

PART 3

WALLS

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1 Walls - Access

1-3 WALLS

Walls Toolbar

[How do I get this toolbar?](#)

You can also acquire access to these commands from the Alternate **Design pull-down menu** . From the **Design** pull-down menu, pick **Walls >** and cascade to the Wall commands. This toolbar is an optional tool and is not needed to use this guide but may help.



Wall Tools Toolbar

For Editing Walls, there are many tools to select from and you may find them a little more difficult to find in ADT 4 than in the previous two releases. This is because a lot of these editing tools are now available via right-click object-specific pop-up menus or through the Properties Palettes. Illustrated to the right is the Wall Tools toolbar that provides access to the tools discussed in [Part 4](#) of this guide.



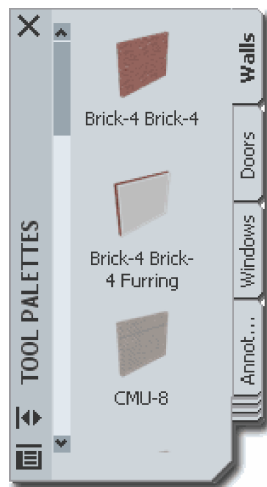
Walls pull-down Menu and Tool Palette

Alt.Menu **Design> Walls**



Keyboard **Wall**

Links [Adjusting to the New Interface for AutoCAD and ADT Users](#) - for how to activate the Design pull-down menu



Walls can be added to a drawing through several techniques including the alternate pull-down menu illustrated to the right. In ADT 4 the primary tool for adding walls is the Tool Palette which automatically loads Wall Styles as they are dragged in from the Palette so this makes the task of loading styles less tedious. However, the default **Walls Tool Palette** only contains a fraction of the Wall Styles that come with ADT

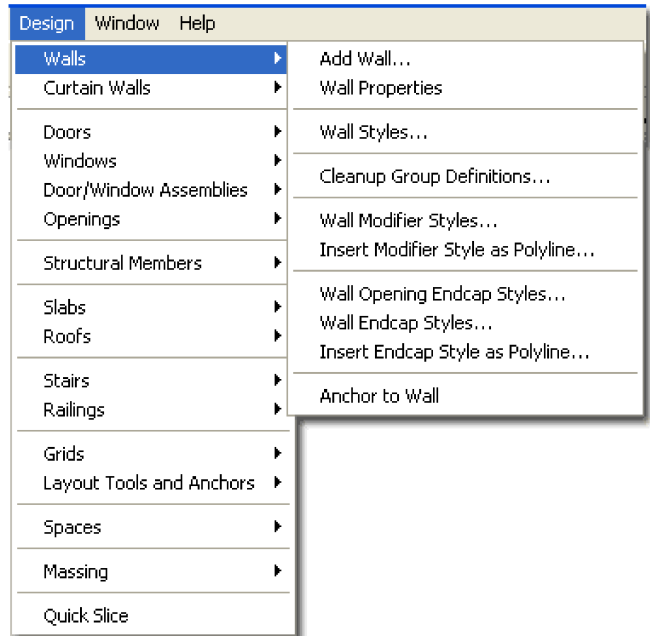
On the command line, you can type "**Wall**" when you want access to many of the Wall options. For direct access to an option within the Wall command-line menu, you can type the primary command plus the option you want direct access to. For example, if you want to

Add a Wall, you can type "**WallAdd**" or if you want to Modify a Wall, you can type "**WallProps**" or "**-WallModify**"

Below is the command line read-out for "**Wall**":

Command: **WALL**

Wall [Add/ COnvert/ Properties/ Styles/ CLeanupgroups/ Dimension/ Interference/ Reverse]:



2 Importing Wall Styles

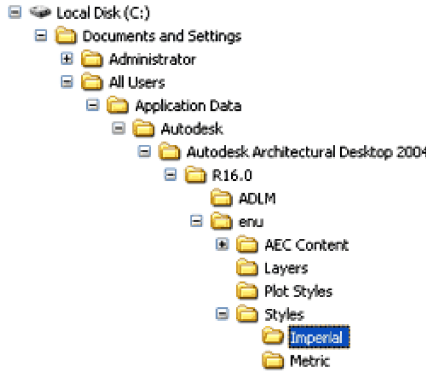
Opening a Wall Style template file in Style Manager

Menu **Design> Walls> Wall Styles...**



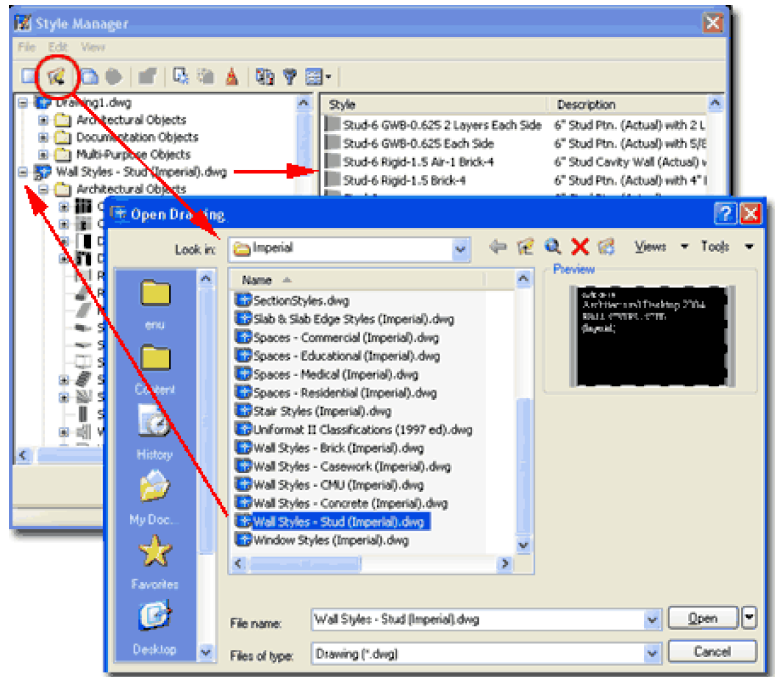
Keyboard **WallStyle**

Links [Wall Style Properties](#) - for how to create a Wall Style
[Hey, where did all of my stuff go?](#) - for more information on the location of ADT Content.



ADT comes with a rather extensive library of Wall Styles but you would never know this by looking at the default Walls Tool Palette. Though you can use the Content Browser to add more styles to your Walls Tool Palette, you might as well learn where these styles come from.

For local installations of ADT, you are likely to find the **Imperial** or **Metric Wall Styles** in the **Styles Folder** as illustrated to the left. The full path to this location may vary but typically it is as illustrated. On a Network based installation of ADT, these Wall Styles should be on a captured drive (like "G:\offices standards") or similar location with a folder name that indicates Styles. Consult your CAD or IT manager if you cannot locate the Styles Folder.



Illustrated above, I show how you use the **Style Manager**, filtered for **Wall Styles**, to **Open** one of the Wall Style files from ADT's **Styles folder**. The process is much like Opening a drawing for editing.

You should find several Wall Style drawing files; including one for **Brick**, **Casework**, **CMU**, **Concrete** and **Studs**. Later, we'll discuss creating a custom files with the Wall Styles you use regularly so you can increase your productivity.

Copying Wall Styles in the Style Manager

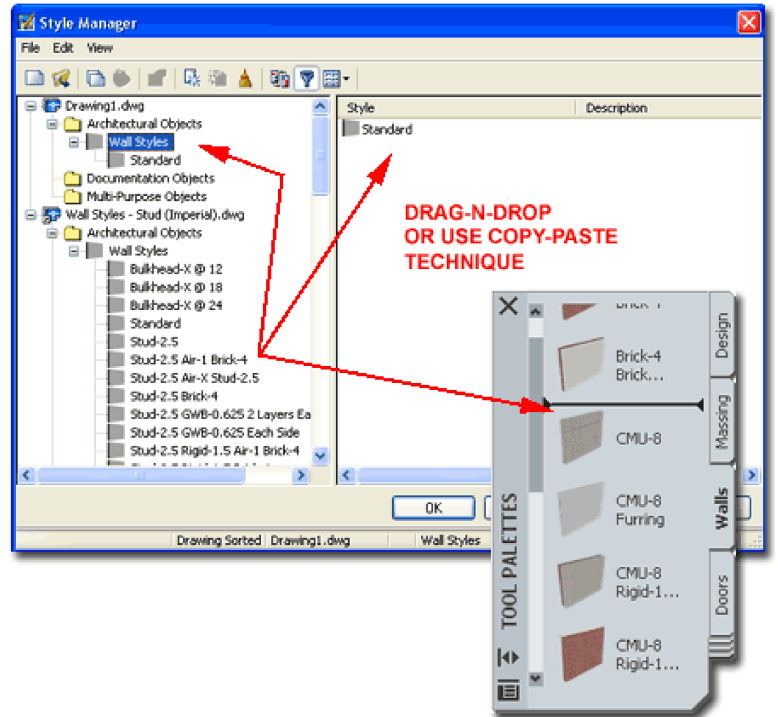
Links [Style Manager](#) - for more reading

Once you have a **Wall Style** template file **Open** in the **Style Manager Window**, simply **select** the **Wall Style(s)** you want and **drag-n-drop** them on top of the current drawing file **folder** - as illustrated to the right.

In some cases, the list of Styles is so long that it takes too much time to scroll back up so you can use the **left-click** option and select **Copy** from the pop-up menu; then **pick** on the current drawing **folder**, **pick** in the **right-hand pane**, **right-click** on your mouse and use the **Paste** option. This technique is the same as that used in Microsoft's Explorer.

If you want to add one or more of the Wall Styles to your **Tool Palettes**, you can also drag-n-drop directly onto it as illustrated to the right.

Those familiar with AutoCAD techniques, will also find that cut-n-paste works great for copying a Wall Style from one drawing to another. Inserting a file, such as one of the Wall Style template files also works to get every single Wall Style in one quick action. If you want to use the insert trick, just hit the <Esc> key when prompted for an insertion point; i.e., you don't actually have to insert anything, just the action brings in all of the data.



3 Adding Walls

Add Walls - Properties Palette

Alt. Menu **Design> Walls> Add Wall...**



Keyboard **WallAdd**

Links [ADT Object Dialogue Boxes](#)

In the illustration to the right, I show that I have imported the "CMU-8", "Concrete-8" and "Stud-4 GWB-0.625 Each Side" Wall Styles from the **Wall Styles Template** files and am now selecting one for use on the **Style drop-down list** of the **Wall Properties Palette**.

Description - use this note field to add text based notes about the Wall if you find that it will help others. You could, for example, explain that the wall was site verified to 1/2" accuracy.

Style - drop-down list for selecting any Wall Styles that are present in the current drawing file. Use the [Style Manager](#) or Wall Palette to create or load others.

Cleanup automatically - drop-down list for changing the default cleanup setting - usually you want walls to cleanup with other walls but this is a nice quick option for an override. The better solution would be to use a Cleanup Group.

Cleanup group - drop-down list for setting a unique Clean-up Group used to prevent Walls from behaviors defined by their Style settings; e.g., two walls passing over each other without cleaning up. Use [Cleanup Group Definitions](#) on the **Style Manager** to create others.

Segment type - drop-down list offering the option for straight or curved Wall segments. See below for Curved Wall Segment.

A - Width - set width of wall. If gray, then the Wall Style has been set to a fixed Width.

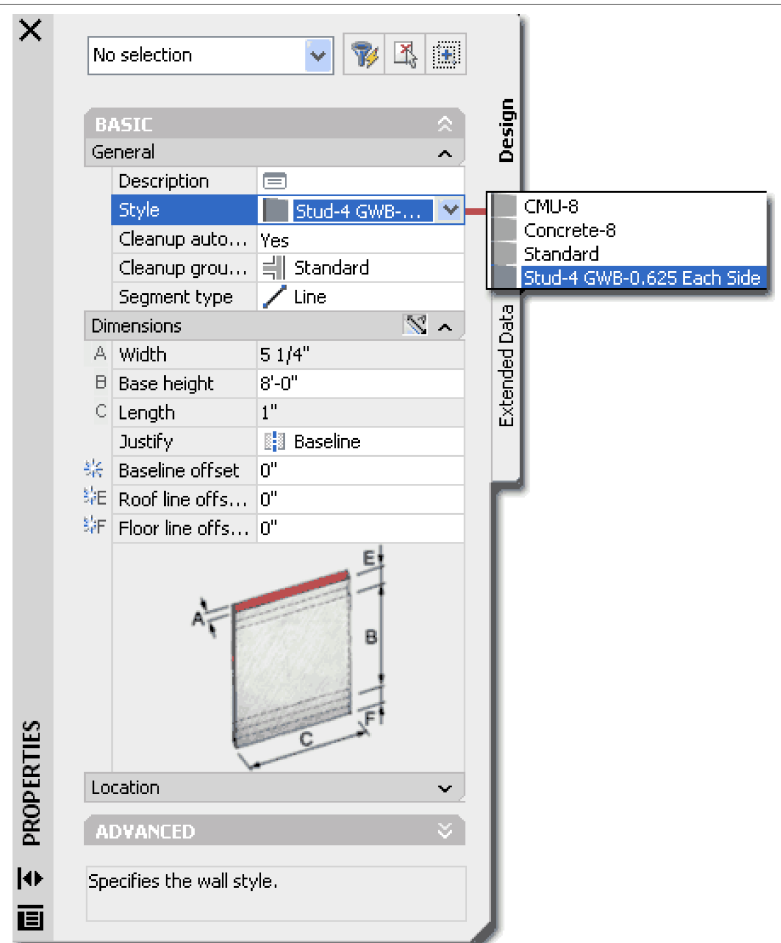
B - Base height - the total finished (plate) height you want your wall.

C - Length - this value field will display the length as drawn on screen and is not available for input when drawing walls but is available for input when modifying walls.

Justify - how you want your Wall to be drawn with respect to your cursor as you draw it. This also affects how other objects relate to a Wall. Left, Right and Center override the default justification, **Baseline**, which is determined within the Wall Style specifications. On complex multifaceted Wall Styles, you may want to use a Baseline at a specific location; above grade on a foundation stemwall, for example. Generally, you should Justify based on the Baseline and change the Wall Style if the Baseline setting isn't what you expect or need. For simple Walls with only one component, it may be okay to use Right or Left but if you ever intend to change the style such Justifications can come back to haunt you. If you only use one component walls (two lines) then don't worry about it.

Wall Justifications

Links [Wall Properties - Dimensions tab](#)



Baseline offset - this odd option allows you to set an offset distance away from the justification so when you draw your Wall in Plan, it will be drawn a distance away from where you are actually picking. This may be a useful option when tracing structural gridlines or similar linework where you need your Walls to be certain distance away from the linework.

E - Roof line offset from base height - this value field provides a means to extend a Wall Height above its predefined Base height (Plate). Generally this value field is filled in at a later point in a project where the [RoofLine tool](#) is used to extend Walls up to Roofs (particularly at gable ends).

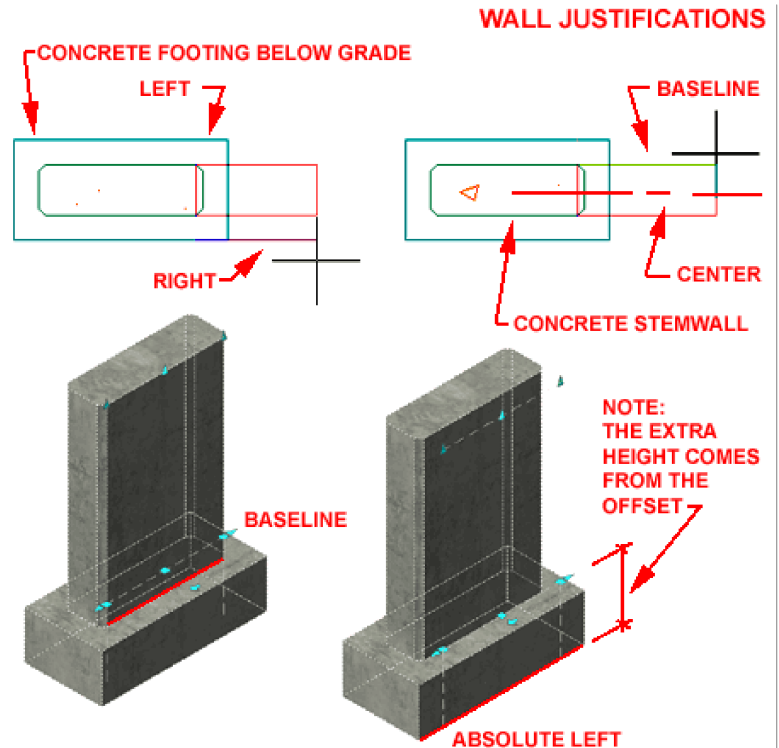
F - Floor line offset from baseline - this value field, similar to the Roof line offset, provides a means to extend a Wall base below the predefined Baseline value (usually zero). Generally this value field is filled in at a later point in a project where you are able to relate your Walls to foundation Walls, Site Contours or other obstructions. The tool for adjusting this value field at a later point is the [FloorLine tool](#). This value field can also be used for special Wall Styles such as spread footings where the footing needs to be set below the base of the stem wall - see image below.

[Wall Style Defaults tab](#)

When you draw Wall Objects, you will find that the Wall Properties Palettes will remain active on the screen. As you draw, you have the freedom to change values on the Properties Palette without losing the object you are currently working with. That is, for example, you can start a Wall and change its Justification without having to start over. You can even change Wall Styles as you draw a series of contiguous Walls.

There are **4 Justification values** and 3 of them are quite easy to understand but Baseline may need some clarification. Illustrated to the right, I show two Justifications for the same CMU concrete footing Wall Style. I am using this Wall Style because not all Walls will react to the Baseline Justification in the same way. The Foundation Styles, with footings that are wider than the stemwall, will usually justify for Right and Left based upon the footing rather than the stemwall; so, this is where Baseline Justification comes in - to let you Justify on any part of a Wall Style that was designed as the zero (0) point.

