Steel Fabrication Transfer from Revit to Advance Steel Under the Hood

Class ID: ID322598

Class Title: Steel Fabrication Transfer from Revit to Advance Steel Under the Hood.

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Speaker Company: Graitec

Learning Objective 1:

- Discover the database table locations and the use within the SMLX Transfer process, standard mapping, and custom 1 to 1

Learning Objective 2

- Learn how to create materials references in both Revit and Advance Steel for easier mapping

Learning Objective 3

- Learn about the requirement for correct Revit family format for steel fabrication

Learning Objective 4

- Discover the importance of the steel connection instances, and learn how to create your own within current connections

Description

This session will focus on transfer of steel fabrication elements from Revit software to Advance Steel software and back. There have been many changes in recent years, so for users and managers of these systems, it is sometimes difficult to understand the background process being used. Therefore, we'll focus upon the various database types, tables, and locations, and what's used for which parts of the process, so users can understand how to manage this operation in both platforms to achieve a successful collaboration. We'll see how the correct use of the mapping database and creation of elements in both software systems, as a management operation, enables a smooth transfer, which is very important in multidisciplinary organizations—so CAD managers understand the need for this processing. Have correct Revit families created to the steel fabrication format, materials identified and mapped, and connection instances created.

Speaker Bio

John Bennett has a structural engineering and fabrication background. He worked as a steelwork detailer then progressed to CAD manager and then moved into the role of application engineer/CSM for Advance Steel software training, sales, and implementation. He has recently been working with various companies for the integration of Advance Steel into plant engineering and structural markets.

1 TABLE OF CONTENTS

2 INTRODUCTION

When suggesting this class for AU, the idea was simple, use some of the knowledge and ideas, workflows that we have found over the last few years from dealing with this through customisations and events with our customer base. Take that knowledge and convey it via this session, to aide others in the quest to work between the Design and detailing platforms of Revit and Advance steel for Structural detailing.

So looking at that simple concept, we set about trying to pull together 3 years or more background work in this area and summarise it into a few slides and a handout out document, not an easy task, as to fully understand we need to convey the changes in the transfer process found during the last 3-4 years, as the process evolves and changes to meet the demands for better collaboration between Revit and Advance steel.

We aim to show the Advance Steel extension evolution over this period, also the introduction of new Steelwork tools within Revit, that allow for detailing at the design stage to aid the clarity of data to the structural detailer from the engineering level. Look at some of the background elements behind this and give an insight into how this is working and how the user can control and understand what is required to transfer the data.

We hope you find the contents of this document useful as collections of references and tips over this process as it is currently seen.

3 THE ADVANCE STEEL EXTENSION FOR REVIT.

The Extension is available to download via your Autodesk account, if you cannot see in your updates in the desktop app, then go to your account settings and log in to download and install.

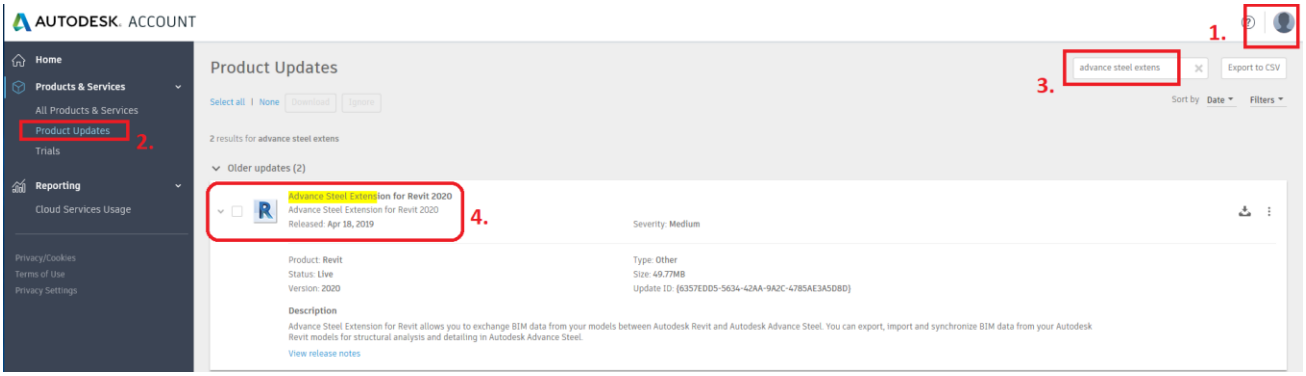


Figure 1-Revit extension in Autodesk account

The 2019 version is also in the ADSK account and the process is the same to install as the 2020 version.

The 2018 version is via the Autodesk Apps store.

https://apps.autodesk.com/RVT/en/List/Search?isAppSearch=True&searchboxstore=RVT&facet=&collection=&sort=&query=Advance+Steel+2018+Extension

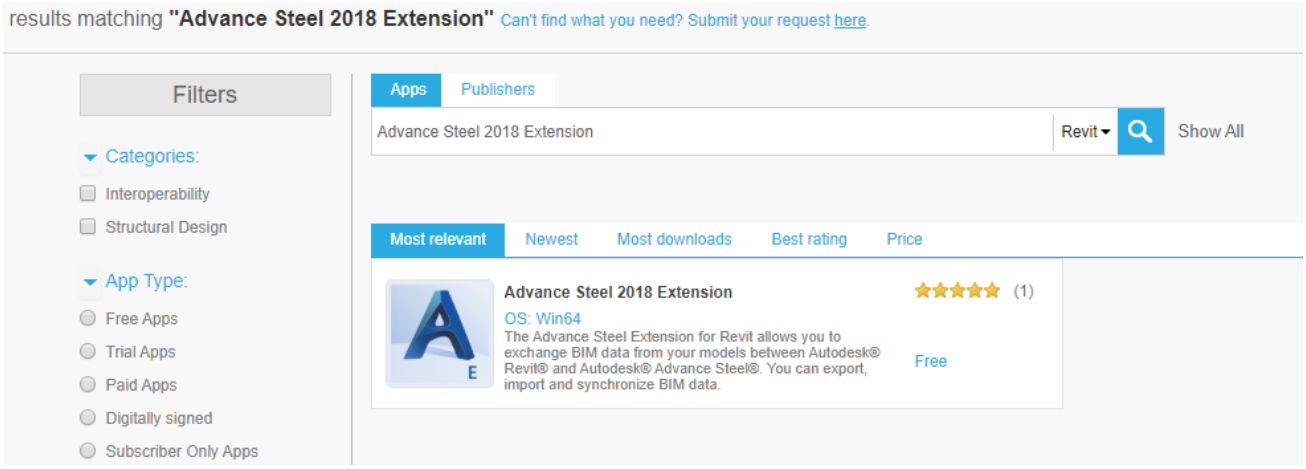


Figure 2-Revit 2018 extension in Autodesk apps store

The **2017 Version** is also via the **Autodesk Apps store**, you can simple install it and then run the Revit version.

Tip: If you are installing multiple versions I would recommend starting with the oldest first, then moving to the newest last. Have noted that some of the newer versions have influences over their predecessors.

3.1 INSTALLATION.

The installation process will install some additional Access Databases under a folder called Advance:

C:\ProgramData\Autodesk\Advance\Data

These are MDB access type databases, called the **GTCMapping20##.MDB**, this is where the default lines for mapping from Revit to Advance Steel are stored.

If you are using a system that has both Revit and Advance Steel, then you may find these databases already in place, as Advance steel also deploys these as well.

Within Advance Steel there are also some corresponding databases, these are MDF type and they are stored under the Advance Steel 20## folder, they will be in a country subfolder:

C:\ProgramData\Autodesk\Advance Steel 2020\####Country folder\Steel\Data

UK install as example string:

C:\ProgramData\Autodesk\Advance Steel 2020\GBR\Steel\Data

*Note: the **MDB types** are used when working with the **Revit Export**, the **MDF types** are used when working from **Advance steel***

4 DATABASE CONTENTS

The GTC Databases contain a series of tables directly related to the transfer process using the SMLX file format. These table cover elements like materials, Beam/Section types, along with various mapping tables for other Exchange processes available from Advance steel into programmes like AutoCAD Plant3D, also included in this database are table for exchange with STADD and KISS formats.

The format with P3D uses the same operation as RVT-AS, in that it maps the materials and the section profile, however for this integration the process is on directional from P3D to AS.

4.1 ACCESSING THE DATABASE TABLES.

There are several options to access the different table types, this really depends upon the level of modification that you wish to carry out.

From the AS product there is the Management Tools (MT) via the table editor, for this you will need to browse to the DB location in question and access the DB.

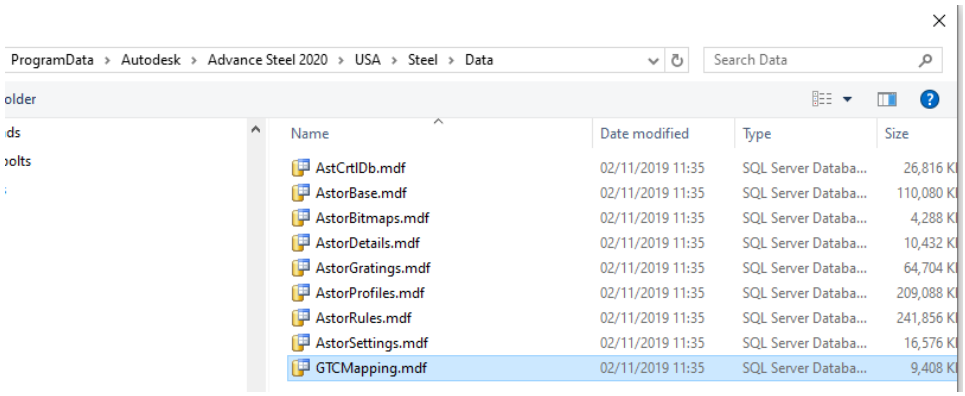


Figure 3- Browse to DB location for GTC mapping

Key	Standard	Section	GTC Standard
1	AISC 14.1 HP Shape	\bHP(\d{1,2})X(\d{2,3})	AISC HP
2	AISC 14.1 M Shape	\bM(\d{1,2}(?:\.\d{1})?)X(\d{1,2}(?:\.\d{1,2})?)	AISC M
3	AISC 14.1 S Shape	\bS(\d{1,2})X(\d{1,3}(?:\.\d{0,2})?)	AISC S
4	AISC 14.1 W Shape	\bW(\d{1,2})x(\d{1,3})	AISC W
5	AISC 14.1 Angle equal	\bL(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1}(?:\/\d{0,2})?)	AISC Angle Equal
6	AISC 14.1 Angle equal	\bL(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1}(?:\s\d{0,1}\/\d{0,2})?)	AISC Angle Equal
7	AISC 14.1 Angle uneq	\bL(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}(?:\s\d\/\d)?)X(\d{1}(?:\/\d{0,2})?)	AISC Angle Unequal
8	AISC 14.1 Angle uneq	\bL(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}(?:\s\d\/\d)?)X(\d{1}(?:\s\d{0,1}\/\d{0,2})?)	AISC Angle Unequal
9	AISC 14.1 C Channel	\bChannelsC(\d{1,2})X(\d{1,2}(?:\.\d{1,2})?)	AISC C
10	AISC 14.1 HSS Round	\bHSSRound\s(\d{1,2}(?:\.\d{1,3})?)x(\d{0,2}(?:\.\d{1,3})?)	AISC HSS Round
11	AISC 14.1 HSSSquare	\bHSS\s(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1,2}/\d{1,2})	AISC HSS Square
12	AISC 14.1 HSSRectangular	\bHSS\s(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}/\d{1,2})	AISC HSS Rectangul
14	AISC 14.1 MC Channel	\bMC(\d{1,2})X(\d{1,2}(?:\.\d{0,1})?)	AISC MC
15	AISC 14.1 MT	\bMT\s(\d{1}(?:\.\d{0,2})?)X(\d{1}(?:\.\d{0,2})?)	AISC MT

Figure 4-MT>Table editor> GTCMapping>Table type

For the Revit GTC mapping DB, you can in current version use Microsoft Access as the DB is a *.MDB type database.

The Access type MDB's are currently used when the Revit extension is used, the installation of the GTBMapping is by the installation of the Revit AS extension, it will add it into the system.

If the user has both Revit and Advance steel in place on their system, then it adds in data lines to the GTCMapping already created by the Advance steel installation.

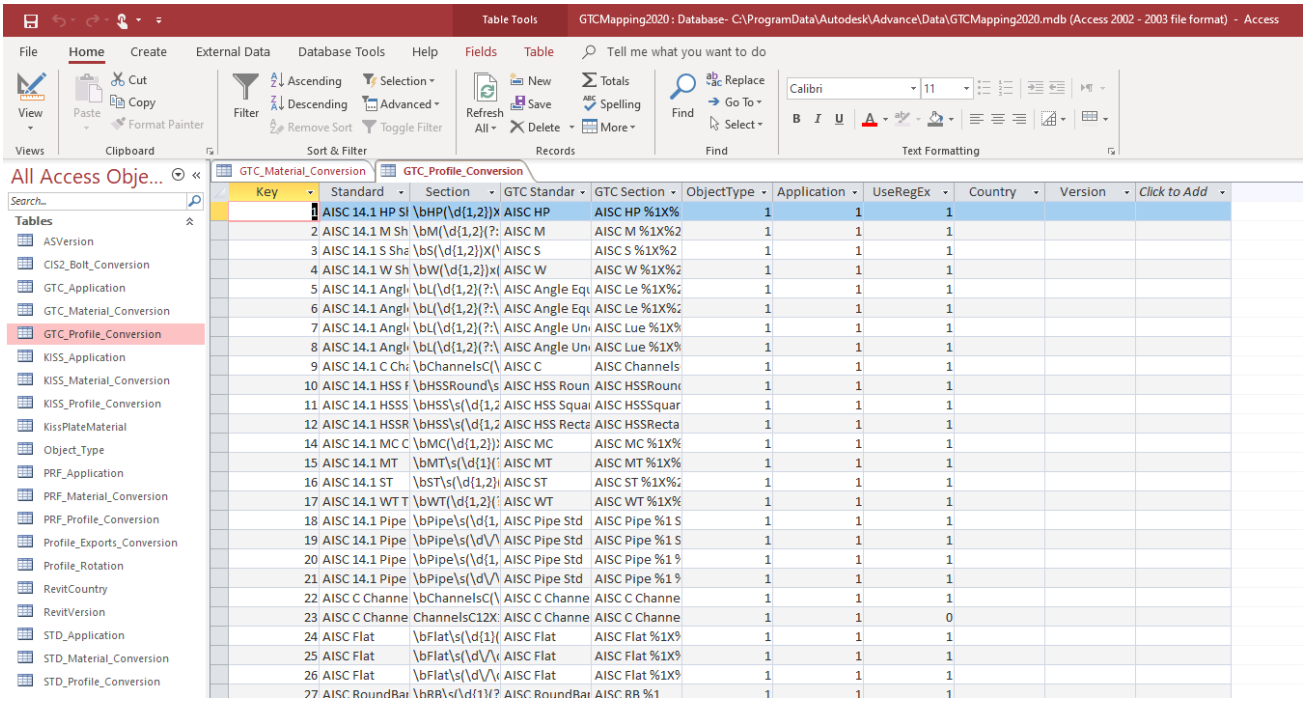


Figure 5-Mircosoft Access - GTC Mapping.MDB

For Advance Steel and P3D, these are the *.MDF type, you can also access the data via the *Microsoft SQL management studio interface*.

