

Diamond Sponsors



AUGIWorld

The Official Publication of the AUGI Design Community

May 2019

Achieving Excellence

Also in this issue:

- Hacking InfraWorks
- Don't Get Lost in the Details
- 3ds Max: The Year of Convergence
- What's New in Revit Structure



DELL IS HAPPY TO BE
THE NEW SPONSOR
FOR AUGI MAGAZINE

Dell Precision TAKES YOU TO NEW PLACES



For more than 20 years, Dell has been helping you take your creative ideas to new destinations by delivering innovative, high-performance workstations. From award-winning filmmakers and animators to architects and engineers, our expansive portfolio lets you customize your workstation for your creative expertise.

Recognized as the #1 workstation brand in the world, Precision gives you the power to reach your creative heights. Experience the legacy today www.DellEMC.com/Precision



contents

product focus



- 6 **Revit Architecture** Organizing The Browser: If You Haven't, Do!
- 12 **Revit MEP** Don't Get Lost in the Details
- 16 **Revit Structure** What's New in 2019



- 20 **3ds Max 2019**: The Year of Convergence
- 24 **AutoCAD Civil 3D** Using Templates and Drawing Settings for Civil 3D Implementation
- 30 **InfraWorks** Hacking InfraWorks: Schema Editor



columns

- 4 **Letter from the President**
- 22 **CAD Manager**
- 34 **Inside Track**



Cover image:
Lippo Centre Towers, Honk Kong
Copyright © 2018 - Phil Lazarus

Letter from the President



AUGIWorld

www.augiworld.com

Editors

Editor-in-Chief

David Harrington - david.harrington@augi.com

Copy Editor

Marilyn Law - marilyn.law@augi.com

Layout Editor

Debby Gwaltney - debby.gwaltney@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

CAD 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

Kimberly Fuhrman

Vice President

Frank Mayfield

Treasurer

Chris Lindner

AUGI Board of Directors

Brian Andresen

Kimberly Fuhrman

Chris Lindner

Sam Lucido

Frank Mayfield

Todd Rogers

Matt Wunch

GREETINGS!

WELCOME TO THE MAY ISSUE OF AUGI WORLD!

May has always been a springboard month when the northern U.S. jumps from spring to summer. Swimming pools open, nature blooms in vivid colors, and kids approach the end of school anxious for summer vacation. My favorite part of living where I do is seeing all the baby farm animals in the fields. One of these days, I will hug a baby calf! It is a month of new beginnings, and that holds true for AUGI as well.

It has been said that "change is good." Behind the scenes, we at AUGI have been working on quite a few of those changes! We hope that our members will benefit greatly from these changes and continue the vision of AUGI as an independent user group. We could not do what we do without our membership and the continued support of our sponsors.

First and foremost, we would like to welcome Dell as the new sponsor for *AUGIWorld* magazine! Their support helps provide the magazine to our readers worldwide. Thank you, Dell!

Secondly, Autodesk User Group International, as an independent organization, will now be formally known as just AUGI. Everybody already calls us this so we are just simplifying the obvious. While our mainstay will still be Autodesk products, we are spreading our wings to be more inclusive of cross-industry practices and software applications. This is a huge step for our AUGI members and our user group community. We look forward to the opportunities this will bring to our organization and to our members.

Speaking of changes, this is a great time to check your AUGI.com profile and make sure your information is up to date. While you are there, take a few moments to stop by the forums and say hello to your fellow AUGI members. Maybe you will spot a question only you have the answer for, or ask a question of your own. Remember, this organization is what you make of it, dear AUGI member!

This is also the time of year the new Autodesk releases start rolling out, and our members have been actively exploring the new features in each release. As these new versions are released, some of our authors will be diving in to report on what they find. Check out what they have to say about their favorites!

Whew! That is some big news! We have been very busy this first half of 2019, and I am looking forward to what the second half brings. For now, I am going to take a nice cold beverage out by the pool with my latest edition of *AUGIWorld*!

Cheers!

Kimberly Fuhrman
AUGI President

Publication Information

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

Published by:

AUGIWorld is published by AUGI, 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.

AUGIWorld is Copyright ©2019 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





COMplete.

ACCURate.

DEPENDABLE.

**Thousands of CAD files in DWG and PDF formats,
so you're sure to find that detail you need.**

ARCAT.com provides the most comprehensive on-line resource for building product information. ARCAT has free tools for each phase and every member of your team. Enjoy the freedom on-line at ARCAT.com for **FREE**, and **no registration required!**

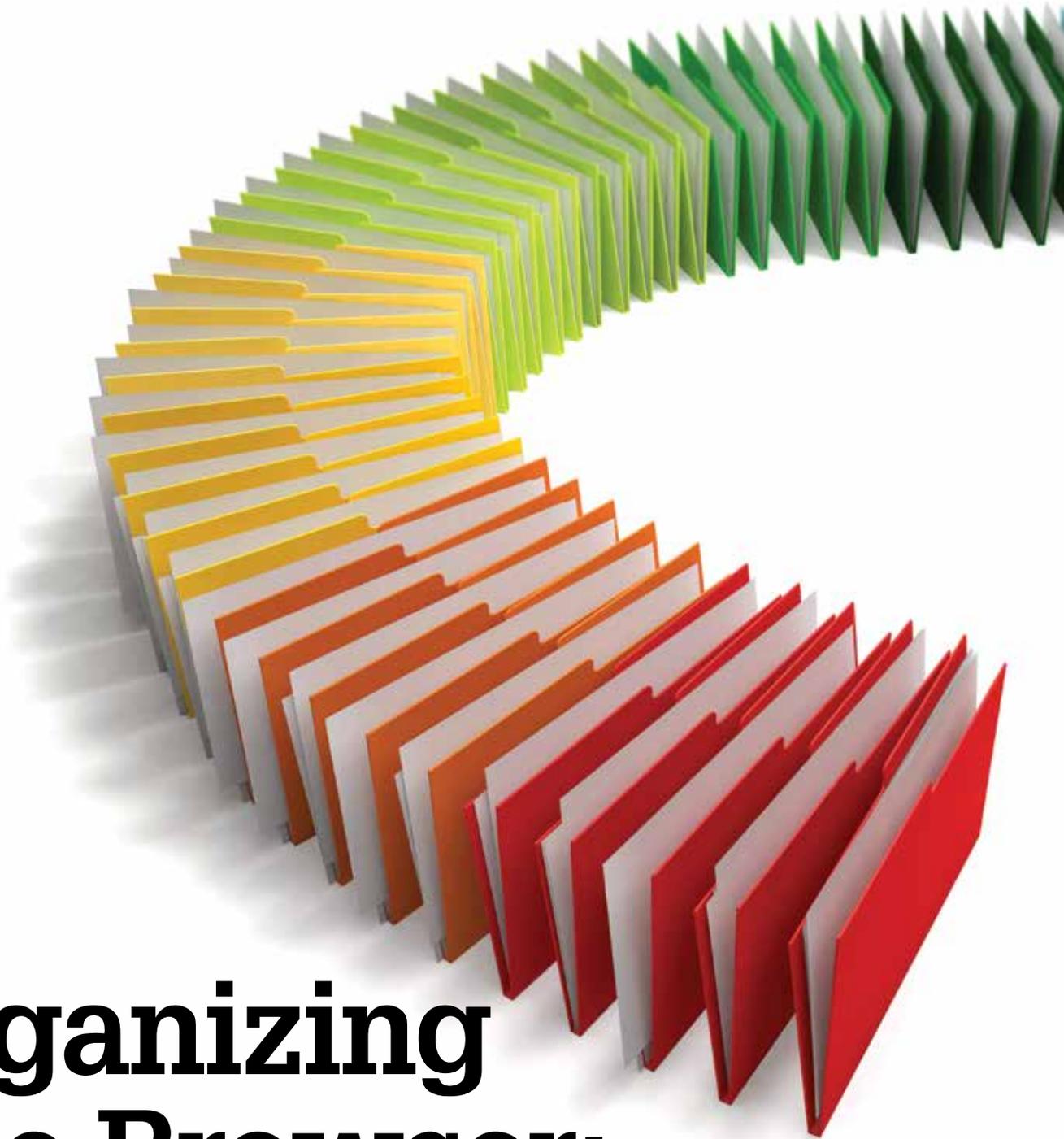


TIP - add CAD or details to your search to get what you need even quicker!

**CAD, BIM, Specs, SpecWizard®
and much, much more!**



ARCAT®
www.arcat.com



Organizing The Browser: If You Haven't, Do!

I see many firms whose templates can use a lot of help for efficiency sake, if not sanity. One simple way to start to gain a foothold is to customize the Project Browser.

Figures 1 and 2 illustrate a variation of the organization explained herein; same strategy, perhaps a few different numbers ;)

There are myriad ways this can be done and the interweb has a lot on this concept with some very pointed positions: it also gets us into the “small template or comprehensive template” conversation. I am on the moderately comprehensive template side, based on a tiered developmental approach, but that is for another time. Let’s get some help to those who use “All” as their browser organizations, for some quick relief.

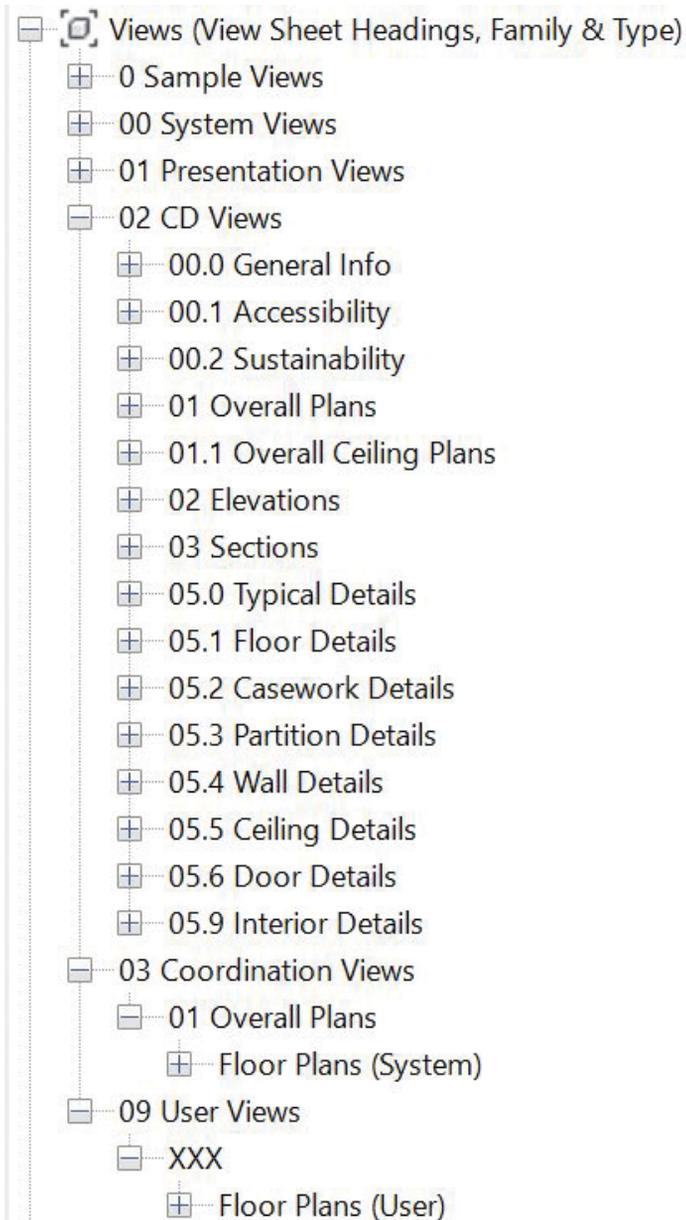


Figure 1

FWIW: I do include naming and numbering strategies, mostly based on the NBIMS (National BIM Standards), and while you can obviously do what you like, if we all actually adopted standards, well, then we'd have one... if you get my point :) Now to the goods.

The purpose of a custom Revit Browser Organization is to enable a logical filing structure to Views and Sheets. Organizing views and sheets into logical and project specific groups allows a large quantity to be easily searched and worked with.

VIEWS

The first course of action is to review the guidelines for creating views; namely, the requisite workflow for creating views will follow these protocols (every single time):

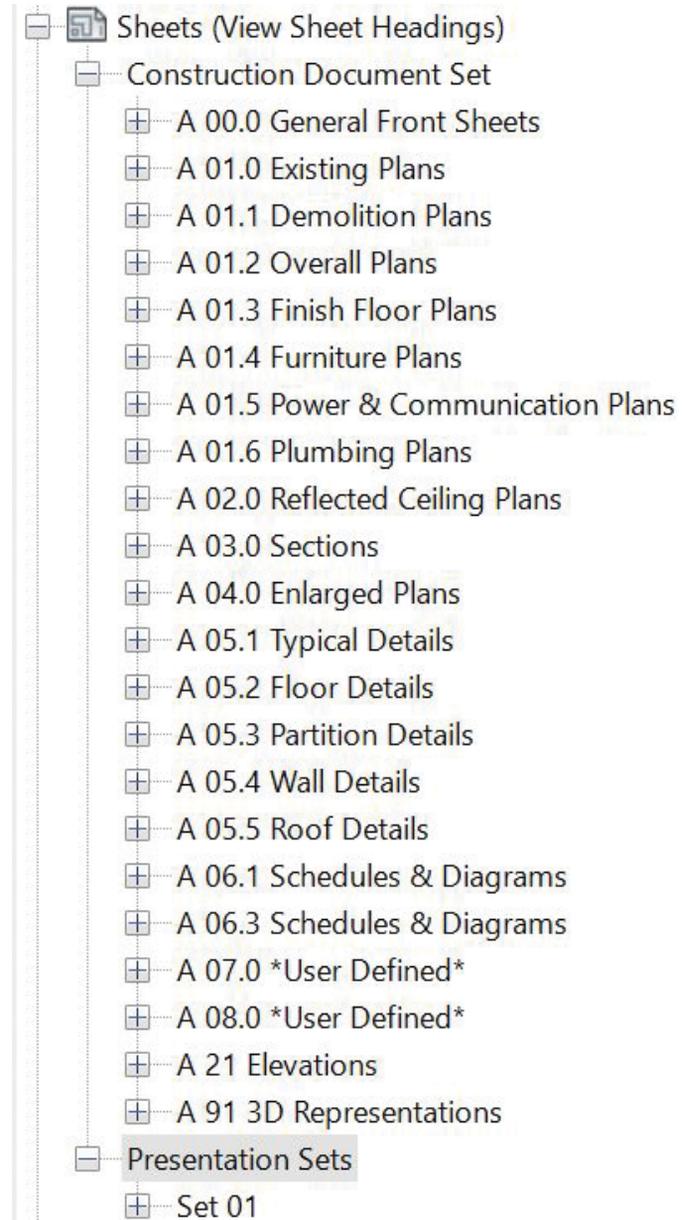


Figure 2

- A. Create a View
- B. Rename the View
- C. Modify necessary View Parameters
- D. Get on to work ;)

*Hint: Use a View List (the *Mgmt one) to modify large numbers of newly created views.*

ELEVATION & SECTION VIEWS

There is only one recommended method to create Elevation & Section views imo, and that is:

Revit Architecture

1) Create a new Elevation or Section using the Elevation or Section View tool.

