Home Designer 2027

Professional 3D Home Design Software



Reference Manual

A description of the software interface, including drawing tools and settings.

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Program Overview

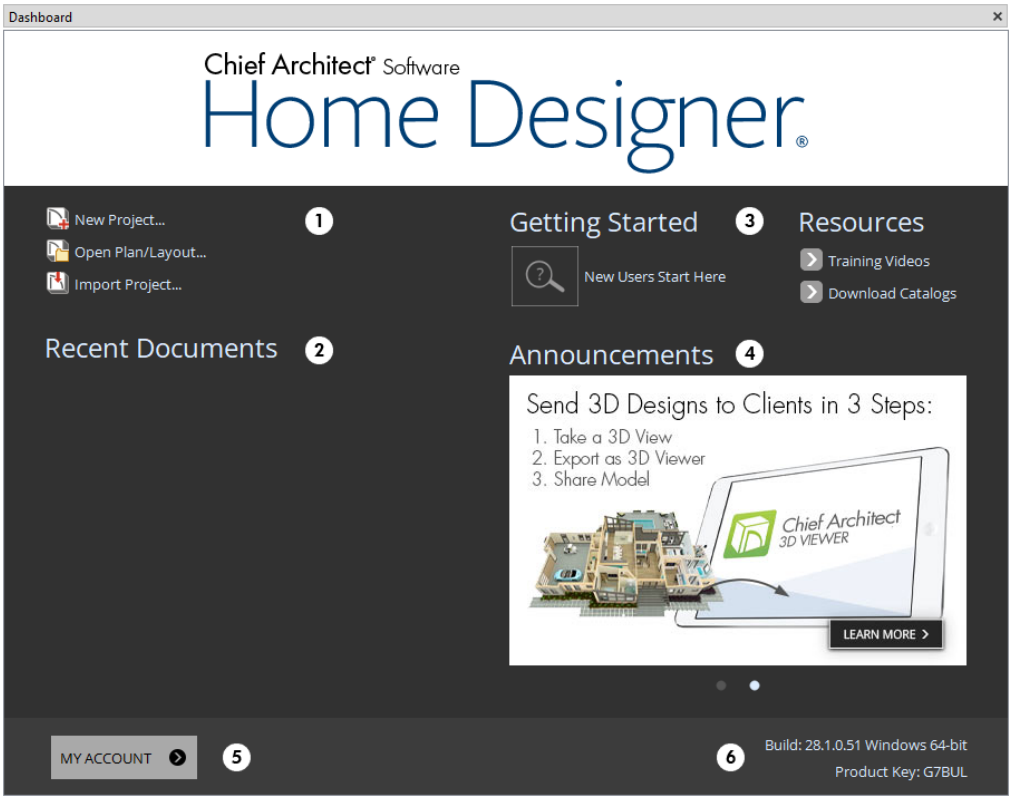
Chapter 1

Home Designer is specifically designed for the residential and light commercial design professional. It allows you to easily and efficiently produce 3D models and construction documents for your projects. We thank you for choosing Home Designer and wish you the best in your design work.

Dashboard

When Home Designer is launched, the Dashboard window displays, allowing you to choose how you want to begin working in the program or access useful resources. The Dashboard can also be opened at any time by selecting **File> Dashboard**.

You can control whether the Dashboard automatically opens and closes in the Preferences dialog. See *General Panel on page 100*.



1 New/Open

The options available here vary depending on whether Chief Architect Project Management is in use or not. See *Chief Architect Project Management on page 35*.

When Chief Architect Project Management is active, these options are available:

Click **New Project** to create a new Project. See *Creating a New Project on page 35*.

Click **Open Plan/Layout** to open a particular Plan or Layout document. See *Select Project Dialogs on page 39*.

Click **Import Project** to add the documents in a .caproj file to your Resource Store and open one of them. See *Importing and Exporting Projects on page 60*.

These options are available when traditional file management is in use:

Click **New Plan** or **New Layout** to open a new, blank file. See *Creating a New Plan or Layout on page 46*.

Choose **Open Plan** or **Open Layout** to work on an existing plan or layout file. See *Opening and Importing Files on page 63*.

2 Recent Documents

The full file paths of the most recently opened Plans and Layouts are listed here. See *Recently Opened Documents on page 64*.

- Move your mouse pointer over a document name to see its full file path.
- Click the **Pin File** icon to the right of a document's name to pin it to the top of the Recent Documents List regardless of how recently it was opened. Click the **Unpin File** icon to return the document to its normal place in the list.
- Click on a Plan or Layout's name to open that document.

3 Getting Started & Resources

A selection of useful online **Getting Started** options and **Resources** are available here. Click on an option to launch your default internet browser to HomeDesignerSoftware.com.

- Click **Getting Started** to visit the Getting Started page on our website with links to a variety of resources to help you begin using the program.
- Click **Training Videos** to access a searchable collection of videos focused on specific topics.
- Click **Download Catalogs** to visit our 3D Library of downloadable bonus and manufacturer library catalogs. See *Library Content on page 717*.

4 Announcements

When an internet connection is available, the **Announcements** section displays updated messages and news from Chief Architect.

5 My Account

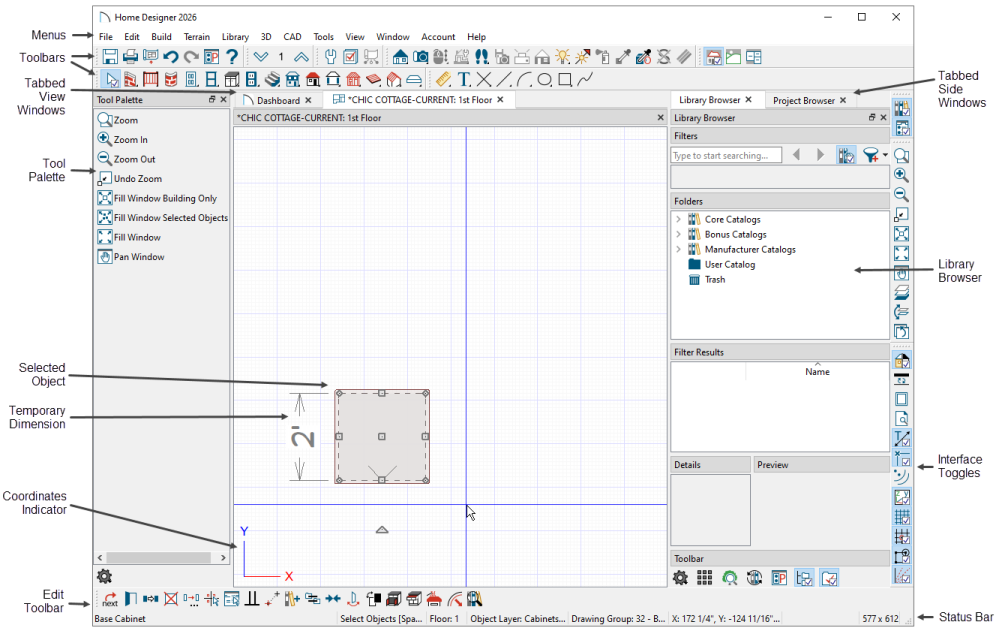
Click **My Account** to launch your default internet browser to the My Account page on our website. If you are not currently signed in, you will instead go to the Sign In page.

6 Build & Product Key

Your software version's **Build** number and the first five characters of your **Product Key** display here for reference.

The Home Designer Environment

Home Designer is designed to be intuitive and efficient.



3D Drafting

In Home Designer, the drawing area is laid out on a Cartesian grid: a three dimensional coordinate system described using the X, Y, and Z axes. A Coordinate System Indicator displays at the bottom left corner of most views, and the current position of your mouse pointer displays in the Status Bar at the bottom of the program window. See *Coordinate System Indicators on page 131*.

Architectural objects take up space in all three dimensions and their height, width and depth can be specified in U.S. or metric units. In addition, the location of objects can be precisely defined using coordinates, again specified in U.S. or metric units. See *Moving Objects Using Dimensions on page 361*.

CAD objects such as lines and arcs take up space in two dimensions in the current view. Their dimensions can also be specified in U.S. or metric units and their locations precisely defined using coordinates.

Objects can be rotated relative to the Cartesian grid system, as well. When the program presents the option to rotate to an Absolute Angle, this angle will be measured relative to an imaginary horizontal line drawn in floor plan view from the origin in the positive X direction.

Easy Access to Tools

You can access Home Designer's features in various ways using the mouse and keyboard.

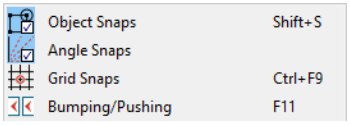
- Convenient toolbar buttons allow fast access to frequently-used tools and let you customize the interface.
- Menus provide access to most tools and settings.
- Keyboard shortcuts are available for most tools.
- Contextual menus display with a right-click of the mouse.
- *The Status Bar on page 24* at the bottom of the screen provides tool descriptions and other information about the current task.

Interface Toggles

A number of useful drawing and editing behaviors, as well as the display of important elements in the interface, can be easily enabled and disabled using the menus and toolbars.

- Object Snaps, Angle Snaps, and Grid Snaps can be toggled on or off as needed. Individual Object Snaps and Extension Snaps can be toggled as well. See *Snap Behaviors on page 141*.
- Display Elements like Print Preview, Show Line Weights, and the Reference Display can be turned on when needed and then toggled off.
- Special Edit Behaviors can be enabled for particular tasks, then replaced by the Default Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.

When a setting is turned on, or a tool is selected, its toolbar icon will be shaded and a small check is displayed at its lower right corner. In Windows its menu icon will appear the same, but in MacOS™ only a large check will be displayed to the left of the icon.



Menu in Windows



Menu in MacOS™

Many of these interface elements are global Preferences while others are file-specific default settings. See *Default Settings vs Preferences on page 83*.

Using Input Devices

You can interact with Home Designer using a variety of input devices.

Keyboard

A keyboard is necessary for entering text and size values. See *Dialogs on page 19*.

Your keyboard can also be used to navigate dialog panels, as well as navigate the program menus. Many commands can also be invoked using keyboard hotkeys. See *Menus, Toolbars, and Hotkeys on page 17*.

In addition to the keyboard, a mouse or other device that can move a pointer is necessary in order to draw, select, and edit objects in your drawings.

Three Button Mice

Left Button



The **left button** is the primary button used in Home Designer. Unless specified otherwise, Home Designer documentation refers to the left mouse button.

Many objects, such as doors and cabinets, are created by clicking the left mouse button. Others, such as walls, stairs and dimension lines, are created by dragging the pointer from one end of the object to the other.

> Note: If you are left-handed and have re-programmed your mouse, reverse the instructions for left and right buttons in this manual.

Right Button



The **right button** has several uses:

- Right-click to select any object. If, for example, the **Straight Exterior Wall** tool is active, the left mouse button only allows you to select walls. You can, however, select other types of objects such as cabinets with the right mouse button.
- Use the right mouse button to temporarily switch to the Alternate edit behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.
- You can also use the right mouse button to open a context sensitive menu with additional editing commands. See *Contextual Menus on page 18*.

Middle Button



The **middle button** can be used to pan in most view types or to temporarily use the Move edit behavior. To close a tabbed view window, click on its tab using the middle mouse button. You can also program it to work as a double-click.

If your mouse does not have a middle mouse button, in the Mac version of Home Designer you can use the left button and the Command key to achieve the same results.

Mouse Wheel



The **mouse wheel** can be used to zoom in and out in most view types. See *Zoom Tools on page 136*.

The Back, or X1, button on a 5-button mouse can be used to temporarily enable the Concentric edit behavior. See the documentation for your mouse.

The Forward, or X2, button on a 5-button mouse can be used to temporarily enable the Resize edit behavior. See the documentation for your mouse.

3D Mice

3Dconnexion®'s 3D mice can be used to navigate in Home Designer. For information about navigating in camera views and overviews, see *3Dconnexion® 3D Mice on page 791*.

Trackpads

In addition to the standard trackpad gestures on your system, in Home Designer you can pinch to zoom.

In macOS™, you can Option + click to pan. Panning with a trackpad is not supported in the Windows version of the software, however.

Touch Screens

Standard one-finger touch screen gestures are supported in both the Windows and Mac versions of the software with one exception: double-tapping is not supported. In the Windows version, touching with a second finger to cancel an action is also supported, as are two-finger pan and two-finger pinch to zoom.



You can set the Pinch Zoom Sensitivity for both trackpads and touch screens in the Preferences dialog. See *General Panel on page 100*.

Gamepads

In the Windows version of Home Designer, gamepads can be used to navigate in camera views, overviews, as well as elevation views. See *Gamepads on page 791*.

Crosshairs



Crosshairs help you position the pointer relative to objects in a view while drawing and editing. They can be set to display in Plan and Cross Section/Elevation views, and in Perspective and Orthographic camera views. Select **View> Crosshairs** to toggle crosshairs on or off in the current view type.

You can customize the Crosshairs' appearance and control their display in different view types in the Preferences dialog. See *Edit Panel on page 110*.

Pointer Icons

The appearance of the pointer or cursor in Home Designer will vary, depending on which tool is active. For example, when the **Select Objects**  tool is active, it will look like a white arrow, and when a **Cabinet Tool**  is active, it will look like a base cabinet with a small cross.

In addition, one or more additional icons may follow the pointer if a recommended setting is not in use or if a problematic condition exists in the file:

Icon	Meaning
	**Angle Snaps** has been disabled. See *Angle Snaps on page 143*.
	The **Alternate** Edit Behavior has been selected. See *Alternate on page 180*.
	The **Resize** Edit Behavior has been selected. See *Resize on page 180*.
	The **Concentric** Edit Behavior has been selected. See *Concentric on page 181*.
	The **Fillet** Edit Behavior has been selected. See *Fillet on page 182*.
	**Connect CAD Segments** has been disabled. See *Connect CAD Segments on page 183*.
	The **Rotate/Resize About Current Point** Edit Behavior has been selected. See *Rotate/Resize About Current Point on page 183*

Icon	Meaning
	A layout view with a broken link has been detected. See *Managing Layout Links on page 980*
	**Auto Rebuild Terrain** has been disabled. See *Auto Rebuild Terrain on page 900*
	**Rebuild Walls, Floor and Ceilings** has been disabled. See *Rebuilding Walls, Floors and Ceilings on page 545*
	A bad wall connection has been detected. See *Fix Wall Connections on page 271*
	An irregular wall angle has been detected. See *Wall Angles on page 268*
	A reversed wall has been detected. See *Reverse Layers on page 278*

You can turn off the display of these informative pointer icons in the Preferences dialog if you wish. See *Behaviors Panel on page 113*.

View and Side Windows

Home Designer's main program window has a number of important features that let you interact with the program, such as toolbars and menus. It also features two different kinds of windows: view windows and side windows.

View Windows

View windows are sometimes referred to as "the drawing area" because most of them are windows in which you can draw or place architectural and/or CAD objects. There are a number of different types of view windows in Home Designer:

- Plan views
- Camera views and overviews
- Cross section/elevation views
- Materials Lists
- Layout

View windows can be navigated by panning and zooming. You can also enable scrollbars on their right side and bottom. Select **View> Scrollbars** to toggle their display. See *View Tools on page 135*.

Although only one view window can be active at any given time, there is no limit to the number of view windows that can be open. View windows can be tiled or tabbed, and you can navigate between them in a number of different ways. See *Window and View Tools on page 130*.

You can also tear a view window out of the main program window. This creates a second, separate program window complete with toolbars and menus. Individual view windows can be torn out and transferred between program windows.

Side Windows

Side windows provide access to a variety of tools and content that helps you add detail your drawings.

Side windows are so-named because they are typically docked to either the left or right side of the program window - although, they can also be docked to the top or bottom, or undocked entirely. There are several different side windows in Home Designer:

- *Child Tool Palette on page 121*
- *The Library Browser on page 705*
- *Walkthrough Path Previews on page 875*
- *Action History on page 222*

Each of these side windows can be opened via the **View** menu or by clicking the toolbar button associated with it. Similarly, each can be closed by clicking the **Close** button in its title bar or tab, via the **View** menu, or by clicking its toolbar button. See *View Tools on page 135*.

Side windows can be resized by clicking and dragging an undocked edge. To undock a side window, either drag its title bar out into the drawing area or click the Undock button on its title bar. To dock a side window, drag its title bar to any side of the program window. You can also double-click on its title bar to return it to its last docked location.

Two or more side windows can be docked together to form a shared side window, and can be tiled and/or tabbed within that shared window. To create a shared side window, begin by docking a side window to a side of the main program window, then:

- To create tabbed side windows, drag a second side window over the first. When the docked window becomes highlighted, release the mouse button.
- To create tiled side windows, drag a second side window over the first. When the docked window becomes highlighted, slowly drag the mouse towards one of its sides. When a highlighted space is created along that side, release the mouse button.

To prevent a side window from docking while you are moving it, hold down the ***Ctrl/⌘*** key while dragging it. You can also choose to disable **Side Window Drag Docking** in the Preferences dialog, and you can enable or disable **Top/Bottom Docking** for each side window, as well. See *Appearance Panel on page 93*.

Side windows can also be set to their initial states in the Preferences dialog. See *Reset Options Panel on page 118*.

Menus, Toolbars, and Hotkeys

Home Designer's drawing, editing, and view tools can be accessed via menus, toolbar buttons, and keyboard hotkeys.

Program Menus

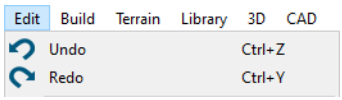
Home Designer's program menus are located below the title bar in the program window and can be used to access nearly all tools in the program. Click on a menu name to expand it, then click on a menu item to either activate that tool or access the item's submenu. Items with a submenu have an arrow to the right of the name.

In the Home Designer documentation, menu paths are written in this format: **Tools> Floor/Reference Display> Up One Floor**  .

The menus can be accessed using the keyboard:

- Press the ***Alt*** key once to enable this functionality - one letter in each menu will become underlined.
- Press the key associated with one of these underlined letters to expand its menu - one letter in each menu item's name will be underlined. Press the key associated with one of these letters to activate that tool or access the item's submenu.
- Press the ***Esc*** key to undo your last selection, or click with the mouse to exit out of this functionality.

Menu items with an icon to their left have a toolbar button associated with them. In addition, many tools can also be activated using keyboard hotkeys. If a menu item has a hotkey, it will display to the right of the item's name.



Edit menu items with button icons to the left and hotkeys to the right

Toolbars and Hotkeys

Home Designer installs with a set of toolbars docked to the margins of the program window. Using these toolbar buttons is a fast and easy way to access many program features. If a tool is active, a small check mark will display at the lower right of its button icon. See *Toolbars and Hotkeys on page 121*.

The Edit Toolbar is a special toolbar with buttons that can be used to modify a selected object or objects. The buttons on this toolbar vary, depending on the type(s) of object selected, the current view, and how you selected the object; when no object is selected, the Edit Toolbar is blank. See *The Edit Toolbar on page 122*.

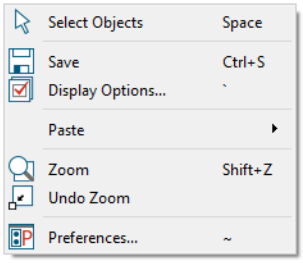
You can move the toolbars, customize them by adding or removing buttons, or create your own toolbars from scratch. See *Toolbar Customization Dialog on page 125*.

Many tools also have a keyboard hotkey associated with them. See *Hotkeys on page 127*.

Contextual Menus

Contextual menus are context-sensitive menus that display tools relevant to a selected object or view. To open a contextual menu, right-click on an object. The options in an object's contextual menu are usually the same as those on an object's Edit Toolbar. See *The Edit Toolbar on page 122*.

You can also access a contextual menu by right-clicking in an empty space in a view window, on a line item in the Library Browser or Project Browser, or in a text field in a dialog.



The Contextual Menu for a Plan View

Contextual menus can be enabled or disabled in the Preferences dialog. When contextual menus are disabled, right-clicks perform generic object selection: much like when the **Select Objects** tool is active. See *Appearance Panel on page 93*.

Tool Search

Tool Search is a Search text field that you can add to your toolbars and use to access any tool or command in the program without having to find it in the menus or toolbars. See *To add a button to a toolbar on page 124*.

To search for a tool, click in the Tool Search text field and begin typing the tool name. As you type in the Tool Search field, a list will drop down below the text field, showing search results that update as you type. Tool Search results are based on tool names and also tool descriptions, making it easier to find a tool when you aren't sure of the name. Click on an item in the results to activate that tool or command.

When Child Tool Palette is selected in the Preferences dialog, Tool Search results will include the names of parent tools, and if you click on a parent tool its child tools will display in the Tool Palette. When Drop Down toolbars are selected instead, parent tools are excluded from the results. See *Toolbar Arrangement on page 121*.

Dialogs

Default and preference settings, object specifications, display settings, and many other functions are accessed through dialog boxes.

> Note: Some of the dialog images in the software documentation have been resized smaller than their actual minimum size.

Dialog Panels

Many dialogs have multiple panels, which are listed in a tree list on the left side of the dialog. Click on a panel name in the list to make it active. In Windows, panels can also be navigated using the keyboard. Press:

- ***Ctrl/⌘ + Tab*** or ***Ctrl/⌘ + F6*** to navigate forward;
- ***Ctrl/⌘ + Shift + Tab*** or ***Ctrl/⌘ + Shift + F6*** to navigate backward.

When a panel name is actively selected in the list, you can also navigate the tree list using the ***Up*** and ***Down*** arrow keys.

By default, dialogs always open to the first panel in the list; if you prefer, you can choose to **Open Dialogs to the Last Panel Visited**. See *General Panel on page 100*.

Units and Math Operations in Dialogs

The units of measurement used in dialogs are determined by your choice of template files. See *Creating a New Plan or Layout on page 46*.

The number format used in dialogs are set based on your operating system's defaults. See *Region and Language Settings on page 84*. You can change the number format as well as the angle format in the Dialog Number Style/Angle Style dialog. See *Dialog Number/Angle Style Dialog on page 119*.

Basic addition, subtraction, multiplication, and division can be performed in the text boxes where numeric values are entered.

Note that settings using Bearings do not support math, nor do those with spin controls or slider bars.

- To add, type the + character followed by the amount that you wish to add. Spaces are ignored and including a unit of measurement is optional.
- To subtract, type the - character followed by the amount you wish to subtract. As with adding, spaces are ignored and a unit of measurement is optional.
- To multiply, type the * character followed by the amount you wish to multiply by. Spaces are ignored, and only one of the values being multiplied can have a unit of measurement.
- To divide, type the / character followed by the amount you wish to divide by. To divide, there must be a space before the / - if there is not, the input may be treated as a fraction. The denominator, or value typed after the /, cannot have a unit of measurement.

Math expressions support a single operation only: more than one operation character (+, -, *, /) at a time is not allowed.

Basic math operations can also be used to move objects using dimensions. See *Moving Objects Using Dimensions on page 361*.

Elevation References

A variety of different architectural objects can be placed at a particular elevation in the 3D drawing space. That elevation can be set relative to a number of different references; the options available may vary depending on the object type:

- **Absolute** is measured from Z = 0. See *3D Drafting on page 12*.
- **From Floor** is measured relative to top of the Floor Structure at the object's location. See *Floor and Ceiling Heights on page 539*.
  - If the object is not in a room, it is measured relative to the default Floor Height for its Floor Level. See *Multiple Floor Levels on page 535*.
  - If the object is not in a room and is on the same Floor Level as the Terrain, it is instead measured relative to the Terrain.
- **From Finished Floor** is measured relative to the object to the surface of the Floor Finish at the object's location.
  - If the object is not in a room, it is measured in the same manner as From Floor.
- **From Terrain** is measured relative to the object to the surface of the terrain at the object's location. See *Terrain on page 898*.
  - If no terrain is present, it is measured relative to the default Floor Height for its Floor Level.
- **From Ceiling** is measured relative to the object to the Ceiling surface at the object's location.
  - If the object is not in a room, it is measured relative to the default ceiling height for its Floor Level.
- **From Roof** is measured relative to the object to the Roof surface at the object's location. See *Roofs on page 592*.
  - If the object is not in a room, it is measured relative to the default ceiling height for its Floor Level.

Dialog Size and Position

Dialog boxes can be both moved and resized to suit your needs. By default, the program will remember both the position and size that you specify for a dialog and use it the next time you open it. The size of dialog preview panes can also be changed, and are remembered as well. You can specify whether the program does this always, per session, or never in the Preferences dialog. See *General Panel on page 100*.

- To move a dialog, position your mouse pointer within its title bar and then simply click and drag.
- To resize a dialog, position your mouse pointer on any edge or corner and then click and drag outward or inward. If you drag an edge, only that edge will move; if you drag a corner, the two adjacent edges will move.
- To resize a preview pane, click and drag the vertical grab handle to its left. See *Dialog Panel Splitters on page 22*, below.

When a dialog is resized, some elements such as list boxes and text fields within it may resize in response.

All dialogs have a minimum size limitation but no maximum size. If a dialog opens on a monitor with resolution too low to display its full extents, it will have vertical and/or horizontal scrollbars.

You can reset the default sizes and positions of all dialogs in the Preferences dialog. See *Reset Options Panel on page 118*.

Specification Dialogs

Each object in Home Designer has a unique specification dialog where you can enter size, style and other information specific to the selected object. To access it, select the object and click the **Open Object** edit button.

You can also double-click on an object with the **Select Objects** tool active to open its specification dialog. See *Selecting Objects on page 183*.

In addition, you can access an active camera view's specification dialog by selecting **3D> Edit Active Camera**. The 3D View tools also have defaults dialogs where you can specify the initial attributes of camera views. See *3D Views on page 779*.

Most objects also have a defaults dialog that lets you specify the initial values in the specification dialog. See *Default Settings on page 83*.

You can open the specification dialog for group-selected objects if they are of the same type, such as base cabinets.

- If a particular setting varies among the different objects, its check box will have a solid fill instead of a check mark. Click once to clear the box for all selected objects, or click a second time to place a check mark for all selected objects.
- In some dialogs, if a particular setting varies among the different objects, it will have a “No Change” radio button. Leave this button selected, or choose a different option to apply it to all objects in the selection set.
- If the setting has a text field or drop-down list, it will say “No Change”. Changes made to such a setting can be undone by replacing the value in the text field with the letter N before you click OK.
  - If that setting is using dynamic defaults that refer to different defaults, its text field or drop-down list may instead report "Multiple Defaults".
- In a few cases, such as schedule Columns to Include, the “No Change” attribute cannot be modified.

If you select multiple objects of different types, the **Open Object** edit button is usually not available. This button may be available if the objects have data in common, but you can only edit the common data.

Dialog Preview Panes

Many specification dialogs have a preview pane that shows how changes to settings affect the selected object. This preview updates when you click in a different field or press the **Tab** key.

If you switch to a panel with settings that affect the selected object’s appearance in a certain view, that view will be shown in the preview. For example, if you select the General panel, a 3D view will be shown; but if you select the Fill Style panel, floor plan view will be shown. When plan view is shown, the primary and all secondary layers associated with the object will display. See *Primary and Secondary Layers on page 152*.

When you click in the Preview Pane, your mouse pointer changes to a four-headed arrow and you can rotate around the object as well as zoom in and out using the mouse scroll wheel. Some objects, notably walls, doors, and windows, have Interior and Exterior labels to indicate which side is visible in the preview. The Preview Background color can be set in the Preferences dialog. See *Colors Panel on page 95*.

A selection of buttons above the preview pane allow you to customize the appearance of and interact with the preview, including:

The Standard, Vector View, and Glass House Rendering Techniques can be applied to the preview for architectural objects, as can Plan View. See *Rendering Techniques on page 836*. You can specify whether Standard or Vector View is used by default in the Preferences dialog. See *Appearance Panel on page 93*.

Click the **Fill Window** button above the preview pane to zoom in or out so that the object fills the extents of the pane, maintaining the current rotation.

Click the **Mouse Orbit Camera** button toggle off or on the ability to rotate around the object in the preview by clicking and dragging.

In the Define Material and Select Material dialogs, materials are previewed on a Cube, Sphere, Teapot, or Face shape and the Physically Based, Standard, and Vector View Rendering Techniques can be applied to the preview. In addition, either a room or a backdrop image can display behind the shape and this background can be blurred if you wish. See *Materials on page 756*.

Click the **Color** button to turn color in the preview off or on.

 Click the **Show Line Weights** button to toggle the display of line weights when Show Plan View is selected.

 Some objects have additional tools that affect object previews. For example, the Cabinet Specification dialogs have a **Select Cabinet Face Item** button. Object-specific tools like this are discussed in the documentation for that object type's specification dialog.

> Note: When multiple objects are selected, their shared specification dialog preview will typically only show one of the objects.

Dialog Panel Splitters

Many dialog panels are divided into up to three sections: a list of panels on the left, an object preview on the right, and a central area where settings are located. The vertical splitters separating these sections each have a pale grey, vertical grab handle.

To resize the panel list or preview, as well as the area in the middle, move your mouse pointer over the vertical grab handle: when the splitter cursor ⇹ can be seen, click and drag to the left or right. In order to move a splitter, the dialog box typically needs to be wider than its minimum width.

The Library Browser side window also has a number of splitters, mostly vertical. See *The Library Browser on page 705*.

Navigating Dialogs

Dialog panels and settings can be accessed using the mouse. You can also navigate the settings on a given dialog panel using the keyboard. For example:

- Line items in tree lists can be browsed using the arrow keys. ***Up*** and ***Down*** navigate the list, while ***Left*** and ***Right*** expand and contract categories.
- Press the ***Tab*** key to shift focus from the tree list to the first setting on the selected panel.
- Press the ***Tab*** key to shift focus from one setting to the next, or ***Shift*** + ***Tab*** to go in the reverse direction.
- A check box can be checked or cleared by pressing the ***Spacebar*** or the + or **-** keys, respectively, while it is in focus.
- Columns of radio buttons can be navigated using the ***Up*** and ***Down*** arrow keys; rows can be navigated using the ***Left*** and ***Right*** arrows. Select a radio button by pressing the ***Spacebar*** while it is in focus.
- Settings in list boxes can be navigated using the ***Up*** and ***Down*** arrow keys. When a check box is in focus, it can be checked or cleared by pressing the ***Spacebar***.
- Drop-down lists can be browsed using the ***Up*** and ***Down*** arrow keys. When the mouse pointer is directly over the drop-down, the mouse scroll wheel can also be used; on a Mac, the list must also be expanded. In Windows only, you can press ***Tab*** to select the highlighted item in the list and proceed to the next setting.
- Settings with spin control arrows can be adjusted by typing in the text field or using the ***Up*** and ***Down*** arrow keys. In most dialogs when the mouse pointer is directly over the setting, the mouse scroll wheel can also be used.
- Slider bars can be adjusted by typing in the text field or using the ***Left*** and ***Right*** arrow keys. In most dialogs when the mouse pointer is directly over the slider bar, the mouse scroll wheel can also be used.
- Line items in tables can be navigated using the ***Up***, ***Down***, ***Left***, and ***Right*** arrow keys.
- To expand a drop-down list in a table, navigate to it and press the ***Spacebar***. Then, browse the list using the ***Up*** and ***Down*** arrow keys. Using the mouse, a drop-down list in a table must be clicked twice: first to select, then to expand the list.
- Line items in tables can be group selected using the ***Ctrl*** or ***Shift*** keys, or by pressing ***Ctrl/⌘ + A***.
- Press the ***Enter*** key to close most dialogs and apply your changes.
- In the Mac version, ***Command*** + **.** closes dialogs.

> Note: Keyboard navigation in dialogs may vary somewhat depending on your computer platform.

In the Mac version of the software, Dictation is supported in dialogs. Select **Edit> Start Dictation**, then open a dialog. Say the word “Numeral” before a number to enter it as a numeric value or immediately follow a number with a unit such as “foot” to enter it as a measurement.

Edit Handles

A selected object has edit handles that can be used to modify its size, position, and orientation. When you move the pointer over an edit handle, information about what it does displays in the Status Bar and the pointer changes to suggest how you can use it.

The edit handles that display depend on the type of object selected, the current view, and how far you are zoomed out. Edit handles do not resize as you zoom in or out. If you are zoomed out far enough, some edit handles may be hidden so that they do not stack over one another. As you zoom in, these handles become visible again.

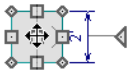
How each handle behaves when it is clicked and dragged may depend on which **Edit Behavior** is currently active. See *Defaults, Preferences, and Edit Behaviors on page 179*.

> You can cancel any edit handle operation before it is completed by pressing the ***Esc*** key or by pressing any two mouse buttons at the same time.

Move Edit Handle

The square Move handle located at the center of a selected box or polyline-based object, or at the center of a group of selected objects, lets you move the selection orthogonal, or at right angles to, its edges. When you position the mouse pointer over the Move handle, it displays a four-headed arrow. See *Moving Objects on page 167*.

Depending on the type of object(s) selected and how far you are zoomed in or out, the position of the Move handle may shift so that it remains on-screen. See *Zoom Tools on page 136*.



Reshape/Resize Edit Handles

Square edit handles on the edges and corners of a selected object allow you to resize the object by moving its edges. A two-headed arrow indicates that the object's edge or corner can be moved in the direction of the arrows. When multiple objects are selected, the Resize handle is not available. See *Resizing Objects on page 206*.

Depending on the type of object selected and how far you are zoomed in or out, the Resize handles may not display on-screen.



In the case of a selected line-based object, clicking and dragging the Resize edit handle will move the object perpendicular to itself. See *Editing Line-Based Objects on page 187*.

Rotate Edit Handle



The triangular Rotate handle lets you rotate the selected object or group of objects. The Rotate handle is located adjacent to either the object's selected edge or its front if it has one, and when you move your mouse pointer over this handle, it displays a circular arrow. See *Rotating Objects on page 173*.

A selection's Rotate handle will display regardless of how far you are zoomed out; however, it is possible to zoom in far enough that it no longer can be seen.



Other Edit Handles

In addition to the Move, Reshape/Resize, and Rotate edit handles, a variety of objects in Home Designer have additional edit handles for special purposes. Examples include:

- Same Line Type edit handles. See *Same Line Type Edit Handles on page 245*.
- Same Wall Type edit handles. See *Edit Handles for Walls on page 279*.
- Change Swing/Hinge Side edit handle for doors. See *Controlling Door Swing on page 406*.
- Add Extension and Extension Line End edit handles for dimension lines. See *Editing Dimension Lines on page 355*.
- Resize edit handles for Schedule columns. See *Plant Schedules on page 947*.

The Status Bar

The Status Bar is located at the bottom of the main program window and reports various information about the current state of the program.

This information depends on a variety of conditions such as settings in the Preferences dialog, the type of object(s) selected, and the current position of the pointer. See *Appearance Panel on page 93*.

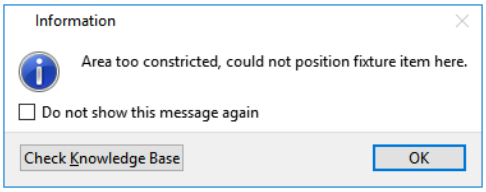
Examples of information that may be reported include:

- The type of object currently selected or the total number of group-selected objects.
- Plan file name and view information when a layout box is selected.
- A description of the edit handle that the pointer is over.
- A brief description of the toolbar button or menu item that the mouse pointer is positioned over.
- The name of the active tool, a brief description of that tool, and its keyboard hotkey, if it has one.
- The length and/or angle of an object as it is being drawn.
- Basic information about a selected library object, folder, or catalog.
- The current floor level or layout page.
- The layer that the selected object is on and its Drawing Group.
- The size of the active window in pixels.
- Whether a camera view is rendering or has finished rendering.
- The current coordinates of the pointer.

The number and angle formats used in the Status Bar is set in the Dimension Defaults dialog, while the angle style can be specified in the Number Style/Angle Style dialog. See *Format Panel on page 348* and *Dialog Number/Angle Style Dialog on page 119*.

Message Boxes

As you work in Home Designer, the program will occasionally prompt you to examine your settings, alert you if you command it to do something that could potentially cause a problem, or notify you if it encounters a problem that needs your attention.



Situations where such message boxes may display include:

- Closing a file or view without saving;
- Modifying an object that is set to rebuild automatically;
- A file referenced outside the program, such as an image or texture, is missing;
- Creating an object in a space too small to contain it.

As with dialog boxes, you can access the options in a message box using the mouse or navigate them using the keyboard.

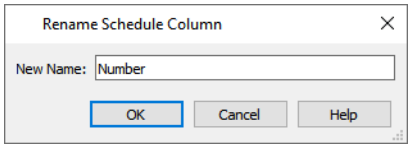
A few messages have a **Send Report** button. Click this button to send details regarding the issue that prompted the message to Chief Architect via the internet. See *Error Messages on page 1004*.

Some message boxes include a “Remember my choice” or a “Do not show this again” check box. Check this box to prevent messages of this specific type from displaying in the future. When this box is checked, some options in the message box may become inactive.

To allow all message boxes to display again, click the **Reset Message Boxes** button in the Preferences dialog. See *Reset Options Panel on page 118*.

Name Prompt

The Name Prompt dialog allows you to **Rename** an entity such as a column in a Plant Schedule. See *Plant Schedule Specification Dialog on page 949*.



For best results, type a short, descriptive, and unique name and then click **OK**.

Toast Notifications

Temporary toast notifications display at the bottom right corner of the program window to notify you when certain tasks are completed. Icons on the right side of the toast let you display the message in a regular message box or close the toast. Some toast notifications can be suppressed: click its **Expand** button and check **Do not show this message again**.

Preferences and Default Settings

Preferences and default settings control many aspects of the user interface and tool behavior in Home Designer. You can use these settings to customize the program to suit your personal work style.

For more information about defaults and preferences, see *Preferences and Default Settings on page 83*.

Preferences

Preference settings let you change program behavior to suit your workflow. For example, you can:

- Turn certain display elements on or off.
- Choose background and editing feedback colors.
- Set the frequency of autosaves, the maximum number of "undos," and file locking.
- Set the default folders for various files.
- Control the editing behaviors of objects.
- Set rendering specifications to maximize efficiency and quality.

Preference settings are global, affecting all plan and layout files.

Defaults

Most objects in Home Designer derive their initial properties from their respective default dialogs.

For example, a newly placed **Window** gets its initial values from the Window Defaults dialog and a newly placed **Hinged Door** gets its initial values from the Interior or Exterior Door Defaults dialog.

Once an object is placed in a plan, its initial properties can be overridden, but setting up your defaults before you begin drawing can save you considerable time as you build a model in the program.

Default settings, unlike Preferences, are file specific.

Dynamic Defaults

Most default settings are static: if you change one, any objects of that type in the current file will not be affected. A few defaults, however, are dynamic: they are tied to existing objects in the drawing and if you change the default, those objects may be affected. See *Dynamic Defaults on page 84*.

Drawing a Plan

When you draw a plan in Home Designer, you are placing 3D objects that represent building components. Home Designer comes with predefined default settings so you can start drawing plans immediately. You should review these default settings to be sure they match your drawing and building methods. See *Preferences and Default Settings on page 83*.

Set the Defaults

1. Open a new plan using the template of your choice. See *Plan and Layout Templates on page 85*.
2. Set the critical structural defaults:
   - Floor Level Defaults. Set the default ceiling height for Floor 1. See *Floor Level Defaults Dialogs on page 535*.
   - Foundation Defaults. Set the foundation specifics such as type, footing size, and stem wall height. See *Foundation Defaults on page 515*.
   - Framing Defaults. Set the floor framing specifications, including type and dimensions. See *Manual Framing Defaults Dialog on page 658*.
   - Default Wall Types. Specify the defaults for walls and railings. See *Wall, Railing, and Fencing Defaults on page 254*.
3. Set material defaults for roof, walls, and rooms (optional). See *Material Defaults on page 757*.
4. Set style defaults for doors, windows, molding, cabinets and other objects.

Draw the Floor Levels

1. While the size of the drawing area in Home Designer is limited only by the resources on your computer, it is best to begin your drawing near the origin, 0,0. See *3D Drafting on page 12*.
2. Draw the exterior walls on Floor 1. See *Creating Walls on page 267*.
3. Adjust the perimeter shape and size as required. See *Moving Walls Using Dimensions on page 276*.
4. Place any first floor bearing walls.
5. Define types for special rooms such as Garages and Decks in the plan. See *Room Types on page 314*.
6. Place perimeter doors and windows. See *Doors on page 397* and *Windows on page 426*.
7. Build additional floors. See *Adding Floor Levels on page 536*.
8. Specify the default ceiling height and platform depths for each floor level as soon as it is created. See *Floor Level Defaults Dialogs on page 535*.
9. Adjust the perimeter shape of additional floor levels as needed. See *Editing Walls on page 277*.
10. Align edited or moved walls with those above or below where appropriate. See *Aligning Walls on page 280*.

Entering Dimensions

The most efficient and accurate way to move a wall or other object is to select it, click on a dimension line that locates it, then enter the desired distance in the inline text field. See *Moving Objects Using Dimensions on page 361*.

In plans using U.S. Units, dimensions report feet and fractional inches by default. In metric plans, millimeters are the default unit. Dimension formats including units, decimals or fractions, and more, can be set in the Dimension Defaults dialog. See *Format Panel on page 348*.

When moving walls, it is important to be aware of which part of the wall assembly dimensions are set to locate. See *Measuring Walls on page 274*.

Build the Foundation

1. Derive the foundation plan from the first floor. See *Building a Foundation on page 519*.
2. Adjust the foundation perimeter shape as needed.
3. Place interior foundation walls as needed for the first floor bearing walls.

4. Place any other foundation walls required.
5. **Align with Above** as needed. See *Aligning Walls on page 280*.

Add Structure and Details

1. Build non-structural interior walls. Begin on floor one and work up in multiple story structures.
2. Add walls where needed to create features such as chimney chases, plumbing walls, or Open Below areas.
3. Finish the relevant interior structure including interior doors, doorways, cabinets, fixtures, and fireplaces.
4. Build the roof planes. If you generate the roof automatically, remember to carry the roof directives in the walls from the first floor up to the top floor for multiple story structures. See *Roofs on page 592*.
5. Build the framing. See *Creating Framing on page 666*.
6. Build the terrain and landscaping. See *Terrain on page 898*.
7. Create the plot plan. See *Plot Plans on page 899*.

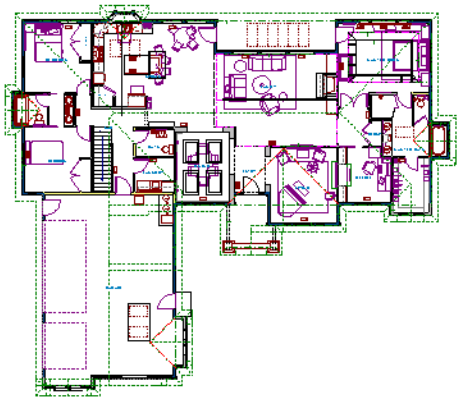
Create the Layout

1. If one does not exist, create a Layout file with a title block, placing the border, title block, and other text on page 0. See *Layout on page 970*.
2. Send views to the layout. See *Sending Views to Layout on page 972*.
3. Print the layout. See *Printing and Plotting on page 984*.

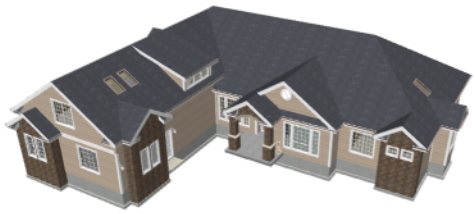
Viewing a Plan

You can see your model in a variety of different 2D and 3D views. You can display more than one view at a time; and in any view, you can pan or zoom in or out. See *Window and View Tools on page 130*.

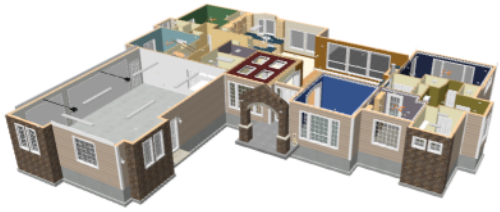
Plan view is a 2D view of the model most commonly used for drawing and editing. Each floor level displays separately; however, you have extensive control over which objects display at any given time; can easily switch between floors; and can also display items on a second floor for reference. See *Multiple Floor Levels on page 535*.



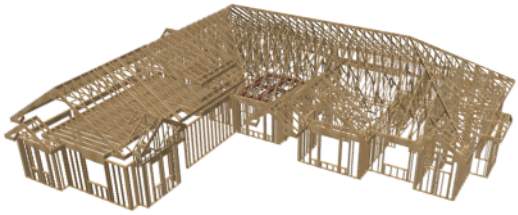
You can create interior and exterior 3D views of your model from any perspective. As in plan view, you can select and edit many objects in 3D views and control which objects are visible. See *3D Views on page 779*.



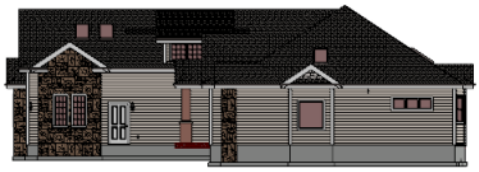
You can also create **Dollhouse Views** that show only the current floor plus any floors beneath it. Ceilings on the current floor are omitted so you can see the interior, visualize the relationships between spaces, and plan traffic flow.



Framing Overviews display framing in 3D, provided that framing has been built. You can customize 3D views to serve special purposes such as this.

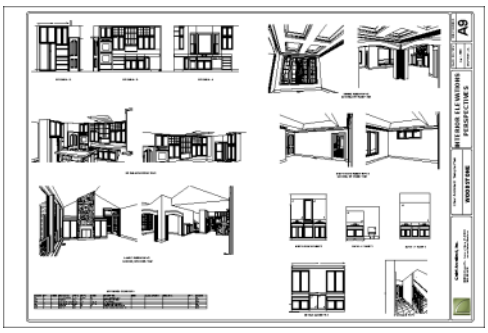


The Cross Section and Elevation camera tools create scaled 2D views of a model's exterior and interior that can be dimensioned and annotated. Just as in other views, you can select and edit objects in a Cross Section/Elevation view as well as control which objects display.



Layout Files

All plan views can be sent to a layout where they can be arranged to produce construction documentation. See *Sending Views to Layout on page 972*.



All views can also be exported as a graphic image. See *To export a picture on page 856*.

Chief Architect Account

Your online Chief Architect Account allows you to take advantage of a variety of valuable resources including catalog downloads, license management, and technical support. Select **Account> My Account** to launch your default web browser to your account page at www.homedesignersoftware.com. If you are not signed in to your account, you will be prompted to do so on the website.

There are a number of tasks in the software itself that require you to be signed into your Chief Architect account:

- Downloading library catalogs. See *Downloading Library Content on page 719*.
- Uploading Chief Architect 3D Viewer models. See *Export Chief Architect 3D Viewer File on page 883*.
- Uploading 360 Panorama images. See *Export 360 Panorama on page 894*.
- Importing a drawing from the Room Planner mobile app. See *Import Room Planner File on page 885*.

Signing In and Out

Your sign-in status is reported at the top of the **Account** menu at the top of the program window, along with the handle and email address of the most recently used account. In order to use any of the services and features of your Chief Architect account within the software, you need to be signed in.

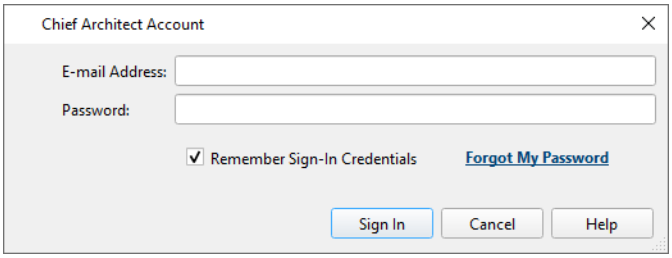
If you try to download library content or upload a 360 Panorama image or 3D Viewer model while you are signed out of your online account, you will be prompted to sign in. You can also sign into or out of your online account at any time by selecting **Account> Sign In to Chief Architect Account** or **Account> Sign Out of Chief Architect Account**.

In some cases, you may want to sign in to a different online account than that associated with your software license: for example, if you have a different account for the 3D Viewer app. See *Export Chief Architect 3D Viewer File on page 883*.

It is important to note that if you are using Chief Architect Project Management, the program will only allow you to sign in to the account associated with your Home Designer 2027 license.

If a given computer is used by more than one Home Designer user, each should have their own User Account on the system. For information about Windows® or macOS™ User Accounts, refer to the operating system's documentation.

Chief Architect Account Dialog



- To download library content, enter the **E-mail Address** and **Password** associated with your online Digital Locker and software license.
- In order to import Room Planner files, you should enter the same **E-mail Address** and **Password** that you used to save the drawing to the cloud in Room Planner.
- Check **Remember Sign-In Credentials** to retain your E-mail Address and Password information in this dialog between sessions.
- Click the **Forgot My Password** link to launch your default web browser to the Account Recovery page at www.homedesignersoftware.com.
- If this dialog opens when you did not prompt it to, information about why you need to provide your login information will be reported.

Getting Help

There are many forms of help available in Home Designer including: Tool Tips, the Status Bar, and the online Help menu. See *Resources and Support on page 1002*.

All these forms of help assume you have a basic working knowledge of your operating system, including how to use a mouse, open, close and save files, copy, paste, and right-click to access contextual menus. Help also assumes you are familiar with basic computer terminology.

The vocabulary used in the design and construction trades vary widely by region. Our online Glossary provides definitions for the terms we use in our information resources. Visit HomeDesignerSoftware.com.

More information is available on Home Designer's website, HomeDesignerSoftware.com.

Tool Tips

When you move the pointer over a toolbar button or menu item, a **Tool Tip** displays, offering a brief description of the tool. More information displays in the Status Bar at the bottom of the window. The Status Bar also reports information about the currently active tool or the currently selected object. See *The Status Bar on page 24*.

Contextual Help

Home Designer's **Help** is a searchable menu that provides information about all of the tools in the program. Select **Help> Launch Help** or press the ***F1*** key to open the program's Help and explore the table of Contents, browse the Index, or Search for keywords.

The Help can be used to provide instant information about toolbar buttons, menu items, and objects in your plan.

- Position the mouse pointer over a toolbar button or menu item, then press the ***F1*** key to open the Help to a page with more information about the tool.
- When an object is selected, press the ***F1*** key to open the Help to a page with information about that object. If you position the mouse pointer over one of the selected object's edit handles and press the ***F1*** key, a page with information about that handle will display instead.
- Press the **Help** button in any dialog box to open online Help to a page describing the options in that dialog.

When the Help is open, it will update automatically to show information about the currently selected object, active tool or dialog, or highlighted item. If you would like to turn off this dynamic behavior, click the **Prevent Help from Updating Dynamically** button at the top of the Help window.

Additional buttons at the top of the Help window allow you to zoom as well as search the current page.

> Chief Architect strives to make our documentation as helpful as possible. Please send any suggestions to: documentation@chiefarchitect.com.

About Home Designer

Select **Help> About Home Designer** in Windows® or **Home Designer> About Home Designer** in macOS™ to view information about your software license, the program's version number, and its release date.

Contact information for Chief Architect, Inc. is available on the MORE INFORMATION panel.

Product Upgrade Options

Ready to expand your design capabilities in the software? Select **Help> Product Upgrade Options** to launch your default web browser and learn about options for upgrading your software license at www.homedesignersoftware.com.

Home Designer Trial Software

Home Designer has a Trial version available for free download at HomeDesignerSoftware.com.

The Trial software offers the same functionality as a purchased license with a few limitations:

- File Saving
- Backing Up or Restoring Managed Resources
- Printing
- File Exporting
- Recording of Walkthroughs
- Printing or Exporting of Materials Lists
- Library Browser restrictions

CONVERTING THE TRIAL VERSION

An installation of any of our Trial programs can be converted into a full working version of the program at any time by purchasing a software license. There are several ways to begin this process in the Trial:

- Click the **Purchase Full Version Now** button in any Trial Restriction message box.
- Select **Account> Purchase Home Designer**  .
- Select **File> Dashboard**  and then click the **Purchase Full Version Now** button.

Once you have purchased a license, you can activate it while the Trial software is running.

To activate the full version

1. Select **Account> Activate Full Version**.
2. In the Product Activation dialog, type or paste the **Product Key** associated with your software license.
3. Click the **Activate Full Version** button.

File Management

Chapter 2

Home Designer reads and edits two main document types: **.plan** files and **.layout** files. The complete 3D model of a structure, surrounding terrain and any CAD data associated with it are stored in the plan file. Data used to create working drawings and the links to various views are stored in the layout file. These files also reference external assets like digital images used as material textures. To maintain links between files, effective file management is important.

All commands related to opening, saving and closing plans are located in the File menu. You can also open plans from the Dashboard window. See *Dashboard on page 10*.

Just as with files created in other software applications, you should back up your plan and layout files externally on a regular basis to avoid accidental loss of work.

Compatibility with Other Programs

The **.plan** and **.layout** files produced in the following programs can all be read by Home Designer 2027.

- Chief Architect® X1 through X18
- Chief Architect® 10.0 through 11.3
- All Better Homes and Gardens Home Designer® products, Interior Designer, and Landscaping and Deck Designer, Versions 7 and 8.
- All Chief Architect Home Designer® products, Interior Designer, and Landscaping and Deck Designer, Versions 9 through 2026.

A number of steps are recommended when migrating plans created in an earlier program version into Home Designer 2027. Before doing so, see *Considerations for Legacy Files on page 1007*.

Files that have been opened and saved in Home Designer 2027 cannot be read by any of the program versions listed above. To continue to read files in the program in which they were created, be sure to create copies of your files before opening them in version 2027.

Plans and layout files produced in the Windows® version of Home Designer 2027 can be read in the Mac® version, and vice versa.

File Association

Although multiple versions of Home Designer can be installed on a computer, the operating system will only associate **.plan**, **.layout**, **.calib**, and **.calibz** files with one of them. If they are not associated with Home Designer 2027, click the **Associate Files with this Program** button in the Preferences dialog. See *File Management Panel on page 101*.

Opening Chief Architect Plans and Layouts in Home Designer 2027

Plans and Layouts created in Chief Architect Versions 10 through X18 can be opened in Home Designer 2027 for general editing and drawing. Bear in mind, though, that if an object cannot be created in Home Designer, it will not be editable. Similarly, some types of views can only be created in Chief Architect and cannot be opened in Home Designer.

Please note, too, that if a Plan has more than the five floors levels that Home Designer supports, the entire Plan can be viewed and annotated only. If a Layout has more than five pages, only pages 0-5 will be accessible.

> Note: Projects exported or backed up in Chief Architect cannot be imported or restored in Home Designer if they contain multiple Layouts, Common Documents, or other data not supported in Home Designer.

Chief Architect Project Management

Chief Architect Project Management is enabled by default in new installations of Home Designer 2027, and offers a number of advantages.

If you prefer, you can disable this option and manage your plan, layout, and asset files yourself. See *Traditional File Management on page 45*.

Just as with files created in other software applications, you should back up your Projects externally on a regular basis to avoid accidental loss of work. See *Backing Up Your Files on page 68*.

Chief Architect Project Management

With the Chief Architect Project Management feature enabled, Home Designer bundles your Plans and one Layout, as well as referenced files and any imported files within a Project and manages their location on your computer for you. This feature offers a number of advantages over traditional file management, such as:

- Protecting links between Plans and Layouts
- Protecting references to Assets, which are external files
- Backing up your Home Designer and referenced files to local disk

In order to perform these tasks, Home Designer saves all plan, layout, and referenced external asset files in a hidden folder on your computer's file system and assigns each file a unique hashed name. This means that these files cannot be accessed outside of Home Designer until they are exported.

Project Management Preferences



Chief Architect Project Management can be enabled or disabled in the Preferences dialog, as can scheduled Project Backups. See *Project Management Panel on page 105*.

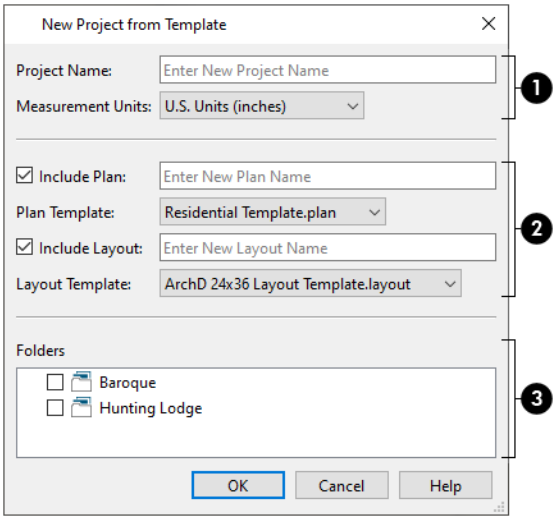
Creating a New Project



There are a number of ways to create a new Project:

- Click **New Project** in the Dashboard window. See *Dashboard on page 10*.
- Select **New Project** from the Projects panel contextual menu. See *Project Browser on page 50*.
- Click the **Add New Project** button in the Project Browser Toolbar.
- Select **File> New Project**.
- Click the **New Project** button in the Select Project dialog. See *Select Project Dialogs on page 39*.
- Select **File> New Project from Legacy Folder**  to create a new folder and import the contents of a folder in your file system into that Project. A Project cannot be created from a folder that contains more than one Layout. See *Layout on page 970*.
- Migrate a plan or layout file into a new project. See *Opening and Migrating Unmanaged Files on page 38*, below.

In all but the last case, the New Project from Template dialog lets you choose the new Project's name and templates:



1

- Type a short, descriptive **Project Name**. Unique names are recommended to avoid confusion, but not required.
- Select which **Measurement Units** the new Project will use: U.S. units or metric. See *Units of Measurement on page 46*.

2

- When **Include Plan** is checked, a plan file is automatically added to the new Project.
  - The plan file's name is initially the same as that of the Project. You can type a different name if you wish.
  - Select the **Plan Template** file used to create the new plan from the drop-down list. See *Plan and Layout Templates on page 85*.
- When **Include Layout** is checked, a layout file is automatically added to the new Project.
  - The layout file's name is initially the same as that of the Project. You can type a different name if you wish.
  - Select the **Layout Template** file used to create the new layout from the drop-down list.

3 Folders

If you have any custom Project Folders, they will be listed here. See *Project Browser on page 50*.

- Check the box beside each Project Folder that you want to add the new Project to.

The New Project from Template dialog also opens when you launch the program while **Open New Plan** is selected in the Preferences dialog. See *General Panel on page 100*.

Make a Copy

Another way to create a new Project is by copying an existing one:

- Select **File> Make a Copy of an Existing Project**. In the Copy Existing Project dialog, select the existing project that you would like to duplicate. See *Select Project Dialogs on page 39*.
- Select **Make a Copy** from a Project's contextual menu in the Project Browser.

The resulting new Project has the same name as the original, appended with " - Copy", and can be renamed in the Project Browser using its contextual menu. See *Project Browser on page 50*.

New Project from Legacy Folder



Select **File> New Project from Legacy Folder** create a new Project based on the contents of a folder on your computer. **New Project from Legacy Folder** is also found in the toolbar of the Project Browser. When you select this option, the Select Folder dialog opens, allowing you to select the source folder on your system. When a new Project is created, any subfolders in the original folder are preserved; however, some files - notably image files - are not listed in the Project Browser.

Adding New Plans and Layouts to a Project

Select **Add New Plan** or **Add New Layout** from a Project's contextual menu in the Project Browser. In the Add New Plan or Layout to Project dialog, you can type a Name for the new Plan or Layout and select which Template to use to create it. See *Using the Contextual Menus on page 55* and *Plan and Layout Templates on page 85*.

Once created, the new Plan or Layout will be listed under the Project selected in the Projects panel of the Project Browser.

You can also choose to add an unmanaged Plan or Layout by opening that file. See above.

Copying Plans and Layouts

Copies of Plans and Layouts can be created within their original Project as well as in other Projects. If a copy is created, it reflects the current state of the Plan or Layout and will include unsaved changes.

- To make a copy of a Plan or Layout in the same Project as the original, select **Make a Copy** from its contextual menu in the Project Browser. The new Plan or Layout is listed in the Project Browser in the same Project as the original. It does not open automatically.
- You can also select **File> Make a Copy**  to make a copy of the Current Plan or Layout in the same Project as the original and specify the new copy's name in the New Plan or New Layout dialog. The new Plan or Layout is listed in the Project Browser in the same Project as the original but does not open automatically.
- To make a copy of a Plan or Layout in a different Project, select **Make a Copy with Links to Project** from its contextual menu in the Project Browser. In the Select Project dialog, select the existing project that you would like to add a new Plan or Layout to. See *Select Project Dialogs on page 39*.
  - Copies of any Plans or Layouts linked to the original document will be created in the destination Project, as well.
  - This option is not available for documents listed under Plan and Layout Templates.
- To make a copy of a Plan or Layout in a new Folder within its Project, select **Make a Copy with Links to Folder** from its contextual menu in the Project Browser. A new Folder with the same name as the copied Plan or Layout is created in the Project and is listed in the Project Browser where you can rename it if you wish.
  - Copies of any Plans or Layouts linked to the original document will be created in the destination folder, as well, and all links will be transferred to those documents.
  - This option is not available for documents listed under Plan and Layout Templates.

Replacing Plans and Layouts

A Plan or Layout's contents and settings can be replaced by data from a different Plan or Layout in the same Project as the original.

To replace a document's data

1. Select **Replace With** from a Plan or Layout's contextual menu in the Folders panel of the Project Browser to replace its data. See *Project Browser on page 50*.

2. If the document being replaced is linked to other Plans or Layouts, replacing its contents could disrupt those links. When this is possibly the case, the Linked Plans/Layouts dialog will report the names of the linked documents, confirm that you wish to replace the contents of the selected document, and give you the option to Cancel.
3. Next, select the source of the replacement data in the Select a Replacement dialog. See *Select Project Dialogs on page 39*.
4. When a source for the replacement data is selected, the program will provide you with the option of deleting the source document of that data.
5. When you are finished, the original Plan or Layout's name does not change, but the data saved within it is replaced.

Replace With cannot be used while the original Plan or Layout is open, and it cannot be used to switch units of measurement from U.S. units to metric, or vice versa. See *Select Project Dialogs on page 39* and *Units of Measurement on page 46*.

Import File to Project

In addition to Plans, Layouts, and the assets they reference, you can import other related files into a Project so they are saved together. You might, for example, import a copy of a contract so that it is accessible within Chief Architect and can be backed up with the Project.

To import a file, right-click on the destination Project in the Project Browser and select **Import File** from the contextual menu. Navigate to and select the file in the Select Files to Import into Project dialog, which is a typical Open File dialog. A Progress dialog will display while the import is in progress. See *Opening and Importing Files on page 63*.

Import File(s) is also available in the contextual menu of the Common Documents heading in the Project Browser. Files imported to Common Documents are also added to your Assets. See *Asset Management on page 42*.

A similar **Import Template(s)** option is available in the contextual menu of the Plan and Layout Templates heading. This option only allows you to import **.plan** and **.layout** files. See *Importing Templates on page 88*.

Saving Plans and Layouts

There are several ways to save changes made to a Plan or Layout. See *Save Tools on page 65*.

- Select **File> Save** to save the currently active Plan or Layout.
- Select **File> Save Entire Project** to save all Plans and Layouts in the currently active Plan or Layout's Project.
- Select **Save All Plans/Layouts** from the contextual menu of a selected Project in the Project Browser. See *Project Browser on page 50*.

Exporting and Importing a Project

To save a copy of a Project, Plan, or Layout so that it can be archived, copied to a different computer, or provided to a client or colleague, you can export it. See *Importing and Exporting Projects on page 60*.

An exported **.caproj** Project file can be imported by selecting **File> Import> Import Project**. See *Import Project on page 61*.

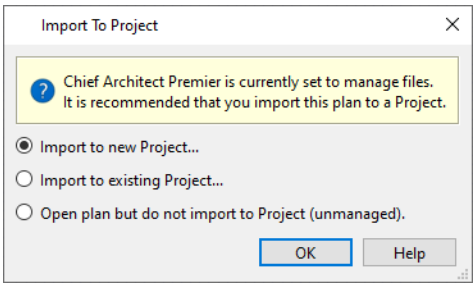
Opening and Migrating Unmanaged Files

Plans and layouts created in legacy Home Designer programs version 2025 and prior can be opened in Home Designer 2026; they will not, however, be associated with a Project. See *Compatibility with Other Programs on page 34*.

Any plan or layout file not included in a Project is referred to as unmanaged. Unmanaged files can be opened in Managed mode; however, copying them or linking them to other files is not supported. See *Referenced Files on page 71*.

To migrate an unmanaged file into a Project

1. While Chief Architect Project Management is enabled, select **File> Open Plan/Layout** . See *Select Project Dialogs on page 39*.
2. At the bottom of the Open Plan/Layout dialog, click the **Browse** button and select a plan or layout file to open.
3. In the Import to Project dialog:



   - Select **Import to new Project** to create a new Project and add the selected file to it.
   - Select **Import to existing Project** to select an existing Project to add the file to in the Select Project dialog. See *Select Project Dialogs on page 39*.
   - Select **Open plan but do not import to Project** to open the file but keep it unmanaged rather than adding it to a Project.
4. If you select either of the **Import** options, you will have the opportunity to select additional plan and layout files to import.

Deleting a Plan, Layout, or Project

With the exception of your default Templates, Plans, Layouts, and Projects can be deleted from your Resource Store using the contextual menus in the Project Browser. See *Using the Contextual Menus on page 55* and *Plan and Layout Templates on page 85*.

> Deleted Projects, Plans, and Layouts are permanently removed from your Resource Store, cannot be retrieved, and are not subject to Undo. It is recommended that you Back Up Resources before Deleting any of your Resources. See *Chief Architect Project Management on page 35*.

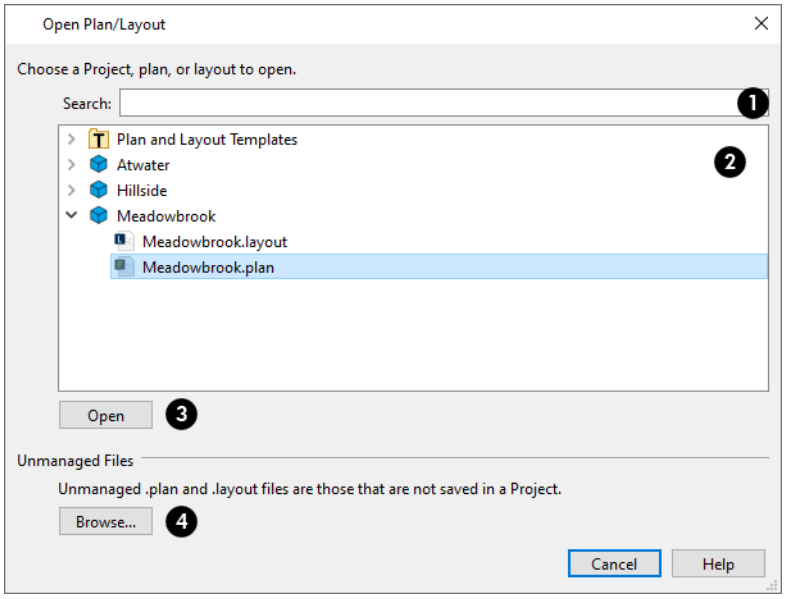
Select Project Dialogs

The Select Project dialogs are used for a number of purposes in the File menu when Chief Architect Project Management is active. See *Chief Architect Project Management on page 35*.

- Make a Copy of an Existing Project
- Make a Copy with Links to Project
- Add New Plan/Layout to Project
- Open Plan/Layout
- Replace Plan/Layout
- Replace Plan/Layout Template
- Replace Reference Plan
- Select a Folder

- Project Imported
- Move to Project

The function of this dialog, along with its title and the text beneath it, vary depending on how the dialog was accessed.



1 Search

Type in the Search field to filter the list of Projects below.

2 Projects

Click on a Project, Plan, or Layout in the list to select it.

3

The options beneath the list of Projects, Plans, or Layouts vary depending on how the dialog was accessed.

- In various dialogs, click the **New Project** button to create a new Project named "New Project" and add a copy of the selected document(s) to it.
- In the Select Project dialog, click the **Select** button at the bottom of the dialog to close the dialog.
- In the Open Plan/Layout dialog, click the **Open** button to open the selected document.

4 Unmanaged Files

- In the Open/Plan/Layout dialog only, click the **Browse** button to open an unmanaged plan or layout file. See *Opening and Importing Files on page 63*.

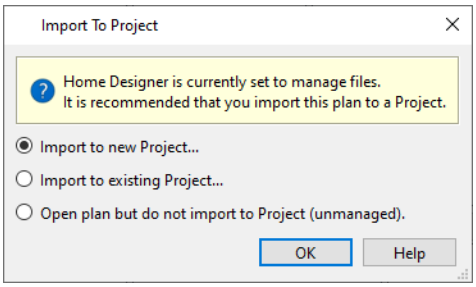
Migrating Plan and Layout Files into Projects

When Home Designer is set to manage files, there are a number of situations in which you will be prompted to copy unmanaged files into Projects:

- Opening an unmanaged plan or layout file
- Using the Save As to make a copy of an unmanaged plan or layout
- Sending a view to layout or editing an existing link

- Linking to a different plan in the Reference Display
- Linking a callout to a different plan or layout file
- Resolving a broken link using the Referenced Plan Files dialog

In these situations, the Import to Project dialog will display.



- Select **Import to new Project** to create a new Project and copy the unmanaged file in question into that Project. The program will include any plans linked to an unmanaged layout file in the new Project, and will give you an opportunity to select other files to add to the new Project in the Additional Import Selection dialog.
- Select **Import to existing Project** to open the Project Selection dialog and choose the Project to add the unmanaged file to. See *Migrating Plan and Layout Files into Projects on page 40*, below.
- Select **Open plan but do not import to Project (unmanaged)** to keep the file unmanaged. Linking unmanaged files is not supported while Home Designer is set to manage files.

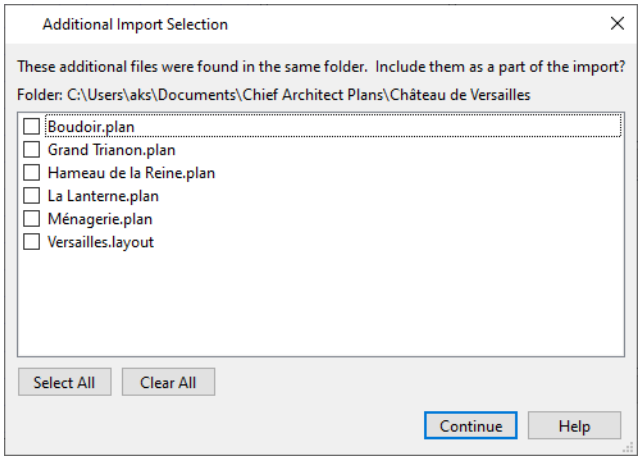
Import to Project

An unmanaged Plan or Layout can be imported into a Project if you wish.

- Select the **Import to new Project** radio button in the Copy to Project dialog.
- Right-click on an unmanaged file in the Project Browser and select **Import with Links to Project** from the contextual menu.

Additional Import Selection Dialog

The Additional Import Selection dialog opens if you copy or import an unmanaged plan or layout file into a new Project, allowing you to import additional plans and layout files from the same folder.



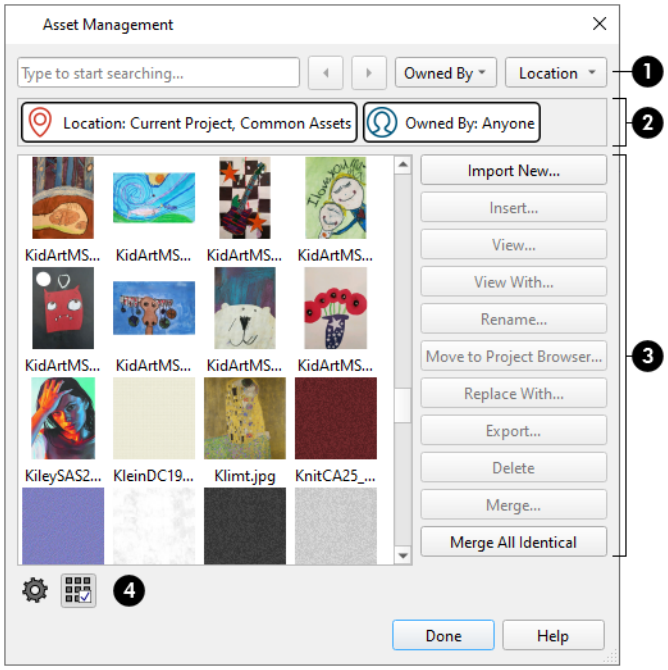
- Check the box beside a plan or layout file to add it to the import selection set or click again to remove the check mark.
- Click the **Select All** button to check the box beside all items in the list, or click the **Clear All** button to remove all check marks.
- When the selection meets you needs, click the Continue button. A new Project will be created using the same name as the plan or layout file that you originally chose to import into a new Project.

Asset Management

Assets are external files that are referenced by plan and layout files. Examples include image files and material map files. When using Chief Architect Project Management, you can access a list of available assets by selecting **Tools> Asset Management**. See *Chief Architect Project Management on page 35*.

When assigning assets such as an image file to a Plant Image object or a material texture to a material, you can choose whether to Import a file saved on your system using the Select File dialog or to use the Asset Management dialog. See *Opening and Importing Files on page 63*.

Asset Management Dialog



1

The settings on the top of the dialog allow you to filter the list of assets below.

- Type in the text field. A **Text** search item will appear in a drop-down list below the field that updates as you type.
  - Click on that **Text** item to use it as the search parameter.
  - You can also type and press the Enter key to use your text as the search parameter.
- Click the **Go Back in History** and **Go Forward in History** buttons to cycle between filters that have been active during the current program session.
- Select one or more asset owners in the **Owned By** drop-down list.
- Select one or more in the **Locations** drop-down list: "Common Assets", "Current Project", "Other Projects". If the current Plan or Layout is unmanaged, "only "Common Assets" and "Projects" will be available.

2

All currently active search parameters are listed immediately below, each in a rectangular frame.

- Click on an item here to remove it from the current filter.

3

Available assets and options for managing them are located below the filtering options.

- Assets that match the current filter are listed here. Click on an item in the list to select it.
  - Depending on the particular asset that is selected, one or more of the buttons on the right will be available.
  - If this dialog is accessed via another dialog such as the Define Material dialog, click the OK button to apply the selected asset to an object or material.
- Use the buttons on the right to manage the assets list.
  - Click **Import New** to add a new file to the list of assets using the Add Asset dialog, which is a typical Open File dialog. See *Opening a Document on page 63*.
  - Click **Insert** to place a copy of the selected Asset in the Active View. Only available for file types that can be imported into Home Designer in the current view type. See *Importing and Exporting on page 883*.
  - Click **View** to view a selected asset in the default application for its file type on your system. Assets shared with you but owned by another user as well as those provided by Chief Architect be viewed only.
  - Click **View With** to select an application to view the selected asset in. Assets shared with you but owned by another user as well as those provided by Chief Architect be viewed only.
  - Click **Rename** to change the name of the selected asset.
  - Click **Move to Project Browser** to move the selected asset to Common Documents in the Project Browser. See *Project Browser on page 50*.
  - Click **Replace With** to replace the selected asset's source file with a different file of the same type.
  - Click **Export** to create a copy of the selected asset file or files in the folder of your choice using the Choose Export Location dialog, which is a typical Save File dialog. See *Exporting and Backing Up Files on page 68*.
  - Click **Delete** to permanently remove one or more selected assets from the list. Only assets that are owned by you and not in use can be deleted. If multiple assets that you own are selected and some are in use, the program will inform you and delete the eligible items.
  - Click **Merge** to merge multiple selected assets into one. The asset that is listed first is retained and all other assets in the selection set are deleted. Any instances of the deleted assets in Plans or Layouts are replaced by the first asset. Only available when multiple assets are selected.
  - Click **Merge All Identical** to merge any instances of duplicate assets.

4

Buttons below the assets list allow you to control the layout of the list and what information it includes.



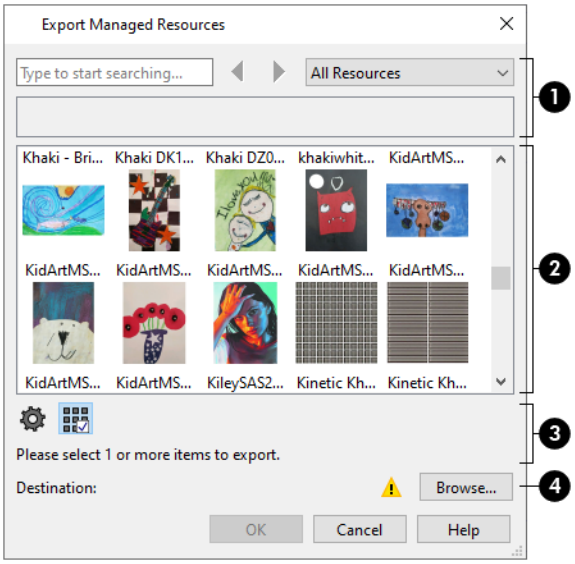
Click the **Settings** button to control what information is reported about each asset when Tile Mode is toggled off and assets are presented as horizontal line items in a sortable table. The available columns are Thumbnail, Extension, Project, and File Size.



When the **Tile Mode** button has a check mark at the bottom right corner, the list presents each asset's thumbnail and file name in a grid format. Click this button to remove the check mark and present the assets as horizontal line items in a table.

Exporting Managed Resources

Select **File> Export Managed Resources** to export one or more assets out of Home Designer so that they can are available for use in other programs.



1

The settings on the top of the dialog allow you to filter the list of assets below using a single search parameter.

- Type in the text field. A **Text** search item will appear below the field that updates as you type.
- Click on that **Text** item to use it as the search parameter.
- You can also type and press the Enter key to use your text as the search parameter.

2

A list of available assets is located below the filter options.

- Click on an item in the list to select it.
- Multiple items can also be selected. See *Shift and Ctrl/⌘ Select on page 187*.

3

Buttons below the assets list allow you to control the layout of the list and what information it includes.

Click the **Settings** button to control what information is reported about each asset when Tile Mode is toggled off and assets are presented as horizontal line items in a table. You can also sort the list by column. Tile Mode always shows the thumbnail and file name and is not affected by these options.

When the **Tile Mode** button has a check mark at the bottom right corner, the assets list is presented in a grid format. Click this button to remove the check mark and present the assets as horizontal line items in a table.

- Text below the buttons reports how many items are selected in the assets list.

4 Destination

- Click the **Browse** button to select a destination folder on your computer for your exported resource files.
  - If the destination folder already contains files, any files with the same name as files in the export will be overwritten. To avoid the possibility of lost data, choosing an empty destination folder is recommended.
- When a destination folder is selected, its path name is reported here. When no folder is selected, a Caution ⚠ symbol displays.

When the desired asset(s) are selected and an export destination folder is specified, click OK.

Traditional File Management

Home Designer reads and edits two main document types: **.plan** files and **.layout** files. The complete 3D model of a structure, surrounding terrain and any CAD data associated with it are stored in the plan file. Data used to create working drawings and the links to various views are stored in the layout file. These files also reference external assets like digital images used as material textures. To maintain links between files, effective file management is important.

Chief Architect Project Management option offers a number of advantages in this regard. See *Chief Architect Project Management on page 35*.

Just as with files created in other software applications, you should back up your plan and layout files externally on a regular basis to avoid accidental loss of work.

Organizing Your Files

You should keep your plan and layout files separate from the support files needed to run Home Designer. To keep files organized, you may find it helpful to create a new folder for each project.

Home Designer files may reference imported images, textures and other custom content saved in their own external data files. Consider storing copies of all external files in the same folder as the plan and layout files that use them so that they are easily found.

Here is one way to organize your files:

- Create a folder in your Documents directory called “Home Designer Plans” or another name you prefer. See your operating system’s Help to learn how to create folders.
- Inside this folder, make a new folder for each client or project. Save all the files for that client or project inside this folder, including plan and layout files and referenced external files. See *Exporting and Backing Up Files on page 68*.

Bear in mind, though, that path names exceeding 260 characters cannot be opened by Home Designer. As a result, it is a good idea to always limit file and folder name length and limit the number of embedded folders you use in your file organization method.

Once you understand the file management of Home Designer, you should decide on a naming convention that suits your needs.



It is recommended that each layout file be saved in the same folder as the plan file(s) associated with it. See *Managing Layout Links on page 980*.

To specify a default Save As location

1. Select **Edit> Preferences**  , then select New Plans from Category list. See *New Plans Panel on page 106*.
2. Under Open and Save As, click **Use this Folder**. The **Browse** button becomes available.

3. Browse to the folder you plan to save your projects in. Click **OK**.

Thumbnail Images

A thumbnail is a miniature image of a selected view or Document that displays in the Preview panel of the Project Browser. Thumbnails also help identify a Plan or Layout in the Open Plan File dialog in the Windows version of the software. See *Opening and Importing Files on page 63*.

If thumbnails are enabled in the Preferences dialog, the program automatically creates one when you first save a new Plan or Layout. You can, however, create a custom thumbnail using any view as well as choose to generate small or large thumbnails. See *File Management Panel on page 101*.

To create a custom thumbnail image

1. You must save the file and give it a name before you can save a thumbnail.
2. Create the 2D or 3D view that you want to use as a thumbnail for the current file.
3. With the desired view active, select **File> Save Thumbnail Image**  .

Thumbnail images are saved in the Plan or Layout that they are associated with.

Creating a New Plan or Layout



To create a new, blank plan when using traditional file management, select **File> New Plan**. You can also choose **New Plan** in the Dashboard window. See *Dashboard on page 10*.



Create a new layout file by selecting **File> New Layout** or by sending a view to layout when no layout file is yet open or associated with the current plan file. See *Creating a Layout File on page 971*.

By default, a new layout file will be assigned the same name of the first plan file sent to it, associating the layout files with the plan files used.

> Note: Only one layout file can be open at any given time.

New, blank plans are called **Untitled.plan** and new, blank layout files, **Untitled.layout**. Unless these files are named and saved, they will be lost when closed. See *Exporting and Backing Up Files on page 68*.

Units of Measurement

All plan and layout files save measurements in either U.S. or metric units. New files are created using one or the other, depending on the current setting in the Preferences dialog. When the program is first installed, the Windows OS setting for units determines what system is used. See *New Plans Panel on page 106*.

A plan or layout file's unit of measurement must be specified before it is created and cannot be changed later. If you normally work in one set of units but need to create a new file using the other, select **File> Templates> New Plan From Template**  or **New Layout from Template**  to open a new file using an appropriate template without changing your Preferences settings for New Plans. See *Using Templates on page 85*.

While it is recommended that you create new plans using the type of unit that you plan to use, you can display dimensions using any type of unit. See *Dimension Preferences and Defaults on page 340*.

Template Plans

New plan and layout files are created as copies of the current template files specified in the Preferences dialog. See *Plan and Layout Templates on page 85*.

Commonly used settings, defaults and other information are included in template files. You can customize the settings in a template file to fit your work style and then save your changes as a new template file. See *To create a plan template on page 87*.

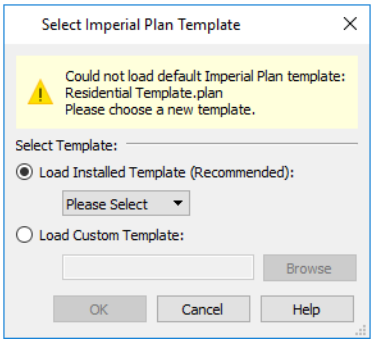
If no template has been specified in the Preferences dialog, new plans and layouts are created using the system defaults. System defaults cannot be modified.

When Home Designer opens a new, blank plan or layout file, the new file is actually a copy of a template using either metric or U.S. units of measurement and predefined default settings, wall definitions, and page setup information.

Select Template Dialog

When a new, blank plan or layout file is opened in Home Designer, the new file is actually a copy of a template using either metric or U.S. units of measurement and predefined default settings, wall definitions, and page setup information.

Creating a new plan without referencing a template file is not recommended. If you try to create a new plan or layout using a template file that is not available, the Select Template dialog will prompt you to specify a template for the new file you are creating.



- Select **Load Installed Template (Recommended)**, then select a template file from the drop-down list.
- Select **Load Custom Template**, then click the **Browse** button and browse to a plan or layout file saved on your computer.
- You can also type or paste the full path name of a file in the text field.

If you encounter this dialog, make sure that the program Data folder is at a location that can be accessed by the program. You may also want to reset your template files to the defaults installed with the program. See *Home Designer Data on page 74* and *Reset Options Panel on page 118*.

Referenced Files

A Home Designer Plan or Layout typically includes information from a variety of external files such as image files. When Chief Architect Project Management is active, the program saves all such files in your Resource Store to help prevent links between files from being disrupted. When traditional file management is in use, maintaining these links is your responsibility.

Missing Files/Resources Dialogs

Home Designer Plans and Layouts can reference a variety of external file types for added detail, including:

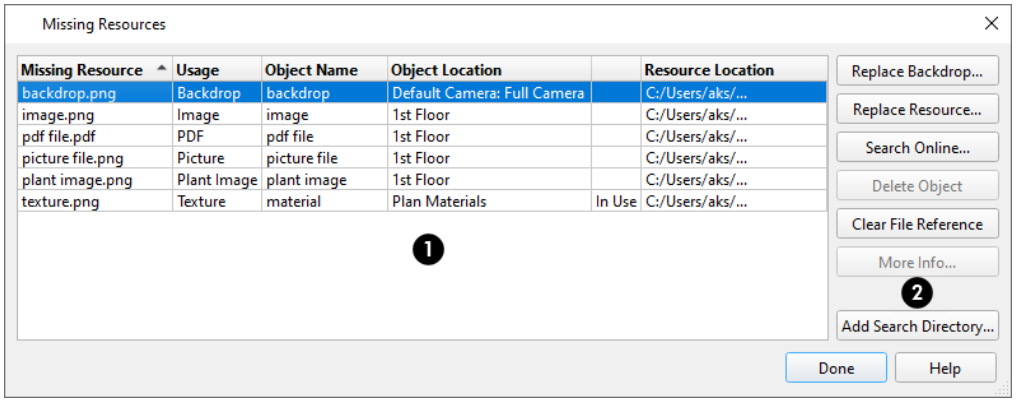
- Material Textures
- Images
- Plant Images

- 3D Backdrops
- Picture Files
- PDF Files

Whenever any view in a plan or any page in a layout is opened, the program checks for referenced files used in that view and will notify you if any of those files cannot be found by opening the Missing Files dialog.

If a layout file is missing referenced files on pages that you do not view during the current session, this dialog may also open when you print the layout. See *Layout on page 970*.

You can also open this dialog at any time by selecting **Tools> Checks> Missing Files**. When accessed this way, all missing files associated with the current file are listed: not just those used in the current view.



1 File Information

The table lists any Missing Files as well as useful information about each:

- **Missing Resource** reports the name and file extension of the missing file.
- **File Usage** indicates how the missing file is used in the program.
- **Used By** reports the name of the document that references the file. This column is only present when exporting a Project and is not shown here. See *Exporting a Project on page 60*.
- **Object Name** states the name of the object in Home Designer that references the file.
- **Object Location** indicates where in the Plan or Layout the object can be found.
- The next column indicates whether a missing backdrop, texture, or material map is **In Use** in the plan. See *About Materials on page 756*.
- **File Path** states the last known location of the missing file on your computer system when traditional file management is in use. When Chief Architect Project Management is in use, this column reports "Managed".

Click on a line item in the table to select it and resolve it using the options on the right. Multiple line items can be selected; however, the selections on the right may be limited. See *Shift and Ctrl/⌘ Select on page 187*.

2 Options

The buttons on the right offer options for resolving a selected missing file. The names of these buttons will vary somewhat, depending on the type of file(s) selected in the list on the left.

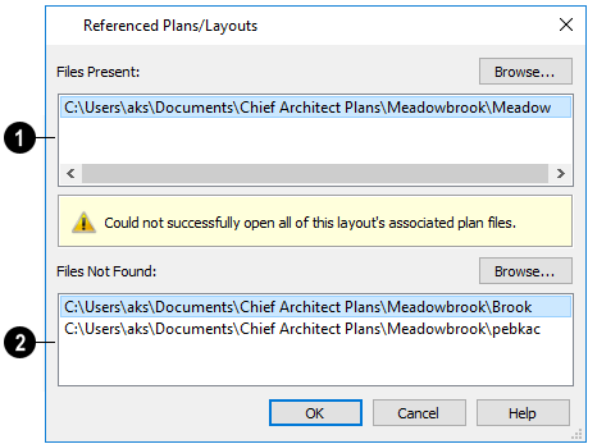
- Click the top **Replace from Library** button to replace any instances of an object or material referencing the selected missing file with a different object or material from the library. Not available for textures, PDF files or picture files.
- Click the **Replace Resource** button to open the Browse for Missing File dialog and select a file saved on your system to replace the missing one. See *Opening and Importing Files on page 63*.

- Click the **Search Online** button to check the Chief Architect 3D Library for the missing resource. Only available when the selected resource is associated with library content provided by Chief Architect. See *Downloading Library Content on page 719*.
- Click the **Delete Object** button to remove the object or material referencing the missing file from the plan. Not available for backdrops or material textures that are In Use.
- Click the **Clear File Reference** button to remove a selected backdrop from the camera or Camera Defaults that it is assigned to, or to remove a selected texture from the material it is applied to.
- Click the **More Information** button for the last known pathname of the selected reference file. Only available when Chief Architect Project Management is active. See *Reset Options Panel on page 118*.
- Click the **Add Search Directory** button to direct the program to a particular folder to search for missing files in. The list of Search folders can be reset in the Preferences dialog. See *Reset Options Panel on page 118*.

You can prevent this dialog from opening automatically by checking **Do not display missing files again during this session** at the bottom of the dialog. This option is not available when the dialog is opened manually.

Referenced Plans/Layouts Dialog

In addition to the file types described above, layout files also reference plan files. The Referenced Plans/Layouts dialog lists all plan files that the current layout file references and allows you to relink these files. To open this dialog in a layout file, select **Layout> Referenced Plans/Layouts**.



1 Files Present

The names of all plan files with intact links to the current layout are listed here.

If you want, you can select a file and click the **Browse** button just above the **Files Present** field and replace the selected plan with a different plan saved on your system.

2 Files Not Found

The names of all plan files with disrupted links to the current layout are listed here. Any files listed here have been moved, renamed, or deleted and cannot be found by the program. Intervention is required to find these files and reestablish their links to the current file.

When Chief Architect Project Management is in use, select a missing file and click the **Replace Reference** button just above the **Files Not Found** field to open the Replace Reference Plan dialog. See *Select Project Dialogs on page 39*.

When traditional file management is in use, select a missing file and click the **Browse** button just above the **Files Not Found** field to open the Browse For Missing File dialog, which is a typical Open dialog. See *Opening and Importing Files on page 63*.

- Locate the missing file in your system's directory structure. When the missing file is selected, click **Open** to link it to the layout.
- You can also redirect an intact link to from a file in the File Present list to a different file in the same manner.

If all missing files are successfully relinked, the layout opens when you click **OK** in the Referenced Plans/Layouts dialog.

Be sure to choose **File> Save** in the current file when the missing files have been located to save their links.

Results of Missing Referenced Plan Files or Linked Views

All dynamic and semi-dynamic layout views are linked to a specific view in the plan file that they reference. If the referenced plan file is found but the linked view is not, the layout box is not successfully linked. See *Managing Layout Links on page 980*.

If an error message displays, one or more of the missing files could not be replaced by the specified file. Click **OK** to continue. The layout opens, but with the following characteristics:

- Any plan views associated with the missing file(s) are blank. Only the border displays if the "Layout Box Borders" layer is set to display. See *Layout Page Display Options on page 970*.
- Any elevations or cross sections associated with the missing file(s) show the automatically generated lines, but any CAD objects added to the view are absent.

Project Browser

The Project Browser side window provides access all of the saved views, schedules, and Materials Lists within an open Plan and all of the pages and tables saved in an open Layout. When Project Management is in use, it can be used to manage all of your Projects as well as Plan and Layout Templates. See *Chief Architect Project Management on page 35*.

Project Browser

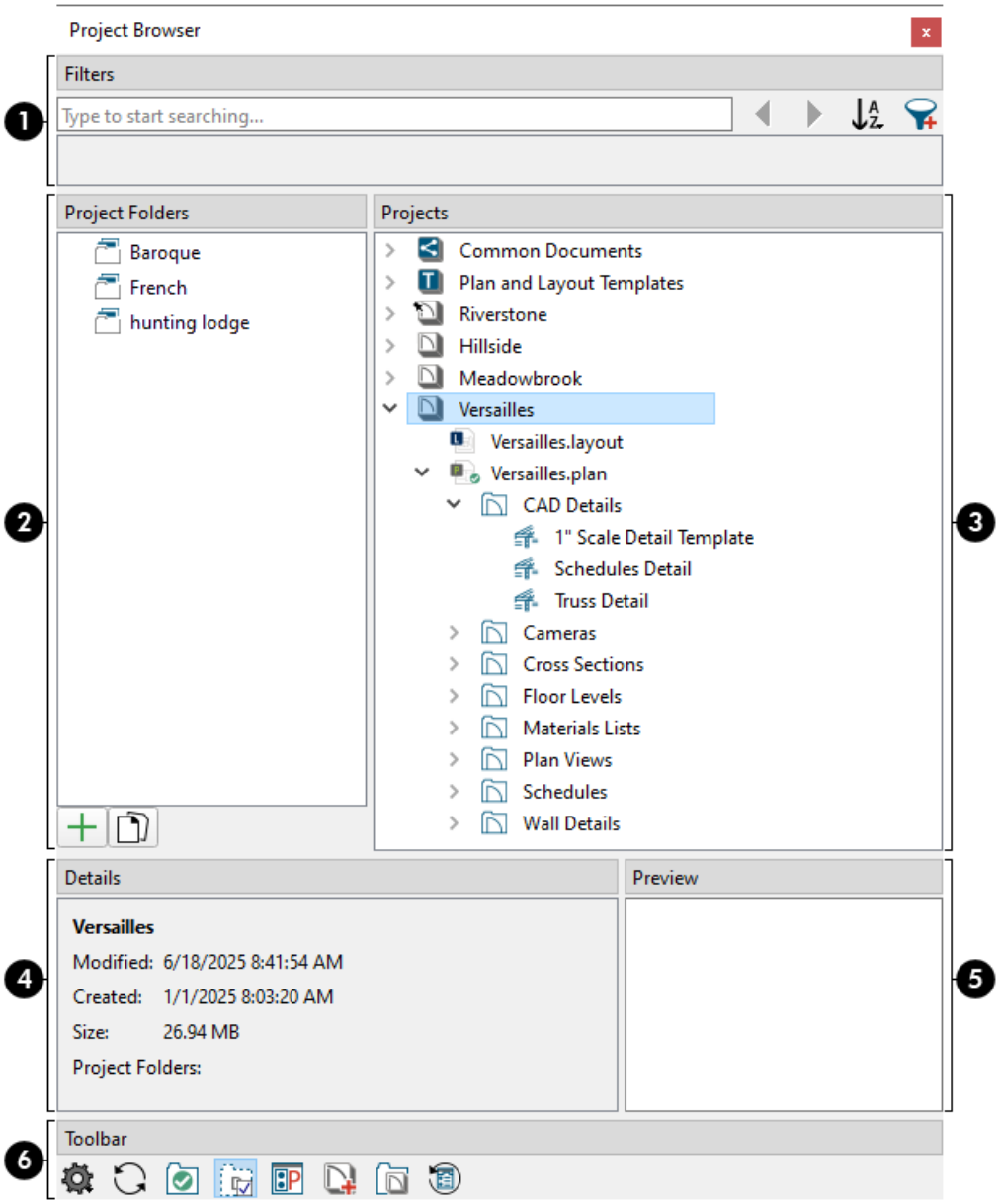
The Project Browser side window provides access all of the saved views, schedules, and Materials Lists within an open Plan and all of the pages and tables saved in an open Layout. When Project Management is in use, it can be used to manage all of your Projects as well as Plan and Layout Templates. See *Chief Architect Project Management on page 35*.

Project Browser Side Window

To open the Project Browser, select **View> Project Browser**. This side window is docked to the right side of the program window by default. See *View and Side Windows on page 16*.

To locate the active view in the Project Browser, select **File> Show in Project Browser**. If the view is saved, its Category will be expanded and it will be selected; if it is not saved, its Document will be selected instead. See *View Windows on page 130*.

The Project Browser will also open if you create a new Project. See *Creating a New Project on page 35*.



Click on a view's name to select it; double-click on its name to open the view; right-click on it to access its contextual menu. See *Project Browser on page 50*, below.

1 Filters

Locate specific documents by name by filtering the information in the Projects panel, below. Saved views and layout pages in an open document can also be located. A selected Project Folder is saved between program sessions; a typed filter, however, is not.

- Type in the text field. A drop-down will appear below the field that updates as you type.
  - Click on the line item in the drop-down to use it as a search parameter.
  - You can also type and press the Enter key to use your text as a search parameter.
- When a filter created by typing a keyword is created, it displays below the text field as a **Text** filter.

- You can also filter the Projects panel by selecting a **Project Folder** in the Project Folders panel. See *Project Folders and Tags on page 59*.
- Specify which criteria you want to **Sort by** in the Projects panel:
  - Check the box beside **Name**, **Date Modified**, **Date Created**, or **Size** to sort by that attribute.
  - Check the box beside either **Ascending** and **Descending** to specify the sort order.
- Click the **Advanced Search** button for more granular filtering options in the Advanced Search dialog. See *Project Browser on page 50*, below.

2 Project Folders/ Tags

Project Folders/Advanced Tags allow you to create custom categories which you can assign Projects to and use as filters. Only available when Chief Architect Project Management is in use. See *Project Folders and Tags on page 59*.

- All available Project Folders are listed in this panel. Click on one to use it as a search parameter listed in the Filters panel, above. The currently selected Folder is highlighted.
- Right-click on a Folder to select **Rename**, **Change Color**, or **Delete** from its contextual menu.
- Right-click on a Folder and select **Pin** from the contextual menu to move it to the top of the list. Pinned Folders have a black push-pin over their icon.
- Click the **Create New** button to open the Folder Name dialog and type a short, descriptive name for a new Folder.
- Click the **Filter Unfiled** button to apply an "Unfiled" filter and show only Projects that are not assigned to Project Folders in the Projects panel.

3 Projects

The Projects panel lists plan and layout files in a tree list and allows you to access and manage views within these files. The information and options in the Projects panel varies considerably depending on which File Management option is in use. See *File Management on page 34*.

Traditional File Management

When Traditional File Management is in use, only open plan and layout files are listed in the Project Browser. Open views and active layout pages are indicated by a small green dot on their icon. See *Traditional File Management on page 45*.

All open **Plan** files are listed alphabetically by name. Click the arrow to the left of a Plan name to expand its contents in the tree list and access expandable Category folders containing all views as well as Schedules saved in that file.

Cameras - Full and overview cameras are listed here by floor. See *Camera Views on page 783*.

Cross Sections - Cross Section and Elevation views are listed here. See *Cross Section/Elevation Views on page 784*.

Floor Levels - All floor levels are listed here. See *Multiple Floor Levels on page 535*.

Materials Lists - Materials Lists are listed here. See *Materials Lists on page 954*.

> You can organize your Cameras and Cross Sections in custom folders. Select New Folder from the category's contextual menu; give it a short, descriptive name; then click and drag views in that category into the folder. See *Managing Projects, Documents, and Views on page 56*.

If a **Layout** file is open, it will be listed here. Only one Layout can be open at a time. See *Layout on page 970*.

Project Management

When Chief Architect Project Management is in use, all of your Projects and their contents are listed in the Project Browser, although you can use Filters to control which ones are visible at any given time. Open views, documents, and Projects with open views are identified by a small green dot on their icon. See *Chief Architect Project Management on page 35* and *Searching the Project Browser on page 57*.

Files identified as **Plan and Layout Templates** are listed by name and can be managed via the contextual menu. See *Plan and Layout Templates on page 85*.

- By default, only Templates that use the Units selected for new Plans in the PREFERENCES dialog are listed in the Project Browser. See *New Plans Panel on page 106*.
- Unlike plans and layouts in regular Projects, these files' various saved views and schedules are not listed below their names.

All **Projects** are listed alphabetically by name and can be managed via the contextual menu.

- You can right-click any Project and select **Pin** from the contextual menu to move it to the top of the list. Pinned Projects have a black push-pin over their icon.
- Click the arrow to the left of a Project name to expand its contents in the tree list and access the plan and layout files associated it.

> Plans and Layouts can be moved from one Project or Folder within a Project to another by clicking and dragging. More options for organizing Projects are found in the contextual menus. See below.

All **Plans** are listed under the Project that they are associated with and can be managed via the contextual menu. If a Plan is currently open, you can click the arrow to the left of its name to expand its contents in the tree list and access expandable Category folders containing all of its views:

Cameras - Full and overview cameras are listed here by floor. See *Camera Views on page 783*.

Cross Sections - Cross Section and Elevation views are listed here. See *Cross Section/Elevation Views on page 784*.

Floor Levels - All floor levels are listed here. See *Multiple Floor Levels on page 535*.

Materials Lists - Materials Lists are listed here. See *Materials Lists on page 954*.

> You can organize your Cameras and Cross Sections in custom folders. Select New Folder from the category's contextual menu; give it a short, descriptive name; then click and drag views in that category into the folder. See *Managing Projects, Documents, and Views on page 56*.

Each Project can have one **Layout** document, and only one Layout can be open at a time.

If a Project has any imported **Assets**, they will be listed as well and can be managed via the contextual menu. An Asset can be dragged and dropped into the current view provided that is supported in that view type. See *Asset Management on page 42*.

- To avoid unexpected issues, only drag an Asset into a view if it is in the same Project as the Asset. To use it in a different Project, first make a copy of it in that Project.
- If an Asset is dragged into a view associated with a different Project than the Asset, you will be prompted to remove the Asset from the Project Browser and save it as an unmanaged file in the Home Designer Data folder.

4 Details

Basic information about the selected Project, Plan, Layout, or Asset is reported here.

- **Modified**, **Created**, and **Size** can also be used as search filters. See *Advanced Search Dialog on page 58*.
- **Location** - Only available for unmanaged files. See *Saving Your Data on page 65*.
- **Notes** - You can add a Note to any item in the Projects Panel aside from the "Plan and Layout Templates" heading - including individual views - by clicking the the **Edit Notes** button in this panel. A text field becomes available and you can choose to **Save Notes** as well as **Insert Hyperlink**. Notes are not an option for unmanaged files and cannot used in Search filters.

5 Preview Pane

A preview of the view or layout page selected in the list above displays here. When Chief Architect Project Management is active, documents also have previews. Double-click on the preview to open the selected view or page. The Preview Background color can be set in the Preferences dialog. See *Colors Panel on page 95*.

6 Toolbar

The available buttons vary depending on whether Traditional File Management or Chief Architect Project Management is in use.

Traditional File Management

The **Settings** menu lets you select which Project Browser panes are presented and which are hidden. See Customizing the Browser, below.

Update Preview(s) updates the previews for views associated with open plan and layout files.

Preferences opens the PROJECT BROWSER panel of the Preferences dialog. See *Project Browser Panel on page 98*.

Refresh Browser refreshes the information in the Projects panel.

Project Management

The **Settings** menu lets you select which Project Browser panes are presented and which are hidden. See Customizing the Browser, below.

Update Preview(s) updates the previews for a selected view or views.

Only Show Open Projects toggles the display of all Projects in the Projects panel in favor of Active projects only. See *Chief Architect Project Management on page 35*.

Show Plan and Layout Templates toggles the display of Plan and Layout Templates on and off in the Projects panel.

Preferences opens the PROJECT BROWSER panel of the Preferences dialog. See *Project Browser Panel on page 98*.

Add New Project lets you begin a new Project. See *Creating a New Project on page 35*.

Import Legacy Folder lets you import the plan, layout, and some other files located in a folder on your system into a new Project. See *Opening and Migrating Unmanaged Files on page 38*.

Refresh Browser refreshes the information in the Projects panel.

CUSTOMIZING THE PROJECT BROWSER

The Project Browser can be resized, moved, as well as docked with other Side Windows in the configuration of your choice. To return the Project Browser to its original position and size, click the **Reset Side Windows** button in the Preferences dialog. See *Side Windows on page 16*.

The panels in the Project Browser are customizable:

- You can control which Project Browser panels display by clicking the **Settings** button in the Toolbar panel near the bottom of the browser.
- To adjust the height or width of a panel, place the pointer over the splitter bar you want to move. When the splitter cursor displays, click and drag. See *Dialog Panel Splitters on page 22*.
- Panels can be rearranged within the Project Browser side window. Click and drag a panel's title bar: When a highlighted space is created at the location you want, release the mouse button.
- You can hide the panel title bars or show them again if you wish: click the **Settings** button, then select **Section Title Bars**.
- When your panel arrangement meets your needs, you can lock it: click the **Settings** button, then select **Lock Panels**. When panels are locked, they can be resized but cannot be moved except via the Settings menu.

To return the Project Browser's panels to their original configuration, click the **Reset Panel Layout** button in the Preferences dialog. See *Project Browser Panel on page 98*.

Using the Contextual Menus

Items in the Project Browser can be accessed, modified and organized using their contextual menus.

- To access an item's contextual menu, right-click on its name in the Projects panel. See *Contextual Menus on page 18*.
- You can also select multiple line items in the same folder as a group and then right-click to open a shared contextual menu. See *Shift and Ctrl/⌘ Select on page 187*.

The options in the contextual menus allow you to access, organize, and edit existing views. The available options vary greatly, depending on the type of item(s) selected as well as whether you are using Traditional File Management or Chief Architect Project Management.

- When Chief Architect Project Management is active, many contextual menu items are standard file management tasks like creating, opening, saving and importing. See *Chief Architect Project Management on page 35*, *Opening and Importing Files on page 63*, and *Save Tools on page 65*.
- Some contextual menu items help filter the Projects panel for better searching. See *Searching the Project Browser on page 57*.
- Some items allow you to access and manage saved views and layout pages. See *View Windows on page 130* and *Layout Page Management on page 981*.
- Some items are specifically for the purpose of organizing and accessing documents and views within the Project Browser itself.

New Folder

New folders can be added to all view categories except Materials Lists and Layout Pages, allowing you to organize views to meet your needs. To add a new folder, right-click on a Category or its sub-folders and select **New View Folder** from the contextual menu. The new folder is created inside the item you right-clicked on and its name selected for editing: type a short, descriptive name and press the ***Enter*** key.

When Chief Architect Project Management is in use, new folders can also be added to Projects. To add a new folder, right-click a Project or an existing Folder and select **New Document Folder** from the contextual menu and type a short, descriptive name for it.

To move a view or Document to a folder, click and drag it over the desired destination folder. If an item of the same type and name is already present in the destination folder, you will be notified.

Expand All/Collapse All

When a Plan, Layout, View Category, or folder is selected in the Projects panel, **Expand All** and **Collapse All** are available in the contextual menu, allowing you to expand to show or contract to hide its contents in the tree list. All folders located within the selected item are expanded or contracted, as well. When Chief Architect Project Management is in use, these options are also available for Projects.

Select All

To select all views in a View Category or View Folder, right click on the folder and choose **Select All** from the menu.

Managing Projects, Documents, and Views

Items in the Project Browser can be accessed, modified and organized using their contextual menus.

- To access an item's contextual menu, right-click on its name in the Projects panel. See *Contextual Menus on page 18*.
- You can also select multiple line items in the same folder as a group and then right-click to open a shared contextual menu. See *Shift and Ctrl/⌘ Select on page 187*.

The available options in the contextual menu vary greatly, depending on the type of item(s) selected as well as whether you are using Traditional File Management or Chief Architect Project Management. See *Chief Architect Project Management on page 35*.

Organizing the Projects Panel

The Projects panel lists plan and layout files in a tree list and allows you to access and manage views within these files. The information and options in the Projects panel varies considerably depending on which File Management option is in use. See *File Management on page 34*.



Project Folders - Assign a Project to one or more Project Folders. See *Searching the Project Browser on page 57*.



Pin/Unpin - Projects are listed in alphabetical order in the Projects panel. Add a Pin to selected Project to put it at the top of the list. See *Pinning Projects on page 57*.



New Folder - Create a new folder in Common Files, Plan and Layout Templates, or a selected Project. Folders can also be added to a Document's View types with the exceptions of Floor Levels and Materials Lists.

Rename - Type a short, descriptive name for the selected Project, Plan, Layout, View, or Folder in the inline text field.



Send to Layout - Available for all views, but not for Materials List Reports or schedules. See *Sending Views to Layout on page 972*.



Exchange with Next/Previous Page - Available for Layout pages. See *Layout Page Management on page 981*.



Update Preview(s) - The selected view's preview is useful for quickly identifying its contents.

Accessing Views and Documents

- **Open View** - Not available for schedules and layout tables.
- **Open** - Open the selected Plan, Layout, or eligible Asset in the current view window.
- **Open With** - Open the Asset in the default application for its file type in your system.
- **Show Page** - Show the selected Layout page in the Layout's currently open view window.

- **Open Page View** - Opens a new view window to the selected Layout page.
- **Find in Plan** - See *Finding Objects on page 79*.
- **Close View/Close All Views** - Close a selected view, or all views in a folder.

Creating New Documents, Views, and Pages

- **Saved Plan Views** - See *Plan Views on page 132*.
- **Insert Page Before/After** - See *Layout Page Management on page 981*.

Editing Views

- **Select All** - Select all items in a view category or folder.
- **Edit View** - Open the specification dialog for one or more views saved in a Plan. See *View Windows on page 130*.
- **Open Object** - Open the specification dialog for a selected schedule or layout table. See *Plant Schedule Specification Dialog on page 949*.
- **Save View** - See *Saved vs Unsaved Views on page 130*.

Deleting Documents and Views

One or more selected views, Payout pages, schedules/tables, Plans, Layouts, and even entire Projects can be removed from your Resource Store by selecting **Delete** from the contextual menu. If any Documents link to any items in the selection, the program will notify you and confirm that you wish to proceed with the deletion.

> Deleted Projects, Plans, and Layouts are permanently removed from your Resource Store, cannot be retrieved, and are not subject to Undo. It is recommended that you Back Up Resources before Deleting any Assets. See *Chief Architect Project Management on page 35*.

Searching the Project Browser

Over time, the amount of information listed in the Project Browser can become substantial. There are a number of options to help you efficiently locate a particular Project, Document, or even a Saved View or layout page in an open Document.

Pinning Projects

All of your Projects are listed in alphabetical order in the Projects panel of the Project Browser, just under the Plan and Layout Templates. You can, however, pin one or more Projects to the top of that list so they are easily located without scrolling or using filters. When more one Project is Pinned, they are listed alphabetically as a group.

To pin a Project to the top of the list, right-click on it and select **Pin** from the contextual menu. Pinned Projects have a black push-pin over their icon. To return it to its normal place in the list, right-click on it and select **Unpin**.

You can also **Pin** one or more Plans and Layouts to the top of its Project's tree list.

Separately, you can also pin Plans and Layouts in your Recent Documents list. See *Recently Opened Documents on page 64*.

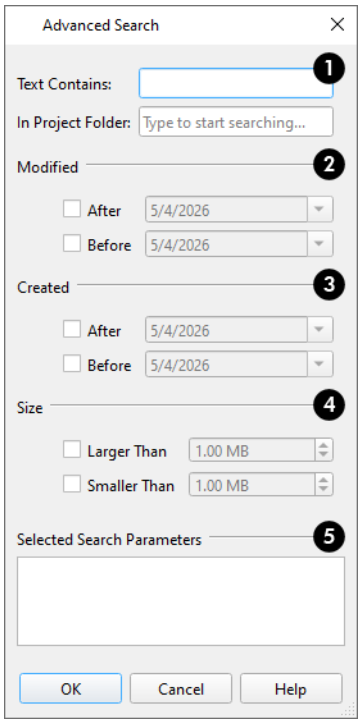
Searching Using Filters

You can locate specific Plans and Layouts by name by typing in the Filters field, which is located at the top of the Project Browser by default. Saved views and layout pages in an open document can also be located.

When the Projects panel is filtered, only documents that match the filter are listed: including any Plans and Layouts that are open.

Advanced Search Dialog

Click the **Advanced Search** button in the Filter panel of the Library Browser to open the Advanced Search dialog.



1

These fields will be automatically populated by any previously selected in the Filters panel, which can be changed.

- In the **Text Contains** text field, type the **Text** filter that you would like to use.
- Specify the Project Folder you would like to use as a filter in the **In Project Folder** text field:
  - Type in the text field. A drop-down list of search results will appear below the field that updates as you type.
  - Click on a line item in the drop-down list to use that item as a search parameter.

2 Modified

Filter documents by the date that they were last edited.

- Check **After** to only show documents **Modified After** the selected date in the Projects panel.
- Check **Before** to only show documents **Modified Before** the selected date in the Projects panel.

- To specify an After or Before date:
  - Type a date in the text field using the format.
  - Click the arrow on the right side of the text field and select a date from the drop-down calendar.

3 Created

Filter documents by the date that they were originally created.

- Check **After** to only show documents **Created After** the selected date in the Projects panel.
- Check **Before** to only show documents **Created After** the selected date in the Projects panel.

4 Size

Filter documents by their file size.

- Check **Larger Than** to specify the minimum file size for documents listed in the Projects panel.
- Check **Smaller Than** to specify the maximum file size for documents listed in the Projects panel.
- To specify a file size, either type a number or use the spin control.

5 Selected Search Parameters

The search parameters specified above are listed here.

A selected Project, Plan, Layout, or Asset's Modified, Created, and Size information is reported in the Details panel of the Project Browser.

Project Folders and Tags

In addition to filtering what is shown in the Projects panel using text, you can use Project Folders or Tags. Both of these options allow you to assign your Projects to different categories that you create, then use those categories to filter the Projects panel. You can then add an additional Text or Advanced Search filter if you wish.

Project Folders and Tags use the same categories; however, their interface varies somewhat, so you can use the one that best meets your needs:

Project Folders can be nested inside one another and are presented in a tree list which can be helpful for organizational purposes. Only one Project Folder can be used to filter the Projects panel at a time, however.

Tags cannot be nested or grouped and are presented in rectangular frames in alphabetical order; but, you can use more than one at a time as filters.

You can **Pin** a Project Folder or Tag to the top of their list using its contextual menu. See *Using the Contextual Menu on page 710*.

Project Folders are in use by default, but you can instead select **Use Advanced Tags** in the Preferences dialog. See *Project Browser Panel on page 98*.

Creating Project Folders and Tags

Project Folders and Tags are created in much the same way: click the **Create New** button and type a short, descriptive name.

- This button is located at the bottom of the Project Folders panel.
- On the Tags panel, the button is instead found at the top of the list of Tags.

To create a nested folder, right-click on an existing Project Folder and select **Add New Project Folder** from the contextual menu. You can also click on an existing folder and drag it into or out of another folder.

Once a Project Folder or Tag has been created, you can **Rename** it if need be using its contextual menu.

Using Project Folders and Tags

A Project can be added to a Project Folder or Tagged using its contextual menu. In both cases, right-click on a Project, and then:

- Hover over **Project Folders>** in its contextual menu. In the submenu, check the box beside each **Project Folder** that you would like to add the selected Project to, and then select **Apply**.
- When Advanced Tags are in use, instead hover over **Tags>**. In the submenu, check the box beside each **Tag** that you would like to assign to the selected Project, and then select **Apply**.

To use a Project Folder or Tag as a filter, simply select it. It will appear in a rectangular frame in the Filter panel, and the Projects panel will only show Projects that match. Only one Project Folder can be used as a filter, while multiple Tags can be.

A selected Project Folder is retained between program sessions with one exception: Filter Unfiled, which is always unselected when the program is restarted.

Both Project Folders and Tags can be assigned a custom **Color** using their contextual menu.

To filter the list of Projects so that only those that are not assigned to a Project Folder are shown, click the **Filter Unfiled** button below the Folders list.

When a Project Folder or Tag(s) are used for filtering, only documents that match the filter are listed. Any Plans and Layouts that are not assigned to the Project Folder or Tag(s) will not be listed: even if they are open.

Importing and Exporting Projects

When the Home Designer Project Management feature is in use, Home Designer bundles your Plans, Layouts, as well as referenced files and any imported files within a Project and manages their location on your computer for you. Projects can, however, be imported into and exported out of your managed Resource Store when need be.

Exporting a Project

The **Export Project** function saves a Plan, a Layout, or a Project or a Folder within a Project with all of its references and assets in a single **.caproj** file, which allows you to perform several important tasks:

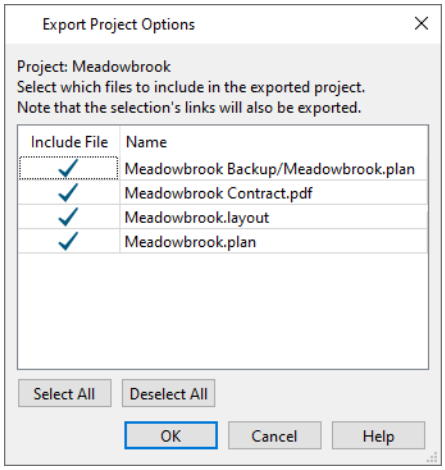
- Archiving or backing up your work on the local system.
- Transferring your work to another computer.
- Sending drawings to a colleague or client.

Multiple Projects or multiple items of the same file type within a single Project can also be exported into a single **.caproj** file.

When Chief Architect Project Management is in use, there are two ways to export a Project:

- Select **Export** from a Project's or a folder's contextual menu in the Project Browser. See *Project Browser on page 50*.
- Select **File> Export> Export Project** to export the Project that the current view's Plan or Layout is associated with.

In either case, the Export Project Options dialog opens:



- A table lists the Layout, all Plans, and imported files associated with the current file's Project.
  - A check mark ✓ in the "Include File" column indicates that a file will be included in the export. All associated assets will be exported, as well.
  - Click on a check mark ✓ to remove it; or click in an empty "Include File" field to add a check mark.
  - If a Plan, Layout, or other document is located in a custom folder in the Project Browser, it will be indicated in the document's Name. Custom folder structure is maintained in exported Projects.
  - When Templates are exported, only those using your default unit of measurement have check marks ✓ by default.
- Click the **Select All** button to add a check mark to all line items, or click the **Deselect All** to remove all check marks.
- When the desired line items have check marks, click OK.

When you click OK, the Choose Export Location dialog opens next. In this dialog, which is a typical Save File dialog, select a location in the local file system for the exported Project as well as the name of the exported **.caproj** file. See *Exporting and Backing Up Files on page 68*.

The resulting **.caproj** file can be archived, included in your data backup routine, transferred to another computer, or shared with a client or colleague.

Export Plan/Layout as Project

If you are using traditional file management, you can export the currently open and active Plan or Layout file as a Project by selecting **File> Export> Export Plan as Project** or **File> Export> Export Layout as Project**, respectively. See *Traditional File Management on page 45*.

In both cases, all assets are included in the **.caproj** file that is created; in addition, referenced Plan files are included when **Export Layout as Project** is used.

Export Disconnected Plan or Layout

The **Export Disconnected Plan** and **Export Disconnected Layout** functions are available in the contextual menus in the Project Browser and allow you to export an individual Plan or Layout file without including any assets or referenced Plans. See *Using the Contextual Menus on page 55*.

Import Project

A Project that was previously exported can be imported by selecting **File> Import> Import Project**. The Select Project dialog opens, letting you browse to and select the **.caproj** file that you would like to add to your Resource

Store. See *Opening a Document on page 63*.

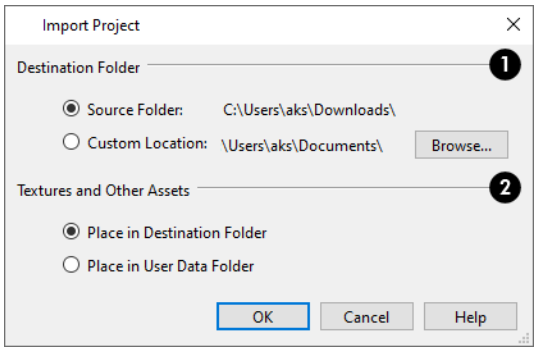
Chief Architect Project Management

When Chief Architect Project Management is in use, the Project including all plan and layout files will be listed in the Project Browser, and its assets will be listed in the Asset Management dialog. If a Project of the same name already exists in your Resource Store, the new Project's name will be appended with "_copy". See *Project Browser on page 50* and *Asset Management on page 42*.

Depending on the size of the Project, a progress indicator dialog will display as it is imported. When the import process is complete, the Project Imported dialog will open, allowing you to select a single document in the newly imported Project to open.

Traditional File Management

If you import a Project while using traditional file management, you will be prompted to choose a location on your file system for the Project's documents and asset files before the import process begins. See *Traditional File Management on page 45*.



1 Destination Folder

The contents of an imported Project are placed in a new folder with the same name as the .caproj file. Specify the location of that folder.

- Select **Source Folder** to create the destination folder in the same location in your file system as the .caproj file.
- Select **Custom Location** to choose a different destination folder in the Select Project dialog, which is a typical Open File dialog. See *Opening a Document on page 63*.

2 Textures and Other Assets

Select the location where the imported Project's asset files are placed. See *Asset Management on page 42*.

- Select **Place in Destination Folder** to save the asset files in the same destination folder as the plans and layout, specified above.
- Select **Place in User Data Folder** to save the asset files in Home Designer 2027. See *Home Designer Data on page 74*.

When you click OK, the import process begins and a progress dialog may display depending on the Project file's size.

When the import process is complete, a message box will let you know, and will provide you with the option of opening one or more Plans or Layouts in the imported Project. If you choose that option, the Open Plan or Layout File(s) dialog will open next. This is a typical Open File dialog. See *Opening a Document on page 63*.

Opening and Importing Files

Opening and importing files are often similar tasks, but accomplish two very different things:

- Opening a file refers to opening it in the program in which it was created. Only plan or layout files can be opened in Home Designer. See *Compatibility with Other Programs on page 34*.
- Importing a file brings data that was created in a different program into Home Designer. A number of different file types can be imported into Home Designer.
- Importing is also the term that describes the task of loading an exported Project into Home Designer.

Opening a Document

There are a number of ways to open an existing Plan or Layout document.

When Chief Architect Project Management is in use:

- In the Dashboard window, click on its name in the list of Recent Documents.
- Select **File> Recent Documents** from the program menu and click on its name in the submenu.
- Double-click on its name in the Projects panel of the Project Browser.
- Right-click on its name in the Project Browser and select **Open** from the contextual menu.
- Select **File> Open Plan/Layout** from the program menu.
- Right-click on a Project or Folder in the Project Browser's Project panel and select **Open All Plans/Layouts** from the contextual menu to open all documents saved within it.

When traditional file management is in use:

- Select **File> Open Plan** to open an existing **.plan** file or **File> Open Layout** to open an existing **.layout** file located on your computer. Home Designer automatically browses to either the directory last used or to a specific directory, depending on your current Preferences settings. See *New Plans Panel on page 106*.
- In the Dashboard window, click on its name in the list of Recent Documents.

See *Recently Opened Documents on page 64*, below.

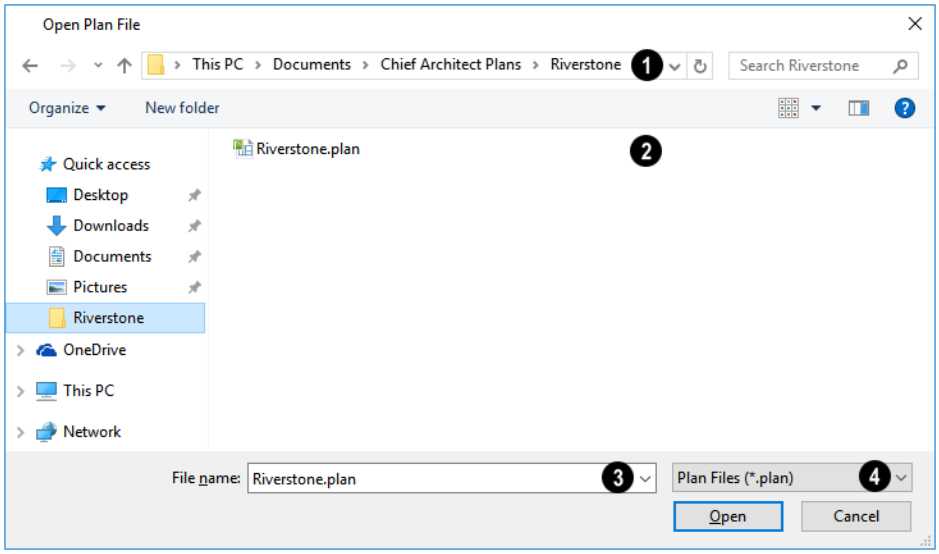
> Before opening a file located on a removable storage device, server, or other computer on a network, copy it to your local computer's hard drive first.

Open File Dialog

To open a plan or layout file when traditional file management is in use, select **File> Open Plan** or **File> Open Layout**.

The Open File dialog uses your operating system's file open dialog format. When traditional file management is in use, this dialog is used for opening and importing all files. When Chief Architect Project Management is active, it is used for migrating unmanaged files into the Resource Store as well as importing files. This dialog's name may vary, depending on your operating system and the type of file being opened or imported.

A similar Select Folder dialog allows you to select an entire folder of files to import.



1 File Path

Choose the location on your local computer for the file you are opening.

- Initially, all **Open** and **Save As** operations go to your Documents directory. After that, the location last visited is remembered and subsequent **Open** or **Save As** commands default to the directory last used for that operation. This path is saved when the program exits and is used the next time Home Designer is launched.
- If you prefer, you can instead specify a directory to be used for all **Open** and **Save As** operations in the **Preferences** dialog. See *New Plans Panel on page 106*.

2 Folder Contents

Any existing folders and/or files in the current location display here.

3 File Name

When selecting a file, its name will automatically display in the **File Name** field. You can also type the file's name to locate a specific file. When importing some types of files, multiple files may be selected.

4 File Type

When opening or importing a file, the program will usually choose the appropriate file type from the **File type** drop-down list. When importing, you may need to choose a specific file type.

Plan files open to the floor that was active when the file was last saved and closed; layout files open to the page that was active.

Importing Files

Home Designer has a number of options for exporting and importing information out of and into your drawings. Often, file import dialogs are simply versions of the Open File dialog. See *Importing and Exporting on page 883*.

Similarly, file export dialogs are often similar to the Save File dialog. See *Exporting Files on page 68*.

Recently Opened Documents

A list of recently opened and saved Plans and Layouts can be accessed by selecting **File> Open Recent Documents**. Select one of these documents to open it without using the Open File dialog. The names of Recent Documents also display in the

Dashboard window. See *Dashboard on page 10*.

A document can be Pinned to the top of the Recent Documents List by clicking the **Pin File** icon to the right of its name in the Dashboard window. An individual document can be unpinned by clicking the **Unpin File** icon. The list of Pinned Documents can be cleared by selecting **File> Open Recent Documents> Clear Pinned Documents** or clicking the corresponding button in the Preferences dialog

The maximum number of recent documents listed in the **File** menu can be changed in the Preferences dialog. You can also specify that the Recent Documents List display at the bottom of the **File** menu rather than in a submenu. See *File Management Panel on page 101*.

To clear the Recent Documents List, select **File> Open Recent Documents> Clear Recent Documents** or click the button of the same name in the Preferences dialog.

In addition, you can also specify whether each Plan or Layout's Project is stated along with the Document's name in the Preferences dialog. See *General Panel on page 100*.

Saving Your Data

Saving, exporting, and backing up your files are three separate tasks that accomplish different things:

- Saving a plan or layout file retains your work so that it can be later opened in Home Designer.
- Exporting a file allows you to save certain kinds of data in a format that can be used by a program other than Home Designer.
- Backing up your files involves taking steps to make sure that your valuable data is protected and available when needed.

Whether you are saving, exporting, or backing up your data, it is important that you select a location on your computer for the files you create, and also specify a short, meaningful name that you will be able to identify in the future.

Save Tools

Save

The **Save** command saves the current state of your Plan or Layout without changing its name. Unlike some programs, Chief Architect does not save your documents automatically so it is a good idea to save your progress regularly as you work.

You can also save the current state of a Plan by selecting Save from its contextual menu on the Projects panel of the Project Browser.

> Although the program warns you if you try to exit without saving, you should get in the habit of saving open Documents before exiting the program.

Save As

Save As opens the Save File dialog, allowing you to save the current Plan or Layout using a different name or location on your computer. Save As is only available when the current document is unmanaged or when traditional file management is in use.

To save an untitled plan or layout file

1. Select **File> Save As** to open the Save File dialog.
2. Specify a location on your local computer where you would like to save the file. See *Organizing Your Files on page 45*.
3. In the **File name** text field, type a name for the file.
4. Home Designer automatically assigns the **File of type** and file extension **.plan** to plan files and **.layout** to layout files.
5. When both the Save in location and File name are correct, click **Save**.

Open and Save As Folder

When traditional file management is in use, all initial **Open** and **Save As** operations are initially directed to your Documents directory. After that, the location last visited is remembered and subsequent **Open** or **Save As** commands default to the directory last used for that operation. This path is saved when the program exits. The next time Home Designer is launched, these defaults are used.

If you prefer, you can instead specify a directory to be used for all **Open** and **Save As** operations in the **Preferences** dialog. See *New Plans Panel on page 106*.

Save Entire Project

When Chief Architect Project Management is in use, the **File> Save Entire Project** command saves all Plans and Layouts in the same Project as the currently active Plan or Layout.

You can also select **Save All Plans/Layouts** from the contextual menu of a selected Project in the Project Browser to save all Plans, Layouts, and Assets associated with that Project. See *Project Browser on page 50*.

Save as Template

Template files can be created from scratch; however, if you have a Plan or Layout with settings and data that you would like to use in future projects, you can use the **Save as Template** tool to purge unnecessary data and save a copy in your Templates directory. See *Save as Template on page 86*.

Saved Views

All saved camera views are saved with their Plan file. See *View Windows on page 130*.

When saving a Layout, the program saves all layout pages, all CAD and Text objects drawn on those pages, and all links to the various views sent to the Layout. See *Layout on page 970*.

Saving Revision Files

Revisions are a common aspect of any design project. There are a number of possible strategies for organizing revision files:

- Prepending the file name;
- Appending the file name;
- Saving revisions in separate folders.

To avoid confusion and potential mistakes, it is recommended that you always give files unique names - including revision files. If you choose to organize your revisions by saving them in separate folders, you should also give each file a unique name that makes it impossible to confuse it with another file saved in a different folder.

Save File Dialog

To save an untitled plan or layout file

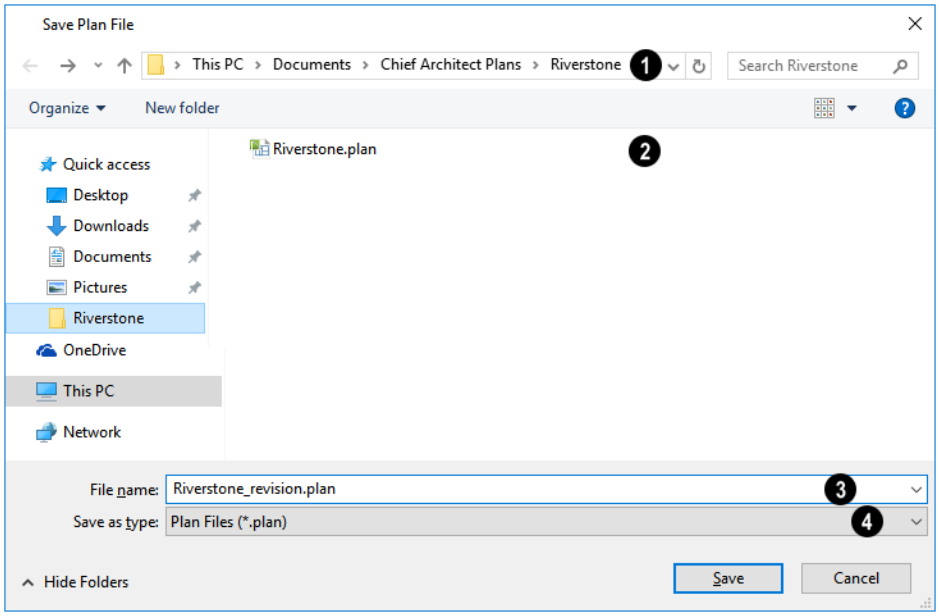
1. Select **File> Save As** to open the Save File dialog.
2. Specify a location on your local computer where you would like to save the file. See *Organizing Your Files on page 45*.
3. In the **File name** text field, type a name for the file.
4. Home Designer automatically assigns the **File of type** and file extension **.plan** to plan files and **.layout** to layout files.
5. When both the Save in location and File name are correct, click **Save**.

> Although the program warns you if you try to exit without saving, you should get in the habit of saving plan files before exiting the program.

Save File Dialog

The Save File dialog uses the operating system's file save dialog format, and is used when exporting files. When traditional file management is in use, this dialog is also used when saving a new plan or layout for the first time and when using Save As to save a file using a new name or save location. The dialog name may vary, depending on the type of file being saved or exported.

A similar Select Folder dialog allows you to select a destination folder to which files can be exported.



1 Location

Choose a location on your local computer's file system for the file you are saving.

2 Files

Any existing folders and/or files in the current location display here.

3 File Name

In the **File Name** field, type a name for the file. If you select an existing file from the space above, its name will display here automatically.

4 Save as Type

When saving a file, the program will choose the appropriate file type from the **Save as type** drop-down list. When exporting, you may need to choose a specific file type.

Exporting and Backing Up Files

Exporting Files

Home Designer has a number of options for exporting information out of and importing information into your drawings. See *Importing and Exporting on page 883*.

Often, file export dialogs are simply versions of the Save File dialog. See *Exporting and Backing Up Files*, above.

Similarly, file import dialogs are often similar to the Open File dialog. See *Importing Files on page 64*.

Export Project

The **Export Project** function saves a Plan, a Layout, or a Project with all of its references and assets in a single **.caproj** file, which allows you to perform several important tasks. If you are using traditional file management, you can export an individual plan or layout file as a Project by selecting **File> Export Plan as Project** or **File> Export Layout as Project**, respectively. See *Importing and Exporting Projects on page 60*.

> Note: Projects exported or backed up in Chief Architect cannot be imported or restored in Home Designer if they contain multiple Layouts, Common Documents, or other data not supported in Home Designer.

Back Up Managed Resources

The term Managed Resources refers to all of your Projects and Assets managed by Chief Architect Project Management.

You can back up all of your Managed Resources - including unsaved changes to Plans and Layouts - by selecting **File> Back Up and Restore> Back Up Managed Resources**. This command saves all of your Projects, Assets, and your User Catalog in a zipped folder located in the Home Designer Data folder or a different location of your choosing. See *Home Designer Data on page 74* and *Exporting and Backing Up Files on page 68*.

You can restore use of a set of Managed Resources by selecting **File> Back Up and Restore> Restore Managed Resources**. This command can only be used when no Plans or Layouts are open, and replaces all of your current Projects, Assets, and your User Catalog with a set of previously backed up content.

> Before Deleting a Project or using Restore Managed Resources, it is a good idea to first Back Up Managed Resources in their current state to avoid losing important data accidentally.

Backing Up Your Files

It is always a good idea to create backup copies of all your important files on your computer and ideally, save those backups somewhere other than your local computer.

It is strongly recommended, however, that you never save directly:

- Across a network, such as onto a server;
- Onto removable media such as a USB thumb drive.
- Across the Internet.

Instead, copy your files to such locations only after you have saved them on your computer's hard drive and exited the program.

Similarly, you should never open files saved in these locations. Copy the files to the local hard drive, and then open them. See *Opening and Importing Files on page 63*.

Archive folders are used by Home Designer to manage prior versions of your files. While you can certainly refer to an Auto Archive file if you need, to you should not view these files as a substitute for your own backup routine, and should never save a file in an archive folder. See *Auto Archive on page 69*.

When backing up your Home Designer files, consider backing up not only your **.plan** and **.layout** files, but your custom user data, as well - including library content, toolbar configurations, and textures. This custom data is all located in the Home Designer 2027 Data folder, so it can be easily backed up. See *Home Designer Data on page 74*.

You can, if you wish, create a folder inside the Data folder for your **.plan** and **.layout** files, as well. See *Organizing Your Files on page 45*.

Auto Archive

The first time a plan or layout is saved, an Archive folder is automatically created in the Home Designer 2027 Data folder. The Archive folder contains Auto Save and Archive files.

The program will also create Auto Save files for unsaved plans and layouts provided that they have been open for longer than the Auto Save frequency setting in the Preferences dialog. See *Auto Save Files on page 70*, below.

> Auto Save and Archive files should not be viewed as a substitute for regularly saving your work by selecting **File> Save** or pressing ***Ctrl/⌘ + S***, nor should they be considered an alternative to your own file backup routine.

Archive Files

Every time a drawing is saved, Archive files that keep a historical archive of your plan are automatically created and then updated.

Files can be archived by hour, day or most recent save. They are renamed according to which archiving option is selected in the Preferences dialog. See *File Management Panel on page 101*.

JonesResidence.plan

JonesResidence_2026_1_15.plan

JonesResidence_2026_1_15_13.plan

> Regardless of what archiving option you select in the Preferences dialog, if you do not save your work regularly, your archive files will not be updated.

Plan, layout and related files from previous versions of the program are automatically moved to the archive folder when the plan is opened and saved in Home Designer 2027.

Archive files are meant to be for emergency use only. If you must access an archive file, open it as you would any other file. As soon as the file is open, use **Save As** to save this file to another location.

Legacy Archive Files

Plan and layout files saved in the current program version are not backwards-compatible: that is, they cannot be opened in older versions of the software.

If you open a Home Designer plan or layout file from a previous program version and immediately **Save** it (not **Save As**), the Auto Archive utility will create an additional archive file using the original program version format. This archive file is a copy of the original and can still be opened in the original program version.

Manage Archives

Home Designer offers two convenient ways to access Archive folders.

- Select **File> Manage Auto Archives** to open the current plan's Archive folder.
- Click **Yes** in the Archived Files dialog when the program warns you that the number of archive files exceeds the **Auto Archive Files** value.

You can also move, copy, or delete archived files using your operating system. See your operating system's Help for more information.

Auto Save Files

As you work, Home Designer automatically creates Auto Save files which are saved in the Archive folder located in the Home Designer 2027 Data folder. Auto Save files are updated at regular intervals when changes are made to a file that have not been saved by selecting **File> Save**.

You can enable Auto Save and set its frequency in the Preferences dialog. See *File Management Panel on page 101*.

When you close a file normally, its Auto Save file is retained until the next time the file is opened - at which time the Auto Save file is overwritten. The name of an Auto Save file after a normal shutdown is appended **_auto_save.plan** or **_auto_save.layout**, like this:


JonesResidence_auto_save.plan

Auto Save files created as a result of an improper program shutdown are appended **_auto_save_bak.plan** or **_auto_save_bak.layout**, like this:


JonesResidence_auto_save_bak.plan

If your computer shuts down improperly, you may be able to recover some of your work by opening the **_auto_save_bak** file. The next time you open a file affected by an improper shutdown, the program will notify you if an Auto Save file newer than the original file is found and it will give you the option to open that file. **_auto_save_bak** files are overwritten, so you will only have this opportunity once after an improper shutdown. As such, you should always open the **_auto_save_bak** file and use **Save As** or **Make A Copy** to retain a copy of this file. To identify it as a recovered auto save file, you can append it with **_recovered**. See *Exporting and Backing Up Files on page 68*.

Even with Auto Save, you should save your work manually on a regular basis using any of the following methods:

- Click the **Save** button.
- Select **File> Save**.
- Press ***Ctrl/⌘ + S***.

Because the Home Designer 2027 Data folder contains custom user data, it is not deleted when the program is uninstalled. See *Uninstalling Premier*.

Referenced Files

A Home Designer Plan or Layout typically includes information from a variety of external files such as image files. When Chief Architect Project Management is active, the program saves all such files in your Resource Store to help prevent links between files from being disrupted. When traditional file management is in use, maintaining these links is your responsibility.

Missing Files/Resources Dialogs

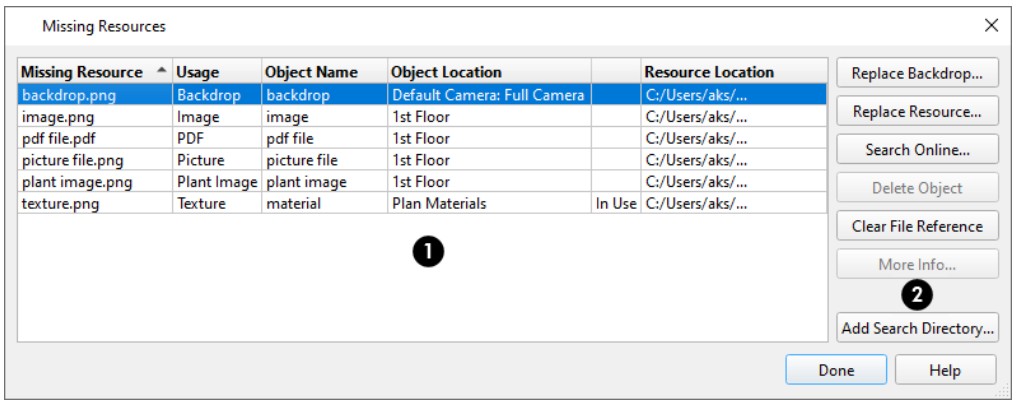
Home Designer Plans and Layouts can reference a variety of external file types for added detail, including:

- Material Textures
- Images
- Plant Images
- 3D Backdrops
- Picture Files
- PDF Files

Whenever any view in a plan or any page in a layout is opened, the program checks for referenced files used in that view and will notify you if any of those files cannot be found by opening the Missing Files dialog.

If a layout file is missing referenced files on pages that you do not view during the current session, this dialog may also open when you print the layout. See *Layout on page 970*.

You can also open this dialog at any time by selecting **Tools> Checks> Missing Files**. When accessed this way, all missing files associated with the current file are listed: not just those used in the current view.



1 File Information

The table lists any Missing Files as well as useful information about each:

- **Missing Resource** reports the name and file extension of the missing file.
- **File Usage** indicates how the missing file is used in the program.

- **Used By** reports the name of the document that references the file. This column is only present when exporting a Project and is not shown here. See *Exporting a Project on page 60*.
- **Object Name** states the name of the object in Home Designer that references the file.
- **Object Location** indicates where in the Plan or Layout the object can be found.
- The next column indicates whether a missing backdrop, texture, or material map is **In Use** in the plan. See *About Materials on page 756*.
- **File Path** states the last known location of the missing file on your computer system when traditional file management is in use. When Chief Architect Project Management is in use, this column reports "Managed".

Click on a line item in the table to select it and resolve it using the options on the right. Multiple line items can be selected; however, the selections on the right may be limited. See *Shift and Ctrl/⌘ Select on page 187*.

2 Options

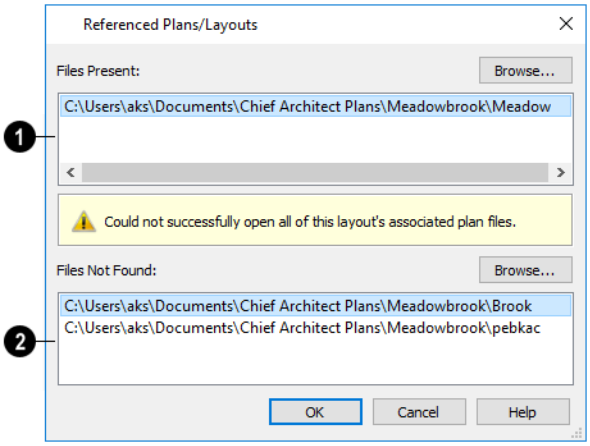
The buttons on the right offer options for resolving a selected missing file. The names of these buttons will vary somewhat, depending on the type of file(s) selected in the list on the left.

- Click the top **Replace from Library** button to replace any instances of an object or material referencing the selected missing file with a different object or material from the library. Not available for textures, PDF files or picture files.
- Click the **Replace Resource** button to open the Browse for Missing File dialog and select a file saved on your system to replace the missing one. See *Opening and Importing Files on page 63*.
- Click the **Search Online** button to check the Chief Architect 3D Library for the missing resource. Only available when the selected resource is associated with library content provided by Chief Architect. See *Downloading Library Content on page 719*.
- Click the **Delete Object** button to remove the object or material referencing the missing file from the plan. Not available for backdrops or material textures that are In Use.
- Click the **Clear File Reference** button to remove a selected backdrop from the camera or Camera Defaults that it is assigned to, or to remove a selected texture from the material it is applied to.
- Click the **More Information** button for the last known pathname of the selected reference file. Only available when Chief Architect Project Management is active. See *Reset Options Panel on page 118*.
- Click the **Add Search Directory** button to direct the program to a particular folder to search for missing files in. The list of Search folders can be reset in the Preferences dialog. See *Reset Options Panel on page 118*.

You can prevent this dialog from opening automatically by checking **Do not display missing files again during this session** at the bottom of the dialog. This option is not available when the dialog is opened manually.

Referenced Plans/Layouts Dialog

In addition to the file types described above, layout files also reference plan files. The Referenced Plans/Layouts dialog lists all plan files that the current layout file references and allows you to relink these files. To open this dialog in a layout file, select **Layout> Referenced Plans/Layouts**.



1 Files Present

The names of all plan files with intact links to the current layout are listed here.

If you want, you can select a file and click the **Browse** button just above the **Files Present** field and replace the selected plan with a different plan saved on your system.

2 Files Not Found

The names of all plan files with disrupted links to the current layout are listed here. Any files listed here have been moved, renamed, or deleted and cannot be found by the program. Intervention is required to find these files and reestablish their links to the current file.

When Chief Architect Project Management is in use, select a missing file and click the **Replace Reference** button just above the **Files Not Found** field to open the Replace Reference Plan dialog. See *Select Project Dialogs on page 39*.

When traditional file management is in use, select a missing file and click the **Browse** button just above the **Files Not Found** field to open the Browse For Missing File dialog, which is a typical Open dialog. See *Opening and Importing Files on page 63*.

- Locate the missing file in your system's directory structure. When the missing file is selected, click **Open** to link it to the layout.
- You can also redirect an intact link to from a file in the File Present list to a different file in the same manner.

If all missing files are successfully relinked, the layout opens when you click **OK** in the Referenced Plans/Layouts dialog.

Be sure to choose **File> Save** in the current file when the missing files have been located to save their links.

Results of Missing Referenced Plan Files or Linked Views

All dynamic and semi-dynamic layout views are linked to a specific view in the plan file that they reference. If the referenced plan file is found but the linked view is not, the layout box is not successfully linked. See *Managing Layout Links on page 980*.

If an error message displays, one or more of the missing files could not be replaced by the specified file. Click **OK** to continue. The layout opens, but with the following characteristics:

- Any plan views associated with the missing file(s) are blank. Only the border displays if the "Layout Box Borders" layer is set to display. See *Layout Page Display Options on page 970*.
- Any elevations or cross sections associated with the missing file(s) show the automatically generated lines, but any CAD objects added to the view are absent.

Home Designer Data

When Home Designer 2027 is installed, the program automatically creates a folder in the user Documents directory called **Home Designer 2027 Data**. The way this Data folder is used by the program varies depending on whether you use traditional file management or Chief Architect Project Management. See *File Management on page 34*.

When traditional file management is in use, this folder contains important user-specific information saved in the following folders and files and should not be moved, renamed or deleted:

- **Archives** - A folder of automatically archived plan and layout files. See *Auto Archive on page 69*.
- **Backups** - The default location containing Managed Resources Backups. See *Chief Architect Project Management on page 35*.
- **Backdrops** - A folder of custom backdrop images. See *3D Backdrops on page 790*.
- **Hotkeys** - A folder of hotkey assignments. See *Hotkeys on page 127*.
- **Images** - A folder of custom images. See *Using the Contextual Menu on page 722*.
- **Database Libraries** - A folder of user library data. See *Library Content on page 717*.
- **Scripts** - A folder for custom Ruby scripts associated with Chief Architect plans.
- **Templates** - A folder of plan and layout template files. See *Creating a New Plan or Layout on page 46*.
- **Textures** - A folder where you can save image files used to create custom material textures. See *Creating Materials on page 767*.
- **Toolbars** - A folder of customized toolbar files. See *Toolbar Customization Dialog on page 125*.
- **sheetSizes.sheet** - A list of user-created Drawing Sheets. See *Customize Sheet Sizes Dialog on page 990*.
- **_MigrateBackup** - If you migrated legacy settings into Version 2027, additional folders with names appended with _ MigrateBackup may also be present.

When Chief Architect Project Management is in use, the Data folder contains the subfolders listed above; however, only these are actively used:

- **Archives** - A folder of automatically archived plan and layout files. See *Auto Archive on page 69*.
- **Backups** - A folder of zipped folders containing Managed Resources Backups. See *Chief Architect Project Management on page 35*.
- **Scripts** - A folder for custom Ruby scripts associated with Chief Architect plans.
- **_MigrateBackup** - If you migrated legacy settings into Version 2027, additional folders with names appended with _ MigrateBackup may also be present.



If the Home Designer 2027 Data folder is renamed, moved or deleted, the program will automatically replace it using default information from the program's installation folder. When this occurs, customized user settings and custom user library content will not be available.

Data Folder Name and Location

The name of the Home Designer 2027 Data folder cannot be changed, but you can specify its location on your system in the Preferences dialog. See *Folders Panel on page 103*.

If you specify a new location for this folder, the program will not migrate any custom user settings that you might have. Instead, it will automatically create a new folder at that location containing default information from the Home

Designer2027 installation folder. If you would like to copy custom settings to the new location, you can do this yourself in an operating system window.

When specifying a location for the Data folder, bear these considerations in mind:

- If you move the Home Designer 2027 Data folder on your computer without specifying its location in Preferences, the program will automatically replace the folder in its default location using default information from the software's installation folder.
- The same will result if you specify a location on a network or removable device and that location becomes inaccessible. For this reason, it is best to use a location on your local hard drive.
- The User Database Libraries in particular may contain a large amount of data. Whatever location you choose to use must be located on a hard drive with sufficient space to hold these files.

Just as with your plan and layout files, it is a good idea to back up your Home Designer2027 Data folder.

Because the Home Designer 2027 Data folder contains custom user data, it is not deleted when the program is uninstalled. See *Uninstalling Premier*.

Exiting Home Designer

Select **File> Exit** in Windows® or **Home Designer> Quit** in macOS™ to exit the program. It is best to save your work before exiting/quitting; however, if you have not saved any open files, you will be reminded to do so. See *Closing Views and Files on page 138*.

When you exit from the program using **File> Exit** or **Home Designer> Quit**, all Autosave files and Undo files are automatically deleted. See *Auto Save Files on page 70* and *Undo and Redo on page 222*.

In macOS™, if you click the program window's red **Close** button, the program window will close and you will be prompted to save your work; however, the program itself will continue to run. If you do not plan to use the program in the near future, it is good practice to **Quit** instead of letting the program run in the background.

Project Planning

Chapter 3

The tools described in this chapter allow you to conduct preliminary budget and space planning, and to and run checks on plans so you can be more confident that they are free of common drawing errors.

Space Planning

The **Space Planning Tools** are a time-saving way to create a preliminary room-by-room design without getting caught up in the details. When Room Boxes are arranged to meet your needs, you can convert them into a working plan that can be edited and detailed to completion. Select **Tools>Space Planning** to access these tools in plan view only.

Use the **Space Planning Toolbar Configuration** to efficiently design using the Space Planning Tools along with Text, Dimensions, and CAD tools. See *Toolbar Configurations on page 122*.

Placing and Arranging Room Boxes

The Space Planning tools consist primarily of tools that place various types of Room Boxes, each associated with a particular Room Type such as **Bedroom** or **Kitchen**. See *Room Types on page 314*.



Select a Room Box tool, then move the pointer into the drawing area. A preview of the box will follow the pointer: click once to place a 2D Room Box at that location. You can also click and drag to draw a Room Box of any size. You can continue to create more of the same type of Room Box until another tool is selected. A Room Box can be placed so that it does not touch other boxes, or so its edge(s) align with or overlap those of other, previously placed boxes.

Displaying Room Boxes

Room Boxes and their labels are located on the “Space Planning Boxes” layer. Space Planning Box labels use the Text Style assigned to that layer, as well. See *Displaying Objects on page 151*.

You can change a Room Box's **Room Name** and Function as well as its line and fill style in its specification dialog. See *Room Box Specification Dialog on page 79*.

Each Room Box is surrounded by lines that indicate the extents of the walls that will define it once the **Build House** tool converts boxes into rooms.

Editing Room Boxes

Room Boxes are a type of 2D CAD polyline and once placed, they can be moved, resized, and reshaped much like other closed-polyline based objects. Curved edges are not supported on Room Boxes, however. See *Editing Closed Polyline-Based Objects on page 197*.

As with Room Boxes in the process of being placed, a selected box can be moved so that it does not touch other boxes, or so its edge(s) align with or overlap those of other boxes. Boxes overlap in the order they were created, with newer boxes overlapping boxes placed earlier.

When one Room Box overlaps another, its edge lines are drawn in the area of the overlap, while the overlapped box's lines are suppressed. If you select the overlapped box, however, its selection fill and edit handles indicate its full area. Overlap does not affect a room's actual shape until **Build House** is used.

Two edit tools are unique to Room Boxes and allow you to manage overlap situations:

Remove Overlapped Areas removes all areas from the selected Room Box(es) that are overlapped by adjacent boxes. The box edges are not drawn differently as a result, but any overlap conditions are removed, additional edit handles may become available, and the selected box typically gains new edges as its shape is modified.

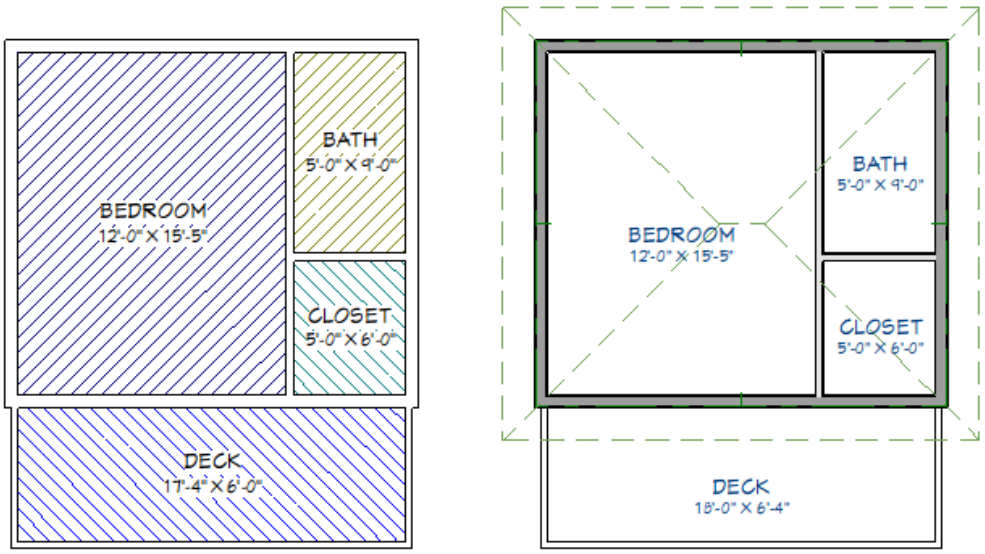
The **Overlap Adjacent Room Box** allows you to reverse an instance where the selected Room Box is overlapped by an adjacent box, making it overlap the other box instead. To use this tool, click the button and then click on the adjacent Room Box that currently overlaps the selected box. The box edges are redrawn to reflect this change, but neither box's shape actually changes and no additional edit handles become available.

Build House

When Room Boxes are in place, select **Tools> Space Planning> Build House** to convert them into a structure in which walls and railings define rooms. When Build House is used, walls are generated based on the locations of the Room Box edges as they are drawn: any overlaps are ignored. See *Rooms on page 312*.

Room Box edges are converted into walls using the Wall Types set in the Exterior Wall, Interior Wall, Railing, and Deck Railing Defaults dialogs. See *Wall, Railing, and Fencing Defaults on page 254*.

Room Box edges are converted into walls using the Wall Types set in the Exterior/Interior Wall Defaults dialog. Railings and Deck Railings are used to define some exterior Room Types, as well. See *Wall, Railing, and Fencing Defaults on page 254*.



Room Boxes and rooms defined by walls and railings created by the Build House tool

Multiple Floors

Space Planning is supported on Floor 1 and all floor levels above it but not on Floor 0. See *Multiple Floor Levels on page 535*.

If you would like to use Room Boxes to design room layout on upper floor levels, it is important that you make sure the Room Boxes, or more to the point, the walls they will eventually create, are properly aligned between floors. To do this:

- Turn on the Reference Display. See *The Reference Display on page 546*.
- Make sure that the "Space Planning Boxes" layer is turned on in the Reference Display. See *Change Floor / Reference Dialog on page 546*.
- Make sure that Object Snaps are enabled - particularly, Endpoint and On Object snaps. See *Object Snaps on page 142*.
- Use a Room Box's edit handles to snap its edges to edges drawn in the Reference Display.

Space Planning Assistant

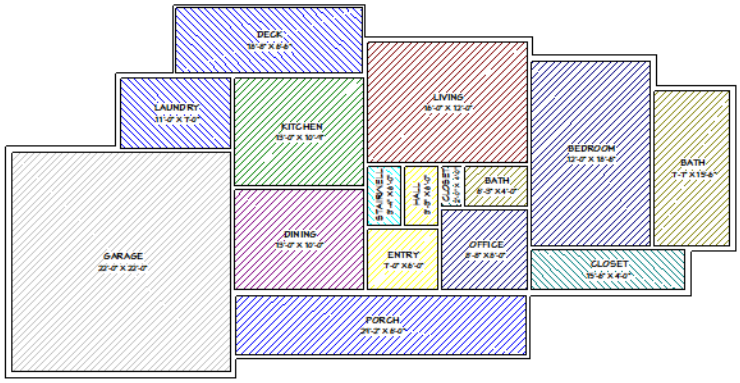
In plan view, select **Tools> Space Planning> Space Planning**. The Space Planning Assistant gathers information about the rooms you want to include in your house. When you click **Finish**, the selected room boxes display.

Room boxes can now be arranged into a floor plan.

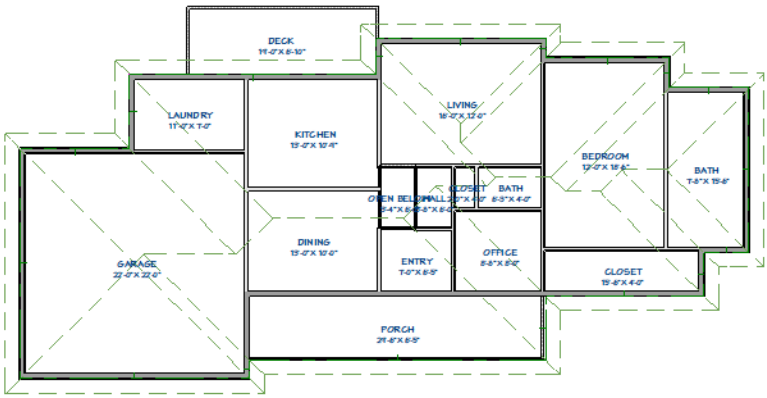
Multiple Floors

If you specified a two-story house in the Space Planning Assistant:

1. Edit and arrange the room boxes on Floor 1 as desired.



2. Select **Tools> Space Planning> Build House** tool to create the walls on the first floor.



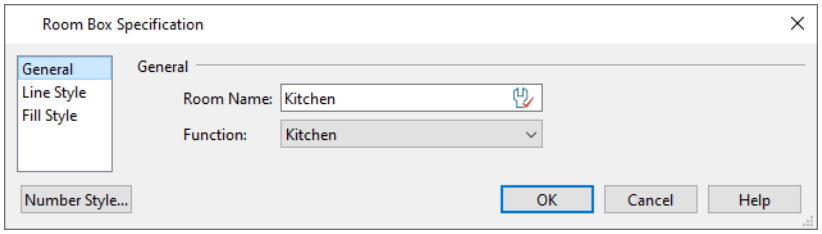
3. Go **Up One Floor** and notice that the positions of the walls on Floor 1 display in red as a reference.
4. Arrange the rooms on Floor 2 as desired using the red polylines as a guide.
5. On the second floor, select **Tools> Space Planning> Build House** to complete the second floor.

Room Box Specification Dialog

Select one or more room boxes and click the **Open Object** edit button to open the Room Box Specification dialog. See *Space Planning on page 76*.

General Panel

Most of the settings on the General panel are used when the selected room box is converted to a room using the **Build House** tool.



- Specify a **Room Name** for the selected Room Box. When the default is specified, the Function selected below is used as the name.
- Select a **Function** from the drop-down list. See *Room Types on page 314*.

Line Style Panel

The Line Style panel is available for a variety of other objects in the program. For more information, see *Line Style Panel on page 234*.

Fill Style Panel

The Fill Style panel is available for a variety of other objects in the program. See *Fill Style Panel and Dialogs on page 161*.

Finding Objects

There are a variety of tools in the program designed to help you locate specific objects.

These tools often open a new view window in which the object in question is either highlighted or selected.

- To find out where a line item in the Materials List is located in the model, select its row or any cell in its row and click the **Find Object in Plan** edit button. See *Find Object in Plan*, below.
- To find a saved camera or schedule listed in the Project Browser, right-click on it and select **Find in Plan** from the contextual menu. See *Project Browser on page 50*.
- To locate a string of text, select **Edit> Find/Replace Text**. See *Find/Replace Text on page 379*.
- In a Framing Overview or other 3D view in which wall framing can be seen, select a wall framing member and click the **Find Wall** edit button to locate its owner wall in plan view. See *Selecting Walls on page 277*.
- To locate the current view in the Projects panel of the Project Browser, select **File> Show in Project Browser**. See *In the Project Browser on page 130*.

Additional tools are available to help you find files referenced by your plans and layout files.

- Select **Tools> Checks> Missing Files Check** to identify and locate any missing referenced files. See *Referenced Files on page 71*.
- Select **Tools> Layout> Referenced Plan Files** to identify and locate any plans linked to the current layout file. See *Managing Layout Links on page 980*.

Find Object in Plan

To find out where a line item in the Materials List is located in the model, select its row or any cell in its row and click the **Find Object in Plan** edit button. This tool selects the object or objects associated with that line item and will open a new view window to do so if necessary.

The similar **Find in Plan** command is available in the contextual menu of a selected Camera or Cross Section/Elevation in the Project Browser. See *Project Browser on page 50*.

If a plan view showing the floor that the object is on is open, that view will become active and the object will be selected. If no such view is open, a new view showing the object's floor will be created. See *View Windows on page 130*.

If the selected row or rows in a Materials List refer to objects on different floors, the Details dialog will open when you click the **Find Object in Plan** edit button. See *Details Dialog on page 957*.

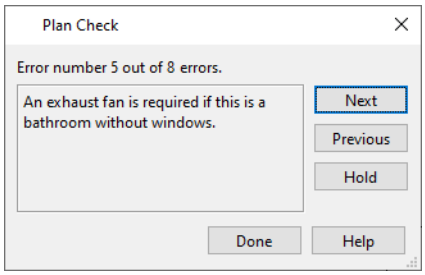
Plan Check

Plan Check examines the current floor of a plan, checking for anything that appears to violate common building practices. Plan Check may not find all the problems in a plan, but does it point out areas that may need improvement.

> Disclaimer: The Plan Check feature in Home Designer compares your plan with common building practices but does not claim to detect all building code and design requirements.

To open the Plan Check dialog, select **Tools> Checks> Plan Check**.

Potential plan errors found are usually highlighted in plan view. To ensure the highlighted item is on-screen, make sure the entire drawing is shown in the window before you run **Plan Check**. See *Fill Window on page 137*.



- The current error number, along with the total number of errors found, is stated at the top of the dialog.
- A description of the current error displays in the field on the left.
- Options for navigating Plan Check are found on the right side.
  - Click **Next** to ignore the current error and proceed to the next.
  - Click **Previous** to return to the previous error.
  - Click **Hold** to suspend Plan Check so you can fix the current error. Select **Tools> Checks> Plan Check** again and the check starts where it left off.
- Click **Done** to terminate Plan Check.

If this dialog obscures the plan view, drag its title bar to move it. It remembers its new position and displays there the next time **Plan Check** is run.

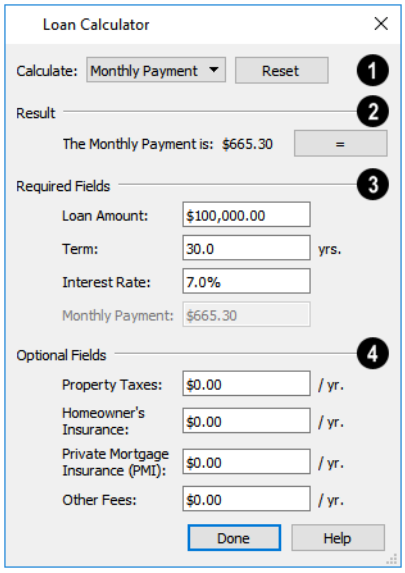
Room Types

Plan Check can do a much better job of checking for problems if it knows what the rooms in your plan are to be used for, so you should assign a Room Type to each room in your plan. See *Room Types on page 314*.

The first time **Plan Check** runs in a plan, it automatically assigns a room type to as many undesignated rooms as it can. Some rooms are determined by their size and shape, and others by their contents. For example, a shelf in a small room indicates a closet; a stove or refrigerator indicates a kitchen; or a bed, a bedroom. If the program cannot assign a room type, **Plan Check** highlights it and suggests that you do so manually.

Loan Calculator

Select **Tools> Loan Calculator** to open the Loan Calculator dialog, which lets you calculate different aspects of a loan for the current plan based on a variety of parameters.



1 Calculate

- Specify what aspect of the loan you would like to **Calculate** from the drop-down list: Monthly Payment, Loan Amount, Term, or Interest Rate.
- Click the **Reset** button to reset all Required and Optional Fields to the system default values.

2 Result

The calculation result, based on the information you provide, displays here.

- If you make changes to any of the fields in the dialog, click the = button to refresh the **Result**.

3 Required Fields

These fields are the same as the options in the **Calculate** drop-down list. The option selected under **Calculate** is inactive here.

- Specify the desired **Loan Amount**.
- Specify the desired **Term**, in years.
- Specify the desired **Interest Rate**.
- Specify the desired **Monthly Payment**.

4 Optional Fields

These options allow you to include additional costs in your loan calculation.

- Specify the expected **Property Taxes** per year.
- Specify the expected **Homeowner's Insurance** cost per year.
- Specify the expected **Private Mortgage Insurance (PMI)** cost per year.
- Specify the cost of any expected **Other Fees**.

When Monthly Payment is calculated, each Optional value is divided by twelve (months) and then added to the total payment.

When a Calculate option other than Monthly Payment is selected, these values are divided by twelve (months) and then subtracted from the specified Monthly Payment value. The result, which does not display, is then used to determine the Loan Amount, Term or Interest Rate.

Preferences and Default Settings

Chapter 4

Preferences are global settings that affect the functionality and appearance of the Home Designer environment, while default settings control what objects look like when they are initially created. You can save time and increase your productivity by becoming familiar with these settings and customizing them before you begin a new project or as needed thereafter.

Default Settings vs Preferences

Default and preference settings have important effects on how the tools in Home Designer function. Default settings are file specific, while Preferences are global, taking effect regardless of what file is open.

Defaults and Preferences can be customized to suit your needs and improve your efficiency, so it is recommended that you become familiar with them and learn how you can use them to your advantage.

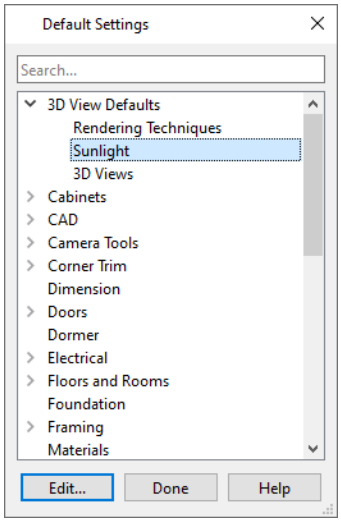
Default Settings

Default settings determine the initial characteristics of objects when they are first drawn. For example, when you place a base cabinet in a plan, its size, materials, front items, and hardware are determined by settings in the Base Cabinet Defaults dialog. You can access a complete list of the various default settings in the current plan or layout file by selecting **Edit>Default Settings** from the menu.

Some defaults affect the structure of your model: for example, Floor, Foundation, Framing, and Wall defaults.

Defaults are file-specific, which means that any changes that you make to the default settings in one plan or layout file will have no effect on other plans or layout files.

Default Settings Dialog



- Type in the **Search** field to filter the tree list of all defaults in the current document. When nothing is typed, all defaults are listed.

- You can also browse the list. Click the arrow beside a category to expand it and access the defaults for items related to that category.
- To open the defaults dialog associated with an item in the list, double-click on the line item, or click on the item and then click the **Edit** button.
- General CAD defaults are view-specific and are only available in views where CAD objects can be drawn. See *CAD Defaults Dialog on page 224*.

Many defaults dialogs can also be opened by double-clicking on a parent and/or child toolbar button of a tool affected by the settings in that dialog. For example, you can:

- Double-click the **Cabinet Tools** parent button to open the Defaults Settings dialog for Cabinet tools only;
- Double-click the **Base Cabinet** child button to open the Base Cabinet Defaults dialog.

A few defaults dialogs, such as 3D View Defaults and General CAD Defaults, do not have a parent or child tool associated with them. You can add optional buttons to your toolbars to quickly access these dialogs. See *To add a button to a toolbar on page 124*.

Some objects have similar defaults dialogs which can be selected and edited as a group. Camera Defaults, Wall Defaults, Door Defaults, the Base, Wall, and Full Height Cabinet Defaults, and the Floor Defaults are examples. See *Shift and Ctrl/⌘ Select on page 187*.

Preferences

Preference settings influence the overall environment of the program, such as what the interface looks like, how the tools are accessed, and the basic rules governing how objects are drawn and edited. See *Preferences Dialog on page 92*.

Unlike default settings, Preferences are global, which means that any changes that you make to them will take effect in all plan and layout files.

To access the Preferences dialog, select **Edit> Preferences** from the menu.

Region and Language Settings

There are a few formatting considerations in Home Designer that are set based on your operating system's Region settings:

- **Units of measurement** - When you first install and launch the program, your template plan and layout files will be set to use either U.S. or metric units, depending on your operating system settings. See *New Plans Panel on page 106*.
- **Currency** - The currency associated with your Region settings will be used in the Materials List, Components dialogs, and Loan Calculator. See *Materials Lists on page 954* and *Loan Calculator on page 81*.
- **Decimal mark format** - Depending on your operating system settings, either a dot or a comma will be used in dimension lines, dialogs, and anywhere the program can display a numeric value using decimals.
- **Date format** - The format of Sun Angle date labels vary depending on your operating system settings. See *Sun Angles on page 831*.

Dynamic Defaults

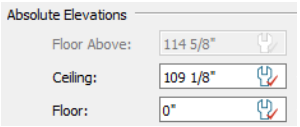
Dynamic defaults are values that can be changed globally throughout the current plan or layout file.

- If you change a dynamic default value in a defaults dialog, all objects of that type that are set to use the default will update automatically to use the new value.

- Any objects of that type that are not using the default value because of editing will not be affected if you change the default.

Dynamic defaults are presented in several different ways in specification dialogs:

- Some settings have a **Use Default** radio button, or a "Use Default" option in a drop-down list.
- Some settings have a **Default** check box. Uncheck this box to make the setting not dynamic, or check it again to restore the dynamic behavior.
- Some dynamic default text fields have an Active Defaults icon in the value field.



Not all default settings are dynamic; however, most objects that have defaults dialogs do have some settings that are dynamic defaults. They are available for a variety of objects, including dimension lines, walls, doors, cabinets and rooms. Materials are another example of an attribute that uses Dynamic Defaults: including for objects that do not have defaults dialogs such as library symbols. See *Material Defaults on page 757*.

Plan and Layout Templates

When Home Designer opens a new, blank Plan or Layout, the new document is actually a copy of a template using either metric or U.S. units of measurement and predefined default settings, layer settings, wall definitions, page setup information, and more.

Once you are familiar with the default settings in Home Designer, you can create Plan and Layout templates to fit your needs, store them in your Templates directory, and even specify them as the defaults for new documents.

If you make changes to a default template, all subsequently created Plans and Layouts will use the new default settings.

> If a template file is not specified or cannot be found, the program starts new Plans using a set of system defined defaults. System defaults are very basic and unlikely to meet your drawing needs, so you should always specify a template Plan and Layout.

Using Templates

A template is used every time you create a new Plan or Layout file. In Chief Architect Project Management, when you create a new Project, Plan, or Layout, you can specify which template(s) you want to use. See *Chief Architect Project Management on page 35*.

You can specify which Plan and Layout template are used by default in the **Preferences** dialog.

To set a template as your default

1. Select **Edit> Preferences** and go to the New Plans panel of the Preferences dialog. See *New Plans Panel on page 106*.
2. Select **U.S. Units** or **Metric Units**. Under each of these options, the templates used when you open a new Plan or Layout are reported.
3. For either the plan or layout template:
   - Choose **Select** or **Import** from the drop-down list to the right of the template's information if using Chief Architect Project Management.

- If using traditional file management, click the **Browse** button to the right of the Plan or Layout template's information.

4. If you choose to Import a file or are using traditional file management, select a template file from the Templates directory or navigate to a different location and select a template from there. If you Select a template when Chief Architect Project Management is in use, you can do so in the Resource Management dialog.
5. Make sure that the file you select uses the correct units of measurement. The file names of metric Chief Architect template files are appended "- Metric".

When Chief Architect Project Management is in use, you can also specify a Plan or Layout as the default Template using its contextual menu in the Project Browser. To do this, right-click on a document in the Templates category in the Projects panel and select **Use as Default Layout Template** from the menu. The selected document's units of measurement are reported in parentheses after the tool name in the menu. See *Project Browser on page 50*.

New Plan/Layout From Template

When Chief Architect Project Management is in use, you can create a new Plan or Layout by double-clicking on a document under "Plan and Layout Templates in the Project Browser. You will be asked to choose whether to open the template or create a new document, and if you choose to create a new document the Add New Plan/Layout to Project dialog will open. See *Project Browser on page 50* and *Select Project Dialogs on page 39*.



To create a new Plan or Layout using a template other than the current preference when traditional file management is in use, choose **File> Templates> New Plan from Template** or **New Layout from Template**. The program browses to the Templates directory in your Home Designer 2027 Data folder. See *Home Designer Data on page 74*.

> Note: When creating a new Plan or Layout using a template, be sure to select the appropriate units of measurement. The units used in the new file - U.S. Units or metric - are the same as those in the template used to create it.

Data in Plan and Layout Templates

File-specific content and settings in a Plan template include:

- Default Settings. See *Default Settings on page 83*.
- Layer settings. See *Display Layers on page 151*.
- Wall Type Definitions. See *Wall Type Definitions Dialog on page 290*.
- If anything is drawn in the template plan, it will be present in all new plans created with that template.

File-specific content and settings in a Layout template include:

- Default Settings. See *Layout Preferences and Defaults on page 970*.
- Layer settings. See *Display Layers on page 151*.
- A title block and border. See *CAD and Text in Layout on page 971*.
- Drawing Sheet Setup settings. See *Drawing Sheet Setup Dialog on page 987*.
- Any text, dimensions, or CAD drawn on any pages of the layout will be present in all new layout files created using that template. Consider adding General notes and other generic text used in multiple projects.

Save as Template



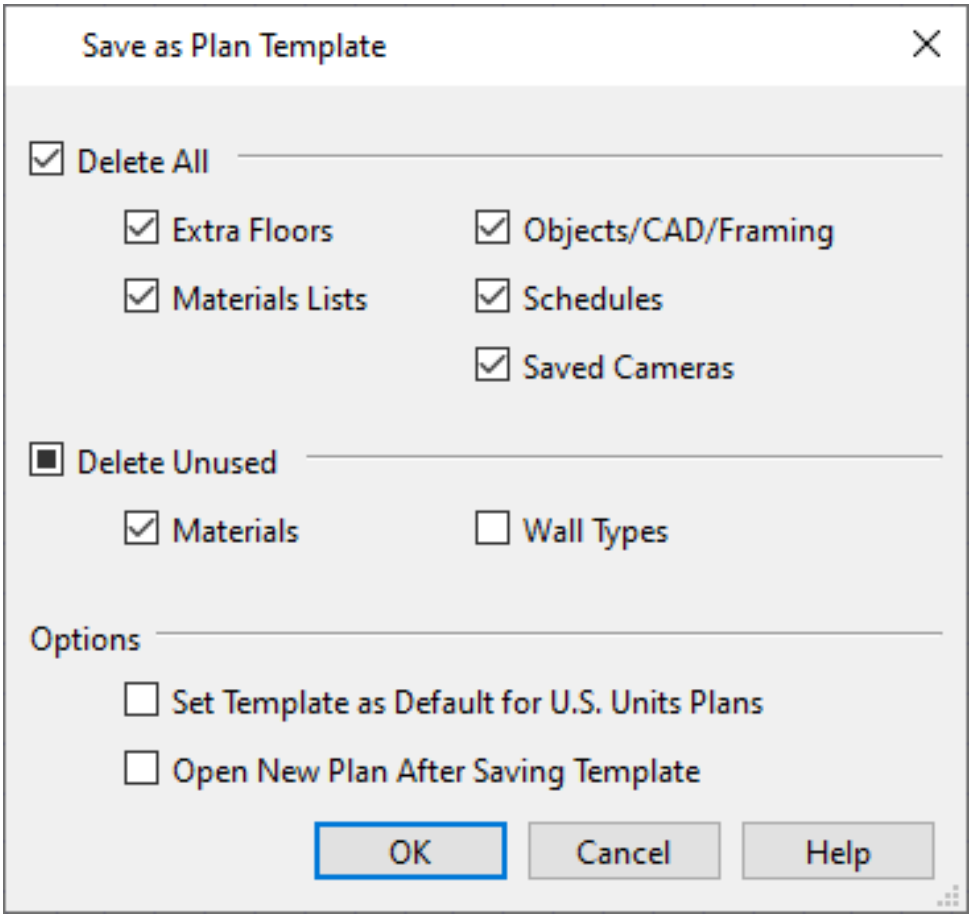
Template files can be created from scratch; however, if you have a Plan or Layout with settings and data that you would like to use in future projects, you can use the **Save as Template** tool to purge unnecessary data and save a copy

in your Templates directory.

Save as Template is also an option in the contextual for a selected Plan and Layout in the Project Browser when Chief Architect Project Management is in use, and also when Import Template is selected from the contextual menu for the Templates category. See *Project Browser on page 50*.

To create a plan template

1. Open the plan file with settings and data that you would like to use as a basis for a template.
2. Select **File> Templates> Save as Template** .
3. In the Save as Plan Template dialog:



- Check the box beside each category of object or data that you want to delete from the current file.
- Unless you have a specific reason to retain a particular category, it is best to delete them all.
- Check **Set Template as Default for U.S. Units/Metric Plans** to use the new template as your default template when a new Plan is created. See *Units of Measurement on page 46*.
- Check **Open New Plan After Saving Template**, if you would like to open a new Plan based on the new template.

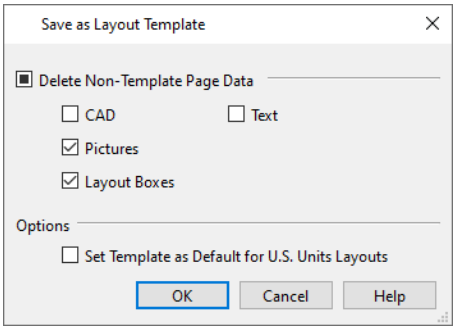
4. When you click OK and Chief Architect Project Management is active:
   - The Plan Template Name dialog opens. Type a short, descriptive name and click OK.
   - If you checked **Open New Plan After Saving Template**, the Select Project dialog opens next. Select the Project you would like the new Plan to belong to and when you click the Select button, that Plan will open and will have the same name as its Project. See *Select Project Dialogs on page 39*.

5. When you click OK and traditional file management is in use:
   - The Save Plan File dialog will open. Give the template file a short, descriptive name and save it in your Templates directory. See *Exporting and Backing Up Files on page 68*.
   - When you click **Save**, the original Plan remains open, and a new untitled Plan will open if you checked **Open New Plan After Saving Template**.

The primary difference between Plan and Layout files is that there are fewer default settings in Layouts. In addition, most Layout templates include a border and title block whereas Plan templates are often blank.

To create a layout template

1. Open the Layout with settings and data that you would like to use as a basis for a template.
2. Select **File> Templates> Save as Template** .
3. In the Save as Layout Template dialog:



   - Check the box beside each category of **Non-Template Page Data** that you want to remove from non-templates pages. Data on Page Templates is not affected. See *Layout Page Management on page 981*.
   - Check **Set Template as Default for U.S. Units/Metric Layouts** to use the new template as your default template when a new Layout is created. See *Units of Measurement on page 46*.
4. When you click OK and Chief Architect Project Management is active, the Layout Name dialog opens. Type a short descriptive name and click OK
5. When you click OK and traditional file management is in use, the Save Layout File dialog will open. Give the template file a short, descriptive name and save it in your Templates directory. See *Exporting and Backing Up Files on page 68*.

Importing Templates

When Chief Architect Project Management is in use, you can import Plan and Layout Templates into your Resource Store by selecting **Import Template(s)** from the contextual menu for the Plan and Layout Templates category heading in the Project Browser. See *Using the Contextual Menus on page 55*.

When a single Plan or Layout is selected, the Save as Template dialog will open; when multiple documents are imported as a group, they will be imported directly without this dialog opening. See above.

Updating Template Settings

To change the default settings in your template, you must open the template file as though it were a regular Plan or Layout:

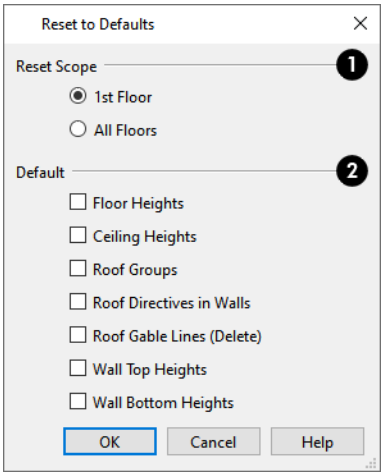
- When Chief Architect Project Management is active, double-click on a Plan or Layout Template and when prompted, click the **Create New From** button.
- When traditional file management is in use, select **File> Open Plan** or **Open Layout** .

After the necessary changes are made, save your work and close the document.

Reset to Defaults

Select **Edit> Reset to Defaults** to open the Reset to Defaults dialog.

This dialog allows you to reset critical structural settings in the current plan to the default values.



1 Reset Scope

The settings can be cleared for the **current floor** or for **All Floors**.

2 Default

Specify which settings you want to reset to **Default**.

- Check **Floor** and/or **Ceiling Heights** to reset the default values as specified in the Floor Defaults dialog. Floor and ceiling heights for any room can be changed in the Room Specification dialog. See *Floor Level Defaults Dialogs on page 535*.
- **Roof Groups** - You can specify a room's Roof Group in the Room Specification dialog. This builds the roof over this room and others in the same Roof Group independent of the roof built over other parts of the plan. Check to reset to the default Roof Group, zero. See *Roof Groups on page 596*.
- When **Roof Directives in Walls** are reset, all items on the ROOF panel of the Wall Specification dialog are reset to the default. See *Roof Directives in Walls on page 595*.
- Check **Roof Gable Lines (Delete)** to delete any Roof Gable Lines in the plan. See *Gable/Roof Lines on page 624*.
- **Wall Top Heights** and **Wall Bottom Heights** - Wall shape and height can be edited in 3D views. Check to reset wall shapes and heights. See *Editing Walls on page 277*.

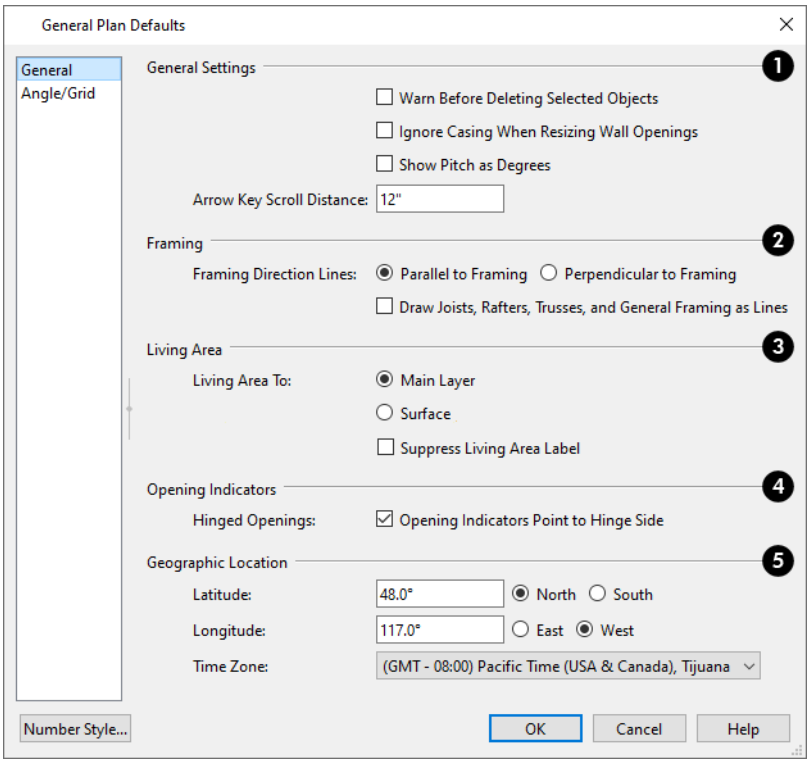
General Plan and Layout Defaults Dialogs

The settings in the General Plan Defaults dialog control basic features of the Home Designer environment in plan files. Just as with other default settings, they are file specific, which means that they can be set differently in individual plan files. To open this dialog, select **Edit> Default Settings**, select "Plan", and click the **Edit** button.

You can also open this dialog by double-clicking the **Select Objects** button.

The General Layout Defaults dialog is similar to the General Plan Defaults dialog, but has fewer settings and is available in layout files only. Its settings, too, are file specific.

General Panel



1 General Settings

- Check **Warn Before Deleting Selected Objects** if you want the program to require confirmation before an item is deleted.
- Check **Ignore Casing When Resizing Wall Openings** to allow wall openings such as doors to be positioned against an intersecting interior wall. Clear this box retain sufficient space for the opening's specified interior trim width. Not available in layout files.
- Check **Show Pitch as Degrees** to display Pitch values in degrees in all dialogs as well as in roof plane labels. Values between -89° and 89° can be entered. When Pitch in Degrees in unchecked, Pitch is described in terms of rise and run: x inches in 12 or x mm in 1000.
- The **Arrow Key Scroll Distance** setting determines how far to scroll in plan view when you press an arrow key. The initial default is 12 inches (300 mm). Not available in layout files. See *Using the Arrow Keys on page 137*.

2 Framing

- Specify how **Framing Direction Lines** function. See *Joist Direction Lines on page 671*.
  - Select **Parallel to Framing** to produce joists and roof trusses that run in the same direction as the Joist Direction Line that affect them.
  - Select **Perpendicular to Framing** to produce joists and roof trusses that run at a 90° angle to the Joist Direction Line that affect them.
- Check **Draw Joists, Rafters, Trusses, and General Framing as Lines** to draw these objects as single lines rather than represent their widths. See *Displaying Framing on page 673*.

3 Living Area

Not available in layout files. See *Living Area on page 321*.

- Select **Main Layer** to have the Living Area calculation measure from the walls' Main Layer.
- Select **Surface** to have the Living Area calculation measure from the walls' exterior surface.
- Check **Suppress Living Area Label** to check the box of the same name on the LABEL panel in the specification dialog of Exterior Rooms that gets created in the current Plan in the future. This option does not affect any existing Exterior Rooms and their labels. See *Living Area on page 321*.

4 Opening Indicators

Not available in layout files. Opening Indicators display on doors, windows, and cabinet doors in camera views when the "Opening Indicators" layer is turned on. See *Opening Indicators on page 402*.

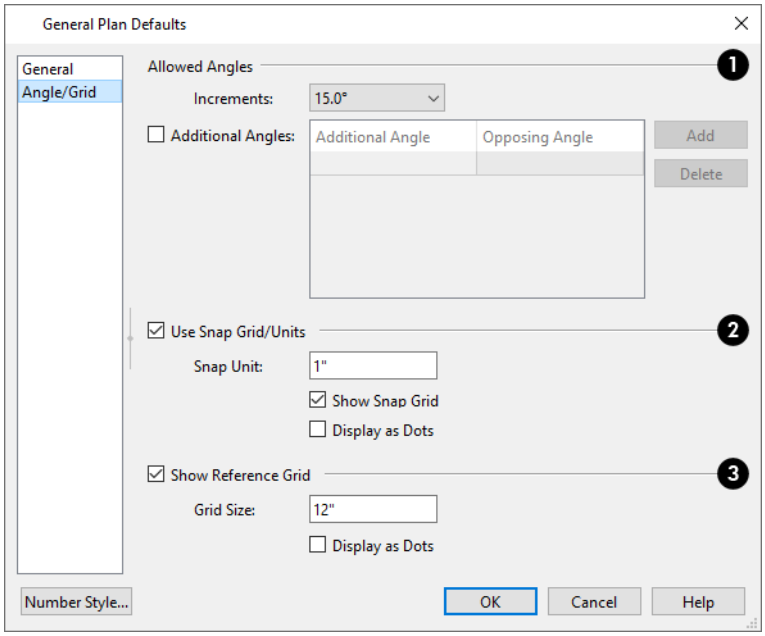
- Check **Hinge Indicators Point to Handle** for opening indicators to point towards the handle side of openings. When unchecked, opening indicators point towards the hinge side.

5 Geographic Location

See *Sun Angles and Shadows on page 830*.

- Define the default **Latitude**, **Longitude** and **Time Zone** used by all Sun Angles in the current plan.

ANGLE/GRID PANEL



1 Allowed Angles

See *Angle Snaps on page 143*.

- Select the angle **Increments** used by Angle Snaps from the drop-down list.
- Check **Additional Angles** if you need to snap to any other angles not included in the selected Increments.
- A table lists the Additional Angles saved in the current file along with the Opposing Angle of each.
  - To add a new Additional Angle, click the **New** button or click in the empty field in the Additional Angles column and type or paste a value.
  - To edit an existing angle, click on its field in the Additional Angles column.
  - To remove an Additional Angle from the current file, click on its row to select it and click the **Delete** button.

- The default Angle Style is degrees. Click the **Number Style** button to specify the format used to enter angles in this as well as all other dialogs. See *Dialog Number/Angle Style Dialog on page 119*.

2 Snap Grid

See *Grid Snaps on page 144*.

- Check **Use Snap Grid/Units** to enable Grid Snaps in the current plan or layout file.
  - You can also click the **Grid Snaps** toggle button to turn on/off grid snapping.
- Specify the **Snap Unit** you wish to use. The initial default is 1 inch (10 mm) in plans and 1/16" (10 mm) in layout files.

> It may be helpful to temporarily change the Snap Unit when working with large objects such as terrain.

- Uncheck **Show Snap Grid** to turn off the display of the Snap Grid, a visual indicator of the location of the snap points.
- Check **Display as Dots** to display the Snap Grid using dots rather than lines.

3 Reference Grid

See *Reference Grid on page 144*.

- Check **Show Reference Grid** to display the Reference Grid in the current plan or layout file.
  - You can also click the **Display Reference Grid** toggle button to turn on/off the Reference Grid display.
- Specify the **Reference Grid Size**.
- Check **Display as Dots** to display the Reference Grid using dots rather than lines.

The Snap and Reference Grid colors can be set in the Preferences dialog. See *Colors Panel on page 95*.

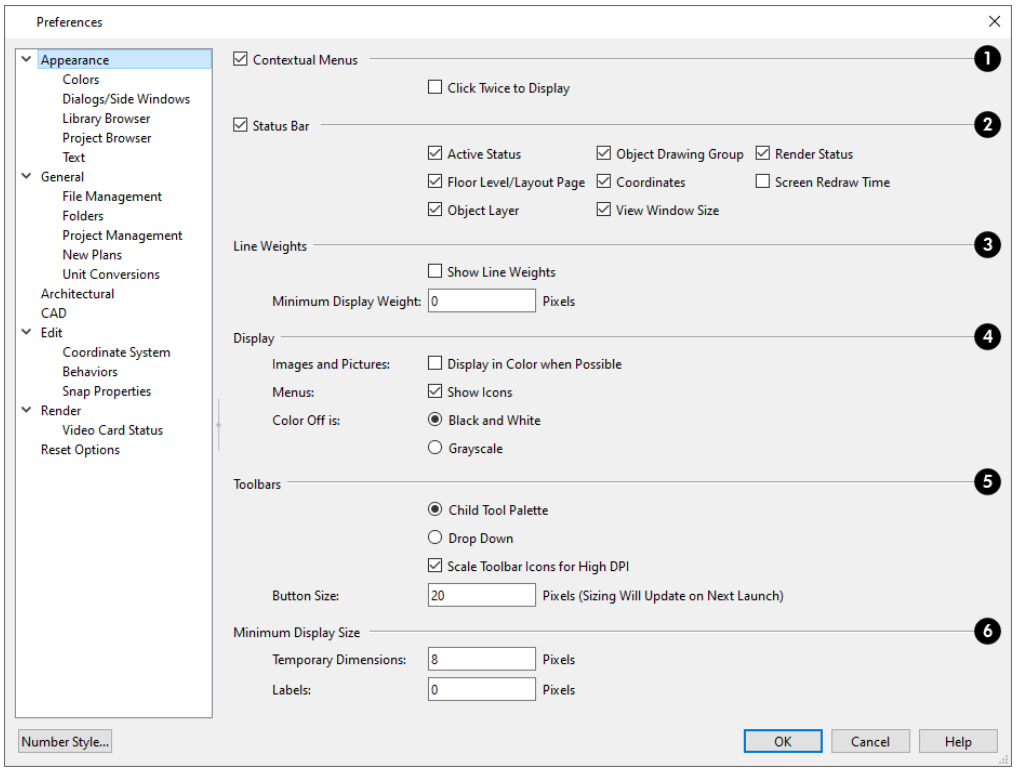
The Snap Unit and Reference Grid Size settings affect the functionality of object nudging. See *Nudging on page 168*.

Preferences Dialog

Preferences are settings that affect the functionality and appearance of the Home Designer environment. You can save time and increase your productivity by becoming familiar with these settings and customizing them. The settings in the Preferences dialog are global: they apply to all plan and layout files and are preserved between sessions. To access this dialog, select **Edit> Preferences** in Windows® or **Home Designer> Preferences** in macOS™. Unlike most dialogs in the program, it is not necessary to have a Plan or Layout open to access the Preferences dialog.

The Preferences dialog has the following panels:

Appearance Panel



1 Contextual Menus

- Check **Contextual Menus** to activate contextual menus that display when you right-click. See *Contextual Menus on page 18*.
- Check **Click Twice to Display** to require two right-clicks on an object before the contextual menu displays. This allows the first right-click to be used for object selection. See *Selecting Objects on page 183*.

> Note: In 3D views, the two clicks must be on the same object surface in order for the contextual menu to display: Clicking on two different surfaces of the same object is treated like two single-clicks.

2 Status Bar

The Status Bar is located at the bottom of the main program window and reports information about the current state of the program. See *The Status Bar on page 24*.

- Uncheck **Status Bar** if you prefer that the Status Bar not display.
- Specify which information you want the Status Bar to report:
  - **Active Status** reports a variety of information, depending on the current context, including:
    - Information about a selected object, or the number of group-selected objects.
    - Information about the toolbar, menu item, or edit handle your pointer is hovering over.
    - Information about using the currently active tool.

- The length and angle of an object as it is being drawn.
- The name of a selected item or folder in the Library Browser.
- The number of 3D surfaces in a rendering.

- **Floor Level/Layout Page** reports the current plan, camera, or cross section/elevation view's floor level, or the current layout page. See *Multiple Floor Levels on page 535* and *Layout on page 970*.
- **Object Layer** reports the layer that the selected object is drawn on. "Multiple Values" may be reported if more than one object is selected.
- **Object Drawing Group** reports the Drawing Group that the selected object is drawn in. "Multiple Values" may be reported if more than one object is selected.
- **Coordinates** reports the X, Y, and Z coordinates of the pointer. See *The Home Designer Environment on page 11*.
- **View Window Size** reports the size of the current view window in pixels.
- **Render Status** reports whether a camera view is "Rendering" or "Finished Rendering".
- **Screen Redraw Time** reports the number of seconds it takes to redraw the current view. In camera views, multiple redraw times are reported for individual processes rather than one cumulative time.



The angle and number styles used to report Active Status and Coordinate information are set in the Number Style/Angle Style dialog. See *Dialog Number/Angle Style Dialog on page 119*.

3 Line Weights

Specify the on-screen display of Line Weights. See *Line Weights on page 994*.

- Check **Show Line Weights** to represent line weights on-screen. Depending on your zoom factor and your monitor's resolution, lines may appear to be wider on screen than when they are printed. Zooming closer may reflect a more accurate idea of the actual line width.
- Specify the **Minimum Display Weight**, in Pixels. This is the lowest line weight possible on screen, regardless of how far you zoom out. A Minimum Display Weight of 0 is the same as 1. This setting is ignored when printing or when **Print Preview** is enabled.

4 Display

- **Images and Pictures** - Check **Display in Color when Possible** to display pictures and images in color even when Color is toggled off. Does not affect the display of images in any 3D views aside from Vector Views. See *Color On/Off on page 157*.
- **Menus** - Check **Show Icons** to display tool icons next to items in the menus.
- **Color Off is** - Specify whether views appear in **Black and White** or **Grayscale** when color is toggled off. Does not apply to any 3D views aside from Vector Views. See *Vector View on page 837*.

5 Toolbars

Specify how the program's toolbars present child tools when a parent button is clicked.

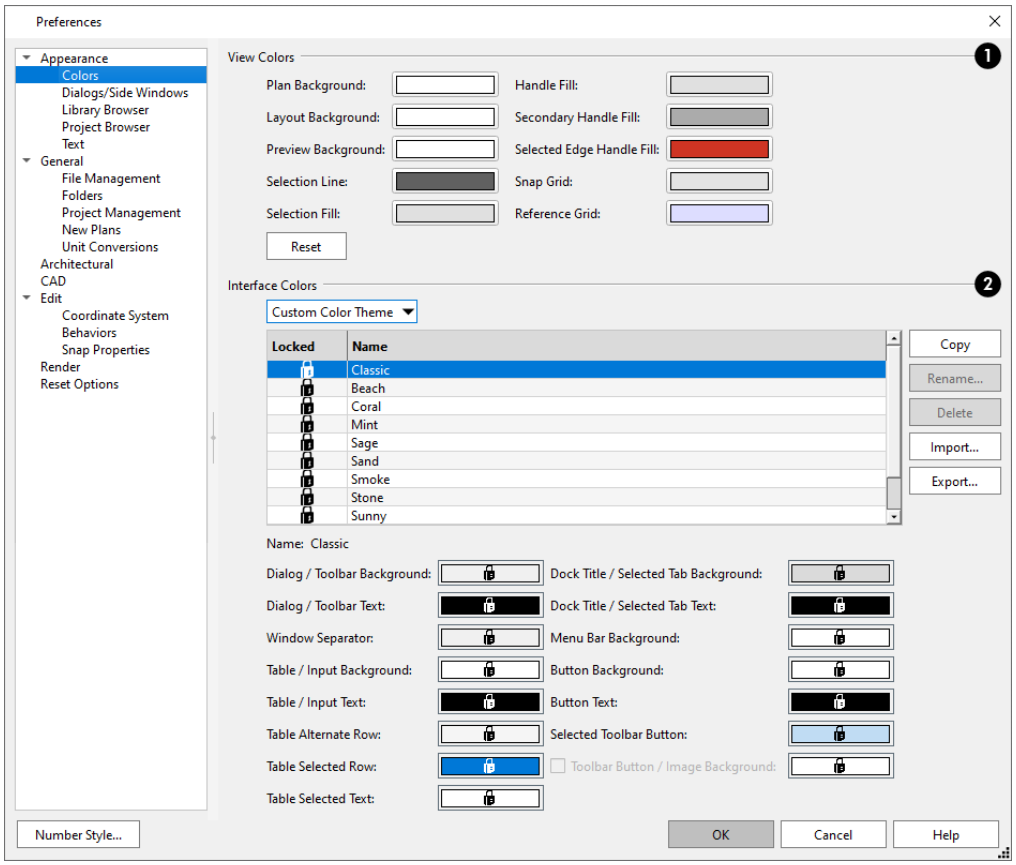
- Choose **Child Tool Palette** to display child tools as buttons at the end of the toolbar where the parent button resides.
- Choose **Drop Down** to display child tools when the drop-down arrow to the right of the parent button is clicked.
- Uncheck **Scale Toolbar Icons for High DPI** to prevent toolbar icons from becoming larger on systems running Windows and using Custom Scaling to increase DPI resolution. When checked, toolbar buttons will increase in size when high DPI is used. Not available in the Mac version of the software.
- Specify the desired toolbar **Button Size**, in pixels. Increasing this value will proportionally resize the text in the drop-down toolbars, as well. See *Toolbar Button Size on page 123*.

6 Minimum Display Size

Specify the minimum display size of **Temporary Dimensions** and **Labels**, in pixels. For labels, this is the on-screen size and does not affect printed or exported output. To use the printed scale, turn on **Print Preview**.

- Dimension sizes are set in the Dimension Defaults dialog. See *Dimension Defaults Dialog on page 341*.

COLORS PANEL



1 View Colors

Specify view background colors and colors associated with selected objects by clicking a color bar to open the Select Color dialog. The Selection Line and all Fill colors can also be assigned a level of opacity. See *Select Color Dialog on page 165*.

- Specify the **Plan Background** color for plan views. The background color for 3D views can also be set to use this color in their defaults and specification dialogs. See *Backdrop Panel on page 813*.
- Specify the **Layout Background** color, which is the background color in layout files. See *Layout on page 970*.
- Specify the **Preview Background** color, which is the background color for previews in the Project Browser, Library Browser and in various dialogs. See *The Library Browser on page 705*.
- Specify the **Selection Line** color and its level of opacity. This is the line color of the bounding box that draws around a selected object or objects and overlays the lines that represent the selected object(s). This color also outlines temporary CAD points and is the fill color for temporary points aside from the Current CAD Point. See *Selecting Objects on page 183*.
- Specify the **Selection Fill** and its level of opacity. This is the fill for the bounding box that draws around a selected object or objects. If a selected object has a fill style assigned to it, the appearance of its Selection Fill color may be affected. See *Fill Style Panel and Dialogs on page 161*.

- Specify the **Handle Fill**, which is the fill color for selected objects' edit handles and its level of opacity. This fill is also assigned to the Current CAD Point. See *Edit Handles on page 23* and *The Current Point on page 228*.
- Specify the **Secondary Handle Fill**, which is used to identify special edit handles such as the Key Frame handles on Walkthrough Paths. Both color and opacity level can be set. See *Key Frames on page 871*.
- Specify the **Selected Edge Handle Fill** color and its level of opacity. This is the fill color of the edit handle on a selected object's Selected Edge. See *Selected Edge on page 185*.
- Specify the **Snap Grid** color. See *Grid Snaps on page 144*.
- Specify the **Reference Grid** color. See *Reference Grid on page 144*.
- Click the **Reset** button to reset all View Colors to the installed defaults.

> Note: If the Selection Line and Handle Fill Colors are similar, it may be difficult to distinguish between active and inactive CAD Points.

2 Interface Colors

- Specify the colors for a variety of different elements in the software's interface by selecting an option from the drop-down list:
  - Select "System" to use your operating system's color settings.
  - Select "Force Light" to use Light Mode in Home Designer regardless of the system settings, or "Force Dark" to use Dark Mode in Home Designer regardless of the system settings. In the Windows version of the software, this change does not affect a few interface elements until you restart the program.
  - Select "Custom Color Theme" to apply a color theme to the program interface and select its characteristics below.
  - In order for "System", "Force Light", or "Force Dark" to take effect on all elements of the interface, you must restart the program.
- The table and settings that follow are only available when "Custom Color Theme" is selected, above:
  - The table lists all available Color Themes. Click on a line item to select and activate that color theme.
  - Locked themes are installed with the program and cannot be modified or deleted.
  - To create an unlocked theme, select any theme in the list and click the **Copy** button.
  - Select an unlocked theme and click the **Rename** button to specify a new name.
  - Select an unlocked theme and click the **Delete** button to remove the theme from the list.
  - When an unlocked theme is selected, the settings below the table are enabled, allowing you to specify the colors for a variety of elements in the program interface.
  - When **Toolbar Button/Image Backgrounds** is unchecked, toolbar buttons and images in dialogs use the Dialog/Toolbar Background color.

The program interface will update as you select different color themes or edit the selected unlocked theme's color settings.

Dialogs/Side Windows Panel

1 Dialog Size and Position

- Specify when to **Save Dialog Size** and **Save Dialog Position**: **Always**, **Per Session**, or **Never**. See *Dialog Size and Position on page 20*.
- Check **Open Dialogs to the Last Panel Visited** to open paneled dialogs to the last panel that you accessed during the current program session. When unchecked, dialogs always open to the first panel. See *Dialogs on page 19*.

2 Dialog Previews

Specify whether Dialog Previews use the **Standard** or **Vector View** Rendering Technique by default. See *Dialog Preview Panes on page 21*.

3 Material Previews

These settings affect material previews the Define Material dialog, Plan Materials dialog, Select Material dialog, and Library Browser. See *Materials on page 756* and *The Library on page 705*.

- When **Prefer Physically Based on Launch** is checked, material previews use the Physically Based Rendering Technique. Uncheck this box to use Standard rendering instead.
- Specify whether or not a **Blurred Backdrop Effect** is applied behind the preview in the Define Material dialog, Plan Materials dialog, Select Material dialog, and Library Browser when a Backdrop image is in use.

4 Side Window Top/Bottom Docking

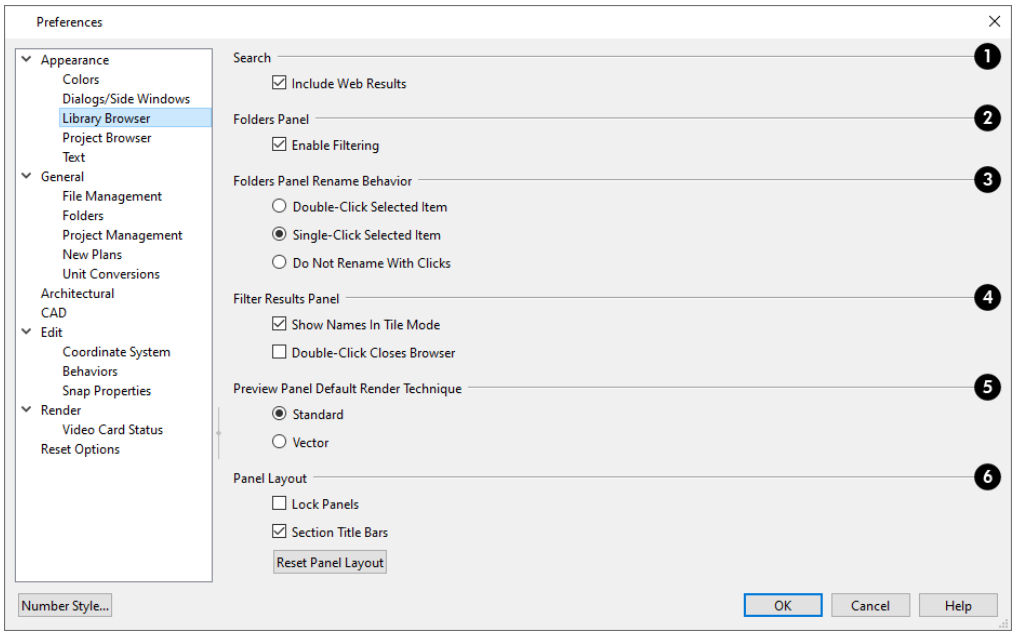
Specify whether side windows dock to the top or bottom edges of the program window. These settings do affect docking to the left and right sides. See *View and Side Windows on page 16*.

- Uncheck **Side Window Drag Docking** to prevent undocked side windows from docking when moved using the mouse. A side window can still be docked to its last docked location by double-clicking its title bar.
- Check the box beside a side window's name to allow it to dock on the top and bottom edges of the program window.
- Multiple line items can be selected by clicking on the names, then edited as a group. See *Shift and Ctrl/⌘ Select on page 187*.
- Click the **Select All** button to select all line items, or click the **Clear All** button to deselect all line items.

> To restore the original size and position of the Library Browser and other side windows, click the **Restore Side Windows** button on the *Dialogs/Side Windows Panel on page 96*.

Library Browser Panel

The Library Browser panel controls the appearance of the Library Browser side window. See *The Library Browser on page 705*.



1 Search

When **Include Web Results** is checked, the View Online Content option will be available in the Folders panel of the Library Browser, and online catalogs will be listed in the Select Material/Library Object dialog. Uncheck this to only show content already present in the library in the Folders panel. See *The Library Browser on page 705*.

2 Folders Panel

When **Enable Filtering** is checked, the tree list in the Folders panel will be filtered according to the active search parameters. Uncheck this to show all content in the tree list, regardless of the active filter.

3 Folders Panel Rename Behavior

Specify which actions allow you to edit the name of an item in the User Catalog. See *Renaming Library Items on page 724*.

- Select **Double-Click Selected Item** to open an inline text editor when you double-click on the name of a library item.
- Select **Single-Click Selected Item** to open an inline text editor when you single-click on the name of a library item that is already selected.
- Select **Do Not Rename With Clicks** to never open an inline text editor in the Folders Panel and instead use the contextual menu when you wish to rename an item.

4 Filter Results Panel

- When **Show Names in Tile Mode** is checked, the names of items in the Filter Results panel list are reported under each thumbnail when Tile Mode is in use. When unchecked, only the thumbnails display.
- Check **Double-Click Closes Browser** to close the Library Browser side window when you double-click on an item in the Filter Results list. Doing this will also close any other side windows that the Library Browser is docked with.

5 Preview Panel Default Render Technique

Specify whether selected library items are displayed in the Preview panel using the **Standard** or **Vector View** Rendering Technique. See *Rendering Techniques on page 836*.

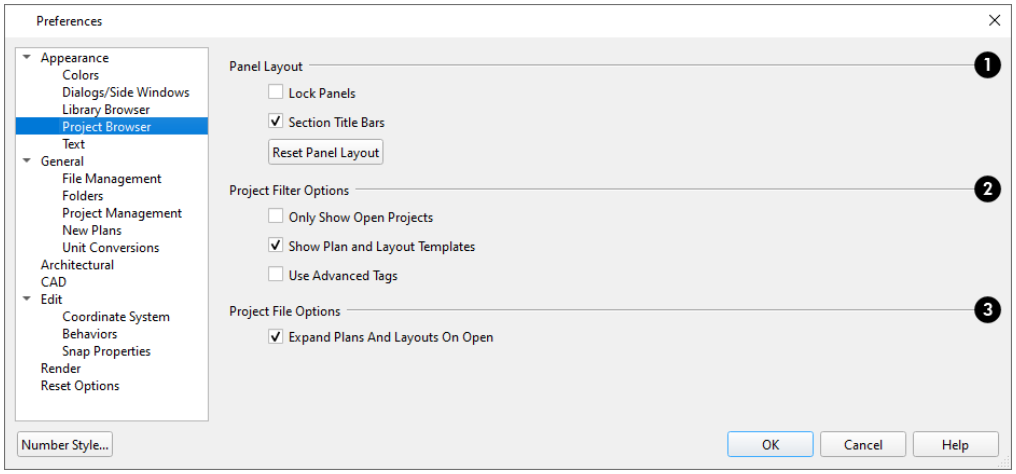
6 Panel Layout

- When **Lock Panels** is unchecked, library panels can be rearranged by clicking and dragging their title bars. Check this box to prevent library panels from being moved.
- When **Section Title Bars** is checked, each panel has a title bar at the top that reports its name. Uncheck this to hide all Library Browser title bars.
- Click the **Reset Panel Layout** button to return all library panels to their system default locations.

> To restore the original size and position of the Library Browser and other side windows, click the **Restore Side Windows** button on the *Library Browser Panel on page 97*.

Project Browser Panel

The Project Browser panel controls the appearance of the Project Browser side window. See *Project Browser on page 50*.



1 Panel Layout

- When **Lock Panels** is unchecked, Project Browser panels can be rearranged by clicking and dragging their title bars. Check this box to prevent panels from being moved.
- When **Visible Title Bars** is checked, Project Browser panels have title bars at their tops. Uncheck this box to suppress the title bars.
- Click the **Reset Panel Layout** button to return Project Browser panels to their system default configuration.

2 Project Filter Options

These options are only available when Chef Architect Project Management is in use. See *Chief Architect Project Management on page 35*.

- When **Only Show Active Projects** is unchecked, all of your Projects are listed in the Projects panel of the Project Browser side window. Check this box to only list Projects that are currently open and hide the rest.
- When **Show Default Documents** is checked, the Plan and Layout Templates category is listed in the Projects panel. Uncheck this box to not list this category.

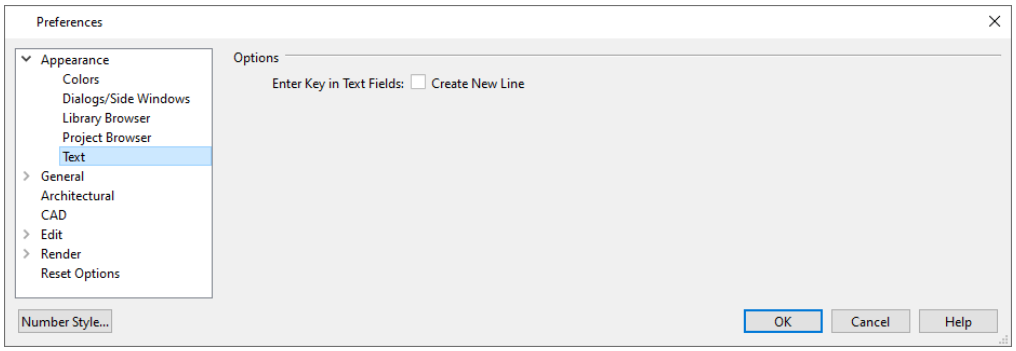
3 Project File Options

Only available when Chef Architect Project Management is in use.

- When **Expand Plans and Layouts On Open** is checked, a newly opened document automatically expands to show its contents below its name. Leave this box unchecked to keep the document's contents collapsed until you click the arrow to the left of its name.

> To restore the original size and position of the Project Browser and other side windows, click the **Restore Side Windows** button on the *Project Browser Panel on page 98*.

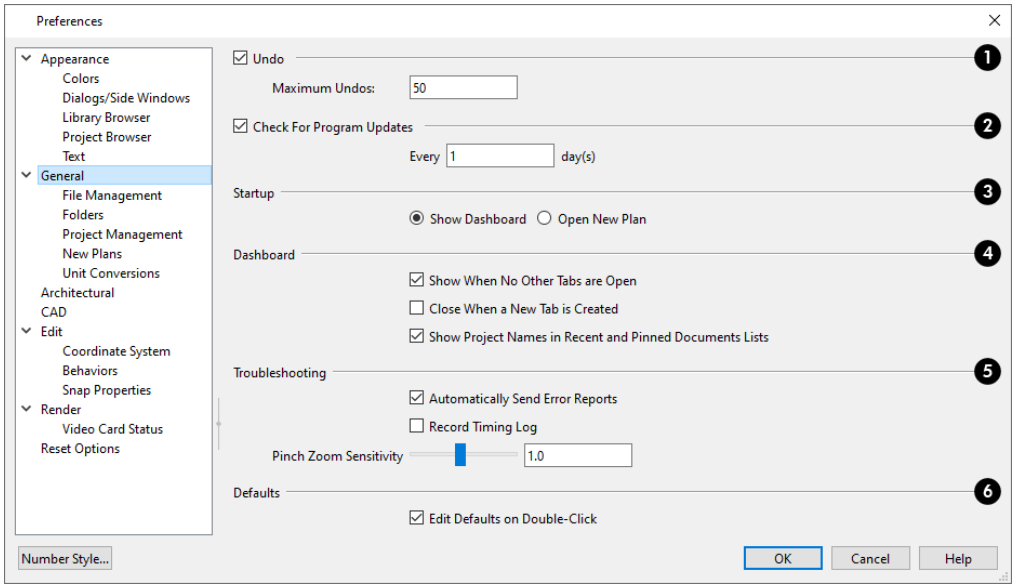
Text Panel



Enter Key in Text Fields

- When **Create New Line** is checked, pressing the ***Enter*** key in a dialog text field that supports multiple lines will result in the cursor moving to a new line. Uncheck this to instead close the dialog when ***Enter*** is pressed.

General Panel



1 Undo

- When Undo is checked, the Undo and Redo commands can be used. See *Undo and Redo on page 222*.
- **Maximum Undos** - Specify how many levels of Undo and Redo you want available, from 1 to 100. Undo files are saved in the Undo Directory.

2 Check For Program Updates

- When **Check For Program Updates** is checked, Home Designer will check for updates when the program is launched.
- By default, Home Designer checks for program updates once a day when the program is launched. You can specify a different frequency, in days, if you prefer.

3 Startup

- When **Show Dashboard** is selected, the Dashboard window opens when Home Designer is launched. See *Dashboard on page 10*.
- When **Open New Plan** is selected, a new plan file is instead created. See *Creating a New Plan or Layout on page 46*.

4 Dashboard

- When **Show When No Other Tabs are Open** is checked, the Dashboard will open when all other view tabs are closed. See *View Windows on page 130*.
- Check **Close When a New Tab is Created** to close the Dashboard tab whenever a new view is opened. When this is unchecked, the Dashboard remains open when a new tab is created.
- When **Show Project Names in Recent and Pinned Documents Lists** is checked, the name of each Document's Project is reported along with the Document name in the Recent and Pinned Documents Lists. Uncheck this to only show the individual Plan and Layout names. This option is only available and only has an effect when Chief Architect Project Management is in use. See *Recently Opened Documents on page 64*.

5 Troubleshooting

- Check **Automatically Send Error Reports** to automatically send a report to Chief Architect in the event of a program error. This box becomes checked automatically if you click the Send Report button in an error message box. If an unsent error report generated during the current program session exists, it will be sent automatically if this box is checked by the user. See *Error Messages on page 1004*.
- Check **Record Timing Log** to have the program create an event timing log in the Hidden User Settings Folder for troubleshooting purposes. Unless you are actively troubleshooting program performance, this box should be unchecked.
- Specify the desired **Pinch Zoom Sensitivity**, which affects the zoom rate for touch screens, trackpads, as well as ***Ctrl/⌘*** + scroll wheel actions in Home Designer. The default value is 1. See *Using Input Devices on page 13*.

Additional options are available in the Mac version of the software only:

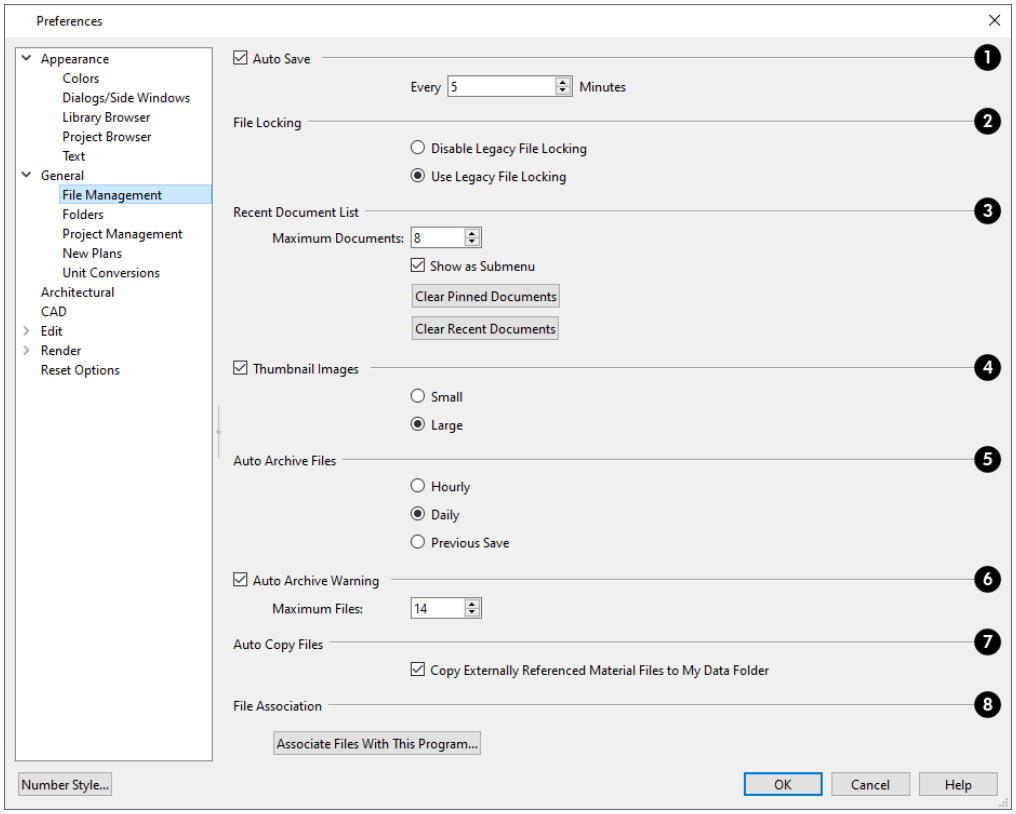
- When **Mouse Movement Optimizations** is checked, zooming using the mouse scroll wheel is optimized for Mac systems. This box is checked by default and should only be unchecked when troubleshooting issues with the mouse scroll wheel in the Mac version of the software.
- Use the **Mouse Scroll Sensitivity** scrollbar or text field to control how sensitive the mouse scroll wheel is when zooming using the mouse scroll wheel in the Mac version of the software.

6 Defaults

- When **Edit Defaults on Double-Click** is checked and you double-click on a toolbar button, the defaults dialog for that tool will open if there is one. Uncheck this if you prefer that this not occur.

File Management Panel

The settings on the File Management panel let you modify functions related to the program's plan and layout file management.



1 Auto Save

- Check **Auto Save**, then enter a value greater than zero in the text field to specify the frequency in minutes that Auto Save files are created. Auto Save files are stored in the Archive folder. See *Auto Save Files on page 70*.

> Even with Auto Save active, you should frequently save your work to the hard drive by selecting File> Save.

2 File Locking

Choose whether or not to lock **.plan** and **.layout** files when they are open when traditional file management is in use. File Locking prevents another program or copy of Chief Architect software from opening and modifying the same file at the same time and is recommended in nearly all circumstances.

- Select **Disable Legacy File Locking** to leave files unlocked when they are open.
- Select **Use Legacy File Locking** to lock files.

3 Recent Document List

Specify the maximum size and location of the Recent Document List. See *Recently Opened Documents on page 64*.

- Specify the maximum number of recently opened **Documents** to list in the Dashboard window and at **File> Open Recent Files**. You can open any of the files in this list by selecting it, making it a quick way to access your most recent work.
- Uncheck **Show in Submenu** to display the Recent File List at the bottom of the File menu rather than in a submenu.
- Click the **Clear Pinned Documents** button to remove any Pinned Documents from the Recent Documents list. See

Recently Opened Documents on page 64.

- Click the **Clear Recent Documents** button to empty the list of all Recent Documents.

4 Thumbnail Images

Thumbnail images are file previews that display when opening or searching for saved plan and layout files, and are also used in the Project Browser. See *Thumbnail Images on page 46*.

- Check **Thumbnail Images** to automatically create thumbnail images when a plan or layout is first saved. If this option is disabled, you can still create thumbnails manually.
- Select either **Small** or **Large** thumbnails. Large thumbnails provide a higher quality image but result in larger file sizes.

5 Auto Archive Files

Select an **Auto Archive Files** option. Every time a file is saved, the current archive file is overwritten. See *Auto Archive on page 69*.

- Select **Hourly** to save and append archive files based on an hourly format.
- Select **Daily** to save and append archive files based on a daily format.
- Select **Previous Save** to archive only the most recently saved file, unappended.

6 Auto Archive Warning

- Uncheck **Auto Archive Warning** to prevent the program from prompting you to manage archive files. When checked, you will be reminded to manage the current file's archives when they reach the number specified below.
- Enter the **Maximum Files**, which is the number of files that must be in a file's Archive directory before the Manage Archives warning will display. See *Manage Archives on page 70*.

7 Auto Copy Files

- When **Copy Externally Referenced Material Files to My Data Folder** is checked, the program automatically makes a copy of the material texture files associated with any custom materials that you create in your Home Designer 2027 Data folder. This can help prevent these files from becoming lost if the originals are deleted. See *About Materials on page 756* and *Home Designer Data on page 74*.

8 File Association

- Click the **Associate Files With This Program** button to direct your computer's operating system to associate all **.plan**, **.layout**, **.calib**, and **.calibz** files with Home Designer 2027. This button will not be active if plan, layout, and library files are already associated with this program and version. See *File Association on page 34*.

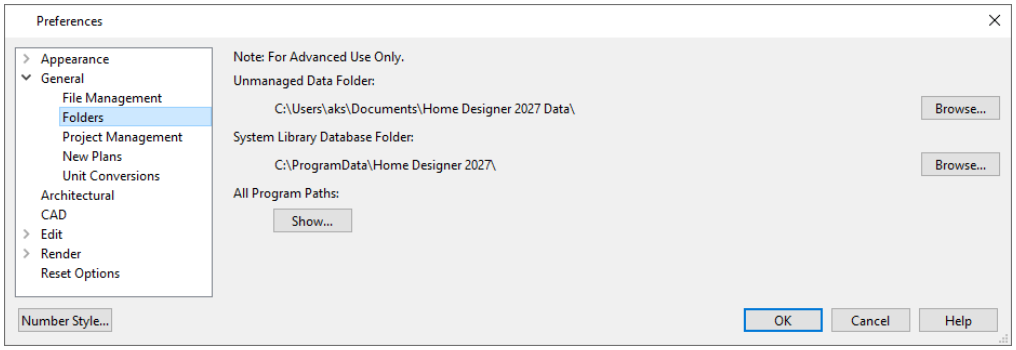
Folders Panel

Home Designer stores many support files in various folders on your computer. The default locations of these directories are listed and can be redefined on the Folders panel if necessary.

You do not need to change default locations under normal circumstances; but if you are using traditional file management, it may be preferable to locate certain files in another location. To specify a new default folder for a particular purpose, click the **Browse** button to the right of that item.



Changing settings on the Folders panel can result in unexpected program functionality.



- Important user-specific information is stored in the **Home Designer 2027 Data** folder, which is located in your Documents directory by default. When Chief Architect Project Management is in use, this is instead labelled **Unmanaged Data Folder**. See *Home Designer Data on page 74*.
  If you specify a new location, any custom toolbars or other settings that you may have will not be copied to the new location: you can do this yourself if you wish.

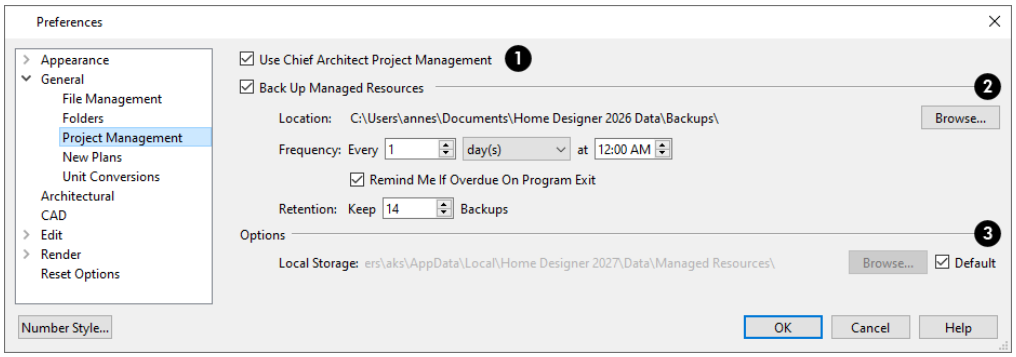
  > Make sure that the location you specify is accessible and has adequate space for the files in this folder. See *Data Folder Name and Location on page 74*.

- The **User Library Folders** contain custom content, including the User Catalog and Trash in the Library Browser. When Chief Architect Project Management is in use, this data is saved in the Resource Store and these settings are not available:
  - When **Keep User Library and Referenced Files in Data Folder** is checked, the location of these folders will update if you specify a new location for the Data folder, above. See *The User Catalog on page 718* and *Deleting Library Items on page 725*.
  - When this is unchecked, these folders will remain in the location specified below.
  - If you specify a new location, you will be presented with the option of automatically copying your existing User Catalog and Trash, as well as your Backdrops, Images, and Textures folders to the new location.
  - Archives, Hotkeys, Scripts, Templates, Toolbars, and the Master List are not copied to the new location. Instead, copies of the installed default folders and files are created.
- All library content aside from your User Catalog is stored in the **System Library Database Folder**. See *Library Content on page 717*.
  - By default, this folder is created in the directory intended for shared application data in your operating system (C:\ProgramData in Windows;/Library/Application Support in macOS).
  - If you specify a new location, the program will automatically copy your library content to that location.

  > If you choose to use a different folder, you must specify a directory on a hard drive with sufficient space to hold these files.

- **All Program Paths** - Click the **Show** button to open the Program Paths dialog, where you can find the location of files that may be needed for troubleshooting purposes. See *Program Paths Dialog on page 1005*.

Project Management Panel



1

See *Chief Architect Project Management on page 35*.

- When **Use Chief Architect Project Management** is checked, the program manages your Project files to protect links between files along with other benefits. Uncheck this box if you prefer to use traditional file management.
  - This setting cannot be changed if any plan or layout files are currently open.
  - If you uncheck this box, you will be prompted to back up your resources. It is recommended that you do so. See *Importing and Exporting Projects on page 60*.

2 Back Up Managed Resources

See *Back Up Managed Resources on page 68*.

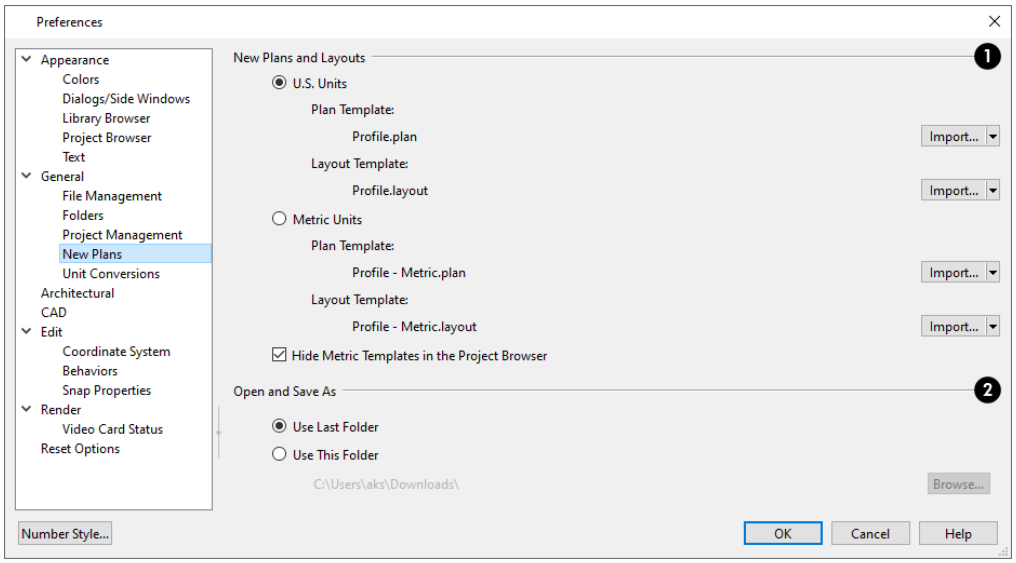
- Check **Back Up Managed Resources** to create a zipped folder containing copies your Assets, Database Libraries, Projects, and Settings.
- The **Location** where Backups are saved on the local system is reported here. By default, it is located in the Home Designer 2027 Data folder; however, you can click the **Browse** button to select a different location.
  - Set the **Frequency** at which Backups are created by specifying an interval value of either Hours or Days and choosing a time of day.
  - When **Remind Me If Overdue on Program Exit** is checked, the program will present you with the option of backing up your Managed Resources if the last scheduled backup was unable to run. Although it is helpful to know if a scheduled backup did not run, you can uncheck this if you prefer to not be notified.
  - Specify the **Retention** of Backups, which is the maximum number of saved Backups for each Project. Once this value is reached, the oldest Backups are deleted from the system.

A Managed Resource Backup can only run if there is sufficient available disk space. If there is not, a warning message will report which drive is being used and approximately how much space is required. You can find out how much space is available on that drive in the System Information dialog. See *System Information Dialog on page 1004*.

3 Options

- The **Local Storage** location of the files associated with your Projects is reported here. Although not recommended, you can uncheck **Default** and click the **Browse** button and choose a different location.
- Click the **Migrate Forward Legacy Projects** button to migrate any Projects from previous program versions found on the local system into the Version 2027.

New Plans Panel



Open and Save As
Control how the program behaves when a new plan is opened or an existing plan is saved.

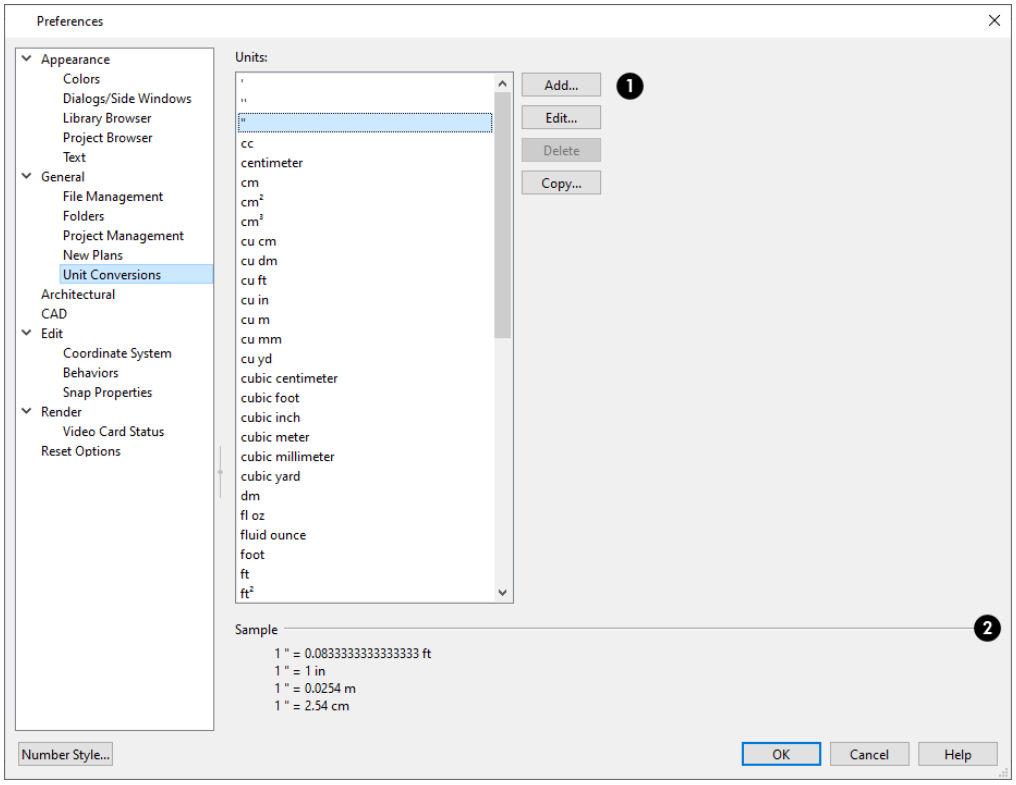
- **Use Last Folder** refers the program to the directory last used to save or open a plan file.
- **Use This Folder** refers the program to a particular location specified by you.
- Click the **Browse** button to define a particular directory when **Use This Directory** is selected.

Unit Conversions Panel

In many places throughout Home Designer, you can specify the size of an object with any Length unit listed on the Unit Conversions panel. Using the data on this panel, the program will convert your entry into the unit set in the Dialog Number/Angle Style dialog. See *Dialog Number/Angle Style Dialog on page 119*.

These conversions are also useful when you import drawings. When an object is drawn in a Home Designer plan file, it is always at its true, unscaled size and the drawing is only scaled when you print it. This means that if you import a scaled drawing, you must compensate for its scaling by creating a custom unit of measurement. See *Import Drawing Assistant on page 888*.

The default unit conversions are locked and cannot be changed, but custom conversions can be added to the list and later modified.



1 Units

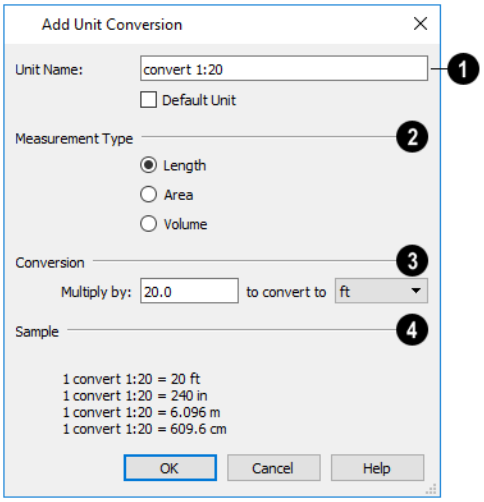
A list of available units of measurement displays here. Click on the name of a unit to select it.

- **Add**, **Edit**, **Delete**, or **Copy** the unit conversions. Certain unit conversions are locked and cannot be edited or deleted.
- If you click **Add**, **Edit**, or **Copy**, the Add Unit Conversion dialog displays.

2 Sample

An example of how the unit selected above converts to a selection of similar units. You can use this to verify that any unit conversion you create is correct.

Add Unit Conversion Dialog



1 Unit Name

- Type a short, descriptive name of the new unit. Names must be unique: the names of units installed with the program cannot be used.
- Names can include any characters, as well as spaces. Bear in mind, though, that names of units for measuring length that have numbers in them may be unusable if entered in some dialogs in the program.
- Check **Default Unit** to display this new unit in places that present lists of available units. For example, if you have inches as units and make inches a default, inches appear on the list when you are given a choice of units, such as in the Import Drawing Assistant. In other places, such as the Materials List, all units are listed.

2 Measurement Type

Specify what the new unit measures.

- Select the appropriate radio button: **Length**, **Area**, or **Volume**.

3 Conversion

- Specify how much to **Multiply by** your custom unit **to convert to** the unit you select from the drop-down list. A measurement type must be selected before the list is populated.

4 Sample

An example of the Unit Conversion defined above displays here.

When importing a drawing with a 1” = 20’ scale, for example, create a unit to convert this scaling to 1” = 1”.

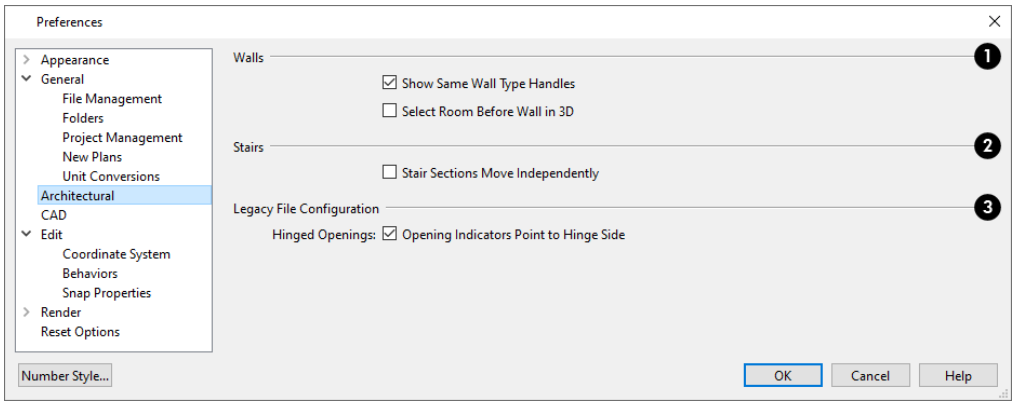
To create a new unit of measurement

1. Click the **Add** button to open the Add Unit Conversion dialog.
2. Type a short, descriptive name like “convert 1:20” in the **Unit Name** field.
   - Because this unit will be used only for scaling conversion, including numbers in its name will not cause any issues.
3. Select **Length** as the **Measurement Type**.
4. Type 20 in the **Multiply by** field.
5. Select “ft” from the drop-down list.

   Note: You can achieve the same results if you Multiply by 240 to convert to inches.

6. Click **OK** to close the dialog.

Architectural Panel



1 Walls

Select the desired default behaviors for selected walls.

- Check **Show Same Wall Type Handles** to display edit handles on selected walls that draw new walls of the same type when dragged. See *Same Wall Type Edit Handles on page 280*.
- Check **Select Room Before Wall in 3D** to select the room defined by a wall when you click on the wall in 3D views. See *Selecting Rooms on page 317*.

2 Stairs

- Check **Stair Sections Move Independently** to allow stair sections connected by landings to move separately, without moving the entire staircase. See *Editing Stairs and Ramps on page 555*.

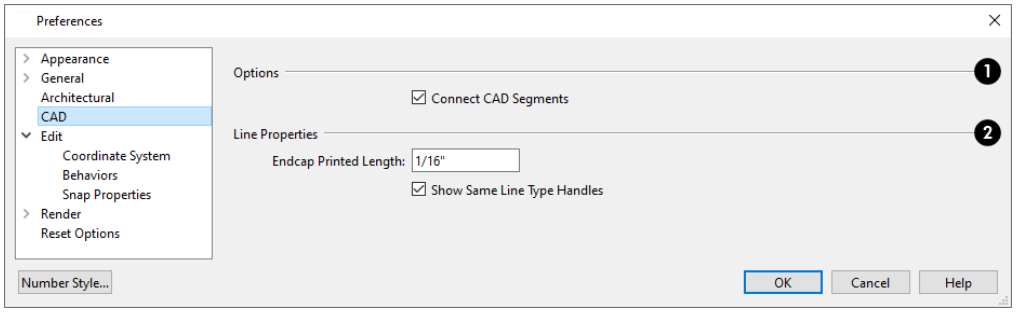
3 Legacy File Configuration

Specify how obsolete settings are handled when legacy files are opened in the current program version. See *Considerations for Legacy Files on page 1007*.

- When **Opening Indicators Point to Hinge Side** is checked, the opening indicators for hinged openings point to the hinge side of the opening in legacy files opened in Home Designer 2027. When unchecked, opening indicators in these files point to the handle side. See *Opening Indicators on page 402*.

CAD Panel

The CAD panel contains settings that define how Sun Angles and other CAD and CAD-based objects behave. See *Polylines on page 244*.



1 Options

- Uncheck **Connect CAD Segments** to prevent CAD objects from snapping together to form polylines as they are drawn or edited. See *Connect CAD Segments on page 183*.

> Note: Unlike other Preferences, the program always resets Connect CAD Segments to be on whenever you close the program.

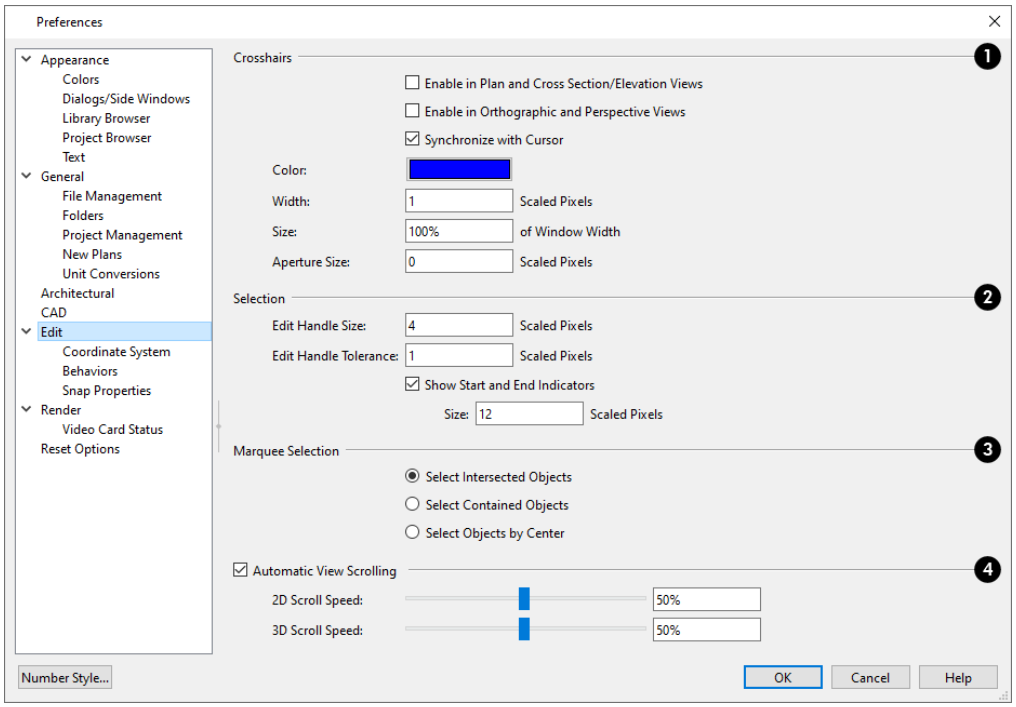
2 Line Properties

These settings affect open CAD shapes, including lines, arcs, and splines.

- **Endcap Printed Length** - The beginning and end of CAD lines that use a dashed line style are sometimes difficult to distinguish. Endcaps can be placed to eliminate this problem. Specify the printed endcap length in inches (mm).
- Uncheck **Show Same Line Type Handles** to turn off the display of these edit handles on selected CAD objects. See *Same Line Type Edit Handles on page 245*.

EDIT PANEL

The settings on the EDIT panel of the Preferences dialog control the appearance of the cursor and selection behavior of edit handles. See *Using the Crosshairs on page 171*.



1 Crosshairs

You can use a cursor with Crosshairs in different view types and control its appearance. See *Crosshairs on page 15*.

- Check **Enable in Plan and Cross Section/Elevation Views** to use a cursor with crosshairs in plan and cross section/elevation views. This option is checked by default.
- Check **Enable in Perspective Views** to use a cursor with crosshairs in perspective camera views and overviews.
- When **Synchronize with Cursor** is checked, the mouse pointer and crosshairs always move together on screen. If you feel that they do not keep up with your mouse movements, try unchecking this option.

- Click the **Color** bar to open the Select Color dialog and specify the color of the crosshairs.
- Specify the **Width** of the crosshairs lines, in Scaled Pixels.
- Crosshairs **Size** is specified as a percentage of the view **Window Width**. Specify the **Size** as 100% to extend the crosshairs across the entire screen.
- Set the **Aperture Size**, measured in Scaled Pixels. The aperture is the space where the crosshairs meet. A value of 0 makes the crosshairs meet at a point. Larger numbers leave a gap in the center.

2 Selection

Customize the appearance of some types of selected objects, and edit handle sensitivity.

- Enter an **Edit Handle Size** in Scaled Pixels. The edit handles are twice this number of pixels plus one. For example, the default value is 4, which results in a handle that is 9 x 9 pixels (4 x 2 = 8, and 8 + 1 = 9). The minimum value is 1, which results in a handle that is 3 x 3 pixels.
- Enter a value, in Scaled Pixels, for **Edit Handle Tolerance** to specify how close to an edit handle you must click in order to select it. The default value is 0.
- When **Show Start and End Indicators** is checked, an S and an E display at the start and end points of a selected wall or the selected edge of a CAD-based object. This can make it easier to edit the selected edge in the object's specification dialog. Uncheck this box if you prefer not to see these indicators. See *Selected Edge on page 185*.
- Specify the **Size** of the Start and End Indicators, in Scaled Pixels.

3 Marquee Selection

Specify program behavior when selecting objects using a marquee. See *Marquee Select on page 186*.



Select Intersected Objects selects any objects whose bounding boxes are intersected by or located within the marquee.



Select Contained Objects selects only objects located entirely within the marquee. This option provides the best results in most situations.



Select Objects by Center selects only objects whose center points are located within the marquee.



You can add the Marquee Selection Modes tools to your toolbars. See *To add a button to a toolbar on page 124*.

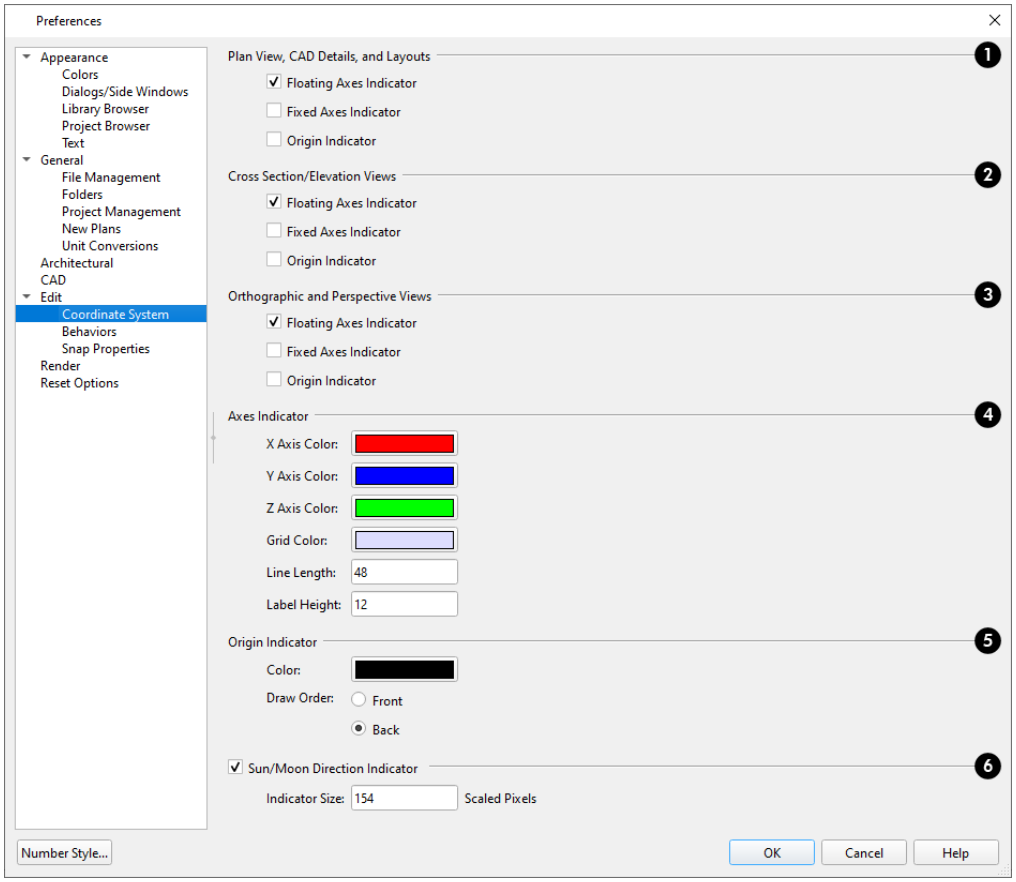
4 Automatic View Scrolling

See *Panning the Display on page 137*.

- When **Automatic View Scrolling** is checked, a view window's extents will adjust to keep the pointer in the view when drawing or editing an object. Uncheck this to prevent the view from adjusting when a pointer is moved beyond its extents while drawing or editing.
- Adjust the **2D Scroll Speed** using the scroll bar or text field. This setting affects plan views.
- Adjust the **3D Scroll Speed** using the scroll bar or text field. This setting affects camera views and cross section/elevation views.

Coordinate System Panel

Indicators for the X, Y, and Z drawing space axes and/or the drawing space origin can be set to display in a variety of views for reference purposes. See *Coordinate System Indicators on page 131*.



1 Plan View and Layouts

Check the box beside each indicator type that you want to display in these view types. In these 2D views, the X and Y axes are always shown.

2 Cross Section/Elevation Views

Check the box beside each indicator type that you want to display in these view types. In these views, the Z axis is always shown, and the other axis is dependent on the camera's direction. If the camera's line of sight is at an angle that is not parallel to either the X or Y axis in plan view, all three axes will be represented.

3 Orthographic and Perspective Views

Check the box beside each indicator type that you want to display in these 3D view types. In these views, the X, Y, and Z axes are always shown.

4 Axes Indicator

- The **X Axis**, **Y Axis**, and **Z Axis Colors** display in the Color bars. Click a Color bar to choose a new color if you wish. See *Select Color Dialog on page 165*.
- Specify the **Grid Color**.
- Specify the **Line Length**, which controls the size of the Floating Axis Indicator in all view types.
- Specify the **Label Height**, which controls the size of the X, Y, and Z axis labels in all view types.

5 Origin Indicator

- Specify the **Color** of the Origin Indicator crosshairs. See *Select Color Dialog on page 165*.
- Specify the Origin Indicator's **Draw Order**: select **Front** to draw the Origin Indicator in front of objects in the view, or select **Back** to draw it behind all objects in the view. See *Drawing Groups on page 156*.

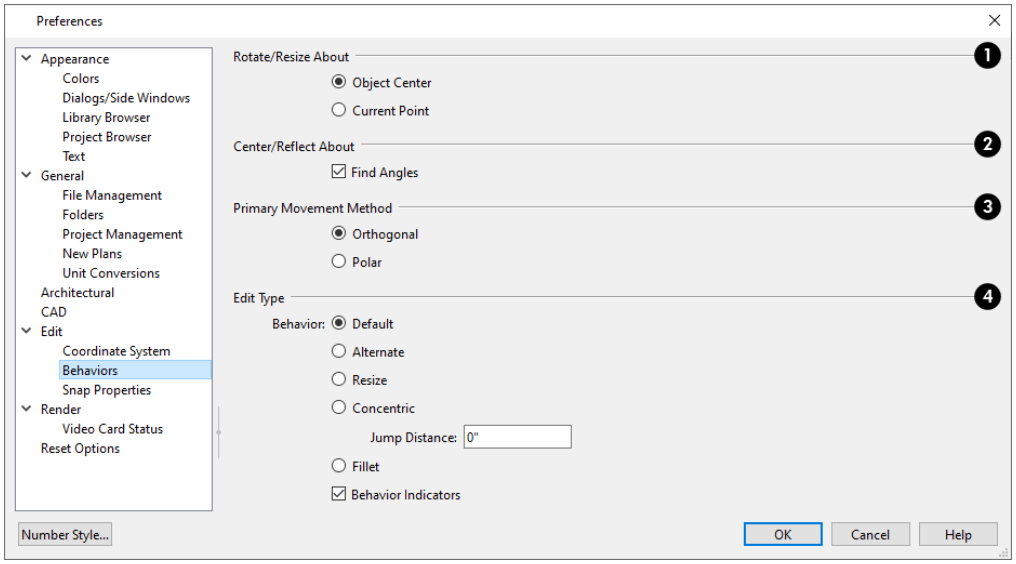
6 Sun/Moon Direction Indicator

See *Move Sun/Move Moon on page 822*.

- When this box is checked, a direction indicator displays at the bottom left corner of the view window, providing a sense of where the Sun or Moon is located relative to the model and the direction it moves when you click and drag. Uncheck it to not display this indicator.
- Specify the on-screen **Size** of the Sun/Moon Direction Indicator, in Scaled Pixels.

BEHAVIORS PANEL

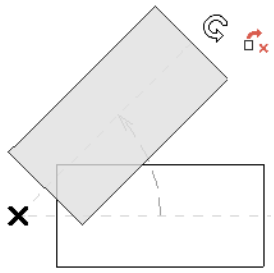
The settings on the BEHAVIORS panel of the Preferences dialog define basic editing behaviors of CAD and architectural objects.



1 Rotate/Resize About

Define the point about which an object or a group of objects rotates or resizes. See *Rotate/Resize About on page 141*.

- Select **Object Center** to rotate or resize the selection about its center point. Object Center is the default setting.
- Select **Current Point** to rotate the object about the current CAD point instead.
- To resize a CAD object about a current point, select the **Resize** Edit Type.
- This function can also be accessed by selecting **Edit> Edit Behaviors> Resize** . See *Defaults, Preferences, and Edit Behaviors on page 179*.
- **Rotate Jump** defines the angles an object or group of objects jumps to as it is rotated. When this value is set to 0°, the Allowed Angles set in the Plan Defaults dialog are used; otherwise, Allowed Angles are ignored.



A rectangular polyline snaps at Allowed Angles as its Rotate edit handle is dragged.

2 Center/Reflect About

See *Center Object on page 170* and *Reflect About Object on page 175*.

- When **Find Angles** is checked, the Center Object and Reflect About Object tools allow you to center or reflect the selection relative to angles formed by walls. Uncheck this to only center or reflect relative to object edges.

3 Primary Movement Methods

Control the directions that you can move objects using their edit handles.

- Select **Orthogonal** to move an object perpendicular to any of its edges.
- Select **Polar** to move an object at Allowed Angles.

4 Edit Type

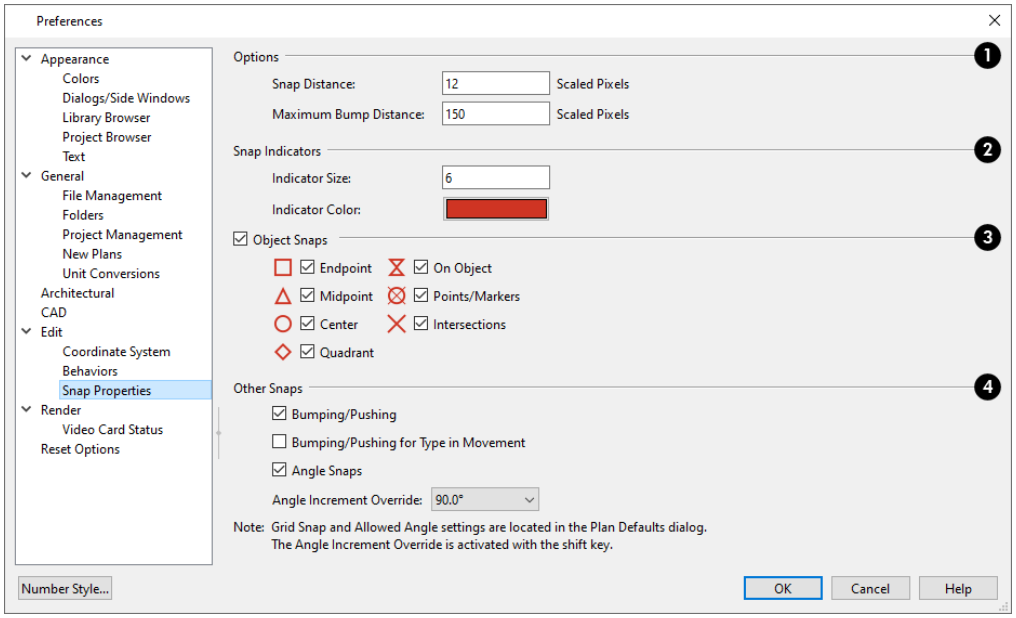
See *Defaults, Preferences, and Edit Behaviors on page 179*.

- Specify the active Edit Behavior.
- Specify the desired **Jump** increment for Concentric resizing. This setting is also found in the Set Concentric Jump dialog. See *Concentric Resize on page 207*.
- Uncheck **Behavior Indicators** to turn off the display of the mouse pointer icons associated with these Edit Behaviors. This box is checked by default.

> Note: Unlike other Preferences, the program always restores the Default Edit Behavior whenever you close the program.

Snap Properties Panel

The settings on the Snap Properties panel of the Preferences dialog control the behavior of Object Snaps as well as the appearance of snap indicators. See *Object Snaps on page 142*.



1 Options

- Specify the **Snap Distance**, which is how far the cursor can be from a snap point for the snap to occur. This value is measured in Scaled Pixels; the default value is 12.
  When working with very small objects, you may find it helpful to reduce this value; when working with very large objects, it may be helpful to increase it.
  This setting also controls the minimum length of camera and cross section/elevation lines of sight. See *Creating Camera Views on page 784*.
- Specify the **Maximum Bump Distance**, which is the distance in Scaled Pixels that a selected object must be dragged to override bumping and move past an obstructing object.

2 Snap Indicators

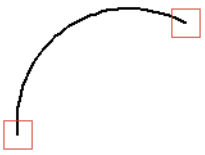
- Specify a snap **Indicator Size** in pixels. This setting also controls the size of temporary CAD Points. See *Place Point on page 227*.
- Click the color bar to select a snap **Indicator Color** from the Select Color dialog. See *Select Color Dialog on page 165*.

3 Object Snaps

These options can also be turned on and off using the toggle buttons on the toolbar and/or keyboard hotkeys.

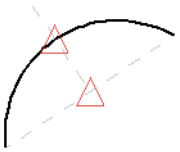
Check **Object Snaps** to enable the object snap options, below.

Endpoint enables snapping to the ends of lines, arcs, splines and other objects.



Endpoint snaps

Midpoint enables snapping to the midpoint of an object such as a line or arc. For objects such as boxes, you can snap to the midpoint of any side of the box.



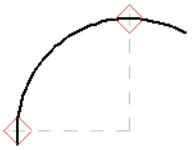
Midpoint snaps

Center enables snapping to the center of cabinets, fixtures, furniture, as well as circles and arcs.



Center snap

Quadrant enables snapping to the left, right, top, or bottom of an object. Only used for arcs and circles.



Quadrant snaps

On Object enables snapping to any point on the selected object, including CAD objects and cabinets.



On Object snap

Points/Markers allows you to snap to temporary CAD points. Note that this only affects CAD Points, not Text Markers. See *Point Tools on page 227*.



Points/Markers snap

Intersection enables snapping to the intersection of two objects, such as the intersection of a line with another line. Intersection snapping also snaps extension lines to objects, and allows you to snap two extension lines to each other.



Intersection snap

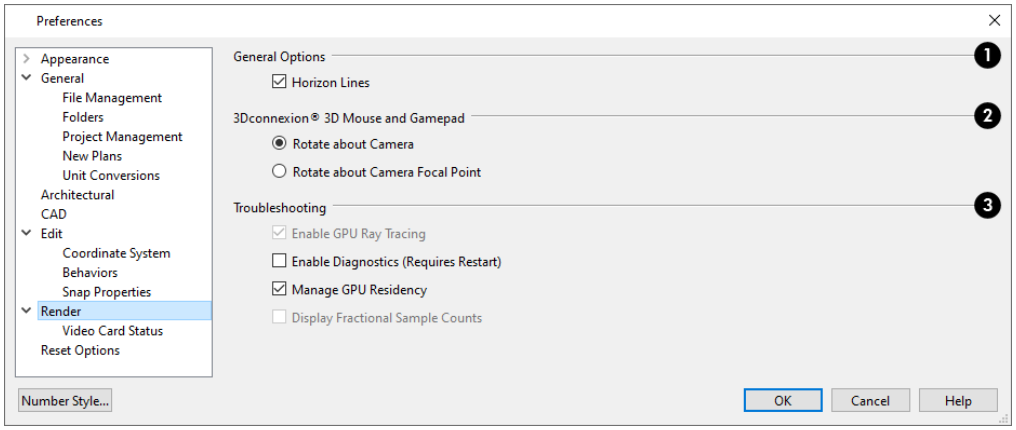
When Intersection snapping is enabled, wall extension line snapping will also occur. See *Creating Walls on page 267*.

4 Other Snaps

- When **Bumping/Pushing** is checked, objects being moved will bump into and move other objects. Uncheck this to allow objects to move through and past other objects without stopping.
- Check **Bumping/Pushing for Type-in Movement** to cause objects moved using dimensions to bump into objects in their path of movement and stop. When unchecked, objects moved using type-in methods move to their specified destination locations. See *Moving Objects on page 167*.
- When **Dimension Line Separation Snaps** is checked, a dimension line will snap to First Line Offset and Line Separation locations as it is being moved. Uncheck this to prevent dimension lines from snapping in this manner. These locations are set in the Dimension Defaults dialog. See *Setup Automatic Panel on page 343*.
- Check **Angle Snaps** to enable snapping to Allowed Angles. See *Angle Snaps on page 143*.
- Select an **Angle Increment Override** from the drop-down list. This is the angle increment used by Angle Snaps when the ***Shift*** key is held down.

RENDER PANEL

The settings on the RENDER panel control how 3D views are generated and navigated.



1 General Options

- **Horizon Lines** are lines that generate along the curved edges of symbol objects in Vector Views. Uncheck this box to increase the speed of Vector View generation but also suppress these lines. See *Vector View on page 837*.

2 3Dconnexion® 3D Mouse and Gamepad

See *3Dconnexion® 3D Mice on page 791*.

- Select **Navigate about Camera** to center mouse movement about the location of the camera.
- Select **Navigate about Camera Focal Point** to center mouse movement about the location of the camera's focal point. See *To create a camera view on page 784*.

3 Troubleshooting

- In the Windows version of the program, uncheck **Enable GPU Ray Tracing** to disable enhanced shadow and ambient occlusion quality in 3D views that support these effects. This box is checked by default and should only be unchecked for troubleshooting purposes. If this option is disabled, it is not supported on the system.

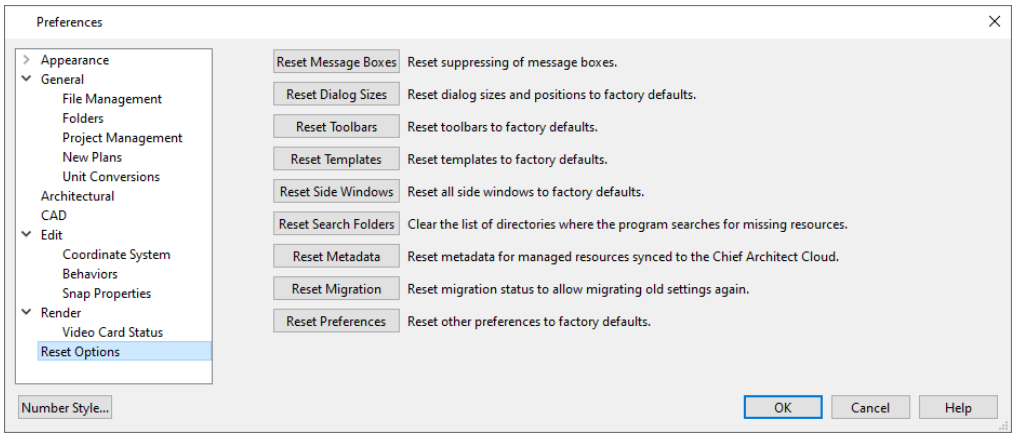
- In the Windows version of the software, the **Enable Diagnostics (Requires Restart)** option makes it possible for information about certain errors to be collected. Restarting with Diagnostics enabled will degrade program performance and should only be done when requested Chief Architect Technical Support. See *Contacting Technical Support on page 1003*.
- **Manage GPU Residency** helps improve performance when printing very large files. This option is checked by default and should only be unchecked for troubleshooting of printing issues in the Windows version of the software only. See *Printing and Plotting on page 984*.
- In the Mac version of the software, checking **Disable Render Target Aliasing** may address pixelation in camera views. This option is unchecked by default on most systems.
- In the Mac version of the software, the **Enable Retina Render Targets** option is checked by default but should be unchecked on systems that do not have Retina displays.

Video Card Status Panel

The Video Card Status panel displays information about your video card that may be important if you are having problems generating 3D views.

Reset Options Panel

In order for some of the Reset Options to take effect, you will need to restart Home Designer.



- If message boxes have been suppressed, you can make them display again by clicking **Reset Message Boxes**. See *Message Boxes on page 25*.
- Click the **Reset Dialog Sizes** button to restore all dialog boxes to their original sizes and positions. See *Dialogs on page 19*.
- Click the **Reset Toolbars** button to reset all toolbars to their original states. If you are encountering warning messages regarding toolbars, this option may resolve the issue. Note that any custom toolbars that you may have created will be discarded if you click this button. See *Customizing Toolbars on page 123*.
- Click the **Reset Templates** button to restore the templates used for creating new plan and layout files. See *Template Plans on page 46*.
- Click the **Reset Side Windows** button to restore all side windows to their original sizes and positions. Tool Palette Settings are also reset, as are the panes in the Library Browser. See *Side Windows on page 16*.
- Home Designer retains a list of locations where you have located missing files in the past. If you find that the program takes a long time searching before informing you that files are missing, you can click the **Reset Search Folders** button to clear this list. See *Referenced Files on page 71*.

- Click the **Reset Migration** button to be prompted to migrate your content and settings from an older program version the next time you launch the software. See *Migrating Legacy Content on page 1006*.
- Click the **Reset Preferences** button to restore all preferences to those originally installed with the program.

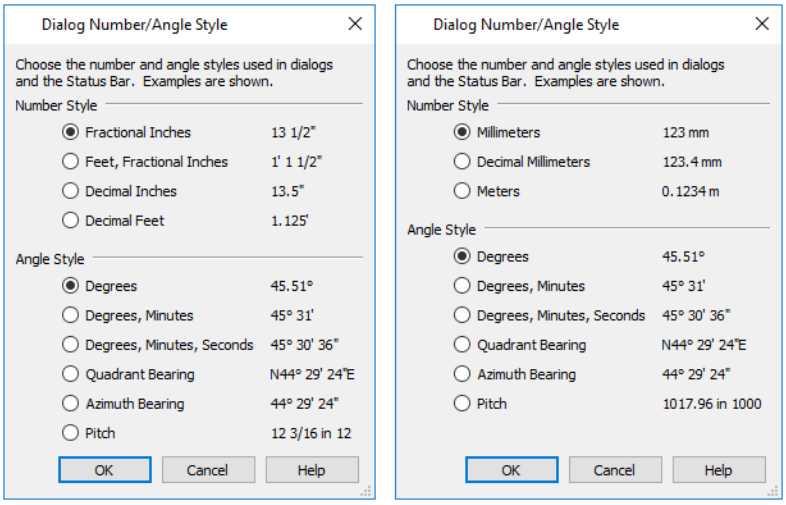
> Resetting all preferences to default can be a drastic step and should be done with caution.

Dialog Number/Angle Style Dialog

At the bottom of many dialogs, you can click the **Number Style** button to open the Dialog Number/Angle Style dialog.

The settings in this dialog are global and control the format of distances, coordinates and angles of angles in dialog boxes and inline text fields, as well as in the Status Bar. They are also persistent for the current program session only: when you restart the program, they are reset. See *The Status Bar on page 24*.

These settings control the format of values used in dialogs but do not limit how you must enter these values. For example, if you set your Number Style to use Inches, values will display using fractional inches. You can, however, enter values using decimal inches, inches and feet, or even decimal feet by including the appropriate unit indicators. When the dialog you're typing in updates, the value will be converted to fractional inches.



When U.S. Units are used, the **Fractional Inches** and **Feet, Fractional Inches** options use fractional inches with denominators of 2, 4, 8 and 16. A few objects, notably text, dimensions, and floor, ceiling and wall structure layers can be sized using smaller fractions with larger denominators.

Angles can be displayed using one of the following methods:

- **Degrees/Minutes/Seconds** - Measured counterclockwise from a line drawn horizontally to the right of the angle's vertex. Useful for most drawing tasks. Select the level of accuracy that you require.
- **Quadrant Bearings** - Measured from a vertical line representing North/ South, Quadrant Bearings use directional bearings in their measurements. Useful for site drawings.
- **Azimuth Bearings** - Measured from a line drawn straight up from the angle's vertex (ie, North on a site plan). Useful for site drawings, Azimuth Bearings use degrees, minutes, and seconds in their measurements.
- **Pitch** - Defined as a ratio of vertical rise to horizontal run. In U.S. Unit plans, the run is always 12"; in metric plans, it is 1000 mm. Useful for roofs.

Quadrant and Azimuth Bearings are affected by the orientation of the **North Pointer**  , if one is present in the current plan. See *North Pointer on page 830*.

Toolbars and Hotkeys

Chapter 5

Two of the most efficient ways to access Home Designer's tools and settings are the toolbars and keyboard shortcuts, also referred to as hotkeys.

Toolbar Arrangement

Home Designer's toolbars provide fast access to the program's most commonly used tools and settings, and are organized so that related tools are grouped together and easy to find.

> If a tool or setting is active, a small check mark will display at the lower right corner of its button icon.

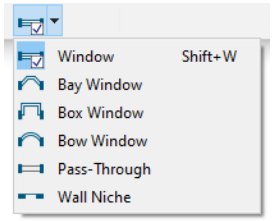
The toolbars that display in a given view depend on the view type. For example, the toolbars that are available in floor plan and 3D views are not available in Materials Lists. Some toolbars are available in more than one type of view. If a tool cannot be used in that view, its icon will appear pale grey in color.

You can turn off the display of toolbars entirely or turn them on again by selecting **View> Toolbars** .

Many of Home Designer's tools are organized into families of related tools which can be accessed using either of two styles of toolbar interface: the **Child Tool Palette** or **Drop Down** tools. You can select the interface that you prefer in the Preferences dialog. See *Appearance Panel on page 93*.

Drop-Down Tools

Click on the arrow to the right of a button to display a drop-down list of related tools. For example, click the arrow to the right of the **Window** button to display a drop-down list of the other Window Tools.



The most recently selected tool displays in the toolbar.

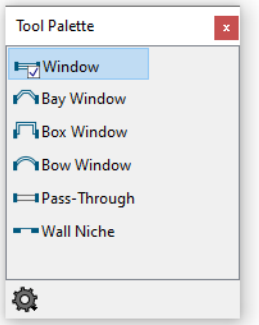
Child Tool Palette

An alternative to Drop-Down toolbars is the Parent button and Child Tool Palette interface. Parent toolbar buttons have a blue triangle in the lower right corner. When you select a Parent button, its Child tools display in the Child Tool Palette. If the Child Tool Palette has been closed, it will open. You can open the Tool Palette at any time, even when Drop Down tools are enabled, by selecting **View>Tool Palette** . See *View Tools on page 135*.

By default, the Child Tool Palette is docked on the left side of the program window; but it can be undocked and moved, as well as resized and closed, just like other side windows. See *Side Windows on page 16*.

As long as it is open, the Child Tool Palette will also display the members of a selected tool's family when the Drop Down interface is active. If you select a tool that does not belong to a family, the previously selected tool's family will continue to display in the Tool Palette.

When you click the **Window Tools** Parent button, for example, its Child buttons display in the Child Tool Palette.



Click the **Settings** button at the bottom of the palette to select how the tools within it are presented:

Fit Palette: resize the palette so that it is one row wide.

Grid View: display only the button icons of the child tools in a grid that may have multiple rows, depending on the width of the palette side window.

List View: display child tools in a vertical list with each tool's button icon and name in a row.

Maintain Width: prevent the width of the Tool Palette from changing when it is docked to the side of the program window.

The Edit Toolbar

The Edit Toolbar is a special toolbar that only features buttons when one or more objects in the drawing window is selected. By default, it is located at the bottom of the program window, just above the Status Bar. The buttons on this toolbar vary, depending on the type of object selected, the current view, and how you selected the object; when no object is selected, it is blank.



Toolbar Configurations

Home Designer installs a set of Toolbar Configurations, which control what tools are initially included in the toolbars, as well as where these toolbars are located.

The **Default Configuration** displays architectural tools used for house design, including walls, windows, doors, stairs, cabinets, etc.

The **Terrain Configuration** displays buttons associated with the terrain and road tools, including the plant and sprinkler tools. See *Terrain Toolbar Configuration on page 898*.

The **Space Planning Configuration** displays buttons associated with the Space Planning Assistant. See *Space Planning on page 76*.

To switch toolbar configurations

There are several ways to switch from one Toolbar Configuration to another.

- Click a Toolbar Configuration button.
- Choose a configuration in the Toolbar Customization dialog. See *Toolbar Customization Dialog on page 125*.
- Right-click in an empty space on any toolbar and select a **Toolbar Configuration** from the contextual menu.

Toolbar Button Size

By default, toolbar buttons are sized at 20 pixels, which works well on most computer monitors running default system settings. If you wish, you can increase or decrease this size in the Preferences dialog. See *Appearance Panel on page 93*.

Customizing Toolbars

The Toolbar Configurations installed with the program are designed to help make tools quickly and easily accessible; however, for greatest efficiency, you may want to customize them to meet your own particular needs.

Any changes made to an existing Toolbar Configuration will be saved whenever you:

- Switch to a different configuration;
- Close the Toolbar Configuration dialog;
- Exit out of Home Designer.

Bear in mind that the size of the Home Designer program window and the space available for toolbar button depends on your monitor's size and screen resolution settings.

Toggling Toolbars



You can turn off the display of all toolbars entirely or turn them on again by selecting **View> Toolbars**.

There are also several ways to toggle individual toolbars on or off:

- Right-click in an empty space on any toolbar and mouse over **Toolbars** in the contextual menu. In the submenu, toolbars with a check mark next to their name are on in the currently active view. Click on a toolbar name to turn it off if it is on, or vice versa.
- Toolbars can be turned on or off in the Toolbar Customization dialog. See *Toolbar Panel on page 127*.
- If a toolbar is undocked, click the **Close** button at its top right corner.

Moving Toolbars

You can move any toolbar to a different location by clicking and dragging its dotted grab bar. Toolbars can be docked to any side of the program window, or they can be undocked and left floating.

Undocked toolbars can be moved outside the program window, and they can be closed completely. They can also be reshaped; however, they cannot be resized in such a manner that any buttons become hidden.

Changes to toolbars are saved between program sessions.

Adding and Removing Buttons

Toolbar buttons can be added to or removed from toolbars using the Toolbar Customization dialog.

To add a button to a toolbar

1. Select **Tools> Toolbar and Hotkeys> Customize Toolbars** and go to the TOOLS panel of the Toolbar Customization dialog. See *Tools Panel on page 125*.
2. Select the **View Type** that you want to add a toolbar button in.
   - You can add any buttons you like to any View Type; however, not all buttons will necessarily be available for use in all views.
3. Search or browse to find the desired button or its parent in the **Available Toolbar Buttons** list.
4. Click and drag the button you wish to add to a toolbar out of the dialog box.
   - Drop it onto an existing toolbar to add the button to that toolbar.
   - Drop it away from an existing toolbar to create a new toolbar. See *To create a new toolbar on page 124*.

To remove a button from a toolbar, open the Toolbar Customization dialog, then click and drag the button out of the toolbar area.

Buttons cannot be added to or removed from the Edit Toolbar. See *The Edit Toolbar on page 122*.

ADDING AND REMOVING TOOLBARS

Toolbars can be added to or removed from each View Type using either the toolbar contextual menu or the Toolbar Customization dialog.

To add or remove an existing toolbar

1. Right-click on an empty space in a toolbar.
2. In the contextual menu, click on the name of a toolbar.
   - If the toolbar has a check mark next to it, clicking on it will clear the check mark and remove the toolbar from the current View Type.
   - If the toolbar does not have a check mark next to it, clicking on it will add the toolbar to the current View Type.

You can also specify which toolbars are used in each View Type in the Toolbar Customization dialog. See *Toolbar Panel on page 127*.

CREATING NEW TOOLBARS

New toolbars can be created using the Toolbar Customization dialog.

To create a new toolbar

1. Select **Tools> Toolbar and Hotkeys> Customize Toolbars** and go to the TOOLS panel of the Toolbar Customization dialog.
2. Select the **View** type to which you want to add a new toolbar.
3. Select the first button that you want on the toolbar from the **Available Toolbar Buttons** list.
4. Click and drag the button out of the dialog box and drop it:
   - In an empty section of the program window border to create a new toolbar docked at that location.
   - In the drawing area to create a new, undocked toolbar.
5. Additional buttons can be added by dragging them onto to this new toolbar.



Use the Empty Space button in your toolbars as a spacer.

6. A new toolbar will inherit the name of the first tool that was added to it, preceded by the word Custom. You can assign a new name on the TOOLBAR panel of the Toolbar Customization dialog.
7. Also on the TOOLBAR panel, specify the View Types that the new toolbar should be used in.

LOCKING TOOLBARS



When your toolbars are organized the way you want them, you can select **Tools> Toolbars> Lock Toolbars** to prevent them from being moved. Select the same tool to unlock toolbars. **Lock Toolbars** is also available in the contextual menu for toolbars: right-click in an empty space on any toolbar to access it. See *Contextual Menus on page 18*.

RESTORING TOOLBARS

To discard your changes and restore all installed Toolbar Configurations to their original condition, click the **Reset Toolbars** button in the Toolbar Customization dialog. See *Toolbar Panel on page 127*.

You can also restore toolbars to their original state in the Preferences dialog; however, please note that if toolbars are restored using this option, any custom configurations that you have created will be discarded. See *Reset Options Panel on page 118*.

Toolbar Customization Dialog



Select **Tools> Toolbars and Hotkeys> Customize Toolbars** to open the Toolbar Customization dialog. You can also right-click in an empty space in any toolbar and select **Customize Toolbars** from the contextual menu.

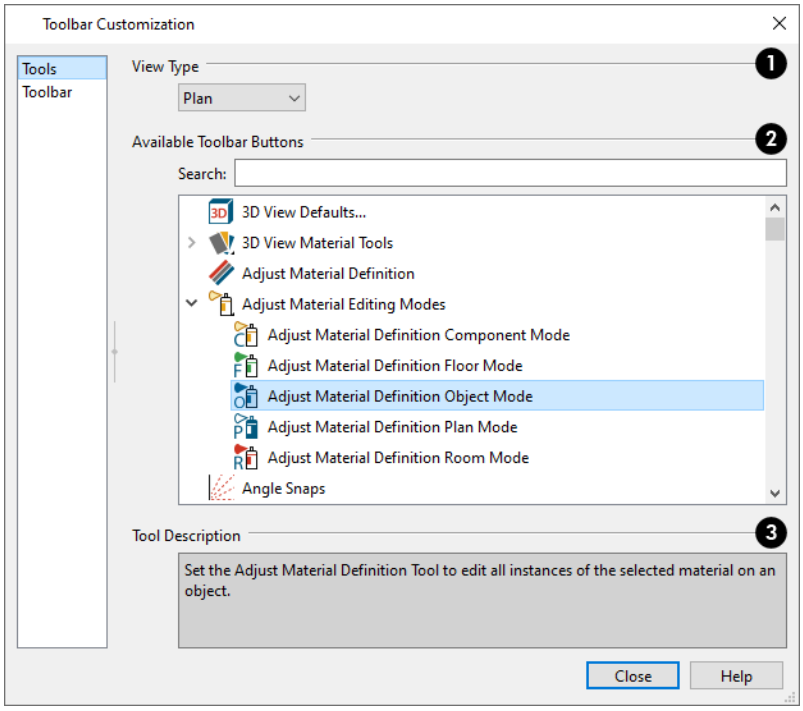
In the Toolbar Customization dialog, you can:

- Add and remove buttons from toolbars.
- Specify which toolbars display in different view types.
- Select the active Toolbar Configuration.

The Toolbar Customization Specification dialog has the following panels:

TOOLS PANEL

From the TOOLS panel, you can add or remove buttons from your toolbars, as well as create new toolbars. See *Customizing Toolbars on page 123*.



1 View Type

Select the **View Type** that you would like to add toolbar buttons to. When the dialog is first opened, the selected View Type is that of the current view. If you select a different View Type, the toolbars associated with it will display behind the dialog for reference until you click the **Done** button.

2 Available Toolbar Buttons

All available toolbar buttons are presented in a list that can be searched or browsed.

- Type a keyword or the name of a tool in the **Search** field. As you type, only buttons that match your search will display.
  - When nothing is typed in this field, all buttons will display in the list.
  - If a child tool matches your search, its parent will display in the search results. Click the arrow to the left of its name to see its child tools.
- The Available Toolbar Buttons list can be browsed using the scrollbar to the right.
  - Parent tools have an arrow to the right of their button icon in the list. See *Toolbar Arrangement on page 121*.
  - Click on this arrow to display the child tools below the parent.
- Click on a button in the list to select it and display a description of that tool, below.
- To add the selected button to your toolbars:
  - Drag it onto an existing toolbar to add it to that toolbar.
  - Drag it to an empty space in the toolbar area to create a new docked toolbar at that location.
  - Drag it into the drawing space to create an undocked toolbar at that location.
- Parent tools have an arrow to the right of their button icon in the list. Click on this arrow to display the child tools below the parent. See *Toolbar Arrangement on page 121*.

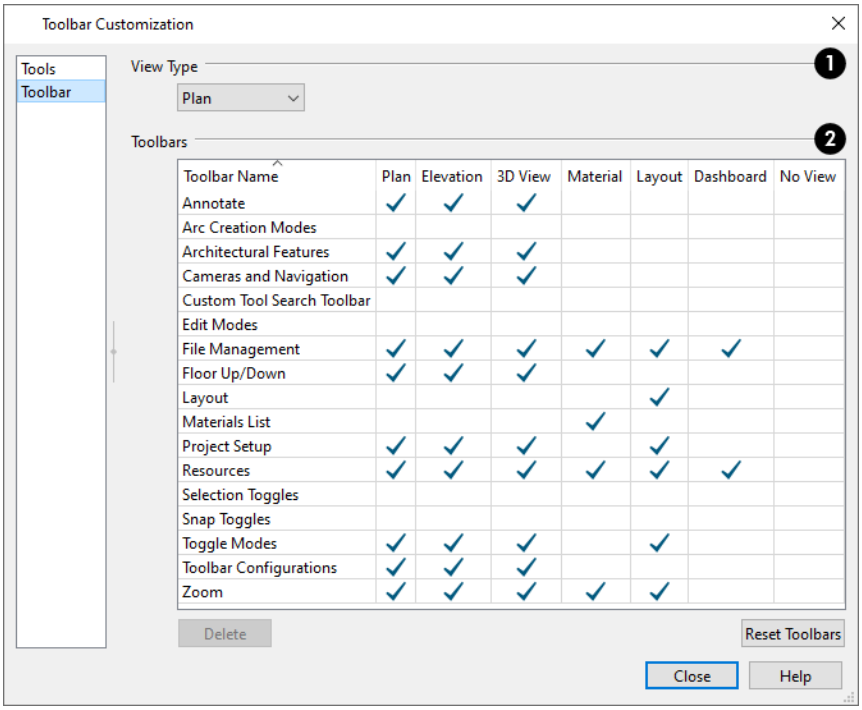
If you do not see a particular button in the list, it may be the child of a parent tool.

3 Tool Description

When a button is selected in the list above, a description of it displays here.

TOOLBAR PANEL

The TOOLBAR panel allows you to manage the use of individual toolbars.



1 View Type

When this dialog is first opened, the selected **View Type** is that of the current view. If you select a different View Type, the toolbars associated with it will display behind the dialog for reference until you click the **Done** button.

2 Toolbars

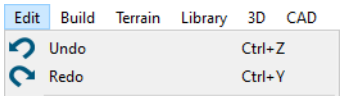
The **Toolbars** table displays the names of all available toolbars, along with the View Types in which they are in use.

- Select a toolbar by clicking on its name.
- Click to place a check mark in a column to add the selected toolbar to that View Type; click on check mark to remove it.
- Double-click on a toolbar in the Toolbar Name column to rename it. Toolbar names must be unique.
- Click **Delete** to remove the selected toolbar from the list. A deleted toolbar is no longer available in any View Type.
- Click **Reset Toolbars** to restore all the toolbars to their original configuration. See *Restoring Toolbars on page 125*.

