

Diamond Sponsors



AUGI WORLD

The Official Publication of the AUGI Design Community

June 2021

Planning Effective Implementation

Also in this issue:

What's New in Revit Structure

An AREA That Needed Improvement

Autodesk Licensing

NEW PRECISION WORKSTATION FAMILY

BUILD THE NEXT BIG THING



The new Precision workstation family enhances productivity on every application with performance levels that go beyond the expected. Create what doesn't exist, define the standard and redefine what's possible with reliable systems designed for intelligent performance.

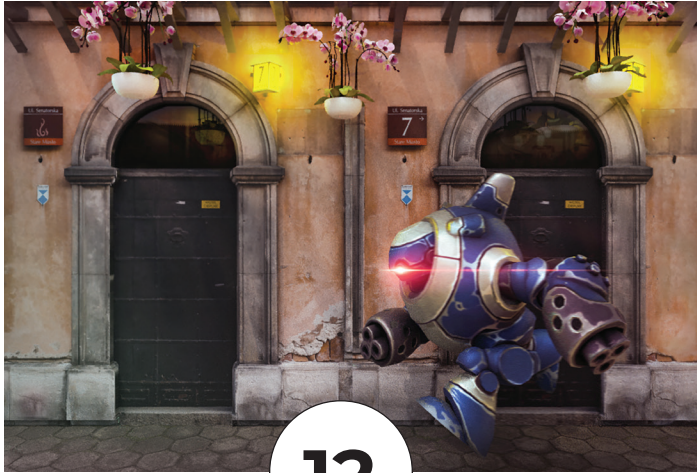
Learn more at DellTechnologies.com/Precision

As a special thank you to the AUGI World community, you can find exclusive offers from Dell at Dell.com/AUGI

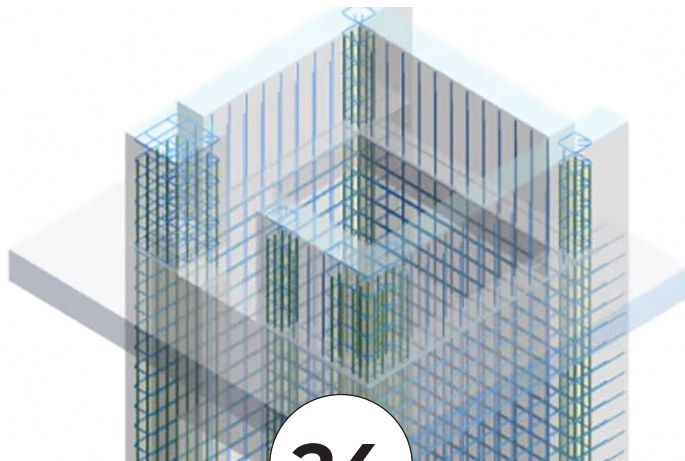
DELLTechnologies

 **NVIDIA**

CONTENTS



12



24



34

FEATURES

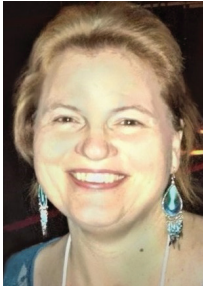
- 8 BIM**
Implementation within a Multi-Trade Environment
- 12 3ds Max**
Implement Time Saving Techniques
- 16 Civil 3D**
Implementing Revit Within Your Civil 3D Workflow
- 24 Revit Structure**
What's New in 2022
- 28 AutoCAD**
An AREA That Needed Improvement
- 34 Autodesk Licensing**
Autodesk Licensing

COLUMNS

- 4 Letter from the President**
- 6 Letter from the Editor (the finale!)**
- 11 Inside Track**
- 20 Tech Manager**



From the President



Hello AUGI Members!
The June issue of *AUGI WORLD* is dedicated to implementation. I've spent a good portion of the last 23 years of my life helping customers with software implementation and migration, either rolling out new versions of their software or switching to a completely new software for their CAD/BIM needs. Some years I've felt like a roving CAD manager!

- I have some strong opinions on software implementations. The most important being that there must be a plan! The plan should consist of the following basic elements (at the minimum):
- Timeline
- Customization, Template, Family/Block development
- Training
- Mentoring

I strongly believe that when you implement a new software in your organization, after software training, you should have a solid plan for mentoring employees. Whether that means bringing in an outside resource once a week or dedicating an existing employee as a mentor during set hours each week.

Having a solid plan for software implementation/migration equals success! If any of the core elements aren't implemented, then you are sure to experience more pain during the process than is necessary.

Finally, how do you get a good plan? A good plan is built by starting with a discovery! A discovery consists of going through a process of questioning your internal needs, processes, and workflows to see what software/services are needed, what should be customized and what content needs to be developed. At that point you should have a good idea if you'll need an external resource to assist with any part of your plan.

My best regards to all of you,
KaDe

AUGIWorld

www.augiworld.com

Editors

Editor-in-Chief

David Harrington - david.harrington@augi.com

Copy Editor

Todd Rogers - todd.rogers@augi.com

Layout Editor

Tim Varnau - tim.varnau@augi.com

Content Managers

3ds Max - Brian Chapman
AutoCAD - Jim Fisher
AutoCAD Architecture - Melinda Heavrin
AutoCAD Civil 3D - Shawn Herring
AutoCAD MEP - William Campbell
BIM Construction - Kenny Eastman
Tech Manager - Mark Kiker
Inside Track - Brian Andresen
Inventor
Revit Architecture - Jay Zallan
Revit MEP - Nathan Mulder
Revit Structure - Jason Lush

Advertising / Reprint Sales

Kevin Merritt - salesmanager@augi.com

AUGI Executive Team

President

KaDe King

Vice-President

Frank Mayfield

Treasurer

Todd Rogers

AUGI Board of Directors

Brian Andresen	Frank Mayfield
Kimberly Fuhrman	Todd Rogers
KaDe King	Scott Wilcox
Chris Lindner	

Publication Information

AUGI World magazine is a benefit of specific AUGI membership plans. Direct magazine subscriptions are not available. Please visit www.augi.com/account/register to join or upgrade your membership to receive *AUGI World* magazine in print. To manage your AUGI membership and address, please visit www.augi.com/account. For all other magazine inquiries please contact augiworld@augi.com

Published by:

AUGI World is published by Autodesk User Group International, Inc. AUGI makes no warranty for the use of its products and assumes no responsibility for any errors which may appear in this publication nor does it make a commitment to update the information contained herein.

AUGI World is Copyright ©2021 AUGI. No information in this magazine may be reproduced without expressed written permission from AUGI.

All registered trademarks and trademarks included in this magazine are held by their respective companies. Every attempt was made to include all trademarks and registered trademarks where indicated by their companies.

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



SUPERMICRO

Built for Your Imagination

Workstations Optimized for Media and Entertainment

- Drastically Reduce Render Times
- Accelerate 3D Design and Animation
- Create Stunning Videos and Graphics

Supermicro M&E Workstations Featuring Intel® Technology



Learn More at www.supermicro.com/superworkstation

© Supermicro and Supermicro logo are trademarks of Super Micro Computer, Inc. in the U.S. and/or other countries.
All logos, and brands are property of their respective owners.



Letter from the Editor (The Finale!)



It's been a while since I was lucky enough to pen something for our little magazine, so I thought it would be fitting to contribute as I "exit stage left". It is this issue, June 2021, which will be my last as the Editor-in-Chief of *AUGIWORLD* magazine. I know, OMG, it has been *my* thing for years and years! How

can it be? Well let me run down memory lane a bit for you.

This magazine began as "a" magazine (weird name for sure) around 2001 and then renamed as *AUGIWORLD* late 2002. At the time AUGI had partnered with a management company and through a collaboration with member authors expanded the publication, and actually mailed upwards of 50,000 copies per issue! It is during this time that I wrote about AutoCAD, Local User Groups, and later about Revit. To say contributing to this magazine's success was a personal reward would be an understatement.

I first began to help the development of *AUGIWORLD* in Jan 2005 as the technical editor. I did that for several years, and then in then in Jan 2011, I formally transitioned over to Editor-in-Chief. So, it literally has been over a decade for me in this role. After stepping into the role, we then expanded the management approach. We created the concept of Content Managers, or channels if you will, that would help volunteer managers to find volunteers to write. But over the years I know I have recruited dozens and dozens of new authors to try their hand at writing about software that they use, and in some cases, actually love.



Circa 2005

However, it is time to offload this love affair of mine so that I can focus on other efforts at AUGI

and work on the organization itself. Luckily, Todd Rogers has stepped up over the last year as our Copy Editor and he will be assuming the Editor-in-Chief role. We will also be bringing in a new Copy Editor as well.

Okay, so here is my last plug for new authors. Did you know you can build off what you may contribute to *AUGIWORLD*? Way back in 1994 I attended my first Autodesk University (Atlanta). During that event, I ran into the publisher of the Inside AutoCAD book series. That chance meeting led to an offer to do a technical review on the next book they had in production. I wrote up 4 pages of my insight and it was received well. I was then offered an opportunity to technical edit the following book. And then after that, I was offered a chance to author an AutoCAD book. That then led to a handful of book updates and later spun into series of new books on Revit.

The point of this is simple; getting experience draws you in to get more experience, and that then, in many cases, leads to legitimate opportunities out in the industry. There are many ex-authors of *AUGIWORLD* articles who later went on to write for other magazines, online blogs, professional training materials, technical manual books, and even teach at conferences. What are you waiting for? Why not? There is literally nothing to lose and everything to gain.

Will I be back? Well, I'm not quitting AUGI and so obviously I will still be around and casually watching over Todd's efforts to make sure we keep the party going! I'll still be happy to help new authors get lined up and happy to keep talking to content managers whenever they, or Todd needs it. It's going to be slow "tear off the band-aid", I suspect.

It has been my sincere pleasure and a rewarding experience for me leading *AUGIWORLD* into the future. I hope you continue to read, and even comment on our articles. I hope many of you take up the opportunity to contribute. You will be glad you did. Until next time!

Take care,
David



**DIGITAL
BUILT
ENVIRONMENT
INSTITUTE**



**A Global
Community for
AEC Professionals to Learn,
Grow and Exchange Knowledge.**

Become a member: www.dbei.org/membership



Implementation within a Multi-Trade Environment

The term *implementation* is a funny thing. Back in the day when I worked for an Autodesk reseller, I suppose that was my job. To perform an implementation at a firm trying to get on Revit. 15 years ago, it was pretty cut and dry. OK, you use AutoCAD now you want to use Revit. Perfect, show me what your drawings look like in AutoCAD (discovery phase) and we will make Revit look like that. Step-1. You good? Wing...Out! (In my mind I'm doing a mic drop and I'm awesome). On to the next client that I can do this with, but I don't have to hang around to actually enforce this stuff. Fast forward 15 years, and I find most firms are still at step one. How can that be? I mean...how

hard is it to make a symbol with a little triangle inside of a circle? I'll tell you how hard it is. It's this next sentence that put's the brakes on the entire implementation. "Well, the firm I worked at last is a circle inside of a triangle, not a triangle inside of a circle, I've been doing that for 25 years". Yep, here we go. Wow, we can't get past that?

So, step 1. How do we implement and maintain a set of standards across all trades?

Step 2. Implementing BIM. Pretty similar to step one. I think it should be straight forward as well. Don't model a pipe through the middle of a duct.

Don't put an occupancy sensor on the floor. They belong on the ceiling. We spent all that time ironing out step one, now the triangle in the circle looks great in plan but the actual device is on the floor. Actually, all of the ceiling hosted devices are on the floor in the entire project. Boooooo! Same thing, right? "AutoCAD is so much easier because we didn't have to worry about that garbage". That's actually a true statement. I can't refute it. I know BIM pays off in the long run and all that, but let's stay focused on implementation.

Step 3. Workflow. Engineer to drafter back to engineer back to drafter. That's actually a workflow. An antiquated workflow that works horribly when trying to implement BIM. The drafter doesn't know the building or the system completely, and the engineer doesn't know the software at all. I wish there was some way we could just merge these two individuals into one superstar. Maybe in a lab somewhere on a college campus. Actually, that's a good idea. Maybe not a lab with beakers and test tubes where we are creating this superhuman, but a computer lab! Then we could hire people who have gone through these labs. Wouldn't that be something?

STEP-1 MAINTAINING STANDARDS

I don't know if this is possible or not. I suppose if my focus was only on one trade it would be possible. Wait, that gives me another idea! We definitely should concentrate on one trade at a time, but something needs to come first.

Your company's brand. Unless you are employee #5, you probably got hired at your company with a set of standards that exist. The company logo, text styles, a title block...the North Arrow! Gather these standards and maintain them at all costs. Broadcast what these standards are, and the fact that it is non-negotiable. Our drawings look like this, and that's that. I don't care what your last company did. You don't work there anymore. Document this and carve it in stone. If you can get upper management's backing that is the best way to ensure at least this isn't up for debate. (That'll never happen, but if you think it's true then it is).

Find a trade champion. I don't care for that term, but I can't come up with a better one, so I'll keep using it. When you go trade by trade, that means you are going to set up a meeting with representatives from that trade. More times than

not, once that meeting is over, so is the awesome conversation you just had. Find someone who will/can actually do the things you discussed. Support, encourage and help that person. If that person doesn't exist, then it's on you my friend.

Documentation. You need to do it. Document your accomplishments one they are accomplished. That being said, you don't need to stand up in front of everyone with a giant scroll and a grand proclamation every time a decision is made, but having it documented helps when people push back. And they will push back. Also make sure these incremental successes find their way into your templates and/or your standards directory. REMOVE the old standards. Don't put in a folder called old either. Back it up somewhere out of site from the general population then delete it.

Going through trade-by-trade with the company branding as a consistent message as being non-negotiable and making sure there is consistency amongst the trades when a drawing set is put together gets you on the right track.

STEP-2 IMPLEMENTING BIM

How do I summarize this in a paragraph? I used to be able to, but the BIM concept in my opinion has been made so convoluted over the years that I'm not even sure where to start. Actually, I do because the basis is the same as I mentioned before. Don't run a pipe through a beam or a duct. Just don't. Put your stuff in the right spot in the X, Y...and oh yeah, the Z. I know you're scoffing right now. It's not as easy as I'm making it out to be, but that is the end goal.

Training. Yep. Your people need to know the software they are using so they know how to not run a pipe through a beam or a duct. They need to know how to show elements in Revit consistent with the non-negotiable standards. I know I'm understating this, but it is what it is. Everybody in the project either needs to have an acute understanding of Revit, or they need to be on the track to having an acute understanding. Make it happen.

Coordination. Sounds simple but there's no BIM without basic project coordination. People need to know as much about the project as possible. They need to know that there's a chance that the duct they need to avoid doesn't even exist yet. When it

suddenly does exist, somebody needs to coordinate this. This is why BIM coordination meetings are needed. They don't need to be this intense hour's long debate. Just a meeting saying "hey, this pipe is running through this duct" is generally sufficient.

