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1 Utilities - Access

.1-26 UTILITIES

Utilities Toolbar
How do I get this toolbar?
You can also acquire access to some of these commands from various different menus such as the Alternate **Design** and Alternate **Document** pull-down menus. See the individual commands and tools below for how to access them through other means.


Utilities Pull-down menu

In ADT 4, the **Utilities** portion of the Desktop has been blasted to pieces with many options and tools virtually lost to any but the most savvy of users who remember how to type them in. Some of the tools listed below may already be archaic given the evolution of ADT but it never hurts to know your options and the odd **Quick Slice** tool might actual come in handy on some project requirement that you come up against. Other tools like **AecObjExplode** and **CreateHLR** are incredibly useful and should definitely be among those that you are familiar with.

Notes are the same notes you will find on every object's Properties dialog box.

Object Viewer is a handy tool that is used more in Mass Element work, but can be very useful with any ADT object. It is particularly useful when you just want to look at a single object and not have to wait for the 3D Orbit tool to generate your entire drawing. Another useful part of the Object Viewer is that it usually centers an object and thus allows you to work with the 3D Orbit tool, built in, more easily than when it hangs up on big drawings and doesn't allow you to easily orbit around the center of your work.



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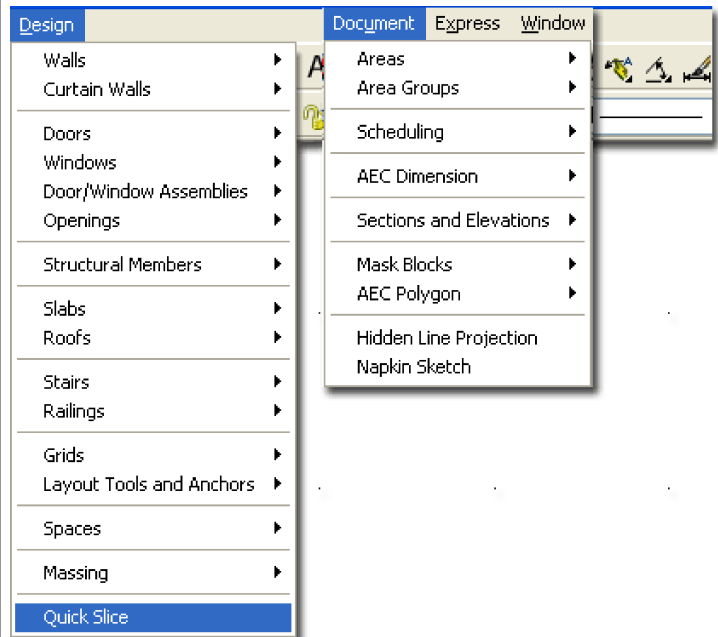
2 Notes

2-26 UTILITIES

Adding Notes

Menu	**N.A.**

Keyboard	**Notes**
Mouse	Double Pick on Object, select Extended Data on Properties Palette and Pick on Notes
Links	

Notes offer the option to include written notes about a single object on a drawing or an entire Object Style. The primary problem with the use of Notes is that there is no obvious graphical indication on the screen that one or more objects have Notes so find them is a bit of work unless you know that they exist.
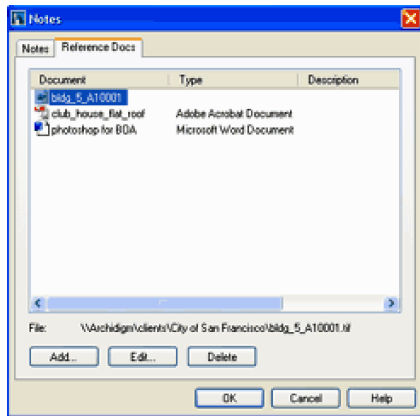
Illustrated to the right I show to primary ways that you can access the Notes section of an Object Style or single Object. For Object Styles, simply use the **Notes... button** on the **Object Style Properties dialog box** (see upper right image). For individual Objects, you can use the **Properties Palette** to access the **Extended Data tab** where you will find the **Notes icon**. You can also **type** "**Notes**" and then **Select** an **Object** to add Notes to.

