AUTODESK **UNIVERSITY** 2014

Implementing Advance Steel within a Building Information Modeling (BIM) Workflow

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FB6278

This class will cover the implementation of Advance Steel software for connection design and fabrication modeling within an existing Building Information Modeling (BIM) workflow based in Revit software. We'll take users through integration of model data from Revit software into Advance Steel software and on into Navisworks project review software for construction coordination.

Learning Objectives

At the end of this class, you will be able to:

- Discover the most efficient practices for getting started with Advance Steel software
- Learn how to use Revit software model export functionality to populate an Advance Steel software model
- Understand the various limitations of the software
- Learn how to generate models for fabrication

About the Speaker

Richard Walsh has a background in structure Building Information Modeling (BIM) development and deployment, and he has worked as a technical consultant within the Europe, Middle East, and Africa (EMEA) BIM Team at Autodesk, Inc., for the past 3 years.
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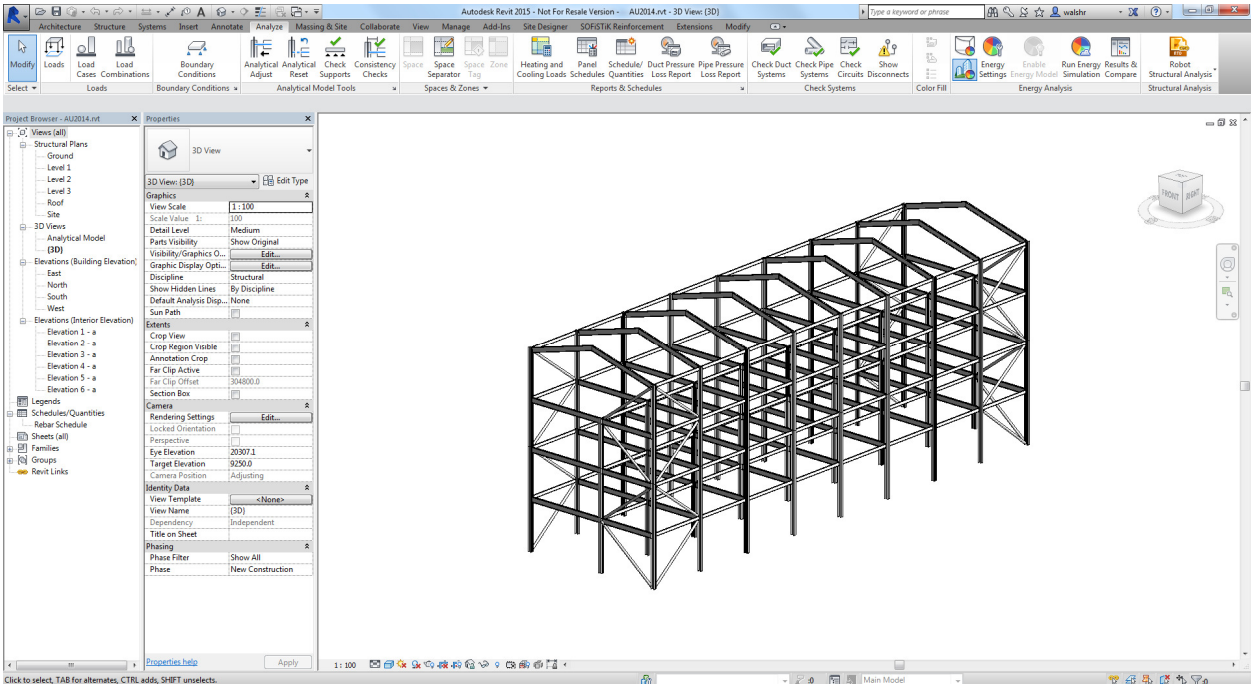
Discover the most efficient practices for getting started with Advance Steel software

The software chosen through the demonstration of this section are:

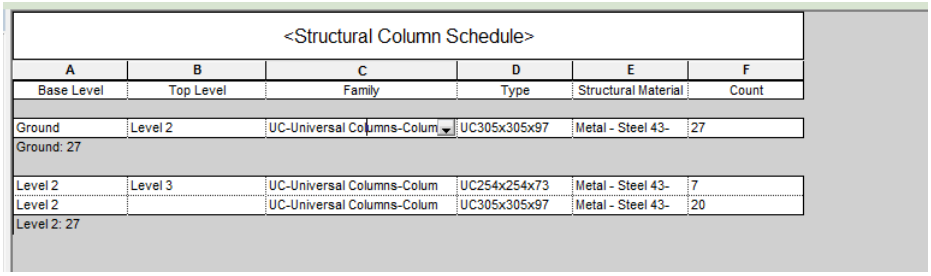
- Autodesk Revit 2015
- Robot™ Structural Analysis Professional
- Autodesk Advance Steel 2015
- Navisworks Manage 2015

Starting in Revit

The creation of a relatively common steel frame structure in Revit was created using the UK standard shipped Template *"Structural Analysis-DefaultGBRENU.rte"*



Member selection was from the UK Chorus Steel catalogue of UB's UC's etc...



<Structural Column Schedule>

A	B	C	D	E	F
Base Level	Top Level	Family	Type	Structural Material	Count
Ground	Level 2	UC-Universal Columns-Colum	UC305x305x97	Metal - Steel 43-	27
Ground: 27					
Level 2	Level 3	UC-Universal Columns-Colum	UC254x254x73	Metal - Steel 43-	7
Level 2		UC-Universal Columns-Colum	UC305x305x97	Metal - Steel 43-	20
Level 2: 27					

Structural Column Schedule

<Structural Framing Schedule>

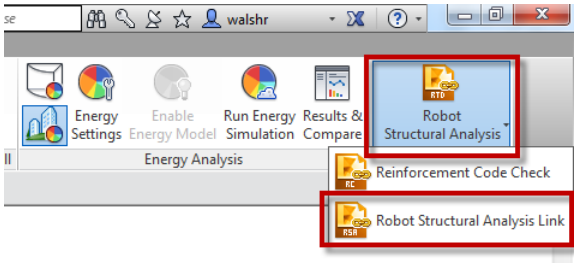
A	B	C	D	E	F
Reference Level	Family	Type	Structural Usage	Structural Material	Count
Ground	Circular Hollow Sections	CHS219.1x8	Other	Metal - Steel 50-355	6
Ground: 6					
Level 1	Circular Hollow Sections	CHS219.1x8	Other	Metal - Steel 50-355	6
Level 1	UB-Universal Beams	UB305x102x25	Girder	Steel, 43-275	24
Level 1	UB-Universal Beams	UB457x191x82		Steel, 43-275	27
Level 1	UB-Universal Beams	UB457x191x98	Girder	Steel, 43-275	9
Level 1: 66					
Level 2	Circular Hollow Sections	CHS219.1x8	Other	Metal - Steel 50-355	6
Level 2	UB-Universal Beams	UB305x102x25	Girder	Steel, 43-275	24
Level 2	UB-Universal Beams	UB457x191x82	Girder	Steel, 43-275	9
Level 2	UB-Universal Beams	UB457x191x98	Girder	Steel, 43-275	9
Level 2: 48					
Level 3	Circular Hollow Sections	CHS219.1x8	Other	Metal - Steel 50-355	6
Level 3	UB-Universal Beams	UB305x102x25	Girder	Steel, 43-275	24
Level 3	UB-Universal Beams	UB457x191x82	Girder	Steel, 43-275	9
Level 3	UB-Universal Beams	UB457x191x98	Girder	Steel, 43-275	9
Level 3: 48					
Roof	UB-Universal Beams	UB305x102x25	Girder	Steel, 43-275	16
Roof: 16					

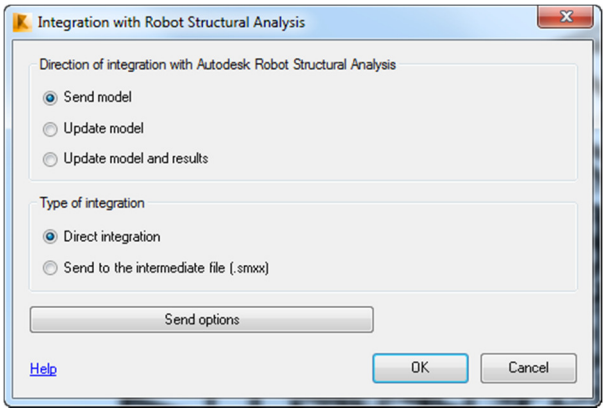
Structural Framing Schedule

There were no loads applied in Revit nor any foundations etc.