2) Do not use any of the “duplicate” tools. *It is inadvisable to use “Duplicate,” “Duplicate with Detailing,” or “Duplicate as Dependent” when creating multiple Elevations & Sections (Building, Wall, and Detail included).*

Duplicating Elevations & Sections creates a host of problems and will also copy the View Markers and these will immediately cover the previous view markers, making an unintelligible set of documents. This obscuring of data will spiral out of control and make the project nearly unworkable; confusion caused by this will continue to get worse as the project progresses.

Please take note that what may have traditionally been called an elevation is very specifically different in Revit. There are two things that make up Revit’s Elevations and Sections; namely The **View** & The **Elevation** itself.

NAMING AND RENAMING VIEWS

View names are one of the many parameters in Revit. These are “Instance” parameters and are accessed from the first window of the modeless Properties window. Instance parameters can be set differently for each distinct “instance” of a family, such as scale, name, etc. BTW, never include “scale” in a View Template—let that be free; you’ll thank me ;)

When naming or renaming views, if the following dialog appears prompting the actual Level be renamed, always choose Yes. Reason being, that set of views are never on sheets as outlined below. There are reasons, but we have enough to cover.

VIEW NAME CONVENTION

ALL CAPS:

Views that go on Sheets

Modified Sentence Case:

Views that do not go on sheets
More on specifics below...

VIEW PROPERTIES AND PARAMETERS

The View & Sheet Parameters are accessed via the Properties dialog, four of the five used in organizing views fall under the heading “Identity Data.”

Along with the **View Name**, for each new view we must also set up a **Title on Sheet** value, along with the **Discipline, View Sheet Heading 1 & View Sheet Heading 2**. *These are used to correctly designate all views into their proper browser organization. Yaay.*

A Few Notes on Views:

- Any annotations placed in views other than CD, SK CA, or Presentation views will NOT find their way to sheets, as the only views that are to be placed onto sheets are CD, CA and/or Presentation views. All other views are for modeling and/or reference and collaboration only.
- User Sections & Elevations with OOTB families are to be set to use a “Hide at Scales Coarser Than” parameter value set to 12”=1’-0” (full scale). This will ensure that their symbolic markers do not show up throughout the model views and document set.
- Manage the location, etc. of these user sections/elevations from a user plan view by changing the scale to full size when editing the extents of the section, and so on.
- When a value is placed in the “Title on Sheet” parameter field, the View name is only used in the Project Browser. This Title on Sheet value is left empty for all views that are not intended for sheets.

BROWSER ‘VIEW’ ORGANIZATION

The purpose of a custom browser organization is to enable a logical filing methodology to Views and Sheets. Breaking these out into smaller logical and project specific groups allows a large number of views and sheets to be more easily searched and worked on and with.

Not all views are used for modeling; some are only for documentation, or collaboration/coordination, or presentation. Annotations such as dimensions, annotations, keynotes, etc. are placed for printing purposes only so there will be several copies of each plan view set up for such purposes. Most all modeling is to be done in “User” views that will not go onto sheets. The reasons for this are several-fold and allow for independent component and view visibilities providing smooth team workflows and less “stepping on each other’s toes.”

How to set this up:

1. Create 2 Project Parameters:
View Sheet Heading 1
View Sheet Heading 2
2. Input values as follows, for every view and sheet. Always.

Parameter Value Naming Convention

View Sheet Heading 1 (Modified Sentence Case)
View Sheet Heading 2 (Modified Sentence Case)
Family & Type

Organization Structure

The browser organization used for views categorizes them by the following parameters:

View Sheet Heading 1
View Sheet Heading 2
Family & Type

View Sheet Heading 1

The View organization includes, but may not be limited to the following values for View Heading 1.

- 00 System Views
- 01 Presentation Views
- 02 CD Views
- 03 Coordination Views
- 04 Study Views
- 05 RFI Views
- 06 SK Views
- 07 *Project Defined*
- 08 *Project Defined*
- 09 User Views

View Sheet Heading 2

The View organization includes, but may not be limited to the following values for View Heading 2.

- Associated
- 3D and Isometrics
- Dependent
- Dependent Children
- Enlarged
- Overall
- XXX (Denotes User's Initials)

Verify with your team any additions to these lists.

00 System Views

The System Views are for project management purposes only and are never placed onto sheets.

Associated (Views)

The Default 3D views and all "Level Created" Plan and RCP views are to be organized under "Associated." Whenever a Level is created and it generates a Plan View, those originating (Associated) plans and RCPs are kept in this subcategory. These do not go onto sheets, even though they are in ALL CAPS (rules do have breaking points).

Associated Views Naming Convention

Associated Views have names that break from the convention of: **ALL CAPS= on Sheets, Sentence Case= not on sheets.** Associated views are named per project documentation requirements. Since these views' names also appear on Level Markers, they want to be ALL CAPS for documentation purposes. Remember, when naming or re-naming views, if the following dialog appears, always choose **Yes**.

01 Presentation Views

The "Presentation Views" subset houses those views intended for presentation title block sheets, including but not limited to Overall plans, Dependents, Sections and Elevations, etc.

Presentation View Naming

PR OA LEVEL 01

PResentation Over All LEVEL 01

PR RCP OA LEVEL 01

PResentation Reflected Ceiling Plan Over All LEVEL 01

For other presentation views the naming will follow a similar protocol, with a PR prefix, such as:

PR BS 5 A-F

PResentation Building Section near grid 5 from grids A to F

02 CD Views

The "CD Views" subset houses those views intended for CD title block sheets, including but not limited to 3Ds, Overall and Enlarged plans, partial Dependent plans, Sections and Elevations, etc.

3D Isometric View Naming

3D ISO ENTRY

3Dimension ISOMetric @ ENTRY

3D Perspective (Camera) View Naming

3D CAM ENTRY

3Dimension CAMera @ ENTRY

Dependent 'Parent' Plan View Naming

- + Parent views do not themselves go onto sheets so they have Modified Sentence Case naming.
- + The "View Sheet Heading 2" for Parent Dependents is: Dependent.
- + Always annotate and make changes in the Parent views, so all additions and changes are reflected on all child views.

Parent Level 01

Parent RCP Level 01

Dependent 'Children' Plan View Naming

The "View Sheet Heading 2" for Child Dependents is:

Dependent Children. With the naming convention:

CD LEVEL 01 N

Construction Document LEVEL 01 North

CD RCP LEVEL 01 N

Construction Document Reflected Ceiling Plan LEVEL 01 North

Note: By having no "OA" prefix, the child views shall be understood as being partial plans.

CD Enlarged Plan Naming

CD EN LEVEL 01 STAIR A

Construction Document ENLargEd LEVEL 01 STAIR A

CD RCP EN LEVEL 01

Construction Document Reflected Ceiling Plan ENLargEd LEVEL 01

Revit Architecture

CD Overall Plan Naming

CD OA LEVEL 01

Construction Document OverAll LEVEL 01

CD RCP OA LEVEL 01

Construction Document Reflected Ceiling Plan OverAll LEVEL 01

CD Building Elevation Naming

EE OA EAST

Exterior Elevation OverAll EAST

EE PT EAST

Exterior Elevation Partial EAST

CD Interior Elevation Naming

IE ROOM 101 A

Interior Elevation ROOM 101 viewA

CD Building Section Naming

Note: Even though there is to be no “CD” prefix on sections, all section and detail views shall be understood as being for CDs; thus on sheets: except in the case of User views that would have three initials as a prefix and PR (presentation) views.

BS 5 A-F

Building Section looking toward grid 5, cutting from grids A through F

CD Wall Section Naming

WS 5 A

Wall Section looking toward grid 5, cutting near grid A

06 User View Naming

XXX Level 01

User XXX Level 01

Notes:

- XXX denotes user's three initials. If a user has only two initials, please add one to keep the three-letter prefix for user views consistent.
- The “View Sheet Heading 2” for all User Views is to be the user's three initials.

Legend View Naming

Legends shall follow the protocols:

ALL CAPS:

Views that go on Sheets

Sentence Case:

Views that do not go on sheets

Schedule View Naming

Schedules shall follow the protocols:

ALL CAPS:

Views that go on Sheets

Sentence Case:

Views that do not go on sheets

*Mgmt schedules are used for management of project data only, never placed onto sheets. The * places these at the top of the schedule's list.

BROWSER 'SHEET' ORGANIZATION

Sheets are organized first by Consultant, then View Sheet Heading 1, and finally View Sheet Heading 2. Refer to section.

View Sheet Heading 1

Sheet View “View Sheet Heading 1” parameter values:

Presentation Set

Construction Document Set

RFI Set

SK Set

Etc. (?)

View Sheet Heading 2

Sheet View “View Sheet Heading 2” parameter values follow the National (CAD and) BIM Standards:

A0's = General Front Sheets

A1's = Plans (Including Dependent views)

A2's = Elevations

A3's = Sections

A4's = Large Scale Views (not Dependent views)

A5's = Details

A6's = Schedules & Diagrams

A7's = *User Defined*

A8's = *User Defined*

A9's = 3D Representations

View Name Prefixes

These are to be created or modified as necessary for each specific project, using the convention and concepts herein.

Phase Prefixes

DX Demolition of Existing

EX Existing

Note: New views shall be CD views.

3D View Prefixes

3D ISO Three Dimensional Isometric

3D CAM Three Dimensional Camera

3D RDR Three Dimensional Renderings

General Prefixes

OA Overall Views

EN Enlarged Views (Partial Views)

DV Dependent Views

Plan View Prefixes

CD Construction Document

FN Furniture Plans

FP Finish Plans

PC Power & Communication Plans
RCP Reflected Ceiling Plans
SP Site Plans

Section View Prefixes

BS Building Section
WS Wall Section
DS Detail Section (View Generating)
DT Detail (Drafting Views)

Elevation View Prefixes

EE Exterior Elevation
IE Interior Elevation

Schedule View Prefixes

*Mgmt Data Management Schedule

Structural View Prefixes

FS Foundation & Slab Plans
FM Framing Plans
FE Framing Elevations
RB Reinforcing Plans

Coordination View Prefixes

XARC Architectural Coordination
XSTR Structural Coordination
XMEP MEP Coordination

Sheet Number Designations

A00.01 Discipline
A00.01 Type
A00.01 Sub-Type
A00.01 Level (Plans), Sequence (Others)
A00.01 Sequence
B.1.1 Sheet Types & Sub-Types
A0's = Front Sheets, Site, Existing & Demo
A00. Cover
A01. General Notes
A02. ADA
A03. Site & Site Details
A04. Existing
A05. Demo
A1's = Architectural Plans
A11. Floor Plans
A12. RCPs
A13. Finish Plans
A14. Power & Comm. Plans
A15. Furniture Plans
A2's = Architectural Elevations
21. Exterior Elevations
22. Interior Elevations
A3's = Architectural Sections
31. Building Sections
32. Wall Sections

A4's = Architectural Enlarged Views (Plan, Section, Elevation, etc.) *Note: For Enlarged View's Sheet sub-types, use similar breakdown as are in plans, etc.*

A5's = Details
A51. Typical Details
A52. Floor Details
A53. Partition Details
A54. Wall Details
A55. Roof Details
A56. Other Details
A6's = Schedules & Diagrams
A61. Door & Window Schedules
A62. Room Finish Schedule
A63. *User Defined*
A64. *User Defined*
Etc.
A7's = *User Defined*
A8's = *User Defined*
A9's = Architectural 3D Sheets
A91. Exterior 3D Sheets
A92. Interior 3D Sheets

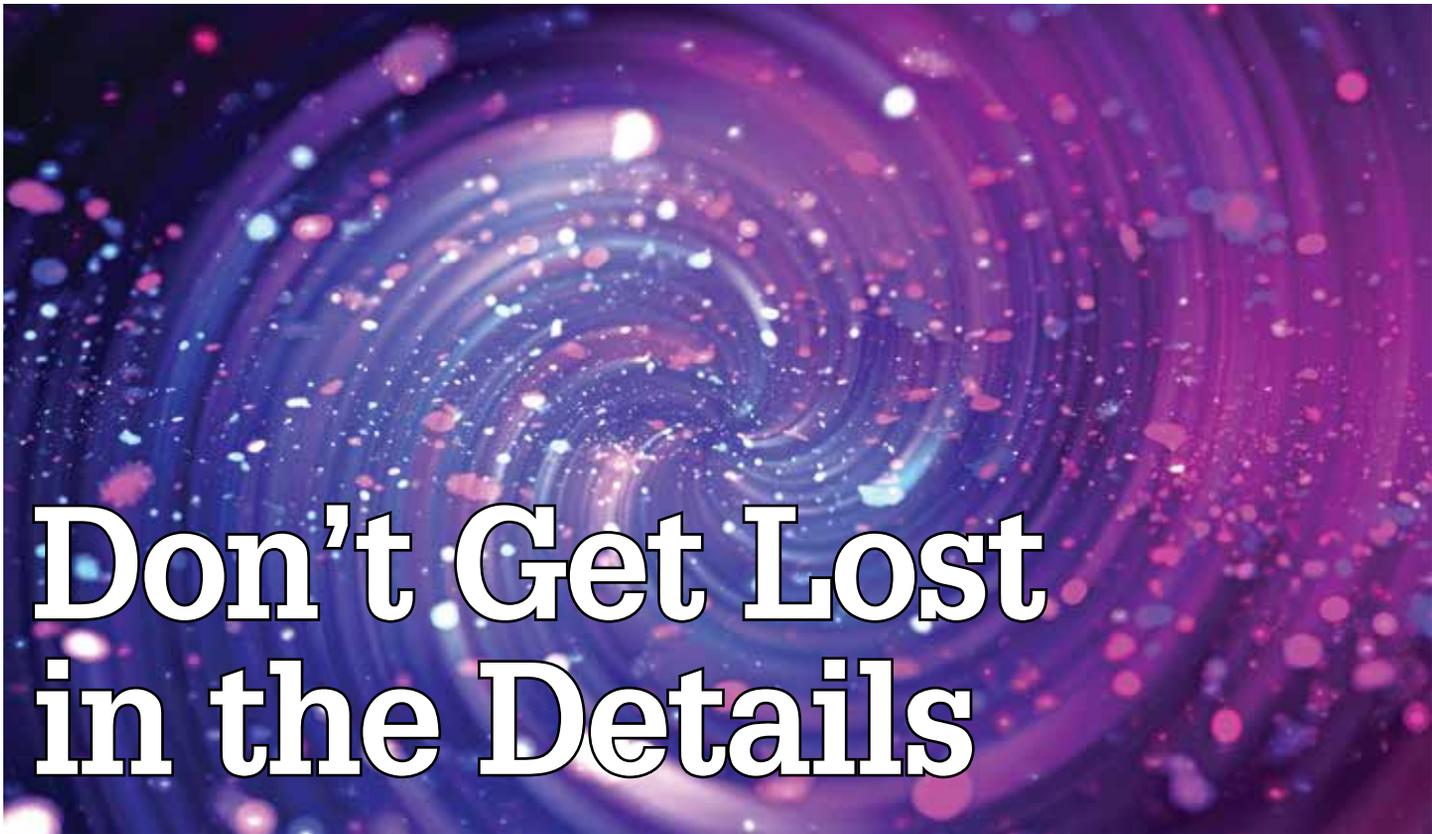
So to close, make those two parameters, use them, and if you can deal with the rigors of keeping to naming conventions and team workflows, you should find that an organized browser, even with the coded naming convention suggested herein (proven on countless projects to include most every project inevitability) will enable a smoother, efficient practice.