> Clicking the Reset Toolbars button removes all changes that you may have made to all installed Toolbar Configurations.

Hotkeys

Many Home Designer tools have a keyboard shortcut, or hotkey, associated with them. If such a hotkey exists, it will display to the right of the tool's name in the menu.



Tools in the Edit menu with tool icons to the left of their names and hotkeys to the right.

To use a hotkey, simply press the appropriate key or combination of keys instead of selecting the menu item or clicking the toolbar button. For example, press the ***Ctrl/⌘*** and ***Z*** keys at the same time to perform an **Undo**.

> Note: If a key or key combination is in use as a system hotkey, it cannot be used as a program hotkey.

Create Hotkey List

A list of the hotkeys available to the current program user can be saved in **.html** or **.xhtml** format.

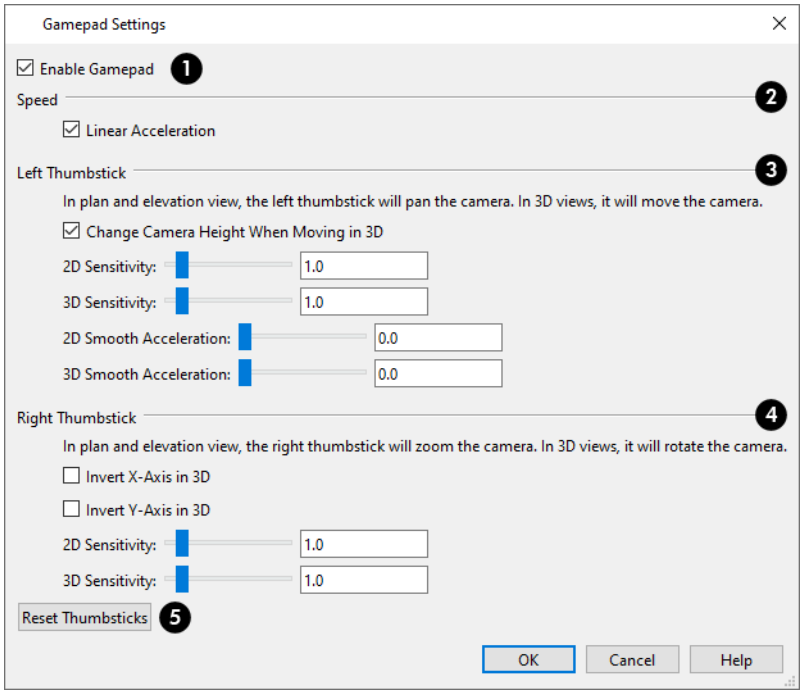
Select **Tools> Create Hotkey List** to open the Save Hotkey List File dialog, a standard Save dialog, and create a hotkey list that can then be opened in a web browser window and printed, if you wish.

Gamepad Settings Dialog

The Gamepad Settings dialog allows you to specify thumbstick behavior in Home Designer. Select **Tools> Customize Gamepad** to open this dialog. See *Gamepads on page 791*.

You can also open this dialog by clicking the Gamepad Settings button, which you can add to your toolbars. See *To add a button to a toolbar on page 124*.

You can also specify whether navigation is centered about the location of the camera or its focal point in the Preferences dialog. See *Render Panel on page 117*.



1 Enable Gamepad

Check this box to allow Home Designer to recognize a gamepad on your system and enable the other settings in this dialog.

2 Speed

When **Linear Acceleration** is checked, camera acceleration is always directly proportional to the amount the thumbstick is pushed. When unchecked, acceleration is increased on a curve, allowing more precision on the low end, and more speed on the high end.

3 Left Thumbstick

- When **Change Camera Height When Moving in 3D**, the left thumbstick can be used to change the camera height in 3D. Uncheck this to maintain a consistent camera height instead.
- Use the slider bar or text field to specify the **2D Sensitivity**, which controls how quickly the view pans in plan and elevation views.
- Use the slider bar or text field to specify the **3D Sensitivity**, which controls how quickly the camera moves in 3D views.
- Use the slider bar or text field to specify the **2D Smooth Acceleration**, which controls how the speed at which acceleration and deceleration occur in 2D views.
- Use the slider bar or text field to specify the **3D Smooth Acceleration**, which controls the speed at which acceleration and deceleration occur in 3D views.

4 Right Thumbstick

- When **Invert X-Axis in 3D** is unchecked, pushing the right thumbstick to the left rotates the camera to the left. When checked, pushing this thumbstick to the left rotates the camera to the right.
- When **Invert Y-Axis in 3D** is unchecked, pushing the right thumbstick to the up rotates the camera upward. When checked, pushing the thumbstick up rotates the camera downward.
- Use the slider bar or text field to specify the **2D Sensitivity**, which controls how quickly the view zooms in plan and elevation views.
- Use the slider bar or text field to specify the **3D Sensitivity**, which controls how quickly the camera rotates in 3D views.

5 Reset Thumbsticks

Click this button to restore the default Left and Right Thumbsticks settings.

Window and View Tools

Chapter 6

The View and Window Tools let you control how views of your drawing are shown on screen, as well as toggle useful drawing aides on and off.

By default, Home Designer uses a tabbed document interface. The name of the file and the type of view displays at the top of each view window in its title bar. If the view is saved, its name also displays.

View Windows

In Home Designer, there are several different types of views:

- *Plan Views, see page 132*
- *3D Views, see page 779*
- *Cross Section/Elevation Views, see page 784*
- *Materials Lists, see page 954*
- *Layout, see page 970*

Each view can show the model from a different perspective and displays in a view window. Multiple views can be open and display on screen; however, only one view window can be active at any given time. See *Working in Multiple Views on page 133*.

Saved vs Unsaved Views

Most new views in plan files are temporary: if you close the view window, the view will not be retained.

When a view is saved, all of its attributes are retained, including the:

- Floor level
- Extents of the view
- Color toggle

When a plan file is active, select **Tools> Active View** for tools that allow you to save and edit the current view. Not available when a layout file is active.

In the Project Browser

A Plan's saved views and a Layout's in-use pages are listed and can be managed in the Project Browser side window. See *Project Browser on page 50*.

- Plan, 3D, and cross section/elevation views are found in plan files only. Each view window can show the model from a different perspective and display a unique set of information about it, making them useful for a variety of drawing tasks and print requirements.
- Materials Lists are found in plan files only and contain a list of objects found in the model along with their components and information like floor level and counts.
- Layout files are composed of up to five pages. A given layout view window can only display a single page at a time.

Saving Views

You can specify that any camera, cross section/elevation view, or Materials List be saved. See *Saving 3D Views on page 807*.


To save an unsaved camera, view, select **3D> Save Active Camera**.


To save an active Materials List, click the **Save Active Materials List** button in the toolbars. See *Materials Lists on page 954*.

Changes to a saved view's attributes will not be retained unless you Save the view before closing it.

Once a view has been saved, you also can save any changes to it by right-clicking on it on the Projects panel of the Project Browser and selecting **Save View** from the contextual menu. See *Project Browser on page 50*.

Some additional settings are also view specific, although they do not require that a view be re-saved when they are changed:

- Print Preview toggle
- Drawing Sheet Setup dialog settings

View Specification Dialogs

Each saved view has a specification dialog that can be opened by right-clicking on it in the Project Browser and selecting **Edit View**:

- *Camera Specification Dialogs, see page 809*
- *Cross Section/Elevation Camera Specification Dialog*
- *Materials List Specification Dialog, see page 958*

Coordinate System Indicators

In Home Designer, the drawing area is laid out on a Cartesian grid, a three dimensional coordinate system described using the X, Y, and Z axes. As a reference, you can display one or more Coordinate and Origin Indicators in your views to help locate your model within this system. This can be particularly helpful in camera views or if you have rotated your drawing.

There are three types of Coordinate System Indicator:



The **Floating Axes Indicator** is always present at the lower left corner of a view window, regardless of the drawing space coordinates currently showing in the view. The length of the floating axes can be specified.



The **Fixed Axes Indicator** is always present at the drawing space Origin: 0,0,0 (0,0 in plan views, CAD Details, and layout) and may or may not be visible in the current view, depending on its extents. When visible, the fixed axes extend to the edges of the view window.


The **Origin Indicator** crosshairs are always present at the drawing space Origin. They are of a fixed size and may or may not be visible in the current view.

These Coordinate System Indicators can be turned on or off for different view types in the Preferences dialog, and their appearance can be customized there, as well. They can also be toggled on or off using the **View** menu, as well as using the toggle buttons that can be added to the toolbars. See *Coordinate System Panel on page 111*.

The Coordinate System Indicators are an on-screen reference only: they are not included when a view is printed, exported, or sent to layout.

Closing View Windows

There are a number of ways to close view windows. See *Closing Views and Files on page 138*.

Plan Views

Plan view is where most drawing and editing is done, and when you open a new plan file, a plan view is active. When an existing plan file is opened, the floor level, view extents, and Color toggle setting that were in use in the active plan view the last time the plan was saved will all be used.

You can create additional plan views for use during the current program session: select **Tools> New Plan View**. Each plan view that you create can show a different floor and have different view extents and Color setting.

Creating New Plan Views

To create a new plan view, select **Tools> New Plan View**. An identical copy of the current plan view is created and becomes the active view.

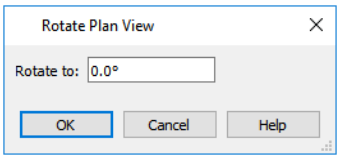
Opening a Saved Plan View

There are three ways to open a Saved Plan View:

- Select a view from the **Saved Plan View Control** Plan View drop-down in the toolbars.
- Right-click on a view in the Plan Views folder in the Project Browser and select **Open View** from the contextual menu. See *Project Browser on page 50*.
- If a Saved Plan View has been sent to layout, select its layout box and click the **Open View** edit button. See *The Layout Tools on page 971*.

Rotate Plan View

To rotate everything in a plan view, including all objects on all floors, the Snap and Reference Grids, the plan's Cartesian coordinates, and the drawing sheet, select **Tools> Rotate Plan View** to open the Rotate Plan View dialog. See *3D Drafting on page 12*.



Enter the degrees to rotate the plan view to using decimal units with either positive or negative values. The degrees rotated displays in ±180º format. For example, if you enter 270º, it displays as -90º when the dialog is reopened.

Rotate Plan View rotates a plan relative to its original orientation. For example, entering 90º twice results in a rotation of 90º, not 180º.

Text objects rotate with the plan unless you uncheck **Rotate with Plan** in the Text Specification dialog for each object. See *Rich Text Specification Dialog on page 370*.

> The Rotate Plan View tool does not rotate objects; it literally rotates only your view of those objects. As a result, it does not alter the orientation of the plan in layout views or on the printed page.

Reverse Plan



Select **Tools> Reverse Plan** to mirror the current Plan so that nearly everything in the entire Plan is swapped left to right. **Reverse Plan** tool reflects architectural and CAD objects on all floors of an entire plan, as though they were flipped about a vertical line. See *Reflecting Objects on page 175*.

Any Room Labels set to an Absolute location will be reset to the default Relative location when Reverse Plan is used. See *Room Labels on page 320*.

Reverse Plan does not affect the Terrain objects. See *Terrain on page 898*.

Reversing a plan rebuilds the entire model and affects views sent to layout.

Working in Multiple Views

Although only one Layout can be open at a time, there is no limit to the number of Plans that can be open, nor is there a limit to the number of view windows that can be open. The name of the document and the type of view is stated at the top of each view window in its title bar as well as in its tab. If the view is saved, its name displays instead of the view type.

By default, Home Designer uses a tabbed document interface, which means that when more than one view window is open in the program window, each open window will have a tab that displays in a row above the currently active view.

- Each tab states the name of the file, the view type, and the view's name.
- Each tab features an icon indicating its type of view. These icons are also used in the Project Browser. See *Project Browser on page 50*.
- If you hover over a tab:
  - The view's Project and Plan or Layout names are reported in a tool tip when Chief Architect Project Management is in use.
  - The full path name of the view's plan or layout file is reported in a tool tip when traditional file management is in use.
- Click on a tab to make it the active view.
- If there is not enough room in the program window to display all tabs, left and right arrow buttons allow you to scroll through the tabs.
- Tabs can be reordered by clicking and dragging.

There is no limit to the number of 3D view windows that you can have open at a given time; bear in mind, though, that each window demands use of your computer's resources and that you may see poor performance if too many views are open. See *3D Views on page 779*.

There are several ways to close a view window. See *Closing Views and Files on page 138*.

Tiling Views



As an alternative to tabbed views, windows can instead be tiled. Tiling allows you to display multiple views in a single program window so you can see the results of changes in plan view in 3D or vice versa. It can also be useful for copying objects from one plan to another.



A plan view and camera view tiled vertically

There are several ways to create tiled views:

- Click and drag a view window's title bar or tab into the part of the drawing area that you would like it to be. When a highlighted space is created, release the mouse button.
- Select **Window> Tile Horizontally** to display views in a horizontal orientation, one above the other.
- Select **Window> Tile Vertically** or press ***Shift* + *F6*** to display views in a vertical, side by side, orientation.

Views are tiled left to right or top to bottom in the order in which they were last active: the most recent view is on the left or at the top, while least recent is on the right or on the bottom.

- To activate a view, click on its title bar or anywhere in the view window. Note that any changes you make in the active window are reflected in other views as well.
- To end window tiling, select **Window> Tab Windows**. You can also end tiling by double-clicking on the title bar of the program window.

Multiple Program Windows

To create a second program window, click and drag the title bar or tab of a view window completely out of the current program window: for example, onto a second monitor. A second program window will be created with its own menu and toolbars.

Swapping Views

Only one view window can be active at a time, and there are a number of ways to switch between open view windows:

- Click on a view window's tab.
- Select **Window> Swap Views** or press the ***F7*** key to switch between the two most recent views.
- The **Swap Views** button toggles between the Active View and the view that was active before it.
- Select **Window> Select Next Tab** or **Window> Select Previous Tab** to cycle through all open views in the order you prefer.
- In Windows®, press the ***Ctrl* + *Tab*** (Next Window) or ***Ctrl* + *Shift* + *Tab*** (Previous Window) keys to cycle through all open views.
- In macOS™, press the ⌘ + } (Next Window) or ⌘ + ***Shift*** + { (Previous Window) keys to cycle through all open views.

- A list of all the views currently open is located at the bottom of the Window menu. Each view is identified by its name and what type of view it is. A check mark is beside the current Active View. Select one to go directly to that view.
- You can add the **Select Current Tab** drop-down, which lists all currently open views and allows you to select which one is the Active View, to your toolbars. See *Adding and Removing Buttons on page 123*.

If more than eight view windows are open, **More Windows** will be the last item in the Window menu. Select this option to open the Select Window dialog.

Select the name of a view in the list and click **OK** to make it the active view.

> Note: The Window Menu Tools parent button can be added to the toolbars. See *Toolbar Customization Dialog on page 125*.

View Tools

The **View Tools** allow you to open and close the program's side windows, as well as toggle a variety of references and drawing aides. Select the **View** menu to access these tools. You can also add the **View Tools** parent button or any of its child tools to your toolbars. See *Adding and Removing Buttons on page 123*.


Refresh Display redraws the current window to clean up extra lines, show missing items, and correct random on-screen effects caused by changes to the model. See *Refresh Display on page 157*.


Library Browser opens and closes the Library Browser side window. See *The Library on page 705*.


Tool Palette opens and closes the Tool Palette, which will display related tools. See *Child Tool Palette on page 121*.


Walkthrough Preview opens and closes the side window of the same name. See *Walkthrough Path Previews on page 875*.


Action History opens and closes the side window of the same name. See *Action History on page 222*.


Status Bar displays or suppresses the Status Bar at the bottom of the program window. See *The Status Bar on page 24*.


Scrollbars displays and suppresses scrollbars on view windows. See *View Windows on page 16*.


Toolbars displays and hides the program's toolbars. See *Toolbars and Hotkeys on page 121*.


Color toggles the display of color in the current view. See *Color On/Off on page 157*.


Crosshairs toggles the use of the blue crosshairs centered on the mouse pointer in most views.


Coordinate System Indicator - Floating toggles the Floating Axes Indicator in views of the current type in all files. See *Coordinate System Indicators on page 131*.


Coordinate System Indicator - Fixed toggles the Fixed Axes Indicator in views of the current type in all files and can be added to the toolbars.


Coordinate System Indicator - Origin toggles the Origin Indicator in views of the current type in all files and can be added to the toolbars.


Reference Grid toggles the display of the Reference Grid in all views in the current plan or layout file. See *Grid Snaps on page 144*.


Temporary Dimensions toggles the use of Temporary Dimensions when objects are selected. See *Temporary Dimensions on page 353*.

Arc Centers and Ends toggles the display of Arc Centers and Ends in the current view. See *Arc Centers and Ends on page 193*.

Line Weights toggles the display of Line Weights in all views in which lines are drawn. See *Line Weights on page 991*.

Drawing Sheet toggles the display of the drawing sheet. See *Print Preview on page 990*.

Zoom Tools

Zoom is used to magnify any given area on the plan or 3D view. Select **Window> Zoom**, then click and drag a marquee around an area on screen. When you release the mouse, the selected area expands to fill the screen.

Note that in 3D views, using **Zoom** does not reposition the camera. This can lead to inconsistencies between a camera's position and what is actually shown in the view if other methods of zooming are used later. See *Navigating in Camera Views on page 790*.

When the zoom is complete, whatever tool was active prior to selecting the **Zoom** tool automatically becomes active again. If another zoom is needed, click the **Zoom** tool again.

These additional commands are also found in the **Window** menu:

Zoom In - Click to zoom in towards the screen center by a factor of two.

Zoom Out - Click to zoom out from the screen center by a factor of two.

Undo Zoom - Reverse the last zoom or fill window operation. This option is also found in the contextual menu, as is the **Zoom** tool. See *Menus, Toolbars, and Hotkeys on page 17*.

Fill Window Selected Objects - Fits all selected items on screen.

Fill Window Building Only - Fits all walls and railings on the current floor on screen.

Fill Window - Fits all visible items on screen. See *Fill Window on page 137*.

> Note: Changes to a view's zoom status are not affected by Undo and Redo. See *Undo and Redo on page 222*.

Zooming With the Mouse Wheel

Use the mouse wheel to zoom in and out in all view windows. Scrolling the mouse wheel one click up or down zooms in or out, centering on the location of your pointer and changing the zoom by about 10%.

By default, zooming in 3D views changes the camera's position. See *Mouse Scroll Wheel and Trackpad on page 791*.

> Note: Depending on the configuration of your mouse, it may be necessary to hold down the ***Ctrl/⌘*** key while turning the mouse wheel.

Fill Window

 In plan view or a cross section/elevation view, select **Window> Fill Window** or press the ***F6*** key to view nearly everything on screen that is visible, including the Reference Display. CAD Points are the only objects that are not included when Fill Window is used.

If you are zoomed in so that only a portion of the drawing displays on screen, selecting **Fill Window** zooms out so that the entire view fits on the screen. If you are zoomed out so that the entire drawing is smaller than the screen, selecting **Fill Window** zooms in until the drawing fills the screen.

When the drawing sheet is shown, **Fill Window** zooms to the sheet borders.

Fill Window Selected Objects

 **Window> Fill Window Selected Objects** is similar to Fill Window, but zooms in or out so that the current selected object or objects fill the current window. See *Selecting Multiple Objects on page 186*.

Fill Window Building Only

 **Window> Fill Window Building Only** is similar to **Fill Window**, but zooms in or out to so that all walls, railings, and roof planes in the view fill the current window. These objects are included in the extents of the view even if their layers are turned off. Other objects are ignored.

In 3D Views

The **Fill Window** tools behave slightly differently in perspective and orthographic 3D views. In perspective views, the original zoom factor is restored, while in orthographic views the camera's Field of View is adjusted so that all surfaces in the 3D view are included.

Panning the Display

There are a number of ways to pan the display without changing the zoom factor.

Using the Arrow Keys

In plan view, the Arrow keys work exactly like clicking the Arrow buttons on the scrollbar. They shift the display according to the number of inches defined in the Plan Defaults dialog.

Using the Mouse

If you have a wheel mouse, you can pan the display by pressing the middle mouse button, or wheel, and moving the mouse in the direction you would like to pan. When the middle mouse button is held down, the pointer changes to a hand icon.

In the Mac version of Home Designer, you can pan using the left mouse button and Option key.

Mouse drivers sometimes have other functions assigned to the wheel and buttons. These override the Home Designer setting.

Using a Mac Trackpad

In the Mac version of Home Designer, you can two finger drag to pan the display. See *Trackpads on page 14*.

Using the Pan Window Tool

The **Pan Window** tool works much like the mouse wheel method.

- Select **Window> Pan Window**. The pointer changes to a hand icon. Click and drag to pan the window. The program reverts to the previously active tool when you release the mouse button.
- Double-click the **Pan Window** tool and the command remains active.

Using the Scrollbars

One method is to use the scrollbars on the right and bottom edges of the window. See *View Windows on page 16*.



- Click the end arrow keys on the scrollbars to shift the display in 12" increments.
- The 12" increment is defined in the Plan Defaults dialog under **Inches Scrolled by Arrow Key**. See *General Plan and Layout Defaults Dialogs on page 89*.

Automatic View Scrolling

When clicking and dragging to either draw or edit an object in such a way that the pointer goes past the current view window's extents, the view will automatically adjust so the pointer remains in-view. **Automatic View Scrolling** speed can be adjusted, and you can disable this behavior if you wish in the Preferences dialog. See *Edit Panel on page 110*.

Closing Views and Files

If a view is still needed, you can swap to a different view without closing it. See *Working in Multiple Views on page 133*.

If, however, a view is no longer needed, it can be closed. If you have changed a camera view's specifications or added annotation to a cross section/elevation, the program will prompt you to save the view before closing. See *Detailing Cross Section/Elevation Views on page 802*.

There are a number of ways to close a single view window:

- Select **File> Close View** to close the active window.
- Press ***Ctrl/⌘ + W*** or ***Ctrl/⌘ + F4*** to close the active window.
- Click the **Close** button in the active view's title bar or in any view's tab.
- A tabbed view can be closed by clicking on its tab using the middle mouse button. See *Three Button Mice on page 13*.
- Right-click on a view in the Project Browser and select **Close View** from the contextual menu. Not available for Floor Levels.

There are also several ways to close multiple windows at once:

- Select **File> Close All 3D Views** to close all currently open camera view windows.
- Select **File> Close All Views** to close all currently open view windows aside from the Dashboard.

- Right-click on a Project in the Project Browser and select **Close All Plans/Layouts** from the contextual menu to close all of its Plans and Layouts. Documents in other Projects are not affected. Not available when none of its Plans or Layouts are open.
- Right-click on a Folder in the Project Browser's Project panel and select **Close All Plans/Layouts** from the contextual menu to close all of its Plans and Layouts. Documents in other Folders are not affected. Not available when none of its Plans or Layouts are open.

If a Plan has only one view window open and you try to close it, the program will prompt you to save the file before closing if there are any unsaved changes. See *Exporting and Backing Up Files on page 68*.



Although the program warns you if you try to exit without saving, you should get in the habit of saving your Plans and Layouts before exiting.

Even if all view windows are closed, the program can still be open. It is a good idea to Exit or Quit the program, however, if you will not be using it for an extended period of time. See *Exiting Home Designer on page 75*.

Creating Objects

Chapter 7

There are a wide variety of objects in Home Designer that you can use to create complete 3D models and working drawings. Although these objects are sometimes very different from one another, the methods used to create them are similar.

Once an object is created, it can be selected and edited to meet the requirements of your project. The editing characteristics common to most objects are described elsewhere. See *Editing Objects on page 179*.

Architectural vs CAD Objects

There are two broad categories of objects in Home Designer: architectural objects and CAD objects.

CAD objects such as lines, arcs, text, and dimensions are 2D objects that can be created and edited in plan view, cross section/elevation views, and on layout pages but only exist and display in the views in which they were created. See *The CAD Drawing Tools on page 225*.

In contrast, architectural objects such as walls, cabinets, doors, windows, and stairs display in 2D and 3D views. Architectural objects can be created and edited in 2D and 3D views but not on layout pages.

Some architectural objects, such as custom countertops and slabs, have some behaviors in common with CAD objects and are referred to as CAD-based.

Drawing Preferences

The ways that objects in the program behave as they are created and edited are affected by a number of default and preference settings. See *Preferences and Default Settings on page 83*.



It is a good idea to be familiar with these options and how they affect both drawing and editing in the program.

Snap Settings



Select **Edit> Snap Settings** to access the three categories of Snap Settings that determine how objects snap to one another and whether they snap to allowed angles or to points on a grid, as well as object bumping and pushing behaviors.

The available Snap Settings are:



Object Snaps enables snapping to objects. See *Object Snaps on page 142*.



Angle Snaps enables snapping at Allowed Angles. See *Angle Snaps on page 143*.



Grid Snaps enables snapping to the Snap Grid. See *Grid Snaps on page 144*.



Bumping/Pushing enables bumping and pushing behaviors. See *Bumping/Pushing on page 167*.

Edit Behaviors

Select **Edit> Edit Behaviors** to access the six global edit behavior modes that determine how dragging the edit handles with the left mouse button affects a selected object and may also affect how objects are drawn.

The available Edit Behaviors are:

Default - provides the most commonly used editing options. See *Default on page 179*.

Alternate - provides an alternative to the Default behaviors that may be more useful in some situations. See *Alternate on page 180*.

Resize - scales an object as you drag a corner handle. See *Resize on page 180*.

Concentric - allows you to resize objects so that the distance moved by each edge is the same as all other edges. See *Concentric on page 181*.

Fillet - allows you to add a fillet at any corner of an object. See *Fillet on page 182*.

Connect CAD Segments

Select **Edit> Edit Behaviors> Connect CAD Segments** to toggle the ability to edit the individual segments of polyline-based objects and connected walls. See *Disconnect Edges on page 185*.

Unlike Object Snaps, Connect CAD Segments also affects the ability to snap line- and arc-based objects together as they are drawn to form a polyline. See *Object Snaps on page 142*.

Rotate/Resize About

Objects can be rotated or resized about either their own centers or the Current CAD point. See *Rotate/Resize About on page 173*.

Specify which behavior is used by selecting **Edit> Edit Behaviors> Rotate/Resize About Current Point** or in the Preferences dialog. See *Behaviors Panel on page 113*.

Arc Creation Modes

Select **Edit> Arc Creation Modes** to access the five Arc Creation Modes that control how arcs and curved walls are drawn.

The available Arc Creation Modes are:

Free Form Arc - mode allows you to define an arc by clicking and dragging along the desired path. See *Free Form Arc on page 236*.

Arc About Center - mode allows you to draw an arc by defining the center and then the start and end points. See *Arc About Center on page 237*.

Snap Behaviors

There are three categories of snap behavior in Home Designer that affect how objects are created and how they can be edited:

Object Snaps, which snap CAD and architectural objects to other objects. See *Object Snaps on page 142*.

Angle Snaps, which snap objects at specific angles. See *Angle Snaps on page 143*.

Grid Snaps, which snap objects to points on a grid. See *Grid Snaps on page 144*.

Snap behaviors can be controlled in the Preferences dialog and in the Plan or Layout Defaults dialogs. See *Snap Properties Panel on page 114* and *General Plan and Layout Defaults Dialogs on page 89*.

You can select **Edit> Snap Settings** to quickly turn Object, Angle and Grid Snaps on or off.

To temporarily disable Snap Behaviors and other move restrictions, press the ***Ctrl/⌘*** key while dragging an edit handle. See *Moving Objects on page 167*.

Hotkeys

You can also temporarily enable individual Snap Behaviors during a mouse editing operation using hotkeys. This can be helpful if you wish to use one particular type of snap behavior when you begin an operation, but a different behavior when you end it.

The Snap Behavior hotkeys are listed on the right side of the **Edit> Snap Settings** submenu. See *Hotkeys on page 127*.

To use snap behavior hotkeys

1. Select **Edit> Snap Settings** and toggle off the snap behavior category that you wish to control using hotkeys.
2. Select a tool that you wish to draw with or an object you wish to edit.
3. Begin drawing or editing and hold down the left mouse button without releasing.
4. Press and hold the appropriate key on your keyboard to enable the snap behavior associated with it.
5. When you are finished using the snap behavior, release the hotkey but continue holding down your left mouse button.
6. If you wish, you can press and hold a different hotkey on your keyboard and continue the drawing or editing operation.
7. When you are finished, release the left mouse button.

Object Snaps

Object Snaps allow you to position objects precisely relative to each other; for example, to position lines so that their endpoints meet or roof plane edges so that they are collinear.

Object Snaps can be turned on or off by selecting **Edit> Snap Settings> Object Snaps**, by clicking the toggle button, or in the Preferences dialog. See *Snap Properties Panel on page 114*.

Object Snaps are indicated visually as you create or edit objects. To remove any object snap indicators that are visible on screen, press the 1 (one) key. As you continue drawing or editing, new indicators may appear.

With the exception of **On Object** snaps, Object Snaps have priority over all other types of snapping in Home Designer. **Bumping/Pushing** overrides Object Snaps, however. See *Bumping/Pushing on page 167*.

Object Snap Locations

There are many locations on an object that other objects can snap to. Each type of object snap can be toggled by selecting **Edit> Snap Settings** or in the Preferences dialog. See *Snap Properties Panel on page 114*.

Regardless of which Object Snaps are active, when multiple objects are selected the selection set's only snap point is its midpoint.

Extension Snaps

Extension snaps allow you to snap to a point that is not actually on an object. Instead, these snaps locate points that are either collinear to the end of a wall or orthogonal (at a 90° angle) to it.

Extension snaps function when you are drawing or editing walls and create a "sticky point" and blue extension line where the wall being drawn reaches a point that is either collinear or orthogonal to another wall's end point. See *Creating Walls on page 267*.

Object Snaps Hotkeys

- Hold down the "S" key to temporarily disable Object Snaps.

Angle Snaps



It is often important that objects be drawn at exact angles. This can be accomplished using **Angle Snaps**. Angle Snaps allow you to draw walls, lines, and other objects at specified Allowed Angles. Angle Snaps also affect the way objects rotate, the radius of arcs, and a variety of other operations.

Angle Snaps can be turned on or off by selecting **Edit> Snap Settings> Angle Snaps**  , by clicking the toggle button, or in the Preferences dialog. See *Snap Properties Panel on page 114*.

Particularly when drawing walls, it is important that Angle Snaps be toggled on to help ensure accuracy. Because drawing at regular angles is extremely important, when Angle Snaps are disabled, the Angle Snaps  icon will display near and follow the pointer. See *Pointer Icons on page 15*.

Angle Snap Settings

By default, the program snaps to angles in 15° increments. You can, however, choose from a selection of Angle Snap Increments as well as specify any additional Allowed Angles that you may need in the General Plan/Layout Defaults dialogs. See *Angle/Grid Panel on page 91*.

Restrictive Angle Snaps

You can restrict Angle Snaps to either 90° or 45° increments regardless of the settings in the General Plan/Layout Defaults dialog by pressing the ***Shift*** key before drawing a new object or at any time while editing an existing object. You can specify which of these two increments to use in the Preferences dialog. See *Snap Properties Panel on page 114*.

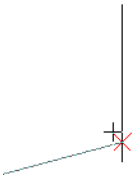
Angle Snaps and Object Snaps

Angle Snaps have a higher priority than Grid Snaps and **On Object Snaps**  , but a lower priority to all other Object Snaps. If a valid Object Snap exists, the program uses that instead of an Angle Snap.



Walls are an exception to this snapping prioritization. When walls are drawn or edited, Angle Snaps take higher priority than Object Snaps. See *Creating Walls on page 267*.

Sometimes both Angle Snaps and Object Snaps apply. For example, suppose a CAD line is drawn at 15° using Angle Snaps and another line is approached. You can draw the new line at 15° using **Intersection Snaps**  to snap to a point on the existing line.



Use Object Snapping and Angle Snapping to draw a line at a 15° angle that intersects an existing line.

Now suppose that we don't want the new line to end on the existing line. Hold down the “S” key to temporarily disable Object Snaps, allowing only Angle Snaps.

Grid Snaps

Grid Snaps allow you to snap objects to points on an on-screen grid as they are created, moved, and resized. See *Moving Objects on page 167* and *Resizing Objects on page 206*.

It is recommended that you draw and position the exterior walls of your plan with **Grid Snaps** enabled. Once these walls are in place, you may choose to turn Grid Snaps off to finish the rest of the drawing.

Grid Snaps are turned on and off by selecting **Edit> Snap Settings> Grid Snaps**, by clicking the toggle button, by pressing the ***Ctrl* + *F9*** keys, as well as in the General Plan or Layout Defaults dialog. See *Angle/Grid Panel on page 91*.

When Grid Snaps are enabled, you can choose to whether or not to display the Snap Grid in plan and cross section/elevation views and in layout.

Reference Grid

In addition to the Snap Grid, the **Reference Grid** is a virtual graph paper that can be used to provide a sense of scale in plan and cross section/elevation views, and in layout. It is useful for zooming in and out, or for general layout guidelines, but is not used for snapping. The Reference Grid can be toggled on and off by selecting **View> Reference Grid**. See *View Tools on page 135*.

Grid Size and Appearance

The colors of the Snap and Reference Grids are set globally in the Preferences dialog. See *Colors Panel on page 95*.

The Snap and Reference Grids' sizes can be set for each Plan or Layout in the General Plan Defaults and General Layout Defaults dialogs You can also specify whether the grids display as dots or solid lines. See *Angle/Grid Panel on page 91*.

Grid Snaps and Angle Snaps

Of the three snap behaviors, Grid Snaps have the lowest priority and are overridden by Angle Snaps and Object Snaps.

When Grid snaps and Angle Snaps are both enabled, objects are drawn and edited using Polar Coordinates. For example, if the grid **Snap Unit** is set to 12" (1 foot), drawing a new wall at an Allowed Angle snaps the wall length to 0", 12", 24", and so on.

To draw a line or wall at an Allowed Angle but with unrestricted length, disable Grid Snaps and leave Angle Snaps on.

Grid Snaps and Object Nudging

You can use the arrow keys on your keyboard to move a selected object or objects one increment at a time in 2D and 3D views. This is referred to as nudging, and the increments used for Nudging and Nudging Further are the same as the Grid Snap Unit and Reference Grid Size, respectively. See *Nudging on page 168*.

Creating Objects

In Home Designer, there are four ways to add new objects to your drawing: by clicking to place an object, by clicking and dragging to draw an object, by entering coordinates, or by importing custom symbols, CAD drawings, pictures or metafiles.

If you create an object using any of these methods and the layer it will go on is either locked or turned off, the program will ask you if you want to unlock or display the layer. Objects can be created on layers that are not set to display, but they cannot be created on locked layers. See *Object Creation and Layers on page 146*.

While the size of the drawing area in Home Designer is limited only by the resources on your computer, it is best to begin your drawing near the origin, 0,0. The current position of your mouse pointer displays in the Status Bar at the bottom of the program window. See *3D Drafting on page 12*.

Click-to-Create

Many objects, including doors and windows, cabinets, library symbols, text, pictures, and images are created by clicking. Select a library object or one of the drawing tools mentioned above, then click in the drawing area to place the object at that location.

Continue clicking to place the selected object until another tool is selected.

If you click at a location where there is not enough room for the object to be placed, one of two things may happen:

- Some objects, notably cabinets, doors, and windows, will resize smaller to fit into the space.
- Most objects cannot resize in this manner, so the program will present a warning message indicating that there is not sufficient space at the current location.

When most drawing tools are active or library symbols selected for placement, a preview outline follows your mouse pointer, indicating the size and shape of the object to be created. If your pointer is positioned at a location where the object cannot be placed, this preview outline will not display.

As you move the mouse pointer, the center point of the object's back edge will snap to active snap points when **Grid Snaps** or **Object Snaps** are enabled. See *Snap Behaviors on page 141*.

Many architectural objects can be created in plan view or any 3D view. In order to place a stand-alone, click-to-create object in 3D, it is necessary to click near a wall or within the Terrain Perimeter as these objects help orient the new object within the 3D space.

Clicking and Dragging

Other objects, including walls and railings, straight stairs, and CAD and CAD-based objects are created by clicking and dragging to define either a path or an enclosed area. Select a tool, then click and drag in the drawing area to draw an object between your start and end points.

Continue drawing the selected object type until another tool is selected.

You can temporarily slow the movement of the mouse as you drag by holding down the ***Shift*** key.

You can cancel any click-and-drag drawing operation before it is completed by pressing the ***Esc*** key, or by pressing any two mouse buttons at the same time.

Polyline- and Spline-based objects can be created by snapping multiple Line-, Arc-, and/or Spline-based objects together. These objects will only snap together to form a polyline or spline if they are on the same layer and share identical attributes such as color, line style, and arrow specifications. See *Editing Objects on page 179*.

Entering Coordinates

CAD lines, arcs and points can be created using the Input Line, Input Arc and Input Point dialogs. See *Input Point on page 227*, *Input Line on page 230*, or *Input Arc on page 237*.

Auto Rebuild

A number of objects, notably foundations, roofs, Attic walls, and framing, can be automatically generated and rebuilt as changes are made to the model. Objects created in this manner can be edited just like other objects; however, the Auto Rebuild functionality will be disabled.

Importing Objects

Custom symbols, CAD drawings, pictures and metafiles can be imported into the program and placed in the drawing area with a click. See *Importing and Exporting on page 883* and *Pictures, Images, and Walkthroughs on page 850*.

Converting Objects

A variety of objects can be created by converting existing CAD objects and many CAD-based objects into another type of object. See *Converting Objects on page 211*.

Object Creation and Layers

When it is created, every object is placed on a layer which controls whether and how it displays. See *Display Layers on page 151*.

If you try to create an object on a layer that is not set to display in the current view, the program will ask if you want to turn that layer on. See *Message Boxes on page 25*.

- Click **Yes** to create the object and turn on its layer in the current view.
- Click **No** to create the object but leave its layer turned off in the current view.
- Click **Cancel** to not create the object and leave the layer turned off.

If you try to create an object on a layer that is locked, the program will prompt you to unlock the layer. If you choose to leave the layer locked, the object will not be created. See *Locking Layers on page 153*.

Similarly, if you try to insert an object into another object that is on a locked layer, nothing will be created. See *Inserted Objects on page 728*.

Copying and Pasting Objects

New objects can also be created by cutting, copying, and pasting existing objects, either individually or in groups. Objects can be copied from one floor to another, one view window to another, and one file to another. Because copying uses your system's clipboard, some objects can be pasted into other applications, as well.

> Objects created in a plan or layout using U.S. Units should not be pasted into a metric file, or vice versa. See *Units of Measurement on page 46*.

Objects cannot be pasted into any views that they cannot be created in normally. For example, CAD objects cannot be pasted into a 3D camera view or overview, while Architectural objects cannot be pasted onto a layout page.

> Note: Terrain Perimeters can be copied and pasted, but the pasted copy will be a Standard Polyline which can then be converted into a Terrain Perimeter or other type of polyline. See *Convert Polyline on page 211*.

Cut, Copy, and Paste

The Cut, Copy, and Paste tools allow you to copy a selection to the system clipboard and then paste it into a different view window, onto a different floor level, or even into a different application.

Select **Edit> Cut** or press ***Ctrl/⌘ + X*** to remove the selected object(s) from the file and save them in the system clipboard so that the selection can be pasted in a different location in Home Designer or in another application, depending on the type of selection.

Select **Edit> Copy** or press ***Ctrl/⌘ + C*** to save a copy of the selected object(s) to the system clipboard while maintaining the original(s). The selection can then be pasted in a different location in Home Designer or in another application, depending on the type of selection.

Select **Edit> Paste** or press ***Ctrl/⌘ + V*** to enable Paste mode, then left- or right-click in the current view to paste the selected object(s) previously copied to the system clipboard at that location. If pasting from another application, click in the destination view in Home Designer first to make sure it is active.

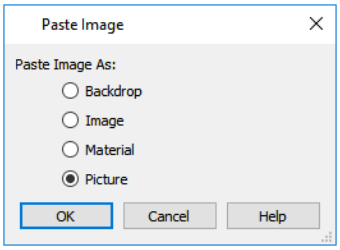
To Cut, Copy, and Paste

1. Select an object or objects to copy, then:
   - Select **Edit> Cut** or press ***Ctrl/⌘ + X*** to remove the original selection from the file and copy it to the system clipboard.
   - Select **Edit> Copy** or press ***Ctrl/⌘ + C*** to copy the selection to the clipboard while retaining the original.
2. If you wish to paste the copy in a different view or program window, open that window and click in it to make it active.
3. Select **Edit> Paste** from the menu or press ***Ctrl/⌘ + V***.
4. When pasting in Home Designer, the mouse pointer will display the Copy/Paste icon. Left- or right-click once to paste a copy of the object at that location.

If the new object(s) are pasted into Home Designer, they will be selected. Objects pasted in 3D views are selected on their top surfaces.

If the selection being pasted consists of text, it is placed in a Text object.

If the selection being pasted is an image, the Paste Image dialog opens.



Specify how you would like to paste the selected image:

- Select **Backdrop** to add the image to a new 3D backdrop in the User Catalog in the library, where it will be selected. See *3D Backdrops on page 846*.
- Select **Image** to add the image to an Image object in the User Catalog in the library, where it will be selected. See *Images on page 850*.
- Select **Material** to add the image to a new material in the User Catalog in the library, where it will be selected. See *Creating Materials on page 767*.
- Select **Picture** to display the picture in the current plan view. See *Pictures on page 856*.

COPY/PASTE

The **Copy/Paste** edit tool allows you to copy the selected object(s) to the system clipboard and immediately enable the Paste function so that a copy can be made in the current view. Edit handles and a variety of edit tools let you control the location, orientation, and size/shape of the pasted object(s).

To Copy/Paste by clicking

1. Select an object or objects to copy.
2. Click the **Copy/Paste** edit button. The cursor displays the Copy/Paste icon.
3. Left- or right-click once to paste a copy of the selection at that point where you clicked.

The Copy/Paste edit tool can be used in combination with the original selection's edit handles to move, rotate, or reshape the copy relative to the original. The available edit handles will vary depending on the type and number of objects selected. See *Edit Handles on page 23*.

To Copy/Paste by dragging

1. Select an object or objects to copy.
2. Click the **Copy/Paste** edit button. The cursor displays the Copy/Paste icon.
3. Click and drag an edit handle:
   - Drag the Move edit handle to position the copy at a new location. As you drag, a preview of the selection follows the mouse pointer.
   - CAD lines and some line-based objects have a round Orthogonal Move edit handle. When dragged, movement is restricted to directions that are perpendicular to the selected line.
   - Other types of CAD and CAD-based objects have a round Concentric Resize edit handle. Click and drag this handle to create a concentric copy that is either larger or smaller than the original.
   - Drag a corner handle to create a copy in the same location as the original but with a different shape or size. The result depends on which **Edit Behavior** you use. See *Defaults, Preferences, and Edit Behaviors on page 179*.
   - Drag the Rotate handle to create a copy in the same location as the original, but rotated to a different angle.
4. You can resize or position the copy accurately with respect to the original by watching the moved distance in the Status Bar at the bottom of the screen.

The **Copy/Paste** edit button activates Paste mode in which each available edit tool and handle makes a copy in addition to its primary function and seven new edit buttons display on the Edit Toolbar.

Click the **Sticky Mode** edit button to remain in the current mode and place multiple copies of the selected object(s). See *Sticky Mode on page 149*, below.

Click the **Paste Hold Position** edit button create a copy of the selection at the same location as the original. See *Paste Hold Position on page 149*, below.

Click the **Point to Point Move** edit button to make a copy of the selection at a specific location. See *Point to Point Move on page 169*.

Click the **Center Object** edit button to make a copy of the selection and center it relative to another object. See *Center Object on page 170*.

Click the **Reflect About Object** edit button to make a copy of the selection reflected about another object. See *Reflect About Object on page 175*.

Click the **Main Edit Mode** edit button or press the ***Esc*** key to return to the selection's main Edit Toolbar.

To use Copy/Paste with other edit tools

1. Select the object(s) to be copied and click the **Copy/Paste** edit button.
2. Notice that the options in the Edit Toolbar change and include several tools for moving and centering:
   - Click the **Point to Point Move** edit button, then click at the start and end points to position the copy at a particular point. After your click on the start point, an extension line, selection preview outline, and Point B icon follow the mouse pointer.
   - Click the **Center Object** edit button, then mouse over the object you want to center the copy relative to and click once when the desired centering axis and selection preview outline displays.
   - Click the **Reflect About Object** edit button, then mouse over the object you want to reflect the copy about and click once when the desired reflection axis and selection preview outline displays.
3. An exact copy of the selected object(s) is created and is positioned and oriented based on the actions performed using the second edit tool.

Sticky Mode

Normally, after an action is performed using the edit tools or handles while in Paste mode, you return to the Main Edit Mode. Click the **Sticky Mode** edit button to remain in Paste mode and continue pasting copies of the selected object (s).

To exit Paste mode and return to the main Edit Toolbar for the selected object, click the **Main Edit Mode** edit button, or press the ***Esc*** key. You can also click the **Sticky Mode** button once more.

Paste Hold Position

Click the **Paste Hold Position** edit button to create a copy of the selected object(s) at the same location as the original. The copy remains selected so you can perform additional operations.

Because multiple walls, railing and fencing cannot share the same space, the **Paste Hold Position** edit button is not available for these objects.

When copying between different floors or view windows, you can paste a copy at the same absolute position as the original selection using the **Paste Hold Position** command.

To use Paste Hold Position

1. Select the object(s) to be copied.
2. Click the **Copy/Paste** edit button.
3. Switch to the desired floor or plan file and select **Edit> Paste> Paste Hold Position** .
4. A copy is placed at the same X, Y coordinates on the new floor or in the new plan as the original's position.

When a CAD-based object is moved to a new floor, only its display in plan view is moved - its physical location in the model remains unchanged. See *Architectural vs CAD Objects on page 140*.

Copy and Paste in Place

Select **Edit> Copy and Paste in Place** to create a copy of the selected object(s) at the same location as the original. The copy remains selected so you can perform additional operations.

Because multiple walls, railings, and fencing cannot share the same space, the **Copy and Paste in Place** command is not available for these objects.

Paste Special

The **Paste Special** tool allows you to choose a representation for the selection to be pasted.

Selections can be pasted as:

- Enhanced Windows Metafiles (EMF). See *Metafiles on page 861*.
- Device Independent Bitmaps (BMP). See *Importing Pictures on page 858*.
- Unformatted non-unicode text (TXT).
- File Name (a path to a file). Depending on the file type, it will be either opened or imported (if supported).
- Unformatted text (HTML). Pastes as text.
- Model Objects - Home Designer format, not compatible with other programs.

To use Paste Special

1. Select an object, image, text or file on your computer and copy it.
2. Switch to the desired Home Designer view window and select **Edit> Paste> Paste Special** .
3. In the Paste Special dialog, select the desired representation for the selection and click OK.
4. Click in the drawing area to place the copy at that location.

Transform/Replicate Object

Objects and groups of objects can be copied and pasted using the Transform Replicate Object dialog. See *Transform/Replicate Object Dialog on page 176*.

Displaying Objects

Chapter 8

The way that objects display is an important in all stages of the design process. There are two primary ways that the display of objects is controlled: Drawing Groups and Layers.

Displaying Objects

There are two broad categories of objects in Home Designer: architectural objects and CAD objects. See *Architectural vs CAD Objects on page 140*.

CAD objects are two-dimensional and display only in the view in which they were drawn. Architectural objects, on the other hand, are 3D and are represented in 2D and 3D views in different ways.

Layer Settings

By default, CAD and CAD-based objects use the settings assigned to their layer: including line style, color, and weight. They can be assigned custom line attributes in their specification dialogs. See *Appearance Attributes on page 153*.

In plan view, architectural objects are represented much like CAD objects, using the attributes assigned to their layer. In addition, the edge lines of architectural objects in Vector Views also use these layer settings. See *Vector View on page 837*.

In addition, layers can be used to turn the display of objects on and off in different views. See *Layer Attributes on page 152*.

Fill Styles

Closed CAD objects and can also be assigned a fill style for their interior areas. Fill styles may be a solid color or a pattern, and can be specified as transparent. See *Fill Styles on page 159*.

Many architectural objects can also be assigned a fill style; however, it is only used in plan view. In 3D views, architectural objects are represented using surfaces that have materials assigned to them.

Patterns and Textures

The appearance of architectural objects in 3D views is determined by the materials applied to the objects' surfaces. See *Materials on page 756*.

Material patterns display in Technical Illustration and Vector Views, while textures display in other types of rendered views. See *Rendering Techniques on page 836*.

You can turn the display of patterns on or off in 3D views that use them by selecting **3D> Toggle Patterns**  .

Display Layers

Layers are used to organize and manage the display of all objects in all views except Materials Lists. A layer can be thought of as a transparent sheet with objects placed on it for viewing. Nearly all views use multiple layers, like a stack of

transparencies put together to show a combination of different types of objects.

You can find out which layer an object is on by selecting the object and looking at the Status Bar. And, you can customize how each layer displays in a particular view in the Layer Display Options dialog. See *The Status Bar on page 24* and *Layer Display Options Dialog on page 154*.

Multiple layers are organized into Layer Sets, which allow you to control which objects display in different views. See *Layer Sets on page 155*.

Layer Attributes

The display of objects in different views is controlled by layer sets and layers in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

In-Use Layers

A layer is considered to be in use in the current plan or layout file if one or more objects are assigned to it; if it is selected in one or more defaults dialogs; or, if it is a system default layer for one or more drawing tools.

In the Layer Display Options dialog, the **Used** column identifies in use layers:

- Indicates that one or more objects are assigned to the layer.
- Indicates that there are no objects on the layer, but that it is specified in a defaults dialog.
- S Indicates that the layer is not used elsewhere, but is a system default layer for certain object types.

Move your mouse pointer over an icon to display a tool tip summarizing where the layer is in use.

Primary and Secondary Layers

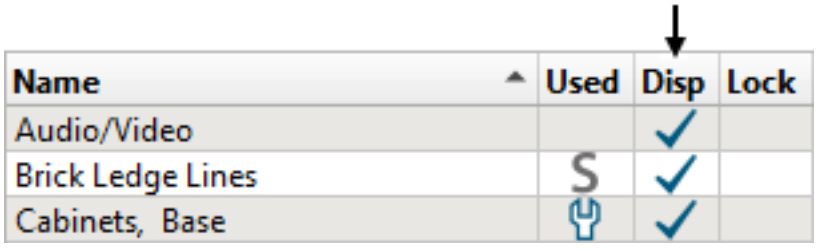
Every object is placed on a layer which controls whether it displays in a given view. This layer is referred to as the object's primary layer, and you can see its name in the Status Bar when the object is selected. See *The Status Bar on page 24*.

In addition, some objects have secondary layers which may alter the appearance of objects on the primary layer, but do not control whether the objects display or not.

For example, the primary layer for base cabinets is "Cabinets, Base". In addition, base cabinets have a number of secondary layers that control the display of the countertop, face indicators, door opening indicators, module lines and labels.

> Note: If an object's primary layer is turned off, information on its secondary layers will not display - even if those layers are turned on.

All layers with a check in the **Disp** column display when the current Layer Set is active. Objects that are not displayed cannot be seen or selected. If you try to place or draw an object on a layer that is hidden, the program asks if you want to turn the layer on.



Some objects are designed to be inserted into another object rather than standing alone. If the display of an object that contains an inserted object is turned off, the inserted object's display will be turned off, as well For example, if the display of a wall is turned off, any doors and windows in that wall will not display either. See *Inserted Objects on page 728*.

Only displayed objects are included when DXF/DWG and EMF files are exported, and only displayed objects print.

Appearance Attributes

A layer's **Color**, **Fill**, **Weight**, and **Line Style** attributes determine how an object on that layer appears in plan view. These layer attributes also affect CAD objects drawn in cross section/elevation views. See *Fill Styles on page 159* and *Line Weights on page 994*.

In addition, display layer attributes also affect Surface Edge Lines in 3D views using the Vector View Rendering Technique. The Color attribute is also used for Surface Edge Lines in Technical Illustration renderings. See *3D View Defaults Dialog on page 782*.

The **Text Style** attribute affects the appearance of dimensions, object labels, and objects that can display text such as Room Labels, Callouts, and Markers. See *Text Styles on page 390*.

Color	Fill	Weight	Line Style	Text Style
		18		Schedule Style
		25		Default Text Style
		10		Default Label Style

Many objects, including all CAD and text objects, allow you to override most or all of these settings for an individual object without changing its display layer. See *Line Style Panel on page 234* and *Fill Style Panel and Dialogs on page 161*.

Edge and Pattern Lines

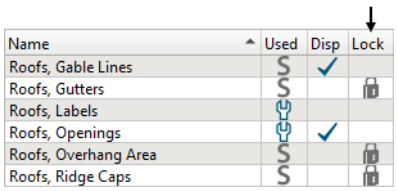
In 3D Vector Views, architectural objects are represented using lines to define their surface edges. By default, Surface Edge Lines use the attributes set for the object's layer, as described above.

Some CAD-based architectural objects, such as Slabs, have line style settings in their specification dialogs; however, these specifications are not used unless **Use Object Settings** is checked in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

In addition, a material applied to an object surface may have a pattern associated with it. A material's pattern Line Color, Weight, and Spacing and more can be set in the Define Material dialog. See *Pattern Panel on page 772*.

Locking Layers

Objects on layers with a lock icon in the **Lock** column cannot be selected by the user.



New objects cannot be drawn on a locked layer, either. If you attempt to draw a new object on a locked layer, a message box will ask you to unlock it.

Layers with objects that you need to see as a reference while working, but not select, are good candidates for locking. For example:

- Locking the “Rooms” layer can make it easier to select objects located inside rooms.
- Locking the “Roof Planes” layer can make it easier to select objects located under the eaves.

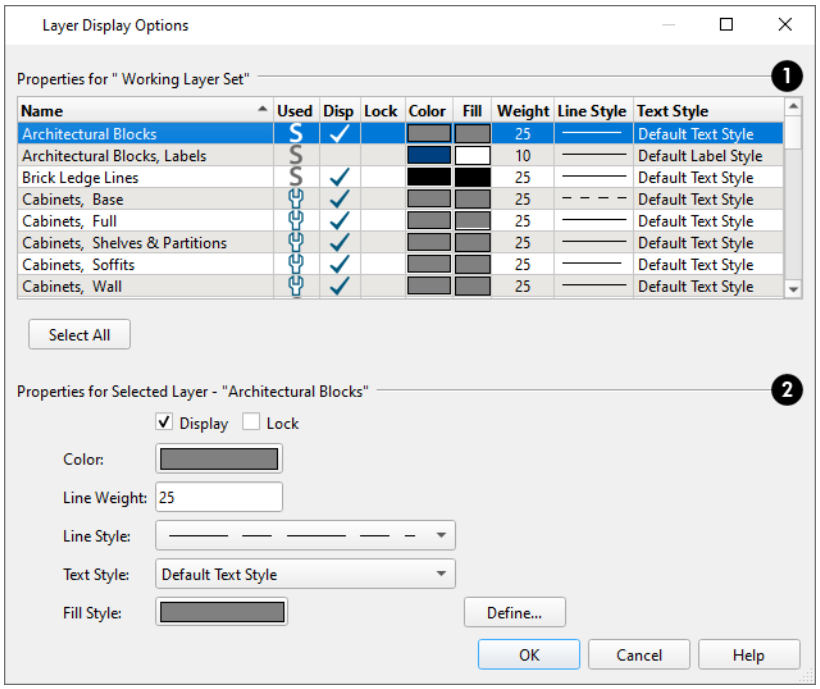
> Locking a layer does not prevent objects on that layer from being modified. In addition, most objects can be deleted using the Delete Objects dialog. Objects are also deleted if the floor they are placed on is deleted. See *Deleting Objects on page 218*.

Layer Display Options Dialog

The Layer Display Options dialog controls the display of layers in the active layer set. From any view except the Materials List, select **Tools> Display Options** to open this dialog.

The Layer Display Options dialog consists of a table that lists all layers and their attributes.
Select **Tools> Display Options** in a layout to open the similar Layout Page Display Options dialog. See *Layout Page Display Options on page 970*.

To edit the attributes of the Reference Floor Layer Set, click the **Define** button in the Change Floor/Reference dialog. See *The Reference Display on page 546*.



1 Properties for Current Layer Set

The **Properties for Current Layer Set**, which is the layer set that is active in the current view, are presented in a table of layers and their attributes. Click a column header to sort all layers in the table by that column. An arrow above a column indicates that it is being used to sort the table, and in which direction it is being sorted.

- The **Name** column is sorted alphabetically. Layers are named so that similar object types are listed near one another.
- \An icon in the **Used** column indicates that the layer is in use. The information in this column can be sorted, but not edited here. See *In-Use Layers on page 152*.

- A check mark in the **Disp** column indicates which layers are set to be visible. If a layer is turned off, this column is blank.
- A lock icon in the **Lock** column indicates which layers are locked, preventing objects on that layer from being selected. See *Locking Layers on page 153*.
- The **Color** column shows the line color for each layer and can be sorted so that layers with like colors are listed together.
- The **Fill** column shows the fill style for each layer and can be sorted so that layers with like fill styles are listed together. See *Fill Styles on page 159*.
- The **Line Style** column shows the line style for each layer and can be sorted so that like line styles are listed together.
- The **Line Weight** column displays the line weight used by each layer and can be sorted so that like line weights are listed together. See *Line Weights on page 994*.
- The **Text Style** column shows the text style assigned to each layer and can be sorted so that layers using the same style are listed together. See *Text Styles on page 390*.
- Click the **Select All** button located below the layer table or press ***Ctrl/⌘ + A*** to select all layers in the table at once. This allows changes to be quickly applied to all layers.

Layers are selected by clicking on them in the table. Hold down the ***Shift*** key or the ***Ctrl/⌘*** key to select multiple layers at once. Press ***Ctrl/⌘ + A*** or click the **Select All** button to select all layers in the table. When selected, a layer's attributes display and can be edited below.



The program remembers what layer(s) are selected when you click OK and selects them again when you return to this dialog.

2 Properties for "Selected Layer"

These options let you modify the attributes of one or more selected layers. Line Color, Style, and Size affect lines in plan view and surface edge lines in Vector Views. When multiple layers are selected, "No Change" may display for attributes that are not shared by the selected layers.

- To turn off a selected layer, uncheck **Display**. See *Layer Attributes on page 152*.
- To protect the objects on a selected layer from accidental changes, check **Lock**. Items on locked layers can display but cannot be selected. See *Locking Layers on page 153*.
- To change the color of lines on a selected layer, click the **Color** bar to open the Select Color dialog. See *Select Color Dialog on page 165*.
- Specify the default **Line Weight**, or thickness, for objects on the selected layer. See *Line Weights on page 994*.
- To change the **Line Style** of a selected layer, click the drop-down arrow.
- To change the **Text Style** of a selected layer, click the drop-down arrow. See *Text Styles on page 390*.

Note: Not all objects display in all views. For instance, invisible walls do not appear in camera views or materials lists.

Layer Sets

Layer Sets are used to control the layer settings for different views in a plan or layout file. All views associated with a plan file - including views sent to layout - make use of Layer Sets stored in that **.plan** file.

A Layer Set consists of a complete list of the layers in the current plan or layout along with the display settings for each layer as set for a particular type of view. These display settings can be modified, and can be different for each type of view. See *Layer Display Options Dialog on page 154*.

Layer sets are file specific, which means that changes made in one plan or layout file have no effect on the settings in other files.

Home Designer uses a different Layer Set for each type of view of your plan:

- Plan views. See *Plan Views on page 132*.
- Camera views and Overviews. See *3D View Tools on page 783*.
- Cross Section/Elevation views.
- Wall Elevation Views.
- Framing Overviews. See *Framing Overview on page 786*.
- Reference Floor. See *The Reference Display on page 546*.

While any view is active, select **Tools> Display Options** to make changes to the Layer Set used for that view type.

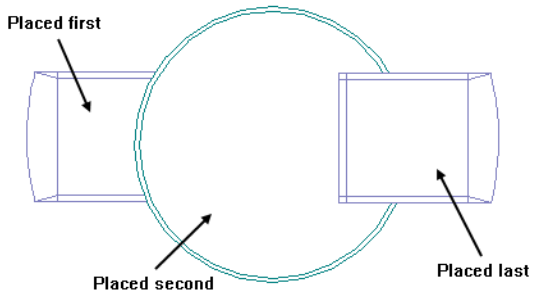
Any changes made to settings in the Layer Display Options dialog for one particular view will affect all views using that same Layer Set. For example, if you make changes for a camera view, all camera views and overviews in the current plan will be affected. See *Layer Display Options Dialog on page 154*.

Drawing Groups

Each object in a plan or layout file belongs to a Drawing Group, which influences whether it displays in front of or behind other objects. Drawing Groups control the display of objects in plan view and on the layout page. They also control the display of 2D CAD objects drawn in cross section/elevation views, but do not affect the display of any objects in camera views and overviews.

Most categories of objects have their own Drawing Group; however, a few objects are instead placed in the Front or Back Group. Imported pictures, which are placed in the Back Group, are a notable example. A selected object's Drawing Group is reported in the Status Bar. See *The Status Bar on page 24*.

Within a given Drawing Group, drawing order is determined by the order in which objects are placed. By default, an object will display in front of any objects that were created before it was. For example, if you place a chair and then a table, the table will display in front of the chair; if you instead place a table and then the chair, the chair will display in front.



Drawing order also affects how objects are selected. If two objects are positioned so that they overlap one another, and you click at a point that they both share, the frontmost object will become selected first. See *Select Next Object on page 184*.

Drawing Group Edit Tools

Once an object has been placed, its position in the drawing order can be modified. To do this, select one or more objects and click the **View Drawing Group Edit Tools** edit button.

There are two options for moving a selection towards the back of the drawing order:

Click the **Send to Back** edit button to move the selected object(s) to the back of the Back Group so it displays behind all other objects.

Click the **Send Backward** edit button to move the selected object(s) to the back of its current Drawing Group. If it is already at the back of its current group, it will be moved to the next group down in the drawing order.

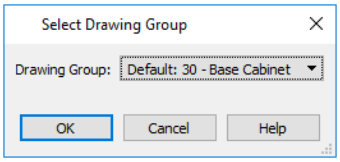
There are two options for moving a selection towards the front of the drawing order:

Click the **Bring to Front** edit button to move the selected object(s) to the front of the Front Group so that it displays in front of all other objects.

Click the **Bring Forward** edit button to move the selected object(s) to the front of its current Drawing Group. If it is already at the front of its current group, it will be moved to the next group up in the drawing order.

Select Drawing Group Dialog

The **Select Drawing Group** 1 edit button reports the Drawing Group number that the selected object(s) is in. When multiple objects are selected, a horizontal line may display instead. Click this button to open the Select Drawing Group dialog.



- Select a Drawing Group from the drop-down list to place the selected object(s) into that group. The default group for the selected object is noted as such.
- When multiple objects in different groups are selected, “No Choice” will initially display. You can select “Default: Multiple Values” to return each object to its respective default group.

Display Toggles

There are a number of toggles and tools that can be used to affect the appearance of the on-screen display. Some toggles affect the current view, while some are global and affect all views.

Refresh Display

Refresh Display redraws the current window to clean up extra lines, show missing items, and correct random on-screen effects caused by changes to a model. Select **View> Refresh Display** or press the ***F5*** key to refresh the on-screen display.

Color On/Off

The display of color on-screen can be toggled on and off in the current view without affecting other views by selecting **View> Color** or by clicking the toggle button.

- If **Color** is toggled off in any 3D view other than a Vector View, the view will be displayed in grayscale.
- If **Color** is toggled off in any line based view, including plan view, Vector Views, and layout, the view will be displayed either in black and white or grayscale, depending on the **Color Off Is** setting in the Preferences dialog. See *Appearance Panel on page 93*.

The Color toggle can be set on a view by view basis and can be saved in the Camera Specification and Cross Section/Elevation Specification dialogs. See *Camera Panel on page 809* and *Camera Panel*.

To display views in grayscale

1. Select **View> Color** to toggle color off.
2. Select **Edit> Preferences** to open the Preferences dialog.
3. On the APPEARANCE panel, select **Grayscale** as the **Color Off Is** setting. See *Appearance Panel on page 93*.

To display views in black and white

1. Select **View> Color** to toggle color off.
2. Select **Edit> Preferences** to open the Preferences dialog.
3. On the APPEARANCE panel, select **Black and White** as the **Color Off Is** setting.

When **Color** is toggled off and **Black and White** is specified, all lines appear as black, regardless of their color. Solid fill colors appear as either white or black, depending on which is closer to the actual fill color when Color is turned on. The background remains as defined in the Preferences dialog. See *Colors Panel on page 95*.

You can specify whether cross section/elevations, camera views, and overviews using the Vector View Rendering Technique are generated with colors turned on in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

You can also print in color, black and white, or grayscale. See *Print View Dialog on page 997*.

Drawing Sheet

The **Drawing Sheet** is a representation of the size and orientation of the final printed output, and can be toggled on or off in the current view. See *Drawing Sheet on page 991*.

Print Preview

Print Preview allows you to get a sense of what the current view will look like when it is printed. See *Print Preview on page 990*.

Arc Centers and Ends

Arc Centers and Ends toggles the display of arc center- and endpoints in the current cross section/elevation view, or on the current floor level in all plan views. See *Arc Centers and Ends on page 193*.

Reference Grid

The **Reference Grid** can be used to create a sense of scale in scaled views and affects all views in the current Plan or Layout. See *Reference Grid on page 144*.

Crosshairs

Crosshairs help you position the pointer relative to objects in a view while drawing and editing and are toggled globally for plan and cross section/elevation views, as well as camera views and overviews. See *Crosshairs on page 15*.

Coordinate System Indicators

The **Coordinate System Indicators** help locate your model within Home Designer's three dimensional coordinate system and are toggled globally for three different view categories. See *Coordinate System Indicators on page 131*.

Temporary Dimensions



Temporary Dimension displays automatically when an object is selected and reports the distance between that object's selected edge and its opposite edge as well as other objects. This toggle is global, affecting all views in all Plans and Layouts. See *Temporary Dimensions on page 353*.

Line Weights



The term **Line Weights** describe the thickness of lines when printed; however, you can globally toggle the on-screen display of Line Weights to get a sense of how they will print. See *Line Weights on page 994*.

Other Toggles

Delete Surface



In any 3D view, select **3D> Delete Surface**, then click a surface in the view to temporarily remove the surface from the current view. See *Delete 3D Surface on page 790*.

Fill Styles

Fill patterns are CAD-based patterns that can be used to fill the interiors of closed CAD shapes and can be applied to a variety of architectural objects in plan view, as well. A fill pattern has a variety of attributes that can be customized, including pattern Type, Color, and Scale. See *Fill Style Panel and Dialogs on page 161*.

The Fill Patterns library catalog contains a variety of patterns that can be applied to objects individually in their specification dialogs as well as using the **Fill Style Painter** tools.

To ensure consistency, you can set objects to use the fill assigned to their display layer; and for a variety of object types, you can also specify a fill style in their defaults dialogs. See *Layer Attributes on page 152*.



Patterns, which are similar to fill styles, can be used to represent materials in Vector Views. See *Patterns and Textures on page 756*.

Fill Style Eyedropper and Painter Tools



The **Fill Style Eyedropper** tool allows you to load a fill style assigned to an existing object into the Fill Style Painter and apply that fill style to other eligible objects.

Select **Tools> Fill Style Painter** to access the **Fill Style Painter** tools, which are used to apply fill styles to closed CAD objects. In plan view, the Fill Style Painter tools can be used to apply fill styles to a variety of architectural objects, as well.

These tools are similar to other Painter Tools in the program, but are not available in camera views. See *Eyedropper and Painter Tools on page 216*.

Import Patterns

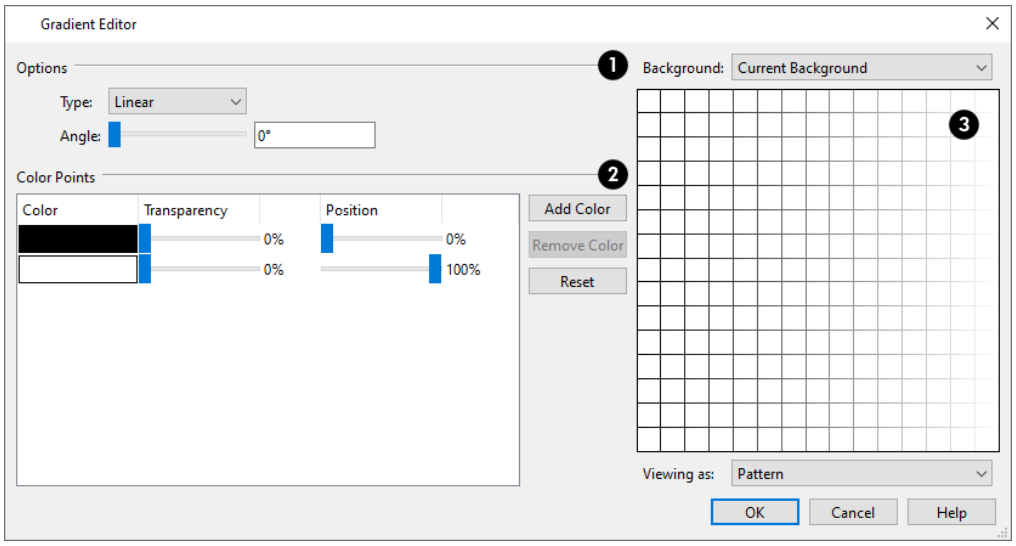


Select **File> Import> Import Patterns** to open the Import Custom Patterns dialog and import a **.pat** file. See *Importing Files on page 64*.

Patterns are imported directly to the User Catalog in the Library Browser. See *The User Catalog on page 718*.

Fill Gradients

To access this dialog, click the Gradient Color bar in the Fill Style Specification dialog or on the Fill Style panel of a variety of different dialogs in the program. See *Fill Style Panel and Dialogs on page 161*.



1 Options

- Select a **Type** from the drop-down list:
  - "Linear" produces a gradient that runs along a single line.
  - "Radial" produces a gradient that encircles a point at the center of the fill.
- When "Linear" is the selected Type, specify the **Angle** of the gradient line, relative to 0° in the current view. See *3D Drafting on page 12*.

2 Color Points

Specify at least two colors for the selected fill pattern's gradient.

- Each line item in the table has three attributes:
  - Specify a line item's **Color** by clicking the Color bar. See *Select Color Dialog on page 165*.
  - Specify the **Transparency** of the selected gradient color using the slider bar or the text field to its right.
  - Specify the **Position** of the selected gradient color using the slider bar or text field. 0% places the color on the far right side of a Linear gradient or at the center of a Radial gradient, while 100% places it on the far left side or far outside. The closer two Position values are, the sharper the gradient will be.
- Buttons on the right allow you to manage the colors in the list.
  - Click **Add Color** to add a new color to the list.
  - Click **Remove Color** to remove the selected line item from the list. Only available if there are three or more colors in the list.
  - Click **Reset** to reset all Color Point settings to the system defaults. Any added colors will be removed.

3 Preview

A preview of the selected fill with the specified gradient displays to the right. As changes are made to the settings on this panel, the preview will update. Display options above and below the preview pane are available for patterned fills only.

- Select a **Background** from the drop-down list above the preview pane. The active view's Current Background color is used by default; however, you may find it easier to see the fill pattern's gradient in the preview by selecting "White", "Black", or "Checkerboard" instead.
- Select an option from the **Viewing As** drop-down list below the preview pane. "Pattern" is selected by default, but you can select "Solid" instead to better see some gradients.

Fill Style Panel and Dialogs

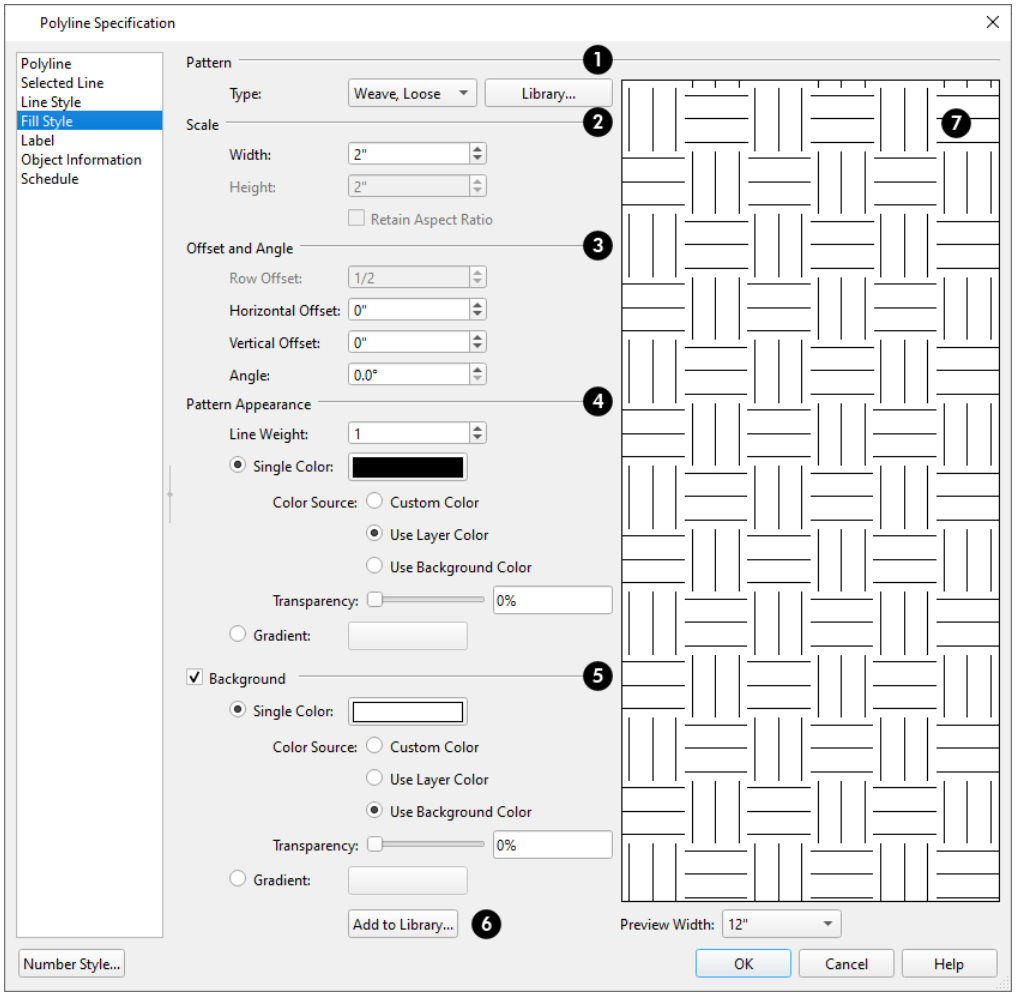
Fill styles are CAD-based patterns that can be used to fill the interiors of closed CAD shapes. In plan view, fill styles can also be applied to a variety of architectural objects, symbol objects, and Wall Hatching. See *Wall Hatching on page 266*.

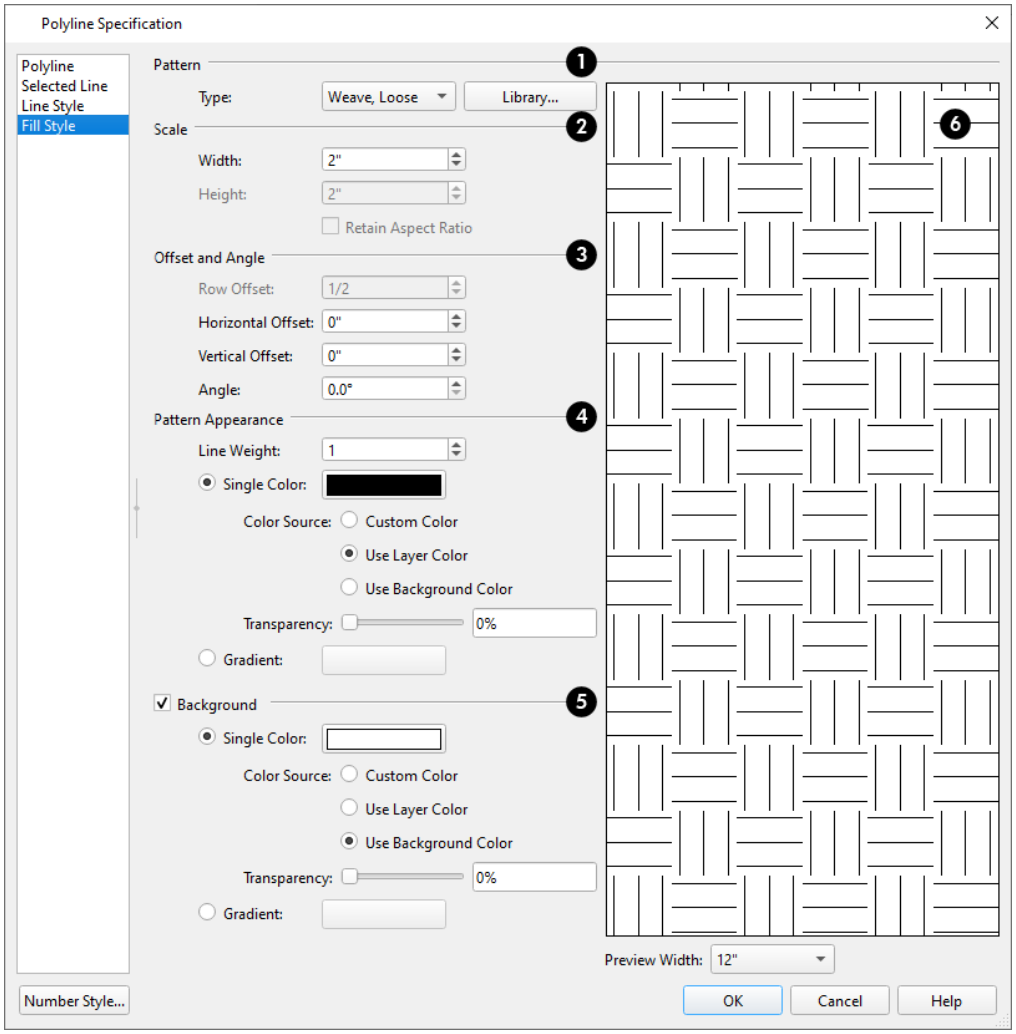
The FILL STYLE panel is found in the specification dialogs for a variety of objects in the program. This panel is not available Electrical Connection splines, Sprinkler Lines, or any object that does not form a closed shape.

Sprinklers can have more than one fill style. As such, the FILL STYLE panel in their specification dialog does not have settings for a single fill style: instead, it lets you access the Fill Style Specification dialog for each of the selected object's possible fill styles. See *Sprinkler Specification Dialog on page 947*.

The settings on this panel are also found in a number of dialogs:

- To open the Fill Style Specification dialog, right-click on a fill style in the library and select **Open Object** or right-click on an unlocked library folder and select **New> Fill Style**. See *Using the Contextual Menu on page 710*.
- You can also create a new fill style by clicking the **Add New Fill Style** button in the Select Library Object dialog. See *Select Library Object Dialog on page 729*.
- To open the Layer Fill Style dialog, click in the Fill column in the Wall Type Definitions or any Material Layers Definition dialog. See *Wall Type Definitions Dialog on page 290* and *Material Layers Definition Dialogs on page 753*.
- The Cabinet Box and Countertop Fill Style dialogs can be accessed by clicking the associated **Fill Style** button on the FILL STYLE panel of the Base Cabinet Specification dialog. See *Fill Style Panel on page 490*.
- The Spray Area and Sprinkler Symbol Fill Style dialogs can be accessed by the associated **Fill Style** button on the FILL STYLE panel of the Sprinkler Specification dialog. See *Fill Style Panel on page 738*.


Polyline Specification
Polyline
Selected Line
Line Style
Fill Style
Label
Object Information
Schedule
Pattern
1
Type:
Weave, Loose
Library...
Scale
2
Width:
2"
Height:
2"
Retain Aspect Ratio
Offset and Angle
3
Row Offset:
1/2
Horizontal Offset:
0"
Vertical Offset:
0"
Angle:
0.0°
Pattern Appearance
4
Line Weight:
1
Single Color:
Color Source:
Custom Color
Use Layer Color
Use Background Color
Transparency:
0%
Gradient:
Background
5
Single Color:
Color Source:
Custom Color
Use Layer Color
Use Background Color
Transparency:
0%
Gradient:
Add to Library...
6
7
Preview Width:
12"
Number Style...
OK
Cancel
Help



Fill Style Name
In the Fill Style Specification dialog only, specify the **Fill Style Name**.

1 Pattern

Select a pattern **Type** from the drop-down list and specify its characteristics.

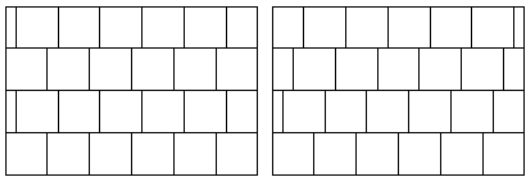
- Select "Use Layer" from the list to use the fill style assigned to the object's layer. See *Layer Attributes on page 152*.
- Select “Library” from the list or click the **Library** button to choose a pattern from the library. When a Library fill style is selected, its name will display in the list instead of a system default Type. See *Assigned Items on page 729*.

2 Scale

These options vary, depending on whether a system pattern Type or a pattern from the Library is selected, above.

When a system pattern Type is selected:

- Specify the **Row Offset** of the selected fill pattern. Only available for Grid, Offset and Grid, Step patterns.



Grid, Offset and Grid, Step patterns: both with 1/4 Row Offset

  - For Grid, Offset patterns, the offset alternates back and forth from row to row.
  - For Grid, Step patterns, the offset progresses upward and to the right.
- Specify the **Width** of the selected fill pattern. For Concrete and Sand fills, instead adjust the overall **Spacing**. Not available for Solid fill.
- Specify the **Height** of the selected fill pattern. Only available for the Grid fill Types, as well as Herringbone and U's.

When a pattern from the Library is selected:

- Specify an **X Scale** and **Y Scale** for the selected fill pattern. Only available when the name of a fill style from the library is listed as the fill Type, above.

3 Offsets and Angle

Specify the fill's **Offsets and Angle**.

- Specify the **Horizontal** and **Vertical Offsets**.
- Specify the **Angle** of the selected fill pattern. Not available for Solid fill.

4 Pattern Appearance

- Set the **Line Weight** for the selected fill pattern. Not available for "Solid" fill.
- Select **Single Color** to specify a single color for the lines that make up the fill pattern or Solid fill. The Color bar shows the currently selected color: click the bar to select a custom color if you wish. See *Select Color Dialog on page 165*.
  - If you click the Color bar above, **Custom Color** is selected automatically.
  - Select **Use Layer Color** to have the fill pattern use the layer color for the pattern lines or solid fill. This option is selected by default.
  - Select **Use Background Color** to use the view's background color for the pattern lines or solid fill.
  - Use the **Transparency** slider bar or text field to control how transparent the fill pattern lines are. This setting also affects the transparency of Solid fill colors.
- Select **Gradient** to apply a gradient to the selected fill instead of a single color. Click the Gradient Color bar to customize its appearance in the Gradient Editor dialog. See *Fill Gradients on page 160*.

5 Background

Not available when "Solid" is the selected Pattern Type.

- Check **Background** to add a background color to the fill pattern and enable the settings below. When unchecked, the fill pattern has a transparent background.
- Select **Single Color** to specify a single color for the fill pattern's background. The Color bar shows the currently selected color: click the bar to select a custom color if you wish. See *Select Color Dialog on page 165*.
  - If you click the Color bar above, **Custom Color** is selected automatically.
  - Select **Use Layer Color** to have the fill pattern use the layer color for its background color.

- Select **Use Background Color** to use the view's background color for the pattern's background. This option is selected by default.
- Use the **Transparency** slider bar or text field to control how transparent the fill pattern lines are.

- Select **Gradient** to apply a gradient to the selected pattern's background instead of a single color. Click the Gradient Color bar to customize its appearance in the Gradient Editor dialog. See *Fill Gradients on page 160*.

6 Preview

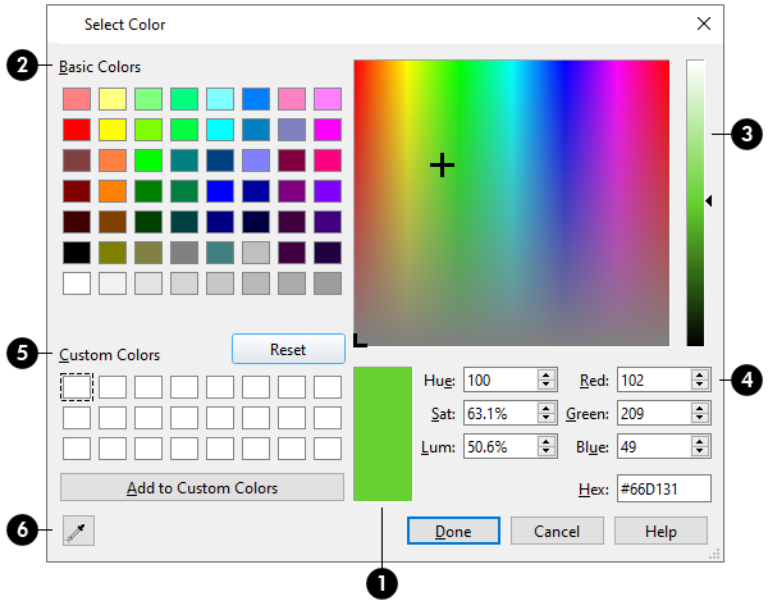
A preview of the selected pattern displays to the right. As changes are made to the settings on this panel, the preview will update.

- Choose a **Preview Width** from the drop-down list. This value controls how large an area the preview represents. The selected value indicates the horizontal width of the preview pane in actual plan inches (mm).

Select Color Dialog

The Select Color dialog can be opened by clicking on the Color bar that can be found in many dialogs throughout the program, allowing you to specify the color used to draw various objects as well as elements of the program interface.

Mouse over a Color bar in any dialog to display a tool tip reporting the selected color's RGB values.



1 Current Color

The currently selected color displays in the rectangle at the lower center of the dialog. There are a number of ways to select a color in this dialog.

2 Basic Colors

Click in any one of the color boxes to select it.

3 Color Spectrum

- Click anywhere in the color spectrum area to select a color. The location of the selected color is identified by crosshairs.
- Click anywhere in the vertical bar or drag the arrow to adjust the selected color's Luminosity and RGB values.

4 Color Definition

- Define a color by specifying its **Hue**, **Saturation**, and **Luminosity** (HSL) or its **Red**, **Green**, and **Blue** (RGB) values.
- Specify the color's **Opacity**. 0% is totally transparent. Only available when Selection and Edit Handle colors are being set via the COLORS panel of the Preferences dialog. See *Colors Panel on page 95*.

5 Custom Colors

Custom colors are retained during the current program session only.

- Click in one of the **Custom colors** boxes to either select it or to specify it as the box for a new custom color to be defined.
- Click the **Add to Custom Colors** button to add the selected color to the Custom Colors group.
- Click the **Reset** button to reset all Custom colors to white.

6 Color Chooser Eyedropper

Click this button, then click anywhere on your monitor to select the color displaying at that location.

Click OK to apply the currently selected color to the object's line or fill style, or to the material's pattern color.

Positioning Objects

Chapter 9

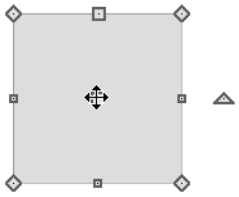
Once objects are created, they can be repositioned using a variety of methods.

Moving Objects

Objects can be moved using the edit handles as well as a variety of edit tools. Multiple selected objects can also be moved as a group. See *Selecting Objects on page 183*.

Using the Edit Handles

Select an object, then click the **Move** edit handle and drag it to a new location. When your pointer is over the Move handle, it displays a four-headed arrow.



As an object is moved, it jumps at set increments when **Grid Snaps** are enabled. See *Grid Snaps on page 144*.

When **Object Snaps** are enabled, a selected object snaps to a "sticky point" at its original location if it passes over that location while being moved.

The behavior of the Move edit handle varies depending on the currently active **Edit Behavior**. See *Defaults, Preferences, and Edit Behaviors on page 179*.

- If the **Default**, **Resize**, **Concentric** or **Fillet** edit behavior is active, the object moves orthogonal, or at a right angle to, any of its edges.
- If the **Alternate** edit behavior is active, the selected object(s) can be moved at Allowed Angles if **Angle Snaps** are enabled, or orthogonal to any of its edges if they are not. See *Alternate on page 180*.

Bumping/Pushing

When **Edit> Snap Settings> Bumping/Pushing** is enabled, architectural objects will bump into and can push one another as they are moved. This setting also affects CAD and CAD-based objects with **CAD Stops Move** and/or **Wall Stops Move** enabled. See *Line Style Panel on page 234*.

When an object bumps into another object while it is being moved, it stops. If you do not release the mouse button and continue to drag, however, the selected object resumes movement and continues past the obstructing object.

Instead of dragging through and past obstructing objects, you can instead push them. To do this, bump an object into an obstructing object and release the mouse button. Then, click and drag the Move edit handle a second time in the same direction.

Walls, wall openings, cabinets, furnishings and fixtures, and CAD and CAD-based objects are examples of objects that can bump into as well as push other objects. Electrical Connections and Custom Backsplashes are examples of objects that are not affected by Bumping/Pushing.

By default, **Bumping/Pushing** does not affect objects moved using dimensions. See *Moving Objects Using Dimensions on page 361*.

The **Maximum Bump Distance**, which is the distance you must drag to override bumping, is set in the Preferences dialog. **Bumping/Pushing for Type-in Movement** can also be enabled there. See *Snap Properties Panel on page 114*.

Certain types of objects, notably roof planes, and objects on locked layers can be bumped but cannot be pushed. See *Layer Display Options Dialog on page 154*.

CAD Stops Move/Wall Stops Move

CAD and CAD-based objects can be set to stop at other CAD objects and/or at walls as they are being moved. See *Line Style Panel on page 234*.

Some objects, such as cross boxes, framing members and insulation, are automatically set to stop when moved against other CAD objects.

CAD Stops Move and **Wall Stops Move** do not function if **Bumping/Pushing** is turned off.

Unrestricted Movement

Many objects have restrictions placed on their movement by their own properties or specification settings. Architectural objects, for example, bump into other 3D objects as they are being moved when **Bumping/Pushing** is enabled.

CAD-based objects can be set to stop at other CAD objects or at walls. See *Line Style Panel on page 234*.

Other move restrictions are activated by the **Snap Settings**. See *Snap Behaviors on page 141*.

These restrictions can be overridden when necessary by holding down the ***Ctrl/⌘*** key while dragging to move an object.

To move an object freely

1. Select the object.
2. Hold down the ***Ctrl/⌘*** key.
3. Click the Move edit handle and drag it to the new location.

You can also press the ***Ctrl/⌘*** key while dragging an object's Move handle to override move restrictions.

Nudging

You can use the arrow keys on your keyboard to move a selected object or objects one increment at a time in 2D and 3D views. This is referred to as nudging. See *Grid Snaps on page 144*.

A selected object can be nudged using either of two increments:

- The standard nudging increment is the same as the Snap Grid Unit set in the General Plan and General Layout Defaults dialogs. See *Angle/Grid Panel on page 91*.
- The Nudge Further increment uses the larger Reference Grid Size. To Nudge Further, hold down the ***Shift*** key while pressing the arrow key of your choice.

In Plan View

To nudge an object in plan view, select it and press any of the four arrow keys: Up, Down, Left, or Right. These directions are relative to the Snap Grid: if **Rotate Plan View** is used to rotate plan view, the definitions of up, down, left, and right are affected. See *Rotate Plan View on page 132*.

In 3D Views

In 3D views, nudging is relative to the selected surface. If, for example, you select the front of a cabinet in 3D and nudge it to the left, it will move to the left in plan view. If you instead select the back of a cabinet in 3D and nudge it to the left, it will move to the right in plan view.

When multiple objects are selected, the surface that was clicked on last is considered the selected surface. When nudged, all selected objects will move relative to that surface. See *Shift and Ctrl/⌘ Select on page 187*.

If an object is rotated, the directions that it can be nudged in 2D are not affected; however, in 3D, they are. If, for example, a cabinet is rotated 45º, it will nudge to the left as defined by the Snap Grid in plan view. When nudged in 3D, however, it will move at a 45º angle to the Snap Grid: or parallel to the selected surface.

Point to Point Move

The **Point to Point Move** edit tool allows a selected object or group of objects to be accurately moved.

The Point to Point Move tool is often most effective when used in combination with Object Snaps. Bear in mind that it is also affected by Grid Snaps, and that in some situations you may want to toggle snaps off. See *Snap Behaviors on page 141*.

To use Point to Point Move

1. Select one or more objects that you would like to move, then click the **Point to Point Move** edit button.
2. A temporary CAD point preview follows the mouse pointer, which displays the Point A icon. Click on a point that you want to accurately reposition: a temporary point is placed at that location.
3. Move the mouse pointer:
   - An extension line extends from Point A to the pointer, which now displays the Point B icon and is followed by a preview outline of the selection and another temporary point preview.
   - You can move the mouse at any angle, making it easier to use Object Snaps.
   - Hold down the ***Shift*** key to moved at Allowed Angles only. See *Angle Snaps on page 143*.
4. Click on the point on an object or in the plan where you would like the selected point to be relocated when it is moved.
5. The selected object(s) are moved so that they maintain their position relative to the point and both temporary points are deleted.

To retain a copy of the selected object(s) in the original location, the **Copy/Paste** edit button before clicking the **Point to Point Move** button. See *To use Copy/Paste with other edit tools on page 149*.

Point to Point Move can also be used with the **Edit Area** tools. See *Edit Area Tools on page 213*.

Using Center Object

The **Center Object** edit button allows you to move walls, cabinets and other objects so that they are centered along a wall within a room or relative to a window or cabinet. See *Center Object on page 170*.

Move to Framing Reference

Framing members can be positioned relative to a Framing Reference using the **Move to Framing Reference** edit tool. See *Framing Reference Markers on page 670*.

Using Dimensions

Objects or the selected edges of some objects can be moved using dimensions. See *Moving Objects Using Dimensions on page 361*.

When **Bumping/Pushing for Type-in Movement** is checked in the Preferences dialog, adjacent objects can be pushed when an object is moved using dimensions.

> Note: By default, objects moved using dimensions are not subject to Bumping/Pushing. See *Bumping/Pushing on page 167*.

Using the Transform/Replicate Object Dialog

Objects and groups of objects can be moved relative to themselves or an absolute location using the Transform Replicate Object dialog. See *Transform/Replicate Object Dialog on page 176*.

Aligning Objects

It is often important to align objects such as text boxes, roof plane edges, or walls, or to align objects on different floors. There are several methods to choose from.

Center Object

The **Center Object** edit button can be used to center a variety of objects either relative to another object. Center Object can be used to center architectural objects in plan view, cross section/elevation, and 3D views. It can also be used to center CAD objects in plan view, cross section/elevation views, and layout.

A few objects, such as camera symbols, are not eligible to be used as a centering axis.

To use the Center Object edit tool

1. Select one or more objects that you would like to center relative to another object or feature.
2. Click the **Center Object** edit button.
3. Move the mouse pointer over the object you would like to center the selected object relative to.
4. As the pointer passes over an eligible object, it becomes highlighted and a dashed centering axis line displays.
   - A centering axis collinear with an edge can be used.
   - A centering axis through the midpoint of and perpendicular to an edge can be used.
   - A centering axis that splits the angle at a corner between two connected object edges or walls can be used.
5. When the centering axis displays, a preview of the selection to be pasted will also display, indicating where it will be located if centered along that axis.
6. When the centering axis and preview meet your needs, click once to center the selected object along that axis line.

To center an object in a room

1. Select one or more objects that you would like to center relative to a room.
2. Click the **Center Object** edit button.
3. Move the mouse pointer in the room that you would like to center the selected object relative to.
   - When a room is being used for centering, its area will be highlighted.
   - As you move the pointer, a centering axis will display along the wall it is closest to.
   - If you move the pointer near a wall corner, the centering axis will split the angle of that corner.
   - The selected object does not have to be inside a room in order to be centered relative to that room.
4. When a centering axis displays, a preview of the selection to be pasted will also display, indicating where it will be located if centered along that axis.
5. When the centering axis and preview meet your needs, click once to center the selection relative to the room.

Objects can also be centered relative to the Exterior Room. See *The Exterior Room on page 317*.

You can specify whether the Center Object and Reflect About Object edit tools **Find Angles** or not in the Preferences dialog. See *Behaviors Panel on page 113*.

To retain a copy of the selected object(s) in the original location, the **Copy/Paste** edit button before clicking the **Center Object** button. See *To use Copy/Paste with other edit tools on page 149*.

Using the Crosshairs

Objects can be aligned by eye using the mouse pointer crosshairs as a reference. This method can help you draw, place and edit objects quickly, easily, and with reasonable accuracy, but is not necessarily as accurate as some of the other approaches described here. See *Crosshairs on page 15*.

The mouse pointer crosshairs can be turned on and off and their size and aperture set in the Preferences dialog. See *Edit Panel on page 110*.

Using Snap Settings

With **Object Snaps** on, you can snap the edge of a selected object to that of another. Select an edge of an object. Drag it to the edge of another object to reveal an Object Snap point, then release the mouse.

With **Grid Snaps** on and **Angle Snaps** off, select the left side of the object, and drag from the center move handle. This snaps the selected side to the grid.

When both **Grid Snaps** and **Angle Snaps** on, objects snap at increments equal to the **Snap unit** specified in the Plan Defaults dialog rather than onto the grid itself. This does not align objects to the grid unless they were already snapped to the grid. See *Snap Behaviors on page 141*.

Using Dimensions

Create a temporary or manual dimension relative to an object such as a wall or line, and relocate the objects to the same dimension. See *Moving Objects Using Dimensions on page 361*.

> Text objects can be aligned using settings in the Text Specification dialog. See *Aligning Text on page 377*.

CAD Stops Move/Wall Stops Move

CAD and CAD-based objects can be aligned using another CAD object or a wall as a guide. Check the **CAD Stops Move** and/or **Wall Stops Move** boxes in the objects' specification dialogs, then move them until they bump into the CAD object or wall that you wish to use as a guide for alignment. See *Line Style Panel on page 234*.

Make Parallel/Perpendicular

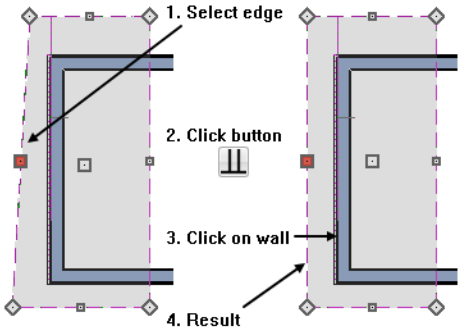
The **Make Parallel/Perpendicular** edit button allows you to make an object's Selected Edge parallel or perpendicular to any straight line or edge.

If you select an edge of a polyline-based object, adjacent edges extend or contract to maintain contact, but other edges remain unchanged. The selected edge rotates about its endpoint if selected near the end, or about its center if you click within its middle third.

A few objects, such as camera symbols, are not eligible to be used as an axis for the **Make Parallel/Perpendicular** tool.

To use Make Parallel/Perpendicular

1. Select an object such as a roof plane on the edge that you would like to make parallel or perpendicular to another object or feature.
   - Click near the center of the selected edge to lock the midpoint when the edge's angle is changed.
   - Click near one end of the selected edge to lock that end when the edge's angle is changed.
2. Click the **Make Parallel/Perpendicular** edit button.
3. If you want to rotate the entire polyline instead of changing the angle of the selected edge, double-click on the **Make Parallel/Perpendicular** button and select the option to **Rotate entire polyline** in the Make Parallel/Perpendicular dialog. This setting is global for the duration of the current program session. See *Make Parallel/Perpendicular with Polyline-Based Objects on page 174*.
4. As the pointer passes over an eligible object, it becomes highlighted and a dashed make parallel/perpendicular axis line displays.
   - An axis collinear with an object edge can be used.
   - An axis through the midpoint of and perpendicular to an object edge can be used.
   - An axis that splits the angle at a corner between two connected object edges or walls can be used.
5. When an axis displays, a preview of the selection to be made parallel/perpendicular will also display, indicating its new shape if edited using that axis.
6. When the axis and preview meet your needs, click once. If the first object is within 45° of parallel to the axis, it is made parallel. Otherwise, it is made perpendicular to the axis.



Aligning Arc Centers

The center points of circles and arc-based objects can be aligned, even if the objects are on different floors, when the Reference Display is turned on and **Arc Centers and Ends** is toggled on. Note that Arc Centers and Ends is a floor-specific toggle. See *The Reference Display on page 546* and *Arc Centers and Ends on page 193*.

To align center points easily, it is helpful to turn on **Object Snaps** and turn off **Angle Snaps**. See *Object Snaps on page 142* and *Angle Snaps on page 143*.

Aligning Objects on Different Floors

Objects on different floors can be aligned with one another using **Object Snaps** and the **Reference Display**. See *Object Snaps on page 142* and *The Reference Display on page 546*.

Rotating Objects

Objects can be rotated using the edit handles as well as a variety of edit tools. Multiple selected objects can also be rotated as a group. See *Selecting Objects on page 183*.

By default, an object or group of objects rotate about the center point of the selection set. You can instead specify that objects rotate about the current CAD point. See *The Current Point on page 228*.

Using the Edit Handles

Select an object, then click the triangular **Rotate** edit handle and drag it in any direction. When your pointer is over the Rotate handle, it displays a curved arrow .

The angles of line-based objects can also be changed by dragging an end handle in a direction other than parallel to the object. The object rotates about the opposite end point. See *Editing Line-Based Objects on page 187*.

When **Angle Snaps** are enabled, objects snap to Allowed Angles as specified in the Plan Defaults dialog as they are rotated. See *Angle Snaps on page 143*.

To override any movement restrictions caused by snap settings or the presence of other objects, press the ***Ctrl/⌘*** key while dragging an edit handle.

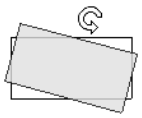
You can temporarily slow the movement of your mouse as you drag an edit handle by holding down the ***Shift*** key.

Using the Specification Dialog

The exact angle of some objects such as lines, arcs, walls and the selected edges of polylines can be specified on either the General panel, Selected Line panel, or Selected Arc panel of that object's specification dialog. See *Polyline Specification Dialog on page 245*.

Rotate/Resize About

Objects can be rotated about either their own centers or the current CAD point. See *The Current Point on page 228*.



Rotate About Object Center



Rotate About Current Point

You can specify which behavior is used by selecting **Edit> Edit Behaviors> Rotate/Resize About Current Point** . When this option is selected, objects rotate about the current CAD point; when it is not selected, object rotate about their centers.

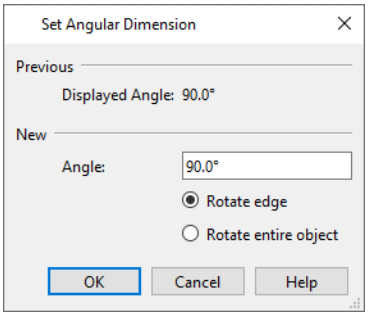
The Rotate/Resize About behavior can also be specified in the Preferences dialog. See *Behaviors Panel on page 113*.

Using Angular Dimensions

Angular Dimensions are useful for adjusting the angles of a variety of objects with straight edges. See *Angular Dimensions on page 352*.

To change an angular dimension

1. Draw an **Angular Dimension** between the objects you want to move.
   - Begin and end as close as possible to the two objects you wish to locate.
2. Select the edge that you want to move.
3. Click the dimension value to open the Set Angular Dimension dialog.
   - The **Previous Value** is indicated degrees, minutes and seconds.



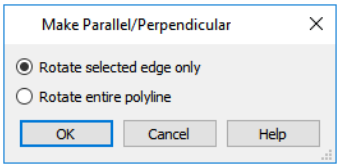
4. Enter a value in the **New Value** field.
5. Select **Rotate Edge** to move the selected edge when OK is clicked or select **Rotate entire polyline** to rotate the entire object the selected edge is a part of, maintaining the Previous Value of the angle.
6. Click **OK** to apply the change.

When an entire polyline is rotated using the Set Angular Dimension dialog, it rotates around the vertex of the angle.

Make Parallel/Perpendicular with Polyline-Based Objects

The **Make Parallel/Perpendicular** edit button usually adjusts the angle of a selected polyline edge. See *Make Parallel/Perpendicular on page 172*.

To rotate the entire polyline instead, double-click the **Make Parallel** edit button to open the Make Parallel dialog.



Choose to either **Rotate Selected Edge Only**, or **Rotate Entire Polyline**. This setting is global, affecting all files, and is retained during the current program session.

Polylines rotate according to the current **Rotate/Resize About** setting. See *Behaviors Panel on page 113*.

Using the Transform/Replicate Object Dialog

Objects and groups of objects can be rotated to a relative or absolute angle using the Transform Replicate Object dialog. See *Transform/Replicate Object Dialog on page 176*.

Reflecting Objects

There are several ways to reflect an object, group of objects, or an entire plan about an axis or another object. Either the original object(s) or copies of the original(s) can be reflected.

Reflect About Object

A selected object or objects can be reflected about another object, regardless of its angle, using the **Reflect About Object** edit tool.

Most objects have one or more axes that can be used.

- When line-based object is used as the reflective object, the reflection axis can be either collinear with the object's centerline or perpendicular to it and running through its midpoint.
- When an open or closed polyline-based object is used as the reflective object:
  - A reflection axis collinear with an object edge or line-based object's midpoint can be used.
  - A reflection axis through the midpoint of and perpendicular to an object edge can be used.
  - A reflection axis that splits the angle at a corner between two connected object edges can be used.
- Rooms and the walls that define them can also be used as reflective objects: much like closed polyline-based objects.
- When a circle or box-based object such as a CAD box or cabinet is used as the reflective object, the axis runs down the center of the object from back to front.
- In 3D views, architectural objects can only be reflected about a vertical axis - not a horizontal axis.
- A few objects, such as camera symbols, are not eligible to be used as a reflective object.

To use Reflect About Object

1. Draw a CAD line to act as the reflection line.
2. Select the object(s) to be reflected.
3. Click the **Reflect About Object** edit button.
4. Move your mouse pointer over a CAD line, object edge, or other object that you would like to reflect the selection about.
   - When a room is being used for reflecting, its area will be highlighted.
   - As you move the pointer, a reflection axis will display along the wall it is closest to.
   - If you move the pointer near a wall corner, the reflection axis will split the angle of that corner.
   - The selected object does not have to be inside a room in order to be reflected relative to that room.
5. When the mouse pointer is over a valid reflection axis, a preview of the selection to be pasted will display on the opposite side of the axis as the original.

6. Click once when the preview meets your needs. The selection is reflected around the CAD line, and the original is no longer there.

To retain a copy of the selected object(s) in the original location, click the **Copy/Paste** edit button before clicking the **Reflect About Object** button. See *To use Copy/Paste with other edit tools on page 149*.

You can specify whether the Reflect About Object and Center Object edit tools **Find Angles** or not in the Preferences dialog. See *Behaviors Panel on page 113*.

Using Transform/Replicate Object

Objects and groups of objects can also be reflected horizontally or vertically using the Transform Replicate Object dialog. See *Transform/Replicate Object Dialog on page 176*.

Reverse Direction

Select a line-based, arc-based, open spline-based, or open polyline-based object and click the **Reverse Direction** edit button to reverse its direction. Not available for Terrain Path objects.

Reversing an object's direction switches its Start and End points and can be useful with certain line styles or if the selected object has an arrow at one end. The **Reverse Direction** tool also reverses the direction in which a selected Walkthrough Path is recorded. See *Walkthrough Paths on page 870*.

Reverse Plan

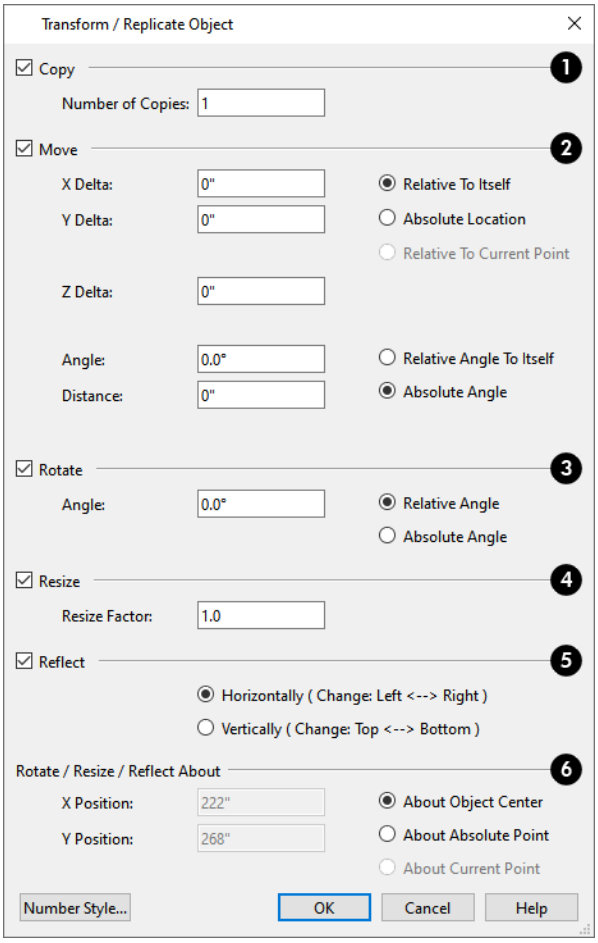
The **Reverse Plan** tool reflects architectural and CAD objects on all floors of the current plan, as though they were flipped about a vertical line. See *Reverse Plan on page 133*.

Transform/Replicate Object Dialog

Select any object or group of objects and click the **Transform/Replicate Object** edit button to open the Transform/Replicate Object dialog.

If multiple options are selected in the Transform/Replicate Object dialog, they are performed in the order they appear in the dialog, from top to bottom.

> Always double-check values entered in the Transform/Replicate Object dialog. Large offset values, resize factors, or numbers of copies can result in objects that are time-consuming to create or may be off the screen.



1 Copy

Check **Copy**, then specify the **Number of Copies** to make. Not available when certain object types are selected: for example, Roof Baselines.

2 Move

Check **Move**, then specify how far and in what direction to move the selected object(s).

There are three ways to define where you want to move the selection in the horizontal XY plane:

- Specify the desired **X Delta** and **Y Delta** values, which are the object's changes in position along the X and Y axes. Only available when the **Relative to Itself** or **Relative to Current Point** radio button is selected as the movement reference. See *The Current Point on page 228*.
- Specify the desired **X Position** and **Y Position** values, which define a point along the X and Y axes. Only available when **Absolute Location** is selected as the movement reference. See *3D Drafting on page 12*.
- Specify the **Angle** of movement and the **Distance** that you want the selection to move.
  - Select **Relative Angle to Itself** to move the selection relative to its current orientation. When this option is selected, the selection's current absolute orientation is reported in the Angle field and can be changed.
  - Select **Absolute Angle** to move the selection relative to an imaginary horizontal line drawn in the positive X direction from the origin.



When the X/Y Delta or X/Y Position settings are changed, the information in the Angle and Distance fields will update automatically, and vice versa.

You can also specify the **Z Delta**, which is the selection's elevation on the vertical Z axis. This setting is always relative to the selection's original elevation.

3 Rotate

Select this option, then specify the **Angle** to rotate the object(s).

- Select **Absolute Angle** to rotate the object relative to an imaginary horizontal line drawn in the positive X direction from the origin.
- Select **Relative Angle** to rotate the object the specified angle relative to its current orientation.

You can also specify the point the selected object(s) rotate about, below.

4 Resize

Specify the **Resize Factor** in decimals. A resize factor of 2 doubles the size of the object, while a resize factor of 0.5 halves the object's size. Not available for all objects, including line- and arc-based objects.

You can also specify the point the selected object(s) is resized about, below.

5 Reflect

Select this option, then specify which axis to reflect about.

- **Horizontally** - Select this option to reflect the object horizontally.
- **Vertically** - Select this option to reflect the object vertically.

You can also specify the point the selected object(s) is reflected about, below.

6 Rotate/Resize/Reflect About

This section is enabled when the **Rotate**, **Resize** and/or **Reflect** functions are selected.

- **X Position** - Specify the X coordinate of the point to perform the selected edit function(s) about when **About Absolute Point** is selected.
- **Y Position** - Specify the Y coordinate of the point to perform the selected edit function(s) about when **About Absolute Point** is selected.
- **About Object Center** - Select this option to perform the selected edit function(s) about the object's center.
- **About Absolute Point** - Select this option to perform the selected edit function(s) about the specified point.
- **About Current Point** - Select this option to perform the selected edit function(s) about the current CAD point.

Editing Objects

Chapter 10

Just as the methods used to create and reposition different objects in Home Designer are similar, the options for resizing, reshaping, and editing their other properties are also alike.

Edit handles allow objects to be resized, relocated, or rotated using the mouse. Edit toolbar buttons and the contextual menus access edit tools relevant to the selected object(s). Most objects have a specification dialog that allows you to edit it in ways that are specific to that type of object.

The editing characteristics common to most objects are described in this chapter. Unique, object-specific editing behaviors and the specification dialogs are covered in their respective chapters.

Defaults, Preferences, and Edit Behaviors

The same defaults and preference settings that affect how objects are drawn also influence how they can be edited. See *Drawing Preferences on page 140*.



In addition, the **Edit Behavior** modes that determine how edit handles affect an object, and may also affect how objects are drawn. The currently active Edit Behavior is a global preference setting, affecting all plan and layout files.

Two of these modes, **Default** and **Alternate**, are useful for most drawing and editing needs and can be considered primary editing modes. Default mode, in particular, accesses the most commonly used behaviors and is the best choice in most circumstances.

When an Edit Behavior other than Default is active, its icon displays near the mouse pointer. For example, when **Connect CAD Segments** is disabled, CAD objects cannot connect to form polylines and the Connect CAD Segments icon follows the mouse pointer to remind you that this behavior is active. See *Pointer Icons on page 15*.

Regardless of which Edit Behavior is active, the Default behavior is restored when you close the program.

The other modes, **Resize**, **Concentric**, and **Fillet**, offer special editing behaviors that may be useful only in certain situations and can be considered secondary.

Each edit behavior can be temporarily enabled using the different buttons on your mouse or by pressing the keyboard keys associated with each. See *Using Input Devices on page 13* and *Hotkeys on page 127*.

You can also specify which edit behavior mode is active when the left mouse button is used in the Preferences dialog, by selecting **Edit> Edit Behaviors**, or by clicking the corresponding toggle button, which can be added to your toolbar. See *Behaviors Panel on page 113*.

Default

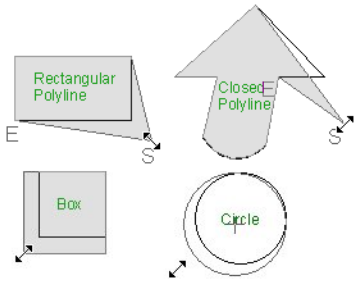


The **Default** mode is one of the primary edit behavior modes. It offers access to the most commonly used edit behaviors and should be selected as your preference in most situations.



When the use of a tool is described in this manual, it is assumed that the Default edit behavior mode is active.

- **Drawing** - Standard click and drag drawing behavior is enabled. See *Creating Objects on page 145*.
- **Resize/Reshape** - Default allows you to adjust the angle of any corner of a polyline without affecting adjacent corners, changing the object's shape.



- For box-based objects, the Default mode functions the same as the Alternate mode.
- **Movement** - Default allows you to move objects orthogonal, or at a right angle, to any of their edges.
- **Rotation** - In Default mode, objects snap at Allowed Angles as they are rotated.

You can temporarily enable the **Default** edit mode when another mode is active by pressing **Alt** + **Z** or **Alt** + / while performing an edit or drawing operation.

ALTERNATE

Alt The **Alternate** mode is the second primary edit behavior mode. When this mode is active, the Alternate Alt icon displays near the mouse pointer.

> Note: Not all commands have an Alternate edit behavior. If a selected tool does not, it will not work when this edit mode is active.

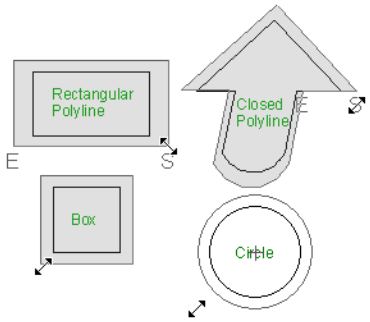
- Alternate allows you to drag an end handle on an open polyline to change it from a line to an arc or vice versa.
- Alternate overrides the **Lock Center** setting of arc-based objects.
- **Movement** - Alternate allows you to move objects at Allowed Angles when **Angle Snaps** are enabled, or orthogonal to any of its edges when they are not. See *Angle Snaps on page 143*.
- **Rotation** - Alternate snaps objects at Allowed Angles as they are rotated.
- Alternate allows you to create a camera view using the Alternate Rendering Technique. See *Alternate Rendering Technique on page 785*.

You can temporarily enable the **Alternate** edit mode when another mode is active by pressing ***Alt*** or using the right mouse button while performing an edit operation.

RESIZE

The **Resize** edit behavior allows you to rescale an object. As you drag a corner edit handle of an object, you get an exactly scaled version of the original. For example, you can resize an object to 50% of its original size while maintaining the same proportions. When this mode is active, the **Resize** icon displays near the mouse pointer.

- **Drawing** - Standard click and drag drawing behavior is enabled.
- **Resize/Reshape** - Resize allows you to keep the angle between adjacent edges fixed when a corner handle is moved.



To proportionally resize an object, always drag a corner edit handle and not an edge handle.

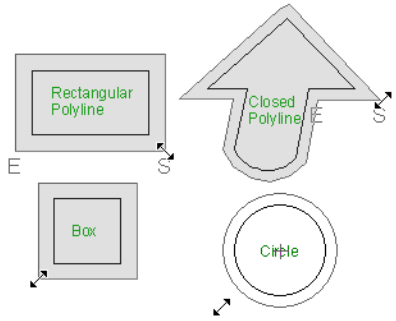
- **Movement** - Resize allows you to move an object orthogonal, or at a right angle, to any of its edges.
- **Rotation** - In Resize Mode, objects snap at Allowed Angles as they are rotated.

You can temporarily enable the **Resize** edit mode when another mode is active by pressing **X** or the period key, or using the X2 button on a five-button mouse while performing an edit or drawing operation. See *Using Input Devices on page 13*.

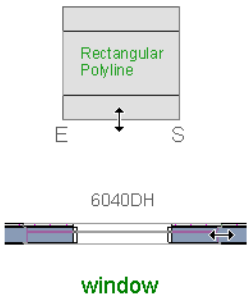
CONCENTRIC

The **Concentric** mode allows you to resize objects so that the distance moved by each edge is the same. For example, you can resize an irregularly shaped polyline so that each edge is exactly ten feet in from the original position, which is useful for creating site plans with setbacks. When this mode is active, the Concentric icon displays near the mouse pointer.

- **Drawing** - Standard click and drag drawing behavior is enabled.
- **Resize/Reshape** - Concentric allows you to resize an irregularly-shaped polyline so that each edge is moved the same distance from its original location.

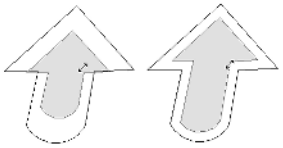


- Concentric mode also allows you to move opposite edges of a four-sided object or opposite ends of a line-based object so that each edge or end is moved the same distance from its original location.



- **Movement** - Concentric mode allows you to move an object orthogonal, or at a right angle, to any of its edges.
- **Rotation** - In Concentric mode, objects snap at Allowed Angles as they are rotated.

In some cases, the Concentric and Resize edit behaviors have the same result, such as when a circle is resized. Usually, though, the two behaviors are different because concentric resizing does not maintain the original ratio between an irregular polyline's edges.



Resize (left) and Concentric (right) produce different results when a shape is complex

In Concentric mode, objects resize in **Concentric Jump** increments specified in the Preferences and Set Concentric Distance dialogs. See *Behaviors Panel on page 113*.

When the **Concentric Jump** distance is set at 0", objects resize according to the **Snap Unit** specified in the Plan Defaults dialog. See *Grid Snaps on page 144*.



To concentrically resize an object with no restrictions, set the Concentric Jump value on the Behaviors panel of the Preferences dialog to zero and turn off Grid Snaps.

You can temporarily enable the **Concentric** edit mode when another mode is active by pressing **C** or the command key, or using the X1 button on a five-button mouse while performing an edit or drawing operation. See *Using Input Devices on page 13*.



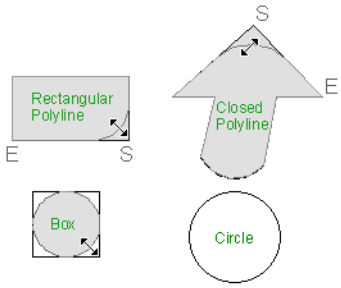
You can also concentrically resize a single selected object regardless of the currently active Edit Behavior by clicking the **Concentric Resize** edit button. See *Resizing Objects on page 206*.

FILLET



The **Fillet** mode allows you to add a fillet, or curve, at any corner of an object. Dragging a corner edit handle adjusts the fillet radius at that corner. When this mode is active, the Fillet  icon displays near the mouse pointer.

- **Drawing** - Standard click and drag drawing behavior is enabled.
- **Resize/Reshape** - Fillet allows you to create a fillet at by dragging a corner edit handle inward.



- **Movement** - Fillet mode allows you to move an object orthogonal, or at a right angle, to any of its edges.
- **Rotation** - In Fillet mode, objects snap at Allowed Angles as they are rotated.

The **Fillet** edit behavior adjusts all the corners of a box at once. The radius of each corner is the same.

Fillet does not have an effect on circles, ovals, ellipses or arc segments.

You can temporarily enable the **Fillet** edit mode when another mode is active by pressing **F** while performing an edit or drawing operation.



To produce fillets or chamfers of an exact radius, use the Fillet Lines or Chamfer Lines edit button. See *Fillet Lines on page 210* and *Chamfer Lines on page 211*.

Connect CAD Segments



Typically, when two CAD objects share the same properties and Endpoint Snaps are enabled, they can be snapped end-to-end to form a polyline. **Connect CAD Segments** controls whether CAD objects with the same properties can be snapped together to form polylines. It also controls whether spline segments can be snapped together. See *Polylines on page 244* and *Splines on page 249*.

Select **Edit> Edit Behaviors> Connect CAD Segments** to toggle this behavior on or off. You can also turn **Connect CAD Segments** on or off in the Preferences dialog. See *CAD Panel on page 109*.

In addition to CAD objects, **Connect CAD Segments** also affects stairs, ramps, and road objects. See *Stairs, Ramps, and Landings on page 548* and *Roads, Driveways, and Sidewalks on page 934*.

When **Connect CAD Segments** is disabled, CAD objects cannot connect to form polylines and the Connect CAD Segments  icon displays near the mouse pointer. See *Pointer Icons on page 15*.

Rotate/Resize About Current Point



Objects can be rotated or resized about either their own centers or the current CAD point. See *The Current Point on page 228*. When this mode is active, the **Rotate/Resize About Current Point**  icon displays near the mouse pointer. See *Rotate/Resize About on page 173*.

Selecting Objects

"Select" refers to selecting an object for editing. An object must be selected before it can be edited. There are a number of ways that objects can be selected:

In order for an object to be selected, it must be both unlocked and visible in the current view. See *Display Layers on page 151*.

When an object is selected, it displays edit handles and is highlighted using the **Selection Line** and **Selection Fill** colors set in the Preferences dialog. See *Colors Panel on page 95*.

In 3D views, a selected object will also display lines representing the selected edge or surface. The size of the edit handles does not change as you zoom in or out and is set in the Preferences dialog. To prevent them from stacking on one another, some edit handles may not display as you zoom away from the selected object. See *Edit Panel on page 110*.

When an object is selected, its edit toolbar also displays: by default, it is located at the bottom of the Home Designer program window just above the Status Bar. See *The Edit Toolbar on page 122*.

Groups of objects can also be selected simultaneously. See *Selecting Multiple Objects on page 186*.

Information about the selected object or objects will also display in the Status Bar. See *The Status Bar on page 24*.

A selected object remains selected until another object is selected, a different tool is activated, the ***Esc*** key is pressed, or any two mouse buttons are pressed at the same time.

Finding Objects

In order to select an object for editing, you may first need to find it. There are a variety of tools in the program designed to help you locate specific objects. These tools often open a new view window in which the object in question is either highlighted or selected.

- To find out where a line item in the Materials List is located in the model, select its row or any cell in its row and click the **Find Object in Plan** edit button. See *Find Object in Plan on page 80*.
- To locate a string of text, select **Edit> Find/Replace Text**. See *Find/Replace Text on page 379*.
- In a Framing Overview or other 3D view in which wall framing can be seen, select a wall framing member and click the **Find Wall** edit button to locate its owner wall in plan view. See *Selecting Walls on page 277*.
- Select **Tools> Checks> Missing Files Check** to identify and locate any missing referenced files. See *Referenced Files on page 71*.

Select Objects

With the exception of temporary CAD points, any object created using Home Designer's drawing tools can be selected using the **Select Objects** tool. Select **Edit> Select Objects**, click the toolbar button or press the ***Spacebar*** to activate this tool, then click on an object to select it.

You can also select objects or open context sensitive menus using the right mouse button when any tool is active.

By default, you can select an object by clicking within 12 pixels of it. You can adjust this distance by changing the **Snap Distance** in the Preferences dialog. A lower value, for example, can be helpful for working with small objects but can also make it very difficult to select larger objects. See *Snap Properties Panel on page 114*.

Select Next Object

next If there is more than one object in a particular space, it may be difficult to select the desired object. When a nearby object is selected, click the **Select Next Object** edit button or press the ***Tab*** key until the desired object becomes selected. This function cannot be applied to groups of selected objects.

Selecting Similar Objects

If a tool other than **Select Objects** is active, you can only select objects of that type using the left mouse button. For example, if the **Straight Exterior Wall** tool is active, you can only select walls using the left mouse button.

This can be useful for selecting an object when many objects of a different type occupy the same space in plan view.

Objects can be selected using the right mouse button, regardless of which tool is active.

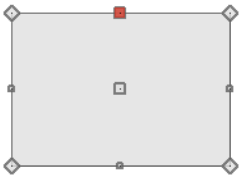
Right-Clicking

Regardless of which tool is active, you can select an object by right-clicking on it once. When you right-click to select an object a contextual menu also appears, displaying the object's edit tools. You can turn contextual menus on or off in the Preferences dialog. See *Contextual Menus on page 18*.

If a drawing tool is active and you right-click to select an object, you can unselect it by left-clicking in an empty space in the drawing area. Although a drawing tool is active, it is not used. If you then left-click a second time, the active tool will be used.

Selected Edge

When you click on a polyline- or box-based object, the edge that you click nearest becomes the selected edge and displays an edit handle larger and of a different color than those on other edges. The handle on this edge may also display at the point where you clicked to select it. You can specify the **Selected Edge Handle Fill** color in the Preferences dialog. See *Colors Panel on page 95*.



This edge can be edited on the Selected Line or Selected Arc panel of the object's specification dialog, as well as using a variety of edit toolbar buttons. It can also be moved using dimensions. See *Moving Objects Using Dimensions on page 361*, *Line Panel on page 233* and *Arc Panel on page 239*.

The Start and End points of a CAD-based object's selected edge or of a wall can be indicated by an S and an E when the object is selected. These Start and End indicators can be helpful when editing the selected edge in the object's specification dialog, and their display can be turned on and off in the Preferences dialog. See *Edit Panel on page 110*.



If the currently selected edge of an object is not the one you need, click the **Select Next Edge** edit button to select the side of the object that connects to its Endpoint. You can cycle through all sides of the object until the one you need is selected.

Selected Side

Most architectural objects can be selected in 3D views. When selected, the outline of their bounding box displays, and edit handles are located on the side where you clicked to select the object. The edit handles can be used to move, resize, or rotate the object in different directions, depending on which side is selected.

If the currently selected side of an object is not the one you need, click the **Select Next Side** edit button to select a different side of the object. You can cycle through all sides of the object until the one you need is selected.

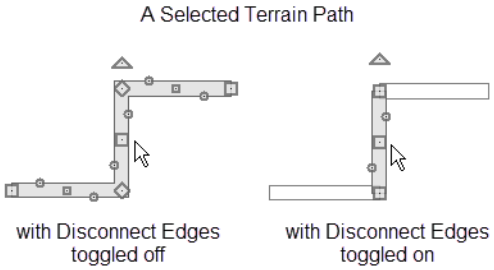
Disconnect Edges

Polyline-based objects are composed of lines and arcs that are connected end to end. The individual edges of open and closed polylines can be selected and edited independently of the object's other edges when **Disconnect Edges** is in use. Select **CAD> Lines> Disconnect Edges** to enable this ability.

Disconnect Edges also affects Terrain Paths, but does not affect Walkthrough Paths, Electrical Connection or Sprinkler splines, or closed polyline-based objects such as Slabs and Roof Planes.

To use Disconnect Edges

1. Select **CAD> Lines> Disconnect Edges** .
2. Click on an individual edge of an eligible polyline-based object to select it.



3. Notice that it is no longer connected to the rest of the polyline.
4. The individual segment can now be edited entirely independent of its neighbors.
5. Continue clicking on polyline edges to disconnect them from their polyline.
6. When you are finished, click the **Select Objects** button or activate another tool.
7. To connect the segment to the polyline again, move the end handles so that they snap to the ends of adjacent segments.
8. When **Disconnect Edges** is used, only edges that you click on are actually affected by it. Any polylines that you do not click on will remain intact.

You can also separate the selected edge of an open or closed polyline from the rest of the polyline by clicking the **Disconnect Selected Edge** edit button. See *Selected Edge on page 185*.

Selecting Multiple Objects

Multiple objects can be selected and edited in groups. The options available for editing them will vary depending on the type or types of objects selected. See *Editing Multiple Objects on page 206*.

Marquee Select

Groups of objects can be selected by holding down either the ***Shift*** or ***Ctrl/⌘*** key when the **Select Objects** tool is active and then dragging a marquee around the objects to be selected.

When using the marquee-select method, both CAD and architectural objects included in the marquee are selected. To remove an object from the selection set, hold down the ***Ctrl/⌘*** key and click on it.

If an object is selected and a selection marquee is drawn around it using the ***Ctrl/⌘*** key, that object becomes deselected. If the ***Shift*** key is used instead, the original object remains selected and the other objects are added to the selection set.

The ***Shift*** key can be used to marquee-select objects of a similar type when the drawing tool used to create those objects is active.

To marquee-select objects by type

1. Select a drawing tool used to create the type of object you wish to select: for example, the **Hinged Door** tool.
2. Hold down the ***Shift*** key, then click and drag a rectangular selection marquee in the drawing area.
3. When you release the mouse button, objects of the selected drawing tool's type - here, door objects - located in the marquee will be selected.

You can specify whether objects must be totally contained in or intersected by the marquee, or whether an object's center point must be contained in the marquee, in the Preferences dialog or using the **Selection Mode** buttons, which can be added to your toolbars. See *Edit Panel on page 110*.



To make marquee selection easier, you can turn off the display of objects you do not want to include in your selection set. See *Display Layers on page 151*.

Marquee Select Similar



The **Marquee Select Similar** edit tool lets you group-select objects in the current plan view that are similar to the selected object(s).

To use Marquee Select Similar

1. In plan view, select one or more objects, then click the **Marquee Select Similar**  edit button.
2. The **Restrictive Selection**  toggle controls whether objects are selected by similar type(s) only, or if additional attributes are taken into account.
   - **Restrictive Selection**  is disabled by default, so objects of the same type will be selected.
   - Click the **Restrictive Selection**  edit button to toggle it on and select only objects with additional attributes like materials in common.
3. Click and drag a rectangular selection marquee in the drawing area to select similar objects within its area.
4. Alternatively, click the **Select All Similar**  edit button to select all similar objects in the current view.
5. The **Marquee Select Similar**  tool is not available for all object types. For example, it is not available for wall framing.

Shift and Ctrl/⌘ Select

You can select a group of objects by adding them to the selection set one by one. Select an object, hold down either the ***Shift*** or ***Ctrl/⌘*** key, and click additional objects to select them.

More than one type of object can be selected using this method, but the ability to edit the group-selected items is limited to attributes that all selected objects have in common.

To remove an object from a selection set, click on it once more with the ***Ctrl/⌘*** key pressed.

The ***Shift*** and ***Ctrl/⌘*** keys can be used to select multiple items in a variety of contexts, such as: the Library Browser, lists in dialog boxes, and files to be imported. When selecting items in a list of check boxes, click on the item names and not the check boxes. These keys can also be used to marquee-select objects in plan view.

Edit Area



The **Edit Area Tools** allow you to define an area of your plan and select the objects within that area for editing. See *Edit Area Tools on page 213*.

Editing Line-Based Objects

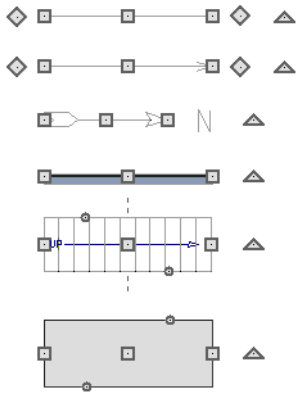
Objects are considered line-based when they can be edited similar to CAD lines using their edit handles.

CAD lines, framing members, straight walls and railings, straight stairs, and straight roads are examples of line-based objects.

Most line-based objects can be connected to the ends of other like objects to form polylines or polyline-based objects provided that they have identical attributes such as line color and arrow specifications. See *Editing Open Polyline-Based Objects on page 193* and *Editing Closed Polyline-Based Objects on page 197*.

Some objects, notably walls, have line-based editing behavior only when selected on certain surfaces. See *Editing Walls on page 277*.

Wall openings such as doors and windows have line-based editing behavior in plan view only but cannot be rotated, reversed or converted to an arc. See *Editing Doors on page 403* and *Editing Windows on page 436*.



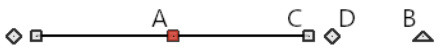
Other objects, such as stairs and roads, have additional edit handles that allow you to concentrically adjust the object's width.

Using the Edit Handles

When selected, a typical line-based object displays six edit handles: a Move handle, two Extend/Change Angle handles, two Same Line Type handles, and a Rotate handle.

Any action performed using the edit handles can be canceled by pressing the ***Esc*** key or any two mouse buttons at the same time.

> The behavior of the edit handles may depend on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.



A. Move
B. Rotate
C. Extend/Change Angle
D. Same Line Type

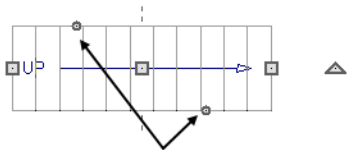
A. Click and drag the Move handle to move the object according to the currently active **Edit Behavior** . See *Defaults, Preferences, and Edit Behaviors on page 179*.
   - Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging. See *Unrestricted Movement on page 168*.

B. The **Rotate** handle is used to rotate the object, either about its center or about the current CAD point. See *Rotating Objects on page 173*.

C. The square-shaped **Extend/Change Angle** end handles serve several purposes:
   - Drag parallel to the selected line to change its length.
   - Drag at an angle to the selected line to change its angle. When **Angle Snaps** are on, the line snaps to Allowed Angles. See *Angle Snaps on page 143*.
   - Right-click and drag to change the adjacent line into an arc, or vice versa. See *Alternate on page 180*.

D. Drag a diamond-shaped **Same Line Type** end handle in any direction to draw a new line that shares the original's color, weight, line style, and layer. See *Same Line Type Edit Handles on page 245*.

Some line-based objects, such as stairs and roads, have additional handles that allow the width of the object to be adjusted.



Adjust width

Click and drag a small, round **Adjust Width** handle to increase or decrease the object's width. By default, objects are resized in 1" increments. This Snap Unit is defined in the Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.

Using Dimensions

Dimensions can be used to position line-based objects relative to other objects. See *Moving Objects Using Dimensions on page 361*.

Dimensions cannot, however, be used to adjust the length of line-based objects, or the width of line-based objects such as stairs.

Using the Specification Dialog

Line-based objects can be edited using their specification dialogs. See *Line Specification Dialog on page 233*.

Using the Edit Toolbar

A selected line-based object can be edited in a variety of ways using the buttons on the Edit Toolbar.

The following toolbar buttons may display on the Edit Toolbar for a selected line-based object:

Select Next Object selects nearby objects instead of the selected object. See *Selecting Objects on page 183*.

Open Object opens the specification dialog for the selected object(s). See *Specification Dialogs on page 20*.

Copy/Paste copies the selected object(s) to the system clipboard so they can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.

Delete deletes the selected object(s). See *Deleting Objects on page 218*.

Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selected object(s). See *Transform/Replicate Object Dialog on page 176*.

Make Parallel/Perpendicular makes the selected object(s) parallel or perpendicular to a straight edge. See *Make Parallel/Perpendicular on page 172*.

Point to Point Move accurately moves the selected object(s). See *Point to Point Move on page 169*.

Center Object centers an object along a wall within a room or relative to a cabinet fixture. See *Center Object on page 170*.

Reflect About Object reflects the selected object(s) about another object. See *Reflecting Objects on page 175*.

View Drawing Group Edit Tools modifies the selected object's place in the drawing order. See *Drawing Group Edit Tools on page 156*.

Add Break adds a new corner or pivot point to the selected object. See *Add Break on page 208*.

Complete Break breaks the selected object into two separate objects. See *Add Break on page 208*.

Reverse Direction reverses the direction of the selected object(s). See *Reverse Direction on page 176*.

Convert Polyline converts the object into a special polyline-based object. See *Convert Polyline on page 211*.

Change Line/Arc changes a line-based object to an arc, or vice versa. See *Change Line/Arc on page 209*.

Intersect/Join Two Lines joins two non-parallel lines or arcs. See *Intersect/Join Two Lines on page 210*.

Fillet Lines create an additional arc connecting two non-parallel lines or arcs. See *Fillet Lines on page 210*.

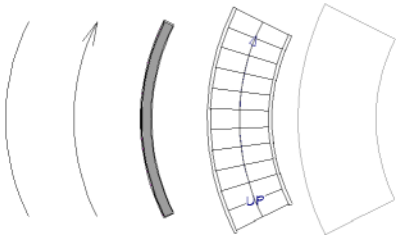
Chamfer Lines chamfers the corner between adjacent edges. See *Chamfer Lines on page 211*.

Editing Arc-Based Objects

Objects are considered arc-based when they can be edited similar to CAD arcs using their edit handles.

CAD arcs, curved walls and railings, curved stairs, and curved roads are examples of arc-based objects.

Most arc-based objects can be connected to other like objects to form polylines or polyline-based objects provided that they have identical attributes such as line color and arrow specifications. See *Editing Open Polyline-Based Objects on page 193* and *Editing Closed Polyline-Based Objects on page 197*.



Some objects, notably curved walls, have arc-based editing behavior only when selected on certain surfaces. See *Editing Walls on page 277*.

Other objects, such as curved stairs and roads, have additional edit handles that allow you to concentrically adjust the object's width.

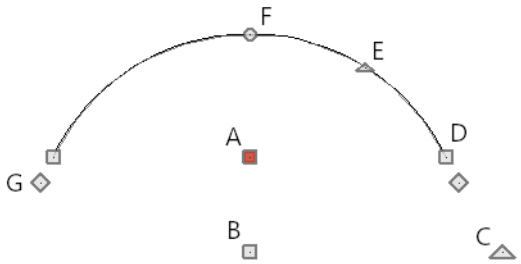
The currently active **Arc Creation Mode** determines how an arc-based object is drawn. Once an arc is drawn, the active Arc Creation Mode does not affect it. See *Drawing Arcs - Arc Creation Modes on page 236*.

Using the Edit Handles

When selected, a typical arc-based object displays seven edit handles.

Any action performed using the edit handles can be canceled by pressing the ***Esc*** key or any two mouse buttons at the same time.

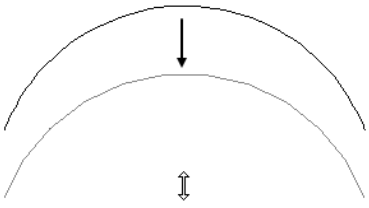
The behavior of the edit handles may depend on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.



A. Move Chord Center
B. Move Arc Center
C. Rotate
D. Extend (along arc or chord)
E. Reshape (moves center)
F. Resize (changes radius)
G. Same Line Type

A. Click and drag the small circular **Move Chord Center** handle located at the midpoint of the arc's chord to move the arc according to the currently active **Edit Behavior** . See *Defaults, Preferences, and Edit Behaviors on page 179*.
   - Use this handle if you would like to snap the Chord Center to a point at a different location. See *Object Snaps on page 142*.
   - Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging. See *Unrestricted Movement on page 168*.

B. Click and drag the square-shaped **Move Arc Center** handle located at the arc's center point to move the arc according to the currently active **Edit Behavior** . See *Arc Centers and Ends on page 193*.



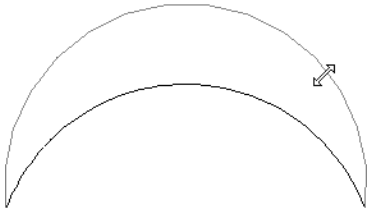
Dragging the Move Arc Center edit handle downward

   - Use this handle if you would like to snap the Arc Center to a point at a different location. See *Aligning Arc Centers on page 173*.
   - Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging.

C. The large triangular **Rotate** handle is used to rotate the arc, either about its center or about the current CAD point. See *Rotating Objects on page 173*.
   - The angle formed by the center point of the arc and its two endpoints is referred to as the Included Angle. If **Angle Snaps** are on, the Included Angle of the arc, as measured in degrees, can be rotated at Allowed Angles. See *Angle Snaps on page 143*.

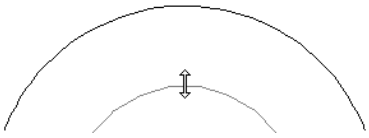
D. The square-shaped **Extend/Change Radius** end handles have several uses:
   - Click and drag an Extend/Change Radius handle along the path of the arc to adjust its length.
   - Click and drag one of these handles along the arc's chord to change its radius and the location of its center point.
   - Right-click and drag one of these handle to change the chord direction and radius. See *Alternate on page 180*.

E. Drag the small triangular **Reshape** handle to change the arc's length and location of its Center without moving the endpoints.



Dragging the Reshape edit handle away from the center

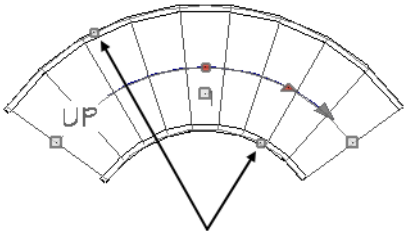
F. Drag the small, round **Resize** edit handle to change the radius and included angle of the arc while maintaining its center.



Dragging the Resize edit handle toward the center

G. Drag a diamond-shaped end handle in any direction to draw a new line that shares the arc's color, weight, line style, and layer. See *Same Line Type Edit Handles on page 245*.

Some arc-based objects, such as stairs, have additional handles that allow the width of the object to be adjusted.



Adjust Width edit handles

Click and drag a small, round edit handle to increase or decrease the object's width. By default, objects are resized according to the Snap Unit defined in the Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.

Using Dimensions

Dimensions can be used to position arc-based objects. Dimension lines typically locate tangent extension lines and any extension lines that may be parallel to those lines rather than the arc itself. See *Moving Objects Using Dimensions on page 361*.

Using the Specification Dialog

Arc-based objects can be edited using their specification dialogs. See *Arc Specification Dialog on page 239*.

Using the Edit Toolbar

A selected arc-based object can be edited in a variety of ways using the buttons on the Edit Toolbar.

The following toolbar buttons may display on the Edit Toolbar for a selected arc-based object:

Select Next Object selects nearby objects instead of the selected object. See *Selecting Objects on page 183*.

Open Object opens the specification dialog for the selected object(s). See *Specification Dialogs on page 20*.


Copy/Paste copies the selected object(s) to the system clipboard so they can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.


Delete deletes the selected object(s). See *Deleting Objects on page 218*.


Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selected object(s). See *Transform/Replicate Object Dialog on page 176*.


Point to Point Move accurately moves the selected object(s). See *Point to Point Move on page 169*.


Center Object centers an object along a wall within a room or relative to a cabinet fixture. See *Center Object on page 170*.


Reflect About Object reflects the selected object(s) about another object. See *Reflecting Objects on page 175*.


View Drawing Group Edit Tools modifies the selected object's place in the drawing order. See *Drawing Group Edit Tools on page 156*.


Add Break adds a new corner or pivot point to the selected object. See *Add Break on page 208*.


Complete Break breaks the selected object into two separate objects. See *Add Break on page 208*.


Reverse Direction reverses the direction of the selected object(s). See *Reverse Direction on page 176*.


Convert Polyline converts the object into a special polyline-based object. See *Convert Polyline on page 211*.


Change Line/Arc changes an arc-based object to a line, or vice versa. See *Change Line/Arc on page 209*.


Intersect/Join Two Lines joins two non-parallel lines or arcs. See *Intersect/Join Two Lines on page 210*.


Fillet Lines creates an additional arc connecting two lines. See *Fillet Lines on page 210*.


Chamfer Lines creates an additional edge connecting two lines. See *Chamfer Lines on page 211*.

Arc Centers and Ends


When working with arc-based objects or circles, it can be helpful to see their center points. Similarly, when snapping arcs together to form a polyline, seeing their endpoints can be helpful. Select **View> Arc Centers and Ends** to toggle the display of both in the current cross section/elevation view, or on the current floor level in all plan views. You can also turn on their display in the CAD Defaults dialog. See *CAD Defaults Dialog on page 224*.

Arc-based objects can be aligned using their center points. See *Aligning Arc Centers on page 173*.

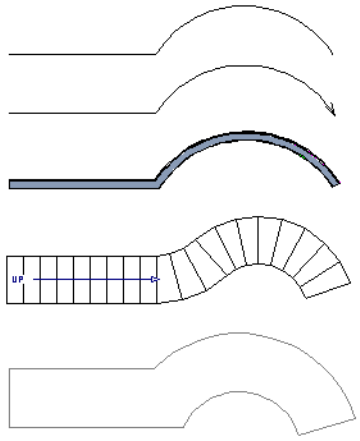
Editing Open Polyline-Based Objects

Open polyline-based objects are composed of individual line- and arc-based objects that are connected at their end points but do not form an enclosed area. See *Polylines on page 244*.

Objects are considered open polyline-based when they can be edited similar to open CAD polylines using their edit handles.

Open CAD polylines, connected walls, stairs, and connected roads are examples of open polyline-based objects.

For information about editing closed polyline-based objects, see *Editing Closed Polyline-Based Objects on page 197*.



Other objects, such as connected stair and road segments, have additional edit handles that allow you to concentrically adjust the width of all segments of the object.

> If Connect CAD Segments is disabled, clicking on a CAD polyline edge selects the individual edge rather than the entire polyline. See *Disconnect Edges on page 185*.

Using the Edit Handles

A polyline can be composed of many segments. See *Polylines on page 244*.

When selected, an open polyline-based object displays a Move handle, a Rotate handle, a Reshape handle at the intersection of each segment, and an Extend handle at each end.

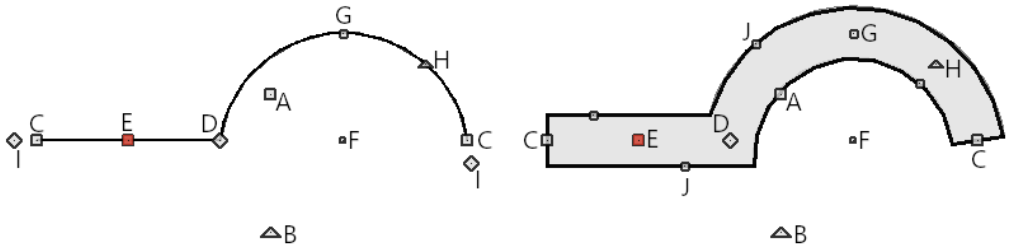
Each straight, line-based segment also has a Move edit handle along its length.

Each curved, arc-based segment has its own Move handle at the center of its chord, a Resize handle and, if it has an unlocked center, a Reshape handle. See *Editing Arc-Based Objects on page 190*.

When a polyline is selected, the edge that you click nearest is called the selected edge, and certain operations affect only this edge. The Move handle of the selected edge is larger than that of other edges. It displays along the length of a line segment, or at the center of the chord on an arc segment. See *Selected Edge on page 185*.

Any action performed using the edit handles can be canceled by pressing the ***Esc*** key or any two mouse buttons at the same time.

> The behavior of the edit handles depends on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.



A. Click and drag the **Move** handle to move the object according to the currently active **Edit Behavior** .
   - Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging. See *Unrestricted Movement on page 168*.

B. The **Rotate** handle is used to rotate the object, either about its center or about the current CAD point. Its position varies depending on which edge is currently selected. See *Rotating Objects on page 173*.

C. Click and drag an Extend handle to lengthen or shorten the unconnected end of the selected line or arc segment, or to change the radius of the selected arc. See *Editing Arc-Based Objects on page 190*.
   - Right-click and drag it to change the adjacent line into an arc, or vice versa. See *Alternate on page 180*.

D. Click and drag a **Reshape** edit handle to change the angle and/or length of the segments on either side of it, or the size of the object, depending on the currently active **Edit Behavior** .

E. The **Move Line Segment** edit handle is found on straight segments of open polylines and moves the straight section according to the currently active **Edit Behavior** . Adjacent segments may extend or contract in their original directions to maintain their connections.

F. Click and drag the **Move Arc** edit handle to change the radius and/or chord length or position, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

G. Click and drag the **Resize Arc** edit handle to change the radius, chord length and chord position of the arc segment, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

H. Click and drag the **Reshape Arc** edit handle to change the radius of the arc without moving its end points. Only available if the arc has an unlocked center.

I. Drag a diamond-shaped **Same Line Type** end handle in any direction to draw a new line that shares the original polyline's color, weight, line style, and layer. See *Same Line Type Edit Handles on page 245*.

   Some open polyline-based objects, such as stairs and roads, have additional handles that allow the width of the object to be adjusted.

J. Click and drag a small, round **Adjust Width** edit handle to increase or decrease the object's width. By default, objects are resized in 1" increments. This Snap Unit is defined in the Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.

Using Dimensions

Dimensions can be used to move or reshape polyline-based objects. See *Moving Objects Using Dimensions on page 361*.

Using the Specification Dialog

Open polyline-based objects can be edited using their specification dialogs. See *Polyline Specification Dialog on page 245*.

Using the Edit Toolbar

A selected open polyline-based object can be edited in a variety of ways using the buttons on the Edit Toolbar.

The following toolbar buttons may display on the Edit Toolbar for a selected open polyline-based object:

Select Next Object selects nearby objects instead of the selected object. See *Selecting Objects on page 183*.

Open Object opens the specification dialog for the selected object(s). See *Specification Dialogs on page 20*.


Copy/Paste copies the selected object(s) to the system clipboard so they can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.


Delete deletes the selected object(s). See *Deleting Objects on page 218*.


Disconnect Selected Edge disconnects the selected edge of the polyline, turning it into a separate object. See *Disconnect Edges on page 185*.


Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selected object(s). See *Transform/Replicate Object Dialog on page 176*.


Make Parallel/Perpendicular makes the selected straight edge parallel or perpendicular to another straight edge. See *Make Parallel/Perpendicular on page 172*. Not available when the selected edge is an arc.


Point to Point Move accurately moves the selected object(s). See *Point to Point Move on page 169*.


Center Object centers an object along a wall within a room or relative to a cabinet fixture. See *Center Object on page 170*.


Reflect About Object reflects the selected object(s) about another object. See *Reflecting Objects on page 175*.


View Drawing Group Edit Tools modifies the selected object's place in the drawing order. See *Drawing Group Edit Tools on page 156*.


Add Break adds a new corner or pivot point to the selected object. See *Add Break on page 208*.


Complete Break breaks the selected object into two separate objects. See *Add Break on page 208*.


Reverse Direction reverses the direction of the selected object(s). See *Reverse Direction on page 176*.


Close Polyline converts the selected open polyline into a closed polyline. See *Close Polyline on page 196*.


Convert Polyline converts the object into a special polyline-based object. See *Convert Polyline on page 211*.


Change Line/Arc changes a line-based polyline edge to an arc, or vice versa. See *Change Line/Arc on page 209*.


Intersect/Join Two Lines joins two a non-parallel lines or arcs. See *Intersect/Join Two Lines on page 210*.


Fillet Lines creates an arc connecting two non-parallel lines. See *Fillet Lines on page 210*. Cannot be used if the adjacent edge is an arc.


Chamfer Lines creates a line connecting two non-parallel lines. See *Chamfer Lines on page 211*.

Close Polyline


An open polyline-based object can be converted into a closed polyline using the **Close Polyline** edit tool. This tool adds an edge to the open polyline, connecting its two ends and closing the gap between them.

Close Polyline is not available when **Connect CAD Segments**  is enabled. See *Disconnect Edges on page 185*.

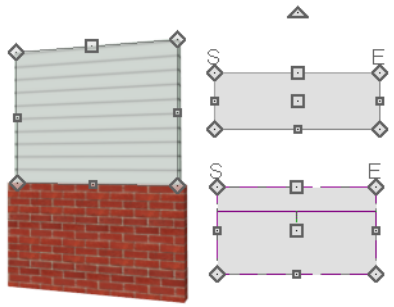
Editing Closed Polyline-Based Objects

Closed polyline-based objects are composed of individual line- and arc-based objects joined end-to-end and forming an enclosed area. See *Polylines on page 244*.

Objects are considered closed polyline-based when they can be edited similar to closed CAD polylines using their edit handles.

Closed CAD polylines, slabs and roof planes are examples of closed polyline-based objects.

Some objects, notably walls, have closed polyline-based editing behavior only when they are selected on certain surfaces in 3D views. See *Editing Walls on page 277*.



For information about editing open polyline-based objects, see *Editing Open Polyline-Based Objects on page 193*.

> If Connect CAD Segments is disabled, clicking on a polyline edge selects the individual edge rather than the entire polyline. See *Disconnect Edges on page 185*.

Using the Edit Handles

A polyline can be composed of many segments. See *Polylines on page 244*.

When selected, a closed polyline-based object displays a Move handle, a Rotate handle, and a Reshape handle at the intersection of each segment.

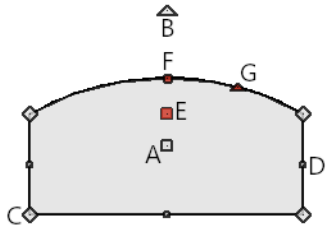
Each straight, line-based segment has a Move edit handle along its length.

Each curved, arc-based segment has its own Move handle at the center of its chord, a Resize handle and, if it has an unlocked center, a Reshape handle. See *Editing Arc-Based Objects on page 190*.

When a polyline is selected, the edge that you click nearest is called the selected edge, and certain operations affect only this edge. The Move handle of the selected edge is larger than that of other edges. It displays along the length of a line segment, or at the center of the chord on an arc segment. See *Selected Edge on page 185*.

Any action performed using the edit handles can be canceled by pressing the ***Esc*** key or any two mouse buttons at the same time.

> The behavior of the edit handles may depend on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.



A. Click and drag the **Move** handle to move the object according to the currently active **Edit Behavior** .
   - Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging. See *Unrestricted Movement on page 168*.

B. The **Rotate** handle is used to rotate the object, either about its center or about the current CAD point. Its position varies depending on which edge is currently selected. See *Rotating Objects on page 173*.

C. Click and drag a **Reshape** edit handle to change the angle and/or length of the segments on either side of it, or the size of the object, depending on the currently active **Edit Behavior** .

D. The **Move Line Segment** edit handle is found on straight segments of closed polylines and moves the straight section according to the currently active **Edit Behavior** . Adjacent segments may extend or contract in their original directions to maintain their connections.

E. Click and drag the **Move Arc** edit handle to change the radius and/or chord length or position, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

F. Click and drag the **Resize Arc** edit handle to change the radius, chord length and chord position of the arc segment, depending on the currently active **Edit Behavior** and whether the arc has a locked center. Adjacent segments may extend, contract, or change angle to maintain their connections.

G. Click and drag the **Reshape Arc** edit handle to change the radius of the arc without moving its end points. Only available if the arc has an unlocked center.

Some objects, such as staircases and connected road segments, have additional edit handles that allow you to concentrically adjust the width of all segments of the object. Click and drag a small, round **Adjust Width** edit handle to increase or decrease the object's width. By default, objects are resized in 1" increments. This Snap Unit is defined in the Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.

Using Dimensions

Dimensions can be used to move or reshape closed polyline-based objects. See *Moving Objects Using Dimensions on page 361*.

Using the Specification Dialog

Closed polyline-based objects can be edited using their specification dialogs. See *Polyline Specification Dialog on page 245*.

Using the Edit Toolbar

A selected closed polyline-based object can be edited in a variety of ways using the buttons on the Edit Toolbar. The options available will vary by object type.

The following toolbar buttons may display on the Edit Toolbar for a selected closed polyline-based object:

Select Next Object selects nearby objects instead of the selected object. See *Selecting Objects on page 183*.


Open Object opens the specification dialog for the selected object(s). See *Specification Dialogs on page 20*.


Copy/Paste copies the selected object(s) to the system clipboard so they can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.


Delete deletes the selected object(s). See *Deleting Objects on page 218*.


Disconnect Selected Edge disconnects the selected edge of the polyline, turning it into a separate object. See *Disconnect Edges on page 185*.


Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selected object(s). See *Transform/Replicate Object Dialog on page 176*.


Make Parallel/Perpendicular makes the selected straight edge parallel or perpendicular to another straight edge by either rotating the selected edge or the entire polyline. See *Make Parallel/Perpendicular on page 172*. Not available when the selected edge is an arc.


Point to Point Move accurately moves the selected object(s). See *Point to Point Move on page 169*.


Center Object centers an object along a wall within a room or relative to a cabinet fixture. See *Center Object on page 170*.


Reflect About Object reflect the selected object(s) about another object. See *Reflecting Objects on page 175*.


View Drawing Group Edit Tools modifies the selected object's place in the drawing order. See *Drawing Group Edit Tools on page 156*.


Add Break adds a new corner or pivot point to the selected object. See *Add Break on page 208*.


Complete Break breaks an edge of the selected object into two separate objects. See *Add Break on page 208*.


Reverse Direction reverses the direction of the selected object(s). See *Reverse Direction on page 176*.


Convert Polyline converts the object into a special polyline-based object. See *Convert Polyline on page 211*.


Change Line/Arc changes a line-based polyline edge to an arc, or vice versa. See *Change Line/Arc on page 209*.


Intersect/Join Two Lines joins two non-parallel lines or arcs. See *Intersect/Join Two Lines on page 210*.


Fillet Lines creates an arc connecting two non-parallel lines. See *Fillet Lines on page 210*. Cannot be used if the adjacent edge is an arc.

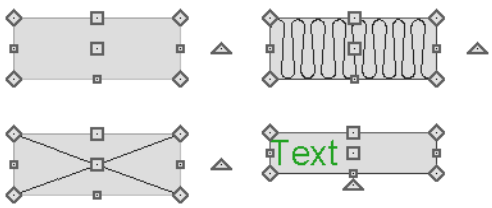

Chamfer Lines creates a straight line between two non-parallel lines. See *Chamfer Lines on page 211*.

Editing Box-Based Objects

Objects are considered box-based when they can be edited similar to CAD boxes using their edit handles.

Box-based objects are similar to closed polyline-based objects, but must always have four sides with right-angled corners.

In addition to the CAD Box tools, Text objects, many library symbols, pictures and images are examples of box-based objects.

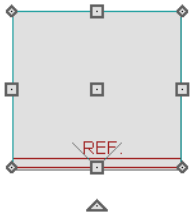


Using the Edit Handles

When selected, a box-based object displays ten edit handles. Unlike polylines, boxes must always have four sides with right-angled corners.

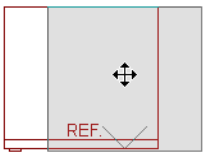
Any action performed using the edit handles can be canceled by pressing the ***Esc*** key or any two mouse buttons at the same time.

> The behavior of the edit handles may depend on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.

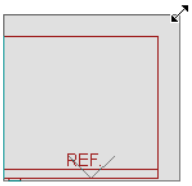


- Click and drag the Move handle to move the object according to the currently active **Edit Behavior**  . See *Defaults, Preferences, and Edit Behaviors on page 179*.

  Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging. See *Unrestricted Movement on page 168*.



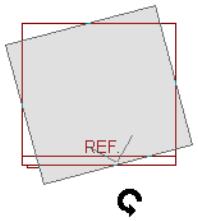
- The four **Resize** handles located at each corner are used to increase or decrease the size of the object.



- The four **Extend** handles display along each edge. If you select an object on an edge, the Extend handle displays at the point where you clicked; otherwise, it displays at the center of the edge.



- The triangular **Rotate** handle located near the selected edge of the object is used to rotate it either about its center or the current CAD point. The pointer changes to a circular arrow when moved over this handle. See *Rotating Objects on page 173*.



Using Dimensions

Dimensions can be used to move or reshape box-based objects. See *Moving Objects Using Dimensions on page 361*.

Using the Specification Dialog

Box-based objects can be edited using their specification dialogs. See *Box Specification Dialog on page 248*.

Using the Edit Toolbar

A selected box-based object can be edited in a variety of ways using the buttons on the Edit Toolbar.

The following toolbar buttons may display on the Edit Toolbar for a selected box-based object:

Select Next Object selects nearby objects instead of the selected object. See *Selecting Objects on page 183*.

Open Object opens the specification dialog for the selected object(s). See *Specification Dialogs on page 20*.

Copy/Paste copies the selected object(s) to the system clipboard so they can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.

Delete deletes the selected object(s). See *Deleting Objects on page 218*.

Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selected object(s). See *Transform/Replicate Object Dialog on page 176*.

Make Parallel/Perpendicular makes the selected straight edge parallel or perpendicular to another straight edge. Not available when the selected edge is an arc. See *Make Parallel/Perpendicular on page 172*.

Point to Point Move accurately moves the selected object(s). See *Point to Point Move on page 169*.

Center Object centers an object along a wall within a room or relative to a cabinet fixture. See *Center Object on page 170*.

Reflect About Object reflects the selected object(s) about another object. See *Reflecting Objects on page 175*.

View Drawing Group Edit Tools modifies the selected object's place in the drawing order. See *Drawing Group Edit Tools on page 156*.

Convert Polyline converts the object into a special polyline-based object. See *Convert Polyline on page 211*.

Editing Spline-Based Objects

A Spline is a curve that passes smoothly through a set of points, or vertices. Splines are typically used in situations where an irregular, free-flowing curve is needed.

Objects are considered spline-based when they can be edited similar to CAD splines using their edit handles. See *Splines on page 249*.

Sprinkler lines, spline terrain curbs, spline terrain walls, and both round and kidney-shaped terrain features are spline-based objects. See *Terrain on page 898*.



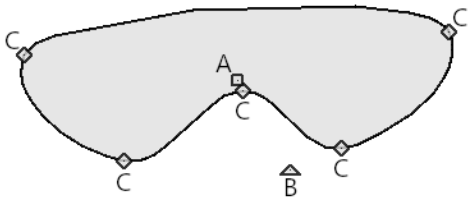
Using the Edit Handles

When a spline is selected, several different types of handles display.

Any action performed using the edit handles can be canceled by pressing the ***Esc*** key or any two mouse buttons at the same time.



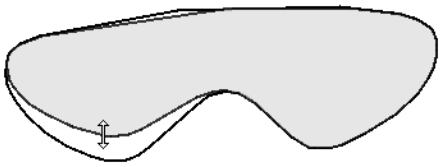
The behavior of the edit handles may depend on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.



A. Click and drag the square-shaped **Move** handle to move the object according to the currently active **Edit Behavior**  . See *Defaults, Preferences, and Edit Behaviors on page 179*.
   - Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging. See *Unrestricted Movement on page 168*.

B. Click and drag the triangular **Rotate** edit handle to rotate the entire spline.

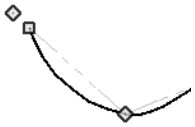
C. The diamond-shaped **Vertex** edit handles display along the spline at each vertex. Click and drag a Vertex edit handle to change the length, angle and curve of adjacent segments without affecting other vertices.



Dragging a Vertex edit handle

Same Line Type

Drag a diamond-shaped end handle in any direction to draw a new spline segment that shares the original spline's color, weight, line style, and layer. See *Same Line Type Edit Handles on page 245*.



Using the Specification Dialog

Spline-based objects can be edited using their specification dialogs. See *Polyline Specification Dialog on page 245*.

Using the Edit Toolbar

A selected spline-based object can be edited in a variety of ways using the buttons on the Edit Toolbar.

The following toolbar buttons may display on the Edit Toolbar for a selected spline-based object:

Select Next Object selects nearby objects instead of the selected object. See *Selecting Objects on page 183*.

Open Object opens the specification dialog for the selected object(s). See *Specification Dialogs on page 20*.

Copy/Paste copies the selected object(s) to the system clipboard so they can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.

Delete deletes the selected object(s). See *Deleting Objects on page 218*.

Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selected object(s). See *Transform/Replicate Object Dialog on page 176*.

Make Parallel/Perpendicular makes the selected spline edge parallel or perpendicular to another straight edge. See *Make Parallel/Perpendicular on page 172*.

Point to Point Move accurately moves the selected object(s). See *Point to Point Move on page 169*.

Center Object centers an object along a wall within a room or relative to a cabinet fixture. See *Center Object on page 170*.

Reflect About Object reflects the selected object(s) about another object. See *Reflecting Objects on page 175*.

View Drawing Group Edit Tools modifies the selected object's place in the drawing order. See *Drawing Group Edit Tools on page 156*.

Add Break adds a new corner or pivot point to the selected object. See *Add Break on page 208*.

Complete Break breaks an edge of the selected object into two separate objects. See *Add Break on page 208*.

Reverse Direction reverses the direction of the selected object(s). See *Reverse Direction on page 176*.

Convert Polyline converts the object into a special polyline-based object. See *Convert Polyline on page 211*.

Editing Circles, Ovals and Ellipses

Objects created using the **Circle Tools** are unusual in that no architectural objects share their functionalities.

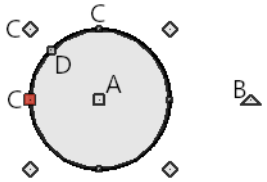
Using the Edit Handles

When selected, circles, ovals and ellipses display eleven edit handles.

Unlike **Ovals** and **Ellipses**, a **Circle** cannot be edited into any other shapes; it can only be a circle.

Any action performed using the edit handles can be canceled by pressing the ***Esc*** key or any two mouse buttons at the same time.

> The behavior of the edit handles may depend on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.

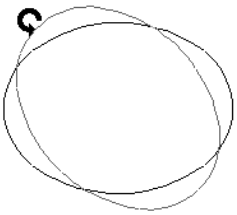


A. Move
B. Rotate
C. Reshape
D. Concentric Resize

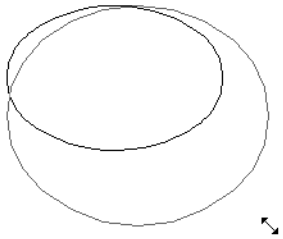
Move

A. Click and drag the Move handle to move the object according to the currently active **Edit Behavior**. See *Defaults, Preferences, and Edit Behaviors on page 179*.
   - Movement may be limited or stopped by other objects or Snap Behaviors. Move restrictions can be overridden by holding down the ***Ctrl/⌘*** key while dragging. See *Unrestricted Movement on page 168*.

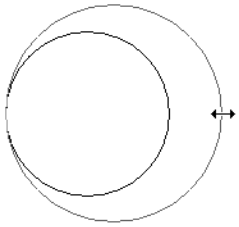
B. Click and drag the large triangular **Rotate** handle of an Oval or Ellipse to change its orientation. Circles cannot be rotated.



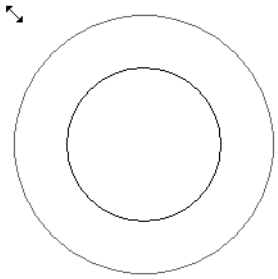
C. The eight edit handles beyond the perimeter are **Reshape** edit handles. Move them in or out to resize and reshape an Oval or Ellipse.



- Unlike Ovals or Ellipses, Circles cannot be reshaped. When a Reshape handle is dragged on a Circle, it is only resized.



D. The circular **Concentric Resize** edit handle displays on the perimeter of a Circle between a corner Reshape handle and the center. Click and drag this handle to resize the Circle without moving its center point.



Using Dimensions

Dimensions can be used to move or resize circle-based objects. See *Moving Objects Using Dimensions on page 361*.

Using the Specification Dialog

Circles, ovals and ellipses can be edited using their specification dialogs. See *Circle/Oval/Ellipse Specification Dialog on page 243*.

Using the Edit Toolbar

A selected circle, oval or ellipse can be edited in a variety of ways using the buttons on the Edit Toolbar.

The following toolbar buttons may display on the Edit Toolbar for a selected circle, oval or ellipse:

Select Next Object selects nearby objects instead of the selected object. See *Selecting Objects on page 183*.

Open Object opens the specification dialog for the selected object(s). See *Specification Dialogs on page 20*.

Copy/Paste copies the selected object(s) to the system clipboard so they can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.


Delete deletes the selected object(s). See *Deleting Objects on page 218*.


Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selected object(s). See *Transform/Replicate Object Dialog on page 176*.


Make Parallel/Perpendicular makes the selected edge parallel or perpendicular to another straight edge. See *Make Parallel/Perpendicular on page 172*.


Point to Point Move accurately moves the selected object(s). See *Point to Point Move on page 169*.


Center Object centers an object along a wall within a room or relative to a cabinet fixture. See *Center Object on page 170*.


Reflect About Object reflects the selected object(s) about another object. See *Reflecting Objects on page 175*.


View Drawing Group Edit Tools modifies the selected object's place in the drawing order. See *Drawing Group Edit Tools on page 156*.


Convert Polyline converts the object into a special polyline-based object. See *Convert Polyline on page 211*.

Editing Multiple Objects

There are a couple of options for accurately and efficiently editing multiple objects at once. See *Selecting Multiple Objects on page 186*.

Dynamic Defaults

Dynamic defaults are a useful way to apply certain attributes to multiple objects of the same type throughout a plan. They are found in the defaults dialogs for a variety of different architectural objects, and when these default values are changed, all objects that are set to use them throughout the current plan will update automatically. Dynamic defaults are particularly valuable for applying critical defaults like ceiling heights and floor structure. See *Dynamic Defaults on page 84*.

In the Specification Dialog

When multiple objects are selected, the **Open Object** edit button is often available. The settings available in a shared specification dialog will vary, depending on the types of objects that are selected. If the objects are of the same type, their shared specification dialog will have many of the settings that their individual specification dialogs have; if they are not similar, the dialog may have only a few settings. When multiple objects are selected, their shared specification dialog may also have settings in a "No Change" state. See *Specification Dialogs on page 20*.

Using the Edit Toolbar

Group-selected objects can also be edited using the buttons on edit toolbar. The available tools will vary, depending on which types of objects are selected. See *The Edit Toolbar on page 122*.

Resizing Objects

Objects can be resized using the edit handles, specification dialogs, and the Transform/Replicate Object dialog.

Using the Edit Handles

Depending on the currently active **Edit Behavior**, the end, corner and/or side edit handles can be used to resize a selected object. See *Defaults, Preferences, and Edit Behaviors on page 179*.

When the **Concentric** edit behavior is active, dragging an object's corner or end handle resizes it according to the **Concentric Jump** value set in the Preferences dialog. See *Concentric on page 181*.

Objects can be resized about either their center points or the current CAD point. See *Rotate/Resize About on page 173*.

To override any movement restrictions caused by snap settings or the presence of other objects, press the ***Ctrl/⌘*** key while dragging an edit handle.

As an object is resized, any dimensions indicating its size will update to reflect your changes. You can use dimensions as references to help you achieve the correct size for most objects.

You can temporarily slow the movement of your mouse as you drag an edit handle by holding down the ***Shift*** key.

Using the Specification Dialog

Most objects can be accurately resized in their specification dialogs. See *Specification Dialogs on page 20*.

Using Dimensions

Many objects can be resized by selecting an edge and then moving that edge using dimensions. See *Moving Objects Using Dimensions on page 361*.

Walls can also be resized using dimensions; however, it is important to understand that the selected edges of other objects cannot be resized using dimensions - they can only be moved. To resize an edge, select an adjacent edge and move that edge instead.

Concentric Resize

The **Concentric Resize** edit tool allows you to resize a selected object using its edit handles so that the distance moved by each edge is the same. For example, you can resize an irregularly shaped polyline so that each edge is exactly ten feet in from the original position, which is useful for creating site plans with setbacks. The behavior will vary depending on the shape of the object and the edit handle used to resize it. See *Concentric on page 181*.

When the **Concentric Resize** edit button is clicked, three new edit buttons display on the Edit Toolbar:

Click the **Sticky Mode** edit button to remain in the current mode and resize the selected object repeatedly. See *Sticky Mode on page 149*.

Click the **Set Concentric Jump** edit button to specify how much each of the object's edges moves when concentrically resized. The **Jump Distance** set in the Set Concentric Jump Distance dialog is a global value and is the same as the Jump Distance set in the Preferences dialog. See *Behaviors Panel on page 113*.

Click the **Main Edit Mode** edit button or press the ***Esc*** key to return to the selection's main Edit Toolbar.

Using the Transform/Replicate Object Dialog

Most objects can be resized about either their centers or an absolute point using the Transform Replicate Object dialog. See *Transform/Replicate Object Dialog on page 176*.

Reshaping Objects

There is a variety of ways to reshape objects using the edit handles, specification dialogs and edit toolbar buttons.

Some objects, notably circles and box-based objects, cannot be reshaped - only resized. See *Resizing Objects on page 206*.

Using the Edit Handles

Depending on the **Edit Behavior** in use, the end, corner and/or side edit handles can be used to reshape a selected object. See *Defaults, Preferences, and Edit Behaviors on page 179*.

When a line-based, arc-based, or open polyline-based object is selected, you can right-click and drag an end handle to change a line into an arc or vice versa. This behavior does not apply to closed polylines.

To override any movement restrictions caused by snap settings or the presence of other objects, press the ***Ctrl/⌘*** key while dragging an edit handle.

You can temporarily slow the movement of your mouse as you drag an edit handle by holding down the ***Shift*** key.

Using the Specification Dialog

A variety of CAD and CAD-based objects can be reshaped by editing values on either the Selected Line or Selected Arc panel of their specification dialogs. See *Polyline Specification Dialog on page 245*.

Using Dimensions

Both temporary and manually drawn dimensions can be used to increase or decrease the distance between the edge a line- or polyline-based object and another, parallel edge or line. See *Moving Objects Using Dimensions on page 361*.

Angular Dimensions can be used to adjust the angle where two polyline segments meet. See *Using Angular Dimensions on page 174*.

Add Break

The **Add Break** edit tool can be used to break an individual line-, arc-, or spline-based object into two segments. The edges of a polyline-based object can also be broken.

> Note: The Add Break edit button is not available for Box-based objects, objects created with the Circle Tools, North Pointers, Sun Angles, Joist Direction Lines, or some architectural objects such as trusses.

There are two types of breaks: partial and complete. A partial break creates a new corner or pivot point between two connected segments, while a complete break actually severs an edge into two disconnected segments.

To create a partial break

1. Select the object, object edge, or the centerline of the object that you want to add a pivot point or corner to.
2. Click the **Add Break** edit button once or press the 3 key.
3. If you would like to create more than one break, click the **Sticky Mode** edit button.
4. If you want, you can click the **Corner Edit Handles** edit button to toggle off their display.
5. Click the edge to create a new corner edit handle at that location and two separate edges on either side of that handle.

6. If you enabled **Sticky Mode**, continue clicking to place additional breaks.
7. Click the **Main Edit Mode** edit button or press the ***Esc*** key to return to the selected object's main edit toolbar.

If you click and drag one of the edit handles on either side of the partial break, the edge moves at a right angle to itself and another edge forms, connecting the moved edge with the one on the other side that does not move.

You can remove an edge from a polyline-based object by clicking and dragging a corner handle until it snaps to an adjacent corner handle.

When a complete break is created, the object or edge is totally severed at that point.

With the exception of framing members, complete breaks cannot be created on CAD-based architectural objects. In the case of framing members, only complete breaks can be created.

To create a complete break

1. Click the object, object edge, or object centerline that you want to break into two segments.
2. Click the **Add Break** edit button.
3. Click the **Complete Break** edit button.
4. If you would like to create more than one complete break, click the **Sticky Mode** edit button.
5. If you want, you can click the **Corner Edit Handles** edit button to toggle off their display.
6. Click on an edge to create a complete break at that location.
7. If you enabled **Sticky Mode**, continue clicking to place additional breaks.
8. Click the **Main Edit Mode** edit button or press the ***Esc*** key to return to the selected object's main edit toolbar.

The edge that you clicked on will be divided into two separate sections, one of which will be selected. You can now move or edit the selected edge completely independent of the object or edge on the other side of the break. Click on the other edge to select it instead.

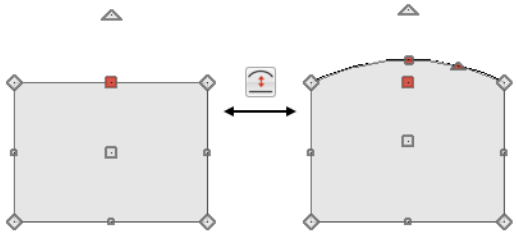
When **Object Snaps** are enabled, breaks can be placed at snap locations such as midpoints. See *Object Snaps on page 142*.

To remove a break from an edge

1. Make sure that **Object Snaps** are enabled. See *Object Snaps on page 142*.
2. Select the object that has a break that you want to remove.
3. Click on the corner edit handle associated with the break that you want to remove and drag it to an adjacent corner handle.
4. When you see an **Endpoint** snap indicator, release the mouse button. The handle that you selected will be removed.

Change Line/Arc

Select an individual line-based or arc-based object or a segment of a polyline-based object and click the **Change Line/Arc** edit button to convert the selected segment from a line to an arc or vice versa.



The Change Line/Arc edit tool changes the selected straight edge to an arc or vice versa.

Using Make Parallel/Perpendicular

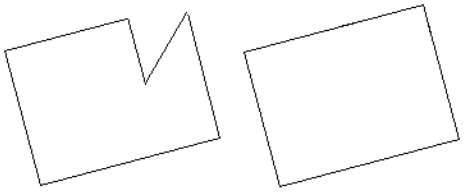
The **Make Parallel** edit button can be used to reshape a polyline by making a selected edge parallel or perpendicular to another straight edge. See *Make Parallel/Perpendicular on page 172*.

Intersect/Join Two Lines

The **Intersect/Join Two Lines** edit tool allows you to connect two non-parallel line- and/or arc-based objects or to join two edges of an open or closed polyline-based object. The lines or edges will shorten or lengthen as need to intersect at a point and join. If one or more edges exists between the two polyline edges, they will be removed.

To use Intersect/Join Two Lines

1. Click on a line, arc, or polyline segment that you would like to connect to another line or segment.
2. Click the **Intersect/Join Two Lines** edit button.
3. Click on the other line or polyline edge.



The Intersect/Join Two Lines edit tool can be used to remove polyline edges.

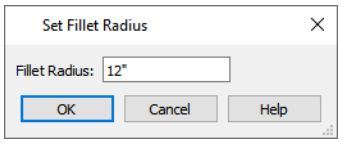
Fillet Lines

The **Fillet Lines** edit tool allows you to replace the angled corner where two polyline edges meet with an arc.

Fillet Lines can also be used to join two non-parallel line-based objects with an arc. If one or both of the two objects is an arc, both will extend or contract as needed to become connected. No additional arc is created.

To use Fillet Lines

1. Click on a line or polyline segment that you would like to connect to another line or segment with a fillet, or arc.
2. Click the **Fillet Lines** edit button, then click the **Fillet Radius** edit button.
3. In the Set Fillet Radius dialog, specify the desired **Fillet Radius** and click OK. If this value is 0, no fillet will be created.



4. To apply a fillet to more than one corner of the selected polyline, click the **Sticky Mode** edit button.
   - Click on the line or polyline segment that you want the selected line or edge to connect to with a fillet.
   - Continue clicking on edges to create additional fillets.
   - Click the **Main Edit Mode** edit button or press the ***Esc*** key to return to the selected object's main edit toolbar.

Once two lines are filleted, the arc between them can be edited. See *Editing Arc-Based Objects on page 190*.

Chamfer Lines

The **Chamfer Lines** edit tool allows you to create a straight corner bevel of a specified size connecting any two non-parallel lines or polyline edges. The Chamfer Distance set in the Chamfer Distance dialog describes the distance both lines that form the corner are shortened to produce the bevel: not the length of the bevel itself.

The Chamfer Lines tool can also be used to extend an arc so that it joins to another arc or line. If one or both of the two objects is an arc, both will extend or contract as needed to become connected. No additional chamfer is created.

The Chamfer Lines edit tool is used much the way the Fillet Lines edit tool is. See *To use Fillet Lines*, above.

> The Fillet Lines and Chamfer Lines edit tools can also be used the same way as the Intersect/Join Two Lines tool to join lines and polyline edges and remove any intervening polyline edges.

Using Close Polyline

An open polyline-based object can be converted into a closed polyline using the **Close Polyline** edit tool. See *Close Polyline on page 196*.

Simplify Polyline

The **Simplify Polyline** edit button is available for an open or closed polyline or polyline-based object if it has two or more edges that are collinear or a segment that is unusually short and can cause problems when editing the polyline's shape. Click this edit button to merge the collinear edges or remove the problem segment.

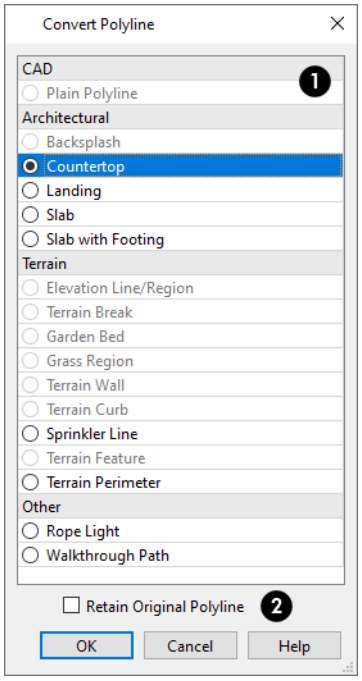
Converting Objects

CAD objects and many CAD-based objects can be converted into a variety of other types of objects.

Convert Polyline

The **Convert Polyline** edit tool lets you turn CAD-based objects into a different type of CAD-based object. Examples include countertop, stair landings, special polylines such as Materials List Polylines, and a variety of slab, hole and terrain objects.

To convert a CAD-based object into a different object type, select the object in plan view and click the **Convert Polyline** edit button to open the Convert Polyline dialog.



Polyline Types
The various polyline types that the selected object can be converted into are listed here. Click the radio button beside one line item in this list to select it.

CAD

- **Plain Polyline** - See *Polylines on page 244*.

Architectural
These settings are only available if the selected polyline is closed. See *Polylines on page 244*.

- **Backsplash** - Only available in cross section/elevation views. See *Custom Backsplashes on page 468*.
- **Countertop** - See *Countertops on page 467*.
- **Landing** - Not available if the polyline is a spline. See *Landings on page 559*.
- **Skylight** - Only available when the selected polyline is contained inside a single roof plane. See *Skylights and Roof Holes on page 628*.
- **Slab** and **Slab with Footing** - See *The Slab Tools on page 527*.

Terrain
Most of these options are only available when a Terrain Perimeter is present.

- **Elevation Line/Region** - See *Elevation Data Tools on page 901*.
- **Terrain Break** - See *Elevation Data Tools on page 901*.
- **Garden Bed** - Only available when the selected object is a closed polyline. See *Terrain Features on page 906*.
- **Grass Region** - Only available when the selected object is a closed polyline. See *Terrain Features on page 906*.
- **Terrain Wall** - See *Terrain Walls on page 908*.
- **Terrain Curb** - See *Terrain Curbs on page 908*.
- **Sprinkler Line** - See *Sprinkler Tools on page 946*.
- **Terrain Feature** - Only available when the selected object is a closed polyline. See *Terrain Features on page 906*.

- **Terrain Perimeter** - See *Terrain Perimeter on page 899*. This option is only available when: the polyline is closed, a Terrain Perimeter does not yet exist, and only one polyline is currently selected.

Other

- **Walkthrough Path** - See *Walkthrough Paths on page 870*.

2 Retain Original Polyline

When this box is unchecked, the originally selected polyline is replaced by a polyline of the type selected above. Check this box to instead keep both the original and converted polylines.

Click **OK** to convert the selected object or objects.

Edit Area Tools

The **Edit Area Tools** allow you to quickly define an area of your plan and select the objects in that area. Once selected, they can then be repositioned, copied or deleted. Select **Edit> Edit Area** to access these tools.

Unlike other selection methods, the **Edit Area Tools** cut walls, railing and fencing where the selection marquee intersects them, allowing you to edit only the selected portion of these objects.

Some objects, such as cabinets, are included in the selection only if more than half of the object is contained within the marquee.

Camera and cross-section/elevation symbols are included in the selection and can be moved with it. While cameras can also be rotated as well as copied, cross section/elevations cannot. See *Editing 3D Views on page 797*.

A few objects, notably CAD points, are not affected by the **Edit Area Tools**.

> The Edit Area tools can cause wide-spread changes across an entire plan and should always be used with caution.

Edit Area

Select **Edit> Edit Area> Edit Area** and draw a rectangular marquee around the area of the plan to be edited.

Edit Area affects all objects included in the selection marquee that are located on the current floor, regardless of whether they are displaying in plan view or not.

Edit Area Visible

Select **Edit> Edit Area> Edit Area Visible** and draw a marquee around the area of the plan to be edited.

Edit Area Visible only affects visible objects included in the selection marquee: objects not currently displayed in plan view are unaffected.

Edit Area (All Floors)

Select **Edit> Edit Area> Edit Area (All Floors)** and draw a marquee around the area of the plan to be edited.

Edit Area (All Floors) affects all objects on all floors of the plan that are included in the selection marquee, regardless of whether they display in plan view.

Edit Area (All Floors) Visible

Select **Edit> Edit Area> Edit Area (All Floors) Visible** and draw a marquee around the area of the plan to be edited.

Edit Area (All Floors) Visible affects all visible objects on all floors of the plan that are included in the selection marquee. Objects not currently displaying in plan view are not affected.

Edit Area Polyline

If a rectangular marquee's shape does not allow you to define an area precisely, use a closed polyline instead.

Select a polyline that defines the desired area in plan view and then select one of the **Edit Area Tools** . The polyline becomes temporarily highlighted and acts as an Edit Area marquee.

Using the Edit Handles

An Edit Area marquee displays edit handles that are similar to those of a closed polyline. See *Using the Edit Handles on page 197*.

- Click the **Move** edit handle to move the entire selection set. See *Moving Objects on page 167*.
- Click the **Rotate** edit handle to rotate the entire selection set. See *Rotating Objects on page 173*.
- Click and drag the **Reshape** and **Resize** edit handles at each corner and along each edge to adjust the size and shape of the marquee. See *Using the Edit Handles on page 197*.

Adjusting the size or shape of an Edit Area marquee may change which objects are included in the selection set but does not otherwise affect those objects.

Using the Edit Toolbar

A selected Edit Area marquee and/or the objects within it can be edited in a variety of ways using the buttons on the Edit Toolbar. See *Using the Edit Toolbar on page 198*.

The following toolbar buttons may display on the Edit Toolbar for an Edit Area marquee:

Copy/Paste copies the selection set to the system clipboard so it can be pasted elsewhere. See *Copying and Pasting Objects on page 146*.

Delete deletes the selection set. See *Deleting Objects on page 218*.

Transform/Replicate Object copies, moves, rotates, resizes, or reflects the selection set. See *Transform/Replicate Object Dialog on page 176*.

Make Parallel/Perpendicular rotates the Edit Area marquee and the selection set so that the selected marquee edge is parallel or perpendicular to another straight edge. See *Make Parallel/Perpendicular on page 172*.

Point to Point Move accurately moves the selection between two points. See *Point to Point Move on page 169*.

Center Object centers the selection relative to another object. See *Center Object on page 170*.

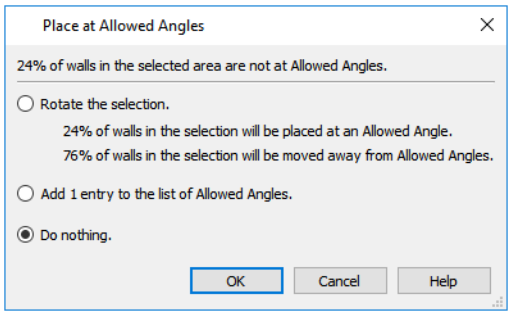
Reflect About Object reflects the selection set about another object. See *Reflecting Objects on page 175*.

Allowed Angles opens the Place at Allowed Angles dialog.

Place at Allowed Angles Dialog

If more than one percent of the straight walls included in an Edit Area marquee are not at an Allowed Angle, the **Allowed Angles** edit button displays.

Click the **Allowed Angles** edit button to display the Place at Allowed Angles dialog.



Select the first option and click **OK** to rotate the plan so that the largest group of off-angle walls move to an Allowed Angle. This may place this largest group at Allowed Angles, but has two disadvantages.

- First, other groups of off angle walls remain off angle.
- Second, any walls that were at an allowed angle before this action will move to an off angle. The dialog shows how much (weighted by length) of the selected walls are in each category.

Select the second option and click **OK** to add new entries to the Allowed Angles list and allow new walls to be placed at these angles. Walls already at Allowed Angles remain so. See *Angle Snaps on page 143*.

Select the third option and click **OK** to do nothing, which is the same as clicking **Cancel**.

You may want to rotate the majority of the walls to one of the normal allowed angles. Then, use an **Edit Area** tool to select everything again and select the second option to provide new angle entries to cover the remaining walls.

Stretch CAD

The **Stretch CAD** tool allows you to reshape or move a variety of CAD-based objects using a temporary closed polyline.

To use the Stretch CAD tool

1. Select **Edit> Stretch CAD** .
2. Click and drag to draw a rectangular polyline through the CAD objects that you would like to stretch.
3. You can edit the shape of the Stretch CAD polyline so that it intersects the objects you want to stretch along the desired planes. See *Editing Closed Polyline-Based Objects on page 197*.
   - An edge of the polyline must extend through each of the objects that you would like to stretch.
   - The opposite polyline edge should be located outside those objects.
4. When the Stretch CAD polyline's shape and position meet your needs, click and drag its Move edit handle.
5. As you drag, intersected objects will either stretch, contract, or move.
   - An edge of the polyline must extend through each of the objects that you would like to stretch.
   - The opposite polyline edge should be located outside those objects.

1. When the Stretch CAD polyline's shape and position meet your needs, click and drag its Move edit handle.
2. As you drag, intersected objects will either stretch, contract, or move.

Not all CAD-based objects can be reshaped using the **Stretch CAD** tool:

- Road and Text objects are examples of objects that can be moved but not reshaped by this tool.
- Stairs and Ramps are examples of objects that are not affected by this tool at all.

Eyedropper and Painter Tools

There are a number of tools in Home Designer that allow you to apply attributes to objects by clicking on them.

- The Eyedropper tools allow you to load attributes from one object and apply them to other objects.
- The Painter tools allow you to apply attributes to one or more objects. Depending on the tool, attributes may be loaded from another object using an Eyedropper tool or selected from a dialog.
- Some object attributes can also be replaced directly from the library. See *To replace an inserted object on page 730*.

Attributes cannot be either loaded from or painted onto objects on locked layers or on layers that are not set to display. They can be used to modify automatically generated objects such as roof planes and framing; however, the associated Auto Rebuild function will be turned off. See *Auto Rebuild on page 146*.

Eyedropper Tools

The Eyedropper tools allow you to select attributes from one object and apply them to other objects. There are three Eyedropper tools in the program:

Material Eyedropper, see *Material Eyedropper on page 759*

Object Eyedropper, see *Object Eyedropper on page 218*

Fill Style Eyedropper, see *Fill Style Eyedropper and Painter Tools on page 159*

To use an eyedropper tool

1. Select the Eyedropper tool that you want to use and notice that the mouse pointer displays an eyedropper icon.
2. Move the mouse pointer over an object in the current view. If the object is eligible for use with the selected Eyedropper:
   - It will become highlighted in the view.
   - The left side of the Status bar will report information about that object or the attribute that the Eyedropper can load from it.
3. Click once to load the object's attributes so they can be applied to other, similar objects.
4. Notice that your mouse pointer now displays a spray can icon. This means that the Painter tool associated with the selected Eyedropper is now active.
5. Depending on the tool in use, additional buttons may now display on the Edit Toolbar. Select the option or options that you need:
   - The **Painter Scoping Mode** buttons. See *Painter Scoping Modes on page 217*, below.
   - **Blend Colors with Materials**. See *Material Painter® Tools on page 758*.

- **Toggle Library Replacement Mode** . See *Replace From Library on page 730*.

6. Move your mouse pointer over an object that is similar to the one selected in step 2. If it is eligible to receive the loaded attribute(s):
   - It will become highlighted in the view.
   - The left side of the Status bar will report information about the attribute to be painted or loaded.
7. Click on an eligible object to apply attributes to it as well as to any other identical objects, depending on which Painter Scoping Mode is active.
8. Continue clicking to apply attributes until the ***Esc*** key is pressed or another tool is activated.

Painter Tools

The Painter Tools let you apply attributes to a wide variety of objects by clicking on them. When a Painter tool is active, the mouse pointer will display a spray can icon. There are a number of ways to load attributes into a Painter tool.

- Click on an object using any Eyedropper tool to load its attribute(s). The associated Painter tool will become active, ready to paint the loaded attributes.
- Select a material or fill style in the Library Browser and move the mouse pointer into the current view window. If that item can be applied in the current view type, the associated Painter will be active and you can apply the selection to eligible objects in that view.
- When you select the **Material Painter** tool, the Select Material dialog will open, allowing you to choose a material from the library. See *Select Material/Library Object Dialog on page 762*.
- When you select the **Fill Style Painter** tool, the Select Library Object dialog will open, allowing you to choose a fill style from the library. See *Select Library Object Dialog on page 729*.

Once a Painter tool is loaded, simply click on an object to apply the selected attributes. See *To use the Material Painter tool on page 759*.

Painter Scoping Modes

There are five Painter Scoping Modes that control how broadly or narrowly a selected Painter tool will apply an attribute or attributes to objects in the current plan. These modes are listed in the same submenu as the associated Eyedropper and/or Painter tool. When a Painter tool is active, they are also found on the Edit Toolbar. In both locations, a small check mark will display at the lower left of the active Mode's button icon.



Depending on the type of object attributes have been loaded from, not all Object Painter Scoping Modes may be available.

Rather than modify instances of an object type, the Material Painter Scoping Modes replace instances of a material based on the selected scope.

Object Mode applies attributes to or replaces a material on individual target objects, one at a time. All instances of the original material on a target object are replaced by the one being painted.

Marquee Mode is available in plan view for the Fill Style and Object Painter tools. To use this mode, click and drag a marquee around the objects you would like to paint instead of clicking on them.

Room Mode applies attributes to a target object as well to as all instances of that object type in the same room with a single click. All instances of the original material throughout the room are replaced by the one being painted.

Floor Mode applies attributes to a target object as well as all instances of that object type on the same floor with a single click. All instances of the original material on the current floor are replaced by the one being painted.

Plan Mode applies attributes to a target object as well as all instances of that object type in the entire plan with a single click. All instances of the original material throughout the plan are replaced by the one being painted.

An additional mode, the **Component Mode**, is only available for the Material Painter and Adjust Material Definition tools. It is also available when replacing an inserted object with another from the library. See *Material Painter Scoping Modes on page 759*, *Adjust Material Definition on page 765*, and *Replace From Library on page 730*.

Home Designer will remember your Painter Scoping Mode selection until you quit the program. The next time you launch the program, Object Mode will be active.

Object Painter

A variety of attributes can be copied from one object to another using the Object Painter tools.

Object Eyedropper

Select **Tools> Object Painter> Object Eyedropper** to apply the attributes of one object to other objects. The Object Eyedropper functions like other Eyedropper tools. See *To use an eyedropper tool on page 216*.

When the Object Painter is active, you can choose a Painter Scoping Mode to control how broadly or narrowly the selected attributes are applied to other objects. See *Painter Scoping Modes on page 217*.

Deleting Objects

Objects can be deleted in a variety of ways:

- Select an object or group of objects, then: click the **Delete** edit button; select **Edit> Delete** from the menu; or press either the ***Delete*** or ***Backspace*** key.
- Entire categories of objects can be deleted using the Delete Objects dialog.
- Objects are deleted if the floor they are placed on is deleted. See *Deleting Floor Levels on page 539*.

If an object has a line with arrow attached to it, the line with arrow is deleted if the object is deleted. To prevent the arrow from being deleted, drag the attached end away from the object before deleting it.

A variety of objects in the program can be generated automatically, including roofs, the foundation, and framing. Automatically generated objects cannot be deleted unless the automatic creation option is disabled.

Objects such as roofs, framing, and Auto Exterior Dimensions that are set to automatically rebuild or refresh cannot be deleted while that behavior is enabled. Automatically generated objects cannot be deleted unless the automatic creation option is disabled.

> Although objects on locked layers cannot be selected, most can nevertheless be deleted using the Delete Objects dialog.

Deleting Polyline Edges

There are a number of different ways to delete individual edges of polyline-based objects:

- Select **Connect CAD Segments** . Select the edge and delete. See *Disconnect Edges on page 185*.
- Drag a corner handle until it overlaps an adjacent corner handle to remove the edge between them and merge them into a single handle.
- Create a complete break at both ends. Select the edge and delete. See *To create a complete break on page 209*.
- The **Fillet Lines** and **Chamfer Lines** tools can be used to delete polyline edges. See *Reshaping Objects on page 208*.

Delete Surface

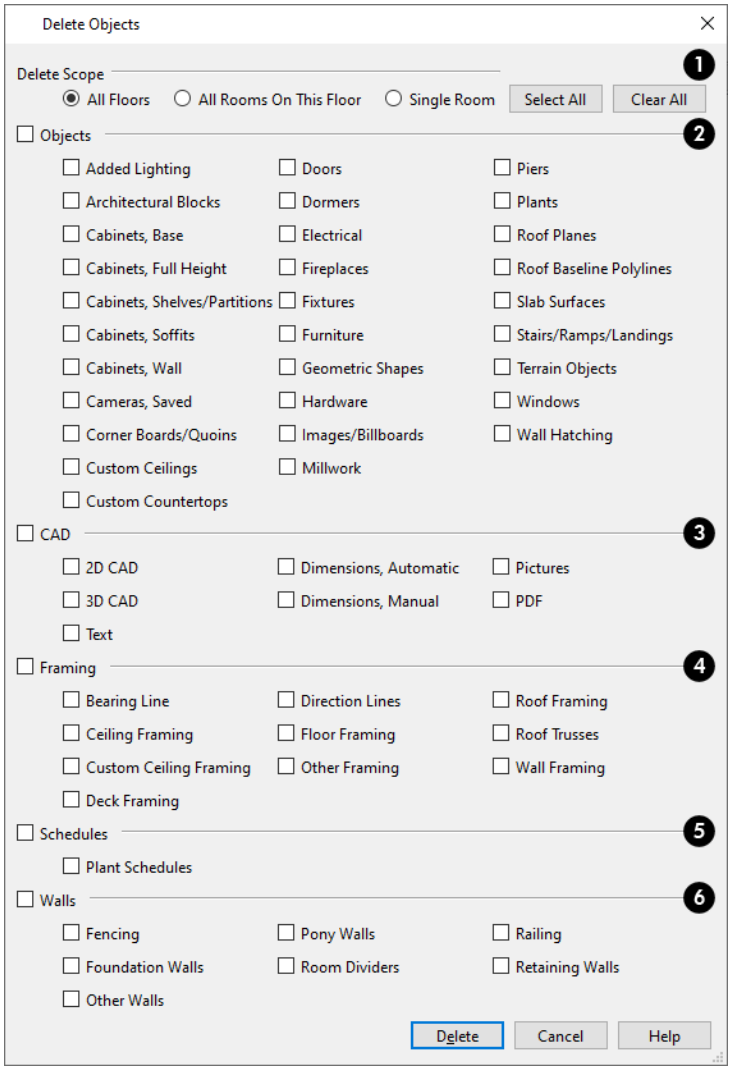
In any 3D view, select **3D> Delete Surface**, then click a surface in the view to temporarily remove the surface from the current view without permanently affecting the object. See *Delete 3D Surface on page 790*.

Delete Objects Dialog

The Delete Objects dialog lets you delete categories of objects in a plan or layout file. Select **Edit> Delete Objects** to access this dialog. The settings in the dialog vary depending on whether a plan or a layout file is active:

In Plan Views

The Delete Objects dialog only deletes objects in plan view - it does not delete CAD objects or plant schedules drawn in cross section/elevation views. If this dialog is opened while a camera view is active, CAD objects and plant schedules cannot be deleted.



1 Delete Scope

- Choose **All Floors** to delete objects on all floors in the current plan.
- Choose **All Rooms on This Floor** to delete objects in all rooms on the current floor.
- Choose **Single Room** to delete objects in rooms on the current floor that you then select. See *To use the Delete Objects dialog on page 221*, below.
- Click the **Select All** button to check all boxes below.
- Click the **Clear All** button to uncheck all boxes blow.

2 Objects

Specify which types of architectural Objects you want to delete.

3 CAD

Specify which types of CAD objects you want to delete. See *CAD Objects on page 224*.

4 Framing

Specify which types of Framing objects you want to delete. See *Framing Tools on page 663*.

5 Plant Schedules

Specify whether or not to delete Plant Schedules. See *Plant Schedules on page 947*.

6 Walls

Specify which kinds of Walls you want to delete. See *Walls, Railings, and Fencing on page 254*.

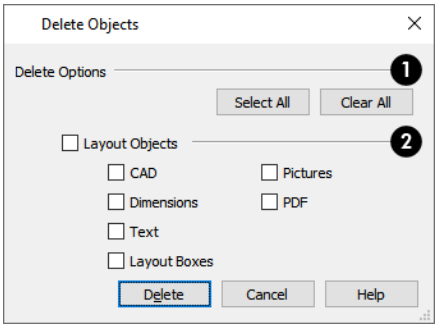
To use the Delete Objects dialog

1. Specify the **Delete Scope** as **Single Room**, **All Rooms On This Floor**, or **All Floors**.
2. Click **Select All** to check all the boxes or **Clear All** to uncheck all boxes.
3. Check the box for each category of objects you want to delete.
   - Check the box beside any heading to select all of the categories within it; clear the box beside a heading to deselect all of its categories.
4. Check the box for each subcategory of objects that you want to delete.
   - If "Roof Planes" cannot be selected, they may be locked. See *Editing Roof and Ceiling Planes on page 607*.
5. When the scope is set to **Single Room**:
   - Move your cursor into the drawing area and click in a room of the plan to delete objects of the selected type within that room without closing the dialog.
   - Only objects with their center point located in the room are deleted.
   - Continue clicking on rooms or choose a different Delete Scope.
   - Click **Done** when all selections have been deleted.

   > Note: If you click in or try to switch to a view window other than the active view, the Delete Objects dialog will close.

6. If you select **All Rooms On This Floor** or **All Floors**, you do not need to click in plan view. The **Delete** button becomes available, and clicking it closes the dialog and deletes the specified objects.

In Layout



1 Delete Options

- Click the **Select All** button to check all boxes below.
- Click the **Clear All** button to uncheck all boxes.

2 Layout Objects

Specify which types of objects that you want to delete. See *On the Layout Page on page 972*.

Undo and Redo

The **Undo** and **Redo** commands allow you to both undo the last action performed, as well as redo actions that were recently Undone.

The 50 most recent actions can be Undone or Redone, depending on your settings in the Preferences dialog. See *General Panel on page 100*. Actions that can be Undone and Redone include creating, editing, and deleting objects.

The maximum number of Undo files is specified in the **Maximum Undos** value in the Preference settings. If you have **Undo** enabled, be sure to define a directory on a hard drive with enough space for these files.

To Undo an action, select **Edit> Undo**, click the **Undo** button, or press ***Ctrl/⌘ + Z***.

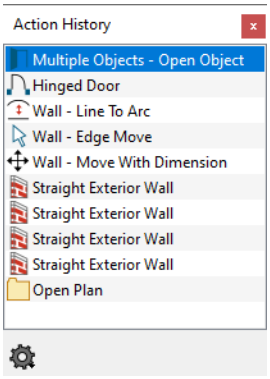
The Redo command is only available after Undo has been used. To Redo an Undone action, select **Edit> Redo**, click the **Redo** button or press ***Ctrl/⌘ + Y***.

It is important to note that **Undo** and **Redo** do not affect all actions in the program, including:

- Save and Save As. See *Exporting and Backing Up Files on page 68*.
- Changes made in the Library Browser. See *The Library Browser on page 705*.
- Changes made in a dialog while the dialog box is open. See *Dialogs on page 19*.
- Changes made to lights using the Adjust Lights dialog. See *Adjust Lights Dialog on page 826*.
- Changes made to the display by panning the display or zooming in or out. See *Zoom Tools on page 136*.
- Changes made to the position of a camera, or its Rendering Technique. See *Editing 3D Views on page 797*.

Action History

The Action History side window allows you to access recent Undoable actions in the current plan or layout file. Select **View>Action History** to open or close this side window.



Each line item in the Action History side window represents an action that changes one or more objects or settings in a dialog, and includes a tool icon indicating the name of the drawing tool, edit tool, or dialog used. If an object was edited, its object type and information about how it was edited is also stated.

Actions are listed in **New to Old** chronological order with the most recent at the top of the list by default. To instead sort **Old to New**, click the **Settings** button at the bottom of the Action History side window.

Up to 50 of the most recent actions can be listed by default. The maximum list length is tied to the **Maximum Undos** value set in the Preferences dialog. See *General Panel on page 100*.

The selected line item is highlighted and reflects the current state of the file:

- Items below it are past actions that can be Undone.
- Any items above it have effectively already been Undone but can be Redone.

Click on a line item to make that action the most recent and effectively Undo all line items above it in the list and Redo all line items below it.

By default, when the Action History side window is opened, it will be docked on the right side of the program window. Like other side windows, though, it can be moved. See *Side Windows on page 16*.

CAD Objects

Chapter 11

The CAD tools allow you to add details to 2D views of your design to create complete working drawings.

CAD objects do not affect 3D objects or display in camera views or overviews, but they can be used to add details to layout pages, plan views and cross section/elevation views.

CAD polylines can be converted to 3D objects such as countertops and terrain data, and shown in 3D views. See *Convert Polyline on page 211*.

CAD objects are edited much like other objects in Home Designer. See *Editing Objects on page 179*.

CAD Defaults and Preferences

CAD Defaults can be accessed by selecting **Edit> Default Settings** from the menu and expanding the CAD category.

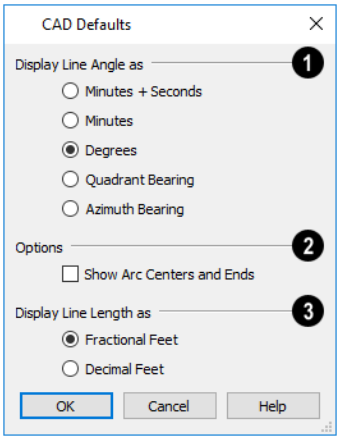
The behavior and appearance of CAD objects are also affected by settings on the CAD, LINE PROPERTIES, SUN ANGLE, BEHAVIORS, and SNAP PROPERTIES panels of the Preferences dialog. Unlike default settings, preference settings are global, affecting all plan and layout files. See *Preferences Dialog on page 92*.

CAD DEFAULTS DIALOG

The settings in the CAD Defaults dialog control the basic appearance of CAD objects. This dialog can also be opened by clicking the **CAD Defaults** button, which can be added to the toolbars. See *To add a button to a toolbar on page 124*.

Each plan file has multiple CAD Defaults dialogs: one affecting plan view and one for every cross section/elevation view. Each layout file has its own CAD Defaults, as well. The CAD Defaults associated with a given view can be accessed by opening the CAD Defaults dialog while that view is active.

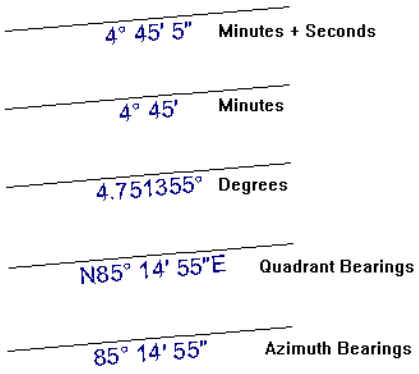
The CAD Defaults dialog cannot be opened when a camera view or overview is active.



1 Display Line Angles as

Specify the format to use when **Show Angle** is checked in an object's specification dialog. See *Line Style Panel on page*

234.



Line angles can be displayed using three basic methods:

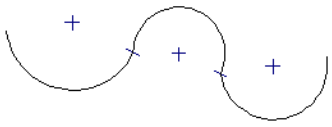
- **Degrees/Minutes/Bearings** - Measured counterclockwise from a line drawn horizontally to the right of the angle's vertex. Useful for most drawing tasks. Select the level of accuracy that you require.
- **Quadrant Bearings** - Measured from a vertical line representing North/ South, Quadrant Bearings use directional bearings in their measurements. Useful for site drawings.
- **Azimuth Bearings** - Measured from a line drawn straight up from the angle's vertex (i.e., North on a site plan). Useful for site drawings, Azimuth Bearings use degrees, minutes, and seconds in their measurements.

> Line length and angle indicators use the Text Style of the layer that their object is on. See *Text Styles on page 390*.

2 Options

Select any combination of the available **Options**.

- Check **Show Arc Centers and Ends** to show arc centers and ends on the current floor. Ends display as small lines where arcs connect to one another. Centers also acts as snap points. See *Arc Centers and Ends on page 193*.



3 Display Line Length As

In plan and layout files using US Units, specify whether to **Display Line Length as** either **Fractional** or **Decimal Feet**. This controls the appearance of line length indicators, which only display when **Show Length** is checked in an object's specification dialog. Not available in metric files. See *Line Style Panel on page 234*.

The CAD Drawing Tools

The following CAD Tools are available in the CAD menu and the toolbars.

Point Tools

Select **CAD> Points** to access the Point Tools.

The **Place Point**, **Input Point**, **Point Marker**, and **Delete Temporary Points** tools can be used to create or remove snap points for a variety of purposes. See *Point Tools on page 227*.

Line Tools

Select **CAD> Line** to access the Line Tools.

The **Draw Line**, **Input Line**, **Line With Arrow**, **Sun Angle**, and the **North Pointer** allow you to create various types of lines. See *Line Tools on page 230*.

Arc Tools

Select **CAD > Arcs** to access the Arc Tools.

The **Draw Arc**, **Input Arc**, and the **Arc With Arrow** tools allow you to create arcs. See *Arc Tools on page 237*.

Box Tools

Choose **CAD > Boxes** to access the Box Tools.

The **Rectangular Polyline**, **Box**, **Cross Box**, and **Insulation** tools allow you to create a variety of polyline and box objects. See *Box Tools on page 247*.

Circle Tools

Select **CAD> Circles** to access the Circle Tools.

The **Circle**, **Circle About Center**, **Oval**, and the **Ellipse** tools are discussed in detail later in this chapter. See *Circle Tools on page 242*.

Spline

A Spline is a curve that passes smoothly through a set of points. Select **CAD> Spline** to draw connected line segments that form a spline. See *Splines on page 249*.

Once created, a spline can be selected and edited. See *Editing Spline-Based Objects on page 202* and *Polyline Specification Dialog on page 245*.

Dimension Tools

Select **CAD> Dimensions** to access the Dimension Tools. The **Dimension Tools** can be used with CAD and architectural objects and are discussed in their own chapter. See *Dimensions on page 340*.

Text Tools

Select **CAD> Text** to access the Text Tools. The Text Tools are discussed in their own chapter. See *Text, Callouts, and Markers on page 366*.

Point Tools

Select **CAD> Points** to access the Point Tools.

Temporary points created using the **Place Point** and **Input Point** tools and permanent **Point Markers** can be used with **Object Snaps** to accurately position a variety of objects. See *Object Snaps on page 142*.

Point Markers

Use a permanent **Point Marker** as a snap point for dimension lines and other CAD objects. Select **CAD> Points> Point Marker** and click in the view to place a permanent point marker. Point markers display as a simple cross by default, but you can specify a different style of marker as well as add a label in the Marker Specification dialog. See *Marker Panel on page 387*.

Once created, Point Markers can be edited like other Markers. You can also place Point Markers using the **Marker** tool. See *Markers on page 386*.

Point Markers are also created when the **Point to Point Dimension** tool is used or when a dimension line is copied and pasted independent of the objects it locates. See *Point to Point Dimensions on page 352*.

Place Point

Select **CAD> Points> Place Point**, then and click in the drawing area to place a temporary CAD point at that location. Temporary CAD points can be used for a variety of purposes: for example, as an anchor for snapping objects to a precise location. The Current CAD Point can be used for additional tasks. See *The Current Point on page 228*, below.

Once a temporary CAD point is created, it cannot be selected and does not have an edit handle or edit tools. The only way to modify it is to move it using the Move Point dialog. See *Move Point Dialog on page 229*, below.

The size and color of temporary points is specified in the Preferences dialog. See *Snap Properties Panel on page 114* and *Colors Panel on page 95*.

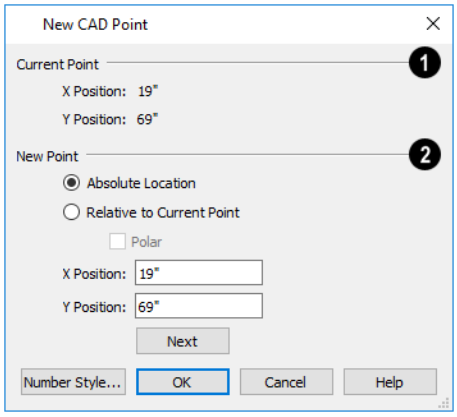
Input Point

Temporary CAD points can be placed with precision by entering coordinates. See *3D Drafting on page 12*.

To use the Input Point tool

1. Select **CAD> Points> Input Point** to open the New CAD Point dialog.
2. Select a **Location** option, and enter the desired location of the point.
3. Click **OK** to close the dialog and create the new point. The new point becomes the Current Point and is highlighted. See *The Current Point on page 228*.
4. Alternatively, click **Next** to create the new point but remain in the New CAD Point dialog and create additional points. As each is created, it becomes the Current Point.

New CAD Point Dialog



1 Current Point

The location of the **Current Point** displays here. If no CAD points are present, the origin (0, 0) displays. See *The Current Point on page 228*.

2 New Point

Specify the location of the **New Point**.

- **Absolute Location** - Define the point in **X Position** (horizontal) and **Y Position** (vertical) coordinates, relative to the origin at (0,0).
- **Relative to Current Point** - Define the new point in **X** and **Y** coordinates that are relative to the Current Point, as though that point was at (0,0). Only available when a Current Point exists.
  - Check **Polar** to define the new point by its **Distance** and **Angle** from the Current Point rather than in X and Y coordinates. This is helpful when creating a plot plan. See *Plot Plans on page 899*.

The position of the New Point is defined here. The options available depend on the method chosen to define it, above.

- **X Position** and **Y Position** coordinates relative to (0,0) are entered if the Absolute Location method is specified.
- **X Position** and **Y Position** coordinates relative to the Current Point are entered if the Relative to Current Point method is specified.
- **Distance** and **Angle** from the Current Point are entered if the Relative to Current Point: Polar method is specified.
- Click **Next** to create the new point without exiting the dialog so you can input data for the next point. The newly created point becomes the Current Point.



Click the Number Style button to change the units used in dialogs. See *Dialog Number/Angle Style Dialog on page 119*.

The Current Point

In any view and on any floor, there may be multiple temporary CAD points. The Current Point is either the most recently created or most recently selected temporary CAD point. The Current Point has a variety of uses:

- As the starting point for objects as they are drawn by entering data. See *Entering Coordinates on page 146*.
- As the point about which objects are rotated. See *Rotating Objects on page 173*.
- To indicate the points at which roof planes can join. See *To find roof plane intersection points on page 611*.

The Current CAD Point displays using the Selection Line and Handle Fill colors set in the Preferences dialog. When multiple temporary points are on-screen, the other points use only the Selection Line color as both outline and fill so the Current CAD Point can be easily identified. See *Colors Panel on page 95*.



The Current CAD Point on the right has a unique fill color.

To specify a different temporary point as the Current CAD Point, double-click on it. See *Move Point Dialog on page 229*, below.

To delete the Current Point

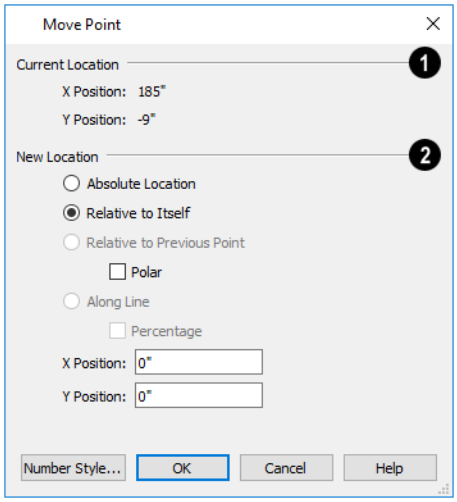
1. Make sure no other objects are selected by clicking the **Select Objects** button. You can also press the ***Esc*** key to deselect any selected objects.
2. Press the ***Delete*** key to delete the Current Point. The temporary point created prior to this one becomes the new Current Point.
3. If you continue pressing the ***Delete*** key, temporary points will be deleted in the reverse order that they were created.

Move Point Dialog

A CAD Point can be repositioned relative to itself, another point, or a CAD object such as a line using the Move Point dialog. When a Point is moved, it becomes the Current Point.

For example, you can locate the point exactly one-quarter the distance along a given line, or exactly 6 inches from one end. This new location can then be used for the start point of a new line or other purpose.

To reposition a CAD Point, double-click on it using the **Select Objects** tool. That point becomes the Current Point, and the Move Point dialog opens.



1 Current Location

The **Current Location** of the selected point displays at the top of the dialog for reference.

2 New Location

Specify the **New Location** of the point.

- **Absolute Location** - Define the new location in **X** (horizontal) and **Y** (vertical) **Position** coordinates, relative to the origin at (0,0).

- **Relative to Itself** - Define the new location in **X** and **Y Position** coordinates relative to the current location, as though that point were the origin.
- **Relative to Previous Point** - Define the new location relative to the point that was the Current Point prior to this one, as though that point was the origin. Only available if the selected point is located on a CAD object.
  - Check **Polar** to define the new location's **Distance** and **Angle** from the previous point instead of using X and Y coordinates. Only available if Relative to Itself or to Previous Point is selected above.
- **Along Line** - Define the new location relative to the edge of a nearby CAD object. This option is enabled only when the point is located near a CAD object and refers to the end nearest to the point's original location.
  - Check **Percentage (%)** to specify the Along Line value as a percentage of the total line or arc length rather than as a distance. 0% moves the point to the closest end of the nearest edge, 50% to the midpoint, and 100% to the other end. Negative numbers and percentages greater than 100 are allowed.
- Specify the new position of the point here. The options that are available depend on the method chosen above to define the New Location.
  - **X Position** and **Y Position** coordinates are entered if the Absolute Location method is specified or if either Relative method is used with Polar unchecked.
  - **Distance** and **Angle** are entered if either Relative method is specified when Polar is checked.
  - **From Edge** - When the Along Line method is used, specify the distance of the point's New Location to the end of the CAD object's edge that it was originally closest to. When **Percentage (%)** is checked, enter this value as a percentage instead.



Click the Number Style button to change the units used in dialogs. See *Dialog Number/Angle Style Dialog on page 119*.

Delete Temporary Points



All temporary CAD points in the current view can be deleted at once using **CAD>Points>Delete Temporary Points**. In plan view, Delete Temporary Points will delete all temporary points on all floors.

You can also press the **Delete** key when the Select Objects tool is active and nothing is selected to delete the points one by one; however, **Delete Temporary Points**  can save time when there are many points.

Line Tools



Select **CAD> Draw Lines** to access the Line Tools.

If **Object Snaps**  and **Connect CAD Segments**  are enabled, you can connect the ends of multiple lines and/or arcs to form a single entity called a polyline. See *Polylines on page 244*.

Draw Line



Select **CAD> Lines> Draw Line**, then click and drag from beginning to end.

Input Line



CAD lines can also be created using absolute values entered with the keyboard by selecting **CAD> Lines> Input Line**. This method is slower but more precise than using the mouse and is ideal when the desired length and angle of each line is known, such as with property lines.

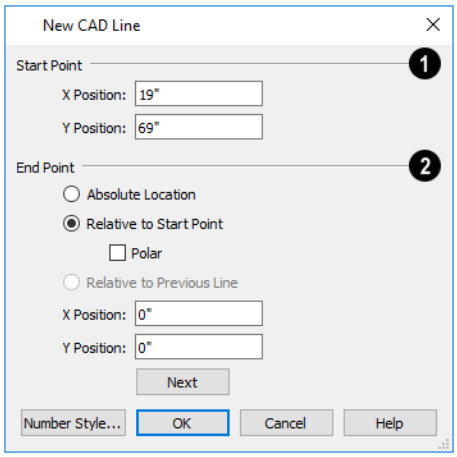
Before any line is drawn using this method, a starting point must be defined. If a starting point has not been defined, Home Designer assumes a starting point of 0,0.

To use the Input Line tool

1. Select **CAD> Points> Place Point**, then click the screen to place a CAD point. This is the Current Point, and is the start point for the new line. See *The Current Point on page 228*.
2. Select **CAD> Lines> Input Line** to open the New CAD Line dialog. This dialog can also be opened by double-clicking the **Line Tools** parent button.
3. If necessary, specify the start point.
4. Specify the method used to define the location of the End Point, then define the End Point.
5. Click **OK** to close the dialog and draw the line, or click **Next** to draw the line but remain in the New CAD Line dialog and draw additional lines.

> Note: If you accidentally click OK instead of Next and need to continue drawing a polyline using the New CAD Line dialog, select the Input Line tool again and continue.

New CAD Line Dialog



1 Start Point

The **X Position** (horizontal) and **Y Position** (vertical) coordinates of the start point for the new line display here. They can also be changed, if you wish.

2 End Point

The new line's **End Point** is defined here. Begin by specifying how you want to define the line **End Point Location**.

- **Absolute Location** - Define the end point of the new line in **X Position** (horizontal) and **Y Position** (vertical) coordinates, relative to (0,0).
- **Relative to Start Point** - Define the end point of the new line in **X** and **Y** coordinates that are relative to the line's Start Point, as though it were at (0,0).
- Check **Polar** to define the End Point of the new line by its **Distance** and **Angle** from the Start Point rather than in X and Y coordinates. This is helpful when creating a plot plan. See *Plot Plans on page 899*.
- **Relative to Previous Line** - Define the End Point of the new line by its **Distance** and **Angle** relative to the end of the last line drawn, as though that line's angle were at 0° and its End Point, at (0,0).

- **X Position** (horizontal) and **Y Position** (vertical) coordinates relative to (0,0) are entered if the Absolute Location method is specified.
- **X Position** (horizontal) and **Y Position** (vertical) coordinates relative to the start point are entered if the Relative to Start Point method is specified.
- **Distance** and **Angle** from the start point are entered if the Relative to Start Point: Polar method is specified.
- **Distance** and **Angle** from the start point are entered if the Relative to Previous Line method is specified.
- Click **Next** to create the line without exiting the dialog so you can input data for the next line. The start point of the next line is the end point of this line.



Click the Number Style button to change the units used in dialogs. See *Dialog Number/Angle Style Dialog on page 119*.

To enter an angle in bearings

1. While not required, you may want to select **Quadrant** or **Azimuth Bearings** in the Dialog Number/Angle Style dialog.
2. For Quadrant Bearings, begin by typing ***N*** or ***S*** (for North or South).
3. Next, type the number of degrees followed by either a letter d or a space.
4. Type the number of minutes followed by either a ‘ or a space.
5. Type the number of seconds followed by either a “ or a space.
6. Finally, for Quadrant Bearings, type either ***E*** or ***W*** (for East or West).

Following are some examples of Quadrant Bearings. It is not necessary to capitalize the letters. Spaces after each value are optional.

- N 20d 30' E
- S 45' W
- N 89d 48' 30" W
- N 90' E

Enter Coordinates

Similar to **Input Line**, lines can also be specified by pressing the ***Tab*** key when a line is in the process of being drawn. This opens the Enter Coordinates dialog. See *Entering Coordinates on page 146*.

Line With Arrow



Create a line or polyline with an arrow on one or both ends by selecting **CAD> Lines> Line With Arrow**, then clicking and dragging in the drawing area. The initial attributes of the line’s arrow are set in the Arrow Defaults dialog. See *Arrow Defaults on page 367*.

As with other lines, lines with arrows can be edited after they are created and connected to form polylines provided that they share the same style attributes. See *Editing Line-Based Objects on page 187* and *Line Specification Dialog on page 233*.

You can also create arcs with arrowheads. See *Arc with Arrow on page 239*.



If either end of a Line with Arrow is snapped to an object, it maintains its connection if that object is moved. See *Text Arrows on page 381*.

Sun Angle

Sun Angles let you specify the date, time, latitude, and longitude that the program uses when calculating the angle of the Generic Sun as well as the direction and length of sun shadows. See *Sun Angles and Shadows on page 830*.

North Pointer

The **North Pointer** tool is used to define the direction of true north in a plan. The direction of north does not affect the orientation of the Snap and Reference grids, but it does determine the direction of bearing information as well as how shadows and conditioned area totals are calculated. See *North Pointer on page 830*.

If a **North Pointer** is not used, north is assumed to be straight up on screen in plan view.

Disconnect Edges

Select **CAD> Lines> Disconnect Edges**, then click on the edge of a polyline-based object to disconnect that edge from the rest of the polyline. See *Disconnect Edges on page 185*.

When **Connect CAD Segments** is toggled off, CAD objects will not join to form a single polyline, either as they are drawn or when edited. See *Polylines on page 244*.

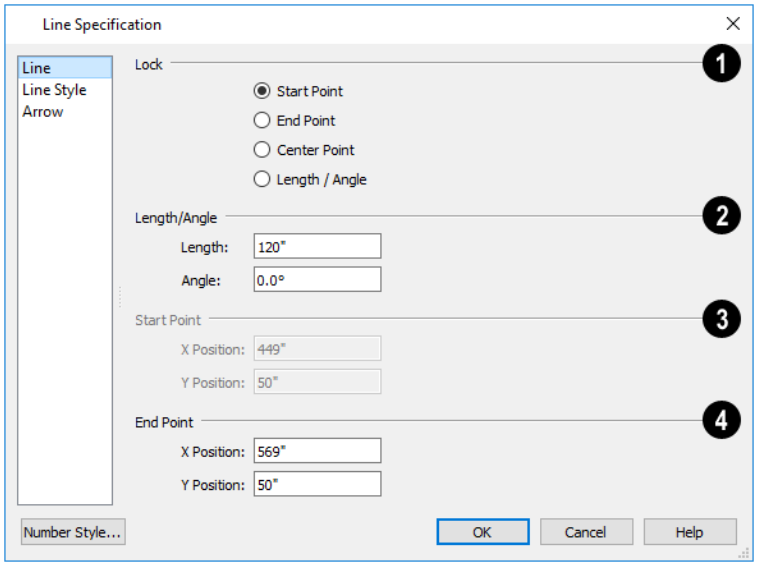
Line Specification Dialog

Select a CAD Line, Line With Arrow, or Text Line With Arrow and click the **Open Object** edit button to open the Line Specification dialog.

The settings on the panels in this dialog are found in the specification and defaults dialogs for a variety of different objects in the program.

Line Panel

The information on the LINE panel of the Line Specification dialog is similar to that found on the SELECTED LINE panels of various specification dialogs in the program.



1 Lock

These lock options control how changing properties on this dialog affect the line.

- Select **Start** to keep the start of the line fixed when changing the length, angle, and end.
- Select **End** to keep the end of the line fixed when changing the length, angle, and start.
- Select **Center** to keep the center of the line fixed. Changing the length of the line moves the start and end of the line equally. Changing the angle rotates the line around the center.
- Select **Length/Angle** to keep the length and angle of the line segment fixed. Moving the start or end moves the other end so the length and angle of the line do not change.

When editing a polyline, moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves the start of the next connected line, if there is one.

2 Length/Angle

Specify the length and angle of the selected line. Not available when Length/Angle is locked, above.

3 Start Point

Specify the X and Y coordinates of the line's **Start Point**. Not available when the Start or Center Point is locked, above.

4 End Point

Specify the X and Y coordinates of the line's **End Point**. Not available when the Center or End Point is locked.

5 Visibility

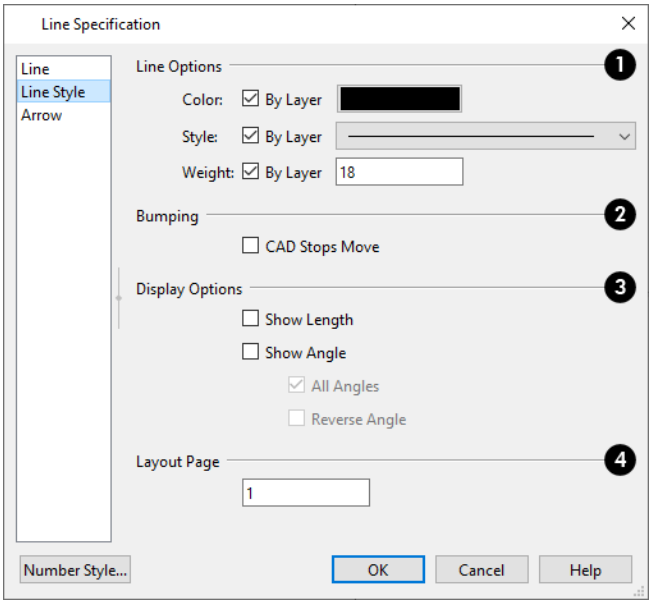
Only available in the Polyline Specification dialog. See *Polylines on page 244*.

- Uncheck **Show Selected Edge** to prevent the object's Selected Edge from drawing. This setting is also affected by The **Hide Selected Edge**  and **Show Selected Edge**  edit tools. See *Hide/Show Selected Edge on page 252*.

The format used here can be changed by clicking the **Number Style** button. See *Dialog Number/Angle Style Dialog on page 119*.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. The settings here control the appearance of the lines and/or arcs that make up an object. Depending on the type of object selected, some settings may not be available. The available settings vary slightly depending on whether the object was drawn in a plan or a layout file.



1 Line Options

- Specify the line **Color** used to represent the selected object. Check **By Layer** to use the color assigned to the object's layer or click the Color bar to select a different color. See *Select Color Dialog on page 165*.

> Mouse over the Color bar to display a tool tip reporting the selected color's RGB values.

- Specify the line **Style** used to represent the selected object. Check **By Layer** to use the line style assigned to the object's layer or click the drop-down list to select a different style.
- Define the **Line Weight** or check **By Layer** to use the **Line Weight** assigned to the object's layer. Setting the Line Weight to zero results in lines that print as thin as possible. See *Line Weights on page 994*.

2 Bumping

These options are not available for Electrical Connections or Custom Backsplashes and only function when **Bumping/Pushing** is enabled. See *Bumping/Pushing on page 167*.

- Check **CAD Stops Move** to bump the selected object into other CAD or CAD-based objects as it is moved, and/or to push the other object(s).
- Check **Wall Stops Move** to stop the selected object when it bumps into a wall. Walls cannot be pushed by other objects. Not available in layout files.

3 Display Options

These options not available for CAD Box- or CAD Circle-based objects, or for Custom Backsplashes, Electrical Connections, North Pointers, or Sun Angles.

- Check **Show Length** to show the length of each line centered above the line.
- Check **Show Angle** to show the angle of each line centered below the line. If the object is an arc, its radius will also display.

  The **Length** and **Angle** formats are specified in the CAD Defaults dialog. See *CAD Defaults Dialog on page 224*.

- Uncheck **All Angles** to show only those angles that are neither horizontal nor vertical. This is automatically checked when **Show Angle** is checked.
- Check **Reverse Angle** to reverse the angle by 180°. This may be helpful when showing a line's bearing, since the direction a line is drawn from start point to end point defines its bearing.

An additional **Display Options** setting is available In the Picture File, Metafile, and PDF File Box Specification dialogs. See *Pictures, Images, and Walkthroughs on page 850*.

- Check **Show Border** to display the selected object's border polyline.

4 Layout Page

Specify the layout page that the selected object(s) is located on. Only available for objects drawn in layout files, but not in defaults dialogs for objects such as callouts and markers. See *Layout on page 970*.

Arrow Panel

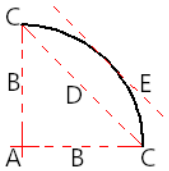
The settings on the Arrow panel allow you to customize the style of arrowhead the selected object displays. See *Arrow Panel on page 252*.

Drawing Arcs - Arc Creation Modes

There are two Arc Creation Modes that control how arcs and arc-based objects are drawn. Select **Edit> Arc Creation Modes** to select a mode.

The program remembers the last creation mode used between sessions. Once drawn, all arcs are edited similarly. See *Editing Arc-Based Objects on page 190*.

Before deciding which Arc Tool or Arc Creation Mode is best for the project at hand, it is helpful to be familiar with the different components that make up an arc.



A. **Center** - the point the arc is drawn about.
B. **Radius** - the distance from the center to the arc.
C. **Start** / **End** - where the arc begins and ends.
D. **Chord** - the straight line between the start and end point.
E. **Tangent** - a straight line that intersects an arc and is perpendicular to the radius of the arc at that point.

Free Form Arc

Free Form Arc mode allows you to define an arc by clicking and dragging along the desired path.

To draw a Free Form arc

1. Select **CAD> Arcs> Draw Arc**, then click at the arc's start point.
2. Move the pointer along the desired curve while dragging to curve the arc.
3. Release the mouse button at the end point to complete the arc.

Arc About Center

Arc About Center mode allows you to draw an arc by defining the center and then the start and end points.

To draw an Arc About Center

1. Select **CAD> Arcs> Draw Arc**, then click once to define the center point.
2. Click and drag from the start point of the arc to its end point.
3. Or, click and drag an arc. The Current Point is used as the center. See *The Current Point on page 228*.

Arc Tools

Select **CAD> Arcs** to display the submenu of Arc Tools.

Draw Arc

The method used to draw an arc using **Draw Arc** depends on which Arc Creation Mode is currently active. Once drawn, an arc can be edited. See *Editing Arc-Based Objects on page 190*.

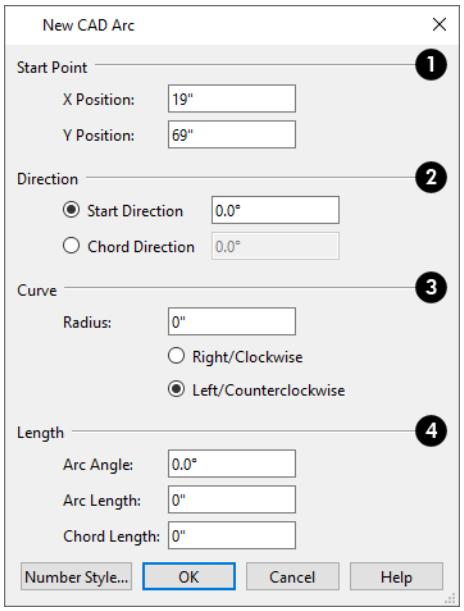
Input Arc

An arc can be drawn to exact specifications using the New CAD Arc dialog.

To use the Input Arc tool

1. Select **CAD> Points> Place Point**, then click the screen to place a CAD point. This is the Current Point, and will be the start point for the new arc. See *The Current Point on page 228*.
2. Select **CAD> Lines> Input Arc** to open the New CAD Arc dialog.
   The New CAD Arc dialog can also be opened by double-clicking the **Arc Tools** parent button.
3. If necessary, specify the Start Point.
4. Specify the method used to define the arc's Direction, then define its angle.
5. Define the arc's Radius. In order to create an arc, a value greater than 0 must be specified.
6. Define the arc's Extension, or length, using one of the three methods. In order to create an arc, one of these values must be greater than 0, and only one method should be used.
7. Click **OK** to close the dialog and draw the arc.

New CAD Arc Dialog



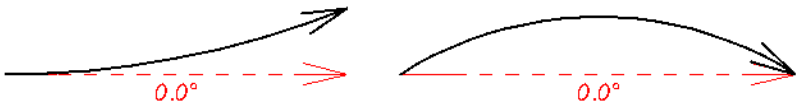
1 Start Point

The **X Position** (horizontal) and **Y Position** (vertical) coordinates of the **Start Point** for the new arc display here. They can also be changed, if you wish.

2 Direction

Specify how you want to define the arc's **Direction**, then specify its angle.

- The **Start Direction** defines the angle of the tangent from the arc's start point.
- The **Chord Direction** defines the angle of the arc's chord from the start point.



Start Direction at 0° vs Chord Direction at 0°

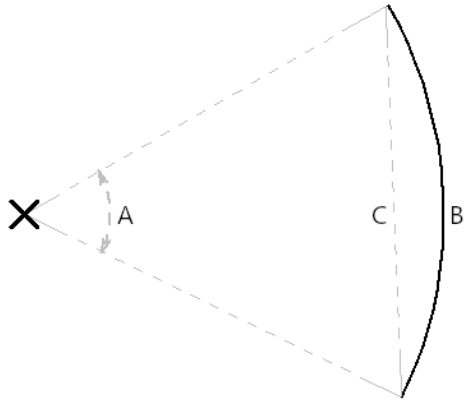
3 Curve

- Define the arc's **Radius**.
- Select the direction that the arc curves: either to the **Right/Clockwise** or to the **Left/Counterclockwise**.

4 Length

Control the length of the arc by defining one of these:

- A. **Arc Angle** - the arc's central angle as measured between the radii of both start and end points.
- B. **Arc Length** - the length of the arc along its curve from one endpoint to the other.
- C. **Chord Length** - the linear distance between start and end point.



Click the Number Style button to change the units used in dialogs. See *Dialog Number/Angle Style Dialog on page 119*.

Arc with Arrow

You can create an arc with an arrow on one or both ends, using the **Arc With Arrow** tool. Draw an **Arc With Arrow** like a regular arc. When you release the mouse button, the arc has an arrowhead at the end. The default attributes of the arrow are determined by the settings in the Arrow Defaults dialog. See *Arrow Defaults on page 367*.

As with regular arcs, arcs with arrows can be edited after they are created. See *Editing Arc-Based Objects on page 190* and *Arc Specification Dialog on page 239*.

Continue to draw connected lines and arcs to form a polyline with an arrowhead at the end. The arrowheads display only at the free ends, not where the lines connect. See *Polylines on page 244*.

Lines with arrowheads can also be created. See *Line With Arrow on page 232*.

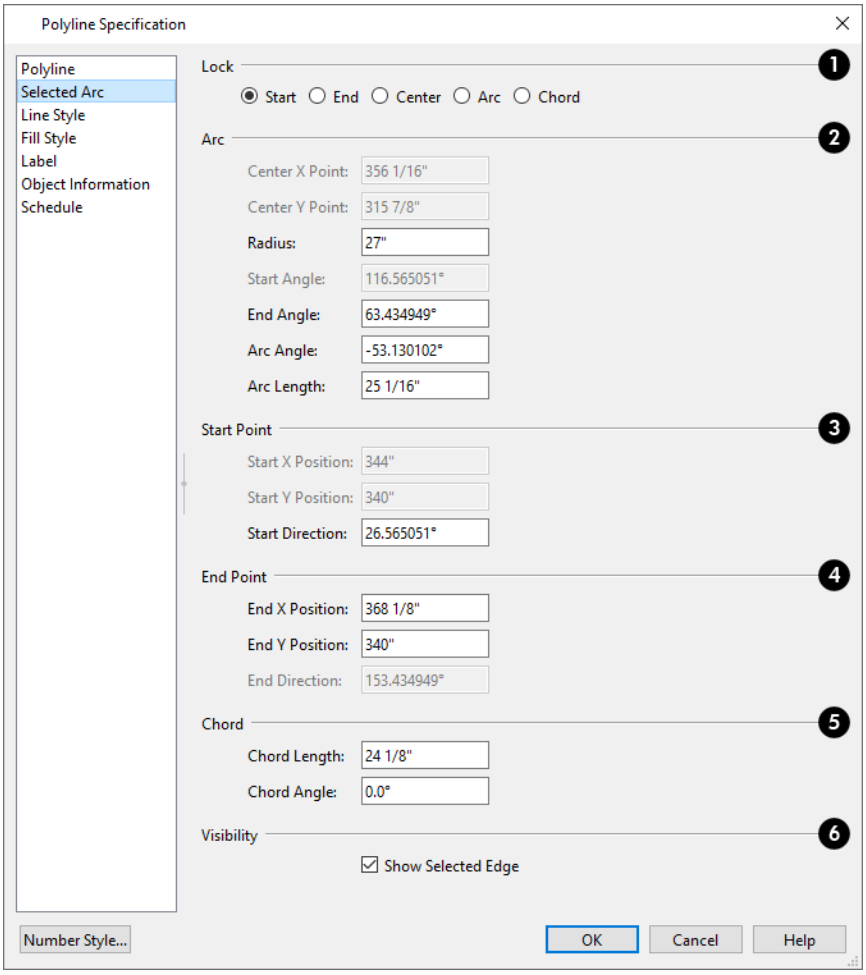
A line can be converted to an arc or vice versa by selecting the line, pressing and holding down the ***Alt*** key, then using the edit handle at either end to bend the line.

Arc Specification Dialog

Select an arc and click the **Open Object** edit button to open the Arc Specification dialog.

Arc Panel

The settings on the Arc panel are also found on the Selected Arc panels for a variety of CAD-based objects.



1 Lock

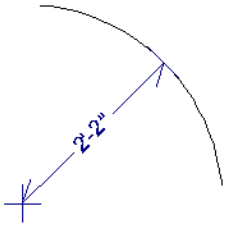
These options control how changing properties in this dialog affects the arc.

- **Start** - Select this option to keep the start fixed when changing the arc, chord, or end.
- **End** - Select this option to keep the end fixed when changing the arc, chord, or start.
- **Center** - Select this option to keep the center of the arc fixed when changing the arc.
- **Arc** - Select this option to keep the arc fixed when changing the arc location.
- **Chord** - Select this option to keep the arc chord fixed when changing the arc radius.

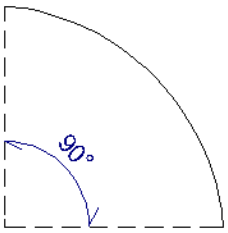
2 Arc

These parameters define the arc. Various controls are disabled depending on what lock option is used.

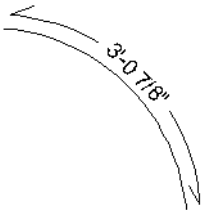
- **Center X Point** - Specify the X coordinate for the center of the arc.
- **Center Y Point** - Specify the Y coordinate for the center of the arc.
- **Radius** - The distance between the center of the arc and the arc surface.



- **Start Angle** - Specify the angle that a line drawn from the arc center to the arc start measured from a horizontal line to the right.
- **End Angle** - Specify the angle that a line drawn from the arc center to the arc end measured from a horizontal line to the right.
- **Arc Angle** - The angle between the center of the arc and each end.



Arc Length - The length of the arc along the curve.



Uncheck **Automatic Facet Angle** to specify the **Facet Angle**, which is the angle at which the surfaces of a curved 3D object are broken in 3D views. The default value is 7.5°; a smaller value produces a smoother curve while a larger value may generate more quickly in 3D views. These settings are only available on the SELECTED ARC panel for some CAD-based architectural objects such as Slabs. See *Architectural vs CAD Objects on page 140*.

3 Start Point

These values define the start point of the arc. The Position settings are disabled when the Start is locked.

- **Start X Position** - Specify the X coordinate for the beginning of the arc.
- **Start Y Position** - Specify the Y coordinate for the beginning of the arc.
- **Start Direction** - Specify the angle of a tangent line at the start of the arc.

4 End

These values define the end point of the arc. The Position settings are disabled when the End is locked.

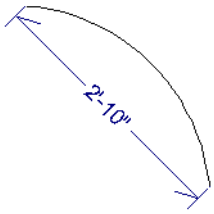
- **End X Position** - Specify the X coordinate for the end of the arc.
- **End Y Position** - Specify the Y coordinate for the end of the arc.
- **End Direction** - Specify the angle of a tangent line at the end of the arc.

5 Chord

These values define the chord of the arc, which is the imaginary straight line going from the start of the arc to the end of the

arc.

- **Chord Length** - The straight line distance between the two ends of the arc.



- **Chord Angle** - Specify the angle of the chord. An angle of 0° is horizontal while an angle of 90° is vertical.

6 Visibility

Only available in the Polyline Specification dialog. See *Polylines on page 244*.

- Uncheck **Show Selected Edge** to prevent the object's Selected Edge from drawing. This setting is also affected by the **Hide Selected Edge** and **Show Selected Edge** edit tools. See *Hide/Show Selected Edge on page 252*.

Line Style Panel

For information about the Line Style panel, see *Line Style Panel on page 234*.

Arrow Panel

For information about the Arrow panel, see *Arrow Panel on page 252*.

Circle Tools

Select **CAD> Circles** to access the Circle Tools.

Circle

To draw a circle, select **CAD> Circles> Circle**, then click and drag across the diameter, in any direction.

Once a circle is created, it can be edited. See *Editing Circles, Ovals and Ellipses on page 204* and *Circle/Oval/Ellipse Specification Dialog on page 243*.

Draw Circle About Center

Select **CAD> Circles > Circle About Center** to create a circle by dragging the radius out from the center point.

To draw a Circle About Center

1. Click the **Circle About Center** tool.
2. Click the screen to define the center.
3. Drag the radial distance and release the mouse button. If you are using **Object Snaps**, both the center point and the radius snap to any appropriate nearby CAD object, intersection or point.

Oval

An **Oval** is a four-arc approximation of an ellipse. To draw an oval, select **CAD> Circles> Oval**, then click and drag at an angle to define the oval's maximum height and width.

Once an oval is created, it can be edited. See *Editing Circles, Ovals and Ellipses on page 204* and *Circle/Oval/Ellipse Specification Dialog on page 243*.

Ellipse

An **Ellipse** is a set of points with a constant combined distance from two points called foci. An ellipse looks like a stretched circle, or a circular surface viewed at an angle. To draw an ellipse, select **CAD> Circles> Ellipse** and drag at an angle to define its maximum height and width.

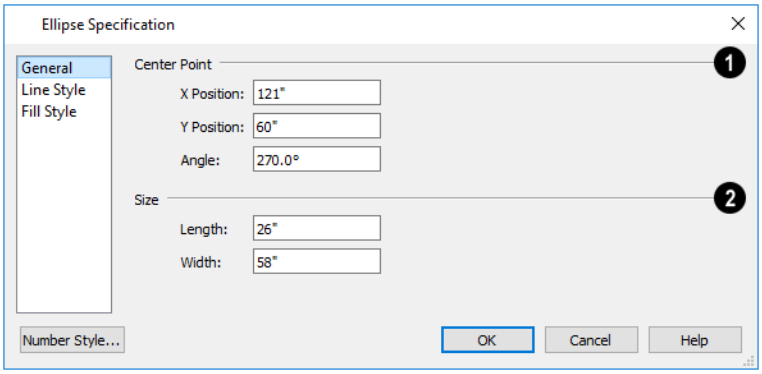
Once an ellipse is created, it can be edited. See *Editing Circles, Ovals and Ellipses on page 204* and *Circle/Oval/Ellipse Specification Dialog on page 243*.

Circle/Oval/Ellipse Specification Dialog

Select a circle, oval or ellipse and click the **Open Object** edit button to open the CAD Circle, Oval or Ellipse Specification dialog.

The CAD Circle, Oval, and Ellipse Specification dialogs are almost exactly the same. The Oval and Ellipse Specification dialogs have an additional setting for **Angle** on the General panel.

General Panel



1 Center Point

Specify the position of the circle, oval or ellipse's **Center Point**.

- Specify the **X Position** and **Y Position** of the center of the circle, oval or ellipse.
- Specify an oval or ellipse's **Angle**. Not available for circles.

2 Size

- Specify the **Length** and **Width** of an oval or ellipse, or the **Diameter** and **Radius** of a circle.
- Specify the **Circumference** of a selected circle. Not available for ovals or ellipses.

Line Style Panel

For information about the Line Style panel, see *Line Style Panel on page 234*.

Fill Style Panel

For information about settings on this panel, see *Fill Style Panel and Dialogs on page 161*.

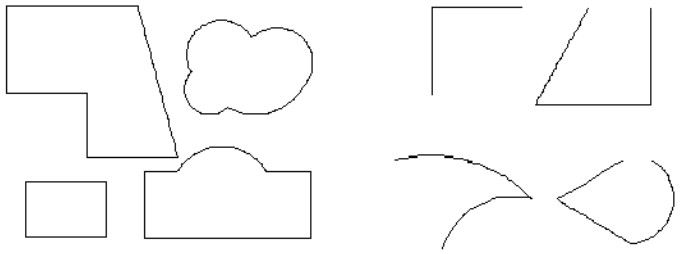
Polylines

A polyline consists of two or more line and/or arc segments that are attached at their endpoints. Select **CAD> Boxes> Rectangular Polyline**, then click and drag from corner to corner to create a rectangular-shaped, closed polyline. A closed polyline measuring 2'x 2' (600 mm x 600 mm) can also be created by clicking once while the **Rectangular Polyline** tool is active.

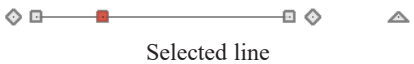
When **Object Snaps** and **Connect CAD Segments** are enabled, you can also create a polyline by drawing lines and/or arcs end-to-end, allowing the end of each new object to snap to the end of the previous one. See *Defaults, Preferences, and Edit Behaviors on page 179*.

Line- and arc-based objects will only snap together to form a polyline if they are on the same layer and share identical attributes such as color, line style, and arrow specifications.

If one end of the polyline is connected to the other, it becomes a closed polyline. Closed polylines can be adjusted in a variety of ways that open polylines cannot. For example, closed polylines can be assigned a fill pattern and/or turned into special 3D objects such as slabs or countertops that display in 3D views.



Lines and polylines can be distinguished by the edit handles that display when you select each. A line displays an edit handle at each end and one in the middle. If more than three edit handles display, the object is a polyline.



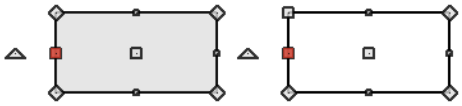
Selected line



Selected polyline with two collinear edges

Lines that appear connected to a polyline may prove to be unconnected when selected.

For example, the two polylines in the following image appear identical until their left edges are selected. The entire polyline on the left is highlighted, showing it is a closed polyline. The polyline on the right, however reveals that its left edge is not fully attached. In contrast, the left edge of the polyline on the left is part of the larger polyline unit.



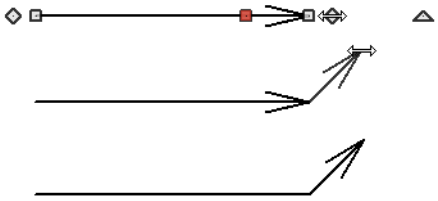
The **Close Polyline** edit tool can be used to connect the edges of an open polyline. This tool adds a segment between the two open ends, closing the gap between them. See *Close Polyline on page 196*.

Polylines can be copied, moved, reshaped, or resized as a single unit. Additionally, the individual segments can be edited. See *Disconnect Edges on page 185*.

Once created, polylines can be edited in a variety of ways. See *Editing Open Polyline-Based Objects on page 193* and *Editing Closed Polyline-Based Objects on page 197*.

Same Line Type Edit Handles

A new segment can be added to a CAD Line, Arc, Open Spline, or Open Polyline using the Same Line Type edit handles at each of its ends. The start point of the new line is located at one end of the existing object and shares its line color, weight, style, and its layer. If the object has an arrow, its attributes are also inherited. See *Line Style Panel on page 234* and *Arrow Panel on page 252*.



The Same Line Type edit handles are available for CAD lines, arcs, open polylines, and splines, but not for closed CAD shapes or CAD-based architectural objects with the exception of walls and railings, which have similar handles. See *Same Wall Type Edit Handles on page 280*.

The Same Line Type edit handles can be turned off in the Preferences dialog if you wish. See *CAD Panel on page 109*.

When **Connect CAD Segments** is disabled, the new CAD line will snap to the existing object, forming an open polyline or spline. When **Connect CAD Segments** is enabled, on the other hand, the two will remain separate objects.

Polyline Specification Dialog

Select an open polyline, closed polyline, spline, Sprinkler Line polyline, or Electrical connection and click the **Open Object** edit button to open the Polyline Specification dialog.

The panels that are available in the Polyline Specification dialog will vary, depending on the attributes of the selected polyline as well as those of its selected edge.

Polyline Panel

The Polyline panel is found in the specification dialogs for a variety of objects throughout the program, but is not included in any defaults dialogs. This panel reports:

- The total number of **Polylines Selected**;
- The **Length** of an open polyline;
- The **Perimeter** of a closed polyline;

- The **Area** of a closed polyline;
- The **Volume** of a closed polyline;
- The **Number of Lines** that form an open polyline or the perimeter of a closed polyline or polyline hole;
- The **Number of Holes** located inside a closed polyline;
- The **Hole Perimeter** is the total length of the perimeter(s) of any holes inside a closed polyline;
- The **Hole Area** is the total area of the holes located inside a closed polyline.

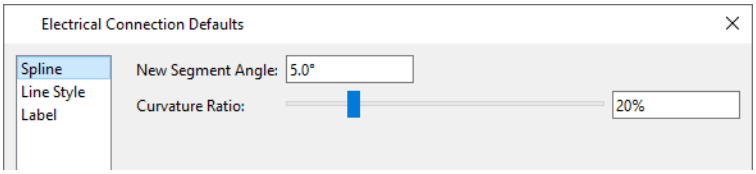
If the polyline is not closed, the Area and Volume are described as “Not closed”. The Volume of a 2D polyline will always be 0, even if it is closed.

When one or more roof planes or ceiling planes is selected, the **Area** is reported in a variety of ways. See *Polyline Panel on page 615*.

If multiple objects of the same type are selected, the combined totals of these values are stated.

Spline Panel

The Spline panel is only available when the selected object is a spline or spline-based object. See *Splines on page 249*.



- **New Segment Angle** - Specify the angle between the selected spline's segments. A smaller angle makes the spline's curves smoother while a larger value produces segment intersections that are more angular. Values between 0° and 45° are allowed.
- In the Electrical Connection Defaults dialog only, specify the **Curvature Ratio** of newly drawn Electrical Connection splines. A lower value produces new Electrical Connection splines with gentle curves while a higher value produces splines with tight curves. See *Electrical Connection on page 504*.

Selected Line Panel

The Selected Line panel is available when the selected edge of the polyline is a line as opposed to an arc and is not available if the selected object is a spline. See *Editing Line-Based Objects on page 187*.

Moving the Start of a line segment moves the end of the previous connected line, if there is one. Similarly, moving the End of a line segment moves the start of the next connected line, if there is one.

This panel is similar to the Line panel of the Line Specification dialog. See *Line Panel on page 233*.

One setting is unique to the Polyline Specification dialog: **Show Selected Edge**. See *Hide/Show Selected Edge on page 252*.

Selected Arc Panel

The Selected Arc panel is available when the selected segment of the polyline is an arc as opposed to a line. It is not available if the selected object is a spline.

This panel is similar to the Arc panel of the Arc Specification dialog. See *Arc Panel on page 239*.

One setting is unique to the Polyline Specification dialog: **Show Selected Edge**. See *Hide/Show Selected Edge on page 252*.

Line Style Panel

This panel is similar to the Line Style panel in the Line Specification dialog. See *Line Style Panel on page 234*.

Fill Style Panel

The Fill Style panel is found in the specification dialogs for a variety of objects in the program. Only available for closed polylines. See *Fill Style Panel and Dialogs on page 161*.

Arrow Panel

The Arrow panel is available for most open polylines and splines and is similar to the Arrow panel of the Line Specification dialog. See *Arrow Panel on page 252*.

The Arrow panel is not available for closed polylines, Sprinkler Lines, or Electrical Connections.

Components Panel

The Components panel is available for a selected Sprinkler Line or Sprinkler Spline. See *Sprinkler Tools on page 946*.

The information on this panel can be used in the materials list. See *Components Panel on page 967*.

Components Panel

The information on the Components panel can be used in the materials list. For more information, see *Components Panel on page 967*.

Box Tools

Select **CAD> Boxes** to access the Box Tools.

Rectangular Polyline

A **Rectangular Polyline** can be created in either of two ways:

- Click in the drawing area to place a 24” x 24” square polyline at that location.
- Click and drag from corner to corner to draw a rectangle of any size.

CAD polylines can also be created by connecting CAD lines and/or arcs. See *Polylines on page 244*.

Once created, a rectangular polyline can be edited into any shape or converted to a 3D object. See *Editing Closed Polyline-Based Objects on page 197*.

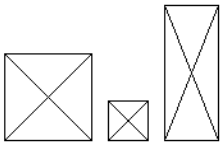
Box

Select **CAD> Boxes> Box** to draw a 2D rectangular polygon shape. CAD Boxes are drawn from corner to corner, forming a rectangle.

The sides of a Box can be resized, but unlike a polyline, a Box always has four 90° corners. See *Editing Box-Based Objects on page 199* and *Box Specification Dialog on page 248*.

Cross Box

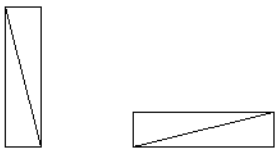
Use the **Cross Box** tool to create a 2D box with an X-shaped cross in the interior to represent framing in a cross section detail.



In cross section/elevation views, Cross Boxes are used to represent joists and rafters members that are perpendicular to and cut by the camera's clip plane. See *Cross Section/Elevation Views on page 787*.

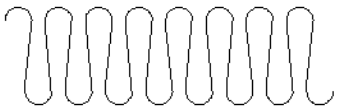
Blocking Box

Use the **Blocking Box** tool to create a 2D box with a diagonal line in the interior to represent blocking or bridging in a cross section detail.



Insulation

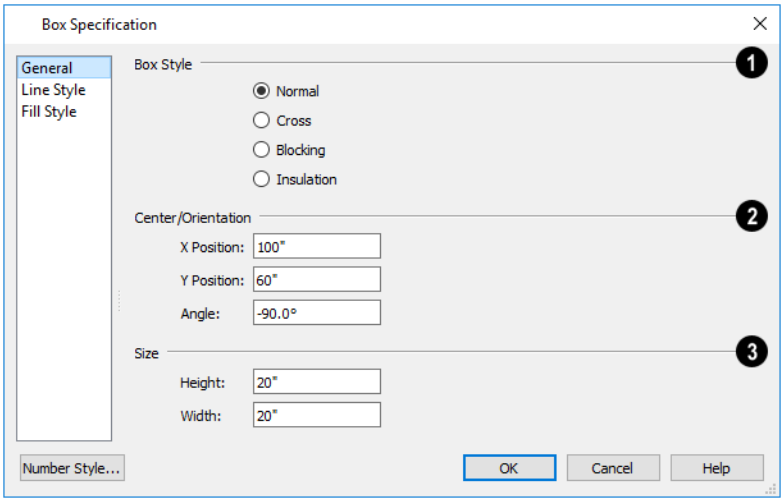
Use the **Insulation** tool to draw insulation in cross section details. Insulation Boxes are like 2D boxes and Cross Boxes; however, unlike these other types of boxes, Insulation Boxes do not have perimeter lines: only the curves of the insulation pattern.



Box Specification Dialog

Select a CAD box, a framing box, a Cross box, a Blocking box, or an Insulation box and click the **Open Object** edit button to open the Box Specification dialog. See *Box Tools on page 247*.

General Panel



1 Box Style

Specify a **Box Style**. Select **Normal** to specify a normal box, **Cross** to specify a cross box, or **Insulation** to specify an insulation box. If multiple CAD boxes are selected, "No Change" may display.

2 Position

Define the **Position** of the box.

- Specify the **X Position** and **Y Position** of the center of the box.
- Specify the **Angle** of the box.

3 Size

Define the **Size** of the box by specifying its **Height** and **Width**.

Line Style Panel

For information about the Line Style panel, see *Line Panel on page 233*.

Fill Style Panel

For information about the Fill Style panel, see *Fill Style Panel and Dialogs on page 161*.

Splines

A Spline is a curve that passes smoothly through a set of points. Splines are typically used in situations where there is an irregular curve. A contour line is a typical example. Splines are useful wherever a free-flowing curve is needed.

Once created, splines can be selected and edited. See *Editing Spline-Based Objects on page 202* and *Polyline Specification Dialog on page 245*.

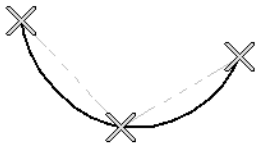
To use the Spline tool

1. Select **CAD> Spline** .
2. Make sure that **Connect CAD Segments** are enabled so multiple spline segments can snap together. See *Connect CAD Segments on page 141*.
3. Click and drag to draw the first spline segment just as you would a line. A single spline segment looks identical to a line, in fact. You may need to turn off **Angle Snaps** to draw freely.



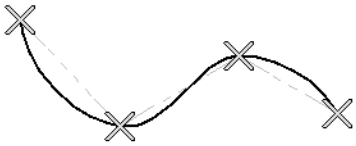
Spline line drawn between two points

4. Draw the second segment from the end of the first at a different angle. **Object Snaps** should be on to assure that new segments attach correctly to the ends of previous segments.



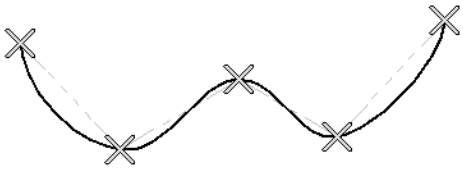
Spline polyline drawn between three points

5. As soon as two straight spline segments connect end-to-end, the straight segments become a curve that passes through the endpoints defined by the original segments. Each point is called a vertex.
6. Draw a few more segments, connecting each to the free end of a previously drawn segment.



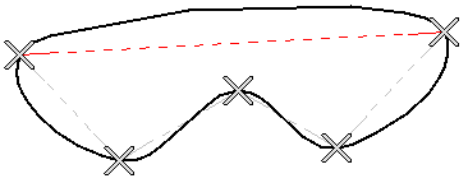
Spline polyline drawn between four points

7. Notice as additional segments are drawn that the spline changes the curvature of the previous segment to create a continuous curve between the last three points.



Spline polyline drawn between five points

8. Form a closed spline by drawing a segment between its two free ends.



Draw additional segment to close polyline

9. The result is an irregular curve that flows smoothly through each vertex.



Spline-based objects will only snap together to form a single spline if they share identical attributes such as color, line style, and arrow specifications.

> Note: Spline-based objects with the same properties will only snap together when Connect CAD Segments is enabled. See *Connect CAD Segments on page 183*.

Displaying CAD Objects

As with architectural objects, the display of CAD objects is controlled in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

CAD objects can be drawn in plan views, layout, and cross section/elevation views. They are 2D objects only, though, so they cannot be seen in any view other than the one they are drawn in and are never visible in camera views or overviews. See *Architectural vs CAD Objects on page 140*.

Drawing Groups

Each object in a plan or layout file is included in a Drawing Group, which influences whether it displays in front of or behind other objects. By default, all CAD objects are placed in the same Drawing Group. Their drawing order relative to one another is based on the order in which they were placed: an object will display in front of any objects that were created before it was.

Once created, however, the drawing order of CAD objects can be customized. See *Drawing Groups on page 156*.

Show Length and Angle

You can specify that line segment length and angle display along a CAD line, CAD arc, or along each segment of a CAD polyline. If the segment is an arc, its radius also displays. See *Line Style Panel on page 234*.

The format of the length and angle can be specified in the CAD Defaults dialog. See *CAD Defaults Dialog on page 224*.

Line length and angle indicators use the Text Style assigned to the layer that their CAD object is on. See *Text Styles on page 390*.

Endcaps

Dashed lines often display endcaps, which are dashes of a particular length. You can specify the Printed Length of endcaps in the Preferences dialog. See *CAD Panel on page 109*.

Line Styles

A selection of line styles is available for you to apply to CAD and some architectural and terrain objects. See *Line Style Panel on page 234*.

Hide/Show Selected Edge

The **Hide Selected Edge** and **Show Selected Edge** edit tools allow you to toggle the display of the selected edge of a CAD polyline. See *Selected Edge on page 185*.

You can also specify whether the current Selected Edge is visible in the Polyline Specification dialog. See *Selected Line Panel on page 246*.

Fill Styles

Fill patterns can be applied to closed CAD and CAD-based architectural objects. See *Fill Styles on page 159*.

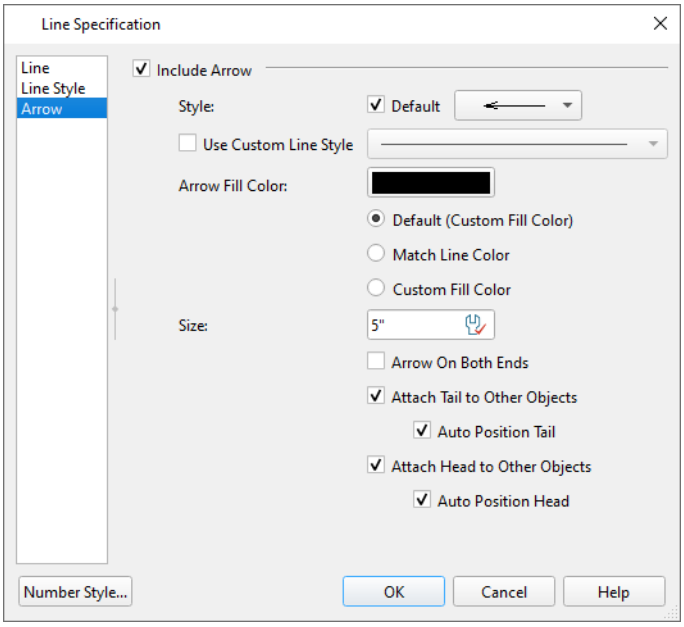
Fill colors can also be assigned to objects by layer. See *Layer Attributes on page 152*.

Arrow Panel

The Arrow panel is available for in the specification dialog for CAD lines, arcs, splines, open polylines, and dimension lines. Select one of these objects and click the **Open Object** edit button. See *CAD Objects on page 224* and *Dimension Line Specification Dialog on page 362*.

The defaults for arrows assigned to CAD objects are set in the Arrow Defaults dialog. See *CAD Defaults and Preferences on page 224*.

Some objects, notably Joist Direction Lines, do not have the Attach or Auto Position settings. Other objects, including closed polylines, Sprinkler Lines, and Electrical connections cannot have arrows at all.



- Check **Include Arrow** to apply an arrow to the tail end of the selected object and enable the settings that follow.
- Select an arrowhead **Style** from the drop-down list.
  - Check **Default** to use the default arrowhead.
  - Arrowheads with a white center have a transparent fill.

- When **Use Custom Line Style** is unchecked, the selected object's arrow(s) use the same line style as the rest of the object. Check this box to use a different line style.
  - Select a line style from the drop-down list.
- The arrowhead's **Arrow Fill Color** displays in the Color bar. Click the bar to specify a custom color. See *Select Color Dialog on page 165*.
  - Select **Default Fill Color** to use the fill color specified in the Arrow Defaults dialog.
  - Select **Match Line Color** to use the color specified on the LINE STYLE panel. See *Arrow Panel on page 252*.
  - **Custom Fill Color** is selected automatically if you click the Color bar above.
- Specify the arrowhead's **Size**, measured from its front to its back.
- Check **Arrow on Both Ends** to place an arrowhead on both ends of the selected object.
- When **Attach Tail to Other Objects** is checked, the tail end of the arrow will attach to another object when snapped to it, and will maintain its attachment if the object is moved. When this is checked and the arrow is selected, its tail end edit handle will display the Selected Edge Handle Fill color.
- Check **Auto Position Tail** to have the tail end update its position on the object it is attached to if either object is moved. See *Auto Position Arrows on page 382*.
- When **Attach Head to Other Objects** is checked, the head of the arrow will attach to another object when snapped to it, and will maintain its attachment if the object is moved. When this is checked and the arrow is selected, its arrow end edit handle will display the Selected Edge Handle Fill color.
- Check **Auto Position Head** to have the arrow end update its position on the object it is attached to if either object is moved.

Walls, Railings, and Fencing

Chapter 12

To draw a wall, select one of the *Wall Tools on page 257*, then click and drag in a line to the approximate length that you want. When you enclose an area with walls, a room is created, complete with floor and ceiling. The *Door Tools on page 398* and *Window Tools on page 426* can be used to add openings, while *Dimensions on page 340* are used to position walls and openings with accuracy.

Walls are the single most important structural component in Home Designer. They define *Rooms on page 312*, are used to create *Foundations on page 515*, and even influence how *Roofs on page 592* are built. It is helpful to understand how Wall Type Definitions, wall connections, and wall alignment all affect your design.

Wall, Railing, and Fencing Defaults

Default Settings can be accessed by selecting **Edit> Default Settings**. Click the arrow next to "Walls" to display the walls sub-headings. Select a subheading and click the **Edit** button to open the Wall Defaults dialog associated with your selection.

There is a defaults dialog associated with each of the Wall Tools in the list of subheadings. These can be multiple-selected by holding down the ***Shift*** or ***Ctrl/⌘*** keys. See *Shift and Ctrl/⌘ Select on page 187*.

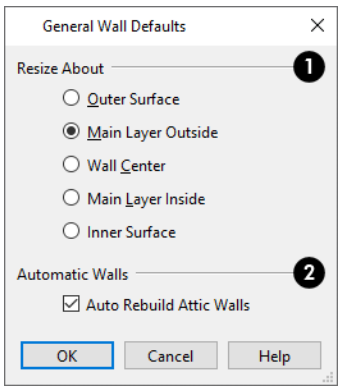
The defaults dialog for each wall tool can also be accessed by double-clicking the tool's toolbar button.

The settings in the various wall defaults dialogs determine what Wall Types are drawn when the different wall tools are used. It is a good idea to be familiar with these settings and how they relate to your style of building. See *Wall Types on page 288*.

General Wall Defaults

The General Wall Defaults dialog controls the general behavior and display attributes of all walls, railings and fencing.

For quick access, the **General Wall Defaults** button can be added to the toolbar or you can press ***Alt*** + ***Q***.



1 Resize About

These radio buttons determine what part of a wall retains its position when its Wall Type or Wall Type Definition is changed. See *Resize About on page 281*.

The **Resize About** location is also where any snap points will be located along a wall as it is drawn or connected to other walls, and is where a wall's length is measured.

- **Outer Surface** - Snap to and resize about the exterior surface. When a wall is resized, its exterior surface does not move.
- **Main Layer Outside** - Snap to and resize about the outer line of the Main Layer. When a wall is resized, the outer line of its Main Layer does not move.
- **Wall Center** - Snap to and resize about the center line. When a wall is resized, its center line does not move, but wall layers on either side may.
- **Main Layer Inside** - Snap to and resize about the inner line of the Main Layer. When a wall is resized, the inner line of its Main Layer does not move.
- **Inside Surface** - Snap to and resize about the interior surface. When a wall is resized, its interior surface does not move.

Note: In most circumstances, it is recommended that you Resize About the Main Layer Outside to avoid unexpected results.

2 Automatic Walls

- Uncheck **Auto Rebuild Attic Walls** to prevent Attic walls from automatically generating when the model changes. When checked, Attic Walls are automatically generated. See *Attic Walls on page 285*.

Exterior and Interior Wall Defaults Dialogs

Specify the initial attributes of walls drawn using the **Exterior** and **Interior Wall** tools in the Exterior and Interior Wall Defaults dialogs. See *Wall Tools on page 257*.

The panels in this dialog are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Foundation Wall Defaults

Specify the initial attributes of walls created by the **Foundation Wall** tool when it is either used manually or when a stem wall or pier foundation is generated in the Foundation Wall Defaults dialog. See *Foundation Walls on page 261*.

The Foundation Wall Defaults dialog also controls the Wall Type drawn by the **Retaining Wall** tool. Unlike other walls, **Retaining Walls** are used to modify your terrain rather than build a structure. See *Terrain Wall and Curb Tools on page 908*.

Footing size and other information used when building stem wall or pier foundations is also specified here. For more information, see *Foundation Defaults Dialog on page 516*.

The panels in this dialog are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

All Foundation Wall and Monolithic Slab footings use the "Foundation/Slab" material set in the Material Defaults dialog. See *Material Defaults on page 757*.

Pony Wall Defaults

Specify the initial attributes of walls drawn using the **Pony Wall** tool. See *Pony Walls on page 263*.

The **Display in Plan** and **Display of Openings in Non-Displayed Parts of Walls** settings on the Wall Types panel of the Pony Wall Defaults dialog are static in views sent to layout. See *Keeping Layout Views Current on page 974*.

The panels in this dialog are the same as those in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Railing and Deck Railing Defaults

Specify the types of railings created when the Railing and Deck Railing tools are used. See *Railing and Deck Tools on page 258*.

> Note: By default, Railings and Deck Railings are drawn using two separate Wall Types: "Interior Railing" and "Deck Railing/Fence". See *Wall Types on page 288*.

The panels in these dialogs are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Glass Wall Defaults

Specify the initial attributes of walls drawn using the **Straight Glass Wall** tool. See *Glass Walls and Half-Walls on page 257*.

The panels in this dialog are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Glass Pony Wall Defaults

Specify the initial attributes of walls drawn using the **Straight Glass Pony Wall** tool. See *Glass Walls and Half-Walls on page 257*.

The panels in this dialog are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Half-Wall Defaults

Specify the attributes of a solid railing drawn using either the **Straight Half Wall** or **Curved Half Wall** tool. See *Glass Walls and Half-Walls on page 257*.

The panels in this dialog are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Fencing Defaults

Specify the initial attributes of walls drawn using either of the **Fencing Tools**. See *Fencing Tools on page 261*.

The panels in this dialog are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Room Divider Defaults

Specify the initial attributes of walls drawn using the **Room Divider** tool. See *Room Dividers and Invisible Walls on page 264*.

The panels in this dialog are the same as their respective panels in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

Wall Hatching Defaults

Specify the initial attributes of **Wall Hatching** tool. See *Wall Hatching on page 266*.

The panels in this dialog are the same as their respective panels in the Wall Hatching Specification dialog. See *Wall Hatching Specification Dialog on page 311*.

Wall Tools



Select **Build> Wall** to access the Wall Tools. The type of wall drawn by each wall tool is specified in its corresponding defaults dialog.



The **Curved Wall** tools are similar to their corresponding **Straight Wall Tools**. Select **Build> Wall** to access these tools, as well.

Exterior Walls



The **Exterior Wall** and **Curved Exterior Wall** tools draw walls using the default Wall Type specified for exterior walls in the Exterior/Interior Wall Defaults dialog. See *Exterior and Interior Walls on page 261*.

Interior Walls



The **Interior Wall** and **Curved Interior Wall** tools draw walls using the Wall Type specified for interior walls. The interior Wall Type is defined in the Exterior/Interior Wall Defaults dialog.

> Note: Whether a wall is recognized as an exterior or interior wall by the program is determined by its position in the model, not by the tool used to draw it. See *Exterior and Interior Walls on page 261*.

Foundation Walls



The **Foundation Wall** and **Curved Foundation Wall** tools draw foundation walls according to the information specified in the Foundation Defaults dialog. Foundation walls normally have a footing and can be drawn on any floor of the model, not just the foundation floor. See *Foundation Walls on page 261*.

Pony Walls



A **Pony Wall**, also called a split wall, is defined as a wall with two separate Wall Types, one for the upper portion and another for the lower portion.

The **Pony Wall** and **Curved Pony Wall** tools draw pony walls using the information specified in the Pony Wall Defaults dialog. You can also convert a normal wall into a pony wall and vice versa in the Wall Specification dialog. See *Pony Walls on page 263*.

Glass Walls and Half-Walls



The **Straight Glass Wall** tool creates single-layer glass walls that do not cut the surfaces of the floor, ceiling, or adjacent walls. The Wall Type and other attributes of glass walls drawn with this tool are defined in the Straight Glass Wall Defaults dialog. See *Glass Wall Defaults on page 256* and *Partition Walls on page 271*.



The **Straight Glass Pony Wall** tool creates a pony wall with a glass upper partition. The height and other attributes of walls drawn with this tool are defined in the Straight Glass Pony Wall Defaults dialogs. See *Glass Pony Wall Defaults on page 256*.



The **Half-Wall** and **Curved Half-Wall** tools create solid railings: walls that are 36” (900 mm) high topped with a handrail. See *Railing and Deck Tools on page 258*. The height and other attributes of solid railings drawn with

this tool are defined in the Half-Wall Defaults dialog. See *Half-Wall Defaults on page 256*.

Room Dividers



Room Dividers are Invisible walls with a thickness of 0" (mm) that are used to define separate room areas in a plan. They can display in plan view but not in 3D views. See *Room Dividers and Invisible Walls on page 264*.

Wall Hatching



The **Wall Hatching** tool applies a hatch pattern to a wall that displays in plan views. You must click the wall that you want to apply the hatch pattern to. You can then select the hatch and resize it if you want to only hatch a portion of a wall. See *Wall Hatching on page 266*.

Fix Wall Connections



The **Fix Wall Connections** tool connects walls whose ends are within a few inches of each other but are not connected. See *Fix Wall Connections on page 271*.

Wall Break



The legacy **Wall Break** tool divides walls into separate segments. It is similar to the Add Break edit tool, but can be used to modify multiple walls without having to select them first. The Wall Break tool has been deprecated but can be activated using the hotkey ***Ctrl/⌘ + B***. See *Add Break on page 208*.

The Break Wall tool can also be added to the toolbars. See *Toolbars and Hotkeys on page 121*.

Define Wall Types



The **Define Wall Types** tool opens the Wall Type Definitions dialog, where Wall Types can be created, copied and edited. See *Wall Type Definitions Dialog on page 290*.

Railing and Deck Tools



Railings are a special type of wall that have a specified height rather than building all the way to a room's ceiling height. Select **Build> Railing and Deck** to access the Railing and Deck Tools. Railings are typically used to define interior spaces, while the various Deck tools are used to define exterior Deck rooms.

With the exception of the Polygon Shaped Deck tool, each of the tools in this family have both Straight and Curved versions, and are created and edited just like walls. See *Creating Walls on page 267*.

To create a break in a railing for a stairway or other access, use a **Doorway**  or create a gate using a **Hinged Door**  or other door type. This keeps the railing continuous and maintains room definition. See *Room Definition on page 312*.

When first drawn, railings are specified as **No Locate**, which prevents **Auto Exterior Dimensions**  from locating them. See *General Panel on page 295*.

The attributes for railings when they are first drawn are defined in the Railing Defaults dialog. See *Railing and Deck Railing Defaults on page 256*.

Railings



The **Railing** and **Curved Railing** tools create railings that are primarily used to define interior spaces. The style and height of railings drawn with this tool are defined in Railing Defaults dialog. See *Railing and Deck Railing Defaults on page 256*.

Half Walls  are also a type of Railing. See *Glass Walls and Half-Walls on page 257*.

Railings are ideal for a number of tasks:

- Creating changes in floor and/or ceiling height. See *Floor and Ceiling Heights on page 539*.
- Creating stairwells. See *Creating a Stairwell on page 573*.



Deck Railing



The **Straight Deck Railing** and **Curved Deck Railing** tools draw decks, complete with framing and bounded by a railing. If a foundation level exists, supports for the deck are also created. See *Decks on page 324*.

When a room is defined using deck railing, its **Room Type** is automatically set to “Deck”. See *Decks on page 324*.

Deck Edges



The **Straight Deck Edge** and **Curved Deck Edge** draw decks complete with framing, but without a railing. No deck supports are created.



Polygon Shaped Deck



The **Polygon Shaped Deck** tool opens the New Polygon Shaped Deck dialog, where you can specify the exact size and number of sides of a new polygonal deck room and then click in plan view to create that deck room. See *Polygon Shaped Decks on page 265*.

Railing Types

A variety of railing types can be specified in the Railing and Deck Railing Specification dialogs. See *Rail Style Panel on page 307*. Available types include:

- **Baluster** creates railings composed of newel posts, balusters, a railing, and an optional bottom rail.
- **Solid** produces a framed railing wall, or Half Wall. See *Glass Walls and Half-Walls on page 257*.
- If **Panels** is selected, you can choose a panel style such as cable, glass, or ironwork from the library. See *Newels/Balusters Panel on page 309*.

By default, newels and balusters do not display in plan view, but their display can be turned on. See *Newels/Balusters Panel on page 309*.

Wall Types and Railings

Just like regular walls, railings are assigned a Wall Type: "Interior Railing". This Wall Type has three layers: a framing layer in the middle and a layer of drywall on each side. See *Wall Types on page 288*.

You can use a different Wall Type Definition for railings if you wish, but bear in mind that this Wall Type Definition determines several important things:

- The railing's appearance in plan view. See *Displaying Walls on page 271*.
- The actual thickness of Solid railings in 3D views.
- The extent of the floor platform, if a platform edge is defined by the railing is defined by the outer surface of the Wall Type. See *Floor and Ceiling Platforms on page 542*.
- If the railing is used to create a change in floor height, this Wall Type controls the structure and position of the partial wall built beneath the railing, if one is required. See *Floor and Ceiling Heights on page 539*.

If the railing is a type other than Solid, its sizing is specified on the Newels/Balusters panel of the Railing Specification dialog, and the railing is centered along the width of the Wall Type. This will not be evident in plan view unless newels and balusters are set to display.

Deck Railing is also assigned a Wall Type: "Deck Railing/Fencing". This Wall Type has a single framing layer and is recommended for use only with deck railing and fencing.

Railings Over Walls

To produce a railing over a solid wall, specify it as both a Railing and a Pony Wall. See *Pony Walls on page 263*.

To create a solid glass partition over a partial-height wall, specify the "Glass Shower" Wall Type as the Upper Wall.

To create a glass panel above a half wall

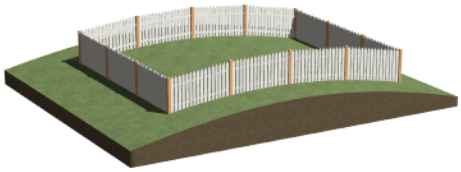
1. Draw a **Half Wall** and open its specification dialog.
2. On the Wall Types panel of the Railing Specification dialog, check the box beside **Pony Wall**.
3. On the Rail Style panel, select **Panel** and uncheck **Include Top Rail**, **Include Bottom Rail**, and **Raise Bottom**.
4. On the Newels/Balusters panel, select "Solid" and adjust the Newels/Posts **Width** and **Spacing** values to meet your needs.
5. On the Materials panel, specify a glass material for the Panel component.

Fencing Tools

Fencing is a special type of wall that is designed to follow the terrain rather than define a room with a flat floor platform.

Select **Build> Fencing** or click the **Fencing Tools** to access the fencing tools. Fencing automatically follows the shape of the terrain. You can choose to have the fencing follow the terrain smoothly or to have each segment step as it follows the terrain. See *Rail Style Panel on page 307*.

The **Fencing** and **Curved Fencing** tools are used to draw fences, which are similar to railings but by default do not define room areas. Fencing is created and edited much like walls and railings, and normally used outside a building and follows the shape of the terrain. See *Terrain on page 898*.



Define the default fence style in the Fencing Defaults dialog. See *Fencing Defaults on page 256*.

Exterior and Interior Walls

Most walls are drawn using either the **Straight Exterior Wall** and **Straight Interior Wall** tools.

Exterior and interior walls can also be drawn using the **Curved Exterior Wall** and **Curved Interior Wall** tools.

The only difference between the Exterior and Interior Wall Tools is the Wall Type used: Exterior Walls use a Wall Type set up to model a wall with siding, while Interior Walls model interior walls with sheetrock. See *Wall Types on page 288*.

To draw a wall using a different Wall Type, you can change the default Wall Type for either tool in the Exterior and Interior Wall Defaults dialogs. You can also draw a wall using the default type and then change the Wall Type in the Wall Specification dialog. See *Wall Types Panel on page 303*.

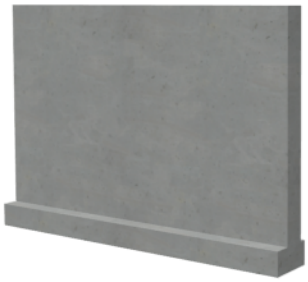
Whether a wall is recognized by the program as an actual exterior or interior wall is based on its position in the model, not by which tool you used to draw the wall.

- Any wall or wall segment that is entirely surrounded by interior room areas is considered to be an interior wall.
- Any wall or wall segment that defines an exterior room or is exposed to the outside of the building is considered to be an exterior wall. See *Room Types on page 314*.

If a Framed wall separates an interior room area from an exterior room, hybrid room, or the outside of the building, it will have insulation counted for it in the Materials List. See *In the Materials List on page 273*.

Foundation Walls

Foundation walls are similar to the interior and exterior walls but also have a footing. Foundation walls can either be created automatically when a foundation floor is created or manually by drawing them using the **Straight** or **Curved Foundation Wall** tool. See *Building a Foundation on page 519*.



The initial foundation Wall Type and footing size are specified in the Foundation Wall Defaults dialog. These values can be changed for individual walls in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

You can draw a foundation wall on any floor of a plan, not just on the foundation level. Any wall can be specified as a foundation wall, regardless of the tool used to draw it. See *Foundation Panel on page 302*.

Foundation walls are placed on the “Walls, Foundation” layer. In plan view, foundation wall footings are placed on the “Footings” layer; in 3D views, they are on the “Walls, Foundation” layer. See *Displaying Walls on page 271*.

Slab Footings

When a Monolithic Slab foundation is created, the slabs are defined by specially defined foundation walls that have footing widths equal to that of the Wall Type - by default, 16” (350 mm). For Garage curbs, the footings should be wider than the Wall Type. See *Foundation Panel on page 302*.

Rooms defined by Slab Footings will have a Ceiling Height of 0 and a Monolithic Slab Foundation. See *Structure Panel on page 330*.

Foundation Wall Footings

A foundation wall's footings can be specified in the Wall Specification dialog. See *Foundation Panel on page 302*.

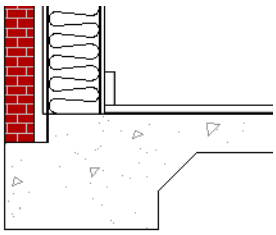
You can select the footing in 3D views and edit its size and shape using the edit handles. See *Stepped and Raked Walls on page 286*.

Foundation wall footings extend past the end of a foundation wall the same amount that they extend past each side. To create a footing that extends more than that amount, create a short segment of foundation wall at that location and specify it as Invisible.

