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January 2021

Advancing Forward Into 2021

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Note from the Editor: Hopefully you have noticed a refreshed look and style for AUGI WORLD magazine. The changes are not earth-shattering (we have COVID to thank for that) but we tried to bring some flavor of AUGI.com into the magazine. It had been over 10 years with our previous design. I think this one will likely have a long life as well! -David



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Cover Image:



High speed rail station architecture in west kowloon Hong Kong

Credit: danielskyphoto - stock.adobe.com

From the President

HAPPY NEW YEAR!

2020 is over, and I am sure everyone is looking forward to a fresh start and a better 2021! While I always put off undecorating from the holidays, I am looking forward to what the new year has to offer. A new year often signals change, whether intentional or unintentional. It becomes a time of planning as well as reflection. I look back over the last year with AUGI, and while we faced the same challenges as everyone else we also can recognize that our organization had a fantastic year. We breached the 500,000 member mark, added new sponsors and ramped up our social media presence. We have added AUGIWorld authors and we thank you all for your contributions last year. In addition, our very own Brian Andresen has started podcasts of our AUGIWorld articles so that you can listen while you work!



We also managed to pull off our first virtual Annual General Meeting, and I would like to give a special thank you to Lynn Allen, Paul Doherty, Mark Gunn, Matt Murphy, Carlie Wagner, and Jim Quanci for joining us virtually. If you missed the AGM, you can find the link to the recording on AUGI.com.

Looking ahead to 2021 is bittersweet. Due to personal reasons, I have decided to step aside as president of AUGI, however I will remain on the board of directors. I leave the position in

the very capable hands of KaDe King. KaDe has been instrumental in the past year in helping our social media team and has wonderful ideas for the organization. I hope you will welcome her as president of AUGI and give her as much support as you have given me over the past two years. I am so thankful for all of you and will continue to be AUGI's biggest cheerleader (ok, besides Lynn Allen!).

This month's AUGIWorld articles focus on Advancement. Take your skills to new heights with the articles contained within this month's issue. I hope you find them challenging and enlightening!

And as always...

Cheers!

Kimberly

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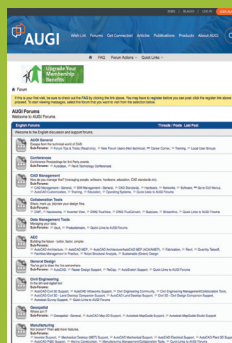
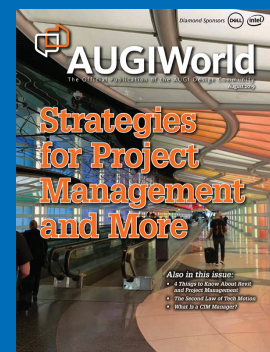
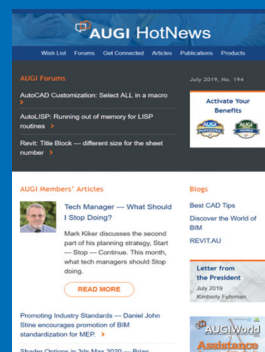
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3ds Max: This is the Way



3D artists must approach 3D work as a filmmaker or photographer. I will explain with a little history. Color photography was invented decades before the black and white silent film era and produced stunning results. One of the earliest color photographs was a photo taken of the last direct decedent of Genghis Khan, Alim Khan, Emir of Bukhara (now modern-day Uzbekistan and Tajikistan) in 1911. Photographer Sergei Mikhailovich Prokudin-Gorskii took the photo at the height of the silent film era. However, the time and cost of producing similar cinema results were insurmountable. Filmmakers continued producing black and white content until 1951, when CBS broadcast the first commercial color TV program (although no one saw it because they didn't have color TVs). So why did it take over half a century for filmmakers to introduce color into everyone's lives? The answer is in the details, literally. Filmmakers wanted to produce content where props, stages, and characters could be shared with the most clarity possible to do what art has always aimed to do: inspire empathy and draw

out conversation. Invoking the Mandalorian within, I'd say that black and white was "the way." For 3ds Max artists, it is essential to approach our work the same way.

So let's talk about that. First, we have the same constraints filmmakers have: time and money. We want to produce detailed and exciting content most efficiently to inspire empathy and draw out conversation. Second, we need to recognize producing 3D content is less about a single item or feature and much more about the entire stage. Adding details to that stage is crucial. Since Autodesk continues to drive Arnold and OSL deeper into the structure of 3ds Max, we have some powerful tools to add details to our scenes exceptionally quick to make them more attractive. So, for this article, I'll provide a demonstration.

Figure 1 demonstrates using Arnold with OSL to convert simple planes and a sphere into interesting content in just a few short minutes. Artists use these methods to produce content for sci-fi elements like

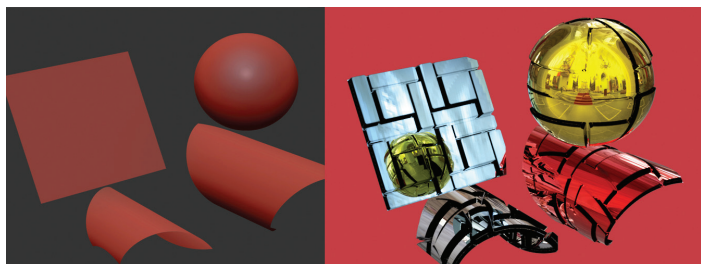


Figure 1 – Example Image

ships and mech robots, to background elements for cities and buildings as well as tiles, brick walls, wood floors, windows, and more.

We'll begin with lighting the stage. HDRI images are the industry standard for presenting content with realistic lighting and reflections. HDRI images are high-resolution 360-degree images with data embedded, allowing us to adjust their exposure after taking photos. HDRI-Skies (<https://hdri-skies.com/>) provides free HDRI images (2K resolution) acceptable for most artists and cases. They have incredibly high-resolution imagery for more advanced applications and film making for sale. See Figure 2 for an example of an HDRI image.



Figure 2 – HDRI Image

Setting up the scene is simple. First, be sure to select Arnold for your renderer under Rendering Setup.

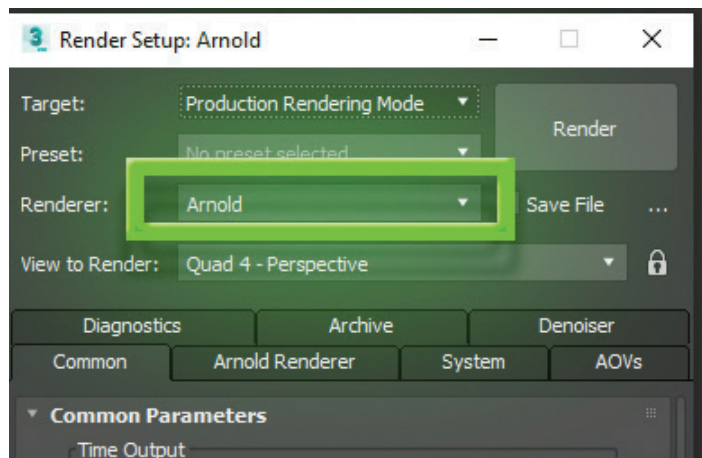


Figure 3 – Select Arnold

Next, open the Slate Material Editor, locate the HDRI Environment node, and drag and drop it on the slate. When you drop the node, it will open a dialogue box to select the HDRI image you downloaded from HDRI-Skies.

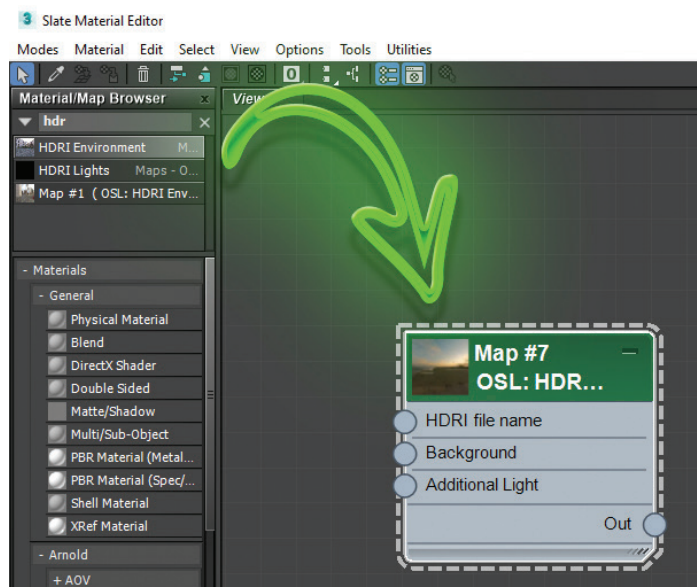


Figure 4 – HDRI Node

Now, place a plane in your scene with 10x10 subdivisions and then add the modifiers displayed in Figure 5.

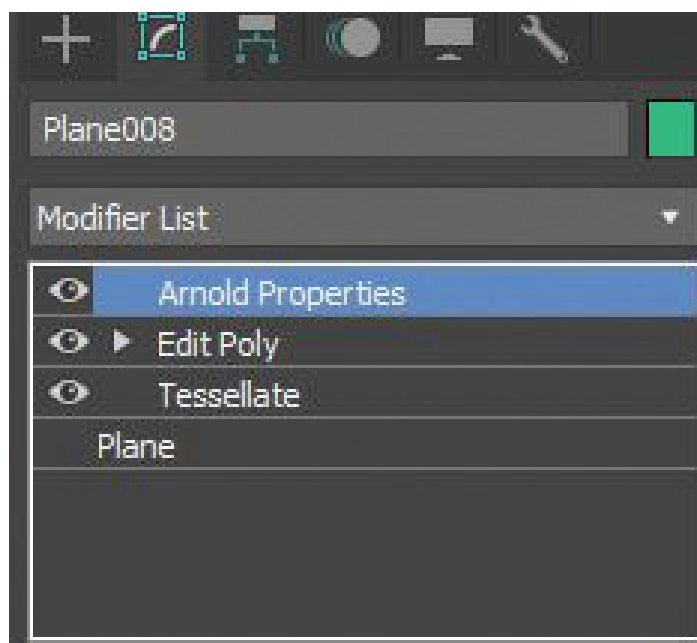


Figure 5 – Modifiers

The Tessellate modifier will give you greater control over the quality of the displacement displayed in Figure 1.

