



CADS Revit SCIA Engineer Link

Getting Started



Contents

1	Introduction	1
2	Compatibility.....	2
3	Workflow.....	3
3.1	Revit Architecture to SCIA Engineer round trip	3
3.2	Revit to SCIA Engineer round trip	4
3.3	SCIA Engineer to Revit round trip	4
4	Installation	5
4.1	Revit and SCIA Engineer licensed on the system	5
4.2	Only Revit licensed on your system	6
4.3	Only SCIA Engineer licensed on your system	6
4.4	Neither Revit nor SCIA Engineer license present on your system	6
5	Basic commands.....	7
5.1	Version of SCIA Engineer.....	7
5.2	Code of practice	8
5.3	Model export / import	12
5.3.1	Case 1: Export from Revit to SCIA Engineer	13
5.3.2	Case 2: Import from SCIA Engineer to Revit	18
6	Features	21
6.1	Log of events	23
6.2	Member export/import	24
6.3	Rotation.....	28
6.4	Eccentricity.....	28
6.5	Support.....	29
6.6	Loads	31

1 Introduction

CADS Revit SCIA Engineer link facilitates the bi-directional exchange of members, loads and supports between **Autodesk Revit** and **SCIA Engineer** and in doing so plays a vital role in the overall Building Information Modelling (BIM) process. A structure modelled in **Revit** can be transferred to **SCIA Engineer** for structural analysis and design using **CADS Revit SCIA Engineer link**. When the structural analysis and design has been completed in **SCIA Engineer**, the updated model can be sent back to **Revit**. The modelling - analysis - design process requires numerous iterations to arrive at the final design. **CADS Revit SCIA Engineer link** will save time by avoiding duplication and reducing errors.

This Getting Started guide will help you with instructions on how to install the software and make the best use of **CADS Revit SCIA Engineer link** to manage your BIM process successfully.



The Content libraries in Revit are stored as a collection of the **Revit family (*.RFA)** files. Please ensure that the country specific libraries are installed on the system while installing Revit.

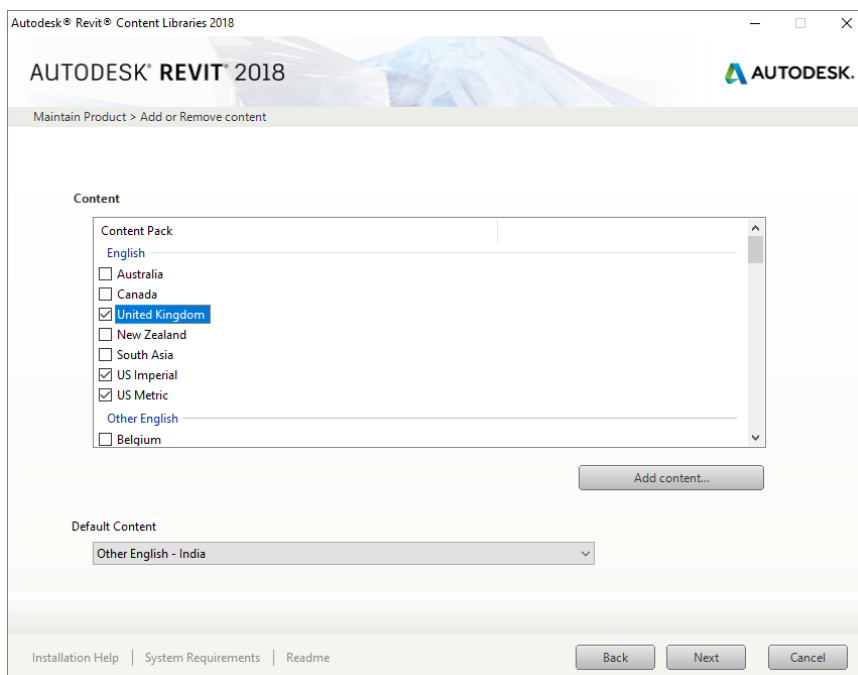


Figure 1-1: Revit installation option

2 Compatibility

CADS Revit SCIA Engineer link is shipped with a *Release Notes* document which lists the versions of **Revit** and **SCIA Engineer** with which it is compatible. You can also find this document in the following folder:

C:\Program Files\Revit To SCIA Engineer\Revit20xx\Docs

C:\Program Files folder is the default installation folder for **CADS Revit SCIA Engineer Link**.

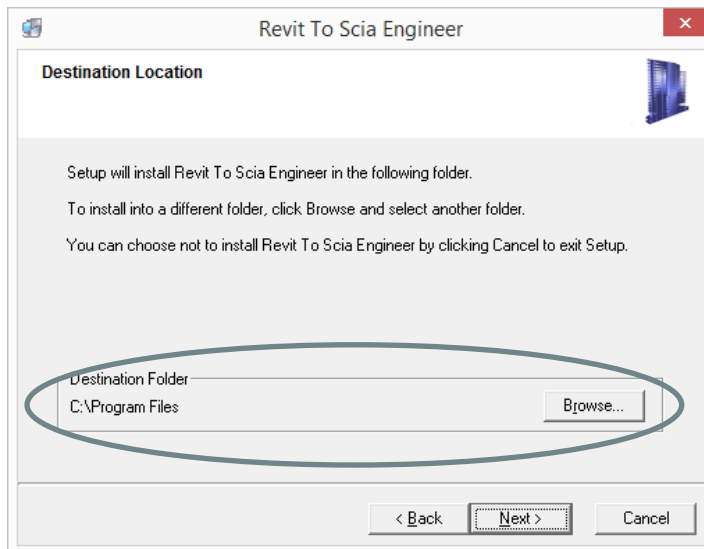


Figure 2-1: CADS Revit SCIA Engineer Link installation folder

Revit20xx is the **Revit** version number on which **CADS Revit SCIA Engineer link** is installed.

3 Workflow

CADS Revit SCIA Engineer link supports the following workflows:

3.1 Revit Architecture to SCIA Engineer round trip

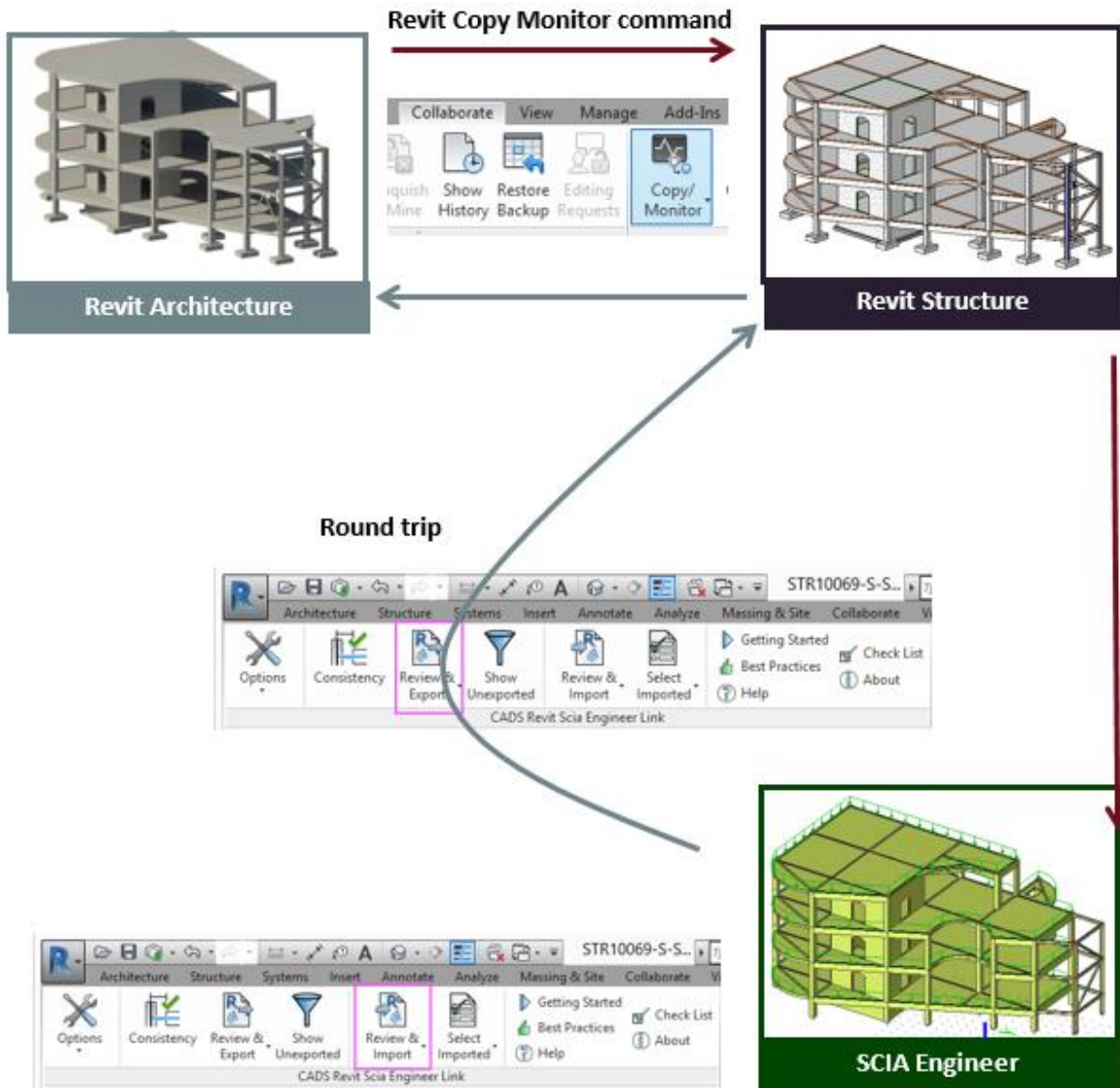


Figure 3-1: Revit Architecture to SCIA Engineer round trip

3.2 Revit to SCIA Engineer round trip

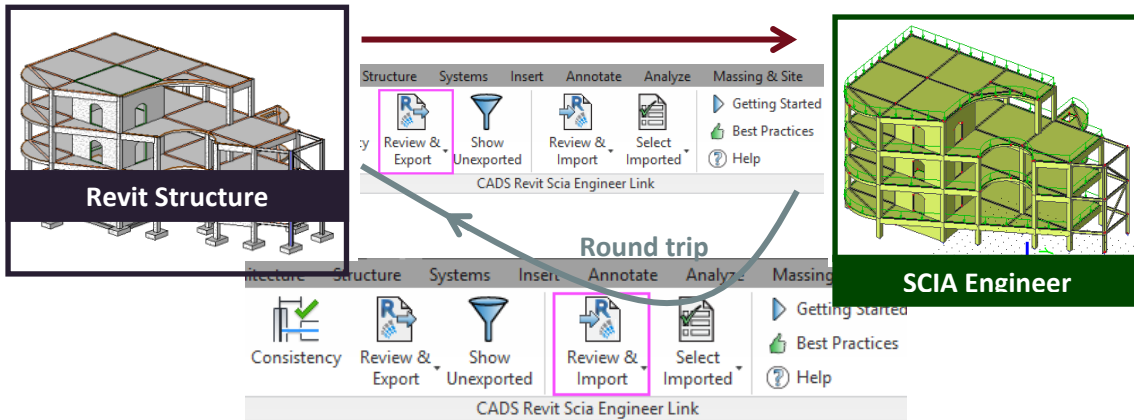


Figure 3-2: Revit to SCIA Engineer round trip

3.3 SCIA Engineer to Revit round trip

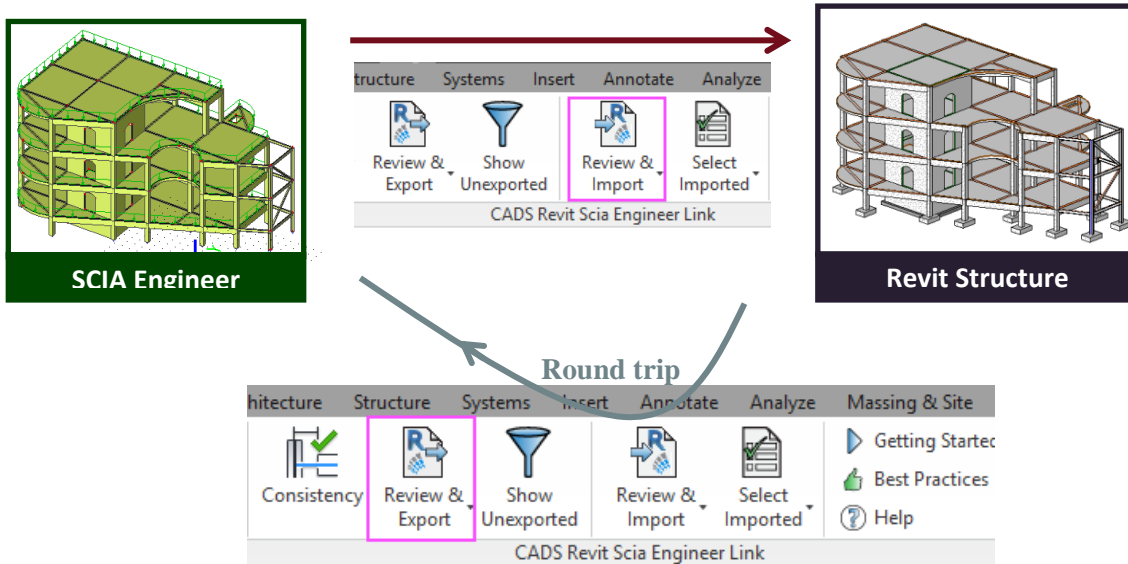


Figure 3-3: SCIA Engineer to Revit round trip

4 Installation

This section sets out how to install **CADS Revit SCIA Engineer link** on various system environments.



If you wish to have a direct link between **Revit** and **SCIA Engineer**, you should have both applications installed and licensed on your system.

If only one of the applications is licensed (i.e. **Revit** or **SCIA Engineer**) and you wish to share your model with your colleague then you need to use the file based transfer method. This means, you will have to create a *.R2S file from either of the applications and then import it into the other application.

ESA RevitLink (ESA.21) module should be licensed as part of the **SCIA Engineer** installation to exchange models in between **Revit** and **SCIA Engineer**.

