

Autodesk Architectural Desktop™ 2007

Feature Based Primer for Basic and Intermediate Classes Part 2 of 4 = Content

...or...

David's Brain Noise for ADT 2007

Anytime you enter the learning curve you are focusing on your weaknesses – this is just part of any learning curve – I realize this is frustrating for everybody, but it is the way it is.

In class you will get lost, get behind, get frustrated ... repeatedly

Take a deep breath

Stretch

And I will be covering something else in 10 minutes, so hang on....

Forward: Basic and Intermediate Class

Brain Noise Intro:

Welcome to David's brain.

I have been working with ADT in architectural design and production, in beta testing, as a courseware writer, and instructor since early in 1998. I often feel in classes that I have too much information to give you. Often times when I give a class, I spew some piece of information, and a student will ask... "Is this written down somewhere?". Well most of the time the answer is Yes, but too often the answer is yes, but you might spend an hour or so trying to track it down... As such, this document was created as much to give you space to take notes as it is to force me to organize the concepts I want to convey in the basic and intermediate class.

You will see Brain Dumps occasionally fall out of the ADT newsgroup. A Brain Dump is usually a group of thoughts prepared by one of the programmers explaining why they created something in one way or another. This document is almost but not quite entirely unlike a brain dump. I have been using the term Brain Noise for a long time. To me, this is my brain noise – very informal, definitely always a work in progress. This is not a complete documentation as much as the general ideas, concepts and oddities about the objects that I would like you to take away from the basic and intermediate classes. Concepts such as "What is stored in the properties Vs the style of an object". Oddities such as "Why did they issue ADT 2007 in April of 2006?"...

As is noted in the syllabus, I want you to take 3 main ideas away from this class, and everything in the class will elaborate in one way or another on the following concepts

Architectural Desktop objects are different from AutoCAD lines arcs and circles in three ways:

- **Objects have display representations** – or a set of instructions to the graphics card saying "show me this way"
- **Objects are style based.** Styles generally contain the variables that affect how the object is constructed in the real world. Styles can also contain overrides to the display representations.
- **Objects have relationships to other objects.** Generally these relationships are Anchors, but there are others: How walls clean up, how schedule data populates the table from the objects, on and on...

Two secondary ideas that I want to convey in the basic class are:

- Use the right mouse button
- Watch the command line

Have I said yet,

Use the right mouse button

or

Watch the command line

?

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Content

Content is an overused word in the ADT world. Content can mean anything from the styles and display configurations provided in the templates to the door tag that is provided is a separate folder for you to use. For our purposes here we will define content to mean “Everything you drag into the drawing or onto a tool pallet” from:

- A Tool Palette
- The Content Browser (catalogs)
- The Design Center
- The Style Manager

With this plethora of places to go to control/add/delete content on your hard drive, it is a bit overwhelming as you are starting out in ADT. Think of the content this way.

DesignCenter:

Design Center has been around for a long time. This used to be the place you went to add much of the content for ADT (lights, tables, chairs, plumbing fixtures) as well as many of the documentation commands (section mark, revision bubble etc) I still find in useful for the block based stuff – a bit easier to find things than in the Content Browser.

You can drag anything from the DesignCenter directly onto a palette as well to create a tool

Tools and palettes:

The tools on the tool palettes are just complicated shortcuts to styles or blocks stored in other drawings on the server or on your hard drive. Each Tool has its own tool properties. These control the behavior of the individual tool.

Even beginning users should be able to understand this system enough to create their own tools and palettes.

Content Browser:

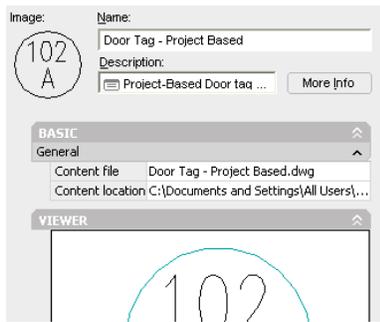
The content browser is where all the tools are located and organized in catalogs. Within a catalog there can be entire palettes that you can drag onto your local tool palettes, or individual tools you can drag and drop onto a workspace palette.