Wall footings can have a different material assigned to them than their owner wall. This material can be assigned in the Wall Specification dialog; however, unlike the wall itself, footings do not have Surface materials. Specifying a Footing material or using the **Material Painter** will replace the footing's material rather than just cosmetically cover its surface in camera views. See *Material Painter and Walls on page 760*.

Brick Ledges

Brick ledges can be produced in monolithic slab, stem wall, and grade beam foundations. They do not extend under door openings in monolithic slab foundations.



Brick ledges are represented in plan view by lines on the “Brick Ledge Lines” layer. See *In Plan View on page 272*.

In order for a brick ledge to be produced, the foundation wall material directly under the brick ledge must be the “Concrete” Structure Type and the outermost exterior layer of the wall above must be the "Masonry" Type. See *Material Structure Types on page 768*.

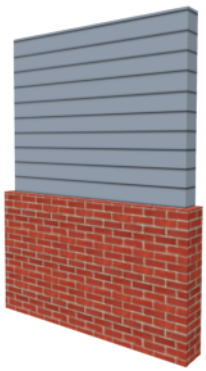
Additional settings that control whether a brick ledge is produced as well as its size are found in the Wall Type Definition of the wall that is located above the brick ledge. See *Wall Types on page 288*.

- The width of the ledge is equal to that of the Exterior Layers of the Wall Type.
- The **Build Platform to Exterior of Layer** setting cannot be the Wall Type’s exterior layer.

If the floor platform inside a brick ledge is hung on the foundation wall, **Subflooring to Wall Interior** must be checked in the Wall Specification dialog in order for a brick ledge to generate. See *Structure Panel on page 296*.

Pony Walls

A **Pony Wall**, sometimes called a split wall, is a wall with two separate Wall Types, one above the other.



Walls drawn using the **Pony Wall** tool are created using the Wall Types and other information specified in the Pony Wall Defaults dialog. See *Pony Wall Defaults on page 255*.

Most pony walls combine two exterior or two interior Wall Types; however, a pony wall can also produce an individual wall to be an exterior wall near its top and an interior wall near its bottom. See *Exterior/Interior Pony Walls on page 284*.

When a pony wall is also specified as a Railing, its upper wall is replaced by a railing. See *Wall Types and Railings on page 260*.

You can also convert a normal wall into a pony wall and vice versa in the Wall Specification dialog. See *Wall Types Panel on page 303*.

The height where the upper portion meets the lower can be adjusted in 3D views using the wall’s edit handles as well as in the Wall Specification dialog. The upper and lower sections of a pony wall are linked, so if either portion is modified along

the division between the two, the other portion of the pony wall adjusts to match. See *Stepped and Raked Walls on page 286*.

Displaying Pony Walls

You can specify whether the upper and lower portion of pony walls displays in plan view in the Pony Wall Defaults dialog. See *Wall Types Panel on page 303*.

The default **Display in Plan View** setting is plan view specific and is static in views sent to layout. See *Plan Views on page 132* and *Keeping Layout Views Current on page 974*.

The **Display in Plan View** option can also be set for individual walls in the Wall Specification dialog.

- If a wall is set to use the Default, the active option and its appearance may change in different plan views.
- If the wall is set to use an option other than the Default, it will use that option in all views regardless of the default setting.

Just as with other walls, the appearance of the portion of a pony wall that displays in plan view can be controlled. See *Displaying Walls on page 271*.

Only the portion of a pony wall that displays can be snapped to; however, regardless of what part is displaying, the upper wall will be used to **Align with Wall Above**, and the lower part will be used to **Align with Wall Below**. See *Editing Walls on page 277* and *Aligning Walls on page 280*.

By default, when a door or window is located entirely in one part of a pony wall, and that part is not displayed in plan view, the opening's outline is shown but the wall's layer lines and fill drawn through it. You can instead display openings in the non-displayed parts of pony walls the same as in the displayed parts, or not at all. See *Pony Wall Defaults on page 255*.

If a window or door is completely contained by one part of a pony wall, it will display in plan view if the other part of the pony wall is shown; but the wall's layer fill pattern or Wall Hatching fill pattern will display over it.

Changing Wall Types

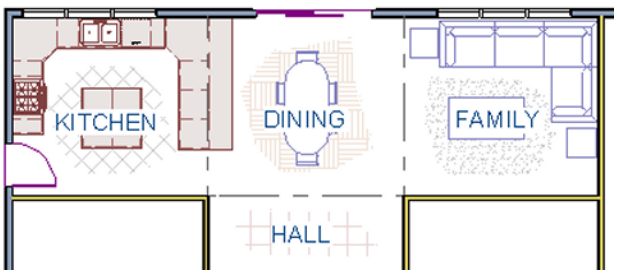
The default upper and lower parts of a Pony Wall can be specified in the Pony Wall Defaults dialog. See *Pony Wall Defaults on page 255*.

The upper and lower parts of a Pony Wall can be redefined as different Wall Types in the Wall Specification dialog. See *Wall Types Panel on page 303*.

Room Dividers and Invisible Walls

The **Room Divider** tool is used to define separate room areas in a plan; typically, by dividing a large room area into two or more smaller areas. See *Room Definition on page 312*.

Common uses for Room Dividers include dividing areas of an open floor plan into areas with different purposes.



Room Dividers can also be used to define areas with different floor or ceiling materials or heights.

Room Dividers are drawn using the attributes specified in the Room Divider Defaults dialog; which means they are simply walls that are specified as Invisible and have a single layer of an "Air Gap" material with a thickness of 0" (mm).

If a zero-thickness **Room Divider** separates two rooms with different floor and/or ceiling heights, its Wall Type will be changed to the current plan's default Interior Wall so that the platform step created by the height difference can be enclosed. See *Floor and Ceiling Platforms on page 542*.

Invisible Walls

Any wall, regardless of its Wall Type or thickness, can also be specified as Invisible - or vie versa - in the Wall Specification dialog or by clicking the **Make Wall(s) Invisible** or **Make Wall(s) Visible** edit button. See *General Panel on page 295*.

Room Dividers are placed on the "Walls, Invisible" layer, as are walls that are specified as Invisible. See *Room Divider Defaults on page 256*.

Walls specified as Invisible can display in plan view but not in 3D views or the Materials List. See *Displaying Walls on page 271*.

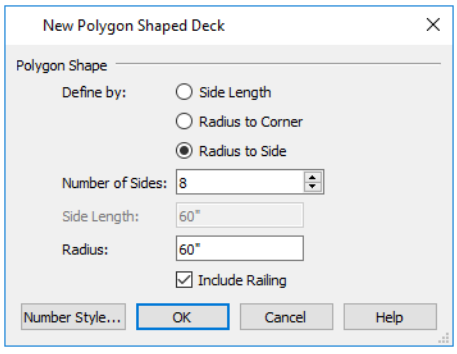
It is not possible to place doors or windows into an Invisible wall; however, if a wall with openings in it is specified as Invisible, any openings in it will remain.

Important Notes on Invisible Walls

- Floor, wall and ceiling areas are calculated separately for rooms divided by Invisible walls.
- Invisible walls are ignored by the **Auto Place Outlets** tool; it functions as though they were not present.
- Cabinets, fixtures and furniture can be moved freely through Invisible walls.
- Invisible walls can be drawn through a cabinet to attach to the wall behind.

Polygon Shaped Decks

Select **Build> Railing and Deck> Polygon Shaped Deck** to open the New Polygon Shaped Deck dialog and create a polygon shaped deck with regular sides.



The settings in this dialog are saved between program sessions.

To create a polygon shaped deck

1. Click the radio button beside an option to specify whether you want to **Define Polygon by Side Length**, **Radius to Corner** or **Radius to Side**.
2. Specify the desired **Number of Sides**.
3. Specify the desired **Side Length** or,
4. Specify the desired **Radius**.
5. Uncheck **Include Railing** to produce a deck platform defined by Deck Edges. This option is not available in the New Polygon Shaped Room dialog.
6. Click **OK**, then click once in plan view to create the specified polygon shaped deck.

Wall Hatching

The **Wall Hatching** tool can be used to cover wall segments with a fill pattern in plan view. To apply Wall Hatching, select **Build> Wall> Wall Hatching**, then click on a wall. The fill pattern covers the entire length and width of the wall segment. The initial appearance of Wall Hatching can be specified in the Wall Hatching Defaults dialog. See *Wall, Railing, and Fencing Defaults on page 254*.

Wall Hatching can be placed within a single wall segment only. If a wall is divided into separate segments using the **Add Break** edit tool, separate Wall Hatching objects must be placed on each side of the break to cover the entire length. See *Add Break on page 208*.

> Note: The Wall Hatching tool cannot be used to apply a hatch pattern to Invisible Walls or to walls on a locked layer. See *Room Dividers and Invisible Walls on page 264* and *Locking Layers on page 153*.

Displaying Wall Hatching

The display of Wall Hatching objects is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

- Wall Hatching is placed on the “Walls, Hatching” layer.
- Wall Hatching covers all of the selected wall's layers displaying in the current view, covering any fill styles specified for that Wall Type. See *In Plan View on page 272*.
- When Wall Hatching is applied to a railing, or when the “Walls, Main Layer Only” layer is turned on, Wall Hatching only displays in the Main Layer(s). See *The Main Layer on page 288*.

In many cases, it is preferable to create a Wall Type Definition rather than use the **Wall Hatching** tool because multiple fill styles can be used for the wall's various structural layers. See *Wall Type Definitions Dialog on page 290*.

Like other objects, Wall Hatching objects are placed in Drawing Groups that affect whether they display in front of or behind other objects in plan view. You can modify a selected object’s place in the drawing order by clicking the **View Drawing Group Edit Tools** edit button. This can be particularly helpful when controlling the display of overlapping Wall Hatching. See *Drawing Group Edit Tools on page 156*.

Editing Wall Hatching

Once created, a Wall Hatching object can be selected and edited. To select a Wall Hatching, click on it using the **Select Objects** tool to select the owner wall, then click the **Select Next Object** edit button. You can also directly select a Wall Hatching while the **Wall Hatching** tool is active. See *Selecting Objects on page 183*.



When editing or deleting Wall Hatching, you can make sure that it is selected rather than its owner wall by confirming that “Wall Hatching” is reported in the Status Bar. See *The Status Bar on page 24*.

Wall Hatching can be edited much like other line-based objects can. The fill pattern and line weight can be customized in the Wall Hatching Specification dialog. See *Editing Line-Based Objects on page 187* and *Wall Hatching Specification Dialog on page 311*.

More than one Wall Hatching object can be applied to a single wall segment and can overlap one another. If three or more wall hatching objects occupy the same space in a wall, a Caution ⚠ symbol will display at the problem location in plan view. Click on the Caution ⚠ symbol that displays over the wall to open a contextual menu, then select **Delete** to delete a duplicate wall hatching. When no more Caution symbols remain, you should then confirm that the remaining two wall hatching objects meet your needs and delete any that are unnecessary.

Creating Walls

Walls, railings, and fencing are drawn similar to the way CAD lines are drawn: select a Wall Tool and then click and drag from end to end in the drawing area by clicking and dragging from end to end. Walls can be drawn in plan view, camera views, and overviews. See *Line Tools on page 230*.

There are several other ways that walls can be created in Home Designer:

- Exterior walls can be generated automatically when a new floor is built by using another floor as a model. See *Adding Floor Levels on page 536*.
- Foundation walls are created when a foundation is automatically generated on Floor 0. See *Foundations on page 515*.
- Attic walls are generated automatically when the program perceives a gap between a wall that defines a room and the roof above. See *Attic Walls on page 285*.
- The **Space Planning Assistant** creates room boxes which can be arranged and then converted into walls. See *Space Planning on page 76*.

Drawing Walls

Drawing walls to create a floor plan is simple if you keep a few things in mind:

- Draw exterior walls first to define the building’s footprint, then draw the interior walls after the perimeter is in place.
- It is easiest to draw walls at the approximate location and length needed and then move or resize them precisely using dimensions later. See *Moving Objects Using Dimensions on page 361*.
- When drawing and positioning exterior walls, make sure **Grid Snaps** are enabled. Once these walls are in place, you may prefer to turn Grid Snaps off to draw and position interior walls and other objects. See *Grid Snaps on page 144*.
- If you wish to input wall lengths as you draw, make sure your General Wall Defaults are set to **Resize About Outer Surface**. See *Entering Wall Lengths and Angles on page 269*.
- As walls are drawn, “sticky” points and extension lines identify points that are either collinear or orthogonal to the end points of other walls, making alignment easier. See *Extension Snaps on page 143*.
- When walls enclose an area to form a room, the program will orient all exterior walls so that the siding material faces outward. See *Wall Types on page 288*.
- To flip the layers of a wall after it is drawn, select it and click the **Reverse Layers** edit button. See *Editing Walls on page 277*.

- Initial wall heights are determined by the default floor and ceiling heights of the current floor. See *Floor Level Defaults Dialogs on page 535*.

Wall Angles

With very few exceptions, walls should be drawn and edited with **Angle Snaps** enabled. Walls that are drawn at irregular angles can result in wall connection, alignment, and room definition problems. See *Angle Snaps on page 143*.

Fencing, Terrain Walls, and Retaining Walls, which should never be used as part of a building's structure, are reasonable candidates for being drawn at off angles. See *Fencing Tools on page 261* and *Terrain Wall and Curb Tools on page 908*.

If a wall is drawn at an off angle on the current floor level, the **Off Angle Wall** icon will follow the mouse pointer and a Caution ⚠ symbol will display over the problem wall in plan view. See *Pointer Icons on page 15*.

Click on the Caution ⚠ symbol that displays over the wall to open a contextual menu, then select:

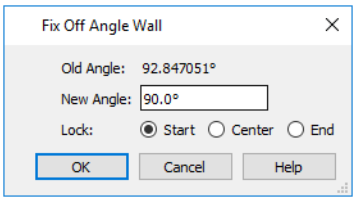
Fix Off Angle Wall to correct the wall's angle in the Fix Off Angle Wall dialog.

Ignore Off Angle Wall to leave the wall unchanged and suppress the Caution symbol.

Ignore All Off Angle Walls to leave the wall unchanged and suppress the Caution symbol on all off angle walls on all floor levels.

You can also suppress the Caution symbol by specifying the needed angle in the wall's specification dialog or adding that angle to the list of Allowed Angles. See *General Plan and Layout Defaults Dialogs on page 89*.

When you select **Fix Off Angle Wall** in the contextual menu, the Fix Off Angle Wall dialog opens:



- The **Old Angle** is stated for reference.
- Enter a **New Angle** in the text field.
- Specify whether to **Lock** the **Start**, **Center**, or **End** point of the wall when its angle is changed.

There are several other ways to fix a selected wall if it has been drawn at an off angle:

- Click the **Open Object** edit button and specify the correct angle. See *General Panel on page 295*.
- Click and drag an end edit handle until the wall snaps to an Allowed Angle. See *Angle Snaps on page 143*.
- If the wall in question should be aligned with a wall directly above or below it, click the **Align with Wall Above** or **Align with Wall Below** edit button. See *Aligning Walls on page 280*.

Wall Positioning

The recommended method of drawing walls is to draw them at their approximate location and length, then move them into position with accuracy using dimensions. To make this task quick and efficient:

- Notice the temporary wall that displays as you draw. Its length and angle display in the Status Bar at the bottom of the window and adjust as you move the mouse. Release the mouse button to draw the wall at the displayed length and

angle. See *The Status Bar on page 24*.

- Use Snaps to help ensure proper wall alignment and orientation. See *Snap Behaviors on page 141*.

Once walls are drawn, they can be accurately dimensioned and moved as needed. See *Measuring Walls on page 274*.

Entering Wall Lengths and Angles

The fastest way to draw walls is to draw them at their approximate position and length, and then move or resize them accurately using dimensions. See *Moving Walls Using Dimensions on page 276*.

For those that wish to enter walls' lengths and angles as they are drawn, first select **Resize About Outer Surface** in the General Wall Defaults dialog. See *Resize About on page 281*.

Then draw a wall, select it, and specify its **Length** and **Angle** in the Wall Specification dialog. Draw a second wall and specify its length and angle, and so on. See *General Panel on page 295*.

Wall Openings

To create a door or doorway, do not draw wall sections with a gap between them. Walls should be drawn to completely enclose rooms, and then door and window objects should be placed in the walls to create openings later. See *Doors on page 397* and *Windows on page 426*.

Temporary Dimensions

Temporary dimensions will display along the length of a wall as it is drawn when **Temporary Dimensions** are toggled on. See *Temporary Dimensions on page 353*.

Drawing Curved Walls

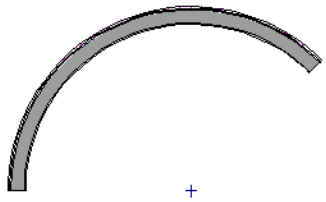
Drawing a curved wall, curved railing, or curved fence is similar to drawing a CAD arc. See *Arc Tools on page 237*.

As with CAD arcs, the method used to draw a curved wall depends on which **Arc Creation Mode** is currently active. See *Drawing Arcs - Arc Creation Modes on page 236*.

A straight wall can also be converted into a curved wall and vice versa using the **Change Line/Arc** edit button. See *Change Line/Arc on page 209*.

> To create a room in the shape of a circle, you must draw two curved walls.

A curved wall always has a center point. The center displays as a small cross when **Show Arc Centers and Ends** is enabled. See *Arc Centers and Ends on page 193*.



The radius of a curved wall is measured from the center to a surface or layer of the wall. The radius can be defined in the Wall Specification dialog. You may elect to define the radius to the exterior or interior wall layers. See *General Panel on page 295*.

Space Planning Assistant

The **Space Planning Assistant Tools** allow you to place and arrange room boxes that can then be converted into a fully editable house plan, including walls. See *Space Planning on page 76*.

Wall Framing

Once walls have been drawn, they can be framed. For best results, avoid generating framing until your model is in its final form. See *Manual Framing Defaults Dialog on page 658*.

Once created, wall framing can be viewed and edited in floor plan and 3D views.

Connecting Walls

When three or more walls connect to form a completely enclosed area, that area defines a room. See *Rooms on page 312*.

Wall Snapping

When walls are drawn sufficiently close to one another, their ends will snap together to form an intersection. This snapping occurs when the walls' center lines are within a distance defined by the larger of the two walls' widths and will occur even when **Object Snaps** are turned off. See *Object Snaps on page 142*.

When walls snap together to form an intersection, the program joins them at their **Resize About** line, which is specified in the General Wall Defaults dialog. See *Aligning Walls on page 280*.

- The wall that is being drawn or edited will move, lengthen, or shorten slightly to meet the other wall.
- The other wall will not move; however, its length may be affected.

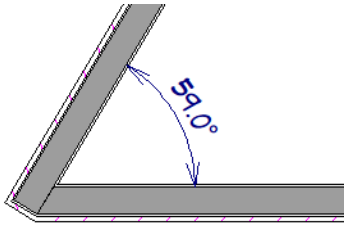
If the two walls in question have identical specifications and are collinear, they will merge to become a single wall. See *Aligning Collinear Walls on page 281*.

Wall Intersections

Any time two walls intersect, one wall will build through the other. You can turn on the display of the "Walls, Through Wall Lines" layer in plan view to see which walls build through and which do not. See *Layer Attributes on page 152*.

When a wall builds through another wall, it will extend into the intersected wall until it meets the interior surface of that wall's Main Layer. See *The Main Layer on page 288*.

If an intersection between two walls forms an acute angle of less than 60°, the wall that builds through will terminate at a right angle to its direction, producing a third edge on the outside of the angle.



At this corner, the angled upper wall builds through the horizontal one.

You can specify which walls build through wall intersections at corners in the Wall Specification dialog. See *Structure Panel on page 296*.

Partition Walls

By default, walls not only build to an intersecting wall's Main Layer, they also build through the finish layers of the floor below and the ceiling above to reach the structural layers.

In some situations, though, this is not desirable: for example, glass shower walls are typically installed against the surfaces of walls, floors and ceilings rather than building into them. To achieve this, use the "Glass Shower" Wall Type. See *Glass Walls and Half-Walls on page 257*.

Fix Wall Connections


Occasionally, intersecting walls may not properly connect. When this is the case and the connection in question is on the current floor level, a Caution ⚠ symbol will display at the problem location in plan view and the Connect Walls  icon will follow your mouse pointer.

Click on the Caution ⚠ symbol that displays over the wall to open a contextual menu:


Select **Delete** to delete the wall.


Select **Ignore Unconnected Wall** to leave the wall unchanged and suppress the Caution symbol.

To correct wall connections throughout the current plan, select **Build> Walls> Fix Wall Connections**  .

Alternatively, you can fix an individual wall connection using the **Connect Walls**  edit tool.

To use the Connect Walls edit tool

1. Select a wall.
2. Click the **Connect Walls**  edit button.
3. Click on a wall that you want to connect to the selected wall.
   - If the unconnected wall ends are sufficiently close to one another, the tool connects them.
   - If the separation is too great, extend one towards the other and try again.

Removing Wall Breaks

The **Add Break**  edit tool allows you to break a wall into two or more separate wall segments. See *Add Break on page 208*.

To merge two collinear walls separated by a break, select one of the segments, then click the end edit handle located at the break and drag it a few plan inches (mm) away from the break.

If the two walls do not merge, either the walls are not collinear or their specifications are not identical. You can open the Wall Specification dialog for each wall and determine how they differ. See *Wall Specification Dialog on page 294*.

Displaying Walls


While the structure and appearance of each Wall Type is controlled in the Wall Type Definitions dialog, the display of walls in all views is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

If a "Walls" layer is turned off in plan view, any doors and windows placed in walls on that layer will not display, either. See *Displaying Doors on page 400* and *Displaying Windows on page 433*.

In Plan View

The appearance of each Wall Type, including line weights and colors and wall layer fill styles, is specified in the Wall Type Definitions dialog. See *Wall Type Definitions Dialog on page 290*.

There are also several options for controlling how walls are displayed in plan view. In the Layer Display Options dialog, you can specify whether or not various types of walls display.

- Walls are placed on layers with “Walls” at the beginning of the layer name, such as “Walls, Normal”.
- The display of the wall layers specified in the Wall Type Definitions dialog can be controlled. If you turn off the display of the layer called “Walls, Layers”, Wall Types display with two lines representing the inside and outside surfaces.
- In addition, you can turn off the display of non-structural layers and show only the walls’ Main Layers by turning on the display of the “Walls, Main Layer Only” layer. This allows you to create both fully configured walls and framing layouts. The “Walls, Main Layer Only” layer affects the display of walls in plan view only. See *The Main Layer on page 288*.
- The “Walls, Through Wall Lines” layer controls the display of lines indicating which walls build through at wall intersections.
- Foundation Walls have footings that display in all view when the “Footings” layer is turned on. See *Displaying Foundations on page 521*.
- Foundation Walls may also have brick ledge lines that display in plan view when the "Brick Ledge Lines" layer is turned on. See *Brick Ledges on page 262*.

> Note: In plan view, railings not specified as Solid display their Main Layer regardless of whether “Walls, Layers” or “Walls, Main Layer Only” is turned on. See *Wall Types and Railings on page 260*.

Either the upper or lower portion of a Pony Wall can display in plan view. Only the portion that displays can be snapped to or aligned with walls above or below. See *Pony Walls on page 263*.

It is sometimes helpful to display the walls from a floor other than the current floor. To do this, select and display a reference floor. See *The Reference Display on page 546*. You can also specify which layers are included in the Reference Display Layer Set in the Layer Display Options dialog.

Notification Icons

Occasionally, the program may detect a problem with one or more walls in a plan. When this is the case, notification icons will display on the floor where the problem has occurred:

- If a wall is drawn at an off angle, the **Off Angle Wall** icon will follow the mouse pointer and a Caution symbol will display over the problem wall in plan view.
- If there is a problem with a wall connection, the **Connect Walls** icon will follow the mouse pointer and a Caution symbol will display at the problem location.

The recommended response to either situation is to fix the problem, although you can choose to ignore it if you prefer. See *Wall Angles on page 268* and *Fix Wall Connections on page 271*.

If an issue has been ignored, notification icons for it will not display. Select **Tools> Checks> Reset Notification Icons** to display any suppressed notifications so that any wall angle or connection problems can be corrected.

In 3D Views

As in plan view, the display of walls can be controlled by layer in the Layer Display Options dialog.

Each layer of a wall is generated when you create a 3D view. You can see the different layers in 3D using the **Delete Surface** tool. See *Delete 3D Surface on page 790*.

A wall's framing layer displays as a solid layer rather than studs and plates until wall framing is built. Wall framing is placed on the "Framing, Wall" layer. See *Framing on page 641*.

When a camera is located on the exterior of a structure, you can select **3D> Camera View Options> Hide Camera-Facing Exterior Walls**, allowing the interior to be seen as you rotate around the model. Interior walls set as Attic walls are also hidden when this setting is active.

While most architectural objects in the program can display in both floor plan and 3D views, a few cannot. Invisible walls and Wall Hatching are examples of objects that do not display in 3D.

Unlike in plan view, doors and windows placed in a wall can display in 3D views even if the wall's layer is turned off. See *3D View Defaults Dialog on page 782*.

Wall Labels

Wall labels are located on the "Walls, Layers" layer and can be set to display in plan views. See *Label Panel on page 395*.

Walls do not have Automatic Labels by default; however, custom labels can be assigned to any wall in the Wall Specification and Defaults dialogs.

Wall Materials

There are several ways that materials can be assigned to walls, depending on how the walls and the rooms they define have been defined. See *Rooms on page 312*.

When you draw a wall, it uses the materials specified in its Wall Type Definition. See *Wall Types on page 288*.

You can change the surface material of an individual wall in the Wall Specification dialog. If you select "Use Default" as the material and the wall is used to define a room, the program refers to the material specified in the Room Specification dialog. See *Wall Specification Dialog on page 294*.

You can also change a room's wall material in the Room Specification dialog. See *Materials Panel on page 760*. To restore the default Wall Type material, select **Use Default** in the Select Material dialog. See *Select Material/Library Object Dialog on page 762*.

Wall materials can also be changed using the **Material Painter** tool, but bear in mind that depending on which Material Painter Scoping Mode is in use, only a portion of the wall may be painted and that the entire room may be affected rather than the individual wall. See *Material Painter and Walls on page 760*.

When neither the wall nor the room has a material assigned to it, the program refers to the general material for walls in the Material Defaults dialog. See *Material Defaults on page 757*.

> Note: Wall materials that are specified on the Materials panel of either the Wall or Room Specification dialog are not calculated in the Materials List.

In the Materials List

The materials that make up wall assemblies are listed under different Categories in the Materials List:

- **Siding** - Lists the materials assigned to each wall's Exterior Layers, such as siding, sheathing, and housewrap.
- **Framing** - Lists the framing material(s) for all walls as well as railings specified as Solid. Non-framed walls' Main Layer materials are also listed here when those walls are not specified as Foundation. Wall framing, including studs, plates, and headers, is only counted when a framing material has been assigned to a Wall Type and wall framing has been built. See *Framing on page 641*.
- **Insulation** - Insulation is calculated for all exterior walls are not defined as Railings, and have one or more Framing layers. Insulation thickness is equal to that of the framing layer. See *Exterior and Interior Walls on page 261*.
- **Wallboard** - Lists the materials assigned to each wall's Interior Layers, such as drywall. This does not include Wall Coverings or materials specified in either the Room or Wall Specification dialog. See *Materials Panel on page 306*.
- **Interior Trim** - Lists base, crown and chair rail moldings, and Wall Covering materials specified in the Wall and Room Specification dialogs. See *Wall Covering Panel on page 305*.
- **Foundation** - Lists the concrete, block, and rebar for all walls specified as Foundation as well as their footings. See *Foundation Walls on page 261*.
- **General** - Reports the thickness of glass wall materials and their total lengths.

With the exception of wallboard, windows and doors are taken into account in the calculation of these totals.

Wall framing members can be reported in a Materials List using one of four methods: Linear Length, Buy List, Cut List, or Mixed Reporting. See *Framing and the Materials List on page 680*.

Measuring Walls

Accurate wall measurements are an essential aspect of any drawing, and can be achieved by following two basic rules:

- Be aware of what part of a wall assembly dimensions are locating;
- Position walls using dimensions rather than edit handles or edit tools.

These rules can easily be met when you keep the following recommendations in mind.

Dimension Defaults

Before drawing dimensions, it is a good idea to make sure all Dimension Defaults settings meet your needs. See *Dimension Preferences and Defaults on page 340*.

Confirming that your Dimension Defaults are set to meet your needs is particularly important before using them to move your walls into position:

- Depending on your Dimension Defaults settings, manual and/or automatic dimension lines may locate wall surfaces or wall dimension lines. See *Locate Manual Panel on page 344*.
- Dimensions can be set to locate **Wall Steps** in elevation views. Steps in foundation walls in plan views can also be located. Wall steps cannot be moved using dimensions, however. See *Stepped Walls and Footings on page 286*.
- Dimensions can be set to locate **Brick Ledge Lines** in plan view; however, dimensions that locate brick ledge lines cannot be used to move walls. See *Brick Ledges on page 262*.
- Dimensions can be set to locate Newel Centers and/or Newel Sides in railings and fencing in both plan and elevation views and will do so even if newels are not set to display in the selected railing or fence's specification dialog. See *Newels/Balusters Panel on page 309*.

Be aware that the wall length dimension that displays when a wall is selected as well as the **Length** specification in the Wall Specification dialog do not inherit their settings from the Dimension Defaults. Instead, they follow the **Resize About** line. See *Resize About on page 281*.

If a wall is specified as Invisible, dimensions will locate it at its centerline regardless of its Wall Type Definition or your Dimension Defaults settings. If the Invisible wall divides rooms with different floor heights, dimensions will locate the edge of the wall facing the room where the floor is lower. See *Room Dividers and Invisible Walls on page 264*.

Only the portions of pony walls that display are located by dimensions. The upper and lower parts of pony walls typically have different thicknesses, so which part you choose to display may affect your plan's dimensions. See *Pony Wall Defaults on page 255*.

Object, Angle and Grid Snaps

Object Snaps, Angle Snaps, and Grid Snaps make it easier to align walls when they are being drawn as well as when they are edited. See *Snap Behaviors on page 141*.

Object Snaps help to ensure consistent wall connections and are particularly helpful when aligning collinear walls.

When **Grid Snaps** are enabled, walls are drawn on a regularly spaced grid, which helps avoid inaccurate wall placement. This can become particularly important if you forego positioning walls using dimensions in favor of using edit handles to move them.

> Using Grid Snaps is recommended when you are laying out exterior shell walls, but may be inconvenient when positioning interior walls or other objects.

Angle Snaps make it easy to accurately draw walls at regular angles, ensuring walls that are truly parallel or perpendicular to one another and separated by consistent distances.

Primary and Secondary Sides

When dimensions that locate walls are drawn or generated in plan view, a Primary and a Secondary Side for each wall is identified. For exterior walls, the Primary Side is always the exterior side of the Wall Type Definition and the Secondary side is always the interior. See *Wall Types on page 288*.

For interior walls, the functionality is more complex:

- For vertical interior walls with perfectly symmetrical wall layers, the Primary Side is always on the left side of the wall as it is drawn in the plan, regardless of the orientation of its layers.
- For horizontal interior walls with perfectly symmetrical wall layers, the Primary side is always on the bottom side of the wall as it is drawn in the plan.
- For both vertical and horizontal interior walls with wall layer that are not symmetrical, the functionality is the same as that for exterior walls: the Primary Side is always the exterior side of the Wall Type Definition and the Secondary side is always the interior.

With the exception of Interior and Auto Room Dimensions, you can specify whether the various dimension tools locate the Primary Side, Secondary Side, or both in the Dimension Defaults dialog. See *Locate Manual Panel on page 344*.

Dimension lines that are drawn through a wall can also be set to measure and report the widths of walls, or to suppress that information. See *Dimension Panel on page 363*.

Editing Extension Lines

Once a dimension line has been drawn, its extension lines can be edited to locate a number of locations on a wall assembly:

- The exterior surface
- The Wall Dimension Layer's exterior
- The center line of the wall assembly

- The Main Layer's center line
- The Main Layer's interior
- The interior surface

See *Editing Extension Lines on page 357*.

Moving Walls Using Dimensions

Automatic, manually-drawn, and temporary dimension lines can be used to both resize and move walls with accuracy. Select a wall, then click on a dimension line that reports its distance from another wall and type in the value that you need. See *Moving Objects Using Dimensions on page 361*.

When a wall is resized using dimensions, the inline text field used to edit the dimension will have three unique buttons:

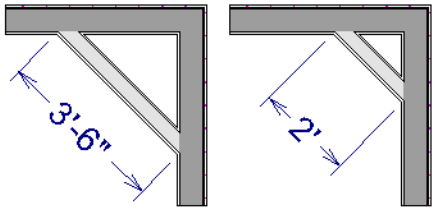
- Horizontal walls have **Move Left End**, **Move Both Ends**, and **Move Right End**.
- Vertical walls have **Move Top End**, **Move Both Ends**, and **Move Bottom End**.



Choose the option that you want to use before pressing the ***Enter*** key.

> Note: If only one of these buttons is available, the wall end that the button references is the only part of the selected wall that the dimension line actually locates, and only that end can be moved using the selected dimension.

If both ends of the selected wall intersect walls that are not parallel to one another, a fourth option will be available: **Move Along Rails**. When this option is used, the selected wall both resizes and changes position so that it remains connected to the other walls when you press the ***Enter*** key.



No Locate

If a wall is specified as **No Locate** in the Wall Specification dialog, it will be ignored by **Auto Exterior Dimensions** in plan view, as will any doors or windows placed in it. See *Dimensions on page 340*.

By default, **Railings**, **Deck Railings**, and **Room Dividers** are specified as No Locate. See *General Panel on page 295*.

If a wall is specified as **No Locate**, it will be moved to the "Walls, No Locate" layer. If this box is later unchecked, the wall will return to its default layer. If a wall is on a non-default layer, it will remain there. See *Displaying Walls on page 271*.

Once a dimension line has been created, it can be edited so that it locates a No Locate wall or railing that is perpendicular to it.

Editing Walls

Walls can be selected in all views. When a wall is selected, it displays edit handles and an edit toolbar that can be used to modify it in various ways. When a wall is selected, temporary dimensions may also display. See *Temporary Dimensions on page 353*.

The ways in which a wall can be edited depend on the current view and which edge is selected. See *Selecting Objects on page 183*.

Selecting Walls

Like other objects, walls can be selected in a variety of ways. See *Selecting Objects on page 183*.

- When **Select Room Before Wall in 3D** is checked in the Preferences dialog and you click on a wall in a cross section/elevation or camera view, the room defined by that side of the wall will become selected instead of the wall. See *Appearance Panel on page 93* and *Selecting Rooms on page 317*.

  When this is the case, you can select the wall by clicking the **Select Next Object** edit button or pressing the ***Tab*** key.
- In a camera view or overview, you can also select a wall along its top surface provided that it is not hidden by other objects. When the top surface is selected, its edit handles and tools are similar to those available in plan view.
- In plan views, the **Edit Area** tools allow you to select only part of a wall or walls. See *Edit Area Tools on page 213*.
- In a Framing Overview or other 3D view in which wall framing can be seen, select a wall framing member and click the **Find Wall** edit button to switch to a plan view in which the wall associated with the selected framing is selected. A wall selected in this manner can then be edited even when its layer is turned off and/or locked. See *Locking Layers on page 153*.

In plan view, if wall hatching has been applied to a wall using the **Wall Hatching** tool, it is possible that the hatching may be selected first. If it is, click **Select Next Object** to select the wall itself. See *Wall Hatching on page 266*.

Using the Edit Handles

A selected wall can be modified in a variety of ways using its edit handles in any view. The handles that are available will depend on the current view type. See *Edit Handles for Walls on page 279*.

In the Specification Dialog

The appearance and structure of walls can be customized in the Wall Specification dialog. See *Wall Specification Dialog on page 294*.

The characteristics of the roof directly above a selected wall can also be specified in the Wall Specification dialog. See *Roof Panel on page 299*.

Using the Edit Tools

A selected wall or walls can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Reverse Layers

When walls enclose an area to form a room, the program will orient all exterior walls so that the siding material faces outward. When needed, you can click the **Reverse Layers** edit button to flip the orientation of the interior and exterior layers of a selected wall. Its Wall Type Definition is not affected by this change. See *Interior and Exterior Surfaces on page 289*.

When a wall has **Lower Wall Type if Split By Butting Roof** checked in its specification dialog and its interior wall layers are oriented to face adjacent roof planes, a Caution ⚠ symbol will display at the problem location in plan view and the Reverse Layers icon will follow your mouse pointer. See *Roof Panel on page 299*.

Click on the Caution ⚠ symbol that displays over the wall to open a contextual menu:

- Select **Reverse Layers** to flip the wall's interior and exterior layers.
- Select **Ignore Reversed Wall** to leave the wall unchanged and suppress the Caution symbol.

Wall Thickness

The initial thickness of a wall is determined by its Wall Type definition. You can change a wall's thickness by modifying its Wall Type. If you do this, all instances of the Wall Type used in the plan will be affected - not just an individual object. See *Wall Types on page 288*.

You can also specify a selected wall's thickness in its Wall Specification dialog. See *General Panel on page 295*.

If a selected wall's thickness is changed:

- A copy of the wall's Wall Type is created with the same name but appended with a number equal to the thickness of the Main Layers, and that new type is assigned to the wall. See *The Main Layer on page 288*.
- The change in thickness will be applied to new Wall Type's innermost Main Layer.
- The Main Layer must be at least 1/16" thick, and the wall's thickness cannot be less than the original Wall Type's total thickness minus the thickness of its Main Layer.

If a Wall Type's thickness is modified, the wall will resize about the **Resize About** line specified in the General Wall Defaults dialog. In some instances, the wall may appear to move as a result of changes made to the thicknesses of its layers. See *General Wall Defaults on page 254*.

Wall Heights

The height of a wall is controlled by the ceiling height of the room(s) it defines. If the ceiling or floor height of a room is changed, the height of the walls that define it also change.

- The initial ceiling height for all rooms on a floor is set in the Floor Defaults dialog for that floor. See *Floor Level Defaults on page 313*. Whenever possible, it is best to set all ceiling heights using the default.
- The ceiling height of a single room can be set in its Room Specification dialog. See *General Panel on page 329*.
- The default Floor and Ceiling Heights for a given floor can be adjusted by editing the top and/or bottom edges of the Exterior Room in a 3D view. See *The Exterior Room on page 317*.
- The top or bottom edge of any wall or railing can be adjusted independent of floor or ceiling heights using the mouse in Cross Section/Elevation and 3D views. Top and bottom edges of walls - but not railings - can also be stepped and raked. See *Stepped and Raked Walls on page 286*.
- The top height of a selected Railing can also be edited in Cross Section/Elevation and 3D views. The bottom height, however, cannot. See *Railing and Deck Tools on page 258*.

- The edge dividing an upper and lower pony wall can be edited in Cross Section/Elevation and 3D views. In addition, its height can be defined in the Wall Specification dialog. See *Wall Types Panel on page 303*.

Wall Length

By far, the most accurate way to position walls and specify wall length is using dimensions. For more information, see *Measuring Walls on page 274*.

To produce accurate measurements, remember to:

- Be aware of what part of your walls is being located by each type of dimension.
- Avoid specifying dimension values with greater accuracy than your dimensions are set to display. See *Format Panel on page 348*.

Wall length can be modified in several other ways, as well:

- In the Wall Specification dialog. See *General Panel on page 295*.
- Using the **Add Break** edit tool to divide a selected wall into two segments. See *Add Break on page 208*.
- By dragging the end edit handles. See *Editing Line-Based Objects on page 187* and *Editing Arc-Based Objects on page 190*.

Be aware that the wall length dimension that displays when a wall is selected as well as the **Length** specification in the Wall Specification dialog do not locate the wall the same way dimension lines do, using settings from the Dimension Defaults. Instead, they follow the **Resize About** line and may not report the same values as dimension lines. See *Resize About on page 281*.

If you try to resize a wall by a small amount using one of its edit handles and that wall is connected to another wall at that end, its length will not change because its end will snap back to the existing intersection. See *Connecting Walls on page 270*.

> Dimension Defaults have a significant effect on how walls are located by dimensions and thus how they report length. It is recommended that you review these settings and make sure that they meet your needs.

Edit Handles for Walls

Walls can be edited extensively using their edit handles. Depending on the type of view, a wall displays a different set of edit handles when selected.

Moving a wall in any view will move any cabinets attached to that wall, as well.

In Plan View

In plan view, straight and curved walls can be edited like other line- and arc-based objects. See *Editing Line-Based Objects on page 187* and *Editing Arc-Based Objects on page 190*.

In addition:

- A wall's edit handles display along its **Resize About** line. See *Resize About on page 281*.
- A wall can only be moved perpendicular to itself or, in the case of curved walls, perpendicular to its chord using the Move edit handle. To move a wall at Allowed Angles, use the **Alternate** Alt Edit Behavior. See *Alternate on page*

180.

- When wall labels are set to display and a wall has a label, it will have a small, square Move edit handle.

In Camera Views

The edit handles that are available for a selected wall in a camera view depends whether the wall is selected on its interior or exterior surface or on its top or bottom edge. See *3D Views on page 779*.

- In a cross section/elevation view, the top and bottom edges of straight and curved walls can be edited like closed polylines. See *Editing Closed Polyline-Based Objects on page 197*. Only the top and bottom edges of walls can be broken, angled, or curved: the side edges cannot.
- In a Wall Elevation view, the side edges of walls do not have edit handles and cannot be moved.
- In a camera view or overview, click on an interior or exterior surface to display the same edit handles as in an elevation view: one at each corner and one on the top and bottom edges.
- In a camera view or overview, click on the top surface of a wall to display the same edit handles as in plan view, allowing you to rotate, move, and extend or shorten the length of the wall.
- The footings of Foundation Walls and Slab Footings can be selected in 3D views and edited using the edit handles. See *Footing Width and Height on page 523*.

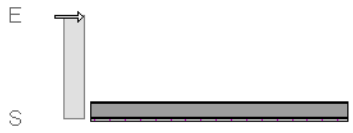
Same Wall Type Edit Handles

The **Same Wall Type** edit handles allow you to draw a new wall extending out from either end of a selected wall and with identical properties as that wall. If you prefer, you can disable them globally and enable them only as needed by selecting a wall and clicking the **Same Wall Type** edit button. These edit handles can also be globally enabled or disabled in the Preferences dialog. See *Architectural Panel on page 109*.

When the Same Wall Type edit handles are enabled, two edit handles display just beyond a selected wall's Extend edit handles in plan view or when the top edge of the wall is selected in a 3D view.



Click and drag a Same Wall Type edit handle at any angle to draw a new wall segment of the same type as the selected wall.



Aligning Walls

Wall alignment refers to the way wall segments line up with one another, either on the same floor or on the floor above or below. Walls may need to be aligned in a variety of situations.

To make alignment easier when drawing or resizing walls, "sticky" points and extension lines identify points that are either collinear or orthogonal to the end points of other walls. See *Extension Snaps on page 143*.

Resize About

The **Resize About** line specified in the General Wall Defaults dialog controls two important aspects of wall alignment:

- What part of a wall retains its position when its Wall Type or Wall Type Definition is changed. See *Wall Types on page 288*.
- Where walls snap together to form an intersection. See *Connecting Walls on page 270*.

See *General Wall Defaults on page 254*.

The **Resize About** line is the line along which a selected wall's length is measured in the Wall Specification dialog. See *Wall Length on page 279*.

The **Resize About** line is also the line along which a selected wall's edit handles display, and is the line along which any snap points will be located. See *Editing Walls on page 277*.

Aligning Collinear Walls

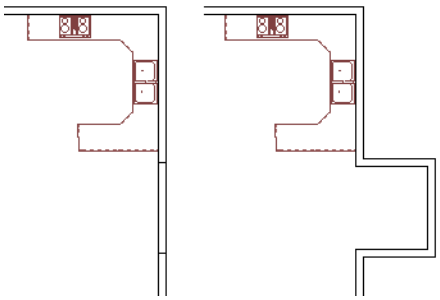
Collinear walls are parallel walls connected end to end and drawn on the same floor. When collinear walls join end-to-end, the walls snap together. If these walls have the same Wall Type and identical specifications, and if **Object Snaps** are enabled, they will merge to become a single wall segment.

Creating a Nook

Walls can be aligned across an opening such as a nook, so that they are collinear, using the **Add Break** edit tool.

To align walls across a gap

1. Select a wall to build a nook into and click the **Add Break** edit button.
2. Click at a point on the wall close to one side of the nook area. Do not worry about exact placement right now.
3. Click again near the other side of the nook. Two short lines at each location where you clicked indicate Breaks in the walls.



4. Right-click the middle section of the wall to select the wall section.
5. Click the middle Move handle and drag the wall outward.
6. Draw side walls to connect the wall back to the rest of the house.
7. Move these short walls using dimensions to accurately size the nook.

Aligning Walls Between Floors

Walls can be aligned between floors by clicking the **Align With Wall Above** and **Align With Wall Below** edit buttons.

Walls on Floor 1 and above are aligned by the outer edges of their Main Layers. Foundation Walls on Floor 0 and walls drawn directly above them on Floor 1 are instead aligned according to the Foundation to Exterior of Layer setting specified for the Floor 1 wall's Wall Type. See *The Main Layer on page 288* and *Wall Type Definitions Dialog on page 290*.



In order for these edit tools to be available, the areas of the walls in question must be partially aligned, or overlapping.

To align walls between floors

1. Select a wall that you want to align with another wall either above or below it.
2. If the wall is above or below the other wall along only part of its length, you must click on it along that part. Select **Tools> Floor/Reference Display> Reference Display On**  to help make sure you click on the correct part of the wall.
3. When you have selected the wall at the desired location, click either the **Align With Wall Above**  or **Align With Wall Below**  edit button.

Aligning Curved Walls Between Floors

Curved walls are aligned between floors using the same technique to align straight walls. If the centers and radii of the walls are within a few inches of each other, the **Align With Wall Above**  and **Align With Wall Below**  edit buttons are enabled for the selected wall. The selected curved wall will take on the radius and center of the referenced wall when the walls are aligned.

Aligning Pony Walls Between Floors

When aligning a pony wall with either the wall above or below:

 **Align With Wall Below** will always align the lower pony wall with the wall below, as specified in the lower pony wall's Wall Type Definition. See *Wall Types on page 288*.

 **Align With Wall Above** will always align the upper pony wall with the wall above, as specified in the upper pony wall's Wall Type Definition.

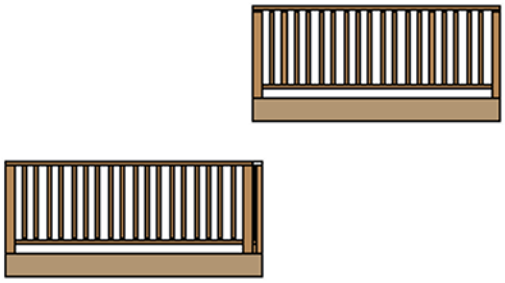
Aligning Foundation Walls

By default, foundation walls and slab footings will align with walls on the floor above along the outside surface of the Main Layer of both Wall Types. See *Wall Types on page 288*.

If there is only one layer for both the stem wall and the first floor wall above it, the exterior surfaces of the walls align. The footing is centered on the stem wall.

Aligning Railings on Different Platforms

Two collinear Railings or Deck Railings on the same floor can be aligned one above the other when they define rooms with different floor heights.



To align railing on different platforms

1. Click and drag to draw a Railing or Deck Railing that divides a room such as a deck in two.
2. Click the **Select Objects** button, then click in one of the room areas.
3. Click the **Open Object** edit button, and on the GENERAL panel of the Room Specification dialog:
   - Specify a **Floor Height** that differs from that of the other by at least the height of the railing, then click OK.
   - The default railing height is 36”, so for best results the Floor Height should be changed by at least this amount.
4. Click on the railing drawn in step 1, then click the **Open Object** edit button. On the RAIL STYLE panel of the Railing or Deck Railing Specification dialog, check **Generate on Low Platform**. See *Rail Style Panel on page 307*.
5. Click and drag a second railing parallel to the one drawn in step 1.
6. Select this second railing and click the **Open Object** edit button. On the GENERAL panel of the Railing or Deck Railing Specification dialog, check the box beside **No Room Def** and click OK.
7. With the railing still selected, ***Ctrl/⌘*** + + drag it into the same position as the first railing. See *To move an object freely on page 168*.

Roof Directives in Walls

To automatically generate a roof plane using values other than the defaults or to not generate a roof plane bearing on a particular wall (as for a gable or the sides of a shed roof), you can change the settings in the Wall Specification dialog. See *Roof Panel on page 299*.

HIP, GABLE, AND SHED ROOFS

By default, the program will produce a roof plane over each exterior wall to create a hip roof. You can specify a different condition over a selected wall, however. For example:

- Check **Full Gable Wall** to create a gable with a ridge centered above the selected wall(s).
- Check **High Shed/Gable Wall** for the side walls or the wall under the high side of a shed roof.
- You can also select a wall and click the **Change to Gable Wall(s)** edit button, or change it back by clicking the **Change to Hip Wall(s)** edit button.

PITCH

The default pitch for roof planes is set in the Build Roof dialog. However, any exterior wall can define the pitch of the roof plane built above it.

You can also specify a second, upper pitch above a given wall. Mansard, gambrel, gull wing and half-hip are examples of roof styles that use two pitches.

Overhangs and Roof Returns

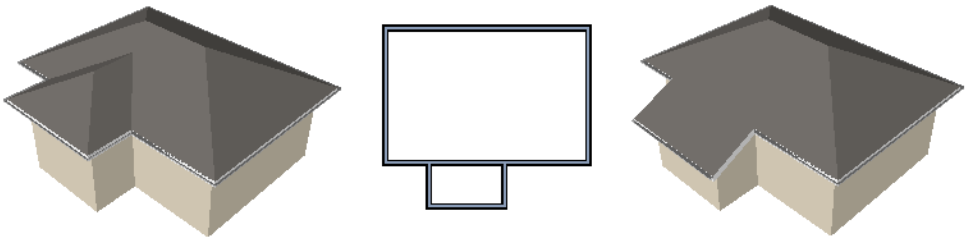
You can specify the overhang of the roof plane to be generated above the selected wall. This setting only takes effect when Same Height at Exterior Walls is unchecked in the Build Roof dialog, which is also where the default Overhang value is set.

Check **Auto Roof Return** to generate roof returns on the selected wall. In most cases, roof returns only generate on Full Gable Walls. See *Roof Returns on page 638*.

Extend Slope Downward

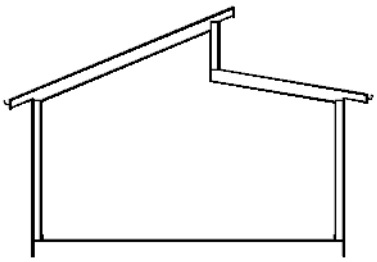
Check **Extend Slope Downward** to extend the roof plane downward over a bump-out, instead of creating additional roof planes. The two connecting walls that create the bump-out must be Full Gable walls.

In the following image, the bearing wall of the bump-out has **Extend Slope Downward** checked. The two short side walls are **Full Gable Walls**.



Clerestory and Dormer Walls

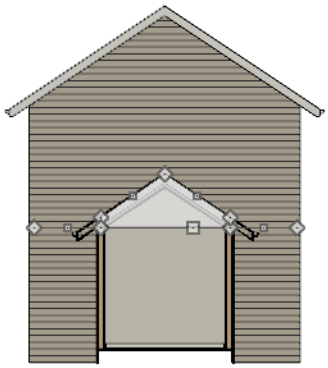
Occasionally, walls are built between two roof planes rather than between a roof plane and a floor platform. Common examples include clerestory walls and the side, or the cheek, walls of floating dormers.



Check **Roof Cuts Wall at Bottom** to have the bottom of the selected wall clipped by the roof plane below, as where a floating dormer wall meets the main roof plane.

Exterior/Interior Pony Walls

It’s not uncommon for an individual wall to be an exterior wall near its top, and an interior wall near its bottom.



Check **Lower Wall Type If Split By Butting Roof** to achieve this. When this option is checked, the selected wall is specified as a pony wall and a second, lower Wall Type can be specified. Unlike with other pony walls, the change in Wall Type occurs wherever a roof plane builds to the exterior of the wall. See *Pony Walls on page 263*.

Attic Walls

In Home Designer, walls are built between the floor and ceiling platforms of the current floor. See *Floor and Ceiling Heights on page 539*. When the program detects an open space between a wall and the roof plane above it, it automatically creates an Attic Wall on the floor above that wall to fill in the gap.

Attic Walls are typically found above Full Gable Walls, forming a gable or closing the top portion of a side wall of a shed roof. They are also generated above all exterior walls when the **Raise Off Plate** value in the Build Roof dialog is 3” (175 mm) or greater. See *Build Roof Dialog on page 597*.

Attic Walls are often found on the Attic floor, but can be generated on other floors, as well. See *The Attic Floor on page 546*.

Attic Walls are specified as such in the Wall Specification dialog; if automatically generated, that will be noted as well. If needed, you can specify a regular wall as an Attic Wall. If you specify a wall as an Attic Wall, it will be moved to the “Walls, Attic” layer, See *General Panel on page 295*.

When you **Rebuild Walls/Floors/Ceilings** , all automatically generated Attic Walls in the plan are deleted and rebuilt.

Removing Attic Walls

Occasionally, the program will generate an Attic Wall where one is not wanted. There are several ways to address this:

- Turn off the display of the “Walls, Attic” layer.
- Specify the Attic Wall as **Invisible**. See *Room Dividers and Invisible Walls on page 264*.
- Some interior Attic Walls can be suppressed by specifying space they enclose as a **Shelf Ceiling**. See *Shelf Ceilings on page 541*.
- Select the Attic Wall and **Delete** it. The program will specify the wall as Invisible automatically. If you delete this Invisible wall, a new Attic Wall will be created.
- Combine the Attic Wall with the wall below. To do this, select **Combine with Above Wall** in the Wall Specification dialog for the wall below. See *Roof Panel on page 299*.

Knee Walls

Knee Walls are a bit like Attic Walls in that they are not meant to generate to full ceiling height. Instead, they build upward until they encounter a roof plane. Unlike Attic Walls, however, Knee Walls are used in the interior of a structure, typically to separate unused areas from rooms on the upper floor of a story-and-a-half structure. See *Room Types on page 314*.

Home Designer does not specify walls as Knee Walls automatically. If an interior wall is drawn in a location where the roof is lower than the ceiling height, you should specify it as a Knee Wall in the Wall Specification dialog. See *Roof Panel on page 299*.

For best results, Knee Walls should be drawn perpendicular to the pitch of the roof and should intersect with Full Gable Walls on each end.

Stepped and Raked Walls

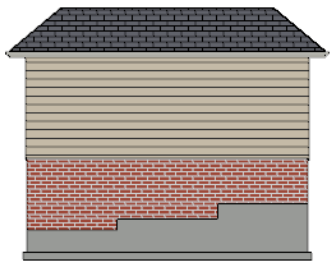
Stepped and raked walls can be created using the **Add Break** edit tool and the wall's edit handles in any 3D or cross section/elevation view. In many cases, working in a **Back Clipped Cross Section** is easiest and allows the greatest accuracy.

> When you try to select a wall in a 3D view, the interior or exterior room that it defines may be selected first. Click the Select Next Object edit button to select the wall itself. See *Selecting Walls on page 277*.

Railing and fencing height can be adjusted in camera views, but cannot be stepped or raked. See *Railing and Deck Tools on page 258*.

Stepped Walls and Footings

A typical example of stepped walls is a stepped foundation with pony walls. In the illustration below, the lower part of the pony wall is the concrete wall with footing, and the upper part of the pony wall is a framed wall with brick siding built to the first floor platform. See *Pony Walls on page 263*.



To add a step to a wall

1. Select the wall in a **Back Clipped Cross Section** view.
2. Click the **Add Break** tool, then click the top or bottom edge of the wall to place the break.
3. In addition to the corner handles, two handles display along the broken edge.
4. Select one of these two handles, and drag up or down.
5. A square step is created.

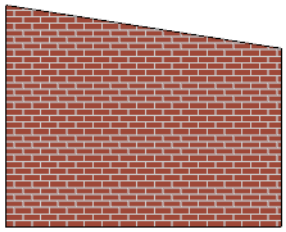
The vertical edges of a wall cannot be broken, although they can be raked as well as moved side to side.

By default, a stepped foundation wall displays an “S” symbol at the location of each step in plan view. The display of this “S” is controlled in the Foundation Defaults dialog. See *Foundation Defaults on page 515*.

Steps in walls can be located by dimensions in elevation views when **Wall Steps** is checked in the Dimension Defaults dialog. In addition, steps in foundation walls can be located in plan view. Wall steps cannot be moved using dimensions, however. See *Locate Manual Panel on page 344*.

Raked Walls

A raked wall has an angled top or bottom edge.

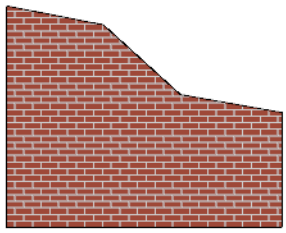


To create a simple raked wall

1. Select the wall in Cross Section/Elevation or 3D view.
2. Click one of the corner edit handles and drag that handle either up or down.
3. To rake a wall at a specific angle, you can:
   - Use **Angle Snaps** and Allowed Angles. See *Angle Snaps on page 143*.
   - Draw a **CAD Line** at the desired angle and use the **Make Parallel/Perpendicular** edit tool. See *Make Parallel/Perpendicular on page 172*.

Compound Raked Walls

A compound raked wall is a wall that has a top or bottom edge with multiple angles.



To create a compound raked wall

1. Select the wall in Cross Section/Elevation or 3D view.
2. Use the **Add Break** tool to add breaks to the wall edge, as for a stepped wall.
3. Select a segment of the edge and adjust its angle, as for a raked wall.

Wall Types

Every wall drawn in a plan is assigned a Wall Type, and its Wall Type Definition determines its structure, its appearance in plan view, and its default materials. Wall Types can be viewed, edited, and created in the Wall Type Definitions dialog. See *Wall Type Definitions Dialog on page 290*.

Wall Types typically have multiple assembly layers, each representing a different material. All of these layers can be calculated in the Materials List. The materials assigned to the surface layers of the Wall Type Definition also determine the wall's appearance in 3D views. See *Materials Lists on page 954*.

You can specify the default Wall Type that is drawn by each Wall Tool and can specify the Wall Type of any wall after it is drawn in the Wall Specification dialog. See *Wall, Railing, and Fencing Defaults on page 254* and *Wall Types Panel on page 303*.

The Main Layer

In most circumstances, each Wall Type's Main Layer should be specified as the structural layer. A Wall Type is considered to be:

- "Framed" if it has a Main Layer specified as **Framing**;
- "Concrete" if it has a Main Layer with the "Concrete" Material Structure Type;
- "Masonry" if it has a Main Layer with a "Masonry" Material Structure Type.

See *Materials and the Materials List on page 768*.

- The Main Layer determines many things in addition, including:
- Floor and ceiling platforms and automatically built foundation walls normally build to the outer edge of the Main Layer.
- The Main Layers of exterior walls build through slab floors while interior wall layers stop at the slab surface.
- At intersections, walls join at the interior surfaces of their Main Layers. See *Connecting Walls on page 270*.
- Windows are placed relative to the outer surface of the outermost Main Layer.
- Exterior walls on different floors are aligned by the exterior edges of their outermost Main Layer.
- Roof baselines are placed at the outer edge of the outermost Main Layer when roofs are automatically generated. See *The Baseline on page 604*.
- Roof baselines and gable/roof lines that are manually drawn snap to the outermost edge of the Main Layer.
- By default, walls resize about the exterior surface of their Main Layers when their thickness, Wall Type, or Wall Type Definition is changed. See *Resize About on page 281*.
- **Object Snaps**  locate the interior and exterior edges of a wall's Main Layers. See *Object Snaps on page 142*.
- The Sheathing Layer that windows and doors may be recessed to is the layer located just outside the outer Main Layer.

All of this information is reliant on the Main Layer, so creating your Wall Type Definitions accurately beforehand and specifying the Main Layer correctly is very important.

Multiple Main Layers

In standard light frame construction, walls build to one another's framing layers, and floor and ceiling platforms are built to bear over the wall framing; however, some building techniques configure these components in other ways. You can control how walls of a given type are intersected, and also where platforms build to, by specifying multiple Main Layers.

- By default, when multiple Main Layers are specified:
- Intersecting walls build to the interior surface of the innermost Main Layer.
- Floor platforms build to the exterior surface of the outermost Main Layer.
- A selected wall's edit handles display along the exterior of the outermost Main Layer.
- The exterior surface of the outermost Main Layer is the Dimension Layer.

See *Wall Type Definitions Dialog on page 290*.

The Dimension Layer

Dimension Defaults can be set to locate walls at their surfaces or at the exterior line of their Wall Dimension Layer. See *Locate Manual Panel on page 344*.

For installed Wall Types, the default Wall Dimension layer is the Main Layer; however, this can be changed in the Wall Type Definitions dialog. In addition to the Wall Dimension Layer, dimensions can locate the inside surface of the Main Layer, as well.

Whether Surface or Wall Dimension Layer is selected on the Locate Objects panel of the Dimension Defaults dialog determines a number of aspects related to how dimensions locate walls:

- How Auto Exterior and Manual Dimensions measure the lengths of walls.
- Where both Manual and Automatic Reach are measured from.
- Where Extension line lengths and their Gap From Marked Object are measured from.
- Where First Line Offset for **Auto Exterior Dimensions** is measured from.
- How the minimum enclosed area required by **Auto Exterior Dimensions** is measured.

The settings on the Locate Objects panel control how dimensions initially locate walls. Once a dimension line has been created, you can move its extension lines or add new extensions to locate other points along a wall's assembly. See *Measuring Walls on page 274*.

Interior and Exterior Surfaces

Every wall has an interior and exterior surface - including walls in a plan that are recognized by the program as being interior walls. See *Exterior and Interior Walls on page 261*.

Having separate designations for a wall's two sides serves a couple of purposes:

- It allows the program to orient each wall's exterior side toward the outside of a structure. See *Creating Walls on page 267*.
- It allows you to specify different materials for each side's surface in the Wall Specification dialog. See *Materials Panel on page 306*.

In the Wall Type Definitions dialog, the exterior surface is shown at the top of the Wall Layers table. In plan view, you can identify a selected wall's exterior surface by the location of its edit handles, which display on the exterior of the Main Layer by default. See *Resize About on page 281*.

Legacy Wall Types

In Home Designer version 9 and prior, generic, single-layer Wall Types were used as the default for railings, deck railings and fencing.

- In Home Designer 8 and prior, there were two such Wall Types: “Default (wood frame 16” OC)” and “Default (concrete)”.
- In Home Designer 9, these two Wall Types were replaced by one named “Adjustable Thickness Wall”.

When plans that include either of these Wall Types - in the drawing itself or set as a default - are opened in Home Designer 2027, the legacy Wall Type is replaced by a new Wall Type named “Wall-X”, where X is the thickness of the wall’s Main Layer, rounded up. There are a few exceptions:

- If legacy Wall Types with the same thickness but different materials are found, they use the same naming convention appended with an additional _X.
- If a wall using a legacy Wall Type is specified as a Foundation wall, the resulting Wall Type will be named “Foundation Wall-X”.
- If a legacy Wall Type has the same attributes as a Wall Type installed with Home Designer 2027, such as 8” Concrete Stem Wall, it will be replaced by that Wall Type.

Unless a wall is specified as a Foundation wall, Deck Railing, or Fencing, it will be treated as a framed wall and its new Wall Type will acquire two additional 1/2” (13 mm) thick wall layers: an interior and an exterior layer. These new layers will use the interior and exterior materials of the original wall. The wall’s original layer will maintain its original thickness, acquire a framing material, and will become the new Wall Type’s Main Layer.

Foundation, Deck Railing, and Fencing Wall Types converted in this manner will continue to have only one layer.

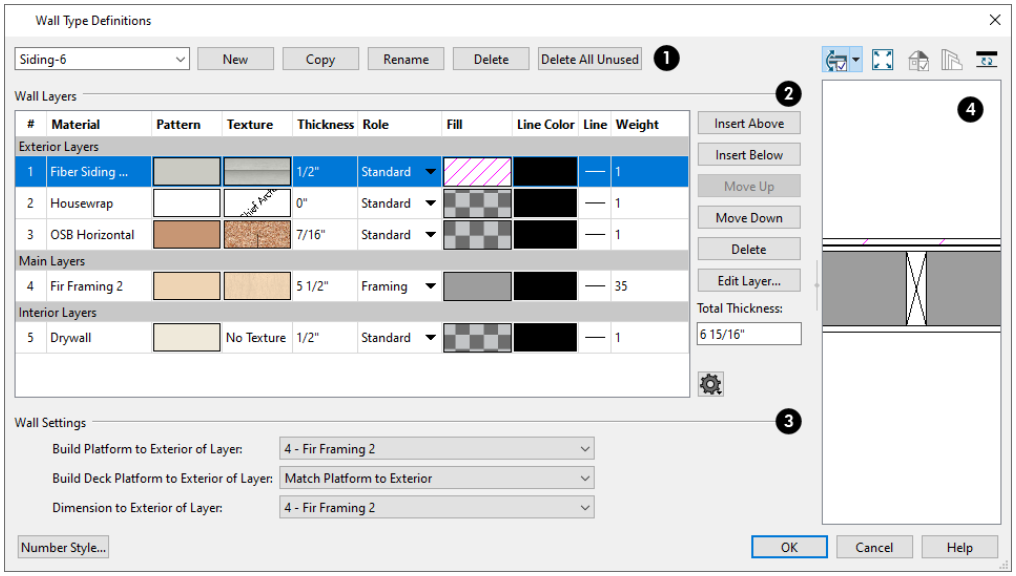
Wall Type Definitions Dialog

The Wall Type Definitions dialog is used to define new Wall Types and redefine existing Wall Types in the current plan file. Select **Build> Wall> Define Wall Types** to open this dialog.

You can also click the **Define** button on the WALL TYPES panel of the Wall Specification dialog or in most Wall Defaults dialogs. See *Wall Types Panel on page 303*.

Changes made to an existing Wall Type Definition affect all walls in the current plan using that Wall Type. Walls in other plan files are unaffected.

If changes to a Wall Type affect its thickness, the position of any walls in the plan using that Wall Type may be affected. See *General Wall Defaults on page 254*.



1 Wall Types

Manage the list of Wall Types available in the current Plan. See *Wall Types on page 288*.

- Click the drop-down list to display all Wall Types in the current Plan. Select a Wall Type from the list to display its definition. You can rename a Wall Type by typing in a new name. Note that Wall Type names in a Plan must be unique.
- To create a new Wall Type, click **New** to define a new Wall Type from scratch or click **Copy** to copy the currently selected Wall Type. A copied Wall Type can then be renamed and redefined.
- Click **Rename** to rename an existing Wall Type, or simply click on its name and type a new name.
- To remove a Wall Type from the current plan, select it and click **Delete**. Wall Types that are in use or set as plan defaults cannot be deleted.
- To remove all Wall Types that are not in use or set as a default from the current Plan, click **Delete All Unused**.

2 Wall Layers

The selected Wall Type's layers are listed here, from the exterior at the top to the interior at the bottom. The last item listed is the interior surface line rather than a true layer.

- The list is divided into three sections: Exterior, Main, and Interior Layers. To move a layer to a different location in the wall assembly, use the Move Up and Move Down buttons to the right.
- A Wall Type's thickest structural layer is typically set as the Main Layer; however, multiple Main Layers can be specified. See *The Main Layer on page 288*.
- Click in a cell to edit that attribute for the associated structural layer:
  - Click in either the **Pattern** or **Texture** column to open the Select Material dialog and choose a material for the selected wall layer. For Framing layers, the Stud material is reported here. See *Select Material/Library Object Dialog on page 762*.
  - Click in the **Fill** column to open the Layer Fill Style dialog and specify a fill style for the selected wall layer. See *Fill Styles on page 159*.

    The Wall Hatching tool can be used to cover part or all of a wall's layer fill styles in plan view. See *Wall Hatching on page 266*.
  - Click in the **Thickness** column to type the selected layer's thickness, or depth. Very thin layers can be created, but for best results, avoid using a thickness of 0. For very small values, it can be helpful to temporarily change the dialog number format: click the Number Style button.
  - Click in the **Extension** column to type how far the selected layer extends past its default bottom elevation, either at the bottom of the wall's bottom plate or that of the floor platform it builds on. Only available for Exterior wall layers, the highest Extension value is also applied to the Wall Type's Brick Ledge Depth, set on the Wall Properties Tab.
- The buttons to the right of the table allow you to manage the Wall Type Definition's layers. When multiple layers are selected, only the Edit Layer button will be available.
  - Click the **Insert Above** button to create a new layer directly above, or outside, the selected layer in the Wall Type Definition. The new layer is a copy of the original.
  - Click the **Insert Below** button to create a new layer directly below, or inside, the selected layer in the Wall Type Definition. The new layer is a copy of the original.
  - Click the **Move Up** button to swap the selected layer's position with that of the layer immediately outside it or to move it into the layer section directly outside it. Not available for the outer-most layer or for a single Main Layer.
  - Click the **Move Down** button to swap the selected layer's position with that of the layer immediately inside it or to move it into the layer section directly inside it. Not available for the inner-most layer or for a single Main Layer.

- Click the **Delete** button to remove the selected layer from the Wall Type Definition. Not available if the selected Wall Type has only one Main Layer and it is selected.
- Click the **Edit Layer** button to open the Wall Layer Specification dialog, where you can specify the appearance, role, and framing attributes of a selected wall layer. See *Wall Layer Specification Dialog on page 292*.

- The **Total Thickness** of the wall assembly displays below the layer management buttons. If you change this value, the thickness of the Main Layer automatically updates to account for the difference.
- Click the **Settings** button to control which columns display in the wall layer table.

3 Wall Settings

- **Build Platform to Exterior of Layer** - Select a wall assembly layer from the drop-down list to build floor and ceiling platforms to. By default, the exterior side of the outermost Main Layer is selected.

> Note: If Build Platform to Exterior of Layer is set to the exterior wall layer, no siding material will generate to cover the floor platform.

- **Build Deck Platform to Exterior of Layer** - Select a wall assembly layer from the drop-down list to attach the floor platform of Deck rooms to. See *Decks on page 324*.
  - Select "Match Platform to Exterior" to build Deck platforms to the same layer selected to Build Platform to Exterior Layer, above.
- **Dimension to Exterior of Layer** - Specify the Wall Type's Dimension Layer by selecting a wall assembly layer from the drop-down list. By default, the outermost Main Layer is selected. This setting does not affect Interior Dimensions. See *The Dimension Layer on page 289*.

4 Preview

A preview of the selected Wall Type Definition displays here. See *Dialog Preview Panes on page 21*.

The Standard, Vector View, and Glass House Rendering Techniques can be applied to the preview for architectural objects, as can Plan View.

Click the **Fill Window** button above the preview pane to zoom in or out so that the object fills the extents of the pane, maintaining the current rotation.

When the selected preview type is a 3D view, click the **Color** button to turn color in the preview off or on.

When the selected preview type is a 3D view, you can click the **Explode Layers** button to create a gap between each of the wall layers in the preview. Click the **Explode Layers** button again remove these gaps.

Wall Layer Specification Dialog

The Wall Layer Specification dialog can be accessed by selecting a wall assembly layer in the Wall Type Definitions dialog and clicking the **Edit Layer** button. See *Wall Type Definitions Dialog on page 290*.

The selected wall assembly layer's identification number is reported in the dialog's title bar for reference.

General Panel

Specify the selected wall layer's role in the wall assembly, as well as set its wall framing attributes. Defaults for the framing attributes are set in the Automatic Framing Defaults dialog. See *Wall Panel on page 651*.

1 Wall Layer Role

- When **Standard** is selected, the selected wall layer's material displays in 3D and is calculated in the Materials List, but framing is not generated within it.
- Select **Framing** to produce framing in the selected wall layer when wall framing is generated. Wall framing displays in 3D views when its layers are turned on and wall framing members are calculated in the Materials List.
- When **Air Gap** is selected, the selected wall layer does not display in 3D views and is not calculated in the Materials List.

> Note: Many of the settings that follow have the Active Defaults icon in the text field.
>
> When this icon has a red check mark, the plan-wide default value set in the Framing Defaults dialog is used. See *Dynamic Defaults on page 84* and *Wall Panel on page 651*.

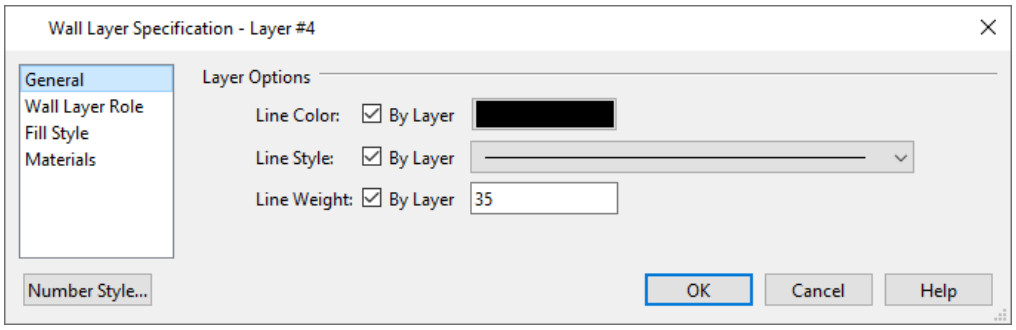
2 Framing Assembly

These settings are only available when Framing is selected as the Wall Layer Role, above.

- Select the **Stud Construction** by selecting a Framing Member Definition from the drop-down list. Click the **Define** button to open the Framing Member Defaults Management dialog. See *Default Framing Members on page 645*.
- Specify the **Stud Width** of the framing in the selected layer.
- Specify the on-center **Stud Spacing** of the selected wall layer.
- Select the **Top Plate Construction** by selecting a Framing Member Definition from the drop-down list. Click the **Define** button to open the Framing Member Defaults Management dialog.
- Specify the **Bottom Plate Width**, which is the vertical thickness of the top plate(s).
- Specify the **Top Plate Count**, which is the number of plates stacked one above the other on top of the wall studs. When multiple plates are specified, their ends are staggered 48" (1200 mm).
- Select the **Bottom Plate Construction** by selecting a Framing Member Definition from the drop-down list. Click the **Define** button to open the Framing Member Defaults Management dialog.
- Specify the **Bottom Plate Width**, which is the vertical thickness of the bottom plate(s).
- Specify the **Bottom Plate Count**, which is the number of plates stacked under the wall studs.
- Check **Max Plate Length**, then specify the maximum allowed length for the boards that make up the top and bottom plates. When unchecked, top and bottom plates run the entire length of each wall, regardless of its length.
- Check **Horizontal Framing** to produce framing that runs horizontally instead of vertically, sometimes referred to as girts, in the selected wall assembly layer.
  - **Bottom Run Elevation** determines the start point for the hortizontal framing roll-out. This is defined an absolute height and is not relative to the wall. Framing will be rolled out from this height going up the wall using the on-center girt spacing value. Only runs where the entire girt falls within the wall layers top/bottom heights will be generated. See *Floor 1 Default Height on page 313*.
  - Check **Max Girt Length** and then specify the maximum allowed length for the girt boards. When unchecked, girt boards run the entire length of the wall, regardless of its length.

> Note: The materials seen in camera views for plates, studs, and treated framing are set on the Materials panel of this dialog.

Line Style Panel



Line Options
These settings control the appearance of the selected wall assembly layer's edge line. The exterior-most Main Layer has two edge lines, while all layers inside it have one line on their interior side and all Exterior layers have one line on their exterior side

- Specify the **Color** of the selected wall assembly layer's edge line. Check **By Layer** to use the color assigned to the wall's display layer, or click the Color bar to choose a different color. See *Select Color Dialog on page 165*.
- Select the line **Style** of the selected wall assembly layer's edge line. Check **By Layer** to use the line style assigned to the wall's display layer, or click the drop-down list to select a different style. See *Display Layers on page 151*.
- Define the **Line Weight** of the selected wall assembly layer's edge line, or check **By Layer** to use the Line Weight assigned to the wall's display layer. Setting the Line Weight to zero results in lines that print as thin as possible. See *Line Weights on page 994*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected wall assembly layer in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected wall assembly layer in 3D views. See *Materials Panel on page 760*.

Materials for wall layers with the Framing Role affect the appearance of top plates, bottom plates, studs, and treated framing in camera views. Materials for Standard wall layers are reported in the Materials List and their material definitions can affect Materials List calculations. See *About Materials on page 756*.

Wall Specification Dialog

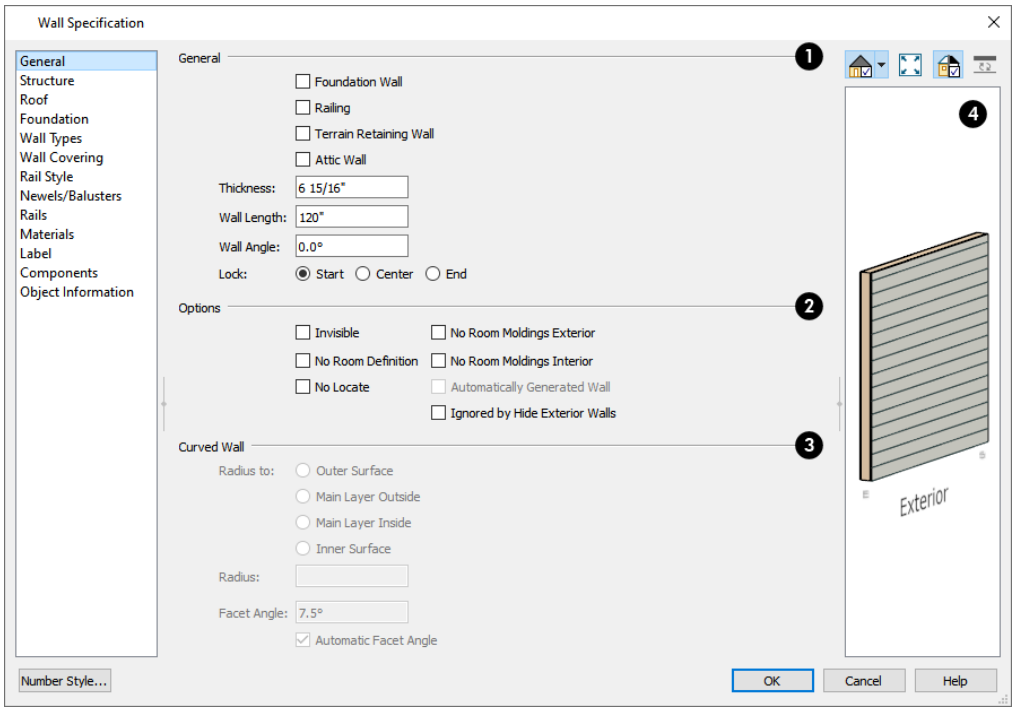
To open the Wall Specification dialog, select a wall or group of walls and click the **Open Object** edit button.

The panels of the Wall Specification dialog are also found in the Railing, Deck Railing, and Fencing Specification dialogs. See *Railing and Fencing Specification Dialogs on page 307*.

The settings in this dialog are also similar to those in the various Wall Defaults dialogs. The settings in these defaults dialogs determine the initial characteristics of railings, deck railings and fencing when they are first drawn. See *Wall, Railing, and Fencing Defaults on page 254*.

General Panel

The settings on the General panel determine the basic use of the selected wall, as well as its length, angle, and other attributes.



1 General

Specify **General** properties of the selected wall(s) or railing(s).

- Check **Foundation Wall** to specify the selected wall as a foundation wall. More foundation wall settings are available on the Foundation panel. See *Foundation Walls on page 261*.
- Check **Railing** to specify the selected wall as a railing. More railing settings are found on the Railing, Newels/Balusters, and Rails panels. See *Railing and Fencing Specification Dialogs on page 307*.
- Check **Terrain Retaining Wall** to treat the selected wall as a terrain retaining wall. See *Retaining Walls on page 908*.
- Check **Attic Wall** to prevent the selected wall from extending through the roof above. See *Attic Walls on page 285*.
- The **Thickness** of the selected wall displays and can be changed here. If the wall is a Post to Overhead Beam railing, this setting also affects the width of the beam. See *Wall Thickness on page 278*.
- **Wall Angle** - The current absolute angle of the wall in plan view is shown. If you type in a new angle, the wall rotates about its locked point and any walls attached to it will not move. If the selected wall is curved, this value describes the angle of the chord and cannot be modified. See *3D Drafting on page 12*.
- **Wall Length** - The current length, as measured along the **Resize About** line, is shown. If you type a new length, the wall will extend or contract according to how it is locked. Any walls attached to the selected wall will not move. If the selected wall is curved, this value cannot be modified. See *Resize About on page 281*.
- Select a radio button to **Lock** the selected straight wall at its Start, End or Center. When the **Wall Angle** or **Wall Length** of the selected wall is changed, this point along the wall does not move. Not available for curved walls.

2 Options

- Check **Invisible** to specify the wall as invisible. Invisible walls can display in plan view but not in 3D views or the Materials List. **Room Dividers** are invisible by default. See *Room Dividers and Invisible Walls on page 264*.
- Check **No Room Definition** to display the wall in floor plan and/or 3D views but not create room definition. This box is checked and inactive when the selected wall is set to be a Furred Wall on the STRUCTURE panel. See *Room Definition on page 312*.
- Check **No Locate** to prevent **Auto Exterior Dimensions** from locating the wall in plan view. See *No Locate on page 276*.
- Check **No Room Moldings Exterior** to prevent any room moldings from generating along the Exterior side of the selected wall. See *Room Moldings on page 328*.
- Check **No Room Moldings Interior** to prevent any room moldings from generating along the Interior side of the selected wall.
- **Automatically Generated Wall** displays for reference and is checked whenever the selected wall was generated by the program. Typically, automatic walls are also Attic walls.
- Check **Ignored by Hide Exterior Walls** to prevent the selected wall from being hidden in 3D views when the Hide Camera-Facing Exterior Walls option is in use. See *Hide Camera-Facing Exterior Walls on page 820*.

3 Curved Wall

The **Curved Wall** settings control the definition of a selected curved wall's radius and are only available when the selected wall is curved.

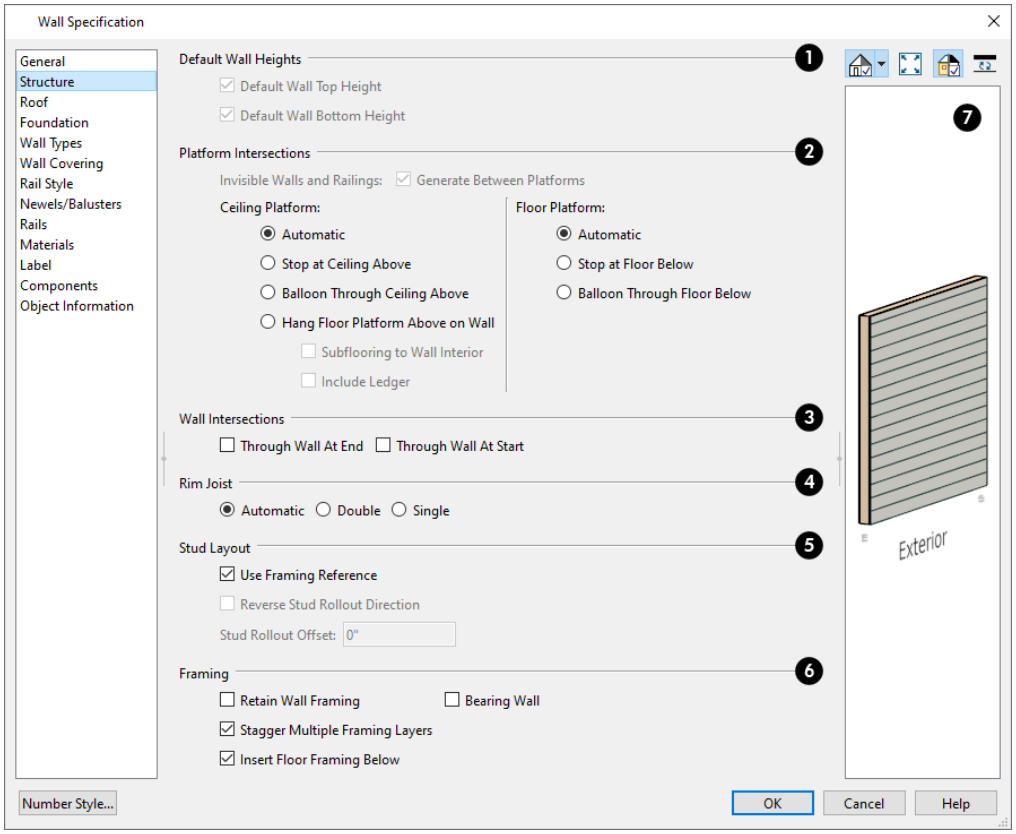
- Select **Outer Surface** to measure the selected wall's radius from its center point to its outer surface.
- Select **Main Layer Outside** to measure the radius from the wall's center point to the outside of its Main Layer. See *The Main Layer on page 288*.
- Select **Main Layer Inside** to measure the radius from the wall's center point to the inside of its Main Layer.
- Select **Inner Surface** to measure the radius from the wall's center point to its inner surface.
- Specify the selected wall's **Radius**, as defined by the radio button selected above.

4 Preview

A preview of the selected wall, including any doors or windows inserted into it, displays on the right. If the selected wall is specified as Invisible, its plan view will display here by default. See *Dialog Preview Panes on page 21*.

STRUCTURE PANEL

The settings on the STRUCTURE panel control the height and other structural attributes of the selected wall(s).



❶ Default Wall Heights

The **Default Wall Heights** settings allow you to reset a wall's default top and bottom heights if they have been manually edited. See *Wall Heights on page 278*.

- **Default Wall Top Height** and **Default Wall Bottom Height** are only enabled if the selected wall's top and/or bottom height has been edited. Check these boxes to restore the default heights.

❷ Platform Intersections

These settings control the relationship between the selected wall and the **Ceiling Platform** above and the **Floor Platform** below it. They only take effect when the selected wall is positioned at a platform edge, such as at the exterior of a building or Open Below room. See *Floor and Ceiling Platforms on page 542*.

- Check **Generate Between Platforms** to fill in the gap between floor and/or ceiling platforms when the selected railing or invisible wall separates rooms with different floor and/or ceiling heights. When unchecked, this gap is not closed. Only available for railings, Invisible railings, and Invisible walls, this setting has no effect when the selected Wall Type has only one layer.

The **Ceiling Platform** settings control how the selected wall's top plates are generated.

- Select **Automatic** to set the wall's top plates under the ceiling above if there is a floor/ceiling platform above, or to balloon frame the wall if there is not a platform above.
- Select **Stop at Ceiling Above** to have the top of the wall top at the bottom of the ceiling platform above, as is typical in light frame construction.
- Select **Balloon Through Ceiling Above** to have the top of the wall go past the ceiling platform. If there is a framed wall directly above, the framing will continue upward to that wall's top plate. The two walls remain separate objects on different floors, however, unless the wall above is an Attic Wall. This setting does not affect interior walls.

- Select **Hang Floor Platform Above on Wall** to produce a platform that hangs on the inside of the selected wall rather than bearing on top of it. When checked, the two options that follow are available.
  - Select **Subflooring to Wall Interior** to produce subflooring that builds to the inside surface of the wall. When unchecked, the subflooring builds over the top of the wall to the outside of its Main Layer. The wall's top height may be lowered to accommodate a sill plate. See *Floor and Ceiling Platform Definitions on page 542* and *The Main Layer on page 288*.
  - Select **Include Ledger** to hang the platform from a ledger board attached to the wall. When unchecked, no ledger is created when platform framing is generated. See *Manual Framing Defaults Dialog on page 658*.

The **Floor Platform** settings control how the selected wall's bottom plate is generated.

- Select **Automatic** to set the wall's bottom plate on top of the floor platform below, or to balloon frame the wall if there is not a platform below. If the wall is a Concrete type, the floor platform instead hangs on the inside the selected wall. See *The Main Layer on page 288*.
- Select **Stop at Floor Below** to have the bottom of the wall stop at the top surface of the floor platform, as is typical in light frame construction.
- Select **Balloon Through Floor Below** to have the bottom of the wall go through the floor platform below. If the selected wall is framed and there is a framed wall directly below, the studs of the wall below will extend up produce balloon framing. If the wall below is set to Stop at Ceiling Above, the selected wall's bottom plates will rest on that wall's top plates. This setting does not affect interior walls.

> Note: Whether a wall is a framed or concrete type is determined by the material assigned to its Main Layer. See *Wall Type Definitions Dialog on page 290*.

3 Wall Intersection

These settings control whether the selected wall builds through wall corners at its Start and End points. The display of **Start and End Indicators** can be turned on or off in the Preferences dialog. See *Edit Panel on page 110*.

- Select **Through Wall at Start** to build the wall through the wall corner located at its start point.
- Select **Through Wall at End** to build the wall through the wall corner located at its end point.
- When neither box is checked, the program will determine whether the wall builds through the corners at each of its endpoints.

4 Rim Joists

Specify the number of automatically-generated rim joist boards for the floor platform below the selected wall(s). Additional settings for rim joists are found in the Automatic Framing Defaults dialog. See *Floor Level Panels on page 648*.

- Select **Single** or **Double** to generate one or two rim joists, respectively.
- Select **Automatic** to generate two rim joists if there is no wall below the selected wall, and one rim joist when there is a wall below. Automatic produces a single rim joist for Deck Railing.

5 Stud Layout

- Check **Use Framing Reference** to use a Framing Reference Marker as the starting point for the selected wall's stud layout. When unchecked, stud rollout begins at the wall's Start. See *Framing Reference Markers on page 670*.
- Check **Reverse Stud Rollout Direction** to begin stud rollout at the selected wall's End instead of its Start. Only available when Use Framing Reference is unchecked. The display of **Start and End Indicators** can be turned on or off in the Preferences dialog. See *Edit Panel on page 110*.
- Specify the **Stud Rollout Offset**, which is the distance from the selected wall's Start or End that you want stud rollout to begin. Only available when Use Framing Reference is unchecked.

6 Framing

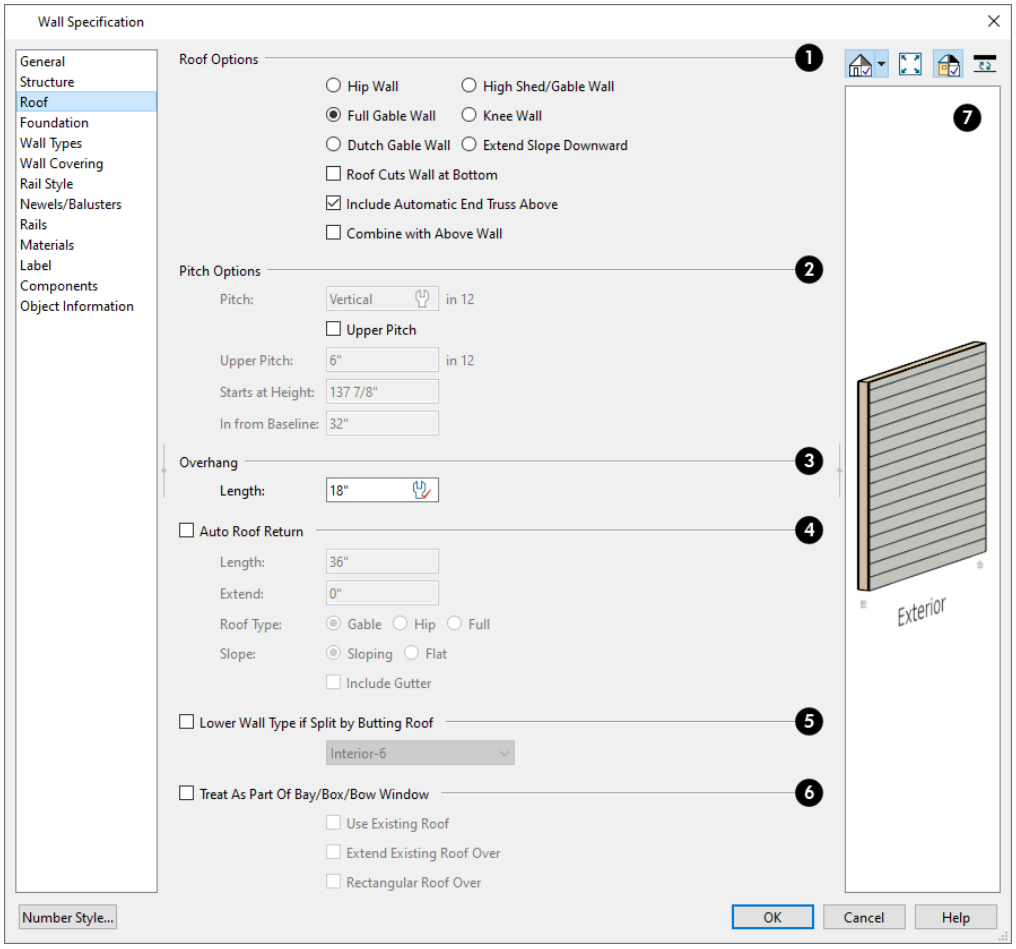
- Check **Retain Wall Framing** to preserve the framing of the selected wall when the wall framing is globally rebuilt. See *on page 1*.
- Check **Stagger Multiple Framing Layers** to produce wall studs that are offset from one another when wall framing is created. This setting only has an effect if a Wall Type with multiple Framing layers is specified. See *Wall Type Definitions Dialog on page 290*.
- Check **Bearing Wall** to specify the selected wall as load-bearing. When checked, automatically generated joists run perpendicular to the selected wall and either lap or butt over it, as specified in the Build Framing dialog. See *Manual Framing Defaults Dialog on page 658*.
- When **Insert Floor Framing Below** is checked, extra floor joists will be generated under the selected wall for support if the wall in question is parallel with the joists below. Uncheck this box for joists generated at regular layout. Extra joists can be added manually if desired. See *Manual Framing Defaults Dialog on page 658*.

7 Preview

A preview of the selected wall, including any doors or windows inserted into it, displays on the right. See *Dialog Preview Panes on page 21*.

Roof Panel

Any automatically generated roof style other than a hip requires roof information to be defined in the exterior walls. On the Roof panel, you can specify how the selected wall interacts with the roof plan, defining the portion of the roof plan that bears on it. See *Automatic vs. Manual Roofs on page 592*.



❶ Roof Options

Specify the shape of the wall relative to the roof.

- Select **Hip Roof** to create a roof plane that bears on top of the selected wall.
- Select **Full Gable Wall** to create a gable end over the selected wall.
- Select **Dutch Gable Wall** to create a small gable part way up a hip roof. Use the Pitch Options below to specify the location of the gable.
- Select **High Shed/Gable Wall** to specify the selected wall as the high end of a shed roof.
- Select **Knee Wall** to define the selected interior wall as a knee wall. Only an interior wall can be defined as a knee wall. A knee wall's height is defined by the roof above, not the ceiling height. See *Knee Walls on page 286*.
- Select **Extend Slope Downward** to continue a roof down over a bump-out in an exterior wall. See *Extend Slope Downward on page 284*.
- Check **Roof Cuts Wall at Bottom** to prevent the portion of a selected wall located below an intersecting roof plane from building.
- When **Include Automatic End Truss Above** is checked and there is an Attic wall above the selected wall, that Attic wall will receive a Reduced Gable End Truss when roof trusses are automatically generated. This box is checked automatically whenever a wall is specified as a Full Gable Wall. See *Roof Trusses on page 683*.
- **Combine with Above Wall** is only available when a selected wall has an Attic wall above it. Check this box to balloon frame the two walls when automatic framing is built. The two walls remain separate objects. See *Attic Walls on page 285*.

2 Pitch Options

Specify the pitch or pitches of the roof plane(s) above the selected wall.

- Enter a value to define the **Pitch** of the roof plane bearing on the selected wall.
- Check **Upper Pitch** to create a roof with two pitches or, if the selected wall is a Full Gable Wall, a half hip condition.
- Enter the **Pitch** of the second, upper roof.
- Specify the **Height** that the Upper Pitch **Starts at,** or define the distance **In from Baseline** that the second pitch begins. The two values are dynamic. Press the ***Tab*** key to update the relative numbers. These settings are also used to position a Dutch Gable Wall.

3 Overhang Length

Specify the **Overhang Length**, which is the horizontal distance from the baseline to the eave. See *The Baseline on page 604*.

4 Auto Roof Return

Check **Auto Roof Return** to generate roof returns on the selected wall. In most cases, roof returns only work for Full Gable Walls. See *Roof Returns on page 638*.

- Specify the horizontal **Length** of the roof return in inches (mm).
- Enter a value in inches (mm) to **Extend** the roof returns past the overhang.
- Specify a **Gable**, **Hip**, or **Full** roof return.
- Specify a **Sloping** or **Flat** roof return.
- Check the box to **Include Gutters** on the roof returns.

5 Lower Wall Type if Split by Butting Roof

Check **Lower Wall Type if Split by Butting Roof** to specify the Wall Type for any portion of the selected wall located beneath an adjacent, abutting roof plane, should one be present. A wall affected by this setting is specified as a Pony Wall and the upper wall is defined on the WALL TYPES panel. See *Exterior/Interior Pony Walls on page 284*.

6 Treat As Part Of Bay/Bow/Bow Window

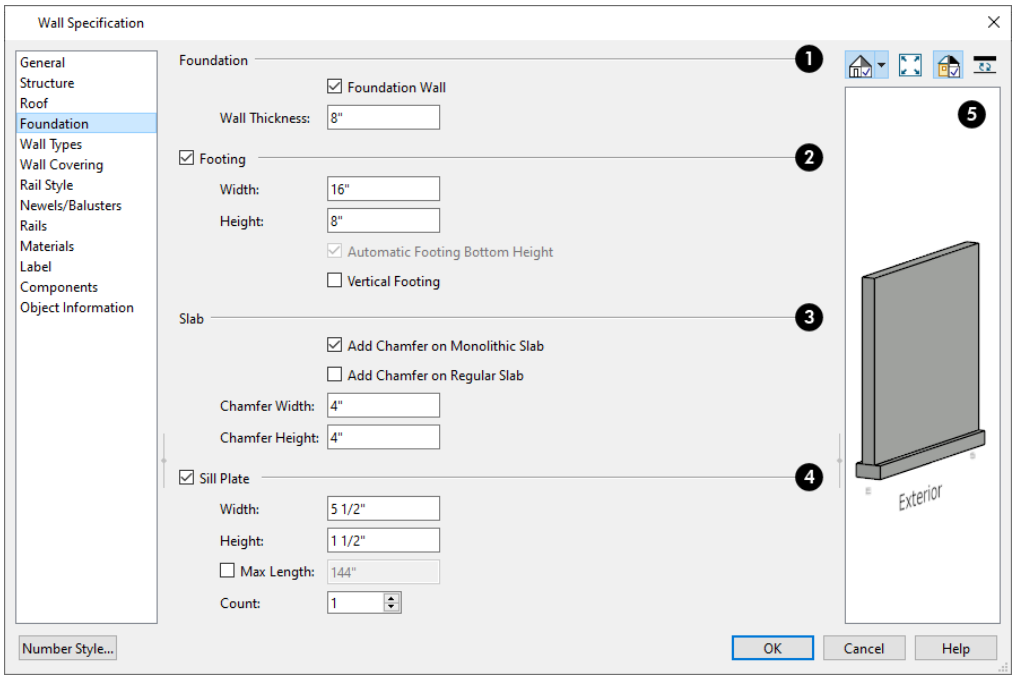
These options correspond to the **Roof** options in the Bay/Bow/Bow Window Specification dialog and should only be used by groups of three or more walls that form a bay or bow shaped bump-out. See *Bay, Box, Bow Windows and Roofs on page 454*.

- Check **Treat As Part Of Bay/Box/Bow Window** to create a hip roof with California ridge over the bump-out formed by the selected walls when the roof is rebuilt.
- Check **Use Existing Roof** to ignore the bump-out formed by the selected walls when the roof is rebuilt.
- Check **Extend Existing Roof Over** to extend the eave of the main roof plane to cover the bump-out created by the selected walls and follow its footprint.
- Check **Rectangular Roof Over** to create a rectangular hip roof over the bump-out formed by the selected walls instead of one that follows its footprint.

7 Preview

A preview of the selected wall, including any doors or windows inserted into it, displays on the right. See *Dialog Preview Panes on page 21*.

Foundation Panel



1 Foundation

Specify the **Foundation** properties of the selected wall(s).

- Check **Foundation Wall** to specify the selected wall as a foundation wall and enable additional settings on this panel. This box is checked by default for automatically generated foundation walls as well as walls drawn with the **Foundation Wall tool** .

> Note: Rooms defined by walls drawn using the Slab Footing tool will have a Ceiling Height of 0 and a Monolithic Slab Foundation. Rooms defined by walls that are later specified as Slab Footings will not unless the room is on Floor 0 and the plan has a Monolithic Slab foundation specified.

- The **Wall Thickness** of the selected wall displays and can be changed here.

2 Footing

Check **Footing** to assign a concrete footing to the selected wall(s) and enable the settings below. Only available when Foundation Wall is checked, above.

- Specify the **Width** and **Height** of the footing below the selected foundation wall(s). The **Height** value will be unavailable if the bottom height of the footing has been edited. See *Stepped Foundations on page 526*.
- Check **Automatic Footing Bottom Height** to restore the default height of the selected wall's footing. Only available when the footing bottom height has been edited.
- Check **Vertical Footing** to generate footings that run up and down along any steps in the foundation wall's bottom height.

3 Slab

Specify how footings generate in the presence of Monolithic and regular slabs. See *Foundations on page 515*.

- Check **Add Chamfer on Monolithic Slab** to add a chamfer to the selected wall's footing when the wall defines a Monolithic slab. See *Automatic Foundation Types on page 515*.
- Check **Add Chamfer on Regular Slab** to add a chamfer to the selected wall's footing when the wall defines a slab floor that is not Monolithic.
- Specify the **Chamfer Width** and **Height**, which define the angled corners where the footing meets the underside of the slab.

4 Sill Plate

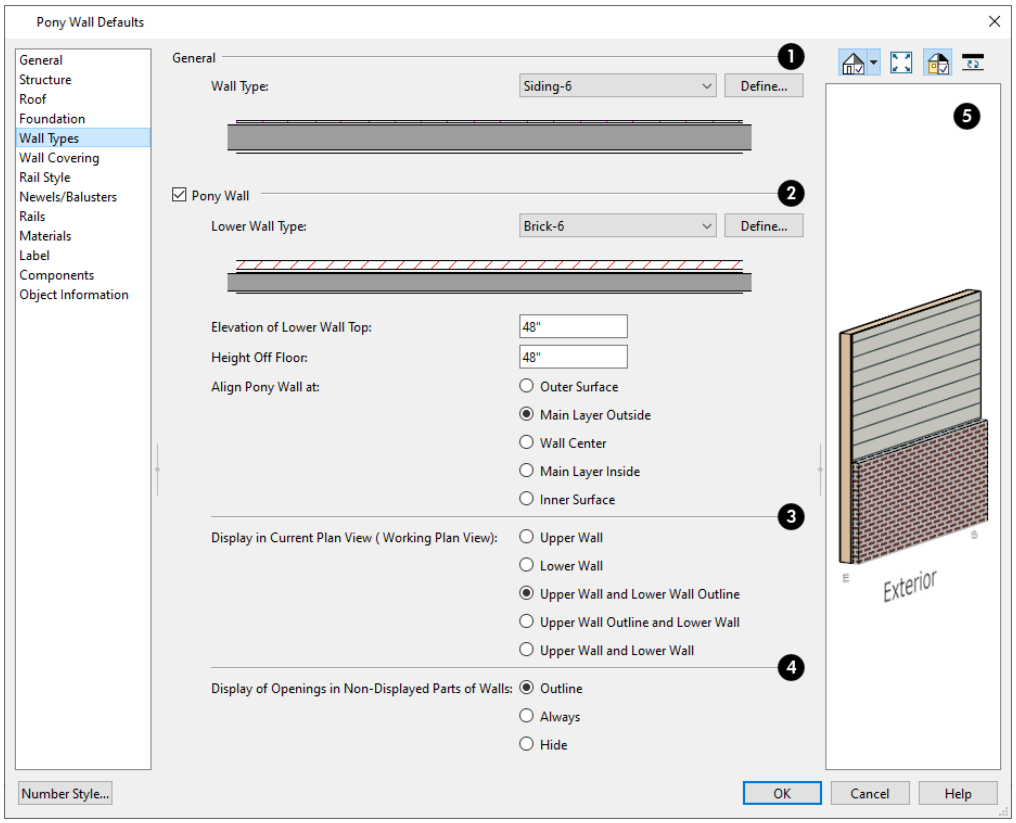
Check **Sill Plate** to reserve space for one or more sill plates, or mud sills between the selected foundation stem wall or grade beam and the floor platform or framed wall that bears on it. Sill plates are generated when the floor framing is generated. See *Manual Framing Defaults Dialog on page 658*.

- Specify the **Width** and **Height** of the treated sill plates. If the Height is set to zero, no sill plates are produced. Not available if **Monolithic Slab** is the selected **Foundation Type**.
- Specify the **Max Length**, then specify the maximum allowable length for sill plate boards generated over the selected wall. When unchecked, sill plates run the full length of the wall, regardless of length.
- Specify the **Count**, which is the number of sill plates stacked vertically on each stem wall or grade beam.

5 Preview

A preview of the selected wall, including any doors or windows inserted into it, displays on the right. See *Dialog Preview Panes on page 21*.

Wall Types Panel



1 General

Specify the selected wall's primary Wall Type.

- Choose the selected wall's **Wall Type** from the drop-down list of all currently available types.
  - Click the **Define** button to open the Wall Type Definitions dialog to create or modify existing Wall Types. See *Wall Type Definitions Dialog on page 290*.
- A preview of the selected Wall Type as seen in plan view displays below the drop-down list. See *Displaying Walls on page 271*.

2 Pony Wall

- Check **Pony Wall** to specify the selected wall as a pony wall having different Wall Types on its upper and lower portions. If the selected wall is a Foundation Wall, its initial Wall Type will become the Lower Wall Type. For all other walls, the initial Wall Type will be the upper Wall Type. See *Pony Walls on page 263*.
- Select the **Lower Wall Type**, the Wall Type of the lower portion of the pony wall, from the drop-down list. A preview of the selected Wall Type displays directly below.
  - Click the **Define** button to open the Wall Type Definitions dialog.
- A preview of the selected Lower Wall Type as seen in plan view displays below the drop-down list.
- Specify the height of the division between the upper and lower walls. These two settings are dynamic: if one is changed, the other will update accordingly.
  - Specify the **Elevation of Lower Wall Top**, which is the division between the upper and lower walls. If the top of the lower pony wall is stepped or raked, this value will be "No Change". This is an absolute value: regardless of the wall's location, it is always measured from 0" (mm) - the default floor height for Floor 1. See *Floor Level Defaults Dialogs on page 535* and *Stepped and Raked Walls on page 286*.
  - Specify the **Height Off Floor** of the division between the upper and lower walls. This value is measured from the floor height of the room(s) defined by the selected wall. If the wall defines rooms with different floor heights, "No change" will display.
- **Align Pony Walls at** - Specify how the layers of the selected wall's Upper and Lower portions align.
  - Select **Outer Surface** to align Wall Types at their outer surfaces.
  - Select **Main Layer Outside** to align Wall Types at the exterior edge of their Main Layers.
  - Select **Wall Center** to align the centers of the Main Layers of both Wall Types.
  - Select **Main Layer Inside** to align the Wall Types at the interior side of their Main Layers.
  - Select **Inner Surface** to align Wall Types at their interior surfaces.
  - **No Change** is used by default when multiple pony walls with different alignment settings are selected. Choose this to leave the alignment as it was when the dialog was opened.

3 Display in Plan View

Specify which part of the pony wall you would like to display. In the Pony Wall Defaults dialog, this option can be set differently in each plan view but are disabled if the current view is not a plan view or if multiple defaults are being edited. See *Displaying Pony Walls on page 264*.

- Select **Use Default** to display the portion of the pony wall specified in the Pony Wall Defaults dialog in the current plan view. The portion set as the Default is stated in parentheses for reference. Not available in the Pony Wall Defaults dialog.

> Note: The default Display in Plan View settings can be set differently for each plan view and become permanent parts of views sent to layout. See *Plan Views on page 132* and *Keeping Layout Views Current on page 974*.

- Select **Upper Wall** to display the upper portion of the selected pony wall.
- Select **Lower Wall** to display the lower portion of the selected pony wall.
- Select **Upper Wall and Lower Wall Outline** to display the selected pony wall's upper wall along with the edge lines of the lower wall.
- Select **Upper Wall Outline and Lower Wall** to display the selected pony wall's lower wall along with the edge lines of the upper wall.
- Select **Upper Wall and Lower Wall** to display both the upper and lower portions of the selected pony wall.
- When walls are group-selected, choose **No Change** to allow each wall in the selection set to maintain its own setting.

4 Display of Openings in Non-Displayed Parts of Walls

In the Pony Wall Defaults dialog only, specify how doors and windows display in plan view when they are located entirely in the part of a pony wall that is not visible.

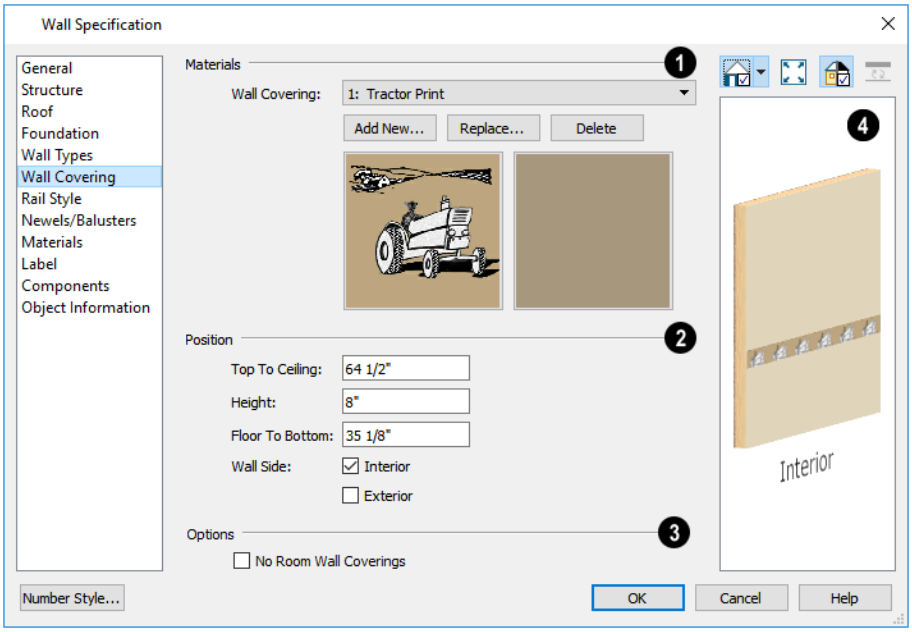
- Select **Outline** to display the lines associated with openings but draw the wall layers' lines and fill through them.
- Select **Always** to display doors and windows the same regardless of where they are located: drawing their outlines and preventing wall layers from drawing through them.
- Select **Hide** to not draw door and window outlines at all, so they cannot be seen.

5 Preview

A preview of the selected wall, including any doors or windows inserted into it, displays on the right. See *Dialog Preview Panes on page 21*.

Wall Covering Panel

The Wall Covering panel is also available in the Room Specification dialog. See *Room Specification Dialog on page 328*.



1 Materials

All wall covering materials applied to the selected wall are listed here. Select one from the drop-down list to edit its position or remove it from the wall.

- Click **Add New** to apply a new wall covering to the selected wall. See *Select Library Object Dialog on page 729*.
- Click **Replace** to replace the current wall covering with a new one from the library.
- Click **Delete** to remove the current wall covering from the selected wall.

Preview panes showing the current wall covering display the row of buttons.

2 Position

Specify the **Position** of the selected wall covering.

- Enter the heights of the current wall covering's **Top To Ceiling** and **Floor To Bottom**. The wall covering's **Height** from its top edge to its bottom edge can also be specified.
- Check **Interior** and/or **Exterior** to apply the wall covering to the inside and/or outside of the selected wall. Interior is checked by default. Not available for rooms. See *Wall Types on page 288*.

3 Options

Check **No Room Wall Coverings** to prevent any wall coverings assigned to rooms from generating on the selected wall.

4 Preview

Most wall coverings are best previewed using the Standard Rendering Technique. See *Dialog Preview Panes on page 21*.

Rail Style Panel

The settings on the Rail Style panel are only available for Railings, Half Walls, Deck Railings, and Fencing. See *Rail Style Panel on page 307*.

Newels/Balusters Panel

The settings on the Newels/Balusters panel are only available for Railings, Half Walls, Deck Railings, and Fencing. See *Newels/Balusters Panel on page 309*.

Rails Panel

The settings on the Rails panel are used to specify the style and size of the horizontal components of a selected Railing, Deck Railing, or Fence. See *Railing and Deck Tools on page 258*.

A similar panel is also found in the Staircase and Ramp Specification dialogs and has additional settings for handrails at walls. See *Rails Panel on page 585*.

The settings on this panel are like those on the Moldings panel found in a variety of dialogs in the program. See *Moldings / Rails Panels on page 702*.

Materials Panel

All walls - including interior walls, railings and fencing - have an "Exterior Wall Surface" and an "Interior Wall Surface". See *Interior and Exterior Surfaces on page 289*.

The materials specified on the Materials panel affect the appearance of walls and Solid Railings in 3D views but are not calculated in the Materials List. See *Materials Lists on page 954*.

For most railing types, the "Exterior Wall Surface" component only affects the appearance of the floor platform under the railing and the "Interior Wall Surface" component is not used. For fencing, neither material component is used.

Label Panel

Wall labels display in plan view when the “Walls, Labels” layer is turned on and use the Text Style assigned to that layer. See *Wall Labels on page 273*.

For information about the settings on this panel, see *Label Panel on page 395*.

Components Panel

The information on the Components panel can be used in the materials list. For more information, see *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the materials list. For more information, see *Object Information Panel on page 968*.

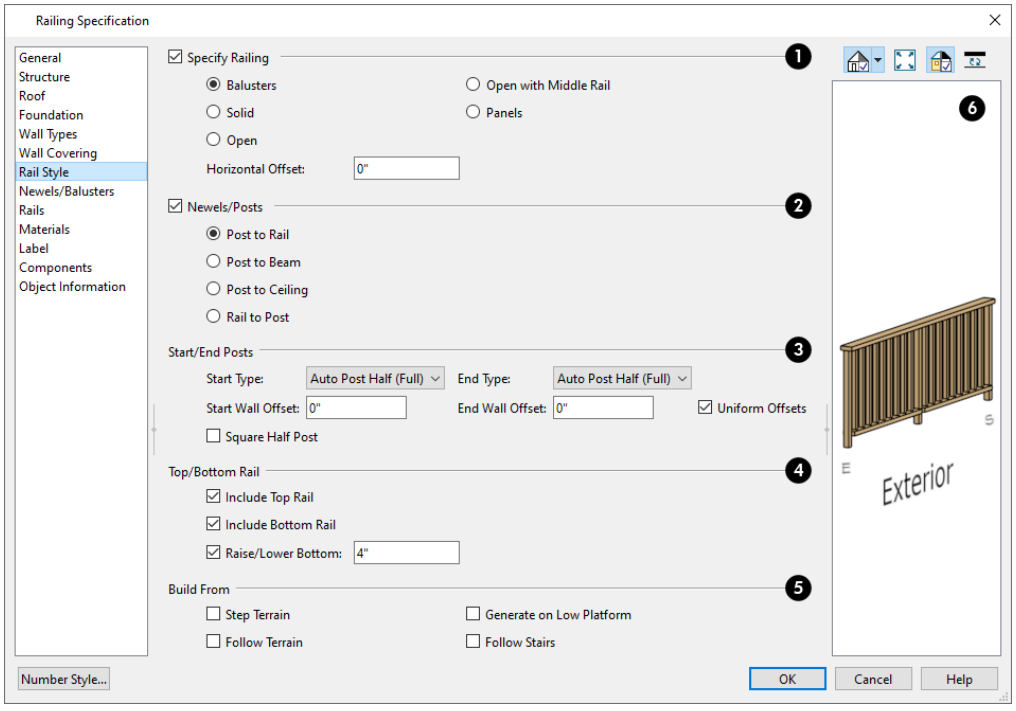
Railing and Fencing Specification Dialogs

To open the Railing or Fencing Specification dialog, select a railing or fencing, or a group of railings or fencing, and click the **Open Object** edit button.

The Railing and Fencing Specification dialogs are the same as the Wall Specification dialog, but have three panels that apply only to Railings, Half Walls, Deck Railings, and Fencing. See *Wall Specification Dialog on page 294*.

The Rails panel is similar to the Handrail panel found in the Staircase and Ramp Specification dialogs. See *Stairs, Ramps, and Landings on page 548*.

Rail Style Panel



1 Specify Railing

Check **Specify Railing** to specify the selected wall as a railing and enable the other options on this panel. Railings drawn using the **Railing** or **Deck Railing** tools have this checked by default.

- Select the radio button for the desired **Railing Type**:
  - Select **Balusters** to create regularly spaced balusters between larger newel posts.
  - Select **Solid** to create a solid railing or Half Wall. Not available if the selected railing is also a Pony Wall. See *Pony Walls on page 263*.
  - Select **Open** to create a railing with only newel posts and top and bottom rails.
  - Select **Open with Middle Rail** to create a railing with newel posts and top, bottom, and middle rails.
  - Select **Panels** to create a railing composed of panels, then click the **Library** button to select a panel style from the Library Browser. See *Select Library Object Dialog on page 729*. You can specify the panel style on the NEWELS/BALUSTERS panel. See *Newels/Balusters Panel on page 309*.
- Specify a **Horizontal Offset**, which allows you to place the railings either inside or outside their default location. A positive value offsets the railings in the direction of their interior surface, while a negative value offsets them outward. Room definition is not affected by this offset so you can offset a railing relative to the floor platform edge it defines.

2 Newels/Posts

- Check **Newels/Posts** to assign these to the selected railing, then specify their properties:
  - Select **Post to Rail** to create newel posts from the floor to the top rail. This option is selected by default.
  - Select **Post to Beam** to create newel posts from floor to a beam placed just under the ceiling height. The beam's width is based on the Thickness of the selected railing wall.
  - Select **Post to Ceiling** to extend the newel posts to the ceiling.
  - Select **Rail to Post** to produce newel posts of the Height specified on the NEWELS/BALUSTERS panel, with rails that build to the sides of the newels.

3 Start/End Posts

If either the Start or End of the selected railing is connected to another railing, the settings associated with that end will not be available. These options are not available at all when **Newels/Posts** is unchecked above.

- Select the **Type** of post at the railing's **Start** and **End** points: "Full Post", "Half Post", or "None." The "Auto Post" options place either a Half post or None if the railing intersects a wall and a Full post otherwise: the currently applicable Type is indicated in parentheses. A Full Post is always placed where railings meet at a corner.
- Specify the **Start** and **End Wall Offsets**, which are the distances between the railing's half posts and the intersecting wall.
- Check **Uniform Offsets** to apply the same offset to both ends of the railing.
- Check **Square Half Post** to use a square half post where the railing intersects a wall instead of the post Type specified on the NEWELS/BALUSTERS panel. This only applies when a railing end is set to have a Half Post.

4 Top/Bottom Rail

These options control the placement of the top and bottom rail, or shoe.

- Uncheck **Include Top Rail** to eliminate the top rail.
- Uncheck **Include Bottom Rail** to eliminate the bottom rail and extend the balusters to the floor. Not available for Solid railings.
- Check **Raise/Lower Bottom**, then specify the **Floor to Bottom** distance, measured up from the floor platform to the bottom rail or panel. A negative value positions the bottom rail or panel below the floor.

5 Build From

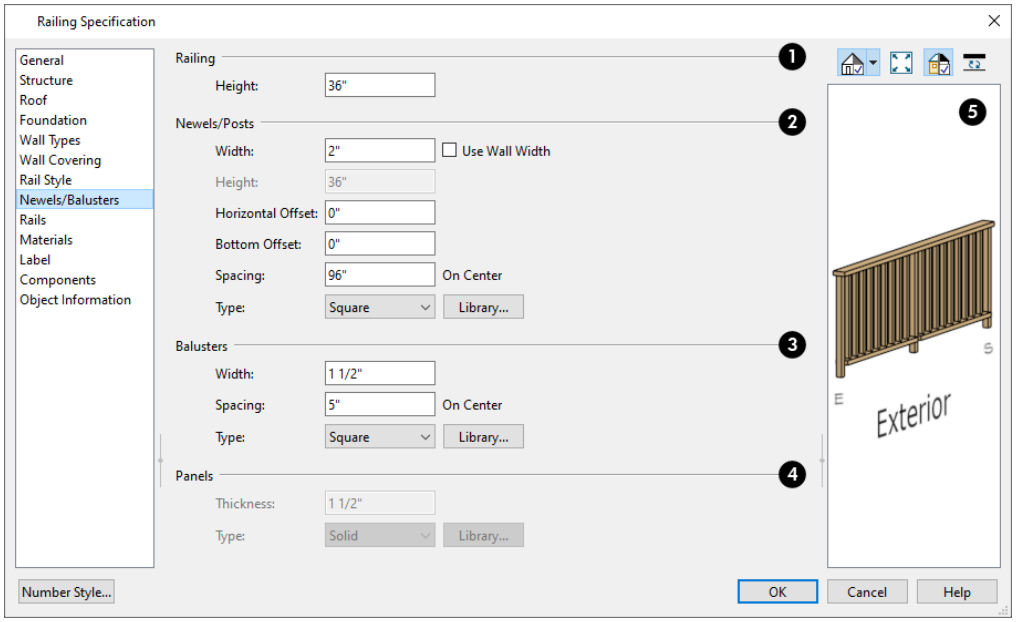
Specify where the selected railing or fencing should **Build From**. With the exception of Follow Stairs, these settings are not available for Solid railings.

- Check **Step Terrain** to have the railing or fencing follow the terrain in horizontal steps between each newel post. Not available if the selected railing is a Pony Wall.
- Check **Follow Terrain** to have the railing or fencing follow the terrain smoothly. Not available if the selected railing is a Solid or a Pony Wall.
- Check **Generate on Low Platform** to build the selected railing on the lower floor platform when the railing defines two room areas with different floor heights. See *Aligning Railings on Different Platforms on page 282*.
- Check **Follow Stairs** to have the railing or fencing follow the rise of stairs drawn in the same location. See *Inset or Middle Railing on page 571* for more information.

6 Preview

A preview of the selected railing or fence, including any doorways or gates inserted into it, displays on the right. See *Dialog Preview Panes on page 21*.

Newels/Balusters Panel



1 Railing

Specify the height of the railing.

- For interior railings, the **Railing Height** is measured from the height of the floor finish. See *Floor and Ceiling Platform Definitions on page 542*.

2 Newels/Posts

Specify the characteristics of the selected railing's newel posts.

- Specify the **Width** of each newel at its widest point.
- Check **Use Wall Width** to assign the width of the Wall Type assigned to the selected railing to its newels.

- Specify the **Height**, which is the height from the floor or ground to the top of the newel. Not available if Post to Rail, Post to Overhead Beam or Post to Ceiling is selected on the RAIL STYLE panel. See *Rail Style Panel on page 307*.
- Specify the **Horizontal Offset**, which is the amount each newel is offset from the center of the railing. You can, for example, use this setting to create a fence with the posts on one side of the fence boards.
  - A positive value offsets the newels towards the interior; a negative value, towards the exterior.
  - When this value is negative and Full Post is selected Start and/or End Type, a newel is created on each side of an exterior corner rather than one centered on the corner. See *Rail Style Panel on page 307*, above.
- Specify the **Bottom Offset**, which is the amount each newel is raised or lowered. When this value is 0, the newels' bottom edges are positioned on the surface of the floor finish.
- Specify the **Spacing** method that determines the distance between the selected railing's newel posts.
  - Select "Automatic" from the drop-down list to evenly space all newels as close to the interval specified below as possible, depending on the length of the selected railing.
  - Select "From Start" to place newels at the interval specified below beginning at the railing's Start end. The interval between the End newel and the one adjacent to it will vary, depending on the length of the selected railing. See *Selected Edge on page 185*.
  - Select "From End" to place newels at the interval specified below beginning at the railing's End. The interval between the newel at the Start end and the one adjacent to it will vary, depending on the length of the selected railing.
  - Select "Centered" to place two newels at the interval specified below, then center them on the midpoint. Additional newels are laid out from there; however, the interval between the newels at the Start and End points and adjacent newels will vary, depending on the length of the railing. It is also possible that layout may originate from a single newel at the railing's midpoint: again, depending on railing length and spacing.
  - Select "Count" to specify the a fixed number of newels, below, instead of the spacing between them. The interval between the newels will vary, depending on the length of the selected railing.
  - "Manual" is selected automatically when newels are manually moved using the **Move Newels**  edit tool. See *Editing Walls on page 277*.
- Specify the on-center **Max. Spacing** interval. The actual spacing of newels may vary from this value, depending on the Spacing method selected above and the length of the selected railing. Not available when "Count" or "Manual" is selected as the Spacing method, above.
- Specify the selected railing's total newel post **Count**. Only available when "Count" is the Spacing method selected above.
- **Type** - Select Square, Round, or Library newels. Selecting Library from the drop-down list is the same as clicking the Library button to the immediate right and allows you to select a symbol from the library. See *Select Library Object Dialog on page 729*.

3 Balusters

These settings are only available when the railing type is “Balusters” on the RAIL STYLE panel.

- Specify the **Width** or diameter of each baluster at its widest point.
- Specify the on-center **Spacing** of the balusters.
- **Type** - Select Square, Round, or Library balusters.

4 Panels

These settings are only available when the railing type is specified as Panels on the RAIL STYLE panel.

- Specify the panel’s **Thickness**.
- Select “Solid” or “Library” from the **Panel Type** drop-down list.



You can also apply newels, balusters, and panels onto a railing directly from the Library Browser. See *Inserted Objects on page 728*.

5 Preview

A preview of the selected railing or fence, including any doorways or gates inserted into it, displays on the right. See *Dialog Preview Panes on page 21*.

Rails Panel

The settings on the Rails panel are used to specify the style and size of the horizontal components of a selected Railing, Deck Railing, or Fence. See *Railing and Deck Tools on page 258*.

A similar panel is also found in the Staircase and Ramp Specification dialogs and has additional settings for handrails at walls. See *Rails Panel on page 585*.

The settings on this panel are like those on the Moldings panel found in a variety of dialogs in the program. See *Moldings / Rails Panels on page 702*.

Wall Hatching Specification Dialog

To open the Wall Hatching Specification dialog, select a Wall Hatching and click the **Open Object** edit button. The settings in this dialog are also found in the Wall Hatching Defaults dialog. See *Wall Hatching on page 266*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Wall Hatching in plan view. See *Fill Style Panel and Dialogs on page 161*.

Label Panel

Labels for Wall Hatching display when the “Walls, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for Wall Hatching is blank, but you can specify a custom label if you wish. See *Object Labels on page 394*.

Rooms

Chapter 13

Rooms are created when walls are drawn to enclose an area. When a room is defined in this way, it automatically receives both a floor and ceiling as well as features like moldings and finish materials that can be seen in 3D Views.

Rooms can be selected and edited. Each room can be assigned a Room Type with predefined characteristics. For example, a room defined as a Deck is assigned certain attributes that are different from a Kitchen.

Room Definition

A room is a totally enclosed area defined by any combination of joined walls or railings, visible or invisible. To be recognized as a room by Home Designer, a room must have an unbroken perimeter.

Unless otherwise specified, rooms generate floor and ceiling platforms automatically. Most rooms are also automatically covered by the roof when one is built. There are exceptions to this, such as rooms defined as Decks. See *Room Types on page 314*.

Room definition disappears if part or all of a surrounding wall is deleted. It is a good idea to finalize the position of walls before specifying Room Types or defining room attributes such as floor or ceiling height.

Subdividing Rooms

When a room area is first defined, it inherits its characteristics from the Floor Defaults dialog for that floor. If the room is then specified as a particular type, it may inherit properties from the Room Defaults dialog associated with its type. See *Floor and Room Defaults on page 313*.

If a new room is created by subdividing a larger room, it inherits its characteristics from that larger room - including any non-default settings.

If two rooms are separated by an Invisible wall, their interior areas will be measured from the wall's centerline and characteristics like the floor finish materials and moldings will break along that line.

- If the two rooms have different floor heights, the break will occur at the wall edge that faces the room where the floor is lower.
- If the two rooms have different ceiling heights, the break will occur at the wall edge that faces the room where the ceiling is higher.

Copying and Pasting Rooms

A room can be copied into the same or a different plan by copying and pasting the walls that define it. Rooms copied in this manner retain their size and shape, as well as any finish materials assigned to the walls. See *Copying and Pasting Objects on page 146*.

If you want to retain the room's Type and other specifications, copy and paste it and the walls that define it using the **Edit Area** tools. See *Edit Area Tools on page 213*.

Floor and Room Defaults

Select **Edit> Default Settings** to open the Default Settings dialog, then click the arrow to the left of "Floors and Rooms" to expand the category. Here, you can access several defaults dialogs which directly affect rooms. Select a line item and click the **Edit** button to open the defaults dialog associated with it.

Floor Level Defaults

Many important default values that affect rooms are specified in the Floor Level Defaults dialog for each floor level in a plan. This dialog controls important information that the program uses to create a 3D model - particularly floor and ceiling heights and materials. Moldings can also be specified in the Floor Level Defaults dialogs.

Only the defaults for Floor 1 can be set ahead of time. The program uses the settings from Floor 1 to create subsequent floors. Once a new floor is created, its floor defaults can be changed. See *Floor Level Defaults Dialogs on page 535*.

The Floor Level Defaults dialog for the current floor can also be opened by clicking the **Floor Defaults** button, which can be added to the toolbars. See *Adding and Removing Buttons on page 123*.

Floor 1 Default Height

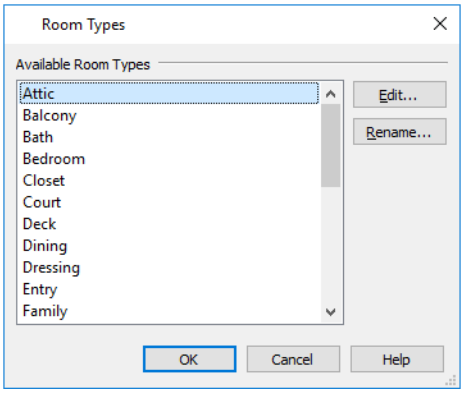
Home Designer always defines the default height of Floor 1 at 0'-0". This height value is measured from the top of the subfloor and is the constant by which the heights of structural elements in the program like walls, floors, and ceilings are measured. The heights of architectural objects can be measured relative to this absolute height, as well. As such, this default cannot be changed.

Floor and Ceiling Platforms

Floor and **Ceiling Structure** and **Finish** definitions assigned to rooms affect structural heights as well as the appearance of rooms and have a hierarchy of dynamic defaults. See *Floor and Ceiling Platforms on page 542*.

Room Type Defaults

The Room Types dialog can also be opened by clicking the **Room Types** button, which can be added to the toolbars.



Select an **Available Room Type** from the list, then:

- Click the **Edit** button to modify the selected Room Type in the Room Type Defaults dialog.
- Click the **Rename** button to specify a new Name for the selected Room Type.

The settings in the Room Type Defaults dialogs allow you to specify the following for each Room Type:

- The **Name**, as used in its default Room Label
- Inclusion in the **Living Area**. See *Living Area on page 321*.
- **Ceiling Structure** and **Finish**. See *Floor and Ceiling Platforms on page 542*.
- **Floor Structure** and **Finish**.
- **Framing** and **Supports** for Deck rooms. See *Decks on page 324*.
- **Fill Style** for use in plan view. See *Fill Style Panel and Dialogs on page 161*.
- **Moldings**. See *Room Moldings on page 328*.
- **Components** information for use in the Materials List. See *Components Panel on page 967*.

These settings are also found in the Room Specification dialog. See *Room Specification Dialog on page 328*.

Room Label Defaults

The Room Label Defaults dialog allows you to specify the initial appearance of room labels. See *Room Labels on page 320*.

The options in the Room Label Defaults dialog are found on the Label panel in a variety of specification dialogs throughout the program. See *Label Panel on page 395*.

Any changes made to the Room Label Default settings do not alter existing room labels. To update existing labels so that they reflect changes made to the defaults, delete and replace them. See *Room Labels on page 320*.

Room Types

Room Types are used to quickly apply useful structural, functional, and appearance properties to different kinds of rooms. For example, a room assigned the “Garage” Room Type will receive concrete curbs under its walls when the Foundation is built, while a “Kitchen” will get GFCI Outlets when the Auto Place Outlet tool is used.

When a room is first created by enclosing an area with walls, it is assigned a generic room type of “Unspecified.” Once a room is created, though, it can be assigned a **Room Type** in the Room Specification dialog. See *General Panel on page 329*.

A selection of pre-defined Room Types is available for use. See *Room Type Defaults on page 313*.

Room Type Defaults

Each Room Type is composed of two sets of characteristics: those set by the program, and those that are directly editable.

Characteristics set by the program are grouped together based on typical requirements for different types of rooms. These non-editable sets of properties is referred to as Room Functions.

Characteristics of a Room Type that can be modified include the default room Name, whether it is included in the Living Area, and the floor structure, finish, and deck supports. See *Room Type Defaults on page 313* and *Automatic Framing Defaults Dialog on page 648*.

When you specify that a room be a certain Room Type, all of the characteristics associated with that Room Type are assigned to the room, overriding existing settings. After you specify a Room Type, though, various settings can be customized.

Room Types

There are three broad categories of room Types: Interior, Exterior and Hybrid.

- **Interior** - Most room Types are Interior.
- **Exterior** - Balcony, Court, Deck.
- **Hybrid** - Attic, Garage, Open Below, Porch, Slab.

Effects of Room Types

Home Designer applies specific properties to rooms depending on the assigned Room Type.

Living and Conditioned Areas

- All interior type rooms are included in Living Area calculations by default; exterior and hybrid type rooms are not.
- All interior type rooms are included in Conditioned Area calculations by default. Open Below rooms are also included; however, exterior and other hybrid type rooms are not.

Ceilings and Roofs

- Interior rooms have a flat ceiling and are set to generate a roof above them.
- Exterior rooms are assumed to be open to the outside and do not have a flat ceiling or generate a roof above them.
- Attic rooms do not receive a ceiling and are ignored by the program's automatic roof generator.
- Garage, Slabs, and Porches are treated like exterior rooms in all cases except that they generate a ceiling and a roof above them by default.

Floors and Foundations

- A room's default floor structure and finish definitions are determined by its Room Type. See *Room Type Defaults on page 313*.
- Open Below rooms have no floor platform and influence how adjacent walls are framed. Stairwells and Crawl Spaces are created using the Open Below Room Type.
- Garages have a foundation under them as defined by the Foundation Defaults dialog with a concrete slab at the top of stem wall or grade beam.
- The floor in Garage and Slab rooms display in 3D on Floor 0, not the first floor. See *Garages on page 524*.
- Defining a room as Slab causes the floor platform thickness to equal the slab thickness value in the Foundation Defaults dialog.
- Deck rooms do not generate foundations. See *Decks on page 324*.

Doors and Windows

- A window placed in a wall between an exterior room and an interior room always faces out toward the exterior.
- Doors placed between interior and exterior type rooms inherit their settings from the Exterior Defaults for the door tool, if hinged or sliding; they display threshold lines and are considered Exterior. See *Interior vs Exterior Doors on page 397*.
- Doors placed between interior type rooms do not display thresholds and are considered Interior.
- Open Below rooms are treated as interior rooms for window and door placement. All other hybrid type rooms are treated as interior.

Electrical

- An electrical object placed on the wall of an exterior room using the **Light**  , **Switch**  , **110V Outlet**  or **220V Outlet**  tool will automatically be a waterproof or outdoor type fixture, as specified in the Electrical Defaults

dialog. See *Electrical Defaults on page 499*.

- The **Auto Place Outlets** tool adds outlets automatically to all interior rooms. See *Auto Place Outlets on page 503*.
- **Auto Place Outlets** places GFCI outlets over base cabinets in Kitchens and Baths. Kitchens also receive standard height outlets while Baths do not.
- **Auto Place Outlets** places fewer outlets in hybrid type rooms.
- **Auto Place Outlets** does not place outlets in exterior type rooms, Porches or Open Below rooms.

Plan Check

- **Plan Check** uses Room Types and their characteristics for basic plan checking. For example, a closet does not need a smoke detector but a bedroom does. See *Plan Check on page 80*.

Displaying Rooms

Unlike most things in Home Designer, a room is not an individual object. Rather, a room is a space defined by the walls that enclose it.

In Plan Views

Rooms typically display a transparent fill in plan view. You can, however, specify a solid color or fill pattern for all the rooms on an entire floor in the Floor Defaults dialog, or for individual rooms in the Room Specification dialog. See *Fill Style Panel and Dialogs on page 161*.

In order for room fill styles to display, the “Rooms” layer must be turned on. See *Layer Attributes on page 152*.

Room labels that include the room’s name as well as its size and other information can be set to display in plan view. See *Room Labels on page 320*.

In 3D Views

Rooms can be viewed in views created by any of the 3D view tools. The **Dollhouse View** tools can be used to see all rooms on the current floor without their ceilings. See *Creating Overviews on page 785*.

If the "Rooms" layer is turned off in a camera view, a room's floor surface and flat ceiling will not display and the room will not be selectable.

In the Materials List

The contents of a room, including furnishings and floor, ceiling, and wall materials can be calculated using the **Calculate Materials in Room** tool. See *Calculate Materials in Room on page 955*.

The **Calculate Materials From Selection** edit tool creates a Materials List that calculates the finish materials in a selected room or rooms. Room moldings and wall, floor, and ceiling finish materials are counted, as is subflooring; but doors, windows, and structural materials like framing and other structural materials are not. See *Calculate Materials From Selection on page 955*.

Selecting Rooms

Room definition is established when a room is completely enclosed by walls. You can confirm that a room has room definition by using the **Select Objects** tool to select it. When a fully-enclosed room is selected, its interior space becomes highlighted. See *Selecting Objects on page 183*.

Rooms can be group-selected using the ***Shift*** or ***Ctrl/⌘*** key. They can also be marquee-selected using the **Marquee Select Similar** edit tool. To select rooms of a particular type, us the **Restrictive Selection** option. See *Selecting Multiple Objects on page 186*.

A room can only be selected when the "Rooms" layer is unlocked in the current view. See *Displaying Rooms on page 316* and *Locking Layers on page 153*.



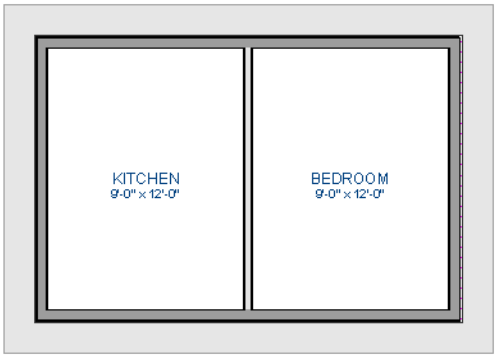
Note: The selection color can be specified in the Preferences dialog. See *Colors Panel on page 95*.

The Exterior Room

Each structure drawn on each floor level of a plan has an Exterior Room, which allows you to control its exterior wall coverings and materials in the Exterior Room Specification dialog. See *Room Specification Dialog on page 328*.

Each Exterior Room's automatic label reports the area of the living space inside its structure. See *Living Area on page 321*.

To select an Exterior Room in plan view, click just outside an exterior wall using the **Select Objects** tool. If a wall or other object becomes selected instead, click the **Select Next Object** edit button or press the ***Tab*** key until the Exterior Room becomes selected. An Exterior Room will also become selected if you click on its label, which is typically located below it in plan view. The Status Bar indicates which object is currently selected. See *The Status Bar on page 24*.



When it is selected, a highlighted band around the plan’s exterior displays.

In 3D Views

Provided that its layer is set to display, a room can be selected in a 3D view by clicking on an empty space on its floor or a wall surface while the **Select Objects** tool is active.

If you select a wall or other object instead of the room, click **Select Next Object** edit button or press the ***Tab*** key until the room becomes selected.

In exterior camera views and overviews, the Exterior Room for each floor can be selected by clicking on the exterior surface of an exterior wall using the **Select Objects** tool and then clicking the **Select Next Object** edit button.

Select Room Before Wall in 3D

By default, when you click on a wall surface in a 3D view, the individual wall will become selected. If you prefer to always select the room first instead of the wall, check **Select Room Before Wall in 3D** in the Preferences dialog. See *Architectural Panel on page 109*.

Editing Rooms

A room's structure and appearance can be modified using its edit tools and specification dialog. Rooms can be selected in all views, and the ways in which they can be edited depend somewhat on the current view. See *Selecting Rooms on page 317*.

In 3D Views

The top and bottom heights of individual walls, the floor and ceiling heights of individual rooms, and the floor and ceiling heights for and entire floor levels can be edited using edit handles in 3D views. Lowered ceilings cannot be edited in 3D. See *3D Views on page 779*. See *The Exterior Room on page 317*.

The default floor and ceiling heights for an entire floor level can be edited by selecting the Exterior Room. See *The Exterior Room on page 317* and *Floor and Room Defaults on page 313*.

To change default ceiling heights in 3D

1. Create a 3D or cross section/elevation view of the exterior of your plan.
2. Click on the exterior surface of a wall, then click the **Select Next Object** edit button.
3. When the Exterior Room is selected in 3D:
   - The wall that you clicked on remains highlighted and an edit handle displays along its top edge.
   - When the wall is on any floor other than Floor 1, an edit handle also displays along its bottom edge.
   - A bounding box displays around each wall of the selected floor level.
   - The Status Bar says "Exterior Room". See *The Status Bar on page 24*.
   - A temporary dimension will display, measuring from the floor's default rough floor to default rough ceiling. See *Temporary Dimensions on page 353*.
4. Click and drag the edit handle on the top wall edge to adjust the default ceiling height, or the edit handle on the bottom edge to adjust the default floor height.
5. As you drag a handle, notice that the entire floor level is affected.
   - The wall that you clicked on remains highlighted and an edit handle displays along its top edge.
   - When the wall is on any floor other than Floor 1, an edit handle also displays along its bottom edge.

- A bounding box displays around each wall of the selected floor level.
- The Status Bar says “Exterior Room”. See *The Status Bar on page 24*.
- A temporary dimension will display, measuring from the floor’s default rough floor to default rough ceiling. See *Temporary Dimensions on page 353*.

6. Click and drag the edit handle on the top wall edge to adjust the default ceiling height, or the edit handle on the bottom edge to adjust the default floor height.

> Note: Any rooms that do not update when the default floor or ceiling height is changed are not using the default values. To use the default values for a specific room, check Default for any of the room height values in its specification dialog. See *General Panel on page 329*.

To adjust room heights in 3D

1. Create a 3D or Cross Section/Elevation view of your plan.
2. Click on the surface of a wall that faces a room to select it, then click the **Select Next Object** edit button.
3. When a room is selected in 3D:
   - The wall that you clicked on remains highlighted and an edit handle displays along its top and bottom edges.
   - The Status Bar says “Room”.
   - A temporary dimension will display in cross section/elevation views, and measure from the room’s rough floor to rough ceiling.
4. Click and drag the edit handle on the top wall edge to adjust the room ceiling height, or the handle on the bottom edge to adjust its floor height. Temporary dimensions display.
5. As you drag a handle, notice that all walls defining that room are affected.

To adjust the height of a wall in 3D

1. Create a 3D or cross section/elevation view of your plan.
2. Click on a surface of the wall to select it.
3. Click and drag the edit handles along its top and bottom surfaces. See *Wall Heights on page 278*.

Room materials such as floor, ceiling, and wall materials can be changed in 3D views using the **Material Painter**. See *Material Painter® Tools on page 758*.

Room moldings can be replaced directly from the library in 3D views, as well. See *Replace From Library on page 730*.

In the Specification Dialog

Floor and ceiling heights, moldings, wall coverings, and materials can all be specified in the Room Specification dialog. See *Room Specification Dialog on page 328*.

Using the Edit Tools

A variety of options are available on the Edit Toolbar for a selected room. See *The Edit Toolbar on page 122*.

Calculate Materials for Room creates a materials list of the contents of the selected room, not including walls. See *Calculate Materials in Room on page 955*.

Turn Ceiling Off removes the flat ceiling from the selected room while **Turn Ceiling On** restores it. See *Vaulted and Cathedral Ceilings on page 327*.

Auto Room Dimensions edit button to generate interior dimensions that measure each wall defining the selected room(s). See *Auto Room Dimensions on page 354*.

Room Labels

A label can display in plan view for any area defined as a room. See *Object Labels on page 394*.

Automatic Room Labels

The format for automatic room labels has two parts:

- The Room Name, which is set in the Room Specification dialog.
- Optional Room Size information, which can be reported as dimensions and/or an area.

Room Names

By default, the Room Names that display in room labels are based on the Room Types assigned in the Room Specification dialog. See *Room Types on page 314*.

You can, however create a custom name for a selected room, also in the Room Specification dialog. See *General Panel on page 329*.

Before creating a custom Room Name, assign the Room Type most similar to the room's actual use. For example, if you wish to name a room "Guest Room", begin by specifying it as a "Bedroom" since these rooms have similar uses.

Room Size

Room Size information can be added to room labels under the automatic Room Name or the manually specified label using any of three different formats:

- **Interior Dimensions** is measured from the inner surfaces of the room walls.
- **Interior Area** is measured from the inner surfaces of all the room's walls.
- **Standard Area** is measured from the center of interior walls that define the room and from either the outside surface or the outside of the Main Layer of exterior walls, depending on the **Living Area to** setting in the General Plan Defaults dialog. It is rounded to the nearest square foot or mm and does not include the area within bay, box and bow windows. See *Exterior and Interior Walls on page 261* and *General Plan and Layout Defaults Dialogs on page 89*.

These three Room Size formats can be specified as in use or not for each Room Type in the Room Type Defaults dialogs, and for individual rooms in the Room Specification dialog. See *Label Panel on page 395*.

In addition, the display of each Room Size format can be controlled per view using the "Rooms, Interior Dimensions", "Rooms, Interior Area", and "Rooms, Standard Area" layers. See *Displaying Rooms on page 316*.

All three area formats are based on the configuration of the walls that define the room and measure the room's size at floor level. The Interior Area room area calculation includes the areas within bay, box or bow windows, while the Standard Area and Interior Dimensions calculations do not.

These automatic area formats are not editable; however, the information they report is also reported by these Name-Value Pairs which you can include in custom macros: %dimensions%, %internal_area%, and %standard_area%. See *Working with Name-Value Pairs*.

Custom Room Labels

If automatic labels do not meet your needs, you can create a custom label in the Room Specification dialog or even suppress the label entirely. See *Label Panel on page 395*.

Room Label Defaults

The initial settings that control the size, font, color and other aspects of room label appearance are controlled in the Room Label Defaults dialog. See *Room Label Defaults on page 314*.

The defaults for the actual contents of room labels can be specified in the Room Type Defaults dialogs for the various Room Types. You can also suppress labels for certain Room Types, as well. See *Room Type Defaults on page 314*.

Displaying Room Labels

The display of room labels in plan view is controlled in the Layer Display Options dialog. Room labels are placed on the "Rooms, Labels" layer and use the Text Style assigned to that layer. See *Layer Display Options Dialog on page 154*.

When automatic room labels are in use, you can display the room size using several formats. See *Room Size*, above.

The display and appearance of room labels can also be controlled on a room by room basis in the Room Specification dialog. By default, room labels are positioned relative to the room's center point and may move if the room is resized. You can, however, specify an absolute location if you prefer. See *Label Panel on page 395*.

Living Area

Each structure on each floor level has an Exterior Room. The automatic label for each Exterior Room reports the interior area that is defined as living space. See *The Exterior Room on page 317*.

By default, interior type rooms are defined as part of the Living Area, while exterior and hybrid type rooms are not. In addition, rooms with a Rough Ceiling height that is less than 48" (1200 mm) are excluded from the Living Area by default. See *Room Types on page 314*.

Regardless of its Room Type, you can specify whether any room is included in the Living Area Calculation in the Room Specification dialog. See *General Panel on page 329*.

A Living Area label is created as soon as a room area is defined by walls and/or railings and is recalculated every time you add, remove, resize, or redefine a room or when you **Rebuild Walls/Floors/Ceilings** . If multiple buildings are created, each will have its own Living Area label. If none of a structure's rooms are included in the Living Area Calculation, however, no Living Area label will display for it.

Each Living Area label can be edited in its specification dialog. Bear in mind, though, that if a new floor is added, any existing Living Area labels will be deleted and replaced. See *Text Specification Dialog on page 322*.

Living Area labels are placed on the "Room Labels" layer. To turn off the display of all Living Area labels in a plan without affecting individual room labels, you can uncheck **Show Living Area Label** in the General Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.

Living Area labels cannot be deleted: if you select one and click the **Delete** edit button, **Show Living Area Label** in the General Plan Defaults dialog will become unchecked.

Living Area vs. Footprint

The Living Area should not be mistaken for the footprint of a house. Only true livable areas are included in the Living Area calculation. By default, exterior and hybrid room types such as Garage, Deck, and Porch are not included. Neither is any room labeled Open Below or Attic. See *Room Types on page 314*.

Regardless of its room type, you can specify whether a room is included in the Living Area calculation in the Room Specification dialog. See *General Panel on page 329*.

Living Area is measured from either the outside surface or the outer surface of the Main Layer of exterior walls. See *Wall Types on page 288*.

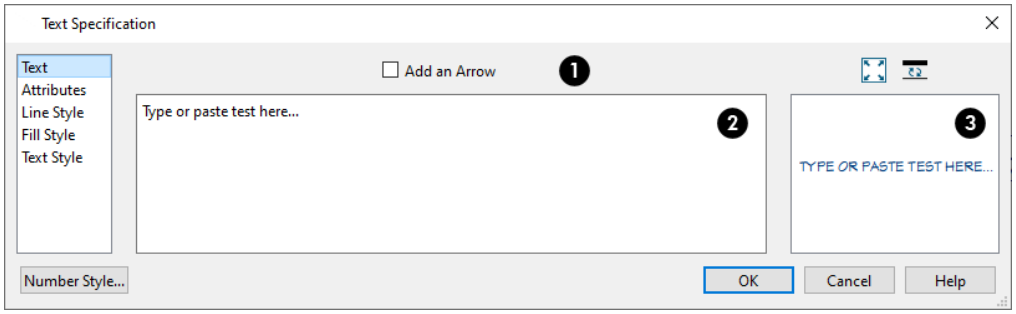
Text Specification Dialog

The Text Specification dialog is available for simple **Text** objects in legacy plan or layout files created in Version 8 or prior. See *Compatibility with Other Programs on page 34*.

> Note: Rich Text objects have a different specification dialog. See *Rich Text Specification Dialog on page 370*.

TEXT PANEL

The settings on the TEXT panel allow you to type the selected Text object's content.



Text Entry

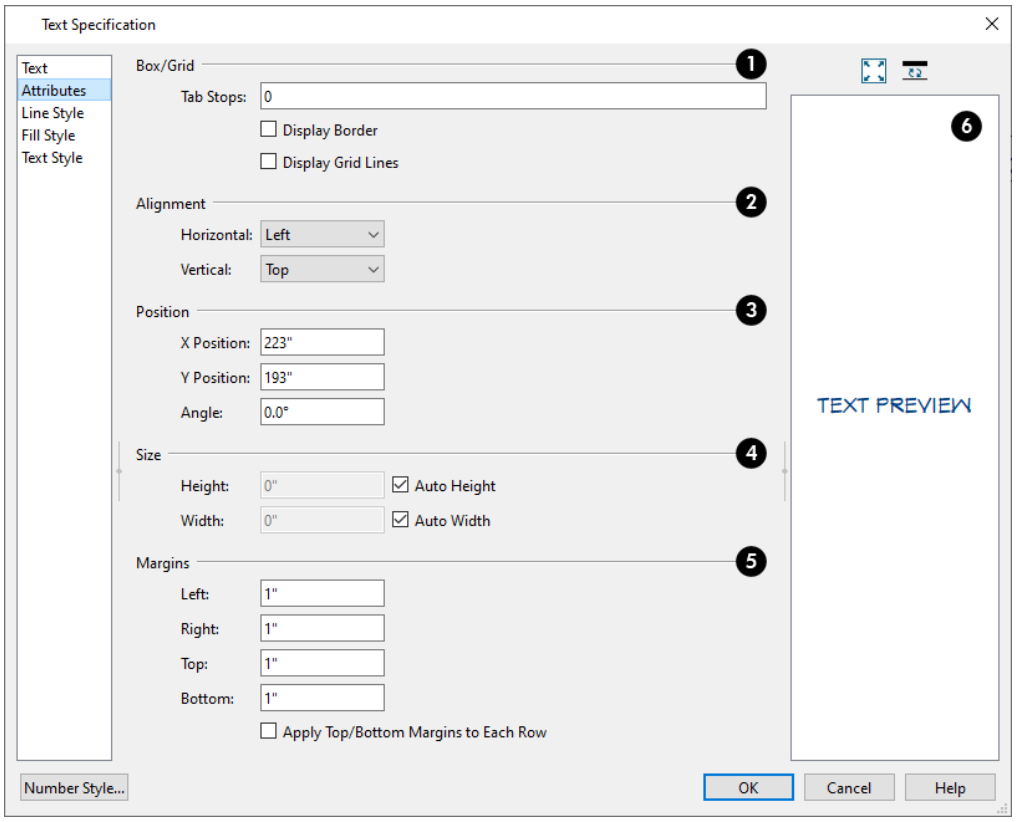
- Enter text in the Text Entry field.
- Depending on the current **Preferences** settings, pressing the ***Enter*** key either forces a new line in the text box or closes the dialog. A carriage return can also be added by typing Shift + Enter or ***Ctrl/⌘ + Enter***. See *Text Panel on page 100*.
- Text automatically wraps to a new line without requiring a hard return.
- Tabs can be added to the text by pressing the ***Tab*** key.

> Two spelling suggestions, Ignore Spelling, and Learn Spelling are available in the contextual menu if you right-click on a selected misspelled word. See *Spell Check on page 380*.

Preview

A preview of the selected Text object displays on the right. See *Dialog Preview Panes on page 21*.

Attributes Panel



1 Box/Grid

- Specify the positions of the selected text object's **Tab Stops**.
- In the text field, specify the number of spaces from the left edge of the text box where each new column begins. The first column always starts at 0 and is not listed.
- Check **Display Border** to turn on the display of a border polyline around the selected object.
- Check **Display Grid Lines** to turn on the display of the grid formed by the specified rows and columns.

2 Alignment

- Specify the **Horizontal** alignment of the text characters within its left and right edges of its columns by choosing an option from the drop-down list.
- Specify the **Vertical** alignment of the text characters within its top and bottom edges by choosing an option from the drop-down list.

3 Origin/Angle

- Specify the **X Position** and **Y Position** of the selected object relative to the origin. See *3D Drafting on page 12*.
- Specify the **Angle** of the selected text object. The default value is 0°.

4 Size

- Specify the **Height** of the selected text object(s) or check **Auto Height** to automatically adjust its height to match its contents.
- Specify the **Width** to of the selected text object(s) or check **Auto Width** to automatically adjust its width to match its contents. When Auto Width is used, text extends in a single line rather than wrap.
- Specifying a Height and/or Width of 0 sizes the text box as small as the text within it allows without turning on the Automatic behavior.

5 Margins

- A default **Left** and **Right** margin is applied. **Top** and **Bottom** margins are measured relative to the line height and may not extend to the text box completely when given a value of 0.
- Check **Apply Top/Bottom Margins to Each Row** to apply the Top and Bottom Margins specified above to each line of text within the selected Text object. When unchecked, the Top and Bottom margins are applied to the Text object as a whole.

6 Preview

In the legacy Text Specification dialog only, a preview of the selected text object displays on the right.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. For more information, see *Line Style Panel on page 234*.

Fill Style Panel

For information about the settings on this panel, see *Fill Style Panel and Dialogs on page 161*.

Text Style Panel

The Text Style panel is available for a number of objects in the program and control the appearance of the selected object's text. See *Text Style Panel on page 392*.

Decks

A Deck room is an exterior-type room that uses deck planking and framing to create a floor platform rather than using a floor finish that spans the entire room area. See *Floor and Ceiling Platform Definitions on page 542*.


To draw a deck, select **Build> Railing and Deck> Straight Deck Railing**, then click and drag to draw a railing. Once room definition is established, the area defined by the railing can be assigned the "Deck" room type.


To create a curved deck railing, instead use the **Curved Deck Railing** tool.


To create a deck without a railing, use the **Straight Deck Edge** or **Curved Deck Edge** tool.


You can also create a regular, polygon-shaped deck using the **Polygon Shaped Deck** tool. See *Polygon Shaped Deck on page 259*.

The default settings for deck planking and framing are set in the Automatic Framing Defaults dialog, while other default attributes are set in the Deck Room Defaults dialog. See *Automatic Framing Defaults Dialog on page 648* and *Room Type Defaults on page 314*.

A room does not have to be defined by Deck Railing to be specified as a "Deck." See *Room Types on page 314*. You can also define a room as a "Deck" in the Room Specification dialog. See *General Panel on page 329*.

By default, decks do not have roofs. If you want a roof over a deck, check **Roof Over This Room** in the Room Specification dialog. See *Structure Panel on page 330*.

To give the roof a visible means of support, you can select the **Post to Beam** option in the Deck Railing Specification dialog. See *Rail Style Panel on page 307*.

Openings in deck railings can be created using **Doorways**  . See *Openings in Railings on page 408*.

The structural materials for a selected deck can be calculated in a Materials List by clicking the **Calculate Structural Materials for Deck**  edit button. Any planks that are cut to a smaller width (ripped) to fit the size of the Deck will be described using their full width. See *The Materials List Tools on page 954*.

Deck Framing and Planking

When a Deck room is created, the floor platform is modeled using joists, beams, posts, and planking as specified in the Automatic Framing Defaults dialog. See *Deck Panel on page 334* and *Deck Support Panel on page 336*.

- If a floor level is present below the one that the Deck room is created on, the framing will be created there. If needed, beams may be generated with posts beneath them, if specified. When terrain is present, the posts will have footings, again, if specified.
- If a floor level is not present below the Deck, framing will be generated on the same floor as the room. Beams may be created but posts will not.
- Deck framing, planking, posts, and beams are placed on their own layers with names that begin with "Framing, Deck": for example, "Framing, Deck Posts". These layers are often turned off in plan view but are typically turned on in 3D views. See *Displaying Framing on page 673*.

> Note: If a room on the floor level below is located directly beneath a Deck, its ceiling will not be supplied by the floor platform of the Deck as it would with other room types, nor will it receive a ceiling finish. To avoid unexpected issues, any room directly under a Deck should have Roof Over This Room and Flat Ceiling Under This Room unchecked in the Room Specification dialog. See *Structure Panel on page 330*.

If standard floor framing is present when a room is specified as a Deck, that framing is deleted and replaced with automatically-generated deck framing. In addition, a Deck's framing will automatically rebuild any time the walls or railings that define it are moved or changes are made to its Structure, Deck, or Deck Support settings.

Editing and Retaining Deck Framing

Once created, the individual planking and framing objects generated for a Deck room can be selected and edited like other framing objects, provided that **Automatically regenerate deck framing** is unchecked on the DECK panel of the Room Specification dialog. See *Editing Framing on page 675*.

If changes are later made to the settings on the DECK and/or DECK SUPPORT panel of the Room Specification dialog and **Automatically regenerate deck framing** is unchecked, however, the deck framing and planking will not rebuild in response.

To rebuild a deck's framing and remove any changes you may have made to automatically-generated deck framing or planks, select the Deck room and click the **Build Deck Framing** edit button. The Build Deck Framing edit tool does not affect any manually-drawn floor joists or trusses in the Deck room's area.

If you delete a Deck room, its deck framing and planking will be automatically deleted, as well. To prevent this from happening, check **Keep deck framing after the deck room is deleted**. See *Deck Panel on page 334*.

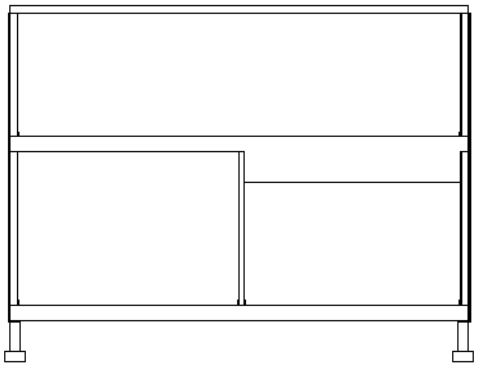
Special Ceilings

By default, the program builds a flat ceiling platform on top the wall plates of a room. More varied and complex ceilings are made using settings in the Room Specification dialog and the **Ceiling Plane** tool. Ceiling Planes are drawn and can be edited much like roof planes. See *Ceiling Planes on page 620*.

Lowered Ceilings

If you require uniform top plate heights and a single floor platform with a uniform height and thickness but different ceiling heights for the rooms below, specify a lowered ceiling. You can define a lowered or dropped ceiling in a room without affecting the top height of the walls by specifying the lowered ceiling framing as a layer in the Ceiling Finish Definition. See *Floor and Ceiling Platforms on page 542*.

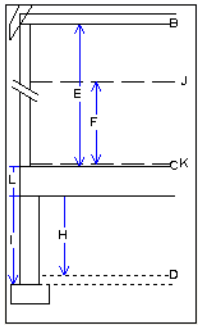
In the following illustration, the default ceiling height for the entire first floor is 120", and the room on the right has a ceiling finish lowered to 96".



When a Soffit is positioned against the ceiling in a room, the bottommost Ceiling Finish layer located directly above it will not generate unless that layer is specified as Framing. See *Placing Soffits on page 749*.

To create a lowered ceiling

1. Select the room in which you would like to specify a lowered ceiling.
2. Click the **Open Object** edit button to open the Room Specification dialog.
3. On the Structure panel, click the **Ceiling Finish** button to open the Ceiling Finish dialog. See *Material Layers Definition Dialogs on page 753*.
   - Check **Frame Lowered Ceiling**.
   - Specify the **Air Gap**, which is the distance between the bottom of the platform above and the top of the lowered ceiling framing.
   - Specify the **Framing Thickness**, which is the depth of the lowered ceiling joists.
4. When you are finished, click OK to close the Ceiling Finish Definition dialog.
5. On the Structure panel, notice that the preview diagram represents the Finished Ceiling height (F).



Vaulted and Cathedral Ceilings

A cathedral ceiling has the same pitch as the roof and is created using the underside of the roof above the room. A vaulted ceiling typically has a different pitch from that of the roof and is often framed using scissor trusses. See *Scissors Trusses on page 692*.

To create a cathedral ceiling

1. Build a roof for your plan. See *Roofs on page 592*.
2. Select the room and open the Room Specification dialog. See *Room Specification Dialog on page 328*.
3. On the STRUCTURE panel, uncheck **Flat Ceiling Over This Room**.

You can also remove or restore a selected room's flat ceiling by clicking the **Turn Off Ceiling** or **Turn On Ceiling** edit button.

By default, cathedrals ceiling use the ceiling material set in the Room Specification dialog. If you require a different material on a given roof plane, uncheck **Use Room Ceiling Finish** in the Roof Plane Specification dialog. See *Options Panel on page 615*.

To create a vaulted ceiling

1. To create a ceiling pitch different from the roof's, select **Build> Roof> Ceiling Plane** and draw pitched Ceiling Planes. See *Ceiling Planes on page 620*.
2. Select each Ceiling Plane and specify its pitch. See *Ceiling Plane Specification Dialog on page 622*.

Tray Ceilings

A tray ceiling is an area within a ceiling that is raised and has either vertical or sloping sides. A standard tray ceiling can be easily created by placing Soffits around the perimeter of the room. An angled tray ceiling can be created using the underside of roof planes above.

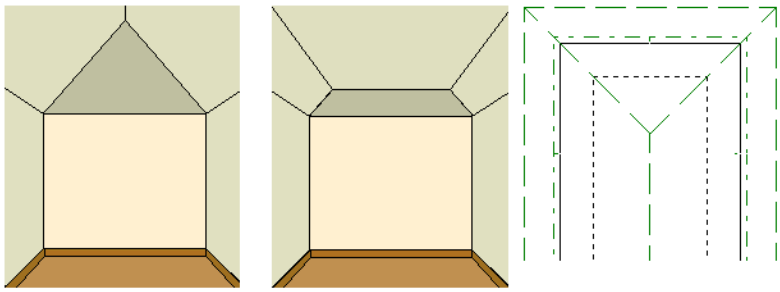
To create an automatic angled tray ceiling

1. In the Room Specification dialog, make sure that **Flat Ceiling Over this Room** is checked, then specify the desired height of the walls as the **Ceiling Height**. See *Structure Panel on page 330*.
2. Make sure that **Auto Rebuild Roofs** is unchecked, then build the roof. See *Build Roof Dialog on page 597*.
3. Change the **Ceiling Height** of the room to the desired height of the flat ceiling surface in its center.

In plan view, dashed lines indicate where the ceiling changes from sloped to flat. These lines are located on the "Ceiling Break Lines" layer in the Display Options dialog. See *Layer Display Options Dialog on page 154*.

If the roof is rebuilt after the ceiling height is adjusted upward, the new roof will be raised to match the new ceiling height and a tray ceiling will not be created.

In the following example, a hip roof is built on 8’ (2400 mm) ceilings. After the roof is built, the Ceiling Height is raised to 10’ (3000 mm). The resulting ceiling follows the roof pitch for 2’ (600 mm), then becomes a flat ceiling.



Cantilever Undersides

Occasionally, a room will cantilever out past an exterior wall. You can specify the surface material of the underside of a cantilever on the Materials panel of the Room Specification dialog. For no material, select “No Material” from the Plan Materials dialog. See *Room Specification Dialog on page 328*.

Room Moldings

Base molding, chair rail, and crown moldings can be applied to rooms on a floor by floor basis in the Floor Defaults dialogs, to different room types in the Room Type Defaults dialogs, and to individual rooms in the Room Specification dialog. See *Floor and Room Defaults on page 313* and *Room Specification Dialog on page 328*.

By default, Home Designer does not automatically add room moldings to exterior or hybrid room types. Baseboards and chair rails are not automatically added to Open Below rooms, either; however, crown molding is if it is specified in the defaults for the room’s floor. See *Room Types on page 314*.

Base molding and chair rail heights are both offset from the floor, while crown molding is offset from the ceiling. For additional information, see *Moldings / Rails Panels on page 702*.

By default, room moldings are suppressed behind cabinets placed against a wall. You can prevent this from occurring by checking **Suppress Adjacent Room Moldings** in the Cabinet Specification dialog. See *General Panel on page 481*.

Suppress Adjacent Room Moldings is also an option in the Architectural Block Specification dialog as well as in the Symbol Object Specification dialog for fixtures and furniture. See *General Panel on page 746* and *Symbol Object Specification Dialogs on page 735*.

Room Moldings can be suppressed along an individual wall by checking **No Room Molding Exterior** and/or **Interior** in the Wall Specification dialog. See *General Panel on page 295*.

Room Specification Dialog

The Room Specification dialog controls the structural characteristics and appearance of a selected room. To open the Room Specification dialog, select one or more rooms and click the **Open Object** edit button. See *Selecting Rooms on page 317*.

Some of the panels in this dialog are also found in the Exterior Room Specification dialog as well as in the Floor, Floor/Ceiling Platform, and Room Type Defaults dialogs. See *Floor and Room Defaults on page 313*.

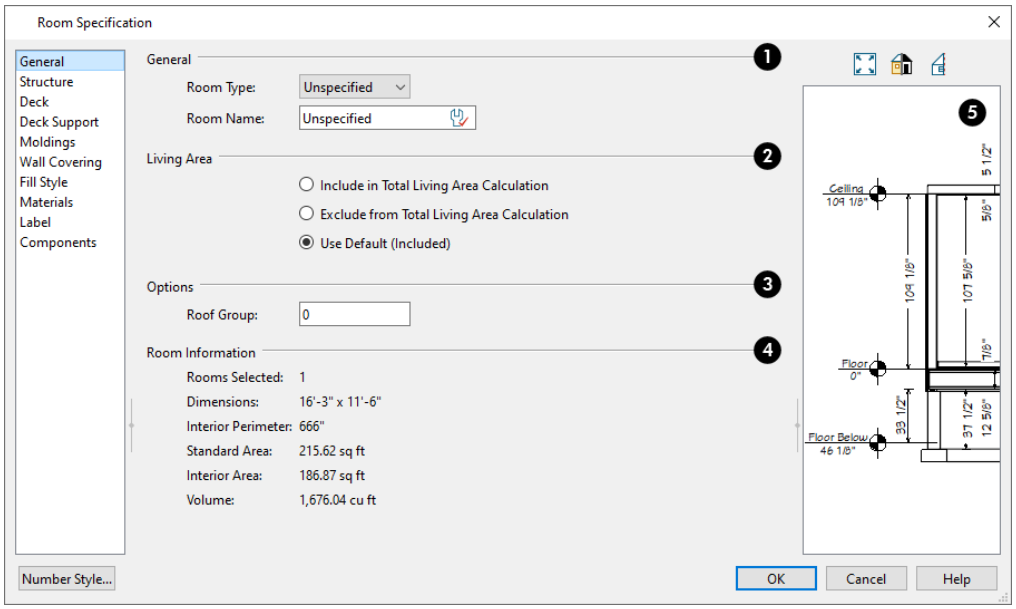
Some values in this dialog are dynamic. A value with Default specified references the Floor Defaults dialog. To return a value to the default, replace the check mark. See *Dynamic Defaults on page 84*.

The settings in this dialog are similar to those in the Floor Defaults dialog, but affect only the selected room See *Floor Level Defaults Dialogs on page 535*.

If multiple rooms are selected, not all of the settings in this dialog will be available. See *Selecting Objects on page 183*.

General Panel

The General panel is also available in the Room Type Defaults dialogs. See *Floor and Room Defaults on page 313*.



1 General

Specify the Room Type and the appearance of the Room Label

- Select the **Room Type** from the drop-down list. Changing the Room Type can affect settings throughout the dialog. See *Room Types on page 314*.
- Click the **Define** button to open the Room Types dialog where you can customize the settings of the selected Room Type.
- In the Room Type Defaults dialog only, the **Function** of the selected room type displays for reference. See *Room Types on page 314*.
- If you wish to use a custom name in the room's label, type the desired **Room Name** in the text field.
- Check **Show Room Label** to display the room label in plan view. See *Room Labels on page 320*. Show Room Label is unchecked automatically if you select "Unspecified" as the Room Type, and checked automatically if you select any other Room Type; however, you can turn this behavior off if you wish in the Preferences dialog. See *Architectural Panel on page 109*.

2 Living Area

See *Living Area on page 321*.

- Select **Include in Total Living Area Calculation** to include the room in the Living Area regardless of its Room Type.
- Select **Exclude from Total Living Area Calculation** exclude the room from the Living Area regardless of its Room Type.
- Select **Use Default for Room Type (Included/Excluded)** to base the selected room's inclusion in the Living Area on its Room Type. The default for the selected Room Type is stated in parentheses.

3 Options

- Specify the **Roof Group** of the selected room. Change this value to control how the program combines the selected room's roof system with that of the rest of the building when automatic roofs are built. This value is nearly always left at zero. Not available in the Room Type Defaults dialogs. See *Roof Groups on page 596*.

4 Room Information

Size information about the selected room or rooms is reported here for reference. Some of this information can also be displayed in room labels. See *Displaying Room Labels on page 321*.

5 Preview

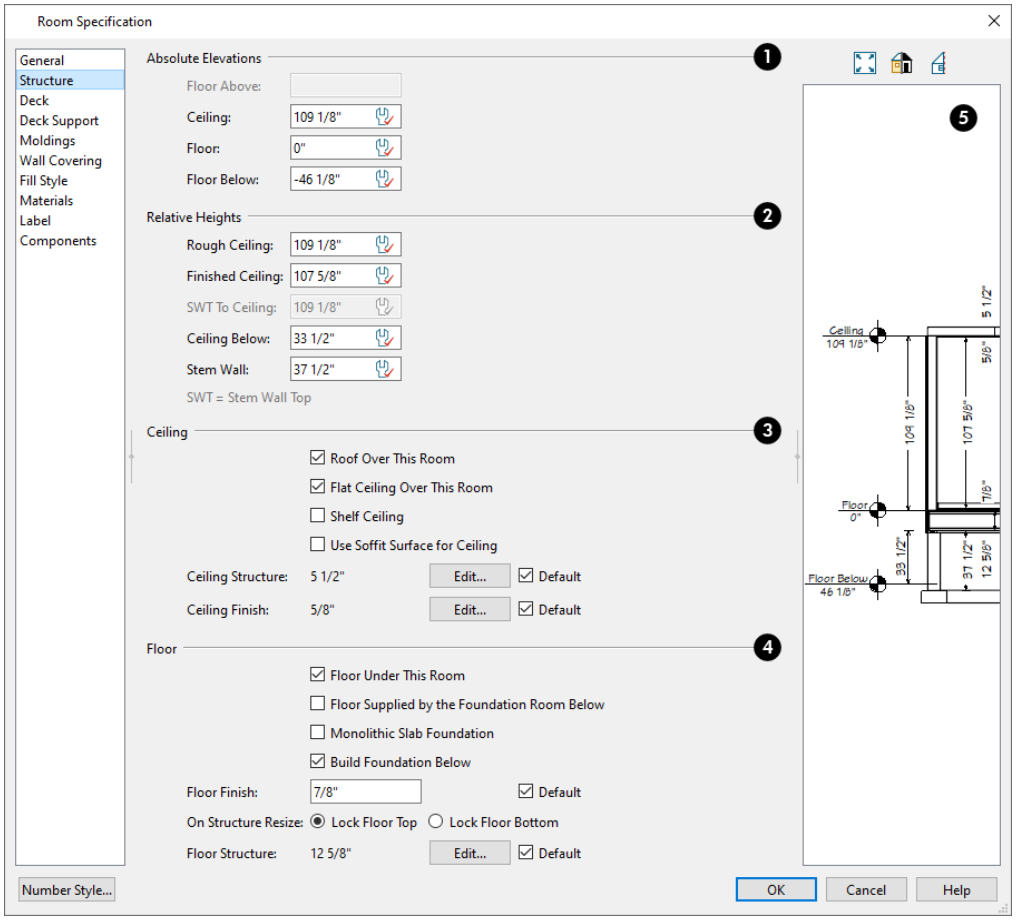
The preview on the right side of this dialog features a cross section diagram showing the relationships between the room's heights and platform thicknesses.

- If present, the floors above and below the selected room are also shown. The left side of the floor above is offset for clarity.
- The height and thickness values shown in this diagram are set on the *Structure Panel on page 330*.

STRUCTURE PANEL

Some settings on the STRUCTURE panel are also found in the Floor, Floor/Ceiling Platform, and Room Type Defaults dialogs.

In the Floor/Ceiling Platform and Room Type Defaults dialogs, only the **Floor** and **Ceiling** settings are available. See *Floor and Room Defaults on page 313*.



Active Defaults icons in the Elevation and Height fields, as well as Default check boxes next to the Structure and Finish fields indicate that these settings are Dynamic Defaults. See *Dynamic Defaults on page 84*.

> Note: Many of the settings on this panel are interdependent. For example, if the Ceiling Structure thickness is modified, the Absolute Ceiling and Rough Ceiling heights will change in response.

1 Absolute Elevations

These height values are measured from zero, which is the default top height of the subflooring on Floor 1. See *Floor and Ceiling Heights on page 539*.

- The **Floor Above** height displays here for reference. If multiple rooms with differing floor heights exist directly above, "No Change" will display.
- Specify the **Ceiling** height of the selected room, as measured from zero to the bottom of the ceiling framing. Not available in the Room or Floor Defaults dialog or if multiple floor heights are specified above the selected room.
- Specify the **Floor** height, as measured from zero to the top of the subfloor.

  Note: The default floor height for Floor 1 is 0. It can be modified in the Room Specification dialog, but not in the Floor 1 Defaults dialog. See *Floor and Room Defaults on page 313*.
- If a room is defined directly beneath the selected room on the floor below, additional settings may be available.
- Specify the **Floor Below** height, which is the subfloor height of the room directly below where you clicked to select the currently selected room. If there are multiple rooms with differing floor heights located below, this value may change depending on where you click.

- If the selected room is directly above a Garage and there is a foundation present, you can specify the **SWT Below** height, which is the top height of the concrete stem walls around the perimeter of the garage.

2 Relative Heights

These height values are measured from surfaces within the selected room or the room below.

- Specify the **Rough Ceiling** height, as measured from the subfloor surface to the bottom of the ceiling framing. Not available if multiple floor heights are specified directly above the selected room.
- Specify the **Finished Ceiling** height, as measured from the finished floor surface to the finished ceiling surface. Not available if multiple floor heights are specified directly above the selected room.
- Specify the distance from the **Stem Wall Top to Ceiling**. Only available when **Floor for this Room is Supplied by the Foundation 'Room' from the Floor Below** is checked, below.
- Specify the **Floor to Stem Wall Top** for rooms with **Floor for this Room is Supplied by the Foundation 'Room' from the Floor Below** specified.
- Specify the **Ceiling Below** height, which is the height of the ceiling of the room below, as measured from that room's subfloor to rough ceiling surfaces. Not available when Auto Rebuild Foundation is enabled or if there is no room below the selected room. See *Rebuilding Foundations on page 522*.
- Specify the **Stem Wall** height, which is measured from the top of the foundation wall footing to the top of the wall. Only available if the selected room or the room below it is defined by foundation walls.

3 Ceiling

Only the Ceiling Finish and Structure settings are available in the Room Type Defaults dialogs.

- If **Roof Over This Room** is checked, a roof automatically generates over the room. If unchecked, no automatic roof generates.

  If this option is unchecked and a roof plane is manually drawn over this room, its structure will be that of an eave rather than a regular roof. In most cases, if a roof is present over a room, this box should be checked. See *Roof Panel on page 654*.
- If **Flat Ceiling Over This Room** is checked, the room has a flat ceiling. If unchecked, the ceiling follows the underside of the roof or manually drawn ceiling planes.
- Check **Shelf Ceiling** to prevent Attic Walls from generating over the interior walls that define the selected room. When unchecked, interior Attic Walls will generate if surrounding rooms have higher ceilings than the selected room. See *Shelf Ceilings on page 541*.
- Check **Use Soffit Surface for Ceiling** to frame the roof over the selected room using the framing defaults for fascia rather than for rafters.
- The **Ceiling Structure** depth displays here for reference.
  - Click the **Edit** button to open the Ceiling Structure Definition dialog and define the layers of materials that form the ceiling platform.
  - Check **Default** to use the Ceiling Structure Definition set in the current floor's Floor Defaults dialog. Not available for rooms on Floor 0. See *Manual Framing Defaults Dialog on page 658*.
- The **Ceiling Finish** depth displays here for reference.
  - Click the **Edit** button to open the Ceiling Finish dialog and define the layers of materials that form the finished ceiling surface.
  - Check **Default** to use the Ceiling Finish set in the current floor's Floor Defaults dialog. See *Ceiling Finish Dialog on page 334*.

- Check the **Default** box to the right of either of the above buttons to restore the default structure and/or finish set in the Room Type Defaults dialog. See *Floor and Room Defaults on page 313*.

4 Floor

In the Room Type Defaults dialogs, the most of the options here are not available.

- When **Floor Under This Room** is checked, the room has a floor platform as specified below.
- If **Floor Supplied by the Foundation Room Below** is checked, the floor platform for this room is a slab located on the floor below and cannot be edited here. This option cannot be edited while Automatically Rebuild Foundation is enabled. See *Foundation Defaults Dialog on page 516*.
- If **Monolithic Slab Foundation** is checked, the current Floor Structure will be replaced by a single 4" (100 mm) layer of concrete with footings that can be seen in camera views only. When a stem wall or grade beam foundation is generated, a slab will be created beneath the selected room.

> If the selected room has a living space located anywhere beneath it, avoid checking Monolithic Slab Foundation.

- When **Build Foundation Below** is checked, the selected room receives a foundation under it when the foundation is automatically built. Uncheck this box to prevent a foundation from being created below the selected room. See *Building a Foundation on page 519*.
- Specify the thickness of the **Floor Finish** layer. Check **Default** to use the default Floor Finish thickness set in the current floor's Floor Defaults dialog.
- Specify which part of the floor platform moves **On Structure Resize**. Select **Lock Floor Top** to keep the top of the floor structure at the same height and raise or lower its bottom when the platform depth is changed. Select **Lock Floor Bottom** to keep the bottom of the floor structure at the same height and raise or lower the top when the depth is changed.
- The **Floor Structure** depth displays here for reference.
  - If the selected room is a Deck, this label will be **Planks, Joists** instead. See *Decks on page 324*
  - Click the **Edit** button to open the Floor Structure Definition dialog and define the layers of materials that form the floor platform.
  - Check **Default** to use the Floor Structure Definition set in the current floor level's Floor Defaults dialog. See *Material Layers Definition Dialogs on page 753*.
  - Check the **Default** box to the right of either button to restore the default structure and/or finish. See *Floor and Ceiling Platforms on page 313*.

> Note: The default floor and ceiling platform and finish definitions for rooms are set in the current floor's Floor Defaults dialog. In the Floor Defaults dialog, the defaults are drawn from the Floor/Ceiling Platform Defaults dialog. See *Floor and Room Defaults on page 313*.

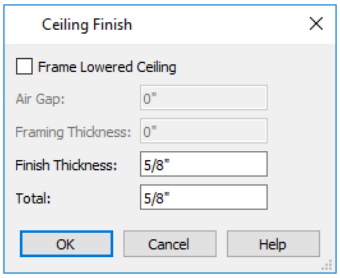
5 Preview

The preview on the right side of this dialog features a cross section diagram showing the relationships between the room's heights and platform thicknesses.

- If present, the floors above and below the selected room are also shown. The left side of the floor above is offset for clarity.
- The callout or dimension line associated with selected height or thickness value will be highlighted in the preview, as will any height or thickness value that you move your mouse point over.
- The font used by the callouts and dimensions is set in the Dimension Defaults dialog, while the unit of measurement is specified in the Dialog Number/Angle Style dialog. See *Dimension Defaults Dialog on page 341* and *Dialog Number/Angle Style Dialog on page 119*.

- What appears in both the diagram and in the settings on the STRUCTURE panel may be affected by the location where you clicked to select the room. For example:
- If the selected room is located above two rooms with different structural settings, the position of the pointer relative to these two lower rooms determines which of them displays as the floor below.
- If the selected room is located below two rooms with different floor heights, its absolute and relative ceiling height settings will be disabled.

CEILING FINISH DIALOG

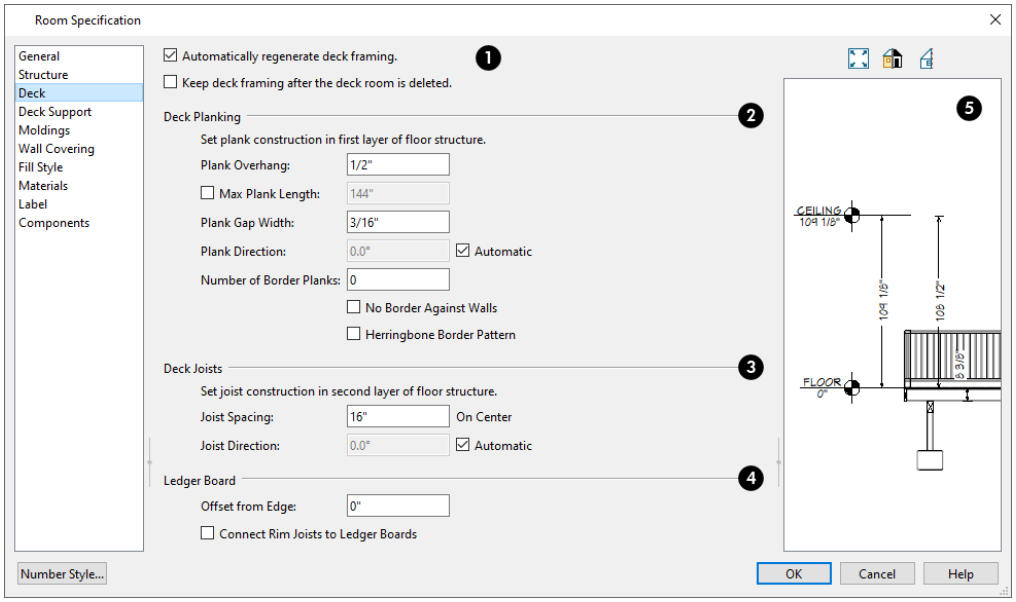


- Check **Frame Lowered Ceiling** to enable the two settings that follow.
- Specify the **Air Gap**, which is the vertical distance between the lowered ceiling framing and the framing of the platform above it.
- Specify the **Framing Thickness**, which is the vertical depth of the framing of the lowered ceiling.
- Specify the **Finish Thickness**, which is the vertical depth of the ceiling finish material.
- The **Total** thickness of the Ceiling Finish Definition displays for reference.

DECK PANEL

The options on the DECK panel are only available for rooms designated as Decks, and control how deck planking and joists are generated. See *Editing and Retaining Deck Framing on page 325*.

Most of the settings on this panel are also found in the Automatic Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.



1 Automatic Deck Framing

Both of these settings are unchecked by default and are not available in the Automatic Framing Defaults dialog.

- Check **Automatically regenerate deck framing** to generate planking and support framing for the deck that updates as changes are made to the deck. See *Decks on page 324*.
- Check **Keep deck framing after the deck room is deleted** to retain the automatically generated framing and planking when the selected deck room is deleted. When this box is unchecked, the framing is automatically removed if the room is deleted.

2 Deck Planking

Deck planking should be specified in the top layer of the room's Floor Structure Definition.

- Specify the **Plank Overhang**, which is how far planks extend past the rim joists.

> Note: Planking width and thickness are specified in the Floor Structure Definition dialog. See *Floor and Ceiling Platform Definitions on page 542*.

- Check **Max Plank Length**, then specify the maximum allowable length for the selected Deck's planks. When unchecked, planks run the full length of the Deck room.
- Specify the **Plank Gap Width**, which is the distance between individual planks.
- If you want to enter a **Plank Direction**, remove the check mark from **Automatic**. Enter the direction as degrees.
- Specify the **Number of Border Planks**. These are planks that follow the outside edge of the deck and may not be parallel with the rest of the planking. Border planks generate on each edge of the deck provided that the length of an inside edge is greater than 0”. They do not generate on curved deck edges.
- Check **No Border Against Walls** to prevent border planking from being generated along any walls defining the deck.
- Check **Herringbone** to produce a herringbone pattern where the border planks meet.
- Check **Treated** to specify that the deck planking is counted as treated in the Materials List.

3 Deck Joists

Joist width and depth are specified in the Floor Structure Definition dialog. See *Floor and Ceiling Platform Definitions on page 542*.

- Specify the **Spacing** between joists, as measured from joist center to joist center.
- If you want to specify joist **Direction**, uncheck **Automatic** and enter the direction in degrees. When checked, joists are run in the direction that results in the shortest spans.

4 Ledger Board

Ledger boards are horizontal boards attached to the side of a structure that deck joists are fastened to.

- Specify the **Offset from Edge**, which is the ledger board's distance from the attachment wall layer, specified for each Wall Type. See *Wall Type Definitions Dialog on page 290*.
- When **Connect Rim Joists to Ledger Boards** is unchecked, the Deck platform's rim joist ends attach to the Ledge Board, leaving an exposed gap if there is an Offset from Edge specified. Check this box to connect the Deck rim joists to the attachment wall layer set in the Wall Type Definitions dialog.

5 Preview

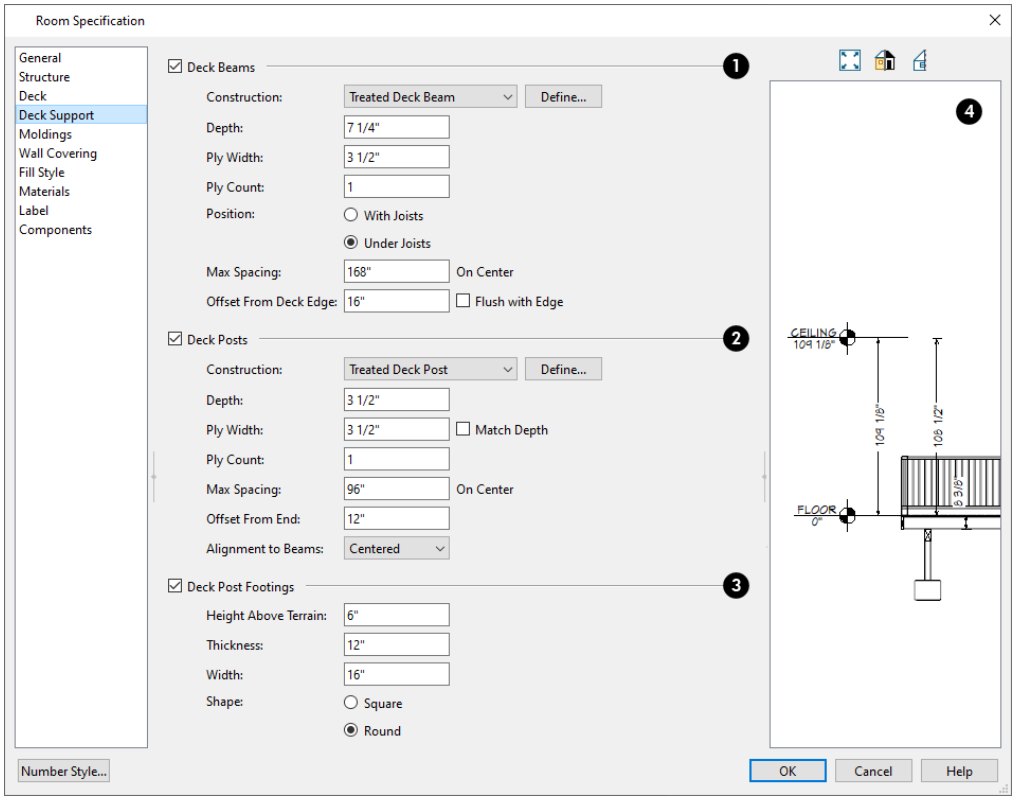
The preview on the right side of this dialog features a cross section diagram showing the relationships between the room's heights and platform thicknesses.

- If present, the floors above and below the selected room are also shown. The left side of the floor above is offset for clarity.
- The height and thickness values shown in this diagram are set on the *Structure Panel on page 330*.

Deck Support Panel

The options on the Deck Support panel are only available for Deck rooms and control how deck beams and posts are generated. See *Editing and Retaining Deck Framing on page 325*.

The settings on this panel are also found on panel of the same name in the Automatic Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.



1 Deck Beams

Specify the configuration of the beams under the selected Deck room.

- Uncheck **Deck Beams** to prevent the automatic generation of support beams under the selected Deck room.
- Select the **Construction** of the selected deck's beams by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Specify the size and count of the board or boards that make up the selected Deck's beams by default:
  - Specify the **Depth**, which is the vertical measurement of the beams.
  - Specify the **Ply Width**, which controls the side-to-side measurement of the beams. When the Ply Count is 1, this value is the width of the entire beam. When the Ply Count is two or more, this is the width of each board that makes up the beam.
  - The **Total Width** is reported to the right for reference.
  - Specify the **Ply Count**, which is the number of boards sistered together to form a beam. A value of one produces beams composed of a single board.
- Specify the **Position** of the beams:
  - **With Joists** positions the top edge of each beams at the same height as the tops of the joists.
  - **Under Joists** positions the beams directly under the bottom edges of the joists.
- Specify the **Max Spacing** of beams, measured from center to center. Beams may be positioned closer than this value, but not further apart.
- Specify the **Offset from Deck Edge**, which is the distance from each deck edge and the nearest beam that is parallel to that edge.

- This value is measured from the center line of the beam.
- Check **Flush With Edge** to align the interior edge of the beam with the deck edge.

2 Deck Posts

Specify the configuration of the posts under the selected Deck room.

- Uncheck **Deck Posts** to prevent the automatic generation of support posts under the selected Deck room.
- Select the **Construction** of the Deck's posts by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Specify the size of the board or boards that make up the Deck's posts by default:
  - Specify the **Depth**, which is the front-to-back measurement of the posts.
  - Specify the **Ply Width**, which controls the side-to-side measurement of the Deck's posts. When the Ply Count is 1, this value is the width of the entire post. When the Ply Count is two or more, this is the width of each board that makes up the posts.
  - The **Total Width** is reported to the right for reference.
  - Check **Match Depth** to ensure that each Deck post ply remains square-shaped whenever they are resized. This option also ensures single-ply Round Posts remain circular when resized.
  - Specify the **Ply Count**, which is the number of boards sistered together to form a post. A value of one produces posts composed of a single board.
- Specify the **Max Spacing** of the Deck's posts, measured from center to center. Posts may be positioned closer together than this value, but not further apart.
- Specify the **Offset from End**, which is the distance from the end of each beam to the center of the nearest post. Deck posts cannot be generated past the end of a deck beam, so any value less than half the posts' Width 2 value will align end posts with the end of the beam.
- Specify the posts' **Alignment to Beams**: Exterior, Centered, or Interior. This setting only has an effect when the default Deck Beam or sistered beams' Width is greater than the posts' default Dimension.

3 Deck Post Footings

These settings are not available if Deck Posts is unchecked, above.

- Uncheck **Deck Post Footings** to prevent the automatic generation of footings under the selected Deck room's posts.
- Specify the footings' **Height Above Terrain**. See *Foundations and the Terrain on page 525*.
- Specify the footings' **Thickness** and **Width**.
- Specify whether the footings are **Square** or **Round** in shape.

4 Preview

The preview on the right side of this dialog features a cross section diagram showing the relationships between the room's heights and platform thicknesses.

- If present, the floors above and below the selected room are also shown. The left side of the floor above is offset for clarity.
- The height and thickness values shown in this diagram are set on the *Structure Panel on page 330*.

Moldings Panel

Chair rail, crown and base moldings can be assigned to one or more selected rooms on the Moldings panel. Moldings are placed on a room's wall surfaces and continue around the surface of any soffit that is attached to the wall at the molding

height.

The settings on this panel are also similar to those found in the Floor Defaults dialog, but affect only the selected room instead of all rooms on the current floor.

The settings on this panel are similar to those found in other specification dialogs throughout the program. See *Moldings / Rails Panels on page 702*.

Wall Covering Panel

The settings on the Wall Covering panel of the Room Specification dialog are the same as those on the same panel of the Wall Specification dialog. When a wall covering is assigned in the Room Specification dialog, it is applied to all walls in the selected room only. See *Wall Covering Panel on page 305*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected room in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected room in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Fill Style Panel

Labels for room display when the “Rooms, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Dimensions

Chapter 14

Home Designer provides a variety of dimensioning tools for measuring walls, doors, windows, and many other objects in various 2D and 3D views.

Dimensions can be used to accurately position objects relative to other objects. In addition, dimension lines and extensions can be selected and customized.

Dimension Preferences and Defaults

There are a number of defaults settings as well as options in the Preferences dialog that affect dimensions.

Preferences

All plan and layout files save measurements in either U.S. or metric units. The type of unit used is determined when the file is first created and cannot be changed later. See *Creating a New Plan or Layout on page 46*.

You can specify either metric files or those using U.S. Units to be used as the templates whenever you open a new, blank plan or layout file in the Preferences dialog. See *New Plans Panel on page 106*.

You can also specify the minimum on-screen display size for dimension numbers in the Preferences dialog. See *Appearance Panel on page 93*.

When Dimension Line Separation Snaps is checked in the Preferences dialog, dimension lines can snap to the Line Separation and 1st Line Offset locations set in the Dimension Defaults dialog. See *Snap Properties Panel on page 114*.

Default Settings

Select **Edit> Default Settings** to open the Default Settings dialog, then select "Dimension" and click the Edit button.

The Dimension Defaults dialog can also be accessed by double-clicking the **Dimension Tools** parent button. See *Dimension Defaults Dialog on page 341*.

When **Angle Snaps** are enabled, dimensions can be drawn at the **Allowed Angles** set in the General Plan Defaults dialog. Regardless of their angles, however, dimensions will only locate objects that are parallel to one another. See *General Plan and Layout Defaults Dialogs on page 89*.

When a Marker is created in association with a manually drawn dimension, the Marker will inherit its initial settings from the Marker Defaults dialog. See *Markers on page 386*.

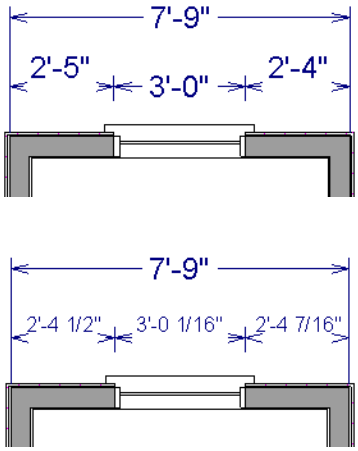
Dimensions and Accuracy

When a model is drawn with greater accuracy than dimensions are set to report, rounding may be required. The **Rounding Method** in the Dimension Defaults dialog controls how Home Designer handles dimensions that require rounding. See *General Panel on page 342*.

The two Rounding Methods are:

- Grid Rounding, which always add up dimension runs correctly, but individual distances may be inaccurate in order to achieve this.
- Distance Rounding, which shows the distance between equally spaced objects correctly, but dimension runs are not always accurate when added.

Dimensioning the same object using these two rounding methods will obtain the same results as long as objects are placed with the same accuracy as the precision of the dimension lines. If an object is placed using more precision than the dimensions, results may vary between methods.



A good approach to accurate dimensioning is to turn on the accuracy indicators and position objects so that the inaccuracy indicators do not display.

Dimension Defaults Dialog

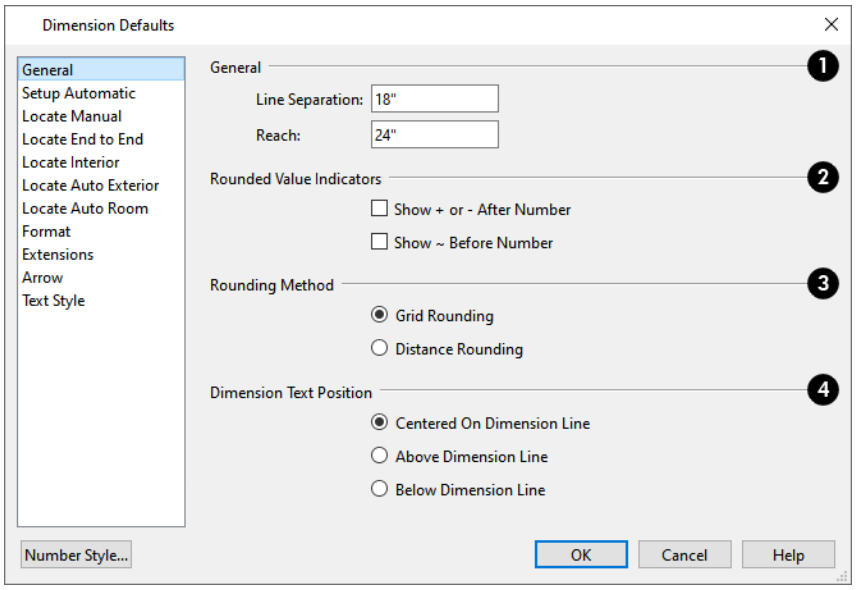
Select **Edit> Default Settings**, expand the "Dimension" category, select "Dimensions", and click the **Edit** button to open the Dimension Defaults dialog.

You can also open this dialog by double-clicking the **Dimension Tools** parent button. If you double-click any of the Dimension Tools child buttons, the LOCATE panel associated with that tool will be active.

You can also open this dialog by clicking the **Temporary Dimension Defaults** button, which you can add to your toolbars. See *To add a button to a toolbar on page 124*.

The settings in this dialog are dynamic defaults, which means that any changes made here may affect existing dimension lines in the drawing that are using default values. See *Dynamic Defaults on page 84*.

General Panel



1 General

- Specify the **Baseline Line Separation**, which is the distance between Baseline Dimension lines in plan inches (mm). This value should always be greater than the Character Height. See *Dimension Defaults Dialog on page 341*.
  - In a Layout, you can instead specify the **Snap Line Separation**, which is the distance from the marked object that a dimension line snaps when it is moved.
- Specify how far manually drawn dimension lines **Reach** to locate walls and/or objects specified on the LOCATE panels. The default is 24” (450 mm) in plan files and 1” (10 mm) in layout. See *Locate Manual Panel on page 344*.

2 Rounded Value Indicators

Rounded Value Indicators can display when the degree of accuracy in use is not sufficient to describe a dimension’s true value.

- Check **+ or - After Number** to indicate that the actual dimension value is higher or lower than the value shown.
- Check **~ Before Number** to indicate dimension values that are not accurate with the ~ symbol.

3 Rounding Method

- **Grid Rounding** ensures that the sum of the parts of a dimension line add up to the whole distance. To produce this result, some sections may not be rounded accurately. This is the recommended rounding method and is selected by default.
- **Distance Rounding** addresses each section of a dimension line individually, which could result in the sum of these sections not being equal to the whole. This option is available for legacy purposes only and is not recommended. See *Dimensions and Accuracy on page 340*.

> To avoid the appearance of inaccuracy that rounding may cause, draw with Grid Snaps enabled and place objects in your plan using the same accuracy as your dimensions. See *Grid Snaps on page 144*.

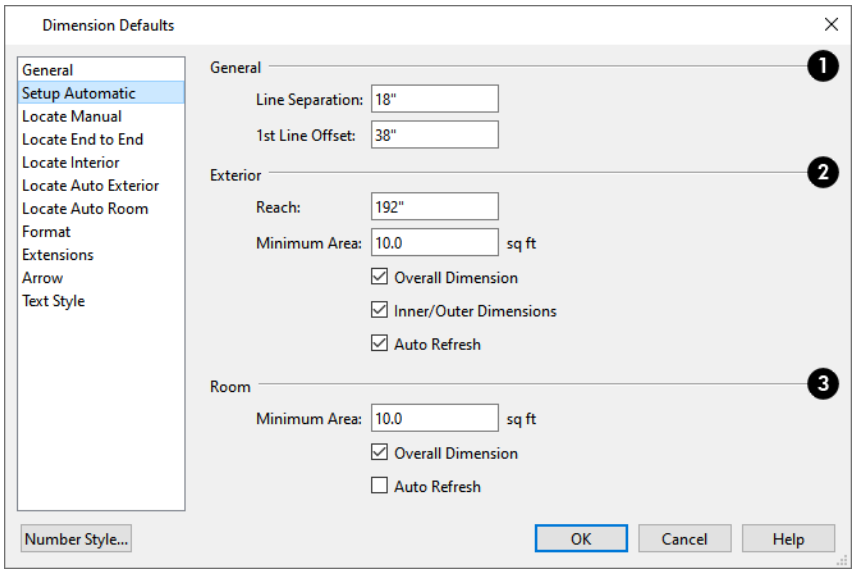
4 Dimension Text Position

Specify the location of dimension numbers relative to the dimension line.

- **Centered on Dimension Line** centers the primary dimension numbers on the dimension line. If two formats are used, the primary format is placed above the line and the secondary format, beneath it.
- Position dimension numbers **Above Dimension Line**.
- Position dimension numbers **Below Dimension Line**.

Setup Automatic Panel

The settings on the Setup Automatic panel affect how Auto Exterior and Auto Room Dimensions are created.



1 General

- Specify the **Line Separation**, which is the distance between Auto Exterior Dimension lines in plan inches (mm). This value should always be greater than the Character Height used by the label. If two formats are used, it should be at least twice the Character Height. See *Dimension Labels on page 354*.
- Specify the **First Line Offset**, which is the distance between each wall and the nearest Automatic Dimension line that measures its length in plan inches (mm).
- Specify how dimensions **Offset from Wall**, which is where the First Line Offset is measured from:
  - Select **Center** to position the First Line Offset relative to the wall's center line.
  - Select **Dimension Layer** to position the First Line Offset relative to the nearest edge of the wall's Dimension Layer.
  - Select **Surface** to position the First Line Offset relative to the wall's nearest surface.

2 Exterior

These settings control how Auto Exterior Dimensions generate.

- Specify how far Auto Exterior Dimensions **Reach** to locate objects set back from exterior walls. If exterior walls are set back further than this distance, additional dimension lines are produced to locate the set-back walls.
- Specify the **Minimum Area**, which is the minimum area defined as a room needed for Auto Exterior Dimensions to generate.
- When **Overall Dimension** is checked, a dimension line reporting the overall length of each side of the structure is created.

- When **Inner Dimension** is checked, up to three rows of Auto Exterior Dimensions per exterior wall are generated. Uncheck this box to suppress these inner dimension strings.
- Check **Auto Refresh** to delete and replace Auto Exterior Dimensions whenever a change is made to the model that affects them.

3 Room

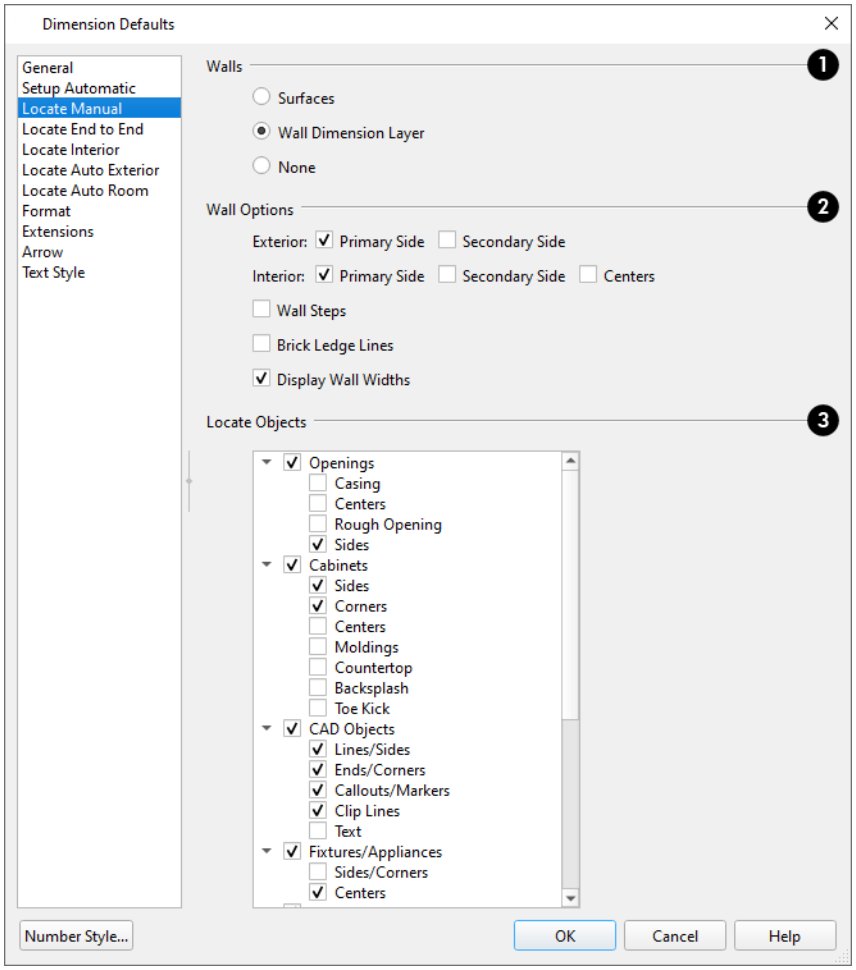
These settings control how Auto Room Dimensions generate.

- Specify the **Minimum Area**, which is the minimum area defined as a room needed for Auto Room Dimensions to generate.
- When **Overall Dimension** is checked and a room's Auto Room Dimensions locate objects in addition to its walls, an overall dimension for each wall is also generated.
- Check **Auto Refresh** to delete and replace Room Dimensions whenever a change is made to the model that affects them.

Locate Manual Panel

The settings on the MANUAL panel specify how and whether or not **Manual Dimensions** locate specific types of objects.

Changes made on this panel only affect new dimension lines as they are drawn, not those already drawn. Once created, a dimension line's extensions can be edited so that they locate objects in ways not specified here. See *Editing Extension Lines on page 357*.



In the Dimension Defaults dialog for a layout file, only the **CAD Objects** settings on this panel is available.

1 Walls

Specify the marked location in wall assemblies that the Extension Lines of Manual Dimension lines snap to by default. See *The Dimension Layer on page 289*.

- Select **Surfaces** to locate exterior and interior walls at their surfaces.
- Select **Wall Dimension Layer** to locate walls at their Dimension Layer. A wall's Dimension Layer is specified in its Wall Type. See *Wall Type Definitions Dialog on page 290*.
- Select **None** to prevent Manual and End to End Dimensions from locating walls.

2 Wall Options

These settings control how or whether exterior and interior walls are located by Manual Dimensions. See *Exterior and Interior Walls on page 261* and *Primary and Secondary Sides on page 275*.

- Specify how **Exterior** walls are located:
  - Check **Primary Side** to have dimensions locate the exterior side of exterior walls.
  - Check **Secondary Side** to have dimensions locate the interior side of exterior walls.
  - When neither box is checked, exterior walls are not located by Manual Dimensions.

- Specify how **Interior** walls are located:
  - Check **Primary Side** to have dimensions locate the interior side of interior walls. For Auto Exterior Dimensions, this option locates the bottom of horizontal interior walls and the left side of vertical interior walls
  - Check **Secondary Side** to have dimensions locate the exterior side of interior walls. For Auto Exterior Dimensions, this option locates the top of horizontal walls and the right side of vertical walls.
  - Check **Centers** to have dimensions locate the centers of interior walls.
  - When neither box is checked, interior walls are not located by Manual Dimensions.
- Check **Wall Steps** to have dimensions locate steps in walls in elevation views. Steps in foundation walls in plan views are also located. See *Stepped Walls and Footings on page 286*.
- Check **Brick Ledge Lines** to have dimensions locate brick ledge in plan views. Dimensions that locate brick ledge lines cannot be used to move walls. See *Brick Ledges on page 262*.
- When **Display Wall Widths** is checked, the thicknesses of any walls that a dimension line crosses will be measured. Uncheck this box to suppress the segments dimension line segments that report these measurements.

> Note: Walls specified as No Locate will not be located by some dimension tools. See *No Locate on page 276*.

3 Locate Objects

- Each category corresponds to a type of object in Home Designer. Under each category are locations, or marks, on these objects that dimensions can locate.
- Check the box beside an option to have dimension lines locate that mark on objects of that type as dimensions are drawn or generated.
- Uncheck the box beside a category to not locate objects in that category: any checked boxes in that category remain checked, but disabled. Check the box beside a category to locate the selected marks on objects of that type.

	Cabinets
	Cabinets can be moved and resized in plan and cross section/elevation views. See *Using Dimensions on page 475*.
Sides	The sides do not have to be perpendicular to the dimension line
Corners	Angled cabinets are dimensioned to their corners at a right angle to the dimension line. A cabinet's front or sides do not need to be perpendicular or parallel to the dimension line for its corners to be located.
Centers	A cabinet's front or sides do not need to be perpendicular or parallel to the dimension line for its center to be located.
Moldings	In elevation views only, locate the tops and bottoms of cabinet moldings.
Countertop	In plan view, a cabinet's front or sides must be perpendicular or parallel to the dimension line for its countertop to be located. In elevation views, only the top and bottom edges can be located when the dimension is being drawn.
Backsplash	In elevation views only, locate the tops and bottoms of backsplash edges.
Toe Kick	In elevation views only, locate the tops and bottoms of toe kicks.
	Fixtures/Appliances
	These options affect how dimension lines locate appliances and other fixtures such as hardware, millwork, sprinklers, and Geometric Shapes. In cross section/elevation views, dimensions can only locate furniture at points where a surface is present.

Sides/Corners	For sides to be located, they must be perpendicular to the dimension line
Centers	An object's front or sides do not need to be perpendicular or parallel to the dimension line for its center to be located.
	Furniture
	These options affect how dimension lines locate furniture and furnishing accessories. See *Stand-Alone Objects on page 728*.
Sides/Corners	For sides to be located, they must be perpendicular to the dimension line.
Centers	An object's front or sides do not need to be perpendicular or parallel to the dimension line for its center to be located.
	Openings
	Specify how dimensions locate doors and windows. Openings in walls specified as No Locate will not be located by Auto Exterior Dimensions. See *Doors on page 397*, *Windows on page 426*, and *No Locate on page 276*.
Casing	Locate the outer edges of both sides of wall openings' casing. Because interior and exterior casing often have different widths, an opening may have different interior and exterior dimensions when this option is selected.
Centers	Locate the centers of wall openings.
Rough Opening	Locate both sides of the rough opening of doors and windows.
Sides	Locate the both sides of wall openings. This option locates the nominal width - not the rough opening.
	CAD Objects
	These options control how dimension lines locate 2D CAD objects as well as CAD-based objects such as slabs and stairs. See *CAD Objects on page 224*.
Line/Sides	For a line/side to be located, it must be perpendicular to the dimension line.
Ends/Corners	Locate all ends/corners of polylines, no matter what angle they are in relation to the dimension line.
Callouts/Markers	See *Callouts on page 382* and *Markers on page 386*.
Clip Lines	See *Side Clipping on page 801*.
Text	See *The Text Tools on page 368*.
	Framing
	See *Using Dimensions on page 676*.
Single Side	Locate one side of framing objects.
Both Sides	Locate both sides of framing objects.
Centers	Locate the centers of framing objects.
	Electrical
	Electrical objects can be moved using dimensions, but not resized. See *Editing Electrical Objects on page 506*.
Lights	Locate the centers of Light fixture symbols.
Outlets	Locate the centers of Outlets.

Switches	Locate the centers of Switches.
Other	Locate the centers of other types of Electrical symbols such jacks from the Library.
	Other Objects
	Electrical and image objects can be moved using dimensions, but not resized.
Architectural Blocks	See *Editing Architectural Blocks on page 745*.
Plants and Images	See *Using Dimensions on page 853*.
Newel Centers	Locate the centers of newel posts on railing walls and fencing. See *Measuring Walls on page 274*.
Newel Sides	Locate the sides of newel posts on railing walls and fencing.

Locate End to End Panel

The settings on the Locate End to End panel are the same as those on the Locate Manual panel, but control how objects are located when an **End to End Dimension** or **Point to Point Dimension** is drawn. See *End-to-End Dimensions on page 352* and *Locate Manual Panel on page 344*.

Locate Interior Panel

The settings on the Locate Interior panel are also found on the Locate Manual panel, but control how objects are located when an **Interior Dimension** is drawn. See *Interior Dimensions on page 352* and *Locate Manual Panel on page 344*.

Locate Auto Exterior Panel

The settings on the Locate Auto Exterior panel are also found on the Locate Manual panel, but control how objects are located when **Auto Exterior Dimensions** are generated. See *Auto Exterior Dimensions on page 353* and *Locate Manual Panel on page 344*.

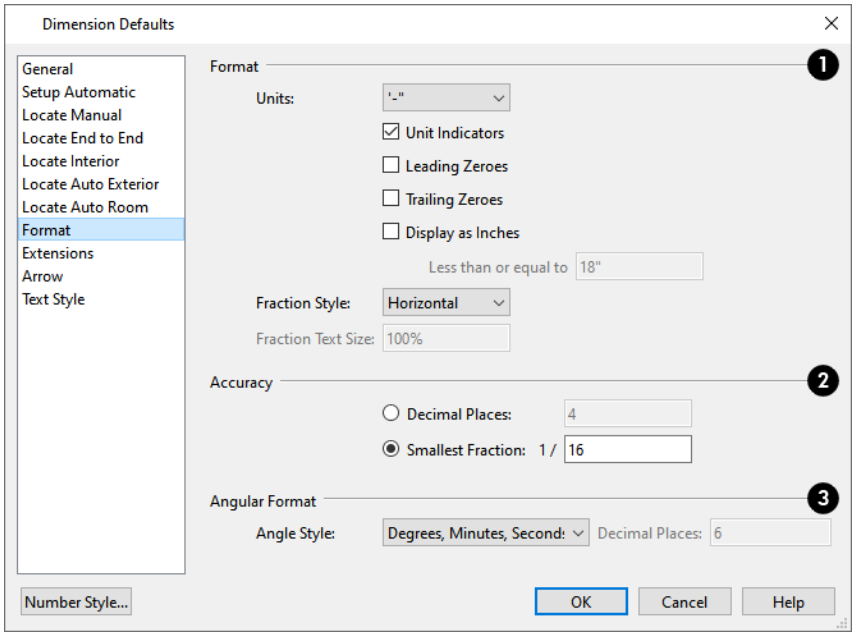
Locate Auto Room Panel

The settings on the Locate Auto Room panel are also found on the Locate Manual panel, but control how objects are located when **Auto Room Dimensions** are generated. See *Auto Room Dimensions on page 354* and *Locate Manual Panel on page 344*.

Format Panel

The settings on the Format panel allow you to specify the units, position, and degree of accuracy of dimension numbers. The settings on this panel also control the format of object length numbers in the Status Bar. See *The Status Bar on page 24*.

These settings are the same as those on the Format panel of the Dimension Line Specification dialog and the Dimension Format panel of the Room Label Defaults dialog. See *Dimension Line Specification Dialog on page 362* and *Room Label Defaults on page 314*.



1 Format

Specify the numbering **Format** for dimension numbers.

- Select the **Units** of measurement to be used by dimensions from the drop-down list. The choices in this list correspond to all units measuring length specified in the Preferences dialog. See *Unit Conversions Panel on page 106*.

> Note: Although you can select U.S. or metric units in any plan or layout, it is best to use the same unit type that the file uses to save measurements. See *Units of Measurement on page 46*.

- Check **Unit Indicators** to display the unit of measurement along with the dimension number.
- Check **Leading Zeros** to include the zero before a decimal less than 1 or to display 0’ or 0” when the ft-in or ’-” unit formats is used.
- Check **Trailing Zeros** to display trailing zeros at the end of decimal values. When the ft-in or ’-” unit format is used and fractional inches are specified, 0” will be included.
- Check **Display as Inches** to display the dimension number of sufficiently short segments in inches rather than the Unit selected above. This option is only available when the specified Unit is a form of either feet or yards, or a format that includes feet.
- The **Less than or equal to** value specifies how short a segment must be before its number uses inches rather than the specified Unit.
- Select a **Fraction Style** from the drop-down list. This option affects the angle of the fraction's vinculum line.
- Specify the desired **Fraction Text Size** as a percentage of a selected dimension line's Number Height. Only available when either "Diagonal" or "Vertical" are selected as the Fraction Style.

2 Accuracy

Specify the degree of accuracy used by dimension numbers.

- Select the **Decimal Places** radio button for dimension numbers in decimal format. In the text field, specify the number of decimal places to use, from 0 to 20. If 0 is used, no decimal places are used.

- Select the **Smallest Fraction** radio button for dimension numbers using whole numbers and fractions. In the text field, specify the largest denominator to use, from 1 to 16. If 1 is entered, whole numbers are used.

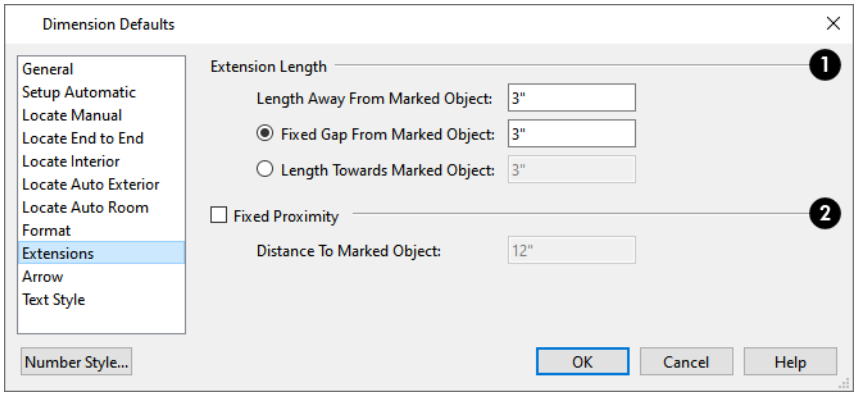
3 Angular Format

Specify format used by Angular Dimensions. See *Angular Dimensions on page 352*.

- Select an **Angle Style**. For a description of each, see *Dialog Number/Angle Style Dialog on page 119*.
- When **Degrees** is selected, you can specify the number of **Decimal Places** to report.

Extensions Panel

The settings on the Extensions panel control the length of extension lines.



1 Extension Length

Specify the **Extension Length** relative to the marked location on an object.

- Specify the **Length Away From Marked Object**, which is the length of the portion of an extension line that extends from the dimension line in the opposite direction of the object it locates.
- Select **Length Towards Marked Object** to specify a fixed length for the portion of an extension line that extends from the dimension line toward the object it locates. If the dimension line is moved, this length remains the same but the size of the gap updates.
- Select **Gap From Marked Object** to specify the distance between the end of extension lines and their marked location in plan inches or mm. If a dimension line is moved, extension lines update, and the size of this gap is maintained.

> Gap From Marked Object + Length Toward Marked Object = Distance to Marked Object

2 Fixed Proximity

Specify a fixed length for one extension line that will not change if the object the extension line locates is moved. See *Using Fixed Proximity on page 360*.

- Check **Fixed Proximity** to specify a fixed distance between the marked object and the dimension line. You can only fix the proximity for a single extension line.
- Specify the **Distance to Marked Object**, which is the distance from the dimension line to the marked object, using a positive value.

> Extension Line and Gap lengths are measured from the marked location on a wall. See *The Dimension Layer on page 289*.

Fixed Proximity only affects dimension lines that locate an object using an extension line. When a dimension line arrowhead points directly to the object without using an extension line, this option has no effect.

Auto Exterior Dimensions ignore Distance to Marked Object and use the default First Line Offset and Line Separation values. See *Setup Automatic Panel on page 343*.

Arrow Panel

The settings on the Arrow panel control the default size and style of dimension line arrows. See *Arrow Panel on page 252*.

Text Style Panel

The settings on the Text Style panel control the size, font and other attributes of automatic, manually drawn, and temporary dimension line labels. Individual dimension lines inherit their text style from a Saved Dimension Default: they cannot have a non-default text style assigned to them. See *Dimension Labels on page 354*.

For information about the settings on this panel, see *Text Style Panel on page 392*.

Temporary dimensions and their labels always use the **Selection Line** color set in the Preferences dialog. See *Colors Panel on page 95*.

The Manually Drawn Dimension Tools

Select **CAD> Dimensions** to access the manually-drawn Dimension Tools.

Manually drawn dimensions are created by clicking and dragging like other line-based objects and can be drawn in plan view, cross section/elevation views, and on layout pages.

> The Automatic Dimension tools can also be used to create interior and exterior dimensions. See *Automatic Dimensions on page 353*.

With the exception of **Angular Dimensions**, dimension lines only locate objects that are parallel or nearly parallel to one another and should be drawn orthogonal, or at right angles, to the objects being located.

Dimension lines locate objects using **Object Snaps**, although they do not need to be enabled in order to draw dimensions. See *Object Snaps on page 142*. Bear in mind, though, that Object Snaps must be enabled in order to:

- Locate parallel objects drawn at angles other than Allowed Angles.
- Locate more than one object drawn in the same space, such as a CAD line drawn over a wall.

The zoom factor of the current view affects whether objects drawn close together are dimensioned or not. If you try to dimension an array of objects but the dimension line locates only the first and last objects along its path, **Zoom** in on the objects and try again. Similarly, if you want to dimension between two objects but the dimension locates unwanted objects between them, **Zoom** out. See *Zoom Tools on page 136*.

Once created, both manually drawn and automatically generated dimension lines can be selected and edited. See *Editing Dimension Lines on page 355*.

If the object or objects located by a dimension are resized or moved, the dimension will update to reflect the change. Objects located by a dimension can also be accurately relocated or resized by specifying a new dimension value. See *Moving Objects Using Dimensions on page 361*.

Manual Dimensions



The **Manual Dimension** tool creates dimension lines that locate all eligible objects positioned between their start and end points and within the default Reach distance.

Manual Dimensions locate walls and a variety of other object types as specified in the Dimension Defaults dialog. See *Locate Manual Panel on page 344*.

End-to-End Dimensions



The **End-to-End Dimension** tool creates dimension lines that locate an eligible object at its start and end points but ignores any objects in between.

End to End Dimensions locate walls and a variety of other object types as specified in the Dimension Defaults dialog. See *Locate End to End Panel on page 348*.

Angular Dimensions



The **Angular Dimension** tool measures the angle between any two straight edges, including walls, cabinets, and the straight sides of polyline-based objects. To create an angular dimension, click on the first edge to be dimensioned, then drag an arc and release on the second edge.

By default, Angular Dimensions use the **Angle Style** specified in the Dimension Defaults dialog. See *Format Panel on page 348*.

Interior Dimensions



The **Interior Dimension** tool creates dimension lines that measure the interiors of rooms. Interior Dimensions do not locate the exterior sides of exterior walls by default, although they can be edited to do so, and they have **Display Wall Widths** unchecked by default in their specification dialog so they do not report the thicknesses of walls or wall layers. See *Dimension Panel on page 363*.

Interior Dimensions locate either wall surfaces or the Main Layer, as well as a variety of other objects, depending on the settings in the Dimension Defaults dialog. See *Locate Interior Panel on page 348*.

Point to Point Dimensions



The **Point to Point Dimension** tool creates dimension lines that locate an eligible object at their start and end points if possible. If no object is present at either location, a Point Marker is created and the dimension line locates it instead. See *Markers on page 386*.

Point to Point Dimensions can be drawn in either of two ways:

- When the **Default** edit behavior is active, a Point to Point Dimension places Point Markers at its start and end points, which it locates. Any objects along the dimension line's length are ignored. See *Point Markers on page 227*.
- When the **Alternate** Alt edit behavior is active, a Point to Point Dimension locates objects along its length as well as objects or Point Markers at its start and end. See *Defaults, Preferences, and Edit Behaviors on page 179*.

The Point Markers created by the **Point to Point Dimension** tool can be selected and edited. See *Editing Markers on page 386*.

Point to Point Dimensions locate walls and a variety of other objects depending on the settings in the Dimension Defaults dialog. See *Locate End to End Panel on page 348*.

Tape Measure

Use the **Tape Measure** tool to draw a temporary dimension line between any two points in the drawing area. The tool will place temporary markers at the start and end points of the dimension line. The Tape Measure line and its start and end points all disappear when you release the mouse button. If **Object Snaps** are enabled and an object is located by the temporary line, you can snap to it.

Delete Dimensions

The **Delete Dimensions** tool deletes all dimension lines displaying in the current view in a plan file. In a layout file, dimensions that currently display on all pages are deleted. See *Deleting Dimension Lines on page 357*.

Automatic Dimensions

These tools automatically create dimension lines in plan view for different purposes:

> The manually drawn Dimension tools can also be used to draw dimensions in plan and cross section/elevation views. See *The Manually Drawn Dimension Tools on page 351*.

Temporary Dimensions

Temporary Dimension displays automatically when an object is selected and reports the distance between that object's selected edge and its opposite edge as well as other objects. Select **View> Temporary Dimensions** to turn on or off the display of Temporary Dimensions. This toggle affects all views and is saved between launches of Home Designer.

A Temporary Dimension will only display when an object is selected, and as with other dimension lines, it will only locate object edges that are parallel or nearly parallel to one another. Temporary Dimensions will also locate the endpoints of CAD lines and the corners of objects located past the end of the selected edge, within 4 feet (1200 mm) of the point where you click to select the object.

In 3D Views, Temporary Dimensions will report both the height and width of a selected door, window, or the selected side of a cabinet as well as its distance from other objects.

Temporary Dimensions can display when multiple objects are selected; however, depending on the situation some or all may be suppressed.

Auto Exterior Dimensions

The **Auto Exterior Dimensions** tool generates dimensions around a plan's exterior in plan view, locating walls and openings as specified in the Dimension Defaults dialog.

Up to three rows of automatically generated dimensions may be created per exterior wall:

- The innermost dimension line locates exterior walls, interior walls, and all openings in exterior walls.
- The second dimension line locates exterior and interior walls.
- The outermost dimension line is the overall exterior dimension.

> Auto Exterior Dimensions do not generate properly if there is a gap in the exterior walls or if they do not connect properly. If automatic dimensions do not generate, try Build> Wall> Fix Wall Connections.

If you edit an **Auto Exterior Dimension** line, it will be converted to a manual dimension, so if Auto Exterior Dimensions are later regenerated, your changes will not be lost.

Auto Room Dimensions

Select one or more rooms in plan view and click the **Auto Room Dimensions** edit button to generate interior dimensions that measure each wall defining the selected room(s).

Auto Room Dimensions lines are generated inside the rooms they measure and locate walls and wall openings, as well as other objects, as specified in the Dimension Defaults dialog. See *Locate Auto Room Panel on page 348*.

Auto Room Dimensions do not recognize the **No Locate** setting for walls. If a wall is specified as No Locate, Auto Room Dimensions will locate it anyway. See *No Locate on page 276*.

Displaying Dimension Lines

The display of dimension lines is controlled in the Layer Display Options dialog. See *Displaying Objects on page 151*.

Dimension lines created by any of the dimension tools share the same components:

- **Dimension Lines** run parallel with the distance being measured.
- **Extension Lines** are perpendicular to dimension lines, indicating what they locate. If a dimension line locates more than two objects, extension lines divide the dimension line into segments.
- **Arrowheads** display at the intersections of dimension and extension lines.
- **Dimension Labels** display at the midpoint of dimension line segments and indicate the distance that each segment measures.



Extension Lines

If a dimension line is offset from the objects it locates, extension lines help clarify exactly what is being located. Extension lines are numbered: when a dimension line is selected, an Extension Line Number displays at the end of each extension line.

You can specify the default length of extension lines in the Dimension Defaults dialog. See *Extensions Panel on page 350*.

Once drawn, the appearance of extension lines can be edited. See *Editing Extension Lines on page 357*.

Dimension Labels

Manually drawn, automatic, and temporary dimension labels use the Text Style specified in the Dimension Defaults dialog. Unlike many objects that use Text Styles, by default dimensions use a Text Style specified in the defaults dialog rather than the Text Style assigned to their layer. See *Text Style Panel on page 392*.

Like other text, dimension labels are subject to scaling. For example, A Character Height of 6” prints a 1/8” tall number at 1/4” = 1’ scale. A Character Height of 125 mm prints a 3 mm tall number at 1 m = 50 m scale. See *Printing Text, Dimensions, and Line Styles on page 993*.

By default, dimension labels have a solid fill that is the same as the **Background Color** set in the Preferences dialog. You can instead specify that labels use a Text Style with a transparent fill.

You can also specify the minimum size of Temporary Dimension numbers displaying on screen in the Preferences dialog. See *Appearance Panel on page 93*.

Labels can be centered on dimension lines or located either above or below them. See *Format Panel on page 348*.

Dimension labels have their own edit handle and can be moved when a dimension line is selected. See *Editing Dimension Lines on page 355*.

Dimension Arrowheads

You can specify the style, color and size of dimension arrows in the Dimension Defaults and Dimension Line Specification dialogs. See *Arrow Panel on page 252*.

The arrow at the end of a dimension line will not display if it is close enough to another dimension arrow that the two will overlap. A typical example of this is where two sections of an Interior Dimension locate two sides of an interior wall.

Dimension Lines in Camera Views

In plans created in Chief Architect Premier, saved cameras may include one or more dimension lines. These dimension lines cannot be selected, edited, or deleted in Home Designer; however, you can turn off the display of the "Dimensions" layer in camera views. See *Opening Chief Architect Plans and Layouts in Home Designer 2027 on page 34*.

Selecting Dimension Lines

Before a manually-drawn or automatic dimension line can be edited, it must be selected. A dimension line can be selected in one of three ways, each of which affects the ways that the dimension line can then be edited.

The standard way to select an individual dimension line is to click anywhere along its length when the **Select Objects** or any of the **Manual Dimension** tools is active. When selected in this manner, the dimension line's full range of editing options are available.

You can instead click on one of the dimension line's extension lines. When selected in this way, the selected extension line's length can be edited; however, fewer edit handles are available overall. See *Editing Extension Lines on page 357*.

> If you select an extension line by mistake, press the ***Esc*** key to display the full set of dimension line edit handles.

Dimension lines can also be group-selected, with limited editing options. See *Selecting Multiple Objects on page 186*.

Editing Dimension Lines

Before a dimension line can be edited, it must be selected. See *Selecting Dimension Lines on page 355*.

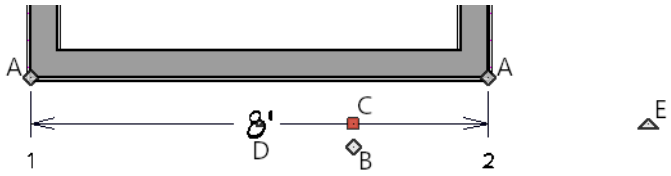
With the exception of **Temporary Dimensions**, dimension lines can be selected and edited using the mouse, the Edit Toolbar buttons, and the Dimension Line Specification dialog. See *Dimension Line Specification Dialog on page 362*.

If an Auto Dimension line is edited, it will no longer be considered an automatic dimension line and will not be deleted and replaced the next time the tool used to create it is used.

For information about changing the value reported in a dimension line label, see *Moving Objects Using Dimensions on page 361*.

Using the Edit Handles

When a dimension line is selected, its edit handles can be seen. There are five types of dimension line edit handles. The total number of edit handles a dimension line has depends on how many extension lines it has.



A. The **Extension Line End** handles are positioned at the point that each extension line locates and are used to move or delete extension lines. See *Moving an Extension Line on page 358*.

B. The **Add Extension Line** handle displays to the side of the Move handle and is used to add extension lines to the dimension line. Extension lines added in this manner are able to locate marks that the dimension line might not locate as it was being drawn. See *Adding an Extension Line on page 357*.

C. The **Move** handle is located where you clicked to select the dimension line and displays the Selected Edge Handle Fill color. It is used to move the entire dimension line, including any subsections, perpendicular to itself. Extension lines are resized as appropriate.

D. The small, square **Move Dimension Label** handle is located at the center of the selected label. Use this handle to move the dimension number for each dimension line section. The pointer changes to a four-headed arrow when moved over this handle. When Object Snaps are enabled, dimension label centers will snap to their associated dimension line.

E. The **Rotate** handle is located past the end of the dimension line and can be used to rotate the dimension line.

A selected Angular Dimension has only one edit handle. When you click and drag this handle, the selected Angular Dimension will move. Its length will increase or decrease concentrically depending on which direction it is moved, and the location of its arc center will be maintained.

As a selected dimension line is resized, its drawing behavior and the objects it locates may vary, depending on the Dimension Tool that was used to create it. When selected, Interior Dimensions are described as such in the Status Bar. See *The Status Bar on page 24*.

Using the Edit Tools

Dimension lines can be repositioned, copied, and deleted using the Edit Toolbar buttons just like other objects in the program can. See *The Edit Toolbar on page 122*.

Click the **Edit Extensions** edit button to edit the lengths of the selected dimension's extension lines. See *Editing Extension Lines on page 357*.

Dimension Number Size

The initial size of dimension numbers is specified in the Dimension Defaults dialog. See *Dimension Defaults Dialog on page 341*.

You can specify number height for individual dimension lines in the Dimension Line Specification dialog. See *Dimension Panel on page 363*.

As with text and other objects, dimension number size is subject to scaling when sent to layout or printed. See *Printing Text, Dimensions, and Line Styles on page 993*.

Copying and Pasting Dimension Lines

Dimension lines can be copied and pasted into any view type that supports dimensions. If a dimension line is copied independent of the objects it originally locates, the pasted dimension line will locate Point Markers. See *Point Markers and Dimensions on page 387*.

Deleting Dimension Lines

There are several ways to delete dimension lines:

- Select any manual or automatic dimension line or group of dimension lines, then press the ***Delete*** key or click the **Delete** edit button. See *Deleting Objects on page 218*.
- Select **CAD> Dimensions> Delete Dimensions** to delete all dimension lines displaying in the current view in a plan file. In a layout file, dimensions that currently display on all pages are deleted.
- The Delete Objects dialog allows you to delete all manually drawn and/or automatic dimension lines in all plan views using one of three scopes. In a layout file, dimensions can be deleted on the current page or on all pages. See *Delete Objects Dialog on page 219*.

Automatically generated dimension lines may be set to **Auto Refresh** in the Dimension Defaults dialog. When deleted in plan view, you will be prompted to turn off the Auto Refresh functionality. See *Automatic Dimensions on page 353*.

Individual dimension line segments located between extension lines can also be deleted. If a segment is located between two other segments along the same dimension line, that dimension will be broken in two.

To delete a portion of a dimension line

1. Select any **Dimension Tool** aside from Angular or Auto Exterior Dimensions.
2. Manually draw a dimension line over the segment that you wish to remove, dragging from extension line to extension line.

Editing Extension Lines

Before extension lines can be edited, either they or their dimension line must be selected. See *Selecting Dimension Lines on page 355*.

Extension lines can be added, edited, and deleted using the edit handles when their dimension line is selected. In addition, extension lines can be individually selected and edited.

Extension lines are also affected by settings in the Dimension Line Specification dialog. See *Extensions Panel on page 364*.

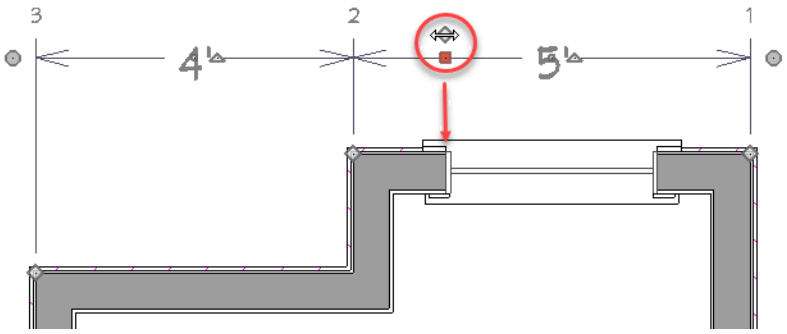
Adding an Extension Line

The Add Extension Line edit handle allows you to locate marks that the dimension line might not have been able to locate as it was being drawn. Interior Dimensions, for example, do not locate cabinets as they are drawn; however, you can add an extension line that locates a cabinet.

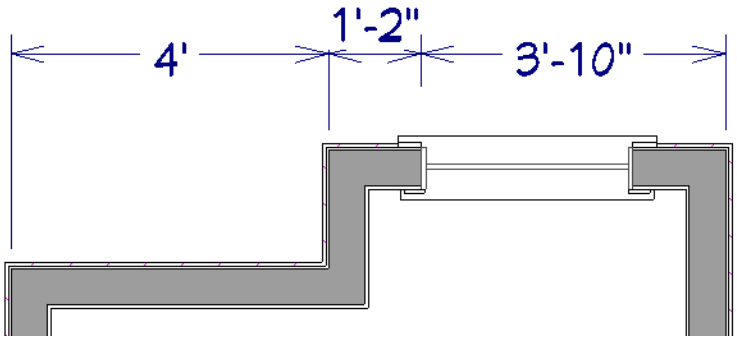
To add an extension line

1. Select the dimension line anywhere along its length.
2. Click the diamond-shaped Add Extension Line edit handle which displays near the Move edit handle. The pointer changes to a two-headed arrow ↔.

3. Drag the handle to the object that you want to locate with a new extension handle. This example adds an extension line to the left side of the window.



4. Release the mouse button to add an extension line.

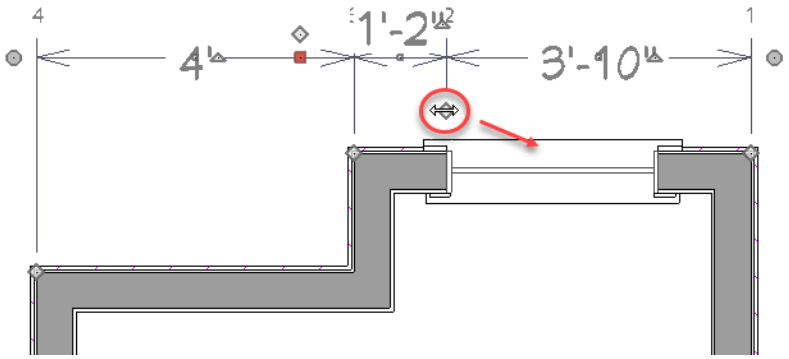


Moving an Extension Line

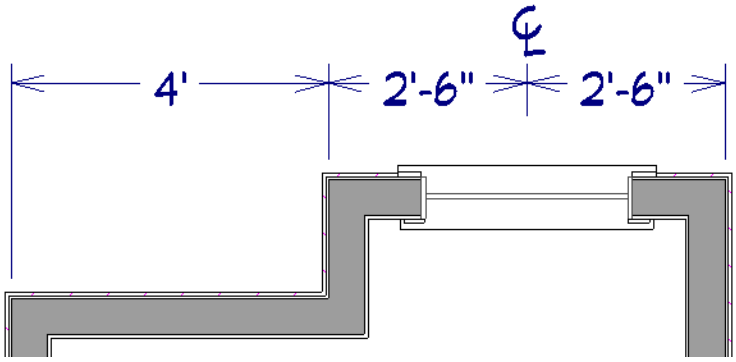
Extension lines can be moved to locate the centers, sides, or surfaces of most objects. Here, an extension line is moved from the windows edge to the center.

To move an extension line

1. Select the dimension line anywhere along its length: do not click on the extension line itself.
2. Click the Extension Line edit handle. The pointer changes to a two-headed arrow ↔.



3. Drag the handle to a new location. The extension line snaps to possible marks as the handle is moved.
4. Release the mouse button at the new location.



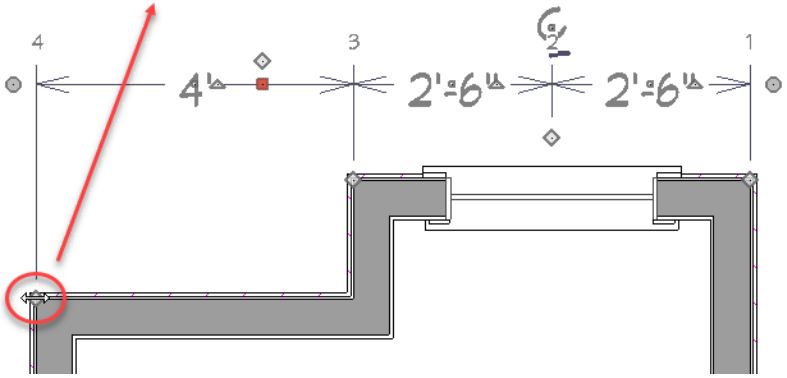
Not all library symbols can be located by a dimension line as it is drawn. Once a dimension is drawn, however, you can move or add an extension line to locate the library object.

Deleting an Extension Line

When an extension line is deleted, the remaining dimensions update. If a dimension line has only two extension lines, they cannot be deleted.

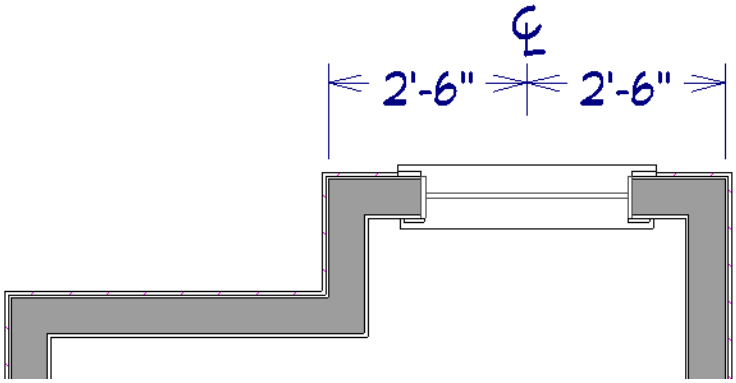
To remove an extension line

1. Select the dimension line anywhere along its length: do not click on the extension line itself.
2. Click the Extension Line edit handle.



3. Drag it perpendicular to the direction of the arrows, away from any dimensionable object, and release the button when

the extension line disappears.



In addition, individual extension lines can be selected, allowing you to resize them.

Resizing Extension Lines

You can resize extension lines in the Dimension Line Specification dialog or using their edit handles. See *Extensions Panel on page 350*.

To resize an extension line

1. Click on the extension line or select the dimension line and click the **Edit Extensions** edit button to display two handles along the extension line.



2. Click either handle, turning the pointer into a two-headed arrow ↔.
3. Extend or contract the extension line and release the mouse.

Using Fixed Proximity

The **Fixed Proximity** option allows you to specify a fixed length for one extension line that will not change if the object the extension line locates is moved.

To use Fixed Proximity

1. Select a dimension line that locates multiple independent objects and note the Extension Number of the extension line that you would like to have a fixed length.
2. Open the Dimension Line Specification dialog and go to the EXTENSIONS panel. See *Extensions Panel on page 364*.
   - Select the Extension Number that you noted in step 1 from the **Selected Extension** drop-down list.
   - Check **Fixed Proximity**.
   - Specify the desired **Distance to Marked Object**, which is the distance from the selected dimension line to the object that the Selected Extension locates. This distance includes the Gap From Marked Object.
   - Click **OK**.

To see how Fixed Proximity works, select the object that the extension line with Fixed Proximity specified and move it. Notice that the dimension line moves in response and that all extension lines' lengths adjust except for the one with Fixed Proximity specified.

Moving Objects Using Dimensions

Most objects can be moved by changing an automatic, manual, or temporary dimension value that locates it. This technique can be applied in nearly any situation where dimensions are present, including angular dimensions. See *Moving Objects on page 167*.

In addition, some objects can be resized using dimensions. See *Resizing Objects on page 206*.

Your pointer indicates which dimensions can be used to relocate the selected object by changing to a pointing hand icon.

Another way to tell is to select an object and drag it in the desired direction. As you drag, note which dimensions update. These dimensions are the dimensions that can be used to move that object.

> Note: A selected object can be moved and resized using a dimension line even when that dimension's layer is locked. See *Locking Layers on page 153*.

To move an object using dimensions

1. Select the object and click on a dimension line that locates it. An inline text field opens at the location where you clicked.
   - The actual distance displays in the text field.
   - If the dimension is locating two different objects and the selected object is polyline-based, the **Move Edge** and **Move Entire Object** buttons display to the right of the text field.



   - If the dimension describes a selected wall's length, additional buttons display to the right. See *Moving Walls Using Dimensions on page 276*.



2. Click the **Move** button of your choice.
3. Enter a new value in the text field.
   - To use a different unit, include its indicator after the value.
   - To move the selected object past a second object, to its opposite side, enter a negative value.
   - Basic math operations can also be performed in the inline text box, just as they can in dialogs. See *Units and Math Operations in Dialogs on page 19*.
4. The selected object moves or resizes when you press the ***Enter*** key or click outside the text field.
5. If **Bumping/Pushing** is enabled, the object being moved will bump into any objects in its move path and not move the entire distance. Hold down the ***Ctrl/⌘*** key when you press the ***Enter*** key to override this move restriction. See *Bumping/Pushing on page 167*.

A variety of polyline- and box-based objects can also be resized using dimensions.

To resize an object using dimensions

1. Select the object along the edge that you would like to move. See *Selected Edge on page 185*.
2. Click on a dimension line that indicates its distance from the object's opposite side.
3. In the inline text field, enter a value.

4. Click **Move edge** to move the selected edge only.
5. The selected edge moves, resizing the object, when you press the ***Enter*** key.

> You can cancel a move or resize operation using dimensions at any time by pressing the ***Esc*** key.

Resizing Walls Using Exterior Dimensions

When resizing a structure using dimensions, it is important to work your way around it in one direction. Relocate one wall at a time in succession so that you do not redefine the same dimension more than once.

For more information, see *Measuring Walls on page 274*.

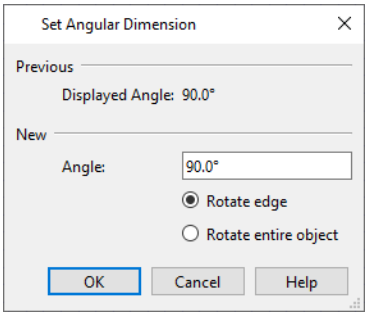
Using Angular Dimensions

Angular Dimensions are useful for adjusting the angles of polyline-based objects and walls.

To change an angular dimension

1. Draw an **CAD> Dimensions> Angular Dimension**, then click and drag to draw an arc within the angle you wish to measure.
2. Select the edge that you want to move.
3. Click the dimension value to open the Set Angular Dimension dialog.

   The Set Angular Dimension dialog reports the **Previous Value** in degrees, minutes and seconds.



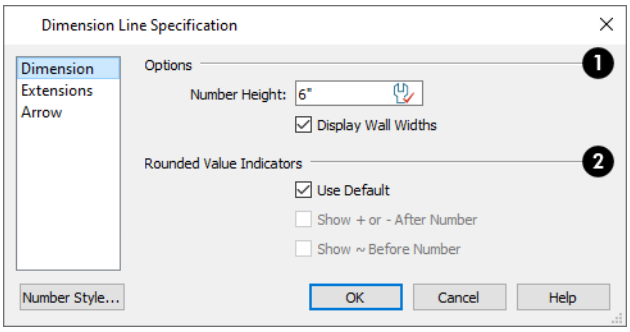
4. Enter a value in the **New Value** field.
5. Specify what you want to rotate:
   - Select **Rotate edge** to move the selected edge when you click OK, or
   - Select **Rotate entire polyline** to rotate the entire object about the corner formed by the edges that the Angular Dimension locates, maintaining the previous value of that angle.
6. Click **OK** to apply the change.

Dimension Line Specification Dialog

To open the Dimension Line Specification dialog, select one or more dimension lines and click the **Open Object** edit button.

The settings in this dialog are dynamic defaults. See *Dimension Defaults Dialog on page 341*.

Dimension Panel



1 Options

Specify the text size and display of wall widths attributes for the selected dimension line. The minimum on-screen size can be set in the Preferences dialog. See *Appearance Panel on page 93*.

- Specify the **Number Height** of the selected dimension's labels. See *Dynamic Defaults on page 84*.

> Dimension Number Height is subject to scaling. See *Scaling Text on page 376*.

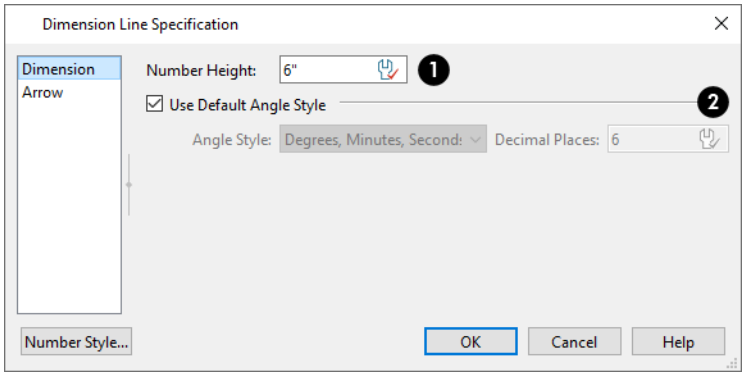
- Uncheck **Display Wall Widths** to suppress those portions of the dimension line that measure between two surfaces of the same wall. Both sides of a wall may still be located, but its width will not display. This option is checked by default for most manually drawn dimensions, but is unchecked for **Interior Dimensions** .

2 Rounded Value Indicators

Specify the use and appearance of **Rounded Value Indicators**, which can display when the degree of accuracy in use is not sufficient to describe a dimension's true value.

- Check **Use Default** to use the default indicator(s). Uncheck this box to make the options that follow active.
- Check **+ or - After Number** to indicate that the actual dimension value is higher or lower than the value shown.
- Check **~ Before Number** to indicate dimension values that are not accurate with the ~ symbol.

Dimension Panel for Angular Dimensions



1

- Specify a **Number Height** for the selected dimension. See *Dynamic Defaults on page 84*.

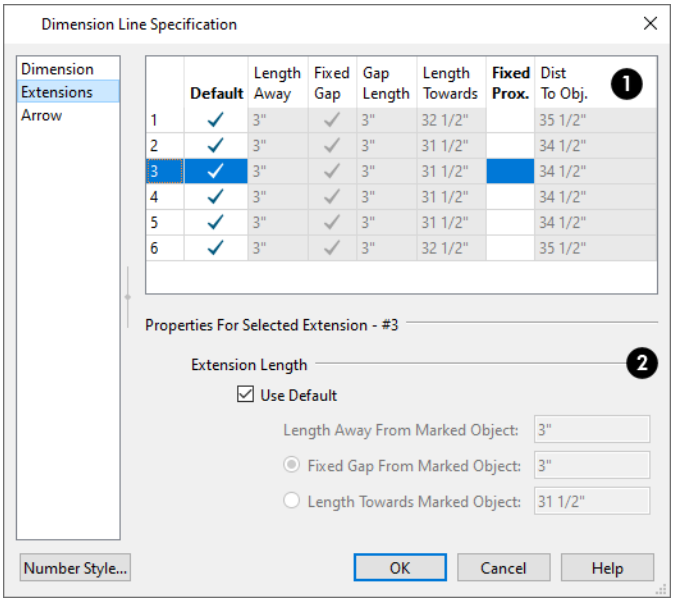
❷ Use Default Angle Style

When this box is checked, the selected dimension uses the angle style set in the Dimension Defaults dialog. Uncheck this box to select a different **Angle Style** and number of **Decimal Places**. See *Format Panel on page 348*.

EXTENSIONS PANEL

The settings on the EXTENSIONS panel allow you to edit the selected dimension line's extensions. See *Editing Extension Lines on page 357*.

This panel is not available for multiple dimensions selected as a group or for **Angular Dimensions** .



❶ Extension Lines

An editable table lists the selected dimension line's extensions here. Initially, the extension closest to the point where you clicked to select the dimension line will be highlighted. The highlighted extension line is selected and can be edited.

> Each extension line's number displays beside it when a dimension line is selected. See *Displaying Dimension Lines on page 354*.

- Click on a line item to select and edit it. The **Properties for Selected Extension** are listed and can be edited using the settings below.
- The available Extension Length and Marker Style settings can also be edited in the table. The available options depend on which Extension Length option is selected below.
- Only available in the table, click in the **Fixed Proximity** column to specify a fixed distance between the marked object and the dimension line. You can only fix the proximity for a single extension line. See *Using Fixed Proximity on page 360*.
- When Fixed Proximity is checked, specify the **Distance to Marked Object**, which is the distance from the dimension line to the marked object, using a positive value.

The **Properties for Selected Extension** options allow you to edit the Extension Line selected in the table above.

❷ Extension Length

These settings are the same as those in the Dimension Defaults dialog, but apply to the extension lines associated with the

selected dimension line only. See *Extensions Panel on page 350*.

- Uncheck **Use Default** to enable the three settings that follow as well as the equivalent fields for the selected line item in the table above.
- Check **Use Default** to restore the default settings to the Selected Extension line.
- Specify the **Length Away From Marked Object**, which is the length of the portion of an extension line that extends from the dimension line in the opposite direction of the object it locates.
- Select **Length Towards Marked Object** to specify a fixed length for the portion of an extension line that extends from the dimension line toward the object it locates. If the dimension line is moved, this length remains the same but the size of the gap updates.
- Select **Gap From Marked Object** to specify the distance between the end of extension lines and their marked location in plan inches or mm. If a dimension line is moved, extension lines update, and the size of this gap is maintained.

Arrow Panel

The settings on the Arrow panel control the size and style of the selected dimension line's arrows. See *Arrow Panel on page 252*.

Text, Callouts, and Markers

Chapter 15

The Text Tools help you draw attention to special details of your drawings. Text objects can be added in plan view, in cross section/elevation views, and to layout pages.

Text Defaults and Preferences

Text Defaults can be accessed by selecting **Edit> Default Settings** in any view in which text can be created. Click the "+" next to **Text, Callouts and Markers** to display the sub-headings. See *Default Settings vs Preferences on page 83*.

The default settings for Rich Text, Callouts, Markers, and Arrows determine what these objects look like when they are first created. Text Style Defaults determine the appearance of text associated with things like dimensions and object labels.

Changes made to default settings do not alter existing text objects, so it is a good idea to go over these settings before placing text.

Text Style Defaults

Select “Text Style” from the list in the Default Settings dialog and click the **Edit** button to open the Saved Text Style Defaults dialog.

The Text Style Defaults dialog allows you to specify the attributes of the various Text Styles in use in the current file. See *Text Styles on page 390*.

Rich Text Defaults

Double-click the **Rich Text** to open the Rich Text Defaults dialog and specify the default appearance of Rich Text objects.

The Rich Text Defaults dialog is similar to the Rich Text Specification dialog. See *Rich Text Specification Dialog on page 370*.

Text Lines with Arrows use the same default layer as Rich Text, so by default they have the same color, line weight and line style. See *Display Layers on page 151*.

Callout Defaults

Double-click the **Callout** tool to open the Callout Defaults dialog and specify the default appearance of callouts.

The Callout Defaults dialog looks almost the same as the Callout Specification dialog. See *Callout Specification Dialog on page 384*.

Marker Defaults

Double-click the **Marker** tool to open the Marker Defaults dialog and specify the default appearance of markers.

The Marker Defaults dialog looks almost the same as the Marker Specification dialog. See *Marker Specification Dialog on page 387*.

Arrow Defaults

Double-click the **Text Line with Arrow** tool to open the Arrow Defaults dialog.

The settings in the Arrow Defaults dialog determine the initial settings for arrows drawn using the **Text Line with Arrow** and **Line With Arrow** tools. These settings also determine the initial appearance of arrows when they are added to CAD lines, arcs, and polylines.

The Arrow Defaults dialog looks almost the same as the ARROW panel of the Line Specification dialog. See *Arrow Panel on page 252*.



Avoid typing any text in any text Defaults dialog unless you want it to be present in all text objects you create.

Preferences

Specify whether pressing the ***Enter*** key creates a new line of text or closes the Rich Text and Text Specification dialogs in the Preferences dialog. See *Text Panel on page 100*.

Fonts and Alphabets

Home Designer allows you to use any font found in your computer's Fonts directory.

For best printed results, using true-type or open-type fonts is recommended.

Chief Blueprint Font

The Chief Blueprint font is installed in the Windows Fonts directory when Home Designer is installed.

On Mac systems, this font is embedded with the Home Designer 2027 installation but not installed on the system. As such, it is available for use in Home Designer 2027 but not in other programs.

International Alphabets

The **Rich Text** tool supports unicode alphabets and characters. In order to use a unicode alphabet or characters, the appropriate language support must be installed on your computer. See *The Text Tools on page 368*.

Special characters can be added to any **Rich Text** object by:

- Copying and pasting the character from another application;
- Copying and pasting the character from the Windows Character Map;
- Using the Mac Character Viewer;
- Typing the keystroke associated with the character.

See *Copying and Pasting Text on page 378*.

Character Size

Rich Text, **Text**, **Callouts**, **Markers**, **Plant Schedules**, and dimension numbers can be sized to 1/128" accuracy (0.078125 mm). See *Text Style Panel on page 392*.

These objects use CAD Style Font Sizing, which specifies text size as the measurement from the baseline to the topmost part of the capital letter A, as in most CAD programs.

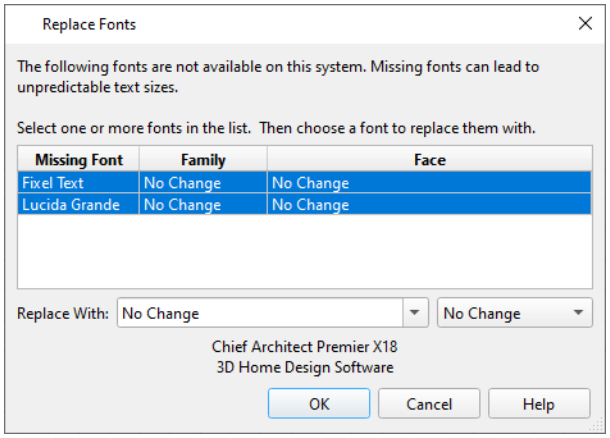
In legacy files migrated into Version 2027, an additional **Legacy Compatible Size** option will be available for some objects if it was specified in the original program version. When this method is used, text size is based on information stored in the font that is then modified to approximate the specified Character Height.

Rich Text objects have two font sizing methods to choose from: **CAD Style Font Sizing** and a method similar to most word processing applications, where size is based on information stored in the font. See *Options Panel on page 374*.

Replace Fonts

Select **Edit> Replace Fonts** to replace one or more fonts in the current file with a different font using the Replace Fonts dialog.

The Replace Fonts dialog will also open if you open a plan or layout file that uses a font that is not installed on the current computer, giving you an opportunity to replace that font.



The table lists all missing fonts in the current file and how they will be replaced.

- Click on a **Missing Font**'s name in the list to select it. Use the ***Shift*** or ***Ctrl/⌘*** key to select multiple fonts. See *Shift and Ctrl/⌘ Select on page 187*.
- Select a replacement font Family and Face from the **Replace With** drop-down lists. The Family list is populated by all font families installed on the local system. The items in the Face list vary depending on the font styles included in the selected Family.
- "No Change" indicates that a replacement for a missing font has not been selected. If you do not select a replacement, the program will select a font Family and Face that appears to best match the size attributes of the missing font.
- A preview of the selected font displays below the **Replace With** list.

If this dialog opens in response to missing fonts and you do not plan to return the file to the computer where it was created, you may want to replace missing fonts with the fonts you normally use. On the other hand, if you do intend to return the file, you may prefer to not replace any missing fonts.

The Text Tools

Select **CAD> Text** to access the **Text Tools**. These tools are available in plan view, in cross section/elevation views, and in layout files.

The **Rich Text** tool is used to create text objects. See *Creating Text Objects on page 369*.

The **Text Line with Arrow** tool is used to connect text and another object with an arrow. See *Text Arrows on page 381*.

The **Text with Arrow** tool places a Rich Text object with an arrow attached.

The **Callout** tool is used to place callouts. See *Callouts on page 382*.

The **Marker** tool is used to place markers for **Level Lines**, **Test Borings** and **Point Markers**. See *Markers on page 386*.

Creating Text Objects

Text objects can be created in plan views, cross section/elevation views, and on layout pages. See *View Windows on page 130*.

Once created, text objects can be selected and edited in a variety of ways. See *Editing Text on page 375*.

To create Rich Text

1. Select **CAD> Text> Rich Text**.
2. Click in the drawing area, and the Rich Text Specification dialog will open. See *Rich Text Specification Dialog on page 370*.
3. Type or paste the desired text into the Text Field.
4. Use the options in the dialog to change the font, style and size of any portion of the text. See *Editing Text on page 375*.
5. When you are finished, click OK. The **Text** tool remains active, so you can create additional text objects if you wish.

> Note: If you do not type anything in the Text Field, a text object will not be created when you click outside it.

Rich Text, **Callouts**, and **Markers** can also be created by clicking where you want the upper left corner of the object to be created. The object's specification dialog will open: enter text and click OK.

You can also create lines with arrows connecting the text that you create to items in the drawing. See *Text Arrows on page 381*.

Placing Text from the Library

Rich Text, **Callouts**, and **Markers** can be added to the User Catalog in the Library and then placed into plans and layout files as needed. See *Add to Library on page 722* and *Replace From Library on page 730*.

Text and CAD Objects

Text can be used in combination with CAD objects to create legends, title blocks, and a wide variety of other details. See *CAD Objects on page 224* and *Layout on page 970*.

Hyperlinks

Hyperlinks that link to web pages both in the views they are created in as well as when printed to PDF can be added to

Rich Text objects in their specification dialogs. See *Text Panel on page 370*.

To open a link in Home Designer, select a Rich Text object, then mouse over the text in the selected object. If the mouse pointer displays a pointing hand icon, the Status Bar will report the address that it links to, and you can click once to open the link in your default web browser.

Displaying Text Objects

As with other types of objects, the display of Text objects is controlled in the Layer Display Options dialog. Text objects are located on layers with "Text" at the beginning of the layer name, such as "Text, Callouts". See *Layer Display Options Dialog on page 154*.

Text objects can only be displayed in views where text can be created.

The display attributes of each individual text object can be controlled independent of the layer it is placed on. See *Rich Text Specification Dialog on page 370*.

Rich Text Specification Dialog

The Rich Text Specification dialog opens if you select one or more Rich Text objects, then click the **Open Object** edit button.

This dialog also opens when you select the **Rich Text** tool and then click once in the drawing area.

When **Rich Text** objects are group-selected, the text content, zoom factor, and Paragraph Options cannot be changed, but everything else can be.

The Rich Text Specification dialog is similar to the Rich Text Defaults dialog but affects the selected text rather than all subsequently created text objects. See *Text Defaults and Preferences on page 366*.

Text Panel

The settings on the Text panel allow you to type the selected Rich Text object's content and control many aspects of its appearance, including its font, size, color and style.

You can specify the appearance of the text before typing, and can also select and change the attributes of all or portions of the text content after it is typed. To change text that already exists, simply highlight it using the mouse and/or the Shift + arrow keys and then make any needed changes to its attributes.

> Note: If you do not type anything in the text field on this panel when creating a new object, no object will be created when you click OK. On the other hand, if you remove the text from an existing object and click OK, an empty text box will result.



1 Edit Bar

Use the options on the Edit Bar, which displays above the Text Entry field, to change the font, size, and style of the text.

Select the desired options before typing to affect the text as it is typed, or select some or all of the text and then specify which options to apply to it.

- Select a **Font Family** and **Style** from the drop-down lists. See *Fonts and Alphabets on page 367*.
  - The available Styles vary depending on which Font Family is selected.
- Specify the **Text Size** in drawing units.
- Click the **Print Size** button to open the Printed Size Input dialog. See *Scaling Text on page 376*.
- Click the **Color** button to specify the color of the selected or subsequently typed text. See *Select Color Dialog on page 165*. If **Layer Color Text** is checked on the APPEARANCE panel, any custom colors specified here are lost. See *Appearance Panel on page 373*.
- Click the **Insert Hyperlink** button to insert text that links to a web address or edit an existing selected hyperlink. See *Hyperlinks on page 369* and *Insert Hyperlink Dialog on page 372*, below.

  > Note: Hyperlink text is automatically underlined and assigned a non-default blue color. Once created, though, it is editable. To remove a hyperlink, select the linked text, right-click, and select Remove Hyperlink from the contextual menu.

- Click the **Bold** button to specify the selected text as bold. The ***Ctrl/⌘ + B*** hotkey can also be used.
- Click the **Italic** button to specify the selected text as italic. The ***Ctrl/⌘ + I*** hotkey can also be used.
- Click the **Underline** button to specify the selected text as underlined. The ***Ctrl/⌘ + U*** hotkey can also be used.
- Click the **Strikethrough** button to specify the selected text as stricken-through.
- Click the **Uppercase** button to display the selected text in all capital letters.
- Click the **Align Left**, **Align Center**, or **Align Right** button to specify how the selected text is aligned.
- Click the **Paragraph Options** button to specify the selected paragraph's alignment, spacing and bullets or numbering in the Paragraph Options dialog.
- Specify the **Zoom** factor of the selected text by typing a percentage value in the text field or clicking the up/down arrows. This setting only affects the text as it appears in this dialog.

  > Note: Some fonts cannot be drawn at certain zoom factors. When this is the case, the appearance of the text will not change.

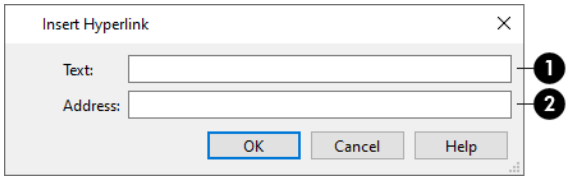
2 Text Entry Field

Type or paste text in the Text Entry field. See *Copy, Cut and Paste on page 377*.

- This field also serves as a preview pane, and the background color is set:
  - Globally for plan views and layout in the Preferences dialog. See *Colors Panel on page 95*.
  - In the Cross Section/Elevation Specification dialog for each cross section/elevation views. See *Backdrop Panel*.
  - In camera views and overviews, the background color is always white.
- Depending on the current **Preferences** settings, pressing the ***Enter*** key either forces a new line in the text box or closes the dialog. A carriage return can also be added by typing Shift + Enter or ***Ctrl/⌘ + Enter***. See *Text Panel on page 100*.
- Right-click in the Text Entry field to access a contextual menu from which you can select Undo, Redo, Cut, Copy, Paste and Select All. See *Contextual Menus on page 18*.

- To edit text in the entry field, click and drag to highlight any portion of it and then use the tools on the Edit Bar as needed.

Insert Hyperlink Dialog



1 Text

Specify the text of the hyperlink that the reader will see.

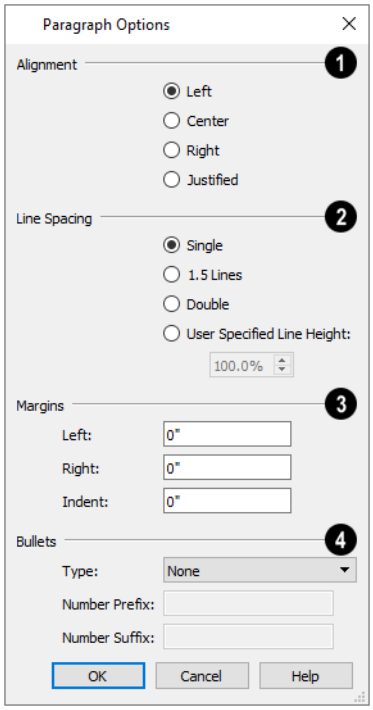
- If any text in the Rich Text Specification dialog is selected or if the cursor is located within an existing hyperlink when you click the **Insert Hyperlink** button, it will populate the **Text** field. If you change this initial text, the selected text in the Rich Text Specification dialog will update when you click OK and return to that dialog.
- If no text is selected but the cursor is located within an existing hyperlink when you click the **Insert Hyperlink** button, that hyperlink will essentially be selected: its text will populate the Text field and its address will populate the Address field.

2 Address

Specify the address, or URL, of the page that the link will access.

- If the **Address** field is empty when you click OK, the hyperlink will be removed.

Paragraph Options Dialog



1 Alignment

Specify the **Alignment** of the selected paragraph(s). See *Aligning Text on page 377*.

2 Line Spacing

Specify the **Line Spacing** of the selected paragraph(s).

- Click the radio button beside **Single**, **1.5 Lines**, **Double** or **User Specified**.
- If you select **User Specified Line Height**, type the desired height in the text field. For best results, this value should be at least as much as the largest text size used in the selection.

3 Margins

Specify the appearance of the selection's side **Margins**, as measured in from edges of the text box. Only positive Margin values can be used.

- Specify the **Indent**, which is measured from the left side margin. A negative value can be used if a left Margin has been specified.

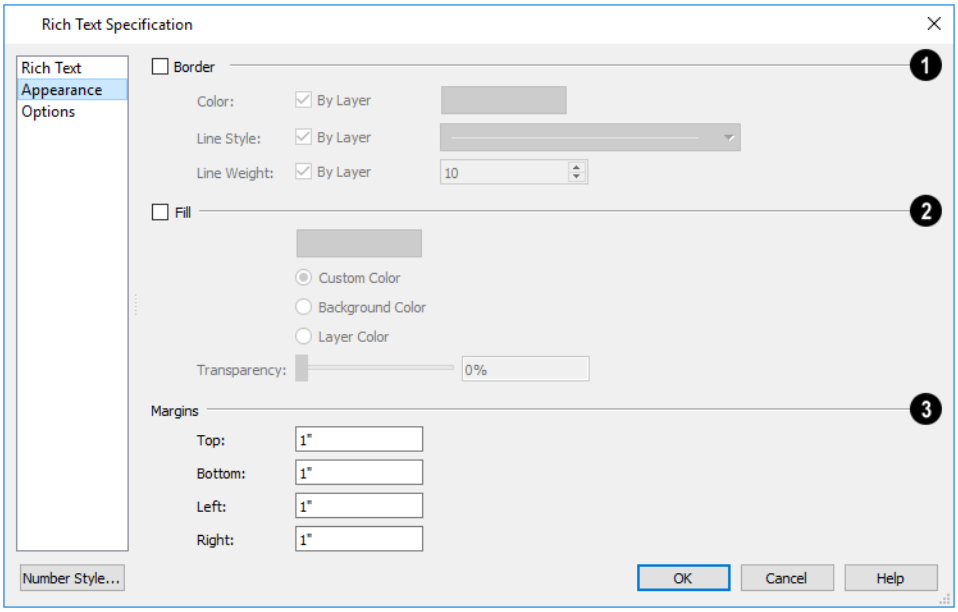
4 Bullets

Specify the appearance of **Bullets** and numbering in the selection.

- Select the desired bullet, numbered, or lettered **Type** from the drop-down list.
- Specify the **Number Prefix**, which are any characters that you would like to display before the number or letter. Does not affect paragraphs using circle or square bullets.
- Specify the **Number Suffix**, which are any characters that you would like to display after the number or letter and before its actual text. Does not affect paragraphs using circle or square bullets.

Appearance Panel

Text Lines with Arrows use the same default layer as Rich Text, so they share the same default color, line weight and line style. See *Display Layers on page 151*.



1 Border

Check **Border** to display a border around the selected text object and enable the settings that follow.

2 Fill

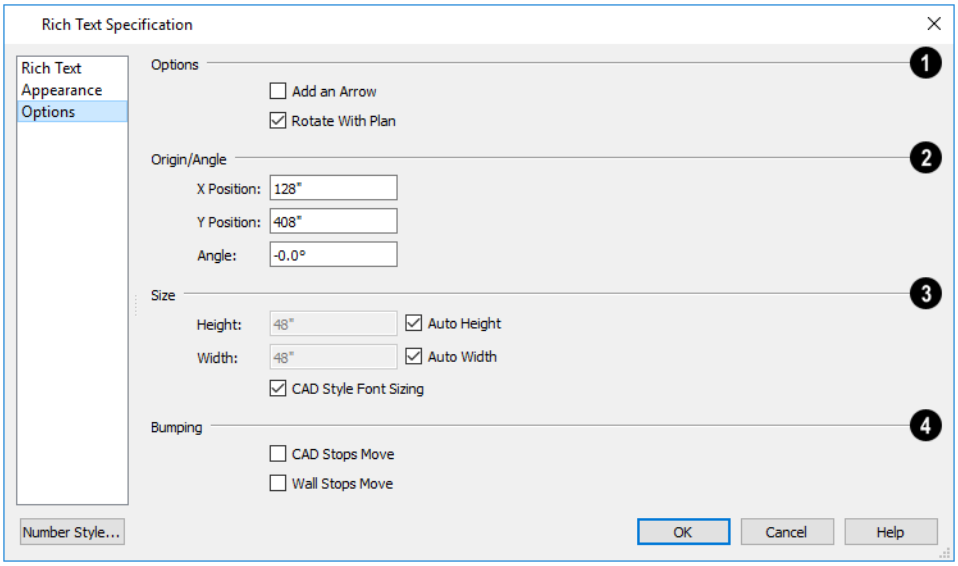
Check **Fill** to display a fill color within selected text object(s) and enable the settings that follow.

- Select **Custom Color** then click the Color bar to use a fill color of your choosing.
- Check **Use Layer Color** to use the color assigned to the text object's layer as its fill color.
- Check **Use Background Color** to use program's Background color as the text object's fill color. See *Colors Panel on page 95*.
- Use the **Transparency** slider bar or text field to control how transparent the fill color is.

3 Margins

Specify the **Top**, **Bottom**, **Left**, and **Right Margins**, which are the distance between the text and the border of the selected text object(s).

Options Panel



1 Options

- Check **Add an Arrow** to add a Text Arrow to the selected text object. It will be attached to the left side of the selected object if the text is set to Align Left, or to the right side if it is set to Align Right or Align Center. See *Text Arrows on page 381*.
- Check **Rotate with Plan** to rotate the selected text when **Rotate Plan View** is used. If unchecked, the selected text is unaffected when Rotate Plan View is used. See *Rotate Plan View on page 132*.

  Rotate with Plan also affects text in views sent to layout if the layout box is rotated. See *CAD and Text in Layout on page 971*.

2 Origin/Angle

- Specify the **X Position** and **Y Position** of the selected object relative to the origin. See *3D Drafting on page 12*.
- Specify the **Angle** of the selected text object. The default value is 0°.

3 Size

Specify the **Size** of the selected text object.

- Specify the **Height** of the selected text object(s) or check **Auto Height** to automatically adjust the text object's height to match its contents.
- Specify the **Width** to of the selected text object(s) or check **Auto Width** to automatically adjust the text objects width to match its contents. When Auto Width is used, text extends in a single line rather than wrap.
- **CAD Style Font Sizing** measures text size based on the total height of the capital letter A, as most CAD programs do. Uncheck this to instead size text according to information stored with the font, as most word processing programs do. See *Character Size on page 367*.

4 Bumping

See *Bumping/Pushing on page 167*.

- Check **CAD Stops Move** to bump the selected object into other CAD or CAD-based objects as it is moved.
- Check **Wall Stops Move** to stop the selected object when it bumps into a wall.

Editing Text

Once created, **Rich Text** objects can be selected individually or as a group and edited using the edit handles, the Edit Toolbar buttons, and their specification dialogs. See *Rich Text Specification Dialog on page 370*.

Callout and Marker editing are described separately. See *Editing Callouts on page 383* and *Editing Markers on page 386*.

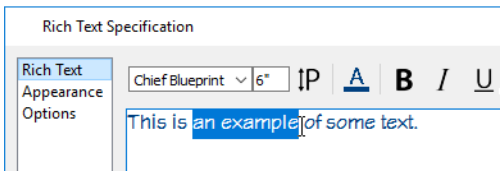
Editing Text Attributes

Most text attributes, including the font, size, style, and the content itself, are edited in the Rich Text Specification dialog.

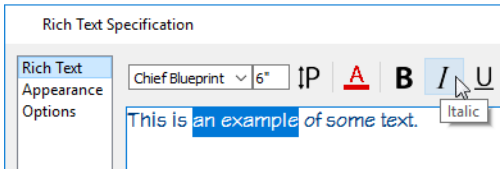
In order to edit the attributes of an existing **Rich Text** object, you must select some or all of the text before making changes. See *Text Panel on page 370*.

To edit Rich Text attributes

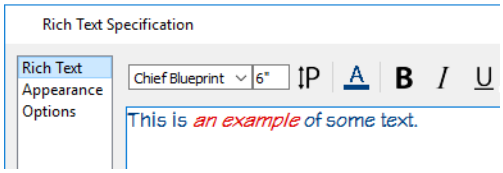
1. Select a **Rich Text** object and click the **Open Object** edit button.
2. On the Text panel of the Rich Text Specification dialog, click and drag to select some or all of the text typed into the Text field.



3. With some or all of the text selected, change any of the attributes available along the top of the panel, including the font, size, color, and style.



4. As changes are made, the selected text updates. Only the selected text is modified.



Using the Edit Handles

A selected **Text** object has the same edit handles as other box-based objects. See *Editing Box-Based Objects on page 199*.

As a text box's width is made narrower or wider using an edit handle, its height may increase or decrease so that none of the text becomes hidden. The opposite is not true, however: a text box's height cannot be resized smaller than the height of the rows of text it currently contains, plus its margins.

Depending on the active **Edit Behavior**, the text box and the characters within it may or may not resize together when a corner edit handle is dragged. See *Defaults, Preferences, and Edit Behaviors on page 179*.

- If **Resize** editing is enabled, both the text object and the font resize when a corner edit handle is dragged.
- If **Default** or **Concentric** editing is enabled, the text box resizes, but not the font size.
- If **Fillet** editing is selecting, the corners become rounded and the font size does not change. See *Behaviors Panel on page 113*.

> When text is resized using the edit handles, there is a "sticky point" at the natural size of the text box. Hold down the ***Ctrl/⌘*** key while resizing to override this behavior.

Using the Edit Tools

A selected **Rich Text** object can be edited in a variety of ways using the buttons on the Edit Toolbar See *The Edit Toolbar on page 122*.

Resizing Text

Both the border of a text object and the characters it contains can be resized.

The border of a text object can be resized using its edit handles or by specifying the Height and Width in its specification dialog.

The default character height of **Rich Text** objects can be specified as can the character height for individual objects, in their specification dialogs. See *Text Defaults and Preferences on page 366*.

Character height can be measured in either of two ways. See *Character Size on page 367*.

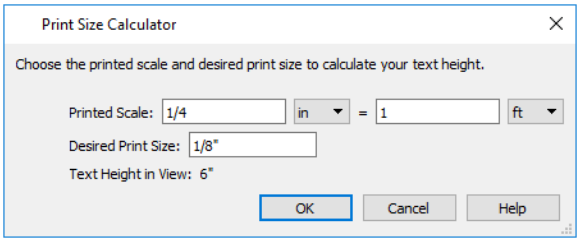
Scaling Text

As with the size of other objects, text size is subject to the current drawing scale specified in the Page Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.

To determine the **Height** in drawing units that is needed to produce text of a specific size when printed, use the Print Size Calculator dialog.

To use the Print Size Calculator dialog

1. Select the text object or Text Style that you wish to scale and click:
   - The **Print Size** button on the TEXT panel of the Rich Text Specification dialog. See *Text Panel on page 370*.
   - The **Scale** button on the TEXT panel of a variety of specification dialogs. See *Text Style Panel on page 392*.
   - The **Scale** button in the Text Style Defaults dialog.



2. In the Print Size Calculator dialog:
   - Confirm the desired **Printed Scale**.
   - Enter the **Desired Print Size** of the text.
   - The **Text Height in View** required to produce the Desired Print Size displays here for reference.
3. Click OK to return to the previous dialog. The **Character Height** value now equals that of the Text Height in View.

Generally, the **Printed Scale** does not need to be changed in the Print Size Calculator dialog unless you intend to send the current view to layout at a different drawing scale. See *Sending Views to Layout on page 972*.

ALIGNING TEXT

Text can be aligned in a number of ways.

- The text content of a text object can be aligned to the left, right, center or justified in the Rich Text Specification dialog. See *Text Panel on page 370*.
- The text content of a text object can be also be aligned by clicking the **Align Left**, **Align Right**, **Center**, or **Justify** edit button.
- The center points of text objects can be aligned with one another by assigning them the same **X** and/or **Y Position**. See *Attributes Panel on page 385*.
- Text objects can be aligned by bumped them against a CAD line or CAD based object such as a roof plane. See *Bumping/Pushing on page 167*.

A variety of other alignment methods are also available. See *Aligning Objects on page 170*.

The text in the columns of a plant schedule can also be aligned. See *Plant Schedules on page 947*.

COPY, CUT AND PASTE

Copy, Cut and Paste of text into and out of the text specification dialogs can be accomplished using keyboard hotkeys:

- Press ***Ctrl/⌘ + X*** to **Cut** the selected text and save it to the system clipboard.
- Press ***Ctrl/⌘ + C*** to **Copy** the selected text and copy it to the system clipboard.
- Press ***Ctrl/⌘ + V*** to **Paste** your last cut or copied selection in a new text object.

For more, See *Copying and Pasting Text on page 378*.

Copy, Cut and Paste use the system clipboard, making it possible to transfer text between text objects, between Home Designer files, from a plan or layout into another application, or vice versa. See *Copying and Pasting Objects on page 146*.

Copying and Pasting Text

The Copy, Cut and Paste commands use the system clipboard, making it possible to transfer text between text objects, between Home Designer files, from a plan or layout into another application such as a text editor or spreadsheet program, or vice versa. See *Copying and Pasting Objects on page 146*.

All or selected portions of the Materials List can also be copied and pasted into a text object, as well as into a word processing or spreadsheet program. See *Materials Lists on page 954*.

Cut, Copy, and Paste can also be accessed from the Edit menu of many applications, including Home Designer. These menu commands are not available when the Rich Text Specification dialog is open, but you can use the associated hotkeys.

To Copy, Cut and Paste text

1. On the TEXT panel of the Rich Text Specification dialog, or in another program altogether, highlight the text you wish to cut, copy or paste.
2. Press ***Ctrl/⌘ + X*** to **Cut** the selected text out of its original location and save it to the system clipboard.
3. Press ***Ctrl/⌘ + C*** to **Copy** the selected text to the system clipboard without removing it from its original location.
4. Open the text object or a file in another application and click to place your cursor in the Text field, writing area, or spreadsheet cell.
5. Press ***Ctrl/⌘ + V*** to **Paste** the copied text at the location of your cursor.

Bear in mind that when text is copied and pasted, its formatting is not always retained. The results depend on the program or type of text object in which the content was created as well as the type of text object into which it is pasted.

PASTING INTO RICH TEXT

Text pasted into a **Rich Text** object from another source will retain most - but not necessarily all - of its custom formatting. If a line of text is sufficiently long, however, it may be wrapped automatically when pasted into Rich Text.

To retain the same character size when text is pasted from a word processing program into the Rich Text Specification dialog, uncheck **CAD Style Font Sizing**. See *Options Panel on page 374*.

If you want to retain the original color(s) of the text being pasted into a **Rich Text** object, be sure to uncheck **Layer Color Text** in the Rich Text Specification dialog. See *Appearance Panel on page 373*.

Text pasted into a **RichText** object from a spreadsheet program retains basic column and row information. Column width cannot be adjusted as it can in simple **Text** ; however, as you add or remove text from a cell, row height will increase or decrease to accommodate your changes.

PASTING INTO A VIEW

Text can also be pasted directly into a plan view or layout page or cross section/elevation view. When you use the Paste command, a new Rich Text object is created, the text is pasted into that object, and it is selected. In order to see the new object, you may need to Fill Window.

Find/Replace Text

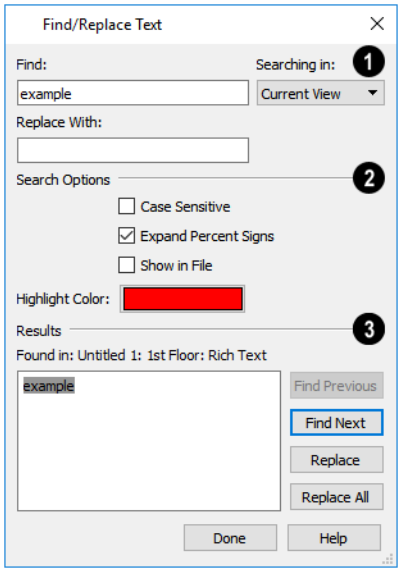
Find/Replace Text and **Spell Check** locate text in Rich Text, legacy Text, Callouts, Markers, Plant Schedule titles and headings, Object Information, and custom labels for objects and rooms. They do not locate text in automatic object labels,

default room labels, suppressed labels, the Materials List, or in the bodies of Plant Schedules, however.

Find/Replace Text and **Spell Check** locate text even when an object's layer is turned off and/or locked. They can also find text in objects on locked layers. See *Locking Layers on page 153*.

FIND/REPLACE TEXT

Select **Edit> Find/Replace Text** to find a particular word or string of text in your plan or layout file and replace it if you wish.



1 Find and Replace

- Type the string of text that you want to **Find** in the text field.
- Type the string of text that you want the text you find to be **Replaced With**.
- Select the scope of your search from the **Searching In** drop-down list. Choose "Current View", "Current File", "All Open Files" or "Selected Objects".

2 Search Options

These settings allow you to refine your search.