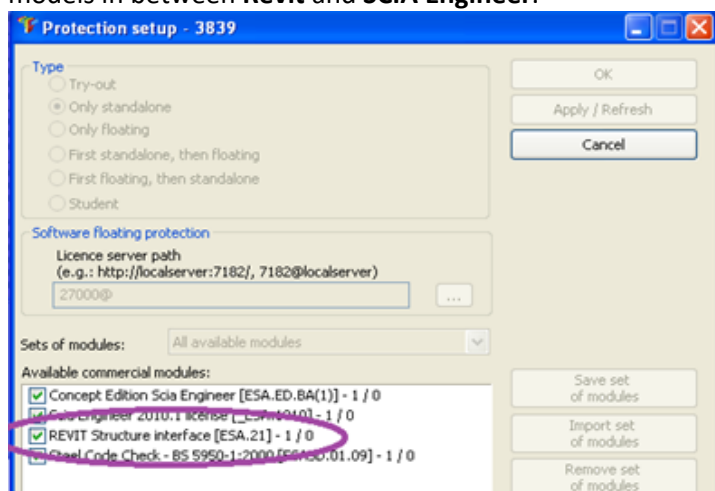


Figure 4-1: SCIA Engineer - Protection setup dialog

Note:

We suggest that you uninstall the previous version of **CADS Revit SCIA Engineer link** before starting the installation of the latest version of **CADS Revit SCIA Engineer link**.

The mapping databases is updated in the latest version of CADs Revit SCIA Engineer link (2018.0). If you wish to use any of the existing databases or any pre-defined customised databases, please copy them into the folder C:\ProgramData\CADS\Revit to Scia Engineer\Revit 20xx\Mapping Databases.

Please note that the user table created in the previous versions of **CADS Revit SCIA Engineer link** cannot be used with the new version.

4.1 Revit and SCIA Engineer licensed on the system

1. Check in the *Release Notes* whether the **Revit** version is compatible with the version of **CADS Revit SCIA Engineer link** you wish to install on your system. If yes, then continue with the installation, or else install the required version of either **Revit** or **SCIA Engineer**
2. Run **CADS Revit SCIA Engineer link** installation and select the options as prompted in the dialogs
3. Finish the installation.

4.2 Only Revit licensed on your system


1. Check in the *Release Notes* whether the **Revit** version is **compatible** with the version of **CADS Revit SCIA Engineer link** you wish to install on your system. If yes, then continue with the installation or else install the required version of Revit Structure.
2. Run **CADS Revit SCIA Engineer link** installation and select the options as prompted in the dialogs.
3. **CADS Revit SCIA Engineer link** requires that **SCIA Engineer** is installed on the system to generate the *.R2S file. A licensed copy of **SCIA Engineer** is not mandatory, for example, just the installation of a **SCIA Engineer** demo version should be sufficient.

4.3 Only SCIA Engineer licensed on your system

CADS Revit SCIA Engineer link installation is not required. As long as you have the [ESA RevitLink \(ESA.21\)](#) module installed and licensed on your system you can export or import the *.R2S file from **SCIA Engineer** as explained in [Section 5](#).

4.4 Neither Revit nor SCIA Engineer license present on your system

CADS Revit SCIA Engineer link requires at least one of the above applications to be installed and licensed on the system for it to work.

 **CADS Revit SCIA Engineer link** can be also installed on **Revit Architecture** or **Revit MEP**, but this is not advisable as the correct structural model may not get transferred to/from **SCIA Engineer**. A structural model in Revit should have an analytical line associated with all structural elements. The analytical properties of a structural element can be modified from the Revit *Properties* tab.

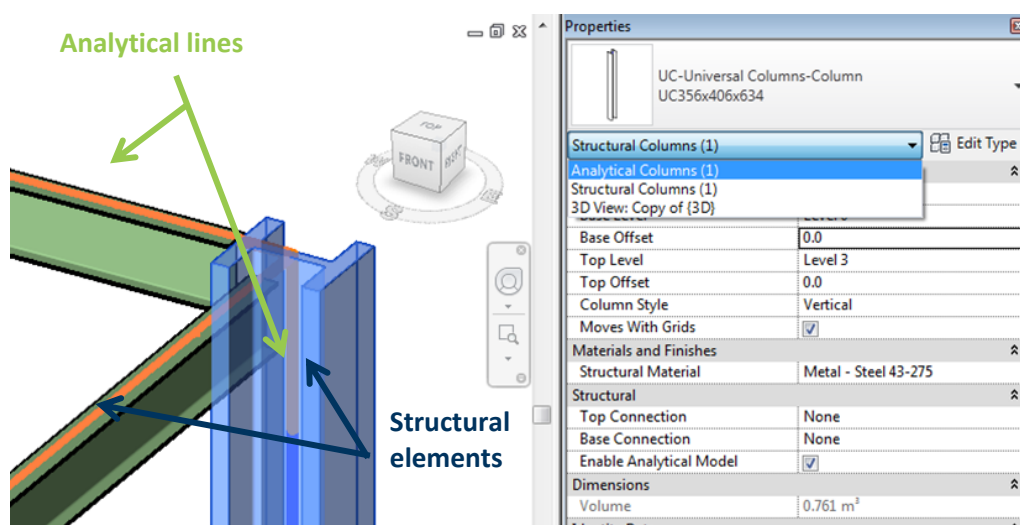


Figure 4-2: Analytical lines in Revit

5 Basic commands

In order to transfer the model from **Revit** to **SCIA Engineer**, you must specify the following:

5.1 Version of SCIA Engineer

You will have to select the **SCIA Engineer** version you wish to use for export/import of models.

R Revit -> CADS -> Revit SCIA Engineer Link -> Options -> Actions -> SCIA Engineer Version -> Browse -> Add

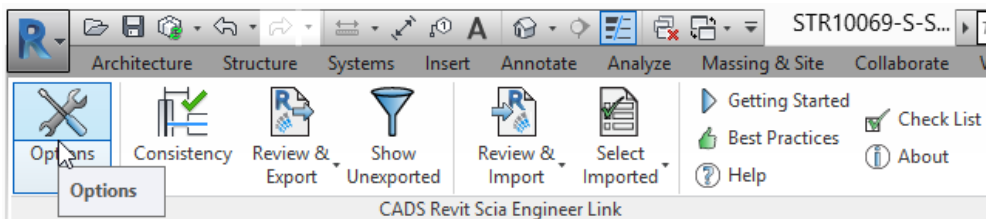


Figure 5-1: CADS Revit SCIA Engineer Link - Options button

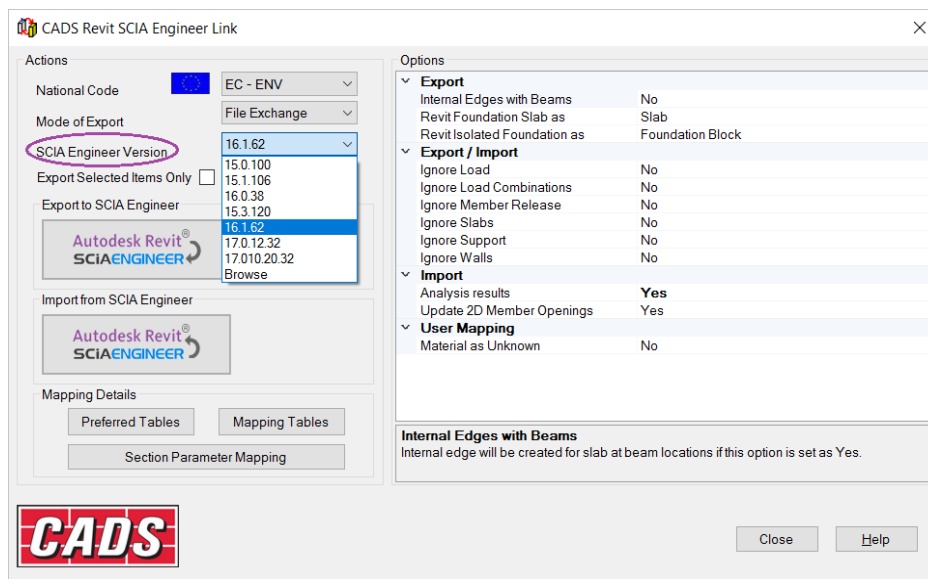


Figure 5-2: CADS Revit SCIA Engineer Link - Add SCIA Engineer version dialog

Click on the **Add** button to select the **SCIA Engineer** root folder as shown below:

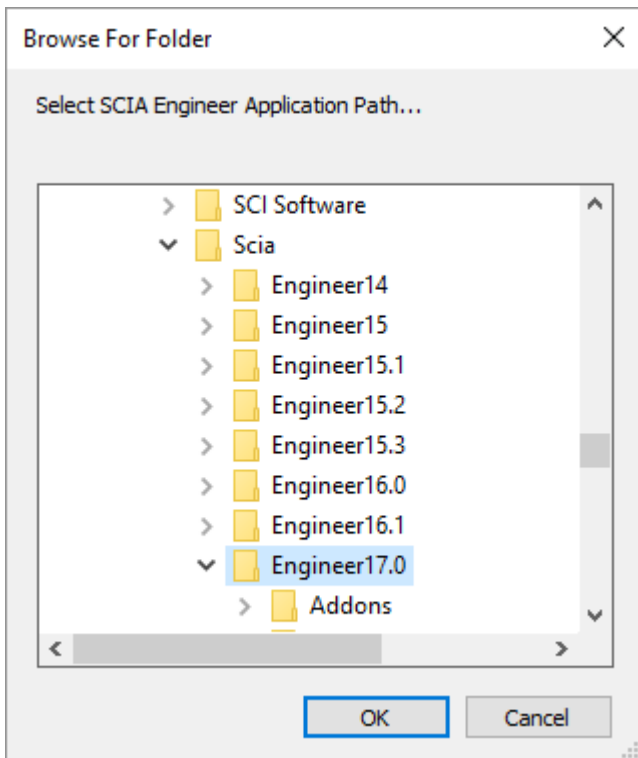


Figure 5-3: CADs Revit to SCIA Engineer Link - Browse for SCIA Engineer folder

Select *OK* and then *Close* the previous dialog.

5.2 Code of practice

R Revit -> CADs -> Revit SCIA Engineer Link -> Options -> National Code

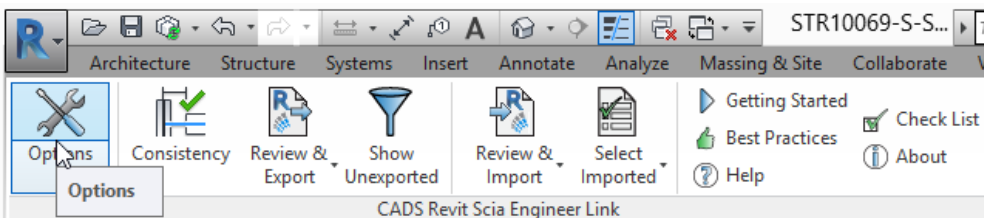


Figure 5-4: CADs Revit SCIA Engineer Link - Options button

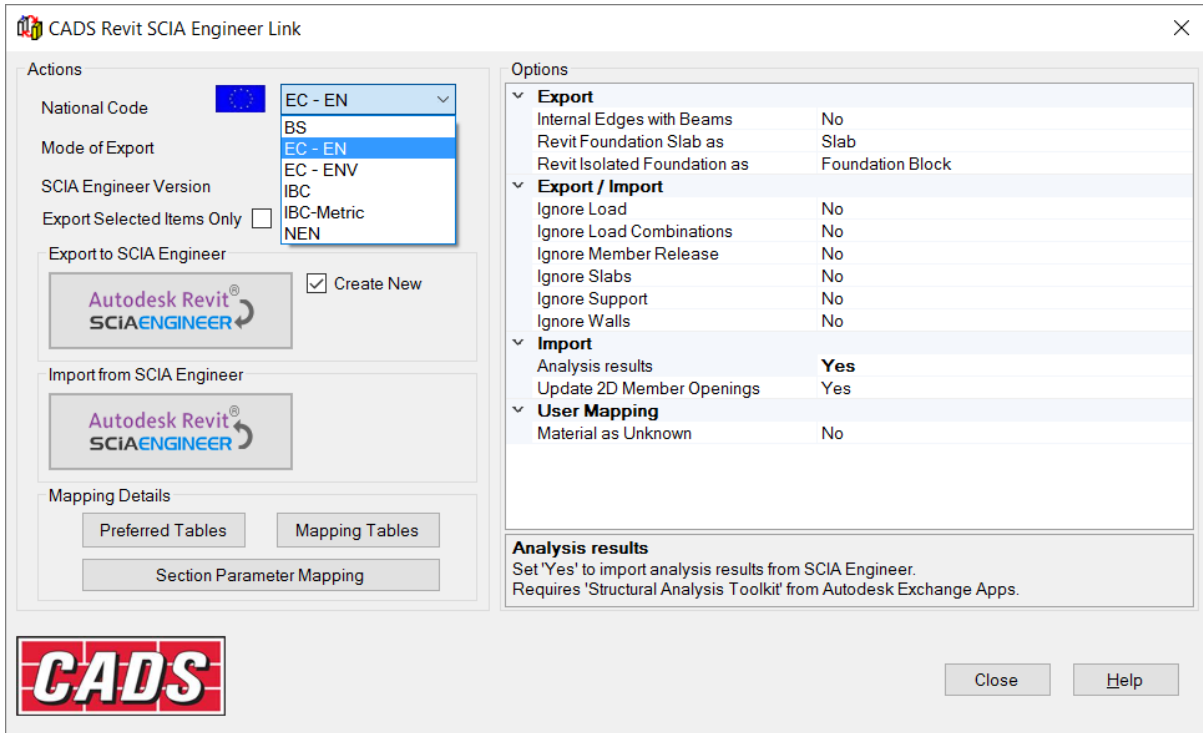


Figure 5-5: CADs Revit SCIA Engineer Link - National Code

Select the National Design Code you wish to use in **SCIA Engineer** before exporting the mode from **Revit**. **CADs Revit SCIA Engineer Link** will automatically select the appropriate **SCIA Engineer** template to create the model.

The first time you import a project from **SCIA Engineer** into **Revit**, ensure that you create a new **Revit** file and select the correct template file as per the country code used for creating the job in **SCIA Engineer**.

