BES323057

3D Multidisciplinary Plant Engineering, Collaboration and Execution Using AEC Collection

Khaled Aboughanem
BIM Manager, JNE Consulting

Mathieu Binette
Team Leader, Graitec Inc.

Learning Objectives

- Learn tips, workflows, and best practices to set up, manage, and optimize a 3D, multidisciplinary plant engineering model (model management)
- Learn about plan, communicate, implement (PCI) - the three key words to succeed
- Learn how to collaborate and interface with models of other disciplines, and share multidisciplinary data between AEC products
- Learn how to import a laser scan into any AutoCAD-based AEC software and visualize its data in AutoCAD and Navisworks

Description

This class outlines the best practices and workflows for model management, design collaboration and project execution among multiple disciplines by using Autodesk Architecture, Engineering, and Construction (AEC) collection products and tools.

This session features: AutoCAD Plant 3D, Advance Steel, Revit, Paneldes 3D (Elecdes Design Suite), and Navisworks Manage.

Speaker(s)

Khaled Aboughanem – My background is civil engineering. After graduation, I started my career in the construction industry and worked for four years as a site engineer. Shortly after, I worked as a civil estimator, then decided to go back to college for MicroCAD Specialist one-year Co-op Program; I started working for JNE as a co-op student, then was hired as a full time designer after graduation. This is my 26th year with JNE, holding the BIM Manager role since 2000 and supporting all North America offices. During my various roles, I got to learn AutoCAD Plant 3D, Advance Steel, Revit, Civil 3D, Recap Pro, Navisworks Manage and various other CAD systems.

Mathieu Binette - Started the Advance Steel journey in 2013, as a Business Development Manager for GRAITEC in Montreal, Canada and shortly after, he became one of the main Advance Steel evangelist in North America. In 2015, Mathieu created the first Advance Steel Academy (User Group) in the U.S. which is now happening every year at the NASCC Steel Conference (2020 : Atlanta). This 3 days event is allowing attendees to follow classes covering complex topics such as Drawings Styles, Data Base Management and workflow with complimentary Autodesk solutions. Today, Mathieu is managing the GRAITEC Advance Steel sales & technical team in North America and he is, on a daily basis, helping new Advance Steel users with their learning curve, implementation and support.

Table of Contents

Introduction 4

The 3 Key Processes..... 5

Step 1: Project setup, directory structure, file organization and communication 6

Step 1: Model validation / E-checking 7

Step 2: Exporting Advance Steel to Revit..... 9

Step 3: Importing Advance Steel into Revit 9

Step 4: Exporting AutoCAD Plant 3D Structure to Advance Steel & Revit..... 10

Step 5: Importing AutoCAD Plant 3D Structure into Advance Steel..... 10

Step 6: Importing AutoCAD Plant 3D Structure into Revit..... 11

Step 7: Exporting from AutoCAD Plant 3D to Revit..... 12

Step 8: Importing from AutoCAD Plant 3D into Revit – Link a CAD model..... 12

Step 8: Create, insert, and update a part family..... 13

Step 9: Model Management in Revit..... 14

Step 10: Exporting from Revit to Advance Steel..... 14

Step 11: Exporting from Revit to AutoCAD Plant 3D..... 15

Step 11: Revit export settings..... 16

Step 12: Importing Revit into AutoCAD Plant 3D..... 17

Step 13: Model Coordination with Revit Thru Navisworks - model development..... 18

Step 14: Managing Deliverables 19

Conclusion 20

Introduction

Currently, in the AEC industry there isn't one software program solution. Separate applications are needed for architectural, civil, structural, piping, mechanical, electrical, and infrastructure designs. The exchange of design data among all different programs is not flawless. One of the most critical workflows is between Revit and AutoCAD vertical products such as Advance Steel and Plant 3D.

Using the Autodesk AEC collection applications, we will demonstrate the best practices for the 3D model collaboration and execution that will assist in minimizing problems, issues and maximizing the performance and productivity. The provided information is built on basic knowledge of Advance Steel, AutoCAD Plant 3D, and Revit adhering to these goals:

- Create and integrate an optimized workflow throughout the project
- Create interoperable and coordinated models
- Model management and coordination in execution
- Deliverable of the final model in AutoCAD vanilla without the need of applications' objects enablers

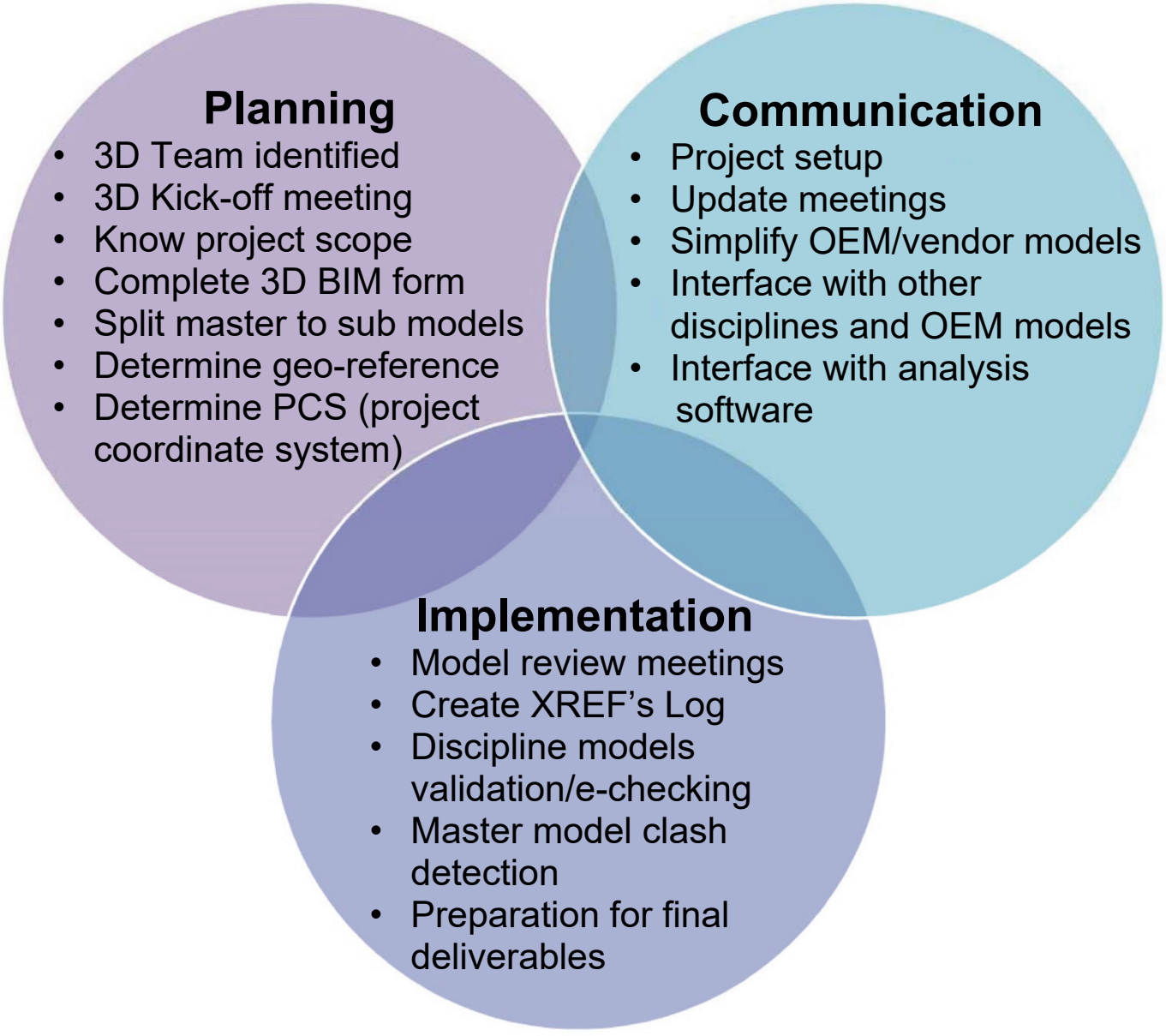
This handout will take us through this journey step by step. Starting with the three key processes that will lead to a successful executed project:

- **Planning**: Starting with project setup, directory structure, and models' files organization

- **Communication**: How to communicate among all different applications' models and exchanging information with OEM and vendors' models

- **Implementation**: Includes single discipline model validation (e-checking), and multi-discipline validation of the overall model, then the preparation of model deliverables

The 3 Key Processes



STEP 1:

A- Project setup:

1. Identify 3D team, assign the project “3D Admin” and individual “3D Lead” per each discipline
2. Understand project scope and identify plant areas
3. Identify “Plant Master” model for the overall plant and “Area Master” models (sub-models for each area)
4. Specify spec., catalogue, and database to be used and its locations

B- Directory Structure:

1. Create the entire directory structure prior to any model creation
2. Create dedicated folders for Advance Steel, Revit, Plant 3D, MEP, and Paneldes under the 3D directory for each discipline sub-directory 05E (Electrical), 06M (Mechanical / Piping / HVAC), 07C (Civil / Structural)
3. 3D scans/point cloud files are to be stored under 11R (Reference scan files)
4. Navisworks deliverable files to go under a “Date Directory” under 13N (Navisworks files)
5. All 3D xrefs to go under “3D Refs” under the 12X (External reference files – “Xrefs”)

C- Models’ files organization:

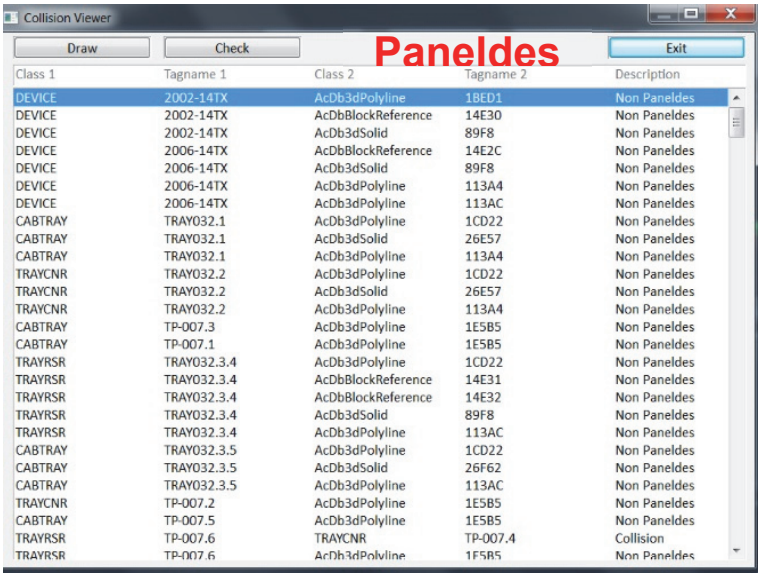
1. The Origin (0,0,0) is the control point of the project; all models are in relation to the project coordinate system (PCS), so everything is to be inserted at 0,0,0
2. When referencing models, always attach Xrefs as “Overlay” reference type. Note that there are some applications’ attaching restrictions when generating 2D outputs out of the model
5. Create “Discipline Master” models if multiple models per area
6. Create “Area Master” model out of “attached” Xref’d discipline models
7. Create a “Plant Master” model entirely out of Xref’d “Area Masters”

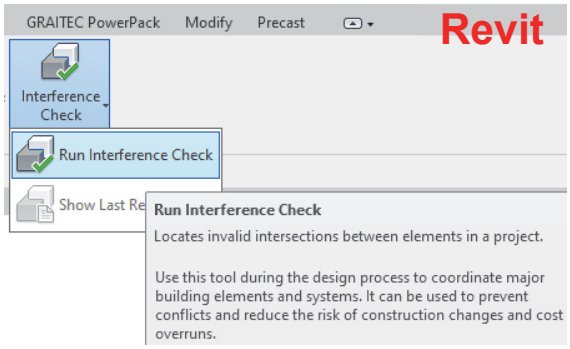
D- Communication Protocols:

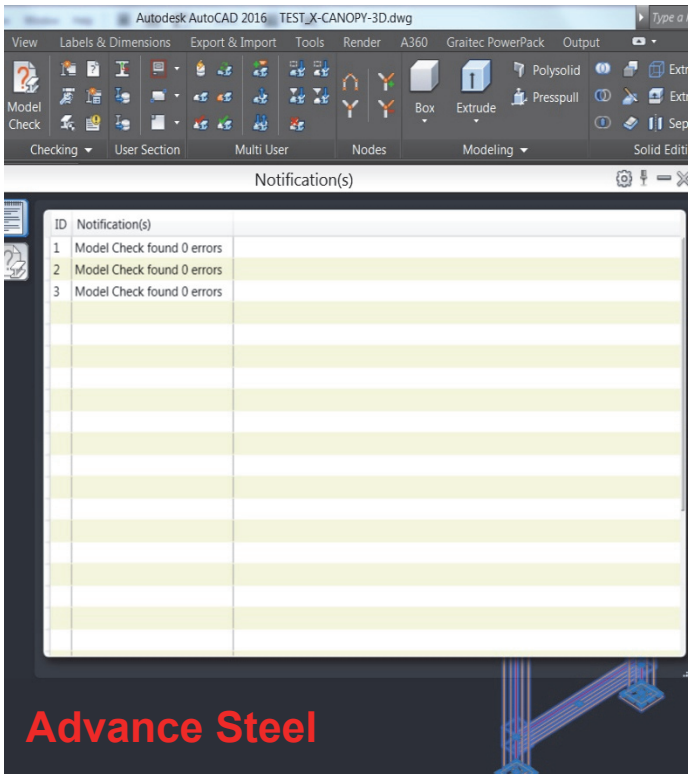
1. Autodesk AEC products (but Revit) are AutoCAD based so it communicates very well, keeping in mind that the object enablers for Advance Steel, Plant 3D, and Civil 3D are required to be installed for AutoCAD
2. Navisworks Manage is used for interference and clash detection among all disciplines utilizing its three file formats “NWF” (for model references/updates), “NWC” (for model coordination), and “NWD” (for model review/deliverables)
3. Within AutoCAD attach the Recap point cloud; manipulate and geo-reference it to a known point, then save the ACAD file with its attachment as “3DX-Scan” file, where it can be attached to disciplines’ models
4. Preferred exchanged models formats are STEP “STP”, ACIS “SAT”, but other formats such as; “IFC”, “IGS” can be used too after simplification. Output Plant 3D Structural to Advance Steel using XML export. An Inventor output “ADSK” file format can be imported to AutoCAD Plant 3D

