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AUGIWorld

The Official Publication of the AUGI Design Community

July 2020

3rd Party Apps Help!

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- What's New in Revit Structure
- Civil 3D 3rd Party Add-Ons
- 3ds Max Plugins

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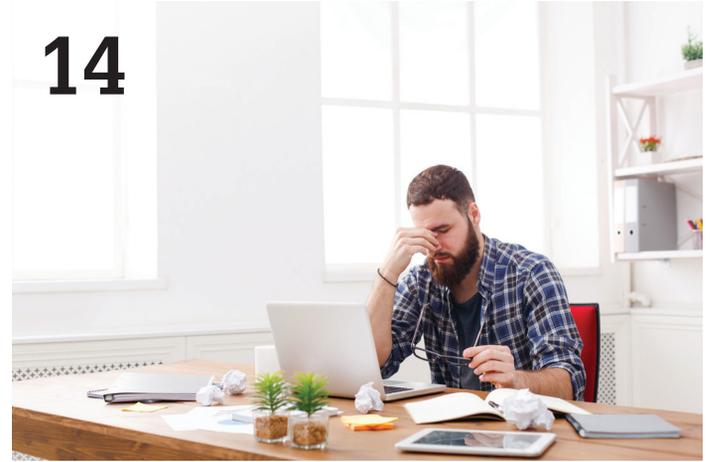
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Sunrise in Chicago
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Letter from the President



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GREETINGS!

Happy Independence Day to our readers in the U.S.! It is hard to believe that half of 2020 is already over, and what a year it has been so far! This Independence Day will certainly look a lot different this year. Large gatherings and fireworks shows are being canceled in light of the continuing Covid-19 precautions. I am sure that some of my rural neighbors here in PA will provide their own entertainment, hopefully in a safe manner, and much to the chagrin of my pup.

My family and I are heading to the beach in July (barring any restrictions). The trip has become something we plan for and look forward to for months. Personally I find the beach to be the most relaxing place on Earth. The sound of the waves and the feel of my toes in the sand, sitting with a good book and a cold drink...there really isn't anything better! One of my favorite parts of our vacation is waking up before the rest of my crew and having my morning coffee on the deck as the sun comes up over the ocean. Sometimes it is necessary to escape from the routine of everyday life and explore the world around us.

That brings me to this month's issue of *AUGIWorld* - the 3rd Party edition. This month, our authors are exploring outside the Autodesk realm in the world of 3rd Party software. This could be an add-on to an Autodesk product or a stand-alone product! As an organization that is a truly independent user group, we would like to expand our software repertoire not just this month, but every month in *AUGIWorld*! If you have an idea for an article and would like to write for AW, please feel free to reach out to me or our copy editor and board member, Todd Rogers.

Our Social Media Team has been very busy sharing information on all of our social media platforms and we truly appreciate their efforts! You can find AUGI on LinkedIn where we have a company page as well as various group pages. Follow AUGI on Facebook, @AUGI on Twitter, and @goaugi on Instagram. These are great ways to stay connected to your AUGI community.

Now, where did I leave my sunscreen...

Cheers!

Kimberly

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3ds Max – Plugins and More

The 3D world is incredibly vast and is as exciting as ever. It is projected to have a 600% increase in job growth over the next ten years; this has very much to do with real-

time capability. With the adoption of real-time, 3D is making its way into additional markets. Industries such as information technology, engineering, design and media, sales, construction, public relations, marketing, business management, and data analysis are

TexTools 4.10

01.) Spaces shells evenly with automatic flow direction detection.

02.) Apply checker maps on multiple objects at once without losing prior defined materials.

03.) Auto align edge loops with just 1 edge selected or just particular with a selected set of verts or edges

04.) Assign baked textures instantly as materials for a better preview.

05.) Checker for saving baked textures as a TIFF or BMP files.

06.) Checker for displaying the baked Texture in a 3dsMax window.

07.) Edge based worn map rendering that makes models with hard edges look worn.

08.) Preset set for A0 baking.

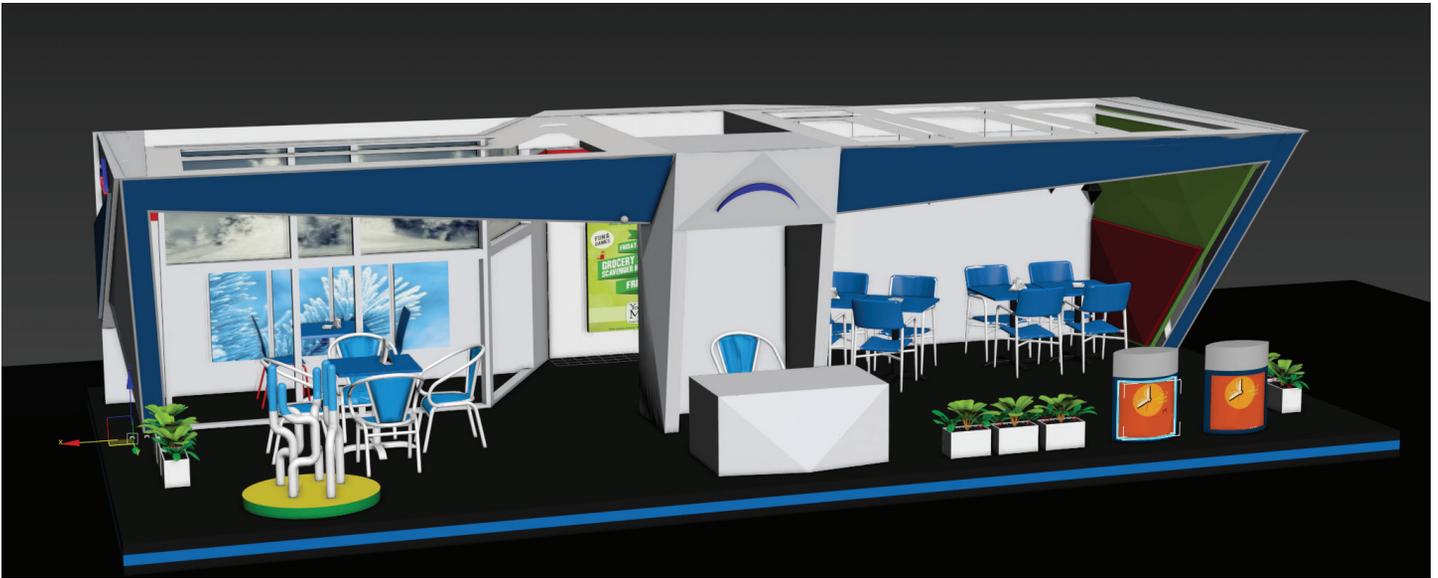
09.) Distance spinner for the A0 baking so that more range is used.

10.) Preset for LT baking.

11.) Convert Object Difuse map to vertex color. Great when you want to use any channel map as a mask for advanced material renderings.

renderhjs.net/textools

Insert Figure 1



Insert Figure 2 – Renderpeople Resizer

all adopting real-time 3D skills. Several areas in 3D have already experienced growth in sectors from 150% to 600% range from 2013 to 2018.

At the same time, the software used for 3D is evolving at an unprecedented pace. Unreal Engine tech demo for the future Unreal Engine 5 demonstrates the use of real-time animation in a scene with hundreds of millions of polygons with real-time effects and physics. This achievement will send a tsunami through 3D industries. As the very fundamental part of 3D production for nearly three decades has been to reduce polygon count. The Unreal 5 tech demonstration smashed that concept to pieces. Additionally, Unreal Engine 4.25 (used today) is streamlining VFX and film productions by eliminating the requirement for green screens. They are now using LED television technology and tracking to film a sunset for several hours. The technology is so new, it is hard to imagine the implications. But, in many cases, 3D artists will either supplement, or replace, set dressers in the film industry. Lastly, combined with the power of NVIDIA, Unreal Engine is turning monitors into 3D boxes without the use of glasses. Instead, they use video tracking devices to follow the position of the person to adjust the monitor as needed.

