Tips for 3D PDF Revit Plugin Users from Dan Stine, CSI, CDT

There are now a number of options for creating 3D PDF files from Revit. I have tested a number of them, and have found **Tetra4D's 3D PDF Plugin for Revit** offering to be the best thus far. In particular, it creates surfaces with Revit's *Appearance Asset* (i.e. the rendering textures) and no extra lines. There are also a number of options related to creating templates and embedding multiple views, from the Revit model, into the PDF.

In this brief blog post, I will give you a quick rundown on how this add-in works and some of the cool things you can do in *Adobe Acrobat*, once the 3D PDF is created. The Revit model used here is from my book Interior Design using Autodesk Revit 2014.

You may want to save a 3D view in Revit specifically for exporting the 3D PDF. It is best to turn off categories for anything you do not need in the 3D PDF. This will help with performance when navigating the 3D PDF. This will also affect the 3D PDF files size.

TIP: *If you turn on the section box, you can clip the toposurface* (Image 1a)*. This is the only way to see the ground in section as shown in the image below. This will transfer through to the 3D PDF.*

You don't need to clip the building or hide the roof/ceilings as this can be done in **Adobe Acrobat** (more on this later).

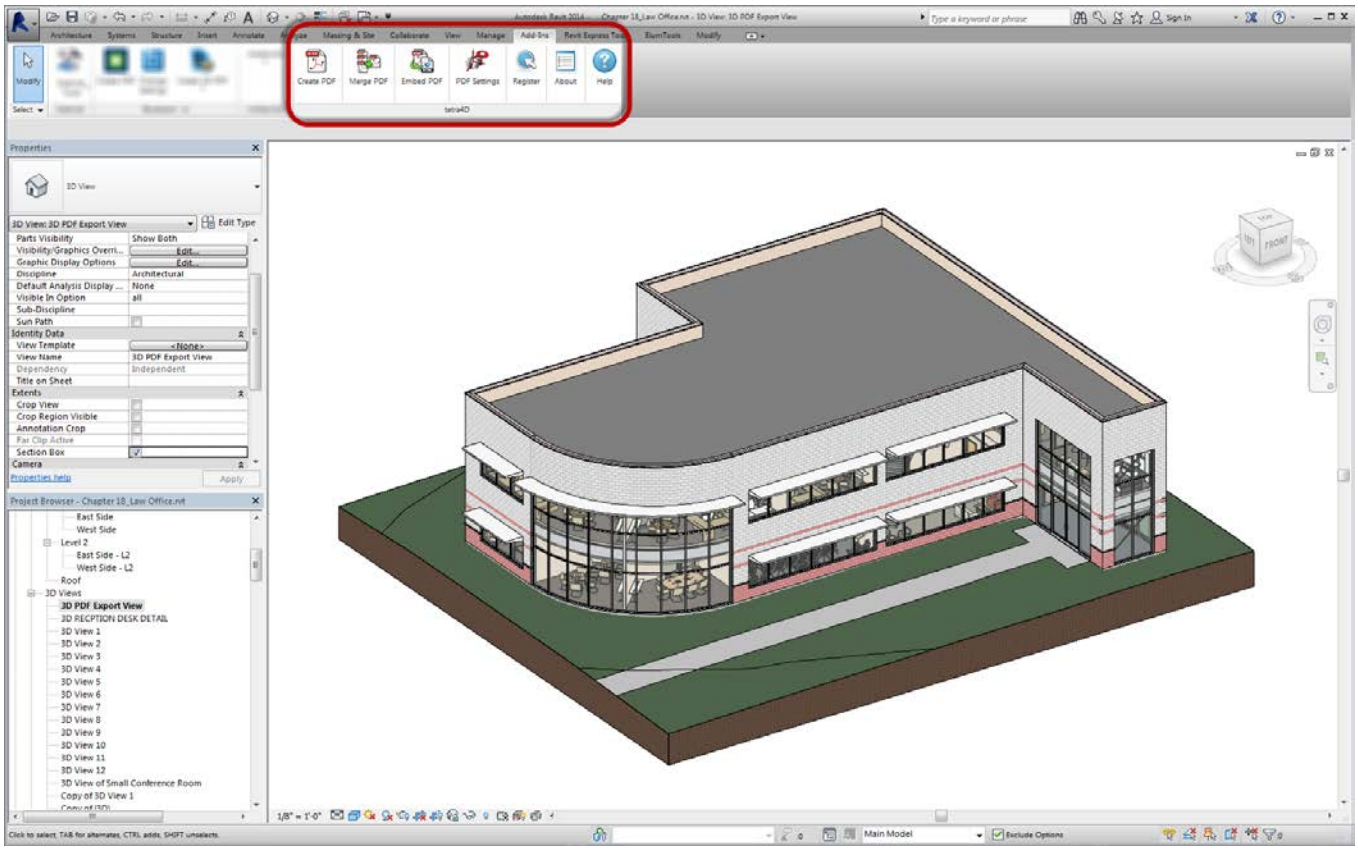

Image 1a: *Revit model with Tetra4D tools on Add-ins tab*

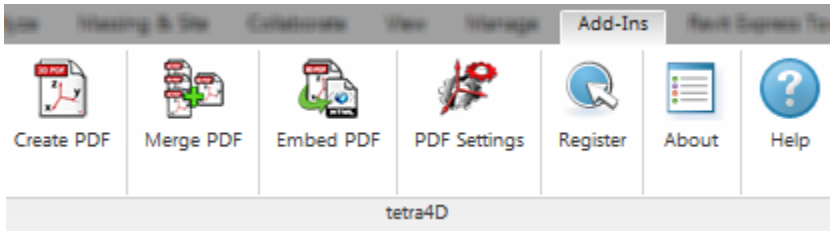

Image 1b: *Enlargement of Add-ins tab*

Clicking the **PDF Settings** button allows you to specify several options related to how the PDF file is created (Image 2). Notice the navigation mode and light settings, plus the option to show the 3D toolbar. On the advanced tab you have the option to export element attributes as well.