- Check **Case Sensitive** to distinguish between capitalized and lowercase letters when searching. When unchecked, capitalization is ignored while searching. Regardless of whether this is checked, the capitalization used in the Replaced With field will be applied when text is replaced.
- When **Expand Percent Signs** is checked, the program will ignore strings of one or two % signs in a row, which may be used to mark up imported text with style commands. Uncheck this to find individual % signs in the search results.
- Check **Show in File** to open a new view window and highlight the object associated with the current search Result. When unchecked, the current search Result will only be highlighted if it is located in the current view window. See *Working in Multiple Views on page 133*.
- Click the **Highlight Color** button to specify the color used to highlight the object associated with the current search Result. See *Select Color Dialog on page 165*.

3 Results

The current search Results are shown for reference in the field on the left. The location of the associated object, including

file name, view name, and its object type is stated above the Results field as well. Click a button to the right of the Results field to perform the associated action:

- Click **Find Previous** to find the previous search Results.
- Click **Find Next** to search for additional Results.
- Click to **Replace** the current search Results with the replacement specified above.
- Click to **Replace All** instances of the current search Results found throughout the Searching In scope, selected above.

> Although the Find options do not locate text in suppressed labels, Replace All will replace that text. See *Displaying Labels on page 394*.

Spell Check

Select **Tools> Checks> Spell Check** to open the Spell Check dialog. The **Spell Check** feature checks each text object in the current Plan or Layout consecutively for spelling errors.

Spell Check can also be accessed by clicking the **Spell Check** button in the Rich Text, and Plant Schedule Specification dialogs as well as by clicking the **Spell Check** edit button for a selected text object or schedule. When accessed in either of these manners, only the selected object is checked for spelling errors. See *Editing Text on page 375*.

Spell Check Dialog

1 Results

Spell Check looks for each word in all open dictionaries. When a word that is not recognized is found, it displays here.

- The location that the spelling error was **Found in** is reported at the top of the dialog for reference.
- The text where the error was found displays in the top field for reference. The error itself is highlighted.
- Click **Ignore** to ignore the word in question in all Spell Checks during the current program session. The word will not be ignored the next time Home Designer is launched.
- Click **Skip** to ignore the current instance of the word, but find other instances that may be present.
- Click **Learn** to add the word in question to the User Dictionary. See *Home Designer Data on page 74*.
- Click **Delete** to remove the selected word from the text.
- Click **Replace** to replace the word in question with the suggested word, below.

2 Suggestions

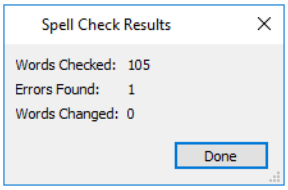
Spell check displays **Suggestions** for corrections here. There are two ways to replace a misspelled word:

- Type a correction in the field and click the **Replace** button.
- Click on a suggestion to select it, then click **Replace** to accept it.

3 Highlight Color

Click the Color bar to specify the **Highlight Color** for misspelled words when Check Spelling is used. This color is used to identify misspelled words in this dialog, text objects with misspelled words in views where an error is found, and text objects located using **Find/Replace Text**. See *Select Color Dialog on page 165*.

When Spell Check is finished checking the text object or file for errors, the Spell Check results window displays.



Two spelling suggestions, Ignore Spelling, and Learn Spelling are available in the contextual menu if you right-click on a selected misspelled word in the Rich Text and Text Specification dialogs. See *Rich Text Specification Dialog on page 370*.

Text Arrows

Text arrows, which are simply CAD lines with arrows drawn on the "Text" layer, can be used to connect text objects to details of interest in your drawing. See *Line Tools on page 230*.

There are several ways to create text arrows, and special attachment behaviors to take advantage of.

Text with Arrow

The **Text with Arrow** tool places a text object with an arrow already attached. This line with arrow can be selected and edited like any other CAD line. See *Line Tools on page 230*.

Text Line with Arrow

Text Lines with Arrow can be attached to text, CAD, and architectural objects by selecting **CAD> Text> Text Line with Arrow** and then clicking and dragging to draw a line. There is no limit to the number of text lines with arrows that can be attached to an object.

The endpoints of Text Lines with Arrow can be joined to form polylines with corners that can be adjusted using the edit handles. See *Polylines on page 244*.

A **Text Line with Arrow** behaves like a **Line With Arrow** with one exception: Text Lines with Arrow are initially placed on the "Text" layer, not the "CAD, Default". See *Display Layers on page 151*.

Attaching Text Arrows to Objects

A CAD line, arc, spline, or open polyline with an arrow can be attached to other objects. It can attach to an architectural object anywhere within its 2D symbol in plan view, but attaches to a closed polyline-based object along its edges. A text line with arrow will automatically be deleted if one of the objects it is attached to is deleted.

Text Lines with Arrow that have the same Line Style and Arrow attributes can be snapped together to form open or closed polylines. If two lines with arrows meet within the bounding box of a text object, however, they will not join. This allows you to attach multiple, separate text arrows to a single text object. See *Editing Line-Based Objects on page 187*.

Text Lines with arrow can be independent or attached to other objects at both their tail and head ends. Arrows attach to closed polyline-based objects along their edges, but can attach to Text or an architectural object anywhere within its bounding box in plan view.

- When a selected Text Line with Arrow is attached to an object on either end, its end edit handle will display the Selected Edge Handle Fill color. See *Colors Panel on page 95*.

- If an attached object is moved, the end of the Text Line with Arrow will move, as well.
- If a text arrow is attached to text or another object, deleting either the text or the object will also delete the text arrow.

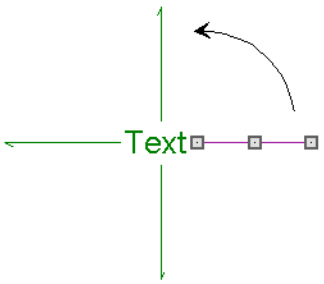
Auto Position Arrows

If either or both ends of a line with arrow are attached to an object, **Auto Position Tail** and **Auto Position Head** will be available in the Line Specification dialog. See *Arrow Panel on page 252*.

The Auto Position options are designed to prevent lines with arrows from crossing over the text or other objects that they are attached to. These options snap the ends of a line with arrow to predefined points on the object(s) it is attached to. If an attached object is moved, the end of the line with arrow will update so that it is snapped to the closest Auto Position location. Similarly, if the line with arrow is moved, rotated, or resized, its end may snap to a new Auto Position location on an attached object.

There are four Auto Position locations on a text object: one at the midpoint of each side. The Auto Position locations on other objects varies by object type.

The following image illustrates the behavior of Auto Positioning. The arrow has the **Auto Position Tail** option checked, and the tail end of the line is attached to the text object. When the head of the line with arrow is moved, the tail of the arrow snaps to different Auto Position locations on the text object, maintaining its connection.



In addition:

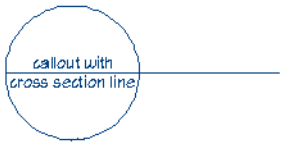
- If a selected Text Line with Arrow is moved away from an Auto Position location and you check **Auto Position Tail**, the tail will snap to the nearest Auto Position location.
- The first segment of a polyline arrow attached to text maintains its angle when Auto Position is off and text is moved.
- Auto Position is disabled automatically when an arrow is not attached to one of the auto position locations.
- Arcs and splines with arrows can also be attached to text and other objects.

Callouts

To create a callout, select **CAD> Text> Callout**, then click at the location where you want a callout to be placed in plan view, a cross section/elevation view, or on a layout page. The Callout Specification dialog displays. Make any needed changes and click **OK** to place a callout. See *Callout Specification Dialog on page 384*.

Cross Section Lines

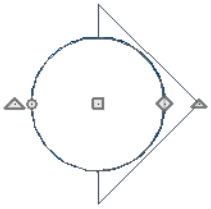
Check the **Cross Section Line** box in the Callout Specification dialog to add a cross section line with the length, angle, and other attributes that you specify. See *Attributes Panel on page 385*.



Cross section lines can be added to any callout shape. You can specify the cross section line's length and angle in the Callout Specification dialog, as well as add text above and/or below the line. A cross section line can also be resized as well as rotated using the square edit handle located at the end of the cross section line. See *Editing Callouts on page 383*, below.

Callout Arrows

To add an arrow or "hat" to a callout, select the callout and drag the diamond-shaped handle away from the center of the callout. An arrow is created, pointing in the direction you dragged. See *Editing Callouts on page 383*, below.



Arrows can also be specified in the Callout Specification dialog. See *Attributes Panel on page 385*.

You can also add as many CAD Lines with Arrows as you like to callouts. To add a line with arrow to a callout:

- Select the callout, then click and drag the diamond-shaped Add Text Line with Arrow edit handle located below the callout.
- Select **CAD> Text> Text Line with Arrow** , then click and drag to create a line with arrow, which can be moved or resized as needed.

See *Text Arrows on page 381*.

Double Callouts

Any callout can be specified as a **Double Callout** in the Callout Specification dialog. See *Attributes Panel on page 385*.

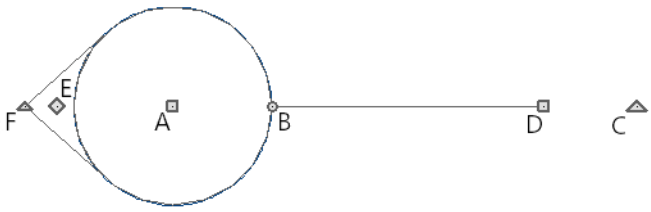


To resize the line between the two callout shapes, select the callout and then click and drag the edit handle at the center of either callout shape. The arrows on a double callout are always the same on both callouts.

Editing Callouts

Callouts can be edited using the edit handles, the Edit Toolbar buttons and the Callout Specification dialog. See *Callout Specification Dialog on page 384*.

When a callout is selected, it has a selection of edit handles. The number varies depending on whether it has a cross section line and/or arrow.



B. Concentric Resize

A. The **Move** handle is located at the center of the callout shape. Click and drag this handle to move the callout according to the currently active **Edit Behavior** .

B. The small circular **Concentric Resize** handle displays on the perimeter of the callout shape. If the callout has a cross section line, it will be found where that line meets the perimeter. Click and drag this handle to resize the callout without moving its center point.
   - If the callout's Size is set to **Automatic** in its specification dialog, any text displaying inside its shape will also resize when this edit handle is used. See *Callout Panel on page 389*.

C. The large triangular **Rotate** handle displays outside the callout shape perimeter, just past the end of the cross section line if one is present. It is used to rotate the callout shape. The callout's text does not rotate along with the shape unless the Text Angle is set to Automatic.

D. The square **Extend** handle is at the end of the cross section line, if there is one. Click and drag this handle to change the cross section line's length and/or angle.

E. The diamond-shaped **Add Callout Arrow** handle is located just outside the callout shape. Click and drag this handle away from the callout shape in any direction to draw a callout arrow, or hat, to the perimeter. See *Callout Arrows on page 383*.
   - Remove an arrow by clicking and dragging this handle towards the center of the callout.

F. The small triangular **Add Rotate Arrow** handle is located at the end of each callout arrow, or hat. Click and drag this handle to rotate that arrow around the callout shape.

Callout Specification Dialog

To open the Callout Specification dialog, select a Callout and click the **Open Object** edit button. This dialog also displays when a new Callout is created using the **Callout** tool. See *Callouts on page 382*.

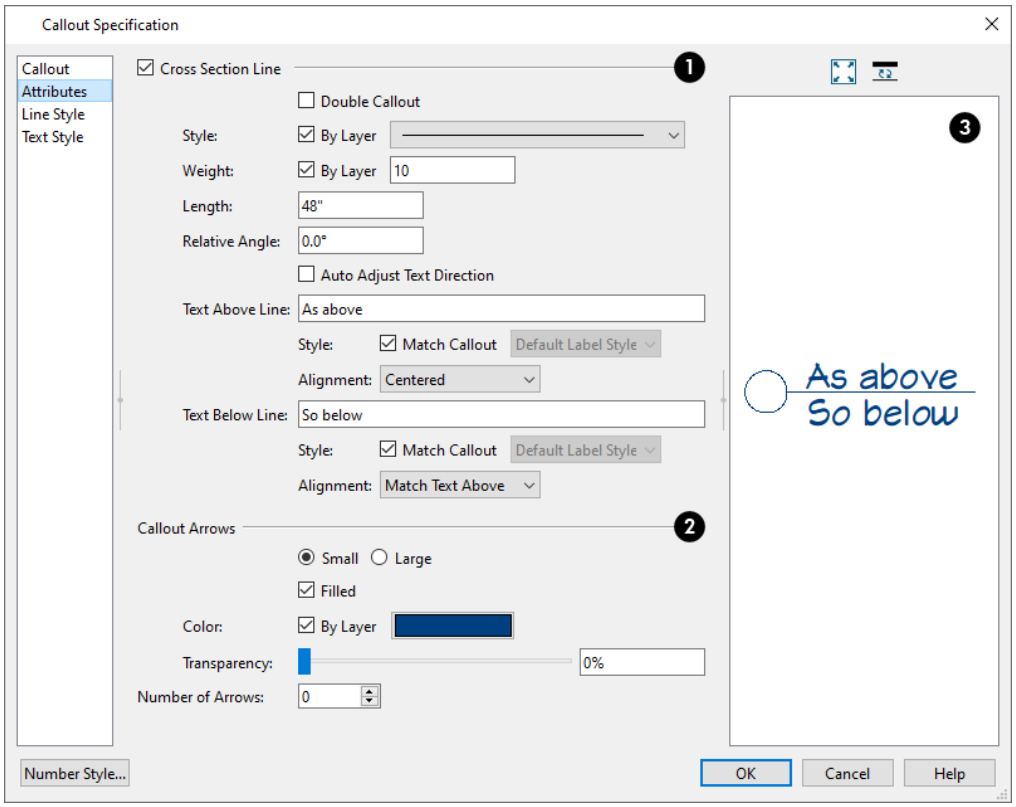
The Callout Specification dialog is similar to Callout Label Specification dialog, which allows you to create callout labels for layout views. See *Layout Box Borders and Labels on page 977*.

This dialog is also similar to the Callout Defaults dialog but affects the selected callouts rather than all subsequently created callouts. See *Text Defaults and Preferences on page 366*.

Callout Panel

For information about the settings on this panel, see *Callout Panel on page 389*.

Attributes Panel



1 Cross Section Line

Check **Cross Section Line** to apply a cross section line to the selected callout and enable the settings that follow.

- Check **Double Callout** to specify two identical callouts connected by the cross section line. Only available when Display is checked.
- Select the cross section line's line **Style** from the drop-down list. When **By Layer** is checked, the line style specified in the Layer Display Options dialog is used.
- Specify the **Weight** of the cross section line or check **By Layer** to use the line weight specified in the Layer Display Options dialog.
- Specify the **Minimum Length** of the cross section line. The actual length may be greater, depending on the text either above or below the cross section line.
- Specify the **Relative Angle** of the cross section line. This setting is not absolute: rather, it is measured relative to the Shape Angle of the callout object.

2 Callout Arrows

- Specify whether the arrows are **Small** or **Large**.
- Check **Filled** to specify arrows with a solid fill. When unchecked, arrows are unfilled.
- Specify the **Color** of the callout's arrow(s): check **By Layer** to use the color specified in the Layer Display Options dialog or click the Color bar to choose an arrow color. See *Select Color Dialog on page 165*.
- Use the **Transparency** slider or text field to control how transparent the callout arrow(s) are.

- Specify the **Number of Arrows**.
- The angle of each arrow can be set using the callout's edit handles. See *Editing Callouts on page 383*.

3 Preview

A preview of the selected callout displays on the right. See *Dialog Preview Panes on page 21*.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. For more information, see *Line Style Panel on page 234*.

Additional attributes for the cross section line and arrows can be specified on the *Attributes Panel on page 385*.

Markers

To create a marker, select **CAD> Text> Marker** and click at the location where you want it to be placed. The Marker Specification dialog opens.

Markers for **Level Lines**, **Test Borings** and **Point Markers** can be placed in plan view, and cross section/elevation views.

You can also place a framing reference marker using **Build> Framing> Framing Reference** . **Framing Reference Markers** should only be placed in plan views. See *Framing Reference Markers on page 670*.

Editing Markers

Markers can be edited using the edit handles, edit toolbar and Marker Specification dialog. See *Marker Specification Dialog on page 387*.

When a marker is selected, it has four edit handles.



A. The **Move** handle is located at the center of the callout shape. Click and drag this handle to move the callout according to the currently active **Edit Behavior** .

B. The small circular **Concentric Resize** handle displays on the perimeter of the callout shape. If the callout has a cross section line, it will be found where that line meets the perimeter. Click and drag this handle to resize the callout without moving its center point.
   - If the callout's Size is set to **Automatic** in its specification dialog, any text displaying inside its shape will also resize when this edit handle is used. See *Callout Panel on page 389*.

C. The square **Extend** handle is at the end of the cross section line, if there is one. Click and drag this handle to change the cross section line's length and/or angle.

D. The large triangular **Rotate** handle displays outside the callout shape perimeter, just past the end of the cross section line if one is present. It is used to rotate the callout shape. The callout's text does not rotate along with the shape unless the Text Angle is set to Automatic.

Point Markers and Dimensions

There are a number of scenarios in which Markers may be created in conjunction with dimension lines. These Point Markers derive their initial attributes from the Marker Defaults dialog and can be selected and edited:

- When the **Point to Point Dimension** tool is used to draw a dimension line and an object is not available to snap to at either the start or end point, a Point Marker will be automatically created and the dimension line will locate it. See *Point to Point Dimensions on page 352*.
- Dimensions drawn in a cross section/elevation view may locate Cross Section Lines that represent objects rather than the objects themselves. When this occurs, Point Markers will also be placed and the dimension lines will locate them. See *Cross Section Lines on page 797*.
- If a dimension line is copied independent of the objects it locates, the pasted dimension line will locate Point Markers. See *Copying and Pasting Dimension Lines on page 357*.

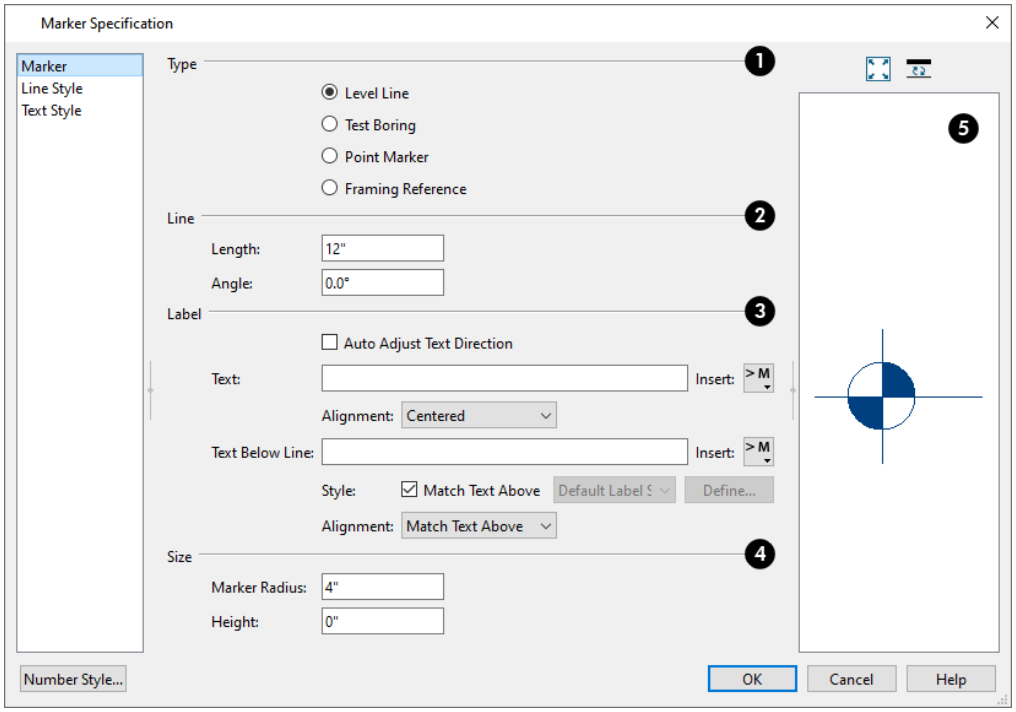
Marker Specification Dialog

To open the Marker Specification dialog, select a marker and click the **Open Object** edit button.

This dialog also displays when a new marker is created by clicking in plan view using the **Marker** tool.

The Marker Specification dialog is similar to the Marker Defaults dialog but affects the selected markers rather than all subsequently created markers. See *Text Defaults and Preferences on page 366*.

Marker Panel



1 Type

Choose a marker **Type**. Note that **Framing Reference Markers** affect the model, while the other marker types are for

annotation only. See *Framing Reference Markers on page 670*.



Examples of Level Line, Test Boring, Point and Framing Reference markers.

2 Line

Specify the **Minimum Length** and **Angle** of the marker's line and text.

- For Level Line and Framing Reference Markers, the actual length of the level line may be greater, depending on the text either above or below the line.
- For Test Boring and Point Markers, the Minimum Length controls the gap between marker and text.

3 Label

Specify the text and alignment of the selected marker's **Label**. The label's text style can be specified on the TEXT STYLE panel. See *Text Styles on page 390*.

- When **Auto Adjust Text Direction** is checked, label text is oriented relative to the bottom or the right side of the view window, depending on the cross section line's angle. When unchecked, label text is oriented relative to the cross section line, regardless of its angle.
- Type the **Text** which displays above the marker's line.
- Select a text **Alignment** option from the drop-down list. Only available for Level Line and Framing Reference markers.
  - **Toward Marker** positions the text next to the marker shape.
  - **Centered** centers the text along the length of the marker's line.
  - **Away From Marker** positions the text at the end of the marker's line.

Text Below Line and the related settings below it are only available for Level Line markers.

- Type the **Text Below Line** that displays below the Level Line marker's line, if desired.
- Specify the Text **Style** used by the Text Below Line:
  - When **Match Text Above** is checked, the Text Below Line uses the same Text Style as the text above the line.
  - Uncheck this box, then select a different Text Style from the drop-down list.
- Select a text **Alignment** option for the Text Below Line from the drop-down list. "Match Text Above" is selected by default.

4 Size

Specify the **Size** of the selected marker.

- Specify the **Marker Radius**, which is the distance from the marker's center to the edge of its filled shape.
- In a cross section/elevation view, specify the **Height** of the marker, relative to 0. This setting is also available in plan view but does not affect the marker's position. See *Detailing Cross Section/Elevation Views on page 802*.

5 Preview

A preview of the selected marker displays on the right. See *Dialog Preview Panes on page 21*.

Line Style Panel

The Line Style panel is found in the specification dialogs for many different objects. For more information, see *Line Style Panel on page 234*.

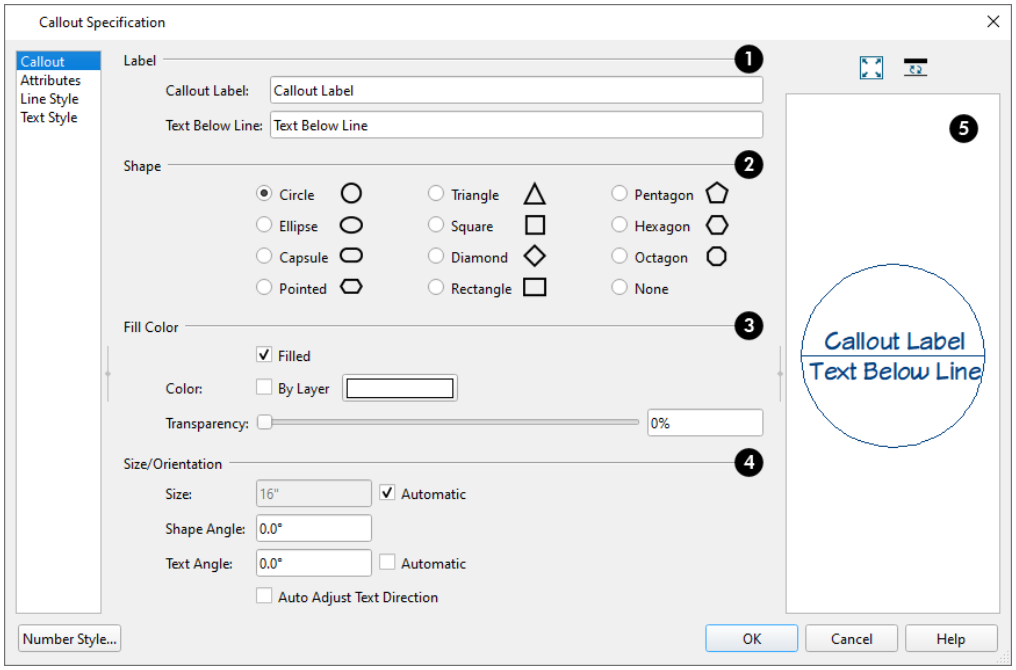
Additional attributes for the cross section line and arrows can be specified on the Attributes panel. See *Attributes Panel on page 385*.

Text Style Panel

The settings on the Text Style panel control the appearance of the selected object's text. For more information, see *Text Style Panel on page 392*.

Callout Panel

The Callout panel is found in the Callout Specification dialog. See *Callout Specification Dialog on page 384*.



1 Label

- Type the **Callout Label**, which displays inside the callout shape. This text is centered in the callout shape when no Text Below Line is specified.
- Type the **Text Below Line** for the bottom row, if desired. If Text Below Line is added, a line centered in the callout shape will separate this text from the Text Above Line.

2 Shape

Select a callout shape by clicking the radio button beside one of the options. "None" produces callout text but no shape around it.

3 Fill Color

- When **Filled** is checked, the selected Callout has a solid fill. When unchecked, it is unfilled.
- Specify the **Color** of the Callout's fill: check **By Layer** to use the color specified in the Layer Display Options dialog or click the **Color** bar to choose a fill color. See *Select Color Dialog on page 165*.
- Use the **Transparency** slider bar or text field to control how transparent the fill color is.

4 Size/Orientation

- Uncheck **Automatic** to enable the **Size** field and specify a new value. When checked, the callout is sized so that it encompasses its Label.
- Specify the **Shape Angle** of the callout shape.
- Specify the **Text Angle** of the text inside the callout shape. Check **Automatic** for the Text Angle to match the Shape Angle.

5 Preview

As in many specification dialogs, a preview of the selected object displays on the right. See *Dialog Preview Panes on page 21*.

Text Styles

In Home Designer, a Text Style is a set of attributes assigned to objects that displays text, such as Dimensions, Callouts, Markers, Plant Schedules, and object labels.

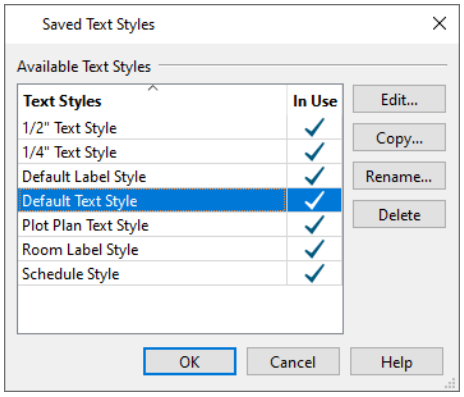
> Note: Because of its ability to use multiple attributes in the same object, Rich Text does not use Text Styles. See *Rich Text Specification Dialog on page 370*.

You can create your own or edit existing Text Styles to suit your needs in the Text Style Defaults dialog.

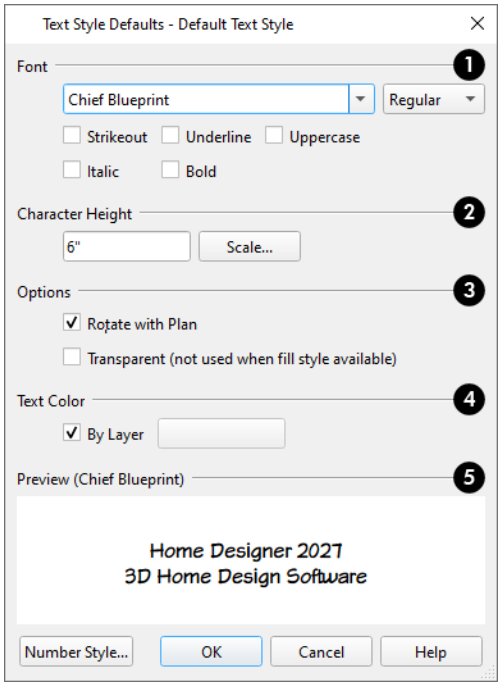
Text Style Defaults Dialog

Select **Edit> Default Settings**, click on “Text Styles” and click the **Edit** button. The Saved Text Styles dialog will open, allowing you to select which Saved Text Style Defaults you would like to edit.

Saved Text Styles Dialog



- Select the **Name** of a Text Style from the list.
- Click the **Edit** button to open the defaults dialog for the selected Text Style so that you can edit it.
- Click the **Copy** button to create a new Text Style by copying the one currently selected in the Name field.
- Click the **Rename** button to change the name of the selected Text Style.
- Click the **Delete** button to remove the selected Text Style from the current plan or layout file.
- Click **OK** to close the Saved Text Style Defaults dialog and save any changes you made in the defaults dialog(s). Any changes made to a given Text Style will be applied to all objects in the current plan that are set to use that Text Style.
- Click **Cancel** to close the Saved Text Style Defaults dialog without saving any changes that you may have made in the defaults dialog.



1 Font

- Select a **Font Family** and **Style** from the drop-down lists. See *Fonts and Alphabets on page 367*.
  - The available Styles vary depending on which Font Family is selected.
- The text styles **Bold**, **Underline**, **Italic**, **Strikeout**, and **Uppercase** are available. Check any of the boxes to apply that style.

2 Character Height

- Enter the **Character Height** in drawing units. This height is subject to the current drawing scale.
- Click the **Scale** button to open the Printed Size Input dialog. See *Scaling Text on page 376*.
- If the selected object was originally created in an older program version and had **Legacy Compatible Size** checked in that version, this check box will be available. If you uncheck the box and click OK, however, the option will be removed. See *Character Size on page 367*.

3 Options

- Check **Rotate with Plan** to rotate text using the selected Text Style when **Rotate Plan View** is used. If unchecked, the text is unaffected when **Rotate View** is used. See *Rotate Plan View on page 132*.
  - **Rotate with Plan** also affects text in a view sent to layout if the layout box is rotated. See *CAD and Text in Layout on page 971*.
- Check **Transparent** to make text boxes using the selected Text Style transparent. When unchecked, text boxes have a solid fill the same color as your background color. Not available for objects that have FILL STYLE panels in their specification dialogs. See *Colors Panel on page 95*.

4 Text Color

- When **By Layer** is checked, text uses the line color assigned to the layer that the object it is assigned to is located on. See *Layer Attributes on page 152*.
- Uncheck **By Layer**, then click the **Color** bar to select a different color. See *Select Color Dialog on page 165*.

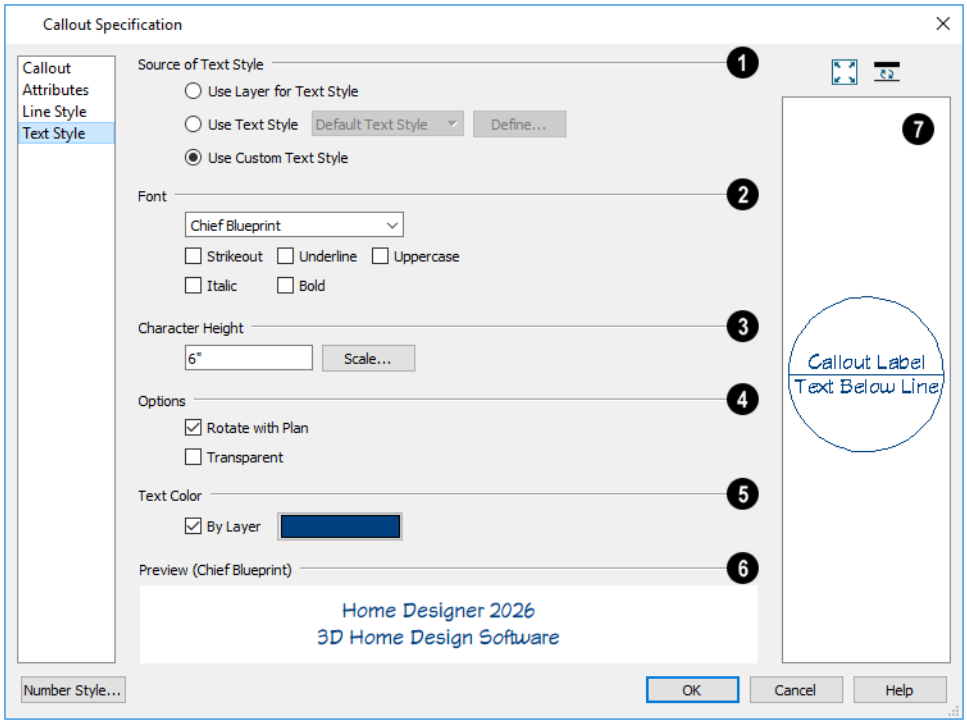
5 Preview of Text Style

A preview of the Text Style currently assigned to the selected object displays here.

TEXT STYLE PANEL

The TEXT STYLE panel is found in various specification and defaults dialogs in the program.

Most of the settings on this panel are also found in the Text Style Defaults dialog, where they affect all objects using that style rather than a single selected object.



1 Source of Text Style

Specify where the selected object should draw its Text Style from. These options are not available in the Text Style Defaults

dialog.

- Select **Use Layer for Text Style** to use the Text Style assigned to the layer that the selected text is located on.
- Select **Use Text Style**, then choose a style from the drop-down list to apply that style to the selected object, regardless of what layer it is on. When this is not selected, the name of the selected object's Text Style displays here for reference.
- Select **Use Custom Text Style** to enable the settings below and customize the selected objects Text Style attributes.
- Check **Use Default Text Style** to use the default style for the selected object type, or uncheck this box to enable the settings below and define a custom style.
- The settings that follow are only editable when **Use Custom Text Style** is selected. When it is not selected, information about the Text Style that is assigned to the selected object displays for reference.

2 Font

- Select a font from the drop-down list.
- The text styles **Bold**, **Underline**, **Italic**, **Strikeout**, and **Uppercase** are available. Check any of the boxes to apply that style.

3 Character Height

- Enter the **Character Height** in drawing units. This height is subject to the current drawing scale.
- Click the **Scale** button to open the Printed Size Input dialog. See *Scaling Text on page 376*.
- If the selected object was originally created in an older program version and had **Legacy Compatible Size** checked in that version, this check box will be available. If you uncheck the box and click OK, however, the option will be removed. See *Character Size on page 367*.

4 Options

- Check **Rotate with Plan** to rotate text using the selected Text Style when **Rotate Plan View**  is used. If unchecked, the text is unaffected when **Rotate View** is used. See *Rotate Plan View on page 132*.
  Rotate with Plan also affects text in a view sent to layout if the layout box is rotated. See *CAD and Text in Layout on page 971*.
- Check **Transparent** to make text boxes using the selected Text Style transparent. When unchecked, text boxes have a solid fill the same color as your background color. Not available for objects that have FILL STYLE panels in their specification dialogs. See *Colors Panel on page 95*.

5 Text Color

- When **By Layer** is checked, text uses the line color assigned to the layer that the object it is assigned to is located on. See *Layer Attributes on page 152*.
- Uncheck **By Layer**, then click the **Color** bar to select a different color. See *Select Color Dialog on page 165*.

6 Preview of Text Style

A preview of the Text Style currently assigned to the selected object displays here.

7 Object Preview

In some specification dialogs, a preview of the selected object displays on the right. See *Dialog Preview Panes on page 21*.

Object Labels

Labels for architectural objects can display in plan views for a variety of different object types:

- Automatic Labels provide basic information about the object, such as its type, size, or name.
- You can create a custom label for an object in its specification dialog using text. See *Label Panel on page 395*.

Object labels have their own Move edit handle that displays when their object is selected. Schedule callout labels can be moved in the same manner. When a plant object has both label types displaying, they share a single Move handle and can only be rotated using settings in the object specification dialog and Schedule Specification dialog. See *Labels Panel on page 952* and *Edit Handles on page 23*.

Automatic Labels

Most objects that can display labels have an Automatic Label created by the program that states basic information about it.

When **Automatic Label** is selected in the object's specification dialog, this is usually the label that will be used; however:

- If a user-defined label is specified in the object's defaults dialog, that label will be used instead of the Automatic Label.
- Automatic room labels report each room's name and optionally, its size as well. See *Automatic Room Labels on page 320*.
- If the plant is included in a plant schedule and callout labels are specified in that schedule, a callout label will be used.
- Fixtures and appliances inserted into cabinets do not have labels of their own.

The information reported in automatic labels varies by object type. A number of automatic object labels have special features:

- *Wall Labels on page 273*
- *Room Labels on page 320*
- *Door Labels on page 403*
- *Window Labels on page 435*
- *Cabinet Labels on page 471*
- *Roof Plane Labels on page 606*
- *Displaying Framing on page 673*
- *Truss Labels on page 688*
- *Symbol Object Labels on page 733*
- *Layout Box Borders and Labels on page 977*

Displaying Labels

The display of object labels in plan views can be controlled by layer in the Layer Display Options dialog. Label layer names begin with the object type, followed by the word Label: for example, cabinet labels are located on the "Cabinets, Labels" layer. See *Layer Display Options Dialog on page 154*.

In addition, you can click the **Display Label in This View** edit button to display or suppress a selected object's label in the current view. In plan view, this checks or unchecks the Display in Plan View in the object's specification dialog; in camera views, it controls the Hide in this View check box. See *Label Panel on page 395*.

Object labels use the "Default Label Style" Text Style. See *Text Styles on page 390*.

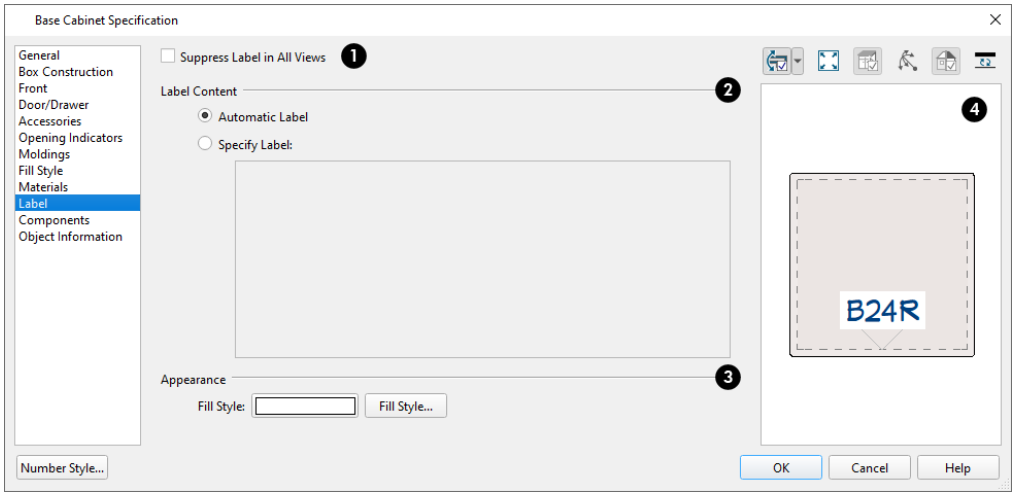
With the exception of those for rooms, roofs, and cameras, labels can also be included in the Materials List. Items in the Labels column of the Materials List are editable; however, any changes will not be applied to the actual objects' labels. See *Materials List Columns on page 962*.

The minimum on-screen display size of labels can be specified in the Preferences dialog. See *Appearance Panel on page 93*.

Label Panel

The LABEL panel is found in the specification and defaults dialogs for a variety of different objects. The settings that are available vary depending on the type of object that is selected. See *Object Labels on page 394*.

> Note: If you select Use Callout in the Plant Schedule Specification dialog, the settings here are overridden and the schedule label is used instead. See *Labels Panel on page 952*.



1 Display Options

The options available here vary depending on object type. Not available in the Room Label Defaults dialog.

- Check **Suppress Label in All Views** to prevent the selected object's label from displaying in all plan views. This option does not affect the display of schedule callouts and is not available for Bay, Box, and Bow Windows or Mulled Units.
  - This box is checked automatically in the Room Specification dialog if you select "Unspecified" as the Room Type, and unchecked automatically if you select any other Room Type. You can, however, turn this behavior off if you wish in the Preferences dialog. See *Architectural Panel on page 109*.
- Room size information can be set to **Display in All Views** below either the automatic or manually specified label. Select any combination of **Interior Dimensions**, **Interior Area**, and/or **Standard Area**. Only available in the Room Specification and Room Type Defaults dialogs. See *Room Size on page 320*.
- When **Display in Plan View** is checked, the selected object's label displays in all plan views, and when unchecked the label displays in none of them. Only available for Bay, Box, and Bow Windows or Mulled Units in plan view when Show Single Label is selected below.
- The **Display in Current View** settings are only active if you open an object's specification dialog in a camera or cross section/elevation view, and only affect the display of the selected object's label in the current view. Not available for layout boxes.
  - Select **Automatic** to display the object's label when the surface at its center point is visible in the view.
  - Select **Show in this View** to display the object's label regardless of whether its center point is visible.

- Select **Hide in this View** to suppress the object's label regardless of whether its center point is visible.

- Bay, Box, and Bow Windows and Mulled Units have several settings for controlling **Multiple Component** labels. These settings also affect how Bay, Box and Bow Windows and Mulled Window units are counted the Materials List. See *Window Labels on page 435*.
  - Select **Suppress Label(s) in All Views** to display no label in plan view. Individual components are counted in the Materials List.
  - Select **Show Component Labels** to produce labels for each component in plan view. Individual components are counted in the Materials List.
  - Select **Show Single Label** to produce one label for the unit and suppress component labels. When this option is selected, the settings that follow on the LABEL panel become enabled.

2 Label Content

Specify the information reported in the label. Not available for cameras. See *Displaying 3D Views on page 788*.

- Select **Automatic Labels** to use the default label for the selected object. See *Automatic Labels on page 394*.
- Select **Specify Label** to replace the selected object's Automatic Label with whatever you type in the text field below. Press the ***Enter*** key while the cursor is in the text field to begin a new line. When Specify Label is chosen, the text of the selected object's Automatic Label initially populates the text field.

3 Appearance

- To define a **Fill Style** for the selected object's label, click the preview box or the **Fill Style** button. See *Fill Styles on page 159*.

4 Preview

In most specification dialogs, a preview of the selected object displays here. In the preview pane, labels can be seen in Plan View only. Only the regular plant label is shown: even when a selected plant has a schedule callout label. See *Dialog Preview Panes on page 21*.

Doors

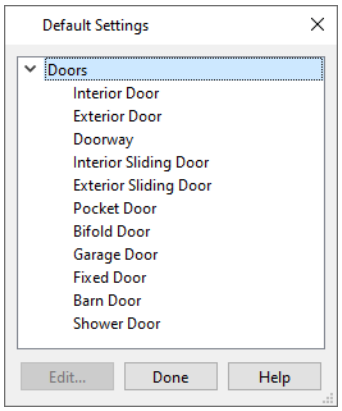
Chapter 16

Home Designer comes with tools for creating a wide variety of interior and exterior doors. In addition, the library offers a large selection of specialty doors and doorways including hinged, sliding, pocket, bifold, and garage doors. Additional name-brand door catalogs are also available for download from our website, HomeDesignerSoftware.com.

Door Defaults

There are several defaults dialogs for doors. Default Settings are accessed by selecting **Edit> Default Settings**. Click the arrow next to "Doors" to expand the category. Select one or more subheadings and click the **Edit** button to open the defaults dialog associated with your selection:

The various Door Defaults in the list can be multiple-selected by holding down the ***Shift*** or ***Ctrl/⌘*** keys. See *Shift and Ctrl/⌘ Select on page 187*.



Door Defaults can also be accessed by double-clicking the **Door Tools** parent button or the **Hinged Door** or **Sliding Door** child button. Double-clicking the other Door Tools child buttons will open the defaults dialog for that particular door type.

Because Hinged and Sliding Doors are often used in both interior and exterior applications, they have both Interior and Exterior Door Defaults.

The Door Defaults dialogs look nearly the same as the Door Specification dialog. See *Door Specification Dialog on page 410*. There are only a couple of differences:

- Since default settings are specified here, "Use Default" is not an option for some settings as it is in the Door Specification dialog.
- The **Door Type** cannot be changed in the Defaults dialogs.

Interior vs Exterior Doors

Regardless of its **Door Type** or the tool used to create it, a door will be:

- An Interior Door if it is created in a wall that separates two interior rooms;
- An Exterior Door if it is created in a wall that separates an interior room from either an exterior room or the building's exterior. See *Room Types on page 314*.

This rule does not apply to doors placed from the Library or copied and pasted from one location to another, however. If, for example, you place a hinged door in an interior wall between two rooms and then paste a copy of that door in an exterior wall, the copy will remain an interior door. See *Exterior and Interior Walls on page 261*.

You can specify that a Hinged or Sliding Door be either Interior or Exterior regardless of where it is placed in the Door Specification dialog. See *General Panel on page 410*.

Dynamic Door Defaults

A variety of door default values are dynamic, including the Door Style, Casing, Lintel, Jamb, Hardware, Framing, and Rough Opening. When a dynamic default is changed, existing door using the default value are affected. See *Dynamic Defaults on page 84*.

All Materials listed under "Doorway" on the MATERIALS panel are also dynamic. Materials assigned to doors and hardware items from the library, however, are listed separately and are dynamically linked to the "Interior Door", "Exterior Door" and "Fixture Trim" and "Hardware" materials set in the Material Defaults dialog rather than the Door Defaults dialogs. See *Material Defaults Dialog on page 758*.

Door Framing

The default headers, trimmers, rough opening, and sill for doors can be defined in the Door Defaults dialogs. You can also specify an additional amount to cutout for door openings in concrete garage curbs and foundation walls. See *Rough Opening Panel on page 422* and *Framing Panel on page 423*.

The default header depths for different spans can be set in the Framing Defaults dialog. See *Openings Panel on page 653*.

Door Tools

To place a door, select the type you want from the **Build> Door** submenu. Move your mouse pointer over a wall, railing, or fencing section. When a preview outline can be seen, click to place a door at that location.

The minimum initial size for doors varies by Door Type. For example, If there is room enough along the wall to fit a 12" (300 mm) wide Hinged Door, a preview outline will display and a door can be placed. Garage doors, in contrast, must initially be at least 6' (1800 mm) wide.

Doors can be placed in both straight and curved walls, as well as span across straight, collinear wall segments.

A newly created door inherits the settings in the Door Defaults dialog for its door type. Once created, doors can be edited in a variety of ways. See *Door Defaults on page 397*.

Doors cannot be placed in a wall specified as Invisible or if the wall in question is on a locked layer. See *Locking Layers on page 153*. See *Room Dividers and Invisible Walls on page 264*.

Once placed, any door may be changed into any other type of door in the Door Specification dialog. See *General Panel on page 410*.

Hinged Doors

Select **Build> Door> Hinged Door** and click on a wall to place a hinged door at that location. Hinged doors have separate defaults for interior and exterior doors. By default, a hinged door becomes a double door when its width is

four feet (1200 mm) or greater.

The initial swing direction of a hinged door depends on the location of the mouse pointer relative to the wall when you click. The door will swing towards the side of the wall that you click nearest.

The initial hinge side of a hinged door can be set by clicking to place the door and then holding the mouse button down rather than releasing it. Move the mouse toward the end of the door that you would like the hinges to be on: as the mouse pointer nears either end, the door preview's hinge side will move to that end. You can also adjust the door's swing direction in this manner. When the swing direction and hinge side are correct, release the mouse button.

Doorways

Select **Build> Door> Doorway** and click on a wall to place a doorway. Doorways are simply openings without a door and can be placed in interior and exterior walls, railings, and fences. You can assign a door from the library to a doorway if you wish.

Sliding Doors

Select **Build> Door> Sliding Door** and click on a wall to place a sliding door. Sliding doors have separate defaults for interior and exterior doors: interior sliding doors are typically solid while exterior sliding doors are Glass Panel doors.

The initial opening side of a sliding door can be specified by moving the mouse pointer along the wall while the mouse button is still pressed.

Pocket Doors

Select **Build> Door> Pocket Door** and click on a wall where you want to place a pocket door.

As with sliding doors, the initial opening side of a pocket door can be specified by moving the mouse pointer along the wall while the mouse button is still pressed.

By default, a pocket door becomes a double pocket door if its width is four feet (1200 mm) or greater.

Bifold Doors



Select **Build> Door> Bifold Door** and click on a wall where you want to place a bifold door.

Like a hinged door, the initial opening side of a bifold door depends on the location of the mouse pointer relative to the wall when you click. The door will open towards the side of the wall that you click nearest.

Similarly, the initial hinge side of a bifold door can be specified by moving the mouse pointer along the wall while the mouse button is still pressed.

By default, a bifold door becomes a double bifold if its width is greater than three feet (900 mm).

Garage Doors



Select **Build> Door> Garage Door** and click on a wall to place a garage door.

In plan view, dashed lines show the size and location of the garage door when open.

Garage doors will build into a garage stem wall provided the room is designated as a garage before the door is inserted. See *Room Types on page 314*.

Fixed Door

Select **Build> Door> Fixed Door** and click on a wall to place a fixed door.

Barn Door

Select **Build> Door> Barn Door** and click on a wall to place a surface mounted sliding door, sometimes referred to as a barn style door.

Shower Door

Select **Build> Door> Shower Door** and click on a wall to place a hinged glass slab shower door.

> Place a Shower Door in a Straight Glass Wall. See *Wall Tools on page 257*.

Doors & Doorways Library Catalog

The Doors & Doorways library catalog can be accessed by selecting **View> Library Browser** and browsing to Core Catalogs> Architectural> Doors and Doorways. This catalog contains a variety of interior and exterior doors, as well as special entryways and wrapped openings.

Entryways and wrapped openings are examples of Doorways, which are wall openings that do not have doors within them.



To add a door to the Doorway, select a **Door Type** other than "Doorway" from the drop-down list in the Door Specification dialog. See *General Panel on page 410*.

You can also select a door from the library and place it into a doorway in plan view or any 3D view.

To place a library door in a doorway

1. Open the Library Browser in plan view or any 3D view.
2. Browse or search to find a door style that suits your needs.
3. Select the door in the Library Browser, then click on the doorway to place the selected door within it. If a door already exists, it is replaced.
4. Continue clicking other doorways as needed.

Displaying Doors

The display of doors, door labels, opening indicators, header lines, and casing is controlled in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

If the “Doors” layer is turned off, doors and their casing do not display but openings in the walls where they are located are visible.

Along with the doors themselves, the display of a number of door components can also be controlled by layer:

- Interior and exterior door casings are located on the “Casings, Exterior” and “Casings, Interior” layers and can display in all views. In plan view, the vertical side casings will be shown, but the horizontal top casing or lintel will not. If a door is recessed, the affected wall layers will adjust to accommodate the casing.
- Window and door shutters are located on the "Shutters" layer and can display in all views. Shutters can also be set to Show Closed or open. See *Shutters Panel on page 449*.
- When the “Opening Header Lines” layer is turned on in plan view, headers are represented by dashed lines within each door. These lines do not correspond to actual framing objects and cannot be selected. In addition, header framing members can be set to display. See *Manual Framing Defaults Dialog on page 658*.
- If a door is placed in a Garage room at a height where it extends into the stem wall or curb, a cutout in the concrete will display on the floor below. You can specify the cutout’s size and whether it displays in plan view in the Door Specification dialog. See *Rough Opening Panel on page 422*.

Doors can only be placed in walls, so if a wall’s layer is turned off in plan view, any door placed in that wall will not display, either. In 3D views, however, doors can display independent of their containing walls:

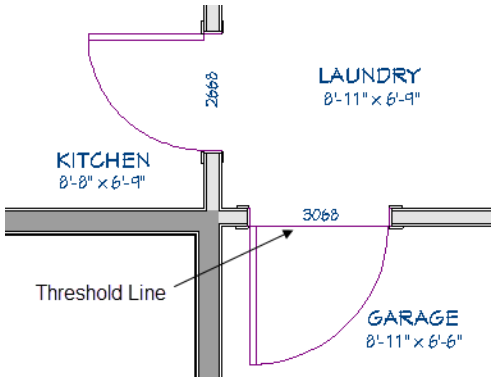
- When **Hide Camera-Facing Exterior Walls** is in use in the current view. See *Displaying Walls on page 271*.
- When **Display Openings Independent of Walls and Roofs** is checked in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

In Plan Views

A door’s jamb, casing, and swing are all represented in plan view. If a door is recessed, the affected wall layers will adjust to accommodate the casing.

A threshold line will display across a door opening in plan view when the door:

- Is located in an exterior wall. See *Exterior and Interior Walls on page 261*.
- Opens to an exterior room such as a Garage or Deck. See *Room Types on page 314*.
- Is located between rooms with different floor heights. See *Floor and Ceiling Platforms on page 542*.



Doorways display dashed lines that represent the wall surface between the doorway and the ceiling. Other types of doors do not display these wall surface lines, however, you can specify that any door display them or not in its specification dialog. See *Options Panel on page 412*.

If an exterior door to a Garage room on Floor 1 extends into a Garage stem wall or curb on Floor 0, its location will be indicated on Floor 0. You can control the display of this concrete cutout in the Door Specification dialog. See *Garages on page 524*.

When the “Opening Header Lines” layer is turned on in plan view, headers are represented by dashed lines within each door’s opening. These lines do not correspond to actual framing objects and cannot be selected. In addition, header framing members can be set to display. See *Manual Framing Defaults Dialog on page 658*.

The vertical casing on the sides of doors will display in plan view when the “Casings, Exterior” and “Casings, Interior” layers are turned on. See *Casing Panel on page 414*.

In 3D Views

In addition to the components drawn in plan views, door hardware and millwork display in camera views.

You can specify whether an exterior door has a threshold in the Door Specification dialog. See *Casing Panel on page 414*.

You can also specify whether window and exterior door glass is opaque or transparent in the Rendering Technique Options dialog. When Opaque Window/Door Glass is used, window and door glass uses the color specified for the active Rendering Technique. The Automatic Opaque Glass behavior can be overridden in the Door Specification dialog if you wish. See *Options Panel on page 412*.

Doors as well as windows can display in 3D Framing Overviews when **Display Openings Independent of Walls and Roofs** is checked in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

Show Open/Show Closed



You can specify whether a selected door or window is shown open or closed in the current view type by clicking the **Show Open** and **Show Closed** edit buttons. See *Displaying Windows on page 433*.

- In plan view, these buttons are named **Show Open in 2D** and **Show Closed in 2D**.
- In camera and cross section/elevation views, they are named **Show Open in 3D** and **Show Closed in 3D**.

Show Open in 2D and Show Open in 3D are also settings in the Door Specification and Window Specification dialogs. See *Options Panel on page 412*.

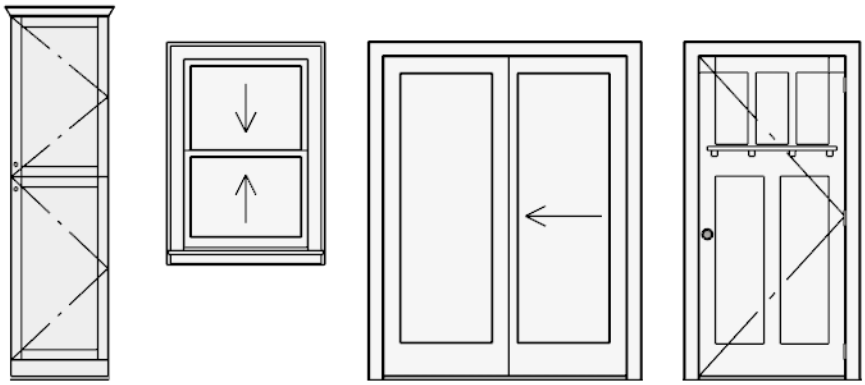
The angle of an open door or window can also be set in its specification dialog. In addition, doors have edit handles in plan view that allow you to change hinge side, direction, and angle. See *Using the Edit Handles on page 404*.

Opening Indicators

Doors, windows and cabinet doors can all display opening indicator arrows in Vector Views. See *Vector View on page 837*.

To display an object's opening indicator arrows in a Vector View:

- Turn on the “Opening Indicators” layer in the Layer Display Options dialog.
- Make sure the object is set to Show its opening indicators in its specification dialog. See *Opening Indicators Panel on page 420*.



Opening indicators on a cabinet, window, and doors in a Vector View

You can specify whether opening indicators point to the opening hinge side or the opening side in the General Plan Defaults dialog. See *General Panel on page 90*.

Door Labels

Door labels display in floor plan view, centered on the doors they represent, when the "Doors, Labels" layer is turned on and use the Text Style assigned to their layer. See *Label Panel on page 395*.

Door labels indicate Width and Height. For example:

- In U.S. Unit plans, the automatic label for a 3'-0" wide, 6'-8" high double hung window will read 3068.
- In metric plans, the automatic label for a 900 mm wide, 2100 mm high double hung window will read 900x2100.

Customized labels can also be specified in the Door Specification dialog.

In the Materials List

The materials associated with doors are listed under different Categories in the Materials List:

- **Doors** - Lists door panels, handles, and hinges.
- **Interior Trim** - Lists interior casing and lintels as well as interior door jambs.
- **Exterior Trim** - Lists exterior casing, lintels, shutters. Exterior jambs and thresholds are also listed here.

As with other objects, there are a number of ways to control how, or whether, doors are included in the Materials List. See *Organizing Materials Lists on page 956*.

You can add and edit information about a door's accessories in the Door Specification dialog. See *Components Panel on page 967*.

Editing Doors

Before a door can be edited, it must be selected. To select a door, click it when the **Select Objects** tool or any of the **Door Tools** are active. Doors and/or windows can also be group selected and edited. See *Selecting Objects on page 183*.

Blocked units are made up of individual doors and windows that have been grouped together to act as one object. You can create what is essentially a blocked door unit by assigning a library door to a doorway from the library.

Select a blocked unit by clicking on it in any view. To select a door that is a component of a blocked unit, click at the location of the component in question, then click the **Select Next Object** edit button. See *Selecting Objects on page 183*.

Using the Edit Handles

In plan view, click either of the two end handles and drag along the wall to change the width. The label showing the size updates as the handles are dragged. Click and drag the Move handle at the center to move the door along the wall it is placed in. Use the triangular Rotate handle to adjust the door's swing. If door labels are set to display, they will each have a small square Move edit handle. See *Displaying Doors on page 400*.

In 3D views, a selected door has five edit handles: the Move handle at the center and a Resize handle on each edge. Click and drag an edge handle to resize the door.

Using the edit handles, doors resize according to the currently active **Edit Behavior**  . See *Defaults, Preferences, and Edit Behaviors on page 179*.

A door or window moved against an intersecting wall temporarily stops when the casing meets the intersecting wall. You can continue to drag and it resumes movement past the intersecting wall.

In the Specification Dialog

The most precise method of editing a door or group of doors is to use the Door Specification dialog. Door type, size, casing, materials, shape, and more can all be specified in this dialog. See *Door Specification Dialog on page 410*.

Using the Edit Tools

A selected door or doors can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

 **Change Opening/Hinge Side** changes the side of the door that its hinges are on. See *Controlling Door Swing on page 406*.

 **Change Swing Side** changes which direction the selected door swings.

 **Show Open in 2D/3D** or **Show Closed in 2D/3D** control the selected door's appearance in plan and 3D views. See *Show Open/Show Closed on page 402*.

 **Gable Over Door/Window** creates a gable over the selected door(s) the next time the roof is rebuilt. See *Gable/Roof Lines on page 624*.

 When a door has been edited to meet your needs, you can use the **Add to Library** edit tool to add it to the Library for future use. See *Adding Library Content on page 722*.

Using Dimensions

 Like various other objects, doors can be moved using dimensions. See *Moving Objects Using Dimensions on page 361*.

You can specify how doors and windows are located by dimensions in the Dimension Defaults dialog. Dimensions can be set to locate the centers, sides, casing, and/or rough openings of doors and windows, or you can choose to not locate them at all. See *Locate Manual Panel on page 344*.

Once a dimension line has been drawn, you can move or add its extension lines to locate non-default locations on a door. See *Editing Extension Lines on page 357*.

Centering Doors

 The **Center Object** edit button allows you to center a selected door along a wall within a room or relative to a cabinet or window. See *Center Object on page 170*.

To center a door along a wall

1. Select a door or combination of windows and doors in plan view.
2. Click the **Center Object** edit button then choose from one of the following options:
   - Click near a wall inside a room to center the door along that wall in that room.
   - Click outside the house (on the exterior room) near an exterior wall to center the door along an exterior wall.

Door Style and Panels

There are a number of Door Styles available for use, including Slab, basic Panel, and Louvered. In addition, a selection of door panel symbols is available in the Library. See *Placing Library Objects on page 727*.

By default, most door types are either single or double, depending on their width. You can specify how many panels a selected door has in the Door Specification dialog. See *Options Panel on page 412*.

Door Sides

Like walls, all doors have two sides: an interior side and an exterior side. This is the case even for doors placed in interior walls. See *Exterior and Interior Walls on page 261*.

By default, the interior side of the door will face the direction that the door swings to open. If you prefer, you can specify that the interior side face the opposite direction in the Door Specification dialog. See *General Panel on page 410*.

You can specify the materials for the two sides separately in the Door Specification dialog. See *Door Specification Dialog on page 410*.

You can also specify different casing for the interior and exterior sides of exterior doors - that is, doors placed in exterior walls or walls defining a Garage or other exterior room type. See *Room Types on page 314*.

Door Casing

Doors typically feature casing, or trim, on both sides of the wall opening. See *Moldings / Rails Panels on page 702*.

- By default, interior doors use the same casing profile on both sides. You can specify that both sides be edited separately in the Door Specification dialog. See *General Panel on page 410*.
- Exterior doors can have different casing profiles on their interior and exterior sides.

The default casing for interior and exterior doors is a basic rectangular stock profile. You can specify a door's casing profiles in the Door Specification dialog, or you can choose to suppress casing altogether. See *Casing Panel on page 414*.

A separate molding profile can be specified for the lintel, or top horizontal molding. See *Lintel Panel on page 416*.

Exterior and interior door casing will display in all views when the "Casings, Exterior" and "Casings, Interior" layers are turned on. In plan view, only the vertical side casing is shown.

Door Hardware

Handles, locks, and hinges can be assigned to a door in the Door Specification dialog. See *Hardware Panel on page 419*.

In 3D views, handles and locks can also be applied directly from the Library Browser. Select a hardware item in the library, then click on the door to apply it to that side of the door. See *Inserted Objects on page 728*.

Controlling Door Swing

Door swing direction and hinge side can be changed using the edit handles and the **Change Opening/Hinge Side** and **Change Swing Side** edit buttons.

> You can specify whether each door is shown open or closed in plan and camera views. See *Show Open/Show Closed on page 402*.

The **Change Opening/Hinge Side** edit button is available for all doors except doors with multiple panels and garage doors.

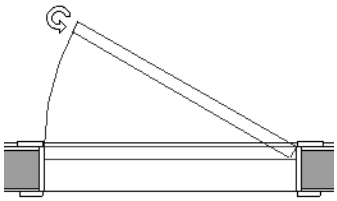
The **Change Swing Side** edit button is available for all doors except pocket doors.

Hinged Doors

In addition to using the edit buttons, Hinged Doors and Shower Doors' hinge side and swing direction can be changed using the triangular Rotate edit handle.

To adjust the angle of swing:

1. In plan view, select the door and grab the triangular handle.
2. Drag to change the amount of swing.

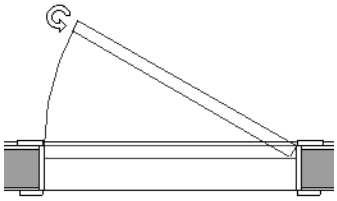


3. Release the mouse.

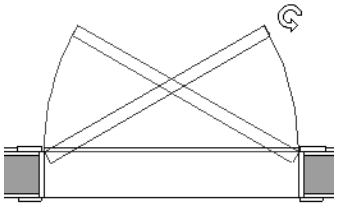
If you drag near the closed position, the door snaps to a closed position.

To change the swing using edit handles:

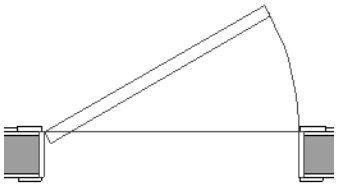
1. In plan view, select the door and grab the triangular edit handle.



2. Drag the pointer along the path of the new arc to change the hinge side and/or swing direction.



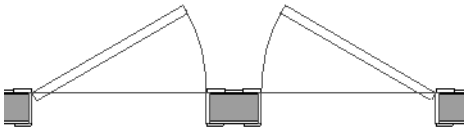
3. Release the mouse.



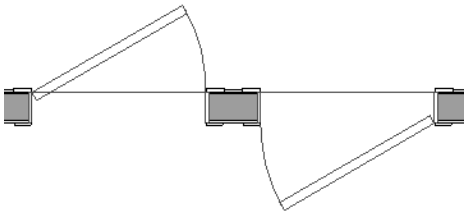
You can specify a Double Hinged Door to swing from its center in the Door Specification dialog. See *Options Panel on page 412*.

To change the swing using edit buttons:

1. In plan view, select the door.
2. To change the hinge side, click the **Change Opening/Hinge Side** edit button.



3. To change the swing direction, click the **Change Swing Side** edit button.



You can also specify a Hinged Door to swing in both directions in the Door Specification dialog. See *Options Panel on page 412*.

Sliding Type Doors

Sliding, Pocket, Bifold, and Barn Doors are types of sliding door.

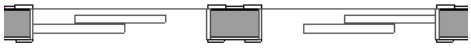
Similar to hinged doors, the Opening/Hinge and Swing sides of a Sliding, Pocket, Bifold, or Barn Door can be changed by clicking and dragging its diamond-shaped edit handle.

To change the side of a Sliding, Pocket, Bifold or Barn door that opens, select the door and click the **Change Opening/Hinge Side** edit button.



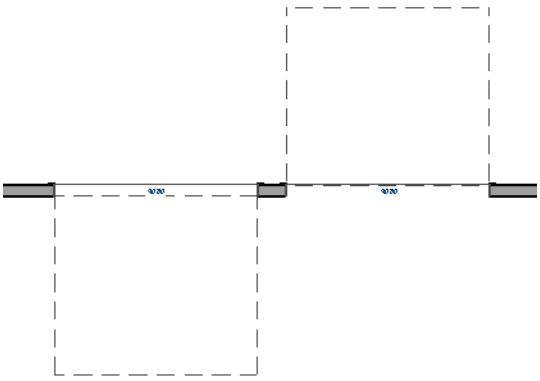
Note: For a Pocket Door to change Opening Side, there must be enough room for the entire door to fit in the wall on that side.

To flip the fixed and moving sides of the door, click the **Change Swing Side** edit button.



Garage Doors

To change the side of a garage door that it faces, select it and click the **Change Swing Side** edit button.



Unlike other door types, the Swing side of a garage door cannot be modified using the edit handles.

Special Doors

A variety of special doors and doorways can be created in Home Designer.

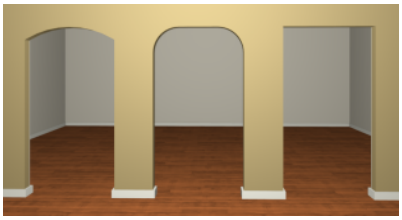
Transoms Above Doors

Transom windows above doors are created the same as other stacked windows. See *Grouped Windows on page 431*.

Wrapped Openings

Wrapped openings of various shapes are available in the **Doors & Doorways Library**.

You can also create a wrapped opening by unchecking **Use Interior Casing** and/or **Use Exterior Casing** in a Doorway's Door Specification dialog. See *Casing Panel on page 414*. If base molding is present, it will wrap around the opening.



Recessed Doors

A door placed in a brick or stone wall is often recessed into the wall's exterior. In the illustration below, the door to the right is recessed, so the brick wraps the opening. The door on the left is not recessed, so the casing is outside the brick.

You can specify a door as recessed in the Door Specification dialog. See *Options Panel on page 412*.

Openings in Railings

Use the **Doorway** tool to open a railing for a stairway or other access.



To open a railing across an entire section, resize the doorway's **Width** so that it is greater than the length of the railing in the Door Specification dialog. The opening resizes to the maximum width possible for that space. See *General Panel on page 410*.

To add a gate, specify the doorway's **Door Type** as a Door, then choose an appropriate gate as the **Door Style**. A selection of gates is available in the Fences & Railings library folder. See *Placing Library Objects on page 727*.

Creating a Doorway with a Railing

When a railing is specified as **No Room Def**, it can be positioned within a **Doorway** .



To create a doorway with railing

1. Place a **Doorway** at the desired location in your plan.
2. Select **Build> Railing and Deck> Straight Railing** , then click and drag to draw a railing parallel to the wall with the doorway.
3. Select the railing, then use the Resize edit handles to adjust the length of the railing as needed. See *Using the Edit Handles on page 188*.
4. With the railing selected, click the **Open Object** edit button.
5. On the General panel of the Railing Specification dialog, check **No Room Def** and click OK. See *General Panel on page 295*.
6. With the railing still selected, ***Ctrl/⌘*** + drag it into position within the doorway. See *To move an object freely on page 168*.



Placing a Gable Over a Door

Click the **Gable Over Door/Window** edit button to produce a gable roof over the selected door(s) the next time automatic roofs are built. See *Gable/Roof Lines on page 624*.

You can manually edit or delete this gable line at any time. Your changes take effect when the automatic roofs are rebuilt. This can also be used with group selected doors.

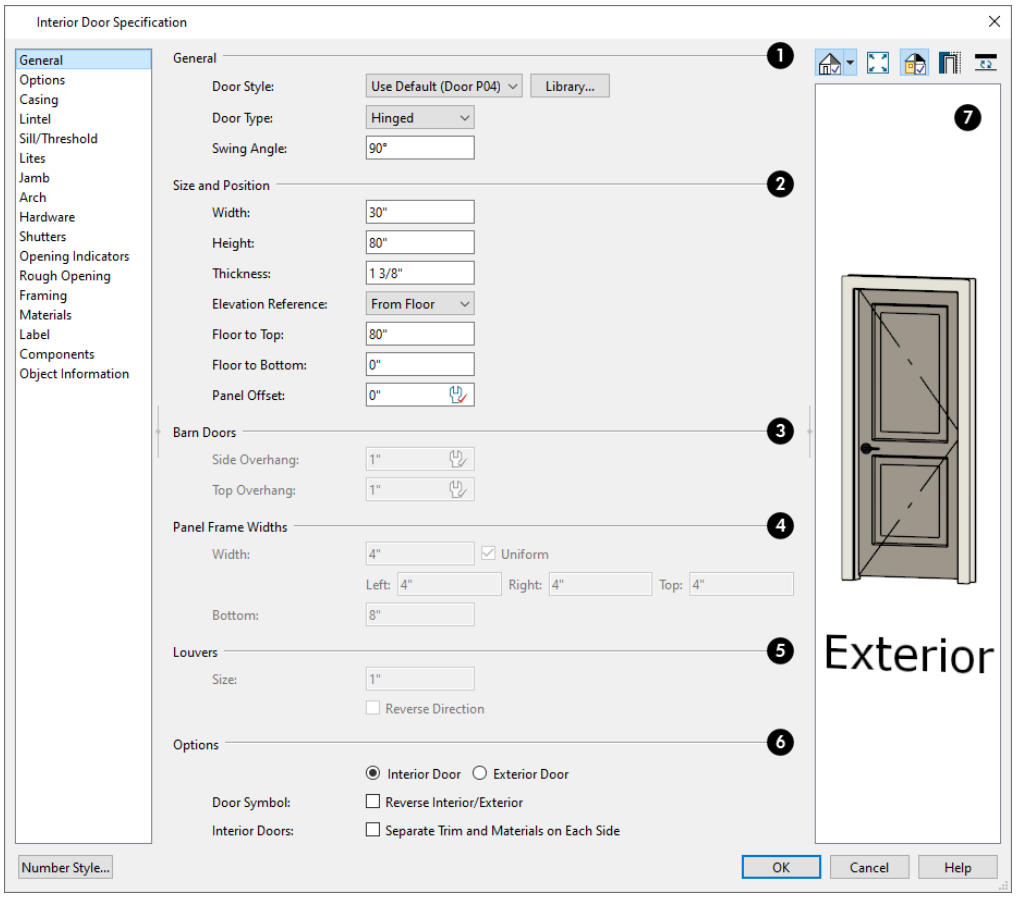
Door Specification Dialog

To open the Interior or Exterior Door Specification dialog, select a door or group of doors and click the **Open Object** edit button or double-click on a door using the **Select Objects** or any **Door** tool.

Whether a selected door is Interior or Exterior depends on where it is placed. See *Interior vs Exterior Doors on page 397*.

> The Lintel and Framing panels are also found in the Window Specification dialog. In addition, the Frame panel for windows is similar to the Jamb panel for doors. See *Window Specification Dialog on page 438*.

General Panel



1 General

- **Door Style** - Select Slab, Glass Slab, Panel, Glass Panel, Louvered, or Glass Louver from the drop-down list; select a style from the Library; or choose "Use Default" to use the default door style set in the Door Defaults dialog. See *Door Defaults on page 397*.
- Select "Library" from the drop-down list or click the **Library** button to choose a door symbol from the library. Once a library door is selected, its name is added to the Door Style list. See *Select Library Object Dialog on page 729*.
- Specify the **Door Type** as Doorway, Hinged, Sliding, Pocket, Bifold, Garage, Fixed, Barn, or Shower. In the Door Defaults dialogs, the Door Type cannot be changed.
- Specify the **Swing Angle** of the selected door in plan view, between 0° and 180°.
  - An angle of 0° displays the door as closed and an angle of 180° displays it as wide open.
  - The Swing Angle for Bifold doors and double doors that swing from the center can be no more than 90°.
  - The Swing Angle also affects the door's appearance in 3D views if **Draw Closed** is unchecked on the OPTIONS panel. See *Options Panel on page 412*.
- Specify the **Panel Offset**, which is how far the selected door is offset from its default location. Most door types are centered in the wall's Main Layer by default, while Barn Doors are positioned against the wall surface.

2 Size and Position

Specify the **Size and Position** of the selected door.

- Specify the **Width** and **Height** of the door. These values do not include the jamb unless Door Size Includes Jamb is selected on the JAMB panel.
- Specify the **Thickness** of the door. This option does not affect door symbols from the Library. See *Door Style and Panels on page 405*.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their labels. See *Elevation References on page 20*.
  - Specify the height **to Top**, measured from the selected Elevation Reference to the top of the door frame.
  - Specify the height **to Bottom**, measured from the selected Elevation Reference to the bottom of the door frame.

3 Barn Doors

- Specify the **Side** and **Top Overhang** values, which control how much the selected door extends past its wall opening.

4 Panel Frame Widths

Specify the dimensions of the selected door's rails and stiles. Only available for Glass, Panel, and Louvered doors.

- Specify the **Width** of the stiles and top rail. Uncheck **Uniform** to specify separate values for the **Left**, **Right**, and **Top** of the frame, or leave it checked to use the same value for all three.
- Specify the height of the **Bottom** rail.

5 Louvers

- Specify the **Size**, or vertical height, of the selected door's louvers. Only available for Louvered and Glass Louvered doors.
- By default, louvers face the direction that the door swings. Check **Reverse Direction** to reverse the direction that they face.

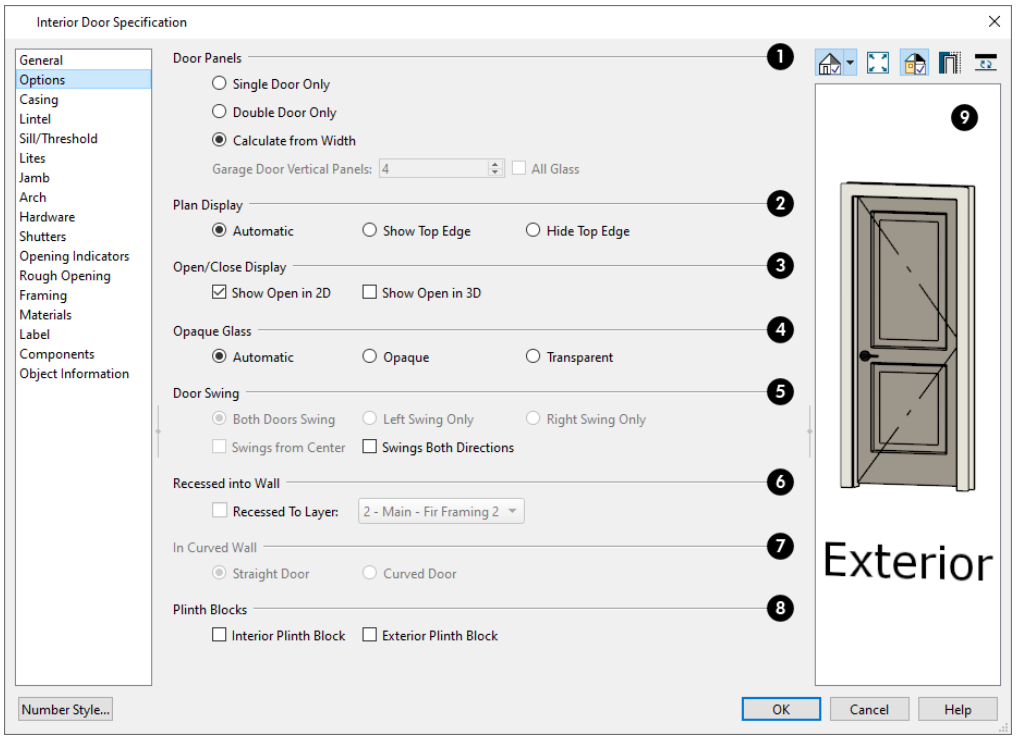
6 Options

- Specify whether the selected door is an **Interior** or **Exterior** door. This option controls whether the selected Hinged or Sliding Door uses the dynamic defaults set in the Interior or Exterior Door Defaults dialog for its type. See *Door Defaults on page 397*.
- Check **Reverse Interior/Exterior** to reverse the two sides of the selected door so that they face the opposite direction. Only available when a door symbol from the Library is specified as the Door Style. See *Door Sides on page 405*.
- Check **Separate Trim and Materials for Each Side** to specify the casing, lintels, and all materials for each side of the selected interior door independently. When unchecked, the two sides of the door use the same trim and materials. Only available when the selected door is placed in an interior wall. See *Exterior and Interior Walls on page 261*.

7 Preview

A preview of the door displays on the right side of the dialog box. A label indicates which side of the door is its Interior and which is its Exterior. See *Dialog Preview Panes on page 21*.

Options Panel



1 Door Panels

Specify the number of **Door Panels** or sections that the selected door has. See *Door Style and Panels on page 405*.

- Select **Single Door Only** to force the selected hinged, pocket or bifold door to be a single door, regardless of its width.
- Select **Double Door Only** to force the selected hinged, pocket or bifold door to be a double door, regardless of its width.
- Select **Calculate From Width** to use the program defaults. Hinged and pocket doors default to **Single Door** when less than four feet (1200 mm) wide; bifold doors do so when less than three feet (900 mm) wide. If the width is greater than this, **Double Door** is the default.

Note: The Calculate From Width defaults are not editable.

- For a selected Garage Door, specify the number of **Vertical Panels**.
  - When **All Glass** is unchecked, only the third panel from the bottom the door is a glass panel: the rest are solid panels. Check this box to make all of the panels glass. The number and style of the lites and the Muntin Width can be specified on the LITES panel.

2 Plan Display

These settings control the display of dashed wall surface lines above the door in plan view. See *In Plan Views on page 401*.

- Select **Automatic** to display wall surface lines only when the selected door is a Doorway.
- Select **Show Top Edge** to display wall surface lines regardless of the door type.
- Select **Hide Top Edge** to not show wall surface lines regardless of door type.

3 Open/Close Display

Specify whether the selected door is shown open or closed in 2D and 3D views. When doors are drawn open in any view, they use the Swing Angle set on the *General Panel on page 410* is used.

- If **Show Open in 2D** is checked, the selected door is shown open in plan view. The Swing Angle set on the *General Panel on page 410* is used.
- If **Show Open in 3D** is selected, the selected door is shown open in 3D and cross section/elevation views.

4 Opaque Glass

Window and door glass can be drawn using an opaque solid color rather than the glass material's properties. See *In 3D Views on page 402*.

- When **Automatic** is selected, glass in exterior doors is opaque when Opaque Window/Door Glass is specified in the view's Rendering Technique Options.
- Select **Opaque** to draw the selected door's glass using an opaque solid color in all views, regardless of the view's settings.
- Select **Transparent** to draw the selected door's glass using the glass material's properties in all views, regardless of the view's settings.

5 Door Swing

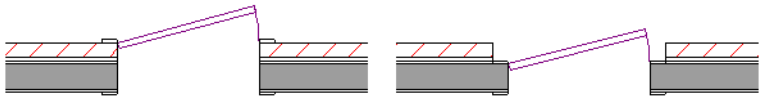
Specify how the selected door swings. Most options here are only available when the selected Hinged or Pocket door is a Double Door. Not available for Bifold, Slider or Garage doors. See *Controlling Door Swing on page 406*.

- Check **Both Doors Swing** to allow both sides of a Double Door to swing.
- Check **Left Swing Only** or **Right Swing Only** to allow only the left or right side of a Double Door to swing.
- Check **Swings from Center** to create a Double Door with hinges at the center rather than at the outside edges.
- Check **Swings Both Directions** to allow a door or both sides of a Double Door to swing both directions.

6 Recessed Into Wall

These options allow you to recess the selected door’s jamb into its wall, away from the exterior surface. This setting also affects the exterior casing and lintel, if used. Only available if the door is placed in a multi-layered wall. See *Wall Types on page 288*.

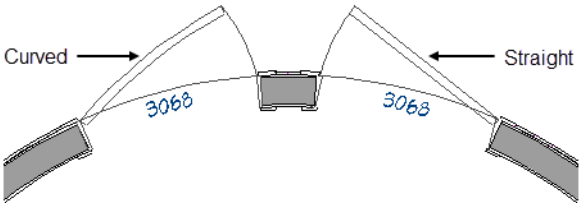
- Check **Recessed**, then select a structural wall layer from the drop-down list. See *Wall Types on page 288*.
- The drop-down lists all of the wall's all Exterior and Main Layers, but not its Interior Layers.



The door on the left is not recessed, while the door on the right is recessed to its framing layer.

7 In Curved Wall

Specify whether a door placed in a curved wall is **Straight** or **Curved**. This setting affects both the frame and the door panel. Slider, Pocket, and Barn Doors are specified as Curved automatically and cannot be changed. Only available when the selected door is placed in a curved wall. See *Drawing Curved Walls on page 269*.



8 Plinth Blocks

Add an **Interior Plinth Block** and/or **Exterior Plinth Block** to the selected door. Plinth blocks are counted in the Materials List; however, they do not display in 3D views.

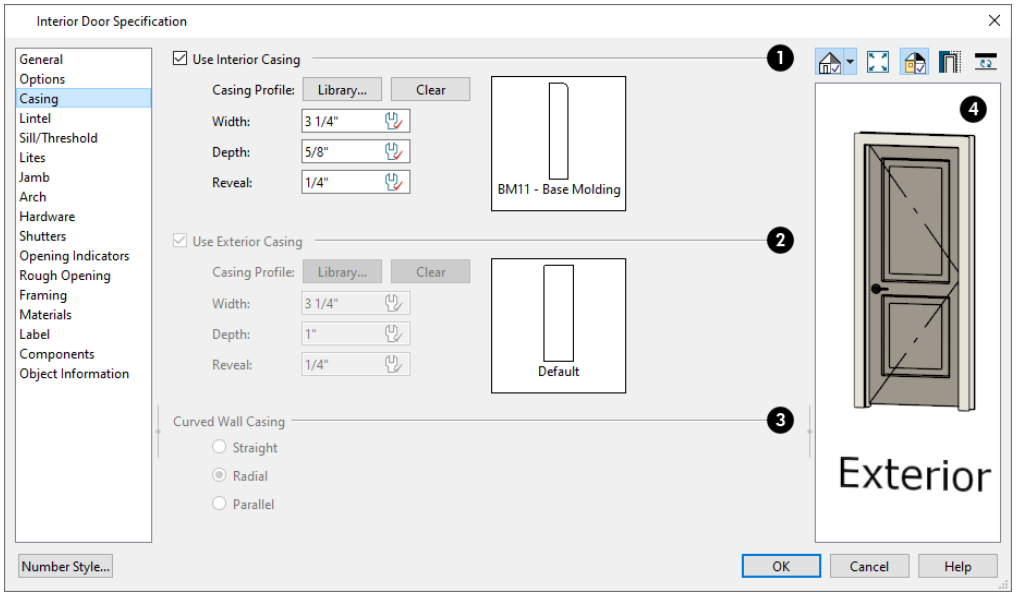
9 Preview

A preview of the door displays on the right side of the dialog box. See *Dialog Preview Panes on page 21*.

CASING PANEL

The CASING panel is also found in the Window and Mulled Unit Specification dialogs. See *Window Specification Dialog on page 438*.

By default, interior and exterior casing is suppressed for doorways placed into railings: including solid railings and railing pony walls.



1 Use Interior Casing

When this box is unchecked, no casing is used and the settings that follow are disabled.

- **Casing Profile** - Click the **Library** button to select a molding profile for the casing. A preview of the casing profile displays to the right. See *Select Library Object Dialog on page 729*.
- Click the **Clear** button to remove a selected casing profile from the door. When no profile from the library is selected, a basic rectangular stock profile is used.
- Specify the **Width** of the selected casing.
- Define the **Reveal**, which is the distance between the inside edge of the door or window frame and the inside edge of the casing.

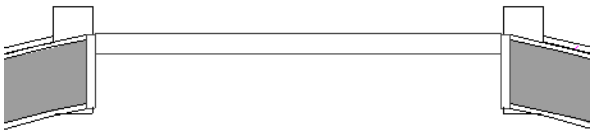
2 Use Exterior Casing

Check this box to enable the settings that follow, then specify the exterior casing for the selected door(s) These settings are the same as those for the Interior Casing, and are not available for doors in interior walls unless **Separate Trim and Materials on Each Side** is checked on the GENERAL panel. See *General Panel on page 410*.

3 Curved Wall Casing

These settings are enabled if the selected door or window is located in a curved wall. See *Drawing Curved Walls on page 269*.

- Door and window casing and jamb can be constructed three ways in curved walls:
- **Straight** - Both the door and casing are straight. This can be used where the wall's curvature is not too sharp and the opening is not too wide. Not available for Sliding, Pocket, or Barn Doors.



- **Radial** - A vertical surface that would be perpendicular to a straight wall has its plane pass through the wall's center of curvature.



- **Parallel** - A vertical surface that would be perpendicular to a straight wall remains parallel to the line from the wall center through the opening center.



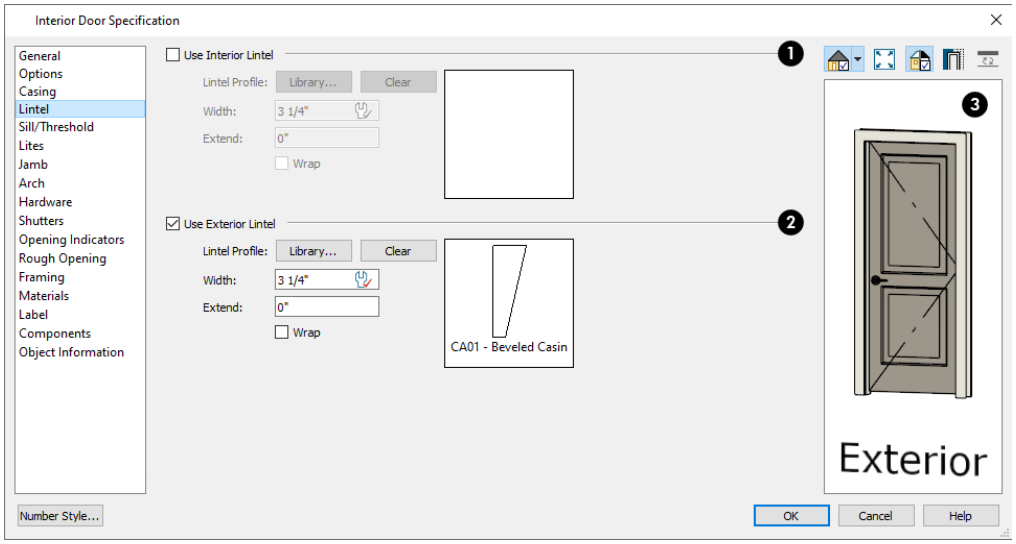
4 Preview

A preview of the door displays on the right side of the dialog box. If casing is not specified for a Doorway or Passthrough, the **Show Wall** option will be toggled on automatically. See *Dialog Preview Panes on page 21*.

LINTEL PANEL

The settings on the LINTEL panel allow you to assign a lintel: a top molding that meets the side casing using a butt joint instead of a mitered joint.

The LINTEL panel is also found in the Window and Mulled Unit Specification dialogs. See *Window Specification Dialog on page 438*.



1 Use Interior Lintel

Check **Use Interior Lintel** to enable the settings that follow, then specify the lintel applied to the interior side of the selected door(s) using these settings. When this box is unchecked, no lintel is used.

- **Lintel Profile** - Click the **Library** button to select a molding profile for the lintel. A preview of the selected profile displays to the right. See *Select Library Object Dialog on page 729*.
- Click the **Clear** button to remove a selected lintel profile from the door.
- Specify the **Width** of the lintel. This value is independent of the casing's width; however, the lintel does inherit its depth from the casing.

- Specify how far to **Extend** the lintel past the outside edges of the casing on each side.
- Check **Wrap** to wrap the lintel profile back toward the wall.

❷ Use Exterior Lintel

Check **Use Exterior Lintel** to enable the settings that follow, then specify the exterior lintel for the selected door(s) using these settings. These settings are the same as those for the Interior Lintel, and are not available for doors in interior walls unless Use Exterior Trim and Materials is checked on the GENERAL panel. See *General Panel on page 410*.

❸ Preview

A preview of the door displays on the right side of the dialog box. See *Dialog Preview Panes on page 21*.

SILL/THRESHOLD PANEL

The settings on the SILL/THRESHOLD panel of the Door Specification dialogs allow you to specify whether the door has a threshold or sills. These settings are also found on the SILL/THRESHOLD panel of the Window Specification dialog. See *Sill/Threshold Panel on page 441*.

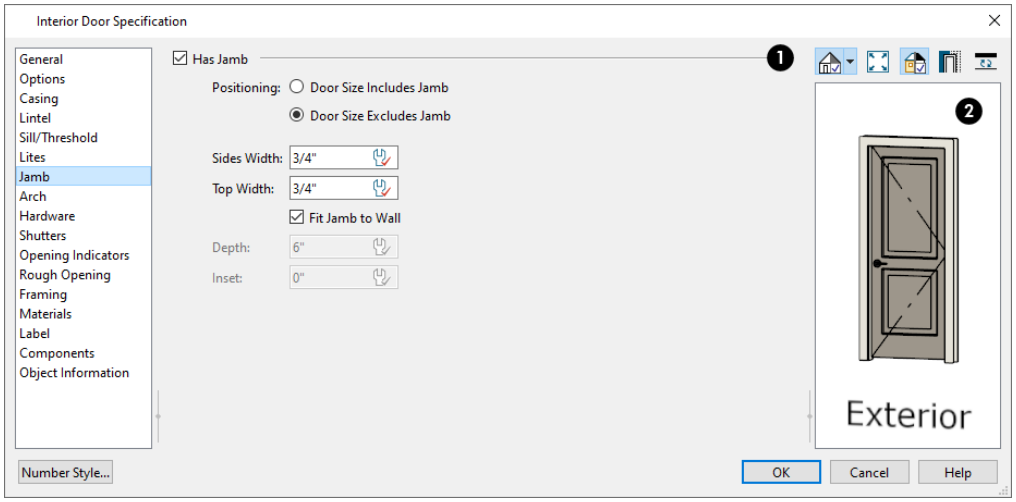
LITES PANEL

The settings on the LITES panel of the Door Specification dialogs are only available when the selected door is specified as a Glass door on the *General Panel on page 410*. These settings are also found on the LITES panel of the Window Specification dialog. See *Lites Panel on page 445*.

JAMB PANEL

The settings on the JAMB panel are similar to those on the FRAME panel of the Window Specification dialog. See *Frame Panel on page 444*.

By default, Has Jamb is unchecked for doorways placed into railings: including solid railings and railing pony walls.



❶ Has Jamb

Check **Has Jamb** to enable the settings that follow, then specify the attributes of the selected door's jamb using those settings. The jamb is not included in the door's size, which is set on the *General Panel on page 410*.

- Specify the **Positioning** of the door. These settings affect what the door's Size settings on the GENERAL panel are describing; however, switching these settings does not affect the Size values:

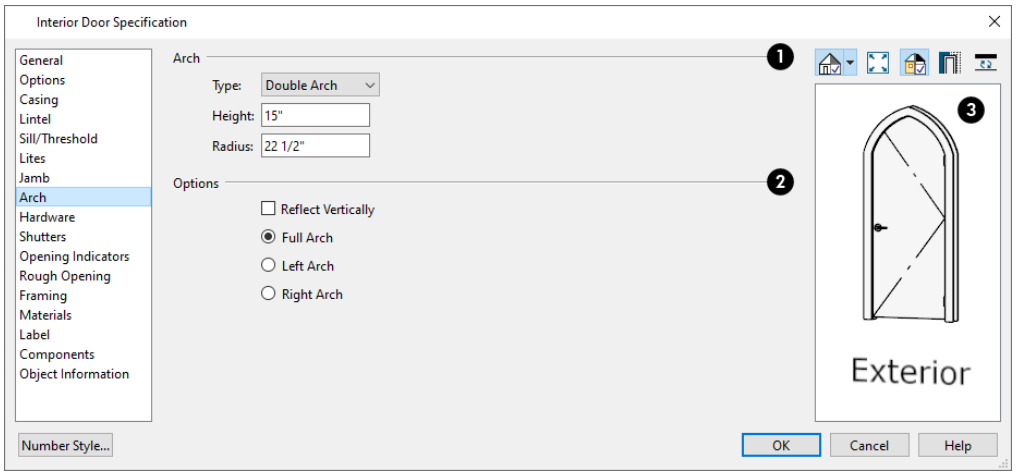
  - Select **Door Size Includes Jamb** to specify size as a total of the door panel plus jamb width.
  - Select **Door Size Excludes Jamb** to specify the size of the door panel only.
- These values only affect the door's specified size when Door Size Includes Jamb is selected, above:
  - Specify the **Sides Width**, which is the thickness of the pieces of the door jamb that display in plan view. This value is subtracted from the "pocket" side rough opening for Pocket Doors when wall framing is generated. See *Pocket Doors on page 399*.
  - Specify the **Top Width**, which is the thickness of the top vertical piece of the door jamb.
- Uncheck **Fit Jamb to Wall** to specify the Depth and Inset of the selected door's jamb. When this box is checked, the jamb Depth automatically extends from the Recessed Into Wall layer to the wall's inside surface with an Inset of 0". The Recessed Into Wall layer is specified on the OPTIONS panel of this dialog.
  - Specify the **Depth** of the door jamb from front to back.
  - Specify the jamb's **Inset**, which is measured from the Recessed Into Wall layer and moves the door jamb towards its interior side. If used, the casing and lintel are not affected by this setting.

2 Preview

A preview of the door displays on the right side of the dialog box. See *Dialog Preview Panes on page 21*.

ARCH PANEL

The settings on the ARCH panel are also found in the Window Specification dialog; however, it is not available for window symbols from the library, and its settings are not available if a selected window has been modified using the SHAPE panel. See *Shape Panel on page 446*.



1 Arch

Define the style and size of the arch.

- Select a **Type** of arch from the drop-down list.
- Specify the **Height** of the arch, as measured from the base of the arch to the top of the door. Not available for Round Top and Octagonal Arches.
- The **Radius** can also be defined for Tudor and Double Arches.

2 Options

Define the orientation of the arch.

- Check **Reflect Vertically** to reflect the arch, top to bottom. This option cannot be used if a Sill is specified, and is typically used with windows rather than doors. See *Window Specification Dialog on page 438*.
- Select **Full Arch** to produce an arch with the apex at the door's center.
- Select **Left Arch** to produce an arch with the apex on the door's right side.
- Select **Right Arch** to produce an arch with the apex on the door's left side.

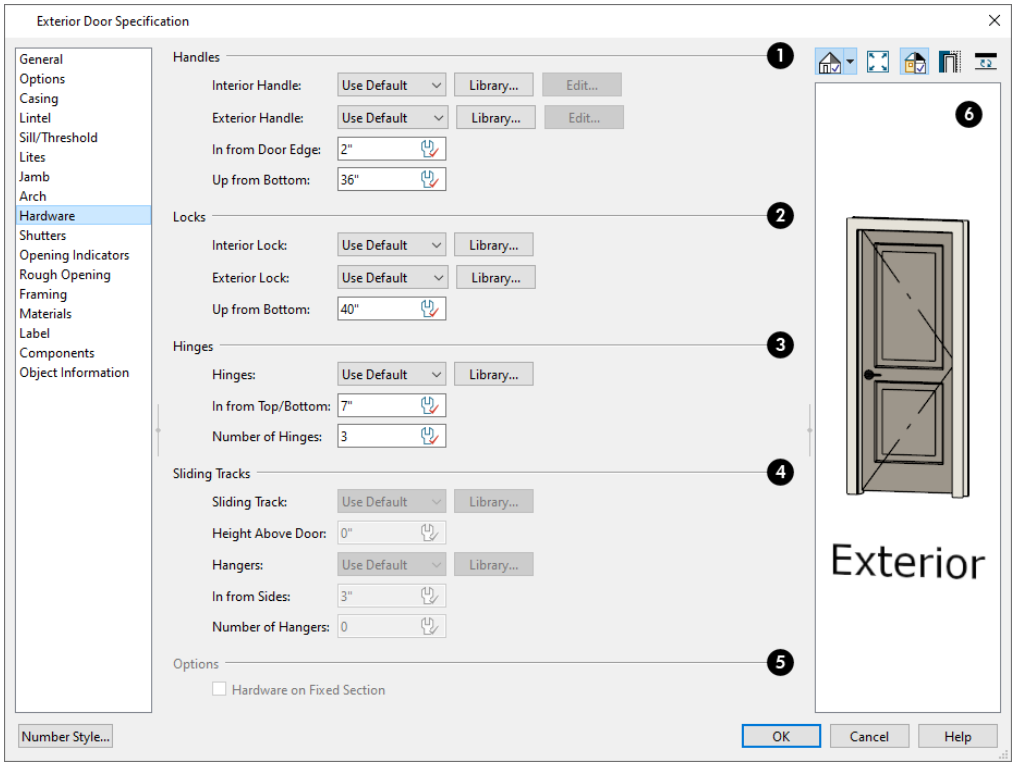
> Note: The Left and Right settings here on this panel refer to the door or window as viewed from its exterior.

3 Preview

A preview of the door displays on the right side of the dialog box. See *Dialog Preview Panes on page 21*.

HARDWARE PANEL

Many of the settings on the HARDWARE panel are Dynamic Defaults: if "Use Default" is selected, the setting in the Door Defaults dialog for the selected door's Type is used. See *Dynamic Defaults on page 84*.



1 Handles

- Select an **Interior Handle** and/or **Exterior Handle** from the drop-down lists. Select "Library" or click the **Library** button to select a handle from the library. See *Select Library Object Dialog on page 729*.
- When a handle from the Library is selected, you can click the **Edit** button to customize its size and angle. See *Hardware Size/Orientation Dialog on page 492*.
- Specify the location of the door handles **In From Door Edge**.
- Specify the location of the door handles **Up From Bottom**.

2 Locks

- Select an **Interior Lock** and/or **Exterior Lock** from the drop-down lists. Select “Library” or click the **Library** button to select a lock from the library.
- Specify the location of the door locks **Up From Bottom**. The locks use the same In From Door Edge value as the handles.



To use the same handle and lock on both sides of a door, select “Match Interior” as the Exterior option.

3 Hinges

Only Hinged and Bifold doors receive hinges.

- Select a style of **Hinges** from the drop-down list. Select “Library” or click the **Library** button to select a hinge style from the library.
- Specify the distance **In From Top/Bottom** of the door to the center of the top and bottom hinges.

Note: For hinges to look right, it is best to have at least a 1/4" (6 mm) reveal for the interior, or hinge side, door casing.

- Specify the **Number of Hinges** on the selected door. Interior hinged doors and bifold doors typically have two hinges while exterior hinged doors have three.

4 Sliding Tracks

Only available when a Barn Door is selected.

- Select a **Sliding Track** from the drop-down list. Select “Library” or click the **Library** button to select a track from the library. See *Select Library Object Dialog on page 729*.
- Specify the track’s **Height Above Door**.
- Select a style of **Hangers** from the drop-down list. Select “Library” or click the **Library** button to select a hanger from the library.
- Specify the distance **In From Sides** of the door to the center of the outermost hangers.
- Specify the number of **Hangers** to be evenly spaced along the door.

5 Options

Check **Hardware on Fixed Section** to include handles, locks, and hinges on the fixed side of a double Hinged door. Only available for Double Doors with Left or Right Swing Only selected. See *Options Panel on page 412*.

6 Preview

A preview of the door displays on the right side of the dialog box. See *Dialog Preview Panes on page 21*.

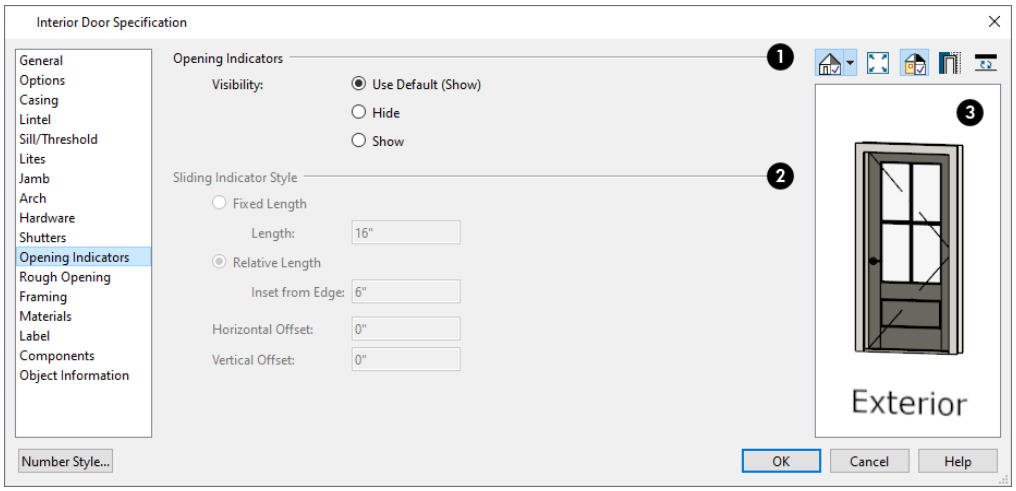
Shutters Panel

The settings on the Shutters panel of the Door Specification dialogs are also found on the Shutters panel of the Window Specification dialog. See *Shutters Panel on page 449*.

Opening Indicators Panel

The settings on the Opening Indicators panel control the appearance of the selected hinged or sliding door's opening indicator in camera views using the Vector View Rendering Technique. These settings are also available for windows and

cabinets. See *Opening Indicators on page 402*.



❶ Opening Indicators

Specify whether the selected door's opening indicators display.

❷ Sliding Indicator Style

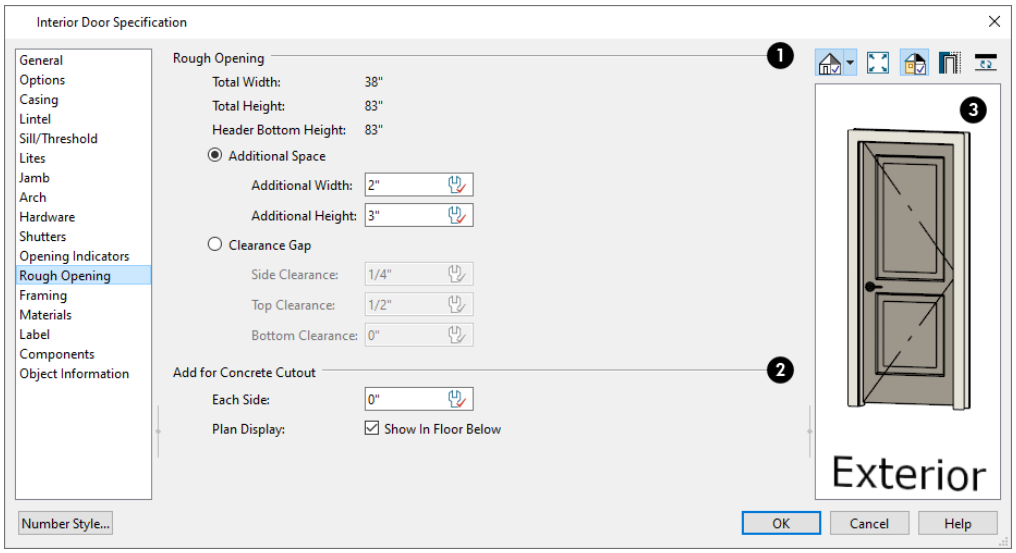
Available for Sliding, Pocket, Barn, and Garage doors, as well as Single Hung, Double Hung, and Sliding windows. Sliding indicator arrows display centered over all movable door panel(s) or window component(s).

- Select **Fixed Length**, then specify the desired **Length** of the indicator arrow in the text field.
- Select **Relative Length** for an indicator arrow sized relative to the movable component it is drawn over.
- Specify the **Inset from Edge**, which is the distance of each end of the indicator arrow line from the adjacent edge of the associated door panel or window component. If a panel or component is not wide or tall enough to accommodate the Inset distance on both ends of the arrow line, this value will be ignored and an arrow 10" (250 mm) long will be used.
- Specify the **Horizontal Offset**, which allows you to offset the arrow line to the right or left using a positive or negative value.
- Specify the **Vertical Offset**, which allows you to offset the arrow line upwards or downwards using a positive or negative value.

❸ Preview

A preview of the door displays on the right side of the dialog box. Opening indicators only display in Vector Views. See *Dialog Preview Panes on page 21*.

Rough Opening Panel



1 Rough Opening

- The **Total Width**, **Total Height** and the **Header Bottom Height** are reported here for reference.
- Specify the **Behavior** used to define the rough opening:
  - When **Additional Space** is selected, the rough opening is equal to the specified size of the door or window plus additional space, specified below.
  - When **Clearance Gap** is selected, the rough opening for doors is equal to the specified size of the door plus the thickness of its jamb plus the values specified below. For windows, the rough opening is equal to the specified size plus the values set below.
- When Additional Space is the selected Behavior:
  - Specify the total **Additional Width** added to the width of the window frame or that of the door, not including jamb.
  - Specify the total **Additional Height** added to the height of the window frame or that of the door, not including jamb. If the selected opening at floor level, the bottom of the rough opening will be at the height of the subfloor.
- When Clearance Gap is the selected Behavior:
  - Specify the **Side Clearance**, which is the space on each side of the window frame or door jamb, between it and the adjacent trimmers.
  - Specify the **Top Clearance**, which is the space above the window frame or door jamb, between it and the header or wall top plate.
  - Specify the **Bottom Clearance**, which is the space below the window frame or door jamb, between it and the sill, bottom plate, or subfloor.

2 Add for Concrete Cutout

- Specify the amount to add to **Each Side** of the door opening when the upper part of the door is in a framed wall and the lower part is located in a concrete or masonry wall, stem wall, or garage curb. See *Wall Types on page 288*.
- Uncheck **Show in Plan** to suppress the display of the concrete cutout in plan views. A concrete cutout will only display in plan views if it is located in a garage curb. See *In Plan Views on page 401*.

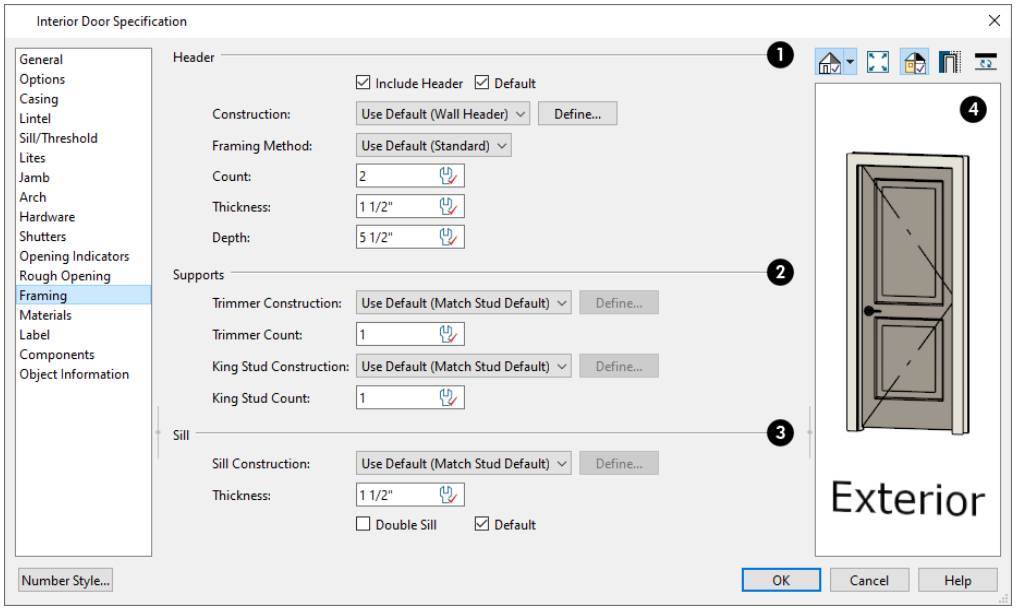
Framing Panel

The settings on the Framing panel control how the selected door or doors is framed when wall framing is generated. See *Creating Framing on page 666*.

A similar panel is also found in the Window Specification dialog. See *Window Specification Dialog on page 438*.

Most of the settings on this panel are dynamic defaults. See *Dynamic Defaults on page 84*.

> Home Designer is dependent upon user input and does not calculate loads or perform structural analysis. Always consult your local building authorities and contact a licensed engineer for structural calculations.



1 Header

Specify the characteristics of the selected door's header. See *Manual Framing Defaults Dialog on page 658*.

- When **Include Header** is checked, a header as defined below is generated.
  - When this box is unchecked, a single, non-structural, horizontal framing member of the same type as the wall studs is created above the door opening.
  - When **Default** is checked, this setting is dynamically linked to the Door Defaults dialog for the selected door's type.
- Select the header's framing member **Construction** from the drop-down list. See *Framing Types on page 647*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Select a **Framing Method**, which is the header's assembly style, from the drop-down list. See *Manual Framing Defaults Dialog on page 658*.
  - "Standard" headers are composed of vertically-oriented framing members.
  - "Flat" headers are composed of horizontally-oriented framing members.
  - "Boxed" headers have vertical framing members with horizontally-oriented top and bottom rails. The horizontal boards are not included in the header Depth.

- Specify the **Count**, which is the number of the framing members used to create the header. Up to 10 header boards can be specified, but only those that fit within the wall's framing layer will be generated when wall framing is created.
- Specify the **Thickness** of each header framing member.
- Specify the vertical **Depth** of the header. This value does not include the top and bottom chords of a Box Header.
  - In the Door and Window Defaults dialogs, an additional **Calculate from Width** check box is available. When checked, the header Depth is automatically calculated based on settings in the Framing Defaults dialog and the door's current width. See *Openings Panel on page 653*.

2 Supports

Trimmers are studs that are positioned under the ends of headers, while king studs are full-height studs positioned on either side of the header, next to the trimmers.

- Specify the **Trimmer Construction** by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - When "Match Stud Default" is selected, trimmers use the same Construction as the door's owner wall's studs. See *Wall Layer Specification Dialog on page 292*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be selected and edited. Not available when "Match Stud Default" is selected above.
- Specify the **Trimmer Count**, which is the number of trimmer boards on each side of the header.
- Specify the **King Stud Construction** by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - When "Match Stud Default" is selected, king studs use the same Construction as the door's owner wall's studs. See *Wall Layer Specification Dialog on page 292*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be selected and edited. Not available when "Match Stud Default" is selected above.
- Specify the **King Stud Count**, which is the number of king studs on each side of the header.

3 Sill

When the bottom of a door is raised sufficiently off the floor, it will require a horizontal sill under it as part of its framing.

- Specify the **Trimmer Construction** by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - When "Match Stud Default" is selected, sills use the same Construction as the door's owner wall's studs. See *Wall Layer Specification Dialog on page 292*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be selected and edited. Not available when "Match Stud Default" is selected above.
- Specify the **Thickness**, which is the vertical thickness of the sill board.
- Check **Double Sill** to generate two bottom sill members of the specified thickness instead of one.

Materials Panel

The settings on the Materials panel affect the appearance of the selected door in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Label Panel

Door labels display in plan view when the “Doors, Labels” layer is turned on and use the Text Style assigned to that layer. See *Door Labels on page 403*.

Manufacturer Panel

The MANUFACTURER panel provides contact information for the selected door’s manufacturer. Only available for doors from Manufacturer library catalogs. See *Manufacturer Catalogs on page 718*.

Components Panel

The information entered on the COMPONENTS panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the OBJECT INFORMATION panel can be used in the Materials List. See *Object Information Panel on page 968*.

Windows

Chapter 17

Home Designer can model a wide variety of windows. Fixed glass, hung, casement, sliding, awning, hopper, and louver window styles can all be created with the standard Window tool. The shape of a window can be angled or made into a round top or other arch styles. Home Designer can create bay, box, and bow windows with a single click. In addition, the library contains many mulled window combinations.

Window Defaults

Default Settings can be accessed by selecting **Edit> Default Settings**. Select Window from the Default Settings dialog and click the **Edit** button.

You can also double-click the **Window Tools** parent button to open the Window Defaults dialog.

The settings in the Window Defaults dialog control the attributes of a window when it is initially placed in a plan, so you should define the type of window that will be placed most often in your model. See *Default Settings on page 83*.

The panels in the Window Defaults dialog are similar to those found in the Window Specification dialog, with one exception:

On the GENERAL panel of the Window Defaults dialog, you can specify the **Minimum Separation** between window and/or door units in the plan. This value controls how close window and/or door units can be to each other. This setting also determines the width of the shared casing between windows.

For more information, see *Window Specification Dialog on page 438*.

Dynamic Window Defaults

A variety of window default values are dynamic, including the Window Type, Casing, Lintel, Sash, Frame, Treatments, Framing, and Rough Opening. All Materials are also dynamic. When a dynamic default is changed, existing windows using the default value are affected. See *Dynamic Defaults on page 84*.

Window Framing

The defaults for window framing can be defined in the Window Defaults dialogs. You can also specify an additional amount to cutout for window openings in concrete walls when the upper part of the window is located in a framed wall. See *Rough Opening Panel on page 451* and *Framing Panel on page 451*.

The default header depths for different spans can be set in the Framing Defaults dialog. See *Openings Panel on page 653*.

Window Tools

To place a window, select **Build> Window** and choose the desired Window Tool. Move your mouse pointer over a wall section, then click to place a window in the wall at that location.

- If there is room enough along the wall to fit a 6” (150 mm) wide Standard Window, a preview of the window will display and a window can be placed.

- The Bay, Box, and Bow Window tools do not have preview outlines. If a minimum width of 30” (725 mm) cannot be accommodated at the location where you click, a warning message will display and a window unit will not be created.

Standard Windows, Passthroughs, and Wall Niches can be placed in both straight and curved walls, as well as span across straight, collinear wall segments. In contrast, a Bay, Box, or Bow Window can only be placed in a single, straight wall.

Windows can also be placed in the Pony Walls; however, if the upper wall is a Railing, only Windows, Passthroughs, and Wall Niches can be placed provided that they are located entirely within the lower wall. See *Pony Walls on page 263*.

Windows cannot be placed in a wall specified as Invisible or if the wall in question is on a locked layer. See *Locking Layers on page 153*. See *Room Dividers and Invisible Walls on page 264*.

Standard Windows

Select **Build> Window> Window**, then click on a straight or curved wall to place a Standard Window at that location.

A Standard Window is a single window that is not a bay, box, bow window, a corner window or a blocked unit. These special types are made up of multiple Standard Windows.

A Standard Window that is part of a special window is called a Component Window.

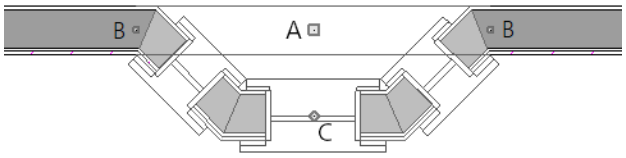
Standard Windows can be specified as any of a variety of window types, such as double hung, casement and awning. See *Window Specification Dialog on page 438*.

Bay Windows

> The roof is affected by Bay, Box and Bow Windows. These windows should therefore be placed before the roof is built.

A **Bay Window** is composed of three wall sections, each with a single component window. The two side walls are at an angle to the main wall. Select **Build> Window> Bay Window** and click on a straight wall to produce a bay window.

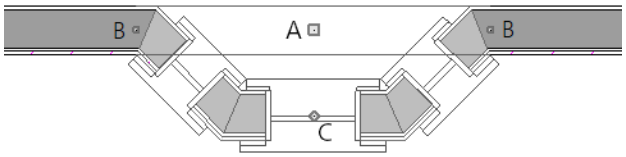
When initially placed, bay windows measure 2’-2” across at the front, 4’-2” across at the back, and are 1’-0” deep. The component windows are specified in the Window Defaults dialog and their sizes adjust to fit the available space.



Box Windows

A **Box Window** is a bay window with side angles set at 90°. Select **Build> Window> Box Window** and click on a straight wall to produce a box window.

Box windows initially measure 4’-2” wide with a depth of 1’-6”. The component windows are specified in the Window Defaults dialog and their sizes adjust to fit the available space.



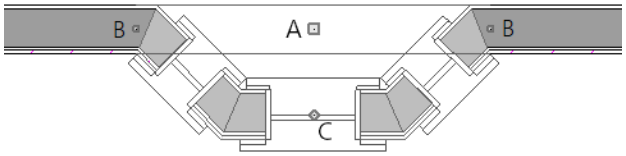
Bow Windows

A **Bow Window** is a group of identical wall segments that form a segmented curve. Select **Build> Window> Bow Window** and click on a straight wall to produce a 5-section bow window.

Bow windows can be composed of between two and twenty sections. The number of bow window components can be changed in the Bow Window Specification dialog. See *Bay/Box and Bow Window Specification Dialogs on page 457*.

The component windows are specified in the Window Defaults dialog. Their sizes adjust to fit the available space.

The 5-section bow below has a 4’-10” radius centered 3’-9” inside the wall, giving an opening 5’-10” across and a depth of 11½”.



Note that for a bow with an odd number of sections, the radial dimension is from the center of the arc to an outside corner where two window sections join. The depth (11 ½”) is measured to the flat area of the center section, not to a corner. As a result, the radius is a bit greater than the sum of the depth and the distance from the center of the bow’s curve to the exterior of the wall.

> Note: Bay, box, and bow window areas are not included in the living area or in room standard area calculations. They are included in room interior area calculations.

Pass-Throughs

Select **Build> Window> Pass-Through**, then click on a straight or curved wall to place a Pass Through at that location.

A Pass-Through is simply a wall opening without a window unit placed inside. Like a window, it can have casing and a sill. It does not, however, have a sash, frame, or glass. It is one of the window **Types** available in the Window Specification dialog. See *General Panel on page 438*.

Wall Niches

Select **Build> Window> Wall Niche**, then click on a straight or curved wall to place a Wall Niche at that location.

A Wall Niche is a wall opening that does not extend through the entire depth of the wall. You can specify the niche’s depth in the Window Specification dialog. See *General Panel on page 438*.

Windows Library

Select **View> Library Browser**, then browse to Core Catalogs> Architectural> Windows to access a selection of special window units. Select the desired window, then click on a wall to place the window at that location.

Special Windows

A variety of special windows can be created using multiple standard windows, the edit tools or custom symbols.

Creating Manual Bay, Box and Bow Windows

Sometimes it is easier to draw bay, box and bow windows manually than to use the automatic tools. Bays created using walls can have more than one window per section, which is not possible using a bay window unit.

Bear in mind that moving a manually created bay, box or bow window is generally more difficult than moving a unit created with one of the **Window Tools** since it is composed of individual walls.

Corner Windows

To create a corner window, first create the desired window on each side of the corner. For best results, the heights, casing, and sills of both windows should be the same. For glass that meets at the corner:

- Specify both windows as **Fixed Glass**.
- Use each window's Move edit handle to position it all the way in the corner. To do this, drag the Move handle past the corner and parallel to the wall that the window is placed in. When the preview outline moves into the middle of the wall corner, release the mouse button.
- You can also position a window in a corner using its end Resize handle.
- Select **Mitered** in the Window Specification dialog. See *Frame Panel on page 444*.



Angled top, or shaped windows can be components of corner windows as long as their heights are equal at the corners. Windows with single or two segment tops can be used, but windows with three cannot. If a two segment window is used, the segment nearest the corner must be flat.

When a corner post is required, select **Post** instead of Mitered. There are a number of ways to control its size.



- Use dimensions to position the windows relative to the corner. By default, windows will stop when their interior casing bumps into the adjacent wall. See *Editing Windows on page 436*.
- To move a window all the way into a corner, check **Ignore Casing for Opening Resize**. See *General Plan and Layout Defaults Dialogs on page 89*.
- To produce a minimal corner post and no siding or casing between the windows, use their Move edit handles. Click and drag each window past the exterior corner until its preview outline moves into the middle of the wall corner.

Special Window Shapes

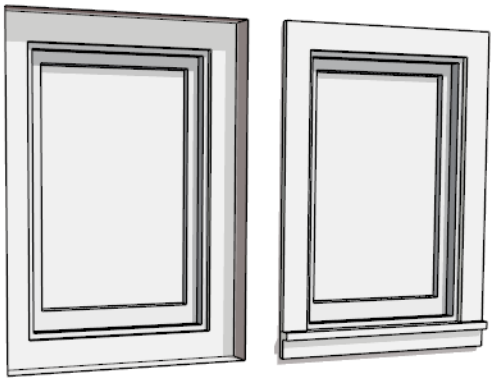
A selection of special shaped windows is available in the Windows Library, including arched windows and mulled units.

In addition, you can create a wide variety of window shapes in the Window Specification dialog, including:

- Arched windows. See *Arch Panel on page 448*.
- Trapezoidal windows. See *Shape Panel on page 446*.

Recessed Windows

A window or mulled unit placed in a brick or stone wall is often recessed into the wall's exterior, so the brick wraps the opening.



You can specify a window as recessed in the Window Specification dialog. See *Options Panel on page 440*.

Placing a Gable Over a Window

Click the **Gable Over Door/Window** edit button to produce a gable roof over the selected window(s) the next time automatic roofs are built. See *Gable/Roof Lines on page 624*.

You can manually edit or delete this gable line at any time. Your changes take effect when the automatic roofs are rebuilt. This tool can also be used with group selected windows.

Stained Glass

A selection of solid stained glass materials is available in the Core Catalogs> Materials> Glass library. See *Materials on page 756*.

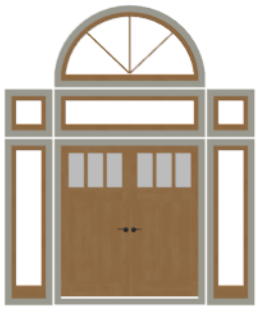
Vents

A selection of attic, foundation and gable vents are available in the Library Browser. See *The Library on page 705*.

Vents are placed in the same manner as regular windows and can be edited in much the same way, as well.

Grouped Windows

Windows can be grouped together to create a wide variety of custom configurations. Stacked windows are easy to create in 3D views, particularly cross section/elevation views, using their edit handles. See *Editing Windows on page 436*.



Notice how the windows and door in this example are separate, with spaces between them. Doors and/or windows can also be positioned so that there are no spaces between the windows and door units, and the casing between them appears to be shared. To help organize their display in plan view, you can place stacked windows of varying heights on different Window Levels. See *Window Levels on page 433*.

Automatically Mulled Openings

To form a mulled group of windows and/or doors, move them close enough together so that their casings touch. Once the casings touch, the windows are mulled together with one casing between the two of them.

The sill of each window in the group must be at the same level for them to share the middle casing; however, the casing tops do not. The casings are modeled as if they are one unit but the windows remain separate objects for dimensioning and the Materials List.

Windows can be automatically mulled to doors if the bottom of the window is at the elevation of the floor, equal to the bottom of the door.

The **Minimum Separation** value in the Window Defaults dialog specifies how close window and door units can be to each other. This setting also controls the width of the shared casing between adjacent windows. See *Window Defaults on page 426*.

Mulled Units in the Library



A selection of mulled window units is available in the Windows library. To place one in your plan, select it and click on a wall in any view. See *Placing Library Objects on page 727*.

Multiple Stacked Openings

If four or more multiple windows or doors occupy the same space in a wall, a Caution ⚠ symbol will display at the problem location in plan view.

Click on the Caution ⚠ symbol that displays over the wall to open a contextual menu, then select **Delete Duplicate** to delete a duplicate opening. When no more Caution symbols remain, you should then confirm that the remaining three openings meet your needs and delete any that are unnecessary.

Mulled Units

A mulled unit is a group of two or more windows and/or doors blocked together to form a single unit. A selection of mulled units is available in the Library Browser.

Selecting Components of Mulled Units

To select a component of a mulled unit from the library, click at the location of the component in question, then click the **Select Next Object** 

edit button or press the ***Tab*** key until that individual component is selected. Only the component clicked on is selectable using this method. If you need to select a different component, click on it and repeat the process.

The selected component may be on any window level in the mulled unit. If there are multiple levels, it is easiest to select the components in a 3D view. When you have selected an individual component, you can change its parameters in the Window Specification dialog. See *Window Specification Dialog on page 438*.

If the selected component is not itself a mulled unit and has no components above it, its **Height** and **Arch** parameters can be changed. Changing the Height causes the component top to move. The bottom remains stationary.

Displaying Mulled Units



As with other windows, the display of mulled window units is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

Mulled units are placed on the “Windows” layer by default and have a single label, which is on the “Windows, Labels” layer. Mulled units from the library are also included in the windows category of the Materials List. If the component objects of a mulled unit have unique moldings or materials, they will not be noted in the Materials List.

If a mulled unit includes a door, **Treat as Door** will be checked in the Mulled Unit Specification dialog. When this box is checked, the unit’s default layer is “Doors” and its label is placed on the “Doors, Labels” layer. Units set to **Treat as Door** are also included in the “Doors” category of the Materials List. See *Options Panel on page 440*.

You can, if you wish, display a mulled unit’s individual component labels instead of a single label for the unit. Labels are placed on the layers they would be on were the unit not mulled. A mulled unit’s label setting also affects how it is listed in the Materials List. See *Label Panel on page 395*.

- When **Suppress All Labels** is selected, individual components are counted in the Materials List.
- When **Show Component Labels** is selected, components are counted in the Materials List.
- When **Show Single Label for Entire Unit** is selected, the unit is treated as a single object the materials list.

Window Levels

It is often necessary to position more than one window, mulled unit, and/or door at the same location along a wall in plan view: for example, to create an entry with side lites and transom.



To help control and organize the appearance of stacked wall openings in plan view, you can assign windows at various heights to different **Window Levels**.

Window Levels do not define the height of a window, just the appearance and behavior of windows and doors in plan view.

Window Level Zero

Window Level 0 (zero) is the Window Level that all windows and doors are always placed on by default.

- In plan view, windows and doors on the Window Level 0 display the line color and style of the layer they are on. Windows on any other level appear light gray.
- When you click on stacked doors and windows in plan view, those on Window Level 0 are selected first. To select an opening on another level, use the **Select Next Object** edit button. See *Select Next Object on page 184*.
- Only windows and doors on the Window Level 0 can be located by dimension lines as they are drawn. You can, however, add an extension line to locate an opening on a non-default Level. See *Adding an Extension Line on page 357*.

Once the window is created, its parameters, including Window Level, can be changed. See *Editing Windows on page 436*.

Displaying Windows

The display of windows and window labels in floor plan and 3D views can be controlled in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

Along with the windows themselves, the display of a number of window components can also be controlled by layer:

- Interior and exterior window casings are located on the “Casings, Exterior” and “Casings, Interior” layers and can display in all views. In plan view, the sills and vertical side casings will be shown, but the horizontal top casing or lintel will not. If a window is recessed, the affected wall layers will adjust to accommodate the casing.
- Window and door shutters are located on the "Shutters" layer and can display in all views. Shutters can also be set to Show Closed or open. See *Shutters Panel on page 449*.
- Window curtains and blinds are located on the "Windows, Curtains & Blinds" layer, which controls their display in camera views only. See *Treatments Panel on page 448*.

- When the “Opening Header Lines” layer is turned on in plan view, headers are represented by dashed lines within each window. These lines do not correspond to actual framing objects and cannot be selected. In addition, header framing members can be set to display. See *Manual Framing Defaults Dialog on page 658*.
- If a window is placed in a Garage room at a height where it extends into the stem wall or curb, a cutout in the concrete will display on the floor below. You can specify the cutout’s size and whether it displays in plan view in the Window Specification dialog. See *Rough Opening Panel on page 422*.

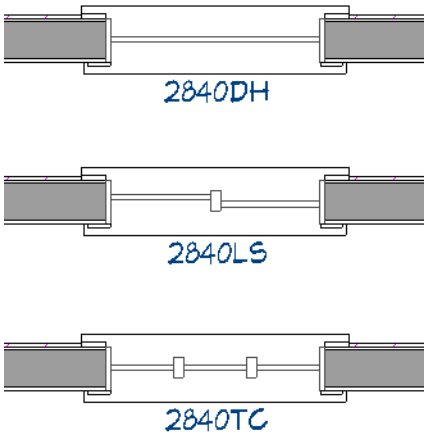
If the “Windows” layer is not set to display, window casing and other components are not visible, but the openings in the walls where they are located can still be seen.

Windows can only be placed in walls, so if a wall’s layer is turned off in plan view, any windows placed in that wall will not display, either. In 3D views, however, windows can display independent of their containing walls:

- When **Hide Camera-Facing Exterior Walls** is in use in the current view. See *Displaying Walls on page 271*.
- When **Display Openings Independent of Walls and Roofs** is checked in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

In Plan View

A window’s frame, glass, and sill are all represented in plan view. This makes some window types, notably Sliding and Double and Triple Casement windows, distinguishable. With the exception of Single and Double Hung windows, windows can also be drawn open in plan view.



Window Types in plan view

Depending on its Type, you can specify whether a selected window is shown open or closed in plan view in the Window Specification dialog. See *Options Panel on page 440*.

By default, when a window is located entirely in one part of a pony wall, and that part is not displayed in plan view, the window’s outline is shown but the wall’s layer lines and fill drawn through it. You can instead display windows in the non-displayed parts of pony walls the same as in the displayed parts, or not at all. See *Pony Wall Defaults on page 255*.

Bay, box, and bow windows have dimensions lines associated with them.

- You can suppress their display by turning off the “Manual Dimensions” layer or on a unit by unit basis in the unit’s specification dialog. See *Bay/Box and Bow Window Specification Dialogs on page 457*.
- The arrow style and fill are set in the Dimension Defaults dialog. See *Dimension Defaults Dialog on page 341*.

In 3D Views

In addition to the components that are drawn in plan views, in camera views, interior and exterior window treatments display when the "Windows, Curtains & Blinds" layer is on. In 3D Vector Views, windows can also display opening indicator arrows. See *Opening Indicators on page 402*.

You can also specify whether window and door glass is opaque or transparent in the Rendering Technique Options dialog. When Opaque Window/Door Glass is used, window and door glass uses the color specified for the active Rendering Technique. See *Rendering Technique Options on page 839*.

Windows as well as doors can display in 3D Framing Overviews when **Display Openings Independent of Walls and Roofs** is checked in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

Show Open/Show Closed



You can specify whether a selected door or window is shown open or closed in the current view type by clicking the **Show Open** and **Show Closed** edit buttons. See *Displaying Doors on page 400*.

- In plan view, these buttons are named **Show Open in 2D** and **Show Closed in 2D**.
- In camera and cross section/elevation views, they are named **Show Open in 3D** and **Show Closed in 3D**.

Show Open in 2D and **Show Open in 3D** are also settings in the Window Specification and Door Specification dialogs. See *Options Panel on page 440*.

The Angle of an open door or window can also be set in its specification dialog. Unlike doors, windows do not have an edit handle to adjust the opening angle. See *General Panel on page 438*.

Mulled Units do not have the **Show Open in 2D** and **Show Open in 3D** settings in their specification dialog; however, they do have the edit tools, which affect all door and window components of the Unit.

Window Labels

Window labels display in floor plan view, centered on the windows they represent, when the “Windows, Labels” layer is turned on and use the Text Style assigned to their layer. Similarly, Wall Niche labels display in the same manner when the "Wall Niches, Labels" layer is turned on. See *Label Panel on page 395*.

Automatic window and niche labels indicate Width and Height, followed by Type. For example:

- In U.S. Unit plans, the automatic label for a 3’-0” wide, 4’-0” high double hung window will read 3040 DH.
- In metric plans, the automatic label for a 900 mm wide, 1200 mm high double hung window will read 900x1200 DH.

You can specify whether a Bay, Box or Bow Window displays a single label or displays the labels of its component windows. See *Bay, Box, and Bow Windows on page 452*.

- When **Suppress All Labels** is selected, individual components of Bay, Box and Bow Windows are counted in the Materials List.
- When **Show Component Labels** is selected, components of Bay, Box and Bow Windows are counted in the Materials List.
- When **Show Single Label for Entire Unit** is selected, the Bay, Box or Bow Windows has one label in plan view but each component is counted separately in the materials list.

These options are also available for mulled units but affect their display the materials list somewhat differently. See *Displaying Mulled Units on page 432*.

Customized labels can also be specified in the Window Specification dialog.

In the Materials List

The materials associated with windows are listed under different Categories in the Materials List:

- **Windows** - Lists windows units, including Passthroughs.
- **Interior Trim** - Lists interior casing, lintels, aprons, and sills.
- **Exterior Trim** - Lists exterior casing, lintels, aprons, sills, and shutters.
- **Wall Board** - Lists the backerboard associated with Wall Niches.

As with other objects, there are a number of ways to control how, or whether, windows are included in the Materials List. See *Organizing Materials Lists on page 956*.

You can add and edit information about a window's accessories in the Window Specification dialog. See *Components Panel on page 967*.

Editing Windows

Before a window can be edited, it must be selected. Click on a window when the **Select Objects** tool or any of the **Window Tools** are active. Doors and/or windows can also be group-selected and edited. See *Selecting Objects on page 183*.

To select a window that is part of a blocked unit, click the component window, then click the **Select Next Object** edit button. See *Selecting Components of Mulled Units on page 432*.

Once selected, windows can be edited using their edit handles, the Edit Toolbar buttons, and their specification dialogs.

Using the Edit Handles

In plan view, click either of the two end handles and drag along the wall to change the width. The label showing the size updates as the window is resized.

In 3D views, a selected window has five edit handles: the Move handle at the center and a Resize handle on each edge. Click and drag an edge handle to resize the window. If window labels are set to display, they will each have a small square Move edit handle. See *Displaying Windows on page 433*.

Using the edit handles, a window resizes according to the currently active **Edit Behavior**. See *Defaults, Preferences, and Edit Behaviors on page 179*.

In 3D views, a selected window has five edit handles: the Move handle at the center and a Resize handle on each edge. Click and drag an edge handle to resize the window.

A single window or a group of windows can be moved with the center edit handle.

A door or window moved against an intersecting wall temporarily stops when it is the casing distance from the intersecting wall. Enable **Ignore Casing for Opening Resize** in the Plan Defaults dialog to turn off this behavior. See *General Plan and Layout Defaults Dialogs on page 89*.

You can continue to drag the selected window and it will resume movement past or onto the intersecting wall.

To create a corner window, drag the Move handle straight out past the wall corner, parallel to the selected window's wall. See *Corner Windows on page 429*.

In the Specification Dialog

The most precise method of editing an individual window or group of windows is to use the Window Specification dialog. The window type, size, casing, materials, shape, and more can all be specified in this dialog. See *Window Specification Dialog on page 438*.

Using the Edit Tools

A selected window or windows can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Gable Over Door/Window creates a gable over the selected window(s) the next time the roof is rebuilt. See *Gable/Roof Lines on page 624*.

Show Open in 2D/3D or **Show Closed in 2D/3D** control the selected window's appearance in plan and 3D views. See *Show Open/Show Closed on page 402*.

Change Wall Side moves a selected Wall Niche to the opposite side of the wall. See *Wall Niches on page 428*.

When a window has been edited to meet your needs, you can use the **Add to Library** edit tool to add it to the Library for future use. See *Adding Library Content on page 722*.

Using Dimensions

Like various other objects, windows can be moved using dimensions. See *Moving Objects Using Dimensions on page 361*.

You can specify how windows and doors are located by dimensions in the Dimension Defaults dialog. Dimensions can be set to locate the centers, sides, casing, and/or rough openings of windows and doors, or you can choose to not locate them at all. See *Locate Manual Panel on page 344*.

When they are generated or being drawn, dimension lines can only locate windows and doors on the Default Level. You can, however, add an extension line to an existing dimension line to locate an opening on a non-default Level. See *Window Levels on page 433*.

Once a dimension line has been drawn, you can move or add its extension lines to locate non-default locations on a window. See *Editing Extension Lines on page 357*.

Window Casing, Sills, and Millwork

Windows often feature casing, or trim, on both sides of the wall opening as well as a sill on one or both sides. See *Moldings / Rails Panels on page 702*.

The default casing for windows and doors is a basic rectangular stock profile. You can specify a window's casing profiles in the Window Specification dialog, or you can choose to suppress casing altogether. See *Casing Panel on page 414*.

A separate molding profile can be specified for the lintel, or top horizontal molding. A sill profile can be specified, as well. See *Lintel Panel on page 441*.

Additional millwork items can be applied above and below the window's casing on its exterior side. See *Treatments Panel on page 448*.

Each of these objects can be replaced with a different profile or object directly from the library in 3D views. Select a molding profile or millwork item, then click on the window component you want it to replace. See *Replace From Library on page 730*.

Window Treatments and Shutters

Curtains and blinds can be assigned to the interior side of windows in the Window Specification dialog. See *Treatments Panel on page 448*.

Shutters can be assigned to the exterior of windows in a similar manner. See *Shutters Panel on page 449*.

Each of these objects can be replaced with a different object directly from the library in 3D views. Select a window treatment or shutter item, then click on the window component you want it to replace. See *Replace From Library on page 730*.

Window Specification Dialog

To open the Window Specification dialog, select a window or a group of windows and click the **Open Object** edit button; or double-click the window using the **Select Objects** or a **Window** tool.

This dialog is also available for the components of Bay, Box, and Bow Windows. See *Bay, Box, and Bow Windows on page 452*.

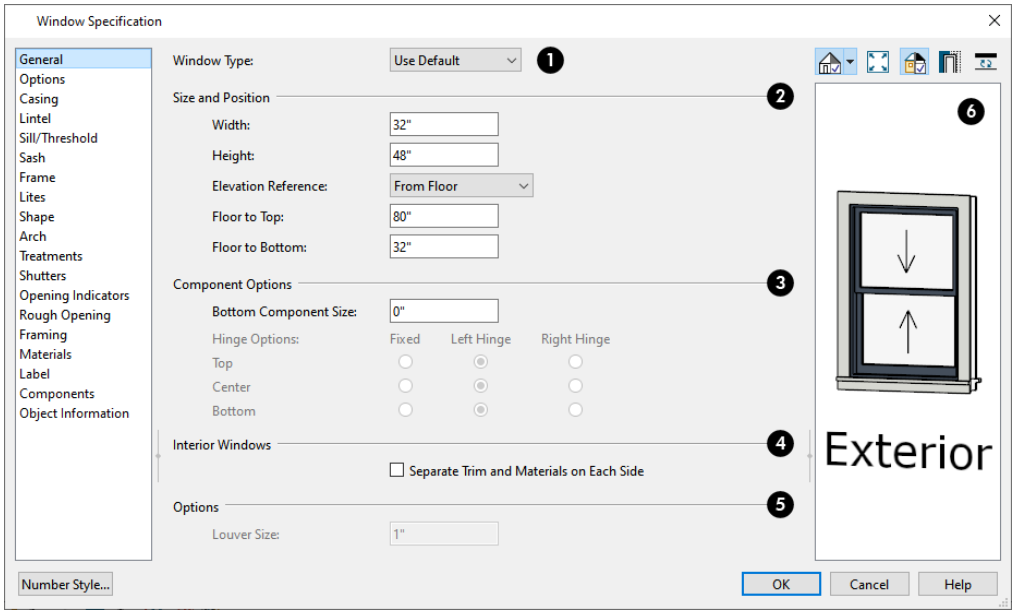
The settings in this dialog are similar to those in the Window Defaults dialog, and some panels are also found in the Mulled Unit Defaults dialog as well. See *Window Defaults on page 426*.

The settings in this dialog are also similar to those in the Wall Niche, Mulled Unit and Window Symbol Specification dialogs. Although similar, a number of the options cannot be edited when either a window symbol or a mulled unit is selected, and some panels are not available. See *Grouped Windows on page 431*.

The panels that are available in the Window Specification dialog will vary depending on whether the selected window is a regular window or a mulled unit or symbol object from the library.

General Panel

In the Wall Niche Specification dialog, only the **Size and Position** settings on this panel are available. See *Wall Niches on page 428*.



1 General

- Select the **Window Type** from the list. The first entry in the list is the “Use Default”, which is set in the Window Defaults dialog.
- Control how far open the selected window is in 3D views:
  - For Single Hung, Double Hung, and Sliding windows, specify the **Percent Open**.
  - For Awning, Casement, and Hopper windows, specify the **Swing Angle** instead.
  - Not available for Fixed or Louvered windows.

2 Size and Position

- Specify the window’s **Width** and **Height**. These values do not include the window frame unless Window Size Includes Frame is selected on the FRAME panel.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the height **to Top**, measured from the selected Elevation Reference to the top of the window frame.
  - Specify the height **to Bottom**, measured from the selected Elevation Reference to the bottom of the window frame.
- Specify the **Depth** of the selected Wall Niche, measured from the wall surface to the back of the niche. Only available for Wall Niches.

> Note: When either the Floor to Top or Floor to Bottom setting is modified, the other will adjust in response to prevent the window’s Height from changing.

3 Component Options

These settings affect windows with movable sections and are not available for Pass-Throughs, Fixed glass windows, mulled units, or window symbols.

- Specify the **Bottom Component Size** for Single Hung, Double Hung, Double Awning, Double Hopper, and Triple Hopper windows; specify the **Top/Bottom Component Size** for Triple Awning windows; or,
- Specify the **Side Component Size** for Triple Casement and Triple Sliding windows, the **Right Component Size** for Left Sliding windows, or the **Left Component Size** for Right Sliding and Double Casement windows. A **Component Size** value of 0 creates a window with identically sized components.
- Specify how each **Component Opens** from the available options. Only available for Casement, Double and Triple Awning, and Double and Triple Hopper windows.

4 Interior Windows

These settings are only present when the selected window is a Pass-Through placed in an interior wall. See *Exterior and Interior Walls on page 261*.

- Check **Separate Trim and Materials for Each Side** to specify the casing, lintels, sills, and all materials for each side of the selected Pass-Through independently. When unchecked, the two sides use the same trim and materials.

5 Options

- **Louver Size** - Specify the vertical height of the selected window’s louvers. Only available for Louvered and Glass Louver windows.

6 Preview

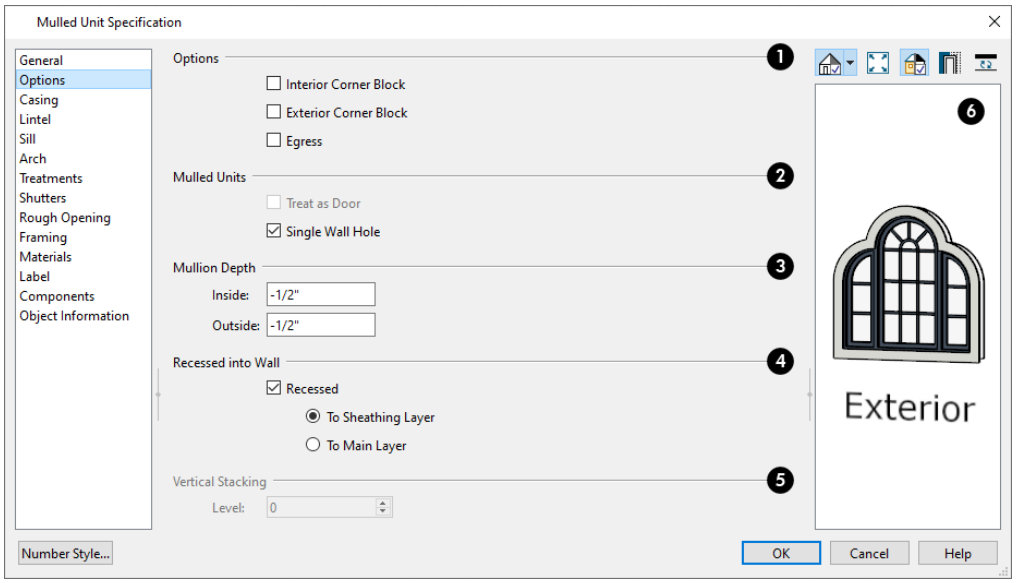
A preview of the selected window displays here. A label indicates which side of the window is its Interior and which is its Exterior. See *Dialog Preview Panes on page 21*.

Window opening directions can best be seen using the Vector View Rendering Technique.

OPTIONS PANEL

The OPTIONS panel is not available in the Wall Niche Specification dialog.

The Mulled Units and Mullion Depth settings on the OPTIONS panel are only available in the Mulled Unit Specification dialog. See *Grouped Windows on page 431*.



1 Options

These settings affect how the selected window is listed in the Materials List. See *Displaying Windows on page 433*.

- Check **Interior Corner Block** to count interior corner blocks in the Materials List. These do not display in 3D views.
- Check **Exterior Corner Block** to count exterior corner blocks in the Materials List. These do not display in 3D views.
- Check **Egress** to specify the window as an egress window in the Materials List. Not available for Pass-Throughs.

> Consult your local building and fire code authorities for your local egress window requirements.

- Check **Reverse Symbol** to reverse a window symbol as though it were reflected about a vertical line through its center. Only available in the Window Symbol Specification dialog.

Display

Not available for Fixed, Louvered, Glass Louver windows, Pass-Throughs, or Mulled Units. You can specify how far the window is open on the GENERAL panel. See *Displaying Windows on page 433*.

- Check **Show in Open in 2D** to draw the selected window as open in plan views. Not available for Awning or Hopper windows.
- Check **Show in Open in 3D** to draw the selected window as open in camera views.

2 Mulled Units

Only available when a Mulled Unit is selected. See *Mulled Units in the Library on page 432*.

- Check **Treat as Door** to include the unit in the "Doors" category of the Materials List. Only available when the selected unit contains a door.
- Uncheck **Single Wall Hole** to produce individually framed wall openings for each unit in a mulled unit. When this box is checked, a single wall opening with one header for the entire unit is produced.

3 Mullion Depth

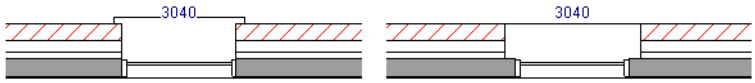
Only available when a Mulled Unit is selected. Specify the depth of the casing between the Mulled Unit's components, measured from the wall surface. Positive values move the mullion surface towards the wall center; negative values, away from it.

- Specify the **Inside** depth of the mullion on the interior surface of the wall.
- Specify the **Outside** depth of the mullion on the exterior surface of the wall.

4 Recessed into Wall

These settings allow you to recess the selected window or mulled unit into its wall, away from the exterior surface. Only available if the window or mulled unit is in a multi-layered wall.

- Check **Recessed**, then select a structural wall layer from the drop-down list. See *Wall Types on page 288*.
- The drop-down lists all of the wall's all Exterior and Main Layers, but not its Interior Layers.



The window on the left is not recessed while the one on the right is recessed to its framing layer.

5 Vertical Stacking

- Specify the window **Level** that the selected window is placed on. Not available for Mulled Units or window symbols from the library. See *Window Levels on page 433*.

6 Preview

A preview of the selected window displays here. See *Dialog Preview Panes on page 21*.

Casing Panel

The settings on the Casing panel of the Window and Mulled Unit Specification dialogs are also found on the panel of the same name in the Door Specification dialog. See *Casing Panel on page 414*.

The Casing panel is not available in the Window Symbol Specification dialog.

Lintel Panel

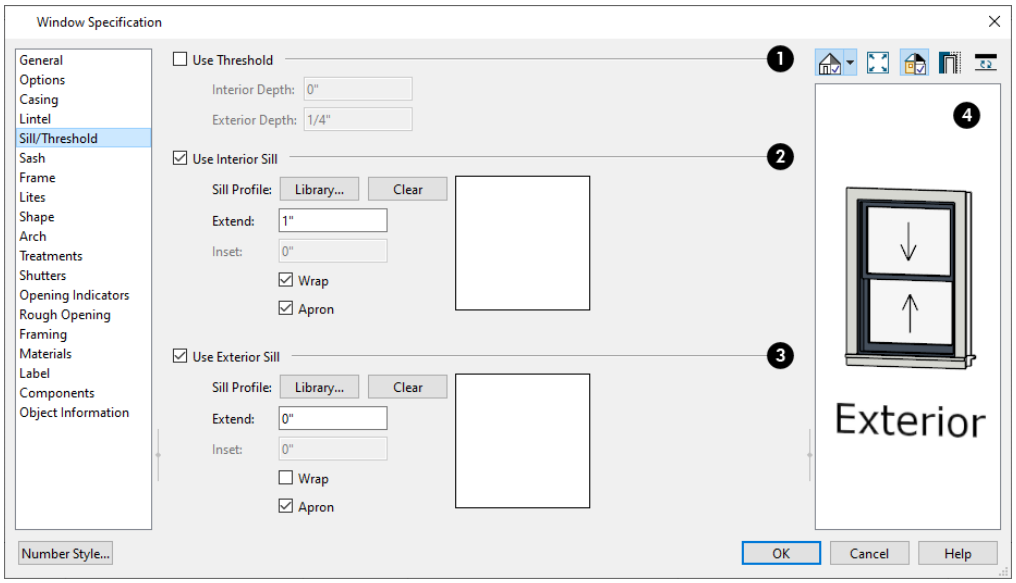
The settings on the Lintel panel of the Window and Mulled Unit Specification dialogs are also found on the panel of the same name in the Door Specification dialog. See *Lintel Panel on page 416*.

The Lintel panel is not available in the Window Symbol Specification dialog.

Sill/Threshold Panel

The settings on the Sill/Threshold panel of the Window and Mulled Unit Specification dialogs are not available if the window has a vertically reflected arch. See *Arch Panel on page 448*.

The SILL/THRESHOLD panel is not available in the Window Symbol Specification dialog.



1 Use Threshold

Check **Use Threshold** then specify its **Interior** and **Exterior Depth**, below. When this box is unchecked, no threshold is added. Typically, exterior doors and full-height side lites receive a threshold while other openings do not. Thresholds extend under an opening's exterior casing, if present.

2 Use Interior Sill

Check **Use Interior Sill** to enable the settings that follow, then specify the sill applied to the interior side of the selected window(s) using these settings. When this box is unchecked, no interior sill is used.

- **Sill Profile** - Click the **Library** button to select a molding profile for the sill. A preview of the selected profile displays to the right. See *Select Library Object Dialog on page 729*.
- Click the **Clear** button to remove the selected sill profile from the window. When no library profile is selected, a basic rectangular profile is used.
- Specify how far to **Extend** the sill past the outside edges of the casing on each side. If an Apron is specified, it will also be affected by this setting.
- Specify how far to **Inset** the sill into the window. A value of 0 positions the sill profile against the surface of the wall. Only available when a sill profile from the library is selected.
- Check **Wrap** to wrap the sill profile back toward the wall.
- Check **Apron** to include an apron under the sill. When Wrap is checked, the apron will be 1/2” (12 mm) shorter than the sill on each side; when it is unchecked, it will be the same length as the sill.

3 Use Exterior Sill

Check **Use Exterior Sill** to enable the settings that follow, then specify the exterior sill for the selected window(s) using these settings. These settings are the same as those for the Interior Sill, above.

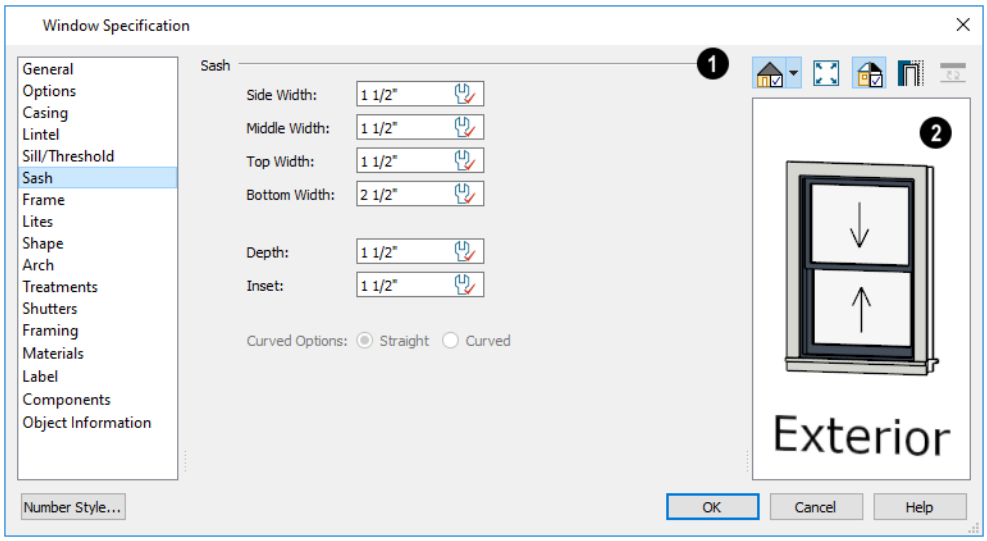
4 Preview

A preview of the selected window displays here. See *Dialog Preview Panes on page 21*.

Sash Panel

The settings on the Sash panel control the size and position of the selected window's sash. Note that increasing the Side, Middle, Top or Bottom Width decreases the area of the glass and vice versa.

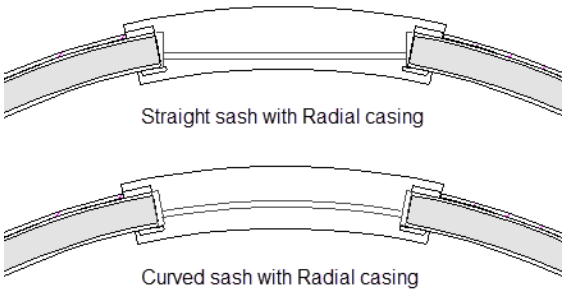
The Sash panel is not available in the Wall Niche, Mulled Unit, and Window Symbol Specification dialogs, and the settings on this panel are not available for Pass-Throughs.



1 Sash

Specify the width and depth of the selected window's sash, which are the pieces of the window that hold the glass; or, uncheck this box to prevent it from having a sash.

- Specify the **Side Width** of all vertical sash members: those at the window sides as well as the central members of Casement and Sliding windows. This is also the width of the top portion of the window when an arch is specified.
- Specify the **Middle** width of horizontal components between the top and bottom sash in Double Hung, Double and Triple Awning, and Double and Triple Hopper windows. It does not affect Casement and Sliding windows.
- Specify the **Top** and **Bottom Widths**. The **Top** value is not used if the window has an arch.
- Specify the **Depth**, or thickness, of the sash stock measured from the exterior to the interior.
- Specify the **Inset**, the distance between the frame and the outermost sash. If there is no frame, the inset is measured from the outer surface of the wall's Main Layer.
- **Curved Options** - When the selected window is placed in a curved wall, specify whether it has a curved or straight sash. A curved sash is typically used with Radial casing. See *Casing Panel on page 414*.

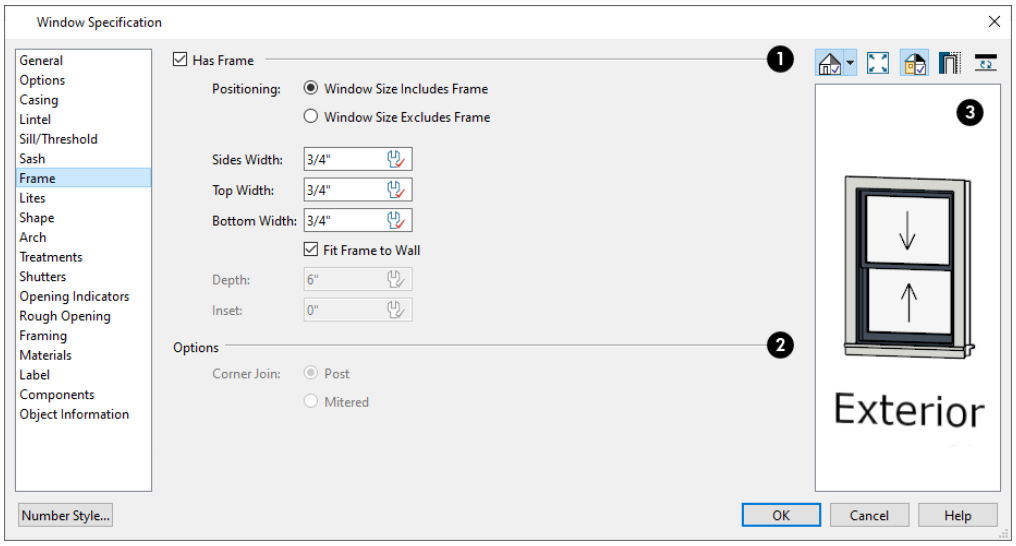


2 Preview

A preview of the selected window displays here. See *Dialog Preview Panes on page 21*.

Frame Panel

The Frame panel is not available for mulled units or window symbols from the library. The settings on the Frame panel are similar to those on the Jamb panel of the Door Specification dialog. See *Jamb Panel on page 417*.



1 Has Frame

Check **Has Frame** to include a frame and enable the settings below. When this is unchecked, the selected window has no frame around it.

- Specify the **Positioning** of the window frame. These settings affect what the window's Size settings on the General panel are describing; however, switching these settings does not affect the Size values:
  - Select **Window Size Includes Frame** to specify size as a total of the window glass plus sash plus jamb width.
  - Select **Window Size Excludes Frame** to specify the size of the window glass plus sash only.
- Specify the **Side**, **Top**, and **Bottom Widths** of the window's frame. Changing these values only affects a window's total size when Window Size Includes Frame is selected, above.
- Uncheck **Fit Frame to Wall** to specify the Depth and Inset of the selected window's frame. When this box is checked, the frame Depth automatically extends from the Recessed Into Wall layer to the wall's inside surface with an Inset of 0". The Recessed Into Wall layer is specified on the *Options Panel on page 440* of this dialog.
  - Specify the **Depth** of the window frame from front to back.
  - Specify the frame's **Inset**, which is measured from the Recessed Into Wall layer and moves the window frame towards its interior side. If used, the casing and lintel are not affected by this setting.

2 Options

Specify how corner windows join. Only available when the selected window is one of two Fixed glass windows that meet at a wall corner, or when both windows are selected. See *Corner Windows on page 429*.

- Select **Post** to produce a vertical support between the two windows that separates their sash and glass.
- Select **Mitered** for sash and glass that meet and miter at the corner where the two windows meet.

3 Preview

A preview of the selected window displays here. See *Dialog Preview Panes on page 21*.

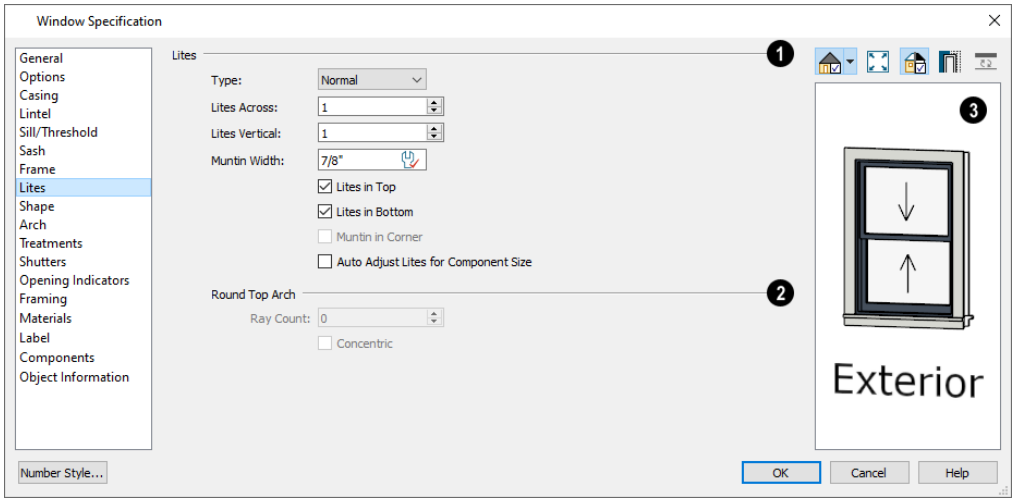
LITES PANEL

The LITES panel allows you to add muntins to windows, and is also available for Glass doors. See *Doors on page 397*.

There are four possible styles of muntin bars for regular windows, plus two additional options for arched windows.

A window that has been modified using the SHAPE panel cannot have divided lites or shutters added.

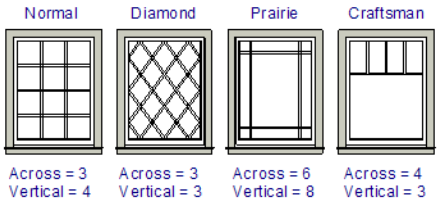
The LITES panel is not available in the Wall Niche, Mulled Unit, and Window Symbol Specification dialogs, and the settings on this panel are not available for Pass-Throughs.



1 Lites

Specify the number, position and style of lites for the selected window.

- Select a **Type**, or style, of window lite from the drop-down list.



  - **Normal** style is the most common, with muntins going horizontally and vertically. Colonial windows are an example of the normal style.
  - **Diamond** style uses angled muntin bars to divide up the lites. French windows are an example of the diamond style.
  - **Prairie** style is based on the normal style, but with all the central muntin bars removed, leaving only the two outside muntin bars both horizontally and vertically. Typically, both Lites Across and Lites Vertical should be set between 6 and 8. Federal or Federation windows are an example of the Prairie style.
  - **Craftsman** style is based on the normal style, but only the topmost horizontal muntin bar is kept with all the portions of the vertical muntin bars above it. Typically, both Lites Across and Lites Vertical should be set between 4 and 8.
- Enter the number of horizontal **Lites Across** in each sash.
- Enter the number of vertical **Lites Vertical** in each sash.
- Specify the **Muntin Width**, which is the width of the bars dividing the panes of glass.

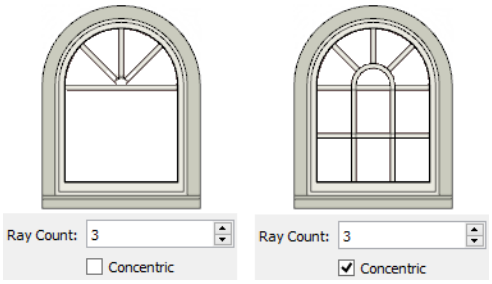
- Check or uncheck **Lites in Top** and/or **Lites in Bottom** - or **Lites in Left** and/or **Lights in Right** - to specify either one or both of the sashes to have divided lites.
- Check **Muntin in Corner** to add a vertical muntin bar where two corner windows meet. Only available when Mitered is selected as the Corner Join option on the FRAME panel. See *Corner Windows on page 429*.
- Check **Auto Adjust Lites for Component Size** to have the program produce lites that are consistent in size across all components. When this is checked, the window's lites and its specification settings may not agree; when unchecked, lites in the components may not be consistent in size.

> Note: Because the fixed window in a Triple Sliding window is twice the size of the movable windows, the fixed section has a vertical muntin bar. To eliminate this, uncheck Auto Adjust Lites for Component Size.

2 Round Top Arch

These options are only available if the window has an Arch specified.

- Specify a **Ray Count** of up to 10 radial muntin bars in the portion of the window within the arch. There is one more pane of glass than the number of rays specified. See *Arch Panel on page 448*.
- Check **Concentric** to produce muntins radiating from a curved inner muntin that is concentric with the window's arch. You must have at least three Lites Across for this to be used.



3 Preview

A preview of the selected window displays here. See *Dialog Preview Panes on page 21*.

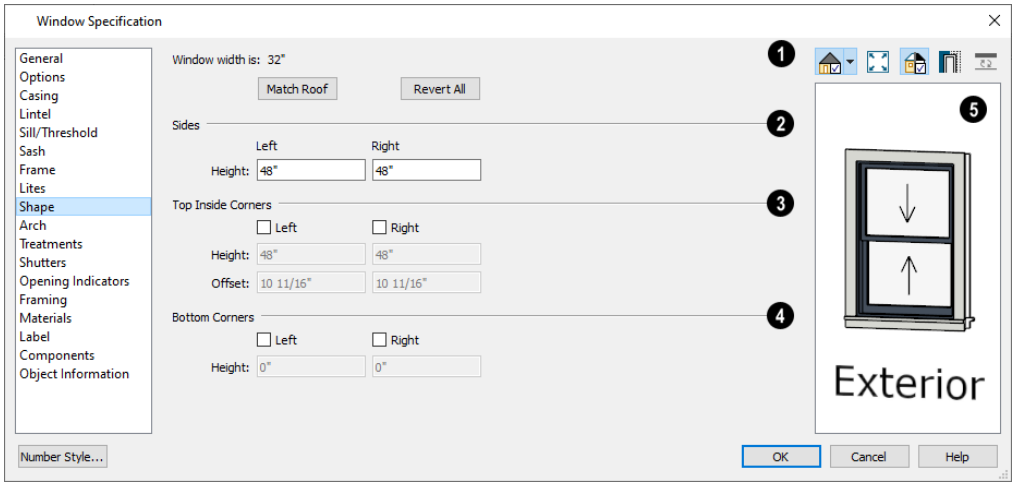
SHAPE PANEL

The settings on the SHAPE panel control the position of the selected window's corners, allowing you to create angled edges and mitered top corners.

If any of these settings are used to create a custom shape, the selected window will be automatically specified as "Fixed Glass" on the GENERAL panel. If the selected window has an arch specified on the ARCH panel, it will be removed.

The SHAPE panel is not available for mulled units or window symbols from the library.

> Note: The Left and Right settings on this panel refer to the window's exterior.



1 Window Width

The Window Width displays for reference here. It can be changed on the *General Panel on page 438*.

- Click **Match Roof** to match the angle of the top of the window to the pitch of the roof above by changing its Sides heights, below. If either Top Inside Corner box is checked, it will become unchecked.

  Match Roof does not work for curved roofs, has no effect if the window is not in a gable end wall, and is not available in the Window Defaults dialog.
- Click **Revert All** to restore the window to its original shape, type and arch settings.

2 Sides

Specify the height of the window's **Left** and **Right** sides, as measured from the bottom of the window. By default, these settings match the window's Height.

3 Top Inside Corners

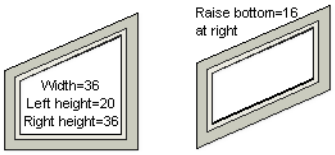
These settings allow you to create a second set of top corners with angled edges between them and the outside top corners.

- Check **Left** to add an additional corner along the top edge.
- Specify the **Height** of the left inner corner, as seen from the exterior, measured from the bottom of the window.
- Specify the **Offset** of the left inner corner, as measured from the left side of the window.
- An additional **Right** Inside Corner can be specified in a similar manner.

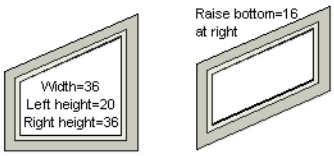
4 Bottom Corners

These settings allow you to raise the heights of the bottom corners, as measured from the bottom of the window specified on the *General Panel on page 438*.

- Check **Left** to raise the height of the bottom left corner.
- Specify the **Height** of the bottom left corner. This value cannot exceed the Height of the Left Side.



- The height of the **Bottom Right** corner can be raised in a similar manner.



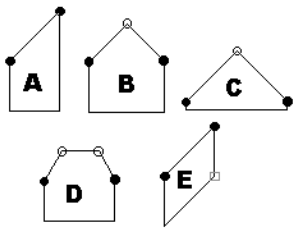
- The height of the **Bottom Right** corner can be raised in a similar manner.

5 Preview

A preview of the selected window displays here. You may want to rotate the view so the window's exterior can be seen. See *Dialog Preview Panes on page 21*.

> Note: The Left and Right settings on this panel refer to the window's exterior.

The following diagram represents added Inner corners using open circles and the left and right corners using solid black circles:



- **A** has different left and right Side Heights with no Top Inside Corner added.
- **B** has matching left and right heights with an added Top Inside Corner.
- **C** is the same as **B**, except that the left and right Side Heights have been shortened to 1/4".
- **D** is the same as **B** except it has two added Top Inside Corners.
- **E** is the same as **A** except that the Bottom Right Corner has been raised.

ARCH PANEL

The settings on the ARCH panel of the Window and Mulled Unit Specification dialogs are also found on the panel of the same name in the Door Specification dialog. See *Arch Panel on page 418*.

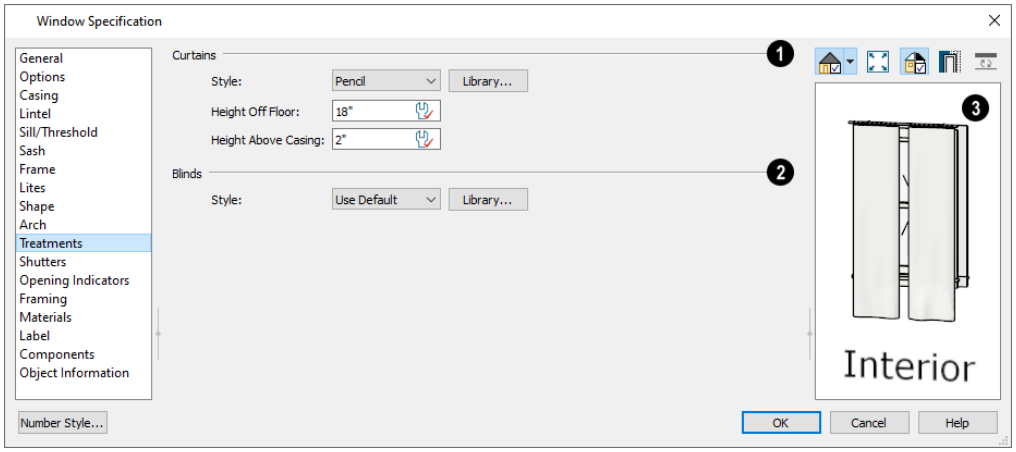
The settings on this panel of the Mulled Unit Specification dialog define the overall shape of the blocked unit's top. If the mulled unit already includes a component window with an arch, these settings cannot be modified.

The ARCH panel is not available for window symbols from the library, and its settings are not available if the selected window has been modified using the SHAPE panel.

TREATMENTS PANEL

The settings on the TREATMENTS panel allow you to add embellishments to the interior and exterior of the selected window or mulled unit.

The TREATMENTS panel is not available in the Wall Niche and Window Symbol Specification dialogs.



1 Curtains

Curtains are applied to the selected window or mulled unit's interior side.

- Specify a style of **Curtains** by selecting "Use Default", "None" or "Library" from the drop-down list. If a non-default library item has been selected, its name will display in the list, as well.
- Click the **Library** button or select "Library" from the drop-down list to choose a style of curtain from the library. See *Select Library Object Dialog on page 729*.
- Specify the **Height Off Floor** of the bottom edge of the curtains.
- Specify the **Height Above Casing** of the top of curtains.

2 Blinds

Blinds are specified in the same manner that Curtains are chosen, above.

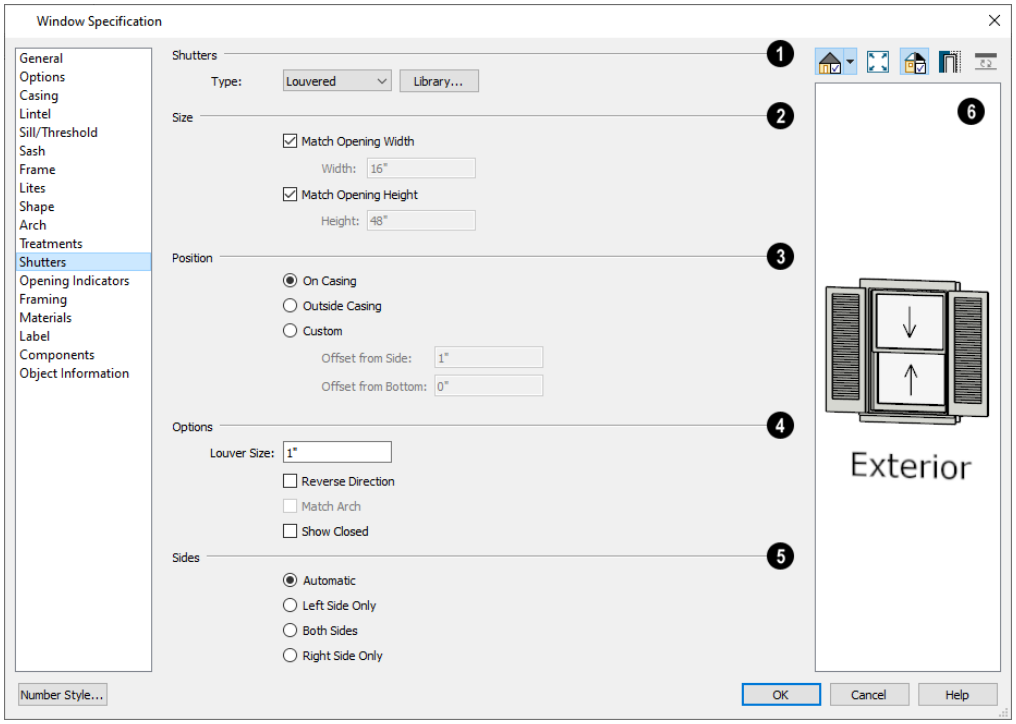
3 Preview

A preview of the selected window displays on the right. You may want to rotate the view so the window's interior can be seen. See *Dialog Preview Panes on page 21*.

SHUTTERS PANEL

The settings on the SHUTTERS panel allow you to specify exterior shutters for the selected window or mulled unit from the library.

The SHUTTERS panel is not available in the Wall Niche and Window Symbol Specification dialogs.



1 Shutters

Select a **Type** of shutters from the drop-down list or click the **Library** button to select a style of shutters from the Library Browser. See *Select Library Object Dialog on page 729*.

2 Size

- When **Match Opening Width** is checked, each shutter's width is exactly half that of the window, excluding casing.
- Uncheck **Match Opening Width** to specify a **Width** in the text field. If the window is later resized, the shutters will not adjust in response.
- When **Match Opening Height** is checked, each shutter's height equals that of the window, excluding casing.
- Uncheck **Match Opening Height** to specify a **Height** in the text field. If the window is later resized, the shutters will not adjust in response.

3 Position

Specify the position of the shutters relative to the window.

- Select **On Casing** to position the shutters just outside the window frame, like functional shutters.
- Select **Outside Casing** to position shutters outside the window casing, as decorative shutters often are.
- Select **Custom** to create a custom position for the shutters by specifying the **Offset from Side** and **Offset from Bottom** in the fields below.

4 Options

Additional shutter **Options** can be specified here.

- Specify the **Louver Size**. Only available when "Louvered" is selected as the Type, above.
- Check **Reverse Direction** to orient the shutters so their exterior sides face outward and their interior sides face the wall. For functional shutters, this should remain unchecked.

- When **Match Arch** is checked, shutters are shaped to match the selected window's arch shape. Uncheck this box for shutters with flat tops that reach the bottom of the curved portion of an arched window. Only available the selected window has an Arch specified. See *Arch Panel on page 448*.
- Check **Show Closed** to draw the shutters so they cover the exterior of the selected window. When this is unchecked, the shutters are positioned against the wall on either side of the window.

5 Sides

Specify which sides of the selected window receive shutters.

- Select **Automatic** to assign shutters to both sides of the window as long as there is sufficient room on the wall. If the window is next to a wall intersection or corner, the shutter closest to the intersection will not generate.
- Select **Left Side Only** to assign a shutter to the left side of the window and none on the right.
- Select **Both Sides** to assign shutters to both sides of the window under all circumstances, even if there isn't enough room on the wall for one or both of them.
- Select **Right Side Only** to assign a shutter to the right side of the window and none on the left.

6 Preview

A preview of the selected window displays on the right. Shutters will only generate if there is sufficient room for them along the window's containing wall. In order to see the shutters, you may need to rotate the preview to show the Exterior. See *Dialog Preview Panes on page 21*.

Opening Indicators Panel

The settings on the Opening Indicators panel are also found on the panel of the same name in the Door Specification dialog. See *Opening Indicators Panel on page 420*.

Rough Opening Panel

The settings on the Rough Opening panel are also found on the panel of the same name in the Door Specification dialog. See *Rough Opening Panel on page 422*.

Framing Panel

The settings on the Framing panel are also found on the panel of the same name in the Door Specification dialog. See *Framing Panel on page 423*.

Layer Panel

The settings on the Layer panel control which layer and Drawing Group the selected Window is assigned to. See *Layer Panel*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Window in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

The settings on the Materials panel of the Mulled Unit Specification dialog apply to all components of the blocked unit. Any settings made for individual components of the blocked unit are overridden here.

Label Panel

Window labels display in plan view when the “Windows, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Similarly, Wall Niche labels display in plan view when the “Wall Niches, Labels” layer is turned on and use the Text Style assigned to that layer. See *Wall Niches on page 428*.

Manufacturer Panel

The MANUFACTURER panel provides contact information for the selected Window’s manufacturer. Only available for Windows from Manufacturer library catalogs. See *Manufacturer Catalogs on page 718*.

Components Panel

The information entered on the COMPONENTS panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the OBJECT INFORMATION panel can be used in the Materials List. See *Object Information Panel on page 968*.

Bay, Box, and Bow Windows



Bay, Box and Bow Windows are created much the way regular windows are: select a tool, then click a wall to place that window type.

Home Designer automatically builds a foundation under bay/box/bow windows placed on Floor 1 unless they are raised from their original position. That section of the foundation wall is also a bay/box/bow, but without windows. If the foundation was generated before the window is placed, the foundation must be rebuilt or edited manually.

Displaying Bay, Box, and Bow Windows

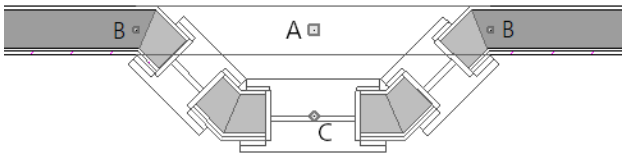
The display of bay, box, and bow windows is controlled in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

Like other windows, bay, box, and bow windows can display labels. Either a single label for the unit can be used, or a separate label for each component. See *Window Labels on page 435*.

Bay, box, and bow window width and radius dimensions, which display in plan view when specified to do so in the window’s specification dialog, are placed on the “Dimensions” layer. See *Options Panel on page 459*.

Editing Bay, Box, and Bow Windows

Bay, box, and bow windows are edited similar to regular windows with one exception: in plan view, a diamond-shaped Depth edit handle displays on the section. Drag this Depth handle outward to increase the depth, or inward to decrease the depth of the unit. See *Editing Windows on page 436*.



A. Move
B. Adjust Width
C. Adjust Depth

Bay, box, and bow windows can also be edited in their respective specification dialogs. See *Bay/Box and Bow Window Specification Dialogs on page 457*.

Component Windows

A component window within a bay, box, or bow window can be edited like others standard window, with a few restrictions. To select a component window, click at the location of the component in question, then click the **Select Next Object** next edit button or press the ***Tab*** key.

- Only the bay or box window component that was clicked on is selected using this method. If you need to select a different component, click on it and repeat the process.
- In a bow window, all components are identical, so only one component can be selected. Changing this component changes them all.

An individual component window can be resized using the edit handles or by changing settings in the component's Window Specification dialog. Component windows can also be resized using the Transform/Replicate Object dialog. See *Transform/Replicate Object Dialog on page 176*.

When a bay/box/bow window is first created, there is room for one standard trimmer on each side of each component window. When the bay as a whole is moved and resized, its components automatically resize so that a standard trimmer is still accommodated.

If you increase a component window's width to the point where there is not enough room for standard trimmers, a thinner trimmer can be used. The size of this thinner trimmer is specified in the Build Framing dialog. See *Openings Panel on page 653*.

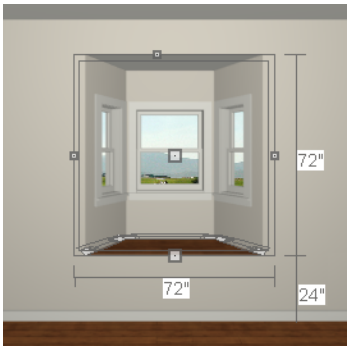
If a component window is resized, it retains its size if at all possible when the containing bay/box/bow window is moved or resized. If the bay is resized in such a way that the component is too large to fit even with a thinner trimmer, the component resumes its default behavior, resizing as the containing bay window is resized.

Floors and Ceilings

When originally created, the floor and ceiling within a bay, box, or bow window are the same heights as the floor and ceiling of the room in which it is placed.



Both the top and bottom heights of these window units can be adjusted in its specification dialog or a 3D view using its edit handles to create a lowered ceiling and/or a bench seat or garden window.



When the ceiling is lowered, the top heights of the walls that define the window unit are also lowered. When a roof is built over the unit, its height will be affected, as well.

When the bottom of the window is raised to create a bench seat, the unit's walls will not reach the ground. As a result, window units with bench seats will have no foundation beneath them when the foundation is built.

Bay, Box, Bow Windows and Roofs

Several different roof styles can be specified for Bay, Box and Bow window units in the Bay/Box and Bow Specification dialogs. See *General Panel on page 457*.

If you change a Bay, Box, or Bow Window's roof specification, you will need to rebuild the roofs to see the changes. See *Rebuilding Roofs on page 597*.

Hip Roofs

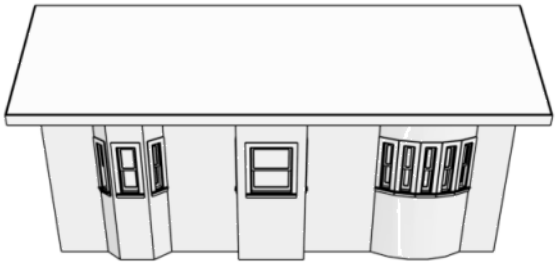
By default, a hip roof is built above the unit when roofs are automatically generated. Bay and Bow Windows with angled side walls also receive two additional roof planes that produce a ridge at the back of the bump-out's roof, sometimes referred to as a California ridge. No roof directives need to be selected in the Bay/Box/Bow Specification dialog to produce this roof.



Hip roofs over Bay, Box, and Bow Windows

Use the Existing Roof

To generate a standard roof that ignores a Bay, Box, or Bow Window, check **Use Existing Roof**.

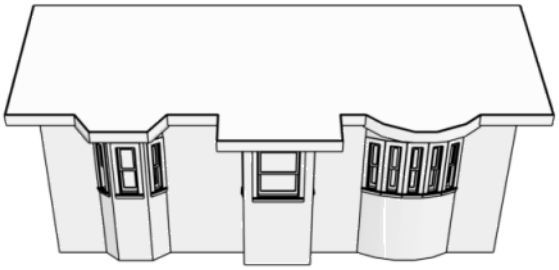


Existing roof extending over and following the shape of Bay, Box, and Bow Windows

With this option the Bay, Box, or Bow Windows is tucked under the roof eave. You may find it necessary to increase the width of the eave. See *Roof Panel on page 598*.

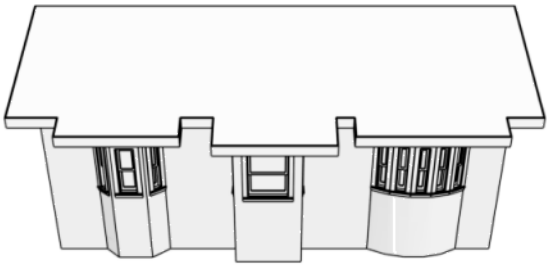
Extend the Existing Roof

To have the main roof extend down over the window unit and follow the shape of the unit, select **Extend Existing Roof Over**.



Existing roof extending over and following the shape of Bay, Box, and Bow Windows

To extend the main roof down over a window unit to create a rectangular roof over it rather than one that follows its shape, select both **Extend Existing Roof over** and **Rectangular Roof Over**.



Existing roof extending rectangular bump-outs over Bay, Box, and Bow Windows

For this roof style, the ceiling heights of the window unit and the adjacent room must be the same. If you lower the ceiling of the window unit and then build the roof, a lower hip roof over the window is created. See *Floors and Ceilings on page 453*.

If a header is desired over the window unit, first build the roof, then lower the ceiling of the window unit. Once the ceiling is lowered, select **Rebuild Walls/Floors/Ceilings** . Do not rebuild roof planes.

Rectangular Hip Roofs

To create a rectangular-shaped hip roof above a Bay, Box, or Bow window, select **Rectangular Roof Over**.



Rectangular-shaped hip roofs over Bay, Box, and Bow Windows

Gable Roof

A gable roof is not one of the automatic options for the roof above a Bay, Box, or Bow Window. A gable can be created by manually editing the rectangular hip roofs that are automatically created. See *Roof Planes on page 604*.

To create a gable over a bay window

1. Select a Bay, Box, or Bow window, open its specification dialog, and choose the **Rectangular Roof Over** option.
2. Rebuild the roof.
3. Select one of the side roof planes and drag the corner edit handle located at front end of the ridge forward until the fascia snaps to the edge of the front hip section.
4. Edit the other side roof plane in the same manner.
5. Delete the front hip section.
6. Adjust the roof's overhang as needed.



To create a gable roof over a normal window, use the Gable Over Door/Window edit button. See *Gable/Roof Lines on page 624*.

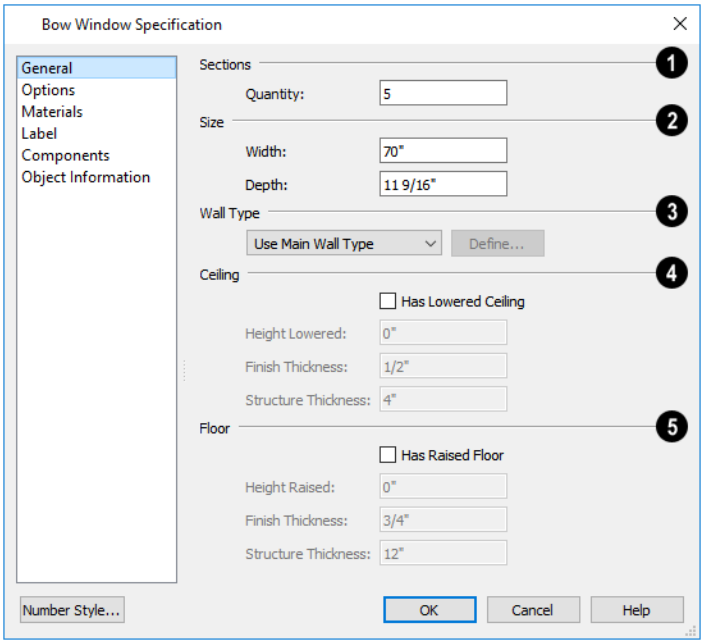
Bay/Box and Bow Window Specification Dialogs

To open the Bay/Box Window Specification or the Bow Window Specification dialog, select one or more Bay, Box, or Bow Windows and click the **Open Object** edit button. See *Bay, Box, and Bow Windows on page 452*.

The options in this dialog can only be set for objects placed in a plan: Bay, Box, and Bow Windows do not have defaults dialogs.

The settings that are available in these dialogs depend on whether the selected object is a Bay, Box, or Bow Window.

General Panel



1 Sections

The setting that displays here depends on whether the selected window is a Bay, Box, or Bow Window.

- Specify the **Bay Angle**, which is the angle of the side components of a Bay or Box Window. Bay Windows have an angle of 45° by default; Box Windows have an angle of 90°.
- Specify the **Quantity**, which is the number of component windows in a Bow Window.

2 Size

Specify the **Width** and **Depth** of the Bay, Box, or Bow Window.

3 Wall Type

Specify the Wall Type used by the walls embedded in the selected Bay, Box, or Bow Window. See *Wall Types on page 288*.

- Select “Use Main Wall Type” from the drop-down list to use the same Wall Type as that of the wall that the window unit is placed in. If the main wall is a Pony Wall, both Wall Types are used.
- Select a specific Wall Type from the drop-down list to use it instead of the Main Wall Type.
- When a specific Wall Type is selected, click the **Define** button to modify its definition. See *Wall Type Definitions Dialog on page 290*.

4 Ceiling

Specify the height and structure of the **Ceiling** within the selected window.

- Check **Has Lowered Ceiling** to enable the settings that follow. When this is unchecked, the ceiling height and finish material within the window is the same as that for the adjacent room.
- Specify the **Height Lowered**, which is measured from the ceiling height of the adjacent room.

> Note: If the Height Lowered is 0”, Has Lowered Ceiling will become unchecked when you click OK.

- Specify the **Finish Thickness**, which is the thickness of the ceiling’s finish material.
- Specify the **Structure Thickness**, which is the thickness of the ceiling’s structural layer.

5 Floor

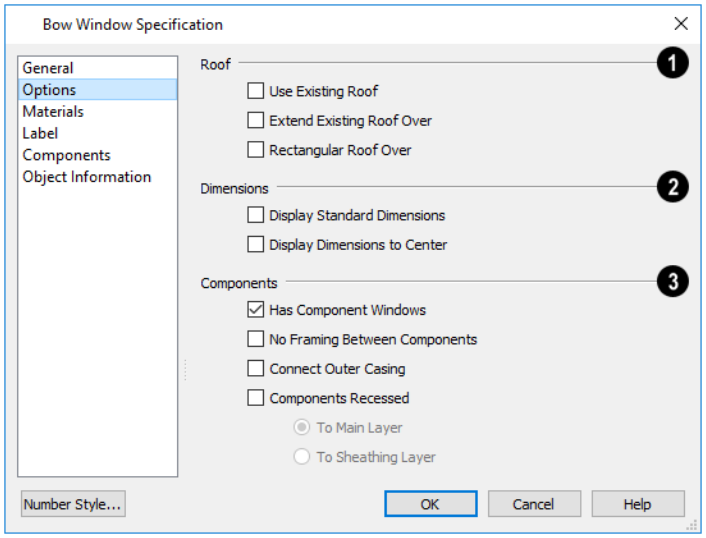
Specify the height and structure of the **Floor** within the selected window.

- Check **Has Raised Floor** to enable the settings that follow. When this is unchecked, the floor height and material within the window is the same as that for the adjacent room.
- Specify the **Height Raised**, which is the measured from the floor height of the adjacent room.

> Note: If the Height Raised is 0”, Has Raised Floor will become unchecked when you click OK.

- Specify the **Finish Thickness**, which is the thickness of the floor’s finish material.
- Specify the **Structure Thickness**, which is the thickness of the floor’s structural layer.

Options Panel



1 Roof

Specify the structure of the automatic roof over the selected window unit. See *Bay, Box, Bow Windows and Roofs on page 454*.

- Check **Use Existing Roof** if the existing roof needs no changes to accommodate the bay window.
- Check **Extend Existing Roof Over** to extend the existing roof plane to cover the bay window below.
- Check **Rectangular Roof Over** to create a roof over the bay window that is square across the end instead of following the profile of the roof.

2 Dimensions

Specify the appearance of the selected window unit's dimensions in plan view. These dimensions are drawn on the "Dimensions" layer but cannot be selected. See *Dimensions on page 340*.

- Check **Display Standard Dimension** to display the automatically-produced dimensions that show the window's width and depth.
- Check **Display Dimensions to Center** to display a Bow Window's radial dimension.

3 Components

Specify the structure of the selected window unit's components and the wall sections containing them.

- Uncheck **Has Component Windows** to remove the component windows of the selected Bay, Box, or Bow Window and disable the settings that follow.
- Check **No Trimmers for Components** to eliminate the trimmer studs for Bay and Box Window components, allowing the width of each component window to increase. See *Manual Framing Defaults Dialog on page 658*.
- Check **No Framing Between Components** to remove both studs between the component windows.

> Note: If the selected unit is moved or resized, its components automatically resize to use a standard trimmer, regardless of whether either of the two options above are selected.

- Check **Connect Outer Casing** to have exterior casing surround the component windows of a Bow Window as a group rather than individually. Mullions are provided between components. This is how interior casing is always created.

- Check **Components Recessed** to recess the component windows into the wall and enable the settings that follow. Typically used if the window is placed in a brick wall and you want to produce a brick molding.
- Select **To Main Layer** to recess the components to the wall's Main Layer instead of the exterior wall surface. See *The Main Layer on page 288*.
- Select **To Sheathing Layer** to recess the components to the sheathing layer instead of the exterior wall surface.

Layer Panel

The settings on the LAYER panel control which layer and Drawing Group the selected window is assigned to. See *Layer Panel*.

Materials Panel

The settings on the MATERIALS panel affect the appearance of the selected window in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Label Panel

Labels for window display when the "Windows, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Bay, Box, and Bow Window labels can display in plan view when the "Windows, Labels" layer is turned on and use the Text Style assigned to that layer. See *Window Labels on page 435*.

Components Panel

The information entered on the COMPONENTS panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the OBJECT INFORMATION panel can be used in the Materials List. See *Object Information Panel on page 968*.

Manufacturer Panel

The MANUFACTURER panel provides contact information for the selected window's manufacturer. Only available for windows from Manufacturer library catalogs. See *Manufacturer Catalogs on page 718*.

Cabinets

Chapter 18

With Home Designer's cabinet tools you can create base, wall, and full height cabinets as well as soffits, shelves, partitions, and custom countertops. These objects are very versatile, allowing for a wide range of customization.

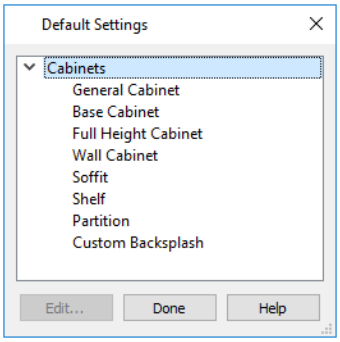
A selection of cabinet door and drawer styles are available in the Library Browser.

Home Designer also has many customized cabinets and cabinet groups available in the library.

Cabinet Defaults

There are several defaults dialogs for cabinets. Access Default Settings by selecting **Edit> Default Settings**, then clicking the arrow beside "Cabinets". Select a subheading and click the **Edit** button to open the defaults dialog associated with your selection.

The Cabinet Defaults dialogs can also be accessed by double-clicking the **Cabinet Tools** parent button.



Double-clicking a Cabinet Tools child button also opens its corresponding defaults dialog, if that object has a defaults dialog.

Each type of cabinet object has default definitions for size, style, materials and much more. In fact, the default dialog for each cabinet type is similar to its corresponding specification dialog. For descriptions of these settings, see *Cabinet Specification Dialog on page 480*, *Shelf/Partition Specification Dialog on page 493* and *Soffit Specification Dialog on page 750*.

Custom Countertops do not have defaults dialogs. Instead, their initial settings are based on the those of other objects.

- Custom Countertops' initial settings are based on Base Cabinet Default settings but are also influenced by the settings of cabinets beneath them. See *Countertops on page 467*.

Dynamic Cabinet Defaults

When a dynamic default is changed, existing cabinet objects using the default value are affected. See *Dynamic Defaults on page 84*.

The following cabinet default values are dynamic: **Separation**, **Backsplash Height** and **Thickness**, **Countertop Overhang** and **Thickness**, **Toe Kick Height** and **Depth**, **Side** and **Vertical Overlap**, **Stiles**, and **Hardware** spacing.

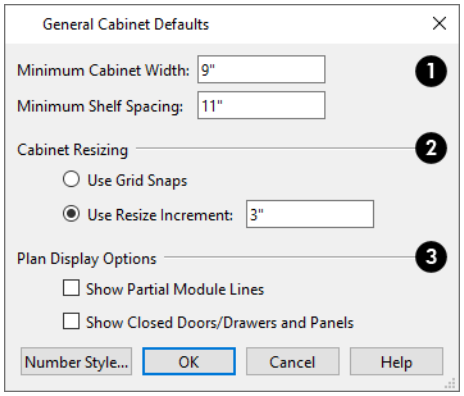
All **Materials** are also dynamic. In addition, the Cabinet Defaults can be set up to refer dynamically to information in the Material Defaults dialog. This makes it easy to have all cabinet objects in a plan use the same default materials. See *Material Defaults Dialog on page 758*.

To use dynamic cabinet Material Defaults

1. Specify the desired materials for the cabinet categories in the Material Defaults dialog:
   - "Cabinets" can be linked to the default cabinet box, cabinet interior, shelves, and toe kicks as well as to Shelves and Partitions.
   - "Cabinet Door/Drawer" can be linked to the default frames and panels of cabinet doors and drawers.
   - "Countertop" can be linked to the default countertop.
   - "Hardware" can be linked to the default door and drawer pulls and hinges.
2. On the MATERIALS panel of the Base Cabinet Defaults dialog, select the first object component and click the **Select Material** button.
3. The Select Material dialog opens:
   - On the LIBRARY MATERIAL panel, check **Use default material**, or
   - On the PLAN MATERIAL panel, select "Use Default" at the top of the list.
4. Click **OK**, then repeat this step for each of the components in the list.
5. Repeat steps 2-4 in each of the Cabinet Defaults dialogs.

GENERAL CABINET DEFAULTS

The General Cabinet Defaults dialog can be accessed only from the Default Settings dialog.



1 Automatic Behaviors

- Specify the **Minimum Cabinet Width**. The smallest allowable value is 1/16 of an inch (10 mm).
- Specify the **Minimum Shelf Spacing** inside Door and Opening face items.

2 Cabinet Resizing

Specify how **Cabinet Resizing** takes place when the edit handles are used.

- Select **Use Grid Snaps** to resize cabinets using Snap Grid increments. See *Grid Snaps on page 144*.
- Select **Use Resize Increment** to resize cabinets using the increment specified here.
- Set the **Resize Increment** at which cabinets resize. The minimum allowable increment is 1/16 of an inch (10 mm).

3 Plan Display Options

- Check **Show Partial Module Lines** to represent module lines as grey lines that do not extend across the cabinets. When this is unchecked, lines between merged cabinet modules display as specified by the "Cabinets, Module Lines" layer. See *Displaying Cabinets on page 469*.
- Check **Show Closed Doors/Drawers and Panels** to display closed cabinet doors, drawers, and panels in plan view. When unchecked, these items are not shown. See *Displaying Cabinets on page 469*.

The Cabinet Tools


Select **Build> Cabinet** to access the Cabinet Tools.

Cabinets are easily created with a single click in plan view or any camera view. See *Click-to-Create on page 145*.

Typically, groups of cabinet objects are positioned closely together and arranged to form work spaces, and there are some special behaviors and techniques to be aware of. See *Placing Cabinets on page 465*.

Once created, cabinets, soffits, shelves, partitions and fillers can be selected and edited much like other box-based objects. See *Editing Cabinets on page 474*.

Base Cabinets


Base cabinets can be placed directly under wall cabinets and generate a countertop and toe kick by default.

Wall Cabinets


Wall cabinets can be placed directly over base cabinets.

Full Height Cabinets


Full height cabinets generate a toe kick by default and cannot be placed on top of other cabinets.

Soffits


Soffits typically fill the space between cabinet tops and the ceiling, but can also be used to create any object that can be modeled as a 3D box. To place a soffit, select **Build> Cabinet> Soffit** and click in any view.

By default, soffits use the material assigned to interior walls in the Material Defaults dialog. Like cabinets, soffits can have molding profiles applied to them.

For more information about using soffits for a variety of purposes, see *Other Objects on page 749*.

Shelves


Select **Build> Cabinet> Shelf** and click in any view to create a shelf.

Create corner shelves by placing one shelf on each wall, then moving or stretching them until they touch.

Once created, shelves can be selected and edited. See *Shelf/Partition Specification Dialog on page 493*.

You can also specify shelves inside base, wall, and full height cabinet boxes. See *Cabinet Shelf Specification Dialog on page 491*.

Partitions



Select **Build> Cabinet> Partition** button and click in any view to create a vertical partition.

Like shelves, partitions can be selected and edited after they are placed.

Partitions can be used with shelves to create complex storage systems.

Custom Countertops



Custom Countertops are drawn and edited just like other closed-polyline based objects. Select **Build> Cabinet> Custom Countertop**, then either click and drag a rectangle or single-click to place a 2'x2' countertop. See *Countertops on page 467*.

You can also generate a custom countertop over one or more base cabinets using the **Generate Custom Countertop**  edit tool. See *Using the Edit Tools on page 474*.

Custom Backsplashes



Select **Build> Cabinet> Custom Backsplash** while an elevation or camera view is active, then either click and drag a rectangle or single-click on a wall surface to place a Custom Backsplash Layered Material Polyline on that wall. See *Custom Backsplashes on page 468*.

A custom backsplash can also be created using the **Convert Polyline**  edit tool. See *Convert Polyline on page 211*.

Cabinet Library Catalog



In the Library Browser, browse to Core Catalogs> Architectural> Cabinets to access a selection of specialty cabinets. Select the library object you want, then click in any view to place it in the plan. Once placed, library cabinets can be edited. See *Placing Library Objects on page 727*.

Cabinet Doors, Drawers, and Panels Catalog



A selection of cabinet door panels, drawer fronts, and specialty cabinet storage options can be found in the Library Browser in Core Catalogs> Architectural> Cabinet Doors, Drawers, and Panels.

- Doors and drawers can be assigned to a cabinet in its specification dialog. See *Door/Drawer Panel on page 487*.
- Select a door or drawer in the library, then click on a cabinet in your plan to place the door or drawer onto that cabinet. Side and back panels cannot be applied to cabinets using this approach. See *Inserted Objects on page 728*.
- Cabinet doors and drawers can also be placed as stand-alone fixtures. Once placed, they can be edited like other stand-alone library objects. See *Editing Library Items on page 726*.

Built-In Sinks and Appliances

There are two types of built-in fixtures: free-standing appliances that are installed under countertops and fixtures that are installed in cabinet boxes:

- A selection of appliances such as dishwashers and under-counter refrigerators will receive an automatic countertop when placed beside a base cabinet, provided that the cabinet has an automatic countertop. See *Automatic Countertops*

on page 467.

- A variety of fixtures and appliances such as sinks, cooktops, and wall ovens can be inserted into cabinets. See *Inserted Objects on page 728*.

> Place fixtures and appliances into cabinets early, so that any resizing can be done while there is adequate free space.

To insert a fixture into a cabinet, select the fixture in the Library Browser, then click on a cabinet. There must be enough space in the cabinet or adjoining cabinets to contain the selected fixture. Only one front mounted appliance can be inserted in this manner.

If a sink or cooktop is inserted into a cabinet with a top Drawer or Double Drawer, its Item Type will automatically change to a False Drawer or False Double Drawer.

Once placed, an inserted fixture can be selected and edited:

- To select a fixture in a cabinet top, click on it and then click the **Select Next Object** edit button. See *Select Next Object on page 184*.
- Front fixtures can only be modified or deleted in the Cabinet Specification dialog. See *Front Panel on page 484*.

> Fixtures can be added to both the top and front of the same cabinet. It is up to you to determine which can be effectively and safely combined in the real world.

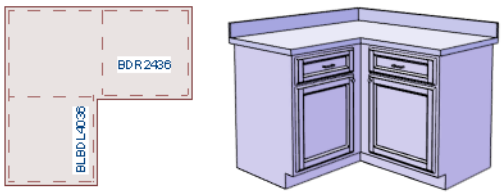
Electrical Switches and Outlets

Electrical switches and outlets placed within the backsplash area of a base cabinet will display in front of the backsplash in 3D views when the “Electrical” layer is turned. See *The Electrical Tools on page 500*.

Cabinet Fillers

Home Designer automatically generates fillers when Base, Wall, and Full Height Cabinets of the same height are either touching or placed with 3” (75 mm) of one another. Automatic fillers receive the same toe kick, moldings, and backsplash as adjacent cabinets, and model a continuous countertop over Base Cabinets.

If two cabinets meeting at a corner are separated from each other by 3” (75 mm) or less, the program will automatically generate a filler in the angle between them. A filler is used to separate the front of one of these cabinets from the one it meets so that drawers and doors have room to operate.



Placing Cabinets

Cabinets are easily created with a single click in any view. See *Click-to-Create on page 145*.

When used near a wall corner, the Cabinet Tools will produce corner cabinets and soffits. See *Corner Cabinets on page 478*.

When created, cabinets are positioned relative to the floor of the room in which they are placed. Base and full height cabinets typically rest on the floor while wall cabinets are placed a set distance above the floor. See *Cabinet Defaults on page 461*.

If the ceiling height of the room does not accommodate the height of a cabinet, its **Floor to Bottom** value will be retained and its **Height** will be reduced so that it fits under the ceiling. When this happens, some front items may be removed from the cabinet if there is not enough room for them. See *Front Panel on page 484*.

Because cabinets are typically organized into groups with shared attributes, they have some special behaviors.

Cabinet Snapping and Aligning

Cabinets have several special snapping and aligning behaviors which help you create precisely aligned cabinets quickly and easily.

- When Base and/or Full Height cabinets are within 3” of one another’s sides, they will snap together. Wall cabinets snap in a similar manner, but only with other Wall cabinets.
- When Base and/or Full Height cabinets are within 3” of one another’s sides and their front or back surfaces are within 3” of aligning, they will become aligned. Wall cabinets snap in a similar manner with other Wall cabinets as well as Full Height cabinets.
- When a Base and/or Full Height cabinet is placed against the back of another Base or Full Height cabinet, its back surface will automatically face the other cabinet’s back. Wall cabinets snap in a similar manner with other Wall as well as Full Height cabinets.
- When a cabinet or cabinet filler is placed against a wall, its back and/or side will snap to the wall and, if the wall is moved, the cabinet will move with it.

When cabinets are snapped to a wall or to other cabinets, only exposed end cabinets have side counter overhangs.

Cabinet snapping and aligning occurs even when **Object Snaps**  are turned off; however, you can override this behavior by moving a cabinet into the desired position using dimensions. See *Moving Objects Using Dimensions on page 361*.

Cabinet Merging

When cabinets of the same height and type are placed side-by-side within 3” (30 mm) of one another they will automatically merge, making any shared components such as the toe kick, countertop, backsplash, and moldings continuous. Any gap between merged cabinets will be automatically filled.

The exposed ends of merged cabinets have side counter overhangs.

Cabinets placed at different angles will also merge if they face toward one another and meet at a front corner. Cabinets that meet at a back corner will also merge provided that they face away from one another at an angle no greater than 87°. In either case, a filler is created in the angle between the two.

If the side of a cabinet is placed within 3” (30 mm) of a wall, the countertop will extend to the wall and a filler will be created.

Cabinet merging occurs even when **Object Snaps**  are turned off.

Base and Wall Cabinets

Base and wall cabinets have different default heights, so they can be placed directly above or below one another without interference. You can use **Object Snaps**  to center a wall cabinet’s back center point above that of a base cabinet, or vice versa. See *Click-to-Create on page 145*.

Minimum Cabinet Size

If you try to place a cabinet into a space that is too narrow for its default size, the program will place a smaller cabinet with a width that is a multiple of the default **Resize Increment**. For example, if you try to place a 24” wide cabinet in a 20” wide space and your Resize Increment is 3”, the program places an 18” cabinet. See *General Cabinet Defaults on page 462*.

If you try to place a cabinet into a space narrower than the default **Minimum Cabinet Width**, a cabinet will not be placed. If, for example, you have a space that is 8” and your Minimum Cabinet Width is 9”, no cabinet is placed.

Countertops

Countertops are automatically generated on top of base cabinets, but can also be drawn manually.

Automatic Countertops

Base cabinets automatically receive countertops as specified in the Base Cabinet Defaults dialog. These default countertops are components of the cabinets and can be edited in the Cabinet Specification dialog, but cannot be selected and modified separately.

The overhangs on automatic countertops are clipped on any side where the cabinet is positioned against or within 3" (75 mm) of a wall, a Full Height Cabinet, a Partition, or free-standing appliance from the Library. Edge profiles on those sides are also suppressed, as are toe kicks.

A selection of fixture symbols such as dishwashers and under-counter refrigerators will also receive an automatic countertop provided that the symbol's top surface is below the bottom of the countertop and it is positioned within 3" (75 mm) of a base cabinet with an automatic counter.

Custom Countertops



When an automatic countertop does not meet your needs, you can instead use a **Custom Countertop**. In any view except a cross section/elevation, select **Build> Cabinet> Custom Countertop**, then either click and drag a rectangle or single-click to place a 2’x2’ countertop polyline. This countertop can be selected independent of any cabinets beneath it and is edited just like other closed-polyline based objects. See *Editing Closed Polyline-Based Objects on page 197*.

When a Custom Countertop covers any portion of a base cabinet, it overrides that cabinet's automatic countertop and bases its thickness and height on the base cabinet below.

- If there are multiple cabinets below, it uses the specifications for the cabinet with the greatest overall height.
- If there is no base cabinet below, its height and thickness are based on the base cabinet defaults. See *Cabinet Defaults on page 461*.

If a sink or built-in appliance is added to the cabinet, a hole for the fixture is automatically cut in the Custom Countertop.

By default, if a side of a Custom Countertop is positioned against a wall, the edge profile on that side will not generate.

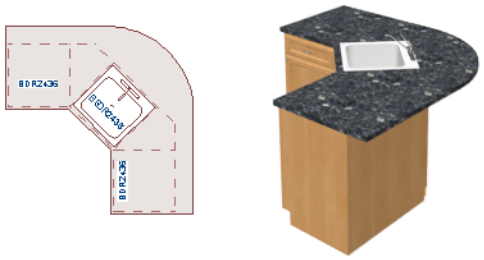


You can also generate a Custom Countertop over one or more selected base cabinets by clicking the **Generate Custom Countertop** edit button. See *Using the Edit Tools on page 474*.

When created in this manner, the Custom Countertop inherits the cabinet's countertop material. If the cabinet has a To Top molding profile at counter height, the Custom Countertop will inherit it, as well. See *Editing Cabinet Styles on page 476*.

Editing Custom Countertops

Once created, a custom countertop can be selected in 2D and 3D views and edited like other closed-polyline based objects. See *Editing Closed Polyline-Based Objects on page 197*.



Custom countertops initially use the default countertop material set in the Base Cabinet Defaults dialog. You can specify a different material as well as the height and position in the Custom Countertop Specification dialog. See *Custom Countertop Specification Dialog on page 494*.

You can also specify the edge profile of a custom countertop in the Custom Countertop Specification dialog. See *Shelf/Partition Specification Dialog on page 493*.

Waterfall Countertops

To add a vertical waterfall to the edge of a Custom Countertop, select that edge and click the **Add Waterfall to Selected Edge** edit button. See *Selected Edge on page 185*.

You can also specify a waterfall edge as well as edit its attributes in the Custom Countertop Specification dialog. See *General Panel on page 495*.

To remove a waterfall from a countertop edge, select that edge and click the **Remove Waterfall from Selected Edge** edit tool.

Custom Backsplashes

The **Custom Backsplash** tool allows you to create areas on a wall that use a different surface material than the parent wall. To create a Custom Backsplash, select **Build> Cabinet> Custom Backsplash**, then either click and drag to draw a rectangular shape on a wall, or click once to create a shape that covers the wall surface.

If you click to create a Custom Backsplash, it will:

- Seek to fill the area between any base cabinets or floor appliances against that wall surface and any wall cabinets and/or windows above them.
- If nothing is above any base cabinets, it will fill the area between the cabinets and the ceiling; if nothing is below any wall cabinets, it will fill the area between the cabinets and the floor.
- Replace the backsplash associated with any base or wall cabinets.

Custom Backsplashes are closed polyline-based objects that are drawn on the vertical surface of a wall. They can only be drawn, and their shapes edited, in camera and elevation views. See *Polylines on page 244* and *Editing Closed Polyline-Based Objects on page 197*.

Custom Backsplashes are composed of a layer of backsplash material. The layer material and its thickness can be set in the Custom Backsplash Specification dialog. See *Custom Backsplash Specification Dialog on page 497*.

By default, a Custom Backsplash will cut into the wall layers between it and its parent wall's Main Layer and replace those layers with its own within its perimeter; it can, however, can be affixed to the wall's surface instead if you prefer.

Displaying Cabinets

The display of the various cabinet object types, labels, module lines, door opening indicators, and more is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

Objects assigned to cabinets, including hardware and moldings, are located on the same layer as their parent object. They display in 3D views, but are not shown in plan view. There are a few exceptions:

- Both automatic and Custom Countertops are drawn on the "Cabinets, Countertops" layer in all views. In plan view, countertops use the line style, color, and weight assigned to this layer; in 3D views, the line attributes of the parent object's layer are used instead.
- Cabinet doors, drawers, and panels are drawn on the "Cabinets, Doors & Drawers" layer in all views. When closed, however, they only display in 3D views by default. See *Cabinet Doors and Drawers on page 470*, below.
- Closed Doors, Drawers and Panels can be set to display in plan view in the General Cabinet Defaults dialog. See *General Cabinet Defaults on page 462*.
- Fixtures inserted into cabinets are drawn on the "Fixtures, Interior" layer in all views.
- You can also display cabinet front indicator arrows in plan view by turning on the "Cabinets, Front Indicators" layer.

In Plan View

Fill Styles and colors that display in plan view can be assigned to cabinet objects. See *Fill Style Panel on page 490*.

Like other objects, cabinets are placed in Drawing Groups that affect whether they display in front of or behind other objects in plan view. By default, wall cabinets, soffits and shelves are drawn in front of base and full height cabinets, countertops and partitions. You can modify a selected cabinet's place in the drawing order by clicking the **View Drawing Group Edit Tools** edit button. See *Drawing Group Edit Tools on page 156*.

Both automatic and Custom Countertops can be assigned an edge profile, and can display the width of this profile when **Display Molding Edges in Plan Views** is selected in the Base Cabinet or Custom Countertop Specification dialog.

By default, cabinet module lines display in plan view when cabinet objects of the same type are placed side by side. If you prefer that these lines not display, turn off the "Cabinets, Module Lines" layer. You can also specify whether module lines are full or partial. See *General Cabinet Defaults on page 462*.

Cabinet labels display in plan view when the "Cabinets, Labels" layer is turned on and use the Text Style assigned to their layer. See *Cabinet Labels on page 471*.

If multiple fixtures are inserted into the front of a cabinet, only the topmost fixture will display in plan view. See *Built-In Sinks and Appliances on page 464*.

In 3D Views

In 3D views, cabinet doors and drawers are drawn on the "Cabinets, Doors & Drawers" layer, and their display can be turned on and off.

In 3D Vector Views, cabinet doors can display opening indicator arrows. See *Opening Indicators on page 402*.

Cabinet Doors and Drawers

There are several options for controlling the display of cabinet doors and drawers in plan and 3D views.

Cabinet doors and drawers are drawn on the "Cabinets, Doors & Drawers" layer. In plan view, they use the line style, color, and weight assigned to that layer when they are set to display. In 3D Vector Views, they use the line style, color, and weight assigned to their parent cabinet's layer.

- Cabinet doors and drawers can be drawn open or closed in both plan and 3D views.
- To draw a selected cabinet's doors open in all views, click the **Open Cabinet Doors** edit button. Any shelves set as Rollout will display in 3D views as well.
- To draw its drawers open in all views, click the **Open Cabinet Drawers** edit button.
- To close the doors and/or drawers, click the **Close Cabinet Doors** or **Close Cabinet Drawers** edit button.

Cabinet doors and drawers also can be set to **Show Open** in the Cabinet Specification dialog. In addition, you can specify how far open each is drawn. See *Front Panel on page 484*.

By default, doors and drawers do not display in plan view when they are closed: even when the "Cabinets, Doors & Drawers" layer is set to display. You can, however, check **Show Closed Doors/Drawers in Plan Views** in the General Cabinet Defaults dialog. See *General Cabinet Defaults on page 462*.

Rollout Shelves and Storage

Shelves can be specified for Door and Opening cabinet front items and are visible in 3D views. Those inside Doors will only display in 3D views when Doors and Rollout Shelves are set to **Show Open**. See *Front Panel on page 484*.

Shelves can be specified as **Rollout**, each with its own rollout percentage, and will display in 3D views when Doors and Rollout Shelves are set to **Show Open**. If a Rollout shelf is in a Door item, the door must be set to 100% **Percent Open** in order for the shelf to draw open. See *Cabinet Shelf Specification Dialog on page 491*.

Cabinet shelves and added storage items do not display in plan view.

In the Materials List

The materials associated with cabinet objects are listed under different Categories in the Materials List:

- **Cabinets** - Lists Cabinets, Shelves, Partitions, Custom Countertops, Custom Backsplashes, storage and organization inserts, as well as cabinet doors and drawers placed from the library as free-standing objects.
- **Interior Trim** - Lists Soffits and any moldings assigned to cabinet objects located in Interior rooms. Note that Soffits are not listed in the Materials List unless a non-default material is applied to them.
- **Exterior Trim** - Lists any Soffits and moldings assigned to cabinet objects located in Exterior rooms. See *Room Types on page 314*.
- **Fixtures** - Lists any sinks inserted into base cabinets. See *Inserted Objects on page 728*.
- **Appliance** - Lists any appliance fixtures inserted into cabinets. If a base cabinet has an under-counter appliance inserted into it, that cabinet will not be counted in the Materials List - only the countertop and backsplash materials associated with it will be listed. The cabinet will also display the appliance's label information instead of its own. See *Cabinet Labels on page 471*.

As with other objects, there are a number of ways to control how, or whether, cabinets are included in the Materials List. See *Organizing Materials Lists on page 956*.

You can add and edit information about a cabinet's accessories in the Cabinet Specification dialog. See *Components Panel on page 967*.

Note that cabinet door and drawer height is described in two different ways:

- In the Cabinet Specification dialog, the Item Height for cabinet doors and drawers describes the height of the opening in the cabinet box rather than that of the door or drawer front. See *Front Panel on page 484*.
- In the Materials List, the full height of cabinet door and drawer front is listed in the Size column.

Cabinet Labels

Labels for cabinets display in plan view when the "Cabinets, Labels" layer is turned on. See *Label Panel on page 395*.

Shelves and Partitions can also display labels when the "Cabinets, Labels" layer is turned on. Unlike cabinets, the Automatic Label for these objects is blank; however, you can specify a custom label in their specification dialogs.

Cabinet labels use the Text Style specified for the "Cabinets, Labels" layer. See *Text Styles on page 390*.

If a base cabinet's only front item aside from Separations and Blank Areas is an Appliance, the appliance's label will display instead of the cabinet's, and will be placed on the "Cabinets, Labels" layer. To edit the appliance label, select the cabinet and click the **Open Symbol**  edit button. See *Symbol Object Specification Dialogs on page 735*.

The minimum on-screen display size of object labels can be specified in the Preferences dialog. See *Appearance Panel on page 93*.

Automatic Labels

The format for automatic cabinet labels has four parts: Key, Code, Size, and Door Swing.

The **Key** provides basic information about the cabinet box and its use. B refers to base cabinets, W refers to wall cabinets and U refers to full height cabinets.

Together with the key, the **Code** provides additional information about the shape of the cabinet box:

Code	
	All Cabinets
LS + Key	Lazy Susan
LSD + Key	Lazy Susan Diagonal Door
DC + Key	Diagonal Door
LC + Key	Left Corner
BC + Key	Blind Corner
E + Key	Right or Left End
A + Key	Angled Front
PR + Key	Peninsula Radius
R + Key	Radius End
Key + XL	Extend Left Face Frame
Key + XR	Extend Right Face Frame
Key + XLR	Extend Left and Right Face Frame
B	**Base**
OB	Oven Base

Code	
SB	Sink Base
RB	Range Base
#DB	Drawer Bank (# is the number of drawers
FHB	Full Height Base (1 full height door)
W	**Wall**
Code above + #D	Drawer (# is the number of drawers
U	**Full Height (Utility)**
OTC	Tall Oven
RTC	Tall Refrigerator

Blind corner cabinets are dependent on the cabinet's position in the plan. A cabinet can only be a blind corner cabinet when its front is partially hidden by another cabinet. See *Blind Cabinets on page 480*. If a cabinet is moved, therefore, its Code information may change.

The **Size** follows the Code in a cabinet label. Cabinet width is always included in the label; depth and height, on the other hand, may be included depending on the cabinet type and whether they are standard or non-standard.

Base and full height cabinet labels present Size information in this order: width, depth, height. Wall cabinet labels present it in a slightly different order: width, height, depth.

	Sizes
Base	**W(D)(H)**
Width (W)	Always included
Depth (D)	24" (60 cm)
Height (H)	34 1/2" (90 cm)
Corner Depth (D)	Depth = Width
Wall	**WH(D)**
Width (W)	Always included
Depth (D)	Always included
Height (H)	12" (30 cm)
Corner Depth (D)	Depth = Width
Full Height	**WDH**
Width (W)	Always included
Depth (D)	Always included
Height (H)	Always included
Corner Depth (D)	Always included

Door Swing is included at the end of the label as either **L** or **R**, but only if all the doors on a cabinet have the same swing.

Here are a few examples of automatic cabinet labels and their meanings:

- **3DB24**: Base cabinet with 3 drawers, 24" wide. Depth and height are standard.
- **SB24R**: Sink base, 24" wide, with a right door. Depth and height are standard.

- **BCW2436R**: Blind wall cabinet, 24” wide, 36” high, with a right door. Depth is standard.
- **DCW2436L**: Diagonal corner wall cabinet, 24” wide, 36” high, with a left door. Depth is standard (equal to width).
- **OTC362490**: Full height cabinet with oven, 36” wide, 24” deep, 90” high.



The Automatic Labels for Shelves and Partitions are blank, but you can specify custom labels for both. See *Shelf/Partition Specification Dialog on page 493*.

Cabinet Construction

Both framed and frameless, or European-style, cabinet construction can be specified in Home Designer. You can also specify either the overlay or reveal of cabinet doors, drawers, and panels.

If you know what cabinet construction style you want, you can save time by specifying that style in the Cabinet Defaults dialogs before you start placing cabinets. See *Cabinet Defaults on page 461*.

Framed and Frameless

A cabinet can be specified as Framed or Frameless on the Box Construction panel of the Cabinet Specification dialog. See *Box Construction Panel on page 483*.

The sides of both Framed and Frameless cabinet boxes are 3/4" (18 mm) thick but can be adjusted in the Cabinet Specification dialog. This value is also the system default Item Height for Separation face items in Frameless cabinets. See *Box Construction Panel on page 483*.

Framed cabinets have left and right stiles with widths that can be specified. The Separation value set on the Box Construction panel of the Cabinet Specification dialog serves as the default Height value for separation face items as well as the default width for left and right stiles. These can be set individually on the Front/Sides/Back panel. See *Front Panel on page 484*.

Traditional Overlay

To specify how far doors, drawers and panels overlap vertical stiles and horizontal separations, select **Traditional Overlay** on the Box Construction panel of the Cabinet Specification dialog and then specify the **Overlap** of all doors, drawers, and panels on the selected cabinet.

When Traditional Overlay is selected, the widths of stiles can be specified on the Front/Sides/Back panel, as can the heights of selected Separation items; however, the overlap of individual items cannot.

Full Overlay and Reveal

To specify the reveal on horizontal separations and vertical stiles, select **Full Overlay** on the Box Construction panel and then specify the desired **Reveal**. Both the sizes and the reveals on the Left and Right Stiles and on individual Separation items can be customized on the Front/Sides/Back panel.

Inset Doors and Drawers

Cabinet doors and drawers can be specified as Inset instead of overlaid on the Box Construction panel of the Cabinet Specification dialog.

Editing Cabinets

Cabinets can be selected in 2D and 3D views both individually and in groups and edited using the edit handles, the Edit Toolbar and their specification dialog.



You can marquee-select cabinets of multiple types when the Full Height Cabinet tool is active. See *Marquee Select on page 186*.

Using the Edit Handles

Cabinets can be edited like other box-based objects. See *Editing Box-Based Objects on page 199*. The edit handles that a cabinet displays when selected will vary depending on the view.

When a cabinet is selected in plan view or on its top surface in a 3D view, ten edit handles display: the Move handle at the center, the Rotate handle, and a Resize handle on each edge and at each corner. In plan view, cabinet labels also have a small square Move edit handle when they are set to display. See *Displaying Cabinets on page 469*.

In 3D views, cabinets can be selected on any surface: front, side, back or top. When the side of a cabinet is selected, five edit handles are available: the Move handle and a Resize handle on each edge.



Cabinets cannot be concentrically resized, even when the Concentric edit behavior is enabled. See *Defaults, Preferences, and Edit Behaviors on page 179*.

In the Specification Dialog



A selected cabinet can be customized in a variety of ways in its specification dialog. See *Cabinet Specification Dialog on page 480*.

When you group select cabinets of different types, some options are not available in the Cabinet Specification dialog. For example, you cannot modify the crown molding on a full height cabinet if it is selected with a base cabinet that does not have crown molding. Any specifications that they share in common, however, can be edited.

Soffits, shelves, and partitions can also be group-selected and edited using a shared specification dialog. It is, however, necessary that only soffits, or only shelves, or only partitions be a part of the selection set in order to access a shared specification dialog.

Using the Edit Tools

A cabinet or cabinets can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.



The **Open Cabinet Doors/Drawers** and **Close Cabinet Doors/Drawers** tools affect the cabinet's doors and drawers in 2D and 3D views. See *Cabinet Doors and Drawers on page 470*.

Generate Custom Countertop replaces a base cabinet's countertop with a separate Custom Countertop object. See *Custom Countertops on page 467*.

Select Next Object allows you to select a fixture inserted into a cabinet. See *Select Next Object on page 184*.

Add to Library

Cabinets can be saved in the Library Browser. Select a base, wall or full height cabinet or cabinet filler and click the **Add to Library** edit button. See *Add to Library on page 722*.

Using Dimensions

Like various other objects, cabinets can be moved and resized using dimensions. See *Moving Objects Using Dimensions on page 361*.

In order to be edited using dimensions, cabinets must be located by them. In the Dimension Defaults dialog, you specify what components of a cabinet are located by dimensions as they are drawn:

- Cabinet sides, corners, and centers can be located in both plan and elevation views.
- Backsplashes, countertops, toe kicks, and moldings can be located in elevation views. The heights of cabinet components cannot, however, be edited using dimensions.
- Automatic and Custom Countertops can be located as well as edited in both plan and elevation views provided that Countertops are set to be located.
- If **Display Molding Edges in Plan View** is checked in the Base Cabinet Specification dialog, a cabinet's counter edge profile will display and can be located by dimensions provided that Cabinet Moldings are set to be located.
- Automatic Backsplashes can also be located and edited in both types of views provided that CAD Objects are set to be located.

See *Locate Manual Panel on page 344*.

If you wish, you can add or move a dimension’s extension lines to locate countertop edges in plan view after the dimension line is drawn. In elevation views, the heights of cabinet face items, openings, the toe kick, backsplash, and/or moldings can also be located in this manner.

Depending on whether a cabinet box or Custom Countertop is selected, Temporary Dimensions will locate objects near the Selected Edge somewhat differently: See *Temporary Dimensions on page 353*.

- If a cabinet box is selected, Temporary Dimensions will locate the nearest wall surface or another cabinet box, but not automatically generated or Custom Countertops.
- If a Custom Countertop is selected, Temporary Dimensions will locate the nearest wall surface, Custom Countertop, or automatically generated countertop edge.

Moving Walls with Cabinets Attached

When a cabinet is placed or moved against a wall, it will snap to the wall and become attached to it. When a wall is moved, all attached cabinets move with it.

When wall layers are resized or the wall layer definition redefined, the cabinets may become unattached. To reattach, select the cabinets, drag them away from the wall, and then drag them back again.

Editing Cabinet Styles

A variety of settings allow you to customize the appearance of your cabinets to create styles ranging from traditional to contemporary.

If the desired style is known before cabinets are placed, you can save time by specifying that style in the Cabinet Defaults dialogs before you start drawing. See *Cabinet Defaults on page 461*.



A variety of cabinet style attributes, including doors and drawers, moldings, and millwork accessories can be replaced with different items selected in the library. See *Replace From Library on page 730*.

Cabinet Face Items

A variety of different face items can be added to the front of any cabinet, including doors, drawers, cutting boards, and horizontal separations. Face items can be moved, resized, as well as removed and can also be split vertically or horizontally to produce a variety of custom configurations. See *Front Panel on page 484*.

When adding, removing, or resizing face items, it is helpful to keep a few rules in mind:

- Door and drawer Item Height settings reflect the height of the opening rather than that of the front item. When **Traditional Overlay** is specified, an item's front height will be equal to its **Item Height** plus its top and bottom **Vertical Overlap**.
- When the overall height of a cabinet or the height of a face item is changed, the height of the lowest face item that is not a Separation is adjusted to accommodate the change.
- If you increase the height of the lowest face item, the non-Separation item directly above is adjusted; if you decrease its height, a Blank Area and Separation are created below it.
- If the bottom-most face item on a cabinet is a Separation and you increase its height to be greater than the default value, it will extend down past the bottom of the cabinet, creating a recessed bottom.
- By default, if the bottom-most face item on a cabinet is anything other than a Separation or Blank Area, the cabinet box will be treated as an appliance garage and will not have a bottom.

Note: To ensure that Face Item heights always equal the total cabinet front height, the program automatically adjusts the bottom Face Item as changes are made elsewhere. This means you should start editing Face Items at the top and work down.

Doors, Drawers and Panels

- Cabinet doors, drawers, and panels can be applied in either of two ways:
- In the Cabinet Specification dialog. See *Door/Drawer Panel on page 487*.
- Directly from the Library Browser.

A secondary door or drawer style can also be specified - for example, to create glass doors above solid doors in wall cabinets. See *Front Panel on page 484*.

Select a style in the Library, then click on a cabinet to apply the selected style to that cabinet. Additional cabinets may also be affected, depending on the active Scoping Mode. See *Replace From Library on page 730*.

When replacing cabinet door or drawer style, the Replace from Library behavior will vary depending on the view type:

- In plan view, the main style will be updated and any secondary styles will be unaffected.
- In camera views, the main style will be updated only if all of a cabinet's doors or drawers are affected by the change.

Framed and Frameless Cabinets

Both framed and European-style frameless cabinets can be specified in Home Designer. See *Box Construction Panel on page 483*.

For both types of cabinet, you can define the door and drawer overlay or specify inset doors. On a traditional framed cabinet, you can also control the size of the rails and stiles. See *Front Panel on page 484*.

Cabinet Hardware and Moldings

Cabinet handles, pulls, and hinges can be assigned in the Cabinet Specification dialog. See *Door/Drawer Panel on page 487*.

The hardware on individual doors and drawers can also be customized. See *Front Panel on page 484*.

In 3D views, cabinet hardware can also be applied directly from the Library Browser. Select a cabinet hardware item in the Library, then click on a cabinet door or drawer to assign it to all face items of that type, including custom hardware on individual face items. See *Inserted Objects on page 728*.

Base cabinet with pilasters and feet



Wall cabinet with crown molding and light rail

Countertops and Backsplashes

The countertop thickness, overhang, edge profile, and material for a selected base cabinet can be specified in the Cabinet Specification dialog. See *General Panel on page 481* and *Moldings / Rails Panels on page 702*.

Backsplashes can be specified for base cabinets on the GENERAL panel of their specification dialogs, as well. If a Custom Countertop is created using the **Generate Custom Countertop** edit tool, it will inherit the backsplash attributes of the base cabinet. Manually drawn Custom Countertops, however, do not have backsplashes. See *Using the Edit Tools on page 474*.

In addition, Custom Countertops and Backsplashes can be created independent of base cabinets. See *The Cabinet Tools on page 463*.

Cabinet Shelves

You can customize the shelves inside base, wall, and full height cabinet boxes. See *Cabinet Shelf Specification Dialog on page 491*.

Special Cabinets

There are a number of special cabinet shapes that can be specified. Certain requirements must be met before some special cabinet shapes can be specified. If the requirements are not met, a warning message will explain what is needed. See *Cabinet Specification Dialog on page 480*.

> Note: Only Standard cabinets can be the default cabinet Type. See *Cabinet Defaults on page 461*.

Standard Cabinets

Select **Build> Cabinet> Base Cabinet** and click in plan view to place a standard, rectangular base cabinet.



Corner Cabinets

To create a corner cabinet, click as close to an inside wall corner as possible using either the **Base Cabinet**, **Wall Cabinet**, or **Full Height** cabinet tool. A corner cabinet remains a corner cabinet when it is moved, edited or copied.

You can turn an existing cabinet into a corner cabinet by selecting “Corner” from the **Special** drop-down list in its specification dialog. See *General Panel on page 481*.

- Before a corner cabinet can be specified in the Cabinet Specification dialog, the cabinet’s Width must be greater than its Depth.
- The **Left** and the **Right Side Widths** can be set independently for corner cabinets.



- You can specify a Diagonal Door on corner cabinets to create an angled corner cabinet. See *Front Panel on page 484*.



End Cabinets

To turn a cabinet into an end cabinet, specify its Type as “Left End” or “Right End”.



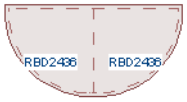
- End Cabinets have an angled front and side.
- The cabinet width must be no greater than its depth for an end cabinet to be specified.

Radius End Cabinets

To turn a cabinet into a radius end cabinet, specify its Type as “Left Radius End” or “Right Radius End”.



As you face the cabinet, a right radius end curves to the right, and a left radius end curves to the left.



Peninsula Radius Cabinets

To turn a cabinet into an end cabinet, specify its Type as “Peninsula Radius”.



The radius can be adjusted by changing the Depth/Bow Depth value. See *General Panel on page 481*.

Angled Front Cabinets

To assign an angled front to a cabinet, specify its Type as “Angled Front”.

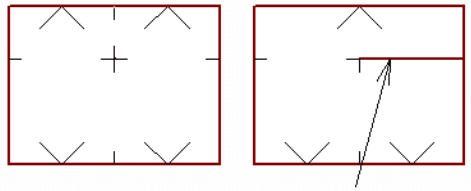


- The length of the left and right side of an **Angled Front** cabinet can be defined by changing the Depth/Bow Depth value. See *General Panel on page 481*.

Kitchen Islands

To create a kitchen island, simply place several cabinets back-to-back and/or side-to-side. Match the widths so that each cabinet back or side meets the back or side of only one other cabinet. If this is not done, the lines separating the cabinets cannot be suppressed.

A given side of a single cabinet cannot merge with the edges of two different cabinets. The example below shows two instances of cabinets placed back-to-back. Cabinet fronts and joining surfaces are shown.



Blind Cabinets

Often, when two cabinets meet in a corner, one is partially hidden by the other. This partially hidden cabinet is called a "blind" cabinet. Home Designer will resize and offset the front items of the partially hidden cabinet so that they are not located in the hidden portion of the cabinet face.



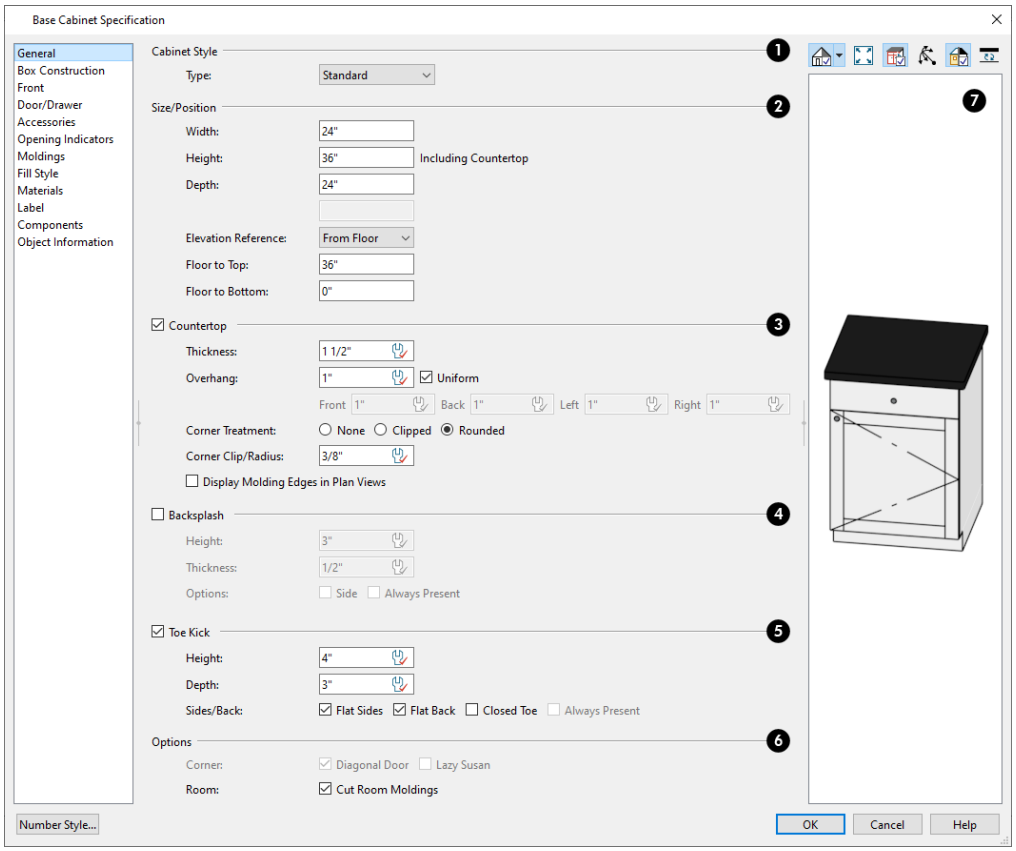
You can also create a blind cabinet manually by controlling the widths of a cabinet's left or right stile in its Cabinet Specification dialog. See *Front Panel on page 484*.

Cabinet Specification Dialog

Select one or more cabinets and click the **Open Object** edit button to open the Cabinet Specification dialog.

The options in the Cabinet Specification dialogs are similar to the corresponding Cabinet Defaults dialog. See *Cabinet Defaults on page 461*.

General Panel



1 Cabinet Style

A number of **Cabinet Types** are available in the drop-down list. Certain requirements must be met before some types can be specified. Not available in the Cabinet Defaults dialogs. See *Special Cabinets on page 478*.

2 Size/Position

The selected cabinet's dimensions and position relative to the floor can be specified here. Fractional values are supported to 1/16th of an inch (1 mm).

- Specify the **Width** of the cabinet box, as measured across the front of the cabinet box from left to right. This does not include the countertop overhang.
- Specify the **Height (Including Counter)** of the cabinet box, as measured from bottom to top. For base cabinets, this value includes the countertop thickness, but not the height of the backsplash.

> Note: Height refers to the height of the entire cabinet, including countertop and toe kick. If you change the Countertop Thickness or Toe Kick Height, the cabinet's total height is not altered. Instead, the cabinet face height and the heights of face items change in response.

- Specify the **Depth** of the cabinet box, as measured from front to back. It does not include the thickness of overlay doors or the countertop overhang.
- For Corner cabinets, the **Width** and **Depth** fields are instead named **Right Side Width** and **Left Side Width**.
- For Corner cabinets, specify the **Bow Depth**. A positive number creates a bow and a negative number, an inside bow. Not available for Corner cabinets if Diagonal is unchecked on the Front panel. See *Front Panel on page 484*.

- For Angled Front cabinets, specify the **Left Depth** and **Right Depth** rather than the Depth and Bow Depth.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the **to Top** distance, measured from the Elevation Reference to the top of the cabinet's countertop.
  - Specify the **to Bottom** distance, measured from the Elevation Reference to the bottom of the cabinet, including the toe kick.

3 Countertop

Specify the dimensions and style of the selected cabinet's **Countertop**, or uncheck this box to prevent it from having a countertop. Only available for base cabinets.

- Specify the countertop **Thickness**. Changing this value does not alter the cabinet height, but it does affect the height of face items. See *Front Panel on page 484*.
- Specify the countertop **Overhang**. Uncheck **Uniform** to specify separate values for each side in the fields below, or leave it checked to use the same value for all sides. Overhangs do not generate on sides that are against a wall, free-standing appliance, Partition, or another Base or Full Height Cabinet. See *Cabinet Snapping and Aligning on page 466*.

- **Corner Treatment** - Specify **Clipped** or **Rounded** countertop corners.
- When Clipped or Rounded is selected, specify the **Corner Width**, which is measured from the original location of the corner to the point where the straight front edge ends.
- Check **Display Molding Edges in Plan Views** to draw the molding profile applied to the countertop in plan views, if there is one. When unchecked, only the countertop's Overhang is represented. See *Editing Cabinet Styles on page 476*.

4 Backsplash

Check the box beside **Backsplash**, then specify its dimensions and when it should generate, or leave this box unchecked to prevent the selected base or wall cabinet from having a backsplash.

- Specify the backsplash **Height** and **Thickness**. Height is only available for base cabinets - not wall cabinets in legacy files.
- Check **Side** to add the backsplash to the side of the cabinet if it is against a wall or a taller cabinet. Not available for Corner cabinets.
- Check **Always Present** to display the backsplash at all times. If unchecked, a backsplash is present only when the cabinet is against a wall.
- The **Backsplash to Base Below** check box is only available in legacy plan files if it was checked in the original program version. When checked, a backsplash extends from the selected wall cabinet down to the backsplash or countertop of the base cabinet below. If this box is unchecked and you click OK, the setting will be removed from the dialog.

5 Toe Kick

Specify the dimensions and style of the selected cabinet's **Toe Kick**, or uncheck this box to prevent it from having a toe kick. Only available for base and full height cabinets. Regardless of the settings here, toe kicks do not generate on sides that are against a wall, free-standing appliance, Partition, or another Base or Full Height Cabinet.

- Specify the toe kick's **Height** and **Depth**. Changing the Height does not alter the cabinet height but does affect the heights of the cabinet face and face items.
- **Flat Sides** can be added to base and full height cabinets. Checking Flat Sides eliminates the toe kick area on the exposed end(s) of the cabinet.
- Check **Flat Back** to eliminate the toe kick on a cabinet with an exposed back. This does not eliminate the toe kick on the cabinet front.

- Check **Closed Toe** to extend the cabinet sides to cover the sides of the toe kick. If pilasters that do not extend to the floor are specified, checking this places a support block under them at Exposed Ends. See *Accessories Panel on page 489*.

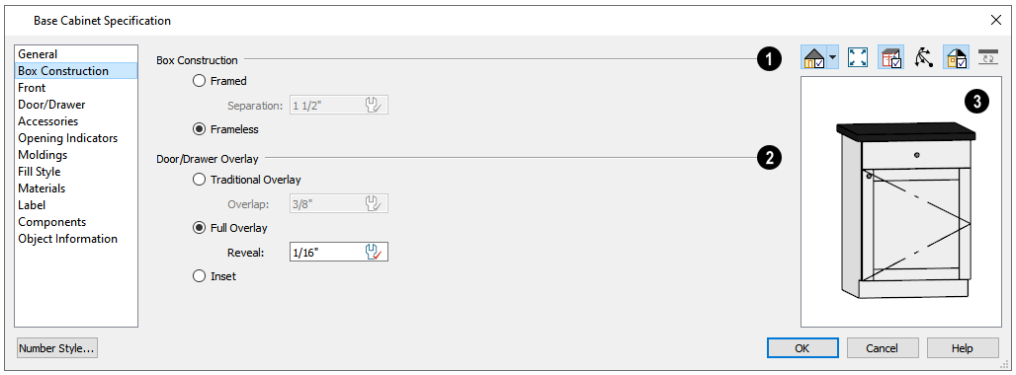
6 Options

- Uncheck **Diagonal Door** to create double doors at right angles instead of a single diagonal door. This option is checked by default in the Cabinet Defaults dialog and is only available for Corner Cabinets. See *Corner Cabinets on page 478*.
- Check **Lazy Susan** to indicate a lazy Susan in the cabinet's label and its appearance in plan view. This option does not display in 3D views.
- When **Cut Room Moldings** is checked, room moldings do not generate on walls where the selected cabinet touches them. Uncheck this box to allow room moldings to generate through the cabinet. See *Room Moldings on page 328*.
- Check **Suppress Automatic Fillers** to prevent automatic fillers from generating next to either side or back of the selected cabinet. See *Cabinet Fillers on page 465*.

7 Preview

A preview of the selected cabinet displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Box Construction Panel



1 Box Construction

- Select **Framed** to create a traditional framed cabinet.
  - Specify the value, which is the width of the horizontal face frame piece between doors, drawers, and other face items.
- Select **Frameless** for a European style cabinet.

2 Door/Drawer Overlay

See *Cabinet Construction on page 473*.

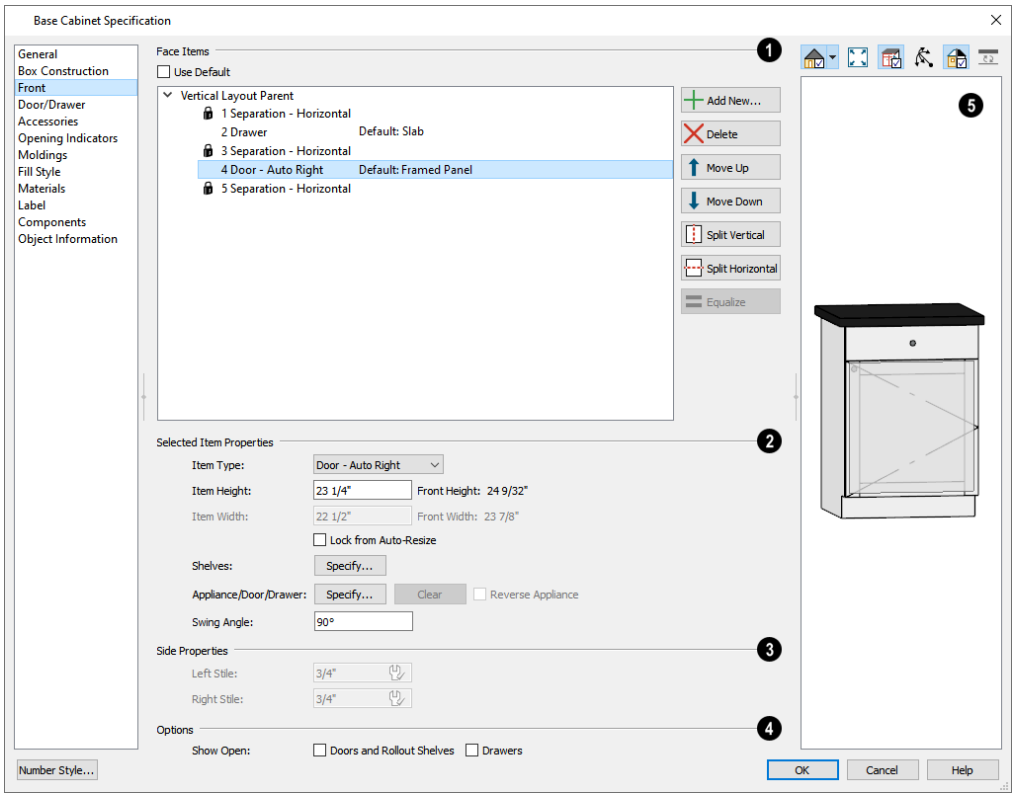
- Select **Traditional Overlay**, then specify the default **Overlap** value for the selected cabinet's face items. You can customize the Left, Right, Top, and Bottom Overlays of individual door and drawer face items, as well. See *Cabinet Specification Dialog on page 480*, below.
- Select **Full Overlay**, then specify the **Reveal**, which is the distance between door and drawer front items. This serves as the default for the Left and Right Reveal settings on THE FRONT/SIDES/BACK panel.
- Select **Inset** to produce doors and drawers that are flush with the rails and stiles rather than overlaying it.

3 Preview

A preview of the selected cabinet displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

FRONT PANEL

If you click on a cabinet face item in the preview on the right side of the dialog, the FRONT panel will become active and that face item will be selected and can be edited.

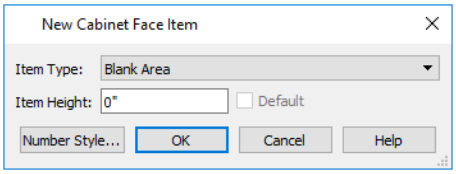


1 Face Items

Most of these settings are only active when a door, drawer, or other face item is selected. To select a face item, click on its name in the list or click on it in the preview on the right.

When a face item is selected, it is highlighted in the list as well as in the preview; its attributes can be edited and the list can be navigated using the arrow and number keys. The vertical frame pieces on the sides of the cabinet front are referred to as stiles and cannot be selected in the preview. See *Cabinet Face Items on page 476*.

- A numbered tree list of face items displays here. Item numbers start at the top of the cabinet and go down the face to the bottom of the cabinet. Item 1 is usually the top face frame Separation, or rail. The selected face item is highlighted; if no item is selected, the “Vertical Layout Parent” heading will be highlighted.
- The name of inserted library objects associated with doors, drawers, and appliance items is stated in the list. If a door or drawer is using the default style, it s name will be preceded by "Default".
- Click **Add New** to add a new face item directly below the currently selected item. When a face item is added, the height of the lowest item on the cabinet front is reduced to make room for the new item. If you click **Add New** with no face item selected, the new item is added to the bottom of the cabinet face.
- In the New Cabinet Face Item dialog, define the **Item Type**, **Item Height**, and click OK. If the Item Type is “Separation”, you can check **Default** to use the default Separation Height.



- Click **Delete** to remove the selected face item. When an Auto Left, Auto Right, Left, Right, or Double Door is deleted, it is replaced by an Opening; when other face item types are deleted, the height of the lowest item is increased to make up the difference. You can also press the ***Delete*** key to remove a selected face item.

> The program tries to maintain a single separation between all face items. When you add or delete a face item, separations are usually added or deleted with them.

- Click **Move Up** to move the currently selected item up one position, switching places with the item directly above.
- Click **Move Down** to move the currently selected item down one position, switching places with the item directly below.
- When the selected face item is part of a "Layout - Horizontal", the **Move Left** and/or **Move Right** buttons will be available instead. Click either to have the selected item switch places with its neighbor.
- Click **Split Vertical** to divide the selected face item into two separate side-by-side items of the same Item Type and Height. A vertical separation is added between them and together the three new items have the same Width as the original item. Not available for Horizontal or Vertical Layouts, Appliances, Separations, or for items 1 1/2" (50 mm) wide or less.
- Click **Split Horizontal** to divide the selected face item into two separate items of the same Item Type and Width, stacked one above the other. A horizontal separation is added between them and together the three new items have the same Height as the original item. Not available for Horizontal or Vertical Layouts, Appliances, Separations, or for items 1 1/2" (51 mm) tall or less.
- Click **Equalize** to make the sizes of a face item's sub-items equal in size. Only available if the selected item is a Vertical or Horizontal Layout with sub-items.

2 Selected Item Properties

- Choose the selected face item's **Item Type** from the drop-down list:

Item Type	Special Behaviors
Blank Area	Creates a solid, flat surface.
Horizontal Layout	Creates a group of identical, side-by-side items separated by vertical separations.
Vertical Layout	Creates a group of identical, stacked items separated by horizontal separations.
False Drawer and False Double Drawer	Assumes the appearance of specified the drawer style, including hardware.
Drawer and Double Drawer	Creates a single or double drawer of the specified drawer style, including hardware.

Item Type	Special Behaviors
Cutting Board	Creates a cutting board.
Auto Right and Auto Left Door	Become double doors when the width of the opening is greater than 24" (600 mm).
Left, Right, and Double Door	As specified, regardless of opening width.
Door Panel	Assumes the appearance of the specified door style but with no hardware.
Opening	Creates an opening with shelves.
Separation	Creates a horizontal rail, or frame piece.
Appliance	Creates an opening with no shelves, for which an appliance can be specified.

- Specify the selected face item's **Item Height**. Fractional values are supported to 1/16th of an inch (1 mm). For doors and drawers, this is the height of the opening: the selected door or drawer's Front Height is reported to the right for reference. A door or drawer's front height is equal to its Height plus its top and bottom Vertical Overlap. For best results, edit face item heights starting at the top of the cabinet and work down. See *Cabinet Face Items on page 476*.
- Specify the selected face item's **Item Width**. Fractional values are supported to 1/16th of an inch (1 mm). For doors and drawers, this is the width of the opening: the selected door or drawer's Front Width is reported to the right for reference. Only available for components of a Horizontal Layout.
- Check **Lock from Auto Resize** to prevent the selected face item from resizing when the cabinet is resized, new face items are added, or when the **Equalize** button is clicked.
- **Shelves** - Click the **Specify** button to open the Cabinet Shelves Specification dialog and specify the shelf configuration for a selected Door or Opening Face Item. See *Cabinet Shelf Specification Dialog on page 491*.
- When an **Appliance/Door/Drawer** is selected:
  - Click the **Specify** button to choose an appliance from the Library or to customize the selected door, drawer, or panel's front style and hardware. The options available depend on the type of face item currently selected. See *Select Library Object Dialog on page 729* and *Door/Drawer Panel on page 487*.
  - Click the **Clear** button to remove the selected appliance from the cabinet or to reset the selected door or drawer so it uses hardware and front style assigned to the cabinet.
  - Check **Reverse Appliance** to reverse the selected face item from left to right: for example, to move a microwave oven's controls from the left side to the right. Only available when an "Appliance" item is selected. See *Inserted Objects on page 728*.
- Specify the **Percent Open** of a selected drawer, which controls how far it is shown open in plan and 3D views. See *Cabinet Doors and Drawers on page 470*.
- Specify the **Swing Angle** of a selected door in plan and 3D views. An angle of 0° displays the door completely closed and an angle of 180° displays it as wide open.

3 Side Properties

- Specify the widths of the **Left Stile** and **Right Stile**. Only available when the selected cabinet has **Framed** Box Construction specified. See *Framed and Frameless Cabinets on page 477*.

4 Options

- Specify which types of front items you would like to **Show Open** in plan, 3D, and cross section/elevation views. See *Cabinet Doors and Drawers on page 470*.

5 Preview

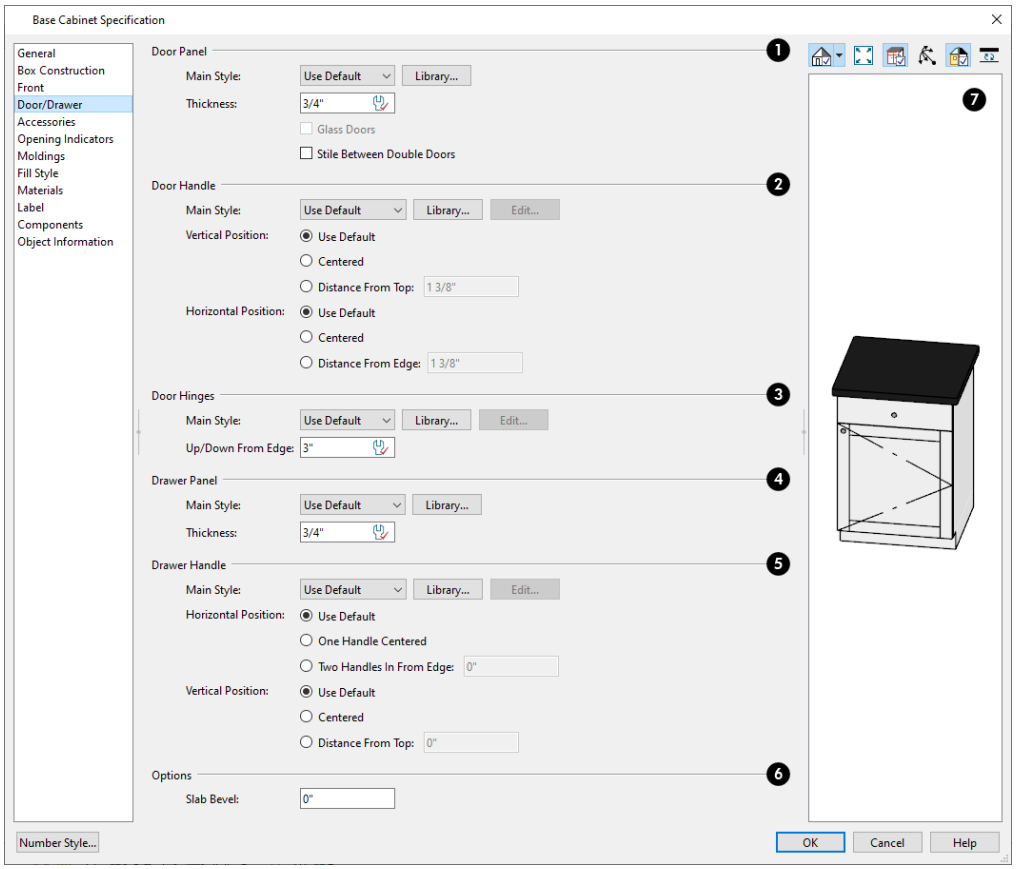
A preview of the selected cabinet displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

- **Select Cabinet Face Item** mode is active by default and allows you to click on a face item like a door, drawer, or separation in the preview to select it for editing. The selected face item is highlighted in grey.
- **Mouse-Orbit Camera** mode allows you to orbit around the preview of the cabinet. When this is active, you can right-click on a front item to select it.

DOOR/DRAWER PANEL

The settings on the DOOR/DRAWER panel allow you to control the appearance of the selected cabinet's doors, drawers and hardware.

Similar settings are also found in the Door and Drawer Face Item Specification dialogs, which allow you to customize the door and drawer style as well as the hardware for individual cabinet face items. See *Front Panel on page 484*.



1 Door

- Select a door **Main Style** from the drop-down list. See *Doors, Drawers and Panels on page 476*.
  - Select “Use Default” to apply the door style specified in the defaults dialog for the selected cabinet’s type. See *Cabinet Defaults on page 461*.
  - Select “Slab Doors” to apply a flat door front or “Framed Doors” to apply a door with a frame and flat panel front.
  - Select “Library” or click the **Library** button to select a cabinet door from the library. If a library door has been previously selected, its name will display in the list. See *Select Library Object Dialog on page 729*.
- Specify the selected door's **Thickness**. If you assign a door symbol from the library to the cabinet, this value will update to match the symbol's Depth.
- Check **Glass Doors** to use a glass material for the panel of Framed doors or for the entire door for Slab doors. Not available when “Library” is the selected door Style.
- Check **Stile Between Doors** to separate double doors and double drawers with a stile. Other face items types are not affected by this setting.

2 Door Handle

- Select a door handle **Main Style** from the drop-down list or choose one from the **Library**.
- When a handle from the Library is selected, you can click the **Edit** button to customize the handle's size and angle. See *Hardware Size/Orientation Dialog on page 492*.
- Specify the **Vertical Position** of the door handle: Choose **Use Default** to use the default position; **Centered** for a handle centered on the door face; or specify a **Distance From Top**, instead or **Up From Bottom** for wall cabinets.
- Specify the **Horizontal Position** of the door handle: Choose **Use Default** to use the default position, **Centered** for a handle centered on the door face, or specify the handle’s **Distance From Edge**.

3 Door Hinges

- Select a door hinge **Main Style** from the drop-down list or choose one from the **Library**.
- When a handle from the Library is selected, you can click the **Edit** button to customize the handle's size and angle. See *Hardware Size/Orientation Dialog on page 492*.
- Specify the location of the hinges **Up/Down From Edge**, as measured from the door edge. If the cabinet door is more than 35 1/4” (880 mm) high, three hinges will be created instead of two.

4 Drawer

- Select a drawer **Main Style** from the drop-down list or choose one from the **Library**. For best results, “Framed” drawers should be at least 6” (150 mm) high.
- Specify the selected drawer's **Thickness**. If you assign a drawer symbol from the library to the cabinet, this value will update to match the symbol's Depth.

5 Drawer Handle

- Select a drawer handle **Main Style** from the drop-down list or choose one from the **Library**.
- When a handle from the Library is selected, you can click the **Edit** button to customize the handle's size and angle. See *Hardware Size/Orientation Dialog on page 492*.
- Specify the **Horizontal Position** of the drawer handle(s): Choose **Use Default** to use the default position; **One Handle Centered** for a single handle centered on the drawer face; or **Two Handles In From Edge** for two handles set in from the drawer sides by the value specified in the text field.

- Specify the **Vertical Position** of the drawer handle(s): Choose **Use Default** to use the default position, **Centered** for handle(s) centered on the drawer face, or specify the handle's **Distance From Top**.

6 Options

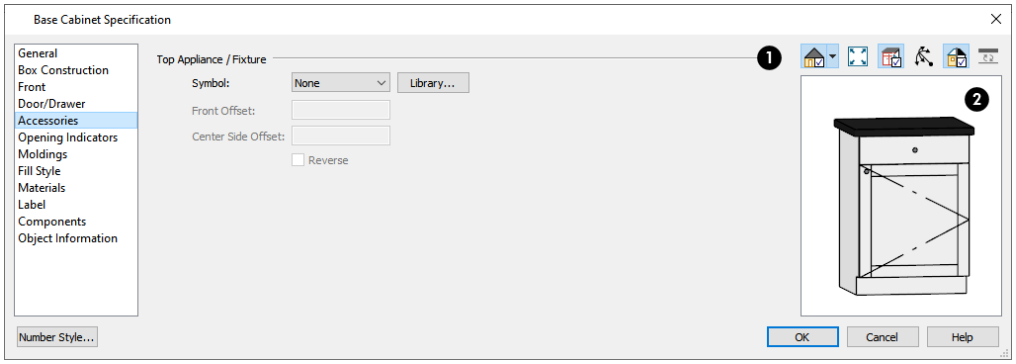
- Enter a **Slab Bevel** width to create beveled edges on Slab drawers and doors. The bevel width, as viewed from the front, has a maximum value of 3" (75 mm). Framed and Library doors are not affected by this setting.

7 Preview

A preview of the selected cabinet displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Accessories Panel

The Accessories panel is only available in the Base Cabinet Specification dialog. It is not available for wall or full height cabinets, nor is it found in the Base Cabinet Defaults dialog.



1 Top Appliance/Fixture

These settings apply to a fixture inserted into a base cabinet's countertop. Only Front Offset is available in the Base Cabinet Defaults dialog. See *Built-In Sinks and Appliances on page 464*.

- Select a fixture **Symbol** from the drop-down list, or choose "None". If a fixture is inserted into the countertop, its name will be listed. If no top fixture is present, you can select "Library" to select a fixture symbol from the Library.
- Specify the **Front Offset**, which is the distance from the front of the fixture to the front of the cabinet box. A positive value offsets the fixture towards the back of the cabinet while a negative value moves it forward.
- Specify the **Center Side Offset**, which is the distance between the fixture's center and that of the cabinet. A positive value offsets the fixture to the right while a negative value offsets it to the left.
- Check **Reverse** to reverse the selected fixture from left to right: for example, to move a cooktop's controls from the left side to the right. See *Inserted Objects on page 728*.

2 Preview

A preview of the selected cabinet displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Opening Indicators Panel

The settings on the Opening Indicators panel allow you to control whether an opening indicator displays on the selected cabinet's door(s) in camera views. See *Opening Indicators Panel on page 420*.

Moldings Panel

The settings on the Moldings panel allow you to assign one or more horizontal molding profiles around the selected cabinet. See *Moldings / Rails Panels on page 702*.

See, too, *Editing Cabinet Styles on page 476*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected cabinet in plan view. See *Fill Style Panel and Dialogs on page 161*.

In the Wall and Full Height Cabinet Specification dialogs, this panel is the same as panels found elsewhere in the program. In the Base Cabinet Specification dialog, on the other hand, there are options for specifying two different fill styles.

1 Cabinet Box

- The type of **Fill Style** assigned to the cabinet box is reported here. When "Use Default" is reported, the cabinet box uses the fill style set in the Base Cabinet Defaults dialog.
- Click the either button to specify a different fill style in the Cabinet Box Fill Style dialog.

2 Countertop

- When **Countertop** is unchecked, the selected cabinet's countertop displays the same fill as the cabinet box. Check this box to specify a different fill below.
- The type of **Fill Style** assigned to the countertop is reported here. When "Use Default" is reported, the countertop uses the fill style set in the Base Cabinet Defaults dialog.
- Click the either button to specify a different fill style in the Countertop Fill Style dialog.

3 Preview

A preview of the selected cabinet displays on the right side of the panel. Plan View is selected by default. See *Dialog Preview Panes on page 21*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected cabinet in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Label Panel

Labels for cabinet display when the “Architectural Blocks, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Cabinet labels display in plan view when the “Cabinets, Labels” layer is turned on and use the Text Style assigned to that layer. See *Cabinet Labels on page 471*.

Components Panel

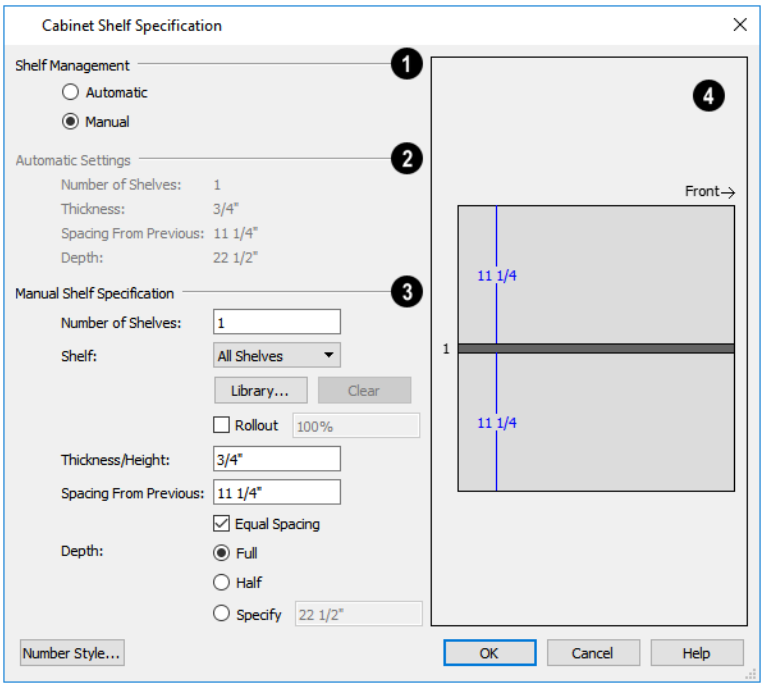
The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Cabinet Shelf Specification Dialog

In the Base Cabinet, Wall Cabinet, or Full Height Cabinet Specification dialog, select a door or opening face item and click the **Specify Shelves** button to open the Cabinet Shelf Specification dialog. See *Front Panel on page 484*.



1 Shelf Management

Specify how shelves in the selected face item are created.

- By default, cabinet doors and openings receive **Automatic** cabinet shelves. The number of shelves, shelf type, thickness, spacing, and depth display below.
- Select the **Manual** radio button to specify the shelving for the selected door or opening. If the cabinet is resized after shelving has been manually edited, the specifications are maintained, but all shelves may not display in all situations.

2 Automatic Settings

Displayed for reference only.

3 Manual Shelf Specification

The following settings are available when **Manual** is selected, above:

- Specify the total **Number of Shelves** in the selected door or opening front item.
- Select a **Shelf** from the drop-down list to customize its settings. To edit all shelves at once, choose “All Shelves”.

> Note: If "All Shelves" is selected after changes are made to an individual shelf, "No Change" may display in the settings that follow.

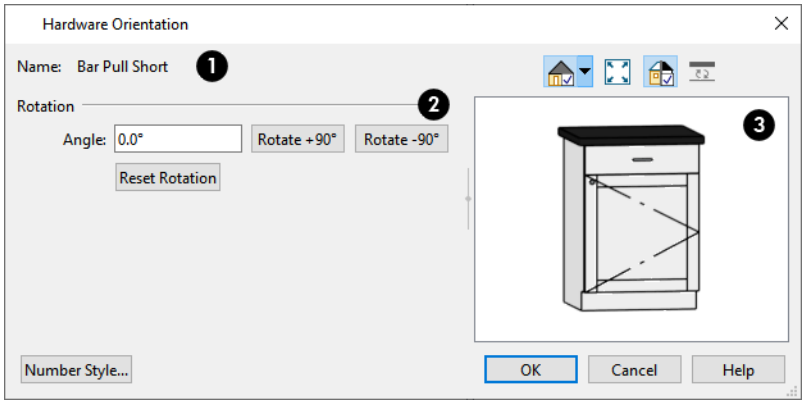
- Click the **Library** button to select a shelf, storage, or organization object from the Library Browser. See *Inserted Objects on page 728*.
- Click the **Clear** button to restore the default shelf style.
- Check **Rollout**, then specify the amount that the shelf rolls out when set to Show Open. Only available for Standard cabinets. See *Rollout Shelves and Storage on page 470*.
- Specify the **Thickness/Height** of the shelves or storage item.
- Specify the **Spacing From Previous**, which is the distance from the bottom of the selected shelf to the top of the shelf below it.
- If the **Spacing From Previous** value is changed, **Equal Spacing** will become unchecked. Check this box to produce evenly space the shelves within the selected cabinet front item.
- Specify the selected shelf's **Depth**: choose **Full**, **Half**, or **Specify** a custom value in inches (mm).

4 Preview

The preview shows shelf numbers and spacing. Shelf thickness and depth are also represented. Press the ***Tab*** key to update the preview as changes are made.

Hardware Size/Orientation Dialog

In the Base Cabinet, Wall Cabinet, or Full Height Cabinet Specification dialog, click the **Edit** button associated with either door/drawer handles or drawer hinges to open the Cabinet Shelf Specification dialog. See *Door/Drawer Panel on page 487*.



1 Name

The Name of the selected hardware symbol is reported here for reference.

2 Rotation

- Specify an exact **Angle** by typing it in the text field.
- Click the **Rotate +90°** or **Rotate -90°** button to add or subtract 90° from the Angle value.

3 Preview

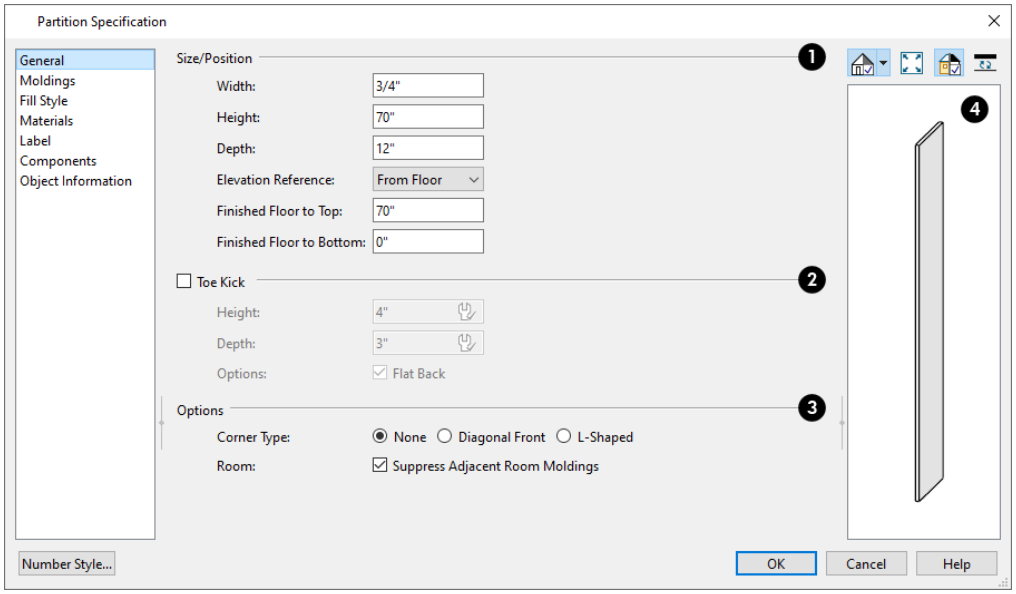
The preview shows the hardware's containing cabinet with the specified hardware. See *Dialog Preview Panes on page 21*.

Shelf/Partition Specification Dialog

Select a Shelf or Partition and click the **Open Object** edit button to open the Shelf Specification or Partition Specification dialog.

The options in these specification dialogs are similar to the corresponding defaults dialogs. See *Cabinet Defaults on page 461*.

General Panel



1 Size/Position

Specify the **Height**, **Width**, and **Depth** of the Shelf or Partition.

- **Left Side Width** and **Right Side Width** replace Width and Depth when a Diagonal or L-Shaped Corner Type are selected below.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the **to Top** distance, measured from the Elevation Reference to the top of the Shelf or Partition.
  - Specify the **to Bottom** distance, measured from the Elevation Reference to the bottom of the Shelf or Partition.

2 Toe Kick

Specify the dimensions of a selected Partition's Toe Kick, or uncheck this box to prevent it from having a toe kick. Only available for Partitions.

- Specify the toe kick's **Height** and **Depth**. Changing the Height does not alter the Partition's height.
- Check **Flat Back** to eliminate the toe kick on a Partition with an exposed back. This does not eliminate the toe kick on the Partition's front.

3 Options

- Specify the **Corner Type**: "Diagonal", "L-Shaped", or "None". "None" produces a rectangular Shelf or Partition. In the Shelf Defaults dialog, "Diagonal" and "L-Shaped" are the available **Auto Corner Types**. See *Corner Cabinets on page 478*.
- When **Suppress Adjacent Room Moldings** is checked, room moldings do not generate on walls where the selected object touches them. Uncheck this box to allow room moldings to generate through the object.

4 Preview

A preview of the selected object displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Moldings Panel

The settings on the Moldings panel allow you to assign one or more horizontal molding profiles around the selected Shelf or Partition. See *Moldings / Rails Panels on page 702*.

See, too, *Editing Cabinet Styles on page 476*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Shelf or Partition in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Label Panel

Labels for Shelf or Partition display when the “Cabinets, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Shelf and Partition labels display in plan view when the “Cabinets, Labels” layer is turned on and use the Text Style assigned to that layer. See *Cabinet Labels on page 471*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

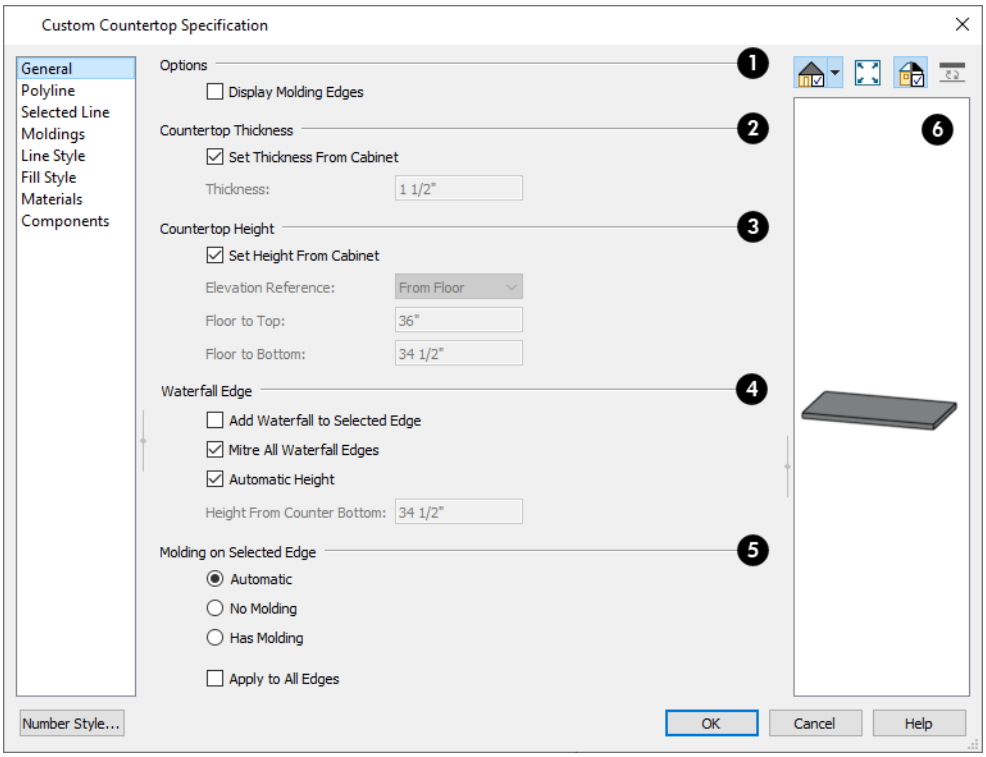
Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Custom Countertop Specification Dialog

Select a custom countertop and click the **Open Object** edit button to open the Custom Countertop Specification dialog.

General Panel



1 Options

- Check **No Molding On Selected Edge** to turn off the display of molding on the selected edge. Only has an effect when a molding is specified for the countertop on the MOLDINGS panel of this dialog.
- Check **Display Molding Edges in Plan Views** to display two edge lines instead of one, indicating the width of any molding applied to the countertop. Only has an effect when a molding profile is specified for the countertop.

2 Countertop Thickness

- Uncheck **Set Thickness From Cabinet**, then specify the Thickness of the selected Custom Countertop below. When this is checked, the thickness is inherited from the cabinet below or from the Base Cabinet Defaults dialog if no cabinet is present below.

3 Countertop Height

- Uncheck **Set Height from Cabinet**, then specify the height of the selected Custom Countertop using the settings below. When this is checked, Countertop height is determined by the cabinet below or by the default base cabinet counter thickness if no cabinet is present below.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the height **to Top**, which is measured from the selected Elevation Reference to the top of the countertop.
  - Specify the height **to Bottom**, which is measured from the selected Elevation Reference to the bottom of the countertop.

4 Waterfall Edge

Control whether the selected countertop edge has a waterfall and specify its attributes. See *Waterfall Countertops on page*

468.

- Check **Add Waterfall to Selected Edge** to add a vertical extension to the selected edge of the countertop.
- Uncheck **Mitre All Waterfall Edges** to create butt joints with seams that may be visible in some views where the waterfall meets the horizontal countertop and any adjacent waterfall edges. When checked, these joints are mitered so the only visible seams are located at the corners.
- When **Automatic Height** is checked, the waterfall builds down to the floor height countertop's room, or the default floor height for the current floor if it is not in a room. Uncheck this to specify the waterfall's vertical height, below.
- Specify the **Height from Counter Bottom**, measured from the bottom of the horizontal countertop to the bottom of the waterfall.

5 Molding on Selected Edge

An edge profile for the selected counter can be specified on the Moldings panel. See *Selected Edge on page 185*.

- Select **Automatic** to remove the edge profile from the selected edge when it is positioned against a wall and generate it otherwise.
- Select **No Molding** to remove the edge profile from the selected edge regardless of where it is positioned.
- Select **Has Molding** to generate the edge profile on the selected edge regardless of where it is positioned.
- Check **Apply to All Edges** to apply the option specified for the currently selected edge to all edges of the countertop. This is an action rather than a state: the next time this dialog is opened, this box will be unchecked.

6 Preview

A preview of the selected countertop displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Polyline Panel

The Polyline panel reports the length of the selected Custom Countertop's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Moldings Panel

The settings on the Moldings panel allow you to apply an edge profile to the selected countertop. For information about these settings, see *Moldings / Rails Panels on page 702*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Custom Countertop in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Custom Countertop in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Custom Countertop in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Label Panel

Labels for Custom Countertop display when the "Polylines 3D, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for Custom Countertops is blank, but you can specify a custom label if you wish. See *Object Labels on page 394*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

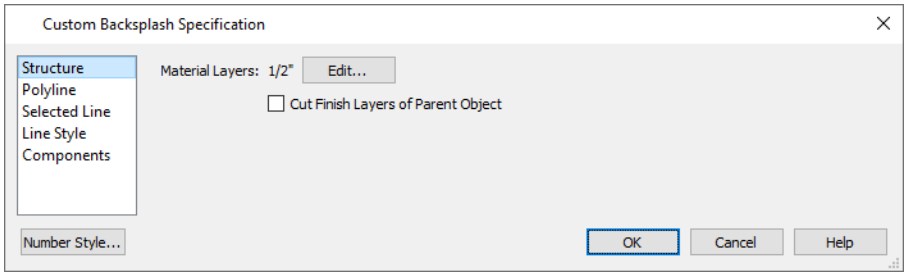
Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Custom Backsplash Specification Dialog

Select a Custom Backsplash and click the **Open Object** edit button to open the Custom Backsplash Specification dialog.

Structure Panel



- The total thickness of the **Material Layers** displays here for reference.
- Click the **Edit** button to open the Material Layers Definition dialog. See *Material Layers Definition Dialogs on page 753*.

- Uncheck **Cut Finish Layers of Parent Object** to fix the selected Material Region to the surface of its parent floor platform or wall. When checked, it cuts into the finish layers of the polyline's parent object and replaces those layers with its own within its perimeter.

Polyline Panel

The Polyline panel reports the length of the Custom Backsplash's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Custom Backsplash in plan view. See *Line Style Panel on page 234*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Electrical

Chapter 19

The electrical plan shows the location of all electrical objects such as lights, switches, outlets, smoke detectors and vent fans. Basic wiring diagrams show which objects share circuits and the locations of the controlling switches.

Electrical objects can be displayed in 2D and 3D views. Some electrical light fixtures also add light sources to 3D views. See *Lighting on page 820*.

Usually, the electrical plan is one of the last additions to a plan since the position of most electrical objects is determined by the location of walls, cabinets and other objects.

> Building requirements vary throughout the country and around the world. It is your responsibility to comply with local codes.

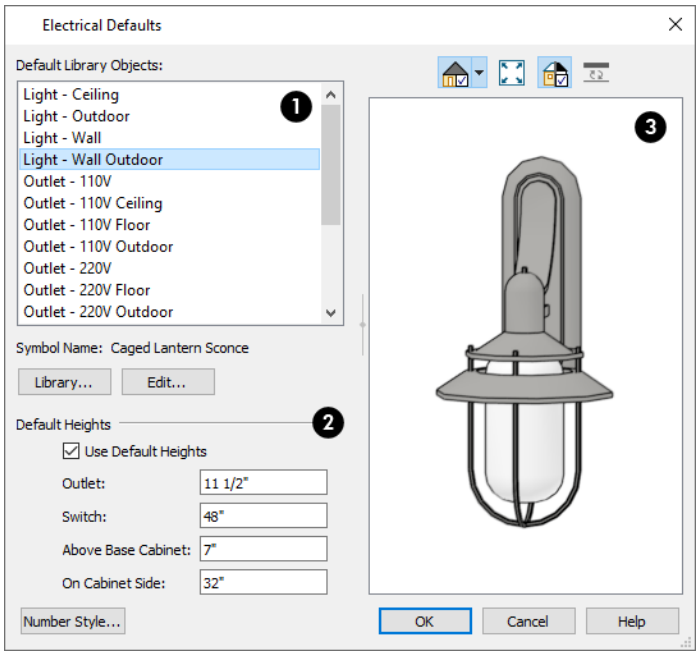
Electrical Defaults

There are two defaults dialogs for electrical objects, which you can access by selecting **Edit> Default Settings**, then clicking the arrow beside "Electrical". Select a subheading and click the **Edit** button to open the defaults dialog associated with your selection. See *Default Settings on page 83*.

Default heights and other attributes of individual objects can be overridden in the Electrical Service Specification dialog. See *Light Data Panel on page 508*.

Electrical Defaults Dialog

The Electrical Defaults dialog lets you specify which electrical symbols are placed by the Electrical Tools and can be opened by double-clicking any of the Electrical Tools' toolbar buttons, except **Rope Light** or **Electrical Connection**.



1 Default Library Objects

The **Default Library Objects** are the objects created using the Electrical Tools. Select an item in the scrollable list to see and edit its settings.

- The name of the object shown in the preview image displays here.
- Select an item in the Default Library Objects list and click the **Library** button to select a new default object from the library. See *Select Library Object Dialog on page 729*.
- Click the **Edit** button to open the specification dialog for the selected object. Any changes you make in the specification dialog are saved with the plan as long as the selected object is not replaced. See *Light Data Panel on page 508*.

2 Default Heights

Specify the heights at which electrical outlets and switches are initially placed when the Switch or any of the Outlet tools are used.

- Check **Use Default Heights** to apply the default heights specified here to electrical objects placed in plan view using the Electrical Tools. When this is unchecked, electrical objects use the height saved with their symbol. See *Placing Library Objects on page 727*.
- **Outlet** - Specify the default height for outlets, as well as phone, cable and TV jacks.
- **Switch** - Specify the default height for switches, doorbells and thermostats.
- **Above Base Cabinet** - Specify the default height for switches and outlets placed above base cabinets in plan view, as measured from the countertop. See *Adjusting Electrical Object Heights on page 507*.
- **On Cabinet Side** - Specify the default height for switches and outlets placed on the sides of cabinet boxes, measured relative to the side of the cabinet in question. See *Placing Electrical Objects on page 502*.

3 Preview

A preview of the selected object displays here. See *Dialog Preview Panes on page 21*.

Electrical Connection Defaults

The Electrical Connection Defaults control the appearance of Electrical Connection splines when they are first drawn and can be opened by double-clicking the **Electrical Connection** tool. See *Creating Wiring Schematics on page 504*.

This dialog is similar to the Electrical Connection Specification and Polyline Specification dialogs but has only two panels:

- The Spline panel allows you to control the curvature of Electrical Connection splines. See *Spline Panel on page 246*.
- The Line Style panel lets you control the line style assigned to Electrical Connection splines. See *Line Style Panel on page 234*.

The Electrical Tools

Select **Build> Electrical** to access the Electrical Tools. Some electrical objects are designed to be inserted into walls, floors, ceilings or cabinets, although some can also be free-standing. With the exception of Electrical Connection splines, they can be created with a single click in plan and camera views. See *Placing Electrical Objects on page 502*.

The Electrical Tools place objects or draw according to the settings in the Electrical Defaults dialogs. See *Electrical Defaults on page 499*.

Different outlet, switch, and light fixture symbols can be placed in different room types. To take advantage of the program's capabilities, define room types properly before placing electrical objects. See *Room Types on page 314*.

Once created, outlets, switches, and lights can be selected and edited. See *Editing Electrical Objects on page 506*.

Outlets

The outlet tools can place receptacles on walls, the floor, and on the sides of cabinets and soffits.

Select **Build> Electrical**, then choose:

 **110V Outlet** to place 110 volt duplex outlets.

 **GFCI Outlet** to place ground fault circuit interrupter outlets.

 **220V Outlet** to place 220 volt outlets.

The type and height of an outlet will vary depending on where it is placed. For example:

- An outlet placed on a wall at the back of a base cabinet in plan view is positioned above the counter.
- An outlet placed on a wall at the back of a base cabinet containing a kitchen sink is placed at the standard 11 1/2" (300 mm) above the floor.
- An outlet placed on the side of a cabinet or soffit will be positioned 32” (800 mm) up from that object’s bottom.
- An outlet placed outside the building or in an exterior area such as a deck or porch will be weatherproof.
- An outlet placed in the central area of a room in plan view will be positioned on the floor, with one exception: 110V Outlets placed in Garage or Slab rooms will be positioned on the ceiling.

 In camera views, 110V Outlets can be placed on ceilings in any room type.

