

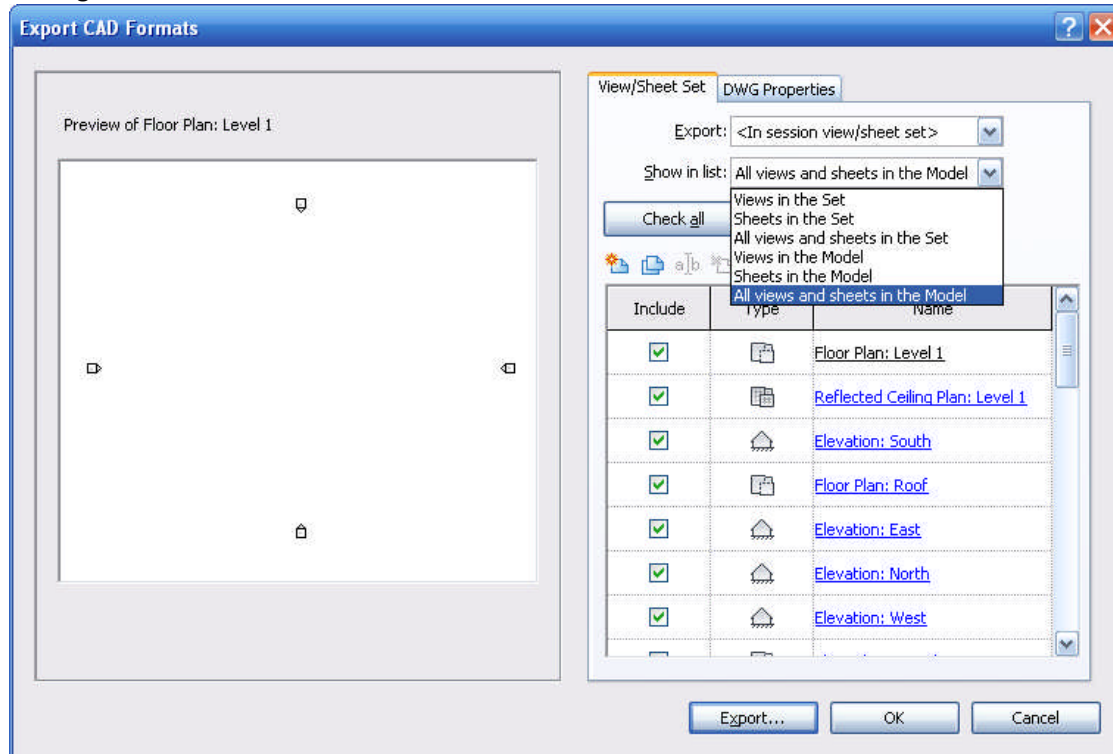
PBS BIM Export to DWG

Friday, March 12, 2010
3:23 PM

Note: this list of suggestions is intended to clarify some efforts that would help to prepare BIM project files to be more CAD Compliant for delivery...it is a work in progress and we welcome input:

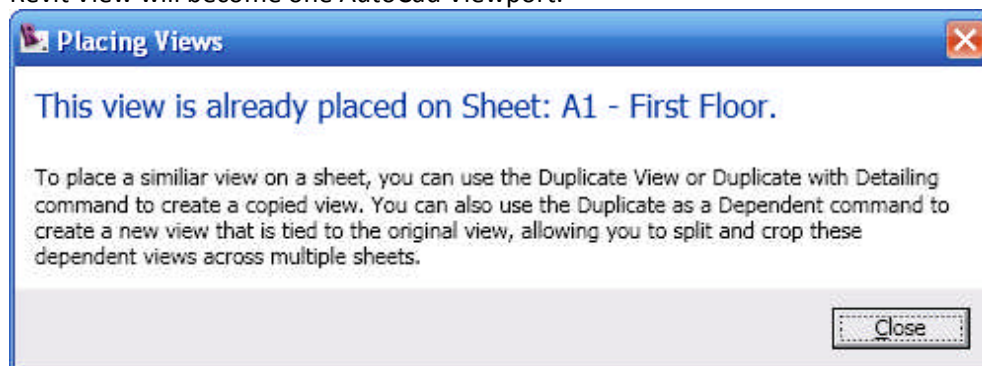
Revit Architecture 2010 Export

- It is possible to easily give us all Revit Sheets AND all Revit Views. This is however NOT the default setting in the Revit Export CAD Formats dialog. Please use the 'All views and sheets in the Model' setting:



Revit Views

- Views can only exist once on one Sheet. This is relatively good news for Exporting to AutoCad; as one Revit View will become one AutoCad Viewport.



Views actually become AutoCad unique Viewports when exported.

Revit View Dependant Views

- (more info here)

Revit View Templates

- (more info here)

Revit Sheets

- (more info here)

AutoCad Model File

- We have a naming convention that is important for our in-house document management system that is described in our R03 Cad Deliverables Policy and must be adhered to.
- You may rename the resulting Model Files after the Export or consider renaming your Revit Views before you Export instead.
- Here are examples based on the Revit Commercial-Default template:

Revit - Views (all)	AutoCad Model Files
Floor Plans - B.B. Footing	(Tbd)
Floor Plans -Foundation	(Tbd)
Floor Plans -Level1	A-FP01.DWG
Floor Plans -Roof	A-RO.DWG
Floor Plans -Roof Framing	(Tbd)
Floor Plans -Site Plan	A-SP.DWG
Floor Plans -T.O. Footing	(Tbd)
Ceiling Plans - level 1	(Tbd)
Elevations (Building Elevation) - East	(Tbd)
Elevations (Building Elevation) - North	(Tbd)
Elevations (Building Elevation) - South	(Tbd)
Elevations (Building Elevation) - West	(Tbd)

AutoCad Sheet File

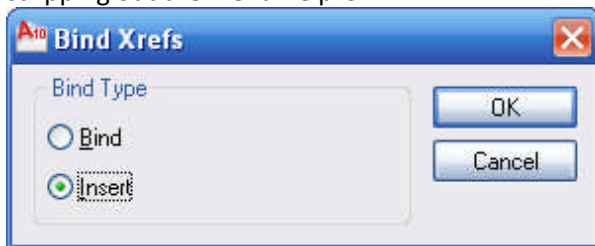
- We have a naming convention that is important for our in-house document management system that is described in our R03 Cad Deliverables Policy and must be adhered to.
- You may rename the resulting Sheet Files after the Export or consider renaming your Revit Sheets before you Export instead.
- Here are examples based on the Revit Commercial-Default template:

Revit - Sheets (all)	AutoCad Sheet Files
A1 - First Floor	A-101-01.DWG
A2 - First Floor Reflected Ceiling Plan	A-102-01.DWG
A3 - Roof Plan	A-###-RO
A4 - Elevations	(Tbd)
A5 - Elevations	(Tbd)
A6 - Building Sections	(Tbd)
A7 - Building Sections	(Tbd)
A8 - Wall Sections	(Tbd)
A9 - Building Sections	(Tbd)
A10 - Wall Sections	(Tbd)
A11 - Interior Elevations	(Tbd)

A12 - Interior Details	(Tbd)
A13 - Schedules	(Tbd)
C1 - Site Plan	A-###-SP
S0 - Foundation	(Tbd)
S1 - Roof Framing	(Tbd)

AutoCad Xref Bind

- Your exported Sheets will externally reference a file that is NOT the Model File requested above. It is instead a copy of only those objects that are to be visible on this particular Sheet. Although this is not our preferred method it does represent a snapshot in time which is acceptable. However to pass our Drawing Analysis Program report you will have to perform one additional step. Please go into each sheet and Bind the Xref(s). Please use the Insert selection as this will create your layer names correctly stripping out the filename prefix.