R Revit -> New -> Project

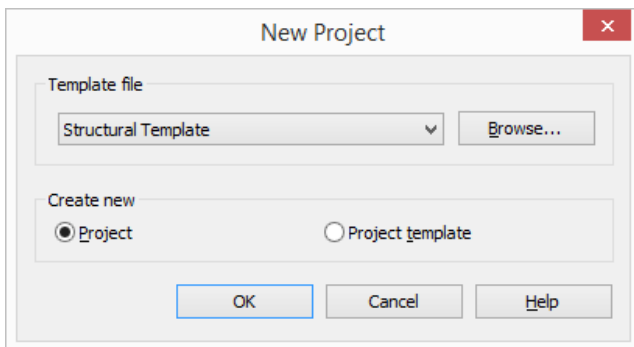


Figure 5-6: Revit - New project dialog

Use the *Browse* button to locate the correct template file.

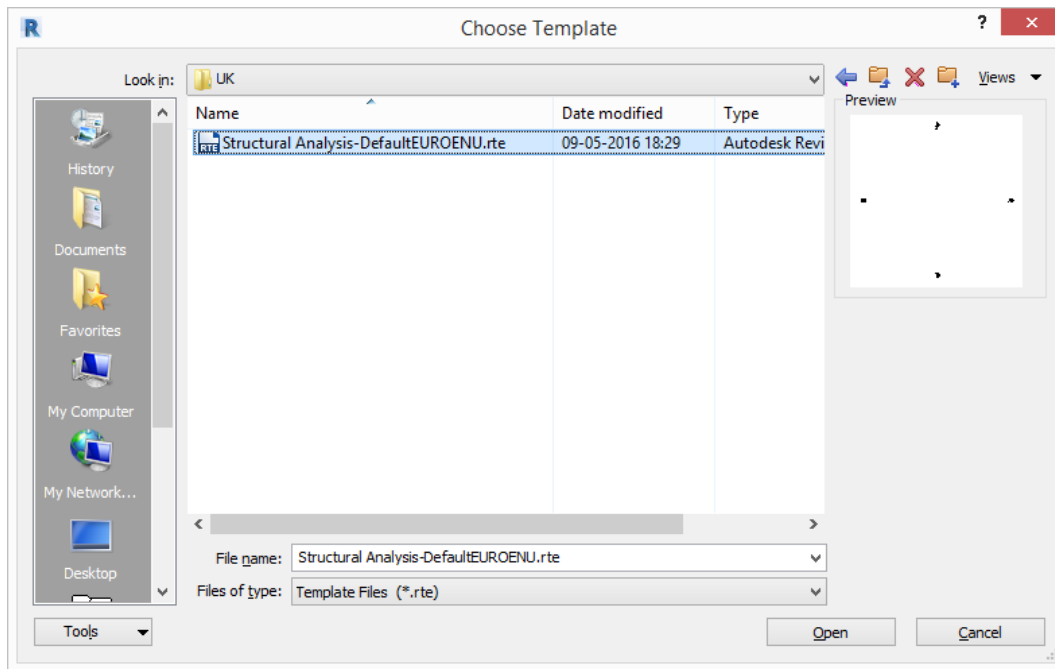


Figure 5-7: Revit - Choose template dialog



You may choose any customised **Revit** Structural template file as well, but make sure that the units are the same as those used in the **SCIA Engineer** model. For example, if the **SCIA Engineer** model is created in Metric units, then the **Revit** Structural template should also be in Metric.

Ensure that the **Revit** libraries of structural members are available in the default **Revit** installation folder, for example the library of UK cross sections are available in the following folder for **Revit** 2017 by default.

C:\ProgramData\Autodesk\RVT 2017\Libraries\UK

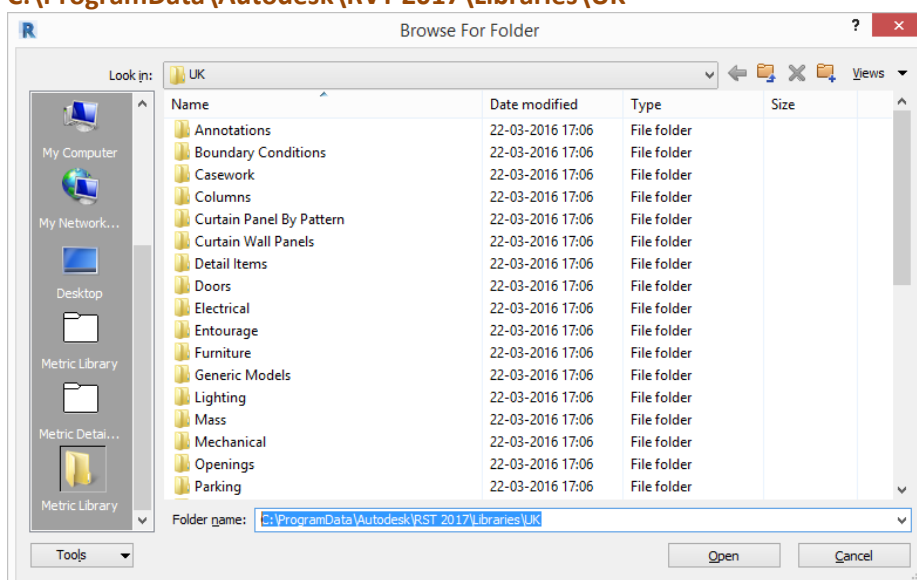


Figure 5-8: Revit - Family folder

If you are using the library of customised **Revit** families and/or the library of **Revit** families stored in LAN, you have to configure the folder location where these **Revit** families are stored. You can access this from:

R Revit -> CADs -> Revit SCIA Engineer Link -> Options -> Mapping Details -> Preferred tables -> Revit Family Path

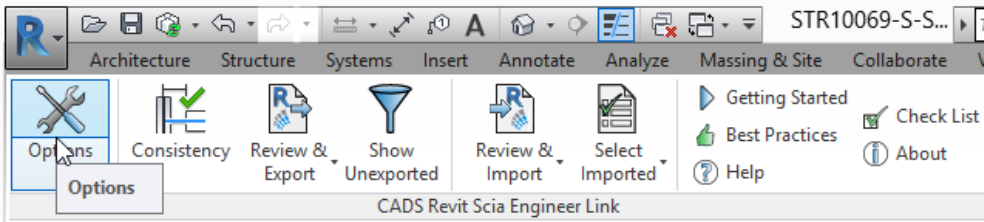


Figure 5-9: CADs Revit SCIA Engineer Link - Options button

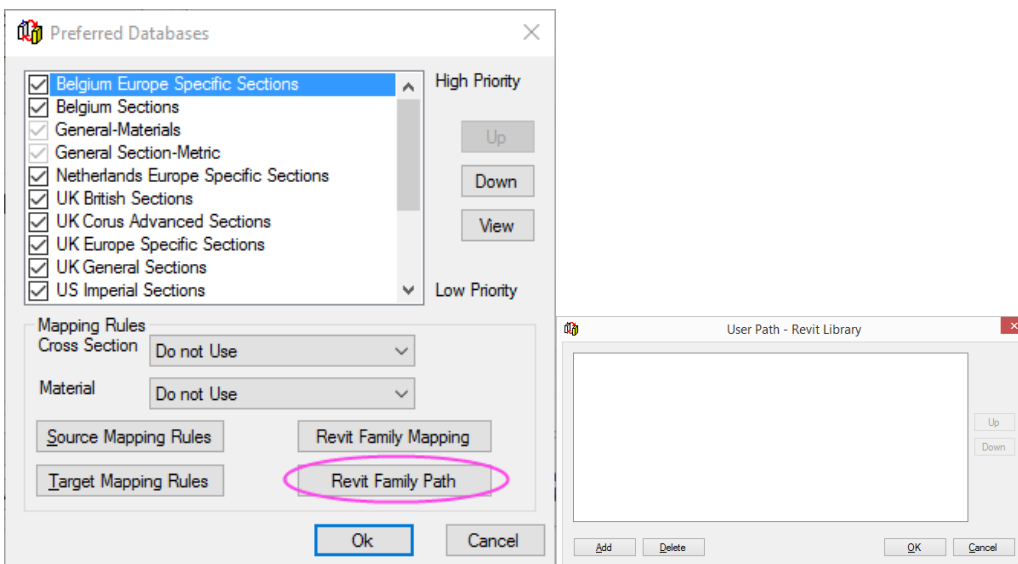
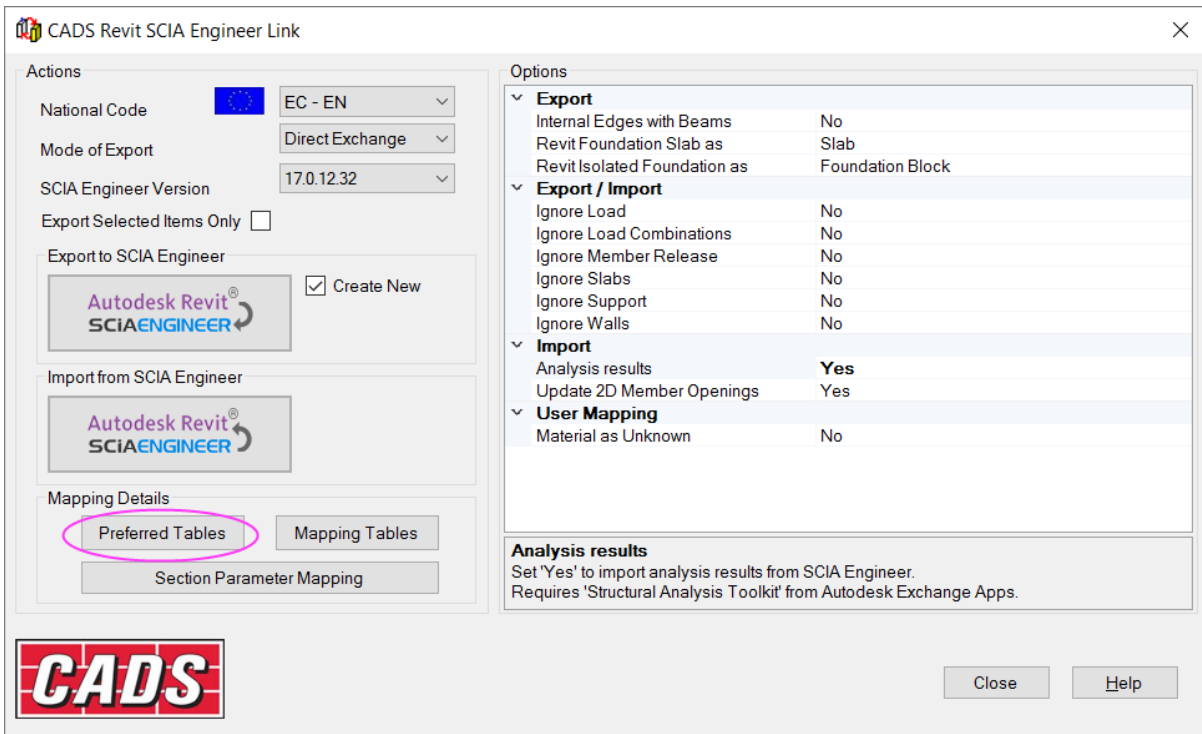


Figure 5-10: CADs Revit SCIA Engineer Link - Revit family path

5.3 Model export / import

There are two ways in which a model can be exchanged between **Revit** and **SCIA Engineer**:

- *Direct exchange method*: In this method the model is transferred directly between **Revit** and **SCIA Engineer** without the need of any data exchange file. You must have both **Revit** and **SCIA Engineer** licensed on your system to use this method of model exchange.
- *R2S file exchange method*: If you have either **Revit** or **SCIA Engineer** licensed on your system then you can exchange models using a data exchange file in the *.R2S format.

Should you wish to transfer a model using the *Direct exchange method*, you should set the option *Mode of Export* to *Direct Exchange*.

R **Revit -> CADs -> Revit SCIA Engineer Link -> Options -> Actions -> Mode of Export**

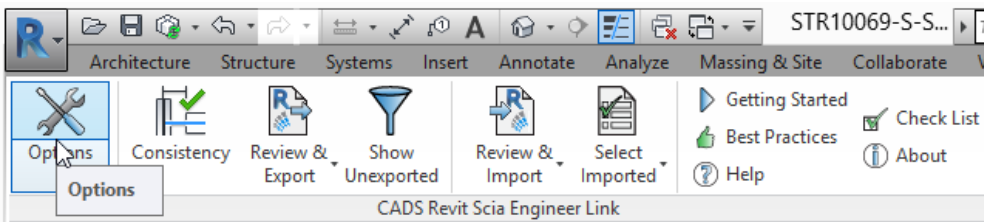


Figure 5-11: CADs Revit SCIA Engineer Link - Options button

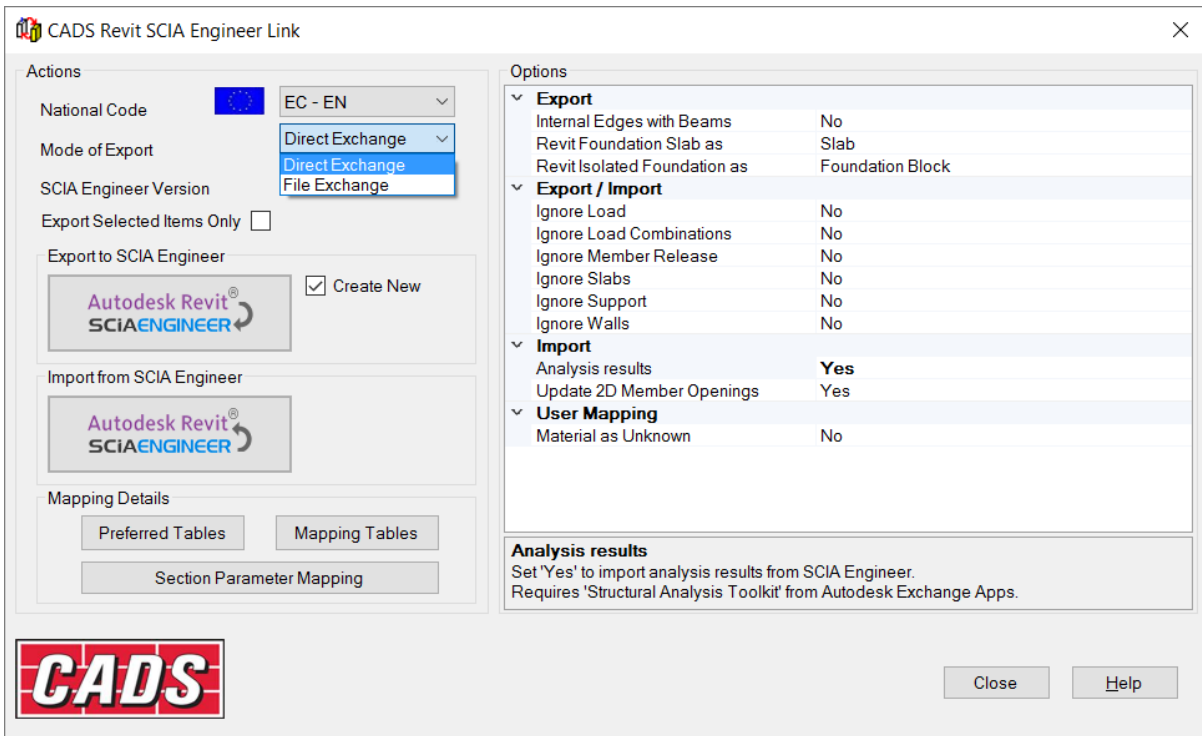


Figure 5-12: CADs Revit SCIA Engineer Link - Launch SCIA Engineer

Revit SCIA Engineer Link Getting Started

The matrix below shows how the **CADS Revit SCIA Engineer Link** works when you use the export or import feature from **Revit** or **SCIA Engineer**.

