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April 2018

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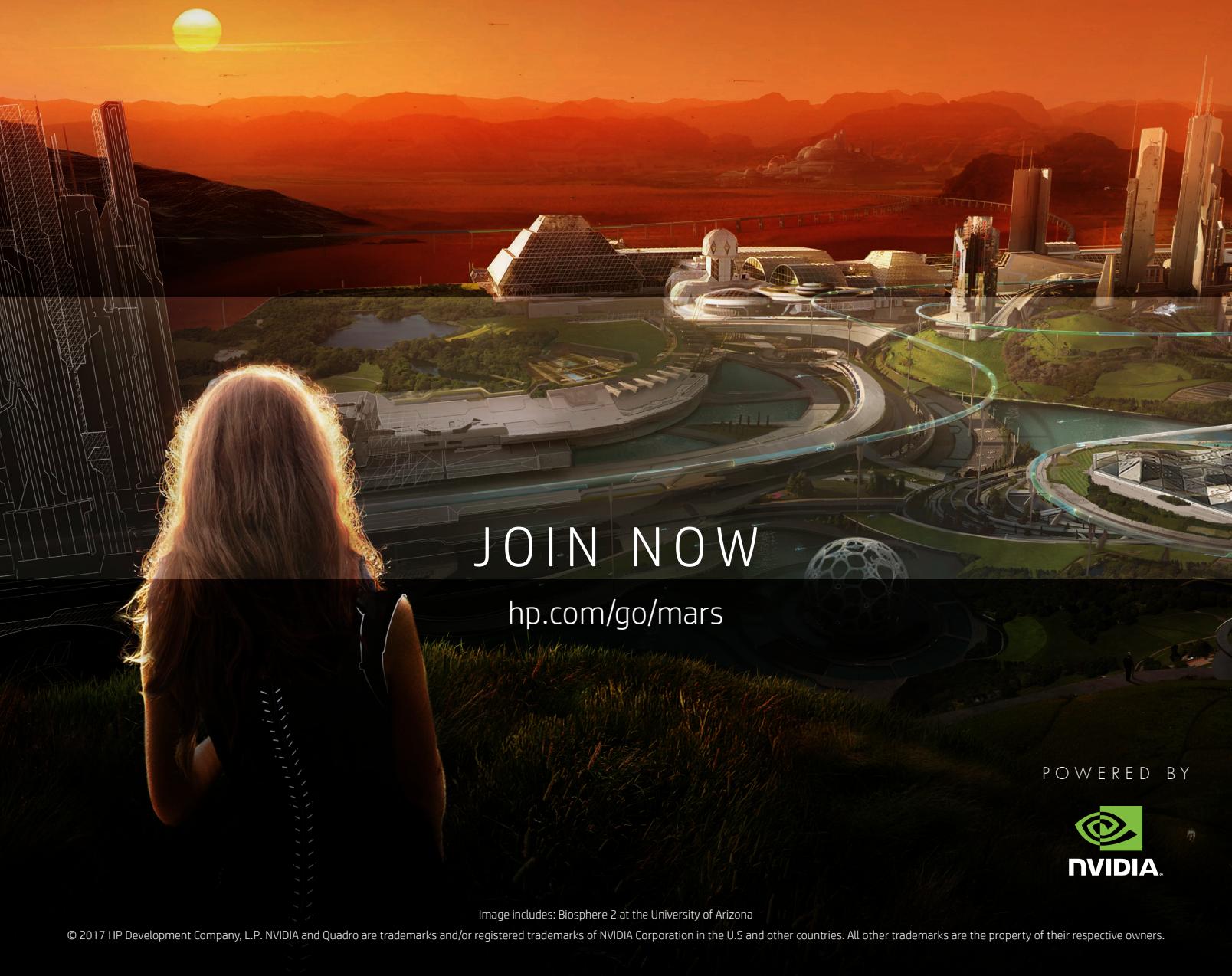
Also in this issue:

- Smart Schedules in Revit MEP
- A CAD Manager's Advice, Part 2
- Tips & Tricks for AutoCAD Architecture



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Letter from the President



AUGI



When was the last time you had a day without a software update? It seems to me that every time I turn around, something on my phone, computer, or tablet wants to tell me that there's a new version available. In fact, I saw it just this morning—my conference call software wanted to update from 2.210.1009 to 2.210.1106.

What happened to updating from version 2 to version 3? Is it really necessary to take version numbers out to eight significant digits? Any science teacher will tell you that's a ridiculous level of precision. Is whatever new feature that just rolled out really worth it? And never mind the management headaches... when software releases trickle out like this it's almost impossible to keep everyone on the same version. There's one product on our network where there are 14 versions currently installed, all between 14.0 and 14.5. (I wish I were joking.)

All right, that's enough with the rant. Most of the time, I'm grateful for how easy the update process is these days. Remember when you really had to pay attention when a program advised you to "close other programs before continuing with the installation"? Now I still save my work before an installation, but that's it. Most installations don't even require a reboot (even if you should maybe reboot anyway).

When it comes to update philosophies, I think there are generally three types:

- **The Live Wire:** Installs updates the instant they're available—if it's automatic, so much the better.
- **The Resister:** Imposes a waiting period on new software, to let everyone else find the bugs before risking their own machines.
- **The Stick-in-the-Mud:** Waits as long as possible to change anything; runs updates only when there is absolutely no alternative left.

What kind of updater are you?

A one-size-fits-all approach isn't likely to be the best strategy. On my personal devices, I'm basically a Live Wire. I have automatic updates turned on whenever possible, and when they're not, I don't usually wait too long before letting the update run. In general, I trust that developers don't try to break things, and thanks to redundancy in my storage and programs, even if something does break I'm not likely to be at a standstill.

At the office, though, it's a different story. We have a standard 30-day moratorium on any new program or update, unless it's a critical bug fix. This is to prevent a "bad" update from crashing a product and interrupting business for dozens of people at once. Although frankly, we don't see much crashing these days. We're more often grateful for our waiting period because an "update to the update" gets released two weeks after the original update. By waiting a little bit, we save ourselves from having to deploy things twice. We're cautious, but we're not sticks-in-the-mud either—it's extremely rare that we would decide to skip an update entirely.

I don't really have "advice" to conclude with this month... maybe just a request that you look at your own software update strategy and make sure it's reasonable. Test updates thoroughly before rolling out something that can affect lots of people, but don't delay important updates just because they're a hassle. (Hmm, I guess that's advice after all!)

Before I go, one bit of news from the Board of Directors: Robert Green has stepped down as a Director and Treasurer. We're sorry to see him go, but I'm sure he won't go far. Chris Lindner is taking over as Treasurer, and Kimberly Fuhrman will be our new Secretary. And stepping up to fill out the remainder of Robert's term is Frank Mayfield, a longtime AUGI member and forum moderator, and a contributor to the "Tuesday Tips" series on the AutoCAD blog. Welcome, Frank!

Wondering how you can get involved like Frank? Email me: president@augi.com.

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Published by:

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AUGIWorld (San Francisco, Calif.)
ISSN 2163-7547



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New Look, New Features





Icons! Icons! Icons! They are all different! Every. Single. One. Autodesk has revamped every button and clickable graphic in AutoCAD® 2019. It has a new flat design that is intended to display more clearly on higher resolution monitors.

One of the more interesting, and perhaps more useful, updates is the new Drawing Compare tool. This tool will come in handy. It looks at the linework between two files and displays what is different. If the linework is the same it will be grayed out. The differences will be either red or green, depending on the file to which it belongs. It makes drawing differences easier to determine in an easy-to-see visual display.

Go to the Application Menu when you don't have a file open. If you do have a file open, then go to Drawing Utilities to start the DWG Compare tool. The tool is also accessible from the ribbon in the Collaborate panel. There are two new commands and 15 system variables to go along with this tool. COMPARE is the

actual command. COMPAREINFO will display the dialog with information about the two compared files.

Another new tool is the Shared Views feature. It extracts and stores data from your file into the cloud and provides a sharable link for others to view the drawing. Whoever receives the link will be able to view, review, measure, comment, and markup the drawing from Autodesk Viewer in their web browser. Shared Views allows you to share your drawings with others without having to release your CAD files.

The reviewer can access your drawings from their computer, tablet or mobile device. Once they have provided feedback, you will be able to see their markups from within AutoCAD. To create Shared Views you must have, and be signed into, your Autodesk account and be a subscription member. CAD Managers who run a multi-license account for a company can grant or restrict access to the company users as they see fit.

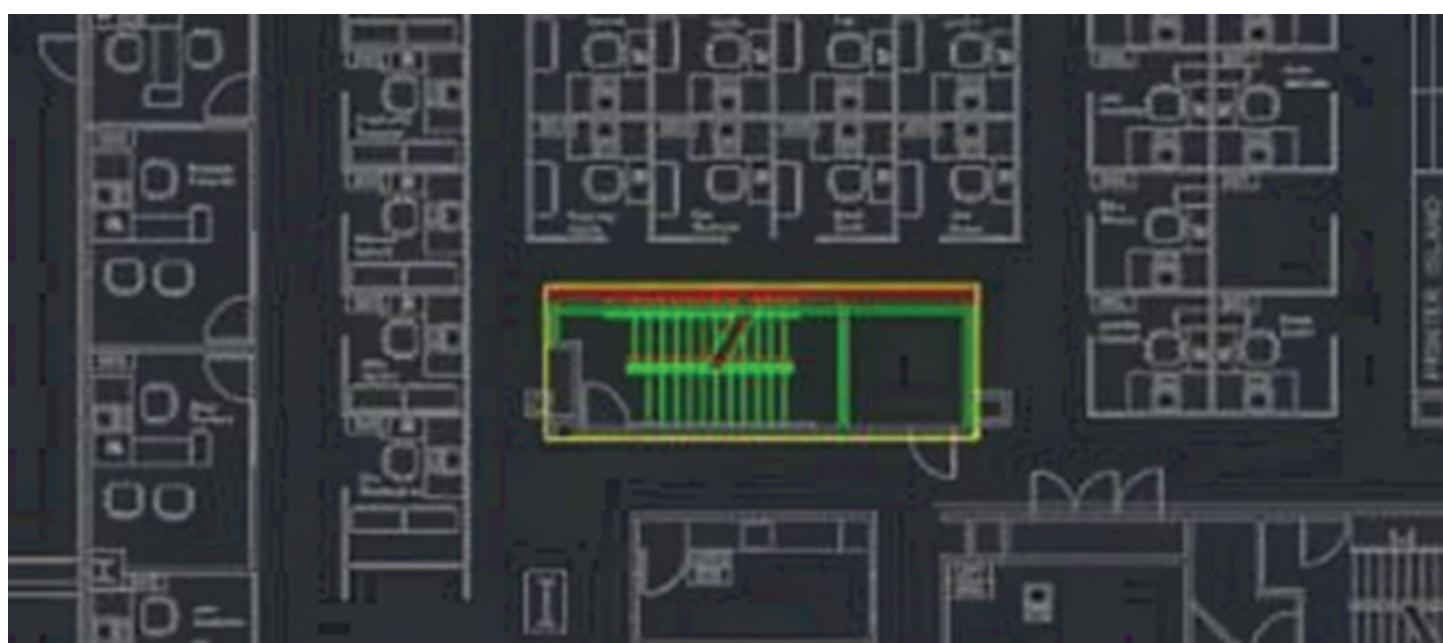


Figure 1: The grayed out linework is the same. The red and green linework indicates what is different.

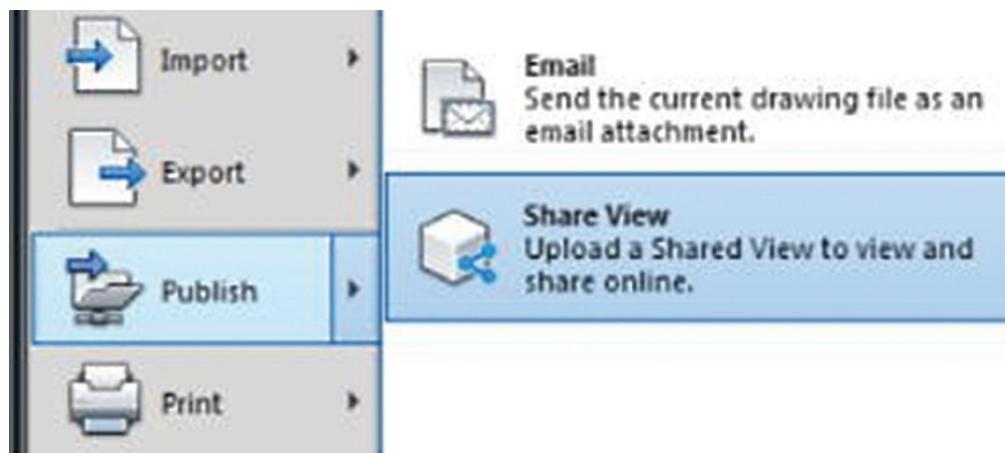


Figure 2: Access the Shared Views commands via the Application menu.

The Shared Views commands are based in a palette, which can be accessed via the Collaborate panel on the ribbon. This palette will display the views from the current file that have been shared. This palette also provides the controls for the shared links, control of the views themselves, as well as responses or comments from those who have reviewed the shared files.

Views and Viewports have been refreshed and are a bit easier to create and use. A new Named Views panel has been added to the View tab on the ribbon, making it easier to create,

AutoCAD 2019

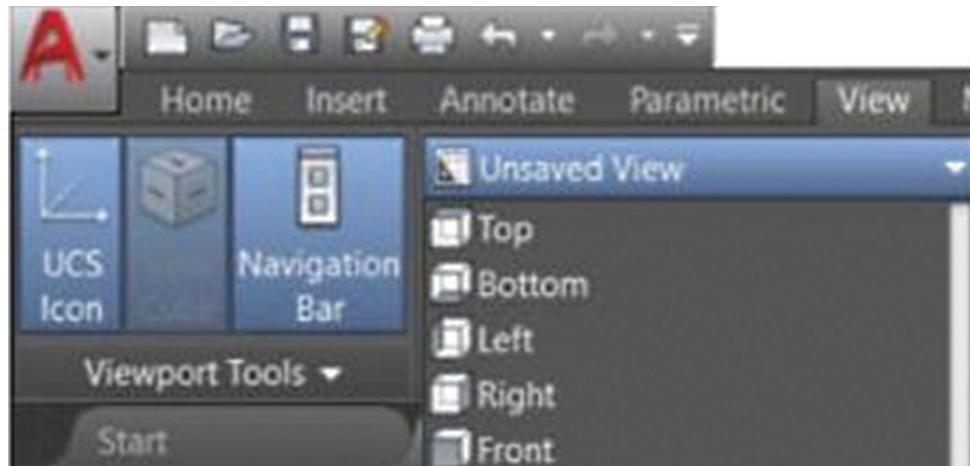


Figure 3: Easily access the view controls in the new dropdown on the ribbon.

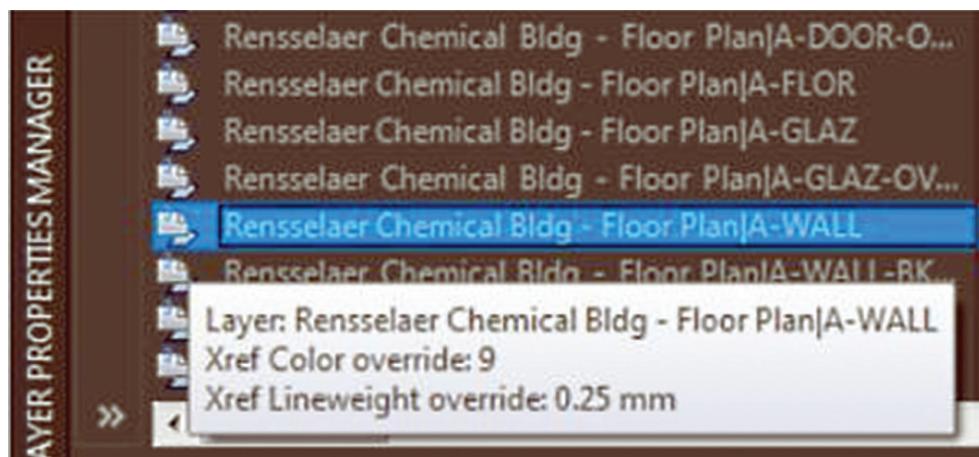


Figure 4: A mouse-over will show what has been overridden in each layer.

restore, and edit named views. This provides a simpler version of the New View/Shot Properties dialog box, providing the basic controls that are more commonly used.