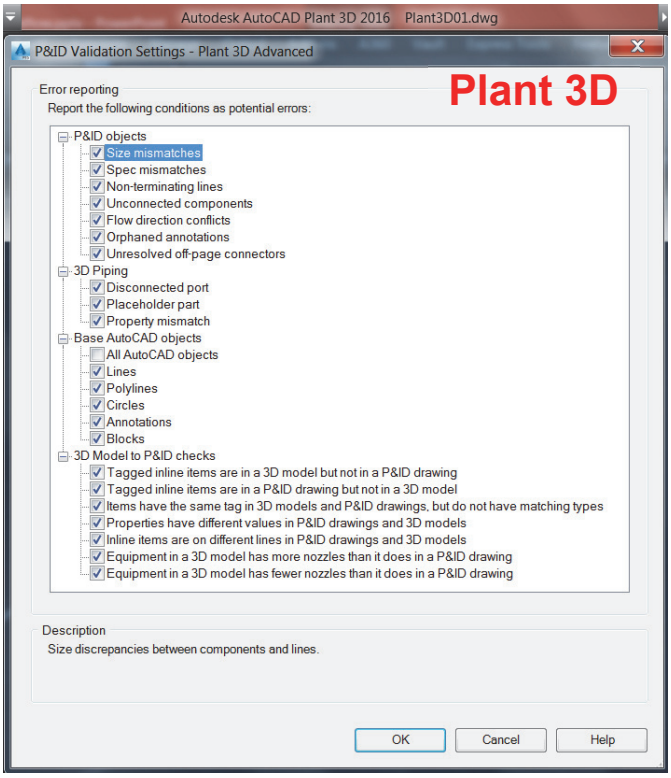
E- Model Validation/E-checking:

1. Single discipline model validation can be done from within the software itself, where it checks for errors in the model and model integrity; this capability is available within Advance Steel, Revit, Plant 3D and Paneldes









2. Navisworks Manage is used for inter-discipline e-checking to identify any interferences or clashes; where it integrates individual discipline models into a multi-discipline Navisworks model then it utilizes interactive 3D design among disciplines. Detection is done by using the “run test” option for “one discipline model” vs “other discipline model” for hard, soft, or clearance. Design clash to be reported as “TXT”, “HTML” or “XML”. Resolving the clashes is to be done in the discipline design software

Navisworks

								Item 1						Item 2					
Image	Clash Group	Clash Name	Status	Distance	Description	Date Found	Clash Point	Item ID	Layer	Item Layer	Item Source File	AutoCad Size	AutoCad Line Number	Item ID	Layer	Item Layer	Item Source File	AutoCad Size	AutoCad Line Number
		CG1	New	1095.5	Hard	2017/11/24 19:27:0	x: 349506.1, y:348428.0, z:78460.6	Entity Handle: 59C55	6_HYD-P1	6_HYD-P1	3DX-20-P-20-01.dwg	6"	6" HYD-P1	Entity Handle: 14CA17	0-Existing Concrete AS Not	0-Existing Concrete AS Not	60140000-3D-C-20.dwg		
	CG1	Clash1	New	1095.5	Hard	2017/11/24 19:27:0	x: 349506.1, y:348428.0, z:78460.6	Entity Handle: 59C55	6_HYD-P1	6_HYD-P1	3DX-20-P-20-01.dwg	6"	6" HYD-P1	Entity Handle: 14CA17	0-Existing Concrete AS Not	0-Existing Concrete AS Not	60140000-3D-C-20.dwg		
	CG1	Clash2	New	700.8	Hard	2017/11/24 19:27:0	x: 349446.1, y:348828.0, z:78460.6	Entity Handle: 77CB9	1 1_2_HYD-T2	1 1_2_HYD-T2	3DX-20-P-20-01.dwg	1 1/2"	1 1/2" HYD-T2	Entity Handle: 14CA17	0-Existing Concrete AS Not	0-Existing Concrete AS Not	60140000-3D-C-20.dwg		
		CG2	New	373.6	Hard	2017/11/24 19:27:0	x: 346292.7, y:365630.7, z:78731.2	Entity Handle: 7BA57	8_HYD-T2	8_HYD-T2	3DX-20-P-20-01.dwg	8"	8" HYD-T2	Entity Handle: 58BD4	Floor Cover	Floor Cover	60140020-3D-S-20.dwg		
	CG2	Clash3	New	373.6	Hard	2017/11/24 19:27:0	x: 346292.7, y:365630.7, z:78731.2	Entity Handle: 7BA57	8_HYD-T2	8_HYD-T2	3DX-20-P-20-01.dwg	8"	8" HYD-T2	Entity Handle: 58BD4	Floor Cover	Floor Cover	60140020-3D-S-20.dwg		
	CG2	Clash4	New	281.8	Hard	2017/11/24 19:27:0	x: 346038.9, y:381397.3, z:78756.2	Entity Handle: 57C30	4_HYD-T2	4_HYD-T2	3DX-20-P-20-01.dwg	4"	4" HYD-T2	Entity Handle: 58BD4	Floor Cover	Floor Cover	60140020-3D-S-20.dwg		
	CG2	Clash5	New	244.7	Hard	2017/11/24 19:27:0	x: 345637.3, y:381397.3, z:78756.2	Entity Handle: 57A1F	3_HYD-P1	3_HYD-P1	3DX-20-P-20-01.dwg	3"	3" HYD-P1	Entity Handle: 58BD4	Floor Cover	Floor Cover	60140020-3D-S-20.dwg		
	CG2	Clash6	New	164.1	Hard	2017/11/24 19:27:0	x: 346523.6, y:365363.2, z:78731.2	Entity Handle: 5001D	1 1_2_HYD-D2	1 1_2_HYD-D2	3DX-20-P-20-01.dwg	1 1/2"	1 1/2" HYD-D2	Entity Handle: 58BD4	Floor Cover	Floor Cover	60140020-3D-S-20.dwg		

After completing 1A, 1B, and 1C steps, then each discipline will start their design and model development.

All models are to be developed in the 12X directory. This directory will be the pool of all discipline models, where each discipline can attach other discipline model from this location as an “Overlay Xref”.