	Revit		SCIA Engineer	
	Export	Import	Export	Import
Mode of Export = Direct Exchange	Invokes SCIA Engineer automatically with the same file name and folder location as that of a Revit Structure job.	Imports the SCIA Engineer job into Revit #	Prompts you to specify the file name for the *.R2S file you wish to create which can be imported into Revit .	Prompts you to select the *.R2S file you created / modified from Revit .
Mode of Export = File Exchange	Prompts you to specify the file name for the *.R2S file you wish to create which can be imported into SCIA Engineer .	Prompts you to select the *.R2S file you created/modified in SCIA Engineer .		

Figure 5-13: Model export & import matrix

#Owing to certain programming API limitations, while importing the job into **Revit** you might get an error message 'Unable to find SCIA Engineer model'. In such cases, please follow the following steps:

1. Save the job in **SCIA Engineer**
2. Close **SCIA Engineer**
3. Open **Revit**
4. Create a new job with Structural template
5. Save the new job with a dummy **Revit** file name, e.g. Test.rvt
6. Export the job to **SCIA Engineer** with Mode of Export as "Direct Exchange"
7. A new session of **SCIA Engineer** will be created. Open the original job (point 1) in this session of **SCIA Engineer**
8. Now import the **SCIA Engineer** job into **Revit**

5.3.1 Case 1: Export from Revit to SCIA Engineer

R Revit -> CADS -> SCIA Engineer Link -> Export

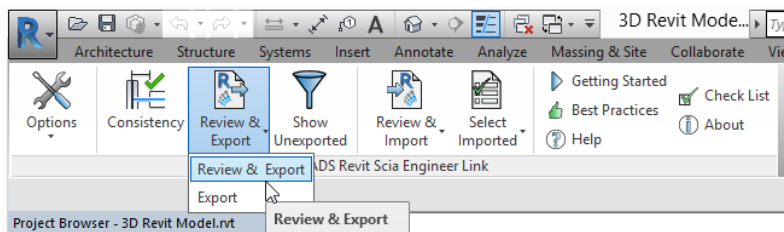


Figure 5-14: CADS Revit SCIA Engineer Link - Export model from Revit to SCIA Engineer

You can export the structural model in **Revit** to **SCIA Engineer** using the *Review & Export / Export* option.

Using the *Review & Export* will open the review manager that will list the changes to export by comparing the current Revit model with the last exported model. If this is a first time export, it will list all the items as 'New' under the 'Changes' column as shown below.

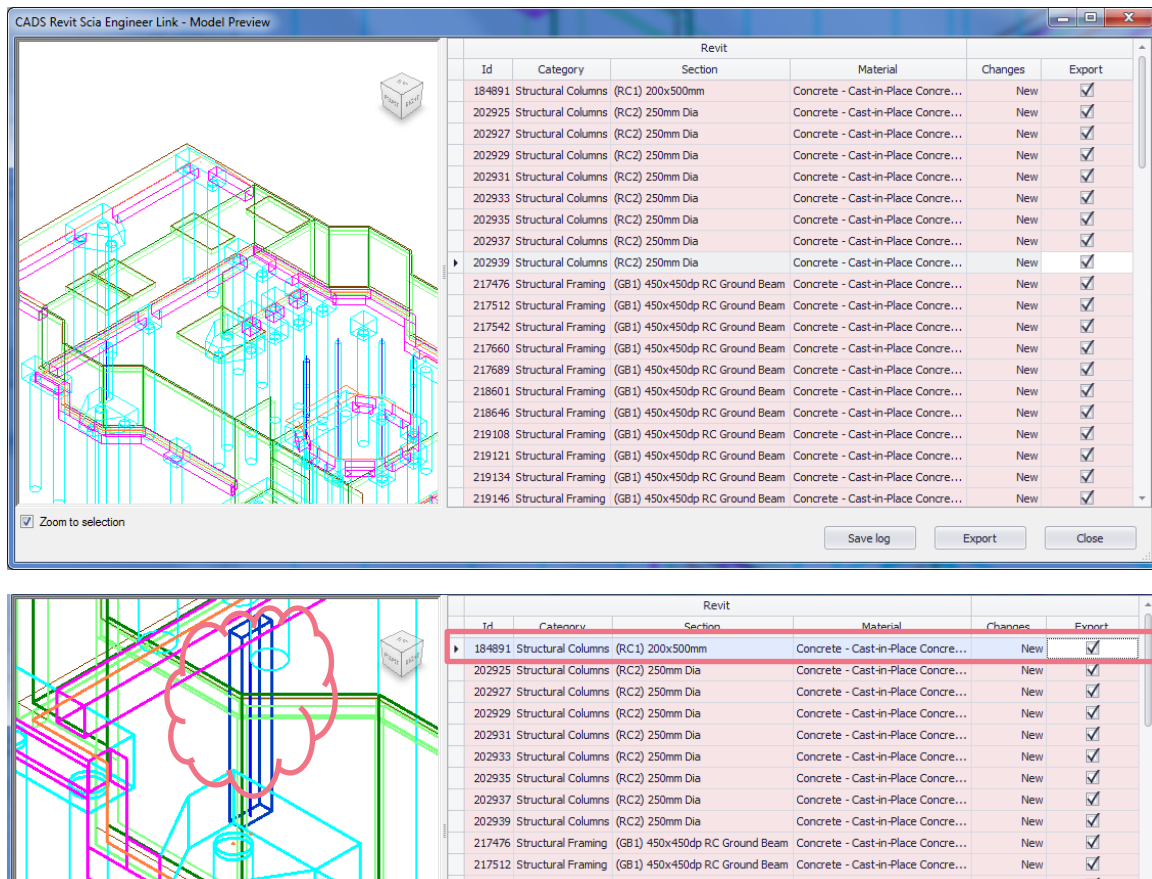


Figure 5-15: CADS Revit SCIA Engineer Link – Review & Export – Model Preview

The review manager lists the element ID, member category, cross section, material, type of change and an option to export. The preview on the left zooms to show the selected ID.

The following changes to structural members and openings are tracked by the review manager in this release:

- ▶ New - when a new item is available in the current model;
- ▶ Cross section – changes to the cross section (for example UB 305x102x25 to UB 305x127x37 or wall thickness changed from 200 mm to 300 mm);
- ▶ Dimension – changes to length of 1D members such as beam, column and changes to dimensions of 2D elements such as slab;
- ▶ Position - if the structural element is moved from its previous position, including changes in eccentricity;
- ▶ Rotation – changes to cross section rotation;
- ▶ Material – changes to material;
- ▶ Member releases – changes to member end releases such as hinges in SCIA Engineer;

- ▶ Opening – changes to opening dimension, position;
- ▶ Delete – when a member is deleted in SCIA Engineer.



Changes to *Loads* and *Supports* are not tracked by the review manager in this release.

Elements deleted from the Revit model will not be listed as the review manager compares just the currently available items.

You can save the contents of the review manager into a file by clicking on the *Save log* for future reference. Clicking on the *Export To* option in the preview allows you to save the file to multiple file formats.

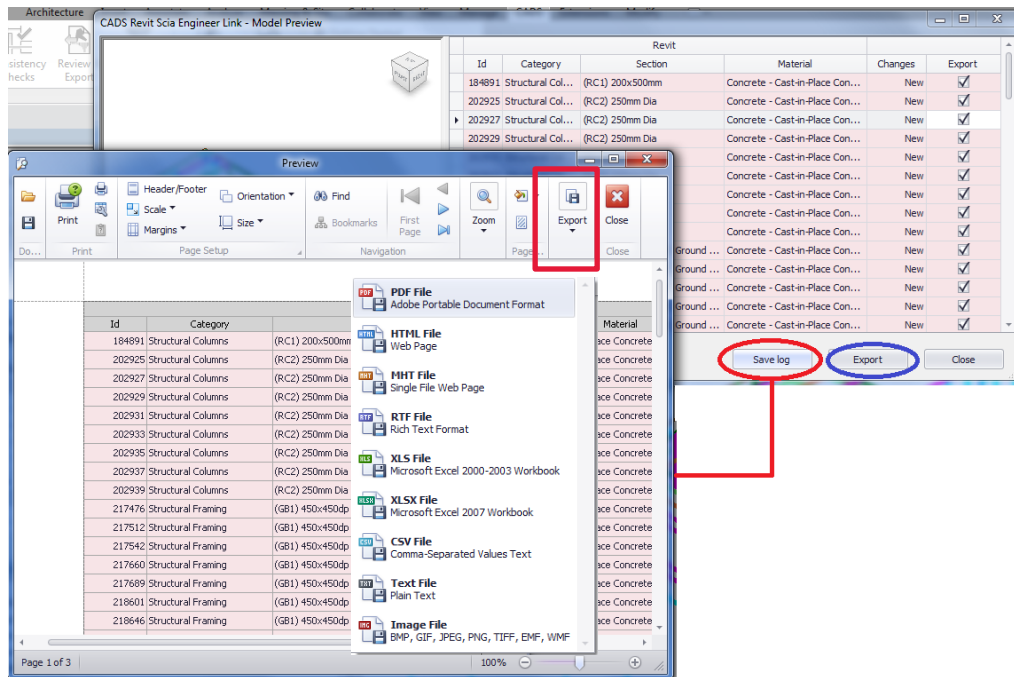


Figure 5-16: CADs Revit SCIA Engineer Link – Review & Export – Save Log

Using the selection in the last column (*Export*) you can choose not to export a particular element by un-ticking it. Clicking on *Export* will automatically perform Revit's *Analytical Consistency Check*.

It displays the following dialog if any errors / warnings exist providing an opportunity to correct the errors thus ensuring the Revit model is good for structural analysis prior to export.

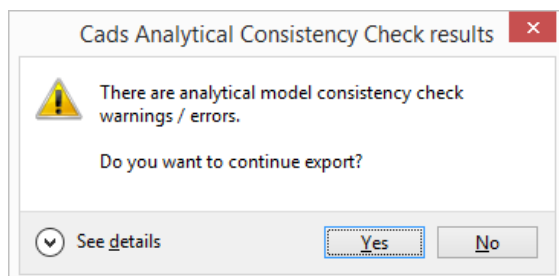


Figure 5-17: CADs Revit SCIA Engineer Link – Review & Export – Export – Analytical Consistency Check

Please save the Revit model once the export is completed in order to enable the review manager to track the changes.

Alternatively you may choose the *Export* option which directly starts to create the SCIA Engineer model (without tracking).

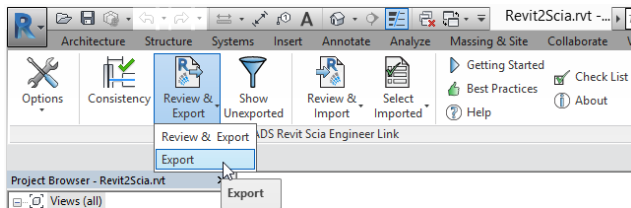


Figure 5-18: CADs Revit SCIA Engineer Link – Export

CADs Revit SCIA Engineer Link will open an instance of **SCIA Engineer** and create a **SCIA Engineer** model with the same file name as that of **Revit**. You may either choose to create a new **SCIA Engineer** file or overwrite an existing one by setting the following option.