The **Reference Docs** tab of the **Notes** dialog, illustrated left, box is far more interesting and useful than the Notes part. By using the **Add...** button you can access your hard drive or Server and link an unlimited set of file types to the current object. As illustrated, I show that I have Added a drawing, video, photo and document.

The problem with both options is that we tend to forget what we don't see and I think in order for either of these options to be useful, a visual queue is needed so that we remember that information has been added. It is possible to create such a visual queue by using all sorts of tricks but we would want one that does not print (or has that option) and I would prefer one that isn't a vector object so I don't end up snapping on it by accident.
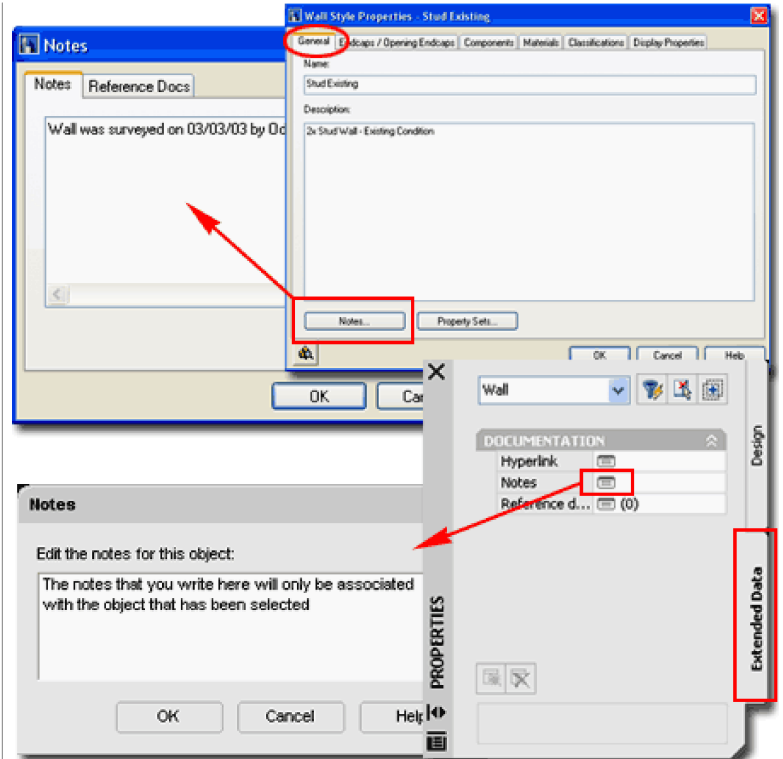
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3 Object Viewer

Object Viewer - Window

Menu	**N.A.**

Keyboard	**ObjectViewer**

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Mouse	Select Object(s), right-click, select Object Viewer...
Links	

The **Object Viewer** is one of my favorite tools in ADT and when I find myself in regular AutoCAD, I really miss this tool. You may have discovered that the 3D Orbit tool often behaves poorly with respect to the center of the objects on your screen. For cases where this happens, just Select your objects and use this tool instead because it always has the correct center. If you want to use it as a replacement for the regular 3D Orbit tools, use the **Ctrl+A** keyboard stroke before activating the Object Viewer so you will see All Objects in it. Notice that is has several ADT only tools such as, **Display Configurations** , a **Set View** option and the ability to set the **Lens Length** in millimeters (like a real camera).

Illustrated to the right, I show how you can use the Object Viewer to select a set of objects in a complex plan and view it in an isolated mode.

The Object Viewer has all of the same options as those found when using the **3D Orbit** tool; just pick the 3D Orbit button and right-click to see the full list of options. You can also use the tools from the toolbar to achieve similar results as those found off of the 3D Orbit pop-up menu.