So, where does 3ds Max fit in all of this? Well, Unreal Engine is still an engine, and NVIDIA produces hardware. 3ds Max is still one of the most fundamental and efficient tools for building 3D content, effects, animations, and more. With its extensive capability coupled with strong support for plugins, 3ds Max remains a top contender for producing the most realistic and clean content available today. While Unreal Engine may be providing us the opportunity to ignore polygon count, it is still not appropriate to do so. Let me explain... Statistics show that roughly 67%, or 211 million people in the United States play games of some sort. 90% of those people play those games on tablets or phones. For streaming purposes, optimization is still going to remain fundamental to production. Now that the data dump is done, let us talk about some

of the plugins available to us as 3ds Max users to ensure we can take advantage of all this the best way possible.

TEXTTOOLS

Textools is a free plugin that helps to streamline unwrapping procedures using the UnwrapUVW modifier. It is an ironing, scale, alignment, and texture sizing tool that makes unwrapping a little less monotonous. See Figure 1 for information.

RENDERPEOPLE RESIZER

Renderpeople Resizers is a free plugin, and probably one of the most powerful secrets on the market. The plugin allows us to reduce the size of textures in an entire scene with a single click. It is an incredible optimization tool. Note: there are arguments today, that by continuing to downsample images for optimization, we lose libraries of future potential high-resolution data that will take advantage of the higher resolutions in screens and technology. You will have to decide what route you want to go for your work and projects. To demonstrate the value, I reduced the 5 textures in this scene to 256 x 256 and saw a reduction in file size from 3.4 MB to 108 KB. That is a 96% reduction! My hard drive thanks me.



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What's New in Revit Structure 2020

 There are many new features to Revit 2020 that improve the overall performance of Revit. The major improvements to Revit Structure that have been released in this version have been focused on the further development of the Rebar tools, and the fabrication & connection features.

This article will focus mainly on those features. However, there are some other overall features enhanced that I will also touch on that are not necessarily Revit Structure, but improve the overall workflows of your Revit projects.

CREATE CONTENT

In Revit 2020 one of the main areas of focus was on the idea of equipping the user with a way to create more accurate and detailed documentation. This is to more closely represent the actual design intent.

One of the areas of concentration for Structure was the continued focus on the improvement of the Rebar design and

Rebar modeling tools. One item that Autodesk concentrated on improving, is the copy and move logic of the rebar tools. Shape-driven rebar snaps work more intuitively with the defined concrete coverage when the copy or move of rebar elements command is used.

Snapping automatically will no longer create the very small rebar segment lengths as in previous versions. As a result, this also means you no longer have the issue of new rebar positions (and rebar numbers) being created. The shape-driven rebar segments are automatically constrained to only the concrete face that hosts said rebar segment. This ensures bars will no longer be incorrectly connected to host faces that are too far away to react to changing concrete host faces.

Another improvement to rebar in this version of Revit, is the Multi-Rebar Annotations. Annotations can now be used to dimension free form rebar in any view that is perpendicular to any bar in the rebar set. Multi-Rebar annotations can now also be utilized to dimension rebar in elements such as ramps. The rebar sets can be either shape-driven, or free form rebar shapes, and can either be with or without hooks. With this enhance-

ment, you can now produce much more accurate sections and detail documentation of the design intent structures.

Multi-Rebar Annotations can now dimension the actual position of your rebar sets in respect to the host concrete faces, or to any other dimensioned reference point in the Revit model. The Tag family for the Multi-Rebar Annotation will only extract data from the rebar references. Other tags are used for the dimension of the rebar sets.

Another enhancement to the Rebar “toolbox”, is the Rebar in Model-in-Place Stairs feature. In this enhancement you now have the ability to add any type of reinforcement (including shape-driven and free form) to structural elements in the stair’s category (even model-in-place forms).

Another area Autodesk concentrated on in this release of Revit for the Structural group, is the continued advancement of the Steel Fabrication Tools.

The first area of concentration is the Propagation of Steel Connections. This allows the end user the ability to propagate steel connections and save time when the same connection is needed to be populated to many locations throughout the model. This feature gives you the ability to automate the process of creating connections in the Revit model from connections that are currently placed in the model. To use the Propagate Steel Connections feature, select an existing connection that has already been placed in the model from a 3D view, then use the Propagate tool found in the contextual menu. Then, the connection will be placed in other locations throughout the model at locations where your framing

conditions are like the host connection. Once they are placed, you can then modify all instances of the connection simply by choosing one of the connections and making adjustments in the modify dialog box that appears on the screen. This is based on previously saved connection configurations.

Another steel enhancement is the Steel Connection Grouping feature. In previous versions of Revit, Autodesk added fabrication families that can be easily added to structural models.

The existing dimension and tagging tools have been enhanced to extend the functionality to develop more accurate and readable engineering drawings for structural steel detailing and fabrication. Enhanced features allow the dimensioning of elements like holes and shear studs by simply picking their center points.

Over the past few years, more applications for implementing Dynamo to increase repetitive tasks, has slowly built momentum for new applications. In this version of Revit, it is no different. This release of Revit has its own Autodesk Steel Connection Dynamo Package. The purpose of this integration is to accelerate the insertion of multiple steel connections based on some user defined rules that identifies similar geometric conditions in the model for placement of steel connections. This package includes several OOTB (out-of-the-box) scripts to use with the Dynamo Player. This new integration with Dynamo can streamline workflows for designing and detailing steel buildings for construction documents using both standard and custom steel connections.