Illustrated to the right I show how the **Right, Left and Center** Justifications are all based on the extents of a Wall Style's Width. Baseline, however, can be designed by the person who creates the Wall Style to allow for a unique justification point that might be more beneficial when adding it to a plan. In the example Foundation Wall Style, right, the Baseline was set to be on the exterior side of the stemwall. When drawing this particular Wall Style, the Baseline appears to be offset from the true base of the footing because its Property has been set that way on the Floor line offset value field (see Properties Palette image above).

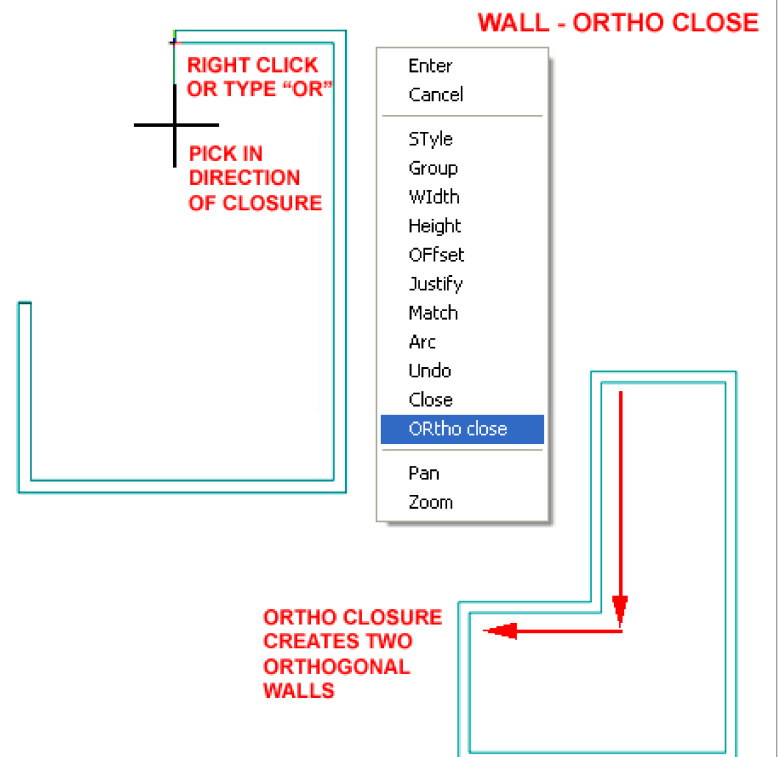


Wall Closing

When drawing Wall Objects, you should find that there are two options on the command line for Closing: Close and ORtho close. These options will appear once you have drawn two consecutive Wall segments. You will also find these two options for closing on the right-click pop-up menu as illustrated to the right.

Close will simply take the current position and draw a Wall to the first point of a Wall series.

Ortho Close is a little more sophisticated than Close because it actually creates two Walls as illustrated to the right. If you don't have Ortho Mode on when you pick the Closure Direction, that wall segment will be non-orthogonal, but the 2nd segment will be perpendicular to its origin - which should be the very first Wall Added in a series.



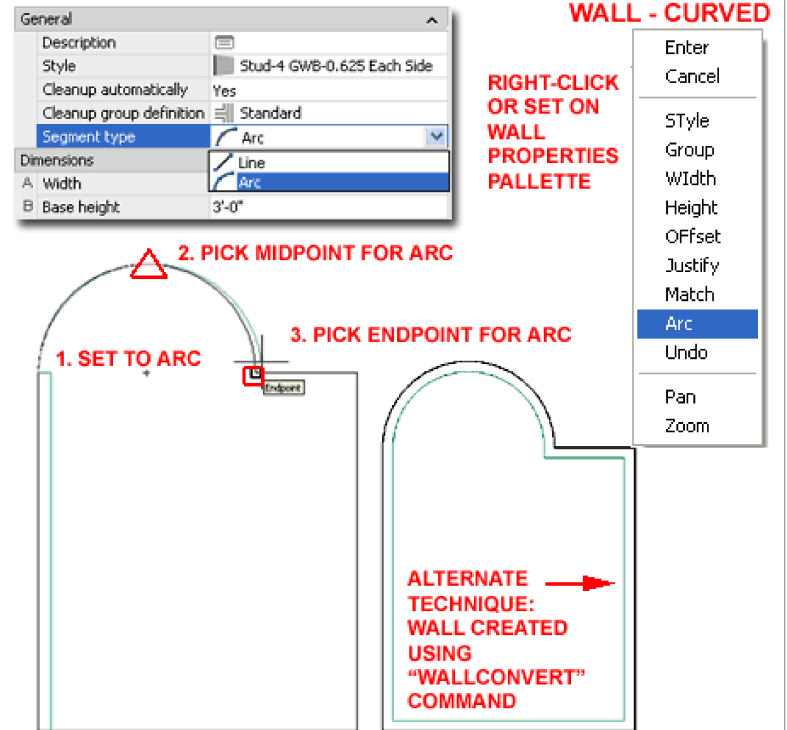
Wall Segment - Curved

The **Arc** option for **Segment type** on the Wall Properties Palette can be enigmatic if you don't realize that it allows you to pick two points along the curve path. Illustrated to the left, I show what happens when you attempt to follow a common perimeter curve. After setting the Arc option, pick somewhere along the midpoint of the desired curve and then pick at the endpoint of the desired curve.

The Arc option can also be activated by using the right-click pop-up menu while drawing a Wall Object - see illustration far right.

I find that creating Curved Wall segments with this option is best if I already have a 2D Arc or Circle to Osnap to. If you don't have anything to Osnap to when drawing the Curved Wall segment, you can use Grips to adjust it later.

Another option is to use the [WallConvert](#) tool and select a Pline perimeter or Arc that represents what you want your wall to look like.



4 Wall Properties

Wall Properties - General

Alt. Menu **Design> Walls> Wall Properties**



Keyboard **WallModify**

Mouse **Double-pick on Object** or Select Object, left-click, select **Properties**

Links [Add Walls - Properties Palette](#)

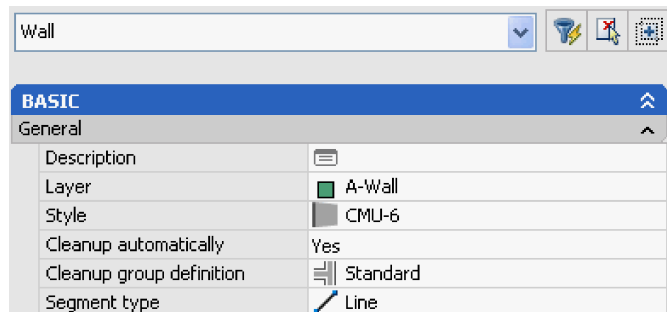
When Modifying Wall Objects, you should find that you get most of the same options as when you created the Wall(s). In addition to the basic list of options you should also find many other options that are only available when Modifying Walls. Some of these options reflect the results of other modification tools and In-place Editing work.

See [Add Walls - Properties Palette](#) for definitions of the General options listed to the right.

Note:

At the top of the Properties Palette you should find a Selection Type drop-down list which indicates the type of object you have selected. If you select too many objects at one time, you can use this drop-down list to isolate the individual object types.

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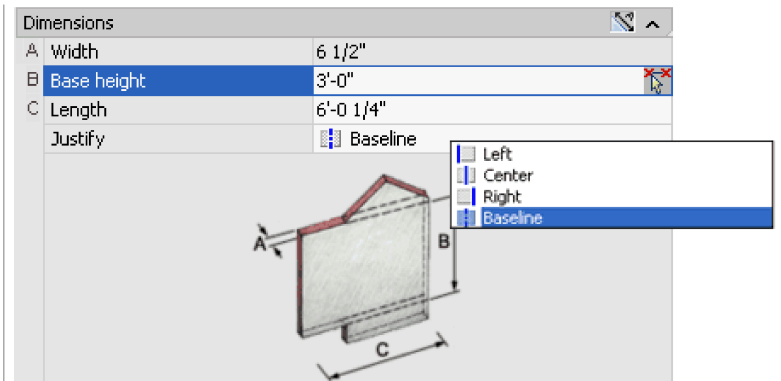


Wall Properties - Dimensions

Under the **Dimensions** section of the **Wall Properties Palette**, you can change basic **Width**, **Base height**, **Length** and **Justification** values. If you find that any of these value fields are gray then the value has been set as fixed at the Wall Style level and can only be changed through the Wall Styles dialog box.

Note:

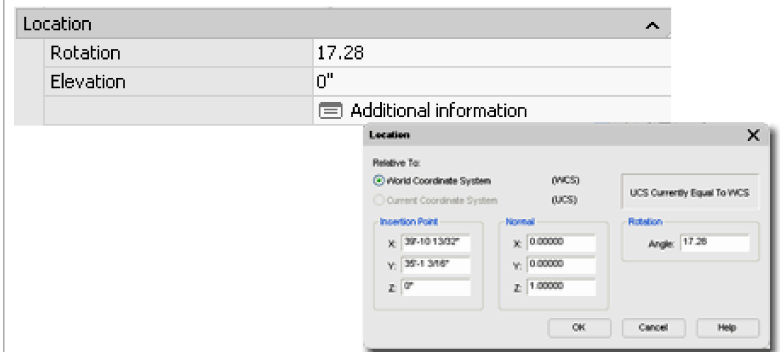
Changing Justifications on Walls can have detrimental effects on your work since such changes usually move the Wall Objects from their existing position to their new Justification; i.e., the Wall Objects do not stay in place while acquiring a new Justification, they move to this new point.



Wall Properties - Location

Under the **Location** section of the **Wall Properties Palette**, you can change **Rotation** and **Elevation** values or work with the **Location dialog** to alter the **Insertion Point**, **Normal** and **Rotation** angle relative to the World or a unique UCS rotation.

Basically these are all values that you are more likely to adjust live on the object by working with Grips in Plan, Elevation or Isometric Views. This section simply provides another way to alter these values or to set them back to something more logical if editing errors occurred while using Grip Editing techniques.



Wall Properties - Cleanups tab

Links [Overriding Wall Endcaps](#)
[Cleanup Group Definitions](#) - the way to keep Walls from cleaning up.

Wall Cleanup is a term used to describe the removal of lines where Walls intersect and is based on a radial measure from the end of a Wall. This radial measure, called "Cleanup Radius", is centered on an edge referred to as the "Graphline". The Graphline is typically turned Off but can be activated with the Diagnostic Display Configuration. By default, the Graphline displays as a Blue Dashed line but by modifying the Graph Display Representation for Wall Objects, this appearance can be modified.

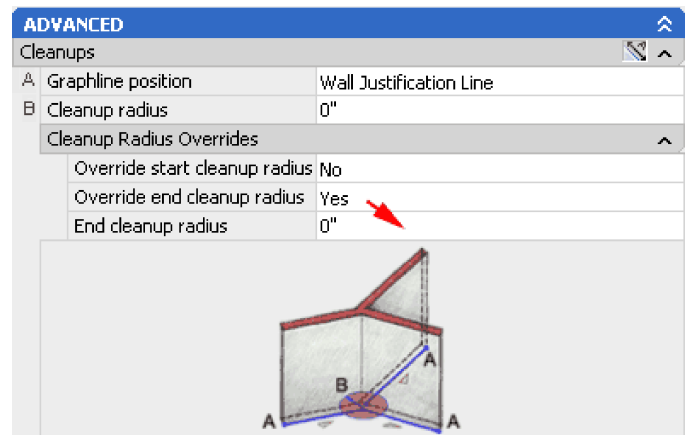
A - Graphline Position - the Graphline is set to the "**Wall Justification Line**" by default but it can be changed to "**Wall Center Line**" where it may be useful for creating Areas or similar objects. Moving the Graphline position also moves the center of the cleanup circle and can thus be used to assist tricky Wall Intersections.

B - Cleanup Radius - the value for this option is set to zero by default and tends to work for most normal Wall Intersections where the Graphlines connect without trouble. When drawing Walls, the **Autosnap New Wall Baselines** value on the **Aec Object Settings tab** of the **Options dialog** assists in bringing the Baselines together to make the zero Cleanup Radius function. In cases where Baselines don't meet correctly, increasing the Cleanup Radius allows the Baseline to extend farther to connect with another Wall's Baseline. This setting affects both ends of a Wall Object.

Cleanup Radius Overrides

Override start cleanup radius - this drop-down list offers a "**Yes**" or "**No**" option. By choosing the "**Yes**" option, you will expand the field to allow for a cleanup radius setting for this particular end. Use this option when you only want to affect one end and not the other.

Override end cleanup radius - see comments above.



Note:

To see the Graphline and Cleanup Radius of all Wall Objects, use the **Diagnostic Display Configuration** or "**AecWallGraphDisplayToggle**" command.

Wall Properties - Style Overrides

Links [Overriding Wall Endcaps](#)

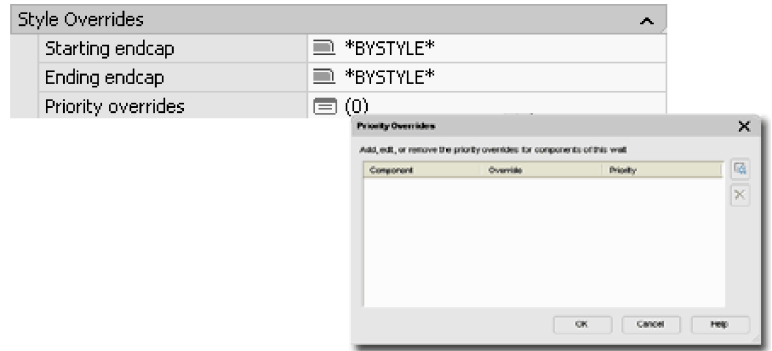
[Wall Priorities - Standard Component Numbers](#) - for a list of priority numbers for the Wall Styles that come with ADT

Wall Endcaps are stored in the **Style Manager** and affect the free ends of Wall Objects. For Walls with multiple components, complex Endcap Styles can be designed and "indexed" to match the components of the Wall Object. You can also use the [Override Wall Endcaps](#) tool to add unique Endcaps.

Starting endcap - the default setting for this option is "*BYSTYLE*" which means that the Wall Style controls the Endcap setting. "Standard" is another choice available for all Walls this is simply a straight line cut. You may find that if you look at many of your Wall Styles, they actually use "Standard" as their default endcap style (at the Wall Style Level and not here). To create custom Endcap Styles, use the **WallEndCapStyle** command or Select a Wall Object, right-click and use the Endcaps cascading menu to create one in-place.

Ending endcap - see comments above.

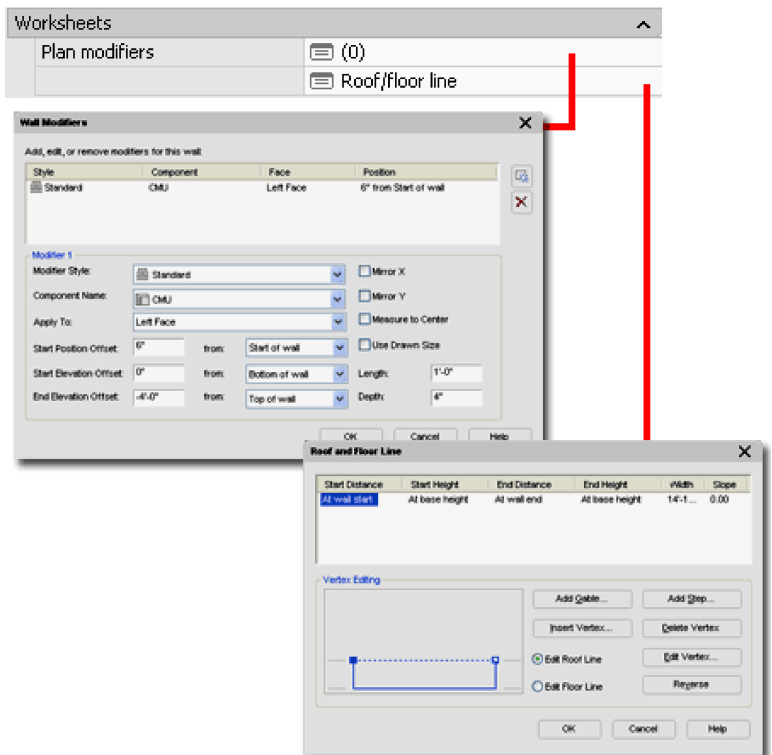
Wall **Priorities** affect how the **components** within a Wall Style clean up when they meet or cross each other. The Priority is based on a rating system between 0 - 2147483647; where 0 has the highest priority. These **Priority Overrides** only allow for end Position Priority Overrides (conditions at or near the end of a Wall) but you can also work with [Priorities on a Wall Style](#) via the Style Manager to set full length Priority settings. These are good for quickly getting two Walls of the same Style to not cleanup in a "T" type intersection.



Wall Properties - Worksheets

Under the **Worksheets Category** you should find the **Plan Modifiers** and **Roof/floor line** Worksheets. In addition to these two Worksheets, you may find more depending upon the modifications that have been made to the Wall Object (see the 3D Modifiers discussion below). In some cases you can have multiples of the same Worksheets, such as Plan Modifiers and those will be indicated by a number adjacent to the Worksheet icon. For the Roof/floor line Worksheet, you can only have one.

In some ways you might think of these Worksheets as storage devices for changes made through other means and thus you may choose to avoid working directly with the Worksheets. In Part 4 - Wall Tools, I will cover numerous methods of editing/modifying Wall Objects with and without dialog boxes.