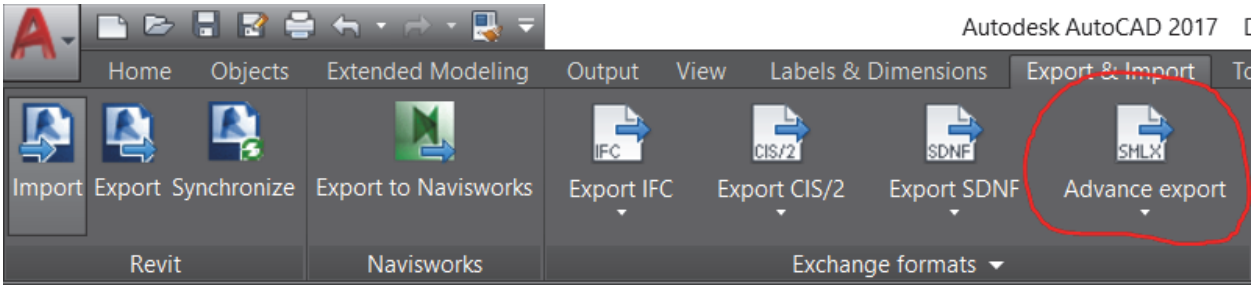
The workflow for all AutoCAD based products such as; Advance Steel, Plant 3D, and Paneldes model files can be attached to each other’s flawlessly, where all objects from each application should be visible to other applications with the aid of the object enablers.

As mentioned earlier in this handout, Revit is incompatible since it has a different file format and we will highlight the tools that have been made available to overcome this incompatibility.

The next steps will demonstrate the bi-directional exchange of models between Revit from one side and Advance Steel, Plant 3D and other AutoCAD based applications such as Paneldes on the other side.

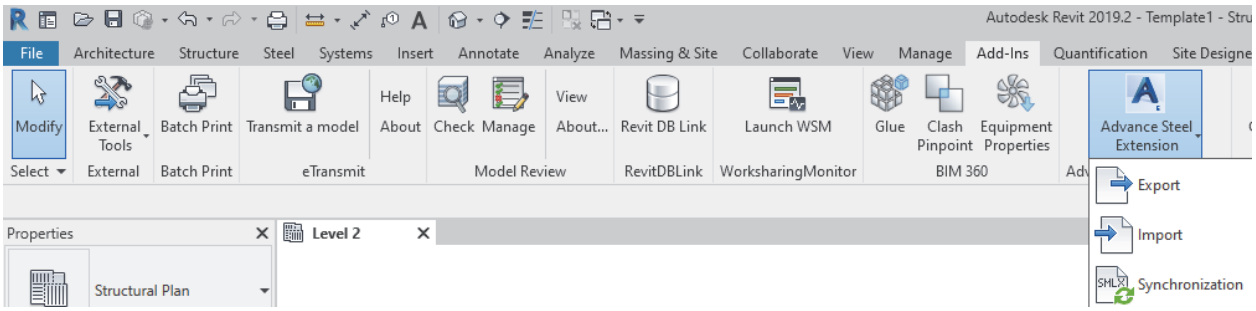
STEP 2: Exporting from Advance Steel to Revit

To export Advance Steel models for use with Revit projects. In order for Revit to process and properly display the geometry for objects in the DWG file, the model must be exported as SMLX file. The “Advance Export” function within the “Export & Import” on the ribbon is to be used to process all the Advance Steel objects and convert them to be visible and usable in Revit.



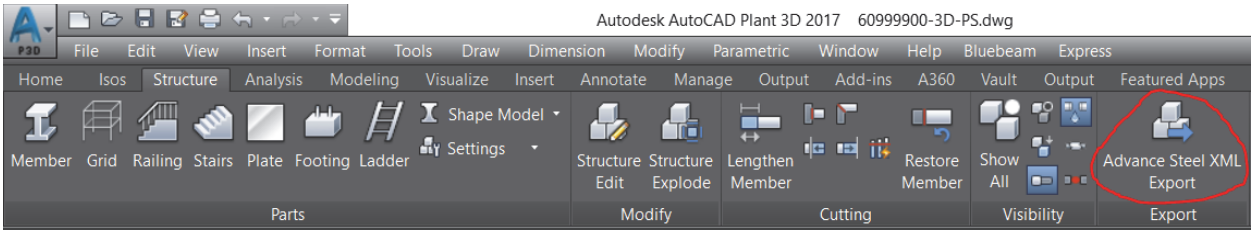
STEP 3: Importing Advance Steel into Revit

In order for Revit to process and properly display the geometry, the exported SMLX model file can be imported using “Import” option from the “Advance Steel Extension” within the “Add-Ins” on the ribbon.



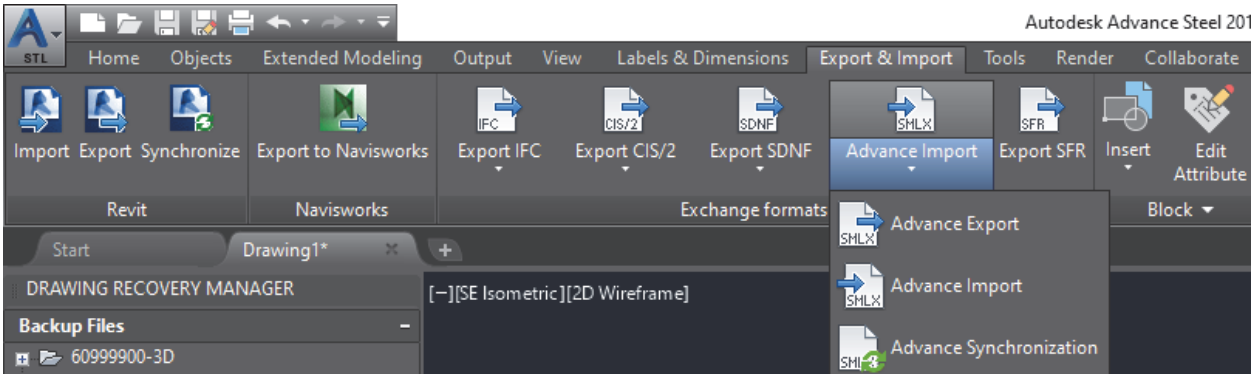
STEP 4: Exporting from Plant 3D Structure to Advance Steel and Revit

If a structural model was developed using the Plant 3D Structure, then this model can be exported for use with Advance Steel and/or Revit projects. In order for Advance Steel to process and properly display the geometry, the model must be exported as SMLX file using the “Advance Steel XML Export” function within the “Structure” on the ribbon.



STEP 5: Importing Plant 3D Structure into Advance Steel

In order to save time re-generating the structure model in Advance Steel; the Plant 3D structure model can be imported for use within Advance Steel and/or Revit projects. In order for Advance Steel to process and properly display the geometry, select the “**Advance Import**” from the “**Export & Import**” ribbon and choose Advance Import to import the SMLX file.