If you find a view that you want to present in the working environment, you can use the **Set View** button to transfer the Object Viewer's view to ADT's working view or viewport.
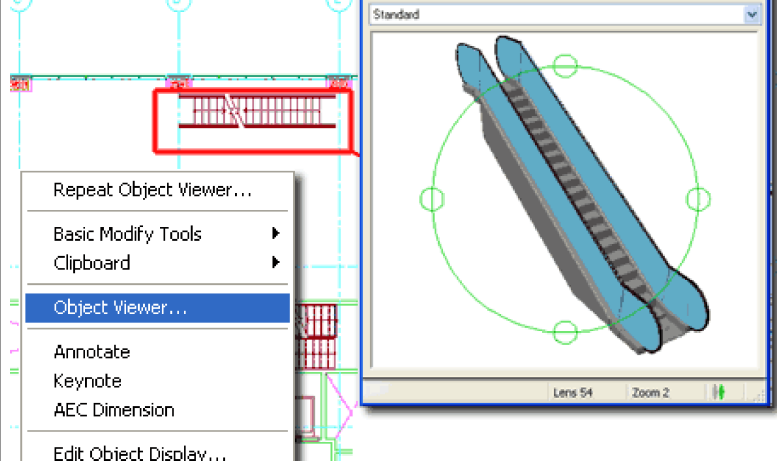
4 Quick Slice

Quick Slice

Alt.Menu	**Design > Quick Slice**

Utilities

| Keyboard	**QuickSlice**
Links	CreateHlr - is likely a better tool to consider for this type of work.

Quick Slice is the ultimate 2D projection tool in ADT but that does not mean it is the best solution for creating sections. This is the type of tool you use when you have a very specific need or are completely frustrated with all of the other options (thus needing the ultimate end).

Quick Slice is similar to the Slice tool in AutoCAD for Solid Models and creates a 2D Polyline right through the Selected Objects. It uses the **ZX-plane** of the UCS icon as a basis for what plane to slice in so you can actually use Quick Slice to create 2D polyline representations of Floor Plans. To cut a 2D Floor Plan, simply rotate the UCS icon on the X-axis by 90 degrees. It will slice through most ADT Objects, including Mass Elements and it will also slice through AutoCAD Solid Models.

Though Quick Slice will cut an Xref'd model, it does seem to perform better if the objects are in their original state rather than within an Xref. Another thing to keep in mind is that Doors are, by default, open on Models and thus will not show up in a Quick Slice unless closed.
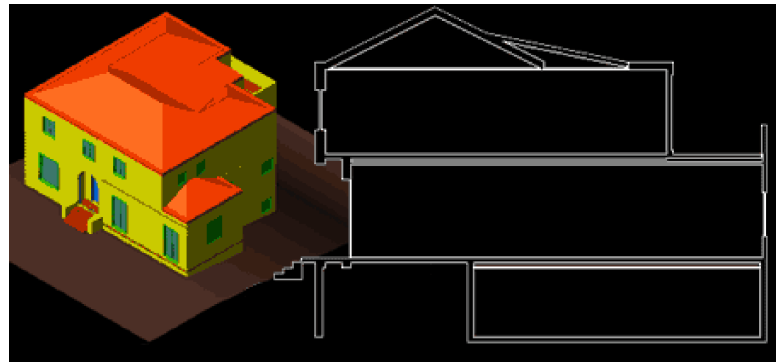
Command line steps:

Command: **quickslice**
Select entities to slice: < **select all of the model** >
Pick first point: < **select a point on the model** >
Specify opposite corner: < **select a point in the direction of the desired sectional cut** >
[19] polyline(s) created.
Command:

5 Reference AEC Objects

Reference AEC Objects...

Menu **N.A.**

Keyboard **EntRef**

Links

To use, Type **EntRef, Select** any single object (including blocks, xref's, elevations, sections or even a line) and then specify a base point, an insertion point and a rotation angle for the new referenced object.

The concept of Referencing is one, I have to say, that I have been waiting for in AutoCAD for as long as I have worked with this program. It allows you to choose an object that controls all of the copies of itself. In a way, it's like an internal Xref.