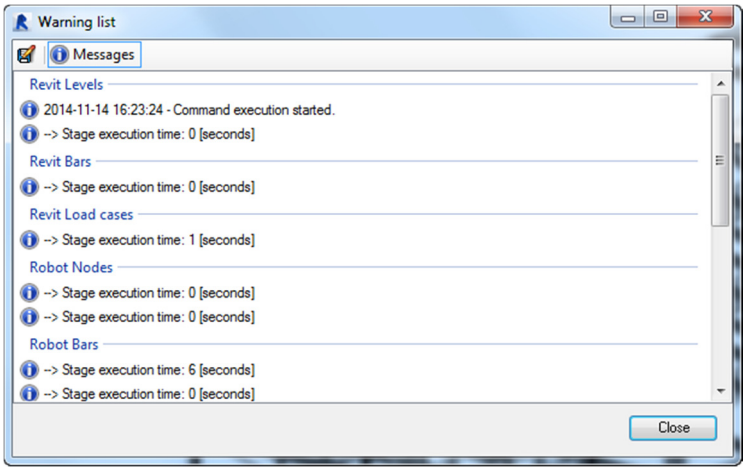
Moving to Robot

Exporting from Revit to Robot for Structural Analysis was simply and efficiently managed through the Analysis Tab on the ribbon as shown below:

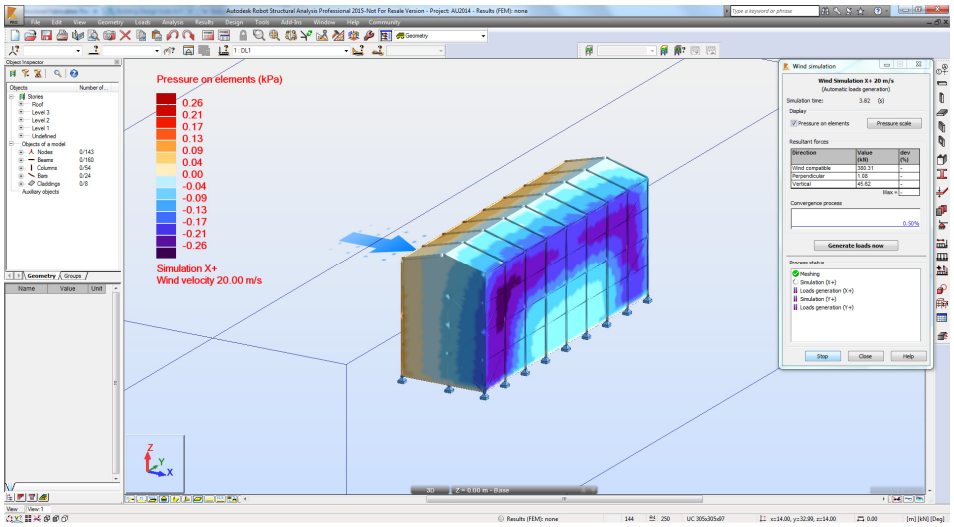




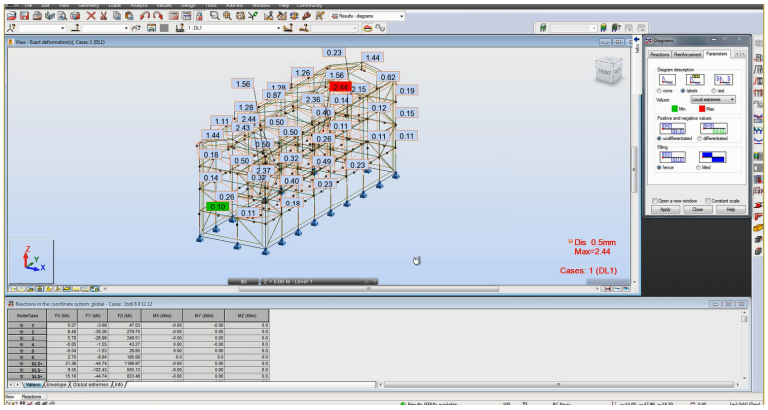
Once the model is successfully opening in Robot (with no errors or warnings)



The frame can be supported and loaded ready for analysis. This includes applying cladding panels for the purposes of wind analysis.