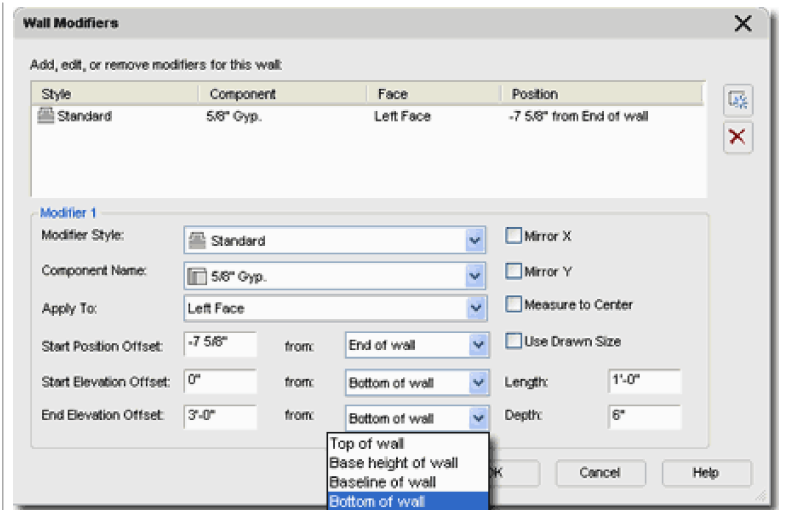
Wall Properties - Wall Modifiers

Links [Add Wall Modifier](#) - for examples.

Wall Modifiers are used to create protrusions, niches, pilasters, and all sorts of other Wall Object irregularities that are not defined by the Wall Style. By using the Wall Modifiers dialog, you can create Modifiers using two methods: with the Standard Style or with a custom [Wall Modifier Style](#). Wall Modifiers, including the Standard Style, are defined by simple shapes that are Applied To Components to create surFACE alterations. The various settings on the Wall Modifiers dialog can be used to control the Position, Length, Depth and side of the Modifier Style.

If you have already used a Wall Modifier tool on the selected Wall Object, you will see its properties listed here. You can use this tab to make a unique adjustment to a Wall Modifier Style for one Wall Object but it is better to work with the Wall Modifier Style in the Style Manager if you want to change all cases of a Wall Modifier in your drawing.

For a more in-depth explanation of this topic, see [Wall Modifiers - Modify](#).



Wall Properties - Roof and Floor Line

Links [Roof Line](#) - a faster and easier way to alter the top of a wall.

[Floor Line](#) - a faster and easier way to alter the bottom of a wall.

On the **Roof/Floor Line** tab of the **Wall Properties** dialog box, illustrated to the right, are the tools to reshape walls outside of the standard rectangular shape. This tool can only be used to alter the elevation shape of walls.

Add Gable... creates a new vertex point along the top of the Wall when the **Edit Roof Line** radio button has been checked.

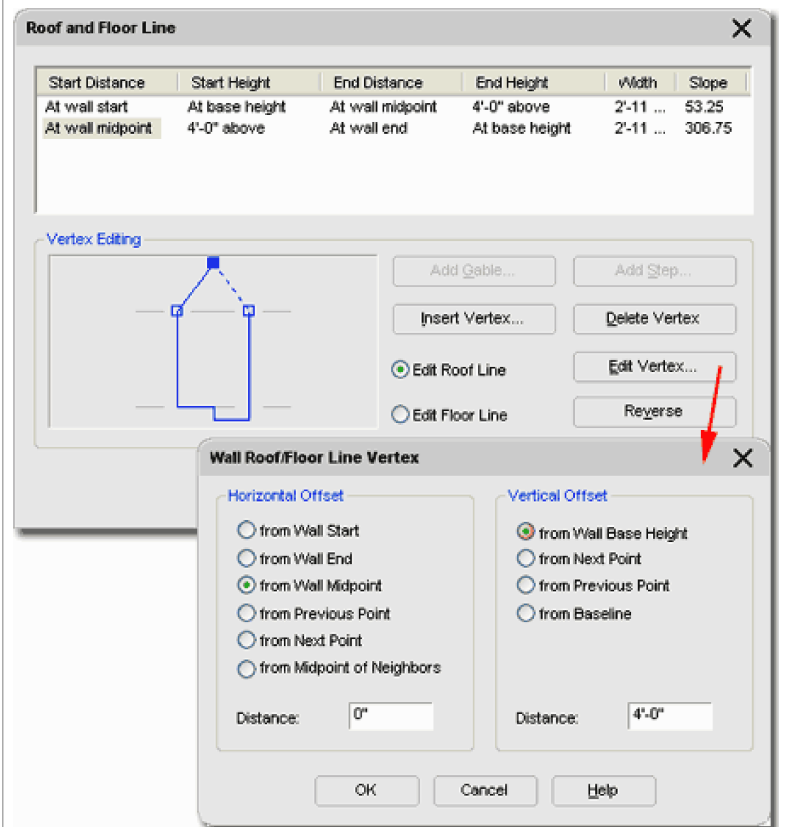
Insert Vertex... creates a new vertex point along the top or bottom of a Wall.

Add Step... creates two new vertex points to form a perpendicular step when the **Edit Floor Line** radio button has been checked. This option only works once on a Wall and cannot be used if the base of the Wall vertex points have already been modified.

Delete Vertex - removes any but the primary four corner points. To Delete a Vertex, the vertex has to be highlighted in the preview picture or selected from the data field.

Edit Vertex... provides the means for adjusting the horizontal and vertical position of a vertex relative to numerous other points on the Wall (see illustration, left). By using a Horizontal and a Vertical set of values relative to known points of reference on the Wall Object, you can specify exactly where a new or existing point should be positioned. Wall Base Height is the actual height as set when drawing the wall, Baseline is the actual bottom of the wall as it was set when drawing it. You can make a Wall go above or below its preset base or height by using positive or negative values relative to these heights.

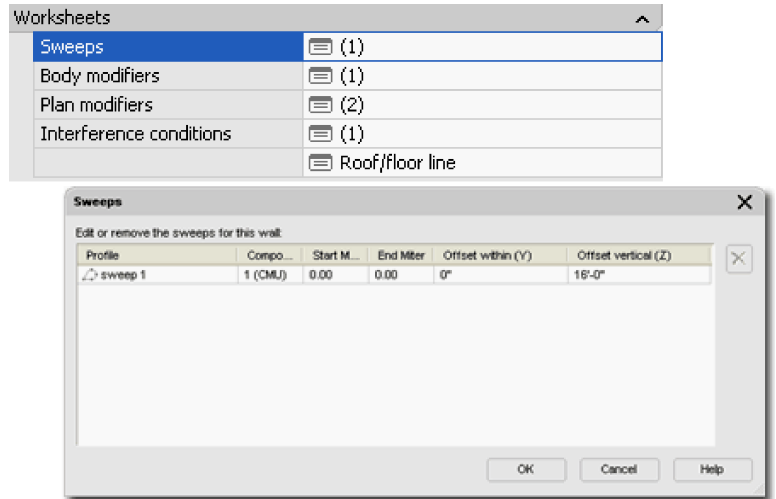
Reverse - provides the means for flipping or mirroring the Roof Line or Floor Line vertex configuration. This does not flip the wall but only the settings on this dialog box.



Wall Properties - 3d Modifiers tab

Links [Interference Condition](#)
[Sweep Profile](#)
[Sweep Profile Miter Angles](#)
[Body Modifier](#)

Among the Worksheets discussed above, there are others that will appear under this category when other Wall Modifier tools have been used to alter their proportions. These Worksheets basically act as storage bins for advanced Wall Modifiers. You cannot Add these modifiers here but you can **Remove** or **change Interference, Sweep** and **Body Modifiers** once they have been introduced to a Wall Object with their respective tools - see Links table above.



5 Converting Objects to Walls

Convert to Walls

Menu N.A.



Keyboard **WallConvert**

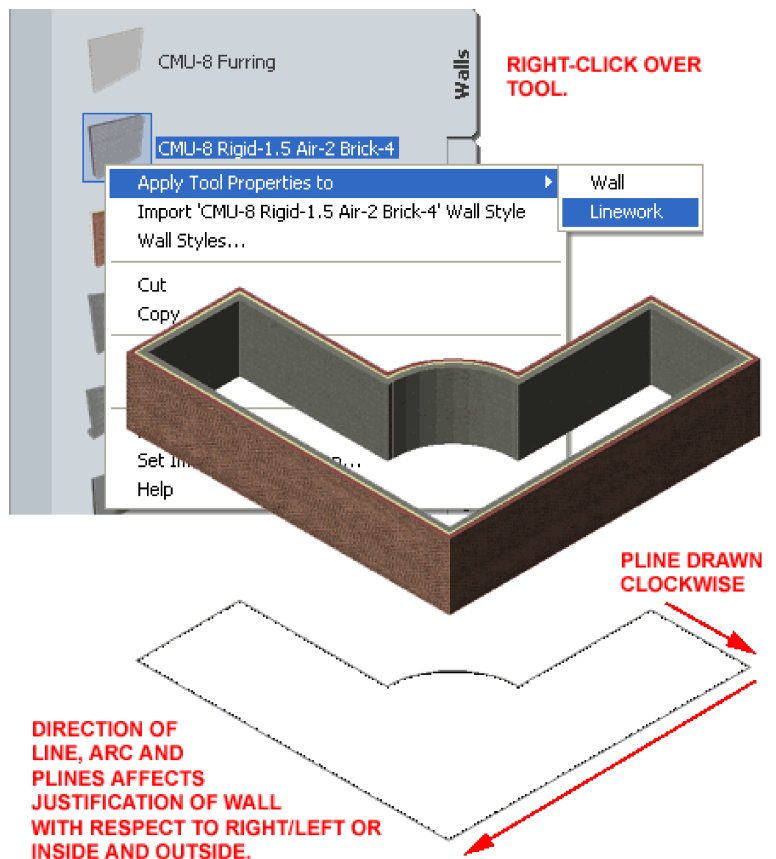
Mouse Select Wall Style in Palette, right-click, **Apply Tool Properties to > Linework**

For some, one of the best ways to get started with a project is to go from simple 2D linework sketches and then build up from there. In the illustration to the right I show how a simple 2D Pline perimeter of a proposed building has been converted into a complex 3D Wall object by using the **WallConvert** tool. Note that I have indicated the direction in which the Pline was drawn since this will impact the resultant wall(s) with respect to right/left or inside and outside. If you have trouble with this factor, you can always use the **WallReverse** (also illustrated as an arrow marker when editing using Grips) tool to flip your walls.

The **WallConvert** tool will allow you to convert Lines, Arcs, Circles and Plines. You can Convert these objects either by typing the WallConvert command on the command line or by right-clicking on the Wall Style on a Palette. When using the Palette technique, cascade from **Apply Tool Properties to >** over to Linework as illustrated to the right. When using the WallConvert command technique, you will find that the Wall Properties Palette pops up and the process of converting is similar to Adding a new wall.

Converting regular AutoCAD objects to Walls is relatively easy as long as you don't attempt to convert an entire drawing. This was one of my first strategies in hopes that I could take a 2D R14 project and quickly convert it to ADT. The problem is that this routine reads every object that it converts as the centerline or baseline of a new wall so if you use the classic double lines in an older AutoCAD drawing, you will get double walls everywhere; one for each side. As a result, I find that it is better to just trace over an Xref of an older file than to attempt a full conversion.

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Convert Body to Wall

Menu N.A.

N.A.

Keyboard **WallBodyConvert**

Mouse Select object, right-click, **Convert to Wall**

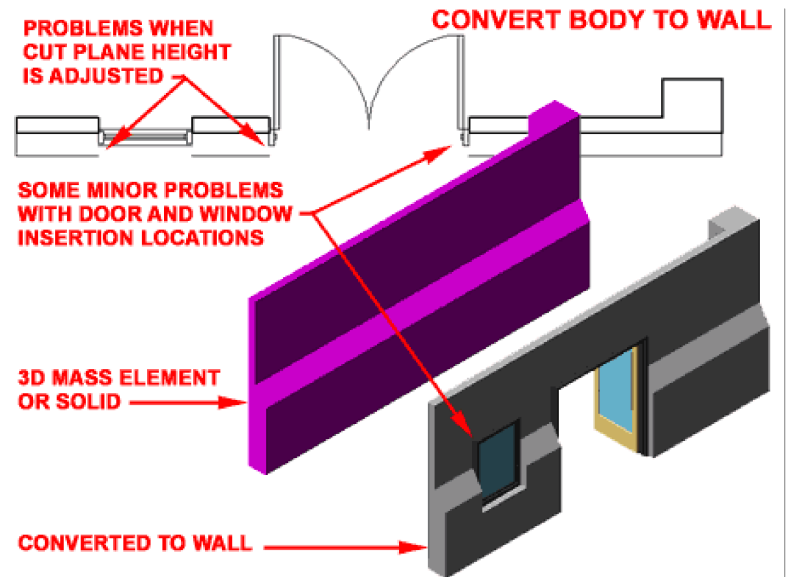
Links [Pre-Design eGuide](#) - for information on Modeling

The **Convert Body to Walls** tool allows you to convert 3D objects (like Mass Elements and AutoCAD Solids) into pseudo-Walls. The reason I call them pseudo-Walls is that they do not behave like typical Walls and thus you may not find this conversion of much value.

When you create a Wall this way, you are basically create a normal wall where the object being converted is read as a Wall Body Modifier. You can use the **Wall Properties** Palette to see this effect and if you **Remove** the [Body Modifier](#), you will find that a normal wall will be left in place of the converted object. Wall Body Modifiers are fairly static with respect to editing so you will not find that you can stretch these Walls like normal Walls and that may prove quite frustrating. In addition to this problem, you may find that Doors and Windows have Anchor problems when placed within these converted Walls requiring manual adjustments of the Anchors.

Note:

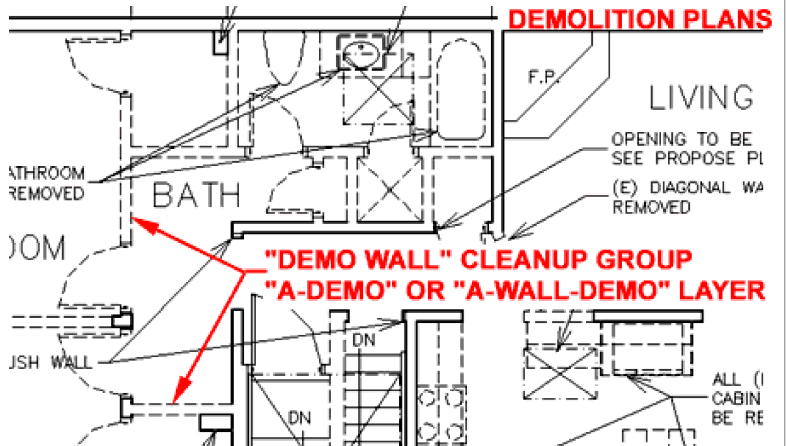
When queried to establish a **Baseline** for your converted wall, use points that can be considered as a baseline justification; i.e., select two points along a length that is usually along one exterior side of the object being converted into a wall.



6 Wall Priorities and Cleanup Groups

Eventually you will find yourself caught with a Wall condition where two or more have to meet or cross in a very unique way. By default, ADT's walls pretty much behave in the same way when they meet other walls; usually a clean "T" intersection. To create something different, you will need to understand how Wall Priority works and how Cleanup Group Definitions work.

Illustrated to the right is an example of where I use Cleanup Groups the most on a common residential remodel project. By having a unique **Cleanup Group Definition** and a unique Layer for **Demo** work, I simply take an existing Wall, drag-n-drop it on to the Demo Layer and Assign it a new Cleanup Group. Using this technique, the Demo Wall will no longer cleanup with other existing or proposed walls. For demolished segments within (e) Walls, I simply Add a New Wall already assigned to the Demo Cleanup Group. For Layering, you can use [Layer Key Overrides](#) or simply drag-n-drop your Wall onto the correct layer after creation.



6-3 WALLS

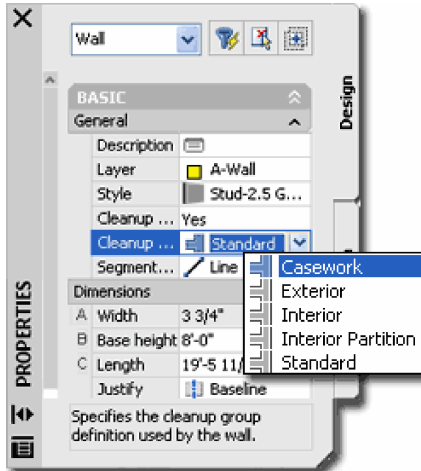
Wall Cleanup Group Definitions

Alt. Menu **Design> Walls> Cleanup Group Definitions...**



Keyboard **Wall <enter> CL**

Links [Wall Properties - Cleanups tab](#)



Cleanup Group Definitions employ a logic that is rather easy to understand: Walls that are associated with one Cleanup Group Definition will ignore Walls associated with another Cleanup Group Definition. It's that simple!

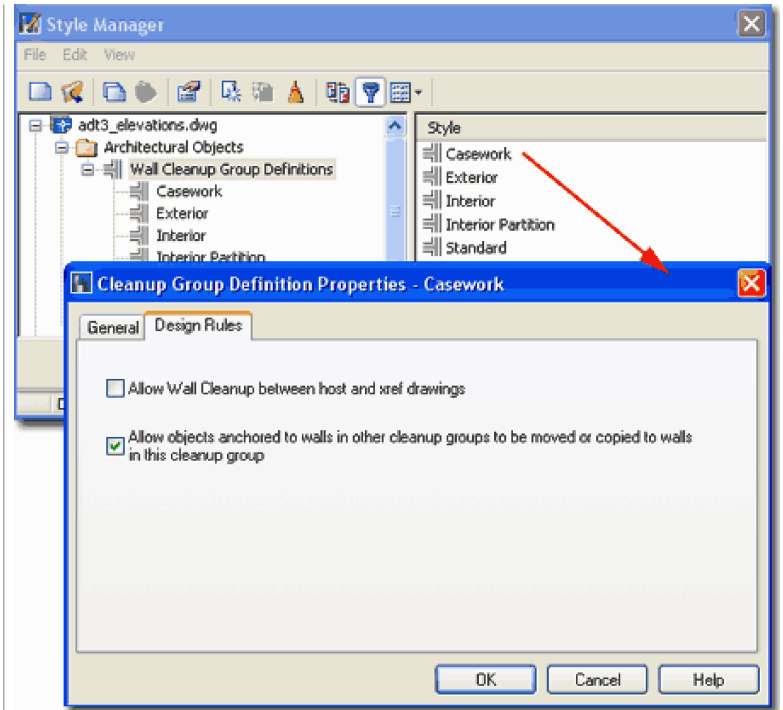
To start, you have to create a Wall Cleanup Definition in the **Style Manager**. Create a **New** Cleanup Group Definition.

