

# House Design Tutorial

This House Design Tutorial shows you how to get started on a design project. The tutorials that follow continue with the same plan. When you are finished, you will have created a sample plan named “Stucco Beach House.” You can then apply the tools and techniques learned to your own plans.

In this tutorial you will learn about:

- Before You Begin
- Getting Started
- Setting Defaults
- Drawing Walls
- Creating Dimension Lines
- Adjusting Wall Positions
- Creating Rooms
- Creating a 3D View
- Adding Floors
- Adding Stairs
- Placing Doors and Windows

## Before You Begin



Home Designer Pro may look differently on your screen than it does in the following tutorials.

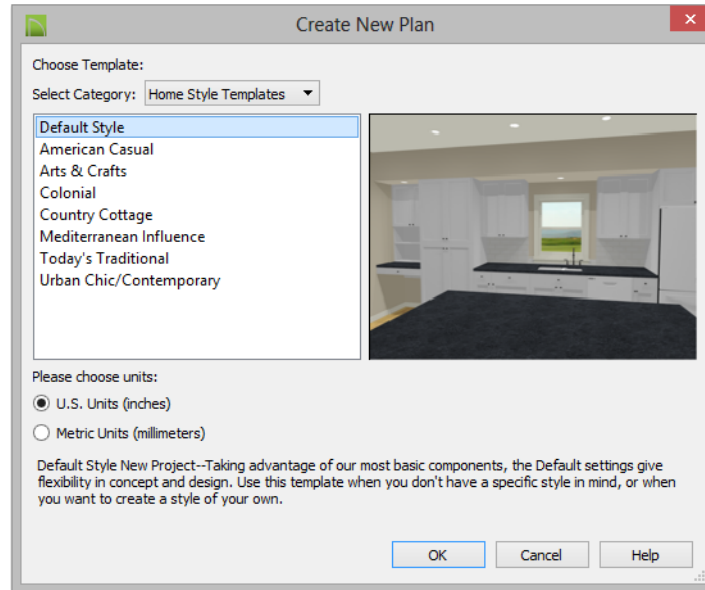
- Screen captures are taken from a smaller window to optimize image quality, so the size and proportion of your interface may be different.
  - Some features, such as the Reference Grid, have been turned off to optimize image quality. For more information, see “General Plan Defaults Dialog” on page 67 of the Reference Manual.
  - Since toolbars can be customized, their default layout and location may differ. For more information, see “Toolbar Customization Dialog” on page 107 of the Reference Manual.
  - As the program is updated, features may be added or removed. If you are using the latest version of Home Designer Pro, you may see buttons and/or menu items that have been added or removed since this tutorial was written. For more information, see “Program Updates” on page 17.
  - Depending on your operating system and system settings, dialogs and toolbars may appear differently than they do in the tutorials.
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## Getting Started

Begin by opening a new, blank plan.

### *To begin a new plan*

1. When Home Designer Pro launches, the **Getting Started** dialog displays. For more information, see “Startup Options” on page 24 of the Reference Manual.
  - Select **New Plan**  to open a new, blank plan.
  - You can also select **File> New Plan**  to open a new, blank plan.
  - For more information, see “File Management” on page 45 of the Reference Manual.
2. The **Create New Plan** dialog displays next.



3. Home Designer Pro includes a selection of Home Style, Interior and Landscaping template plans, each with different default settings that allow you to begin working in a particular plan style quickly. For this tutorial, select **Home Style Templates** from the drop-down list. The **Default** template and **U.S. Units** are selected by default. Click **OK**. The floor plan view window opens, ready for you to begin drawing.
4. You should begin work on any new file by giving it a name. To do this:
  - Select **File> Save**  from the menu to open the **Save Plan File** dialog.
  - Specify the location on your computer where you would like to save the plan.
  - Type a name for your plan.
  - Click **Save**.
5. It is a good idea to save your work on a regular basis as you proceed. To do this, you can:
  - Select **File> Save**  from the menu to open the **Save Plan File** dialog.
  - Click the **Save**  button on the toolbar.
  - Type **Ctrl + S** on your keyboard.

For more information about saving files, see “Saving, Exporting, and Backing Up Files” on page 50 of the Reference Manual.

## Setting Defaults


Default settings determine the initial characteristics of objects when they are first drawn. When set up in advance, they can help you both save time and avoid mistakes. Before you draw walls and create rooms, therefore, you should always make sure the defaults will meet your needs for the current project. For more information about defaults, see “Preferences and Default Settings” on page 63 of the Reference Manual.

While all defaults are important, there are several that can be considered critical because they help determine the size and structural characteristics of the building. These critical defaults are:

- Normal Room Defaults
- Floor Defaults
- Framing Defaults
- Wall Defaults
- Dimension Defaults

It is recommended that whenever possible, you set these defaults before drawing anything in your plan. Changes made to these settings later on are possible, but may require extra work to review and adjust heights and wall positions.

### To access a file's default settings

1. Select **Edit> Default Settings**  to open the **Default Settings** dialog.
2. Click on the arrow next to a category to expand it and show its contents.
  - Click on the arrow again to collapse the category.
3. Select a defaults dialog that you would like to open and click the **Edit** button.
  - You can also open the defaults dialog by double-clicking on a line item.

## Normal Room Defaults

The **Normal Room Defaults** dialog serves as the master defaults dialog for floor and ceiling structure and finish definitions on all floors. These are particularly important because they influence the overall height of the structure. For more information, see “Floor and Room Defaults” on page 248 of the Reference Manual.

### To set the Normal Room Defaults

1. In the **Default Settings** dialog, click the white arrow beside "Rooms", then select "Normal Rooms" from the list and click the **Edit** button.
2. The settings in this are similar to those on the STRUCTURE panel of the **Room Specification** dialog, but only four options are active here:
  - Specify the default **Ceiling Structure**.
  - Specify the default **Ceiling Finish**.

- Specify the default **Floor Finish**.
  - Specify the default **Floor Structure**.
3. If you wish, you can also specify unique default Floor Finish definitions for Kitchen/Bath/Utility Rooms, Deck Rooms, and Garage/Porch/Slab Rooms.

## Floor Defaults

The **Floor Defaults** dialogs let you set the default floor and ceiling structure and finish definitions for the each floor as well as the default ceiling heights and room moldings. The Floor Defaults dialogs draw their default floor and ceiling structure and finish definitions from the Normal Room Defaults dialog. For more information, see “Floor Defaults Dialog” on page 342 of the Reference Manual.

### *To set the Floor Defaults*

1. In the **Default Settings** dialog, select "Floor" from the list and click the **Edit** button to open the **Floor Defaults** dialog for the current floor.
  - In a plan in progress with multiple floors, begin by navigating to the floor where you would like to modify the floor defaults, then open the **Default Settings** dialog.
2. On the STRUCTURE panel, note the **Ceiling Height**. The initial value is 109 1/8” (inches). Leave this value unchanged for this tutorial.
3. Click OK to close the **Floor Defaults** dialog.

### *To reset the Floor Defaults*

1. Select **Edit** > **Reset to Defaults**.
2. Under Reset Scope, choose either a particular floor, or All Floors.
3. Click **OK** and floor and ceiling heights for any room that was changed in the Room Specification dialog will be restored to the Floor default values.

## Framing Defaults

The **Framing Defaults** dialog influence how all of the major structural components of the model are created: including floors and ceilings, walls, and the roof. For more details, see “Framing Defaults” on page 468 of the Reference Manual.

### *To set the Framing Defaults*

1. In the **Default Settings** dialog, select "Framing", then click the **Edit** button to open the **Framing Defaults** dialog.
2. It is a good idea to review the settings on each of the panels; however, there are several settings that should be set before you start drawing:
  - On the FOUNDATION panel, set the Floor Joist Width and On-Center Spacing.