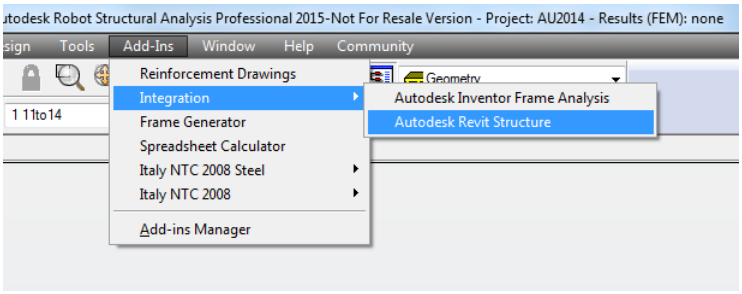
Wind analysis in Robot



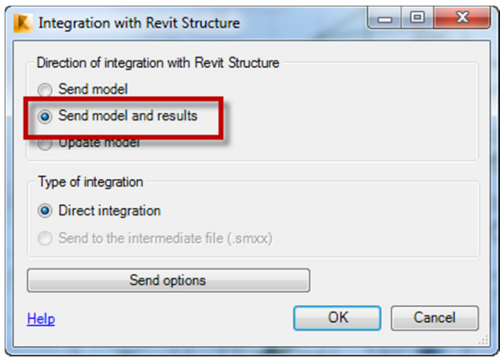
Checking the results in Robot

Back to Revit

The model can now be sent back to Revit through the Integration tool for Revit Structure in the Add-Ins tab:



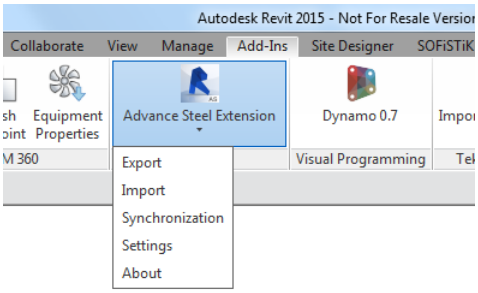
It is important to note that this needs to include the results with integration options as illustrated below:

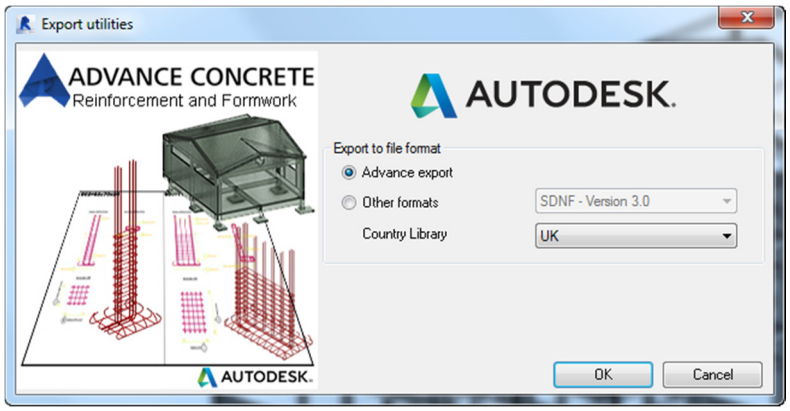


This will now update the original Revit model including the loading and results from the analysis.