Style Manager:

The style manager also has been around for a long time and used to be where you imported new styles into the drawing to use. Now with palette tools, this can be done by the tool itself. However, there are still times when you might find the style manager useful such as creating new styles or definitions, purging styles in the drawing, or directly copying styles from one drawing to another. Again like the DesignCenter you can drag styles onto a palette to automatically create a tool based on that style.

With ADT 2004/5, you now have the palettes and catalogs as sources for adding content to your drawing as well as the DesignCenter. But because the DesignCenter was first, it will be easier to understand the palette and Catalog behavior if you understand the DesignCenter and how it causes Content to behave.

Content and 2004/5/6



While most of this chapter was written for R3, The behaviors noted in this chapter are also true for the tools on the palette. The dictionary controls much of the behavior of things like door tags in versions 2004 and 05. If you look at the properties of a door tag tool, there is not much on the page. All of the functionality including the command launched, the layering and scaling is held in the dictionary in that drawing that is pointed to by the tool, so read on....

Note that in ADT 2006, they changed this and there is now much more information on a tool properties than in prior releases, but the basic Design Center and its functions still exists and is outlined here.

Content and the DesignCenter

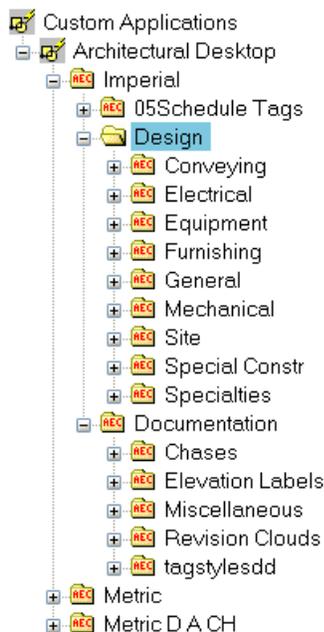
ADT3 opened up the advantages of the DesignCenter. The ACAD DesignCenter has three standard views: Folders, Open Drawings, History and DC Online. ADT adds an extra view called AEC Content. This is an enhanced view for the DesignCenter allows access to the pre-made *Content* provided with ADT, and has some very particular features associated with it.



into the current drawing without opening the originating drawing. All fine and well, but here is the kicker...

Drawing as Container

A2K introduced the idea of a .DWG as container. With the DesignCenter you have access to the various elements within the drawing to use in other drawings. Items such as blocks, layers, dimstyles, and text styles may all be dragged from the DesignCenter



Content and Enhanced Content Drawings. The AECDC Dictionary

ADT3: ADT provides a plethora of drawings for you to use. The old Softdesk 8 Symbol Manger got migrated into the DesignCenter and all of the old drawings were put into folders that get installed by default in the folder

ADT4 C:\Documents and settings \<allUsers>/Application Data\Autodesk\Autodesk Architectural Desktop 2004\R16\enu\AEC Content.

(ADT3 Path = C:\Program Files\Autodesk Architectural Desktop 3\Content\Imperial folder).

There are two folders here Design and, Documentation. The Design folder contains primarily Multi-View Blocks. The Documentation folder contains annotation tools such as revisions clouds, title marks and the like. These two folders contain Enhanced content drawings. While placing an MvBlock is fairly straight forward, some of the documentation commands get complex quickly. Dragging one of these pieces of Content into the drawing launches a series of commands that require attention to the command line. The mechanism that launches the commands is a dictionary that is stored in the content drawing.

Enhanced Content Drawings are drawings to which the AecDc *dictionary* has been added. The AecDcDictionary contains additional information used by the enhanced DesignCenter when these enhanced content drawings are added to the drawing. Information regarding the scale, elevation, layer key, description, and custom commands can be stored in the dictionary in the content drawing, and then read by ADT as the content is placed in the current drawing. You may add this element to your own drawings by using the Create Content Wizard.