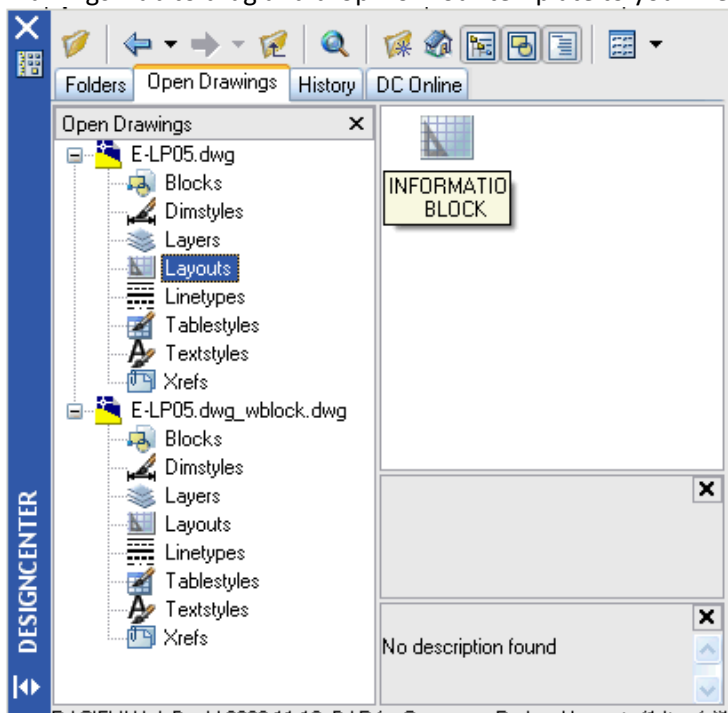
- Do NOT explode this resultant block! That way we can select it and remove it easily if needed later.

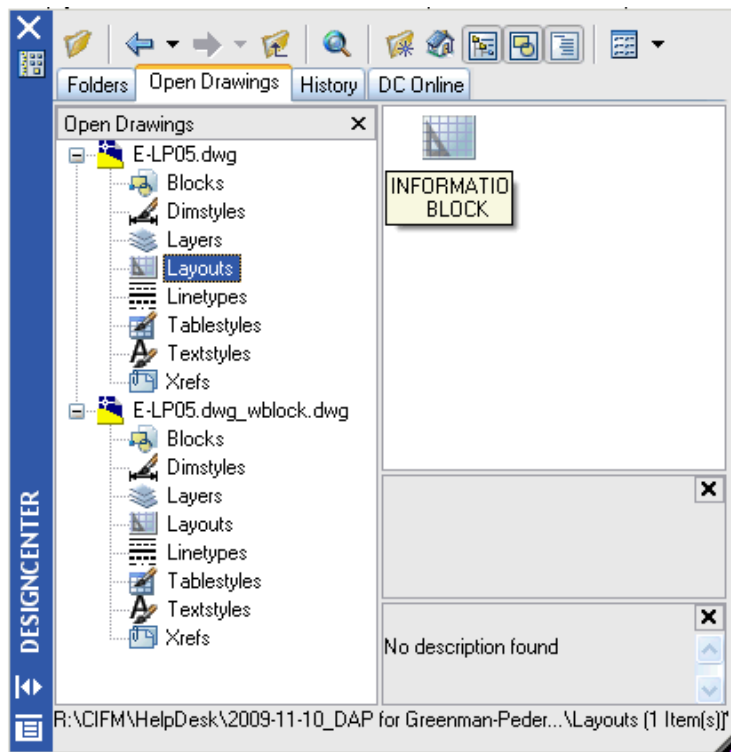
AutoCad Sheet Titleblock and Model InfoBlock Metadata

- It is VERY important that our AutoCad Titleblocks contain defined blocks with smart attributes like what was provided in our template files. We use this to read those pieces of text intelligently from outside AutoCad going forward. There are other methods of capturing metadata about the file like fields which we would be open to considering also. But we are not interested in a titleblock that simply has dumb text or mtext filled in appropriately. This does not help us manage our files.
- Unfortunately we are not Revit experts yet here at the PBS and have no suggestions for how to rectify this particular issue at this time. Therefore you may have to do this step as manual data [re]entry.
- Here is a trick to save you time doing this:

Use DesignCenter to create a new PaperSpace Layout Tab with our Titleblock or InfoBlock.

