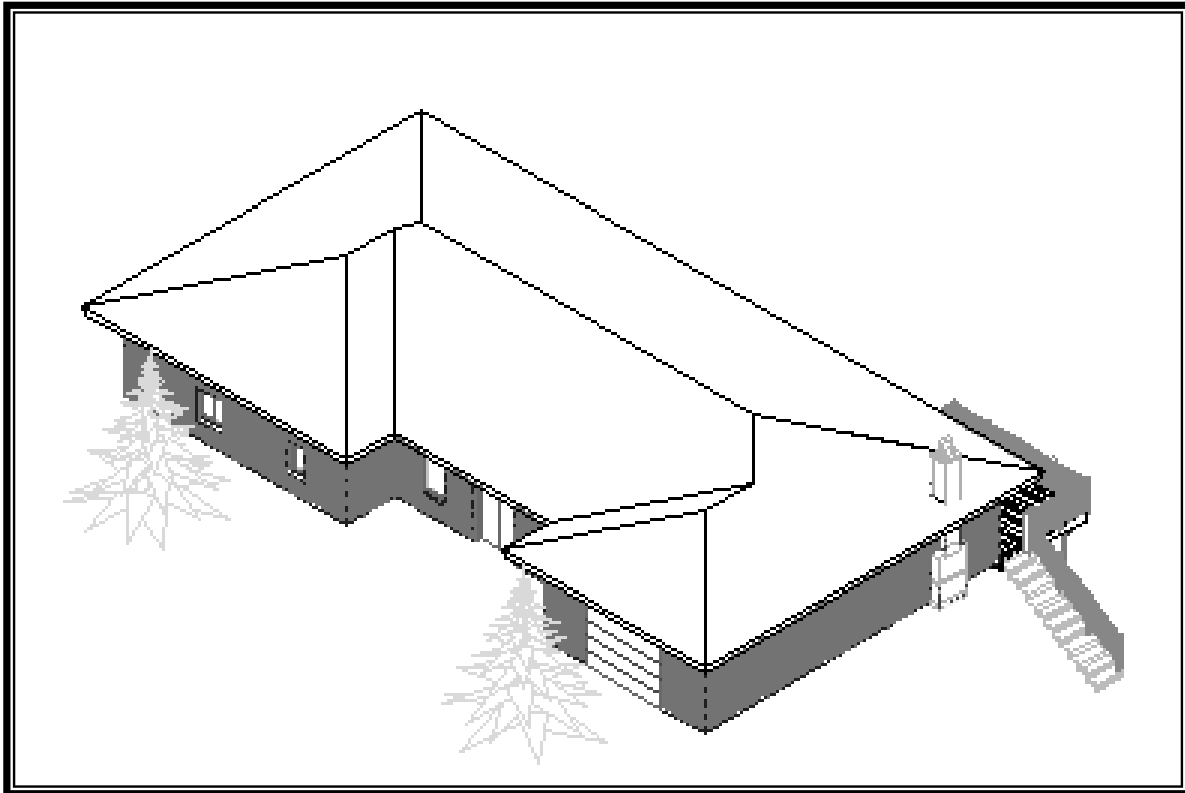


Autodesk
**Architectural Desktop 2006
Fundamentals**



Elise Moss

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Lesson 3

Floor Plans

The floor plan is central to any architectural drawing. We start by placing the exterior walls, then the interior walls, then doors, and finally windows.

| | |
|--------------|---------|
| Tool Palette | Walls |
| Command Line | WallAdd |



TIP: If you draw a wall and the materials composing the wall are on the wrong side, you can reverse the direction of the wall. Simply select the wall, right click and select the Reverse option from the menu.



TIP: You can convert lines, arcs, circles, or polylines to walls. If you have created a floor plan in AutoCAD and want to convert it to 3D, open the floor plan drawing inside of ADT. Use the Convert to Walls tool to transform your floor plan into walls.


Exercise 3-1:

Creating Exterior Walls

Drawing Name: New
Estimated Time: 10 minutes

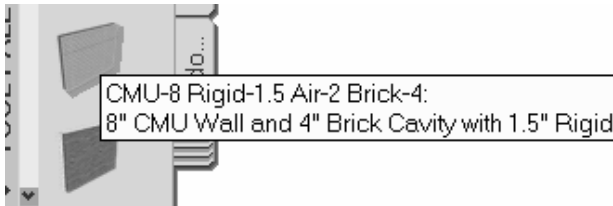
This exercise reinforces the following skills:

- Create Walls
- Project Navigator

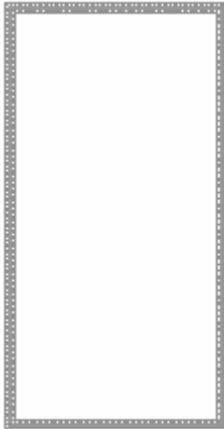
1.  Start a new drawing using QNEW.

2.  Launch the Tool Palette.

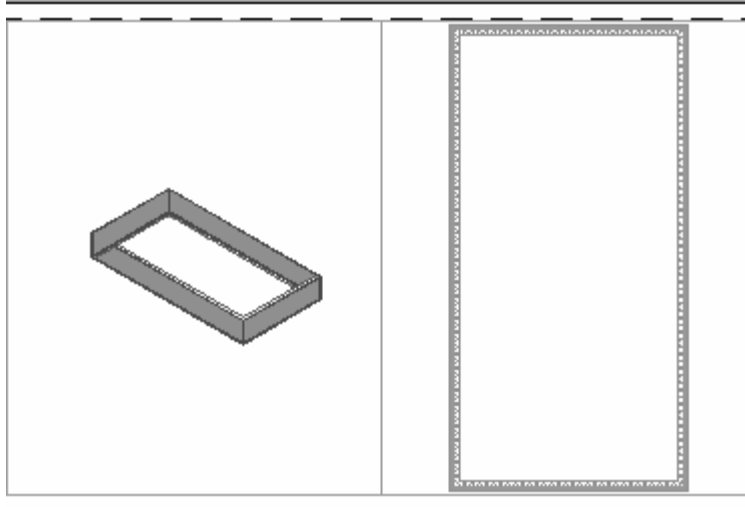
Select the **Walls** tab.



Select the **CMU-8 RIGID-1.5 Air-2 Brick-4**: wall style.

3.  Toggle **ORTHO** ON.
Start the wall at 0,0.
Create a rectangle 60' tall and 30' wide.

4. Select the **Work** tab.




5. You see that the walls you placed are really 3-dimensional.
6. Save your drawing as *Ex3-1.dwg*.

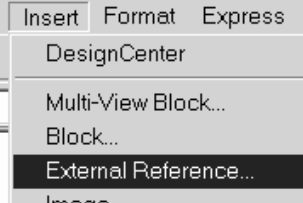
Exercise 3-2:
Convert to Walls

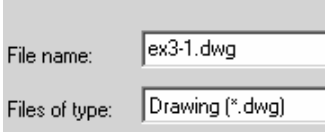
Drawing Name: new
Estimated Time: 60 minutes


This exercise reinforces the following skills:

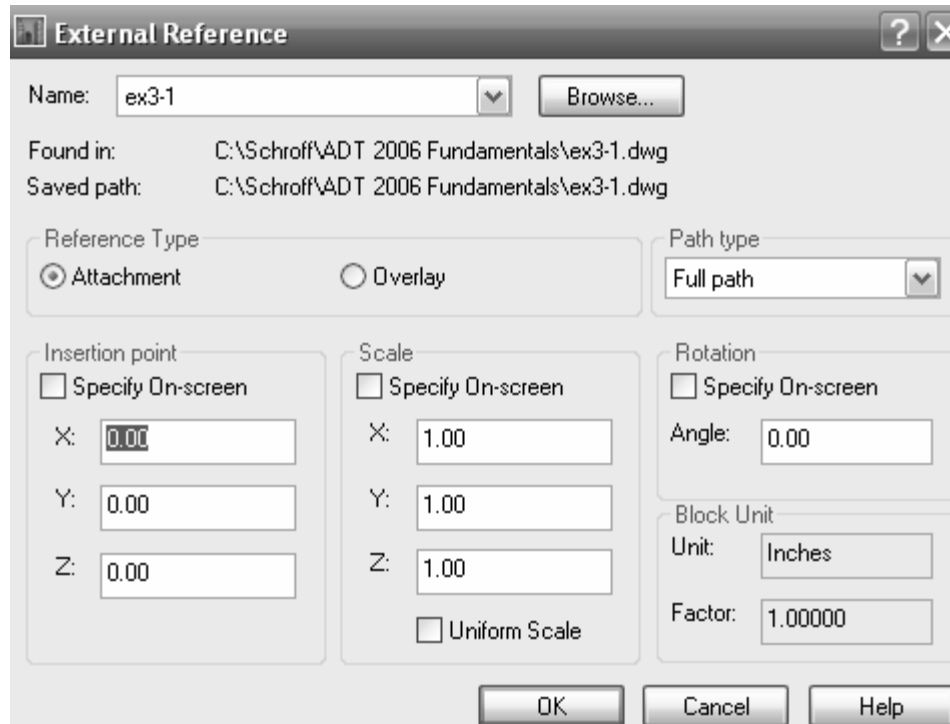
- Convert to Walls
- Xrefs
- Creating Interior Walls

1.  Start a new drawing using **QNEW**.

2.  Go to **Insert**→**External Reference**.

3.  Locate *ex3-1.dwg*.
Press **Open**.

 **TIP:** Many architects use external references to organize their projects. That way, teams of architects can concentrate just on their portions of a building. External references also use less system resources.

