



FRAMECAD RevLink

User Manual

Version (1.5)

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1 Installation and Start-up

1.1 Overview

FRAMECAD RevLink is an application for Autodesk Revit and is provided only to FRAMECAD customers.

This plugin consists of data exchange between Revit and FRAMECAD software packages. It reads and writes a FRAMECAD Information Model (.FIM) file format. FIM files will contain only the necessary information from the BIM model, reducing the time when processing data, as it only includes the relevant information for framing design and production.

This version supports walls, ceiling panels, floor panels and roof panels.

The plugin comprises the following functions:

1. Label / Quick Label / Label by Selection
2. Export
3. Set Panel Edge and Export
4. Schedule
5. Import
6. Update
7. Configuration Page
8. Clash Avoidance
9. Clash and Openings
10. Selection

1.2 Software Licensing

FRAMECAD RevLink requires a valid security license to operate. It can either utilize a HASP/dongle hardware security device connected to a computer's USB port or a softkey configured to work online or offline.

New users are required to use the softkey licensing method. For existing customers, once the previous licenses of FRAMECAD software have expired, renewals will only be provided on the new version unless advised otherwise.

To activate the licenses, please log into MyFRAMECAD (<https://my.framecad.com/FCADShop>), purchase RevLink or contact your account manager.

1.3 Installation and Setup

- a) Download FRAMECAD RevLink from the MyFRAMECAD <https://my.framecad.com/Software/SoftwareUpdates>

If you require further assistance, get support by raising a ticket through <https://care.framecad.com/>

- b) If you have installed beta versions of the plugin, you should now uninstall any old version on your machine.

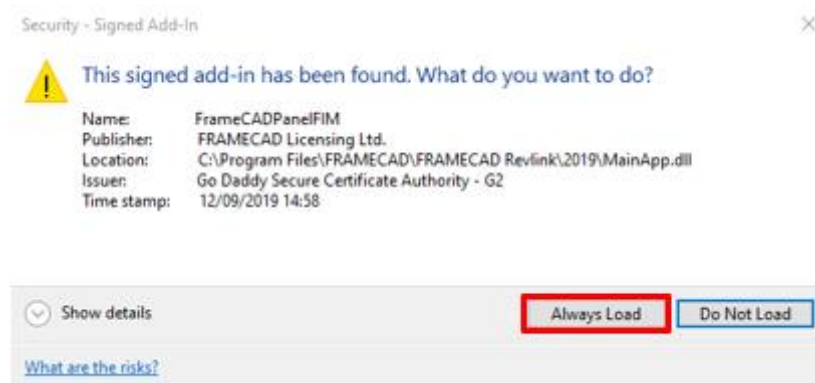
- c) If using a HASP, ensure it's connected to your computer first. If using softkey, double-click the FRAMECAD RevLink installer to start the installation process. Follow the prompts to complete the installation.

Depending on your Revit version, the path will differ by the year of your software version. For example, Revit 2019 version, all FC Families library, samples and documentation will be installed in this directory:

C:\ProgramData\FRAMECAD\FRAMECAD RevLink\2019

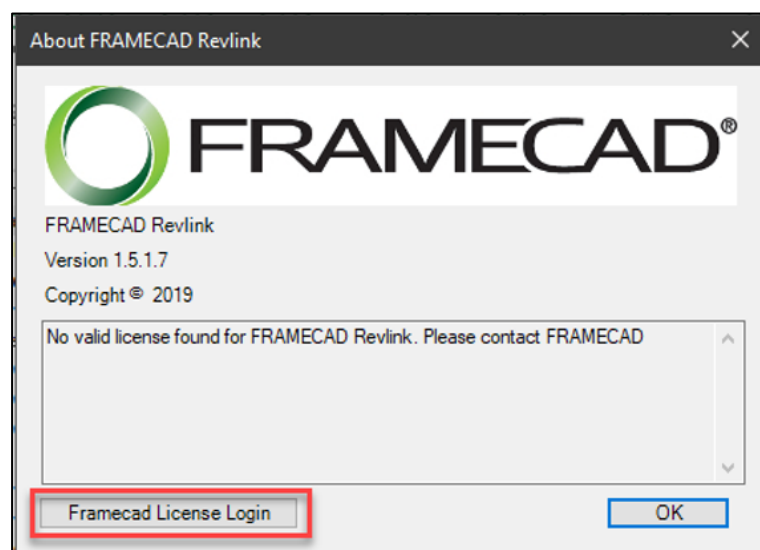
NOTE: By default, the ProgramData directory is hidden by the MS Windows operating system. If you wish to access this folder, you must go to your Folder Options (this can always be found in the Control Panel) and set the 'Hidden files and folders' option to: 'Show hidden files, folders and drives'.