BIM Execution Plan. Is there one? No? Well, just pretend there is one on every project so that when there is one, there's not a clash detection fire drill when the Revit models get sent back with a Navisworks clash model from the client. I'm not going to go into the specifics of a BEP. Just Google it and you will find a thousand. If there is one for the project you are working on, read it and communicate that your client is serious about it. Trust me. I fall into this pit all the time.

STEP-3 WORKFLOW

How do you change a company's workflow? No, seriously I'm actually asking you. How do you say "Look we'd like to start having all of our engineers and architects do their own drafting, and the drafters...well we'd like them to become licensed engineers and architects"? Ha, yeah! Try that statement in a meeting. This is a gradual evolution that has to naturally occur.

Training. I know I used training for the last step. We still need it here. We need to train our engineers and project managers how to open a model and at least navigate around. From there we teach them how to add notes here and there (you know, basically do their own markups), then we teach them how to add content and model. Before you know it, you have a convert! (This doesn't happen often but when it does celebrate! I swear I've seen it and it is glorious).

Onboarding. Remember that secret college lab we were talking about in the intro chapter? Look for applicants who may be fresh out of college with that type of training. More and more schools are making BIM a part of their curriculum. Also, new employees with experience at other firms should be required to have these skills. Either way have an onboarding process that immediately exposes them to your non-negotiable corporate branding, and standards developed in step 1.

OK, I know I'm over simplifying, and have left out process that fall into place once the prescribed procedures that have been implemented. This isn't one size fits all. I really wish it was and have

spent my career trying to make that a reality but it's not. The branding at C&S Companies (my firm) is different than yours. I guarantee, however, personalities at my company are the same as yours. The objective is to better your company's processes. That's it. Having people all doing different stuff that they did at their last company does not better your process. If I went to your company right now my mindset should be, I don't care how it was done at C&S. I'm not there anymore. Certainly, I'm bringing that experience, that's why you hired me, but how can I apply that experience to fit your situation. (Disclaimer: I'm using myself in the third person. I'll never leave C&S).



Eric Wing lives in Syracuse NY where he is the Director of BIM Services for C&S Companies. Eric is a popular speaker at events around the country speaking on many BIM-related topics. He has authored several books including Autodesk's official training guide for their BIM solution "Revit" called Revit for Architecture No Experience Required. Eric is also an author for LinkedIn Learning where he has authored around 60 full courses on BIM management, Revit, AutoCAD MEP, Navisworks and Virtual Design and Construction (VDC). Eric has truly been a leader in the architecture, engineering and construction industry since the conception of BIM and 3D design, and has specialty skills in BIM coordination, training and development of technical staff along with daily application of these tools on multi scale, multi-disciplinary projects. He is also currently a Professor at Syracuse University teaching BIM and Advanced BIM at the School of Architecture, and at the School of Engineering. Eric has also taught courses at the Rochester Institute of Technology and Clarkson University on the subjects of Analytical tools for Facility Management, BIM, and Integrated Project Delivery.

Welcome to the AUGI 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.



SNIPTOOLS

<https://apps.autodesk.com/RVT/en/Detail/Index?id=8821842591531288805&appLang=en&os=Win64>

Autodesk Revit

Version: 2021, 2020, 2019, 2018

SnipTools is an easy way to create a snapshot of the current drawing within the Autodesk® Revit® environment.

SnipTools is a beneficial tool to share your mark-ups with others when you are working on larger plans and grid bubbles are not visible. The app creates a snip of the area selected without creating a crop view.

SnipTools adjusts the grid lines to the selected area and allows you to mark up and share your mark up with others.

Highlights:

- Adjust the grid lines to the selected area
- Mark up tools
- Watermark
- Copy to Clipboard
- Share via email



PROSHEETS

<https://apps.autodesk.com/RVT/en/Detail/Index?id=7448218013676619378&appLang=en&os=Win64>

Autodesk Revit

Version: 2021, 2020, 2019, 2018

ProSheets is a free plugin for Autodesk® Revit® that allows users to bulk export views/sheets to PDF, DWG, DGN, DWF, NWC, IFC, and IMG (e.g., JPEG, PNG, TIFF, etc).

Main features:

- Auto-detection of the paper size
- Auto-detection of the paper orientation
- Auto-generation of custom paper sizes
- Advanced naming rules (using sheet parameters and project information parameters)
- Ability to store your favorite settings in a profile.

Notes:

This add-in will automatically install the PDF24 and a custom 'diroots.prosheets' virtual printer. Uninstalling them will make ProSheets stop working.



PYTHON VALVE

<https://apps.autodesk.com/PLNT3D/en/Detail/Index?id=4763538936142871881&appLang=en&os=Win64>

Autodesk AutoCAD Plant 3D

Version: 2021, 2020, 2019, 2018

Create custom-built valve catalogs. The scripts are small Python based programs for creating valves in Autodesk® AutoCAD® Plant 3D by entering just a few parameters. You can use all these scripts to create your own valve catalogs based on your standards. Some standard sizes are provided as a sample.



NIGHMOS

https://apps.autodesk.com/ACD/en/Detail/Index?id=331948426610297129&appLang=en&os=Win32_64

Autodesk AutoCAD

Version: 2021, 2020, 2019, 2018

This app is designed to help structural engineers drawing:

- Beams and Ribs Cross-Section in a simple way by entering some vars only.
- Grids with labels and annotations in a simple way by entering some vars only.

The program deals with wrong entries and gives info on what is wrong, and how to make your section drawable.

AUGIWorld brings you recent developments in Autodesk and related software items



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

Implement Time Saving Techniques

This month, we will implement time-saving techniques with 3ds Max to generate professional content in today's fast-paced environments. These are the hacks, the shortcuts, the areas we bend the rules to our will to

communicate ideas fast, efficiently, and effectively to move production forward. Using these simple techniques, we create outstanding results like a smokescreen, concealing the simple and perhaps rule-breaking procedures behind them.



Figure 1 – The Façade

IMPLEMENT THE FAÇADE

Façade: frontage, disguise, smokescreen, coverup, concealment.

Scene context brings a photo to life, improving the idea and conveying more to the viewer. Simple additions to scenes can help convey a story better. A simple way to accomplish this is with façades. Refer to Figure 1. If I presented the robot alone, it would be interesting, but spending fifteen minutes to add some context to the scene dramatically improves the result, making it well worth the little bit of extra effort.

Adding façades to scenes can be straightforward if planned. We could apply a texture to a plane and call it adequate under some circumstances. However, the human brain can notice that something is wrong with a render even if the viewer can't point out the specific reason; it just feels off. The trick is to focus on the silhouette. The human brain processes silhouettes exceptionally well. If you look up the silhouette of a horse or rabbit, for example, without any context, you can likely determine it is a horse or rabbit.

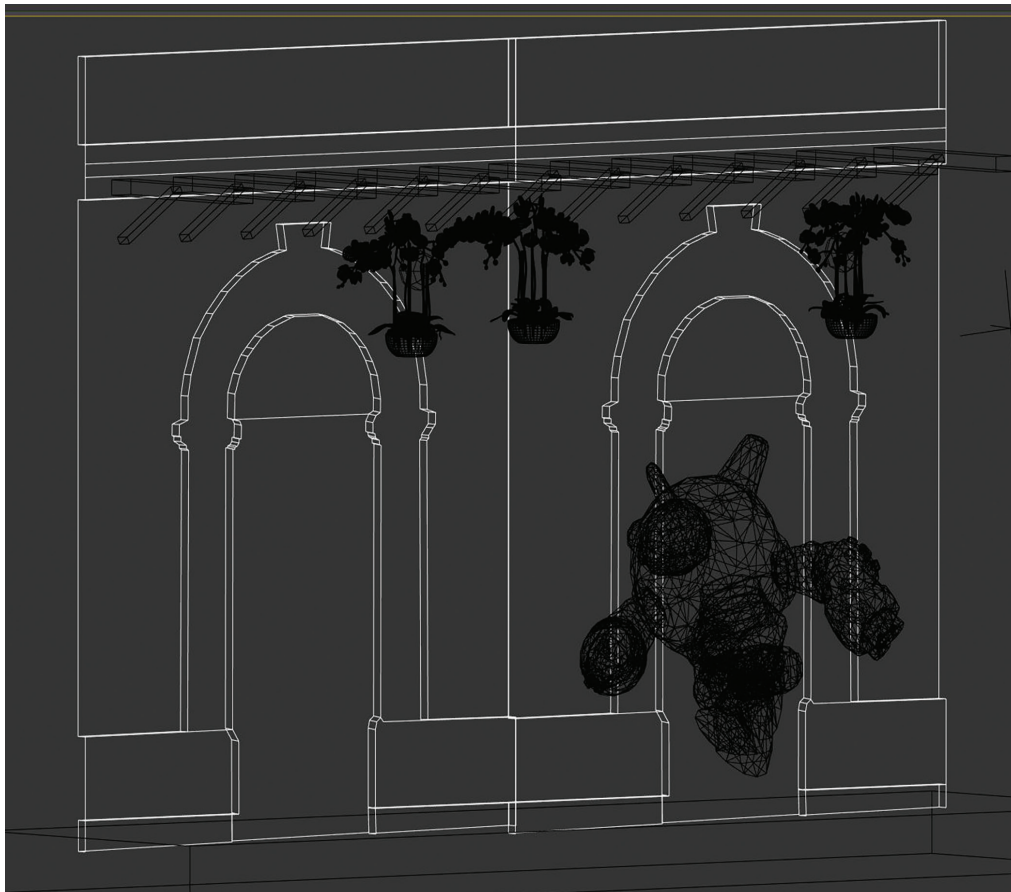


Figure 2 – Façade Wireframe

Regarding 3D, it isn't necessary to construct everything in detail. Contributing to the silhouette helps 3ds Max bounce light and generate shadows. Capturing key features and components that impact light and shadows can be enough to trick the viewer. Figure 1 uses a photo as a texture, but you can see in Figure 2 I only had to apply a few extrusions to get a believable result. In my case, the extrusion was most effective where the sidewalk meets the vertical wall.

It is essential to plan this process. Extruding planes and using photos for textures causes stretching in the texture. You want your extrusions to face the camera, be hidden by other objects, or minimal enough they don't draw attention. Tip: Correcting those extrusions in post-production is reasonable (in Photoshop, for example). However, if you must adjust the scene, reapplying those corrections can be burdensome.

IMPLEMENT THE MASTERPLAN

Masterplan: idea, proposal, suggestion, project, scheme.

We can expand our possibilities using the same principles discussed with the façade. Figure 3 displays an illustrated master plan. The concept here is simple. Using a 2D colored masterplan (generated with AutoCAD, Photoshop, or similar software) mapped onto a simple plane, I scattered some vegetation over the plane, added a few buildings, then applied some sketch effects in Photoshop. The foreground elements were sufficient to project shadows, while the background element acted as a simple ground plane. In the past, I've applied the same technique with animated elements such as pedestrians and vehicles. By implementing a few quick and simple techniques, we produce a more exciting product with minimal effort.

IMPLEMENT THE GIANT

Giant: immense, tremendous, monumental, epic, massive, colossal.

Skyscrapers, the giants of the urban environment, are scattered throughout every major city. They represent the enormous aspirations of humanity

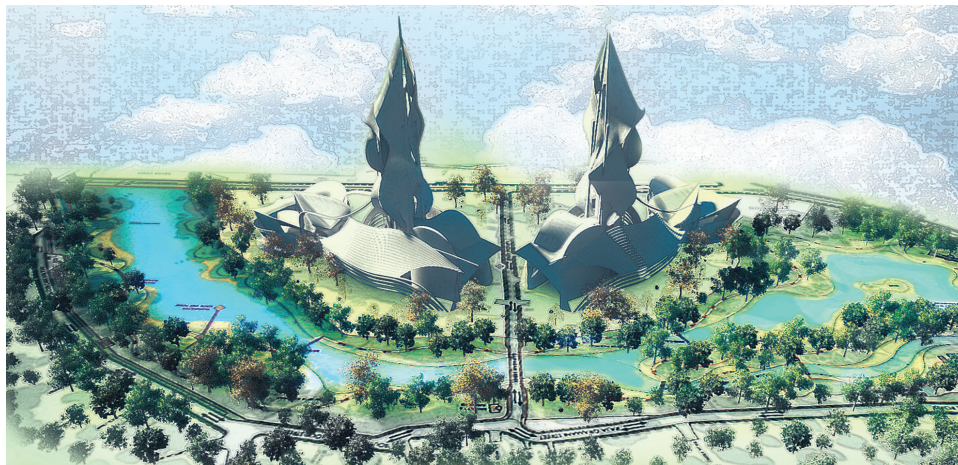


Figure 3 – The Masterplan

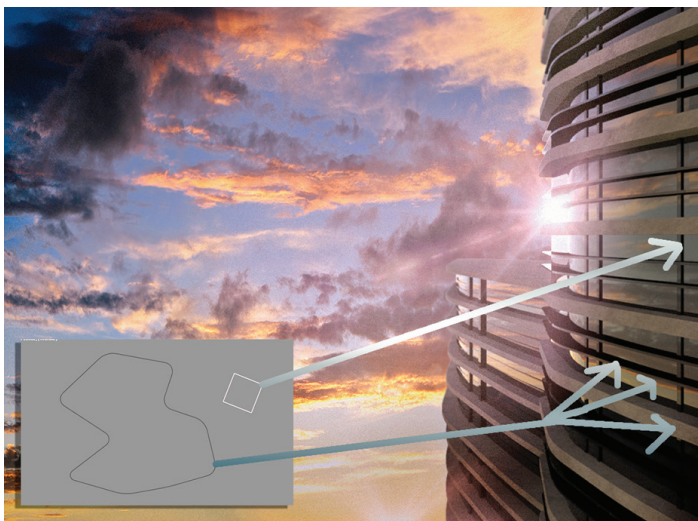


Figure 4 – The Giant

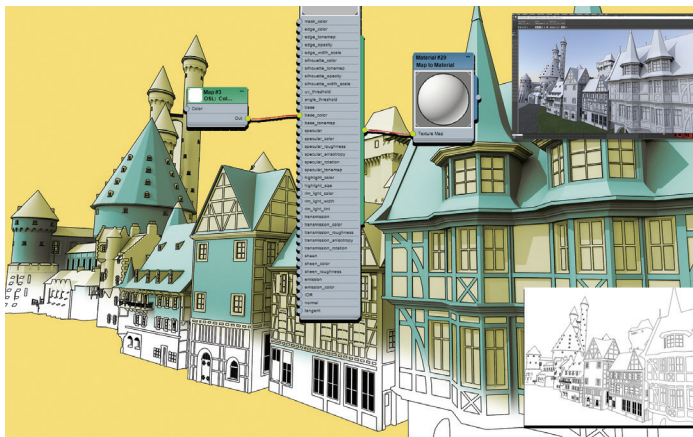


Figure 5 – The Perspective

and play crucial roles in the development of urban environments. They take years to design and build. However, generating them in 3D doesn't have to be difficult at all. Refer to Figure 4, for example.