- On the 1ST FLOOR panel, Set the Floor Joist Width and On-Center Spacing.
  - On the ROOF panel, set the On Center Rafter Spacing, Rafter Type, and the Height and Width of the roof framing members.
3. When your Framing Defaults suit your needs, click OK.

## Wall Defaults

The **Wall Defaults** dialogs let you specify the thickness, materials, and other characteristics of the walls that are drawn by each of the Wall Tools. For more information, see “Wall Type Definitions” on page 224 of the Reference Manual.

### *To set the Wall Defaults*

1. In the **Default Settings** dialog, click on the arrow next to "Walls", select "Exterior Wall" and click the **Edit** button.
2. For this tutorial, go to the WALL TYPES panel, select "Stucco-6" from the **Wall Type** drop down list and click OK.



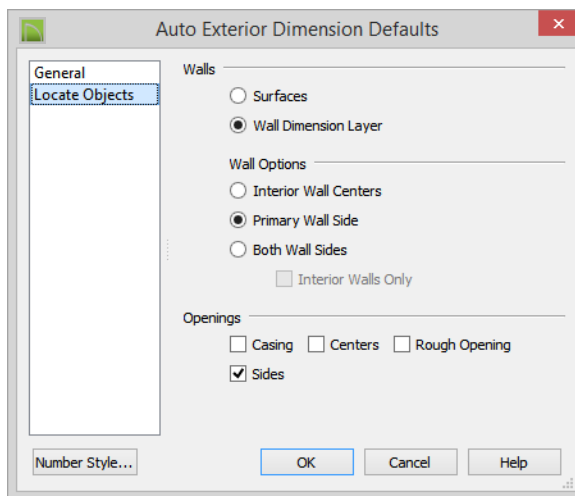
To learn more about defining Wall Types, see “Wall Type Definitions” on page 224 of the Reference Manual.

## Dimension Defaults

Dimension lines are important for both positioning walls and other objects and for annotating your drawing. It is a good idea, therefore, to specify how you want dimensions to locate objects as well as their appearance before you begin drawing.

### *To set the Dimension Defaults*

1. In the **Default Settings** dialog, click on the arrow next to "Dimension" to expand this category, then select the type of dimension you want to modify. For this tutorial, select **Auto Exterior Dimensions**, and click the **Edit** button.
2. On the LOCATE OBJECTS panel, specify how you want Auto Exterior Dimension lines to locate walls: either at their outside surfaces or at their dimension layer.
  - Under the **Walls** heading, select **Wall Dimension Layer** and **Primary Wall Side**.
  - Specify how **Openings** are located. For this tutorial, **Sides** is used.



3. Review each of the panels and settings available for setting up your Dimension Defaults.
4. For more information, see “Dimension Preferences and Defaults” on page 767 of the Reference Manual.

## Other Defaults

You may want to review some of the other available defaults when setting up your template. For example, you can modify your Cabinet defaults, where you can set up your materials for Base, Wall and Full Height Cabinets so that any future cabinets placed in the plan will initially use these default settings.


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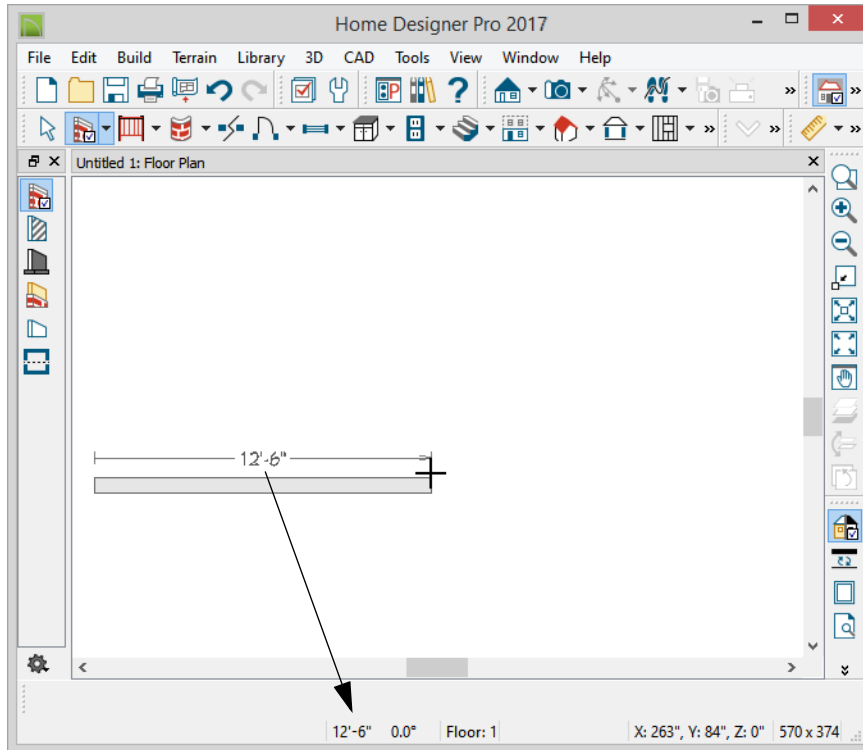
## Drawing Walls



Once your defaults are set, a new drawing can be started by drawing some exterior walls. When drawing walls, do not try to size or position them precisely - they can be more easily positioned after they are created. For more information, see “Walls, Railings, and Fencing” on page 191 of the Reference Manual.

### *To draw exterior walls*

1. When drawing a structure’s perimeter walls, it is recommended that you make sure **Grid Snaps** are turned on. You may choose to disable them, though, once the shell walls are in position. See “Snap Behaviors” on page 121 of the Reference Manual for more information.

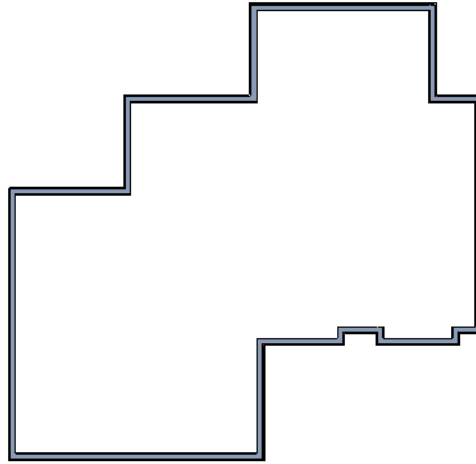
- Select **Build> Wall> Straight Exterior Wall**  from the menu or click the corresponding toolbar button, then click and drag from left to right to draw a wall.
2. There are a few things to make note of as you draw a wall.
- The wall's length displays in two places: above the wall and in the Status Bar at the bottom of the screen. Its angle is also shown in the Status Bar:



- Wall angles are restricted to increments of 15° when **Angle Snaps**  are on. In most instances, this makes drawing straight walls easy and is desirable; however, you can toggle Angle Snaps on and off by selecting **Edit> Snap Settings> Angle Snaps**  or pressing the F10 key. See “Snap Behaviors” on page 121 of the Reference Manual for more information.
3. Continue drawing walls, creating a rough outline of the building's exterior, as shown in the following image.
- Exact dimensions are not important yet, but keep the final size of the structure in mind as you draw. The overall lengths of this building's sides are 41' x 39'6".



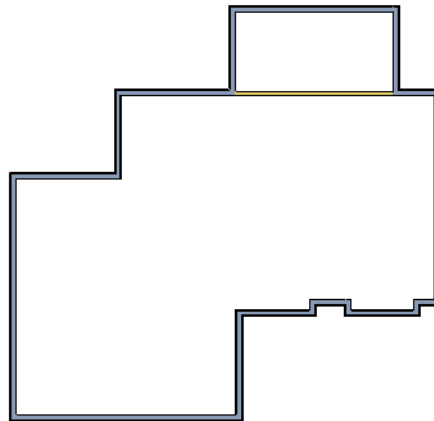
- It is helpful to draw exterior walls in a clockwise direction to ensure the proper orientation of wall surfaces.
- When the walls enclose an area completely, a Living Area label is created. See “Living Area” on page 256 of the Reference Manual.