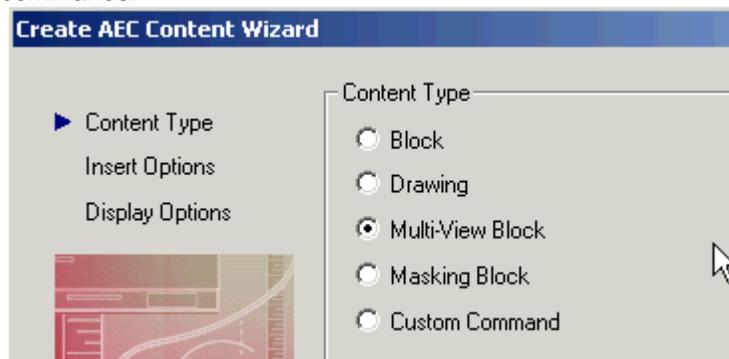
This dictionary element has already been added to the drawings in the design and documentation subdirectories of the content folder. The drawings in the design folder contain (with some exceptions) single multi-view blocks ready to insert into your drawing. The Documentation folder contains procedural content. These drawings contain subroutines stored in the dictionary and executed when the enhanced DesignCenter is used to insert the content drawings into your current drawing.

Note it is the enhanced DesignCenter interface which allows the use of these subroutines. If these drawings are inserted using the other access modes of the DesignCenter, the imbedded subroutines will not be read or executed.

Enhanced content drawings are intended to be discrete elements. Acting as the interface to the Content drawings, Enhanced DesignCenter only displays drawings with an assigned AecDCDictionary. While the rest of the DesignCenter is focused on displaying drawings as 'containers' with access to the elements within, the Enhanced DesignCenter shows access only down to the drawing level. Additionally, **Only drawings with the dictionary in them will show up in the custom view of the design center.** You cannot just place your drawings in folders in below the content hierarchy and expect them to show up. They will not show up until you have gone through the create AEC Content Wizard that places the dictionary in the drawing.

Types of Content

Content drawings located in the Content\Imperial\design and the Content\Imperial\documentation subdirectories can be divided into five classes: Blocks, MvBlocks, Dwgs, Masking blocks, and Custom commands.



Blocks:

Standard ACAD blocks. If you have a block library, it can be stored in one of the content folders for access.

MvBlocks or Multi-View Blocks:

MvBlocks are AEC objects consisting of several AutoCAD blocks. The direction you view the MvBlock determines which ACAD block gets displayed.

Masking blocks:

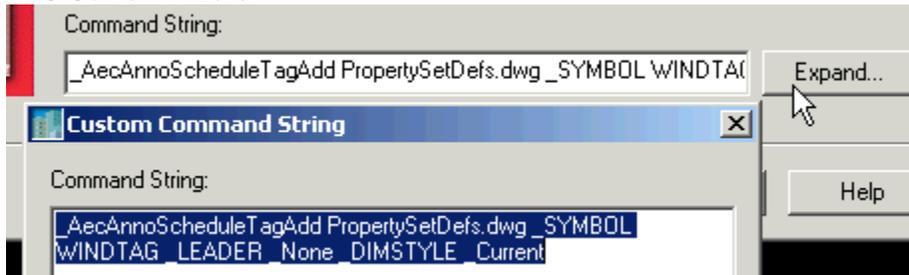
A masking block as the name implies will mask out any AEC object that it gets attached to. Some of the light fixture content expects it will be inserted onto a ceiling grid, and as such will mask out the ceiling grid it is attached to. These masking blocks have blocks nested in them. Sometimes there is an MvBlock nested in an ACAD block. The nested blocks are "Additional Graphics".

Dwgs:

Some of the content such as the plumbing>layouts are drawings. Dragging a Layout into the current drawing will insert the content as a block. Exploding this block will give you control over the counters (which are a wall type) and the MvBlocks that make up the fixtures.