- d) Start Revit. When opening Revit for the first time after the installation, a security message will appear asking you to confirm that you want to load the application into the software. Click "always load" to automatically load the plugin every time Revit starts.



In Revit, a new tab called "FRAMECAD RevLink" will be displayed next to the Add-Ins tab. There you'll find the functions available in this package, plus access to support materials.

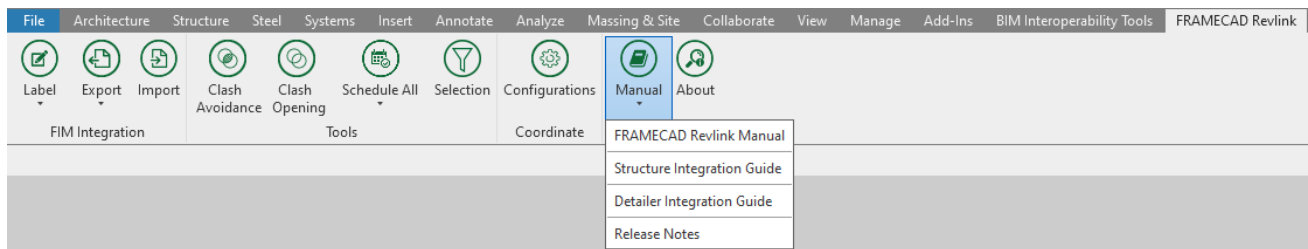
- e) If using softkey licensing, you can now activate your key. Click on the About button on the FRAMECAD Revlink ribbon, and once the window opens, click on the Framecad License Login button.



Fill up the gaps in the necessary locations. If you require further assistance, contact the FRAMECAD Aftersales Team at care@framecad.com

1.4 Documentation

Support materials are provided with the plugin installation. They can either be accessed in this directory `C:\ProgramData\FRAMECAD\FRAMECAD Revlink\20XX\Manual` or Revit, under the FRAMECAD Revlink tab, click on the drop-down arrow under the **Manual** button.



The following user documentation is provided with the software installation.

1. **FRAMECAD Revlink Manual**
This manual covers Installation and Setup, Plugin Overview, and details of the features available within the add-in.
2. **Structure Integration Guide**
This manual describes the steps for integrating Revit and FRAMECAD Structure software.
3. **Detailer Integration Guide**
4. This manual describes the steps for integrating Revit and FRAMECAD Detailer software.
5. **Release Notes**
A historical document outlining any changes/bug fixes throughout the product updates.

2 Revit Modelling

When dealing with the FRAMECAD RevLink application, there is some information that you should bear in mind while working with Revit models.

2.1 FRAMECAD Revit Families

Once you have successfully installed the plugin on your machine, FRAMECAD families will be located in this folder:
C:\ProgramData\FRAMECAD\FRAMECAD RevLink\20XX\Library

NOTE: Replace the 20XX according to the year of your Revit version.

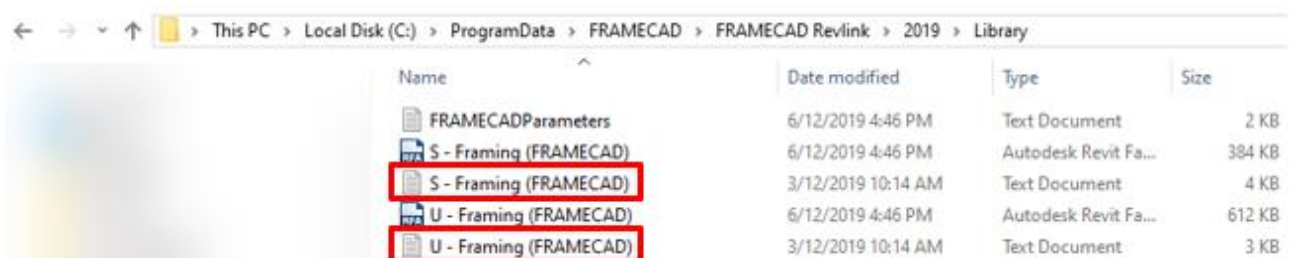
FRAMECAD's framing components were created using the Structural Framing – Beams and Braces template. They were shaped through sweep forms with family parameters already designed to support the workflow. Do not delete any of these parameters while using the families to avoid unexpected issues.