Command: _AecEntRef
Entity reference [ADd/Properties/Insertion point/ATtach]:   **AD**
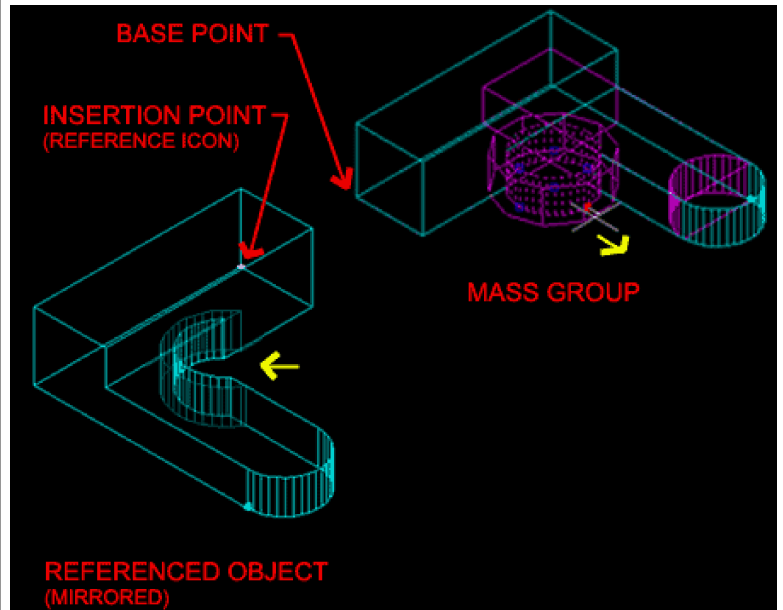Select an entity to reference: < **pick source or parent object** >
Insertion point: < **Osnap to a base point on source object** >
Location: < **specify new location for Reference Object relative to base point** >
Rotation angle <0.00>:
Command:

The Insertion point on the Referenced Object provides the only Grip editing point; thus behaving much like a common AutoCAD Block. Changes to the parent object reflect in the Reference once they have been completed.

The **ATtach** option under the AecEntRef command is really a replace tool. It defers to the base point of the original Reference Creation, the original Insertion point and then replaces what was referenced with anything selected. The original base and insertion points remain the same, so the distance between the new selected object and the original base point are reflected in the new ATtached object.

Changing the **Insertion point**, relates directly to the original Base point so the shift this causes to a reference may seem inexplicable; i.e, a change in location of the insertion point is accumulative with respect to its current location.

6 Hidden Line Projection

Hidden Line Projection

Alt.Menu **Document > Hidden Line Projection**

Keyboard **CreateHLR**

Links

Hidden Line Projection is the ultimate 2D solution for generating Elevations in Architectural Desktop. Like the Quick Slice tool, this tool will project the exterior hidden view on to a flat plane. Any View can be projected so if you are in need of 2D Isometric Views of your building design, this is an awesome solution for that type of work. To create a typical Elevation, simply set the **View** to **Front** or other Elevation View, type **CreateHLR** on the command line, **Select** any or all of your **Model**, **pick** an **Insertion** point for the new projection and answer **Yes** to the **Insert in Plan View** option. The resultant projection will be a Block but you can Explode it for editing. There is no link to the source data like the Section and Elevation tools so there is no need to keep the Block in tact unless you want it that way.

Command: _AecCreateHLR
Select objects: < **pick objects individually, by window or crossing** >
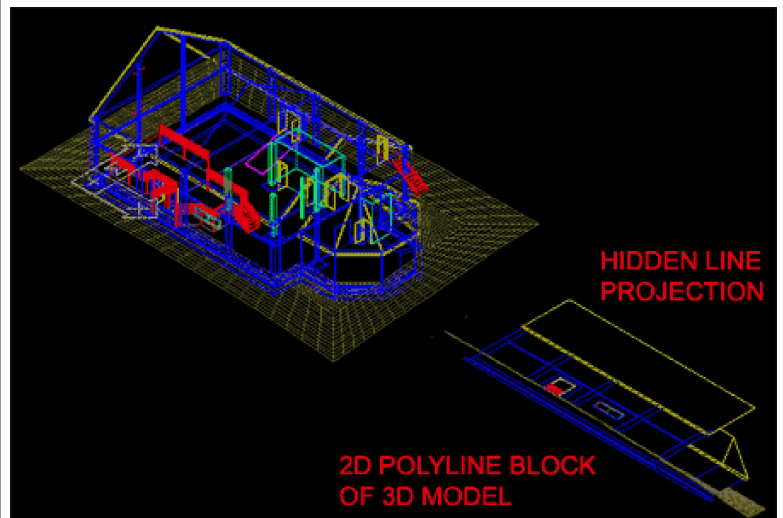
The resultant Projection is a regular **AutoCAD block** and can be exploded for editing. The block is made of polylines and usually the layers and colors come through okay. Once Exploded, you may find numerous redundant lines that require cleanup. Use the **Overkill** command from the Express Tools to remove extra lines. Notice, in the illustration above, that the 3D grade mesh was also transcribed by this routine; indicating its amazing ability to project