Learn. Always. Push. Change. Inspire.

Art - Architecture - Technology - Creativity

With over 20 years of Architectural experience Jay B. Zallan enjoys a varied and diverse portfolio spanning high-end custom residential design, large mixed-use developments, major transportation and infrastructure projects 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 business process of AECO with proven management, creativity, and project generating strategies. Enabling, empowering, and inspiring teams to realize their own dreams and potentials beyond limitations (whether real or perceived).



Don't Get Lost in the Details

Details. They aren't necessarily exciting, but every project has them. In the context of construction documents they are the industry standard method of conveying graphical information at a scale, or level of detail, not needed throughout the whole project. They depict a small area of a building, element, or system. Some details are project specific because they are unique to that project and won't be reused. Many, however, are so typical and common that they get reused often or on almost every project.

For this reason companies have detail libraries—an entire repository devoted to keeping and maintaining details that will be accessed on future work. They are generic or typical enough that they can be used on projects unchanged or used as a starting point so as to not reinvent the wheel.

Maintaining a detail library can be a chore and even make up a fairly significant proportion of a position's job duties. Depending on the size of the company (or not!) there may be standards in place on detail naming, location, accessing, proper use, etc. As with anything there are numerous opinions on the approach to details and detail libraries. This is especially the case related to Revit® and the transition from CAD for many companies in the last 10 years.

Because AutoCAD® dominated so much of the AEC industry the last 20-30 years most details were or are in DWG format. Understandably this is or was an obstacle to be overcome with a transition to Revit. The short answer is that yes, DWG details can be used in Revit projects. The long answer is that no, it is not the best solution. I tend to be a software purist. In my opinion, us-

ing DWG details in Revit is a short-term solution to a long-term problem. Let's discuss some of the approaches and thoughts on the topic of details in Revit.

By now it is probably common knowledge that DWG files can be referenced into a Revit drafting view in several ways. First, they can be imported (Figure 1). This is probably the least desirable option for the purposes of a detail. Once imported, the DWG cannot be edited or updated in Revit or AutoCAD. In order to update the DWG, it would have to be deleted, edited outside Revit, and then reimported.

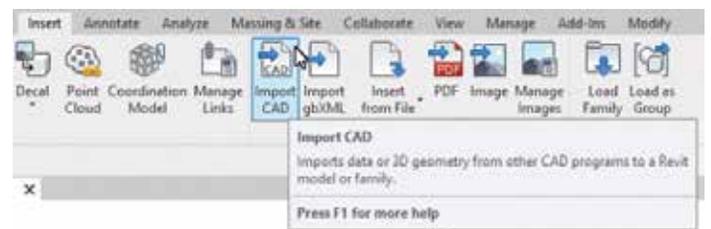


Figure 1

A second option is to explode the DWG in Revit, converting it to Revit elements (Figure 2). This way the detail can be edited if needed without having to leave Revit. That this option is even available makes many Revit users shudder. Why? It isn't a very "clean" process. When a DWG is exploded/converted it creates all kinds of text types, line patterns, filled region (hatch) patterns, etc. Cleanup of this "garbage" quickly begins to diminish the attractiveness of this option. Some even report that doing so leaves "invisible" artifacts that can destabilize the model.

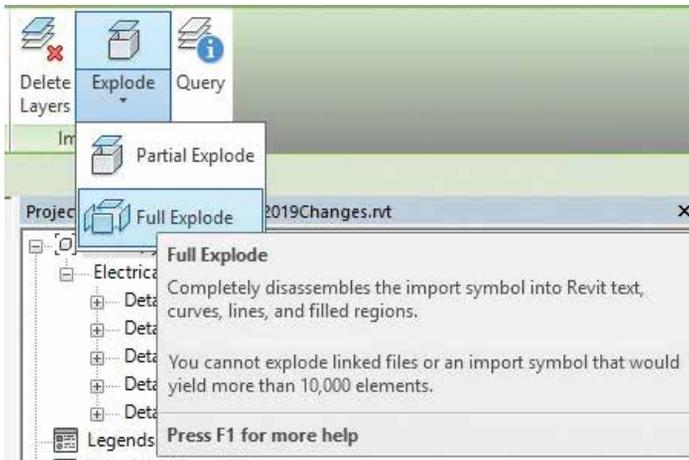


Figure 2

Third, a DWG can be linked (Figure 3). This allows the file to be referenced into the model without having to convert it. This is more desirable compared to the first two options. However if it does need to be edited, it has to be opened in AutoCAD. To see the changes in Revit it must be reloaded through Manage Links. This workflow is not the end of world, but it can be quite inconvenient having to repeat this process as details are edited as the project progresses.

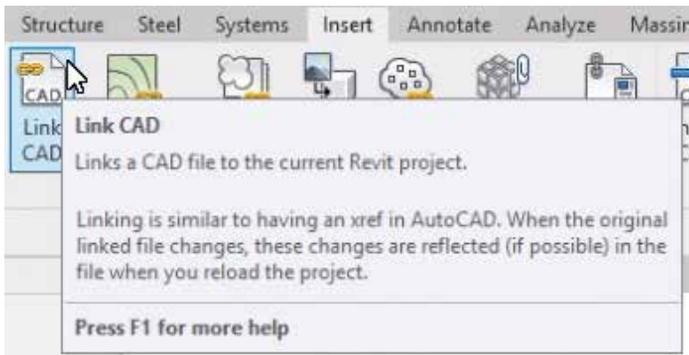


Figure 3

Another drawback to this third option is the appearance of the detail. Some, if not considerable, changes typically must be made to the DWG to ensure that it looks the same in Revit as it does in AutoCAD. Common offenders are items such as text formatting and layers/line weights. Some have outlined a detailed process of making changes to their DWG details by which they were usable—both in AutoCAD and Revit. In the end we decided against spending our energy on this approach and instead on a Revit-first approach, which will be discussed more in depth later in this article.

The last option is to re-create the detail(s) using native Revit elements in drafting views. Admittedly, this option is the most time consuming, but if a long-term solution is the goal, it also produces highly editable and usable details in Revit. I am partial to this last option, but because this process takes the longest, linking in DWGs is a good solution to bridge the gap.

As we have seen, there are several factors to consider when thinking about details in Revit. Given the various scenarios a company might encounter and the desired goal, there is more than one path to a solution. There are also numerous software programs to help with the various aspects of such a project, like conversion, file management, and accessibility for companies with distributed offices and team members. Below, I'd like to recount a recent conversion project outlining the decisions and steps that were made.

Our office has decided to pursue using Revit as much as possible, even on "CAD" projects. Coinciding with that decision it also made sense to fully convert an entire detail library of more than 1,000 details. The process from start to finish took approximately two years of on and off work. Where possible, details were converted as needed on live projects. When time allowed, hours were devoted solely to converting details in the library.

In terms of the actual conversion we tried several approaches. Converting a large number of details is a sour pill to swallow. There are really only two tools native to Revit to assist in the process. First is simply choosing to explode a DWG file. Due to the disadvantages described above if this method is chosen, it is recommended it be done in a non-project or non-template file. Once conversion and further changes are made, the elements can be copied and pasted into the model or template where the details will live or be used.

If attempting this approach, something to consider is linking several DWGs in the same drafting view. This way the explode, and subsequent cleanup, can be done on all elements instead of one at a time on individual details in their own drafting views. There is a limit to the number of elements that can be exploded—I think the number being 10,000 that will throw a Revit error.

Additionally, this method can reveal poor drafting techniques in the DWG, such as overlapping lines, exploded hatches, etc. To my knowledge, exploding a DWG is the only process that converts text. It is also converted in a way that preserves appearance, not formatting. This means multiline text is converted to individual text elements. Dimension text is converted, but the dimension line work itself is just lines.

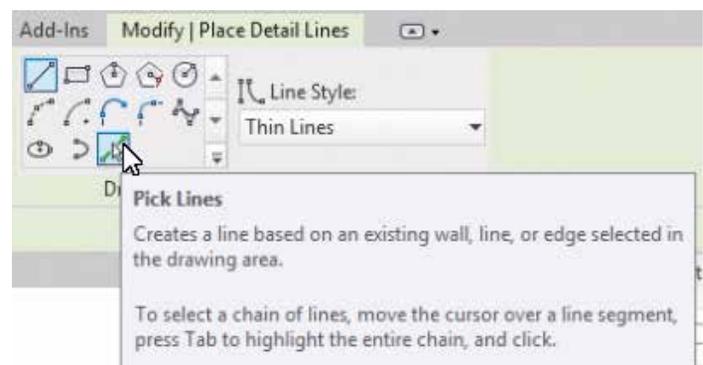


Figure 4

Revit MEP

All things considered, that is why experience has made me conclude that in the end the best way to convert a DWG detail is to redraw it in Revit. The second Revit tool that can moderately assist with this is the Pick Lines tool (Figure 4). Desired lines in the DWG can be selected or, using tab, chains of select connected linework will be converted to the desired line style.

We did make use of some helpful macros and add-ins to assist in the conversion process. “Convert DWG to Revit lines” from ArchSmarter.com allows layers in the DWG to be mapped to Revit detail lines, converting every DWG line in the view without having to manually pick them. Again, this process is as “clean” as the DWG itself. We used another add-in from the Autodesk Exchange Store that removed overlapping detail lines, the equivalent of the Overkill command in AutoCAD. Filled regions (hatches), dimensions, and text had to be manually entered. Perhaps it goes without saying that detail item and generic annotation families can be created for use across the details for various purposes.

Another aspect of this conversion project was the decision to keep all the details in a single Revit model. This allowed Revit’s capabilities to make tasks such as editing view names, text notes, and families a breeze. Need to change the font of text? Edit the text types and the change is made to every detail. Want to find and replace words in text notes? Use find and replace to search all text throughout the whole model. Lastly, by keeping all details in a single model, detail(s) can be easily found and inserted into a project model as needed using “Insert from File” (Figure 5).

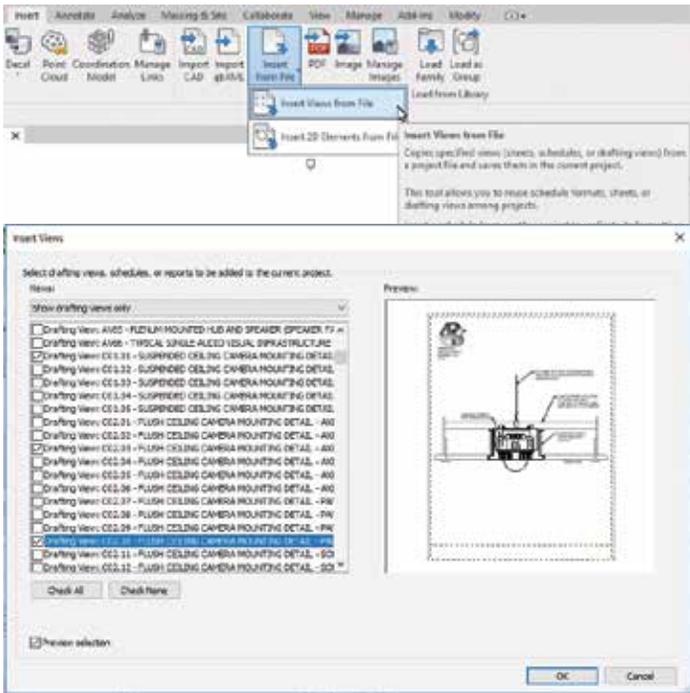


Figure 5

Because Revit is not backwards compatible, a challenge to consider is how to make details available to multiple versions of Revit. Due

to improvements in the text editor, it was decided that Revit 2017 would be the lowest supported Revit format for our detail library. A copy of the library was upgraded so that all details were available for each subsequent version.

A final aspect to consider for our situation was the need for details to be available in PDF format. There are content management solutions that help with nearly every aspect of detail library management that have been described so far. But these have additional costs, and not every company has access to in-house software development. Something nearly every business probably does use, though, is Microsoft software, most recently Office 365, which comes with Sharepoint in the cloud. This is where it was decided to house our detail library in PDF format. The latest details are accessible by team members in any office anywhere in the world. Using search and metadata for filter controls details can easily be viewed and selected by anyone with a web browser and Internet connection.

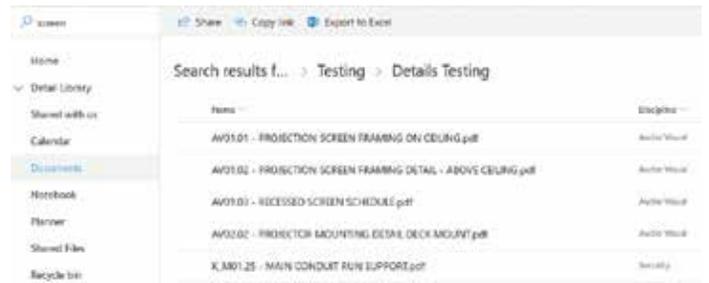
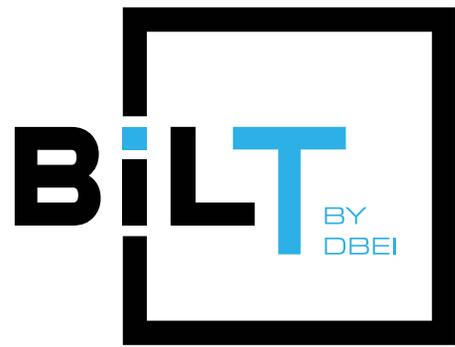


Figure 6

Maintaining a detail library is a necessity in our industry. There are many ways to meet this need while maintaining standards and improving efficiency. What option is best for your situation depends on several factors that may change over time. Either way, with proper planning there is no reason to get lost in the details!