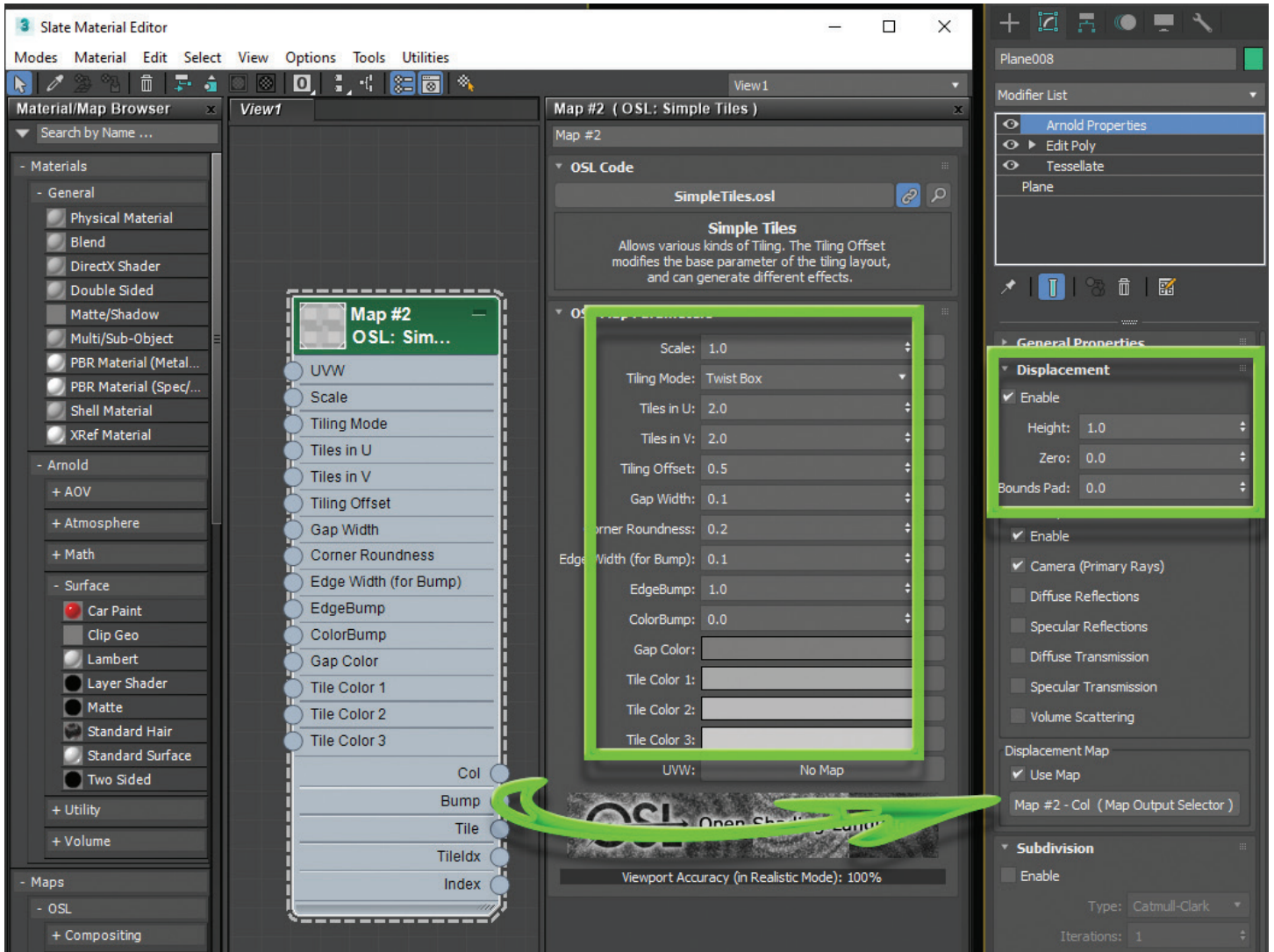
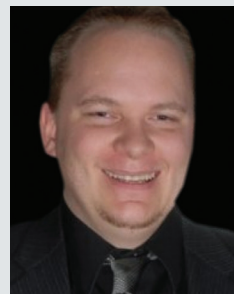


Figure 6 – Displacement

Finally, the Arnold Properties modifier is where the power is to add the displacement details. In the Slate Material Editor, drop in a Simple Tile node, then plug the color output into the Arnold Properties modifier displacement map displayed in figure 6.

After that, apply whatever material you want to your plane, hit render, and view the results.



Brian Chapman is an Autodesk Authorized Developer, Digital Artist, and a CAD Applications 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

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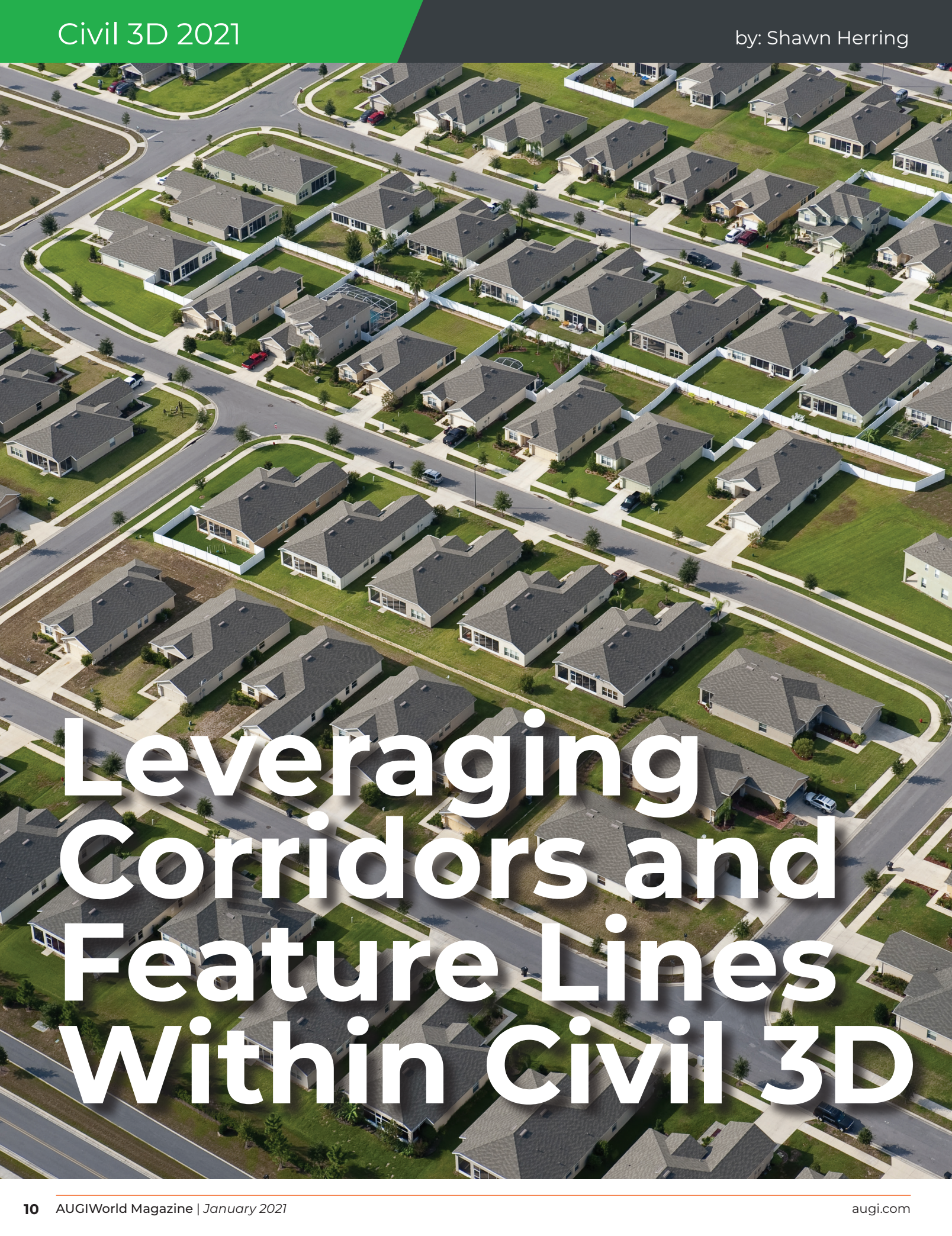
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Leveraging Corridors and Feature Lines Within Civil 3D

Over the past few releases of AutoCAD Civil 3D there has been a lot of emphasis on Corridor modeling, corridor modeling techniques and advanced modeling workflows. Much of this is because of Department of Transportation's getting deeper into Civil 3D workflows and larger companies pushing for things to behave a certain way. But even for those doing "simple" site plans and subdivision roads, Civil 3D has a great way to increase your productivity and help streamline your workflows.

This article helps you walk through a couple scenarios of when you could possibly use feature lines in your corridor modeling. If you would like the data used for this article, please email me and I will send the files.

NEW IN CIVIL 3D 2017

In addition to alignments and profiles, feature lines now can be used as corridor baselines. This change was made in 2018, I believe. Feature lines can also be selected when creating the corridor and when adding baselines.

A parking lot is a good example of where to apply this new workflow. When I design a parking lot, I typically design the edge of pavement in order to see true slopes of asphalt. I then use the stepped offset command to give me flow line and/or back of curb elevations, and sometimes I may use grading objects to keep some level of dynamics. But now you can add the feature line to a corridor along with a curb & gutter assembly and have a much more dynamic and accurate surface.

An intersection is also a great example of using feature lines within your corridor model. Many people use feature lines for intersections, but up until now it was more of a manual process and not very dynamic. Extracting and targeting these feature lines is very simple and easy to use in corridor modeling.

The functionality of extracting feature lines, and keeping them dynamic, has been in Civil 3D for as long as I can remember. However, this functionality has now been enhanced with many new options. The options for selecting which feature lines to extract include:

- Extract all feature lines at once
- Select them one by one
- Define Station Range

Create Corridor

Name: Corridor - (<[Next Counter(CP)] >)

Description:

Corridor style: Basic

Corridor layer: C-ROAD-CORR

Baseline type:

- ☒ Alignment and profile
- ☐ Feature line

Alignment:

Profile:

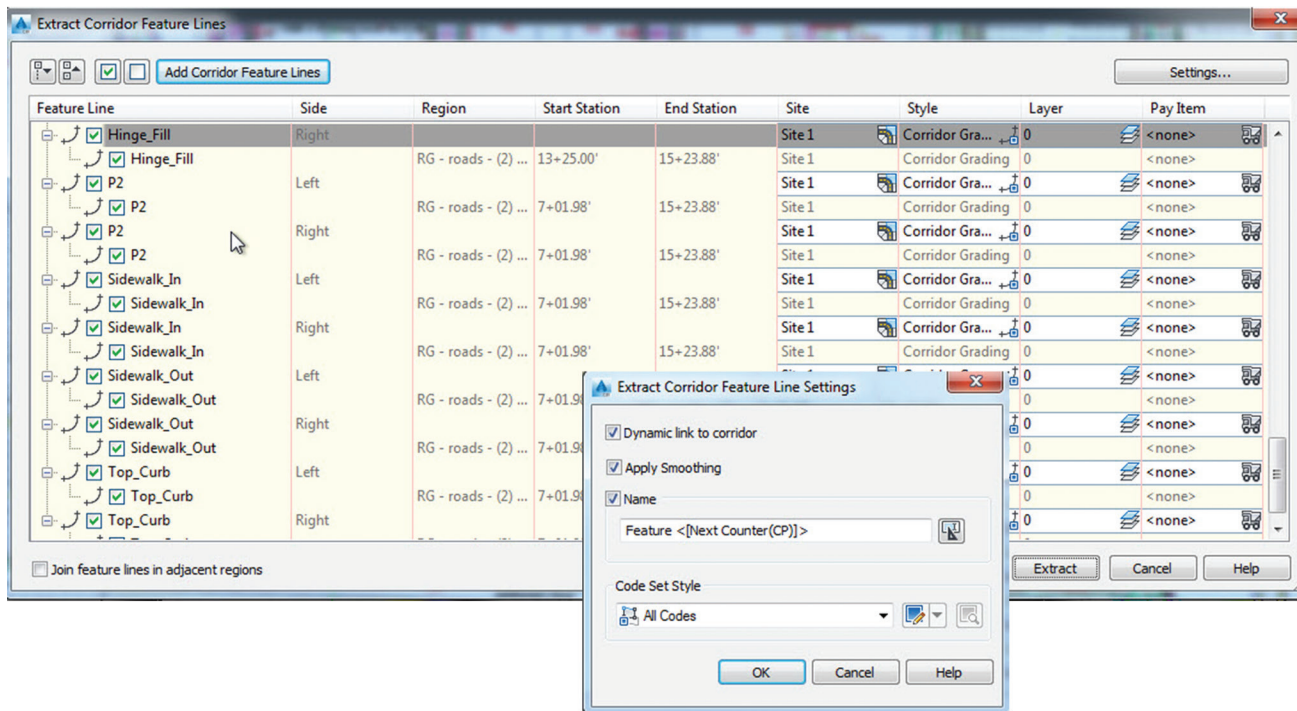
Assembly: <none>

The <None> selection creates an empty corridor. Regions, assemblies, and targets can be added later.