Revit -> CADs -> Revit SCIA Engineer Link -> Options -> Export to SCIA Engineer -> Create New

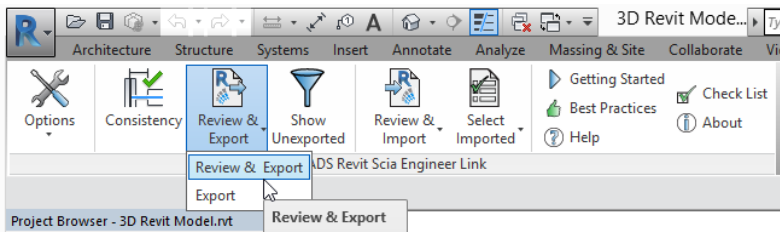


Figure 5-19: CADs Revit SCIA Engineer Link - Options button

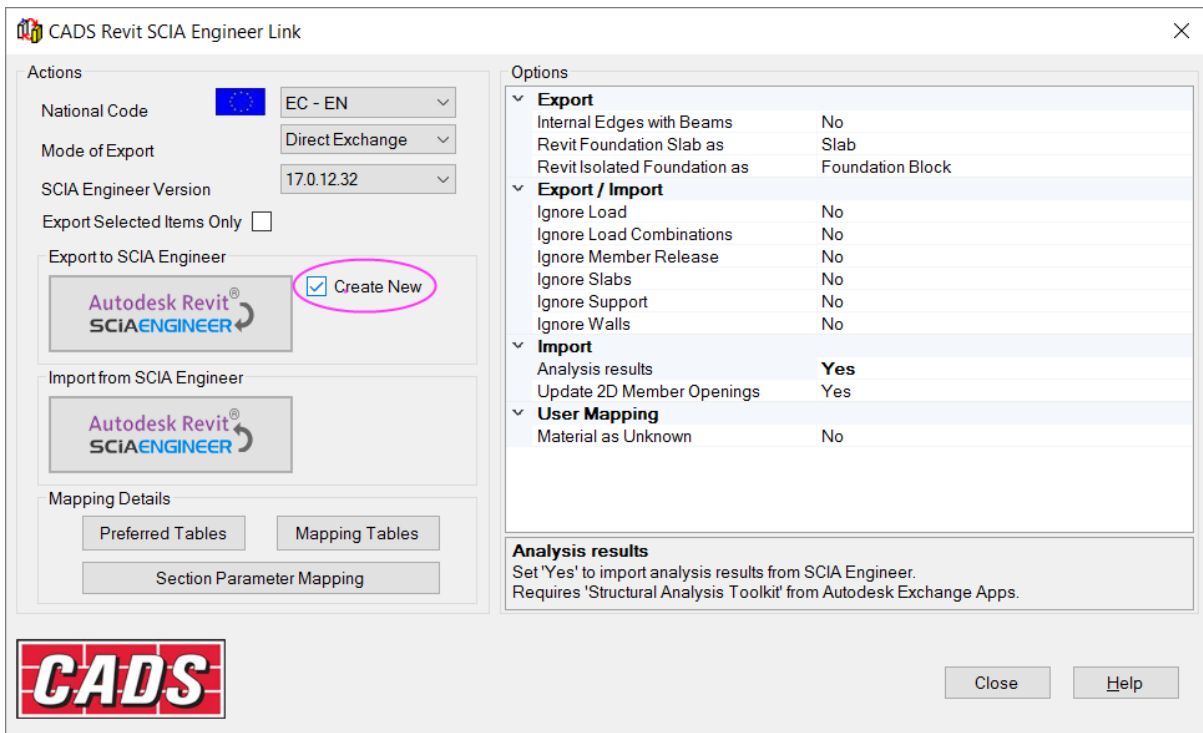


Figure 5-20: CADs Revit SCIA Engineer Link - Create new SCIA Engineer file

Revit SCIA Engineer Link Getting Started

When the option *Create New* is *un-ticked*, only the changes in the model will be updated to the existing **SCIA Engineer** file. Where the model is being transferred for the first time then **CADS Revit SCIA Engineer Link** will automatically create a new **SCIA Engineer** file (*.ESA) with the model.

If the option *Create New* is *ticked*, **CADS Revit SCIA Engineer Link** will overwrite the entire model information in the **SCIA Engineer** file. If an existing **SCIA Engineer** file with the same name is available then the old data in the file will be completely replaced by the new model data.



If you already have a SCIA Engineer session open in your system then **CADS Revit SCIA Engineer Link** may open another session owing to certain programming limitations.

For the *File exchange method* of model exchange, the *.R2S file generated from **Revit** can be imported into SCIA Engineer using the *Import* or *Update* option.



SCIA Engineer -> File -> Import -> Revit File

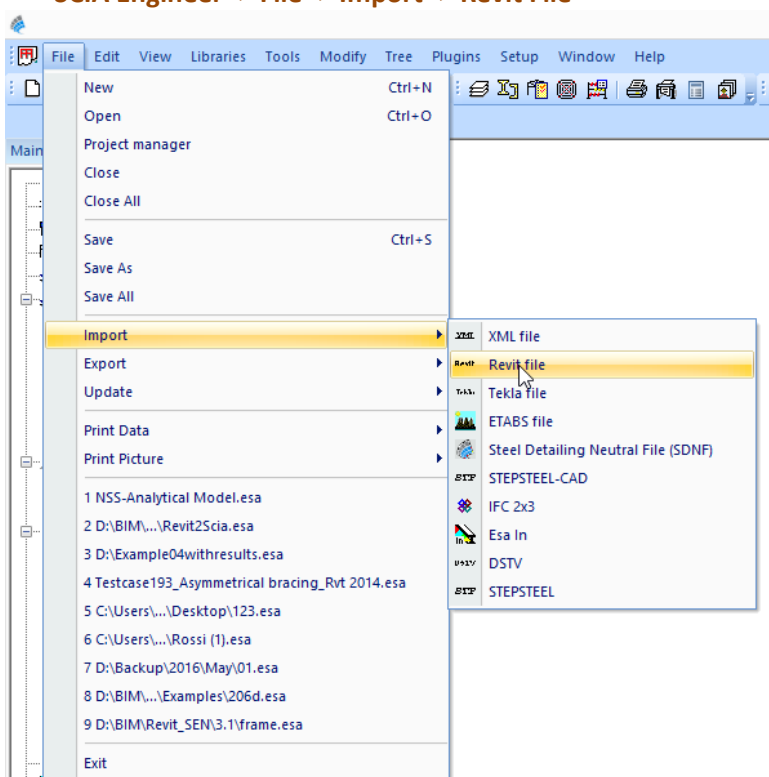


Figure 5-21: SCIA Engineer - Import Revit file

The *Import* option will create a new **SCIA Engineer** file and add the model information to it.



SCIA Engineer -> File -> Update -> Revit File

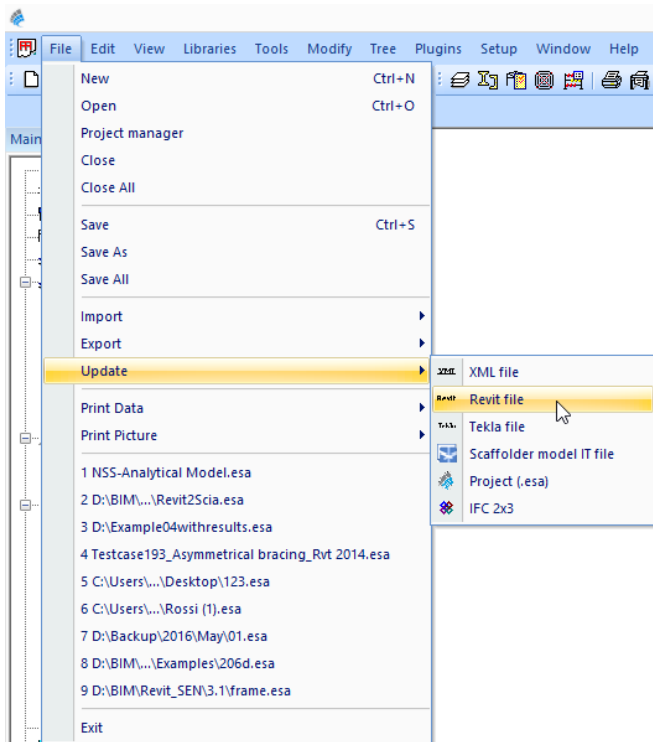


Figure 5-22: SCIA Engineer - Update Revit file

The *Update* option will update only the changes to an existing **SCIA Engineer** file.

5.3.2 Case 2: Import from SCIA Engineer to Revit

Revit -> CADS -> Revit SCIA Engineer Link -> Import

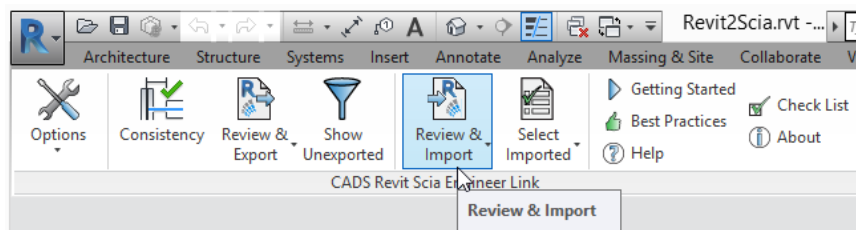


Figure 5-23: CADS Revit SCIA Engineer Link - Import model from SCIA Engineer to Revit Structure

You can import a **SCIA Engineer** model into **Revit Structure** using the *Review & Import / Import* option.

Click on *Review & Import* to track the changes between the SCIA Engineer model and the current Revit model.

Revit SCIA Engineer Link Getting Started

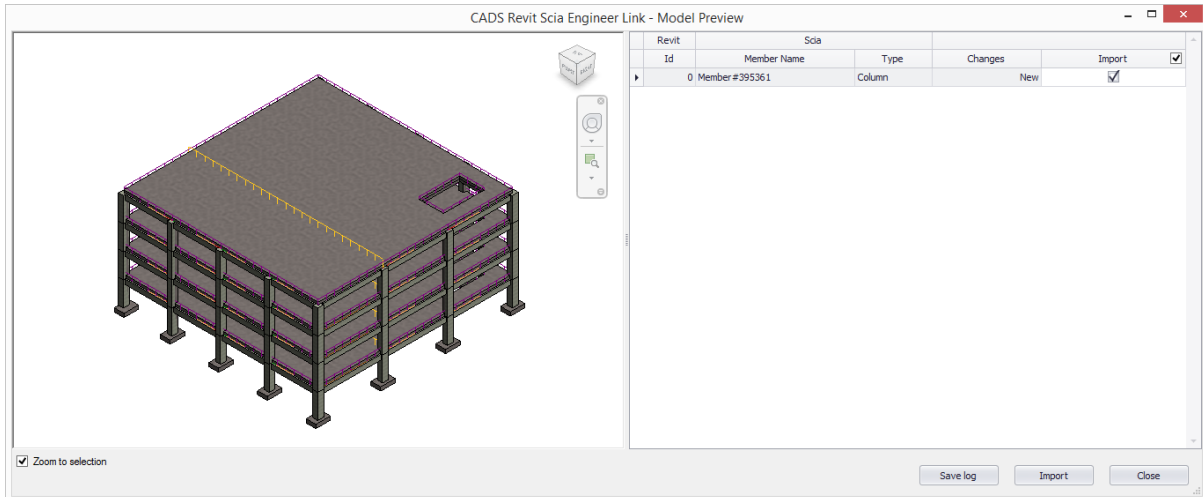


Figure 5-24: CADs Revit SCIA Engineer Link – Review & Import – Model Preview

You can choose not to import a change by using the option in the last column. This is particularly helpful if the changes are specific to analysis.

During import, **CADs Revit SCIA Engineer Link** will always update the existing mode available in **Revit**.

First, set the standard Code of Practice and ensure the cross section library is mapped correctly before starting the import as detailed in [Section 5.2 Code of practice](#).

You may import the model into **Revit** from **SCIA Engineer** using the *.R2S file too.

In both cases, you can use the *Select Changes* option to highlight the new or updated elements.

Revit -> CADs -> Revit SCIA Engineer Link -> Select Imported

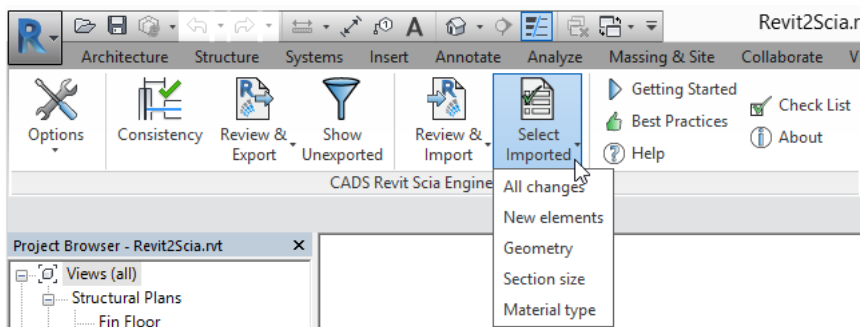


Figure 5-25: CADs Revit SCIA Engineer Link - Select changes

For the *R2S file exchange method*, you will have to first create a *.R2S file from **SCIA Engineer** using the following option:

SCIA Engineer -> File -> Export -> Revit File

Revit SCIA Engineer Link Getting Started

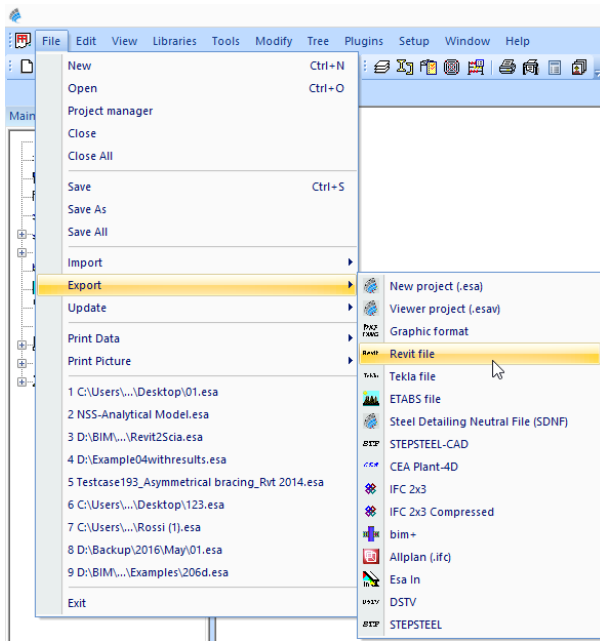


Figure 5-26: SCIA Engineer - Export Revit file

6 Features

Structural elements present in **Revit** or **SCIA Engineer** can be exchanged between the two applications, provided both the products support them. For example, you can apply a *Moment in node* in **SCIA Engineer** but there is no equivalent feature in **Revit**, hence it will be ignored when you import a model into **Revit** from **SCIA Engineer**.

Similarly, structural properties may be known by different names, but are mapped based on their role. For example, the 'line support', known as *Boundary Condition – Line* in **Revit** is equivalent to *Support - Line on Beam* or *Support – Line on 2D Member* in **SCIA Engineer**.

A complete list of features supported is available in the *Help file*.

R **Revit -> CADS -> Revit SCIA Engineer Link -> Help -> Introduction -> Bi Directional Link between Revit and SCIA Engineer**

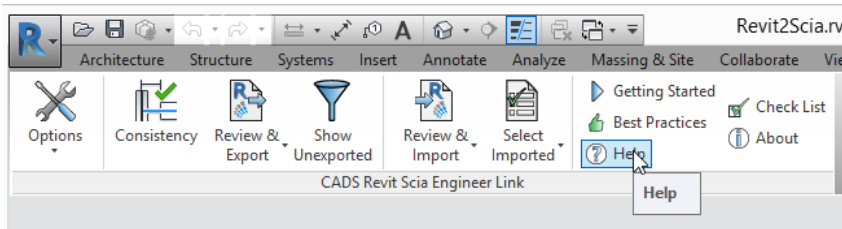


Figure 6-1: CADS Revit SCIA Engineer Link - Help button

All structural elements present in a **Revit** project will be exported to **SCIA Engineer** if the configuration option *Export Selected Items Only* is *un-ticked*. This includes all the members physically present in the **Revit** project irrespective of whether the *Worksets* they lie in are active or not.