Many times a named view is created that is intended to fill in a viewport. It makes creating the view in a viewport easier. Now you can make a viewport from a named view. This saves several steps in drawing creation. Go to the contextual Layout ribbon tab (when a layout tab is activated) and use the Insert View tool. Select the named view you want to use and place it into your layout. A preview of the view will be displayed, providing a visual guide that will assist you in placing the view on the drawing.

Viewports are a bit easier to update. They have built-in grips for editing that will allow you to change the scale quickly.

There is a New View tool that will quickly create a viewport by allowing you to select the area in model space to be displayed and creating a viewport of that view.

Have you ever had trouble getting your drawings to print the way you want because somebody didn't follow standards? Or maybe you received CAD files from an outside vendor? The Layer Properties Manager has a new status icon that shows when an Xref layer contains an override.

There is also a toggle switch to sort the layers according to overrides. Now, if you right-click on a layer you have the option to reset the layer to match what is in the Xref file. Very handy. There is also the option to remove layer overrides in the command line when using -LAYER.

The layer setting dialog box is updated (changed) to include new tools for managing Xref layer properties. You get to it from the settings icon in the Layer Manager. The Visretain settings are there now and the new ability to treat Xref layer objects as bylayer regardless of the object settings allows you to override object

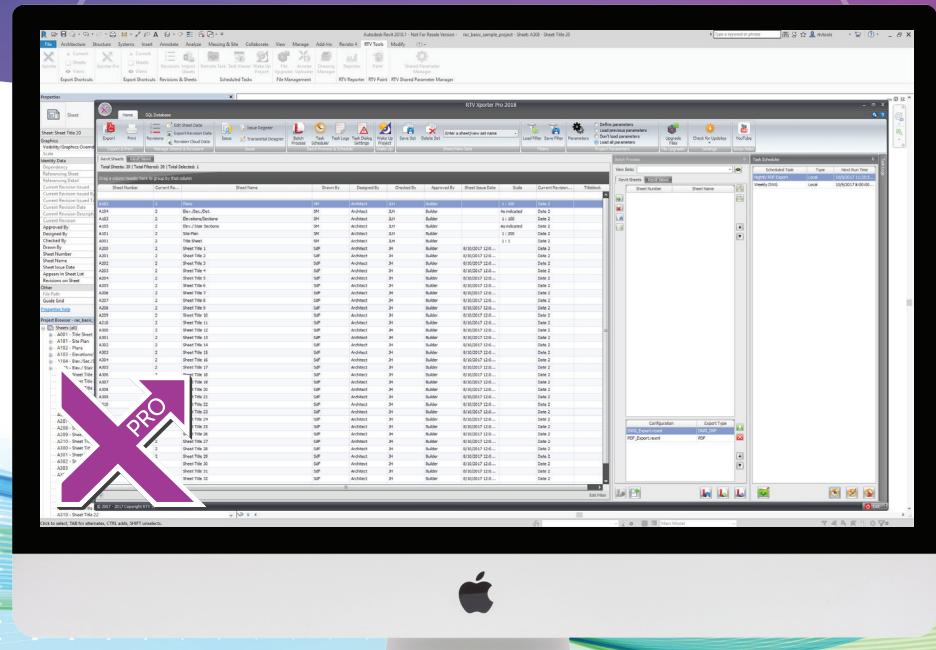
overrides and display the objects in your drawing as you like. This is huge for those who work with third-party CAD files often. There is a new XREFLAYER system variable that forces Xref files to a specified layer when inserted into a drawing. No longer will an Xref be on the wrong layer.

Behind-the-scenes tweaking promises faster performance during use. It also now supports higher resolution monitors for 4K support.



Brian Benton is a CAD Manager, CAD Service Provider, technical writer, and blogger. He has more than 20 years of experience in various design fields (Mechanical, Structural, Civil, Survey, Marine, Environmental) and is well versed in many design software packages (CAD, GIS, Graphics). Brian has been a contributing writer for Cadalyst magazine and was their Tip Patroller for some time. He has authored AutoCAD training videos for Infinite Skills and is co-author of the book Mastering AutoCAD. Contact Brian at cad-a-blog.com.

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Making Schedules Smart



Have you ever wanted Autodesk® Revit® to do more for you? Have you ever wished all the information that is populated inside elements would do more for you? Well it can! Revit has a way to make schedules “smart.” Revit allows for the input of formulas for calculations and it associates that information with the elements in the model. The smart schedule shows elements that exist in the model with their information; calculations are based on information populated in the model; and changes made in either place will directly reflect in the other.

How is this done? In order for everything to work together, three things are needed: Shared Parameters, Families, and Schedules. The foundation for bringing smart into your schedules is by using shared parameters. You can have a single shared parameter file with different groups of parameters as needed. You can also create a shared parameter file for each schedule you want to create. These shared parameters are the link from the family to the schedule.

The schedule type we will be using is a quantities schedule, the most common type of smart schedule used. These schedules allow you to schedule based on model category and they pull their information from the shared parameters that are loaded

into the family and schedule. When creating a quantities schedule you will choose the desired parameters and build your own schedule. The customization/creation of these schedules involves the following: Fields, Filter, Sorting/Grouping, Formatting, Appearance, Embedded, and Phasing (Figure 1).

Fields acts as a parameter manager for the schedule. This tab allows you to add parameters, remove parameters, arrange the order of parameters, and provides the ability to create a calculated value

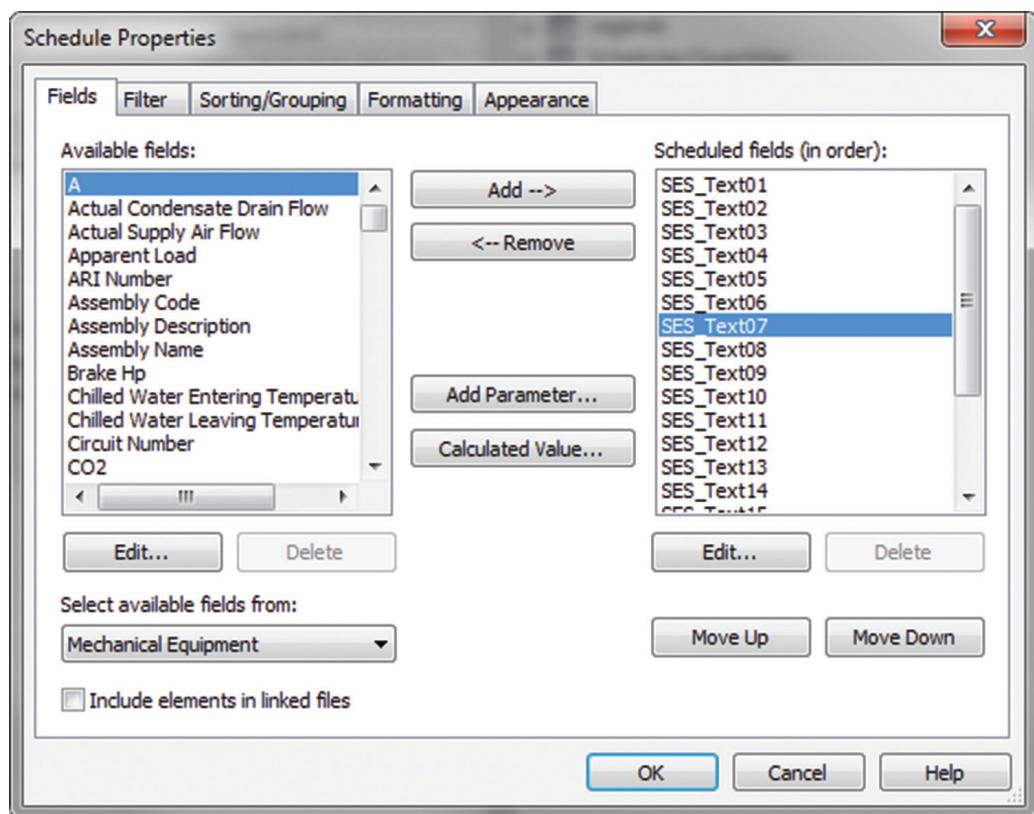


Figure 1

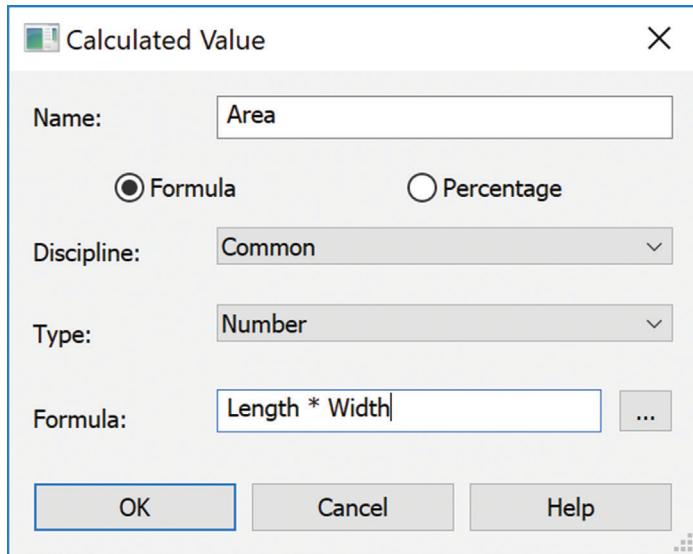


Figure 2

parameter (Figure 2). As a rule of thumb, I never add a parameter from the left to the right. To ensure that the correct parameter is being added I always use the Add Parameter button and load it from the appropriate shared parameter file. Once the parameters are added use the Move Up and Move Down buttons to arrange the order as desired. An example of how to use the Calculate Value button is shown in Figure 2. Name the parameter for the calculated value (Area). Adjust settings as needed and then put in the formula. In my example I am referring to the parameters Length and Width that must already exist in the schedule parameter options.

Next, the Filter tab will help you sort through your scheduled model category items. In the instance where you want to schedule Air Handling Units, the entire model category of mechanical equipment will not work for this schedule. There are many different ways to filter and all of them depend on the desired outcome. However, this filter will be based on a parameter that exists in the schedule and equipment. An example of two different parameters to filter by are Mark and Schedule Number (Figure 3).

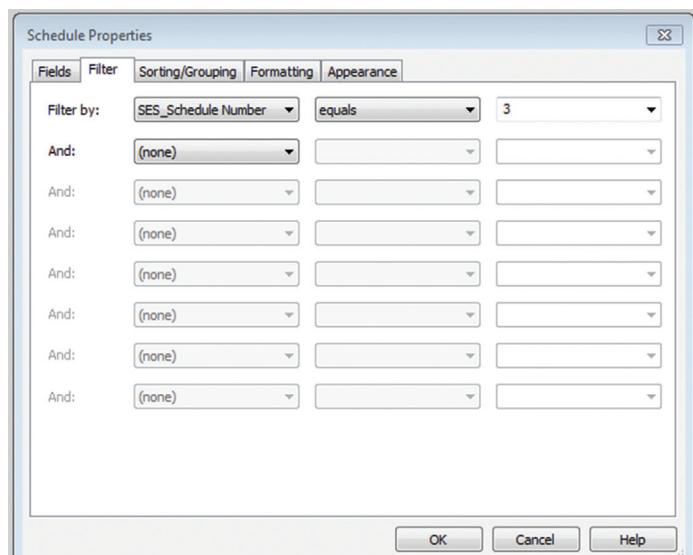


Figure 3

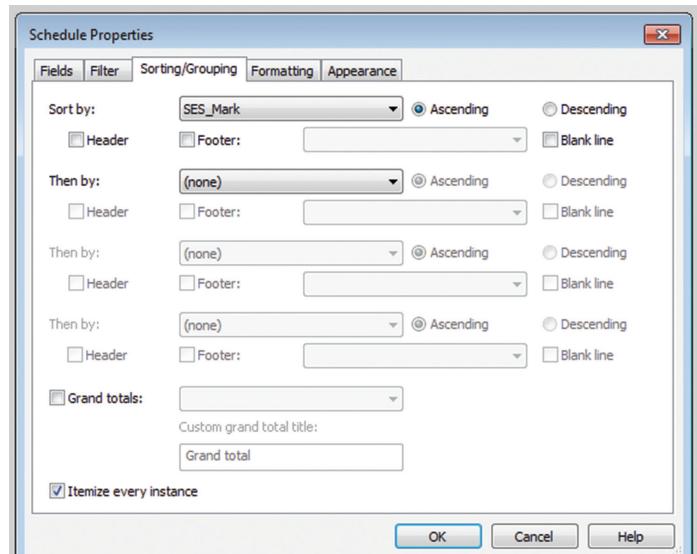


Figure 4

The Sorting/Grouping tab (Figure 4) will help to arrange the order in which the families appear. This can show all instances of the families or show one type. The type option is quite nice when working with something such as a diffuser where you would not want every instance to schedule. This tab also allows Headers, Footers, and Grand totals that are all beneficial in their own way. Try them out!

The Formatting tab shown in Figure 5 is where the fun begins. Here the generic orientation and alignment are taken care of. The fun part is making Hidden fields, applying Field Formats, and applying Conditional Formats. Hidden fields are nice if there is information valuable to you in the schedule, but you don't wish to print the information. Simply make it a hidden field while printing and turn it back on when needed. Field Format will adjust the parameter units independently of the base parameter units and project units.

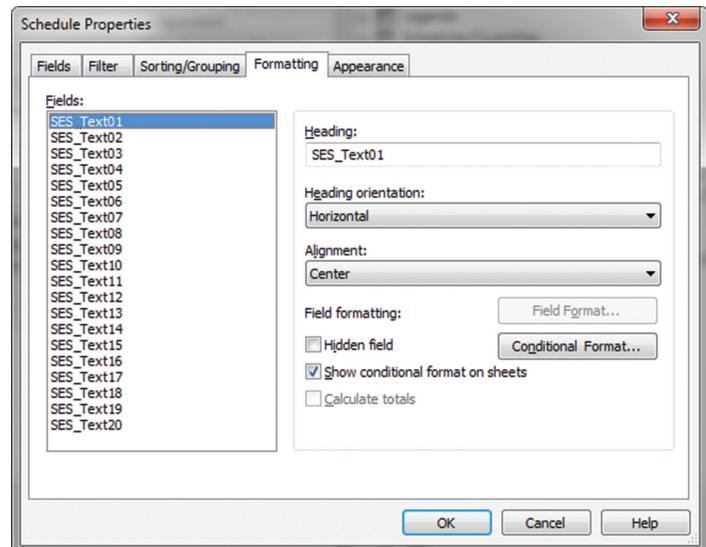


Figure 5

Revit 2018 – MEP

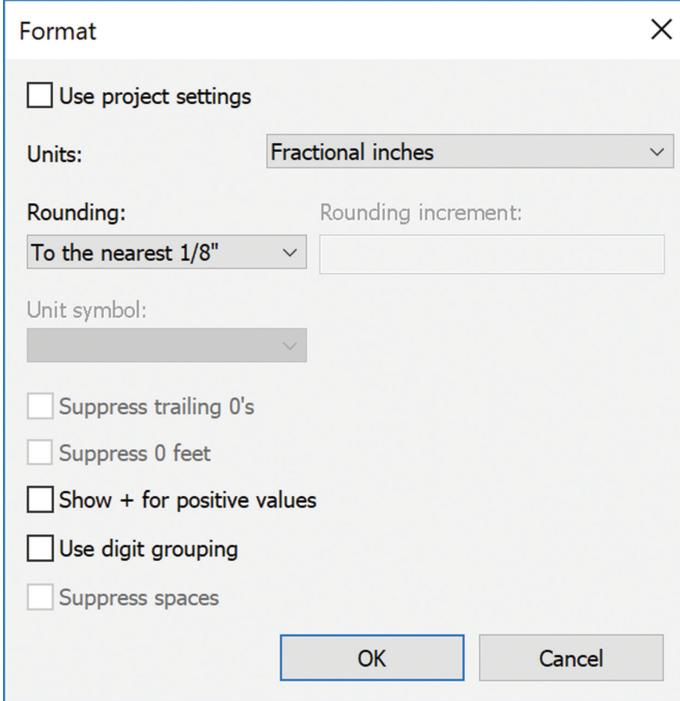


Figure 6

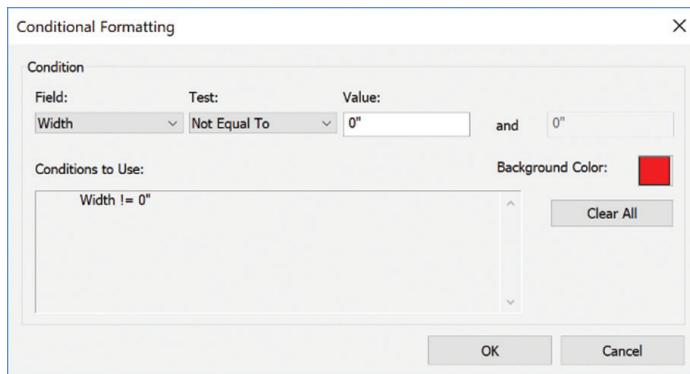


Figure 7

The Conditional Format option gives preset options to adjust how cells appear in the schedule. I use this in QC schedules to alert me to either discrepancies or potential inaccuracies that could cause issues. For example, if my CFM is greater than 3000, the cell will turn red and then I know that something is not correct (see Figures 6 and 7).