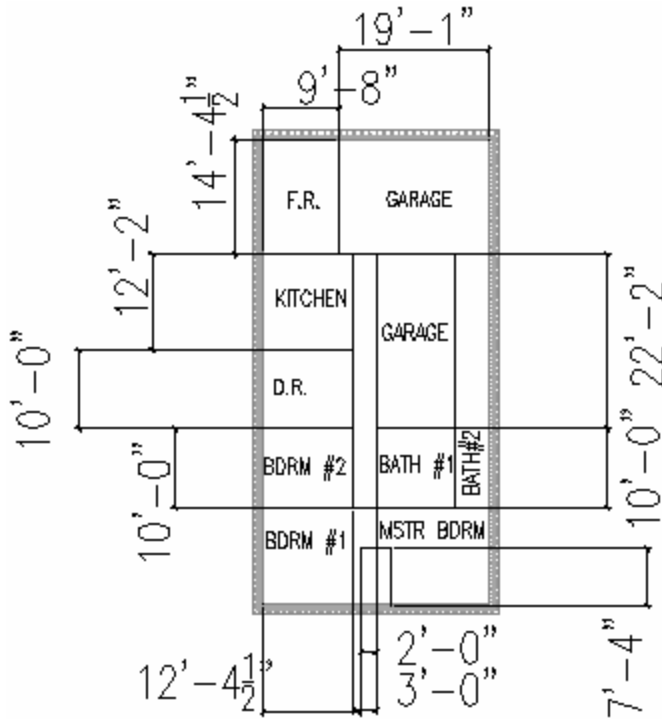


4. Uncheck **Specify On-Screen** under Insertion point, scale, and rotation.

Press **OK**.

This will insert the file as an external reference at 0,0,0.

5.



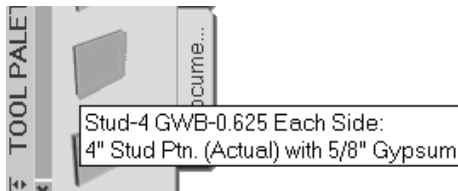
Create the layout shown using lines or polylines. (It may be helpful to turn off the A-Walls layer while you are working and create your lines on layer 0).

Do not add the dimensions or the text to your drawing. They are there to help you place the lines only.

Don't draw using rectangles if you are going to use the CONVERT method or you will get duplication of lines over lines, which will affect the wall creation.

If you do not want to spend time creating the floor plan, you can download the drawing 'floor plan.dwg' from www.schroff1.com.

6.

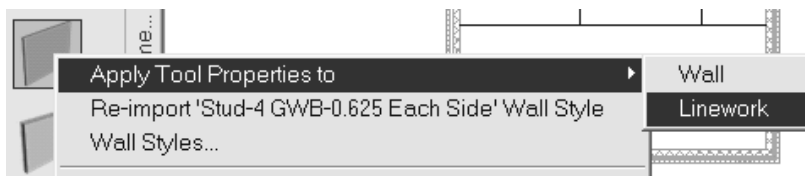


Locate the **Stud-4 GWB-0.625 Each Side:** wall style.

7.

Highlight the wall tool.

Right click and select **Apply Tool Properties to→Linework**.



8.

Select all the interior polylines you just created.

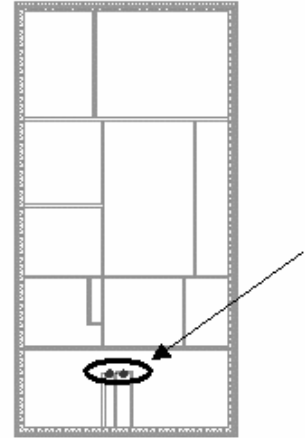
```
Erase layout geometry? [Yes/No] <N>: Y
```

```
15 new wall(s) created.
```

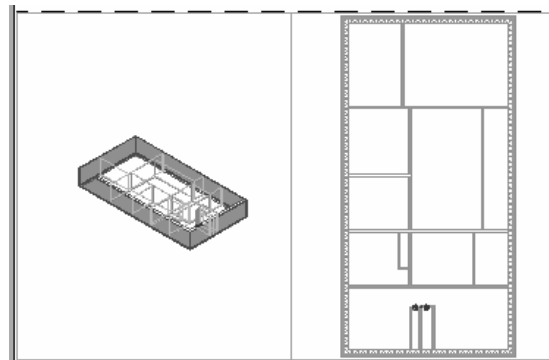
```
Command: Regenerating model.
```

You are prompted if you want to erase the layout geometry. Type **Y** for Yes.

9. Your walls appear. Some walls may not be aligned with others, and wall cleanup error symbols may appear as well.



10. Switch to the Work tab so you can see how your house looks in 3D.



11. Save the file as *ex3-2.dwg*.

Exercise 3-3:
Wall Cleanup

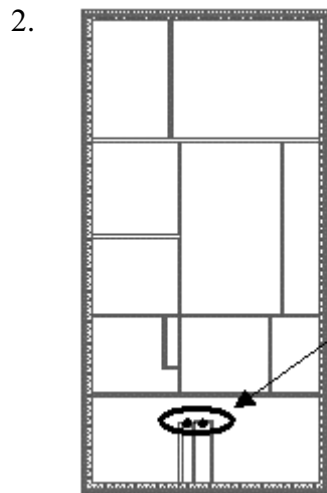
Drawing Name: ex3-2.dwg
Estimated Time: 30 minutes

This exercise reinforces the following skills:

- Modifying Walls
- Wall Tools
- Xref Manager
- Edit External References In-Place

If your walls are all clean, you can skip this exercise.

1.  Open *ex3-2.dwg*.

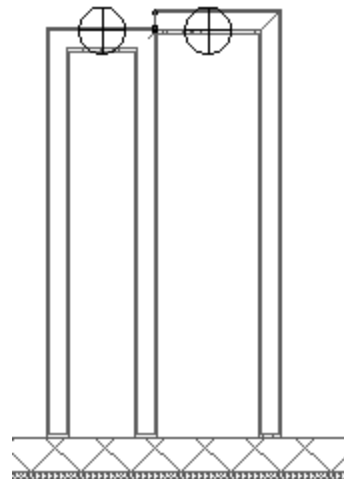


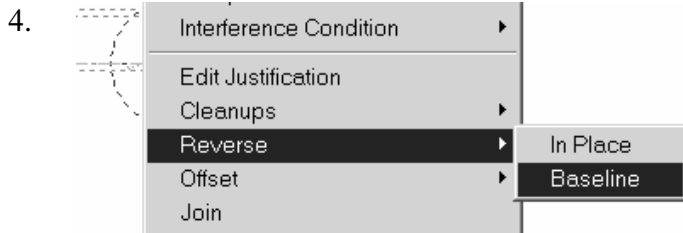
Select the Model Tab.

Zoom into the area indicated.

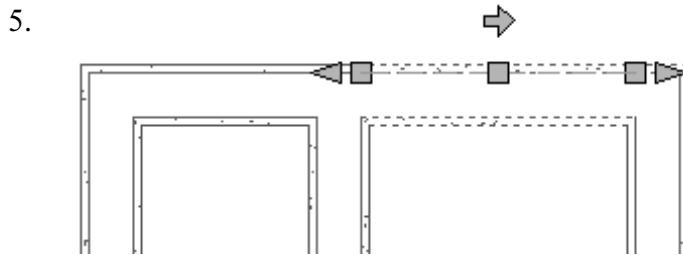
3. Our closet walls are not even. This is because the lines we converted to walls were drawn in different directions.

When you see a red circle like the ones shown, this is considered a 'defect condition.'



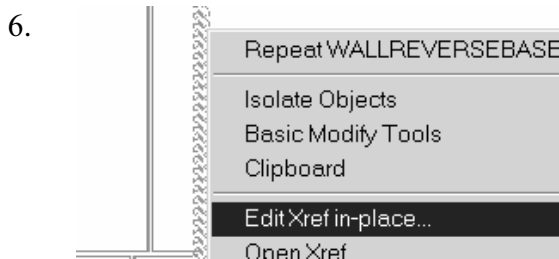
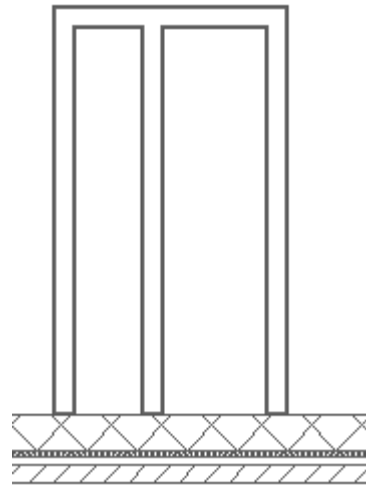
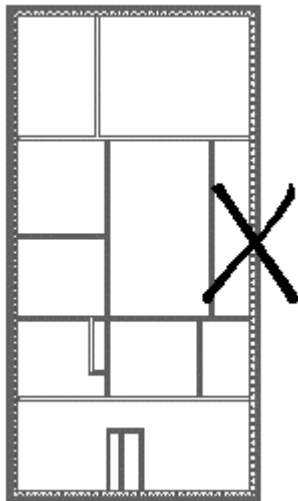


Select one of the walls.
Right click and select **Reverse**→**Baseline**.