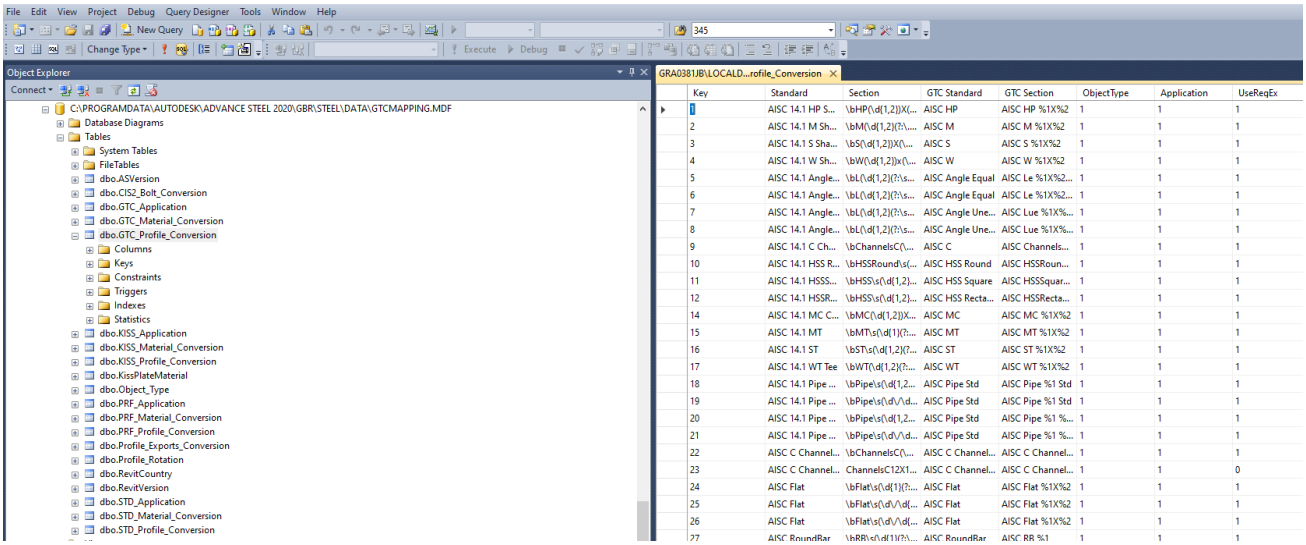


Figure 6-SQL server management studio for MDF

AKN link for SQL server management ： https://knowledge.autodesk.com/support/advance-steel/getting-started/caas/CloudHelp/cloudhelp/2020/ENU/AdvSteel-GetStarted/files/GUID-36721418-4385-475A-91CA-384AE72121D8-htm.html

Each of these tables contains rules to transform the names of elements (profiles, materials) when exporting from one application to another, according to the used conversion standard (SMLX, CIS2, Kiss, STD, etc.)

4.2 EDITING TABLES AND DATA

When editing the data in the tables or removing data, you can use any one of these interfaces, the first port of call would be the MT Table editor, it is a basic editor, you can find the data entries and remove lines, edit content etc.

For more complex changes and editing to the table data, if the DB is a MDF format then, you would use the SQL management tools, there are options in their to export/import the data to spreadsheet format, also options to replicate and create new data tables. But users should be mindfully of the use of these tools.

The MDB type we would use Access and spreadsheet tools to management the data creation and replication.

Generally, for the less experienced user, not familiarly with the use of SQL or Access coding or scripting, we would try to keep the data management as this simple level, more experience users, or users with access to programming knowledge they could experiment with Scripts/codes and using *Visual Basic for their editing and management.*

We will come on to talk about expressions rules and their contents in due course, but at this point of the document we would like to point users to some useful information and video's created by Stephan Gumpert over the use and creation of expressions for the SMLX management.

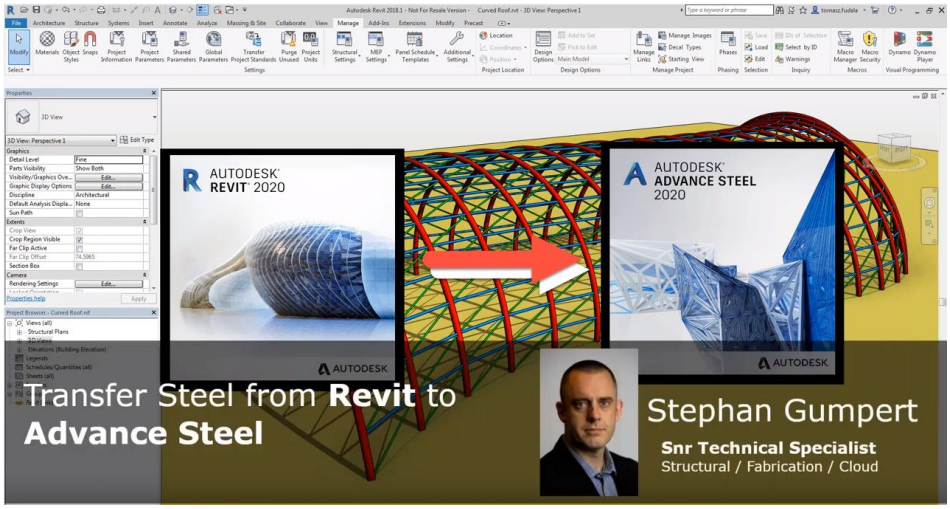
https://www.linkedin.com/in/stephan-gumpert/?originalSubdomain=au

In these video's Stephan explains how to remove existing data and then create your own expression rules, using the basis of the SMLX process to map between the software platforms.

Link to YouTube presentations

https://www.youtube.com/watch?v=Kgyttkgfndo

https://www.youtube.com/watch?v=29I6jAaS12Q



https://knowledge.autodesk.com/support/revit-products/learn-explore/caas/video/youtube/watch-v-Kgyttkgfndo.html?st=stephan%20Gumpert

https://knowledge.autodesk.com/support/revit-products/learn-explore/caas/video/youtube/watch-v-29I6jAaS12Q.html?st=stephan%20Gumpert

5 THE EXTENSION MECHANISMS

Behind the AS Extension for Revit are several mechanisms that are used to map between the software's, and these have changed over the different versions in recent years, some are no longer in the exchange process, others remain.

During the session you will see examples of these over the last few versions of Revit and Advance steel, but for this document we focus upon the 2020 release.

5.1 THE FILE FORMAT.

The process creates a File now referred too as the '**SMLX**' file, (**Steel Mark-up language format**) this is an XML based file that stores section profile data, along with materials data and contains connection data from joints/connections created within Revit and Advance Steel.

In recent years this has also been expanded to include the data for plates, bolts and welds that are created manually in both platforms, thus expanding the ability within both platforms to recognise the transfer of primary Steel fabrication elements.

The files are created using standard tools within both Revit and Advance Steel, although with Revit the Advance Steel Extension needs to be installed and will come in under the Add-ins Ribbon.

I would recommend using the correct version for each installation version of the software and the user should be carefully if trying to work between different versions of software, personally I would recommend staying within the version/release with the exchange tools.

Also, for model synchronisation the SMLX format is the only format that allows this process to function.

5.2 CONTENT EXPORTED.

The Export can be based upon selection, in the Revit platform you can use the:

- Visibility / Graphics Overrides menu
- Temporary Hide / Isolate
- Temporary View Properties

Also, you can select a series of objects via a manual selection, only that selection will be exported.

Inside Advance Steel a similar process exists, either by manual selection or by using the Search or filtering options.

5.2.1 Elements Exported

Within the process there are many elements that can be transfer, within each class there are Object types.

CLASS	OBJECT TYPE	REVIT TO ADVANCE STEEL	ADVANCE STEEL TO REVIT
General	Level	✓	✓
	Grid	✓	✓
Steel Beams	Beam	✓	✓
	Column	✓	✓
	Compound beam	X	✓
	Welded beam	X	✓
	Tapered beam	N/A	✓
	Curved beam	✓	✓
	Poly beam	N/A	✓
	Folded beam	N/A	✓
	Aluminum beam	X	✓
Plates	Rectangular plate	✓	✓
	Polygonal plate	✓	✓
	Circular plate	✓	✓
	Folded plate	N\A	✓
	Twisted folded plate	N\A	✓
	Conical folded plate	N\A	✓
Wood	Timber beam	✓	✓
Concrete elements	Wall	✓	✓
	Polygonal wall	✓	✓
	Slab	✓	✓
	Polygonal Slab	✓	✓
	Concrete beam	✓	✓
	Concrete curved beam	✓	✓
	Concrete column	✓	✓
	Isolated footing	✓	✓
	Continuous footing	✓	✓
Grating	Standard grating	N/A	✓
	Bar grating	N/A	✓
	Variable grating, rectangular	N/A	✓
	Variable grating, polygonal	N/A	✓
Connection elements	Bolts	✓	✓
	Anchors	✓	✓
	Shear Studs	X	X
	Welds	✓	✓
	Holes	✓	✓

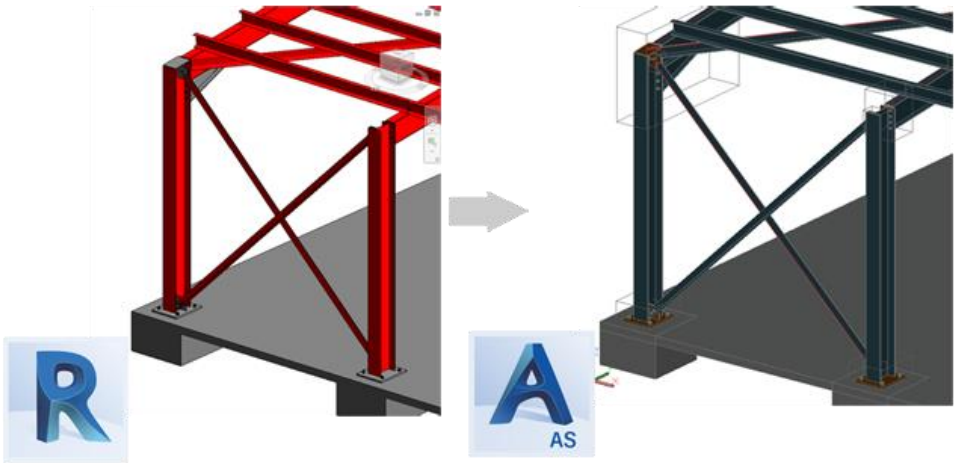
Beam features	Shorten	✓	✓
	Contour	✓	✓
	Cope	✓	✓
	Weld preparation	N/A	X
	Corner cut	✓	✓
	Cope (from Revit)	✓	✓
Plate features	Shorten	✓	✓
	Contour	✓	✓
	Weld preparation	N/A	X
	Corner cut	✓	✓
Structural analysis results	Torsor (N,V,M)	✓	X

Legend:	
✓	Present in the source application, is imported in the target application (limitation).
X	Present in the source application, is NOT imported in the target application.
N/A	NOT available in the source application.

AKN page: Element Transfer between Advance Steel and Revit

5.2.2 Steel Connection transfer

Within the Extension lies the ability to Transfer the Revit/AS connections, these are joints between the steel members, using the common connection template tech, these allow the user to create the connection in either platform, using a dialog entry and then transfer between. There are approximately 130 connection types available.



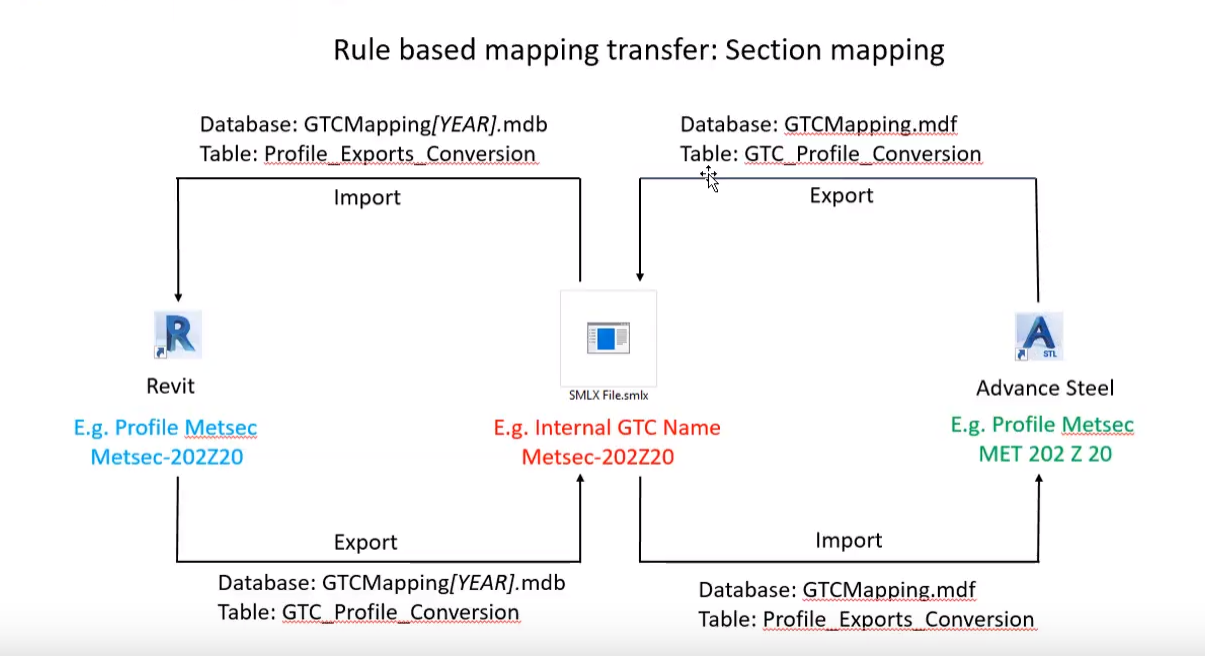
AKN Link : Structural Connection Transfer and Synchronization

Note: presently with the steel connections, we believe the intention here is to allow for their transfer to further the downstream processing within Advance Steel, then if needed to send back to Revit, this can be achieved, but with keeping the intelligence of the joint in-place, should a change be required.