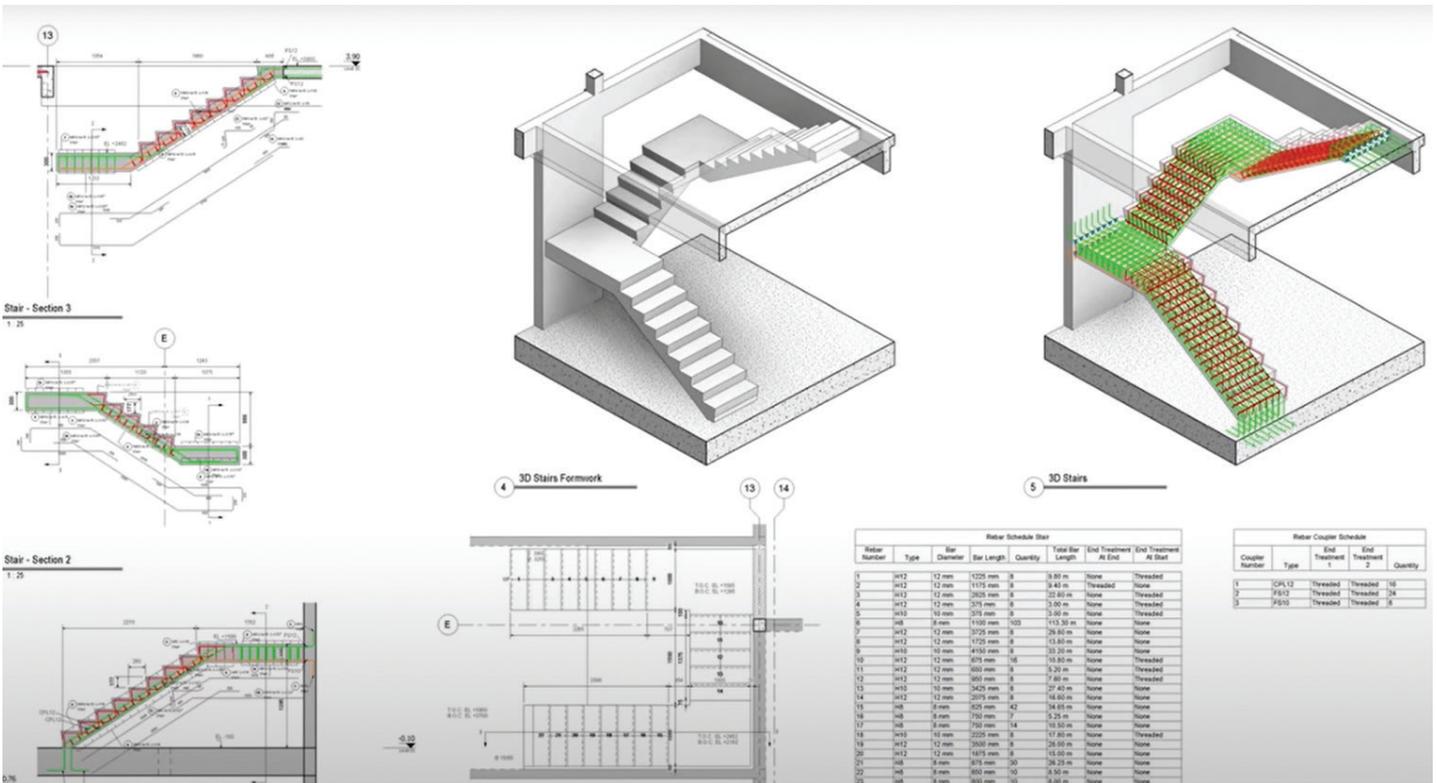


Figure 1 – Rebar in Model-in-Place Stairs

Revit Structure 2020

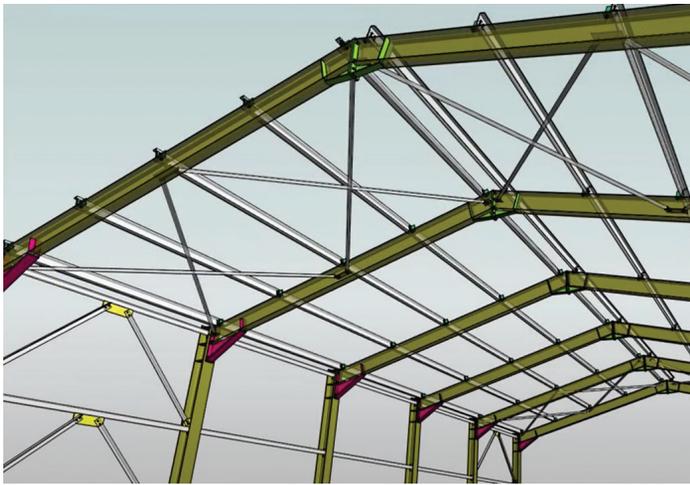


Figure 2 – Automate Steel Connection w/ Dynamo Scripts

REVIT ENHANCEMENTS

One of the big improvements to Revit in general, is the ability to now insert PDF documents into your Revit design models as a 2d object. This attachment however is only available in the view which it has been inserted into. The PDF is treated like an image and can be modified and managed like all other image attachments through the Manage Images dialog. Once the PDF is attached to the Revit document, you can use any of the Revit tools such as move, copy, scale and/or rotate to manipulate the attached PDF document. The PDF can be used as an image on schedules as well as to convey certain information to clients, contractors and sub-consultants. Any attached PDF containing vector data can utilize the vector data to enable snaps for quickly tracing objects to make walls, footings, etc. in your model, or using the vector data to more accurately align objects in your model to points using the PDF as a background.

Another improved feature with Revit, is the ability to now copy a legend to the clipboard and then paste it from the clipboard to multiple sheets in your project. In the past, this was a multi-step process to open a sheet then navigate to the desired legend in the project browser, then drag and drop a legend to the desired sheet and repeat the process for other sheets. This feature now saves time being able to copy a legend to the clipboard, and then manually paste the legend to several sheets with less effort.

The OR feature in view filters is not a new feature, but in this version of Revit, Autodesk enhanced the existing OR function by now allowing you to choose a specific category and then selecting a specific parameter. Previously, only common parameters between categories could be used with the OR function in view filters. This feature enhancement will allow you control over specific model elements.

One of the enhancements for working with large schedules in Revit, now allows you to freeze the header in schedules like you have had for years in Excel spreadsheets. This feature keeps the header information always visible while you scroll down the rows in your

schedule. Another added feature is the Highlight Active Row in Schedule. Now, the row selected in a Revit schedule the row is highlighted in blue to know where your are in the schedule.

Full Path for BIM 360 Links is an added feature that allows you to see the full path of the design model when linking design models from a BIM 360 Design location. This path will appear in the manage links dialog. This makes it easier to see if the model you are linking is a live linked model, or if you are consuming a model when collaborating in Revit.

Another BIM 360 enhancement is Publishing Cloud Model on Revit Home. This feature allows you to easily navigate to the location of your models and access the models in the cloud. It allows you to publish models from the Revit Home location and publish multiple models at the same time. When publishing models, the other members of the team that do not have Revit can view and reference the models in BIM 360.

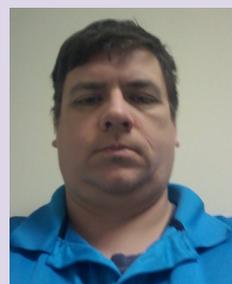
Another BIM 360 advancement is the Open a Revit Model with Desktop Connector improvements. This enhancement allows you to use BIM 360 connected drive in Windows Explorer if you want to open the latest published version of a Revit workshare cloud model.

BIM 360 Design Synch Activity Indicator was updated in Revit version 2020.1, to setup Revit Cloud Worksharing to collaborate a model that is stored in the cloud

One last enhancement to Revit workflows is the Display Coordinates of linked files made visible. This enhancement exposes the internal origin of the model. By default, this feature is turned off. There is now a category in the Site Category that now allows you to expose this data location in respect to the project base point and the survey point.

FINAL THOUGHTS

Although I have covered a lot of enhancements in this article on what is new in Revit 2020 (both Revit Structural enhancements and general Revit enhancements), these items and some of the more important general enhancements, are only a few of the many added to Revit. Make sure to check out the “What’s New” in the Revit help documentation as well.



Kenn Farr is currently Senior BIM Technology Analyst - Practice Technology Group w/ 13+ yrs of Experience at Gresham Smith. Involved in trouble shooting, training, development, implementation and Support with the Building Engineering groups. Kenn has over 26 years of experience in the AEC industry.