Custom Commands:

Most of the annotation content (title marks, elevation marks etc) contains a subroutine buried in the content. The subroutine is a script file or lisp routine that you can access from the first page of the create AEC Content Wizard.



Below are some of the command you can use in the custom command area of the create content wizard.

When using these commands, go through the routine first to get an idea of what is needed in the subcommands. An example is `_AecAnnoScheduleTagAdd`

When you launch this at the command line, you get

```
Command: _AecAnnoScheduleTagAdd
Property set definitions drawing <C:\...\Content\Imperial\Schedules\PropertySetDefs.dwg>:
Select object to tag [Symbol/Leader/Dimstyle]: s
Enter tag symbol name <Aec3_Door_Tag>:
Select object to tag [Symbol/Leader/Dimstyle]: l
Enter leader type [None/Straight/Spline] <None>:
Select object to tag [Symbol/Leader/Dimstyle]: d
Enter leader dimstyle CURRENT <Aec_Arch_I$7>:
Select object to tag [Symbol/Leader/Dimstyle]:
Specify location of tag <Centered>:
Select object to tag [Symbol/Leader/Dimstyle]:
```

So a proper script to place in the custom command area of the content would be:

```
_AecAnnoScheduleTagAdd PropertySetDefs.dwg _SYMBOL WINDTAG _LEADER _None _DIMSTYLE
_Current
```

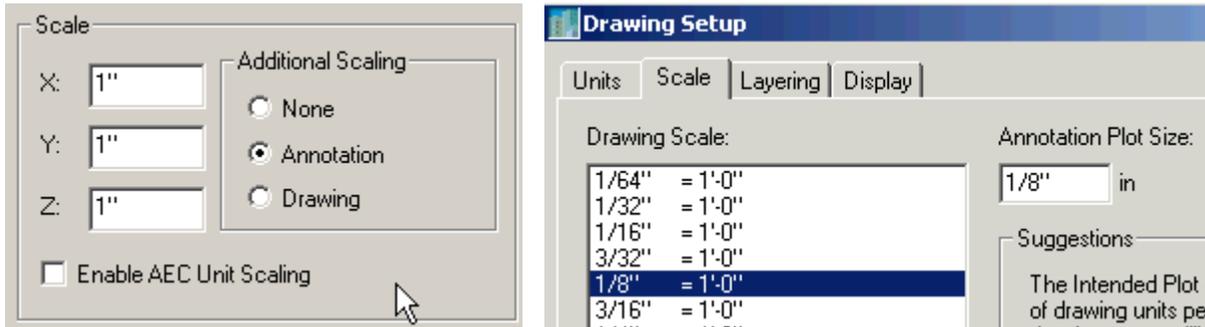
Here is a list of some of the AEC commands you can use:

```
-AecCreateContent, -CreateContent
AecAnnoBarScaleAdd, AnnoBarScaleAdd
AecAnnoBreakMarkAdd, AnnoBreakMarkAdd
AecAnnoDetailBoundaryAdd, AnnoDetailBoundaryAdd
AecAnnoDetailMarkAdd, AnnoDetailMarkAdd
AecAnnoElevationLabelAdd, AnnoElevationLabelAdd
AecAnnoElevationMarkAdd, AnnoElevationMarkAdd
AecAnnoLeaderAdd, AnnoLeaderAdd
AecAnnoMatchLineAdd, AnnoMatchLineAdd
AecAnnoMvBlockInterferenceAdd, AnnoMvBlockInterferenceAdd
AecAnnoRatingLineAdd, AnnoRatingLineAdd
AecAnnoRevisionCloudAdd, AnnoRevisionCloudAdd
AecAnnoScheduleTagAdd, AnnoScheduleTagAdd
AecAnnoSectionMarkAdd, AnnoSectionMarkAdd
AecAnnoSymbolAdd, AnnoSymbolAdd
AecAnnoTitleMarkAdd, AnnoTitleMarkAdd
AecCreateContent, CreateContent
AecSpaceAutoGenerate, SpaceAutoGenerate
```

Tip: If you start with a piece of content that does more or less what you want it to do, open the original content, saveas, then go through the create content wizard, the original dictionary will fill out the create content wizard like a template saving you some of the work.