5.3 THE EXPRESSIONS MECHANISM.

This is the foundation method first created to allow the transfer of data between the platforms, its origins are in the ability to understand naming conventions between the software's and provide a link between them.

This method works well for the export of section profiles that are grouped together within a range and a single line can be used to transfer a number of these in one reference. This works using an Expression placed within the cell inside the Database table.



Basically, there are two different tables (inside of the GTCMapping.mdb/mdf database's) which are used in the SMLX conversion process:

GTC_Profile_Conversion: This table is used for the name conversion of the profile, when exporting from an application to SMLX format.

Profile_Exports_Conversion: This table is used for the conversion of the profile, from inside the SMLX file, when importing into an application.

This process will work vice-versa when returning from the destination application to the original one:

GTC PROFILE CONVERSION TABLE, below is a extract from the 2020 table in the MDF Database.

GRA0381JB\LOCALD...rofile_Conversion

Key	Standard	Section	GTC Standard	GTC Section	ObjectType	Application	UseReqEx	Country
1	AISC 14.1 HP Shape	\bHP(\d{1,2})X(\d{2,3})	AISC HP	AISC HP %1X%2	1	1	1	NULL
2	AISC 14.1 M Shape	\bM(\d{1,2}(?:\.\d{1})?)X(\d{1,2}(?:\.\d{1,2})?)	AISC M	AISC M %1X%2	1	1	1	NULL
3	AISC 14.1 S Shape	\bS(\d{1,2})X(\d{1,3}(?:\.\d{0,2})?)	AISC S	AISC S %1X%2	1	1	1	NULL
4	AISC 14.1 W Shape	\bW(\d{1,2})x(\d{1,3})	AISC W	AISC W %1X%2	1	1	1	NULL
5	AISC 14.1 Angle equal	\bL(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1}(?:\/\d{0,2})?)	AISC Angle Equal	AISC Le %1X%2X%3	1	1	1	NULL
6	AISC 14.1 Angle equal	\bL(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1}(?:\s\d{0,1}\/\d{0,2})?)	AISC Angle Equal	AISC Le %1X%2X%3	1	1	1	NULL
7	AISC 14.1 Angle uneq	\bL(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}(?:\s\d\/\d)?)X(\d{1}(?:\/\d{0,2})?)	AISC Angle Une...	AISC Lue %1X%2X%3	1	1	1	NULL
8	AISC 14.1 Angle uneq	\bL(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}(?:\s\d\/\d)?)X(\d{1}(?:\s\d{0,1}\/\d{0,2})?)	AISC Angle Une...	AISC Lue %1X%2X%3	1	1	1	NULL
9	AISC 14.1 C Channel	\bChannelsC(\d{1,2})X(\d{1,2}(?:\.\d{1,2})?)	AISC C	AISC ChannelsC %1X%2	1	1	1	NULL
10	AISC 14.1 HSS Round	\bHSSRound\s(\d{1,2}(?:\.\d{1,3})?)x(\d{0,2}(?:\.\d{1,3})?)	AISC HSS Round	AISC HSSRound %1x%2	1	1	1	NULL
11	AISC 14.1 HSSSquare	\bHSS\s(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1,2}/\d{1,2})	AISC HSS Square	AISC HSSSquare %1X%2X%3	1	1	1	NULL
12	AISC 14.1 HSSRectangular	\bHSS\s(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}(?:\s\d\/\d)?)X(\d{1,2}/\d{1,2})	AISC HSS Recta...	AISC HSSRectangular %1X%2X%3	1	1	1	NULL
14	AISC 14.1 MC Channel	\bMC(\d{1,2})X(\d{1,2}(?:\.\d{0,1})?)	AISC MC	AISC MC %1X%2	1	1	1	NULL
15	AISC 14.1 MT	\bMT\s(\d{1}(?:\.\d{0,2})?)X(\d{1}(?:\.\d{0,2})?)	AISC MT	AISC MT %1X%2	1	1	1	NULL
16	AISC 14.1 ST	\bST\s(\d{1.2}(?:\.\d{0.1})?)X(\d{1.2}(?:\.\d{0.2})?)	AISC ST	AISC ST %1X%2	1	1	1	NULL

Figure 7-sample of Profile conversion table

The contents of the table include several columns each with a specific purpose for the storing of the Data in the Transfer.

a) **Key-** is the table position of the conversion rule
b) **Standard -** is the internal Standard Name of the section family, in the original application, from where the profile will be exported
c) **Section -** the Regular Expression used to search in the string name of the section (to identify the string in the section name)
d) **GTC Standard -** the internal GTC Standard Name of the section family, which will be assigned in the conversion process and saved in the GTC file
e) **GTC Section -** the 'composition' of the GTC Standard name; it will establish how the name of the section will be written in the GTC file by using the original founded strings in the 'Section' column
f) **Object Type -** this is a parameter which refers to the type of the element when using the section in question (beam or column); this variable can be set in the case of a conversion mapping for Revit (where there are different sections according to the element type)
g) **Application -** the application name for which this rule will be created, when exporting from it.
h) **UseRegEx -** if '1' it means that the Regular Expressions will be used, if '0' it means that direct conversion will be used - 'one to one conversion'

PROFILE EXPORT CONVERSION TABLE, below is a extract from the 2020 table in the MDF Database.

GRA0381JB\LOCALD...xports_Conversion | GRA0381JB\LOCALD...rofile_Conversion

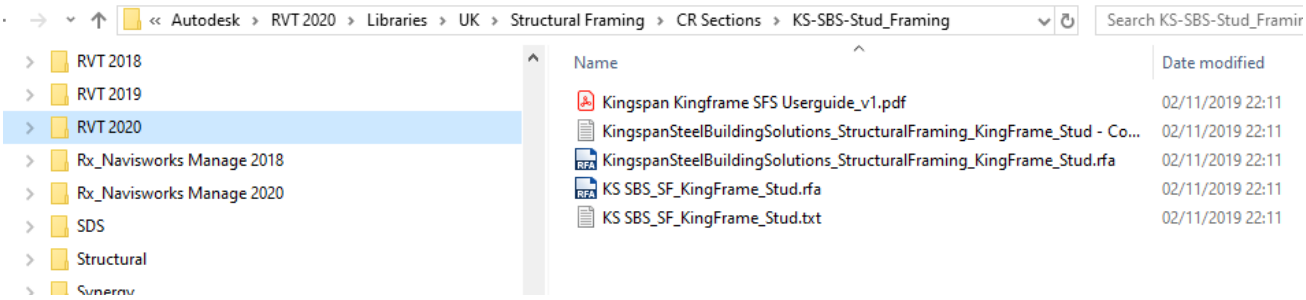
Key	GTC Standard	GTC Section	Standard	Section	ObjectType	Application	UseReqEx	Country
1	AISC HP	\bAISC HP\s(\d{1,2})X(\d{2,3})	AISC 14.1 HP Shape	HP%1X%2	1	1	1	NULL
2	AISC M	\bAISC\sM\s(\d{1,2}(?:\.\d{1})?)X(\d{1,2}(?:\.\...	AISC 14.1 M Shape	M%1X%2	1	1	1	NULL
3	AISC S	\bAISC S\s(\d{1,2})X(\d{1,3}(?:\.\d{0,2})?)	AISC 14.1 S Shape	S%1X%2	1	1	1	NULL
4	AISC W	\bAISC W\s(\d{1,2})X(\d{1,3})	AISC 14.1 W Shape	W%1x%2	1	1	1	NULL
5	AISC Angle Equal	\bAISC Le\s(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1}(...	AISC 14.1 Angle equal	L%1X%2X%3	1	1	1	NULL
6	AISC Angle Equal	\bAISC Le\s(\d{1,2}(?:\s\d\/\d)?)X(\1)X(\d{1}(...	AISC 14.1 Angle equal	L%1X%2X%3	1	1	1	NULL
7	AISC Angle Unequal	\bAISC Lue\s(\d{1,2}(?:\s\d\/\d)?)X(\d{1}(?:\s...	AISC 14.1 Angle uneq	L%1X%2X%3	1	1	1	NULL
8	AISC Angle Unequal	\bAISC Lue\s(\d{1,2}(?:\s\d\/\d)?)X(\d{1}(?:\s...	AISC 14.1 Angle uneq	L%1X%2X%3	1	1	1	NULL
9	AISC C	\bAISC ChannelsC\s(\d{1,2})X(\d{1,2}(?:\.\d{1...	AISC 14.1 C Channel	ChannelsC%1X%2	1	1	1	NULL
10	AISC HSS Round	\bAISC HSSRound\s(\d{1,2}(?:\.\d{1,3})?)x(\d{...	AISC 14.1 HSS Round	HSSRound %1x%2	1	1	1	NULL
11	AISC HSS Square	\bAISC HSSSquare\s(\d{1,2}(?:\s\d\/\d)?)X(\1...	AISC 14.1 HSSSquare	HSS %1X%2X%3	1	1	1	NULL
12	AISC HSS Rectangular	\bAISC HSSRectangular\s(\d{1,2}(?:\s\d\/\d)?...	AISC 14.1 HSSRectangular	HSS %1X%2X%3	1	1	1	NULL

Figure 8- Example of profile Exports conversion table mdf

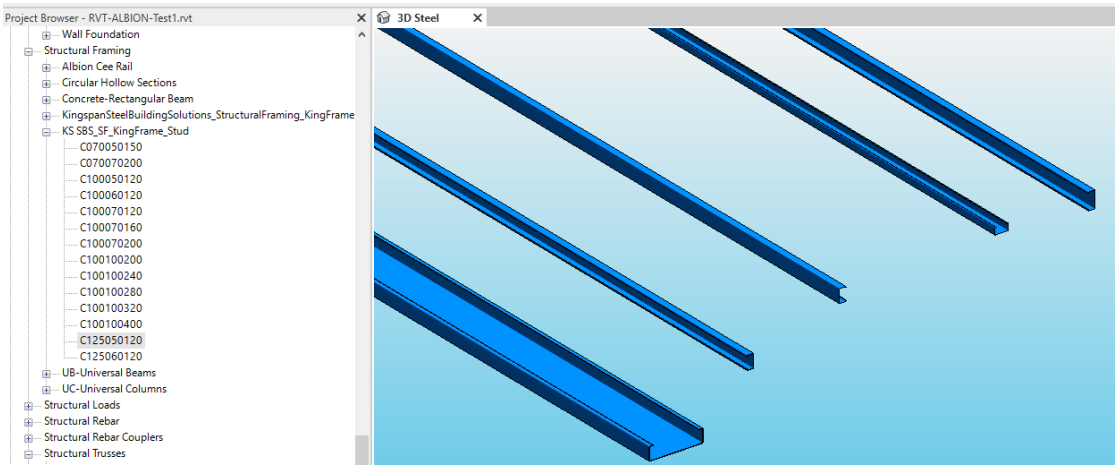
a) **Key -** is the table position of the conversion rule
b) **GTC Standard -** the internal GTC Standard Name of the section family, which should be found in the GTC file contents
c) **GTC Section -** the Regular Expression used to search in the GTC string name of the section (to identify the string in the GTC section name)
d) **Standard -** is the internal Standard Name of the section family, in the target application, where the profile will be imported
e) **Section -** the 'composition' of the Section name; it will establish how the name of the section will be written at import in the target application, by using the original founded strings in the 'GTC Section' column
f) **Object Type -** this is a parameter which refers to the type of the element when using the section in question (beam or column); this variable can be set in the case of a conversion mapping for Revit (where there are different sections according to the element type)
g) **Application -** the application name for which this rule will be created, when importing into it.
h) **UseRegEx -** if '1' it means that the Regular Expressions will be used, if '0' it means that direct conversion will be used - 'one to one conversion'

5.4 EXAMPLE OF CREATING A NEW ENTRY IN THE GTCMAPPING DB SYSTEM.

For this Example, we are taking a profile from a manufacturer, that was found on one the common sources for Revit families, then we are adding that family into the RVT2020 folder, under the libraries, within the appropriate subfolder etc.



Then loading that family into the Revit Template or project, along with several the required profiles.



With those loaded we can model a few simple sections of different types to see the mapping process, explaining what each of the tables in the **GTCmapping.MDF** database and their columns are creating during the process.

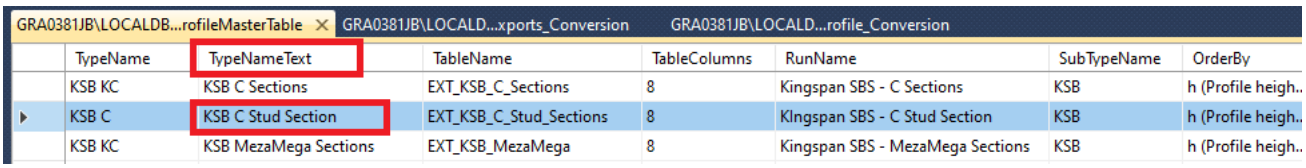
During the process we will see entries made in several tables as required to map the profile and materials.

5.4.1 GTC profile conversion

Within this table we see the new entry created, typically using a Start Key Value of 22000, is where to start looking for the new entries.

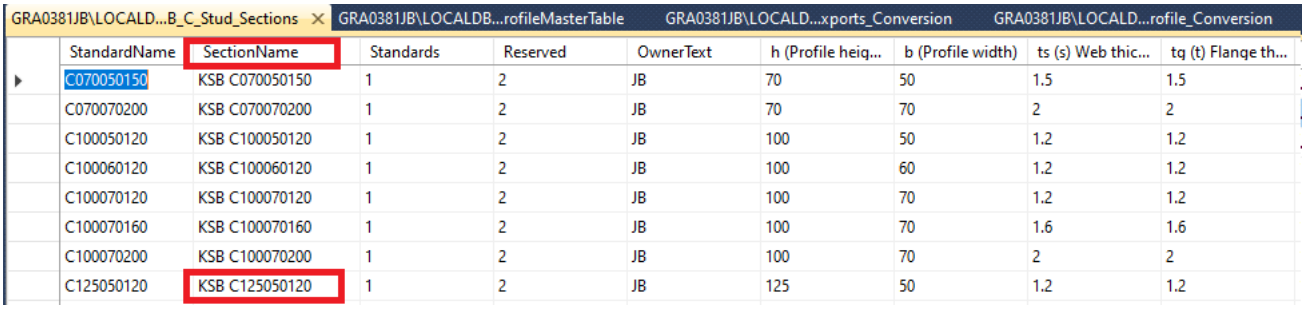
The entries have created data relative to different aspects of the software's, drawing key elements from both platforms.