Target Surface: <none>

☐ Set baseline and region parameters

OK Cancel Help

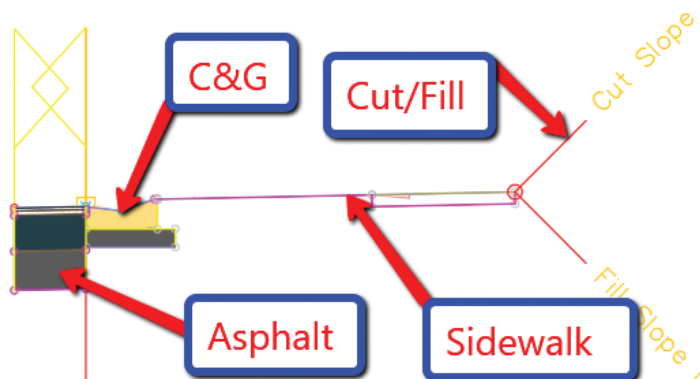


- Select a subset based on a corridor region or a simple polyline

By selecting a polyline, you will then be given the option on which feature lines to include/exclude for the extraction procedure. Select the settings option to choose whether or not to dynamically link them to the corridor. You can choose to add them to a site, or now use the "Siteless" feature line options.

THE ASSEMBLY

We will need to create an assembly for our curb & gutter. We will use this assembly for both examples. This will typically be a simple assembly and can even be a copy/modification of your corridors full assembly. Below is a screenshot of what I will be using:

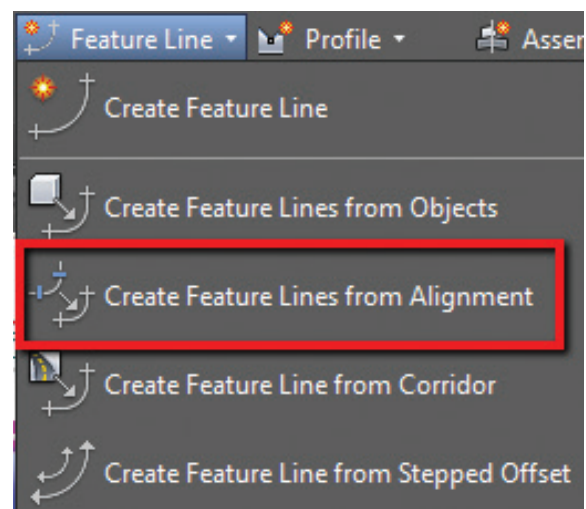


INTERSECTION WORKFLOW

Yes, we could use the intersection tool to create this, but sometimes that just does not accomplish what we want it to do. Sometimes you need just a bit more control, and feature lines will allow you to do so.

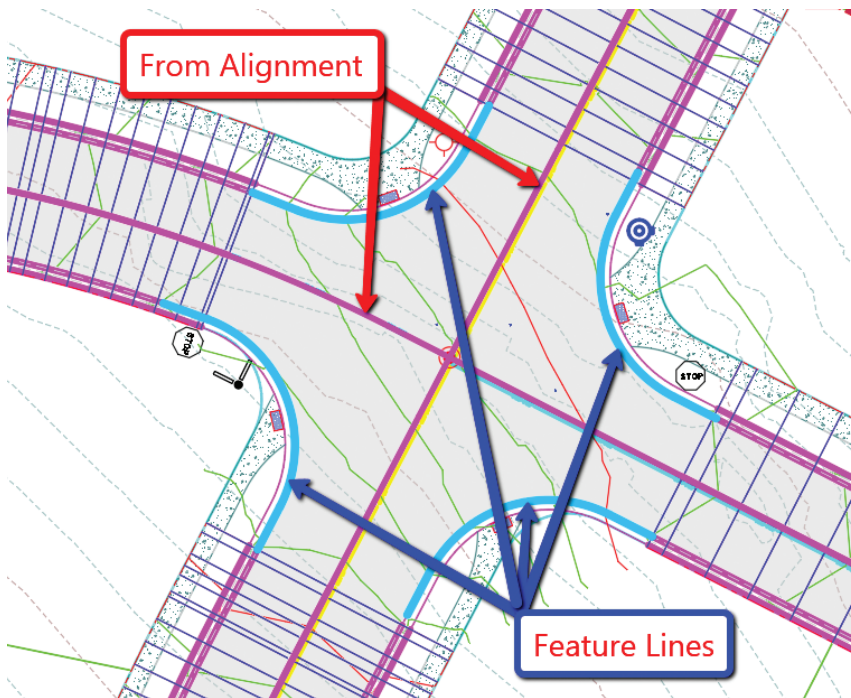
Let's take a 4-way intersection for example. I first start with extracting the centerline feature lines as a dynamic link to either my profile or corridor. In this case I chose to use my FG profile as the feature to extract a feature line from (We will keep both crowns maintained).

1. From the Home tab > Create Design panel > Feature Line drop-down > Create Feature Lines from Alignment



2. Select your alignment, then select the profile you wish to dynamically link to. You will then have a dynamic feature line, therefore when your Alignment and/or Profile changes, your feature line does as well.
3. Create your feature lines along the Lip of Gutter (Edge of Asphalt) using either a polyline and create from objects command, or manually draw in your feature line.
4. Set the grades as you would like along that feature line. For this example, I will assume you know how to do so.

The example I am using would look something like this. The corridor has already been started, with gaps for the intersection area to be modeled.



Once we have our assembly created and our feature lines in place, we are ready to begin modeling the intersection.

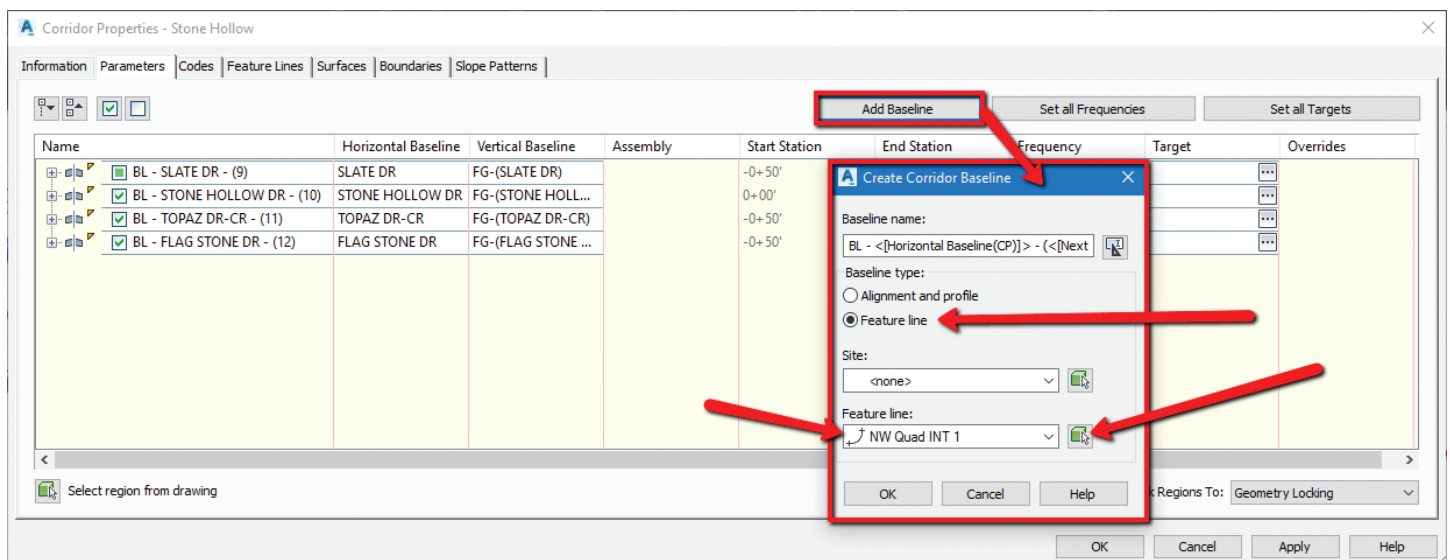
5. Select the Corridor, go into your Corridor Properties and select the Parameters tab.
6. From the Parameters tab, select **ADD BASELINE**. The Create Corridor Baseline dialog box will appear, select **FEATURE LINE** from the Baseline type.
7. Use the icon next to the Feature Line dropdown to select your feature line from the screen. Once selected, you may be prompted to name the feature line, I chose to name mine **NW Quad INT 1**. Select **OK**.

8. The Baseline is now added to your corridor and we need to add the region and select the assembly.

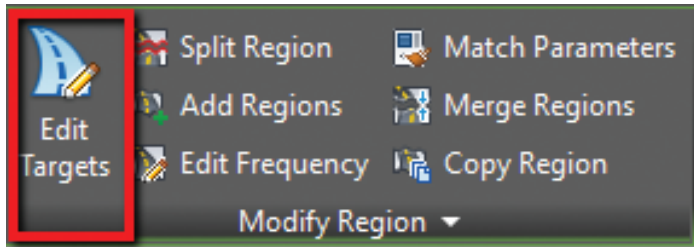
9. Right click on the new baseline and select **ADD REGION**.

10. Choose your assembly and select **OK**. Rebuild corridor if needed.

This will no put in the assembly along that feature line. And no need to do a stepped offset!! Pretty good so far, right? Let's finish up the intersection quadrant by targeting our centerline feature lines for width and elevation. I use the contextual ribbon for some very useful shortcuts. Use these to really speed up your corridor modeling workflows!



11. Select your corridor from the screen.
12. From the contextual ribbon for said corridor, select **EDIT TARGETS** from the Modify Region panel.