For this version, there are four profile types available for use:

- a) Lipped sections:
 - a. S - Framing (FRAMECAD) – The web is measured externally over flanges.
 - b. P - Framing (FRAMECAD) – The web is measured internally between flanges.
- b) Unlipped sections:
 - a. U - Framing (FRAMECAD) – The web is measured externally over flanges.
 - b. T - Framing (FRAMECAD) – The web is measured internally between flanges.

If you have existing projects using families from previous versions, make sure you reload the latest types of FRAMECAD families into your project.

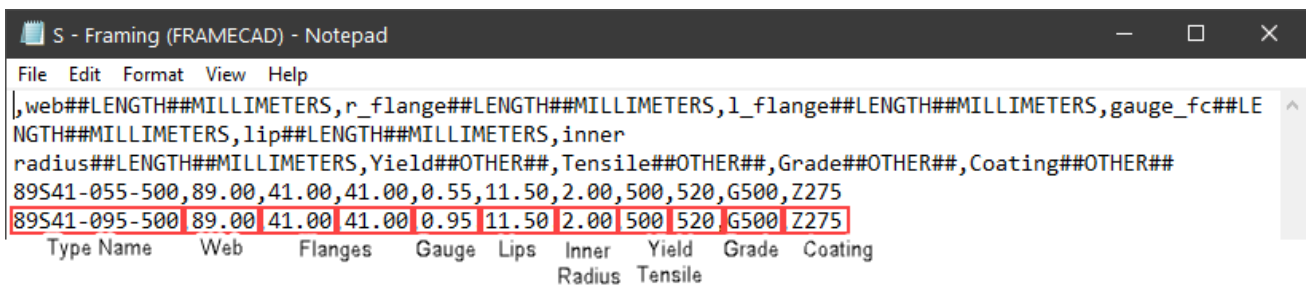
For each framing family (.rfa), a type catalogue has been set up to assist the users in creating or modifying profile sizes. The recommendation is always to use the type catalogues if new styles or sizes are required. Inside the "Library" folder, you'll find these catalogues in a (.txt) format.



Name	Date modified	Type	Size
FRAMECADParameters	6/12/2019 4:46 PM	Text Document	2 KB
S - Framing (FRAMECAD)	6/12/2019 4:46 PM	Autodesk Revit Fa...	384 KB
S - Framing (FRAMECAD)	3/12/2019 10:14 AM	Text Document	4 KB
U - Framing (FRAMECAD)	6/12/2019 4:46 PM	Autodesk Revit Fa...	612 KB
U - Framing (FRAMECAD)	3/12/2019 10:14 AM	Text Document	3 KB

To make changes to the catalogues, make sure Revit is closed.

Open the desired type catalogue with any text editor program. You can open it with the Microsoft Notepad program. As an example, the S-Framing text file has been opened for amendment.



A comma separates each field. Highlights in red exemplify each of them.

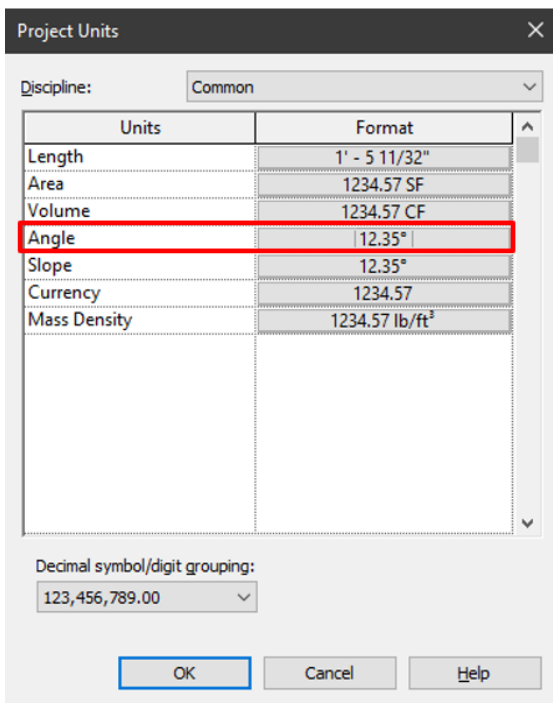
In those fields, you can amend or add new profiles as required. Bear in mind the values must be in millimetres units. When done, save the file. Now, open Revit (reload the family if necessary) and use FRAMECAD RevLink as usual.