Standard: This reference is coming from Advance Steel, via the **Astorprofiles.mdf** database, from the *ProfilemasterTable*, within this table is a line created when a profile is added to the system, within this line it uses the *'TypeNameText'* reference.



TypeName	TypeNameText	TableName	TableColumns	RunName	SubTypeName	OrderBy
KSB KC	KSB C Sections	EXT_KSB_C_Sections	8	Kingspan SBS - C Sections	KSB	h (Profile heigh..
KSB C	KSB C Stud Section	EXT_KSB_C_Stud_Sections	8	KIngspan SBS - C Stud Section	KSB	h (Profile heigh..
KSB KC	KSB MezaMega Sections	EXT_KSB_MezaMega	8	Kingspan SBS - MezaMega Sections	KSB	h (Profile heigh..

Section: This is the '*SectionName*' of the profile given by the Advance Steel System, for this you to check the name you would look under the Actual profile table, within the table you look for the '*SectionName*' column and the reference under there is the one used.



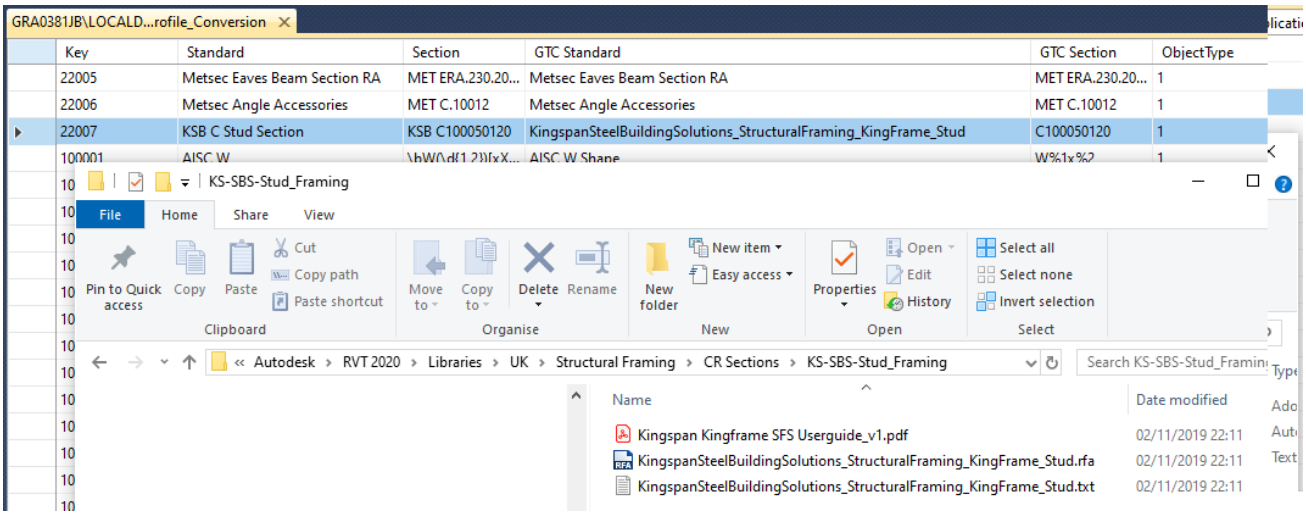
GRA0381JB\LOCALD...B_C_Stud_Sections | GRA0381JB\LOCALDB...rofileMasterTable | GRA0381JB\LOCALD...xports_Conversion | GRA0381JB\LOCALD...rofile_Conversion

StandardName	SectionName	Standards	Reserved	OwnerText	h (Profile heiq...	b (Profile width)	ts (s) Web thic...	tq (t) Flange th...
C070050150	KSB C070050150	1	2	JB	70	50	1.5	1.5
C070070200	KSB C070070200	1	2	JB	70	70	2	2
C100050120	KSB C100050120	1	2	JB	100	50	1.2	1.2
C100060120	KSB C100060120	1	2	JB	100	60	1.2	1.2
C100070120	KSB C100070120	1	2	JB	100	70	1.2	1.2
C100070160	KSB C100070160	1	2	JB	100	70	1.6	1.6
C100070200	KSB C100070200	1	2	JB	100	70	2	2
C125050120	KSB C125050120	1	2	JB	125	50	1.2	1.2

GTC Standard column

When Creating a New mapping, the GTC Standard column entry is taken from the Name given to the Revit Family file, the text of that family name is the one created in the GTCMapping.MDF Database, under the GTC profiles conversion table.

The Example below is using a supplier's details found on BIMStore, Adding this into the RVT 2020 libraries, in a sub folder for this type of profile. The name given is the Default name of the section range chosen.



GRA0381JB\LOCALD...rofile_Conversion

Key	Standard	Section	GTC Standard	GTC Section	ObjectType
22005	Metsec Eaves Beam Section RA	MET ERA.230.20...	Metsec Eaves Beam Section RA	MET ERA.230.20...	1
22006	Metsec Angle Accessories	MET C.10012	Metsec Angle Accessories	MET C.10012	1
22007	KSB C Stud Section	KSB C100050120	KingspanSteelBuildingSolutions_StructuralFraming_KingFrame_Stud	C100050120	1
100001	AISC W	\hW\d{1,2}\[xX...	AISC W Shape	W%1x%2	1

KS-SBS-Stud_Framing

File | Home | Share | View

Pin to Quick access | Copy | Paste | Cut | Copy path | Paste shortcut | Clipboard

Move to | Copy to | Delete | Rename | Organise

New folder | New item | Easy access | New

Properties | Open | Edit | History | Open

Select all | Select none | Invert selection | Select

« Autodesk › RVT 2020 › Libraries › UK › Structural Framing › CR Sections › KS-SBS-Stud_Framing

Search KS-SBS-Stud_Framin

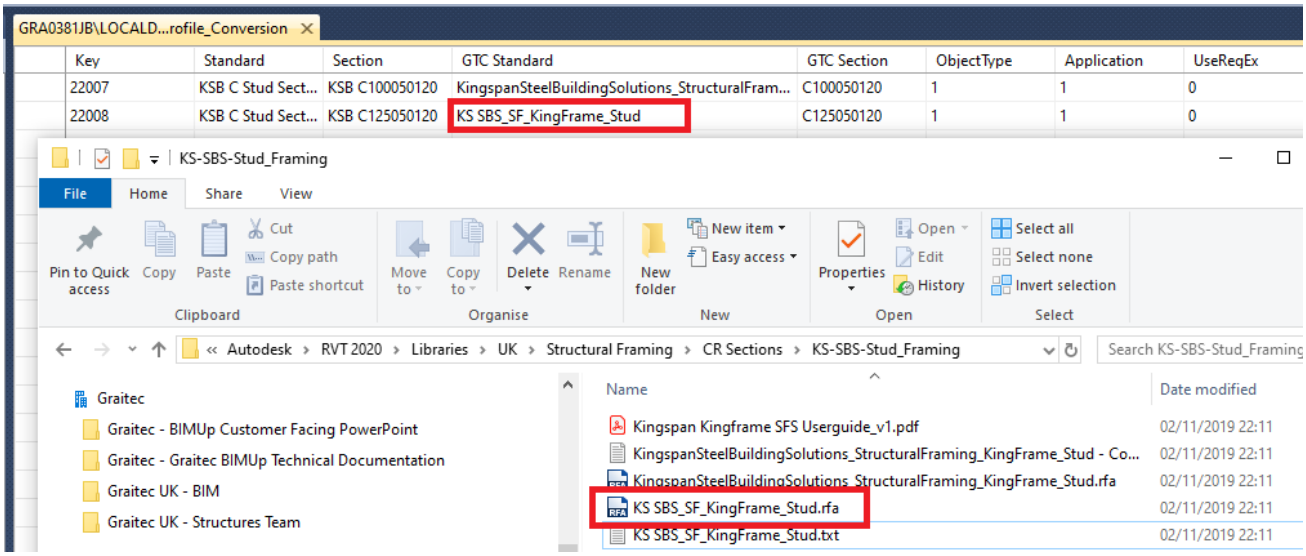
Name	Date modified
Kingspan Kingframe SFS Userguide_v1.pdf	02/11/2019 22:11
KingspanSteelBuildingSolutions_StructuralFraming_KingFrame_Stud.rfa	02/11/2019 22:11
KingspanSteelBuildingSolutions_StructuralFraming_KingFrame_Stud.txt	02/11/2019 22:11

If we copy that family and **change the naming of the files**, this will reflect in the **GTC Standard name**.

We load this new family name into the Revit template or project, then create a section and then Export it via the SMLX process.

RVT Family File Name: KS_SBS_SF_Kingframe_Stud.rfa

GTC Standard: KS_SBS_SF_Kingframe_Stud



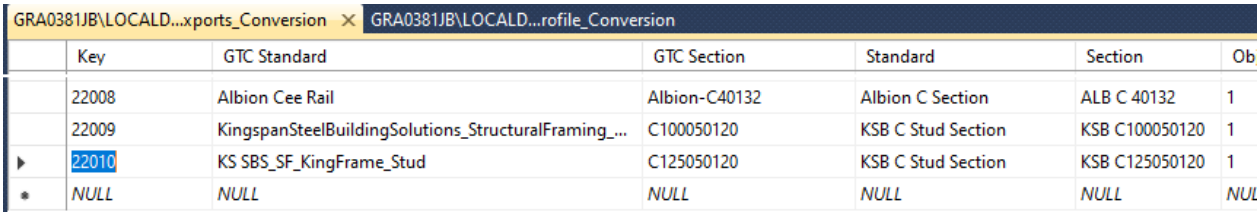
GTC Section: this is the **Revit Family name for the Section**, in this case the file has many profiles of different sizes, but we have mapped this size,

- **Revit Section name C125050120**

5.4.2 Profile Exports conversion table.

When you export from Revit to AS, the process also creates and Entry in the Profile Exports conversion table, this again pulls some entries from the Revit Family and the Advance Steel profiles database.

Below we can see an example using the Same Families we added into the RVT model for this test.

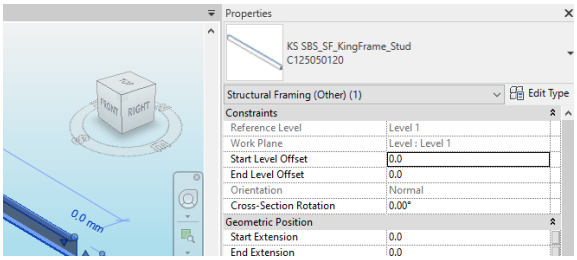


GTC Standard: This is the same as the profile conversion it is using the Revit Family file name,

- **RVT Family File Name:** KS_SBS_SF_Kingframe_Stud.rfa

GTC Section: this is the **Revit Family name for the Section**, in this case the file has many profiles of different sizes, but we have mapped this size,

- **Revit Section name C125050120**



Standard: This reference is coming from Advance Steel, via the **Astorprofiles.mdf** database, from the *ProfilemasterTable*, within this table is a line created when a profile is added to the system, within this line it uses the *'TypeNameText'* reference.

GRA0381JB\LOCALDB...rofileMasterTable | GRA0381JB\LOCALD...xports_Conversion | GRA0381JB\LOCALD...rofile_Conversion

TypeName	TypeNameText	TableName	TableColumns	RunName	SubTypeName	OrderBy
KSB KC	KSB C Sections	EXT_KSB_C_Sections	8	Kingspan SBS - C Sections	KSB	h (Profile heigh..
KSB C	KSB C Stud Section	EXT_KSB_C_Stud_Sections	8	KIngspan SBS - C Stud Section	KSB	h (Profile heigh..
KSB KC	KSB MezaMega Sections	EXT_KSB_MezaMega	8	Kingspan SBS - MezaMega Sections	KSB	h (Profile heigh..

Note: in this test we mapped to a known profile within the AS database, there is an option to map to a user profile within the Transfer process, but you will still need to create the profile within Advance Steel, either via a Shape Code type or a user profile definition.

Section: This is the *SectionName* of the profile given by the Advance Steel System, for this you to check the name you would look under the Actual profile table, within the table you look for the '*SectionName*' column and the reference under there is the one used.

GRA0381JB\LOCALD...B_C_Stud_Sections | GRA0381JB\LOCALDB...rofileMasterTable | GRA0381JB\LOCALD...xports_Conversion | GRA0381JB\LOCALD...rofile_Conversion

StandardName	SectionName	Standards	Reserved	OwnerText	h (Profile heiq...	b (Profile width)	ts (s) Web thic...	tq (t) Flange th...
C070050150	KSB C070050150	1	2	JB	70	50	1.5	1.5
C070070200	KSB C070070200	1	2	JB	70	70	2	2
C100050120	KSB C100050120	1	2	JB	100	50	1.2	1.2
C100060120	KSB C100060120	1	2	JB	100	60	1.2	1.2
C100070120	KSB C100070120	1	2	JB	100	70	1.2	1.2
C100070160	KSB C100070160	1	2	JB	100	70	1.6	1.6
C100070200	KSB C100070200	1	2	JB	100	70	2	2
C125050120	KSB C125050120	1	2	JB	125	50	1.2	1.2

6 MAPPING 1 TO 1 TYPE.

The **above example is a walk through of a 1 to 1 mapping process**, this can be used as a precursor to create an expressions-based mapping rule, where several family profiles are mapped under one reference expression. But the most common form of mapping used by users is the 1 to 1 process to create the lines within the table/s.

These lines are created as the use transfer from one platform to the other, this can make the process rather long as it is seen as a singular operation for each size.

However, once you know the tables and the various references and from where they are being drawn, then the user can add lines into the table for each section reference using tools like access or Excel and then the copy options within the SQL Management to copy in the data lines to the table.

7 PROFILE DEFINITION

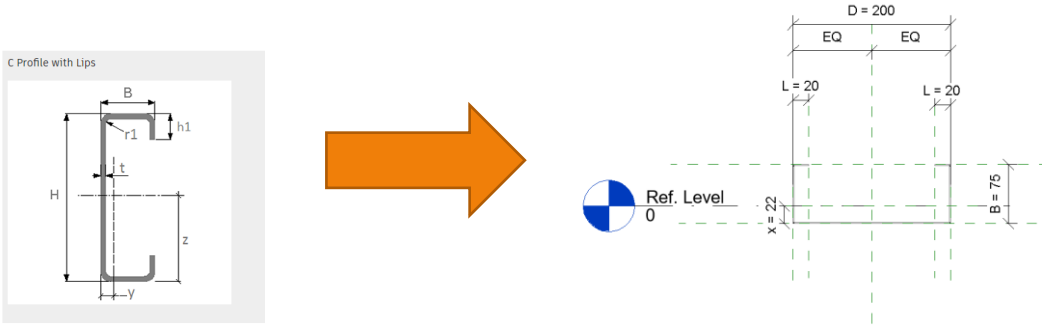
Linked to the transfer now in latest version is the Shape Definition, Shape code, Revit and advance steel have Standard Shape references for profiles, from the above we see that we have used a 'Cee Section', this has a reference for both Advance Steel and Revit, so common parameters for each in their definition.