The graphics and text options for the schedule reside on the Appearance tab (Figure 8). These can be adjusted per schedule or a view template can be applied in order to keep appearance consistent among all schedules for the project.

Every schedule has an assigned Phase and Phase Filter similar to views. Schedules can have a phase set to show elements as desired. This can help when phases are used in a project for different submittals. If there will be schedules for each phase, then assign the appropriate phase to the schedule so only elements of that phase will populate. On the flip side, the phase filter can be set to show all and include elements of all phases in the schedule.

Embedded schedules are an option inside some Quantity Schedules. The option is available in the following model categories: spaces, duct systems, piping systems, and electrical circuits. This allows you to include information from more than one model category and can be found on the Fields tab.

Now that the schedule aspects have been covered, it's time to talk about parameters in families. How do we make these parameters work for us? We use formulas! These can be as simple as:

- + add
- subtract
- * multiply
- / divide

Some simple and common formulas that can be used in family creations are half lengths, half widths, radius/diameter, offset values. Examples of these follow.

$$\begin{aligned}\text{Half Length} &= \text{Length} / 2 \\ \text{Half Width} &= \text{Width} / 2 \\ \text{Radius} &= \text{Diameter} / 2 \\ \text{Diameter} &= \text{Radius} * 2 \\ \text{Frame Offset} &= \text{Length} + 2"\end{aligned}$$

Complex parameter formula examples:

- If (x, *yes*, *no*) If statement
- If (x, *yes*, if(x, *yes*, *no*)) Nested If statement
- If/and statement
- NOT(*checkbox parameter*, *yes*, *no*) Parameter reading from checkbox

There's a saying, "Google is your oyster." Oh wait, that might just be my interpretation. I use Google a lot for finding formulas to use in family creations.

Some model category families have a Room Calculation Point option in the Family Types dialog. This will make a small dot with a line attached to your element that is only visible in the family.

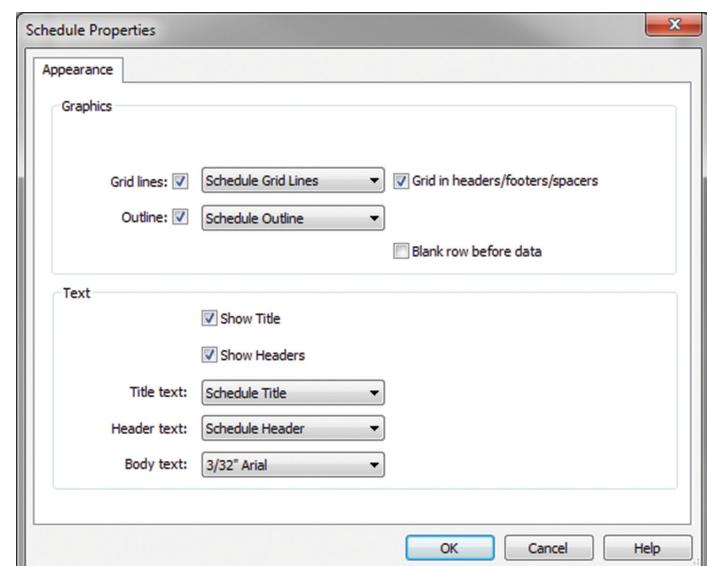


Figure 8

A	B	C	D	E	F	G	H
MARK	LOCATION		ZONE SERVED	V	O	A	
	ROOM NAME	ROOM NUMBER		X	X	X	CO2
AA-	CONTROL	L191					
AA-	CONTROL	L191		X	X	X	

Figure 9

A	B	C	D	E	F	G	H
MARK	LOCATION		ROOMS SERVED	V	O	A	
	ROOM NAME	ROOM NUMBER		1	1	1	CO2
ZV-	CONTROL	L191					
ZV-	CONTROL	L191		1	1	1	

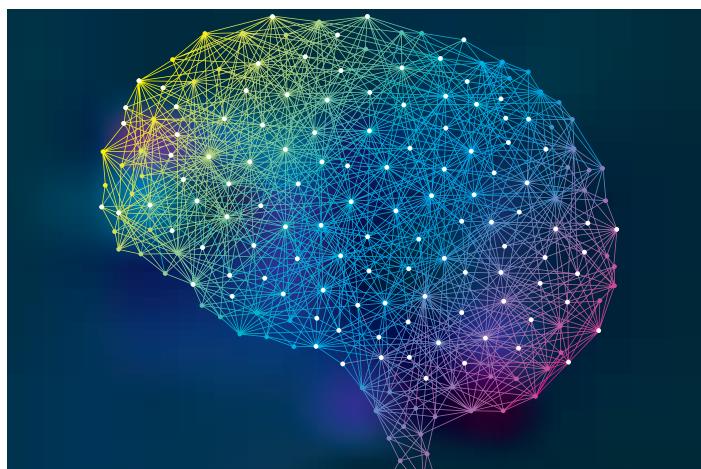
Figure 10

When this is inside a space it will read the space information and relay it back to the family. These come in handy when scheduling the room name or number in which the elements resides because it will automatically populate in your schedule with zero effort on your part.

Basic formulas build into complex formulas, which build into nested formulas, which lead to you being able to achieve great things.

I have used shared parameters in a family to relay information to the schedule and populate parts of it based on visibilities and connections. An example is the Area Alarm panel schedule. If the Area Alarm panel has connections for vacuum, oxygen, and air, then those boxes are checked in the Properties panel for the family (Figure 9). That information is relayed to the schedule and puts an "X" in the schedule for what gases the panel contains. The Room Name and Room Number shown are populated from the Room Calculation Point.

I have also used formulas and shared parameters to read a pipe connection size and input the information in the schedule. The connection information works by assigning a pipe size parameter to the pipe connector inside the family. A text shared parameter exists in the schedule and reads the connection size while converting the pipe size parameter to a text parameter. Last, a yes/no parameter exists in the family to identify if the connection point is used.



Example of the aforementioned formula and parameters required:
OSize – parameter, pipe size, exists in the family at the point of connection, instance

Schedule O – parameter, text, exists in the schedule, instance

O – parameter, yes/no, exists in the family, instance

Formula: Schedule O = if(not(O), "", if(OSize = 0' 0 1/2", "1/2", if(OSize = 0' 0 3/4", "3/4", if(OSize = 0' 1", "1", if(OSize = 0' 1 1/4", "1 1/4", if(OSize = 0' 1 1/2", "1 1/2", if(OSize = 0' 2", "2", if(OSize = 0' 2 1/2", "2 1/2", ")))))))

Formula explained in words: If the O system does not have the O box checked, populate the schedule with a space. If the O system does have the box checked and OSize is equal to 0' 0½", populate the schedule with ½" (repeat for all sizes shown).

The pipe size parameter will adjust to the size of pipe connected to the pipe connector. The sizes listed in the formula are all the typical sizes for connection. Side note: If you draw from the connection point, this does not work. You must draw the pipe and connect to the connection point. See Figure 10.

This completes my brief look into making Revit schedules work for you. An in-depth article on Revit schedules would take pages upon pages, so if you have questions about what is presented here, please feel free to reach out to me via LinkedIn.



Andrea Alderton is the BIM Administrator at Specialized Engineering Solutions in Omaha, Nebraska. An Autodesk Revit Architecture 2013 Certified Professional, Andrea has been in the MEP industry for nearly nine years, working on projects from small two-room renovations to multimillion dollar University buildings and hospitals. She has a passion for learning, teaching, thinking outside of the box, and asking "why?" Connect to Andrea on LinkedIn.



A Recap: Advice I Give Myself, Part Two



It is always good to review. So let's review last month's article (*AUGIWorld*, March 2018). We covered seven traits that I keep reminding myself need attention. I suggested that you think of these as approaches, habits, mindsets, ways of thinking, modes of practice, leanings, frames of mind, perspectives, and so on.

Last month I reminded myself of some items such as providing great customer service, the value of communication, sharing knowledge, taking initiative, being proactive and organized, and, finally, planning as a way of life.

Here is the next batch. These are the things that I keep telling myself. They are posted on my bulletin board. They are reviewed from time to time when I need some refreshing of my focus.

BE QUALITY DRIVEN

Take pride in the work you produce. Work to a level that is beyond "good enough." You should not think you have done a great job just because no one complains. You may have done a lousy job and they may be complaining to others. Test and verify solutions. Strive for best outcome. Stay with a task or problem until the end user is satisfied. Avoid "do overs." Do not have an attitude of "I can just fix it/finish it later." Act as if your name is stamped all over the work you are doing (it actually is—make it a good thing).

**Everything you
“do” says something
about “you”**

DOCUMENTATION

Document and share processes, procedures, access, and controls. This is so hard to do—going back at the end of a job and writing down what you did or what you set up takes time. Yes, this is time that could be spent elsewhere, but not time that could be spent better. Understand that everything that is done in a shared environment of support needs to be documented and stored in a shared location, secured as needed. Create documentation that non-support staff can also use as applicable. Develop “cheat sheets” to help end users. Go on a deep dive for the tech heads out there that might come after you. Get it out of your head and on (digital) paper.

REPORTING

Notify stakeholders of progress, problems, and completion. Keep stakeholders informed as the project progresses. Notify everyone about delays and roadblocks. Understand that a job is not done until all stakeholders know that it is completed. If you finish something and do not tell others, then they are delayed in taking the next steps, so they need to know about completions. Fixes must be reported so others can then move forward on cascading efforts that were held up. Producing progress reports in a timely manner helps others know that you are still focused on their issues. Quick reports can help others focus on other things and not worry about what you are doing.

HAVE A PLAN B

Yes, a Plan B, and C, and maybe D. Defining back-out strategies as part of planning is wise. We talked about planning in the March 2018 article. Planning contingencies in case of failures is a good idea. Plan B might come into play at any time. Quickly developing options if things derail comes from good prep and working contingencies into your planning. Don’t be overly optimistic to the point of not thinking about things going wrong. Something always goes wrong, takes too long, does not work, or breaks. You need to have a Plan B and know when to put it into action.

BE A TEAM PLAYER

Working well with others is part of everyday work processes. You have to know when and how to hand off work and delegate to others. Teamwork can be defined in many ways. Here is a synopsis of what I once wrote on my blog.

Good team players work toward a common goal. This may seem like a commonly understood perspective, but I have seen teams drift off track and lose sight of the goal. I have seen teams that do not agree on the goal at all. These should be the first questions asked and the ones that are reviewed from time to time to see if you are still heading in the right direction. What defines success?

Good team players share common methods. They are not little robots, programmed to do just one thing, but they do share a common approach to getting things done. Teams may not start this way, but they need to agree on how the goal will be reached. The teams that operate the best are those that first agree on how they will tackle the process of reaching the

Quickly developing options if things derail comes from good prep and working contingencies into your planning

goal. Sometimes the process is defined up front and other times it is defined as you move forward. Either way works, as long as the team understands who is doing what.

Good team players document the process and the results. This goes back to my documentation topic. The goal is not the only milestone that is achieved as the team progresses. It may be formal or informal, but you need to document what is agreed to so everyone stays on the same page. Writing it down and distributing it causes you to clarify and review as you go. Everyone contributes and reads the notes from a meeting and they are verified so all agree to the decisions that are written and not just what they think was said. I have found so many times that written reviews force people to see what was said.

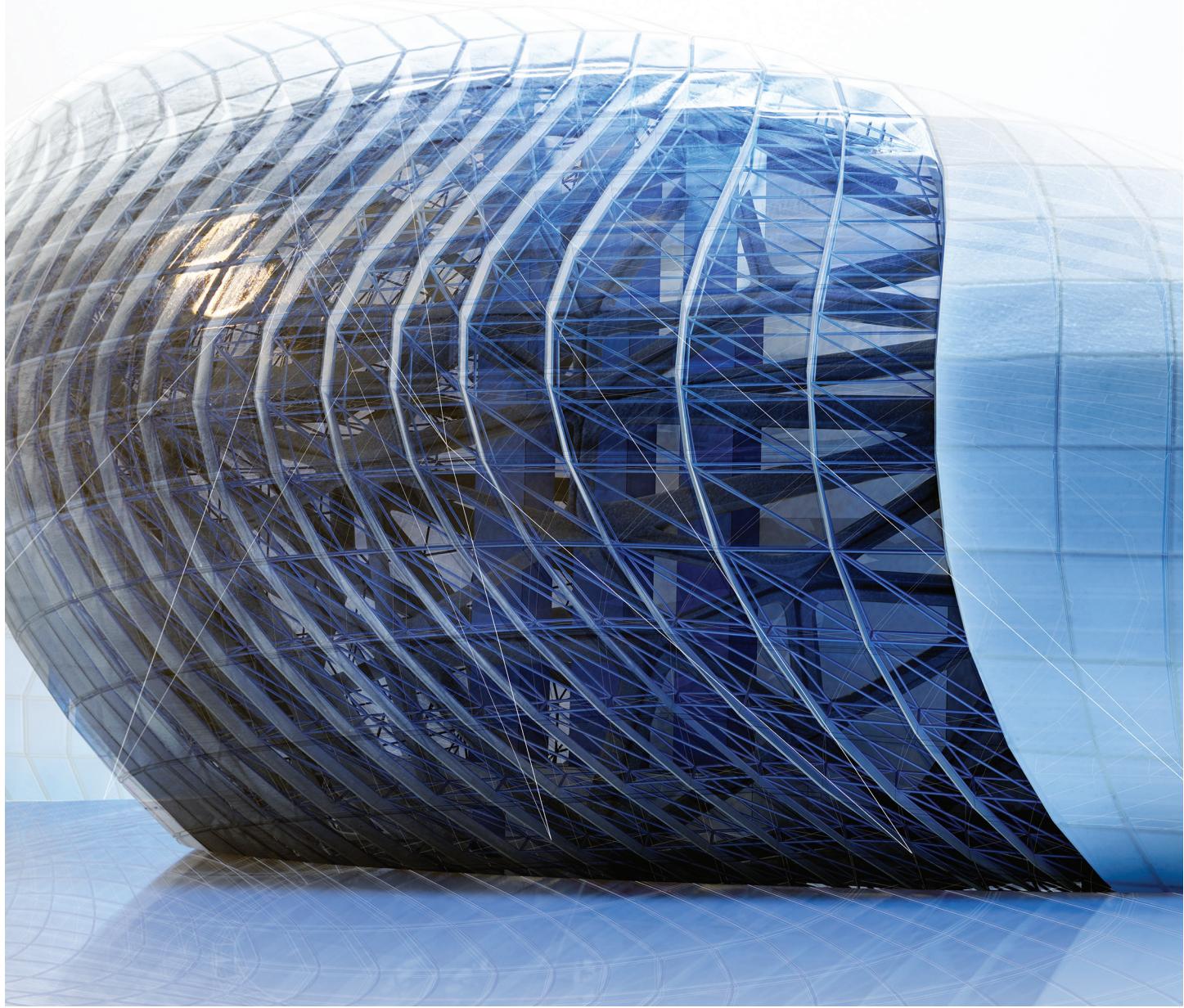
Good team players work as a team. An obvious statement, but so often not applied. Every member of the team stands or falls on the collective outcome of the team. But many bring personal agendas and goals that counteract that effort. Ferreting out these silent agendas may be tough, but they need to be uncovered and addressed or corrected. And don’t bring your hidden agendas into a team process. Not good.