Light Fixtures

 Select **Build> Electrical> Light** to place light fixtures on walls, the ceiling, or on soffits. All light fixtures placed in a plan can also serve as light sources in most 3D views. To place a light fixture using the Light tool:

- Click near a wall or the side of a soffit to place a wall-mounted fixture at that location.
- Click away from a wall to place a ceiling mounted light.
- Click inside a soffit in plan view or on its bottom surface in a camera view to place a ceiling mounted light on the soffit’s bottom surface.
- Click outside a room and away from a wall to place a path light.
- Some light symbols from the library can be mounted under wall cabinets, as well.

The rendering characteristics of individual lights that control how they appear in rendered views can be specified on the Light Data panel of the Electrical Service Specification dialog. See *Light Data Panel on page 508*.

In addition, in Physically Based renderings light fixtures can emit light from their surfaces using Area Light materials. See *Area Light Materials on page 824*.

Rope Lights

 Select **Build> Electrical> Rope Light**, then click and drag to draw a Rope Light path with regularly-spaced punctual light sources along its length. Individual Rope Lights can be customized, as can the Rope Light Defaults. See *Rope Light Specification Dialog on page 512*.

Switches

Select **Build> Electrical> Switch** to place electrical switches on walls or on the sides of cabinets or soffits. Like outlets, the height of switches is measured from the floor to the center of the object.

- A switch placed on the side of a cabinet or soffit will be positioned 32” (800 mm) up from that object’s bottom.
- Switches placed outside the building or in an exterior area such as a deck or porch will be weatherproof.

> If you connect two or more switches in a circuit, they update to 3-way or 4-way switches automatically.

Switches placed from the Electrical Library do not automatically update by default, but can be specified to do so. See *Light Data Panel on page 508*.

Auto Place Outlets

Select **Build> Electrical> Auto Place Outlets** and click in a room tool to place outlets at regular intervals around the entire room. See *Auto Place Outlets on page 503*.

Ganged Electrical Blocks

The **Make Ganged Electrical Block** edit tool allows you to block two or more wall- or cabinet-mounted Electrical objects into a single unit, including Switches, Outlets, and jacks from the Library. In order for Electrical objects to be blocked together, they must have the same height and width, be aligned horizontally, and be positioned within 36" (900 mm) of one another.

The **Explode Ganged Electrical Block** edit tool unblocks a Ganged Electrical Block so its components are separate objects.

Electrical Connection

Select **Build> Electrical> Electrical Connection**, then click and drag to draw splines that snap to electrical switches, outlets, and lights to illustrate wiring circuits. See *Creating Wiring Schematics on page 504*.

Lighting and Electrical Library Catalogs

A selection of free-standing and ceiling-, wall- and cabinet-mounted light fixtures is available in the Library Browser at Core Catalogs> Architectural> Lighting.

Special use outlets, switches, jacks and numerous other electrical items can be found at Core Catalogs> Mechanical, Electrical, Plumbing> Electrical. See *Placing Library Objects on page 727*.

You can also add electrical objects, including Ganged Blocks, to the User Catalog. See *The User Catalog on page 718*.

Placing Electrical Objects

Electrical switches, outlets, lights, and other symbols can be created with a single click in any view. They can also be placed from the Library. See *Click-to-Create on page 145*.

When the Switch, Light, or an outlet tool is used, the type and height of the object that is created will vary depending on where it is placed. As you move your mouse pointer around the view, an object preview will display near the pointer

whenever it is over a location where an object can be placed. Specific details for each tool are noted in *The Electrical Tools on page 500*.

The electrical objects in the Library are typically designed for a specific use and can only be placed on a wall, on the floor, or on the ceiling. Some are instead free-standing and are designed to be placed on a table or the floor. See *Placing Library Objects on page 727*.

Wall mounted outlets, switches, and Library symbols can also be placed on the sides of cabinets and soffits. They will snap to the outside of the cabinet box or to the outside of Side or Back Panels, but will ignore doors and drawers.

When a light fixture is created using any method, including copying and pasting, it will always be turned On. This is the case even if the default symbol is turned Off. See *Light Data Panel on page 508*.

Electrical Object Heights

When a wall-mounted electrical object is placed in plan view using one of the Electrical Tools, its initial height off the floor is based on settings in the Electrical Defaults dialog. See *Electrical Defaults on page 499*.

Wall mounted electrical symbols placed directly from the Library derive their initial heights from specification settings saved with each object. See *Light Data Panel on page 508*.

Similarly, cabinet-mounted electrical objects are placed using height information set in either the Electrical Defaults dialog or the symbol's specification dialog. If the default height is higher or lower than the cabinet it's being placed on, the electrical object will be placed along the top or bottom edge of the cabinet box.

In 3D views, an electrical object placed on a wall in a 3D view will snap to its default height provided that the mouse pointer is near that height when you click. If you move the mouse pointer away from the default height, the object will be positioned wherever you click on the wall, regardless of the height at that point.

Auto Place Outlets

Select **Build> Electrical> Auto Place Outlets** and click in a room to place 110 volt outlets on the walls around the entire room, spaced so that no position along a wall is farther than six feet (1800 mm) from the nearest outlet. 110 or 220 volt outlets are also placed behind large appliances. In addition, a light is placed above each sink.

Outlets and sink lights are placed based on settings in the Electrical Defaults dialog. See *Electrical Defaults on page 499*.

It is important that a room's Type be defined before **Auto Place Outlets** is used so that outlets are placed appropriately. For example, it places **GFCI Outlets** over base cabinets if they are located in rooms specified as Kitchen or Bath. See *Room Types on page 314*.

Auto Place Outlets does not work in rooms assigned an exterior room type such as Deck. To place outlets in an exterior room, place them from the Electrical Library or use the **110V Outlet** tool.

Railings and invisible walls are ignored by **Auto Place Outlets**. If it is used in a room defined by railings or invisible walls, outlets are automatically placed in any adjacent rooms on the other side of these Wall Types. See *Room Definition on page 312*.

Once placed, any outlet can be moved, edited, or deleted. See *Editing Electrical Objects on page 506*.

Creating Wiring Schematics

Electrical schematics can be created in two ways. Using the **Electrical Connection** tool is quick and easy, but if you need detailed schematics, you can create your own wiring diagrams using the CAD tools. See *CAD Objects on page 224*.

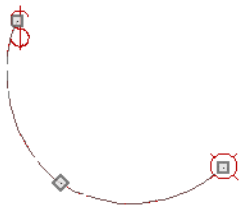
Electrical Connection

In plan view, select **Build> Electrical> Electrical Connection**, then click and drag to draw splines that attach to electrical Switches, Outlets, and Lights to illustrate wiring circuits. Electrical Connection Splines can also attach to cabinets and non-Electrical symbol objects. In addition, they can snap to points on other types of objects when Objects Snaps are in use; however, they are not attached to those objects and are not actually required to snap to or be attached to anything. See *Object Snaps on page 142*.

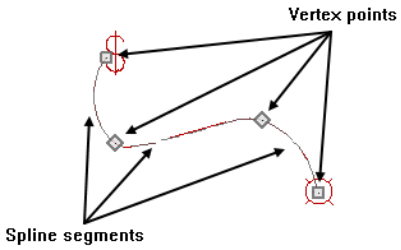
You can also draw an Electrical Connection spline using a selected Switch, Outlet, or Light fixture's Electrical Connection edit handle. When you move your mouse pointer over this diamond-shaped edit handle, the Electrical Connection icon will replace the default arrow and you can click and drag to draw a connection between the selected object and another electrical object.

To create a new circuit or add to an existing circuit, click on a switch, outlet, or light while the **Electrical Connection** tool is active, drag to the next object and release.

When an **Electrical Connection** spline is first drawn, it looks like an arc but actually consists of two segments that are defined by vertex points. When selected, its edit handles display at each of these vertices. If you click and drag one of these edit handles, the length, angle, and curvature of the spline will change but the other vertices will not move. See *Splines on page 249*.



Unattached ends of **Electrical Connection** splines can be connected to one another and once drawn, additional vertices can be added and used to form complex curves. See *Editing Spline-Based Objects on page 202*.



To remove a connection from a circuit, simply select it and us its end edit handle to disconnected it from the object it is connected to. If you remove an electrical object from a circuit, any Electrical Connection splines connected to it will also be deleted. See *Deleting Objects on page 218*.

Reset Curvature

An edited Electrical Connection spline can be reset to its original shape using the **Reset Curvature** edit tool. This tool removes any breaks from the selected spline, restores its original curvature direction, and applies the Curvature Ratio

set in the Electrical Connection Defaults dialog. See *Spline Panel on page 246*.

Three- and Four-Way Switches

Multiple switches can control an object or group of Electrical objects.

- Two switches controlling the same objects are referred to as three-way switches.
- Three switches controlling the same objects are called four-way switches.

In plan view, a three- or four-way switch's "way" number will automatically display in its 2D symbol. You can prevent a switch's symbol from changing by unchecking **Automatically Change Switch Type When Wiring** in its specification dialog. See *Symbol Object Specification Dialogs on page 735*.

While more than one Switch can be connected to a cabinet or non-Electrical symbol object using an Electrical Connection spline, the Switches will not become three- or four-way.

Electrical Library Content

Select **View> Library Browser** to accesses a variety of electrical symbols. See *The Library Browser on page 705*.

Browse for electrical objects such as bath vent fans, an electrical panel, fluorescent lights, chandeliers, a smoke detector, thermostat, and more. Select a symbol, then click in your plan to place it on a wall, floor, or ceiling.

You can specify which electrical object in the library is used by each of the Electrical Tools. See *Electrical Defaults on page 499*.

You can also assign electrical objects from the library to toolbar buttons for easy access and placement to frequently-used library objects. See *Place Library Object Button on page 729*.

Adding Electrical Content

Any electrical symbol placed into a plan can be customized and added to the User Catalog in the Library Browser. See *Add to Library on page 722*.

Displaying Electrical Objects

The display of electrical objects and connections is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

When displayed in 3D views, light fixtures act as sources of light that help illuminate the 3D model. See *Lighting on page 820*.

In Plan View

In plan view, electrical objects are represented by commonly used CAD symbols that represent the type of object rather than its appearance in 3D.

Like other objects, electrical objects are placed in Drawing Groups that affect whether they display in front of or behind other objects in plan view. You can modify a selected object's place in the drawing order by clicking the **View Drawing Group Edit Tools** edit button. See *Drawing Group Edit Tools on page 156*.

Electrical symbols are placed on the “Electrical” layer, while Electrical Connection splines are drawn on the “Electrical, Connections” layer.

Electrical Labels

Electrical labels display in plan view when the “Electrical, Labels” layer is turned on and use the Text Style assigned to their layer. See *Label Panel on page 395*.

Customized labels can be specified in the Electrical Service Specification dialog.

Electrical labels have their own edit handles and can be moved when the electrical object is selected.

> Note: Some electrical objects are represented in plan view by a symbol that includes text. This text is not part of the object’s label and does not use the Text Style assigned to the “Electrical, Labels” layer.

In the Materials List

Electrical objects, including outlets, switches, lights, and symbols from the library such as jacks and fans, are listed under the Electrical Category in the Materials List. Electrical Connection splines are 2D objects only, however, and are not calculated. See *Materials Lists on page 954*.

As with other objects, there are a number of ways to control how, or whether, electrical objects are included in the Materials List. See *Organizing Materials Lists on page 956*.

You can add and edit information about an electrical object’s accessories and sub-accessories in specification dialog. See *Components Panel on page 967*.

Editing Electrical Objects

Electrical objects can be selected individually as well as in a group in 2D and 3D views and edited using the edit handles, the Edit Toolbar and their specification dialog. See *Symbol Object Specification Dialogs on page 735*.

Electrical objects can be marquee-selected by type when the drawing tool used to create them is active. The Marquee Select Similar edit tool can also be used to group-select electrical objects. See *Selecting Multiple Objects on page 186*.

Light fixtures and Added Lights can be group-selected, but their light data cannot be edited unless each has the same number of light sources. See *Lighting on page 820*.

Lights can also be edited using the Adjust Lights dialog. See *Adjust Lights Dialog on page 826*.

Using the Edit Handles

The edit handles for electrical objects vary depending on the location of the object.

- In plan view, Switches, Outlets, and Lights have a special diamond-shaped Electrical Connection edit handle located below the object's symbol. Click and drag this handle to draw an Electrical Connection spline between the selected object and another electrical object. See *Creating Wiring Schematics on page 504*.
- Wall mounted electrical objects cannot be rotated in plan view, so only the Move edit handle displays.
- Electrical objects placed on floors and ceilings can be rotated in plan view.
- In 3D views, some ceiling mounted and free-standing light fixtures can be resized.
- **Rope Lights** are edited like open polylines. See *Editing Open Polyline-Based Objects on page 193*.

- **Electrical connections** are edited like splines. See *Editing Spline-Based Objects on page 202*.
- When set to display in plan view, each electrical label has a small square Move edit handle.

In the Specification Dialogs

Most electrical objects can be edited in the Electrical Service Specification dialog. See *Symbol Object Specification Dialogs on page 735*.

Ganged Electrical Blocks are instead edited in the Ganged Electrical Block Specification dialog. See *Ganged Electrical Block Specification Dialog on page 510*.

Rope Lights have options for controlling the rope profile, light spacing, and more. See *Rope Light Specification Dialog on page 512*.

Using the Edit Tools

A selected electrical symbol can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Change to GFCI Outlet changes a selected 110V Outlet to a GFCI Outlet, as specified in the Electrical Defaults dialog.

Change to 110V Outlet changes a selected GFCI Outlet to a 110V Outlet.

Make Ganged Electrical Block changes two or more electrical objects mounted on the same wall or cabinet side into a ganged unit, while Explode Ganged Electrical Block separates a ganged block into its individual component objects.

Make Architectural Block allows you to block an electrical object with other architectural objects like cabinets into a block, while Explode Architectural Block separates an architectural block into its individual component objects. See *Architectural Blocks on page 744*.

Turn Light(s) On in 3D toggles a selected light on so that it emits light in 3D views while **Turn Light(s) Off in 3D** toggles it off. See *Displaying Lights on page 825*.

Adjust Brightness allows you to adjust the brightness of a selected light fixture's light sources in the current Light Set in the Adjust Brightness dialog. See *Light Intensity and Brightness on page 824*.

Using Dimensions

Electrical objects can be moved precisely using dimensions. See *Moving Objects Using Dimensions on page 361*.

By default, electrical objects are not located by dimension lines as the lines are drawn. Once created, though, you can edit a dimension line's extensions to locate the center of any electrical object. See *Editing Extension Lines on page 357*.

In order to locate electrical objects by a dimension line as it is being drawn, first check the box beside **Electrical** on the Locate Objects panel of the Dimension Defaults dialog. See *Locate Manual Panel on page 344*.

Adjusting Electrical Object Heights

When a wall- or cabinet-mounted electrical object is placed, its initial height is based on settings in the Electrical Defaults dialog. See *Placing Electrical Objects on page 502*.

Once placed, a wall-mounted electrical object's height can be edited in three ways:

- Specify the height in the Electrical Service Specification dialog. See *Symbol Object Specification Dialogs on page 735*.
- In 3D views, the position of an electrical object can be adjusted using its edit handles.
- In any view, use the **Transform/Replicate Object** tool. See *Transform/Replicate Object Dialog on page 176*.

Deleting Electrical Objects

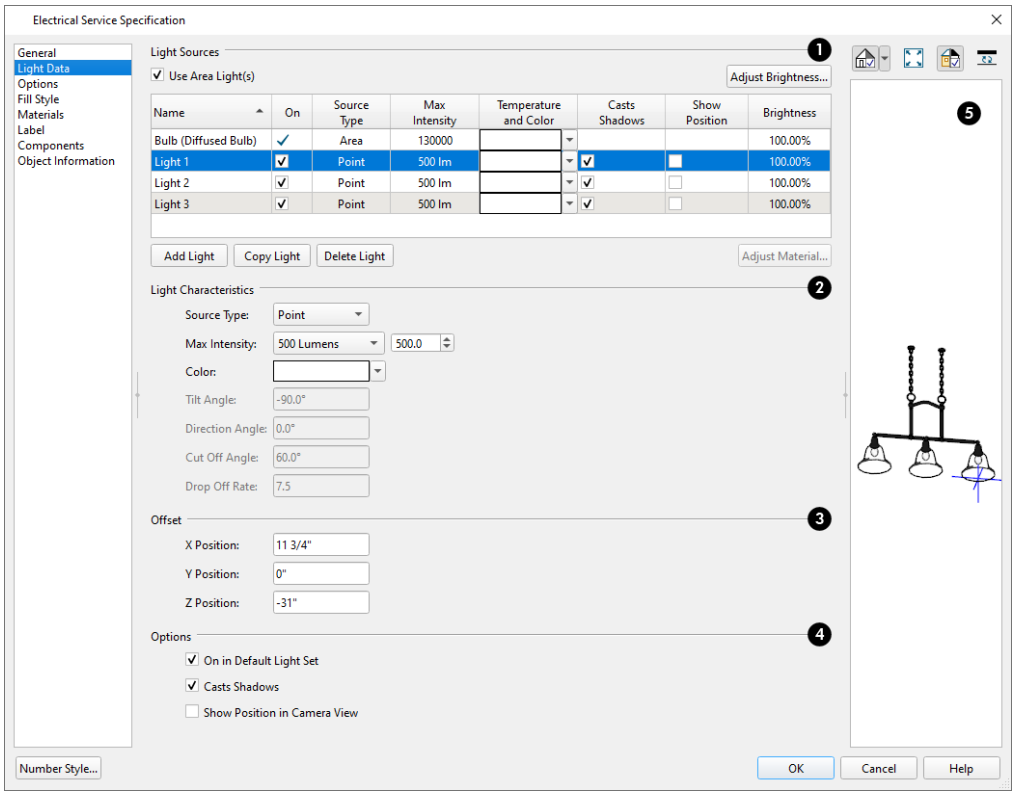
An electrical object can be deleted by selecting it and clicking the **Delete** edit button or by pressing the ***Delete*** key.

All electrical objects in a room, on a floor, or in the entire plan can also be deleted as a group using the Delete Objects dialog. See *Deleting Objects on page 218*.

Light Data Panel

The Light Data panel is available in the specification dialogs for Light fixture symbols as well as Added Lights. Select one or more electrical objects and/or Added Lights and click the **Open Object** edit button to open the Electrical Service Specification, Added Light, or Light Data dialog. See *Added Lights on page 821* and *Symbol Object Specification Dialogs on page 735*.

The settings on this panel allow you to control the attributes of the light source(s) associated with the selected object. A number of the settings on this panel can also be edited in the Adjust Lights dialog. See *Adjust Lights Dialog on page 826*.



1 Light Sources

Each fixture can have multiple **Light Sources**, listed here. Area Lights are only listed if they have an Emissive value greater than 0 or are set to Apply Emissive and Color from Lights. See *Lighting on page 820*.

- The **Name** column for fixtures with multiple light sources is listed in descending alphanumeric order by default: click its column header to reverse the direction. You can also select another column and click its header to sort by that column instead. An arrow above a column indicates that it is being used to sort the table, and in which direction it is being sorted
- The table's columns can also be reorganized if you wish: click in a column to select it, then click and drag its header to the left or right. Only the Name column cannot be moved.
- When **Use Area Light(s)** is checked, all Area Light materials assigned to the fixture are turned on in Physically Based renderings. When this box is unchecked, only the fixture's punctual lights are used. Not available for Added Lights or if the selected fixture does not have an Area Light assigned to it. See *Area Light Materials on page 824*.
- Click the **Adjust Brightness** button to edit the Brightness of all light sources and Area Lights using the Adjust Brightness dialog. Brightness cannot be edited for individual line items in the table. See *Light Intensity and Brightness on page 824*.
- Click on a line item in the table to select it for editing using either the settings in the table or those below. Multiple line items can also be selected and edited. See *Shift and Ctrl/⌘ Select on page 187*.
- The selected light source's Position Indicator displays in the preview on the right.
- Click **Add Light**, **Copy Light**, or **Delete Light** to add or delete light sources from the list.
  - If the selected fixture has only one light source, Delete Light will not be available.
  - These options are not available for Added Lights.
- Click **Adjust Material** to edit, copy, or replace a selected Area Light material. Not available for Added Lights, or when the selected line item is a punctual light. See *Adjust Area Light Material Dialog on page 828*.

2 Light Characteristics

- Select either **Point Light** or **Spot Light** as the light **Source Type**. The Type determines which options are enabled below. See *Light Types on page 823*.
- Select a **Max Intensity** from the drop-down list. The available options are described using lumens and correspond to commonly used light bulb wattages. You can also use the text box or spin controls to make fine adjustments to the Intensity value. When a non-standard value is specified, the Intensity is described as “Custom Lumens”.
- Colored lights alter the appearance of textures and can be used to achieve special effects. Select a **Color** in either of two ways:
  - Click the **Color** bar to define the color of the selected light source. See *Select Color Dialog on page 165*.
  - Alternatively, select a pre-defined **Temperature**, in degrees of Kelvin, from the drop-down list.



The default color of light is pure white, which has the least effect on the appearance of material colors and textures.

The Angle and Drop Off Rate settings below are only available for Spot Lights.

- The **Tilt Angle** controls the angle of the illumination with respect to the horizon. A value of -90° points the light straight down and a value of 90° points it straight up. 0° is parallel to the horizon.
- The **Direction Angle** defines the direction of the illumination relative to the ground. 0° is measured horizontally pointing to the right. Positive values rotate in a counter-clockwise direction from there. Enter a value up to 360°. If you enter a negative value, the program adds 360° to it when you click OK or press the ***Tab*** key.
- The **Cut Off Angle** controls the angle of the cone of illumination for Spot Lights only. A cone angle of 180° creates a spot light that shines in a half sphere on one side of the light source. A small cone angle, for example 10°, creates a very narrow cone of light.
- The **Drop Off Rate** affects how fast a Spot Light’s intensity drops off from the center of the cone to the outside edge.

  A value of 0 produces a cone of light with the same intensity from the center to the outside edge and a sharp

distinction between lit areas within the cone and unlit areas outside it. As this value is increased, the light intensity decreases closer to the edge of the cone and the distinction between lit and unlit areas becomes softer. Only available for Spot Lights.

3 Offset

These settings control the location of the selected Light Source relative to the fixture.

- **From Base** controls how far the light source is from the fixture base. The fixture base is determined by the surface that it is attached to (i.e. wall, floor, or ceiling).
- **X Position** and **Y Position** allow you to position the light source relative to the center of the fixture, along the floor/ceiling.

4 Options

These options affect how the selected light source behaves are available.

- Check **On** to use the light source in camera views, or uncheck it if you prefer that the light source not be used. See *Lighting on page 820*.
- **Casts Shadows** controls whether or not the selected light source casts shadows in camera views. See *Shadows on page 819*.
- Check **Show Position in Camera View** to indicate the position of a selected Point or Spot Light source in the preview pane and in 3D views when it is turned On. This tool can be used to determine if your light source is positioned correctly. See *In 3D Views on page 825*.

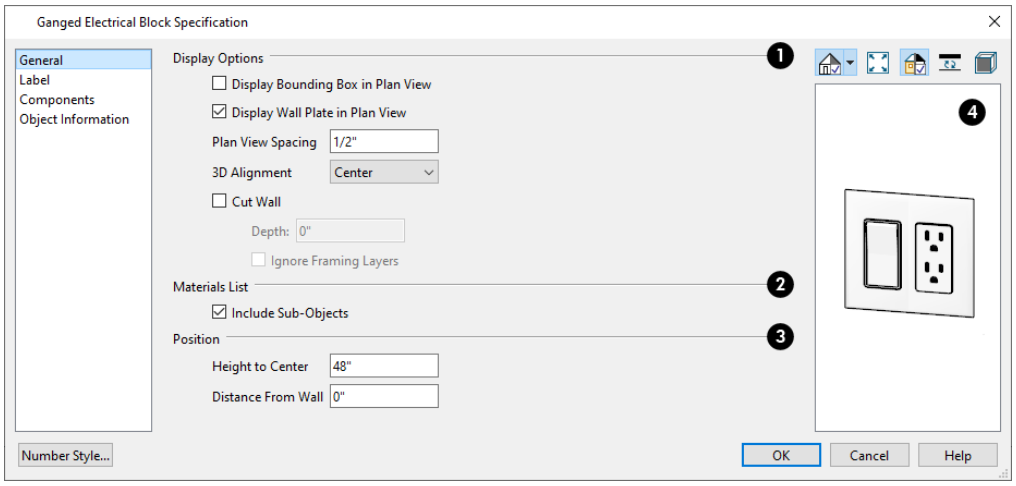
5 Preview

A preview of the selected object displays here. The selected light source's Position in Camera View displays here in all views except Plan View. See *Dialog Preview Panes on page 21*.

Ganged Electrical Block Specification Dialog

The Ganged Electrical Block Specification dialog controls the way Ganged Electrical Blocks display in plan view and in the Materials List. Select one or more Ganged Electrical Blocks and click the **Open Object** edit button to open this dialog. See *Ganged Electrical Blocks on page 502*.

General Panel



1 Display Options

These settings control the appearance of the selected Ganged Electrical Block in plan view.

- Check **Display Bounding Box in Plan View** to show the block's bounding box, which encompasses its 2D symbols, in plan view.
- Check **Display Wall Plate in Plan View** to represent the block's wall plate in plan view.
- Specify the **Plan View Spacing**, which is how far apart the 2D CAD blocks that represents the block's component object are.
- Select a **3D Alignment** option from the drop-down list. This controls whether the wall plate is aligned at the Center of the blocked objects, on their Left, or on their Right.
- Check **Cut Wall** to cut a hole in the wall and inset the selected symbol into it. Not available if the selected block is mounted on a cabinet.
  - Specify the **Depth** that the symbol insets into the referenced surface.
  - Check **Ignore Framing Layers** to ignore framing layers in the structural assembly.

2 Materials List

These settings control how the selected Ganged Electrical Block appears in the materials list.

- When **Include Sub-Objects** is checked, the Switches, Outlets, and/or jacks that make up the Ganged Block are listed in the materials list. Uncheck this box to only list the block's wall box and wall plate.

3 Size/Position

These settings are not available if the selected block includes any objects such as electrical objects that do not have these settings in their individual specification dialogs.

- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the height **to Center**, measured from the selected Elevation Reference to the top of the architectural block.
  - Specify the height **to Bottom**, measured from the selected Elevation Reference to the bottom of the architectural block.

4 Preview

A preview of the selected cabinet displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Label Panel

Electrical labels display in plan view when the “Electrical, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

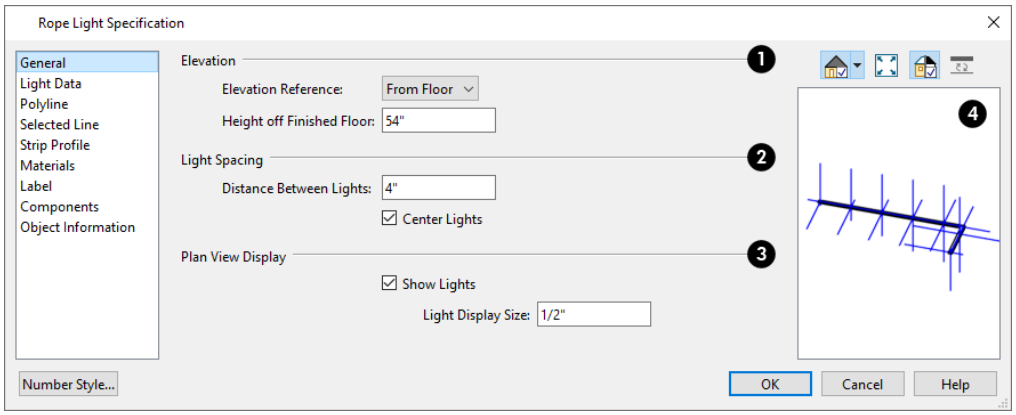
The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Rope Light Specification Dialog

Select a Rope Light and click the **Open Object** edit button to open the Rope Light Specification dialog.

The settings in this dialog are also found in the Rope Light Defaults dialog. See *Electrical Defaults on page 499*.

General Panel



1 Elevation

- Select the **Elevation Reference** from the drop-down list. This determines where the next setting is measured from, and also affects its setting label. See *Elevation References on page 20*.
- Specify the **Height** of the Rope Light, measured from the Elevation Reference to the top of the rope profile.

2 Light Spacing

- Specify the **Distance Between Lights**, measured from the centers of the light sources.
- When **Center Lights** is checked, the light sources are centered along the length of the Rope Light. Uncheck this to position a light source at the Rope Light's Start end and space additional lights along its length from there.

3 Plan View Display

- Check **Show Lights** to represent the light sources as circles inside the rope path. When unchecked, only the path is shown.
- Specify the **Light Display Size**, which is the diameter of the circles representing the light sources in plan view.

4 Preview

A preview of the selected Rope Light displays here. The selected light sources' Position in Camera View display in all views but Plan View. See *Dialog Preview Panes on page 21*.

Light Data Panel

The settings on the Light Data panel are also found on the same panel of the Electrical Service Specification dialog. See *Light Data Panel on page 508*.

Polyline Panel

The Polyline panel reports the length of the selected Rope Light's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Strip Profile Panel

The settings on the Strip Profile panel allow you to specify a rope light profile. These settings are like those on the Moldings panel found in many dialogs in the program. See *Moldings / Rails Panels on page 702*.

Layer Panel

The settings on the Layer panel control which layer and Drawing Group the selected Rope Light is assigned to. See *Layer Panel*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Rope Light in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Label Panel

Labels for Rope Light display when the “Electrical, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for Rope Lights is blank, but you can specify a custom label if you wish. See *Object Labels on page 394*.

Components Panel

The information entered on the COMPONENTS panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the OBJECT INFORMATION panel can be used in the Materials List. See *Object Information Panel on page 968*.

Foundations

Chapter 20

There are three foundation types in Home Designer: stem walls with footings, grade beams on piers, and monolithic slab. All three can be generated automatically or manually. The foundation type can be specified in the Foundation Defaults dialog when the foundation is built on Floor 0.

There can be only one foundation level in a plan, Floor 0; however, foundation structures can be drawn on any floor using the Foundation and Slab Tools.



Always consult registered geotechnical and civil engineers for information regarding the proper foundation for your site.

Foundation Defaults



There are several defaults dialogs that affect the foundation. They can be accessed by selecting **Edit> Default Settings**.

- In the Default Settings dialog, select “Foundation” and click the **Edit** button to open the Foundation Defaults dialog.
- Once a foundation has been built, it will have a Floor 0 Defaults dialog. The structural settings in this dialog are initially drawn from those in the Foundation Defaults dialog. See *Floor Level Defaults Dialogs on page 535*.
- The Foundation Wall Defaults dialogs control the default setup of Foundation Walls. See *Wall, Railing, and Fencing Defaults on page 254*.
- The default attributes for Slabs and Slabs with Footings can be set in the Slab Defaults dialogs. See *The Slab Tools on page 527*.
- The default attributes for Post footings can be set in the Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.

Automatic Foundation Types

Home Designer can automatically generate three types of foundation on Floor 0. See *Building a Foundation on page 519*.

Walls with Footings

The **Walls with Footings** option can be used to create stem wall and frost wall foundations, crawl spaces, and full basements.

A Walls with Footings foundation is defined by walls as specified in the Foundation Wall Defaults dialog and can support both framed and concrete floor platforms on the floor above. If **Slab at Top of Stem Wall** is checked, a concrete slab floor will be generated to serve as the floor platform for rooms on Floor 1 and a slab with frost walls is produced. Otherwise, if the **Basement Ceiling Height** of 72" (1800 mm) or greater is specified, a slab floor for the basement is generated automatically.

By default, floor platforms bear on top of foundation stem walls. You can instead select **Hang Floor Above on Wall** in a foundation wall's specification dialog. See *Structure Panel on page 296*.

Monolithic Slab

As the name implies, the **Monolithic Slab** option produces a single slab defined by Slab Footings on Floor 0 for each structure on Floor 1. See *Foundation Walls on page 261*.

Monolithic Slab room areas are defined by Slab Footing walls and supply the concrete floor platform for all of Floor 1. No other floor structure type is supported.

When a Monolithic Slab foundation is generated, both **Monolithic Slab Foundation** and **Floor Supplied by the Foundation Room Below** become checked in the Floor 1 Defaults dialog, as well as in the Room Specification dialog for all rooms on Floor 1. These boxes will become unchecked automatically if you later generate a different foundation type.

Regardless of what foundation type is generated, you can specify that an individual room on Floor 1 receives a **Monolithic Slab Foundation** in its specification dialog. See *Structure Panel on page 330*.

Grade Beams on Piers

The **Grade Beams on Piers** option produces foundation walls as specified in the Foundation Wall Defaults dialog, only without footings. These walls also receive regularly spaced Round Piers or Square Pads, again, as specified in the Foundation Wall Defaults dialog. See *Editing Piers and Pads on page 530*.

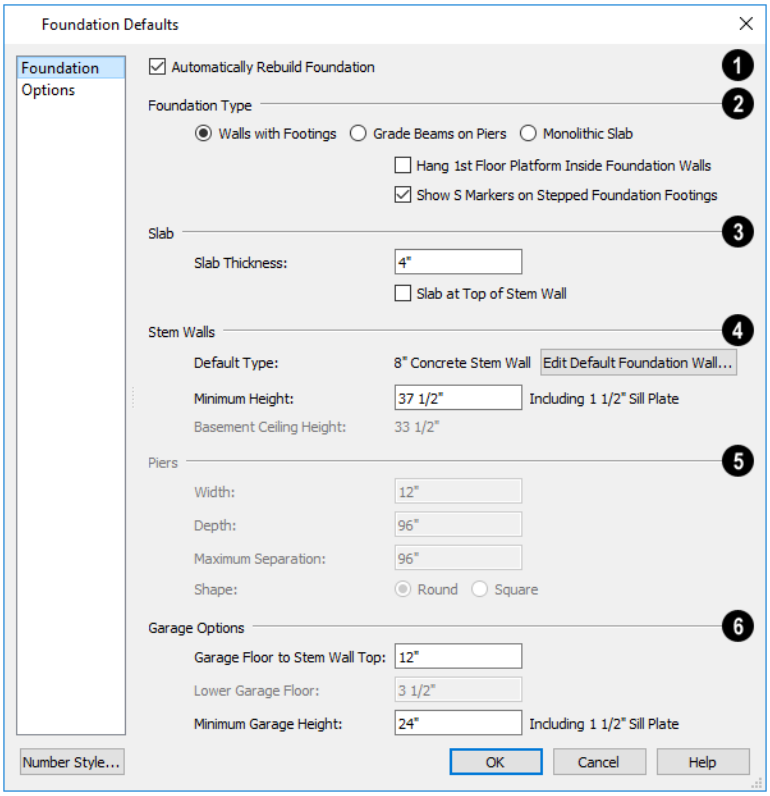
Grade Beams on Pier foundations can support crawl spaces and basements, as well as framed and concrete floor platforms on the floor above.

Foundation Defaults Dialog

The Foundation Defaults dialog allows you to specify stem wall height, slab thickness, and other characteristics of an automatically-generated foundation. These values determine how a new foundation is generated as well as the sizes for manually drawn foundation walls added to an existing foundation. Select **Edit> Default Settings**, and in the Default Settings dialog, select "Foundation" and click the **Edit** button.

The settings in the Foundation Defaults dialog are similar to those in the Build Foundation dialog, which opens when **Build> Floor> Build Foundation** is selected. The primary difference is that when you click **OK** in the Foundation Defaults dialog, no changes are made to the model. See *Building a Foundation on page 519*.

Foundation Panel



1 Automatically Rebuild Foundation

Check **Auto Rebuild Foundation** to automatically rebuild the foundation whenever changes are made to Floor 1 that affect the structure of the foundation. See *Rebuilding Foundations on page 522*.

2 Foundation Type

Three different **Foundation Types** can be created in Home Designer. Each type of foundation has different default settings, options, and behaviors. Select the radio button next to the desired type.

- Select **Walls with Footings** to produce a foundation composed of stem walls with footings that run continuously under the base of the walls.
- Select **Grade Beams on Piers** to generate a pier and grade beam foundation. The floor framing rests directly on top of the grade beams.
- Select **Monolithic Slab** to build a slab foundation defined by slab footings. The foundation forms the floor platform for Floor 1. It is visible on Floor 0 and can be selected and edited.
- Check **Hang 1st Floor Platform Inside Foundation Walls** to produce stem walls that build up to the top of the floor platform of Floor 1. When unchecked, the stem walls build to the bottom of the floor platform, which bears on top of them. Only available when Walls with Footings is selected, above.
- Check **Show "S" Markers on Step Foundation** to include an "S" symbol in plan view anywhere there is a step in foundation wall height. Not available when Grade Beams on Piers is selected, above. See *Displaying Foundations on page 521*.

3 Slab

- Specify the **Slab Thickness**, which is the thickness of the slab produced above the footing or at the top of the stem wall.
- Check **Slab at top of Stem Wall** to raise the slab so its top is flush with the top of the stem walls. Only available when Walls with Footings is the selected Foundation Type.
  If **Slab at top of Stem Wall** is selected, all rooms on the first floor are automatically set to **Floor Supplied by the Foundation Room Below** in the Room Specification dialog. See *Structure Panel on page 330*.

4 Stem Walls

- The name of the **Default Foundation Wall Type** displays here for reference.
- Click the **Edit Default Foundation Wall** button to open the Foundation Wall Defaults dialog and change the default settings for foundation walls. See *Foundation Walls on page 261*.
- If Monolithic Slab is the selected Foundation Type, the **Edit Garage Curb** button will be available. Click it to open the Foundation Wall Defaults dialog and define the walls that form curbs around Garage and Slab rooms.
- Specify the **Minimum Height**, which is the minimum height for foundation stem walls and grade beams. This value does not include any sill plates which may be present.
- The **Basement Ceiling Height** displays here as a reference. This is the distance from the top of the slab floor to the basement ceiling and is equal to the Minimum Wall Height minus the Slab Thickness plus any sill plates, which are specified in the foundation walls' specification dialog. See *Foundation Panel on page 302*.

  If the Minimum Wall Height is at least 76” (1900 mm), a Ceiling Finish is added to the foundation room automatically. A slab floor is also generated above the footing. The ceiling height and finish can be changed later. To remove this slab, specify the room areas in the basement as “Open Below”. See *Room Specification Dialog on page 328*.

5 Piers

These settings are only available when Grade Beams on Piers is the selected Foundation Type.

- Specify the **Width**, **Depth**, and **Maximum Separation** of the piers.
- Choose either **Round or Square** piers.

6 Garage Options

These settings only apply to rooms defined as Garages. See *Garages on page 524*.

- Specify the **Garage Floor to Stem Wall Top**, which is the distance between the slab and the tops of the stem walls in both Garage and Slab rooms. Available for Walls with Footings and Grade Beams on Piers foundation types. See *Foundation Defaults on page 515*.

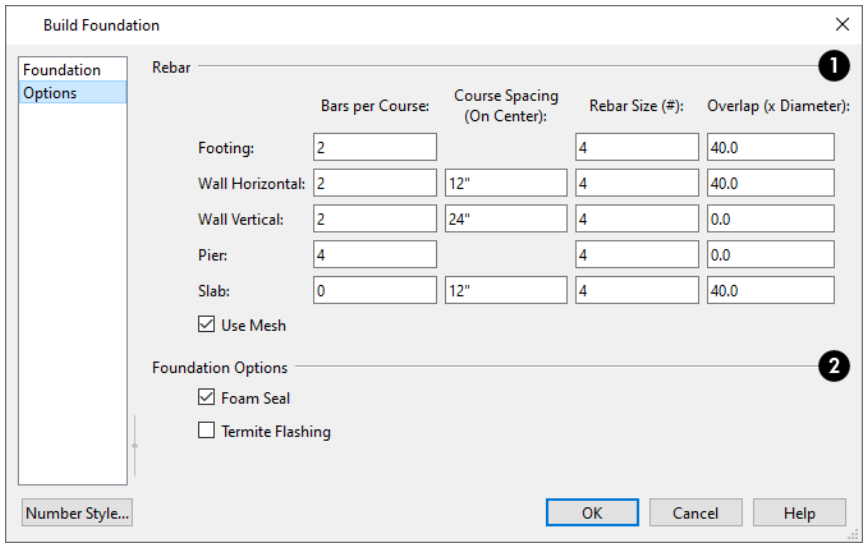
  > Note: The Garage Floor to Stem Wall Top setting only affects Garage rooms that have a Floor Height of 0. See *Structure Panel on page 330*.

- Specify the **Lower Garage Floor** height, which is the distance that Garage and Slab room floors are lowered when a Monolithic Slab foundation is built. This value is also the height of the curbs around these rooms.
- Specify the **Minimum Garage Height**, which is the minimum height that stem walls defining a Garage foundation will be, regardless of the Minimum Stem Wall Height for the rest of the foundation.

Options Panel

The Options panel allows you to include rebar and other materials related to the foundation in the Materials List. See *Materials Lists on page 954*.

Some options on this panel may be unavailable depending on the foundation type selected on the FOUNDATION panel.



1 Rebar

Specify the **Rebar** used in the major foundation components: **Footing**, **Wall Horizontal** courses, **Wall Vertical** courses, **Pier**, and **Slab**. Rebar and mesh are calculated in the Materials List provided that the wall or footing they are associated with is the "Concrete" Structure Type; but, they do not display in any 2D or 3D views of the model. See *The Materials List Tools on page 954*.

- **Bars per Course** - Specify the number of bars of rebar to be used per course for each foundation component.
- **Course Spacing** - Define the spacing for Vertical and Horizontal Wall courses, and for Slabs. If slabs are to have rebar instead of mesh, this spacing value applies to both directions.
- **Rebar size** - Define the rebar size in 1/8th inches. 4 represents 4/8, or 1/2 inch.
- Specify the **Overlap** where sticks of rebar meet, in terms of the rebar's **Diameter**. A value of 40.0, for example, equals 40 times the Rebar Size.
- Check **Use Mesh** to reinforce the slab floor with mesh instead of rebar, or uncheck it to use rebar.

2 Foundation Options

Select either **Foam Seal**, **Termite Flashing**, or both. These options are added to the Materials List, but do not display in the model.

Building a Foundation

Foundations can be generated automatically or drawn manually. A combination of the two methods can also be used.

Three foundation types are available: stem walls with footings, grade beams on piers, and monolithic slabs. See *Automatic Foundation Types on page 515*.

Automatically built foundations are placed on Floor 0 and are based on wall positions and floor heights on Floor 1. Foundation walls or slab footings are generated under:

- All exterior walls on Floor 1 that define a room that has **Build Foundation Below** specified. In order to automatically receive a foundation wall below, Exterior walls cannot be Railings or Invisible. See *Room Definition on page 312*.

- Any interior walls on Floor 1 defining rooms with different floor heights. See *Floor and Ceiling Heights on page 539*.

At least one room that has **Build Foundation Below** specified must be defined by visible, non-railing walls on Floor 1 for a foundation to be automatically generated. If no rooms are defined on Floor 1, a blank Floor 0 is created.

There can be only one Floor 0 per plan. If your plan requires a foundation on more than one floor, you will need to draw the required foundation walls or slabs yourself.

To build an automatic foundation

1. Specify the desired floor heights for the rooms on Floor 1: particularly Porch and Garage rooms.
2. Select **Build> Floor> Build Foundation**  .
3. Specify the desired foundation type and other information in the Build Foundation dialog and click OK. The settings in this dialog are similar to those in the Foundation Defaults dialog. See *Foundation Defaults Dialog on page 516*.
   - To rebuild the foundation using these settings any time changes are made to the structure on Floor 1, check the box beside **Automatically Rebuild Foundation**.
4. In the New Floor dialog, select **Derive new Foundation plan from the 1st floor plan** and click **OK** to build a foundation based on Floor 1.

If you prefer, you can instead select **Make new (blank) plan for the Foundation** to create an empty foundation level where you can manually draw foundation walls or slabs.

In most cases, it is preferable to base Floor 0 off the first floor plan and then manually edit the foundation as needed. See *Editing Foundations on page 522*.

Foundation Wall Alignment

By default, foundation walls and slab footings will align with walls on the floor above along the outside surface of the Main Layer of both Wall Types. See *Aligning Walls on page 280*.

Mixing Foundation Types

You can also create a foundation that combines stem walls, grade beams and piers, and/or monolithic slabs.

To create a foundation of multiple types

1. Begin by specifying any rooms on Floor 1 that require a slab floor as either a Garage or Slab **Room Type**. See *Foundations and Rooms on page 524*.
2. Alternatively, or in addition, you can specify any rooms on Floor 1 as having a **Monolithic Slab Foundation**. See *Structure Panel on page 330*.
3. **Build Foundation**  , as described above.
   - If the foundation will include any grade beams and piers, specify **Grade Beams on Piers** as the **Foundation Type** and build the foundation.
   - If the foundation will include a combination of stem walls and slabs, specify **Walls with Footings** as the **Foundation Type**.
4. Once the foundation walls have been generated, they can be moved or deleted, and new **Foundation Walls**  and/or **Slabs**  can be drawn. See *Foundation Walls on page 261* and *The Slab Tools on page 527*.

Openings in Foundation Walls

Any doors placed in walls around a Garage will receive cutouts in the garage stem wall or curb. The width of that cutout can be specified in the Door Specification dialog. See *General Panel on page 410*.

Displaying Foundations

The objects associated with foundations can be displayed in a variety of ways in Home Designer.

Foundation Layers

The display of foundation walls, slabs, curbs, piers and footings is controlled in the **Layer Display Options** dialog. See *Layer Display Options Dialog on page 154*.

- Foundation Walls, including grade beams, slab footings and Garage curbs, are placed on the “Walls, Foundation” layer.
- Footings under slab footings and Foundation Walls are placed on the “Footings” layer, as are Round Piers and Square Pads.
- Post footings and deck post footings are placed on the “Footings, Post” and “Footings, Deck Post” layers.
- Slabs created using the **Slab Tools** are placed on the “Slabs, Custom” layer.
- Wall labels and slab labels are placed on the “Walls, Labels” and “Polylines 3D, Labels” layers, respectively.
- In stem wall and grade beam foundations, brick ledge lines in plan view are on the “Slabs” layer; in monolithic slab foundations, they are on the “Walls, Foundation” layer. See *Brick Ledges on page 262*.
- The “Foundations” layer controls the display of all objects on Floor 0 in 3D views but does not affect plan view.

In Plan View

The appearance of foundation Wall Types, including line weights, colors and fill styles, is specified in the Wall Type Definitions dialog. See *Wall Type Definitions Dialog on page 290*.

Changes in stem wall and monolithic slab foundation heights are represented in plan view with S markers. These markers are located on the “Footings, Step Markers” layer and use the Text Style assigned to that layer. See *Stepped Foundations on page 526*.

If a door on Floor 1 extends into a stem wall or curb defining a Garage room, its location will be indicated on Floor 0. See *Displaying Doors on page 400*.

In 3D Views

In 3D views, all objects on Floor 0 will only display when the “Foundation” layer is turned on.

While the display of foundation walls and their footings can be controlled independent of one another in plan view, in 3D views this is not the case. If a foundation wall is set to display, its footing will as well - even if the “Footings” layer is turned off. The reverse is also true - if a foundation wall’s display is turned off, so will its footing’s.

The display of monolithic slab foundations in 3D views is controlled by the “Foundation” layer. Slab footings are located on the “Walls, Foundation” layer; but if this layer is turned off, any slab footings that define a foundation room will continue to display as long as the “Foundation” layer is on.

In the Materials List

The materials that make up foundation walls, footings, and slab floors are listed under the Foundation category in the Materials List, including:

- Concrete for walls, slabs, and footings
- Rebar for walls and footings
- Rebar or mesh for slabs

Other objects relevant to foundations can be found in these categories:

- **Exterior Trim** - Lists slabs drawn with the **Slab** tools that are located outside a structure.
- **Interior Trim** - Lists slabs drawn with the **Slab** tools that are located inside a structure.

See *Materials Lists on page 954*.

Editing Foundations

Stem wall with footings, wall with piers and monolithic slab foundations are all created using walls which enclose room areas.

- Foundation walls can be selected and edited much like other walls. See *Editing Walls on page 277*.
- Footing size can be changed on a wall by wall basis. See *Editing Foundations on page 522*.
- Foundation rooms can also be selected and edited like other rooms. See *Foundations and Rooms on page 524*.

Rebuilding Foundations

By default, foundations update automatically when changes are made to the structure on Floor 1. For example, if exterior walls are moved or floor platforms are raised or lowered, the foundation will be rebuilt.

You can direct the program to rebuild an automatically generated foundation whenever changes are made on Floor 1 that affect the foundation by checking **Auto Rebuild Foundation** in the Foundation Defaults dialog. See *Foundation Defaults on page 515*.

You can also rebuild an automatically generated foundation by selecting **Build> Floor> Build Foundation** from the menu.

When **Auto Rebuild Foundation** is enabled, walls cannot be edited, manually drawn or deleted on Floor 0. When the foundation is rebuilt, any manually drawn or edited walls are deleted. Similarly, rooms on Floor 0 cannot be edited while this option is enabled. If you try to draw a wall or edit a room or a wall while **Auto Rebuild Foundation** is turned on, a warning message will display.

Changing Foundation Types

When a foundation is generated, the program creates Floor Defaults settings for Floor 0 based on the information in the Build Foundation dialog. If you specify a Monolithic Slab foundation, the default Floor Structure on Floor 1 will also be changed to a slab rather than a framed platform. See *Floor Level Defaults Dialogs on page 535*.

> To avoid unexpected results, it is recommended that you not change the Foundation Type once the foundation is built.

Stem Wall Height

When a foundation is created, all of Floor 0 uses the stem wall height specified in the Foundation Defaults dialog,

This height is measured from the bottom of floor platform of Floor 1 to top of the stem walls' footings. If Floor 1 has multiple floor platform heights, the foundation stem walls will be stepped.

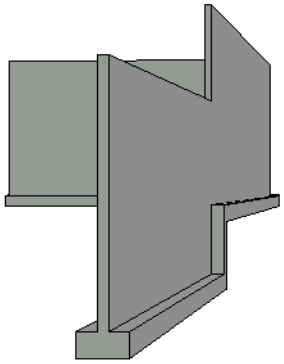
Once a foundation is created, stem wall heights can be adjusted either on a room-by-room basis or for individual walls.

To change a room's stem wall height

1. Select a room on Floor 0 and click the **Open Object** edit button.
2. Specify the desired **Stem Wall Height** in the Room Specification dialog. See *General Panel on page 329*.
3. If you wish to reduce the **Stem Wall Height**, you will first need to reduce the **Ceiling Height** value by the same amount.

If adjacent rooms have stem wall heights that differ by at least 1/16 of an inch, the stem wall separating them uses the larger of these two values.

In 3D views, individual stem walls can be selected and edited. In most cases, this method should only be used for stepping the bottom of the foundation wall. See *Stepped Walls and Footings on page 286*.



Footing Width and Height

Foundation Wall footings derive their Width and Height from in the Foundation Wall Defaults dialog, Once a Foundation Wall is created, its footing can be adjusted in its specification dialog. See *Foundation Panel on page 302*.

Stem wall footing heights can also be edited in 3D views just as the rest of the stem wall can. Slab footing heights, on the other hand, cannot be adjusted in 3D. See *Stepped and Raked Walls on page 286*.

You can specify whether stepped stem walls have vertical footings on the FOUNDATION panel of the Foundation Wall Defaults and Specification dialogs.

Interior Footings

Slab foundations often have interior footings: to support posts, for example. Home Designer does not generate interior footings automatically, but you can easily draw them using the **Slab** tool. See *The Slab Tools on page 527*.

To create an interior footing

1. Select **Build> Slab> Slab**, then click and drag to draw a slab on Floor 0. This slab will serve as a footing.
2. Select the slab and click the **Open Object** edit button.
3. In the Slab Specification dialog, specify the desired **Height** and **Thickness**. See *General Panel on page 528*.

- The **Height** should be set so that it meets the bottom surface of the monolithic slab above.

4. Use the edit handles, dimensions and/or the Reference Display to position the slab at the desired location.

Deleting Foundations

Select **Build> Floor> Delete Foundation** to delete the entire foundation floor.

You can also select and delete individual foundation walls and slabs by clicking the **Delete** edit button or pressing the ***Delete*** key. See *Deleting Objects on page 218*.

Deleting and rebuilding the foundation is often the quickest way to update the model when substantial changes are made to Floor 1 after the foundation is built.

Foundations and Rooms

When a foundation plan is created, rooms included in the Living Area calculation generate a stem wall, grade beam, or slab foundation below them. Garage rooms generate slab foundations, but exterior rooms such as Decks, Courts and Balconies do not generate any foundation. See *Room Types on page 314*.

Interior foundation walls are not generated unless:

- They separate the area under a Slab or Garage room from the rest of the plan;
- They separate the area under a room specified as having a slab foundation from the rest of the plan;
- They define areas under rooms with different floor heights.
- A wall on Floor 1 is specified as a **Bearing Wall** in the Wall Specification dialog. See *Foundation Panel on page 302*.

> Note: To remove all or part of the concrete slab in the basement area, select a basement room and define it as Open Below in the Room Specification dialog.

Garages

When a foundation is generated based on the floor plan of Floor 1, a room on the first floor specified as either a Garage or Slab type will receive a stem wall or pier foundation with a slab floor and stem walls. If a monolithic slab foundation is generated, the room will receive a slab floor with curbs.

An opening placed in a wall defining a Garage will receive a cutout in the stem wall or curb that displays in plan view on the floor below provided that the stem wall or curb's Main Layer has a Concrete or Brick material type.

The width of the concrete cutout can be defined and you can specify whether the cutout displays in the Door or Window Specification dialog. See *Rough Opening Panel on page 422*.

By default, a room on Floor 1 specified as a Garage or a Slab will be assigned a lower floor height when the foundation is built. The amount that it is lowered depends on the foundation type:

- The floor height will drop the default thickness of the floor platform for Floor 1 plus 12" (300 mm) in a Walls with Footings or Grade Beams on Piers foundation.
- The floor height will drop 3 1/2" (88 mm) in a Monolithic Slab foundation.

These values are set in the Foundation Defaults dialog. See *Foundation Defaults on page 515*.

To build a Garage slab with stem walls

1. Before the foundation is generated, specify the room as a Garage or Slab.
2. Build an automatic Wall with Footings or Grade Beam on Piers foundation.

In the Floor 1 Garage's Room Specification dialog, **Floor Supplied by the Foundation Room Below** will now be checked. See *Structure Panel on page 330*.

By default, the program produces a 4" (100 mm) slab and 24" (600 mm) high stem walls around the garage. These stem walls are drawn on Floor 0 and will indicate the locations of any doors that extend into them.

To build a Garage slab with curbs

1. Before the foundation is generated, specify the room as a Garage or Slab.
2. Build an automatic Monolithic Slab foundation, specifying the required Lower Garage Floor value.

By default, the program produces a 4" (100 mm) slab and 3 1/2" (88 mm) high curb around the garage. The curbs are drawn on Floor 0, use the Default Foundation Wall Type, and will indicate the locations of any doors that extend into them.

The floor height of the garage and the stem wall or curb height can then be adjusted, if necessary, in the Garage room's Room Specification dialog. See *Structure Panel on page 330*.

Basement Rooms

When a foundation's type is Walls with Footings or Grade Beams on Piers, and it is assigned a Basement Ceiling Height of 48" (1200 mm) or greater, the resulting basement is automatically included in the Living Area calculation. It does not, however, have a floor or ceiling finish.

When a foundation is assigned a Basement Ceiling Height of 72" (1800 mm) or greater, the resulting basement is automatically created with a 4" (100 mm) concrete slab floor and a default Floor Finish like that on Floor 1. Similarly, it is automatically given a painted drywall Ceiling Finish. See *Foundation Defaults on page 515*.

Regardless of its ceiling height, however, you can specify a floor or ceiling finish for any room in the Room Specification dialog. See *Structure Panel on page 330*.

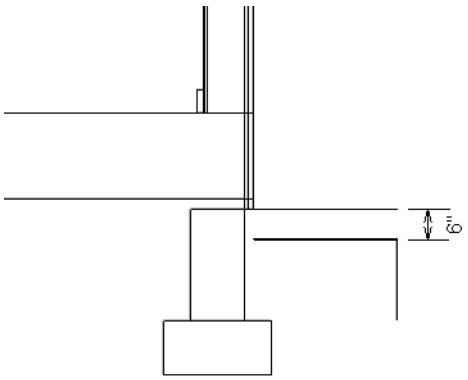
The resulting basement can be divided into separate rooms using **Interior Walls**  or any Wall Type you wish. If the rooms in a basement have different floor heights, it is best to separate them using walls specified as **Foundation Walls**  .

Foundations and the Terrain

By default, Home Designer automatically raises the structure in a plan a set distance above the terrain. See *Terrain Height vs Floor Height on page 899*.

In a plan with a foundation present, the terrain will be:

- 6" (187 mm) below the top of the stem walls or grade beams in a Walls with Footings or Grade Beams on Piers foundation.
- 8" (200 mm) below the top of the slab in a Monolithic Slab foundation.



The terrain is positioned 6" below the top of a foundation stem wall.

Not all foundations have these requirements, of course, so you can customize your foundation and terrain to suit your needs.

Daylight Basements

Daylight basements, also referred to as look-out basements, have walls that are tall enough for basement windows to be positioned above the terrain. They are often found in split level or split entry structures.

To create a daylight basement condition, build a stem wall foundation with a sufficiently tall Min Stem Wall Height, and modify these settings in the Terrain Specification dialog:

- Uncheck **Automatic**.
- Increase the **Elevation At** setting, which is the distance between the default floor height of Floor 1 and the terrain.

Walkout Basements

Walkout basements are a type of daylight basement typically located on sloped terrain. They feature walls that are above ground at the lower end of the slope so that a door can be positioned above the terrain at that end.

To create a walkout basement, build a stem wall foundation and modify these settings in the Terrain Specification dialog:

- Uncheck **Automatic**.
- Make sure **Flatten Pad** is unchecked.
- See *General Panel on page 912*.

You will also need to create sloped terrain and adjust the **Elevation At** and/or terrain data so that the terrain is at the appropriate height relative to the structure at both the high and low ends of the slope.

Stepped Foundations

Stepped foundations are usually built on sloping terrain. A stepped foundation will be produced automatically if more than one floor height is present on Floor 1 when the foundation is built.

In plan view, steps in stem wall and monolithic slab foundations are represented using S markers. See *Displaying Foundations on page 521*.

As with a walkout basement, you will need to build a stem wall foundation and modify these settings in the Terrain Specification dialog:

- Uncheck **Automatic**.
- Make sure **Flatten Pad** is unchecked.

- See *General Panel on page 912*.

You will also need to create sloped terrain and adjust the **Elevation At** setting and/or terrain data so that the terrain is at the appropriate height relative to the structure at both the high and low ends of the slope.

You can also create a stepped foundation by editing foundation rooms and walls. See *Stem Wall Height on page 522*.

The Slab Tools

Select **Build> Slab** to access the Slab Tools.

Slabs

Select **Build> Slab**> **Slab** or **Slab With Footing**, then either click or click and drag a rectangle to draw a slab. The Slab Tools are intended for generic purposes than foundations and should not be substituted for a foundation plan. See *Rectangular Polyline on page 247*.

A newly drawn **Slab** or **Slab With Footing** inherits the settings in the Slab Defaults or Slab with Footing Defaults dialog. Once created, slabs can be edited like other closed polylines. See *Editing Slabs on page 528*.

A slab is also created when the **Post with Footing** tool is used. See *Framing Tools on page 663*.

Piers and Pads

Piers and pads can be manually placed under walls, railings, or beams on any floor. Select **Build> Slab> Round Pier** or **Build> Slab> Square Pad** and click in plan view to place a pier or pad. They are also generated automatically when a Grade Beam on Piers foundation is created. See *Building a Foundation on page 519*.

For information about editing Round Piers and Square Pads, see *Editing Piers and Pads on page 530*.

Editing Slabs and Piers/Pads

Once created, slabs can be selected in 2D and 3D views both individually and as a group and can be edited using the edit handles, the Edit Toolbar, and the Slab Specification dialog. See *Slab Specification Dialog on page 528*.

Slabs can be edited like other closed-polyline base objects in both 2D and 3D views. See *Editing Closed Polyline-Based Objects on page 197*.

Using the Edit Tools

One or more selected Slabs can be edited in a variety of ways using the buttons on the Edit Toolbar. As with most objects, Slabs can be copied, replicated, moved, deleted, etc. See *The Edit Toolbar on page 122*.

Slabs and the Materials List

If a slab's material type is specified as Concrete or Volume, the materials list calculates the total volume of the slab and all footings. See *Define Material Dialog on page 772*.

Editing Slabs

Slabs can be selected in 2D and 3D views both individually and as a group and can be edited using the edit handles, the Edit Toolbar, and the Slab Specification dialog. See *Slab Specification Dialog on page 528*.

Using the Edit Handles

Slabs can be edited like other closed-polyline base objects in both 2D and 3D views. See *Editing Closed Polyline-Based Objects on page 197*.

Using the Edit Tools

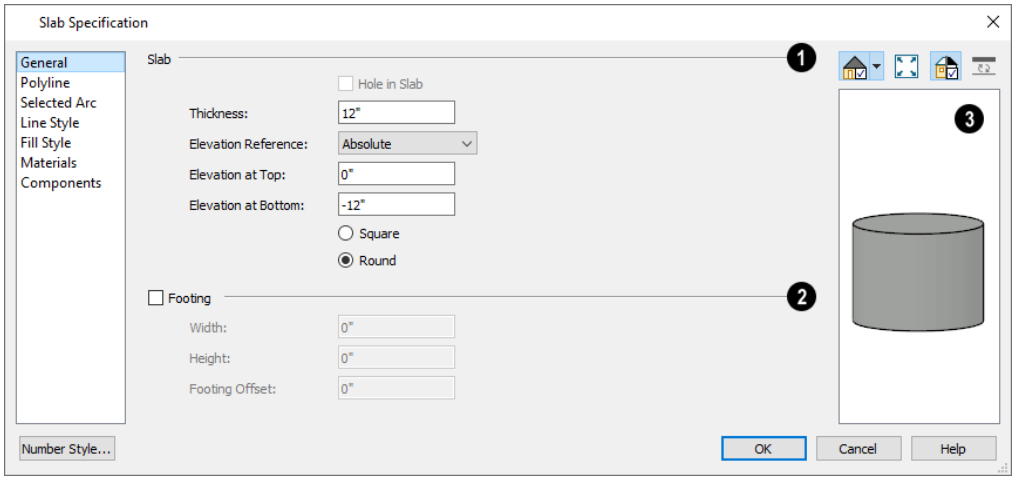
One or more selected Slabs can be edited in a variety of ways using the buttons on the Edit Toolbar. As with most objects, Slabs can be copied, replicated, moved, deleted, etc. See *The Edit Toolbar on page 122*.

Slab Specification Dialog

Select one or more Slabs and click the **Open Object** edit button to open the Slab Specification dialog.

The options in this dialog are similar to those in the Slab Defaults and Slab with Footing Defaults dialogs, but affect the selected Slab(s) only.

General Panel



1 Slab

Specify the characteristics of the selected **Slab**.

- Specify the **Thickness**, which is the measurement from the slab's top to bottom surfaces.
- Select the **Elevation Reference**, from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the slab's height **to Top**, which is of its top surface measured from the selected Elevation Reference.
  - Specify the slab's height **to Bottom**, which is the height of its bottom surface, measured from the Elevation Reference.

- When the selected slab is a Post Footing or Deck Post Footing, specify whether it is **Square** or **Round**. Not available for manually drawn slabs or if the slab's shape has been modified using the **Change Line/Arc** edit tool. See *Framing Tools on page 663*.

2 Footing

Specify the characteristics of the selected slab's **Footing**. Not available in the Slab Defaults dialog.

- Check **Has Footing** if you would like the slab to have a footing around the inside of its perimeter.
- Specify the **Height** and **Width** for the footing.
- Specify the **Footing Offset**, which is the distance that the footing extends out past the edges of the slab. A value of 0 aligns the outside of the footing with the outside of the slab.

3 Preview

A preview of the selected slab displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Polyline Panel

The Polyline panel reports the length of the selected Slab's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Slab in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Slab in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Slab in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Editing Piers and Pads

Round Piers and Square Pads can be selected individually and in groups in 2D and 3D views and edited using their edit handles and edit toolbars.

There are several ways to move piers and pads; however, they must always be positioned under a wall. A pier or pad can only be moved away from the wall it is placed beneath if it is moved to another wall.

Using the Mouse

In plan view, piers and pads can be edited like CAD lines. Three edit handles allow the pier or pad to be resized and moved along the wall it is placed beneath. See *Editing Line-Based Objects on page 187*.

In 3D views, piers and pads can be edited like CAD boxes. See *Editing Box-Based Objects on page 199*.

Using Dimensions

In plan view, piers and pads can also be moved using dimensions. See *Moving Objects Using Dimensions on page 361*.



If you move a foundation wall or beam, any piers or pads it contains will move with it.

Using the Edit Tools

A selected pier or pad can be edited in a variety of ways using the buttons on the Edit Toolbar. As with most objects, piers and pads can be replicated, moved, and deleted. See *The Edit Toolbar on page 122*.

Fireplaces



A selection of freestanding fireplace symbols is available in the Architectural Core Catalog. See *The Library on page 705*.



A masonry fireplace can be placed in or away from a wall by selecting the legacy **Fireplace** tool and then clicking in the drawing area.

- If created in a wall, it is considered a wall opening and can be moved or resized like a window or door.
- If created away from a wall, it moves and resizes similar to a cabinet.

The legacy **Fireplace**  tool can be added to the toolbars. See *Adding and Removing Buttons on page 123*.

The display of fireplaces is controlled in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

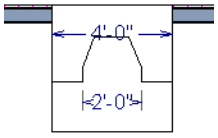
Fireplaces can be edited, moved, resized, and deleted similar other objects. See *Editing Objects on page 179*.

Built into a Wall

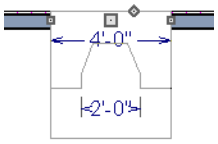
Flush and Mantle fireplace symbols are available in different styles in the Library Browser and can be positioned against a wall to create the front face of a built-in fireplace. For information about adding a chimney, see *Chimneys on page 534*.

To place a masonry fireplace in a wall, click the **Fireplace** button, then click on a wall. A fireplace is created with the outside of the fireplace flush with the outside of the wall.

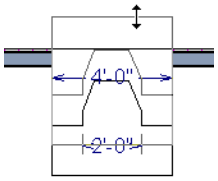
Fireplaces cannot be placed in a wall specified as Invisible or if the wall in question is on a locked layer. See *Locking Layers on page 153*.



A selected masonry fireplace inserted into a wall has four edit handles, all located along the wall.



Click the diamond-shaped Depth handle and drag toward the outside of the wall. The fireplace will stop when the firebox front is flush with the inside edge of the wall.



In 3D views, fireplaces placed in walls have five edit handles: a Resize handle along each edge and a Move handle at the center.

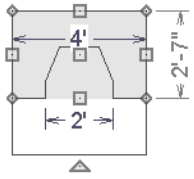
Fireplaces always face the interior when placed on an exterior wall. When placing a fireplace in an interior wall, click on the edge of the wall that you want the fireplace to face. The fireplace is created with the firebox on the same side as the wall edge you clicked on to create it.

Freestanding Fireplaces

A selection of freestanding metal and adobe fireplace unit symbols is available in the Library Browser.

To place a free-standing masonry fireplace, click the **Fireplace** button, then click in an open area away from a wall.

Both fireplace symbols and freestanding legacy masonry fireplace objects have ten edit handles when selected and may be rotated, resized, or moved in any direction, similar to the way CAD boxes can. See *Editing Box-Based Objects on page 199*.



Free-standing fireplaces can be selected and replaced with a symbol from the library by clicking the **Replace From Library** edit button. See *Replace From Library on page 730*.

Masonry Fireplace Foundations

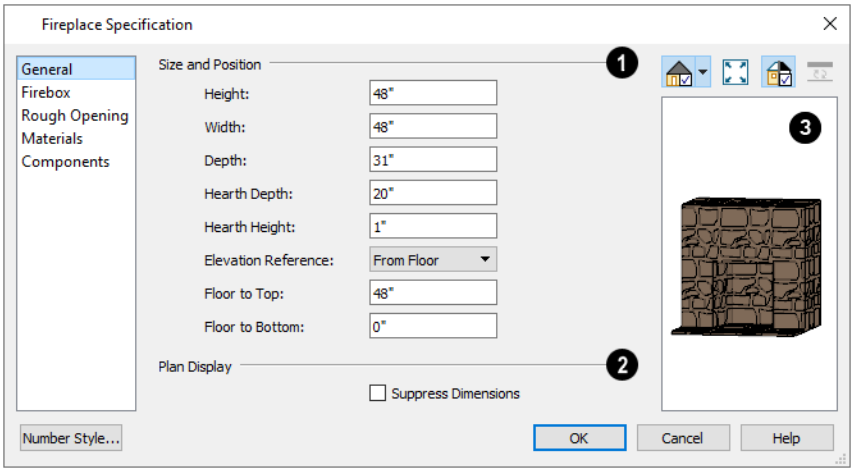
When a Walls with Footings or Grade Beams on Piers foundation is built, a fireplace foundation will be generated under any **Fireplaces** present on Floor 1. See *Building a Foundation on page 519*.

Fireplace foundations are the same material type as the original fireplace, but do not have a firebox or a hearth. Fireplace foundations can be edited or deleted as needed. A firebox and hearth can be added in the Fireplace Specification dialog. See *Fireplace Specification Dialog on page 532*.

Fireplace Specification Dialog

Select a legacy Fireplace and click the **Open Object** edit button to display the Fireplace Specification dialog. Multiple fireplaces can be group-selected, but all objects in selection group must be either placed in a wall or free-standing.

General Panel



1 Size and Position

- Specify the **Height**, **Width**, and **Depth** of the fireplace.
- Specify the **Hearth Depth**. This is measured from the front of the fireplace out into the room. To eliminate the hearth altogether, enter a zero for this value.
- Specify the **Hearth Height**, relative to the floor in the room that the fireplace faces.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the height **to Top**, measured from the selected Elevation Reference.
  - Specify the height **to Bottom**, measured from the selected Elevation Reference.

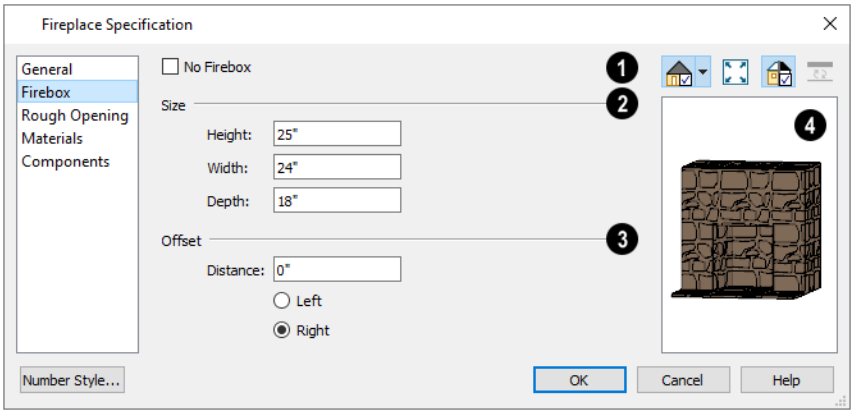
2 Plan Display

Check **Suppress Dimensions** to turn off the display of the selected fireplace's width and firebox width dimensions in plan view.

3 Preview

The preview of the fireplace updates as changes are made.
See *Dialog Preview Panes on page 21*.

Firebox Panel



1 No Firebox

Check **No Firebox** to eliminate the firebox from the fireplace. This is checked by default for a fireplace object generated on Floor 0 to serve as a solid matching base for a fireplace on Floor 1.

2 Size

- Specify the firebox's **Height** and **Width**.
- Specify the **Depth** of the firebox.

3 Offset

- Enter the offset **Distance**, which is how far the firebox is offset from the fireplace center. A value of 0 centers the firebox in the fireplace.
- **Offset to Left/Right** - Choose to offset the firebox to the left or to the right.

4 Preview

The preview of the fireplace updates as changes are made. See *Dialog Preview Panes on page 21*.

Rough Opening Panel

The settings on the Rough Opening panel are also found on the panel of the same name in the Door Specification dialog. See *Rough Opening Panel on page 422*.

Materials Panel

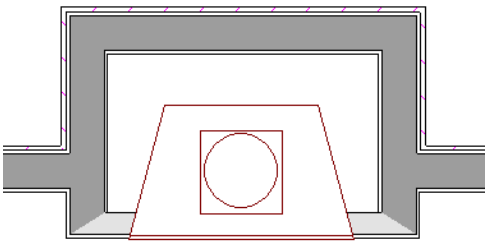
For information about the settings on this panel, see *Materials Panel on page 760*.

Components Panel

The information on the Components panel can be used in the materials list. For more information, see *Components Panel on page 967*.

Library Fireplaces

A variety of fireplace symbols are available in the library. Flush fireplaces are designed to snap to wall surfaces. Some fireplace symbols can be enclosed by walls or positioned to project through a wall. See *Placing Library Objects on page 727*.



Always check the manufacturer's product information for the framing and clearance requirements of the fireplace unit you plan to use, and design your plan accordingly

Chimneys

Chimneys can be created using a variety of methods.

Masonry Fireplace Chimneys

To create a chimney on a masonry fireplace

1. Select the fireplace in a 3D view.
2. Ctrl/⌘ + drag the top edge of the chimney upward through all the floors and the roof until it is to the desired height. See *Unrestricted Movement on page 168*.
3. When the chimney is approximately the correct height, select the fireplace, click the **Open Object** edit button, and type in the exact height.

Chimney Chases and Caps

There are two ways to draw a chimney chase:

- Place a closed box Geometric Shape or Soffit over the chimney chase, resize it to match, then increase its height either in its specification dialog or in a 3D view using the same method as extending a masonry fireplace.
- Use walls to define the chimney chase as a room area, making sure these walls are aligned between floors. The chimney chase "room" on the uppermost floor should have a much higher ceiling than the other rooms on that floor and should also have no ceiling or roof. See *Room Specification Dialog on page 328*.

A selection of chimney tops is available in the library. In addition, custom chimney caps can be made using Geometric Shapes and/or Soffits. See *Other Objects on page 749*.

Multiple Floor Levels

Chapter 21

When a new plan file is opened in Home Designer, two floor levels are present: Floor 1 and the Attic Floor. You can add more floors whenever you like: up to 5 total. Once created, floors can also be copied and deleted.

Home Designer also supports special floors for foundations and attics. Only one foundation level and one Attic can exist in a plan. Foundations are discussed in their own chapter. See *Foundations on page 515*.

Floor Level Defaults Dialogs

There is a Floor Defaults dialog for each floor level in a plan file aside from the Attic floor. To access these dialogs, select **Edit> Default Settings**. Click the arrow to the left of "Floors and Rooms" to expand the category, then expand the "Floor Levels" subcategory. Select one or more floor levels and click the **Edit** button to open the Floor Defaults dialog for that floor or floors. See *Default Settings vs Preferences on page 83*.

- Floor Defaults can also be accessed by double-clicking the **Floor Tools** parent button.
- In addition, the **Floor Defaults** button can be added to the toolbars. See *Toolbar Customization Dialog on page 125*.

The Floor Level Defaults dialog also opens whenever you add a new floor to the plan. See *Adding Floor Levels on page 536*.

The Floor Level Defaults dialog does not open when you build a foundation; however, the **Floor 0 Default** settings are created based on the current Foundation Defaults. See *Foundation Defaults on page 515*.

The settings in each Floor Level Defaults dialog are also found in the Room Specification dialog, but control the default settings for all rooms on the floor level in question. The settings here also control the default height of individual walls as they are drawn on that floor. See *Room Specification Dialog on page 328*.

> Note: The default floor height for Floor 1 is 0. It can be modified in the Room Specification dialog, but not in the Floor 1 Defaults dialog. See *Floor and Room Defaults on page 313*.

Structure Panel

The settings on the Structure panel are similar to those in the Room Specification dialog. See *Structure Panel on page 330*.

Moldings Panel

The settings on the Moldings panel are similar to those in the Room Specification dialog. See *Moldings / Rails Panels on page 702*.

Fill Style Panel

The settings on the Fill Style panel are similar to those in the specification dialogs for many objects throughout the program. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel are similar to those in the specification dialogs for many objects throughout the program. See *Materials Panel on page 760*.

Floor Tools

Select **Build> Floor** to access the following floor tools:

Build New Floor builds a new floor; a new floor can be generated based upon the perimeter of the floor below or a blank floor can be created and drawn from scratch. See *Adding Floor Levels on page 536*.

Insert New Floor inserts a new floor below the Current Floor. See *Adding Floor Levels on page 536*.

Delete Current Floor removes the Current Floor from the plan. For more information, see *Deleting Floor Levels on page 539*.

Build Foundation opens the Foundation Defaults dialog and build a foundation floor. See *Building a Foundation on page 519*.

Delete Foundation removes the foundation from the plan. See *Deleting Foundations on page 524*.

Rebuild Walls/Floors/Ceilings prompts the program to recalculate the relationship between the walls, floors, and ceilings in your model. See *Rebuilding Walls, Floors and Ceilings on page 545*.

Adding Floor Levels

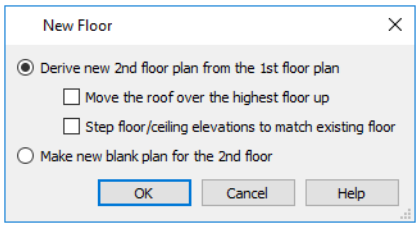
When a new plan file is opened in Home Designer, two floor levels are present: Floor 1 and the Attic Floor. You can add up to 5 total living floors, as well as create a foundation below Floor 1.

Floors can be added whenever you like; and once created, they can also be copied and deleted.

> Note: Home Designer allows only one floor, the foundation/basement, below Floor 1. See *Foundations on page 515*.

Build New Floor

New floors can be created in plan view as well as in 3D views, and are always added above the top living floor. To create a new floor, select **Build> Floor> Build New Floor**.



- **Derive new 2nd floor plan from the 1st floor plan** creates a new top floor with exterior walls generated directly over the exterior walls of the floor below. Wall Types and roof directives associated with the walls on the floor below are duplicated; however, interior walls are not. See *Roof Panel on page 299*.

- Check **Move Highest Floor's Roof Up** to move any roof planes displaying on the highest floor in the plan up one floor when the new floor is created. Roof planes displaying on floors other than the top floor are unaffected. This option is only available if there are roof planes built on the top floor and is not available when **Auto Rebuild Roofs** is enabled. See *Build Roof Dialog on page 597*.

> When Move highest floor roof up is checked, roof planes on the top floor will move even if the "Roof Planes" layer is locked and manually edited roof planes are set to be retained. See *Roof Panel on page 598*.

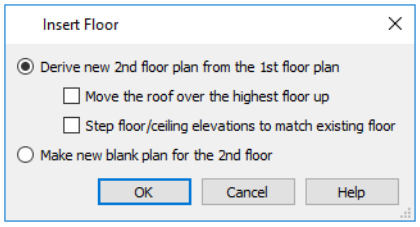
- Check **Step floor/ceiling elevations to match existing floor** to maintain all ceiling heights on the existing floor by stepping floor heights on the new floor to match. Ceiling heights on the new floor also become stepped accordingly. See *Floor and Ceiling Platforms on page 542*.
- **Make new (blank) plan for the # floor** creates a new top floor that is blank. This option is typically useful only if none of the exterior walls on the new floor will be directly above the exterior walls on the floor below. If you choose this method, it may be helpful to turn on the Reference Floor when drawing walls on the new floor. See *The Reference Display on page 546*.

When you click OK, the Floor Defaults dialog for the newly created floor opens. Make any necessary changes to the floor structure, moldings, or materials and click OK. See *Floor Level Defaults Dialogs on page 535*.

The new floor becomes the Current Floor in plan view. If, however, the new floor is created in a 3D view, the camera remains on its original floor and does not move.

Insert New Floor

A floor level can also be inserted beneath the Current Floor in both plan and 3D views. Begin by going to the floor level you would like to insert a floor under to make it the Current Floor, then select **Build> Floor> Insert New Floor**. See *The Current Floor on page 545*.



- Select **Derive new # Floor plan from the # Floor plan** to insert a new floor below the Current Floor, with exterior walls based on those of the Current Floor.
- Check **Move Highest Floor's Roof Up** to move any roof planes displaying on the highest floor in the plan up one floor when the new floor is created. Roof planes displaying on floors other than the top floor are unaffected. This option is only available if there are roof planes built on the top floor and is not available when **Auto Rebuild Roofs** is enabled. See *Build Roof Dialog on page 597*.

> When Move highest floor roof up is checked, roof planes on the top floor will move even if the "Roof Planes" layer is locked and manually edited roof planes are set to be retained. See *Roof Panel on page 598*.

- Check **Step floor/ceiling elevations to match existing floor** to maintain the floor and ceiling heights on the existing floors by stepping floor and ceiling heights on the new floor to match. See *Floor and Ceiling Platforms on page 542*.
- Select **Make new (blank) plan** to insert a blank floor below the Current Floor.

Adding a Foundation

To add a foundation, select **Build> Floor> Build Foundation** . See *Building a Foundation on page 519*.

Displaying Floor Levels

Home Designer allows you to view the floor levels in a plan in a variety of ways.

In Plan View

In plan view, only one floor level can be active for editing at a time. This is referred to as the Current Floor. See *The Current Floor on page 545*.

In addition to the Current Floor, one other floor can be displayed for reference purposes: the Reference Floor. Objects on the Current Floor can snap to those on the Reference Floor, helping you align objects. See *The Reference Display on page 546*.

Floor and ceiling platforms do not display in plan view. When floor and/or ceiling framing is present, its display can be turned on; however, other components of floor and ceiling platforms like sheathing, drywall, and finish materials, cannot.

In 3D Views

In 3D views, all floor levels in a plan are visible, from the foundation up to the attic. There are two exceptions:

Orthographic and **Perspective Dollhouse Views**, which show the Current Floor, not including its ceiling, plus any floors beneath it.

Wall Elevation views, which show a wall on a single floor, in a single room.

See *3D View Tools on page 783*.

In the Materials List

The materials that make up floor and ceiling platform assemblies are listed under different Categories in the Materials List:

- **Subfloor** - Lists floor framing and structural subflooring materials specified in all Floor Structure Definitions in the current plan. See *Floor and Ceiling Platform Definitions on page 542*.
- **Flooring** - Lists flooring and subflooring materials specified in all Floor Finish Definitions in the current plan.
- **Framing** - Lists ceiling framing and any other materials specified in all Ceiling Structure Definitions in the current plan.
- **Wall Board** - Lists ceiling finish materials specified in all Ceiling Finish Definitions in the current plan.
- **Insulation** - Floor insulation is calculated for all rooms that have a floor, and ceiling insulation is calculated for all rooms that have a ceiling - regardless of the Floor or Ceiling Structure Definition. When a ceiling is not present, insulation is calculated for the roof. See *Structure Panel on page 330*.
- **Foundation** - Lists the concrete and mesh for all Floor Structure Definitions in the current plan with a layer of concrete material. See *Materials and the Materials List on page 768*.

See *Materials Lists on page 954*.

Exchanging Floors

Select **Build> Floor> Exchange With Floor Above** or **Exchange With Floor Below** to swap the Current Floor with the floor above or below.

The floor that was moved becomes the Current Floor at its new location. You can easily move a floor up or down several floors by using either one of these buttons repeatedly.

Copying Floors

The **Edit Area** tools can be used to make copies of entire floors in a plan. See *Edit Area Tools on page 213*. You can use these tools to:

- Make a copy of an existing floor to be pasted onto a new floor.
- Make a copy of all existing floors in a plan to be pasted into a different plan.

You can also copy the information on a floor by pressing ***Ctrl/⌘ + A*** **(Select All)**, then using **Copy** and **Paste Hold Position**. See *Paste Hold Position on page 149*.

Copying Between Plans

While you can copy and paste floors from one plan file to another, this is not always the best approach.

- To make a copy of the plan for backup or your records, use **Save As** to save the file using a new name. See *Exporting and Backing Up Files on page 68*.
- To copy the model into another plan with multiple structures, consider exporting it as a symbol and importing it into the new plan. See *Symbol Objects on page 733*.

Deleting Floor Levels

Select **Build> Floor> Delete Current Floor** to remove the Current Floor from the plan. If there is a floor above, it becomes the Current Floor; if there is no floor level above, the floor level below becomes the Current Floor.

To delete Floor 0, select **Build> Floor> Delete Foundation**. You can delete the foundation without actually being on Floor 0. Floor 0 cannot be deleted while **Auto Rebuild Foundation** is turned on. See *Deleting Foundations on page 524*.

> When a floor is deleted, all objects on that floor are deleted with it, including locked roof planes and any other objects on locked layers. See *Locking Layers on page 153*.

Floor and Ceiling Heights

Different rooms on the same floor level can have their own floor and ceiling heights, allowing you to create a variety of structural conditions and styles. See *Special Ceilings on page 326*.

Custom Floor and Ceiling Heights

Default floor and ceiling heights are defined in the Floor Defaults dialog for each floor, including the foundation. Use the Floor Defaults dialog to change these values on a floor-by-floor basis. See *Floor and Room Defaults on page 313*.

Use the Room Specification dialog to set floor heights on a room-by-room basis. See *Structure Panel on page 330*.

In order to raise or lower an area's floor or ceiling height without affecting adjacent areas, you must give that space its own room definition. To create room definition without enclosing an area with solid walls, use **Railings** . See *Room Definition on page 312*.



Different floor and ceiling heights can be assigned to adjacent rooms.

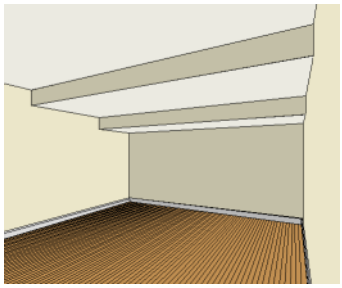
Invisible walls and railings will fill in the vertical space between floor platforms of different heights as long as **Generate Between Platforms** is checked in their specification dialog. See *General Panel on page 295*.

Stairs are able to locate and snap to changes in floor height between rooms just as they are between floor levels. See *Straight Stairs on page 548*.

In 3D views, you can adjust the default floor and ceiling height for the entire floor, the floor and ceiling height for an individual room, or the top and bottom heights of an individual wall. See *In 3D Views on page 318*.

Ceiling and floor heights are interrelated. Changing the floor height in one room can affect ceiling heights of the rooms below.

- If a room's floor is lowered, its ceiling height is increased while the ceiling below that room drops.
- If the floor is raised, the ceiling height decreases while the ceiling below that room is raised.



A room's ceiling will be stepped if the rooms on the floor level above have more than one floor height.

In a situation like this, a Lowered Ceiling can be used to cover "steps" made by different floor heights on the floor above.

Dropped Ceilings and Raised Floors

The structure of a dropped, or suspended, ceiling can be specified in the Ceiling Finish dialog either for a room or the defaults for a floor. See *Floor and Ceiling Platform Definitions on page 542*.

To create a framed dropped ceiling

1. Select a room and click the **Open Object** edit button.
2. On the STRUCTURE panel of the Room Specification dialog, click the **Ceiling Finish** button. See *Structure Panel on page 330*.
3. In the **Ceiling Finish** dialog:
   - Check **Frame Lowered Ceiling**.
   - Specify the depth of the **Air Gap**, or the distance between the bottom of the ceiling platform and the top of the lowered ceiling framing.
   - Specify the **Framing Thickness**, which is the depth of the framing layer.

A dropped ceiling composed of a metal grid requires only two layers: one for the plenum and one for the tiles. To achieve this, set the Framing Thickness to 0” (mm).

Shelf Ceilings

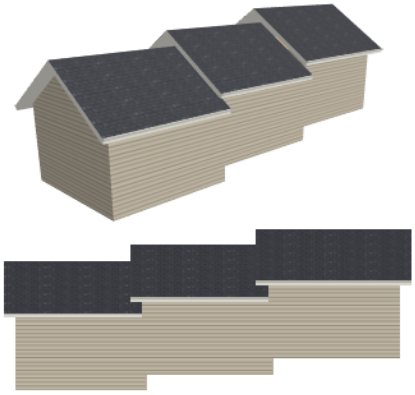
In rooms with high or vaulted ceilings, it is possible to have a smaller room such as a closet that has a lower ceiling. By default, the area above the flat ceiling will be enclosed by automatically-generated Attic walls. See *Attic Walls on page 285*.

If you prefer, you can specify that these Attic walls be suppressed and an open space be created instead. This condition is referred to as a **Shelf Ceiling**, or plant shelf, and can be specified in the Room Specification dialog of the room with the lower ceiling. Rooms with Shelf Ceiling specified usually have flat ceilings over them; however, this is not required. See *Structure Panel on page 330*.

Split Levels

A split level can be created by raising or lowering the floor and ceiling heights of various areas of the plan.

In the following example, the lowest floor height is 0 inches, the next is 24 inches, and the next is 48 inches. The ceiling height in each room is set at 109 inches. See *Split Levels on page 544*.



A split level structure is created by adjusting floor and ceiling heights.

Floor and Ceiling Platforms

In many ways, rooms in Home Designer are defined by the floor platforms below them and the floor and/or ceiling platforms above.

All floor and ceiling platform and finish materials are calculated in the Materials List. See *Materials Lists on page 954*.

Floor vs Ceiling Platforms

Floor and ceiling platforms are not the same thing in Home Designer. Floor platforms have living space above them and are designed to be weight-bearing. Ceiling platforms, on the other hand, have living space below them but not above them. They are not designed to bear weight and are typically less strong - and less thick - than floor platforms.

Floor and Ceiling Platform Definitions

Floor and ceiling platforms are made up of layers of different materials such as framing, subflooring or drywall, and finish materials. They are defined in the Floor and Ceiling Structure Definition dialogs. See *Material Layers Definition Dialogs on page 753*.

> Note: Subflooring refers to the topmost layer(s) of a floor structure not specified as Framing.

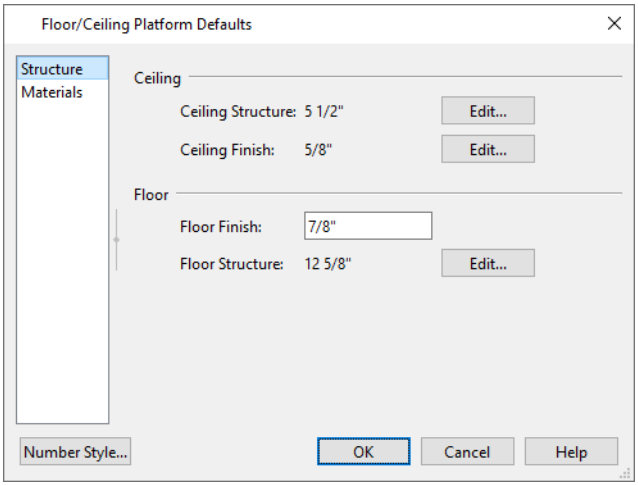
Floor and Ceiling Platform Definitions play a role in determining floor and ceiling heights. Ceiling Finish Definitions can be used to create dropped ceilings. See *Floor and Ceiling Heights on page 539*.

In addition to the structural layers of a platform, floors and ceilings also have a finish layer. You can specify floor and ceiling finish materials for an entire floor or individual room on the MATERIALS panel of either the Floor Level Defaults or Room Specification dialog. See *Materials Panel on page 760*.

Floor/Ceiling Platform Defaults Dialog

The plan-wide defaults for all floor and ceiling platforms are set via the Floor/Ceiling Platform Defaults dialog. Floor and ceiling platform depths contribute to the overall height of a structure, so their default values should be set as early as possible. See *Manual Framing Defaults Dialog on page 658*.

Structure Panel



- The total depth of each assembly is reported for reference.
- Click the **Edit** button beside each assembly type to define its composition in the Material Layers Definition dialogs. See *Material Layers Definition Dialogs on page 753*.
- **Floor Finish** is composed of a single layer. Type the desired default depth in the text field.

Dynamic Platform Defaults

Floor and **Ceiling Structure** and **Finish** definitions assigned to rooms have a hierarchy of dynamic defaults. These defaults help you maintain consistency throughout each model. See *Dynamic Defaults on page 84*.

- The plan-wide defaults for platforms are set in the Floor/Ceiling Platform Defaults dialog. See *Manual Framing Defaults Dialog on page 658*.
- The plan-wide defaults can be overridden for each floor level in the Floor Level Defaults and Framing Defaults dialogs.
- Floor-wide platform defaults can be overridden in the Room Type Defaults dialogs. See *Room Types on page 314*.
- The platform defaults for Room Types can be overridden for individual rooms in the Room Specification dialog. See *Structure Panel on page 330*.
- The settings for individual rooms can be overridden by **Joist Direction Lines**. See *Joist Direction Lines on page 671*.

Materials Panel

The settings on this panel affect the appearance of floor and ceiling surfaces in 3D views. See *Materials Panel on page 760*.

Floor and Ceiling Finishes and the Material Painter



If you use the **Material Painter** to change a room's floor or ceiling finish material, it will add that material to the room's Floor or Ceiling Finish Definition. Changes to a Deck room's planking or framing will affect its Floor Structure Definition. See *Material Painter® Tools on page 758*.

When the Material Painter is used to add a floor or ceiling finish material in a room where one does not currently exist, a new finish layer is created and the material Depth is used as its Thickness. See *Materials List Panel on page 777*.

Stepped Floor and Ceiling Platforms

Each floor has default floor and ceiling heights. You can, however, use the Room Specification dialog to specify floor and ceiling heights on a room by room basis to create platform areas with different framing attributes, including stepped floors and ceilings. See *Structure Panel on page 330*.

If you require a single floor platform with a uniform height and thickness but different ceiling heights for the rooms below, specify a lowered ceiling using the Ceiling Finish Specification dialog. See *Lowered Ceilings on page 326*.

Either way, by default, any gap between floor and ceiling platforms that step at a railing or invisible wall is closed off by a short section of solid wall. If you require a gap between the platforms, either select a single-layer Wall Type or uncheck **Generate Between Platforms** in the Wall or Railing Specification dialog. See *General Panel on page 295*.

Joist Direction Lines



By default, automatically-generated floor and ceiling joists will run in the direction that results in the shortest span between beams. A **Joist Direction** line allows you to define the direction that joists in a particular floor or ceiling platform run, regardless of span. See *Joist Direction Lines on page 671*.

Platform Edges

Typically, floor and ceiling platforms are built so that they bear on top of walls. The edges of the platform structures extend through exterior walls to the layer of the Wall Type Definition with the **Build Platform to This Line** setting. See *Wall Types on page 288*.

- For framed walls, the **Build Platform to This Line** layer is set as the outside of the wall's Main Layer,
- For concrete walls, it's the inside of the wall's Main Layer.
- The platforms of rooms with raised floors and/or lowered ceilings build in the same manner: to the **Build Platform to This Line** layer of the Wall Type assigned to the railing or invisible wall defining the room. See *Floor and Ceiling Heights on page 539*.

For a given Wall Type, you can specify a different **Build Platform to This Line** wall layer surface provided that it is on the exterior side of the Main Layer.

In addition, you can specify that individual walls build through floor and ceiling platforms in the Wall Specification dialog. See *General Panel on page 295*.

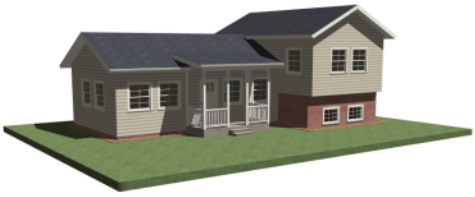
Split Levels

Both split level floor plans and split level entries can be created by controlling the floor and ceiling heights of individual rooms in a multiple story structure.

For more detailed information about both types of structure, visit HomeDesignerSoftware.com.

Split Level Floor Plans

A split level, or tri-level, structure is a building where the floor level in one part of the plan is located approximately halfway between the floor and ceiling levels of another part of the plan.



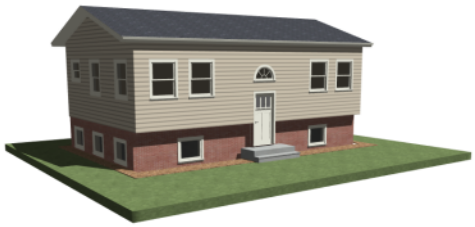
To create a simple split level plan

1. Draw a simple rectangular structure divided into two separate halves by an interior wall.
2. Select one of the rooms and click the **Open Object** edit button. See *Room Specification Dialog on page 328*.
3. Raise the **Floor Height** then press the ***Tab*** key.
4. Restore the **Relative Rough Ceiling** to the default value, then click OK.
5. Build a stem wall foundation. See *Foundations on page 515*.
   - The foundation under the room with the lower floor height will have the specified Min Stem Wall Height.
   - The foundation under the room with the raised floor will have taller stem walls.
   - Both can be edited in the Room Specification dialog.
6. If you add a Floor 2, note that the **Ceiling Height** in the room on Floor 1 will be reset to the default value.

- To maintain a stepped condition on multiple floors, return to this room and set the **Relative Rough Ceiling** back to using the default.

Split Level Entries

A split level entry, or divided entry, is characterized by an entry door that opens onto a landing positioned halfway between the basement floor and first floor levels.



To create a simple split level entry

1. Create a plan file with a full basement at the location of the entry door. See *Basement Rooms on page 525*.
2. Go to Floor 0 and draw a stair **Landing** at the location of the entry. See *Landings on page 559*.
3. Specify the desired height of the landing. See *Stair Landing Specification Dialog on page 589*.
4. Draw stairs upward from the basement floor to the landing.
5. Draw a second stair section from the landing upward.
6. Select the stairs and click the **Auto Stairwell** edit button. See *Creating a Stairwell on page 573*.

Split level entries are often associated with daylight basements. See *Daylight Basements on page 526*.

Rebuilding Walls, Floors and Ceilings

When you make a change to the walls or to the floor or ceiling platforms in your plan, they may not immediately resize or move in the 3D model. The program does detect such changes, though, and the next time you generate a 3D or section/elevation view, walls, floors and ceilings are rebuilt.

By default, walls, floors and ceilings are also rebuilt when an automatic roof is generated. See *Build Roof Dialog on page 597*.

You can direct the program to rebuild walls, floors, and ceilings at any time by selecting **Build> Floor> Rebuild Walls/Floors/Ceilings**.

The Current Floor

In a given plan view window, only one floor level can be active at any given time. The active floor is referred to as the **Current Floor**, and it is the only floor on which objects can be edited.

If you would like to view two different floor levels side by side, open a second plan view, navigate to the desired floor, and then tile the two views. Although both are visible, only one of these view windows is active. See *Working in Multiple Views on page 133*.

Floor Up / Floor Down



If you are working with more than one floor, you can select **Tools> Floor/Reference Display> Up One Floor** or **Down One Floor** to switch from one floor to another.

You can change the Current Floor in floor plan, cross section/elevation and 3D views. The Current Floor number is reported on the **Change Floor/Reference** button, which can be found between the **Down One Floor** and the **Up One Floor** buttons.

Floors become available once they have been built. The Attic and foundation levels are also accessible using these tools.

Change Floor / Reference

If there are multiple floors, select **Tools> Floor/Reference Display> Change Floor/Reference** to open the Change Floor/Reference dialog, where you can select both the Current Floor and which floor is used in the Reference Floor, as well as control the appearance of the Reference Floor. See *The Reference Display on page 546*.

The Attic Floor

Home Designer automatically creates a floor above the top numbered floor level of each plan. This floor is called the Attic floor and has only one purpose: to provide a space for automatically generated Attic walls. See *Attic Walls on page 285*.

In some situations, you may find it necessary to draw one or more walls on the Attic floor; however, even if you enclose an area with walls, rooms cannot be created on this floor level. If you wish to create an attic loft or bonus room in your plan, you must do so on a numbered floor level.

Because the Attic floor is not meant to be a living area, a warning message will display if you try to draw walls or other objects on this floor level.

The Reference Display



When a model has more than one floor level, it is often helpful to see how they relate to each other in plan view. Select **Tools> Floor/Reference Display> Reference Display** to turn on the display of an additional reference floor along with the Current Floor.

Objects on the Reference Floor cannot be selected or edited.

If the Reference Floor Display is turned on when a view is printed, it will be included in the printed output. See *Displaying Objects on page 986*.

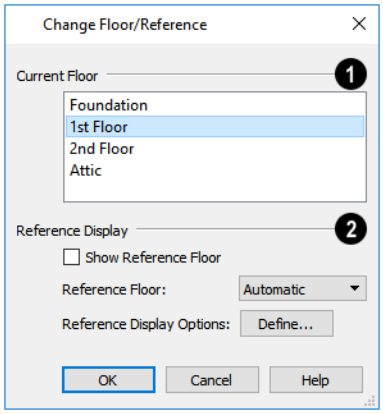
If the Reference Floor is on when a plan view is sent to layout, it is always on in that layout view and is not affected if it is turned off in the plan. See *Keeping Layout Views Current on page 974*.

Change Floor / Reference Dialog

Select **Tools> Floor/Reference Display> Change Floor/Reference** or click the toolbar button that reports the current floor level. See *The Current Floor on page 545*.

In the Change Floor/Reference dialog, you can specify which floor level is the Current Floor. You can also specify a Reference Floor from one or more different plan files, multiple Reference Floors, and Reference Floor layer sets and drawing order here, as well.

When this dialog is accessed from a camera view, only the Current Floor options will be active.



1 Current Floor

The **Current Floor** is highlighted here. Select another floor from the list to make it the Current Floor instead.

2 Reference Display

These settings are only available when a plan view is active.

- Check **Show Reference Floor** to turn on the display of the Reference Floor.
- Choose the current **Reference Floor** from the drop-down list. When "Automatic" is selected, the floor level below the Current Floor is always used; if there is no floor below, the floor above is used instead.
- Click the **Define** button to open the Layer Display Options dialog and change the settings for the Reference Floor Layer Set. See *Layer Sets on page 155*.

Stairs, Ramps, and Landings

Chapter 22

Staircases can be composed of one or more straight or curved stair sections, ramps, and landings. Stairs and ramps can be drawn, selected and edited in 2D and 3D views.

Starter treads can be defined, stair sections can be flared, treads can be wrapped, and curved sections can be turned into winders.

Landings can be created automatically or manually and their shape customized. You can edit an existing landing, or create a landing from a closed CAD polyline. Landing heights can be defined or you can let them automatically adjust as needed.

Stairwells can be created automatically or manually and can be seen in 3D views.



Local building and fire authorities must be consulted for specific stair construction codes and access requirements.

Stair and Ramp Defaults

The purpose of interior stairs is to provide passage from one floor platform to another, so the attributes that influence floor heights - including ceiling heights, floor platform thicknesses, and floor finish materials - also influence the structure of stairs. When considering a staircase's structure, bear in mind that riser height is directly dependent on the distance from one floor platform to another.

When **Automatic Heights** are used, stairs are built so that they rest on the top of the floor structure of the floor where they are drawn, and build up to the top of the floor structure on the floor above. Risers are measured to the floor finish surfaces on both floors. See *Floor and Ceiling Platform Definitions on page 542*.

Ramps are built in a similar manner: interior ramps bear on the floor structure, and when **Automatic Heights** are used, the top surface of both interior and exterior ramps locates floor finish surfaces.

The Stair Tools



Select **Build> Stairs** to access the Stair Tools.

Draw Stairs



To draw a straight staircase select **Build> Stairs> Draw Stairs**, then click and drag in floor plan or a 3D view. You can also click once to place a staircase that extends from the current floor up to the next floor. See *Drawing Stairs and Ramps on page 551*.

Straight Stairs



Select **Build> Stairs> Straight Stairs**, then click to create stairs between the current floor and the floor above. To create stairs between two floor platforms on the current floor, click on the low side, within a few feet of where the floor changes height.

- If you click on the low side of a floor platform defined by a railing, a doorway will be created in the railing, adjacent to the stairs.
- If you click on the low side of a floor platform defined by a wall, stairs will be created but a doorway will not.
- If you click at a location that is not near the edge of a floor platform, a full height staircase will be created.

Curved Stairs



Select **Build> Stairs> Curve to Left** or **Curve to Right** and click once in plan view to place a curved staircase. See *Curved Stairs and Ramps on page 551*.

L-Shaped Stairs



Select **Build> Stairs> L-Shaped Stairs**, then click to create two equal stair sections that form a 90° corner and are connected by a landing. See *L- and U-Shaped Stairs on page 552*.

U-Shaped Stairs



Select **Build> Stairs> U-Shaped Stairs**, then click to create two stair sections that form a 180° turn and are connected by a landing.

Landing



Select **Build> Stairs> Landing** to draw a landing, which is a platform connecting two or more stair sections. See *Landings on page 559*.

There are two ways to create a landing using this tool:

- Click once to place a landing measuring 39” (975 mm) on each side.
- Click and drag to draw a rectangular landing sized as needed. See *Polylines on page 244*.

You can also create a landing by converting a CAD polyline. See *Convert Polyline on page 211*.

Ramp



Select **Build> Stairs> Ramp** to draw a sloped ramp. By default, ramps are drawn at a 1:12 slope to a maximum height of 30” (760 mm). See *Drawing Stairs and Ramps on page 551*.

Spiral Stairs



In the Library Browser, browse to Core Catalogs> Architectural> Spiral Stairs to access a selection of spiral staircase fixtures. Select the object that you want, then click in any view to place it in the plan. See *The Library on page 705*.

Because spiral staircase symbols are fixture symbols, they do not have an Auto Stairwell edit tool. An opening in the floor above a spiral staircase must be created manually. See *Creating a Stairwell on page 573*.

Anatomy of a Staircase

Stairs as well as ramps are often described in terms of **rise** and **run**. Rise is typically between 6" and 8", and the run between 10" and 12". In metric plans, rise is 177 to 190 mm, and the run is about 250 mm. Whenever possible, Home

Designer will automatically apply reasonable rise and run values that meet most building codes to stairs and ramps as they are drawn.

In Home Designer, staircases automatically have a consistent rise and run along their length because this is also a typical requirement of most building codes. When this is not desired, however, stairs and ramps can be divided into multiple sections subsections. See *Stair and Ramp Sections and Subsections on page 556*.

Staircase Terminology

Balusters - The vertical members that run between the handrail and the treads or bottom rail.

Bracket - Decorative L-shaped supports on the exposed side of stairs below each tread.

Landing - A platform connecting two or more stair sections.

Newels - The end post of a stair railing located at landings and the beginnings and endings of new stair sections.

Rise - The height of a riser, measured from tread surface to tread surface, Also referred to as Unit Rise.

Rise Angle - The angle of the staircase or stair section, defined by a line drawn through the back surfaces of its treads.

Riser - The vertical stair member located between the treads. Risers may be solid or open. When open, the front surfaces of the stringers are considered the risers.

Run - The depth of a tread, measured from riser surface to riser surface. Run does not include the Tread Overhang. Also referred to as Unit Run.

Runner - The carpet that runs down the center of the staircase.

Shoe - The bottom railing, placed on the landing floor, that anchors the balusters at landings.

Stringer - The inclined support member of a staircase that supports the treads and risers.

Tread - The horizontal member of a stair that the foot is placed on.

Tread Overhang - The portion of a tread extending past the front surface of the riser and over the tread below. Also referred to as Nosing or Nosing Extension, it is not included in the Run or Tread Depth measurements.

Tread Thickness - The vertical depth of the tread material.

Winder - A wedge-shaped stair tread used where curved or angled stairways change direction.

Stair Structure and the Model

By default, stairs locate the height of the floor platform that they are drawn on and seek the next level, which may be the floor platform of the floor above or a landing. The stringers locate the subfloor of the floor platforms and maintain consistent riser height. If the stairs are long enough to reach the next level at a reasonable rise angle, their tread depth and number of treads are automatically calculated to create a staircase with consistent tread and riser dimensions along its entire length.

You can modify this behavior or turn off it off altogether in the Staircase Specification dialog and specify your own rise and run values. Bear in mind, though, that if you turn it off, you will need to specify the correct **Top** and **Bottom Heights** to make sure that the stairs actually meet both floor platforms correctly. See *General Panel on page 575*.

Drawing Stairs and Ramps

Stairs and ramps can be drawn in floor plan and 3D views but not in cross section/elevation views. There are a few things to keep in mind when drawing stairs:

- Before stairs are created, make sure that the heights for both the lower and upper floors are correctly defined.
- Stairs are drawn going **UP**, so they should be drawn from the lower of the two floors they connect.
- By default, stairs adjust their riser and tread dimensions to connect two floor heights if possible. The rise and run are calculated so that the steps are consistent in size.
- Stairs drawn within 1” (25 mm) of a wall will snap to the outer surface of the wall.
- Stairs will snap to the **Reference Display**, if you have it turned on. See *The Reference Display on page 546*.
- Hold down the ***Ctrl/⌘*** key to suppress these snapping behaviors. See *Snap Behaviors on page 141*.
- If a stairwell room has been defined on the floor above, the top of the stairs can be dragged until it stops at the railing or wall defining the stairwell.
- When drawing stairs or a ramp up from the terrain, it is a good idea to make sure the terrain is up-to-date. See *Building the Terrain on page 909*.

Straight Stairs and Ramps

The **Draw Stairs** tool can be used in two different ways:

- Click and drag in a straight line to draw stairs that are the length that you drag.
- Click once to place stairs that go from the current floor up to the height of the next floor level.

You can also click once using the **Straight Stairs** tool to create stairs between rooms on the same floor with different floor heights or between exterior rooms and the terrain. When the Straight Stairs tool is active, a preview outline of the stairs will follow the mouse pointer. Hold down the ***Alt*** key while dragging to reverse the direction of the Up arrow in the preview.

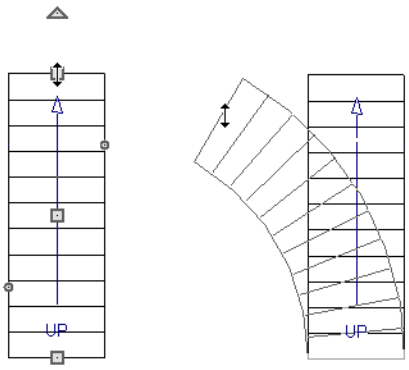
Similarly, **Ramps** can be created by either clicking and dragging or by clicking. A ramp created with a single click will be 30” (760 mm) high, have a slope of 1:12, and be 360” (9120 mm) long.

An individual stair or ramp section must be between 6” (150 mm) and 100’ (30 m) in length. If a greater length is needed, connect two sections using a landing.

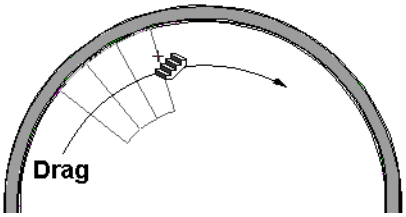
Curved Stairs and Ramps

You can make a straight stair or ramp section curved, or vice versa:

- Select the stairs or ramp and click the **Change Line/Arc** edit button. See *Change Line/Arc on page 209*.
- Select the stairs or ramp, hold down the ***Alt*** key (or right-click), and drag an end edit handle. See *Alternate on page 180*.



You can also curve straight stairs and ramps by drawing them against a curved wall.



Curved Stairs can also be created in plan view by selecting **Build> Stairs> Curve to Left** or **Curve to Right**. Click to place a 90º curved stair section that can then be edited. You can continue clicking to place additional curved staircases until another tool is selected.

Once drawn, the radius of a curved stair section can be specified in the Staircase Specification dialog. See *General Panel on page 575*.

Drawing Stairs and Ramps Downward

Stairs and ramps can be drawn from the current floor level downward; however, drawing stairs or ramps between floors in this manner is not recommended. Drawing downward should only be used to create a staircase or ramp between a porch or deck and the terrain when you require the direction arrow to say “DN” instead of “UP”. See *Displaying Stairs, Ramps, and Landings on page 554*.

To draw stairs going downward

1. Select **Build> Stairs> Draw Stairs** .
2. Hold down the ***Alt*** key or the right mouse button.
3. Click and drag to create straight stairs.

When drawing stairs or ramps from a floor platform to the terrain, or vice versa, they will locate the height of the terrain as long as it is lower than the floor height. You can also create a landing or “room” outside the structure and use it to establish the bottom height of the stairs or ramp. Then, draw in an upward direction from the lower platform to the upper platform.

L- and U-Shaped Stairs

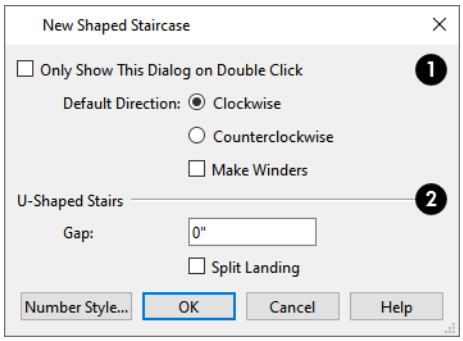
The **L-Shaped Stairs** and **U-Shaped Stairs** tools allow you to place staircases composed of two stair sections connected by one or more landings with a single click.

The staircases created with these tools build from the current floor to the floor above. If you need a staircase that builds between platforms on the same floor level, or in a downward direction, you will need to draw it manually. See *Landings on page 559*.

When you select either tool, the New Shaped Staircase dialog opens.

New Shaped Staircase Dialog

The settings in this dialog retained between sessions in the software and are global, affecting all plans.



1

- Check **Only Show This Dialog on Double Click** to suppress this dialog unless the L-Shaped Stairs or U-Shaped Stairs is double-clicked.
- Specify the **Default Direction** of the stairs as they build upward: **Clockwise**, or **Counterclockwise**. These settings only apply to staircases when they are not placed next to a wall.
- Check **Make Winders** to create multiple landings with angled edges between the two stair sections When unchecked, a single rectangular landing is produced.

2 **U-Shaped Stairs**

- Specify the width of the **Gap** between the two stair sections.
- Check **Split Landing** to create two rectangular landings instead of one. When Make Winders is also checked, each of these two landings is further divided into triangular shaped winders.

When you click OK, a preview outline will follow the mouse pointer.

Placing L- and U-Shaped Stairs

You can control the staircase's orientation and direction prior to placing it by moving the mouse pointer towards a wall.

In the case of a **L-Shaped** staircase with **Clockwise** set as the Default Direction:

- As you move the mouse pointer close to a wall, the upper stair section in the preview outline will snap to the wall first.
- As you move the mouse pointer closer to the wall, the preview outline will rotate so that the bottom stair section snaps to the wall instead.
- If you move the mouse pointer into a wall corner, the preview outline will rotate so the landing is in the corner and the Default Direction is used.

In the case of a **U-Shaped** staircase with **Clockwise** set as the Default Direction:

- As you move the mouse pointer close to a wall, the back of the landing in the preview outline will snap to the wall first.
- As you move the mouse pointer closer to the wall, the preview outline will rotate so that the upper stair section snaps to the wall.
- If you continue to move the mouse closer, the lower stair section will snap to the wall instead.
- If you move the mouse pointer into a wall corner, the preview outline will rotate so that the bottom stair section snaps to the wall that is nearest to the mouse pointer.

When an L- or U-Shaped Staircase preview outline is in a wall corner, you can use the mouse to further control position and direction:

- When an **L-Shaped** staircase preview is in a wall corner, move the mouse pointer over the stair sections to control which is the bottom section.
- When a **U-Shaped** staircase preview is in a wall corner, move the mouse pointer within the landing area to control which wall the back of the landing snaps to.
- With the landing in place, move the mouse pointer over the two stair sections to control which is the bottom section.

You can use keyboard hotkeys to override these behaviors:

- Press the ***Alt*** key to reverse these snapping behaviors and the stairs' direction.
- Hold down the ***Ctrl/⌘*** key to prevent the stairs from rotating or snapping to walls.

Displaying Stairs, Ramps, and Landings

The display of stairs, ramps, and landings in all views is controlled in the Layer Display Options dialog. Stairs, ramps, and landings are placed on the "Stairs & Ramps" layer. See *Layer Attributes on page 152*.

In Plan View

Stairs, Ramps, and Landings have a variety of display options in plan view.

Direction Arrow and Walkline

Stairs and Ramps have an arrow indicating the direction they run. Interior stairs and ramps have an **UP** arrow on the floor they were created on and a **DN** arrow when viewed from the floor above. Stairs drawn from a floor platform to the terrain also have a **DN** arrow. See *Drawing Stairs and Ramps on page 551*.

The style and size of the direction arrow can be specified in the Staircase or Ramp Specification dialog. The Text Style, line color, and display are controlled by the "Stairs & Ramps, Up/Down Arrows" layer. See *Arrow Panel on page 252*.

In addition, staircases can use and display a Walkline in plan views. The **Walkline** is drawn on the "Stairs & Ramps" layer and can be specified in the Staircase Specification dialog. See *Style Panel on page 578*.

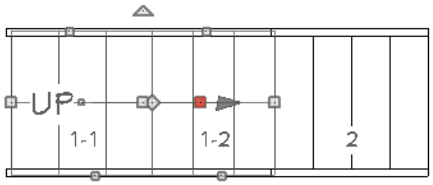
To see the center of a curved stair section's arc in plan view, click **Show Arc Centers and Ends**. See *Arc Centers and Ends on page 193*.

On Multiple Floors

Stairs and ramps display on the floor level on which they are drawn. If they are located beneath an Open Below room, they will be visible within the area of that room on the floor level above, as well. See *Creating a Stairwell on page 573*.

Sections and Subsections

When a staircase is selected in plan view, the numbers associated with each of its sections and subsections display. Stair sections are assigned a single number, while subsection numbers have two parts: a section number and subsection number separated by a hyphen.



Selected staircase with two sections as well as two subsections

In 3D Views

Although stairs span between two floors, they can only belong to one floor. As a result, stairwells will appear as an empty spaces in Dollhouse Views when **Show Lower Floors in Floor Overviews** is unchecked in the Camera Specification dialog. See *Camera Panel on page 809*.

Editing Stairs and Ramps

Staircases and ramps can be selected and edited in plan view and 3D views. See *Selecting Objects on page 183*.

To select a single section of a staircase, hold down the ***Shift*** key before clicking on it. When selected in this manner, a stair section can be edited independent of any other connected stair sections.

Using the Edit Handles

When a staircase or ramp is selected, its edit handles display. These edit handles can be used to customize the selected object in many ways. See *Editing Objects on page 179*.

- Straight stair sections and ramps are edited along their centerlines like CAD lines. They have additional edit handles for resizing the width of the section. See *Editing Line-Based Objects on page 187*.
- Curved stair sections and ramps are edited along their centerlines like CAD arcs and also include edit handles for resizing the stair's width. See *Editing Arc-Based Objects on page 190*.
- Ramps can be resized to a maximum top height of 30" (760 mm). If you extend a ramp's length to greater than 360" (9120 mm), its slope will decrease. For a taller ramp and control over the slope, uncheck **Automatic Heights** in the Ramp Specification dialog and specify the values you need. See *General Panel on page 586*.
- When stair sections are merged, the edit handles display differently depending on what subsection is currently selected. See *Merging Stair and Ramp Sections on page 557*.
- When moving merged stair or ramp sections, all merged sections and landings move as one unless **Stair Sections Move Independently** is checked in the Preferences dialog. To temporarily enable this behavior, hold down the ***Alt*** key. See *Architectural Panel on page 109* and *Alternate on page 180*.
- Additional edit handles display on the first two treads of a staircase if the **Starter Tread** edit button is clicked. See *Starter Treads on page 565*.
- Several additional edit handles display on a staircase if the **Flare/Curve Stairs** edit button has been clicked. See *Flared Stairs and Curved Treads on page 562*.

In the Specification Dialog

Stairs and ramps can be customized and their structure precisely defined in the Staircase and Ramp Specification dialogs. See *Staircase Specification Dialog on page 575*, *Ramp Specification Dialog on page 586*, and *Stair Landing Specification Dialog on page 589*.

Stair, ramp, and landing railings can also be customized. See *Railing Panel on page 581*, and *Newels/Balusters Panel on page 583*.

If one or more staircase and ramp is selected, their shared specification dialog will be limited to settings that both object types share, including those that affect railings, line styles, and fill styles.

Using the Edit Tools

A selected staircase or ramp can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Starter Tread allows you to create one or two rounded starter treads at the base of a selected staircase. See *Starter Treads on page 565*.

Flare/Curve Stairs allow you to flare or curve the sides of the selected staircase's base. See *Flared Stairs and Curved Treads on page 562*.

Auto Stairwell creates a Stairwell room on the floor above the selected staircase. See *Creating a Stairwell on page 573*.

Adjusting the Radius of Curved Stairs

The easiest way to match the radius of a stair section to the radius of a curved wall is to draw a staircase near one side of the curved wall using the **Draw Stairs** tool. The stairs snap to the wall, and the radius of the new staircase is defined. See *Curved Stairs and Ramps on page 551*.

Existing curved stairs can be aligned with an existing curved wall by aligning their centers, much the same way that curved stairs on different floors can be aligned. See *Aligning Objects on page 170*.

If there is no curved wall, the radius of a stair section can be aligned to a CAD arc or circle.

To align curved stairs to an object

1. Align the centers of the CAD object and the staircase.
2. Select the curved stairs and move the side nearest to the arc or circle edge using the **Resize** edit handle.

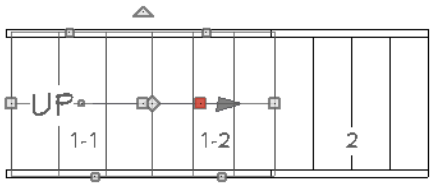
Finally, restore the stair width by dragging from the other side handle or using the Stair Specification dialog.

Stair and Ramp Sections and Subsections

In Home Designer, staircases and ramps can be composed of multiple sections. In addition, each section can be broken into multiple subsections.

- Both sections and subsections can be curved while their neighbors are straight and can have different tread depths.
- Stair sections can also have different tread widths, can be disconnected from adjacent sections using the edit handles, and are usually separated from other sections by landings.
- Subsections both move and rotate as a single object, while sections move with other sections but rotate separately.

You can identify sections and subsections by clicking on a stair or ramp to select it: sections are identified with labels using whole numbers (1, 2, etc), while subsections are identified using hyphens (1-1, 1-2, etc). In addition, when a stair or ramp is selected, only the selected section will have edit handles.



The selected section or subsection can be identified by the Move edit handle, which is red by default. See *Selected Edge on page 185*.

Creating Stair and Ramp Subsections

There are several ways to create a stair section with multiple subsections:

- Draw one section, then draw a second section that begins at the first one's endpoint.
- Draw two separate segments, then snap the start point of one segment to the endpoint of the other using the edit handles.
- Draw one segment and use the **Add Break** edit tool to divide it into two subsections. See *Add Break on page 208*.

Creating Stair and Ramp Sections

There are also three ways to create multiple stair sections:

- Draw two separate stair sections and join them using a landing.
- Use the **Complete Break** edit tool to divide a section into two sections. See *To create a complete break on page 209*.
- Use the **Disconnect Selected Subsection** edit tool to change a subsection into a section.

Merging Stair and Ramp Sections

Any combination of straight and curved stair sections or straight and curved ramps using **Automatic Heights** can be merged. The resulting staircase or ramp section is made up of subsections and, if there are no landings, functions as a single unit.

Stair and ramp subsections must be drawn in the same direction if they are to be merged:

- The top edge of a stair section or ramp cannot merge with the bottom edge of another section or ramp.
- Combinations of stairs drawn in the **UP** and **DOWN** directions cannot be merged.

Stair subsections merge at the center points of their upper and lower edges.

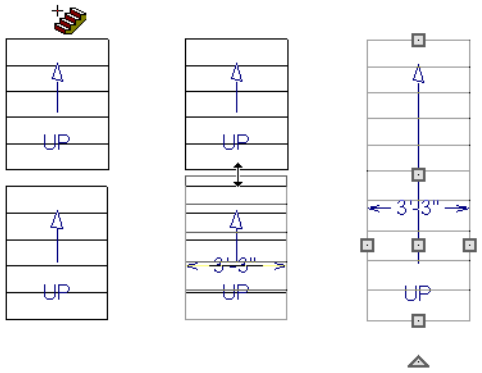
Stair sections and ramps cannot be merged directly. If a combination of stairs and a ramp is required, connect them with a landing. See *Landings on page 559*.

To merge stair or ramp sections

1. Confirm that the stairs or ramps that you wish to merge are using **Automatic Heights**. See *General Panel on page 575*.
2. Position the sections so they are in the desired relationship to each other.

- In order to merge stair sections correctly, they must be parallel to one another.
- To create merged subsections that change direction, make one of the merged sections curved and then specify Winders. See *Winders on page 567*.

3. Select either stair or ramp section so that its edit handles display.
4. Click the Extend handle on the end to be merged and drag it to the point where the two stairs or ramps are to meet.



A staircase consisting of merged subsections resembles a single stair section in plan view. The **UP** (or **DN**) arrows join, becoming a single direction arrow.

When a subsection is selected, the entire staircase is selected. Additional edit handles, indicating the presence of multiple subsections and allowing you to reposition the line along which they join. See *Using the Edit Handles on page 555*.

Lock Tread Depth

If a staircase with **Lock Tread Depth** selected in the Staircase Specification dialog is resized, its length increases or decreases one full tread at a time. See *General Panel on page 575*.

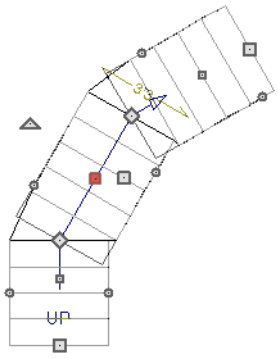
When **Lock Tread Depth** is checked, it can be difficult to merge the section with another section or landing. If this is a problem, you can temporarily uncheck **Lock Tread Depth**. After the stairs are merged, the tread depth can be locked again.

Curved Subsections

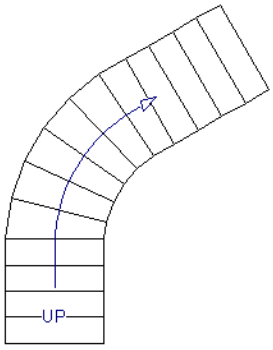
Stair subsections attached at both ends by other sections do not have a free end that can be dragged into a curve. In this situation, change the middle sub-section to a curve using the **Change Line/Arc** edit button. See *Change Line/Arc on page 209*.

To curve an enclosed stair subsection

1. Draw three straight stair sections and connect them end to end.
2. Select the middle subsection.



3. Click the **Change Line/Arc** edit button. The center section turns into a curved stair section.



4. Use the triangular Change Curve edit handle to adjust the curvature of the middle section as needed.

Stairs joined in this manner can be turned into winders, which are steps located where a staircase turns and are narrower on the inside of the turn than they are on the outside. See *Winders on page 567*.

Landings

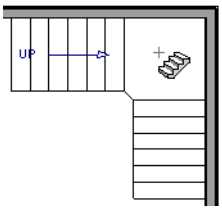
Stair landings are platforms between stair sections and/or ramps, and can be created in either of five ways:

- Click and drag using the **Landing** tool.
- Single-click using the **Landing** tool to create a 3’-3” (975 mm) square landing.
- Click between two stair sections using the **Draw Stairs** tool.
- Convert a closed CAD polyline into a landing. See *Convert Polyline on page 211*.
- One or more landings are also created when the **L-Shaped Stairs** or **U-Shaped Stairs** tool is used.

To create a landing between stair sections

1. Draw two stair sections going UP. They can be at any angle.
2. Click between the two sections using the **Draw Stairs** tool to create a landing. Notice that only one direction arrow

displays after the sections are joined by a landing.



Similarly, a landing can be created between two ramps by clicking between them with the **Ramp** tool active.

Multiple stair sections and/or ramps can be connected to one landing. For example, two or three stair sections might meet at a landing with a single stair section continuing to the next level.

To be linked by a landing, all sections must be drawn in the same **UP** direction and the top of one section should be near the bottom of the next.

Stair sections connected with a landing will move together as a single unit unless **Stair Sections Move Independently** is checked in the Preferences dialog. See *Architectural Panel on page 109*.

A landing formed between two stair sections having less than a 90º angle between them are created with a short edge not less than 6” (150 mm). This is because most building codes require the shortest tread to be at least 6” wide. This edge can be manually edited to less than 6” if needed.

Adjacent Landings

Some staircases have more than one landing adjacent to one another. When **Auto Adjust Height** is used, landings in Home Designer recognize other nearby landings and will automatically adjust their heights and railings when their edges are sufficiently close to one another.

To create adjacent landings, draw two landings and then position them so that their edges are within 1” (25 mm) of one another. The landing that was drawn first will maintain its position while the height of the one drawn later will be the equivalent of one riser higher than the first. The railings on adjacent edges are suppressed, as well.

Adjacent landings can be used to represent winders. See *Winders on page 567*.

Editing Landings

Once created, landings can be selected in 2D and 3D views and edited like other closed-polyline based objects. See *Editing Closed Polyline-Based Objects on page 197*.

Landings derive their initial materials, height, thickness, and railings from the stairs and/or ramps attached to them. You can assign a unique railing or material to a landing in the Stair Landing Specification dialog. See *Stair Landing Specification Dialog on page 589*.

When moving a landing, all stair or ramp sections connected to it move as one unless **Stair Sections Move Independently** is checked in the Preferences dialog. To temporarily enable this behavior, hold down the ***Alt*** key. See *Architectural Panel on page 109* and *Alternate on page 180*.

Landing Height and Thickness

A landing’s height and thickness can either be dynamically controlled by the program or user-defined and static.

By default, landing top height and thickness are both set to **Auto Adjust**. This means that if the structure of the attached stairs is edited so that their length or riser height is affected, the landing’s height and thickness will adjust automatically to maintain consistent riser height in all connected stair sections.

If you uncheck either **Auto Adjust** box in the Stair Landing Specification dialog, the landing will maintain the specified height and/or thickness no matter how the attached stairs or ramps are modified. This can result in stairs that have inconsistent risers. See *Stair Landing Specification Dialog on page 589*.

Landing Railings

By default, landings have railings on all edges, but will automatically suppress the railing along any portion of an edge that connects to a stair or ramp section or has an adjacent landing. You can specify whether this automatic behavior is used, the railing is suppressed, or the railing is always applied in the Stair Landing Specification dialog. See *Stair Landing Specification Dialog on page 589*.

You can also suppress the railing on a selected edge by clicking the **Remove Railing from Selected Edge** edit button. To always generate the railing on a selected edge, click the **Add Railing to Selected Edge** edit button. See *Selected Edge on page 185*.

Landings can be edited into a wide variety of shapes. So that the railings of stair sections connect properly to the landing railings, you may find it helpful to use the **Add Break** edit tool to create a break in a landing edge if it is longer than the connecting stairs are wide. See *Add Break on page 208*.

Maintaining Tread Depth

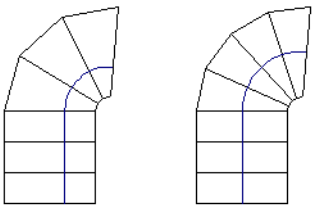
Most building codes require staircases to maintain a consistent tread depth.

Walkline

By default, Home Designer measures a stair section's length and tread depth along a Walkline located 12" (30 cm) from the right edge of the stair section. On curved stairs, it is located 12" (30 cm) from the inside edge of the curve.

The distance of the Walkline from the staircase edge can be specified in the Staircase Specification dialog. See *Style Panel on page 578*.

Alternatively, you can turn the Walkline feature off and tread depth will be measured at the tread center.



When a curved stair section has **Automatic Treads** specified in the Staircase Specification dialog and the Walkline is used, the number and/or width of treads in a section or subsection changes when the inner edge is moved. For this reason, it is best to finalize stair section width as early as possible.

There are two ways to keep tread depth even throughout a stair section made of multiple subsections.

Lock Tread Depth

The first way to maintain tread depth is to **Lock Tread Depth** to a specified value in the Staircase Specification dialog. See *General Panel on page 575*.

Once locked, any changes to the length of the stair section are achieved by keeping the specified tread depth and changing the number of treads.

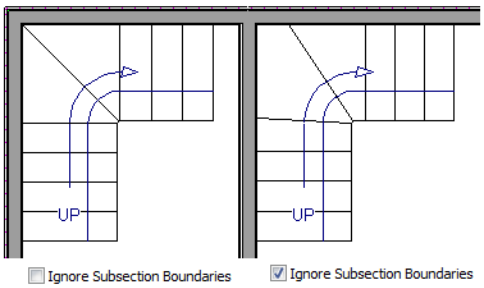
Ignore Subsection Boundaries

Curved stair sections typically have treads that are wider on one side than on the other. When they are connected to other stair sections, as with winders, it is possible to have treads that are too narrow at the Walkline. See *Winders on page 567*.

Uniform tread depth in a stair section with subsections can be maintained by checking **Ignore Subsection Boundaries** in the Staircase Specification dialog. See *General Panel on page 575*.

When **Ignore Subsection Boundaries** is checked, the Tread Depth value may change when the stair section is edited, but will remain consistent throughout all subsections.

Because the boundaries between stair sections are being ignored, the treads where a straight section joins a curved section may shift position or change angle to accommodate the adjustment.



Flared Stairs and Curved Treads

Any stair section can be flared and/or its treads curved using the **Flare/Curve Stairs** edit button.

Only exposed sides of a stair section can be flared. If one side of a stair section is against a wall or wrapped (see *Wrapped Stairs on page 567*), only the exposed end can be flared.

> Flaring, curved treads, and special treads should be the last changes that you make to any stairs.

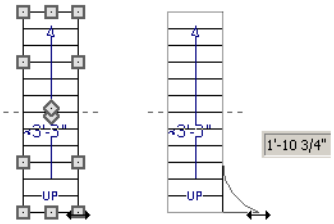
Creating a Flared Stair

Flared stairs grow wider near one end, typically sweeping outward at the bottom. Stairs can also be flared at the top or on both ends.



To create flared stairs

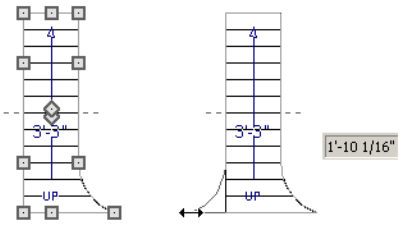
1. Create the stairs and connect them to a landing, floor platform edge, or another stair section.
2. Specify the section width, tread depth, and any other needed information.
3. Select the stairs and click the **Flare/Curve Stairs** edit button. New **Flare** edit handles display on all four corners of the stairs.
4. Drag one of the corner handles to flare that corner. As you drag the flare, the Status Bar shows the distance the side handle moves. This allows you to move the opposite handle the same amount.



5. When you are finished editing the flare, click the **Main Edit Mode** to restore the stairs' regular edit handles and toolbar buttons.

Symmetrically Flared Stairs

Use the dimension information that displays in the Status Bar as a reference to create symmetric flares on both sides.



Adjusting the Flare Radius

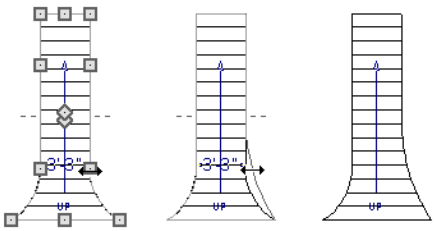
After a flared staircase has been created, you may want to soften the radius of the flare.

The four handles at the sides and the four handles at the corners flare the stair section when dragged outward. The two handles in the center of the section move the starting point for flaring along the stair section.

To adjust the flare radius

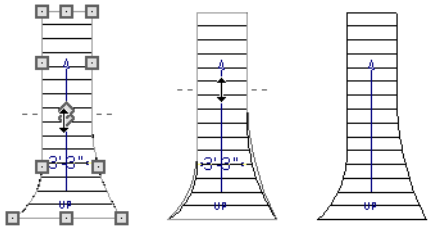
First, adjust the curvature of the flared section.

1. Select the flared stair and click the **Flare/Curve Stairs** edit button to access the flare handles again.
2. Select the handle along the flared edge of the stair. Drag this handle outward very slightly. This forms a more gradual flare.



Then, adjust the starting point of the flare:

1. Select the flared stair and click the **Flare/Curve Stairs** edit button to access the flare handles again.
2. This time, drag the lower of the two central handles upward. The handle above it moves with it. This moves the start point for the bottom flare from the middle of the section toward its top, making the flare even more gradual.

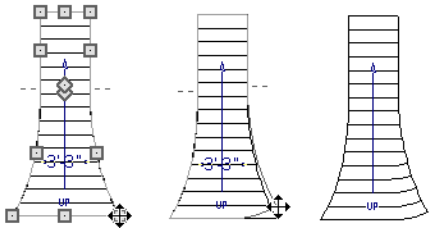


Treads Perpendicular to Flare

Flared stairs often look best when the treads curve to meet the flared side perpendicular to the radius.

To curve the edges of flared treads

1. Select the flared stair and click the **Flare/Curve Stairs** edit button to access the flare handles again.
2. Drag a corner edit handle upward one tread depth or less.



3. When you are finished editing the curve, click the **Main Edit Mode** to restore the stairs' regular edit handles and toolbar buttons.

This type of tread curving works only on flared edges and concentrates the curvature at that edge.

Flared treads can also be curved using the Curve edit handle, which curves the treads more uniformly.

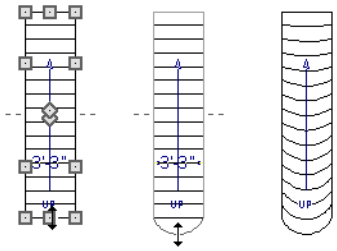
Curving the Treads

When treads are curved, all treads in the section show some degree of curvature. Treads close to the curved end have a greater curve than those at the opposite end, but both ends can be curved.



To curve stair treads

1. Select the staircase, then click the **Flare/Curve Stairs** edit button.
2. Drag the edit handle at the center of the bottom edge a small distance to curve the treads.



3. When you are finished editing the curve, click the **Main Edit Mode** to restore the stairs' regular edit handles and toolbar buttons.

Starter Treads

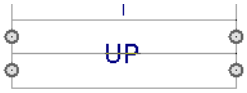
The first and second treads of a staircase can be turned into starter treads by clicking the **Starter Tread** edit button. Starter treads extend to the side of the staircase, have rounded edges and are common on traditional staircases.

A starter tread can be added only to open sides of a stair section. If one side of a stair section is against a wall or wrapped (see *Wrapped Stairs on page 567*), only the exposed tread end can become a starter tread.

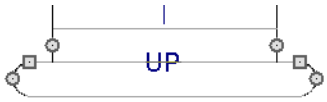


To create starter treads

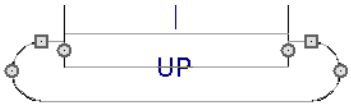
1. Click on a staircase to select it.
2. Click the **Starter Tread** edit button. An edit handle displays on each end of both the first and second treads.



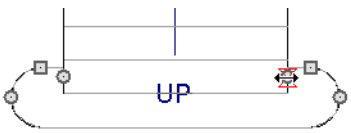
3. Drag either of the handles on the first tread outward from the stair section. If the stair section is against a wall, only one handle displays on the side opposite the wall.
4. As you drag, the ends of the tread become rounded.



5. Two additional edit handles display on each side of the tread, along the back edge.
6. Drag either of the two square handles upward to increase the width of the rounded ends of the tread.



7. Drag the edit handle on the second tread outward from the stair section to create a second starter tread.



8. To make changes to existing starter treads, select the stairs, click the **Starter Tread** edit button and repeat the above steps as needed.
9. When you are finished editing the starter treads, click the **Main Edit Mode** to restore the stairs' regular edit handles and toolbar buttons.

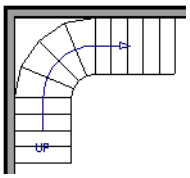
Winders

Winders are steps located where a staircase turns and are narrower on the inside of the turn than they are on the outside. A staircase defined as a winder expands to fill in any gaps between the side of the stairs and nearby walls.

Curved stair sections are typically used to create winders, although straight stairs can also be used. See *Curved Stairs and Ramps on page 551*.

To create winders

1. In an enclosed room area, place and connect the stair sections that you want to be winders. For best results:



   - The stairs should be two straight sections connected by a curved section between them;
   - The curved section should be adjacent to a 90° corner.

> It is often easiest to create the staircase configuration in an open space, away from walls, then move it into position in a wall corner before specifying it as Winders.

2. Select the staircase and click the **Open Object** edit button to open the Staircase Specification dialog.
3. On the GENERAL panel, place a check in the **Winders** check box and click **OK**.
4. The steps nearest the wall corner adjust their shapes and extend into the corner after the stair is changed to a winder.

> Winders must be in a room with valid room definition. You cannot create winders in an area composed of only 2 corner walls. If this configuration is needed, enclose the area in with Invisible walls so that a room area is defined.

The Winders attribute directs the stair section to expand or contract to meet nearby walls, and can also be used to create a partial railing. See *Partial Railings on page 570*.

Winders sometimes have treads that are too narrow at the inside curve. The **Ignore Subsection Boundaries** option can address this issue. See *Ignore Subsection Boundaries on page 562*.

In situations where the conditions for stair winders cannot be met, you can use adjacent landings. See *Landings on page 559*.

Wrapped Stairs

Check **Allow Wrap** on the STYLE panel of the Staircase Specification dialog and the selected stairs can be wrapped around the corner of a deck or landing. Curved stairs and stairs with multiple subsections cannot be wrapped. See *Style Panel on page 578*.

Stair sections that wrap around a corner to meet one another must have identical attributes. As a result, edits made to one wrapped stair section apply to all adjacent, wrapped sections.

To wrap stairs around a deck

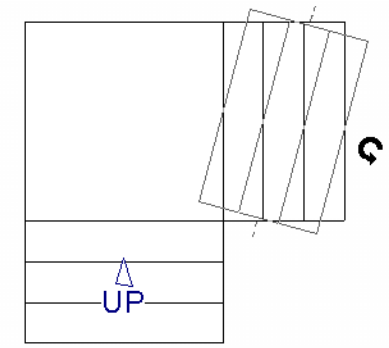
1. Begin by drawing a deck. See *Decks on page 324*.
2. Use the **Straight Stairs** tool to place a stair section on each side of the corner around which you want them to wrap.
3. Move the stair sections toward the corner of the deck. When the two sections are sufficiently close to the corner, they will merge to form wrapped steps.



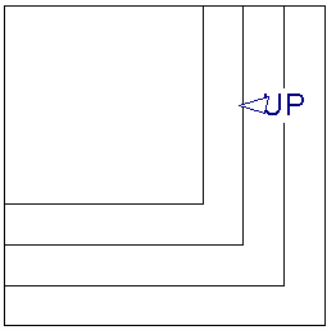
You can also draw stairs down from a deck by right-clicking to draw them or by pressing the ***Alt*** key while you drag. See *To draw stairs going downward on page 552*.

To wrap stairs around a landing

1. Use the **Draw Stairs** tool to create two perpendicular stair sections with top ends that share a corner.
2. Click between them to create a landing.
3. Rotate one stair section 180°.



4. The stairs wrap around the corner. Notice that the Up arrow displays on the most recently edited stair section.

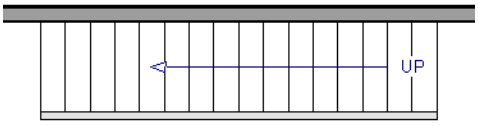


Other Special Railings and Stairs

Stairs can be customized to meet a variety of needs.

Solid Railings

To create a solid rail along a staircase, position a solid Railing against, but not underneath, the stairs. Specify it as **Solid** and that it **Follow Stairs**. See *Rail Style Panel on page 307*.



The solid railing recognizes the adjacent stairs and climbs alongside them.



If any balusters extend beyond the railing, eliminate them by unchecking **Left Railing** or **Right Railing** in the Staircase Specification dialog. See *Style Panel on page 578*.

Fully Housed Stringers with Balusters

Fully housed stringers with balusters can also be created by positioning a pony wall next to the stairs.



To create fully housed stringers

1. Create a staircase, then select the stairs and click the **Open Object** edit button.
2. On the STYLE panel of the Staircase Specification dialog, uncheck **Stringer at Wall** and click OK.
3. Draw an **Interior Wall** or **Half Wall** against, but not underneath, the stairs.
4. Select the wall and click the **Open Object** edit button.
5. On the GENERAL panel of the Wall or Railing Specification dialog, make sure **Railing** is checked.
6. On the WALL TYPES panel:
   - Check **Pony Wall**.
   - Specify the **Lower Wall Type** as the same interior wall as the upper wall.
   - Specify the **Elevation of Lower Wall Top**. This value should equal the stairs' riser height plus the height above the treads.
7. On the RAIL STYLE panel:
   - Check **Follow Stairs**.
   - Specify desired **Railing Height**.
   - Click OK.

> Note: To create housed stringers, check Trim Against Wall in the Staircase Specification dialog. See *Stringers Panel on page 579*.

PARTIAL RAILINGS

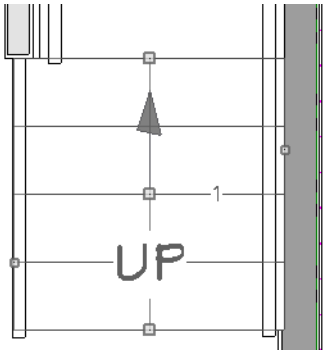
A staircase can be enclosed on one side by a combination of wall and railing.



Partial railings can be created by creating a staircase composed of two sections, each with a different tread width. See *Stair and Ramp Sections and Subsections on page 556*.

To create a partial stair railing

1. Create a staircase and draw an **Interior Wall** against, but not underneath, the stairs.
2. In plan view, select the stairs and click the **Add Break** edit button. See *Add Break on page 208*.
3. Next, click the **Complete Break** edit button.
4. With **Object Snaps** enabled, click once on the stairs where they meet the end of the interior wall to add a complete break to the stairs at that location. The staircase is broken into two separate sections. See *Object Snaps on page 142*.
5. Select the stair section that is not adjacent to the interior wall and, using either its edit handles or its specification dialog, increase its tread width.



6. You may need to **Zoom** in on the stairs and wall to move the stair edge.

Railing Panels

You can specify panels, including glass panels or cables, as a stair or ramp's railing in the Staircase and Ramp Specification dialogs. See *Railing Panel on page 581*.

Inset or Middle Railing

You can use a **Railing** to create inset stair railings or a middle railing.

To use railing panels with stairs

1. Create a staircase and draw a **Railing** under the stairs.
   - Make sure that the railing is located entirely within a single stair section.
   - Position it so that it is aligned with the left edge.
2. Select the railing and click the **Open Object** edit button. See *Wall Specification Dialog on page 294*.
3. On the Rail Style panel of the Railing Specification dialog:
   - Select the **Panels** radio button.
   - Check **Follow Stairs**.
4. On the Newels/Balusters panel, click the **Browse** button to the right of **Panel Type** and select the railing panel you want to use on the stairs, then click OK.
5. Select the staircase and click the **Open Object** edit button.
6. On the Newels/Balusters panel of the Railing Specification dialog, uncheck **Left Railing** to prevent the default stair railing from generating in addition to the railing panel.
7. Repeat these steps if you want railing panels under the right side of the stairs, as well.

Concrete Stairs



To make a solid concrete staircase

1. Select the stairs and click the **Open Object** edit button.
2. On the Style panel of the Staircase Specification dialog:
   - Set the **Tread Overhang** to zero.
   - Set the **Tread Thickness** to zero.
   - Uncheck **Open Risers**.
   - Uncheck **Open Underneath**.
3. On the Stringers panel, you can also check **Large Stringer Base**.
4. On the Materials panel, specify the "Riser/Trim", "Support Wall", and "Tread" materials as concrete.

Masonry Stairs



To make a set of masonry stairs

1. On the Style panel of the Staircase Specification dialog:
   - Set the **Tread Overhang** to zero.
   - Set the **Tread Thickness** to the thickness of the masonry material.
2. On the Materials panel, assign the desired masonry material to the "Tread" component and specify the "Riser/Trim" material as concrete.

Steel Stringer



To make a steel stringer with concrete treads

1. On the STYLE panel of the Staircase Specification dialog:
   - Check **Open Underneath**.
   - Set the **Tread Thickness** to 2 inches or more.
2. On the STRINGERS panel, select **1 Center Stringer**.
3. On the MATERIALS panel, specify the "Tread" material as concrete and the "Riser/Trim" material as steel.

Creating a Stairwell

An interior staircase must be located in a stairwell, an opening to the floor above. A stairwell is an Open Below room type on the floor above. See *Room Types on page 314*.

If you create a stairwell away from other walls so the Open Below is created in the center of another room, connect a wall of the Open Below room to another wall using an invisible wall.

CREATING A STAIRWELL AUTOMATICALLY

To create a stairwell that matches the perimeter of a selected staircase, click the **Auto Stairwell** edit button. This button is only available when a living space exists above the staircase. It will not be available if the space above is Open Below or on the Attic Floor.

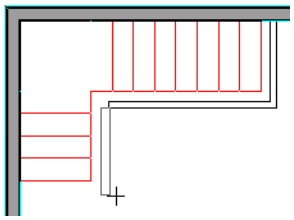
Auto Stairwell automatically creates a room on the floor above enclosed by railings, defined as **Open Below** in the Room Specification dialog, and given a **Stairwell** room label. This room can be selected and edited like any other room.

CREATING A STAIRWELL MANUALLY

Stairwells can also be created manually.

To create a manual stairwell

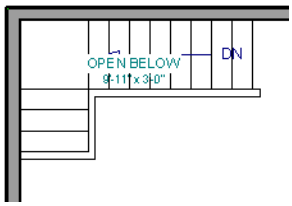
1. Draw a two-story building. Create the staircase on the first floor.
2. Make the second floor the **Current Floor** and the first floor the **Reference Floor**. See *The Reference Display on page 546*.
3. Select **Tools> Floor/Reference Display> Reference Display** to show the Reference Floor, including the stairs.
4. On the upper floor, use the **Railing** tool to create a room around the stairs. Use the edit handles to position the railings as needed.



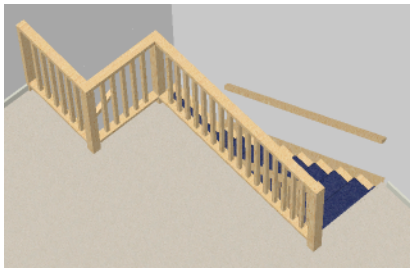
5. Select the railings one at a time and move them into position.
   - When a railing is selected, its bounding box shows the location of the outer surface of the railing's drywall layer. For best results, this outer surface (which does not display when the railing is not selected) should meet the top edge of the stairs. See *Wall Types and Railings on page 260*.

- If you prefer, you can also go **Down One Floor** and adjust the top edge of the staircase to snap it to the surface of the railing on the floor above.

6. When the railings are positioned properly, select **Tools> Floor/Reference Display> Reference Display** to turn off the display of the Reference Floor.
7. Click inside the room using the **Select Objects** tool to select it, then click the **Open Object** edit button.
8. On the GENERAL panel of the Room Specification dialog, select "Open Below" from the **Room Type** list. Click **OK** to close the dialog.



9. Place a **Doorway** in the railing at the top step for an opening.
10. Select the doorway and define a large width in the Door Specification dialog. If the doorway is specified wider than the railing, its width adjusts to fit the available space.

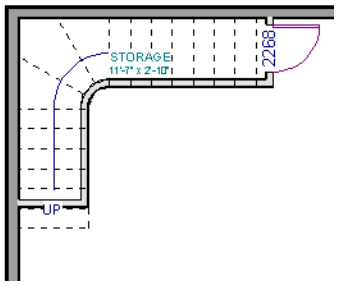


Rooms Below Staircases

Rooms such as closets or storage areas are commonly located beneath staircases.

To create a room below a staircase

1. Draw a staircase, select it, and click the **Open Object** edit button to open the Staircase Specification dialog. See *Staircase Specification Dialog on page 575*.
   - If Winders are specified for this staircase, set **Max Tread Contraction** to 2" on the STYLE panel to allow walls to be built entirely under the staircase.
   - On the FILL STYLE panel, select "No Pattern" so the walls and other objects under the stairs can be seen.
2. On the same floor as the staircase, draw the **Interior Walls** under them, following their shape.
3. Reposition the walls as needed, making sure that each is entirely under the stairs.
4. The wall at the foot of the stairs should be placed no closer to the bottom than the second step.
5. Add a door and specify the Room Type.



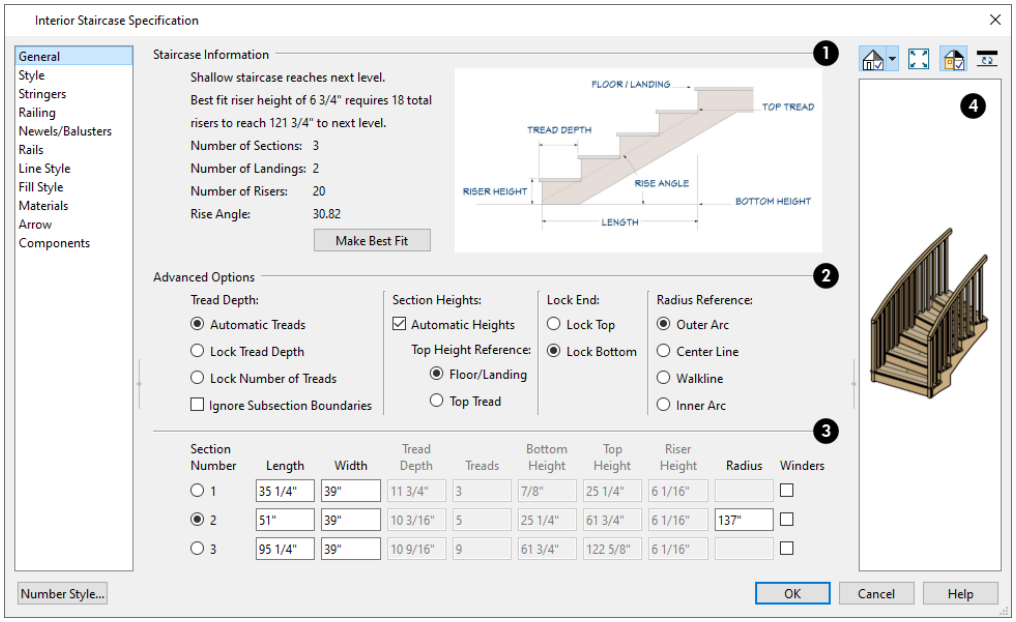
Staircase Specification Dialog

Staircases can be defined with the greatest accuracy in the Staircase Specification dialog. To open this dialog, select one or more staircases and click the **Open Object** edit button, or double-click a stair section using the **Draw Stairs**, **Straight Stairs**, or **Select Objects** tool.

If a staircase is composed of multiple stair sections, or if multiple separate staircases are selected, the section that you clicked on to select the staircase is the Selected Section. You can select a different Selected Section on the General panel; however, regardless of which section is selected, information about all the sections is available and can be edited in the dialog.

> It is recommended that all floor heights, ceiling heights and platform thicknesses be established before using the Staircase Specification dialog.

General Panel



1 Staircase Information

Structural information about the selected staircase displays here for reference and updates as changes are made on the General panel.

- The first comment tells whether or not the staircase reaches the next level, which may be a floor platform or locked landing. It also indicates whether its rise angle is either steeper or more shallow than the Best Fit, described below. If

Automatic Heights is unchecked, this comment instead says “Start and end heights are set manually”.

- The second comment, **Best fit riser height of ___ requires ___ total risers to reach ___ to next level**, describes the ideal rise and run for the selected staircase. The program defines the Best Fit Riser Height as the riser height closest to 6 3/4” (168.75 mm) that allows the selected staircase to meet the next level precisely. This comment is only active if **Automatic Heights** is checked, below.

If the staircase includes a landing with a user-specified height, that height is used to calculate this information. See *Landing Height and Thickness on page 560*.

- The total number of stair **Sections**, **Landings**, and **Risers** associated with the selected staircase also display here.
- The **Rise Angle** of the currently active stair section also displays here.
- Click the **Make Best Fit** button to add or remove risers to the Selected Section. You can specify which section is Selected below. Only available when **Automatic Heights** is checked and the staircase does not currently use the Best Fit Riser Height.

Make Best Fit will also extend stairs drawn in a downward direction until they reach the terrain. See *Terrain Perimeter on page 899*.

A diagram of a sample staircase’s structure displays here for reference, as well.

2 Advanced Options

The **Advanced Options** apply to all sections and subsections.

- Specify how **Tread Depth** is determined:
  - Select **Automatic Treads** to have the program define the depth and number of stair treads. If the staircase has multiple sections, each may have different tread depths.
  - Select **Lock Tread Depth** to specify the Tread Depth for each stair section, below, and prevent them from changing. When Lock Tread Depth is selected and the length of the stairs is changed, the number of treads will change.
  - Select **Lock Number of Treads** to specify the number of treads in each stair section and prevent it from changing. When Lock Number of Treads is selected and the length of the stairs is changed, the tread depths will change.
  - If multiple staircases or a staircase with multiple sections is selected, **No Change** may be an option as well. Select this to maintain the multiple sections’ individual settings.
  - Check **Ignore Subsection Boundaries** to maintain tread depth throughout a stair section composed of merged subsections, regardless of whether the subsections have different tread depths assigned to them. See *Ignore Subsection Boundaries on page 562*.
- The **Section Heights** settings control how the top and bottom heights of each stair section is determined:
  - Uncheck **Automatic Heights** if you would like to specify the bottom and top heights of each stair section, as measured from the default floor height of Floor 1, 0” (mm). When checked, the program automatically defines the top and bottom heights by precisely locating floor platforms and landings.
  - The **Top Height Reference** values control what point on the staircase the Top Height value, below, describes.
    - Select **Floor/Landing** for the Top Height value to describe the height of the top tread plus the stated Riser Height.
    - Select **Top Riser** for the Top Height value to describe the height of the top riser.
- If you make changes in this dialog that will affect the Selected Section's length, first use the **Lock End** settings to control which end moves. The height of the Selected Section’s locked end is not affected by these settings: only its position in plan view. These settings are actions rather than settings:
  - Select **Lock Top** to prevent the selected stair section’s top end from moving. Sections and landings above the selected section do not move when you click OK, while those below do move.

- Select **Lock Bottom** to prevent the selected stair section's bottom end from moving. Sections and landings below the selected section do not move when you click OK, while those above do move.



If you select a staircase by clicking near its bottom end, Lock Top will be selected; if you select it near its top end, Lock Bottom will be selected.

- The **Radius Reference** options control where the radius of curved stair sections, specified below, is measured from.
  - **Outer Arc** measures the radius from the outer surface of the curved stair section's structure.
  - **Centerline** measures the radius from the curved stair section's centerline.
  - **Walkline** measures the radius from the curved stair section's walkline. See *Walkline on page 561*.
  - **Inner Arc** measures the radius from the inner surface of the curved stair section's structure.

3 Specifications

The specifications for each stair section and subsection are listed as line items and can be edited here. Up to ten line items total can display. A change in one value usually affects other values. You may need to reposition the staircase after making changes.

- The **Section Number** column identifies the Selected Section and the number of each section of the selected staircase. The radio button to the left indicates which section or subsection is selected. If **Ignore Subsection Boundaries** is unchecked, subsection numbers are also identified. See *Displaying Stairs, Ramps, and Landings on page 554*.
- Define the **Length**, or run, of each section or subsection measured along the Walkline. The length is equal to the number of treads multiplied by the tread depth. See *Walkline on page 561*.

When the length of a section changes, other sections and landings in the staircase unit move in response. You can specify whether the bottom or top edge of the Selected Section moves when you resize it by selecting either the Lock Bottom or Lock Top radio button, above.

- Define the **Width** of each section. Only one width can be defined for a section, so all subsections in the same section have the same width. If a section is connected to a landing, its width should equal the length of the landing edge that it connects to. See *Landings on page 559*.
- Specify the **Tread Depth**, or run, of each stair tread in the selected section. To lock this value, check **Lock Tread Depth**, above.

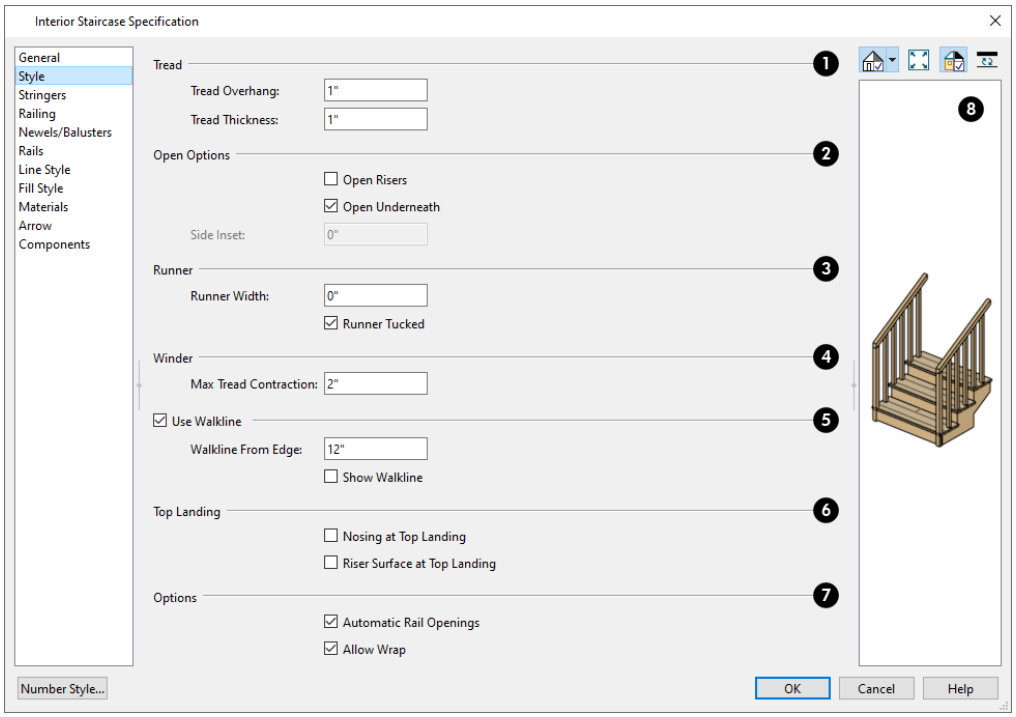
If a landing is created between two stair sections and one of them has locked tread depth, the resulting staircase also has locked tread depth. Any landings or sections connected to this new staircase adjust to meet it and then have locked tread depth as well.

- Define the number of **Treads** in a stair section or subsection. To lock this value, select Lock Number of Treads, above.
- Define the **Bottom Height**, the height of the stair section's bottom edge. To lock this value, click the radio button to the left of the section's number, then click the Lock Bottom radio button, above, and click OK.
- Define the **Top Height**, the height of the stair section's top edge. To lock this value, click the radio button to the left of the section's number, then click the Lock Top radio button, above, and click OK.
- Define the **Riser Height**, the height of the risers in each stair section.
- Define the **Radius** of a curved stair section. The location on the stairs where the radius is measured from can be specified above. Not available if the selected staircase does not have a curved section.
- Check **Winders** to specify the Selected Section, including subsections, as winders. See *Winders on page 567*.

4 Preview

A preview of the selected staircase displays on the right side of the panel. If the staircase includes any landings, only the section that was selected when the dialog was opened will display. See *Dialog Preview Panes on page 21*.

Style Panel



1 Tread

See *Anatomy of a Staircase on page 549*.

- Specify the **Tread Overhang**, which is the distance that each tread overhangs the riser.
- Specify the **Tread Thickness**.

2 Open Options

The **Open Options** control whether the selected stairs have open risers or an open underside.

- Check **Open Risers** to eliminate the riser face under each tread and expose the stringers.
- Uncheck **Open Underneath** to add a skirt below the staircase along the two sides. It looks like a wall in 3D, but only has a single face. Base molding does not generate along the bottom of the skirt, and doors cannot be placed in it. In most cases, the recommended way to enclose the area beneath stairs is to use walls. See *Rooms Below Staircases on page 574*.
- Specify the **Side Inset** of the skirt below the staircase. The default value of 0 aligns the skirt with the outside of the surface of the stringers. Only available when **Open Underneath** is unchecked.

3 Runner

Specify the attributes of the staircase's carpet **Runner**. Only available when **Open Risers** is unchecked, above.

- Specify the **Runner Width**. The default value of 0 does not create a runner.
- Uncheck **Runner Tucked** to have the runner drop straight down from the tread front to the riser below. This is checked by default.

4 Winder

Define the **Max Tread Contraction**, which is the amount a tread's width may be reduced when it meets a wall. See *Partial*

Railings on page 570.
This option only takes effect when the stairs are specified as **Winders** on the GENERAL panel. See *General Panel on page 575*.

5 Use Walkline

See *Walkline on page 561*.

- Check **Use Walkline** to have the program calculate the tread depth based on a Walkline. Uncheck the box to disable this function.
- Specify the distance of the **Walkline from Edge**. The default value is 12” (300 mm).
- Check **Show Walkline** to show the Walkline in plan view.

6 Top Landing

Specify the appearance of the staircase where it meets the next floor platform. These options do not affect the edges of landings.

- Check **Nosing at Top Landing** to produce tread nosing attached to platform edge at the top of stairs.
- Check **Riser Surface at Top Landing** to produce a riser surface against the platform edge at the top of the stairs. This allows stair risers to match all the way to the top of the platform.

7 Options

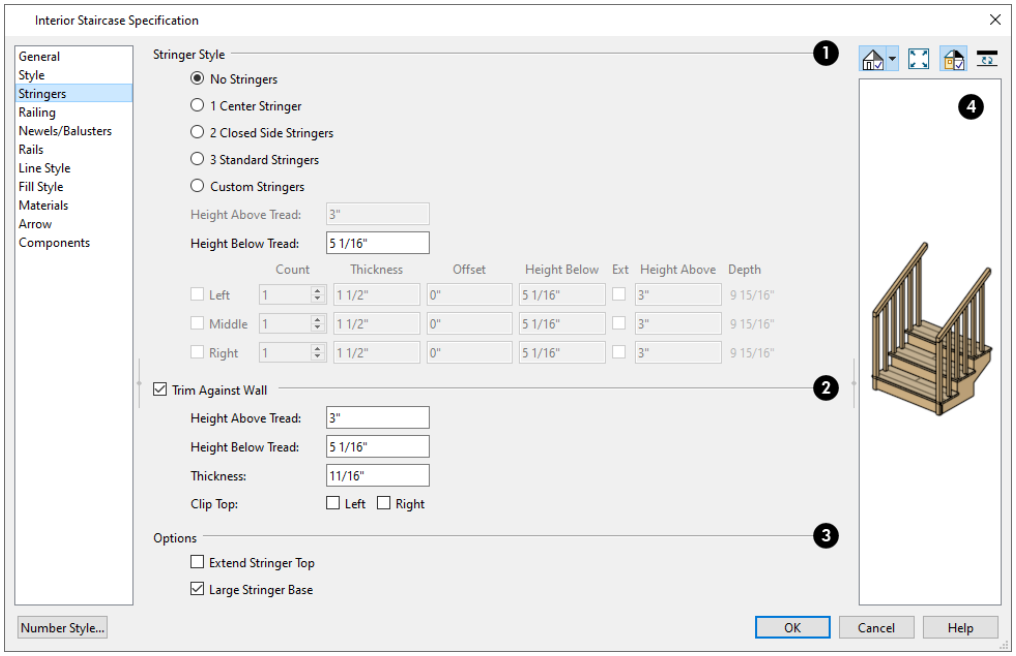
- Check **Automatic Railing Openings** to automatically create a doorway opening when the selected stairs are snapped to a railing drawn on the same floor as the stairs. This is checked by default.
- Check **Allow Wrap** to wrap the selected stairs around the corner of a deck or landing where another, identical stair section is present. See *Wrapped Stairs on page 567*.

8 Preview

A preview of the selected staircase displays on the right side of the panel. If the staircase includes any landings, only the section that was selected when the dialog was opened will display. See *Dialog Preview Panes on page 21*.

STRINGERS PANEL

The settings on the STRINGERS panel affect all sections of a selected staircase.



1 Stringer Style

- Click a radio button to specify the number of stringers assigned to the staircase. Select **Custom Stringers** to enable the Left, Middle, and Right settings below.
- Specify the **Height Above Tread**, measured straight down from the top outer edge of the tread nosing to the top of the stringer. Only available when 2 Closed Side Stringers is selected, above.
- Specify the **Height Below Tread**, measured straight down from the back bottom edge of the tread to the bottom of the stringer. Not available when Custom Stringers is selected, above.

The **Left**, **Middle**, and **Right** settings are enabled when Custom Stringers is selected. For each of these:

- Specify the **Count** for each stringer location. Multiple Left and Right stringers are butted side to side while multiple Middle stringers are evenly spaced between them.
- Specify the **Thickness**, measured horizontally.
- Specify the **Offset** of each stringer from its default location. A positive value offsets the stringer(s) to the right; a negative value offsets them to the left.
- Specify the **Height Below** the treads, measured straight down from the back bottom edge of the tread to the bottom of the stringer.
- Check **Ext** to specify the stringer(s) as Exterior and allow them to extend up past the top of the stair treads.
- Specify the **Height Above** the stair treads, measured straight down from the top outer edge of the tread nosing to the top of the stringer.
- The vertical **Depth** of the stringers is reported here for reference. This value is affected by the Heights above and below the treads, as well as the stairs Rise Angle.

2 Trim Against Wall

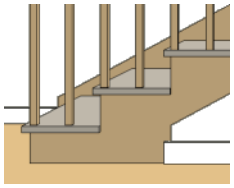
Specify the attributes of the **Trim Against Wall** that generates when the staircase is positioned against a wall.

- Specify the **Height Above Tread**, measured straight down from the top outer edge of the tread nosing to the top of the tread.

- Specify the **Height Below Tread**, measured straight down from the back bottom edge of the tread to the bottom of the trim.
- Specify the **Thickness** of the trim, measured horizontally.
- **Clip Top** - Specify whether to clip the top of the trim where it meets the upper floor level. Trim can be clipped on the **Left** and/or **Right** sides of the staircase.

3 Options

- **Extend Stringer Top** is checked by default and extends a triangular portion of the stringer under the landing or platform at the top of the stairs.
- Check **Large Stringer Base** to widen the stringers at the foot of the staircase. This is helpful when walls are created below the stairs.



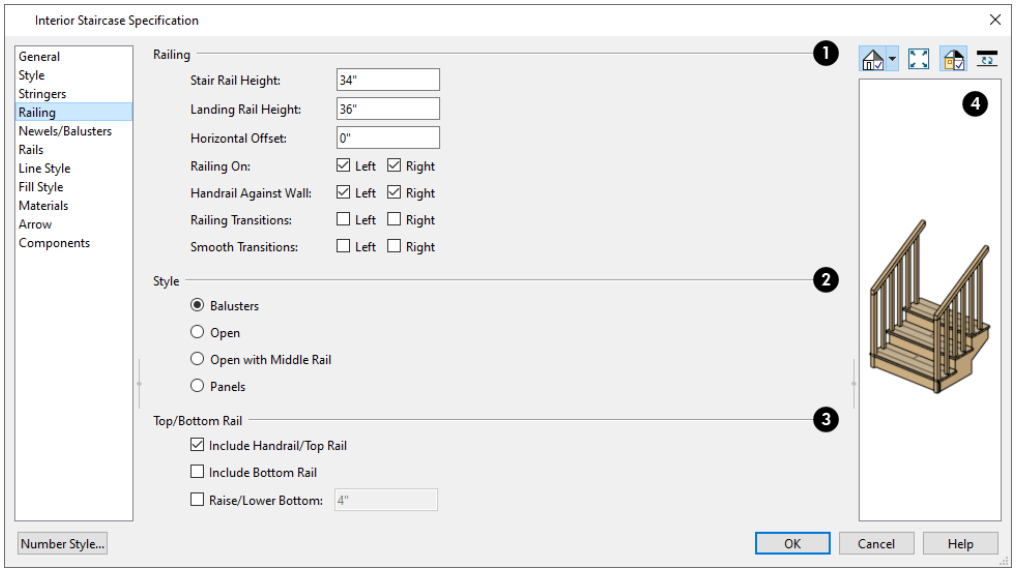
4 Preview

A preview of the selected staircase displays on the right side of the panel. To see the stringers, click in the preview and drag upward to rotate. See *Dialog Preview Panes on page 21*.

Railing Panel

By default, the settings on the Railing panel also affect the railings on any landings attached to the selected staircase or ramp. See *Landings on page 559*.

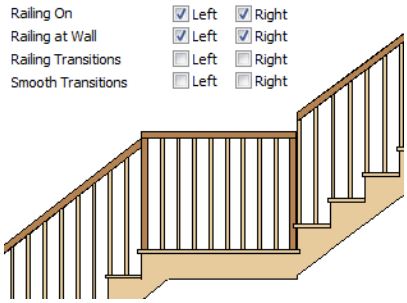
This panel is also found in the Ramp and Landing Specification dialogs.



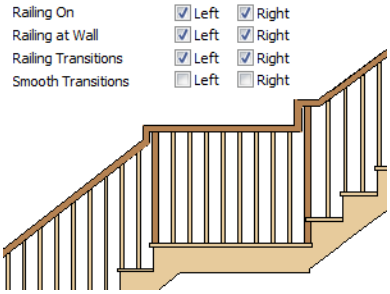
1 Railing

The settings here vary considerably depending on what object type is selected.

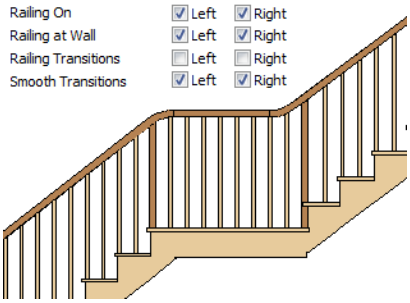
- Stairs and Ramps:
  - **Stair Rail Height** defines the height from tread surface directly over the riser to railing top.
  - **Landing Rail Height** defines the height of the rail top of any attached Landings from the landing surface.
  - **Horizontal Offset** allows you to place the railings either inside or outside their default location aligned with the edge of the stairs. A positive value offsets the railings inward while a negative value offsets them outward.
  - **Railing On** - Select **Left** and/or **Right** to specify placement of railings on stair sections.
  - **Railing at Wall** - Select **Left** and/or **Right** to specify the placement of wall railings. Not available for Ramps.



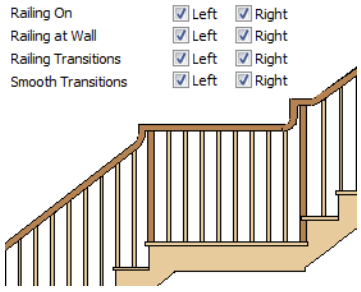
  - Check **Railing Transitions** on **Left** and/or **Right** to create “gooseneck” connections between stair and landing railings. This option only has an effect when **Rail Passes Over Newel** is checked. Not available for ramps.



  - Check **Smooth Transitions** on **Left** and/or **Right** to specify the placement of smooth connections between stair and landing railings. Not available for ramps.



- Check both **Railing Transitions** and **Smooth Transitions** to produce a handrail like this:



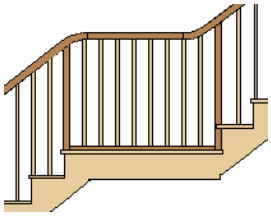
- Landings:
  - When **Use Default Railing** is checked, a selected Landing inherits its railing's properties from the interior or exterior Stairs or Ramps that it is attached to. Uncheck this box to customize these settings and enable the settings below.
  - Specify the **Rail Height**, measured from the landing surface to the rail top.
  - Specify the **Horizontal Offset**, which allows you to place the railings either inside or outside their default location aligned with the edge of the Landing. A positive value offsets the railings inward while a negative value offsets them outward.

2 Style

- Select **Balusters** to create regularly spaced balusters between larger newel posts.
- Select **Open** to create with only newels posts.
- Select **Open with Middle Rail** to create railings with newel posts and a middle rail.
- Select **Panels** to create railings composed of panels. The panel style is specified on the NEWELS/BALUSTERS panel. See *Newels/Balusters Panel on page 583*.

3 Top/Bottom Rail

- Check **Include Handrail/Top Rail** to produce a top rail on the stair railings that receives the top baluster ends and typically acts as a handrail.
- Check **Include Bottom Rail** to place a low rail on the landing surface that receives the balusters ends.



- Check **Raise/Lower Bottom**, then specify the distance to raise the bottom rail or panel from the stair tread.

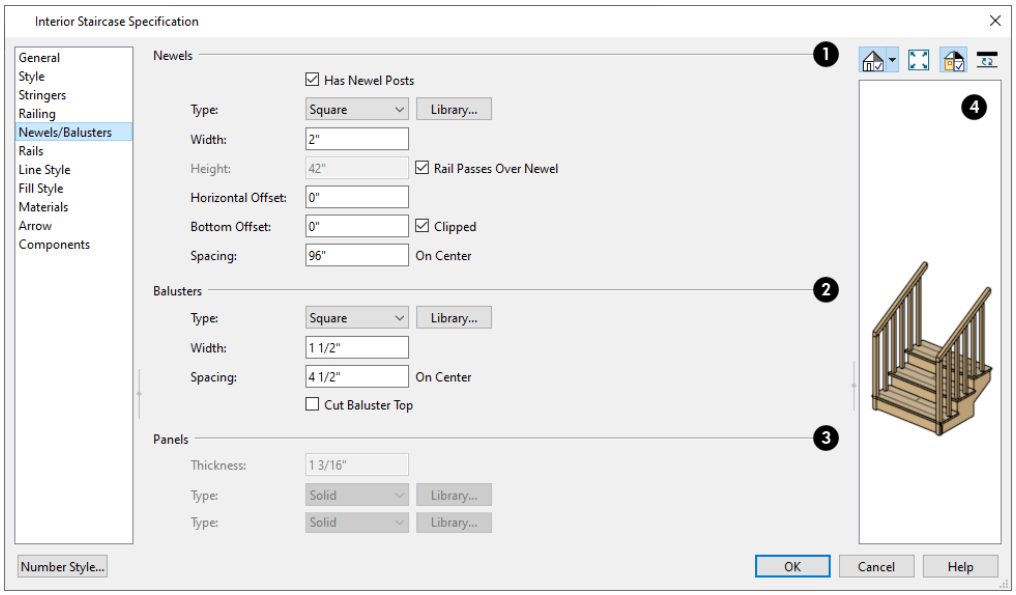
4 Preview

A preview of the selected staircase displays on the right side of the panel. If the staircase includes any Landings, only the section that was selected when the dialog was opened will display. See *Dialog Preview Panes on page 21*.

NEWELS/BALUSTERS PANEL

The settings on the NEWELS/BALUSTERS panel will also affect the appearance of railings on any landings attached to the selected staircase. See *Landings on page 559*.

These settings are similar to those found on the same panel of the Ramp and Landing Specification dialogs. See *Ramp Specification Dialog on page 586*.



1 Newels

- Uncheck **Has Newel Posts** to prevent newels from generating in the selected staircase's railings. When this box is checked, newels are generated and can be edited using the settings that follow.
- **Type** - Select **Square**, **Round**, or newels from the **Library**. Selecting **Library** from the drop-down list is the same as clicking the **Library** button to the right and allows selection of a newel from the library.
- Specify the **Width**, which is the width or diameter of each newel. For Library newels, this is the width at its widest point.
- Specify the **Height**, which is the height from the landing surface to the top of the newel. Only available when **Rail Passes Over Newel** is unchecked; when this box is checked, newels build to the bottom of the handrail.
- Specify the **Horizontal Offset**, which is the amount each newel is offset from the center of the railing.
- Specify the **Bottom Offset**, which is the amount each newel's bottom is offset from the tread or floor surface beneath it.
- Check **Clipped** to clip any newels that extend down to or past the floor level at the floor surface.
- Specify the on-center **Spacing** of the newel posts.

2 Balusters

The first three **Balusters** settings are similar to the Newels options of the same names, above.

- **Cut Baluster Top** - Each tread normally has two to three balusters, growing longer toward its back. The default is to use the same baluster and cut it off at the bottom to shorten it toward the tread front. Check this box to cut the balusters at the top instead.

3 Panels

These settings are only available when the railing Style specified as "Panels" on the *Railing Panel on page 581*.

- Specify the panel's **Thickness**.
- Select "Solid" or "Library" from the **Type** drop-down list.



You can also apply newels, balusters, and panels onto stair or ramp railing directly from the Library Browser. See *Inserted Objects on page 728*.

4 Preview

A preview of the selected staircase displays on the right side of the panel. If the staircase includes any landings, only the section that was selected when the dialog was opened will display. See *Dialog Preview Panes on page 21*.

Rails Panel

The settings on the Rails panel control the attributes of the handrail and other optional rails on the selected Staircase's railings. They are similar to those on the Rails panel of the Wall Specification dialog as well as the Moldings panel of a variety of other dialogs. See *Moldings / Rails Panels on page 702*.

By default, the settings on the Rails panel will also affect the appearance of railings on any landings attached to the selected staircase. See *Landings on page 559*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Staircase in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Staircase in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Staircase in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

The settings on this panel will also affect the materials applied to any landings attached to the selected Staircase. See *Landings on page 559*.

Arrow Panel

The settings on the Arrow panel control the appearance of the selected Staircase's direction arrow in plan view. See *Displaying Stairs, Ramps, and Landings on page 554*.

For information about these settings, see *Arrow Panel on page 252*.

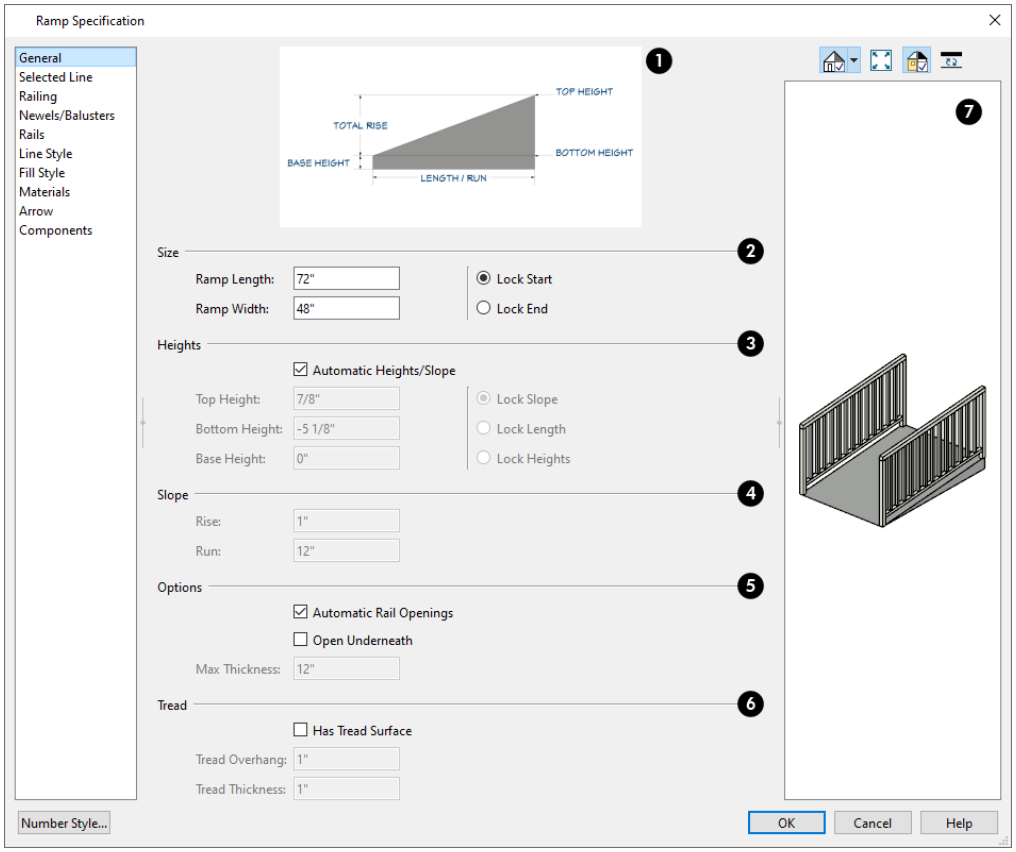
Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Ramp Specification Dialog

Ramps can be defined with the greatest accuracy using the Ramp Specification dialog. To open this dialog, select one or more ramps and click the **Open Object** edit button or double-click a ramp section using the **Ramp** or **Select Objects** tool.

General Panel



1 Diagram

A diagram of a sample ramp's structure displays here for reference.

2 Size

- Specify the **Ramp Length** and **Width**.
- Specify which end of the selected ramp to move when editing its Length:
  - Select **Lock Start** to prevent the selected ramp section's bottom end from moving when its length is edited. Sections and landings below the selected section do not move when you click OK, while those above do move.
  - Select **Lock End** to prevent the selected ramp section's top end from moving when its length is edited. Sections and landings above the selected section do not move when you click OK, while those below do move.

3 Heights

Specify the heights of various key locations on the selected ramp.

- Uncheck **Automatic Heights/Slope** to activate the settings below, then specify the height and slope of the ramp.
- Specify the **Top Height**, which is the height of the ramp at its high end.
- Specify the **Bottom Height**, which is the height of the ramp at its low end.
- Specify the **Base Height**, which is the height of the bottom surface of the ramp.
- Specify which of the selected ramp's attributes to lock while editing its Top or Bottom Height:
  - Select **Lock Slope** to prevent the ramp's slope from changing when a Height value is edited.
  - Select **Lock Length** to prevent the ramp's Length from changing when a Height value is edited.
  - Select **Lock Heights** to prevent other Height values when one of these values is edited.

4 Slope

Specify the ramp's **Slope** by typing its **Rise** value in the first field, and the **Run** value in the second field. See *Anatomy of a Staircase on page 549*.

5 Options

- Check **Automatic Railing Openings** to automatically create a doorway opening when the selected ramp is snapped to a railing drawn on the same floor as the ramp. This is checked by default.
- Check **Open Underneath** to remove the skirt around the bottom of the ramp so that it has a uniform, sloped thickness that may not reach the floor or terrain at the high end. This is unchecked by default.
- Specify the **Max Thickness**, which is the ramp's maximum thickness. At the low end of the ramp where it meets the floor or terrain, its thickness may be less than this value.

6 Tread

Specify the structure of the ramp's tread, which is an optional surface layer placed over the top of the ramp.

- Check **Has Tread Surface** to apply a top tread surface to the ramp and enable the settings below.
- Specify the **Tread Overhang**, which is the distance the tread surface extends past the ramp's edges.
- Specify the **Tread Thickness**, which is the tread surface's vertical depth.

7 Preview

A preview of the selected ramp displays on the right side of the panel. If the ramp is composed of multiple sections separated by landings, only the section that was selected when the dialog was opened will display. See *Dialog Preview Panes on page 21*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Railing Panel

The settings on the Rails panel are similar to those on the Rails panel of the Staircase Specification dialog as well as the Moldings panel of a variety of other dialogs. See *Moldings / Rails Panels on page 702*.

Newels/Balusters Panel

The settings on the Newels/Balusters panel are similar to those on the same panel in the Staircase Specification dialog. For more information, see *Newels/Balusters Panel on page 583*.

By default, the settings on this panel will also affect the appearance of railings on any landings attached to the selected ramp. See *Landings on page 559*.

Rails Panel

The settings on the Rails panel control the attributes of the handrail and other optional rails on the selected Ramp's railings. They are similar to those on the Rails panel of the Wall Specification dialog as well as the Moldings panel of a variety of other dialogs. See *Moldings / Rails Panels on page 702*.

By default, the settings on the Rails panel will also affect the appearance of railings on any landings attached to the selected Ramp. See *Landings on page 559*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Ramp in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Ramp in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Ramp in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

The settings on this panel will also affect the materials applied to any landings attached to the selected Ramp. See *Landings on page 559*.

Arrow Panel

The settings on the Arrow panel control the appearance of the selected ramp’s direction arrow in plan view. See *Displaying Stairs, Ramps, and Landings on page 554*.

For information about these settings, see *Arrow Panel on page 252*.

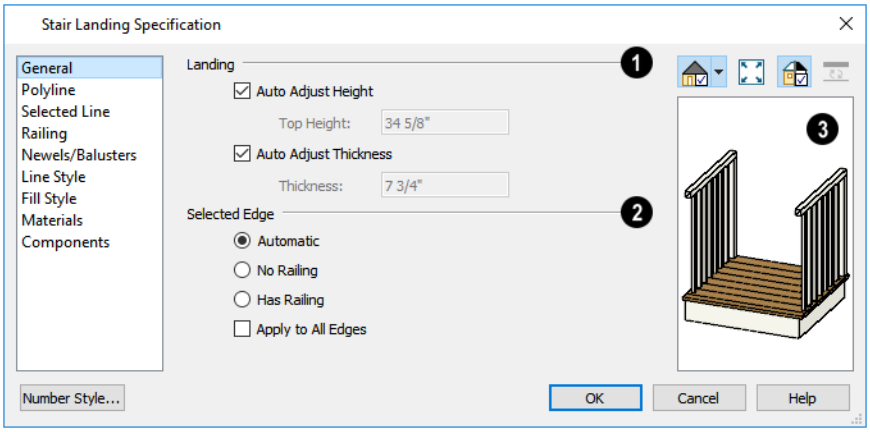
Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Stair Landing Specification Dialog

Select a landing and click the **Open Object** edit button to open the Stair Landing Specification dialog. See *Landings on page 559*.

General Panel



1 Landing

Uncheck **Auto Adjust Height** to specify the selected landing's Top Height.

- A free-standing interior landing will have a default Top Height equal to one riser plus the thickness of the default floor finish. A free-standing exterior landing will have a default top height equal to its thickness. When this box is checked, the landing height may adjust as needed to maintain consistent riser height in all connected stair sections, ramp sections, or adjacent landings.
- The **Top Height** field is only active when Auto Adjust Height is unchecked. See *Landing Height and Thickness on page 560*.

> Note: A network of adjacent landings can only be created when Auto Adjust Height is checked. See *Adjacent Landings on page 560*.

Uncheck **Auto Adjust Thickness** to specify the selected landing's **Thickness**.

- A free-standing landing will have a default thickness of 6 3/4" (169 mm). When checked, the thickness is based on the riser height of the stair sections it is attached to, or the thickness of the ramps it is attached to.
- The **Thickness** field is only active when Auto Adjust Thickness is unchecked.

2 Selected Edge

Specify how railings are applied to the landing's **Selected Edge**. See *Selected Edge on page 185*.

- Select **Automatic** to suppress the railing on any portion of the selected edge that either connects to a stair or ramp section or has an adjacent landing, but to produce a railing where that is not the case. See *Landing Railings on page 561*.
- Select **No Railing** to suppress the railing on the selected edge of this landing.
- Select **Has Railing** to produce a railing along the selected edge, even where it connects to a stair or ramp section or has an adjacent landing.

- Check **Apply to All Edges** to apply your selection to all edges of the landing. This is an action rather than a state - the next time this dialog is opened, this box will be unchecked.

3 Preview

A preview of the selected landing displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Polyline Panel

The Polyline panel reports the length of the selected Landing's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

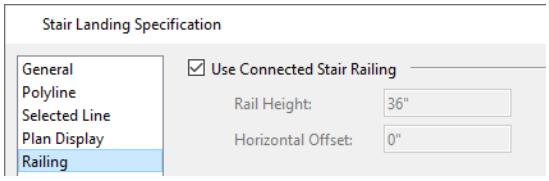
Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Railing Panel

The settings on the Railing panel are similar to those on the same panel in the Staircase Specification dialog. See *Railing Panel on page 581*.

There is one setting that is unique to the Landing Specification dialog:



Uncheck **Use Connected Stair** or **Ramp Railing** to enable the settings on this panel, the Newels/Balusters panel, and the Rails panel. When checked, the selected landing derives all railing settings from the connected stairs or ramp.

If the selected landing is not connected to a stair or ramp, this check box will be named **Use Default Interior** or **Exterior Stair Railing**, depending on where the landing is located.

Newels/Balusters Panel

The settings on the Newels/Balusters panel are similar to those on the same panel in the Staircase Specification dialog. For more information, see *Newels/Balusters Panel on page 583*.

Rails Panel

The settings on the Rails panel control the attributes of the handrail and other optional rails on the selected Landing's railings. They are similar to those on the Rails panel of the Wall Specification dialog as well as the Moldings panel of a variety of other dialogs. See *Moldings / Rails Panels on page 702*.

By default, the settings on the RAILS panel will also affect the appearance of railings on any landings attached to the selected Ramp. See *Landings on page 559*.

LINE STYLE PANEL

The settings on the LINE STYLE panel affect the appearance and Bumping behavior of the selected Landing in plan view. See *Line Style Panel on page 234*.

FILL STYLE PANEL

The settings on the FILL STYLE panel affect the appearance of the selected Landing in plan view. See *Fill Style Panel and Dialogs on page 161*.

MATERIALS PANEL

The settings on the MATERIALS panel affect the appearance of the selected Ramp in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

When a Landing is attached to stairs or a ramp, its initial materials are derived from the stairs or ramp. When the landing is attached to a ramp, its top surface material is defined by the Landing Sides component unless the ramp is using a Tread material.

COMPONENTS PANEL

The information entered on the COMPONENTS panel can be used in the Materials List. See *Components Panel on page 967*.

Roofs

Chapter 23

Home Designer's manual and automatic Roof Tools allow you to draw almost any roof style.

> ⚠ Verify that all roof planes join as intended. The program does not confirm correct geometry between manually designed or edited roof planes. It is possible to design and edit roof planes with hips and valleys that do not meet properly.

Automatic vs. Manual Roofs

Home Designer can create just about any roof style. Most common roof styles such as hips and gables can easily be generated automatically.

More complex roof styles, including curved roof planes, can be created manually. The manual roof tools allow you to create any roof system that can be represented using roof planes.

Automatically Generated Roofs

The quickest and easiest way to create a roof over a structure is automatically. By default, a roof plane is generated over each exterior wall, creating a hip roof. The program automatically joins the roof planes at ridges, hips, and valleys and tries to create roof planes that join together to form a single, integrated system. See *Automatic Roofs on page 595*.

Any deviations from the default hip roof can be specified on the Roof panel of the Wall Specification dialog for any exterior wall. Here, you can specify a Full Gable Wall, High/Shed Gable Wall, or other options instead of a default hip roof. You can also specify a different overhang, pitch, an upper pitch, and the elevation where the upper pitch begins for the roof plane that rests on the selected wall. See *Roof Directives in Walls on page 283*.

When you need the roof planes over an area of a plan to be entirely separate from those over the rest of the structure, you can assign those areas to a non-default Roof Group. See *Roof Groups on page 596*.

Roofs can also be automatically generated based on a Roof Baseline Polyline. When a Roof Baseline Polyline is used, information that determines where and how roof planes are generated is contained in the Roof Baseline Specification dialog. See *Roof Baseline Polylines on page 617*.

Bay, bow, and box windows also produce roof planes automatically. For information about these windows and the roof styles that can be used with them, see *Bay, Box, Bow Windows and Roofs on page 454*.

Manually Drawn Roofs

Any roof system that can be created automatically can also be created manually. Each roof plane is drawn and edited individually, offering full control over the process and limiting the possibilities only to your imagination.

> Note: You cannot manually draw or edit roof planes when Auto Rebuild Roofs is enabled in the Build Roof dialog. See *Roof Panel on page 598*.

Using Both Techniques

Another useful option is to start with an automatically generated roof and use manual design techniques to finish it. Using both automatic roof generation and the manual roof drawing and editing techniques, you can quickly design highly

customized roof systems.

Roof Defaults

There are several defaults dialogs for roofs. Access Default Settings by selecting **Edit> Default Settings**, then clicking the arrow beside “Roofs and Custom Ceilings”. Select a subheading and click the **Edit** button to open the defaults dialog associated with your selection.

There are a number of other structural conditions that directly affect roof generation, as well.

Roof Defaults Dialog

The Build Roof and Roof Defaults dialogs are nearly identical in appearance and function. The only difference is that the Build Roof dialog has a number of check boxes that allow you to automatically generate roof planes and related objects. See *Build Roof Dialog on page 597*.

If changes are made to the settings in this dialog after the roof has been built, you will need to rebuild the roof in order for your changes to take effect.

Skylight Defaults Dialog

The Skylight Defaults dialog is located in the "Roofs and Custom Ceilings" category in the Default Settings dialog and can also be opened by double-clicking the **Ceiling Plane** or **Tray Ceiling Polyline** tool. These dialogs are similar to the specification dialogs for their respective objects. See *Special Ceilings on page 326*.

Ceiling Plane and Tray Ceiling Defaults Dialogs

The Ceiling Plane Defaults and Tray Ceiling Defaults dialogs are located in the "Roofs and Custom Ceilings" category in the Default Settings dialog and can also be opened by double-clicking the **Skylight** tool. This dialog is similar to the Skylight Specification dialog. See *Skylight/Roof Hole Specification Dialog on page 629*.

Roof Framing Defaults

Default settings for roof framing can be specified in either the Build Roof, Framing Defaults, or the Framing Defaults dialog. See *Manual Framing Defaults Dialog on page 658*.

To create roof planes with a particular assembly of layers, begin by setting up the desired roof framing defaults, then build the roof. If you later need to change the structure of the roof planes, make the needed change to the Framing Defaults, and then rebuild the roof. You can also edit the structure of individual roof planes.

Dormer Defaults

The settings in the Dormer Defaults dialog determine the initial settings for automatic dormers and are much like those in the Dormer Specification dialog. See *Dormer Specification Dialog on page 634*.

The Dormer Defaults dialog can be opened from the Default Settings dialog or by double-clicking either of the **Auto Dormer** tools.

Floor and Ceiling Heights

Floor and ceiling heights as well as their platform thicknesses are important considerations for roofs because they determine roof heights.

Floor and ceiling height defaults can be set for each floor level in the Floor Level Defaults dialogs as well as for individual rooms in the Room Specification dialog. See *Structure Panel on page 330*.

Platform definitions assigned to rooms affect structural heights and have a hierarchy of dynamic defaults. See *Floor and Ceiling Platforms on page 542*.



If Auto Rebuild Roofs is checked in the Build Roof dialog and you change floor or ceiling heights, floor or ceiling platform depths, wall positions or roof directives in walls, the roof rebuilds to reflect your changes. See *Rebuilding Roofs on page 597*.

Roof Directives in Walls

By default, when an automatic roof is built, a roof plane is generated over each exterior wall, creating a hip roof. See *Roof Directives in Walls on page 283*.

Any deviations from this default hip roof, such as a gable or a different pitch, can be specified in the Wall Specification dialog for any exterior wall. See *Roof Panel on page 299*.

The Roof Tools



Select **Build> Roof** to access the Roof Tools.

Build Roof



Select **Build> Roof> Build Roof** to open the Build Roof dialog, specify the settings for automatically generated and manually drawn roof planes as well as manually drawn ceiling planes, and build or rebuild a roof. See *Build Roof Dialog on page 597*.

When roofs are automatically generated, a roof plane is created over each exterior wall by default, resulting in a hip roof, and the program tries to join them together to form a single, integrated system.

To automatically generate a roof plane using values other than the defaults or to not generate a roof plane bearing on a particular wall (as with a gable or the sides of a shed roof), you can change the settings in the Wall Specification dialog. See *Roof Panel on page 299*.

Roof Plane



Select **Build> Roof> Roof Plane** to draw a roof plane manually. See *Roof Planes on page 604*. You can also double-click the **Roof Plane** button to open the Build Roof dialog.

Note: You cannot use the Roof Plane tool when Auto Rebuild Roofs is enabled in the Build Roof dialog. See *Manually Drawn Roofs on page 592*.

Ceiling Plane



Select **Build> Roof> Ceiling Plane** to draw a ceiling plane manually. Ceiling Planes are drawn and behave much like roof planes. See *Ceiling Planes on page 620*.

Gable/Roof Line



Select **Build> Roof> Gable/Roof Line** to draw a gable line that generates a gable along a baseline edge when roofs are automatically generated. See *Gable/Roof Lines on page 624*.

Skylight



Select **Build> Roof> Skylight**, then draw a rectangle over an existing roof plane to create a skylight. The skylight, skylight shaft, and ceiling hole (if a ceiling exists) are drawn at the same time. See *Skylights and Roof Holes on page 628*.

Roof Hole



Select **Build> Roof> Roof Hole**, then draw a rectangle over an existing roof plane to create a hole. See *Skylights and Roof Holes on page 628*.

Auto Floating Dormer



Select **Build> Roof> Auto Floating Dormer** and click within an existing roof plane to place an auto floating dormer. See *Dormers and Crickets on page 631*.

Auto Dormer



Select **Build> Roof> Auto Dormer** and click within a roof plane to place a dormer. See *Dormers and Crickets on page 631*.

Delete Roof Planes



Select **Build> Roof> Delete Roof Planes** to delete all roof planes in the plan. See *Deleting Roof Planes on page 610*.

Delete Ceiling Planes



Select **Build> Roof> Delete Ceiling Planes** to delete all manually drawn ceiling planes in the plan. See *Ceiling Planes on page 620*.

Automatic Roofs

When roofs are automatically generated, a roof plane is created over each exterior wall by default, resulting in a hip roof, and the program tries to join them together to form a single, integrated system.

There are a number of options available to produce variations in this default roof style.

Roof Directives in Walls

To automatically generate a roof plane using values other than the defaults or to not generate a roof plane bearing on a particular wall (as with a gable or the sides of a shed roof), you can change the settings in the Wall Specification dialog for that wall. See *Roof Panel on page 299*.

Roof Groups

When an automatic roof is generated, the program tries to create roof planes that join together to form a single, integrated system. Different parts of the structure influence how the roof is generated over the whole.

When you need the roof planes over an area of a plan to be entirely separate from those over the rest of the structure, you can assign those areas to a non-default Roof Group. The program treats different Roof Groups as separate buildings for the purpose of automatic roof generation, preventing their roofs from influencing one another.

Bear in mind that the use of Roof Groups typically involves using a combination of both automatic roof generation and manual roof editing, and that changes to Attic walls may also be necessary. See *Using Both Techniques on page 592*.

Roof Groups are assigned using numbers. The Default Roof Group is always 0, and you can assign rooms to other roof groups in the Room Specification dialog. See *General Panel on page 329*.

Curved Walls and Roofs

Automatically generated roof planes are placed over curved walls at specified increments. In the Build Roof dialog, you can specify the degree increments for the roof over curved walls, from 6° to 90°. The lower the number, the more roof sections are created over the curved wall.

The following illustrations show a roof created at two different curved increments: 30° and 15°.

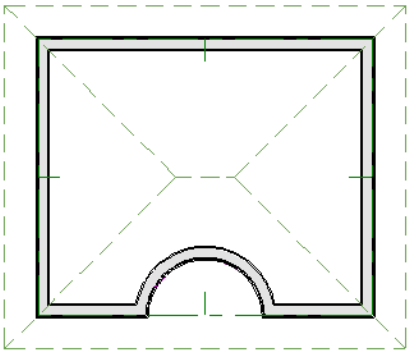


Concave Curved Walls and Roofs

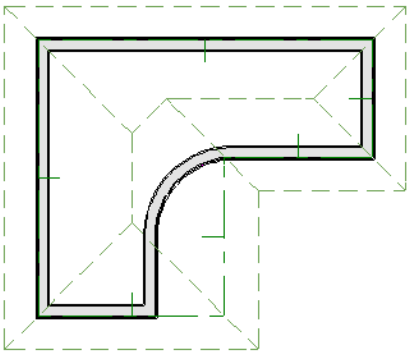
Regular roof plane sections can also generate over concave curved walls. For roof sections to generate over a concave curved wall, the sections' baselines must be longer than the **Minimum Alcove Size** value on the BUILD panel of the Build Roof dialog.

If the baselines are shorter, the automatically generated roofs are simplified by either:

- Ignoring the curved wall, as if the walls on either side extended to their meeting point.



- Spanning the concave curved wall with a straight Baseline and produce a roof plane for it from that.



Rebuilding Roofs

By default, whenever changes are made to wall placement, floor/ceiling heights, or roof directives in walls, the roof will update in response. If you do not want the roof to rebuild automatically, uncheck **Auto Rebuild Roofs** in the Build Roof dialog. See *Roof Panel on page 598*.

Changes made to floor or ceiling platform thicknesses will also cause the roof to be automatically rebuilt. See *Editing Rooms on page 318*.

You can also rebuild the roof at any time to reflect the current state of the model by opening the Build Roof dialog, checking **Build Roof Planes**, and clicking OK.

Manually dawn roof planes are specified as such in the Roof Plane Specification dialog. If a roof plane was automatically generated, it will instead have a **Mark as Edited** check box. See *Roof Plane Specification Dialog on page 613*.

When the roof is rebuilt using **Auto Rebuild Roof** or **Build Roof Planes** in the Build Roof dialog, all roof planes in the plan, both automatically generated and manually drawn, are deleted and replaced.

- To preserve any manually drawn roof planes, check **Retain Manually Drawn Roof Planes** on the BUILD panel of the Build Roof dialog before the roof is rebuilt.
- To preserve any automatically generated roof planes that you have edited, check **Retain Edited Roof Planes** on the BUILD panel of the Build Roof dialog before the roof is rebuilt.

> Note: Under some conditions, when the roof is rebuilt new roof planes may be generated in the same location as retained manually drawn or automatic roof planes.

Roof planes cannot be edited or manually drawn when **Auto Rebuild Roofs** is turned on. If you try to either edit or draw a roof plane using the **Roof Plane** tool, a question message will display.

Build Roof Dialog

The Build Roof dialog is used to automatically build or rebuild roof planes and generate Roof Baseline Polylines. The settings in this dialog act as defaults for both manually drawn and automatic roofs. See *Roof Defaults on page 593*.

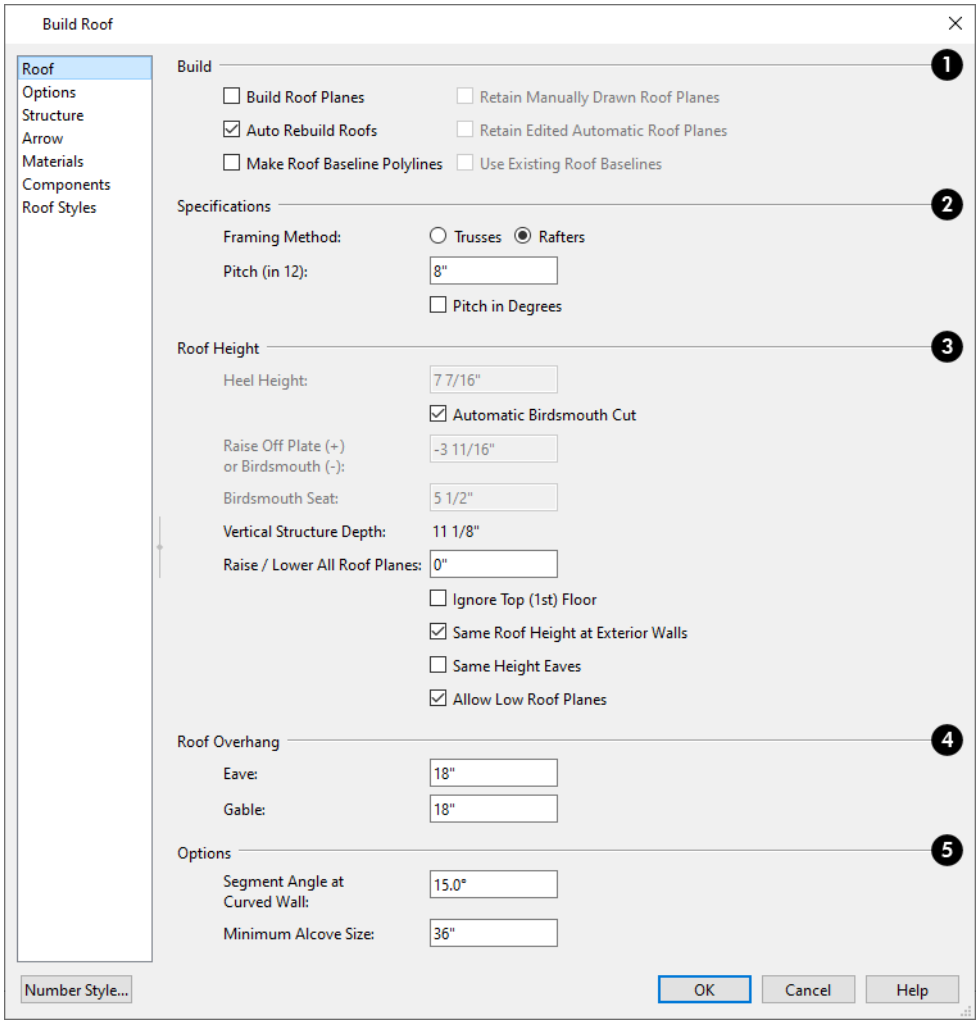
To open the Build Roof dialog, select **Build> Roof> Build Roof**. You can also double-click the **Roof Tools** button or the **Roof Plane** button to open this dialog.

Roof planes and Roof Baseline Polylines are generated based on the positions and roof directive settings for each exterior wall in the plan. If you make changes to any of these walls or to any of the settings in this dialog, you will need to build the roof again for them to take effect. See *Roof Panel on page 299*.

Aside from a number of check boxes on the ROOF panel that allow you to automatically generate roof planes and related objects, the settings in this dialog are also found in the Roof Defaults dialog. See *Roof Defaults on page 593*.

The settings in this dialog are similar to those found in the Roof Plane Specification dialog, but affect all subsequently created roof planes rather than one or more selected roof planes. See *Roof Plane Specification Dialog on page 613*.

ROOF PANEL



1 Build

- Check **Build Roof Planes** to build a new roof structure over the entire model. Unless you specify otherwise, the program discards the existing roof planes and produces new ones.
- If you check **Auto Rebuild Roofs**, the program automatically rebuilds the roof whenever you make a change that affects the generation of roofs, such as changes to exterior walls or ceiling heights.
- Check **Make Roof Baseline Polylines** to delete the existing roof and to create Roof Baseline Polyline(s) based on the exterior wall layout and roof information defined in those walls. Not available when **Build Roof Planes** is checked. See *Roof Baseline Polylines on page 617*.
- You can also specify how manually drawn or edited roof planes are handled when the roof is rebuilt automatically. These options are only available when **Build Roof Planes** is checked. See *Rebuilding Roofs on page 597*.

- Check **Retain Manually Drawn Roof Planes** to prevent manually drawn roof planes from being deleted when roof planes are rebuilt. Automatic roof planes may be generated in the same location. Also available if **Make Roof Baseline Polylines** is checked.
- Check **Retain Edited Automatic Roof Planes** to prevent automatic roof planes that have been manually edited - including roof planes over exploded dormers - from being deleted when roof planes are rebuilt. Also available if **Make Roof Baseline Polylines** is checked.
  If a newly generated roof plane is coplanar with a retained plane, and the area where they overlap is at least half the area of either of them, the new roof plane is deleted and only the retained plane is kept.

  > Note: Under some conditions, new roof planes may be generated in the same location as manually drawn or automatic roof planes that have been retained.

- Check **Use Existing Roof Baselines** to produce a roof plan based on your Roof Baseline Polyline(s) instead of the exterior wall layout.

2 Specifications

- Specify the roof **Framing Method**: either **Trusses** or **Rafters**. When Trusses is selected, roof plane Structure Thickness is derived from the default Top Chord Depth for roof trusses set in the Framing Defaults dialog; when Rafters is selected, the Structure Thickness is derived from the default Structure Definition. If you plan to use both trusses with rafters, select Framing so that the rafters' depth can be accommodated. See *Trusses Panel on page 657* and *Roof Panel on page 654*.
- Enter a value to describe the **Pitch**. In plans using U.S. units of measurement, pitch is described as a ratio over 12 by default; in metric plans, it is measured in degrees. For a conversion to degrees, see *Roof Pitches in Degrees on page 640*.
- Check **Pitch in Degrees** to display the pitch value in degrees in all dialogs as well as in roof plane labels. Values between -89° and 89° can be entered. When **Pitch in Degrees** is unchecked, Pitch is described in terms of rise and run: x inches in 12 or x mm in 1000.

3 Roof Height

- Specify the **Heel Height**, which the height that the roof is raised off the wall top plates to accommodate an Energy Heel. Only available when Trusses is the selected Framing Method. See *Energy Heels on page 691*.
- Uncheck **Automatic Birdsmouth Cut** to enable the settings below. When checked, the birdsmouth is calculated based on the pitch and rafter depth and its values are listed here for reference. Only available when Rafters is the selected Framing Method. See *Birdsmouth Cut on page 609*.
- The Raise Off Plate and Birdsmouth settings do not affect the bearing wall heights.
  - Enter a positive **Raise Off Plate** value in this field to build the roof to bear on Attic knee walls. A value of 6" builds the roof 6" above the wall top plates, bearing on short Attic walls.
  - Enter a negative **Birdsmouth Cut** value to control the birdsmouth depth. For a birdsmouth depth of 3", enter -3". The location of the Baseline may change if you use the **Raise Off Plate** setting to specify the birdsmouth depth. See *Birdsmouth Cut on page 609*.
- Specify the **Birdsmouth Seat**, which is the horizontal depth of the birdsmouth cut. If you change this value, the **Raise Off Plate/Birdsmouth Cut** value will automatically adjust.
- To control the Birdsmouth Cut, you should also check **Same Roof Height at Exterior Walls**, above.
- The **Vertical Structure Depth** is reported here for reference. It can be changed on the STRUCTURE panel. See *Structure Panel on page 603*.
- Specify the amount to **Raise/Lower All Roof Planes**, which controls the height of roof planes relative to the ceiling height specified for the rooms below. See *Floor and Ceiling Heights on page 539*.

  - The default value is 0, which creates roof planes that bear on the wall top plates at the Ceiling Height of the room below.
  - Increase this value to raise roof planes so they do not bear directly on the wall top plates. If roofs are raised sufficiently, Attic walls will automatically generate to support them. The exact height depends on the roof pitch.
  - Decrease this value to drop roof planes downward and decrease the height of the bearing walls. If roofs are lowered sufficiently, they may extend into rooms, producing areas with angled ceilings.
- Check **Ignore Top Floor** to ignore the top living floor when roof planes are generated. Roof planes are built on the top plates of the walls below the top floor.
- Specify how you would like the eaves of roof planes with different pitches to meet. See *Aligning Eaves on page 612*.
- Check **Same Roof Height at Exterior Walls** to keep bearing walls the same height and change horizontal roof overhang distances as needed so that eaves meet correctly.
  - When checked, this option ignores any overhang values you may have entered in the Wall Specification dialog. See *Aligning Eaves on page 612*.
  - Uncheck this option to raise or lower some roof planes relative to the wall's top plate, allowing all horizontal overhangs to be the same unless a non-default value has been entered in the Wall Specification dialog. See *Roof Directives in Walls on page 283*.
- Check **Same Height Eaves** to keep the eave height for all roof planes the same. Roof planes are raised and lowered as needed so that eaves meet correctly.
  - The eave height used when this box is checked is that of a roof plane using the default Pitch and Overhang values. When this box is checked, all roof planes are affected, including those that do not need adjustment in order to align with adjacent planes.
  - When **Same Height Eaves** is checked, any non-default overhang values specified in the Wall Specification dialog are used. Roof planes are raised or lowered so that the eave height is the same, regardless of the horizontal overhang.
- Uncheck **Allow Low Roof Planes** only when an upper floor overhangs roof planes below.

4 Roof Overhang

An overhang is measured horizontally from the outside Main Layer of exterior walls to the top outside edge of the fascia or, if no fascia is present, the end of the top of the rafter. The overhang does not include gutters. See *The Main Layer on page 288*.

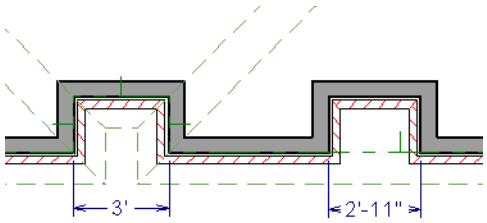
- **Eave** is the overhang distance outside bearing walls for roof planes using the default Pitch. If a particular roof plane has a different Pitch, its overhang will adjust to keep its fascia at the same height. Overhang may be greater for a shallower pitch, lesser for a greater pitch.
- **Gable** is the overhang distance at gable ends or rake walls.



If the roof overhang values are not sufficient to extend past the outer surface of exterior walls, the walls may not generate correctly in 3D views.

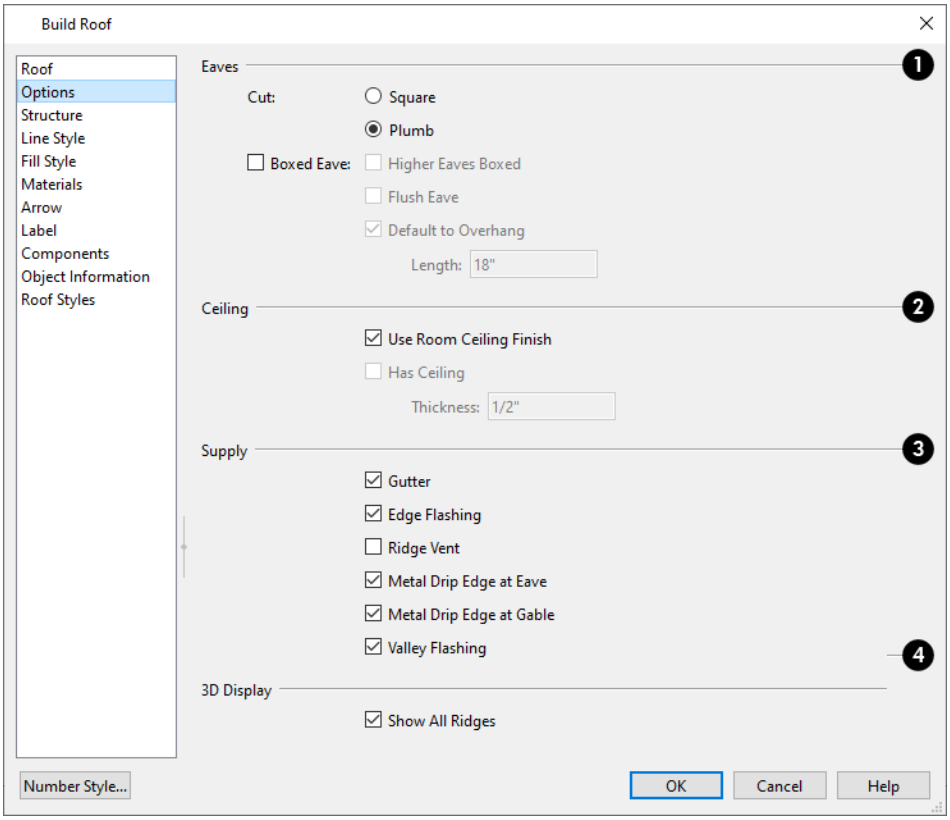
5 Options

- Enter the **Segment Angle at Curved Wall**, which is the angle for roof segments automatically generated to cover a curved wall. A smaller angle produces more roof planes. Note that in some instances, slightly smaller or larger values will be used instead of the specified angle.
- Specify the **Minimum Alcove Size**, which is the minimum depth and width of an alcove in an otherwise straight exterior wall. Alcoves with both a depth and width less than this value are roofed over, while alcoves that are either wider or deeper than this value do not receive a roof.



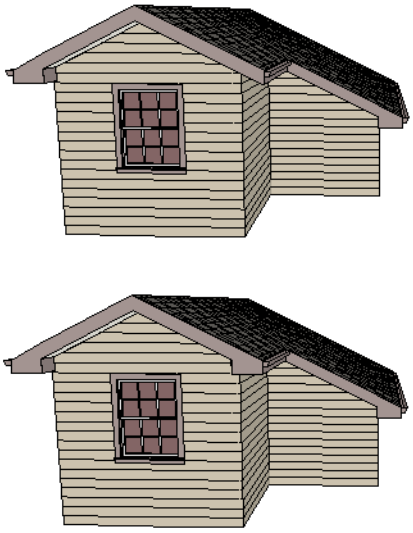
An alcove smaller than the Minimum Alcove Size is ignored by the automatic roof generator.

Options Panel



1 Eaves

- Specify how the rafter and truss ends are **Cut** by selecting either **Square Cut** or **Plumb Cut**.
- Check **Boxed Eave** to produce horizontal boxed eaves or uncheck it for sloping eaves. You can also change this for individual roof planes in the Roof Plane Specification dialog. See *Boxed Eaves on page 639*.
- Check **Flush Eave** to produce box eaves that build flush with the adjacent exterior wall. When unchecked, boxed eaves build to the gable fascia.
- **Higher Eaves Boxed** - If the selected roof plane contains more than one eave, check this box to box the higher eaves as well as the lower ones.



- By default, Boxed Eaves extend from the inside edge of the roof fascia to the exterior Main Layer of the wall, enclosing the overhang area. If an exterior room with **Use Soffit Surface for Ceiling** checked is located between the roof's baseline and an interior room, the Boxed Eave will extend across that room, as well. You can instead uncheck **Default to Overhang** and specify the **Length** of the boxed eaves. Not available if **Flush Eave** is checked.

2 Ceiling

See *Special Ceilings on page 326*.

- Specify how the **Ceiling** surface on the underside of roof planes is built. See *Vaulted and Cathedral Ceilings on page 327*.
- When **Use Room Ceiling Finish** is checked, the ceiling finish thickness and material on the undersides of roof planes are defined by the room below. Uncheck this box to enable the two settings that follow and define the ceiling finish as part of the roof planes instead. When this is unchecked, you can specify the Ceiling Surface material on the *Materials Panel on page 603*.
- Check **Has Ceiling** to enable the Ceiling Thickness option. When this box is unchecked, the selected roof plane will have no ceiling surface at all and the "Ceiling Surface" component will not be available on the MATERIALS panel.
- Specify the **Ceiling Thickness**, which is the thickness of the bottom surface of the ceiling plane.

3 Supply

Specify which material components to calculate in the Materials List. See *Materials Lists on page 954*. Only **Gutter** is available in the Roof Plane Specification dialog.

- Uncheck **Gutter** to not include gutters on subsequently-built roof planes. This option affects both the Materials List and 3D views.
- Check **Edge Flashing** to calculate edge flashing in the Materials List when one or more roof planes is against a wall.
- Check **Ridge Vent** to calculate ridge venting in the Materials List.
- Check **Metal Drip Edge at Eave** to calculate metal drip edge along the eaves in the Materials List.
- Check **Metal Drip Edge at Gable** to calculate metal drip edge along any gable eaves in the Materials List.
- Check **Valley Flashing** to calculate valley flashing in the Materials List when two or more roof planes form a valley.

4 3D Display

- When **Show All Ridges** is checked, a line along each hip between roof planes forming the conical roof above a curved wall displays in Vector Views. Uncheck this box to suppress these lines. See *Rendered and Vector Views on page 779*.

Structure Panel

The settings on the Structure panel of the Build Roof dialog are the same as those on the Roof panel of the Build Framing dialog. Changes made in one dialog are also applied in the other. See *Roof Panel on page 654*.

> Note: Changes made on the Structure panel will not affect the structure of existing roof planes. To make changes take effect, rebuild the roof.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of Roof Planes in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of Roof Planes in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on this panel allow you to specify the default materials for the roof's various components. See *Materials Panel on page 760*.

Arrow Panel

The settings on this panel allow you to control the appearance of Roof Plane slope direction arrows. See *Displaying Roofs on page 606*.

For information about these settings, see *Arrow Panel on page 252*.

Label Panel

By default, Roof Plane labels display when the "Roofs, Labels" layer is turned on and use the Text Style assigned to that layer. For more information see *Label Panel on page 395*.

See, too, *Roof Plane Labels on page 606*.

Components Panel

The information on the Components panel can be used in the materials list. For more information, see *Components Panel on page 967*.

Object Information Panel

The information on the Object Information panel can be used in the materials list. For more information, see *Object Information Panel on page 968*.

Roof Styles Panel

The Roof Styles panel provides links to tutorial information about creating different roof styles automatically. Click on a roof style to launch the online Help to a page with information about the roof style you selected.

Roof Planes

When creating a roof, it is helpful to know how to draw a roof plane manually and be familiar with its parts.

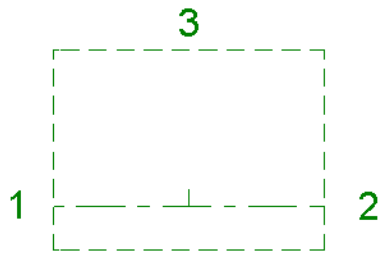
Drawing Roof Planes

Roof planes are CAD-based objects that are created and edited like much closed polylines, and also have pitch, elevation and structural properties.

Before drawing roof planes, you should set your roof defaults so that the 3D attributes of your roof planes are correct. See *Roof Defaults on page 593*.

To draw a roof plane

1. Select **Build> Roof> Roof Plane** .
2. Click and drag a Baseline from point **1** to point **2**, as in the following example:



> Most roof planes are drawn over a wall, and the Baseline should be located directly above the outer edge of the wall's Main Layer. See *The Main Layer on page 288*.

3. Release the mouse button at point **2** and move your cursor in the upslope direction. As you move the cursor, a preview outline of the roof plane displays.
4. Click at point **3** to build the roof plane. Point 3 is located on the ridge edge of the roof plane.

> Note: You cannot manually draw roof planes when Auto Rebuild Roofs is enabled in the Build Roof dialog. See *Roof Panel on page 598*.

Ceiling Planes are drawn in a similar manner to Roof Planes with one important exception: a Ceiling Plane's Baseline should be drawn so it is located above the inner edge of the wall's Main Layer.

The Baseline

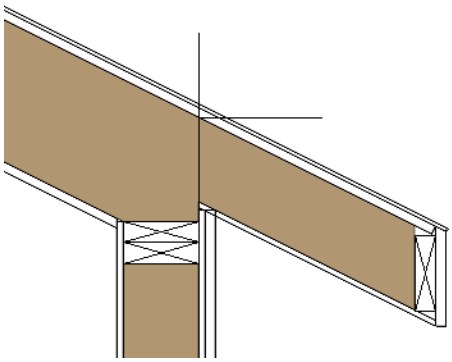
The pitch direction and initial height of any roof plane - manual or automatic - is determined by its Baseline.

A roof plane's Baseline is normally located over the outer Main Layer of the wall and is used as the pivot point for the roof plane when the pitch is changed. See *The Main Layer on page 288*.

Baseline height is determined by the following formula:

Elevation of the wall top plate + (Vertical Structure Depth - Vertical Birdsmouth Depth) = Baseline Height

In a cross section, the Baseline is located directly above the outer surface of the main wall layer, at the top surface of the roof framing.



A roof Baseline displays as a separate line within its roof plane when the "Roofs, Baselines" layer is turned on. In 3D views, it can only be seen if the roof plane is selected.

A Baseline has a tick mark at its center point which indicates the direction that the roof plane slopes upward. If the upslope tick is pointing the wrong direction, either rotate the entire roof plane or delete it and draw a new one.

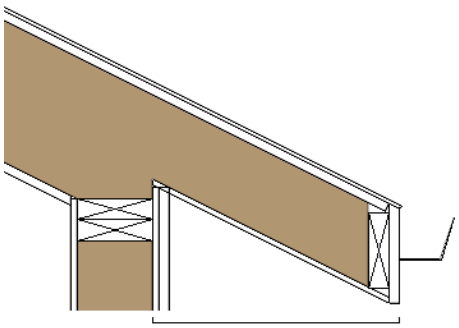
When drawing the Baseline of a roof plane, here are some things to consider:

- A Baseline does not have to be drawn over a wall, although it often is.
- A Baseline drawn along a wall should be drawn over the outer edge of the wall's Main Layer. It will, in fact, snap to that layer if possible.
- The elevation of the top plate is defined by the ceiling height in the room. If the roof plane is not drawn over a wall, its height is based on the default ceiling height value for the current floor.
- If a Baseline is drawn over the top of any other roof plane, the Baseline height equals the height of the existing roof plane at the point where you started drawing.

Once drawn, a Baseline can be selected in plan view and edited independent of the roof plane. See *Editing Roof Baselines on page 609*.

Eave and Gable Overhangs

Roof overhangs are measured horizontally from the outside Main Layer of exterior walls to the top outside edge of the fascia or, if no fascia is present, the end of the top of the rafter. The overhang does not include gutters. See *The Main Layer on page 288*.



The location of a roof plane's fascia and shadow boards also determines its area and the size of its polyline in plan view. See *Polyline Panel on page 615*.

Displaying Roofs

The display of roof planes, their labels, and attributes such as gutters and ridge caps is controlled in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

Roof planes are drawn on the "Roof Planes" layer. If this layer is turned off and **Auto Rebuild Roofs** feature is turned on, changes made to the plan that cause the roof to rebuild will not automatically turn on its display. See *Rebuilding Roofs on page 597*.

In Plan View

A number of layers associated with roof planes only display information in plan view, including "Roofs, Baselines" and "Roofs, Gable Lines".

If the bottom surface of the roof extends below the ceiling height of a room, Ceiling Break lines will display, indicating where the flat ceiling ends and sloped ceiling begins. Ceiling Break lines are drawn on the "Ceiling Break Lines" layer in plan view only.



In plan view, roof planes can display on any floor without affecting their height in 3D. To move the display of a roof plane to a new floor, select it in plan view and click either the **Display on Floor Above** or **Display on Floor Below** edit button. The display of group-selected roof planes can also be controlled in this manner.

Any skylights or roof holes placed in a roof plane moved in this manner will move, as well. Other associated objects like Auto Dormers or gutters will not move, however.

Projected vs Actual Size

Like other closed-polyline based objects, roof planes, ceiling planes, and roof holes have a perimeter and an area. Roof objects are unique, however, in that they typically have a pitch. This means that their size is represented in two ways:

- Actual size, which is useful for calculating materials
- Projected size, which is used in plan view and is useful for representing setbacks, overhangs, and other attributes.

When a roof object has a non-zero pitch, its projected size will be smaller than its actual size. The steeper the pitch, the larger the difference between the two. Any edges that are perpendicular to the pitch direction are not affected by the steepness of the pitch; however, all other edges are. In its specification dialog, you can specify the length of a roof object's selected edge's using either the Projected Length or the Length at Pitch. See *Line Panel on page 233*.

Information about a roof object's projected and actual size is reported in its specification dialog. See *Polyline Panel on page 615*.

Skylights are special type of roof object that also have projected size in plan view. See *Skylights and Roof Holes on page 628*.

Roof Plane Labels

Roof plane labels indicating the pitch and slope direction are located on the "Roofs, Labels" layer and can be set to display in floor plan view. When a roof plane or a ceiling plane with a label specified is selected, its label will have a small square Move handle.

You can specify whether roof plane labels display the pitch in terms of rise and run or in decimal degrees by checking or unchecking **Pitch in Degrees** in the Build Roof dialog. See *Roof Panel on page 598*.

A roof plane's label can be customized in its specification dialog. See *Label Panel on page 395*.

Manually drawn **Ceiling Planes** and **Skylights** can also display labels when the "Roofs, Labels" layer is on. Unlike roof planes, these objects' labels do not include a slope indicator and their Automatic Labels are blank; however, you can specify a custom label using text in their specification dialogs. See *Ceiling Planes on page 620* and *Skylights and Roof Holes on page 628*.

When a roof plane, ceiling plane or roof hole/skylight is selected in a 3D view, its label will display on a temporary basis if the "Roofs, Labels" layer is turned on.

In Cross Section Views

When a roof or ceiling plane is viewed in a cross section, the layers that compose it can be seen, including the roof surface, sheathing, and the ceiling surface:

- If roof framing has been built, its display can be turned on, as well. See *Displaying Framing on page 673*.
- If a roof or ceiling plane is located over a room with **Flat Ceiling Over this Room** checked, the ceiling surface will not generate. See *Vaulted and Cathedral Ceilings on page 327*.

In the Materials List

The materials that make up roof and ceiling plane assemblies are listed under different Categories in the Materials List:

- **Roofing** - Lists most materials associated with roofs, including roofing, sheathing, rafters and trusses, gutters, and skylights.
- **Insulation** - Insulation is calculated for roof and ceiling planes above rooms that do not have Flat Ceiling Over This Room checked. See *Structure Panel on page 330*.
- **Wallboard** - Lists ceiling materials for all rooms, including those that use the underside of the roof as their ceiling.
- **Framing** - Lists ceiling framing for manually drawn ceiling planes.

See *Materials Lists on page 954*.

Editing Roof and Ceiling Planes

A selected roof or ceiling plane can be edited in 2D and 3D using edit handles, edit toolbar buttons, and its specification dialog. In 3D views, you can also use the **Material Painter** . See *Material Painter® Tools on page 758*.

The appearance and display of roof and ceiling planes can also be customized. See *Displaying Roofs on page 606* and *Roof Plane Specification Dialog on page 613*.

By default, all roof planes are deleted and replaced whenever the roof is rebuilt using the Build Roof dialog. If you have manually edited roof planes and do not want them to be replaced, be sure to check **Retain Edited Roof Planes** in the Build Roof dialog. See *Roof Panel on page 598*.

Selecting Roof Planes

To select a roof or ceiling plane in plan view, click on one of its edges. When a roof or ceiling plane is selected, it is highlighted using the Selection Line and Fill Colors set in the Preferences dialog, and a full complement of edit handles

displays, including one on each edge and each corner. See *Selecting Objects on page 183*.

A roof or ceiling plane's Baseline can also be selected and edited in plan view. To select it, first select the roof plane and then click the **Select Next Object** edit button. When the Baseline is selected, the roof plane is highlighted but edit handles only display at the midpoint and on each end of the Baseline. See *The Baseline on page 604*.

Roof and ceiling planes can also be group-selected, although their editing options will be limited. See *Selecting Multiple Objects on page 186*.

Roof and ceiling planes can be selected and edited in 3D views; however, their Baselines cannot.

Roofs and Auto Rebuild

Roof planes cannot be edited while **Auto Rebuild Roofs** is checked in the Build Roof dialog. If you try to do so, the program will prompt you to turn Auto Rebuild off.

An exception to this rule is the **Material Painter** tool, which you can use to change the materials used by individual roof planes without rebuilding the roof. Bear in mind, though, that any changes made using the **Material Painter** will not be retained if the roof is later rebuilt. See *Material Painter® Tools on page 758*.

2D Shape and 3D Orientation

There are two basic aspects to editing roof planes: 2D shape and 3D orientation.

- The 2D shape of a roof or ceiling plane can be edited much like a closed CAD polyline. As a plane's perimeter is reshaped in 2D, the program maintains its height and pitch in 3D. See *Editing Closed Polyline-Based Objects on page 197*.
- The 3D orientation of a roof or ceiling plane is defined by its height, pitch, and its structure: all of which can be edited in its specification dialog.

An understanding of these two concepts may require some practice, but allows you to design almost any kind of roof system.

Raising/Lowering Roof and Ceiling Planes

The default height of a roof or ceiling plane is based on the ceiling height of the room below. See *Floor and Ceiling Heights on page 594*.

Roof planes can be raised or lowered in the Roof Plane Specification dialog. Begin by locking the **Pitch**, then change one of the **Height** values. See *General Panel on page 613*.

Ceiling Planes can be edited in a similar manner in their specification dialog. See *General Panel on page 622*.

You can also raise or lower roof and ceiling planes using the **Transform/Replicate Object** edit tool. See *Transform/Replicate Object Dialog on page 176*.

In addition, when a new floor is added to a plan, you can choose to move any roof planes displaying on the top floor up to the newly added floor level. Ceiling Planes are not affected when a new floor is added. See *Adding Floor Levels on page 536*.

Changing a Roof or Ceiling Plane's Pitch

The default pitch for a roof system as well as for manually-drawn ceiling planes is set in the Build Roof dialog. Non-default pitches can be set in the specification dialog of each exterior bearing wall defining a room on the top floor level of the plan. See *Roof Directives in Walls on page 283*.

Just as with its height, the pitch of a roof or ceiling plane can be modified on the GENERAL panel of its specification dialog. Begin by locking one of the **Height** values and then change the **Pitch**.

If you choose to lock the **Top of Plate** height of a roof plane, the point about which the plane will pivot depends on whether **Automatic Birdsmouth Cut** is checked in the Build Roof dialog.

- When it is checked, the roof plane will pivot about the top inside edge of the bearing wall's top plate.
- When it is unchecked, it will pivot about the top outside edge of the top plate.

Changing a roof plane's pitch can affect how it connects to adjacent roof planes. See *Connecting Roof and Ceiling Planes on page 611*.

EDITING ROOF PLANE STRUCTURE

To create roof planes of a particular depth, begin by setting up the desired roof framing defaults, then build the roof. See *Manual Framing Defaults Dialog on page 658*.

If you later need to change the structure of the roof planes, make the needed change to the Framing Defaults, and then rebuild the roof. You can also edit roof structure on an individual roof plane basis. See *Roof Plane Specification Dialog on page 613*.

BIRDSMOUTH CUT

The birdsmouth is the notch cut into a rafter where it rests on the wall top plate. You can control its vertical depth and the width of the birdsmouth seat in the Build Roof dialog. See *Roof Panel on page 598*.

There are two ways to create a roof plane with no birdsmouth:

- Select **Trusses** as the **Framing Method** in the Build Roof dialog before drawing the roof plane.
- Specify a **Raise/Lower All Roof Planes** value of at least 1/16” in the Build Roof dialog.

To change the birdsmouth depth after the roof is built, you can move the roof planes up or down, or change the pitch. For example, if you lock the pitch and raise the roof plane by one inch, you decrease the birdsmouth depth by one inch.

EDITING ROOF BASELINES

The pitch direction and initial height of any roof plane - manual or automatic - is determined by its Baseline. See *The Baseline on page 604*.

In plan view, a Baseline can be selected and edited independent of the roof plane. To select it, click on the roof plane at the location of the Baseline and then click the **Select Next Object**  edit button. The Status Bar tells you when the roof plane Baseline is selected. See *Select Next Object on page 184*.

If a roof plane Baseline is moved, its height will not change. Instead, the height of the roof plane will be affected. In most cases, therefore, moving a roof plane’s Baseline independent of the roof plane itself is not recommended.

If the angle of a roof plane’s Baseline is changed, the direction of the roof plane’s pitch will be modified. The Baseline Angle can be modified in either of two ways:

- In the Roof Plane Specification dialog. This will change its angle relative to the floor, and will tilt the roof plane along an axis perpendicular to its Baseline. This method is helpful when a specific eave angle is needed. See *General Panel on page 613*.
- Using its Rotate edit handle in plan view. This will change its angle relative to the roof plane’s eave or ridge and will modify the direction of the pitch. This method is best when the pitch direction matters more than the angle of the eave.

- Both of these methods can be used to modify the same roof plane, although the second approach makes it difficult to control both the pitch direction and eave angle, and is not recommended.

The length of a roof plane Baseline can be lengthened or shortened using its edit handles without changing any of the roof plane's attributes.

Roof Edges and Walls

By default, the edges of a roof plane will automatically snap to the outer surface of a nearby parallel wall. You can disable this **Special Snapping** behavior for a selected roof plane in its specification dialog. See *General Panel on page 613*.

After moving a corner edit handle, it may be difficult to make an edge parallel to an eave or a wall. Use the **Make Parallel/Perpendicular** edit button to align a roof or ceiling plane edge with a wall, another roof plane edge, or another object with a straight edge. See *Make Parallel/Perpendicular on page 172*.



If opposite sides of a roof plane are parallel, Temporary Dimensions will display between them when one side is selected.

Sometimes, what appears to be a single, straight roof plane edge may actually be broken into two or more edges, which can affect your ability to align the edge properly.

When **Bumping/Pushing** is enabled and **CAD Stops Move** is checked in the Roof Plane Specification dialog, a roof plane will bump against another roof plane, CAD or CAD based object as it is moved. Roof planes cannot push these objects, however. See *Bumping/Pushing on page 167*.

Locking Roof Planes

When the roof plan is correct, roof planes can be locked to prevent them from being accidentally selected and changed. To do this, lock the "Roof Planes" layer. See *Layer Display Options Dialog on page 154*.

Locking roof planes will not prevent roof planes from being deleted if the floor they are on is deleted. See *Locking Layers on page 153*.

Deleting Roof Planes

There are several ways to delete roof planes.



Delete the entire roof quickly by selecting **Build> Roof> Delete Roof Planes**.



You can also delete all roof planes at once in the Delete Objects dialog. See *Delete Objects Dialog on page 219*.



In addition, you can select one or more roof planes or roof plane baselines, then press the ***Delete*** key or click the **Delete** edit button to delete it from the plan. See *Deleting Objects on page 218*.

Generally speaking, roof planes cannot be deleted if they are locked. An exception to this rule occurs when an entire floor of a plan is deleted. Any roof planes present on a floor will be deleted when the floor is deleted, locked or not. See *Deleting Floor Levels on page 539*.

When a roof plane is deleted, any roof framing associated with it is automatically deleted, as well.

Connecting Roof and Ceiling Planes

When a roof system is drawn correctly, roof planes will meet along geometrically correct lines to form ridges, hips, and valleys. There are a number of tools to help you achieve this when manually drawing or editing roofs.

To generate roof planes that do not form a single, integrated system, consider using Roof Groups. See *Roof Groups on page 596*.

By default, all roof planes are deleted and replaced whenever the roof is rebuilt using the Build Roof dialog. If you have manually edited roof planes and do not want them to be replaced, be sure to check **Retain Edited Roof Planes** in the Roof Plane Specification dialog. See *Roof Panel on page 598*.



Roof planes cannot be edited while Auto Rebuild Roofs is turned on. If you try to do so, the program will prompt you to turn it off.

Join Roof Planes



Two roof or ceiling planes can be joined at adjacent edges in both 2D and 3D using the **Join Roof Planes** edit button. To use this tool, first identify which edges of the roof planes can extend to meet at a ridge, hip, or valley. The program will join the two planes along the line where they intersect whenever possible.

To use Join Roof Planes

1. Select a roof or ceiling plane on the edge to be joined to another plane.
2. Click the **Join Roof Planes**  edit button or press the ***2*** key.
3. Move your pointer to the edge of the second roof or ceiling plane that the first one needs to join to. When your pointer is over the second plane, this plane will highlight.
4. Click on the edge of the second roof or ceiling plane to join it to the first plane.

Note: Join Roof Planes cannot be used to join a roof plane and ceiling plane. Only planes of the same type can be joined using this tool.

If the planes are not close enough, or their shape is not correct, you may need to align their edges, remove extra edges, or move them closer.

When roof or ceiling planes adjust, the program joins them at the proper location and the adjacent edges extend or contract to remain connected. If the joining of the two will completely eliminate or reverse an adjacent edge, the connection cannot be made.

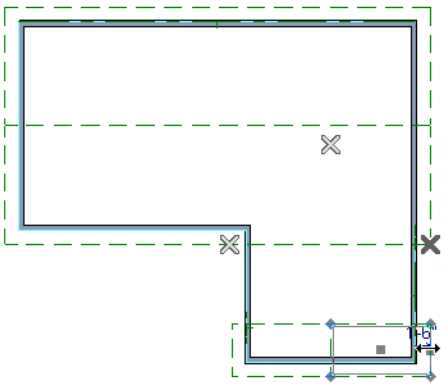
Locating Intersections

When roof planes of differing slopes meet, they create a ridge, hip, or valley. The **Join Roof Planes**  edit tool is the easiest way to move roof plane edges so that they meet correctly; but you can also locate roof plane intersection points where the ridge, hip or valley should be. Once you know where the planes will meet, you can drag edges or corners to those points.

To find roof plane intersection points

1. Select the roof plane you would like to place intersection points on.
2. Click the **Place Roof Plane Intersection Point**  edit button.

3. Click the edge of another roof plane to place a temporary CAD Point at the geometrically accurate location where that edge would meet the selected roof plane.
4. Repeat these steps for additional edges as needed.



5. Once these intersection points are identified, you can snap the corners of the second roof plane to them.

Aligning Eaves

It is not uncommon for roof plans to feature more than one pitch. In order for the eaves of roof planes with different pitches to meet correctly at ridges and hips, you must control the roof planes' heights and their horizontal overhang distances. Two options in the Build Roof dialog allow you to control how the eaves of automatically generated roof planes align. See *Roof Panel on page 598*.

- **Same Roof Height at Exterior Walls** maintains the default height of roof planes where they bear on exterior walls. The horizontal overhang distances of any non-default roof planes are adjusted so that they continue to join correctly with default roof planes.
- **Same Eave Heights** maintains the default roof plane height at the eaves as well as any non-default horizontal overhang distances. All roof planes are raised or lowered so that they all have the same height at the eaves as default roof planes.

Roof planes that do not join other roof planes with different pitches at ridges or hips are referred to as Independent.

- When **Same Roof Height at Exterior Walls** is checked, Independent roof planes are not affected and will maintain any non-default overhang values.
- When both **Same Roof Height at Exterior Walls** and **Same Eave Heights** are checked, the overhangs of Independent roof planes will be adjusted to preserve their heights at both the exterior walls and the eaves.

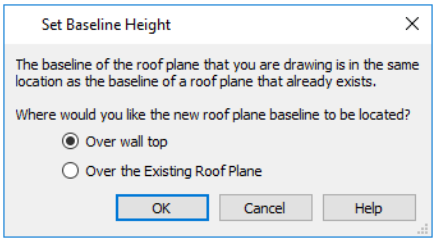
Move to be Coplanar



The **Move to be Coplanar** edit button allows you to move the selected roof plane to be coplanar (in the same plane) with the next selected roof plane. You can use this tool in both 2D and 3D views. The results can be easily seen in a cross section view. The two roof planes must have parallel Baselines for this to work.

Set Baseline Height Dialog

If you manually draw a roof plane so that it bears on a wall at its Baseline, and is placed in the same location as an existing roof plane, the Set Baseline Height dialog will display. See *The Baseline on page 604*.

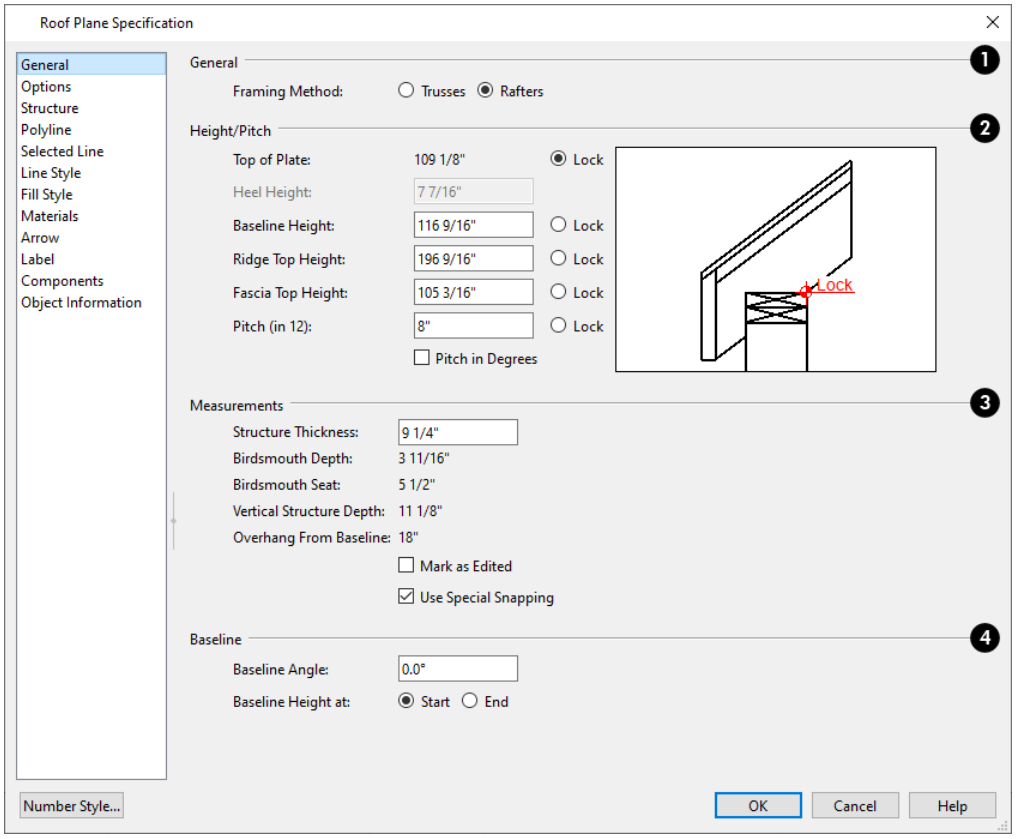


- Select **Over Wall Top** to create a roof plane that bears on the wall it is drawn over and has an overhang as specified in the Build Roof dialog. This option would be appropriate to produce a full height dormer. See *Manually Drawn Dormers on page 633*.
- Select **Over the Existing Roof Plane** to produce a roof plane with a height based on that of the roof plane below it rather than the wall. The Baseline height equals the top height of the existing roof at the point where you began drawing the new roof plane Baseline, and has no overhang. This option would be appropriate to create a dormer vent or cricket. See *Crickets on page 633*.

Roof Plane Specification Dialog

Select one or more roof planes and click the **Open Object** edit button to open the Roof Plane Specification dialog.

General Panel

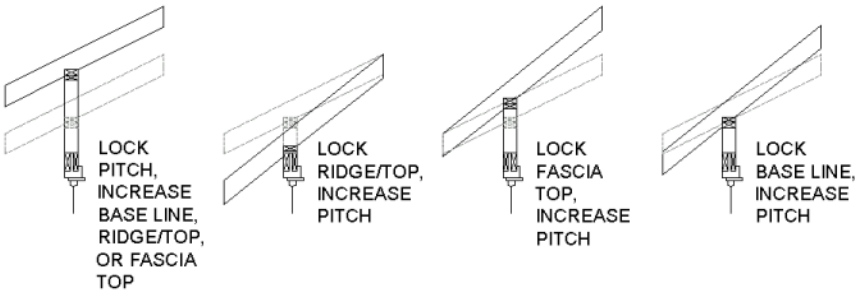


There are four values that define the 3D orientation of a roof plane: **Ridge Top Height**, **Baseline Height**, **Fascia Top Height**, and **Pitch**.

Locking any of the **Height** values defines that value as the pivot point for the selected roof plane. Each of these dimensions is measured from the first floor default elevation of 0' - 0".

If you lock the **Pitch** and change a Height value, the roof plane moves vertically, keeping the same slope. It will not pivot.

Changing these values does not affect the 2D representation of the roof plane.



1 General

- Specify the selected roof plane's **Framing Method**: either **Trusses** or **Rafters**. When Trusses is selected, the roof plane's Structure Thickness is derived from the default Top Chord Depth for roof trusses set in the Framing Defaults dialog; when Rafters is selected, the Structure Thickness is derived from the dialog. See *Roof Panel on page 654* and *Trusses Panel on page 657*.

2 Height/Pitch

Specify the **Height** and **Pitch** of the selected roof plane(s). Heights are measured from the top surface of the roof plane(s) rafters or trusses. See *Roof Planes on page 604*.

- The **Top of Plate** is defined by the ceiling height of the room below and is reported here for reference. N/A displays if no room is below the roof plane.
- Specify the **Heel Height**, which only applies to roof planes framed with Trusses, and cannot be adjusted when the Baseline Height is locked.
- Define the **Ridge Top Height**, or lock this value to make it the roof plane's pivot point. If the roof plane's has multiple ridge lines, this setting is associated with the highest ridge.
- Define the **Baseline Height**, or lock this value to make it the pivot point.
- Define the **Fascia Top Height**, or lock this value to make it the pivot point.

> Note: The Fascia Top height will decrease slightly if the fascia edge is aligned with the ridge top of another roof plane.

- Specify the **Pitch** for the selected roof plane, or lock this value to move the roof plane vertically when a Height value is changed.
- Check **Pitch in Degrees** to display the pitch value in degrees in all dialogs as well as in roof plane labels. Values between -89° and 89° can be entered. When **Pitch in Degrees** in unchecked, Pitch is described in terms of rise and run: x inches in 12 or x mm in 1000.

The diagram to the right of the Height/Pitch settings shows the location of the Lock point. If a Height/Pitch setting is currently selected for editing, its location will also be indicated using an arrow.

- Select a radio button to choose whether to **Show Diagram for Rafters** or **Trusses**. The structure of the roof and location of the Top of Plate Lock point vary between these two options.

3 Measurements

Information about the structure of the selected roof plane(s) displays here for reference.

- Specify the **Structure Thickness** of the selected roof plane(s). The default Structure Thickness is set in the Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.
- The **Birdsmouth Depth** is the plumb or vertical depth of the birdsmouth cut. To change it, move the roof plane some way. For example, if you lock the pitch and raise the roof plane by one inch, you will decrease the birdsmouth depth by one inch. See *Birdsmouth Cut on page 609*.
- The **Birdsmouth Seat** is the horizontal width of the birdsmouth cut. This value is dynamically linked to the birdsmouth depth - if one changes, so does the other.
- The **Vertical Structure Depth** is defined by measuring a plumb line across the roof plane structure. The degree of pitch affects the Vertical rafter width. The greater the pitch, the greater the vertical structure depth.
- **Overhang from Baseline** is the horizontal overhang measured from the Baseline to the eave.
- **Mark as Edited** - When an automatically generated roof plane is modified, the program marks it as "edited", giving you the option of retaining it when the roof is rebuilt. Uncheck this box to remove this status from the selected roof plane. See *Rebuilding Roofs on page 597*.
- **Mark as Edited** is only available for automatically generated roof planes. If a manually drawn roof plane is selected, the words **Manual Roof Plane** will display here instead.
- When **Use Special Snapping** is checked, the selected roof plane's edges will automatically snap to the outside surface of walls that it may butt against. Uncheck this to prevent the roof plane from snapping to any nearby walls.

4 Baseline

Specify the angle of the selected roof plane's **Baseline**, relative to the XY axis. See *Editing Roof Baselines on page 609*.

- A positive **Baseline Angle** value causes the Baseline to tilt upward from its default height. A negative value causes it to tilt downward. The top heights of any walls under the selected roof plane will become angled, as well.
- The **Baseline Height** defined above can be maintained at either the **Start** or **End** point. In plan view, the Baseline direction is clockwise around the house.

Options Panel

The settings on the Options panel are the same as those on the panel of the same name in the Build Roof dialog, but affect the selected roof plane only. See *Options Panel on page 601*.

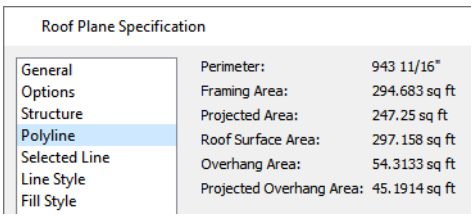
Structure Panel

The settings on the Structure panel are similar to those on the Roof panel of the Build Framing dialog, but apply to the selected roof plane only. See *Roof Panel on page 654*.

One check box is unique to the Structure panel of the Roof Plane Specification dialog: check **Retain Roof Framing** to keep the selected roof plane's framing from being deleted and replaced when roof framing is rebuilt.

Polyline Panel

The Polyline panel states the length of the roof plane's Perimeter and its enclosed Area, calculated using several different methods.



- The **Perimeter** is the total length of the roof plane's sides, not including fascia, with its pitch taken into account. It does not equal the perimeter as measured in plan view unless the roof plane has no fascia and the pitch is 0.
- The **Framing Area** is the area of the roof plane's framing, not including the fascia, with the pitch taken into account. It is slightly smaller than the Roof Surface Area as roofing typically overhangs the framing by a small amount.
- The **Projected Area** is the area of the roof plane polyline, including fascia, as seen in plan view. It does not equal the Roof Surface Area unless the pitch is 0.
- The **Roof Surface Area** is the area of the roof plane's top surface, which covers the fascia, with the pitch taken into account.
- The **Overhang Area** is the area of the roof plane's overhang, including fascia, with its pitch taken into account.
- The **Projected Overhang Area** is the area of the roof plane's overhang, including fascia, as seen in plan view. Not available for Ceiling Planes or Roof Holes.
- The **Overhang Area** is the area of the roof plane's overhang, including fascia, with its pitch taken into account. Not available for Ceiling Planes or Roof Holes.
- The **Projected Overhang Area** is the area of the roof plane's overhang, including fascia, as seen in plan view. Not available for Ceiling Planes or Roof Holes.

Selected Line Panel

The SELECTED LINE panel is similar to the Line panel of the Line Specification dialog, and applies to the roof plane's Selected Edge. See *Selected Edge on page 185* and *Line Panel on page 233*.

Line Style Panel

The settings on the LINE STYLE panel affect the appearance and Bumping behavior of the selected Roof Plane in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the FILL STYLE panel affect the appearance of the selected Roof Plane in plan view. See *Fill Style Panel and Dialogs on page 161*.

Arrow Panel

The settings on the ARROW panel allow you to control the appearance of the selected roof plane's slope direction arrow. See *Displaying Roofs on page 606*.

For information about these settings, see *Arrow Panel on page 252*.

Materials Panel

The settings on the MATERIALS panel allow you to specify materials for the selected roof plane's various components. For more information, see *Materials Panel on page 760*.

The "Ceiling Surface" component is only available when **Use Room Ceiling Finish** is unchecked and **Has Ceiling**, checked, on the OPTIONS panel. See *Options Panel on page 601*.

Label Panel

Labels for Roof Plane display when the "Roofs, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

See, too, *Roof Plane Labels on page 606*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Roof Baseline Polylines

Typically, the program builds an automatic roof based on the settings in the Build Roof dialog and on the Roof panel of the Wall Specification dialog, along with the layout of the exterior walls and floor and ceiling heights.

If you want to build a roof that diverges from the footprint of your building as well as the roof directives in the exterior walls, you can use Roof Baseline Polylines.

To create roof baseline polylines

1. Select **Build> Roof> Build Roof**  .
2. On the Build panel of the Build Roof dialog, check **Make Roof Baseline Polylines**.
3. Click **OK**. A set of roof Baselines is created along the outside edge of the Main Layer of the exterior walls, forming one or more closed polylines.

As with roof planes, the heights of Roof Baseline Polylines are determined by ceiling heights in the plan. If roof planes will be built at more than one height, a separate baseline polyline is created for each height.

Once created, a Roof Baseline Polyline can be edited in a variety of ways, then used as the basis for the roof then next time it is built automatically.

To create a new roof using the directives in your Roof Baseline Polyline(s), check **Use Existing Roof Baselines** in the Build Roof dialog and click OK. See *Roof Panel on page 598*.

Displaying Roof Baseline Polylines

Roof Baseline Polylines are placed on the “Roofs, Baseline Polylines” layer and use the Text Style assigned to that layer. See *Layer Attributes on page 152*.

Roof directive information displays along each edge of the polyline, including:

- V - vertical (against wall);
- G -gable/shed;
- K - knee wall;
- L - lower (extend slope downward).

If the directive information includes the pitch, the roof plane slopes toward that edge; if it includes the word (vert), it does not.

Editing Roof Baseline Polylines

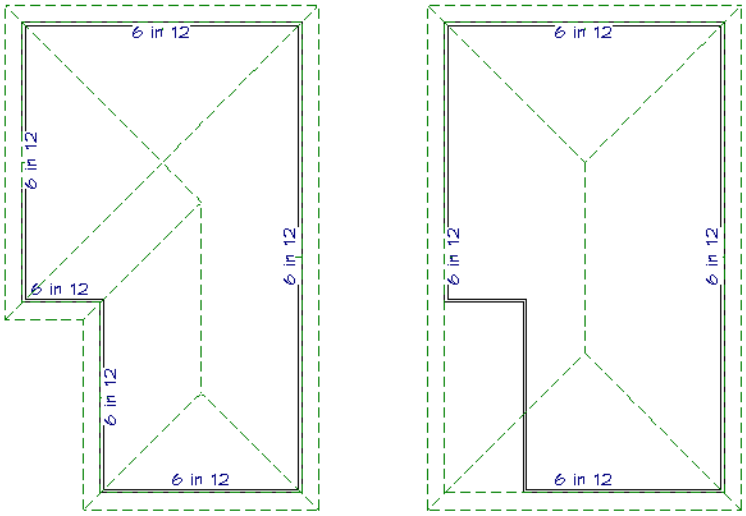
A Roof Baseline Polyline's shape can be edited much like a CAD polyline using its edit handles and edit toolbar buttons. See *Editing Closed Polyline-Based Objects on page 197*.

Roof Baseline Polylines always form a closed area with straight sides only. They cannot be severed or curved, but additional joints or corners can be added.

In addition to length and direction, each Roof Baseline Polyline edge has roof directives associated with it, much like the roof directives in individual walls. See *Roof Directives in Walls on page 283*.

An Example

In order for it to reflect any changes that you make to a Roof Baseline Polyline, the roof must be rebuilt. For a simple example of Roof Baseline Polyline editing, consider an L-shaped house, with a rectangular roof. The inner part of the 'L' is a patio that is covered under the same roof.



On the left is the baseline polyline as it was originally produced and the roof plan it creates.

To model the roof plan shown on the right

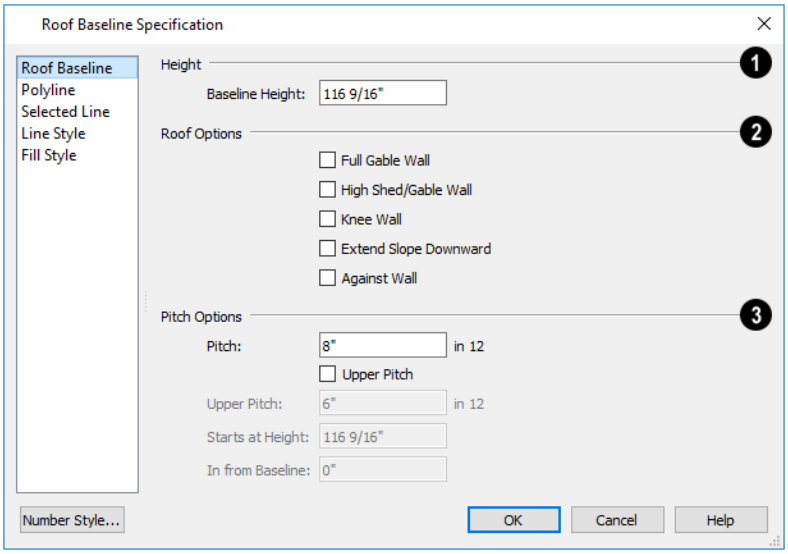
1. Select the Roof Baseline Polyline along its bottom-most edge.
2. Click the **Intersect/Join Two Lines** edit button. See *Reshaping Objects on page 208*.
3. Click the left-most edge to remove the two intervening edges.
4. A message box informs you that "The system must delete intervening lines (those on the inside of the L) to join the two selected lines." Click OK.
5. Open the Build Roof dialog and select the **Build Roof Planes** and **Use Existing Roof Baseline** check boxes to model the roof plan shown on the right side of the image above.

Roof Baseline Specification Dialog

Like walls, each line of a Roof Baseline Polyline contains roof directives that affect automatic roof generation. Select any edge of a Roof Baseline Polyline click the **Open Object** edit button open the Roof Baseline Specification dialog.

Roof Baseline Panel

The settings on the Roof Baseline panel control the roof directives associated with the selected edge of the Roof Baseline Polyline. See *Selected Edge on page 185*.



1 Baseline Height

See *The Baseline on page 604*.

2 Roof Options

- The first six options: **Hip Wall**, **Full Gable Wall**, **Dutch Gable Wall**, **High Shed/Gable Wall**, **Knee Wall**, and **Extend Slope Downward** are the same as those in the Wall Specification dialog. See *Roof Panel on page 299*.
- Select **Against Wall** if the roof plane rising from this baseline butts against an exterior wall. This is similar to checking High Shed/Gable Wall.

3 Pitch Options

These settings are also found in the Wall Specification dialog. See *Roof Panel on page 299*.

- Unlike the **Pitch** value elsewhere, this value is not a Dynamic Default here; however, you can click on the Default icon to load the current default Pitch. See *Build Roof Dialog on page 597*.

Polyline Panel

The Polyline panel reports the length of the selected Roof Baseline Polyline's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

The Polyline panel reports the length of the selected Roof Baseline Polyline's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 615*.

Selected Line Panel

This panel is similar to the Line panel of the Line Specification dialog. See *Line Panel on page 233*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Roof Baseline Polyline in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Roof Baseline Polyline in plan view. See *Fill Style Panel and Dialogs on page 161*.

Roof and Ceiling Framing

Roof framing can be both drawn manually and generated automatically. You can also combine the two techniques. As with other kinds of framing, it is often easiest to begin by generating roof framing automatically and then editing it as needed. See *Creating Framing on page 666*.

Roof Trusses cannot be generated automatically - they must be drawn manually and then replicated. If you intend to use Roof Trusses, make sure the settings in the Build Roof dialog are properly defined before you build the roof. See *Roof Trusses on page 683*.

When using a combination of Roof Trusses and stick framing, begin by drawing the roof planes and ceiling planes. When they are in place, draw and replicate the Roof Trusses. Finally, automatically generate or manually draw the stick framing and edit it as needed. See *Creating Framing on page 666*.

Framing for manually drawn **Ceiling Planes** cannot be drawn manually - it must be automatically generated. The framing for manually drawn Ceiling Planes is generated when roof framing is built and uses the settings in the Build Roof dialog as defaults. Once it has been created, it can be edited. See *Ceiling Planes on page 620*.

Rebuilding Roof Framing

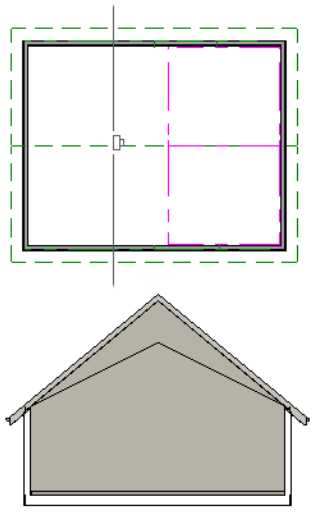
If roof framing defaults are modified after the roof and roof framing are built, neither will update automatically. In order to update the model you need to rebuild the roof, then rebuild the roof framing.

You can also modify the roof framing settings for individual roof planes, and then either build roof framing or click the **Build Framing for Selected Object** edit button. See *on page 1*.

Ceiling Planes

Ceiling Planes are drawn in the much same way as roof planes and are edited using the same tools. They are useful for creating custom vaulted ceilings. See *Vaulted and Cathedral Ceilings on page 327*.

Ceiling Planes are drawn using the same default pitch as roof planes, specified in the Build Roof dialog. See *Build Roof Dialog on page 597*.



If you wish, you can specify the desired pitch in the Build Roof dialog before drawing a Ceiling Plane, or you can change the pitch after it is drawn in the Ceiling Plane Specification dialog. See *Ceiling Plane Specification Dialog on page 622*.

There are a few things to remember when drawing Ceiling Planes.

- Ceiling Planes should be created over rooms that have **Flat Ceiling Over this Room** unchecked in the Room Specification dialog. See *Structure Panel on page 330*.
- The Baseline of a Ceiling Plane should be drawn along the inner surface of the bearing wall's Main Layer. See *The Main Layer on page 288*.
- The sloping edge at the side of a Ceiling Plane should butt to the inside of the wall.
- Ceiling Planes act independent of the roof planes above.
- Usually, the pitch of a Ceiling Plane is lower than the pitch of the corresponding roof plane.
- Ceiling Planes can be joined together using the **Join Roof Planes** edit button. See *Join Roof Planes on page 611*.
- Select a Ceiling Plane and click the **Open Object** edit button to open the Ceiling Plane Specification dialog. See *Ceiling Plane Specification Dialog on page 622*.

Displaying Ceiling Planes

Ceiling Planes are drawn on the "Ceiling Planes" layer.

Manually drawn **Ceiling Planes** can also display labels when the "Roofs, Labels" layer is on. See *Roof Plane Labels on page 606*.

Editing Ceiling Planes

Ceiling Planes can be edited much like roof planes using their edit handles and edit toolbar buttons. See *Editing Roof and Ceiling Planes on page 607*.

Ceiling Planes can also be edited in their specification dialog. See *Roof Plane Specification Dialog on page 613*.

As with roof planes, the Ceiling Planes layer can be locked to prevent them from being selected.

Deleting Ceiling Planes

There are several ways to delete Ceiling Planes. See *Deleting Objects on page 218*.

Select **Build> Roof> Delete Ceiling Planes** to delete all Ceiling Planes in the current plan.

Ceiling Planes can also be deleted at once in the Delete Objects dialog. See *Delete Objects Dialog on page 219*.

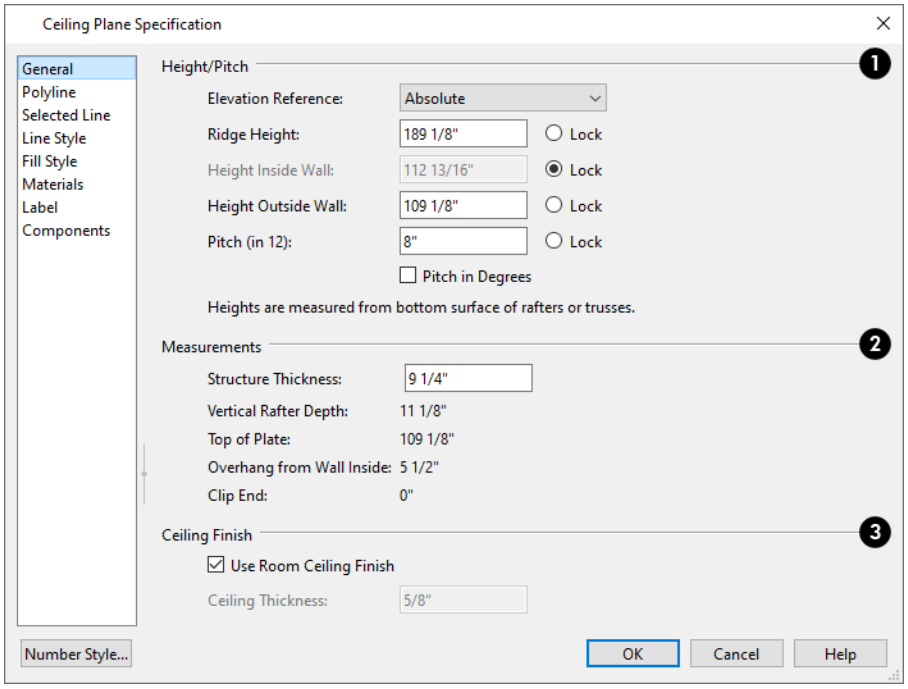
Select a Ceiling Plane or group of Ceiling Planes, then click the **Delete** edit button or press the ***Delete*** key.

Ceiling Plane Specification Dialog

Select a Ceiling Plane and click the **Open Object** edit button to open the Ceiling Plane Specification dialog.

The settings in this dialog are similar to those in the Ceiling Plane Defaults dialog as well as those in the Roof Plane Specification dialog. See *Roof Plane Specification Dialog on page 613*.

General Panel



There are four values that define the 3D orientation of a Ceiling Plane: **Ridge Height**, **Height Inside Wall**, **Height Outside Wall**, and **Pitch**.

Locking any of the **Height** values defines that value as the pivot point for the selected Ceiling Plane. Each of these dimensions is measured from the first floor default elevation of 0' - 0".

If you lock the **Pitch** and change a Height value, the Ceiling Plane moves vertically, keeping the same slope. It will not pivot.

Changing these values does not affect the 2D representation of the Ceiling Plane.

1 Height/Pitch

Specify the **Height** and **Pitch** of the selected Ceiling Plane. Heights are measured to the bottom surface of the Ceiling Plane's rafters or trusses, at the center point of the Ceiling Plane's baseline. See *The Baseline on page 604*.

- Select the **Elevation Reference**, which is where the Height values below are measured from.
- Define the **Ridge Height**, or lock this value to make it the Ceiling Plane's pivot point.
- Define the **Height Inside Wall**, or lock this value to make it the Ceiling Plane's pivot point. If the plane is drawn over a wall, this is located at the inside surface of the wall's Main Layer.
- Define the **Height Outside Wall**, or lock this value to make it the Ceiling Plane's pivot point. Only available when a Ceiling Plane is drawn over a wall, this is the height of the lower edge of the ceiling rafters, were they not clipped by the wall below.
- Specify the selected Ceiling Plane's **Pitch**, or lock this value to move the plane vertically when a Height value is changed.
- Check **Pitch in Degrees** to display the Pitch value in degrees in all dialogs as well as in roof plane labels. Values between -89° and 89° can be entered. When **Pitch in Degrees** in unchecked, Pitch is described in terms of rise and run: x inches in 12 or x mm in 1000. See *Roof Pitches in Degrees on page 640*.

2 Measurements

Information about the structure of the selected Ceiling Plane(s) displays here for reference.

- Specify the **Structure Thickness**. The default Structure Thickness is the same as that for roof planes and is set in the Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.
- The **Vertical Rafter Depth** is defined by measuring a plumb line through the ceiling structure. The greater the pitch, the greater the vertical structure depth.
- The **Top of Plate** value is the top plate height of the bearing wall, and is also the ceiling height of the room.
- **Overhang From Wall Inside** - Only appearing when a Ceiling Plane is drawn over a bearing wall, this is the horizontal distance from the Baseline to the inside Main Layer surface of the wall. The Baseline is typically drawn over the outside Main Layer surface, so this value is equal to the wall's Main Layer thickness.
- **Clip End** - This is the amount a ceiling rafter's underside must be clipped at its lower end to rest on the wall top plate, and is zero if the Ceiling Plane was not drawn over a bearing wall. This value is equal to the Ceiling Plane's rise in slope over the distance of the **Overhang from Inside Bottom**.

  The **Outside Bottom** value plus the **Clip end** value equals the **Top of Plate** value.

3 Ceiling Finish

Specify how the **Ceiling Finish** surface on the underside of the selected Ceiling Plane is built.

- When **Use Room Ceiling Finish** is checked, the selected Ceiling Plane's ceiling finish thickness and material are defined by the room below and the "Ceiling Surface" component will not be available on the MATERIALS panel. Uncheck this box to define the ceiling finish as part of the Ceiling Plane and enable the **Ceiling Thickness** option.
- Specify the **Ceiling Thickness**, which is the thickness of the bottom surface of the Ceiling Plane.

POLYLINE PANEL

The POLYLINE panel states the length of the Ceiling Plane's **Perimeter**, its **Framing Area**, and its **Projected Area**. See *Polyline Panel on page 615*.

SELECTED LINE PANEL

The settings on the SELECTED LINE panel control the length, angle, and position of the selected Ceiling Plane. See *Line Panel on page 233*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Ceiling Plane in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Ceiling Plane in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Ceiling Plane in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

The "Ceiling Surface" material can be specified here. It is only available, however, when **Use Room Ceiling Finish** is unchecked on the General panel.

Label Panel

Labels for Ceiling Plane display when the "Roofs, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for Ceiling Planes is blank, but you can specify a custom label. See *Roof Plane Labels on page 606*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Gable/Roof Lines



The **Gable/Roof Line** tool can be used to automatically generate a gable above the bearing wall of a hip roof plane. It is best used in situations where roof directives in walls are not possible. For example:

- Where a wall is not present, such as across the front of an alcove;
- Over a Bay, Box, or Bow Window.

See *Roof Directives in Walls on page 283*.



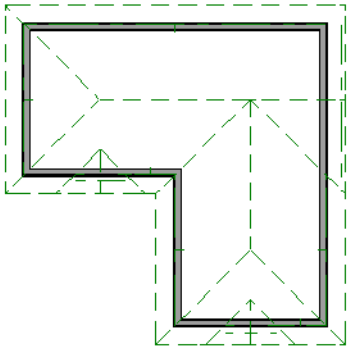
In addition, the **Gable Over Door/Window** edit button allows you to add a small Gable/Roof Line over one or more selected doors or windows the next time automatic roof planes are built.

Gable/Roof Lines display in plan view when the "Roofs, Gable Lines" layer is set to display and can be selected and edited much like regular CAD lines. See *Editing Line-Based Objects on page 187*.

Creating a Gable

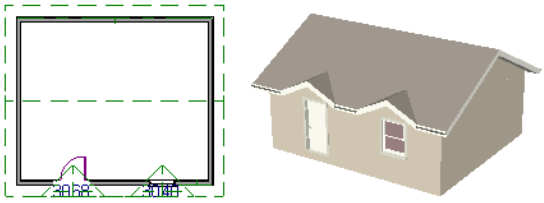
To create a gable using a Gable/Roof Line

1. Select **Build> Roof> Gable/Roof Line**, then click and drag to draw a line outside the exterior wall that you want to create a gable over.
2. Position the Gable/Roof Line within 10 feet (2260 mm) of the wall's Main Layer but not touching it. See *The Main Layer on page 288*.
   - Make sure that the Gable/Roof Line is exactly parallel to the exterior wall.
3. Resize the Gable/Roof Line so that it is the length of the desired gable.
   - The length of the Gable/Roof Line determines the gable width at the wall Main Layer, not at the overhang.
   - At the larger roof eave, a gable roof is wider than the gable line by twice the overhang distance.
4. You can specify the pitch of the gable roof planes and their overhang in the Gable Line Specification dialog. See *Gable Line Specification Dialog on page 627*.
5. Select **Build> Roof> Build Roof** and regenerate the roof. See *Build Roof Dialog on page 597*.



To use the Gable Over Door/Window tool

1. Select one or more doors or windows.
2. Click the **Gable Over Door/Window** edit button.
   - **Gable Over Door/Window** is not available for openings placed in Full Gable Walls or for Bay, Box or Bow Windows. See *Bay, Box, Bow Windows and Roofs on page 454*.
3. In the Gable Line Specification dialog, specify the desired Pitch and Overhang for the gable roof. See *Gable Line Specification Dialog on page 627*.
4. The next time automatic roof planes are built, gables will be created over each of these doors and windows.



- Each gable will extend 12" (300 mm) on either side of its door or window.
- If two of these openings are within 30" (750 mm) of each other on the same wall, a single gable will be created.

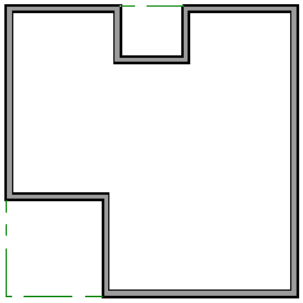
- If you move or resize the door or window(s), the associated Gable/Roof Line will not update until the roof is built again.

5. There are several ways to remove a Gable Over Door/Window:
   - Select the door(s) or window(s) and click the **Delete Gable Over Opening** edit button.
   - Select the gable line and click the **Delete** edit button.
   - All Gable/Roof Lines can be deleted using the Reset to Defaults dialog. See *Reset to Defaults on page 89*.
   - The next time the roof is built, the gable or gables will be removed.

Covering an Alcove

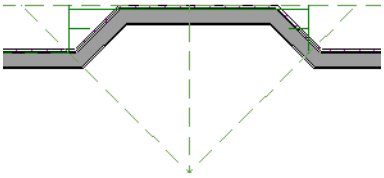
A **Gable/Roof Line** can also be used to maintain a roof plane baseline where there is no wall below. For example, you can use it to extend a roof plane across an alcove, rather than wrap into it.

In order for a **Gable/Roof Line** to direct the roof to extend over an alcove or other area where no wall is present, it must be aligned with the exterior walls' Main Layer.

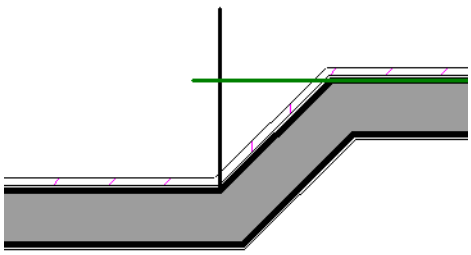


Covering a Bay

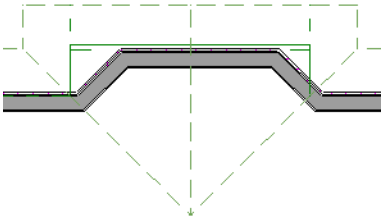
A **Gable/Roof Line** drawn across a bay causes a gable to be built above the bay when roofs are automatically generated.



In order for the gable to be built, at least one end of the Gable/Roof Line must extend past the side walls of the bay.



If the Gable/Roof Line is drawn along the outer edge of the bay's outer wall's Main Layer, the resulting gable will extend only to the eave of the larger roof. Draw the Gable/Roof Line beyond the bay's outer wall to extend out past the larger roof's eave.



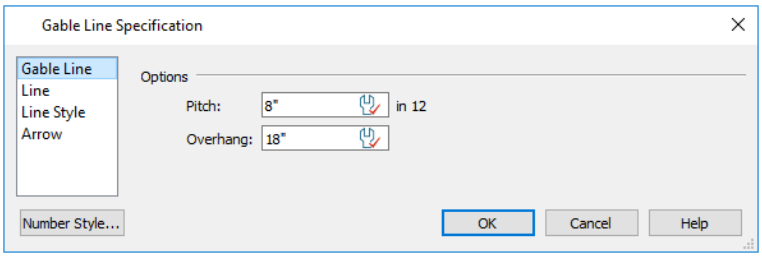
Gable Line Specification Dialog

Select a Gable Line and click the **Open Object** edit button to open the Gable Line Specification dialog. This dialog also opens whenever the **Gable Over Door/Window** edit button is clicked. See *Gable/Roof Lines on page 624*.

Gable Line Panel

The settings on this panel affect the structure of the two roof planes associated with the selected Gable Line.

The defaults for these settings are set in the Build Roof dialog. See *Roof Panel on page 598*.



- Specify the **Pitch** of the roof planes that form the gable.
- Specify the **Overhang** of the roof planes that form the gable.

Line Panel

The settings on the LINE panel control the length, angle and position of the selected Gable Line. See *Line Panel on page 233*.

Line Style Panel

The settings on the LINE STYLE panel affect the appearance and Bumping behavior of the selected Gable Line. See *Line Style Panel on page 234*.

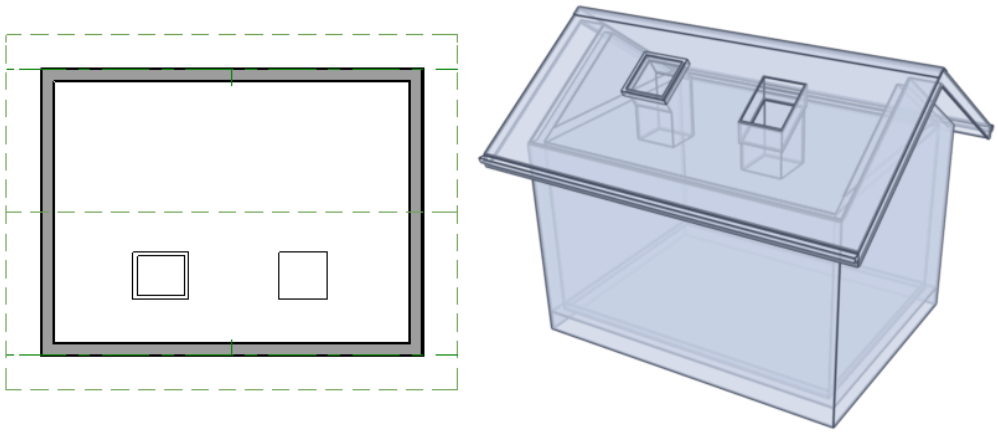
Arrow Panel

The settings on the ARROW panel allow you to specify an arrow for the selected Gable Line and control its appearance. See *Arrow Panel on page 252*.

Skylights and Roof Holes

Select **Build> Roof> Skylight** to insert a flat panel skylight with a frame into a single roof plane, create a hole in the roof and the ceiling below, and also a shaft between the roof and ceiling holes.

Select **Build> Roof> Roof Hole** to create a hole in the roof and the ceiling below as well as a shaft between the two holes.



A skylight and roof hole in plan view and Glass House rendering.

Creating Skylights and Roof Holes

To create a Skylight or a Roof Hole, select either tool and then click and drag to draw a rectangular polyline within a single roof plane. With either tool active, you can also click once within a roof plane to place an object measuring 2' x 2', as measured in plan view with the roof pitch not taken into account.

To place a skylight in a vaulted ceiling, uncheck **Flat Ceiling Over This Room** in the Room Specification dialog, draw the Ceiling Planes to produce the vault and edit them as needed, and then draw the skylight. See *Structure Panel on page 330*.

> Note: If a sloped ceiling plane is present under the skylight, a hole in this ceiling plane is automatically produced. This hole is visible, and may be located directly under the roof hole. It can be moved and edited separately.

Displaying Skylights and Roof Holes

Skylights and roof holes are placed on the "Roofs, Openings" layer. Although they are inserted into roof planes, skylights and roof holes are able to display in plan view when their containing roofs do not. Skylights are also able to display independent of their containing roofs in 3D views. See *Displaying Objects on page 151*.

In plan view, skylights and roof holes are represented using their projected size: the steeper the pitch of the roof, the more affected a skylight or roof hole's shape in plan view will differ from its actual shape. The true size and shape of skylights and roof holes is only represented in plan view when they are inserted into a roof plane with a pitch of 0. To create a skylight of a particular size, therefore, its size must be set in its specification dialog rather than using edit handles or using the **Edit Skylight Shape** tool. See *Edit Skylight Shape on page 629*, below.

Both skylights and roof holes can display labels in plan views when the "Roofs, Labels" layer is turned on. Automatic skylight and roof hole labels report the object's size using the same format that window labels use. See *Window Labels on page 435*.

Skylights are counted in the Roofing category of the Materials List, while the shaft material of Roof Holes is calculated under Wall Board. See *Materials Lists on page 954*.

Editing Skylights and Roof Holes

A roof hole is essentially a feature of its containing roof plane's shape and can be edited much the same way roof planes and other closed-polyline based objects are using the edit handles and edit toolbar buttons. See *Editing Roof and Ceiling Planes on page 607*.

Skylights, on the other hand, are a special type of inserted object with editing options that are restricted because of the difference between their actual size and their projected size. Because the actual size of a skylight is not usually represented a plan or camera view, the only way to resize one is in its specification dialog or using the **Edit Skylight Shape** edit tool. See *Skylight/Roof Hole Specification Dialog on page 629*.

Skylights and roof holes should always be contained by a single roof plane. If either object type extends past a roof plane edge, the results may be unexpected. If the roof plane is deleted, any skylights or holes it contains are also deleted.

Edit Skylight Shape

The **Edit Skylight Shape** edit tool lets you make changes to a selected skylight's actual shape. Not available when skylights are group-selected.

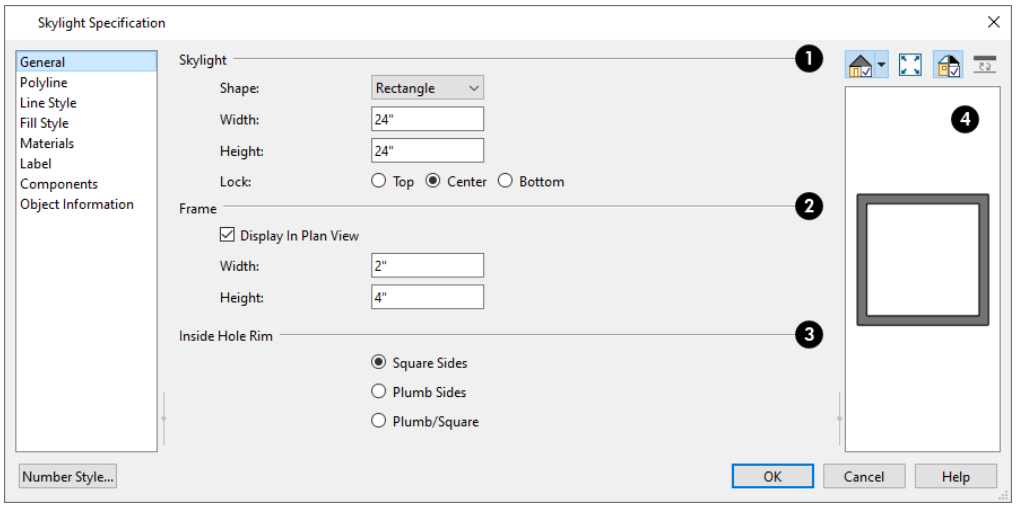
When you click this edit button, a Skylight Detail Window opens, showing the shape of the skylight's hole represented by a closed CAD polyline. This polyline can be edited to produce the desired shape, or it can be deleted and replaced with a new closed polyline created using a selection of CAD drawing tools. Only one CAD object can be present in a Skylight Detail Window, and only a closed polyline shape can be saved as a Skylight Detail. When you close this view window, the program will give you an opportunity to save your changes and apply them to the selected skylight. See *Editing Closed Polyline-Based Objects on page 197*.