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FAMILY BROWSER R3 2021



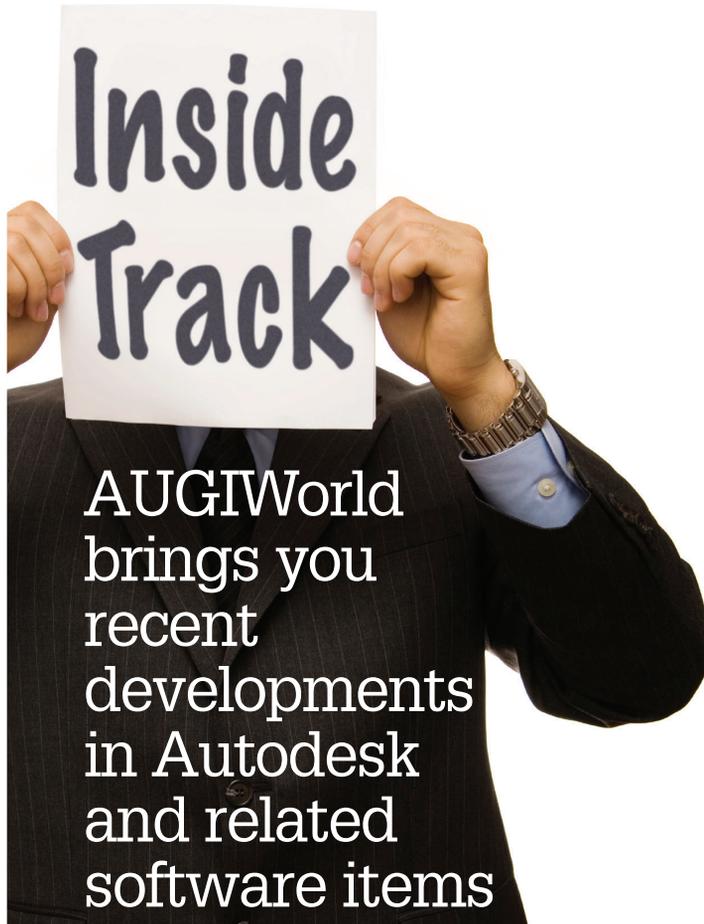
<https://apps.autodesk.com/RVT/en/Detail/Index?id=7071247551404881274&appLang=en&os=Win64>

Autodesk Revit: 2021

Family Browser is a dynamic interface; to control, store and locate office families. Family Browser stays up to date with any changes made in Windows Explorer. Ideal for any small or large practice no matter what flavor of Autodesk® Revit® you use. All families can be controlled from a central location allowing a BIM Manager to instantly make changes, adding groups, tabs or families.

Family Browser Features

- Easy to set up and use
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- Drag n Drop families to load/insert. Fast load times
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- Tags - Metadata can be added to any family as tags, to add more useful information to the family for searching.
- Users can star rate families so that BIM managers can see what the most popular families are.



- Search across your entire library with instant feedback. Search by family name, type name, category, parameter value or customizable tags.
- Ability to also include Revit System families, schedules, & drafting views into your Family Browser library.
- Analytics. Keep track off, and visually see what users are using Family Browser and how. See what the most used families, tabs and groups and what users are using them. Analyze what users are searching for and the time it takes the Family Browser to respond to those requests. Keep track of your license usage.
- User Management. Assign users as Admin or User. A user can use Family Browser but does not have any access to modify the setup.
- Family Browser is fully integrated into the UI of Revit through a floating palette. It is part of Revit.
- Silent deployment options.

Note: Family Browser has a fully functional free 21 days, 5 user trial licenses for testing.

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 Autodesk AutoCAD Plant 3D: 2021 , 2020 , 2019 , 2018
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Key drawing optimization features:

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- Finding and removing objects located in overlapping areas of other objects.
- Finding and replacing two or more co-directional objects forming an interface node with a single entity.
- Finding and replacing two or more co-directional objects partially overlapping each other with a single entity.
- Replacing serial collinear chains of the same objects with a single object.
- Finding and removing redundant vertices in polylines (POLYLINE, LWPOLYLINE).
- Optimizing jointly and separately entities LINE, CIRCLE, ARC, and polylines POLYLINE, LWPOLYLINE.
- Properly handling entities located in different planes and ensuring 100% support for all user coordinate systems (UCS).
- Two built-in optimization methods.
- High performance compared to existing competitors (OVERKILL).

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The Overwhelmed Tech Manager - Too Busy to Get Anything Done



Summertime should be a time to relax – right? But it typically brings more activity with friends and family, plus time to get outdoors and be more active. People ask you to participate in more events. Yard work increases and home projects multiply. With so many things to get done, it can seem overwhelming at times.

Work can overwhelm us at times also. It can come in waves that keep crashing into your shore. Just when you think you can come up for a breath, another wave of work comes down on your head. If your firm is understaffed, it can happen a lot. Even if you have enough staff, the workload can well up and spill over the banks when project deadlines loom, equipment breaks, staff gets sick or clients get impatient. It can be daunting.

So, what do you do when the work world starts spinning too fast? How to you keep up? When do you get a break? Who can help? Does anyone care that I am swamped? It can become frustrating, exhausting and stressful.

TAKE A BREATH

Just pause a minute. Instead of running around frantic, go to your seat and take a deep breath, or two (or more). Or better yet, go for a walk. Get out of the office as soon as you can. Walk around the building for 10 minutes or so to gather your thoughts. Listen to the birds (hopefully there are some in your area). Watch the cars go by to calm yourself. Now that you have control of the situation, go back into the building and focus on the issues.

MAKE A LIST

I have talked about this before. Write down everything you have to get done. You may be surprised that the list is not really that long. Or, you may still be overwhelmed with how long it is. Either way, get it out of your head and down on paper. You can focus your thought process better when you can see the list and not just have it bounce around between your ears.

You could also start a list of things you are NOT going to do until other things are completed. This helps you avoid the time wasters. There are a lot of them, and they steal your time each day.

PRIORITIZE

Next stop – bubble up the most important and most urgent. If something is boiling over, or spreading, address it first. Start by putting out the fires. Then move on to the most important. Rewrite the list as many times as you need or put it on a white board and move it around. Or use a tech tool to track it...it does not matter how you do it, just do it. Get the list in the best order for attacking the issues.

DEFINE LEVEL OF EFFORT

Not everything has to be perfect. Yes, most of the time you need to do a great job. But sometimes, just enough is good for now. You can circle back around later (do not take it off the list). When you come back to it, then you can clean up and improve. But don't get bogged down and take too long to move from one item to another when the list is really long. The marginal improvement that comes near the end of your efforts to reach that last 15% of perfection takes a long time. Know when to move on.

DELEGATE TO OTHERS

Maybe it is time to sharpen your delegation skills. You do not have to do it all yourself. Even if you are the only one who gets paid to support CAD/BIM, others can help. And many are willing and eager to help. Tech is exciting for a lot of people you work with. They would love to assist in an area that you trust them with.

TAKE ONE STEP AT A TIME

Sometimes it is a question of where to start or how to begin. Being overwhelmed can mean that you freeze up. Too much to do makes it hard to do anything at all. On a grander scale, you could produce a work breakdown schedule for larger tasks. This breaks down large portions of work into smaller chunks that can be completed within 30, 60 or 90 minutes. Whatever time you have, you can work on a specific chunk to make progress.

CHECK IT OFF THE LIST

When you get something done, check it off the list. There is a lot of gratification when you can look at a list and see what has been completed. As the checks grow and the list shrinks, you can relish the fact that you are prepared for the next avalanche of work. If you do it all day long, then review it at the end of the day. If you do not have time to do it as you work, then do it at the end of the day. Set aside a few minutes before you head out the door, exhausted, to look over the list and mark some items as done.

TIDY UP

And while you are at the end of your day, straighten up your desk. Do not leave a cluttered mess to greet you tomorrow morning. That is an energy killer. Stack the papers and move the completed items off the desk. Visually make your desk have some open space for the start of the next task. It gives you elbow room to be creative and clears your mind in subtle ways.

KNOW HOW TO SAY NO

Sometimes you take on more than you can handle. No one likes to tell people they cannot help them. No one likes to be told no. But often we take on more because it does fall within our wheelhouse. No need to be gruff about it. You can help people understand why you need to push something away. You can bring up your priorities and tasks that need your attention and then ask what should be set aside to work on what you are being given. If you still must take it on, then define a start date in the future with the understanding that it might slip if other things become a priority above it.