Defining the Shape code within the Revit Family, is useful, as some are supported to aide the transfer of connections between the two platforms.

Also, we have found that the Rotation that occurs sometimes between the platforms seems to lie in how the profile is defined within the Revit And Advance Steel processes for family creation, a good example of this is the Cee Shape profile.

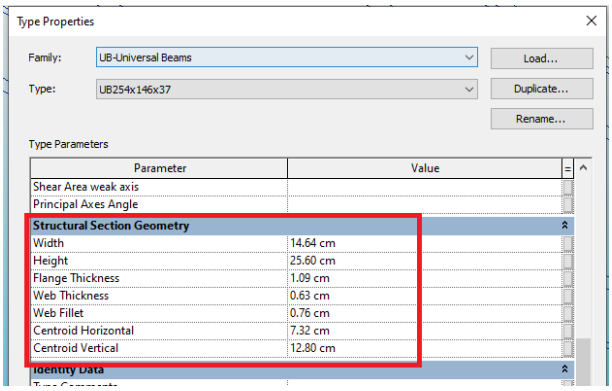
Checking under the section shapes supported, Cee came up as being one of those, so looking at it from the definition it should just transfer from RVT to AS, without issue. However, that is not always the case, the **objects are being rotated upon import**.

So, checking the Family definition form some BIM Family sites, we found that the families where being created incorrectly relative to their primary shape definition. In the Case of the Cee, the **web was horizontal in the Family definition, rather than vertical**, as it is shown in both the Revit and Advance Steel Shape code references.



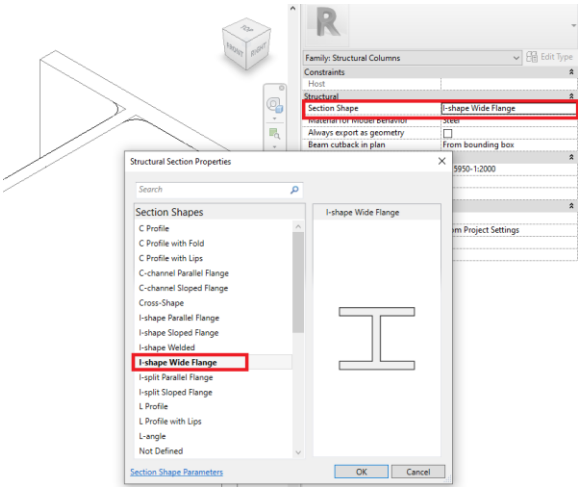
7.1 Structural Section Geometry

Make sure that during the family creation the parameters are defined for the Structural geometry, we have found in the past this affects the application of a connection, sometimes altering the rotation of the section.



7.2 Shape Definition type.

When creating a Steel structure family, then make sure the Section shape type is defined under the available types from the list.



7.3 Material for Model Behaviour.

When creating a Family for Steel fabrication, the **'Material for Model Behaviour'** needs to be set to **"Steel"**

7.4 Create a Section profile for each beam Size.

When creating a Family in Revit, it is important to create a reference for each size within the family, this is so that when transferring from RVT to AS, each size can be mapped to correspond size in either platform.

We have found Structural families out there that have one generic reference for the whole section range, these will not map across to individual sizes within the AS Sections library.

7.5 AKN Help links:

Revit - Hot Rolled Steel Section Shape Dimensions

Revit - Hot Rolled Steel Section Shape Detailing Dimensions

Revit - Cold-formed Steel Section Shape Dimensions

Revit Steel (Other) Section Shape Dimensions

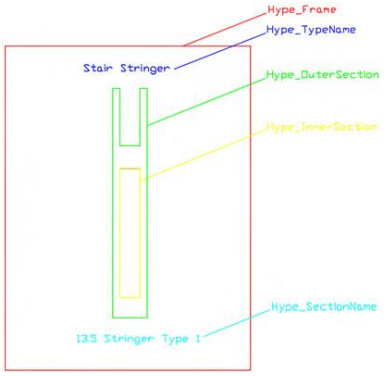
7.6 Advance Steel profile Definition.

If you are creating a custom Shape definition within Revit, it may not support the Steel connection and Transfer, but you can Create a user profile within Advance steel to be the same as the Revit profile shape.

From our testing we are recommending that the orientation of the shape is the same in both systems, so the same as the Cee shape, we used to demo the process, it would be the same for a user defined profile, create it in the same orientation, rotation etc.

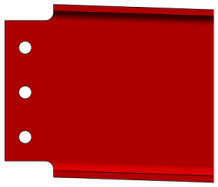
Create user sections as the link below, we recommend matching the orientation of the Revit families

AKN link : Creating user sections



8 Steel Fabrication Shape Definition within Revit

When you model in Revit a structural beam or column using steel framing and column elements, if you then apply a modifier to the beam, this action changes the element to have the Steel Fabrication Shape activated.



The users will not see this change, but steel beams/columns have the Radius shown in the fine detail etc., along with this to view any of the modifiers elements like holes bolts the presentation level needs to be set to Fine, within Revit.

About the Structural Steel Framing and Column Fabrication Shape

Modifiers are the tools that where introduced as part of the Steel tab in Revit, these are same functions that are seen in Advance Steel. examples of these are Corner Cuts,

Details of the types of modifiers are found on the AKN page for Steel Fabrication Element Transfer . this page explains what is transfer via the operation of the modifiers.

8.1 Detail Steel Modelling

As part of this process there are a number of factors introduced into the Revit platform for Detail Steel modelling, on the AKN page there are is a great deal of information over the elements and features now available.

Topics in this section

- Supported Structural Steel Shapes and Families for Steel Fabrication
  Learn about the structural steel framing and column shapes and families that you can use in the steel fabrication workflow.

- About the Structural Steel Framing and Column Fabrication Shape
  Learn about the fabrication shape and its properties, parameters and representation.
- Steel Fabrication Shape Instance Properties
  Review the steel fabrication shape instance properties and modify the coating of the element.
- Modify Elements with a Steel Fabrication Shape
  Learn about how the Revit Modify tools work with elements with a steel fabrication shape.
- Steel Fabrication Elements
  Place steel fabrication elements for steel fabrication detailing.
- Steel Element Cut Tools
  Modify steel fabrication elements in your steel fabrication model.
- Structural Steel Connections
  Model parametric structural steel connections with a higher detail level.
- Detailed Steel Modelling Background Process
  Learn how the background process works when calculating some of the most commonly used actions for detailed steel design.
- About Steel Element Asynchronous Update
  Learn how the asynchronous update works when calculating the steel fabrication element geometry and steel fabrication shape.
- Considerations when Using Steel Fabrication Elements
  The topics in this section describe important guidelines and requirements for working with steel fabrication elements.

9 MATERIALS -MAPPING AND OPTIONS

Materials exchange from Revit to Advance Steel, this is part of the transfer process between the platforms, again this uses a table in corresponding locations to transfer/create mapping between the different references is so required.

- When you Import/Export from Advance Steel 2019, the **GTC_Material_Conversion** table from **GTCMapping.mdf** (C:\ProgramData\Autodesk\Advance Steel 2019\[Installed Language]\Steel\Data) database is used.
- When you Import/Export from Revit 2019, the **GTC_Material_Conversion** table from **GTCMapping2019.mdb** (C:\ProgramData\Autodesk\Advance\Data) database is used.

In Advance Steel the materials are stored within the system under the Database and within the materials table, also there is a standard method to add the materials to the Advance steel set up if required.

Also within the Revit System there are Standard materials created under the model/Template file these use the AEC Material library in Revit, in the Material Browser.

The Materials listings in Revit tend to be seen differently to how a Steel fabricator my view them or note them in their workflow and this can cause some confusion between the systems. From our experiments we have found that it is sometimes better to list the materials out as schedule, if sending to a fabricator because they can then check in the Advance Steel System if that material exists.

For the purposes of the session we show the use of a material noted in the UK system called '**Cold rolled'**, this was its visual name in Advance Steel, but it internal name/Key Reference was '**ColdRolled'**, with no space between the two words. When initially mapping the materials, this process did not seem to work, but after noting that the SMLX transfer uses the **'Key'** from the Advance steel materials table, we where able to create a corresponding material within the RVT Materials library, with the Key Name and the mapping was made a lot easier between the two software's.

Figure 9-Advance Steel-Astorbase-material table- Cold Rolled

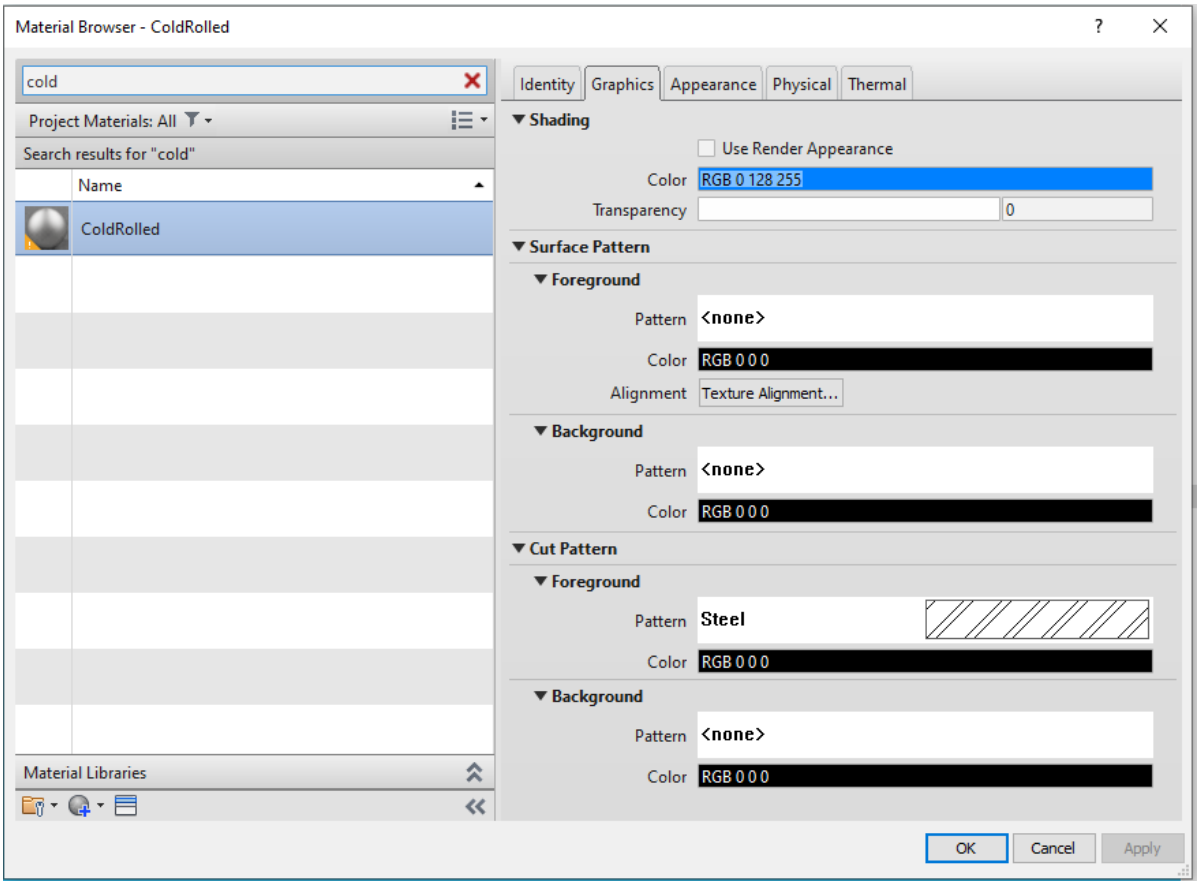


Figure 10-Revit AEC materials with ColdRolled Added

9.1 Materials Not found in Revit

If transferring a model from Advance steel to Revit and the materials do not exist in the AEC library, the system will create a material if not found in Revit Material browser on the fly so to speak, you can then go and find this material and edit should you wish to change/update it properties.

Again, to avoid this duplication of materials that have very similar references it is best to check what is in the Transfer process also what it presents in the AEC materials to start with.

10 Recommendations for Steel Creation and Transfer Practices.

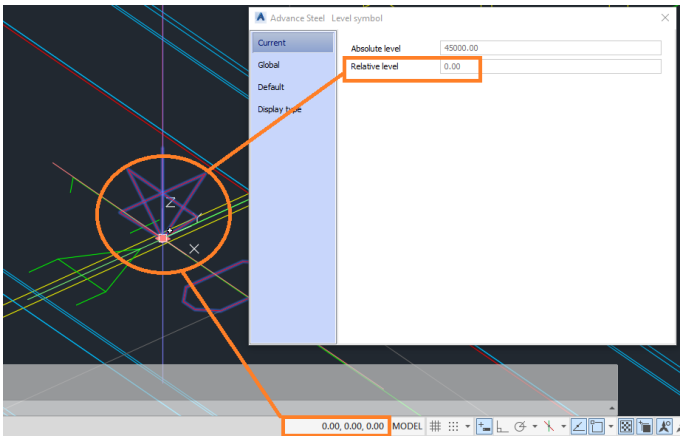
With the 2020 version of Extension, this now only uses Rules based and 1 to 1 mapping, all the other Family name/file name type and the Dynamic types have been removed from the mechanism. So, it is more important to try and pass some additional information with the transfer file, below we try to explain some of these.

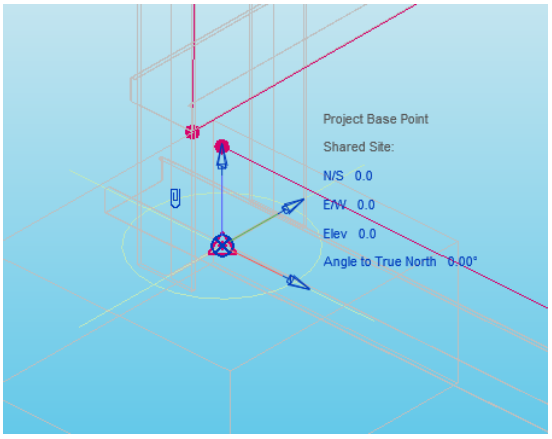
10.1 Origin within Both RVT and AS

This is important in the transfer, so we recommend that the users know where this is, for Advance steel we would typically advise the user to work about the origin, as all the levels/workplanes are based around that point within the Model.