Content Scaling

In the content wizard you are asked in you want additional scaling for your content. You can choose from None, Annotation or Drawing. You are also given the opportunity to apply an absolute override scale to the content.



None: Just leaves the content as is – MvBlocks and such

Drawing and Annotation: These options refer to the drawing setup (Desktop>Drawing setup >Scale). They work in tandem like this: If you create your content annotation text 1" tall

Set the drawing scale to what you will print the sheet at, for example, 1/4". The drawing scale will always be applied to content created with the annotation scaling flag set. At this point the text is now multiplied by what ever factor this is (48) to be plotted at 1/4" so your text is now 48 inches tall. If you just use Drawing scaling, and not Annotation that is the end of the story. If you select Annotation scaling, the content (text is multiplied by the annotation scale - let's use 3/32" in this example. So, the 48" tall text is now multiplied by 3/32. $3/32 \times 48 = 4.5$ the proper size for text to be plotted at 1/4"=1'-0" to appear 3/32" high.

Tags: Location of the Property Definition sets:

Tags are a special type of content stored in the Schedules folder. If you create custom tag, you need to make sure the PropertySetDefinitions exist in a location the program can find them.

When you tag an object, the tag command looks at the block you are using to tag, and reads the PropSetDef name, as well as the name of the property. It looks first in the current drawing Prop def sets to see if a match can be found here, if not, it looks in C:\Documents and Settings\All Users\Application Data\Autodesk\Autodesk Architectural Desktop 2004\R16.0\enu\AEC

Content\Imperial\Documentation\Schedule Tags\PropertySetDefs.dwg and will automatically pull it in from there. If it does not exist in either of these two locations, it will fail to tag properly.

So if you need custom properties make sure they exist in your drawing (from your office template) or in the file noted above. Keeping them in the file noted above will be less tedious if they need to change.

Palettes and Tools

Palettes

Each palette has a properties.

Palettes may be “shared from a catalog” – this is the same as being locked.

Add palettes by eye dropping a palette from a catalog or RC on the title edge of the tool palettes and select New Palette.

ADT06 – each project has project specific palettes. Anytime you have a project open, any palettes you create are “owned” by the project.

If you switch projects, your available palettes will change also

Tools

General

Each tool may have a slightly different right click menu.

Each tool has a property that is separate from the properties page (RC on tool > Properties)

Tool properties for AEC objects can include a layer key and /or a layer key override (you can create a wall tool that adds –loww as an override so all walls created by that tool come in on A-Wall-Loww)

You will sometimes see little snowflakes on the tool properties or in the properties page while adding an object. These are the old Defaults tab from ADT3. These settings are only valid as you are adding an object and will not appear on the object’s properties page once created.

Add tools to palette by:

Dragging from style manager

Dragging from design center

Eye dropping from a catalog.

Dragging from current drawing. Be careful with this on AEC objects – it will try to record the drawing from which the style came (properties page). If that drawing gets moved the style will revert to standard. The tool does not store the style definition.

For more information see “Catalogs for CAD Connoisseurs”

- in the advanced docs folder on the CD

Differences in tools and Palettes between AutoCAD Vs ADT

Also From the help file:

AutoCAD Tools

Differences with the AutoCAD tools:

- AutoCAD tools do not use the Properties palette during adding them to the drawing.
- AutoCAD tools do not have the same tool properties as Architectural Desktop tools; for example, the layer key.
- AutoCAD Hatch tools and Block tools cannot have a user-defined tool image.
- The tool properties of AutoCAD tools cannot be applied to an existing AutoCAD object in the drawing.