R **Revit -> CADS -> Revit SCIA Engineer Link -> Options -> Export Selected Items Only**

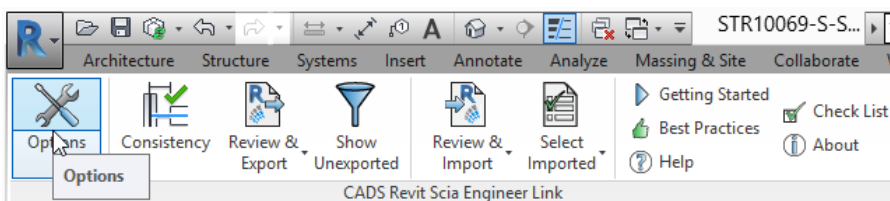


Figure 6-2: CADS Revit SCIA Engineer Link - Options button

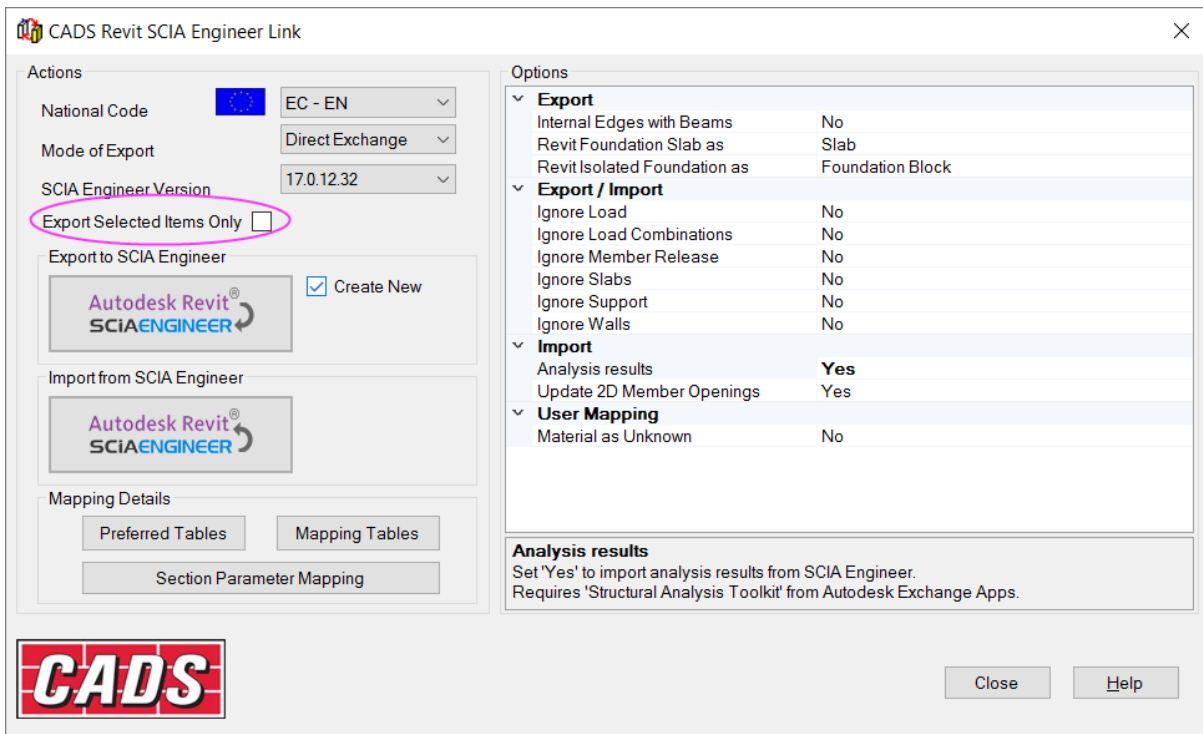


Figure 6-3: CADs Revit SCIA Engineer Link - Export selected items only

It is possible to specify the format of the node names to be used in the SCIA Engineer model through the *Node format* option. It is used only for export from Revit to SCIA Engineer for the first time.

Revit -> CADs -> Revit SCIA Engineer Link -> Options -> Node Format

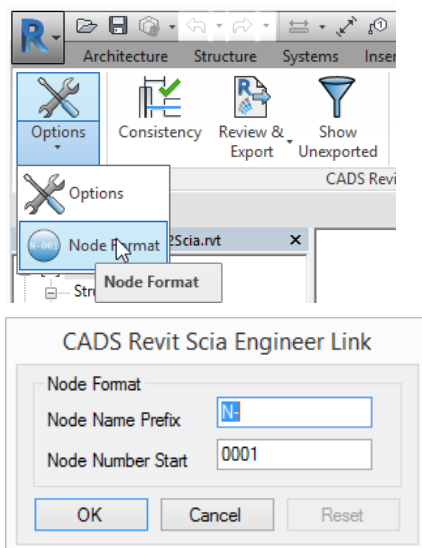


Figure 6-4: CADs Revit SCIA Engineer Link – Options – Node Format

Structural members visible in the **Revit** job but linked to external Revit or other CAD files will not be exported, for example linking an external **Revit** file using the *Insert->Revit Link* option.

You may choose to export only the selected members by ticking the configuration item *Export Selected Items Only*. This option could be very useful when you have a very large job but would like to analyse the structure in parts or would like to send updates for only a few members.

There is no such option available when you export the job from **SCIA Engineer**. All structural elements present in **SCIA Engineer** will get imported into **Revit**.

6.1 Log of events

Whenever you export or import a model from **Revit Structure**, a log of important events is created. For example:

"UC356x368x202" is mapped as "UC356/368/202"

- Doors | Doors 4 - 225505 : Not exported as this is not a structural element!
- Where 225505 is the member ID in **Revit**

The log will list the different categories of items present in the model and their status.

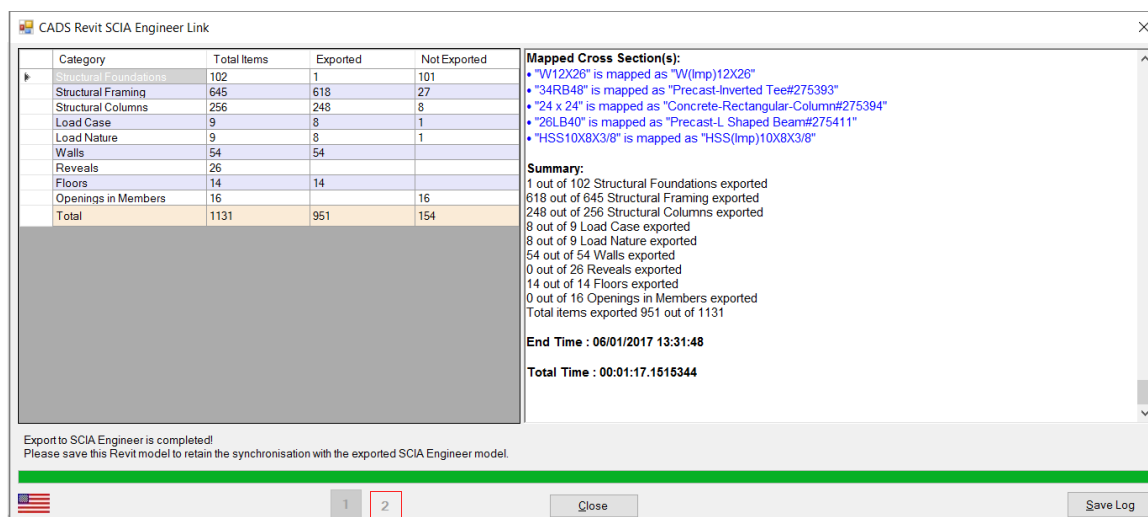


Figure 6-5: CADs Revit SCIA Engineer Link – Save Log file

It is recommended to save the log as a *.RTF file using the *Save Log* button for checking and version control purposes.

Items which are successfully exported or imported are marked in blue. Elements that could not be exported/imported or have some issues attached to it are marked in red. You can highlight the affected member in **Revit** by using *Manage->Select by ID* option in **Revit**.

In the absence of a review manager, this is a very good option to highlight the elements marked in red in the log file and then take appropriate corrective action to export/import the member again.

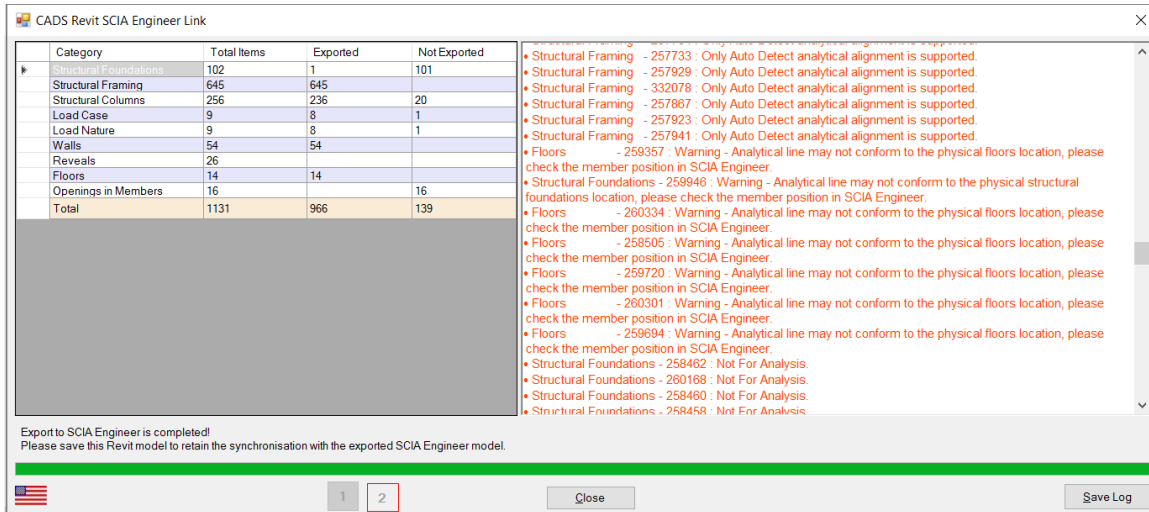


Figure 6-6: CADs Revit SCIA Engineer Link – Error checking in log file

For example in the above log file, a warning that the analytical line is not in the proper position is given for floor slab 227544. You can use the *Manage->Select by ID* option in **Revit** to highlight the slab and take the required action.

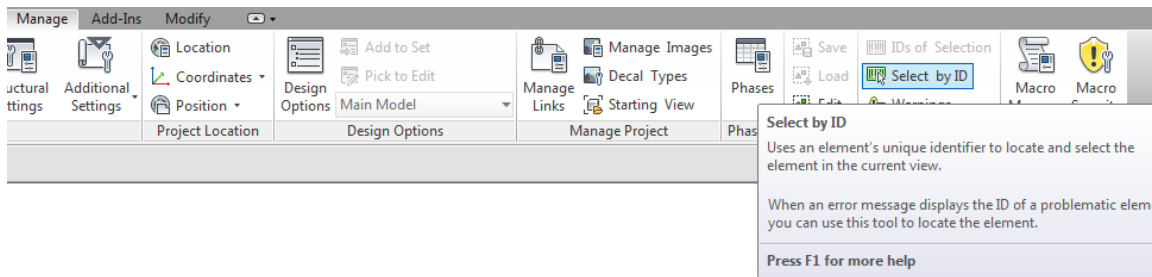


Figure 6-7: Revit - Select by ID

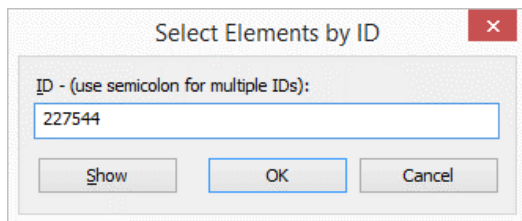


Figure 6-8: Revit - Select elements by ID

You may then change the required member attributes and send only the selected elements using the option *Export Selected Items Only*.

6.2 Member export/import

The standard cross section and material libraries in both **Revit** and **SCIA Engineer** are comprehensive but are labelled differently. For example *BS – Universal Beam (UB)* sections are named as *UB254/102/25* in **SCIA Engineer** but as *UB254x102x25* in **Revit**.

Therefore, **CADS Revit SCIA Engineer link** is shipped with a pre-installed mapping library which matches cross sections and material properties between **SCIA Engineer** and **Revit**. In addition to the above, you can also specify your own mapping rules for any new section you add to the library.