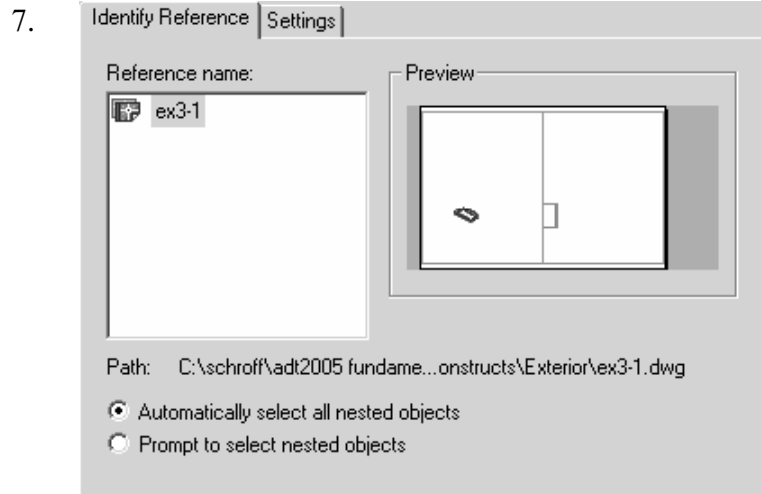


Use the middle blue group to line up the walls.

Next, we delete the wall indicated.



Select the exterior walls.
Right click and select **Edit Xref in-place**.

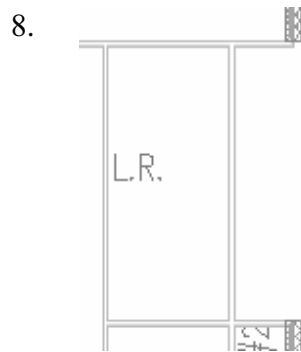


Enable Automatically select all nested objects.

Press **OK**.

By enabling the ability to select nested objects, you would be able to select blocks or other items inserted in the drawing. It is not really applicable here as there are no nested objects...just walls.

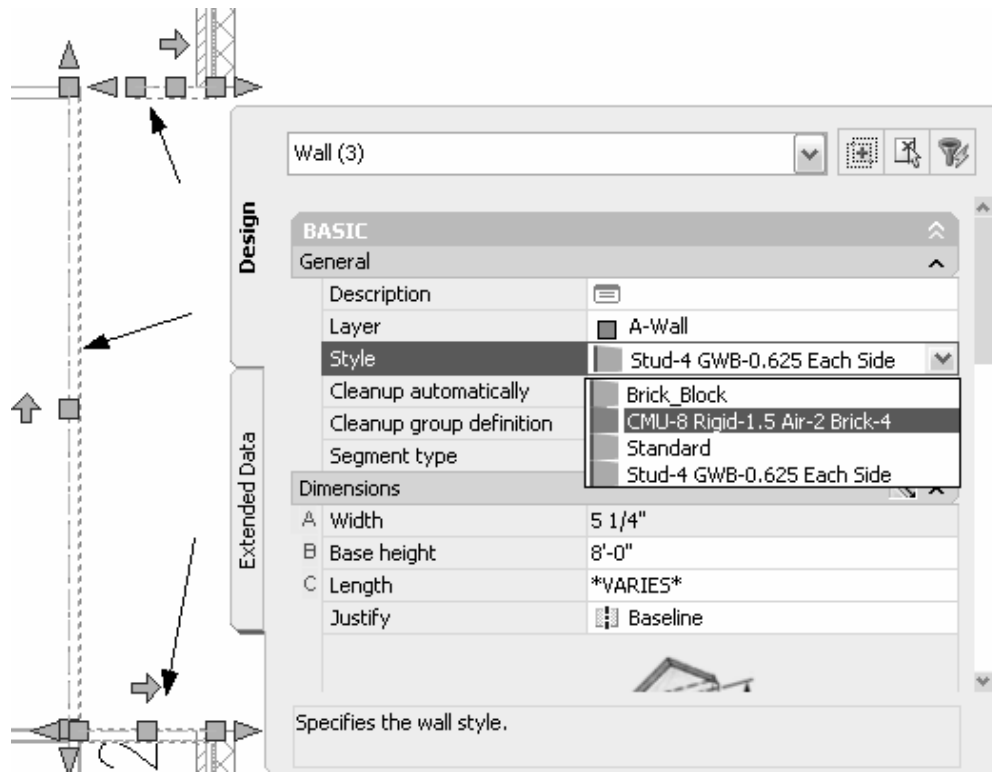
You'll notice that the interior walls now appear lighter to allow you to select the referenced file's objects.




Use the Trim tool to create the opening for the living room entrance.

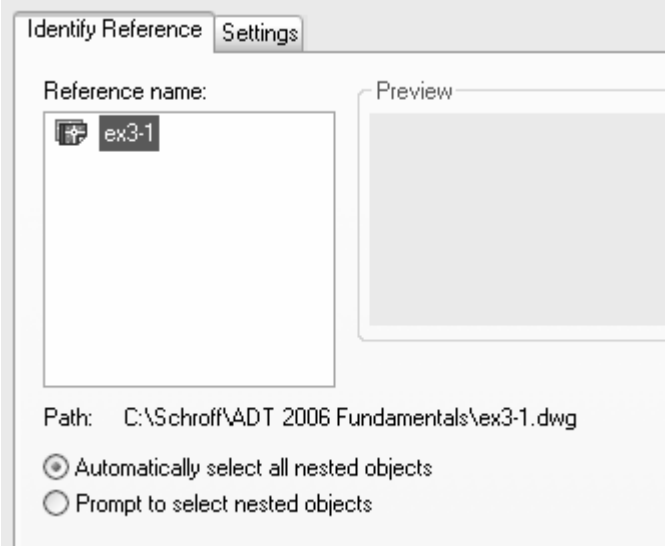
9. Save the **Xref Edits**.

10. Use the Break tool to set the three walls for the living room so that they are exterior.



11. Once the walls are divided, use Properties to set the three exterior walls to the CMU-8 Rigid-1.5 Air-2 Brick-4 wall style.

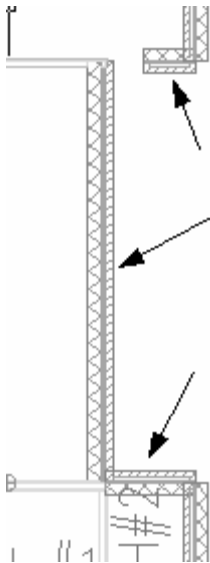
12.  Edit Xref in-place...
Open Xref Select the Exterior Walls.
Right click and select **Edit Xref in-place**.

13.  **Press OK.**

The 'Identify Reference' dialog box has two tabs: 'Identify Reference' and 'Settings'. Under 'Identify Reference', there is a 'Reference name:' field containing 'ex3-1' with a small icon to its left. To the right is a 'Preview' area which is currently blank. Below the dialog, the 'Path:' is shown as 'C:\Schroff\ADT 2006 Fundamentals\ex3-1.dwg'. There are two radio button options: 'Automatically select all nested objects' (which is selected) and 'Prompt to select nested objects'.

14.  Select **Add to Working Set**.

15. Add the three walls.



16. **EDIT JUSTIFICATION**
Cleanups
Reverse
Offset
- Toggle Wall Graph Display**
Apply 'L' Cleanup
Apply 'T' Cleanup

Use the **Apply 'L' Cleanup** to make the corners where two walls meet clean.

17. Select the Save and Close Xref tool.

- 18.

Press **OK**.

You can now edit the interior walls but not the exterior walls.

19. The walls appear cleaner.

20.



The drawing is now updated.

Save as *ex3-3.dwg*.



TIP: To create a freestanding door, press the ENTER key when prompted to pick a wall. You can then use the grips on the door entity to move and place the door wherever you like.


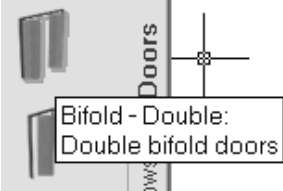
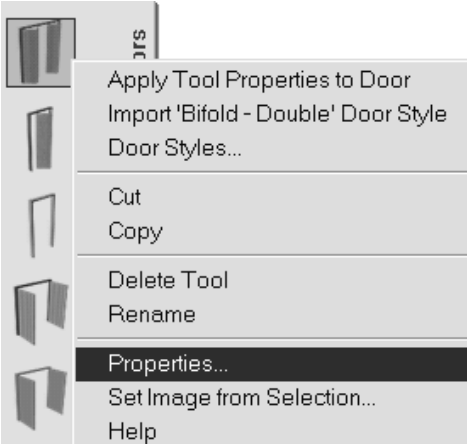
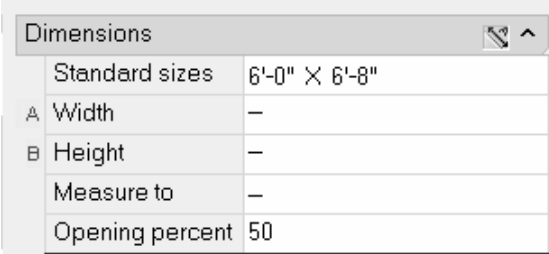
To move a door along a wall, use Door→Reposition→Along Wall. Use the OSNAP From option to locate a door a specific distance from an adjoining wall.