Interior walls are drawn the same way that exterior walls are.

***To draw interior walls***

1. Select **Build> Wall> Straight Interior Wall**  from the menu or click the corresponding toolbar button.
2. Draw an interior wall as shown in the following image.



### *To delete a wall*


1. While the **Select Objects**  tool is active, click on a wall with the pointer to select it.
2. Press the **Delete** key or click the **Delete**  edit button.

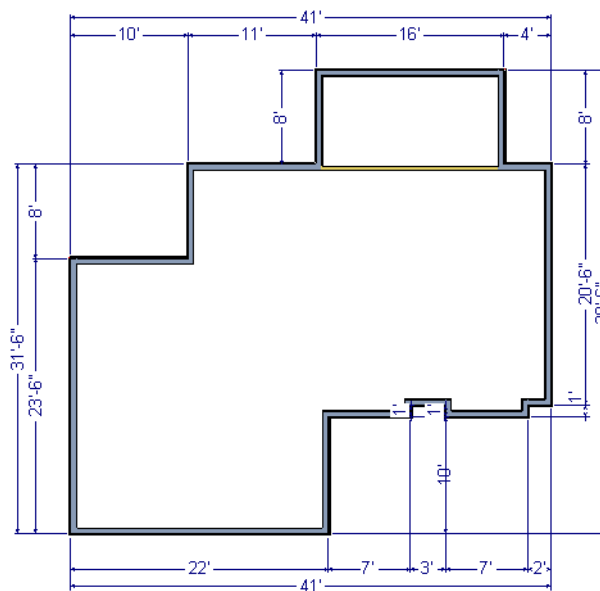
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## Creating Dimension Lines


Dimension lines locate walls, openings in walls, and other objects. In Home Designer Pro, you can generate two types of automatic dimension lines and draw a variety of manual dimensions. For more information, see “Dimensions” on page 767 of the Reference Manual.



### *To create automatic exterior dimension lines*

1. Select **CAD > Dimensions > Auto Exterior Dimensions** .




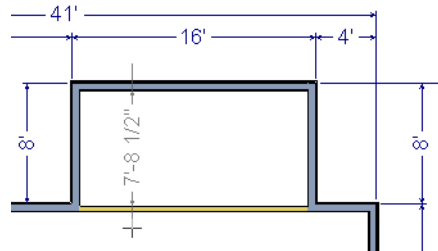
LIVING AREA  
1145 sq ft

2. For a closer view of a certain area, click the **Zoom**  tool, click and drag a box around the area you want to see in detail, and release the mouse button. That area fills the screen. For more information, see “Window and View Tools” on page 695 of the Reference Manual.

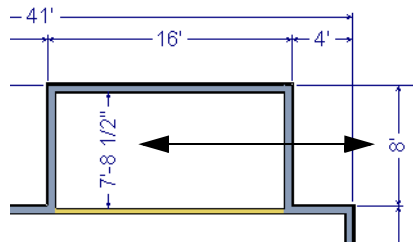
3. To return to the previous zoom factor, select **Window> Undo Zoom** .
4. If you can't see all the exterior dimension lines at once, select **Window> Fill Window Building Only**  to center your plan on screen.

*To draw an interior dimension line*

1. Select **CAD> Dimensions> Interior Dimension** .
2. Click and drag a line that intersects the interior wall and other walls you want to locate.



3. Notice that Interior Dimension lines locate the interior side of exterior walls, while other types of dimension lines locate the exterior side.






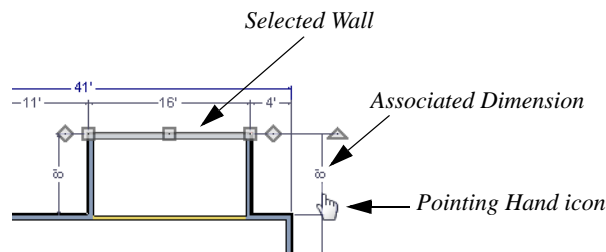
Note: Interior Dimensions locate the Main Layer of walls by default rather than wall surfaces. See “Wall Type Definitions Dialog” on page 227 of the Reference Manual. This and other options can be changed in the Dimension Defaults dialog. See “Dimension Defaults Dialog” on page 768 of the Reference Manual.

## Adjusting Wall Positions

With the perimeter walls in place, you can adjust their position with precision. There are several ways to do this, but the fastest and most accurate uses dimension lines. For more information, see “Moving Objects Using Dimensions” on page 787 of the Reference Manual.

### To move walls using dimensions

1. Begin by selecting **Window > Fill Window Building Only**  so the entire building can be seen.
2. Click the **Select Objects**  button, then click on a wall that you want to move.
3. Click on a dimension line that indicates how far the selected wall is from another wall. There are a couple of ways to determine which dimensions can be used for this purpose:
  - Move the selected wall and see which dimensions update.
  - Move your pointer over a dimension. If it is an associated dimension, the icon will change to a Pointing Hand .

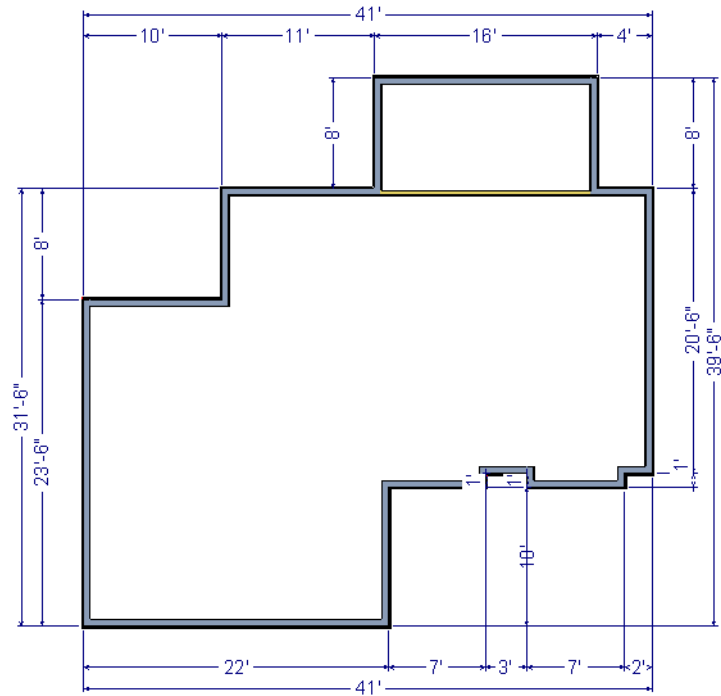


4. With the Pointing Hand icon visible, click on the associated dimension and enter a new value.
  - Remember: Type an apostrophe to denote feet and quotes to denote inches.
  - If neither apostrophes nor quotes are included, inches will be used.
5. Press the Enter key on your keyboard to move the wall to the newly specified distance.
6. Repeat this process for the adjacent exterior wall, continuing in a clockwise direction.



When using dimensions to reposition walls, you should always work in the same direction, adjusting one wall section after another.




When you are finished, your dimensions should match those in the following image:



Dimensions can also be used to change the length of a selected wall. Bear in mind, though, that when a wall is resized in this manner its Start point will always be locked and its End point will always be moved. Because of this, it is often easier to move walls than to resize them. See “Editing Walls” on page 212 of the Reference Manual.


When your exterior walls are in position, you may find it helpful to delete the dimensions.