Definition and **Name** it anything you want. Now, use the **Add Walls** Properties Palette, illustrated to the right, and use the **Cleanup group definition** pull-down menu to see your Cleanup Group Definition Style.

For other features related to Wall Cleanup Group Definitions, see the Design Rules tab illustrated to the right. You can access this tab by editing a Wall Cleanup Group Definition Style in the Style Manager.

Cleanup Group Definition Properties Dialog

Allow Wall Cleanup between host and xref drawings - use this checkbox to allow copying and moving of objects like Doors and Windows between Walls that belong to different Cleanup Groups. This is an option that should probably be on in most cases since it really confuses users when it is not set (as was the case in ADT 3 - 3.3 where this was not an option at all).



Allow objects anchored to walls in other cleanup groups to be moved or copied to walls in this cleanup group - use this checkbox to allow for copying and moving of objects like Doors and Windows between Walls that belong to different Cleanup Groups. This is an option that should probably be on in most cases since it really confuses users when it is not set (as was the case in ADT 3 - 3.3 where this was not an option at all).

Wall Cleanup Group Definitions Through Xref's

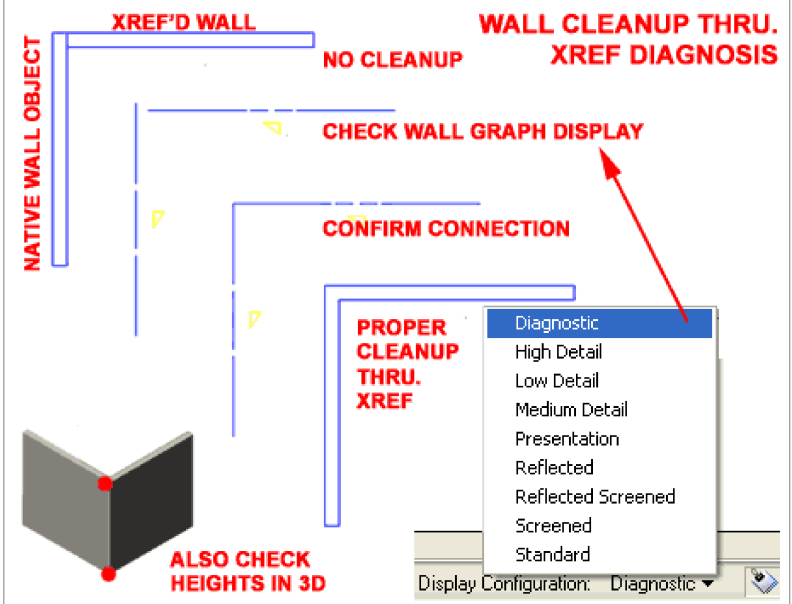
If the Cleanup Group Definition has been set to Cleanup through Xref's via the Design Rules tab (see image above, right), Wall objects using the same Cleanup Group Definition will actually cleanup through Xref's.

Illustrated to the right I show a couple of the issues that may prevent Wall Cleanup through Xref's even when you have done everything else correctly.

If you have two or more Wall Objects meeting across Xref's where some are native and some are coming through as Xref'd Walls, they may not cleanup because their Wall Graph Lines don't meet. With the default ADT template files, there is a Display Configuration called Diagnostic, that you can toggle to see the Graph Lines. By adjusting your Wall Objects to meet properly you should find the cleanup through Xref's very successful.

There are numerous ways to get the wall graph lines to meet properly and you should read up on this topic below but two good ones are using the Grips to adjust the Wall or use a Wall Cleanup Radius Override.

If this does not fix your cleanup problems, check for other odd

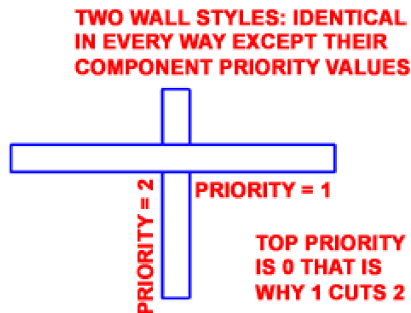


connections such as the Z-axis Heights.

Wall Priorities

- Links [Wall Properties - Wall Style Overrides tab](#) - another way to do this that affects only the ends of a wall.
[Wall Priorities - Standard Component Numbers](#) - for a list of priority numbers for the Wall Styles that come with ADT

Wall Priorities can get a little complicated because you can have different priorities within a single Wall object. Think about a Footing and Stemwall or a unique Cavity wall with layers of building materials/structure. For each of your single Wall components, you can prioritize how they should cleanup when encountering other wall components.

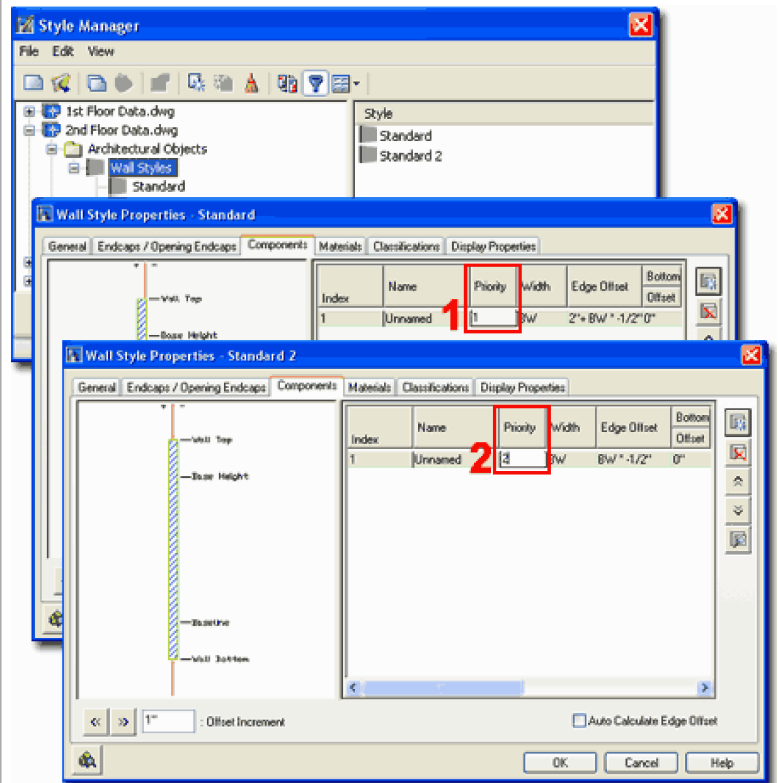


Let's look at a simple but common wall condition where you want one wall, of exactly the same construction, to be shown as passing over or through the first wall. Basically, this means that one will have higher priority than the other.

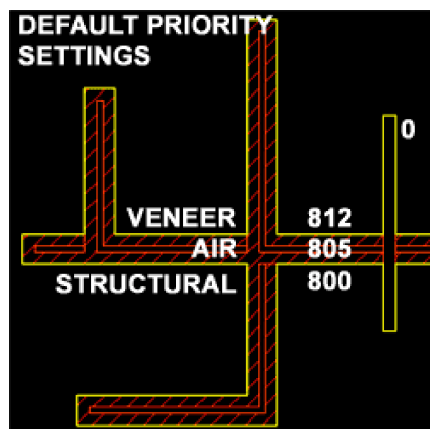
If you use the Standard Wall Style in ADT, you can follow this example. First, I will just draw a Standard Wall. *Make sure that you don't play with the Cleanup Group Definitions on this example.*

Now, I want to create another Standard Wall that crosses over the first one. Well, you can't do it with the same Standard Wall Style because no single Wall Style can have different priorities; its one priority (or priority set, if you count components) per Wall Style. What you can do, is make a copy of the Wall Style and simply change the name; like "Standard (2)".

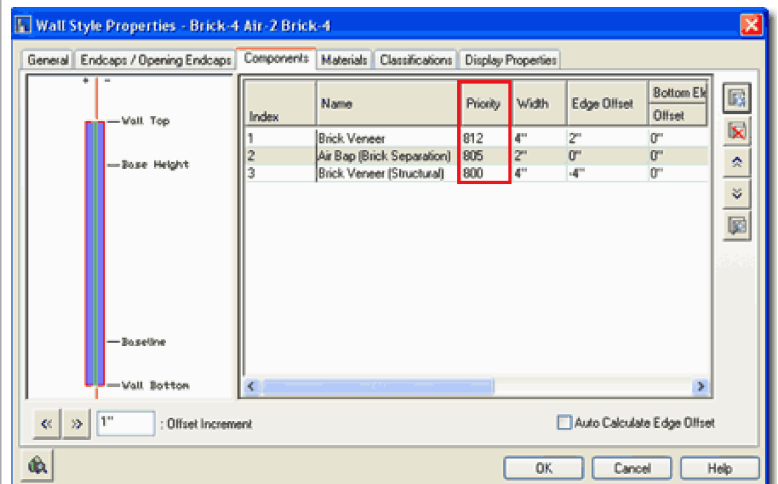
Once you have copied your Wall Style, **Edit...** it and pick on the **Components** tab. On the Components tab of the Wall Style Properties dialogue box, you should see a text box for **Priority** (see red dot on illustration, right). All you have to do is change that number by one digit, up or down depending on how you want it to behave. If you make the number bigger, it will be cut by the other wall. If you make the number small (closer to zero), it will cut the other wall. On the Priority scale, zero has highest priority.



Wall Priorities - Multiple Components



Illustrated to the right and left are the default Priority settings for ADT's Brick-4 Air-2 Brick-4 Wall Style: 812, 805 and 800 respectively. This wall was designed to have a structural side or simply one with a higher priority so that when they cross, one side will run straight through. In this design, there is also an Air Gap with a priority in the middle so that the structural side cuts through it but the non-structural side does not.

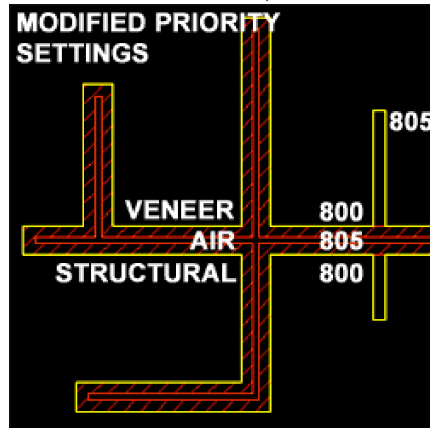


To set or change a Priority value, you simply **select** the Wall's **index number**

In the illustration to the left, I also show what a Standard Wall Style, with Priority 0, does as it crosses this Brick Style. Notice that since 0 is at the top of the Priority Stack, it cuts right across the brick wall.

If you were to change your mind about the Brick Wall Style and wanted to both sides to have an equal level of display, structure, non-structure or Priority, you can simply make the two Wall Style Components hold the same Priority values. In this example, I show what happens when you change the Brick Veneer to a Priority of 800 - to match that of the Brick Veneer (Structural).

In the illustration to the left, I also show what happens when you change the Priority of a Standard Wall Style to match that of the Air Gap within the Brick Style.



on the Components tab of a Wall Style Properties dialogue box and type in a number in the Priority field.

Priority values can range between 0 and 2147483647, so you have plenty of breathing room. Working with higher numbers can be an effective methodology when weighed against all of the other Wall Style types; you may want to leave room in the range of 0 - 200 or so for structural Wall Styles that must cut through all other Wall work.

Wall Priorities - Standard Component Numbers

Links [Standard Wall Component Cleanup Priorities](#) - for a table of observed numbers taken from the ADT 3.3 Wall Style files.

The Priority Numbers for Wall Style Components listed in this separate Window, were collected by actually looking at each Wall Style and may therefore be different from other published versions of this list.

The good thing about the list is that there is a fairly decent amount of space between the numbers so you can create your own Wall Style Components and work in these ranges.

Wall Component Name	Priority	Comments
Unnamed (Standard Wall)	1	Not a great number to start with
Partitions (Bathrooms)	55 - 80	Embedded in Multi-View Blocks
Concrete	200	
Concrete Masonry Unit (CMU)	300	
CMU Veneer	350	
Brick Veneer (Structural)	400	
Rigid Insulation (Brick)	404	
Air Gap - Brick	405	
Brick Veneer	410	

7 Wall Style Properties

Wall Style- Design from Scratch or Edit an Existing Style

Menu **Design>Walls>Wall Styles...**



Keyboard **WallStyle**

7-3 WALLS

Links [Importing Wall Styles](#)

[Style Manager](#). - for more reading

[Adding Wall Tags](#) - for a way to import a Property Set Definition Style that will allow you to Add a Property Set.

[Schedule Data](#) - for more information on this topic.

To create a **Wall Style** from scratch, use the **Style Manager** and go to Wall Styles or type "**WallStyle**" on the command line. Once in the Style Manager, use the right-pane to do most of your work. You can right-click in the right pane or use the New icon to create a New Wall Style. A good trick for creating a New Wall Style is to Copy an existing Style and Pasting it; then Rename it.

The **General** tab of the **Wall Style Properties** dialogue box provides a **Name** field, a **Description** field, the ability to attach **Notes** or documents and the ability to attach **Property Sets**. You can use the Notes... button to add comments about the Wall Style or you can Add... links to any file type as reference information related to the Wall Style. You can use the Property Sets... button to access the Edit Property Set Data dialog. You will not be able to use the Add property sets button to add data to your Wall Style unless you have a Property Set Definition Style specifically set to Apply To Wall Styles or Wall Objects. If you do add data, it can be used to designate information for tags and schedules; information like wall type, construction type, materials and/or fire rating - read [Part 18 - Schedules](#) for more information on this topic.

Running through some basic steps - 1:

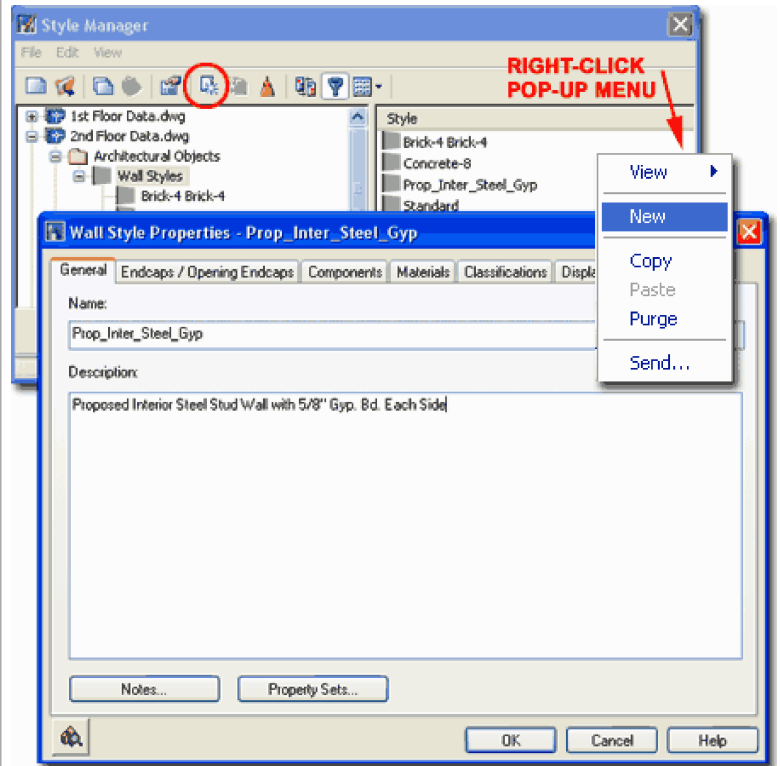
Illustrated to the right I show the first step in creating **your own custom Wall Style**. On the **General** tab you can **Name** the Wall Style and Add a **Description**. Autodesk started a convention of using an "X" in the Wall Style Name to imply that the Width is variable; you may wish to continue this practice if you have mixed Wall Style types (fixed and non-fixed). In this exercise, no Notes or Property Sets are added.

Wall Style- Endcaps / Opening Endcaps tab

Links [Wall Endcap Styles](#) - for how to create custom Wall Endcap Styles.

Opening Endcap Style

[Foundation Footing](#) as an example of when and why you need Endcap Styles.



On the **Endcaps / Opening Endcaps** tab of the **Wall Style Properties** dialog box, you can specify unique Endcaps for either or both of the free ends of this Wall Style and/or the ends that occur when Openings are created in this Wall Style. In essence, this tool offers the option to control how a Wall should look at termination and opening points.

Wall Endcap Style - use this drop-down list to select any existing Wall Endcap Styles that are currently available in the active drawing file. "Standard" is simply a straight line that cuts a Wall like a saw might. For this reason, the "Standard" Wall Endcap Style is not a good choice when components, such as Gyp. Board, are used because the Gyp. Board will not be wrapped around the ends or at openings. To have the option to select other Wall Endcap Styles, you must first create one using the **WallEndCapStyle** command and one or more open Pline shapes.

Opening Endcaps - by working with each of the objects listed under this category, you can set unique Opening Endcap Styles for each of the four objects listed: Door, Door/Window Assembly, Opening and Window. Each of these objects actually anchor to Walls and cut them. For each object, you can control four different Endcap Styles as illustrated on the Design Rules tab of the Opening Endcap Style dialog box to the right. This means that if you have a unique Sill condition, for example, on a Window you can set a unique Endcap Style for just that "Position" while using different Endcap Styles for the other three sides of the Window Opening.