Some of you may have taken a few tips from this article that can be put into place. Or at least pondered. More to come next time. Until then, keep on thinking.



Mark Kiker has more than 25 years of hands-on experience with technology. He is fully versed in every area of management from deployment planning, installation, and configuration to training and strategic planning. As an internationally known speaker and writer, he is a returning speaker at Autodesk University since 1996. Mark is currently serving as Director of IT for SIATech, a non-profit public charter high school focused on dropout recovery. He maintains two blog sites, www.caddmanager.com and www.bimmanager.com.

Manage This!



 I am guilty of it. A new building assignment, a fresh Revit® project, and all you want to do is get in there and start modeling! Then, partway through you realize there are some things Revit should have had before you started the project. Some things that can wreak havoc if you have to go back and change them after you have already started modeling. Here are a few things to check before you start modeling.

MANAGE TAB

Just my very humble opinion, but the Manage tab should be first in the Revit lineup. You can change any of the tab locations on your ribbon by holding the CTRL button and dragging the tab.

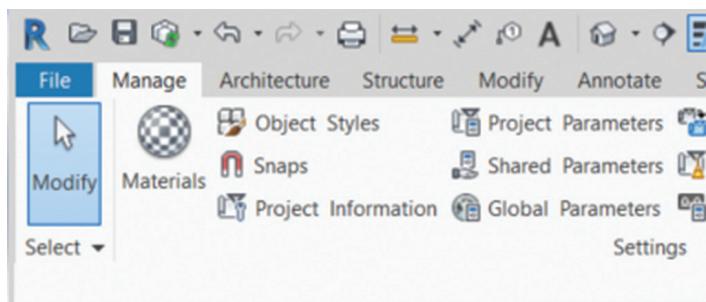


Figure 1: Manage tab first!

This creates a subtle reminder to check project settings first.

SETTINGS

Working across the Manage tab, the first panel is the Settings panel. Materials and Object Styles can be set in a template file by your BIM manager. There will also be additional Materials created that are project specific, so those can be revisited later as you go along. Snaps are something I've only changed a few times in the many years I've been working with Revit, but you can set your preferences here. Snaps may be turned on or off globally, or Snaps may be turned on or off individually. Snap increments for both linear and angular dimension snaps can be modified as well.

Project Information lists parameters that are specific to the current Revit project—project name, owner's information, typical title block fodder. Energy Settings for analysis purposes can also be set in the Project Information, or on the Analyze tab.

The middle section of the Settings panel is dedicated to Parameters—Project Parameters (those specific to the current Revit project), Shared Parameters (applied to multiple projects and families), and

If you are collaborating with a team, you will want to make sure everyone is using consistent Shared Parameters. Otherwise, schedules and tags will become very cumbersome.

Global Parameters (used to control other parameters). Set as many of these as possible before starting, especially if you are using Global Parameters to drive the values of dimensions or other parameters. If you are collaborating with a team, you will want to make sure everyone is using consistent Shared Parameters. Otherwise, schedules and tags will become very cumbersome.

Transfer Project Standards is a fantastic tool when used properly. With Transfer Project Standards, you can copy Family Types, Object Styles, and many other settings from one project to another. Unfortunately, many users abuse this by copying from one project to another, over and over. It is important to have a system in place to manage items that continually are reused. Data that is continually reused in a legacy fashion is more likely to become corrupt. If objects are continually reused, consider incorporating into templates or libraries.

PURGE UNUSED... my favorite command available! When a user comes to me and complains that the model is running slow, the first thing I'm going to ask is if they have purged lately. And the answer is usually something like, "I don't want to lose anything." Okay, key word here is "unused," meaning you're not using it! So, get rid of it! It's bogging down your model, and you don't need it. Chances are you won't need it, and even if you do, it's not that difficult to reload a family. Also, you can select which families to

purge, so if there is something you really have a grip on, uncheck the box and it won't be removed from the project. Purge often!

Project units are usually fixed. The one thing I usually check is the accuracy of the length

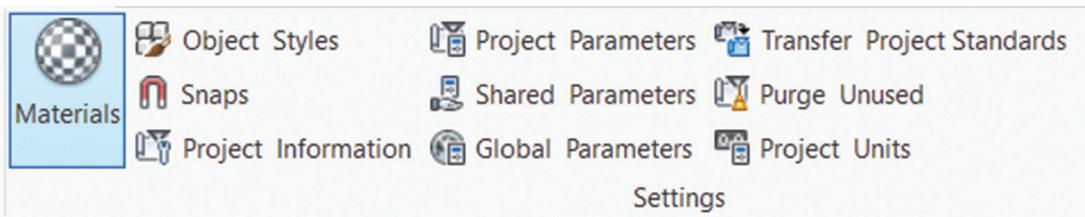


Figure 2: Settings panel of the Manage tab

Revit 2018 – Structure

units. For those of us stuck in Imperial units, set the length accuracy to 1/256". This will ensure that your model is accurate, and will eliminate errors due to rounding, especially critical with steel measurements.

STRUCTURAL SETTINGS

Hidden in a tiny button on the Settings panel are the Structural Settings. Before starting structural modeling, check these settings.

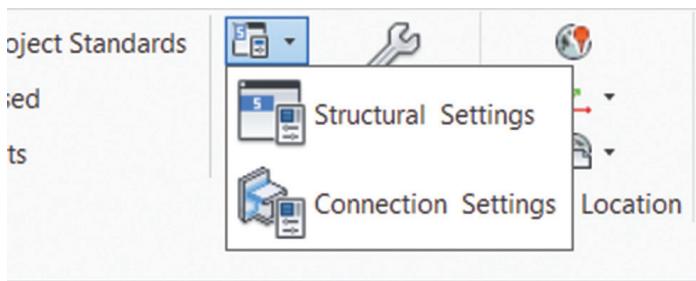


Figure 3: Structural settings

This will save you from headaches later. Cutback Distances, Symbolic Representations and Load Calculation, and Analytical settings all reside within this tiny button that's often overlooked.

AND THE REST...

The remainder of the Manage tab includes other general settings that will most likely be managed by templates or company

standards. The one command I will highlight is the Phases button. If at all possible, set the Phases at the start of the project. Phases must be consistent through linked Revit projects (Architecture/ MEP); otherwise, visibility controls and project management will be utterly impossible.

START WELL, END WELL

The more you can set from the beginning of the project, the easier it will be to continue and complete the project. If something needs to be adjusted at the start of every project, consider making those settings permanent in a template. Management doesn't mean a higher status in the company... management means taking care of your projects from start to finish. Manage this!



Kimberly Fuhrman, LEED AP BD+C, is a Sr. BIM Technical Specialist for EDGE-Global Technology Solutions. She serves on the AUGI Board of Directors, as well as the USGBC-Central PA Community MLAB. She also participates in the Autodesk Developer Network and is a member of the Autodesk Expert Elite program. Kimberly has been a presenter at Autodesk University, Midwest University and BILT NA. In her spare time, she is a regular contributor to cadpanacea.com.

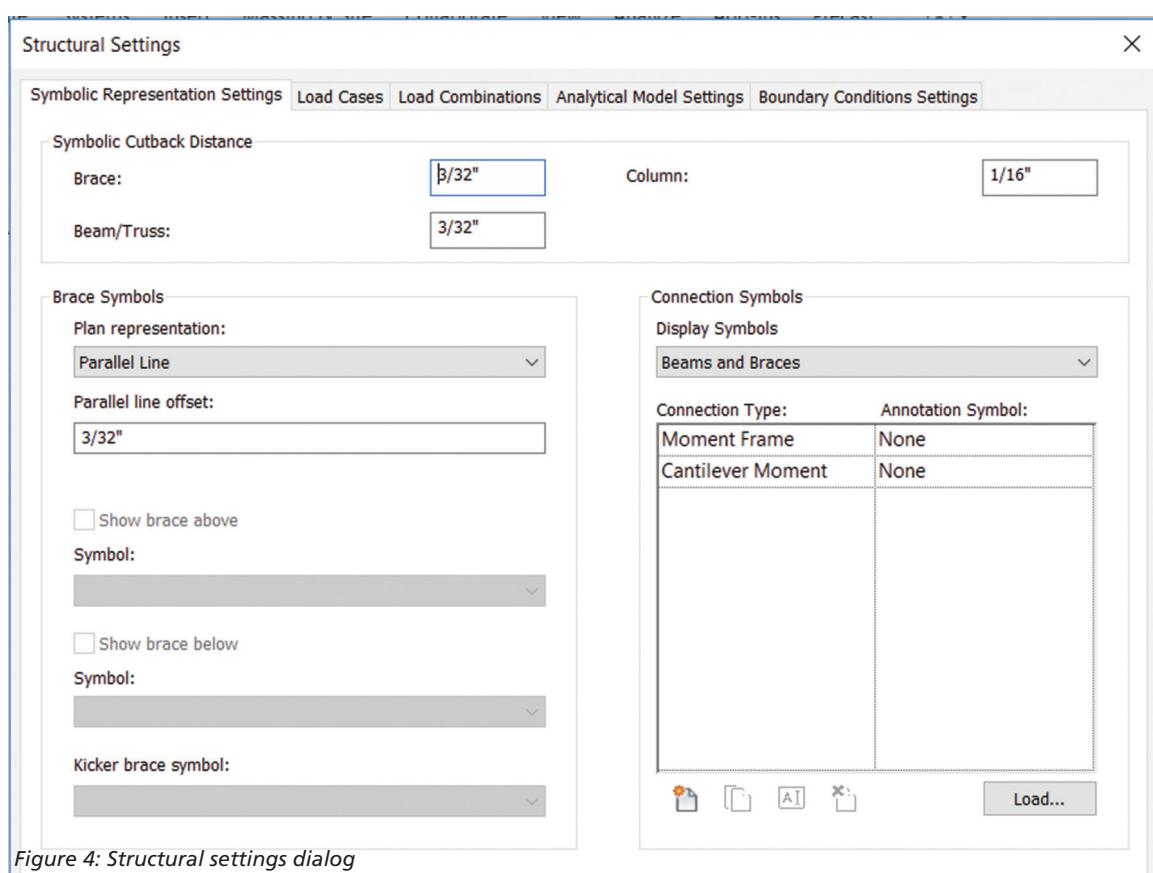


Figure 4: Structural settings dialog

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Inside Track

by: Brian Andresen

Welcome to *AUGIWorld Inside Track!* Check out the latest opportunities to advance your skills, processes, and workflows in your firm with the most current AEC-related software and hardware updates available.

REOPEN



<https://timclassen.com/>

ReOpen opens all Autodesk® Inventor® windows exactly the way they were being used before the Inventor was last closed, allowing you to continue working right where you left off.

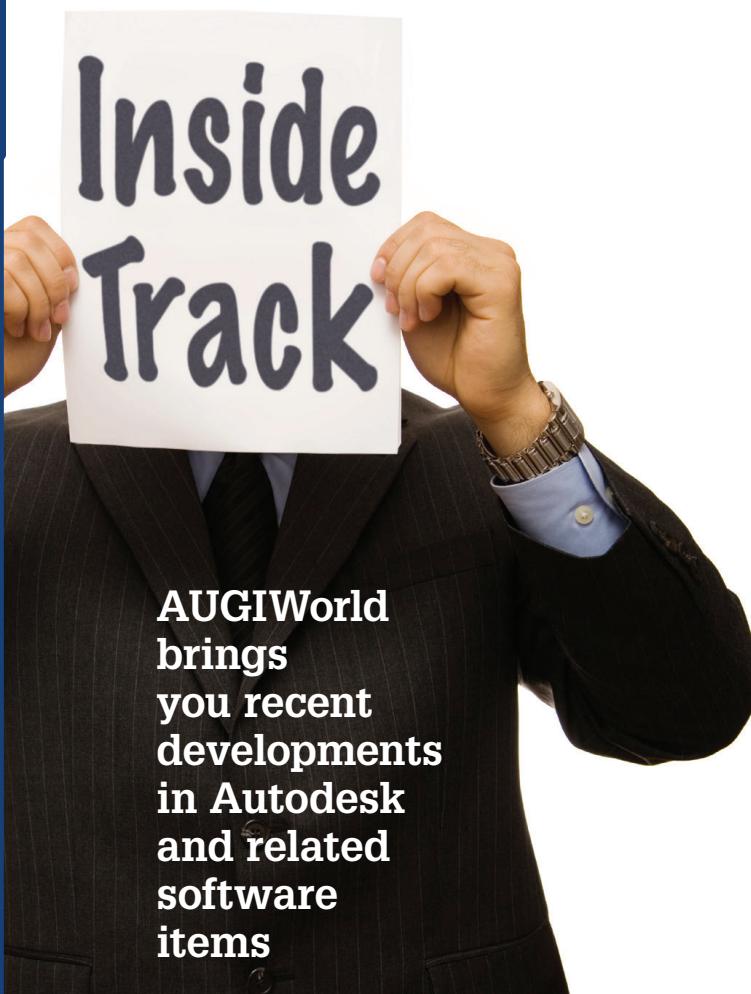
Via “‘Re-Open’-Settings” (“Get Started” -> “Launch” -> “‘Re-Open’-Settings”), you can configure the program to automatically ask whether you would like to restore the windows from the last session of Inventor when you start the program. You can also reopen the windows from the last session via the “Re-Open” menu item in the Inventor menu (“Get Started” -> “Launch” -> “Re-Open”).

AUTOEXCEL



<http://bit.ly/2HuZh3Y>

With AutoExcel, you will be able to quickly export and re-import any Autodesk® Revit® project schedule to Microsoft Excel. Process includes:



1. Open any project schedule and click “export”
2. Modify the Excel generated file
3. Go back to the same project schedule and click on “import”

Great for modification of many parameters in a single step. Use Excel to organize your data and parameters.

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AREAMARKER



<http://bit.ly/2FFIwT4>

AreaMarker is an AutoCAD® app that allows you to get areas of CAD objects and regions quickly and mark the results in the drawing. Then you can also export the results to CAD Table or Excel.

You can start AreaMarker by the main shortcut “FF,” which is the easiest and recommended way.

- Pick internal point or [Single mode Multiple mode Index Export Options]:

And you can also start AreaMarker with the following shortcuts:

Shortcut	Feature
AMS	Single Mode
AMM	Multiple Mode
AMP	Internal Point Mode
AME	Export
AMO	Options

Detail
Select single object one by one and specify a point for area mark
Select multiple objects to mark all areas at once
Pick internal point to mark area in the center
Select areas to create a table or export results to Excel
Options and settings

Options include:

- By picking an internal point, AreaMarker will automatically generate the boundary and mark the area at the center point.
- By selecting objects in AutoCAD, AreaMarker will mark areas at the center points.
- You can also export the results to Excel after marking.

Supported versions: AutoCAD 2015 - 2018.

If you have some news to share with us for future issues, please let us know. Likewise, if you are a user of a featured product or news item and would like to write a review, we want to know: brian.andresen@augi.com

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Mark your calendar
Registration opening soon

Australia/New Zealand

Brisbane, Australia
24 - 26 May 2018

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Submit your abstract
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START TAB

 **W**hen you start the program, open a new tab (+), or close the last drawing, a Start Tab is displayed (see Figure 1). Each Start tab (formerly the New tab) contains the Create Page and the Learn Page.

The Create Page is a quick launch pad to decide what to do, and contains the following sections.

- Get Started
- Start New Drawing
- Templates
- Open Files
- Open a Project
- Open a Sheet Set
- Explore Sample Drawings
- Recent Documents
- Connect

The Learn page provides access to learning resources such as videos, tips, and other relevant online content or services. For every new content update, a notification badge is displayed at the bottom of the page. Note that if there is no Internet connection, the Learn page is not displayed.

You can use Ctrl+Home or GOTOSTART to get to the

Start tab quickly. If you don't want the Start tab to display, set STARTMODE to 0.