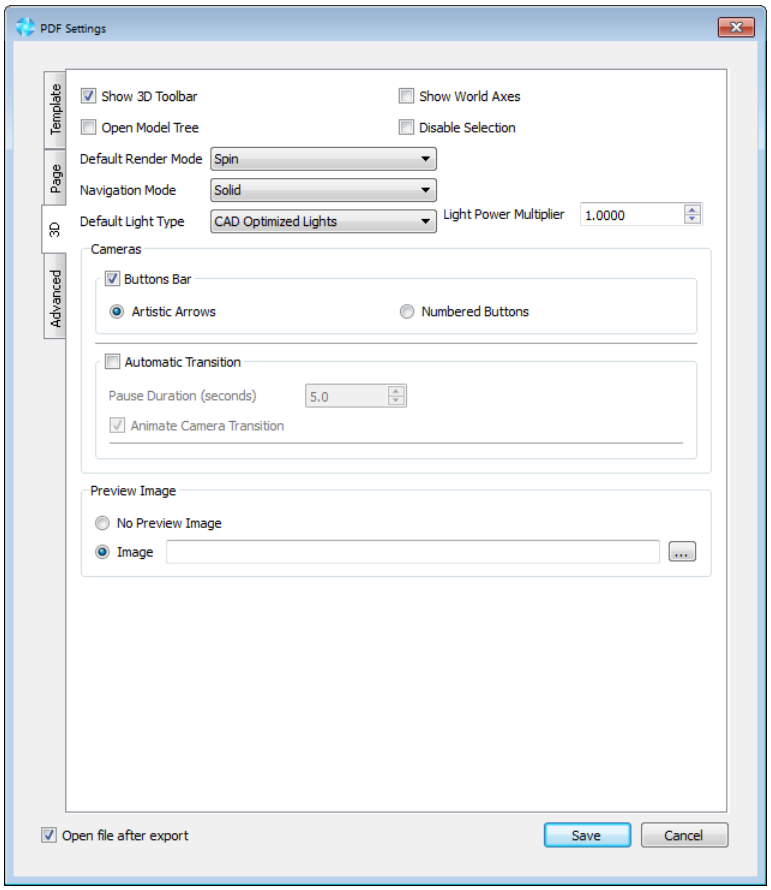

Image 2: *Settings for exported PDF file*

From a 3D view, click the **Create 3D PDF** button on the *Add-ins* tab.

If you have a lot of views in your model this can take a few minutes. **Tetra4D's 3D PDF Plugin for Revit** is grabbing the preview for each view so you can select which ones you want in the 3D PDF file. You are now in the **Scenes manager** dialog (Image 3).

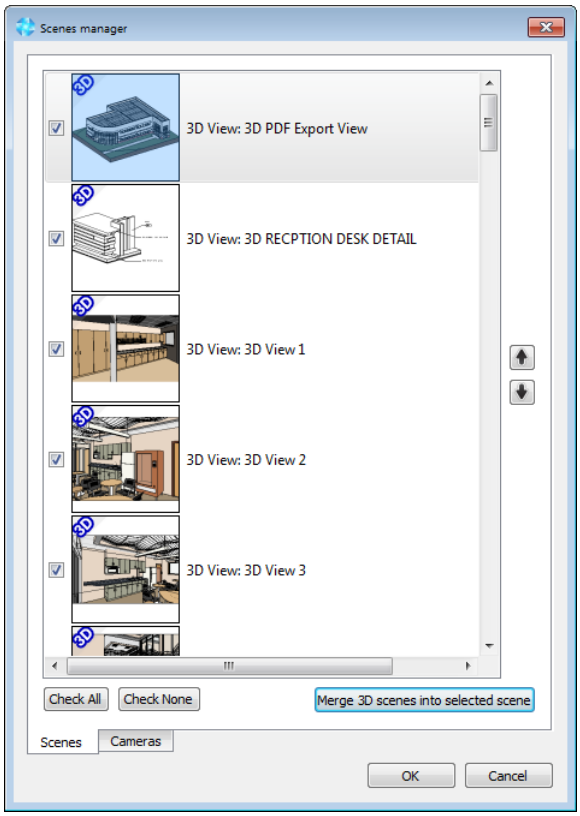

Image 3: *Select views to be exported to the PDF file*

TIP: If you have a large project with hundreds of views, you may want to save a [detached] copy and delete all the views except the 3D view(s) needed (or use a project cleaner add-in). This can save lots of time because **Tetra4D's 3D PDF Plugin for Revit** does not need to scan as many views.

If you just want to create a single view of the Revit model, which is what one usually wants, just click the **Check None** button and then check the view listed at the top (which is the view you were in when you started the process).

Click **OK** to create the 3D PDF.

Select a location and name for the file.

As you can see, the entire process is quite simple. You now have a 3D PDF (image 4)! In this example, the 3D PDF is about 14MB (the Revit file is 46MB).