The building displayed is constructed using instances of two objects, a spline and a box. Each element is copied, extruded, scaled differently, and

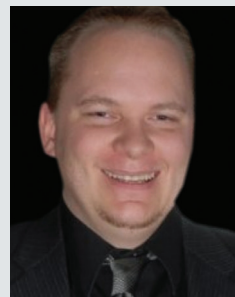
duplicated to generate the parts necessary for the rendering. The process takes about ten minutes to complete. However, for the average person reviewing our render, we produce colossal-sized results.

IMPLEMENT THE PERSPECTIVE

Perspective: outlook, view, point of view, position, projection.

Artists utilize 3ds Max to produce professional results that many don't attribute to it as well.

Besides work for cinema, it is helpful to develop scenes and elements for concept work, illustration, animated shows, and comics. Primarily, it is helpful with drawing in perspective and developing environments for characters. Refer to Figure 5, where I demonstrate using the toon shader with 3Ds Max to produce supporting content for 2D work. With the ability to pose 3D characters, we can apply the same principle to position a character in perspective to help with the concept or design in 2D as well.



Brian Chapman is an Autodesk Authorized Developer, Digital Artist, Designer, and CAD Application Specialist for an engineering firm located in Las Vegas, Nevada. Brian shares tips and tricks at procad.blog with a portfolio of digital artwork and renderings at emptypawn.com. Brian's email is procadman@pro-cad.net



AUGI Members Reach Higher with Expanded Benefits

AUGI is introducing three new Membership levels that will bring you more benefits than ever before. Each level will bring you more content and expertise to share with fellow members, plus provide an expanded, more interactive website, publication access, and much more!



Basic members have access to:

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

DUES: Free



Premier members have access to:

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

DUES: \$25



Professional members have access to:

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

DUES: \$100

**Are you ready to upgrade yourself and your membership?
Access additional benefits and upgrade at www.augi.com**



Implementing Revit Within Your Civil 3D Workflow

As a civil engineer, sometimes working with an architect has been nothing more than “Just send me your stuff and I’ll get it in the right spot”. And as an architect, sometimes working with the civil engineer’s JUNK is not worth the hassle. I am 100% guilty when it comes to both of those statements! But there are some helpful ways to implement Revit to Civil 3D and/or Civil 3D to Revit workflows.

COORDINATE SYSTEMS

I thought I’d briefly explain how the coordinates of both Civil 3D and Revit work.

Civil 3D is preloaded with a huge library of coordinate systems and easy to create custom coordinate systems, or project coordinate systems in. Setting the coordinate system in Civil 3D is very easy, simply right click on your drawing name from the Settings tab of your Toolspace.

From the Units and Zone tab you can set your Category (State/Country) and well as choose from a list of available coordinate systems (CS). If you know your CS code, you can simply type it into the box.

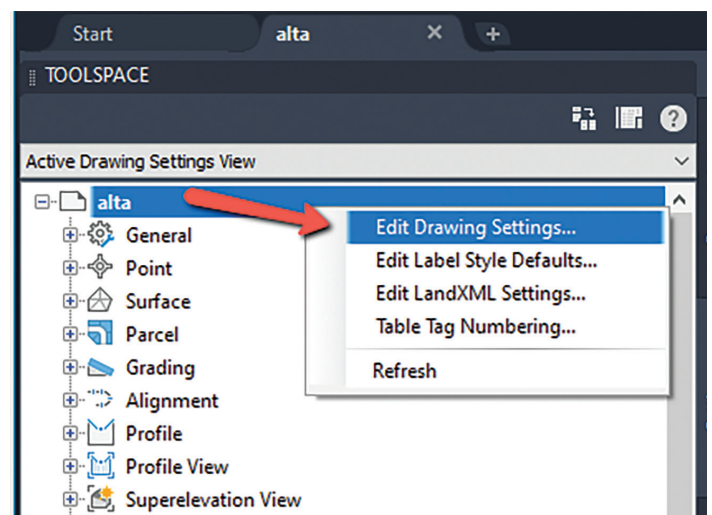


Figure 1

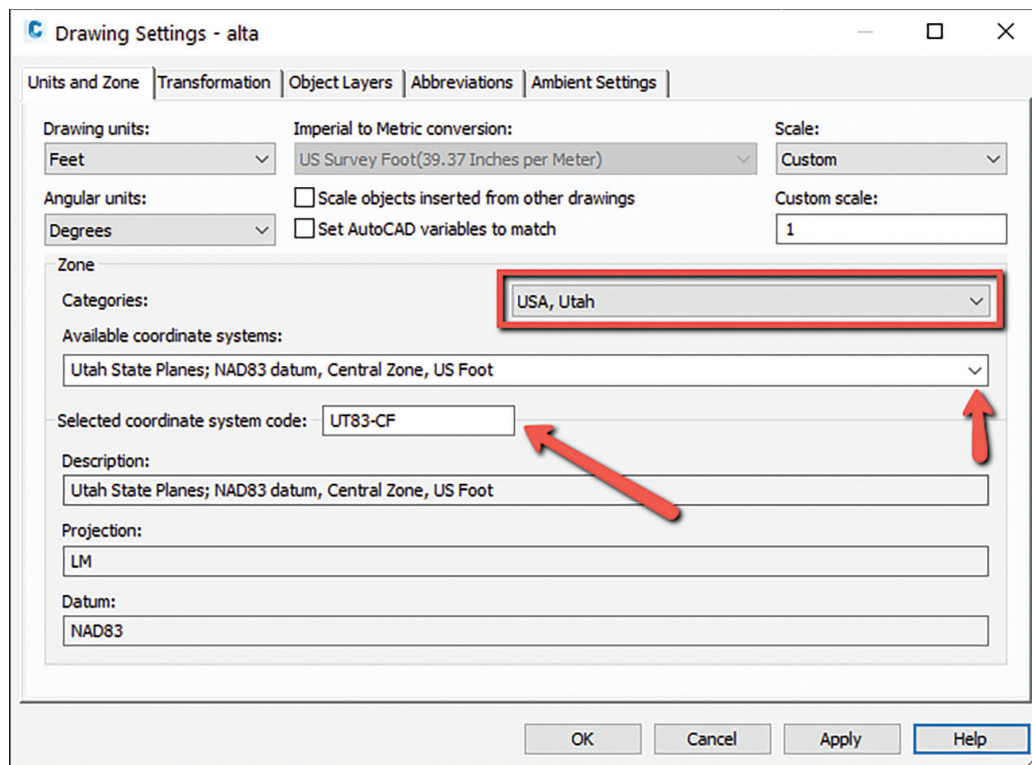


Figure 2

Once a coordinate system is selected, you can do things such as turn on Bing Maps, reproject GIS data and images, and many other project related tasks. Bing Maps is great to serve as a reference tool and has imagery that can easily be turned on and off. A CS must be set in order to use this functionality.

Revit, however, doesn't come loaded with CS and has further limitations on what the size of your model can be, and the distance from the project origin.

Taken directly from the Revit help menu:

"When you create a Revit model, you are working on a modeling work plane that is 20 miles or 32 kilometers in diameter, with a radius of 10 miles or 16 kilometers from the *internal origin*. All geometry for the model, including geometry from an import or a link, should reside within the limits of the modeling work plane."

The *internal origin* is the starting point for the

internal coordinate system, which provides the basis for positioning all elements in the model.

Note: The internal origin is also called the startup location. The location of the internal origin never moves.

From the internal coordinate system, you can establish the following:

- The project coordinate system (Project base Point): provides local context for measuring distances and positioning objects in relation to the model.
- The survey coordinate system (Survey Point): provides a real-world context for the model.

We will use the survey point to assist us in tying down the Revit model.

AUTODESK SHARED REFERENCE POINT

The Autodesk Shared Reference point has been around for almost a decade now! Hard to believe, but it has been there a while but often gets overlooked. It is important to note that it must be installed for both Civil 3D AND Revit.

You can typically download it from your Autodesk Desktop App and the tool can be launch from the Toolbox tab of your Toolspace, under the Subscription Extension Manager where you can simply right click and execute the command.

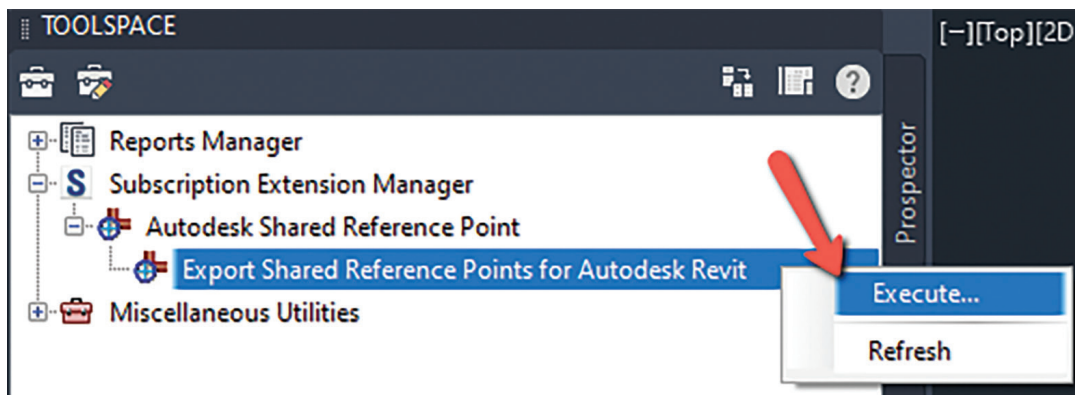


Figure 3

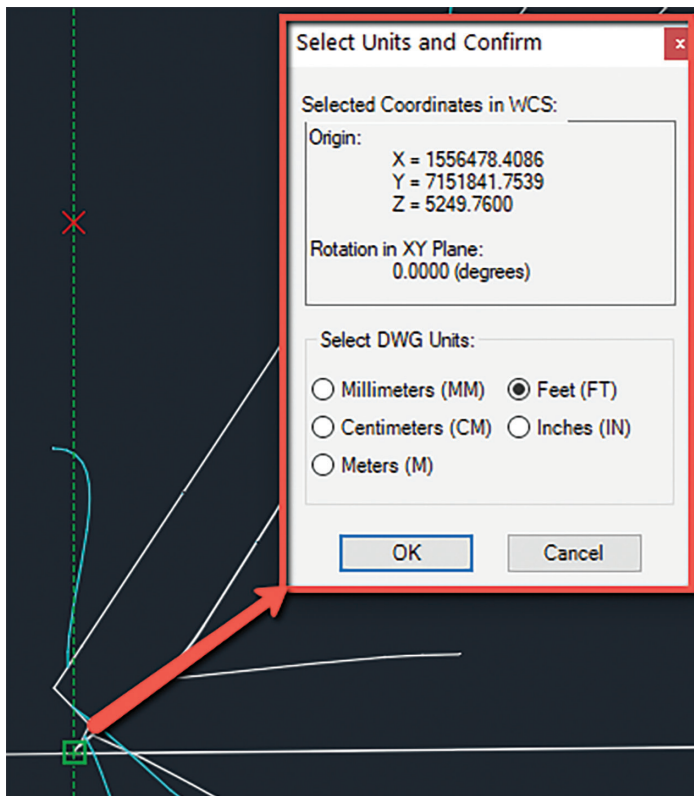


Figure 4

Once you execute the command, it will ask you to select the Origin Point and North axis. Once selected, you are presented with the following dialog box, which will export the selected data into an XML file.

Import XML from Shared Reference Point into Revit

Once that XML file has been exported, we can now use it within Revit. Once inside Revit, you may want to turn on your grid line if that is helpful to you.

From the Add-Ins tab of the ribbon, you can select *Import Shared Coordinates from XML File*. This will be the file you just exported.

You'll be prompted to select the same 2 points you selected in Civil 3D. It's crucial that you pick

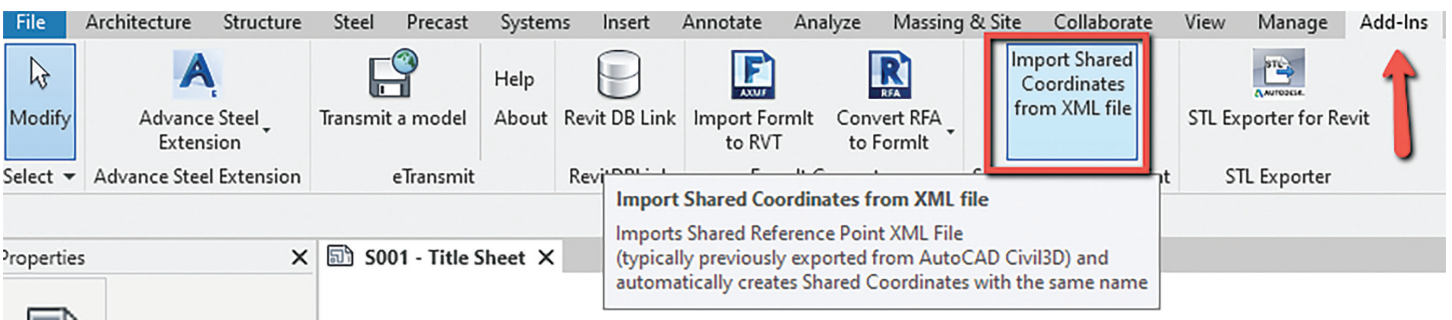


Figure 5

the same points. Once you've selected the second point, you will then select the XML file, followed by a message asking if you're sure you want to create a New Shared Coordinates, select YES.

This creates a new site, where you can then go to the Manage tab of the toolbar, select Location, and from the Site tab you will see, and be able to select, your MySharedRefPnt.

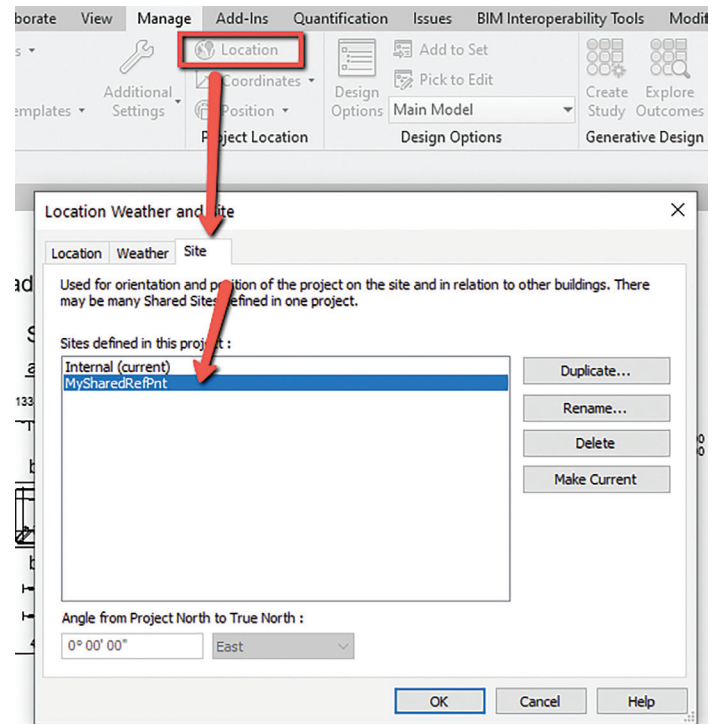


Figure 6

Your Revit project is now linked to your Civil site!! For a quick test to see if it worked you can check the model orientation. Just toggle the orientation to North and your model should orient just as your Civil 3D file is.