Simply have both your Sheet or Model file open and our appropriate template and use the 'Open Drawings' Tab to drag and drop from our template to your file...





Copy and paste each piece of text as necessary.

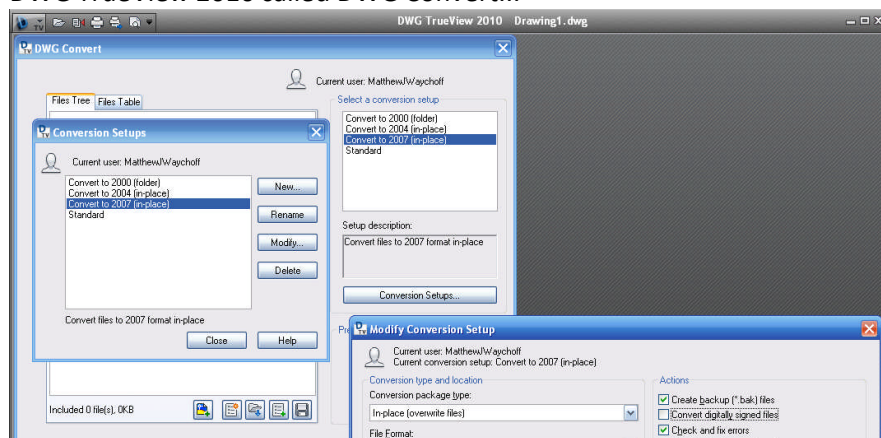
AutoCad Layers

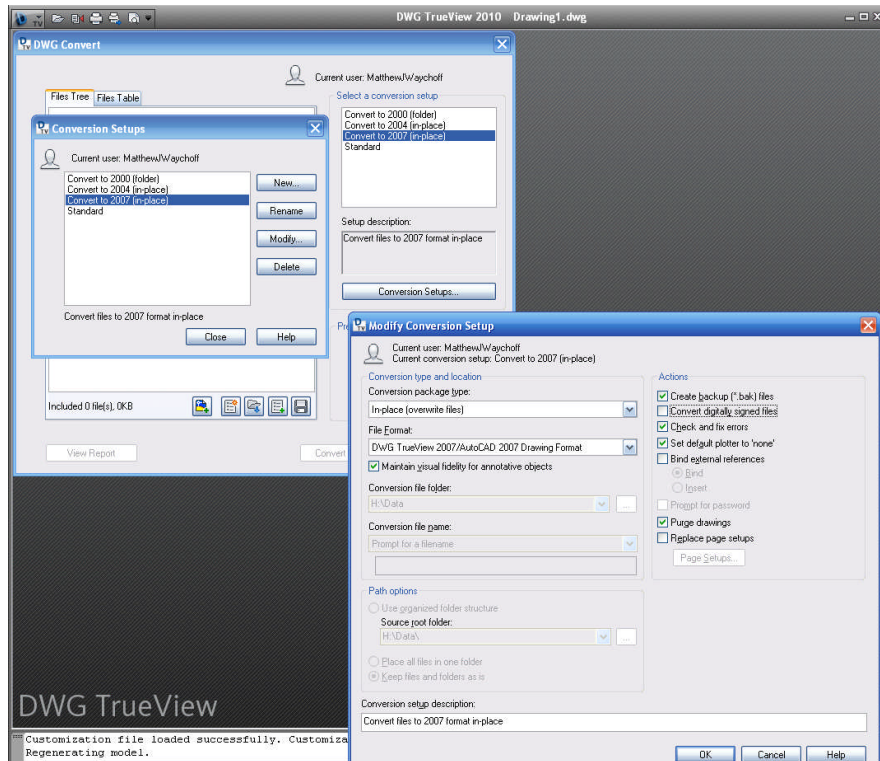
- We take a rather liberate interpretation to the US National Cad Standard and therefore the AIA CAD Layer Guidelines. If a layername combination is not explicitly listed as a possibility then we did not code to check for it. Logically please understand that it would be somewhat impossible to guess all the permutations if a subjective interpretation were allowed. This is specifically mentioned in line 5.1.1d of the R03 Cad Deliverables Policy.
- There are a few layernames that are created using the Autodesk's implementation of the AIA CAD Layer Guidelines circa 2007 (i.e. NCS4.0) that are newer than the R03 Cad Deliverables Policy and DAP software but these are mostly typos that were found in the AIA CAD Layer Guidelines circa 2005 (i.e. NCS3.1) so we will allow all of the ones that are specifically listed in the current document.
- A few however are not. For these and any others of your own creation you must exercise the following line of our policy:

5.8.1 Custom Layers: If you would like to include custom user-defined layers, permission must be granted by GSA, and a list and description of such layers must be submitted to GSA along with the drawing submission [in your README file].

AutoCad File Format

- Revit Architecture 2010 creates an AutoCad 2010 DWG instead of an AutoCad 2007 DWG which is in your contract. The easiest thing to do is to use a little known batch utility feature in Autodesk's free DWG TrueView 2010 called DWG Convert...





Revit Structural 2010 Export

(we will assume for now that the suggestions for Revit Architecture 2010 will suffice)

AutoCad MEP 2010

AutoCad Layers

- Placing DUCT after ANNO is not specifically listed as a valid minor group code. see page CLG-13 in the NCS.
- You may find it interesting that page CLG-86 highly discourages using ANNO at all.
- HIPR is not listed anywhere in the NCS.
- The following layers are not compliant but could easily be made to be:

AutoCad MEP 2010 layername	R03 Cad Deliverables Policy and DAP compliant layernames
M-ANNO-DUCT	
M-ANNO-DUCT-E	
M-ANNO-DUCT-TEXT	
M-DUCT	
M-DUCT-E	
M-DUCT-TEXT	
M-HIPR-D	No recommendation - include in ReadMe deliverable
M-HIPR	
M-HVAC-HIPR	
M-HVAC-HIPR-D	
M-HVAC-DUCT-TEXT	
M-HVAC-DUCT-E	

ObjectARX non-native non-graphical entities

- AcadMEP2010 SaveAs command includes using AECexplode which will dumb down your files to be 2D

DWG files. You must be in TOP camera view when you do this as the result is dependant on this.

- Unfortunately you will still have hundreds of unwanted 'non-graphical non-native objects' present as a result of the 3D AECObjects created using the MEP ObjectARX functions
- Therefore you must do one additional step:
Using Acad2008/9/10 if you simply WBLOCK out everything in Modelspace to a new file you will end up with only 34 'non-graphical non-native objects'. These are the only ones we are willing to accept.
Note1: If you do this from within AutoCad 2007 you will get down to 2 'non-graphical non-native objects' which would be preferable.
- Here is a trick to save you time doing this:
Use ScriptPro to batch all your model files:
Create yourself an AutoCad Script file as follows:



writeblockall.scr

COPY FROM BELOW

tilemode

1

-layer

on

*

thaw

*

unlock

*

```
(setq dwgnamenew (strcat (getvar "dwgprefix") (getvar "dwgname") "_wblock"))
```

```
(command "-wblock" dwgnamenew "*")
```

PASTE FROM ABOVE

- Note2: your BIM requirement will also ask you to deliver the original AcadMEP2010.DWGs as well.
Please provide these in a separate folder. There is no naming convention for these at this time.

MicroStation Civil

(unfortunately there are no Subject Matter Expert on PBS R03 staff at this time to review and comment)