Note:

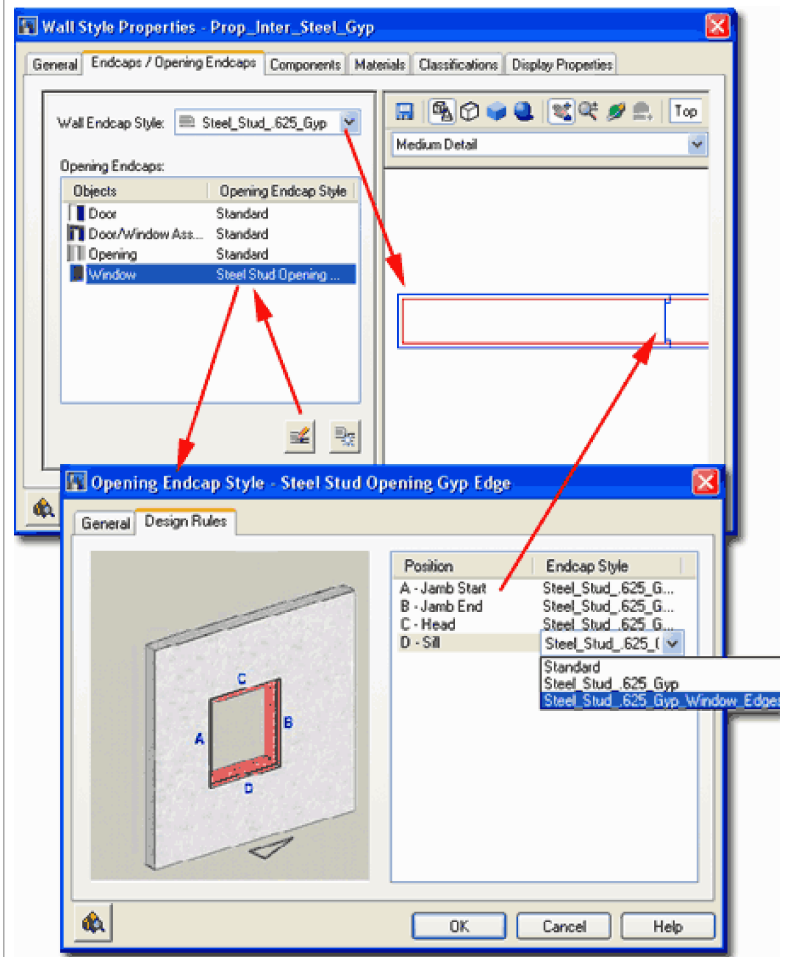
In theory, all of this fancy Endcap Style functionality is wonderful but in practice it can be a nightmare to create and manage so my suggestion is to dabble lightly before getting wild. Though I have spent much time on creating custom Endcaps for Wall ends and clean Openings, I have yet to worry much about Windows and Doors because this level of detail is rarely seen unless used for details.

Running through some basic steps - 2:

On the **Endcaps / Opening Endcaps** tab for your custom Wall Style, we will keep it simple for now by leaving all of the **Endcap Styles** as "**Standard**". Later, should the need occur, you can return and add something more sophisticated like the the unique Window Opening Endcap Style illustrated to the right. More information on Endcaps Styles is provided in Part 4 - Wall Tools.

Wall Style- Components tab

When designing your own custom Wall Styles, the **Components** tab is the place where it all really happens. In simple terms, this is the place where you define the rectangles that make up your Wall system; each rectangle, in plan view, representing framing,



applications, insulation, air, protection and so on. A basic wall, for example, can be represented by one rectangle with a certain Width. A more complex wall might have a rectangle for the framing members and two adjacent rectangles, on each side, representing gypsum board.

Index - an automatically generated sequential number, starting with 1, for each component Added to a Wall Style. The order of the components is not important but structuring a Wall from inside to outside (or left to right) can make it easier to follow.

Add / Remove - buttons used to Add a component or remove it.

Name - a literal name for the component to make it easier for the designer to understand.

Priority - a rating for cleanup; 0 is the top of the stack. Though you can find lots of examples by reverse-engineering the Wall Styles that come with ADT, the issue you will have to address is how to use numbers that work with other Wall Styles and create correct results on the component level.

Width - use the pick button in this cell to activate the Width Settings bar - see illustration to the right. The Width is either a simple physical value that represents how thick the component is or a more complex formula designed to work in conjunction with the Base Width as set or as input by the user at the time of drawing this Wall Style. Using all fixed values is the easiest Wall Style to create but the least flexible at the time of use. Using the "BW" (Base Width) option allows for variable Widths by the user at the time of creation but then you will need to use Edge Offset values to compensate for variable Widths. In most cases, Wall Styles will have one variable Width Structural or Framing component with fixed value applications but if you need to vary the application as the Width changes, you can create a formula whereby the Width is a factor or sum based on a relationship to the "BW".

Running through some basic steps - 3:

On the **Components** tab for your custom Wall Style, we can create a Fixed Width or Variable Width Component configuration by using actual dimensions or by using the "BW" (Base Width) variable.

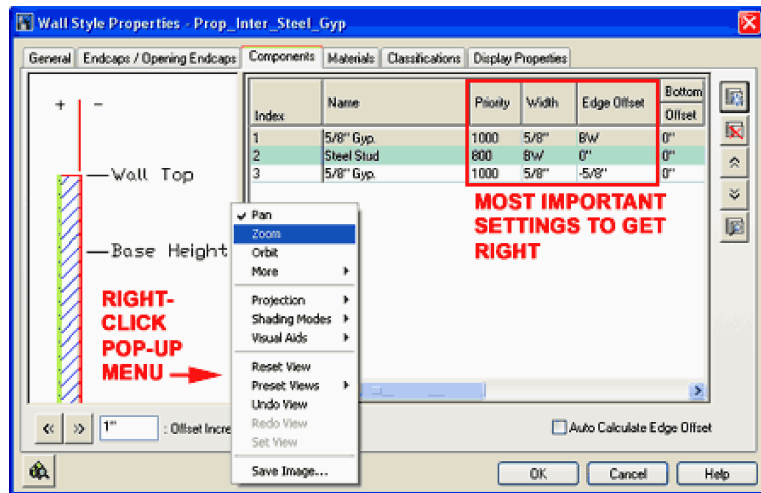
Illustrated to the right I show how to configure components for both a **Fixed Width** and Variable Width Stud Wall faced by 5/8" Gyp. Board on each side. As you can probably see, creating a Fixed Width Wall Style is rather easy as long as you recognized that zero is your Baseline and that you build components based on that position in space. In both examples, illustrated to the right, I treat the component Widths as positive numbers and use a negative Edge Offset for the negative side of the Wall (hence the -5/8" Edge Offset with a 5/8" Width back to the zero point on the Wall).

For the **Variable Width** Wall, I show that I have declared the Stud Component as the Variable while the Gyp. Board Components remain fixed at 5/8" Wide. In order to allow this Wall to grow and still put the Gyp. Board Component in the right position, the Edge Offset on the positive side is set to match the Width: "BW".

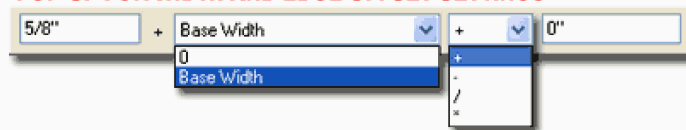
The **Priority** settings are somewhat arbitrary but it is best to make the Stud Component lower (higher in Priority) than the Gyp. Board so the Stud will cut through the exterior Components. If you wish to match the Wall Style Priorities that come with ADT, you may wish to use 1200 for the Gyp. Board and 500 for the Stud.

Note: There are many ways to produce the same results so don't get caught thinking that these two examples represent the only or event the "right" way to create your Wall Styles.

Wall Style- Materials tab



POP-UP FOR WIDTH AND EDGE OFFSET SETTINGS



Edge Offset - use the pick button in this cell to activate the Edge Offset Settings bar - see illustration to the right. The Edge Offset is simply a control for positioning the components relative to each other. This value can either be a simple positive or negative distance relative to a zero point in the wall section or it can be quite complicated if a formula has also been used for the Width (see comments above). In the illustration to the upper right, I show that if you use a zero point (Baseline), setting appropriate Edge Offset values for other components is just a matter of relating to the zero position and the widths of the individual components. If a Wall Frame use BW for its Width, you will want you Gyp. Board to be placed outside this BW value so the offset would be that BW value. If you cannot use a zero baseline but must use a centerline or some other position, the Edge Offsets will need to use formulas that relate to this primary position.

Top Elevation Offset - a value field for controlling where the top-plate (or other component) of a Wall Style should be relative to **Wall Top, Base Height, Baseline** or **Wall Bottom**.

Bottom Elevation Offset - a value field for controlling where the sill-plate (or other component) of a Wall Style should be relative to **Wall Top, Base Height, Baseline** or **Wall Bottom**.

BASELINE
FIXED WIDTH WALL STYLE

Index	Name	Priority	Width	Edge Offset
1	5/8" Gyp.	1000	5/8"	3 1/2"
2	3 1/2" Steel Stud	800	3 1/2"	0"
3	5/8" Gyp.	1000	5/8"	-5/8"

BASELINE
VARIABLE WIDTH WALL STYLE

Index	Name	Priority	Width	Edge Offset
1	5/8" Gyp.	1000	5/8"	BW
2	3 1/2" Steel Stud	800	BW	0"
3	5/8" Gyp.	1000	5/8"	-5/8"

Links [Object Style Properties - Materials Overview](#) - for more in-depth instruction on how to work with and create custom Material Definitions including Rendering Materials.

[Wall Style - Display Properties tab](#) - for information on where you must activate the use of a Material Definition Style for the particular Component as a Display Property.

For more advanced **presentation** involving everything from Hatch Patterns in Plan construction documents to Textured Brick in Perspective renderings, you use the options on the **Materials tab**. It should be noted that if this topic is too advanced for you or if 3D presentation effects are not of significant value for you, you are not forced to use the Materials to get basic Hatch Patterns on Walls in Plan; you will, however, need to use Materials for Hatch Patterns on Walls in Elevation (across the vertical face).

On the **Materials tab** of the **Wall Style Properties dialog box**, you should find each **Component** listed under the Components tab. For **Materials**, the default is "Standard" which defers the Color to the settings under the Display Properties tab (like the previous releases of ADT). Any other Material that you may find on the Material Definition drop-down lists, have either been created by you or came into your file as a result of using other ADT objects from the ADT Content Library. Though you may assign any Material to any Component, not all Materials Properties are configured equally and thus produce different results.

Modifying a Material Definition is okay as long as the modifications don't alter how that Material is applied to other objects.

Creating a New Material Definition can be done here or by using the **Style Manager** and then returning to this point. I recommend using the "**MaterialDefine**" command to create Materials if you only need to copy an existing one, rename it and make minor modifications so it works differently for your own custom Wall Styles. If you create a new Material Definition Style via the Wall Style Properties route (illustrated here), you have to create your Material Definition Style from scratch.

Illustrated to the right I show that I have decided to create a **New Material Definition** for the 5/8"Gyp. **Wall Component** and have named it "Gyp. Board". By using the **Edit Material button**, I show that I have accessed the **Material Definition Properties dialog box** where all of the Display Properties are listed for Materials in my current drawing. Files started with the ADT Template Files will have more **Display Representations** than drawings started from scratch but basically, Material Styles only have one real Display Representation (General) while all others are just duplicates with unique settings.

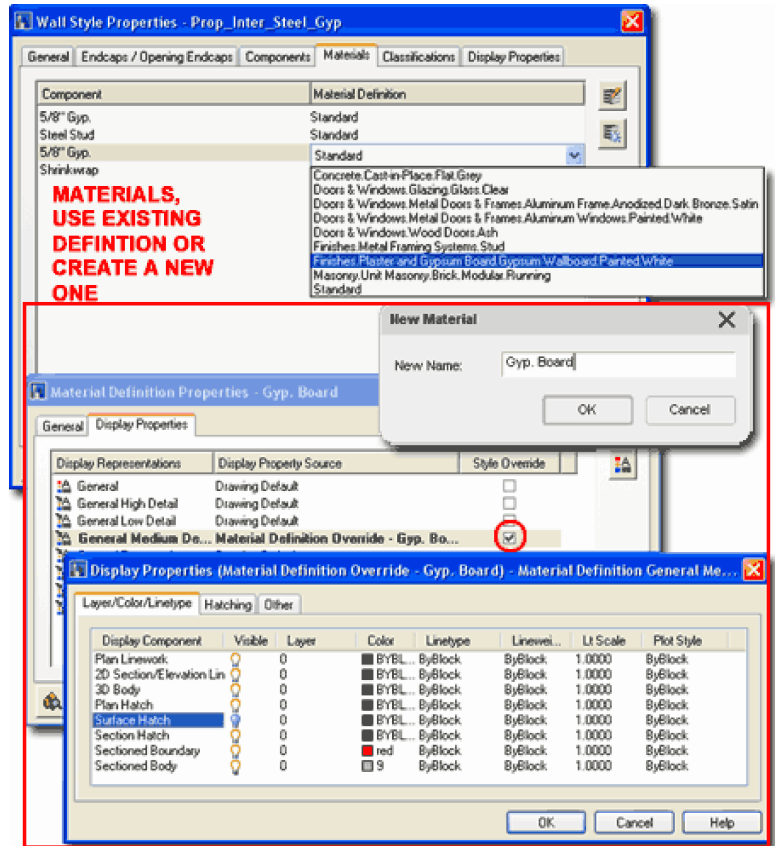
Running through some basic steps - 4:

On the Materials tab, for your custom Wall Style, you could spend a lot of time creating a Material Definition Style but in this simple example I suggest that you either leave the Material settings as "Standard" or Import a Wall Style from the ADT Library that contains similar components and then return to this list to assign those imported Material Definitions.

Wall Style- Classifications tab

Links [Object Style Properties - Classifications Overview](#) - for more in-depth instruction on how to work with and create custom Classification Definitions and how to use them in your work.

Depending on your future objectives with your Wall Styles, you can use **Classifications** to assist in simple tasks such as display



On the **Display Properties tab** of the **New Material Definition (Gyp. Board)**, I show that I have activated a **Style Override** for the **General Medium Detail Display Representation**. By activating the **Style Override**, I have also activated the **Display Properties dialog box** as it applies to this Material for the General Medium Detail Display Representation only. On this dialog box, I show that I have highlighted the **Surface Hatch Display Component** on the **Layer/Color/Linetype tab** and if I turn this Component on and Set a **Hatch Pattern** on the **Hatching tab**, I will see this Pattern on my Wall in 3D Views whenever the General Medium Detail Display Representation is used.

If all of that is confusing, don't worry, there is a far more in-depth breakdown of this whole topic in [Part 1 - AEC SETUP -DISPLAY](#).

Note:

Be sure the read the section on the [Display Properties tab](#) to learn about another place the Materials are activated or deactivated for display.

controls (like an ON/OFF toggle for Demolition Walls) or for more complicated tasks such as Schedules and BOM's.

On the **Classifications** tab of the **Wall Style Properties** dialog box, you may find that there are no options and that you simply cannot use this feature. None of the ADT Template Files come with **Classification Definition Styles** so you must first create one in order to use it under the Classifications tab of the Wall Style Properties dialog or any other Object Style Properties dialog, for that matter.

Illustrated to the right I show that I used the **Style Manager** to create a **New Classification Definition Style** that I named "Walls" (you can also type "**ClassificationDefinition**" or use the Format pull-down). Once you have created a Classification Definition Style, you must **Edit** it and **Add Classifications** on the **Classifications** tab of the **Classification Definition Properties** dialog box (see image right). In the illustration to the right I show that I have Added two example Classifications that I named " **Load Bearing - Structural**" and "**Partition - Non-Structural**" as examples. You could just as easily create Classifications such as "Proposed", "Existing" and "Demolish". The names are the true Classifications so you will want to give some thought to these names and how they will play a role in the bigger picture of your Project Management. This will, of course, not be obvious until you have explored this topic further and studied how it can be applied to Display Control and Schedules.

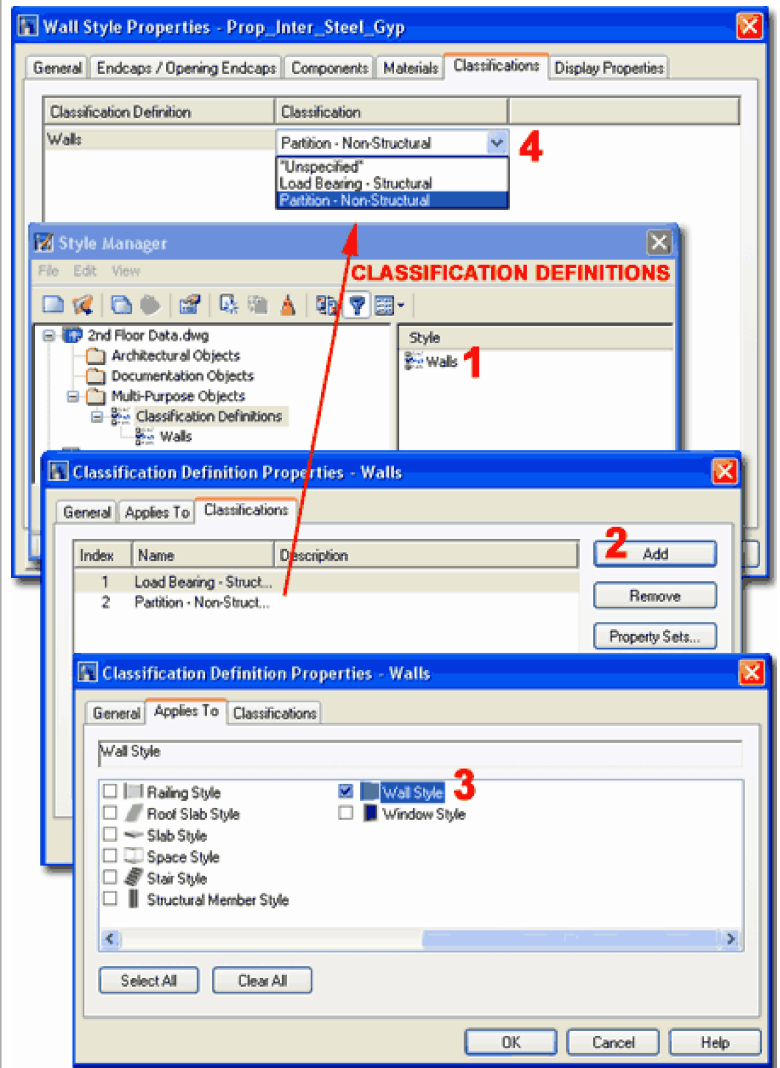
To isolate or allocate the Classifications that I created on the Classifications tab on the Classification Definition Properties dialog box, I show that I used the **Applies To** tab and selected the one object that I might want this Classification available for. You can, of course, Apply To more or all objects but you must set the Apply To to objects that you intend to use these Classifications for or they will not show up on the Object Style Properties dialog box.