#### *To delete all dimensions at once*

1. Select **Edit > Delete Objects**  to open the **Delete Objects** dialog. See “Delete Objects Dialog” on page 186 of the Reference Manual.
2. Select the **All Rooms On This Floor** radio button, then under the CAD heading:
  - Check **Manual Dimensions** to delete manually-drawn dimension lines such as those drawn by the **Interior Dimension**  tool;
  - Check **Automatic Dimensions** to delete automatically generated dimension lines such as those created by the **Auto Exterior Dimensions**  tool;
  - Click the **Delete** button, then **Done**.

Although using dimensions is generally the fastest and most accurate way to move walls, you can also move them using their edit handles and edit tools.

*To move walls using their edit handles*

1. Click the **Select Objects**  tool then click on an exterior wall to select it.
2. Click and drag the Move edit handle that displays at the position along the wall where you clicked. Walls can be moved perpendicular to the direction that they are drawn.
3. As you move the wall, the dimension lines that indicate how far it is from other walls will update.


If you have difficulty positioning a wall at a particular location, try zooming in on it using either the **Zoom**  or **Zoom In**  tool or by scrolling with your mouse wheel. You can also use the arrow keys on your keyboard to nudge a selected wall up, down, left, or right on-screen.

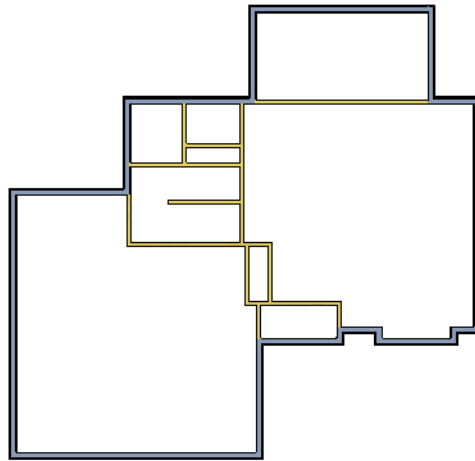
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## Creating Rooms

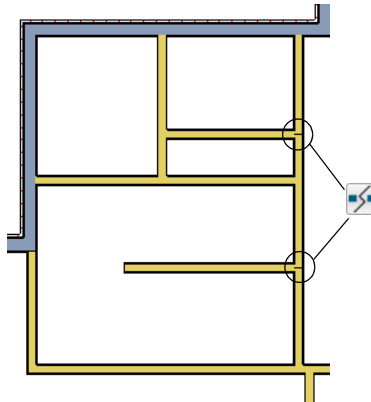
When the exterior walls enclose an area, a single, large room is created. Once the exterior walls are in position, you can add interior walls and to create multiple rooms. Rooms can be assigned a Room Type that applies attributes such as flooring that are typical of that type of room. For more information about rooms, see “Room Types” on page 253 of the Reference Manual.


*To define rooms using interior walls*

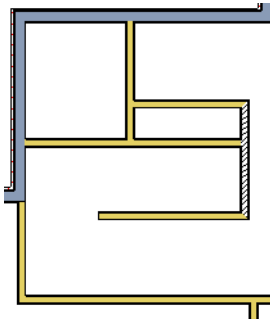
1. Select **Build> Wall> Straight Interior Wall** , then click and drag to draw interior walls. As with exterior walls, you don't need to worry about exact placement as you draw.




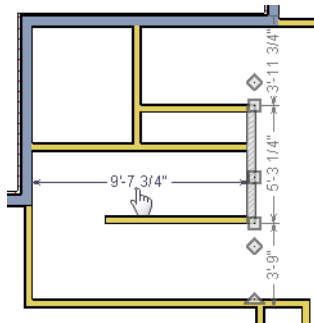
2. Select **Build> Wall> Break Wall**  and click to place two breaks at the locations shown in the following image.




3. Click the **Select Objects**  button, then select the top wall section created by the breaks and delete it. Repeat this process for the bottom wall section, so that only the middle section remains, which is hatched in the image below for illustrative purposes.



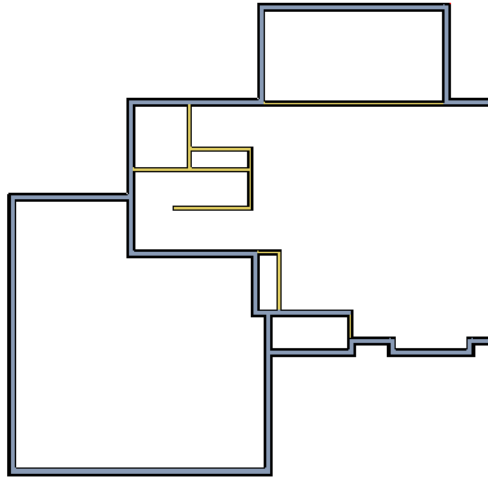
4. Draw a horizontal **Interior Dimension**  inside this new room, then use it to move the vertical interior wall 9' 7 3/4" from the opposing exterior wall.



*To change a wall's type*

1. Select a wall with the incorrect wall type and click the **Open Object**  edit button to open the **Wall Specification** dialog. See "Wall Specification Dialog" on page 230 of the Reference Manual.
2. On the WALL TYPES panel, click the **Wall Type** drop-down list and select the desired wall type.
3. Click **OK** to close the dialog and change the selected wall to the chosen wall type. Repeat this process for each of the walls that you want to change, as in the image below.




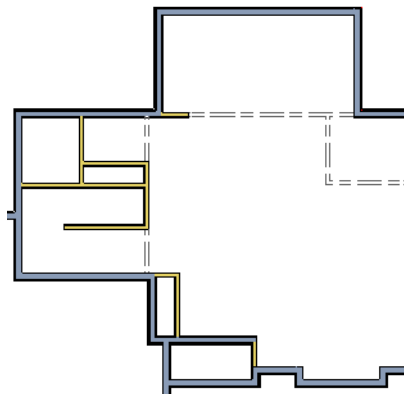





### Using Room Dividers

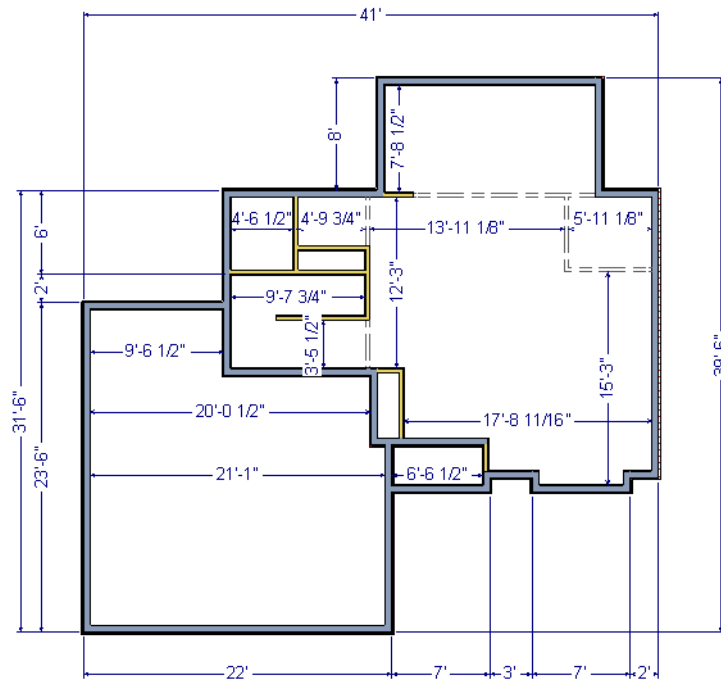
In reality, rooms are not always divided by a physical wall. The separation of two rooms may be marked by a change in the flooring (carpet to tile, for example), or by a change in the interior wall covering. In Home Designer Pro, a Room Divider or invisible wall can be used to define rooms without creating an actual wall. For more information, see “Room Dividers and Invisible Walls” on page 202 of the Reference Manual.