Similarly, the option in Revit is the same, know where the origin is as this is the focal point of the model transfer, all the relative levels are based around this point.

Also, within Revit there are options to offset the level values to reflect real world situation, using project co-ordinate.





10.2 Levels

Both platforms use levels, Revit it is a fundamental for the creation of any structure, with elements being attached to them, with offsets values. AS also has level functions as part of its project explorer tool, which like Revit beams can be attached too.

As part of the process levels are transferred between platforms, providing that they have elements attached to them, this includes concrete walls, beams.

Within Advance Steel the attachment of Beam elements, is based upon what is termed the System line, this for beams in the horizontal direction, is typically placed at the top of the section for a Top of Steel level. However in Revit, the **Beam can sometimes be offset from the level with at large offset value**, **but this can cause and issue in the transfer from RVT to AS**, in that **AS see's this as an large offset value from the level, placing the system line outside the object body**, which is *not good from Advance steel*, for the placement of connections/ cuts/copes etc., along with the downstream drawing process, as Assemble and *detailing styles are based around the system line.*

Note: levels are only transferred is elements are attached to them.

10.3 Grids

Grids are transferrable, but possible the best practice is to only send them at the initial stage of the transfer. There are options to exclude them from the transfer.

They are treated differently in each software platform, Revit projects it grids iv the vertical direction, Advance steel you must copy it in the vertical. Therefore, is exporting from AS to RVT, you can end up with multiple grids applied to the model at various levels.

'The Export grids option in the Settings dialog allows you to transfer grid elements when starting a new project. This is a checkbox option and by not checking it, you can choose not to take the grid elements into consideration in the following synchronization iterations, when the focus is no longer on the basics of the structure.'

https://knowledge.autodesk.com/support/revit-products/learn-explore/caas/CloudHelp/cloudhelp/2020/ENU/Revit-AddIns/files/GUID-337B42A1-B63A-4AA1-8107-5C66BA25E4CA-htm.html

Note: Noticed when importing grids from RVT, sometimes multiple grids appear in the AS model origin level, these can be selected these and remove if required or move them up in the AS Model to level Required and change their layer etc. this is standard practice in AS.

10.4 Models within Revit

For the Steel frame, it is possible better in our view to transfer this into a Revit file that is separate from the main project, so it is a discipline model, separated out from the other Revit elements, then using the various co-ordination tools collaborate this back into the collective model hub.

10.5 Advance Steel – Project Explorer

As previously mentioned, for AS there is the project explorer, this can be the hub for the model creation, using the levels and assignment of beams to those levels, along with the other elements of model views and searches.

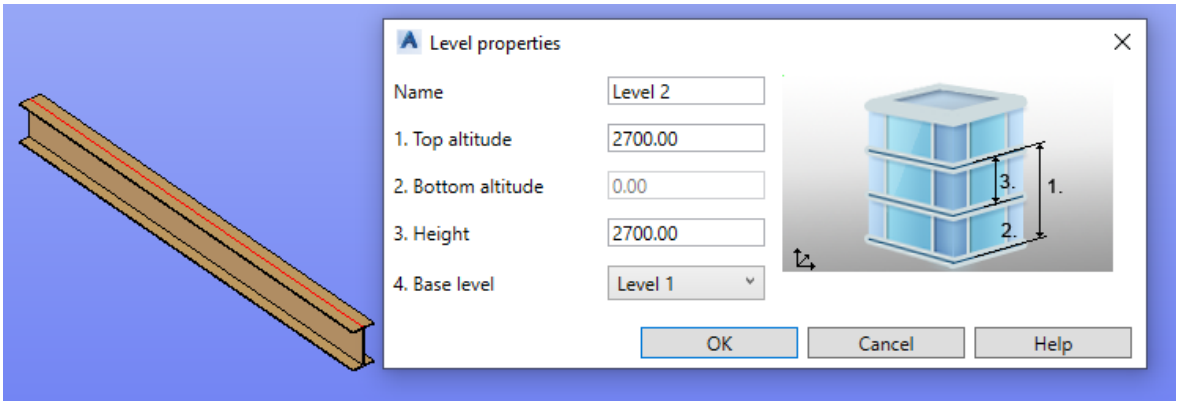
If you are going to work within a collaborative workflow with a Revit counterpart model, then adopt the use of the Project explorer and levels and assignment of beams/concrete to those levels, it will just help when transferring a model back into Revit, as the beams will become assigned to the levels.

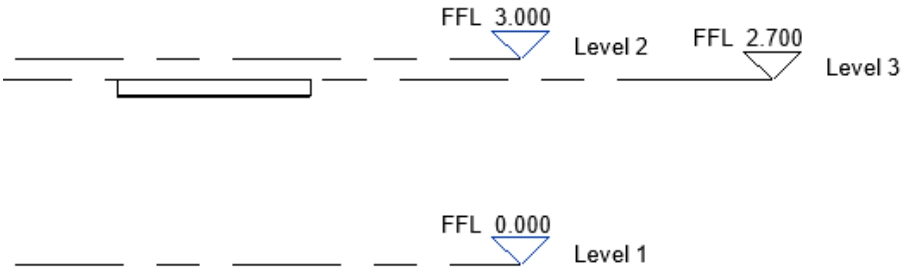
10.6 Transferring from AS to RVT – Levels in RVT template.

We have found that when you transfer from AS to RVT with the use of levels, it is best to have a RVT template with only one base level present, then SMLX import will create any associated levels that beams/elements are found to be present on.

We have found that if you transfer the beams with levels of same name, then those beams can see in the Revit model with a new level value and name. For example, if the AS level for Level 2 is 2700mm, but in Revit this is 3000 for level 2, then the element is transferred with at 2700 level and new name (e.g. level 3).

This can lead to confusion when working with levels between the platforms.





But if you transfer to an RVT model with only a level 1 in place at 0,000 value, then the result is

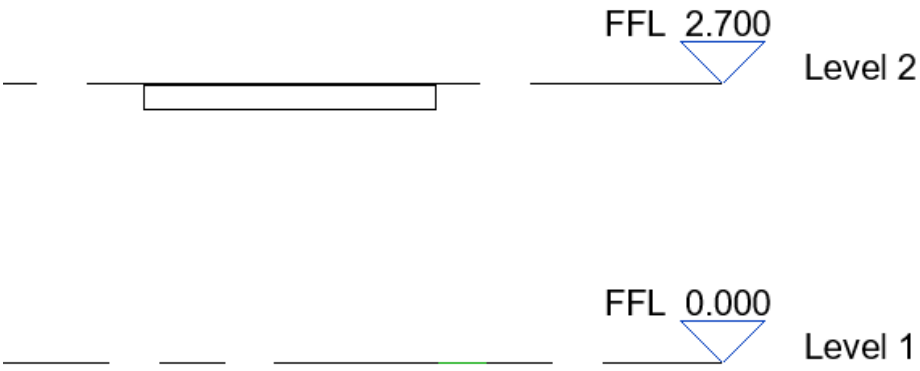
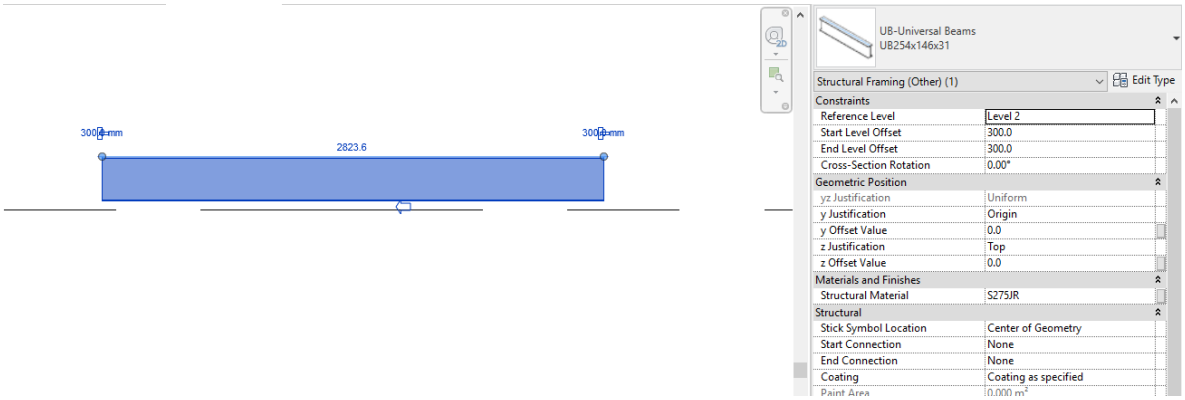
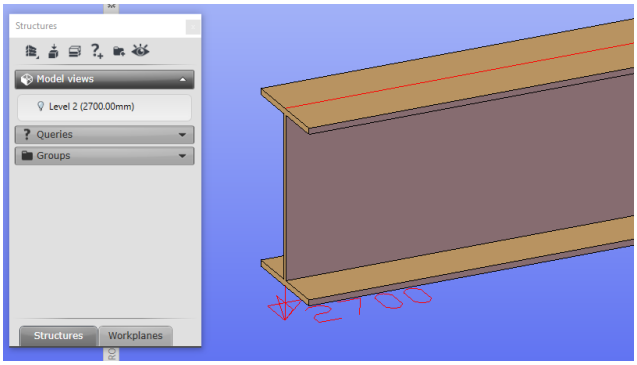


Figure 11-AS import to RVT with only level 1 present.

Also, the RVT file can contain beams that are linked to a level for example the Level 2 @ 2700mm, but then offset by a value at the start and end by 300mm



This can be exported to AS and will show as a 300 offset above the 2700 level.



Note: Try not to use the Z offset, Y offset values to move the body away from the Justification positions, just move the Start and end level offset positions, with this it will transfer still attached to the level and correct for AS detailing.

Note: the level 1 was not transferred because of there were no elements on that level in the RVT model.

10.7 Level of Detail in RVT.

To see Steel connections/ modifier elements, you need to have the **detail level set to fine within the Revit** platform. My personal view would be to set this in the template, if that template was aimed at the Steel fabrication model.

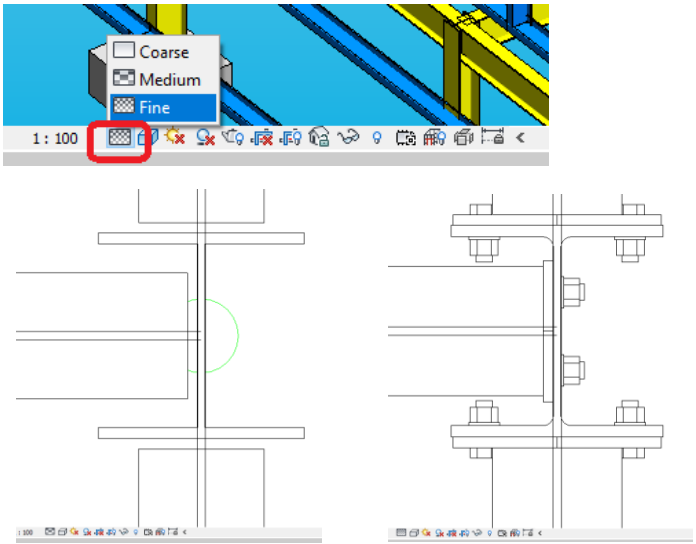
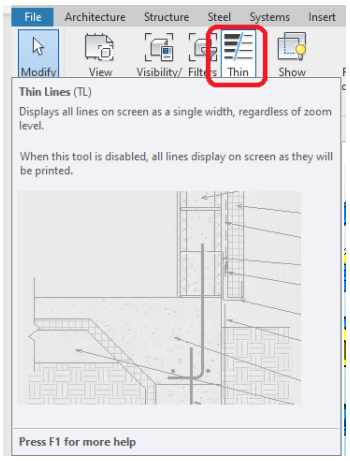


Figure 12 - set to medium then set to fine on the right view.

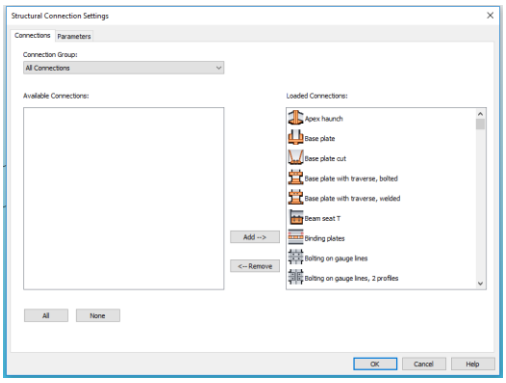
10.8 RVT LINES - SET TO THIN

When working with the Steel content, my recommendation is to set to work with Thin line content display to see the elements.



10.9 STEEL CONNECTIONS

If you plan to work with these a great deal of the time, like Advance steel, then I would just load them all into the template to have them ready and available to search for. It just makes it easier to find them and use them. (Again, a fine detail level is required)



10.10 STRUCTURAL STEEL ELEMENTS, BEAMS AND COLUMNS

Within a structural template, if used primarily for Steelwork, then I would load number of the families into the template to start with, to avoid having to try and find the correct ones and load as a when. With the AS platform we tend to preference the sizes we use, so a similarly approach could be taken here, that yes load a family type for columns or framing, but possible not load all the section types/sizes, only regular ones.

10.11 STEEL BEAMS AND COLUMNS – APPROVED FAMILIES

For this I would try to use the ones delivered with the software, these families are the approved ones and work well with the transfer, also having the correct definition of the family to work with the connections/Steel Fabrication format.

10.12 Use of colours for elements.

If coming from advance steel, then the user would be used to colours and layers, not quite the same here for Revit, but again you can make use of the colours, either by setting under the materials type you create, or adjusting within the Visual graphics interface and override options if so required.

10.13 Use of the project explorer and project browser.

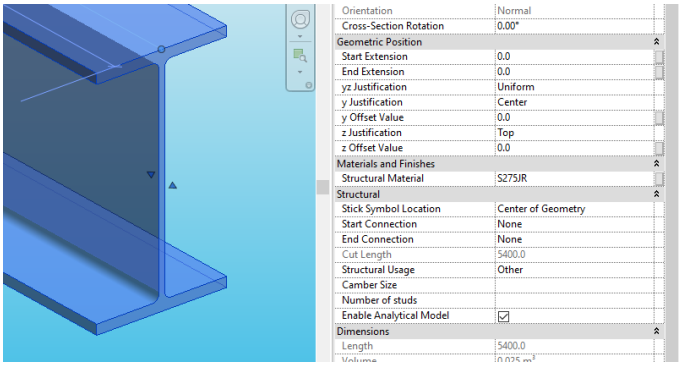
Each system has a similar approach to making the model viewable, although users of Advance steel may not use the project Explorer, if working with Revit a lot, it makes it easier for level control and see views as you would in Revit. For plans, elevations etc., using a combination of level views and model views a similar interface can be seen.