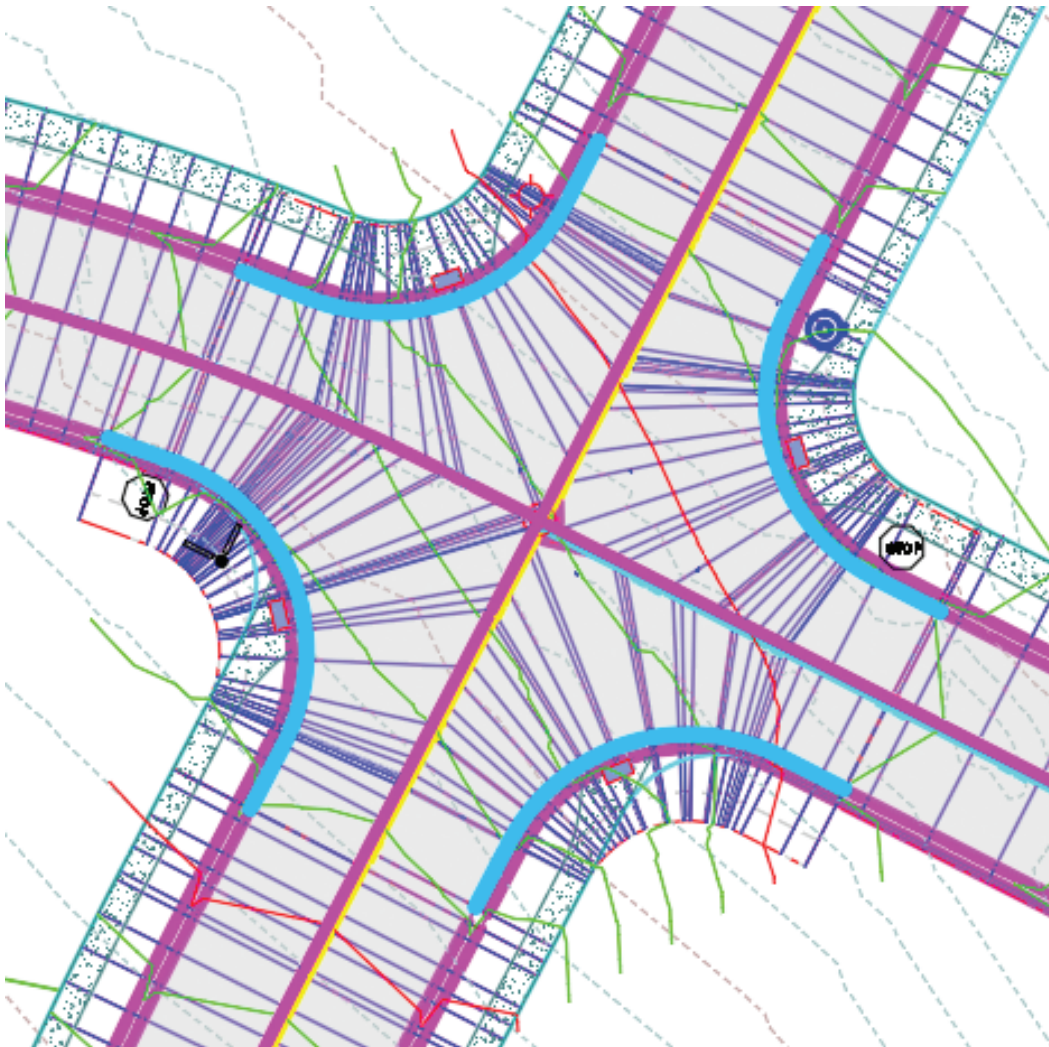
13. Select within the region for the intersection. The **Target Mapping** dialog box will appear.
14. We first will select the targets to set our Width. Select **NONE** next to **Width Target** for the asphalt portion.
15. Set the object type to **FEATURE LINES, SURVEY FIGURES AND POLYLINES**. Then select both

centerline feature lines from the screen.

16. Select **OK**.
17. We now need to select the same feature lines for the **Outside Elevation Target**. Select **NONE** next to **Outside Elevation Target** and follow the same steps as outlined about for setting width targets.
18. Select **OK** to exit the Target Mapping dialog box and Select **OK** to complete the Corridor edits.

Repeat all the about for each intersection. Remember to use your contextual ribbon to assist. There is a **MATCH PARAMETERS** command that is very helpful in this case. This will allow you to set similar targets without going through all the same steps.

Your resulting intersection should look something like this. You may need to reverse feature lines from time to time as well, keep that in mind.

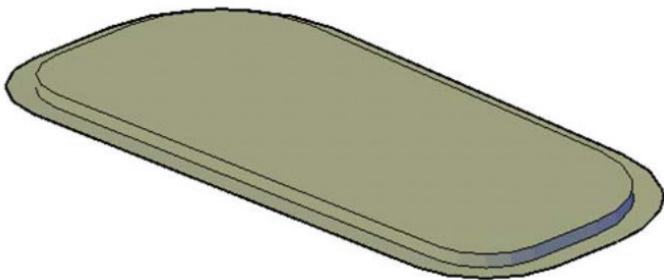


SITE/PARKING LOT WORKFLOW

This is a question I probably get at least once a month... "Should I use corridors for parking lots?". Before now, in order to corridor a parking lot, you would end up with numerous alignments, profiles, assemblies, etc. And it just was not worth the hassle of managing all that data, and a lot of times resulted in a lot of re-work.

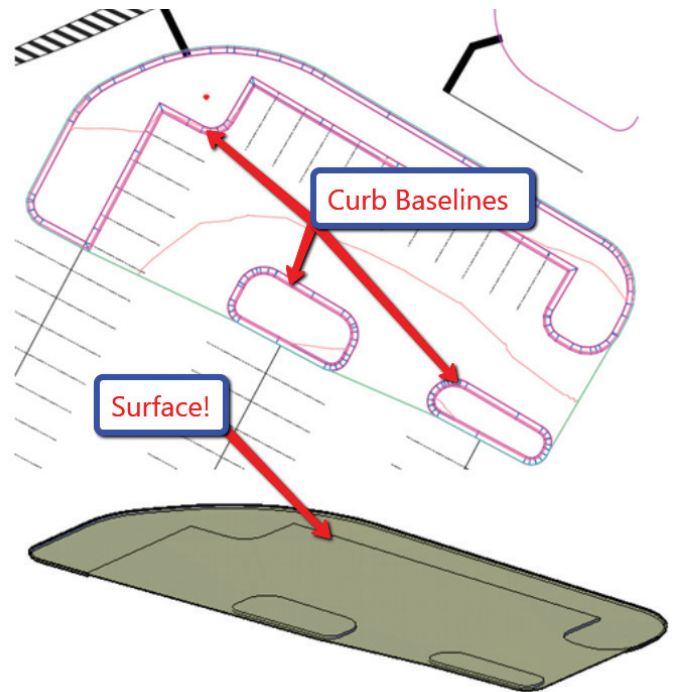
Now, for parking lots of any shape and size, you can simply add each feature line to the corridor as a baseline (not separate corridors) and apply the correct assembly. You also get the extended data a corridor offers with different materials and surface, something that cannot easily be done with just feature lines and stepped offsets. The workflows are practically the same as I outlined within the intersection example, so I will not repeat everything, but a quick outline of this new workflow is below:

1. Add features lines to corridor as a baseline and apply the assembly.
2. Repeat as needed for all curbing.
3. After the first couple are in place, create a surface from your corridor model for the finished grade.



4. As you add additional baselines, you can see your parking lot take shape! You can allow the surface to tin from island to island, or even target using an asphalt subassembly.
5. If the surface/corridor seems to be upside down, you simply need to select the feature line and use the reverse tool from the contextual ribbon.
6. One common issue in corridor modeling is inside and outside corners. Avoiding "bowties" and "non-mitered" issues have always been painful. Inspect some of the island and parking areas to see how Civil 3D has now fixed the majority of those issues!

Try this on your next site design to really see the



benefit of using corridors in this situation. I would love to see your final product!

CONCLUSION

There are many ways to model a corridor and corridor intersection. Some like to create alignments and profiles, some like to use the intersection tool and modify from there and some just ignore the intersection (I have time to time). It was my attempt to display a workflow that you may try and see if it fits your needs. So hopefully this gives you a little direction to at least give the feature line as baseline a shot within your Corridor Modeling workflows.

As always, I am interested to hear what you think and see how we can improve upon this topic.

Good luck and Happy Modeling!!



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.

Modeling Stage Lighting in Revit

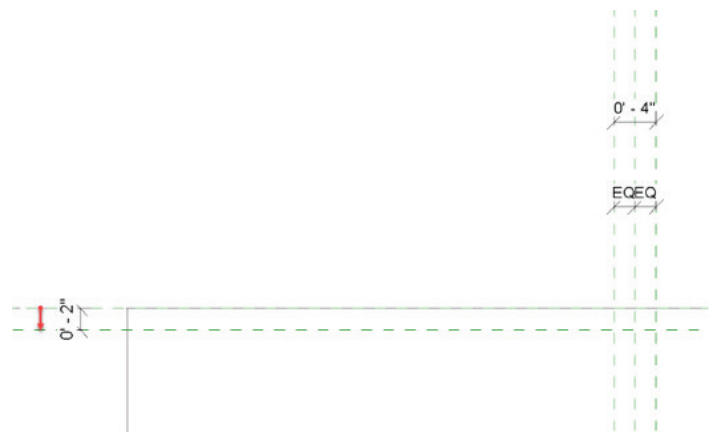
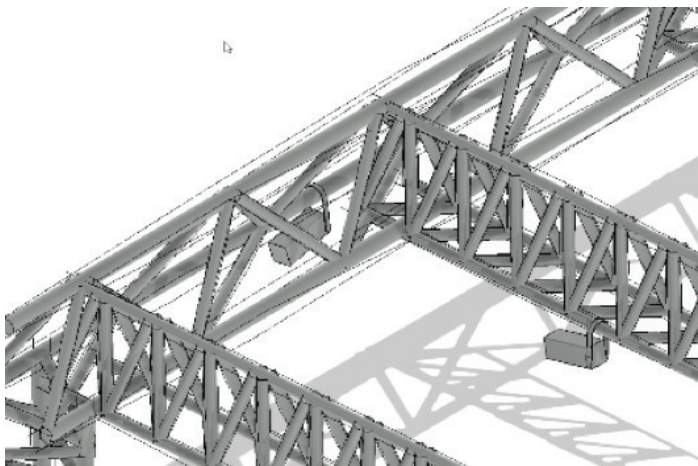
This article will dive into a few different methods

I thought would be useful for folks to know if you don't already.

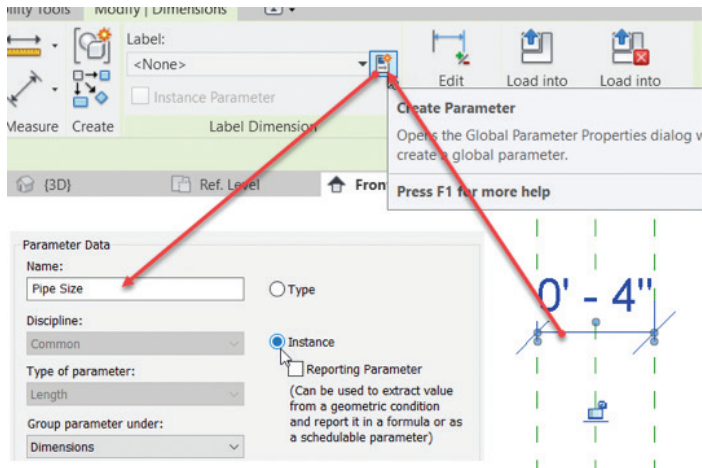
Recently, I had to model some structure and lighting equipment.

So, I thought I would share!

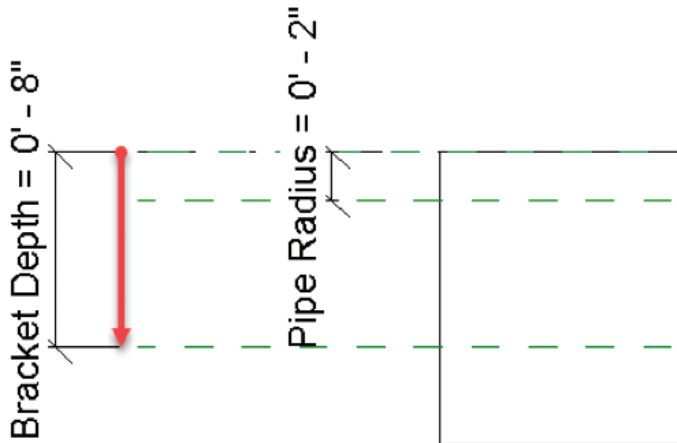
1. In Revit start a new family using the **Generic Model face based.rft** template.
2. In the Project browser, go to the Front elevation.
3. Right-click the middle reference plane and create the three reference planes shown below.
4. Dimension the reference planes as shown below.