Exercise 3-4: Adding Closet Doors

Drawing Name: Ex3-3.dwg
Estimated Time: 10 minutes

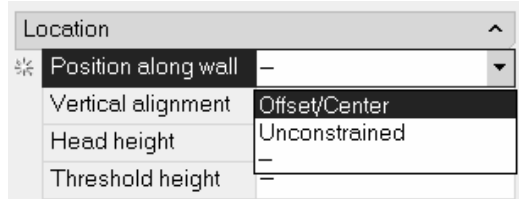
This exercise reinforces the following skills:

- Adding Doors
- Door Properties

1.  Open *ex3-3.dwg*.
2.  Locate the **Bifold-Double** door on the Doors tab of the Tool Palette.
3.  Highlight the **Bifold-Double** door. Right click and select **Properties**.
4.  Expand the **Dimensions** section. Set the Standard sizes to **6'-0" x 6'-8"**. Set the Opening percentage to **50**.
A 25% opening will show a door swing at a 45-degree angle.

The value of the Opening percentage determines the angle of the arc swing. A 50% value indicates the door will appear half-open at a 90-degree angle.

5.

Expand the **Location** section.Set Position along wall to **Offset/Center**.Set the Automatic offset to **1'-2 1/2"**.

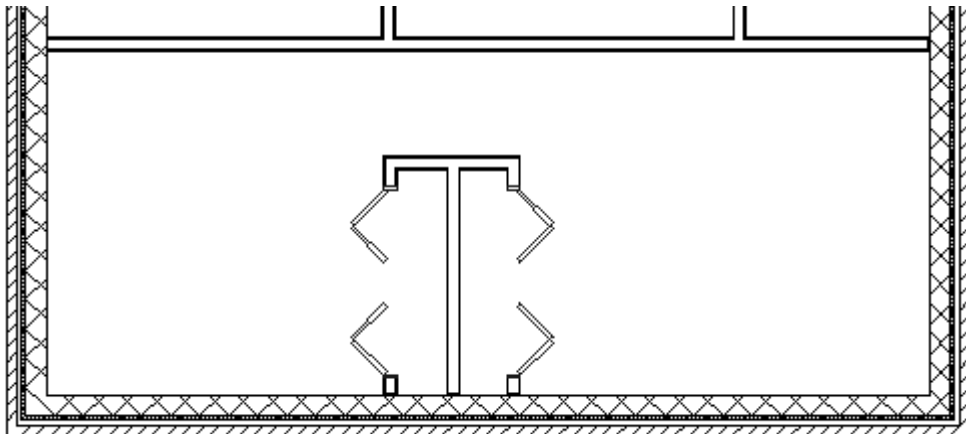
(This will center the closet doors along the wall.)

Press **OK** to close the Properties dialog.

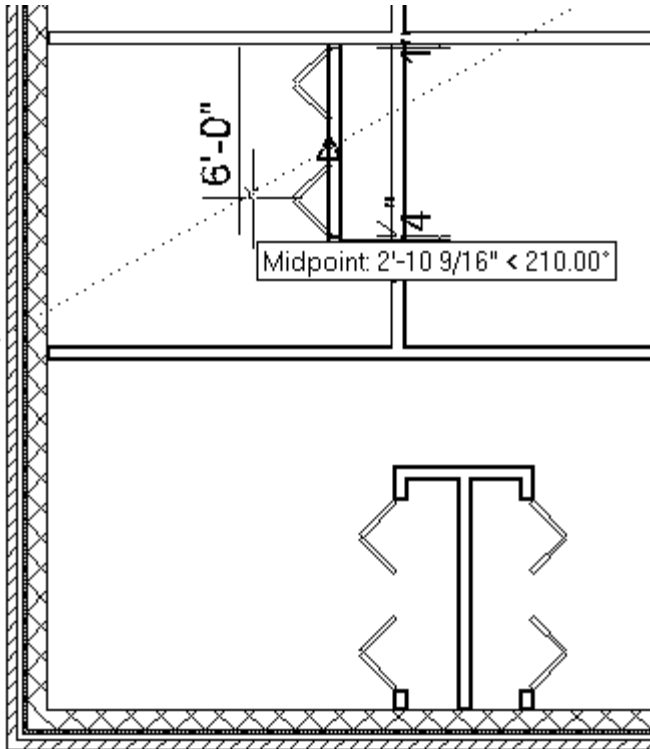
TIP: Note the vertical alignment field. It defaults to a threshold height of 0" for doors and a head height of 6'8" for windows. You will need to adjust these defaults in multi-story buildings.

6. Place the Bifold Double doors at the two closets.

The orientation of the door swing is determined by the wall side selected. In both cases, you want to select the outside face of the wall.



7.

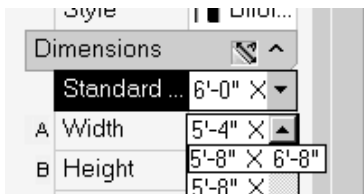


Place a Bi-fold Double door in the wall shown.

The door will be too wide for the wall.

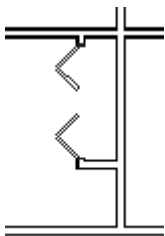
Select the door.
Right click and select **Properties**.

8.



Change the Standard size to **5'-8" x 6'-8"**.

Close the Properties dialog.



The door is updated.

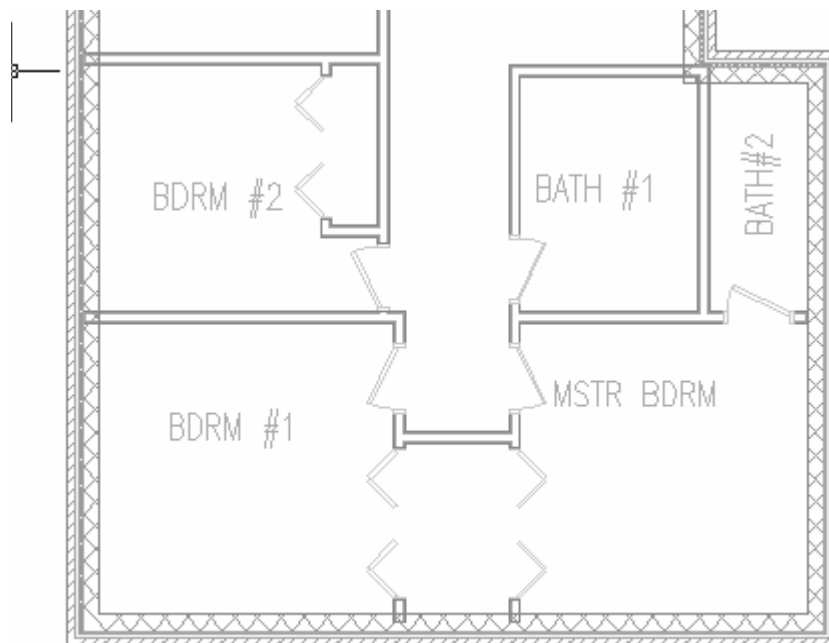
9. Save as *ex3-4.dwg*.

Exercise 3-5:
Adding Interior Doors

Drawing Name: ex3-4.dwg
 Estimated Time: 10 minutes

This exercise reinforces the following skills:

- ❑ Adding Doors
- ❑ Door Properties





We will add single hinge doors in the areas shown.

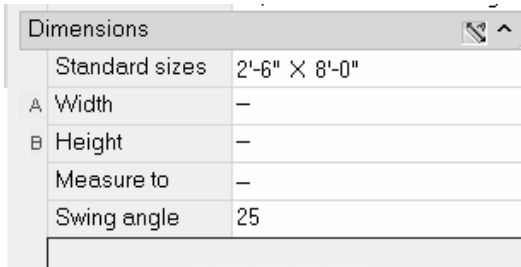
You will need to do some wall cleanup to get the rooms to look proper.

Use AddWall, Extend, and Trim.

Try to keep the walls so they line up to keep the floor plan looking clean.

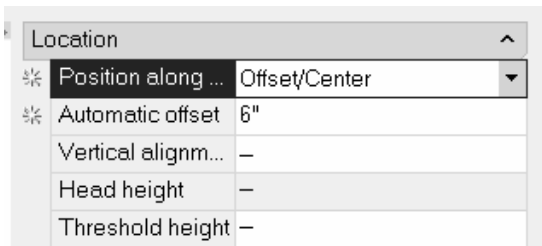
1.  Open *ex3-4.dwg*.
2.  Locate the **Single Hinged** door on the Doors tab of the Tool Palette. Right click and select **Properties**.

3.



Expand the Dimensions section.
Set the Standard sizes to **2'-6" x 8'-0"**.
Set the Swing angle to **25**.

4.



Set the Position along wall to **Offset/Center**.
Set the Automatic offset to **6"**.
Press **OK**.