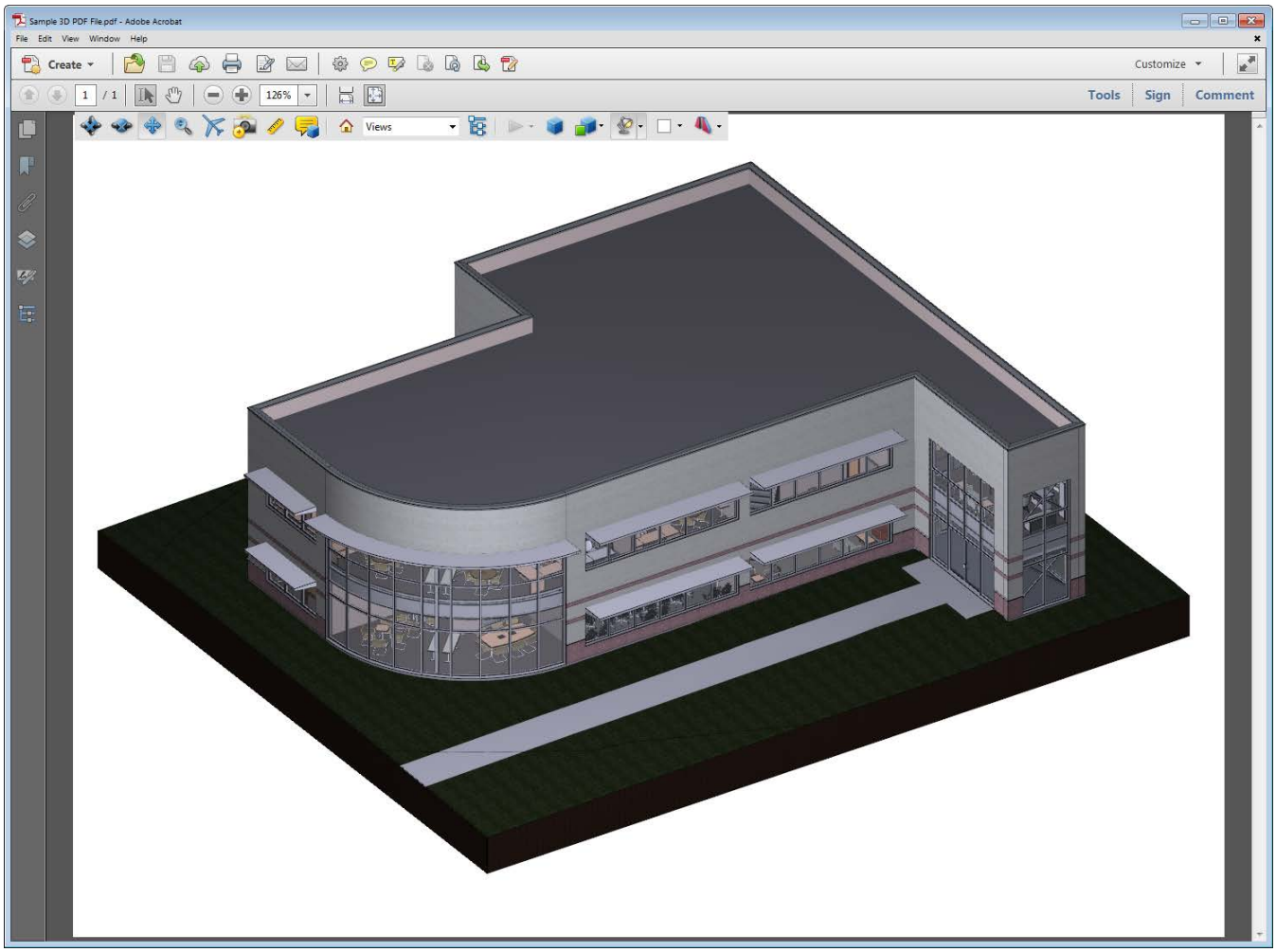

Image 4: *3D PDF shown via Adobe Acrobat*

If you scroll your wheel, on the mouse, and zoom in, you can see the materials have been properly mapped to the 3D objects. **Tetra4D's 3D PDF Plugin for Revit** is the only add-in I know of that can do this. It can be done manually using Bentley workflow (with the Bentley add-in for Revit and Navigator).