AutoCAD Tool Palettes

Differences with the AutoCAD tool palettes:

- When working in plain AutoCAD, you cannot create and link AutoCAD tool palettes from the Content Browser.
- When working in plain AutoCAD, AutoCAD tool palettes do not support palette properties.

Other Differences

Other differences with AutoCAD:

Content

- *Properties Palette*: When working in plain AutoCAD, you cannot set the AutoCAD Properties palette to be transparent.
- *Revision clouds*: The Revision cloud feature in AutoCAD is not identical to the Revision cloud feature in Architectural Desktop. Revision clouds in Architectural Desktop have additional scaling and layer key functionality, as well as the option of adding a Delta symbol.
- *Units*: Running the *UNITS* command from the command line opens the Architectural Desktop Drawing Setup dialog box. If you want to open the AutoCAD Units dialog box, enter *ddunits* on the command line.

WARNING: To change the drawing setup of Architectural Desktop, you must use the Drawing Setup command of Architectural Desktop. If you change the units in the AutoCAD Units dialog box, Architectural Desktop drawing units are not affected.

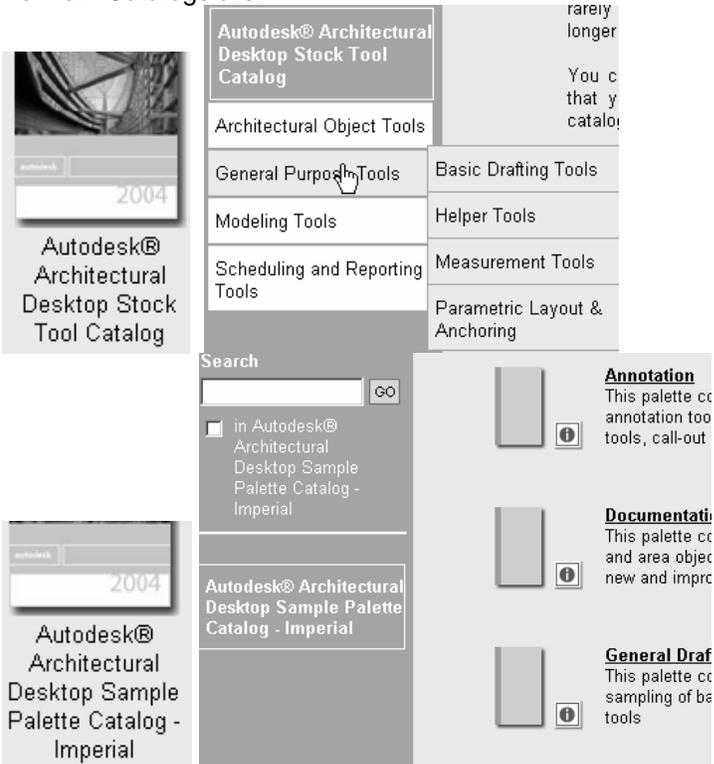
To this I would add that ACAD users can export tool palettes while ADT users must create a catalog and share the catalog.

Content Browser: Catalogs

These are the catalogs that hold the tools and palettes that are installed with the software
It is a good idea to create a new scratch palette that you can just drop tools onto from the Content Browser.

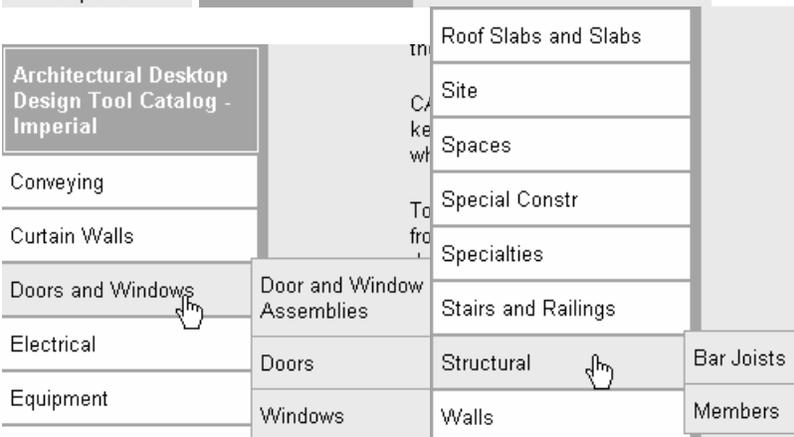


The Main Catalogs are:



The Stock Tool Catalog is general tools more than content – Things from R3 like renumber schedule data (tags) as well as the anchor tools, and the generic tools from the design palette.