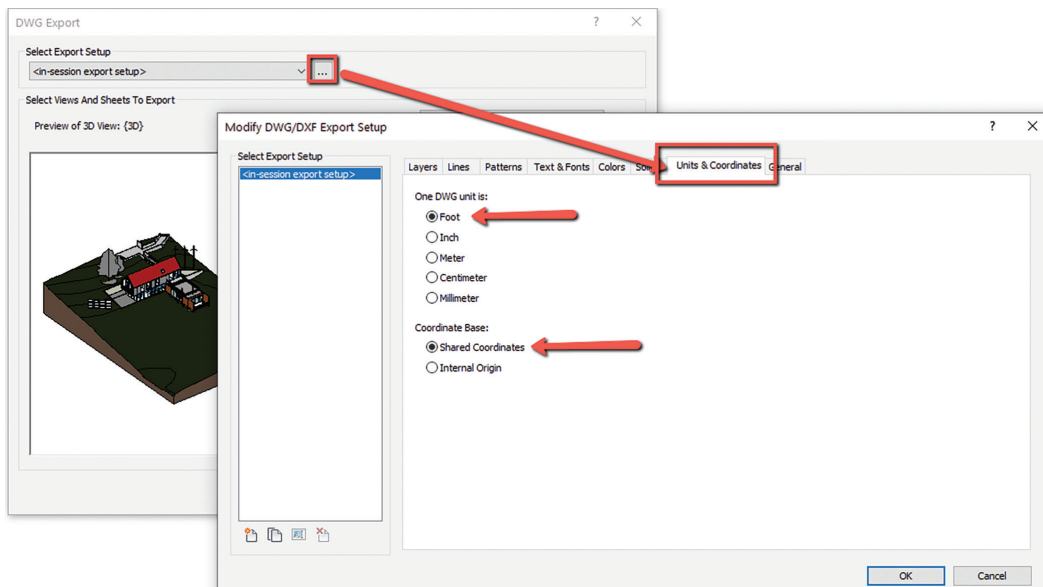


Figure 7

Switch back to Civil 3D and XREF the model in just like any other XREF! Make sure your insertion point is set to 0,0,0, and select OK. Now take a look at different views and elevations, and your Revit model now resides in Civil 3D without any manual modification!

CONCLUSION

I know this is a quick explanation of working with the Autodesk Shared Reference point, but this tool is often overlooked by many on the Civil side and Architectural side and can probably ease a little tension on the data handoff between the 2!

There are several ways to get your Civil surfaces/ linework into Revit, and we will explore that at another time. But for now, I hope this helps understand a bit more between the 2 products.

Thank you!

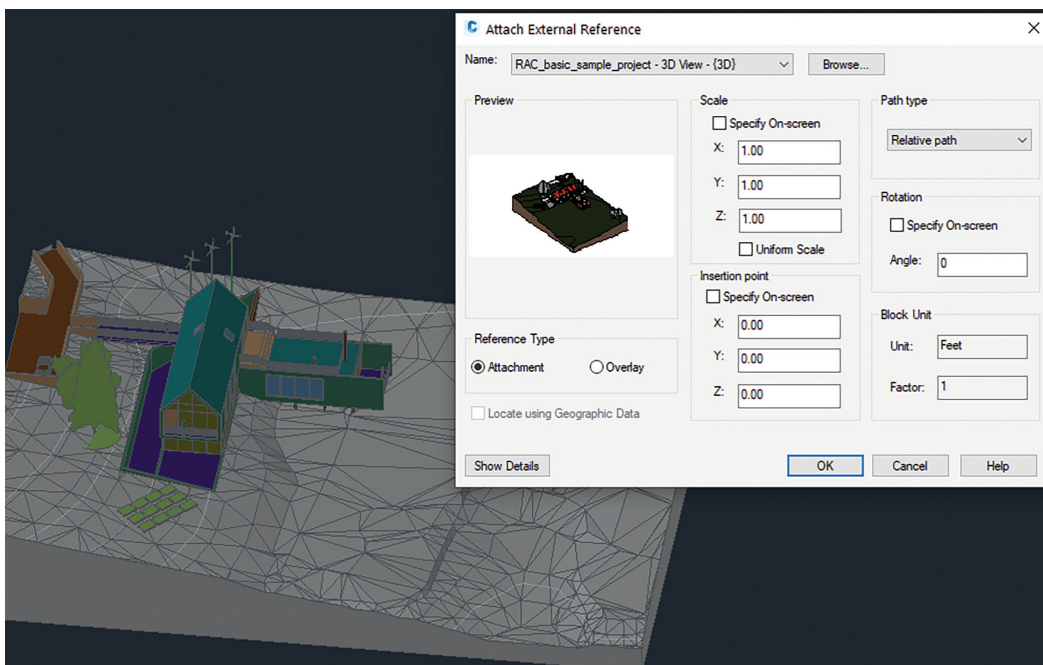


Figure 8

DWG EXPORT FROM REVIT TO CIVIL 3D

To export a 3D model out of Revit, choose the Default 3D view.

Choose the FILE tab of the ribbon, choose Export, select CAD Formats, and select DWG. A quick setting needs to be changed for the Revit export to be coordinated with the Civil 3D file. Under the Modify DWG/DXF Export Setup dialog, ensure that the correct units are set and that we're using the Shared Coordinate NOT the Internal Origin.

Go ahead and select OK, then NEXT to save your DWG.



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.

The Haves and Have Nots of Meetings



You need to have meetings – but you need to have good ones. I have read a lot about having effective meetings. Efficient meetings that happen like clockwork.

Meetings that stay on track and get things done. Meetings that move the project along. I have attended many and held many that I thought were well run and got the job done. I have also been part of some that seemed to go nowhere and get nothing accomplished. I have even held a few that seemed to get derailed and fail to make progress. They can be torture or treasure... depending on the interactions and outcomes.

THE HAVES

Here are some ideas related to meetings. Many you may have heard before. Some you may be

doing. And some that you may need to be reminded to do again.

HAVE A REASONS FOR THE MEETING

No one likes meetings with no purpose. There are so many other things to get done, and those things do not happen in a meeting. But meetings are needed. They establishing a cadence of accountability which is done via regular meetings. These happen on a cycle at intervals like weekly, bi-weekly, monthly and even quarterly. Depending on the need of the project they establish an unwritten deadline. As the meeting approaches, those who are attending feel the need to get something done in case they have to update others on their progress. If there is no reason to meet – then do not meet. If there is a reason – state it in the invite.



HAVE AN AGENDA

A meeting without an agenda is not a meeting... I have heard that before, have you? What should the agenda look like? It can take on many forms. It can be informal and just a list of topics that need to be covered. It should at least be sorted by order of importance. Get the most important items at the top of the agenda. And send the agenda out to everyone before the meeting starts.

A more formal agenda has agenda items with start times or duration times associated with each topic. This helps keep things on time. Think through the timeline and duration of each topic and keep it real. If you know that 30 minutes will be needed on a topic so that everything gets discussed, don't set the duration as 15 minutes. If you finish a topic

quickly, move on. Don't just keep talking because the agenda has more time. Get done early – everyone will love that.

Flag agenda items as Introduction, Discussion, Decision, Update or whatever, so that people know what is expected. Introducing new items does not call for exhaustive discussion. If you do not have all the players or facts yet, just bring up the topic and define the next steps. Then move on. If you have a decision to make, don't leave the topic until you decide, or have a defined next step toward the decision point.

Before you move from one agenda item to the next, summarize what happened. Restate the next steps. Restate the decision. Get decisions down on paper. Get agreement, verbally or just a nod. Make sure that everyone knows what is next or what was decided.

HAVE A TIME KEEPER

If you have a timeline on your agenda (or even if you don't) have someone designated as the time keeper. Their job is to remind the meeting leader that the time is dragging on. They should encourage the leader to move on. They should remind everyone that time is valuable and there is more on the agenda to discuss. This person should be forceful enough to get action, but not demand it. The meeting leader is in charge, not the time keeper. Don't let the time keeper shut down a conversation that might lead to a decision quickly. The leader defines when to cut off discussion.

HAVE ACTION ITEMS

Record who is going to do what. Every meeting has some action items that need to be completed next. Write them down as they are defined. They include making phone calls, sending emails, setting appointments contacting vendors, writing documentation, etc. The lists are endless. Each action item should have a person responsible, what they will do and when it should be done. This might be the most important product of the meeting. Don't leave until you have it.

One of the last things you do is review it together, in the meeting and get it recorded correctly. Don't put it off. You could start every meeting with an update on the last meetings action items. If you put the update of prior items at the end of the meeting, do it prior to reviewing new action items and carry over anything that is not done.

A few days before the next meeting, send out a reminder email with the Action Items list.

HAVE A TIME SET FOR THE NEXT MEETING

Speaking of next meetings, set the time for the next one (or remind everyone when it is coming). If the time is not set, have everyone check their calendars and make sure they can attend. If someone cannot attend, they should speak up. Then the group can define another date or decide to carry on without that person.

THE HAVE NOTS

Do not have conversations that drift away - Like a dandelion in the wind, we can so easily drift away... Conversations need to stay focused and they seem to get derailed by a puff of wind. As conversations extend, they tend to not come to conclusions. If you see that happening, stop and recap what has been said and seek to narrow the discussion again. "Here is what I think I am hearing..." works well to get back on track and summarize the many points that might have come up, seek to unify the discussion and drive toward decision. The leader may need to offer a solution and seek agreement. "How about this..." can precede a summation and proposal.

Do not have pointless discussion/decision - meetings generate a lot of talk with few bottom line decisions. If that is happening, then the meeting or the conversation does not need to continue.

Cut off topics or entire meetings if...

- more facts are needed before a decision can be made
- discussion needs input from people that are not present
- leadership needs more time to think about the subject or discuss it with their team
- there is not going to be enough time to fully vet the topic (as happens with late agenda items)

Do not let people skip key meetings - not having the right people in the room just delays the decision-making process. If key people can't come, postpone the meeting. If key people don't show up, move their agenda item to the next meeting and move on.

Do not have meetings go on forever - if you say a meeting will last one hour, keep it to one hour. Staying within your time frame encourages people to continue coming. If you have to go longer, ask



people if they agree to stay another 10 minutes since you are getting close to a decision point. If items do not get discussed because others took too long, then move them to the next meeting and rethink your time estimates for topics.

Do not have procrastination - difficult discussions or decisions are not a reason for avoid a topic or a meeting. If you are called on to discuss and decide, then you need to do just that. You just need to get the team to stay focused, do the homework and decide.

Meetings are Good, when you make them good

Meetings that are good are needed, but they can easily wander away from the topic and be unproductive. If you are the leader of the meeting, keep them on track. If you are a participant, help the leader bring out the best in the team. Have everyone contribute to a productive meeting and they will all reap the benefits, as well as your projects.



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.

i9-11900K 5.3GHz in Stock!



MTower™ 2P64X & MTower™ CX

The CX blew away the competition by nearly 100% on Digital Engineering's AutoCAD® Render Test. With **new aggressively priced Intel® Xeon W-2200** to 18-Cores 4.6GHz 1C-TB, with multiple NVIDIA® Quadro® RTX A4/5000 & 3080/3090 10/24GB GPU.



PowerGo™

Our newest PowerGo LE starts at \$ 989. The PowerGo with 8-core Intel i7-10870H and RTX® 3060 starts at \$1448. The XL model supporting both the Quadro RTX 3000, 4000, 5000 and RTX 3070, is aggressively priced starting w/Quadro 620 at just \$1559.00



WebRAIDER™ & NetRAIDER™ 64X

The most cost effective building blocks for data center, rendering, AI, simulation & machine learning computing solutions. 1U/2U/4U & 6U Rackmount with unsurpassed **scalability to 56 cores Xeon**, 2TB ECC to 8x NVIDIA Ampere® A100, Quadro® RTX 8000 & GeForce® 3090.



MTower PCIe

6-19 Digital Engineering "Fastest Ever" tested workstation, designed for the most demanding workflow. Quiet, powerful, compact, cost effective, available with the Intel Core® i9-11900K 8-Core, 16-threads All-Cores 5.0GHz OC clock frequency. @Xi certified for 100+ CAD applications including AutoCAD, 3ds Max, Adobe CC, CATIA, Cinema 4D, Inventor, Creo, Revit, and SOLIDWORKS. Impeccably built, guaranteed & supported in the USA. Our expert IT Architects will customize the **fastest workflow solution** for your application and budget.



www.xicomputer.com

800-432-0486



What's New in 2022

There are many new features to Revit 2022. A lot of the changes in the Structural 2022 application are focused around the further development of rebar modeling. This article will discuss the R22 improvements to the rebar tools as well as some of the Core R22 enhancements that Structure can utilize.

Some of the rebar enhancements in this release of Revit include the ability to move a Rebar Set, Better Precision Placement by Two Points, Modeling Rebar using Real Bar Diameters, Remember Settings when Placing Rebar, Select Shape Code for Custom Bent Free Form Rebar, and Rebar Visualization Performance Improvement in 2D Views.

Some of the core enhancements in R22 include Wall Enhancements, PDF Export, Share 2D Views, Spot Slope on Ramps, Revision Numbering

Enhancements, Split Schedules Across Sheets, Prefix/Suffix for Dimension Types, and support for CSV Export for Schedules just to name a few.

REBAR ENHANCEMENTS

Several years ago, rebar tools were added to Revit for detailing and modeling rebar more efficiently and accurately. Along the way new tools and techniques have been added to improve upon the existing tools. A lot of the R22 enhancements improve the performance of the rebar detailing and modeling tools once again.

One such enhancement is the ability to **Move modeled rebar elements in a Set**. This gives the end user the ability to control individual bars selected in a set. This is accomplished by selecting one or more bars in a set to be moved, removed, or reset. This helps avoid clashing with other bars in

the set, any openings or other element types but will maintain the original definition of the Rebar set or system.

Another major enhancement to the rebar tools is the **Faster and Precise Rebar by Two Points**. You can now place individual, or bar sets by simply specifying two points to define a bounding box in which the rebar shape is expanded from. This allows you the control to specify both the direction and the dimension of said bars. This ultimately enables the end user more control over the placement of the bars and does not require adjustment to the location after the placement of the bars.

The third rebar enhancement is the **Model Rebar using the Real Bar Diameter**. This was a community idea where you can now model rebar using the actual bar size to help teams avoid clash conflict while modeling concrete elements. This provides for more accurate representation of reinforcing in the model.

Another nice enhancement to the rebar tool set is the **Select Shape Code for Custom Bent Free Form Rebar**. This allows the end user the ability to custom assign shapes to free form rebar that can't be matched automatically to typical rebar shapes.