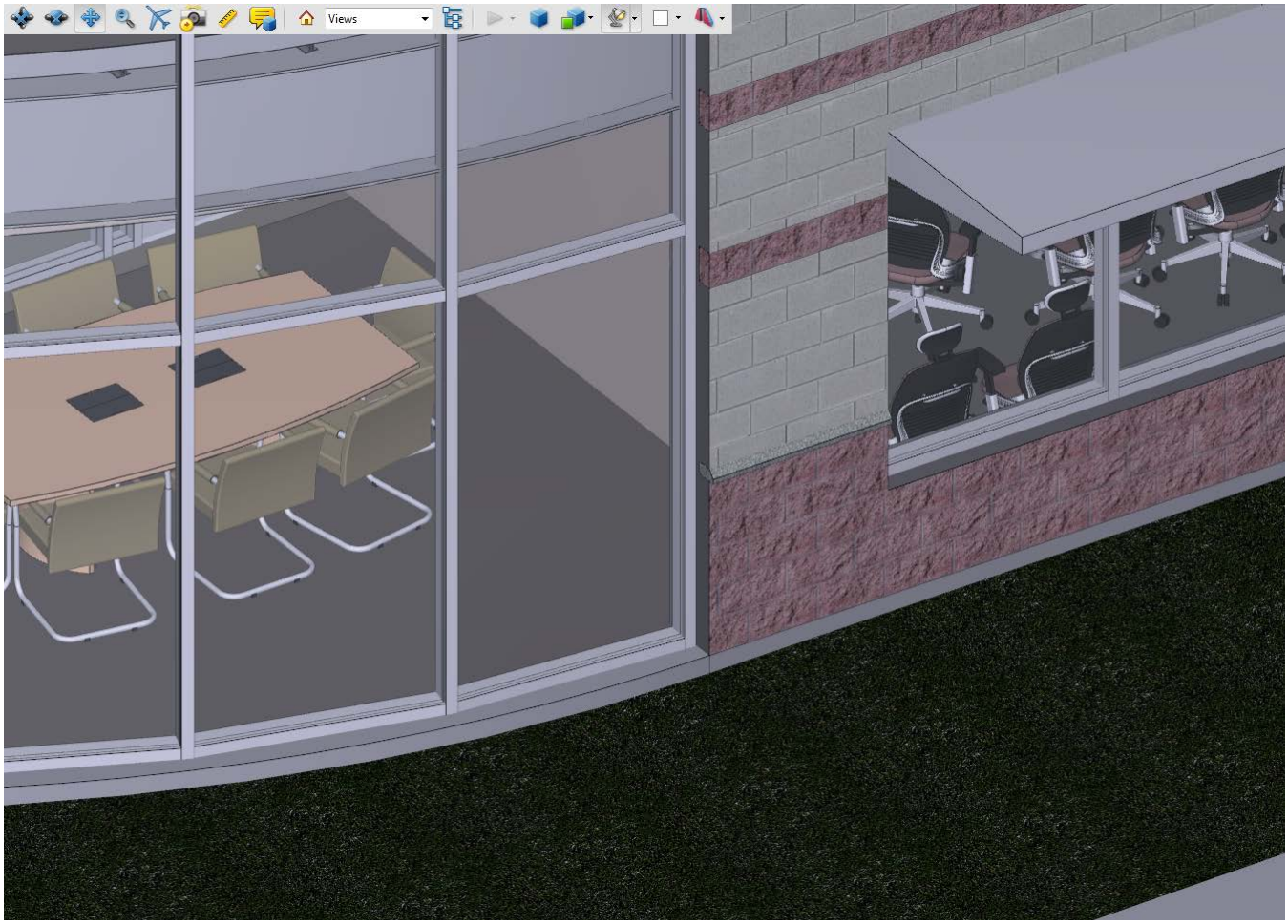

Image 5: *Notice the Revit materials applied to the surfaces in the 3D PDF*

Entities have information saved within them. You must turn on the Model Tree (Item #1) and then select the node in the tree or the element in the model (Item #2). The attributes are shown at the bottom of the Model Tree (Item #3). In this example we see the main entry door is number 118.

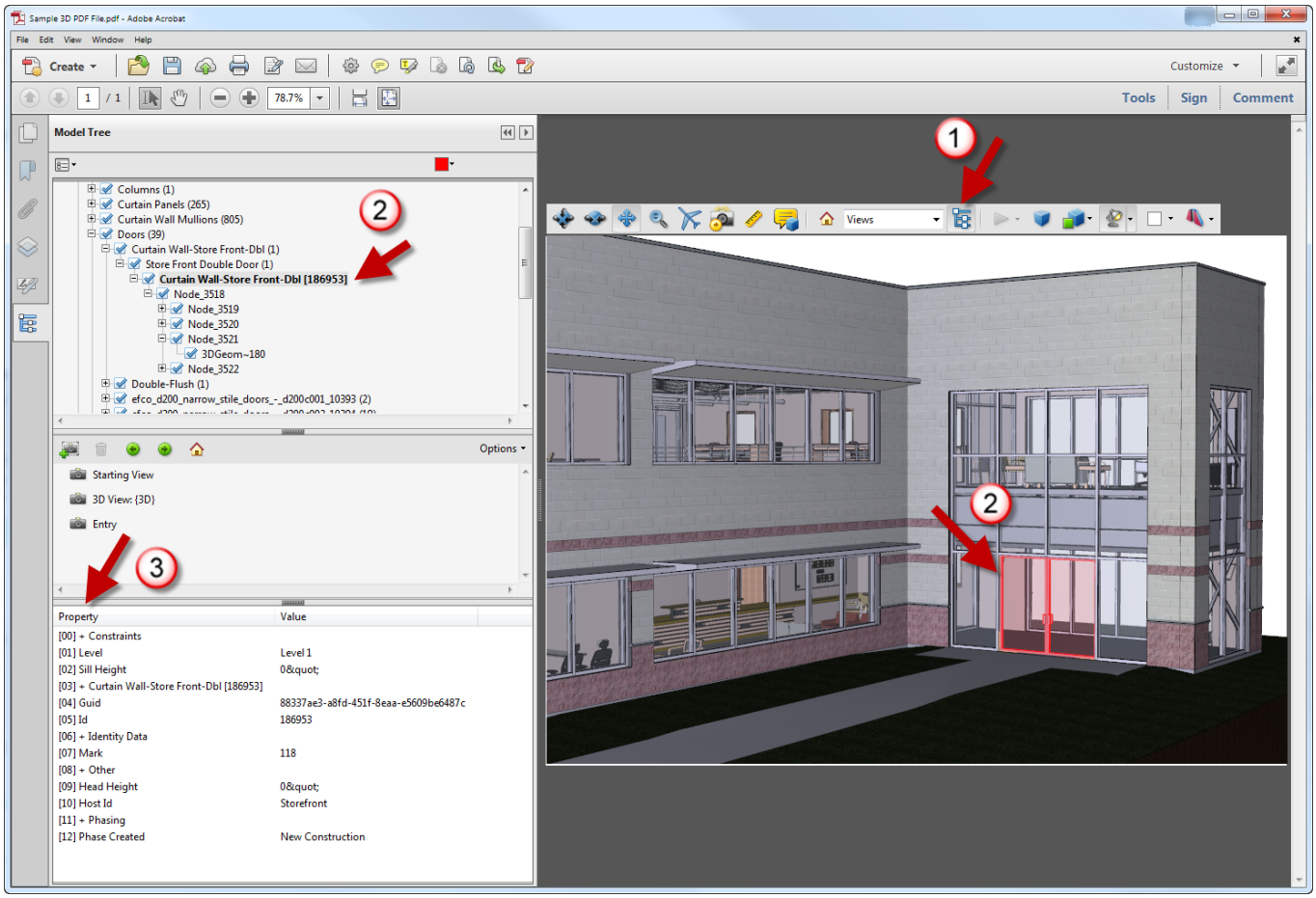

Image 6: *Objects in the 3D PDF have information from Revit associated with them*

Once you have a 3D PDF you can do some amazing things in Adobe Acrobat. The following steps are built-in features of *Adobe Acrobat*, and not part of **Tetra4D's 3D PDF Plugin for Revit**. From this one 3D PDF file, you can setup multiple saved views, make elements transparent and clip away sections of the model. You need *Standard* or *Professional* to save changes.

The first thing you need to figure out is the user interface for the 3D environment.

Once you click within the main drawing window you will see the 3D tools toolbar as seen here.

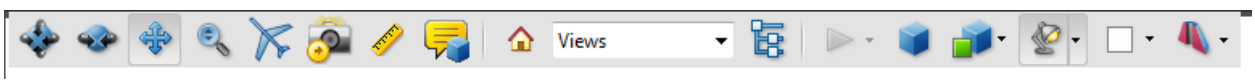

Image 7: *Special toolbar in Adobe Acrobat for 3D models*

Although this can be set in **Tetra4D's 3D PDF Plugin for Revit** settings, you can set the *Model Render Mode* and *Lighting* via a drop-down list (hover cursor to see tooltip). Using **Solid** and **Cad Optimized Lighting**, respectively, works best. You can also **Orbit, Pan, Zoom**, etc. from this menu. We will look at the **Views** options in a moment.