In the last step, once the Classification Definition Style has been configured, you should find that it will now be available on the Classifications tab of the Wall Style Properties dialog box.

If all of that is confusing, don't worry, there is a far more in-depth breakdown of this whole topic in [Part 1 - AEC SETUP -DISPLAY](#) .

Running through some basic steps - 5:

On the Classifications tab, for your custom Wall Style, you could spend a little time creating a Classification Definition Style but in this simple example I suggest that simply bypass this option until a later time when it may be necessary to add this to your custom Wall Style.



Wall Style- Display Properties tab

Links [Wall Object Properties](#) - for more information on the various tabs on the Display Properties dialog box.

The **Display Properties** tab, the last one, on the **Wall Style Properties dialog box** provides access to all of the settings that affect how your Wall Style will look with respect to Component Linework and Hatching. Working with Display Properties can get very complicated so breaking the logic down by only working with one change at a time is usually the best approach. For Wall Styles, the **Default Display Representations** include: **Graph, Model, Plan, Plan High Detail, Plan Low Detail, Reflected** and **Sketch** but you will find more in the ADT Template files. For each of the default Display Representations, there are different Display Properties and Display options depending upon what their function is; for the **Plan** Representation of Wall you should find numerous Display Components listed on the **Layer/Color/Linetype** tab but for the **Sketch** Display Representation, you will only find three. Knowing which Display Representation is actually being used in your Display Configuration(s) is fundamental to choosing the right one or multiples to modify.

Layer/Color/Linetype

Illustrated to the right I show that I have chosen to modify the **Plan Display Representation** of my example Wall Style. I have attached a **Style Override** because I want my Wall Style to have **unique Colors, Lineweights, Hatching** and so on that are very different from the default settings applied to most other Wall Styles. Though many may argue that using Style Overrides is problematic, I don't limit myself to that fear and find that Style Overrides are absolutely necessary to create the types of presentation results that my office needs. The drawback to using Style Overrides is that you limit the option for rapid Display Change of All Wall Styles in a single swoop but as long as you know that there are Style Overrides on most of your Wall Styles, you simply have to run through the list in the Style Manager.

SHRINK WRAP = BYBLOCK COLOR IS COMING FROM LAYER

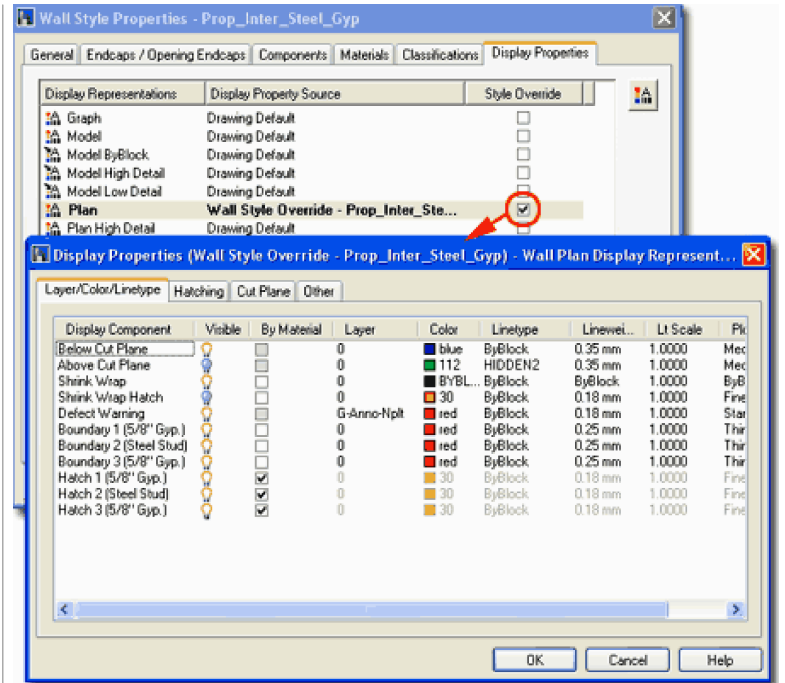
BOUNDARY 1, 2 & 3 = RED COLOR IS FIXED

SHRINK WRAP COVERS EXTERIOR BOUNDARY (PART OF 1 & 3)

Once the Style Override has been checked, the **Display Properties dialog box** will appear as illustrated to the right. You can also use the **Properties button** on the Display Properties tab of the Wall Style Properties dialog box to activate this dialog. Because I chose to modify the Plan Display Representation, my list of Display Components is fairly extensive. If you use a Style Override you will only see your Display Components but if you modify the default Display Representation, you will see a much larger list of generic Display Component names.

Running through some basic steps - 6:

On the **Display Properties** tab for your custom Wall Style, you can spend a bit of time working on all of the different Display Representations. The best approach on a first run at this is to



On the **Layer/Color/Linetype** tab of the **Display Properties dialog box**, you can control the **Visibility, By Material, Layer, Color, Linetype, Lineweight, Lt Scale** and **Plot Style** for each Display Component of your Wall Style. There are so many possible options here that you could almost write a whole book on just this topic alone but essentially what you will need to do is decide on how you want to control your Wall Style Display Components so you always get the type of output that you want with the least amount of effort on your part. For example, when Display Components don't use Layer = 0, Color = ByBlock, Linetype = ByBlock, Lt Scale = 1 and so on, they are fixed no matter what Layer you put them on or how you alter those other Properties other than by using this dialog box. You can create individual Layer Names with the Layer Manager and actually assign each Display Component to a Layer so you would end up with a solution that was more "AutoCAD friendly" but you could also be a bit smarter about how you apply these settings to automatically do work for you. In the case of lines above or below, for example, you may have a practice of always using certain dashed linetypes and certain Colors, Lineweights and so on so why not preset that information here to avoid having to worry about it later.

In the illustration to the left I show one example of how you might want to set the Display Components for a simple Stud Wall with Gyp. Board on both sides. For the **Shrink Wrap** Display Component (the most extreme outer lines on a Wall Style as cut in Plan View) I show that I have turned the **Visibility On** and set the **Color to ByBlock**. I have not use the By Material option since I want this Display Component to be controlled by whatever I set on the "A-Wall" or equivalent **Layer**. For the internal Display Components, I show that I have set them all to use the Color Red because in our office we think of this Color as a light lineweight that is less important than most other Colors. As you can see in the example of this Wall Style, the Shrink Wrap is Blue as set by the "A-Wall" Layer while the internal Components are Red but cannot be changed through any other means than this dialog box (for this Display Representation, that is).

Overall, if you have a good grasp of how to work with basic AutoCAD Layer Properties, you should not find these Display Properties too difficult to master. If you use the "By Material" checkbox, you are deferring the remaining settings over to the Material as set on the Materials tab of the Wall Style Properties dialog box. Likewise, if you want to use or see a Material Definition Style on your Wall Style, you must use the "By Material" checkbox here.

focus on one or two Display Representations and test the results before moving on through the whole list.

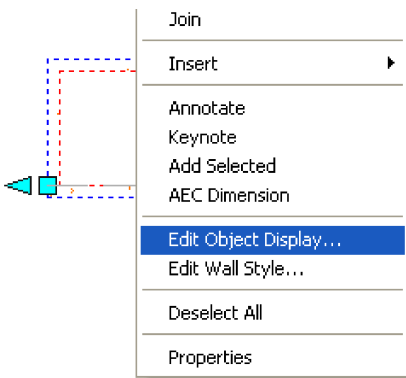
Of the list of Display Representations for a Wall Style, **Plan** is probably the most important. If you double-click on Plan, you will see the default Display Properties for the current drawing. You may choose to make changes here that affect all Wall Styles or Attach a Style Override on the Display Properties tab so you can set highly unique **Display Properties** for this Wall Style on the **Layer/Color/Linetype** tab.

For best results on your first Wall Style, just use the Default Display Properties. Upon further exploration, try Attaching a Style Override to create unique Color, Linetype, Lineweight or other settings that will only affect this Wall Style. Illustrated above left, I show an example of some rather unique settings for a custom Wall Style.

8 Wall Object Display Properties

Accessing Wall Object Display Properties

Links [Wall Style- Display Props tab](#)
[Object Display Property Overrides - Object and Style Based](#) - for more information on the differences and how to access the Display Properties for a single object versus a whole object Style.

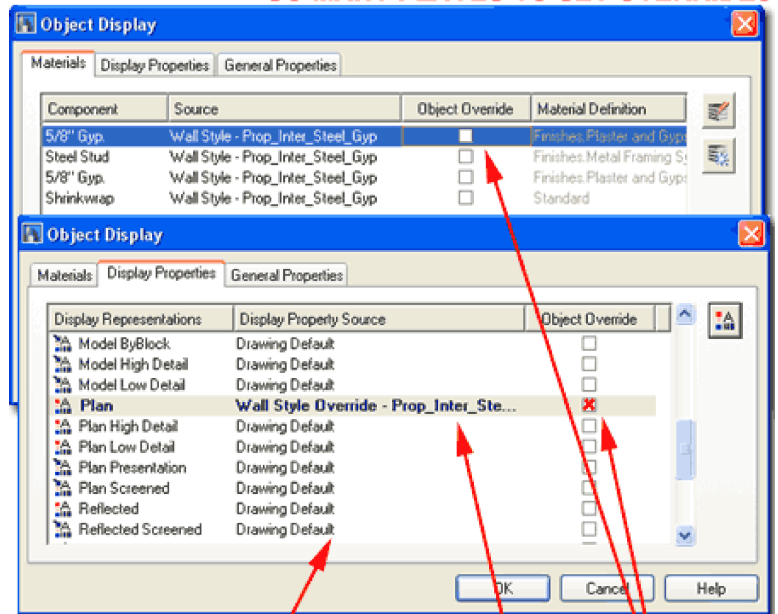


There are two ways that you can access the Object Display Properties of most ADT objects; one way is by the Object's Style Properties (discussed above) and the other way is by picking an Object, right-clicking and selecting **Edit Object Display...** off the object-specific pop-up menu.

When you use the **Edit Object Display...** path to get to the Object Display dialog box, you should notice that the number of tabs and total list of options is far less than what you would find on the Object Style Properties dialog and that is because you are isolated to the Display Properties. Not only that, but if you apply any Overrides here, they will Override the Object Style to become the most isolated Display Controls that you can create: one for just the Object(s) selected.

Illustrated to the right I show how you can decipher the verbiage on the **Object Display dialog box tabs**. "**Drawing Default**" means that the Object Style has **no Overrides** and that you can modify the Display Properties directly in the Display Manager. "**Wall Style Override - ...**" indicates that the Object Style has an **Override** that you can only modify through the Object Style Properties dialog box. If you check the Object Override on this last setting, you will, essentially be Overriding and Override. Attaching Overrides at the Individual Object Level is an extreme act but can be rather useful in frustrating situations where you don't have the time to create a whole new Object Style just to create a simple effect. Though I cannot remember the last time I did this with a Wall Object, I am guilty of doing this with Door Objects on a regular basis just to get Thresholds turned On. The concept is that you just want this one object to have a different appearance but the price is that you can only change it through this very same path of dialog boxes. I equate this technique to the technique used by some really bad AutoCAD drafters that set everything on an object-by-object basis via the Properties toolbar; you know, Color by Color instead of "By

SO MANY PLACES TO SET OVERRIDES

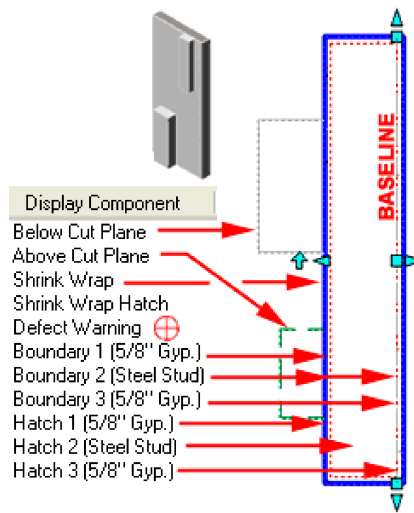


DEFAULT SETTINGS
STYLE SETTINGS - OVERRIDE ON DEFAULT
OBJECT SETTINGS - OVERRIDE ON STYLE AND DEFAULT

Layer" or "By Block". Just imagine what those folks will do to a drawing once they find this option - wow, don't give me any of their drawings.

Wall Object Display Properties - Layer/ Color/ Linetype

Links [Wall Style- Display Props tab](#) - for other information on this topic.



To many, this is where the "light goes on" in their minds about how ADT's Objects can behave the way they do with respect to graphics. Most of the rules you ever learned about AutoCAD's Layer techniques should apply here. If you assign a unique color to any Component within a Wall, don't expect to change its color with the Layer Manager.

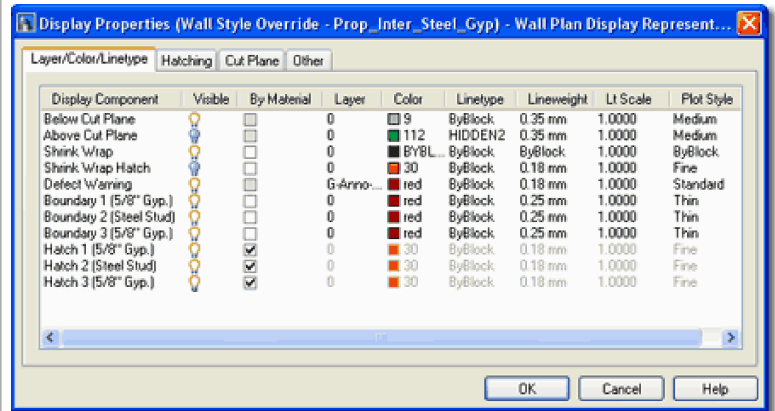
The more you can manage with ByBlock or Bylayer will provide the

greatest flexibility down the road in a project, but working with Styles makes it fairly easy to change these settings throughout a drawing. The larger problems come when you are working with Xref's where access to Styles is limited to Objects that are actually in the current file and thus you cannot change Xref's Object Styles - a real drawback and something to experiment with before you go too far with custom settings.

Many of the Wall Components are easy to figure out but here's a quick overview:

Below and Above Cut Plane - lines controlled by Visibility and settings on the Cut Plane tab.

Shrink Wrap - an outer wrap around a wall for emphasis and the point at which the Cut Plane is set.



Shrink Wrap Hatch - if on and a Hatch pattern is set on the Hatching tab, will apply a pattern from outer edge to outer edge of a Wall Style.

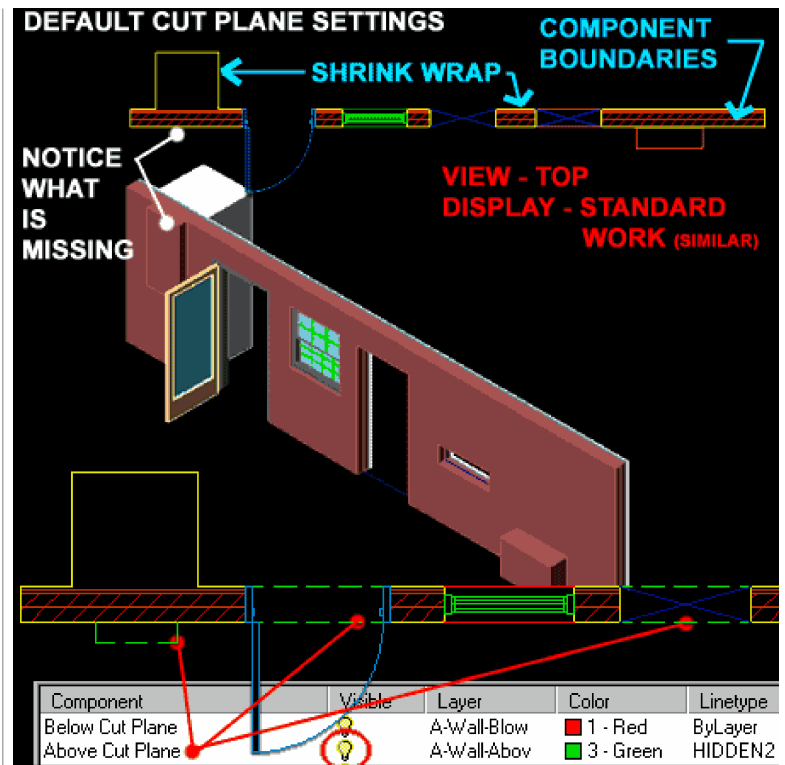
Defect Warning - the "dreaded circle of death" on walls that have problems; usually cleanup problems. Turning Visibility of this symbol off does not solve the defect problem.

Boundary - the actual double lines that define the components of a wall. These are organized by automatically generated **Index** numbers (1, 2, 3...)

Hatch - hatch patterns between the matching boundaries with the same **Index** number; see Hatching tab for patterns.