Select objects:
Block insertion point:< **pick a point where you want the elevation** >
Insert in plan view [Yes/No] <Y>: **Y**
Command:

7 Convert to 3D Solids

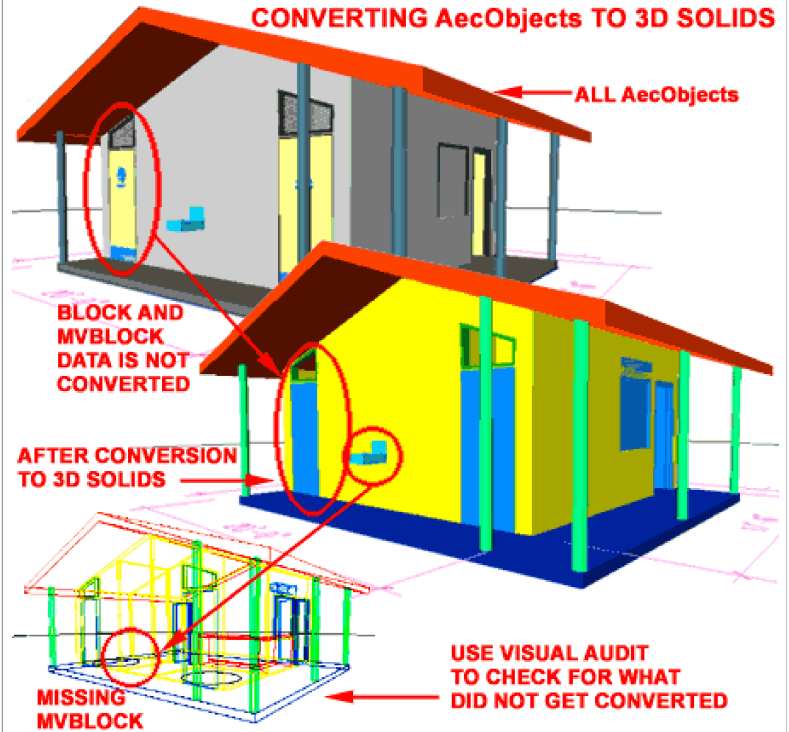**Convert to 3D Solids**

Menu	**N.A.**
Keyboard	**ConvertTo3DSolids**
Links	Solid Modeling and Architectural Desktop - for more information on Solids and the tools you can use to work with them.

Converting AecObjects to 3D Solids provides the means for generating solid geometry that is more universal in structure than the special AecObjects that are based upon Facet Modeling. Solid models are prevalent in the world of mechanical design and can be used for such things as Finite Element Analysis and **Rapid Prototyping**. Solids can be exchanged to other Autodesk products without the need for Object Enablers. At this time, however, ACIS solids cannot be imported into Revit.

When you use this tool, you can select All of the objects in a drawing because it will filter out all objects it cannot convert automatically. When prompted to " **Erase selected entities? [Yes/No]<N>** ", it is usually best to respond with a " **Yes**" or risk having to work with a lot of redundant entities. In some cases, however, you may simply want to convert one or a few objects so you can use the **Solid Editing tools** to create results that are not possible with the AecObject tools (such as Extrude along a Path).

Illustrated to the right I show a sample building before and after Conversion. Blocks added as custom Components within AecObjects (such as Doors and Windows) are ignored and lost. Multiview Blocks are ignored but not lost.

nearly anything to a flat 2D drawing.

CONVERTING AecObjects TO 3D SOLIDS

Once you have converted one or more AecObjects into 3D Solids, you can use the Visual Audit tool to confirm the conversion success rate.

Command: _AecConvertTo3dSolids
Select AEC objects to convert: **All**
78 found
14 were not in current space.
10 were filtered out.
Select AEC objects to convert: **<Enter>**
Erase selected entities? [Yes/No] <N>: **Y**
Added 23 solid(s) to the drawing.
Failed to convert 22 bodies.
Command:

8 Visual Audit

Visual Audit

Alt.Menu **Visual Audit**

Keyboard **VisualAudit**

Links

Visual Audit is a temporary display switch that turns all AecObjects off so you can inspect the remaining entities to see if there are problems. This tool can be rather useful after using the ConvertTo3dSolids tool, discussed above, to assist in determining how many objects were actually converted into 3D Solids.