There are additional tools available in the right-click menu (Image 8). Most notably is the **Walk** tool!

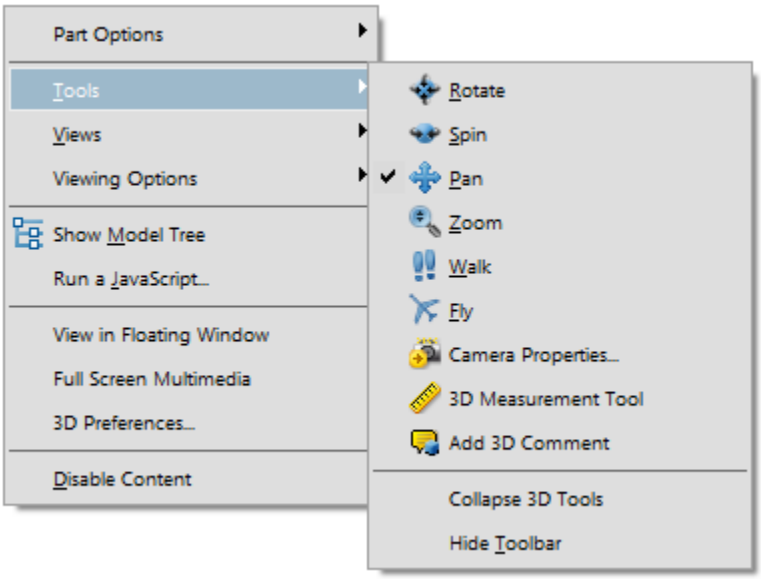

Image 8: *Right-click in Acrobat reveals additional tools, such as Walk*

If you selected multiple views, in Tetra4D's **Create 3D PDF** dialog, to be exported from Revit, they will appear in this list (Image 9). This list allows you or the recipient to quickly switch to different views of the 3D PDF. The **Tetra4D's 3D PDF Plugin for Revit** exporter even lets you include 2D views (i.e. drafting views) in the PDF file. Including lots of views in the initial export can make the file much larger.

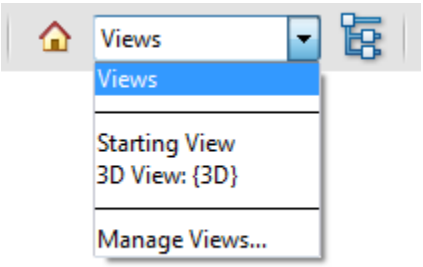

Image 9: *The Views drop-down lists saved views in your 3D PDF*

Next we will look at how you can create your own saved views directly in *Adobe Acrobat*. The first thing you need to do is modify the view of your model using **Zoom**, **Pan**, **Orbit**, **Fly** and/or **Walk** to get the view you want to save on screen (e.g. Image 10). You can also right-click and select **Viewing Options → Use Perspective Mode**