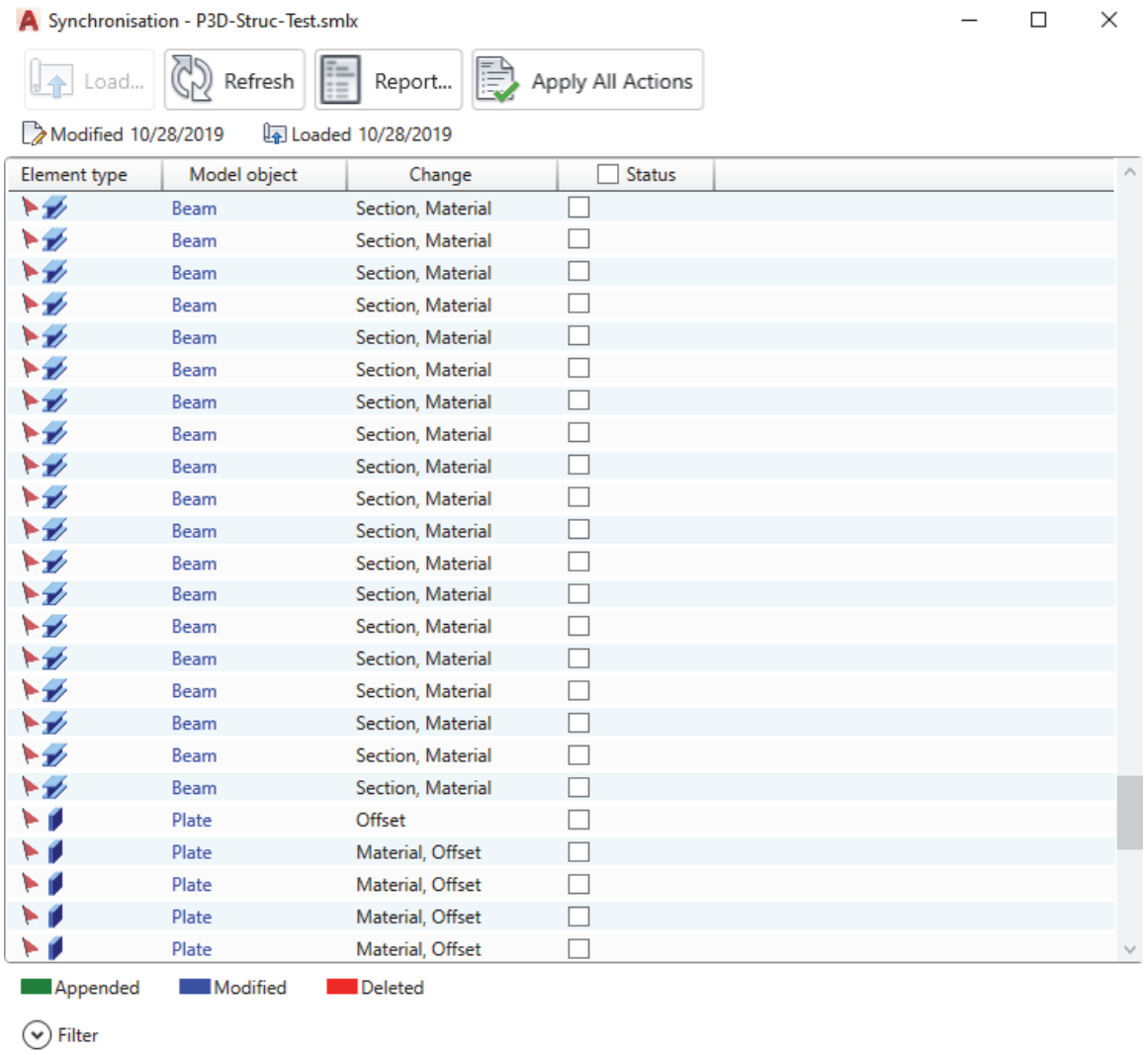


STEP 6: Importing Plant 3D Structure into Revit

The same process as “STEP 3”, the exported SMLX model file can be imported using “Import” option from the “Advance Steel Extension” within the “Add-Ins” on the ribbon.

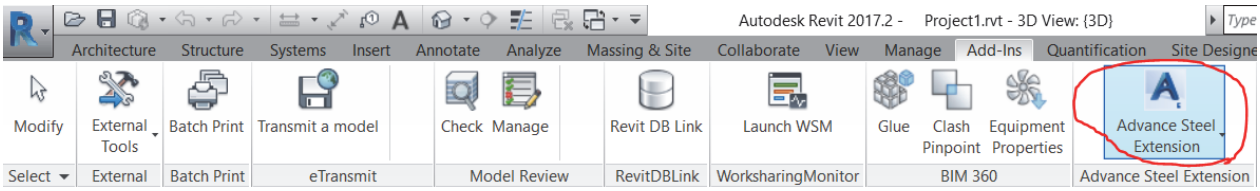
Important Note:

In the above cases where structural models are exported from Advance Steel and/or Plant 3D Structure into Revit; an “Advance Synchronization” tool can be run from the “Advance Export” within the “Export & Import” ribbon; between the two SMLX files. Files will be auto-compared, and if changes made, it will be reported, where the changed elements can be accepted by checking its corresponding “**Status**” box, then click “**Apply All Actions**” to accept



STEP 7: Exporting from AutoCAD Plant 3D to Revit

Since Revit does not utilize object enables, so the imported models must be independent from any Plant 3D objects, therefore it must be exported as ACIS 3D solids. Launch Plant 3D, open the desired model to be exported to Revit, then from within the "Project Manager" tool right-click on the model and select "**Export to AutoCAD**" function; or type in the command line "EXPORTTOAUTOCAD"; that will process all the Plant 3D objects (equipment, pipes, valves, fittings, and all other piping components) and convert them to ACIS 3D solids, then the AutoCAD vanilla "DWG" can be saved at the desired location.



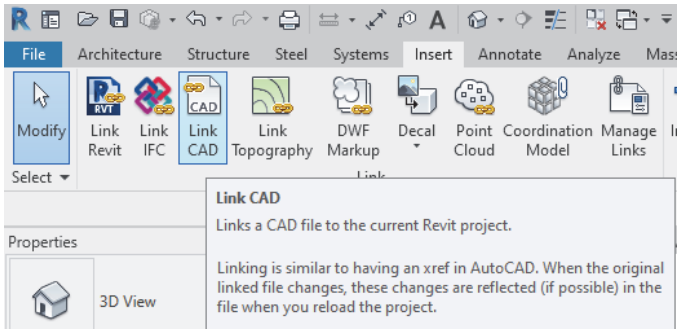
STEP 8: Importing from AutoCAD Plant 3D into Revit

In order for Revit to process and properly display the geometry for objects in the "DWG" file, we will demonstrate in this section the two methods to be used for importing AutoCAD "DWG" files into Revit. The first method is very simple and automatically updates when the model changes, and it is applicable to most AutoCAD based models. The second method requires more steps but allows AEC objects to be sectioned within views which then act more like other Revit objects.

A- Method 1 – Link a CAD Model

This option allows the AutoCAD model to be inserted into Revit using the "**Link CAD**" function; and if any changes or updates made to the linked Plant 3D model, then the "DWG" is to be re-exported; and these changes will be reflected within Revit, when the project is reloaded and opened directly from the job directory (similar to having Xrefs in AutoCAD). This section explains how to export models from Plant 3D for use with Revit projects. the drawings must be exported as 3D solids.