All in all, you can reduce your stress and get some breathing room, but it also takes a bit of work. The payoff is great when you can again have time to think and focus on the most important and impactful tasks.



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.



Autodesk Civil 3D Using 3rd Party Add-Ons

It's always interesting to see all the add-ons to Civil 3D that bridge the gaps on what out-of-the-box software can do and what is really needed to pull off projects, especially on the civil side of things. There are so many different sectors & sub-sectors of civil engineering, and the project types are endless.

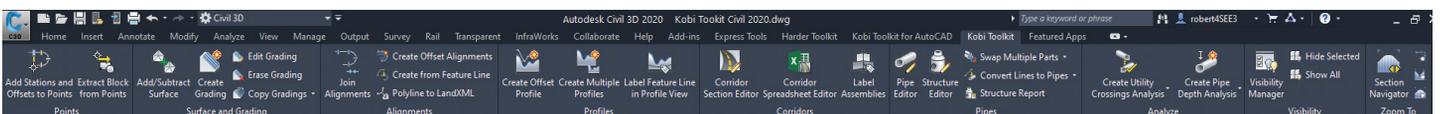
For this article, I reached out to my awesome network on LinkedIn to get an idea of what add-ons they use that are out there on the market. There are literally thousands of add-ons, so I narrowed it down to a few. It was kind of like choosing your favorite child...which in my case it is easy, because it's Addison!! She is my favorite. And here are a few of my favorite add-ons for Autodesk Civil 3D!

KOBILABS – TOOLKIT FOR CIVIL 3D

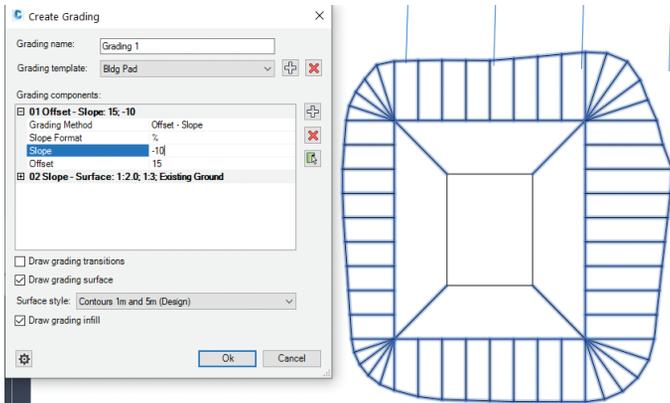
KobiLabs has developed a set of tools for AutoCAD, Revit and Civil 3D. For this, we will focus on the Toolkit for Civil 3D.

Kobi Toolkit for Civil 3D is a set of essential productivity plugins that will make your work in Civil 3D fast, easy, and efficient. These tools will dramatically reduce the number of tedious tasks and help you focus on your engineering challenges. These tools are broken out into 8 separate “workflows” These workflows being:

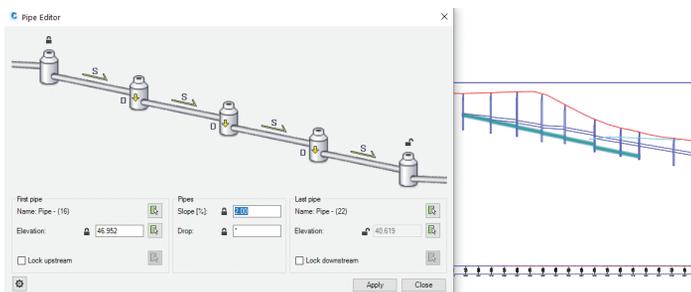
- ♦ **Points** – Simple items such as assigning station & offset to points and having the alignment data available within a table, is now possible with this tool. Extracting the symbol, or blocks, from the points is easy to do using this as well.



- ♦ **Surface & Grading** – Multiple tools for surface and grading design/editing are available in the Toolkit. The grading functionality lets you design various spatial entities with different grading criteria, allowing you to save the templates, edit the source geometry, and review the results in real-time.



- ♦ **Alignments** – The options to join alignments, create offset alignments, and even export a polyline to LandXML, are very helpful.
- ♦ **Profiles** – There are some very helpful profile tools in the Toolkit. One of my favorites is being able to create simple offset profiles and multiple profiles very quickly.
- ♦ **Corridors** – There is a powerful Corridor Spreadsheet Editor that allows you to edit corridors in a MS Excel like editor. It provides possibilities for various kinds of workflows like editing regions, targets and reconstructing corridors in new drawings.
- ♦ **Pipes** – This is where most people need help in Civil 3D. With these pipe tools, you can swap multiple parts, design your gravity systems quickly, and many other great options.



- ♦ **Analysis** – The Check Utility Crossing tool calculates crossings between utility segments (gravity and pressure network pipes), inserts COGO points at crossing locations and marks crossing elevation differences.
- ♦ **Navigation & Visibility** – There are a few navigation related tools. One of them manages the visibility of all Civil 3D objects on a single panel. Make your working area more transparent by toggling the visibility of features on/off.

A couple final things to highlight from KobiLabs would be:

- ♦ They shoot for 6 to 10 new tools each year.
- ♦ NO additional fees for the new tools any customer on subscription automatically gets them.

- ♦ They are always requesting ideas for new tools. If they like the idea, they build it at no cost and it is then put into the tools for every user to take advantage of.

Additional tools and videos can be found here: <https://kobilabs.com/civil-3d/>

SMART TOOLS FOR CIVIL 3D PIPE NETWORKS BY URBANO VISIO

Urbano Visio has been around for Civil 3D since 2016. It is a collection of 12 tools for gravitational piping design (data editing, pipe invert design, hydraulic calculation, and trench excavation calculation). They have tools specifically for Civil 3D pipe networks, productivity features for the design & editing of plan & profile views, quick hydraulic & trench volume calculations, and custom data analyses. Here are just a few of the tools they have.

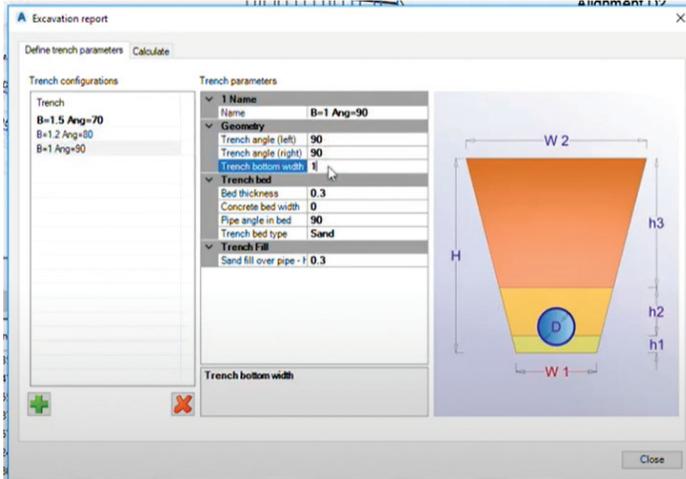


- ♦ **Add, move, delete structures in profile views**
Add, move and delete structures directly in profile views. All three options allow you to set the function behavior (e.g. keep existing slope), select & pick directly in the profile view, and input numerical values for extra precision.
- ♦ **Group, edit and analyze with the data grid**
Create a group for any pipe or structure data, including properties, part list custom data, object data, expressions and property set data. The data is displayed in a data grid that allows fast element selection from the plan, zooming to plan & profile views, and highlight the elements in plan & profile views. Edit one or multiple elements, like changing pipes, renaming structures or adding property set data values. You can analyze data by applying filters, creating AutoCAD tables, and exporting a selected dataset to MS Excel.
- ♦ **Hydraulic calculation**
Quickly calculate all hydraulic values for the whole network, a network part, a single pipe, or even without any pipes. Before running the calculation choose the appropriate formula (Manning or Darcy-Weisbach) and measure unit system (Imperial or Metric). You can automatically dimension pipes using parameters like min. diameter and max. pipe fill percentage. The results are written to property set data.