The main problem with this tool, however, is that it is only a temporary display option that does not operate as a true toggle. In other words, you cannot do any tasks while it is active and you must exit this display mode to continue working or editing your drawing.

Command: _AecVisualAudit
Press ESC, ENTER or mouse-click to exit: **<you must exit to continue working>**
Command:
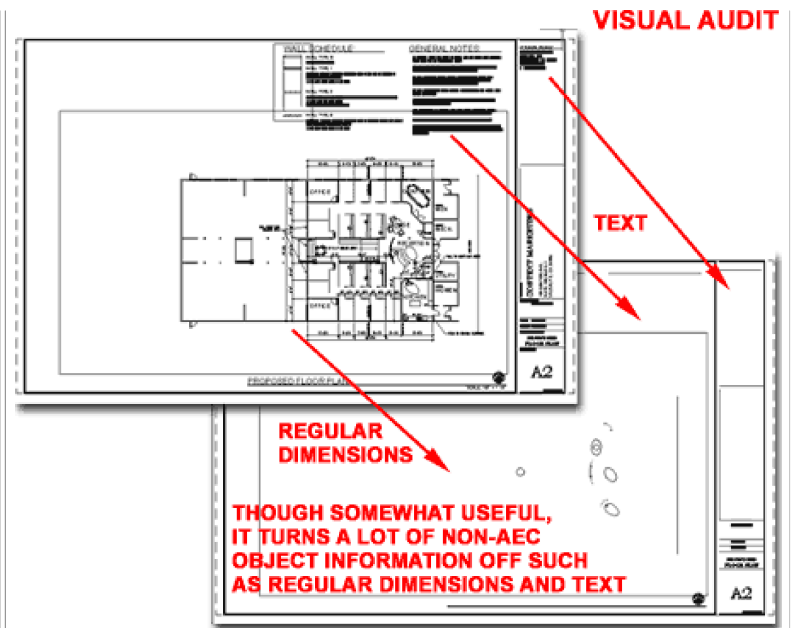
Illustrated above, I show that a lot of non-aec objects are turned off and though this probably isn't the best audit it did reveal the few objects I had drawn as normal linework.

9 Explode AEC Objects

Explode AEC Objects - dialog box

Alt.Menu **CAD Manager**

Keyboard **AecObjExplode**

Links

Explode AEC Objects is your salvation to getting a project out of 3D and down to something more familiar in **2D** (assuming you have a long AutoCAD background). If you need to **Flatten** your drawing and get it into simple "Primitive Graphics" for non-ADT users then this is one of the best options available. The drawback is that you will likely end up with a drawing full of dumb objects where Doors and Windows are made up of Lines and Arcs instead of Blocks.