In the R22 release, the **Remember Settings when Placing Rebar**, this enhancement saves time and remembers your settings used to place rebar for the whole session and does not reset on you after placement of said rebar set. The following are element type retained in this enhancement.

- Layout
- Placement Plane
- Placement Orientation
- Rebar Shape
- Rebar Type

Finally, the Rebar Visualization Performance improvement in 2D Views. This enhancement has improved the functionality of rebar in 2D views showing rebar sets in both Fine and Medium detail level. This enhancement helps when opening, zooming and panning in 2D views showing rebar sets.

CORE R22 ENHANCEMENTS

In R22 just like in previous versions there are many enhancements the core product that aren't Structural Enhancements but are valuable features that will enhance your workflow with the development of the structural model and drawing development.

Many times when working on large projects, scheduled items like column schedules, for

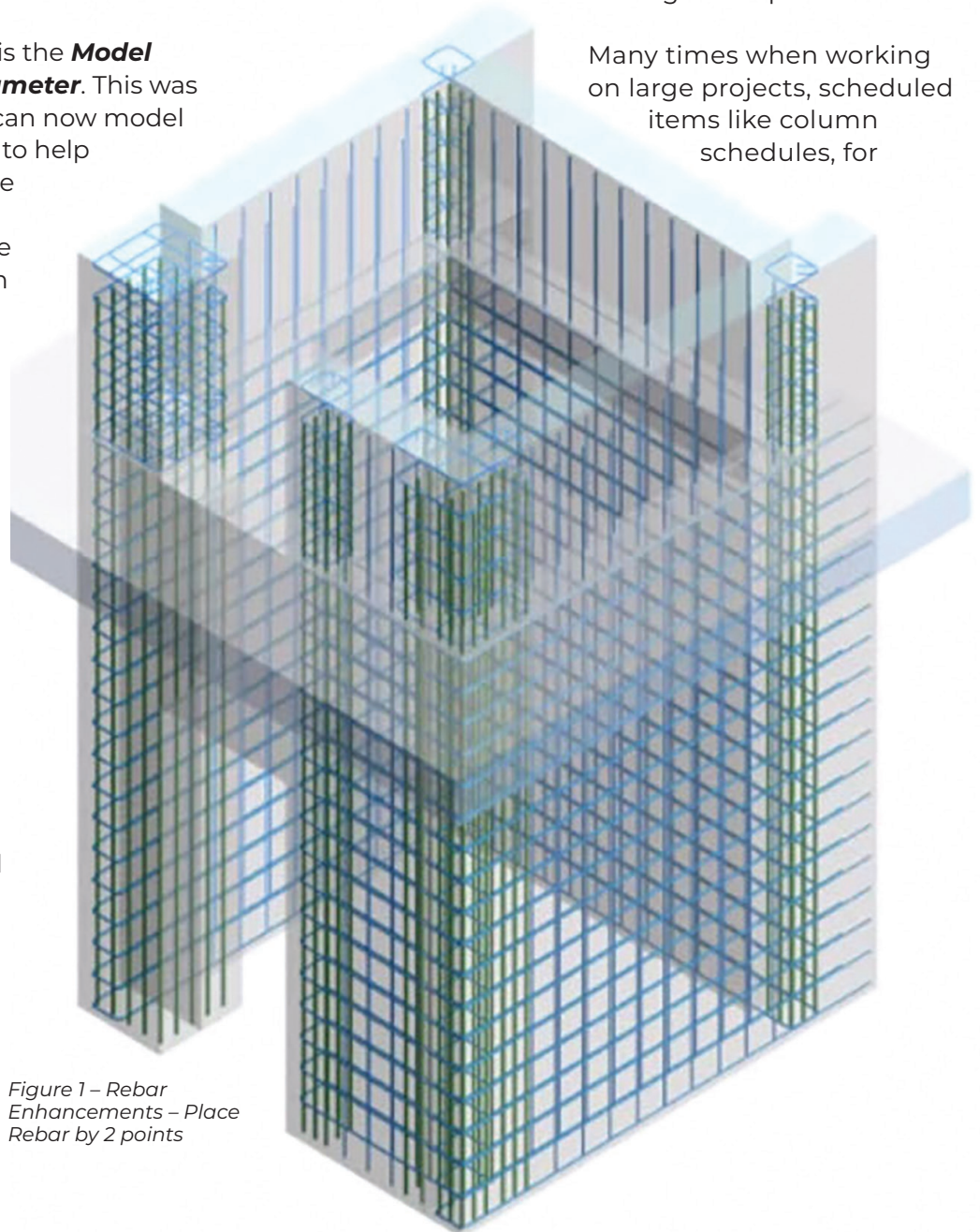


Figure 1 – Rebar Enhancements – Place Rebar by 2 points

instance, can be very large and not fit onto a single sheet. In R22, Autodesk has enhanced the schedules dialog to enable you to dynamically split your schedules so that they can be placed on multiple sheets now. This is done by splitting the schedule into segments and then move the segments to individual sheets across your project. There is a tool inside the schedules menus called Split & Place. This tool allows you the functionality to select said schedule and split it. First, select the break line on the schedule to break the schedule into segments. From there, you can adjust the size of the schedule into segments and then

move segments of the schedule to different sheets accordingly.

Another core enhancement that has been a long time coming, is the ability to develop custom revision numbering sequences. With the addition of the Revision Numbering Enhancements the end user now has that ability. This enhancement to the Revision Numbering sequence the end user now can;

- Create and customize multiple numbering sequences
- Specify the number of digits used for the

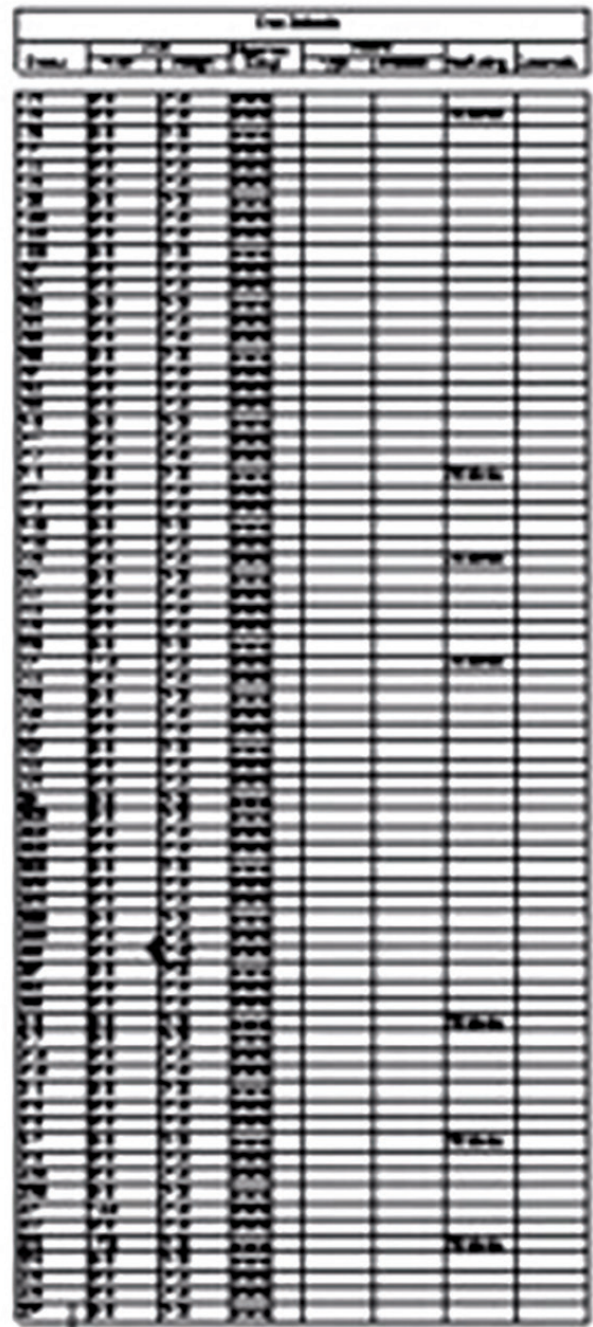


Figure 2 – Core Enhancements – Split Schedule

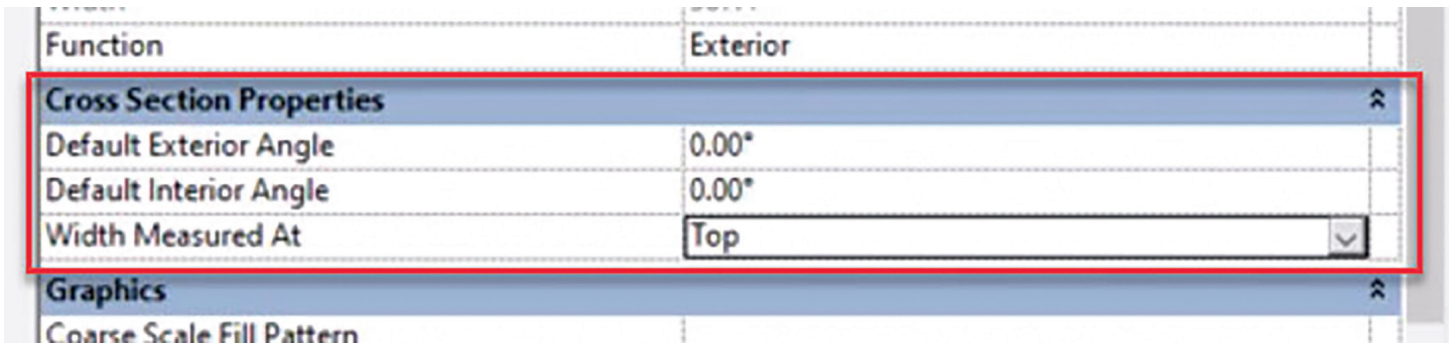


Figure 3 – Core Enhancements – Wall Enhancements

- numbering sequence
- Transfer custom numbering sequences from one project to another

In previous versions of Revit, there have been issues with Tags hosting properly with linked models. This has been corrected with R22. Now Tagged objects in hosted models remember the host from linked models and automatically re-host.

The **Share 2D Views** enhancement makes it easier to share 2D views with other team members by creating shared views that can be shared in the cloud now. This feature allows for better collaboration with the team in the same way that in previous versions of Revit you could share 3D models. This is helpful during the coordination of construction details when the team is trying to coordinate the final details of the project.

Keeping with the theme of Tags, **Spot Slopes on Ramps** was another community suggestion that was implemented in R22. This enables the placement of spot slope annotations directly on the ramp elements. This feature was added to improve the model documentation. In previous versions, this limitation prevented the spot slope annotation from being placed directly on the ramp for proper annotation of ramps and sloped slabs.

The ability to customize dimensions to meet the documentation needs, by adding a prefix and/or suffix to a dimension type, was added in R22. When you need a custom dimension containing a prefix, suffix, or sometimes both in a dimension type. Previously, you only had the ability to add the to individual dimension instances. Now you have the ability to add them to a dimension type and save time modifying individual dimension strings.

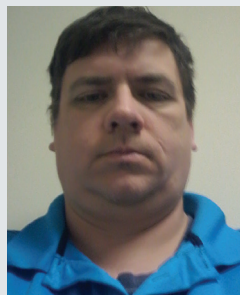
Another community idea that Autodesk picked up in R22, is the ability to create tapered walls. This enhancement, when displayed, will only display the wall's core layers. This is accomplished by changing one of the wall layers to be a variable. With this set, there will be a Cross Section Properties in the wall properties allowing for the definition of:

- Default Exterior Angle
- Default Interior Angle
- Width Measured At

When the wall is placed in the model, set the cross-section parameter to the Tapered setting. This is all that is needed to place tapered walls in the model. There are also override settings to taper the wall in different directions if so desired.

FINAL THOUGHTS

Although I have covered a lot of enhancements in this article on what is new in Revit 2022 (both Structural and Core Enhancements) those are just a few of the enhancements to R22. For the full list, check out the help file and see the What's New section for a full list of enhancements to R22.



Kenn Farr is currently the CAD and BIM Manager for Teasley Services Group in Nashville, TN. Previously Kenn worked in the Practice Technology Group for 13 years in charge of Training, Development, implementation and Support over the Building Engineering groups. Kenn has over 24 years of experience in the AEC industry.

An AREA That Needed Improvement

IN THE BEGINNING WAS THE AREA COMMAND

In 1982, Autodesk introduced their flagship product AutoCAD. Even at its infancy, AutoCAD had the AREA command. The AREA command provided a method to retrieve the area value formed by objects such as a Polyline or Hatch. Unfortunately, for many releases since then, this area value can only be read as a static number. When the geometry of the Polyline or Hatch object changes you would have to manually run the AREA command again to retrieve the new calculated area value.

THEN CAME THE FIELD COMMAND

Twenty-two years later, AutoCAD 2005 was released with the new FIELD command. The FIELD command provided a method to retrieve an object's area value and place this in the drawing as an Attribute, MText or Text object that would automatically update as the object changed. This added feature is truly a godsend to the end user. Now the AutoCAD drawing behaves dynamically. When Polylines that form rooms or Hatch patterns that show the extent of various landscape sections change the calculated area value shown in the Attribute, MText or Text will automatically update. But this is only true when the FIELD command is applied and applied properly.

A FIELD OF COMPLEXITY

Though powerful, the new FIELD command when executed, brings up a very complex graphic user

interface (GUI). The Field GUI is neither friendly nor easily understandable. You would have to go through the following complicated and tedious steps every time before an object's area value can be retrieved; let alone placed into the drawing (see Figure 1):

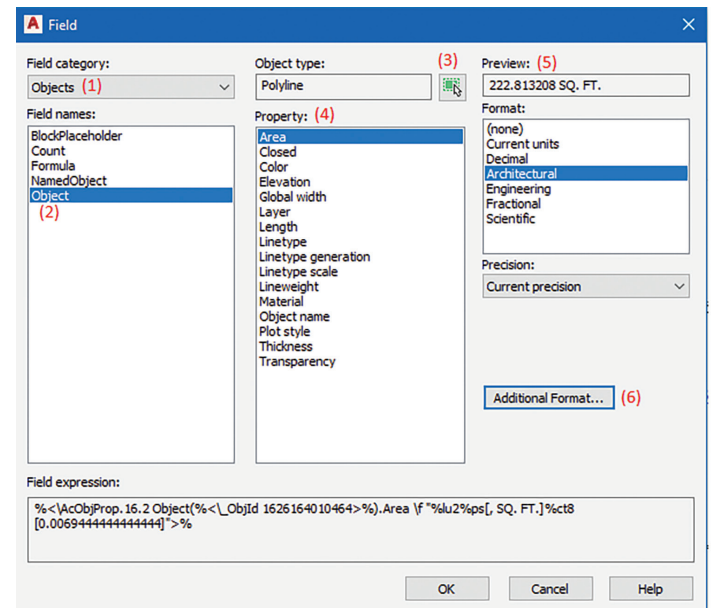


Figure 1

1. You'll need to know to start from the top left column under the Field category drop down list - select Objects
2. Directly below this in the Field names list box - select Object
3. Then you'll need to move over to the top middle column under Object type and click on a button that is not labeled showing a mouse arrow -

- you'll have to hover over this before the Select object label appears
- After selecting an object like a Polyline or Hatch that contains an area value, Area is one of many entries that appears listed under the Property window
 - Finally, after selecting the Area entry you can view the area value listed under the Preview box on top of the right column
 - The process is still not over because to add a suffix like Sq. Ft. after the area value, you would have to click the Additional Format button located on the bottom of the right column. This will bring up another GUI on top of the first GUI giving you options to manually enter a Suffix like SQ. FT. (see Figure 2).