SMOOTH LINE DISPLAY

AutoCAD® Architecture has a solution to the jagged diagonal lines that you sometimes see in 2D wireframe drawings. The command is

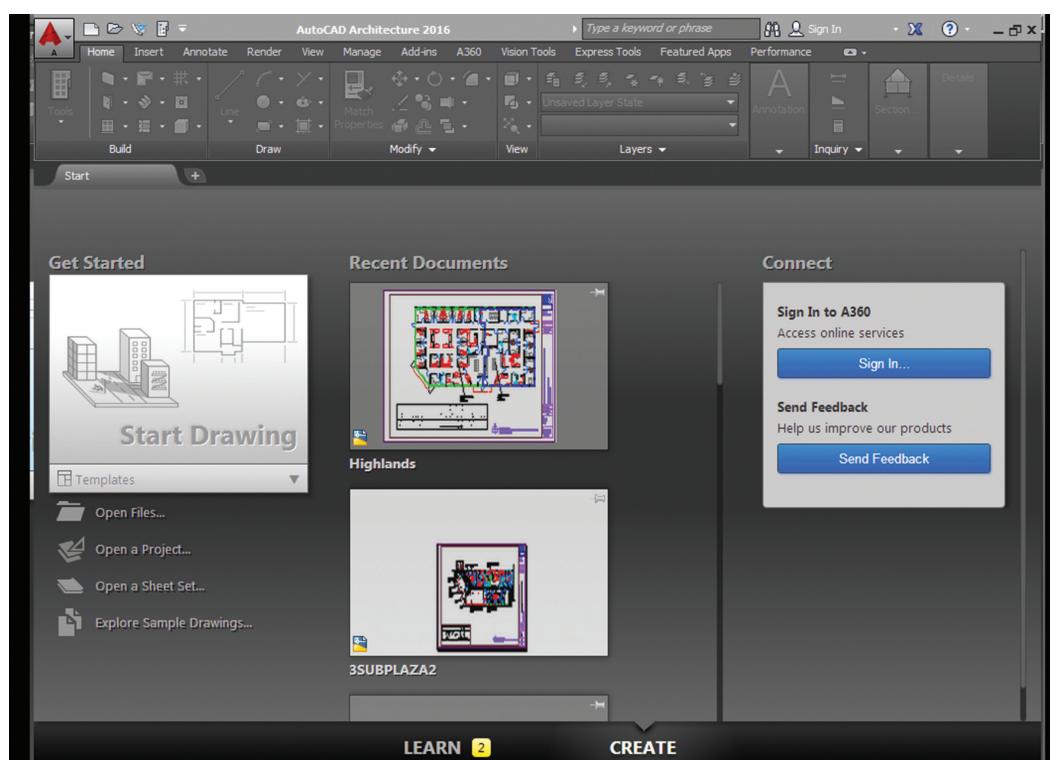


Figure 1: Start tab

LINESMOOTHING. This variable can also be found under the Options dialog box, System tab. Click on Graphics Performance and the Graphics Performance dialog box appears. Checking Smooth Line Display removes the jagged lines. If your hardware supports High Quality Geometry, you can select the new “High Quality Geometry” option in the Graphics Performance dialog on the Status bar. Hardware acceleration must be turned on for this to work. Set LINEFADING to 1 to automatically fade geometry as you zoom into super-dense drawings. You can control the amount of fading with LINEFADINGLEVEL.

DIGITAL SIGNATURES

AutoCAD Architecture offers extra security controls that help to protect your drawings. You will find a variety of Security Options on the System tab of Options. One option is Digital Signatures, now accessible via the new DIGITALSIGN command. A digital signature is a block of encrypted information that you can add to certain files to identify the originator and indicate whether a file has been altered since the digital signature was applied.

To attach a digital signature to a file, you must either have a digital certificate issued by a certificate authority or you can create a self-signed certificate using one of several utilities.

You can examine a file’s digital signature. This is important when you are working on collaborative projects or if you receive an executable file. For drawing files, an icon is displayed on the status bar if a drawing file is digitally signed. When you click the icon, you can verify information such as the validity of the signature, the name of the individual or organization that signed the file, and so on.

STATUS BAR

The status bar can automatically wrap onto two rows when there are more icons than can fit into a single row. At any given time, the Model tab and at least one layout tab is always displayed. You can populate the status bar with the tools you want by clicking on the three-stacked lines in the lower-right corner of the editor (see Figure 2). Isolate Objects and Lock UI have been added to the status bar customization menu. The Lock User Interface tool on the status bar enables you to check and uncheck multiple UI elements at one time instead of having to reopen the flyout each time. You can click the icon to enable or disable UI locking. Also, note that the previous text “Cut Plane:” has been replaced by an icon.

ACA REVISION CLOUD

The Revision Cloud tool is enhanced to provide more flexibility. It is accessible from the Annotate ribbon panel and includes three methods of creation: Rectangular, Polygonal, and Freehand in addition to the Command line option to select

an object. The last used creation method is remembered the next time the command is run. You can set your own default creation method using the REVCLLOUDCREATEMODE system variable. Whether you create rectangular, polygonal, freehand, or object revision clouds, editing their size and shape with grips is intuitive and easy. The number of grips displayed for revision clouds has been significantly reduced. The location and behavior of grips is based on the shape of the revision cloud. If you prefer legacy display of grips you can set REVCLLOUDGRIPS to Off. In addition to easier editing with grips, a new Modify option allows you to draw new revision cloud segments and erase selected portions of existing revision clouds (put several revision clouds together).

3D PRINTING

AutoCAD Architecture has made it easy to send your designs to a 3D printer. Publish, in the Application menu, gives you the option to Send to 3D Print Service. Print in the Application menu gives you the option to choose Print Studio. After choosing one of those options, the 3D Print Options dialog box will appear. This dialog box allows you to select objects and control output dimensions. Select OK and you will be asked to save the output file to STL format so it can be sent to a 3D Print Service. If you

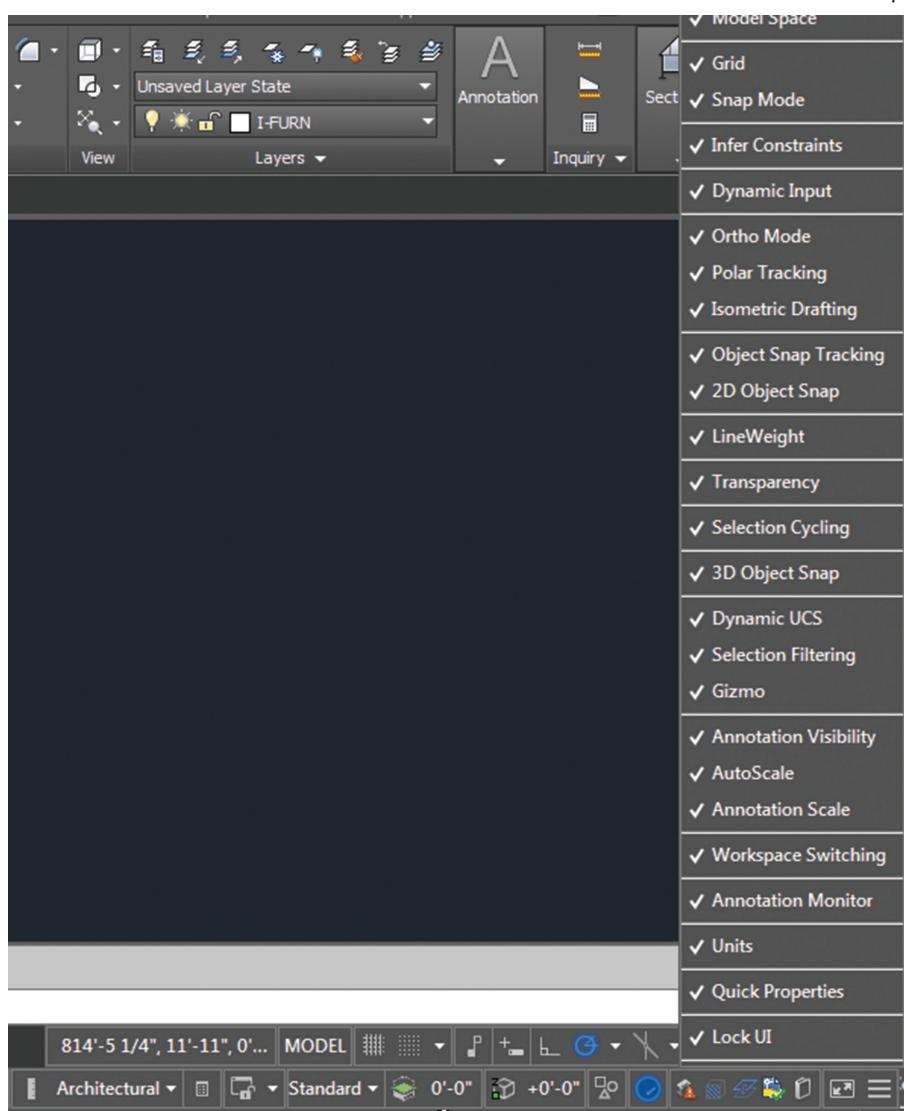


Figure 2: Status bar

AutoCAD Architecture 2018

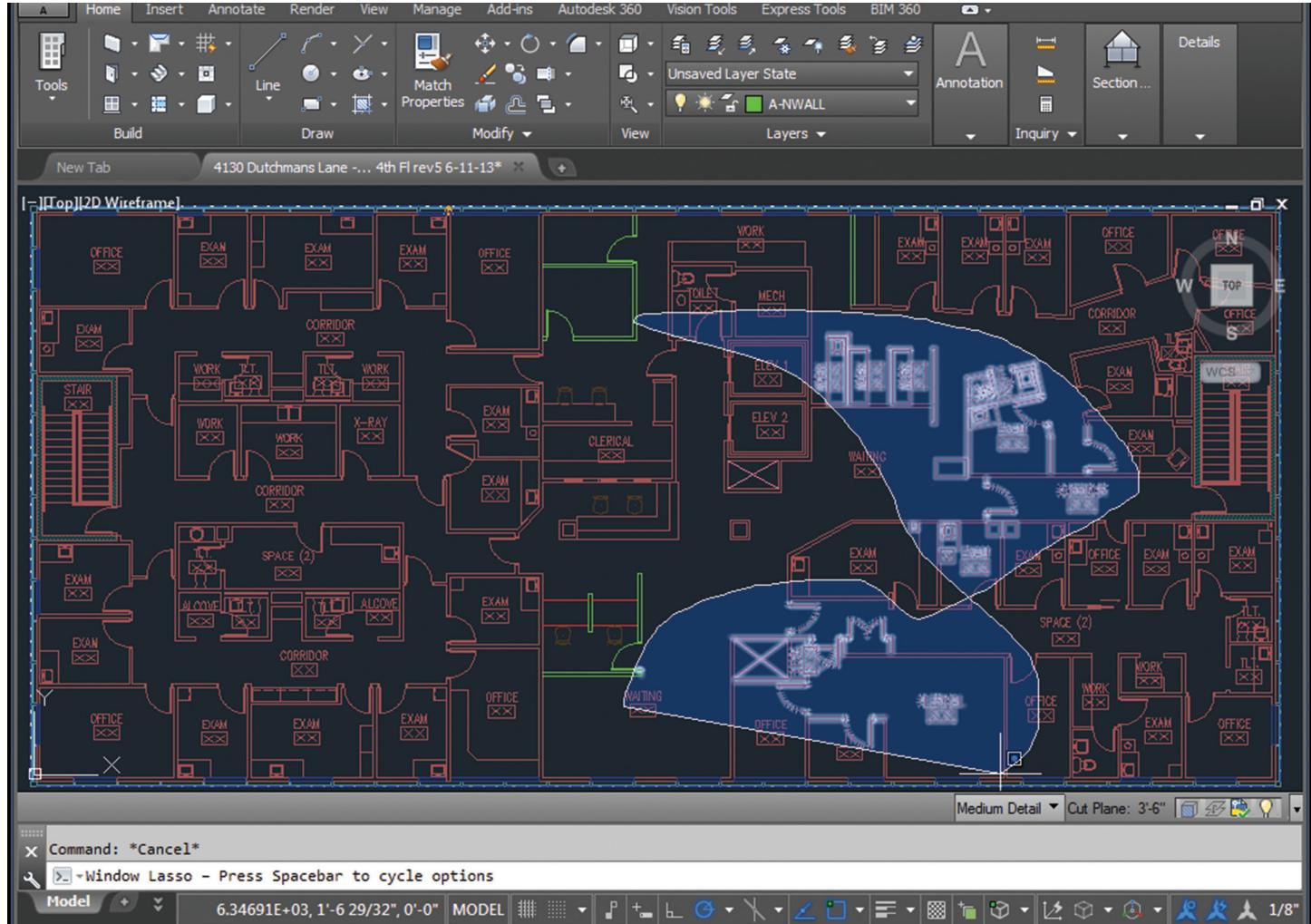


Figure 3: Lasso selection

choose Print Studio, you will have access to additional tools to aid in prepping your model for printing when sending to your 3D printer. You may be prompted to install Print Studio as it is not installed by default.

LASSO SELECTION FOR OBJECTS

Lasso Selection is an object selection feature that can be created by clicking, dragging, and releasing the mouse button (see Figure 3). You can drag from left to right to select all objects that are entirely enclosed in the lasso or drag from right to left to select all objects that are crossed by the lasso. Click Enter. You can deselect objects by pressing shift and then clicking the individual objects or dragging across multiple objects. Press Esc to deselect all objects. It is important to note that when using lasso selection, you can press the spacebar to cycle between the Window, Crossing, and Fence object selection modes.

SHARE DESIGN VIEWS

You can publish design views to a secure, anonymous location within Autodesk A360. You can share views of your design by forwarding a generated link to the people you specify without releasing the DWG file itself. Access to these views is provided by any supported web browser and does not require recipients to

have an Autodesk A360 account or install any additional software. Supported browsers include Chrome, Firefox, and other browsers that support WebGL 3D graphics. Once you have the design view established, you can share the link with other users. This link is valid for 30 days but you can extend it for an additional 30 days at any time indefinitely.

SMART DIMENSIONS

In AutoCAD Architecture, the DIM command is accessible from the ribbon and is smart enough to detect objects and provide various visual dimension options. The DIMLAYER command can be used to create a new layer for dimensioning. You are given horizontal, vertical, and aligned dimension previews when you select a linear object. From these previews, you can simply place the desired dimension. You can also select another non-parallel linear object to display and place an angular dimension. You can specify a type of dimension by using the various dimensioning options in the right-click menu. The default values are automatically assumed for the dimension text and angles, but you can still change them from the right-click menu or command line. The DIM command remains active until you exit the command, allowing you to knock out multiple dimensions at one time. You can use the width sizing control to wrap dimension text, which is a great addition!

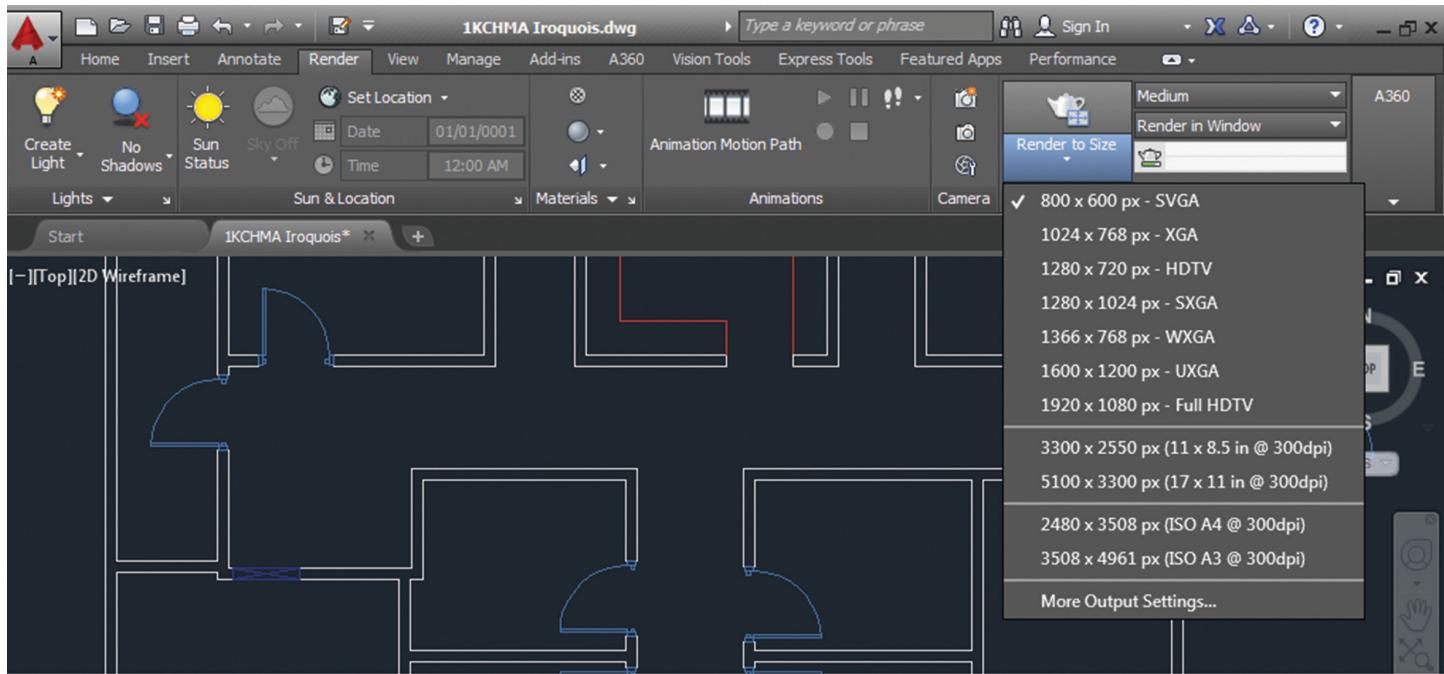


Figure 4: PDF options

PDF ENHANCEMENTS

AutoCAD Architecture has continued improvements for importing geometry, TrueType text, and raster images from a PDF. You can use the PDF Import tool to import geometry from a PDF page into the current drawing as AutoCAD Architecture objects. After selecting a PDF file, you can use the Import PDF dialog box to customize your import. You can choose which page of the PDF file to import and specify scale, rotation, insertion point, type of data to import, and so on. If you choose not to apply linewidth properties, AutoCAD Architecture will use the default linewidth. The PDFIMPORT command offers the option of selecting an attached PDF underlay. This option is found in the contextual PDF underlay ribbon tab. You can specify a polygonal or rectangular boundary around the objects you wish to import or you can choose to import the entire underlay.