#### *To create a room divider*

1. Select **Build> Wall> Room Divider**  and draw Room Dividers as shown in the following image.




- Using the **Select Objects**  tool, select one of the Room Dividers, and click the **Open Object**  edit tool. On the **GENERAL** panel of the **Wall Specification** dialog, note that **Invisible** and **No Locate** are checked.
- Uncheck **No Locate** and click **OK**. When **No Locate** is selected, it will prevent dimensions from locating the wall.
- Adjust the wall spacing of the interior, exterior, and Room Divider walls using **Interior Dimensions** , just as you did with exterior walls, to match the following image:




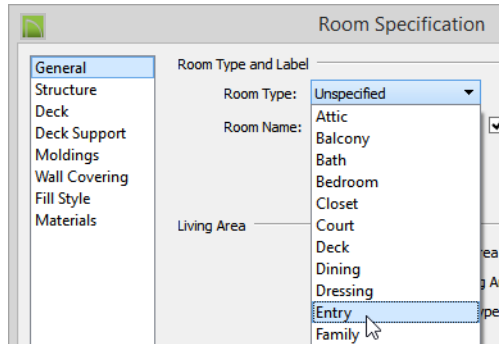
## Room Types

Rooms in Home Designer Pro are given special attributes when they are assigned a Room Type. For example, porches use a concrete floor material and have a ceiling and roof, while decks use floor planking and have no ceiling or roof. For more information, see “Rooms” on page 247 of the Reference Manual.


### *To designate a Room Type for a room*

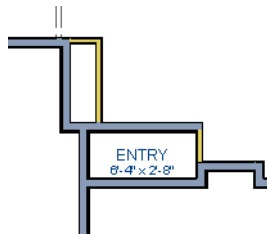
- Click the **Select Objects**  button, then click in the small room at the bottom of the plan.

2. Click the **Open Object**  edit button to open the **Room Specification** dialog.
3. On the GENERAL panel, click the **Room Type** drop-down list and select **Entry**.

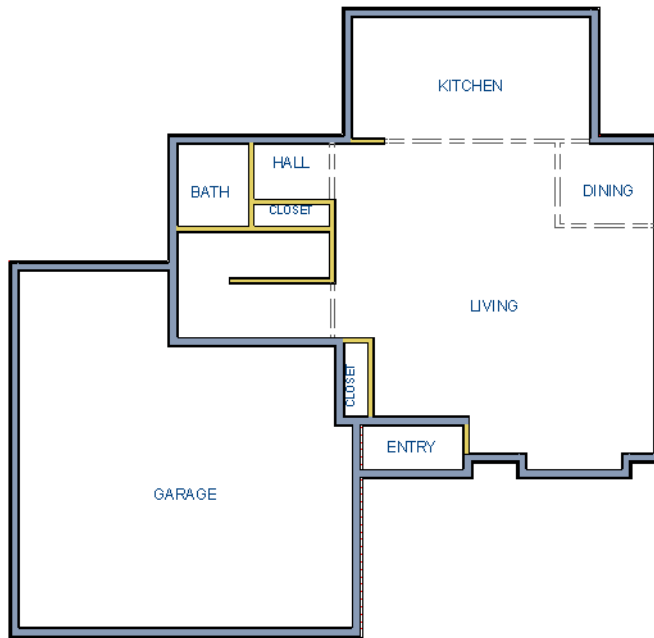


4. Click **OK** close the dialog and apply your change.

Double-clicking inside of a room when the **Select Objects**  tool is active will also open the **Room Specification** dialog. For more information, see “Room Specification Dialog” on page 265 of the Reference Manual.



5. Open each of the rooms and assign room types as shown in the following image.





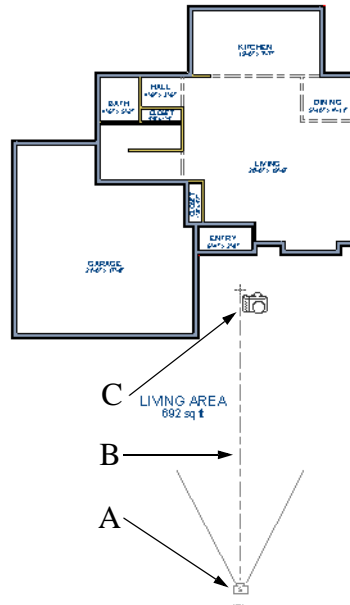
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## Creating a 3D View

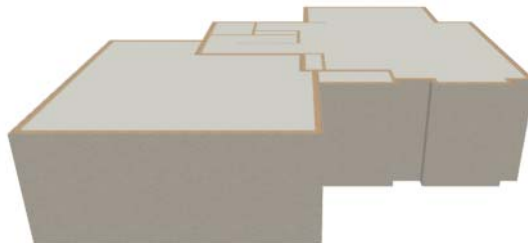
You can create a 3D view of the model to see how it looks so far. For more information, see “3D Views” on page 703 of the Reference Manual.

### *To create a camera view*

1. In floor plan view, click the **Fill Window**  button to zoom out as needed to fill the view window with the entire drawing.
2. Select **3D> Create Perspective View> Full Camera**  (or press Shift + J).
3. Click at the bottom of the floor plan view window and drag a line that stops at the Entry. The point where you click (A) defines the point of perspective and the line (B) defines the direction of perspective.





4. Release the mouse button to create the 3D camera view. Where the mouse is released (C) is the camera's focal point.
5. You can use the **Mouse-Orbit Camera**  tool to change the camera's perspective. The camera will revolve around its focal point (C). See "Repositioning Cameras" on page 721 of the Reference Manual for more information.
6. To smooth out the edges and create a more realistic rendering of the model, you can select **3D> Camera View Options> Final View**  or **Final View with Shadows** .



Note: Final Views often take significantly longer to generate than Previews, so a 3D view will revert back to the Preview Settings as soon as anything is changed within the view.

7. To return to floor plan view, select **File> Close** from the menu.

#### *To create a Doll House View*

1. In floor plan view, select **3D> Create Perspective View> Doll House View** . A Doll House View displays the floor without a ceiling or roof.
2. Select **3D> Move Camera With Mouse> Mouse-Orbit Camera**  (which should be selected by default) then click and drag the mouse on screen to change the camera perspective. You can press the I (in) and the O (out) keys on the keyboard to zoom in and out of the plan. For more information on modifying camera views, see “Editing 3D Views” on page 727 of the Reference Manual.




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## Adding Floors

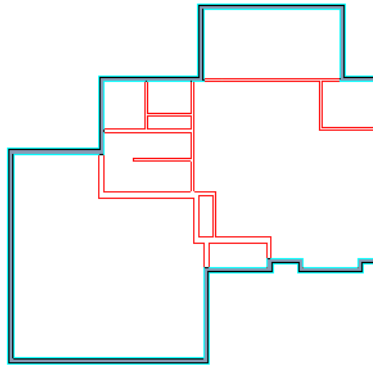
Creating new floors in a plan is easy, but it is best to do so only after the first floor plan has been finalized. With this first floor of this plan completed, you can now add a second story and basement. For more information about working with multiple floors, see “Multiple Floors” on page 341 of the Reference Manual.

#### *To add a second floor*

1. Select **Build> Floor> Build New Floor** . The **New Floor** dialog displays.
2. Select **Derive new 2nd floor plan from the 1st floor plan** and click **OK** to close the **New Floor** dialog to display the Floor 2 Defaults. You could also create a blank second floor

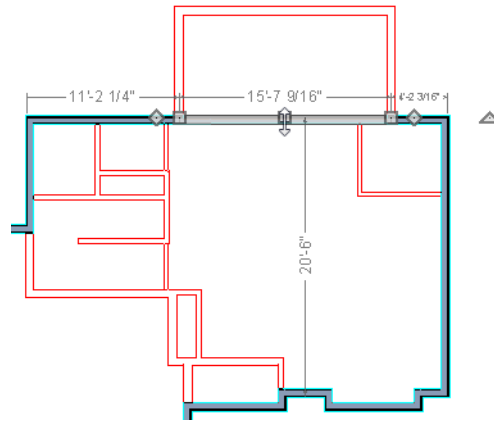
plan and then draw the second story walls manually; however, it is usually faster to automatically generate the perimeter walls and then edit them as needed.