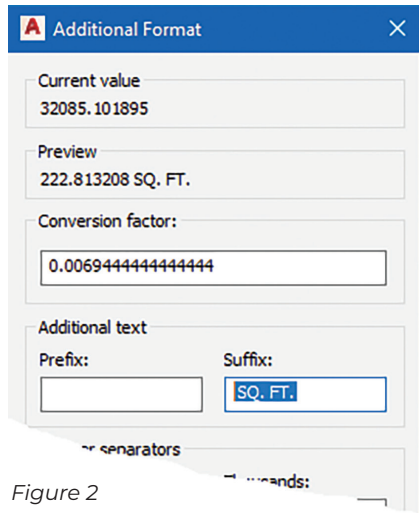


Figure 2

Now what if you want to round up or round down the area value? Then you would have to begin all over again because this is supposed to be done under the Formula section (see Figure 3):

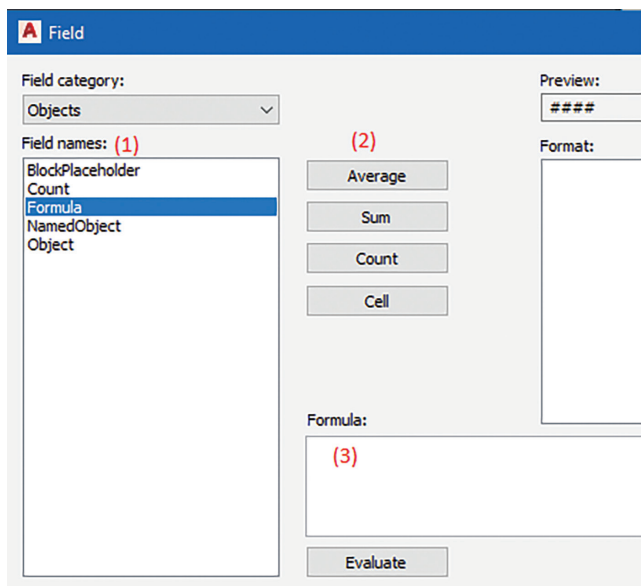


Figure 3

- Starting from the left column under Field names – this time select Formula

- The same Field GUI then transforms into another very hard to understand window - showing a list of four buttons in the middle column: Average, Sum, Count and Cell – so what are these and where is Rounding? (Answer: After doing some research on-line, I learned that these 4 buttons apply to cells within the Table object.)
- Finally, under Formula there's a large empty box - you're now left clueless as to how to proceed

So instead of getting the area value rounded so that it can update automatically in the drawing, you are left with many of the following questions:

- How do you select an object like a Polyline or Hatch at this point to retrieve the area value? (Answer: After more research online, I found out that inside the Formula window you need to right mouse click, select Insert Field from the context menu which will bring you back to the initial Field GUI to start the object selection process – again see Figure 1.)
- Where is the formula to input and round the area value? (Answer: Again, after doing more “Googling,” I found this blog that contains supported functions inside the Formula window: <https://blog.jtbworld.com/2005/04/autocad-2006-and-formulas-in-fields.html?m=1>)

As I work on Architectural floor plans, I would have to repeat these many steps using the FIELD GUI to obtain an automatically updated formatted area value for just one room. This would be multiplied several fold since a typical floor plan may contain many rooms. Now, imagine when I must deal with more than one floor plan which also need rooms to be labeled with areas. I would end up spending more time with many more mouse clicks on the Field GUI. There must be a better and faster way of getting this done.

AREA OBJECT LINK TO THE RESCUE

So back in 2014, I decided to write an app that would simplify the process, save me time, and solve this problem. The app would make it easy to implement the FIELD command in retrieving an object's area value and use a much easier to understand GUI to complete the process. The AutoCAD add-in app I built is called: AREA OBJECT LINK (AOL). The AOL app is built entirely using the AutoLISP/Visual Lisp programming language. Autodesk first introduced AutoLISP as the programming interface for AutoCAD

version 2.18 in 1986. Then Visual Lisp was added in 1997 with AutoCAD Release 14 which provided a programming environment and additional functions to access the object model. (As a side note, I personally like to use Visual Studio for the programming environment because I can open an AutoLISP file for editing in multiple windows. This way I can jump to various locations of the program to make adjustments simultaneously without having to jump back and forth in a single window.) Since all flavors of the AutoCAD product are always shipped with the AutoLISP code interpreter built-in, AutoLISP/Visual Lisp is the most flexible language to use to customize AutoCAD. The AOL app then is 100% compatible with past, present, and future releases of the AutoCAD product. In 2014, the AOL app worked with AutoCAD 2015. Today the same program still works with AutoCAD 2022. As long as AutoCAD continues to support AutoLISP, the AOL app will continue to run on future AutoCAD releases. There's no need to recompile the app which would be needed when using other programming languages i.e.: .NET. Also, the programming process gave me a chance to implement the Dialog Control Language (DCL) code to create the GUI.

DCL was first introduced in AutoCAD Release 12 in 1992. It gave the AutoCAD developer a way to customize dialog boxes that would run inside AutoCAD using AutoLISP. But all of the initial AutoLISP programs that implement DCL and accompanied AutoCAD had the DCL file stored as a separate file. This made it a requirement for the DCL file to be located in an AutoCAD support folder in order for the AutoLISP program to locate the file at run time. So, to do away with this limitation, I included within the AutoLISP code a function to write the DCL file at run time to the AutoCAD temp folder. The AutoLISP code could then point to this temp folder location to load the DCL file at run time. When the app completes its execution the DCL file is removed for a clean ending. Another advantage for using this method is that the AutoLISP code can change how the DCL file is written at run time so that the GUI may change dynamically depending on how the app executes the code.

INTRODUCING AOL

Since I wanted others to also take advantage of the time saved using my AOL app, I decided to share the app for free on the Autodesk Exchange Store: (<https://apps.autodesk.com/ACD/en/Home/Index>).

After downloading and successfully installing AOL, launch AutoCAD and under the Add-ins ribbon tab you'll find the newly added Area Object Link panel (see Figure 4).



Figure 4

The Area Object Link app can be executed within AutoCAD by selecting: AOL or AOLSET. You can also execute these at the Command prompt using the keyboard.

The AOL app actually incorporates the power of Fields but done invisibly in the background to achieve a linked object area value. In addition, the AOL GUI provides various pre-populated and or predefined parameters typically used for you to select from to format the area value. All this simplifies the process to have an area value that would update automatically. Then you don't have to go around hunting for formulas or waste time figuring out how to use the FIELD GUI to include functions to get the area value formatted.

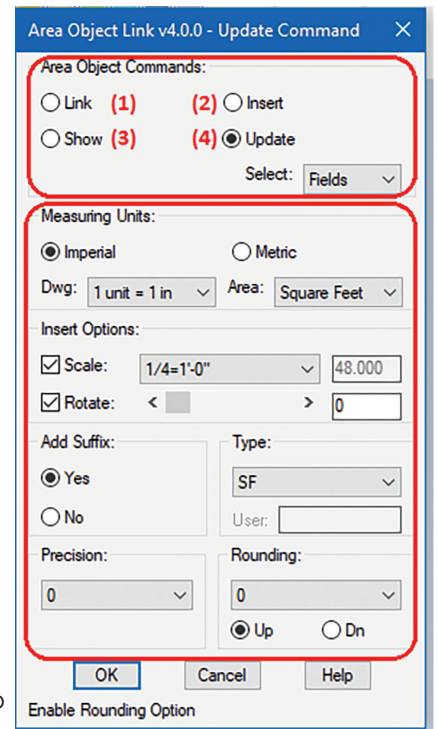


Figure 5

When AOL is launched for the first time you are presented with all the options to choose from in a single GUI (see Figure 5). The AOL GUI is divided into two major sections. The top section shows four new commands. The middle section contains several settings for area value calculations and formatting.

Let's start with the top section: Area Object Commands which contains four radio buttons:

1. Link an object's area value to MText, Text or Attribute

2. Insert an AOL pre-defined Block that contains an attribute as a label and a second attribute for linking to an object's area value
3. Show object(s) shaded that has an area value already linked to a selected MText, Text or Attribute
4. Update selected MText, Text and Attributes with Fields and or ALL AOL Blocks to match with the current set formatting parameters

AOL LINK COMMAND

Now to see how simple it is to use the AOL app to Link an object's area value to Text, select AOL from the Area Object Link panel on the ribbon:

1. (1) The 1st time you start AOL the GUI appears
2. (2) Select Link
3. (3) Click OK

With just three simple clicks you're ready to select MText, Text or Attribute to Link as a Field to an object's area value. To repeat the Link command, run AOL again. This time there is no GUI to interrupt the process. You can continue to select the next MText, Text or Attribute to Link to another object's area value. I wanted to include in the code the ability to bypass the GUI when the same AOL command is executed again. I find that this is another way to speed up the process without being delayed by a GUI.

AOL INSERT COMMAND

Now lets explore the second new AOL command. This time select AOLSET from the Area Object Link panel on the ribbon to bring up the AOL GUI again. Under the Area Object Commands section this time select Insert. The new AOL Insert command simplifies the process of placing a Block that contains Attributes to link to an object's area value as a Field:

1. On the AOL GUI select Insert
2. Select from the dropdown list a Scale option to use
3. Specify a Rotation angle other than 0 if desired
4. Click OK

With these 4 simple steps you are ready to insert a pre-defined AOL Block with Attributes into the drawing for linking. When completed you'll see a room label with the area value shown as a Field (see Figure 6).

To repeat the Insert command without bringing up the GUI, select AOL from the Area Object Link

Area Object Command - Insert

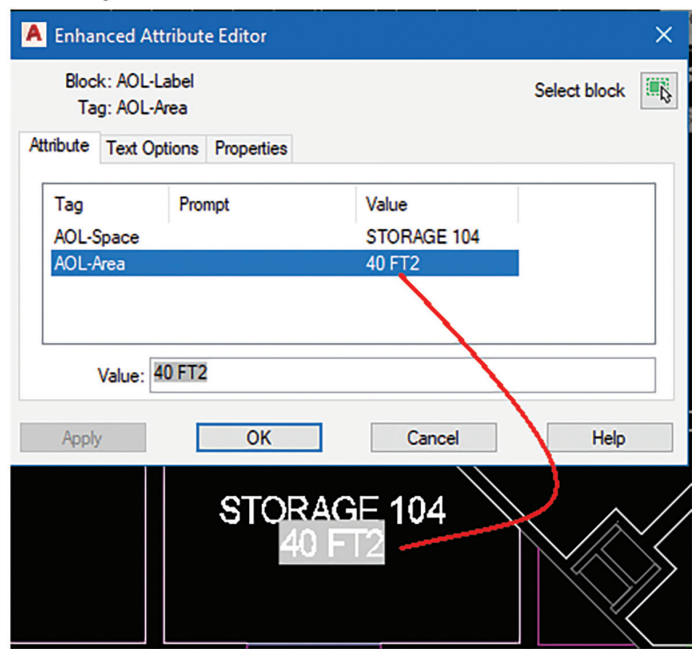


Figure 6

panel. AOL's Insert command will start again using all the settings you chose previously to Insert another AOL Block with Attributes.

With both AOL's Link and Insert commands, the required FIELD code is actually embedded into the Attribute, MText or Text object behind the scenes. This eliminates the need to start the cumbersome FIELD GUI and do all those mouse clicks. We can all benefit from how much time is saved using the AOL app to place on a floor plan in all the rooms linked area Field labels.

AOL SHOW COMMAND

Since AutoCAD currently does not offer a command to identify which object with an area value is linked as a Field to a Text object, I wanted to include this as the third new command in the AOL app. Select AOLSET from the Area Object Link panel on the ribbon to bring up the GUI. This time in the Area Object Commands section select Show and click OK. You'll be prompted to select an Attribute, MText or Text that has a linked Field area value. The linked object(s) would then be highlighted in a shaded color for you to review (see Figure 7).

AOL UPDATE COMMAND

There are times after you've Inserted and Linked the area values in the current drawing you or your client want to change the format to something completely different. This is when you use AOL's Update command. Select AOLSET from the Area

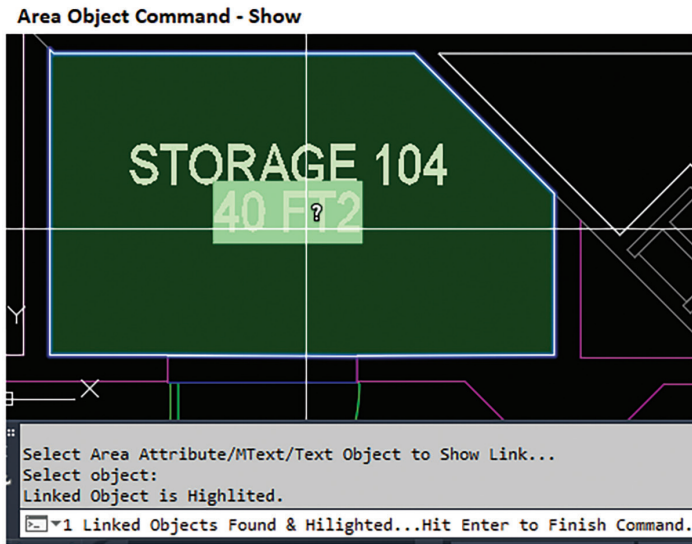


Figure 7

Object Link panel on the ribbon to bring up the GUI. This time in the Area Object Commands section select the last command shown: Update. The Update command offers two Selection options. You can choose to Update only selected text objects with Field area value links, or ALL AOL Blocks inserted in the current drawing (see Figure 8).

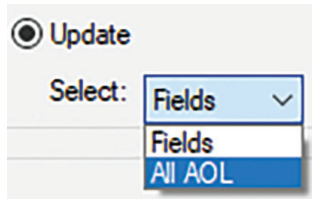


Figure 8

AOL PARAMETERS

Before continuing with the Update command, it's time to introduce the second major section of the AOL GUI. The middle section of the AOL GUI contains parameters that change the calculations and formatting of the area value.