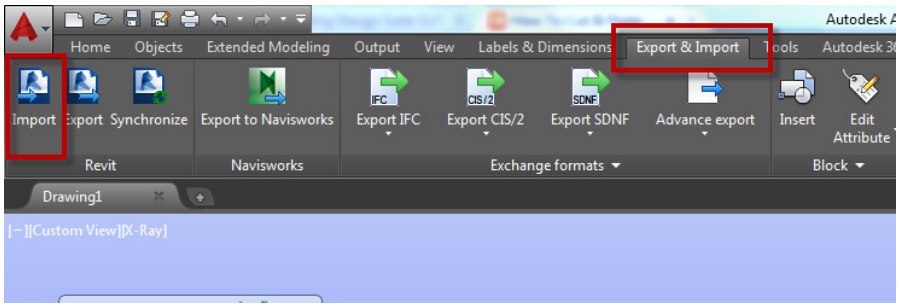
Into Advance Steel

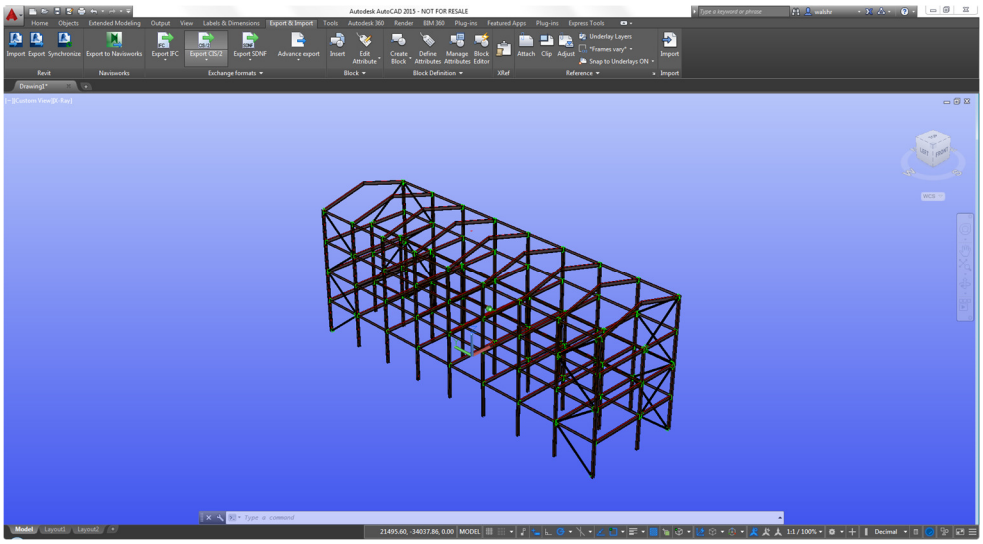
Integration from Revit to Advance Steel couldn't be simpler now with the Advance Steel Extension under the Add-Ins tab:



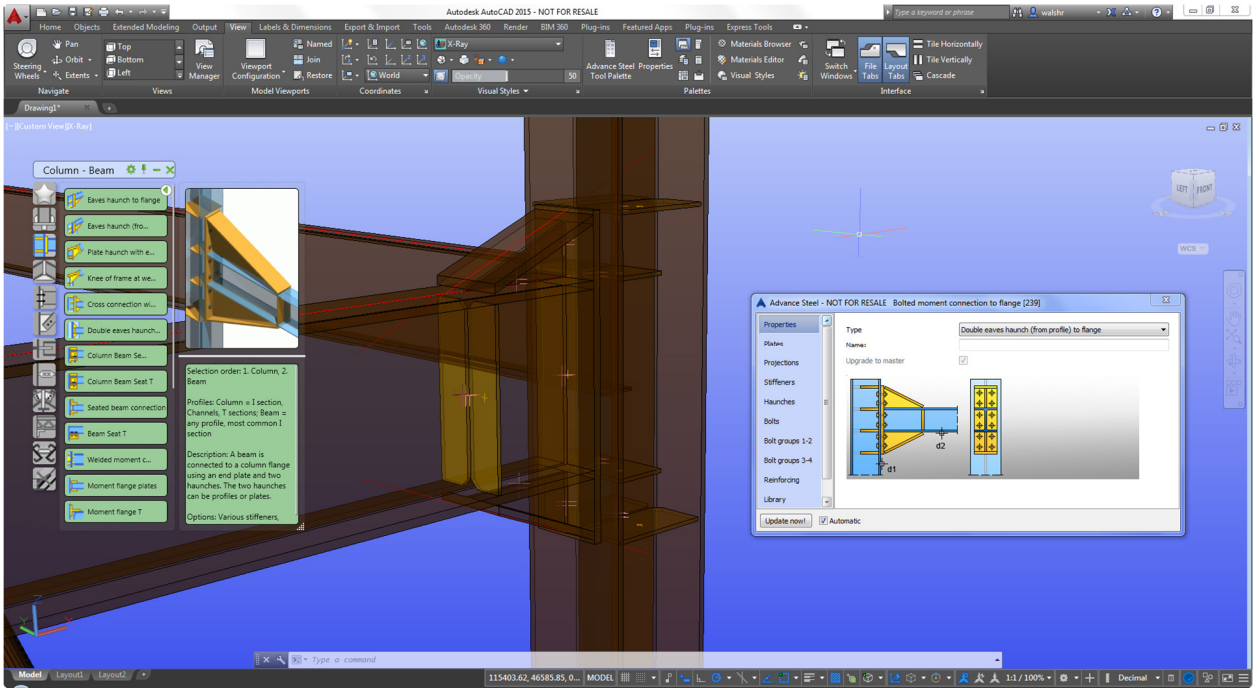


This creates an Advance Steel .gtcx file that can now simply be imported through the Advance Steel "Export & Import" tab:





The model is now ready to save and apply required connections

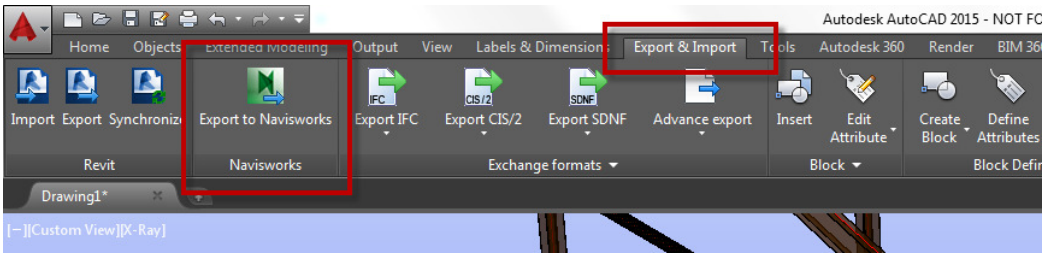


As you will see the model is being updated live as the connection is refined through the dialogue box

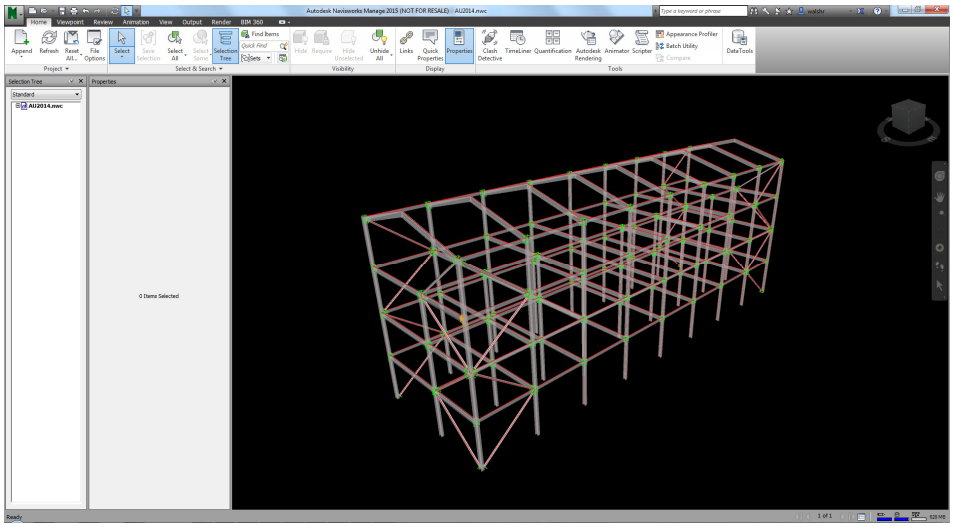
Out to Navisworks

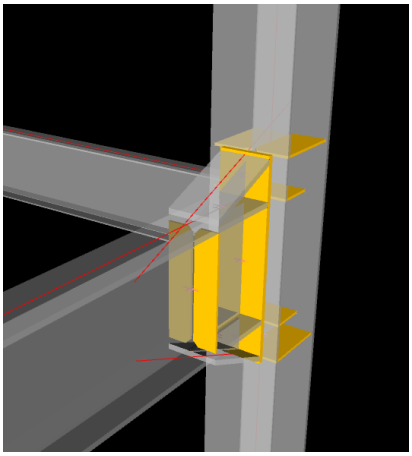
Once the Advance Steel model is completed with connections modelled as required it's time to move on again, this time into Navisworks for further BIM Uses such as coordination, sequencing and quantification