R Revit -> CADS -> Revit SCIA Engineer Link -> Options -> User Table

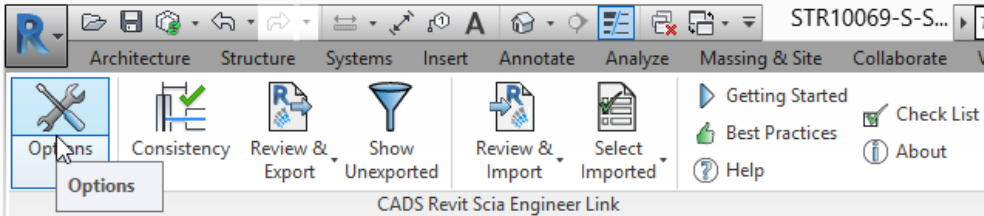


Figure 6-9: CADS Revit SCIA Engineer Link - Options button

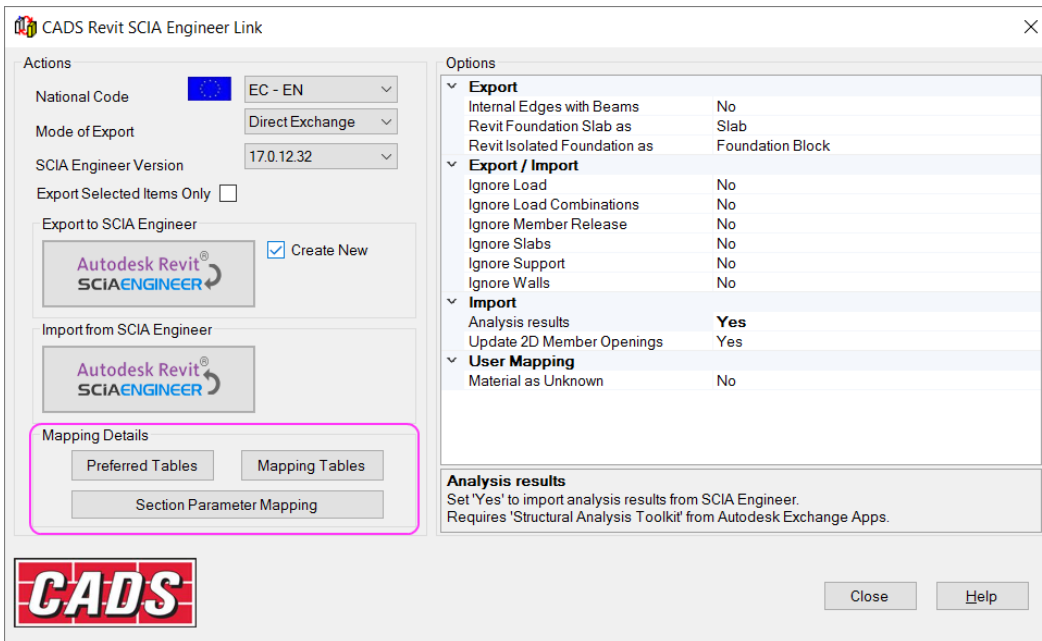


Figure 6-10: CADS Revit SCIA Engineer Link - Mapping Details

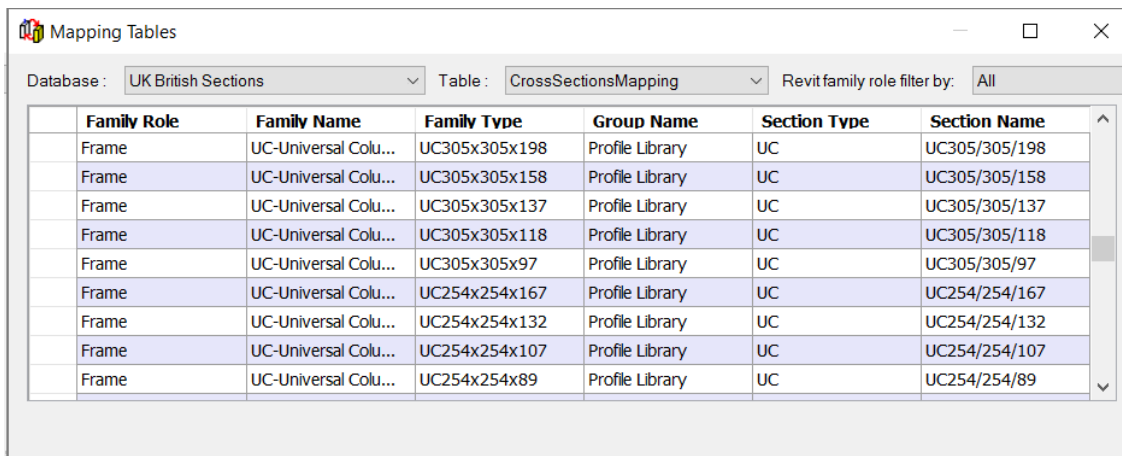
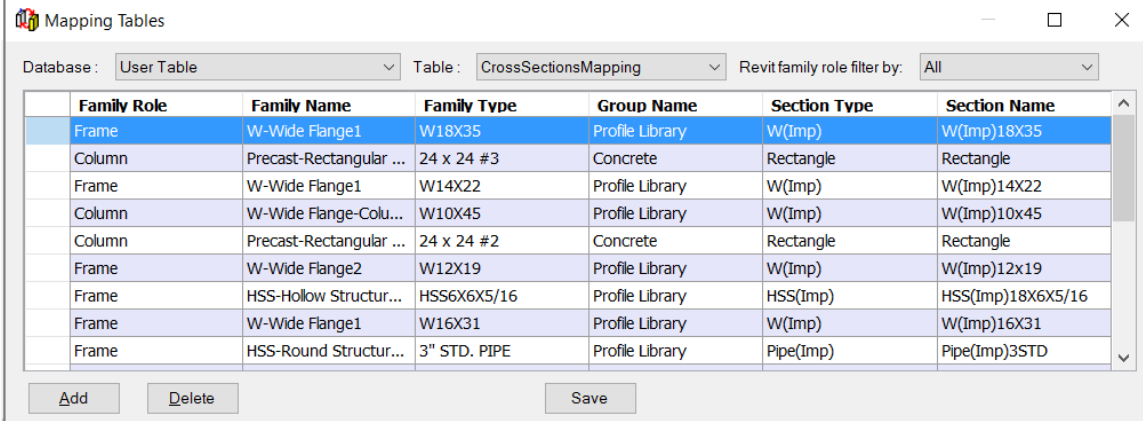


Figure 6-11: CADS Revit SCIA Engineer Link - Mapping tables

The *Database* drop down menu contains the different section libraries that the **CADS Revit SCIA Engineer Link** supports. For each library you will find data mapped between **Revit** and **SCIA Engineer** cross sections and materials using the *Table* drop down menu.

You cannot edit any pre-installed mapping database, but you can add new mapping rules by selecting the *User Table* in the *Database* dropdown menu.



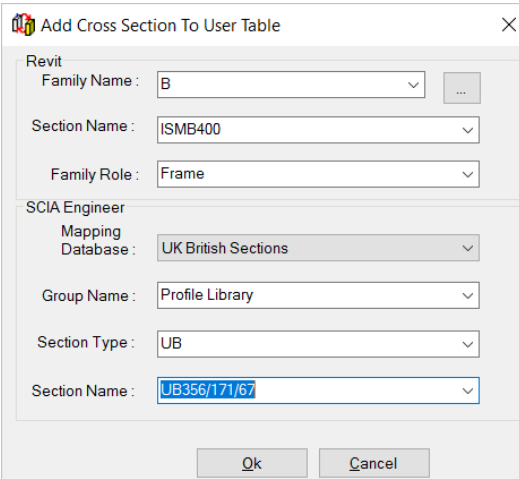
Family Role	Family Name	Family Type	Group Name	Section Type	Section Name
Frame	W-Wide Flange1	W18X35	Profile Library	W(Imp)	W(Imp)18X35
Column	Precast-Rectangular ...	24 x 24 #3	Concrete	Rectangle	Rectangle
Frame	W-Wide Flange1	W14X22	Profile Library	W(Imp)	W(Imp)14X22
Column	W-Wide Flange-Colu...	W10X45	Profile Library	W(Imp)	W(Imp)10x45
Column	Precast-Rectangular ...	24 x 24 #2	Concrete	Rectangle	Rectangle
Frame	W-Wide Flange2	W12X19	Profile Library	W(Imp)	W(Imp)12x19
Frame	HSS-Hollow Structur...	HSS6X6X5/16	Profile Library	HSS(Imp)	HSS(Imp)18X6X5/16
Frame	W-Wide Flange1	W16X31	Profile Library	W(Imp)	W(Imp)16X31
Frame	HSS-Round Structur...	3" STD. PIPE	Profile Library	Pipe(Imp)	Pipe(Imp)3STD

Figure 6-12: CADS Revit SCIA Engineer Link - User table

Click on the *Add* button to include your customised *Revit Structure family (*.RFA) file* to the cross section *Database*. You can add cross sections or material to the *User Table* only. Please contact [CADS Support](#) if you wish to update the pre-installed mapping database.

You can map the *Revit Structure family (*.RFA) file* with the sections available in the **SCIA Engineer** cross section library. The cross section library can be selected from the *Supporting Mapping Database* drop down menu.

The example below shows how you can add your custom *Revit Structure family (*.RFA) file* to the *User table*.



Revit
 Family Name: B
 Section Name: ISMB400
 Family Role: Frame

SCIA Engineer
 Mapping Database: UK British Sections
 Group Name: Profile Library
 Section Type: UB
 Section Name: UB356/171/67

Ok Cancel

Figure 6-13: CADS Revit SCIA Engineer Link - Add cross section to the user table

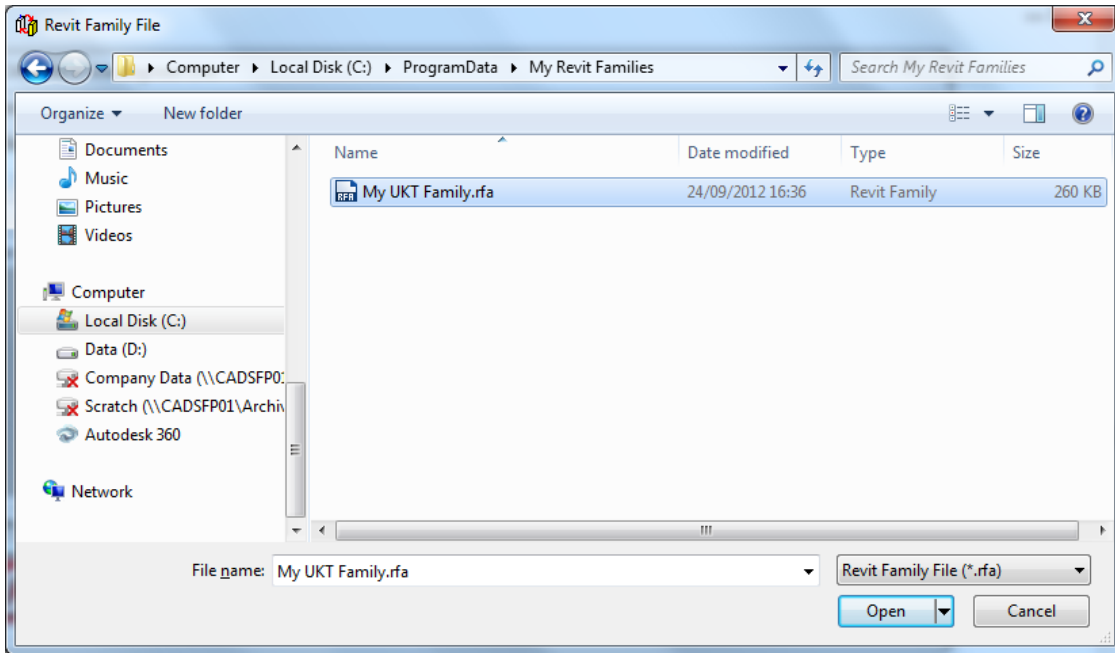


Figure 6-14: CADs Revit SCIA Engineer Link - Revit family file

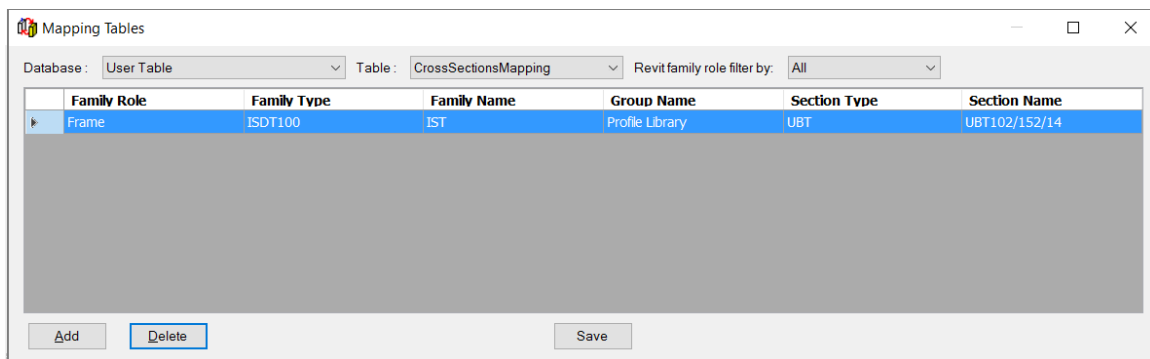


Figure 6-15: CADs Revit SCIA Engineer Link - Mapping tables

The feature is useful when you edit some details of the existing family or create a new one. Please refer to the *Help file ->Bi Directional Link between Revit and SCIA Engineer* on how members are mapped between **Revit** and **SCIA Engineer**.

2 Bi-directional link – Revit and SCIA Engineer

This link software supports a bi-directional link between Revit and SCIA Engineer.

2.1 Items supported in the program:

	Item in Revit	Item in SCIA Engineer
1	Column	Column (1D member)
2	Beam (Frame)	1D member
3	Brace	1D member
4	Structural Floor	2D member

Figure 6-16: CADs Revit SCIA Engineer Link - Help file

Where **CADS Revit SCIA Engineer link** encounters a cross section or material that is not available in any of its libraries, it will ask you to map the cross section while the export or import command is in progress. Once you map the cross section or material, it gets added to the *User Table*. This mapping can be used the next time the same cross section or material is found. Thus as you keep working with **CADS Revit SCIA Engineer link**, your user table will keep growing, adding the cross sections and the materials you generally work with.

Where a duplicate entry is found for the same cross section or material type then you will be prompted to select the appropriate one during the export or import process.

Whilst exporting or importing a project, you might unexpectedly be required to map a member or a material. If you are not sure, just use your best guess and then once the export or import is over; you can review the log file, highlight the member, change the cross section and export/import the member again.

6.3 Rotation

The Member cross section definition in **SCIA Engineer** differs from that of **Revit**. **CADS Revit SCIA Engineer Link** maps the sections between these two different applications. **Revit** depends on the *Revit family (*.RFA)* to define the cross section properties. *Revit family* is a very powerful tool but is also prone to errors since a cross section can be defined in many different ways. The default section library does not follow a systematic pattern to define a cross section. Hence **CADS Revit SCIA Engineer Link** depends on mapping files to map the sections.

CADS Revit SCIA Engineer Link has developed the mapping logic based on the default cross section library supplied with **Revit**. Since the *Revit family* implementation logic is not uniform in **Revit** you might find that the log file shows a message such as *Member rotated*. This is done to ensure that the cross section's handing (plane about which a cross section is mirrored) and orientation (member rotation about its centroid) with respect to the model are maintained in both **Revit** and **SCIA Engineer**.