Under the Measuring Units section choosing to draw in Imperial or Metric impacts the area value calculations. Since Architects deal with construction parts down to fractions of an inch, they typically draw 1 unit = 1 in (Imperial) or 1 unit = 1 mm (Metric). (Note: There are options to select drawing in centimeters or decimeters.) Civil engineers and surveyors on the other hand, since they deal with large lot sizes, would typically draw 1 unit = 1 ft (Imperial) or 1 unit = 1 meter (Metric). The Drawing (Dwg) unit needs to be properly selected in order to acquire the correct area calculation. Furthermore, I made it a point to include a number of conversion factors in the AOL app to support five different area values. Now there's no need to look up the conversion factor to get an area in Acres vs Square

Feet vs Hectare. The AOL GUI conveniently provides them all to choose from in the Area drop down list (see Figures 9 & 10).

Measuring Units:

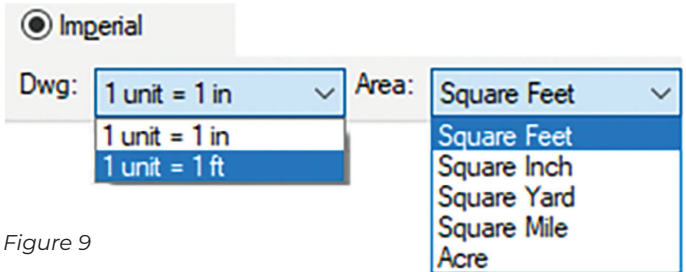


Figure 9

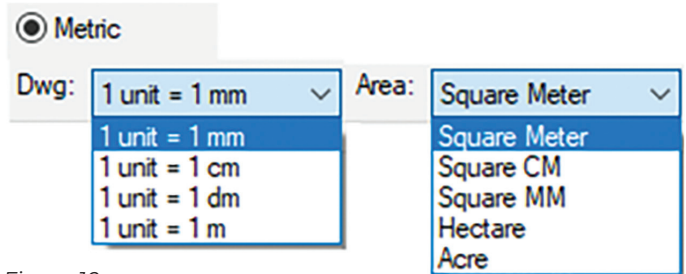


Figure 10

Under Insert Options is where you can specify the Scale and Rotation for AOL Block inserts. This eliminates the need to look up the scale factor by including a pre-populated standard list of scales both in Imperial & Metric systems along with an edit box to enter a custom scale. The Rotation angle can be set from 0 to 360 degrees using the horizontal slider or you can enter the angle in the edit box (see Figure 11).

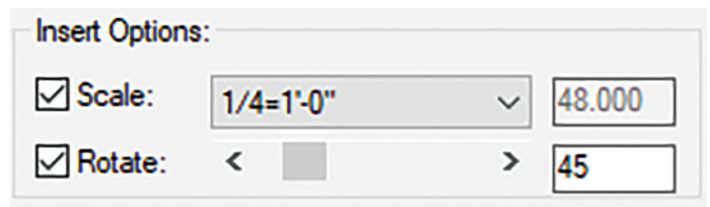


Figure 11

Next, you can choose to Add a Suffix to the area value by selecting from a pre-built drop-down list with an option to enter a Custom suffix (see Figure 12).

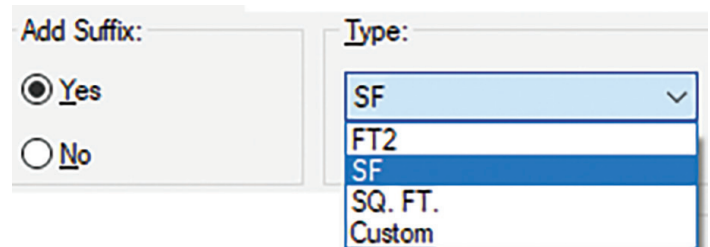


Figure 12

Lastly, at the bottom of the GUI, the area value's decimal Precision can be set as none to up to 3 places. Or you can choose to Round Up or Round Down the area value from none up to the nearest thousand (see Figure 13).

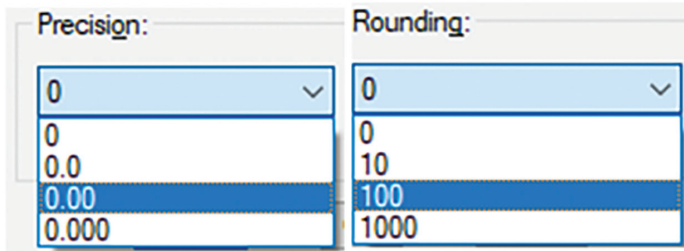


Figure 13

AOL LIVE DEMO

Now, we're ready to go back to the Update command. Let's say that several AOL Blocks have already been Inserted and Linked to room areas on a floor plan. The area value is shown calculated in square feet (abbreviated FT2) and formatted with no rounding (see Figure 14).

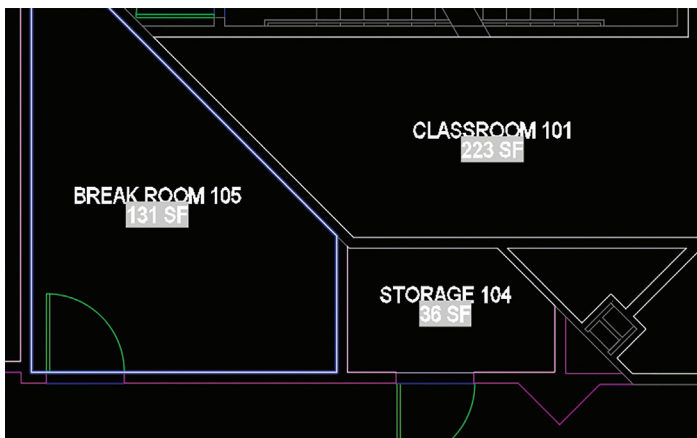


Figure 14

The client for some reason changes his mind and now wants to see all the room areas: larger in size (scale), rotated 45 degrees, in square inches (abbreviated IN2) and rounded up to the nearest ten. This actually can be done easily using Area Object Command - Update|All AOL. Use the middle section of the GUI to adjust the area value calculation and format. Under Measuring Units|Area, change the selection on the drop-down list from Square Feet to Square Inch. Under Insert Options|Scale, change the selection from 1/4"=1'-0" (48) to a larger number like 3/16"=1'-0" (64). In the Rotate edit box enter 45. Under Add Suffix | Type, select from the drop-down list IN2. Finally, under Round, select Up and change the drop-down selection from 0 to 10. After you click OK, all the

AOL Blocks inserted in the entire drawing change automatically with the area value still linked as Fields. Notice how all these changes are quickly set in a single GUI meeting the client's requirements (see Figure 15).

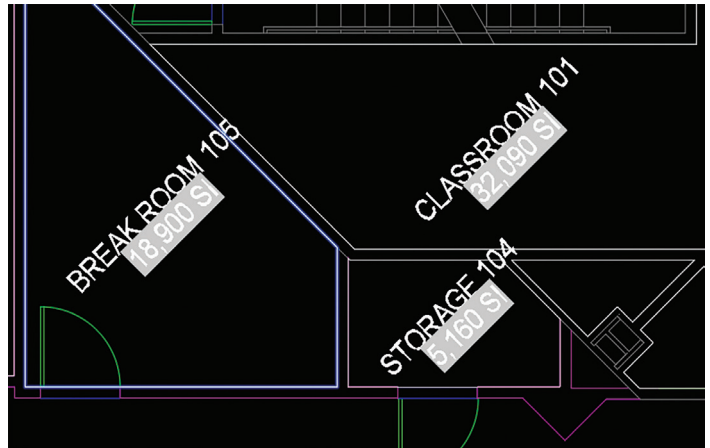


Figure 15

IN THE END AOL WILL DO

The Area Object Link app provides many improvements to AutoCAD's original Area command. In addition, the AOL app brings to the forefront many of the hidden power of AutoCAD's Field command without the need to figure out how to use the FIELD GUI. I also recently updated the AOL app to v4 which includes many of the powerful features mentioned in this article. I hope you'll enjoy using Area Object Link as you continue your adventures in AutoCAD.



Mr. Paul Li graduated in 1988 from the University of Southern California with a bachelor's degree in Architecture. He worked in the Architectural field for small to mid-size global firms for over 33 years. Throughout his tenure in Architecture, he has mastered the use of AutoCAD. Though he recently retired from the Architectural field, he continues to customize AutoCAD as a hobby on the side and write articles for magazines like AUGIWorld. Paul can be reached for comments or questions at PaulLi_apa@hotmail.com.

Autodesk Licensing

Autodesk has made several changes to their software licensing model over the past few years. Starting with retiring new maintenance plans and migrating existing maintenance plans to subscription plans. As part of this transition, standalone license activations based on a serial number were changed to named user licenses based on an individual's Autodesk ID. The latest change is the retirement of multi-user network licensing and migrating existing multi-user licenses to named user licensing, known as the Transition to Named User.

We are currently in the middle of the Transition to Named User rollout. Due to challenges from the pandemic, the timeline has been extended several times. Initially set to begin May 2020, then pushed to August 2020. And most recently extended to allow customers the option to renew existing multi-user licensing and make the transition to named user at a later date. One of the biggest questions most have during this transition is from a technical standpoint, how do I change my existing environment? In this article we will address that question in detail.

TRANSITION TO NAMED USER OFFER

The Transition to Named User offer from Autodesk is a 2:1 trade in offer that you can take advantage

of when renewing existing multi-user licenses. Subscriptions with multi-user will retire and can no longer be renewed after August 7, 2022. With that in mind, migrating those multi-user licenses to named user licensing with the 2:1 offer in most cases is your best path forward. As of this writing, the offer currently reads as:

"At your next renewal before August 7, 2023, trade in one multi-user subscription for two single user subscriptions at a cost consistent with what you pay today."

The intent of this article is to address the technical side of this transition, so I will not dive any deeper into the trade in offer, and its intricacies. Autodesk has some great FAQs or reach out to Autodesk or your Autodesk Partner for more information.

PLANNING FOR THE TRANSITION

If you are getting ready to migrate your existing environment, take a deep breath, it is not as difficult as you may think. There are several different ways to approach the migration, with a bit of planning and coordination it can be done quickly with no down time.

The typical timeline for transition I like to break into three parts. Plan, Migrate, and Clean Up. The

planning phase can begin now, it is never too early to start planning! The migration phase starts the day of renewal, continuing 30 days past renewal. And finally, the cleanup phase.

Because named user licensing is as it sounds, assigned to a named individual, the first step is to determine the number of licenses you are going to need, and who specifically those individuals are. The great thing about multi-user licensing is you can capture usage data and trends to help you better understand your company's software usage and needs. If you are not currently gathering usage data, there are several great applications for gathering both current and historical data from LMTTOOLS on the Autodesk App Store. OpenLM and JTB FlexReport are two that I have used and work well. The sooner you start capturing that information, the more detailed, over time statistics you will have.

Once you have identified the individuals who will need to be assigned a license, gather their First Name, Last Name, and Email so you can add them to the Autodesk User Management portal in your Autodesk Account. Users can be manually added one at a time or imported from a .csv file. You can start adding users to the User Management list anytime, however the single user licenses will not be available to assign to them until renewal day. You will need to be either a primary or secondary admin for your Autodesk licensing to add users.

A common 'gotcha' I see in this step stems from the 'Teams' function in Autodesk Account. Teams give you the ability to break subscriptions up into groups called teams. You can change the name of an existing team, but you cannot add/remove teams, or change what licenses are on each team yourself. You need to contact Autodesk to make these changes for you. If you have multiple teams, and a user needs licenses from multiple teams, they must be added to both teams. So be aware if you have multiple teams, as you add users, that you are adding them to the correct team.

The next step in planning is deciding which migration method is going to work best for you and prepare for that rollout. More on those methods in the next section. Because the single user licenses will not be available until the first day of the new contract, you will need to wait until renewal date to change license type on your software.

With your plan for moving forward in place, the next step begins once your contract has renewed, and the new licenses are available in your Autodesk Account.

MIGRATING EXISTING SOFTWARE

Once renewal date hits, you have a built-in 30-day window with your existing multi-user licenses to migrate before the license file expires. This means although your multi-user licenses are traded in, they will continue to function for 30 days to give you time to make the transition seamlessly.

The first step before changing license type, is to assign users a single user license in the Autodesk Account. If you have already pre-added your users, you can go to User Management ► By Product, select the product you want to assign, and click Assign Users. You can select users by typing their name, or email. You can also do an 'Import to Assign' on that same window. This allows you to upload a .csv file containing users you want assigned. A template for the .csv file is shown on the import window. One gotcha I see often is in the .csv file be sure you do not have any spaces after the names or emails, a space causes a formatting error during upload. Your .csv file can contain both users already added to the Account, and new users you want added to the account. If they are not yet added, the import will also add them as a user and assign them a license. If a user in the list already has the license assigned, they will be skipped.

There are two strategies for migration, Admins change all licenses with a global tool, or user's change their own. Depending on the number of users, physical location of each workstation etc. either option or a hybrid of both can be used.

The simplest method of changing license type is for the user to open the software and go to Help ► About <Software Title> ► Manage license within the software. This brings up the License Manager window, with a link to 'Change License Type'. This will launch the license changer window. Select, 'Sign in with Autodesk ID' and sign in to finish activation. This process will need to be done for each software title and release year. This also will need to be done within the 30-day window, once the network license file has expired, the software will no longer launch, rendering this option not possible.