When using the Plot tool to create PDF files, you can now choose from four predefined PDF presets offering a quick way to apply different PDF output options that meet various needs. If you select any PDF pc3 from the printer/plotter drop-down list, a PDF Options button is displayed, providing convenient access to the PDF Options dialog (see Figure 4). Similar PDF presets and options controls are available when creating PDF files with the Export to PDF and Batch Plot tools.

The Sheet Set Manager has also been updated to support these PDF enhancements. Layout names are automatically displayed as page labels in the PDF file, making it easy to identify sheets when viewing the PDF.

TEXT ALIGNMENT AND TEXT EDIT

AutoCAD Architecture has a TEXTALIGN command that allows multiple text objects to be aligned to a base object and provides a preview of the result. After typing TEXTALIGN,

the prompt Select text objects to align [alignment Options] is displayed. Select two or more objects to align and press Enter. With this command, you can easily control the spacing or alignment direction.

The TEXTEDIT command has a new “multiple” option that allows you to perform multiple text edits as one time. There is also an Undo option within Multiple mode that allows you to undo individual text edits. It is important to note that if you leave TEXTEDIT and perform an undo, all of the edits within the TEXTEDIT will be undone.

LAYER MERGE

Layer Merge (LAYMRG) can be found in the Layer Manager in AutoCAD Architecture. At the command prompt, you can enter LAYMRG. Then in the drawing area, select an object on each layer that you want to merge and press Enter. Next select an object on the target layer. All objects on layers that contain objects in the first selection set are moved to the target layer.

You can also do this using the Layer Properties Manager. Select the Home tab of the ribbon, Layers panel, and then select Layer Properties. In the Layer Properties Manager, select the layers you want to merge into another layer and right-click and select Merge Selected Layers To (see Figure 2). You will need to press Ctrl+click to select more than one layer. In the Merge to Layer dialog box, select a target layer. Objects on the merged layers are moved to the layer you select in this dialog box. The now empty layers are automatically deleted.

RENDERING

The rendering engine in AutoCAD Architecture is easy to use and yields great results. The Render ribbon panel on the Render ribbon tab supports the rendering engine. It includes a size drop-

AutoCAD Architecture 2018

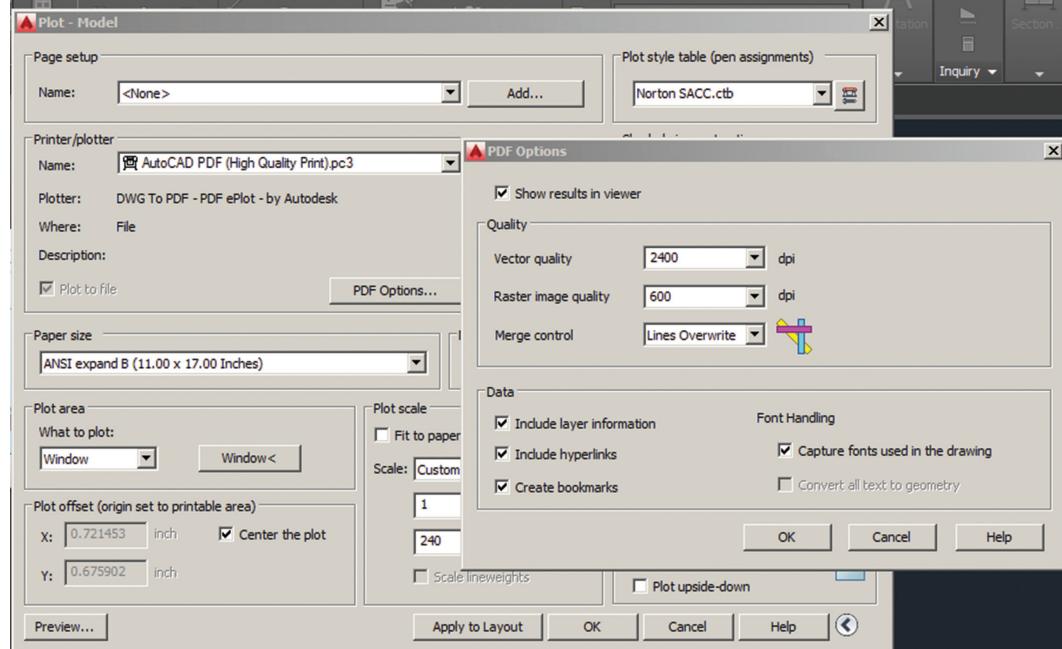


Figure 5: Render to Size

down where you can quickly select from standard pre-defined render sizes (see Figure 5).

The Render Presets list includes additional options enabling you to control the render quality by setting either the number of levels to render or how much time to render. The new Render Presets Manager is much simpler than the previous Render Presets Manager. You can create, modify, and delete custom Render Presets. Specify Render Preset name and description as well as the duration and accuracy. You can render directly from the Render Presets Manager, choosing to render in the Render Window, the current viewport, or a specified region in the current viewport.

When rendering in the render window, a drop-down list enables you to select from a list of standard render output sizes or choose More Output Settings to access the new Render to Output Settings dialog box, in which you can specify the image size and resolution. You can also choose to automatically save the rendered image to a file including BMP, TGA, TIF, JPEG, and PNG formats.

A new Render Environment & Exposure palette offers powerful new Image Based Lighting (IBL) environments. When the Environment control is turned on, you can select from pre-defined, image-based lighting environments. The image-based lighting environments automatically apply lighting effects. Some of them include 360 background images that emulate a realistic environment as you orbit around the model. The viewport must be in a perspective view and you must render to see the IBL environment.

A control in the Render Environment & Exposure palette enables you to use a custom background image. Custom images are static and do not emulate a realistic 3D environment as you rotate. Additional controls in the Render Environment & Exposure palette enable you to adjust the Exposure and White Balance. The Exposure slides between Bright and Dark.

The White Balance slides between Cool and Warm. The new render window displays the current render process and allows you to save a snapshot, zoom in and out while rendering, and print the rendered image. Render history is displayed in the expanded section of the render window.

GEOGRAPHIC LOCATION

Geographic location information in a drawing file is built around an entity that is known as the geographic marker. The geographic marker points to a reference point in model space that corresponds to a location on the surface of the earth of known latitude and longitude. The program also captures the direction of the north

at this location. Using this information, the program can derive the geographic coordinates of all other points in the drawing file. You can set a geographic location using the Set Location tool on the Insert tab of the ribbon, then easily search for an address from a map and drop a marker on the map to mark the spot. Drawing units can be easily modified.

After you insert a geographic marker in a drawing, you can do any of the following:

- Make the program automatically determine the angle of sunlight when you perform sun and sky simulation.
- Insert a map from an online maps service in a viewport.
- Perform environment studies.
- Use position markers to mark geographic locations and record related notes.
- Locate yourself on the map in real-time on systems that support location sensing.
- Export to AutoCAD Map 3D and expect the model to position itself automatically.

You can remove geographic location information from a drawing file using the GEOREMOVE command. The geographic marker and GIS coordinate system are removed from the drawing file. However, position markers will remain in the drawing file.



Melinda Heavrin is a CAD Coordinator & Facility Planner in Louisville, Kentucky. She has been using AutoCAD Architecture since release 2000. Melinda can be reached for comments and questions at melindaheavrin@windstream.net.



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Just installed AutoCAD® Civil 3D® 2018? Maybe just downloaded Civil 3D 2018.1 or 2018.2? Well never fear....2019 is here! That was somewhat sarcastic, but I do see some much-needed improvements to AutoCAD 2019 and its vertical products such as Civil 3D. You saw throughout the year that with most Autodesk products you get periodic updates. Civil 3D 2018.1 and 2018.2 were solid updates, and there are a few items in 2019 that I think are great.

This article looks at some of the top new features within AutoCAD Civil 3D 2019 and may help you make your decision to download and install today.

VERSION INTEROPERABILITY

The AutoCAD format for 2019 is also the 2018 format introduced last year, meaning you should have no problem going back and forth between 2018 and 2019. Good, that's out of the way. Now on to the important stuff!

DWG COMPARE

Compare two versions of a drawing

DWG Compare is a fantastic addition to AutoCAD-based products such AutoCAD Civil 3D. You can now quickly review changes to drawing features such as 2D linework, Civil 3D objects (Pipes, Surfaces, etc), text, and pretty much anything within your drawings. It's available in the main Application menu when no drawing is active or under Drawing Utilities when there is a drawing active. You can also access it from the new Collaborate ribbon tab (Figure 1).

Once you select DWG Compare, the dialog box will ask you to select which two drawings to compare, it will then create a third drawing with the two overlaid. Prior to selecting COMPARE, you can modify the color choices if you wish (Figure 2).

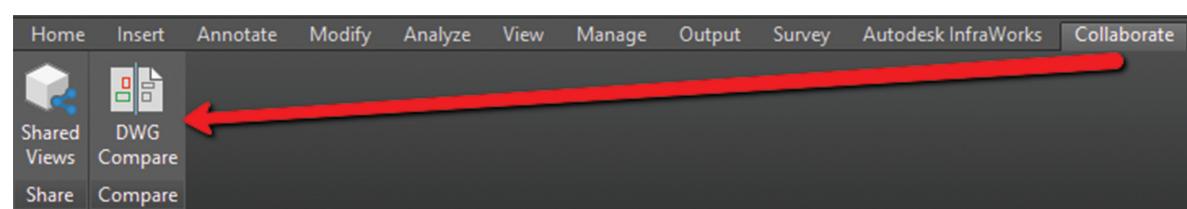


Figure 1



Figure 2

The results of the comparison are displayed in the automatically created third drawing. Three categories of objects, or parts of objects, are displayed. Those which are located only in the first drawing (GREEN), those which are located only in the second drawing (RED), and those which are identical in the two drawings (GREY).

A contextual Compare ribbon tab lets you to control the appearance of results. This tab has three groups of controls: Comparison, Compare Filter, and Change Set.

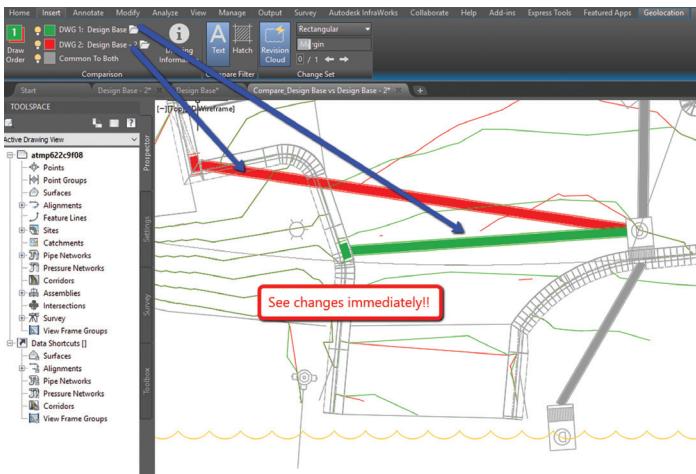


Figure 3

Again, this may seem like a simple task, but for quick reviews, client/city meetings and simple clashes, this tool is a great addition for 2019.

VIEWS / VIEWPORT UPGRADES

Create a Named View

It's always fun when viewports get an upgrade, right? Well, this one I like. I create a lot of saved views within Civil 3D and find it easier to bounce back and forth between these saved views from time to time. But what about adding these views to a sheet layout? It's very simple in Autodesk Inventor®, even easier in Autodesk® Revit®, so why not Civil 3D? Check this out!

On the View tab of the ribbon, you now see a Named Views panel. Zoom into an area on your screen and select New View. You can then name your view, select current display or define a window,

and several other options you can explore. Select OK and your view has been created (Figure 4).

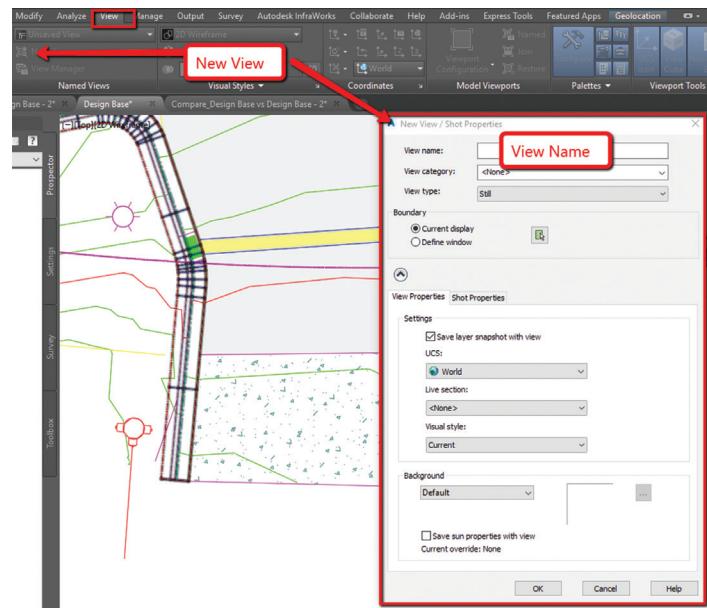


Figure 4

Once you have completed the new named view, switch to paper space and activate the Layout tab on your ribbon.

From the Layout Viewports panel, you now have an Insert View option. Select Insert View and you will see your saved Named View from model space. Select the view you want to add to paper space and add it to your screen.

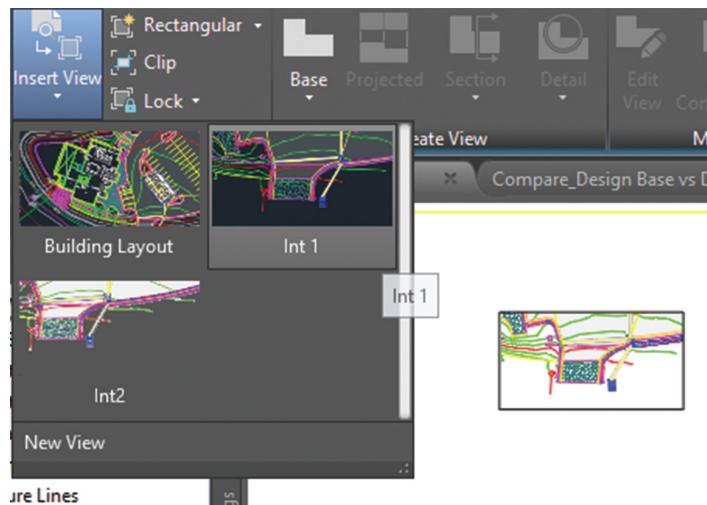


Figure 5

Want to change the scale? Select the viewport, select the dropdown arrow in the middle and choose the scale you would like that view to be. Simple, right?