AutoCAD Civil 3D

✦ Trench volume calculation

Create your own simple trench configuration using parameters like trench side angles, bottom width & bedding type, and thickness. To calculate, select the pipe network, surface and trench configuration. You can also define multiple excavation zones according to excavation depth. After running the calculation, the results will be written to property set data and to a MS Excel report that includes volumes and pipe lengths.



Additional tools and videos can be found here: http://www.studiours.com/en/urbano_visio/131/2

URBANO HYDRA

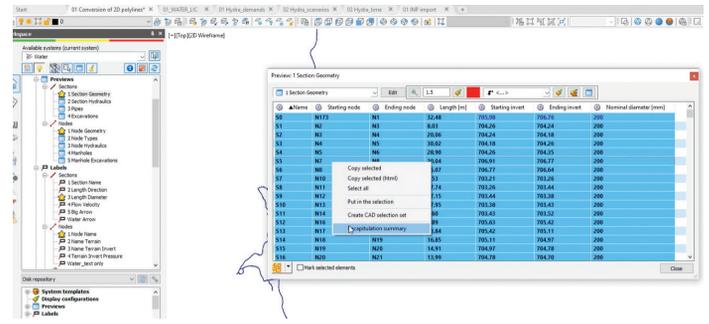
For water distribution design, calculation and analysis, this is a fantastic tool! Pressure analysis has always been missing from Civil 3D and I think many people expected it once the Pressure Pipe Networks were introduced. But there is still nothing out-of-the-box that can pull this off. One of the key features has been outlined below:

✦ Connection to EPANET and other hydraulic modeling software

EPANET is the worldwide standard software for hydraulic calculations of water distribution networks, and most hydraulic modeling software uses the EPANET file format to exchange data. Urbano can be used to determine all pipe network information including water demands, pipes, valves, pumps, reservoirs, etc. The prepared data can then be exported to any EPANET compatible software for hydraulic modeling. The modeling results can be imported to Urbano and become part of the project.

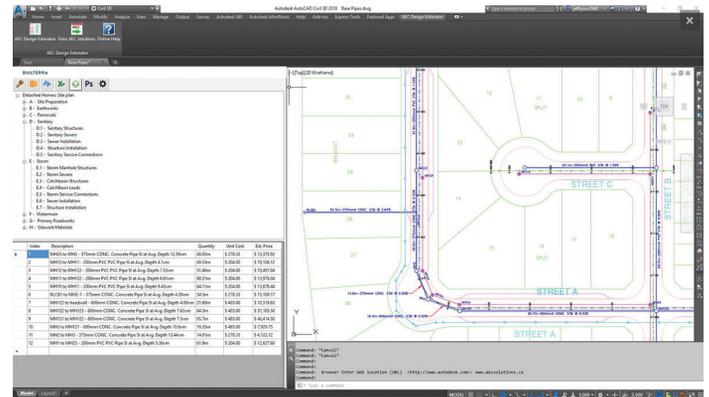
✦ Hydraulic calculation

Urbano uses the EPANET engine for a snapshot hydraulic calculation. This action requires the same data input as if you were to export the data to EPANET. The snapshot calculation can be performed to get some basic understanding of the network in a short amount of time.



QUANTITY ESTIMATION BY BUILTERRA

Yes, Civil 3D has the built in QTO Manager, and multiple methods for quantity takeoffs, but who here still manually does it? I DO!! You could setup everything using the QTO in Civil 3D, and I have set it up for others before, but in my opinion, it still doesn't cut it.



Using Builterra, you now have a way to connect AutoCAD design objects with pay items. Unlike traditional quantity extraction tools, Builterra connects design data to the live project tender. Instantly capture and upload CAD or model-based object properties to build pay item section tables. Designers and PMs can work together to create standardized templates for cost estimates or bid contracts. *Stop copy/paste for good.*

Additional tools and videos can be found here:

<https://builterra.com/design-takeoffs-cost-estimating-reporting>

PIPE NETWORK PRODUCTIVITY TOOLS FROM RED TRANSIT CONSULTANTS

If you have not seen the tools from Steve Hill at Red Transit Consultants, you are really missing out. I could write an entire article on just these tools. In fact, last year's AUGIWorld magazine on 3rd Party Tools covered just that.

This set of productivity tools contains an array of time saving tools for repetitive tasks with Pipe Networks.

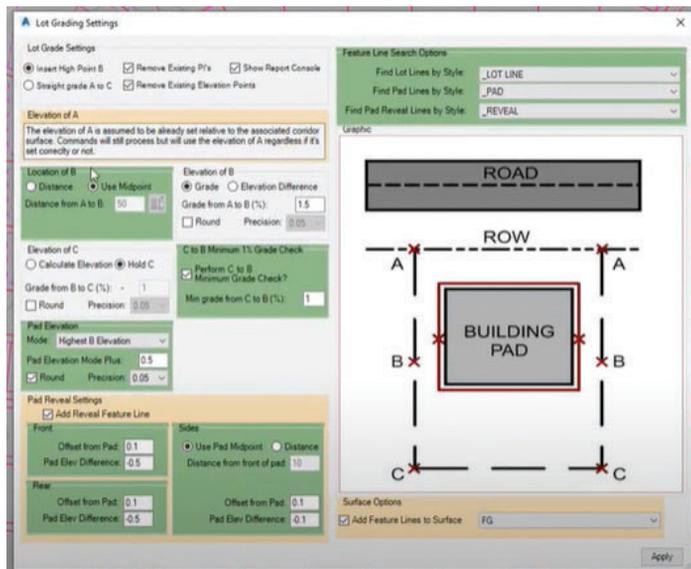
They provide increased productivity to the following:

- Pipe Network tasks such as: Swapping Parts, Adjusting Pipe Elevations, Adding Wye Connections, Modifying Part References, Modifying Part Descriptions, Labelling Pipe Crossings, Labelling Pipe Elevations at any Point Along Pipe, Renaming Parts, Gathering Quantities, and MUCH MORE.

Where applicable, all the tools allow for handling multiple objects with three selection methods: Network, Multiple, and Path.

See for yourself at <https://redtransitconsultants.com/>

While you are there, Steve has a new Lot Grader tool that may change the game for residential lot grading workflows. As someone who designs thousands of lots a year, I cannot wait to get my hands on this software. Mr. Hill, you know where to find me and I accept all free software!!



PROJECT EXPLORER

So, this may not be considered a 3rd Party add-on since Autodesk just acquired it on May 11, 2020, but this tool is going to be freaking awesome! This is not a new tool to the market, this came from 3AM Solutions and has matured into a great addition to the software. I am sure you'll be seeing more info from Autodesk soon, but I wanted to get this on your radar as something to look forward to.

<https://blogs.autodesk.com/infrastructure-reimagined/autodesk-projectexplorer/>

RIVER AND FLOOD ANALYSIS

Also, not a 3rd party, but the River and Flood Analysis tool is an often-overlooked piece of software that the majority of you already own. This is a river modeling software package that supports HEC-RAS within the Autodesk Civil 3D environment. The

Autodesk River & Flood Analysis module makes it easier than ever before to compute water surface profiles for modeling rivers, bridges, culverts, spillways, levees, floodplain & floodway delineations, stream diversions, channel improvements, and split flows.