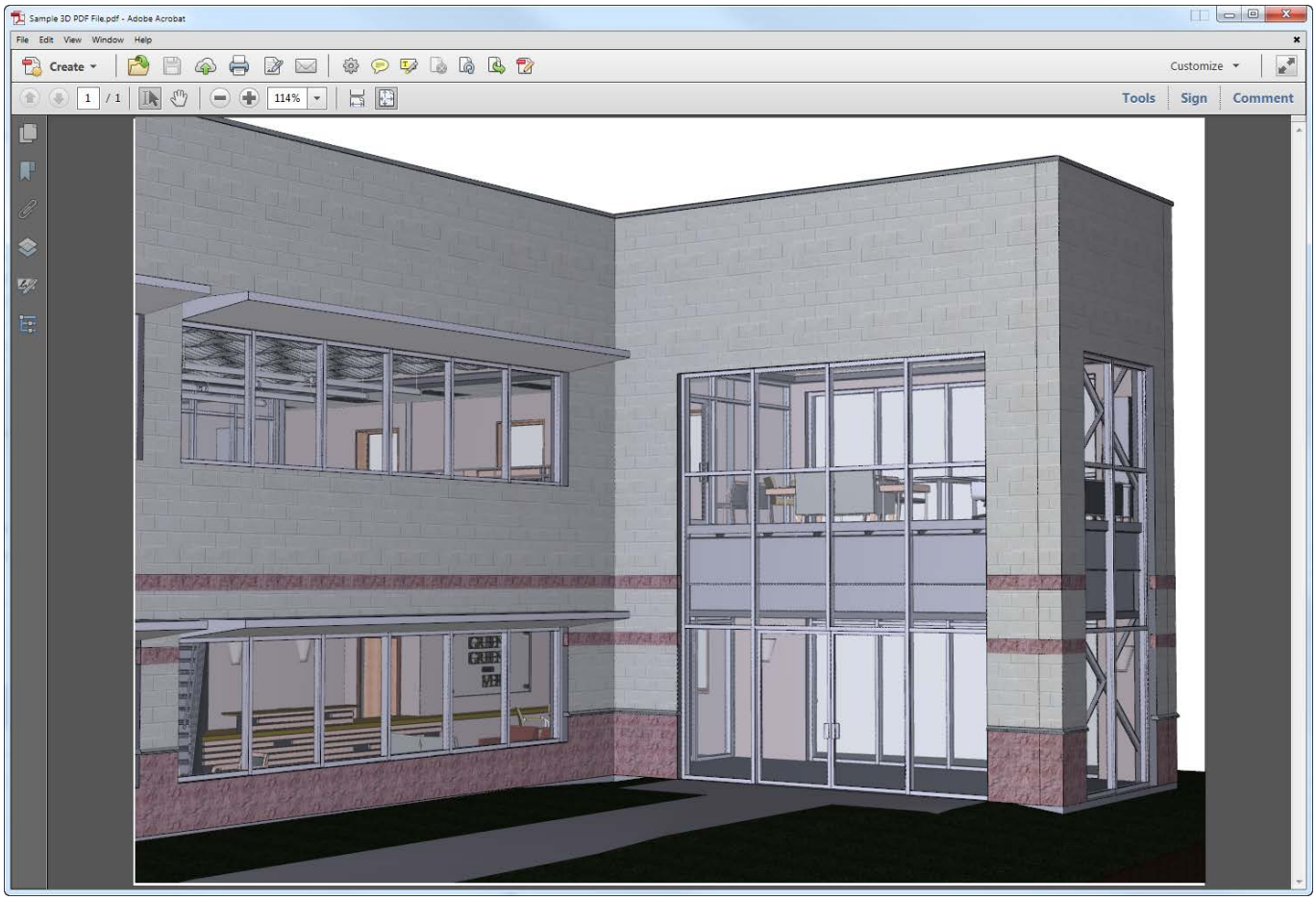

Image 10: *Adjusted view of model set to perspective mode*

Next you select **Manage Views…** (see Image 9 above) to begin the process of saving a new view in the 3D PDF.

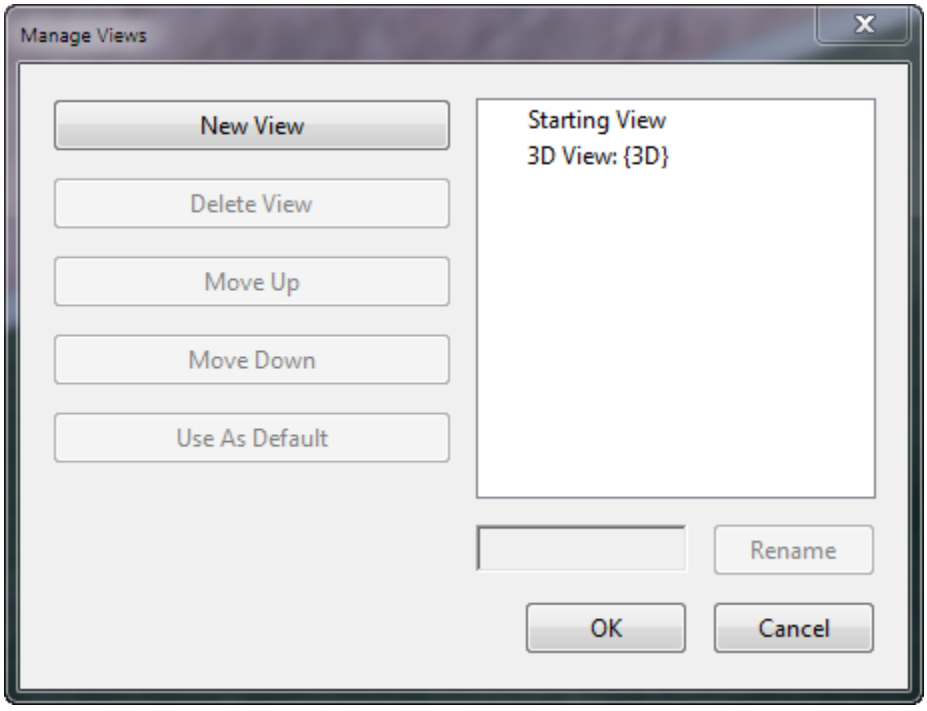

Image 11: *Use the Mange Views dialog to create and delete saved views in the 3D PDF*

Click **New View** (Image 11) and then select **OK** (Image 12). Notice all the settings saved with the view. The ability to save a cross section means you can have one view of the overall building (like our starting view) and another with the roof removed. Additionally, you can select things in the 3D PDF and hide them via a right-click (similar to how it's done in Revit). Because saved views can remember "Node visibility" you can have something show up in one view and be hidden in another (e.g. furniture).

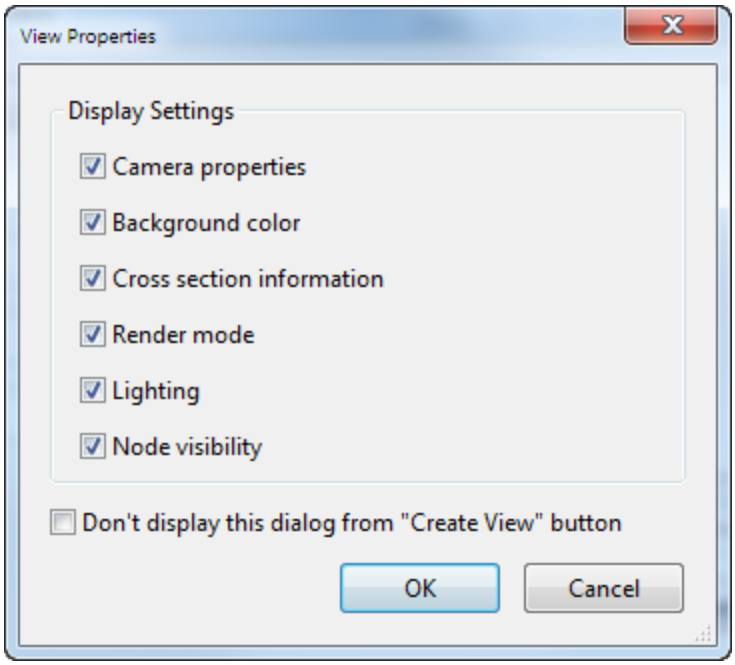

Image 12: *View properties to save in new view*

Rename the new view to **Entry**. You will now have the new view listed in the Views drop-down. When you save the 3D PDF, this will save with the file.

The **Cross Section** tool can be used to create a cutaway view, or just simply view inside the model. To create a cutaway view, select **Cross Section Properties** (Step #1). In the *Cross Section Properties* dialog, turn off the Cutting Plane visibility (Step #2 – this is optional). Now you can adjust the **Offset** slider to move the cut plane into the model (Step #3). Changing the **Alignment** and/or checking **Flip** will let you cut the model pretty much any way you wish (Image 13). Finally, click the Save **Section View** button to save this setup as a named view. Each saved view determines if the section cuts the model. Once the view is saved, you can go back into Manage Views and rename the new view.