AutoCAD Civil 3D 2019

CIVIL 3D 2018.1 AND 2018.2 FEATURES (NOW IN 2019)

Most, if not all, of the Productivity Pack enhancements have been rolled into the software, along with other subscription perks throughout the 2018 release. Some of the following items below may be of interest and really help in streamlining workflows and enhancing design.

Rehab Corridor

(This is for corridors that have attended one too many Autodesk Universities!)

But seriously, this tool works great for optimizing the cross slope of existing roadways or enhancing your design of new roadways that just need a bit more detailed design to them.

The workflow to create a rehab corridor is slightly different from the standard workflow used to create other corridor models. To create a rehab corridor object, you must specify a corridor style, corridor layer, a baseline (alignment and profile), rehab region start and end stations, and a target surface.

Next, you will use the Rehab Parameters palette to specify lane inputs and properties, and modify the rehab input parameters such as cross slope adjustments and milling and leveling parameters. Once you apply rehab parameters to

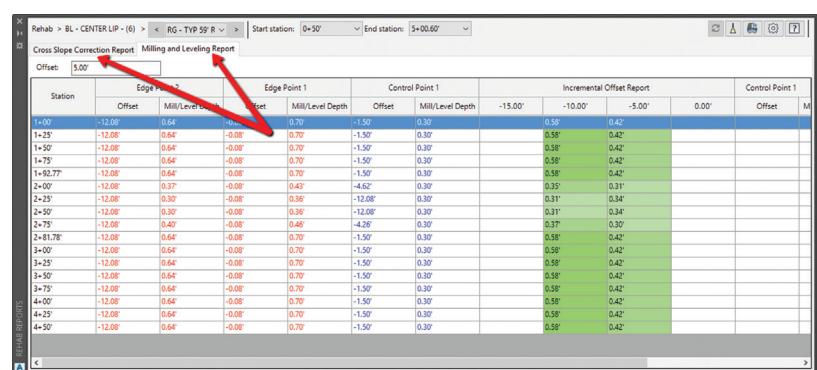
your rehab corridor, AutoCAD Civil 3D will automatically build the rehab assembly for your rehab corridor and will automatically assign the appropriate rehab and/or cross slope optimization subassemblies to your rehab corridor regions. See Figure 6.

Rehab Manager

You can use the Rehab Manager to review parameters and modify accepted cross slope values to meet design requirements on a section-by-section basis.

Rehab Reports

You can use the Rehab Manager to generate Cross Slope Correction and Milling and Leveling reports for selected stations within your rehab corridor regions. The Rehab Manager can also be used to review violations to design geometry requirements and modify rehab parameters on a section-by-section basis (Figure 7).



Station	Edge Point 2		Edge Point 1		Control Point 1		Incremental Offset Report				Control Point 1	
	Offset	Mill/Level Depth	Offset	Mill/Level Depth	Offset	Mill/Level Depth	-15.00'	-10.00'	-5.00'	0.00'	Offset	M
1+00'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
1+25'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
1+50'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
1+75'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
1+92.77'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
2+00'	-12.08'	0.37'	-0.08'	0.43'	-4.62'	0.30'	0.35'	0.31'				
2+25'	-12.08'	0.30'	-0.08'	0.36'	-12.08'	0.30'	0.31'	0.34'				
2+50'	-12.08'	0.30'	-0.08'	0.36'	-12.08'	0.30'	0.31'	0.34'				
2+75'	-12.08'	0.40'	-0.08'	0.46'	-4.36'	0.30'	0.37'	0.30'				
2+81.78'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
3+00'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
3+25'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
3+50'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
3+75'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
4+00'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
4+25'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				
4+50'	-12.08'	0.64'	-0.08'	0.70'	-1.50'	0.30'	0.58'	0.42'				

Figure 7

Infrastructure Parts Editor

Forget partbuilder... finally! Use the Infrastructure Parts Editor to customize drainage structure or piping part families and part assemblies, then publish them to catalogs that are compatible with Autodesk InfraWorks® and AutoCAD Civil 3D.

There are several ways to review, modify, and publish part families and assemblies:

- You can work with a default library of drainage structure and piping catalogs, in Metric or Imperial units.
- You can open and modify a parts catalog that is associated with a specific Autodesk InfraWorks model.
- You can open a part catalog file from your local system in .ICBT format.
- You can add new parametric parts to your library using .IPT parametric shape template files that were created with the Infrastructure Part Shape Utilities tools for Autodesk Inventor.

When creating a new part size, it is very simple to key in the sizes you want and validate your design. Drainage Structures are organized by Assembly, Structure, and Culvert in the Navigation Panel of the Parts Editor. For Piping catalogs in the Parts Editor, there are many types of piping assemblies that can be created using piping parts families. For example, you can create a Fittings assembly from Adapter, Cap, Coupling, Cross, Elbow, Plug, Reducer, Lateral, Tee, and Wye part families, or you could create a Valves and Operators assembly using Hydrant, Valve, Valve Actuator, and Valve Body part families (Figure 8).

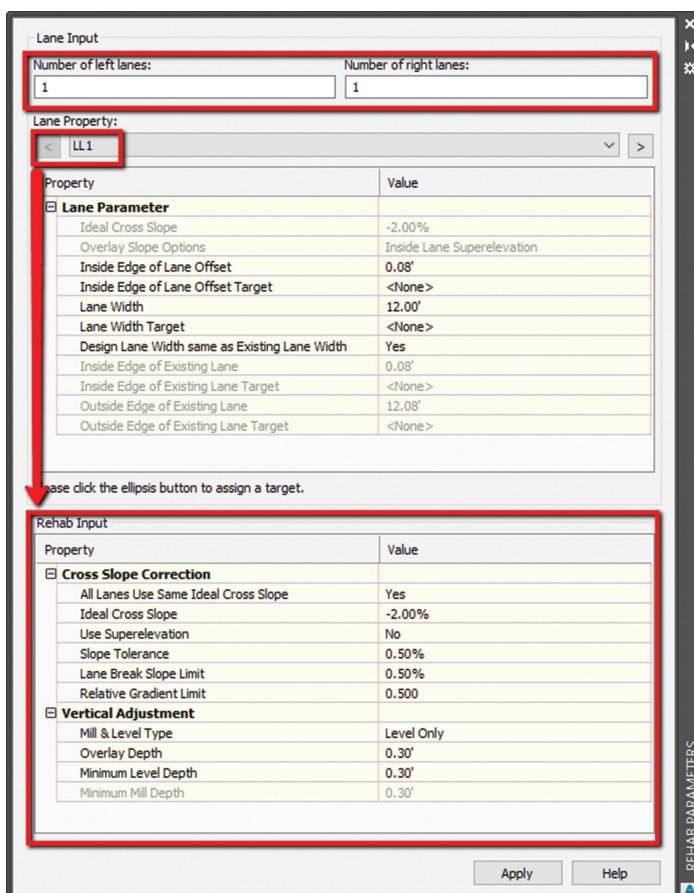


Figure 6

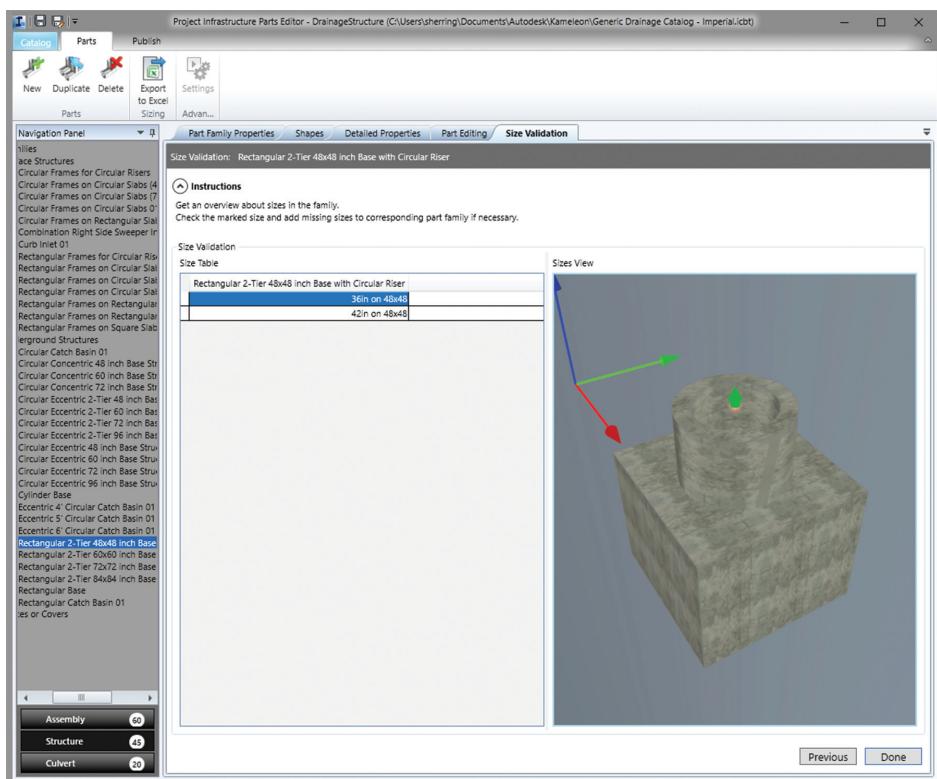


Figure 8

PROFILE GEOMETRY ENHANCEMENTS

Two new vertical curve options exist.

1. Fixed Parabola by High/Low Point
2. Fixed Circular Curve by High/Low Point

Profile layout direction: Draw fixed profile tangents and lay out profiles in either a left-to-right or a right-to-left direction when using the Fixed Tangent (Two Points) command and the Draw Tangents and Draw Tangents With Curves commands. Previously these commands required using a left-to-right layout direction.

Vertical curves in offset profile slope transition regions: Vertical curves are now created in slope transition regions for offset profiles.

Section Views: Use new navigation options to zoom to a section view from a sample line, and to zoom to a sample line from a section view.

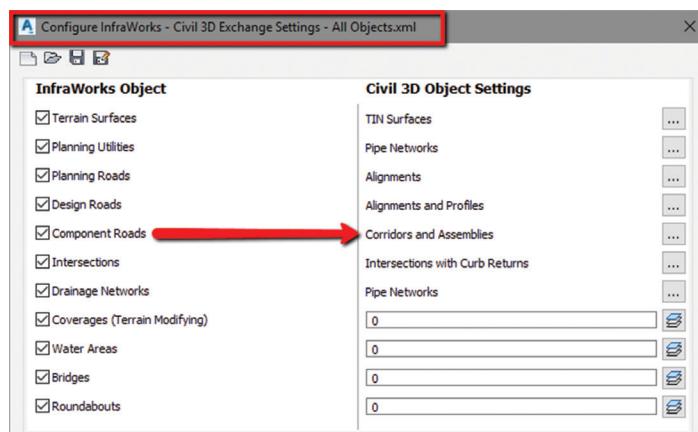


Figure 9

MISCELLANEOUS NEW ITEMS

Here are a few other items that are new in AutoCAD and its vertical products.

Infraworks Component Roads

- Infraworks Component Roads now translate directly into a Civil 3D corridor! In the Civil 3D exchange settings, you can now set default setting to get your corridor to translate correctly (Figure 9).

Reference Template Updates

- Will now read DWT and DWG files.

Xref Layers

- A new XREFLAYER system variable enables you to specify a default layer on which new Xrefs are inserted. The Xref layer is only displayed in the Layer Manager when an Xref is attached to the drawing.

Shared Views

- The Shared Views feature makes it easier for you to share your designs with stakeholders within or outside your company without releasing your original drawing files.
- Creating a Shared View: The Shared View tool can be accessed from AutoCAD's Application menu, under Publish.

CONCLUSION

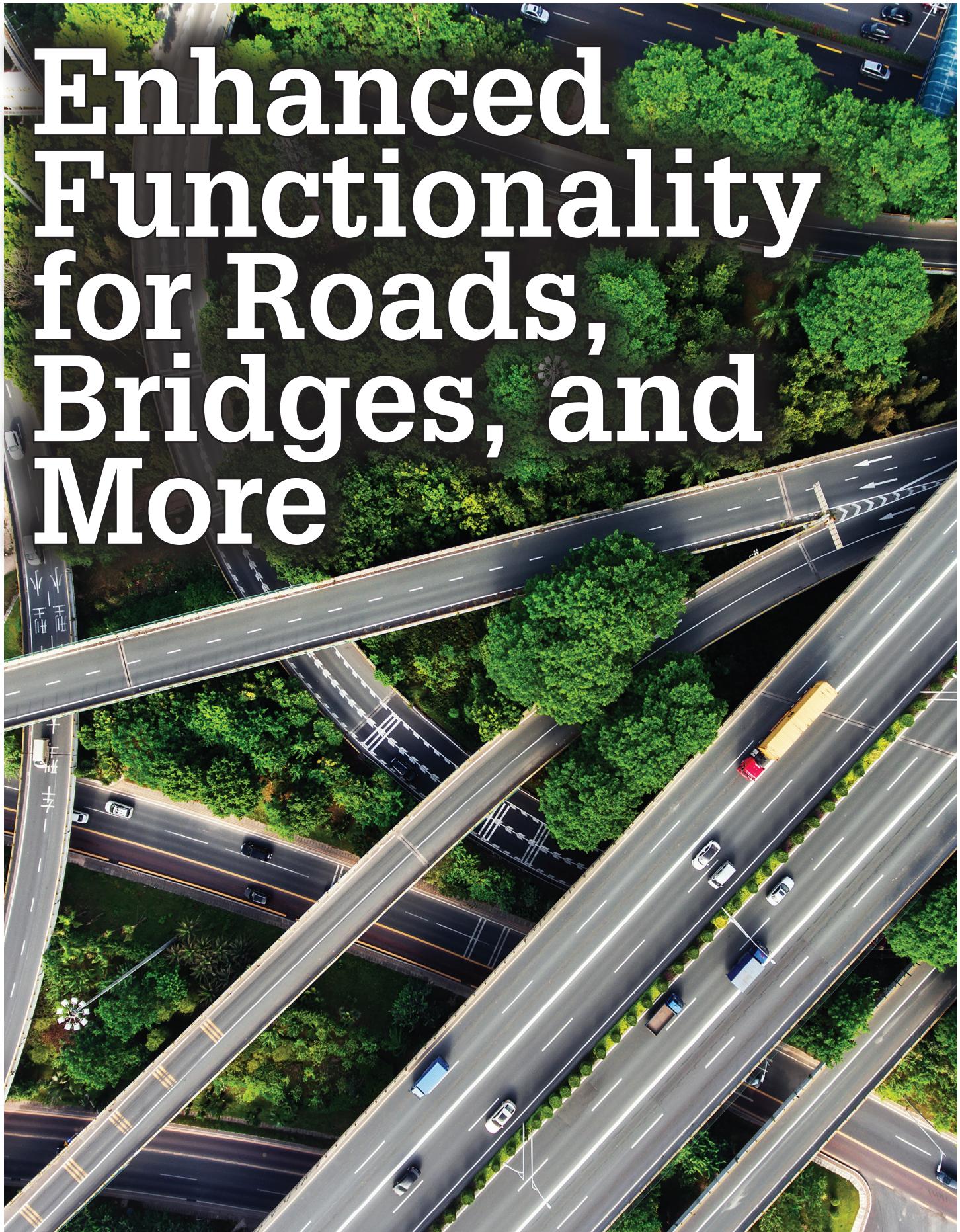
The new and enhanced features in AutoCAD Civil 3D 2019 will help in your everyday workflows.

I would love to hear from you regarding the new features as well as features you would like to see added or enhanced. Feel free to call or email me anytime.



Shawn Herring has been a part of the design engineering community for roughly 13 years in all aspects of design, construction and software implementations. He has implemented and trained companies across the Country on Civil 3D and other infrastructure tools and their best practice workflows. Shawn can be reached for comments or questions at awautocadcivil3dcm@audi.com.

Enhanced Functionality for Roads, Bridges, and More





On January 25, 2018, Autodesk released InfraWorks® 2018.2. This release is chock full of new enhancements. Here, I'll explain the new features and their functionality.

ROADWAY DESIGN

Component Road label prefixes have been added so it's easier to tell the difference between fixed stations and horizontal geometry.