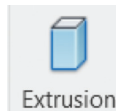
5. Select the 4" dimension and add an instance parameter as shown below:



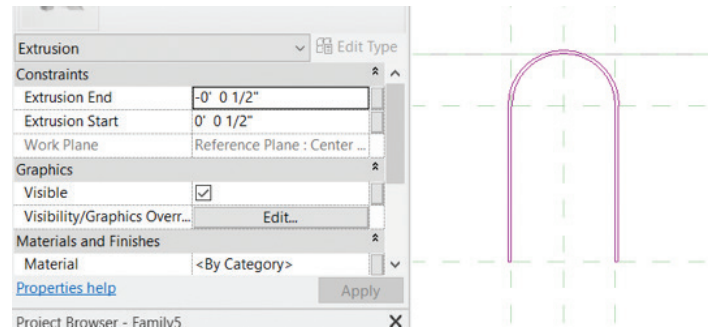
6. Select the 2" Dimension and add an instance parameter called Pipe Radius.
7. On the Properties panel, click the Family Types button.
8. In the Formula cell for the Pipe Radius parameter type **Pipe Size/2**.
9. Add another reference plane and dimension it and add a type parameter called **Bracket Depth** as shown below:



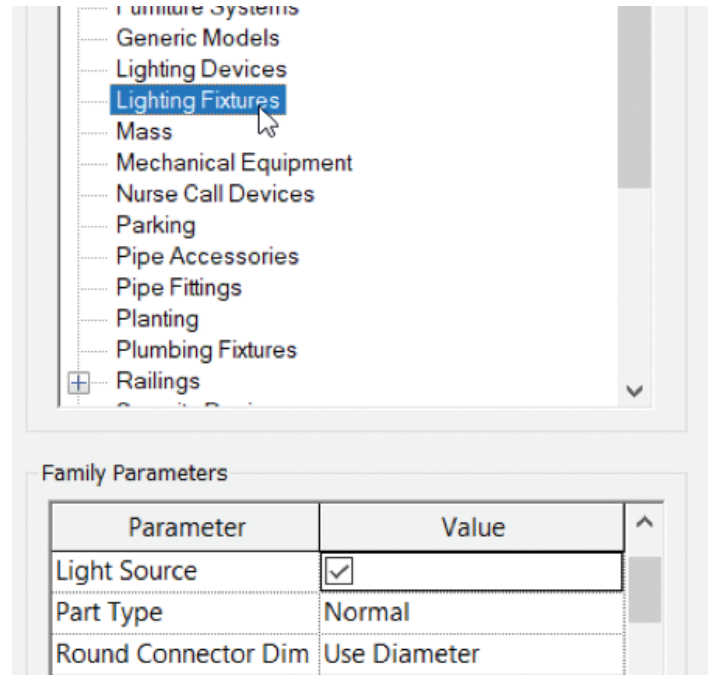
10. Click the Extrusion button
11. In the Properties, set the extrusion End to 1/2" and the Extrusion Depth to 1/2".



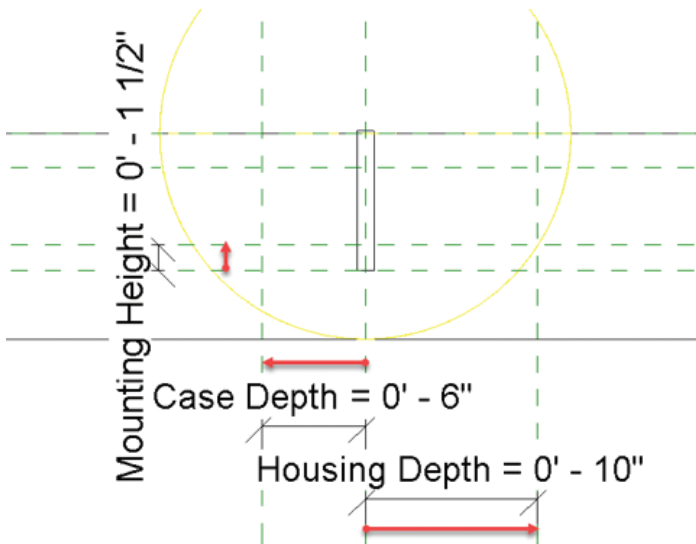
12. Draw the shape shown. I made the width 1/8".



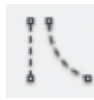
13. Click the Finish Edit button (Green Checkmark).
14. Save the family as **Stage Lighting.rfa**
15. Click the Family Category button and change the category to Lighting Fixtures
16. Make sure Light Source is selected as shown below:



17. Go to the left elevation
18. Create three reference planes and dimension them as shown below

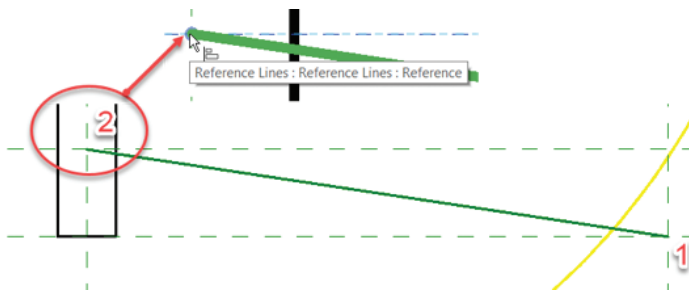


CREATING AN ANGLED REFERENCE

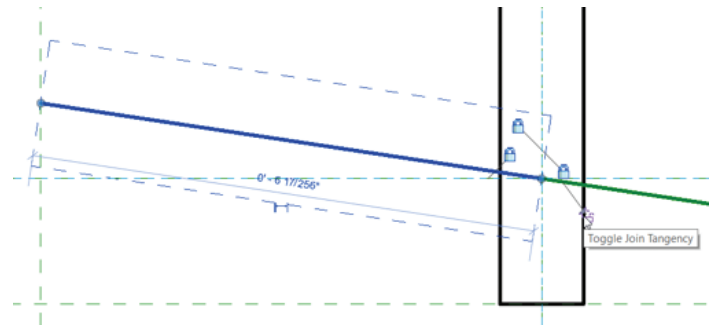


To create the light that can swivel we will need an angular dimension. The trick is to use a reference **line**. Not a reference plane.

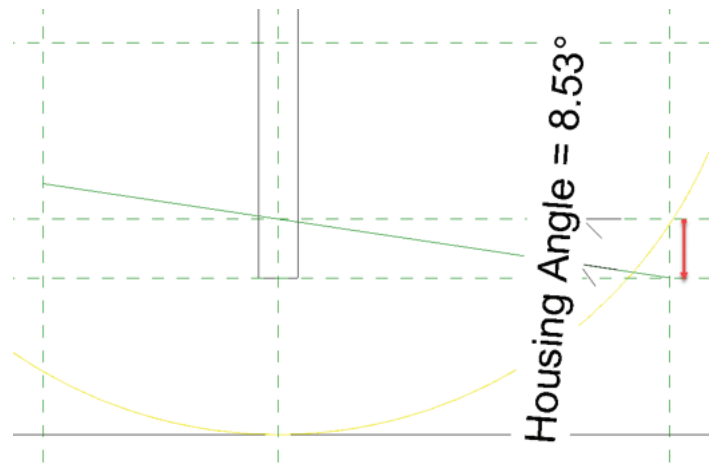
1. Draw a reference line as shown.
2. Align and lock the start of the line picking the end point. You will align it to both the vertical and horizontal reference (Numbered 2). (See the Figure below)
3. Align the end of the line to only the vertical reference plane (Numbered 1).



4. Draw a reference line as shown below.
5. Align and lock the same way you did the last.
6. Select the reference line you just drew.
7. Pick the Toggle Join Tangency lock button. (See the Figure below).

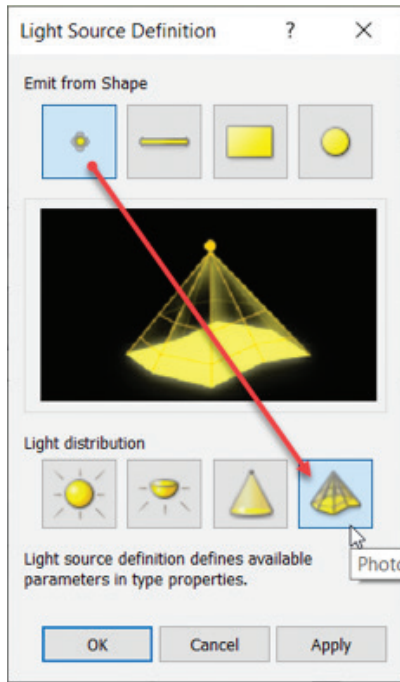


8. Add an angular dimension and add an instance parameter called Housing Angle.



9. In the properties change the angle to Zero (0).
10. On the Create tab, click the Sweep button.
11. Click the Pick Path button.
12. Pick the first reference line you drew.
13. Go to the Front elevation.
14. Click the green checkmark to finish editing path.
15. Click the Edit Profile button.
16. Draw 4 lines similar to the image and fillet the corners at 1/4". (Note you can also model a profile or bring in an actual generic model and do the same thing here. I'm just running out of pages)!
17. Click the green check mark to finish the sketch.
18. Click it again to finish the sweep.
19. Change the angle to make sure it still works.
20. Go to a 3D view.

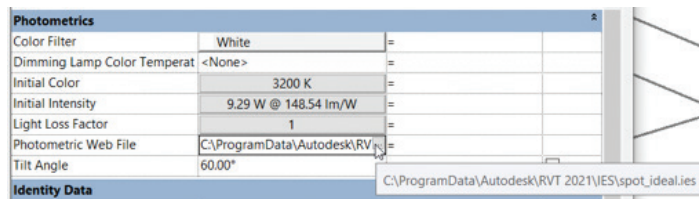




CHANGING THE LIGHT SOURCE TO WORK WITH AN IES FILE.

Select the yellow light source.

1. Click the Light Source Definition button.
2. Change the light source to Photometric Web.
3. With the light source still selected, change the tilt angle to Housing angle in the properties.
4. Hit Esc.
5. Go to the Family Types dialog and scroll down to the bottom.
6. Find Photometric Web file and browse to spot_ideal.ies



ADDING THE FAMILY TO A MODEL

1. I am going to start a new electrical model using the Systems template.
2. Next, I will link my structural rigging model I created in the structural article I wrote for this month's issue.

3. I will just go to a 3D view, load this family in, and insert it along my rigging. Notice it rotated with the bars.

OK, I know we could have added a lot more to this family, but the basics are there. If you feel like it, please experiment, and let me know how it goes! Get ahold of me on LinkedIn!



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.

Eric 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.

Eric 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.



Pitfalls of Tech Management

There are many ways to approach leading and managing technology and people, but there are also things that can trip you up. You may have the best plans and processes in place, the best people skills, and budget... but still struggle to make progress on key initiatives. That may be because you have pitfalls. Pits built for trapping animals are dug on purpose and hidden to fool the animal or catch them unaware. The dictionary defines pitfall as “a hidden or unsuspected danger or difficulty”. In management, pitfalls may not be so hidden, but they can be dangerous to progress and difficult to navigate around. The pitfalls might catch you by surprise or they may remind you that “you blew it again”. Some can be easily avoidable, and others may need more work. I will start sharing a list of some that I have stepped into over the years and will continue the topic next month.

PITFALL ONE: NOT DOING RESEARCH AND TESTING

Technology is always needing a refresh. There will always be a desire for innovative change. An upgrade to the status quo. But if you do not do the prep work needed, you can get trapped in a tough spot. What needs to be done before any upgrade or new purchase is the research and testing.

For new purchases, start with a list of requirements. Have a conversation with all stakeholders and find out what problems the new tool solves, what

it needs to do and what it should prevent. Make the requirements list as complete as you can and then assign a value of Must Have, Nice to Have and Optional. Search for vendors that provide the Must Haves and start reviewing their offerings. If some features of a tool do not provide a Must Have feature, then stop looking at it. You have defined the things that it must have, so if it is not there, move on.