Nathan Mulder has more than 10 years of experience in the AEC industry. He is currently the BIM and CAD Manager for Guidepost Solutions, a global leader in investigations, compliance, and security consulting, offering design services for security, telecom, and technology systems. A Revit MEP Electrical Certified Professional, Nathan is always looking for ways to fully leverage software to improve the project design and management process. Contact him at mulder.nathan@gmail.com or on LinkedIn.



BILT ANZ

Melbourne, Australia
May 23-25, 2019

DIGITAL BUILT WEEK NORTH AMERICA

Seattle, USA
July 17-20, 2019

DIGITAL BUILT WEEK EUROPE

Edinburgh, Scotland
October 10-12, 2019

The Premier Global BIM Events, for user by users

Registration Now Open!

www.dbeinstitute.org





What's New in 2019

There are many new features to Autodesk® Revit® 2019 that improve its overall performance. In this article I'll cover some of Revit software's new features and some of the interoperability features of third-party applications that integrate with Revit and help improve workflows.

Some of those integration features have been added with third-party products such as Bentley Engineering software, detailing software such as Advanced Steel, and BIM collaboration tools such as Autodesk® BIM 360®.

THIRD-PARTY APPLICATION INTEGRATION

For detailers, one of the big enhancements to Revit 2019 is the retooled Steel ribbon. Autodesk has extended the modeling ability of the steel tools by adding specific tools to extend the power of Steel Connections and End Conditions.

There are dedicated tools that help model such features as creating notches, saw cuts, holes and chamfers to steel work that was either not possible or very difficult to do in previous versions.

These features can also be directly linked to the Advanced Steel application for a much higher level of detailing capabilities in the Revit model for improved fabrication documentation.

Keep in mind, the use of these tools will greatly depend on your project's need to provide this higher level of detail on projects. For most engineering firms, the need for these higher level tools are likely a much higher LOD than the standard design intent LOD 300 documents. These tools would be used to develop LOD 400 and above in most cases and would be used for developing fabrication-level documents for contractors in most cases.

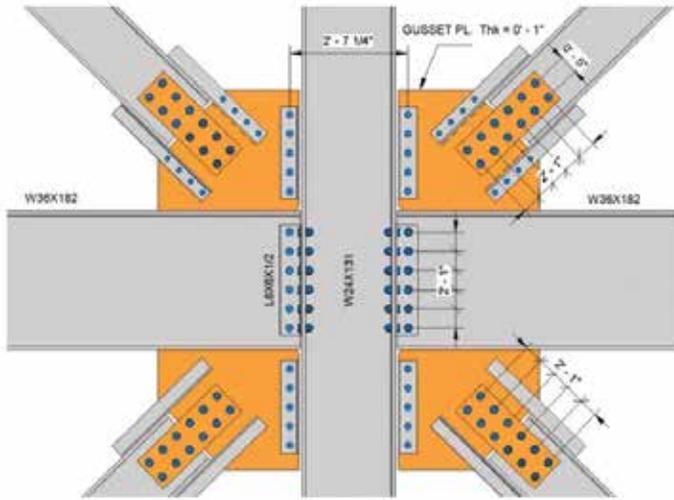


Figure 1: Advanced Steel – Detailed Connections

Having tools to model the intricate pieces and parts is one thing, but the ability to utilize standard connections and break them out into fabrication elements such as plates, bolts, and specific cuts the fabricator needs to know in order to deliver the pieces to the field for installation is a timesaver when detailing a project. Being able to recycle information from the model saves the project team time and money. The recycling of those objects and using them to create other custom families from project to project helps teams become more proficient with the software.

Autodesk also spent some time improving tools to help engineers with their design, detailing, and development of models for construction documents as well. In the latest release, improvements to the Precast tools allow for floor assemblies for detailing building components.

Three main benefits of the Precast Extension improvements in this release are better quality, increased efficiency, and improved creativity in modeling components.

The quality of modeling precast components was improved by eliminating some of the manual repetitive tasks, which in turn eliminates errors and omissions in the modeling process.

When installed, the Precast Extension loads a number of tools, families, and templates. Some of the content you will find includes annotations, custom slab families (sample slabs), profiles, connection families, rebar shapes, and various other parts to use as a baseline to get you started.

Improvements also include more efficient rule-based tools to auto-generate detailed drawings of components. These tools help in the development of shop drawings for fabrication and contractor line drawings for field use.

Allowing for more creativity and more efficient methods of modeling allows end users more time to spend on the design and development of the model and drawings rather than spending time on repetitive and routine tasks.

For those who have dabbled in the customization of Revit, Autodesk has released the API components for the customization of precast automation. Because people use Revit their own way and have developed workflows that meet their needs, it is necessary sometimes to customize parts of Revit or customize tools to help make those workflows more efficient. The best way to accomplish this is to investigate the use of the API language and develop tools to help increase the proficiency of your firm's staff.

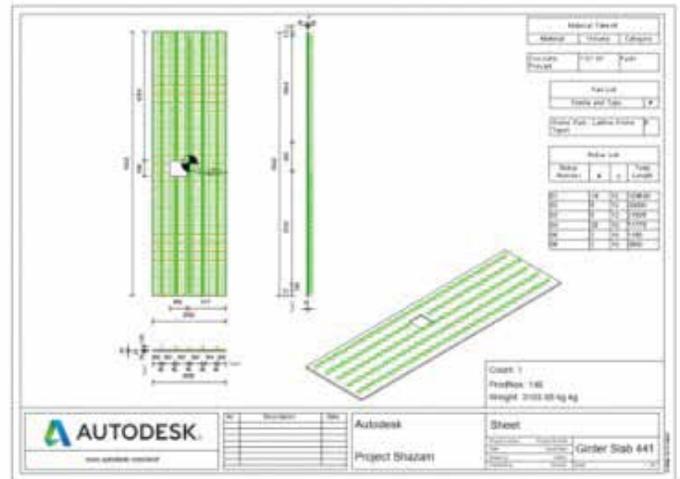


Figure 2: Precast concrete shop drawings

With the use of the API tools, you can customize Revit to better develop precast shop drawings and configure the Precast tool to meet the needs of your firm's specific workflows. In the Autodesk Knowledgebase you will find examples of how to use the API language to develop tools to help make your staff more efficient in the development of the precast shop drawings and better develop your models to work smarter, not harder. Getting familiar with the API also allows you to create links to other third-party applications that you use in the development of models and shop drawings that Autodesk does not already connect to.

Revit Structure

Other structural enhancements in Revit 2019 were improvements to the scheduling and annotation of rebar components. Free form rebar is distributed among faces of structural elements and aligned along a defined path. With the enhancements to the rebar tools you can model rebar in the 3D views rather than having to model in orientation views like plan and sections.

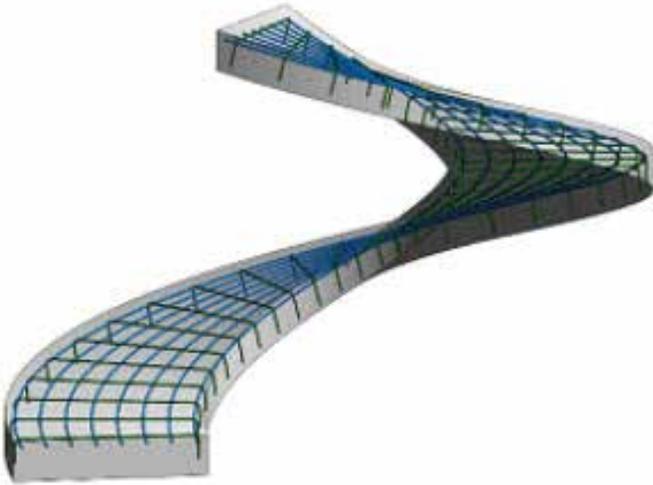


Figure 3: Free form rebar enhancements

Another third-party enhancement that integrates with Revit 2019 is the improvement of the RAM to Revit Import (or Translation) of the engineer's analytical model. The major improvement of the ISM tools in this version is that the foundations and walls that come from the analytical model are better quality now. When foundations are translated from the ISM Repository to Revit, the rebar from the engineer's design will also be converted to Autodesk Revit Rebar families.

GENERAL ENHANCEMENTS

Many new features have been introduced to Revit 2019 to modernize the software's look and feel. Many of the technology upgrades have been on user wish lists for several years. Three of the general features I think will be most appreciated and useful moving forward are the additions of the true dual monitor feature, the ability to display levels in 3D views, and the ability to create rules with conditional rules.

The ability to utilize the dual screens with Revit now is a much-needed feature. Before, the only way to utilize dual monitors with Revit was to span the application window across both monitors and then move dialog boxes to the second monitor. It worked, but needed improvements to fix some issues. The main issue with the application window spanning across both monitors is and always has been the "dead space" in the center. For this reason, I have never used Revit on multiple monitors. Moving forward, I can see a change in some workflows to take advantage of moving some dialog boxes to the other monitor and being able to maximize the size of the application modeling view.

With multi-monitor support, you can now move those other views/models to the second monitor. I see this making it a lot easier when using the Transfer Project Standards tool. Prior to this improvement, it was always a hassle trying to keep project views straight on which model you were copying from and to. Now you can have one model on the left and one on the right to easily keep them straight.

I have only used the level display feature in the 3D view a few times, but so far it seems like an extremely useful feature. Quite often we use isometric views in our drawings sets to give the contractor an image to better understand the big picture of the project. The display of the levels in the 3D views will make it a lot easier to set up the cut location of the isometric views knowing where the floor plate (or level) is located. Before the release of this feature, it was a guessing game as to whether you were setting the display of the view orientation at the right cut level.

Another enhancement I am glad to see is the ability to use fill patterns to define surface and cut patterns to enhance the graphic representation of objects in details and elevations. Another enhancement to the graphic representation that many will find useful is the ability to set the foreground with one fill color and the background with a different color. These fill colors can help project teams to graphically distinguish elements and improve the visual effects of the documents delivered to our clients.

FINAL THOUGHTS

The enhancements discussed in this article are but a few of the many enhancements to Revit 2019. Be sure to check out What's New in the Revit Help documentation as well.



Kenn Farr is currently the CAD and BIM Manager for Teasley Services Group in Nashville, Tennessee. 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 more than 24 years of experience in the AEC industry.

NVIDIA® RTX™ SERVER w/XEON® Gen 2



MTower™ 2P64X & MTower™ CX

The CX blew away the competition by nearly 100% on Digital Engineering's AutoCAD® Render Test. Now available with Intel® 2nd Gen Xeon Scalable to 28-Cores per CPU and with multiple NVIDIA® Quadro® RTX 6000 & RTX 8000 Turing™ GPUs



PowerGo™

The PowerGo XT w/NVIDIA® RTX 2080, now available with the 8-core, 5GHz Turbo Boost Intel® i9-9900K, sets the new high performance standard for CAD Laptops. Our aggressively priced "slim & light" PowerGo XL with Quadro® P3200 starts at just \$2078



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 and up to 8x NVIDIA Tesla®, Quadro® RTX 8000 & GeForce® 2080Ti.



MTower PCIe

Award winning CAD desktop workstation designed to streamline the most demanding workflow. Quiet, powerful, compact, cost effective, now available with the 18-Core i9-9980XE & i9-9900K, the fastest 8-Core in the market, clocked at 5.0GHz all cores & 5.2GHz top core. USA built & supported.



@Xi certified for 3ds Max, Adobe CC, AutoCAD, CATIA, Cinema 4D, Inventor, Creo, Revit, and SOLIDWORKS.

Our expert IT Architects will customize the fastest workflow solution for your application and budget.



www.xicomputer.com

800-432-0486

2019: The Year of Convergence

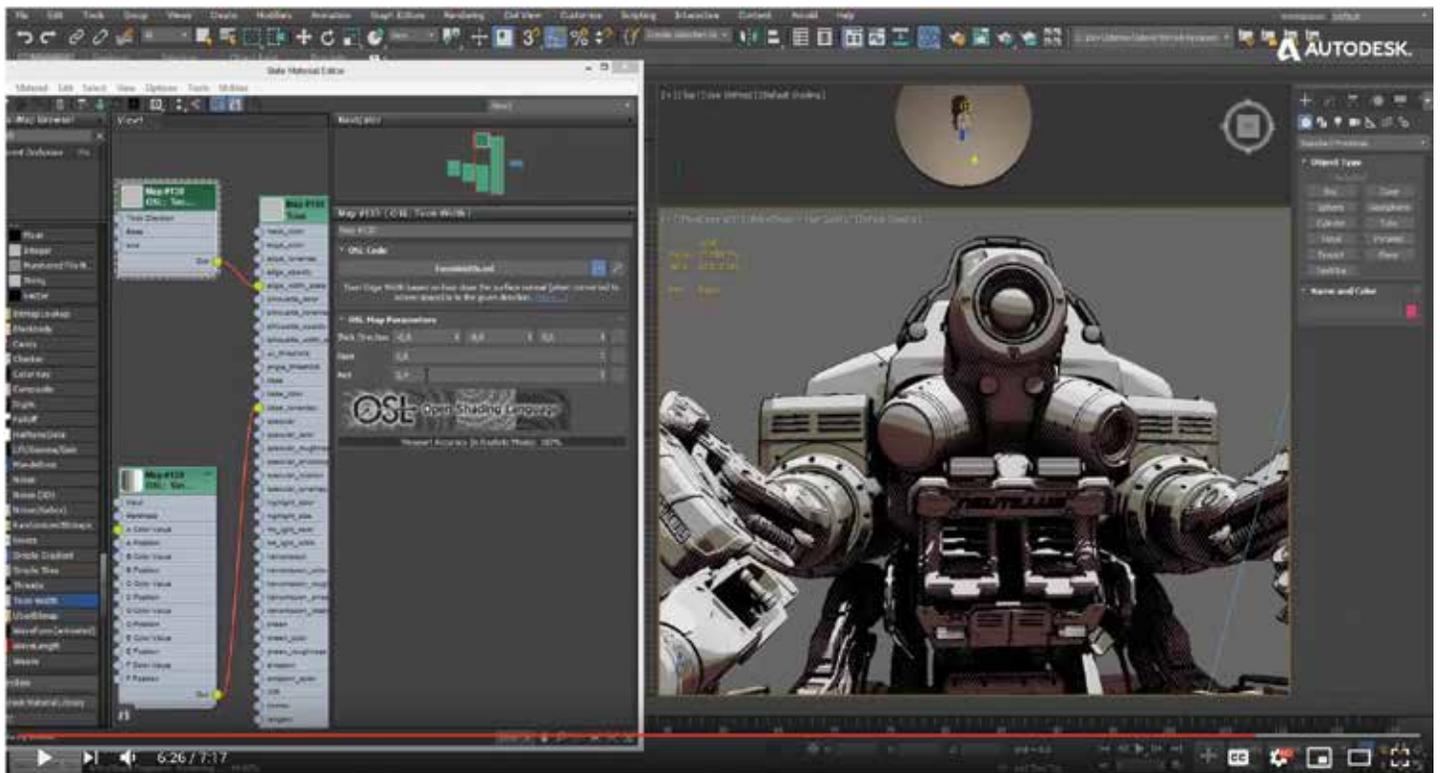


Figure 1: OSL Shader System updates

In my experience, 3ds® Max® has always been the friend that plays well with others on the playground, and because of that, I'm excited to see how far we can push it with advances in today's software. Some of those programs made such incredible advances alongside 3ds Max they are impossible to ignore. These advancements came together simultaneously to give us an extraordinary amount of freedom and power to create anything we want. I'll present some of those in this article (not in any particular order).