Note the following limitations with this method 1:



- Some of the AEC objects from the DWG will show up as wireframe regardless of the detail level setting as there are no object enablers inside of Revit to handle this geometry
- Section and elevation views will not clip the geometry properly
- This method is only recommended for 2D layouts such as plot plans

B: Method 2 – Create, Insert, and Update a Part Family

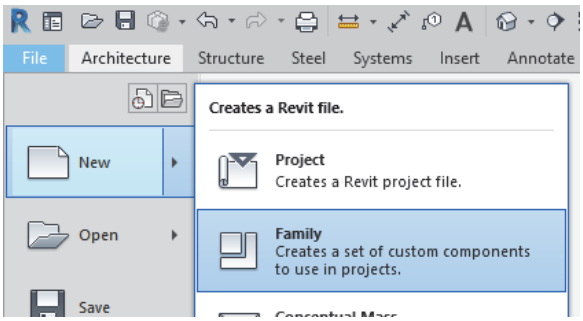
This method takes several steps but gives a better model visibility in Revit. The first step is creating a new part family, importing the CAD model "DWG" file into the part family, and placing an instance into the Revit model. The drawback to this option is the part family must be edited each time a revision is made to the exported "DWG" file from Plant 3D; erasing the existing imported model and replacing it with the updated model.

1. Launch AutoCAD Plant 3D and open the model to be exported in Plant 3D using the "**EXPORTTOAUTOCAD"** command (or right-click the model inside Project Manager and select "Export to AutoCAD" to save a copy of the model with the Plant objects converted to AutoCAD 3D solids.

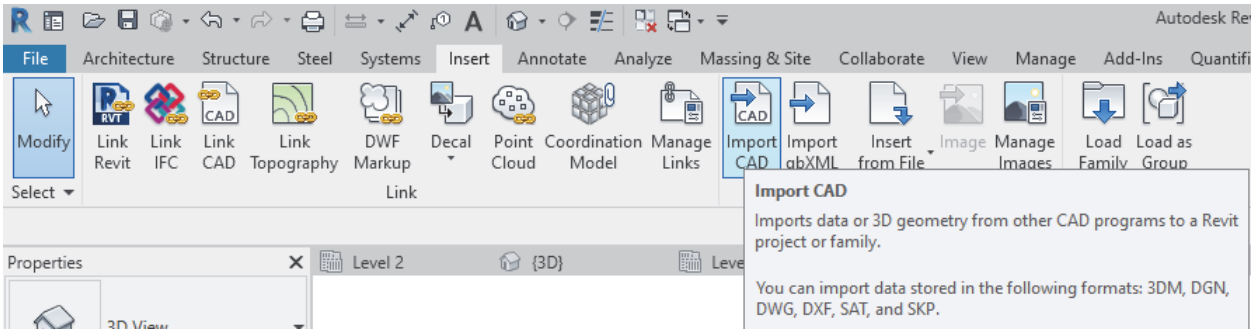
2. Select a folder outside of the Plant 3D project to store the exported model

Note: If you want to include external references (Xrefs) within the exported model, make sure to open the "DWG" file and use the **XREF** command to bind the references into a block.

4. In Revit, create a new empty Revit Family. Use "Generic Model.rft" for the template.



5. From the Insert ribbon click the "Import CAD" button to import the "DWG" file:



6. Click the Save button to save the new part family

7. Use the "Load into Project and Close button" on the "Insert" on the ribbon

8. Click to select a location to place the new part family
   "If desired, press the V key, then the G key to bring up the Visibility / Graphics Overrides window and turn on the site Project Base Point or Survey Point for placement and alignment of the part family in".

9. The Part Family can be placed again by locating it in Project Browser under the Generic Models category and creating a new instance.

Note: when updates occur, an edit will be required to the part family; erase the existing "DWG" geometry, import the updated "DWG" file, save, and reload the family into the project.

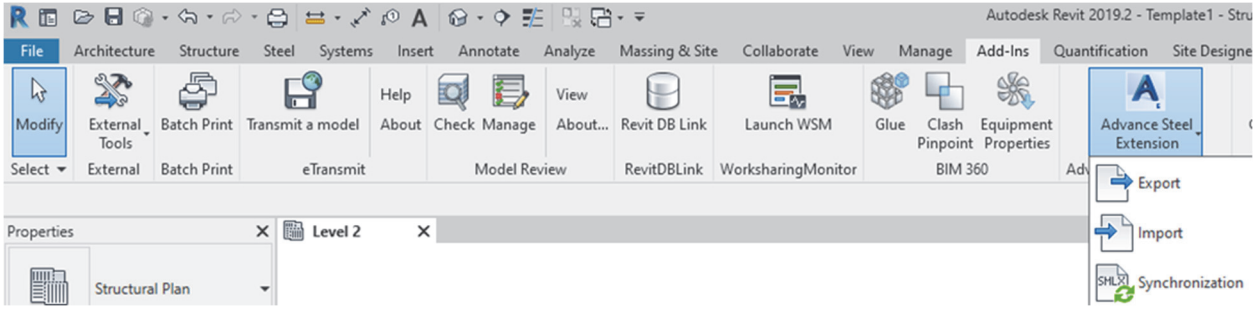
STEP 9: Model Management in Revit:

With the Plant 3D models inserted as part families, they can be used in a Revit project for creating section and plan views.

One recommended practice is to create a new Revit project model specifically for the imported Plant 3D DWG files. This allows the project to the linked into additional Revit projects and un-loaded and re-loaded as needed. This will also avoid importing additional categories and elements into the main models.

STEP 10: Exporting from Revit to Advance Steel

In order to use and properly display the geometry of the Revit model objects within Advance Steel, the model must be exported as SMLX file using the "Advance Steel Extension" function on the "Add-Ins" on the ribbon, where all the Revit objects are processed and converted to be visible and usable in Advance Steel. Then it can be imported in Advance Steel using the "Advance Import" on the "Export & Import" on the ribbon.



STEP 11: Exporting from Revit to Plant 3D

In order to use the 3D models from Revit within Plant 3D, it is necessary to export the models to a DWG file format. This section covers the configuration options and steps to use for proper export.

- Preparing 3D Views from Revit

While it is possible to use the default 3D View within Revit to export the models to DWG files, this may not be the desired option. The default 3D View will contain all Revit objects, including interior doors, furniture, etc.

- Limiting Model Geometry Before Exporting

Before exporting a Revit model, limit model geometry to improve the performance of the export process.

In Revit, a view of the building model contains many objects. When exporting a model for use in AutoCAD, Revit exports only the objects that are visible in the view (or views).

If only a particular set of objects from Revit are needed for the export, customized 3D Views can be created specifically for exporting the DWG files. The visibility / graphic overrides and view templates applied to the views will control what is exported out of Revit.