In Excel (or whatever tool you choose), put each item in the row with check boxes, a column for stated needs (must have, nice to have or optional) and a column for each vendor. Check off each item's row if the vendor has it and then compare the vendor columns against each other. The winner will have all (or most) of the Must Haves, most of the Nice to Have and a few of the Optional features. The tool that might fit best will have ticked the most boxes. For more info on vetting new tools, go back and read my article on Buying Technology in AUGI World Dec. 2017-Jan 2018.

Notice I said, “the tool that might fit best”. This is because you must test it after selecting it. You may test many tools during a free trial download before final selection, or just test the one you are going to buy. The testing is key, and it is done by IT/CAD/BIM staff and a few select users. You need to verify that what your vetting uncovered is actually true.

Testing in your environment is crucial to making sure that your assumptions are correct. Testing proves that the tool will perform as expected and that

others will see the value in this new solution. Do the testing yourself, have others try it out and get some input about their impressions. Try it on different machines and in different offices locations (not all offices have the same culture and approach on technology). When your testing shows promise, you can now start the process of buying and deploying.

The steps in purchasing new tech or upgrading older software are roughly the same. For upgrades the research may be quicker and selection is already done. The research will include reading the release notes and talking to others who have already upgraded to find the “pitfalls” and avoid them. You also need to define the value in the upgrade and what problems it will solve.

Here are the steps in brief:

Research > Selection > Testing > Proof of Concept > Pilot > Training > Proliferation

To read more about the final four steps go back and read my articles in August-October 2015 of *AUGIWorld*.

PITFALL TWO: OVER MONITORING

Managers must monitor progress. They must supervise others. But they do not have to go overboard. Asking for status reports is not micromanaging. Expecting others to share details with you on their planning is not over monitoring. Asking for more effort from a team member is not overbearing (if done right).

But sometimes a manager does go too far and ends up offending a co-worker by asking too much or expecting too much. The best way to avoid over monitoring is to get agreement on when reporting in should be done. Set meetings based on milestones that are natural times to check in. Do not check back on a task or effort unless something changes. Anything that impacts a project may require an update. New deadline, change in scope, team member out on medical leave, changes in staffing, budget reductions, or anything that might cause you to have to rethink the progress and timeline. When you have to check in without a meeting, let the person know why you are doing that. “The big boss wants an update. We are still on track – right?” or “The client just called, and they want to add to the scope, can you tell me where we are, exactly, right now on the design?”

PITFALL THREE: CREATING ARTIFICIAL DEADLINES

No one likes fabricated deadlines and needless emphasis on arbitrary dates. It may put undue pressure on staff to make something happen quicker than is wise. It may cause quality to go down and oversights to happen.

I suggest that you negotiate deadlines. Whenever I assign a task to an individual or team, we discuss possible due dates. When defining deadlines, let the person who is doing the most work define a date. If it is a team, have the team work through it. The date will either be spot on, too early or too late. If it is spot on, and you agree it can be done by then and that it is not delayed unnecessarily, then all is good.

If it is too quick, then add some days on for good measure. Some team members might not have a good grasp on the work to be done. Or they may not know what else might be coming down the road. If it is too far off, then ask them why it will take that long. There may be things you are unaware of or hidden steps that need to be considered. Discuss details as needed, then slide the date around until everyone agrees, then lock it in.

Until next time, keep in mind that by looking for the pitfalls that might trap you, you become a proactive manager that desires to avoid troubles that might come upon you. You also become easier to work with. More to come next month.



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.

Unitsosaurus Success or Failure



Model quality or qualities; or lack(s) thereof(s) are, in my opinion, based on correct geometry. Seeing countless BAD BIM, I am forced (LOL) to implore individuals (CAD and BIM “Managers”), projects, teams, AND finally firms that can’t get simple geometry straight... literally cannot model straight; to get it right already!!!

I am again posting this in a yearly attempt at getting buy-in to REALITY!!!

Why? The overwhelming and frankly unprofessional mediocrity (a majority, like 95%) of AEC production (not modeling straight or correctly) is rampant in Revit® and every other BIM platform, so don't think you're OK Bentley, Graphisoft, et al. If your units are set up like Figure 1, then you are dismissed lol... Seriously 😞 ...Everyone else, be scared and read on.

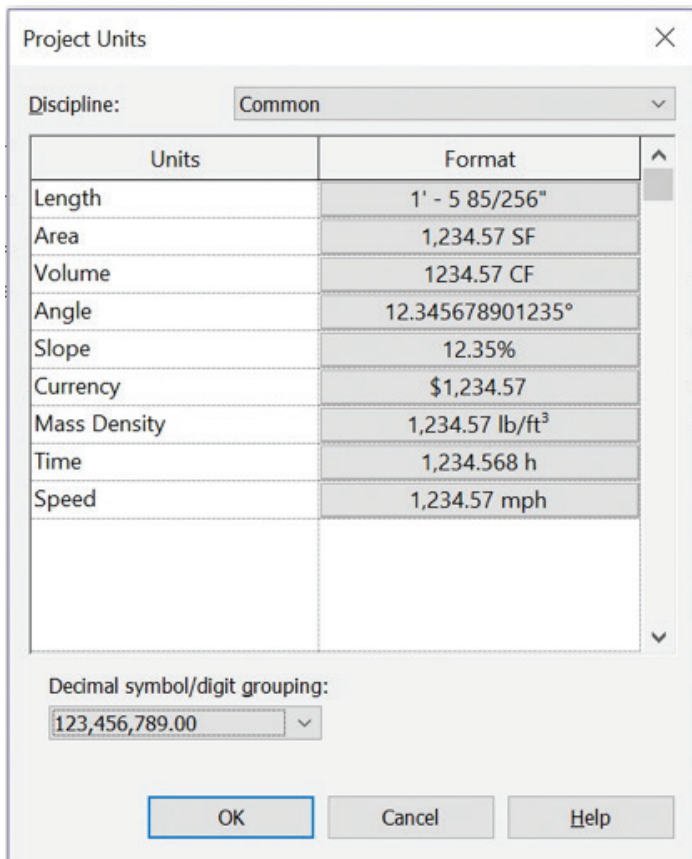


Figure 1: Image illustrating proper overall units

Okay, so since you are still here, I hope this will clear up a few ideas or at least give a starting point for more research into quality, precision, and what it is we are doing in AECO.

If your Revit project template's units (today we are talking Revit, but I do not care about the software: set Units as granular as possible) are NOT set as shown in Figure 1, and they are more like Figure 2, set your units up as I will explain. IMMEDIATELY after reading this. NO JOKE!!!

I will hold back on much more editorializations, except to say that if you disagree with any of these concepts, please contact me on twitter @JayZallan and try your best! I dare you. For what its worth, I have geometry, floating-point precision, and quality in my corner.

Do you have any "Wall is slightly off axis"? Or worse yet, "Line is slightly off axis" warnings? "Slightly Off Axis" warnings are directly related to mediocre, or just plain bad, modeling. If you use any CAD drawing in your process, you will most likely have found these files are some of

the causal factors (and if you are still reading, have ignored such Revit warnings). Regardless, a BIM shall be correct, and not approximated or rounded to the 1/8" (or whatever contractual precision's been set) until the dirt hits the shovel (AKA: during construction). Both bad modeling, and bad CAD, create bad BIM. Which is costing your firm time and money.

So here we go—only tech from here on out.

Do not use the following setup.

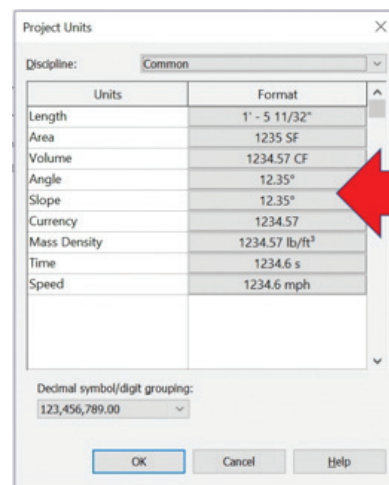


Figure 2: Image illustrating possibly the most unprofessional and unintelligent setup of units possible

Set up Dimensions to respect Project Units.

I am not saying leave dimensions that report to the x/256 of an inch.

What I am saying is:

IF A DIMENSION REPORTS BAD NUMBERS (1/256" etc.) FIX IT!

Fix the model, do not override dimensions.

I do create one Dimension Type that does not use Project Units and rounds to 1/8" (if that is your contractual obligation).

Make this rounded dimension red.

Rarely use this for individual dimensions, where geometry dictates or when the site dictates odd angles, etc.

Never use these for dimension strings. FIX THE MODEL in that case!

UNITS

Setting up Revit units correctly and professionally.

Type “UN”

LENGTH

Click the button under the “Format” heading for “Length” and set up as follows:

YES, 1/256”.

“Suppress 0 feet” is cool to uncheck if you are into that sort of old-timey thing. I like it personally, but still, I do not usually use it.

Digit grouping makes numbers look as we like in the USA... commas and all.

“Suppress spaces” is ok to check if you are into that sort of thing.

Please understand that this comment goes for all following Units’ dialogs as well, as I am not into suppressing spaces.

AREA

Click the button under the “Format” heading for “Area” and set up as follows:

Two decimal places.

Suppress trailing 0s.

This is key. One will only see extra 0s if there are numbers other than 0 to the right of the decimal (0s are visible in Temporary Dimensions and when OBJs are selected, but that is how it should be. Let me see reality!)

All the rest as shown in Figure 4.

VOLUME

Click the button under the “Format” heading for “Volume” and set up as follows:

Note: one may want to get more granular with this if refined calculations are desired.

ANGLE

The following settings are even more important than the length settings, as we geolocate our