NOTE: When modifying the family's type catalogue, make sure you don't have duplicate type names on the list, and always keep the (.rfa) file and (.txt) files in the same location folder.

2.2 Project Units

To preserve the precision during the exchange of data between Revit and FRAMECAD software packages, in Revit, the **Angle** format under the **Project Units** settings should always be set to degrees (either in Metric or Imperial). All other units can be changed as desired.

You can check the **Project Units** configuration by going to the **Manage** tab, **Settings** panel and then **Project Units**. Alternatively, you can open this window through the keyboard shortcut "UN". Now, under the Units parameter, go under the "Angle" option and click on the corresponding value format to open the **Format** dialogue window.



Format

☐ Use project settings

Units: Decimal degrees

Rounding: 2 decimal places Rounding increment: 0.01

Unit symbol: °

☐ Suppress trailing 0's

☐ Suppress 0 feet

☐ Show + for positive values

☐ Use digit grouping

☐ Suppress spaces

OK Cancel

2.3 Supported Objects

FRAMECAD RevLink supports a specific type of group for each building object.

- Walls - "Basic Wall" group.
- Ceilings - "Compound Ceiling" group.
- Floors - "Floor" group.
- Roofs - "Basic Roof" group.

2.4 Openings validation for Walls

FRAMECAD RevLink recognizes three options of openings for walls:

1) a) Doors

Usual door families with sill heights varying as much as required.

b) Miscellaneous Doors - Doors that are too close to each other, windows with sill height ≤ 0.0 , walls that use curtain walls as openings and structural/wall openings that are set to base level ≤ 0.0 .

NOTE: To properly handle the doors mentioned in bullet point 'b', it's essential to select "Check and Match Door Openings for Walls" during the [Export](#) procedure.

2) Windows

Sill heights must be higher than the base level (i.e. > 0.0).

3) Wall Openings

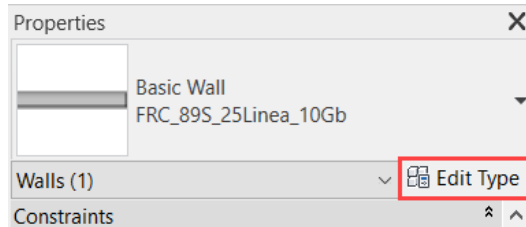
2.5 Setting up Structural Layers in Revit

The recommendation is that AEC objects with framing designs have a structure layer assigned to them.

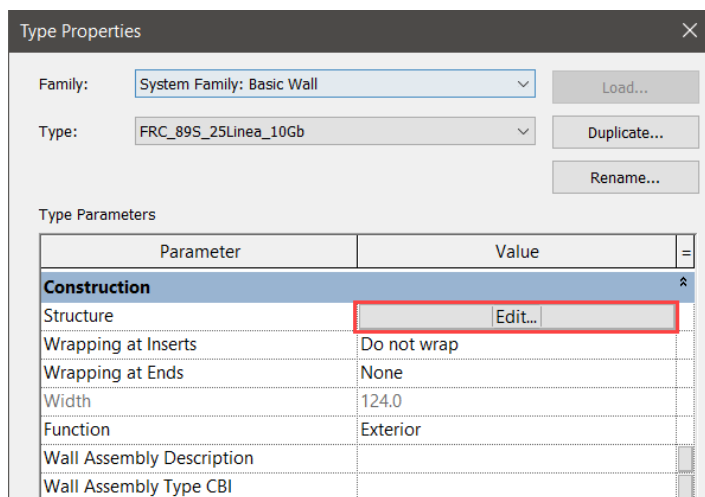
For instance, a compound wall can have multiple layers under its properties. Still, ideally, it should have at least one layer representing the steel frame with the FRAMECAD profile section width (web) that should be designed.

Considering the 'Training Four (89S)' model available under the 'C:\ProgramData\FRAMECAD\FRAMECAD RevLink\20XX\Sample Models' folder, the wall framing has an 89S profile.