EPIC'S UNREAL STUDIO

Unreal Engine was an underdog, arriving late in the game, placing it at a disadvantage in areas of publisher content, support, and

documentation. Additionally, it relies heavily on C++, where alternative programs utilize coding languages such as C#, a more popular language among the average population. Still, the Epic team made exceptional strides to develop Unreal Studio with a few advances worth mentioning that might make users consider making it a part of their workflow.

First is the simplicity of the Unreal Datasmith export for 3ds Max. The exporter is one of the cleanest and simplest systems I've seen to date. Simply pick your objects in 3ds Max, export them to the Datasmith file format, then use the Datasmith import in Unreal Engine to import the content. Because the developers were sure to include compatibility with Vray (arguably the standard for realistic content and visualization), it's an extremely powerful option for generating interactive content and cinematic scene development with 3ds Max.

With Epic's node-based blueprint and material system, modifications and customization after import are efficient and fun.

Second is Epic's announcement of high-performance physics and destruction system real-time tech. It's pretty incredible and frankly hard to put in words, so I suggest readers review their demo online.

Last, it's impossible to ignore the quality of their short film for photorealism called Rebirth. Using real-time, dynamic systems with 3D scanned assets for their environment, they demonstrate that using their engine makes easy work of cinematic-quality, high-definition, 60 frames-per-second content without rendering. It's hard to express how excited I am for this as I feel it puts the power to create cinematic or AAA-quality content in the hands of anyone who wants to create.

ENGINES AND OPERATIONS

The Max team continues to make strides to accommodate the popular rendering engines and tools 3D artists use today. Consequently, developers continue to work toward improving compatibility with Max while providing new features for artists. Some of these include advances in Max's ART rendering and physical materials system, Substance and Arnold integrations, Vray Next advances including an AI-based denoiser system, improvements to the OSL shader system, and many more.

Figures 1-3 are some screenshots and graphics demonstrating some of the advances I've mentioned in this article.

Figure 1 shows Autodesk's Presentation of the OSL Shader System updates coming to 3ds Max.

Figures 2 and 3 are screenshots of Epic's Unreal Engine demo for Rebirth.

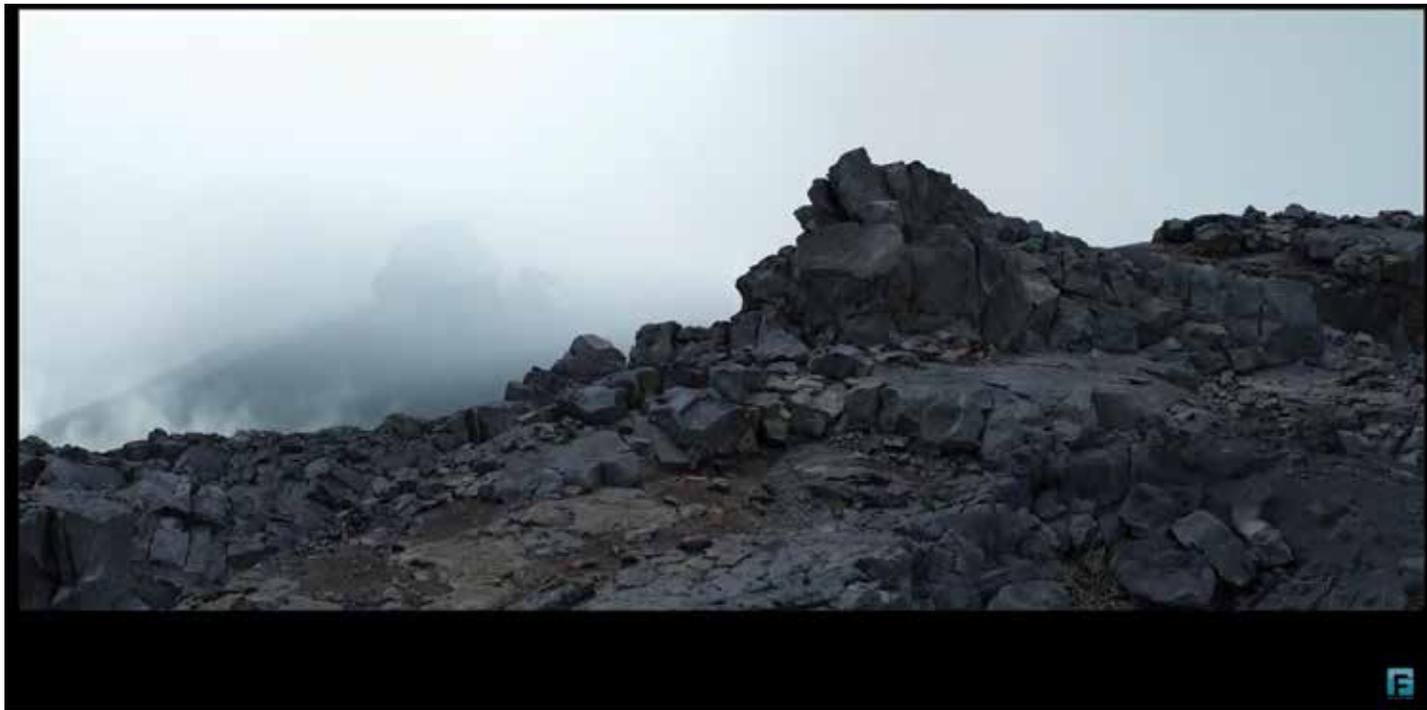


Figure 2: Rebirth screenshot 1



Figure 3: Rebirth screenshot 2



Brian Chapman is an Autodesk Authorized Developer, creator of Pro-Cad.Net and a Senior Designer for an engineering firm located in Las Vegas, Nevada. Brian can be reached at procadman@pro-cad.net.



Managers, What Should Continue or Be Improved?

We looked at what to Start and Stop in the last two articles. Now we turn to things that should Continue or be improved. Not everything is a new startup and not everything should be stopped. Some things need to just keep on going as they are or keep going with a little more polish.

So here are some ideas on what you need to continue to do or seek to improve.

CONTINUE TO ASK OTHERS FOR HELP

You have a lot of answers. When people ask you something, you most likely have a ready answer to their question related to the software, or project flow, or whatever. But as you move into management, you may find that you do not have the answer to all questions. But others do. You need to keep asking for others to

help. Not just to answer the questions, but to provide solutions and hands-on help. You need to multiply your impact by multiplying your confederates. Those that can help in a pinch. Those that can help when you are not around. Build a loose team of supporting folks to help. I have often provided the answer to a question with this... "I don't know the answer, but I know who does." And then we go visit that person together.

CONTINUE ASKING QUESTIONS

This is related to the above. You have a lot of people coming to you for answers, but you need to also be asking questions and listening intently to the answers. Some will be related to how other people do things. Other will be "what if" questions. Other could be "Did you try this? What was the outcome?" Many times I have just used the simple "Tell me more." Statements like that encourage others to share. And when they do, you learn more.

CONTINUE TO LEARN

Training, not straining. When you encounter new technology or difficulties with what you already have, keep learning. Take a class. Read more books. Visit more websites. Talk to fellow experts. Search at AUGI.com.

CONTINUE TO CONNECT

Hang out with your old crowd, but understand that it will be a little different. You want to take them with you. They are not only your friends, they are your support group in times of trouble and your backstop when things might get past you (forgive the baseball metaphor). You want to remain friendly so they do not think you have just left them in the dust, but you need to be taken seriously as a leader now. And even when you do your best to keep them connected, they may view you differently now. It is a fine line to walk and tough to do, but keep making the connection as you lean into leadership.

Along the lines of this issue of *AUGIWorld* magazine (New and Improved), what should you improve?

IMPROVE YOUR PEOPLE SKILLS

Like the topic above, dealing with old teams and building new ones takes a lot of effort. You should read more about how to reach people, build trust, and rally the troops. People skills are usually perfected through trial and error. If you commit a faux pas, admit it, ask people to be forgiving, and try again. Don't leverage relationships just to get something done. You get things done by the relationships you have, but you have to build them before you need them. Work on connecting and staying connected.

IMPROVE YOUR FEEDBACK LOOP

Feedback is invaluable to a manager. Knowing the impact of what has happened or what was done helps you down the road. Course correction is done based on feedback. No one has a perfect plan for getting anything done. Errors happen. Bumps along the road will occur. By setting up a good feedback system, you set yourself up to stabilize after a disruption.

A good feedback loop will include a way to communicate. You may use forms, emails, voicemails, or best of all, direct conversations to gather comments and suggestions. You want to ask the right people to provide input. Not only your allies, but sometimes the naysayers provide the best critique. You need to gather hard data. Key Performance Indicators (KPI) include how many, how often, how good, how bad. It needs to be timely, asked at the right time. Collected as the project moves forward or right after milestones. Get it while it is fresh. And when you get feedback, pay attention. Don't just smile and say thanks. Collect it, review it, and coalesce it into actions.

IMPROVE YOUR SUCCESS RATE

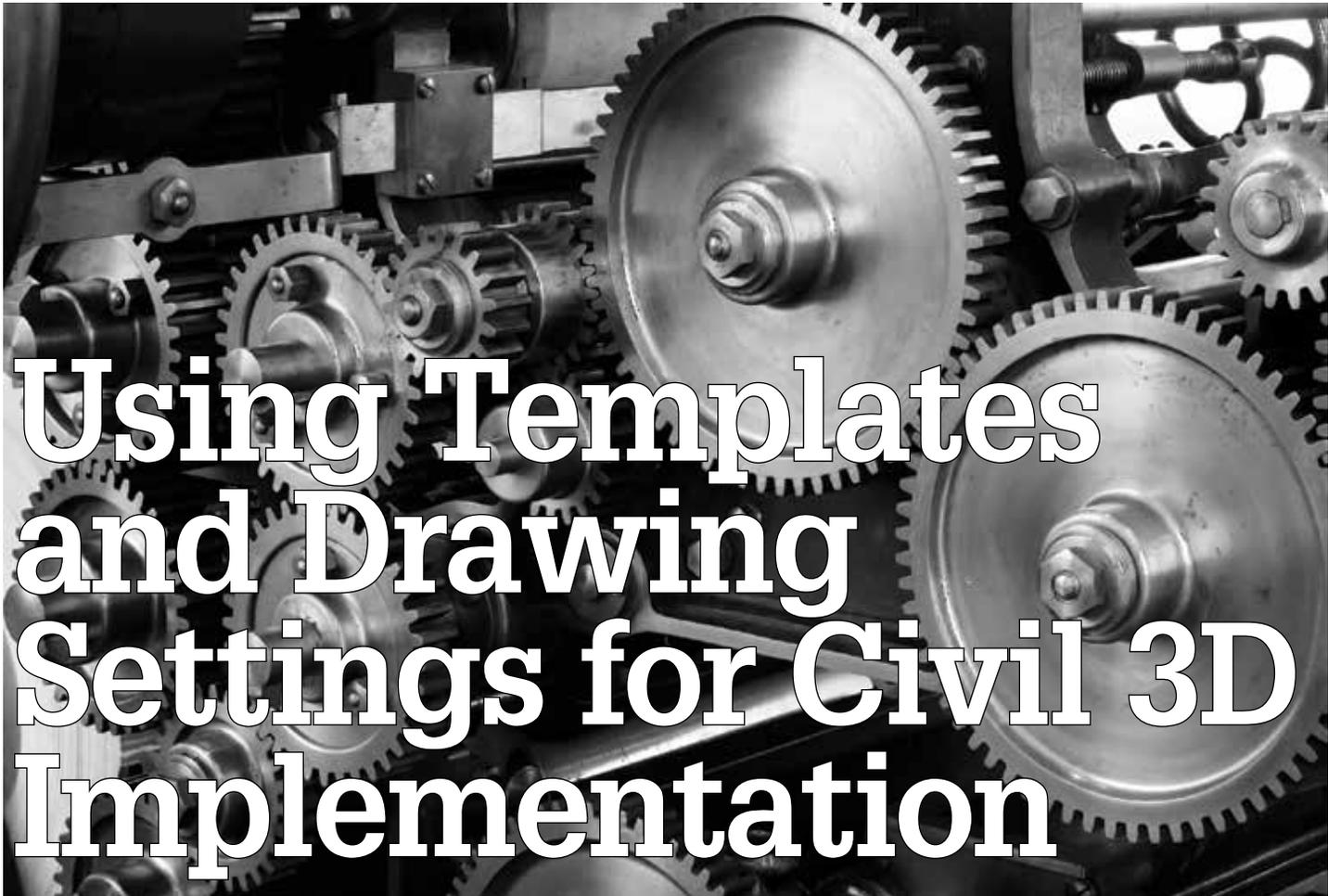
Everyone wants more success, right? Getting better at what you do is doubtless part of your DNA. Constant improvement is something you think about and do every day. Plan more, develop action items, define timelines, get moving—it's that simple, right? Sure, but it is also that hard. Making a plan takes time and thought, but it helps so much. Don't undercut your success rate by taking a low view of planning. Dig in, think it through, define options, and write it all down. Then make an action plan. What to do first, second, third. Don't deviate from your steps unless you really have a better idea. Defining a timeline is more for general expectation management. Timelines always slip, but having one allows others to know what to expect and when. And finally, get moving. Lead by example and expend your efforts in front of others. Let people know that you are moving ahead and want them to join you. Success does not happen when there is nothing going on. You need to motivate yourself and others to make progress.