Again this could not be simpler using the Export to Navisworks from the "Export & Import" tab



As you will see below the Advance Steel model can now be opened/appended to the relevant Navisworks file:



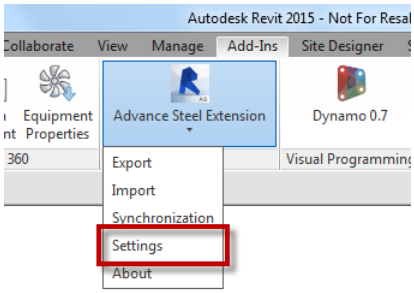


Learn how to use Revit software model export functionality to populate an Advance Steel software

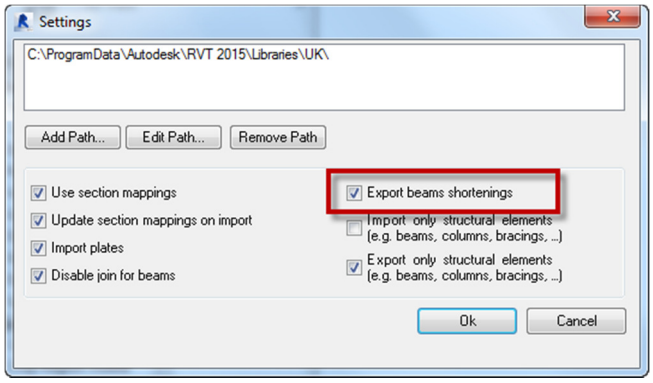
Options and Settings within Revit

During the session we will look under the bonnet for the settings and configuration for Exporting from Revit to Advance Steel

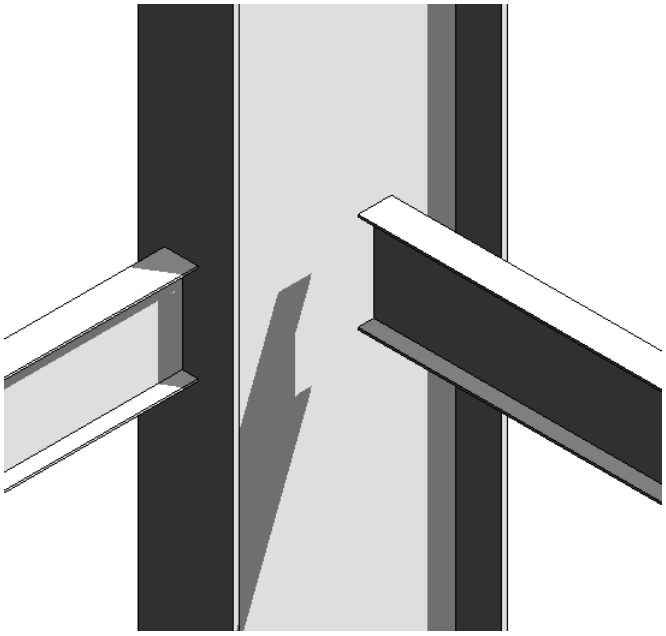
For example within the Setting of the Advance Steel Extension in Revit:



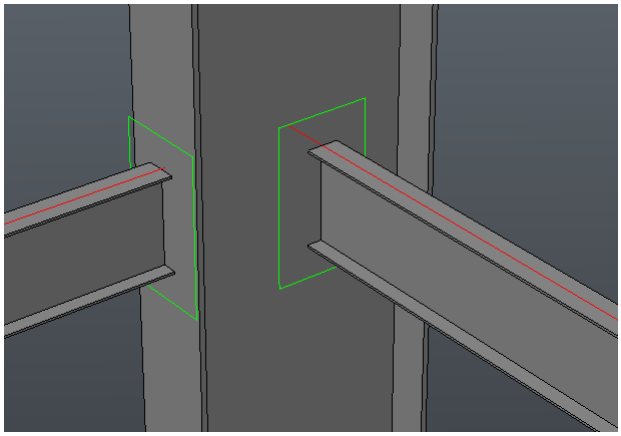
The following options are available:



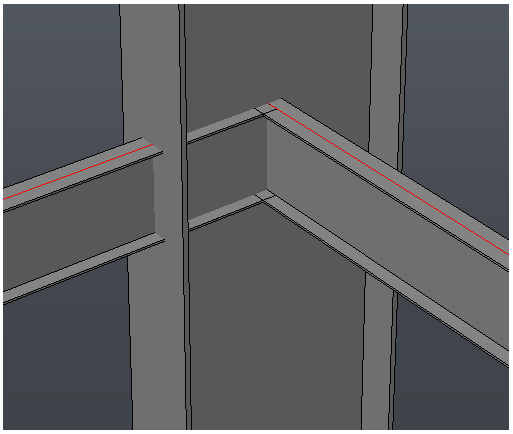
One of the first check boxes to consider unchecking is the “Export beams shortenings”, this will remove the cutbacks from the Revit members when they are exported to Advance Steel



Members in Revit with beam shortenings as standard



In Advance Steel with shortenings ✗

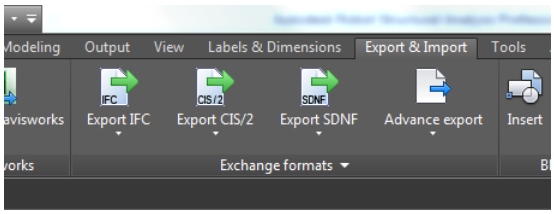


In Advance Steel with shortenings ✓

Learn how to generate models for fabrication

Advance Steel output Formats

There are numbers industry recognised export formats available from Advance Steel



IFC

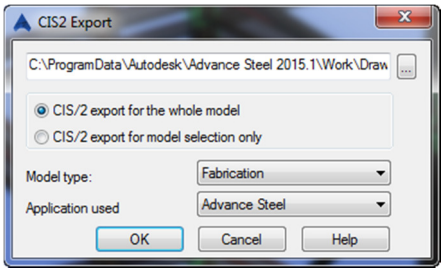
The IFC export functionality from Advance Steel is to the IFC2x3 file format and is Industry Foundation Class format

Further information about this classification can be found through the BuildingSMART® group

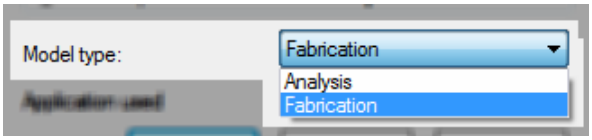
www.buildingsmart-tech.org/

CIS/2

The CIS Interface (CIMsteel Integrated Standard) was developed to enable a model based data exchange between different domains (construction, detailing and fabrication) dedicated to steel construction. This exchange format is mainly driven by the AISC.



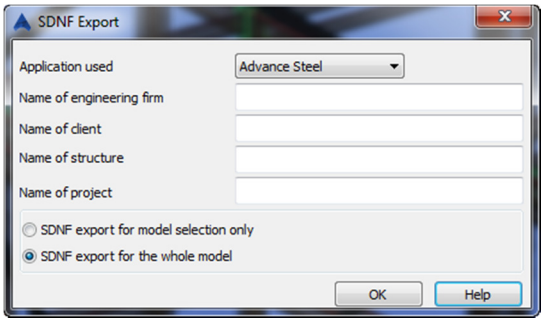
The options available through this output file format including export for Fabrication or Analysis and this depends largely on the downstream intended use by the steelwork fabricator.



SDNF

The SDNF (Steel Detailing Neutral Format) Version 3.0 is a standard format for data exchange of steel elements (sections, plates etc.). SDNF offers a system neutral method for the import and export of structural model data. This bidirectional process allows the import and export of SDNF files from structural models.

Within this export there are options to export the whole model or selected parts/elements:



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Thank you for your time.

I hope this brief seminar proves worthwhile.

Please contact me if you have any questions

richard.walsh@autodesk.com