AUTODESK APP STORE

Boost your productivity with some of the apps on the app store. There are items from full on software additions, to simple "one" command/workflow feature improvements. These are paid apps as well as some fantastic FREE apps. One that I use often, which also happens to be free, is the Drawing Purge app. Explore that, and other apps, from the link below. If you are reading this in print form, and you just clicked the link with your finger, then welcome to the club!!

<https://apps.autodesk.com/CIV3D/en/Home/Index>

FORGE

If you've never been to <https://forge.autodesk.com/> you really should go check it out. For all those that want to build an add-on to their Autodesk product of choice, this is a fantastic way to "open up" the API and let YOU be in charge of what you create. You can automate your processes and it allows you to innovate how you work in a whole new way.

CONCLUSION

Needless to say, there are a ton of add-ons out there that can really help on your day-to-day design/drafting as well as more advanced analysis.

I would love to hear more about what add-ons you are using, or you have developed yourself! At the end of the day, Civil 3D is a brilliant tool, but there is no way for Autodesk to meet everyone's needs and expectations, so it's up to us as a community to bridge that gaps with some of these awesome tools!



Shawn has been a part of the design engineering community for roughly 15 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 sherring@prosoftnet.com.

Top 3 Things You Should Have Set Up in Civil 3D Before You Start Designing

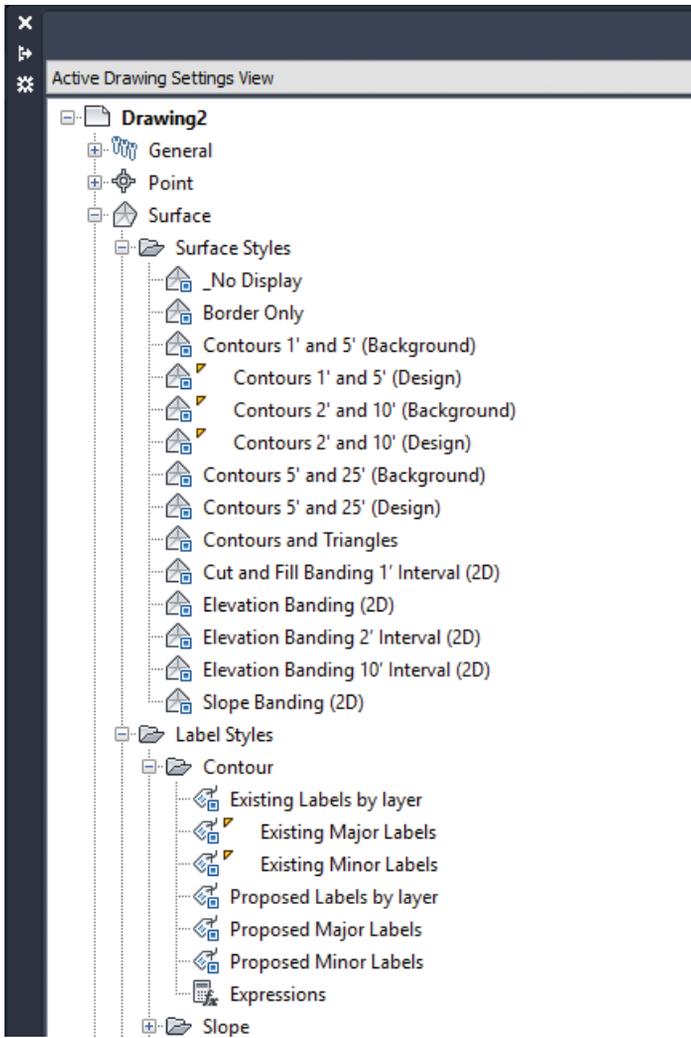


Unlike the “old days” of jumping into a CAD session, and hitting the ground running, there are a few things you need set up beforehand. If you don’t use these 3 things to start with, you are going to have a terrible time trying to figure out how to make data show properly in your drawings.

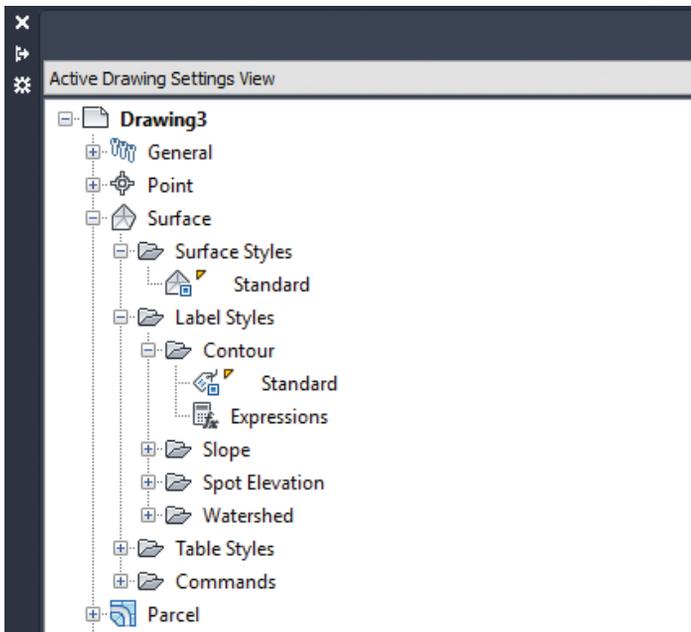
In this article I will outline the 3 things needed and explain the how & why of each.

NO. 1 – THE TEMPLATE FILE

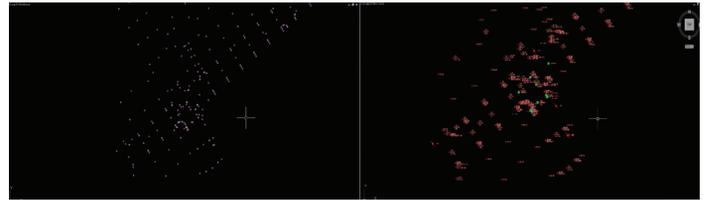
What is a template file? In an effort to not have to duplicate tons of work, you will need to set up a template file to start every drawing in your project. The template file acts as an empty drawing with the extension (.dwt) and includes items such as AutoCAD settings and layers, and AutoCAD objects (i.e., linetypes and text styles). In addition, it can include any Autodesk Civil 3D drawing information that is listed in either the Settings tree (including Autodesk Civil 3D settings, styles, label styles, tables, description keys, and point import/export formats) or the Prospector tree (including any Autodesk Civil 3D object, such as point groups).



In Figure 1, you can see that under Surfaces, there are object styles for the surface, and also label styles. If you start a drawing in Civil 3D without using a template file, you will have one object style and one label style under each, named Standard. I can assure you; you don't want to start using Civil 3D with no styles in the drawing.



Shown in Figure 3 is an example of the differences between using a template and not using a template. The pic on the left is without a template, versus the pic on the right using a template file.



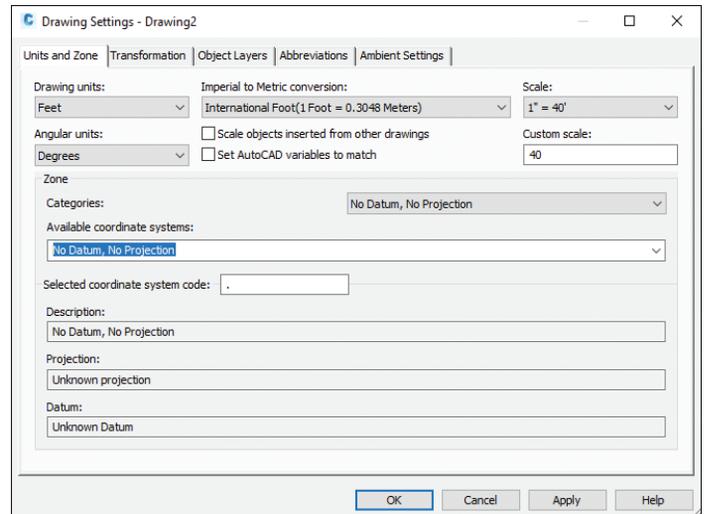
Obviously quite a bit of difference. The is partly due to the fact that the Description Key Set was set up to bring in the correct blocks and use the correct label style according to what the survey uses in the field as his survey codes. See Figure 4...