5. Place the doors as indicated on the previous page.

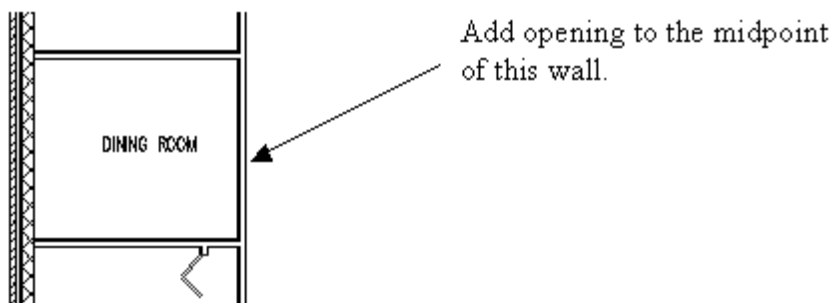
6. Save the file *ex3-5.dwg*.**Exercise 3-6:****Add Opening**


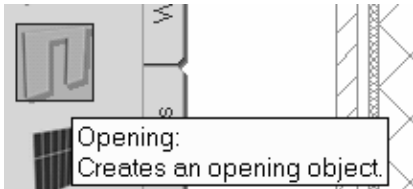
Drawing Name: ex3-5.dwg
Estimated Time: 15 minutes

This exercise reinforces the following skills:

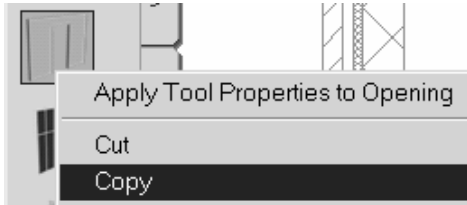
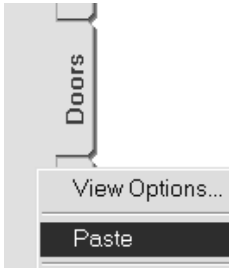
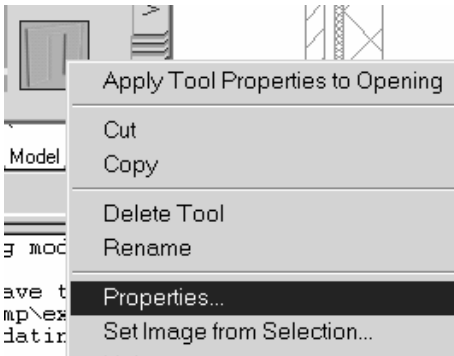
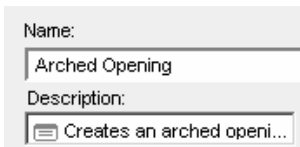
- Adding Openings
- Opening Properties
- Copying Tools
- Set Image from Selection

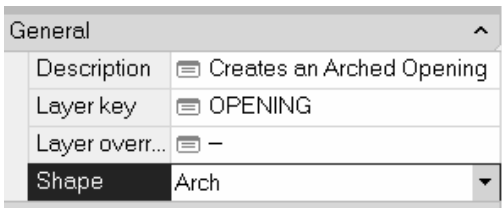
Openings can be any size and elevation. They can be applied to a wall or be freestanding. Openings are placed on Layer A-Wall-Open. The Add Opening Properties allow the user to either select a Pre-defined shape for the opening or use a custom shape.



1.  Open *ex3-5.dwg*.
2.  Locate the **Opening** on the Design tab of the Tool Palette.

Copy a Tool

3.  Right click and select **Copy**.
4.  Select the **Doors** tab.
Right click and select **Paste**.
5.  Highlight the copied tool.
Right click and select **Properties**.
6.  Change the Name to **Arched Opening**.
Change the Description to **Creates an arched opening object**.

- 
- Expand the General section.
Set the Description to **Creates an Arched Opening**.
Set the Layer key to **OPENING**.
Set the Shape to **Arch**.

| Dimensions | | |
|------------|--------|-------|
| A | Width | 3'-0" |
| B | Height | 6'-8" |
| C | Rise | 1'-0" |

Expand the Dimensions section.
 Set the Width to **3'-0"**.
 Set the Height to **6'-8"**.
 Set the Rise to **1'-0"**.

| Location | | |
|----------|---------------------|---------------|
| ※ | Position along wall | Offset/Center |
| ※ | Automatic offset | 3'-4" |
| | Vertical alignment | — |

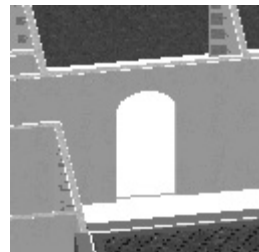
Expand the Location section.
 Set the Position along wall to **Offset/Center**.
 Set the Automatic offset to **3'-4"**.

Press **OK**.



Place the arched opening in the dining room wall.

8. Use View→3D orbit to view the arched opening.



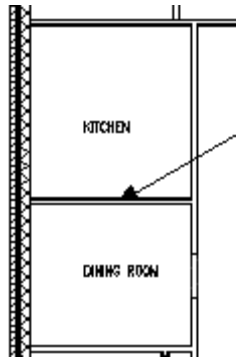
Create an Image for a Tool

- 9.
- | |
|------------------------------------|
| Properties... |
| Set Image from Selection... |
| Help |

Select the Arched Opening icon.
 Right click and select **Set Image from Selection...**
 Pick the arched opening you created.

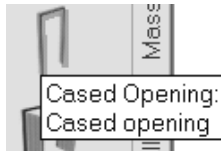
The icon updates to show an arched opening.



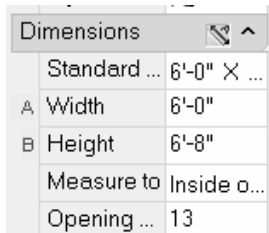


Next we place a rectangular opening in the location indicated.

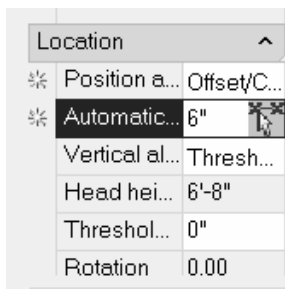
10. Select the **Cased Opening** tool.



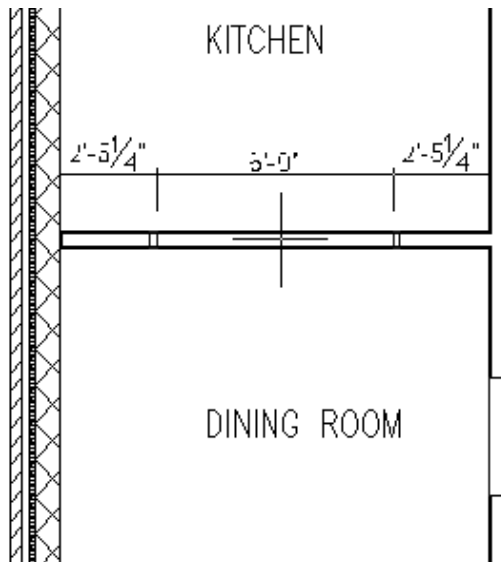
11. Expand the Dimensions section. Set the Width to **6'-0"**. Set the Height to **6'-8"**.



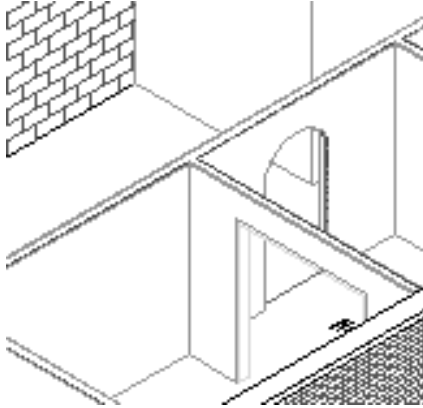
- Expand the Location section. Set the Position along wall to **Offset/Center**. Set the Automatic offset to **6"**.



12. Place the opening in the wall between the kitchen and the dining room.



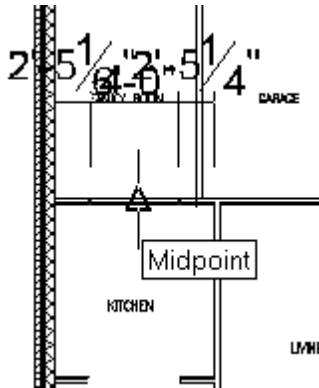
13.



Select the Work tab to view the openings.

Select the Model tab.

14.

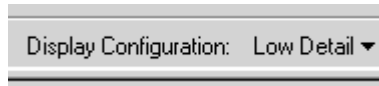


Place a rectangular opening between the kitchen and the family room.



This is our floor plan so far.

The view is set to Low Detail and rotated 90 degrees.



15. Save the file as *ex3-6.dwg*.

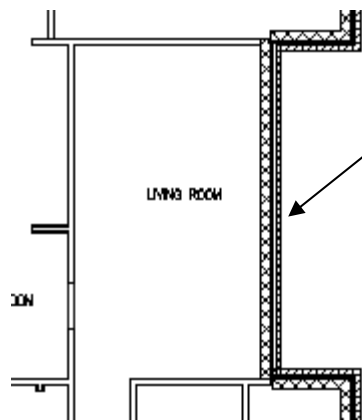
Exercise 3-7:
Adding Doors

Drawing Name: ex3-6.dwg
 Estimated Time: 20 minutes

This exercise reinforces the following skills:

- Adding Doors

1.  Open *ex3-6.dwg*.



We will add an entry door on the wall indicated.

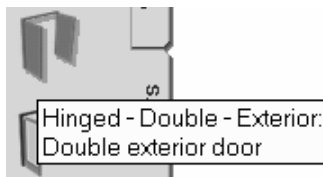
Remember the exterior walls reside on an external reference.

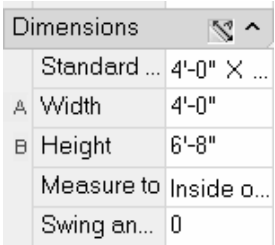


Select the Exterior Walls.
 Right click and select **Edit Xref in-place**.

Press **OK**.

2.  Select the **Hinged-Double-Exterior** door.



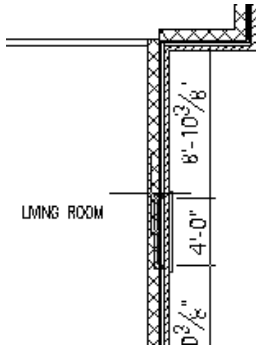
3. 

| Dimensions | |
|--------------|-------------|
| Standard ... | 4'-0" X ... |
| A Width | 4'-0" |
| B Height | 6'-8" |
| Measure to | Inside o... |
| Swing an... | 0 |

Expand the Dimensions section.
 Set the Standard size to **4'-0" x 6'-8"**.
 Set the Swing angle to **0**.