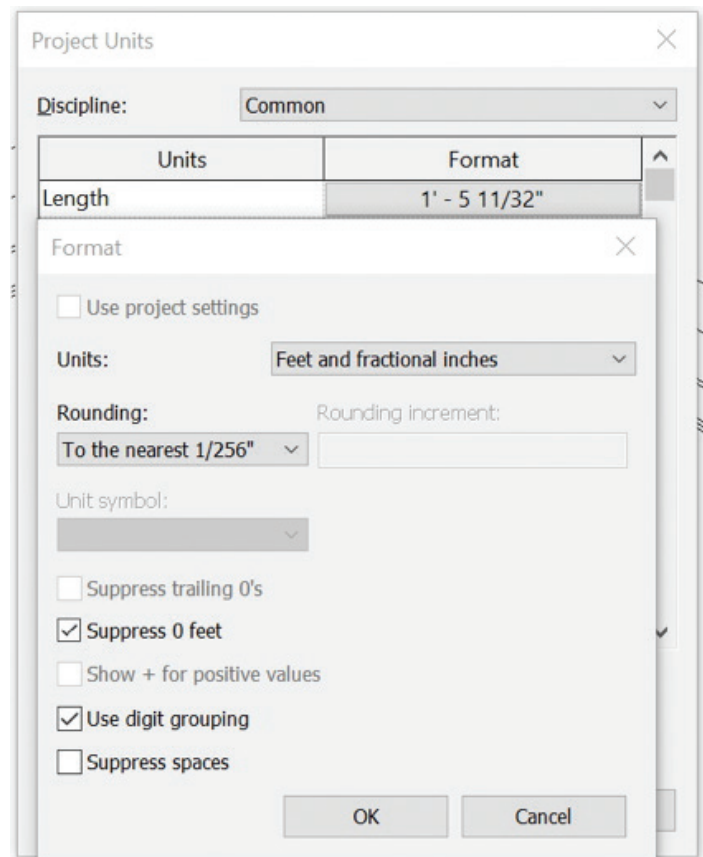


Figure 3: Image illustrating proper “Length” units

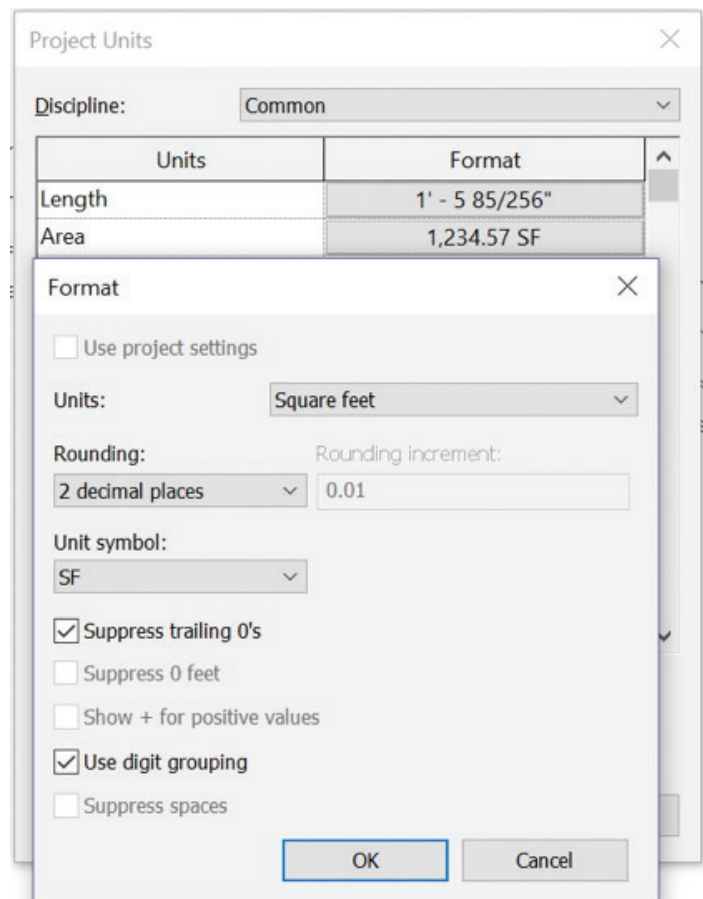


Figure 4: Image illustrating proper “Area” units

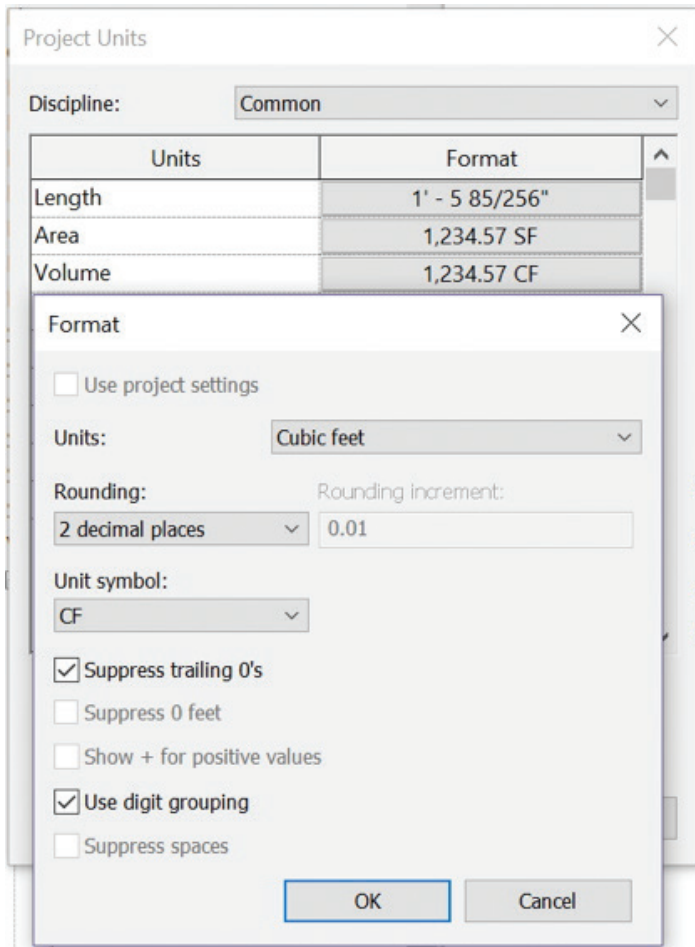


Figure 5: Image illustrating proper “Volume” units

models and need this granularity and quality. (Full Stop)

“Rounding” set to “Custom”.

Place cursor between the 0 and 1, to the right of the decimal point.

Enter “0” ten (10) times.

Just do it, you will thank me when Shared Coordinates don’t blow up anymore (as if).

Remember, the trailing 0s will only show up when the geometry is... well, let’s just say “probably needs work” (at best) and “is totally a joke for someone who calls themselves professional” (at worst).

SLOPE, CURRENCY, AND MASS DENSITY

Settings are all in the following images. There are not many comments until “Time.”

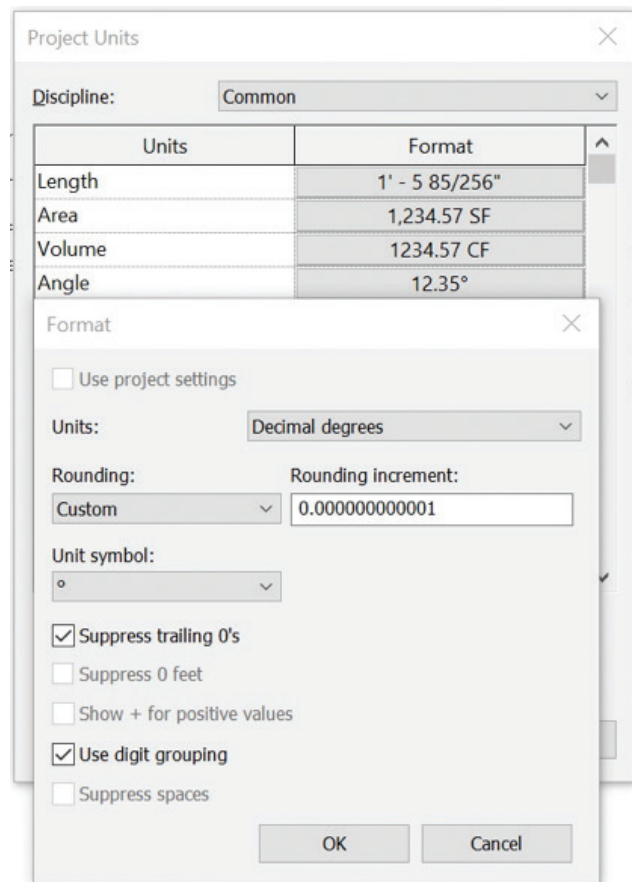


Figure 6: Image illustrating proper “Angle” units

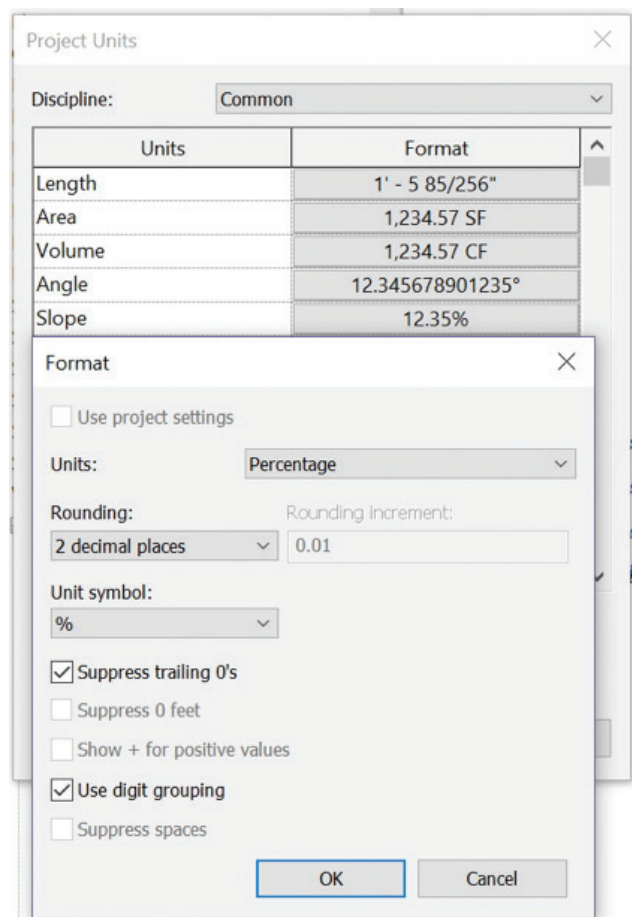


Figure 7: Image illustrating proper “Slope” units.

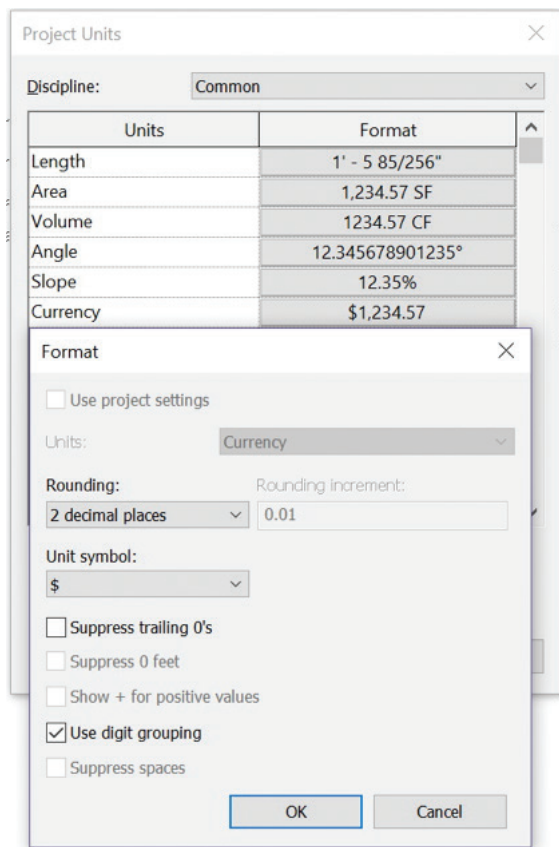


Figure 8: Image illustrating proper “Currency” units (add the dollar sign!)

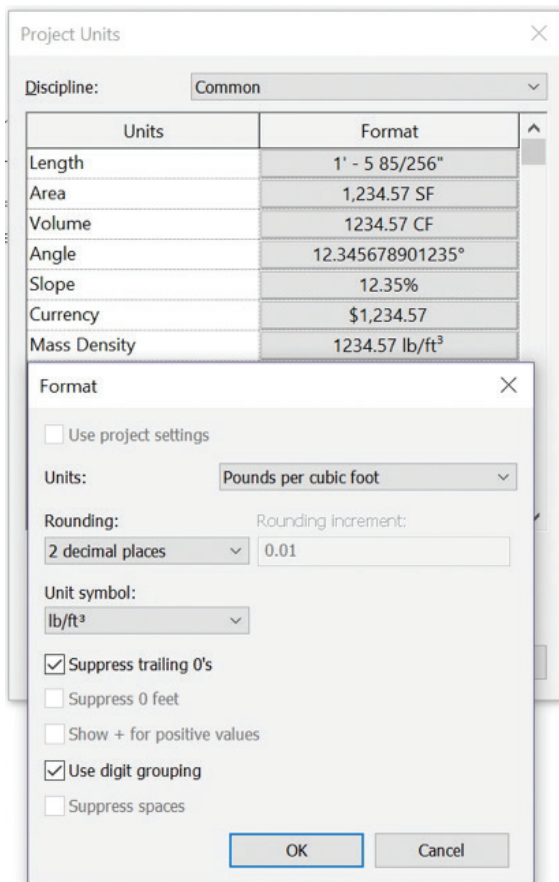


Figure 9: Image illustrating proper “Mass Density” units.