Code	Style	Point Label Style	Format	Layer	Scale Parameter	Fixed Scale Fac...	Use drawing...	Apply to 3D	Apply to 2D	Marker Points...	Marker Font...	Label
BBNA*	BB Nets	Description Only	1"	V-NODE-SGN	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
DW*	Basic	Elevation and Description	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
EC*	Basic	Elevation and Description	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
EP*	Hydrant (with)	Description Only	1"	V-NODE-WATR	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
FL*	Basic	Elevation Only	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
GP*	Basic	Elevation Only	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
GRV*	Basic	Elevation Only	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
GU1*	Basic	Elevation and Description	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
GU2*	Gay Pole	Description Only	1"	V-NODE-POLL	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
HP*	Basic	Elevation Only	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
MKS*	MKS Sign (w)	Description Only	1"	V-NODE-SGN	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
NO*	Basic	Elevation Only	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
PP*	Utility Pole	Description Only	1"	V-NODE-POLL	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
SANMA*	Sanitary Sewer	Point Elevation-Description	1"	V-NODE-SWAR	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
SGN*	Sign (single)	Description Only	1"	V-NODE-SGN	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
STA*	STA	Point Elevation-Description	1"	V-CTRL-ACRT	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
STMAH*	Storm Sewer H	Description Only	1"	V-NODE-STRM	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
TC*	Basic	Elevation and Description	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
TD*	Basic	Elevation Only	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
TP*	Basic	Elevation and Description	1"	V-NODE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
TR*	Sign (single)	Point Elevation-Description	1"	V-NODE-TREE	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"
WV*	Water Valve	Description Only	1"	V-NODE-WATR	Parameter 1	1,000	No	No	No	Parameter 2	0.0000 16	1"

NO. 2 – THE DRAWING COORDINATE SYSTEM

It is recommended to set a drawing, and/or project coordinate system. This will more than likely be a State Plane coordinate system. I would not set the coordinate system in the template file. The reason I would not, is that all your projects are not in the same coordinate system. In rare cases, if your projects are, then you can set it and forget it in the template file.

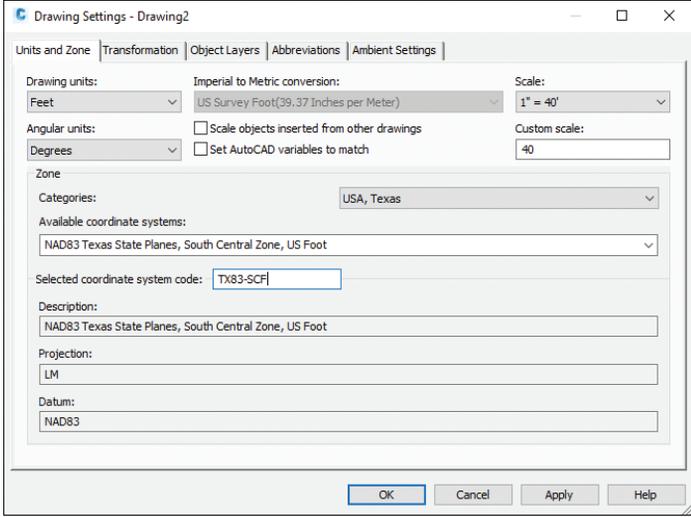
If you click on the Settings tab of the Toolspace, right-click on the drawing name, then choose Edit Drawing Settings, it will open the dialog box you see in Figure 5.



The first tab, Units and Zones, is where you will set your coordinate system. By default, you will see International Foot and a

AutoCAD Civil 3D

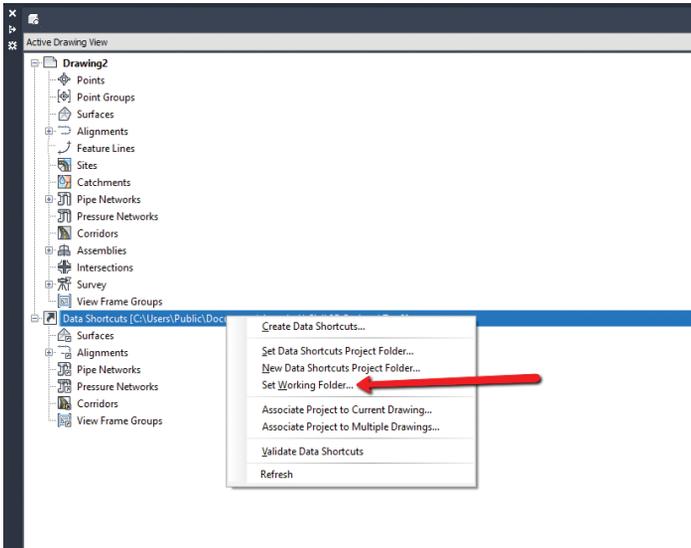
period (.) in the Selected Coordinate System Code section. This indicates “nothing” being set as a coordinate system. Once you set your coordinate system, it will appear in the aforementioned section as shown in Figure 6.



Once you set a coordinate system, the next tab Transformation, will become available for if you want to transform your data to a different location. For example, if your surveyor picked up topo in surface (ground) coordinates, you can specify the scale factor here to transform it to grid coordinates. Coordinate systems being set also aide in transforming GIS data. Most GIS data you download is in WGS84.

NO. 3 – WORKING FOLDERS

There are a couple of different components in Civil 3D that require you to set a “working folder”. One of them is the Survey Database. If you do not import survey data, or don’t import it through the database, then you don’t have to worry about this one. The other one, and probably the most important one, it the working folder for your Data Shortcuts.



This is where Civil 3D stores the XML files used for data shortcuts are stored. If this folder gets moved, then your shortcuts will have the little warning symbol by them in the Prospector. You will then need to re-path everything to the new folder.

CONCLUSION

You can have many years’ experience at working in AutoCAD, Land Development Desktop, and Civil 3D, but if you do not have the 3 things mentioned, your work is going to drive you mad. The 3 listed come in the order of importance. The template file is imperative if you want to be successful in utilizing this software. I always recommend using the template file “out-of-the-box” (OOTB) and alter it to your company standards. This will save countless hours instead of trying to develop one from scratch.



Mr. Todd Rogers is a certified Partner Service Expert (P.S.E.) and certified Autodesk instructor with over 27+ years of experience in teaching, managing, and, providing hardware and software solutions for hundreds of engineering firms throughout the greater Houston, Texas area. Mr. Rogers is a valued member of Walter P Moore, where he works as a BIM Manager. 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), he shares tips and solutions with Autodesk software issues. Todd also sits in the Secretary seat for AUGI, Inc.



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- *HotNews* (last 12 months)
- *AUGIWorld* (last 12 months)

DUES: Free



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- *HotNews* (last 24 months)
- *AUGIWorld* (last 24 months)

DUES: \$25



Professional members have access to:

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- *HotNews* (full access)
- *AUGIWorld* (full access and in print)
- ADN 2013 Standard Membership Offer

DUES: \$100

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