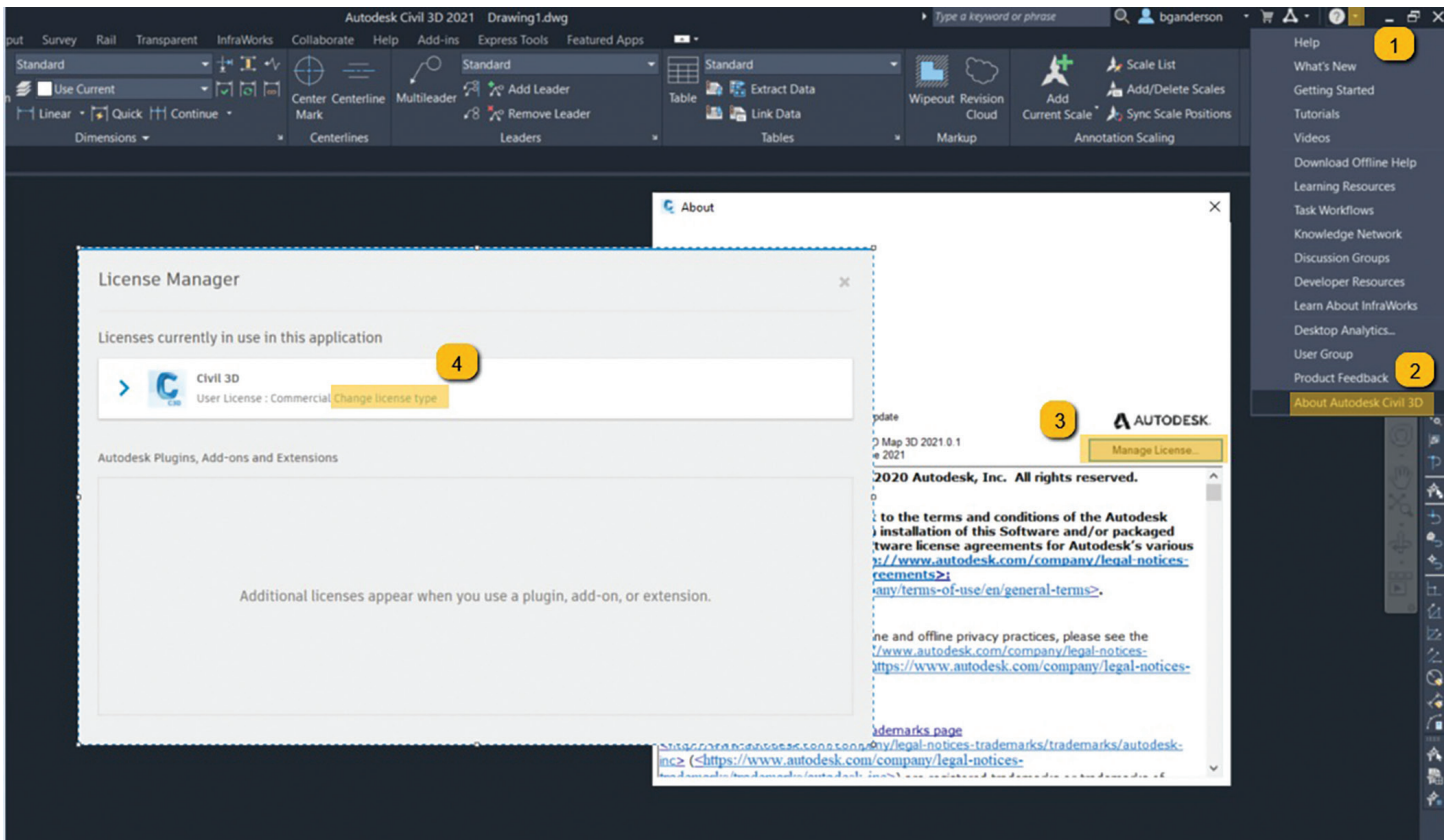


Figure 1

For smaller user bases, individuals working offsite, etc. this is a good option. It is easy to do and can be done by an end user. What I recommend if you want to go this route is send out an email to all users with instructions on how to make the change, and a deadline to make the change by 15-20 days into the 30-day window. Then, on the day after your deadline, either shut off the license service to see who can no longer launch their software or query the license server to see who is still pulling a network license. Inevitably you will have users that did not make the change. Uncovering those during the 30 days, allows the user the ability to still make the change before the license file expires.

If the license type is not changed via the change license type during that 30-day window, they will need to be changed manually outside of the software.

There are two processes for manually changing license type, which one to use depends on the release year of the software. For 2017-2019 release years, you can delete, or change a text file that holds the license type information. For 2020+ release years, a command line utility, Autodesk Licensing Installer Helper Tool is used to change the license type.

The licensing type information for 2017-2019 software is stored at C:\ProgramData\Autodesk\CLM\LGS. There is a subfolder, that begins with the product key for the product and year of each installed software. Inside that folder is a text file, LGS.data, that holds a single line of text with the license type. Editing that file with notepad, you can easily change license type. If you are migrating from a multi-user install it will read '_NETWORK'. Changing that to '_USER', (without the quotations) then saving the file will change the license type. Like the previous method, this will need to be done for each title and release year of software you want to change.

If you do not want to change each individual LGS.data file, you can also delete the entire C:\ProgramData\Autodesk\CLM\LGS folder. On next launch of each software title and year, the user will be prompted to select license type. They will select, 'Sign in with Autodesk ID' and sign in to finish activation. As this is done in each software, the LGS.data files will be re-created automatically.

For the 2020 and later versions, you will use the Autodesk Licensing Installer Helper Tool, AdskLicensingInstHelper.exe.

1. Start by opening an elevated command prompt. Click the windows icon in bottom left corner of your screen and type “cmd”, right click on the ‘Command Prompt’ app and select, “Run as Administrator”.

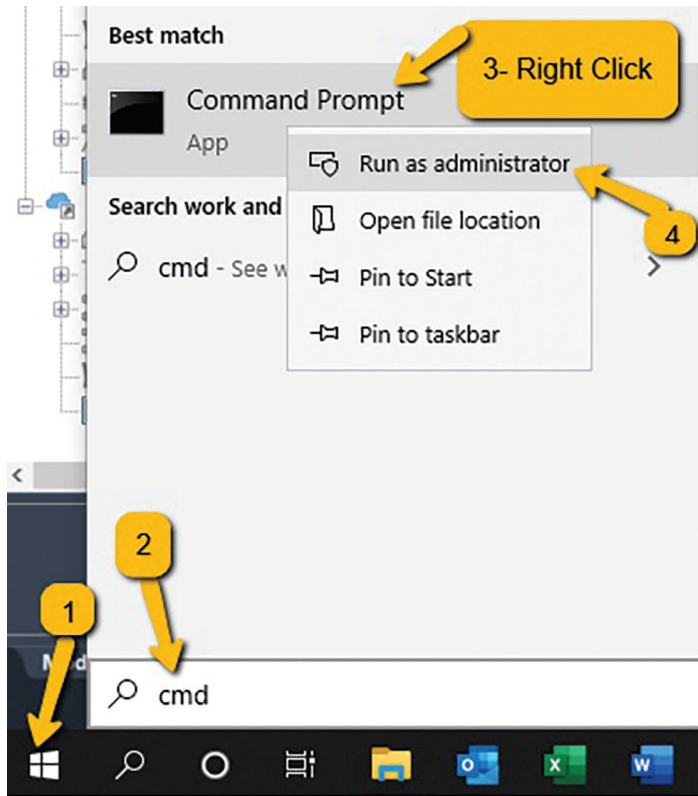


Figure 2

2. Switch to the AdskLicensingInstHelper installation directory with the command: “cd %CommonProgramFiles(x86)%\Autodesk Shared\AdskLicensing\Current\helper”.
3. Run the reset command:
AdskLicensingInstHelper change -pk Product_Key -pv Version.0.0.F -lm USER
4. You will replace the red italicized text above with the product key, and version year for the product you want to change. For example, if you are changing AutoCAD 2020, the command would be: “AdskLicensingInstHelper change -pk 001L1 -pv 2020.0.0.F -lm USER”.

Once the software is launched, it will ask the user to login if they are not already. If the command fails, check your product key, and version year, along with spelling, spaces etc. in the command. The syntax of the command must be exact for it to work properly. More info on the tool can be found on the Autodesk Knowledge Network, <http://knowledge.autodesk.com>. Search for: Autodesk Licensing Installer Helper tool guide.

Each of these methods above require manual effort on each workstation, for each installed software. If you have a large environment, this is not the most efficient way. Fortunately, Autodesk has provided an admin tool, the Autodesk Licensing Support Tool to automate the license type change for all products.

The AdskLicensingSupportTool can be downloaded from the Autodesk Knowledge Network, <http://knowledge.autodesk.com>, search for the article titled ‘Configure your named user license’. Download the support tool .zip file and extract it. Like the Installer Helper Tool discussed earlier, this is a command line tool that needs to be run in an elevated command prompt. To run the tool on an individual workstation, copy the tool support directory you unzipped to an accessible network location, USB drive, etc. Then follow the instructions below to run the tool.

1. Start by opening an elevated command prompt. Click the windows icon in bottom left corner of your screen and type “cmd”, right click on the ‘Command Prompt’ app and select, “Run as administrator”.
2. Use the ‘CD’ command to change to the directory where you have the tool support directory. For example, if you have it on a USB drive F:\, the path could be F:\Tools\AutodeskLicensingSupportTool, making the change directory command “CD F:\Tools\AutodeskLicensingSupportTool”.

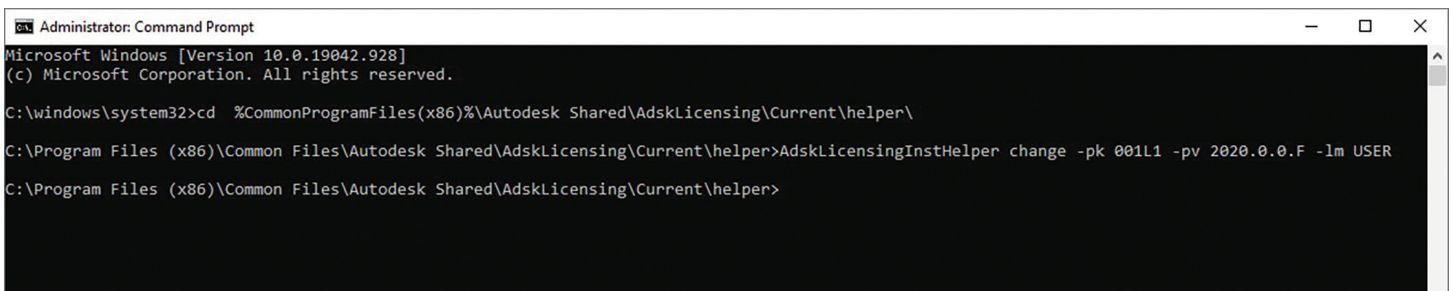


Figure 3

- To set all installed Autodesk software to User type licensing, run the command "AdskLicensingSupportTool -r ALL:USER". When complete, the command will list out all products it found, and if they successfully changed.

For a deployment created through Autodesk Account, repeat the creation workflow, and specify the existing deployment image path as the new path. When you run the image creation tool, it will ask you if you want to update the existing image, answer yes to modify it.

```
Administrator: Command Prompt
Microsoft Windows [Version 10.0.19042.928]
(c) Microsoft Corporation. All rights reserved.

C:\windows\system32>cd C:\Autodesk\AdskLicensingSupportTool

C:\Autodesk\AdskLicensingSupportTool>AdskLicensingSupportTool -r ALL:USER
Info: Changing license method to User for 001K1, 237I1, 237J1, 569I1, 569J1, 001L1, 959M1, 185M1, 340L1, 237L1, 237M1, 919M1, C35M1, 829M1, 569L1
Info: (clmv1) Changing license method for product key 001K1 2019.0.0.F from Network to User
Info: (clmv1) Changing license method for product key 237I1 2017.0.0.F from Network to User
Info: (clmv1) Changing license method for product key 237J1 2018.0.0.F from Network to User
Info: (clmv1) Changing license method for product key 569I1 2017.0.0.F from Network to User
Info: (clmv1) Changing license method for product key 569J1 2018.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 001L1 2020.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 959M1 2021.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 185M1 2021.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 340L1 2020.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 237L1 2020.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 237M1 2021.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 919M1 2021.0.0.F from Network to User
Info: (clmv2) Changing license method for product key C35M1 2021.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 829M1 2021.0.0.F from Network to User
Info: (clmv2) Changing license method for product key 569L1 2020.0.0.F from Network to User

C:\Autodesk\AdskLicensingSupportTool>
```

Figure 4

This will change all installed 2017 and up Autodesk products to User based licensing. The caveat is Design Suites cannot be converted using this tool. You will need to manually convert software installed from Design Suites with the LGS.data file for each Suite installed product.

This utility can be run each workstation or rolled out globally with a software deployment tool like Microsoft System Center, PDQ Deploy, etc. Or even as simple as a logon script or Group Policy object if you want this migration to be seamless for users, with little to no effort, other than logging themselves in with their Autodesk ID, deploying this script is the way to go.

CLEANUP PHASE

Once you are confident everyone has migrated their software, or the 30 days is up and your network license file has expired you can uninstall the Autodesk Network License Manager from your server, it is no longer needed.

If you have installation deployments created that you will need to install from in the future, they will need to be updated to reflect the new licensing model. For deployments created with the classic installer, use the Create and Modify deployment shortcut in the deployment folder of modify it.

CONCLUSION

Though transition to named user can sound like a daunting task, it can be accomplished quickly and easily with a bit of strategic planning. Whether you go a fully automated admin change rollout, or change one at a time, this article should help you get through it.

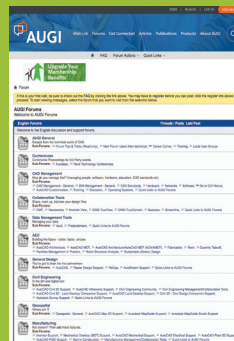
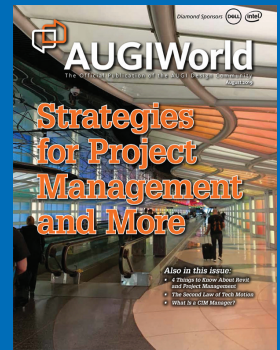
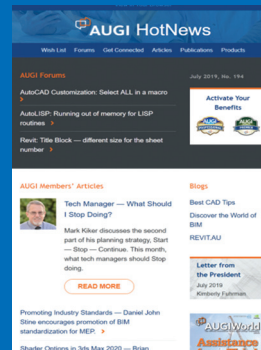


Bryson has worked in the IT industry since 2008. During this time, he has been involved in many aspects of IT including, Systems Administration, Networking, Telecom, Hardware, and IT consulting. He has supported large and small companies in a variety of industries including healthcare, software development, engineering, and architecture; plan, implement, upgrade, and maintain their IT infrastructure. At ProSoft, Bryson admin all aspects of the internal IT infrastructure, and oversees ProSoft's custom workstation and server division. With his knowledge and experience in IT, he consults with companies worldwide on the planning, implementation, and training of Autodesk data management and collaboration software. As well as assisting customers with the licensing, installation, and deployment of Autodesk products.

Connect with AUGI Members

Increase your revenue by advertising with AUGI and reaching its 400,000 Members.

AUGIWorld Print
AUGI HotNews Digital



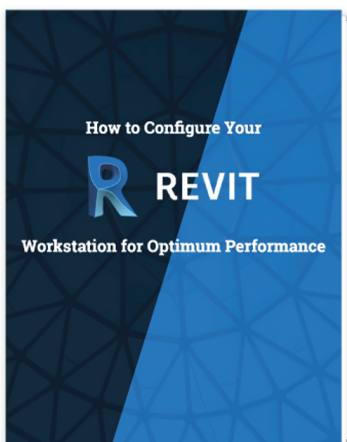
AUGI.com Website
Thousands of visits per month

Forum Advertising
Active membership participation

- Advertising Email Blasts
- Targeted Mailings
- Industry Leading Google Results Site

 **AUGI** Visit www.AUGI.com/advertise

Learn how to configure the ideal **R** REVIT workstation, then save \$500 on the ultimate Autodesk workstation



Download our exclusive eBook, **How to Configure Your Revit Workstation**, packed with vital details and expert insight you won't find anywhere else.

Then, for a limited time, save \$500 on your purchase of an APEXX S3, the world's fastest Autodesk workstation featuring an Intel® Core™ i9 at 5.4GHz, up to two NVIDIA RTX™ GPUs, and purpose-built for Revit, AutoCAD, 3ds Max, and more.

[Get the eBook and Save >](#)

BOXX

 **nVIDIA** | 

(888) 302-0223
512-852-0400
boxx.com/augi

*Offer expires after May 31, 2021. Terms and conditions apply.