The Sample Palette Catalog is contains the installed palettes – so you can reinstall them if you delete them from the local working palette collection



The Design Tool Catalog has most DesignCenter content put into tool form.

This location also has many (most?) of the individual styles that are available in the drawings in the Styles folder

These are available as individual tools for you to drag to your working palettes

Content

Architectural Desktop Documentation Tool Catalog - Imperial	
Area and Area Groups	Miscellaneous
Break Marks	Revision Clouds
Chases	Schedule Tables
Detail Marks	Schedule Tags
Elevation Labels	Section Marks
Elevation Marks	Title Marks
	Area Tags
	Door & Window Tag
	Object Tags
	Room & Finish Tags
	Wall Tags

The Documentation tools are most of the objects that are in the DesignCenter Documentation folder put into tool format.

Style Manager

Interface

General Rules

BE AWARE OF WHERE YOUR CURSOR IS POINTING.

What you see on the right is determined by where the cursor is on the left.

Context sensitive right click rules here. What happens with a right click is determined by where the cursor focus is.

Use the style manager to:

Create new styles (File>new or Right click new)

Edit existing styles

Transfer/copy styles from one drawing to another

Purge styles

Drag and drop styles between drawings

From right window to left window

From one drawing to another in the left window

Right click on individual styles to access style manager pop-up window (edit, copy, paste, New etc.)

Controls

The toggle view lists all the open drawings style BY STYLE instead of by drawing which is very useful if you have several drawings open.

The Funnel icon will filter drawings to just the current selected style.

You can drag items directly from the style manager to the open tool palette if the palette is not shared from a catalog and therefore locked.

Styles

Everything is a style – well not exactly, but you will see things like Profile Definitions, Schedule Data Formats and other things that are not necessarily a style, but you access their “style” definitions through the style manager

Etcetera

Picking the X to close instead of the [OK] button is doing the same as a Cancel. – you will loose any changes you made while in the session. While this is useful to do sometimes, mostly it is counter productive...

Remember to look in the installed style folder for more drawings with more styles... many of these are also linked to from the catalogs available in content browser.

Environment Misc.

Toolbars docked above the command line are not retained between sessions

Solution: This problem is caused by the order in which toolbars are docked above the command line. Toolbars docked above the command line must be configured in the same order that the menus are loaded. The AutoCAD menu loads first followed by the AutoCAD Architectural Desktop menu. Therefore, AutoCAD toolbars must be placed before, which is to the left of Architectural Desktop toolbars when docked above the command line. If you have "lost" a toolbar because of its docking order, you can restore it by following these steps:

- 1) Enter -TOOLBAR on the command line.
- 2) Enter the name of the lost toolbar on the command line, then press ENTER.
- 3) Enter T and press ENTER twice.
- 4) The toolbar will now be docked at the top of your screen. You can move the toolbar to its final destination as necessary at this point. Be sure to place it in the appropriate order if you are docking it above the command line.

Anchors

An anchor is a sticky relationship between two objects. An unanchored object may move freely anywhere in the drawing. An anchored object may only move with relationship to the object it is anchored to. There are two main types of anchors native anchors and user anchors (my terminology).