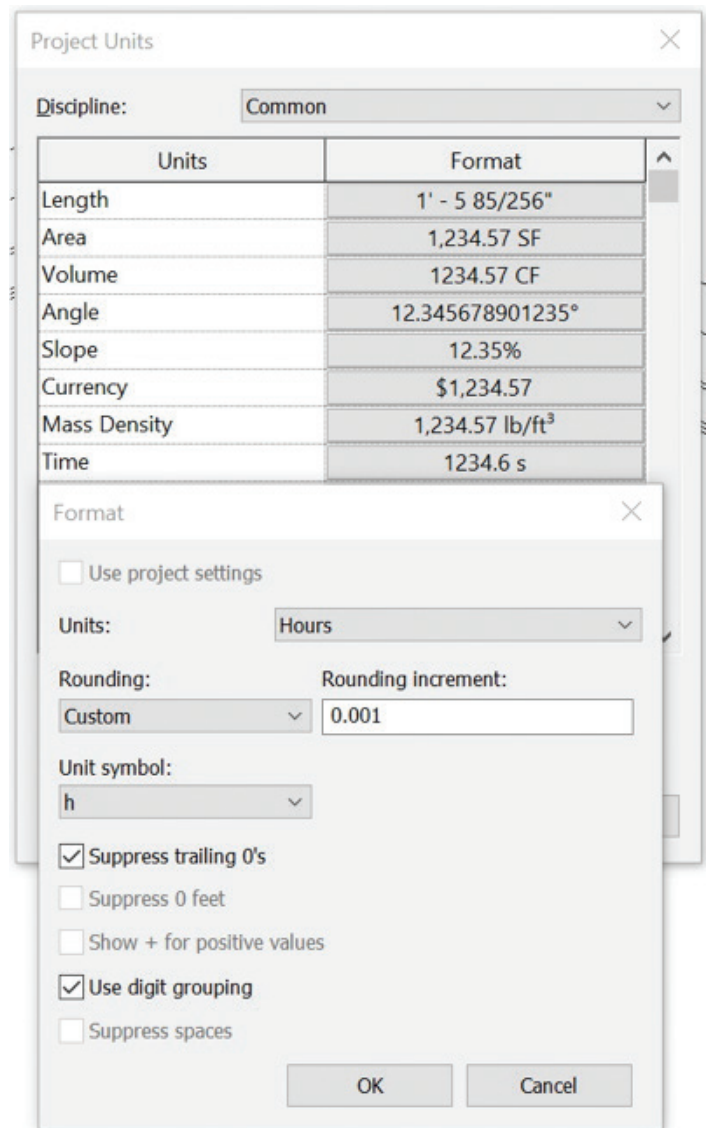


Figure 10: Image illustrating proper “Time” units

(Yeah, you can set them up for Rise/12, etc.... these are often modified to satisfy municipalities, outside jurisdictions, etc.)

I like to set it up like money (since that is what this unit is lol...) so I let the trailing 0s show proudly.

The next time I use these will be the first, so if there are any mass density experts reading this, please let me know if there are better setups.

TIME AND SPEED

Back in Revit© 2020 Time & Speed were added, and are going to allow a lot of future capabilities and I am looking forward to it!

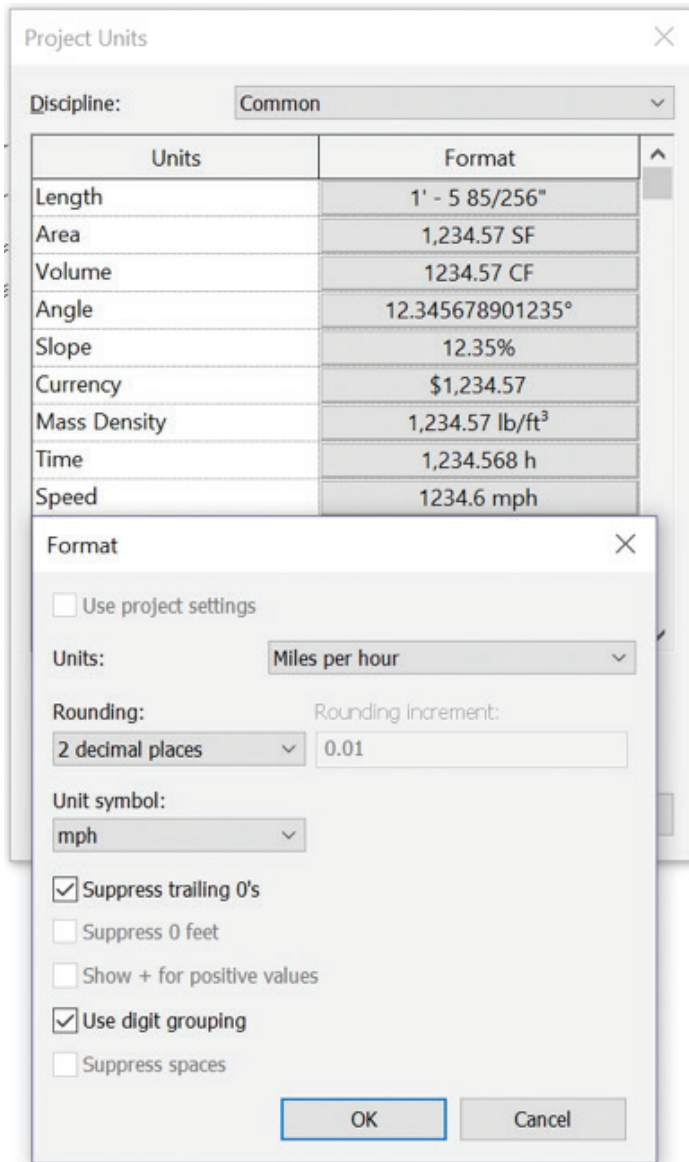


Figure 11: Image illustrating proper "Speed" units

Currently used in the new (and one day to be working properly) Exiting Path tools, with more potential functionality and workflows, beyond exiting alone for the creative masterminds.

UNITS CONCLUSION

Revit Units should look something like Figure 12, but if there are differences, a few things should (if not must) remain constant: Length and Angle must be as granular as allowed, whether in Revit, CAD, or any other software used to author BIMs or any portion therein. Set the Units granular and then draw and model to rational dimensions. PERIOD ;)

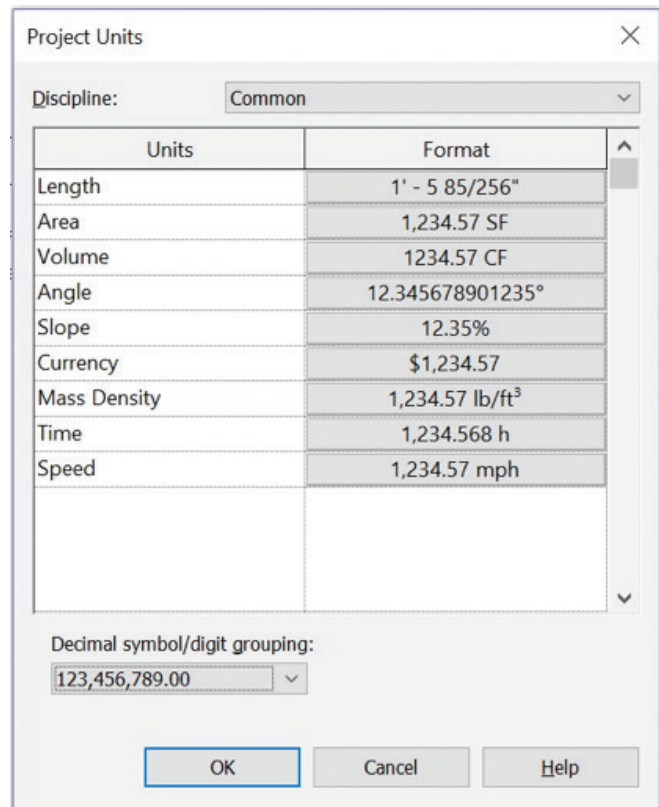


Figure 12: Image illustrating a properly set up Units dialog



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major transportation and
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through most every large-
scale project type. President
of LARUG (Los Angeles
Revit Users Group) and an
Autodesk Implementation
Certified Expert (ICE), Jay
combines unique insights
into the creative and
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PLANTEXPRESSTOOLS

https://apps.autodesk.com/PLNT3D/en/Detail/Index?id=8924220663606690617&applang=en&os=Win32_64

Autodesk AutoCAD Plant 3D: 2021, 2020, 2019, 2018 Autodesk AutoCAD P&ID: 2017

PlantExpressTools were created to capture high value one-off functions that do not fit into any of the other PlantTools. These tools include:

Import/Export/Copy Selection Lists: Autodesk® did a good job with the configurability of Autodesk® AutoCAD® P&ID and Autodesk® AutoCAD® Plant 3D. However, managing the content of project selection lists can be time consuming and frustrating. Our utility allows users to import, edit, and export selection lists from XLS/CSV files. In addition, selection lists can be copied between P&ID and Plant 3D. The Import/Export/Copy Selection Lists function reduces time for list administration to a fraction of what it is without it.

Rename/Copy Project: Once a project is set up, attempting to rename or copy the project is very difficult without PlantExpressTools' Rename/Copy Project function. A project configuration has the project name and location embedded into its configuration files. Rename/Copy Project makes renaming and copying projects simple.

Coordinates function: With the Coordinates

function in PlantExpressTools, users can add additional data properties to each symbol that carries a configurable grid location. These grid location values can be used in reports and make it easier to locate each object on its drawing during project team meetings or discussions.

Update Tags/Acquisition rules: P&ID and Plant 3D don't always update Tags and acquisition rules properly. With PlantExpressTools you can update tags and acquisitions within your drawing or the whole project by the click of a button.

Assemblies: P&ID doesn't know any assemblies. PlantExpressTools allow you to handle them. You just draw a Polyline around you assembly to define what your assembly contains. If your assembly has a Tag or other data, the objects within your assembly can acquire these data.

Export/Import symbol and class properties: Everyone who ever wanted to change the layer of the symbols in ProjectSetup knows what tedious job that is. With the Export/Import feature you can export the symbol as well as the class properties to a csv file, modify the values there and import it back. Configuration was never easier.

From/To-Update finally delivers sensible From and To values for Line Segments as well as LineGroups so you can create meaningful line lists.

This is 30 days Trial version.



DRAW DROP INTERFACE 2021

<https://apps.autodesk.com/RVT/en/Detail/Index?id=6960357646030714351&appLang=en&os=Win64>

Autodesk Revit: 2021

The Software.

- Is intended to simplify “content load and insert” into Autodesk® Revit® models.
- Combines drag and drop from “Project Browser” with “Load Family” from Revit ribbon into one interface.
- Features content list filter and sorting functions.

- Features memory buttons with your stored favorite content folders.
- Displays preview images and selected content data.
- Could be docked in the work area.

The Interface.

- The Drag & Drop Tool consists of various list views, filter boxes, store buttons and information areas.
- The is populated with current model content.
- The Family List is populated with content (.rfa) found in the currently selected folder.
- The Category List could be collapsed or expanded to improve readability.
- The information area will show a preview image and simple symbol data.

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



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

DUES: Free



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

DUES: \$25



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- *HotNews* (full access)
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- ADN 2013 Standard Membership Offer

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BOXX Storage provides secure, next generation NAS data storage (or SAN) for surveillance, backup, and archive within demanding, high performance Revit workloads. [Download the free storage brief](#) featuring product profiles for a variety of storage needs.

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