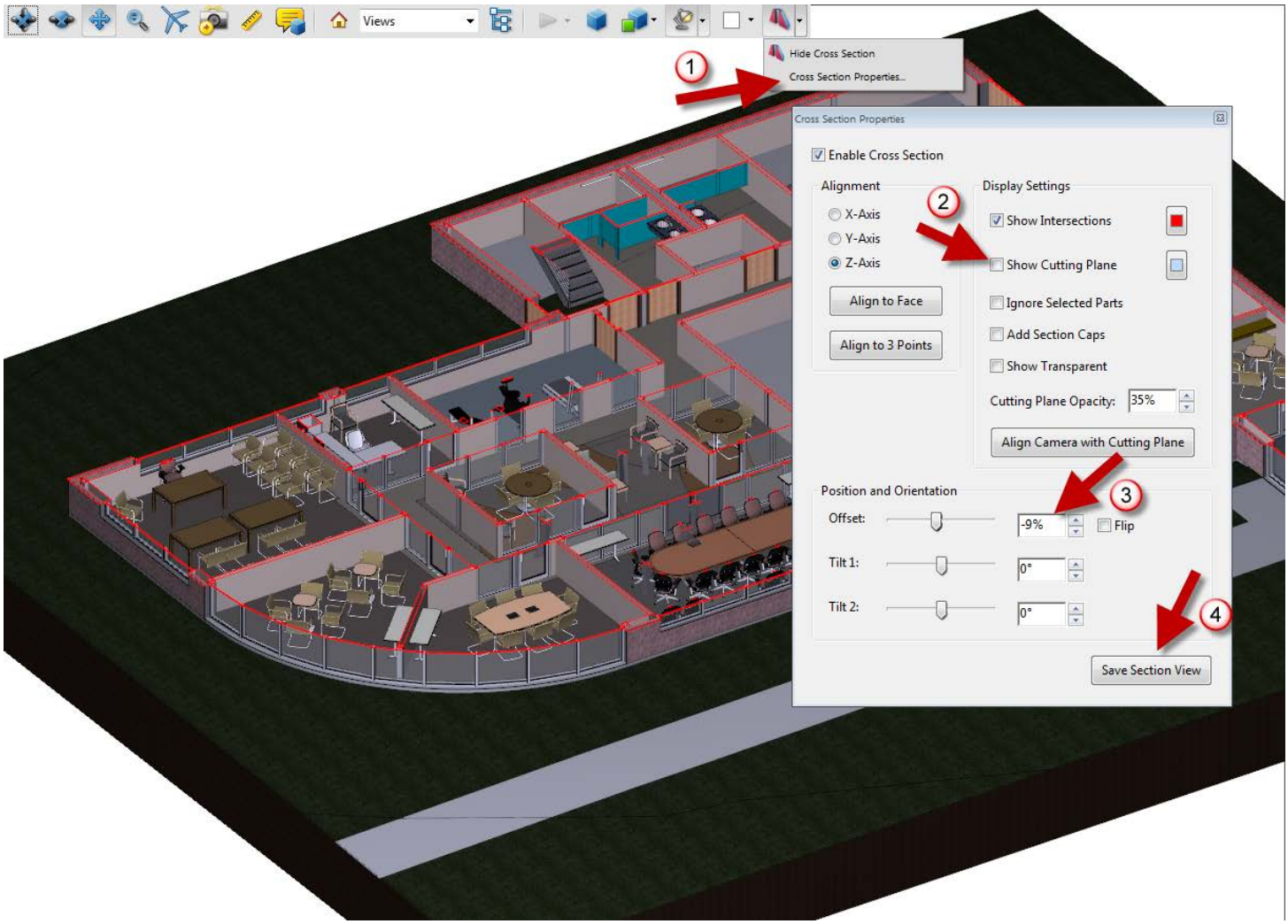

Image 13: *Creating a cutaway view in the 3D PDF*

If you select an item, such as the ground in this example (Image 14), you can right-click and pick **Part Options → Make Transparent**. Now we can see through the ground to the structural footings. This can now be saved to a view and recalled as needed. Notice the other options listed under Part Options, including the ability to override the render mode for just the selected part.

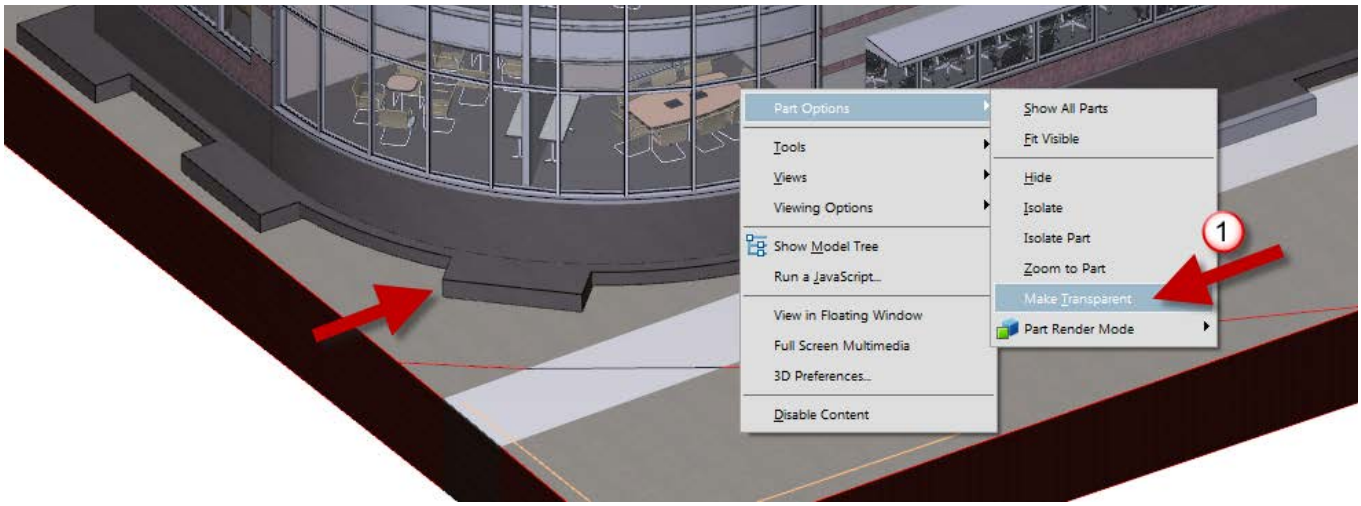

Image 14: *Making the ground transparent so the footings are visible*

Saving views of the interior of the model is very helpful. In the saved view below (Image #15) the **Camera Properties** have been adjusted to have a wider view angle. *Camera Properties* are accessed via **Right-click → Tools → Camera Properties**.