This is generally not a problem with symmetrical sections, but with asymmetrical sections you might find that some sections are transferred with a different handing or orientation. In these cases please check if the *Revit family* used for member mapping is a custom made *Revit Family* or a default one supplied with **Revit**. For a custom made *Revit family* try changing the variables which affect member handing and orientation and use those values which gives the correct result. Please get in touch with the [CADS Support](#) team if there is any issue with the cross sections library supplied with **Revit**.

6.4 Eccentricity

CADS Revit SCIA Engineer Link ensures that the member eccentricity is correctly updated during the model exchange between **Revit** and **SCIA Engineer**. Since the parameters required defining eccentricity is different in **Revit** and **SCIA Engineer**, you may find the eccentricity parameters showing slightly different values, but the relative position of the member with respect to the centre line is maintained.

6.5 Support

Foundations and *Boundary conditions* can be exported from **Revit** to **SCIA Engineer** either as a foundation block or as supports. These can be specified from the configuration option *Export Revit Foundation*. If it is set to *Support* then the foundations are exported to **SCIA Engineer** as *Fixed Supports*, otherwise the foundations are exported as *Foundation Blocks* in **SCIA Engineer**.

Revit -> CADS -> Revit SCIA Engineer Link -> Options

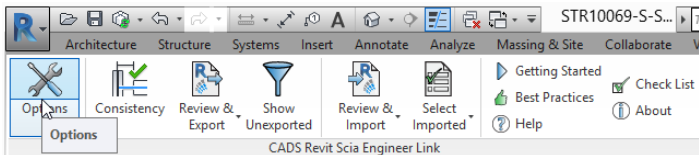


Figure 6-17: CADS Revit SCIA Engineer Link - Options button

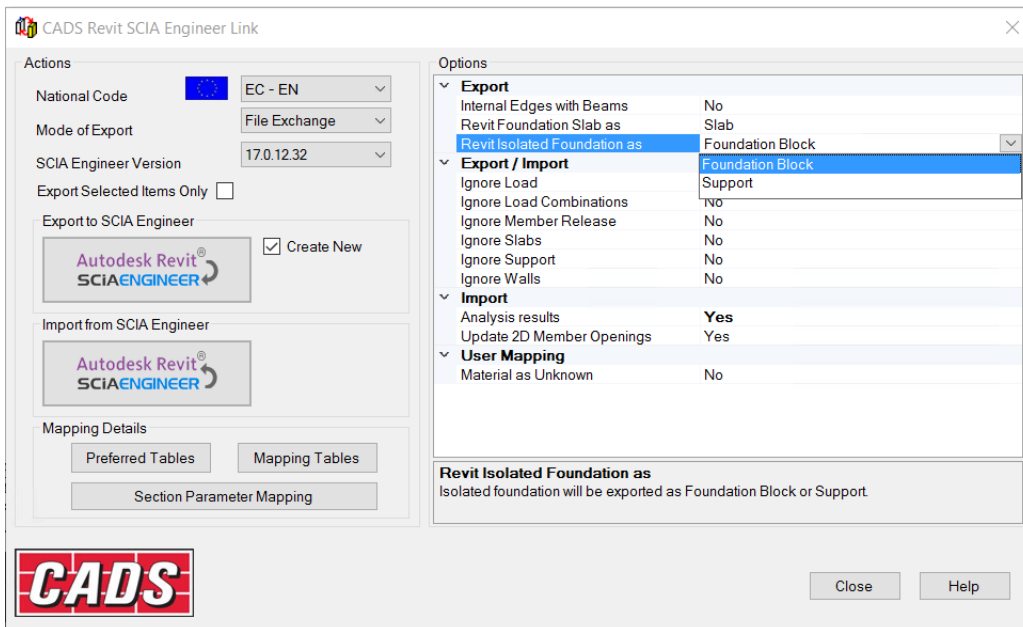


Figure 6-18: CADS Revit SCIA Engineer Link - Export Revit isolated foundation as option

If you have placed any *Boundary Conditions* (*Point*, *Line* or *Area*) in **Revit** then it will get exported as supports in **SCIA Engineer** with the same translational and rotational stiffness values as specified in **Revit**. When a job is imported into **Revit** from **SCIA Engineer** for the first time the supports are ignored and they do not get imported as **Revit Foundations** or *Boundary Conditions* since **CADS Revit SCIA Engineer Link** has no information about its structural usage. But if the model is first created in **Revit** using the *Boundary Conditions* feature then when you edit the support condition in **SCIA Engineer** and import it back into **Revit**, it recognises that the supports were mapped to *Boundary Conditions* and will update it with the modified values.

Where the support parameters are modified in **SCIA Engineer** and you do not wish them to get overwritten during the next export from **Revit**, set the configuration option *Ignore Support* to *Yes*.

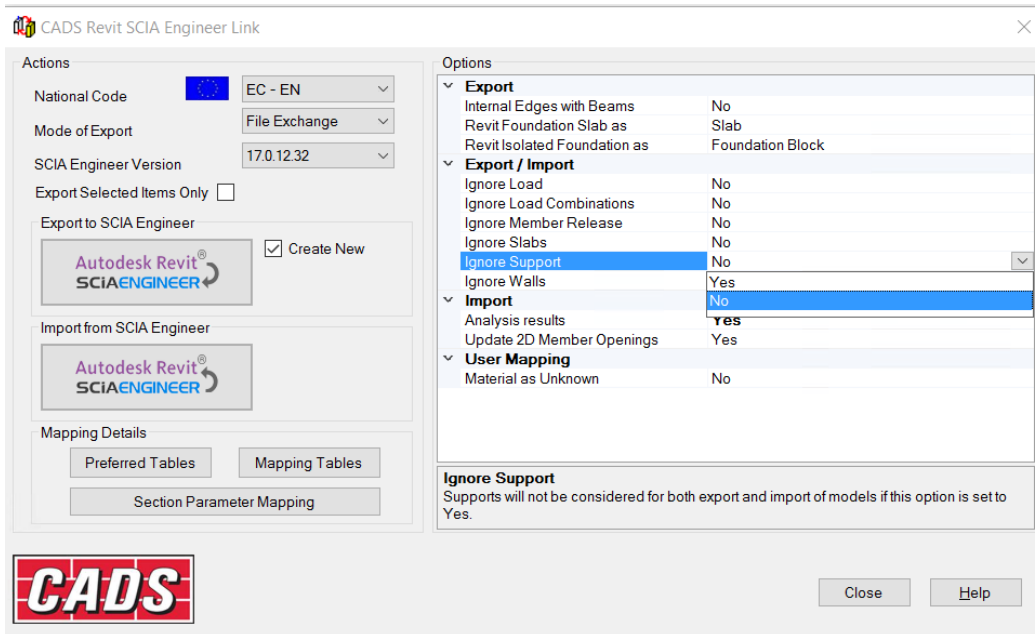


Figure 6-19: CADs Revit SCIA Engineer Link - Ignore support



Supports can be exported from **Revit** to **SCIA Engineer** only when *Structural Settings* in **Revit** is set to include *Member Supports* as shown below.

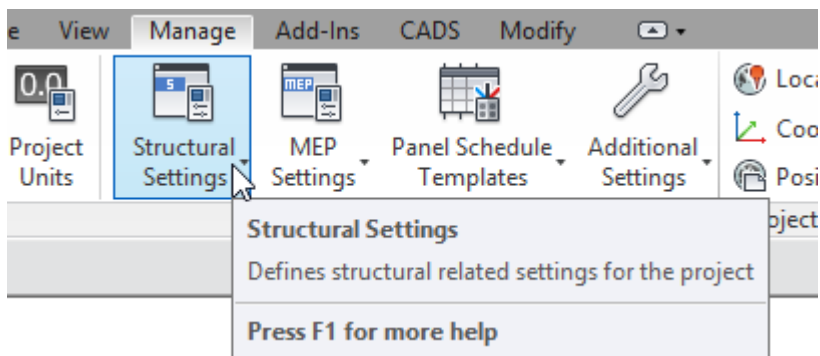


Figure 6-20: Revit - Structural settings

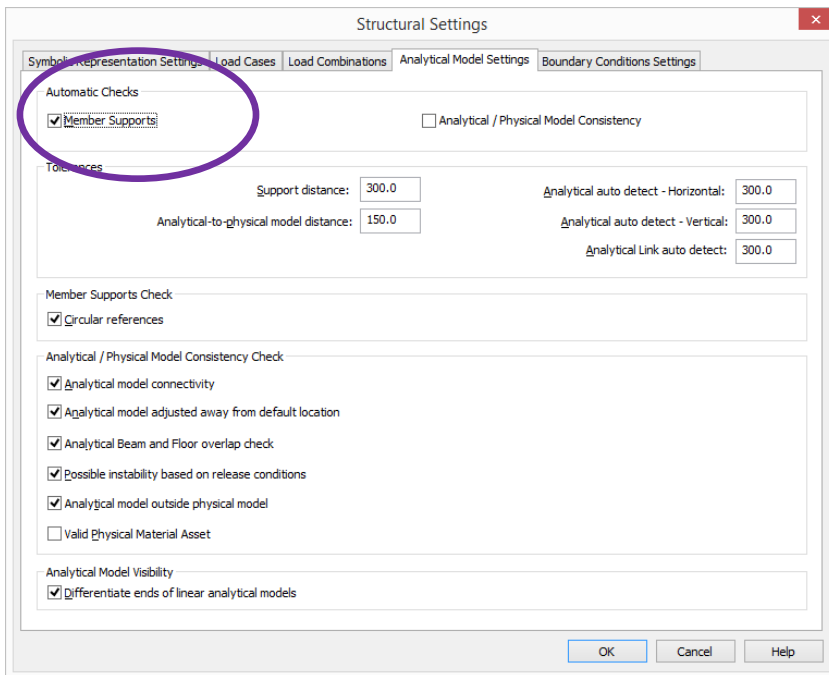


Figure 6-21: Revit - Member supports

6.6 Loads

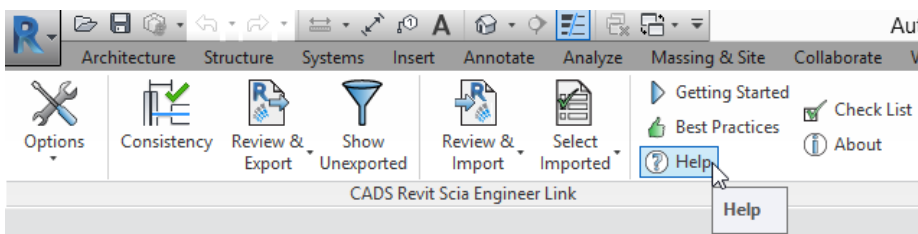
Loads modelled in **Revit** can be exported to **SCIA Engineer** and you can import them back into **Revit** after modifying them in **SCIA Engineer**. You may also choose to model loads in **SCIA Engineer** and import it into **Revit**.

The self-weight of the structural member is not exported to **SCIA Engineer** from **Revit**. You may change the load values if required in **SCIA Engineer** using **SCIA Engineer's** standard product features.

Please refer to the features list in the *Help file* to check how the load types are mapped between the two applications.

R **Revit -> CADS -> Revit SCIA Engineer Link -> Help -> Introduction -> Bi Directional Link between Revit and SCIA Engineer**

Figure 6-22: CADS Revit SCIA Engineer Link - Help button



Bi-Directional exchange of load cases and load combinations are also supported by **CADS Revit SCIA Engineer link**. Structural Engineers may choose to ignore load cases and load combinations specified in **Revit** and handle them in **SCIA Engineer** separately. You can opt to ignore load cases and load combinations in **Revit** by setting the configuration option *Ignore Revit Load Combination* to *Yes*.

R **Revit -> CADS -> Revit SCIA Engineer Link -> Options -> Filters -> Ignore Load Combinations**

Revit SCIA Engineer Link Getting Started

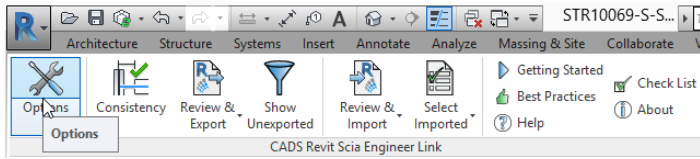


Figure 6-23: CADS Revit SCIA Engineer Link - Options button

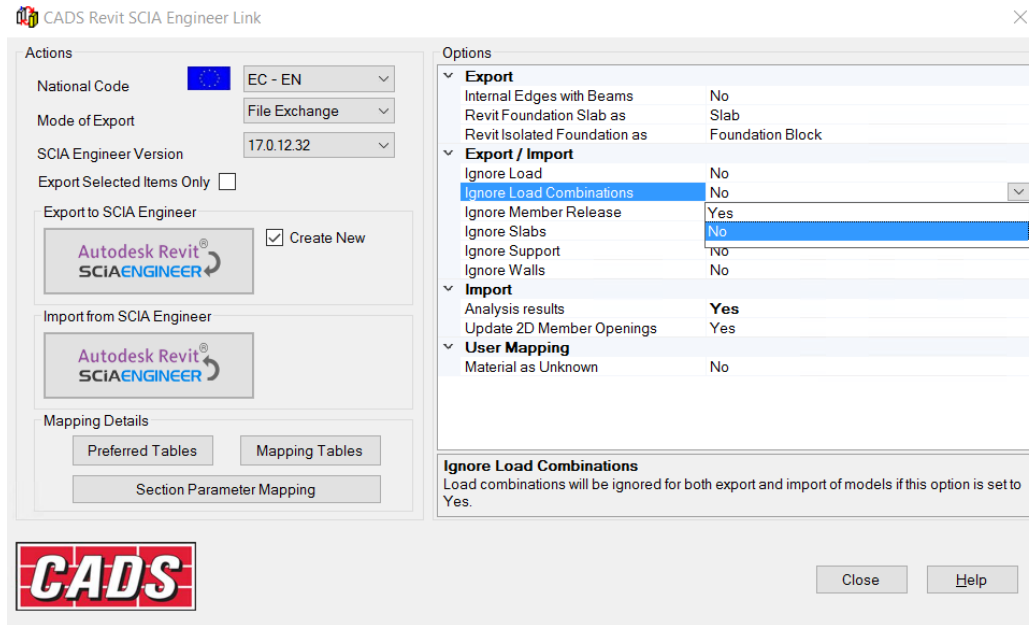


Figure 6-24: CADS Revit SCIA Engineer Link - Ignore load combinations option