Examples:

- Export all concrete slabs but exclude the rebar
- Export all structural steel beams and columns but exclude walls, ceilings, and floors
- Export the exterior of a building, but exclude all interior objects such as furniture

By reducing the amount of model geometry (and its underlying data) that is exported, the following is achieved:

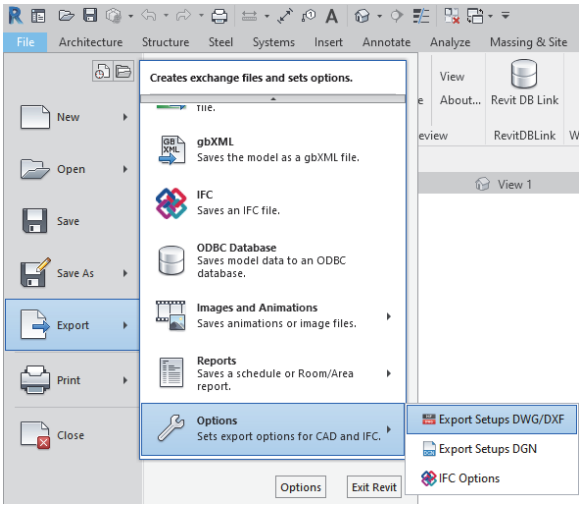
- Improve performance of the export process
- Reduce the size of the exported file
- Improve performance of the importing application
- Reduce clutter (non-essential items) in the exported file, and hence the amount of work required to delete these objects from the file in the importing application
- Optimize the time it takes to generate orthographic views in Plant 3D

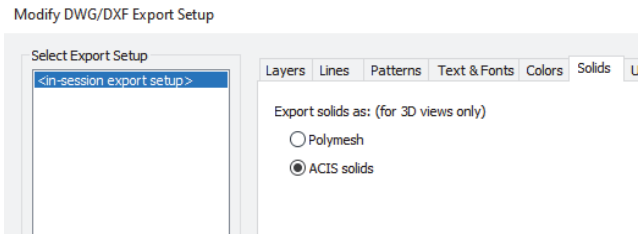
Use the following techniques in Revit to reduce the amount of geometry to be exported:

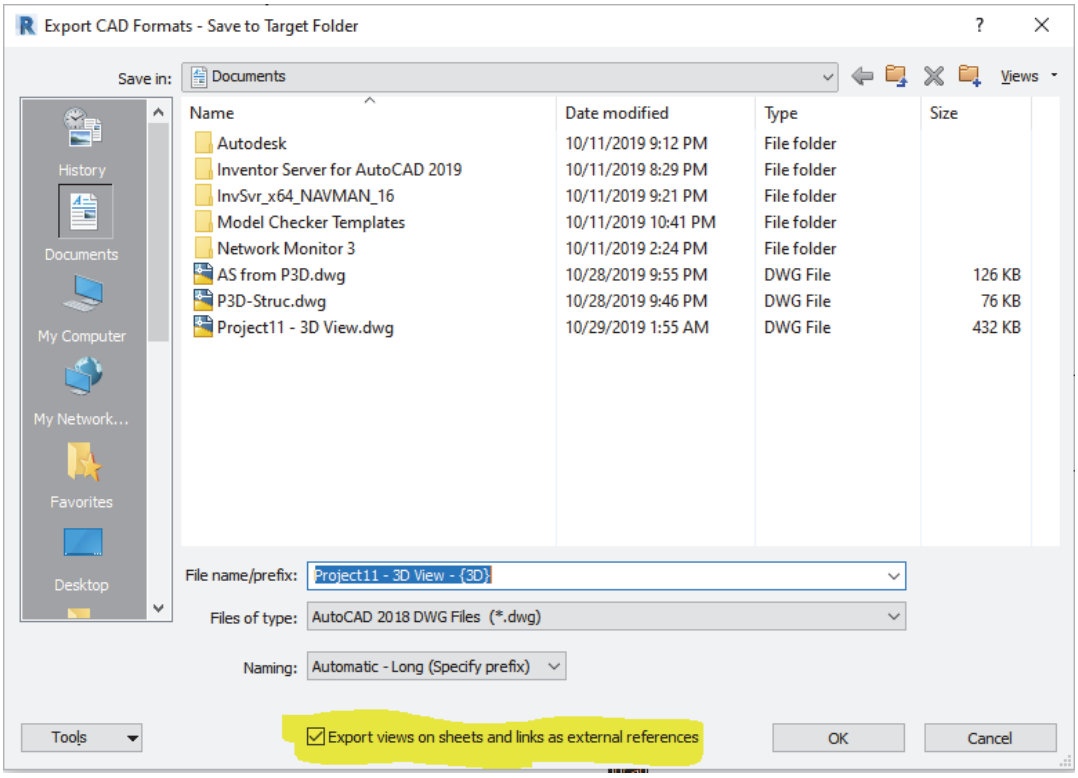
- Turn off visibility of graphics
- Use a section box or a crop region
- Specify the detail level (Course, Medium, Fine)

- Revit Export Settings – Export as ACIS 3D Solids

Before the models are exported make sure to check the export options for Revit to ensure that solids are set to ACIS solids versus Polymesh. The orthographic drawing view generation for Plant 3D will not properly process the Polymesh surfaces. And check export views on sheets.







STEP 12: Importing Revit into Plant 3D

- Attach as XREF

It is recommended to use “host” drawings or DWG files that will act as container drawings when importing the DWGs that have been exported out of Revit. This is accomplished by creating a new project drawing within Plant 3D Project Manager, opening the new drawing, then attaching the exported DWG from Revit. The main benefits of this practice:

- The exported DWGs from Revit do not need to be copied into the Plant 3D project. The host DWG belongs to the Plant project and contains the external reference (XREF) to these drawings which can be stored anywhere on the network.

- By avoiding the need to copy drawings into the Plant 3D project over and over (with each revision / export from Revit), the process of updating is simply opening the host DWG and allow it to reload the XREF.

- Generating Orthographic Views in Plant 3D

If the Revit models were exported to DWG format using ACIS solids, the orthographic view generation within Plant 3D should display all of the geometry properly in generated orthographic views. Note, the complexity of the exported Revit models will have an impact on the time it takes to generate orthographic views. Plant 3D uses the AutoCAD hidden line removal and it must process all of 3D solids in order to create orthographic views

- Model Complexity

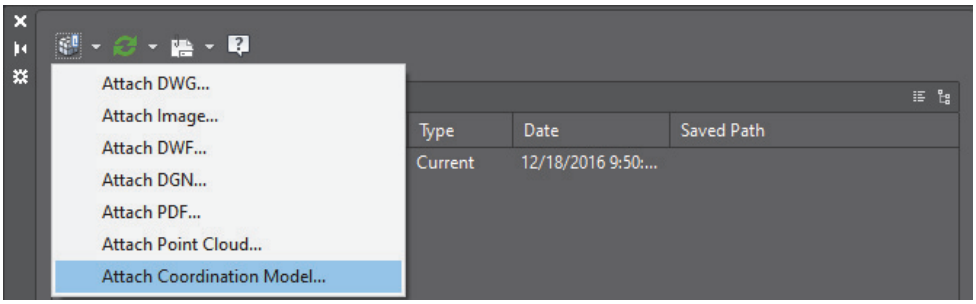
Optimizing the Plant 3D models in preparation for export to DWG files will help general performance with pan, zoom, and 3D orbit view operations within Revit. It will also help speed up the reloading of the models with each model revision.