SERIES SUMMARY

The last three articles have taken you into the Start, Stop, Continue world of a new CAD/BIM/Tech Manager. You saw some ideas about things you may want to start doing. Pick one or two and make it happen. Stopping some processes may be the most important thing you do at the start. Within the first 100 days I suggest you stop something https://as2.ftcdn.net/jpg/00/87/07/03/500_F_87070391_hmndxse0uhl-wjEHXTapDl8cwkdcx9k2g.jpg t most staffers will support getting rid of. There is always something that can be stopped. And finally Continue/Improve, the positive side of refining what your firm does to be successful. By focusing your thought process, you can make some very positive impacts on your team, company, and industry.



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.



Using Templates and Drawing Settings for Civil 3D Implementation

INTRODUCTION

AutoCAD® Civil 3D® is complex software with many different and connecting parts working together to provide solutions to civil design projects. In this article we are going to explore how to use template files to capture feature and object settings that you can use to start your new drawing or reference into an existing drawing. For a successful implementation, the CAD manager or designer can create, update, and distribute template files to all users to ensure a standard and uniform approach to design work.

TEMPLATES

Any new drawing in Civil 3D starts with a default drawing template or a custom template you can create. Drawing template files are drawings that store styles, settings, layers, and layouts in a drawing including title blocks.

STANDARD TEMPLATE PROCESS

When you create a new drawing based on a drawing template, the new drawing gets a copy of the styles in the template, but it is a one-time copy. The connection is not maintained; therefore, if you update the template it will not update your drawing file. For example, if you update the surface styles in your template and you wanted your drawings to get those same updates, you needed to manually copy or import those changed styles into your drawings. You can do this by dragging and dropping or selecting the import tab on the Ribbon as shown in Figure 1.

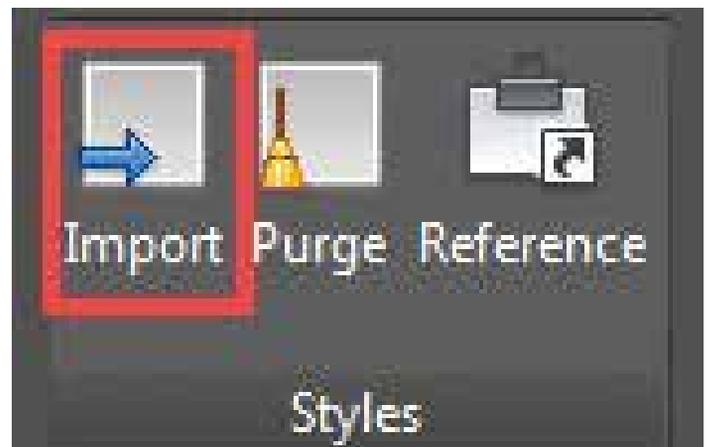


Figure 1: Import styles

Templates are also listed under the Drawing Templates collection in the Prospector tree Master View as shown in Figure 2. Notice the two Civil 3D templates supplied from Autodesk.

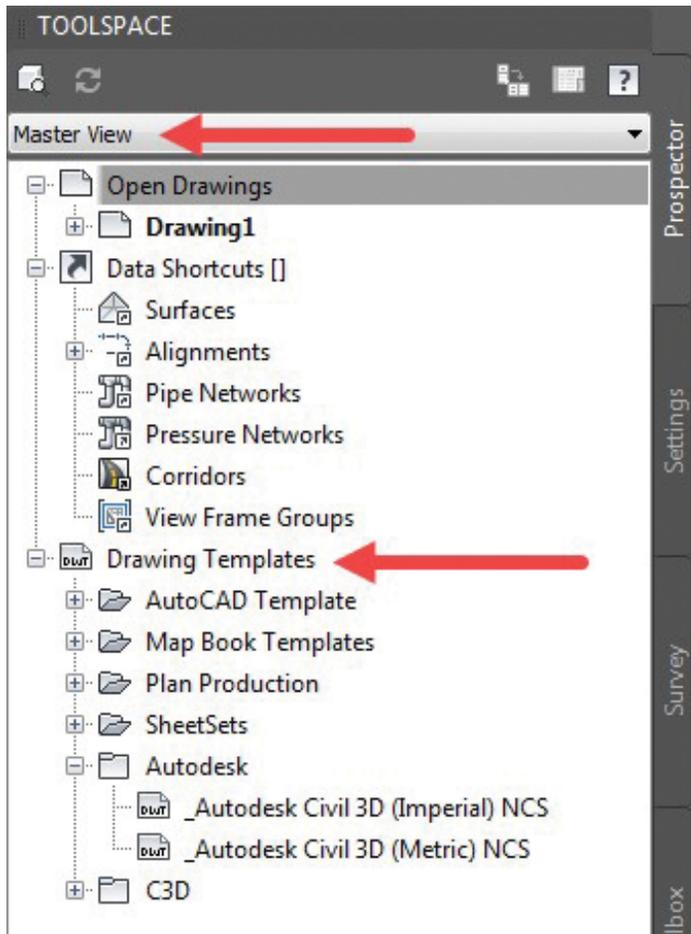


Figure 2: Templates under the Master View in Prospector

Two templates are provided when you install Civil 3D. The path for these templates can be found within the options dialog box under the Files > Templates folder. We are going to open the _Autodesk Civil 3D (Imperial) NCS.dwt and save this to C3D_Standard.dwt. The two AutoCAD Civil 3D drawing templates are based on the United States National CAD Standard®.

- _AutoCAD Civil 3D (Imperial) NCS
- _AutoCAD Civil 3D (Metric) NCS

These templates contain an extended set of styles and settings. When you start a new drawing with the New command on the Application menu, you can choose which template you want to use.

The QNEW command, which is available on the Quick Access toolbar, automatically uses the template specified in the AutoCAD Options dialog box.

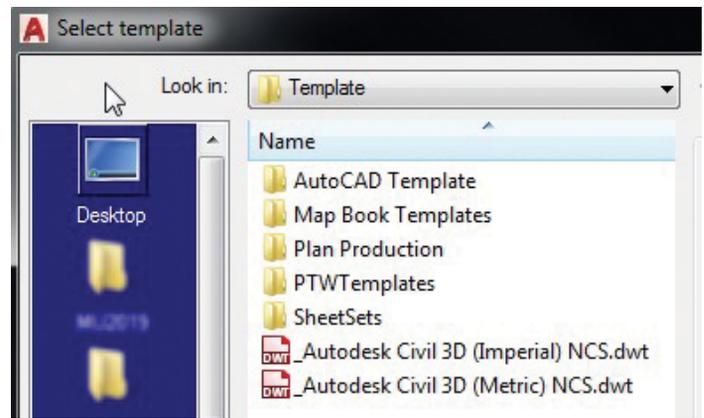


Figure 3: The main templates provided

We are now going to change the settings of our template file (Figure 4). Open the template file you created named C3D_Standard.dwt on the Home tab of the Ribbon > Palettes panel > Open Toolspace.

1. On the palette, move to the Settings tab.
2. Make sure you are in the Active Drawing Settings View and right-click C3D Standard as shown.
3. Select Edit Drawing Settings.

Note: If you move up and down on this palette there are hundreds of different settings that can be applied to all types of Civil 3D object data.

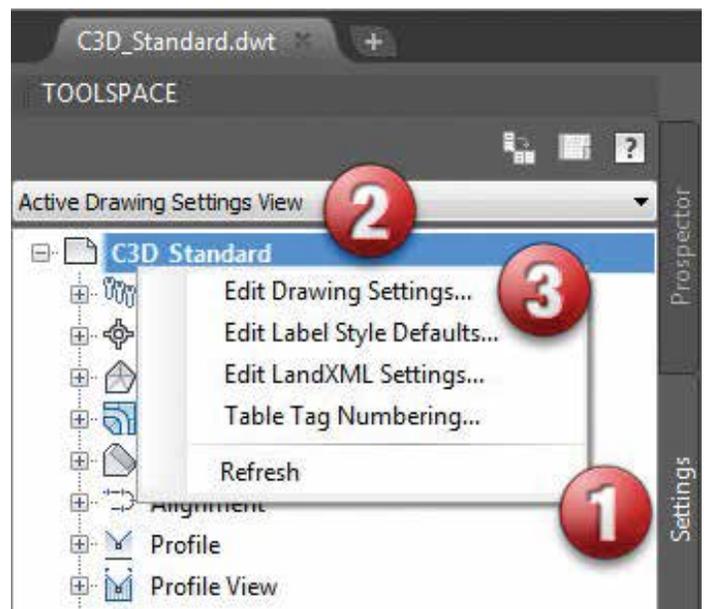


Figure 4: Drawing settings

C3D DRAWING SETTINGS

Settings in Civil 3D control many preset values, such as drawing units, scale, and coordinate system. Civil 3D has drawing, feature,

AutoCAD Civil 3D

and command settings. All three levels of settings in AutoCAD Civil 3D are saved with the drawing, and they can be saved to a drawing template.

1. **Drawing settings:** Establish values for the whole drawing.
2. **Feature settings:** Control behavior for a feature, such as Surfaces or Parcels.
3. **Command settings:** Apply to individual commands within a feature, such as the AddParcelAreaLabel command within the Parcels feature.

You modify each level of settings at a different location in the Settings tree, as shown in Figure 5.

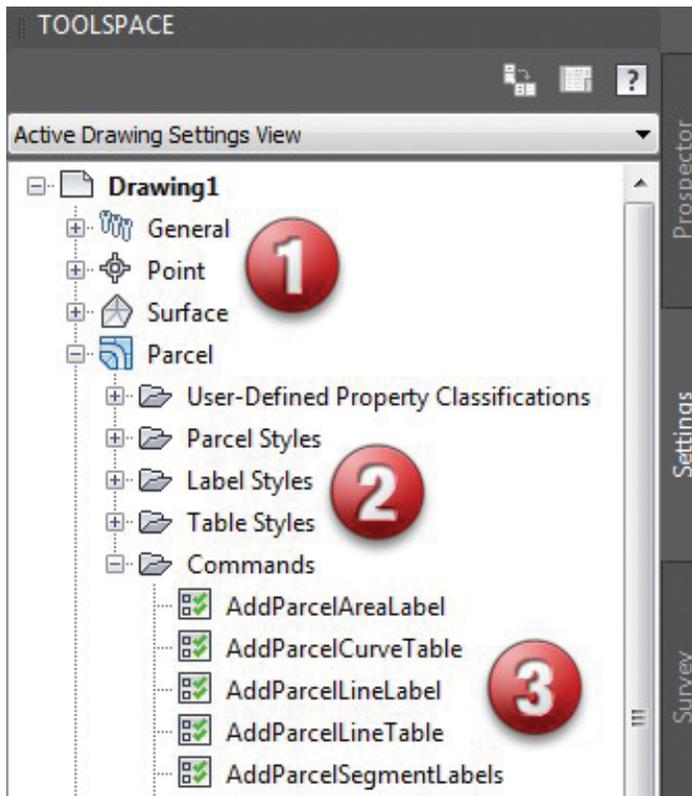


Figure 5: Setting tree

Let's focus on the main drawing Drawing-Level Settings and Feature Level Settings. To access drawing-level settings, right-click the drawing name C3D_Standard in the settings tree and click Edit Drawing Settings as shown in Figure 6.

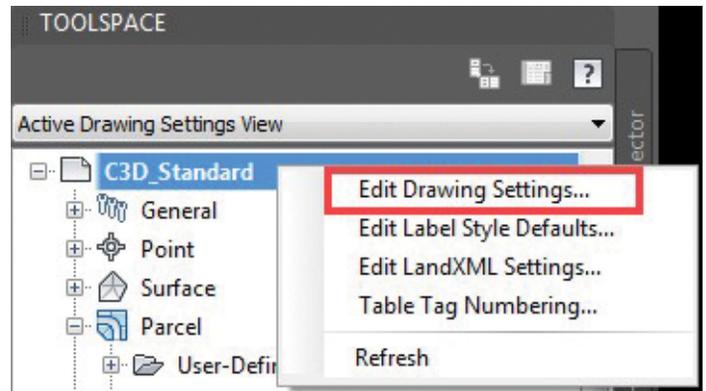


Figure 6: Edit Drawing settings

At the drawing level, the Edit Settings dialog box contains general tabs for the drawing (or template) as shown in Figure 7. We do not want to alter any of these settings except for the Object Layers. Ambient Settings can be altered, but will be overridden by the drawing and feature settings.



Figure 7: Drawing settings

To illustrate how this works, we will edit one of these settings in the Object Layers section. Move to the Object Layers tab on the dialog box and scroll down to Tin Surface as shown in Figure 8. We are going to add a suffix to the default label using a wildcard to ensure that our surface is always on the C-Topo- layer with a suffix of the surface name (i.e., C-Topo-EG).

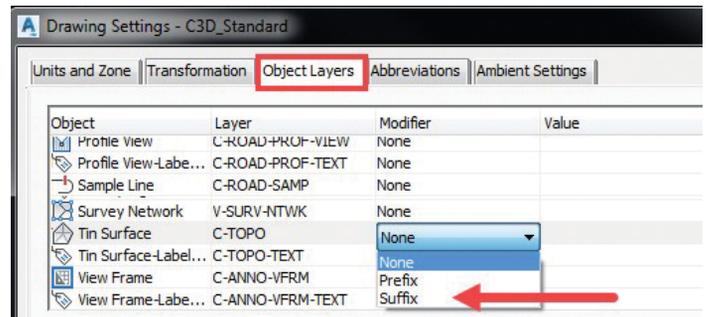


Figure 8: Object layers

1. Move to the C-TOPO layer.
2. Change the value to Suffix.
3. Add a -* to the value field. The hyphen will be added to C-TOPO and the surface name will be appended to the end of the layer (i.e., C-TOPO-EG).

You have now created a standard for Tin Surface layers in Civil 3D and can implement this process. Explore other options at the drawing settings level to ensure your template is ready to go.

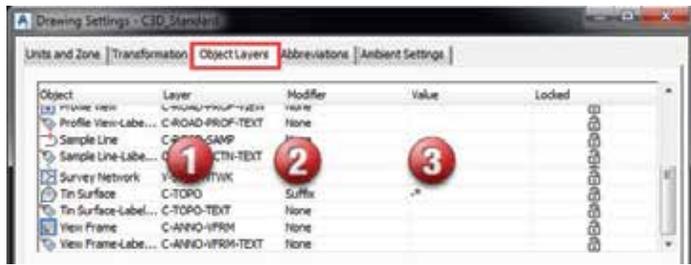


Figure 9: Object Layer modifications

FEATURE-LEVEL SETTINGS

Use the object collection level in the Settings tree to control all settings that pertain to the object type. Access the object or feature-level settings by right-clicking the object collection in the Settings tree and clicking Edit Feature Settings. For this example, we are going to select the Point Collection.