Illustrated to the right, I show how ADT displays a Wall with Doors, Windows, Openings and Modifiers from Top and Isometric based on the **Standard** or **Medium Detail** Display Configurations. I have purposely positioned objects above and below the standard **Cut Plane Height** to show what ADT will and will not display by default. Notice that one Modifier, above the default (3'-6") Cut Plane, is not shown in plan view at all, while the other, below the default Cut Plane, is shown lighter than the rest of the Shrink Wrapped Wall.

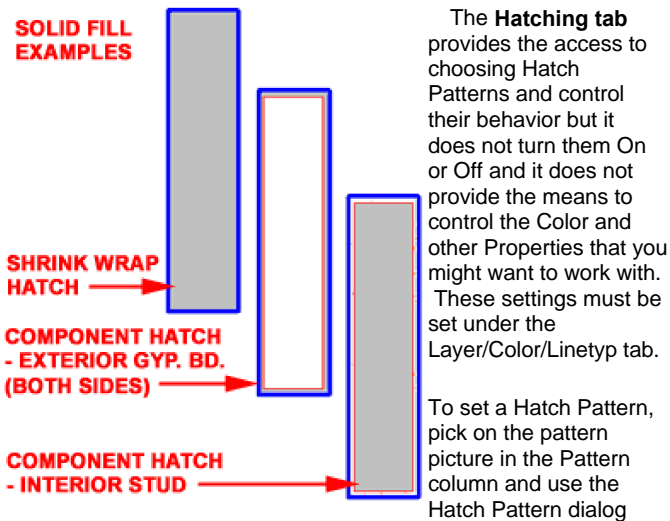
It is almost possible to get a Wall Object to display in any way you might draw by traditional 2D drafting techniques. One of the simplest tricks is to use the [Layer/ Color/ Linetype tab](#) to turn **on** or **off** the **Below Cut Plane** and **Above Cut Plane** Components - see illustration right bottom. In the illustration to the right, I show how turning on **Above Cut Plane** affects the default Wall Display in plan view; in addition, I changed the color and the linetype to make it clear that the lines represent objects above.



Wall Object Display Properties - Hatching

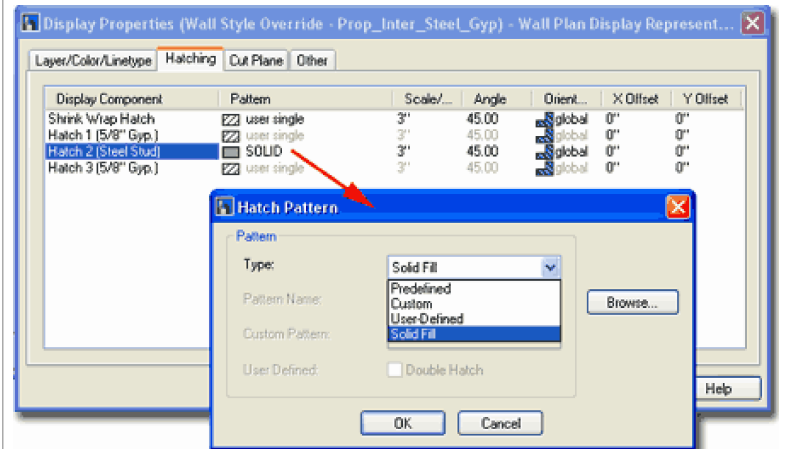
Links [Wall Hatch - Insulation](#) - for how to add Batt Insulation with a traditional look using a custom hatch pattern.

If you find that certain Hatch Patterns stop in long walls, you may need to change the MaxHatch system setting, try typing the following statement (verbatim) on the command line and regen afterwards: **(setenv "MaxHatch" "1000000")**. To check the current setting, type **(getenv "MaxHatch")**. The range is between 100 - 10000000 with 10000 as the default. Higher values will affect performance.



The **Hatching** tab provides the access to choosing Hatch Patterns and control their behavior but it does not turn them On or Off and it does not provide the means to control the Color and other Properties that you might want to work with. These settings must be set under the Layer/Color/Linetype tab.

To set a Hatch Pattern, pick on the pattern picture in the Pattern column and use the Hatch Pattern dialog box, as illustrated, to select patterns in much the same fashion as using AutoCAD's Hatch command. Notice that there is a unique version of the Solid Fill available directly on the Type drop-down list. Be sure to use this version of the Solid Fill if you want a Solid Pattern. The other one, offered via the Predefined option and



Notice that you have **Scale**, **Angle** and a unique **Orientation** option for how the pattern follows an object (Global Angle or based on Object direction).

Setting a pattern for **Shrink Wrap** and turning it on on the Layer / Color / Linetype tab will put a pattern from edge to edge of you wall; right over any internal components. This is sometime a cool technique to set Wall Poches with the Solid pattern.

Hatch Pattern Palette causes a variety of problems when used in Wall Objects.

If you are unable to set a Pattern, confirm that the Display Component is free to receive a Pattern by checking the " **By Material**" status on the Layer/Color/Linetype tab. In other words, if "By Material" is checked for the Component you want to set a Pattern for then you will not be able to do that since the Pattern comes via the Material Definition Display Properties instead.

Wall Object Display Properties - Cut Plane

Links [Display Configuration - Cut Plane](#) - for more information on setting the Cut Plane through Display Configurations.

The **Cut Plane** tab of the **Object Display Properties** dialog box holds a lot of power to control what is and what is not displayed in plan view. Usually, I find that not enough is displayed by default but you can also use these settings to remove information that is above or below a particular Cut Plane.

CUT PLANE = 0 Override Display Configuration Cut Plane - generally this checkbox is unchecked and should remain as such unless you need to alter this centralized setting. In essence, checking this box creates an Override on the Global Cut Plane as defined by the current Display Configuration. Keep in mind that you can work with the Cut Plane tab at the Object Level and at the Object Style Level but if you did need to alter the Cut Plane Height due to an unusual Wall Condition, this is probably the more logical level to do it at (the Object Level that is) because the Override would only be for the selected object and not a whole Style. I have done this on many occasions to get the proper display of items above and below.

LAYER... TAB

OTHER TAB

Cut Plane Height - the z-axis value on a Wall Object where you want your primary cut to be made and where [Shrink Wrap](#) will wrap around. Setting Cut Plane Height to zero (0") can be a very effective solution for problems - see illustration left.

Automatically Choose Above and Below Cut Plane Heights - a check box that allows ADT to set the limits for what gets displayed as objects above and objects below the actual Cut Plane Height. I think, but am not certain about this, that if you check this box the Above and Below values are just from the Cut Plane Height to either the Top or Bottom of the Wall. Remember that ADT has the Above Cut Plane and Below Cut Plane Components that you can turn on or off.

Manual Above and Below Cut Plane Heights - a check box that allows you to Add your own secondary Cut Plane Heights to create a range for what is considered Above and Below. You can, for example, choose to have only objects between the Cut Plane Height and an Added Above or Below Cut Plane Height display as Above or Below; it's like a filter that allows you to include or exclude z-axis information on a Wall Object. **For best results**, set a **Cut Plane Height** and **deactivate** **Automatically Choose Above and Below Cut Plane Heights** .

Note:
Remember that you can control the Visibility of Display

GLOBAL CUT PLANE AS PER DISPLAY CONFIGURATIONS

SEE COMMENTS

DISPLAY MANAGER

CUT PLANE

"PLAN" DISPLAY REPRESENTATION IS PART OF THE "MEDIUM DETAIL" DISPLAY CONFIGURATION, AMONG OTHERS.

USING MANUAL CUT PLANES TO CREATE A RANGE

CUT PLANE HEIGHT

MANUAL ABOVE AND BELOW CUT PLANE HEIGHTS

CUT PLANE -> ABOVE = ABOVE LAYER*
CUT PLANE -> BELOW = BELOW LAYER*
OUTSIDE OF RANGE IS NOT DISPLAYED*

Components for Above and Below on the **Layer/Color/Linetype** tab of the Display Properties dialog. You can also control Above and Below display on the **Other** tab - see below.

Wall Object Display Properties - Other

The **Other** tab of the **Object Display Properties dialog box** provides checkbox based (On/Off) controls for other settings that users might want to toggle.

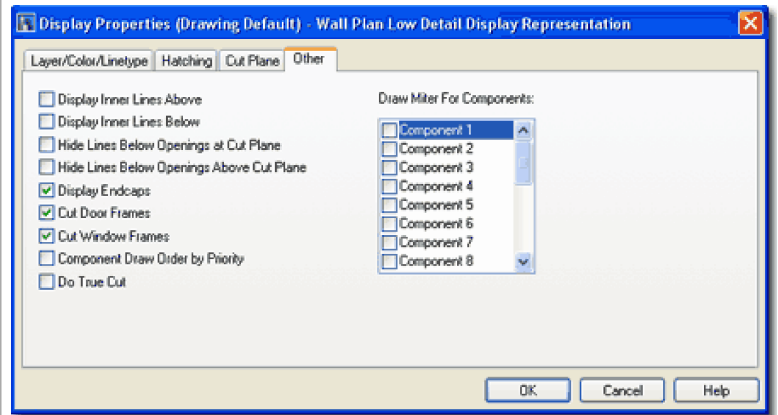
Display Inner Lines Above / Below - use these checkboxes to activate the display of Component Lines within complex Wall Styles. By default, the Above and Below display will only show the outer lines of a Wall but if you check either of these options you will get every single Component line to display. When using be sure to have the Above Cut Plane and Below Cut Plane Display Components turned on (the matching set, that is) on the Layer/Color/Linetype tab. Also, if you have limited the Cut Plane Above and Below range, you may not see any lines Above or Below.

Hide Lines Below Openings at Cut Plane - use this checkbox to remove lines below Openings like Doors and Windows if you don't want lines to display there even though you have the Below Cut Plane Display Component turned on. The only time this has presented itself as a problem to me was when I had a Door in a Wall that with a Threshold height above the baseline. I wanted Lines Display Below all other Openings but I did not want them below the Door. To remedy this situation, I kept the Below Cut Plane Display Component On but used this checkbox to remove the linework below the Door.

Hide Lines Below Openings Above Cut Plane - use this checkbox to get Openings, like Windows for example, that have an unusually high Head height to actually appear as if they have cut the Wall; i.e., remove the lines below them. Because Objects, like Windows, have their own Cut Plane settings (like Respect Cut Plane of Container Object when Anchored) you may have to alter the Display Properties of the Objects to get them to Display.

Display Endcaps - use this checkbox to display unique Endcaps on Walls or cuts in Walls. This is a highly recommended option to have checked.

Cut Door / Cut Window Frames - use this checkbox to display Doors and Windows as objects that actually cut the Wall. Unchecking either of these options can be used to display Doors and Window as reference objects within Walls and may be a desirable option for Foundation Plans or Reflected Ceiling Plans.



Component Draw Order by Priority - use this checkbox to controls what comes to the surface by the Priority settings used to control Cleanups; in other words, maybe you want brick with a priority of 200 to show its color above the adjacent insulation with a priority of 300.

Do True Cut - use this checkbox to display cuts and Openings in Walls as if they are truly three-dimensional cuts; i.e., display all component lines.

Draw Miter For Components - use this checkbox to draw a diagonal line where Wall Components meet.

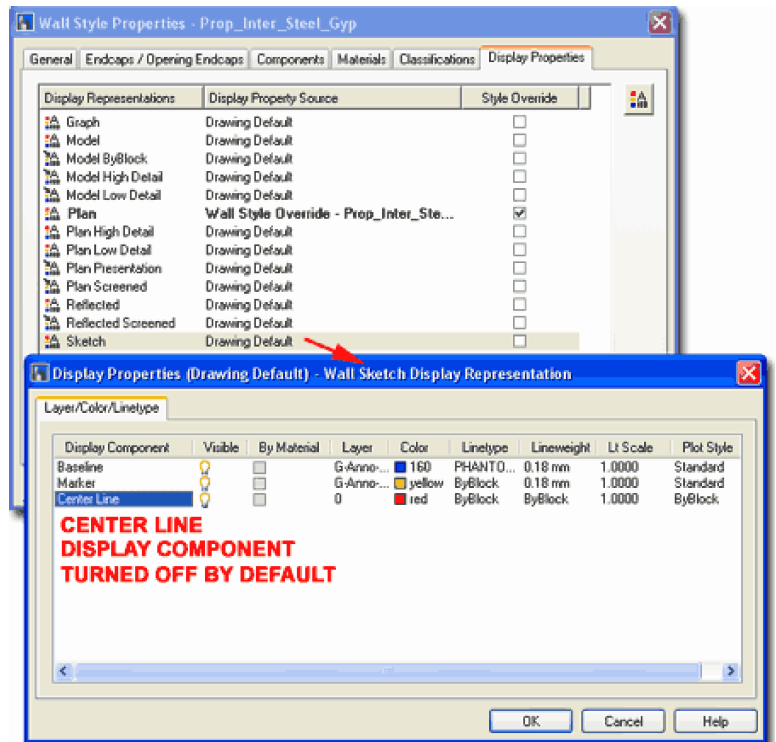
Wall Object Display Properties - Other Display Representations

With thirteen or so Default Display Representations for just the Wall Objects in ADT (per default template that is), it is basically impossible for me to cover all of the options associated with each one of these. For the most part, many are permutations or pointers to the Plan or Model Display Representations so those will offer the same settings or options as the parent but Graph, Reflected and Sketch are unique Display Representations that have their own settings and options.

Illustrated to the right I show an amazing surprise hidden within the Sketch Display Representation: a Center Line Component. If you turn this Display Component On (it's Off by default) and set a unique color for it, it will show all Wall Centerlines regardless of their Baseline or Components. This Center Line is always representative of the true center so it can be very useful for Osnaps during construction or to assist in such matters as Area Calculations.

Note:

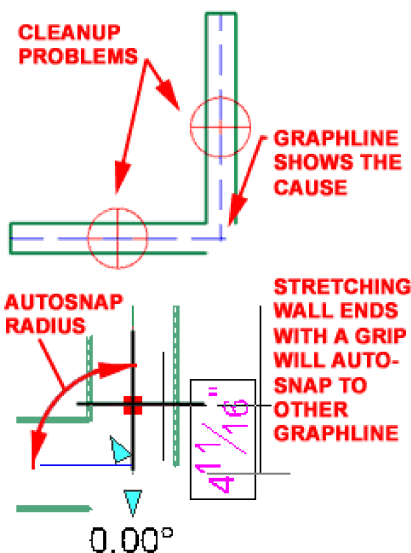
The Sketch Display Representation is used within the Diagnostic Display Configuration that comes in ADT's Template Files. To use this while the Walls are in normal display, add this Display Representation to another Display Set, like Plan Low Detail - just find the Wall object under the Representation by Object folder in the Display Manager Window, look for the Sketch Display Representation and check it for Plan Low Detail. Now, when you set your viewport to Low Detail, the Center Line information will show.



9 Wall Problems

Defect Marker and Cleanup issues

Links [Wall Properties - Cleanups tab](#)



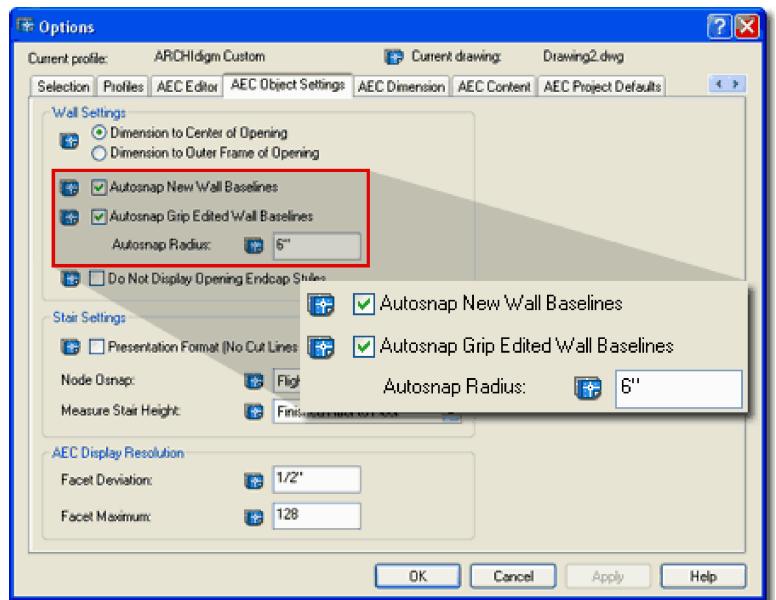
Usually the biggest problem with Wall Objects is dealing with the question of why the "dreaded circle of death" (Defect Maker \emptyset) shows up. There are numerous causes for wall defects but the most common one has to do with [Cleanup Settings](#) and there is a lot you can do to deal with cleanup issues.

When you draw with ADT's Wall Objects, they generally Cleanup perfectly as you place them in a contiguous manner but problems tend to arise when you

add new walls among existing walls or when you begin to edit them with the common Move, Rotate, Mirror, Stretch and similar AutoCAD editing commands.

If you assume that the cause of any cleanup issues is not due to bad Wall Style Component Priority issues then the usual culprit has to do with the **Graphlines**. Mathematically speaking, Walls are just Vector Paths much like Lines and Plines so despite all of the fantastic graphic elements, the key to the Wall is the Vector or Graphline that controls its position, direction, length and cleanup

9-3 WALLS



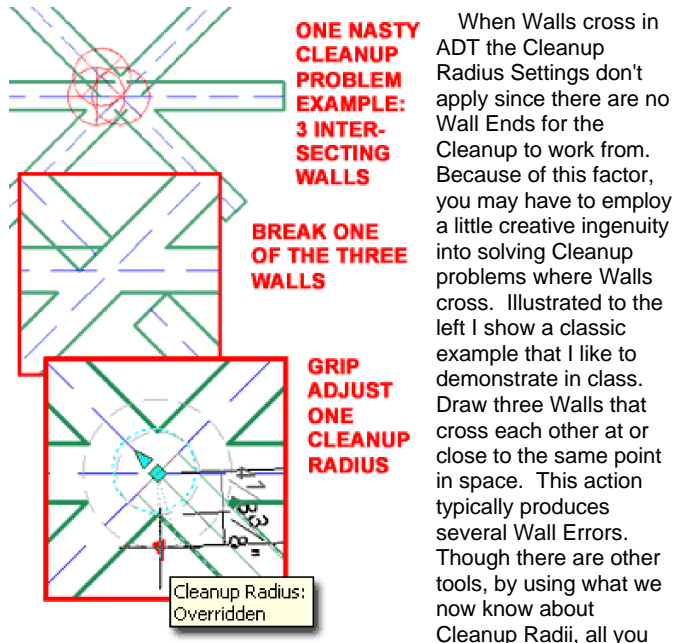
Autosnap New Wall Baselines - this checkbox option uses the Autosnap Radius value as a guide when drawing new Walls that come near other Wall Graphlines. So, as long as you get within the Autosnap radius of another Graphline, the Wall magically joins and hopefully cleans up correctly.