Expand the Location section.
 Set the Position along wall to **Offset/Center**.
 Set the Automatic offset to **6"**.

4.



Place the door so it is centered in the wall.

5.



Select the **Overhead-Sectional** door.

6.

| Dimensions | |
|-----------------|-----------------|
| Standard sizes | 8'-0" x 7'-0" |
| A Width | 8'-0" |
| B Height | 7'-0" |
| Measure to | Inside of frame |
| Opening percent | 0 |

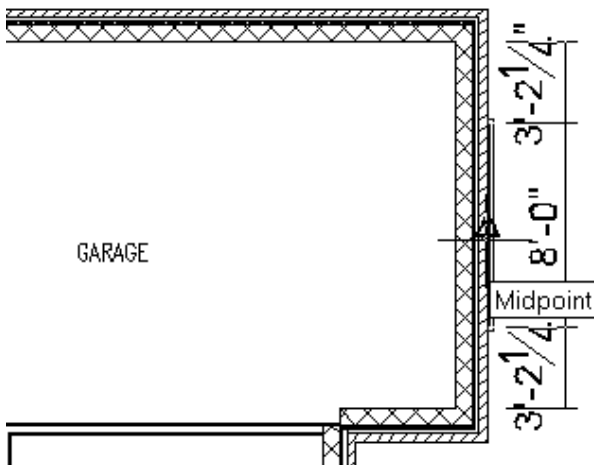
Expand the Dimensions section.
Set the Standard size to **8'-0" x 7'-0"**.
Set the Swing angle to **0**.

7.

| Location | |
|-----------------------|---------------|
| * Position along wall | Offset/Center |
| * Automatic offset | 6" |
| Vertical alignment | Threshold |

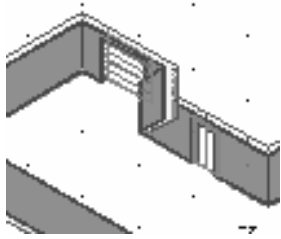
Set the Position along wall to **Offset/Center**.
Set the Automatic offset to **6"**.

8.



Place the door in the garage wall.

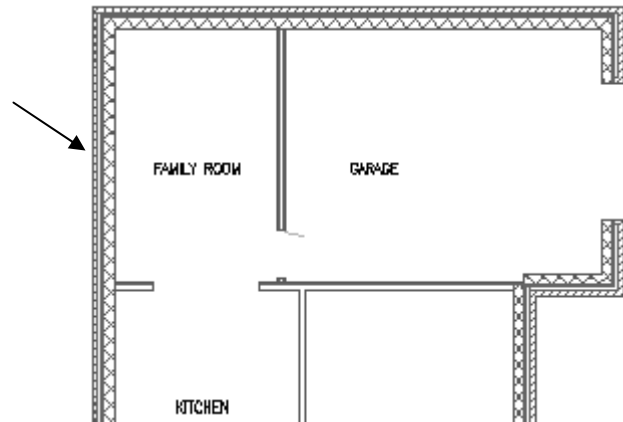
9.



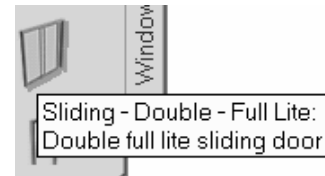
Switch to the Work tab to view the garage door and front entry door.

Switch back to the Model tab.

10. Next we add a sliding door to the family room wall indicated.



11. Select a **Sliding Door –Double Full Lite** to add to the family room.



12.

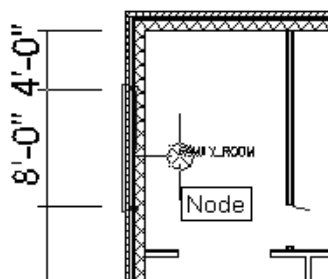
| Dimensions | |
|-----------------|-----------------|
| Standard sizes | 8'-0" X 7'-0" |
| A Width | 8'-0" |
| B Height | 7'-0" |
| Measure to | Inside of frame |
| Opening percent | 0 |

Set the Standard Size to **8'-0" x 7'-0"**.
Set the Opening percent to **0**.

| Location | |
|---------------------|---------------|
| Position along wall | Offset/Center |
| Automatic offset | 4'-0" |
| Vertical alignment | Threshold |

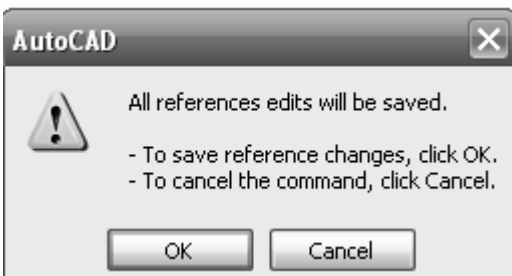
Expand the Location section.
Set the Position along wall to **Offset/Center**.
Set the Automatic offset to **4'-0"**.

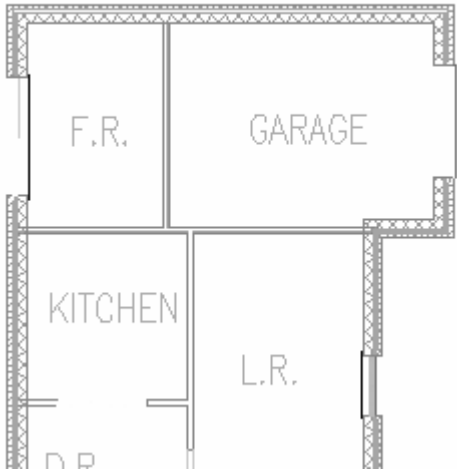
13.



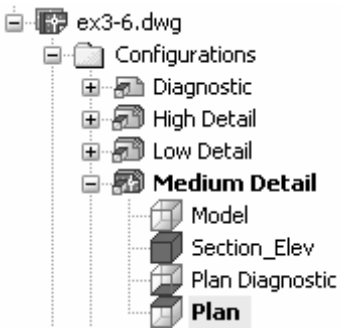
Place the sliding door.

14.  Save the changes back to the external reference.

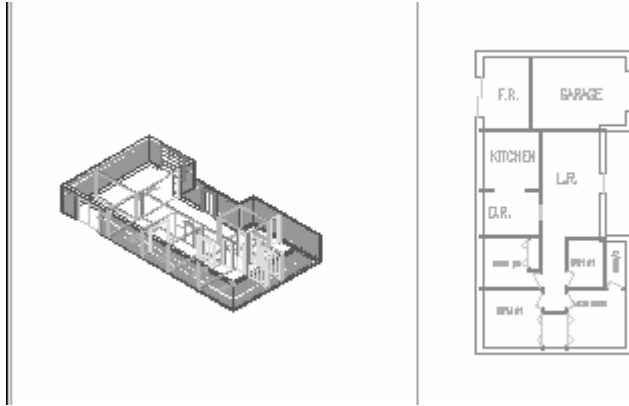
15.  Press **OK**.

16.  If your doors don't look proper, use the Display Manager to modify the appearance.

17.  Go to **Format**→**Display Manager**.

18.  Expand the Configurations folder.
Locate the Plan configuration under Medium Detail.
Note that this configuration is in bold because it is the current active configuration.

19.  Place a check mark for Doors and Door/Window Assembly to set them visible in all views.
- | | | | | |
|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Door | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Door/Window Assembly | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |



20. Select the Work tab to view your model.
21. Save the file as *ex3-7.dwg*.

Exercise 3-8:
Add Window Assemblies

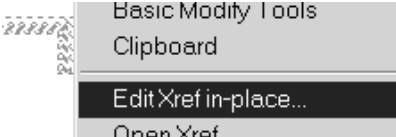
Drawing Name: Lesson 3-7.dwg
 Estimated Time: 30 minutes

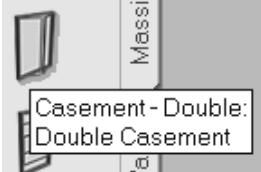
This exercise reinforces the following skills:

- Add Windows

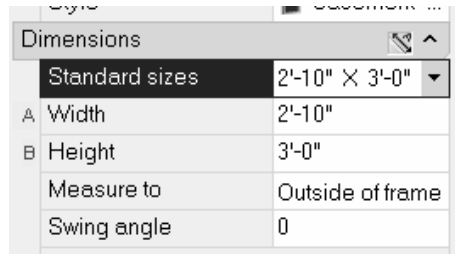
1.  Open *ex3-7.dwg*.

Select the Model tab.

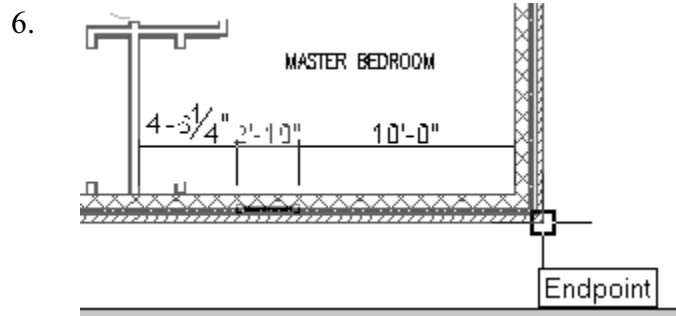
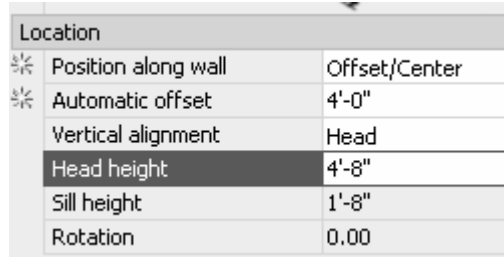
2.  Select an exterior wall.
 Right click and select **Edit Xref In-place**.
 Press **OK**.