3. Click **OK** and a floor plan for the second floor is created based on the exterior walls of the first floor plan. The second floor perimeter walls will now require some editing. It will be difficult to know where the second story walls should be without knowing where the first floor walls are located.
4. Select **Tools> Reference Floors> Floor Reference Display**  or press the F9 key. The first floor walls are displayed for reference.

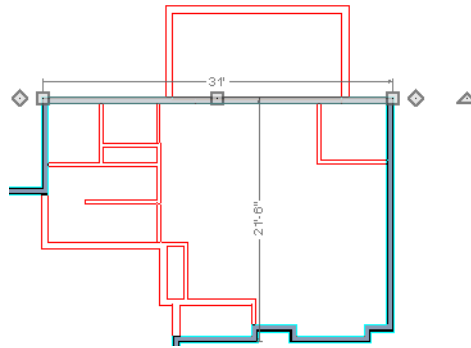


***To merge two parallel walls into one***

1. Select the topmost horizontal wall, then click and drag its Move edit handle to move it.
2. When the wall becomes aligned with another wall and can merge with it, it will stop at a "sticky point."
3. Release the mouse button. Note that if you keep dragging the mouse, the wall will break free of the sticky point and you can continue moving it.



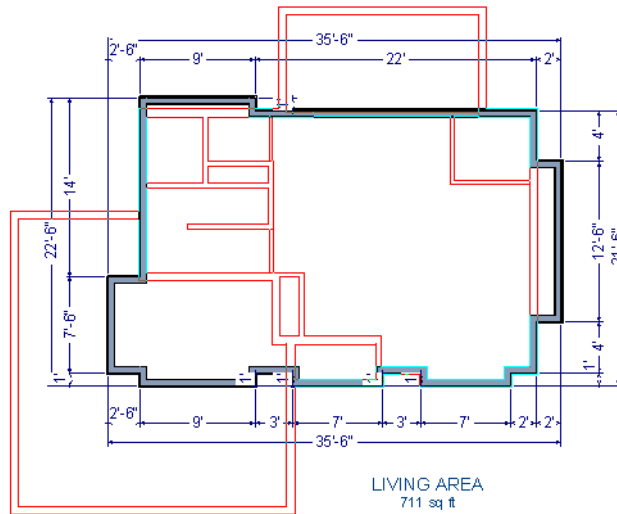
4. When you select the wall now, notice that the edit handles are located along its full length.



Note: Before merging walls, make sure Object Snaps are turned on. For more information, see "Object Snaps" on page 122 of the Reference Manual.



Use the techniques described above and in "Drawing Walls" on page 7 and "Adjusting Wall Positions" on page 12 to create exterior walls as shown in the following image:

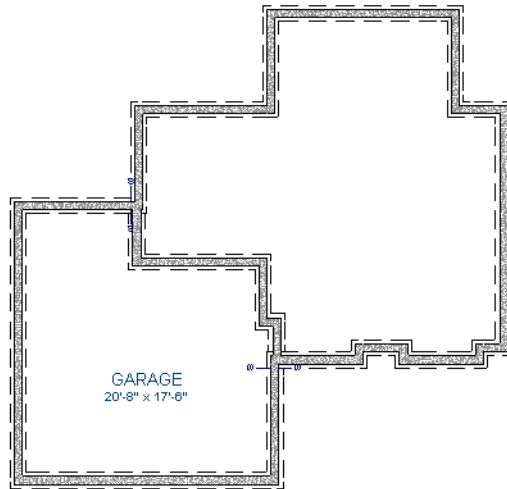






5. Remember to **Save**  your plan as you work.

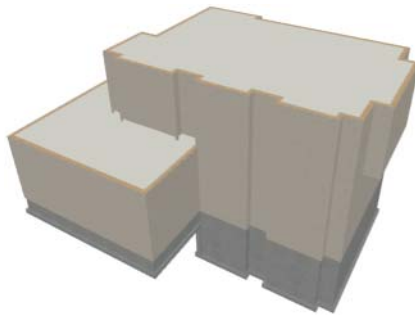
***To create a foundation or basement***

1. Select **Build > Floor > Build Foundation** . In the **Build Foundation** dialog:
  - Change the **Minimum Stem Wall Height** to 100 inches.
  - Click **OK** to close the dialog and create a foundation level for your plan.
  - For more information, see “Foundation Defaults” on page 354 of the Reference Manual.
2. Select **Derive New Foundation Plan From the First Floor Plan** and click **OK** to close the **New Floor** dialog. For more information, see “Adding Floors” on page 343 of the Reference Manual.
3. You can select **Window > Fill Window Building Only**  from the menu to center the plan on screen.



 Notice the "S" Markers, which indicate steps in the foundation stem wall top heights. For more information, see "Foundation Defaults" on page 354 of the Reference Manual.



4. Select **3D > Create Perspective View > Perspective Full Overview**  to create an exterior 3D overview of the entire plan so far.



### *To add a second story balcony*

Now that a second floor has been created, the tools and techniques described earlier can be used to add a second story balcony that is aligned with the floor below.

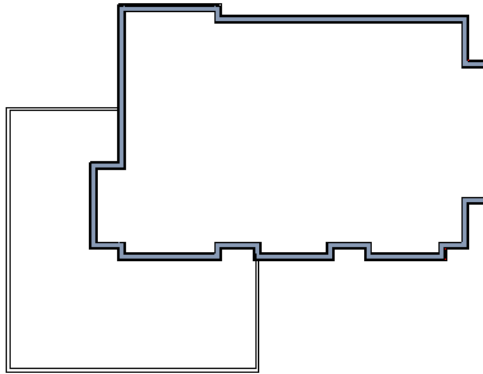
1. Press **Ctrl + Tab** on your keyboard to switch back to floor plan view and return to Floor 2.






2. If they are not already displayed, select **Tools> Reference Floors> Reference Floor Display**  or press the F9 key to display the positions of the first floor walls on Floor 2.
3. Select **Build> Railing and Deck> Straight Railing** .

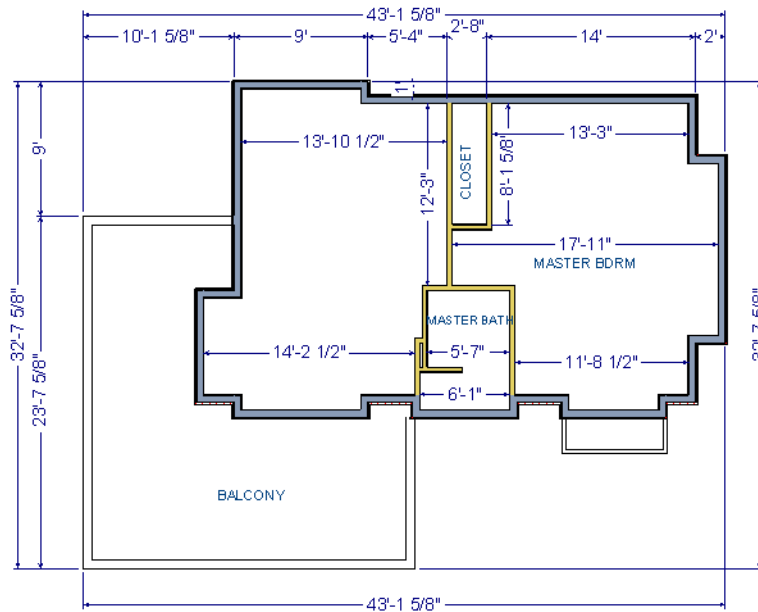


For best results, do not use the Deck Railing tool or specify the balcony room as a Deck.