10.14 Positioning of the Steel.

Within Advance steel there is the System line, there are 9 offset locations, so if placing steel in AS, be mindful of these when transferring to Revit. Similarly, when transferring from RVT to AS.

Simply example of this is the placement of the System line at the top flange of a beam, this will transfer into AS well, columns as the same, personally I would try to place in the centre of the section.

In Revit to position the beam use the geometric positions, combination of Y, Z values to achieve the position.



10.15 Creating a solids file to check the transfer.

When we export a model from Revit via the SMLX, it is expected to see some elements incorrectly positioned or rotated. So, we found that using the Standard option to export to a SAT file, creates a solids format of the model with all the details etc, we can use this as a visual check between the exported model data and the actual model in Revit.

We import this into the model, or a suitable model and it can be attached as a Xref to reference between,

10.16 SMLX Transfer- Additional Documentation.

We have found that when transferring the model via the SMLX, we are advising the practice of creating some schedules from Revit, which refer to the properties of the Structural elements (Beams and Columns) and materials. If this document is created then sent with the transfer file, the Steelwork detailer can investigate this document and check to see if they have the sections present, along with materials and coatings etc.

This document can help the steel detailer in the fact they can see the grade and type of beams being used, then if they are not present within the AS system, they can be added in prior to any transfer operation.

<Structural Column Section and Material>		
A	B	C
Section Shape	Family and Type	Structural Material
C-channel Parallel Flange	PFC-Parallel Flange Channels-Column: PFC200x90x30	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UB-Universal Beams-Column: UB406x178x54	S275JR
I-shape Wide Flange	UC-Universal Columns-Column: UC203x203x46	S275JR
I-shape Wide Flange	UC-Universal Columns-Column: UC203x203x46	S275JR
I-shape Wide Flange	UC-Universal Columns-Column: UC203x203x46	S275JR
I-shape Wide Flange	UC-Universal Columns-Column: UC203x203x46	S275JR
C-channel Parallel Flange	PFC-Parallel Flange Channels-Column: PFC200x90x30	S275JR

<Bolt Schedule>				
A	B	C	D	E
Count	Diameter	Bolt Length	Grade	Assembly
1	20.00 mm	40	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP
1	20.00 mm	45	8.8	CE Mark BZP

The reverse for this can be done within the AS to Revit Transfer, any materials created or added can be seen in lists/extracts from the software, again this can be helpfully if shared with the Revit Team.

11 AS Extension 2020 version – What's New

With the Release of the 2020 version, we find that some of the **previous transfer mechanisms are now removed from the options,** summary of what's new below:

- 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.

From above we see that for the **2020 version** we only have the Rules based transfer, this is the Expression and 1 to 1 mapping.

12 AKN Help Page Links

Below is some key links to AKN help pages for the SMLX transfer process.   There are many other sub sections under these pages.

New in the Advance Steel 2020 Extension for Revit

Advance Steel Extension for Revit

Advance Steel - Revit File Transfer

Steel Fabrication Element Transfer

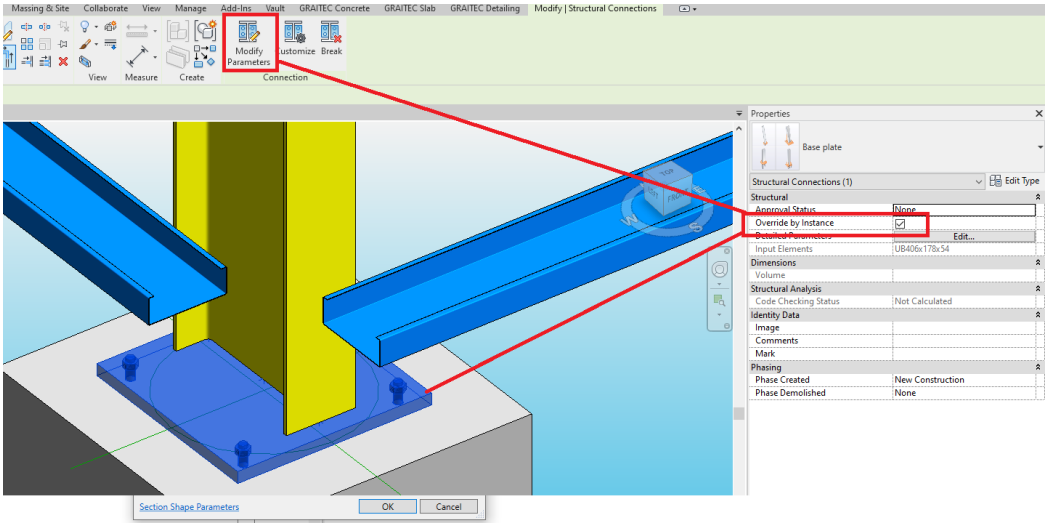
13 STEEL CONNECTIONS – 2020 CHANGES

With the release of 2020 version we see the Propagate joint command for connections created from one of the provided joints in Revit. This feature allows for the copying of joints around the model in multiple instances, that are linked to the source instance.

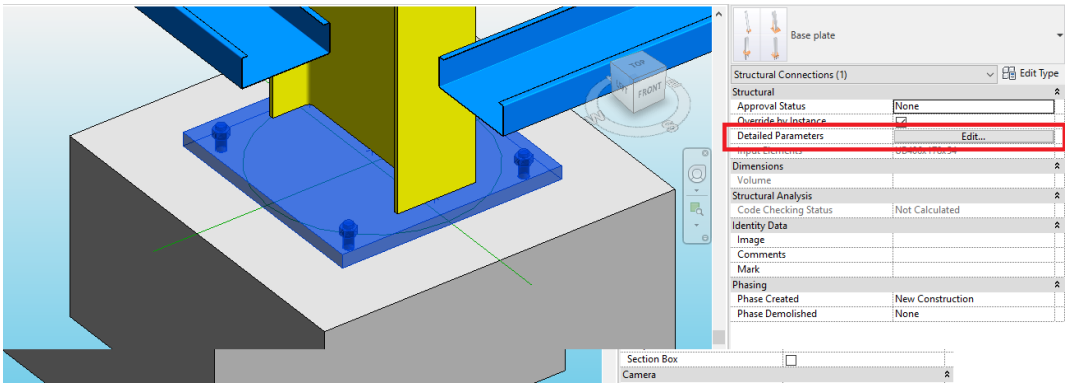
This change also changes the way the user would access the joint tools under the modify parameters for the joint option.

In the 2019 version the Modify parameters option is available all the time, in 2020 you must turn it on, via the option in the connection properties 'Override by Instance', checking this box opens up the Modify parameters, button.

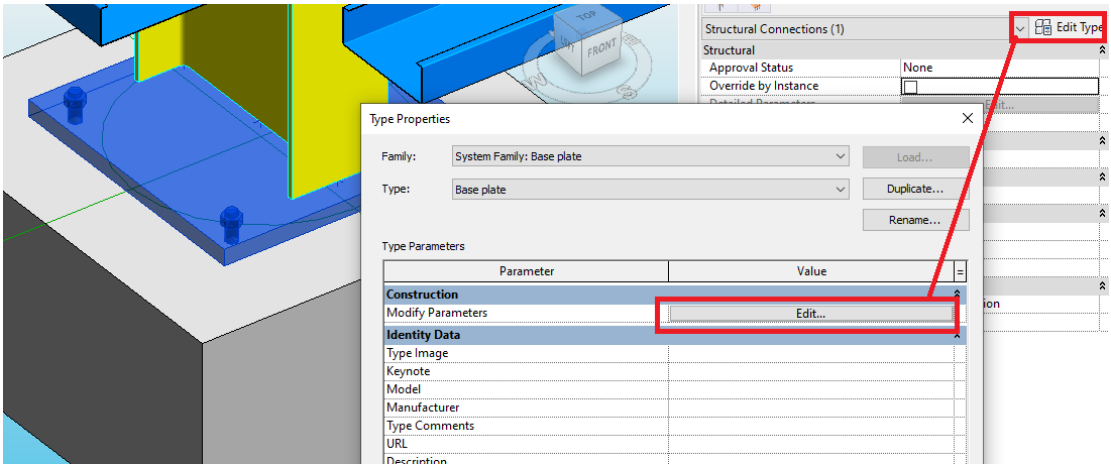
With this the user can change the properties of the joint, but if the return to the RVT dialog and uncheck, the modifications are removed, **reverting to the original settings**, of the Stored instance.



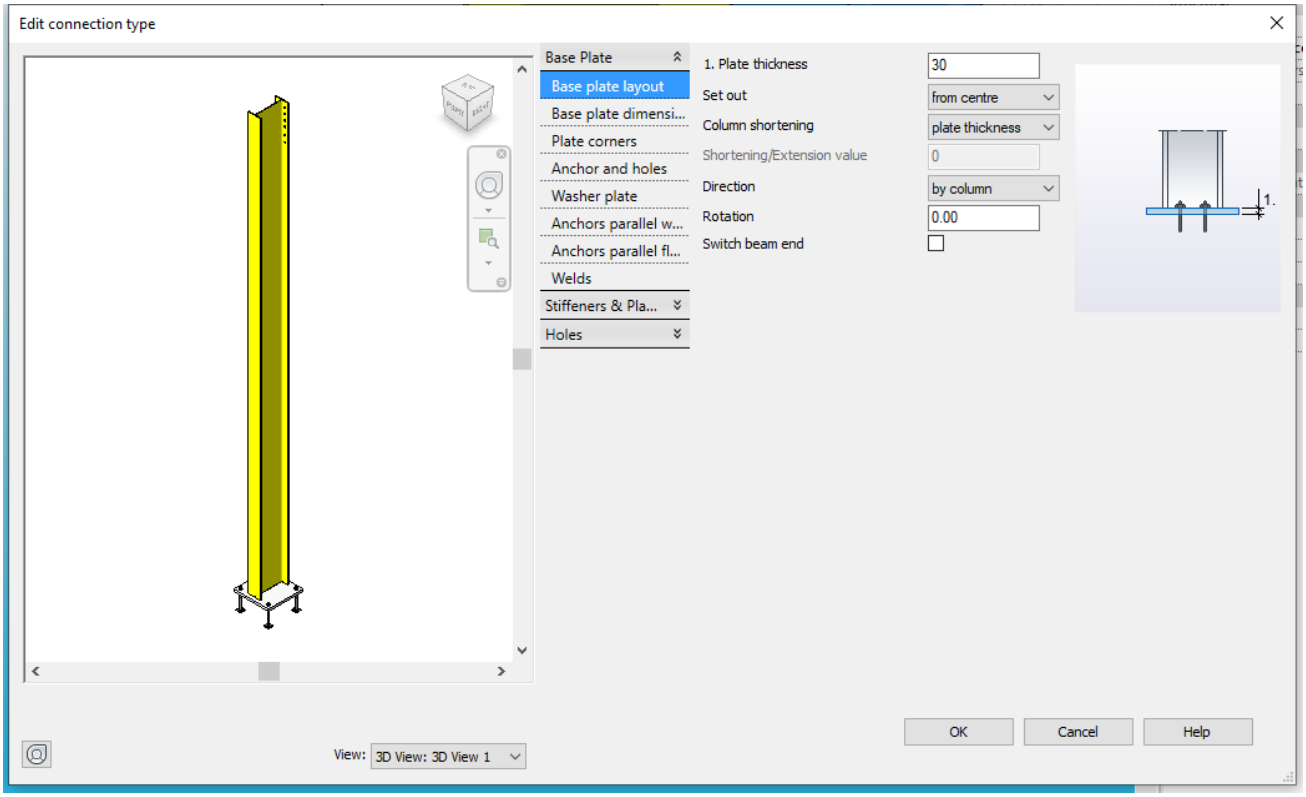
Edit detail parameter arrives at the same joint dialog.



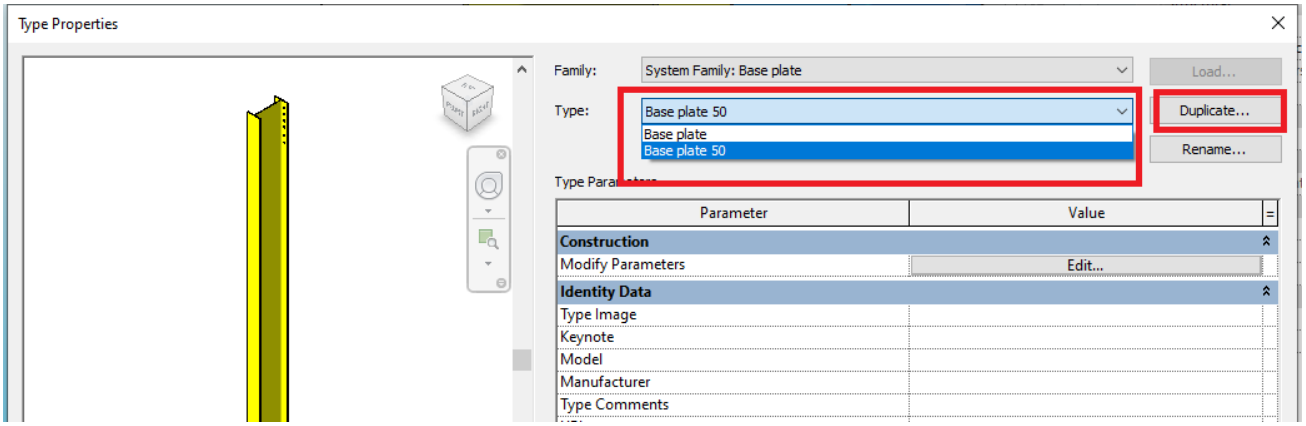
However, to avoid the above with the 2020 version it is now possible to create/duplicate and store many instances of joints via the dialog and **edit type**.