Native Anchors

Native anchors occur throughout the Autodesk Architectural Desktop package. These types of anchors are usually taken for granted as they occur without user intervention. The program presents certain objects by default anchored to other objects. Doors and windows are anchored to walls. Curtain wall elements or Window assemblies may be anchored to Curtain wall systems. Structural Columns are anchored to Column Grids. Each of these Native anchors may behave slightly differently. For example, a door knows that it belongs in a wall, (a door is anchored to a wall), but it does not care what wall it is anchored to. You may move a door to a completely unrelated wall somewhere else in the drawing, but you may not move a door outside of a wall unless you break the anchor tying the door to a wall. (Exception being in ADT3/3.3 you cannot move a door to a wall in a different cleanup group). Column's anchor to a Column grid behaves a bit differently. A column by default is anchored to the grids 'node' or intersection of the grid lines. It does not care what intersection, but it does care which grid. You may move a column to any intersection on the grid, but you may not move a column from one grid to a second grid without explicitly setting the anchor to point to the second grid.

User anchors

User anchors are an attachment between two objects created by the user. ADT provides two Pulldowns for user control of anchors. Layout Tools and Anchors work together to provide the tools and the relationships to attach objects to each other. Layout tools provide the structure (a linear string of nodes [Curve], a grid or a 3D grid [Volume]), and the Anchor pulldown provides the relationship of objects to this structure Node, Cell, and Volume anchors. Curve and leader are special types of anchors.

The layout curve:

Don't let the programmer's terminology – curve – fool you (ACAD programmers think of any linear element as a curve) just look at the three options, Curve Grid and Volume. Is it a line, a grid or is it a shoebox? Most linear elements can be used to create a layout curve (except splines). This includes linear ADT elements such as walls and railings as well.

Once a linear element has been converted to a layout curve, the original element remains in the drawing, and a number of Nodes are placed along the path described by the linear element. Anchor points on a Layout Curves are limited to Nodes (Node in this instance refers to a point along a line). These nodes

spacing is specified at the time the layout curve is created (you may change this later using the layout curve properties page). You may place the nodes along the 'Layout Curve' in one of three ways: Automatic, Repeat – you supply a value for the distance between nodes, and the nodes are distributed evenly along the line.

Automatic, Space evenly – you tell how many nodes you want, and no matter what happens to the original line, the nodes adjust themselves to maintain that number along the linear path.

Manually – enter each value from the start point for each node you want to place).

Layout Grid:

A layout grid like the layout curve also uses a node as one point to anchor object to. For a layout grid object, the node refers to the any intersection of the grid lines. In addition to node anchor point, the Layout Grid has Cell anchor points. The Cell anchor points exist at the middle of each of the areas created by the grid lines. This is easier to see if you change the entity display of a layout grid and turn on the cell and node of the layout grid. These two sub-objects are turned off by default. Layout grids spacing is controlled by the same method as layout curves – Automatic, Repeat and Space evenly and manual.

Scaling. Objects anchored to a layout grid CELL (read attached using Anchor>Cell Anchor command) will scale themselves to fill the whole cell. If you do not want the objects resized to fill the complete cell, you must select the object, RC properties, Anchor tab of object, deselect 'apply scaling' (note: there is not way I see to NOT scale an object if you attach it to a cell. The problem is that once the object is attached to the cell it is resized automatically. If you did not record the original dimensions, even though you can resize it after you uncheck 'Apply Resize', you do not know what the original scale or size was! As applies to multiview blocks, A multiview block will get scaled the number of inches of the grid. So a 10' grid will scale a mview block 10X the original size.)

Column Grids and Ceiling Grids are two specialized versions of the layout grid. The Column grid has unique properties not available to the other grids (dimension and label).

Layout Volume:

A Layout Volume is a 3 dimensional Layout Grid. In addition to the Node and Cell anchor points, a layout Volume has a Volume anchor for anchoring objects in a 3D space.

Special anchors, Curve and Leader:

Curve Anchor - gives you the ability to anchor an object to a linear element directly, do not go through the steps of creating a 'Layout Curve'. The anchored object can move anywhere along the linear element, and is not restricted to a Node.

Leader Anchor - anchors an object to a Node, and places a leader between the object and the node it is anchored to.