Explode AEC Objects To Primitive Graphics - this is probably the most likely option you will select if attempting to create a flat simple drawing for non ADT users to read. Primitive Graphics means lines, arcs and blocks
**Views:**
  Current View - the view you are presently in for one view at a time Exploding. You can Explode the Mode layout or viewports on other Layout Tabs.
  All Layouts - will explode the information presented in each Layout Tab viewport as a separate set of layers with separate entities. Rather than attempt to Explode all of the various Display Representations via the All Layouts tab, I suggest running the Explode AEC Objects several times; once for each Display that you want to convert and then SAVE AS... a name appropriate for those views. If you attempt to Explode All Layouts you will get a lot of layers because that is how the various view information will be separated for you.
  Model Tab as Additional Block - this option is only available when you select the All Layouts option and is simply a way of
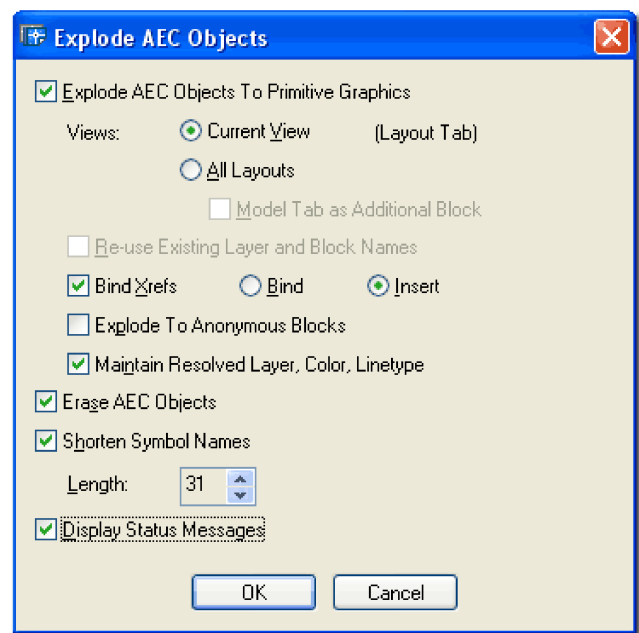
Note:
You are probably wondering what options I use. Well, to be totally honest, I am still struggling with the whole process of dealing with AEC and ARX objects in their non-native state. Many of my clients are on AutoCAD and work with R14 through R2000i, so they receive a lot of Proxy objects coming from Land Development Desktop and ADT. For non-ADT users who do not have the luxury of working with Display Representations, 3D objects are just not acceptable so Flattening is something that has to occur.

If you need to send your files to a legacy or non-ADT user, you will have to consider this problem. Even if they have Object Enablers to read your ADT objects correctly, they have to deal with 3D points in space and this can be disastrous.

adding the Model Layout too. If you have a good set of layouts with Viewports showing exactly what you want, then adding the Model is probably wasteful and redundant.

Reuse Existing Layer and Block Names - this option still leaves me with questions so I won't elaborate beyond my understanding. Apparently, if you intend to run this routine more than once, you could end up with redundant layers so here you can set it to re-use existing layer names. This has to do with Viewport Mapping of Layers. You can read up on it in the ADT Help menu - search for Explode AEC Objects. To explore how this works, run it once for one "Current View" and then return to repeat and should find that you can now "Re-use Existing Layer and Block Names" for the next run.

Bind Xrefs - this option is the same as that offered on the Xref dialogue box and is an option I always spend some time pondering before choosing. With traditional 2D AutoCAD files that needed to be sent off or archived, this option is very valuable and I typically used the Insert option so that Xref'd work would remain as a Block. With ADT objects, you may not find the Xref conversion process very successful, so I recommend using the Explode AEC Objects routine on the individual files.
Bind - this option brings in Xref work as objects but the layer names all end up with **0$0** in the place of the vertical bar **|** (or Pipe) used by the Xref Manager.
Insert - this option brings in Xref work as a block and combines layers if they are already present in the current drawing. New Layer Names appear as normal layer names.

Explode To Anonymous Blocks - this option will convert every ADT object into a Block with wacky names like "*U".
The names are highly undesirable but you do get to keep some cohesive nature to your drawing. The problem is that no one really wants a drawing full of blocks (even the Walls become blocks), so you will probably find that this is not a desirable option.

Maintain Resolved Layer, Color, Linetype - this option is a strange one since unchecking it really causes a mess. If left unchecked many objects end up on layer 0, including Walls, Doors, Windows and even Hatch.

Erase AEC Objects - If **Explode AEC Objects To Primitive Graphic** is **checked**, this option has little if anything to Erase so it almost becomes irrelevant. If the Primitive Graphics option is unchecked, then this option will remove all AEC content and leave only non-ADT objects that were drawn with regular AutoCAD commands; things like Lines, Arcs, Text, Polylines, etc.

So far I have had pretty good success with **Explode AEC Objects To Primitive Graphics** , **Current View** only (one Display Representation at a time), **No Binding of Xref** (do this separately and re-thread), **No Explode to Anonymous Blocks** (unless you want the work of manually Exploding things like Walls), **Maintain Resolved Layer, Color, Linetype** , **Erase AEC Objects** and **Shorten Symbol Names for R14 Compatibility** .

I do not feel that I have completely exhausted all of the scenarios here so don't hesitate to come up with other possibilities. You might even run this thing a couple of times, on the same drawing, using different options to create other results.

10 Utilities - Customizing and Tricks