Autosnap Grip Edited Wall Baselines - this checkbox uses the Autosnap Radius value as a guide when Grip Stretching Wall Ends near other Wall Graphlines. This produces the jumping effect that you may have noticed when using Grips on Walls and is simply one of the best ways to work on cleanup problems.

among other things. In most problematic cases, as long as you get the Graphlines to meet, the Walls will Cleanup properly. You can see the Graphline of all Wall Objects by using the "**Diagnostic**" Display Configuration (personally, I prefer to use the "**AecWallGraphDisplayToggle**" command). To bring the Graphlines together, you can use a multitude of commands like Fillet, Extend, Trim and one of the best, Grips. When using Grips, you will find that Walls often jump to find other Graphlines and this feature is set on the **AEC Object Settings** tab of the **Options** dialog box (see image, right).

Autosnap Radius - this setting controls the how Autosnap New Wall Baselines and Autosnap Grip Edited Wall Baselines work. The greater the Radius the sooner Walls will jump to other Graphlines but too large a value can be a problem and the default seems to be a pretty good one.

Crossing Walls and Cleanup issues



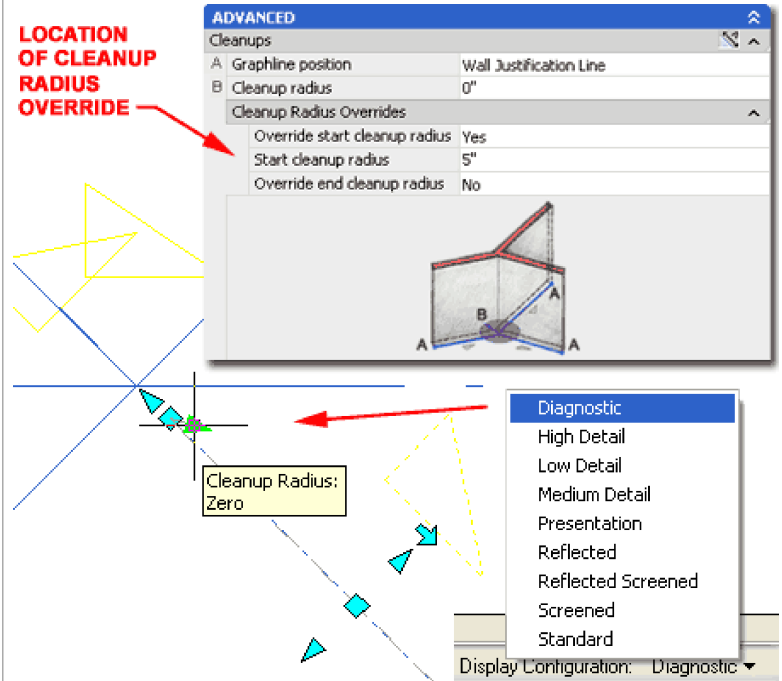
When Walls cross in ADT the Cleanup Radius Settings don't apply since there are no Wall Ends for the Cleanup to work from. Because of this factor, you may have to employ a little creative ingenuity into solving Cleanup problems where Walls cross. Illustrated to the left I show a classic example that I like to demonstrate in class. Draw three Walls that cross each other at or close to the same point in space. This action typically produces several Wall Errors. Though there are other tools, by using what we now know about Cleanup Radii, all you

have to do is break one of the three Walls at the intersection so you can employ a Cleanup Radius Override to solve the problem. It may not be a completely ideal solution but it works and you may have to use similar tricks on other problems you encounter.

Notice that I show that you can find the Cleanup Radius marker and adjust it in-place. To find this icon, you must first activate the Graphline Display, Select one Wall Object and hold the cursor still over one of the angular arrow-like marker icons until you see the little heads-up display illustrated to the left. By Grip Stretching this icon, you effectively apply a Cleanup Radius Override that can be adjusted or removed via the Wall Properties Palette.

Note:

To activate the Wall Graphline Display use the "**AecWallGraphDisplayToggle**" command or the **Diagnostic** Display Representation.



Problems with the way your Walls look?

- Links [Cleanup Issues](#) - see comments above.
- Links [Layer/Color/Linetype](#) - Tab and see if you are getting the results that you expect.
- [Hatching](#) - Tab and see if a hatch pattern is set and if the scale is appropriate for your viewing scale. See also the [MaxHatch setting](#).
- [Cut Plane](#) - Tab and look at the Height to see if it is too high or too low for the results you seek. You may need to request lines for components above and/or below the cut plane.
- [Other](#) - Tab and look there are any unusual checked or unchecked boxes - compare with a default wall or see image above.

When I have ruled out the simple candidates for problems, I look deeper by checking the **Wall Properties**. With the Properties Palette you can quickly go down the list of settings to look for unusual things like a "No" for **Cleanup automatically**, **Elevation Height** not set to zero, **Graphline position** not set to Wall Justification Line, **Cleanup radius** set to something other than zero and/or with **Overrides**, unusual **Endcap Styles** or **Wall Modifiers** under the Worksheets section. Any or all of these can cause an assortment of interesting problems so check them carefully, especially if you didn't draw the Wall(s).

Isolating the source of any Wall problem can prove to be a very tricky and time consuming matter. In some cases, it is just as fast or even quicker to simply redraw the Wall or Walls that exhibit anomalies. If the problem is severe and the source must be isolated in order to remedy the problem, I find it best to use various rules of categorization and elimination.

One of the first steps I take to find the source of a Wall problem is to test the graphic control system first by not only changing to several different [Display Configurations](#), but by changing the [Views](#) to **Plan**, **Isometric** and **Elevation**. While testing these display system changes, I look for obvious user mistakes like inconsistent **Heights**, wrong **Z-axis positions** and other placement problems like [Justification](#), [Direction](#) and [Graphline positions](#).

Depending upon the nature of the problem, I might also look at common culprits like **Layers**, **Standard Properties** and poor choices in Wall Styles (like "Standard").

The next place I check is the [Wall Style Properties dialog box](#). On this dialog, I review each tab and look for strange settings. Even if you don't know what all of the setting do you can compare them with another Wall Style that works correctly. On the [Display Properties tab](#) you can spend an entire day looking for problems because of all the **Display Representations** but one way to narrow things down in this area is to make sure to have the Display Configuration set that has the problem; then, when you visit this tab on the Wall Style Properties dialog, you will see which Display Representation is currently being used (thus narrowing down the field of candidates). In this area, look for Style Overrides. If you suspect that there is a Display Properties problem but you don't see an Override, don't rule that option out. Check the [Object Display Properties](#) and look for an **Override** on the current Object; this is an Object Display Override as opposed to an Object Style Override - easy to do and hard to find.

10 Walls - Customizing and Tricks

10-3 WALLS

AutoCAD commands that work on Walls

Links [General Working Tools](#) - for Fillet and Chamfer on Walls

At first you may think of Wall Objects as unique objects that need to dealt with quite differently than normal AutoCAD objects, but many of AutoCAD's commands do work on Walls. With Wall Objects, you need to consider their three dimensional characteristics and their pre-programmed behavioral reactions (reactors). With the commands **Extend** and **Trim**, for example, the Walls are Extending and Trimming to the Graphlines of other Walls and not necessarily the outer edges. In fact, none of the basic AutoCAD objects Extend or Trim to Wall components but only to the Graphline (a very frustrating factor, I must say).

Since Walls are 3-D objects, it is best to work with them in Plan View with their 2-D Display Representation ("Plan") to avoid the notorious 3-D Osnap that many users complained about in the early days of 3-D Modeling in AutoCAD. If you do need to work on Walls in an Isometric or other Model Display Representation, avoid Osnapping unless you have specific and exact points to Osnap to. It is always best to match the current Display Configuration to the current View; i.e., use a Model Display Representation when working in 3-D (when they are mismatched you will find it difficult to select objects and to Osnap to points that you think are really there).

Move, **Copy**, **Rotate**, **Stretch**, **Mirror**, **Array** and **Offset** work just as you would expect based on use with regular Lines, Plines, Circles and so forth. Commands like **Lengthen** and **Match Properties** either don't work at all because they don't recognize the object type or don't work quite the way you wished for. **Match Properties**, for example, does not match one Wall's Style or Object Properties with others; it only matches basic Properties such as Color, Linetype, Layer and so forth.

Note:

Use some basic Diesel code, you can actually create a Wall Match Prop's command that works much like you would prefer. See the command line sequence for "**-WallModify**" and notice the option to **Match**. See also ARCHIdigm's custom PowerSTRIP for ADT with this button already added.

Offset - you can use this command on Walls exactly as you would on lines. The difference has to do with the fact that you are Offsetting double or more lines and thus the distance should be thought of as a "center-to-center" distance to avoid any dimensional problems.

Trim - to Trim Walls you may often find that they won't behave as regular AutoCAD objects. Two tricks that I have found that help are to make sure you select an edge to Trim to (like another Wall) and that this other object actually cuts across the Path of the Wall you want to Trim.

Extend - see comments on Trim. This command has the same behavioral issues as Trim when it comes to Walls. I have found on both commands, that using Grips to pull another Wall object across the physical path, just for the editing session often works faster than trying to create other solutions. You can also simply draw a temporary line but with both commands, the main problems arise around this "object in the path" issue.

Fillet - works on Walls much like with regular Lines. You can set a Radius to create Curved Fillets between Wall that already intersect or Wall that don't. A favorite trick among many is to use Fillet with a Radius of zero to force Walls to Intersect and Cleanup properly. For best results, pay attention to the Graphline position.

Chamfer - see comments for Fillet.

Walls for Casework

Menu **Window> Content Browser**

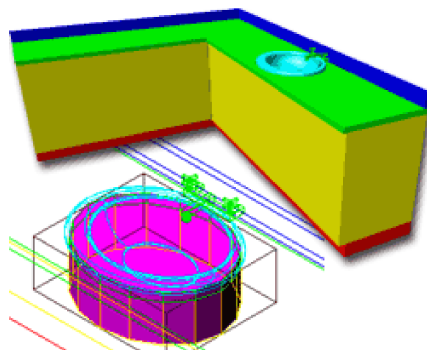


Keyboard **ContentBrowser [Ctrl + 4]**

- Links
- [Wall Style Properties](#) - for how to create a Wall Style
 - [Importing Wall Styles](#) - for more on accessing and loading Wall Styles
 - [Architectural Desktop Kits by ARCHIdigm](#) - see our **Kitchen Cabinets Kit** for better Casework and more

You may not have noticed, but in the Styles folder you should find one for Casework called "**Wall Styles - Casework (imperial).dwg**" or "**Wall Styles - Casework (Metric).dwg**". Loading any or all of these unique Wall Styles will allow you to draw such non-wall things as Countertops, Upper and Lower cabinetry, Islands, Bars and other similar casework.

A typical Kitchen or Bathroom Countertop is nothing more than a Wall Style with two or more components (one for the top and one for the back splash) that have dimensional settings on the [Components tab](#) of the Wall Style Properties dialogue box, that represent a countertop.



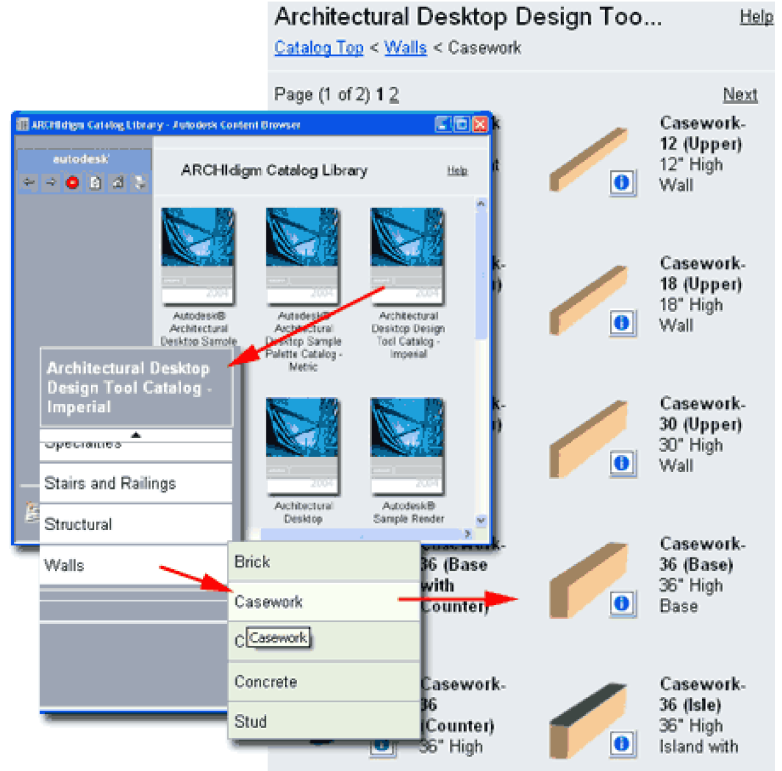
MASS ELEMENT USED AS INTERFERENCE TO SUBTRACT HOLE FOR SINK

By reverse engineering one of ADT's basic casework Wall Styles, you will soon be on your way to creating your own designs. One of the problems that is not solved for you in any of the ADT Wall Styles, however, is how to deal with Sinks and Lavatories. Illustrated below, left, I show one of my solutions.

I create a simple **Mass Element** in the shape of my Sink and use it as a

Wall Interference Condition and **Subtract** it. By Turning Off the **A-Mass Layer**, you don't have to see this object. When you want to Move the sink, just turn on the A-Mass Layer and move both the Mass Element and the Sink at the same time.

For more information and guidance on how to create your own **Kitchen Counter Wall Style**, read "[Liquid Cabinets in Architectural Desktop™](#)"



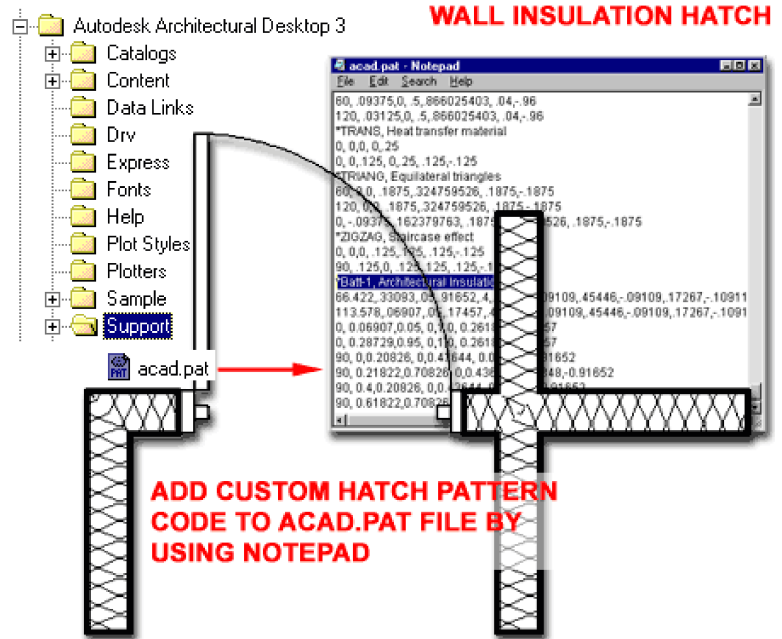
Wall Hatch - Insulation

Links [Wall Entity Properties - Hatching](#) - for how to access the Display Properties to add this pattern to a Wall Style.

Unfortunately, ADT does not come with a useful solution for Insulation in Wall objects. Though you can use AutoCAD's Insulation Linetype, it may prove to be more trouble than it's worth.

The best solution is to find or write a Batt Insulation Hatch pattern and then add it to the default ACAD.PAT file for use in Wall Objects. Below is the Hatch Pattern, written in hexadecimal code, for an insulation pattern that I picked up years ago from some unknown source. It isn't as round as many would prefer but it works fairly well and sure beats having no insulation at all.

To use, find the ACAD.PAT file in the Support Directory of your ADT program and use Notepad to Edit it. Copy the Code to the right and Paste it in at the end of the existing code, as illustrated to the right. Save the file as acad.pat.



```
*Batt-1, Architectural Insulation
66.422,.33093,.05,.91652,.4,.17267,-.09109,.45446,-.09109,.17267,-.10911
113.578,.06907,.05,.17457,.4,.17267,-.09109,.45446,-.09109,.17267,-.10911
0, 0.06907,0.05, 0,1.0, 0.26186,-0.17457
0, 0.28729,0.95, 0,1.0, 0.26186,-0.17457
90, 0,0.20826, 0,0.43644, 0.08348,-0.91652
90, 0.21822,0.70826, 0,0.43644, 0.08348,-0.91652
90, 0.4,0.20826, 0,0.43644, 0.08348,-0.91652
90, 0.61822,0.70826, 0,0.43644, 0.08348,-0.91652
```

To use the Custom Hatch pattern discussed above in ADT, Edit a Wall Style and add the pattern as you would add any other poche pattern.

Batt-1 should now be an option at the bottom of the **Predefined Hatch Pattern Type**. You will probably have to adjust the **Scale/Spacing** value to match the width of your Wall object and my personal preference is to use an **Orientation** of **Object** instead of Global.