4. Draw a balcony as shown in the following image:






5. If **Object Snaps**  are on, the second story balcony railing will likely snap into alignment with the walls on Floor 1 as they are drawn. If not, you can manually align them:
  - With a railing selected, click the **Align with Wall Below**  edit button.
  - If **Align with Wall Below**  is not available, the selected railing either needs to be moved closer to the wall below, or the railing is already aligned with the one below. See “Aligning Walls” on page 217 of the Reference Manual.
6. Use the **Select Objects**  tool to select one of the railings, then click the **Open Object**  edit button. On the GENERAL panel of the **Railing Specification** dialog, increase the Thickness to 8 1/8” and click **OK**.
7. Repeat these steps for each section of railing that has a wall directly below it on Floor 1.
8. Finally, add interior walls to the second floor. When you are finished, it should look similar to this:

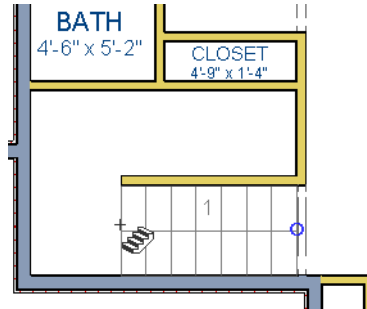


## Adding Stairs

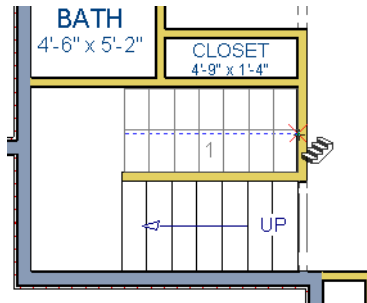
Now that the structure has three floors, it will require stairs. For more information about stairs, see “The Stair Tools” on page 428 of the Reference Manual.


### *To draw stairs with a landing*

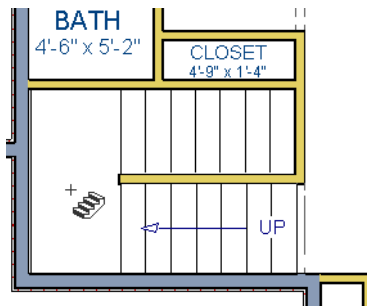
1. Click **Down One Floor**  to go to the first floor. You may want to press F9 to turn off the **Reference Floor Display** .
2. Select **Build> Stairs> Straight Stairs**  (or press Shift + Y).
3. Click and drag to draw a short stair section from right to left, as shown in the following image:





4. Draw another stair section from left to right, directly above the first:





5. While the **Straight Stairs**  tool is still active, click in the space to the left of the two stair sections to create a landing.

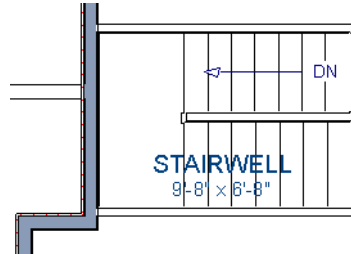



6. Click on the landing with either the **Straight Stairs**  or **Select Objects**  tool active, and if needed, resize it using its edit handles to fit it against the wall.

A stairwell is simply an interior room that has been assigned the Room Type “Open Below”. See “Room Specification Dialog” on page 265 of the Reference Manual.




*To create a stairwell*

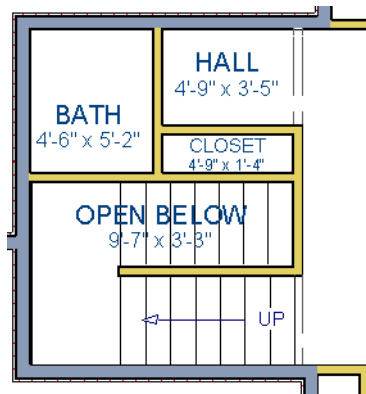
1. Select either of the two stair sections.
2. On the edit toolbar, click the **Auto Stairwell**  button to create a stairwell.
3. Click the **Up One Floor**  button to go to Floor 2. Notice that there is now a stairwell room defined by railings directly above the stairs on Floor 1.






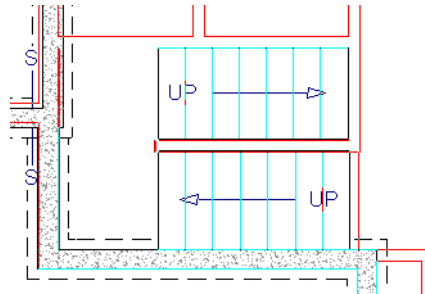
It makes sense to draw the basement stairs directly below the stairs to Floor 1. The **Auto Stairwell**  edit tool could be used to create another stairwell; however, in this situation, it will be better to use the existing interior walls to define the stairwell, rather than by the railings that the Auto Stairwell tool generates.




*To manually create a stairwell*

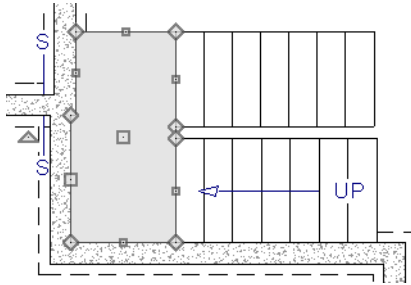
1. Click the **Down One Floor**  button to go down to Floor 1.
2. Next, click on a stair section inside of the stairwell room and click the **Select Next Object**  edit button as many times as needed until the room is selected instead of the stair.
3. With the room selected, click the **Open Object**  edit button and in the **Room Specification** dialog, select "Open Below" from the **Room Type** drop-down list and click OK.






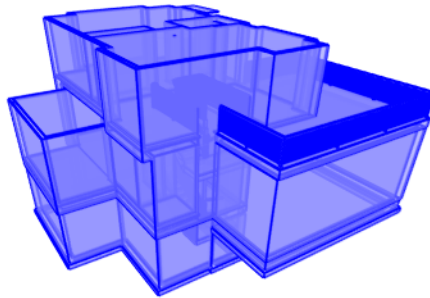
4. Go **Down One Floor**  to the foundation (Floor 0) level, and press F9 to turn on the **Reference Floor Display** .
5. Select **Build> Stairs> Straight Stairs**  and draw two stair sections directly below the stairs you drew on Floor 1. Do not draw the landing just yet, though.



6. Select each stair section and adjust its width and position using its edit handles so that it fits within the walls forming the stairwell drawn on Floor 1.
7. When the stair sections are positioned properly, click with the **Straight Stairs**  tool to create a landing as you did on Floor 1.
8. Next, use the **Select Objects**  tool to select the landing, click the **Break Line**  edit button, and click along the landing's edge to place a break. This divides the edge into two sections with a corner handle between them, allowing you to reshape it so that it fits against the foundation walls.



9. Select **3D> Create Perspective View> Perspective Full Overview**  to create an exterior 3D view of your plan.
10. When the 3D view has generated, select **3D> Rendering Techniques> Glass House**  to view the entire model inside and out with partially transparent surfaces.
11. Select **3D> Move Camera With Mouse> Mouse-Orbit Camera**  and click and drag the mouse on screen to change the camera perspective. You can press the I (in) and the O (out) keys on the keyboard to zoom in and out of the plan.



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## Placing Doors and Windows

Now is a good time to add some doors and windows to the model. For more information about doors and windows, see “Doors” on page 277 of the Reference Manual and “Windows” on page 303 of the Reference Manual.


### *To add a door*

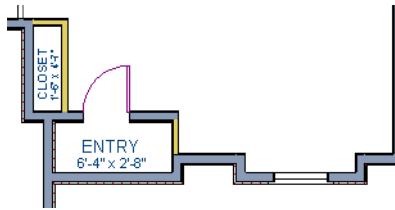
1. If your views are still tiled, close the 3D view and maximize the floor plan view.