3.  Select the Windows tab of the Tool Palette.
 Select the **Casement-Double** window.

4. Expand the Dimensions section.
Set the size to **2'-10" x 3'-0"**.



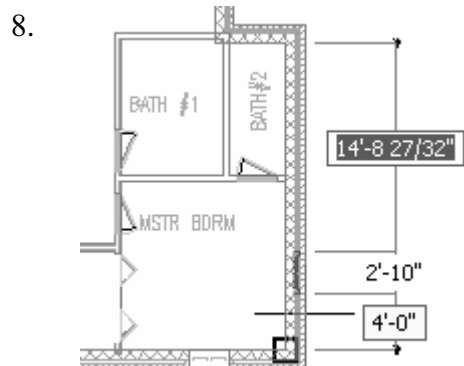
5. Expand the Location section.
Set the Position along wall to **Offset/Center**.
Set the Offset to **4'-0"**.
Set the Head height to **4'-8"**.



Select the wall shown and the endpoint indicated.

The endpoint is where the offset is calculated from.

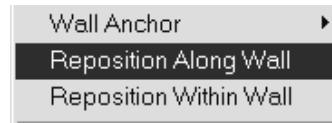
7. Select the **Casement-Double** window again.



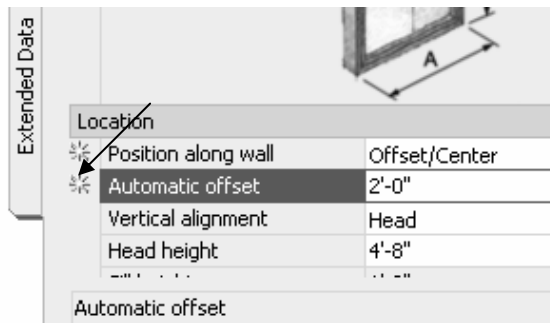
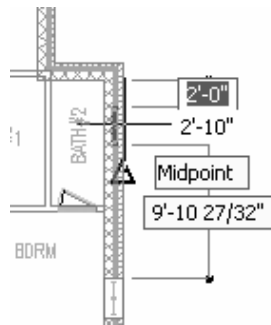
Place the window on the vertical master bedroom wall.



Remember – if you don't like the position of any of the Windows, you can reposition them. Just select the window, right click, and select 'Reposition Along Wall.'



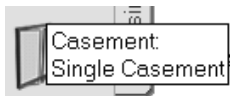
9.



Place a window in Bathroom #2.

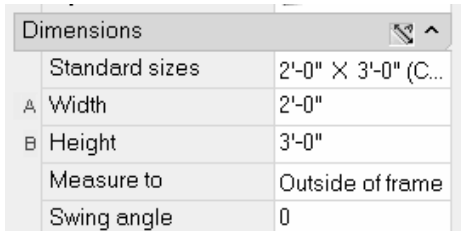
Set the Automatic offset to 2'-0".

10.

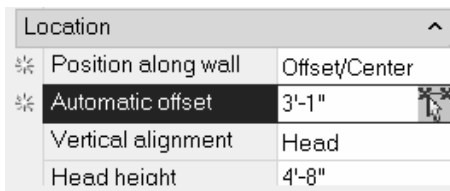


Select the **Casement: Single Casement** window.

11.

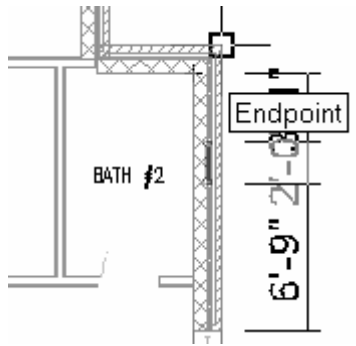


Expand the Dimensions section. Set the size to 2'-0" x 3'-0".

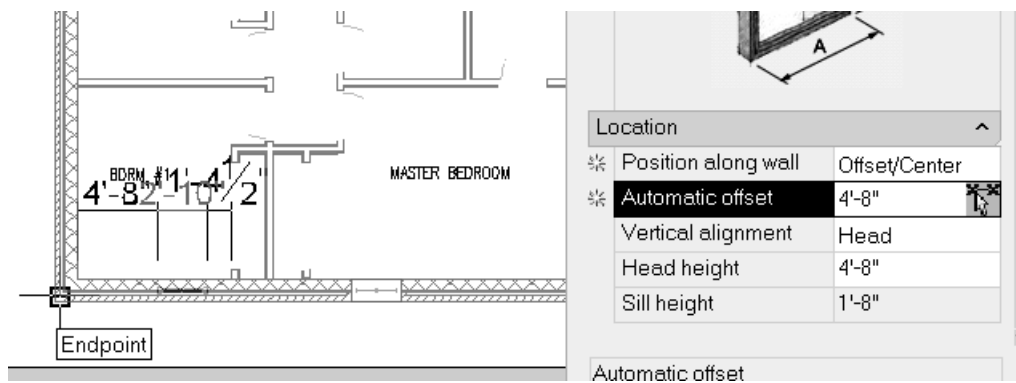


Expand the Location section. Set the Position along wall to **Offset/Center**. Set the Offset to 3'-1".

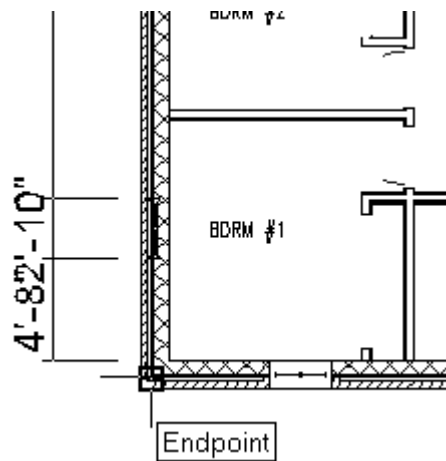
12. Place the window in the wall indicated.



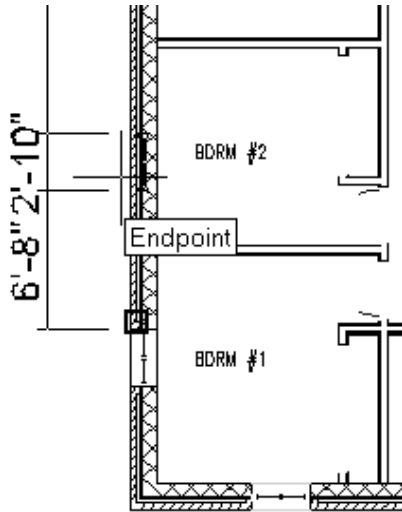
13. Place a 2'-10" x 3'-0" Double Casement window in Bedroom #1 using a 4'-8" offset.



14. Place a 2'-10" x 3'-0" Double Casement window in Bedroom #1 using a 4'-8" offset on the left vertical wall.

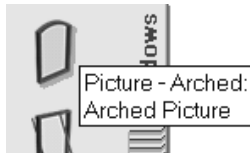


15.



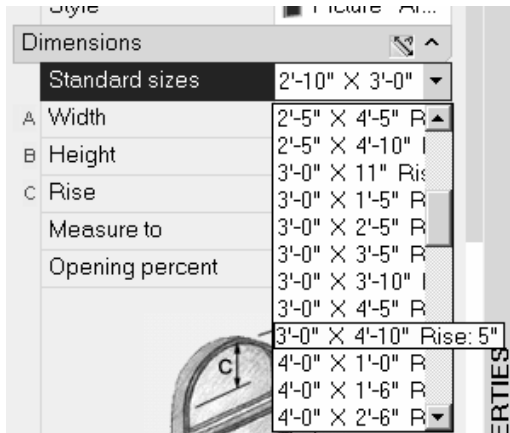
Place a 2'-10" x 3'-0" Double Casement window in Bedroom #2 using a 6'-8" offset on the left vertical wall.

16.



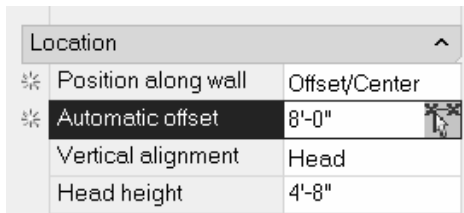
Locate the **Picture- Arched** to place in the left dining room wall.

17.



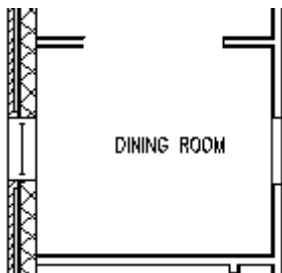
Expand the Dimensions section.
Set the size to **2'-10" x 3'-0" Rise 5"**.

18.



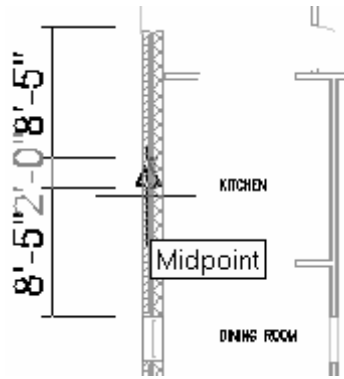
Expand the Location section.
Set the Position along wall to **Offset/Center**.
Set the Offset to **8'-0"**.

19.