Skylight/Roof Hole Specification Dialog

Select a skylight or a roof hole and click the **Open Object** edit button to open the Skylight/Roof Hole Specification dialogs. See *Skylights and Roof Holes on page 628*.

The settings in this dialog are similar to those in the Skylight Defaults dialog.

General Panel



1 Skylight

Not available when a roof hole is selected.

- Select a **Shape** from the drop-down list: "Circle", "Ellipse", "Oval", or "Rectangle". If the Skylight's shape has been edited using the **Edit Skylight Shape** edit tool, "Custom" will be the selected Shape. See *Edit Skylight Shape on page 629*.
- Specify the **Width** and **Height** of the selected Ellipse, Oval, or Rectangle-shaped skylight. The Height value describes the skylight's actual size: not its projected size as measured in plan view.
- When the selected skylight is a Circle, specify its **Diameter**.
- Select which part of the skylight to **Lock** when it is resized: its **Top**, **Center**, or **Bottom**.

2 Frame

Not available when a roof hole is selected.

- Check **Display in Plan View** to draw the selected skylight's frame in plan view.
- Specify the **Width** and **Height** of the skylight's Frame.

3 Inside Hole Rim

Specify how the hole for the skylight is framed as well as the shape of the skylight well where it passes through the roof plane.

- Select **Square Sides** to cut the framing for the skylight square to the pitch of the roof.
- Select **Plumb Sides** to produce framing for the skylight that is plumb-cut.
- Select **Plumb/Square** to produce framing with the bottom edge plumb-cut and the top edge, square-cut.

4 Preview

A preview of the selected skylight displays here. Not available when a roof hole is selected. See *Dialog Preview Panes on page 21*.

Polyline Panel

The POLYLINE panel states the roof hole/skylight's **Perimeter**, its **Framing Area**, and its **Projected Area**. See *Polyline Panel on page 615*.

Selected Line Panel

This panel is similar to the Line panel of the Line Specification dialog. See *Line Panel on page 233*.

Line Style Panel

For information about the settings on this panel, see *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel control the appearance of the selected roof hole or skylight in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

For information about the Materials panel, see *Materials Panel on page 760*.

Label Panel

Roof hole and skylight labels display when the "Roofs, Labels" layer is turned on and use the Text Style assigned to that layer. The Automatic Label for these objects is blank, but you can specify a custom label. See *Roof Plane Labels on page 606*.

For information about the settings on this panel, see *Label Panel on page 395*.

Components Panel

The information on the Components panel can be used in the materials list. See *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in schedules and the materials list. See *Object Information Panel on page 968*.

Dormers and Crickets



Dormers can be drawn manually or placed automatically using the **Auto Dormer** tools. Automatic Dormers can be placed only under certain conditions:

- Automatic Dormers can only be placed entirely within a single roof plane. They cannot extend past the eaves or ridge of this roof plane.
- Automatic Dormer side walls cannot be positioned above other walls in the plan.

If you click within a roof plane to place an automatic dormer, but click too close to an eave or the ridge, a dormer will not be created; however, its outline will. Move this outline box to a location that meets the dormer's requirements and it will be created.

Automatic dormers reside by default on their own layer, "Roofs, Dormers". The display of automatic dormer components is not controlled by this layer; however, you can lock this layer to prevent unintended editing. See *Layer Display Options Dialog on page 154*.

The initial width, height, roof style and other settings of Auto Dormers are set in the Dormer Defaults dialog. See *Dormer Defaults on page 593*.

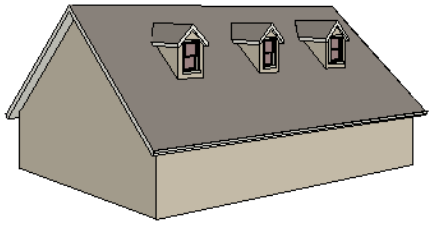
Auto Floating Dormer

Select **Build> Roof> Auto Floating Dormer** and click the roof plane where you would like to place the center of the dormer's front wall.

The bottom edges of all floating dormer walls are cut off by the underlying roof plane. To produce such a dormer manually, check **Roof Cuts Wall at Bottom** for the dormer walls on the ROOF panel of the Wall Specification dialog.

Usually, no room is defined by the walls of this type of dormer.

The images below show both the outside and inside of a typical floating dormer.



A floating dormer can be placed in plan view on the same floor that its underlying roof plane displays on, or it can be placed on the floor above. Normally, it does not matter what floor the dormer is on; but in some cases, it may need to be on the floor above so that the dormer walls do not interfere with walls or railings in the room below.

Regardless of which floor it is placed on, a dormer must always fit within a single roof plane. When placing a dormer on the floor above, you may find it helpful to turn on the **Reference Display** . See *The Reference Display on page 546*.

You may also find it helpful to display the underlying roof plane on the floor above using the Roof Plane Specification dialog. See *Roof Plane Specification Dialog on page 613*.

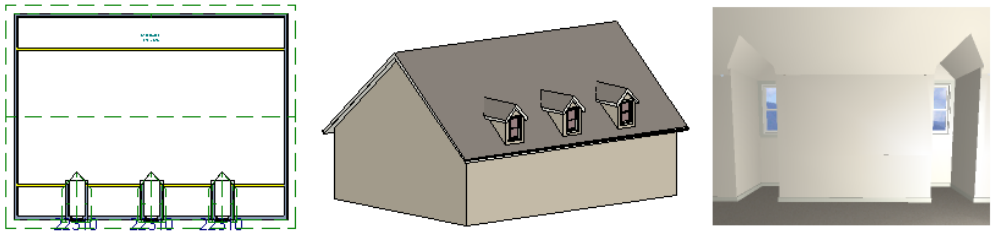
If the dormer is placed on the same floor as the underlying roof plane and the room below, and if the room has a flat ceiling, then a hole will be produced in the ceiling under the dormer.

Auto Dormer

Select **Build> Roof> Auto Dormer** and click on a roof plane where you want the center of the dormer's front wall to be.

The walls of an auto dormer go to the floor and meet a knee wall on either side on the back of the dormer. This knee wall must run parallel to the underlying roof plane's Baseline.

- If you are creating a (non-floating) auto dormer, a knee wall must already exist. The dormer side walls run back to the knee wall and the knee wall is broken where the dormer walls meet it.
- The knee wall does not have to be designated as such in the Wall Specification dialog unless you are generating an automatic roof. See *Knee Walls on page 286*.
- A non-floating dormer must always be created on the same floor as the knee walls.



Non-floating Auto Dormers in plan, exterior camera, and interior camera views

Manually Drawn Dormers

Once you are familiar with Home Designer's roof tools, drawing dormers manually can be quite simple. There are several different ways to draw dormers; some methods work better in certain applications.

A variety of resources with information about drawing dormers manually is available at HomeDesignerSoftware.com.

There are a few things to keep in mind.

- Walls extend upward until they meet an overlying roof plane.
- A wall can also be cut by underlying roof planes if **Roof Cuts Wall at Bottom** is checked in the Wall Specification dialog. For this to work properly, the edge of the roof plane must extend completely through the width of the wall. See *Clerestory and Dormer Walls on page 284*.
- Polylines can be converted into a **Hole in Roof/Ceiling** that allows walls to extend above or below the roof line. See *Convert Polyline on page 211*.

Crickets

When a room's ceiling height is such that it extends above the roof of surrounding rooms, the automatic roof generator will create a cricket against any walls that face up-slope of an adjacent roof. You can also manually draw a cricket using the **Roof Plane** tool and the **Place Roof Plane Intersection Point** edit tool. See *Connecting Roof and Ceiling Planes on page 611*.

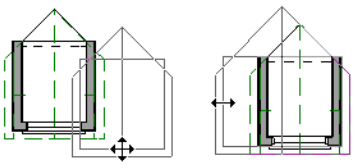
Editing Auto Dormers

Auto Dormers are a collection of objects that behave as one. When a dormer is selected, it can be edited using its edit handles, edit tools, and specification dialog. See *Dormer Specification Dialog on page 634*.

If you click the **Explode Dormer** edit button, the dormer's individual components can be edited.

Using the Edit Handles

When selected, an auto dormer displays three edit handles. The Move handle displays over the front wall and allows you to relocate the dormer. Two resize handles display on the side walls and allow you to change the width of the dormer.



There are some things to keep in mind when editing auto dormers and auto floating dormers using the mouse.

- Dormers move at 90° angles unless the ***Ctrl/⌘*** key is pressed before moving them.
- The dormer must be contained within one underlying roof plane.
- Auto dormers cannot be moved beyond the required knee wall.

Editing the Window

Dormer windows can be selected, edited, deleted and replaced just like other windows. See *Editing Windows on page 436*. You can place several windows in the front wall.

Unless the dormer's window has been edited or changed in the Window Specification dialog, when the dormer width is changed, its width changes automatically to fill the front dormer wall. If the window has been edited, its width stays fixed. If a change to the dormer makes its front wall too short to hold the window, the window reverts to auto width.

Explode Auto Dormer



Click the **Explode Auto Dormer** edit button to explode a selected auto dormer into its component parts. The dormer walls, roof planes, window, and hole in the roof/ceiling can be edited individually.

The program treats roof planes over an exploded auto dormer as though they were manually drawn, allowing you to protect them from being rebuilt in the Build Roof dialog. See *Roof Panel on page 598*.

Once exploded, it is not possible to block the components into a Dormer object again.

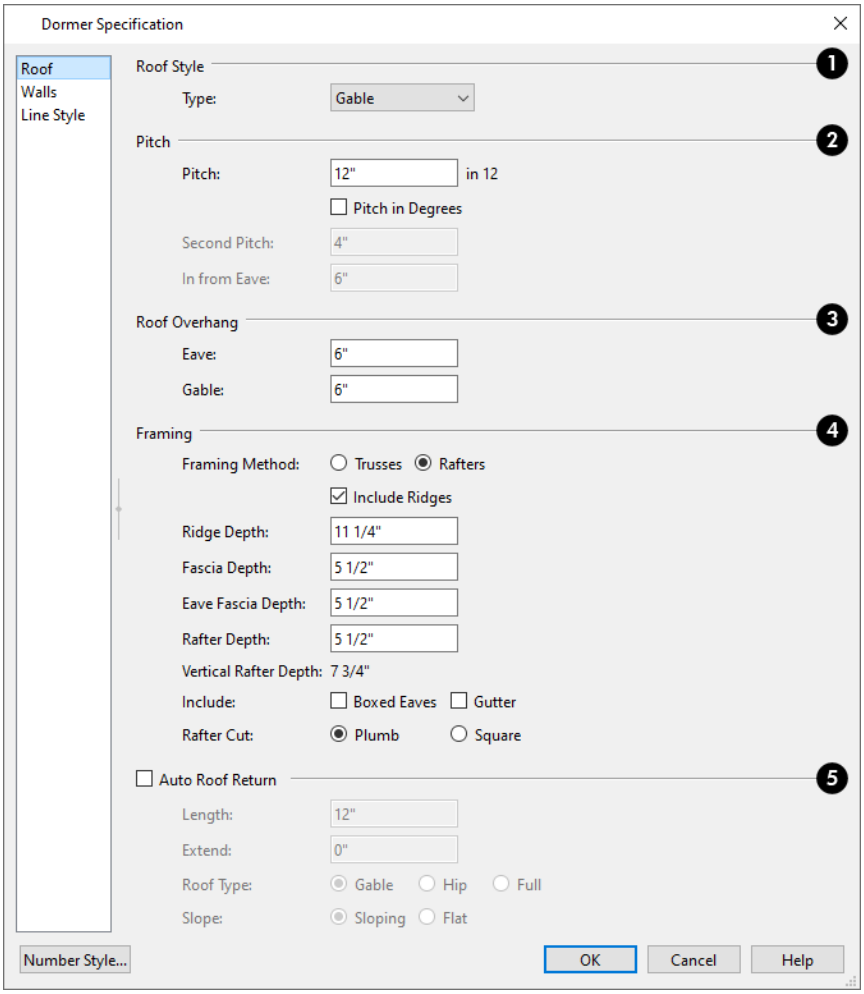
Dormer Specification Dialog



Select a dormer or dormers and click the **Open Object** edit button to open the Dormer Specification dialog.

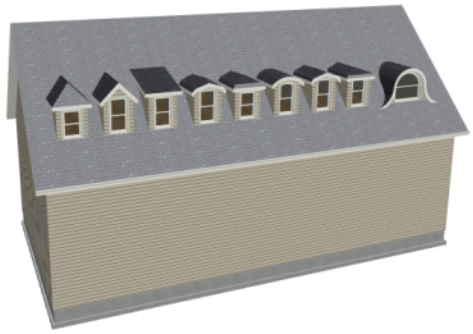
The settings in this dialog are also found in the Dormer Defaults dialog, where they apply to all dormers as they are created rather than to a selected dormer.

Roof Panel



1 Roof Style

- Choose a roof **Type** from the drop-down list. You can choose from Hip, Gable, Shed, Gambrel, Mansard, Barrel, Curved Eave, Hip Curved Eave or Eyebrow.



2 Pitch

- Specify the **Pitch** of the dormer roof planes. The default dormer pitch applies to all dormer roof types except Shed, which has a default 3 in 12 pitch. For Gambrel and Mansard types, this applies to the lowest, or eave, roof planes.
- Check **Pitch in Degrees** to display the Pitch value in degrees in all dialogs as well as in roof plane labels; uncheck it to display the pitch in terms of rise and run. See *Roof Pitches in Degrees on page 640*.
- The **Second Pitch** specifies the upper roof of a Gambrel, Mansard, curved eave, and hip curved eave.
- When a Second Pitch is used, specify the **In from Eave** distance, measured from the lower roof plane eave to where the upper roof plane starts.

3 Roof Overhang

Specify the depth of the selected dormer's **Eave** and **Gable Overhangs**.

4 Framing

See *Manual Framing Defaults Dialog on page 658*.

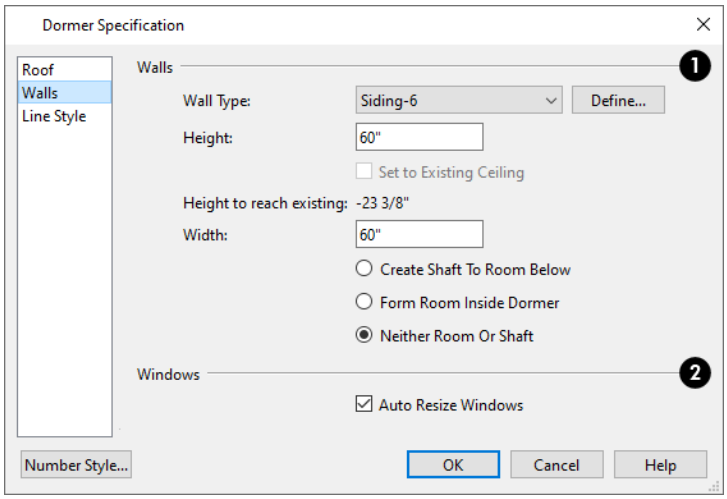
- Select the dormer roof's **Framing Method**: either **Trusses** or **Rafters**.
- When **Include Ridges** is checked, ridge and hip rafters are created for the dormer's roof when roof framing is generated. Uncheck this if you do not want to generate ridge or hip rafters for the selected dormer.
- Specify the **Ridge Depth**, which is the depth of the dormer's ridge and hip rafters.
- Specify the **Fascia Depth** for gable fascia and the **Eave Fascia Depth**.
- Specify the **Rafter Depth**.
- The **Vertical Rafter Depth** is reported here for reference.
- Specify whether to **Include Boxed Eaves** and/or **Gutters**
- Select either **Plumb** or **Square Rafter Cut**.

5 Auto Roof Return

See *Roof Returns on page 638*.

- Check **Auto Roof Returns** to generate roof returns on the selected dormer. Roof Returns can be only specified for Gable dormers.
- Specify the horizontal **Length** of the roof return in inches (mm).
- Enter a value in inches (mm) to **Extend** the roof returns past the dormer overhang.
- Specify a **Gable**, **Hip**, or **Full** roof return.
- Specify a **Sloping** or **Flat** roof return.

Walls Panel



1 Walls

- Select a **Wall Type** for the dormer walls from the drop-down list.
- Click the **Define** button to open the Wall Type Definitions dialog to create or modify existing Wall Types. See *Wall Type Definitions Dialog on page 290*.
- Specify the **Height** of the dormer, as measured from where the top of the underlying roof plane meets the dormer front wall exterior to the top plate of the dormer roof's bearing walls. This top height is called the dormer ceiling height, even if the ceiling in the dormer is not flat. The top dormer window casing is usually close to this height.
  - Check **Set to Existing Ceiling** to assign the ceiling height of the room behind the dormer to the dormer. Not available in the Dormer Defaults dialog.
- **Height to Reach Existing** shows the difference between the dormer height where the inside of the wall meets the underside of the roof and the ceiling of the room behind it.
- Specify the dormer's **Width**, measured from the outside surfaces of the dormer side walls.
- The Dormer Room options are only available for Floating Dormers and are intended for use with dormers on an upper floor level:
  - Select **Create Shaft to Room Below** to create an opening in the floor platform to the floor below, and enclose the inside of the dormer with walls that form a room.
  - Select **Form Room Inside Dormer** to create an opening in the floor platform below that is defined as a room using the dormer walls plus an invisible Room Divider.
  - Select **Neither Room nor Shaft** to make no changes to the structure below the dormer.
- Dormer windows can appear too narrow on the outside due to the space required for interior casing to clear the inside surfaces of the side walls. Two additional settings are available in the Dormer Defaults dialog to help address this.
  - When **Set Inside Window Trim Width** is checked, you can set the **Inside Window Trim** value, which is the default interior casing width for dormer windows. When unchecked, dormer windows use the default interior casing width set in the Window Defaults dialog.

2 Windows

- When **Auto Resize Windows** is checked, the selected dormer's window will resize when the dormer's height or width are adjusted. Uncheck this box to keep the window the same when the dormer is resized.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Dormer in plan view. See *Line Style Panel on page 234*.

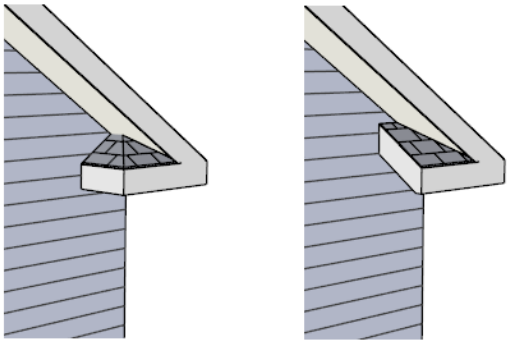
Roof Returns and Other Details

Home Designer offers a selection of tools to add architectural details to your roof design.

Roof Returns

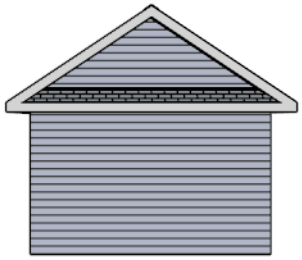
A roof return is a small decorative roof plane that connects to the low side of a gable roof overhang and extends below the upper triangular portion of the gable wall. Three styles of roof returns that can be produced automatically.

The first two styles are called **Gable** and **Hip** returns since the return ends in a gable or hip.



Hip and Gable Roof Returns

The third is called a **Full** return because it extends under the entire gable to connect both sides and is sometimes referred to as a water table. In order for a Full return to be created, the roof planes on each side must have the same Fascia Top Height.



Full Roof Return

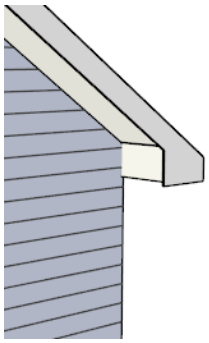
It is not difficult to manually draw roof returns using small roof planes, but it is quicker to produce them automatically. Roof returns are generated automatically on a wall by wall basis using settings in the Wall Specification dialog. See *Roof Panel on page 299*.

These roof return settings are also found in the Dormer Specification dialog for gable roof dormers and function similarly. See *Roof Panel on page 635*.

The pitch of an automatically generated roof return is the same as that of the roof plane above it. Its structure is the same as that of the subfascia and eaves of the roof plane above. See *Structure Panel on page 615*.

Boxed Eaves

Boxed eaves have a flat, horizontal soffit surface instead of one that follows the underside of the rafter ends. Boxed eaves can either extend out to the gable fascia or build flush with the adjacent exterior wall.



Boxed Eave at a gable end

You can specify Boxed Eaves for all roof planes in the Build Roof dialog and for individual roof planes in the Roof Plane Specification dialog. See *Options Panel on page 601*.

Flush eaves cannot be deeper than the default Eave Overhang Depth. If you have eaves of varying depths, specify the deepest value as the default and set walls with smaller eaves accordingly. The flush eave end uses the wall's surface material by default; however, you can specify a different material if you wish. See *Materials Panel on page 603*.

Fascia

Fascia can be added to both automatic and manually drawn roof planes. They can be specified in the Build Roof dialog and added to roof planes as they are created, and they can be added to or removed from individual roof planes in the Roof Plane Specification dialog.

- Fascia and eave fascia can be specified in the Build Framing and Build Roof dialogs. See *Roof Panel on page 654*.
- Fascia is generated whenever the roof is built or rebuilt.

Fascia display in 3D views and are included in the materials list.

Fascia

The material specified for fascia in the Build Roof dialog displays as part of the roof plane rather than as a separate object. It displays in 3D views but not plan view.

In addition, subfascia boards are created when roof framing is generated and are placed on the "Framing, Roof Rafters" layer. The fascia material is not applied to these framing members, however.

The width and depth of fascia and eave fascia can be specified in the Build Framing dialog. See *Roof Panel on page 654*.

Soffits

Soffits are the layer of material that covers the rafter ends on the underside of roof eaves and can be constructed in either of two ways:

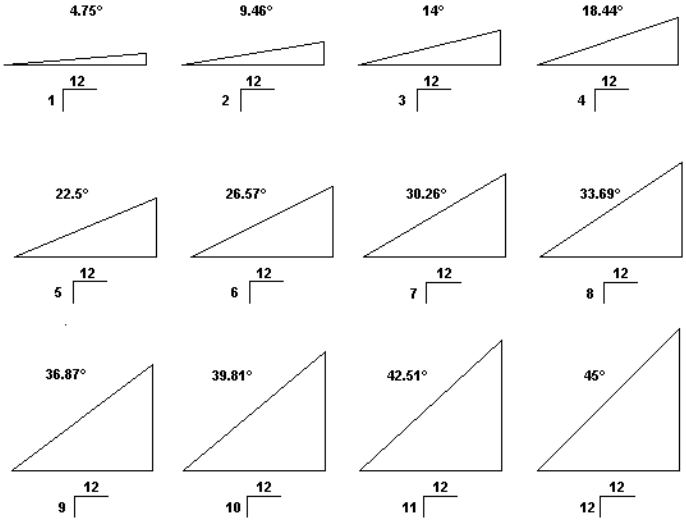
- By default, soffits follow the underside of the rafter ends and butt against the inside edge of the fascia. The rafter end depth and thus the soffit height is controlled by the Gable Subfascia Depth. See *Roof Panel on page 654*.
- Boxed eaves can be specified in the Build Roof and Roof Plane Specification dialogs. Boxed eave height is controlled by the Eave Subfascia Depth. See *Options Panel on page 601*.

GUTTERS

Gutters are added to non-sloping eaves on both automatic and manually drawn roof planes when **Gutters** is checked in the Build Roof dialog. They can also be added to or removed from individual roof planes in the Roof Plane Specification dialog. See *Options Panel on page 601*.

Gutters are placed on the “Roofs, Gutters” layer. By default, this layer is turned on in 3D views but not in plan view, is included in the materials list, and is locked. See *Layer Display Options Dialog on page 154*.

Roof Pitches in Degrees



Framing

Chapter 24

In Home Designer, framing can be produced both manually and automatically, and can be calculated in the Materials List.

Manual framing members are drawn by clicking and dragging, like drawing a CAD line. Automatic framing for the major components of a 3D model (floors, ceilings, walls and roofs) can be generated using the Build Framing dialog.

Both manually drawn and automatically generated framing members can be selected and edited in 2D and 3D views.

Roof, floor and ceiling trusses are discussed in their own chapter, *Trusses on page 682*.

Framing Defaults

There are a number of Framing Defaults dialogs, which can be accessed by selecting **Edit> Default Settings**.

In addition, structural conditions throughout a plan also influence the attributes of framing when it is either generated automatically or manually drawn.

Framing Defaults Overview

Much like in a real world structure, framing in Home Designer has a variety of attributes that vary, depending on each member's role in a given model. As such, there are a number of defaults and structural attributes that together, comprise the defaults for framing.

As with all defaults, setting these up as early in the design process as possible improves efficiency and helps ensure accuracy.

To set defaults for framing

1. Select **Edit> Default Settings** , to open the Default Settings dialog. Click the arrow beside "Framing" to expand the category.
2. Select "Framing Members" from the list, then click the **Edit** button to open the Framing Member Defaults Management dialog.
   - Make sure Default Framing Member has the right Type and other attributes, then click OK.
   - See *Default Framing Members on page 645*.
3. Select "Members Types" from the list, then click the **Edit** button to open the Framing Type Management dialog.
   - Review the available Framing Types, create custom Types as needed, then click OK.
   - See *Framing Types on page 647*.
4. Select "Automatic Framing" from the list, then click the **Edit** button to open the Automatic Framing Defaults dialog.
   - Set the defaults for floor and ceiling and wall framing as well as trusses, then click OK.
   - See *Automatic Framing Defaults Dialog on page 648*.
5. Select "Manual Framing" from the list, then click the **Edit** button to open the Manual Framing Defaults dialog.
   - Set the defaults for General Framing, Posts, and Beams, then click OK.
   - See *Manual Framing Defaults Dialog on page 658*.
6. Set the defaults for framed structural components:
   - Default Wall Types. See *Wall Types on page 288*.
   - Wall Defaults. Specify the defaults for the Wall and Railing Tools. See *Wall, Railing, and Fencing Defaults on page 254*.
   - Floor Defaults. Set the default ceiling height for Floor 1, and for each new floor level as it is created. See *Floor Level Defaults Dialogs on page 535*.
   - Roof Defaults. Set the default pitch and construction for roof planes. See *Roof Defaults on page 593*.
7. Draw the structure. See *Drawing a Plan on page 26*.
8. Customize individual structural components as needed:
   - Floor and ceiling platforms. See *Floor and Ceiling Platforms on page 542*.
   - Joist Direction Lines. See *Joist Direction Lines on page 671*.
   - Room floor and ceiling heights. See *Floor and Ceiling Heights on page 539*.
   - Roof structure and heights. See *Editing Roof and Ceiling Planes on page 607*.

9. Draw posts and beams manually. See *Framing with Floor/Ceiling Beams on page 669*.

Once the defaults are correct and the structure is set to meet your needs, framing can be created.

1. Begin by generating Automatic Framing. See *Creating Framing on page 666*.
2. Manually draw additional framing as needed. See *Manually Drawn Framing on page 668*.
3. Edit framing as needed. See *Editing Framing on page 675*.

If structural changes must be made to the structure, edit the components as needed and then regenerate or redraw the framing. See *Rebuilding and Retaining Framing on page 668*.



You can set your preferred framing and structural defaults in your template plans. See *Plan and Layout Templates on page 85*.

Framing and Structural Assemblies

There are a number of defaults dialogs specifically for framing objects and trusses. In addition, though, the defaults for various structural assemblies as well as the settings of individual structural objects in the model have a significant effect when framing is created.

Any changes made to structural assemblies or their defaults do not affect Framing Defaults settings, nor do they affect any framing in the plan unless that assembly is set to Automatically Rebuild. See *on page 1*.



It is best to set all structural and Framing Defaults before building your model. See *Drawing a Plan on page 26*.

Floor and Ceiling Platform Framing

Floor and ceiling platform depths contribute to the overall height of a structure, so their default values should be set as early as possible. See *Floor vs Ceiling Platforms on page 542*.

The plan-wide defaults for all floor and ceiling platforms are set via the Floor/Ceiling Platform Defaults dialog. These settings serve as the defaults for the Floor Level Defaults dialogs and the Floor Level panels of the Framing Defaults dialog. See *Floor Level Defaults on page 313* and *Dynamic Platform Defaults on page 543*.

Floors and ceilings can be framed using either framing or trusses. See *Floor and Ceiling Trusses on page 682*.

By default, automatically-generated floor and ceiling joists run in the direction that results in the shortest span between exterior walls and/or beams. **Joist Direction** lines also allow you to define the direction that joists in a particular floor or ceiling platform. See *Joist Direction Lines on page 671*.

Ceiling joists do not automatically generate in areas where the bottom chords of roof trusses are already present. See *Roof Trusses on page 683*.

In standard light frame construction, floor and ceiling platforms are built to pass over or bear on the wall framing; however, this is not always desired. You can specify that joists bear on a selected wall, that platforms hang on it, or that a wall build through platforms in the Wall Specification dialog. See *Structure Panel on page 296*.

Wall Framing

Like other types of framing, wall framing is generated based on settings in the Framing Defaults dialog. See *Wall Panel on page 651* and *Openings Panel on page 653*.

In addition, wall framing is dependent on settings from other sources:

- Framing Type, Spacing, Width, Plate Count and size, and more can be specified for each Wall Type in the Wall Type Definitions dialog. See *Wall Type Definitions Dialog on page 290*.
- Horizontal wall framing, or Girts, can be specified for each Wall Type, as well.
- The structural specifications for individual walls can be set in the Wall Specification dialog. See *Structure Panel on page 296*.
- Stud layout can be pulled from a Framing Reference Marker or from the Start or End of each wall. See *Framing Reference Markers on page 670*.

Door and Window Framing

The rough openings, trimmers, and sills for doors and windows are set in their respective defaults and specification dialogs. The rough opening for legacy fireplace objects can also be specified. See:

- *Door Specification Dialog on page 410*
- *Window Specification Dialog on page 438*
- *Fireplace Specification Dialog on page 532*

> Note: Door and window bucks do not automatically generate in concrete or block walls.

Headers

The size, position, and composition of door and window headers can also be set in their respective defaults and specification dialogs.

In addition, a range of header depths for openings of different widths can be specified in the Framing Defaults dialog. Check **Calculate from Width** in the Door and Window Defaults dialogs to assign header depths to openings based on their width. See *Openings Panel on page 653*.

Like other framing members, headers are assigned a Structure Type such as “Lumber” or “LVL”. By default, the program will try to ensure that an opening’s Header Type agrees with the framing material used by the wall it is inserted into. To do this, it compares the Header Type to the wall’s framing material:

- Wood framing types: Lumber, I-Joist, Glulam, Engineered Lumber, LVL, PSL, and VSL.
- Steel framing types: Steel I, Steel Box, C Channel, and U Channel.

If the Header Type agrees with the wall framing material, it will be unchanged; however, if it does not agree it will change to either “Lumber” in a wood-framed wall or “C-Channel” in a steel-framed wall. To prevent this from occurring and use the specified Header Type regardless of wall material, uncheck Automatic. See *Framing Types on page 647*.

There are three Framing Methods for headers: Standard, Flat, and Boxed. See *Framing Panel on page 423*.

- Standard headers are composed of vertically-oriented framing members.
- Flat headers are composed of horizontally-oriented framing members.
- Boxed headers have vertical framing members with horizontally-oriented top and bottom rails.

Sill Plates

Sill plates are treated boards placed on top of exterior walls that have either the Concrete or Brick material type as their Main Layer material when either a framed wall or framed floor platform is located directly above. They are automatically generated when floor framing is generated. See *The Main Layer on page 288* and *Materials and the Materials List on page 768*.

Sill plate size and number can be specified in the Wall Specification dialog of the supporting masonry wall. Only the bottommost plate that comes into contact with masonry is specified as **Treated**. See *Foundation Panel on page 302*.

These sill plates are placed on the “Framing, Sill Plates” layer. See *Displaying Framing on page 673*.

When a monolithic slab foundation is created, sill plates are not generated. Instead, the bottom plates of framed walls built on the slab are specified as **Treated** and are placed on the “Framing, Wall” layer.

As with sill plates, multiple bottom plates can be specified in the Automatic Framing Defaults dialog, but only the bottommost plate is specified as **Treated**, and only when it bears directly on masonry. You can specify wall plate attributes in the Wall Layer Specification dialog. See *Line Style Panel on page 294*.

Posts and Beams

The Post, Floor Beam, and Roof Beam Defaults dialogs can be accessed via the Beams and Posts panels of the Framing Defaults dialog.

These defaults can also be accessed by double-clicking the respective drawing tools. In addition, the Deck Post and Deck Beam Defaults dialogs are similar, and can be accessed from the Deck Room Defaults dialog. See *Room Type Defaults on page 313*.

Roof Framing

Roofs can be framed using either rafters or trusses. You can select the **Framing Method** that you want in the Build Roof dialog. See *Build Roof Dialog on page 597*.

Settings on the Roof and Trusses panels of the Framing Defaults dialog determine the structure of roof planes and manually drawn ceiling planes as well as how they rest on bearing walls, so it is important that their default values be set before building the roof. See *Roof Panel on page 654* and *Trusses Panel on page 657*.

You can add non-structural purlins to the Roof Surface Definition and/or Roof Ceiling Finish Definition. See *Material Layers Definition Dialogs on page 753*.

If changes are made to these defaults that you need to apply to the entire roof plan, you will need to either manually edit or rebuild the entire roof - not just the roof framing. See *Roofs on page 592*.

Deck Framing

Deck rooms have special automatically generated framing and are not affected by the settings in the Framing Defaults or Build Framing dialogs. Deck framing defaults are set in the Deck Room Defaults dialog. See *Decks on page 324*.

Framing Roles

Each framing member in a plan has a Role, which by default corresponds to its actual purpose and position in the structure. Examples include Floor Joist, Header, Plate, and Rafter. A framing member's initial Role is determined when it is created: either automatically generated or drawn manually. Once created, you can specify a different Role for any framing member in its specification dialog. Changing a framing member's Role does not affect its behavior or its other settings, but it does affect how the object is listed in the Materials List. See *General Panel on page 677*.

Default Framing Members

Default Framing Members are framing object definitions set up for different purposes: for example, posts, rafters, and wall framing. These specifications include material and shape but not size, so a single Default Framing Member can be used in more than one application. "Joists - I Joists", for example, can be used in floor platforms with different depths or even used as rafters.

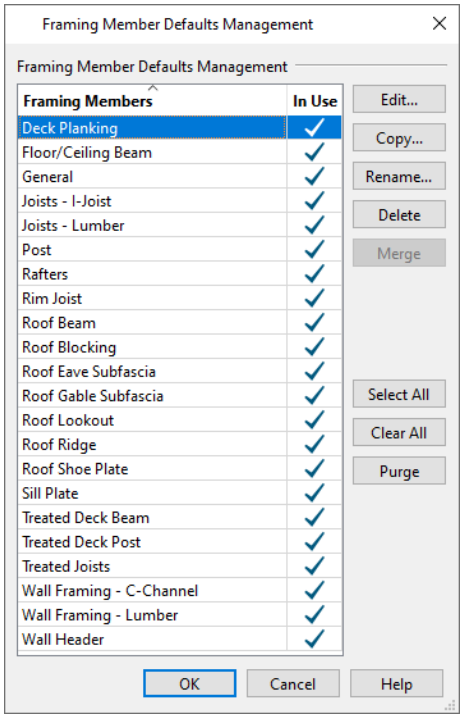
Framing Member Defaults Management Dialog

To open the Framing Member Defaults Management dialog, select **Edit> Default Settings**, to open the Default Settings dialog. Click the arrow beside "Framing" to expand the category, then click on "Framing Members" and click the Edit button. See *Default Settings on page 83*.

The Framing Member Defaults Management dialog can also be opened by clicking the **Framing Member Defaults** button, which can be added to the toolbars. See *To add a button to a toolbar on page 124*.

This dialog can also be accessed by clicking the **Define** button associated with the Construction setting for many different framing Roles in various dialogs:

- *Automatic Framing Defaults Dialog on page 648*
- *Manual Framing Defaults Dialog on page 658*
- *Framing Specification Dialog on page 677*
- *Framing Panel on page 423* of the Door and Window Specification dialogs



Framing Members
The Available Framing Members in the current plan are listed here.

Buttons on the left side of the dialog allow you manage the items in the Available Framing Members list.

- The available **Framing Members** in the current plan are listed in alphabetical order on the left side of the dialog.
  - Click on a line item to select it. When a row is selected, it is highlighted and can be managed using the buttons on the right.
  - Multiple rows can also be selected. See *Shift and Ctrl/⌘ Select on page 187*.
  - A check mark in the **In Use** column identifies which Framing Members are assigned to one or more framing objects and/or defaults dialogs.

- The buttons on the right allow you to manage the items in the Framing Members list.
  - Click the **Edit** button to open the Defaults dialog for the selected line item or items.
  - Click the **Copy** button to create a copy of the selected line item. Multiple selected items can also be copied.
  - Click the **Rename** button to specify a new name for the selected Framing Member.
  - Click the **Delete** button to delete the selected line item(s). In Use items cannot be deleted.
  - Click the **Merge** button to merge two or more line items into a single item. The Framing Member that is listed first is retained and all others in the selection set are deleted. Any instances of the deleted Framing Members in the plan are replaced by the remaining item. Only available when multiple line items are selected.
  - Click **Select All** to select all line items in the list.
  - Click **Clear All** to deselect all line items in the list.
  - Click **Purge** to delete all items line items that are not In Use.

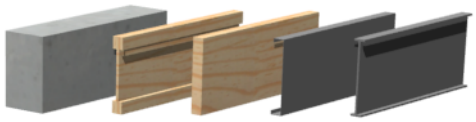
Apply Framing Default Properties



Apply Framing Default Properties allows you to apply the properties of a selected Framing Member Default to a selected framing member or members. See *Default Framing Members on page 645*.

Framing Types

The appearance of a framing member in 3D and cross section/elevation views, and Materials Lists is affected by its Type as well as the material assigned to it. See *Displaying Framing on page 673*.



Concrete, fir, and steel framing members of different Framing Types

Framing Type affects a member's shape, or profile, and thus its appearance in 3D and cross section/elevation views. Type is only mentioned in the Materials List Description for headers, posts, beams, purlins, deck planks, joists, rafters. Steel studs are identified as well, but the profile shape is not stated.

The material specified for a framing member determines what it looks like in camera views by applying a texture, pattern, or color to its surface. Framing materials are usually mentioned in the Description column of the Materials List but have no effect on how the framing is calculated.

The default framing materials and Type are set:

- In the Floor and Ceiling Structure Definition dialogs for floor and ceiling framing. See *Floor and Ceiling Platform Definitions on page 542*.
- In the Wall Type Definitions dialog for wall framing. See *Wall Type Definitions Dialog on page 290*.
- In the Framing Defaults dialog for General Framing, Posts, and Rafters. See *Automatic Framing Defaults Dialog on page 648*.

In the Floor and Ceiling Structure Definition dialogs for floor and ceiling framing, the Framing Type provides an additional option: Truss, which allows you to automatically generated floor and ceiling trusses. See *Floor and Ceiling Trusses on page 682*.

Framing Composition

A variety of structural member shapes is available for use in Home Designer. They fall into four categories:

- Wood Composition
  - Lumber, I-Joist, Glulam, Engineered Lumber, LVL, PSL, and VSL.
- Steel framing types: Steel I and Steel Box.
- Concrete Composition
  - Rectangular and Circular/Rounded.
  - Concrete posts and beams support rebar.
- Other.

The Composition of a framing type influences a variety of characteristics: particularly shape. A Steel I-beam, for example, is shaped slightly different than a wood I-joist. There are also a variety of subtleties with regard to how automatic framing gets generated based on the composition. For example, Steel studs are longer than wood studs because they are supported by Steel U Channel plates rather than plates that are rectangular lumber.

Multiple-Ply Framing Members

Posts, Beams, as well as automatically-generated Girder Trusses are often composed of multiple boards sistered together. You can specify you can specify how many plies these objects have in their specification dialogs. See *Multiple-Ply Framing on page 674*.

Automatic Framing Defaults Dialog

The Automatic Framing Defaults dialog allows you to set the defaults for all framing that can be generated automatically: including when they are drawn manually. To access this dialog, select **Edit> Default Settings**, to open the Default Settings dialog. Click the arrow beside "Framing" to expand the category, then click on "Automatic Framing" and click the Edit button. See *Default Settings on page 83*.

This dialog can also be accessed by double-clicking any of the **Floor/Ceiling Framing Tools**  , or **Roof Framing Tools**  buttons.

Each major structural component of the model has its own panel or panels in the Framing Defaults dialog. The number of panels in the dialog varies depending on how many floors are in your model. There will be a panel called “1st” for the first floor, “2nd” for the second floor, and so on.

- Floor and ceiling framing settings are found on the Foundation and Floor Level panels. See *Floor Level Panels on page 648*.
- Floor truss settings can be accessed on the Trusses panel. See *Trusses Panel on page 657*.
- Wall framing settings are located on the Wall, Openings, and Fireplaces panels. See *Wall Panel on page 651*, *Openings Panel on page 653*, and *Fireplaces Panel on page 654*.
- Roof framing settings are located on the Roof and Trusses panels. See *Roof Panel on page 654* and *Trusses Panel on page 657*.
- The settings on the Roof panel are the same as those on the Structure panel of the Build Roof dialog. See *Roof Panel on page 654*.

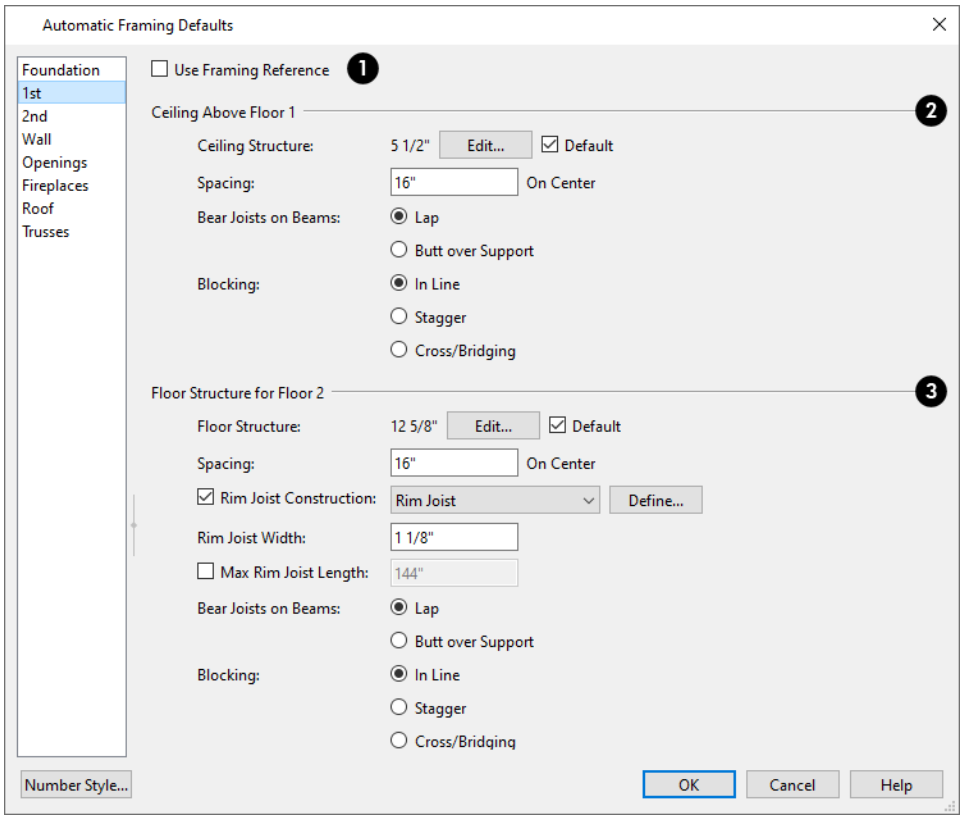
The defaults for the **General Framing**  , **Post**  , and the two **Beam**  tools are set in the Manual Framing Defaults dialog. See *Manual Framing Defaults Dialog on page 658*.

Floor Level Panels

The floor and ceiling framing defaults for individual floor levels are set here. The defaults for all floor levels, however, is set in the Floor/Ceiling Platform Defaults dialog. See *Multiple Floor Levels on page 535* and *Floor and Room Defaults on page 313*.

The floor framing for a given floor level is always generated or manually drawn on the floor below. As such, the floor framing settings for a given floor level are found on the FLOOR panel for the floor below it. For example, the floor framing settings for Floor 2 are found on the 1ST panel, while the floor framing settings for Floor 1 are found on the FOUNDATION panel. See *Floor and Ceiling Platforms on page 542*.

In order to create the floor framing for Floor 1, a Floor 0 must be present. If a Floor 0 has not been built, the **Build Floor Framing** check box on the FOUNDATION panel will not be available. See *Foundations on page 515*.



1 Use Framing Reference

Check this box to use a Framing Reference Marker as the starting point for joist layout. If a Framing Reference Marker is present, the center of the first joist is placed at this point and spacing goes from there. If joists are lapped, the surface is placed at this point. When this is unchecked, the program tries to position ceiling joists so that they coincide with rafters. See *Framing Reference Markers on page 670*.

2 Ceiling Above Floor X

Ceiling platforms are only present above rooms that do not have living space above them. Ceiling platforms that already have the bottom chords of roof trusses present in them do not receive automatically generated joists. See *Roof Trusses on page 683*.

- The **Ceiling Structure** depth displays here for reference.
  - Click the **Edit** button to open the Ceiling Structure Definition dialog and define the layers of materials that form the ceiling platform for Floor X. See *Material Layers Definition Dialogs on page 753*.
  - Check **Default** to use the Ceiling Structure Definition set in the Floor/Ceiling Platform Defaults dialog. See *Floor and Room Defaults on page 313*.
- Enter a value for the On Center **Spacing** of joists or trusses generated in ceiling platforms on Floor X.

- Specify how to **Bear Joists on Beams** and on Bearing Walls when ceiling framing is generated: they can either **Lap** side by side or **Butt** end to end. The lap is 8” (200 mm) and centered over the support.
- Specify what style of **Blocking** or bridging is produced for the ceiling when **Joist Blocking** is manually drawn after joists are in place. See *Framing Tools on page 663*.
  - **In Line** produces blocking pieces that align with each other.
  - **Stagger** produces blocking that alternates on either side of the line you draw.
  - **Cross/Bridging** produces cross bridging that looks like in line blocking in plan view, but shows as cross bridging in 3D views and the materials list.

3 Subfloor of Floor Y

If a room has a living space above it, its ceiling will be supplied by the floor platform of the room(s) above instead of a ceiling platform.

- The **Floor Structure** depth displays here for reference.
  - Click the **Edit** button to open the Floor Structure Definition dialog and define the layers of materials that form the floor platform for Floor Y. Only available if there is living space above at least part of the current floor.
  - Check **Default** to use the Floor Structure Definition set in the Floor/Ceiling Platform Defaults dialog.
- Enter a value for the On Center **Spacing** of automatically generated joists or trusses generated in ceiling platforms for Floor Y.
- Check **Rim Joist** to create rim joists across the ends of the floor joists when floor framing is generated. If this is unchecked, line blocking across the ends of the floor joists is not generated but can be drawn manually later if you wish.
  - Specify the **Construction** of the floor joists by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.

    Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
  - Specify the **Rim Joist Width**, which is the horizontal thickness.
  - Check **Max Rim Joist Length**, then specify the maximum allowable length for rim joist boards. When unchecked, rim joists run the full length of each platform edge where joist ends are found.
- Specify the **Rim Joist Connection Style**, which affects how Double rim joists connect at the corners of floor platforms, but not where rim joists along the same platform edge meet when a Maximum Length is in use. Rim Joists are specified in the Wall Specification dialog. See *Structure Panel on page 296*.
  - Select **Stagger** to align the ends of Double rim joists in an alternating, or herringbone, pattern.
  - Select **Flush** to build each pair of Double rim joists either to the edge of the floor platform or to the inside edge of the adjacent rim joist.

> Rim Joists are specified in the Wall Specification dialog. See *Structure Panel on page 296*.

- Specify how **Bear Joists on Beams** and on Bearing Walls when floor framing is generated: they can either **Lap** side to side or **Butt** end to end. The lap is 8” (200 mm) and centered over the support.
- Specify what style of **Blocking** or bridging is produced for the floor when **Joist Blocking** is manually drawn after joists are in place. See #2, above.

Deck Panel

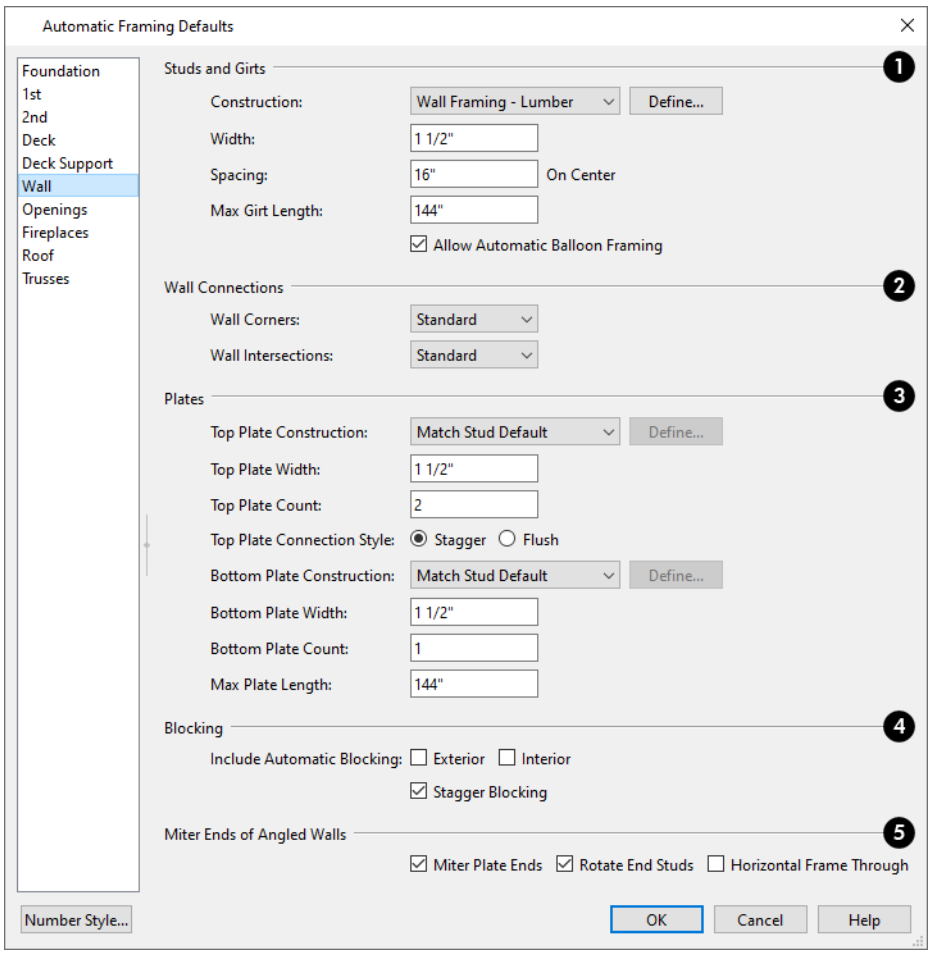
The settings on the Deck panel are also found on the panel of the same name in the Room Specification dialog. See *Deck Panel on page 334*.

Deck Support Panel

The settings on the Deck Support panel are also found on the panel of the same name in the Room Specification dialog. See *Deck Support Panel on page 336*.

Wall Panel

The settings on this panel affect framed Wall Types. See *Wall Type Definitions Dialog on page 290*.



1 Studs and Girts

Specify how vertical wall studs and horizontal girts are created by default. Most of these settings can be customized for individual wall types. See *Wall Type Definitions Dialog on page 290*.

- Specify the **Construction** of studs and girts by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Specify the default **Width** for studs and girts.
- Specify the default **Spacing** for all wall Framing layers in the plan, starting from the Framing Reference Marker, if one is present. See *Framing Reference Markers on page 670*.

- Specify the **Max Girt Length**, which is the maximum allowed length for horizontal girt boards. This value is only applicable for Wall Types that are set to use a maximum girt length.
- When **Allow Automatic Balloon Framing** is checked, walls adjacent to Open Below rooms are balloon-framed. Uncheck this box to instead produce wall plates separated by joists instead. See *Effects of Room Types on page 315*.

2 Wall Connections

Specify how the framing at **Wall Corners** and **Wall Intersections** is generated.

- Select "Standard" to produce corners or intersections composed of three studs.
- Select "Reduced Stud" to produce corners or intersections composed of two studs.
- Select "Laddered" to add horizontal ladder blocking at corners or intersections.
- Select "U Shaped" to produce corners composed of three studs in a U-shaped configuration. Only available for Wall Corners.

3 Plates

Define how horizontal top and bottom wall plates are generated.

- Specify the **Top Plate Construction** by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be selected as well as edited. Not available when "Match Stud Default" is selected.
- Specify the **Top Plate Width** and **Top Plate Count**.
- Specify the **Top Plate Connection Style**, which affects how top plates connect at wall intersections, but not where plates for the same wall meet when a Maximum Length is in use.
  - Select **Stagger** to align the ends of the topmost plates with either the inside or outside edges of adjacent plates in an alternating pattern.
  - Select **Flush** to align all of the topmost plates' ends with those of the plate below it.
- Specify the **Bottom Plate Construction** by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be selected as well as edited. Not available when "Match Stud Default" is selected.
- Specify the **Bottom Plate Count**, as well as each plate's vertical **Thickness**.
- Specify the **Max Plate Length**, which is the maximum allowed length for the boards that make up the top and bottom plates. This value only applies to Wall Types that are set to use a maximum plate length. See *Wall Type Definitions Dialog on page 290*.

4 Blocking

Specify where and how horizontal blocking is created. Each run of blocking behaves as a single object but has gaps where it crosses studs.

- Specify whether you want to **Include Automatic Blocking** in framed walls:
  - Check **Exterior** to automatically produce blocking on exterior walls when wall framing is built.
  - Check **Interior** to automatically produce blocking on internal walls when wall framing is built.
- When **Stagger Blocking** is checked, blocking alternates on either side of a horizontal center line. Uncheck this for collinear blocking.
- Wall blocking is generated exactly half-way up each wall’s total height. Once created, it can be selected in a Framing Overview.

Specify the **Max Girt Length**, which is the maximum allowed length for horizontal girt boards. This value is only

applicable for Wall Types that are set to use a maximum girt length.

5 Mitre Ends of Angled Walls

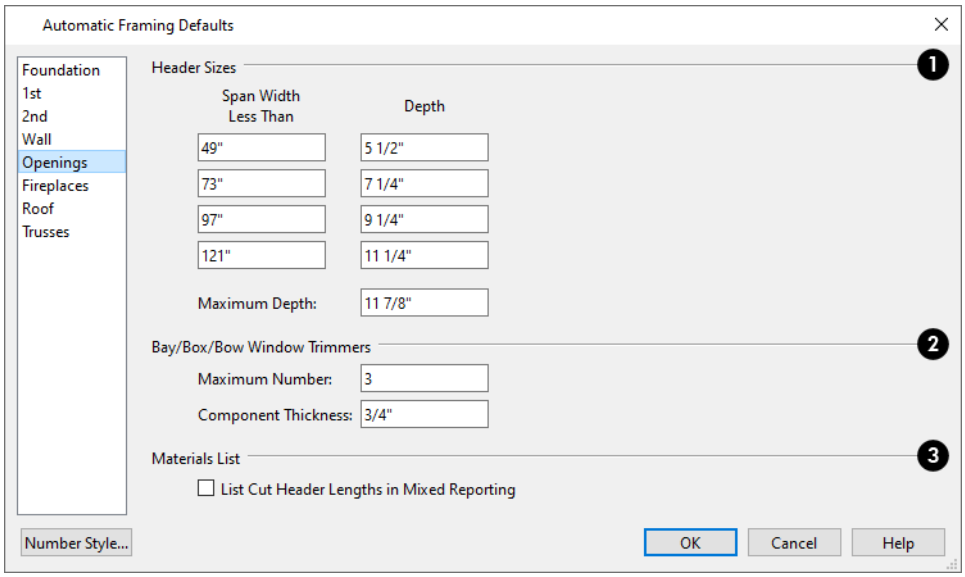
Specify how wall corners that are not right angles are framed. 90° corners are not affected by these settings.

- Select **Mitre Plate Ends** to mitre the ends of the top and bottom plates. If unchecked, top and bottom plates will be butted together.
- Select **Rotate End Studs** to rotate the studs closest to mitre ends to the angle of the mitre. If unchecked, studs will remain perpendicular to the angle of the walls.
- Select **Horizontal Frame Through** to frame through the horizontal walls in plan view, butting vertical walls against them. If unchecked, walls that are vertical in plan view will frame through.

Openings Panel

Various defaults for door and window headers as well as the trimmers for bay/box/bow windows can be set here.

The rough openings for doors and windows can be specified in the Door and Window Defaults and Specification dialogs. See *Manual Framing Defaults Dialog on page 658*.



1 Header Sizes

Specify default **Header Sizes**, dependent on width of the door or window, including its Rough Opening. These values should be set so that the wider the opening, the deeper the header.

- If the top of an opening's Rough Opening is closer to the top plate than the **Maximum Depth**, a solid header is produced to fill the entire space. Short cripple studs between the header and top plate are not produced.

2 Bay/Box/Bow Trimmers

Specify how **Bay/Box/Bow Trimmers**, are generated.

- Specify the **Maximum Number** of trimmers that a Bay, Box, or Bow Window with a lowered top height can have on each side of the opening.
- Specify the **Component Thickness**, which is the thickness of a thinner trimmer for manually resized Bay/Box/Bow Window components if a standard trimmer does not fit. See *Component Windows on page 453*.

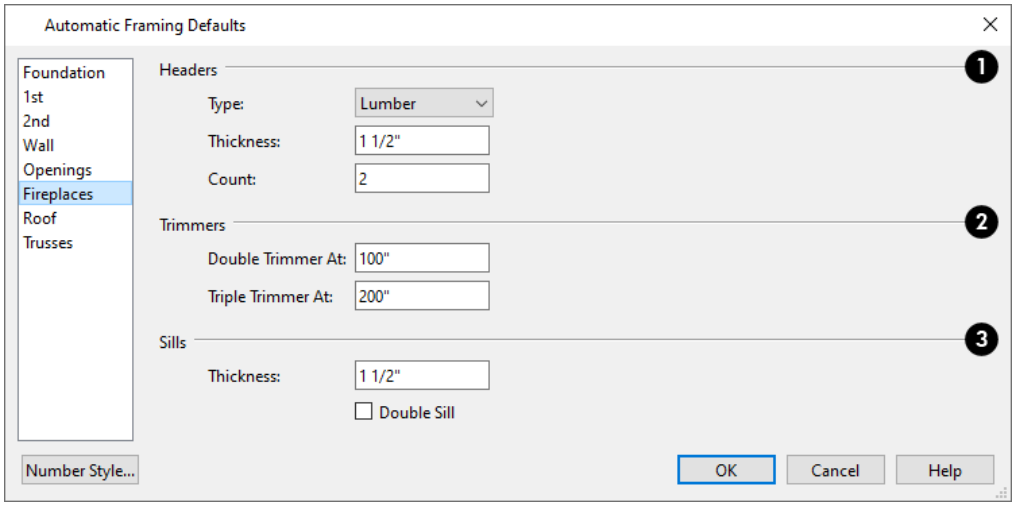
3 Materials List

Check **List Cut Header Lengths in Mixed Reporting** to show precut headers in the Materials List. Precut headers are shown only if the walls have been framed and Mixed Reported is selected as the reporting method.

If this is unchecked, the Materials List produces a total footage for all headers. When checked, each different length of precut header is listed separately. Note that the total number of headers is affected by the **Count** value of each door and window.

FIREPLACES PANEL

The rough openings for legacy Fireplaces placed in walls can be set on the FIREPLACES panel. See *Fireplaces on page 530*.



1 Headers

Specify the characteristics of legacy fireplace headers.

- Specify the **Type** of material used for fireplace headers. See *Framing Types on page 647*.
- Specify the **Thickness** of fireplace headers.
- Specify the **Count** of boards used to form a fireplace header.

2 Trimmers

Specify when to generate multiple trimmers on each side of a fireplace. These values include the fireplace's Rough Opening. See *Manual Framing Defaults Dialog on page 658*.

- **Double Trimmer At** - Fireplace openings of this width or greater receive two trimmers on each side when framed.
- **Triple Trimmer At** - Fireplace openings of this width or greater receive three trimmers on each side when framed.

3 Sills

Specify the characteristics of fireplace sills. A sill is only generated if a fireplace is raised sufficiently off the floor.

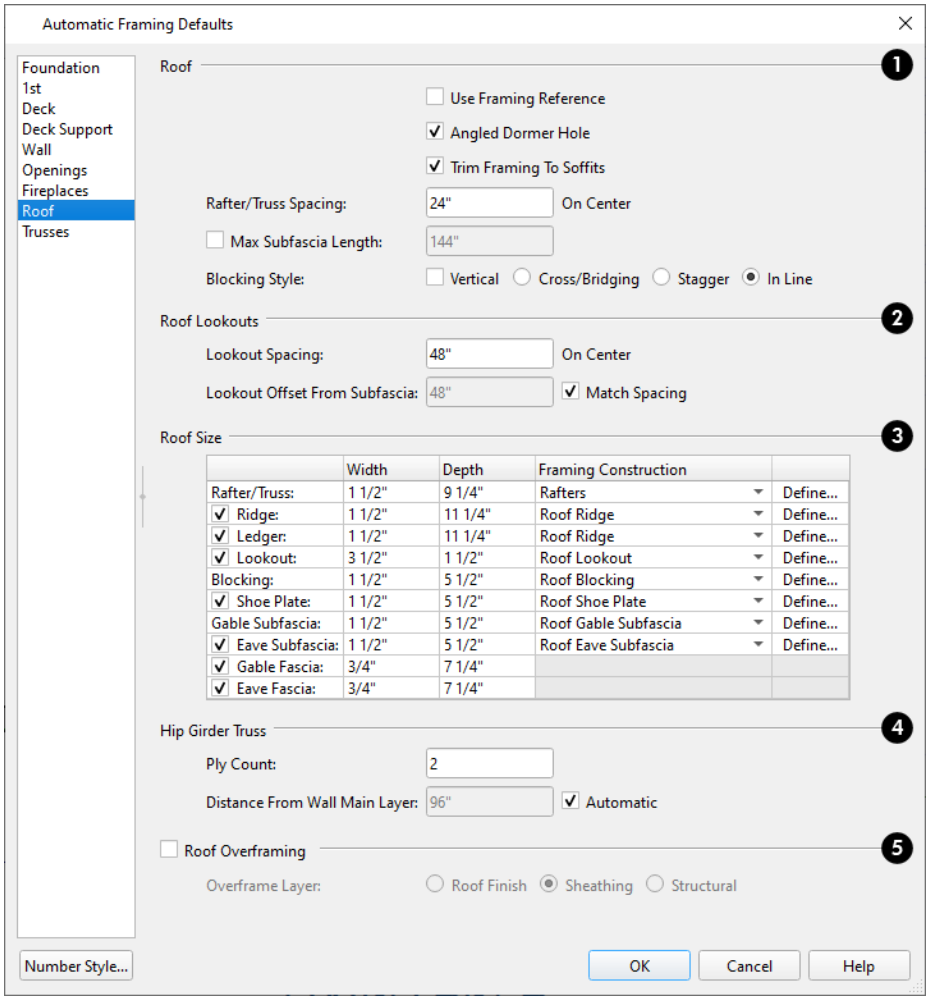
- Specify the **Thickness** of fireplace sills.
- Check **Double Sills** to specify a double sill instead of a single sill board.

ROOF PANEL

The settings on the ROOF panel of the Build Framing dialog are exactly the same as those on the STRUCTURE panel of the Build Roof dialog. See *Build Roof Dialog on page 597*.

These settings are also found on the STRUCTURE panel of the Roof Plane Specification dialog. Those settings that apply to ceiling planes are available in the Ceiling Plane Specification dialog. See *Roof Plane Specification Dialog on page 613*.

> Note: Changes made on the Roof panel will not affect the structure of existing roof planes. To make changes take effect, rebuild the roof.

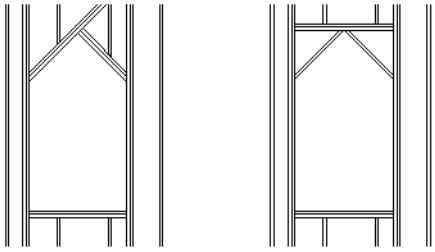


1 Roof

- Check **Use Framing Reference** to use a Framing Reference Marker as the starting point for rafter layout. See *Framing Reference Markers on page 670*.

  > Note: Use Framing Reference is useful when framing a gable roof, but not necessarily a hip roof. See *Framing References and Roof Framing on page 671*.

- Uncheck **Angled Dormer Hole** to frame dormers using rafters under the dormer valleys and a double header where the peak of the dormer roof meets the main roof plane. When checked, a five-sided hole is framed with two angled double rafters located under the dormer valleys.
  If a double header does not fit within the main roof plane, an angled dormer hole is produced regardless of this setting.



- Uncheck **Trim Framing To Soffits** to generate full-depth rafters all the way to the subfascia. If checked, rafter depths are trimmed to the top surface of the soffits in the eave area.
- Specify the **Spacing** of automatically generated rafters or trusses.
- Specify the **Maximum Lookout Spacing**. Depending on a roof plane's length, its lookouts may be spaced closer than this value, but not further.
- Check **Maximum Subfascia Length**, then specify the maximum allowable length for subfascia boards. When unchecked, subfascia boards run the full length of each roof eave edge that has fascia specified.
- Specify the **Blocking Style**. See *Framing Tools on page 663*.
  - Check **Vertical** to generate blocking that is oriented vertically, or plumb. When unchecked, blocking is perpendicular to the roof framing.
  - **In Line** produces blocking pieces that align with each other.
  - **Stagger** produces blocking that alternates on either side of the line you draw.
  - **Cross/Bridging** produces cross bridging that looks like in line blocking in plan view, but shows as cross bridging in 3D views and the materials list.

2 Roof Lookouts

Lookouts, sometimes called outriggers, are boards that are perpendicular to the rafters and support gable eaves.

- Specify the **Lookout Spacing**, which is maximum on center spacing between lookouts.
- Specify the **Lookout Offset from Subfascia**, which is the distance of the lowermost lookout board from the nearest parallel subfascia board. This value is measured from the subfascia board's center line.
  - When **Match Spacing** is checked, the distance from the lowermost lookout board to the subfascia center line is the same as the Lookout Spacing, set above.

3 Roof Size

Specify the default attributes of **Rafters**, the **Ridge** board, **Lookouts**, **Shoe Plate**, **Gable Subfascia**, **Eave Subfascia**, **Gable Fascia**, **Eave Fascia**, and **Blocking**.

- Specify the **Width** and **Depth** of each roof framing component.
- Specify the **Framing Construction** of each roof framing component by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click in the **Define** column to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- The **Gable Subfascia** setting controls the height of both gable and eave soffits, and thus the depth of rafter tails when **Trim Framing to Soffits** is checked, above.
- Uncheck the boxes beside **Ridge**, **Lookout**, **Shoe Plate**, **Eave Subfascia**, **Gable Fascia** and/or **Eave Fascia** to prevent these framing members from generating when roof framing is built. When these boxes are checked, these items will generate as specified here.

- In the Ceiling Plane Specification dialog only, check **Include Ridges** to create ridge boards for the selected ceiling plane(s) when roof framing is generated.

4 Hip Girder Truss

Specify how hip-end girder trusses are generated. Defaults for these trusses can be set in the Roof Girder Truss Defaults dialog. See *Truss Defaults on page 682*.

- Specify the **Count**, which is how many trusses are generated side by side to produce a girder truss.
- Specify the **Distance from Wall Main Layer**, which is the distance from the outside of the Main Layer of the wall that support the sub-girder trusses to the nearest hip girder truss surface.
  - When **Automatic** is checked, hip-end girder trusses are generated on layout, and approximately 4' (1200 mm) from the outside of the exterior of the wall's Main Layer.

5 Roof Overframing

These settings affect how roof framing is generated at locations where roof planes are drawn to represent an overbuild situation.

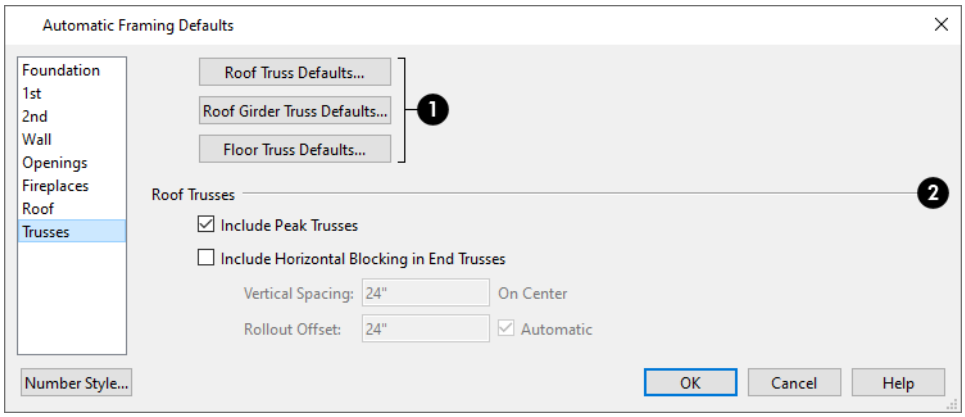
- Check **Roof Overframing** to generate shoe plates for the upper roof's rafters to join to in overbuild situations. When unchecked, no shoe plates are created.
- Specify the **Overframe Layer**, which is the layer of the lower roof assembly that the shoe plate snaps to when roof framing is generated.
  - Select **Roof Finish** to generate overbuild framing on top of the topmost layer of the roof's Surface Definition.
  - Select **Sheathing** to generate overbuild framing on top of the lowermost layer of the roof's Surface Definition.
  - Select **Structural** to generate overbuild framing on top of the roof's Structure Definition.

Trusses Panel

Changes to the settings on this panel do not affect any trusses that are already present in the current plan. See *Trusses on page 682*.

The spacing of automatically generated trusses is specified on the Roof and Floor panels of this dialog.

> Home Designer does not engineer trusses. Always consult an engineer or truss company to have your trusses professionally designed.



1

The three Truss Defaults dialogs are similar to their corresponding Truss Specification dialogs.

- Click the **Edit Roof Truss Defaults** button to open the Roof Truss Defaults dialog. See *Roof Truss Specification Dialog*.
- Click the **Edit Roof Girder Truss Defaults** button to open the Roof Girder Truss Defaults dialog.
- Click the **Edit Floor Truss Defaults** button to open the Floor Truss Defaults dialog. See *Floor/Ceiling Truss Specification Dialog on page 693*.

2 Roof Trusses

- When **Include Peak Trusses** is checked, roof trusses are generated where hip and/or ridge rafters meet regardless of the specified truss spacing. Uncheck this to only produce roof trusses that obey the Spacing set on the Roof panel of this dialog. See *Roof Panel on page 654*.
- Check **Include Horizontal Blocking in End Trusses** to include horizontal blocking in additional to the vertical webbing in End Trusses. See *End Trusses on page 690*.
  - Specify the **Vertical Spacing**, which is the distance between horizontal blocking members, measured center to center.
  - Specify the **Rollout Offset**, which is the distance from the bottom of the truss to the bottommost horizontal blocking member. When **Automatic** is checked, the previous value entered either here or in the Vertical Spacing field is reported for reference and the Vertical Spacing value is used for the actual offset.

Manual Framing Defaults Dialog

To open the Manual Framing Defaults dialog, select **Edit> Default Settings** to open the Default Settings dialog. Click the arrow beside "Framing" to expand the category, then click on "Manual Framing" and click the Edit button. See *Default Settings on page 83*.

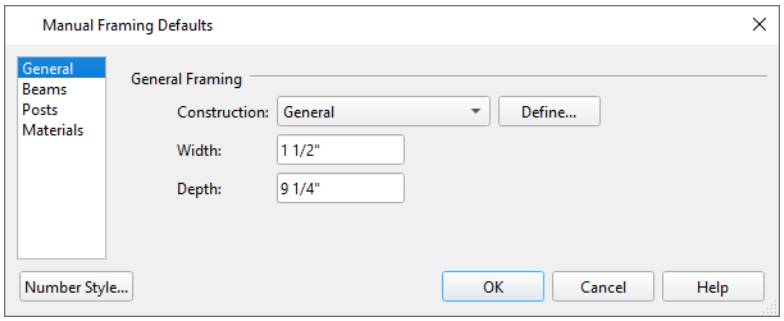
The Manual Framing Defaults dialog can also be opened by clicking the **Manual Framing Defaults** button, which can be added to the toolbars. See *To add a button to a toolbar on page 124*.

This dialog can also be accessed by double-clicking the **General Framing**, **Post**, or any of the **Beam** toolbar buttons. See *Manually Drawn Framing on page 668*.

Any changes made in the Manual Framing Defaults dialog will affect subsequently drawn or generated framing, but not framing already present in the plan.

General Panel

The settings on the General panel control the initial attributes of objects drawn using the **General Framing** tool.



- Select the **Construction** of General Framing members by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.

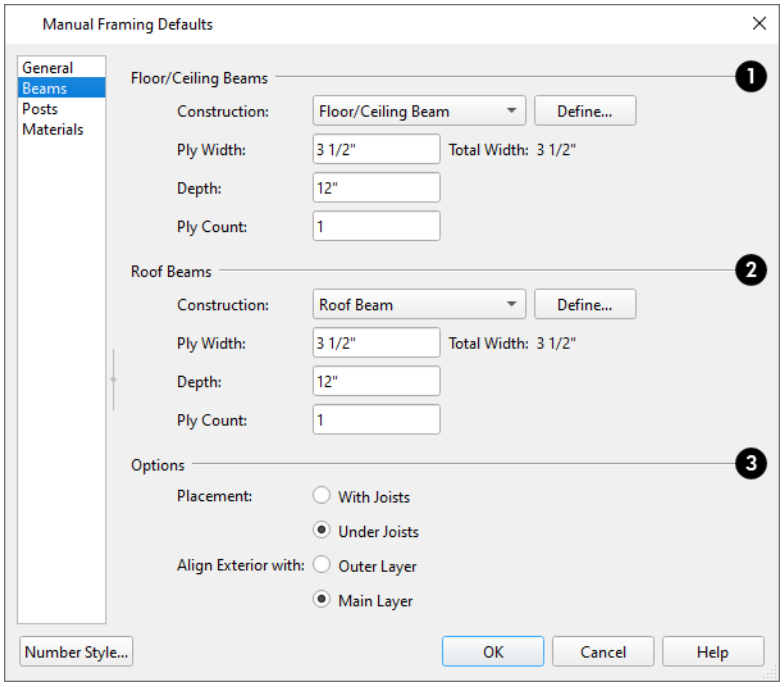
- Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.

- Specify the default **Width** and **Depth** of General Framing members.

Beams Panel

The settings on the Beams panel control the initial attributes of objects drawn using the **Floor/Ceiling Beam** and **Roof Beam** tools. See *Framing with Beams on page 668*.

> Posts and beams may be created under a Deck room automatically, depending on its size, location, and other variables. Deck Framing defaults are set in the Deck Room Defaults dialog. See *Editing and Retaining Deck Framing on page 325*.



1 Floor/Ceiling Beams

These settings control the initial attributes of beams created with the **Floor/Ceiling Beam** tool.

- Select the **Construction** of Floor and Ceiling Beams by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Specify the size and count of the board or boards that make up Floor and Ceiling Beams by default:
  - Specify the **Ply Width**, which controls the side-to-side measurement of a Floor/Ceiling Beam. When the Ply Count is 1, this value is the width of the entire beam. When the Ply Count is two or more, this is the width of each board that makes up the beam.
  - The **Total Width** is reported to the right for reference.
  - Specify the **Depth**, which is the vertical measurement of a Floor/Ceiling Beam.
  - Specify the **Ply Count**, which is the number of boards sistered together to form a beam. A value of one produces beams composed of a single board.

2 Roof Beams

These settings control the initial attributes of beams created with the **Roof Beam** tool.

- Select the **Construction** of Roof Beams by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Specify the size and count of the board or boards that make up Roof Beams by default:
  - Specify the **Ply Width**, which controls the side-to-side measurement of a Roof Beam. When the Ply Count is 1, this value is the width of the entire beam. When the Ply Count is two or more, this is the width of each board that makes up the beam.
  - The **Total Width** is reported to the right for reference.
  - Specify the **Depth**, which is the vertical measurement of a Roof Beam.
  - Specify the **Ply Count**, which is the number of boards sistered together to form a Roof Beam. A value of one produces beams composed of a single board.

3 Options

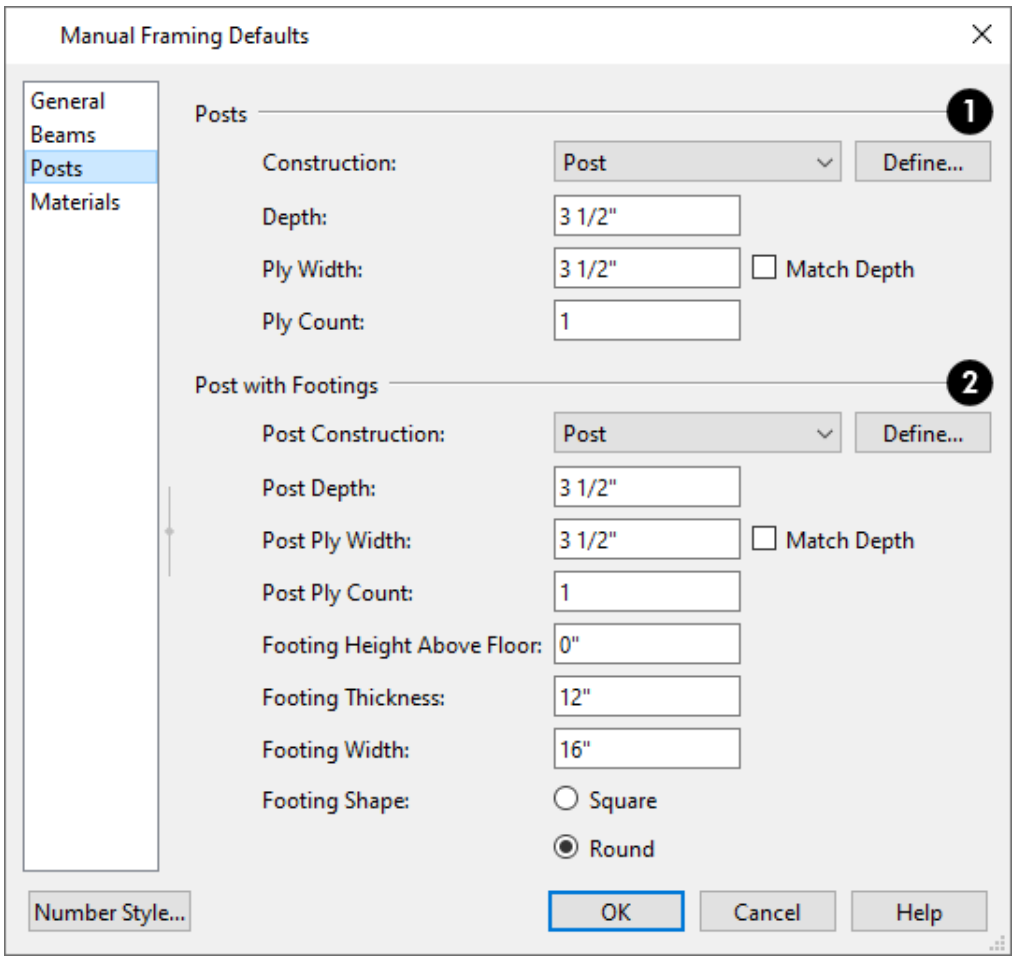
These settings affect the positioning of **Floor/Ceiling Beams**.

- Specify the **Placement** of Floor/Ceiling Beams relative to the joists. **With Joists** places beams at the same height as the joists so they hang on the beams; **Under Joists** places beams below joists so they bear on the beams. See *Bearing Walls and Beams on page 669*.
- **Align Exterior with Outer Layer/Main Layer** - When a Floor/Ceiling Beam is drawn along and over an exterior wall, its exterior surface can snap to either the wall's outer layer or outer Main Layer, as specified here. See *The Main Layer on page 288*.

Posts Panel

The settings on the Posts panel control the initial attributes of objects drawn using the **Post** and **Post with Footing** tools.

The defaults for Deck Framing, including Deck Posts, are set in the Deck Room Defaults dialog. See *Editing and Retaining Deck Framing on page 325*.



1 Posts

These settings control the initial attributes of Posts created with the **Post** tool.

- Select the **Construction** of Posts by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Specify the size of the board or boards that make up Posts by default:
  - Specify the **Ply Width**, which controls the side-to-side measurement of a Post. When the Ply Count is 1, this value is the width of the entire Post. When the Ply Count is two or more, this is the width of each board that makes up the Post.
  - Check **Match Depth** to ensure that each Post ply remains square-shaped whenever they are resized. This option also ensures single-ply Round Posts remain circular when resized.
  - The **Total Width** is reported to the right for reference.
  - Specify the **Depth**, which is the front-to-back measurement of a Post.
  - Specify the **Ply Count**, which is the number of boards sistered together to form a Post. A value of one produces Posts composed of a single board.

2 Post with Footings

These settings control the initial attributes of posts and footings created with the **Post with Footing**

 tool.

- Select the **Construction** of Posts with Footings by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Specify the size of the board or boards that make up Posts with Footings by default:
  - Specify the **Ply Width**, which controls the side-to-side measurement of a Post with Footing. When the Ply Count is 1, this value is the width of the entire Post. When the Ply Count is two or more, this is the width of each board that makes up the Post.
  - Check **Match Depth** to ensure that each Post ply remains square-shaped whenever they are resized. This option also ensures single-ply Round Posts remain circular when resized.
  - The **Total Width** is reported to the right for reference.
  - Specify the **Depth**, which is the front-to-back measurement of a Post with Footing.
  - Specify the **Ply Count**, which is the number of boards sistered together to form a Post with Footing. A value of one produces solid Posts composed of a single board.
- Four settings control Post Footings:
  - Specify the **Footing Height Above Floor** value, measured from the top of the subfloor of the room in which the post is placed.
  - Specify the top to bottom **Thickness** of the footing.
  - Specify the **Width** of the footing. This is the length of each side of a square footing and the diameter of a round footing.
  - Select the **Square** or **Round** radio button to specify the initial Post Footing **Shape**. Once created, Post Footings can be edited like other closed polylines. See *Editing Closed Polyline-Based Objects on page 197*.

Materials Panel

The settings on the Materials panel affect the appearance of General Framing objects, Beams, and Posts in 3D views, but is not used in the Materials List. Materials List information is derived from the structure Type of each framing object. See *Framing and the Materials List on page 680*.

The settings on this panel are found in a variety of defaults and specification dialogs throughout the program. See *Materials Panel on page 760*.

Framing Tools

The Framing Tools can be used to automatically generate as well as manually draw a structure's framing members. Select **Build> Framing** to access these tools.

In the toolbars, the Framing Tools family has three separate parent buttons: **General Framing Tools**, **Floor/Ceiling Framing Tools**, and **Roof Framing Tools**. See *Toolbars and Hotkeys on page 121*.

The default settings for framing members are derived from the structural assemblies they generate or are drawn within, as well as from the Framing Defaults dialogs. See *Framing Defaults on page 642*.

Most types of framing can be created both manually and automatically, and can be viewed in a variety of different ways. See *Displaying Framing on page 673*.

Once created, both automatically generated and manually drawn framing members can be selected and edited. See *Editing Framing on page 675*.

The Framing Tools family has three main categories:

General Framing Tools

The **General Framing Tools** serve a number of purposes: automatically generating framing, manually drawing certain types of framing objects, and adding directives for automatic framing to a drawing.

In the menus, you can access the General Framing Tools by selecting **Build> Framing**. See *Framing Tools on page 663*.

The defaults for **General Framing** objects as well as Posts and Beams are set in the Manual Framing Defaults dialog. See *Manual Framing Defaults Dialog on page 658*.

Framing objects are created on layers with names that begin with “Framing”. Once drawn, they can be edited much like other objects. See *Displaying Framing on page 673* and *Editing Framing on page 675*.

Build Framing

There are several ways to automatically generate framing. See *Creating Framing on page 666*.

Select **Build> Framing> Build Framing** to open the Build Framing dialog, where you can select which type(s) of framing to generate: either automatically as changes are made to the structure, or on command.

Select **Build> Framing> Build All Framing** to build or rebuild all floor, ceiling, wall, and roof framing throughout the current plan.

General Framing

General Framing objects are generic, framing members that can be drawn outside a floor or ceiling platform or roof plane. Select **Build> Framing> General Framing**, then click and drag in a straight line to create one of these objects. In plan view, a horizontal framing member is created.

Post

Posts can only be placed manually. To do so, select **Build> Framing> Post** and click in plan view.

Post with Footing



Posts can also be created with footings beneath them. Select **Build> Framing> Post** and click in plan view to place a post centered over a footing. Post footings are **Slab** objects and can be selected independent of their posts. See *The Slab Tools on page 527*.

Framing Reference Marker



Framing Reference Markers are manually-placed reference points that specify how automatically-generated framing is laid out. To place one, select **Build> Framing> Framing Reference Marker** in plan view and click to place a Framing Reference Marker.

A Framing Reference Marker can also be created by placing a **Marker** and then specifying its type. See *Markers on page 386* and *Framing Reference Markers on page 670*.

Floor and Ceiling Framing Tools



The **Floor Framing Tools** can be used to automatically generate as well as manually draw roof framing members within an area defined as one or more rooms with a ceiling or floor above.



In the menus, you can access the Floor Framing Tools by selecting **Build> Framing**. See *Framing Tools on page 663*.

Both automatically generated and manually drawn floor or ceiling framing use the structural attributes of the room areas they are drawn within, and derive their default Role and other settings from their associated Framing Member Defaults. See *Default Framing Members on page 645*.

Floor and ceiling framing objects are created on layers with names that begin with "Framing, Ceiling" or “Framing, Floor”. Once drawn, they can be edited much like other framing members with one important exception: if you manually specify a floor or ceiling framing object's depth or height, it will no longer be tied to its floor or ceiling platform height. See *Displaying Framing on page 673* and *Editing Framing on page 675*.

Joist



Floor and ceiling joists can be both drawn manually and generated automatically. To draw a joist, select **Build> Framing> Joist** in plan view, then click and drag in a straight line within a floor or ceiling platform.

Joists are always drawn as the ceiling framing for the current floor. See *The Current Floor on page 545*. Whether a floor or ceiling joist is drawn is determined by the presence of a floor platform above.

- If there is no floor platform above, a ceiling joist is drawn.
- If there is a floor platform above, a floor joist is drawn.

If you want to draw floor joists for Floor 1, for example, you must do so on Floor 0. See *Foundations on page 515*.

Joists can be automatically generated for multiple floors in the Build Framing dialog. See *Floor Level Panels on page 648*.

By default, joists automatically generate in the direction that results in the shortest span; however, you can produce different results using interior walls specified as **Bearing Walls**, **Floor/Ceiling Beams**, and/or **Joist Direction** lines. See *Joist Direction Lines on page 671*.

Joist Blocking



Joist blocking can only be drawn manually in plan view. To do so, select **Build> Framing> Joist Blocking**, then click and drag in a straight line within a floor or ceiling platform.

Before drawing Joist Blocking:

- Specify whether you want **In Line**, **Stagger** blocking, or **Cross** bridging in the Framing Defaults dialog.
- Build the floor and/or ceiling platform. See *Floor Level Panels on page 648*.

Regardless of how many joists or other objects it crosses, each run of blocking behaves as a single object.

Floor/Ceiling Truss



Floor and ceiling trusses can only be drawn manually in plan view. Select **Build> Framing> Floor/Ceiling Truss**, then click and drag in a straight line within a floor or ceiling platform. See *Floor and Ceiling Trusses on page 682*.

Floor/Ceiling Beam



Floor and ceiling beams can only be drawn manually in plan view. Select **Build> Framing> Floor/Ceiling Beam**, then click and drag in a straight line within a floor or ceiling platform.

Beams can be drawn in two different ways:

- **Under Joists** places the beam underneath the joists so the joists can bear on it.
- **With Joists** places the top of the beam even with the tops of the joists it supports. The joist then butts against it. See *Automatic Framing Defaults Dialog on page 648*.

Framing Reference Marker



Framing Reference Markers are manually-placed reference points that specify how automatically-generated framing is laid out. To place one, select **Build> Framing> Framing Reference Marker** in plan view and click to place a Framing Reference Marker.

A Framing Reference Marker can also be created by placing a **Marker**  and then specifying its type. See *Markers on page 386* and *Framing Reference Markers on page 670*.

Joist Direction



Joist Direction lines define the direction in which joists run in a floor or ceiling platform and can only be drawn in plan view. To draw one, select **Build> Framing> Joist Direction** and click and drag within a floor or ceiling platform. See *Joist Direction Lines on page 671*.

Roof Framing Tools



The **Roof Framing Tools** can be used to automatically generate as well as manually draw roof framing members within a roof system.



In the menus, you can access the Roof Framing Tools by selecting **Build> Framing**. See *Framing Tools on page 663*.

Both automatically generated and manually drawn roof framing members use the structural attributes of the roof planes they are drawn within, and derive their default Role and other settings from their associated Framing Member Defaults. See *Default Framing Members on page 645*.

Roof framing objects are created on layers with names that begin with “Framing, Roof”. Once drawn, they can be edited much like other framing members with one important exception: if you manually specify a roof framing object's depth or height, it will no longer be tied to its roof plane's height or pitch. See *Displaying Framing on page 673* and *Editing Framing on page 675*.

Rafter



Rafters can be drawn both manually and automatically. To draw a rafter manually, select **Build> Framing> Rafter** in plan view, then click and drag in a straight line within a roof plane.

Roof Blocking



Roof Blocking is automatically generated in the eaves if a soffit is not present; otherwise, blocking is drawn manually. In plan view, select **Build> Framing> Roof Blocking** and click and drag in a straight line within a roof plane. Blocking is typically drawn perpendicular to the rafters, but at the same pitch.

Each run of blocking behaves as a single object but has gaps where it crosses rafters, trusses or other blocking.

Before drawing Roof Blocking:

- Specify whether you want **In Line**, **Stagger** blocking, or **Cross** bridging in the Automatic Framing Defaults dialog. See *Roof Panel on page 654*.
- Build the roof framing. See *Creating Framing on page 666*.

In 3D views, roof blocking is tilted to follow the pitch of the roof plane in which it is drawn.

Roof Truss



Roof trusses can be drawn both generated automatically and drawn manually. To draw a roof truss, select **Build> Framing> Roof Truss** in plan view and click and drag in a straight line within one or more roof planes. Roof planes and either a flat room ceiling or manually drawn Ceiling Plane must be present before a roof truss can be drawn. See *Roof Trusses on page 683*.

Roof Beam



Roof beams can only be drawn manually. To do so, select **Build> Framing> Roof Beam** in plan view and click and drag in a straight line. Roof beams are normally drawn across rafters and placed directly under them.

Creating Framing

Platform, roof, and wall framing can be generated automatically as well drawn manually, and in most cases, both approaches are used. For example, floor joists can be automatically generated to bear on or butt against manually drawn beams supported by manually placed posts.

To create a structure's framing

1. Set the structural and framing defaults. See *Framing Defaults on page 642*.
2. Draw the structure. See *Drawing a Plan on page 26*.
3. When the structure is in its final form, add Posts and Beams. See *General Framing Tools on page 663*.
4. Set any necessary structural directives in walls. See *Structure Panel on page 296*.
5. Build the foundation. See *Foundations on page 515*.
6. Add Joist Direction Lines, if required. See *Joist Direction Lines on page 671*.
7. Place a Framing Reference Marker. See *Framing Reference Markers on page 670*.
8. Automatically generate framing for floors, ceilings, walls, and roofs. See *Building Automatic Framing on page 667*,

below.

9. Manually edit, copy/paste, and/or draw any additional framing, if needed. See *Editing Framing on page 675*.

> Horizontal floor/ceiling platform framing members are referred to as "joists"; vertical wall framing members are referred to as "studs"; and sloped roof framing members are referred to as “rafters”.

Building Automatic Framing

There are two ways to generate framing automatically. If any framing that can display in the current view is not set to do so, you will be given an opportunity to turn on their display layer(s) if you wish. See *Displaying Framing on page 673*.

In order for framing to generate in a particular layer of a structural component such as a wall assembly or floor platform, that layer must be specified as a **Framing** layer. See *Wall Type Definitions Dialog on page 290* and *Material Layers Definition Dialogs on page 753*.

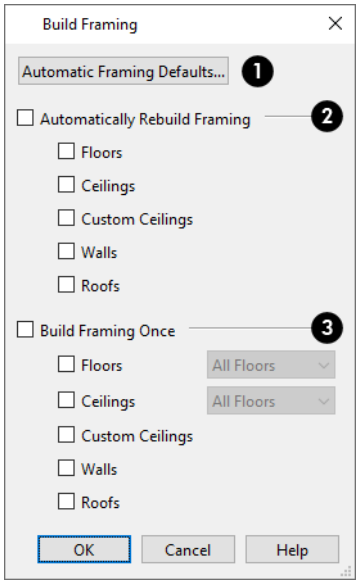
Select **Build> Framing> Build All Framing** to generate framing in all structural components that have framing as part of their definition: walls, floors, ceilings, and roofs. Framing is generated throughout the model based on current settings and structural conditions. See *Manual Framing Defaults Dialog on page 658*.

Select **Build> Framing> Build Framing** to open the Build Framing dialog and specify which structural components to generate framing in and then generate framing as specified.

If automatically generated framing is rebuilt in a structural assembly where it already exists, the existing framing will be deleted and replaced. To prevent this, check Retain Framing check box in the specification dialog of the structural assembly's owner object. See *Rebuilding and Retaining Framing on page 668*, below.

Build Framing Dialog

The Build Framing dialog allows you to automatically generate some or all of the framing in the current Plan. Select **Build> Framing> Build Framing** to open this dialog. You will also be presented with the opportunity to open this dialog if you create a Framing Overview in a Plan where no framing is present. See *Framing Overview on page 786*.



1 Automatic Framing Defaults

Click this button to open the Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.

2 Automatically Rebuild Framing

Specify which structural components are automatically regenerated whenever changes are made to the structure. See *Creating Framing on page 666*.

3 Build Framing Once

These options allow you to build framing for specific structural components one time when you click OK in this dialog.

- Check the box beside each structural component you would like to generate framing for.
- When **Floor** or **Ceiling** is checked, you can select either "All Floors" or a specific floor level from the drop-down list. Only floor levels with rooms that have Floor or Ceiling Framing specified are listed.

Rebuilding and Retaining Framing

If you need to regenerate any framing, there are several important things to bear in mind:

- Framing will only update when changes are made to the model if you actively direct it to rebuild or have set it to rebuild automatically. See *Building Automatic Framing*, above.
- If you rebuild the framing in a structural assembly, all automatically generated framing in that assembly that you edited will be deleted and replaced. To prevent this, check **Retain Framing** in the assembly's specification dialog, on the STRUCTURE panel. See *Wall Specification Dialog on page 294*, *Room Specification Dialog on page 328*, and *Roof Plane Specification Dialog on page 613*.
- While the **Retain Framing** check box is checked, an assembly's framing cannot be regenerated.
- Manually drawn as well as copied framing is not affected when automatic framing is built or rebuilt. To remove this framing, it must be deleted by you. See *Deleting Framing on page 677*.

Framing that has been manually replicated or manually drawn will not be deleted and replaced when automatic framing is regenerated.

Manually Drawn Framing

The manual framing tools are organized into families: **General Framing Tools**, **Floor/Ceiling Framing Tools**, and **Roof Framing Tools**. See *Framing Tools on page 663*.

With the exception of wall framing, most framing objects can be drawn manually by clicking and dragging in a straight line, the way other line-based objects are. See *Line Tools on page 230*.

The family that a drawing tool belongs to determines where it can be used:

- **Roof Framing** can only be drawn within the area of one or more roof planes.
- **Floor/Ceiling Framing** can only be drawn within a floor or ceiling platform.
- **General Framing** objects and **Posts** can be drawn anywhere in a model.

Framing with Beams

Floor/Ceiling Beams should be drawn in a plan either before automatic framing is generated. See *Framing with Floor/Ceiling Beams on page 669*.

Mixing Manual and Automatic Framing

Floor and ceiling platforms can be framed with a combination of manually-drawn and automatically generated joists. Similarly, roof planes can be framed with a combination of manually drawn and automatic rafters.

If you plan to use this approach, bear in mind that automatically generated joists and rafters will not be created in the same location as an existing, manually drawn joist or rafter and will not necessarily use the same layout. For consistent layout, consider using a **Framing Reference Marker** . See *Framing Reference Markers on page 670*.

Manually drawn framing is unaffected when automatic framing is rebuilt and remains along with the newly produced automatic framing.

See *Mixing Trusses with Stick Framing on page 688*.

Bearing Walls and Beams

It is not unusual for joists to lap or butt in the middle of a span rather than build across a platform. When they do, they typically bear on a beam at that point. To produce joists that break over a support, specify the wall or beam in question as Bearing in its specification dialog:

- Check **Bearing Wall** in the Wall Specification dialog. See *Structure Panel on page 296*.
- Check **Bearing Beam** in the Framing Specification dialog. See *General Panel on page 677*.

Joists lap or butt over the support depending on the option selected in the Build Framing dialog. See *Floor Level Panels on page 648*.

In either case, the joists' overlap or butted ends are centered over the support.

Framing with Floor/Ceiling Beams

Floor/Ceiling Beams can be drawn in a plan either before or after automatic framing has been generated. Default settings for beams can be set in the Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.

If a Floor/Ceiling Beam is present and wall framing is generated, posts will be placed under the beam in any walls that pass under it and studs and top plates will build around the beam as necessary.

If a Floor/Ceiling Beam is created before automatic floor or ceiling framing, you can specify whether joists bear on the beam or hang on its sides.

To build joists that bear on a beam

1. Draw a **Floor/Ceiling Beam** at the desired location in your plan.
2. Select the beam and click the **Open Object** edit button. On the General panel of the Beam Specification dialog, confirm that:
   - The **Top Height** value is equal to the Ceiling Height of the room(s) over which the beam is placed.
   - **Bearing Beam** is checked.
3. Click OK, then select **Build> Framing> Build Framing** and build the appropriate floor or ceiling framing. See *Floor Level Panels on page 648*.

To build joists that butt against a beam

1. Draw a **Floor/Ceiling Beam** at the desired location in your plan.
2. Select the beam and click the **Open Object** edit button. On the General panel of the Beam Specification dialog:
   - Specify the desired **Depth** value and then lock it.
   - Specify the **Bottom Height** value so that it is equal to the Ceiling Height of the room(s) over which the beam is placed.

3. Uncheck **Bearing Beam**.
4. If necessary, select **Build> Framing> Joist Direction** and draw a line perpendicular to the beam and within the floor or ceiling platform.
5. Click OK, then select **Build> Framing> Build Framing** and build the appropriate floor or ceiling framing. See *Floor Level Panels on page 648*.

Framing Reference Markers

Framing Reference Markers are markers that specify the starting point for the layout of automatically-produced framing. See *Markers on page 386*.

In order for framing to be laid out relative to a Framing Reference Marker, it must be set to do so:

- Floor and ceiling framing as well as deck joists can be set to **Use Framing Reference** on a floor-by-floor basis in the Build Framing dialog. See *Floor Level Panels on page 648*.
- Roof framing can be set to **Use Framing Reference** plan-wide in the Build Framing dialog. See *Roof Panel on page 654*.
- Wall framing for individual walls can be set to **Use Framing Reference** in the Wall Specification dialog. See *Structure Panel on page 296*.

Each floor level can have its own Framing Reference Marker, which affects the layout of all framing members generated on that floor. If multiple markers are present on a given floor, the one that was created first is used and those created later are ignored. See *In Plan View on page 673*.

In many cases, a single Framing Reference Marker can be used for the entire model. When this is the case, it must be placed on Floor 1.

> Note: If no Framing Reference Markers exist in your plan, the point at 0,0 is used as the Framing Reference location for joists, while the framing for roof planes and walls generate relative to their parent object.

Using Framing Reference Markers

To place a Framing Reference Marker, select **Build> Framing> Framing Reference Marker**. Click in plan view to place the Framing Reference Marker and then build or rebuild some or all framing in the plan. Although Framing Reference Markers can be placed anywhere, a typical location is the corner of two exterior walls, at the exterior of their framing layer. See *Wall Types on page 288*.

When **Object Snaps** are enabled, Framing Reference Markers snap to framing members and other CAD-based objects first, and then to a wall Main Layer surface or corner if possible. See *Object Snaps on page 142*.

Once placed, Framing Reference Markers can be modified just like other markers. See *Markers on page 386*.

When framing is generated using a Framing Reference Marker, the first framing member of a given type snaps to this point and all other framing members are laid out from there.

- Wall and roof framing snap to the Framing Reference Marker at their centers.
- Floor and ceiling framing snaps to the Framing Reference Marker at their centers when it is set to **Butt Over Support** in the Build Framing dialog. See *Floor Level Panels on page 648*.

- Floor and ceiling framing snaps to the Framing Reference Marker along an edge when it is set to **Lap** over a supporting beam or wall. If **Lap** is selected, the surfaces where the joists lap are placed at reference spacing, so that joists are placed on either side of the framing reference locations.

Move to Framing Reference

Manually drawn or edited framing as well as automatic framing that was not generated using a Framing Reference Marker can be moved relative to a Framing Reference Marker using the **Move to Framing Ref** edit button.

A group of selected framing objects that are all parallel to each other can be moved using the **Move to Framing Ref** edit button. Only one of the objects in the group is compared to the Framing Reference Marker and moved; the remaining objects are simply moved the same amount as the first object. Ideally, therefore, the group should have proper spacing relative to each other before the move.

To move framing objects to a framing reference marker

1. Group select the framing objects.
2. Click the **Move to Framing Ref** edit button.
3. The framing members are moved to the nearest Framing Reference Marker.

To determine placement, the **Move to Framing Ref** edit tool uses:

- For wall studs, the default **On Center Spacing** for wall framing, which is set in the Build Framing/Framing Defaults dialog. See *Wall Panel on page 651*.
- For roof rafters, the **On Center Spacing** of the selected object's parent roof plane. See *Structure Panel on page 615*.
- For floor and ceiling joists, the default **On Center Spacing** for the current floor set in the Build Framing/Framing Defaults dialog. They may instead reference spacing specific to a particular floor or ceiling platform. See *Joist Direction Lines on page 671*.

Framing References and Roof Framing

Framing Reference Markers are useful when framing a gable roof, but not necessarily a hip roof. When a Framing Reference is used, common rafters on either side of a hip rafter will not meet in the same place.

If a Framing Reference Marker is not used, the automatic framing utility starts common rafter spacing from each end of the horizontal ridges, which results in common rafters on either side of hip jacks meeting each other.

Joist Direction Lines

By default, automatically-generated floor and ceiling joists will run in the direction that results in the shortest span between exterior walls and/or beams. A **Joist Direction** line allows you to define the direction that joists in a particular floor or ceiling platform run, regardless of span. You can specify whether joists generate parallel or perpendicular to Joist Direction Lines in the General Plan Defaults dialog. See *General Panel on page 90*.

To draw a Joist Direction line, select **Build> Framing> Joist Direction**, then click and drag as you would draw a CAD line. In order to have any effect, a Joist Direction line must be drawn within the area of a single floor or ceiling platform with a framing layer. If a Joist Direction Line is positioned outside of such an area, a non-suppressible Caution symbol will display over it.

To avoid unexpected results, only one Joist Direction Line should be present in a given floor or ceiling platform, and it should not extend outside the extents of that platform.

Joist Direction lines are located on the “Framing, Direction Lines” layer and use the Text Style assigned to that layer. See *Text Styles on page 390*.

Multiple Joist Directions

By default, all of the rooms on each living floor share a single floor platform and a single ceiling platform. If you require joists that run in two directions in either of these platforms, begin by dividing the platform in question in two. There are a number of ways to do this:

- Divide the living area into separate rooms with different platform thicknesses and/or heights. See *Floor and Ceiling Platforms on page 542*.
- Specify one or more interior walls as **Bearing Walls**. See *Structure Panel on page 296*.
- Draw a **Floor/Ceiling Beam** specified as a Bearing Beam. See *Framing Tools on page 663*.

Bearing Walls and Floor/Ceiling Beams should be drawn on the same floor level as the joists they will interact with. See *Dynamic Platform Defaults on page 543*.

- Floor framing for a living floor is created on the floor level below; so Bearing Walls and Beams will affect the floor framing of rooms on the floor level above the Current Floor.
- Ceiling framing for a living floor is created on the same floor level; so Bearing Walls and Beams will affect any ceiling framing of rooms on the Current Floor. See *Floor vs Ceiling Platforms on page 542*.

Joist Size and Spacing

The text of a Joist Direction Line states the platform framing’s framing member type, size, and spacing. The defaults for these values are the attributes of the floor or ceiling platform that the Line is affecting. This information is set in the Room Specification dialog. See *Structure Panel on page 330*.

In plans using US Units, when the Structure Type is “Lumber”, the nominal size will be reported for the joists. For all other Structure Types, fractional inches are used.

It is important to note that if a Joist Direction line is set to use non-default Spacing and Depth values, they will override the settings in both the Framing Defaults and Room Specification dialogs. It will not, however, change the settings in either dialog.

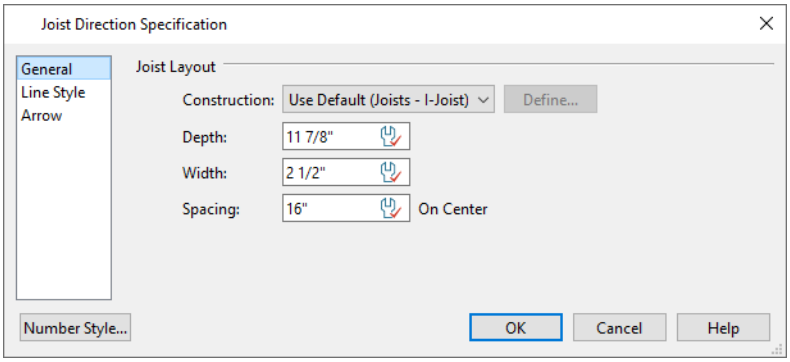
Joist Direction Specification Dialog

Joist Direction Lines allow you to control joist spacing and attributes in the floor/ceiling platform in which it is drawn. To change these attributes, select a Joist Direction Line and click the **Open Object** edit button. See *Joist Direction Lines on page 671*.

Any changes made in this dialog will not affect any joists already present. In order for that to occur, framing must be rebuilt. See *on page 1*.

General Panel

The defaults in this dialog are derived from the floor or ceiling platform definition that the selected Joist Direction Line affects. See *Floor Level Defaults on page 313*.



- Specify the **Construction** of the joists in the platform by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click the **Define** button to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
- Define the vertical **Depth** and horizontal **Width** of the joists.
- Define the **Spacing** of the joists, measured from center line to center line.

> Note: The settings on this panel override the same settings set via the Room Specification dialog. See *Structure Panel on page 330*.

Displaying Framing

The display of framing members is controlled in the Layer Display Options dialog. Framing objects are created on one of over twenty layers with names that begin with "Framing,": Ceiling Beams, for example, are placed on the "Framing, Ceiling Beams" layer. See *Layer Attributes on page 152*.

There are a variety of options for how framing is reported in the Materials List. See *Framing and the Materials List on page 680*.

In Plan View

In plan view, vertically oriented framing such as Posts and Studs are represented by box-based CAD objects that look like Cross Boxes. You can specify whether these framing objects display as Cross Boxes by default in their Framing Member Defaults dialog as well as individually in their Framing Specification dialog. See *Cross Box on page 248* and *General Panel on page 677*.

By default, Beams, Joists, Rafters, Trusses, General Framing, and Headers are represented in plan view by line-based CAD objects that look like long, thin rectangles. If you prefer, these framing member types can instead be represented by a single line. The **Draw, Joists, Rafters, Trusses, and General Framing as Line** setting is found in the General Plan Defaults dialog. See *General Panel on page 90*.

You can specify a default fill style for each type of Framing Member in their Framing Member Defaults dialogs, and can specify a custom fill for all framing objects in their specification dialog. Fill styles are not used by line-based framing members when they are set to draw as single lines. See *Fill Styles on page 159* and *Default Framing Members on page 645*.

Like other objects, framing objects are placed in Drawing Groups in plan view. Newly drawn line-based framing members of a given type, such as Beams, display in front of older ones by default. Posts, meanwhile, display in front of Beams, but behind Joists. You can control the draw order of framing objects using Drawing Groups. See *Drawing Groups on page 156*.

> Note: The framing for the floor platform of a given floor level is drawn on the floor level below. See *Floor Level Panels on page 648*.

Multiple-Ply Framing

Posts, Beams, as well as automatically-generated Girder Trusses can be composed of multiple plies, which are boards that are sistered together to form a single unit.

The **Ply Count** and **Ply Width** for these objects can be set in their specification dialogs. See *Framing Specification Dialog on page 677* and *Roof Truss Specification Dialog*.

The default **Ply Count** and **Ply Width** settings are found in these locations:

- For the Beam and Post tools, the Beam and Post panels of the Manual Framing Defaults dialog. See *Manual Framing Defaults Dialog on page 658*.
- For Deck Beams and Deck Posts, the Deck Support panel of the Deck Room Type Defaults dialog. See *Decks on page 324*.
- For automatically-generated Hip Girder Trusses, the Roof panel of the Automatic Framing Defaults dialog. See *Automatic Framing Defaults Dialog on page 648*.

You can specify whether lines are drawn to represent sistered plies in camera views that use a Rendering Technique in which surface edge lines are drawn as well as in plan views by checking **Show Multi-Ply Lines**, which is also found in these objects' specification dialogs.

Regardless of whether this box is checked or not, each ply of a multiple-ply object is counted in the Materials List. See *Materials Lists on page 954*.

In 3D Views

The easiest way to view framing in 3D is to use either the **Orthographic Framing Overview** or **Perspective Framing Overview** tool, which display the model using the "3D Framing Layer Set". See *Framing Overview on page 786*.

Framing objects can display in other 3D and most cross section/elevation views, although by default they are not set to do so. If you wish to see framing in these views, turn on the framing layers when the view is active. Regardless of whether their layers are on, framing objects will not display in Wall Elevation views or any cross section/elevation view that has Clip to Room checked. See *Cross Section/Elevation Views on page 787*.

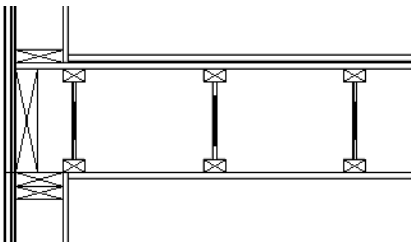
To reveal framing covered by other objects or wall layers, use the **Delete Surface** tool. See *Delete 3D Surface on page 790*.

In Cross Section/Elevation Views

To display framing in a cross section/elevation view, make sure the framing layers are turned on in that view. See *Layer Display Options Dialog on page 154*.

You can also use the **Delete Surface** tool to temporarily delete the surfaces of wall layers or other objects that block the view.

In cross section/elevation views, horizontal framing objects that are cut by the cross section plane display as boxes containing an 'X'. **Joist Blocking** and **Roof Blocking** cut by the cross section plane displays as a box containing a single diagonal line. See *Cross Section/Elevation Views on page 787*.



Editing Framing

Framing can be edited much like other line-based objects can using the edit handles, edit toolbar buttons, or the Framing Specification dialog. See *Framing Specification Dialog on page 677*.

> Note: When Automatic framing of a particular type is enabled, framing of that type cannot be manually edited or deleted. It can, however, be copied.

Framing is organized into families which determine where it is generated and where it can be manually drawn. See *Framing Tools on page 663*.

Framing objects are created on layers with names that begin with “Framing”. Once drawn, they can be edited much like other with one important exception: if you manually specify a framing object's depth or height, it will no longer be tied to its owner structural assembly's height or pitch. See *Displaying Framing on page 673* and *Editing Framing on page 675*.

When **Start and End Indicators** are enabled in the Preferences dialog, a selected framing member will display an S and an E at its start and end points. This makes it easier to choose which end to lock when specifying its Length or Angle. See *Edit Panel on page 110*.

Roof and floor/ceiling trusses cannot be edited like regular framing members can and are discussed in their own chapter. See *Editing Trusses on page 685*.

Selecting Framing

Before a framing member can be edited, it must be selected. Framing can be individually selected in all views, and some types can be group-selected. To group-select framing in plan view, first select any of the Framing Tools. See *Marquee Select on page 186*.

To select framing objects of a particular type, use the **Marquee Select Similar** tool’s **Restrictive Selection** option. See *Marquee Select Similar on page 187*.

Using the Edit Handles

In plan view, framing members can be drawn, edited, and moved much the way CAD lines can. See *Editing Line-Based Objects on page 187*.

In cross section/elevation views, joists and rafters cut by the cross section and displaying a cross box can also be edited. See *Editing Box-Based Objects on page 199*. Also, in cross section/elevation views headers can be edited like closed polylines. See *Editing Closed Polyline-Based Objects on page 197*.

In a camera view or overview, the handles that display on a framing member depend on where it is clicked for selection and your current zoom factor.

- Click the top surface to display the same edit handles as in plan view, allowing you to rotate, move, and extend or shorten the length of the member.

- Click a side surface to display the same edit handles as in an elevation view, one at each end and one at the center.
- Zoom in and click on the appropriate edge to display edit handles that control the width and depth of framing members.

Using the Edit Tools

A selected framing member can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.


Apply Framing Default Properties allows you to apply the properties of a selected Framing Member Default to a selected framing member or members. See *Default Framing Members on page 645*.


Move to Framing Reference moves the selection into alignment with a Framing Reference Marker. See *Framing Reference Markers on page 670*.


Join and Lap Ends and **Join and Mitre Ends** join horizontal framing members at either a lapped or mitered joint. See *Lapped and Mitered Joints on page 676*, below.

Using Dimensions


Framing members can be both moved and resized using dimensions in plan view and elevation views. See *Moving Objects Using Dimensions on page 361*.

In order for a manually drawn Dimension Tool to locate framing objects as a dimension line is drawn, it must be set to do so in the Dimension Defaults dialog. See *Locate Manual Panel on page 344*.

Lapped and Mitered Joints


You can make two horizontal framing members meet at a lapped intersection using the **Join and Lap Ends** edit button.

To join and lap framing members

1. Select a horizontal framing member such as a joist, rafter, beam, or General Framing object.
2. Click the **Join and Lap Ends**  edit button.
3. Click on a second horizontal framing member that is not parallel to the initially selected member.
4. The two members now meet at a lapped joint. The initially selected framing member butts against the second one, which laps the end of the first.


Alternatively, mitered joints can be created using the **Join and Mitre Ends** edit button. This edit tool is used in the same way as the Join and Lap Ends tool.

The **Join and Mitre Ends** and **Join and Lap Ends** tools not available for wall studs, Posts, Floor/Ceiling Trusses, or Roof Trusses.

Steel and Concrete

You can set framing defaults to generate steel framing and concrete structural members as well as lumber and other framing types. Individual framing members can also be specified as concrete or steel, as well.

When setting up defaults or modifying an individual object, make sure you specify both the desired framing Type and the material. See *Framing Types on page 647*.

Deleting Framing

Individual and group-selected framing members can be deleted the way other objects in the program are. See *Deleting Objects on page 218*.

Categories of framing, such as wall framing or floor and ceiling framing, can also be deleted in the Delete Objects dialog. See *Delete Objects Dialog on page 219*.

Framing Specification Dialog

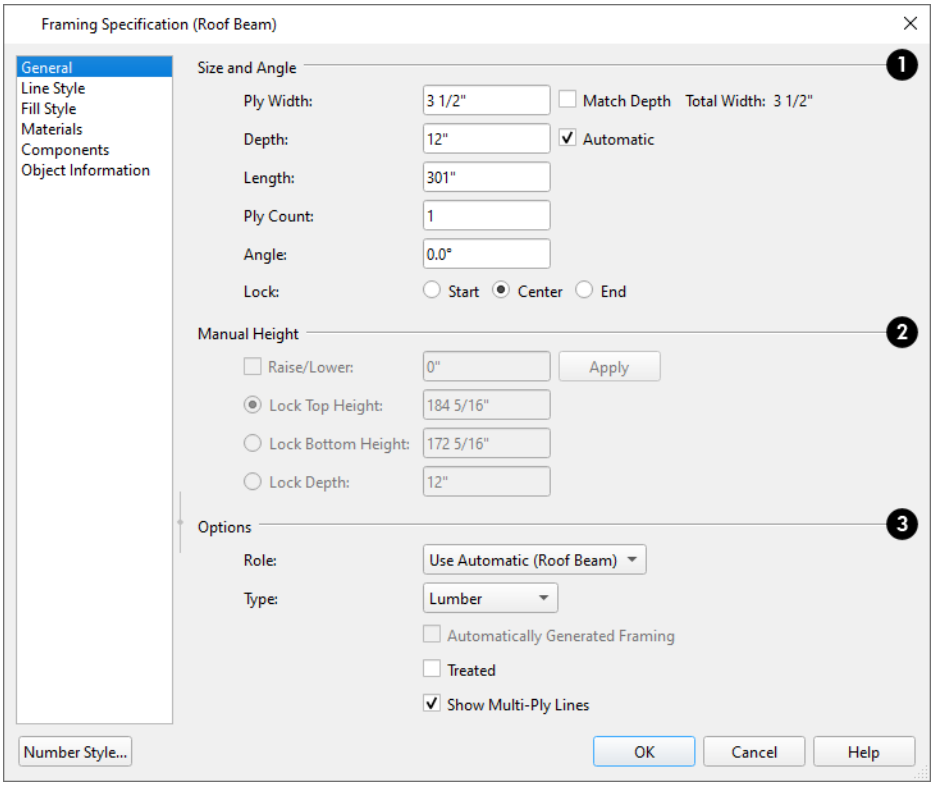
Select a framing member and click the **Open Object** edit button to open the Framing Specification dialog for the type of framing member selected.

The settings in this dialog are similar to those in the Post and Beam Specification and Framing Member Defaults dialogs. See *Framing with Beams on page 668* and *Default Framing Members on page 645*.

The panels available in this dialog will vary, depending on the type of framing object that is selected.

General Panel

The options available in on the General panel will vary depending on the type of framing member selected. Fewer settings are available on this panel in the Framing Member Defaults dialog, as well.



1 Size and Angle

These settings are not available in the Framing Member Defaults dialog.

- Specify the **Depth**, which is the vertical measurement of horizontally oriented framing such as joists, rafters, and beams, and the front-to-back measurement of vertically oriented framing such as posts and studs.

- When **Automatic** is checked, the selected Roof Rafter, Roof Beam, or Roof Blocking object generates within the structural layer of the roof plane(s) it is drawn in. Uncheck this box to enable the Manual Height settings that follow. If the selected object's height is edited outside this dialog, Automatic Height will become unchecked automatically.

- Beams and Posts can be composed of multiple ply boards:
  - Specify the **Ply Width**, which controls the side-to-side measurement of the selected framing member. When the Ply Count is 1, this value is the width of the entire beam or post. When the Ply Count is two or more, this is the width of each board that makes up the beam or post.
  - The **Total Width** is reported to the right for reference.
  - Specify the **Ply Count**, which is the number of boards sistered together to form a beam. A value of one produces beams composed of a single board.
- Specify the **Length** of the framing object. Rafter length is measured along the top of the rafter, and so is greater than the length measured in plan view. Not available for Posts.
- Specify the **Angle** of the framing object in plan view. Changing this rotates the object about the location specified by the radio buttons described below:
  - Select **Lock Center** to resize or rotate the object about its center point.
  - Select **Lock Start** to resize or rotate the object about the location from which you started drawing the framing object.
  - Select **Lock End** to resize or rotate the object about the location where you stopped drawing it.

2 Manual Height

If you change any values here, a selected floor, ceiling, or roof framing member will no longer change heights if the height of the structural assembly they are drawn within is changed. For roof framing, these settings are only available when Automatic is unchecked, above.

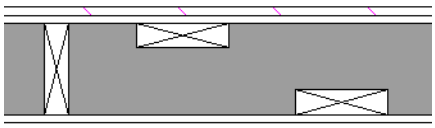
- Check the box beside **Raise/Lower**, then enter a positive value to raise or negative value to lower the framing object from its current position. The amount is added to both the Top and Bottom Heights when you click either **Apply** or **OK**, and does not affect the Depth. When Raise/Lower is checked, the other Depth and Height settings are disabled.
- Select the radio button beside one of the height values to **Lock** it, then change one of the other values that remains available for editing:
  - Specify the **Top Height** of the post, as measured from the first floor subfloor at 0". For a rafter, this is the top height at its low end.
  - Specify the **Bottom Height** of the post, as measured from the first floor subfloor at 0". For a rafter, this is the bottom height its low end.
  - Specify the **Depth** of the framing object. For a rafter, this is the depth measured perpendicular to the roof plane.

3 Options

- Select the selected framing member's **Role** from the drop-down list. See *Framing Types on page 647*.
- Select a structural member **Type** from the drop-down list. The Round Type is unique to Posts. See *Framing Composition on page 647*.
- **Automatically Generated Framing** is checked when the selected object was automatically generated, and is unchecked and also inactive when it was manually drawn. Uncheck this box to treat the selected object as manually drawn going forward. When you click OK, the box will be permanently unchecked and inactive.
- Check **Show Cross** to display the selected Post as a cross box in plan view. Only available for Posts, Studs, King Studs, and Trimmers. See *Displaying Framing on page 673*.

> Note: Instead of counting individual concrete posts and beams in the Materials List, the total volume of their concrete is calculated. The square footage for beam and post forms is also listed.

- Check **Bearing Beam** to specify the selected Floor/Ceiling Beam as a load-bearing beam. When checked, automatically generated joists run perpendicular to the selected beam and either lap or butt over it, as specified in the Build Framing dialog. If the beam's Top Height is at least 1" higher than the joists' bottom height, the joists will instead butt against the sides of the beam. See *Framing with Beams on page 668*. Only available for Floor/Ceiling Beams.
- Check **Treated** to specify that the selected framing member be counted as treated in the Materials List.
- The **Rotate** options let you rotate and align a selected wall stud, blocking, or header within the wall's framing layer. Select **None** for the framing member's Thickness to span the depth of the framing layer; select **Flat to Outside** to rotate the member 90° and align it with the outside of the framing layer; select **Flat to Inside** to rotate the member 90° and align it with the inside of the framing layer.



- Check **Show Multi-Ply Lines** to draw lines between the selected Beam or Post's ply boards in plan view as well as in any camera view using a Rendering Technique in which surface edge lines are drawn. Not available for C-Channel, I-Joist, Round, or Steel-I framing Types. See *Multiple-Ply Framing on page 674*.

Line Style Panel

The settings on the Line Style panel affect the selected object's line style, its bumping behaviors, and its drawing order. See *Line Style Panel on page 234*.

The settings on this panel are not available for wall framing members that display as a cross box in plan view.

Fill Style Panel

The settings on the Fill Style panel affect the selected object's appearance in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Framing member in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

The default materials on this panel are set in the Build Framing dialog. If you change the selected object's framing Type, the material here may update - unless you have previously specified a non-default material. See *Materials Panel on page 760*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Framing and the Materials List

Each framing member created in a plan, including all plies that make up Posts and Beams, is counted in the Materials List. See *Materials Lists on page 954*.

Framing can be calculated using one of several reporting methods.

- **Buy List** calculates the framing materials of the different structural components of the plan by counting individual pieces and matching them to a list of board sizes that you specify.
- **Cut List** calculates the framing materials of the different structural components of the plan by counting the individual pieces present in the model.
- **Linear Length** calculates the framing materials of the different structural components of the plan in linear lengths.
- **Mixed Reporting** calculates framing materials using a combination of linear lengths and piece counts and is recommended for saved Materials Lists in legacy plans.

When a Buy List is specified, long boards such as wall plates and girts, deck planking, and rim joists are all calculated using the longest available board.

It is important to note that the floor, ceiling, and roof framing counted in the Materials List may vary considerably depending on whether framing of those types is actually present in the plan:

- If no framing is present in the model, then the required floor, ceiling, and roof framing is estimated. Total linear footage for various depths of rafters and joists is estimated, rather than a quantity of specific lumber lengths and sizes. Wall framing is not estimated.
- If even one floor, ceiling, or roof framing object exists in the plan, then objects in that category are counted instead of estimated for the Materials List.

Framing and Materials List Categories

Default Framing Members are framing object definitions set up for different purposes: for example, posts, rafters, and wall framing. See *Default Framing Members on page 645*.

Each Default Framing Member has an Automatic Category in the Materials List, for example: Framing (F), Subfloor (SF), Roofing (R), or Decks-Walks (DW). See *Categories on page 957*.

When the Automatic Category is in use:

- Framing (F) includes all wall framing, posts, and General Framing objects.
- Subfloor (SF) lists floor and ceiling framing joists as well as sheathing.
- Roofing (R) includes trusses, rafters, and sheathing.
- Decks-Walks (DW) lists posts, beams, joists, and planking associated with Deck rooms.

You can specify whether each Default Framing Member is set to Auto Category or is assigned to a specific category in its defaults dialog. You can also specify which category an individual framing member is listed under in its Framing Specification dialog. The ID component controls which category is used. See *Object Components on page 966*.

Framing Materials and the Materials Panel

The materials applied to framing objects in 3D views are not used in the Materials List. Materials List information is derived from the structural use of each framing object and its **Type** - not the material seen on its surfaces in 3D views. See *Automatic Framing Defaults Dialog on page 648*.

Trusses

Chapter 27

There are two basic ways to frame a roof. The first is commonly called “stick framing,” or sometimes “handstacking” or “cut-and-stack.” This type of roof incorporates framing such as rafters, ridges, and ceiling joists. See *Framing on page 641*.

The other method is to use prefabricated, engineered roof trusses. Home Designer allows you to design and display a wide variety of trusses.

Disclaimer

Home Designer does not engineer trusses. The trusses displayed by Home Designer are for illustrative purposes only. They can show how trusses are used in your plan, and help you communicate to the licensed engineer who produces your final truss design where you want your trusses and how you would like them to work.

> Always have your truss designs approved by a licensed engineer.

Truss Defaults

The default settings for floor, ceiling, and roof trusses are set in the Floor/Ceiling Truss Defaults, Roof Truss Defaults, and Roof Girder Truss Defaults dialogs. Select **Edit> Default Settings** and in the Default Settings dialog, click the arrows beside "Framing" and then "Trusses", and finally select one of these options and click the **Edit** button.

- The overall depth of individual **Floor/Ceiling Trusses** are based on the thicknesses of the platforms in which they are drawn. See *Floor Level Panels on page 648*.
- The structure of **Roof Trusses** is determined by the position of the roof plane(s) above and the ceiling plane(s) below. See *Roof Planes on page 604* and *Ceiling Planes on page 620*.
- Hip Girder Trusses are automatically generated as specified in the Build Roof dialog. See *Structure Panel on page 603*.

You can also set the **Heel Height** for Roof Trusses in the Build Roof dialog. See *Roof Panel on page 598*.

Floor and Ceiling Trusses

Floor and ceiling trusses can be used instead of joists to frame platforms. As with floor and ceiling joists, the presence of a room above determines whether a platform is a floor or a ceiling and thus, whether a floor or ceiling truss is drawn. For example, a truss drawn on the first floor of a single story home will be a ceiling truss, while a truss drawn on the first floor of a two-story building will be a floor truss for the 2nd floor.

- A floor or ceiling truss can only exist in a floor or ceiling platform. The vertical depth of the truss is defined by the Thickness of the platform's framing layer, so if you intend to use floor/ceiling trusses you should set your platform depths accordingly. See *Floor and Ceiling Platforms on page 542*.
- To generate floor and/or ceiling trusses automatically in a platform, select "Truss" as the Structure Type for the platform structure's Framing layer and then use the Build Framing dialog to generate floor/ceiling framing. See *Floor Level Panels on page 648*.

To draw a floor or ceiling truss manually, select **Build> Framing> Floor/Ceiling Truss**, then click and drag within a floor or ceiling platform in plan view. A Framing layer in the platform structure is required; however, its Structure Type does not have to be "Truss". See *Drawing Trusses on page 684*.

> To create a sloped ceiling truss, draw a Roof Truss and specify it as a Sloping Flat Truss. See *General Panel*.

The TRUSSES panel of the Build Framing dialog contains default settings for floor and ceiling trusses. See *Trusses Panel on page 657*. These default settings can be overridden by the settings in the Floor/Ceiling Truss Specification dialog. See *Floor/Ceiling Truss Specification Dialog on page 693*.

Roof Trusses

Roof trusses can be used instead of or in combination with rafters to frame roofs and ceilings. Roof trusses can be automatically generated or drawn manually, and can only be created where a roof and ceiling are already present. To manually draw a roof truss, select **Build> Framing> Roof Truss**, then click and drag in plan view within one or more roof planes. See *Drawing Trusses on page 684*.

If you intend to use roof trusses, you should build your roof planes with this in mind:

- Before building the roof, select **Trusses** as the roof Framing Method in the Build Roof dialog. When this is selected, roof plane Structure Thickness is based on the default **Top Chord Depth** set in the Framing Defaults dialog. See *Trusses Panel on page 657*.
- If **Rafters** is selected as the Framing Method, roof Structure Thickness is determined by the rafter **Depth** setting on the ROOF panel of the Framing Defaults dialog.
- If you plan to use both trusses and rafters, build the roof using Rafters as the Framing Method and then manually edit the roof planes that will receive trusses. You can specify a roof plane's **Framing Method** in its specification dialog. See *General Panel on page 613*.

ROOF TRUSS PLACEMENT

The shape of a roof truss is defined by the space between the roof above and flat ceiling platform or manually drawn **Ceiling Plane** below.

- If the bottom chords of trusses form the framing for a flat ceiling platform, ceiling joists in that platform will not automatically generate. See *Manual Framing Defaults Dialog on page 658*.
- If the bottom chords of trusses are defined by a sloped ceiling plane, a Scissor Truss will be created. See *Scissors Trusses on page 692*.

If the program either does not find both roof planes and a ceiling, or if there is not enough room between them to model a truss, a warning message will report that this is the case if you position one at that location. The problem truss may still display in plan view with a label of the form “TR-*”. If it does, it should be either moved or deleted. See *Editing Trusses on page 685*.

In a hip roof, Home Designer produces a pair of Girder Trusses at the end of the main truss run, where full roof trusses are replaced by jack trusses. The Girder Trusses follow the spacing of the side jack trusses, so their exact placement varies depending on the size of the roof and specified truss spacing.

If a truss is manually drawn across another truss, one or both of its ends may be truncated. If this happens, it will end exactly on the surface of the existing truss, producing a girder truss. See *Girder Trusses on page 692*.

Trusses can end on interior walls. You can draw a truss that partially crosses the building by starting and/or ending it within 24” (600 mm) of an interior wall. The truss end will snap to the Main Layer surface on the far side of the wall.

Roof Truss Webbing

The webbing in a newly drawn truss is determined by the **Top Chord**, **Bottom Chord**, and **Maximum Horizontal Span** settings in the Roof Truss Defaults dialog. You can also check **Require Kingpost** to add a vertical kingpost to every subsequently generated or drawn Roof Truss. See *General Panel*.

Making adjustments to their default values can result in different truss configurations such as kingpost, queenpost, fink, double fink, fan, howe, or double howe to be represented.

End Trusses have vertical webbing that can replace wall framing when the truss in question is positioned within an Attic wall. Automatically-generated End Trusses can also receive horizontal blocking. See *Special Roof Trusses on page 690*.

Drawing Trusses

Trusses can be generated automatically or drawn manually and replicated. Trusses are drawn similar to the way CAD lines are and can be drawn in plan view only. See *Draw Line on page 230*.

To draw and replicate trusses

1. Select either the **Floor/Ceiling Truss** or **Roof Truss** tool, then click and drag within either a floor/ceiling platform or one or more roof planes.
   - As they are drawn, Roof Trusses will snap to any walls or Girder Trusses that they cross. See *Special Truss Snapping on page 686*.
   - When a Roof Truss ends over an exterior wall, it will extend into the roof eave, stopping at the inside edge of the Eave Subfascia.
   - When a Roof Truss is drawn over a Full Gable Wall, it will have **End Truss** and **Reduced Gable** checked automatically.
   - Floor/Ceiling trusses will snap to the wall surfaces, the exterior surface of a wall's Main Layer, as well as to a variety of CAD-based objects, and can be drawn to any length.
2. Reposition the truss:
   - Floor/ceiling trusses are often positioned relative to an exterior wall or **Framing Reference Marker**. See *Framing Reference Markers on page 670*.
   - Roof trusses are can be positioned over a Full Gable end wall or at the ridge end of a hip.
3. Open the truss's specification dialog and edit its settings to meet your needs. See *Roof Truss Specification Dialog* or *Floor/Ceiling Truss Specification Dialog on page 693*.
4. Make multiple copies of the truss at specified intervals using the **Transform/Replicate Object** edit tool. See *Transform/Replicate Object Dialog on page 176*.

The copies of Roof Trusses automatically conform to the structural conditions in their new locations. As a result, replicated Roof Trusses and their labels may be different from the original. See *Truss Labels on page 688*.

Unlike Roof Trusses, Floor/Ceiling Trusses do not conform to new structural conditions when they are either moved or copied. See *Moving Trusses on page 686*.

Displaying Trusses

The display of trusses and their labels is controlled in the Layer Display Options dialog. The various truss types are

placed on the "Framing, Ceiling Trusses", "Framing, Floor Trusses", and "Framing Roof Trusses" layers by default, while their labels are placed on the "Framing, Floor/Ceiling Truss Labels" and "Framing, Roof Truss Labels" layers. See *Layer Display Options Dialog on page 154*.

In Plan Views

In plan view trusses use the line style assigned to their layer by default, but can be assigned a different line style if you wish. See *Line Style Panel on page 234*.

By default, trusses use the fill style set in the Build Framing dialog in plan view, but can be assigned a custom fill. See *Automatic Framing Defaults Dialog on page 648*.

Like other objects, trusses are placed in Drawing Groups that affect whether they display in front of or behind other objects in plan view. You can modify a selected truss's place in the drawing order by clicking the **View Drawing Group Edit Tools** edit button. See *Drawing Groups on page 156*.

Truss labels display in plan view when the "Trusses, Labels" layer is turned on and use the Text Style assigned to their layer. They are also used in the Materials List. See *Truss Labels on page 688*.

In 3D Views

The easiest way to view trusses in 3D is to use either the **Orthographic Framing Overview** or **Perspective Framing Overview** tool, which display the model using the 3D Framing Set layer set. See *Framing Overview on page 786*.

Trusses can display in other 3D and cross section/elevation views, although by default they are not set to do so. If you wish to see trusses in these views, turn on the "Framing, Trusses" layer when the view is active.

You can create exposed trusses by placing roof and ceiling planes to produce the desired truss structure, drawing the trusses, and then removing the ceiling. See *Vaulted and Cathedral Ceilings on page 327*.

To reveal trusses covered by other objects, you can use the **Delete Surface** tool. See *Delete 3D Surface on page 790*.

In the Materials List

All trusses are listed under the Roofing category in the Materials List. Their labels appear in the Size column, along with their length. See *The Materials List Tools on page 954*.

If you wish, you can specify that the individual chord and webbing boards that form a truss be counted in the Materials List instead of the truss as a single object. The **Calculate Chords/Webbing in Materials List** setting is found in the Truss Specification and Truss Defaults dialogs. See *Roof Truss Specification Dialog* and *Floor/Ceiling Truss Specification Dialog on page 693*.

Editing Trusses

Trusses can be edited much like other objects can using the edit handles, edit toolbar buttons, or the Truss Specification dialogs. See *Roof Truss Specification Dialog* and *Floor/Ceiling Truss Specification Dialog on page 693*.

Selecting Trusses

Before a truss can be edited, it must be selected. Like other architectural objects, Trusses can be individually and group-selected selected in all views. See *Selecting Objects on page 183*.

To group-select trusses of a particular type, use the **Marquee Select Similar** tool. See *Marquee Select Similar on page 187*.

When **Start and End Indicators** are enabled in the Preferences dialog, a truss selected in plan view will display an S and an E at its start and end points. See *Edit Panel on page 110*.

Trusses can be deleted individually, or all at once in the Delete Objects dialog. See *Delete Objects Dialog on page 219*.

Using the Edit Handles

In plan view, trusses can be drawn, edited, and moved much the way CAD lines can. See *Editing Line-Based Objects on page 187*.

When editing a roof truss's length, bear in mind that if you position either of its ends at a location that doesn't correspond to a roof plane edge, interior wall, or another truss, **Use Special Snapping** will automatically become unchecked in its specification dialog.

When selected in a camera view, a truss can be edited like a closed polyline. This is not always recommended, though, because the truss may no longer match the space in the structure that it is meant to occupy. See *Editing Truss Envelopes on page 687*.

The depth of truss chords can be changed in the truss's specification dialog, but not using the edit handles.

Using the Edit Tools

A selected truss can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.



Move to Framing Reference moves the selection into alignment with a Framing Reference Marker. See *Framing Reference Markers on page 670*.

Using Dimensions



Trusses can be repositioned precisely as well as resized using dimensions. See *Moving Objects Using Dimensions on page 361*.

In order for a dimension tool to locate trusses as dimensions are drawn, that tool needs to be set to do so in the Dimension Defaults dialog. See *Locate Manual Panel on page 344*.

Moving Trusses

Trusses can be moved using either their Move edit handle or the **Transform/Replicate Object** edit tool. It's important to note that Roof and Floor/Ceiling Trusses may behave differently when they are moved:

- When a **Roof Truss** is moved, its shape updates to conform to the structural conditions defined by the roof and ceiling in its new location. To prevent this from occurring, check **Lock Truss Envelope and Webbing** in the Roof Truss Specification dialog before moving the truss. See *Lock Truss Envelope and Webbing on page 687*.
- This is not the case with **Floor/Ceiling Trusses**: when moved to a location with a different platform structure, a Floor/Ceiling Truss will not update to conform to its new surroundings. It is important to draw, position, and copy them within the same floor or ceiling platform structure. If a different Floor/Ceiling Truss depth is needed, a new truss should be drawn.

Special Truss Snapping

By default, **Roof Trusses** have a number of special snapping behaviors that are used even when **Object Snaps** are toggled off. See *Object Snaps on page 142*.

These special behaviors include:

- As they are drawn, Roof Trusses will snap to any walls or Girder Trusses that they cross.
- When drawn along an exterior wall, a Roof Truss will snap so that its outer surface is flush with the outer surface of the wall's Main Layer.
- When drawn along a roof plane edge, a Roof Truss will snap to the roof plane's edge or corner.
- The center line Roof Trusses will snap to the line along which two roof planes meet.
- When a Roof Truss ends over an exterior wall, it will extend into the roof eave, stopping at the inside edge of the Eave Subfascia.

Floor/Ceiling Trusses can be drawn to any length but also have special snapping:

- Floor/Ceiling trusses will snap to the wall surfaces, the exterior surface of a wall's Main Layer, as well as to a variety of CAD-based objects.

If you edit a truss in such a way that its ends do not correspond to a special snapping location, **Use Special Snapping** will automatically become unchecked in its specification dialog. This allows you to easily customize a truss but may make it difficult to snap to commonly used locations.

You can check or uncheck **Use Special Snapping** in the Roof Truss Specification dialog. See *General Panel*.

Deleting Trusses

Individual and group-selected trusses can be deleted the way other objects in the program can. See *Deleting Objects on page 218*.

Trusses can also be deleted by category as well as floor in the Delete Objects dialog. See *Delete Objects Dialog on page 219*.

Editing Truss Envelopes

A truss envelope is the shape defined by a truss's top and bottom chords. When a truss is drawn, the envelope is derived from the floor platform, ceiling platform, or roof that the truss is drawn in.

When a truss is viewed in a 3D view, its envelope can be edited like a closed polyline. See *Editing Closed Polyline-Based Objects on page 197*.

This function can be used to change a roof truss end or overhang as well as the overall truss shape. Changing the truss envelope does not change the structure that it is drawn in, however.

In addition, when a **Roof Truss** is moved, its shape updates to conform to the structural conditions defined by the roof and ceiling in its new location. As a result, a Roof Truss's label can change when the truss is moved to a new location.

Floor/Ceiling Trusses do not update when moved to a location with different structural conditions.

Force Truss Rebuild

If you make changes to a selected truss that affect its envelope or webbing, you can ensure that its configuration is up-to-date by checking **Force Truss Rebuild** in the truss's specification dialog. See *General Panel*.

Lock Truss Envelope and Webbing

The **Lock Truss Envelope and Webbing** attribute can be used to prevent a **Roof Truss** envelope from updating when it is moved or replicated. See *Roof Truss Specification Dialog*.

Truss Labels

Labels for roof trusses display when the “Framing, Roof Truss Labels” layer is turned on in the current view. Similarly, floor and ceiling trusses display when the “Framing, Floor/Ceiling Truss Labels” is turned on. See *Layer Display Options Dialog on page 154*.

Truss labels are available in two formats: automatic and user-specified. See *Label Panel on page 395*.

Truss labels can display in plan view and are used in the Label column of the Materials List. See *Displaying Trusses on page 684*.

Truss labels use the Text Style specified for their layer in the current view. See *Text Styles on page 390*.

By default, truss labels are centered on the truss that they identify. If the truss is moved or deleted, the label is moved or deleted as well. When a truss is selected, its label has a small square Move edit handle. See *Editing Trusses on page 685*.

Truss labels obey the **Minimum Display Size** for labels set in the Preferences dialog. See *Appearance Panel on page 93*.

If two or more trusses share the same configuration with identical chords and webbing, they will also share the same truss label.

Automatic Truss Labels

Automatic roof truss labels use the format TR-X, where X is a number indicating the order in which each distinct truss configuration was created. For example, the first truss type created in a plan is labeled TR-1; the second, TR-2; and so on.

Floor and ceiling trusses are labeled FTR-X and use the same numbering convention.

Mixing Trusses with Stick Framing

After the trusses for your roof are in place, additional roof framing can be added. See *Manual Framing Defaults Dialog on page 658*.

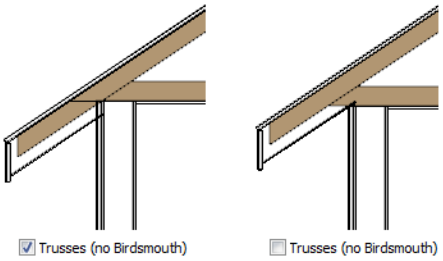
Mixing Rafters and Trusses

- Roofs can be framed with rafters, trusses, or a combination of the two. If you plan to combine roof trusses with rafters and/or ceiling joists, you can save time by:
- Select **Rafters** as the Framing Method in the Build Roof dialog before automatically building or manually drawing a roof. This will produce roof planes set up to accommodate rafters. See *Build Roof Dialog on page 597*.
- Draw and position all roof trusses before automatically generating framing to produce rafters and ceiling joists. See *Roof Trusses on page 683*.

Framing Defaults

Roof planes created using defaults set up for trusses will continue to use those defaults when stick framing is added. If you intend to add rafters, the roof planes should be created while **Rafters** is selected as the Framing Method in the Build Roof dialog. See *Roof Panel on page 598*.

Selecting Rafters as the Framing Method has a similar effect on roof trusses to that of **Raise Off Plate**: roof truss bottom chords may be longer than expected and their top chords, higher. This is necessary to create the space needed to accommodate the rafter’s depth.



Automatic Framing

The Build Framing dialog can be used to generate roof framing in areas not framed by the trusses, including gable eaves and the ends of hips. Note that rafters will not generate closer than 14” (350mm) to an existing, parallel truss.

Automatically generated roof framing will not extend through an existing roof truss. Instead:

- Automatically produced rafters generate inward from the eave until they butt into a truss.
- Blocking for standard and hip ridges generates as individual rafter objects between trusses.
- Lookouts will pass over **Reduced Gable** trusses and will end at the next truss in. See *Roof Truss Specification Dialog*.
- Hip ridges and common rafters at the end of a hip roof will pass over a **Drop Hip Truss**. See *Drop Hip or California Hip on page 689*.

Manually Drawn Framing

Unlike automatically generated roof framing, manually drawn rafters will extend through trusses. Rafters can also snap to truss edges as they are being drawn or when they are being edited. See *Manually Drawn Framing on page 668*.

Hip Trusses

Step Down Hip

Step Down hip roofs are the quickest style of hip truss framing to produce.

To create a step down hip truss system

1. First, draw a **Roof Truss** at the apex of the triangular hip roof plane. When **Object Snaps** are enabled, it will snap into position. See *Object Snaps on page 142*.
2. Select the truss; click the **Transform/Replicate Object** edit button; and create enough copies of the truss in the direction of the hip to reach a reasonable minimum height. See *Transform/Replicate Object Dialog on page 176*.
3. Using the **Roof Truss** tool, draw hip jacks along the hip ridge from the last truss out into the overhang.
4. Using the **Roof Truss** tool, draw a jack truss from the intersection of the last hip truss and the hip jack to the eave.
5. Select the jack truss; click the **Transform/Replicate Object** edit button; and lay out jack trusses up to the other hip jack.

Drop Hip or California Hip

A Drop Hip, or California Hip, system uses trusses with lowered top chords to support stick frame hip ridges and common rafters.

To create a drop hip truss system

1. Start a drop hip truss system as you would a step down hip system. See *Step Down Hip on page 689*.
2. When the hip trusses are drawn, group select them, open the Truss Specification dialog, and select the **Drop Hip Truss** check box. See *General Panel*.
3. Use the Build Framing dialog to produce the common rafters, and the short joists at the hip end. See *Building Automatic Framing on page 667*.

The amount that the top chord is lowered is derived from the rafter **Depth** on the ROOF panel of the Framing Defaults dialog. Because both common rafters and hip ridges must pass over this truss, the ridge depth should be set equal to that of the rafter depth.

SUBGIRDER HIP

Sub-girders are the partial trusses that butt into a reinforced girder truss at the end of the main run. Girder trusses and sub-girders can be generated automatically, and you can specify the girder count as well as its distance from the end wall. See *Roof Panel on page 654*.

Girder trusses and subgirders can also be drawn manually.

To create a subgirder truss system manually

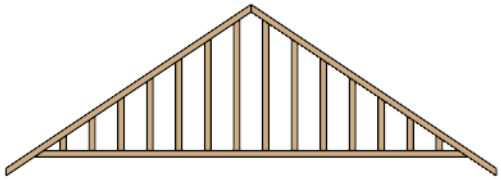
1. Draw a **Roof Truss** and position it as needed: for example, where the hip apex meets the ridge.
2. Double it by drawing a second truss on the far side from the hip section.
3. Using the **Roof Truss** tool, draw the first subgirder from the hip apex out to the eaves.
4. Select it and use the **Transform/Replicate Object** edit button to make copies in both directions. Stop when the height of the subgirders reach a reasonable minimum.
5. Finish off with hip jacks and jack trusses as in a step down hip system.

Special Roof Trusses

A number of special purpose roof trusses can be created in Home Designer.

END TRUSSES

End trusses feature vertical blocking instead of webbing and are generated automatically over Full Gable Walls. See *Roof Directives in Walls on page 283*.



End Truss

To create an end truss manually, open a roof truss's specification dialog and check End Truss. See *General Panel*.

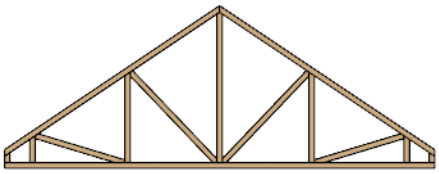
When an end truss is located in the same position as an Attic Wall on the floor level above it, it will replace that wall's framing when wall framing is built. See *Attic Walls on page 285*.

End trusses use the default Spacing for wall studs, which is set in the Automatic Framing Defaults dialog. See *Wall Panel on page 651*.

You can also specify horizontal blocking in the Automatic Framing Defaults dialog as well as for individual end trusses. See *Trusses Panel on page 657*.

Energy Heels

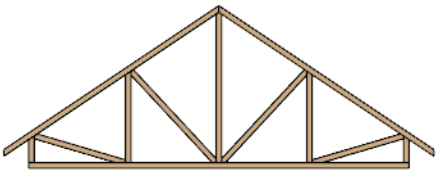
An energy heel or raised heel truss is created when the roof is raised off of the wall top plates, creating space for additional insulation. When this is the case, a vertical member positioned over the supporting exterior wall is added to the truss.



Energy Heel Truss

To create an energy heel

1. In the Build Roof dialog:
   - Specify the **Framing Type** as **Trusses**;
   - Specify the desired **Heel Height**;
2. Automatically generate or manually draw the roof planes.
3. Automatically generate roof framing or manually draw Roof Trusses. See *To draw and replicate trusses on page 684*.
4. By default, the bottom chord extends out to the subfascia. If a truss is moved or replicated into a position where an Energy Heel is required, open the truss's specification dialog, check **Energy Heel** and **Force Truss Rebuild**, then click **OK**. See *General Panel*.

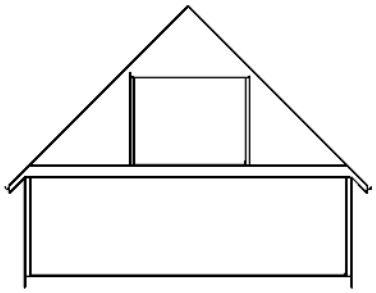


Energy Heel Truss with shortened bottom chord

5. Use the **Transform/Replicate Object** edit tool to make additional copies of that truss as needed.

Attic Trusses

Attic trusses, a variation of roof trusses, can be drawn if a plan contains an Attic area on both sides and above an upstairs room, such as in a Cape Cod style home. The following is a typical cross section view of a building with attic trusses:



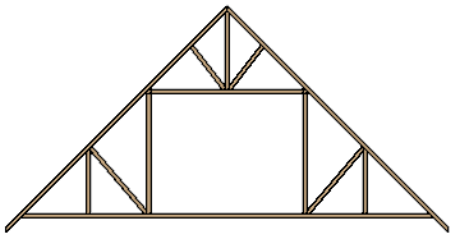
Structure that meets requirements for Attic Trusses

Certain conditions must be met before an attic truss can be built:

- The structure should be sufficiently wide to allow for a loft and attic spaces.
- The loft area must be on a living floor. It cannot be on the Attic floor. See *The Attic Floor on page 546*.
- The loft area must have Attic rooms on both sides. See *Room Types on page 314*.
- The loft area must be separated from the Attic rooms on both sides by Knee Walls. See *Knee Walls on page 286*.
- A flat ceiling in the loft area and a floor below must be present.
- The roof pitch must be steep enough to provide appropriate ceiling height for the loft area. Typical pitches for such a condition are 8 in 12 or greater.
- The roof should bear on the walls of the floor below the loft area and form continuous planes from ridge to baselines.

Once these conditions are met, a roof truss is ready to be designated as an attic truss.

1. Select the roof truss in plan view and click the **Open Object** edit button to display the GENERAL panel of the Roof Truss Specification dialog.
2. Check the box beside **Attic Truss** and click OK. See *Roof Truss Specification Dialog*.

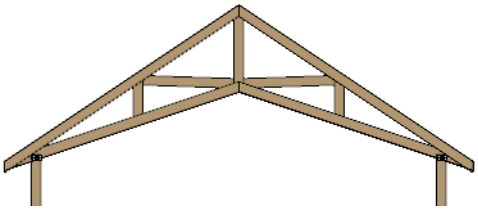


Attic Truss

SCISSORS TRUSSES

Trusses drawn between roof planes and sloping ceiling planes of a different pitch than the roof are called Scissor trusses. See *Ceiling Planes on page 620*.

The following is an example of a scissors truss drawn beneath an 8 in 12 pitch gable roof and above 4 in 12 pitch ceiling planes.

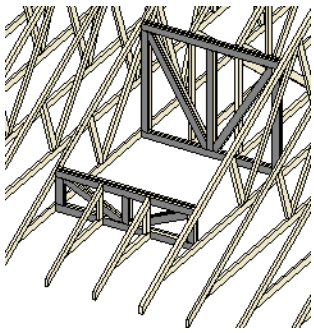


Scissor Truss

GIRDER TRUSSES

Girder trusses provide extra support for various purposes. Hip end girder trusses consisting of two or more trusses side by side can be generated automatically. See *Hip Trusses on page 689*.

Other types of girder trusses can be drawn manually. For example, you can draw a new truss from an existing truss to the roof edge, as you would to draw a hip or end jack truss; or draw a truss between two trusses, forming a girder.

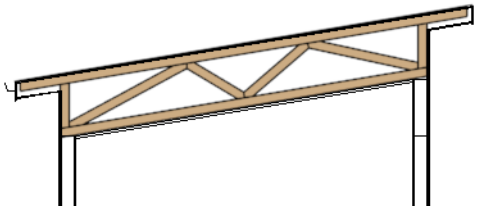


Girder Trusses reinforcing a skylight hole

Trusses cannot be drawn through each other. If a truss is drawn through an existing truss, the program automatically shortens it so that it butts into the existing truss.

Sloping Flat Trusses

A sloping flat truss is a roof truss that builds within the rafter area of the roof plane(s) it is drawn in. In order to create one, the roof plane(s) must have a rafter depth deep enough to accommodate its chords and webbing.



Sloping Flat Truss

To create a sloping flat truss

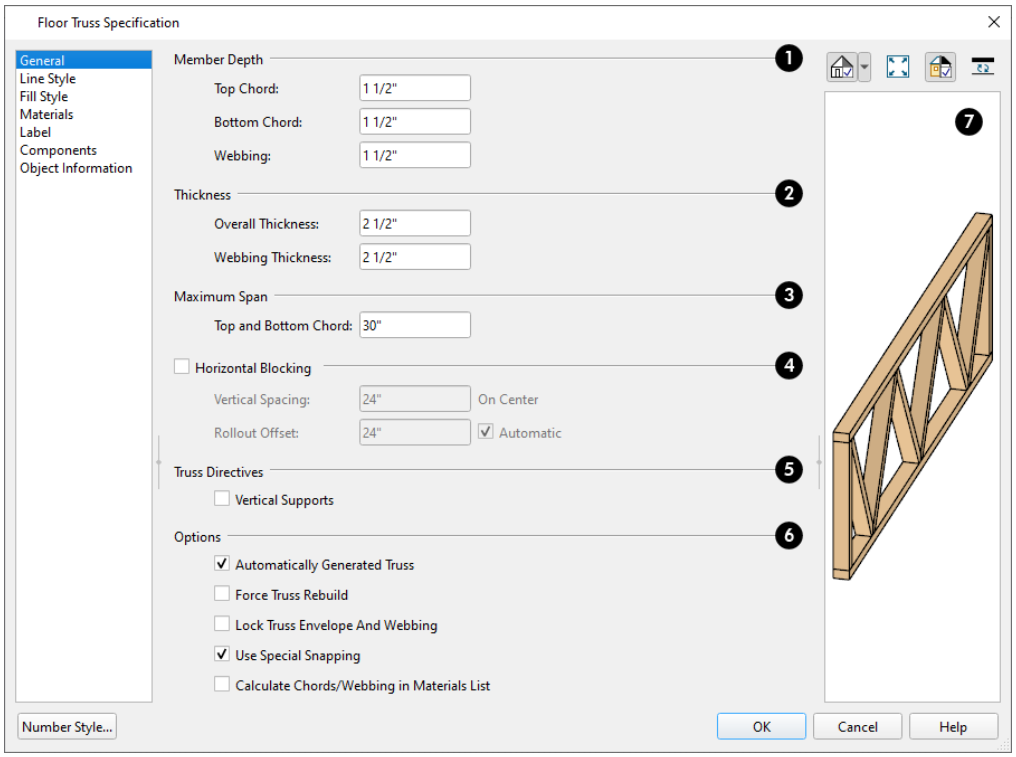
1. Select the roof plane in which you would like to draw sloping flat trusses and click the **Open Object** edit button.
2. On the STRUCTURE panel of the Roof Plane Specification dialog, specify the **Rafter** depth as the desired depth of the sloping flat truss. See *Structure Panel on page 615*.
3. Select the roof truss and click the **Open Object** edit button.
4. On the GENERAL panel of the Roof Truss Specification dialog, check the boxes beside **Sloping Flat Truss** and **Force Truss Rebuild**, then click OK. See *General Panel*.
5. Use the **Transform/Replicate Object** edit tool to replicate the truss within the area of the roof plane(s) edited in step 2.

Floor/Ceiling Truss Specification Dialog

To open the Floor or Ceiling Truss Specification dialog, select one or more floor or ceiling trusses and click the **Open Object** edit button. See *Floor and Ceiling Trusses on page 682*.

The settings in this dialog are also found in the Floor/Ceiling Truss Defaults dialog. See *Truss Defaults on page 682*.

General Panel



1 Member Depth

Specify the **Member Depth** of the different components of the selected truss.

- Specify the depth of the **Top Chord**.
- Specify the depth of the **Bottom Chord**.
- Specify the depth of the **Webbing**.

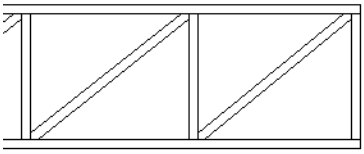
2 Thickness

Specify the **Thickness** of the truss's chords and webbing.

- Specify the **Overall Thickness** of the selected truss.
- Specify the thickness of the **Webbing**.

3 Maximum Span

Specify the **Maximum Span**, which is the maximum horizontal distance between supports along the **Top and Bottom Chord**.



4 Horizontal Blocking

Check this box to include horizontal blocking in addition to the angled and vertical webbing.

- Specify the **Vertical Spacing**, which is the distance between horizontal blocking members, measured center to center.
- Specify the **Rollout Offset**, which is the distance from the bottom of the truss to the bottommost horizontal blocking member. When **Automatic** is checked, the previous value entered either here, in the Vertical Spacing field, or in the Framing Defaults dialog is reported for reference and the Vertical Spacing value is used for the actual offset.

5 Truss Directives

- Check **Vertical Supports** to use vertical supports in the selected truss.

6 Options

- **Automatically Generated Truss** is checked when the selected truss was automatically generated, and is unchecked and also inactive when it was manually drawn. Uncheck this box to treat the selected truss as manually drawn going forward. When you click OK, the box will be permanently unchecked and inactive.
- Check **Force Truss Rebuild** to rebuild the truss envelope based on the existing floor or ceiling platform when you click OK. Not available if Lock Truss Envelope and Webbing is checked, below. See *Force Truss Rebuild on page 687*.
- Check **Lock Truss Envelope and Webbing** to lock the size and configuration of the truss. A locked truss which has been relocated will maintain its original settings. See *Lock Truss Envelope and Webbing on page 687*.
- Uncheck **Use Special Snapping** to prevent the selected truss from snapping along its long edge to a wall's Main Layer or to the corner of a roof plane. If disabled, **Object Snaps**  may still occur. See *Special Truss Snapping on page 686*.
- When **Calculate Chords/Webbing in Materials List** is checked, the selected truss is counted as one object in the Materials List. Check this box to instead count the selected truss's individual chord and webbing pieces in the Materials List rather than the truss. See *Displaying Trusses on page 684*.

7 Preview

A preview of the selected truss displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Line Style Panel

The settings on this panel affect the appearance of the selected truss in plan view only. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on this panel affect the appearance of the selected truss in plan view only. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the MATERIALS panel affect the appearance of the selected truss in 3D views. See *Materials Panel on page 760*.

Label Panel

Floor and ceiling truss labels can display in plan view when the "Framing, Floor/Ceiling Truss Labels" layer is turned on and use the Text Style assigned to that layer. See *Text Styles on page 390*.

For more information about the settings on this panel, see *Label Panel on page 395*.

Components Panel

The information on the Components panel can be used in the materials list. For more information, see *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the materials list. For more information, see *Object Information Panel on page 968*.

Trim and Moldings

Chapter 28

The Trim Tools allow you to place corner boards and quoins at wall intersections that form corners.

You can also assign moldings to a variety of objects, such as rooms and cabinets, in those objects' specification dialogs. See *Specification Dialogs on page 20*.

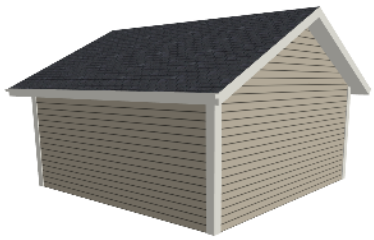
Trim and Molding Defaults

Select **Edit> Default Settings** to open the Default Settings dialog where you can access the defaults for a variety of drawing tools, including a number that affect trim and moldings.

- Click the + beside "Corner Trim" to access the defaults for Corner Boards and Quoins. See *Corner Boards on page 697* and *Quoins on page 699*.
- Click the + beside "Floors and Rooms", then beside "Floor Levels". Select a floor level and click the **Edit** button to specify the default moldings for rooms on that floor. See *Floor Level Defaults on page 313*.
- Click the + beside "Door" to access the defaults for Interior and Exterior Doors. See *Door Defaults on page 397*.
- Select "Window" and click the **Edit** button to specify the default casing for windows. See *Window Defaults on page 426*.
- Click the + beside "Cabinet" to access the defaults for the Cabinet Tools, where you can specify default crown and other moldings. See *Cabinet Defaults on page 461*.

Corner Boards

Corner boards are added to a building exterior in any view by selecting **Build> Trim> Corner Boards**.



Click at a wall corner where you want to add trim. Be sure to click where the outside wall surfaces meet. If you click where the inside surfaces meet, corner trim will be created inside the room.

You can also add Corner Boards to all exterior corners at once by selecting **Build> Trim> Auto Place Corner Boards**.

By default, **Auto Place Corner Boards** adds Corner Boards to outside corners only. If you prefer, you can specify that inside corners receive corner boards in the Corner Board Defaults dialog. See *General Panel on page 698*.

> Note: The Auto Place Corner Boards tool does not place corner boards on Bay, Box, or Bow Windows; on manually drawn dormers; or at intersections with Attic Walls. See *Attic Walls on page 285*.

Corner boards extend from the top plate down to the bottom of the floor platform of the floor on which it is placed, but do not extend to other floors. You must add corner boards to all floors of the building that you want to have corner boards.

A selected corner board or boards can be moved, but only to another wall corner or corners. In 3D views, corner boards can be lengthened or shortened using the edit handles. Corner boards can be copied, deleted and resized similar to other objects using the Edit Toolbar or the Corner Board Specification dialog. See *Corner Board Specification Dialog on page 698*.

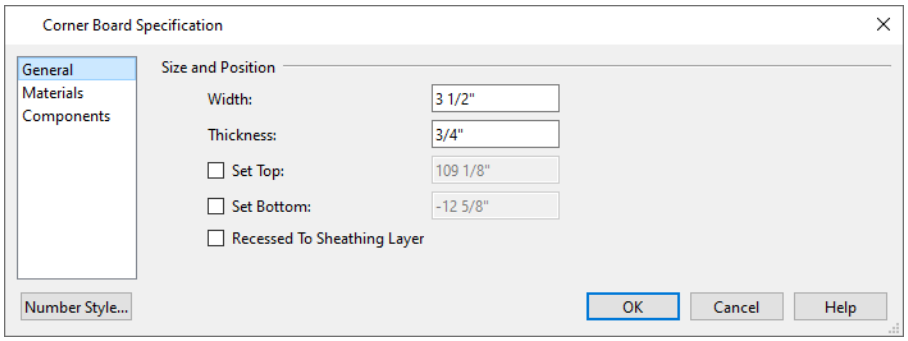
The default material for corner boards is defined by the **Exterior Trim** entry in the Material Defaults dialog. See *Material Defaults on page 757*.

Corner Board Specification Dialog

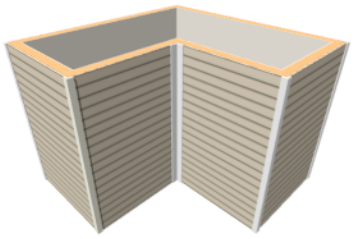
Select one or more corner boards and click the **Open Object** edit button to open the Corner Board Specification dialog.

The settings in this dialog are similar to those in the Corner Board Defaults dialog, but affect the selected corner boards rather than all subsequently created corner boards.

General Panel



- Specify the **Width** and **Thickness** of the selected corner board(s).
- Check **Set Top/Set Bottom** to specify the top and bottom heights of the corner board(s).
  - If **Set Top** is unchecked, the top of the corner board automatically extends to the top plate.
  - If **Set Bottom** is unchecked, the bottom of the corner board automatically extends to the bottom of the floor platform.
  - Select **Recessed To Sheathing Layer** to recess the corner board to the walls' sheathing layer.
- In the Corner Board Defaults dialog, an additional **Auto Place Option** is available.
  - Check **Include Inside Corners** to place Corner Boards on inside corners when the **Auto Place Corner Boards** tool is used. When unchecked, only outside corners receive corner boards.



Materials Panel

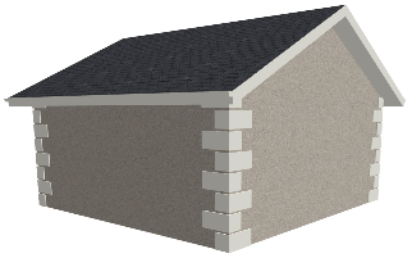
The settings on the Materials panel affect the appearance of the selected Corner Board in 3D views. Materials are also reported in the Materials List. See *Materials Panel on page 760*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Quoins

Select **Build> Trim> Quoins** in any view and click at a wall corner where you want to place quoins.



You can also add Quoins to all exterior corners at once by selecting **Build> Trim> Auto Place Quoins** .

By default, **Auto Place Quoins** adds Quoins to outside corners only. If you prefer, you can specify that inside corners receive quoins in the Quoin Defaults dialog. See *General Panel on page 698*.

> Note: The Auto Place Quoins tool does not place quoins on Bay, Box, or Bow Windows; on manually drawn dormers; or at intersections with Attic Walls. See *Attic Walls on page 285*.

A selected quoin or quoins can be moved, but only to another wall corner or corners. In 3D views, quoins can be lengthened or shortened using the edit handles. Quoins can be copied, deleted and resized similar to other objects using the Edit Toolbar or the Quoin Specification dialog. See *Quoin Specification Dialog on page 700*.

The size of quoins in plan view is relative on their size in 3D.

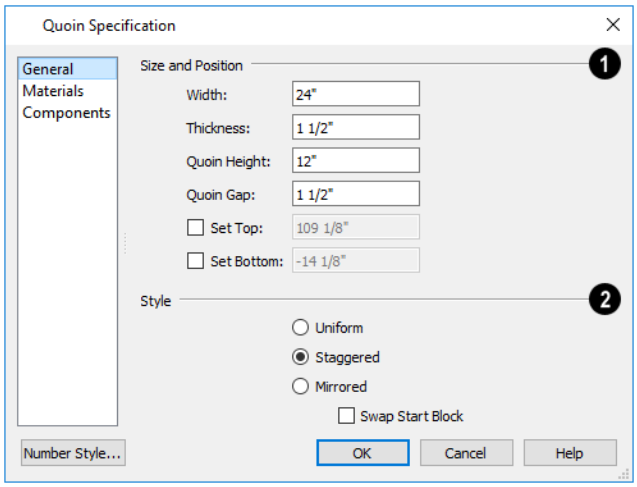
Initially, quoins use the same material as the default material of the wall surface they are placed against. This material is specified in the Wall Type Definitions dialog. See *Wall Specification Dialog on page 294*.

Quoin Specification Dialog

Select one or more Quoins and click the **Open Object** edit button to open the Quoin Specification dialog.

The settings in this dialog are the same as those in the Quoin Defaults dialog, but affect the selected Quoins rather than all subsequently created Quoins.

General Panel

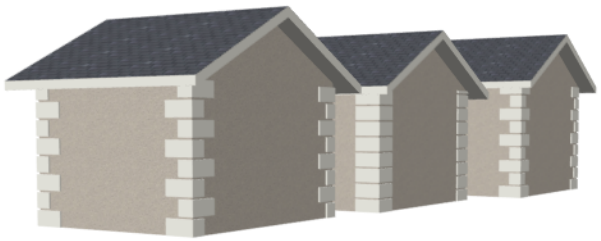


1 Size and Position

- Specify the **Width**, which is the horizontal dimension of each quoin instance in the selected Quoin object. The dimension along the other wall is half this value when they are staggered or mirrored.
- Specify the **Thickness**, which is the amount that the quoin protrudes from the exterior surface of the wall.
- Specify the **Quoin Height** for individual quoins in the selected Quoin object.
- Specify the **Quoin Gap**, which is the distance between successive quoins.
- Check **Set Top/Set Bottom** to specify the top and bottom heights of the selected Quoin object in the text fields.
- If **Set Top** is unchecked, the top of the Quoin automatically extends to the top plate.
- If **Set Bottom** is unchecked, the bottom of the Quoin automatically extends to the bottom of the floor platform.

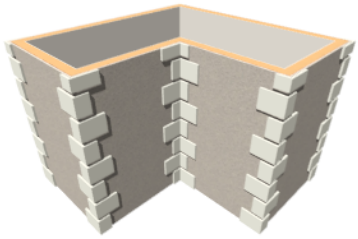
2 Style

- **Uniform** - Produce quoins that are of equal length on both sides of the corner.
- **Staggered** - Produce quoins that have one long side and one short side staggered on opposite sides of the corner.
- **Mirrored** - Produce quoins that alternate having either two long sides or two short sides.
- When Staggered or Mirrored is selected, check **Swap Start Block** to switch the starting order for the quoins.



In the Quoin Defaults dialog, an additional **Auto Place Option** is available.

- Check **Include Inside Corners** to place Quoins on inside corners when the **Auto Place Quoins** tool is used. When unchecked, only outside corners receive Quoins.



Materials Panel

The settings on the Materials panel affect the appearance of the selected Quoin in 3D views. Materials are also reported in the Materials List. See *Materials Panel on page 760*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Editing Corner Boards and Quoins

Before a corner board or quoin can be edited, it must be selected. Click on a trim object when the **Select Objects** tool is active. Corner boards and quoins can also be group selected and edited. See *Selecting Objects on page 183*.

Corner boards and quoins can be edited using their edit handles, the Edit Toolbar buttons, and their specification dialogs. See *Corner Board Specification Dialog on page 698* and *Quoin Specification Dialog on page 700*.

Using the Edit Handles

Depending on the type of view, a corner board or quoin displays a different set of edit handles when selected.

- In plan view, corner boards and quoins display one edit handle and can be moved from one eligible location at a wall corner to another.
- In 3D views, corner boards and quoins can be moved, lengthened, and shorted much the other line-based objects are. See *Editing Line-Based Objects on page 187*.

Using the Edit Buttons

A selected corner board or quoin can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Deleting Corner Trim

Corner boards and quoins can be selected individually or in groups and deleted using the **Delete** edit button or the ***Delete*** key. They can also be removed using the Delete Objects dialog. See *Deleting Objects on page 218*.

Moldings and Millwork

Moldings and millwork are often used to enhance both the interior and exterior of designs.

Millwork

A selection of various types of millwork objects including columns, corbels and finials is available in the Library Browser. See *The Library Browser on page 705*.

Most millwork objects are designed to be placed in a plan as free-standing objects. Some - notably, newels and balusters - can be assigned to objects such as railings and stairs. See *Placing Library Objects on page 727*.

Both free-standing millwork and that assigned to an object can be replaced from the library in 3D views. See *Replace From Library on page 730*.

Moldings and Rails

Moldings can be applied to rooms, doors, windows, and cabinets in their specification dialogs. The sizes of the rails on railing, fencing, stairs, and ramps can also be specified in a similar manner. See *Moldings / Rails Panels on page 702*.

A selection of molding profiles including crown moldings and chair rails, can be found in the Library Browser. See *Assigned Items on page 729*.

Replacing an Existing Molding

If a molding profile has already been applied to an object, it can be replaced by another directly from the library in a 3D view. Select **Build> Trim> Replace Moldings**, select a molding profile from the Select Library Object dialog, then move the mouse pointer into the view window and click on a molding in the view. See *Select Library Object Dialog on page 729* and *Replace From Library on page 730*.

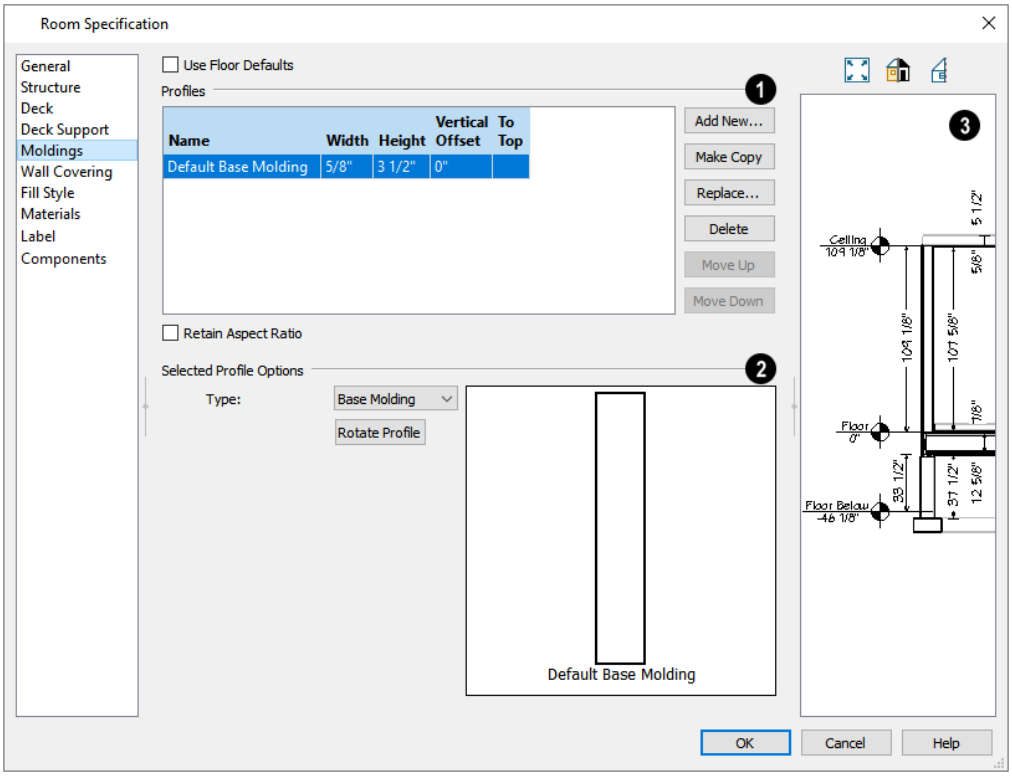
You can also select a molding profile directly from the Library Browser while a 3D view is active and move your mouse pointer into the view window. When a molding is selected, the pointer displays the Moldings icon. When the mouse pointer is moved over a molding in the view, the Replace From Library icon displays instead. Click on the molding's surface to change its molding profile.

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Moldings / Rails Panels

The specification dialogs for a variety of objects in the program include a Moldings panel. Select an object or group of similar objects and click the **Open Object** edit button to open the specification dialog for that selection. The settings available on this panel will vary depending on the type of object selected.

The Strip Profile panel of the Rope Light Specification dialog and the Rails panel of the Railing, Fencing, Staircase, Ramp, and Stair Landing Specification dialogs are similar to the Moldings panel.



At the top of the dialog, one or more check boxes may be present.

- Only available for rooms, uncheck **Use Floor Default** to make the settings that follow active. Check this box to use the defaults set in the Floor Defaults dialog for the current floor. In the Room Type Defaults dialogs, the settings for Floor 1 are shown in the preview when this is checked. See *Floor Level Defaults on page 313*.
- If multiple objects with different moldings assigned to them are selected, a **No Change** check box will be available. Uncheck this box to make the settings that follow active but note that only moldings that all selected objects have in common will be retained.

> Note: If multiple rooms are selected and only some of them have Use Default checked, these settings on this panel will not be editable.

1 Profiles

The selected object's molding profiles rope light strip profile, or rail profiles are listed in a table and can be edited here.

On the RAILS panel of the Staircase, Ramp, and Stair Landing Specification dialogs, the table is divided into three sections: Top Rail, Middle Rail, and Bottom Rail. In the Wall Specification dialog, there is a fourth section: Beam.

- Select the name of a molding to edit it or remove it from the object.
- Click in the **Width** and/or **Height** column and type to specify the selected molding's size.
  - Unlike in most other dialogs, accuracy of up to 1/64" is supported in this table when Fractional Inches are in use. See *Dialog Number/Angle Style Dialog on page 119*.
- Specify the **Vertical Offset** of the selected molding, measured relative to the default molding location on the object it is assigned to.
- Depending on the type of object selected, one or more check boxes will be found under the Molding Profiles table.
  - When **Retain Aspect Ratio** is checked, if you change either the Height or Width, the other value changes to maintain their original ratio. When this is unchecked, the two values can be edited independently.

- On the RAILS panel of the Railing Specification dialog, check **Full Wall Width** to make the rail Width equal to the Thickness of the selected railing wall. Not available for stairs or ramps.

- The buttons on the right allow you to manage the moldings listed in the table. These are not available on the RAILS panel.
  - **Add New** opens the Select Library Object dialog and add a new molding profile to the selected object. See *Select Library Object Dialog on page 729*.
  - Click the **Make Copy** button to add a copy of the selected molding profile at the bottom of the list.
  - **Replace** removes the selected profile and replace it with a new profile from the Library.
  - **Move Up** and **Move Down** change the order of the line items in the table. This does not change a selected item's Height, Offset, To Top setting, or Type: only its position in the table.

2 Selected Profile Options

These settings only apply to the molding profile selected above.

- A preview of the molding profile(s) displays here. When multiple moldings of the same Type, Position on Object setting, or similar Height are specified, they will display together here, even when only one is selected. The selected profile is identified by thicker edge lines than the others. When multiple moldings of different Types, Position on Object, or Height settings are selected, no preview will display.
- When a room or cabinet is selected, choose a molding **Type** from the drop-down list. The options vary, depending on the type of object selected.
  - For rooms, the choices are "Base Molding", "Chair Rail", and "Crown Molding"; for base cabinets, "Edge Profile" and "Base Molding"; for wall cabinets, "Crown Molding" and "Light Rail"; and for full height cabinets, "Crown Molding" and "Base Molding".
  - When a molding profile's Type is changed, its Position on Object setting may also change. See *Room Moldings on page 328* and *Cabinet Hardware and Moldings on page 477*.
- Select a **Position on Object** from the drop-down list. Only available when a room or a cabinet is selected.
- Click the **Rotate Profile** button to rotate a selected profile 90° counterclockwise, or to the left.

3 Preview

Many specification and defaults dialogs have previews of the selected object in which the moldings assigned to it can be seen. See *Dialog Preview Panes on page 21*.

When **Use Floor Default** is checked in the Room Type Defaults dialog, this preview always shows the default moldings for Floor 1.

The Library

Chapter 29

Home Designer's library offers thousands of symbols, materials, and images that can enhance any plan.

New library catalogs and enhancements are made available by Chief Architect Software on a continuing basis and are available for download for the current program version.

You can also customize items from the library or import new items from outside the program and then save them in the library for future use.

The Library Browser

The Home Designer Library Browser allows you to manage the contents of the library as well as add library content to your drawings.

Library Browser Side Window



There are several ways to open the Home Designer Library Browser side window.

- Select **View> Library Browser**.
- Click the **Library Browser**  button.
- Press ***Ctrl/⌘ + L***.

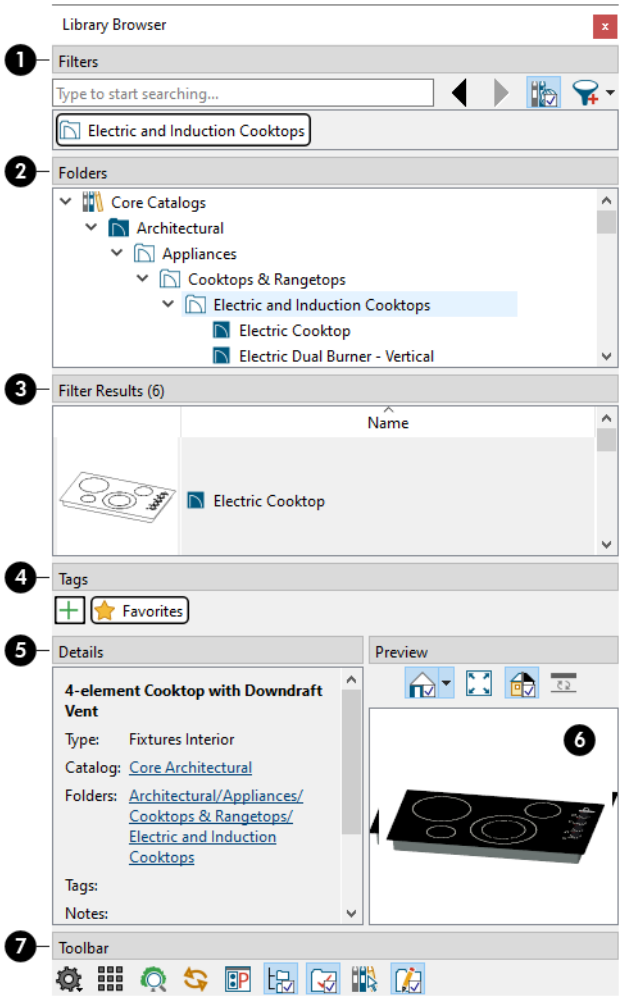
When **Double-Click Closes Browser** is checked in the Preferences dialog, you can also close the Library Browser by double-clicking on an item in the Filter Results. Doing this will also close any other side windows that the Library Browser is docked with. See *Library Browser Panel on page 97*.

By default, the Library Browser is docked to the right side of the program window, but it can be undocked or docked to another side if you wish. See *Side Windows on page 16*.

The Library Browser has seven panels:

- Filters and search options
- Folders tree list
- Filter Results
- Details
- Preview
- Toolbar

The panel title bars report their names by default; however, you can hide the title bars if you prefer by clicking the Settings button at the bottom of the side window.



1 Filters

Search or filter the library to find the content you need. Filter Results are reported below. See *Searching and Filtering the Library on page 711*.

- Type a search parameter in the text field. A drop-down list of search results will appear below the field that updates as you type.
  - Click on a line item to use that item as a search parameter.
  - You can also type and press the Enter key to use your text as a search parameter.
- Alternatively, you can type a Library Folder path in the text field.
  - Begin by typing: Path:
  - Do not include the Category in the path. Instead, begin with the path's top level Folder.
  - Both "/" or "\" can be used as path separators.
  - When the path is correct, press the Enter key to filter the Folders panel accordingly.
- When **Include Web Results** is toggled on, content that is available for download will be included in the Filter Results. Turn this option off to only include content already present in the Library in the Filter Results. This option is also found in the Preferences dialog. See *Library Browser Panel on page 97*.
- Click the **Advanced Search** button to refine the current search parameters as well as create custom filters. See *Advanced Search Dialog on page 714*.

- Click the **Go Back in History** and **Go Forward in History** buttons to cycle between filters that have been active during the current program session.
- All currently active search parameters are listed immediately below, each in a rectangular frame.
  - You can also add search parameters to the current filter by selecting Folders and/or Tags.
  - Click on an item here to remove it from the current filter.
- The tree list in the Folders panel is filtered to only show content that matches your search criteria, and the Filter Results panel below is populated with all items that match the active search parameters.

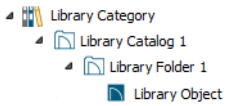
2 Folders

The contents of the Library are listed in a directory tree and can be browsed here. When you select a folder, it will be listed as a search parameter under Filters, above, and its contents will be listed under Filter Results, below.

- The Folders tree list has five categories: Core Catalogs, Home Designer Bonus Catalogs, Manufacturer Catalogs, User Catalog and Trash. See *Library Content on page 717* and *Deleting Library Items on page 725*.

> If the Core Catalogs, Bonus Catalogs, or Manufacturer Catalogs are empty, they will not be listed in the Folders tree list. See *Downloading Library Content on page 719*.

- The basic structure of the directory tree is:



- Library items are always placed in alphabetical order within their hierarchy.
- Navigate the Folders panel tree list using the mouse and/or keyboard:
  - Click the gray Expand arrow pointing to a catalog or folder to display its contents. Once expanded, you can click the black Collapse arrow pointing downward to close it again. Scroll through the list using either the scroll bar on the right or the mouse scroll wheel.
  - You can also browse the list using the Arrow keys. The up and down arrow keys navigate up and down in the list, while the left and right arrow keys expand and contract a selected catalog or folder.
- Click on an item to select it. When you select an individual item, information about it will be shown in the Details and Preview panels below and you can place or apply it in your drawing.

3 Filter Results

All library items that match the currently active search parameters listed in the Filters panel are listed here. Their total number is reported in the panel's heading in parentheses.

- Like the Folders list, the Filter Results can be navigated using the mouse and/or keyboard.
- Click on an item to select it: information about it will be shown in the Details and Preview panels below, and you can place or apply it in your drawing.
  - Basic information about it also displays in the program's Status Bar. See *The Status Bar on page 24*.
  - Multiple items can be selected for organization and limited editing purposes but cannot be placed in a drawing. See *Shift and Ctrl/⌘ Select on page 187*.
  - Right-click on a selection to access its contextual menu. See *Using the Contextual Menu on page 710*, below.
- You can choose to display the Filter Results in either **List Mode** or **Grid Mode** in the Toolbar panel.
- When List Mode is in use, the Name column can be sorted in descending or ascending alphabetical order by clicking the arrow at the top of the column heading.

- Right-click in the Title Bar, an empty space in the results field, or in the column headings when List Mode is active to access the panel's contextual menu. See *Using the Contextual Menu on page 710*, below.
  - Specify whether the Filter Results are sorted in **Ascending** or **Descending** order.
  - You can also specify which Library Browser panels to display and which to hide.



You can increase or decrease the size of the Filter Results tiles by pressing the Ctrl/⌘ key while scrolling the mouse wheel. See *Three Button Mice on page 13*.

4 Tags

Tags allow you to create custom categories which you can then assign library items to. Tags can be used as filters themselves, or as search attributes in more complex filters. The Tags panel does not display by default: click the Settings button in the Toolbar panel below to control which panels display.

- All available Tags are listed in this panel. Click on one to use it as a search parameter listed in the Filters panel, above. The currently selected Tag has a dashed outline.
- Favorites is the installed system Tag.
- Click the **Create New** button to open the New Library Tag dialog and type a short, descriptive name for a new Tag.
- Right-click on a custom Tag to select **Rename**, **Change Color**, or **Delete** from the contextual menu.

5 Details

Information about the selected library item is reported here. These columns can also be shown in the Filter Results panel:

- **Type**
- **Catalog** - See *Library Content on page 717*.
- **Folders** - See *Organizing the Library on page 723*.
- **Tags** - See *Creating and Using Tags on page 713*.
- **Notes** - You can add a Note to any unlocked library item by clicking the **Edit Notes** button in this panel. A text field becomes available and you can choose to **Save Notes** as well as **Insert Hyperlink**. Notes are not used in Library Search filters.

6 Preview

When an item is selected either the Folders or Filter Results panel, a representation of the item displays in the Preview panel. If the selected object is a 3D symbol, you can rotate and zoom in or out on the Preview using the mouse.

Options above the preview pane affect its appearance and vary depending on the type of object selected. These options are also found in most objects' specification dialogs:



The Standard, Vector View, and Glass House Rendering Techniques can be applied to the preview for architectural objects, as can Plan View. See *Rendering Techniques on page 836*. You can specify whether Standard or Vector View is used by default in the Preferences dialog. See *Appearance Panel on page 93*.



Fill Window sizes and positions the selected object so that it fills the preview pane as much as possible.



The display of **Color** can be toggled on and off in the preview for all item types. The Preview Background color can be set in the Preferences dialog. See *Colors Panel on page 95*.



The display of **Line Weights** can be toggled on and off for Fill Patterns.

The options above the preview pane are different when a material is selected. These options are also found in the Define Material dialog:

 The Physically Based, Standard, and Vector View Rendering Techniques can be applied to the preview for materials.

 The display of **Color** can be toggled on and off in the preview for materials just as it can for most other item types.

 Click the **Restore Original View** button to reset the material preview to its original perspective.

 A selected material will display on a shape in the Preview panel. The initial shape is a Teapot, but you can select a Cube, Sphere, or 2D Plane instead. The object shape selection is also shared with the Define Material dialog. See *Define Material Dialog on page 772*.

 A selected material's preview shape displays in front of a backdrop. You can either **Use Default Room** or a **Backdrop from Library**. The current as well as recently used backdrop images are also listed in the drop-down list. See *3D Backdrops on page 846*.

>  You can specify that the backdrop for materials be blurred in the Preferences dialog. See *Appearance Panel on page 93*.

You can update the preview for any item in the User Catalog using its contextual menu.

- Select **Regenerate Thumbnail** to update the preview for one or more selected library items.
- Select **Regenerate Thumbnails** to update the previews for all items in a selected folder within the User Catalog, or for all items in the User Catalog itself.

7 Toolbar

The toolbar at the bottom of the browser aids in searching, displaying panels, and managing library content. The settings here are saved between program sessions.

 The **Settings** menu lets you select which Library Browser panes are presented and which are hidden.

 **Tile Mode** displays items in the Filter Results pane as a grid of thumbnail images. Toggle this off to instead display items in a scrollable horizontal list with item name and preview thumbnail.

 Open the Plant Chooser dialog. See *Plant Chooser Dialog on page 940*.

 **Update Library Catalogs** downloads and installs updates to your installed catalogs to include the latest content. See *Updating Library Catalogs on page 718*.

 Open the Preferences dialog, where display properties for the Library Browser can be controlled. See *Library Browser Panel on page 97*.

 **Search Subfolders** includes the contents of subfolders when a folder is an active search parameter. Turn this off to only include items saved in the folder itself, at the folder level: not in subfolders.

 When **Include Folders in Text Search** is toggled on, any folders that match a Text search will be listed in the Filter Results. Turn this off to include objects in the Filter Results but not folders.

 Click the **Select Libraries** button to share either your "Chief Library" or your User Catalog with others using the Select Libraries dialog.

Customizing the Library Browser

The Library Browser can be resized, moved, as well as docked with other Side Windows in the configuration of your choice. To return the Library Browser to its original position and size, click the **Reset Side Windows** button in the Preferences dialog. See *Side Windows on page 16*.

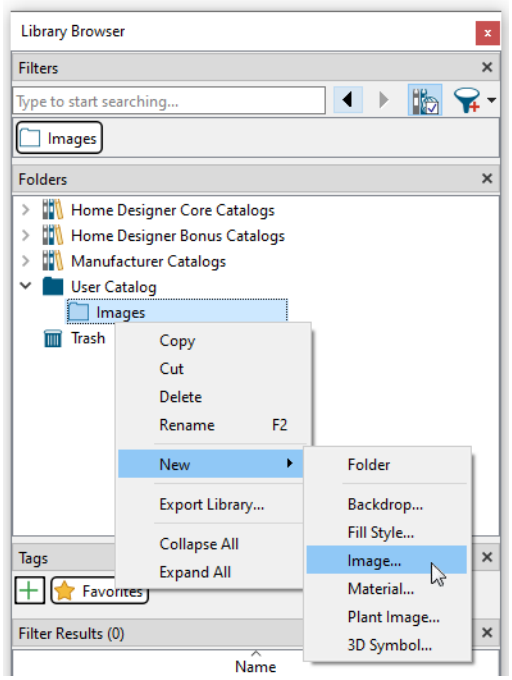
 The panels in the Library Browser are customizable:

- You can control which Library Browser panels display by clicking the **Settings** button in the Toolbar panel near the bottom of the browser.
- To adjust the height or width of a panel, place the pointer over the splitter bar you want to move. When the splitter cursor displays, click and drag. See *Dialog Panel Splitters on page 22*.
- Panels can be rearranged within the Library Browser side window. Click and drag a panel's title bar: When a highlighted space is created at the location you want, release the mouse button.
- You can hide the panel title bars or show them again if you wish: click the **Settings** button, then select **Section Title Bars**.
- When your panel arrangement meets your needs, you can lock it: click the **Settings** button, then select **Lock Panels**. When panels are locked, they can be resized but cannot be moved except via the Settings menu.

To return the Library Browser's panels to their original configuration, click the **Reset Panel Layout** button in the Preferences dialog. See *Library Browser Panel on page 97*.

Using the Contextual Menu

A number of important library functions can be accessed using the contextual menu. Right-click on an item in the Folders or Filter Results panel to open a contextual menu displaying options related to that item. A limited contextual menu is also available when multiple items are selected, as well as when you right-click on an item in the Filter Results panel. Right-click on a panel title bar to control which panels are shown and which are hidden. See *Contextual Menus on page 18*.



The options in the contextual menu vary depending on the item selected, but may include:

- Update
- Cut/Copy/Paste
- Copy to User Catalog
- Search in Folder(s)
- New

- Regenerate Thumbnail
- Delete
- Duplicate
- Rename
- Add Link
- Move to Folder
- Tags
- Export Library
- Adjust Lights
- Open Object
- Download Catalog
- Expand All/Collapse All
- Show in Folder
- Restore from Trash

Keyboard Commands

The Library Browser can be navigated using the Arrow keys on your keyboard.

- The right and left arrow keys expand and collapse folders.
- The up and down keys change which library object is currently selected.
- Select an item and press the ***F2*** key to rename it.
- Select an item and press the ***Delete*** key to delete it.

Expand/Collapse All

When a library category or folder is selected in the Folders panel, **Expand All** and **Collapse All** are available in the contextual menu, allowing you to expand to show or contract to hide its contents in the tree list. All folders located within the selected folder are expanded or contracted, as well.

Searching and Filtering the Library

Depending on how much library content you have imported or customized, the tree list in the Folders panel can be extensive. The Library Browser filtering options let you focus your searches using parameters that you define. There are several approaches to finding content.

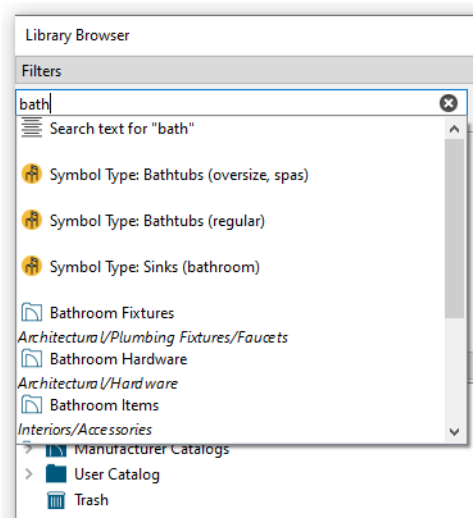
Searching the Library

The most straight-forward way to find content in the Library Browser is to search for it. You can search for item names, folder names, object types, tags, and other search attributes.

When Include Web Results is enabled, content available for download from the Chief Architect 3D Library is also included in the Search results. Be sure to scroll down the Search drop-down list as well as the Filter Results.

To search the Library Browser

1. Specify how you would like library folders treated for search purposes:
   - When **Search Subfolders** is toggled on, the contents of subfolders are included when a folder is an active search parameter. Turn this off to only include items saved in the folder itself, at the folder level: not in subfolders.
   - When **Include Folders in Text Search** is toggled on, any folders that match a Text search will be listed in the Filter Results. Turn this off to include objects in the Filter Results but not folders.
2. If you would like to search to one or more particular folders, select them in the Folders panel, then right-click on the selection and select **Search in Folder(s)**. The selected folder(s) will act as filters until they are actively removed or another filter is selected.
3. Click in the Search text field at the top of the Filters panel and begin typing a keyword to search for. As you type, a list will drop down below the text field, showing search results that update as you type.



The Library Filter drop-down list with search results.

   - Use the keyboard Arrow keys or scroll bar to scroll through the drop-down list.
   - Click on a line item to use that item as a search parameter that influences how the Folders and Filter Results panels are populated, below.

> When Include Web Results is enabled, the search results include downloadable content available in the Chief Architect 3D Library. See *Library Content on page 717*.

4. You can use Boolean keywords and quotation marks to refine your search:
   - Boolean keywords (NOT, AND, OR), capitalized and with spaces, can be used. Shortcuts (!, +, |) can be used, as well.
   - Boolean keywords' are prioritized from highest to lowest in this order: not, and, or. Parentheses can also be used.
   - Use quotation marks “” to search for an exact word or phrase. Quotation marks around a Boolean keyword will treat the keyword as a normal search term.
   - Press the ***Enter*** key to populate the Filter Results panel with items that match your search text.
5. You can also search for Object Attributes, which are listed in the Advanced Search dialog:
   - Type
   - Style
   - Manufacturer
   - Symbol Type

- Symbol Options
- Symbol Placement
- Hardware Options
- Has Texture
- Plant is 3D

6. To combine an attribute with a keyword, use this format: Attribute: keyword.
7. Repeat steps 2 - 5 to add additional parameters to the current filter if you wish.
8. Click the **Advanced Search** button to further refine your search as well as create a Custom Filter. See below.
9. You can click the **Clear** button on the right side of the Search text field to remove anything typed in this field.
10. Right-click on an item in the Filter Results list and select **Show in Folder** to view the item's location in the Folders list.
    - Click the **List Mode** button to display the Filter Results in a single column with each object's name to the right of its preview thumbnail.
    - Click the **Tile Mode** button to display the Filter Results in a grid layout with each object's name beneath its preview thumbnail.

> You can use the Go Back and Go Forward in History buttons in the Filter panel of the Library Browser to cycle between filters that have been active during the current program session.

You can also type the path of a folder or library item in the Search field.

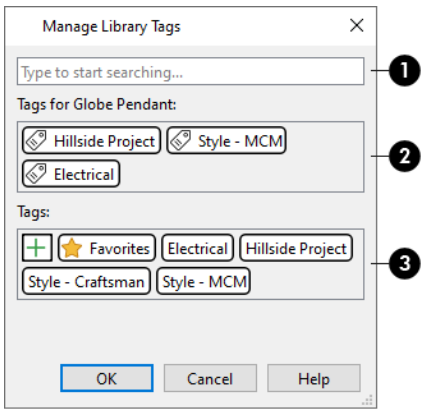
- Begin by typing: Path:
- Do not include the Category in the path. Instead, begin with the path's top level Folder.
- Both "/" or "\" can be used as path separators.
- When the path is correct, press the Enter key to filter the Folders panel accordingly.

Creating and Using Tags

Tags let you group library items into categories that make library filtering more efficient for you. There are numerous uses for Tags, for example: to group items that you use often by drawing task, design style, or a particular project. Home Designer has a single system tag, **Favorites**, but you can create your own by clicking the **Create New** button in the Tags panel of the Library Browser. See *The Library Browser on page 705*.

To add a tag to an item, right-click on it and select **Tags>** from the contextual menu. In the submenu, check the box beside each Tag that you would like to add to the selected item and then select **Apply**. See *Using the Contextual Menu on page 710*.

You can also select **Tags> Manage Tags** from the contextual menu for one or more selected objects to open the Manage Library Tags dialog.



1 Search

If you have created a large number of Tags, you can type in this field to search for a particular Tag name.

- A drop-down list of search results will appear below the field that updates as you type: click on an item in that list to select and apply it to the selected objects.
- You can also create a new Tag using what you have typed as its name.

2 Tags for Item/Common Tags for Items

The names of Tags assigned to the selected object(s) are reported here.

- When multiple objects are selected, only the Tags assigned to all objects will be named here.
- Click on a name to remove that Tag from the selected object(s).

3 Tags

The names of all available Tags are listed here.

- Click on the name of a Tag to assign it to the selected object(s).
- As in the Tags panel of the Library Browser, you can **Create New** Tags as well as right-click on a Tag's name here and **Rename**, **Change Color**, or **Delete**.

To use a tag to find items in the Library Browser, simply click on its name in the Tags panel. All library items that have been assigned that tag will be listed in the Filter Results, where you can select them for use in your drawing. You can also include Tags in custom saved Filters.

Filtering the Library

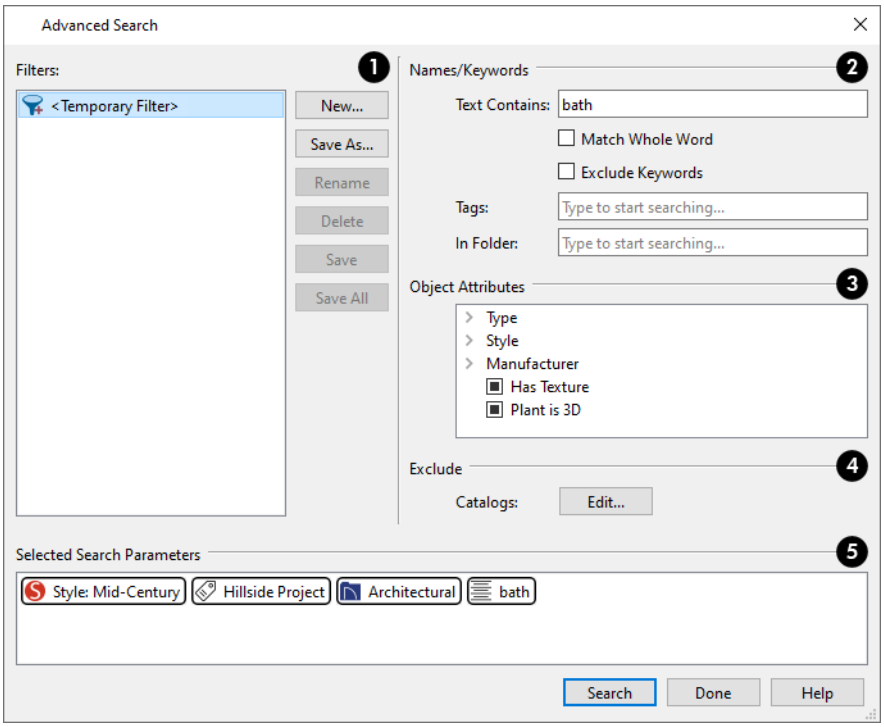
A Library Filter is a set of one or more search parameters that allows you to search for specific content by restricting what is listed in the Folders and Filter Results panels. Library Filters can include plain text, a Symbol Type, an object Type, a Folder, and/or one or more Tags. You can add items to a filter by typing in the Search field, selecting a folder in the Folders panel, or selecting a Tag. Depending on which parameters are already in use, it is possible that a parameter may be removed when a new one is added.

To fine-tune a set of search parameters, or to save a set of parameters for future use, click the **Advanced Search** button. Any filters that you create will be in the **Active Filter** drop-down list at the top of the Library Browser. Select a filter from the list to display content in the library tree list according to its settings. See *The Library Browser on page 705*.

Advanced Search Dialog

Click the **Advanced Search** button in the Library Browser to refine your search results using a Temporary Filter as

well as create custom filters that can be saved for future use. This dialog cannot be accessed while catalogs are being updated. See *Updating Library Catalogs on page 718*.



1 Saved Filters

A list of all filters, temporary as well as saved, is found here. See Creating Custom Filters, below.

- Click on a filter to select it and edit its search parameters using the options on the right.
- Click the **New** button to create a new filter using the currently selected parameters. In the New Library Filter dialog, type a short, descriptive, unique name for the new filter.
- Click the **Save As** button to create a new filter with search parameters that are identical to the selected filter.
- Click the **Rename** button to rename the currently selected saved filter.
- Click the **Delete** button to delete the currently selected saved filter.
- Click the **Save** button to save any changes made to the selected filter. Filters with unsaved changes are can be identified by an asterisk after their names.
- Click the **Save All** button to save any changes made to all library filters.

2 Names/Keywords

- **Text Contains** - Type the text you would like to use as a search parameter. When you press the ***Enter*** key, it will be added to the Selected Parameters list.
  - Check **Match Whole Word** to match the entire keyword or words with the complete name of an item.
  - Check **Exclude Keywords** to ignore search attribute keywords when searching.
- **Tags** - When you begin typing in the text field, a drop-down list of available Tags will appear below the field and will update as you type. Click on a line item to add it to the Selected Parameters list.
- **In Folder** - When you begin typing in the text field, a drop-down list of folder names that match what you typed will appear below the field and will update as you type. Click on a line item to add to the Selected Parameters list.

3 Attribute Parameters

Select various object attributes to include in your search.

- Check the box beside an option to use it as a search parameter. For material Textures and Plants, a "no change" state allows you to include items in your search regardless of whether they have a particular attribute.
- Click the arrow beside an attribute category to expand it:
  - **Type** - A variety of library item types is listed here.
  - **Style** - A selection of architectural and design styles is listed here.
  - **Manufacturer** - A list of brands with Chief Architect Manufacturer Catalogs is listed here. If **Include Web Results** is toggled on, all available manufacturers are listed; if not, only those actually installed in the Library Browser are listed. See *Manufacturer Catalogs on page 718*.
- Has Texture - Lets you search for materials based on whether they have a texture or are simply solid colors. A "no change" state searches for materials regardless of whether it has a texture. See *About Materials on page 756*.
- **Plant is 3D** - This option lets you search for either 3D plant symbols or 2D plant images. A "no change" state searches for both. See *Plant Tools on page 939*.

4 Exclude Catalogs

Click the **Edit** button to open the Exclude Catalogs dialog, where you can select catalog-level library items to exclude from your search.

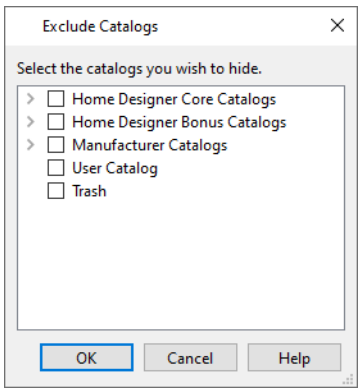
5 Selected Search Parameters

The currently selected parameters are listed here.

- Parameters have icons that indicate which type of data they restrict.
- Click on a parameter from the list.

Exclude Catalogs Dialog

Click the **Edit** button beside **Exclude Catalogs** in the Advanced Search dialog to open this dialog and select library catalogs to exclude from the current Filter, regardless of the active search parameters.



The contents of the tree list in the Folders panel of the Library Browser are listed here. Check the box beside any catalog's name to exclude it from the currently active filter. Line items can also be group-selected. See *Advanced Search Dialog on page 714*, above, and *Shift and Ctrl/⌘ Select on page 187*.

Find in Library



You can find out whether a selected object is saved in the library and if so, where, using the **Find Original in Library** edit tool.

The **Find Original in Library** edit tool also allows you to locate any objects inserted into the selected object as well as any materials or moldings assigned to it. See *Inserted Objects on page 728*.

Find in Library Dialog

The Find in Library dialog opens when you select one or more objects and click the **Find Original in Library** edit button This dialog lists all of the selected objects as well as all objects assigned to and inserted into them.

Highlighted line items are categories that may have multiple components beneath them.

- Check the box beside a line item to find that object in the library.
- Check the box beside a category heading to select all items in that category.

When you click OK, the dialog will close and one of three things will happen:

- If a single line item was selected in the Find in Library dialog was clicked, that item will be selected in the tree list of the Library Browser.
- If the single line item is not found in the library, a message box will inform you of this and give you the option of adding it to the library.
- If multiple line items were selected, the Show in Library Results dialog will open, summarizing the status of each.

Show in Library Results

If multiple line items are selected in the Find in Library dialog, the Show in Library Results dialog will report where, or if, they are found in the library.

Each line item selected in the Find in Library dialog is listed here.

- Click on a line item to select it. Multiple lines can also be selected. See *Shift and Ctrl/⌘ Select on page 187*.
- Click the **Show in Library** button to locate and select the selected line item in the tree list of the Library Browser. Not available if the selected item is “Not Found in Library Browser”, or if multiple line items are selected.
- Click the **Add to Library** button to add the selected line item(s) to the User Catalog in the library.
- Click the **Done** button to close the dialog.

Library Content

The Home Designer library has five categories: Core Catalogs, Home Designer Bonus Catalogs, Manufacturer Catalogs, User Catalog and Trash.

Core Catalogs

The Core Catalogs category contains a wide selection of 3D symbols, images, and materials. If you install the program from USB drive, this library content will also be installed; if you download the software, you will be able to download the Core Catalogs separately, after the program is installed.

When you launch the program for the first time, it will ask if you want to download the Core Catalogs. Click Yes to begin the download. If you click No, you can download at any time by selecting **Library> Install Core Content** from the menu.

Home Designer Bonus Catalogs

Chief Architect regularly posts new library catalogs available for download. Select **Library> Get Additional Content** from the menu to access the bonus catalogs and content.

Most Bonus Catalogs can be purchased for a nominal fee, while others are available free of charge. In addition, some Bonus Catalogs are only available to Chief Architect Support and Software Assurance program members.

Manufacturer Catalogs

A variety of name brand library catalogs is available for download on the Home Designer website with content ranging from materials to fixtures.

Select **Library> Get Additional Content** to access these Manufacturer Catalogs.

As with the Bonus Catalogs, some Manufacturer Catalogs are available free of charge while others can be purchased, and some are available for Support and Software Assurance members only.

Manufacturer Panel

If a selected symbol is from a Manufacturer library catalog, its specification dialog will include the MANUFACTURER panel, which lists contact information. See *Symbol Object Specification Dialogs on page 735*.

Similarly, if a material is from a Manufacturer catalog, the Define Material dialog will have the MANUFACTURER panel. See *Define Material Dialog on page 772*.

View Online Content

You can view a list of the Bonus and Manufacturer Catalogs available for download in the Folders panel of the Library Browser by clicking on **View Online Catalogs**, which is located under these two categories below the installed catalogs.

- Click on a catalog to see its contents in the Folders, Filter Results, and Preview panels.
- To download an online catalog, right-click on it and select Download Catalog from the contextual menu. See *Downloading Library Content on page 719*.
- To hide the catalogs available for download, click on **Hide Online Catalogs** in the Folders panel.

The User Catalog

The User Catalog is the location for items that you add to the library either from a drawing or by importing. See *Adding Library Content on page 722*.

You can create and organize custom library folders and imported items such as symbols, images, backdrops, and materials. See *Organizing the Library on page 723*.

Updating Library Catalogs

The Core Catalogs, Bonus Catalogs, and Manufacturer Catalogs are updated periodically to include new and improved content. The program automatically checks for updates when it is launched and will indicate that updated content is available by displaying the **Update** icon to the right of the Core, Bonus and/or Manufacturer Catalog categories. This icon is also stamped onto the folder for individual Bonus and Manufacturer catalogs with updated content available: .

To update an individual catalog or all catalogs in a category, right-click on its name in the Folders list and select **Update** from the contextual menu. See *Using the Contextual Menu on page 710*.

You can update all of your installed catalogs at once by selecting **Library> Update Library Catalogs** at any time. The program will gather information about the content in each of these three categories, and then download and replace any content that is not up-to-date.

As catalogs are updated, you may see a progress indicator at the bottom of the Library Browser. When the process is finished, the Catalog Update Summary dialog will report which catalogs were updated and the status of each update. See *Download Progress on page 720*.

Library Content Location

All library content aside from your User Catalog is stored in the **System Library Database Folder**. By default, this folder is created in the directory intended for shared application data in your operating system (C:\ProgramData in Windows; /Library/Application Support in macOS).

The Home Designer User Catalog File, User_Library.calib, is saved in the **User Library Folder**, which is located in the Home Designer 2027 Data folder by default. See *Home Designer Data on page 74*.

You can specify a different location for both if you wish in the Preferences dialog. If you choose a removable drive or network location, library slowness may result. See *Folders Panel on page 103*.

If you choose to use a different location for your User Catalog, your existing User Library content as well as your Backdrops, Images, Patterns, and Textures folders will be moved there, as well. It is important that you specify a directory on a hard drive with sufficient space to hold these files.

> Library catalogs are not designed to be shared between program titles or versions. Items designed for use in Home Designer 2027 are not compatible with earlier program versions.

Backing up Custom Content

The best way to back up your custom library content is to export the items in your User Catalog, as this will ensure that the textures used by custom materials or imported symbols are not lost. See *Backing Up Your Files on page 68*.

Exported libraries use the **.calibz** file format: a zipped file type that can include textures and images along with other library data.

To back up your custom library content

1. Launch Home Designer and open a plan file.
2. If the Library Browser is not open, select **View> Library Browser** from the menu.
3. Right-click on a folder or item in the User Catalog.
4. Select **Export Library** from the contextual menu.
5. The Export Library Data dialog is a typical Save dialog. See *Exporting Files on page 68*.

- Notice that the file type in the Save as type field is “Library File with Textures/Images (*.calibz)”.

Downloading Library Content

The Core Catalogs, Home Designer Bonus Catalogs, Manufacturer Catalogs are all available for internet download.

Core Catalogs

When you launch Home Designer for the first time, you will be asked if you want to download the Core Catalogs. Click Yes to begin the download.

If you click No, you can download at any time by selecting **Library> Install Core Content** from the menu.

Bonus and Manufacturer Catalogs

Bonus and Manufacturer Catalogs can be downloaded from www.HomeDesignerSoftware.com. Select **Library> Get Additional Content** to launch your default internet browser to our 3D Library page.

When **Include Web Results** is checked in the Preferences dialog, downloadable content is included in the Library Browser and Select Material/Library Object dialog. See *Library Browser Panel on page 97*.

- In the Filter Results panel, any online content that matches your Filters will be listed. Items that are not downloaded will have the Available Online icon next to their name and display it as a watermark over their thumbnail image.
- In the Folders panel, below the installed catalogs in both the Bonus and Manufacturer Catalog lists, you can click on **View Online Catalogs** to show a list of all catalogs in that category that are available for download. Items that are not downloaded will have the Available Online watermark over their folder in the tree list.
- On the Library panel of the Select Material/Library Object dialog, items that are not downloaded will have the Available Online watermark in the Folders and Filter Results panels, as well. See *Library Materials Panel on page 762*.
- Right-click on one or more Available Online items in any of these locations and select **Download Catalog** from the contextual menu to download it. If you are not signed in to your Chief Architect account, you will be prompted to do so. See *Chief Architect Account on page 30*.

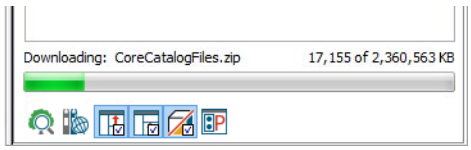
You can also view a list of the Bonus and Manufacturer Catalogs available for download in the Folders panel of the Library Browser by clicking on **View Online Catalogs**, which is located under these two categories below the installed catalogs.

Download Progress

If a Bonus or Manufacturer catalog required a purchase, you may be prompted to wait while the purchase is processed.

When library content is downloading, a green progress bar will display at the bottom of the Library Browser. If you choose to download the Core Catalogs while the library is not open, the Browser will open so the progress indicator can display.

Click on the progress bar to display the name of the current file being downloaded, the total amount of data to be downloaded in KB, and the amount downloaded so far.



Pausing and Resuming

Library downloads can only take place while Home Designer is running. If you close the program while a download is in progress, a dialog will confirm whether you wish to stop the download.

- Click **Stop Download and Close Program** to stop the download and close the program.
- Click **Cancel** to leave the program open and continue downloading.

Most catalogs are composed of a single file. If you stop the download midway, none of the downloaded data will be retained.

The Core Catalogs, on the other hand, contain a large volume of data saved in multiple files. If you close the program and stop the Core Catalogs download midway, only data associated with the file currently being downloaded will be lost. You can resume the download beginning with that file at a later time by selecting **Library> Install Core Content**.

Download Errors

If any problems occur during the library download process, a dialog box will notify you at the end of the download. Click **Retry Download** to repeat the download and correct any errors or click **Cancel** to discard the downloaded catalog.

Importing Library Catalogs

Home Designer library files have two different file extensions: **.calib** and **.calibz**. Both files can include any combination of Home Designer library items; in addition, **.calibz** files are able to save data associated with textures and images. Both file types can be imported into the Home Designer library.

There are several ways to import a **.calib** or **.calibz** file into the program library:

- Double-click on the file in an operating system window while a plan or layout file is open.
- Drag the file from an operating system window and drop it into the Home Designer program window.
- Select **Library> Import Library** from the program menu.

Although multiple versions of Home Designer can be installed on a computer, the operating system will only associate **.calib** and **.calibz** library files with one version. If they are not associated with Home Designer 2027, click the **Associate Files with this Program** button in the Preferences dialog. See *File Management Panel on page 101*.

> Note: Library files cannot be imported if no plan or layout file is open, or when a Materials List window is active.

To import library files into the library

1. Select **Library> Import Library** to display the Import Library Data dialog.
2. Browse to the **.calib** or **.calibz** file(s) that you want to import and either single or group-select the files so that their names display in the **File Name** field.
   - To select a group of files, click on the first one, hold down the ***Shift*** key, then click on another file. The two files plus all files in between are selected.
   - To select multiple files individually, click on one, hold down the ***Ctrl/⌘*** key, then click on additional files. Only the files you click on are selected.
   - To select all files in the directory, click on one and press ***Ctrl/⌘ + A***. Only do this if you wish to import all files in the folder.
3. Click the **Open** button.
4. A progress bar will display, telling you the progress of each library data file as it is imported.
5. Once imported, each file will be listed in and selected in the Library Browser tree list. See *Library Content on page 717*.
   - If the catalog is a Bonus or Manufacturer catalog, it will be added to the corresponding library catalog.
   - Otherwise, the catalog's contents will be added to the User Catalog. The catalog's folder structure will be preserved, and if any duplicate objects are found, you will be notified.

When a **.calibz** file is imported into the program, any images or textures saved in it will be copied into the Home Designer 2027 Data\ Images and Textures folders for backup purposes. The program will only reference these copies if it cannot locate the files in their original locations. See *Home Designer Data on page 74*.

Adding Library Content

In addition to downloading Home Designer Content and importing entire catalogs into the library, you can also add a variety of individual objects to the library.

Add to Library

Nearly any architectural object placed in or imported into a plan or placed from the Library Browser can be added to the User Catalog in the library.

- Select one or more eligible objects in your plan and click the **Add to Library** edit button.
- Check **Add to Library** in the Import 3D Symbol dialog. See *Importing 3D Symbols on page 739*.

A few objects cannot be added to the library: notably text objects, terrain objects, CAD objects, imported pictures, metafiles, and PDF files.

Any object created using a drawing tool in Home Designer will automatically be added to the User Catalog using the name of that tool, whereas a symbol will automatically use the Symbol Name. See *Native Objects vs Symbols on page 726*.

If multiple identical objects are selected when the Add to Library button is clicked, only one instance will be added to the User Catalog.

Once added to the library, objects in the User Catalog can be renamed and edited. See *Renaming Library Items on page 724*.

Using the Contextual Menu

A variety of new content can be added to the User Catalog by right-clicking on it or on a folder within it and selecting **New>** from the contextual menu:

- Backdrops - See *3D Backdrops on page 846*.
- Fill Styles - See *Fill Styles on page 159*.
- Images - See *Images on page 850*.
- Materials - See *Creating Materials on page 767*.
- Plant Image - See *Plant Image Specification Dialog on page 943*.
- 3D Symbols - See *Importing 3D Symbols on page 739*.

See also *Using the Contextual Menu on page 710* and *Adding New Folders on page 723*.

Creating a Customized Library Item

You can customize an existing library item and save your changes for future use by first copying the item into the User Catalog.

To customize a library object

1. Right-click on a library item and select **Copy to User Catalog** from the contextual menu.
2. If the library item is already located in the User Catalog, instead select **Duplicate** from the contextual menu. A copy will be created in the same location as the original.
3. Right-click on the copied item and select **Open Object** from the menu.
4. The item's specification dialog opens, and you can make any changes that you wish to the item.
5. Make any needed changes to the item, then click OK. Your changes will be saved with this item for use in any plan.

Organizing the Library

Library folders and objects can be copied, pasted, moved, and deleted: allowing you to organize your User Catalog to best suit your work style and needs. See *The User Catalog on page 718*.

Selecting Library Items

To select a library object, folder, or category, simply click on it in the Folders tree list. You can also multiple-select library items. See *Shift and Ctrl/⌘ Select on page 187*.

- To select a group of items, click on the first one, hold down the ***Shift*** key, then click on another item. The two items plus all items in between are selected.
- To select multiple items individually, click on one, hold down the ***Ctrl/⌘*** key, then click on additional items. Only the items you click on are selected.

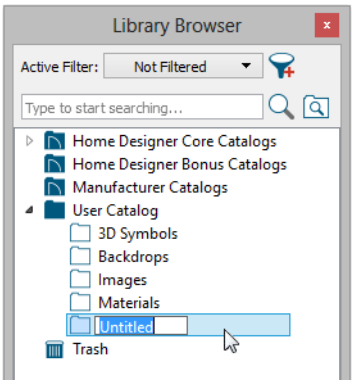
When an object is selected, a thumbnail displays in the Filter Results and Preview panels and basic information about it also displays in the program's Status Bar. See *The Status Bar on page 24*.

A selected library item can be modified in a number of ways to help meet your organizational needs. When multiple items are selected, these options may be limited depending on the specific selection set.

Adding New Folders

New folders can be added to the User Catalog or to any folder located within it. To add a new folder, right-click on User Catalog or one of its sub-folders and select **New> Folder** from the contextual menu. See *Using the Contextual Menu on page 710*.

The new folder is created inside the library item you right-clicked on and is initially named "Untitled". Right-click on it and select **Rename** from the contextual menu, then type a short, descriptive name and press the ***Enter*** key.



Renaming Library Items

Only folders and objects in the User Catalog can be renamed. There are several ways to do this in the tree list:

- Right-click on the item, select **Rename** from the contextual menu, and type a new name.
- Click once on the item, press the ***F2*** key and type a new name.
- Click once on the item, pause for a moment, then click a second time and type a new name. You can change this behavior in the Preferences dialog. See *Library Browser Panel on page 97*.

Library names are case-sensitive and cannot be blank. While you can have more than one library item that uses the same name, it is best to use short, descriptive and unique names.

When an object's name is changed in the User Catalog, its name is also changed in its specification dialog.

Moving Library Items

Folders and objects in the User Catalog can be moved to new locations within the User Catalog. There are several ways to do this:

- Select one or more items in the Folders tree list, then click and drag it to the new location in the list. An icon that follows the mouse pointer indicates when it is over supported and unsupported locations, and any folder able to accept the new content highlights as your mouse pointer moves over it. Release the mouse button to relocate the selection in the highlighted location.
- **Cut** one or more selected items from their current location, right-click on the folder where you want to move them, and **Paste** them there. Cut is found in the selected items' contextual menu while Paste is found in the contextual menu for the destination folder. See *Cut, Copy, and Paste on page 147*.
- Use **Move to Folder**, which is available in the contextual menu for library objects, but not for folders. See *Using the Contextual Menu on page 710*.

Folders and library objects are always organized alphabetically within each hierarchy.

Copying and Linking Library Items

All library folders and objects can be copied and pasted to new locations in the User Catalog using options in their contextual menus. There are two types of copies in the library:

- Independent copies of objects that can then be customized without affecting the original. Both folders and objects can be copied to the User Catalog.
- Linked copies, which are actually representations of the same object shown in different locations in the User Catalog. If one copy is edited, all linked copies are affected. Only library objects can have linked copies: folders cannot.

There are two ways to create independent copies of folders and/or objects:

- **Copy** one or more selected folders and/or objects in their current location, right-click on the User Catalog or the subfolder where you want to copy them, and **Paste** them there. Copy is found in the selected items' contextual menu while Paste is found in the contextual menu for the destination folder. See *Cut, Copy, and Paste on page 147*.
- **Copy to User Catalog** pastes copies of the selected folder(s) and/or object(s) in the User Catalog automatically, without requiring you to choose the location or the Paste command.

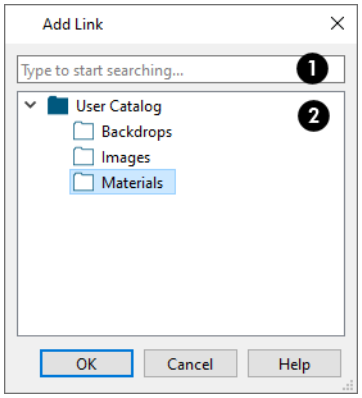
There are also two ways to create linked copies of objects in the User Catalog:

- **Copy** copies a selected object or objects to the system Clipboard. Right-click on the User Catalog or the subfolder where you want to want a linked copy and select **Paste Link** from the contextual menu.

- **Move to Folder** allows you to select multiple folders to list a selected object or objects in.

Add Link Dialog

The Add Link dialog allows you to specify which User Catalog folder(s) linked copies of a selected object or group of objects is listed in.



1 Search

If your User Catalog contains many folder or subfolders, you can type in this field to search for a particular folder name. A drop-down list of search results will appear below the field that updates as you type: click on an item in that list to select it.

2 User Catalog Folders

The names of all folders and subfolders in the User Catalog are listed here.

- Click on a folder name to select it, then click OK.
- Multiple folders can also be selected. See *Shift and Ctrl/⌘ Select on page 187*.
- The OK button will not be active if the selected library item is already linked to the folder selected here.

Deleting Library Items

The five installed library categories: Core Catalogs, Home Designer Bonus Catalogs, Manufacturer Catalogs, User Catalog, and Trash cannot be deleted.

Catalog level folders in all categories can be deleted; however, individual subfolders and objects can only be deleted out of the User Catalog.

Items in the library that are eligible for deletion can be deleted in either of two ways:

- Right-click on it and choose **Delete** from the contextual menu.
- Select it and press the **Delete** key.

When items from the User Catalog are deleted, they are moved to the Library Browser Trash . Items in the Trash can be retrieved by right-clicking on them and selecting **Restore** from the contextual menu. To return an item to a particular folder in the User Catalog, instead select **Cut**. Then, right-click on the destination folder and select **Paste**.

To empty the Trash, right-click on it and select **Empty Trash** from the contextual menu.

Depending on how much content is in the Trash, emptying it can be time consuming. You can click the **Cancel** button to end the process if you wish.

> The Empty Trash command is both immediate and permanent. It cannot be undone, so use care when using it. You should back up all your library files regularly. See *Backing up Custom Content on page 719*.

When content is deleted from the User Catalog or when the Trash is emptied, data associated with that content may remain in the library database. If you see the **Space Optimization Available** icon on the User Catalog folder or Trash in the Library Browser, right-click to select **Optimize Space** from the contextual menu.

Editing Library Items

The Core, Manufacturer, and Bonus Catalogs and the objects within them cannot be edited. Library objects can, however, be customized to suit your design needs. There are three approaches to doing so:

- Select an object in the User Catalog, edit it using any of the options in its contextual menu, and your changes will be reflected when you next place this library object in a drawing. See *Using the Contextual Menu on page 710*.
- Place an object in a drawing and then edit it using the various edit tools available for it. This will not affect the original object still saved in the library.
- Place an object in a drawing, edit it using the available edit tools, and then add it back to the library for future use. This will not replace the original object still saved in the library. See *Add to Library on page 722*.

> To customize an object in the Core, Manufacturer, or Bonus Catalog, right-click on it and select Copy to User Catalog from the contextual menu. See *Creating a Customized Library Item on page 722*.

Native Objects vs Symbols

In Home Designer, objects created using the program's standard tools, such as the **Door Tools** and **Cabinet Tools**, are referred to as native objects.

On the other hand, objects placed from the library, such as fixtures and furnishings, are symbols. Symbols are typically more limited than native objects in how they can be edited.

In addition to the symbols available in the library, you can import additional symbols into the program from 3D **.dxf**, **.dwg, .obj**, **.3ds**, **.skp**, or **.dae** files. See *Importing 3D Symbols on page 739*.

Any changes made to objects like fixtures and furniture will not be reflected in their Materials List Description, although they may be seen in other columns, such as Size. See *Materials Lists on page 954*.

Using the Edit Tools

The specification dialog for an individual symbol, Rich Text object, Callout, Marker, Elevation Point, image, or plant image in the User Catalog can be edited from the Library Browser Directory Pane. Right-click on the item and select **Open Object** from the contextual menu. See *Specification Dialogs on page 20*.

Individual or multiple group-selected materials can be edited by right-clicking and selecting **Open Object** as well. See *Define Material Dialog on page 772*.

If an object in the User Catalog is edited, you may want to update its library preview by selecting **Regenerate Thumbnail** from its contextual menu. See *Using the Contextual Menu on page 710*.

Editing Built-in Fixtures and Appliances

A fixture installed into the front of a cabinet becomes a cabinet face item, like a door or drawer. It can be resized or deleted like other face items in the Cabinet Specification dialog. See *Front Panel on page 484*.

Exporting Library Catalogs

Exporting library files allows you to:

- Back up your custom library content.
- Transfer library content between computers.
- Share custom library content with colleagues.

Exporting is often preferable to simply copying library files because it allows you to include images and textures in the exported library.

To export content from the library

1. Locate an object, folder, or catalog that you want to export, right click on it, and select **Export Library**.
2. In the Export Library Data dialog:
   - Choose the appropriate **Save in:** location for your exported library file.
   - Type a short, descriptive name for your library file in the **File Name** field.
   - Click the **Save as type:** drop-down list and select whether or not you want the library to include Textures/Images.

     If any of the items being exported are images or use textures, be sure to select the .calibz file type.

   - Click **Save**.
3. Your exported library file can now be copied to a network location or storage device in an operating system window.

Placing Library Objects

Library objects are subject to placement restrictions based upon typical real-life placement. Most library objects require sufficient free space at the location where they are placed, for example, and some library objects have additional requirements. Library windows and doors, for example, must be placed in a wall just like standard windows and doors, and some fixtures are designed to be placed in cabinets.

There are three main categories of items available in the Library Browser:

- Stand-alone objects that can be placed directly into a plan. Examples include cabinet modules, fixtures and furnishings, and images.
- 3D objects designed to be inserted into another 3D object. Examples include cabinet fixtures, windows and doors. Some of these items, such as cabinet doors, railing balusters, and fence panels, can be inserted into another object or placed as stand-alone objects.
- Materials fill styles, and molding profiles, which cannot stand alone and must be assigned or applied to another object.

If the Replace from Library icon appears by your pointer, you can click on the object your pointer is over and replace it with the one currently selected in the Library Browser. See *Replace From Library on page 730*.

If a warning message displays when placing a library object, it means that the object cannot be placed at the point where you clicked and will indicate where the object can be placed.

Stand-Alone Objects

Most library categories contain objects that can be selected in the Library Browser and placed directly in a 2D or 3D view.

- Most stand-alone objects are designed to rest on the floor or terrain.
- Some objects will rest on top of a cabinet or countertop, shelf, furniture, or roof plane object if one is located at the point where they are first placed.
- A few objects, notably some light fixtures, will mount on the bottom of a wall cabinet or on the ceiling.
- In addition, some objects will attach to a wall if one is nearby.

To place a stand-alone library object

1. Click on an object in the Folders tree list or Filter Results list in the Library Browser to select it for placement. See *The Library Browser on page 705*.
2. Move your mouse pointer into the view area and notice that it displays an icon indicating the type of object selected instead of an arrow.
3. Click to place the selected object at that location.
4. Continue clicking to place as many instances of the selected object as needed. When you are finished, click the **Select Objects** button.

Once a stand-alone object has been placed, it can be edited in a variety of ways. See *Editing Library Items on page 726*.

Inserted Objects

Some objects cannot stand alone and must be placed into other objects in a plan. For example, doors and windows must be inserted into a wall, while some appliances and plumbing fixtures are designed be placed inside a base cabinet and electrical objects are often mounted on cabinets or structural components like walls or ceilings. See *Doors on page 397*, *Windows on page 426*, *Cabinets on page 461*, and *Electrical on page 499*.

With the exceptions of doors, windows, electrical, and skylights, an inserted library object can only display in a 2D or 3D view if the object that contains it is set to display. This is the case even if the inserted object's layer is turned on. See *Displaying Symbol Objects on page 733*.

To insert a library object

1. Click on an item in the Folders tree list or Filter Results list of the Library Browser to select it for placement. See *The Library Browser on page 705*.
2. Move your pointer into the drawing area.
3. Click on the object into which you wish to insert the selected library item. If the selected library item is designed to be inserted into that type of object, it will be placed into it.
4. Continue clicking on other objects to place as many instances of the selected item as needed. When you are finished, click the **Select Objects** button.

When an object has been inserted into another object, it can be replaced directly from the library. See *Replace From Library on page 730*.

If you try to insert an object into another object that is on a locked layer, nothing will be created. See *Object Creation and Layers on page 146*.

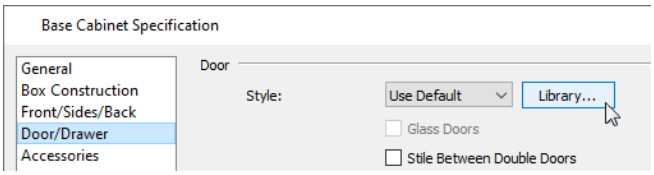
Assigned Items

Some library items, such as fill styles, materials and moldings, are not objects in themselves but can be applied to objects in a variety of ways.

- Using the specification dialog of the containing object. See *Select Library Object Dialog on page 729*.
- By selecting the item in the library and then clicking on the containing object.
- Fill styles, materials and moldings can be assigned to objects directly from the library in 3D views by selecting the library item and then clicking on an object. See *Eyedropper and Painter Tools on page 216* and *Replace From Library on page 730*.

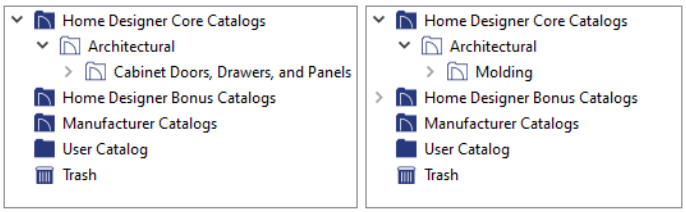
Select Library Object Dialog

The Select Library Object dialog is a modal version of the Library Browser that is accessible from many object specification dialogs. See *Specification Dialogs on page 20*.



This dialog also opens when you select the **Fill Style Painter** tool. See *Painter Tools on page 217*.

The Select Library Object dialog only displays categories of items that are related to the object component being edited. For example, if this dialog is accessed from the Door/Drawer panel of the Cabinet Specification dialog, only cabinet door and drawer symbols will be listed. If it is accessed from the Moldings panel, only moldings will be listed.



From the Door/Drawer panel | From the Moldings panel

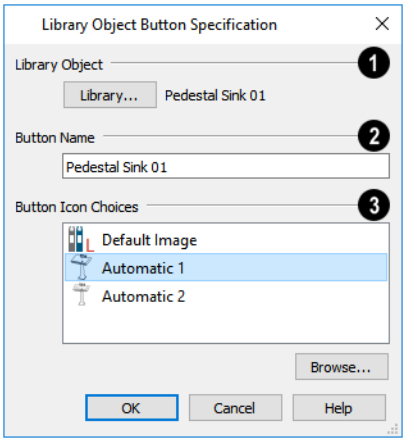
The Select Library Object dialog is similar to the Library Materials panel of the Select Material dialog. See *Select Material/Library Object Dialog on page 762*.

Place Library Object Button

The **Place Library Object** button can be added to your toolbar and used for quick access and placement of frequently used library items.

If the **Place Library Object** button has not yet been assigned a library object, click it once to open the Library Object Button Specification dialog.

Double-click a **Place Library Object** button that has been assigned a library object to open the Library Object Button Specification dialog.



1 Library Object

Click the **Library** button to open the Select Library Object dialog and assign a library object to the button. If a library object has already been assigned, click this button to assign a new library object. See *Select Library Object Dialog on page 729*.

2 Button Name

When a library object has been selected, type a **Button Name** in the text field.

3 Button Icon Choices

When a library object has been selected, assign a **Button Icon**. Choose from two automatically generated button icons or click **Browse** to browse your computer for a different icon.

Up to 398 **Place Library Object** buttons can be added to the same toolbar, each assigned a different object.

The library object assigned to the **Place Library Object** button is actually saved with that particular button. If you move or delete the library item from the library, the button will continue to function.

Replace From Library

There are two different ways to replace an architectural object in a plan with another object from the library.

A variety of free-standing objects, inserted objects, the components of Architectural and Ganged Electrical Blocks, and Molding Profiles can be replaced by a different item from the library with a single click. This approach is particularly effective in 3D views, where the results can immediately be seen. See *Inserted Objects on page 728*.

To replace an inserted object

1. Open the Library Browser, browse to an architectural object of a type similar to the one you wish to replace, and click on it to select it.
2. Click the **Replace from Library** edit button.
   - The Replace from Library edit button is not available for some object types, notably Molding Profiles. The Replace from Library Scoping Mode buttons, however, are.
3. On the Edit Toolbar, select a Replace from Library Scoping Mode:
   - **Component Mode** is the default mode and replaces a single instance of a molding or an inserted object on the target object, Architectural Block, or Ganged Electrical Block. Most object types have a list of components in their

specification dialog, on the MATERIALS and COMPONENTS panels. See *Materials Panel on page 760*, *Object Components on page 966*, and *Architectural Blocks on page 744*.

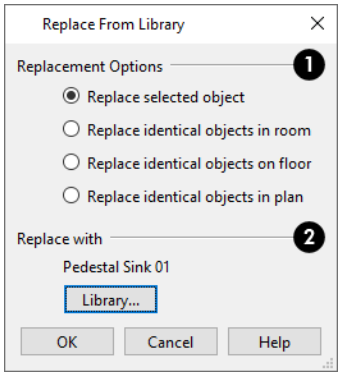
- **Object Mode** replaces all instances of an item inserted into the target object.
- **Room Mode** replaces all instances of an item inserted into objects in the room where the target object is located.
- **Floor Mode** replaces all instances of an item inserted into objects on the floor where the target object is located.
- **Plan Mode** replaces all instances of an item inserted into objects in the entire plan.
- **Toggle Library Replacement Mode** allows you to place a free-standing object instead of replacing anything.

4. Move the mouse pointer into the view window. The Replace from Library icon will display near the mouse pointer when it passes over an object that can be replaced by the selection from the library.
5. Click once to replace the object in the plan as well as to any other identical objects, depending on which Painter Scoping Mode is active, with the selected object from the library.

Some types of inserted objects - notably, plants assigned to Garden Beds, cabinet doors and drawers, and doors - can also be replaced in this manner in plan view provided that the Alternate Edit Behavior is not active.

> In the Windows version of the program, you can temporarily override this replacement behavior in plan view by holding down the ***Alt*** key. A free-standing object will be created if there is space for it instead of an inserted object being replaced.

The **Replace From Library** edit button is available for nearly any stand-alone object that can be added to the library and can be used in 2D and 3D views. Click this button to open the Replace From Library dialog and replace the selected object, and others like it if you choose, with an object of the same type from the library.



1 Replacement Options

- **Replace Selected Object** replaces only the currently selected object.
- **Replace Identical Objects in Room** replaces all objects that are in the same room as, and are identical to, the currently selected object. Not available for doors or windows.
- **Replace Identical Objects on Floor** replaces all objects that are on the same floor as, and are identical to, the currently selected object.
- **Replace Identical Objects in Plan** replaces all objects throughout the entire plan that are identical to, the currently selected object.

2 Replace With

Click the **Library** button to open the Select Library Object dialog and select an object to use as a replacement. The name of the object that is currently selected as a replacement displays above.

Replace From Library  cannot be used to replace a selected cabinet with a cabinet of a larger size. In addition, it is not available for backdrops and items assigned to other objects, such as materials.

Symbol Objects

Chapter 30

Symbol objects play a variety of important roles in Home Designer.

Home Designer provides a complete set of architectural tools for creating highly customized designs, as well as a large selection of objects in the Library Browser that can be used to add more detail to a plan.

In addition, if you don't find precisely what you need, you can either import symbols from third party sources or create your own symbols in Home Designer. See *Importing 3D Symbols on page 739*.

Custom symbols can also be edited and added to the library. See *The Library on page 705*.

Displaying Symbol Objects

The display options available for symbol objects depend on the type of object in question, as well as the view.

If the display of an object is turned off in a 2D or 3D view, any objects inserted into it will not display in that view, either - even if the inserted object's layer is turned on. See *Inserted Objects on page 728*.

In Plan View

All symbol objects except hardware applied to doors or cabinets can display in plan view. Symbol objects are represented in plan view by 2D symbols that resemble the size and shape of the object when viewed from above.

As with other architectural objects, the display of symbol objects is controlled by layer in the Layer Display Options dialog. Each category of objects has its own layer. See *Layer Display Options Dialog on page 154*.

Like other objects, each symbol object is placed in a Drawing Group that affects whether it displays in front of or behind other objects. You can modify a selected symbol's place in the drawing order by clicking the **View Drawing Group Edit Tools** edit button. See *Drawing Group Edit Tools on page 156*.

Symbol Object Labels

Symbol objects, including those in Architectural Blocks, can display labels in plan views when the appropriate layer is set to display in the Layer Display Options dialog. Fixture labels, for example, are located on the "Fixtures, Labels" layer. See *Object Labels on page 394*.

You can assign a custom label to a symbol object in its specification dialog. See *Label Panel on page 395*.

In 3D Views

All symbol objects can display in 3D views when their layers are turned on.

In the Materials List

Most objects placed from the library are counted in the Materials List. These architectural objects have a Components panel in their specification dialog that lets you control how that object displays in the Materials List. See *Components Panel on page 967*.

Note: Although the size and materials of many library objects can be edited, these changes are not reflected in the Materials List. See *Materials Lists on page 954*.

Editing Symbol Objects

Symbol objects can be selected and edited much like other objects in the program. A symbol's category determines exactly what editing options are available; however, most symbols can be edited using the edit handles, edit toolbar, and specification dialog. See *Editing Objects on page 179*.

Symbols have some additional options that allow you to control how the symbol behaves when it is placed, selected, moved and resized.

Stand-alone library symbols placed in a plan can be selected individually or as a group, like other objects in Home Designer. To select a symbol object inserted into the top of a cabinet, select that cabinet and click the **Select Next Object** edit button. See *Selecting Objects on page 183*.

Once selected, a library object can be edited in a variety of ways using dimensions, the edit handles, the Edit Toolbar buttons and its specification dialog. See *Symbol Object Specification Dialogs on page 735*.

A selected library object placed in a plan will have a variety of edit tools available. See *The Edit Toolbar on page 122*.

Native Objects vs Symbols

In Home Designer, objects created using the program's standard tools, such as the **Door Tools** and **Cabinet Tools**, are referred to as native objects.

On the other hand, objects placed from the library, such as fixtures and furnishings, are symbols. Symbols are typically more limited than native objects in how they can be edited.

In addition to the symbols available in the library, you can import additional symbols into the program from 3D **.dxf**, **.dwg, .obj**, **.3ds**, **.skp**, or **.dae** files. See *Importing 3D Symbols on page 739*.

Any changes made to objects like fixtures and furniture will not be reflected in their Materials List Description, although they may be seen in other columns, such as Size. See *Materials Lists on page 954*.

Using Edit Handles

Most free-standing library symbols are box-based objects and can be edited as such once placed in a drawing. See *Editing Box-Based Objects on page 199*. Depending on the type of view and the surface selected, the edit handles a symbol displays will vary.

When a typical symbol is selected in plan view or on the top surface in a 3D view, up to ten edit handles display. They are the Move handle at the center, the Rotate handle just outside the front indicator (a V) and a Resize handle on each edge and at each corner. In plan view, symbol object labels also have a small square Move edit handle when they are set to display.

When a symbol is selected on a side in a cross section/elevation or 3D view, it displays six edit handles: the Move handle, a Rotate handle, and a Resize handle on each edge. See *Selected Side on page 185*.

When a free-standing symbol is selected on its side and rotated, you will be prompted to choose whether to update its plan view symbol to reflect its new orientation, as viewed from above. See *In Plan View on page 733*.

Symbols cannot be concentrically resized, even when the **Concentric** edit behavior is enabled. See *Defaults, Preferences, and Edit Behaviors on page 179*.

Fixtures and furniture placed in a plan are subject to bumping/pushing behavior when moved. See *Bumping/Pushing on page 167*.

Editing Built-in Fixtures and Appliances

A fixture symbol inserted into the top of a cabinet can be selected by clicking on it, then clicking the **Select Next Object** edit tool. Once selected, the fixture can be moved, rotated, and resized using its edit handles. See *Inserted Objects on page 728* and *Select Next Object on page 184*.

A fixture installed into the front of a cabinet becomes a cabinet face item, like a door or drawer. It can be resized or deleted like other face items in the Cabinet Specification dialog. See *Front Panel on page 484*.

Symbol Object Specification Dialogs

Select an object and click the **Open Object** edit button to open that object's Specification dialog. This dialog can also be opened when multiple symbol objects are selected as long as the objects are of the same type.

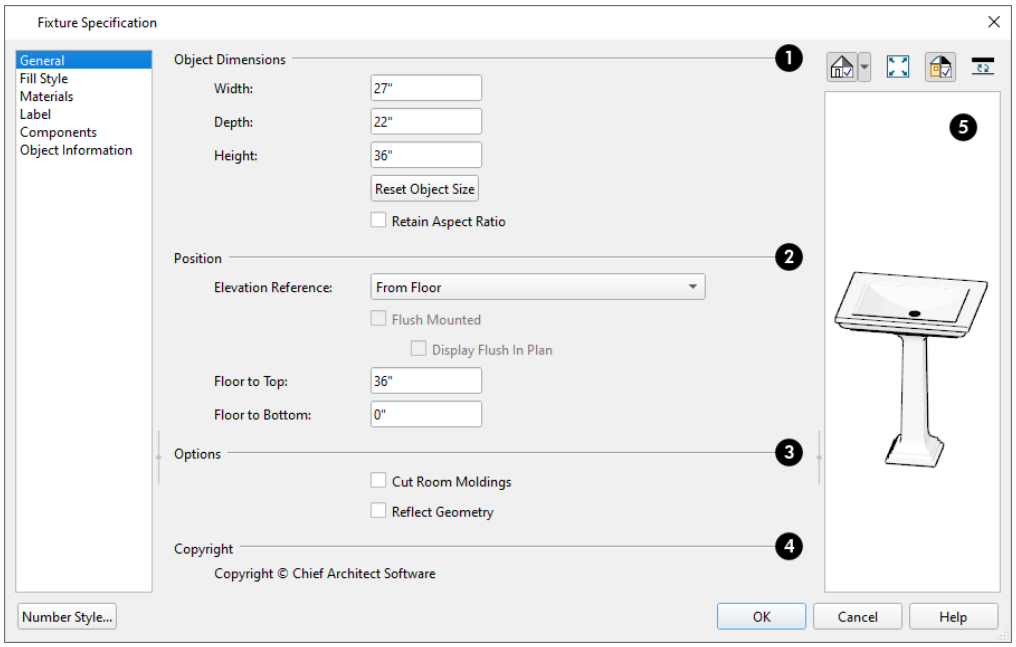
This dialog can also be accessed by right-clicking on an object in the library User Catalog and selecting **Open Object**. Editing an object in the library changes does not affect any instances of it already placed in a plan. See *Editing Library Items on page 726*.

The settings in the Hardware Orientation dialog for cabinet hardware are also found on the GENERAL panel of this dialog. See *Cabinet Hardware and Moldings on page 477*.

The names and settings in these dialogs vary and are determined by the type of object being edited:

- Electrical Service Specification
- Fixture Specification
- Furniture Specification
- Geometric Shape Specification
- Hardware Specification
- Millwork Specification
- 3D Plant Specification
- Sprinkler Specification

General Panel



1 Object Dimensions

These values describe the total size of the selected object's bounding box. For some objects, such as those that insert into cabinets or have special clearance requirements, the bounding box will not match the symbol's geometry.

- Specify the total **Width**, **Depth**, and **Height** of the object's bounding box.
- Click the **Reset Object Size** button to reset the original Width, Depth, and Height values.
- When **Retain Aspect Ratio** is unchecked, the Width, Depth, and Height can be edited independent of one another, potentially changing the object's shape. Check this box to maintain the ratio between these settings when the object is resized in this dialog. This box does not affect editing performed outside this dialog and is an action rather than a state: the next time you open this dialog, it will be unchecked.

2 Position

- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. The "From Ceiling" and "From Roof" options also affect the default Drawing Group of a selected free-standing symbol. Not available in the Electrical Service Specification or Hardware Orientation dialog. See *Elevation References on page 20*.
  - When **Flush Mounted** is unchecked, the symbol hangs straight down from the ceiling. When checked, it is instead oriented square to the pitch of the ceiling. Only available when "From Ceiling", "From Roof", or "From Roof Surface" is the selected Elevation Reference.
  - When Flush Mounted is checked, you can also check **Display Flush in Plan** to display the symbol's 2D symbol as though it were rotated to match the pitch of the referenced ceiling or roof in plan view.
  - Specify the height **to Top**, measured from the selected Elevation Reference to the top of the object.
  - Specify the height **to Bottom**, measured from the selected Elevation Reference to the bottom of the object.
- The options available for Electrical objects differ from other symbol objects, and vary depending on where the selected object is set to be mounted:

- For Ceiling Mounted objects and those set to Mount Under Wall Cabinet, specify the **Offset from Ceiling**. A negative value recesses the selected object into the surface it is mounted on.
- For Floor Mounted objects, specify the **Offset from Floor**.
- For objects set to Sits on Cabinet or Table, specify the **Offset from Surface**.
- For Wall Mounted and Cabinet Side Mounted objects, specify the **Height to Center**, measured from the object's center to the floor or terrain.
- For Wall Mounted and Cabinet Side Mounted objects, you can also specify the symbol's horizontal **Distance from Wall** or **Distance from Cabinet**. A negative value recesses the object into the surface it is mounted on.



You can specify whether a selected Fixture, Furniture, or Electrical symbol mounts to a structural component or cabinet on the Options panel of this dialog. See *Symbol Object Specification Dialogs on page 735*, below.

3 Options

- When **Suppress Adjacent Room Moldings** is checked, room moldings do not generate on walls where the selected object touches them. When it is unchecked, room moldings generate through the object. Not available for Sprinklers.
- Check **Reflect Geometry** to reverse the object's appearance, so that features on its left are positioned on its right, and vice versa. This turns a right-hand refrigerator, for example, into a left-hand refrigerator. This option has no effect on objects that are symmetrical.
- The **Sprinkler Settings** are only available if the selected object is a sprinkler. See *Sprinkler Tools on page 946*.
  - Specify the **Spray Angle**, which is the angle within which the sprinkler sprays. An angle of 360° forms a complete circle.
  - Specify the **Spray Radius**, which is the distance from the sprinkler head that the spray reaches.

4 Copyright

If the selected object has a copyright, information about it displays here.

5 Preview

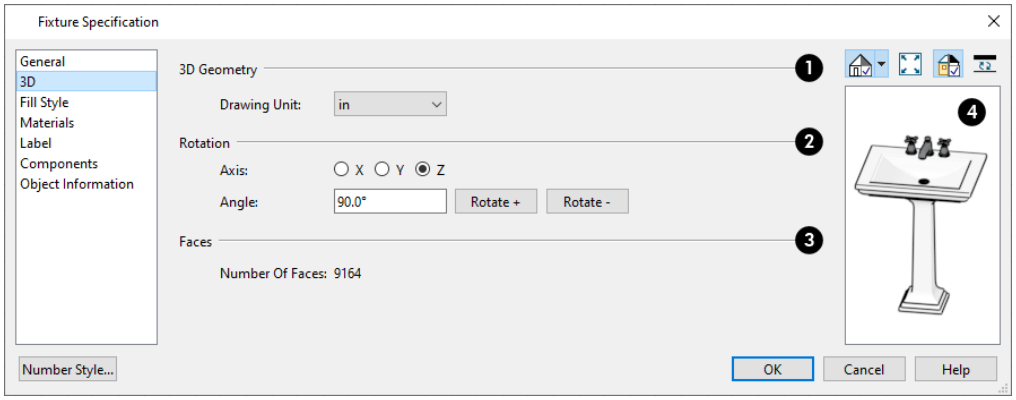
A preview of the selected library object displays here and updates with changes. If the selected symbol is inserted into another object, such as an appliance in a cabinet, the parent object will also display. See *Dialog Preview Panes on page 21*.

Light Data Panel

The Light Data panel is only available for Electrical symbol objects and Added Lights. The settings on this panel allow you to control the attributes of the light source(s) associated with the selected object. See *Light Data Panel on page 508*.

3D Panel

The options on the 3D panel primarily affect the symbol's appearance in 3D views. This panel is only available when a symbol is in the process of being imported. See *Importing 3D Symbols on page 739*.



1 3D Geometry

- Select the **Drawing Unit** that was used to create the symbol. If any units other than inches or mm are selected, the program will convert the data into units appropriate for Home Designer. Only available when a symbol is being imported. To apply a change to this setting, you must also click the Browse button and reload the symbol data from the original file.

> Note: SKP files are always imported using inches, regardless of the default units used in the plan file.

- Check **Reflect Geometry** to reverse the object's appearance, so that features on its left are positioned on its right, and vice versa. This turns a right-hand refrigerator, for example, into a left-hand refrigerator. This option has no effect on objects that are symmetrical.

2 Rotation

These settings allow you to rotate the selected symbol(s) about the X, Y, and Z axes. Note that rotating a symbol will affect the location of its top, bottom, front, and /or back - and thus the location of its default origin. It may affect the size of the bounding box, as well; however, it does not affect the bounding box's orientation. See *Editing Symbol Objects on page 734*.

- Select the **X**, **Y**, or **Z Axis** that you wish to rotate the symbol about.
- Specify the **Angle** to rotate the symbol in the text field. An angle of 90° is set by default.
- Click the **Rotate +** button to rotate the symbol around the selected axis in a clockwise direction.
- Click the **Rotate -** button to rotate the symbol around the selected axis in a counterclockwise direction.

3 Faces

- The **Number Of Faces** that a selected symbol has displays here for reference. When multiple symbols are being imported, nothing displays. Although there is no limit to the number of faces, large numbers can increase rendering time significantly.

4 Preview

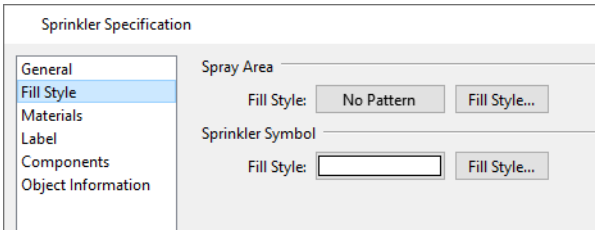
A preview of the symbol's appearance displays here and updates as changes are made to the settings in this dialog. When multiple symbols are selected, the most recently selected symbol displays. See *Dialog Preview Panes on page 21*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected symbol object in plan view, and are found in a variety of dialogs throughout the program. See *Fill Style Panel and Dialogs on page 161*.

This panel is available for most types of symbol objects. One exception, however, is Window Symbols from the Library.

Sprinklers can have more than one fill style. As such, the FILL STYLE panel in the Sprinkler Specification dialog does not have settings for a single fill style: instead, it lets you access the Fill Style Specification dialog for each of the selected object's possible fill styles. See *Displaying Sprinklers on page 946*.



MATERIALS PANEL

The MATERIALS panel allows you to assign materials to the symbol's components and is similar to the MATERIALS panel in many specification dialogs. See *Materials Panel on page 760*.

If the selected symbol is in the process of being imported, bear in mind that **.dxf/.dwg** files do not include material information, so the symbol's components will not initially have materials assigned to them. See *3D Symbols and Materials on page 741*.

In the Symbol Object Specification dialogs only, the names of the Components listed here can be customized: simply click on the Name of a selected component and type a short, descriptive name that better meets your needs. These names are not used elsewhere in the program. See *Symbol Object Specification Dialogs on page 735*.

LABEL PANEL

A variety of library objects can display labels in plan view. Labels use the Text Style assigned to the layer they are on. See *Symbol Object Labels on page 733*.

For information about the settings on this panel, see *Label Panel on page 395*.

COMPONENTS PANEL

The information entered on the COMPONENTS panel can be used in the Materials List. See *Components Panel on page 967*.

OBJECT INFORMATION PANEL

The information entered on the OBJECT INFORMATION panel can be used in the Materials List. See *Object Information Panel on page 968*.

MANUFACTURER PANEL

The MANUFACTURER panel provides contact information for the selected object's manufacturer. Only available for symbols from Manufacturer library catalogs. See *Manufacturer Catalogs on page 718*.

Importing 3D Symbols

Home Designer supports the import of 3D surface and 3D solid objects saved in **.dwg**, **.dxf**, **.3ds**, **.obj**, **.stl**, **.dae**, and

.skp formats. See *3D Data Import Requirements on page 740*.

To import a symbol object, select **File> Import> Import 3D Symbol**  .

Home Designer supports the import of 3D surface and 3D solid objects saved in **.dxf**, **.dwg**, **.obj**, **.3ds**, **.stl**, **.skp** and **.dae** file formats. When imported, these symbols are treated as stand-alone fixtures.

The Import 3D Symbol File dialog, which opens first, is a typical Open File dialog in which multiple files can be group-selected for import. See *Importing Files on page 64*.

For most file types, there are three ways to import a 3D symbol into Home Designer:

- By selecting **File> Import> Import 3D Symbol** to import into the current plan.
- By dragging and dropping the file from an operating system window into plan view to import into the current plan.
- By selecting **New>3D Symbol** from the contextual menu in the Library Browser to import it into the User Catalog. See *Using the Contextual Menu on page 710*.

3D **.dxf/.dwg** files can only be imported by selecting **File> Import> Import 3D Symbol**.

To drag and drop a 3D symbol file

1. Open the plan in which you would like to import a 3D symbol and remain in plan view.
2. Open an operating system window in front of the Home Designer program window.
3. Resize and position the window so that the Home Designer program window can be seen behind it.
4. Click on the desired **.3ds**, **.obj .stl**, **.dae**, or **.skp** file and drag it into the Home Designer program window.
5. When your cursor changes to a +, click in the drawing area to place as many copies of the symbol as desired. When you are finished, select a different tool.



If the symbol you are importing has a high surface count, it may impact program performance. When this is a possibility, the program will warn you and present you with an option to cancel the import operation.

3D Data Import Requirements

Importing a symbol that can be used by Home Designer is a relatively simple process that begins with previously created 3D data. This 3D data often comes from a program other than Home Designer. If you use another 3D modeling program to create the 3D data, be aware of the following requirements before attempting to create symbols.



Chief Architect does not provide support for any third party software.

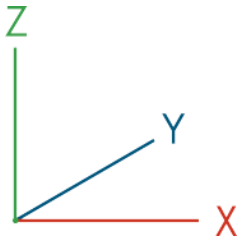
There are a number of requirements that must be met before any 3D data can be used to create a symbol in Home Designer:

- The 3D data must be stored in a standard Drawing Exchange File (**.dxf**), AutoCAD® Drawing (**.dwg**), object (**.obj**), 3D Studio® Mesh (**.3ds**), stereolithography (**.stl**), COLLADA (**.dae**), or SketchUp version 2021 and prior (**.skp**) file format. If you have 3D data in another format, you must convert it into one these formats first.
- Geometry and material information stored in **.3ds** files are imported; cameras and lights are not.
- The 3D model must be composed of 3D DWG or 3DSOLID solid entities, or face data. Faces are typically referred to as 3D faces, polygonal faces, or poly meshes. Other types of entities such as lines, curves, circles, polylines, and free form surfaces can exist in the file but are not imported when the symbol is created. This is true for all (**.dxf/.dwg/.obj/.3ds/.skp**) file types.

- The face data should be assigned to different layers so that you can map them to the correct materials when viewing them in 3D. It is helpful to name your layers using a convention that identifies that materials should be assigned to each sub-component.
- Pay attention to the origin and orientation of the 3D data when designing symbols. Home Designer allows some adjustment when creating the symbol, but it is easier to build the 3D data correctly before importing it into Home Designer. For more information about defining the origin, see *Editing Symbol Objects on page 734*.
- If a symbol with faces that have more than four vertices is imported, the faces are truncated, resulting in an object that appears to have holes. The best remedy is to re-export the model from the original application using only triangular or quadrilateral faces.
- Home Designer does not support grouped objects in symbols imported from **.3ds** files.

SURFACE NORMALS

If you use third party software to create a **.dxf/.dwg/.obj/.3ds./skp** file that will be imported as a symbol, you should be familiar with the concept of surface normals.



A surface normal is a vector that is perpendicular to the plane of a surface. This vector points in one direction, determined by the way the face is drawn.

If a face is drawn clockwise, the surface normals are directed outward; if a face is drawn counter-clockwise, the surface normals point inward. Home Designer assumes that the face on the positive side of the normal vector is the outside face.

Many objects can be drawn using only one side of each face. A cube is a good example: the inside of a cube is not visible, so it is not necessary to create its inside faces. When inside faces are not calculated, 3D views in Home Designer can generate more quickly.

3D Symbols and Materials

When a symbol is imported into Home Designer, material definitions may be included with it. Whether and how material information is included depends on the symbol's file format. See *About Materials on page 756*.

DXF/DWG and STL Files

.dxf/**.dwg** and **.stl** files do not include information about material definitions. When imported, default materials for interior fixtures will be assigned.

OBJ Files

Material definitions for most **.obj** files are saved in a separate file with the **.mtl** file extension. If such a file exists, the materials associated with the **.obj** file display in the list on the left side of the MATERIALS panel of its specification dialog.

If Home Designer does not receive material definition information in an accompanying **.mtl** file, default material properties are assigned.

Material definitions for **.obj** files can also include texture information in the form of image files (**.jpg**, **.png**, etc).

In order to properly import an **.obj** file, Home Designer needs the **.obj** file, the **.mtl** file, and any referenced texture files. If a texture file is not available, the material it is associated with is created without a texture.

The material definitions associated with an imported **.obj** symbol are not available for use by other objects in Home Designer until that symbol has been placed into a plan. The associated texture files are then copied to the user's Textures folder. See *Home Designer Data on page 74*.

3DS and DAE Files

Material definitions for **.3ds** and **.dae** files refer to texture information in separate image files.

In order to properly import a **.3ds** and **.dae** file, Home Designer needs these referenced image files. If a texture file is not available, the material it is associated with will be created without it. The associated texture files are copied to the user's Textures folder.

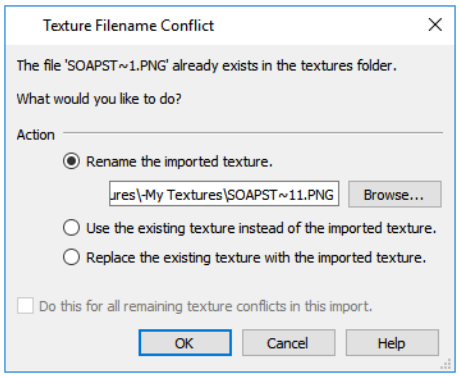
SKP Files

The textures associated with a **.skp** file are saved in the file. After you import a symbol and either place it in a plan or add it to the Library, these textures are saved in the user's Textures folder.

Home Designer does not support deformed textures. If a texture associated with a **.skp** file is deformed, it will be imported without the deformations.

Texture Filename Conflict

If a texture of the same name already exists in the plan when an **.obj**, **.3ds**, or **.skp** file is imported, the Texture Filename Conflict dialog displays.



- Select **Rename the imported texture**, then click the **Browse** button to create a copy of the texture's image file with a new name that you specify.
- Select **Use the existing texture instead of the imported texture** to keep the existing texture.
- Select **Replace the existing texture with the imported texture** to replace the texture already present in the plan with the new, imported one.
- Check **Do this for all remaining textures in this object** to use the same selection for all textures with filename conflicts associated with this symbol.

Exporting a 3D Model

The entire 3D model, or any part that you choose, can be exported from Home Designer into either of two formats:

- *DAE Format on page 743*
- *STL Format on page 743*

To export a 3D model

1. A camera view or overview must be active. See *Types of 3D Views on page 779*.
2. Make sure that everything that you want to export is set to display in the current view, and everything you do not want to export is not set to display. See *Display Layers on page 151*.
   - Any surfaces removed using the **Delete Surfaces** tool will not be exported. See *Displaying 3D Views on page 788*.
3. When the model is ready, select **File> Export>** and choose the file format that you want to use.
4. Give the file a name, making sure to save it in the desired location. See *Exporting Files on page 68*.

> Note: Some proprietary 3D data provided in Manufacturer catalogs cannot be exported. The program will notify you if this protected data is included in the model you are trying to export. See *Manufacturer Catalogs on page 718*.

DAE Format

A **.dae** file can be opened by any program that uses COLLADA™'s **.dae** format. When the model is ready, select **File> Export> 3D COLLADA Model** to export to this format.

The Export COLLADA Model dialog is a typical File Save dialog.

With the exception of Rope Lights, any light sources that are On in the current view, as well as ambient light, will be exported to a .dae file along with the model. See *Lighting on page 820*.

Any material textures used in the model are saved as image files in a folder in the same location as the saved **.dae** file. The folder has the same name as the **.dae** file, appended with "_textures".

STL Format

An **.stl** file can be opened by any program that uses Stereolithography format, and can be printed using a stereolithography machine, or 3D printer. When the model is ready, select **File> Export> 3D Model (STL)**.

The Export STL Model dialog is a typical File Save dialog.

A 3D model exported to an .stl file does not include any material or texture information.

Architectural Blocks

Chapter 31

An architectural block is a collection of individual 3D objects that are grouped together so that they can be placed and moved as a single object. Although blocked together, these objects retain many of their own attributes, such as materials.

Architectural blocks can also be exploded so that the individual sub-objects become independent of one another.

Creating Architectural Blocks

To create an architectural block, group-select multiple architectural objects, then click the **Make Architectural Block** edit button. Architectural blocks can be created in any view. See *Architectural vs CAD Objects on page 140*.

The following is a list of objects that can be included in architectural blocks:

- Cabinets (Base, Wall, Full Height)
- Custom Countertops
- Soffits, Shelves, Partitions
- Fixture and Furniture symbols
- Hardware symbols
- Millwork symbols
- Geometric Shapes
- Electrical objects
- Images
- Slabs and Foundation Slabs
- Roads, Driveways, Sidewalks
- Terrain Features and Terrain Modifiers

Once blocked, the set of blocked objects is contained in a bounding box, indicating that they are now an architectural block.

The Make Ganged Electrical Block edit tool allows you to block two or more wall- or cabinet-mounted Electrical objects into a ganged unit. See *Ganged Electrical Blocks on page 502*.

Displaying Architectural Blocks

As with individual objects, the display of architectural blocks is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

- If an architectural block is composed of objects that are on the same layer, the block will be placed on that layer, as well.
- If an architectural block is composed of objects on different layers, the block will be placed on the “Architectural Blocks” layer.

In Plan View

You can control the appearance of the bounding box by changing the display properties of the architectural block's layer or you can turn off its display in the Architectural Block Specification dialog. See *General Panel on page 746*.

Like other objects, an architectural block is placed in a Drawing Group that affects whether it displays in front of or behind other objects. You can modify a selected architectural block's place in the drawing order by clicking the **View Drawing Group Edit Tools** edit button. See *Drawing Group Edit Tools on page 156*.

Architectural Block Labels

Architectural blocks can display labels for both the block and any component objects that have labels in plan view. As with the objects they are associated with, you can turn off the display of component labels by layer. Labels for architectural blocks are placed on the "Architectural Blocks, Labels" layer and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The label for an architectural block can be generated automatically, user-specified, or suppressed. See *Architectural Block Specification Dialog on page 746*.

Editing Architectural Blocks

Architectural blocks can be selected and edited in 2D and 3D views. See *Selecting Objects on page 183*.

> Note: Moving an architectural block in 3D view regenerates the view. If the architectural block contains terrain objects, the terrain is rebuilt.

Once selected, an architectural block can be edited using its edit handles, edit toolbar buttons, and specification dialog. See *Architectural Block Specification Dialog on page 746*.

Using the Edit Handles

A selected architectural block displays a Move handle and a Rotate handle.

Architectural blocks cannot be resized, but the individual objects in a block can be.

In the Specification Dialog

Architectural blocks can be edited in their specification dialog. See *Architectural Block Specification Dialog on page 746*.

Using Dimensions

Architectural Blocks can be moved precisely using dimensions. See *Moving Objects Using Dimensions on page 361*.

By default, Architectural Blocks are not located by dimension lines as the lines are drawn. Once created, though, you can edit a dimension line's extensions to locate the center of any Architectural Block. See *Editing Extension Lines on page 357*.

In order to locate Architectural Blocks by a dimension line as it is being drawn, first check the box beside **Architectural Blocks** on the Locate Objects panel of the Dimension Defaults dialog. See *Locate Manual Panel on page 344*.

Using the Edit Tools

A selected architectural block or blocks can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Editing Sub-Objects

The individual objects included in an architectural block can also be selected and edited. See *To select a sub-object on page 748*.

Explode Architectural Block

You can break an architectural block to make its objects independent. Select the architectural block and click the **Explode Architectural Block** edit button.

> Note: If you open a plan created in another version of Home Designer and an architectural block includes an object that you cannot create in your version of the software, you cannot unblock it or edit its components.

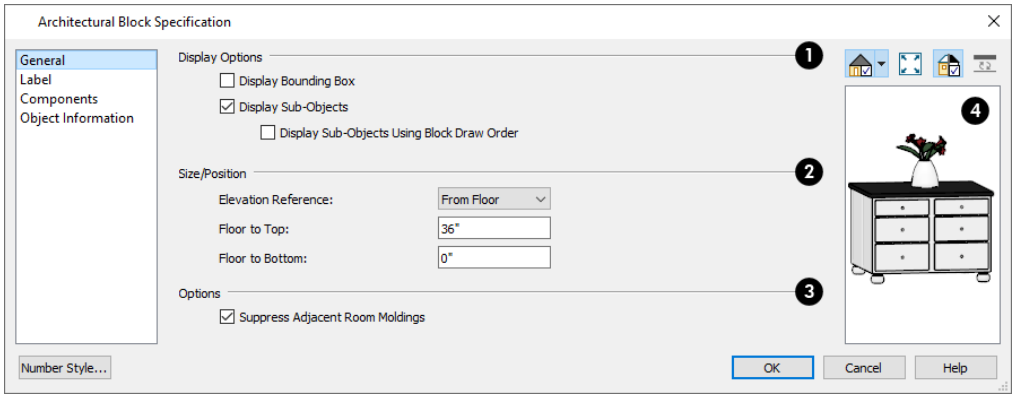
Adding Architectural Blocks to the Library

You can create your own architectural blocks and save them in the library. See *Add to Library on page 722*.

Architectural Block Specification Dialog

The Architectural Block Specification dialog controls the way architectural blocks display in plan view and in materials lists. Select one or more architectural blocks and click the **Open Object** edit button to open this dialog.

General Panel



❶ Display Options

These settings control the appearance of the selected architectural block in plan view. See *Displaying Architectural Blocks on page 744*.

- Check **Display Bounding Box** to show the bounding box of the objects in the architectural block.
- Uncheck **Display Sub-Objects** to suppress the display of the sub-objects and display only the bounding box. If Display Bounding Box is unchecked, it will become checked.
- Check **Display Sub-Objects Using Block Draw Order** to display all component objects of the selected block using the block's drawing order. When unchecked, each component displays according to its individual drawing order. See *Drawing Groups on page 156*.

2 Size/Position

These settings are not available if the selected block includes any objects such as electrical objects that do not have these settings in their individual specification dialogs.

- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the height **to Top**, measured from the selected Elevation Reference to the top of the architectural block.
  - Specify the height **to Bottom**, measured from the selected Elevation Reference to the bottom of the architectural block.

3 Options

- When **Suppress Adjacent Room Moldings** is checked, a room's base, chair, and/or crown moldings will not generate where the selected block's bounding box crosses them when positioned against a wall. When unchecked, room moldings are not affected by the block and generate normally. See *Room Moldings on page 328*.

4 Preview

A preview of the selected cabinet displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Label Panel

Labels for Architectural Block display when the "Architectural Blocks, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Architectural blocks can display labels for both the block and any component objects that have labels. See *Architectural Block Labels on page 745*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Architectural Blocks, Sub-Objects, and Components

An architectural block is composed of a group of sub-objects that have been blocked together. For example, a kitchen island architectural block may consist of cabinets, appliances, a custom countertop, and other accessories.

Each of the sub-objects in an architectural block may contain additional parts called components. The cabinets in a kitchen island, for example, may contain handles, hinges, and drawer glide.

Sub-Objects

Certain attributes of an architectural block can be edited at the sub-object level. A sub-object can be edited by accessing its specification dialog in either of two ways:

- Explode the architectural block, select the sub-object, and click the **Open Object** edit button.
- Select the sub-object while it is part of the architectural block and click the **Open Object** edit button. Some attributes may not be editable while the object is part of a block. See *Editing Architectural Blocks on page 745*.

To select a sub-object

1. Click the **Select Objects** button, then click on the sub-object that you would like to edit.
2. With the architectural block selected, click the **Select Next Object** edit button or press the ***Tab*** key.
   The selection switches to the individual object and it can be edited using its edit handles, edit toolbar and specification dialog.

The options for editing a sub-object may be more restricted than if the object were independent. If more extensive editing is required, the architectural block must be exploded. See *Explode Architectural Block on page 746*.

Components

You can view and modify the components of an architectural block or group of blocks in the Architectural Block Specification dialog. The COMPONENTS panel lists all the sub-objects that comprise an architectural block, as well as the components that make up each sub-object. See *Components Panel on page 967*.

Other Objects

Chapter 32

Home Designer has additional objects that can be used to customize your design.

General Shapes



Items in the Core Catalogs> Shapes library catalog allow you to create a variety of custom objects using basic geometric shapes. These shapes can be used individually or combined to create a wide variety of custom objects.

General Shape objects are placed and edited much like other library objects. See *Editing Box-Based Objects on page 199*.

Soffits



Soffits typically fill the space between the tops of wall cabinets and the ceiling, but they are very versatile and can be used to create almost any other object that can be modeled as a 3D box. Select **Build> Cabinet> Soffit** to activate this tool.

Soffit Defaults



The default settings for soffits are set in the Soffit Defaults dialog. The settings in this dialog are similar to those in the Soffit Specification dialog. See *Soffit Specification Dialog on page 750*.

When a soffit is created, it is placed on the “Cabinets, Soffits” layer. See *Layer Attributes on page 152*.

For best results when placing soffits above wall cabinets:

- The default soffit should be the same width as and 1" (20mm) deeper than the default wall cabinet. See *Cabinet Defaults on page 461*.
- The default soffit **Floor to Bottom** value should equal the sum of the default wall cabinet’s Floor to Bottom value plus its Height. See *General Panel on page 751*.
- The default soffit **Height** should be equal to or greater than the space between the ceiling and the top of the wall cabinets.

If the sum of the default soffit’s Floor to Bottom value and Height is larger than the ceiling height of the room in which a soffit is placed, the Floor to Bottom value will be retained and its Height will be adjusted so that it fits under the ceiling.

The maximum soffit width is 250 feet (48m), and the minimum width is 1/16" (1 mm).

Once a soffit is placed in a plan, you can change its size and position to meet a variety of needs. See *Editing Box-Based Objects on page 199*.

Placing Soffits

Soffits can be created in both 2D and 3D views by simply clicking with the **Soffit** tool active. See *Click-to-Create on page 145*.

To create a corner soffit, click as close to an inside wall corner as possible. A corner soffit retains its shape when it is moved, edited, or copied.

When positioned against a wall in a room, soffits will automatically display any moldings present in that room that are at the same height as the soffit. Soffits can also have custom molding profiles assigned to them. See *Moldings Panel on page 338*.

When positioned against the ceiling in a room, a soffit will prevent the Ceiling Finish layers directly above it from generating in 3D. See *Lowered Ceilings on page 326*.

Calculating Materials on Soffits

The number of bricks, tiles, shingles, shakes or other materials applied to a soffit is calculated using the following rules:

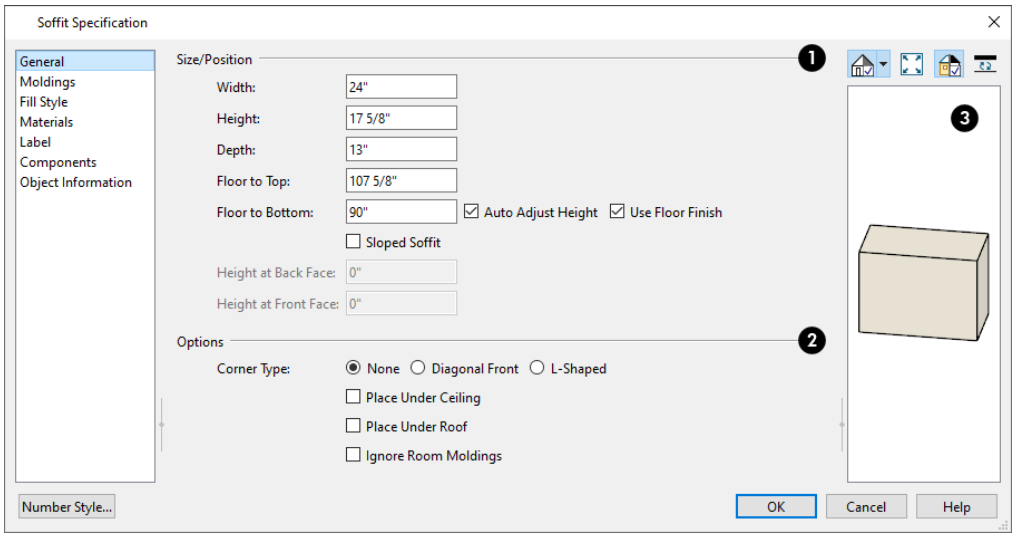
- If the soffit depth is less than the larger of 4 inches (10 mm) or 1 ½ times the material thickness, then only the front area of the soffit is used. Thus if a soffit is 48"x48"x4" thick, and the Dark Red brick material is used (3"x 8" with 3/8" mortar joint), the front of the soffit is 48"x48"=2304 square inches. Including the mortar joint, each brick requires 3 3/8" x 8 3/8" = 28.26 square inches. 2304 sq. in. divided by 28.26 sq. in. per brick gives 81.5 bricks.
- If the soffit depth is greater than both 4 inches (10 mm) and 1 ½ times the material thickness, then the surface areas of the soffit back, sides and top are used in addition to the front, if these surfaces are not attached to a wall or other soffit. However, only those portions of the sides, top and bottom remaining after subtracting twice the material thickness are used. So, for Dark Red brick, which has a depth of 4", the sides, top and bottom surface areas cannot contribute to the brick count unless the soffit depth is greater than 8 inches.
- If surface materials such as brick are applied to a large soffit, the soffit center is assumed to be hollow, with only a single layer of the material applied to each applicable face.
- For shingles and shakes, the overlap amount should be subtracted from the height, as opposed to brick or tile, where the joint width is added to the size.
- For materials in the area category, the soffit area calculation above is used, with the material thickness treated as zero.
- For materials in the volume, concrete or earth categories, the true volume of the soffit is used.

Soffit Specification Dialog

To open the Soffit Specification dialog, select the soffit and click the **Open Object** edit button or double-click on a soffit using the **Soffit** tool.

The settings in this dialog are similar to those in the Soffit Defaults dialog, but affect only the selected object(s).

General Panel



1 Size/Position

Define the **Size** and **Position** of the selected soffit relative to the floor or terrain.

- Specify the **Width** of the soffit.
- Define the vertical **Height** of the soffit.
- Define the **Depth**, which is the distance between the front and the back of the soffit. When selected in plan view, the front of a soffit has a "V," and the back of the soffit has a triangular rotation handle.
- If the selected soffit is a corner soffit, the **Width** controls its left side width, and **Depth** controls its right side width.
- Specify the distance from **Floor to Top** of the soffit.
- Specify the distance from **Floor to Bottom** of the soffit.
- When the selected soffit is outside a room, its Floor to Bottom height is measured relative to the terrain. Check **Auto Adjust Height** to maintain the same distance above the terrain if the soffit is moved to a location with different terrain height. Uncheck this to maintain the same absolute height regardless of the terrain below. When **Auto Adjust Height** is checked, the Floor to Bottom value may automatically adjust if the soffit is moved.
- Check **Sloped Soffit** to slope the soffit vertically from the back up towards the front. This may become checked automatically if you check Place Under Ceiling or Place Under Roof, below. When you specify a soffit as sloped, the available options on this panel change. Not available if the "Diagonal" or "L-Shaped" Corner Type is selected. See *General Panel - Sloped Soffits on page 752*, below.
- The **Height at Back Face** and **Front Face** settings become enabled when Sloped Soffit is checked. See *General Panel - Sloped Soffits on page 752*, below.

2 Options

Only the Ignore Room Moldings setting is available in the Soffit Defaults dialog.

- Specify the **Corner Type**: "Diagonal", "L-Shaped", or "None" which produces a rectangular soffit. In the Soffit Defaults dialog, "Diagonal" and "L-Shaped" are the available **Auto Corner Types**. Not available when Sloped Soffit is checked, above. See *Corner Cabinets on page 478*.
- Check **Place Under Ceiling** to adjust the soffit's height so its top contacts the ceiling above. If the soffit is below a sloped ceiling plane, Sloped Soffit will become checked and the Height at Back and Front Face will adjust to match the pitch. Not available in the Soffit Defaults dialog, or if the soffit is not below a ceiling.

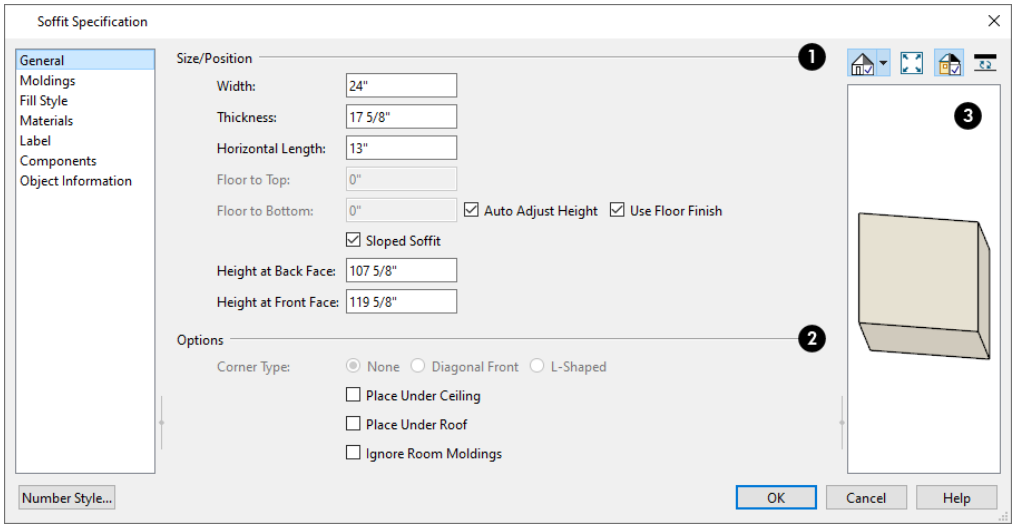
- Check **Place Under Roof** to adjust the soffit's height so its top contacts the bottom of the roof above. Provided that the roof above does not have a pitch of 0, Sloped Soffit will become checked and the Height at Back and Front Face will adjust to match the pitch. Not available in the Soffit Defaults dialog, or if there is no roof above the soffit.
- Check **Ignore Room Moldings** to prevent the selected soffit from displaying moldings assigned to the room that it is placed in. See *Room Moldings on page 328*.

❸ Preview

A preview of the soffit displays on the right side of the dialog box. See *Dialog Preview Panes on page 21*.

General Panel - Sloped Soffits

When a soffit is specified as sloped, the available options on the General panel of the Soffit Specification dialog change. Not available if the "Diagonal" or "L-Shaped" Corner Type is selected.



- **Width** is measured left to right across the soffit, parallel to the front of the soffit.
- **Thickness** is the top-to-bottom height of the front and back faces of the soffit.
- **Horizontal Length** is measured from back to front in plan view. When a soffit is sloped, this measurement is not the actual length of the soffit's bottom or top edge. It cannot, for example, be used to determine the length of a sloped beam.

Both the front and back heights of a sloped soffit must be defined. Checking Place Under Ceiling or Place Under Roof will automatically adjust these values to match the slope of the ceiling or roof plane above.

- **Height at Back Face** is measured from the finished floor to the lowest point at the back of the soffit.
- **Height at Front Face** is measured from the finished floor to the underside of the soffit at the upper end.

Moldings Panel

The settings on the Moldings panel allow you to assign one or more horizontal molding profiles around the selected Soffit. See *Moldings / Rails Panels on page 702*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Soffit in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Soffit in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

See, too, *Calculating Materials on Soffits on page 750*.

Label Panel

Labels for Soffit display when the “Cabinets, Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for Soffits is blank, but you can specify a custom label. See *Cabinet Labels on page 471*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

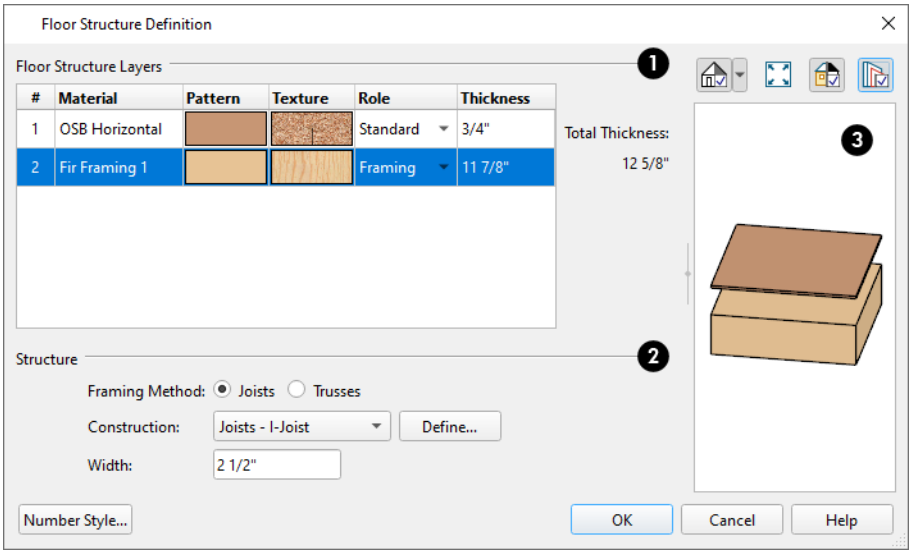
The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Material Layers Definition Dialogs

The Material Layers Definition dialogs allow you to define the layers that make up wall, floor, ceiling, slab, and roof assemblies. The names of these dialogs vary and are determined by the type of object or component being edited. They include:

- Backsplash Layers Definition
- Ceiling Structure Definition
- Floor Structure Definition

See *Custom Backsplashes on page 468* and *Floor and Ceiling Platforms on page 542*.