2. Select **Build> Door> Hinged Door** .
3. Move the pointer to the entry and click on the front wall, left of its center, to place a door.

*To add a window*


1. Select **Build> Window> Window** .
2. Move the pointer to the entry and click on the wall, right of center, to place a window.



*To edit a door*

1. To better see the results when the door is edited, create a **Perspective Full Camera** , view inside the structure, pointed at the entry.
2. Click the **Select Objects**  tool, then click on the door to select it in the 3D view.



3. Click the **Open Object**  edit button to open the **Door Specification** dialog. For more information, see “Door Specification Dialog” on page 289 of the Reference Manual.
4. On the **GENERAL** panel, set the **Door Style** to "Glass", the **Width** to 36", and the **Panel Frame Bottom** to 8". Press the Tab key to update the preview image on the right side of the dialog so that it reflects your change.


5. On the **LITES** panel, set the **Lites Across** to 3 and **Lites Vertical** to 5.
6. On the **HARDWARE** panel, set the Handle **In from Door Edge** to 2".
7. Click **OK** to return to the 3D view.



***To edit a window***

1. Next, click on the window to select it.




2. Click the **Open Object**  edit button to open the **Window Specification** dialog. For more information, see “Window Specification Dialog” on page 315 of the Reference Manual.
3. On the **GENERAL** panel, select “Fixed Glass” from the **Window Type** drop-down list and set the **Width** to 54".

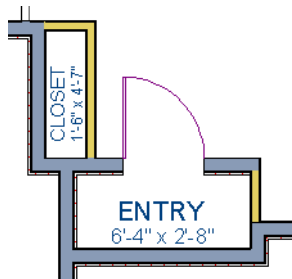
- On the LITES panel, change both the **Lites Across** and **Lites Vertical** to 4.
- Click OK to close the **Window Specification** dialog.




To save time, make these changes in the Door Defaults and Window Defaults dialogs before doors and windows are placed. For more information, see “Default Settings vs Preferences” on page 64 of the Reference Manual.

#### *To change the door swing*

- Return to floor plan view and select the door.
- Click the **Change Opening/Hinge Side**  edit button.






#### *To copy a window or door*

- Return to the 3D view and select the window, or door, you wish to copy.
- Click the **Copy/Paste**  edit button. For more information about copying objects, see “Copying and Pasting Objects” on page 126 of the Reference Manual.


Doors and windows can be placed, selected, deleted, copied, pasted, and edited in either 2D or 3D views. If there is a window design that you will be using throughout a plan, you can create it once, then just copy and paste it. An even better approach is to set your door and window defaults to the desired settings before placing these objects. For more information, see “Default Settings vs Preferences” on page 64 of the Reference Manual.

***To create a doorway***

1. Return to floor plan view and **Zoom**  in on the entry room.
2. Select **Build> Door> Doorway**  and click on the front Entry room wall to place a doorway at that location.
3. Select **3D> Create Perspective View> Perspective Full Camera**  and create an exterior camera view of the doorway.

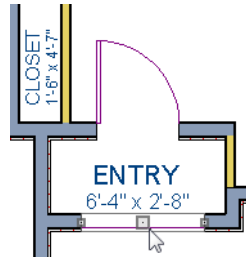



***To customize the doorway***

1. Select the doorway by clicking on its frame and click the **Open Object**  edit button to open the **Door Specification** dialog.
2. On the **GENERAL** panel, change the **Width** to 54" and the **Height** to 96".
3. On the **CASING** panel, change the **Exterior Casing Width** to 10". Be sure to delete the (D) from the text field. It stands for "default" and if it is not removed, it will continue to apply the default casing width, regardless of the value you specify.
4. On the **CASING** panel, click the **Library** button beside **Casing Profile** and select a molding profile from the library.
5. On the **ARCH** panel, click the **Type** drop-down and select "Broken Arch" from the list. Set the **Height** to 12".
6. Click **OK** to close the **Door Specification** dialog.

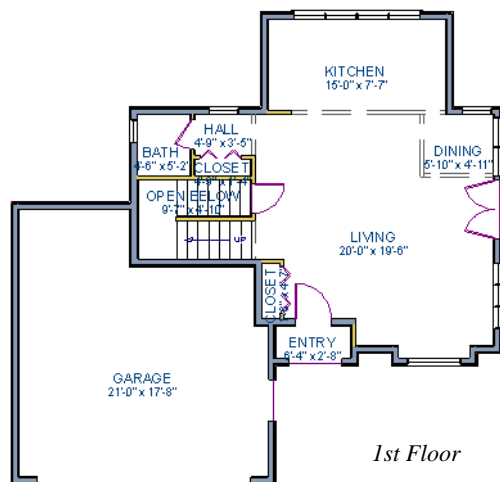
**To center a wall opening**

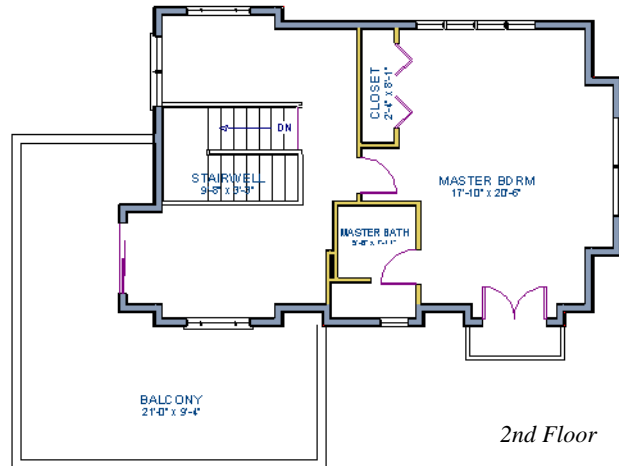
1. Return to floor plan view and select the doorway.




2. Click the **Center Object**  edit button, then click inside the entry room, near the interior wall containing the doorway.
3. When a dashed centering axis displays in the room, click once to center the door. For more information, see “Using Center Object” on page 169 of the Reference Manual.


Use the tools and techniques you’ve learned to add window and doors to the rest of the plan, as shown in the following images. Hinged and Sliding Doors placed in interior walls become interior doors and have different specifications than exterior doors. See “Interior vs Exterior Doors” on page 278 of the Reference Manual.

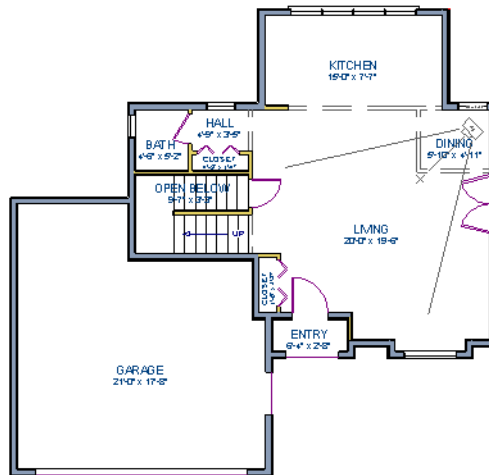





When you have finished, **Save**  your work.

**To take a final look**

1. Using the **Full Camera**  tool, create an interior camera view on Floor 1. Remember that where you click determines the camera's perspective and where you release determines the point about which the camera will rotate. A short drag distance is ideal, however, the distance must be greater than one foot.




2. Release the mouse button to create the 3D camera view then use the **Mouse-Orbit Camera**  tool to take a look around and see your progress so far.



3. You can also create a **Floor Overview**  on any floor.



4. When you are finished, be sure to **Save**  your work.

If you would like, you can continue working on this plan in the Interior Design Tutorial or Kitchen and Bath Design Tutorial. You can also learn about materials in the Materials Tutorial or find out more about roofs in the Roof Tutorial. To learn how to arrange views of your model on a page for printing, see the Layout Tutorial.