Using this option opens up a new dialog interface in the interface,



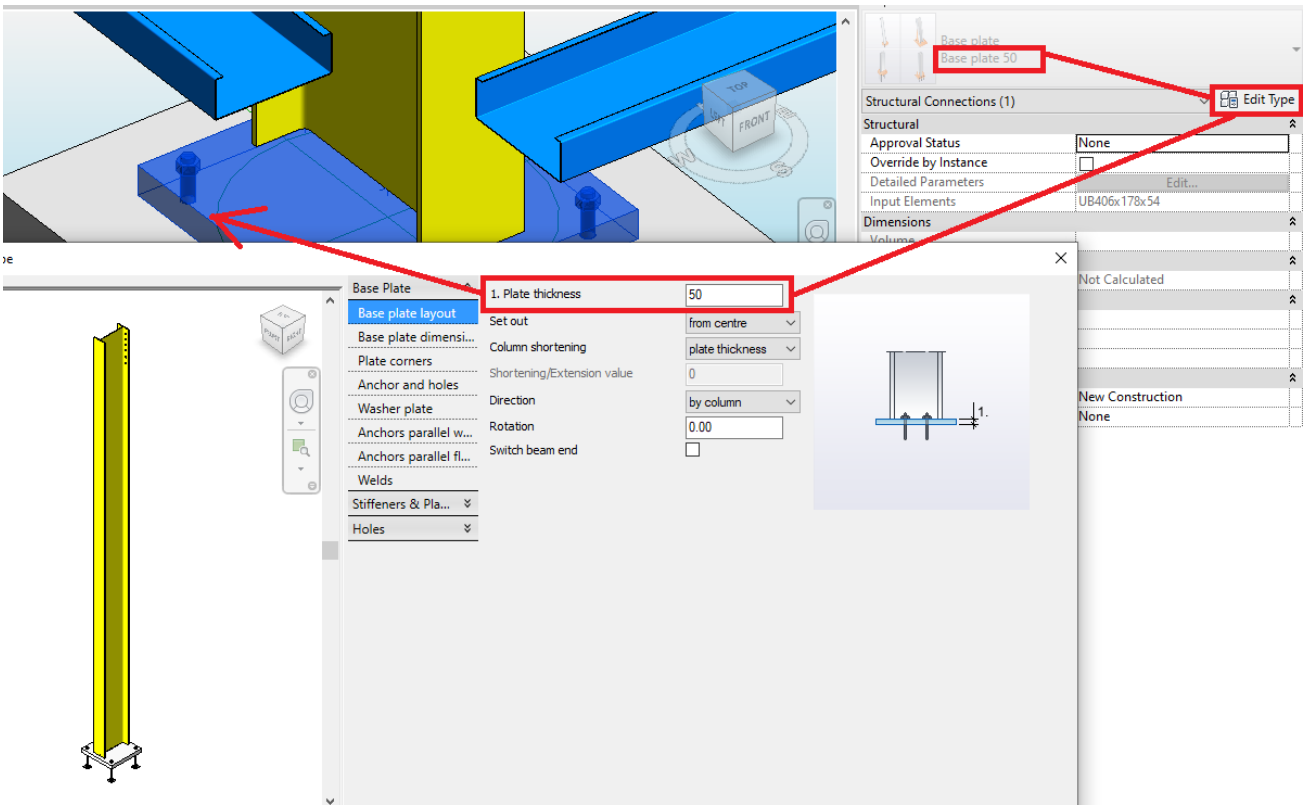
But Before you **edit the properties, you should duplicate the joint instance**, creating a new one and storing it in the system.



With this second instance stored, you can edit that one's properties, then apply that as the new instance.

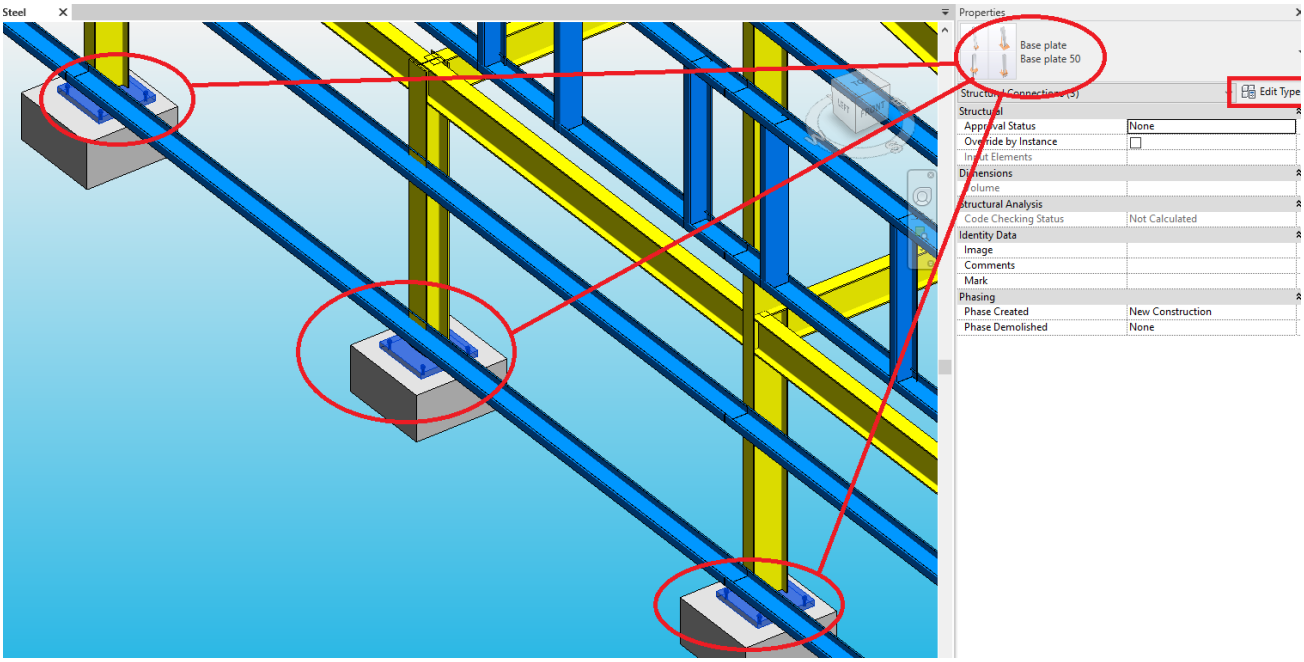
In the Case here, we have changed the plate thickness from 30mm to 50mm, under the duplicated instance with the new name of Baseplate 50.

This then transfer into the instance of the joint/connection applied in the model.



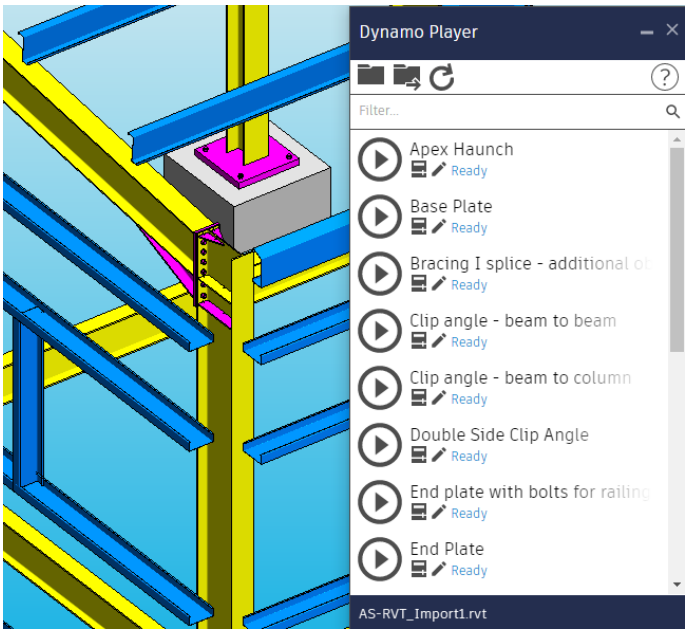
With the new instance in place and stored, it can be transfer to other joints of same type and instance, so for example to change the ones with 30mm thick, you could select them all manually, or use tools like **entire project** or **select instance in the view**, from the right click menu in Revit.

So select the ones with 30mm first, multiple if required then edit button under properties, then change the instance to the 50mm one.



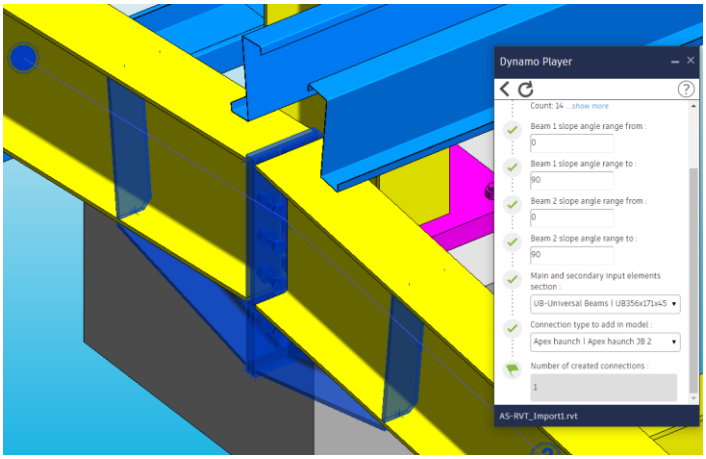
14 RVT 2020 WITH DYNAMO PLAYER & CONNECTIONS

So, with the 2020 version we see the introduction of the dynamo player and package for Steel connections.



This **package for steel connections**, adds in a series of scripts that are working with the Connections provided within Revit for steel, they use the **stored instances of the connections**, so by creating different instances in Revit, we can **apply them via the dynamo player to specific beam selection**.

So using the player and then selecting the elements required, then filtering those elements down to the beam required and the selection of the joint instance, we can apply the connection.



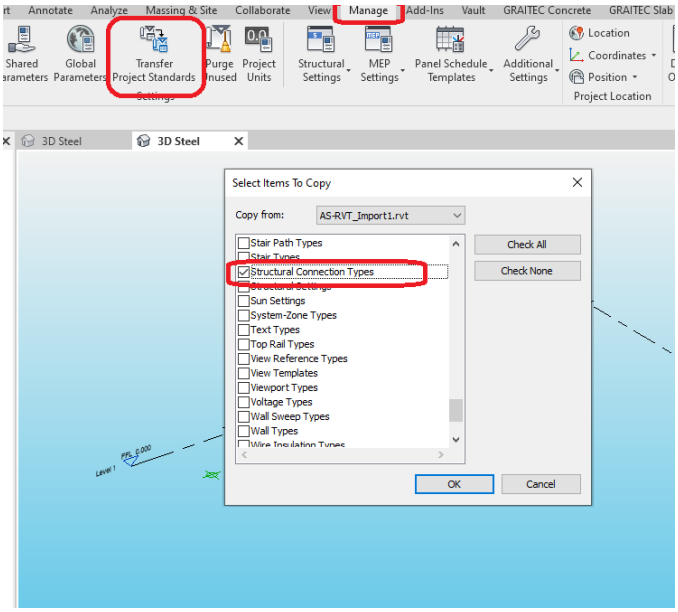
This approach can be used to create a library of connections in the model then then populate them round the model using the player options.

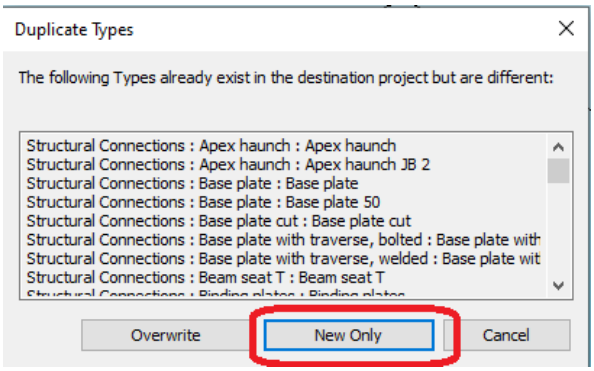
Note: recommend creating the instances required first, before trying to apply them.

14.1 Transfer of the Connection instances

Within Revit it is possible to transfer from one model/project/RVT template file to another any elements that are added/created within that source file.

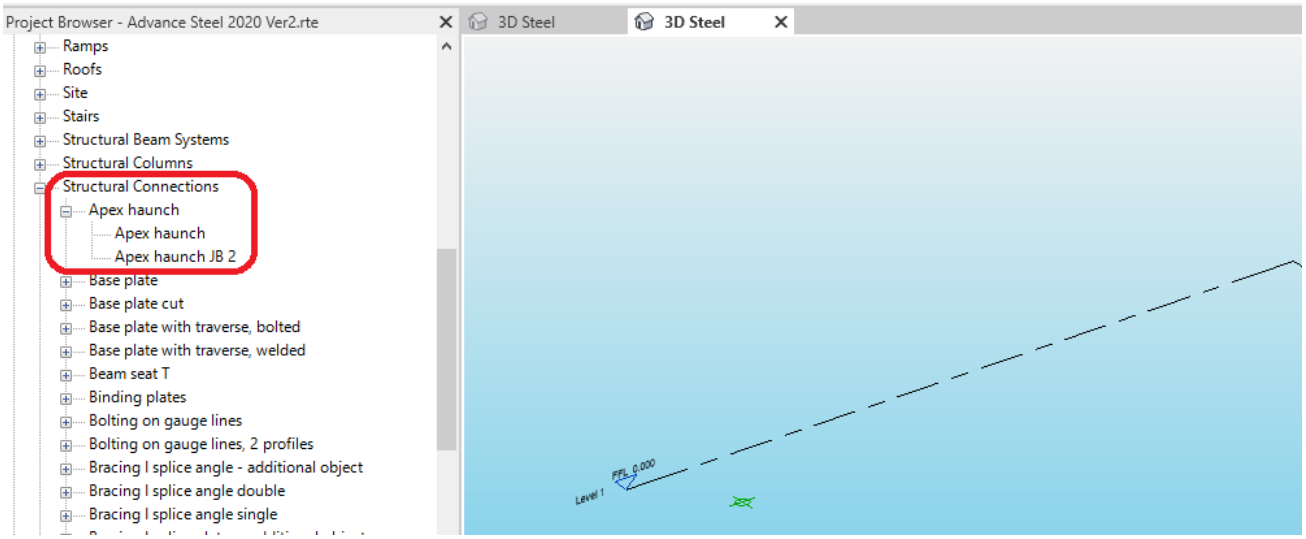
Within the testing we create some sample instances in the working file, these we wish to transfer/add back into the source template we have created, so we use the '*Transfer Project Standards' command,* with only the Structural connections checked for transfer.





We use the option to select only 'New types' and we can see the Apex Haunch type JB 2 Added into the template file, so it is now available for next time.

Apex type 2 shown in Template file.



Version: V1.0 (released) FILE NAME: ID322598-Handout notes RVT to AS.docx

Date: 23rd October 2019 Author: JOHN BENNETT

15 VERSION TABLE

REV History		
Date	Comment	Version
04/11/19	Initial Release.	V1.0
		V1.1
		V1.2
		V1.3