1 Material Layers

The selected assembly's layers are numbered and listed from the top of the structure to its bottom. To select a layer for editing, click in its row.

- Click in the **Material**, **Pattern**, or **Texture** column to open the Select Material dialog and choose a material for the selected layer. See *Select Material/Library Object Dialog on page 762*.
- Click in the **Role** column to select an option from the drop-down list. The available options vary, depending on the type of Material Layers Definition being edited.
  - Select "Standard" for a material that fills the selected layer as specified in its Material Definition. See *Define Material Dialog on page 772*.
  - Select "Framing" to generate framing or trusses in the selected layer. See *Framing on page 641*.
  - Select "Air Gap" to prevent the selected layer from displaying in 3D views or being calculated in the Materials List. See *Creating an Accurate Materials List on page 955*.
- Click in the **Thickness** column to type the selected layer's thickness or depth. Very thin layers can be created, but for best results avoid using a thickness of 0. For very small values, it can be helpful to temporarily change the dialog number format: click the **Number Style** button.
- The **Total Thickness** of the assembly is reported to the right of the table for reference.

2 Structure

Specify whether the selected layer has special structural attributes. The settings here vary depending on the selected layer's Role, specified in the table, above.

- When "Framing" layer is the selected Role:
  - Specify the Floor or Ceiling Finish or Structure Definition's **Framing Method**: either **Joists** or **Trusses**. The options that follow are only available when Joists is selected:
  - Specify the **Construction** of the selected layer's framing by choosing a Framing Member definition from the drop-down list. See *Default Framing Members on page 645*.
  - Click in the **Define** column to open the Framing Member Defaults Management dialog, where Framing Member definitions can be edited.
  - Specify the **Width** of the selected layer's framing members.

3 Preview

A preview of the selected assembly displays here. See *Dialog Preview Panes on page 21*.

- By default, a gap is shown between each of the assembly layers. Click the **Explode Layers** button to remove or restore these gaps.

Materials

Chapter 33

The objects used in Home Designer have a variety of 3D properties. These objects - walls, windows, doors, cabinets, roof planes, lot perimeters, etc. - can have materials assigned to them so that they look realistic in 3D views. These materials can also be used to generate materials lists that can help with cost estimations.

Designing with objects that look correct in 3D and calculate properly in the Materials List requires that you use realistic material definitions and apply them appropriately to objects in your plan.

Home Designer comes with many materials that are ready for use. From siding, roofing, flooring, masonry, tile, and paneling, to road surfaces, grass, water, and wood materials, Home Designer has materials for every application, inside and out. If you cannot find a material that suits your needs, you can customize the materials provided or create your own.

Learning how to create, manage, apply, and edit materials saves time and adds that professional touch to your designs.



Redefining only the visual properties of a material may create unexpected results. For example, changing the image of a brick material to represent siding does not cause the material to be considered as siding during material calculations.

About Materials

The materials that are assigned to objects in Home Designer perform these important roles:

- They determine what the surfaces of objects look like in 3D views. See *Rendering Tips on page 817*.
- Emissive Area Light materials contribute to the lighting in Physically Based renderings. See *Area Light Materials on page 824*.
- They influence how objects are calculated in the Materials List. See *Materials Lists on page 954*.
- 3D Cladding is a special combination of materials and 3D profiles in the Library that produce structural layers like siding and roofing with varying depths.

Materials are stored in the Library Browser and can be applied to objects in either of two ways:

- Using the **Material Painter**  . See *Material Painter® Tools on page 758*.
- In an object's specification dialog. See *Materials Panel on page 760*.

Patterns and Textures

In Home Designer, materials have two attributes that determine what they look like in 3D views: Textures and Patterns.

- Textures are created using images of real-world materials that are specially edited to tile seamlessly when applied to surfaces, and are used to represent materials in most Rendering Techniques. See *In Rendered Views on page 789*.
- Patterns are composed of CAD lines and are seen in Technical Illustration and Vector Views. Select **3D> Toggle Patterns**  to toggle the display of patterns on or off in these views in the current plan. See *Rendering Techniques on page 836*.
- Materials also have a solid Material Color, which is the pattern field color and is also used if a material has no texture.

Often, the texture and pattern for a given material are both set up to represent the characteristics of the material in the real world and have similar sizing and angles. When customizing such a material, check **Keep Pattern/Texture in Sync** before making changes to maintain this consistency. See *Define Material Dialog on page 772*.

Stretch to Fit

Some special textures, often used for artwork, do not tile. Instead, these textures resize to stretch across any surfaces that they are applied to. Materials that behave this way are specified as **Stretch to Fit** in the Define Material dialog. See *Texture Panel on page 775*.

To display an artwork texture, first place a wall or desk frame in your plan. A selection of both are available in the library. See *Placing Library Objects on page 727*.

Next, simply apply a material specified as **Stretch to Fit** to the center portion of the frame. See *Material Painter® Tools on page 758*.

Area Lights

In GPU ray traced Physically Based renderings, you can add light to the scene using Emissive materials. When applied to object surfaces in these views, Emissive materials are referred to as Area Lights. Instead of light emanating from a point, an Area Light emits light from entire surface areas, which can contribute considerable realism to a scene. See *GPU Ray Tracing on page 817*.

Materials List Calculation Methods

Every material can be assigned a Calculation method which defines how the material is calculated in the Materials List: for example, by piece, area, or volume. See *Materials and the Materials List on page 768*.

Material Defaults

Most objects in the program have defaults dialogs which allow you to set up a variety of attributes, including materials, before the objects are created. These defaults dialogs are accessed by selecting **Edit> Default Settings**. See *Preferences and Default Settings on page 83*.

The Material Defaults dialog serves two purposes. It allows you to:

- Set the default materials for objects that do not have a defaults dialog: for example, fixtures and furnishings from the library.
- Set the initial materials that can then populate a variety of defaults dialogs. Door, Window, and Cabinet Defaults are examples of defaults dialogs that can draw their material assignments from the Material Defaults dialog.

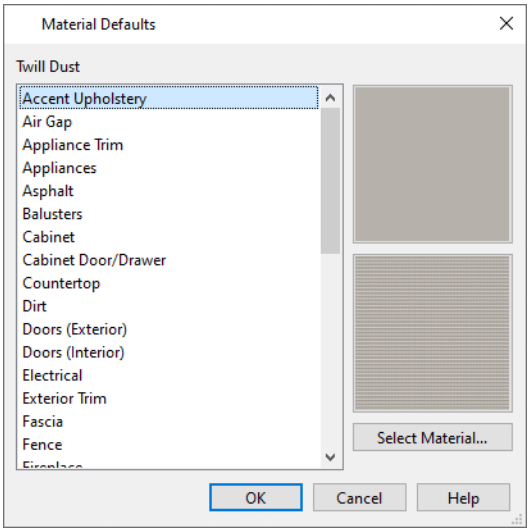
Material defaults are dynamic, which means that if you change a particular default material, all objects that are set to use that default will automatically update to use the new material. See *Dynamic Defaults on page 84*.

Because material defaults are dynamic, you can use the Material Defaults dialog to apply a material to multiple objects that share similar components. For example:

- The “Room Moldings” Material Default applies to the base, crown, and chair rail moldings that can be assigned to rooms, as well as to interior door and window casing. If you change this Material Default, all of these objects in the plan can be affected.
- The “Cabinet”, “Cabinet Door/Drawer”, “Countertop”, and “Hardware” Material Defaults can be used in your Cabinet Defaults dialogs to ensure that all cabinets use the same materials. See *Dynamic Cabinet Defaults on page 461*.

Material Defaults Dialog

Select **Edit> Default Settings** from the menu, select "Materials", and click the **Edit** button to open the Material Defaults dialog.



- Select a material category from the scrollable list. Select multiple line items using the ***Shift*** or ***Ctrl/⌘*** key. See *Shift and Ctrl/⌘ Select on page 187*.
- Click the **Select Material** button or either material preview box to open the Select Material dialog. See *Select Material/Library Object Dialog on page 762*.

Material Painter® Tools

In a 3D view, select **3D> Material Painter** to access the **Material Painter Tools**, which are used to apply materials to object surfaces. The Material Painter tools are available in all Rendering Techniques except Glass House views. See *Glass House on page 838*.

> If you use the Material Painter to change a Deck room's planking or framing will affect its floor structure definition. See *Floor and Ceiling Platform Definitions on page 542*.

Material Painter

The **Material Painter** tool allows you to apply a selected material to other objects in 3D views. It can be activated in several ways:

- Select **3D> Material Painter> Material Painter** .
- Select a material in the Library Browser while a 3D view is active.
- The Material Painter also becomes active when the Material Eyedropper is used.

The **Material Painter** is similar to the other Painter tools but has some additional considerations. See *Painter Tools on page 217*.

To use the Material Painter tool

1. In a 3D view, select **3D> Material Painter> Material Painter** .
2. Choose a material from the Select Material dialog. See *Select Material/Library Object Dialog on page 762*.
   - Check **Use Default Material** at the bottom left of the LIBRARY MATERIALS panel or select "Use Default" from the top of the list on the PLAN MATERIALS panel to apply the default material to any object that has a defaults dialog. See *Material Defaults on page 757*.
3. If you click the **Copy Selected Material** button, a copy of the selected material is created and the Define Material dialog will open, allowing you to customize that copy. See *Copy Selected Material on page 760*.
4. Select one of the **Material Painter Scoping Modes** from the Edit Toolbar. See *Material Painter Scoping Modes on page 759*, below.



5. If you selected a solid color material, choose whether to use the **Blend Colors with Materials** option and click the edit button to turn this feature on or off. See *Blend Colors With Materials on page 760*, below.
   - The mouse pointer displays a paint roller icon when **Blend Colors With Textures** is active.
   - The mouse pointer displays a spray can icon when the **Material Painter** is active and **Blend Colors With Textures** is not.
6. Note that the name of the material being painted displays on the left side of the Status Bar at the bottom of the program window. See *The Status Bar on page 24*.
   - Move your pointer over a surface in the 3D view. The Status Bar now states both the material being painted and the current material on the target surface.
7. Click on a surface to apply the selected material to that surface. The material is applied to surfaces in the model based on the active Material Painter Scoping Mode.
8. If either the **Component** or **Object Mode** is active, you can continue to click on surfaces to apply the selected material. When you are finished, select a different tool.

MATERIAL EYEDROPPER

The **Material Eyedropper** tool allows you to load the material assigned to an existing object into the Material Painter and apply that material to other objects and is similar to other Eyedropper tools. See *Eyedropper Tools on page 216*.

MATERIAL PAINTER SCOPING MODES

There are five Material Painter Scoping Modes, each specifying how broadly or narrowly the selected material will be applied to surfaces in your plan. They are similar to other Painter Scoping Modes in the program, but rather than modify instances of an object type, the Material Painter Scoping Modes replace instances of a material based on the selected scope. See *Painter Scoping Modes on page 217*.

These Painter Scoping Modes are also available when the **Adjust Material Definition** tool is used, allowing you to control how extensively a change to a material is applied throughout the current plan. See *Adjust Material Definition on page 765*.

Material Painter Component Mode is the default mode and applies the selected material to a single component on the target object. For most object types, using this tool is the same as opening an object's specification dialog and changing the material of one of its components on the MATERIALS panel. See *Materials Panel on page 760*.

Material Painter Object Mode replaces all instances of a material on the target object.

Material Painter Room Mode replaces all instances of a material in the room where the target object is located.

Material Painter Floor Mode replaces all instances of a material on the floor where the target object is located.

Material Painter Plan Mode replaces all instances of a material in the entire plan.

Blend Colors With Materials

The **Blend Colors With Materials** option allows you to apply a solid color to a surface displaying a texture or pattern and blend the two.

Blend Colors With Materials works in all five Material Painter Scoping Modes. See *Blending Materials on page 768*.

Copy Selected Material

The **Copy Selected Material** tool creates a copy of the selected material, gives you an opportunity to customize it as needed, and then lets you apply the new material to surfaces in the model. This option is helpful if you need slightly different versions of the same material - for example, to orient wood planks or tile in different directions.

When you click the **Copy Selected Material** button, the Define Material dialog will open, allowing you to customize the new material. When you click OK, the customized material is loaded into the Material Painter. See *Define Material Dialog on page 772*.

Once you apply the material to one or more surfaces in the model, it will be listed in the Plan Materials dialog. See *Managing Plan Materials on page 769*.

Material Painter and Walls

Painting walls is an obvious use for the **Material Painter**; however, it is important to note that the Material Painter Scoping Modes affect walls and rooms somewhat differently than they do other objects: particularly if a wall defines multiple rooms on the side that is being painted.

Component and **Object Modes** only paint the section of the wall that defines the room located where you click to apply a new material. Sections of the same wall that define other rooms are unaffected.

Room Mode applies the material to all walls and solid railings that define the room where you click provided that they have the same original surface material as the one being painted. Any other objects in the room with that original material are also affected, but railings are not unless they are specified as Solid.

Floor and **Plan Modes** apply the material to all walls, all railings, and any other objects with the same original surface material as the one being painted: either on the current floor, or throughout the plan.

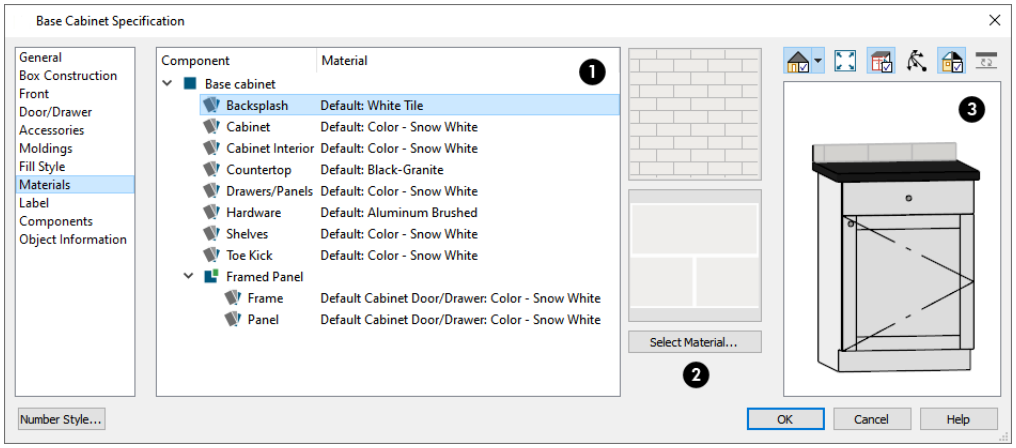
> Note: With the exception of foundation wall footings, wall materials applied using the Material Painter tool are applied cosmetically to wall surfaces only and are not calculated in the Materials List. See *In the Materials List on page 273*.

Materials Panel

The specification dialogs for most objects include a Materials panel. Select an object or a group of similar objects and click the **Open Object** edit button to open the specification dialog for that selection.

On the MATERIALS panel, you can specify material assignments for the components that make up that object. When a new material is assigned, the appearance of the preview image on the right side of the dialog updates.

If the selected object is using a material that is missing its texture, a Caution ⚠ symbol will display next to the Materials panel name in the list on the left side of the object's specification dialog. See *Referenced Files on page 71*.



1 Object Components

The table on the left side of the panel lists the components of the selected object that can be assigned unique materials, along with the names of those materials and whether or not the default materials are used. Some objects may have only one component while more complex objects may have many. As changes are made to the selected object, components may be added to or removed from this table.

- Click on a Component in the table to select it. Multiple line items can be added to the selection set by holding down the ***Shift*** or ***Ctrl/⌘*** key. See *Shift and Ctrl/⌘ Select on page 187*.
- The selected component's Material is stated in the list, to the right of the component name. If the component is using the default material, the name will be preceded by the word "Default:". If it is using a Material Default, it will be preceded by the word "Default" followed by the name of an object type. See *Material Defaults on page 757*.

> Note: If the selected object is a wall or a room modified using the Material Painter, a component's Material may be described as "No Change". See *Material Painter and Walls on page 760*.

2 Material Preview

The two boxes to the right of the table display previews of the color, pattern, and texture of the material assigned to the selected component. If "No Texture" displays in the preview window, the material has no texture assigned to it; if a Caution ⚠ symbol and the words,"Texture Missing" display, the texture file could not be found on the system.

There are several ways to open the Select Material dialog and choose a different material for one or more selected line items:

- Double-click on a line item in the table.
- Select one or more line items and click the **Select Material** button.
- Select one or more line items and click on either of the preview boxes.

See *Select Material/Library Object Dialog on page 762*.

3 Preview

A preview of the selected object displays on the right side of the panel. To view material textures, select **Standard** as the View Type; to view material patterns, select **Vector View**. See *Dialog Preview Panes on page 21*.

Select Material/Library Object Dialog

The Select Material dialog allows you to select a material to apply to one or more objects and is opened by clicking the **Select Material** button on the MATERIALS panel of most specification dialogs or by using the **Material Painter**  . See *Materials Panel on page 760* and *Material Painter® Tools on page 758*.

The similar Select Library Object dialog allows you to select an item from the library to either apply or insert into a currently selected object. See *Placing Library Objects on page 727*.

The Select Library Object dialog has a single panel; however, depending on how it is accessed, the Select Material dialog will have either two or three panels:

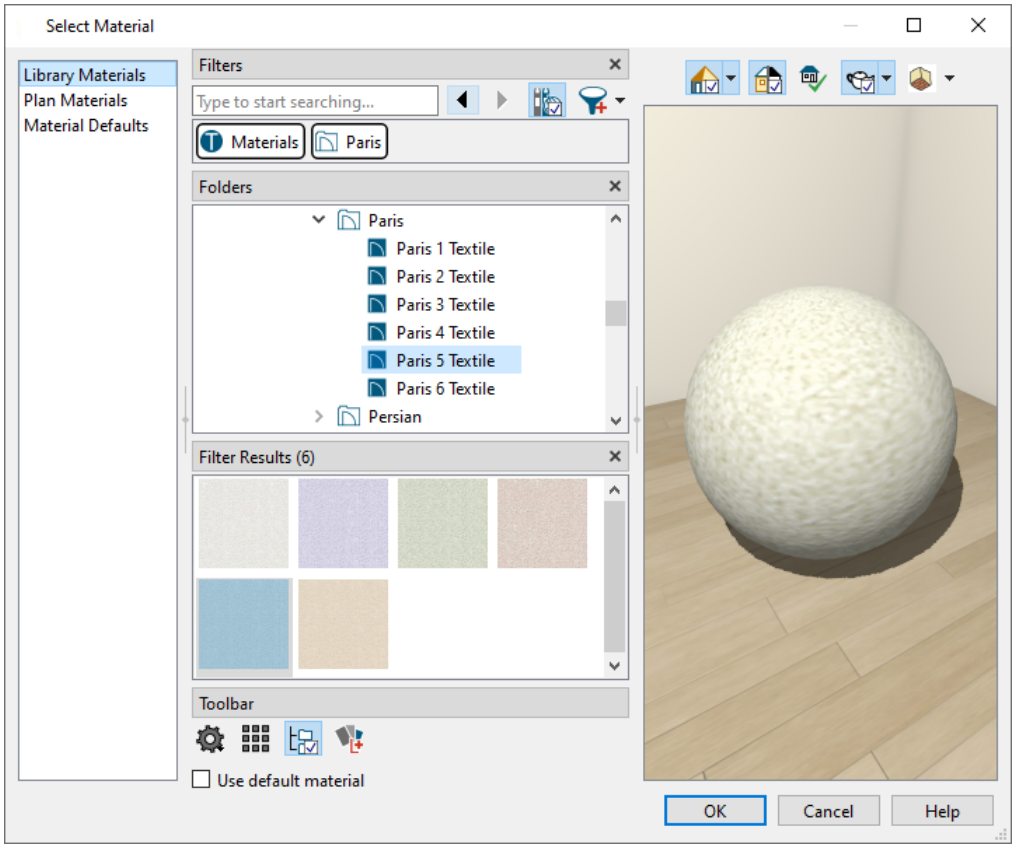
- The *Library Materials Panel on page 762* allows you to select materials from the Library Browser.
- The *Plan Materials Panel on page 764* lets you select materials from the Plan Materials dialog.
- The *Material Defaults Panel on page 764* lets you associate an object component with a Material Defaults category rather than a specific material and is only available when the component of a library symbol is selected on the MATERIALS panel of the object's specification dialog.

The Rendering Technique, object shape, and backdrop selections in this dialog are shared with the Plan Materials and Define Material dialogs. The object shape and backdrop are also shared with the Library Browser. You also can specify a Blurred Backdrop Effect in the Preferences dialog that is used in all of these dialogs and in the Library Browser. See *Define Material Dialog on page 772* and *Appearance Panel on page 93*.

LIBRARY MATERIALS PANEL

The LIBRARY MATERIALS panel is a modal version of the Library Browser that lists only materials. See *The Library Browser on page 705*.

Most of the settings on this panel are also found in the Select Library Object dialog. See *Select Library Object Dialog on page 729*.



The LIBRARY MATERIALS panel has most of the functionality that the Library Browser has, including the search, search filtering options, and preview options.

- To locate a material or object, you can search, apply a Library Filter or Tag, or browse the tree list in the Folders panel. See *Searching and Filtering the Library on page 711*.
- Just as in the Library Browser, you can right-click on items in the Folders and Filter Results panels to access their contextual menus. See *Using the Contextual Menu on page 710*.
- Located below the Folders panel, check **Use default material** to apply the default material to the selected object component(s), if one exists. See *Material Defaults on page 757*.
- A preview of the selected material displays on the right. See *Dialog Preview Panes on page 21*.
- To apply a material to an object, select it in the Filter Results panel and click OK.

Buttons above the Preview Pane allow you to view the selected object or material under different conditions. See *Dialog Preview Panes on page 21*.

- For materials, select an object shape to display the material on in the preview on the far right: Cube, Sphere, Teapot, or Plane.
- For materials, specify the background for the object shape: **Use Default Room** or **Backdrop from Library**. See *3D Backdrops on page 846*.
- For objects, the Preview Background color can be set in the Preferences dialog. See *Colors Panel on page 95*.

A selection of buttons below the Folders panel aid in displaying panels and searching content. See *The Library Browser on page 705*.

 The **Settings** menu lets you select which panes are presented in this dialog and which are hidden.


Tile Mode displays items in the Filter Results pane as a grid of thumbnail images. Toggle this off to instead display items in a scrollable horizontal list with item name and preview thumbnail.


Search Subfolders includes the contents of subfolders when a folder is an active search parameter. Turn this off to only include items saved in the folder itself, at the folder level: not in subfolders.

An additional button below the Folders panel allow you to add new content to the User Catalog. The available option varies depending on the type of library item being assigned or inserted into another object.


Click the **Add New Fill Style** button to open the Fill Style Specification dialog. See *Fill Style Panel and Dialogs on page 161*.


Click the **Add New Backdrop** button to open the Import Backdrop File dialog. See *3D Backdrops on page 846*.


Click the **Add New Material** button to open the Define Material dialog and create a new material saved in the User Catalog. See *Define Material Dialog on page 772*.

The OK button is only active when a library item is selected. If a library folder or catalog is selected, the OK button cannot be clicked.

The Rendering Technique and object shape selections in this dialog are shared with the Define Material and Select Material dialogs. The object shape is also shared with the Library Browser. See *Dialog Preview Panes on page 21*.

Plan Materials Panel

The Plan Materials panel is similar to the Plan Materials dialog and lets you select from a list of materials already present in the plan as well as manage that list. See *Managing Plan Materials on page 769*.

Select “Use Default” from the top of the list to apply the default material to the selected object, if applicable.

Material Defaults Panel

The Material Defaults panel will only be present if the Select Material dialog was accessed via an object specification dialog where a component of an inserted library symbol was selected.

Rather than apply a specific material to the selected component, you can dynamically associate it with a Material Default category. See *Material Defaults on page 757*.

Editing Materials

Much like objects, materials in Home Designer can be edited so that they better suit your design needs. Material attributes are specified in the Define Material dialog. See *Define Material Dialog on page 772*.

There are several ways to customize a material:

- Edit the original material and replace all instances of it in the current plan;
- Create a copy of the original material, edit it, and replace only some instances of the original in the current plan;
- Edit a material in the Library Browser and apply it in any plan as needed.

Material definitions are plan-specific: Any changes that may make to a given material in a plan will not affect any materials saved in the library or materials used in other plans. See *Adding Library Content on page 722*.

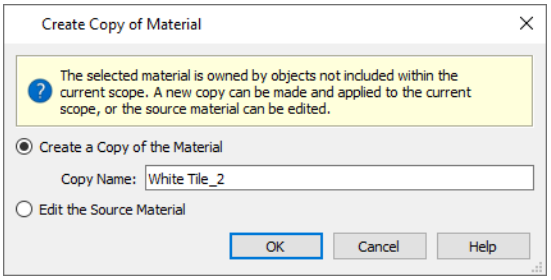

Editing the material applied to an object is not the same as applying a different material to that object. See *Material Painter® Tools on page 758*.

Adjust Material Definition

The **Adjust Material Definition** tool lets you make extensive changes to any material seen in a camera in the current plan in the Define Material dialog.

To use the Adjust Material Definition tool

1. Create a camera view in which a material that you would like to modify can be seen.
2. While the camera view is active, select **3D> Adjust Materials> Adjust Material Definition** .
3. Notice that the **Scoping Mode** buttons become available on the Edit Toolbar, and select the Mode that suits your needs. See below.
4. Select the material that you want to edit:
   - Move your mouse pointer over a surface and notice the Status Bar reports that material's name.
   - Click on a surface displaying the material you want to edit.
5. If the material is assigned to any objects outside the scope set by the selected Mode, the Create Copy of Material dialog will open.



   - Select **Create a Copy of the Material** to make a copy of the material and leave the original unchanged, then type a name for the new material in the **Copy Name** text field.
   - Select **Edit the Source Material** to modify the original material and apply your changes plan-wide.
6. The Define Material dialog opens next, allowing you to edit either the original material or a copy of it. See *Define Material Dialog on page 772*.
7. When you click OK, your customized material will be applied in the current plan according to the selected Mode.

Interactive Material Editor

The **Interactive Material Editor** lets you change the scale, angle, and offset of materials with textures in the current plan using an editable axis polyline in camera views. Select **3D> Adjust Materials> Interactive Material Editor** to enable this tool.

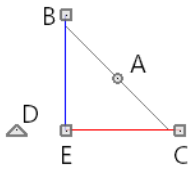
The Interactive Material Editor is only available in Rendering Techniques that support material textures. See *Rendering Techniques on page 836*.

Although not supported in views that use material patterns, patterns are nevertheless affected by the Interactive Material Editor provided that the material has Keep Pattern/Texture in Sync checked in the Define Material dialog. See *Patterns and Textures on page 756*.

To use the Interactive Material Editor

1. Create a camera view in which a material that you would like to modify can be seen.
2. While the camera view is active, select **3D> Adjust Materials> Interactive Material Editor** .

3. Notice that the **Scoping Mode** buttons become available on the Edit Toolbar, and click on the Mode that suits your needs. See below.
4. Select the material that you want to edit:
   - Move your mouse pointer over a surface and notice that the Status Bar reports that material's name.
   - Click on a surface displaying the material you want to edit.
5. If the material is assigned to any objects outside the scope set by the selected Mode, the Create Copy of Material dialog will open. See above.
   - Select **Create a Copy of the Material** to make a copy of the material and leave the original unchanged, then type a name for the new material in the **Copy Name** text field.
   - Select **Edit the Source Material** to modify the original material and apply your changes plan-wide.
6. A material axis polyline with edit handles will now display at the point where you clicked.



   A. The round **Adjust Scale** handle is located on the angled edge of the polyline. Click and drag down or to the left to make the material's scale smaller, or drag up or to the right to make the scale larger. The material's Aspect Ratio is retained.
   B. The square **Adjust Y Scale** handle is located at the top left of the polyline. Click and drag down to make the material's vertical scale smaller, or drag upward to make the scale larger. Editing the Y Scale affects the material's aspect ratio which may make it appear distorted.
   C. The square **Adjust X Scale** handle is located at the bottom right of the axis polyline. Click and drag to the left to make the material's X Scale smaller, or drag up or to the right to make the scale larger. Editing the X Scale affects the material's aspect ratio which may make it appear distorted.
   D. The triangular-shaped **Rotate** handle is located to the left of the axis polyline. Click and drag this handle in any direction to edit the materials Angle.
   E. The **Move** handle is located at the bottom left corner of the axis polyline. Click and drag this handle to the left or right to adjust the material's X Offset, or drag up or down to adjust its Y Offset.
7. Press the ***Tab*** key while dragging any edit handle to open the Enter Texture Scale, Enter Texture Angle, or Enter Texture Offset dialog where you can enter precise values. See *Input Point on page 227* and *Input Line on page 230*.
8. As you edit, your customized material will be applied in the current plan according to the selected Mode. When you are finished, select a different tool.

Changing a material definition using the **Interactive Material Editor** tool only affects objects in the current plan that are using that material. It does not affect any materials saved in the library or materials used in other plans. See *Adding Library Content on page 722*.

Material Editing Scoping Modes

The **Interactive Material Editor** and **Adjust Material Definition** tools have five Scoping Modes that allow you to control how extensively your changes to a given material are applied:

Component Mode allows you to edit the material applied to a single component on a target object. If any other instances of the original material are present in the current plan, including on other components of the same object, you will be presented with the option of editing a copy of the original material on that component so those other instances can remain unchanged.

Object Mode allows you to edit all instances of the material on a target object. If any other instances of the original material are present on other objects in the current plan, you will be presented with the option of editing a copy of the original material on the target object so those other instances can remain unchanged.

Room Mode allows you to edit all instances of the material located in the same room as the target object. If any other instances of the original material are present in other rooms in the current plan, you will be presented with the option of editing a copy of the original material so those other instances can remain unchanged.

Material Painter Floor Mode allows you to edit all instances of the material located on the same floor level as the target object. If any other instances of the original material are present on other floors in the current plan, you will be presented with the option of editing a copy of the original material so those other instances can remain unchanged.

Plan Mode is selected by default and allows you to edit all instances of the material in the current plan. When Plan Mode is selected, the original material is modified and creating a copy of it is not an option.

Plan Materials

You can also edit, copy, and create new materials in the Plan Materials dialog. Select **3D> Plan Materials** to open this dialog for the current plan.

In the Library Browser

Materials saved in the User Catalog of the Library Browser are editable: right-click on one and select **Open Object** from the contextual menu to open the Define Material dialog for that material. See *Editing Library Items on page 726*.

Creating Materials

Home Designer provides a wide variety of materials - including numerous name brand material catalogs - that are ready to download and use. If you cannot find a suitable material, you can edit an existing material or create a new one. See *Editing Materials on page 764*.

Texture File Management

Materials often have a texture which is an image file that adds realism to the material's appearance. In order to display a material’s texture, Home Designer needs to be able to locate the image file associated with it on your computer. See *Referenced Files on page 71*.

If a texture referenced by a newly created material is not located in either the Home Designer 2027 Data folder or the installation folder for the program’s library textures, a copy of the file will be made in Home Designer 2027 Data\Textures\Material Data and the material will reference that copy. See *Home Designer Data on page 74*.

In the Plan Materials Dialog

There are two ways to create a new material in the Plan Materials dialog. See *Managing Plan Materials on page 769*.

- Click the **New** button to create a new material for use in the current plan file.
- Select a material and click the **Copy** button to make a new material based on the original, which can then be edited and used in the current plan.

In the Library Browser

Materials can be created in the Library Browser, making them available for use in any plan. See *Adding Library Content on page 722*.

In the directory pane of the Library Browser, right-click on an unlocked folder and select **New> Material** from the contextual menu. See *Using the Contextual Menu on page 710*.

The Define Material dialog opens, allowing you to specify the new material's attributes. See *Define Material Dialog on page 772*.

Using Paste Image

A new material can be created by copying an image that will serve as its texture to the system clipboard, then navigating to a Home Designer window and selecting **Edit> Paste> Paste** from the menu. See *Cut, Copy, and Paste on page 147*.

Copying Materials

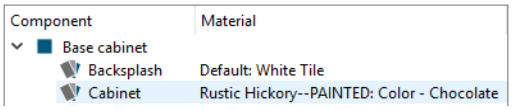
When the **Adjust Material Definition** tool is used with any scoping mode other than Plan Mode, the program will prompt you to choose whether to edit the original material or create a copy of it. See *Adjust Material Definition on page 765*.

Blending Materials

In 3D views, you can create a new material by blending a solid color such as a paint color with a textured and/or patterned material. Select **3D> Material Painter> Blend Colors With Materials** to toggle this feature on or off. See *Blend Colors With Materials on page 760*.

The result is a new material that is saved in the current plan. It can be found in the Plan Materials dialog, edited as needed, and added to the library if desired. See *Managing Plan Materials on page 769*.

Materials created using the **Blend Colors With Materials** tool are given the name of the patterned/textured material with the extension "--PAINTED:" followed by the name of the solid color material.



Materials and the Materials List

When applied to structural components like slabs or wall, floor and ceiling, or roof layers, materials determine how or whether those components are calculated in the Materials List. Each material's Structure Type and its Calculation Method are specified in the Define Material dialog. See *Materials List Panel on page 777*.

Material Structure Types

The Material Structure Type controls how or whether certain structural features generate in the model.

- The Concrete type must be assigned to a Wall Type in order for a brick ledge to be cut into it. This type is also required to produce rebar and steel mesh in the Materials List. It is recommended for concrete walls, footings and monolithic slabs See *Foundations on page 515* and *Brick Ledges on page 262*.
- The Masonry type must be assigned to the exterior layer of a Wall Type in order to generate a brick ledge in the wall below.
- The Other type is useful for other structural applications such as framing, sheathing, and siding.

Calculation Methods

A material's Calculation method controls how it is counted in the Materials List when it is applied to structural components like wall, ceiling, floor, layers, or slabs.

For walls, structural assembly layers, and slabs, "Area", "Count" and "Linear" calculations are based on the area of the assembly or the top of the slab. If a material is calculated by "Count", its Depth is not used; however, the thickness of the layer or slab is noted in the Size column of the Materials List.

For Soffits, "Area", "Count" and "Linear" calculations are made for all sides of the object. The Depth of materials calculated by "Count" is used, but thickness is otherwise not noted.

- "Area" calculates the total area of a material in structural layers and slabs in square feet (m).
- "Count" calculates a piece count based the material's Width, Height, and Depth.
- "Linear" calculates the total length of strips required to cover the area in feet (m).
- "Volume" calculates the total volume of a material in structural layers and slabs in cubic yards (m)
- "None" prevents the material from being calculated in the materials list at all.



To prevent a structural layer from being counted in the materials list as well as from displaying in the 3D model, specify it as an Air Gap. See *Wall Type Definitions Dialog on page 290* and *Material Layers Definition Dialogs on page 753*.

Once a Materials List has been created, the unit of measurement can be changed. See *Changing Count Units on page 964*.

Representing Overlap

Any material using the Count or Linear Calculation method can be set up to account for material overlap in the Define Material dialog. To do this:

- On the Pattern panel, set up the material's pattern so that it accurately represents the size and shape of the exposed portion of an individual piece or strip.
- On the Texture panel, set the Scale to represent the appearance of the exposed material in rendered 3D views.
- On the Materials List panel, specify the full size of the actual material, including the overlapped portion.

If a material is set up to represent overlapping pieces, it is important that you not click the **Update from Pattern** button. See *Materials List Panel on page 777*.

Managing Plan Materials



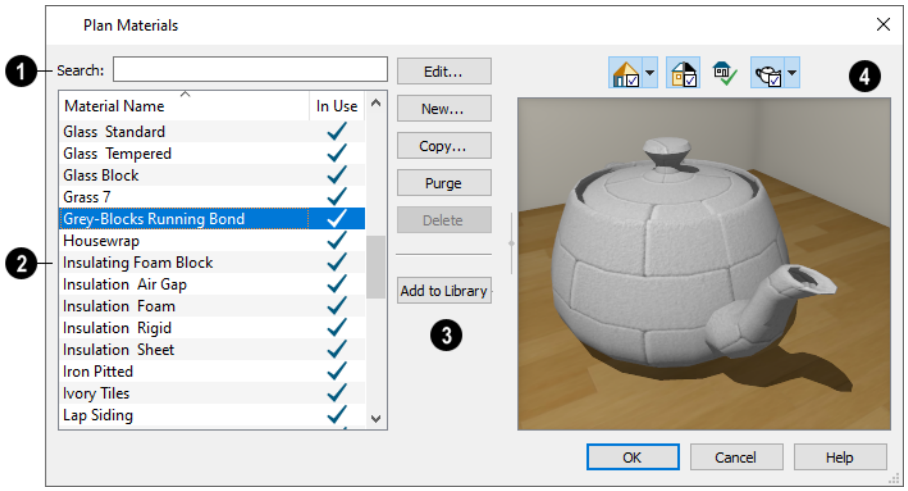
The Plan Materials dialog allows you to manage the materials used in the current plan. Select **3D> Materials> Plan Materials** to open this dialog. You can also access its settings in the Select Material dialog. See *Select Material/Library Object Dialog on page 762*.

When a material is applied to an object in a plan, a copy of that material is created and saved with the plan. If you use the Define Materials dialog to modify that material, your changes affect it wherever it is found throughout that plan. All objects in that plan that use that material are affected, but objects placed in other plans are not.



All materials that come with Home Designer are stored in the Library Browser. You can create your own materials and save them there, as well. See *Creating Materials on page 767*.

Plan Materials Dialog



1 Search

Begin typing in the text field. As you type, the list below will be filtered to show only materials with names that contain your text.

2 Plan Materials

A sortable, scrollable list of the materials referenced by the current plan displays here. Click on the name of a material to select it. Select multiple materials by holding down the ***Shift*** or ***Ctrl/⌘*** key.

- If there is a check mark in the **In Use** column, the material is used by one or more objects in your plan or is defined as a default material for one or more objects in your plan.
- If the **In Use** column is empty, the material was used at one time but is no longer assigned to any objects or used as a default.

3 Management Options

The buttons on the right allow you to modify the selected material and manage the items in the list.

- Click **Edit** to open the Define Material dialog for the selected material. See *Define Material Dialog on page 772*.
- Click **New** to open the Define Material dialog to create a new material.
- Click **Copy** to create a copy of the selected material and open the Define Material dialog where you can make changes to the copied material.
- Click **Purge** to remove all unused materials from the plan.
- Click **Delete** to remove the selected material from the plan. If the material is used in the model, you cannot delete it.
- Click **Add to Library** to add the selected material to the Library Browser, making it available for use in other plans. See *Adding Library Content on page 722*.

> Note: Although there is no limit to the number of materials you can have in one plan, it is recommended that you keep the total number below 1024.

4 Preview

A preview of the material applied to an object displays here. If multiple materials are selected at once, the first one in the list will display. Various options allow you to view different aspects of the material's attributes:

- Display the material in Physically Based, Standard rendering, or Vector View.
- Zoom and orbit the object in the view.
- Toggle Color on or off.
- Click the **Restore Original View**  button to reset the material preview to its original perspective.
- Select an object shape: Cube, Sphere, Teapot, or Plane.

The Rendering Technique and object shape selections in this dialog's preview are shared with the Define Material dialog. Unlike other dialog previews, these are retained when you close the dialog. The object shape selection is also shared with the Library Browser. See *Dialog Preview Panes on page 21* and *The Library Browser on page 705*.

Define Material Dialog

The Define Material dialog allows you to adjust how materials look in 3D views as well as how they are calculated in the Materials List. It can be accessed in a number of ways:

- Use the **Adjust Material Definition** tool. See *Adjust Material Definition on page 765*.
- Select a material from the Plan Materials dialog and click **Edit**, **New**, or **Copy**. See *Managing Plan Materials on page 769*.
- Right-click on a material in the User Catalog in the Library Browser and select **Open Object** from the contextual menu. When multiple materials are selected, some settings will not be available. See *Using the Contextual Menu on page 710*.
- You can also right-click on the User Catalog and select **New> Material**.

If you select a material from a Manufacturer Catalog, some options in the Define Material dialog may not be available and the panels may vary. See *Manufacturer Catalogs on page 718*.

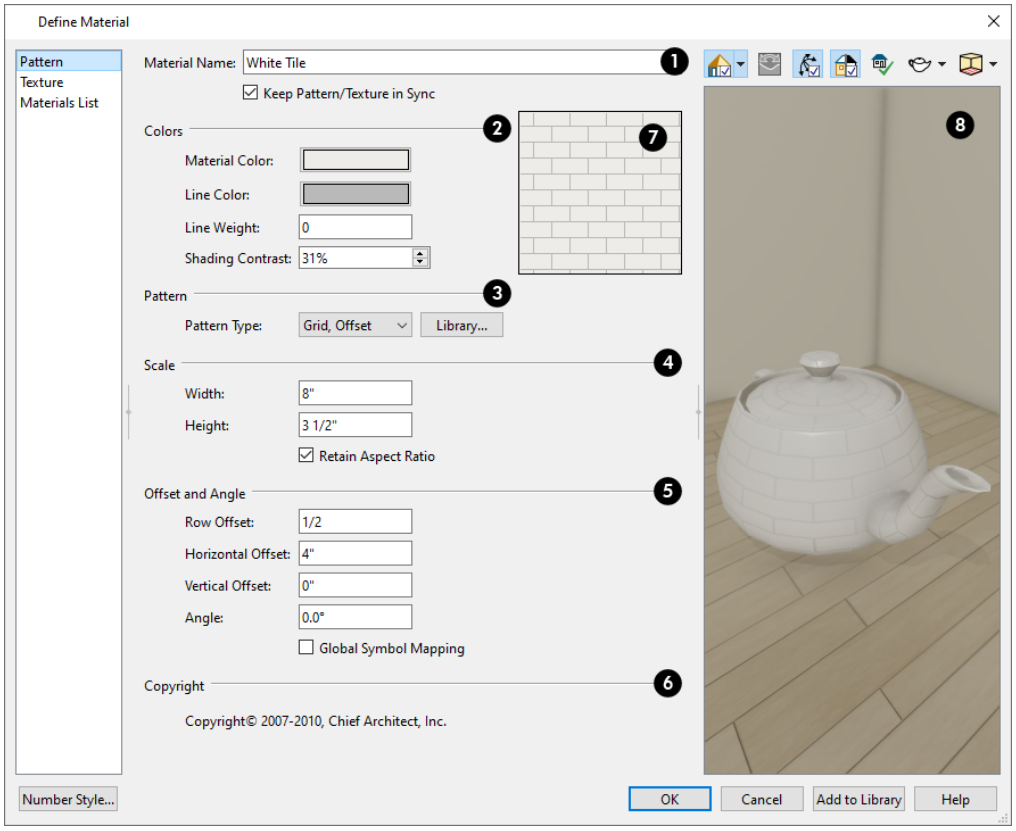
If you access the Define Material dialog through a menu or specification dialog, any changes you make will affect that material wherever it is found in the current plan. Other objects in that plan using that material will also be affected, but objects outside the current plan will not. You can click the **Add to Library** button at the bottom of the dialog to add the material to the User Catalog for future use in any plan. See *Adding Library Content on page 722*.

The Rendering Technique, object shape, and backdrop selections in this dialog are shared with the Plan Materials and Select Material dialogs. The object shape and backdrop are also shared with the Library Browser. You can specify a Blurred Backdrop Effect in the Preferences dialog that is used in all of these dialogs and in the Library Browser. See *Dialog Preview Panes on page 21* and *Appearance Panel on page 93*.

The Define Material dialog has the following panels:

Pattern Panel

Patterns are used to represent materials in Technical Illustration and Vector Views. See *Patterns and Textures on page 756*.



1 Material Name

The **Material Name** displays here. You can type a different name if you wish. Renaming the material does not create a new material: it redefines the existing material. See *Creating Materials on page 767*.

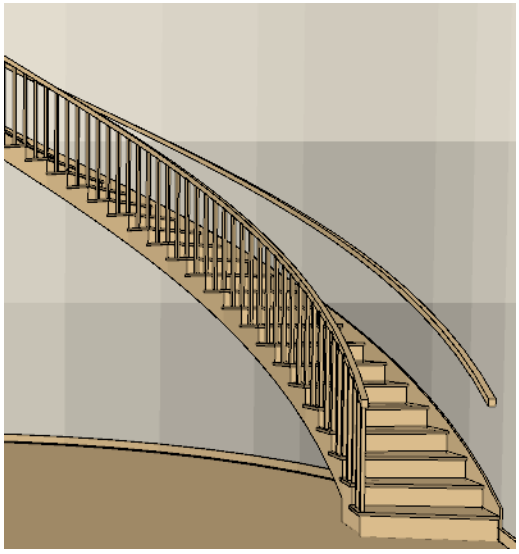
- Check **Keep Pattern/Texture in Sync** to maintain consistent **Scale** and **Offset and Angle** settings for both the selected material's pattern and its texture if any of these settings are modified.

2 Colors

Specify the **Colors** used to represent the material's pattern in Vector Views. Click either color box to open the Select Color dialog and select a color. See *Select Color Dialog on page 165*.

- The **Material Color** displays in Vector Views and is used in rendered views if a material has no texture specified. See *In Vector Views on page 789*.
- The pattern **Line Color** displays in Vector Views only.
- Specify the **Line Weight**, which is the thickness of the pattern lines.
- Specify the **Shading Contrast**, which is the amount of contrast between surfaces at different angles to each other in Vector Views. You can specify whether Shading Contrast is used in the Rendering Technique Options dialog. See *Vector View Panel on page 840*.

The following shows a curved wall with three different Shading Contrasts (created in a separate graphics program). Notice how the lowest contrast at the top appears almost flat.



3 Pattern

When “No Pattern” is selected as the Pattern Type, the Scale, Offset and Angle settings are disabled.

- Select a **Pattern Type** from the drop-down list. Select “Library” or click the **Library** button to select a pattern from the library. When a pattern is selected from the library, its name will display in the list. See *Select Library Object Dialog on page 729*.
- Click the **Add Pattern to Library** button to add the current Pattern to the Library. See *Adding Library Content on page 722*.

4 Scale

- Specify the **Width** of the selected pattern. For Concrete and Sand materials, instead adjust the overall pattern **Spacing**.
- Specify the selected pattern’s **Height**. Only available for Brick, Tile, Shingles, and U’s patterns.
- For some imported patterns and patterns from the library, instead specify the pattern’s **X Scale** and **Y Scale**. If the pattern appears black in the square preview pane, these values should be increased.
- Uncheck **Retain Aspect Ratio** if you would like to modify the Height or Width without affecting the other value. This check box is an action rather than a state: the next time you open this dialog, it will be checked.

5 Offset and Angle

- Specify the **Row Offset** for Grid, Offset and Grid, Step patterns.
- Specify the **Horizontal** and **Vertical Offsets**, if needed, so the pattern displays correctly on surfaces.
- Specify the pattern's **Angle**, measured counterclockwise, in degrees.
- Check **Global Symbol Mapping** to map the pattern and texture using the same origin on all objects. When unchecked, the origin is defined individually for each object.

6 Copyright

If the selected pattern has a **Copyright**, information about it displays here.

7 Pattern Preview

A preview of the material’s pattern displays in the square pane. It updates as you change the pattern’s specifications.

8 Preview

A preview of the material applied to an object displays here and updates as changes are made to the material definition. Various options allow you to view different aspects of the material's attributes:

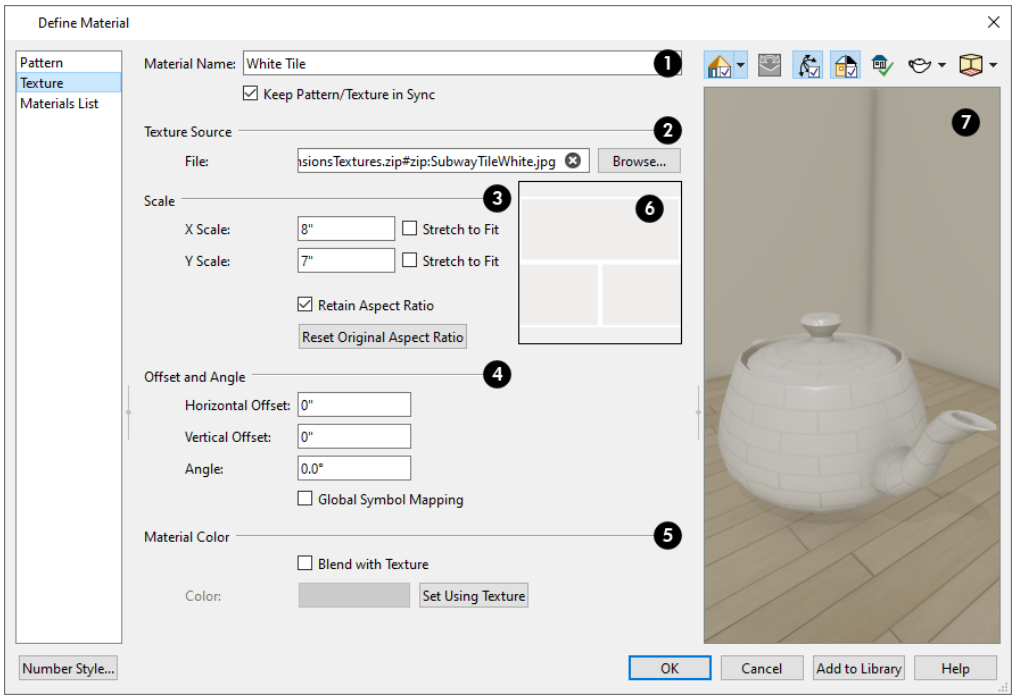
- Scroll in the preview pane to zoom or click and drag to orbit the object shape in the view.
- Display the material using Standard rendering or Vector View.
- There are two options for clicking and dragging within the Preview pane:
  - When a Spherical Backdrop is specified for the material preview, click the **Rotate Spherical Backdrop** button, then click and drag in the preview pane to adjust the backdrop horizontally. Not available if the Default Room or a regular backdrop is in use. See *Spherical Panoramic Backdrops on page 847*.
  - When **Mouse Orbit Camera** is toggled on, you can click and drag in the preview pane to orbit around the object displaying the selected material.
- Toggle **Color** on or off.
- Click the **Restore Original View** button to reset the material preview to its original perspective.
- Select an object shape: Cube, Sphere, Teapot, or Plane.
- Select the background for the object shape: **Use Default Room** or **Backdrop from Library**. Recently used backdrop images can also be selected. See *3D Backdrops on page 846*.

The Rendering Technique and object shape selections in this dialog's preview are shared with the Plan Materials dialog. Unlike other dialog previews, these are retained when you close the dialog. The object shape and backdrop selections are also shared with the Library Browser. See *Managing Plan Materials on page 769*.

Texture Panel

In most Rendering Techniques, materials are represented using textures. See *Rendering Techniques on page 836*.

Transparency information may be contained on the alpha channel of a texture; if so, it is used in rendered views.



1 Material Name

The Material Name displays here and can be changed if you wish. Renaming the material does not create a new material: it redefines the existing material.

- Check **Keep Pattern/Texture in Sync** to maintain consistent **Scale** and **Offset and Angle** settings for both the selected material's pattern and its texture if any of these settings are modified.

2 Texture Source

Displays the path and file name of the selected texture.

- Click the **Browse** button to browse to a texture file saved on your computer. Supported file formats are **.jpg**, **.bmp**, **.png**, **.gif**, and **.tif**. See *Creating Materials on page 767*.
- You can also type or paste the full path name of a texture in the text field. To remove the file, click the **Remove** button.
- Textures saved in **.zip** files can also be used. See *Texture Panel on page 775*, below.
- If the texture is not located in either the Home Designer 2027 Data folder or the installation folder for the program's library textures, a copy of the file will be made in Home Designer 2027 Data\Textures/Material Data. See *Home Designer Data on page 74*.

3 Scale

- Adjust the **X Scale** and **Y Scale**, or height and width, of the selected texture.
  - If a surface is larger than the area described by the X and Y Scale, the surface will receive "tiles" of the texture image. If it is smaller, only a portion of the texture is shown.
  - Check **Stretch to Fit** to stretch the texture image to cover each surface's height and/or width. For artwork or photography in a frame, check Stretch to Fit for both X Scale and Y Scale.
- Check **Retain Aspect Ratio** to maintain the ratio between the texture image's height and width and prevent distortion when either its X or Y Scale value is adjusted.
- Click the **Reset Original Aspect Ratio** button to restore the texture image's actual aspect ratio.

> Note: Changing the scale or selecting Stretch to Fit can cause textures to appear distorted if applied to a surface with a different aspect ratio than the original texture image.

4 Offset and Angle

- Specify the **X** and **Y Positions** of the texture's origin, **if needed,** to adjust its layout on surfaces.
- Specify the **Angle** of the texture on the surfaces of objects, in degrees.
- Check **Global Symbol Mapping** to ignore the texture mapping that a symbol was created with, allowing Chief Architect to map textures automatically, based on the general size of the symbol. This should remain unchecked unless the symbol's textures appear to be mapped incorrectly.

5 Material Color

Material Color can also be set on the PATTERN panel. See *Pattern Panel on page 772*.

- Check **Blend with Texture** to apply the Material Color over the material's texture.

  When a new material is created using the **Blend Colors With Materials** tool, the resulting material has this box checked. See *Blend Colors With Materials on page 760*.
- Click the **Color** button to specify the Material Color.

- Click the **Set Material Color Using Texture** button to use the predominant color of the material's texture. See *Patterns and Textures on page 756*.

6 Texture Preview

A preview of the material's texture displays in the square pane. It updates as you change the material definition.

7 Preview

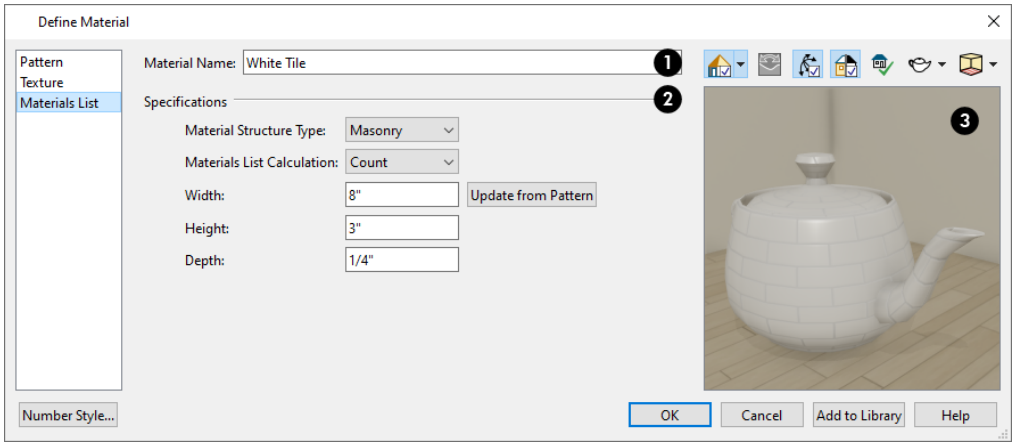
A preview of the material applied to an object displays here and updates as changes are made to the material definition. Various options allow you to view different aspects of the material's attributes:

- Scroll in the preview pane to zoom or click and drag to orbit the object shape in the view.
- Display the material using Standard rendering or Vector View.
- There are two options for clicking and dragging within the Preview pane:
  - When a Spherical Backdrop is specified for the material preview, click the **Rotate Spherical Backdrop** button, then click and drag in the preview pane to adjust the backdrop horizontally. Not available if the Default Room or a regular backdrop is in use. See *Spherical Panoramic Backdrops on page 847*.
  - When **Mouse Orbit Camera** is toggled on, you can click and drag in the preview pane to orbit around the object displaying the selected material.
- Toggle **Color** on or off.
- Click the **Restore Original View** button to reset the material preview to its original perspective.
- Select an object shape: Cube, Sphere, Teapot, or Plane.
- Select the background for the object shape: **Use Default Room** or **Backdrop from Library**. Recently used backdrop images can also be selected. See *3D Backdrops on page 846*.

The Rendering Technique and object shape selections in this dialog's preview are shared with the Plan Materials dialog. Unlike other dialog previews, these are retained when you close the dialog. The object shape and backdrop selections are also shared with the Library Browser. See *Managing Plan Materials on page 769*.

Materials List Panel

The settings on the MATERIALS LIST panel control how the selected material is counted in the Materials List. See *Materials and the Materials List on page 768*.



1 Material Name

The **Material Name** displays here. You can type a different name if you wish. Renaming the material does not create a new

material: it redefines the existing material. See *Creating Materials on page 767*.

2 Specifications

Specify the **Colors** used to represent the material's pattern in Vector Views. Click either color box to open the Select Color dialog and select a color. See *Select Color Dialog on page 165*.

- Select a **Material Structure Type** from the drop-down list. The selected Type defines how - or whether - the material is calculated in the Materials List. See Material Structure Types.
- Select a **Materials List Calculation** method. When "Framing" is the selected Structure Type, the only available Calculation Method will be "Framing". See Calculation Methods.
- The settings that are available below depend on which Calculation method is selected.
  - Specify the material's **Width**. This value is available for Count and Linear Calculation methods
  - Specify the material's **Height**. Only available for the Count Calculation method
  - Click the **Update from Pattern** button to make the Width and Height values here match those set on the PATTERN panel. Only available when Count or Linear is selected as the Calculation method.
  - Specify the material's **Depth**. Only available for the Count Calculation method, this value is only used for Materials List calculations when the material is applied to a Soffit or 3D Solid object. This value may also be used if the Material Painter is used to create a floor or ceiling finish. See Floor and Ceiling Finishes and the Material Painter.

3 Preview

The settings on the MATERIALS LIST panel affect how the material is calculated in Materials Lists, but not its appearance in camera views.

3D Views

Chapter 35

Little preparation is needed to create a 3D view of a model: simply click a button to create an overview or click and drag to create a camera or cross section/elevation view.

To improve the quality of the rendering and create a custom look, you can adjust lighting and edit the materials used in the plan. See *3D Rendering on page 817*.

Many objects can be placed and edited in 3D views, and any camera view or overview can be saved or even used to record a walkthrough. See *Pictures, Images, and Walkthroughs on page 850*.

Types of 3D Views

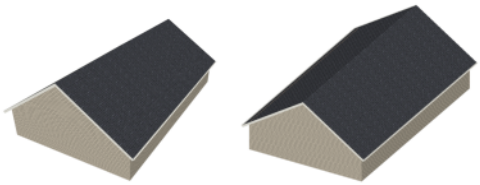
There are three categories of 3D views in Home Designer: camera views, overviews and cross section/elevation views. Each of these view types can be generated using a variety of Rendering Techniques. See *Rendering Techniques on page 836*.

Every 3D view is also either orthographic or perspective in nature. Cross section/elevation views are always orthographic while camera views are always perspective. You can choose to generate overviews as either orthographic or perspective.

Perspective and Orthographic Views

Perspective views have a focal, or vanishing, point. Surface edges and lines that would be parallel in real life appear to converge towards that focal point, and objects closer to the camera appear larger while objects farther from the camera appear smaller.

Orthographic views do not have a focal or vanishing point. Parallel surface edges and pattern lines appear parallel in these views and objects appear to be the same size regardless of their distance from the camera.



The perspective view on the left has a vanishing point while the orthographic view on the right does not.

Perspective views display 3D objects much the way that they appear to the eye in real life, so they are ideal for presentation views. By default, perspective views are created using the Standard Rendering Technique.

Orthographic views, on the other hand, are useful for technical drawings. By default, orthographic views are created using the Vector View technique.

Rendered and Vector Views

3D views can be generated using a variety of different Rendering Techniques. See *Rendering Techniques on page 836*.

Most rendered views represent materials using textures. Surface edge lines are generally not drawn and lighting is often modeled, creating results that range from a photorealistic appearance to artistic painting styles.

Vector Views are non-photorealistic views in which objects are drawn using surface edge lines, or vectors. Limited lighting and shadows can be calculated and materials are represented using pattern lines and solid colors. Vector Views are ideal for layout drawings and high resolution printing. See *Vector View on page 837*.

3D View Defaults and Preferences

There are a number of defaults and preference settings that allow you to control the initial characteristics of 3D views.

Camera positioning, field of view and related initial settings for camera views are specified in the Camera Defaults dialogs. See *Camera Defaults Dialogs on page 780*.

The settings in the **3D View Defaults** dialog control a variety of functions that affect views created by all 3D View tools. See *3D View Defaults Dialog on page 782*.

The default characteristics of the **Generic Sun** light source can be specified in the Generic Sun Defaults dialog. See *Adjust Sunlight Dialog on page 834*.

As in plan view, the display of objects in 3D views can be controlled by layer. See *Layer Attributes on page 152*.

3D views can be generated using any of the **Rendering Techniques**. See *Rendering Techniques on page 836*.

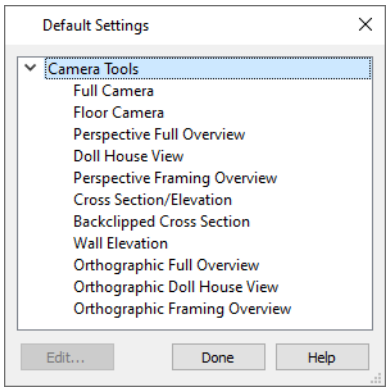
The initial settings for each Rendering Technique can be set in the Rendering Techniques Defaults dialog. See *Rendering Technique Options on page 839*.

The RENDER panel of the Preferences dialog has settings that affect 3D views. See *Render Panel on page 117*.

Camera Defaults Dialogs

There are several defaults dialogs for cameras, which can be accessed by selecting **Edit> Default Settings** or by double-clicking either the **Orthographic or Perspective View Tools** parent button. In the Default Settings dialog, click the arrow next to “Camera Tools”, then select a subheading and click the Edit button to open the defaults dialog associated with your selection.

The various Camera Defaults in the list can be multiple-selected and then edited as a group by holding down the ***Shift*** or ***Ctrl/⌘*** keys. Depending on the selection, not all settings may be available. See *Shift and Ctrl/⌘ Select on page 187*.



The defaults dialog for Camera Tools other than Overviews can be accessed by double-clicking the associated toolbar button.

The settings in the Camera Defaults dialogs affect how each type of camera captures, clips, and renders views; how they display in plan view; how they are positioned; and how they move.

Once a camera is created, its attributes can be customized. See *Editing 3D Views on page 797*.

Full Camera Defaults

Specify the initial attributes of cameras created using the **Full Camera** tool. See *Camera Views on page 783*.

The settings in this dialog are the same as those the Full Camera Specification dialog. See *Camera Specification Dialogs on page 809*.

> Note: The Reflections setting in the Full Camera Defaults is used by walkthroughs created using the Walkthrough Path tool. See *Generating a Walkthrough on page 879*.

Perspective Full Overview Defaults

Specify the initial attributes of cameras created using the **Perspective Full Overview** tool. See *Full Overview on page 785*.

The settings in this dialog are the same as those in the Perspective Full Overview Specification dialog.

Dollhouse View Defaults

Specify the initial attributes of cameras created using the **Dollhouse View** tool. See *Dollhouse View on page 786*.

The settings in this dialog are the same as those in the Dollhouse View Specification dialog.

Perspective Framing Overview Defaults

Specify the initial attributes of cameras created using the **Perspective Framing Overview** tool. See *Overviews on page 783*.

The panels in this dialog are the same as their respective panels in the Orthographic Framing Overview Specification dialog.

Cross Section/Elevation Defaults

Specify the initial attributes of cameras created using the **Cross Section/Elevation** tool. See *Cross Section/Elevation Views on page 784*.

The settings in this dialog are also found in the **Cross Section/Elevation Specification** dialog. See *Cross Section/Elevation Specification Dialog*.

Back Clipped Cross Section Defaults

Specify the initial attributes of cameras created using the **Back Clipped Cross Section** tool. See *Cross Section/Elevation Views on page 784*.

The panels in this dialog are the same as their respective panels in the Cross Section/Elevation Specification dialog. See *Cross Section/Elevation Specification Dialog*.

Wall Elevation Defaults

Specify the initial attributes of cameras created using the **Wall Elevation** tool. See *Cross Section/Elevation Views on page 784*.

The panels in this dialog are the same as their respective panels in the Wall Elevation Specification dialog. See *Cross Section/Elevation Specification Dialog*.

Orthographic Full Overview Defaults

Specify the initial attributes of cameras created using the **Orthographic Floor Overview** tool. See *Full Overview on page 785*.

The panels in this dialog are the same as their respective panels in the Orthographic Full Overview Specification dialog.

Orthographic Dollhouse View Defaults

Specify the initial attributes of cameras created using the **Orthographic Dollhouse View** tool. See *Overviews on page 783*.

The panels in this dialog are the same as their respective panels in the Orthographic Dollhouse View Specification dialog.

Orthographic Framing Overview Defaults

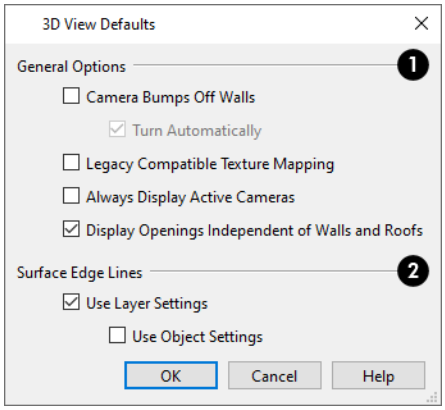
Specify the initial attributes of cameras created using the **Orthographic Framing Overview** tool. See *Overviews on page 783*.

The panels in this dialog are the same as their respective panels in the Orthographic Framing Overview Specification dialog.

3D View Defaults Dialog

Select **3D> 3D View Defaults** or **Edit> Default Settings** to open the 3D View Defaults dialog.

The settings in this dialog control a variety of functions that affect views created by all 3D View tools.



1 General Options

These settings affect all 3D views.

- Check **Camera Bumps Off Walls** to prevent cameras from moving freely through walls. When this setting is on, you can "walk" up a staircase by moving the camera using the Move Camera Tools.
- When **Turn Automatically** is checked, cameras automatically change direction when they approach a wall, door opening, or staircase. This should be unchecked when using a 3D mouse or gamepad. See *3Dconnexion® 3D Mice on page 791* and *Move Camera Tools on page 793*.

- Check **Legacy Compatible Texture Mapping** to use global texture mapping settings rather than texture mapping fixed to individual objects.

> Legacy Compatible Texture Mapping should remain unchecked except in legacy plans with custom rotated textures.

- When **Auto Adjust Electrical Default Glass Properties** is checked, the program automatically adjusts the behavior of electrical fixture glass in Standard rendered views in response to interior and exterior lighting conditions. When this box is unchecked, these adjustments are not made.
- Check **Always Display Active Cameras** to turn on the display of active camera symbols, even when the "Cameras" layer is turned off. When unchecked, active camera symbols obey the layer setting.
- When **Display Openings Independent of Walls and Roofs** is checked, doors, windows, and skylights display in 3D views when their containing wall or roof plane does not. Uncheck this to prevent these objects from displaying in 3D when their parent objects do not. This setting affects the display of openings in both Invisible walls and those on layers that are not set to display.

2 Surface Edge Lines

Specify how Surface Edge Lines display for all objects in Vector View renderings. Surface edge line color in Technical Illustration renderings are also affected by these settings. See *Rendering Techniques on page 836*.

- Check **Use Layer Settings** to display surface edge lines for objects using the display settings specified by layer in the Layer Display Options dialog. If this option is not checked, all edge lines are drawn black and solid with a line weight of 0. See *Layer Attributes on page 152*.
- When **Use Object Settings** is checked, all objects that have non-default settings specified on the LINE STYLE panel of their specification dialog display using those settings, overriding the layer settings in the Layer Display Options dialog. Only available when Use Layer Settings is checked. See *Line Style Panel on page 234*.

3D View Tools



Select **3D> Create Orthographic View** to display the Orthographic View Tools or **3D> Create Perspective View** to display the Perspective View Tools.

There are three types of 3D Views:

CAMERA VIEWS

Camera views are Perspective views. They are not scaled and cannot be annotated but are ideal for creating presentation views.



The **Full Camera** tool creates multi-floor views of the 3D model. It can be used to create interior and exterior perspectives, and is good for displaying cathedral ceilings, roofs, lofts, stairwell openings, and other variation in floor and ceiling levels.

OVERVIEWS

An overview can be either orthographic in nature or perspective, depending on the tool used to create it. See *Creating Overviews on page 785*.



The **Orthographic** and **Perspective Full Overview** tools create views of the entire model including all floors, ceilings, and the roof.



The **Orthographic** and **Perspective Doll House View** tools create views of the current floor with the ceiling removed and all floors beneath it visible.

The **Orthographic** and **Perspective Framing Overview** tools create views of the framing in the model. Framing must be built in order for it to display in a framing overview. See *Framing Overview on page 786*.

Cross Section/Elevation Views

Cross Section/Elevation views are similar to the traditional, scaled orthographic views often used in drafting. They are scaled and can be fully annotated. See *Cross Section/Elevation Views on page 787*.

A **Cross Section/Elevation** view displays all floors of the model. If the view is created outside the structure looking toward it, the result is an exterior elevation. If the view is created inside the structure, or passes through any of the structure, a cross section is created.

The **Back Clipped Cross Section** tool includes only the objects between the starting point and stopping point of the cross section line.

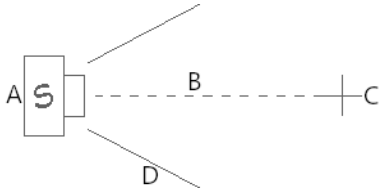
The **Wall Elevation** tool creates an elevation of a wall on a single floor and in a single room. The **Wall Elevation** tool cannot be used to create exterior views.

Creating Camera Views

All Camera views are created using the same method.

To create a camera view

1. In plan view, select the desired camera tool. The mouse pointer displays the camera icon.
2. Click and drag a line to define the view direction.



A. Camera Position (click)
B. Line of Sight (drag)
C. Focal Point (release)
D. Field of View

   - The camera's position is where you click to begin the line.
   - The line that you drag defines the direction the camera is pointed.
   - The end of the line is the focal point of the view, the point the camera rotates around.
   - The Field of View is 55° by default.
3. To create a camera using the **Alternate Rendering Technique**, right-click and drag to create the camera. See *Alternate on page 180*.
4. When you release the mouse button, a view generates in a new window.
5. Return to the plan view. A camera symbol now displays in plan view. See *Working in Multiple Views on page 133*.

In order to create a camera view, you must click and drag at least as far as your current **Snap Distance**. See *Snap Properties Panel on page 114*.

A new camera can also be created by copying and pasting an existing camera symbol selected in plan view. See *Copying and Pasting Objects on page 146*.

Camera Height

By default, Cameras are created at a height of 60” (1500 mm). Where this height is measured from depends on the location of the camera:

- If the camera is inside a room, it is measured from that room’s subfloor.
- If the camera is outside a room but inside the Terrain Perimeter, it is measured from the terrain at the location of the camera.
- If the camera is located in neither a room nor within the Terrain Perimeter, it is measured from the default height of the subfloor for the current floor.

Once created, a camera’s height can be modified in its Camera Specification dialog, and the default height value can be set in the Camera Defaults dialog. See *Camera Panel on page 809*.

Alternate Rendering Technique

With the exception of overviews, all camera views can be created by either left-click + dragging or right-click + dragging. See *Alternate on page 180*.

These two actions provide an efficient way to create a camera view using either the primary Rendering Technique or the Alternate Rendering Technique, respectively. See *Rendering Techniques on page 836*.

Both primary and **Alternate Rendering Technique** are set in the defaults dialog for the camera tool. See *Camera Defaults Dialogs on page 780*.

Creating Overviews

In Home Designer, there are three different overview types: Full, Dollhouse, and Framing Overviews.

Each type of overview can be generated as either an orthographic or perspective view. An overview window’s title bar indicates whether it is perspective or orthographic. See *Perspective and Orthographic Views on page 779*.

Overviews generate as soon as you select the tool and are always created at the same 120° angle. The initial focal point is located at the center of the architectural model: the terrain is not taken into consideration determining its position. The distance of the camera from the model will vary depending on its size: the larger the architectural model, the further away the camera will be from the focal point so that the entire model can be seen in the view.

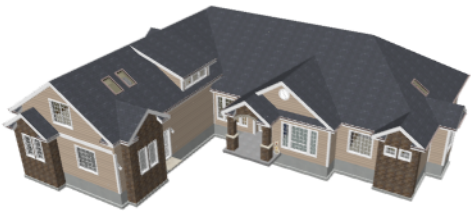
A new overview camera can also be created by selecting an existing overview camera in plan view and then copying and pasting it. See *Copying and Pasting Objects on page 146*.

Once generated, an overview window’s title bar indicates its view type and a camera symbol in plan view represents its location. An overview camera can be edited much like regular camera views can. See *Editing 3D Views on page 797*.

Full Overview



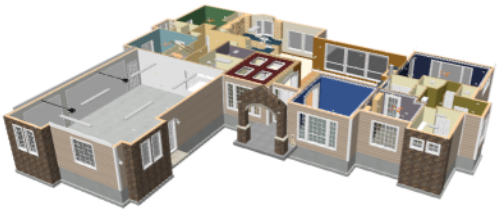
Select **3D> Create Orthographic View> Orthographic Full Overview** or **3D> Create Perspective View> Perspective Full Overview** to generate an exterior view of the entire model.



Dollhouse View

Select **3D>Create Orthographic View> Orthographic Dollhouse View** or **3D> Create Perspective View> Perspective Dollhouse View** to create a view of the current floor with the ceiling removed and all floors beneath it visible.

Dollhouse Views are an effective tool for illustrating traffic flow and the relationships between spaces.

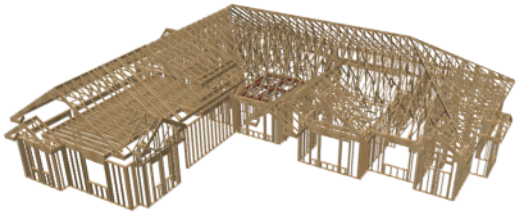


To see a different floor, select **Tools> Floor/Reference Display> Up One Floor** or **Down One Floor**. You can also return to plan view and make another floor current before generating the Dollhouse View.

If you prefer, you can specify in the Camera Defaults dialog that only the current floor be included in Floor Overviews. See *Camera Defaults Dialogs on page 780*.

Framing Overview

Select **3D> Create Orthographic View> Orthographic Framing Overview** or **3D> Create Perspective View> Perspective Framing Overview** to create a view of the entire model, displaying only framing and the foundation.



Framing overviews include all floor, wall, and roof framing as well as foundations. Framing must be created before generating a Framing Overview or the view will be empty aside from any foundation walls on Floor 0. If no framing is present in the model, you will be presented with the opportunity to generate it. See *Creating Framing on page 666*.

Unlike other overviews, which use the Camera View layer set, Framing Overviews use the 3D Framing Set. See *Layer Sets on page 155*.

Cross Section/Elevation Views

The cross section/elevation tools produce the traditional, orthogonal views often used in drafting. Regardless of their distance from the camera, all lines and dimensions in these views are their true lengths, making it easy to accurately see the spatial relationships of the 3D objects in the model.

Cross section/elevation views are the only 3D views that can be enhanced with the 2D CAD tools. They can be fully annotated and dimensioned, sent to layout, and printed to scale. See *Detailing Cross Section/Elevation Views on page 802*.

Creating Cross Section/Elevation Views

Each of these tools has a specific function:

A **Cross Section/Elevation** view displays all floors of the model. The cross section begins at the point where the camera arrow is drawn and continues through the entire model.

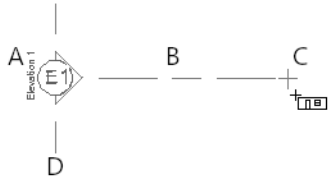
The **Back Clipped Cross Section** tool includes only the objects or portions of objects between the starting point and stopping point of the camera's Line of Sight.

The **Wall Elevation** tool creates an interior elevation of a single wall defining the room that the camera is drawn in. It creates a 2D projection of that wall and the objects located between that wall and its Cross Section Line; does not cut through walls or show the ceiling, floor, or roof; and is used primarily for kitchen and bath elevations. Wall Elevations do not show framing objects, regardless of what layer they are on. This tool cannot be used to create exterior views.

Cross Section/Elevation, **Back Clipped Cross Section**, and **Wall Elevation** views are created in the same way.

To create a cross section/elevation view

1. Select the **Cross Section/Elevation**, **Back Clipped Cross Section**, or **Wall Elevation** tool. The pointer changes to a with crosshairs marking the position of the pointer.
2. Click and drag a line in plan view.
   - If you selected the Wall Elevation tool, you must click inside a room area.
   - A Camera symbol displays where you click, along with a Cross Section Line indicating the plane of the camera's cross section cut line.



A. Camera location (click)
B. Line of Sight (drag)
C. Focal Point (release)
D. Cross Section Line

3. Drag in the direction of the Line of Sight to draw a camera arrow.
   - Always drag the camera arrow perpendicular to the wall to be viewed.
   - If the view is a Back Clipped Cross Section, a second Cross Section Line at the end of the Line of Sight indicates the furthest extent of the back clip.
4. When you release the mouse button, the view generates in a new window.
5. Once created, a cross section/elevation view's extents can be edited. See *Camera Panel*.

As with camera views, you must click and drag at least as far as your current **Snap Distance** in order to create a Cross Section/Elevation view. See *Snap Properties Panel on page 114*.

A new cross section/elevation view can also be created by copying and pasting an existing cross section/elevation camera symbol selected in plan view. See *Copying and Pasting Objects on page 146*.

Once created, the clipping in all cross section/elevation views can be customized to control how much of the model is included in the view. See *Camera Panel*.

If the Line of Sight does not cut through a 3D object and the object is within the back clipped distance, such as a window shown in elevation, the object retains its 3D definition and can be selected, moved, stretched, or otherwise modified in the view. The 3D model is updated in all views.

Displaying 3D Views

A variety of tools and settings allow you to control the appearance of 3D views. There are also numerous ways to adjust a 3D view's position, focal point and field of view. See *Editing 3D Views on page 797*.

The name of the current plan file and the type of view displays at the top of each view window in its title bar. If a 3D view is saved, its name also displays.

There is no limit to the number of 3D view windows that you can have open at a given time; bear in mind, though, that each window demands use of your computer's resources and that you may see poor performance if too many views are open. See *Working in Multiple Views on page 133*.

The 3D model will rebuild automatically as you draw; however, if you notice any anomalies in the model in 3D, select **3D> Rebuild 3D** to regenerate all 3D data associated with the current plan. All open views will remain open.

Layer Display Options

As in plan view, the display of objects in 3D views can be controlled by layer. See *Layer Display Options Dialog on page 154*.

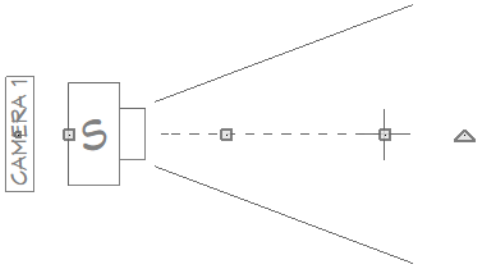
Different view types use different layer sets when they are created. See *Layer Sets on page 155*.

To show framing in a cross section/elevation view, framing must first be built using the Build Framing dialog and the appropriate framing layers must be turned on in the Section View layer set. See *Framing on page 641*.

To show a view's Clip Lines, turn on the "CAD, Clip Lines" layer in that view. See *Clipped Section Views on page 801*.

In Plan View

Cameras are represented in plan view by symbols that indicate the camera's position, field of view and focal point.



2D camera symbols are located on the "Cameras" layer See *Display Layers on page 151*.

By default, active camera symbols display regardless of whether the “Cameras” layer is on or off. If you prefer that their display be turned on or off with this layer, uncheck **Always Display Active Cameras** in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

Active camera symbols and callouts use the **Selection Line** color set in the Preferences dialog. All other display attributes are derived from the “Cameras” layer. See *Colors Panel on page 95*.

You can also display camera symbols for saved cameras when the “Cameras” layer is turned on. See *Display Layers on page 151*.

The symbols for Full Overviews, Cross Section/Elevation, and Back Clipped Cross Section views display on all floors, while those for Full Cameras, Floor Overviews, and Wall Elevations display only on the floor where they were created.

You can also move a camera to a different floor by clicking the **Up One Floor** or **Down One Floor** button while the camera view is active. Note that this may affect what is seen in the view as well as its display in plan view. See *Floor Up / Floor Down on page 546*.

Both saved and unsaved active cameras can have labels indicating the camera number or its name. Camera labels are located on the “Cameras, Labels” layer. See *Label Panel on page 395*.

Camera labels are numbered sequentially in each plan in the order they were created unless you rename them.

- Camera labels always use the Camera Name. Saved cameras’ names can be specified in the Camera Specification dialogs. See *Camera Panel on page 809*.

Camera symbols are an on-screen reference: they do not print unless **Print Image** is used and cannot be sent to layout except as an image. They are, however, included in views exported to .dxf

In Rendered Views

There are a number of factors that contribute to the appearance of rendered 3D views.:

- Select **View> Color** to toggle between color and grayscale in 3D views. See *Color On/Off on page 157*.
- Select **3D> Rendering Technique** to select a technique to apply to the current view. See *Rendering Techniques on page 836*.
- Select **3D> Lighting> Adjust Lights** to open the Adjust Lights dialog and edit the light sources in the current plan. See *Adjust Lights Dialog on page 826*.

Several other factors can contribute to the overall quality of a rendered 3D view. See *Rendering Tips on page 817*.

In Vector Views

There are also a number of factors that affect the appearance of 3D Vector Views:

- Select **3D> Toggle Patterns** in a Technical Illustration or Vector View to turn on or off the display of the “Patterns, 3D Views” layer, which controls the display of material pattern lines. See *Display Layers on page 151*.
- Select **View> Color** to toggle between color and black and white to control the display line and fill colors.
- The line style, color, and weight of objects in Vector Views can be specified by layer or, for some objects, individually in their specification dialogs. See *Line Style Panel on page 234*.
- The line weight, color, and style of material patterns are set in the Define Material dialog. See *Define Material Dialog on page 772*.
- Line weights display on screen when **Show Line Weights** is enabled. See *Line Weights on page 991*.

3D Backdrops

A backdrop is an image, usually of an exterior view, that displays in the background of 3D views to help place the model into a realistic setting and add a sense of perspective. If a backdrop is not specified, Home Designer applies a background color. See *3D Backdrops on page 846*.

Rendering Techniques

Any 3D view can be assigned a Rendering Technique for a range of different purposes: from detail drawings to artistic presentation views. Select **3D> Rendering Techniques** to access these tools. See *Rendering Techniques on page 836*.

Delete 3D Surface

The individual surfaces that make up objects can be temporarily removed from any 3D view by selecting **3D> Delete Surface** and then clicking on a surface. When the pointer is over a surface, that surface will become highlighted.

Surfaces removed in one view are removed in all 3D views, but are not permanently removed from the model. Continue clicking surfaces to remove them, then select another tool when you are finished.

Surfaces in 3D views are composed of multiple triangles. Hold the ***Alt*** key while clicking to delete one triangular face at a time rather than all triangles forming a surface.

To restore the most recently deleted surface, select **3D> Delete Surface** or click the toolbar button.

There are several ways to restore all deleted surfaces:

- Select **Build> Floor> Rebuild Walls/Floors/Ceilings** .
- Exit the 3D view and reopen it.
- Create a new 3D view.

Navigating in Camera Views

Once a 3D view is created, there are many ways to manipulate the camera location and the direction of its line of site using the mouse, the keyboard, and the menus.

The Move Camera with Mouse buttons are included on the toolbars in 3D views by default; but, you can add the other tools your toolbars as well as customize their hotkeys. See *Toolbars and Hotkeys on page 121*.

When the keyboard, toolbar buttons, or menu commands are used to move or rotate a camera, the adjustments occur in regular increments. The size of these increments is specified in the Camera Specification dialog:

- The **Incremental Move Distance** controls Panning movement and forward and backward Dolly movement.
- The **Incremental Rotate Angle** controls Orbit movement, Tilt movement, and side to side Dolly movement.

See *Camera Panel on page 809*.

Each time you move the camera, the view is updated. If you are using either the toolbar or keyboard to move the camera, you can hold down the ***Shift*** key, suppressing the redraw of the view until the ***Shift*** key is released and allowing you to move multiple increments more quickly.

> Press the ***Ctrl/⌘ + Alt + S*** keys while in a camera view or overview to spin the view. To stop the spinning, press the ***Esc*** key.

You can also move a camera to a different floor by clicking the **Up One Floor** or **Down One Floor** button while the camera view is active. Note that this may affect what is seen in the view as well as its display in plan view. See *Floor Up / Floor Down on page 546*.

Mouse Scroll Wheel and Trackpad

3D views can be panned and zoomed when any tool is active using the mouse scroll wheel or trackpad gestures. See *Trackpads on page 14*.

The program adjusts the speed of these actions depending on characteristics of the camera:

- Zoom speed depends on how close the camera is to the object located behind the mouse pointer. When the target object is far from the camera, zooming is faster; as the camera gets closer to the target, zooming slows.
- Regardless of the camera's distance from the target object, you can speed up zooming by holding down the ***Shift*** key or slow down zooming by holding down the ***Ctrl/⌘*** key.
- Panning speed depends on the length of the camera's Line of Sight. In general, it is likely to be faster in an exterior view of a large model, slower in an interior view of a small room. See *Creating Camera Views on page 784*.

By default, panning and zooming adjusts the position and direction of the camera. It does not, however, adjust the distances at which surfaces are clipped. This means that if you zoom in closely on an object, some of its surfaces may be removed from the view. One way to avoid this is to lower the camera's **Clip Surfaces Within** value in the Camera Specification dialog. See *Camera Panel on page 809*.

3Dconnexion® 3D Mice

3Dconnexion®'s 3D mice can be used to navigate in all views - including camera views and overviews.

In the Windows version of Home Designer, preprogrammed view direction hotkeys are supported on devices with buttons for that purpose. MacOS™ does not provide mapping support to the view direction commands.

In Orthographic views, navigation is centered around the camera's focal point; for Perspective views, you can specify whether navigation is centered about the camera or its focal point in the Preferences dialog. See *Render Panel on page 117*.

For best results when using a 3D mouse, uncheck **Turn Automatically** when **Camera Bumps Off Walls** is enabled. See *3D View Defaults Dialog on page 782*.

Rolling is not supported in Home Designer, In addition, 3D mice cannot be used to move the mouse pointer. For details about using your 3D Connexion® mouse, refer to its documentation.

Gamepads

In the Windows version of Home Designer, gamepads can be used to navigate in camera views, overviews, and elevation views. To use a gamepad in Home Designer, Select **Tools> Toolbars and Hotkeys> Gamepad Settings**, then check **Enable Gamepad** in the Gamepad Settings dialog. You can also adjust the sensitivity and other aspects of thumbstick functionality when used in Home Designer. See *Gamepad Settings Dialog on page 128*.

You can also specify whether navigation is centered about the location of the camera or its focal point in the Preferences dialog. See *Render Panel on page 117*.

> You can add the Gamepad Settings and Toggle 3D Mouse and Gamepad Navigation buttons to your toolbars if you wish. See *To add a button to a toolbar on page 124*.

Move Camera with Mouse



An active camera's position can be edited using the mouse. Select **3D> Move Camera With Mouse** to access the Move Camera with Mouse modes, select a mode, and use the left mouse button for the primary behavior or the right mouse button for the secondary behavior. With the exception of Mouse Orbit Camera, which is available in Orthographic Overviews, these tools are not available in Orthographic views.

Tool	Primary Behavior (Left-Click)	Alternate Behavior (Right-Click)
Mouse-Orbit Camera 	Left-click and drag to rotate the camera around its focal point. The camera's position and direction both change. You can temporarily activate **Mouse-Tilt Camera** by using the right mouse button while the Mouse-Pan Camera or Mouse-Tilt Camera mode is active. To continuously rotate the camera around its focal point, left-click in the 3D view, drag the mouse, and release the mouse button to "throw" the view. Click again in the view to stop it from rotating.	Right-click and drag to tilt the camera instead of orbiting.
	In the Mac version of the software, you can temporarily activate **Mouse-Orbit Camera** while another tool is active: hold down the ***Option*** + ***Shift*** keys, then left-click and drag. When the mouse button and keys are released, the previously active tool will again be active.	
Mouse-Pan Camera 	Left-click and drag to move the camera in any direction. The camera's position changes, but its direction does not.	Right-click and drag to orbit instead of panning.
Mouse-Dolly Camera 	Left-click and drag up and down to move the camera forward and backward or drag left or right to rotate the camera side to side.	Right-click and drag to tilt the camera instead of dollying.
Mouse-Tilt Camera 	Left-click and drag in any direction to tilt the camera, changing its view direction but not its position. You can temporarily activate **Mouse-Tilt Camera** by using the right mouse button while the Mouse-Orbit Camera or Mouse-Dolly Camera mode is active.	Right-click to orbit instead of tilting.

Tool	Primary Behavior (Left-Click)	Alternate Behavior (Right-Click)
3D Center Camera on Point 	Lets you focus the camera at a particular point in the scene. This changes the camera's direction and focal point, but not its position. To use this tool, activate it and then click on any object in the scene.	N/A
3D Focus on Object 	Lets you focus on a specific object by changing the camera's position, direction, focal point, and the length of its line of sight. To use this tool, activate it and then click on an object in the scene. Alternatively, select an object in the view and click the **Focus on Selected** edit button.	N/A

Move Camera with Keyboard

An active camera's position can be changed using the Arrow keys on your keyboard. **Select 3D> Move Camera with Keyboard** to access the Move Camera with Keyboard modes. With the exception of Mouse Orbit Camera, which is available in Orthographic Overviews, these modes are not available in Orthographic views.

These modes use the Incremental Move Distance and Incremental Rotate Angle set in the active 3D view's Camera Specification dialog.

- **Keyboard-Orbit Camera** lets you use the keyboard to rotate the camera around the focal point. The camera's position and direction both change.
- **Keyboard-Pan Camera** lets you move the camera up, down, right, and left using the keyboard. The camera's position changes, but its direction does not.
- **Keyboard-Dolly Camera** lets you move the camera forward and back using the ***Up*** and ***Down*** Arrow keys, and rotate side to side using the ***Left*** and ***Right*** Arrow keys.
- **Keyboard-Tilt Camera** lets you use the Arrow keys to tilt the camera up, down, or side to side to change the focal point. The camera's direction changes, but its position does not.

Move Camera Tools



Select **3D> Move Camera** in a 3D view to access these tools. These tools change the active camera's position but not its direction, and are not available in Orthographic views.



The Move Camera Forward and Move Camera Back tools allow you to "walk" up and down stairs when Camera Bumps Off Walls is checked. See *3D View Defaults Dialog on page 782*.

These tools use the Incremental Move Distance set in the active 3D view's Camera Specification dialog.

	Description
	**Move Camera Forward** moves the camera and its focal point forward.

	Description
	Move Camera Back moves the camera and the focal point back.
	Move Camera Left moves the camera and the focal point to the left in a line perpendicular to the line of sight.
	Move Camera Right moves the camera and the focal point to the right in a line perpendicular to the line of sight.
	Move Camera Up moves the camera and the focal point up.
	Move Camera Down moves the camera and the focal point down.

Orbit Camera Tools

Select **3D> Orbit Camera** in a 3D view to access these tools. Orbiting the camera rotates it about the focal point using the Incremental Rotate Angle set in the active view's Camera Specification dialog.

These tools are not available in Cross Section/Elevation, Back Clipped Cross Section, or Wall Elevation Defaults views.

	Description
	Move Camera In moves the camera closer to the focal point along the line of sight. The camera cannot move past the focal point using this tool.
	Move Camera Out moves the camera away from the focal point along the line of sight.
	Orbit Camera Upward rotates the camera up about the focal point. The camera cannot rotate past a vertical line looking straight down on the focal point.
	Orbit Camera Downward rotates the camera down about the focal point. The camera cannot rotate past a vertical line looking straight up at the focal point.
	Orbit Camera Left rotates the camera to the left about the focal point.
	Orbit Camera Right rotates the camera to the right about the focal point.

Tilt Camera Tools

Select **3D> Tilt Camera** to access these tools. Tilting keeps the camera in one place and pivots the camera about its vertical or horizontal axis. This movement uses the Incremental Rotate Angle set in the active view's Camera Specification dialog and is similar to tilting your head up and down or turning it side-to-side.

These tools are not available in Orthographic views.

	Description
	Tilt Camera Upward tilts the camera up while keeping it in the same location. The camera cannot tilt beyond the vertical position.
	Tilt Camera Downward tilts the camera down while keeping it in the same location. The camera cannot tilt beyond the vertical position.
	Turn Camera Left turns the camera to the left while staying in the same location.
	Turn Camera Right turns the camera to the right while staying in the same location.

View Direction Tools

The View Direction Tools allow you to view the model from a specific direction in a camera view or overview. While one of these views is active, select **3D> View Direction** to access these tools.

	Description
	Front View creates a front view of the model.
	Back View creates a back view of the model.
	Top View creates a top view of the model.
	Bottom View creates a bottom view of the model.
	Left Side View create a left side view of the model.
	Right Side View create a right side view of the model.
	Restore Original View restores the original view position. This option is also available for material previews in the Library Browser and Define Material dialogs.

Working in 3D Views

A variety of tools are available in 3D views that allow you to edit your 3D model as well as annotate it.

Creating Objects in 3D Views

You can place windows, doors, cabinets, electrical objects, corner trim, and most library objects directly into 3D views. To do this, select the appropriate tool and click in the 3D view. You can then edit the object's size and placement.

When created in 3D, most objects must be placed against a wall, on a floor platform, or within the Terrain Perimeter.

You can also click and drag to draw some CAD-based objects such as custom countertops, roof planes, terrain features and roads in camera views and overviews.

The Build Framing and Build Roof dialogs are also accessible in 3D views, although the manual **Framing Tools** and **Roof Tools** are not.

Selecting and Editing Objects in 3D Views

Most objects can be selected and edited in 3D views. Select **Edit> Select Objects** and click on the surface of an object to select it. Once selected, objects can be edited using their edit handles, buttons on the Edit Toolbar, and the object's specification dialog. See *Editing Objects on page 179*.

When you select an object, edit handles and a handle surface display. The handle surface is a rectangle around the perimeter of the object that indicates the overall height and width of the selected surface. The edit handles that display depend on the type of object selected. Walls, for example, display two resize edit handles when selected while the top of a cabinet displays ten handles, allowing you to move, resize and reshape it.

> Note: If the wall height of the Exterior Room is adjusted in a 3D view, the default Floor or Ceiling Height of the entire floor is changed. See *Floor and Room Defaults on page 313*.

All moving or resizing is in the plane of the handle surface. You cannot move an object directly towards or away from the camera, for example, because that surface plane cannot be seen in the view.

By default, object movement is restricted to 1 inch (10 mm) increments, but this restriction can be set to custom increments in the Plan Defaults dialog and toggled off and on by selecting **Edit> Snap Settings> Grid Snaps**. See *Grid Snaps on page 144*.

Unrestricted positioning can also be enabled by holding down the ***Ctrl/⌘*** key while moving or resizing an object. See *Unrestricted Movement on page 168*.

Temporary dimension lines display when many objects are selected to help you resize the object and determine its height. These are sometimes easier to see when the color is toggled off. See *Temporary Dimensions on page 353*.

Because cross section/elevation views are orthogonal and display objects at their actual dimensions, they are sometimes more suitable for editing objects than camera views or overviews. See *Cross Section/Elevation Views on page 787*.

When several 3D views are open, changes made in the plan automatically rebuild the model in all views. Because of this, it is typically faster to make changes to your plan with as few windows open as possible.

Editing Materials in 3D Views

Select **3D> Materials> Adjust Material Definition**, then click on a surface in the 3D view to open the Define Material dialog for that material. See *Adjust Material Definition on page 765*.

Select **3D> Material Painter** to apply materials to surfaces in the view using the Material Painter Tools. See *Material Painter® Tools on page 758*.

Select **3D> Material Painter> Material Eyedropper** to apply the material on a surface in the view to other surfaces in the view. See *Material Eyedropper on page 759*.

Annotating Cross Section/Elevation Views

The Text, CAD, and a selection of Dimension tools are available in cross section/elevation views, allowing you to add technical information, call attention to details, and other tasks in these views. See *Detailing Cross Section/Elevation Views on page 802*.

Cross Section Lines

Cross Section Lines are created in cross section views to represent any objects split by the cross section line of the camera. They are placed on the "Cross Section Lines" layer, which is locked by default, and they get deleted and replaced whenever the view is redrawn.

When a dimension is drawn to locate an object split by a camera's section line, it actually locates Cross Section Lines. So that dimensions can be retained when Cross Section Lines are regenerated, a **Point Marker** is automatically created where a dimension meets a Cross Section Line and the dimension locates it instead of the Cross Section Line. See *Point Markers and Dimensions on page 387*.

Cross Section Lines will print when their layer is turned on; however, they are not included when the view is sent to layout. The Point Markers created when dimensions locate Cross Section Lines, however, will both print and display in views sent to layout. See *Layout on page 970*.

The "Cross Section Lines" layer can be unlocked, allowing Cross Section Lines to be selected and edited. Additional CAD objects can also be placed on this layer when it is unlocked, as well; however, when the view is redrawn, all CAD objects on this layer will be deleted and replaced with a fresh set of Cross Section Lines.

Rebuild 3D

As changes are made to your plan, a 3D view automatically updates to reflect any changes visible in the view. If you find that a view is not updating as expected, select **3D> Rebuild 3D** to rebuild the entire 3D model.

Editing 3D Views

In addition to changing its position and direction, there are numerous ways to modify a 3D view's specifications as well as add annotations. See *Detailing Cross Section/Elevation Views on page 802*.

If you make changes to an open camera view that was saved previously, you will be prompted to resave the view when you close it.

In Plan View

Like other types of objects, cameras are represented in plan view 2D symbols. To select a camera symbol for editing, click on it using the **Select Objects** tool. See *Displaying 3D Views on page 788* and *Select Objects on page 184*.

Particularly in plans with a lot of saved cameras, an efficient way to find and select a particular camera is using its contextual menu in the Project Browser. See *Project Browser on page 50*.

- Select **Open View** to open the selected camera view.
- Select **Find in Plan** to select the camera symbol in plan view.
- Select **Edit View** to open the selected camera view's specification dialog.

You can edit a 3D view in plan view without closing it. See *Working in Multiple Views on page 133*.

In the Specification Dialog

You can make adjustments to a camera in its specification dialog. This dialog is particularly helpful for making fine adjustments to the camera's position, appearance, and other attributes. See *Camera Specification Dialogs on page 809* and *Cross Section/Elevation Specification Dialogs*.



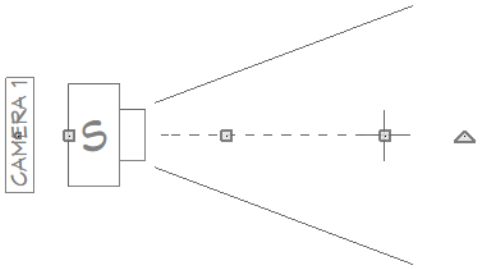
Tile a 3D view and plan view and use the camera movement tools to see how they affect the camera. See *Tiling Views on page 133*.

Using the Edit Tools

A camera symbol or symbols selected in plan view can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Using the Edit Handles

Using the **Select Objects** tool, select the camera object. When a camera symbol or callout is selected, it displays five edit handles.



- Drag the square **Move Label** handle located on the camera label if it is displaying to rotate or move it. See *In Plan View on page 788*.
- Drag the square **Line of Sight** handle located on the camera symbol to change the camera angle without moving the focal point.
- Drag the square **Move** handle located on the line of sight to reposition the camera while maintaining its relative angle.
- Drag the square **Focal Point** handle located at the end of the line of sight to reposition the focal point and change the line of sight without moving the camera.
- Drag the rectangular **Rotate** handle to rotate the camera's line of sight about its center, moving both the camera and its focal point.

If you make changes to a camera symbol using its edit handles in plan view, its 3D view will be affected.

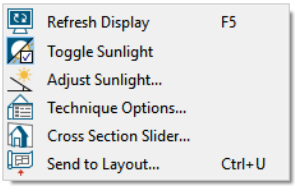
When a cross section/elevation camera is selected, its symbol displays six edit handles:

- Drag the square **Move Label** handle located on the camera label if it is displaying to rotate or move it. See *In Plan View on page 788*.
- Drag the square **Move Clip Plane** handle located on the camera symbol to either lengthen or shorten the line of sight without moving the focal point or back clip line, if present.
- Drag either of the two square **Resize Clip Line** handles located at each end of the clip plane line to adjust the length of the clip plane line, which is perpendicular to the camera's line of sight.
  - Left-click to resize the line concentrically and maintain the camera's position; right-click to move the selected end as well as the camera.
  - This will affect what can be seen in the view if **Clip Sides** is checked. See *Camera Panel*.
- Drag the square **Move** handle located on the line of sight to reposition the camera while maintaining its relative angle.
- Drag the square **Focal Point** handle located at the end of the line of sight to reposition the focal point and back clip line, if present.

Multiple camera symbols can be selected; however, their editing options are limited to being moved, rotated, and deleted.

Using the Contextual Menu

In a 3D view, right-click in an empty space in which the backdrop or background color displays to access the contextual menu. See *Contextual Menus on page 18*.



- In Vector Views, the options are a selection of commonly used commands from the File, Edit, Tools and Window menus.
- In the other Rendering Techniques, the options are a selection of tools and toggles specific to the current view.

Up One Floor/Down One Floor

You can move a camera to a different floor. While the camera view is active, select **Tools> Floor/Reference Display> Up One Floor** or **Down One Floor**. Note that this may affect what is seen in the view as well as its display in plan view. See *In Plan View on page 788*.

The position and movement of a camera is affected by its location within the model. When the camera is outside a building, its height is relative to the terrain and follows the terrain as it is moved. When inside a building, the camera height is relative to the floor of the room it is drawn in.

If the camera is on an upper floor and you move the camera outside the building, the camera remains at the same height relative to the floor it was created on.

Zooming

The Zoom Tools are available in all 3D views. See *Zoom Tools on page 136*.

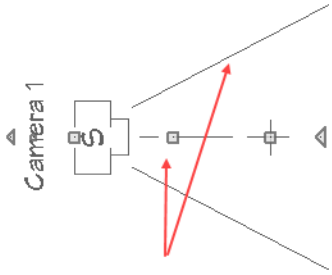
Selecting **Window> Zoom In**, **Zoom Out** or **Fill Window** does not change the camera's location or field of view. Instead, the extents of the view are expanded or cropped.

If you wish, you can instead set the **Zoom** tools to change the Field of View when used in a 3D view. See *Render Panel on page 117*.

Field of View

The Field of View refers to a camera's field of vision. A wider field of view makes the focal point appear further away, as more of the image is included in the same view window.

In plan view, the angled lines of a camera symbol indicate its field of view.



Field of View (FOV) Indicators

A camera's field of view can be adjusted in the Camera Specification dialog. See *Camera Panel on page 809*.

Reset Saved Camera

If you open a saved camera, overview, or cross section/elevation view and then change the position, direction, or any other attribute of the view, you will be prompted to either restore the original attributes or save the current settings when you close the view. See *Saving 3D Views on page 807*.

You can also restore its original attributes at any time prior to closing the view using the Reset Saved Camera tools. Select **3D> Camera View Options** to access these tools.

Reset Saved Camera (All) resets all changes made to the attributes of the current view.

Reset Saved Camera (Position) resets changes to the camera's position and orientation but leaves other attributes as they are.

Clipping and Annotating in Cameras

Home Designer Premier has a number of options to help you show and convey details in a model as well as tools for adding text and other annotations.

Clipped Section Views

The Cross Section/Elevation Specification dialog has Scene Clipping options that allow you to control the extents of the view and thus how much of the model it shows. See *Camera Panel*.

In plan view, information about its front, back, and side clipping are indicated when a camera symbol is selected. In a clipped view, side and elevation clipping are indicated using Clip Lines on the "CAD, Clip Lines" layer. See *Displaying 3D Views on page 788*.

Front and Back Clipping

All cross section/elevation views have a clipping plane positioned at the same location as the camera and running perpendicular to its Line of Sight. This front clipping plane is also referred to as the Cross Section Line, and is shown in plan view when the camera's symbol is selected. If an object is positioned so that it is cut by this plane, its edges will be drawn but the object will not be selectable in the view.

There are two ways to adjust the position of the front clipping plane:

- Specify the camera's **X** and **Y Position** value in the Cross Section/Elevation Specification dialog.
- Use the camera's edit handles in plan view to reposition the start point of its Line of Sight.

By default, Back Clipped Cross Section views also have a second clipping plane: the Back Clip plane, which controls how far into the model from the camera the view extends: objects located further from the camera than the Back Clip plane are not included in the view while those located between the front and back planes are. A Back Clip can be specified for any cross section/elevation view once it has been created.

There are two ways to specify the distance between the front and back clipping planes:

- Set a specific **Back Clip After** value in the Cross Section/Elevation Specification dialog.
- Use the camera's edit handles in plan view to move the end of its Line of Sight, changing its length.

Side Clipping

By default, cross section/elevation views include the entire width of the 3D model. You can instead choose to **Clip Sides** in the Cross Section/Elevation Specification dialog. There are three ways to specify a view's **Clip Width**:

- Set a specific value in the Cross Section/Elevation Specification dialog.
- Use the edit handles in plan view to change the length of the Cross Section Line, or front cutting plane.
- In the view itself, turn on the "CAD, Clip Lines" layer and adjust the position of the vertical Side Clip lines using the edit handles.



You can toggle side clipping in an active view by selecting **3D> Camera View Options> Clip Sides**. This option is not available for views set to Clip to Room.

Top and Bottom Clipping

By default, cross section/elevation views include the entire height of the 3D model. You can instead choose to **Clip Elevation** in the Cross Section/Elevation Specification dialog. There are two ways to specify the top and bottom extents of a clipped view:

- Set a specific **Bottom** and **Top Clip Elevation** values in the Cross Section/Elevation Specification dialog.
- In the view itself, turn on the "CAD, Clip Lines" layer and adjust the position of the horizontal Elevation Clip lines using the edit handles.



When both Side and Top/Bottom Elevation clipping are in use, the Make Parallel/Perpendicular edit tools can be used to customize the horizontal top and bottom clipping planes. These tools do not affect the vertical side clipping planes, however. See *Make Parallel/Perpendicular on page 172*.



You can toggle elevation clipping in an active view by selecting **3D> Camera View Options> Clip Sides**. Not available for views set to Clip to Room.

Clip to Room

The **Clip to Room** option in the Cross Section/Elevation Specification dialog is only available when a selected view camera is located inside a room. This option is the default for Wall Elevation views, and produces a view showing a single wall defining the camera's room along with any objects between the camera and that wall. When this setting is in use, the other clipping options are disabled.

Detailing Cross Section/Elevation Views

CAD objects, including Text and Dimensions, can be created in cross section/elevation views. These objects are superimposed on the view and have no effect on the 3D model itself. If CAD objects have been added to a cross section/elevation view, the program will prompt you to save the view before closing the window. This information is then stored in the view. See *Saved vs Unsaved Views on page 130*.

In cross section views, some objects, such as walls, may be represented using Cross Section lines. If a dimension line finds an object surface edge represented by a Cross Section line, a Point Marker will be placed at that location, and the dimension will locate it instead of the Cross Section line. See *Cross Section Lines on page 797*.

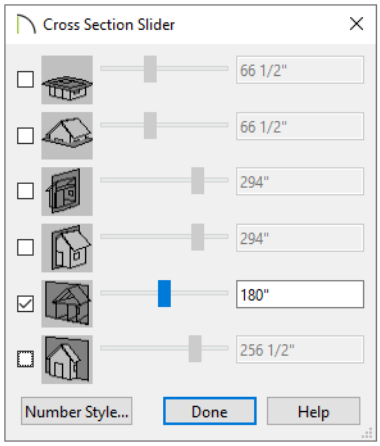
CAD objects will snap to the Snap Grid when **Grid Snaps**  are enabled. Note that the 3D model may obscure the display of the Snap Grid. See *Grid Snaps on page 144*.

Annotated cross section/elevation views can be sent to layout. See *CAD and Text in Layout on page 971*.

Cross Section Slider



The **Cross Section Slider** tool lets you apply one or more cutting planes to expose the interior of a model in 3D views. Select **3D> Camera View Options> Cross Section Slider** when a camera view or overview is active to open the Cross Section Slider dialog.





To use the Cross Section Slider

1. Check the box beside a cross section cutting plane to select it and make its Position slider and text box active.
2. Move the Position slider to adjust the position of the cutting plane.
   - The cutting plane Position is measured from the edge of the model that is cut first by the selected cutting plane.
   - Position the Cutting Plane with accuracy using the text field to the right of the slider.
3. Repeat steps 1-3 to use additional cutting planes if you wish.
4. While the Cross Section Slider dialog is open, you can navigate and even work in the current camera as well as switch views without closing the dialog.
5. Click **Done** to close the dialog. If the active camera is saved, its Cross Section Slider settings will also be retained. See *Saving 3D Views on page 807*.

> Note: Effects created by the Cross Section Slider are not included in Vector Views sent to layout using Plot Lines. See *Plot Line Views on page 976*.

Virtual Reality

The Virtual Reality option is available in the Windows version of Home Designer and allows you to view a plan in 3D using a VR headset. To view a model in VR, select **3D> Virtual Reality** while a Perspective camera view or overview is active.

System Requirements

The following virtual reality headset models are supported for use in Home Designer:

- Oculus: Rift, Rift S, Quest (using Link Cable), Quest 2 (using Link Cable)
- HTC: Vive, Vive Pro, Vive Pro 2, Vive Cosmos, Vive Cosmos Elite, Vive XR Elite with a Vive Streaming Cable
- Valve Index
- Microsoft Mixed Reality

In order to run Virtual Reality in Home Designer, your computer should meet not only the program's system requirements but also the system recommendations provided by your VR headset manufacturer.

In addition, you must first install Steam, a game and software distribution program available at store.steampowered.com.

Once it has been installed, you must also run the SteamVR Setup so that your headset runs through the Steam software. The setup will walk you through setting up the VR sensors in a clear area, free from obstructions, where you can walk and move around.

Virtual Reality can only be activated while viewing an active Perspective View using the Standard Rendering Technique. If Hand Drawn Lines on Top is in use in the current view, it will be ignored in VR. See *Rendering Techniques on page 836*.

Safety Considerations

Virtual Reality should only be run in a space free of obstructions that could cause injury.

To avoid slow performance that could result in motion sickness, turn off any other GPU intensive applications on your system before launching Virtual Reality. Particularly if your system has a high resolution display, use Super Resolution in the current camera view to improve performance prior to launching Virtual Reality. You can also use Super Resolution on systems with a regular monitor; however, you may notice decreased rendering quality. See *Super Resolution on page 818*.

In addition, these settings are recommended in the current camera view prior to launching Virtual Reality:

- Turn Reflections off.
- Turn on a minimal number of lights and shadows.

See *Lighting on page 820* and *Camera Specification Dialogs on page 809*.

Just like in a Home Designer camera view, it is possible to navigate through objects in the model when in Virtual Reality, like walls and furniture. To avoid disorientation or motion sickness, you should avoid doing so.

To avoid motion sickness while using virtual reality, gamepad style controllers are not supported. You can, however, walk within the area designated during your Steam VR Setup. To navigate to different locations in the model, you can also teleport as well as switch between Room View and Overview modes.

Room View and Overview Modes

Home Designer has two Virtual Reality modes:

- In a Room View, you can navigate a model by looking around, walking, and teleporting. Room View is active when you enter VR from a Perspective Camera view.
- In an Overview you can move and rotate the model in order to examine its exterior. Overview mode is active when you enter VR from a Perspective Overview.

In both modes, your initial position and orientation in Virtual Reality are based on the position and angle of the camera. As you turn your head or walk, the view seen in the VR headset will update to reflect your movements. The original camera in Home Designer will be unaffected, however.

Once you enter Virtual Reality, you can switch between the two modes:

- To transition from Room View to Overview, point either VR controller straight up until the Teleport Line changes to a short gray line. Press and hold the Transition button on your VR controller until the line changes entirely to the Mode Transition Color and the controller vibrates, then release the button. See *Virtual Reality Dialog on page 806*, below.
- To transition from Overview to Room View, point either VR controller toward a valid surface on the model. Press and hold the Transition button until the line changes entirely to the Mode Transition Color and the controller vibrates, then release the button.

Navigating Room Views

In a Room View, you can explore a model by looking around, walking in your predefined VR space, and teleporting.

To teleport to other locations within the model, press and hold the Trigger on your VR controller while aiming at a suitably flat surface. A Teleport Marker will appear at the location that you point at, and releasing the Trigger will teleport you to that location.

In Room View, the VR controller projects a Teleport Line that indicates whether a targeted surface is a valid location to teleport to. A valid surface is defined as any surface that has less than 45° pitch, however if a valid surface exists less than 12" below an invalid target location, it will show as valid and the teleport marker will be placed next to the targeted surface. This allows you to easily teleport next to an otherwise invalid surface, such as a wall or cabinet.

To cancel a teleport action, aim the Teleport Line at an invalid location. When the line changes color and the Teleport Marker disappears, release the Trigger.

In Room View, a number of navigation actions can be completed using your VR controller. These controls are the same on both right and left controllers, but specific functions differ slightly depending on the VR controller used.

Command	HTC Vive/Microsoft	Oculus Rift
Teleport	Trigger	
Undo	Trackpad Left	Thumbstick Left + Click
Redo	Trackpad Right	Thumbstick Right + Click
Reset	Menu Button	Thumbstick Up + Click
Transition	Trackpad Down	X or A Button
Update Lighting	Trackpad Upper Click	Y or B Button

Navigating Overviews

In Overview mode, you can examine and model by moving and rotating it in front of you as if holding a scaled version of the model.

In this mode, the Grip buttons on your VR controller allow you to "grab" and rotate the model. Using the Grip buttons on both VR controllers simultaneously gives a more natural rotation, as if grabbing and rotating the entire model.

Pressing and holding the Trigger allows you to drag the model in any direction: up, down, left, right, towards you, and away from you.

Pressing the Triggers while holding the Grips on both controllers simultaneously allows you to zoom in and out. Moving your hands apart will zoom in to the model, moving them closer together will zoom out.

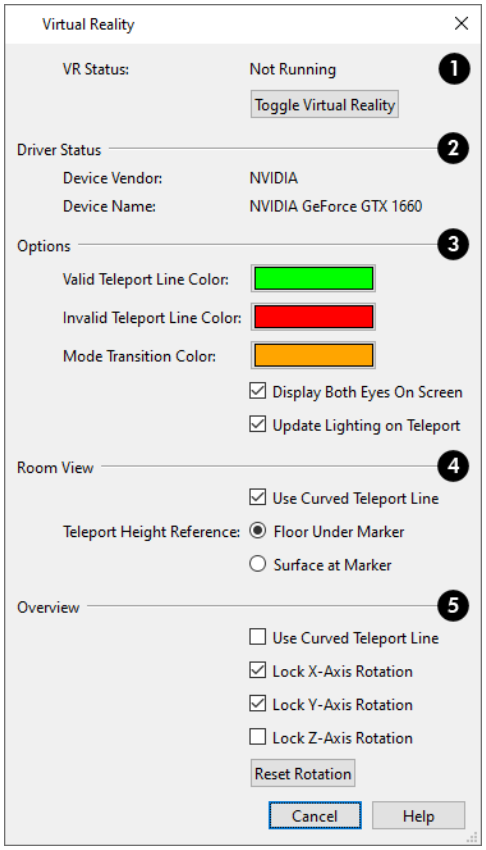
In Overview mode, a number of actions can be completed using your VR controller. These controls are the same on both right and left controllers, but specific functions differ slightly depending on the VR controller used.

Command	HTC Vive/Microsoft	Oculus Rift
Rotate	Grip	
Drag	Trigger	
Zoom	Grip + Trigger	
Undo	Trackpad Left	Thumbstick Left + Click
Redo	Trackpad Right	Thumbstick Right + Click
Reset	Menu Button	Thumbstick Click
Transition	Trackpad Down	X or A Button
Update Lighting	Trackpad Upper Click	

Virtual Reality Dialog

To view a model in VR, select **3D> Virtual Reality** while a Perspective Camera view or Overview is active. The Virtual Reality dialog will open.

> Note: Neither Hand Drawn Lines on Top nor GPU Ray Tracing are supported in VR.



1 VR Status

The current **Virtual Reality Status** is stated at the top of the dialog, along with information about graphics card or chipset being used on the computer.

- Click the **Toggle Virtual Reality** button to turn Virtual Reality on or off.

2 Driver Status

Information about your graphics card is displayed here for reference. Visit HomeDesignerSoftware.com for information about system requirements.

3 Options

- Validity of a surface is indicated by the color of the teleport line. The **Valid Teleport Line** and **Invalid Teleport Line Colors** can be set here.
- The teleport line will display the **Mode Transition Color** when switching between Room View and Overview Modes. This color can also be set here.

- When Virtual Reality is active, the program window shows what the user sees in the VR headset. By default, both eyes' views are shown in a split screen. If you would prefer to see only the left eye's view, uncheck **Display Both Eyes On Screen** in the Virtual Reality dialog.
- When **Update Lighting on Teleport** is checked, the lighting in the model will update when you teleport more than 10 feet (3 m) to ensure that your destination has lighting. Uncheck this is you prefer to only update lighting manually using the controller.

4 Room View

Specify how the teleport feature works in **Room View** Mode.

- **Use Curved Teleport Line** changes the teleport line from a straight line to a curved arc. This is checked by default for Room Views.
- The **Teleport Reference Height** setting determines how the camera height is calculated when the teleport feature is used.
- When **Floor Under Marker** is selected, the new camera position will calculate its height based on the floor surface, or the floor directly beneath where the teleport marker lands if locating a raised surface such as a countertop or table. This may result in being teleported inside furniture or other objects.
- When **Surface at Marker** is selected, the new camera location will determine its height from the surface where the marker landed. This will place the camera on top of objects such as furniture and may result in the view being in or above the ceiling.

5 Overview

Specify how the teleport feature works in **Overview** Mode.

- **Use Curved Teleport Line** changes the teleport line from a straight line to a curved arc. This is unchecked by default for Overviews.
- **Lock X-Axis Rotation** prevents the model from being tilted vertically.
- **Lock Y-Axis Rotation** prevents the model from being rolled left to right.
- **Lock Z-Axis Rotation** prevents the model from being spun horizontally.

When Virtual Reality is active, neither the camera nor the model can be edited in any way. If you wish to make modifications, you must **Toggle Virtual Reality** off in the Virtual Reality dialog, make the necessary adjustments, and then enter Virtual Reality again.

Saving and Printing 3D Views

3D camera views, overviews, and cross section/elevation views can be saved with the plan in which they are created, exported and saved as image files, as well as sent to layout and printed.

Saving 3D Views

Select **3D> Save Active Camera** to save the current camera in the plan. You can also save a camera view by checking the **Saved** box in the Camera Specification dialog. See *Camera Specification Dialogs on page 809*.

Saved cameras can be closed and re-opened for later use, and retain their attributes including Cross Section Slider, Sunlight, Shadows, and Rendering Technique settings. If you make any changes to these attributes while a saved camera view is active and then close the view, you will be prompted to save your changes. See *Cross Section Slider on page 802*, *Adjust Sunlight Dialog on page 834*, *Shadows on page 819*, and *Rendering Techniques on page 836*.

In addition, if Dimensions, CAD, and/or Text objects are drawn in a cross section/elevation view, you will be prompted to save the view when you close it. Any Dimensions, CAD, and/or Text objects added to a cross section/elevation view are saved with the view as part of the plan file.

Activating Saved Views

There are several ways to open a saved 3D view:

- Select the camera symbol in plan view and click the **Open View** edit button.
- Right-click on the camera symbol in plan view and select **Open View** from the contextual menu.
- Double-click the camera symbol using the **Select Objects** tool.

Unsaved cameras that are open in another view window can also be activated using the **Open View** edit button.

If you open a saved camera view and then modify its location or direction using any of the tools available in that view, the program will confirm whether you want to re-save the camera using these new settings when you close it. See *Navigating in Camera Views on page 790*.

Exporting 3D Views

All 3D views can be exported and saved as .bmp, .jpg, .png, .tif, or .webp files. Physically Based renderings can also be exported as .hdr files. Select **File> Export> Picture** to save the current screen image as an image file. See *To export a picture on page 856*.

In addition, Vector Views can be exported and saved as .emf files. See *Metafiles on page 861*.

Once saved, a picture can be opened and converted into many other formats using a graphics program. Picture files can be sent to layout or used in word processing, desktop publishing, and web development programs to create advertisements, brochures, etc.

Plan Backup

When transferring a plan to another computer or to another user, it is helpful to include all the Images, Textures, and Backdrops used in the plan so that rendered views are complete. The **Backup Entire Plan** tool allows you to do so. See *Exporting a Project on page 60*.

Printing 3D Views

Since all 3D views other than Vector Views are created using pixels instead of lines, **File> Print> Print Image** must be used when printing. Print Image is a special Home Designer function that prints the screen in picture format. The entire view prints, including images such as plants and textures.

3D views can also be sent to layout and then printed as part of your construction documents.

Select **File> Send to Layout** to send the current view to layout. See *Sending Views to Layout on page 972*.

Select a saved, inactive camera symbol in plan view and click the **Send Camera's View to Layout** edit button to send the view to layout.

Closing 3D Views

Although you can have any number of 3D views open at a time, to conserve resources on your computer it is a good idea to close views when you no longer need them. There are a number of different ways to do this. See *Closing Views and Files on page 138*.

Camera Specification Dialogs

There are a number of ways to open the Camera Specification dialogs:


In plan view, select one or more camera symbols and click the **Open Object** edit button. See *In Plan View on page 788*.


In a camera view or overview, select **3D> Edit Active Camera**.

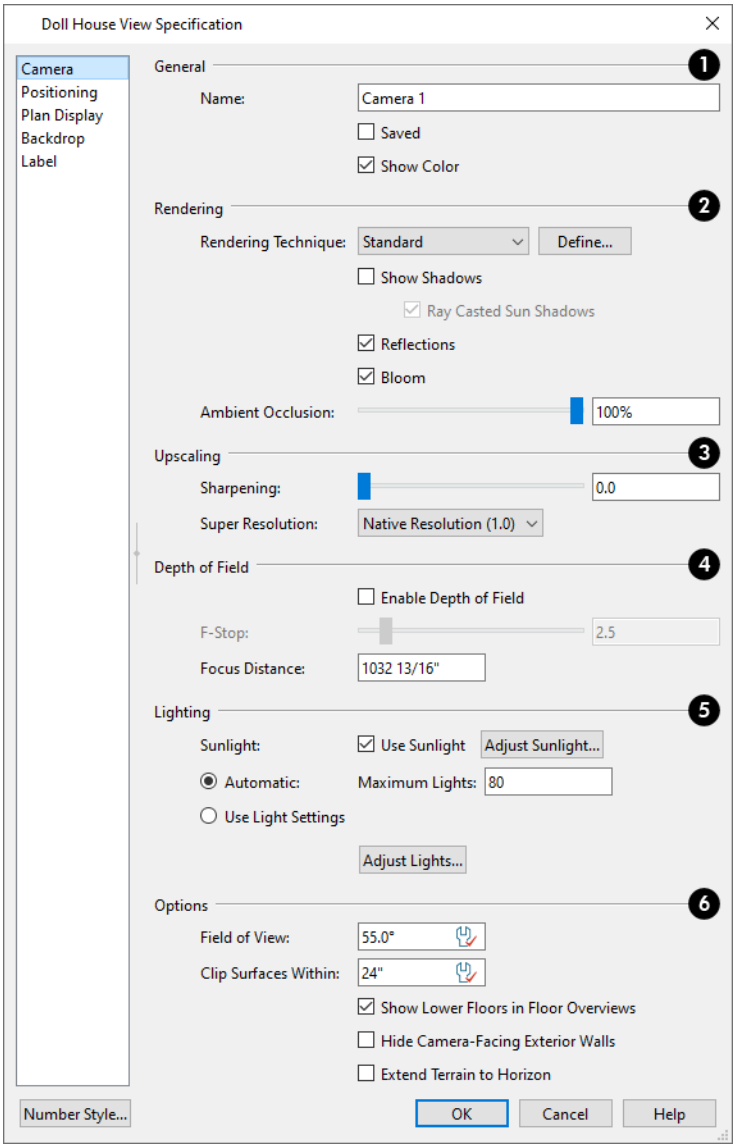
In the Project Browser, select **Edit View** from the contextual menu of a Camera or Cross Section view. See *Project Browser on page 50*.

The settings in this dialog may vary somewhat depending on the tool used to create the selected view. This tool name is indicated in the dialog's title bar: the specification dialog for a **Full Camera**  , for example, is named Full Camera Specification. See *3D View Tools on page 783*.

The settings in this dialog are also found in the Camera Defaults dialogs for each of the various camera tools. See *Camera Defaults Dialogs on page 780*.

Camera Panel

The Camera panel is also found in the Walkthrough Path Specification and Defaults dialogs. See *Walkthrough Path Specification Dialog on page 873*.



Some settings only affect some types of views. Depending on the type of camera view selected, not all the settings may be available.

1 General

Not available in the Walkthrough Path Specification and Defaults dialogs.

- Specify a **Name** for the camera that displays in its label in plan view. Names must be unique.
- Check **Saved** to save this view with the plan. As soon as you type anything in the text field, this box becomes checked. If you click OK while this box is checked, it will become checked permanently.
- Uncheck **Show Color** to toggle the display off in the current view. See *Color On/Off on page 157*.

2 Rendering

- Choose the selected camera or walkthrough path's **Rendering Technique** from the drop-down list.
  - Click the **Define** button to open the Rendering Technique Options dialog. Any changes made in that dialog only affect the selected view or path. Not available in the Camera Defaults dialogs. See *Rendering Techniques on page*

836.

- In the Camera Defaults dialogs for all tools except Overviews, you can also specify an **Alternate Rendering Technique** to be used when a view is created using the Alternate Edit Behavior. See *Alternate on page 180*.

- Check **Show Shadows** to turn on shadows in the selected camera view. When unchecked, shadows are not generated. See *Shadows on page 819*.
  - Check **Ray Casted Sun Shadows** for higher quality shadows cast by sunlight. Ray Casted Sun Shadows take longer to generate than regular shadows and only refresh when the camera is not moving.
- Check **Reflections** to turn on reflections in the selected camera view. When unchecked, reflections are not generated. See *Reflections on page 819*.
- Light **Bloom** occurs around areas of intense illumination and looks as though the light is 'bleeding' beyond the edges of the light source. It adds realism to the view but can take longer to render. Only affects Standard and Watercolor renderings. See *Rendering Techniques on page 836*.
- Select the amount of **Ambient Occlusion** in the view using the slider bar or text field. Ambient Occlusion allows variation in the strength of the ambient light. It is more realistic than uniform ambient light, but can take longer to render. Only affects Standard, Watercolor, and Physically Based renderings. See *Ambient Lighting and Occlusion on page 822*.

3 Upscaling

These settings allow you to improve rendering performance on systems with high resolution monitors. These options are not used in line-based Rendering Techniques. See *Super Resolution on page 818*.

- Specify the level of **Sharpening**, which affects how sharp or soft textures appear in the current view.
- **Super Resolution** refers to a technique that renders at a lower-than-native resolution and then upscales the result. On high resolution displays, these options improve performance without noticeably affecting quality.
  - The scaling factor used by each option is listed after its name: the higher the factor, the greater potential for both performance improvement and reduced quality.
  - Only "Native Resolution" is recommended on regular resolution monitors, as noticeable quality loss may occur otherwise.

4 Depth of Field

These settings allow you to add blur to objects that are not in focus in the current Standard, Vector View, Physically Based, Glass House, or Technical Illustration rendering. Not available in the Walkthrough Path Specification and Defaults dialogs.

- Check **Depth of Field Enabled** to enable the settings below and add blur to out-of-focus objects.
- Set the **F-Stop** using the scroll bar or text field. A low value increases blur while a high value reduces blur.
- Specify the **Focus Distance**, which is the distance from the camera at which objects are in focus and no blur occurs. Objects closer to the camera than this distance are subject to blur, as are those further away from the camera.

5 Lighting

These settings control which and how many light sources are used in the current view. See *Lighting Modes on page 825*.

- When **Use Sunlight** is checked, the sun light source is on in the current view. Uncheck this box to toggle sunlight off.
- Click the **Adjust Sunlight** button to open the Adjust Sunlight dialog. See *Adjust Sunlight Dialog on page 834*
  - Not available in the Camera Defaults or Walkthrough Path Specification dialogs.
- Select **Automatic**, then specify the **Maximum Number** of lights that can be used in the current camera view.
- Select **Use Light Settings** to use all light sources in the entire plan provided that they are turned **On**  .

- Click the **Adjust Lights** button to view a list of the light sources in the plan and modify their settings. See *Adjust Lights Dialog on page 826*.

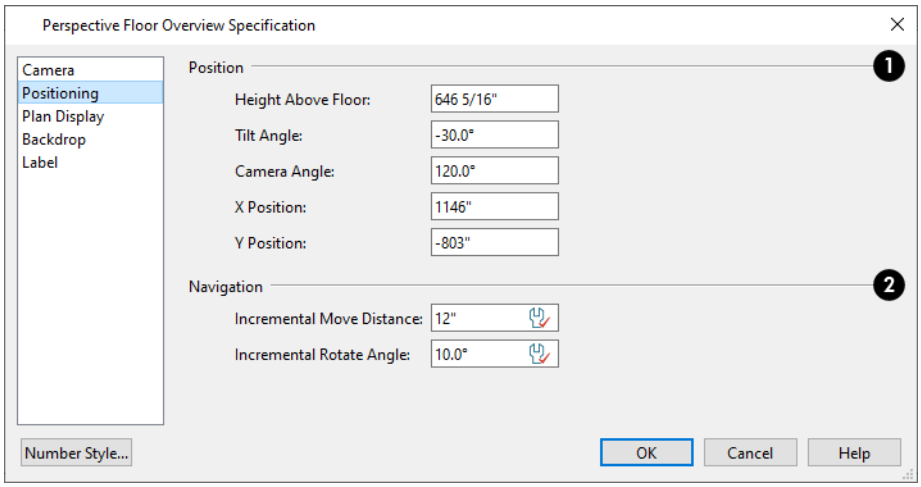
6 Options

Most of these settings are not available in the Walkthrough Path Specification and Defaults dialogs.

- The **Field of View** defines the camera's field of vision in angular degrees. See *Field of View on page 799*.
- **Clip Surfaces Within** - Objects located within this distance from the camera do not display in the view. Decrease this value to display objects located close to the camera; increase it to improve the appearance of some surfaces in Overview cameras with very large extents.
- Uncheck **Show Lower Floors** to show only the current floor in the selected Floor Overview. When checked, the current floor plus any floors beneath it are included in the view. Only available for Floor Overviews. See *Dollhouse View on page 786*.
- Check **Hide Camera-Facing Exterior Walls** to suppress the display of any exterior walls that face the camera, along with objects mounted, inserted, or snapped to such walls. Interior Attic walls are also suppressed. This setting only has an effect when the selected camera's position is on the exterior of a structure and also has an associated toggle. See *Hide Camera-Facing Exterior Walls on page 820*.
- Check **Extend Terrain to Horizon** to create a virtual extension of the Terrain Perimeter in camera views that appears to extend to the horizon. This setting only has an effect if a Terrain Perimeter is present. See *Terrain Perimeter on page 899*.

Positioning Panel

Only the X and Y Position settings are available in the Cross Section/Elevation Specification dialog. See *Cross Section/Elevation Specification Dialogs*.



1 Position

These settings determine the position and orientation of the camera. Only the Height Above Floor and Tilt Angle are available in the Camera Defaults dialogs. See *Navigating in Camera Views on page 790*.

- The **Height Above Floor** defines the height that the camera is above the floor level for the current floor. See *Camera Height on page 785*.
- The **Tilt Angle** determines the vertical angle that the camera is tilted. The camera maintains its focal point and position in plan view, but if the camera is tilted, the focal point is above or below the current camera height.

- Specify the selected camera's **Camera Angle**. This is an absolute value: an angle of 0° points the camera toward the left in plan view.
- Specify the **X Position** and **Y Position** for the selected camera. These are absolute coordinates. Specifying zero for both places the camera at the plan's origin point (0,0).

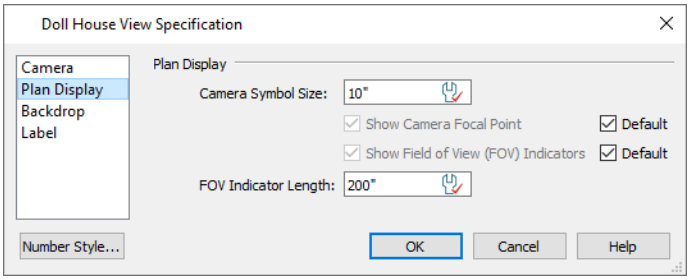
2 Navigation

These settings control how the camera is affected when you navigate using the mouse. See *Move Camera with Mouse on page 792*.

- The **Incremental Move Distance** controls how far the camera moves each time you Pan in any direction or Dolly forwards or backward using the keyboard, toolbar buttons, or menu. For interior views a small number is good, but for exterior you may want a larger increment.
- The **Incremental Rotate Angle** defines how many degrees the camera rotates each time you Tilt, Orbit, or Dolly side to side using the keyboard, toolbar buttons, or menu. A setting of 90° would make one full rotation in four moves.

Plan Display Panel

The settings on the Plan Display panel control the appearance of the selected camera's symbol in plan view. See *In Plan View on page 788*.

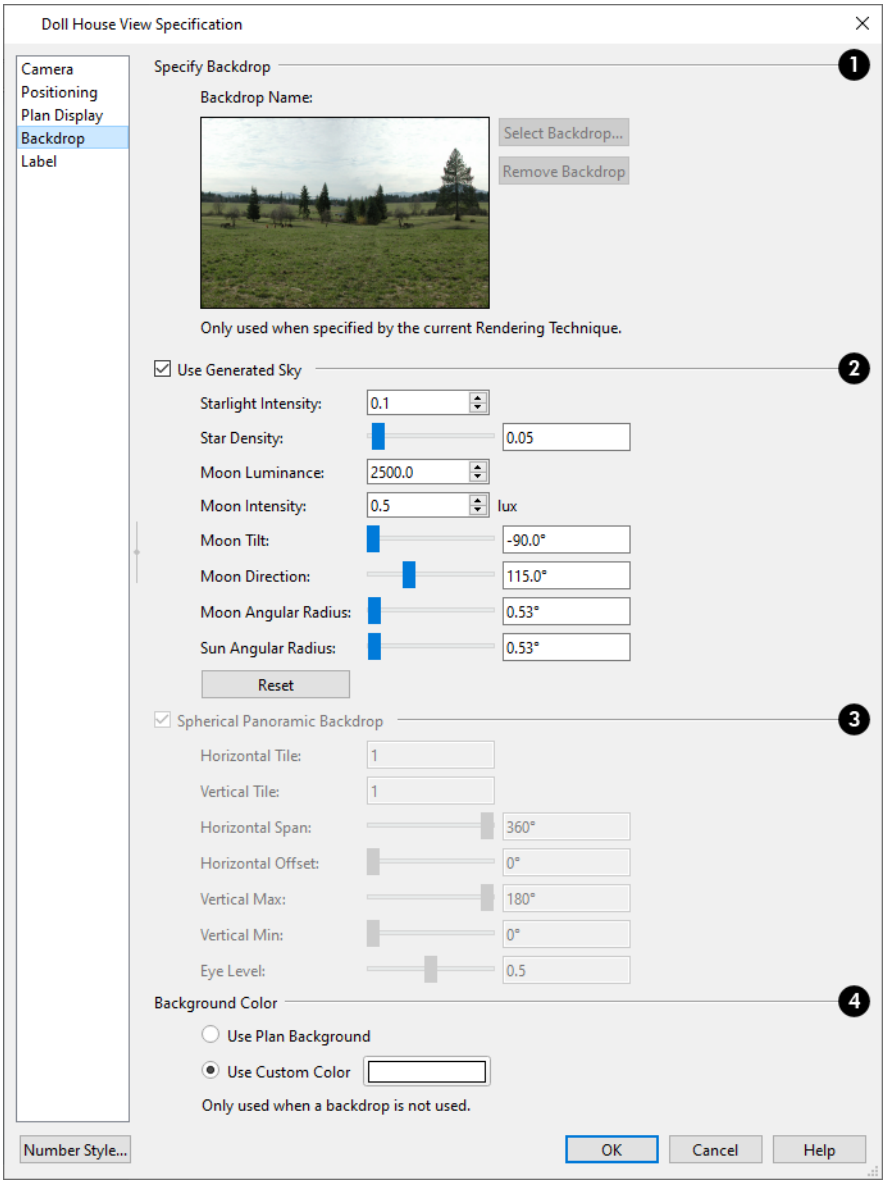


- The **Camera Symbol Size** is measured in plan inches (mm).
  - Check **Show Camera Focal Point** to display the camera's focal point in plan view. When unchecked, the camera's line of sight and focal point are hidden until the camera is selected.
  - Check **Show Field of View Indicators** to display the camera's field of view indicators in plan view.
- You can also change the **FOV Indicator Length**, which is measured in plan inches (mm).

Backdrop Panel

The settings on the Backdrop panel allow you to specify a backdrop image or color to display behind your model in the selected 3D view. See *3D Backdrops on page 846*.

The Backdrop panel is also found in the Walkthrough Path Specification and Defaults dialogs. See *Walkthrough Path Specification Dialog on page 873*.



1 Specify Backdrop

A preview of the selected backdrop image is shown here. A backdrop cannot be selected or removed when Use Generated Sky is checked, below.

- **Backdrop Name** - The selected backdrop image's name displays for reference.
- Click **Select Backdrop** to choose a backdrop image from the library. See *Select Library Object Dialog on page 729*.
- Click **Remove Backdrop** to use a solid color instead of a backdrop image in all 3D views, then specify the color below.

2 Use Generated Sky

Not available for Orthographic Overviews or Cross Section/Elevation views.

- Check **Use Generated Sky** to use a sky backdrop that simulates different times of day based on the position of the Generic Sun.

  - When checked, Spherical Panoramic Backdrop will also be checked and a preview of the Generated Sky will display in the current view behind the dialog, and will update as changes are made to the settings below.
  - If the view's Rendering Technique is not set to Use Backdrop Image, it will be set to do so automatically. See *Rendering Technique Options on page 839*.
- Specify the **Starlight Intensity**, which is how bright the stars appear in the sky.
- Specify the **Star Density**, which controls how close stars are to one another.
- Specify the **Moon Luminance**, which is how much light the moon contributes to the scene.
- Specify the **Moon Intensity**, which is how bright the moon appears in the sky.
- Specify the **Moon Tilt**, which is the direction that the moon's light shines.
- Specify the **Moon Direction**, which describes the position of the moon in the sky.
- Specify the **Moon Angular Radius**, which controls the size of the moon.
- Specify the **Sun Angular Radius**, which controls the size of the sun.
- Click the **Reset** button to reset all Generated Sky settings to the system defaults.

3 Spherical Panoramic Backdrop

These settings are only available when a Backdrop image is selected, and are not available for Orthographic Overviews or Cross Section/Elevation views. When User Generated Sky is checked, above, these settings cannot be edited.

- Check **Spherical Panoramic Backdrop** to place the selected backdrop onto a sphere that surrounds the model in the current view. This box is checked automatically when Use Generated Sky is checked, above.
- **Horizontal Tile** - Specify how many times to tile the selected backdrop image side by side.
- **Vertical Tile** - Specify how many times to stack the selected backdrop image one above the other.
- Specify the **Horizontal Span**, which is how much of the sphere the backdrop is applied to. A Span of 360° wraps the entire sphere.
- Specify the **Horizontal Offset**, in degrees, to shift the backdrop image or tiled images in a clockwise direction.
- Specify the **Vertical Max**, which is the height of the bottom of the backdrop, measured relative to the top of the sphere.
- Specify the **Vertical Min**, which is the height of the bottom of the backdrop, measured relative to the bottom of the sphere.
- The **Eye Level** setting controls the vertical position of the camera within the sphere. A value of 0 positions the camera at the bottom of the sphere while a value of 1 positions it at the top. The default value is 0.5., which centers the camera inside the sphere.

4 Background Color

Select the camera's background color that displays when a backdrop image is not being used.

- Select **Use Plan Background** to use the background color for plan views in the current view. The Background Color for plan views is set in the Preferences dialog. See *Colors Panel on page 95*.
- Select **Use Custom Color**, then click the Color bar to select a custom background color for the current view. See *Select Color Dialog on page 165*.

Label Panel

In the Camera Specification dialogs, the settings on the Label panel are limited to the **Suppress Label** check box and **Position** and **Orientation** settings.

Camera labels always use the **Camera Name** specified on the Camera panel. When callouts are used, the **Callout Label** and **Text Below Line** are specified on the Plan Display panel.

For information about this panel, see *Label Panel on page 395*.

3D Rendering

Chapter 37

There are a variety of tools available to create 3D views of a model: simply click a button to create an overview, or click and drag to create a camera or cross section/elevation view. See *3D Views on page 779*.

To improve the quality of the rendering and create a custom look, you can adjust lighting, edit the materials used in the plan, choose from several rendering techniques, and fine-tune 3D view quality settings.

Rendering Tips

There are a variety of factors which affect the appearance and quality of rendered 3D views. You can use these tools and settings to achieve renderings that meet your needs.

GPU Ray Tracing

On systems that support it, GPU Ray Tracing produces highly realistic lighting, shadows, and effects such as refraction in real time using the Graphical Processing Unit (GPU). GPU Ray Tracing calculates the paths of light rays in the scene and is used in 3D views using the Physically Based Rendering Techniques. See *Rendering Techniques on page 836*.

When GPU Ray Tracing is active in a view, multiple samples of indirect lighting in the scene are created, improving the lighting quality and removing image noise with each sample. By default, samples are run as long as a given view is active; you can, however, specify the Maximum Samples to be used when the view is exported as a picture or sent to layout, and you can also specify that samples in the view be capped at that value instead of running indefinitely. The current number of samples is reported in the Status Bar. See *Physically Based Panel on page 841* and *The Status Bar on page 24*.

GPU Ray Tracing can also be used when recording a Walkthrough. Each frame will use the Maximum Samples value and Denoise setting, and will take considerably more time to record. See *Generating a Walkthrough on page 879*.

You can find out if your computer's graphics card supports GPU Ray Tracing in the Preferences dialog. See *Video Card Status Panel on page 118*.

In other Rendering Techniques in which lighting is supported, GPU Ray Tracing enhances the quality of shadows and ambient occlusion only. For troubleshooting purposes, you can turn this feature off or on in the Preferences dialog. See *Render Panel on page 117*.

For detailed information about the System Requirements for Home Designer 2027, visit HomeDesignerSoftware.com.

Denoising



GPU Ray Trace views are initially grainy, or noisy, and improve in quality over time as more samples are taken. The **Denoise View** tool removes light artifacts and the appearance of graininess from an active Ray Trace view while it is in process. Select **3D> Camera View Options> Denoise View** to replace the current live Ray Trace View with a temporary, offline version that has been denoised; select Denoise View again to return to the original view.

Because denoising does not occur in a live view, you cannot navigate or interact with the model in a denoised view. If you move the camera, modify the scene's lighting, or modify the model, the denoised view will be removed and you will return to the original view where sampling will restart.

GPU Ray Trace views are automatically denoised when exported, printed, or recorded in a walkthrough. You may, however, want to denoise a high quality Ray Trace in which relatively few samples have been taken to see if you need to make changes to the model, lighting, or camera position.

Alternatively, you can use **DLSS Real-Time Denoising**, which denoises Ray Trace views immediately, without collecting samples. DLSS Real-Time Denoising does not produce the same level of quality that denoising with sampling does, particularly on glass materials, and is not used when exporting, printing, or recording a walkthrough. DLSS Real-Time Denoising can be enabled in the Rendering Techniques dialog for both Physically Based renderings and is only available on systems with some Nvidia graphics cards. See *Video Card Status Panel on page 118* and *Rendering Technique Options on page 839*.

Tone Mapping

In 3D renderings, the appearance of materials is affected by the light that bounces off them. Because radiance can vary widely in a given scene, it is possible for colors in the scene to fall outside of the range of colors that monitors are capable of displaying, which can result in the perception of less than ideal lighting quality. Tone mapping addresses this issue by mapping colors in the rendering to colors that can display on-screen.

Tone Mapping Operators (TMOs) are different formulas for performing this color mapping. There is no one "best" TMO, since the desired lighting and coloring can vary from scene to scene and also from viewer to viewer. In Home Designer, one of two TMOs can be used in Physically Based renderings:

- **Hable Tone Mapping** produces moderate color saturation and is often more suitable for interior scenes.
- **ACES** produces somewhat greater color saturation, particularly of bright colors, which may be preferable in exterior daytime scenes.

You can specify the Tone Mapping Operator you wish to use in the Rendering Technique Options dialog. See *Physically Based Panel on page 841*.

Super Resolution

In some cases, rendering large and complex scenes can be time-consuming: particularly when the Physically Based Rendering Technique is used. On systems with high resolution monitors (ex. 4k or Retina), you can reduce rendering time without noticeably impacting quality using **Super Resolution**, which renders scenes at a lower-than-native resolution to shorten rendering time and then scales the result up again. On regular, lower resolution monitors this typically results in decreased quality; however, on high resolution displays the change in quality is considerably less pronounced.

Super Resolution can be specified in camera views and overviews, but not cross section/elevation views. See *Camera Panel on page 809*.

Super Resolution is only used in the Standard, Physically Based, and Watercolor Rendering Techniques. See *Rendering Techniques on page 836*.

It is particularly useful when recording walkthroughs. See *Walkthrough Path Specification Dialog on page 873*.

Lighting

Lighting is extremely important in most 3D renderings. Lighting controls the visibility of objects in a view, affects the appearance of surfaces, and influences the appearances of colors and textures on those surfaces. Even small changes to light intensity, direction and color can have a large impact on image quality. See *Lighting on page 820*.

Area Lights are Emissive materials that emit light from object surfaces in GPU ray traced Physically Based views. Because light shines from entire surfaces rather than individual points, Area Lights produce more realistic shadows and other lighting effects than punctual Point and Spot Lights. They do not, however, emit light in non-ray traced views although their surfaces do appear bright. See *Light Fixtures on page 821*.

Shadows



Like lighting, shadows have an important effect on image quality. Shadows can be generated in any type of camera view using any Rendering Technique aside from Glass House. See *Rendering Techniques on page 836*.

When shadows are enabled and the sun is shining directly at a window, its light can shine through the window and into an interior room. These shadows use **Ray Casted Sun Shadows** by default, but this option can be unchecked if it slows performance in 3D views. See *Sunlight and Moonlight on page 821*.

Shadows are enabled in Full Camera views by default. You can, however, check or uncheck **Show Shadows** and **Ray Casted Sun Shadows** in the defaults dialog for any camera tool or in the specification dialog for any camera view. In addition, you can select **3D> Camera View Options> Toggle Shadows**  in any camera view. See *Camera Panel on page 809*.

Shadows are affected by the number of light sources in a plan, as well as what Rendering Technique is in use. In order for a light source to cast shadows, it must be **On** in the current view and have **Cast Shadows** checked in its specification dialog. See *Light Data Panel on page 508*.

Reflections



Reflections are another aspect of lighting that can increase a 3D view's realism. When a flat surface is assigned a Mirror material, it can display the reflections of other objects in the scene. Bear in mind that a Mirror surface cannot display the reflection of another mirror: when one mirror can be seen in another, its material is shown rather than a reflection.

Reflections in Mirrors only generate in Perspective 3D views using Rendering Techniques that show material textures. In some situations, they can slow down 3D view generation and responsiveness. See *Rendering Techniques on page 836*.

When the **Physically Based**  Rendering Technique is in use, reflections on non-mirror surfaces are modeled, as well. See *Physically Based on page 837*.

Reflections in Mirrors can be toggled on or off in a camera view by selecting **3D> Camera View Options> Toggle Reflections**  as well as in the Camera Specification dialog.

Material Definitions

The appearance of materials in 3D views is controlled by settings in the Define Material dialog.

Textures are graphic files that represent contoured surfaces of objects such as carpet, bricks, tile, and wood in rendered views. Textures are assigned to materials which in turn are assigned to objects. If no texture is selected for a material, a solid color is used instead. See *Patterns and Textures on page 756*.

Images

Image objects use picture files to represent individual objects such as trees, flowers, and vehicles in 3D views. Images are useful because they have only one 3D surface, allowing them to represent complicated 3D objects with a high degree of realism but with minimal cost in terms of performance. See *Placing Images on page 850*.

Backdrops and Generated Sky

A backdrop is an image, usually of an exterior view, that displays in the background of 3D views to help place the model into a realistic setting and add a sense of perspective. Backdrops also contribute to the Global Illumination in Physically Based renderings. If a backdrop is not specified, Home Designer applies a background color. See *3D Backdrops on page 846*.

The Generated Sky is a spherical backdrop option that simulates the sky at different times of day based on the position of the Generic Sun. A horizon line is modeled when the Generated Sky is in use and as the sun is moved closer to the horizon, its intensity decreases and its color becomes an increasingly deep amber color. When the sun is either below the horizon or toggled off, representations of the moon and stars become visible. See *Sunlight and Moonlight on page 821*.

Backdrops and the Generated Sky are view specific and can be set in the Camera Specification dialog. See *Backdrop Panel on page 813*.

Hide Camera-Facing Exterior Walls



Occasionally, it can be very helpful to view the interior of a structure from an exterior view. To achieve this, create an exterior camera view or overview and select **3D> Camera View Options> Hide Camera-Facing Exterior Walls**. This option is view-specific and can also be set in the Camera Specification dialog. See *Camera Panel on page 809*.

This setting also hides:

- Interior walls set as Attic walls;
- Wall or Full Height cabinets snapped to a hidden wall;
- Symbol objects such as electrical fixtures mounted on a hidden wall;
- Doors and Windows inserted into a hidden wall: even if Display Openings Independent of Walls and Roofs is checked in the 3D View Defaults dialog.

Hide Camera-Facing Exterior Walls is also an option for Walkthrough Paths. See *Record Walkthrough Options Dialog on page 879*.

Lighting

Lighting controls the visibility of objects in 3D views, affects the appearance of surfaces, and influences the appearances of colors and textures on those surfaces.

Each individual light source has a set of properties, such as intensity and color, that can be defined. See *Light Data Panel on page 508*.

Lighting is supported in the Standard, Physically Based, and Watercolor Rendering Techniques in Perspective camera views.

By default, a maximum of 20 lights can display in a given camera view or overview. If more than 20 are present, those with the highest intensity located in the same room as the camera are rendered. Lights in adjacent rooms may also be rendered, with the highest intensity lights rendered first.

- You can specify a different Maximum Lights number in the Camera Specification dialog. See *Camera Panel on page 809*.
- You can also manually turn on and off individual lights in order to get the desired lighting effects. See *Displaying Lights on page 825*.

When the camera is outside a building, the program normally uses sunlight for lighting calculations and turns off all other light sources. You can turn the sunlight off and use all the other exterior lights to simulate nighttime views.

There are five types of light sources in Standard rendered views:

Default Interior Light

If you create a Standard interior camera in a room where no lights have been placed, the program creates a Default Light source within that room. The Default interior light acts like a central point light source but cannot be selected or edited.

Because the Default Light cannot be adjusted, if you want to control the light in an interior rendered view, you must add lights to the rooms in your plan by placing light fixtures and Added Lights.

Light Fixtures

An electrical symbol that represents a Light Fixture can have one or more light sources associated with it. Properties for each light source such as light type, color, and intensity can be modified in the fixture's Electrical Service Specification dialog. See *Symbol Object Specification Dialogs on page 735*.

There are two ways that a Light Fixture can add light to a scene: light sources and Area Light materials:

- Light Sources are punctual, emanating from a single point, and can either be Point Lights that shine in all directions, or directional Spot Plights. Light Sources work in all Rendering Techniques that support lighting. See *Light Types on page 823*.
- Area Lights are Emissive materials that emit light from the full area of any surface they are assigned to in Physically Based renderings. Area Lights have a bright appearance in all Rendering Techniques that support lighting, but only actually add light to a scene in Physically Based renderings, which are GPU Ray Traced. See *GPU Ray Tracing on page 817*.

You can also adjust a light source's Offset, or position relative to the fixture. If you choose to **Show Position in Camera View**, you can see where the light source is located.

Light sources look most realistic when they are offset from a surface.

Added Lights



In plan view, select **3D> Lighting> Add Lights** to quickly add a light source to a plan. Added Lights and their labels are placed on the "Light Sources" and "Light Sources, Labels" layers.

There are two types of added light sources: Point Lights and Spot Lights. Like light sources, the properties of Added Lights can be set in their specification dialog. See *Light Types on page 823* and *Light Specification Dialog on page 829*.

Added lights only act as light sources in plan files that have at least one room defined. They display 2D symbols in plan view but do not display as objects in 3D views.

While Added Lights do not display as objects in 3D, you can specify that an Added Light's position be represented by red crosshairs in rendered views that use lighting. Spot Lights also display a blue arrow indicating the light's direction. See *Light Data Panel on page 508*.

Sunlight and Moonlight

Sunlight is the only source of light in exterior daytime camera views. When standard shadows are enabled, sunlight can also shine through windows into interior rooms. See *Shadows on page 819*.

Select **3D> Lighting> Toggle Sunlight**  while in a camera view to simulate either daytime or nighttime exterior lighting.

To prevent the Sunlight from lighting a scene without switching to nighttime lighting, check **Use Only Backdrop for Lighting** in the Rendering Technique Options dialog. This option is useful for overcast daytime scenes in Physically Based renderings. See *Physically Based Panel on page 841*.

There are two types of sunlight:

- The Generic Sun's default intensity, color, and angle can be set in the Generic Sun Defaults dialog, and can be modified in the Adjust Sunlight dialog. In addition, you can specify that it follow the camera in 3D views so surfaces are always illuminated. The Generic Sun's settings are view specific: each 3D view can have its own, unique settings.

See *Adjust Sunlight Dialog on page 834*.

- You can instead place a **Sun Angle** in plan view to produce sunlight based on specific date, time, latitude, and longitude information. See *Sun Angles and Shadows on page 830*.

You can specify that a particular Sun Angle or the Generic Sun be used in any active camera view in the Adjust Sunlight dialog. See *Adjust Sunlight Dialog on page 834*.

Move Sun/Move Moon

When **Use Generated Sky** is in use in a Perspective camera view or overview, the **Move Sun** and **Move Moon** tools allow you to control the position of the Sun and, when Sunlight is toggled off, the Moon. See *Backdrop Panel on page 813*.

Select **3D> Lighting> Move Sun**, then click and drag in any direction in a camera view to adjust the position of the Generic Sun. You can also ***Ctrl/⌘*** + click to place the Generic Sun at the location where you click. This option cannot be used while Sun Follows Camera is checked in the Adjust Sunlight dialog for the current view. See *Adjust Sunlight Dialog on page 834*.

When the Generic Sun is either toggled off or has been moved below the horizon, representations of the moon and stars can be seen in the sky. Select **3D> Lighting> Move Moon**, then click and drag in any direction or ***Ctrl/⌘*** + click to adjust the position of the moon. The intensity and other attributes of the moon and stars can be set in the Camera Specification dialog when **Use Generated Sky** is checked. See *Backdrop Panel on page 813*.

The **Sun/Moon Direction Indicator** can be found at the bottom left corner of a camera view when the Move Sun or Move Moon tool is active, helping to provide a sense of where the Sun or Moon is located relative to the model and the direction it moves when you click and drag. You can set the Indicators' Size in the Preferences dialog as well as disable it if you wish. See *Coordinate System Panel on page 111*.



The Sun and Moon Movement Indicators show the position of the sun and moon relative to the front of the structure.

Ambient Lighting and Occlusion

Ambient lighting simulates the way light bounces around a scene, producing a basic level of uniform illumination on all surfaces. It is used in camera views and overviews using the Standard, and Watercolor Rendering Techniques.

There are three types of ambient light in Home Designer:

- **Interior Ambient** controls the ambient light in interior views.
- **Daytime Ambient** controls the ambient light in exterior views when **Toggle Sunlight** is on. See *Sun Angles and Shadows on page 830*.
- **Nighttime Ambient** controls the ambient light in exterior rendered views when **Toggle Sunlight** is off.

You can control the brightness of each in the Rendering Technique Options dialog. See *Standard Panel on page 839*.

Ambient occlusion adds shading to surfaces near corners which, because of their location, reflect less light compared to other surfaces. Too little ambient occlusion can result in a view having a flat appearance. You can specify the amount of **Ambient Occlusion** to use in Standard, Watercolor, and Physically Based renderings in the Camera Specification dialogs. See *Camera Panel on page 809*.

Backdrop Intensity

In Physically Based renderings, the scene's backdrop contributes to its Global Illumination. You can control Daytime and Nighttime Backdrop Intensity in the Rendering Technique Options dialog. See *Physically Based Panel on page 841*.

Light Types

There are two types of light source, each of which generates light in a different way and allows you to create a variety of lighting effects:

- Point Light sources
- Spot Light sources
- Area Lights materials

Point and Spot Lights emanate light from a single point and are referred to as punctual lights. Any punctual light source except a Sun Angle can be specified as either a Point or Spot Light in its specification dialog. See *Light Data Panel on page 508*.

Punctual lights are typically assigned to light fixtures; however, they can also be placed in a plan as **Added Lights**  which are light sources that are not associated with an object. Added Lights are useful for creating "staged" lighting that highlight features of your designs for presentation views. As with light fixtures, the lighting properties of Added Lights can be set in their specification dialog. See *Light Specification Dialog on page 829*.

Point Lights

Point Lights are punctual, which means that they originate from a single, infinitely small point. Like a bare light bulb, a Point Light radiates light equally in all directions from its origin and is a realistic representation of non-directional electric lighting.

If no user defined light exists, Home Designer creates a Point Light source to represent a light within a room.

To create a Point Light source

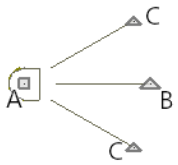
1. In plan view, select **3D> Lighting> Add Lights**  .
2. Click in plan view. Do not drag the pointer when you click the screen, or you will create a Spot Light.

Spot Lights

A Spot Light is also punctual, but focuses the light in a specified direction. The Tilt and Direction Angles can be specified in a Spot Light's specification dialog.

To create a Spot Light source

1. In plan view, select **3D> Lighting> Add Lights**  .
2. Click and drag in plan view no more than two plan feet (600 mm) in any direction.
3. As you drag, the light preview will look like a Spot Light icon.
4. When you release the mouse, a Spot Light pointing in the direction that you dragged is created.
5. Once created, a Spot Light can be selected and edited in its specification dialog, using the tools on its Edit Toolbar, and using its edit handles.



A. The **Move** handle is located at the center of the Spot Light shape. Click and drag this handle to move the Spot Light according to the currently active Edit Behavior.
B. The **Rotate** handle is located at the end of the direction indicator line. Click and drag this handle to change the direction that the Spot Light shines.
C. The **Cut Off Angle** handles are located at the end of each Cut Off Angle line. Click and drag either handle to adjust the angle of the cone of illumination around the Spot Light.

Area Light Materials

In Physically Based renderings, light can be added to the scene using Area Lights, which are a special type of emissive material. Instead of light emanating from a point, an Area Light emits light from entire surface areas. See *Materials on page 756*.

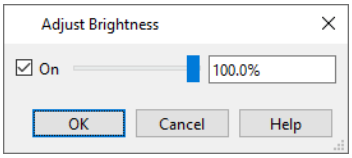
A given light fixture can emit light using either its punctual light(s) or its Area Light(s), but not both. And while individual punctual lights may be turned on or off independently, an Area Light assigned to a fixture is either on or off on all of the surfaces it is applied to. See *Displaying Lights on page 825*.

Light Intensity and Brightness

Each light source has an Intensity value that can be set in its specification dialog as well as in the Adjust Lights dialog. A light source's Intensity is a constant value used in all camera views in which that light source is On. See *Light Data Panel on page 508*.

The **Adjust Brightness** edit tool allows you to dim a selected Added Light or all of a light fixture's light sources without affecting their Intensity.

Brightness can also be adjusted in the selected light object's specification dialog as well as via the Adjust Lights dialog.



- Specify whether the selected Added Light or the selected light fixture's light sources and Area Lights are **On** in the current Light Set:
  - When this box is checked, all of the fixture's lights are on, and when it is unchecked all are off.
  - If some were on while others were off when this dialog was opened, the box will have a solid fill instead of a check mark signifying a No Change state. You can click to clear the box and turn all lights off, click a second time to turn all lights on, or leave the No Change state as it is.
- The Brightness setting applies a percentage of each light source's Intensity. Use the slider bar or text field to set the Brightness for all of the fixture's lights.

Displaying Lights

The display of light fixtures and Added Lights in floor plan and 3D views is controlled in the Layer Display Options dialog. Light fixtures are placed on the “Electrical” layer, and Added Lights, on the “Light Sources” layer. See *Layer Display Options Dialog on page 154*.

In addition, they can serve as sources of light in rendered 3D views. They can be turned on and off, as well as set to cast shadows.

In Plan View

In plan view, both light fixtures and Added Lights can display labels when the “Electrical, Labels” and/or “Light Sources, Labels” layers are turned on. See *Label Panel on page 395*.

In 3D Views

Light fixtures and Added Lights can serve as sources of light in rendered views.

Sunlight will shine through windows into interior rooms when **Shadows** are enabled. See *Shadows on page 819*.

To turn a light on or off

There are several ways to turn a light fixture or Added Light on or off:

- Select one or more fixtures or Added Lights and click the **Turn Light(s) Off in 3D** or **Turn Light(s) On in 3D** edit button.
- Uncheck **On** in the object’s specification dialog. See *Light Data Panel on page 508*.
- Clear the **On/Off** check box in the Adjust Lights dialog. See *Adjust Lights Dialog on page 826*.

Added Lights are not associated with a 3D fixture, but you can specify that any punctual light source’s location be represented in 3D views using crosshairs. See *Light Data Panel on page 508*.

Punctual light source position indicators will only display when the light is in use in the current 3D view. That is, it must be:

- Turned on.
- In-use in the current view.
- Either located in a room or in an exterior view with Sunlight toggled off.

Lighting Modes

By default, cameras use an Automatic Lighting Mode that allows a set number of lights to illuminate the view. This number can be specified in the Camera Specification and Adjust Lights dialogs. See *Camera Panel on page 809*.

If more than the set number of lights are present, lights are prioritized in this order:

- Lights in the same room as the camera before those in different rooms.
- Higher intensity lights before lower intensity lights.
- Lights closer to the camera before those further away.

Regardless of their intensity or proximity to the camera:

- Interior lights are not used in exterior camera views.
- Exterior lights are not used in exterior camera views when the Sunlight is toggled on. See *Sunlight and Moonlight on page 821*.
- Lights on floors above the camera are not used in Floor Overviews. See *3D View Tools on page 783*.

The Automatic Lighting Mode is useful because it is an easy way to produce reasonable lighting without taxing your video memory.

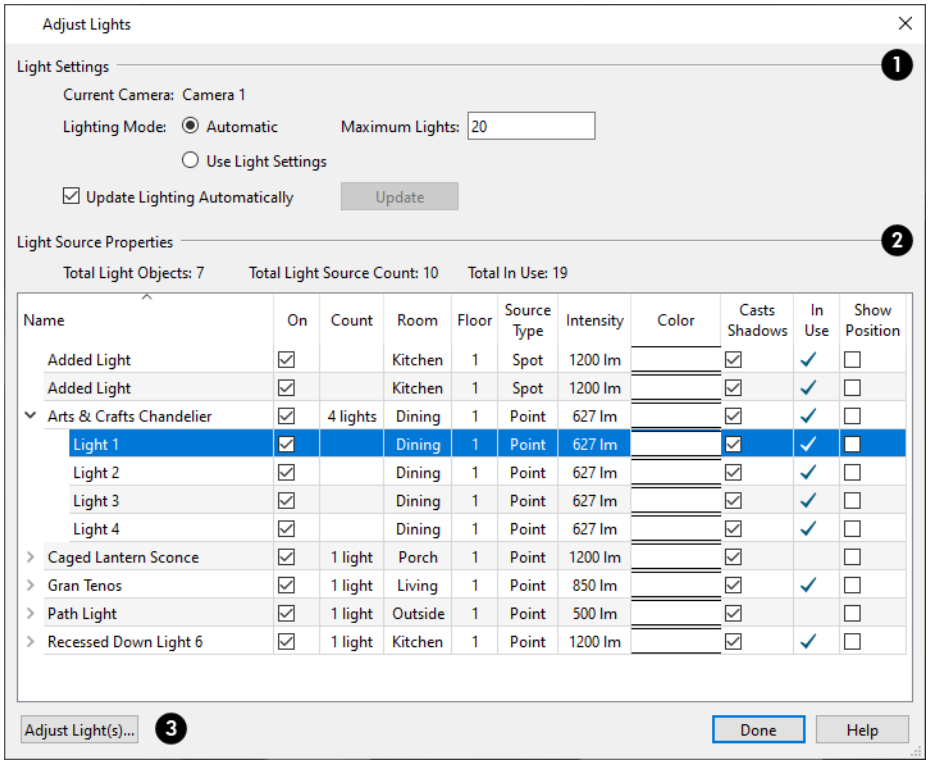
An alternative to the Automatic Lighting Mode is the **Use Light Settings** option. When **Use Light Settings** is selected, all lights in the current plan that are turned On are used in 3D views. This gives you control over which lights are used as light sources but may require more resources on your system.

Adjust Lights Dialog

Light fixtures and Added Lights in the current plan are listed and can be edited in the Adjust Lights dialog, making it an efficient way to control which lights are turned on in 3D views. Select **3D> Lighting> Adjust Lights** to open this dialog in floor plan or any 3D view. You can also open it by clicking the **Adjust Lights** button in the Camera Specification dialog. See *Camera Panel on page 809*.

You can also access a version of this dialog via the contextual menu when one or more light fixtures in the User Catalog of the Library is selected. See *Using the Contextual Menu on page 710*.

The Generic Sun, Moon, and Sun Angles are not listed in this dialog. See *Sunlight and Moonlight on page 821*.



1 Light Settings

When the dialog is opened while a camera view is active, these settings are available:

- The name of the **Current Camera** is stated here for reference.
- Specify the desired **Lighting Mode**:
  - **Automatic** uses the **Maximum Lights** specified here and the On/Off settings specified below.
  - **Use Light Settings** uses the lights that are turned On, as specified below.

If the current view is a camera in which lighting is used, the view will update automatically as changes are made in the Adjust Lights dialog. In some circumstances, this can result in slow performance in this dialog.

- To avoid this slowness, you can uncheck **Update Lighting Automatically**.
- When Update Lighting Automatically is checked, you can click the **Update** button to update the lights in the camera view.

2 Light Source Properties

All lights in the current plan are listed here, and a variety of their attributes can be edited. When accessed from the Library Browser, only the selected light fixture(s) are listed.

- Total Light Objects, punctual Light Sources, and In Use lights are reported for reference above the Properties table.
- The organization of the columns in the Properties table is customizable:
  - Right-click on a column heading to control which columns display and which do not.
  - Click and drag a column heading to the left or right to move that column to a different position.
- All lights in the current plan or currently selected in the Library are listed in the table using the same **Names** as their labels. Click on a line item to select it.
  - When the selected line item is a light fixture, you can change the color and On/Off state of all of its lights as a group.
  - If a line item is a light fixture, it will have an arrow to the left of its name. Click this arrow to show the fixture's lights as individual line items.
  - When multiple line items are selected, only their color and On/Off state can be edited. Multiple line items can be selected by holding down the ***Shift*** key. See *Shift and Ctrl/⌘ Select on page 187*.
- Check the box in the **On** column to turn the selection's light on or uncheck the box to turn it off. See *In 3D Views on page 825*.
  - If a fixture has multiple lights associated with it and only some are on, a solid square will display in its check box.
- The **Count** column lists the number of light sources assigned to each light fixture. This column is empty for Added Lights and Area Lights.
- The **Room** column states the location of each light. If a light is not in a room, "Outside" will be reported. See *Rooms on page 312*.
- The **Floor** column states the floor level that each light is on. See *Multiple Floor Levels on page 535*.
- The **Type** column states the type of light source used by each light. See *Light Types on page 823*.
- The **Intensity** column states the strength of each light.
- The **Color** column displays the light's color. Click the button to choose a different color if you wish.
- The **In Use** column states whether each light is emitting light in the Current Camera view. If a fixture has multiple light sources and only some are in use, a blue box will display in its row.
- The **Show Position** column indicates whether each punctual light source's position is set to show in camera views. Area Lights do not have this option. See *In 3D Views on page 825*.
- The **Brightness** column indicates what percentage of each light's total Intensity is actually used. All light sources associated with a given fixture always have the same Brightness. See *Light Intensity and Brightness on page 824*.

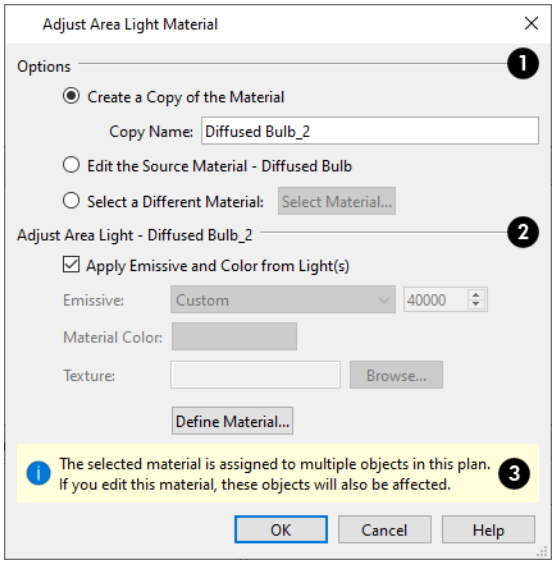
3 Adjust

The properties of punctual light fixtures and Added sources and Area Lights can be edited.

- Click the **Adjust Light** button or double-click on a line item to edit the properties of a selected punctual light in its owner's specification dialog:
  - Light fixture Punctual Lights, see *Light Data Panel on page 508*.
  - Added Lights, see *Light Specification Dialog on page 829*.
- Click the **Adjust Material** button to edit the properties of a selected Area Light in the Adjust Area Light Material dialog. See *Adjust Area Light Material Dialog on page 828*.
- Click the **Adjust Brightness** button to edit the properties of an Area Light or light fixture in the Adjust Brightness dialog. See *Light Intensity and Brightness on page 824*.

Adjust Area Light Material Dialog

The Adjust Area Light Material dialog opens when you edit an Area Light via the Adjust Lights dialog or the Light Data Panel of the Electrical Service Specification dialog.



1 Options

Specify whether you want to edit the original source material, edit a copy of the material, or choose a different material altogether.

- Select **Create a Copy of the Material** to create and edit a copy of the originally selected Area Light material, and specify the new material's **Name**.
- Select **Edit the Source Material** to make changes to the originally selected Area Light material. This option will affect all instances of this material plan-wide.
- Choose **Select a Different Material**, then click the **Select Material** button to choose a different material from the library. See *Select Material/Library Object Dialog on page 762*.

2 Adjust Area Light

The name of the selected Area Light material is stated in the heading line for reference.

- The **Apply Emissive and Color from Light(s)** setting applies when the selected material is assigned to a Light Fixture. See *Light Fixtures on page 821*.

- When this is box unchecked, the selected material uses the Emissive value and Color set below.
- When this box is checked, the material instead uses the Intensity value and light Color assigned to each punctual light, and the settings below are disabled. *Light Data Panel on page 508*.

- Select an **Emissive** setting from the drop-down list, which controls how bright the Area Light appears and affects how much light it emits.
  - The available options are described using common real-life sources of light. You can use the text box or spin controls to make fine adjustments to this value.
  - If this value is set to 0, the material will not be considered an Area Light and will no longer be listed in the Adjust Lights dialog.
- Specify the **Material Color**, which is the color emitted by the Area Light material. This color also displays in Vector Views.
- An Area Light can have a **Texture** assigned to it. See *About Materials on page 756*.
  - When Project Management is active:
    - The name of the currently selected resource is reported.
    - Choose **Select** from the drop-down list to the right of the file name to select a Texture file from a list of existing Resources in the Resource Management dialog. See *Asset Management on page 42*.
    - Choose **Import** from the drop-down list to add a new Texture file to your Resources using the Open Texture File dialog, which is a typical Open File dialog. See *Opening and Importing Files on page 63*.
  - When traditional file management is active:
    - The full path name of the currently selected Texture file is reported.
    - Choose **Browse** from the drop-down list to the right of the file path name to select a different file using the Open Texture File dialog, which is a typical Open File dialog.
    - Choose **Edit Path** from the drop-down list to type or paste the full file path of a Texture file in the Enter a File Path dialog.
- Click the **Define Material** button to open the Define Material dialog and edit more attributes of the selected material than are presented here. See *Define Material Dialog on page 772*.

3 Information

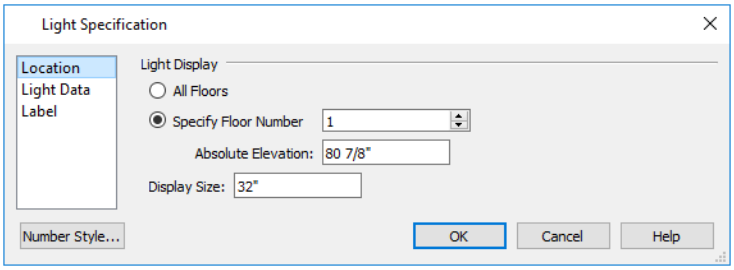
If the selected Area Light is applied to more than one object in the current plan, a message will be present at the bottom of the dialog.

Light Specification Dialog

Select one or more Point or Spot Lights and click the **Open Object** edit button to open the Light Specification dialog.

You can also select **3D> Lighting> Adjust Lights** to access a list of the light sources present in the current plan and open the specification dialog for any of them. See *Adjust Lights Dialog on page 826*.

Location Panel



Light Display
Specify where the selected Added Light displays in plan and 3D views.

- Select **All Floors** to display the selected light on all floors in plan view. See *Multiple Floor Levels on page 535*.
- Select **Specify Floor Number** to display the light on one floor only, then choose a floor number from the drop-down list.

> Note: The floor or floors that an Added Light displays on in plan view is totally independent of where it displays in 3D.

- Specify the selected light's **Absolute Elevation**, measured relative to 0, which is the default height of Floor 1.
- Specify the **Display Size**, which is the diameter of the circle representing the Added Light in plan view.

Light Data Panel

The settings on this panel are also found on the same panel of the Electrical Service Specification dialog. See *Light Data Panel on page 508*.

Depending on the type of light selected, the options available here may vary.

Label Panel

Labels for Added Lights display in plan view when the "Light Sources, Labels" layer is turned on and use the Text Style assigned to that layer. See *Text Styles on page 390*.

For information about the settings on this panel, see *Label Panel on page 395*.

Sun Angles and Shadows

In addition to the functional and aesthetic properties of ambient light and light sources in rendered views, the direction and angle of the sun's light and shadows are an important consideration. Two tools allow you to generate sunlight and sun shadows with accuracy:

North Pointers allow you to specify the direction of true north in a plan.

Sun Angles let you specify an exact location, date, and time for sunlight and sun shadow generation.

North Pointer

The **North Pointer** tool is used to define the direction of true north in a plan. The direction of north does not affect the orientation of the Snap and Reference grids, but it does affect the direction of sunlight and sun shadows, how

conditioned area totals are calculated, and how bearing information is interpreted by the program.

> Every bearing is defined relative to North, so it is best to establish this direction before entering survey information for a site plan.

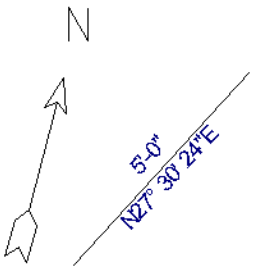
If a North Pointer is not used, north is assumed to be straight up on screen in plan view.

Select **CAD> North Pointer**, then click and drag to draw the pointer, starting at the tail and dragging toward the point. Once it is drawn, you can define its exact length and angle in its specification dialog. See *Line Specification Dialog on page 233*.

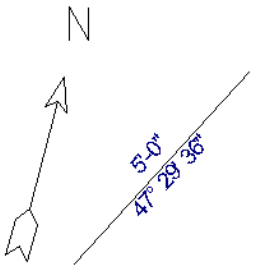
Multiple North Pointers can be drawn in a given plan file, and will always point in the same direction automatically. If you rotate one of them, the others will automatically rotate to match. Similarly, if you draw a new North Pointer at a different angle, existing North Pointers will rotate to that angle automatically.

If you choose to display line angles when a North Pointer exists, be sure to select the appropriate format in the CAD Defaults dialog. See *CAD Defaults and Preferences on page 224*.

- If angles are set to **Bearings**, they are relative to the North Pointer.



- If angles are set to show as **Degrees**, the angle relates to 0° (horizontal to the right) even if a North Pointer is present.



A North Pointer can be selected and edited using its edit handles and Edit Toolbar buttons. All attributes of the N aside from its size are drawn from the Text Style assigned to the "CAD, Default" layer. For more information, see *Editing Line-Based Objects on page 187*.

Sun Angles

Sun Angles allow you show how the sun illuminates a model as well as casts shadows at a specific date and time at the location of the building site.

- Sun Angle Latitude, Longitude, and Time Zone are set plan-wide in the General Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.
- The date and time information used by a Sun Angle is specified in its Sun Angle Specification dialog. See *Earth Data*

Panel on page 832.

- The date format is derived from your operating system settings. See *Region and Language Settings on page 84*.

> Note: Sun Angle calculations do not adjust for elevation. They are based on formulas published by the United States Naval Observatory and have limited accuracy as documented by the USNO.

When an exterior 3D view is rendered, the program looks for an active Sun Angle. If it finds none, the Generic Sun is used. See *Sunlight and Moonlight on page 821*.

There are two ways to create a Sun Angle:

- Click the **New** button in the Adjust Sunlight dialog.
- Use the **Sun Angle** tool.

To use the Sun Angle tool

1. In plan view, go to Floor 1 or Floor 0. Sun Angles can only be created on these floor levels. See *Multiple Floor Levels on page 535*.
2. Select **CAD> Sun Angle** and click in the drawing area to place a Sun Angle arrow at that location.
3. On the EARTH DATA panel of the Sun Angle Specification dialog, specify the Sun Angle's Time and Date. See *Sun Angle Specification Dialog on page 832*.
4. After it is created, a Sun Angle cannot be rotated; but it can be moved as well as resized using its edit handles. Shadows are not affected.

Multiple Sun Angles can be created, each with different Date and Time specifications; however, only one can be used as a light source in a given 3D view or Walkthrough Path Key Frame. If more than one Sun Angle is present in a plan, select the one to use in the current view in the Adjust Sunlight dialog. See *Adjust Sunlight Dialog on page 834*.

Sun Angles can display their date and time in plan view and can also produce Sun Shadow polylines in plan view. Both Sun Angles and their shadows are on the "Sun Angles & Shadows" layer.

SUN SHADOWS

The shadows created by sunlight can be seen in all camera views that support shadows, including cross section/elevation views, and in Walkthrough videos. See *Shadows on page 819* and *Walkthrough Videos on page 868*.

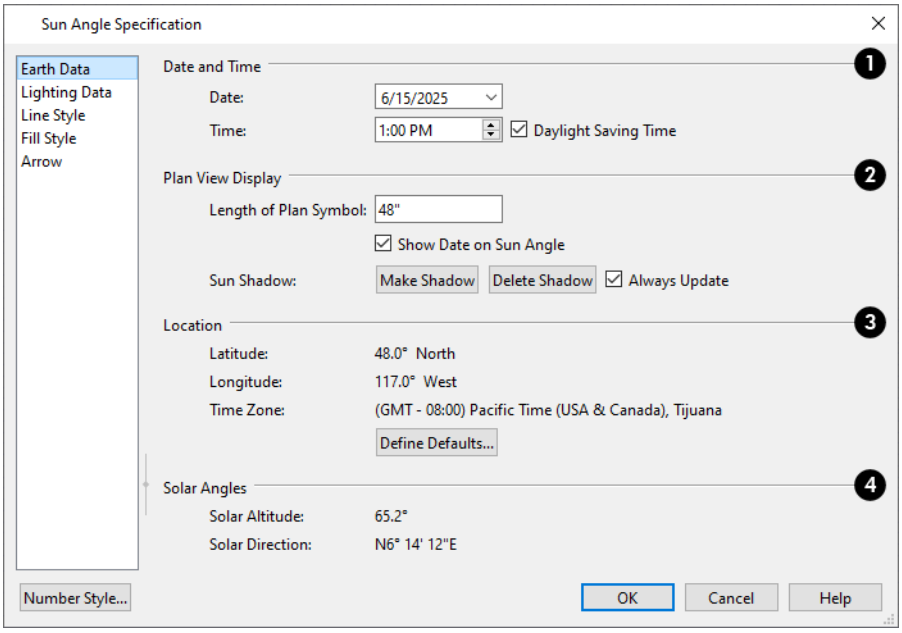
Sun Angle Specification Dialog

Select **CAD> Sun Angle**, then click in plan view to open the Sun Angle Specification dialog and create a new Sun Angle. See *Sun Angles and Shadows on page 830*.

To open the Sun Angle Specification dialog for an existing Sun Angle, select it and click the **Open Object** edit button. This dialog can also be accessed by clicking the **Edit** button in Adjust Sunlight dialog. See *Adjust Sunlight Dialog on page 834*.

EARTH DATA PANEL

The settings on the EARTH DATA panel let you establish exactly where your plan's building site is located, and exactly when the sun's light should be calculated. This information allows the program to generate sunlight and sun shadows with accuracy.



1 Date and Time

Specify the Date and Time of the selected Sun Angle. The initial time zone can be set in the General Plan Defaults dialog.

- Type a **Date** for the selected Sun Angle in the text field or click the arrow to select a date in a Calendar drop-down.
- Type a **Time** for the selected Sun Angle in the text field. You can also highlight the hour, minutes, or AM/PM and use the spin control arrows to adjust that item.
- If you want the Sun Angle to observe **Daylight Savings Time**, check this box.
- Specify the **Time Zone** that the building site is located in.

2 Plan View Display

- Specify the **Length of Plan Symbol**, which is the length of the Sun Angle arrow in plan view.
- Check **Show Date on Sun Angle** to have the date and time display on the Sun Angle arrow in plan view. This label uses the Text Style assigned to the "Sun Angle & Shadows" layer. See *Text Styles on page 390*.
- **Sun Shadow**:
  - Click the **Make Shadow** button to create or regenerate the sun shadow in plan view. See *Sun Angles and Shadows on page 830*.
  - Click the **Delete Shadow** button to remove the sun shadow from plan view.
  - When **Always Update** is unchecked and you make changes in this dialog, its sun shadow will not update in response and you should click the **Make Shadow** button to generate a new shadow. Or, you can check this box to have the program update the selected Sun Angle's shadow whenever any of the defining information is changed.

3 Location

- The **Latitude**, **Longitude**, and **Time Zone** used by Sun Angles in the current plan is reported here for reference.
- Click the **Define Defaults** button to open the General Plan Defaults dialog, where these values can be modified. See *General Panel on page 90*.

4 Solar Angles

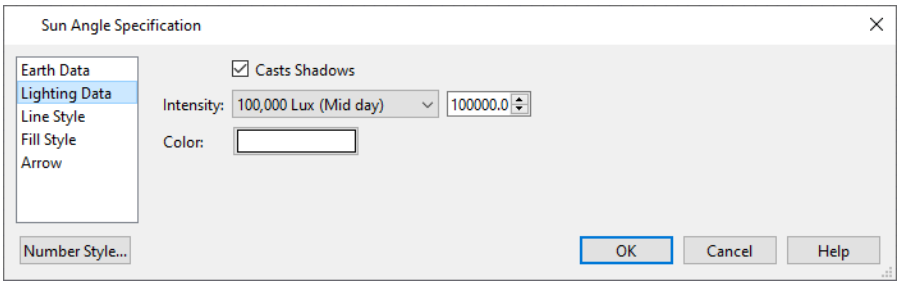
The Solar Angles are based on the date, time, and location information above, and display here for reference.

- The **Solar Altitude** is the angle of the sun above the horizontal plane, in degrees.
- The **Solar Direction** is the angle between true North and the sun's direction. This is the angle the Sun Angle arrow points in plan view relative to the direction of North. See *North Pointer on page 830*.

Lighting Data Panel

A Sun Angle can be used as a light source in 3D views. The settings on the Lighting Data panel control attributes of the sunlight associated with the selected Sun Angle.

The settings defined on the Lighting Data panel do not affect the sun shadow in plan view: they only affect 3D views in which lighting and shadows can display.



- When **Casts Shadows** is checked, the light source associated with the selected Sun Angle casts shadows. These shadows are similar to the shadow shown in plan view, but may render differently based on the presence of other light sources. See *Shadows on page 819*.
- Select an **Intensity** from the drop-down list or specify a value using the text field to define the relative strength of the light source. The time of day as set on the Earth Data panel does not affect how the Sun Angle renders as a light source, but this does.
- Click the **Color** bar to select a color for the sunlight associated with the selected Sun Angle. See *Select Color Dialog on page 165*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Sun Angle. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel control the appearance of the selected Sun Angle's shadow in plan view. For information about these settings, see *Fill Style Panel and Dialogs on page 161*.

Arrow Panel

The settings on the Arrow panel allow you to specify an arrow for the selected Sun Angle and control its appearance. See *Arrow Panel on page 252*.

Adjust Sunlight Dialog

The Adjust Sunlight dialog allows you to control the intensity, direction and color of the Generic Sun light source in the currently active 3D view or to select a Sun Angle to serve as the source of sunlight in the currently active view.

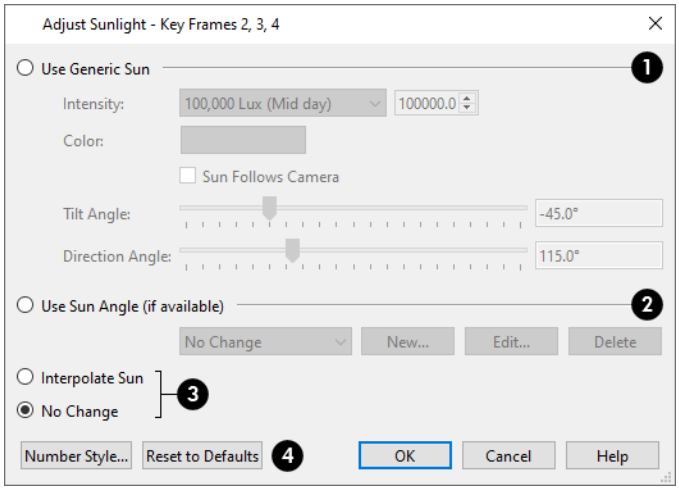
See *Sunlight and Moonlight on page 821*.

The settings in this dialog are view specific. Any changes made to them affect the sun in the currently active 3D view only. Other 3D views can have their own unique settings.

The initial sunlight attributes used in a newly created camera are set in the Sunlight Defaults dialog. See *3D View Defaults and Preferences on page 780*.

There are a number of ways to open the Adjust Sunlight dialog:

- Click the **Adjust Sunlight** button in the Camera and Cross Section/Elevation Specification dialogs. See *Camera Panel on page 809*.
- From the menu, select **3D> Lighting> Adjust Sunlight**.
- From the toolbar, click **Camera View Lighting Tools**, then click the **Adjust Sunlight** button.
- Right-click in an empty space in the background area, then select **Adjust Sunlight** from the contextual menu.
- Click the **Adjust Sunlight** button in the Walkthrough Path Specification dialog or Walkthrough Preview side window. See *Walkthrough Paths on page 870*.



1 Use Generic Sun

Select Use Generic Sun to represent the sun in the currently active 3D view using the settings that follow.

- Use the **Intensity** slider bar or text field to control the brightness of the Generic Sun's light. This setting is not applied in views using the Generated Sky. See *Backdrops and Generated Sky on page 819*.
- Click the **Color** bar to define the color of the light being modeled. Colored sunlight may be used to achieve special lighting effects, but may alter the appearance of your material colors and textures. The color selected here is not used in views using the Generated Sky.
- Check **Sun Follows Camera** to adjust the position of the Generic Sun so that it is always behind the camera, illuminating surfaces in the view. When this is checked, the Tilt and Direction Angle settings that follow are disabled. If used in a Walkthrough, this option will be applied to all Key Frames. This must be unchecked in order to use the Move Sun and Move Moon tools. See *Sunlight and Moonlight on page 821*.

> Note: If the Generated Sky is used in the current view and Sun Follows Camera is checked, the Generated Sky will not update if the camera is moved.

- Specify the **Tilt Angle**, which is the angle of the sunlight with respect to the horizon. A value of 90° means that the light points straight up, while a value of -90° means that the light points straight down. 0° is parallel to the horizon.

- Specify the **Direction Angle**, which is the direction that the sunlight points toward. 0° is measured horizontally on screen, pointing to the right. Positive values rotate in a counter-clockwise direction from there, while negative values rotate clockwise.
- Click the **Reset to Defaults** button to restore the settings set in the Sunlight Defaults dialog in the Active View.
- In the Sunlight Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options in that dialog to the originally installed settings.

2 Use Sun Angle

Select Use Sun Angle to represent the sun using a light source defined by a **Sun Angle**  . See *Sun Angles and Shadows on page 830*.

- Select a Sun Angle from the drop-down list to serve as the source of sunlight in the currently active 3D view. If no Sun Angle is present, the Generic Sun is used.
- Click the **New** button to create a new Sun Angle and open the Sun Angle Specification dialog to set its attributes. Sun Angles created in this way are placed at the origin (0,0) in plan view. See *Sun Angle Specification Dialog on page 832*.
- Click the **Edit** button to open the Sun Angle Specification dialog for the selected Sun Angle.
- Click the **Delete** button to remove the selected Sun Angle from the current plan.

3

These options are only available when this dialog is accessed when editing one or more selected Key Frame of a Walkthrough Path. See *Generating a Walkthrough on page 879*.

- Select **Interpolate Sun** to produce sunlight effects that smoothly progress from the sunlight associated with the Key Frame before the selected to the sunlight associated with Key Frame after it.
- This option is selected automatically if the selected Key Frame is positioned between other Key Frames with different Sun Angles.
- If multiple Key Frames with different Sun Angles are selected when this dialog was opened, a fourth **No Change** radio button will be present. Select a different radio button to apply the same sun settings to all selected Key Frames.

4 Reset to Defaults

- Click **Reset to Defaults** to apply the settings defined in the Sunlight Defaults dialog.
- In the Sunlight Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options in this dialog to the system defaults.

By default, the Generic Sun light color is pure white, which has the least effect on the appearance of material colors and textures. See *Materials on page 756*.

Rendering Techniques

Any camera view, cross section/elevation view, or overview can be generated using one of several Rendering Techniques to produce views for a range of different purposes: from detail drawings to artistic presentation views. To access these tools, while a 3D view is active, select **3D> Rendering Techniques,** then select one of the techniques listed below.

There are three ways to create a view using a particular Rendering Technique:

- Specify the default Rendering Technique as well as an Alternate Rendering Technique for most camera tools in the Camera Defaults dialogs. See *Alternate Rendering Technique on page 785*.
- Create a 3D view, then select the desired Rendering Technique from the menu.

- Select the desired Rendering Technique in the Camera Defaults dialog, then create a 3D view. See *Camera Defaults Dialogs on page 780*.

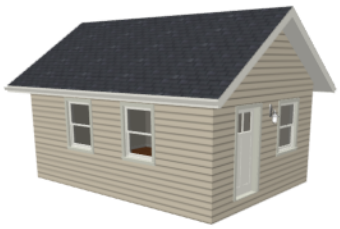
Once a view is created, the effects of the selected Rendering Technique can be adjusted in the Rendering Technique Options dialog. See *Rendering Technique Options on page 839*.

If a camera view is saved, its Rendering Technique settings are saved, as well. See *Saving and Printing 3D Views on page 807*.

> The Watercolor technique requires more time to generate than other Rendering Techniques. To save time, adjust the camera's perspective before using one of these techniques. See *Editing 3D Views on page 797*.

Standard Rendering

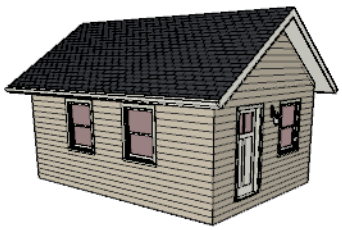
Standard rendering is a photo-realistic technique that represents materials using textures, models lighting and shadows, and can also display reflections. Surface edge lines are not drawn and no special colors or effects are applied.



In plan view, the camera symbol for a view using the Standard technique displays an S in its center. See *Displaying 3D Views on page 788*.

Vector View

In Vector Views, surface edge lines are drawn and pattern lines and colors are used to represent materials while textures are not. Shadows are supported, and when in use a single light source is used to produce them. Shading Contrast can be applied to surfaces, but other special colors or effects are not.

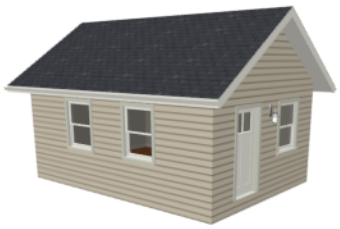


In plan view, the camera symbol for a view using the Vector View technique displays a V in its center.

Physically Based

Physically Based rendering represents materials using textures, does not draw surface edge lines, and uses real-time GPU Ray Tracing to produce lighting effects. Physically Based rendering models material properties and light propagation more accurately than other rendering techniques and is best used when a focus on lighting and finish materials is the goal.

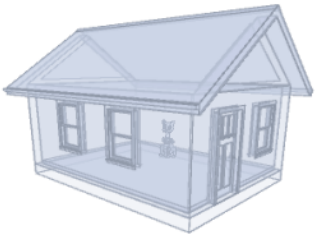
Physically Based rendering is not available in Orthographic Cross Section/Elevation views, or on systems that do not support GPU Ray Tracing. See *GPU Ray Tracing on page 817*.



In plan view, the camera symbol for a view using the Physically Based technique displays a Ph in its center.

Glass House

Glass House rendering uses different shades of a single color to display the model with surface edge lines and semi-transparent surfaces. Lighting and shadows are not modeled, and materials are not represented, so neither pattern lines nor textures are used.

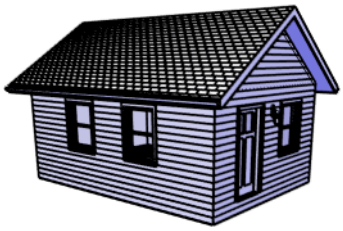


In plan view, the camera symbol for a view using the Glass House technique displays a G in its center.

Technical Illustration

Technical Illustration rendering draws surface edge and pattern lines, and uses shades of two colors, Warm and Cool. The warm shade is applied to surfaces that face the light source in the view, and the cool shade, to surfaces that face away from it.

Only one light source is used: the light with the highest Intensity found in the room containing the camera. In exterior views, this light is always the Generic Sun. If no lights are on, a fallback light is used. Lighting is modeled as non-photorealistic, stylized highlights and shadows are supported. See *Lighting on page 820*.



In plan view, the camera symbol for a view using the Technical Illustration technique displays a T in its center.

Watercolor

Watercolor rendering approximates the effects of watercolor painting such as pigment pooling and flow. It uses textures to represent materials and models lighting, shadows, and reflections.



In plan view, the camera symbol for a view using the Watercolor technique displays a W in its center.

> Note: In some plans, the Watercolor techniques may take a considerable amount of time. You can press the ***Esc*** key to cancel the rendering.

Rendering Technique Options

The settings in the Rendering Technique Options dialog allow you to control the specific effects of each rendering technique on an active 3D view. To access this dialog, create a camera view, cross section/elevation view, or overview and select **3D> Rendering Techniques> Technique Options**.

The Rendering Technique Options dialog can also be accessed by double-clicking the **Rendering Techniques** parent button, or by clicking the **Define** button in the active camera view's specification dialog. See *Camera Panel on page 809*.

The settings in the Rendering Technique Defaults dialog are the same as those in this dialog, but control the initial settings of each technique when it is first applied.

In the Rendering Technique Options dialog, select a technique from the list on the left to make its options active on the right. When this dialog is first opened, the technique currently used by the view is selected.

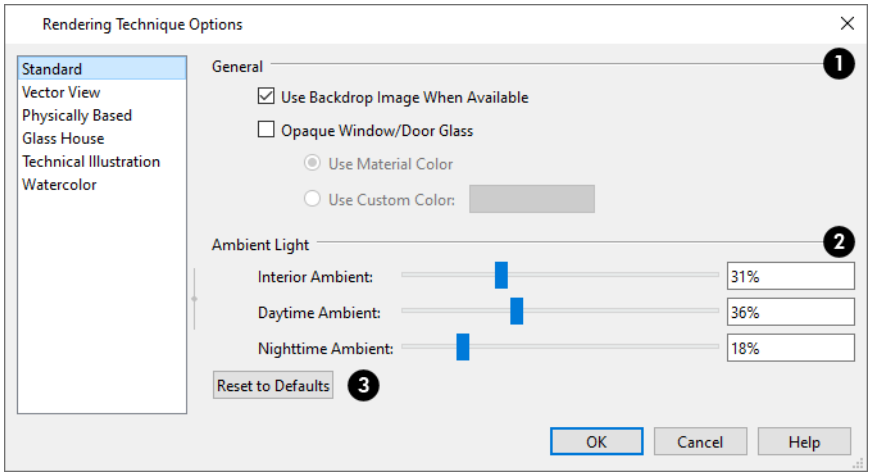
As changes are made in the Rendering Technique Options dialog, the 3D view automatically updates to reflect those changes.

When a 3D view is saved, its Rendering Technique Options settings are saved, as well. See *Saving 3D Views on page 807*.

Standard Panel

When this panel is selected, the active view uses the Standard Rendering Technique. See *Standard Rendering on page 837*.

There are a variety of other tools that affect the appearance of Standard rendered views, as well. See *Displaying 3D Views on page 788*.



1 General

- When **Use Backdrop Image When Available** is checked, the backdrop image specified for this view is used. When unchecked or if no backdrop image is specified for the current view, the specified Backdrop Color is used instead. See *3D Backdrops on page 846*.
- Check **Opaque Window/Door Glass** to make the glass in windows and exterior doors opaque. When unchecked, door and window glass is transparent. See *Rendering Tips on page 817*.
- When Opaque Window/Door Glass is checked, specify the color of door and window glass:
  - Select **Use Material Color** to use the glass material's color. See *Patterns and Textures on page 756*.
  - Select **Use Custom Color** to click the Color button and select a glass color. See *Select Color Dialog on page 165*.

2 Ambient Light

Specify the amount of Ambient light to use in different situations in Standard and Watercolor renderings. See *Ambient Lighting and Occlusion on page 822*.

- **Interior Ambient** affects interior views.
- **Daytime Ambient** affects exterior views.
- **Nighttime Ambient** affects nighttime exterior views.

3 Reset

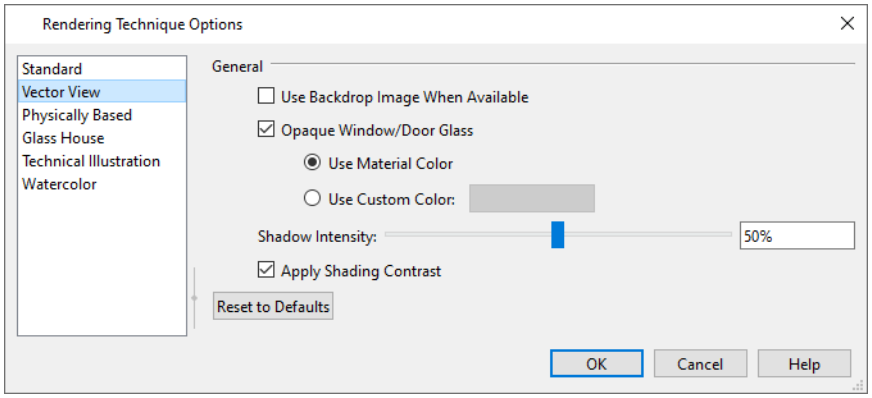
- Click **Reset to Defaults** to apply the Standard settings defined in the Rendering Technique Defaults dialog.
- In the Rendering Technique Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the system defaults.

Vector View Panel

When this panel is selected, the active view uses the Vector View Rendering Technique. See *Standard Rendering on page 837*.

Additional settings that affect the appearance of Vector Views can be found in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

There are a variety of other tools that affect the appearance of Vector Views. See *Displaying 3D Views on page 788*.

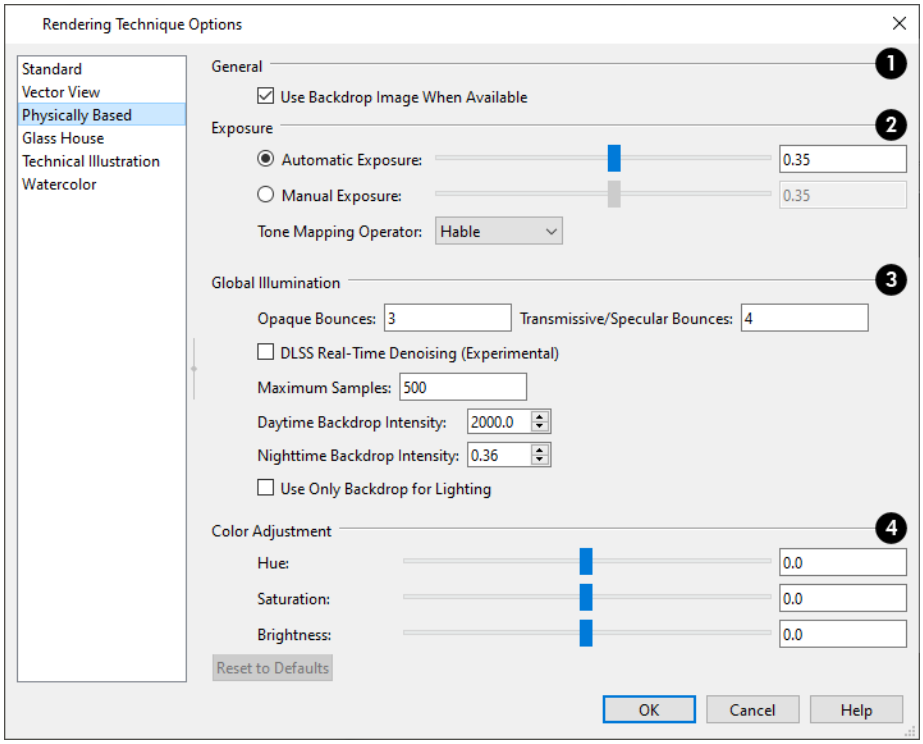


- Check **Use Backdrop Image When Available** to use the backdrop image specified for this view. When unchecked or if no backdrop image is specified for the current view, the specified Backdrop Color is used instead.
- Check **Opaque Window/Door Glass** to make the glass in windows and exterior doors opaque. When unchecked, door and window glass is transparent. See *Rendering Tips on page 817*.
- When Opaque Window/Door Glass is checked, specify the color of door and window glass:
  - Select **Use Material Color** to use the glass material's color. See *Patterns and Textures on page 756*.
  - Select **Use Custom Color** to click the Color button and select a glass color. See *Select Color Dialog on page 165*.
- Specify the **Shadow Intensity**, which is how dark or light shadows appear. A value of 100% creates shadows that hide any objects located within them; a value of 0% effectively produces no shadows.
- When **Apply Shading Contrast** is checked, different levels of shading is used on surfaces oriented at different angles in the model. Uncheck this box to use unmodified material Colors on all surfaces, regardless of the angle. Each material's Shading Contrast can be set individually. See *Pattern Panel on page 772*.
- Click **Reset to Defaults** to apply the Vector View settings defined in the Rendering Technique Defaults dialog.
- In the Rendering Technique Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the system defaults.

Physically Based Panel

This panel is only available in Perspective cameras and overviews, and its settings are only enabled on systems that support GPU Ray Tracing. See *Physically Based on page 837*.

There are a variety of other tools that affect the appearance of Physically Based rendered views. See *Rendering Tips on page 817*.



1 General

- When **Use Backdrop Image When Available** is checked, the backdrop image specified for this view is used. When unchecked or if no backdrop image is specified for the current view, the specified Backdrop Color is used instead.

2 Exposure

Exposure is the amount of light in the scene that is captured by the camera. A low value produces a darker view; too high a value can make the scene look washed out.

- When **Automatic Exposure** is selected, the program automatically adjusts luminance in the scene based on the light sources in use.
- Select **Manual Exposure** to manually adjust the level of luminance. This can sometimes be helpful in some dimly lit scenes.
- Specify the view's **Tone Mapping Operator**, which is a method of color processing that enhances the quality of highlights and shadows in the scene.
  - Select **Hable** for somewhat lower color saturation. This option is often more suitable for interior scenes.
  - Select **ACES** for somewhat greater color saturation, particularly of bright colors, which may be preferable in exterior scenes.

3 Global Illumination

- Specify the **Opaque Bounces**, which is the number of times light will bounce off opaque materials, not including mirrors, before its path is terminated.
- Specify the **Transmissive/Specular Bounces**, which is the number of times light will bounce while passing through or off Translucent, Transparent, or Mirror materials before its path is terminated.

- Check **DLSS Real-Time Denoising (Experimental)**to denoise the current scene in real time. When this is unchecked, denoising only takes place when no changes are made to the scene or camera position. Only available on systems with some Nvidia graphics cards. See *Denoising on page 817*.
- Specify the **Maximum Samples**, which is how many samples to take for a view that you wish to export as a picture, print, record a walkthrough, or send to layout as an image. See *Pictures on page 856* and *Generating a Walkthrough on page 879*.
- Specify the **Daytime Background Intensity**, which is the brightness of the view's background color or backdrop image when the Sunlight is toggled on. See *Backdrop Panel on page 813*.
- Specify the **Nighttime Background Intensity**, which is the background brightness when the Sunlight is toggled off. See *Sunlight and Moonlight on page 821*.
- Check **Use Only Backdrop for Lighting** to prevent the Sunlight from lighting the scene without toggling it off. This option is useful for overcast daytime scenes.

4 Color Adjustment

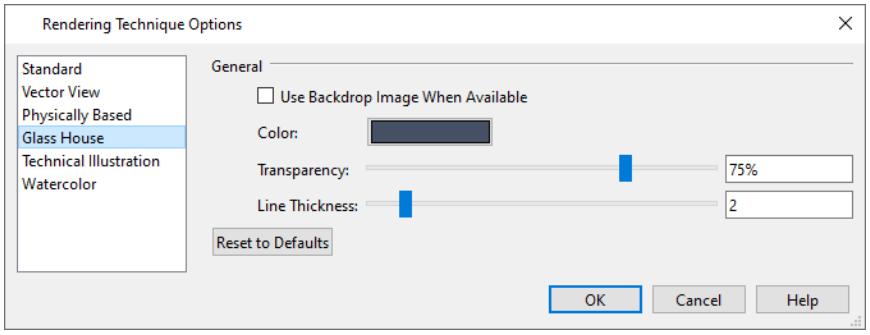
You can adjust the **Hue**, **Saturation**, and **Brightness** of the view, if needed.

5 Reset

- Click **Reset to Defaults** to apply the Physically Based settings defined in the Rendering Technique Defaults dialog.
- In the Rendering Technique Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the system defaults.

Glass House Panel

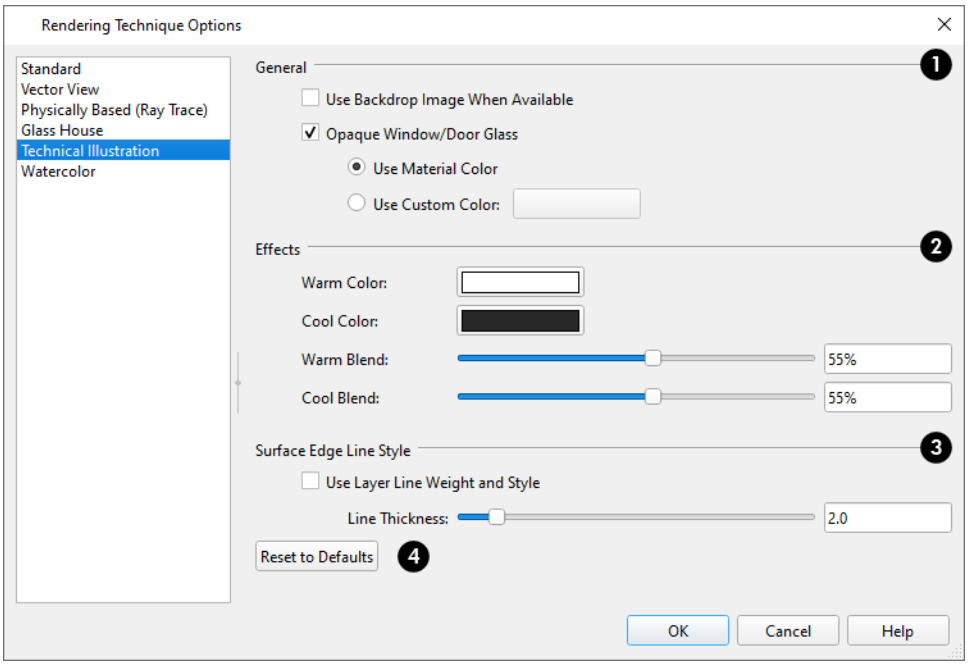
When this panel is selected, the active view uses the Glass House Rendering Technique. See *Glass House on page 838*.



- When **Use Backdrop Image When Available** is checked, the backdrop image specified for this view is used. When unchecked or if no backdrop image is specified for the current view, the specified Backdrop Color is used instead. See *3D Backdrops on page 846*.
- Click the **Color** bar to select a color for the semi-transparent surfaces and lines in a Glass House view. See *Select Color Dialog on page 165*.
- Specify the **Transparency** of the surfaces in Glass House view. For example, to create a wireframe line drawing of your structure, turn transparency to full and minimize line thickness.
- Specify the **Line Thickness** of surface lines in Glass House view.
- Click **Reset to Defaults** to apply the Glass House settings defined in the Rendering Technique Defaults dialog.
  - In the Rendering Technique Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the system defaults.

Technical Illustration Panel

When this panel is selected, the active view uses the Technical Illustration Rendering Technique. See *Technical Illustration on page 838*.



1 General

- When **Use Backdrop Image When Available** is checked, the backdrop image specified for this view is used. When unchecked or if no backdrop image is specified for the current view, the specified Backdrop Color is used instead. See *3D Backdrops on page 846*.
- Check **Opaque Window/Door Glass** to make the glass in windows and exterior doors opaque. When unchecked, door and window glass is transparent. See *Rendering Tips on page 817*.
- When Opaque Window/Door Glass is checked, specify the color of door and window glass:
  - Select **Use Material Color** to use the glass material's color. See *Patterns and Textures on page 756*.
  - Select **Use Custom Color** to click the Color button and select a glass color. See *Select Color Dialog on page 165*.

2 Effects

- Click the **Color** bar to select a **Warm Color** for surfaces that face the light source and a **Cool Color** for surfaces that face away from the light. See *Select Color Dialog on page 165*.
- Specify the **Warm Blend**, which is the degree to which the selected Warm Color is blended with original colors on well-lit surfaces in the view.
- Specify the **Cool Blend**, which is the degree to which the selected Cool Color is blended with original colors on shaded surfaces in the view.

3 Surface Edge Line Style

These settings affect the appearance of 3D object surface edge lines.

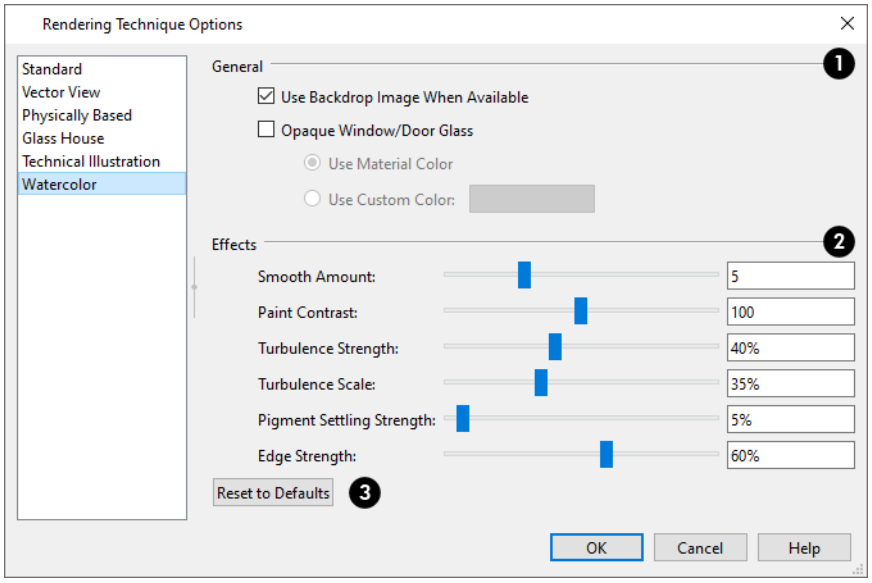
- When **Use Layer Line Weight and Style** is unchecked, surface edge lines are drawn with solid lines using the Line Thickness specified below. Check this box to instead use the Line Weight and Style assigned to each 3D object's layer. See *Layer Attributes on page 152*.
- When Use Layer Line Width and Style is unchecked, specify the **Line Thickness** of all surface edge lines in the view, in pixels, using the slider bar or text field.
- In either case, Surface Edge Line color is set by layer in the Layer Display Options dialog when **Use Layer Settings** is selected in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.

4 Reset

- Click **Reset to Defaults** to apply the Technical Illustration settings defined in the Rendering Technique Defaults dialog.
- In the Rendering Technique Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the system defaults.

Watercolor Panel

When this panel is selected, the active view uses the Watercolor Rendering Technique. See *Watercolor on page 838*.



1 General

- When **Use Backdrop Image When Available** is checked, the backdrop image specified for this view is used. When unchecked or if no backdrop image is specified for the current view, the specified Backdrop Color is used instead.
- Check **Opaque Window/Door Glass** to make the glass in windows and exterior doors opaque. When unchecked, door and window glass is transparent. Opaque Window/Door Glass is not available when the Base Technique is Physically Based. See *Rendering Tips on page 817*.
- When Opaque Window/Door Glass is checked, specify the color of door and window glass:
  - Select **Use Material Color** to use the glass material's color. See *Patterns and Textures on page 756*.
  - Select **Use Custom Color** to click the Color button and select a glass color. See *Select Color Dialog on page 165*.
- Specify the **Base Technique**, which is the Rendering Technique used to render the scene prior to applying Watercolor Effects. Not available in Orthographic views.

2 Effects

- Specify the **Smooth Amount**, which is the degree to which details are removed from the original view.
- Specify the **Paint Contrast**, which determines the extent to which variations in pigment color are used.
- Specify the **Turbulence Strength**, which produces “pooling”, or variations in the strength of pigment colors.
- Specify the **Turbulence Scale**, which controls the size of the areas of pooling.
- Specify the **Pigment Settling Strength**, which is creates the appearance of pigment settling into low areas in paper.
- Specify the **Edge Strength**, which is how well-defined surface edge lines are.

3 Reset

- Click **Reset to Defaults** to apply the Watercolor settings defined in the Rendering Technique Defaults dialog.
- In the Rendering Technique Defaults dialog, the **Restore Initial Settings** button is available instead. Click this to reset the options on this panel to the system defaults.

3D Backdrops

A backdrop is an image, typically of an exterior view, that displays in the background of 3D views to help place the model into a realistic setting and add a sense of perspective.



In Physically Based renderings, backdrop images can also contribute to the Global Illumination of the scene. See *Physically Based Panel on page 841*.

Backdrops automatically adjust to fit each view window, so they look best when they are created with a height to width ratio that is similar to the window you are working in.

Specifying a Backdrop Image

Backdrop images are view specific. You can select a backdrop image for a camera view from the library in either of two ways:

- In a 3D view, open the Library Browser. Select a Backdrop image, then move your mouse pointer into the view window. Click anywhere in the view to apply the selected backdrop.
- Open the Camera Specification dialog, and on the BACKDROP panel, click the **Select Backdrop** button. See *Backdrop Panel on page 813*.
- You can also specify a backdrop image for the material preview panes in the Library Browser and Select Material, Define Material, Plan Materials dialogs. See *Dialog Preview Panes on page 21*.

In Physically Based renderings, High Dynamic Range images in .hdr file format can be used to create high-quality backdrops that also provide more realistic scene lighting. This file format is often used for Spherical Panoramic Backdrops.

When a backdrop image is not applied, Home Designer applies a background color instead. This color can be specified on the BACKDROP panel of the Camera Specification dialog, as well.

You can create digital photos of a building site for use as 3D backdrops.

SPHERICAL PANORAMIC BACKDROPS

Spherical Panoramic Backdrops are a special type of backdrop that wraps around the model in Perspective 3D views as though it were applied to a sphere surrounding it. Although any backdrop image can be specified as a Spherical Panoramic Backdrop, it takes an image processing program or special camera to generate an image that will function properly as such. If you have such a file, you can assign it to a custom Backdrop, then check **Spherical Panoramic Backdrop** in its Backdrop Specification dialog. See *Backdrop Specification Dialog on page 848*.

You can create a Spherical Panoramic Backdrop by exporting a camera view or overview as a 360 Panorama. See *Export 360 Panorama on page 894*.

When in use, Spherical Panoramic Backdrop images can be rotated horizontally by selecting **3D> Camera View Options> Rotate Spherical Backdrop**, and offset both vertically and horizontally in the Camera Specification dialog. See *Backdrop Panel on page 813*.

The **Use Generated Sky** option produces a special Spherical Panoramic Backdrop that simulates a daytime sky using the Generic Sun or active **Sun Angle** data. See *Sun Angles and Shadows on page 830*.

When the Generated Sky is in use, a horizon line is modeled: in a camera with a Tilt Angle of 0°, it runs across the center of the view window. As the sun is moved closer to the horizon, its intensity decreases and its color becomes an increasingly deep amber color. When the sun is moved below the horizon it may continue to contribute to light to the sky, but it will not cast light on the model. When the sun is either below the horizon or toggled off, representations of the moon and stars become visible. See *Sunlight and Moonlight on page 821*.

Note: Spherical Panoramic Backdrops, including the Generated Sky, cannot be used in Orthographic Overviews.

BACKDROP DEFAULTS

By default, Home Designer uses backdrop images in Perspective Full Cameras only. You can, however, specify which types of views use backdrops by default, and also select the default backdrop images for each, in the Camera Tools Defaults dialogs. See *Camera Defaults Dialogs on page 780*.

Similarly, backdrop images are only used by default in a few Rendering Techniques: Standard, Watercolor, and Physically Based. You can choose whether a backdrop is used in any technique in the Rendering Technique Options dialog. See *Rendering Technique Options on page 839*.

ADDING NEW BACKDROPS

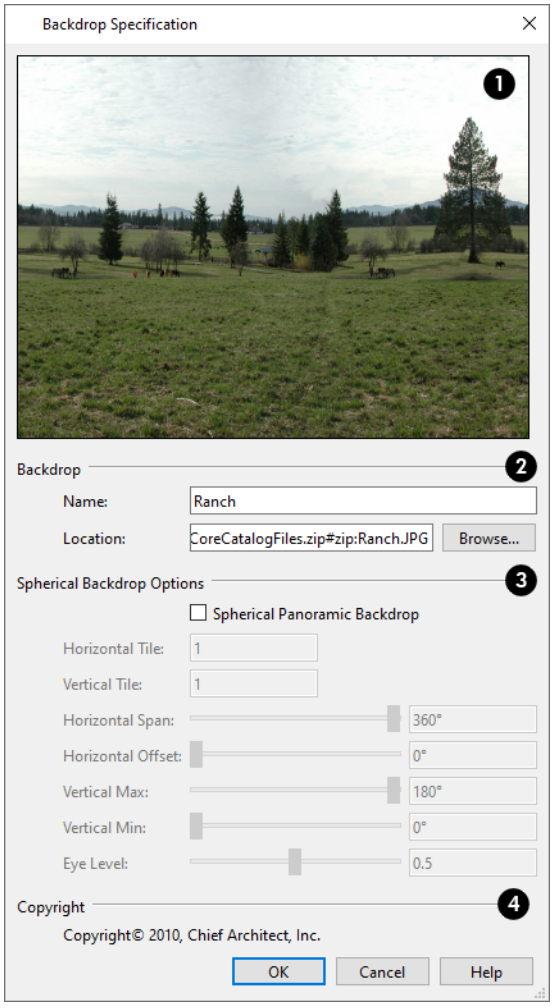
A new backdrop image can be created using a variety of graphic file formats - including High Dynamic Range .hdr - and can be imported into Home Designer in several ways:

- Select **File> Import> Backdrop** to open the Import Backdrop File dialog, which is similar to the Import Picture File dialog. See *Importing Pictures on page 858*.
- Right-click on the User Catalog and select **New> Backdrop** from the contextual menu.
- Copy and paste an image into Home Designer. See *Copying and Pasting Objects on page 146*.

Backdrop Specification Dialog

To open the Backdrop Specification dialog, select **File> Import> Import Backdrop** or right-click on the User Catalog in the Library Browser and select **New> Backdrop** from the contextual menu. See *Adding New Backdrops on page 847*.

You can also open this dialog by right-clicking on a backdrop image in the User Catalog in the Library Browser and selecting **Open** from the contextual menu.



1 Preview

A preview of the selected image displays here.

2 Backdrop

Specify backdrop's Name and the image file associated with it.

- Type a **Name** for the selected backdrop, to be used in the Library Browser and 3D View Defaults dialog.
- In the **Location** field, type the full file path of the image file or click the **Browse** button and browse to the file on your computer. If the file is not located in the Home Designer 2027 Data folder, a copy of the file will be created at Home

Designer 2027 Data\Backdrops\-My Backdrops and the program will reference that copy. See *Home Designer Data on page 74*.

3 Spherical Backdrop Options

A backdrop should only be specified as a Spherical Panoramic Backdrop if its image file was specially created for this purpose. See *Spherical Panoramic Backdrops on page 847*.

- Check **Spherical Panoramic Backdrop** to place the selected backdrop onto a sphere that surrounds the model in the current view.
  - When an .hdr backdrop image is imported, it is automatically set to be a **Spherical Panoramic Backdrop**.
- **Horizontal Tile** - Specify how many times to tile the selected backdrop image side by side.
- **Vertical Tile** - Specify how many times to stack the selected backdrop image one above the other.
- Specify the **Horizontal Span**, which is how much of the sphere the backdrop is applied to. A Span of 360° wraps the entire sphere.
- Specify the **Horizontal Offset**, in degrees, to shift the backdrop image or tiled images in a clockwise direction. The Horizontal Offset can also be adjusted using the **Rotate Spherical Backdrop** tool. See *Rendering Tips on page 817*.
- Specify the **Vertical Max**, which is the height of the bottom of the backdrop, measured relative to the top of the sphere.
- Specify the **Vertical Min**, which is the height of the bottom of the backdrop, measured relative to the bottom of the sphere.
- The **Eye Level** setting controls the vertical position of the camera within the sphere. A value of 0 positions the camera at the bottom of the sphere while a value of 1 positions it at the top. The default value is 0.5., which centers the camera inside the sphere.

Some experimenting with the **Angle** values may be necessary to achieve the desired results. You may prefer to do this after adding the backdrop to a plan. See *Backdrop Panel on page 813*.

4 Copyright

If the selected image has a **Copyright**, information about it will display here.

Pictures, Images, and Walkthroughs

Chapter 38

Home Designer uses picture files in a variety of ways to enhance your drawings.

The Library Browser contains images of real world objects like plants and vehicles that can display in 3D views.

Picture files can also be imported into Home Designer and shown in most views.

You can save any view using a variety of picture file formats. In addition, Home Designer allows you to create virtual tour videos that can be played back later and shared with others.

Picture Files vs Pictures and Image Objects

In common computer language, picture files, pictures and images are more or less synonymous. In the Home Designer environment, however, there are some notable differences between these terms.

In Home Designer, a two dimensional image file such as a .bmp, .gif, .jpg, .png, .tif, or .webp is referred to as a picture file or an image file. Examples of these files are saved on most computers and can be opened in a variety of applications.

A Picture object or Picture File Box, on the other hand, is a file that has been imported into the program. Pictures can be imported into plan view, cross section/elevation views, and layout pages. They are two-dimensional only and do not display in camera views or overviews.

An Image object is also based on a picture file, but it does display in 2D and 3D views. Image objects have 3D width and height data associated with them, as well as a 2D symbol which displays in plan view.

Picture files have additional uses in Home Designer, as well:

- Backdrops are picture files that display behind 3D views. See *3D Backdrops on page 846*.
- Textures are picture files that realistically represent materials in 3D views. See *About Materials on page 756*.

Images

Images add realistic detail to 3D views without adding many surfaces to the model. For example, a tree image with a single surface can be used instead of a tree symbol with thousands, dramatically improving realism without compromising drawing time.

There are two types of Images in Home Designer:

Images rotate so that they always face the camera in 3D views.

Billboard Images do not rotate to face the camera. An example of when this may be useful is an image of a trellis, which might look awkward when facing a camera from a side view.

Placing Images

A selection of Images are available in the Library Browser. Select one and click in a plan view, camera view or overview to place it. See *Placing Library Objects on page 727*.

Once created, Images can be edited using their edit handles, edit tools, and their specification dialog. See *Editing Images on page 852*.

Creating Images

Custom Images can be added to the User Catalog in the library, as well as created in plan files. Home Designer can use any image with a ***.bmp**, ***.jpg**, ***.png**, ***.gif**, or ***.tif** extension.

Generally, **.png** files work best as Images because this format has good compression and allows for the Image to contain transparency information.

To create an Image in plan view

1. In plan view, select **Build> Image> Create Image** or **Billboard Image** to open the Image Specification dialog. See *Image Specification Dialog on page 853*.
2. On the IMAGE panel:
   - Click the **Browse** button to select a picture file on your computer or enter the path to a valid picture file in the **Image File** field. If the file is not located in the Home Designer 2027 Data folder, a copy of the file will be created at Home Designer 2027 Data\Images\-My Images and the Image object will reference that copy. See *Home Designer Data on page 74*.
   - Select a **2D Plan Symbol** from the drop-down list or click the **Library** button and select a symbol from the library. The selected symbol represents the image in plan view. See *Image Panel on page 853*.
   - Specify the **Size** and **Position** of the image.
3. Specify transparency information on the TRANSPARENCY panel.
4. Click OK to close the Image Specification dialog.
5. Click to place the new Image in plan view.

To create an image in the Library Browser

1. In the Library Browser, right-click on an unlocked folder.
2. Select **New> Image** from the contextual menu to open the Image Specification dialog.
3. Browse to the image file you want to add and select your other options. See *Image Specification Dialog on page 853*.
4. Once created, the image is listed in the library folder that you right-clicked on. Size and other data is saved.

Using Paste Image

You can also import an image by first copying it to the system clipboard, then navigating to a Home Designer window and selecting **Edit> Paste> Paste**. See *Paste Special on page 150*.

Displaying Images

The display of images in floor plan and 3D views is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

Images are placed on the “Images” layer.

In Plan View

In plan view, images display in front of most other objects, will print, and can be included in views sent to layout or exported to **.dxf/.dwg**.

In plan view, most images are represented by an Image symbol. You can specify a different symbol to represent an image if you wish. See *Image Specification Dialog on page 853*.

In 3D Views

The actual picture associated with an Image object can be seen in most 3D views, as can any transparency data associated it. See *Image Specification Dialog on page 853*.

Images can be set to either rotate so that they always face the camera or remain stationary, like billboards. See *Images on page 850*.

Images can display in all Rendering Techniques except Glass House. See *Rendering Techniques on page 836*.

In Layout Views

Images can be included in all views sent to layout with the exception of those using Plot Lines. See *Plot Line Views on page 976*.

In Materials Lists

Plant Images are included in the Materials List by default while regular Image objects are not. If you wish to include one, you need to create a custom Component in its specification dialog, then generate a new Materials List. See *Object Components on page 966*.

In Schedules

Plant Images can be listed in Plant Schedules while regular Image objects cannot. See *Plant Schedules on page 947*.

Editing Images

Images can be selected in 2D and 3D views and edited using the edit handles, edit tools and the Image Specification dialog. See *Image Specification Dialog on page 853*.

Using the Edit Handles

In plan view, a selected image can be rotated, moved, and resized. In 3D views, a selected image only has two edit handles: the circular Resize handle and square Move handle.



When an image is resized using the edit handle, its aspect ratio is retained and 2D symbol resizes proportionally.

Using the Edit Toolbar

A selected image or images can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Using Dimensions

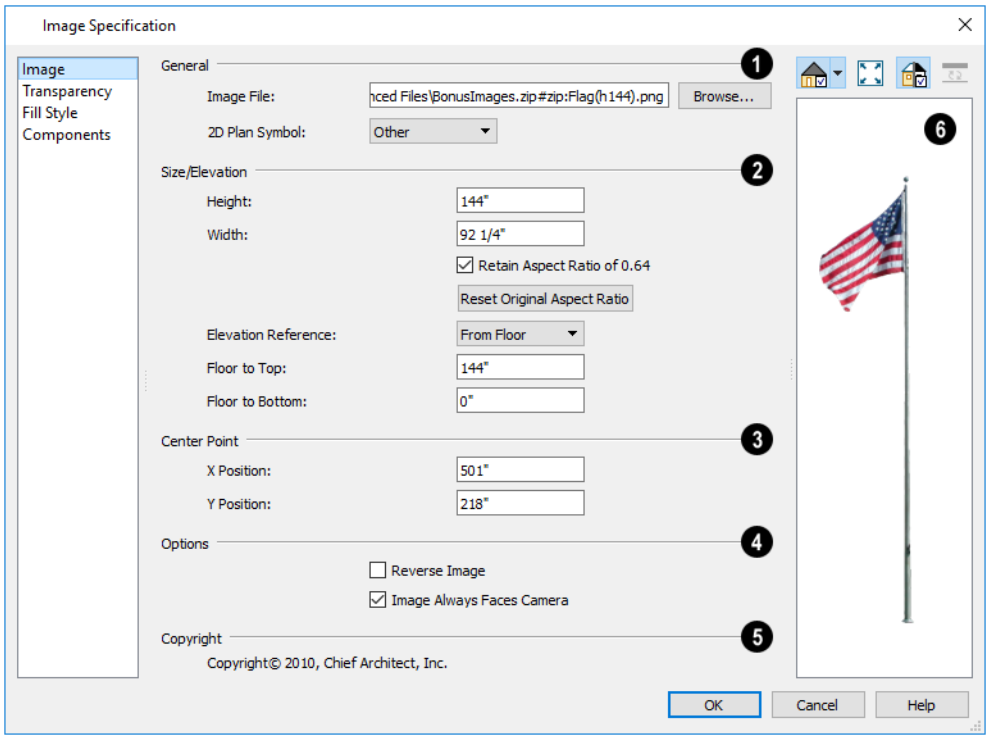
Dimension lines can locate the centers of Image objects and can be used to move these objects \in plan view, but not in cross section/elevation views. See *Moving Objects Using Dimensions on page 361*.

In order for a manually drawn Dimension Tool to locate image objects as a dimension line is drawn, it must be set to do so in the Dimension Defaults dialog. See *Locate Manual Panel on page 344*.

Image Specification Dialog

Select an image and click the **Open Object** edit button to open the Image Specification dialog.

Image Panel



1 General

- The **Image** document associated with the selected object is reported and can be specified here.
- When Project Management is active:
  - The name of the currently selected resource is reported.
  - Choose **Select** from the drop-down list to the right of the file name to select a Image file from a list of existing Resources in the Resource Management dialog. See *Asset Management on page 42*.

    - Choose **Import** from the drop-down list to add a new Image file to your Resources using the Open Image File dialog, which is a typical Open File dialog. See *Opening and Importing Files on page 63*.
- When traditional file management is active:
    - The full path name of the currently selected Image file is reported.
    - Choose **Browse** from the drop-down list to the right of the file path name to select a different file using the Open Image File dialog, which is a typical Open File dialog.
    - Choose **Edit Path** from the drop-down list to type or paste the full file path of a Image file in the Enter a File Path dialog.
- Select a **2D Plan Symbol** from the drop-down list to represent the Image object in plan view. See *Displaying Images on page 851*.

2 Size/Elevation

Specify the Size/Elevation of the image as it displays in 3D views.

- Enter a **Height** for the selected image.
- Enter a **Width** for the selected image.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value. If you do this, the image may appear distorted.
  This check box does not affect editing performed outside this dialog and is an action rather than a state: the next time you open this dialog, it will be checked.
- Click **Reset Original Aspect Ratio of** to reset the image's original aspect ratio and remove any distortion caused by resizing.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
    - Specify the height **to Top**, measured from the selected Elevation Reference to the top edge of the image.
    - Specify the height **to Bottom**, measured from the selected Elevation Reference to the bottom edge of the image.

3 Center Point

Specify the location of the **X** and **Y Coordinates** of the selected image's **Center Point**.

4 Options

- Check **Reverse Image** to reflect the appearance of the image about an imaginary vertical line through its center.
- Check **Image Always Faces Camera** to prevent the image from rotating to face the camera in 3D views. This box is unchecked by default for Billboard Images. See *Images on page 850*.

5 Copyright

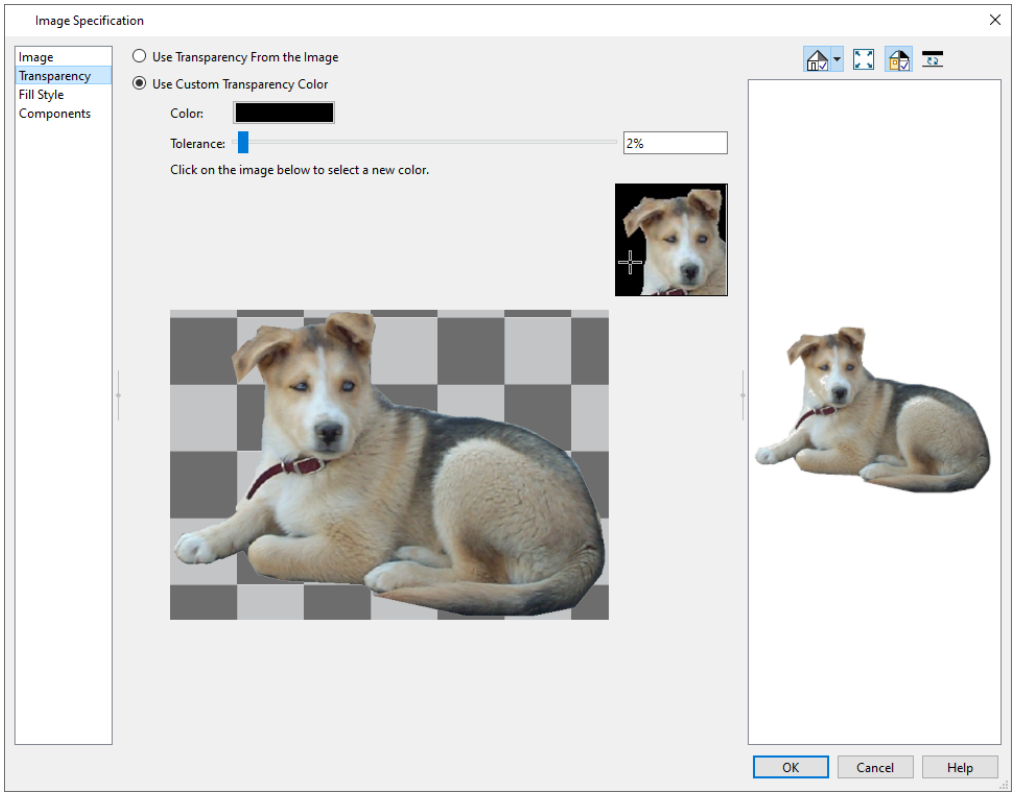
If the selected Image has Copyright information, it will be stated here.

6 Preview

A preview of the selected Image displays here. The Glass House Rendering Techniques is not available for images. See *Dialog Preview Panes on page 21*.

Transparency Panel

The settings on the Transparency panel let you specify portions of the selected image as transparent.



- Click the **Use Transparency From The Image File** radio button to use any transparency data included in the image file.
- Click the **Use Custom Transparency Color** radio button to specify a color in the image to represent the transparency and enable the settings below.
- Click the Color bar to select a color in the Select Color dialog. See *Select Color Dialog on page 165*.
- Use the slide bar or enter a value to specify a level of **Tolerance** to be applied to colors that are almost the same as the specified transparency color.
- Move your pointer over the small preview image below. The pointer changes to an eyedropper and a magnified preview displays to its right. Click to select the color of the pixel your pointer is over as the Transparency color. The selected color displays in the Color bar, below.
- A magnified preview of the area in the preview image above displays here, allowing for accurate pixel selection.

> Note: The image preview will display its original orientation, even if Reverse Image is checked on the Image panel.

The Transparency Color

If the portion of the image file that you wish to use contains the transparency color, that part of the image also becomes transparent. If this happens, the image may appear partially disintegrated.

You may need to experiment to find the best transparency color and tolerance for the image.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Image's **2D Plan Symbol** in plan view, provided that the selected symbol is a closed shape. See *Fill Style Panel and Dialogs on page 161*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Pictures

A variety of picture file types can be imported into and exported out of Home Designer.

Exporting Pictures

There are several ways to save a picture of a view in Home Designer:


Using the **Export Picture** tool is similar to creating a screen capture of everything in the current view window. Pictures can be saved in various file formats and used in other applications. **Export Picture** is particularly suited for rendered views. When exporting a line-based view in the PC version of the program, you may prefer to save it as a metafile. See *To export a metafile on page 861*.


The **Export 360 Panorama** tool creates a spherical panoramic image file. See *Export 360 Panorama on page 894*.


Use the **Print Image** tool to either print or save the current view as a PDF file. See *Print Image Dialog on page 999*.

To export a picture

1. Open the view that you would like to export as a picture file.
2. Zoom, pan or otherwise adjust the view so that what you see on screen suits your needs. See *Displaying 3D Views on page 788*.
3. Select **File> Export> Export Picture (BMP, JPG, PNG)**  to open the Export Picture dialog, below, and specify the desired image size and other properties.

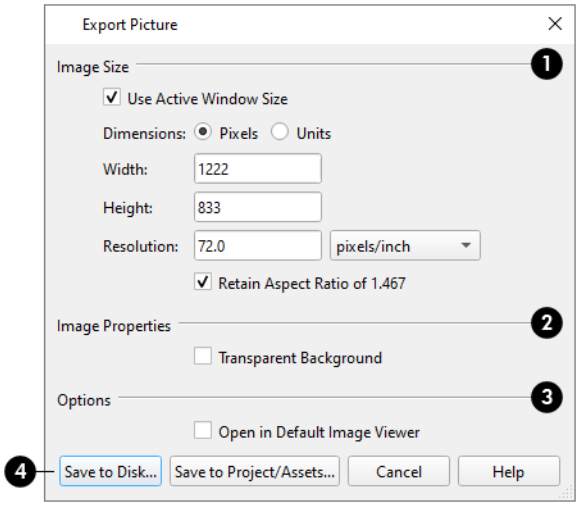
   
   Physically Based renderings can be exported as High Dynamic Range .hdr files. See *Rendering Techniques on page 836*.

4. In the Export Picture File dialog, which opens next, give the new picture file a name, file type, and save location. See *Exporting Files on page 68*.

Export Picture Dialog

A similar dialog also opens if you click the **Define** button in the Send to Layout dialog. See *Send To Layout Dialog on page 973*.

The settings in this dialog are retained between program sessions.



1 Image Size

Specify the exported file's size. The Dimensions and Resolution settings are not available when this dialog is accessed via the Send to Layout dialog.

- Check **Use Active Window Size** to export the picture at the same size as the active view window. The window's Width and Height are described below. In camera views only, these values can be changed, in which case this box becomes unchecked automatically.
- Select either **Pixels** or **Units** as the method by which the picture's dimensions are measured.
- Specify the **Width** and **Height** of the image. The initial values correspond to the view window's size. In plan view, they display for reference only.
- Specify the **Resolution** of the image in pixels.
  - Select **pixels/inch** or **pixels/mm** from the drop-down list.
  - This information does not affect the size of the exported picture. Rather, it is saved as metadata in the exported file and can be used by applications when the file is opened to determine the picture's size: particularly, when printing.
- Uncheck **Retain Aspect Ratio** if you would like to modify the Height or Width without affecting the other value. Leave this box checked to prevent the image from becoming distorted.

2 Image Properties

Check **Transparent Background** to produce alpha transparency in the spaces between all objects that can be seen in the current view. Transparency associated with Fill and Text Styles is retained, as well. Note that the **.png** and **.png** file types support transparency, while the **.jpg** and **.bmp** file types do not.

3 Options

Not available when this dialog is accessed via the Send to Layout dialog.

- When **Open in Default Image Viewer** is checked, the exported image will open in your system's default image viewer program when the export is complete. Uncheck this box if you prefer that the exported image not be opened. Not available when this dialog is accessed via the Send to Layout dialog.

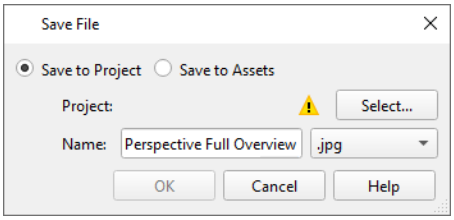
4 Save to

Not available when this dialog is accessed via the Send to Layout dialog.

- Click the **Save to Disk** button to save the walkthrough as an independent .mp4, .wmv, or .avi file on your local system. Set *Save File Dialog on page 67*.

- Click the **Save to Project/Assets** button to save the Picture as a resource associated either with a specific Project or saved in your Assets. Only available when Chief Architect Project Management is active.

Safe File Dialog



- Specify how you want the local file saved. See *Chief Architect Project Management on page 35*.
  - Select **Save to Project** to save the Picture as a resource associated with a specific Project. A folder within a Project can also be selected.
  - Select **Save to Assets** to save the Picture as an Asset in your Resource Store without associating it with a particular Project.
- When Save to Project is selected, click the **Select** button to choose the Project you want the Picture to be associated with in the Choose a folder dialog. See *Select Project Dialogs on page 39*.
- Specify the **Name** of the Picture and select a file format from the drop-down list.

Importing Pictures

Pictures can be imported into and displayed in plan view, cross section/elevation views, and Layout pages. Pictures do not display in camera views or overviews. See *Displaying Pictures, Metafiles, and PDF Boxes on page 866*.

There are several ways to import a Picture into Home Designer:

- Select **File> Import> Import Picture (BMP, JPG, PNG)** to open the Import Picture File dialog, which is a typical open file dialog. See *Importing Files on page 64*.
- Click and drag an image file from an operating system window into the Home Designer window.
- In any application, copy an image to the system clipboard, then select **Edit> Paste> Paste Special** from the program menu in an eligible view window. See *Paste Special on page 150*.

> Note: Importing large, or multiple, Pictures into a Plan or Layout can result in program slowness.

An imported Picture Box is placed in the center of the current view and can be selected and edited. See *Editing Pictures, Metafiles, and PDF Boxes on page 867*.

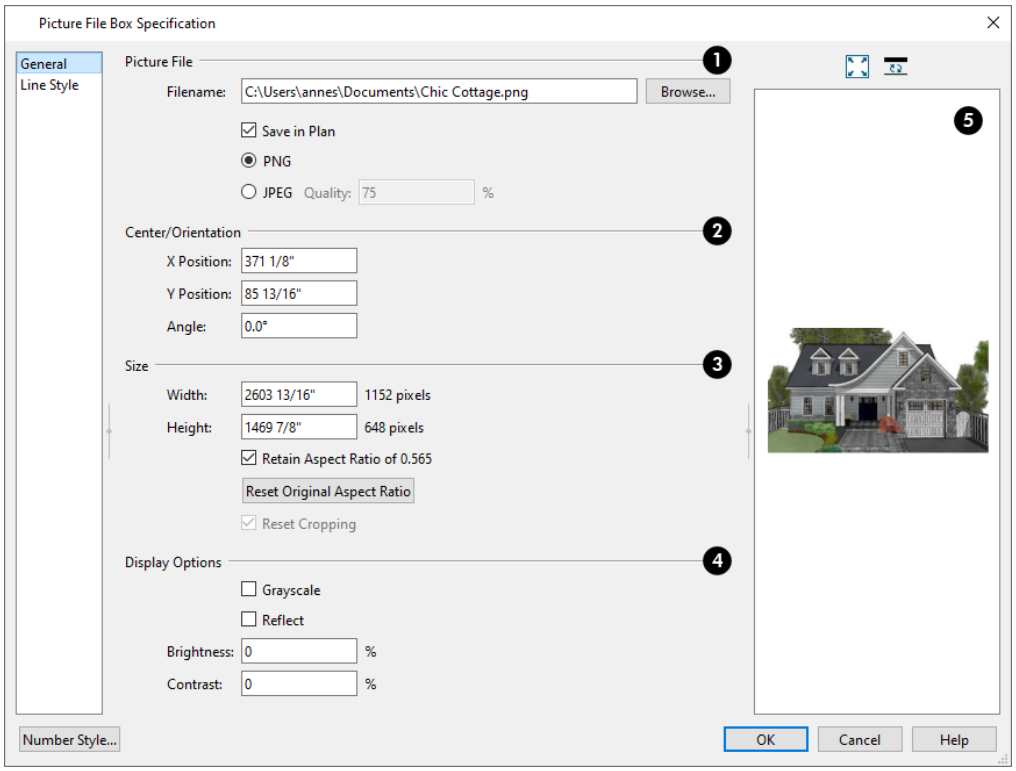
Once an image file is imported into Home Designer, the resulting Picture Box continues to reference an image file for its content. When Chief Architect Project Management is enabled, a copy of the image file is saved as an Asset which the Picture Box references. When traditional file management is in use, the originally imported file is referenced. See *Asset Management on page 42*.

If the file referenced by a Picture Box is modified outside Home Designer, its appearance will not update in Home Designer until you close and reopen the Plan or Layout it was imported into.

Picture Box Specification Dialog

Select an imported picture file and click the **Open Object** edit button to open the Picture Box Specification dialog.

General Panel



1 Picture

- The **Name** of the picture's source document is reported here, and a different document can be selected if you wish.
- When Project Management is active:
  - The name of the currently selected resource is reported.
  - Choose **Select** from the drop-down list to the right of the file name to select a Picture file from a list of existing Resources in the Resource Management dialog. See *Asset Management on page 42*.
  - Choose **Import** from the drop-down list to add a new Picture file to your Resources using the Open Picture File dialog, which is a typical Open File dialog. See *Opening and Importing Files on page 63*.
- When traditional file management is active:
  - The full path name of the currently selected Picture file is reported.
  - Choose **Browse** from the drop-down list to the right of the file path name to select a different file using the Open Picture File dialog, which is a typical Open File dialog.
  - Choose **Edit Path** from the drop-down list to type or paste the full file path of a Picture file in the Enter a File Path dialog.
- Check **Save in Plan** to embed the picture in the plan or layout file. If a picture file is embedded, it does not need to be linked to a file on the system and you do not need to include it when sending the plan or layout to a different

computer.

- Click the radio button beside either **PNG** or **JPEG** to specify how to save the embedded picture data.
- Specify the picture's **Quality %** when **JPEG** is selected. A lower value results in better compression, while a higher value reduces data loss.

> Note: PNG is the better option for pictures of line drawings, text, or large areas of a single color. In addition, PNG files support alpha channel transparency. JPEG is the better option for photos.

2 Center/Orientation

Specify the position of the selected Picture's center point and its angle. See *3D Drafting on page 12*.

- Specify the **X** and **Y Positions** of the picture box's center point relative to the absolute origin.
- Specify the **Angle** of the picture box relative to a horizontal line pointing towards the right-hand side of the screen.

3 Size

Specify the **Size** of the picture in plan inches (mm).

- Specify the **Width** of the picture box. The original width in pixels displays to the right.
- Specify the **Height** of the picture box. The original height in pixels displays to the right.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value. If you do this, the picture may appear distorted. This check box does not affect editing performed outside this dialog and is an action rather than a state: the next time you open this dialog, it will be checked.
- **Reset Original Aspect Ratio** - If the aspect ratio is changed, you can click this button to return the picture to its original aspect ratio.
- Check **Reset Cropping** to fill the extents of the selected Picture box with the image associated with it. If the box has been resized, the image may appear distorted. See *Editing Pictures, Metafiles, and PDF Boxes on page 867*.

4 Display Options

A variety of **Display Options** are available.

- Check **Grayscale** to replace the color in the selected picture with shades of gray.
- Check **Reflect** to reverse the image.
- Enter a degree of **Brightness** from 1 - 100%.
- Enter a degree of **Contrast** from 1 - 100%.

5 Preview

A preview of the selected Picture displays here. See *Dialog Preview Panes on page 21*.

Line Style Panel

The settings on this panel are similar to those on the Line Style panel in numerous other dialogs, with one exception: check **Show Outline** to turn on the display of the picture's border polyline. For more information, see *Line Style Panel on page 234*.

Label Panel

Labels for Picture display when the "Picture/PDF Boxes, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for Pictures reports the name of the image file, but you can specify a custom label if you wish.

Metafiles

A metafile (**.emf**, **.wmf**) is a special picture file format made up of vectors (lines) that allow the image to be rescaled without loss of quality. High resolution pictures of line-based views can be exported as a metafile.

> Note: Metafiles are not supported in Mac operating systems and cannot be imported or exported in Mac versions of the software.

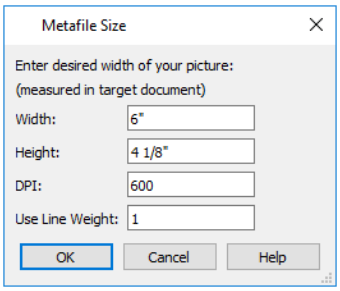
Export Metafile

An enhanced metafile (**.emf**) can be exported from any line-based view: that is, from plan view and 3D Vector Views using the **Export Metafile (EMF)** tool.

Only objects that display on screen are included in an exported metafile.

To export a metafile

1. Accurately position the view on screen.
2. Select **File> Export> Export Metafile (EMF)** .
3. Drag a marquee from corner to corner, defining the area to be included in the metafile.
4. Release the mouse button to open the Export Metafile dialog, which is a typical Save File dialog. See *Exporting Files on page 68*.
5. When you click the Save button, the Metafile Size dialog opens:



   - Specify the desired **Width** or **Height** of the metafile. When one value is edited, the other changes to maintain its aspect ratio.
   - Specify, too, the desired **Dots Per Inch (DPI)** for the metafile. A larger value results in a higher quality metafile, but also a larger file size.
6. When a metafile is exported from a 3D Vector View, you can also specify the printed thickness of lines in the view. To increase the printing line weight, type a larger number in the **Use Line Weight** field. See *Vector View on page 837*.

   Metafiles exported from plan view use the line weights defined in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

Importing Metafiles

Metafiles can be imported into and displayed in plan view, cross section/elevation views, and layout pages. Metafiles do not display in camera views or overviews. See *Displaying Pictures, Metafiles, and PDF Boxes on page 866*.

There are two ways to import a metafile into Home Designer:

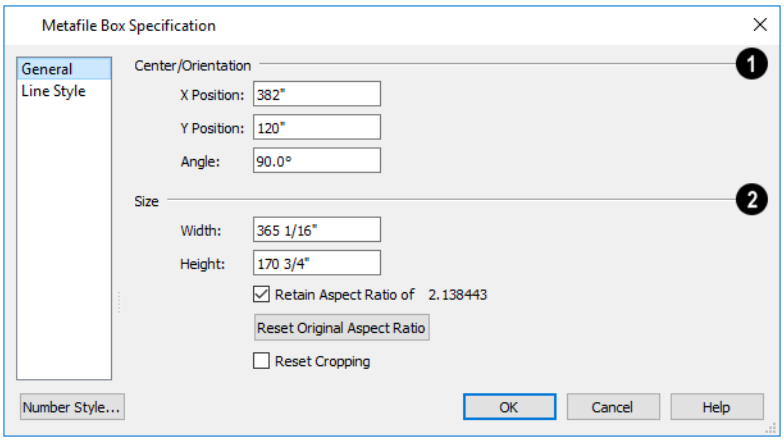
- Select **File> Import> Import Metafile (EMF, WMF)** to open the Import Metafile dialog, which is a typical open file dialog. See *Importing Files on page 64*.
- You can also click and drag a metafile file from an operating system window into the Home Designer window to import it.

An imported metafile is placed in the center of the current view. Once imported, metafiles can be selected and edited. See *Editing Pictures, Metafiles, and PDF Boxes on page 867*.

Metafile Box Specification Dialog

Select an imported metafile and click the **Open Object** edit button to open the Metafile Box Specification dialog.

General Panel



1 Center/Orientation

Specify the position of the selected metafile's center point and its angle. See *The Home Designer Environment on page 11*.

- Specify the **X** and **Y Position** relative to the absolute origin.
- Specify the **Angle** of the metafile box relative to a horizontal line pointing towards the right-hand side of the screen.

2 Size

Specify the **Size** of the metafile in plan inches (mm).

- Specify the **Width** of the metafile box.
- Specify the **Height** of the metafile box.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value. If you do this, the metafile may appear distorted.
  This check box does not affect editing performed outside this dialog and is an action rather than a state: the next time you open this dialog, it will be checked.
- **Reset Original Aspect Ratio** - If the aspect ratio is changed, you can click this button to return the picture to its original aspect ratio.
- Check **Reset Cropping** to fill the extents of the selected metafile box with the image associated with it. If the box has been resized, the image may appear distorted. See *Editing Pictures, Metafiles, and PDF Boxes on page 867*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Metafile. See *Line Style Panel on page 234*.

Check **Show Outline** to turn on the display of the metafile's border polyline. See *Displaying Pictures, Metafiles, and PDF Boxes on page 866*.

Label Panel

Labels for Metafile display when the "Picture/PDF Boxes, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

PDF Files

Portable Document Format (**.pdf**) files are a special type of file that can be viewed on nearly any computer and can include a wide variety of visual information.

Printing and Exporting PDF Files



You can save any view as a 2D **.pdf** file by selecting **File> Export> Export PDF**. This will open either the Print View or Print Image dialog, depending on the view type.

You can also save any view as a 2D **.pdf** file by selecting "Chief Architect Save as PDF" as the Destination printer **Name** in either of these dialogs. See *Printing to a PDF File on page 994*.

Importing PDF Files



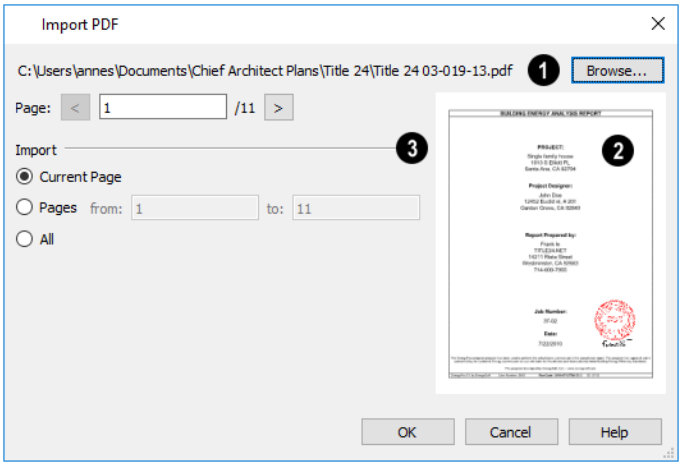
To import a **.pdf** file, select **File> Import> Import PDF**. You can also import a **.pdf** file by dragging it from an operating system window into the Home Designer window.

You can import **.pdf** files into Home Designer in plan view, cross section/elevation views., and in layout. Once imported, PDF boxes behave and can be edited similar to imported pictures and metafiles. See *Editing Pictures, Metafiles, and PDF Boxes on page 867*.

Some **.pdf** files can contain both 2D and 3D information; however, Home Designer can only support 2D data in an imported **.pdf** file. When a 3D **.pdf** file is imported, it may display text, a static image of the 3D model, or it may not import at all.

Once a **.pdf** file is imported into Home Designer, the resulting PDF Box continues to reference an image file for its content. When Chief Architect Project Management is enabled, a copy of the **.pdf** files is saved as an Asset which the PDF Box references. When traditional file management is in use, the originally imported file is referenced. See *Asset Management on page 42*.

> Note: Importing large, or multiple, .pdf files into a plan or layout file can result in program slowness.



1

The full file path of the **.pdf** file displays here. If the file path is not that of a valid **.pdf** file, this text will display in red.

- Click the **Browse** button to choose a new **.pdf** file or to relink to a missing file.
- Specify the **Page** of the **.pdf** file that displays in the preview on the right. Type a page number in the text field or use the spin control arrows to browse the pages sequentially.

2 **Preview**

A preview of the page selected above displays on the right.

3 **Import**

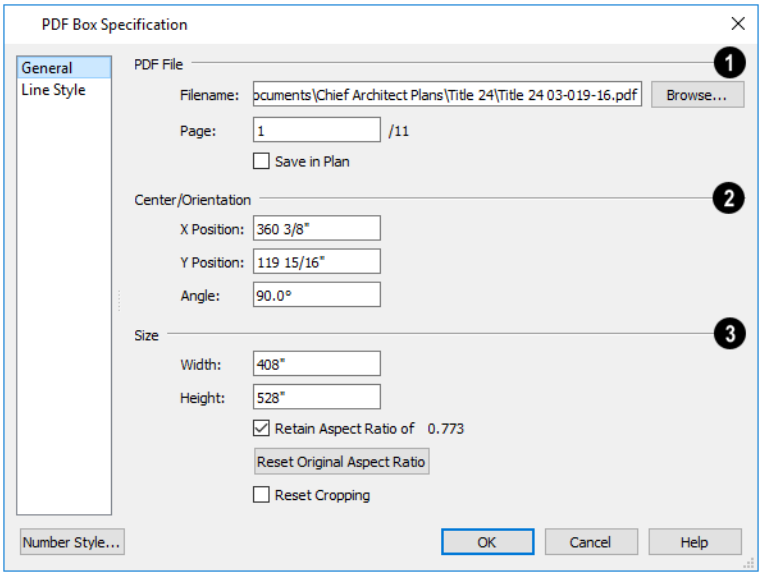
Specify how much of the **.pdf** file you wish to **Import**. When multiple pages are imported, a separate PDF box is created for each one.

- Select **Current Page** to import only the page specified above and shown in the preview to the right.
- Select **Pages**, then specify the starting page in the **From** field and the ending page in the **To** field.
- Select **All** to import the entire **.pdf** file.

PDF Box Specification Dialog

Select an imported PDF box and click the **Open Object** edit button to open the PDF Box Specification dialog.

General Panel



1 PDF

- The **Name** of the PDF's source document is reported here, and a different document can be selected if you wish.
- When Project Management is active:
  - The name of the currently selected resource is reported.
  - Choose **Select** from the drop-down list to the right of the file name to select a PDF file from a list of existing Resources in the Resource Management dialog. See *Asset Management on page 42*.
  - Choose **Import** from the drop-down list to add a new PDF file to your Resources using the Open PDF File dialog, which is a typical Open File dialog. See *Opening and Importing Files on page 63*.
- When traditional file management is active:
  - The full path name of the currently selected PDF file is reported.
  - Choose **Browse** from the drop-down list to the right of the file path name to select a different file using the Open PDF File dialog, which is a typical Open File dialog.
  - Choose **Edit Path** from the drop-down list to type or paste the full file path of a PDF file in the Enter a File Path dialog.
- Specify the **Page** of the **.pdf** file that displays in the selected PDF box.
- Check **Save in Plan** to embed the **.pdf** in the plan or layout file. If a **.pdf** is embedded in a file, you do not need to include it when sending the file to a different computer. If the **.pdf** file is modified, however, the PDF box in Home Designer will only update automatically if this is unchecked.

2 Center/Orientation

Specify the position of the selected PDF box's center point and its angle. See *3D Drafting on page 12*.

- Specify the **X** and **Y Positions** of the PDF box's center point relative to the absolute origin.
- Specify the **Angle** of the PDF box relative to an imaginary horizontal line pointing towards the right-hand side of the view window.

3 Size

Specify the **Size** of the PDF box in plan inches (mm).

- Specify the **Width** of the PDF box.
- Specify the **Height** of the PDF box.
- Uncheck **Retain Aspect Ratio of X** if you would like to modify the Height or Width without affecting the other value. If you do this, the PDF box may appear distorted.
  This check box does not affect editing performed outside this dialog and is an action rather than a state: the next time you open this dialog, it will be checked.
- **Reset Original Aspect Ratio** - If the aspect ratio is changed, you can click this button to return the picture to its original aspect ratio.
- Check **Reset Cropping** to fill the extents of the selected PDF box with the image associated with it. If the box has been resized, the image may appear distorted. See *Editing Pictures, Metafiles, and PDF Boxes on page 867*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected PDF. See *Line Style Panel on page 234*.

Check **Show Outline** to turn on the display of the metafile's border polyline. See *Displaying Pictures, Metafiles, and PDF Boxes on page 866*.

Label Panel

Labels for PDF display when the "Picture/PDF Boxes, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for PDF boxes reports the name of the PDF file followed by the page number, but you can specify a custom label if you wish.

Displaying Pictures, Metafiles, and PDF Boxes

The display of Pictures, Metafiles, and PDF Boxes is controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

Pictures, Metafiles, and PDF Boxes are placed on the "Picture/PDF Boxes" layer.

Pictures, Metafiles, and PDF Boxes can be imported into and displayed in plan view, cross section/elevation views, and layout pages. A Picture, Metafile, or PDF Box can only be seen in the view where it was imported and cannot be imported into a camera view or overview.

Check **Show Outline** in the object's specification dialog to turn on the display of the object's border polyline. See *Line Style Panel on page 234*.

Drawing Groups

Each object in a plan or layout file is included in a Drawing Group, which influences whether it displays in front of or behind other objects. By default, imported pictures and PDF Boxes are placed in the Back Group, and imported metafiles are placed in the same Drawing Group as CAD objects.

Once imported, the drawing order of pictures, metafiles, and PDF Boxes can be customized. See *Drawing Groups on page 156*.

In Layout

Pictures, metafiles, and PDF boxes are included when a view is sent to layout, and can also be imported directly onto a layout page. See *Pictures, Metafiles, and PDFs in Layout on page 972*.

Editing Pictures, Metafiles, and PDF Boxes

Pictures, Metafiles, and PDF Boxes can be selected and edited using the edit handles, the Edit Toolbar, and their specification dialogs.

In the Specification Dialog

Pictures, Metafiles, and PDF Boxes can be customized in their specification dialog.

Using the Edit Handles

Pictures, Metafiles, and PDF Boxes have edit handles similar to other box-based objects. See *Editing Box-Based Objects on page 199*.

- The corner Resize handles do not behave the same for Pictures, Metafiles, and PDF Boxes as they do for CAD boxes, however. If you drag a corner handle of one of these objects while the Default Edit Behavior is active, its contents will resize and height to width ratio will be retained.
- If you drag an Extend handle along a Picture, Metafile, or PDF Box's edge, the contents of the box will not be resized. If you resize it larger, an empty space will be created between that edge and the contents; if you resize it smaller, the contents will be cropped.

Using Dimensions

Pictures, Metafiles, and PDF Boxes can be relocated relative to other objects with precision using dimensions.

To avoid changing the selected object's aspect ratio, make sure you choose to move the entire object rather than the selected edge. See *Moving Objects Using Dimensions on page 361*.

Using the Edit Tools

A selected Picture, Metafile, or PDF Box can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Point to Point Resize



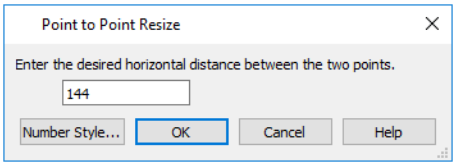
A selected picture, metafile, or PDF box can be resized in either the X or Y direction with the **Point to Point Resize** edit tool.

To use the Point to Point Resize tool

1. Select a picture box, metafile box, or PDF box.
2. Click the **Point to Point Resize** edit button. When you move the mouse pointer into the drawing area, it displays the Point A icon.
3. Click on the first of two points in the selected object's area that have a known distance between them.
4. Notice:

- A temporary CAD point is created at the point where you clicked.
- The mouse pointer now displays the Point B icon.
- As you move the mouse pointer, an extension line extends either horizontally or vertically from Point A.

5. Click on the second of the two points with a known distance between them.
   - Regardless of where the mouse pointer is positioned, Point B will be at the end of the extension line so for best results Points A and B should be on the same X or Y plane.
6. After you click on the second point, the Point to Point Resize dialog opens.



7. The current distance between the two points populates the text field. Enter a new dimension that matches the desired distance between the points.
8. When **Retain Aspect Ratio** is checked, the ratio between the selected object's height and width is maintained when you click OK and the object is resized. When this is unchecked, the object may become distorted-looking. If the selected object has been rotated, this box will be disabled and its aspect ratio will be retained.
9. Click **OK** to resize the picture, metafile, or pdf.

Resize Factor

With a bit of calculation, an imported picture, metafile, or PDF box can be resized to scale using the Transform/Replicate Object dialog. Once resized, the information in the object box can be traced using Home Designer's drawing tools and then deleted.



It is a good idea to delete a resized picture after it is traced to help avoid program slowness and limit your plan or layout file's size.

To calculate the Resize Factor

1. Find two items in the imported object that are separated by a known horizontal or vertical distance, such as two walls or plot lines.
2. Draw parallel CAD lines on top of these two items. See *The CAD Drawing Tools on page 225*.
3. Find the distance between the CAD lines. See *The Manually Drawn Dimension Tools on page 351*.
4. The Resize Factor for the image is the distance described in the picture divided by the distance between the CAD lines.

   For example, if the items are supposed to be 10 feet apart on the picture, but the distance between the two CAD lines drawn on them is only 2 feet, you need to set the Resize Factor for the picture to 5. (10' divided by 2' equals 5). When the picture is 5 times the original size, the items on the picture are at the actual scale shown on the picture.
5. Select the picture and click the **Transform/Replicate Object** edit button.
6. In the Transform/Replicate Object dialog, select the **Resize Factor** check box.
7. Enter the Resize Factor calculated above, then click **OK**.

Walkthrough Videos

Walkthrough videos are an effective way to view your designs in 3D from a variety of different angles.

Walkthrough Tools

A 3D Walkthrough is a series of pictures saved as an **.mp4**, **.wmv**, or **.avi** file that can be played as a video by media player applications. There are a number of ways to create a walkthrough video in Home Designer: select 3D> **Walkthroughs**.

The **Create Walkthrough Path** tool allows you to define the route that a walkthrough video travels through a plan as well as specify details like camera height, angle, and speed before actually recording. See *Walkthrough Paths on page 870*.

Available in plan view, the **Create Orbital Walkthrough Path** edit tool creates a circular walkthrough path around the focal point of a selected Full Camera view or Overview symbol. The path's radius is equal to the length of the camera's line of sight, and all frames are pointed at the camera's focal point. **3D> Walkthroughs> Create Orbital Walkthrough Path** is also an option when a camera view or overview is active.

> Note: Although the Orbital Walkthrough tool is available when a Floor Overview is either selected or active, the properties of a Floor Overview are not supported. When the walkthrough is recorded, it will show a Full Overview instead.

Although time-consuming and lacking many of the options that a Walkthrough Path provides, creating a walkthrough by recording it frame by frame lets you control and see exactly what is being recorded in each frame as you record it. See *Frame by Frame Walkthroughs on page 881*.

Select **Record Walkthrough** while a camera view is active to begin recording a walkthrough.

Select **Stop Recording** when you are finished recording a walkthrough.

Select **Pause Recording** to temporarily stop recording so you can move the camera; select it again to resume recording.

Select **Save Frame** to save an individual frame while recording is paused.

You can play a recorded walkthrough as well as look at a preview of a Walkthrough Path prior to recording it.

Select **Play Walkthrough** to play an **.mp4**, **.wmv**, or **.avi** file saved on your system using your computer's default media player.

The **Walkthrough Preview** side window allows you to preview an existing Walkthrough Path before recording it. See *Walkthrough Path Previews on page 875*.

Playing a Walkthrough

Once a walkthrough has been recorded, it can be played using a media player on your system.

To play a walkthrough

1. Select **3D> Walkthroughs> Play Walkthrough** to open the Select Video File dialog. This is a typical Open File dialog. See *Opening a Document on page 63*.
2. Browse to the **.mp4**, **.wmv**, or **.avi** walkthrough file on saved on your system.
3. Your computer's default video player will launch, ready to play the selected walkthrough video.

Selecting a Codec

A codec is a utility that compresses and decompresses media files, and is used when both recording and viewing videos such as walkthroughs. When you record a walkthrough in Home Designer, you can choose which of the codecs installed on your system you want to use. This selection is universal and is retained between program sessions: when you choose a codec in the Walkthrough Path Defaults or either Walkthrough Options dialog, it will become selected the next time you open either dialog, even if you do so in another plan.

“Windows Media Video 9” is the default codec in the Windows version and “H.264”, in the Mac version; but any codecs installed on your system will be available to use.

To choose the codec that best suits your needs, it is a good idea to create a test walkthrough using each of the codecs installed on your system to see how well their walkthrough quality and file compression meet your requirements. Note that your choice of codec may affect the file formats in the Save Video As dialog.

For more information about codecs, visit HomeDesignerSoftware.com.

Walkthrough Paths

A 3D Walkthrough is a series of pictures saved as an **.mp4**, **.wmv**, or **.avi** file that can be played as a video by media player applications. Although you can record a walkthrough video directly from a camera view, Walkthrough Paths offer more options and flexibility and are the preferred way to create a walkthrough video in Home Designer.

Creating a Walkthrough Along a Path

There are two ways to create a Walkthrough Path:

The **Create Walkthrough Path** tool allows you to define the route that a walkthrough video travels through a plan as well as specify details like camera height, angle, and speed before actually recording.

Available in plan view, the **Create Orbital Walkthrough Path** edit tool creates a circular walkthrough path around the focal point of a selected full overview or camera symbol. The path's radius is equal to the length of the camera's line of sight, and all frames are pointed at the camera's focal point. **3D> Walkthroughs> Create Orbital Walkthrough Path** is also an option when a camera view or overview is active.

To draw a Walkthrough Path

1. Make sure that **Connect CAD Segments** is enabled so multiple spline segments can snap together. See *Connect CAD Segments on page 141*.
2. In plan view, select **3D> Walkthroughs> Create Walkthrough Path**, then click and drag to draw a Walkthrough Path. See *To use the Spline tool on page 250*.
3. Edit the direction and curvature of the spline’s segments, as needed. See *Editing Spline-Based Objects on page 202*.
4. Add **Key Frames** to the path and modify their specifications. See *Key Frames on page 871*.

> Walkthrough Paths can follow stairs and ramps to span multiple floors. See *Walkthrough Paths and Stairs on page 872*.

In plan view, you can convert a CAD polyline or spline into a Walkthrough Path. See *Convert Polyline on page 211*.

To record a walkthrough along a path

1. Begin by choosing your preferred codec for recording walkthroughs in the Walkthrough Path Defaults dialog. See *Generating a Walkthrough on page 879*.
2. In plan view, select **3D>Walkthroughs>Create Walkthrough Path**, then click and drag to draw a Walkthrough Path. See *To use the Spline tool on page 250*.
3. Edit the direction and curvature of the spline's segments, as needed. See *Editing Spline-Based Objects on page 202*.
4. Add **Key Frames** to the path and modify their specifications. See *Key Frames on page 871*.
5. Select a Walkthrough Path and open its specification dialog. Make sure the settings on the GENERAL, CAMERA, and BACKDROP panels meet your needs. See *Walkthrough Path Specification Dialog on page 873*.
6. On the CAMERA panel:
   - Make sure the Rendering Technique Options meet your needs. See *Rendering Technique Options on page 839*.
   - Particularly if your monitor is high resolution and you wish you use the Physically Based rendering technique, use Super Resolution to shorten the recording time. See *Super Resolution on page 818*.
7. With the Walkthrough Path still selected, click the **Record Walkthrough Along Path** edit button or the **Record** button in the Walkthrough Preview side window.
8. In the Record Walkthrough Options dialog, specify the desired Quality, Resolution, Rendering Options, Video Codec, and the name and save location of your walkthrough file, then click OK. See *Record Walkthrough Options Dialog on page 879*.

DISPLAYING AND EDITING WALKTHROUGH PATHS

Walkthrough Paths display in plan view only and are located on the "Walkthrough Paths" layer. Walkthrough Paths display in front of most other objects, will print, and are included in views sent to layout or exported to **.dxf/.dwg**. See *Display Layers on page 151*.

Before a Walkthrough Path can be edited, it must be selected. The Key Frame closest to the point where you clicked will be the Selected Key Frame. See *Selecting Objects on page 183*.

Walkthrough Paths can be edited like other spline-based objects using the edit handles, edit toolbar, and specification dialog. See *Editing Spline-Based Objects on page 202*.

In addition to the standard edit handles for splines, Walkthrough Paths also have an edit handle for each Key Frame. The Key Frame closest to the point where you click displays the Selected Edge Handle Fill color, while the other Key Frame handles use the Secondary Handle Fill color. Both are set in the Preferences dialog. See *Colors Panel on page 95*.

To reverse the direction of the entire walkthrough, select it and click the **Reverse Direction** edit button. See *Reverse Direction on page 176*.

KEY FRAMES

Key Frames are points along a Walkthrough Path that allow you to change:

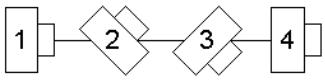
- Camera direction, tilt angle, and height;
- Walkthrough speed;
- The floor that the walkthrough is on.

These changes are applied as the camera moves along the Walkthrough Path from one Key Frame to another.

To add a Key Frame to a Walkthrough Path

1. Select the path and click the **Add Key Frame** edit button.
2. If you wish to add multiple Key Frames, click the **Sticky Mode** edit button. See *Sticky Mode on page 149*.
3. Click on the selected path to add a Key Frame at that location. The new Key Frame receives height and angle attributes based on its position on the path and the attributes of the Key Frames before and after it.
4. If you clicked the **Sticky Mode** button, continue clicking to create additional Key Frames. When you are finished, click the **Main Edit Mode** edit button or select a different drawing tool.

In plan view, each Key Frame is represented by a camera symbol centered along the walkthrough path. It displays its Key Frame number, is pointed in the direction of its **Camera Angle**, and its position along the path corresponds to its **Time** setting.



A Walkthrough Path with four Key Frames at different angles

Key Frame **Time**, **Angle**, and other properties can be edited in the Walkthrough Path Specification dialog. See *General Panel on page 873*.

You can also select a Walkthrough Path and move and rotate each Key Frame using its edit handles.

To remove a Key Frame from a Walkthrough Path, click on its symbol to select it and click the **Delete Key Frame** edit button. The selected Key Frame can be identified by the color of its Move edit handle. This edit tool can be used to delete the Start and End Key Frames; however, if only two Key Frames are present it will not be available. Key Frames can also be deleted in the Walkthrough Path Specification dialog. See *Selected Edge on page 185* and *General Panel on page 873*.

Walkthrough Paths and Stairs

If you draw a Walkthrough Path up or down a staircase or ramp, it will follow the height of the stairs or ramp and continue on the next floor.

To create a multiple floor walkthrough

1. Draw a Walkthrough Path so that it extends into a staircase or ramp in the same direction as its Direction Arrow. See *Displaying Stairs, Ramps, and Landings on page 554*.
   - Do not drag the Walkthrough Path across the entire length of the stairs or ramp. If you do, its height will remain relative to the current floor.
2. When you release the mouse button, the program will automatically display a dashed line with an arrow extending past the last Key Frame on the current floor.
   - If it follows stairs or a ramp going upward, the path will also extend to the top end of the staircase or ramp.
3. Go up or down one floor, select the Walkthrough Path, and resize and reshape it as needed. You can use the **Create Walkthrough Path** tool to draw more segments and use the **Add Key Frame** edit tool, as well.

Previewing a Walkthrough

Depending on the quality settings and length of a Walkthrough Path, it may take a considerable amount of time to record a walkthrough video. The Walkthrough Preview side window allows you to preview part or all of an existing Walkthrough Path to confirm that it meets your needs prior to actually recording it. Select **View> Walkthrough Preview** to open or close this side window. See *Walkthrough Path Previews on page 875*.

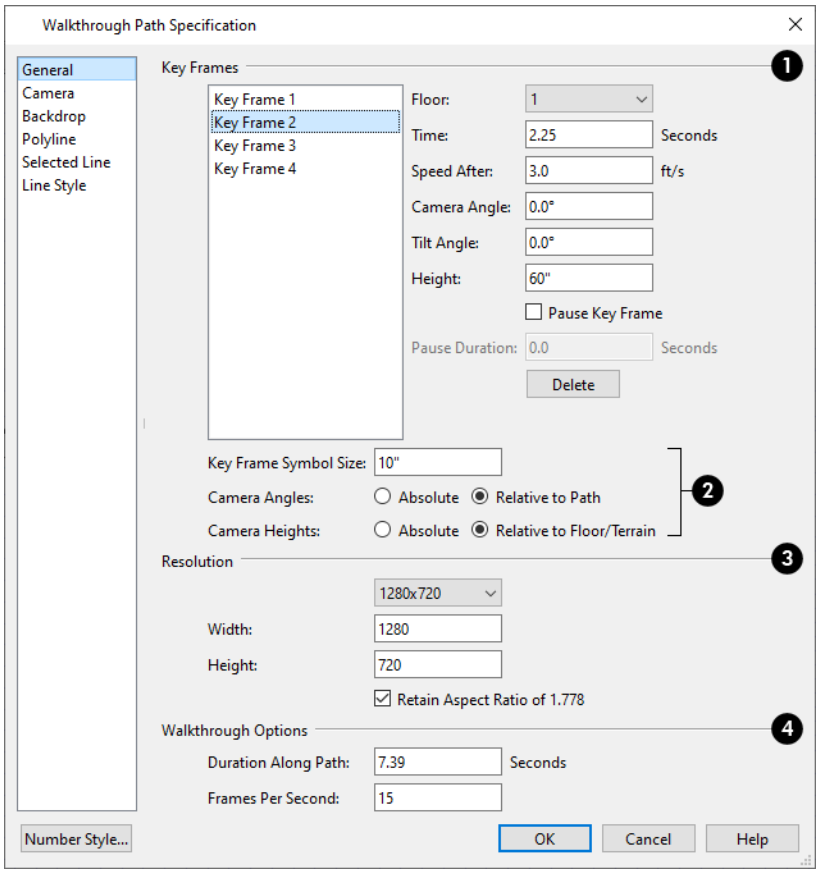
Walkthrough Path Specification Dialog

Select a Walkthrough Path and click the **Open Object** edit button to open the Walkthrough Path Specification dialog. See *Walkthrough Paths on page 870*.

You can also access this dialog by clicking the **Define** button in the Walkthrough Preview side window. See *Walkthrough Path Previews on page 875*.

Most of the settings in this dialog are also found in the Walkthrough Path Defaults dialog.

General Panel



1 Key Frames

See *Key Frames on page 871*.

A list of the selected path's Key Frames displays on the left.

- When the dialog is opened, the Key Frame selected in plan view will be selected in the list automatically.
- Click on a Frame in the list to select and edit it using the settings on the right.
- Multiple Key Frames can also be selected. See *Shift and Ctrl/⌘ Select on page 187*.
- If a Key Frame has a Pause specified, it's Start and End will be listed as separate line items.

The settings on the right allow you to modify the selected Key Frame(s).

- Specify the **Floor** level that the selected Key Frame is located on. See *Multiple Floor Levels on page 535*.
- Specify the **Time** in seconds at which the selected Key Frame is found in the duration of the walkthrough.
  - The Times of the walkthrough path's first and final frames cannot be moved.
  - Not available when the last Key Frame or multiple Key Frames are selected.
- Specify the **Speed After (ft/s)**, which is how fast the camera moves along the walkthrough path from the current Key Frame to the next. Not available when the last Key Frame is selected.
- Specify the **Camera Angle** at the selected Key Frame(s).
- Specify the **Tilt Angle** of the camera at the selected Key Frame(s). A value of -90° points the light straight down and a value of 90° points it straight up. 0° is parallel to the horizon.
- Specify the **Height** of the camera at the selected Key Frame(s).
- Check **Pause Key Frame** to temporarily pause the walkthrough at the selected Key Frame(s).
  - When Pause Key Frame is checked, specify the **Pause Duration**, which is the length of time that the walkthrough pauses at the selected Key Frame(s) before continuing.
  - The Start and End of a Key Frame with a Pause specified will be represented by separate line items in the list on the left.
- Click the **Delete** button to remove the selected Key Frame(s) from the path.
  - This option is not available if deleting the selected Key Frame(s) would result in fewer than two frames.
  - Deleting the End of a Key Frame with a Pause will remove the Pause but keep the Key Frame.
  - Key Frames can also be deleted in plan view using the **Delete Key Frame** edit tool.

2

The settings here apply to all of the selected path's Key Frames.

- Specify the **Key Frame Symbol Size**, which is the size of the symbols representing the selected walkthrough path's Key Frames in plan view. See *Key Frames on page 871*.
- Specify how the **Camera Angles** associated with each key frame are measured:
  - Select **Absolute** to measure the Camera Angles relative to the plan's X and Y axes.
  - Select **Relative to Path** to measure the Camera Angles frame relative to the direction of the path at that location.

> Note: When Relative Angles are used, a Camera Angle of 0° points in the direction of the Walkthrough Path. When Absolute Angles are used, 0° always points in the positive direction along the X axis.

- Specify how the **Camera Heights** associated with each key frame are measured:
  - Select **Absolute** to measure camera height relative to the plan's Z axis.
  - Select **Relative to Floor/Terrain** to measure camera height relative to the floor or terrain at each Key Frame location.

3 Resolution

Control the size of the selected walkthrough's frames.

- Select a size from the drop-down list. If the Width or Height is modified below, the selected Resolution will be "Custom".
- The current **Width**, based on the selected Resolution, is stated here. If you change this value, the selected Resolution will be "Custom".
- The current **Height**, based on the selected Resolution, is stated here. If you change this value, the selected Resolution will be "Custom".

4 Walkthrough Options

- Specify the **Duration**, or total length of the walkthrough video in seconds.
- Specify the desired number of **Frames per Second**, between 1 and 100. A higher number results in a higher quality recording but also a larger file size.
- In the Walkthrough Path Defaults dialog only, specify the **Video Codec** to use when recording all types of walkthroughs. See *Selecting a Codec on page 870*.

Camera Panel

The settings on the Camera panel let you specify lighting, a Rendering Technique, and more. These settings are also found in the Camera Specification dialog. See *Camera Panel on page 809*.

Backdrop Panel

The settings on the Backdrop panel are also found in the Camera Specification dialog. See *Backdrop Panel on page 813*.

Polyline Panel

The Polyline panel states the length of the path's **Perimeter**. The **Area** and **Volume** of a walkthrough path will always be described as "Not closed". See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

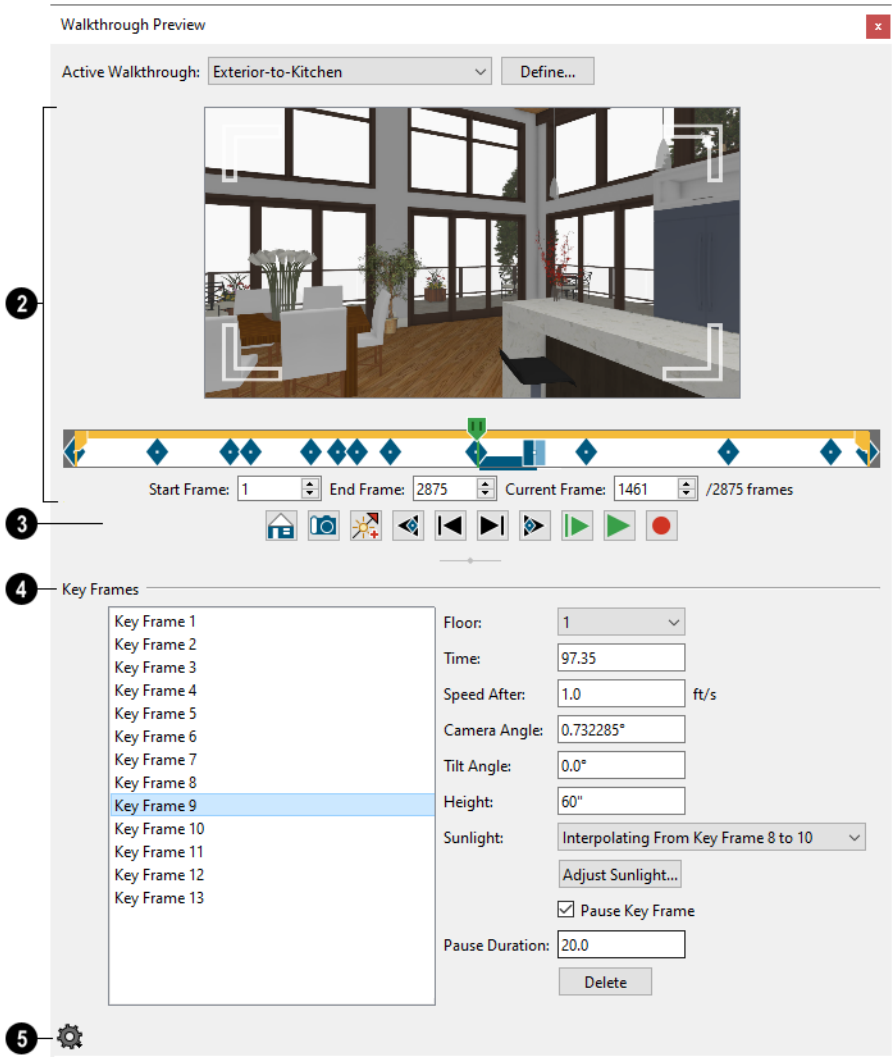
Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Walkthrough Path. See *Line Style Panel on page 234*.

Walkthrough Path Previews

Depending on the quality settings and length of a Walkthrough Path, it may take a considerable amount of time to record a walkthrough video. The Walkthrough Preview side window allows you to preview part or all of an existing Walkthrough Path to confirm that it meets your needs prior to actually recording it. Select **View> Walkthrough Preview** or **3D> Walkthroughs> Walkthrough Preview** to open or close this side window. See *Side Windows on page 16*.

You can also open or close this side window by selecting a Walkthrough Path and clicking the **Walkthrough Preview** edit button.



1 Active Walkthrough

Select the Walkthrough Path that you would like to see in the preview from the drop-down list. All paths present in the current plan are listed, and are described using their Label. See *Walkthrough Path Specification Dialog on page 873*.

- Click the **Define** button to open the selected path's Walkthrough Path Specification dialog. See *Walkthrough Path Specification Dialog on page 873*.

2 Preview

A preview of the selected walkthrough displays here. When a preview is not playing, the Current Frame displays.

- Click and drag in the Preview pane to adjust the Camera Angle and Tilt Angle of the Current Frame.
- The slider just below the Preview pane provides several things:
  - Click and drag the green handle to control which frame of the walkthrough displays in the Preview pane. You can also click anywhere along the slider to move the bar to that location or use the Current Frame setting below the slider.
  - The yellow bar at the top of the slider indicates the duration of the walkthrough and the location of the Start and End Frames selected below. Click and drag the handles at each end to move the Start and End Frames, which can also be set below the slider.