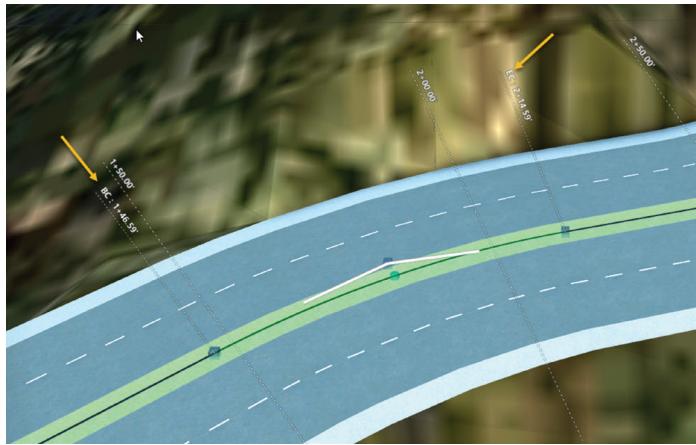


Figure 1

The in-canvas and stack for Spiral editing has added curve radius, curve length, and A values for Spiral In and Spiral Out. If you click on the values shown in-canvas, you will then be able to edit the values.

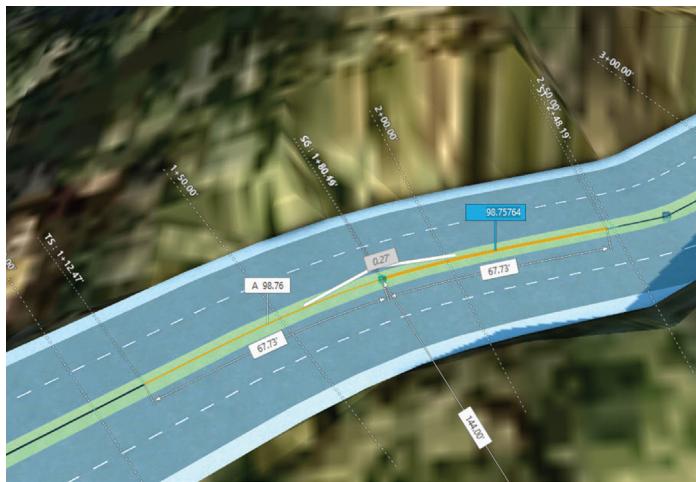


Figure 2

Right-clicking in-canvas on a road tangent will give you the option to Add a Curve (Figure 3).

Right-clicking in profile view on a PVI will give you the option to Add a Vertical Curve and specify the vertical curve properties (Figure 4).

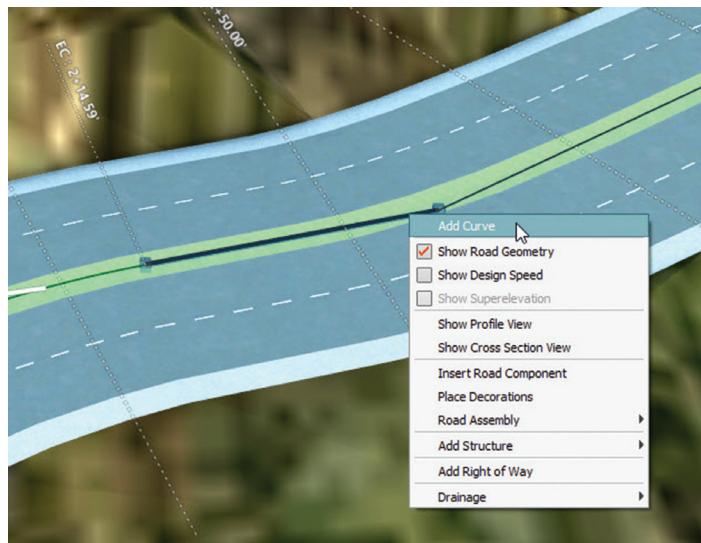


Figure 3

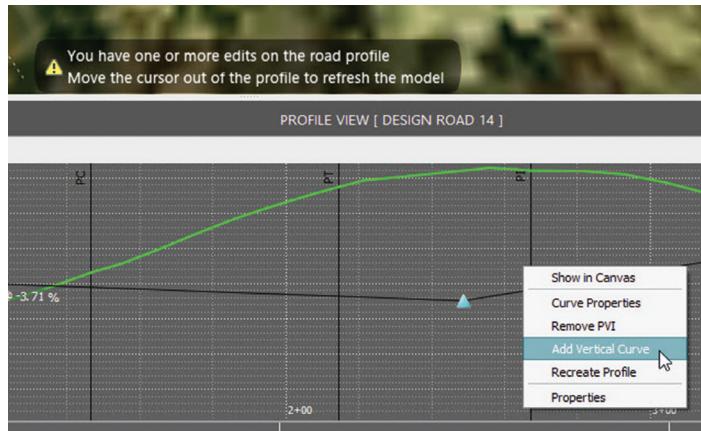


Figure 4

Curve Properties		
Property	Value	
Grade In	-3.71 %	
Grade Out	16.58 %	
K-Value	7.53	
Length	152.76'	
Tangent In Length	172.48'	
Tangent Out Length	133.04'	
Headlight Distance	69.57'	
Geometry	Station	Elevation
Low Point	2+00.40'	1607.35'
Point of Curvature	1+72.48'	1607.86'
Point of Vertical Intersection	2+48.85'	1605.03'
Point of Tangency	3+25.23'	1617.70'

Figure 5

InfraWorks

Right-of-Ways, Parcels, and Easements now display length and area, which can be edited in-canvas. There is also a new keyboard shortcut in case you want to lock the length value (Figure 6).

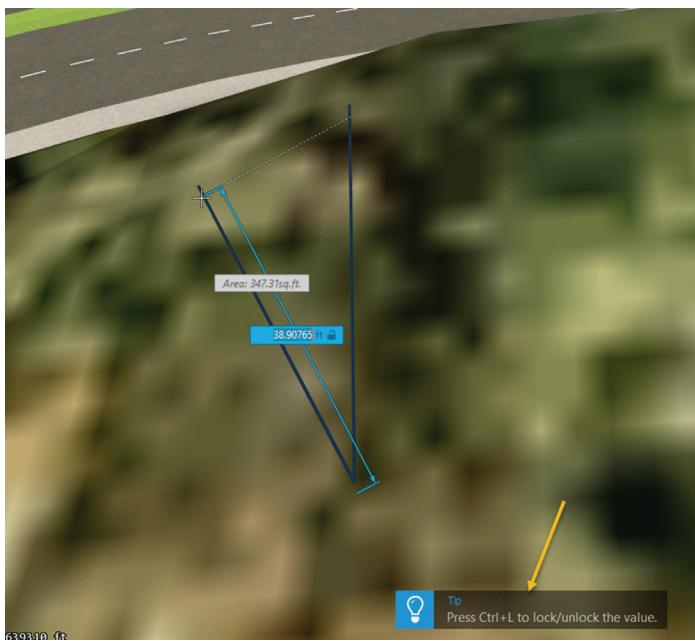


Figure 6

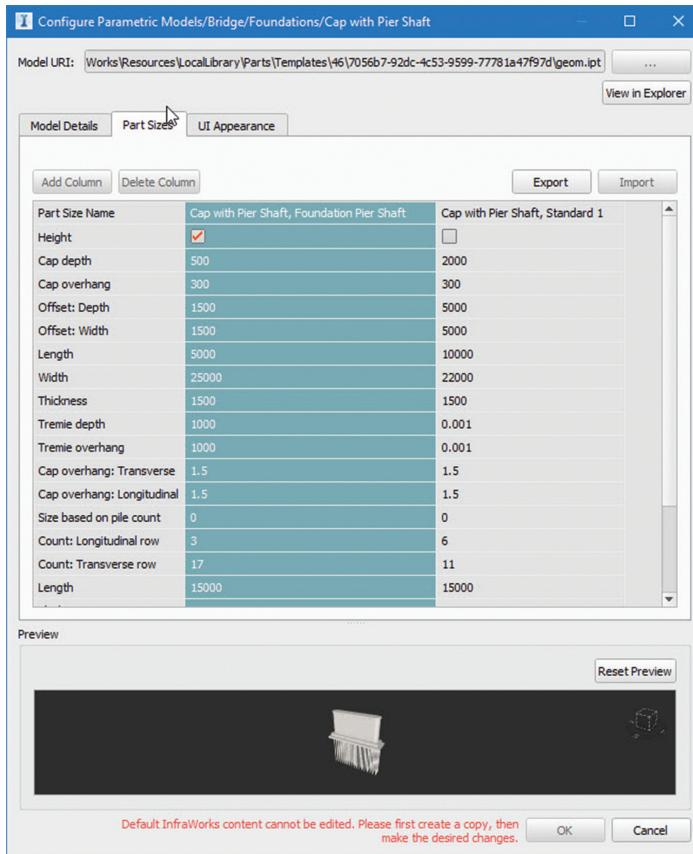


Figure 7

BRIDGE DESIGN

Parametric bridge parameters can now be viewed in-canvas through the Style palette. The configure dialog shows parameters

from Autodesk Inventor® when configured properly. The size of the text has been formatted as well as an import/export option (Figure 8).

QUANTITIES AND ANALYSIS

You now have the ability to specify a station range for road, bridge, and drainage materials. Also, you can perform this same operation by selecting an area of interest (AOI) such as a parcel, easement, or right-of-way. After you select your AOI, the results are shown. These values will update if you adjust the extents of the AOI (Figure 8).

Utilities quantities, such as drainage components or generic pipes, are calculated by depth range.

Material Quantities				
Design Road 11	Station Range	Length (ft)	Area (sq.ft.)	Volume (cu.yd.)
Bridge	Bridge 4	108.95	1182.70	0.00
	Total	108.95	180.89	0.00
	Superstructure	0.00	1001.81	0.00
	Substructure			
Road Component				
Sidewalk	Surface Black Asphalt 1.024...	6063.63	4624.82	56.20
	xFFFF00FF	4294.97	1430.23	17.38
	xFFFFFFFF	4294.97	1430.23	17.38
Lane	Surface Black Asphalt 1.024...	4294.97	5159.69	1252.54
Jersey Barrier	Surface Concrete Linear Pa...	378.83	757.66	56.80

* Some items are not included in quantity calculations; see [help documentation](#) for details.

Generate Report

Figure 8

POINT CLOUDS

Realistic information can be shown by using photographic images along with point clouds during linear feature extraction and vertical modeling (Figure 9).



Figure 9

You can choose to snap or merge the lines when joining two linear features (Figure 10).

It's now easier, in the cross section view, to add vertices for linear features (Figure 11).

There is now a choice to delete a selected feature, or all filtered features, by category or height when extracting vertical features (Figure 12).

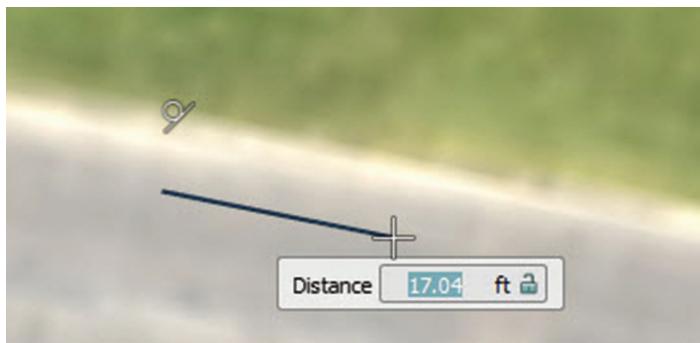


Figure 10

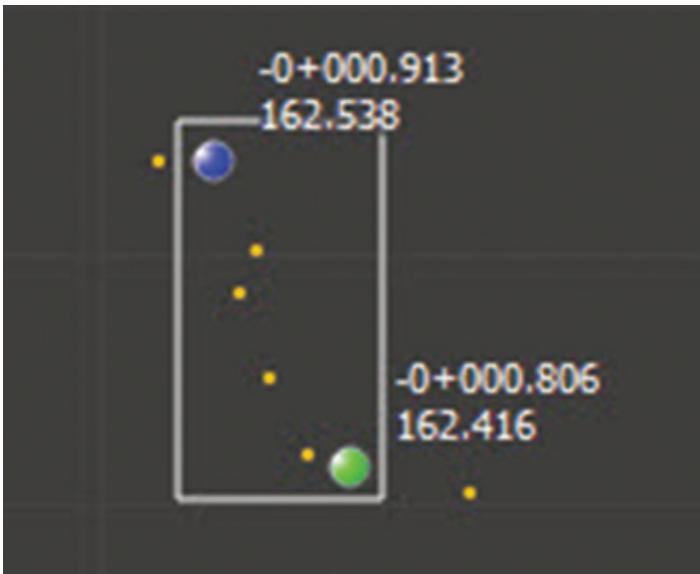


Figure 11

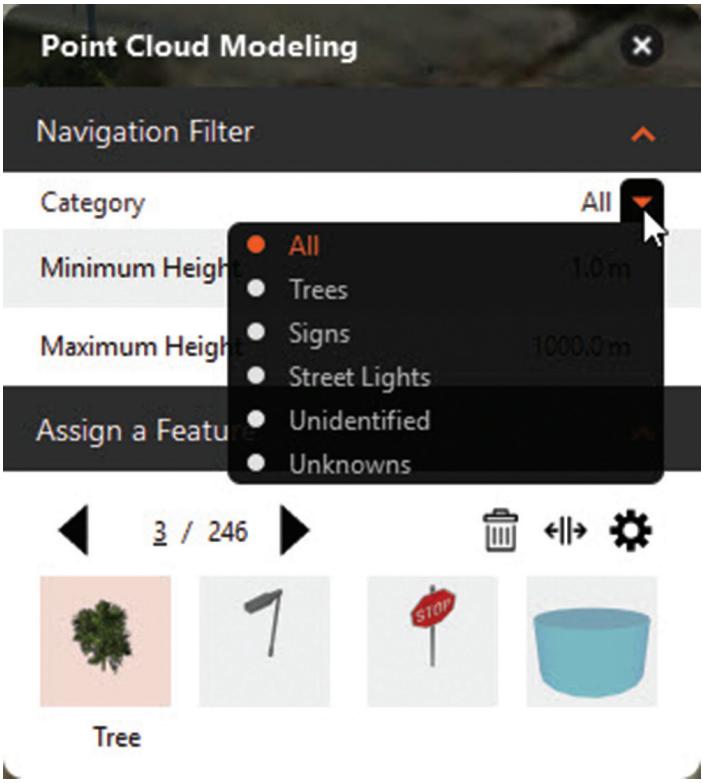


Figure 12

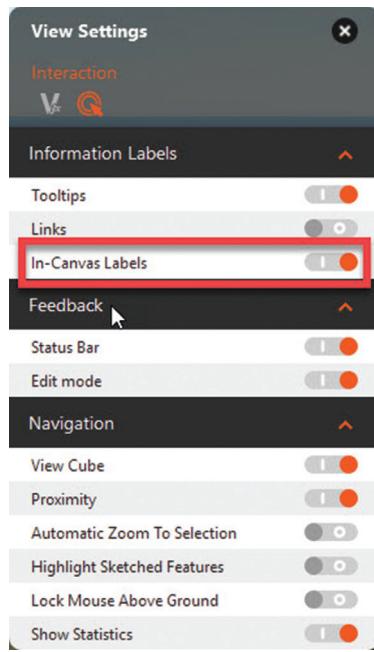


Figure 13

VISUALIZATION

In-canvas labels can now be controlled for viewing in the Interaction View Settings dialog (Figure 13).

CONCLUSION

Special thanks to Elliott Rosenfeld of Autodesk for posting this on the blog BIMagination. Other learning resources include the What's New Help Index inside of InfraWorks, and the Autodesk Civil Engineering Community Center, <http://civil-community.autodesk.com/>.



Todd Rogers is a Customer Success Manager and Certified Autodesk Instructor with more than 23 years of experience in teaching, managing, and providing hardware and software solutions for hundreds of engineering firms throughout the greater Houston, Texas area. Todd is a valued member of the Infrastructure Support Division (ISD) for Graitec USA (formerly Total CAD Systems, Inc.). He also holds the "Autodesk Expert Elite" status, a program to recognize individual community members who have made extraordinary contributions with helping customers by sharing knowledge, providing community leadership, and exemplifying an engaging style of collaboration that drives a healthy and valuable Autodesk customer community. He is an active blogger. Through his personal blog website (civil3dj.wordpress.com), Todd shares tips and solutions for Autodesk software issues.

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