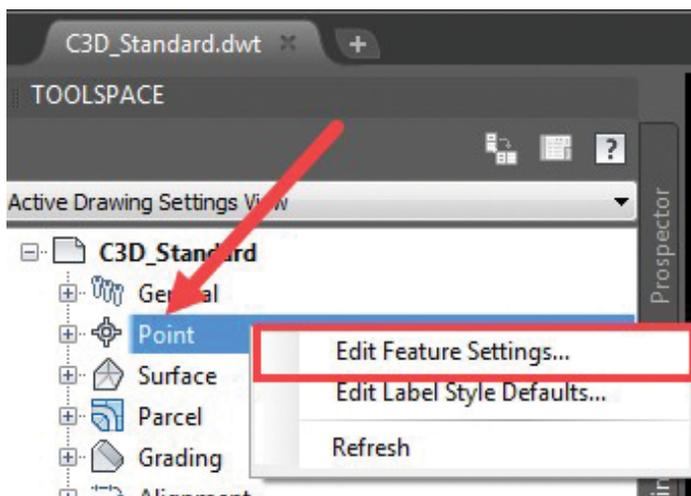


Figure 10: Point Feature settings

At the object level, this dialog box also contains object-specific settings, such as default point styles. In this section we can control how our point label styles are in our drawing as default. If we want all the points to be brought in as a particular style or maker, we can edit these values as our default within our template file. Figure 11 shows the Point Label Style and the dialog box to change the value within the object feature settings.

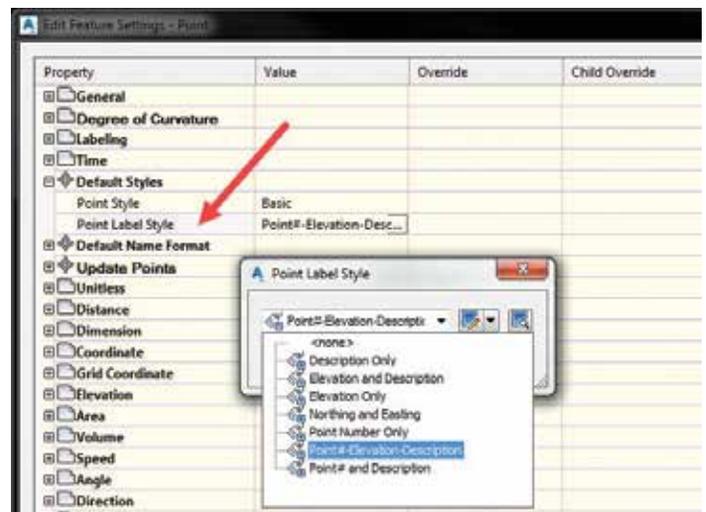


Figure 11: Edit Feature settings

COMMAND-LEVEL SETTINGS

Use the Commands collection level in the Settings tree to override both the object-level settings and drawing ambient settings on a command-by-command basis. You can also specify command-specific settings. Access the command-level settings by expanding the Commands collection for an object type in the Settings tree, right-clicking the command, and clicking Edit Command Settings. Figure 12 shows us editing the command level settings for a surface.

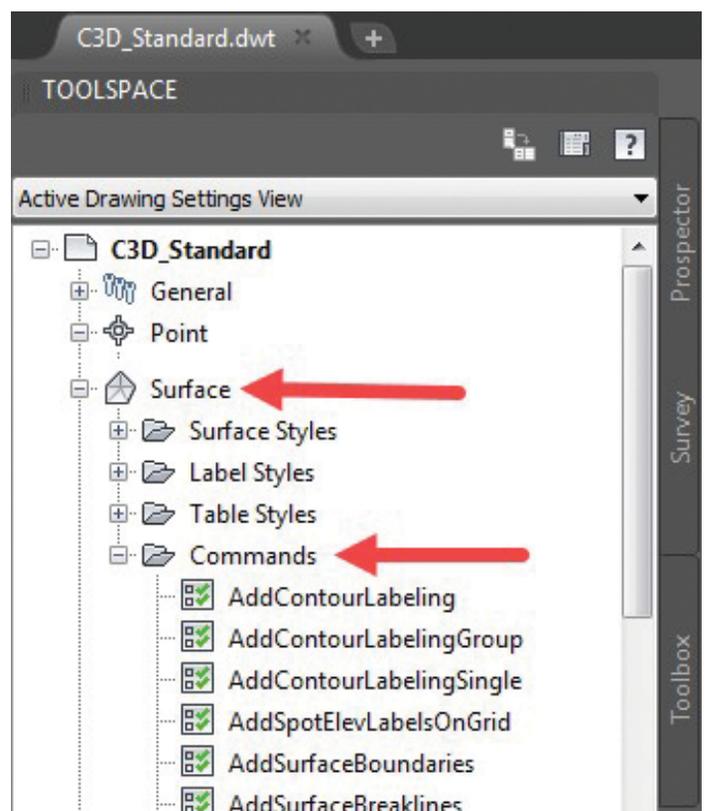


Figure 12: Command-level settings

AutoCAD Civil 3D

LAYER STANDARDS IN TEMPLATES

Maintaining a standard for the use of layers in your drawing is easier if you have a drawing template with predefined layers, and styles that reference those layers when objects are created.

For consistency, save your template as an AutoCAD® standards file (.dws format). Then, in the template, enter the STANDARDS command and in the Configure Standards dialog box, link the standards file to the template. If you want to enforce the standards, you can click the Settings button and activate notifications of standards violations or override such violations. For additional information on the CAD Standards Manager see CSI: CAD Standards Implementation at Autodesk University 2017. <https://autode.sk/2T0ozBa>

The layers created in the AutoCAD Civil 3D 2018 templates follow the National CAD Standard (NCS) rules. For more information about the National CAD Standard layering settings, see <http://www.nationalcadstandard.org>.

Now that you have many of your standards in place for your template, we need to ensure that the template is used on new drawings. From the application menu, select New and your open dialog box will be displayed as shown (Figure 13). Select the C3D_Standard.dwt and all your settings will be inside the new drawing.

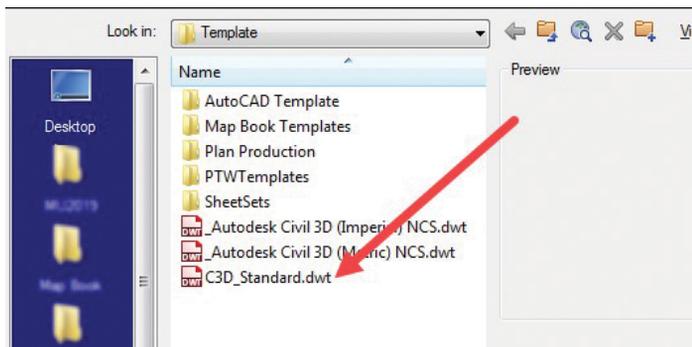


Figure 13: New template

Note: To control the location of template files and QNEW, review the options under the FILES menu > template settings.

REFERENCE TEMPLATES

New to Civil 3D 2018 is a process called reference templates. The command can be found on the Manage tab of the Ribbon > Styles palette > Reference, as shown in Figure 14

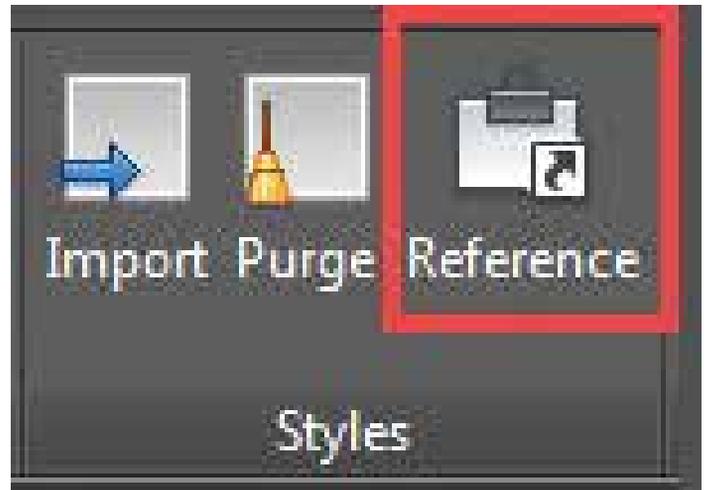


Figure 14: Import styles

When you attach a reference template to a drawing, the AutoCAD Civil 3D styles that are in that reference template are copied into the drawing, and the connection between the drawing and the reference templates is maintained. Drawings can be updated on an ongoing basis either automatically or manually with changes to the styles in the templates. We are going to add a reference to our current drawing file (Figure 15).



Figure 15: Attach Reference Template

As we work on our project, changes to the reference templates are pushed to the drawing so it is kept up to date:

- New or changed styles in reference templates are copied to the drawing.
- Styles that are deleted from reference templates are removed from the drawing if the styles are not in use. If a style is in use, a local copy of the style is made in the drawing.

Select the update button for the template to be added to the drawing. In the Toolspace Settings tree, styles that have been referenced into the drawing are marked with a paper clip icon as shown in Figure 16. Notice how the surface styles are now being controlled by the reference template and not the drawing settings.

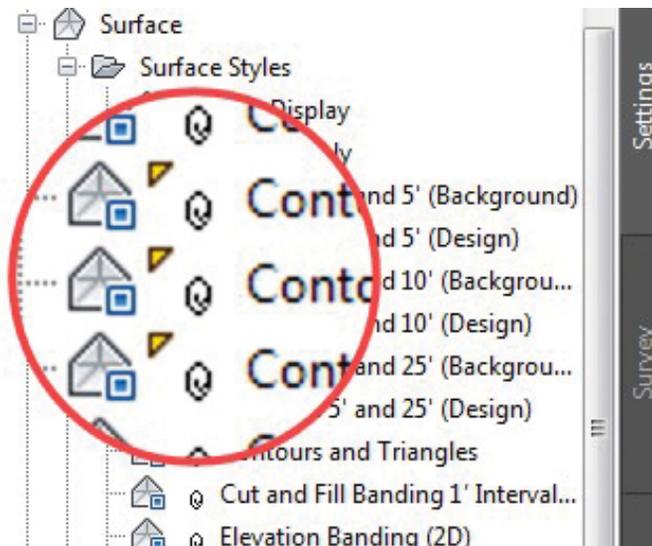


Figure 16: The Paper Clip

As you continue to update and/or add new styles to the project standards template, those changes are pushed to the drawings that reference that template.

The following AutoCAD Civil 3D components can be imported and referenced by a reference template.

- ✦ AutoCAD Layers
- ✦ AutoCAD blocks, text styles, and linetypes
- ✦ Settings
- ✦ Drawing Settings
- ✦ Abbreviations
- ✦ Ambient Settings
- ✦ Object Layers
- ✦ Feature Settings
- ✦ Label Style Defaults
- ✦ Styles
- ✦ Label Styles
- ✦ Object Styles
- ✦ Table Styles
- ✦ Pipe and Structure Rules
- ✦ Pressure Network Parts lists
- ✦ Quantity Takeoff Criteria

If you try to edit a surface style (i.e., rename a layer color) you will get the following error indicating that your style is being controlled by a referenced template or a company standard. You do have options to override the setting as shown in Figure 17, but this is a good reminder to all of us while we work on drawings and maintain our company standards.

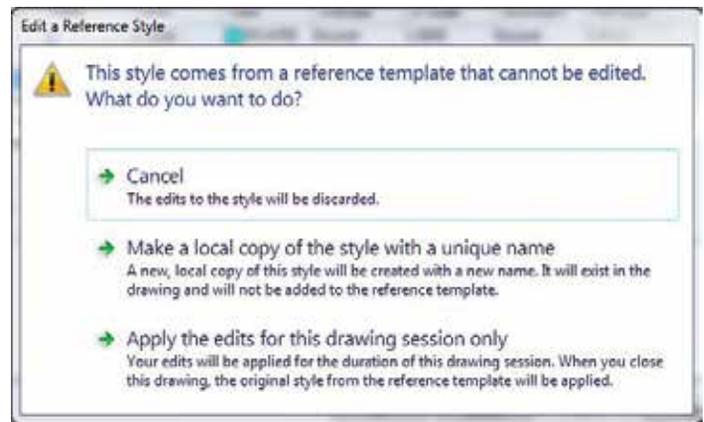


Figure 17: The warning

CONCLUSION

In a perfect world, your drawing templates and settings will have the perfect set of styles for your projects. This typically takes time to grow and can be considered a living template. Consider designing styles to reflect the information requirements at different times in the project. The templates are there as a guide to provide you with the basic information needed to begin your design project efficiently. You can create styles and templates for many different disciplines and still follow your company standard. Keep the implementation process going and create your template to help guide your users and your company to a better, more standard approach to design work.



Sam Lucido is a CAD Services Manager with Haley & Aldrich, Inc. He has more than 25 years of experience involving design, user support, and customization. Sam is an Autodesk certified professional and an Expert Elite Member. He uses his vast knowledge about AutoCAD and Civil 3D to help provide support to engineering and design teams by holding hands on workshops and online training. Sam is a top-rated Autodesk University and Midwest University Speaker as well as being an AUGI Board Member. You can reach Sam at CADProTips.com or by email at lucido1373@gmail.com

Hacking InfraWorks: Schema Editor

A few people recently reached out to me on LinkedIn about how to create and edit custom attributes in InfraWorks® and that interest sparked the idea to write this article. In previous releases of InfraWorks, if you wanted to create custom properties for your data you had to hack InfraWorks and manually create and edit an `im.schema.json` file, hope that all of the syntax was correct, and pray that it would not corrupt your model. But with the recent addition of the Schema Editor to the InfraWorks tool set, all the guesswork

is taken out of the syntax formatting and it allows you to quickly and easily extend your data for any object class: buildings, pipes, roads, etc. Here's how...

CREATE YOUR DATA

From the Model Explorer, right-click on any of the categories and select *Add Extend Schema...* to display the Extend Schema Tool dialog box (Figure 1).