- Blue diamonds along the slider show the location of the selected walkthrough's Key Frames, which are defined below.
- If a Key Frame has a Pause associated with it, its duration will be represented by a blue bar below the slider and a Pause icon.

- Specify the **Start Frame** of the walkthrough video. This will be the first frame of the walkthrough video when it is recorded using **Custom Frames to Record**, and is Frame 1 by default. See *Generating a Walkthrough on page 879*.
- Specify the **End Frame** of the walkthrough video. This will be the final frame of the walkthrough video when it is recorded using **Custom Frames to Record**, and is the last frame of the walkthrough by default.
- Specify the **Current Frame**, which displays in the preview pane above and can also be specified using the slider bar. The Current Frame cannot be located before the Start Frame.

3 Preview Controls



Use Recording Quality shows the preview using the same level of quality as set on the CAMERA panel of the Walkthrough Path Specification dialog. This option is selected by default but may cause slow performance in the preview pane. See *Walkthrough Path Specification Dialog on page 873*.



Use Standard Quality may improve performance if you encounter slowness in the preview pane. This option shows the preview using without shadows, bloom or reflections. In addition, Watercolor and Physically Based Renderings are shown using the Standard Rendering Technique. This setting is retained during the current program session but is reset when the program is relaunched.



Create Camera View creates a camera view window using the location and angle of the current frame.



Create Sun Angle creates a new Sun Angle with settings interpolated from the Sun Angles used by Key Frames before and after the frame selected below. Only available when the selected Key Frame's Sunlight is set to "Interpolating", below.



Jump to Previous Key Frame moves the preview back one Key Frame. Not available if the Current Frame is located before the Start Frame.



Go to Previous Frame moves the preview back one frame. Not available if the Current Frame is located before the Start Frame.



Go to Next Frame advances the preview ahead one frame. Not available if the Current Frame is located after the End Frame.



Jump to Next Key Frame advances the preview ahead one Key Frame. Not available if the Current Frame is located after the End Frame.



Play Walkthrough Preview from Beginning plays a preview of the walkthrough from the Start Frame through the End Frame.



Play Walkthrough Preview from Current Frame plays a preview of the walkthrough from the Current Frame through the End Frame.



Record Walkthrough records a preview of the walkthrough from the Start Frame through the End Frame.

4 Key Frames

Make adjustments to the selected walkthrough's Key Frames. These settings are also found in the Walkthrough Path Specification dialog. See *General Panel on page 873* and *Key Frames on page 871*.

- Click on a Key Frame in the list on the left to select and edit it.
  - When the dialog is opened, the Key Frame selected in plan view will be selected in the list automatically.
  - Click on a Frame in the list to select and edit it using the settings below.

  - Multiple Key Frames can also be selected. See *Shift and Ctrl/⌘ Select on page 187*.
  - If a Key Frame has a Pause specified, it's Start and End will be listed as separate line items.
- Specify the **Floor** that the selected Key Frame is located on.
- Specify the **Time** in seconds at which the selected Key Frame is found in the duration of the walkthrough. The Times of the walkthrough paths' first and final frames cannot be moved.
  - The Times of the walkthrough path's first and final frames cannot be moved.
  - Not available when the last Key Frame or multiple Key Frames are selected.
- Specify the **Speed After**, which is how fast the camera moves along the walkthrough path from the current Key Frame to the next, in feet per second. Not available if the last Key Frame is selected.
- Specify the **Camera Angle** at the selected Key Frame(s).
- Specify the **Tilt Angle** of the camera at the selected Key Frame(s).

> The Camera Angle and Tilt Angle can also be adjusted by clicking and dragging in the preview pane, above.

- Specify the **Height** of the camera at the selected Key Frame(s). You can specify where the Heights are measured from in the Walkthrough Path Specification dialog, which is accessible by clicking the Define button, above.
- Select the source of **Sunlight** for the selected Key Frame(s) from the drop-down list. See *Sunlight and Moonlight on page 821*.
  - Select "Sun From Key Frame" to use the same Sunlight source as either Frame 1 or the closest Key Frame that has a Sun Angle or the Generic Sun specified.
  - Select "Interpolating" to use sun settings interpolated from the Sun Angles used by the Key Frames before and after the selected frame. Only available when the Key Frames before and after the selected frame are using different Sun Angles. See *Sun Angles and Shadows on page 830*.
  - Click the **Adjust Sunlight** button to open the Adjust Sunlight dialog and specify the Sunlight for the selected Key Frame(s).
- Check **Pause Key Frame** to temporarily pause the walkthrough at the selected Key Frame(s).
  - When Pause Key Frame is checked, specify the **Pause Duration**, which is the length of time that the walkthrough pauses at the selected Key Frame(s) before continuing.
  - The Start and End of a Key Frame with a Pause specified will be represented by separate line items in the list on the left.
- Click the **Delete** button to remove the selected Key Frame(s) from the path.
  - This option is not available if deleting the selected Key Frame(s) would result in fewer than two frames.
  - Deleting the End of a Key Frame with a Pause will remove the Pause but keep the Key Frame.
  - Key Frames can also be deleted in plan view using the **Delete Key Frame** edit tool.

5 Walkthrough Preview Control Options

Click the Options button at the bottom of the side window to specify what settings are presented as well as their layout.

- Select **Preview Pane** to toggle the display of the Preview panel that plays the walkthrough preview or shows the Current Frame
- Select **Key Frame Settings** toggle the display of the Key Frames settings.
- Select **Horizontal Layout** to position the Key Frames settings to the right of the other settings, or select or **Vertical Layout** to position the Key Frame settings below the other settings. The side window's shape does not adjust when you switch between layout options, so you may need to resize it by clicking and dragging its edges.

Generating a Walkthrough

There are a variety of variables you can customize to produce a walkthrough that meets your needs.

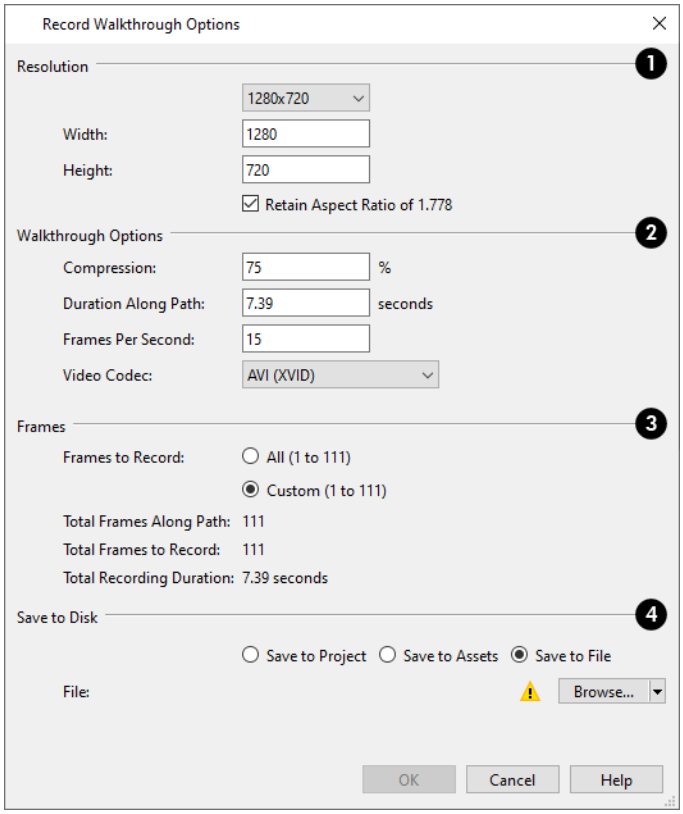
To generate a walkthrough

1. Draw a Walkthrough Path and edit it to meet your needs. See *Walkthrough Paths on page 870*.
2. Before recording, select the Walkthrough Path in plan view, click the **Open Object** edit button, and make sure the settings on the GENERAL, CAMERA, and BACKDROP panels are correct. See *Walkthrough Path Specification Dialog on page 873*.
3. On the CAMERA panel:
   - Make sure the Rendering Technique Options meet your needs. See *Rendering Technique Options on page 839*.
   - Particularly if your monitor is high resolution and you wish you use the Physically Based Rendering Technique, use Super Resolution to shorten the recording time. See *Super Resolution on page 818*.

   Depending on the quality settings and length of a selected Walkthrough Path, it may take a considerable amount of time to generate its video. You can preview a walkthrough before recording it to make sure it looks the way you want it to. See *Walkthrough Path Previews on page 875*.
4. With the Walkthrough Path selected:
   - Use the Walkthrough Preview side window to confirm that the selected path meets your needs. See *Walkthrough Path Previews on page 875*.
   - When you are ready to record, click the **Record** button in the Walkthrough Preview side window or the **Record Walkthrough Along Path** edit button.
5. In the Walkthrough Options dialog which opens next, specify the desired Quality, Resolution, Rendering Options, Video Codec, and the name and save location of your walkthrough file, then click OK. See below.
6. When you click OK, a camera view will show the frames of the walkthrough video as they are recorded. In most cases a Progress dialog will also report the recording's progress.
   - To cancel the recording as it is being created, click the Cancel button in the Progress dialog or press the ***Esc*** key.

RECORD WALKTHROUGH OPTIONS DIALOG

Select a Walkthrough Path and click the **Record Walkthrough Along Path** edit button to open the Record Walkthrough Options dialog.



1 Resolution

Specify the size of the walkthrough's frames.

- Select a resolution from the drop-down list. If you modify the Width or Height below, "Custom" will become selected.
- The current **Width**, based on the selected Resolution, is stated here. If you change this value, the selected Resolution will become "Custom".
- The current **Height**, based on the selected Resolution, is stated here. If you change this value, the selected Resolution will become "Custom".
- Check **Retain Aspect Ratio** to retain the original ratio between the frame Width and Height. If you modify either value while this is unchecked, the walkthrough may appear distorted.

2 Walkthrough Options

- Specify a **Compression** percentage between 0 and 100. A value of 0 gives the highest quality images and largest file sizes.
- Specify a **Duration Along Path** or simply a **Duration** for Stationary Walkthroughs, in seconds.
- Specify the desired number of **Frames Per Second**, between 1 and 100. A higher number results in a higher quality recording but also a larger video file.
- Select a **Video Codec** from the drop-down list. See *Generating a Walkthrough on page 879*.

3 Frames

The information and settings here vary between Walkthrough Paths and Stationary Walkthroughs.

- Specify the **Frames to Record** by choosing either **All** or a **Custom** range
  - Custom ranges are set in the Walkthrough Preview side window. See *Walkthrough Path Previews on page 875*.
- The **Total Frames Along Path**, **Total Frames to Record**, and **Total Recording Duration** are reported for reference.

4 Save to Disk

- Check **Save to Disk** to save the 360 Panorama file to the local hard drive. When this is unchecked, a local copy of the file is not created. See *Exporting and Backing Up Files on page 68*.
- When Chief Architect Project Management is active, specify how you want the local file saved. See *Chief Architect Project Management on page 35*.
  - Select **Save to Project** to save the Walkthrough as a resource associated with a specific Project. In the Select Project dialog, a folder within a project can also be selected.
  - Select **Save to Assets** to save the Walkthrough as an Asset in your Resource Store without associating it with a particular Project.
  - Select **Save File** to save the walkthrough as an independent .mp4, .wmv, or .avi file on your local system.
- When Save to Project is selected, click the **Select** button to choose the Project you want the Walkthrough to be associated with in the Choose a folder dialog. See *Select Project Dialogs on page 39*.
- When Save to Project or Save to Assets is selected, specify the **Name** of the Walkthrough and select a file format from the drop-down list.
- When Save to File is selected or when traditional file management is active:
  - The full path name of the currently selected file is reported.
  - Choose **Browse** from the drop-down list to the right of the file path name to select a different
  - Choose **Edit Path** from the drop-down list to type or paste the full file path of a Walkthrough file in the Enter a File Path dialog.

> Note: The video file formats that are available depend on which Codec is selected, above. When Save to Cloud is checked, the H.264 codec is the only available option. See *Selecting a Codec on page 870*.

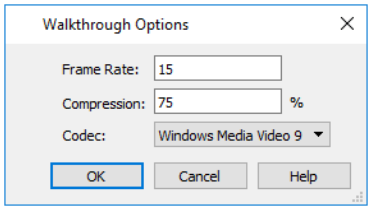
When you click OK, the program will begin recording the Walkthrough video.

Frame by Frame Walkthroughs

Although time-consuming and lacking many of the options that a Walkthrough Path provides, creating a walkthrough by recording it frame by frame lets you control and see exactly what is being recorded in each frame as you record it.

To record a walkthrough frame by frame

1. Create a Camera view or Overview - preferably, a Perspective view - and adjust its position and angle as needed. This view is the first frame of the walkthrough.
2. While the camera view is active, select **3D> Walkthroughs> Record Walkthrough**  .
3. In the Walkthrough Options dialog:



- Select a **Frame Rate** between 1 and 100. The value entered is the number of frames per second.
- Select a **Compression Percent** between 0 and 100. A value of 0 gives the highest quality images and the largest file size.
- Select a **Codec** from the drop-down list. See *Frame by Frame Walkthroughs on page 881*, below.
- Click OK.

4. In the Save Video As dialog, specify the name, location, and file format for the walkthrough file, then click **Save**. The available file formats will vary, depending on the codec you selected.
5. Use the camera movement tools to navigate the view. Each time the screen redraws, it is recorded as the next frame in sequence. See *Editing 3D Views on page 797*.
6. To move the camera without saving a view, select **3D> Walkthroughs> Pause Recording** to temporarily stop recording.
   - You can then select **3D> Walkthroughs> Save Frame** button to control what views are saved.
   - You can start recording again by selecting **Pause Recording** once more.
7. When the walkthrough sequence is complete, select **3D> Walkthroughs> Stop Recording** or close the view.

> Note: Zooming in and out and using the scrollbars does not change the viewpoint and does not produce a frame for the walkthrough.

Importing and Exporting

Chapter 39

Importing is the process of opening a file that was produced in a different program in Home Designer. Exporting, on the other hand, is the process of saving information in a Home Designer file to a format that can be read by another program.

Home Designer allows you to import and export a variety of information from and to other applications. This chapter focuses on importing and exporting 2D .dwg/.dxf files and a variety of 3D file formats. Other importing and exporting options are described in the chapters in which those objects or settings are discussed. See *Pictures, Images, and Walkthroughs on page 850*.

Export Chief Architect 3D Viewer File

The **Chief Architect 3D Viewer**™ allows a model created in Chief Architect to be viewed in either:

- A web browser on a computer.
- The 3D Viewer app on a mobile device.

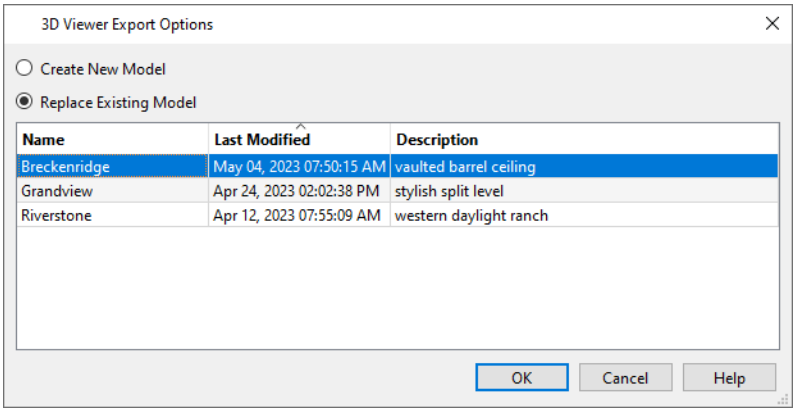
In order to export a Chief Architect 3D Viewer file, you must be signed in to your Chief Architect account. See *Chief Architect Account on page 30*.

For more information about the Chief Architect 3D Viewer, visit HomeDesignerSoftware.com.

To export a file to the cloud for viewing with either option, select **File> Export> Export Chief Architect 3D Viewer File** while a 3D view is active. Up to 99 3D Viewer models can be stored in your account at a time.

With the exception of Rope Lights, any light sources that are On in the current view, as well as ambient light, will be exported along with the model. See *Lighting on page 820*.

3D Viewer Export Options

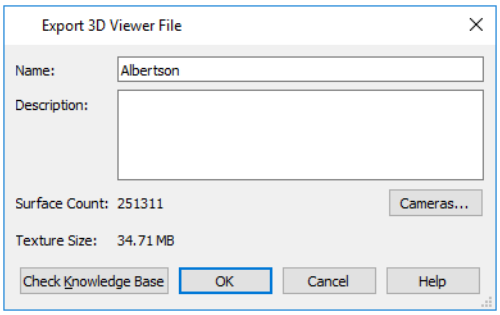


- Select **Create New Model** to export a new model without affecting any previously exported files.
- Select **Replace Existing Model** to select a previously exported model in the list and replace it with the model being exported now.
- To select an existing model to replace, click on its line item in the table.

The information in the table is sortable: click a column header to sort all line items in the table by that column. An arrow above the column indicates that it is being used to sort the table, and in which direction it is being sorted.

When you click OK, the Export 3D Viewer File dialog opens, where you can specify the exported model's name, description, and other details.

Export 3D Viewer File Dialog



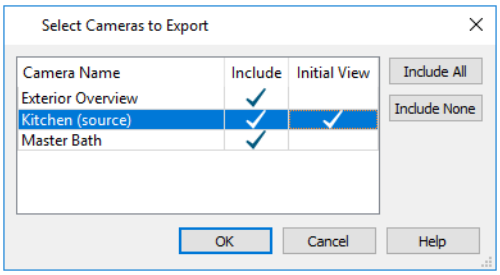
- The **Name** of the current plan file populates this field by default. Specify a different name for the exported 3D Viewer file if you would like. Names must be unique.
- Type a brief **Description** of the model.
- Click the **Cameras** button to open the Select Cameras to Export dialog and specify which saved cameras to export with the model. See *3D Views on page 779*.
- The **Surface Count** and **Texture Size** display here for reference. Large Surface Count and/or Texture Size values can impact performance in the app.

> To reduce Surface Count and Texture Size, consider turning off unnecessary layers in the current 3D view before exporting. See *Display Layers on page 151*.

When you click OK, the 3D model is exported using the layer settings in the camera view that was active when the model was exported.

On the 3D Viewer page, you can also choose to share an exported model with someone so that it can be opened in a 3D Viewer page or in the 3D Viewer mobile app.

Select Cameras to Export Dialog



- The **Camera Name** of each saved Perspective Camera and Overview in the plan is listed in a table. The camera that is active when you export the model, if listed, is followed by "(source)". Dollhouse Views can be exported; however, they behave like Full Overviews in the 3D Viewer.
- In the **Include** column, click to add or remove a check mark for each camera that you would like to export. By default, only cameras of the same type, on the same floor, and using the same layer set are Included.

- In the **Initial View** column, add a check mark for the camera that you would like to be active when the model is opened in 3D Viewer.
- Click the **Include All** button to export all saved cameras with the model. A large number of saved cameras may slow down the interface of the 3D Viewer app.
- Click the **Include None** button to export no saved cameras with the model. When the model is opened, an unsaved 3D Overview will be the initial view.

The columns in the table are sortable: click a column header to sort all line items in the table by that column. An arrow above the column indicates that it is being used to sort the table, and in which direction it is being sorted.

The columns in the table are sortable: click a column header to sort all line items in the table by that column. An arrow above the column indicates that it is being used to sort the table, and in which direction it is being sorted.

Import Room Planner File

The RENDR mobile app can be used to capture 3D floor plans of rooms, and the resulting **.room** files can imported into Home Designer 2027. Visit rendr.com for more information.

Select **File> Import> Import Room Planner File** to open the Import Room Planner File dialog, which is a typical open file dialog. See *Importing Files on page 64*.

> Note: Only .room files authored in the RENDER app can be imported into Chief Architect.

Importing 2D Drawings

Both **.dxf** and **.dwg** file formats contain data representing CAD objects such as lines, polylines, circles, and a variety of other entities which can be imported into Home Designer.

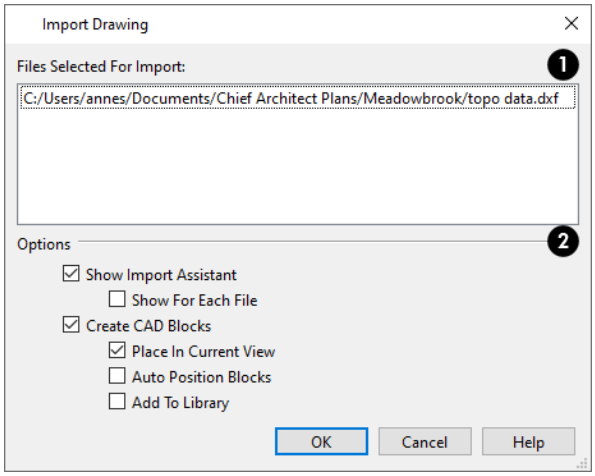
Import Drawing

2D **.dxf** or **.dwg** files can be imported into plan view, cross section/elevation views, and layout. To import a 2D drawing file, open the view in which you would like to place the drawing and select **File> Import> Import Drawing (DWG/DXF)**.

To import a 2D drawing file

1. Open the plan view, cross section/elevation views, or layout page where you would like to place an imported CAD drawing.
2. Select **File>Import>Import Drawing (DWG/DXF)** .
3. Select one or more **.dxf** or **.dwg** files saved in your file system in the Import Drawing File dialog, then click OK. This is a typical Open File dialog. See *Opening a Document on page 63*.
4. In the Import Drawing dialog, select the options you want and click OK.

Import Drawing Dialog



1 Files Selected for Import

The files you selected in the Import Drawing File dialog are listed here for reference.

2 Options

- When **Show Import Assistant** is checked, the Import Drawing Assistant opens when you click OK in this dialog, allowing you to access more detailed import options. See *Import Drawing Assistant on page 888*.
- Check **Show For Each File** to open a separate instance Import Drawing Assistant for each file listed above. When this is unchecked, the Import Drawing Assistant will open only once and its settings will be shared by all drawings listed above.
- When **Create CAD Blocks** is checked, each imported drawing is grouped into a separate CAD Block. Uncheck this box if you prefer that the drawing's individual CAD components remain independent, unblocked objects. See *CAD Blocks*.
  - When **Place In Current View** is checked, the CAD Blocks are placed in the currently active view. Uncheck this if you only want the CAD Blocks to be added to the library.
  - When **Auto Position Blocks** is unchecked, multiple CAD Blocks are all positioned at the same location at the origin of the drawing area when they are imported. Check this box to instead position them side by side near the origin. See *3D Drafting on page 12*.
  - Check **Add to Library** to add the CAD Blocks to your User Catalog. Uncheck this is you only want to place the CAD Blocks in the current view. See *Add to Library on page 722*.

Supported Entities and Data

Home Designer 2027 can import 2D **.dxf** or .**dwg** files compatible with AutoCAD® through version 2025. See *Import Drawing Assistant on page 888*.

Only drawings created in AutoCAD®'s Model Space can be imported into Home Designer. Entities drawn in Paper Space are not recognized. External references (xrefs) are not recognized by Home Designer, either.

In general, all Z coordinates are mapped to zero. If an entity in an imported drawing has thickness, Home Designer ignores it.

2D drawings are imported by reading entities from a **.dxf** or **.dwg** file and creating the equivalent CAD objects in Home Designer. The following is a list of the entities that are imported and how they are converted. All other entities are ignored:

- **Lines** - Both 2D and 3D lines.
- **Circles** - Fully supported in 2D.
- **Arcs** - Fully supported in 2D.
- **Ellipses** - Fully supported in 2D.
- **Spline entities** - Fully supported as 2D polylines.
- **Polylines and Lightweight Polylines** - Polylines are imported as polylines. Bumps are converted to arcs. Line widths are ignored.
- **Lightweight Polylines** - Fully supported in 2D.
- **Points** - Points are not supported unless the layer they are on is converted to Elevation Data. See *Importing Elevation Data on page 928*.
- **Text and Multi-line Text** - Both are imported as Rich Text and mapped to the Text layer. Multi-line text objects retain their original width. The first font in a multi-line text object is applied to the entire object. If that font is unavailable, Arial is used.
- **Multileaders** - Fully supported in 2D.
- **Unicode** - Fully supported in text objects only.
- **Blocks and Block Inserts** - A block is a named group of CAD entities that have been joined together to behave as a single object. A block insert is a reference to such a block. Blocks are loaded by name. If a duplicate name is found, you can specify whether a block is imported under a new name, replaces an existing block or simply uses the existing block of the same name.

  > Note: Blocks imported into Home Designer cannot be exploded into their individual component objects. See *CAD Blocks on page 887*, below.

- **Hatch entities** - If **Import Hatch entities** is selected on the SELECT FILE page of the Import Drawing Assistant for a **.dwg** file, Hatch patterns are imported as a CAD block consisting of solid black filled polylines.
- **2D Solids** (Not ACIS Solids) - Fully supported in 2D.
- **Solids** - A solid is a 3 or 4-sided filled area. These are imported as 2D faces.
- **3D Faces/Polyface Meshes** - A 3D face has its Z coordinate mapped to zero, and imports as a polyline.
- **Dimensions** - Rotated, aligned and 3-point angular dimensions are supported. All other dimension types are imported as lines and text rather than functioning dimensions.
- **Attributes** - Attributes are text objects associated with other items, like blocks. These are imported as text objects at the appropriate location but the association with the original object is broken.
- **Line Styles** - Line styles are not imported. Instead, if a style of the same name displays in the Home Designer line styles, that line style is used. Otherwise, a solid line style is used.
- **Layers** - You can specify which layers in the imported drawing to import into your Home Designer file. See *Display Layers on page 151*.

CAD BLOCKS

A block is a group of CAD objects that has been joined together to behave as a single object. Although blocks can be imported into Home Designer, they cannot be exploded and have no specification dialog. They can, however, be selected, moved, and deleted. See *CAD Objects on page 224*.

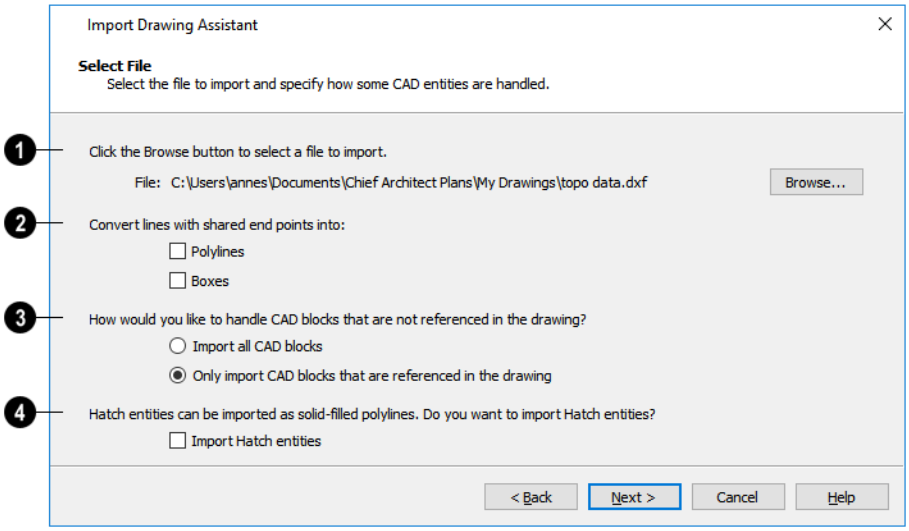
Import Drawing Assistant

A 2D **.dxf** or **.dwg** file can be imported into any orthographic view: plan view, cross section/elevation views, and layout. For information about supported entities, model and paper space, and other considerations, see *Importing 2D Drawings on page 885*.

CONFIRM To import a 2D drawing file, open the view in which you would like to place the drawing and select **File> Import> Import Drawing (DWG/DXF)** to open the welcome page of the Import Drawing Assistant. Click **Next** to continue.

You can also launch the Import Drawing Assistant by dragging a **.dxf/.dwg** file from an operating system window into the Home Designer window.

Select File



1

Click the **Browse** button to select the file that you wish to import. When a file is selected, its full file path displays to its left. The directory containing the last file selected using the Import Drawing Assistant displays here otherwise. If the file path is not a valid dxf/.dwg file, this text will display in red.

> Note: If the file you are importing is password protected, you will be prompted to enter the password before continuing.

2

If you want to convert lines with shared end points to polylines and/or boxes, check the appropriate options. Polylines are not affected by these settings, nor are lines that do not share end points.

- Check **Polylines** to import lines with shared end points as polylines.
- Check **Boxes** to import lines with shared end points that form a closed rectangular shape as boxes.

3

Specify how to treat CAD blocks associated with the selected drawing.

- Select **Import all CAD blocks** to include all CAD blocks associated with the file being imported whether or not they are in use.
- Select **Only import CAD blocks if they are referenced in the drawing** to reduce the volume of transferred data.

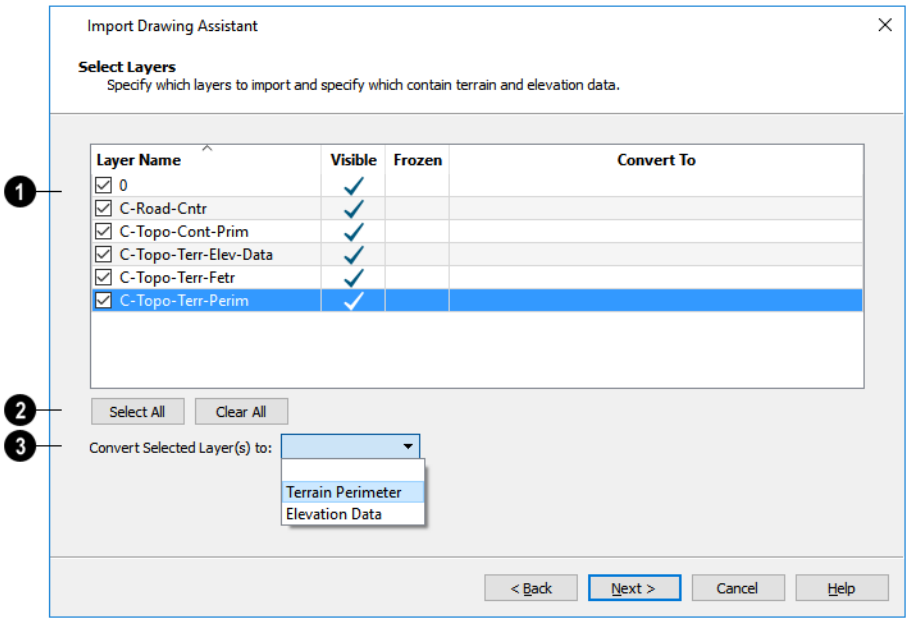
4

Check **Import Hatch entities** to import areas of hatching as solid-filled polylines.

Click **Next** to load the file into memory so that Home Designer can present information about the contents of the file. This can take a while for larger files.

Select Layers

In Home Designer, all drawing file layers are mapped to the "CAD, Default" layer. Original layer attributes are lost, but line color, styles, and weight are preserved on a per-object basis.



1

A list of the layers found in the imported file and information about each layer displays in this table. See *Display Layers on page 151*.

- In the **Layer** column, check the box to the left of each layer name to specify which layers you want to import. Layers with checked boxes are imported; those with unchecked boxes are not.
- Layers that were **Visible** in the original program are checked by default. You can include a layer that is not visible by checking the box to the left of its name.
- Layers that were **Frozen** in the original program are not checked by default. You can include a frozen layer by checking the box to its left.
- If a layer is set to **Convert To** a Terrain Perimeter or Elevation Data, it will be indicated in this column provided that you are importing into plan view.

2

Click **Select All** to check the box to the left of all layer names in the table. Click **Clear All** to clear the check box to the left of all layer names in the table.

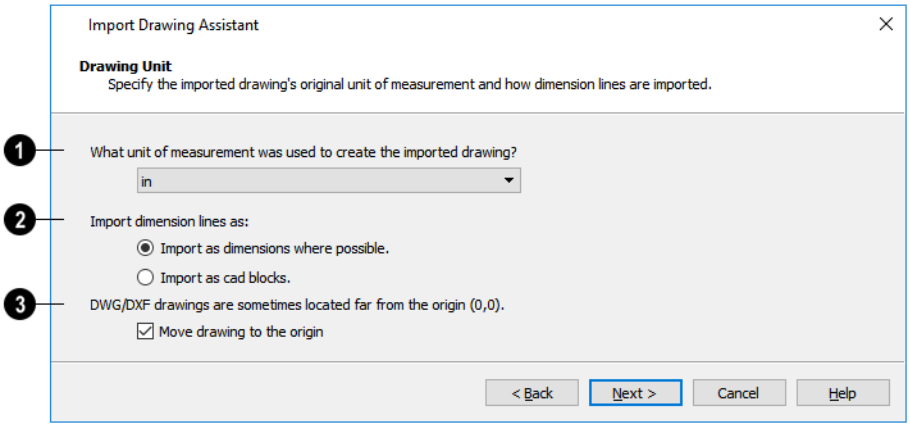
3

The **Convert To** drop-down list allows you convert the data on any layer into a Terrain Perimeter or Elevation Data. See *Terrain Perimeter on page 899* and *Importing DWG/DXF Elevation Data on page 932*. Only available when importing into plan view.

To convert a layer to a Terrain Perimeter or Terrain Data, click on its name in the table and then select an option from the **Convert To** drop-down list. The option you choose will then display in the **Convert To** column in the table.

> Note: If an open polyline is converted into a Terrain Perimeter, the program will draw an additional edge to close the gap.

DRAWING UNIT



1

Select a unit of measurement from the drop-down list. Selecting the correct unit helps ensure that your imported drawing is accurately sized.

> Note: During the import process, Home Designer defaults to inches or millimeters. If you are importing a site plan or topo prepared by a surveyor, or importing a metric drawing into an U.S. Unit plan (or vice versa), you may need to change units.

If the file being imported was drawn at a scale other than 1:1, you can compensate for this scaling by creating a custom unit of measurement and specifying it here. See *Unit Conversions Panel on page 106*.

2

Specify how dimensions are imported.

- Select **Import as dimensions where possible** to import dimensions as Home Designer-supported dimension lines.
- Select **Import as CAD blocks** to import dimensions as CAD entities that are not recognized by Home Designer as dimensions.

3

Check **Move drawing to the origin** to place the drawing at 0,0. When this is unchecked, it is imported to the same location as it was drawn in the original application. See *3D Drafting on page 12*.

Import Complete

When a **.dxf**/**.dwg** file is imported into Home Designer, all of its components are selected as a group. The selection set has Move and Rotate edit handles available for relocating the entire drawing, as well as a variety of edit tools. Once another object or tool is selected, the drawing components are no longer group-selected.

If you do not see your imported drawing, select **Window> Fill Window**  , as it may have been placed at a location not currently visible on screen. When the drawing can be seen, move your mouse pointer over it and note its coordinates in the Status Bar. If any coordinate value has more than six digits, use the **Transform/Replicate Object**  edit button to move it closer to the origin. See *Transform/Replicate Object Dialog on page 176*.

Imported CAD objects can be selected and edited just like objects that were drawn in the program. See *Editing Objects on page 179*.

Exporting 2D DXF/DWG Files

Line-based 2D files can be exported from Home Designer in both **.dxf** and **.dwg** file formats. You can specify the version of AutoCAD® to export to. Compatibility with other software may vary.

There are two ways to export a 2D drawing file in Home Designer: Export Current View and Export All Floors.

Export Current View



To export the currently active plan view or 3D view, select **File> Export> Current View (DWG/DXF)**.

Bear in mind that Orthographic views are drawn to scale and will produce a 2D drawing that can be accurately dimensioned. Perspective views, on the other hand, are not scaled and do not produce drawings that can be dimensioned accurately. See *Perspective and Orthographic Views on page 779*.

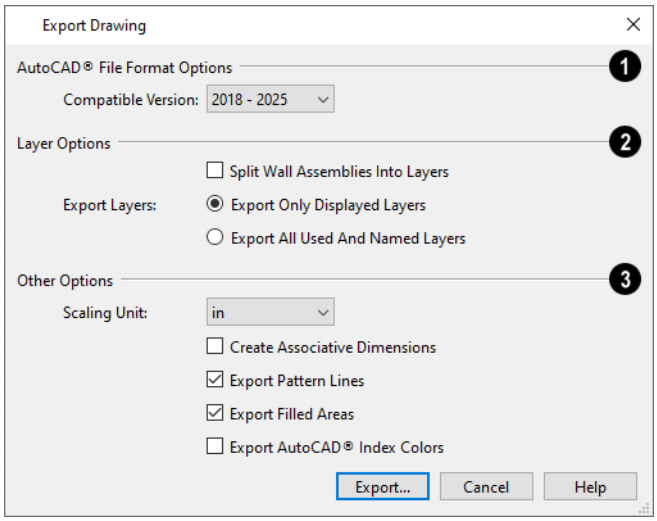
Export All Floors



To export the plan view for all floor plans simultaneously, select **File> Export> All Floors (DWG/DXF)** from any floor of the plan. The floor plans are exported to a single **.dxf** or **.dwg** file.

If you choose to export all floors, the file will contain all floors superimposed on each other. Upon export, each layer in your Home Designer drawing is divided into separate layers: one for each floor. For example: “Electrical-2” contains objects on Floor 2 that were originally on the “Electrical” layer.

Export Drawing Dialog



1 AutoCAD® File Format Options

.dxf and **.dwg** files created by Chief Architect can be compatible with a variety of AutoCAD® versions. Select a version from the drop-down list.

2 Layer Options

The **Layer Options** settings allow you to control the layers associated with the file being exported. See *Display Layers on page 151*.

- **Split Wall Assemblies Into Layers** - The lines that represent wall layers can be exported onto different layers, allowing them to be displayed separately. See *Wall Types on page 288*.
- Select **Export Only Displayed Layers** to export only those layers that are displayed on screen. This is what always occurs when exporting from layout, but is not an available option in layout files.
- Select **Export all used and named layers** to export all layers that either have something on them or have a layer name specified. Not available in layout files.

3 Other Options

- **Scaling Unit** - Select the unit of measurement to be used. For best results, choose inches or feet for U.S. Unit plan or layout files, or metric units for metric files. See *Dimension Preferences and Defaults on page 340*.
- Uncheck **Create Associative Dimensions** to export dimensions as simple CAD entities that are not recognized dimensions by other programs. Associative dimensions are recognized by AutoCAD® and many other CAD programs.

  When exporting a layout page, it is often best to uncheck this box.
- Check **Export Pattern Lines** to export pattern lines. Pattern lines are exported as normal CAD lines.
- Check **Export Filled Areas** to export filled areas as AutoCAD® 2D solid entities.

Dimension lines using non-default formatting will lose their changes and will use the default format upon export.

When you are satisfied with your selections, click the **Export** button to save the exported file as either a **.dwg**, **.dxf**, or **binary .dxf** file.

Note: Binary .dxf is easier for computers to read, is more accurate, and occupies less disk space, but some applications do not support binary .dxf.

DXF vs DWG File Formats

Both .**dxf** and .**dwg** file formats were originally developed by Autodesk and contain data representing CAD objects such as lines, polylines, circles, and a variety of other entities.

- **.dwg** is the native AutoCAD® file format. Originally a proprietary format, it is now widely used with many different products.
- **.dxf** (**D**rawing e**X**change **F**ormat) is a standard file format created by Autodesk for the transfer of data between other programs.
- Binary **.dxf** format is another related file format. It is easier for computers to read, is more accurate, and occupies less disk space and regular .dxf files. When exporting, however, bear in mind that not all applications support binary **.dxf**.

Both .**dxf** and .**dwg** file formats can also contain 3D data rather than 2D data. These files can be imported into Home Designer, as well. See *Importing 3D Symbols on page 739*.

Additional 2D Export Information

The export process converts high level Home Designer objects (doors, windows, etc) into simple, CAD-based objects (lines, arcs, etc). Home Designer exports all data to AutoCAD®'s Model Space.

Supported Entities

The following entity types are currently supported for 2D export:

- **Line** - The simplest entity. In AutoCAD®, lines are 3 dimensional with the Z coordinate set to zero.
- **Arc** - Arcs have a start angle, end angle and radius.
- **Circle** - Fully Supported.
- **Multi Line Text** - If exporting to an AutoCAD® release that supports multi-line text, Home Designer writes the file as multi-line text. If exporting to a version that does not support multi-line text, the file is written as simple text.
- **Unicode Text** - Fully supported.
- **Polylines** - Polylines are a collection of points with lines or arcs connecting them. Home Designer supports both lines and arcs. Arcs are referred to as bulges in AutoCAD®.
- **Block Insert** - A block insert is a reference to a block, which is a named collection of entities. A block can also contain block inserts.

Dimensions

Aligned, rotated, and angular dimensions can all be exported.

Each dimension has an associated block containing a representation of the dimension as it is drawn in Home Designer. It also contains all the data to recreate that information.

- When an exported dimension is modified in AutoCAD® or other CAD program, its appearance changes.
- Home Designer does not support arrowhead styles or fonts.
- Three kinds of dimensions are generated: Aligned, Rotated and 3 Point Angular.
- Please refer to AutoCAD® documentation for more information.

Note: Uncheck “Use Associative Dimensions” in the Export Drawing File dialog if the CAD program you are using does not support AutoCAD® Associative dimensions. See *Export Drawing Dialog on page 892*.

Layers

Layers in other systems are similar to Home Designer layers, but there are some subtle differences. Layer information is mapped as follows:

Home Designer	Other Systems
Name	Name
Color	Nearest AutoCAD® Color. Home Designer uses the default AutoCAD® color table to determine this mapping.
Display	On
Size	Line Weight. In AutoCAD®, line weights are determined by a table of mm line widths. Home Designer maps to the closest match in this table based the current view’s Line Weight Scale. See *Drawing Sheet Setup Dialog on page 987*.
Style	Line type
Lock	Lock

Line Types

A line type, or line style, is used by layers and entities to determine how lines are drawn. Home Designer line types installed with the program are supported on export.

Export 360 Panorama

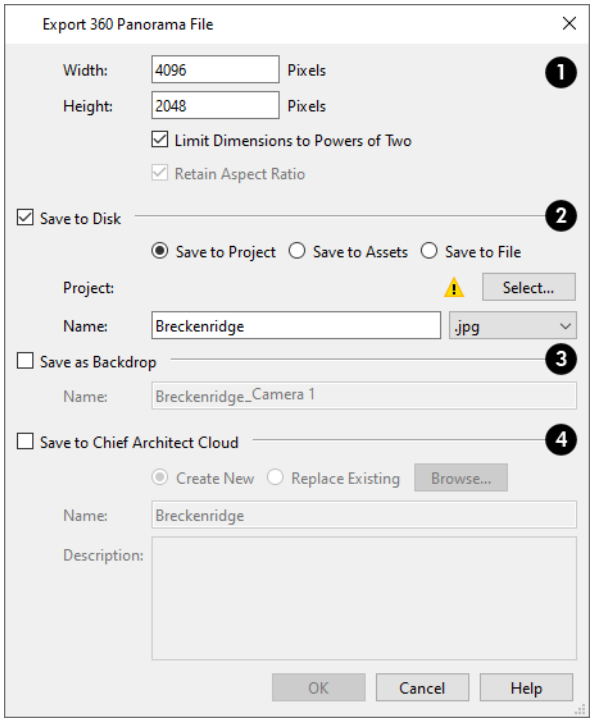


The **Export 360 Panorama** tool creates a spherical panoramic image that can be opened in various panorama viewers. Select **File> Export> Export 360 Panorama** while a 3D view is active to access this tool.

For best results, position the camera as near as you can to the center of the scene before exporting.

Export 360 Panorama File Dialog

All of the settings in this dialog are retained during the current program session.



1

Specify the size of the exported image, in pixels.

- Specify the **Height** and **Width** of the exported image file, in pixels.
- Check **Limit Dimensions to Powers of Two** to restrict the Width and Height to values that are powers of two. When this is checked and an ineligible value is entered, it will adjust up or down to the nearest power of two. Although not required, this option is recommended for best results in some panoramic image viewers.
- The **Retain Aspect Ratio** check box displays for reference and cannot be changed. The ratio between Width and Height is 2 to 1 when Limit Dimensions to Powers of Two is unchecked, above.

2 **Save to Disk**

Check **Save to Disk** to save the exported panoramic image file on the local computer system.

- When Chief Architect Project Management is active, specify how you want the local file saved. See *Chief Architect Project Management on page 35*.
  - Select **Save to Project** to save the 360 Panorama as a resource associated with a specific Project. In the Select Project dialog, a folder within a project can also be selected.
  - Select **Save to Assets** to save the 360 Panorama as an Asset in your Resource Store without associating it with a particular Project.
  - Select **Save File** to save the walkthrough as an independent .mp4, .wmv, or .avi file on your local system.
- When Save to Project is selected, click the **Select** button to choose the Project you want the 360 Panorama to be associated with in the Choose a folder dialog. See *Select Project Dialogs on page 39*.
- When Save to Project or Save to Assets is selected, specify the **Name** of the 360 Panorama and select a file format from the drop-down list.

- When Save to File is selected or when traditional file management is active:
  - The full path name of the currently selected file is reported.
  - Choose **Browse** from the drop-down list to the right of the file path name to select a different
  - Choose **Edit Path** from the drop-down list to type or paste the full file path of a 360 Panorama file in the Enter a File Path dialog.

3 Save as Backdrop

Check **Save as Backdrop** to save an exported panoramic image file in the Home Designer Data folder and use it to create a new Backdrop in the Library Browser. See *Home Designer Data on page 74*

- Specify the **Name** of the image file, not including its file extension. This will also serve as the Backdrop's name in the Library Browser. See *The User Catalog on page 718*.
- If the camera view is using either the Physically Based or Clay Rendering Technique, the backdrop image will be an .hdr image file; otherwise, it will be a .jpg file.

4 Save to Chief Architect Cloud

- Check **Save to Chief Architect Cloud** to save the 360 Panorama file to your Chief Architect account. See *Signing In and Out on page 30*.
  - Up to 99 uploaded 360 Panorama files can be stored in your account at a time.
- Select **Create New** to upload a new 360 Panorama file or select **Replace Existing** to select a 360 Panorama file already in your account that you want to replace with a new one. See *Replace Existing 360 Panorama Dialog on page 896*.
- Type a short, descriptive **Name** for the 360 Panorama file.
- Type a brief **Description** of the 360 Panorama.

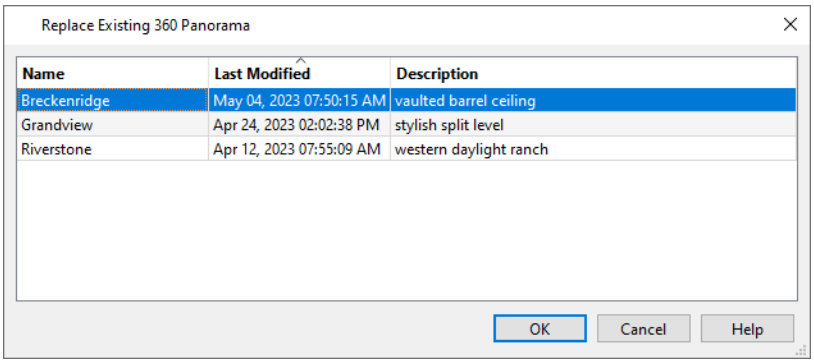
When you click OK, a panoramic image is created and a progress dialog may display. Because spherical panoramas are composed of multiple images stitched together, they may take longer to create than a standard exported picture. See *Exporting Pictures on page 856*.

Once saved on the Cloud, you can choose to share 360 Panoramas via direct link, email, or by embedding them in web pages: go to the Manage 360 Panoramas page of your Chief Architect account.

> Note: You can also upload a previously saved panoramic image file to the cloud on the 360 Panoramas page of your Chief Architect account.

Replace Existing 360 Panorama Dialog

The Replace Existing 360 Panorama File dialog opens when you click the **Browse** button in the Export 360 Panorama to replace an existing file previously uploaded to your Chief Architect Cloud Account.



The information in the table is sortable: click a column header to sort all line items in the table by that column. An arrow above the column indicates that it is being used to sort the table, and in which direction it is being sorted.

Click on a line item to select it, then click OK to replace it with a new 360 Panorama.

Export Thermal Envelope Data

A thermal envelope is a three dimensional boundary built around a structure's conditioned space that separates it from the unconditioned space around it. Thermal Envelopes are composed of floor platforms, ceiling platforms, walls, doors, and windows.



You can export information about the thermal envelope of the current plan by selecting **File> Export> Thermal Envelope Data**. This data is organized by floor level; notes the direction of walls, doors, and windows; and reports the area of each envelope component.

Thermal Envelope Data is exported to a comma delimited **.csv** text file which can be opened in a text editor or spreadsheet application. Once exported, it will automatically open in the application associated with **.csv** files on your system.

Terrain

Chapter 40

Home Designer allows you to model the terrain around a house. Begin by creating a Terrain Perimeter, then specifying elevation data that creates the surface contours, and then adding surface features such as planting areas and water features in level terrain around your house plan.

You can import terrain data from a variety of sources and use this data to produce your 3D model.

Once the terrain is modeled, shadows that follow the terrain can be created using the Sun Angle tool. See *Sun Angles and Shadows on page 830*.

Driveways, parking lots, and sidewalks as well as plants and sprinklers are among the objects that can be placed in your terrain and are discussed in *Plants and Sprinklers on page 939* and *Roads, Driveways, and Sidewalks on page 934*.

Terrain Toolbar Configuration



The Terrain and Road Tools can be accessed through the Terrain menu. You can also display these tools on your toolbar using the **Terrain Configuration**. See *Toolbar Configurations on page 122*.

The Terrain Configuration and Terrain menu both display the following Terrain, Road, Plant, and Sprinkler parent tools:



Elevation Tools allow you to create and edit the Terrain Perimeter and generate or remove contour lines.



Elevation Data Tools allow you to add elevation data to your terrain.



Terrain Modifier Tools model changes in elevation within a defined area.



Terrain Feature Tools let you add materials over the top of the terrain.



Garden Bed Tools create Terrain Features with a mulch material.



Water Feature Tools create Terrain Features with a water material.



Stepping Stone Tools are used to create paths composed of multiple Terrain Features.



Terrain Wall and Curb Tools let you draw walls and curbs that follow the terrain.



Road, Driveway and Sidewalk Tools allow you to create paved areas that can form intersections.



Plant Tools allow you to place plant images and 3D plant symbols.

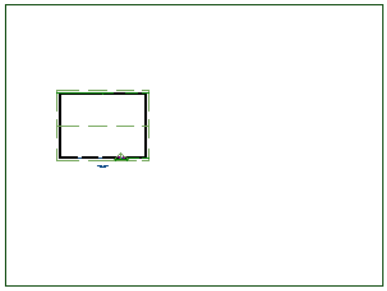


Sprinkler Tools are used to lay out sprinkler symbols and irrigation lines.

Terrain Perimeter

The Terrain Perimeter is a closed polyline defining the boundary of the terrain that generates in 3D views and of the contour lines that generate in plan view. Select **Terrain> Create Terrain Perimeter** to create a Terrain Perimeter. Only one Terrain Perimeter can be present in a given Plan.

A CAD polyline can also be converted into a Terrain Perimeter. See *Editing Terrain Objects on page 910*.

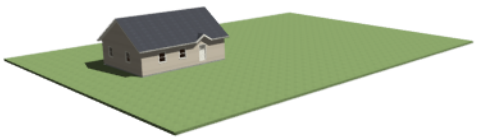


When created in a new, blank plan, a new Terrain Perimeter will be 50’ x 100’. If you create a Terrain Perimeter after you have drawn all or part of a 3D model, it may increase in size as needed to encompass the structure(s) in plan view.

If you create a Terrain Perimeter in plan view but do not see it, select **Window>Fill Window**. See *Zoom Tools on page 136*.

Once created, the Terrain Perimeter can be resized and edited like other polyline-based objects. See *Editing Closed Polyline-Based Objects on page 197*.

When a Terrain Perimeter is first created, it is completely flat and is placed at a height of 0’-0”, or sea level.



The Terrain Perimeter by itself does not have elevation data associated with it. You can use the **Elevation Data** tools to create terrain that slopes in a wide variety of ways. If you do not create elevation data within the Terrain Perimeter, the terrain remains flat at an elevation of 0' - 0". See *Elevation Data Tools on page 901*.

The Terrain Perimeter has a variety of editable properties, including many that affect the appearance of the terrain in 2D and 3D views. See *Terrain Specification Dialog on page 911*.

Plot Plans

Using the CAD drawing and editing tools, you can create an accurate plot plan of any building site. See *CAD Objects on page 224*.

Terrain Height vs Floor Height

Home Designer always defines the default height of Floor 1 at 0’-0”. This height value is the constant by which the heights of structural elements in the program like walls, floors, and ceilings are measured. The heights of architectural object can be measured relative this absolute height, as well. See *Floor 1 Default Height on page 313*.

The default height of Floor 1 is not, however, the absolute by which terrain elevation is measured. Instead, elevation data is measured relative to sea level. This means that if you want to, you can use real-world elevation data to generate a 3D terrain model without also having to measure floor and ceiling heights from sea level. See *Importing Elevation Data on page 928*.

By default, Home Designer automatically positions the terrain a set distance below Floor 1. To do this, it first adds the thickness of the default Floor 1 floor platform to either 6” (150 mm) or 8” (200 mm), depending on the foundation type. To that value it then adds the thickness of any sill plates, if specified. Finally, it calculates the average elevation of the building footprint's perimeter, identifies a footprint corner with an elevation closest to that average, and adjusts the height of the entire terrain so that it is positioned below Floor 1 as described above at that point. This point is referred to as the Terrain Elevation Reference Point, or just Reference Point. See *Foundations and the Terrain on page 525*.

The Automatic distance between Floor 1 and terrain is reported in the **Surface at Reference Point** field in the Terrain Specification dialog, as are the **X** and **Y Position** of the Reference Point. You can turn off the Automatic height and specify a different height and position for the Reference Point, allowing you to produce a daylight or walkout basement, for example. See *General Panel on page 912*.


You can also position the Reference Point manually if you prefer. To do this, select the Terrain Perimeter in plan view and click the **Place Terrain Elevation Reference Point** edit button. Then, click anywhere in the drawing area to place the Reference Point at that location. The Reference Point is only visible when the Terrain Perimeter is selected and is not included in printed output. When it is visible, though, it has its own edit handle and is subject to Grid and Object Snapping so you can position it as needed.

Build Terrain


Select **Terrain> Build Terrain** to generate the terrain surface based on the elevation data you have provided. Build Terrain also updates the Building Pad Elevation value in the Terrain Specification dialog. See *Building the Terrain on page 909*.

Auto Rebuild Terrain

By default, terrain will automatically build any time a 3D view is created, ensuring that the terrain in the view is up-to-date. If your terrain is very large and/or highly detailed and has not been modified, and you find that this unnecessarily slows down the generation of 3D views, consider turning this behavior off in the Terrain Specification dialog. See *General Panel on page 912*.

When Auto Rebuild Terrain is turned off, the Auto Rebuild Terrain  icon will follow your mouse pointer. See *Pointer Icons on page 15*.

Clear Terrain


To remove the generated terrain contours, select **Terrain> Clear Terrain**. When the terrain is cleared, contours do not display in 3D and contour lines do not display in plan view.

Clear Terrain does not remove the Terrain Perimeter, elevation data, or terrain features from the model. Rather, it deletes all program-generated 2D contour lines and 3D contours.

Terrain Surface Triangles

Home Designer generates 3D terrain surfaces by dividing them into triangles. The size of the triangles determines how detailed contour lines and terrain surfaces in the 3D model can be. You can specify triangle size in the Terrain Perimeter Specification dialog. See *General Panel on page 912*.

Increasing the triangle count decreases triangle size, yielding more detailed contour lines and a better 3D approximation of the terrain. Smaller triangles demand longer terrain generation time and increased memory requirements. If you select a large number of small triangles for a large site, you may wait a long time for the calculation.

Decreasing the triangle count increases triangle size. Elevation lines are sampled less frequently, speeding up terrain generation. If you specify a small number of triangles for a plan with detailed elevation data, contour lines and 3D surfaces may not generate correctly.



When a large Terrain Perimeter is used, consider increasing the Triangle Count to help make sure all Elevation Data and Terrain Modifiers generate contours.

Elevation Data Tools



Select **Terrain> Elevation Data** to add elevation information to your terrain. These tools are only available when a Terrain Perimeter is present. See *Terrain Perimeter on page 899*.

When terrain is generated, this data is used to calculate the surface of your site and is represented by contour lines in plan view and a curved surface in 3D. See *Displaying Terrain on page 909*.

Elevation data can be specified using the **Elevation Point**  , **Elevation Line**  , **Elevation Spline**  , **Elevation Region**  , and **Terrain Break**  tools.

Elevation data can also be imported. See *Importing Elevation Data on page 928*.

The elevation of each Elevation Line, Spline, and Region is specified relative to sea level. See *Terrain Height vs Floor Height on page 899*.

In order to create rising and/or falling terrain, multiple terrain data objects with different elevation values must be used. If only one terrain data object is placed, the terrain will be flat regardless of the object's specified elevation.



To avoid unexpected results, do not draw Elevation Data objects with different elevation information at the same location.

Place Terrain Elevation Reference Point



The **Place Terrain Elevation Reference Point** edit tool allows you to manually position the Terrain Elevation Reference Point using an edit handle when the terrain is selected in plan view. See *Terrain Height vs Floor Height on page 899*.



The **Remove Terrain Elevation Reference Point** edit tool allows you to remove the manually editable Terrain Elevation Reference Point.

Elevation Points

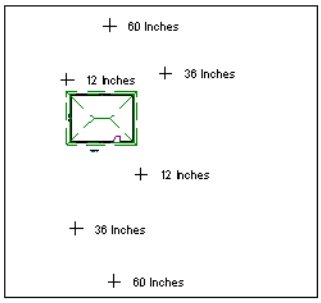


An **Elevation Point** contains the absolute elevation data for one point in the terrain model. Typically, Elevation Points are imported rather than placed manually.

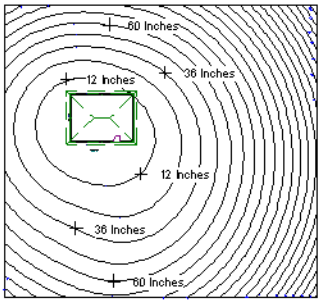
Home Designer requires many points to make an accurate approximation of your site. Even small sites may require over a hundred points to generate an accurate model of the terrain if it is sloped. For the sake of illustration, the following example shows only a few elevation points.

To place an elevation point

1. Select **Terrain> Elevation Data> Elevation Point** and click in plan view at the point where you would like to place elevation data. See *Place Point on page 227*.
2. The Elevation Point Specification dialog opens. Enter an elevation value and click **OK**. See *Elevation Point Specification Dialog on page 915*.
3. Click somewhere else in plan view and the Elevation Point Specification dialog opens again with the last elevation value entered.



4. Repeat steps 1, 2 and 3 to place additional elevation points with varied elevation values as needed.
5. Select **Terrain> Build Terrain**. See *Building the Terrain on page 909*.



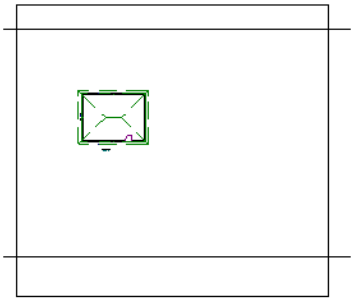
Elevation Points are most effective when they are imported. When adding elevation data manually, use Elevation Lines and Splines instead. See *Importing Elevation Data on page 928*.

Elevation Lines

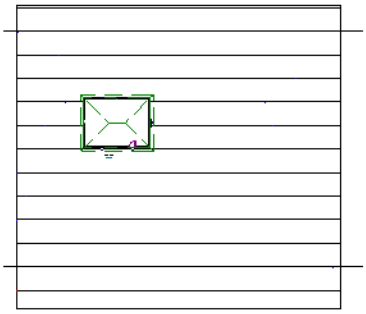
An **Elevation Line** contains absolute elevation data for many points along a line at a constant elevation. Elevation lines can be connected to create a polyline with many straight sections. For the sake of illustration, the images in the following example show single-section elevation lines.

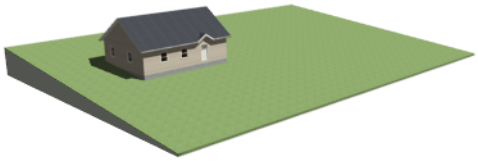
To draw an elevation line

1. Select **Terrain> Elevation Data**> **Elevation Line**, then click and drag a line inside the Terrain Perimeter in plan view.
2. Click on the elevation line to select it, then click the **Open Object** edit button.
3. At first, an elevation line is at elevation 0' - 0". In the Elevation Line Specification dialog, specify the desired elevation and click OK. See *Elevation Line/Region Specification Dialog on page 916*.
4. Repeat steps 2 and 3 to draw additional elevation lines as needed.



5. Select **Terrain> Build Terrain** . See *Building the Terrain on page 909*.





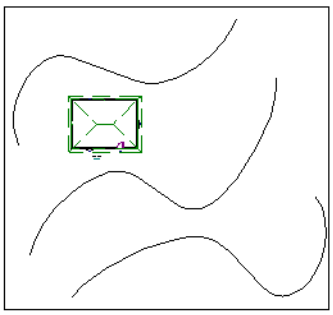
After it is drawn, an Elevation Line can be edited much the way other line-based objects can. See *Editing Line-Based Objects on page 187*.

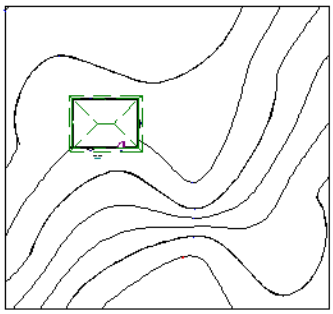
Elevation Splines

Elevation Splines can be used to form complex curves and shapes. Like elevation lines, elevation splines contain absolute elevation data for many points along a constant elevation.

To place an elevation spline, select **Terrain> Elevation Data> Elevation Spline** and click and drag multiple sections in plan view. See *Splines on page 249*.

Elevation splines are initially placed at elevation 0' - 0"and must be opened and assigned an elevation. See *Elevation Line/Region Specification Dialog on page 916*.





After it is drawn, an Elevation Spline can be edited much the way other spline-based objects can. See *Editing Spline-Based Objects on page 202*.

Elevation Regions

An **Elevation Region** contains absolute elevation data for an enclosed region and is ideal for creating a flat surface in your terrain.

To create an elevation region

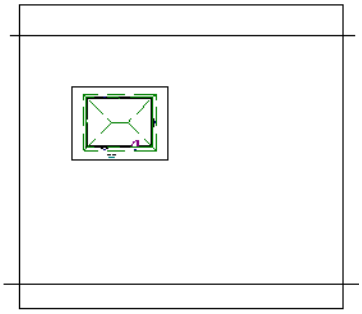
1. Select **Terrain> Elevation Data> Elevation Region** .
2. There are two ways to add an Elevation Region to your plan:
   - Click once to place an 8’ (0.6 m) square feature at that location.
   - Click and drag from end-to-end to draw a feature sized as needed. See *Rectangular Polyline on page 247*.
3. Click on the region to select it, then click the **Open Object** edit button.
4. At first, an elevation line is at elevation 0' - 0". In the Elevation Region Specification dialog, specify the desired elevation and click OK. See *Elevation Line/Region Specification Dialog on page 916*.

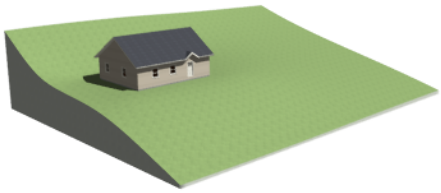
- Click once to place an 8’ (0.6 m) square feature at that location.
- Click and drag from end-to-end to draw a feature sized as needed. See *Rectangular Polyline on page 247*.

1. Click on the region to select it, then click the **Open Object** edit button.
2. At first, an elevation line is at elevation 0' - 0". In the Elevation Region Specification dialog, specify the desired elevation and click OK. See *Elevation Line/Region Specification Dialog on page 916*.

After it is drawn, and Elevation Region can be reshaped much the way other closed polyline-based objects can. See *Editing Closed Polyline-Based Objects on page 197*.

An **Elevation Region** can also be created by drawing a closed polyline using **Elevation Lines** .



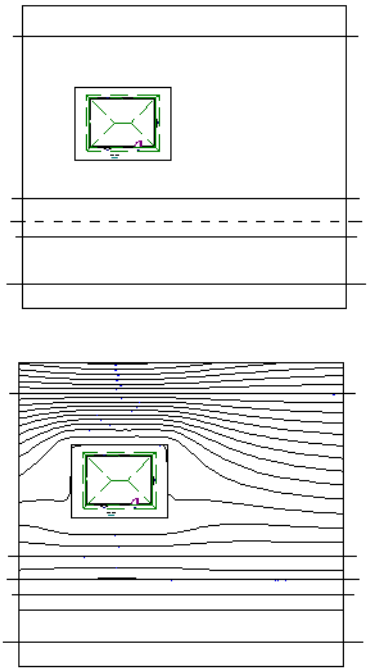


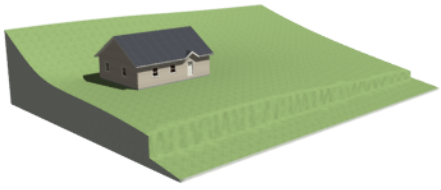
Terrain Breaks

A **Terrain Break** creates a division along the terrain surface that affects terrain generation. Elevation data on one side of the terrain break does not affect the terrain generation on the other side, allowing you to create immediate drops in terrain.

To place a Terrain Break, select **Terrain> Elevation Data> Terrain Break** and click and drag a line in plan view.

- If the Terrain Break divides the Terrain Perimeter into two separate pieces, the terrain data on either side is calculated independently and smoothed separately, resulting in sharp terrain contours.
- If the Terrain Break does not extend completely from one side of the Terrain Perimeter to the other, the areas near each end of the Terrain Break are blended.





The **Retaining Wall** tool creates a similar effect by drawing a Terrain Break as well as a retaining wall that rests against the break. By default, the top height of the retaining wall matches the terrain on the high side of the break and the bottom matches the low side. See *Terrain Wall and Curb Tools on page 908*.

Terrain Features

Terrain Features are useful for creating landscaping features that follow the contours of the terrain and have a specified height, thickness, and material. Terrain Features can, for example, be used to create paths and planting beds with gravel or mulch materials that stand out in a grassy Terrain Perimeter.

Terrain Features can be drawn in both plan and camera views, but only when a Terrain Perimeter is present. Although they can be drawn beyond the extents of the terrain, in 3D views they only display within it. See *Displaying Terrain on page 909*.

Terrain Features can be drawn in either of two ways: click-to-create and clicking and dragging. See *Creating Objects on page 145*.

Terrain Features can also be converted from closed 2D CAD polylines or splines using the **Convert Polyline** edit tool. See *Convert Polyline on page 211*.

Once created, Terrain Features can be edited into nearly any shape you need. See *Editing Closed Polyline-Based Objects on page 197* and *Editing Spline-Based Objects on page 202*.

You can specify a Terrain Feature's material and height in its specification dialog. See *Terrain Feature Specification Dialogs on page 918*.

Terrain Feature Types

There are different types of Terrain Feature tool, all accessible in the Terrain menu. Each is designed to efficiently draw specific types of features:

The **Terrain Feature Tools** create general-purpose features with a concrete material. Terrain Holes are a special Terrain Feature that create a hole in the terrain rather than apply a material over it.

The **Garden Bed Tools** place features with a surface material and height typical of planting beds. In addition, you can choose to distribute copies of a plant image within a Garden Bed. See *Terrain Feature Specification Dialogs on page 918*.

The **Grass Region Tools** create regions of realistic generated 3D grass. See *Grass Region Specification Dialog on page 919*.

The **Water Feature Tools** create ponds and streams with material and height attributes typical of bodies of water. While Ponds are Terrain Features, Streams are a special type of Terrain Curb with a water material. See *Terrain Wall and Curb Tools on page 908*.

The **Stepping Stone Tools** can be used to create a walkway made of individual stepping stones with material and height attributes typical of walking paths.

Polyline Features

Most Terrain Feature parent tools have a Polyline Feature child tool that creates rectangular-shaped polyline features that can then be edited into a wide variety of shapes. Polyline Features created with a single click initially measure 10' (4 m) per side. See *Editing Closed Polyline-Based Objects on page 197*.

Rectangular Feature

Terrain Hole

Polyline Garden Bed

Polyline Grass Region

Polyline Stepping Stone

Round Features

All Terrain Feature parent tools have a Round Feature child tool that creates spline-based features that are roughly circular in shape with smoothly curved corners. Round Features created with a single click are initially about 150 square feet (13.6 square meters). See *Editing Spline-Based Objects on page 202*.

Round Feature

Round Garden Bed

Round Grass Region

Round Pond

Round Stepping Stone

Kidney Shaped Features

Most Terrain Feature parent tools have a Kidney Shaped Feature child tool that creates spline-shaped features with smoothly curved corners and a right angle bend in their shape. Kidney Shaped Features created with a single click are initially about 67 square feet (6 square meters). See *Editing Spline-Based Objects on page 202*.

Kidney Shaped Feature

Kidney Shaped Garden Bed

Kidney Shaped Grass Region

Kidney Shaped Pond

Terrain Holes

By default, the program automatically cuts a hole in the terrain around any structures located within and on the same floor as the Terrain Perimeter. The shape of these holes follow the exterior surfaces of the walls and will automatically update if any of those walls are moved.

A **Terrain Hole** is a Terrain Feature that cuts a hole in the terrain and is useful for manually clipping the terrain around a foundation that does not match the footprint of the first floor. Using this tool is the same as creating a Terrain Feature and checking **Make Hole** in the Terrain Feature Specification dialog. See *Terrain Feature Specification Dialogs on page 918*.

Terrain Wall and Curb Tools



Select **Terrain> Terrain Wall and Curb** to draw landscaping walls and curbs that follow the contours of the terrain. These tools are only available when a Terrain Perimeter is present. See *Terrain Perimeter on page 899*.

Straight and curved Terrain Walls and Curbs are drawn just as other walls are. See *Creating Walls on page 267*.

Terrain Walls and Curbs are examples of Terrain Paths. Other examples include Sidewalks and Streams. See *Terrain Path Specification Dialog on page 926*.

Terrain Walls



Use the **Straight Terrain Wall** tool to draw a wall that sits on top of and follows the terrain.



Use the **Spline Terrain Wall** to draw a curved terrain wall. This wall is drawn the same way as a CAD Spline. See *Splines on page 249*.

Once drawn, a Terrain Wall can be like other line-based objects. See *Editing Line-Based Objects on page 187* and *Editing Spline-Based Objects on page 202*.

Terrain walls are 5’ (1500 mm) high and concrete by default, but you can specify the material, height and more in the Terrain Path Specification. See *Terrain Path Specification Dialog on page 926*.

Retaining Walls

The **Retaining Wall** tools function similarly to Terrain Breaks, but include a wall. See *Terrain Breaks on page 905*.



Use the **Straight Retaining Wall** tool draws a straight wall that holds back sloped terrain.



Use the **Curved Retaining Wall** tool to draw a curved retaining wall.

A Retaining Wall’s height is determined by the elevation of the terrain on each side. By default, the height of the wall matches the terrain on the high side of the break and the bottom matches the low side. If you insert a Retaining Wall into flat terrain, it looks like a concrete strip in 3D views.

Once drawn, a Retaining Wall can be edited much like other walls. See *Editing Walls on page 277*.

Terrain Curbs

Terrain Curbs are useful for creating curbs around planting beds and along paths.



Use the **Straight Terrain Curb** tool to draw a straight landscaping curb.



Use the **Spline Terrain Curb** tool to draw a curved landscaping curb. This curb is drawn the same way as a CAD Spline. See *Splines on page 249*.

Once drawn, a Terrain Curb can be like other line- and spline-based objects. See *Editing Line-Based Objects on page 187* and *Editing Spline-Based Objects on page 202*.

You can specify the height of straight and spline terrain curbs on the GENERAL panel of the Terrain Path Specification. See *Terrain Path Specification Dialog on page 926*.



You can also add Fencing to your terrain, complete with gates from the Doors Library. See *Fencing Tools on page 261*.

Streams



Streams are a special type of spline-based Terrain Curb with a water material. Select **Terrain> Water Feature>** to access the **Stream** tool. See *Terrain Features on page 906*.

Streams follow the contours of the terrain, so for best results try to draw them so they follow a downhill course for their entire length.

Terrain Objects in the Library



The Library Browser contains a variety of objects that can be placed in a plan's terrain, including plants, exterior fixtures, accessories and roadway objects. See *The Library Browser on page 705*.

Displaying Terrain



The display of terrain objects in 2D and 3D views is controlled in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

In Plan View

Like other objects, terrain objects are placed in Drawing Groups that affect whether they display in front of or behind other objects. You can modify a selected object's place in the drawing order by clicking the **View Drawing Group Edit Tools**  edit button. See *Drawing Group Edit Tools on page 156*.

You can customize appearance of Terrain Features, Roads, and other terrain objects in plan view by changing their line and fill styles. See *Line Style Panel on page 234* and *Fill Styles on page 159*.

Plant images are represented in plan view by 2D CAD symbols. You can select a plant's symbol in the Plant Image Specification dialog. See *Image Panel on page 943*.

Building the Terrain



When terrain is generated, Home Designer gathers all elevation data that has been added to the model and creates a terrain surface. The program interpolates the data to produce smooth contours.

A Terrain Perimeter with no additional elevation data drawn within it generates terrain that is flat at the elevation 0' - 0", or sea level.

By default, the terrain is automatically built before a 3D view is generated and when a Sun Shadow is created. This process takes a variable amount of time, depending on the amount of elevation data and number of terrain features in the plan. The Building Terrain progress dialog displays as terrain is generated, sometimes only briefly, indicating the progress.

You can turn off **Auto Rebuild Terrain** in the Terrain Specification dialog as well as in the Sun Angle Specification dialog, and rebuild the terrain manually only when needed by selecting **Terrain> Build Terrain**  . When **Auto Rebuild Terrain** is turned off and the terrain is not up-to-date, the Build Terrain  icon displays near your mouse pointer. See *Terrain Specification Dialog on page 911* and *Earth Data Panel on page 832*.

Contour Lines

When elevation data has been drawn or imported into a plan, contour lines will display in plan views. See *Elevation Data Tools on page 901*.

Home Designer can produce both primary and secondary contours. They are on two different layers so you can control their display separately. Contour line labels use the Text Styles assigned to the “Terrain, Primary Contours” and “Terrain, Secondary Contours” layers.

By default, all contour lines are set to be primary, but you can specify secondary contours, frequency and other attributes of contour lines in the Terrain Specification dialog. See *Contours Panel on page 914*.

In 3D Views

In order for objects such as Terrain Features and Roads to be visible in 3D views, they must be drawn within the Terrain Perimeter. Any portions of these objects drawn outside the Terrain Perimeter will not be seen in 3D views. See *Terrain Features on page 906*.

A variety of tools are available to help you adjust the perspective of your 3D views. See *Editing 3D Views on page 797*.

Terrain and 3D Drawing Time

Terrain is typically large with many surface triangles, which often increases the drawing time of 3D views. The time required is affected by the quality of the terrain, the amount of elevation data and number of terrain features present. For information about surface triangles and how they influence terrain quality, see *General Panel on page 912*.

Lights and symbols can be placed outdoors and included in 3D views when the terrain is generated. These objects can also contribute to the time needed to generate 3D views. See *Rendering Tips on page 817*.

Editing Terrain Objects

Before a terrain object can be edited, it must be selected. All terrain objects can be selected in plan view. In addition, the Terrain Perimeter and Terrain Features can be selected in 3D views. See *Selecting Objects on page 183*.

A selected terrain object can be edited using its edit handles, edit tools and specification dialog. See *Specification Dialogs on page 20*.

Any time elevation data is changed, the terrain must be rebuilt. This can be done by selecting **Terrain> Build Terrain**  , and occurs automatically when a 3D view is created.

Using the Edit Handles

Terrain objects can be moved, resized, and reshaped using their edit handles. How a selected object can be edited depends on what type of object it is. See *Editing Objects on page 179*.

- The Terrain Perimeter can be moved, resized, and reshaped like a polyline-based objects.
- Elevation Points can be moved in plan view using the Move edit handle.
- **Elevation Lines**, **Elevation Splines** and **Terrain Breaks** are edited like other line- and spline-based objects.
- Terrain Features are edited like other spline- and polyline-based objects.

Using the Edit Tools

A selected terrain object can be edited in a variety of ways using the buttons on the Edit Toolbar. The edit tools available for a terrain object depends on the type of object selected. See *The Edit Toolbar on page 122*.

> Note: If you copy terrain objects from one plan to another, you cannot view the pasted objects in 3D unless a Terrain Perimeter exists.

Using Dimensions



Like many other types of objects, terrain objects can be resized and moved using dimensions. For more information see *Moving Objects Using Dimensions on page 361*.

Terrain Specification Dialog

The Terrain Specification dialog controls how your terrain is modeled, as well as its appearance. It can be accessed in any of three ways:



Select **Terrain> Terrain Specification**;

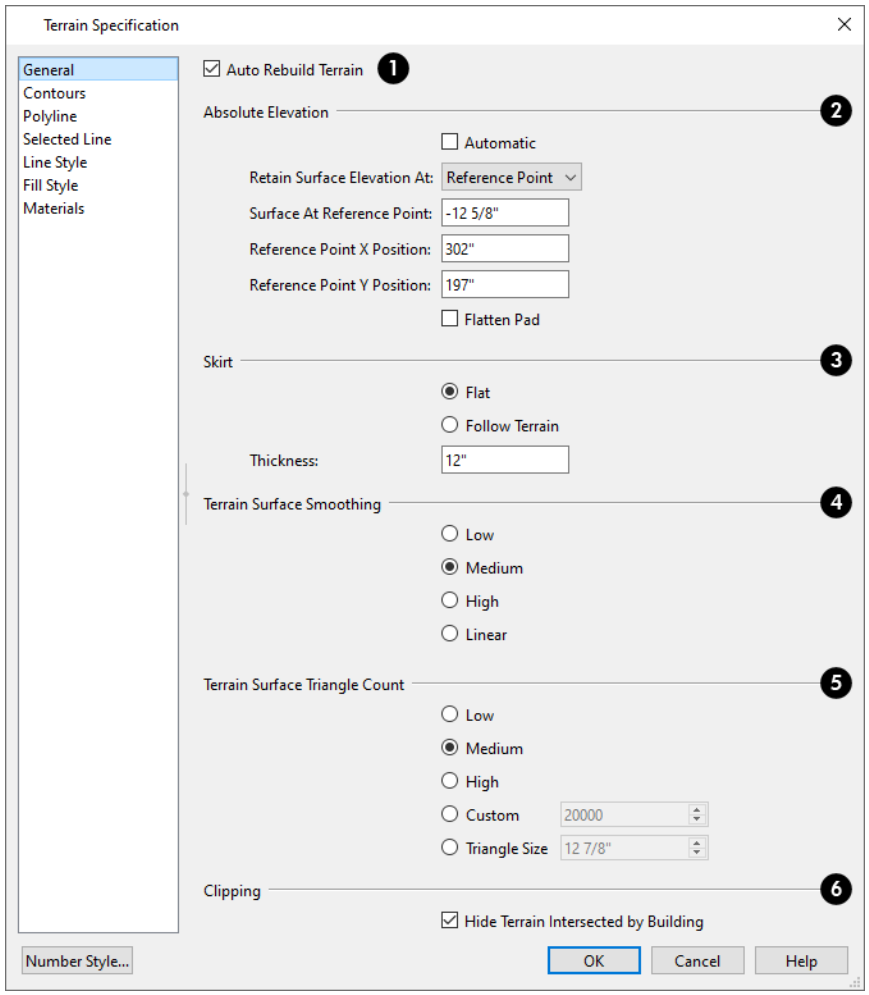


Select the Terrain Perimeter and click the **Open Object** edit button;



Double-click the Terrain Perimeter using the **Select Objects** tool.

General Panel



1 Auto Rebuild Terrain

Check this box to automatically rebuild terrain to reflect recent changes before generating a 3D view or a Sun Shadow. If this option is unchecked and the terrain is not up-to-date, the Rebuild Terrain icon displays near your mouse pointer. See *Building the Terrain on page 909*.

2 Absolute Elevation

Specify the height distance between the terrain and Floor 1 of the structure within it. See *Foundations and the Terrain on page 525*.

- When **Automatic** is checked, Home Designer automatically lower the terrain relative to Floor 1. See *Terrain Height vs Floor Height on page 899*. Uncheck this box so you can specify the distance between Floor 1 and the terrain manually using the settings below:
- The **Retain Surface Elevation At** setting allows you to choose where the difference in height between the subfloor for Floor 1 and the terrain below it is measured from:
  - "Reference Point" refers to the Terrain Elevation Reference Point, which you can position to meet your needs and is independent of the terrain Elevation data in the current plan.

    - "Contour 0" refers to the height of the terrain where its Elevation is 0, regardless of where this occurs or what the elevation is at the location of the structure.
- The **Surface At** setting labels vary depending on which Retain Surface Elevation At option is selected above. In most case, this should be a negative value.
    - When "Reference Point" is selected above, specify the **Surface at Reference Point**, which the vertical distance between the default subfloor height for Floor 1 and surface of the terrain at the Reference Point.
    - When "Contour 0" is selected above, specify the Surface at Contour 0, which is the vertical distance between the default subfloor height for Floor 1 and the contour
- Specify the **X** and **Y Positions** of the Terrain Elevation Reference Point. See *3D Drafting on page 12*.
- Check **Flatten Pad** to flatten the area beneath the building and around its perimeter. For sloping terrain along the building perimeter, leave this box unchecked.

3 Skirt

Define the thickness of the **Skirt** added to the terrain. The skirt is only visible in 3D views and gives the viewer a sense of depth when viewing the terrain.

- **Flat** specifies that the skirt be flat at its base. Home Designer determines the lowest point in the terrain and then offsets this value by the user specified thickness value. The resulting value is used as a uniform elevation for the base of the skirt.
- **Follow Terrain** specifies that the skirt base maintains a consistent distance below the terrain. The distance is equivalent to the specified Thickness value.

4 Terrain Surface Smoothing

The **Terrain Surface Smoothing** settings control the amount of curvature applied to terrain edges.

- **Low** produces terrain that has sharp peaks and abrupt changes in slope, while **High** results in terrain that flows continuously from point to point but may take longer to generate.
- Select **Linear** to apply no smoothing to the Terrain. Instead, flat triangular surfaces are created between elevation points. This option is only recommended when large amounts of closely spaced elevation data is present.

5 Triangle Count

Specify the number of surface triangles used to generate the terrain in 3D views. A lower count value will generate more quickly but have reduced quality.

- Specify a **Custom** triangle count value.
- Specify the maximum **Triangle Size** in the terrain surface. Smaller triangles produce better quality results in 3D but take longer to generate.

Home Designer builds 3D terrain surfaces by splitting them into triangles. See *Terrain Surface Triangles on page 900*.

Triangles are computed roughly as follows:

Size of Triangle = Area of Terrain Perimeter / Number of Triangles

The Low (1000), Medium (2000), and High (4000) values work well for a Terrain Perimeter of approximately 20,000 sq ft (1858 m²). If your Terrain Perimeter varies greatly from this, consider defining the number of triangles using the **Custom** setting or the **Triangle Size** setting.

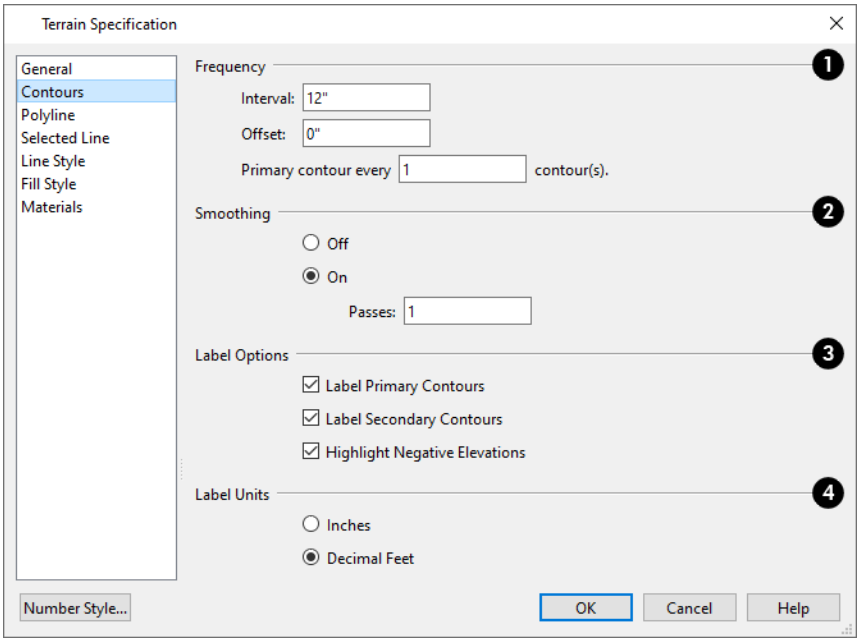
6 Clipping

Check **Hide Terrain Intersected by Building** to cut out the portion of the terrain that is intersected by the first floor footprint. Checking this box prevents the generation of contour lines inside the house.

If your foundation footprint differs from your first floor footprint, you may need to use the **Terrain Hole** tool for custom clipping instead. See *Terrain Features on page 906*.

Contours Panel

Home Designer identifies two types of contour lines: Primary and Secondary. They are drawn on different layers, so you can control how they display in plan view. See *Contour Lines on page 910*.



1 Frequency

Specify the **Frequency** at which contour lines are generated.

- Define the **Interval** between contour lines, which is the change in elevation between contours. If the interval is set to 12”, a contour line is computed for each elevation change of 12”.
- Specify the **Offset** value. When the Offset is 0, a contour line will be drawn at zero elevation and additional contours will generate based on the Interval value. If the Offset is changed to 5, a contour line will be drawn 5 units from zero elevation rather than at 0, and additional contours will generate from there.
- **Primary contour every__contours** - Specify the interval for primary contours. A value of 1 produces only primary contours, while a value of 5 defines every fifth contour line as a primary contour.

2 Smoothing

If contour **Smoothing** is turned on, Home Designer attempts to remove sharp bends and jagged sections from the 2D contour lines.

- Specify the number of **Passes** to perform when smoothing. The more passes, the smoother the contour lines become, but contours become less accurate.

3 Label Options

Control the display of **Contour Labels** in plan view.

- Check **Label Primary Contours** to label primary contour lines with their elevation data using the Units specified below.

- Check **Label Secondary Contours** to label secondary contour lines with their elevation data.
- Check **Highlight Negative Elevations** to display labels of contour lines with elevations below 0 in red. When unchecked, they use the color set in the Text Style assigned to their layer.

> Primary and secondary contour line labels use the Text Style assigned to their respective layers. See *Text Styles on page 390*.

4 Label Units

Specify the **Label Units** used by contour labels. Select either **Inches** or **Decimal Feet** (**Millimeters** or **Meters** for metric).

Polyline Panel

The Polyline panel reports the length of the Terrain Perimeter's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Terrain Perimeter in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Terrain Perimeter in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

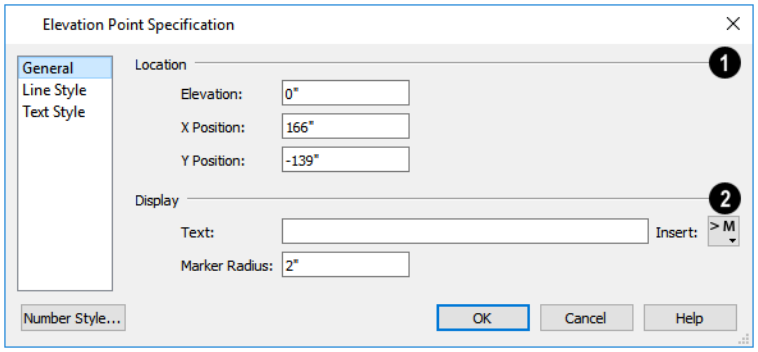
The settings on the Materials panel let you specify the terrain surface and terrain skirt materials used in 3D views. These materials are not calculated in the Materials List. See *Materials Panel on page 760*.

Elevation Point Specification Dialog

To open the Elevation Point Specification dialog, select an Elevation Point and click the **Open Object** edit button, or double-click on an Elevation Point using the **Select Objects** tool.

Use the Elevation Point Specification dialog to define the selected Elevation Point and control its appearance in plan view.

General Panel



1 Location

Specify the exact location of the Elevation Point.

- Specify the **Elevation** of the selected Elevation Point.

> Click the Number Style button to specify the units of measurement used in this and other dialogs. See *Dialog Number/Angle Style Dialog on page 119*.

- **X Position** - Enter the X coordinate of the Elevation Point.
- **Y Position** - Enter the Y coordinate of the Elevation Point.

2 Display

- In the **Text** field, type any notes that you would like to display beside the selected Elevation Point in plan view.
- Enter the **Marker Radius**, which is the size of the point marker, measured from the center to an edge.

Line Style Panel

The settings on the Line Style panel affect the appearance of the selected Elevation Point. See *Line Style Panel on page 234*.

Text Style Panel

The settings on the Text Style panel control the appearance of the selected Elevation Point's text. See *Text Style Panel on page 392*.

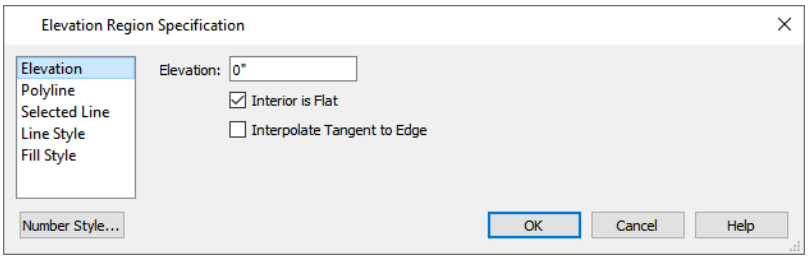
Elevation Line/Region Specification Dialog

To open the Elevation Line or Elevation Region Specification dialog, select an Elevation Line, Spline, a polyline composed of Elevation Lines or Splines, or an Elevation Region and click the **Open Object** edit button. You can also double-click an Elevation Line/Spline using the **Select Objects** tool.

The Elevation Line Specification dialog is used to define the selected Elevation Line /Spline and controls its appearance in plan view.

The settings in this dialog are the same as those in the Elevation Region Specification dialog. See *Elevation Regions on page 904*.

Elevation Panel



- Specify the **Elevation** of the selected Elevation Line, Spline, or Polyline.

> Click the Number Style button to specify the units of measurement used in this and other dialogs. See *Dialog Number/Angle Style Dialog on page 119*.

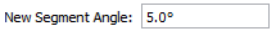
- Check **Interior is Flat** to maintain a flat surface at the specified Elevation. When unchecked, the perimeter of the region maintains the specified Elevation, but the interior elevation may vary depending on other elevation data in the drawing. Only available for closed Elevation Regions.
- Check **Interpolate Tangent to Edge** to flatten the terrain surface as it approaches the edges of the Elevation Region. This option is only available for closed Elevation Regions, and only when Interior is Flat is unchecked.

Polyline Panel

The Polyline panel states the **Length** of an open polyline or the **Perimeter** of a closed polyline. If multiple Elevation Line /Spline segments form a closed Elevation Region, its Area will be calculated. Elevation Lines /Splines do not have a thickness, so they have no Volume.

Spline Panel

The Spline panel has a single option and is only available when the selected object is an Elevation Spline. See *Splines on page 249*.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected 360 Panorama. See *Line Style Panel on page 234*.

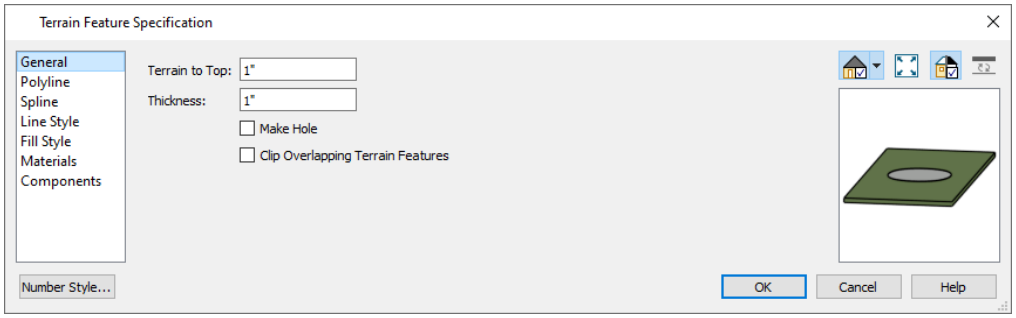
Terrain Feature Specification Dialogs

To open the Terrain Feature Specification dialog, select one or more Terrain Features and click the **Open Object** edit button, or double-click on a Terrain Feature using the **Select Objects** tool. A number of related objects including Ponds, Stepping Stones, Driveways, and Parking Lots use this same specification dialog. See *Terrain Features on page 906*.

Garden Beds are also a type of Terrain Feature and have an additional Distributed Plant panel in their Garden Bed Specification dialog.

The panels that are available in the Terrain Feature Specification dialogs will vary, depending on the type of Terrain Feature that is selected.

General Panel



- Specify the **Terrain to Top** value, which is the distance from the top surface of the terrain to that of the terrain feature. If this value is a negative number, the feature sinks into the terrain.
- Specify the feature's **Thickness**.
- Check **Make Hole** to specify the selected Terrain Feature as a Terrain Hole. See *Terrain Holes on page 907*.
- Check **Clip Overlapping Terrain Features** to suppress the 3D display of any part of the selected Terrain Feature intersected by other Terrain Features with a lower Terrain to Top value. Clipping is useful for creating features that contain other features such as planters or swimming pools.

Distributed Plant Panel

This panel is only available when the selected Terrain Feature is a Garden Bed. See *Distributed Plant Panel on page 922*.

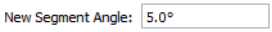
The settings on the Distributed Plant panel allow you to select a plant to distribute throughout the selected Garden Bed as well as customize its spacing and other attributes.

Polyline Panel

The Polyline panel reports the length of the selected Terrain Feature's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See *Splines on page 249*.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. A larger angle may allow large objects to draw faster.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Terrain Feature in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Terrain Feature in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Terrain Feature in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

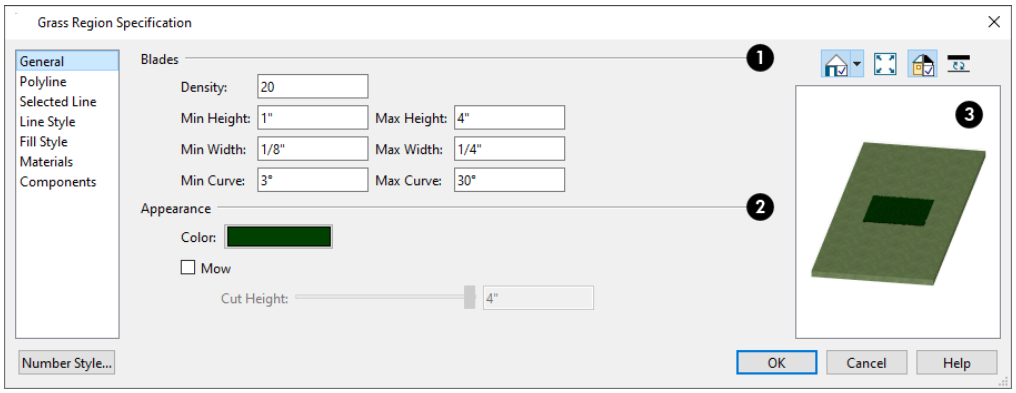
Grass Region Specification Dialog

To open the Grass Region Specification dialog, select one or more Grass Regions and click the **Open Object** edit button, or double-click a Grass Region using the **Select Objects** tool. See *Terrain Features on page 906*.

The settings in this dialog are similar to those in the Grass Region Defaults dialog.

Most of the panels in this dialog are similar to those for a variety of other objects in the program.

General Panel



1 Blades

Specify the physical attributes of the selected region's blades of grass.

- Specify the **Density** value, which controls how closely the blades of grass are to one another.
- Specify the grass blades' **Minimum** and **Maximum Height**.
- Specify the grass blades' **Minimum** and **Maximum Width**.
- Specify the grass blades' **Minimum** and **Maximum Curve**. A value of 0° produces grass blades that are completely straight.

2 Appearance

- Specify the **Color** values, which are the colors assigned to the grass blades.
- Specify the **Noise Frequency**, which is the amount of speckled light reflected off the grass blades.
- Specify the **Roughness** of the grass blades. Adjusting this value can also affect the appearance of lighting noise in some scenes.
  - Check **Mow** to clip the pointed ends of the tallest grass blades so they have a straight top edge and enable the settings that follow:
  - Specify the grass blades' **Cut Height**, which is the height at which the tallest blades are clipped.
  - Specify the **Mow Line Intensity**, which is the degree to which all grass blades are cut to the Cut Height.
  - Specify the **Mow Line Width**, which defines the variance in height that grass blades may have.
  - Specify the **Mow Line Angle**, which is the cut angle on the blades of grass.

3 Preview

A preview of the selected Grass Region displays on the right side of the panel. The Vector View Rendering Techniques is not available for Grass Regions. See *Dialog Preview Panes on page 21*.

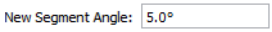
Polyline Panel

The Polyline panel reports the length of the selected Grass Region's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Grass Regions do not have thickness, so their Volume is always 0.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See *Splines on page 249*.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. A larger angle may allow large objects to draw faster.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Grass Region in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Grass Region in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Grass Region in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Labels for Grass Region display when the “Terrain Labels” layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Unlike other Terrain Features, Grass Region do not have side surfaces, so their labels do not display in cross section/elevation views. See *Displaying Terrain on page 909*.

The Automatic Label for Material Regions is blank, but you can specify a custom label if you wish. See *Object Labels on page 394*.

Components Panel

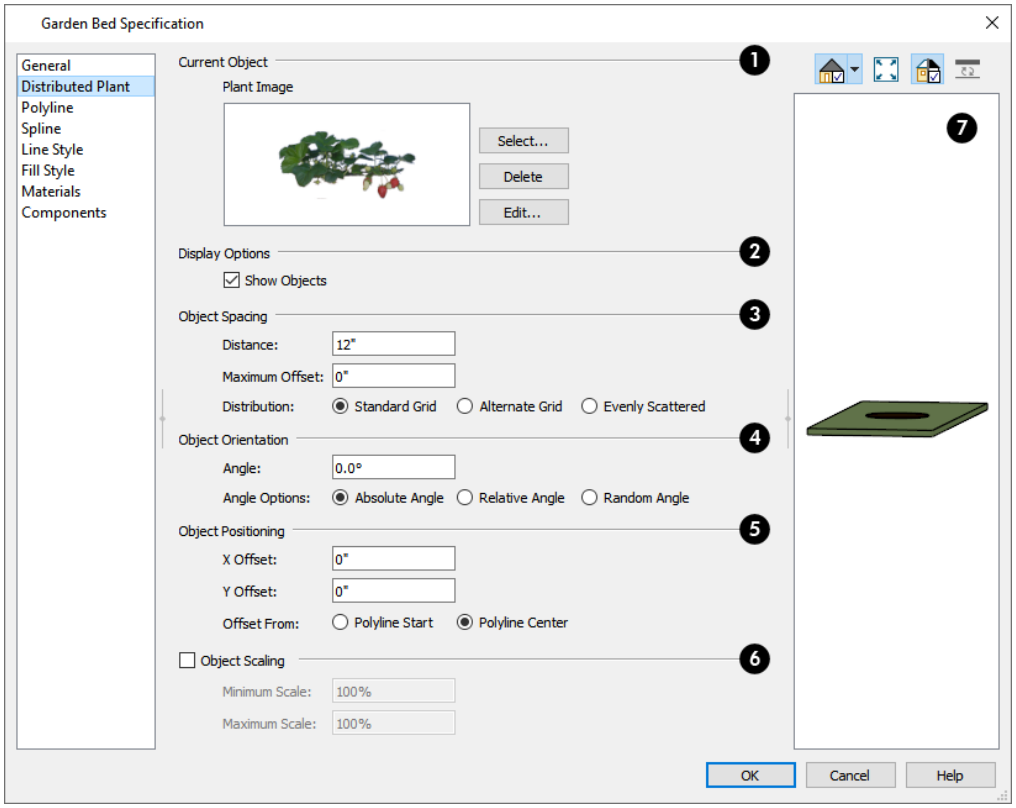
The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

The information on the Components panel can be used in the materials list. For more information, see *Components Panel on page 967*.

Garden Bed Specification Dialog

Select a Garden Bed and click the **Open Object** edit button to open the Garden Bed Specification dialog. This dialog is similar to the Terrain Feature Specification dialog; however, the DISTRIBUTED PLANT panel is unique to Garden Beds. See *Terrain Feature Specification Dialogs on page 918*.

DISTRIBUTED PLANT PANEL



1 Selected Object

Specify object assigned to the selected region. When an object is assigned, its name and a preview of a single instance of it display here.

- Click the **Library** button to choose an object from the library. See *Select Library Object Dialog on page 729*.
- Click the **Delete** button to unassign the currently selected object from the selected region.
- Click the **Edit** button to open the Selected Object's specification dialog. Changes made here affect all objects generated within the region. See *Specification Dialogs on page 20*.

> You can replace the plant assigned to a Garden Bed by applying a new one directly from the library. See *Replace From Library on page 730*.

2 Display Options

- Check **Show Objects** to display the distributed objects in plan view.
- Check **Show Region** to display the distribution region outline in plan view.

3 Spacing

Specify how the objects distributed in the region are spaced.

- Specify the **Distance** between the objects in the region, as measured from their center points. When **Auto Spacing** is checked, this setting is automatically populated by a value that is 10% greater than the larger of either the object's Height or Width.
- Objects in the region can be randomly offset from their default positions if you wish. Specify their **Maximum Offset**, measured from their center points. Not available when Evenly Scattered is selected, below.
- Specify the style of **Distribution**:
  - Select **Standard Grid** to position the objects in rows and columns based on the standard X/Y grid in the program. This grid is affected by **Rotate Plan View**. See *Rotate Plan View on page 132*.
  - Select **Alternate Grid** to position the objects in rows and columns based on the shape of the region.
  - Select **Evenly Scattered** to distribute the objects evenly but not on a grid layout.

4 Orientation

Specify how or if the objects in the region are rotated. These settings do not affect the region itself or its edges.

- Specify the **Angle** that the distributed objects should be placed at.
- **Angle Options**:
  - Select **Absolute Angle** to rotate the objects relative to an imaginary horizontal line drawn in the positive X direction from the origin. See *3D Drafting on page 12*.
  - Select **Relative Angle** to rotate the objects relative to the angle of the region's first edge or, if that edge is curved, to the angle of its chord. The first edge is typically located at the top of the region when it is first created; however, this can change as the region is edited.
  - Select **Random Angle** to rotate the objects in the region at a variety of random angles.

5 Positioning

Specify the positioning of the distributed objects relative to a point of origin within the region.

- Specify the **X Offset**, the horizontal distance in plan view from the region's specified point of origin.
- Specify the **Y Offset**, the vertical distance in plan view from the region's specified point of origin.
- Select **Offset From Polyline Start** to measure the offset from the region's start point. This start point is typically located at the top left of the region when it is first created; however, this can change as the region is edited.
- Select **Offset From Polyline Center** to measure the offset from the region's center point.

6 Scaling

- Check **Scaling** to specify a range of size variation of the objects in the region.
  - Specify the **Minimum Scale**, which is the smallest resize of the objects allowed.
  - Specify the **Maximum Scale**, which is the largest resize of the objects allowed.

7 Preview

A preview of the region displays on the right side of the dialog box. If no object has been assigned to the selected region, Plan View will be the default preview type. See *Dialog Preview Panes on page 21*.

Polyline Panel

The Polyline panel reports the length of the selected Distribution Region/Path's Perimeter, its Area, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Distribution Regions and Paths do not have materials assigned to them or a thickness, so their Volume is always 0.

Spline Panel

The Spline panel has a single option and is only available when the selected object is spline-based. See *Splines on page 249*.

New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Distribution Region/Path in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Distribution Region/Path in plan view. See *Fill Style Panel and Dialogs on page 161*.

The Fill Style panel is not available for a selected Distribution Path unless it forms a closed shape.

Arrow Panel

The settings on the Arrow panel allow you to specify an arrow for a selected Distribution Path and control its appearance. See *Arrow Panel on page 252*.

The Arrow panel is not available for Distribution Regions and is only available for Distribution Paths that do not form a closed shape.

Label Panel

Distribution Region/Path labels display in plan view when the "Polylines 3D, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

The Automatic Label for Distribution Regions and Paths is blank, but you can specify a custom label if you wish. See *Object Labels on page 394*.

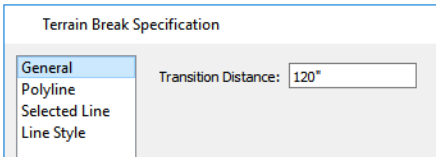
Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Terrain Break Specification Dialog

To open the Terrain Break Specification dialog, select a Terrain Break or group of Terrain Breaks and click the **Open Object** edit button or double-click the Terrain Break(s) using the **Select Objects** tool. See *Terrain Breaks on page 905*.

General Panel



- Define the **Transition Distance**, which is the distance from the edge of the terrain break to where the break stops affecting the terrain.

Polyline Panel

The Polyline panel reports states the Length of an open polyline or the Perimeter of a closed polyline as well as the Number of Lines that make up its length or perimeter. If multiple Terrain Break segments form a closed polyline, its Area will be calculated. Terrain Breaks do not have a thickness, so they have no Volume. See *Polyline Panel on page 245*.

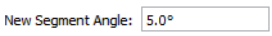
Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.
The Spline panel has a single option and is only available if the selected Terrain Break was converted to a Terrain Break from a CAD spline. See *Splines on page 249*.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. Specify a larger angle to draw the spline faster.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Terrain Break. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Terrain Break in plan view. See *Fill Style Panel and Dialogs on page 161*.

The Fill Style panel is only available when multiple Terrain Break segments form an enclosed area.

Terrain Path Specification Dialog

To open the Terrain Path Specification dialog, select one or more Sidewalks, Streams, Terrain Walls, or Terrain Curbs and click the **Open Object** edit button, or double-click the Terrain Path(s) using the **Select Objects** tool. See *Terrain Wall and Curb Tools on page 908*.

Most of the panels in this dialog are similar to those for a variety of other objects in the program.

General Panel



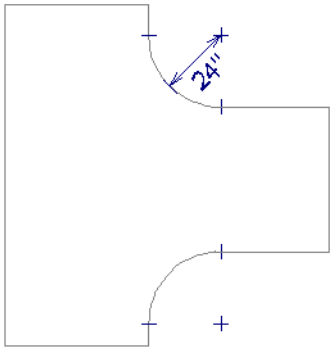
1 Size

- Specify the path's **Width**.
- Specify the **Terrain to Top** value, which is the distance from the top surface of the terrain to that of the path. If this value is a negative number, the object sinks into the terrain.
- Specify the path's **Thickness**.

2 Flare

When one Terrain Path joins another, you can flare the intersection.

- Check **Start** to create a flare at the starting end of the selected Terrain Path, then specify the **Radius** of that flare.
- Check **End** to create a flare at that end of the Terrain Path, then specify the Radius of that flare.



A 24" flare at the intersection of two Terrain Paths

3 Preview

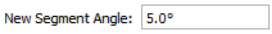
A preview of the selected Terrain Path displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Polyline Panel

The Polyline panel reports the length of the selected Terrain Path's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See *Splines on page 249*.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. A larger angle may allow large objects to draw faster.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Terrain Path in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Terrain Path in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Terrain Path in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Importing Elevation Data

Elevation data can be added to a plan using the tools and techniques described in this chapter or it can be imported from a file. See *Elevation Data Tools on page 901*.

Home Designer can import elevation data saved in DXF/DWG, GPS Exchange (**.gpx**) and a variety of text file formats (**.txt**, **.csv**, **.prn**, **.xyz**, **.auf** and **.nez**). If your terrain data is not saved in one of these file formats, there are third party programs available that can convert to these formats.

DXF/DWG Files

If you have a model of your terrain created on another program that contains contour lines and elevation data, that information can be imported directly as elevation data into Home Designer as a **.dxf** or a **.dwg** file. See *Importing DWG/DXF Elevation Data on page 932*.

Text Files

Elevation data can be saved in text files as x, y, and z coordinates where x and y define the location of a point on a Cartesian grid, and z defines the elevation for that point. Each data point must be on a separate line in the text file.

Importable text files can come from surveyors, other software programs, or you can create your own using a GPS system.

Elevation data saved in text files can be imported using the Import Terrain Assistant. See *Import Terrain Assistant on page 929*.

GPS Exchange Files

Elevation data in standard format **.gpx** files created using a GPS system can also be imported using the Import GPS Data Assistant. See *Import GPS Data Assistant on page 930*.

GPS data may include three types of points - Way, Track, and Route. Home Designer can only import a **.gpx** file if it includes one or more Way Points, and cannot use Route Points at all. If a **.gpx** file does not include any Way Points, it will not be imported, and if it includes any Route Points, they will be ignored.

Home Designer supports the import of data in standard **.gpx** files that adhere to the GPX 1.1 Schema. Files that do not follow this standard cannot be imported.

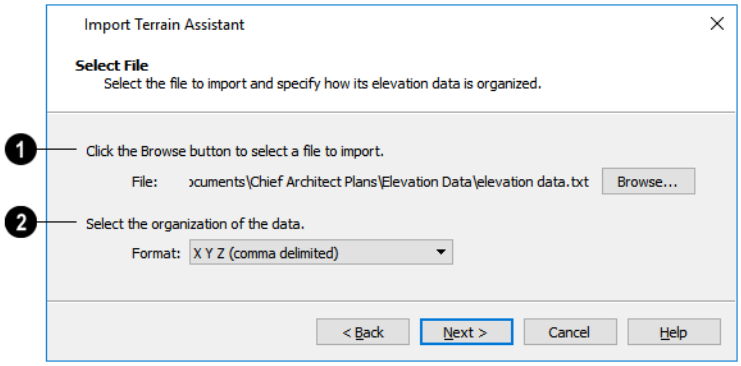
Import Terrain Assistant

The Import Terrain Assistant allows you to import elevation data saved in text (**.txt**) file format into a plan.

Each data point in this format has information about its X-axis (East to West location), Y-axis (North to South location), and Z-axis (elevation). It might also have a brief description. In order to import elevation data from a text file, you need to know how the data in the file is organized.

To launch the Import Terrain Assistant, select **File> Import> Terrain Data** . Click **Next**.

Select File



1 Select a file to import

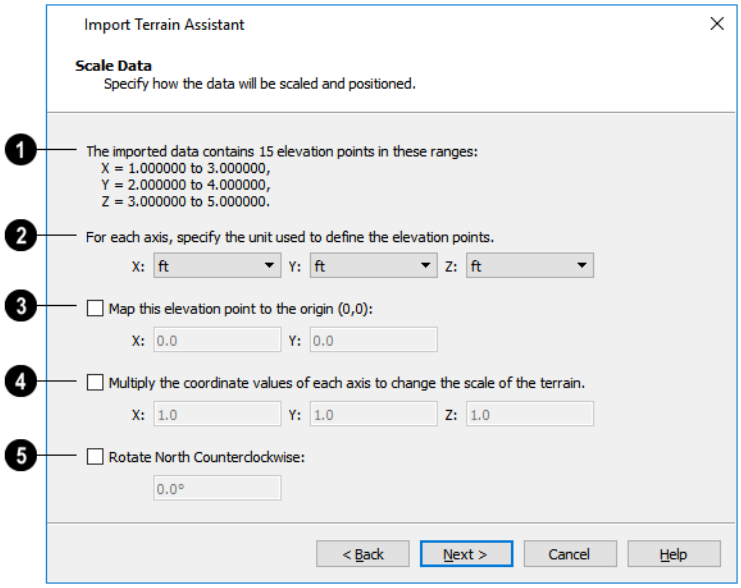
- Click the **Browse** button to locate a file on your computer. See *Importing Files on page 64*.
- If a file has been selected, its full file path displays here for reference; if a file has not been selected, the directory of the last file imported displays. If the file path is not that of a valid **.txt** file, this text will display in red.

2 Select the organization of the data

- Elevation information can be organized in one of six different ways, and can be separated by either a comma (comma delimited) or a space (space delimited).
- **XYZ** - Information in this format begins with the X coordinate, followed by the Y coordinate and the Z coordinate.
- **#XYZ** - Information in this format begins with a number that belongs to each data point followed by the X coordinate, the Y coordinate, and the Z coordinate.
- **#XYZ Description** - Information in this format begins with a number that belongs to each data point followed by the X coordinate, the Y coordinate, the Z coordinate, and a description.
- **YXZ** - Information in this format begins with the Y coordinate followed by the X coordinate and the Z coordinate.
- **#YXZ** - Information in this format begins with a number that belongs to each data point followed by the Y coordinate, the X coordinate, and the Z coordinate.
- **#YXZ Description** - Information in this format begins with a number that belongs to each data point followed by the Y coordinate, the X coordinate, the Z coordinate, and a description.

Click **Next** to continue.

Scale Data



1 Imported Data

- The total number of data points to be imported and the ranges of their coordinates are described here.

2 Units

- Select the **Units** of measurement used for each axis.

3 Map

- **Map** a data point in the file to the origin in Home Designer to position the terrain data relative to your plan. See *3D Drafting on page 12*.

4 Scale

- To change the scale of the terrain, multiply the coordinates of each axis by a specific number to decrease or increase the relative size or relief of your terrain.

5 Rotate North Counterclockwise

- Specify an amount to rotate the terrain data counterclockwise, or to the left.

Click **Next** to finish.

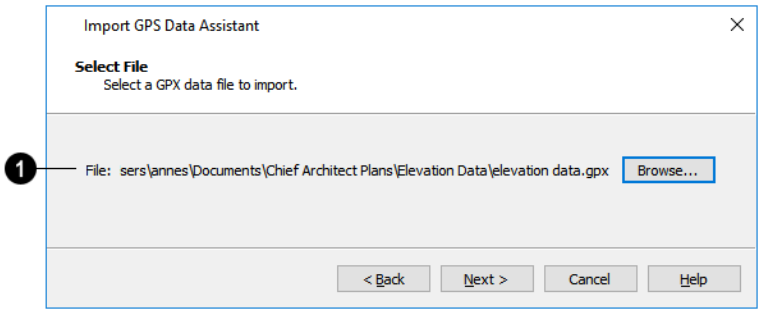
Import GPS Data Assistant

The Import GPS Data Assistant allows you to import terrain data from the standard **.gpx** file format. See *GPS Exchange Files on page 928*.

Select **File> Import> GPS Data** to open the Import GPS Data Assistant, then click **Next** to continue.

> Due to the lack of accuracy in some GPS systems, exact distances using the Import GPS Data Assistant are not guaranteed.

Select File



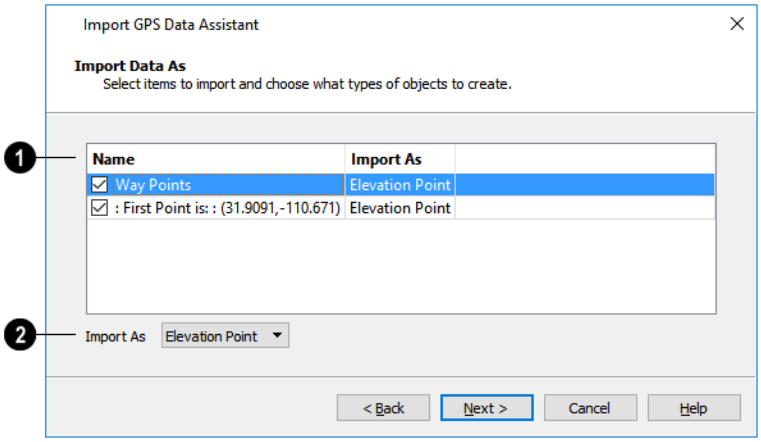
1 Select a file to import

- Click the **Browse** button to locate a **.gpx** file on your computer. See *Importing Files on page 64*.
- If a file has been selected, its full file path is reported here for reference; if a file has not been selected, the directory of the last file imported displays. If the file path is not that of a valid **.gpx** file, this text will display in red.

> Note: Not all GPS programs use the standard .gpx file format; however, only files using the standard format can be imported.

Click **Next** to continue.

Import Data As



1 Name

Specify which items you want to import by checking the box to the left of the **Name**. Items with unchecked boxes are not imported.

2 Import As

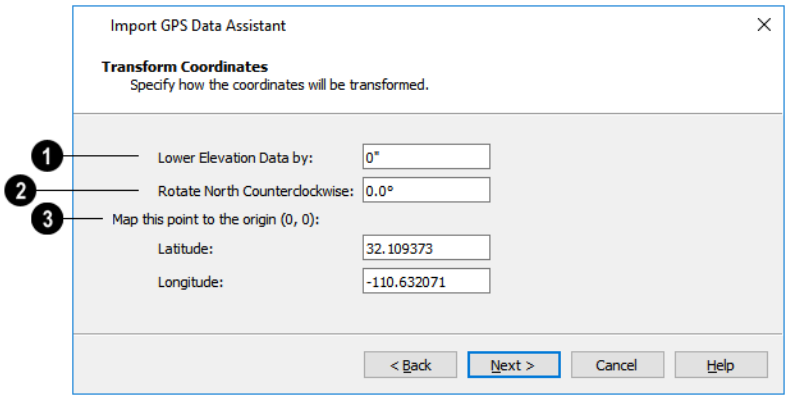
Specify what you would like the selected item to **Import As** from the drop-down list.

- Only Way Points have elevation data associated with them. To import this data, import them as “Elevation Points”.
- Select “Marker” to import either Way Points or Track Points as location markers. Markers have no elevation data associated with them.
- Select “Polyline” to create an open CAD polyline based on the position of Way Points or Track Points. The points themselves are not imported. Polylines have no elevation data associated with them.
- Select “Terrain Perimeter” to create a closed Terrain Perimeter polyline based on the position of either Way Points or Track Points. The points themselves are not imported. A Terrain Perimeter has no elevation data associated with it. See *Terrain Perimeter on page 899*.

> Way Points are typically imported as “Elevation Data”, while Track Points are imported as “Markers”, “Polylines’, or “Terrain Perimeter”.

Click **Next** to continue.

Transform Coordinates



1 Lower Elevation Data by

- Specify the amount that you would like to lower all imported elevation data.

2 Rotate North Counterclockwise

- Specify an amount to rotate the terrain data counterclockwise, or to the left.

3 Map this point to the origin

- Specify a point in the imported terrain data, defined by degrees **Latitude** and **Longitude**, that you would like to locate at the origin in the Home Designer plan.

Click **Next** to finish.

If you do not see the imported terrain, select **Window> Fill Window** .

Importing DWG/DXF Elevation Data

Select **File> Import> Drawing (DWG/DXF)** to open the Import Drawing Assistant, which you can use to import elevation data in **.dwg/.dxf** format. See *Import Drawing Assistant on page 888*.

By default, the Import Drawing Assistant imports entities as regular CAD objects; however, you can specify that any layer in the drawing be converted to either a Terrain Perimeter or Elevation Data. If a layer is converted to Elevation Data, any

points and lines on that layer are converted to Elevation Points and Lines, and any elevation data associated with them is preserved. Elevation data associated with objects in CAD blocks is not recognized, however.

- If an imported line has vertices with the same Z values, an Elevation Line is created.
- If the vertices have differing Z values, an Elevation Point is created for each vertex.
- Imported points are converted to Elevation Points.
- Other imported entities (solids, faces, etc.) are imported normally.

> To avoid unexpected results when importing a drawing, only convert layers with elevation information to Elevation Data.

If a Terrain Perimeter does not exist in the plan or if a layer in the **.dwg**/**.dxf** file is not converted to a Terrain Perimeter, a Terrain Perimeter is created around the extents of the Elevation Data when it is imported.

Converting CAD Objects to Terrain Data

CAD lines, splines, and polylines - either imported or drawn using Home Designer's CAD Tools - can be selected and converted to terrain data using the **Convert Polyline** edit tool.

In plan view, select a CAD line, spline, or polyline and click the **Convert Polyline** edit button to open the Convert Polyline dialog. See *Convert Polyline on page 211*.

A Terrain Perimeter must exist before any other types of terrain object can be created. If no Terrain Perimeter is present in the current plan, this will be the only terrain item available in the Convert Polyline dialog.

When you click **OK**, the terrain object's specification dialog opens, allowing you to specify elevation data or other attributes.

Roads, Driveways, and Sidewalks

Chapter 41

Roads, sidewalks, driveways and parking lots are modeled in 3D like other terrain objects in Home Designer. Because they have much in common with terrain objects and rely upon terrain data to be viewed in 3D, it is helpful to be familiar with terrain modeling before using these tools. See *Terrain on page 898*.

Road, Driveway, and Sidewalk Tools



Roads objects can be drawn in plan view, camera views and overviews, but only when a Terrain Perimeter exists in the plan. See *Terrain Perimeter on page 899*.

Straight and Spline road objects:

- Are typical line- and spline-based objects, and can be edited as such.
- Are flat along their widths, which makes it easy to create roads on sloping terrain.
- Can be joined end-to-end to form intersections and networks.
- Have a consistent width that can be defined in their specification dialogs. See *Road Specification Dialog on page 936* and *Terrain Path Specification Dialog on page 926*.

Driveways and Parking Lots, on the other hand, are actually Terrain Features which follow the contours of the terrain rather than cut into them. They are drawn as rectangles but can be edited to any shape. See *Terrain Features on page 906* and *Editing Closed Polyline-Based Objects on page 197*.

Once road objects have been placed, they can be edited individually or as a group. See *Editing Road Objects on page 935*.

Road Tools



Select **Terrain> Road and Sidewalk> Straight Road**, then click and drag to draw a line within the Terrain Perimeter to draw a Straight Road.

The ends of multiple road sections can be connected together. Roads are edited along their center line and can be edited much like other line-based objects. See *Editing Line-Based Objects on page 187*.



Select **Terrain> Road and Sidewalk> Spline Road**, then click and drag to draw a curved road composed of spline segments.

Spline roads are drawn and edited like other spline-based objects. See *Editing Spline-Based Objects on page 202*.

Sidewalk Tools



To create a sidewalk with no curves, select **Terrain> Road and Sidewalk> Straight Sidewalk**, then click and drag a line within the Terrain Perimeter.

Sidewalks are edited along their center line like line-based objects. See *Editing Line-Based Objects on page 187*.



Select **Terrain> Sidewalk> Spline Sidewalk**, then click and drag to draw a curved sidewalk composed of spline segments.

Driveway Area

A **Driveway Area** is a terrain feature with a concrete material assignment. To create a driveway, select **Terrain> Road and Sidewalk> Driveway Area**, then click and drag from corner to corner to draw a rectangle. See *Rectangular Polyline on page 247*.

Height, thickness and material information can be specified in a driveway's specification dialog. See *Terrain Feature Specification Dialogs on page 918*.

Driveways can be edited like other closed polylines. See *Editing Closed Polyline-Based Objects on page 197*.

Parking Lot

A **Parking Lot** is a terrain feature with an asphalt material assignment. To place a parking lot, select **Terrain> Road and Sidewalk> Parking Lot**, then click and drag from corner to corner to draw a rectangle. See *Rectangular Polyline on page 247*.

Height, thickness and material information can be specified in a parking lot's specification dialog. See *Terrain Feature Specification Dialogs on page 918*.

Displaying Road Objects

Roads and sidewalks display in floor plan and 3D views based on the settings for their layers in the Layer Display Options dialog. See *Display Layers on page 151*.

In 3D Views

In order for Road objects to be visible in 3D views, they must be drawn within the Terrain Perimeter. Any portions of these objects drawn outside the Terrain Perimeter will not be seen in 3D views.

By default, the terrain rebuilds automatically when road objects are added, removed or edited. If it does not, you can select **Terrain> Build Terrain**. See *Terrain Perimeter on page 899*.

Editing Road Objects

Road objects can be selected in 2D and 3D views and edited using the edit handles, the Edit Toolbar, and their specification dialogs.

Terrain Walls and **Terrain Curbs** are also Road objects. See *Terrain Wall and Curb Tools on page 908*.

Using the Edit Handles

The edit handles available for a selected road object depend on the type of object selected.

- **Straight Roads**, straight **Terrain Walls**, and straight **Terrain Curbs** are edited along their centerline like a line or open polyline. See *Editing Line-Based Objects on page 187*.
- **Spline Roads**, **Spline Sidewalks**, **Spline Terrain Walls** are edited along their centerline like CAD splines. See *Editing Spline-Based Objects on page 202*.
- **Driveway Areas** and **Parking Lots** are edited like other closed polyline based objects. See *Editing Closed Polyline-Based Objects on page 197*.

In the Specification Dialog

Road objects can be customized in their specification dialogs. See *Road Specification Dialog on page 936*, *Terrain Feature Specification Dialogs on page 918*, and *Terrain Path Specification Dialog on page 926*.

Using the Edit Tools

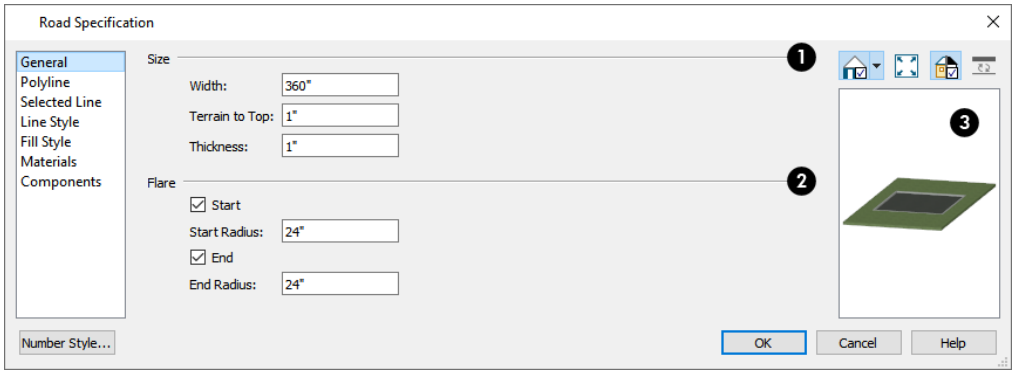
A selected road object can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Road Specification Dialog

To open the Road Specification dialog, select a Straight Road or Spline Road and click the **Open Object** edit button.

Many of the settings in this dialog are similar to those in the Terrain Path Specification dialog. See *Terrain Path Specification Dialog on page 926*.

General Panel



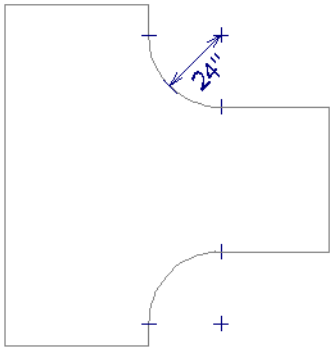
1 Size

- Specify the road's **Width**.
- Specify the **Terrain to Top** value, which is the distance from the top surface of the terrain to that of the road. If this value is a negative number, the road sinks into the terrain.
- Specify the road's **Thickness**.

2 Flare

When one road intersects another, flares can be specified.

- Check **Start** to create a flare at the starting end of the selected road, then specify the **Radius** of that flare.
- Check **End** to create a flare at the end of the selected road, then specify the **Radius** of that flare.



A 24" flare at the intersection of two Roads

3 Preview

A preview of the selected road displays on the right side of the panel. See *Dialog Preview Panes on page 21*.

Polyline Panel

The Polyline panel reports the length of the selected Road's Perimeter, its Area and Volume, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

Selected Line/Arc Panel

The Selected Line panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

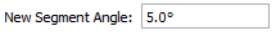
The Selected Arc panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Spline Panel

The Spline panel has a single option and is only available when the selected object is a spline. See *Splines on page 249*.



New Segment Angle - Specify the angle between line segments that are used to draw the spline. Specifying a smaller angle makes the spline smoother. A larger angle may allow large objects to draw faster.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected Road in plan view. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Road in plan view. See *Fill Style Panel and Dialogs on page 161*.

Materials Panel

The settings on the Materials panel affect the appearance of the selected Road in 3D views. See *Materials Panel on page 760*.

Materials are also reported in the Materials List. In addition, material definitions can affect Materials List calculations. See *About Materials on page 756*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Plants and Sprinklers

Chapter 42

The Plant Tools and sprinklers from the Library Browser allow you to create planting designs and irrigation systems in your terrain.

The Terrain Tools are discussed in their own chapter. See *Terrain on page 898*.

Plant Tools

Plant images can be used to create landscaping plans as well as enhance the look of interior and exterior renderings.

Plants Library Catalogs



Home Designer's Core Catalogs include a Plants category with a selection of plant, shrub and trees which you can place in your plan. In the Library Browser, browse to Core Catalogs> Plants to access a selection of plant images. Select the library object you want, then click in any view to place it in the plan. See *The Library on page 705* and *Placing Library Objects on page 727*.

A selection of Bonus Catalogs of plants is also available for download. See *Home Designer Bonus Catalogs on page 718*.

Plant objects are actually images, which provide realism while avoiding high 3D surface count. Once created, plant images can be selected and edited much like other image objects. See *Editing Images on page 852*.

In addition, you can add single plants and blocked groups of plants to your User Catalog for future use. See *Adding Library Content on page 722* and *Architectural Blocks on page 744*.

Plant Tools



Select **Terrain> Plant** to access a variety of tools for finding plant objects for your plans:



Select **Plant Chooser** to open the Plant Chooser dialog and find plants based on their characteristics and requirements. See *Plant Chooser Dialog on page 940*.



Select **Create Plant Image** to create a plant image. See *Plant Image Specification Dialog on page 943*. Once a plant image is created, it can be added to the library for future use. See *Creating Images on page 851*.



Select **Grow All Plants** to get a sense of what the plants in your plan will look like up to 20 years in the future. See below.



Select **Show Hardiness Zones** to access regional climate zone maps and confirm which Hardiness Zone your project is located in. See *Hardiness Zones on page 942*.

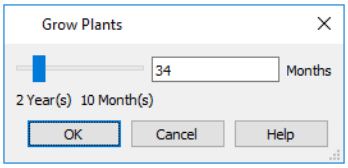


Select **Plant Schedule**, then click to create a plant schedule. See *Plant Schedules on page 947*.

Grow All Plants



Select **Terrain> Plant> Grow All Plants** to open the Grow Plants dialog.



Click and drag the slider bar and select a growth period from zero to twenty years. This only works for plants that have a mature height and mature age specified in the Plant Image Specification dialog. See *Plant Information Panel on page 944*.

Garden Beds

Garden Beds are a special type of **Terrain Feature** with material and height attributes typical of planting beds. In addition, you can choose to distribute copies of a plant image within a Garden Bed. See *Terrain Feature Types on page 906*.

Plant Schedules

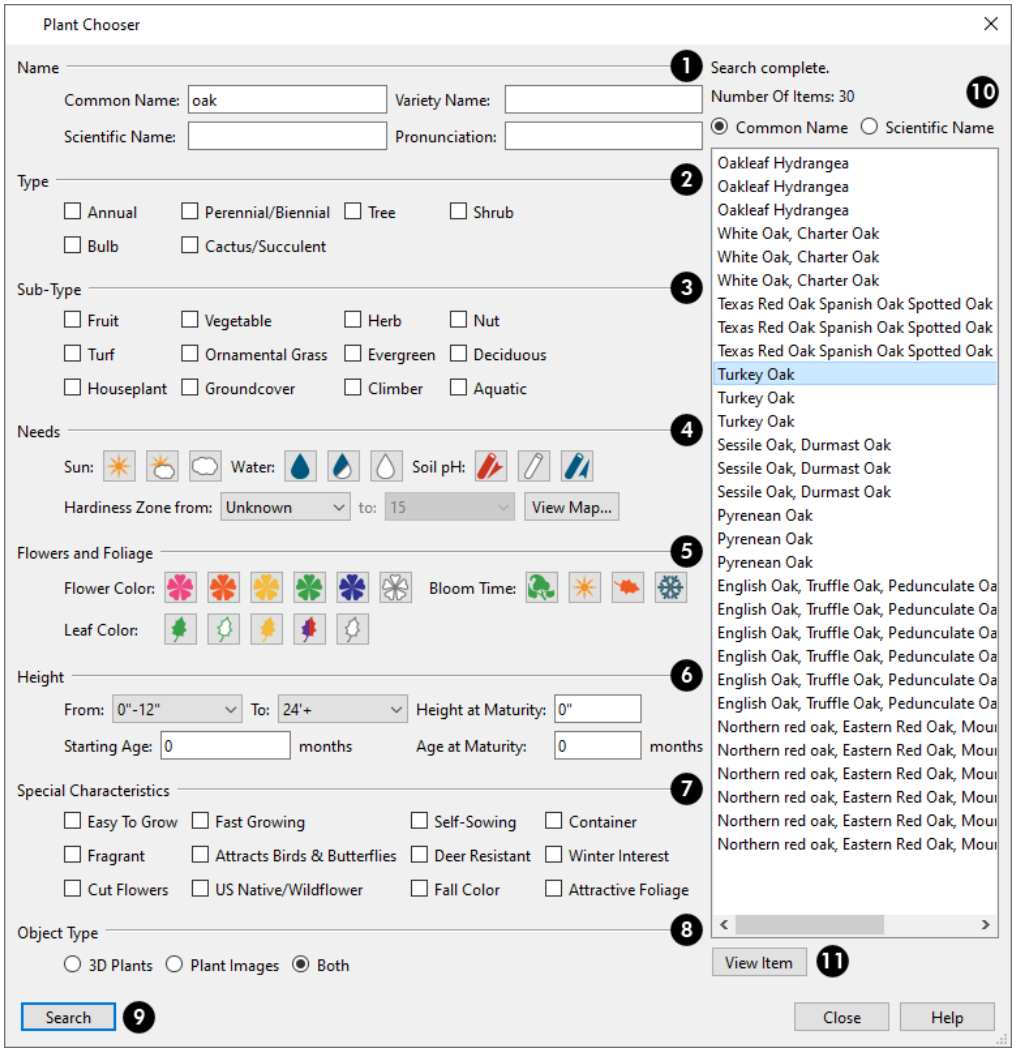
The **Plant Schedule** tool allows you to create customizable plant schedules and plant labels that display schedule numbers. See *Plant Schedules on page 947*.

Plant Chooser Dialog

Select **Terrain> Plant> Plant Chooser** or click the **Plant Chooser** button at the bottom of the Library Browser window to open the Plant Chooser.

Use this dialog to search the library for plant images that match your search parameters. You can search using any or all of the options in the Plant Chooser.

The search parameters in this dialog correspond to the settings on the Plant Information panel of the Plant Image Specification dialog. See *Plant Information Panel on page 944*.



1 Name

Type the **Name** of a plant that you would like to find.

- Specify the plant's **Common Name, Scientific Name**, or its **Variety Name**.
- A **Pronunciation** field is also provided. In the Plant Image Specification dialog, it is populated with a phonetic pronunciation guide for the plant's scientific name.

2 Type

Check one or more boxes to indicate selected plant **Type** to search for.

3 Sub-Type

Check one or more boxes to specify the selected **Sub-Type** to search for.

4 Needs

Specify the plant **Needs** to search for. These include the **Sun**, **Water**, **Soil pH**, and **Hardiness Zone** range. See *Hardiness Zones on page 942*.

5 Flowers and Foliage

- Specify the **Flower Color** to search for. Multiple colors can be selected.
- Specify the **Leaf Color** to search for. Multiple colors can be selected.
- Specify the **Bloom Time** to search for, which is the season when the plant produces flowers.

6 Height

Specify the plant **Height** at maturity to search for. This is used with the Grow Plants feature. See *Plant Tools on page 939*.

- An average mature height range can be entered using the **From** and **To** drop-down lists.
- A specific **Height at Maturity** to search for can be entered in the text field.
- A specific **Starting Age**, in months, can be entered in the text field.
- A specific **Age at Maturity**, in months, can be entered in the text field.

7 Special Characteristics

Check one or more boxes to search for plants with **Special Characteristics**.

8 Object Type

Select which types of plant **Object Type** to search for. 3D Plants are symbol objects, while Plant Images are two dimensional images.

9 Search

Click the **Search** button at the bottom of the dialog to search for plants that meet your search criteria. The search results display to the right.

10 Search Results

Your search results display here.

- Information about the search status as well as the **Number of Items** that match your search criteria are stated.
- Specify whether you want the search results to use the **Common Name** or **Scientific Name**.
- Click on the name of a plant in the list to see its location in the Library Browser.

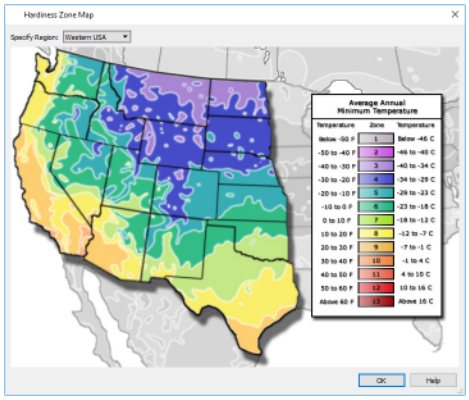
11 View Item

Click the **View Item** button to see more information about the selected plant in the Plant Information dialog. See *Plant Image Specification Dialog on page 943*.

Hardiness Zones



Select **Terrain> Plant> Show Hardiness Zones** to view a selection of regional Hardiness Zone Maps. Click the drop-down list at the top left to select various regions.



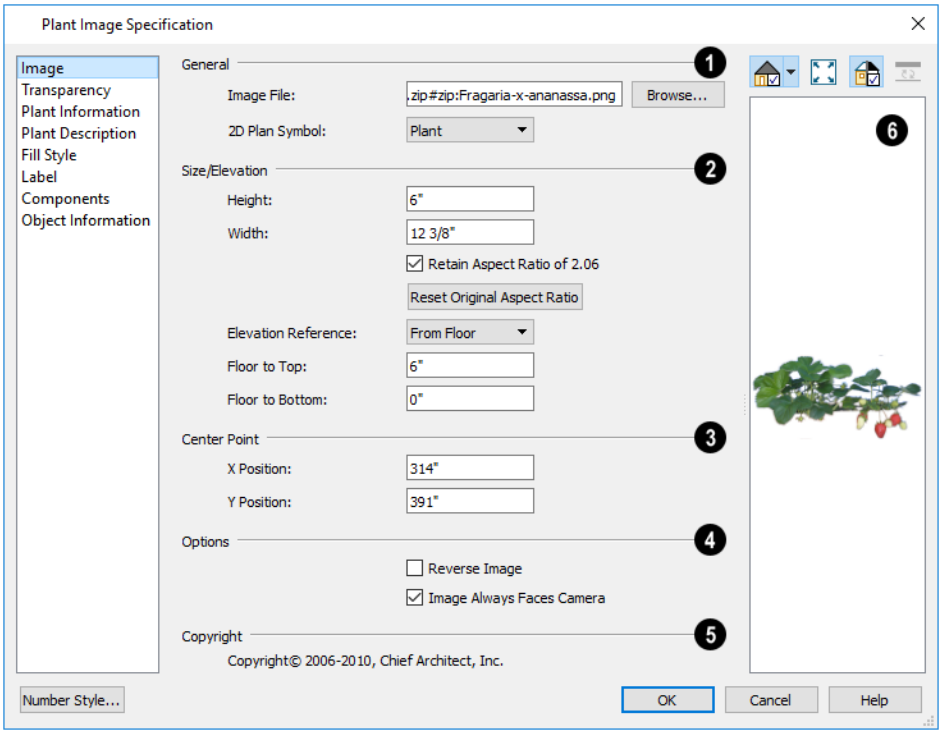
Plant Image Specification Dialog

Select one or more plant images in a plan view or 3D view and click the **Open Object** edit button to open the Plant Image Specification dialog.

This dialog can also be accessed by selecting **Terrain> Plant> Create Plant Image** or by selecting **New> Plant Image** from the Library Browser contextual menu.

The PLANT INFORMATION and PLANT DESCRIPTION panels are also found in the Plant Information dialog, which can be accessed from the Plant Chooser dialog. See *Plant Chooser Dialog on page 940*.

IMAGE PANEL



1 General

- The path and name of the selected plant's **Image File** displays here.
- Click **Browse** to specify the saved location on your computer of the image that represents the plant in 3D views.
- A number of **2D Plant Symbols** are available to represent the image in plan view. Choose one from the drop-down list.

2 Size/Elevation

Specify the **Size/Elevation** of the plant image, as seen in 3D views.

- Specify the **Height** and **Width** of the image.
- When **Retain Aspect Ratio of** is checked, if you change either the Height or Width, the other value changes to maintain this ratio. If this is unchecked and you resize the plant image, it may become distorted.
- Click **Reset Original Aspect Ratio of** to reset the image's original aspect ratio and remove any distortion caused by resizing.
- Select the **Elevation Reference** from the drop-down list. This determines where the next two settings are measured from and also affects their setting labels. See *Elevation References on page 20*.
  - Specify the **to Top** distance, measured from the Elevation Reference to the top edge of the image.
  - Specify the **to Bottom** distance, measured from the Elevation Reference to the bottom edge of the image.

3 Center Point

Specify the location of the selected plant image's **Center Point**.

- Position the selected plant image in reference to the plan coordinates by specifying its **X Coordinate** and **Y Coordinate**.

4 Options

- Check **Reverse Image** to reflect the appearance of the image about an imaginary vertical line through its center.
- Check **Image Always Faces Camera** to prevent the plant image from rotating with the camera.

5 Copyright

If the selected plant image has been copyrighted, its **Copyright Information** displays here.

6 Preview

A preview of the selected plant image displays here. The Glass House Rendering Technique is not available for plant images. See *Dialog Preview Panes on page 21*.

Transparency Panel

The settings on the Transparency panel of this dialog are similar to those on the same panel of the Image Specification dialog. For more information, see *Transparency Panel on page 854*.

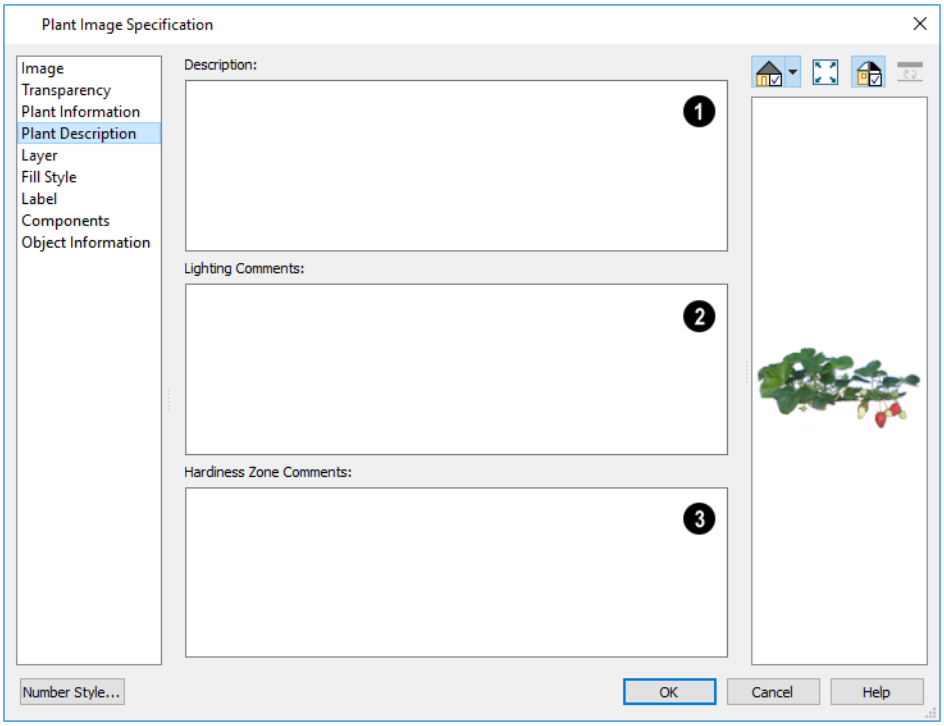
Plant Information Panel

The settings on the Plant Information panel correspond to the search parameters in the Plant Chooser. See *Plant Chooser Dialog on page 940*.



When multiple plants with differing attributes are selected, some button icons may be replaced by an X symbol signifying "No Change".

Plant Description Panel



1 Description

A detailed **Description** of the plant displays in this text field.

2 Lighting Comments

Information in the **Lighting Comments** fields describes the plant's light requirements.

3 Hardiness Zone Comments

Hardiness Zone Comments are given here. See *Hardiness Zones on page 942*.

Fill Style Panel

The settings on the Fill Style panel control the appearance of the selected plant's 2D Plant Symbol in plan view. By default, plant images' fill style is None (Transparent). For information about the settings on this panel, see *Fill Style Panel and Dialogs on page 161*.

If the plant's 2D Plan Symbol does not form a closed shape, the settings on the Fill Style panel will have no effect on the appearance of the plant in plan view.

Label Panel

Labels for Plant display when the "Plants, Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

Components Panel

The information entered on the Components panel can be used in the Materials List. See *Components Panel on page 967*.

Object Information Panel

The information entered on the Object Information panel can be used in the Materials List. See *Object Information Panel on page 968*.

Sprinkler Tools

Use the **Sprinkler Tools** to design a sprinkler system in your plan.

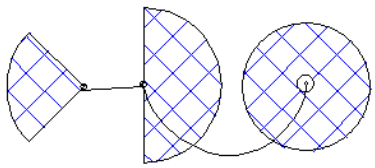
Select **Terrain> Sprinkler> Sprinkler Head** to open the Select Library Object dialog. Browse to a sprinkler type in the library, click OK, then click in the drawing area to place as many as you need. Once drawn, sprinkler heads can be selected and edited. See *Sprinkler Specification Dialog on page 947*.

Select **Terrain> Sprinkler> Sprinkler Line** to draw sprinkler lines in your plan. Sprinkler lines are 2D objects and are drawn and edited much like CAD Lines. See *Line Tools on page 230*.

Displaying Sprinklers

The display of Sprinkler Heads, Lines and Splines can be controlled in the Layer Display Options dialog. See *Layer Attributes on page 152*.

In plan view, Sprinkler Head symbols indicate the spray angle. You can specify a fill style for both Spray Area and Sprinkler Symbol in the Sprinkler Specification dialog. See *Symbol Object Specification Dialogs on page 735*.



Sprinkler Heads display in 3D views; however, Sprinkler Lines and Splines do not.

Sprinkler Heads are counted in the Materials List, as is the total length of Sprinkler Lines and Splines. See *Materials Lists on page 954*.

Selecting and Editing Sprinklers

Sprinkler symbols can be selected like other symbol objects both individually and in groups. To select sprinklers of the same type in a plan with multiple sprinkler types, use the **Marquee Select Similar** edit tool with **Restrictive Selection** enabled. See *Selecting Multiple Objects on page 186*.

Once selected, sprinklers can be edited much the way other objects from the library can: using their edit handles, edit tools, and in their specification dialog. See *Editing Library Items on page 726*.

If you use the Fill Style Painter to modify a sprinkler's appearance in plan view, its Spray Area fill will be painted: not the Sprinkler Symbol fill. See *Fill Style Eyedropper and Painter Tools on page 159*.

Sprinkler Specification Dialog

To open the Sprinkler Specification dialog, select a sprinkler or group of sprinklers and click the **Open Object** edit button. You can also double-click the sprinkler(s) using the **Select Objects** tool.

The Sprinkler Specification dialog an example of a Symbol Object Specification dialog. See *Symbol Object Specification Dialogs on page 735*.

Sprinkler Lines and Sprinkler Splines also have a specification dialog which is very similar to the Polyline Specification dialog. See *Polyline Specification Dialog on page 245*.

Plant Schedules

A Plant Schedule is a table that lists all of the plants in your plan and can include a variety of information about them, including quantities, common and scientific names, and growing needs. Schedules are dynamically linked to the plants in your plan and update as they are created, deleted, moved, or modified.

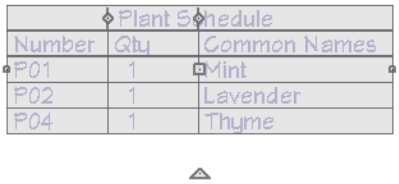
In plan view, select **Terrain> Plant> Plant Schedule**, then click anywhere in the view to place a schedule at that location. You can continue clicking to place additional copies of the schedule. See *Click-to-Create on page 145*.

Schedules can be edited using the edit handles, the Edit Toolbar buttons, and the Plant Schedule Specification dialog.

Using the Edit Handles

A selected schedule has edit handles similar to those of a CAD box. See *Editing Box-Based Objects on page 199*.

In addition, schedules have edit handles that let you control column width:



A. The **Move** handle is located at the center of the schedule. Click and drag this handle to change the schedule's position.

B. The small circular **Resize** handles are located on the schedule's two vertical edges. Click and drag one of these handle to make the schedule wider or more narrow. The right-most column's width is affected by this change.

C. The triangular **Rotate** handle is located below the schedule. Click and drag this handle to rotate the schedule around its center point.

D. The small circular **Resize Column** edit handles are located in the Title row, centered on the grid lines that divide the columns, and can be dragged left or right. If a column is resized sufficiently small, the text within will wrap to multiple rows. The Reset Column Widths edit tool lets you resize all columns so there is no wrapping or extra empty space. See *Plant Schedules on page 947*, below.

> The behavior of edit handles may depend on the currently active Edit Behavior. See *Defaults, Preferences, and Edit Behaviors on page 179*.

By default, the objects listed in the selected schedule are arranged in rows and information about them is presented in columns. You can **Swap Rows/Columns** to instead list objects in columns and information about those objects, in rows. See *Plant Schedule Specification Dialog on page 949*.

In the Specification Dialog

The contents, Text Style, organization, and other attributes of schedules can be modified in the Plant Schedule Specification dialog. See *Plant Schedule Specification Dialog on page 949*.

You can control how objects are listed in a plant schedule by specifying which Columns to Include. For example, if you were to include "Flower Color" but exclude “Common Names” and “Scientific Names” in the Schedule Specification dialog, the resulting plant schedule would list all red flowers in one line item, regardless of their species.

You can also control the appearance of the callout labels associated with plants listed in a schedule. See *Object Labels on page 394*.

Using the Edit Tools

A schedule can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.



The **Align Left**, **Align Right**, **Center**, and **Justify** edit tools allow you to specify how the contents of schedule columns are aligned. See *Aligning Text on page 377*.

Schedule Numbering and Columns

How plants are listed in a schedule is influenced by the order in which they are placed into the plan, as well as by which columns are in use in the schedule.

Schedule Numbering

The numbering of plants in schedules is dependent on the order in which they are placed in the plan, as well as the floor they are on.

- Any plants present in your plan before a schedule is created will be listed first in ascending alphanumeric order, according to their Label information.
- A new, unique plant placed in the plan after the schedule is created will be added to the bottom of the schedule in the order that they are placed, regardless of its Label information.

When an object is edited, its schedule number may or may not change:

- If an object with a Quantity of 1 in the schedule is edited, its position in the schedule will not change.
- If a group of objects listed on the same row in a schedule are edited simultaneously, their position will not change.
- If an object listed on the same row in a schedule with other similar objects is edited so that it is no longer similar enough to share the same row, it will move to the bottom of the schedule.

Columns to Include

Every schedule has a selection of **Columns to Include** in its specification dialog. See *General Panel on page 949*.

Information in the **Code**, **Comment**, **Description**, **Manufacturer**, and **Supplier** columns is drawn from an object’s specification dialog. See *Object Information Panel on page 968*.

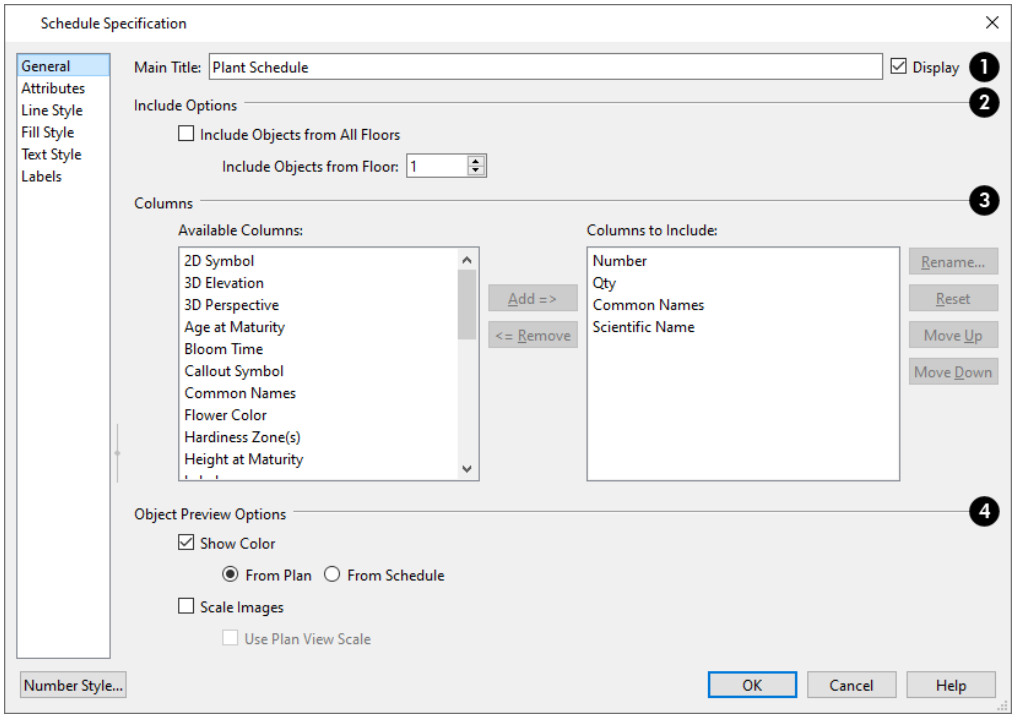
It is important to remember that the columns you choose to include in a schedule can influence the number of separate line items that will be listed in the schedule.

For example, if you were to include "Flower Color" but exclude “Common Names” and “Scientific Names” in the Plant Schedule Specification dialog, the resulting schedule would list all red flowers in one line item, regardless of their species.

Plant Schedule Specification Dialog

Plant Schedules and the object labels associated with them can be edited in the Schedule Specification dialog. To open this dialog, either select a schedule and click the **Open Object** edit button or double-click the schedule using the **Select Objects** tool.

General Panel



1 Main Title

- Specify a **Main Title** for the selected schedule.
- Check **Display** to include the Main Title at the top of the schedule.

2 Include Options

- When **Include Objects from All Floors** is checked, objects from all floor levels are included in the schedule. To create a schedule of objects on specific floor levels, uncheck this box and then select the desired floors below.
- **Include Objects from Floor** - Specify which floor level(s) you would the selected schedule to list objects from.

3 Columns

Specify which columns are included in the selected schedule. See *Schedule Numbering and Columns on page 948*.

- An alphabetical list of **Available Columns** displays on the left.
  - Select one or more names in the list of **Available Columns**, then click the **Add** button to add them to the Columns to Include list on the right. See *Shift and Ctrl/⌘ Select on page 187*.
  - You can also double-click on an item in the list to add it to the Columns to Include list on the right.

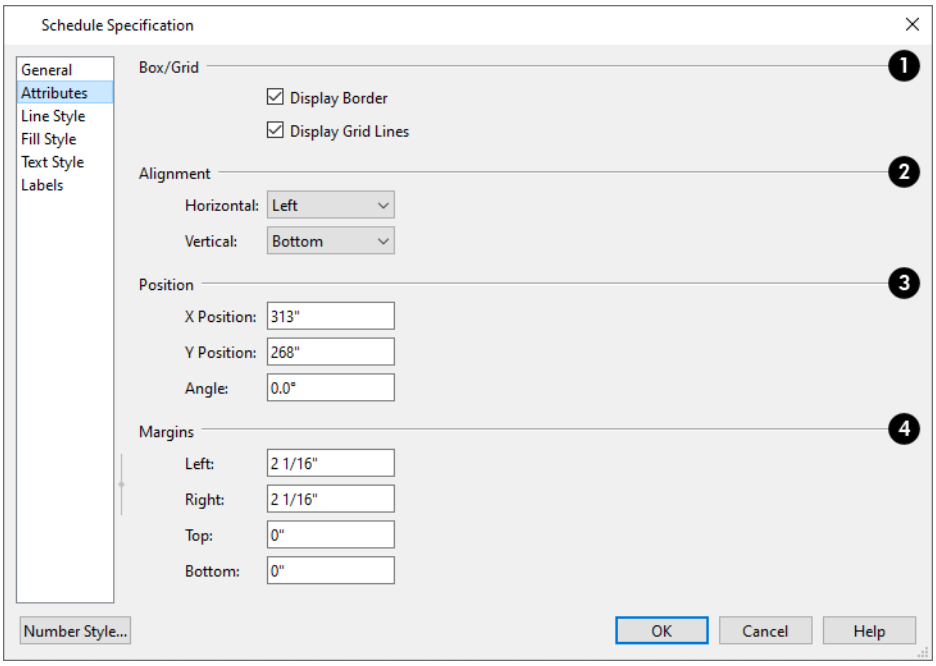
- A list of the **Columns to Include** in the selected schedule displays on the right. The top-to bottom order in this list corresponds to the columns' left-to-right order in the schedule. At least one column must be included to create a schedule.
  - Select or double-click on an item in the list and click the **Rename** button to specify a new name.
  - Click the **Reset** button to restore the default names for all Columns to Include in the current schedule.
  - Select one or more items in the list, then click the **Remove** button to remove those items from the list.
  - Select one item in the list and click the **Move Up** button to adjust its position upward in the list.
  - Select one item in the list and click the **Move Down** button to adjust its position downward in the list.
- Select a column that reports a quantity, component count, length, area, or volume to enable these check boxes:
  - Check **Calculate Total** to report a total for all objects in a row at the bottom of the column.
  - Check **Sum Similar Rows** to group similar objects in a single row and report the total for all objects associated with that row. When this is unchecked, the individual objects are reported in separate rows unless their values in the selected column are identical.

4 Object Preview Options

These options affect the appearance of previews in the 2D Symbol, 3D Elevation, and 3D Perspective Columns, when included in the schedule. Not available for Layout Tables. See *Schedule Numbering and Columns on page 948*.

- Check **Show Color** to draw Callout Symbol, 2D Symbol, 3D Elevation, and 3D Perspective object previews using colored lines. When this is unchecked, lines are black and 3D previews are shown in grayscale.
  - Select **From Plan** to draw Callout Symbols and 2D Symbols using the color assigned to each object's layer, and 3D Elevations and 3D Perspectives using black.
  - Select **From Schedule** to draw Callout Symbol, 2D Symbol, 3D Elevation, and 3D Perspective object previews using the color assigned to the schedule's layer.
- When **Scale Images** is checked, 2D and 3D object previews display at the same scale, giving a sense of their relative size.
  - The scale is determined by the size of the widest preview in each column as well as the width of the column.
  - When this is unchecked, each preview fills its cell to the extent possible regardless of the actual object's size, and its size will adjust if the column width is resized.
- Check **Use Plan View Scale** to apply the same scale used in plan view to the 2D Symbol column.

Attributes Panel



1 Box/Grid

Specify the appearance of the selected schedule's border and grid.

- Check **Display Border** to display lines around the outside of the schedule.
- Check **Display Grid Lines** to display lines around the rows and columns of schedule, forming boxes around each item, or cell.

2 Alignment

- Specify the selected schedule's **Horizontal** text alignment within the left and right edges of its columns by choosing an option from the drop-down list.
- Specify the selected schedule's **Vertical** text alignment within the top and bottom edges of its rows by choosing an option from the drop-down list.

3 Position

Define the position of the selected schedule. Not available in the Schedule Defaults dialogs.

- Specify the **X** and **Y Positions** of the schedule's center point.
- Specify the schedule's **Angle**.

4 Margins

Specify the **Left**, **Right**, **Top**, and **Bottom Margins**, which define the distance between the text and border of each schedule cell.

Line Style Panel

The settings on the Line Style panel affect the appearance and Bumping behavior of the selected schedule. See *Line Style Panel on page 234*.

Fill Style Panel

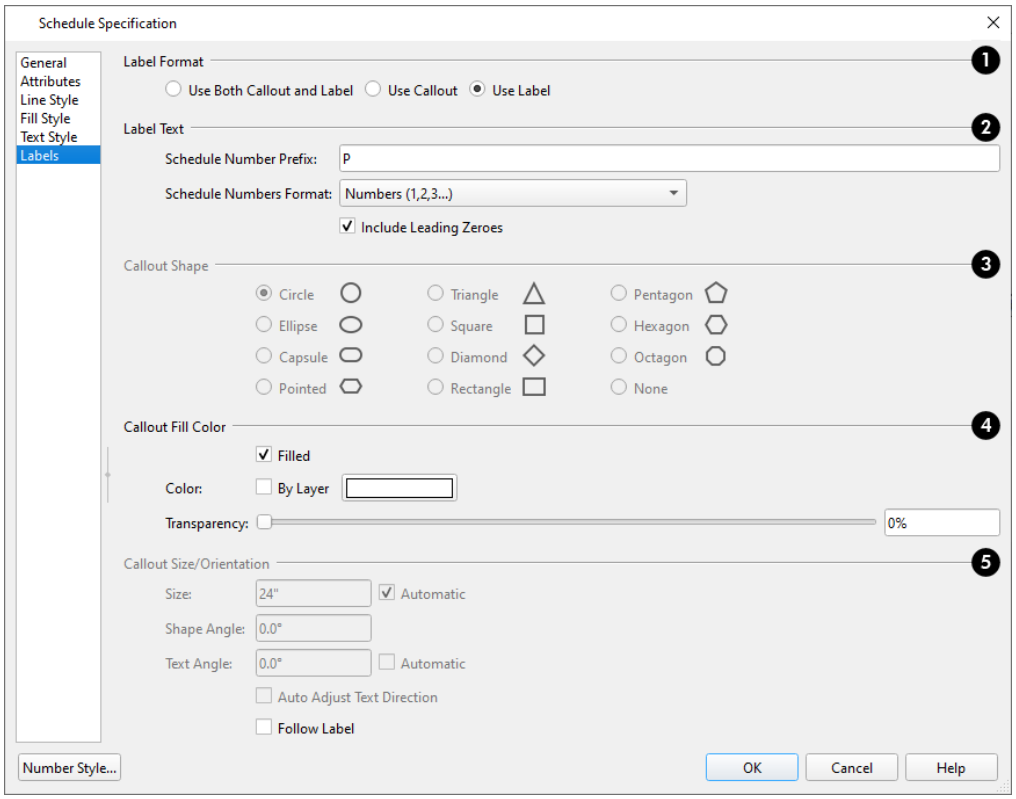
The settings on the Fill Style panel affect the appearance of the selected schedule. See *Fill Style Panel and Dialogs on page 161*.

Text Style Panel

For information about the settings on this panel, see *Text Style Panel on page 392*.

Labels Panel

The Labels panel of the Schedule Specification dialog controls the type, size and appearance of the labels that display in plan view.



1 Label Format

Specify which type(s) of label plants in the selected schedule use.

- Select **Use Both Callout and Label** for plants listed in the schedule to display both regular labels and schedule callouts.
- Select **Use Callout** for plants to display schedule callouts but not their regular labels.
- Select **Use Label** for plants to display only their regular labels and no callouts. See *Label Panel on page 395*.

2 Label Text

- **Schedule Number Prefix** - Specify the leading characters used in callout labels or when Include Schedule Number is checked in the object's specification dialog. See *Label Panel on page 395*.

- Select a **Schedule Numbers Format** from the drop-down list.
- When **Include Leading Zeroes** is checked, single-digit callout labels include a zero in front of the callout number. Uncheck this box to remove these leading zeroes from the labels.

3 Callout Shape

When either **Use Both Callout and Label** or Use Callout is selected above, the callout shape can be selected here. There are ten shapes to choose from. "None" produces callout label text but no shape around it.

4 Callout Fill Color

- When **Filled** is checked, the callout shapes have a solid fill. When unchecked, they are unfilled.
- Specify the **Color** of the fill: check **By Layer** to use the color specified in the Layer Display Options dialog or click the **Color** bar to choose a fill color. See *Select Color Dialog on page 165*.
- Use the **Transparency** slider bar or text field to control how transparent the fill color is.

5 Callout Size/Orientation

- Uncheck **Automatic** to enable the **Size** field and specify a new value. When checked, the callout is sized so that it encompasses the Label Text that displays inside its shape.
- Specify the **Shape Angle**.
- Specify the **Text Angle** relative to the orientation of the callout shape. Not available when Ellipse, Capsule, or Rectangle is selected as the Callout Shape.
- When **Automatic** is checked, the Text Angle automatically matches the Shape Angle.
- When **Auto Adjust Text Direction** is unchecked, the callout label text is always oriented in the same way relative to the Shape Angle. When this box is checked and the Shape Angle is -90°, the text is instead oriented as though it were 90°.
- When **Follow Label** is checked, the callout shape rotates to match the angle of the object's label. When unchecked, the callout shape maintains the same angle when the object label rotates.

Like other object labels, callout labels use the Text Style assigned to the layer they are on. See *Text Styles on page 390*.

Materials Lists

Chapter 43

Home Designer can calculate a Materials List in three ways: **for All Floors**, **From Area**, or **for Room**.

Materials Lists can be created, edited, and printed directly from the program. They can also be exported as text, **.xml**, or **.html** files for use in other programs.

> The Materials List's calculations are based on assumptions that may not match your building style. Chief Architect Software makes no representation as to the accuracy or reliability of the Materials List generated by Home Designer. Always compare the Materials List with a manual take-off before providing a quote or ordering materials for a job.

The Materials List Tools

A Materials List is like a snapshot of the current plan at the time that the list is made. Any changes made to the model after a Materials List is generated are not included in that list. Create a new Materials List if you would like it to include these changes. Select **Tools> Materials List** to access the Materials List tools.

It is not necessary to wait until the plan is complete to generate a Materials List. In fact, you can create a series of Materials Lists reflecting costs at various stages of a project.

When you close a Materials List window, the program will ask if you want to save the Materials List. Type a name and click **Yes** to save the list or click **No** to close the list without saving it. See *Saving and Managing Materials Lists on page 964*.

Calculate from All Floors

Select **Tools> Materials List> Calculate Materials for All Floors** to generate a Materials List for the entire model.

Materials lists calculated for all floors can be lengthy, and only a portion of the list may display on your screen at one time. Use the scrollbars to scroll through the complete list. Move the pointer to cells in the list and click to make changes. Once created, you can also specify which categories are included in the Materials List Specification dialog. See *Categories Panel on page 958*.

Calculate From Area

In plan view only, select **Tools> Materials List> Calculate From Area** to produce a Materials List for the portion of a plan on a single floor that is included within a temporary rectangular Materials List Polyline.

To use Calculate from Area

1. In plan view, select **Tools> Materials List> Calculate from Area**.
2. Click and drag to draw a rectangular marquee around the area of the current floor that you would like to produce a Materials List for.
3. When the mouse button is released, a Materials List for the area within the rectangle will display.

Calculate From Area rectangles are temporary and do not display in plan view after the list is created.

Calculate Materials From Selection



Select one or more objects and click the **Calculate Materials From Selection** edit button to create a Materials List that calculates only the selected object(s) and their components.

When the selected object is a room, its moldings and wall, floor, and ceiling finish materials are counted, as is its subflooring; but doors, windows, and structural materials like framing and other structural materials are not.

Calculate Materials in Room



To create the Materials List for a room, select the room and then select **Tools> Materials List> Calculate Materials in Room**.

Calculate Materials in Room  is also available on a selected room's edit toolbar. See *Editing Rooms on page 318*.

A Materials List calculated from a room is created for the contents of that room, along with floor and ceiling finish materials and wall surface materials that face the room's interior. An object will be counted in the Materials List if its center point is located inside the room.

Calculate Structural Materials for Deck



The structural materials for a selected deck can be calculated in a Materials List by clicking the **Calculate Structural Materials for Deck** edit button. Any accessories added on the COMPONENTS panel of a deck's Room Specification dialog will be included in a Materials List created using this tool. See *Decks on page 324* and *Components Panel on page 967*.

Materials List Management



Select **Tools> Materials List> Materials List Management** to open a list of saved Materials Lists associated with the current plan. See *Saving and Managing Materials Lists on page 964*.

Creating an Accurate Materials List

In order to take full advantage of Home Designer's Materials List capabilities, there are several things to keep in mind.

- The accuracy of your Materials List is directly related to the accuracy of your model. Floor and ceiling heights, wall lengths, and structural settings all directly affect Materials List calculations.
- It takes more than just making your drawing look right to generate an accurate Materials List. If, for example, you use CAD lines to draw an item on a floor plan, that item will not be included in the Materials List. A better way would be to use a symbol or structural element. See *Architectural vs CAD Objects on page 140*.
- If you use custom materials, make sure their material definitions are set up correctly. See *Creating Materials on page 767* and *Materials and the Materials List on page 768*.
- Bear in mind that using generic objects like Geometric Shapes from the library can result in items being calculated in the Materials List in a manner that you might not expect. See *Other Objects on page 749*.

Object Information and Components

Code, Comment, Manufacturer, and Supplier information can be specified for many objects. See *Object Information Panel on page 968*.

Price, Extra, Markup, Labor, and Equipment information can also be specified in an object's specification dialog. See *Components Panel on page 967*.

You can add this information to some objects before they are created in their defaults dialogs. See *Default Settings on page 83*.

You can also add this information to objects placed from the library. See *Editing Library Items on page 726*.

Material Definitions

The material assigned to structural components like walls, floors and ceilings, roofs, and slabs determines how each component is calculated in the Materials List. See *Calculation Methods on page 769*.

Framing in the Materials List

You can specify whether framing materials are calculated by linear foot, as a cut list, or as a buy list.

For more information about how framing appears in the Materials List, see *Framing and the Materials List on page 680*.

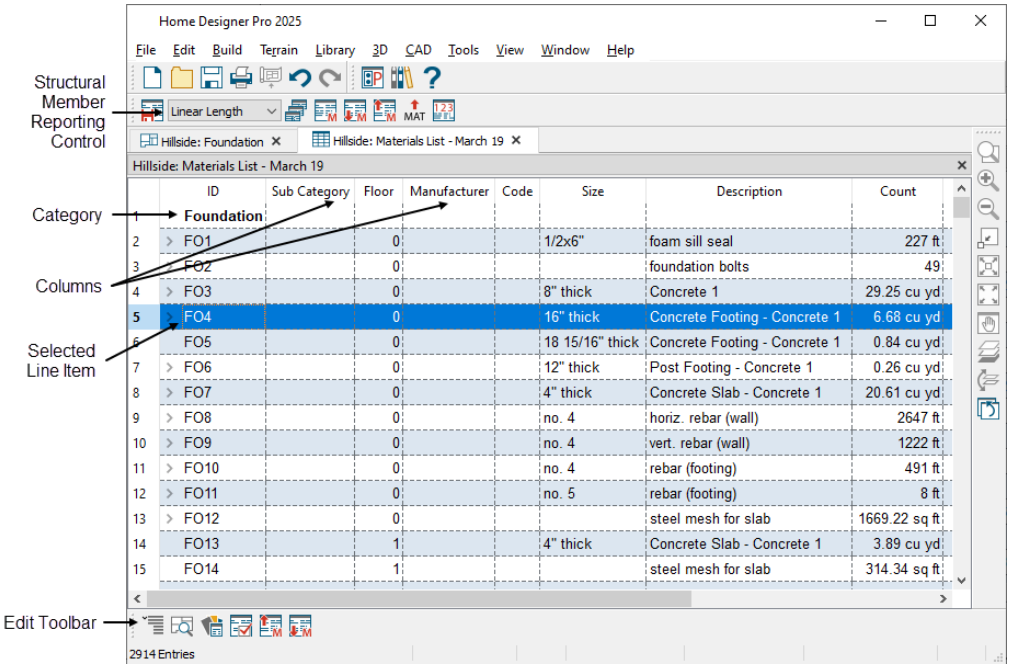
Organizing Materials Lists

You can control which items are calculated in the Materials List by specifying which categories are used.

In addition, you can control how much information about each item is included by specifying which columns to display.

You can also use the **Structural Member Reporting Control** drop-down list in the toolbars to choose which method the Materials List uses for calculating framing members. See *Framing and the Materials List on page 680*.

There are some parts of a model that cannot be excluded from the Materials List. Floor and ceiling platforms are prime examples. If you need to generate a Materials List for only part of a plan, such as an addition, consider making a copy of the plan file. In the copy, delete the as-built portion of the plan and then generate a Materials List.



	ID	Sub Category	Floor	Manufacturer	Code	Size	Description	Count
1	Foundation							
2	FO1		0			1/2x6"	foam sill seal	227 ft
3	FO2		0				foundation bolts	49
4	FO3		0			8" thick	Concrete 1	29.25 cu yd
5	FO4		0			16" thick	Concrete Footing - Concrete 1	6.68 cu yd
6	FO5		0			18 15/16" thick	Concrete Footing - Concrete 1	0.84 cu yd
7	FO6		0			12" thick	Post Footing - Concrete 1	0.26 cu yd
8	FO7		0			4" thick	Concrete Slab - Concrete 1	20.61 cu yd
9	FO8		0			no. 4	horiz. rebar (wall)	2647 ft
10	FO9		0			no. 4	vert. rebar (wall)	1222 ft
11	FO10		0			no. 4	rebar (footing)	491 ft
12	FO11		0			no. 5	rebar (footing)	8 ft
13	FO12		0				steel mesh for slab	1669.22 sq ft
14	FO13		1			4" thick	Concrete Slab - Concrete 1	3.89 cu yd
15	FO14		1				steel mesh for slab	314.34 sq ft

Categories

The line items in the Materials List are organized into a set of predefined categories, such as Electrical and Framing, which display in the **ID** column.

You can specify which category each item belongs to in the Materials List. In addition, many objects can be assigned to a category prior to generating a Materials List in their specification dialog. See *Components Panel on page 967*.

To specify a line item's category

1. Create a Materials List or open an object's specification dialog and go to the Components panel.
2. Click in the cell in the ID column for a line item.
3. Select the desired category from the drop-down list that becomes available.

The categories that are available cannot be altered; however, you can specify which categories are included in the Materials List in either of two ways:

- In the Materials List Defaults dialog.
- For individual lists in the Materials List Specification dialog. See *Materials List Specification Dialog on page 958*.

Subcategories

By default, the Subcategory column of the Materials List is empty for all line items. You can add text to any Subcategory cell by clicking in the cell and typing.

Items can be assigned to a subcategory in the Materials List and, for many items, in their object's specification dialog in the same manner that they can be assigned to a category. See *Components Panel on page 967*.

Materials List Columns

Each column in the Materials List reports a different category of information about objects in the list. You can specify most of this information for a variety of objects prior to generating a Materials List. See *Object Components on page 966*.

You can also specify which columns are included in the Materials List as well as their order in the Materials List Specification dialog. See *Materials List Specification Dialog on page 958*.

Details Dialog



For information about one or more selected line items in a Materials List, click the **Details** edit button. The Details dialog displays all Materials List columns for reference, which can be helpful when not all columns are in use in the Materials List. It also lists the Source Object of the selected line item or items.

This dialog will also open when multiple objects located on more than one floor are selected in a Materials List and you click the **Find Object in Plan**  edit button. See *Find Object in Plan on page 80*.

When one or more line items located on the same floor are selected, click the **Find** button at the bottom of the dialog to view their location in a plan view window.

Changing the Appearance

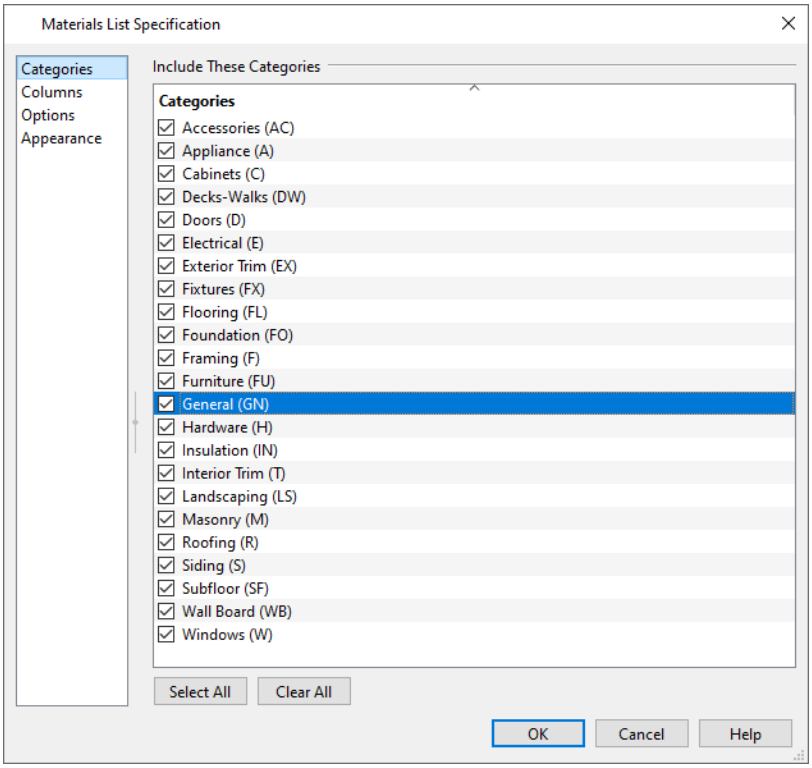
The grid lines, colors, and font used for Materials Lists can be specified in the Materials List Specification dialog. See *Appearance Panel on page 960*.

Materials List Specification Dialog

When a Materials List is open, select **Tools> Materials List> Materials List Specification** to open the Materials List Specification dialog for the current list.

The settings in this dialog are also found in the Materials List Defaults dialog.

Categories Panel

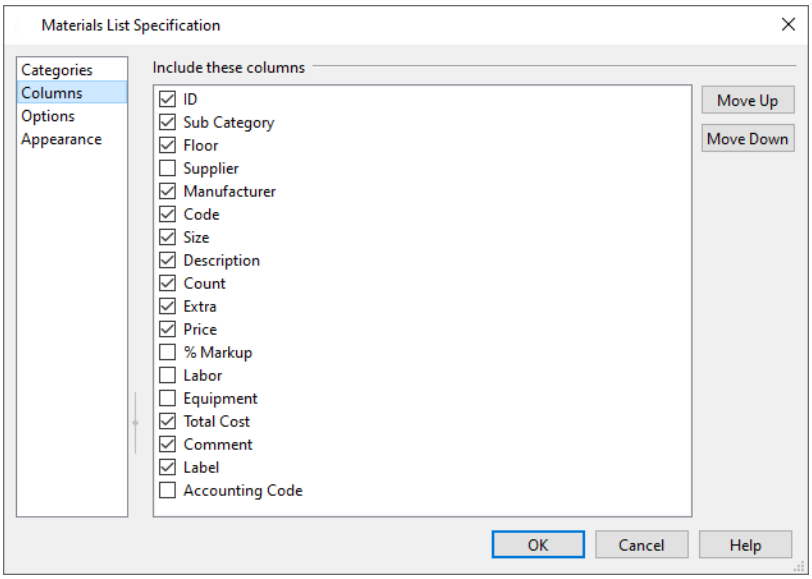


The Categories listed here appear in the ID column of the Materials List in the order they are presented here.

- Check the box beside the name of each category that you want to display in the currently active Materials List.
- Click the **Select All** button to display all categories in the active Materials List.
- Click the **Clear All** button to suppress the display of all categories in the active Materials List.
- Multiple rows can also be selected together using ***Shift*** and ***Ctrl/⌘*** keys. See *Shift and Ctrl/⌘ Select on page 187*.

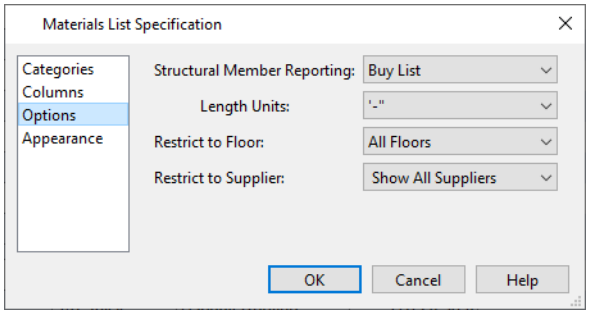
> Note: The information in a suppressed category is still part of the Materials List. If the Materials List is exported, suppressed categories are exported, as well.

Columns Panel



- Check the box beside each column you want to include in the Materials List. To suppress a column's display, remove the check mark next to its name. Columns appear in the Materials List in the order that they display in this list.
- **Move Up** - Click on a column name, then click this button to move that item up one place in the list.
- **Move Down** - Click this button to move the selected column down in the list.

Options Panel

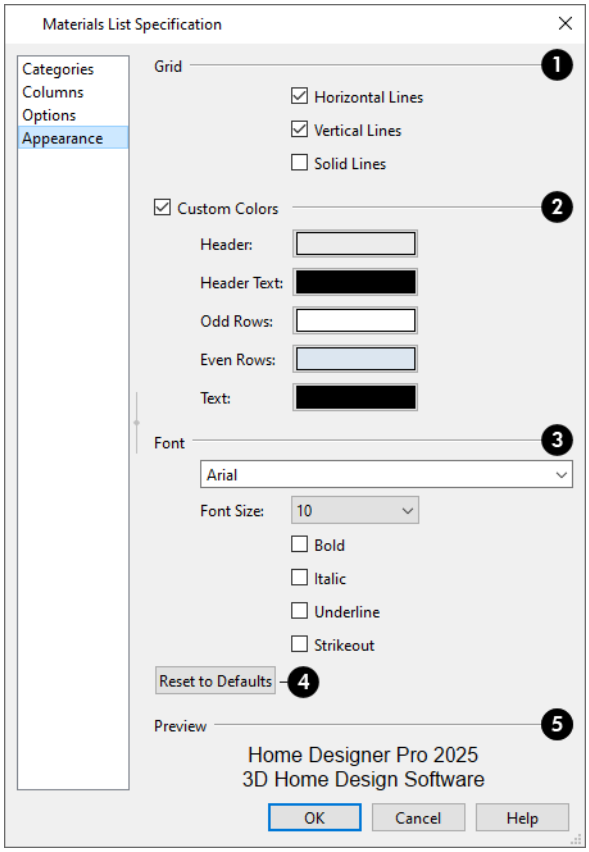


- Select a **Structural Member Reporting** method from the drop-down list to specify how framing members are counted and reported. There are four methods to choose from:
  - **Buy List** calculates the framing materials of the different structural components of the plan by counting individual pieces and matching them to common board lengths.
  - **Cut List** calculates the framing materials of the different structural components of the plan by counting the individual pieces present in the model.
  - **Linear Length** calculates the framing materials of the different structural components of the plan in linear lengths.
  - **Mixed Reporting** calculates framing materials using a combination of linear lengths and piece counts and is recommended for saved Materials Lists in legacy plans.
- Select the **Length Units** you want to use to report framing lengths. Only available when Buy List or Cut List is selected, above.

- Select a floor level from the **Restrict to Floor** drop-down list to limit the current Materials List to objects on that floor. When "All Floors" is selected, the Materials List includes objects from all floors.
- If you plan to buy materials from multiple suppliers, you can create a Materials List for each. Select an option from the **Restrict to Supplier** drop-down list to only list items associated with the selected supplier; select "Show All Suppliers" to list all items, including those with no supplier; or select "Show Only No Supplier" to only list items that do not have a supplier. Suppliers can be added to this list in the specification dialog for various objects. See *Object Information Panel on page 968*.

When a Materials List is active, you can use the **Structural Member Reporting Control** drop-down list in the toolbar to choose which method the Materials List uses.

Appearance Panel



1 Grid

- Specify whether you want the cells of the Materials List to be separated by **Horizontal Lines** and/or **Vertical Lines**.
- When **Solid Lines** is unchecked, the Materials List grid uses a dashed line style. Uncheck this to instead have unbroken lines.

2 Custom Colors

- When **Custom Colors** is checked, the Materials List uses the colors defined below. When this is unchecked, either the colors associated with the active Color Theme or your operating system's default colors are used.

- Each **Color** box displays the color assigned for various uses in the Materials List. Click a **Color** box to choose a different color. See *Select Color Dialog on page 165*.

3 Font

- Select a **Font** from the drop-down list.
- Select a **Font Size** from the drop-down list.
- Select one or more font styles: **Bold**, **Italic**, **Underline**, and/or **Strikeout**.

4 Reset to Defaults

Click this button to reset all settings on this panel to the installed system defaults.

5 Preview

A sample of the selected font and style displays here.

Materials List Columns

The columns in the Materials List are very similar, but not all columns appear in all places.

The following table lists the capabilities of each column:

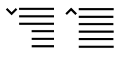
Column	Available In	Editable In	Description
ID	Materials List, Components Panel	Materials List, Components Panel	Displays an automatically generated identifier for each line item. Select the cell in this column to change an item's category.
Sub Category	Materials List, Components Panel	Materials List, Components Panel	Select a cell in this column to change a line item's subcategory.
Floor	Materials List	N/A	States the floor that the line item is located on. See *Multiple Floor Levels on page 535*.
Label	Materials List, Components Panel	Materials List	Lists the label that displays in plan view for most items that have labels associated with them. See *Label Panel on page 395*.
Supplier	Materials List, Components Panel	Materials List, Components Panel	Specify a supplier for the item.
Manufacturer	Materials List, Components Panel	Materials List, Components Panel	Specify a manufacturer for the item.
Code	Materials List, Components Panel	Materials List, Components Panel	Specify a Code, such as an SKU, for the item.
Size	Materials List, Components Panel	Materials List, Components Panel	Click in a cell to edit the size description of the line item. To restore the original size, delete the text you typed in. For a blank cell, type a single blank space.
Description	Materials List, Components Panel	Materials List, Components Panel	Click in a cell to edit the description of the line item in the same way that the Size can be edited.
Count	Materials List, Components Panel	Components Panel	This is the actual number of an item, either associated with the selected object or in the Materials List. Count can be increased for accessories added to a selected object.
Extra	Materials List, Components Panel	Materials List, Components Panel	Specify an additional amount of the line item. Changes made in the object's specification are reflected in the Count column in the Materials List.

Column	Available In	Editable In	Description
Price	Materials List, Components Panel	Materials List, Components Panel	This is the per-unit price of an item.
% Markup	Materials List, Components Panel	Materials List, Components Panel	Specify a markup percentage for the item.
Labor	Materials List, Components Panel	Materials List, Components Panel	Specify a labor cost for the item.
Equipment	Materials List, Components Panel	Materials List, Components Panel	Specify an equipment cost related to the item.
Total Cost	Materials List, Components Panel	Materials List, Components Panel	This is the total cost based on Count, Price, % Markup, Labor and Equip values.
Comment	Materials List, Components Panel	Materials List, Components Panel	Additional information related to the item can be entered here.
Accounting Code	Materials List, Components Panel	Materials List, Components Panel	The Accounting Code information is used if a plan file is opened in Chief Architect X18 and a materials list is exported for use in BuilderTREND software.

Editing Materials Lists

Materials Lists can be edited in a variety of ways. You can adjust the width of a column by clicking and dragging the bar on the right side of the column name.

Expand and Collapse Rows

 If a line item has an arrow to the left of its name in the ID column, it represents multiple individual objects. Click the **Expand** edit button to display these individual objects as separate line items; click the **Collapse** edit button to hide them. You can also click the arrow to the left of the name to expand or collapse the line items. This option is not available in Materials List Reports.

Adding Information

You can enter information in the Price, Supplier, Code, Comment and Manufacturer columns for each line item.

Adding price or other information for any item is straightforward. Simply click in the cell and type the desired information.

Changing Information

You can change the information in any column in an individual Materials List. As with added information, click in a cell to select the existing text, then type in the desired text.

To move a line item to a new category, select the cell in the **ID** column and choose a new category from the drop-down list that becomes available. You can also select a subcategory by clicking in the cell in the **Sub Category** column. See *Categories on page 957*.

Changing Count Units

The material for a given object component will be counted either by piece; linear feet or meters; square feet or meters; or cubic yards or meters. The same method and unit used in the Count column will be used in the Extra column.

When the Count is linear, area, or volume, you can choose a different unit of measurement:

- Double-click in a cell in the Count column to select and edit it, then choose a unit of measurement from the drop-down list to the right of the selected cell.
- You can also click the **Number Formatting** button when a Count cell is selected to specify the units and accuracy of the value in the selected field. The specified unit is also used in the Extra field for that row. See *Number Formatting Dialog*.

The currency used in the Cost and Total Cost columns is determined by your operating system's Region settings. See *Region and Language Settings on page 84*.

Tool Tips

Whenever you mouse over a cell in the Count column, a Tool Tip will display, providing information about the cell's contents. When the Count is a total length, area, or volume, it may be rounded. The Tool Tip will show the value with greater accuracy.

Total Cost

Total Cost for a line item is calculated using the Count, Price, % Markup, Labor and Equipment columns to calculate the cost. The formula used is:

(**Count** + **Extra**) * **Price** * (1 + (**% Markup**/100)) + ((**Count** + **Extra**) * **Labor**) + ((**Count** + **Extra**) * **Equipment**)

If a column does not appear, 0 is used for the value of that column with the exception of Count and Price, which are always used in the calculation even if they are not shown.

Copying Information

Portions of a Materials List can be copied and then pasted into a **Text** object or into a word processing program or spreadsheet program using the standard Windows Copy (Ctrl/⌘ + C), Cut (Ctrl/⌘ + X), and Paste (Ctrl/⌘ + V) commands. See *Copying and Pasting Text on page 378*.

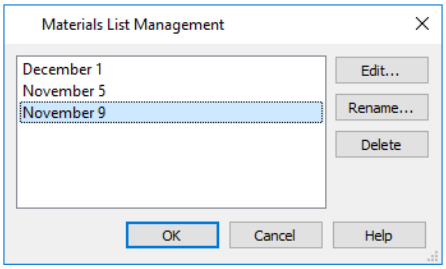
Saving and Managing Materials Lists

To save an open Materials List, click the **Save Active Materials List** button in the top toolbars. If the Materials List has not been previously saved, the Save Materials List dialog will open, allowing you to type a short, descriptive name for the list. You will also be prompted to save a Materials List when you close its window.

Once a Materials List has been saved, it is listed in the Materials List Management dialog.

Materials List Management Dialog

Select **Tools> Materials List> Materials List Management** to open the Materials List Management dialog.



All saved Materials Lists are listed here. Click on an item in the list on the left to select it.

- **Edit** - Open the selected Materials List. You can also double-click an item in the list.
- **Rename** - Open the Rename Materials List dialog and type a new name for the list.
- **Delete** - Remove the selected Materials List from the current plan.

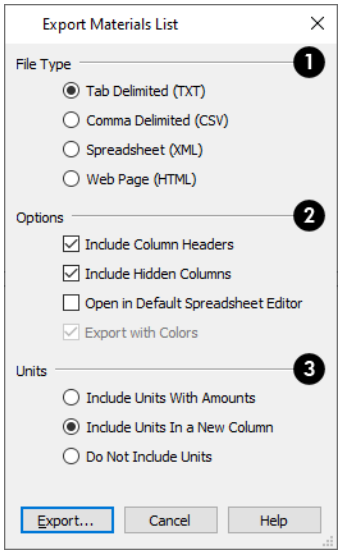
Printing and Exporting the Materials List

There are several options for printing and exporting the information in a Materials List.

To print a Materials List, select **File> Print** while the Materials List window is active. See *Print View Dialog on page 997*.

MAT A Materials List can also be exported into a one of several different file formats that can be opened by various programs. In a Materials List window, select **File> Export Materials List** to open the Export Materials List dialog.

Export Materials List Dialog



1 File Type

Specify the **File Type** that you would like to export to.

- Select **Tab Delimited (TXT)** to create a text file with a tab between each field entry in the Materials List, and a carriage return between each row.
- Select **Comma Delimited (CSV)** to create a text file with a comma between each field entry in the Materials List and a carriage return between each row.
- Select **Spreadsheet (XML)** to create a file that can be opened by Microsoft Excel.
- Select **Web Page (HTML)** to create an html file that you can view with a web browser.

2 Options

Additional export options are available here.

- Uncheck **Include Column Headers** to prevent column headings from appearing in the first row of the exported file. Column headers are always included in HTML files.
- Uncheck **Include Hidden Columns** to only export columns currently displayed in the active Materials List. When this is checked, all columns are exported, regardless of whether they are currently displayed.
- Check **Open in Default Spreadsheet Editor** to open the exported file with the program specified on your computer when you finish exporting.
- When XML or HTML is selected above and **Export with Colors** is checked, the Color Theme or Custom Colors used in the Materials List are exported. When unchecked, the white and pale gray fill and black text are used.

3 Units

Specify how **Units** of measurement are exported. Currency information is always exported, regardless of the option chosen here.

- Select **Include Units with Amounts** to include units in the same column as the associated value.
- Select **Include Units in a New Column** to report units as text in a new column.
- Select **Do Not Include Units** to not export units at all.

When you click OK, the Write Materials Export File dialog will open. This is a typical File Save dialog. See *Exporting Files on page 68*.

Estimating Software

You can export a Materials List to a word processor or spreadsheet program to arrange it in your estimating format. You can also export the Materials List to a number of commercial estimating programs in whose databases you can keep your current pricing, labor costs, and markups and generate reports based on this data.

Before purchasing an estimating software program, be sure that the program supports the direct import of Chief Architect Materials Lists.

Any questions regarding estimating software packages and how they interact with Home Designer should be directed toward the company providing the estimating software. Chief Architect Software is unable to provide any technical support for third party programs.

Object Components

Many architectural objects in the program, from walls to cabinets to images, have components associated with them that are calculated in the Materials List. For example, base cabinets have cabinet box and countertop components.

In addition to their components, some objects also have subcomponents. Cabinet boxes, for example, have doors, drawers and hardware.

Component information for Plant images can be listed in Plant Schedules. See *Plant Schedules on page 947*.

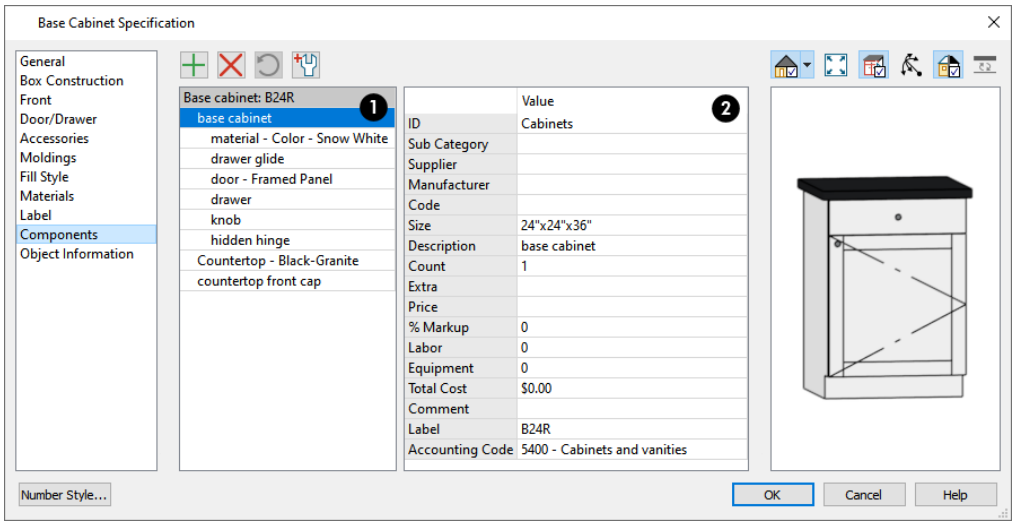
Components and subcomponents are specified on the COMPONENTS panel of many object specification dialogs.

You can also add and edit information for objects and their accessories in the Materials List. See *Editing Materials Lists on page 963*.

COMPONENTS PANEL

Select one or more objects of the same type and click the **Open Object** edit button to open their specification dialog. The information on the COMPONENTS panel is the same as the Materials List line item(s) for the selected object.

The information on the COMPONENTS panel can also be edited for objects in the User Catalog of the Library Browser. See *Editing Library Items on page 726*.



The selected object's components and their attributes are listed in two tables.

1 Components

The selected object's components and subcomponents are listed here.

- Subcomponent names are indented to help distinguish them from main components.
- Click on a line item to select it and display its Materials List information to the right.

The buttons above the table allow you to manage this list.

- When a component is selected, click the **Add Line Item** button to add a new component to the list. When a subcomponent is selected, a new subcomponent is created instead.
- Click the **Remove Line Item** button to remove the selected line item from the list.
- Click the **Restore** button to return to the list any previously removed components or subcomponents. Only available when line items have been removed. User-created line items that have been removed are not affected by this option.
- Click the **Revert** button to reset any Values customized in the Materials List Data table. In the Cabinet Specification dialogs, they are reset to the values set in the corresponding Cabinet Defaults dialog; in the Cabinet Defaults dialogs, they are reset to the system defaults.

2 Materials List Data

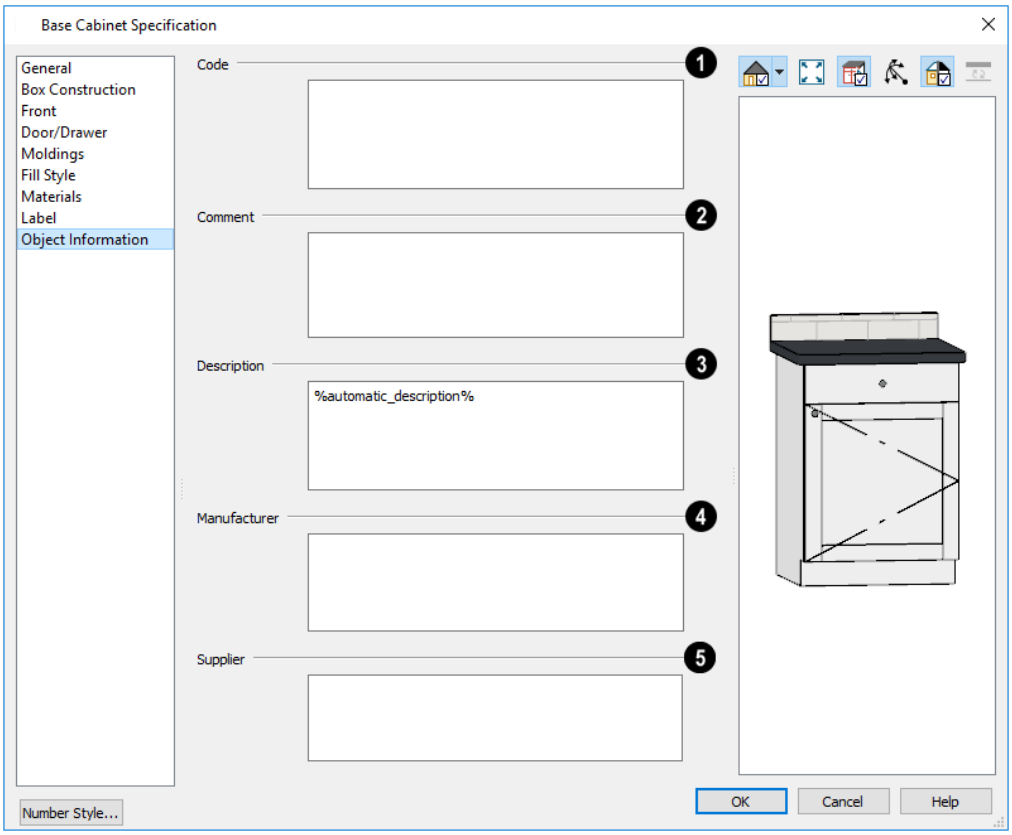
- The left column is a list of column headings found in the Materials List. See *Materials List Columns on page 957*.
- The **Value** for each Materials List column can be specified in the right column.

Additional information about how values are calculated may display below the table for some objects: notably, rooms and terrain features.

> Note: The Label can be edited on the Label panel of the object's specification dialog. See *Label Panel on page 395*.

Object Information Panel

The OBJECT INFORMATION panel is found in the specification and defaults dialogs for a variety of different objects. The settings on this panel let you specify information that can then be included in the Materials List and in Plant Schedules. See *Materials List Columns on page 962* and *Schedule Numbering and Columns on page 948*.



1 Code

Specify a **Code**, such as an SKU, for the selected object.

2 Comment

Specify a **Comment** for the selected object.

3 Description

Specify a **Description** for the selected object.

4 Manufacturer

Specify the selected object's **Manufacturer**.

5 Supplier

Specify the selected object's **Supplier**.

Layout

Chapter 44

The Home Designer layout facility provides a set of easy to use tools for creating printed construction documents. You can create your own title block and border, then arrange multiple views of a plan, notes, and more on a page for printing.

Each Project can include one Layout, and each layout file has up to five pages, each of which can contain multiple views, details, images, CAD objects, or text.

For detailed information about printing in Home Designer, see *Printing and Plotting on page 984*.

Layout Preferences and Defaults

There are a number of defaults and preference settings that affect layout files.

You can specify the background color of the drawing area in layout files on the COLORS panel of the Preferences dialog. See *Colors Panel on page 95*.

To access the layout defaults for the current layout file, select **Edit> Default Settings**. The options in the Default Settings dialog are similar to those found in this same dialog in a plan file, although there are fewer choices in the list because only CAD objects, dimensions, and text can be drawn on layout pages. See *Default Settings on page 83*.

General Layout Defaults

The settings in the General Layout Defaults dialog control basic features of the Chief Architect environment in the current layout file. As with other default settings, they are file specific, which means that they can be set differently in individual layout files. To open this dialog, select **Edit> Default Settings**, select "Layout", and click the **Edit** button. The settings in this dialog are also found in the General Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.

Drawing Sheet Setup

The settings in the Drawing Sheet Setup dialog are file-specific and are particularly important considerations in layout files. See *Drawing Sheet Setup Dialog on page 987*.

Layout Page Display Options

Select **Tools> Layer Settings> Display Options** to open the Layout Page Display Options dialog.

This dialog is similar to the Layers Display Options dialog, but controls only the display of objects drawn on the layout page, such as CAD objects, text, dimensions, and imported objects. The display of layout view boxes is also controlled by the Layout Page Display Options - but not the objects within those views.

For information about how to use this dialog, see *Layer Display Options Dialog on page 154*.

For information about controlling the display of objects in views sent to layout, see *Displaying Layout Views on page 977*.

Layout Box Defaults

The default line style, fill style, and label format for layout boxes can be set in the Layout Box Defaults dialog. See *Layout Box Specification Dialog on page 978*.

The Layout Tools

There are a variety of tools available to send views to layout and edit them, as well as manage links.

Many of the tools available in layout are described in the Printing chapter. See *The Printing Tools on page 986*.

Select **File> Send to Layout** to open the Send to Layout dialog and send the current view to layout. See *Sending Views to Layout on page 972*.

In plan view, select a saved cross section/elevation view symbol and click the **Send Camera's View to Layout** edit button. See *Saving and Printing 3D Views on page 807*.

Select a layout view and click the **Open View** edit button to open the view that was originally sent to layout. This tool is only available for dynamic views. See *Editing Dynamic Views on page 978*.

Select **Edit> Delete Objects** to delete categories of objects from the current layout file. See *Delete Objects Dialog on page 219*.

Select **Window> Swap Views** to switch between the current view and the view that was current before it. See *Working in Multiple Views on page 133*.

Creating a Layout File

To open an existing layout file, select **File> Open Layout**. Browse to a directory and select the layout file to open. See *Opening and Importing Files on page 63*.

As with plan view windows, when a layout file is open, it is listed at the bottom of the Window menu as an open view. See *Working in Multiple Views on page 133*.

In order to create a layout file, you must open a new file and then save it.

Choose **File> New Layout** to create a blank layout file. A layout file is created with the name **Untitled.layout**.

Select **File> Save** to save the layout file. It is important that you save the layout in the same directory as the plan file from which views will be or have been sent to the layout pages. See *Organizing Your Files on page 45*.

Although it is possible to use multiple plan files with a layout, it is generally best to associate only one plan file with a layout and to use the same file name for both. If more than one plan file is used, all should be saved in the same directory as the layout file.

When you save your layout, take a moment to also save the plan file associated with it.

> When a view is sent to layout, the plan and layout files become linked. If you rename or move either file, this link will be broken and the view will not display. See *Managing Layout Links on page 980*.

CAD and Text in Layout

CAD objects, text objects, as well as dimensions can be incorporated into your layout by both including them in your views sent to layout and by drawing them on the layout page.

On the Layout Page

CAD and text can be drawn directly on the layout page, allowing you to create a title block, border, as well as notes and other annotations.

You can draw dimension lines on the layout page to help position CAD and text objects, as well. Dimensions that locate objects in a view sent to layout, however, should be drawn in the original view. See *Dimensions on page 340*.

CAD, text, and dimensions created in layout can be selected, edited, and deleted just as they can in other views. See *Editing Text on page 375* and *CAD Objects on page 224*.

Pictures and PDFs can also be imported into layout. See *Pictures, Images, and Walkthroughs on page 850*.

In Views Sent to Layout

CAD, text, and dimensions in views sent to layout are scaled just like other objects in scaled views. If you want text in a layout view to print at a particular size, specify its size based on the scaling you will use when you send the view to layout. See *Character Size on page 367*.

If you rotate a view on the layout page, any text in that view will rotate as well, provided that its Text Style is using the **Rotate with Plan** setting. See *Text Styles on page 390*.

Pictures, Metafiles, and PDFs in Layout

Picture files, metafiles, and PDF files can be included in views sent to layout or imported directly onto a layout page. See *Displaying Pictures, Metafiles, and PDF Boxes on page 866*.

Views can also be sent to layout as pictures embedded in the layout file. See *Static Views on page 976*.

A picture or metafile imported onto the layout page can be selected and edited using its edit handles, edit tools and specification dialog. See *Editing Pictures, Metafiles, and PDF Boxes on page 867*.



Embedded pictures and pdf files increase layout file size. Limit the number of large and/or multiple pictures.

Sending Views to Layout



Layout files can contain multiple views sent from one or more plan files. To send the active view from a plan file to layout, select **File> Send to Layout**.



You can also send one or more saved, closed cross section/elevation views to layout by selecting the camera symbol and clicking the **Send Camera's View to Layout** edit button. This edit tool is only available when the selected view has been saved, has not previously been sent to layout, and is not open. See *Saving and Printing 3D Views on page 807*.

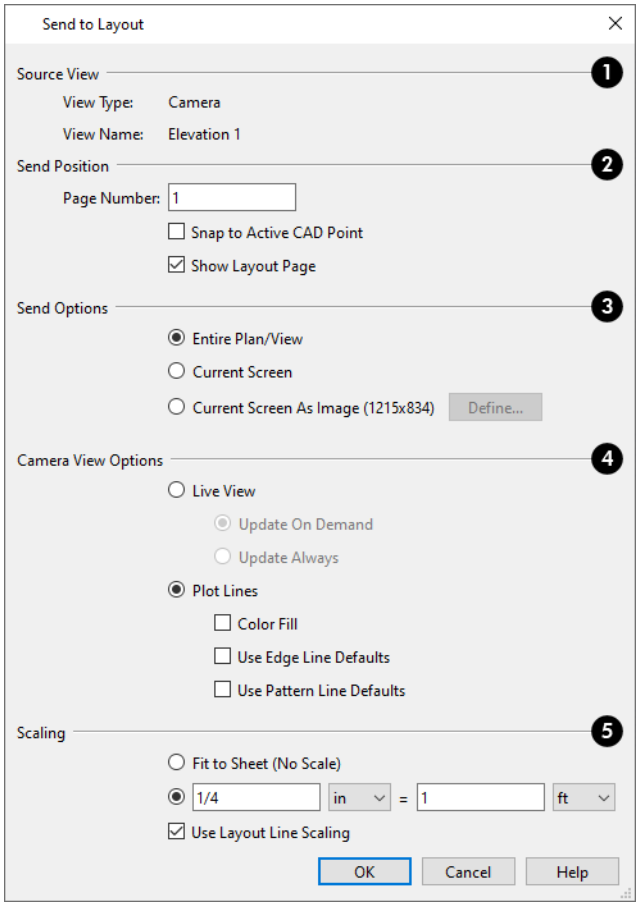
To send a view to layout

1. Open the view you wish to send to layout and prepare it so that the desired layer, default, and other settings are in use. See *Dynamic Views on page 975* for more details.
2. Select **File> Send to Layout**  .
3. In the Send to Layout dialog, select the layout page and other options that you need for the view.

4. Click **OK** to send the view to the specified layout page. Depending on the type of view and size of the model, you may see a progress indicator in the Status Bar. See *The Status Bar on page 24*.

Send To Layout Dialog

The options available in the Send to Layout dialog vary depending on the type of view being sent to layout.



1 Source View

- The **View Type** and **View Name** of the view currently being sent to layout are reported here for reference. See *View Windows on page 130*.

2 Send Position

These options are available for all types of views.

- **Send to Layout Page #** - Enter a page number to send the view to.
- Check **Snap to Active CAD Point** to snap the view you are sending to layout to the active CAD Point. See *Point Tools on page 227*.
- Check **Show Layout Page** to go to the selected layout page when you click OK. When this is unchecked, the current view remains active.

3 Send Options

The options available here depend on the type of view being sent to layout. The last settings used for cross section/elevation

views are retained during the current program session, as are the last settings used for camera views and overviews, and those used for plan views.

- Select **Entire Plan/View** to send to layout the extent of the plan that is visible when you click **Fill Window** . This option is not available for Perspective 3D views. See *Types of 3D Views on page 779*.
- Select **Current Screen** to send only what is shown on screen to layout. This option is available for all view types.
- Select **Current Screen As Image** to send only what is shown on screen to layout as an embedded image. The resulting image size is reported in pixels. This option is available for all views, but is the only option available for rendered views. See *Picture Box Specification Dialog on page 859*.
  - Click the **Define** button to specify the image's size and set whether it has a transparent background. See *Exporting Pictures on page 856*.

4 Camera View Options

These options are available for cross section/elevation, camera views, and overviews sent to layout - provided that **Current Screen as Image** is not selected, above. The last settings used for cross section/elevation views are retained during the current program session, as are the last settings used for camera views and overviews.

- Select **Live View** to make the view dynamically linked to the original view saved in the plan file.
  - Select **Update on Demand** to update the view only when prompted. See *Keeping Layout Views Current on page 974*.
  - Select **Always Update** to update the view any time a change is made to the model. This option ensures that the view is always current but may cause program slowness.
- Select **Plot Lines** to send the view to layout using automatically generated Plot Lines that represent surface edges and material pattern lines in the model instead of the view's Rendering Technique. See *Plot Line Views on page 976*.
  - Check **Color Fill** to include colors that correspond to the materials used in the model.
  - Check **Use Edge Line Defaults** to use a line weight of 18 and black color for all object edge lines. When unchecked, the view uses layer- and/or object-specific settings, per the **Surface Edge Lines** settings in the 3D View Defaults dialog. See *3D View Defaults Dialog on page 782*.
  - Check **Use Pattern Line Defaults** to use a line weight of 10 and black color for all material pattern lines. When unchecked, the pattern line weight and color settings set in the Define Material dialog are used. See *Pattern Panel on page 772*.

5 Scaling

Select a radio button to specify how the view sent to layout is subjected to scaling.

- Select **Fit to Sheet (No Scale)** to send the view to layout at approximately half the size of the layout drawing sheet. Once on the layout page, the view can be resized.
- Specify the **exact scale** for the view in layout. Both U.S. and metric units of measurement are available and can be selected independently.
- When views are sent to layout at different scales, line weights and line styles are subject to the same scaling. In most cases this is not desirable. When **Use Layout Line Scaling** is checked, the lines in views sent to layout appear the same as lines drawn directly on layout. This option is not available for rendered views. See *Line Weights and Scaling on page 995*.

Keeping Layout Views Current

It is not uncommon for changes to be made to a plan after views have been sent to layout. In order to make sure that your layout file is up-to-date, it is important to recognize that there are four types of layout views:

- *Dynamic Views on page 975*, which update automatically every time changes are made to the original view in the plan.
- *Semi-Dynamic Views on page 975*, which fully update when printed or prompted by you.
- *Static Views on page 976*, which do not reference the plan and cannot be updated: only replaced.
- *Plot Line Views on page 976* have elements that are Dynamic or Semi-Dynamic and others that are Static.



Semi-Dynamic and Plot Line Views can be updated using the **Update Layout View** tools. Select **Tools> Update Layout Views**. In addition, a selected view can be updated using the **Update View** edit tool.

Dynamic Views

Dynamic views reference the original view in the plan and update automatically whenever changes are made to that view, including:

- Changes to the model.
- Changes to annotations in the view.
- Changes to the layer settings used by the layout view. See *Layout View Layers on page 977*.

In order for a view to be Dynamic, it must be sent to layout using either the **Entire Plan/View** or **Current View** Send Option. In addition, camera views must have **Update Always** specified. See *Send To Layout Dialog on page 973*.

While convenient, Dynamic views require use of your computer's resources and may slow program performance. Consider sending cameras, overviews, and cross section/elevations to layout as Semi-Dynamic views.

For the most part, plan views sent to layout are Dynamic; however, a number of elements are Static

In order to modify these elements in a view, you need to delete the view and resend it.

- The default **Display in Plan View** setting for pony walls is a permanent part of the layout view. See *Pony Wall Defaults on page 255*.
- The floor level shown in a view sent to layout does not change if you move to a different floor in the plan. See *Multiple Floor Levels on page 535*.
- The **Reference Display** setting in a view sent to layout is unaffected if the Reference Display is turned on or off in the plan. See *The Reference Display on page 546*.
- The **Color** setting in a view sent to layout is unaffected if Color is toggled on or off in the original view. See *Color On/Off on page 157*.
- The **Rotate Plan View** angle is a permanent part of the layout view. See *Rotate Plan View on page 132*.

For information about controlling the display of dynamic views in layout, see *Displaying Layout Views on page 977*.

Semi-Dynamic Views

Camera views, overviews, and cross section/elevation views can all be sent to layout as Semi-Dynamic views. Semi-Dynamic views reference the original view in the plan but no information about the model or the view's layer settings update unless you prompt the layout view to update.

When a cross section/elevation view has been sent to layout, CAD objects, text, and dimensions in that view are fully Dynamic - even if the view is set to **Update on Demand**. See *Detailing Cross Section/Elevation Views on page 802*.

In order for a view to be Semi-Dynamic, it must be sent using either the **Entire Plan/View** or **Current View** Send Option and have **Update on Demand** specified. See *Send To Layout Dialog on page 973*.

There are several ways to update a Semi-Dynamic view:

- Select it and click the **Update View** edit button;
- Select **Tools> Update Layout Views> Update All Views**; or
- Select **Tools> Update Layout Views> Update All Live Views**.
- Update on Demand views also update automatically when you print the layout page that they are on.

Views set to **Update on Demand** may experience a loss in quality as you zoom and pan on the layout page. To restore a view's resolution, simply update it.

Static Views

Static views are like a snapshot of the model taken at a specific time: they do not update when the plan changes. If changes to the plan need to be shown in a Static view, that view must be deleted and resent to layout.

All views sent to layout using the **Current Screen as Image** option are Static. They are treated as imported images embedded in the layout file. See *Picture Box Specification Dialog on page 859*.

Plot Line Views

Camera views, overviews, and cross section/elevation views can be sent to layout as Plot Lines. See *3D Views on page 779*.

In layout boxes set to use Plot Lines, the lines representing surface edge lines and material pattern lines on surfaces visible in the view are represented by automatically generated lines instead of using the view's Rendering Technique. Plot Lines look similar to Vector Views and use the same line weights that were specified in the plan. See *Line Weights on page 994*.

- Plot Line views are Semi-Dynamic in that they are linked to the original view and can be updated.
- Plot Line views are Static in that they will not update automatically when printed: they can only be updated manually by you.
- Any CAD objects, text, or dimensions drawn in a cross section/elevation view sent to layout will not be copied and represented by Plot Lines. These objects remain fully Dynamic and will update immediately in the layout view if changes are made to them. See *Detailing Cross Section/Elevation Views on page 802*.
- The **Color** setting in a Plot Line view is unaffected if Color is toggled on or off in the original view in the plan. See *Color On/Off on page 157*.
- Image objects and effects created using the Cross Section Slider are not included in Plot Line views. See *Images on page 850* and *Cross Section Slider on page 802*.

Plot Line views do not automatically update when printed, nor can they be set to update automatically. In order to update a Plot Line view, you must do one of the following:

- If you close a saved view that was previously sent to layout as Plot Lines and the model has been modified since then, an Update View to Layout message box lets you choose whether you want to update the view on the layout page. Click Yes if you want to update it or No to leave it unchanged. This message can be suppressed if you wish.
- Select the Plot Lines layout box and click the **Update View** edit button;
- Click the **Update All Plot Line Views** button.
- Click the **Update All Views** button; or

Displaying Layout Views

Just as some elements in a view window do not print, they are not included when a view is sent to layout: for example, the Reference Grid and camera symbols in plan view. See *Print Preview on page 990*.

Layout View Layers

When a view is sent to layout, the current layer display settings are used. See *Layer Attributes on page 152*.

The layer settings of a selected Dynamic or Semi-Dynamic layout view can be edited if you click the **Open View** edit button to open the original view in the plan. Please be aware that if you open the original view in this manner and then Save the plan, the layout view and the original view will share the same layer settings going forward. You should only do this if you want a layout view with layer settings that update whenever changes are made in the plan.

If you would like to change the layer settings of a layout view, consider deleting it and sending a new view to layout with the desired layer settings.

Layout Box Borders and Labels

A border will display around each layout box when the “Layout Box Borders” layer is set to display in the Layout Page Display Options dialog. See *Layout Page Display Options on page 970*.

- You can specify the Layout Box border Line Style by layer as well as for individual Layout Boxes. See *Layer Attributes on page 152*.
- When the "Layout Box Borders layer displays, any Fill Styles assigned to Layout Boxes will also display. See *Layout Box Specification Dialog on page 978*.

Layout Boxes can also display labels when the “Layout Box Labels” layer is set to display. See *Label Panel on page 395*.

Automatic Layout Box labels display basic information about the original view in the plan. For example, plan view sent to layout from Floor 1 will have an automatic label that says, “1st Floor”. A camera view sent to layout will have a label that states the camera’s name. Layout Box labels can be customized in the Layout Box Specification dialog. See *Label Panel on page 980*.

Missing Layout Views

If a view on the layout page can be selected but cannot be seen, its link to the plan from which it was sent may have been broken. See *Managing Layout Links on page 980*.

Editing Layout Views

To edit a layout view, first select its layout box using the **Select Objects** tool. Once selected, the view box can be edited using its edit handles, edit toolbar or specification dialog.

Using the Edit Handles

Layout view boxes can be edited using their edit handles like closed polyline-based objects. See *Editing Closed Polyline-Based Objects on page 197*.

Only layout boxes linked to plan views can be rotated, however: cross section/elevation and 3D views cannot. Both the layout box and the view inside it rotate.

In the Specification Dialog

Layout view boxes can be customized in their specification dialog. See *Layout Box Specification Dialog on page 978*.

Using the Edit Tools

A selected layout view or views can be edited in a variety of ways using the buttons on the Edit Toolbar. See *The Edit Toolbar on page 122*.

Using Dimensions

Like other CAD based objects, layout views can be moved and resized using dimensions. See *Moving Objects Using Dimensions on page 361*.

Copying Views

Just like many objects, views sent to layout can be copied and pasted into different layout files.

As a general rule, though, if multiple copies of a view are needed, it is best to send the view to layout as many times as necessary because each view can then be controlled independently.

Bear in mind, too, that if a layout has views copied from a different layout file and is later moved to a different location on your computer, the link to the original plan file may be broken. See *Keeping Layout Views Current on page 974*.

Editing Dynamic Views

Select a Dynamic or Semi-Dynamic view and click the **Open View** edit button to open the original view that was sent to layout. You can also double-click a view of either type in layout to open the original view. See *Opening Layout Views on page 980*.

Resizing Scaled View Boxes

Scaled views retain their scale regardless of how you resize the border. If the border is increased in size, blank spaces may be created; if the border is made smaller, the view may become cropped.

Resizing Non-Scaled View Boxes

If the view was sent to layout using the **Fit to Sheet** setting, or if a view is set to **No Scale** in the Change Scale dialog, resizing may have one of two results:

- Drag a corner edit handle using the **Alternate** Alt Edit Behavior to resize both the border and the image proportionally. See *Alternate on page 180*.
- If you use any other Edit Behavior or if you drag a side edit handle, the perimeter of the layout box changes but the view inside it stays the same size. If you make the border smaller, the view may become cropped.

Layout Box Specification Dialog

Select one or more layout view boxes and click the **Open Object** edit button to open the Layout Box Specification dialog. The settings that are available will depend on the types of views selected.

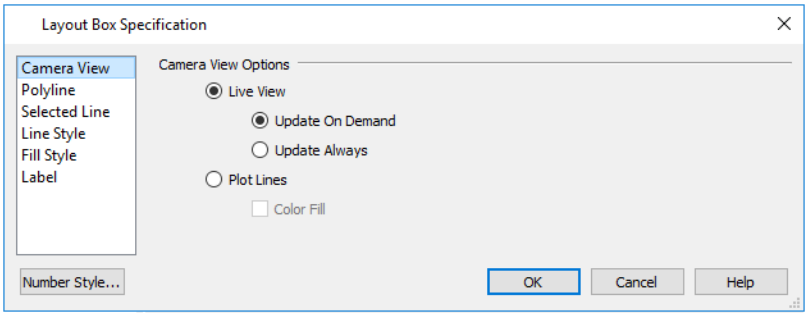
The settings on the LINE STYLE, FILL STYLE, and LABEL panels of this dialog are similar to those in the LAYOUT BOX DEFAULTS dialog. See *Layout Preferences and Defaults on page 970*.

PLAN VIEW PANEL

The PLAN VIEW panel is only available in legacy layout files when the selected view is using a non-default **Number Height** for **Dimensions**. This legacy setting affects the size of dimension numbers in the selected layout view but not in the original plan file. See *Dimension Defaults Dialog on page 341*.

CAMERA VIEW PANEL

The CAMERA VIEW panel is only available when the selected view is a 3D or cross section/elevation view. See *3D Views on page 779*.



- Select **Live View** to make the view dynamically linked to the plan file.
  - Select **Update on Demand** to update the view only when prompted. See *Keeping Layout Views Current on page 974*.
  - Select **Always Update** to update the view any time a change is made to the model. This option ensures that the view is always current but may cause program slowness.
- Select **Plot Lines** to make the view a semi-dynamic Vector View with automatically generated plot lines that represent surface edges and material pattern lines. See *Plot Line Views on page 976*.
  - Check **Color Fill** to include colors that correspond to the materials used in the model.

POLYLINE PANEL

The POLYLINE panel reports the length of the layout box's Perimeter, its Area, as well as the Number of Lines that make up its perimeter. See *Polyline Panel on page 245*.

SELECTED LINE/ARC PANEL

The SELECTED LINE panel is available when the selected edge is a line as opposed to an arc. Its settings control the selected edge's length, angle, and position. See *Line Panel on page 233*.

The SELECTED ARC panel is available when the selected edge has been converted to an arc. Its settings control the selected arc's geometry and position. See *Arc Panel on page 239*.

Moving the Start of a line or arc segment moves the end of the previous connected segment, if there is one. Similarly, moving the End of a line or arch segment moves the start of the next connected segment, if there is one.

See, too, *Selected Edge on page 185* and *Change Line/Arc on page 209*.

Line Style Panel

The settings on the Line Style panel let you set the properties of the selected Layout Box's border and to specify what layout page it is located on. See *Line Style Panel on page 234*.

Fill Style Panel

The settings on the Fill Style panel affect the appearance of the selected Layout Box. See *Fill Style Panel and Dialogs on page 161*.

Layout Boxes only display a fill when the "Layout Box Borders" layer is set to display. See *Layout Box Borders and Labels on page 977*.

Label Panel

Layout Box labels display in layout when the "Layout Box Labels" layer is turned on and use the Text Style assigned to that layer. See *Label Panel on page 395*.

For more information Layout Box labels, see *Layout Box Borders and Labels on page 977*.

Opening Layout Views

Dynamic and Semi-Dynamic views sent to layout refer to an original view in a plan. From the layout page, you can access that original view by selecting a layout box, then clicking the **Open View** edit button. The original view can also be opened by double-clicking the layout view using the **Select Objects** tool.

Changes made in this view update in the original layout view when the plan file is saved. Be aware that depending on the changes you make, other views may also be affected.

Layer Sets

Always remember that when you open a view to edit it, any changes that you make to your layer settings will be reflected on the layout page. When you are finished making changes to your layout view and wish to resume work on the plan, save your work, close the plan, and then open it again. This will help avoid unintended changes to your layout view.

Managing Layout Links

Careful file management is needed to avoid missing files and disrupted layout links. See *Organizing Your Files on page 45*.

The following guidelines can help prevent layout links from being broken:

- Save plan files in the same folder as the layout, or in a sub-folder in that folder.
- Custom graphics included in a plan or layout should be embedded in the file or saved in the same folder as the layout.
- Plan files should never be renamed. If a new name is desired, make a copy of the file and rename the copy. Changes made in the copy do not affect views sent to layout from the original plan.
- Avoid sending cross section/elevations to layout more than once. Changes made to the view can affect layout views in unintended ways.
- Layout files should never be moved. If a layout file must be moved, the entire folder it is saved in should be moved or copied and then moved.

- Use **File> Backup Entire Layout** to create an independent copy of the original layout. Avoid use of "Save As." See *Exporting a Project on page 60*.

> When a layout box is selected, the name of the plan file and basic information about view it is linked to are reported in the Status Bar. See *The Status Bar on page 24*.

Finding Missing Files

When a layout file is opened, the program performs a breadth-first search for dynamically linked views. This means that it:

- Looks first in the same folder as the layout.
- Looks next in the folders located closest to the layout's folder.
- If a missing file is not found, it expands its search further from the location of the layout file until the files with the linked views are located.
- If a missing file is not found, a second breadth-first search will be performed, searching all zipped files found in the first search.

If a file remains missing after the program performs a search of your system, a Warning message will indicate that the program could not successfully open all of the layout's associated plan files. When you click OK, the Referenced Plan Files dialog will open, allowing you to relink the layout to its missing associated files. You can also open this dialog at any time by selecting **Tools> Layout> Referenced Plan Files** while a layout file is open. See *Referenced Plans/Layouts Dialog on page 72*.

In addition, a Caution symbol will display on any unlinked view boxes and the Referenced Plan Files icon will follow your mouse pointer on layout pages with a broken link. See *Pointer Icons on page 15*.

Click on the Caution symbol that displays over a layout box with a broken link to open a contextual menu:

- Select **Referenced Plan Files** to open the Referenced Plan Files dialog.
- Select **Refresh Link** to have the program perform a search of the missing view and its view.
- Select **Ignore Invalid Links** to leave the layout box unchanged and suppress the Caution symbol.

Layout Page Management

Layout files are organized into separate pages numbered 0 through 5.

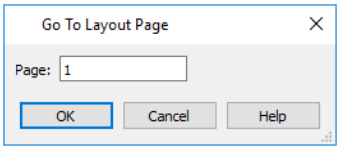
The Current Page



The current layout page is indicated at the center of the Layout Page Up/Down buttons.

There are a number of ways to navigate from one layout page to another:

- Click the arrow buttons on either side of the **Layout Page** button to navigate to the Previous or Next page.
- Click the **Current Page number** between the arrows to open the Go To Layout Page dialog. Enter a page number and click **OK**.



- Select **Tools> Layout> Page Up** or **Page Down**.
- Press ***Shift*** + ***N*** (Page Up) or ***Shift*** + ***M*** (Page Down).

Layout Page Zero

Layout Page Zero serves as a template for the other pages, allowing you to create a single title block and border in one place. Add anything to a Page Template that you want on some or all of your printed layout pages, such as:

- Title Block. See *Text, Callouts, and Markers on page 366*.
- Borders. See *CAD Objects on page 224*.
- Imported images. See *Images on page 850*.

> Note: The printable area varies from printer to printer. For best results, inset layout borders 1/2" to 3/4" from the paper edge.

Because of its special purpose, Layout Page Zero cannot be deleted.

Printing Layout Files

Printing layout files is similar to printing a view in a plan file. Select **File> Print> Print** to open the Print dialog. See *Print View Dialog on page 997*.

As in plan views, printing options for layouts are set in the Drawing Sheet Setup dialog for that layout file. See *Drawing Sheet Setup Dialog on page 987*.

Printing to Scale

A layout file's drawing scale is specified in the Drawing Sheet Setup dialog. While you can specify any drawing scale that you wish, in nearly all circumstances, you will want the scale to be **1 in = 1 in** or **1 mm = 1 mm** for all layout files.

The views sent to your layout pages have already been assigned a scale, and if you select a scale other than one-to-one for the layout, these views will be scaled a second time when printed.

> Layout views will print at their specified scales only when the drawing scale for the layout file is 1 in = 1 in or 1 mm = 1 mm.

When a view is sent to layout at a scale other than that used by the original view, line weights may be affected. See *Line Weights and Scaling on page 995*.

Printing Services

If you plan to use a printing service, you may want to install a PDF writer. See *Printing to a PDF File on page 994*.

You can also print to file using the driver for the printer that the service will use. See *Printing to File on page 985*.

Find out what paper size the print service uses and select it in the Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.

Check Plots

When a large drawing sheet size has been specified, you can print a check plot at a reduced scale so that it can be printed on a smaller printer. This allows you to make final checks before printing to the larger size. See *Check Plots on page 993*.

Exporting Layout Files


A layout can be exported to a **.dxf** file much like any other vector-based view.

The main difference is in the scale of the output, which is in scaled paper units rather than model units. If a 50” line in a plan would be scaled to 1” inch when printed, it is exported as a 1” line instead of its length before prior to scaling. See *Exporting 2D DXF/DWG Files on page 891*.

Printing and Plotting

Chapter 45

Home Designer provides a variety of options for printing scaled plan views, cross section/elevation views, and 3D perspectives.

To create working drawings, you can use the program's Layout facility. Multiple views of the model can be arranged on pages along with a border and title block. For more information, see *Layout on page 970*.

You can also save your drawings in **.pdf** file format that can then be sent to a printing service.

> Note: Screen captures are provided for illustrative purposes only and are not an endorsement of any products.

Introduction to Printing

Home Designer offers printing options to suit a variety of needs. It is helpful to be familiar with these options and choose the one that makes the most sense for the project at hand.

Output Options

Printing From Layout - For professional quality documents with a title block, border, and multiple views of the model, printing from layout provides the best results. For more information, see *Layout on page 970*.

Printing Directly From a View - You may prefer to print individual drawings directly from a view. See *Print Tools on page 987*.

Printing to PDF - Plans can be printed to a **.pdf** file and printed remotely. See *Printing to a PDF File on page 994*.

Export to STL - Exports an .stl file that can be printed on a stereolithography machine, or 3D printer. See *STL Format on page 743*.

Terminology

Drawing Sheet Size - The dimensions of the final printed output. This may or may not be the same as the printer paper size. If the sheet and paper sizes are the same, only one page is required per sheet. See *Drawing Sheet Setup Dialog on page 987*.

Paper Size - The dimensions of the paper to be printed on. Specifying a paper size that is smaller than the Sheet Size allows large drawings to be printed across multiple pages.

Check Plot - A test printing, typically at a smaller scale, made before final output to large paper format. For more information, see *Check Plots on page 993*.

Line Weight - The thickness of a line. A thicker line weight is easier to see, but may not show as much detail. See *Line Weights on page 994*.

Drawing Scale - Drawings are often printed to scale for accuracy. ¼" = 1' and 1 m = 50 m are examples of common scales. You can specify this scale in the Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.

When a particular scale is not important, drawings can also be sized to fill a particular area. See *Printing to Scale on page 992*.



Always familiarize yourself with your printer or plotter before a deadline is near, and bear in mind that it can take a little time to configure a new printer.

Printers and Plotters

There are many different types of printers and plotters. In general, a printer is smaller, normally outputting 8½ x 11" (Letter or ANSI A size), 8½ x 14" (Legal Size) or sometimes as large as 11 x 17" (Tabloid or ANSI B size).

Plotters are typically used to output larger sheets of paper such as 17 x 22" (ANSI C), or 18” x 24” (ARCH C).

Printer Drivers

A printer driver is a program that allows a printer to communicate with the rest of the computer system. Drivers are usually created by the printer manufacturer, are typically updated regularly, and can usually be downloaded free of charge from the manufacturer’s website.

In addition to interpreting between the printer and the rest of the system, printer drivers save default page size, orientation, margin size, and other information that Home Designer refers to unless you specify otherwise. See *Print View Settings on page 986*.

If you experience printing problems, consider installing updated drivers for your printer. Visit your printer manufacturer’s website for more information.



Options available with one driver may not be available with another. Printers and plotters supported in one operating system may not be supported by the manufacturer in another.

Printing to File

If your print service requires you to print to a file that can be read by their plotter, you can install that printer’s drivers on your system and then use the Windows System Print dialog to Print to File. See *Print View Dialog on page 997*.

Printing to a file is not an option in the Mac System Print dialog.

Clearing Printer Information

Some information specific to individual printers, such as available paper sizes, is saved with each plan file. You can select **File> Print> Clear Printer Info** to clear the printer-specific information stored with the plan file.

Printing Defaults

You can print to any printer or plotter that is supported on your operating system and can specify the current printer at any time in either the Drawing Sheet Setup or Print View dialog.

Drawing Sheet Setup



When any orthographic view is active, you can specify its Drawing Sheet size, margins, orientation, printed Drawing Scale, and more in the Drawing Sheet Setup dialog. Select **File> Print> Drawing Sheet Setup** to open this dialog. See *Drawing Sheet Setup Dialog on page 987*.

The settings in the Drawing Sheet Setup dialog are view-specific. This means that in a plan file, they can be set up one way for plan views and a different way for each cross section/elevation view. When a new view is created, its initial settings are derived from the current plan view settings.

The Drawing Scale set in the Drawing Sheet Setup dialog acts as the default scale for the active view's Print, Printed Size Input, and Send to Layout dialogs. See *Send To Layout Dialog on page 973*.

Print View Settings



When you are ready to print an orthographic view, select **File> Print> Print**. The initial settings in the Print View dialog are drawn from the Drawing Sheet Setup for the view. The system's default printer is selected and if possible, the paper size and orientation are set to match those of the Drawing Sheet.

Once a view has been printed, most of the settings in the Print View dialog are saved and will be applied to all views of the same type, in all Home Designer files. View types with separate Print View settings are:

- Plan view
- Cross Section/Elevation views
- Layout
- Materials Lists

If you prefer that the Print View settings not be retained in this manner, uncheck **Remember Print Settings after Printing** in the Drawing Sheet Setup dialog.

Displaying Objects



You can control the display of objects when printing directly from a view in the Layer Display Options dialog. See *Layer Display Options Dialog on page 154*.

Objects must be visible in order for them to print; however, not all items that are visible will print. See *Print Preview on page 990*.

To control the display of objects in a camera view sent to layout, turn layers on/off in the view before it is sent to layout.

Print Preview



To get a sense of whether your current settings will meet your needs when printed, you can use the **Print Preview** toggle to view the printed output on screen before any paper is used. See *Print Preview on page 990*.

The Printing Tools



Select **File> Print** to view the Print Tools submenu. These tools fall into four categories.

Print Setup Tools



Drawing Sheet Setup - Opens the Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.



Scale to Fit - Automatically selects a scale that fits your plan to the drawing sheet. See *Printing to Scale on page 992*.



Center Sheet - Automatically centers the drawing sheet on your drawing. See *Center Sheet on page 992*.



Print Preview - Shows on screen how the current view will appear printed, based on the current scale and other settings. See *Print Preview on page 990*.

Print Tools



Print - Prints the current plan view, Vector View, or layout sheet to a specified scale. See *Print View Dialog on page 997*.



Print Image - Prints the current view including images, textures, and backdrop. Views printed with Print Image are not scaled. See *Print Image Dialog on page 999*.



You can also select **File> Export> Export PDF** to open the Export PDF dialog. See *Print View Dialog on page 997*.

Display Toggles

A number of toggles allow you to turn various aspects of the display on or off. See *Interface Toggles on page 13*.



Color - Turn the on-screen display of color on or off in all views except perspective views. See *Color on page 991*.



Line Weights - When this is on, line weights appear on screen as they will print. See *Line Weights on page 991*.



Drawing Sheet - Turn this on for a preview of your plan relative to the current Drawing Sheet. See *Drawing Sheet on page 991*.



Reference Grid - The Reference Grid does not print, so you can turn this off to get a better sense of what the view will look like printed. See *Reference Grid on page 991*.

Additional Print Tools



Customize Sheet Sizes - Allows you to create custom sheet sizes. See *Customize Sheet Sizes Dialog on page 990*.



Clear Printer Info - Some information specific to individual printers, such as available paper sizes, is saved with each file. This clears the printer-specific information associated with the current page setup.

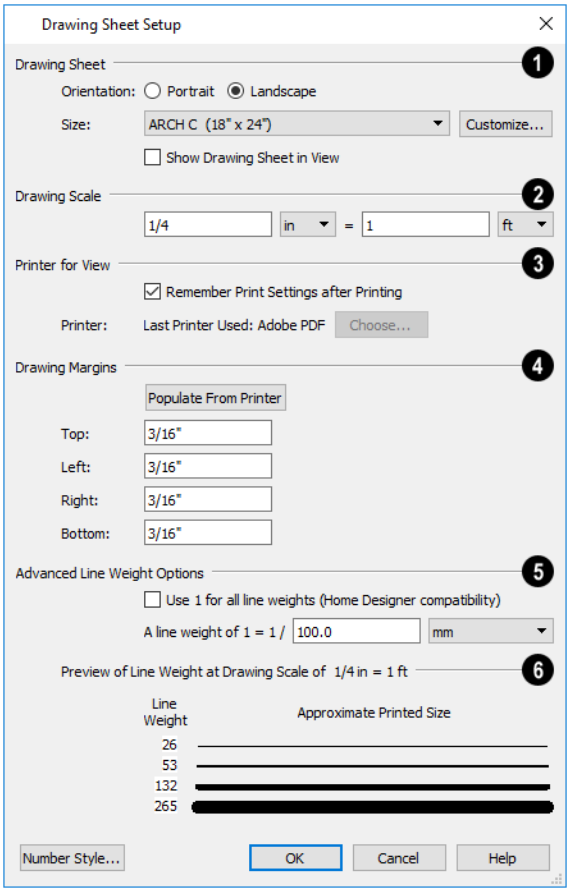
Drawing Sheet Setup Dialog



The settings in the Drawing Sheet Setup dialog control the sheet size and scaling for the current view. Select **File> Print> Drawing Sheet Setup** to open this dialog.

The Drawing Sheet Setup dialog is only available when a plan view, cross section/elevation view, or layout is active. When a perspective view is active, **Drawing Sheet Setup** is not available.

The settings in this dialog are specific to the current view and are saved with the .plan or .layout file. See *Printing Defaults on page 985*.



1 Drawing Sheet

Specify the **Orientation** and **Size** of the **Drawing Sheet**, which is the final printed output.

- Click the **Customize** button to open the Customize Sheet Sizes dialog. See *Customize Sheet Sizes Dialog on page 990*.

> Paper can often be inserted into plotters in either of two orientations. Refer to your plotter's documentation to find out which way to insert the paper for correct results.

- Check **Show Drawing Sheet in View** to turn on the display of the Drawing Sheet in orthographic views. See *Drawing Sheet on page 991*.

2 Drawing Scale

Specify the Drawing Scale for the active view. This scale is applied only when the view is printed.

The scale is specified in two parts, which by default are 1 ft = 1 ft or 1 m = 1 m for layout views, and ¼ inch = 1 ft or 1 m = 50 m for all other views. Both U.S. and metric units of measurement are available and can be selected independently.

The **Drawing Scale** acts as the default scale for the active view's Print, Print Size Calculator, and Send to Layout dialogs.

3 Printer for View

Specify the printer for the current view's type. These settings are global, affecting all plan and layout files.

- Uncheck **Remember Print Settings after Printing** to enable the Choose button, below. When this is checked, the printer is selected in the Print View dialog. See *Printing Defaults on page 985*.

- Click the **Choose** button to select a printer and edit its paper settings in the Default Printer for View dialog.

The name of a **Printer** displays to the left of the Choose button for reference.

- If the **Remember** box is checked, the last printer used in the current view type is shown; if no printer has been used in the current view, “None” will display.
- If the **Remember** box is unchecked, the system’s default printer will be shown.

If you have questions about your printer’s settings, consult its documentation.

4 Drawing Margins

Specify the **Drawing Margins** which define the extents of the printable area of the active view’s Drawing Sheet.

- Click the **Populate from Printer** button to set the margins based on the selected printer’s default settings. See *Printers and Plotters on page 985*.
- Specify the width of the **Top**, **Bottom**, **Left**, and **Right** margins.

5 Advanced Line Weights

The **Advanced Line Weight Options** allow you to specify the active view’s line weight scale. A layout file’s line weight scale should always be the same as that of any plan views associated with it. See *Line Weights and Scaling on page 995*.

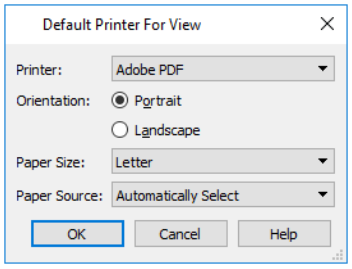
- Check **Use 1 for all line weights (Home Designer compatibility)** to have the program maintain a consistent line thickness and dash size when the drawing scale is changed. When checked, the Line Weight Scale is based on a 1/4 inch = 1 foot drawing scale and 1= 1/300 inch line weight scale. This option is not available for layouts and is not normally recommended. See *Line Weights on page 994*.
- Select the **Line Weight Scale**. See *Line Weights and Scaling on page 995*. This setting should always be the same for both a given layout file and any plan views associated with it.

6 Preview of Line Weight

A line weight **Preview** illustrates how changes to the line weight scale affect the printed size of various line weights at the current Drawing Scale.

Default Printer for View Dialog

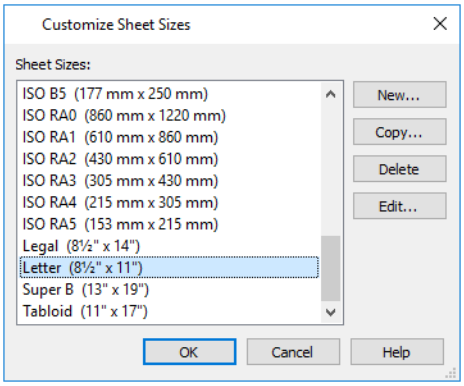
To open the Default Printer for View dialog, click the **Choose** button in the Drawing Sheet Setup dialog.



- Select a **Printer** from the drop-down list.
- Choose the **Orientation** of the paper used by the selected printer.
- Select a **Paper Size** from the drop-down list. The options available will depend on the selected printer.
- Select a **Paper Source** from the drop-down list. The options available will depend on the selected printer.

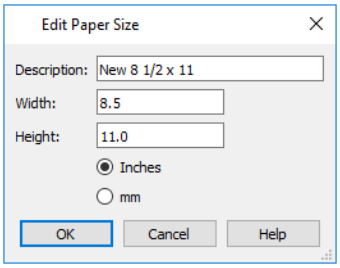
Customize Sheet Sizes Dialog

To open the Customize Sheet Sizes dialog, select **File> Print> Customize Sheet Sizes**, or click the **Customize** button in the Drawing Sheet Setup dialog.



Several options are available:

- Click **New** to create a new sheet size.
- Select a sheet size and click **Copy** to create a duplicate sheet size.
- Click **Delete** to remove the selected sheet size.
- Select a sheet size and click **Edit** to open the Edit Paper Size dialog and change its description, dimensions, and units of measurement.



- Click **OK** to close the dialog. Any new sheet sizes created are now available in the Drawing Sheet Setup dialog.
- The data for this dialog is stored in the “sheetSizes.sheet” file in the program’s Data folder.

Clearing Printer Information

Select **File> Print> Clear Printer Info** to clear the printer-specific information stored in the Drawing Sheet Setup dialog. See *Printers and Plotters on page 985*.

Print Preview

Print Preview and its related display toggles allow you to get a sense of what the current view will look like when it is printed.

Print Preview

Select **File> Print> Print Preview** for an on-screen representation of how the current view will appear when printed. Print Preview is only available in views that can be scaled. See *Printing to Scale on page 992*.

When **Print Preview** is on, the Drawing Sheet and line weights are displayed, and the **Drawing Sheet** and **Line Weights** toggles are overridden.

Objects such as camera symbols, CAD points, text and dimension objects appear on-screen as they will on the printed page.

When **Print Preview** is enabled, color will display depending on whether **Print in Color** is selected in the Print View dialog. See *Print View Dialog on page 997*.

The Reference Display does print if it is visible. See *The Reference Display on page 546*.

Color

The **Color** toggle turns the on-screen display of color on or off in all views. When Color is toggled off, views print in either black and white or grayscale depending on your **Preferences** setting. See *Colors Panel on page 95*.

Reference Grid

The **Reference Grid** is an on-screen grid composed of regular squares that can be used to convey a sense of scale while drawing. It does not print, and its size can be specified in the General Plan Defaults dialog. See *General Plan and Layout Defaults Dialogs on page 89*.

Line Weights

Select **View> Line Weights** for an on-screen representation of line weights and line styles. Turning **Line Weights** on or off does not affect the final printed output.

- When **Line Weights** is turned on, you can **Zoom In** to see the location of lines and dashed lines as they will appear on the printed page.
- When **Line Weights** is off, dashed lines look the same, regardless of the zoom factor.

Line Weights can also be turned on or off in the Preferences dialog. See *Appearance Panel on page 93*.

Drawing Sheet

The Drawing Sheet is a representation of the size and orientation of the final printed output. It is different from the printed page size, which means that you can print a large Sheet to multiple smaller pages. Select **View> Drawing Sheet** to show the Drawing Sheet on screen.

The Drawing Sheet size and orientation are specified in the Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.

When the Drawing Sheet is set to display, a blue border representing the margins of the printable area will also display for reference. If the margins have been set to populate from the selected printer, this border may not display on all edges of the drawing sheet. See *Printer Drivers on page 985*.

When **Drawing Sheet** is on, the drawing sheet behaves as an object.

- When selected at its border the sheet has edit handles, allowing it to be moved. See *Editing Objects on page 179*.
- You can also resize the sheet using its edit handles; however, for best results, it is recommended that you instead select an available sheet size in the Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.
- Dimension lines can locate the edges of the sheet and can be used to position other objects relative to it. See *Moving Objects Using Dimensions on page 361*.

> Note: Specifying a sheet size in the Drawing Sheet Setup dialog is preferable to editing the sheet size on-screen.

The drawing sheet cannot be rotated or copied.

Center Sheet

Select **File> Print> Center Sheet** to center the Drawing Sheet on the drawing. This moves the Sheet relative to the drawing but does not affect the coordinates of objects in the drawing. The location of the Drawing Sheet is independent for each floor of the model.

Printing to Scale

Several different print scaling options are available. The type of view that you are printing determines which options you may choose from.

Orthogonal Views

Plan views, Orthographic 3D views, and layout pages are orthogonal views, which means:

- Your line of sight is at a right angle to all objects in the view.
- Objects do not appear to decrease in size as their distances from the viewer increase.

Orthogonal views can be printed to scale; however, Orthographic 3D views can only be printed to scale when the Vector View Rendering Technique is used.

The scale set in the Page Setup dialog is inherited by the Print and Send to Layout dialogs. This scale can be overridden on an individual basis in either of these dialogs. See *Print View Dialog on page 997* and *Sending Views to Layout on page 972*.

Select **File> Print> Scale to Fit** in an orthogonal view to select a suitable scale and re-center the drawing sheet so that everything fits on the sheet.

U.S. Unit drawing scales are typically noted in inches per foot. Larger scales, such as 1 inch = 50 feet or 1:200m, are often used for property layouts.

Perspective Views

Camera views and Perspective overviews display the model much the way the eye would see it and cannot be scaled.

- Objects in the view may be at any angle relative to your line of sight.
- Objects seem to decrease in size as their distances from the viewer increase.

Perspective views can only be printed using the **Print Image** tool. See *Print Image Dialog on page 999*.

While perspective views cannot be scaled, you can control the printed size of the view. If **Fit to Paper** is selected in the Print View dialog, a percent value can be set that defines how much of the printed page to fill. See *Print View Dialog on page 997*. 50% causes the print to be 50% of both the height and width of the paper, including the non-printable border.

For example, if printing to an 8½ x 11 page with a 1" non-printable border in each direction:

- 100% would print an area 8½ x 11. This is not recommended, as part of the output could fall outside the printable area.
- 50% would print an area 4¼ x 5½.

- Each printer may vary slightly.

Check Plots

A check plot is a test print that allows you to print at a reduced scale on smaller, less expensive paper so you can check that the drawing will print as expected. The drawing scale is temporarily adjusted to a specified fraction of its true value. Both drawing scale and line weights are subject to this scale adjustment.

For example, if a layout has a border designed to fit on a Drawing Sheet of 24” x 36”, a check plot at 1/2 scale would allow it to fit on a 12” x 18’ page. A view sent to that layout at a Drawing Scale of 1/4” = 1’ would be scaled at 1/8” = 1’ when printed at 1/2 scale.

To create a check plot

1. Select **File> Print> Print View**  . In the Print View dialog:
   - Click the **Check Plot at** radio button, then choose the desired scale fraction from the drop-down list.
   - The **Paper Size** will automatically adjust to fit the selected Check Plot Scale.
   - Confirm that the **Paper Size** is the size you wish to use, then click **Print**.
2. The next time you print a view, remember to choose **To Scale** or **Fit to Paper** again in the Print View dialog.

Printing Text, Dimensions, and Line Styles

As with other objects your drawings, text and dimension numbers are subject to scaling when views are sent to layout or printed. See *Scaling Text on page 376*.

Printed text size is also influenced by the selected font and the method used to specify its size. See *Character Size on page 367*.

Text may not print exactly as it appears on-screen. To get a better idea of how text and dimension characters will print, you may find it helpful to **Zoom In**  on them.

For best printed results, using true-type or open-type fonts is recommended.

>  Text may not appear accurately on screen when the font used by the printer is different from the font used on screen. Consult your printer documentation for more information on font substitution.

The line styles assigned to CAD and a variety of other objects are subject to scaling when printed as well. They are only subject to scaling when sent to layout, however, under specific circumstances. See *Line Weights and Scaling on page 995*.

Printing Across Multiple Pages

When printing directly from a plan view, cross section/elevation view, or layout it is possible to print at a scale that does not fit the drawing on one page.

When printing to a paper size that is smaller than the sheet size, a 2% overlap is used. Crop marks print where the paper needs to be cut between pages. A solid line is drawn at the drawing sheet boundary on the sides that need to be cut.

To see on-screen what the drawing will look like when printed, select **View> Drawing Sheet**  and then **Window> Fill Window**  . Grey lines across the drawing sheet indicate where the page breaks will occur. See *Drawing Sheet on page 991*.

Printing to a PDF File

Portable Document Format, or **.pdf** files, are one of the most universally compatible and efficient file formats and can be viewed and printed on most computer platforms.

You can save any view as a **.pdf** file by selecting “Chief Architect Save as PDF” or any other PDF writer installed on your system as the Destination printer **Name** in either the Print View or Print Image dialog. See *Print View Dialog on page 997* and *Print Image Dialog on page 999*.

You can also print to **.pdf** from any view by selecting **File> Export> Export PDF**  . See *PDF Files on page 863*.

When you print to or export a **.pdf** file, you will be asked to either:

- Click the **Save as PDF** button to save the current print job as a **.pdf** file. When you click this, you will be prompted to give the file a name and select a save location on your system. See *Exporting Files on page 68*.
- Click the **Save to Project/Assets** button to save the current print job as a **.pdf** file and include it in either one of your Projects or Assets. See *Chief Architect Project Management on page 35*.

You can also import **.pdf** file into Home Designer. See *Importing PDF Files on page 863*.

Line Weights

The weight of a line refers to its thickness on the printed page and is described in absolute terms as a fraction of a unit, often 1/100th of a millimeter or 1/1000 of an inch. In Home Designer, line weights are assigned to objects, patterns, and layers using whole numbers that correspond to the numerator of this fraction.

Line Weights are specifically a tool for controlling printed output; however, you can globally toggle the on-screen display of **Line Weights** to get a sense of how they will print by selecting **View> Line Weights**. **Show Line Weights** is also an option in the Preferences dialog. See *Appearance Panel on page 93*.

You can specify the Line Weight Scale by defining the denominator and the unit used in this fraction in the Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.

The method for specifying an object’s line weight depends on the object and the type of view.

- Most objects’ line weights can be set by layer. See *Layer Display Options Dialog on page 154*.
- Some objects’ line weights can be set in their specification dialogs. See *Line Style Panel on page 234*.
- The line weights for walls in plan view are defined by Wall Type in the Wall Type Definitions dialog. See *Wall Type Definitions Dialog on page 290*.
- The line weights of material pattern lines, which are visible in Vector Views, can be set in the Define Material dialog. See *Define Material Dialog on page 772*.
- The line weight for fill patterns is set for individual objects in their specification dialogs. See *Fill Styles on page 159*.
- The line weight applied to surface edges in Vector Views can be set in the Print dialog. See *Print View Dialog on page 997*.
- The end cap length of dashed lines in plan view is set in the Preferences dialog. See *CAD Panel on page 109*.
- An assigned line weight of 0 draws a line weight of 1 pixel, the thinnest line weight a printer allows. How thick this is varies from printer to printer. See *Printers and Plotters on page 985*.

Line Weights and Scaling

Line weights and line styles are subject to scaling when printed. You can see an on-screen approximation of what lines will look like when a view is printed by toggling on either **Line Weights** or **Print Preview**. See *Print Preview on page 990*.

When a view is sent to layout, line weights and styles may be further affected by the drawing scale selected for the layout view. This occurs when the layout view's scale is different from the Drawing Scale of the original view.

For example, assume that you have an object in a view with a line weight of 20, and that the view's Drawing Scale is 1 mm = 50 mm.

- If you send the view to layout at 1 mm = 25 mm scale, twice the original scale, the resulting printed line weight for this object will increase to 40 instead of 20.
- If you send the view to layout at 1 mm = 100 mm scale, half the original scale, the resulting printed line weight for this object will decrease to 10 instead of 20.

Line weight scaling affects both line weights and line styles and can be particularly noticeable with dashed line styles.

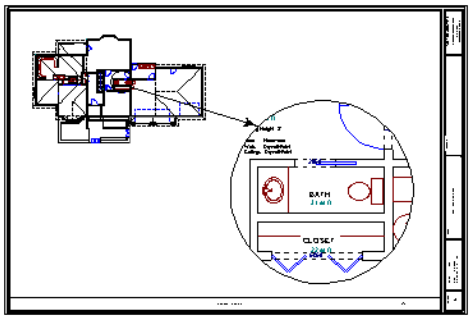
You can specify the drawing scale for any orthogonal view by opening the Drawing Sheet Setup dialog while in that view. See *Printing to Scale on page 992*.

For any layout view, you can specify whether the original line weight is maintained or not in the Send to Layout dialog. See *Send To Layout Dialog on page 973*.

Note that in order to produce exact line weights, a Vector View must be sent to layout using the **Plot Lines** option. See *Plot Line Views on page 976*.

> Note: Under most circumstances, you should select Use Layout Line Scaling when sending views to layout.

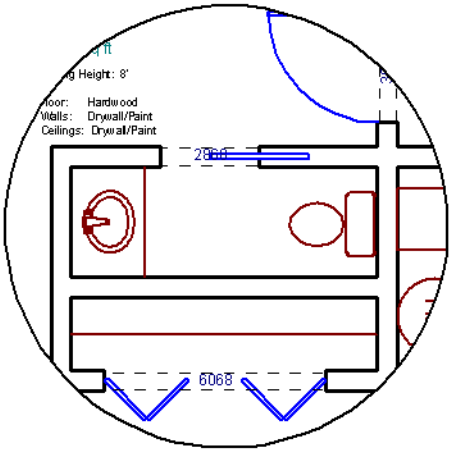
In the following image, the same plan view has been sent to layout twice, at two different scales. The view on the left was sent at the same scale as the original view,
1/8" = 1'. The view on the right was sent at 1" = 1', or magnified eight times, to show an area of the plan in greater detail.



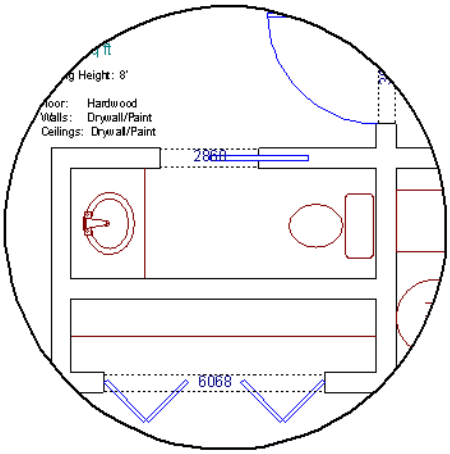
Because the view on the right was sent to layout at a scale other than that of the original, it is subject to layout line scaling.

The solid lines representing walls, cabinets and doors are rescaled to be eight times thicker than in the original view.

Similarly, the dashed lines representing the door jambs are rescaled so that the dashes and the spaces between them are eight times larger than in the original view.



If **Use Layout Line Scaling** is enabled, line weights are no longer scaled and the dashed lines display at the same size as in the original view.



Because the view in this example is scaled eight times larger in this case, the dashes and line weights look relatively small and fine when **Use Layout Line Scaling** is enabled. Were the view rescaled to be smaller instead, the line weights would look relatively large and thick.

Printers and Line Weight

Line weight and print scaling are subject to the limitations of the printer being used. For example, you will not be able to see the difference between a line that is 1/150th of an inch wide and one that is 1/300th of an inch wide when they are printed using a printer that prints 150 dots per inch (DPI).

That is, a CAD line with a line weight of 1 will look the same as a CAD line with a line weight of 4 when the Line Weight Scale is set at 1 = 1/600th of an inch and you print to a printer capable of 150 DPI.

Setting an object's or group of objects' line weight to zero causes the lines to print as thinly as possible.



The default Line Weight Scale of 1 = 1/100 mm makes it easy to meet many professional drawing standards and in most cases should not be changed.

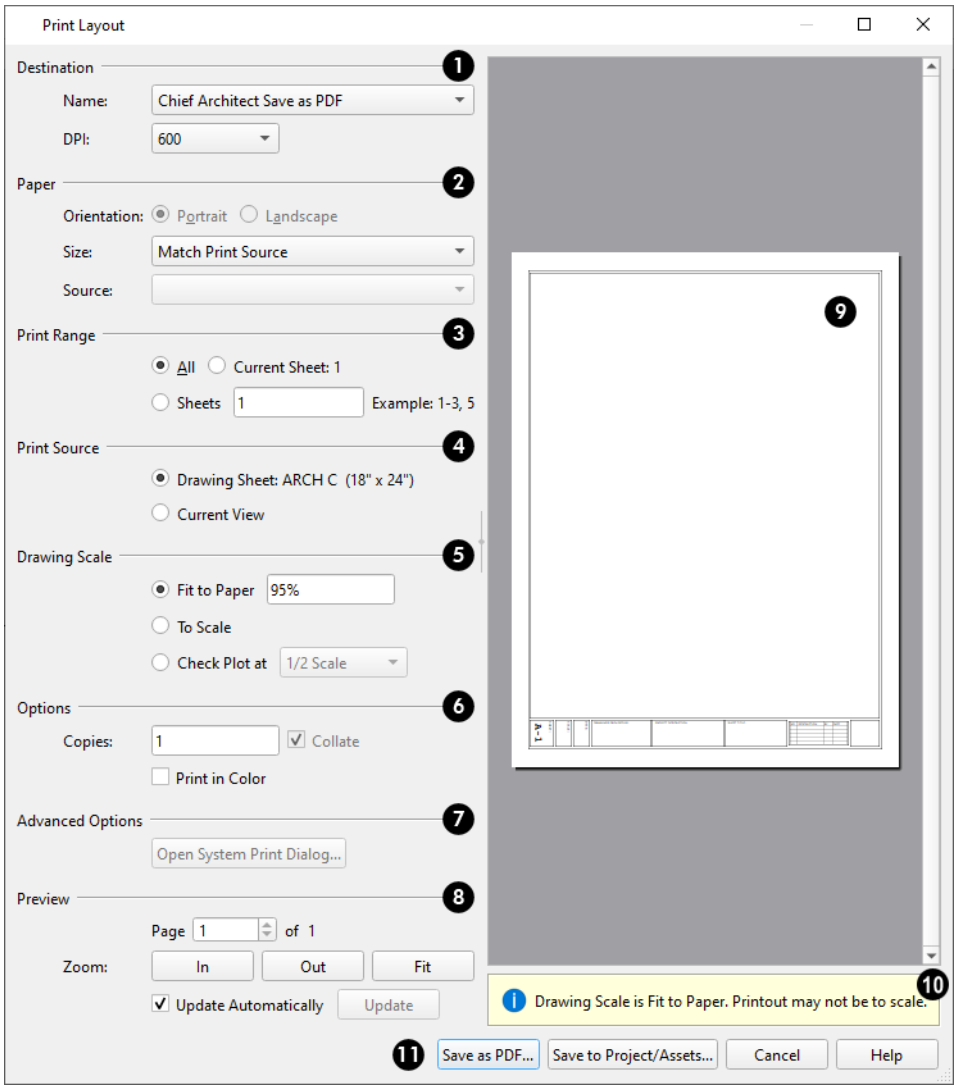
Print View Dialog

To print from plan view, 3D Vector Views, layout, or the Materials List, select **File> Print> Print**. The Print View Print Layout, or Print Materials List dialog opens. The settings that are available will vary depending on which version of the dialog is open.

Select **File> Export> Export PDF** to open the similar Export PDF dialog.

> Note: 3D views that are not Vector Views can be printed using Print Image. See *Print Image Dialog on page 999*.

If **Remember Print Settings after Printing** is checked in the Drawing Sheet Setup dialog, most settings in this dialog will be saved and applied globally to all views of the same type in all Home Designer files. There are three exceptions: **Sheets** and **Copies** are always reset, and the **Print Source** is determined by whether or not the **Drawing Sheet** is toggled on See *Print View Settings on page 986*.



1 Destination

- Select the **Name** of the printer you would like to use from the drop-down list. To print to **.pdf**, select “Chief Architect Save as PDF” from the list, or choose a **.pdf** writer installed on your system. See *Printing to a PDF File on page 994*.
- Select the **DPI**, or Dots Per Inch to use when printing, from the drop-down list. The available options may vary depending on the selected printer.

2 Paper

Select the **Paper Orientation**, **Size**, and **Source**. The available Size and Source options are controlled by the selected printer’s driver. See *Printer Drivers on page 985*.

- When "Match Print Source" is selected from the **Size** drop-down list, the Size as well as the Orientation use the current view's settings in its Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.

3 Print Range

In layout files only, specify the range of pages to print. Only pages that have views or objects drawn directly on them

4 Print Source

Not available in the Print Materials List dialog.

- Select **Drawing Sheet** to print the entire sheet even though you may be zoomed in on a portion of the view. This is selected by default when the Drawing Sheet is set to display in the current view.
- Select **Current View** to print only that portion of the active view that is currently visible on screen. If you are zoomed out, any blank space outside the printable objects in the view is ignored. This is selected by default when the Drawing Sheet is not displaying in the current view.

5 Drawing Scale

Changes to these options may cause the Paper Size to change, above. Not available in the Materials List or in camera views or overviews. See *Printing to Scale on page 992*.

- **Fit to Paper** prints the view on one page. The program uses whatever scale is necessary to fit the plan on one page.
  - When **Fit to Paper** is selected, specify the percentage of the paper to be used. The default value is 95%.

> Note: The Fit to Paper percentage value is global - affecting all views in all files, and is retained between sessions.

- Select **To Scale** to print at the scale specified in the Drawing Sheet Setup dialog. See *Drawing Sheet Setup Dialog on page 987*.
- To print a check plot, select **Check Plot at** and choose a scale adjustment from the drop-down list. See *Check Plots on page 993*.

6 Options

- Specify the number of **Copies** you would like to print.
  - When the number of Copies is 2 or greater, you can choose to **Collate** the pages. When this box is unchecked, copies of each page are printed as a group.
- Check **Print in Color** to print in color or clear the check box to print in either grayscale or black and white. In the Print Materials List dialog, system default colors are used when this box is unchecked.
  - To print in grayscale, check **Obey Color On/Off Setting** in the Preferences dialog before printing, then uncheck **Print in Color**. See *Appearance Panel on page 93*.

- To print in black and white, uncheck **Obey Color On/Off Setting** in the Preferences dialog before printing, then uncheck **Print in Color**. Lines and fill colors print as either black or white, depending on which is closer to the line or fill's actual color.
- Most black and white printers print a grayscale approximation of the colors if **Print in Color** is selected.

7 Advanced Options

Click the **Open System Print Dialog** button to close the Print View dialog and print using your operating system's Print dialog instead. Not available when No Printer is selected.

8 Preview

Control the appearance of the print job preview on the right side of the dialog.

- Specify the **Page** that displays in the Preview area.
- Click the buttons to **Zoom In**, **Zoom Out**, or **Fit** the selected Page to the extents of the Preview area.
- Uncheck **Update Automatically** to turn off the print job Preview and prevent it from updating as changes are made to the settings in this dialog.
- Click the **Update** button to update the print job Preview to reflect the current settings in this dialog. If Update Automatically is unchecked, clicking Update may force the Preview to be blank.

9 Preview Pane

- When **Update Automatically** is checked, a preview of the current print job displays here. The drawing sheet displays as a white rectangle, and if multiple sheets are required, you can scroll through them. If the print job is large, a progress dialog may display briefly as the preview draws or updates.

10 Information

To help prevent unwanted printed output, information messages regarding page size, resolution, and scale may display below the preview pane, depending on the settings in this dialog.

11 Print/Save

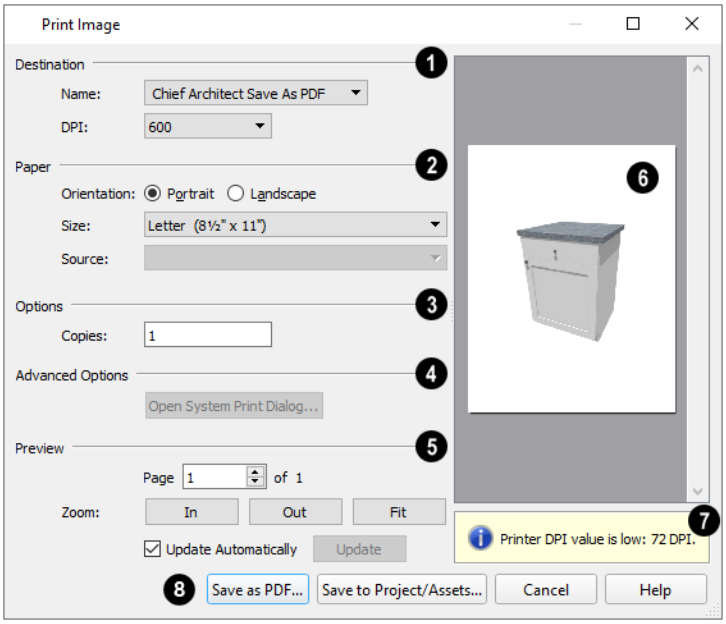
When the settings in this dialog meet your needs, you can print or save the current job.

- When a physical printer is selected as your Destination, above, click the **Print** button to print using the selected printer.
- When a PDF writer such as "Chief Architect Save as PDF" is selected as the Destination, you have two options:
  - Click the **Save as PDF** button to save the current print job as a **.pdf** file. When you click this, you will be prompted to give the file a name and select a save location on your system. See *Printing to a PDF File on page 994*.
  - Click the **Save to Project/Assets** button to save the current print job as a **.pdf** file and include it in either one of your Projects or Assets. See *Chief Architect Project Management on page 35*.

Print Image Dialog

Any view can be printed by selecting **File> Print Image**. This is the only way to print most 3D views. See *3D Rendering on page 817*.

The Print Image dialog is similar to the Print View dialog; however, the printing process is different. **Print Image** prints individual pixels as opposed to vectors (lines).



1 Destination

Select the Name of the **Printer** you wish to use from the drop-down list. To print to **.pdf**, select "Chief Architect Save as PDF" from the list, or choose a **.pdf** writer installed on your system. See *Printing to a PDF File on page 994*.

- Select the **DPI**, or Dots Per Inch to use when printing, from the drop-down list. The available options may vary depending on the selected printer.

2 Paper

Select the **Paper Orientation**, **Size**, and **Source**. The available Size and Source options are controlled by the selected printer's driver. See *Printer Drivers on page 985*.

3 Options

Specify the number of **Copies** you would like to print.

4 Advanced Options

Click the **Open System Print Dialog** button to close the Print View dialog and print using your operating system's Print dialog instead. Not available when No Printer is selected.

5 Preview

Control the appearance of the print job **Preview** on the right side of the dialog.

- Specify which **Page** displays in the Preview area.
- Click the buttons to **Zoom In**, **Zoom Out**, or **Fit** the selected Page to the extents of the Preview.
- Uncheck **Update Automatically** to turn off the print job Preview and prevent it from updating as changes are made to the settings in this dialog.
- Click the **Update** button to update the print job Preview to reflect the current settings in this dialog. If Update Automatically is unchecked, clicking Update may force the Preview to be blank.

6 Preview Pane

When **Update Automatically** is checked, a preview of the current print job is displayed to the right. If the print job is large, a progress dialog may display briefly as the preview draws or updates.

7 Information

To help prevent unwanted printed output, information messages regarding page size and resolution may display here, depending on the settings in this dialog.

8 Print/Save

When the settings in this dialog meet your needs, you can print or save the current job.

- When a physical printer is selected as your Destination, above, click the **Print** button to print using the selected printer.
- When a PDF writer such as "Chief Architect Save as PDF" is selected as the Destination, you have two options:
  - Click the **Save as PDF** button to save the current print job as a **.pdf** file. When you click this, you will be prompted to give the file a name and select a save location on your system. See *Printing to a PDF File on page 994*.
  - Click the **Save to Project/Assets** button to save the current print job as a **.pdf** file and include it in either one of your Projects or Assets. See *Chief Architect Project Management on page 35*.

Resources and Support

Chapter 46

Chief Architect technical support and training resources to help you be successful using our software.

Learning and Inspiration

Chief Architect offers a variety of resources that help you learn how to use the software, discover new drawing techniques, and connect with other Home Designer users.

Home Designer Website

The Home Designer website has an array of resources, including downloadable library content, program updates and more. Select **Help> Visit Home Designer Web Site** from the program menu to launch your default internet browser to HomeDesignerSoftware.com.

The vocabulary used in the design and construction trades vary widely by region. Our online Glossary provides definitions for the terms we use in our information resources. Visit HomeDesignerSoftware.com.

Reference Manual

The Home Designer 2027 Reference Manual is a comprehensive source of information about the entire program interface. This manual is available online in .pdf format by selecting **Help> View Reference Manual**.

User's Guide

Written for new Home Designer users, but a helpful reference for users of all experience levels as well, the User's Guide walks you through the process of creating a complete model, from the first wall to the interior design and landscaping.

This guide is available online by selecting **Help> View User's Guide**.

Online Help Videos

Another resource that illustrates Home Designer's tools is the collection of tutorial videos available on our website. To view the online videos, select **Help> View Online Help Videos** from the program menu or visit www.homedesignersoftware.com/videos.

Online Knowledge Base

The Home Designer Knowledge Base is a collection of online articles that address common technical issues as well as a range of how-to questions with illustrations and step-by-step instructions. To access these resources, visit HomeDesignerSoftware.com.

HomeTalk Online Forum

The HomeTalk User Forum hosts ongoing discussion on a variety of topics related to the use of Home Designer. It is rich with useful tips and available free of charge to everyone with a Home Designer account.

- Discussions are initiated and carried out by users.
- Experienced users share knowledge with each other and beginners.
- Chief Architect Software team members post announcements, advice and technical information.

To visit HomeTalk, select **Help> HomeTalk** or go to hometalk.chiefarchitect.com.

Online Samples Gallery

A collection of plans and renderings is available for viewing and download on our website. Select **File> Download Sample Plans** to launch your internet browser to HomeDesignerSoftware.com.

Contacting Technical Support

Chief Architect's world class technical support services can be accessed both online and by telephone. Select **Help> Technical Support** from the program menu to visit HomeDesignerSoftware.com.

Before contacting Technical Support, take a moment to see if the answer to your question is found in the program's Help, Training Videos, or other online resources. When you contact us, you will be referred to these resources if the answer can be found there.

There are a number of things you can do to ensure a speedy answer to your question when you contact Technical Support.

- Select **Help> About Home Designer** (PC) or **Home Designer> About Home Designer** (Mac) and make a note of the first characters of your Product Key and the program's Build number.
- We periodically release updates to the current program version. Before contacting Technical Support, select **Help> Download Program Updates** and make sure you are running the most current update for your program version.
- When you encounter an error message, click the **Send Report** button if possible and copy the message's exact wording. See *Error Messages on page 1004*.
- When calling Technical Support, have Home Designer running on the computer where the problem occurs. This is necessary in order to troubleshoot the issue and verify that a solution is found.
- Be prepared to reproduce and describe the problem in detail. If we cannot reproduce the problem, there is a reduced chance that we will be able to resolve it.

Chief Architect Support Center

The most efficient way to contact the Technical Support department is the online Chief Architect Support Center because it allows you to upload useful files such as program logs and screen capture images as well as the Plan or Layout in which you are encountering an issue. Be sure to provide a detailed written description of the problem you are encountering in your ticket.

Telephone Support

Our Technical Support team is committed to answering your questions as quickly as possible and in the order received. We can resolve most issues in just a few minutes and are happy to help you find the best resource to answer your questions. So that we can quickly answer all calls, though, we may ask that you limit your inquiry to one question.

Bear in mind that if a Support technician needs to see a copy of a plan, layout, or other file, they will ask you submit it to us using the Chief Architect Support Center.

System Information Dialog

The System Information dialog provides a summary of important information about the computer system that is often helpful when troubleshooting performance issues. In the event that you contact Technical Support, you may be asked to refer to this information. To open this dialog, select **Tools> System Information**.

At the bottom of the dialog are two buttons:

- Click the **Copy** button to copy the information in this dialog to your system's Clipboard. You can then paste this text into a message in an Online Support Center ticket. See *Contacting Technical Support on page 1003*.

> To paste the copied text into your message in an Online Support Center ticket or into a text editor or other application, press ***Ctrl/⌘ + V***. See *Copying and Pasting Text on page 378*.

- Click the **More Information** button to open your computer's System Information utility, which reports substantially more information in greater detail.

For information about exporting your full System Information and sending it to Chief Architect Technical Support, visit our Knowledge Base at www.chiefarchitect.com/support/database.html.

File Information Dialog

For basic information about a Plan or Layout's first and most recent Saves, select **File> View File Information**.

Export Logs

When you contact Technical Support, you may be asked to provide copies of your Chief Architect log files. Select **Help> Export Logs** from the program menu to save copies of these log files in a zipped folder that you can then submit to us using the Chief Architect Support Center.

Error Messages

Most common error messages have a known cause and simple resolution. When you encounter an error or warning message in Home Designer, you can click the **Check Knowledge Base** button in the message box to launch your default internet browser to the Home Designer Knowledge Base on our website, HomeDesignerSoftware.com.

If the message is discussed in an article it will display, providing information about the message and how best to avoid it.

It is important that abnormal errors be reported to Chief Architect Technical Support so that we can identify and resolve any problems.

The content of an error message is useful in diagnosing its cause. If you encounter an error message, make a note of the error number and the full text of the message. You can also click the **Details** button and copy the text into a text document or *Chief Architect Support Center on page 1003* ticket.

If you encounter the error more than once, make a note of your steps prior to receiving the message.

Finally, check to see if there are program updates available. Program updates contain enhancements and other changes that allow the software to perform at an optimum level. Select **Help> Download Program Updates** from the Home Designer menu and follow the instructions on our website, HomeDesignerSoftware.com.

Error Reporting

When an error occurs, you may have the option in the message box to send the report to Chief Architect by clicking the **Send Report** button in the error message box. A report containing technical details about the error, but no personal information, is sent to our Testing team for evaluation.

When you click the Send Report button, the **Automatically Send Error Reports** option will be enabled so that a report will be sent automatically should you encounter additional errors in the future. When Automatically Send Error Reports is enabled, error message boxes will not have a Send Report button. You can enable or disable Automatically Send Error Reports in the Preferences dialog. See *General Panel on page 100*.

After clicking the **Send Report** button, please contact Technical Support with any additional information that you may have about the circumstances of the error: for example, the type of view that was open and the tool that was active.

In many cases, Technical Support will request a copy of your program log files. See *Contacting Technical Support on page 1003*.

More Information Dialog

When Chief Architect Project Management is active, the program periodically runs an audit of your stored data. If it discovers any anomalies in that data, an error message will be presented to inform you of the issue. Please take a moment to click the Send Report button and contact Technical Support with any information that you may have about the issue.

You can then click the **More Information** button to open the More Information dialog.

- Click on a line item to select it.
- If the item's anomaly is a missing name, click the **Rename** button at the bottom of the dialog and type a short, descriptive name for the item.
- If the item's anomaly is a problematic MIME type, click the **Reset MIME Type** button.
- To find out what this item is associated with, click the **Show in Project Browser** edit button.

Program Paths Dialog

Some technical issues can be caused by problems with support files used by Home Designer. In the event of such an issue, Chief Architect Technical Support may direct you to the Program Paths dialog. This dialog displays a list of files utilized by the software along with the file path of each.

To avoid unintended problems that could prevent you from using the software, it is strongly recommended that you make no changes to any of the files in this list except with the direct assistance of Technical Support.

What's New in Home Designer 2027

Chapter 47

Welcome to Home Designer 2027. This topic has been written to help our upgrading customers make a smooth transition from earlier versions of Home Designer to Home Designer 2027.

Getting Started Checklist

There are many new features in Home Designer 2027, and many existing features have changed. The following checklist suggests steps you should take before migrating your files to Home Designer 2027. More information about each of these steps can be found after the checklist.

☐ 1. **Review Migrating Legacy Content**

Legacy users of Home Designer often have library catalogs and other custom content that they want to continue using. See *Migrating Legacy Content on page 1006*.

☐ 2. **Review Migrating Legacy Templates**

Before migrating Templates, bear in mind that they may not be set up to take advantage of new tools in the new program version. See *Migrating Legacy Templates on page 1007*.

☐ 3. **Review the Considerations for Legacy Files**

Before opening a plan or layout file created in a previous version of Home Designer, be aware of potential changes to the file that could occur in the new program version. See *Considerations for Legacy Files on page 1007*.

☐ 4. **Launch Home Designer 2027**

Once you have learned about the new features in Version 2027 and decided whether to migrate any custom settings from a legacy program version, launch Home Designer 2027. The first time you launch, the Migrate Settings dialog will give you the opportunity to bring legacy settings and content forward into Version 2027.

Migrating Legacy Content

Legacy users of Home Designer often have a wealth of library catalogs and other custom content that they have built over time and want to continue using.

Legacy Library Content

There are several ways that legacy library catalogs can be brought into Home Designer 2027.

If you have Home Designer version 2014 through 2026 installed on your computer, the Migrate Settings dialog will display after you activate the license, allowing you to migrate library content as well as a selection of other settings for use in Home Designer 2027. If multiple legacy versions are present on the system, only the data associated with the most recent will be migrated.

You can import library files from Versions 8 through 2014 at any time by selecting **Library> Import Library (.calib, .calibz)** from the program menu.

Custom Graphics Files

Home Designer can use graphics files regardless of where they are stored on your system; however, it is a good idea to keep your data organized in one location. If you have custom graphics files, including textures, images or backdrops that you used in a previous program version, you can copy them manually using your operating system for use in Home Designer 2027.

- Copy custom texture files to the Home Designer 2027 Textures folder located in the Home Designer 2027 Data folder.
- Copy custom image files to your Home Designer 2027 Images folder located in the Home Designer 2027 Data folder.
- Copy custom backdrop files to your Home Designer 2027 Backdrops folder located in the Home Designer 2027 Data folder.

In Home Designer 8 through 2026, custom graphics were saved in the Home Designer Data folder, as they are in version 2027. In version 7, they were located in the program's installation directory, in folders that began with "My". Custom backdrops, for example, were saved in "My Backdrops".

Texture and image files are not listed in the Library Browser. These files can be assigned to material and image objects, however, which are stored in the library so it is important to retain them. There are several tools available for adding materials and images to the library.

Migrating Legacy Templates

Home Designer 2027 installs a selection of template plan and layout files that have been set up to take advantage of the program's updated tools and features. See *Creating a New Plan or Layout on page 46*. Although you can migrate your template files for use in Version 2027, for best results it is recommended that you use the templates installed with Home Designer 2027.

If you choose to continue using template files that you used in a previous program version, it is very important that you take the time to review all the default settings in the file, making sure that they will continue to suit your needs in Version 2027.

Next, make sure that you are aware of changes in Version 2027 that may affect legacy files: including templates. See *Considerations for Legacy Files on page 1007*.

Considerations for Legacy Files

As in all software, every new program version introduces changes to its functionality as well as to the user interface. If you choose to bring a project forward, be sure to take a few moments to look it over in the new version and confirm that the new functionality does not require you to make any modifications. Particularly if you have an approaching deadline, you may find it best to finish the current project in the version of the software in which you began it.



Be sure to read this section before opening any plans created in earlier versions of Home Designer.

Home Designer 2027 can open the **.plan** and **.layout** files from prior versions. Files with the older .pl and .la file extensions are no longer supported, however, and cannot be opened by Home Designer 2027. Before opening any files created in earlier versions of Home Designer, it is important to be aware of changes made in the newest version and the effect they may have on your legacy plan and layout files.

Please note that files saved in the latest program version cannot be read by older versions of the software. When a legacy file is saved in the version 2027, an unaltered copy of the original file is created in the Home Designer 2027 Data folder, under Archives, which can still be opened in the original version.

For Files Created in Version 2026 and Prior

In addition to the above recommendations, if you wish to open files created in Home Designer Version 2026 or prior, bear in mind the following:

1. Legacy Room Labels

   In Home Designer 2026 and prior, room labels were supplied by special automatically-generated Text objects. In Version 2027, rooms have true labels like other objects. When a legacy file is opened in Version 2027, Use Default Formatting will be unchecked in the Room Specification dialog to avoid the addition of unit indicators in some cases.
2. Snap and Reference Grid Colors

   In Home Designer 2026 and prior, the Snap and Reference Grid colors were set in the General Plan and Layout Defaults dialogs. In Version 2027, these colors are set globally in the Preferences dialog. When a legacy file is opened in Version 2027, the Snap and Reference Grid Colors will be reset to use the colors specified in the Preferences dialog.
3. Legacy Compatible Extensions

   In Home Designer 2026 and prior, the Legacy Compatible Extensions settings assigned a non-editable program-defined length to extension lines. In Version 2027, these obsolete settings have been removed from the program. When a legacy file with Legacy Compatible Extensions enabled is opened in Version 2027 and a dimension line set to use this option is edited, Legacy Compatible Extensions will be turned off and the setting permanently removed from its specification dialog.
4. Space Planning Boxes

   In Home Designer 2026, enhancements were made to Space Planner room boxes. If a Plan contains legacy Space Planner room boxes that were created in Home Designer2024 or prior, those boxes will be converted into improved room boxes when the file is opened in Version 2027. Up to 50 such boxes can be converted; if there are more than 50 room boxes present, and the rest will be converted into plain CAD polylines.

For Files Created in Version 2025 and Prior

In addition to the above recommendations, if you wish to open files created in Home Designer Version 2025 or prior, bear in mind the following:

1. Sun Angle Location and Time Zone

   In Home Designer 2025 and prior, the default Latitude, Longitude, and Time Zone used by Sun Angles were set globally in the Preferences dialog and individual Sun Angles could be customized. In Version 2027, these defaults are file-specific, set in the General Plan Defaults dialog, and cannot be modified for individual Sun Angles. When a legacy file with a Sun Angle present is opened in Version 2027, its Location and Time Zone are set as the defaults. If multiple Sun Angles with different Location or Time Zone data are present, some of them may be altered.
2. Automatic Terrain Height

   In Version 2027, the Automatic terrain height functionality was updated for use with the Terrain Elevation Reference Point feature. When a legacy file is opened in Version 2027, Automatic will be unchecked in the Terrain Specification dialog to prevent the terrain from moving relative to the structure.
3. Automatic Fillers for Soffits, Shelves, and Partitions

   In Home Designer 2025 and prior, Soffits, Shelves, and Partitions received automatic fillers if they were spaced within 3" (75 mm) of one another. In Version 2027, these objects do not receive auto fillers. When a legacy file is opened in

Version 2027, it is possible that some Soffits, Shelves, and/or Partitions positioned close to one another without touching may have small gaps between them.

For Files Created in Version 2024 and Prior

In addition to the above recommendations, if you wish to open files created in Home Designer Version 2024 or prior, bear in mind the following:

1. Dimension Label Positioning

   In Version 2025, improvements were made to the method that determines dimension label positioning. When a legacy file is opened in Version 2027, it is possible that some dimension labels may be in a slightly different position than in the original version.
2. Door Thickness

   In Home Designer 2024 and prior, the Thickness value set in the Door Specification dialog affected parametric door panels in 3D views but not door symbols. In Version 2025, this setting affects both types of door panel in 3D. When a legacy file is opened in Version 2027, any symbol door panels will have the depth specified in the Door Specification dialog when viewed in a camera view rather than the depth of the symbol object.
3. PDF Rotation in Mac Version

   In Home Designer 2024 and prior, rotation of imported PDF files was not read in the Mac version of the software, while in Version 2025, it is. When a legacy file is opened in Version 2027, imported PDFs may not be oriented at the same angle as in prior versions.
4. Material Emissivity

   In Home Designer 2024 and prior, the Emissive property for materials could be set using decimal values. In Version 2025, this setting supports whole numbers only. When a legacy file is opened in Version 2027, any decimal Emissive values will be rounded to the nearest whole number. If this setting is rounded to zero, the change may be noticeable in Standard, and Watercolor renderings.

For Files Created in Version 2023 and Prior

In addition to the above recommendations, if you wish to open files created in Home Designer Version 2023 or prior, bear in mind the following:

1. Window Casing Reveal

   In Home Designer 2023 and prior, window casing had an Overlap Frame setting that controlled where casing was placed relative to the window frame, and windows with different frame Width values for their top, bottom, and sides would also have different reveals. In Version 2024, this setting was replaced with a Reveal setting. When a legacy file is opened in Version 2027, any windows with different Width values will no longer have different reveals.
2. Text Indent and Margins

   In Home Designer 2023 and prior, the indent and margins of text could vary depending on the font used. In Version 2024, indent and margins are not affected by settings in the font. When a legacy file is opened in Version 2027, text with varying indent and/or margins may be affected.

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