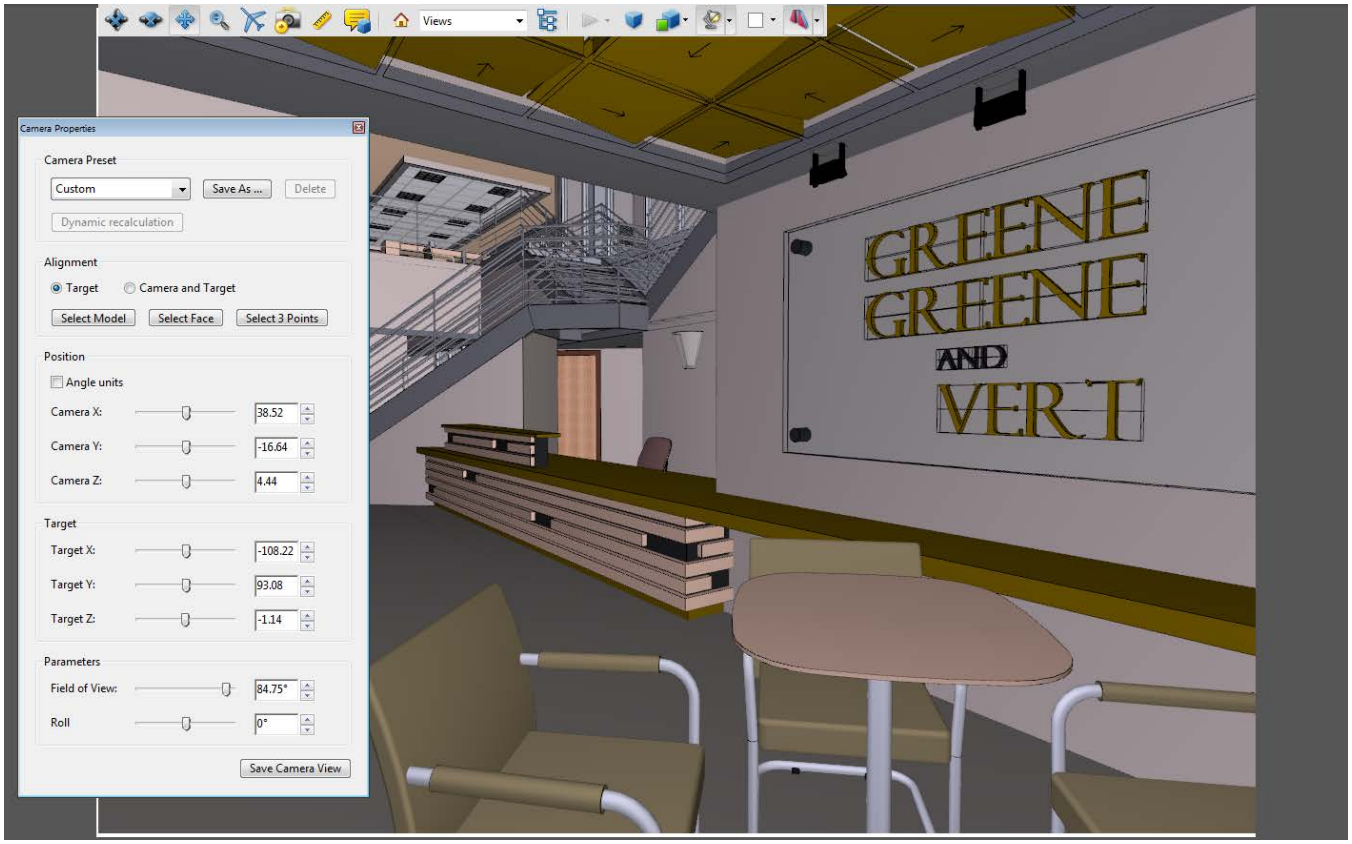

Image 15: *Creating an interior view and adjusting the camera properties*

Once in an interior view, it is easy to use the **Walk** tool and navigate the model. Holding down the **Ctrl** key while in the Walk tool allows you to "look" around without moving your "feet". It is best to save a number of primary interior views so the "user" can quickly jump to important points in the building.

There is more that can be discussed about 3D PDFs but this should be enough to get you going in the right direction. Enjoy!

About the Author

Dan Stine, CSI, CDT is a registered Architect with twenty-two years of experience in the architectural field. He works at LHB (a 200 person multidiscipline firm) in Duluth Minnesota as the BIM Administrator, providing training, customization and support for two regional offices. He has presented at Autodesk University and Revit Technology Conference. Dan is a member of the Construction Specification Institute (CSI) and the Autodesk Developer Network (ADN) and has also taught AutoCAD and Revit Architecture classes at Lake Superior College. Additionally, he is a certified Construction Document Technician (CDT) and certified Revit Architecture 2011 Professional.

Mr. Stine has also written the following textbooks (published by SDC Publications; www.SDCpublications.com):

Interior Design using Autodesk Revit Architecture 2014

Design Integration using Revit 2014 (Architecture, Structure and MEP): includes DVD
Residential Design Using Revit Architecture 2014 : includes video instruction on DVD
Commercial Design Using Revit Architecture 2014 : includes video instruction on DVD
Residential Design Using AutoCAD 2014 : includes video instruction on DVD
Commercial Design Using AutoCAD 2013 : includes video instruction on DVD
Chapters in Architectural Drawing (with co-author McNeill)
Interior Design using Hand Sketching, SketchUp and Photoshop (with co-author McNeill)
Trimble SketchUp 2013 for Interior Designer's