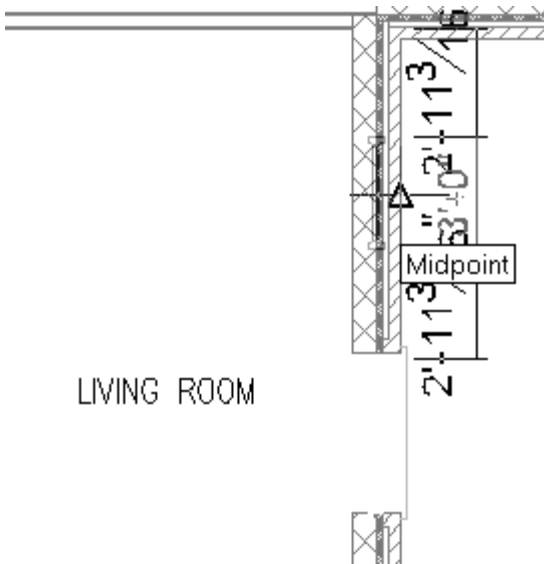
Place the window.

20.



Add a 2'-0" x 3'-0" **Casement: Single** window using a 5'-2" offset.

21.

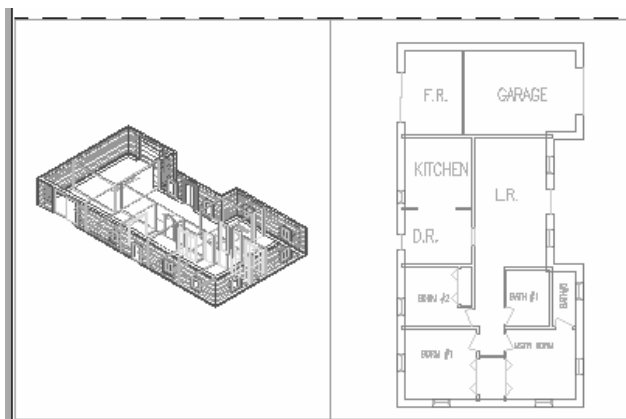


Place an 3'-0" x 4.5" **Rise 5" Arched Picture** window with an offset of 0" on each side of the entry door in the right living room wall.

22.



Select the Save Edits tool.
Press OK to save the modifications to your drawing.



Your floor plan should look similar to the one shown here.

23. Save as *ex3-8.dwg*.

Exercise 3-9:
Adding a Fireplace

Drawing Name: Lesson 3-8.dwg
Estimated Time: 30 minutes


This exercise reinforces the following skills:


- ❑ Adding Complex Geometry
- ❑ Adding Openings

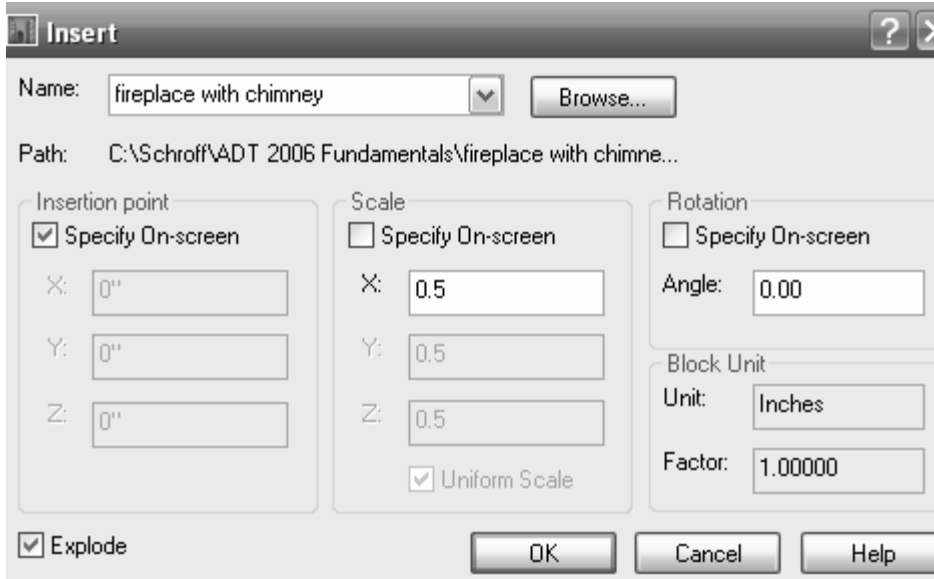
In this exercise, we add a fireplace to the family room. You can download the fireplace from the publisher's website or use the fireplace created in Lesson 1.

1.  Open *ex3-8.dwg*.

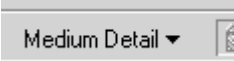
Select the Model tab.

2.  Select an exterior wall.
Right click and select **Edit Xref in-place**.
Press **OK**.

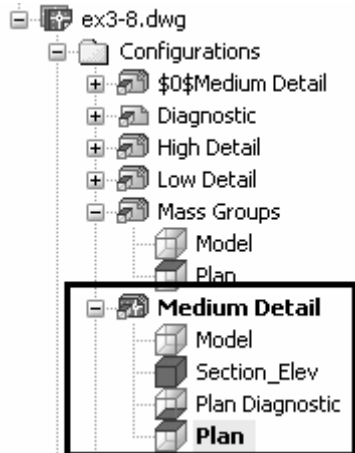
3.  Select the **Insert Block** tool.



4. Browse for the fireplace with chimney drawing that you created earlier.
 Enable **Explode**.
 Set the Scale to **0.5**.
 Press **OK**.

5.  Our Display Configuration is set to Medium Detail.
 If you don't see the fireplace after you place it, it is because Mass Groups are not enabled in this display configuration.

6.  Go to **Format**→**Display Manager**.

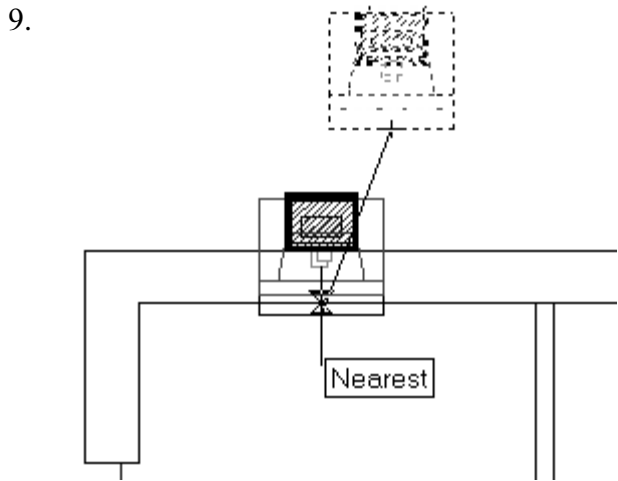
7.  Look under Configurations.
 Expand the Medium Detail list.

8.

| | | | | | | |
|----------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Mask Block Reference | | | | | | |
| Mass Element | <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Mass Group | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| Material Definition | | | | | | |

Place a check mark in all the display representations for Mass Group.

Press **Apply** and **OK**.

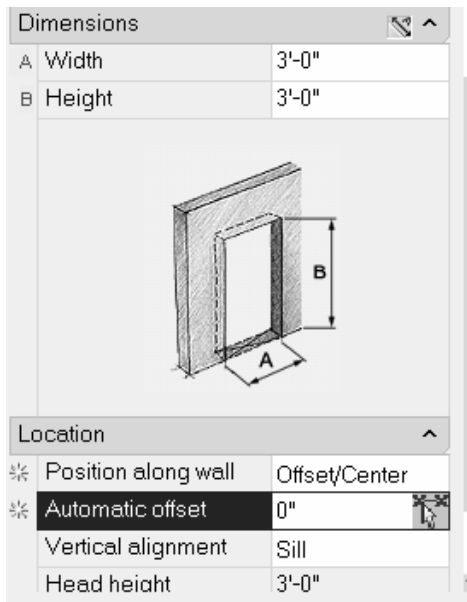


Move the fireplace so it aligned with the wall.

We need to add an opening for the flue.



Select the Opening tool on the Design tab.



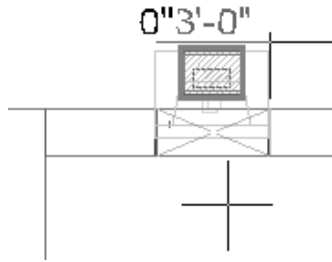
Set the Width to **3'-0"**.

Set the Height to **3'-0"**.

Set Position along wall to **Offset/Center**.

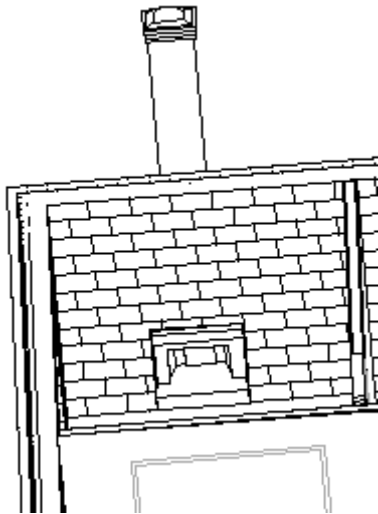
Set the Automatic offset to **0"**.

11.



Place the opening so it is centered on the fireplace.

12.



Activate the Mass Groups display configuration to turn off the display of mass elements.

Use 3D orbit to view your fireplace and ensure that the opening and fireplace are aligned.

13.



Save the edits back to the xref.
Press **OK**.

14.

Save as *ex3-9.dwg*.
Close all open drawings.
You can do this by typing **CLOSEALL** on the command line.