When extremely complex models (such as those provided by vendors) are used for equipment, valves, in-line fittings, etc. the view performance of Revit can suffer when too many of these models are imported. Using simplified models for these objects is recommended as a best practice.

STEP 13: Model Coordination with Revit Thru Navisworks

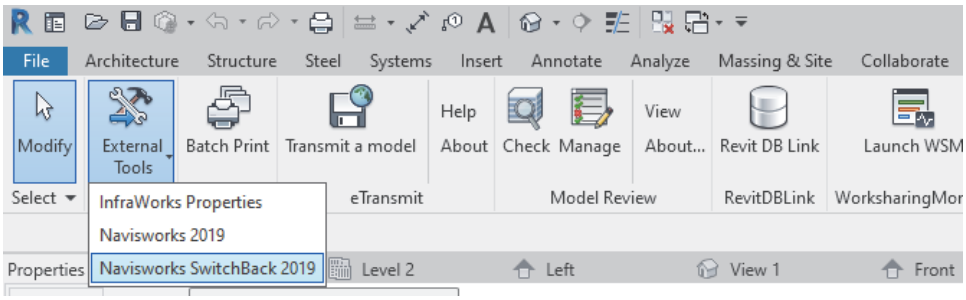
- **During model development:**

Launch Navisworks Manage; open the Revit model and save it as “NWC” file, where it can be attached as “**Attach Coordination Model**” to any AutoCAD based add-on applications by using Xrefs; and everything will be visible. Note that it won’t be a live model; so, the ACAD user must “**unload**” the attached “NWC” model allowing the Revit user to update the “NWC” file (**maintaining the same model filename**); then the ACAD user can “**reload**” the updated “NWC” to view all the changes made to the Revit model.



Note 1: As soon as the Revit user opens the model using Navisworks Manage, it auto-creates the “NWC” caching file, **save it in-place**, where it can be attached to Advance Steel, Plant 3D, and Paneldes as “**Attach Coordination Model**” using the Xref method and it will be visible.

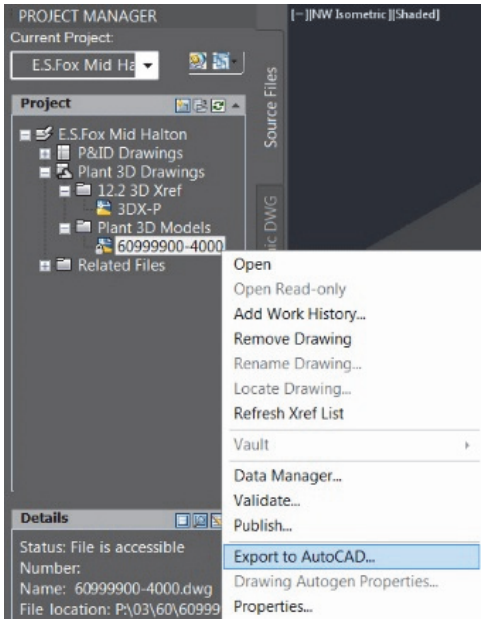
Note 2: Coordination with Navisworks Manage and activating the “Navisworks Switchback” option within Revit and Plant 3D using the “**NWload**” that will be used for clash detection; where a 3D View “Navisworks Switchback” will be created in Revit.



STEP 14: Managing Deliverables

- **Exporting Revit model for delivery:**

  Launch Revit and follow the “STEP 11” section to output the Revit model as ACIS 3D solids and save it in another location outside the project directory, in order to be incorporated with other 3D models from other disciplines.



- **Exporting Plant 3D model for delivery:**

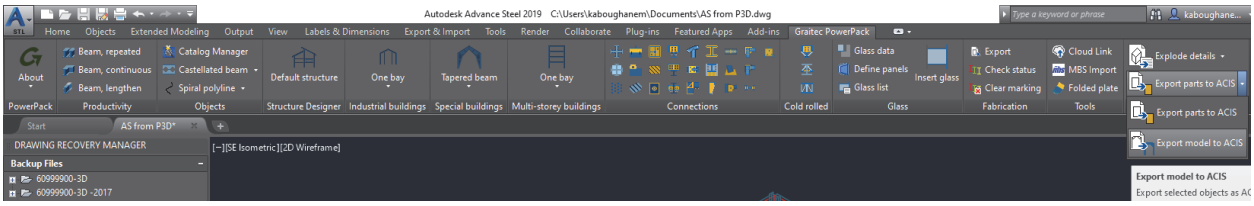
  Launch Plant 3D and follow the “STEP 7” section to output the Plant 3D model as ACIS 3D solids save it in another location outside the project directory, in order to be incorporated with other 3D models from other disciplines.

- **Preparing Paneldes 3D and MEP models for delivery:**

  The Paneldes and MEP models are good as is, so nothing is to be done, copy it from its original location to the other location outside the project directory, where all other 3D models are saved, in order to be incorporated with other 3D models from other disciplines.

- **Exporting Advance Steel model for delivery:**

  Using the “Graitec PowerPak” Tool for Advance Steel, select “Export model to ACIS” from the “Explode” on the “Graitec PowerPak” ribbon to output the model as ACIS 3D solids, then save it in the other location outside the project directory, in order to be incorporated with other 3D models from other disciplines.



Now all the above exported models are to be attached to the Plant Master Model and thus ready for delivery.

Conclusion:

Hope by now you have a better understanding of methods used to share models from Advance Steel, Plant 3D to Revit and Revit to Advance Steel and Plant 3D, in addition to model coordination using Navisworks Manage. Anticipating that this will expand your inter-operability between engineering and design disciplines.
Should you have any questions, please feel free to reach out to us.

Some references and new features:

- Autodesk University
- Graitec Advance Steel Academy
- SolidCAD Tips & Tricks Seminars
- Autodesk Labs
- Autodesk Knowledge - https://knowledge.autodesk.com
- AU presentations by Paul F. Aubin, Jason Drew, Quentin Contreras, Marc Breugelmans

New enhancements and features in the Advance Steel 2020 Extension for Revit:

- The extension exports models using only the Rule Based Mapping Transfer. The Revit Family Based Mapping Transfer and the Dynamic Profile Transfer types were removed from the export functionality
- Added the "Ignore beam cutbacks and extensions on export" option in the Settings dialog
- Added a search field in the manual mapping dialog, which allows you to easily find the desired section from the Revit family
- The Refresh button loads the modifications made in the Revit model inside the Synchronization dialog
- Fixed an issue where an anchor in Advance Steel was imported at a slightly different position in Revit
- Fixed an issue where a plate element was reporting an incorrect position change in the Revit Synchronization dialog
- Fixed an issue where the model was not displayed in Revit, after a SMLX file was imported
- Fixed an issue where the holes placed on an angle profile, in Advance Steel, were imported at a slightly different position in Revit