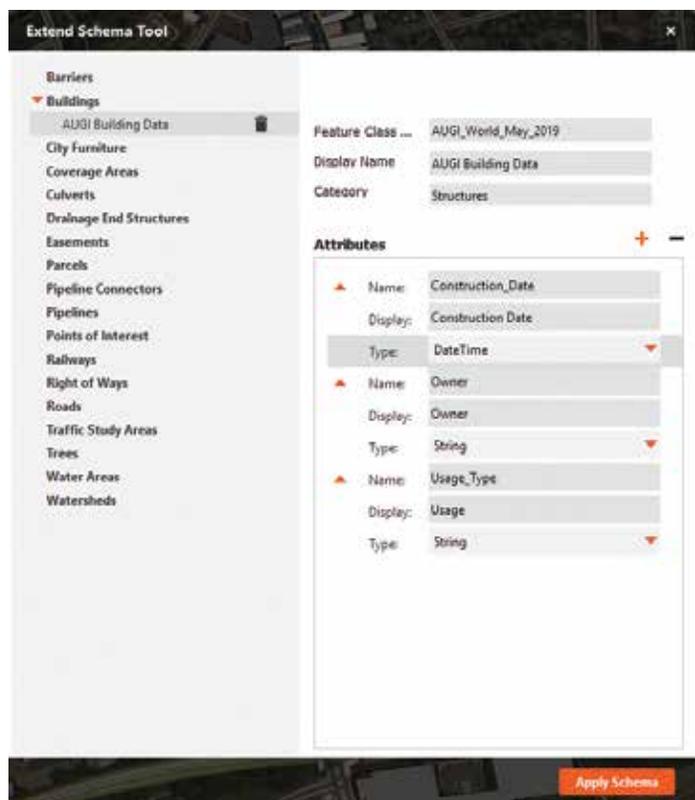


Figure 1

To begin, you must create a new feature class and display name. This new feature class will be the container for every new attribute you add. There are five data types you can add:

- Boolean – a Yes/No value, represented by a toggle.
- Date/Time – displays a calendar from which you can choose a date.
- Double – a number value that can represent either a whole or fractional (decimal) value.
- Integer – a whole number.
- String – can contain letters, numbers, and special characters.

With these attribute types you can add any kind of data to your model. It could be building owner, pipe installation dates, roadway types (materials), building square footage, etc. The possibilities are limitless. In my example I've created a new feature class called "AUGI_World_May_2019" and three attributes for building data; Construction_Date, Owner, and Usage_Type.

It's important to note that these new attributes will only be available to new building data that you import into your model through SHP files or the like. When you configure the data, you'll see the newly created feature class available. Select AUGI Building Data and Close & Refresh to import the buildings (Figure 2).

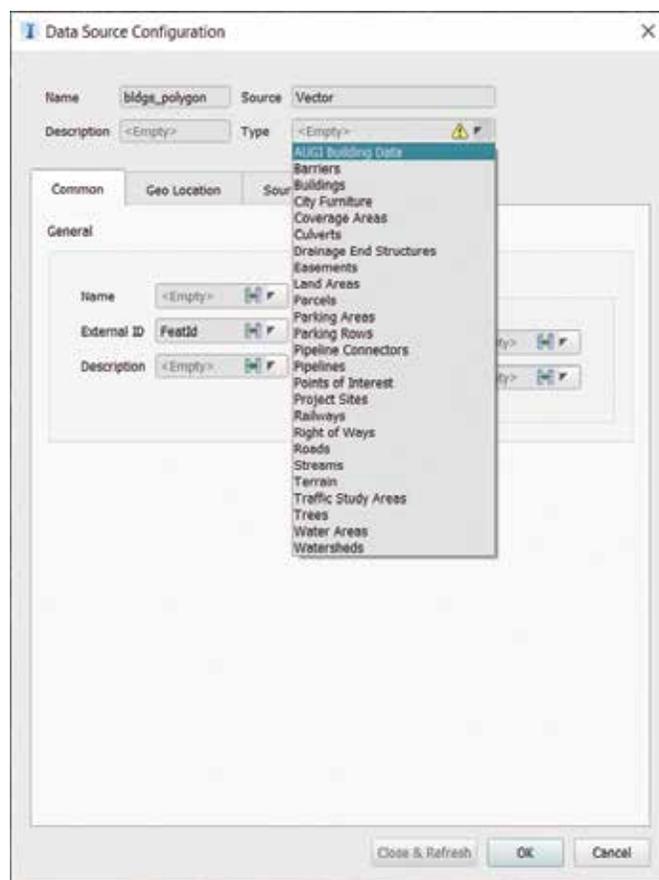


Figure 2

UPDATE YOUR DATA

If you're like most people, you probably have an Excel spreadsheet of data with all the relevant information for buildings, pipe networks, roadway data, etc. for a project. You can populate the attributes of your model objects the tedious and time-consuming way of manually entering the data or... you can use a small piece of JavaScript code to quickly pull in the data.

I wrote an Autodesk Knowledge Network article titled "Update InfraWorks 360 data using JavaScript and a CSV file" back in June 2016 about how to pull in the data using a unique identifier of a particular class. That identifier could be the building owner's name, the building ID number, street name, pipe type, pipe material, etc. And based on that unique identifier, the JavaScript code will look at all the selected buildings and when it finds a matching value in the CSV file, it will apply the corresponding information to the attributes specified in the JavaScript code.

The following code (Figure 3) is from my AKN article, but it can be modified to suit your needs, attributes, and CSV formatting. The code, in this case, is using the building name (read.NAME) as the unique identifier. When it finds a matching name from the CSV file, it then automatically fills in the attributes for USER_DATA (a custom attribute. All custom attributes begin with USER_), DESCRIPTION, and ROOF_HEIGHT.

```
function UpdateBldgData() {
    var db = app.ActiveModelDb;
    var sset = app.ActiveSelectionSet;
    if (sset.QueryCount() < 1) {
        alert("Please select one or more buildings and try again.");
        return;
    }
    var tableName = "BUILDINGS";
    var filter = sset.GetFilter(db.TableIndex("BUILDINGS"));
    var table = db.Table("BUILDINGS");
    var extent = table.QueryExtent(filter);

    table.StartQuery(filter);
    table.BeginWriteBatch();

    var read;
    var write = table.GetWriteRow();
    while (read = table.Next()) {
        var coords = file.ReadFile("C:/Temp/AUGI_2091.csv");
        var coordsa = coords.split("\n");
        for (var i = 0; i < coordsa.length; i++) {
            var txta = coordsa[i].split(",");
            if (txta.length < 4) // Number of columns in the CSV
                continue;
            // If the name of the building is equal to the record
            // found in the CSV file then...
            if (read.NAME == (txta[0])) { // 0 is the first column
                write.USER_DATA = (txta[1]); // Owner -
                write.DESCRPTION = (txta[2]); // Update the
                write.DESCRPTION = (txta[2]); // Update the
                description
                // (2nd column - B)
                write.DESCRPTION = (txta[2]); // Update the
                description
                // (3rd column - C)
                write.ROOF_HEIGHT = (txta[3] * 3.6576);
                // Update the roof
                // height based on number of floors
                // (4th column - D)
                table.UpdateFeature(write, read.ID); // Update the
                model
                write.Invalidate();
            }
        }
        table.CommitWriteBatch();
        table.EndQuery();
        app.InvalidateTileCache(db.TableIndex(tableName),
        extent);
        return true;
    }
}

UpdateBldgData();
```

Figure 3

VISUALIZE YOUR DATA

Using Feature Themes and your new custom feature class attributes, you can visualize and present your model data in easy-to-understand, color-coded view. In Figure 4, I've created a Feature

Theme to visualize the data for the Usage attribute. There are four different values applied to the UsageType attribute: Educational, Government, Residential, and Retail. Displaying your data to clients, owners, and planning agencies using a Feature Theme makes it much easier to read and understand than a spreadsheet.

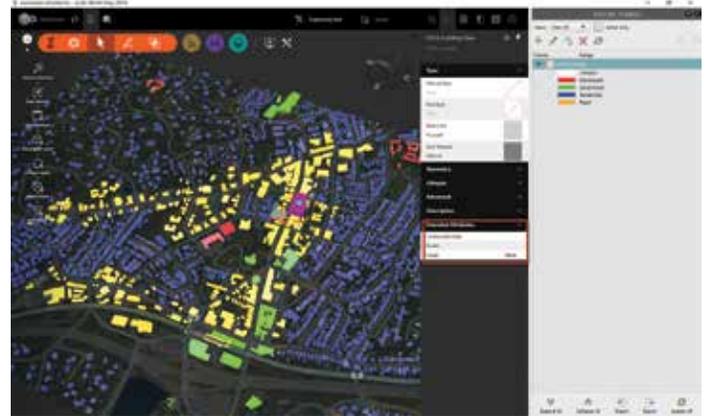


Figure 4

REPORT YOUR DATA

If your client is someone who enjoys scrolling through row after row of data, then you can provide them with that as well. From the Model Explorer panel, select a feature class and choose View In Data Table. This will display the Data Table from which you can export all feature class data to a CSV file (Figure 5).



Figure 5



Matt Wunch is the Digital Content Creator for ARCAT.com in Fairfield, Connecticut. He is an Autodesk Expert Elite member, Revit Certified Professional in Structure, Architecture, MEP – Mechanical and MEP – Electrical, a member of the planning committee of the Construction Institute's BIM Council, board member at AUGI, and owner & FAA licensed sUAS pilot at SkyViz.io. He can be reached for comments or questions at matt.wunch@gmail.com, on Twitter @MattWunch, or LinkedIn.

It's 6 PM.
Chris' coworkers
are still at the office.

**But Chris
is hanging
by the pool**

Being more productive is no accident.

Take advantage of your CADLearning AUGI-member benefit, like Chris:

AUGI Premier members

pay just
\$100 per
year

— or —

AUGI Professional members

pay just
\$25 per
year

Every AUGI member can receive a free subscription to [The Blast](#).

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

HATCHKIT ADD-IN FOR REVIT 2019



<https://apps.autodesk.com/RVT/en/Detail/Index?id=1889691850783935528&appLang=en&os=Win64>

This is a tool for every Revit® user's toolset. The HatchKit Add-In for Revit manages a project's currently loaded fill patterns, including:

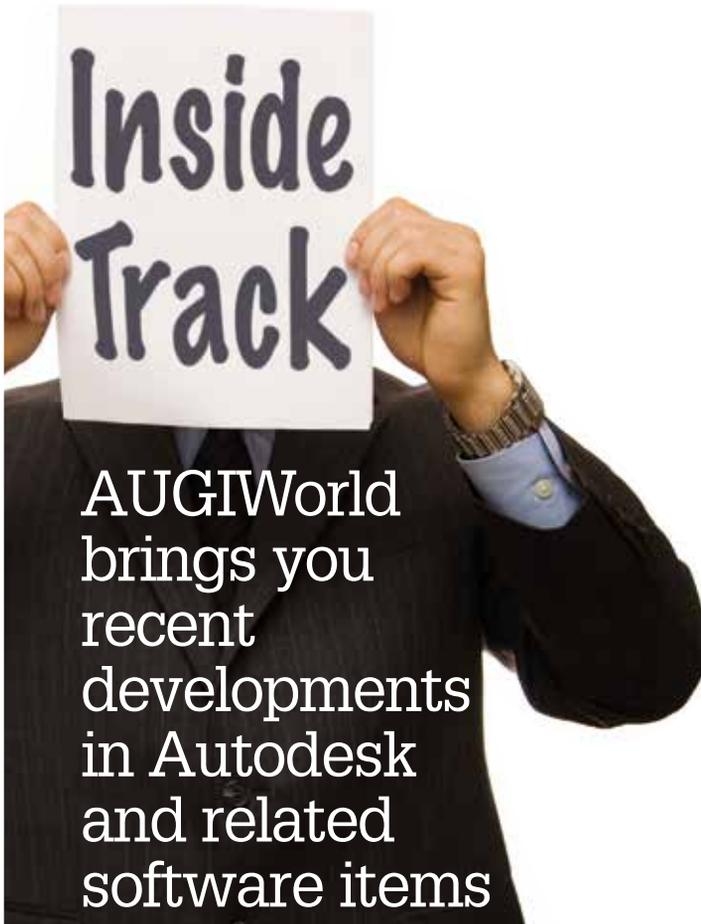
- Create and edit unbroken line patterns such as cross hatches or ceiling grids.
- Move, rescale and rotate fill patterns within Autodesk® Revit® without reloading.
- Combine selected fills to form new fill within project.
- Directly edit a pattern's name, type, and orientation.
- Delete individual patterns (excepting SOLID).
- Purge all unused patterns from the project.

3D ANALYZER CABINET GENERATOR PRO



https://apps.autodesk.com/ACD/en/Detail/Index?id=5718214533534600353&appLang=en&os=Win32_64

3D Analyzer Software - 3D Cabinet Generator Pro for AutoCAD® assists users in drawing production-ready 3D cabinets.



Features include:

- Generates 3D cabinets and associated parts in seconds.
- Multiple cabinet construction methods.
- Fully customizable.
- All parts can be edited.
- Designed to be used for kitchens, wardrobes, wall units, office furniture, custom cabinets.
- An infinite quantity of cabinets, only limited by your hardware.
- Free version.
- Supports all AutoCAD versions with AutoLoader mechanism for plug-ins (2012 upwards).
- Supports earlier versions, but they require manual installation.

BIMCOLLAB BCF MANAGER FOR AUTODESK NAVISWORKS



<https://apps.autodesk.com/NAVIS/en/Detail/Index?id=141413648989600422&appLang=en&os=Win64>

The BCF Managers by KUBUS add BIMcollab® connectivity as well as BCF file support to Autodesk® Navisworks®. It provides the ability to create and modify issues and communicate these through BIMcollab or via BCF files (supports version 1.0 and 2.x) directly from within Navisworks.

Complete Issue Management Ecosystem

The BCF Managers are available for other popular BIM tools such as Revit, ARCHICAD, Solibri Model Checker, Tekla Structures, and simplebim. Together with our web application, these form the BIMcollab issue management ecosystem, which provides an effective way to communicate BIM issues, thereby providing a more efficient workflow.

BCF files support is also included for working with BIM applications that support BCF natively such as Tekla BIMsight, DDS, MagiCAD, and many more.

Issues can be created directly from the Clash Detective as well as from Saved Viewpoints.

Issues will contain title, description, status, who's responsible, recommendations or suggestions, and whether a resolution has been implemented. BIMcollab will additionally allow you to add area information, milestones, and deadlines as well as implement a formal approval process.

All issues can contain viewpoints with camera position and relevant objects. This allows you to zoom-to the issue-location, highlighting the problematic components in whatever BIM tool you are using.

A free BIMcollab account is included with the BCF Manager. You can publish and manage issues in the cloud, and share them with others directly from the Navisworks plug-in or with the web interface.

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.



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**





For complex production pipelines, X marks the spot.

Now available with an overclocked, 18-core, 9th gen Intel® Core™ X-series processor and up to two real-time ray tracing NVIDIA® Quadro RTX™ GPUs, the new APEXX X3 is ideal for 3ds Max, Maya, and a host of other professional applications.

Edit feature films, create stunning VFX, or deploy cutting edge VR with the extreme multitasking workstation built for your complex production pipeline.



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