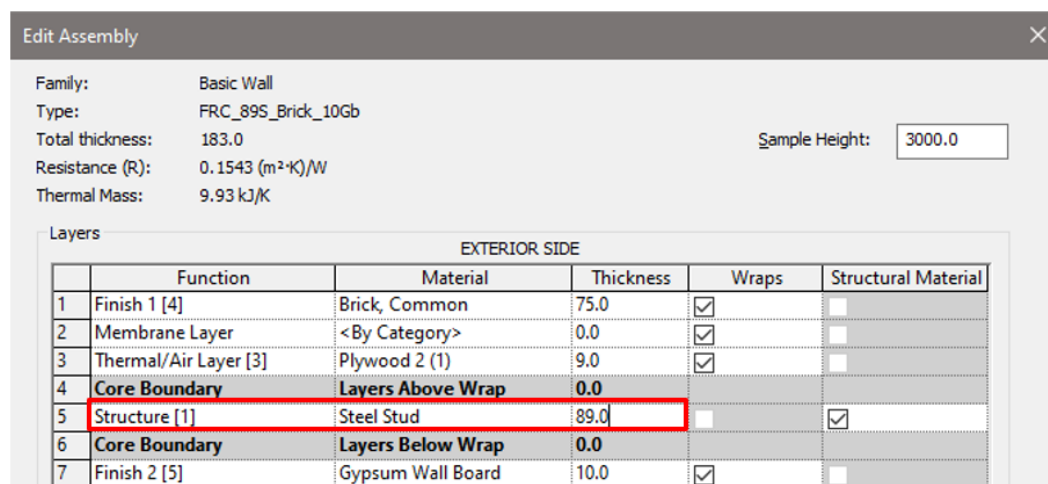
Select the 'FRC_89S_25Line_10Gb' family, and then under the **Properties** palette, click on **Edit Type**:



The **Type Properties** dialogue window will open. Now, under the **Structure** parameter, click Edit.

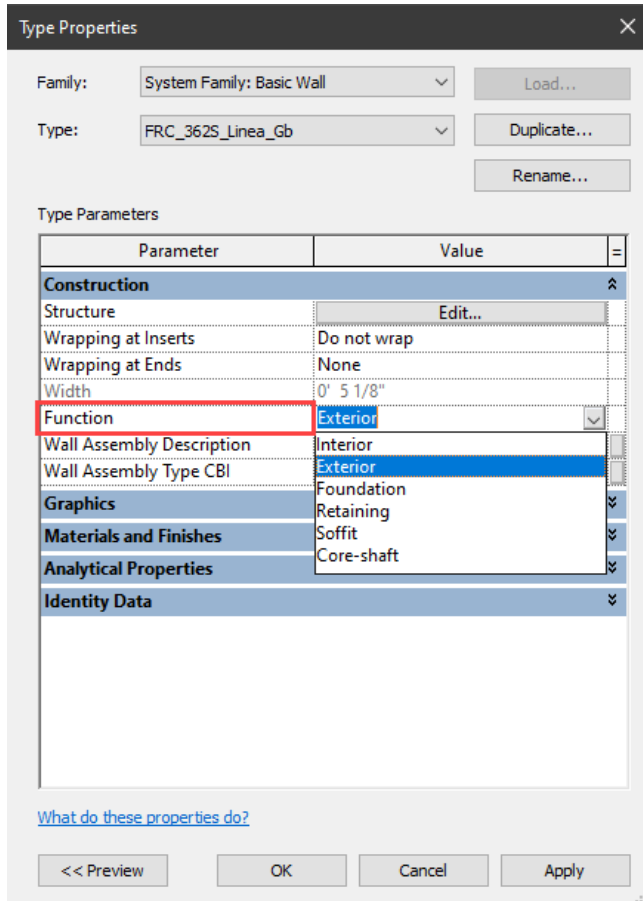


The **Edit Assembly** dialogue will pop up. Here you can specify functions, material, and thickness and select if a particular layer is a structural material or not. The thickness value is associated with the web width of the profile. Here, you should specify the web width of the profile.



2.6 Setting up Wall Function

In Revit, when you select a basic wall family and go under its **Type Properties**, a parameter called 'Function' can have a value specified for it.



Depending on which option is selected, FC Revlink will export the objects as per the following value:

Interior – Internal Wall

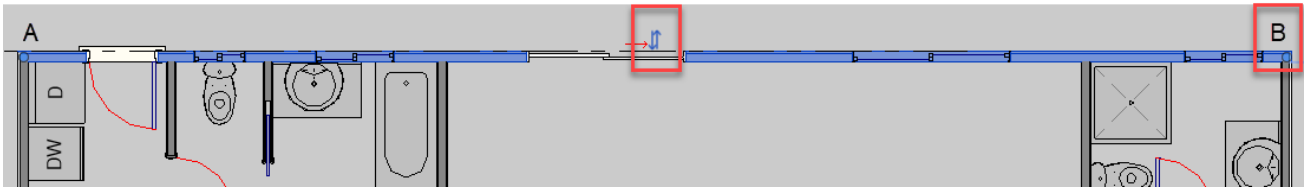
Exterior – External Wall

Foundation, Retaining, Soffit or Core-Shaft – Internal Wall

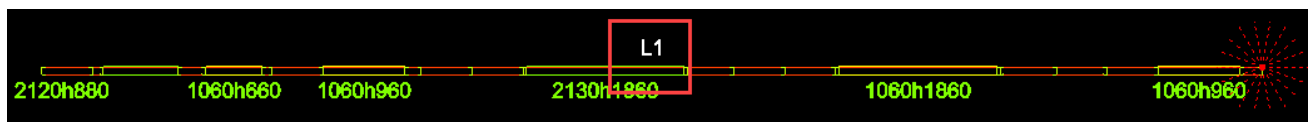
2.7 Wall orientation

The orientation of the walls in Revit indicates if, in Detailer or Structure, the wall panel will be viewed from left to right in the elevation view.

Users can change the orientation of the wall as desired, but usually, the external walls should be viewed from the outside of the building. In Revit, two arrows will show up when a wall is selected. These arrows show the outside face of the external wall. Hence when the Export occurs, it will position the left-hand end of the frame in point B.

Revit View (External Wall)

Therefore, depending on which side of the wall these two arrows are showing, the left-hand end of the wall panel will change as well in Detailer and Structure. To change this orientation in Revit, select the wall, press the keyboard's *Spacebar*, or click the two arrows. These commands will flip the wall around its reference line.

Detailer View (External Wall)Structure View (External Wall)

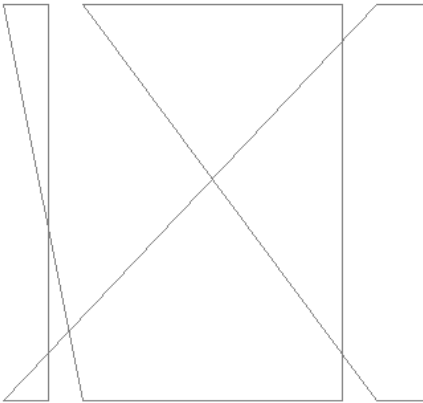
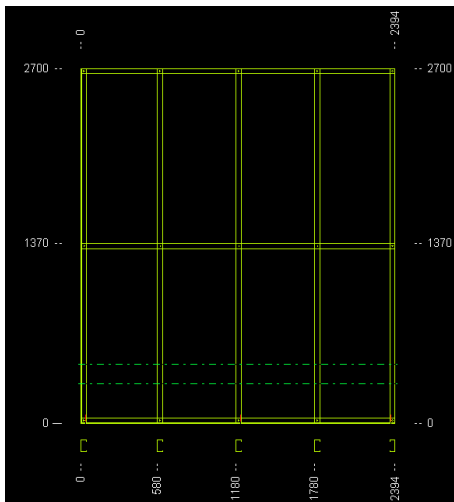
2.8 Split / Break Walls

In some projects, walls can touch curved walls, have odd shapes, have irregular openings, etc. These scenarios may cause the export process to fail or export asymmetrical outlines. Depending on each case, you can make manual adjustments in Detailer or adjust the wall shapes in Revit before exporting the FIM file. Users should decide the best option for each case because the conditions can vary from one project to another.

In Revit, a tool can be helpful to overcome cases where you need to avoid curved objects. It's the "Split Element" tool. This command will cut the wall at a selected point, allowing you to break the walls with long lengths or avoid these interferences.

As per the first picture below, only one wall joins with two round concrete columns. If the wall is exported as it is, we'll get irregular outlines in Detailer, as it will try to get the rounded outlines from the columns. In Structure, you could get a 'contour error'. It will try to adjust the shape, but the dimension values may vary.

Revit Wall:

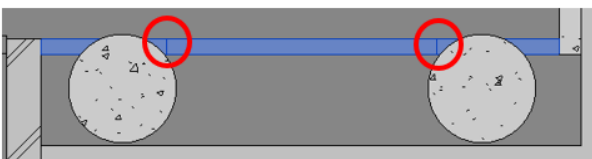
Wall outline in Detailer:Wall outline in Structure:

For this case, using the 'Split Element' tool in Revit is better than adjusting the outlines in Detailer or Structure.

To trigger this tool in Revit, select the wall and under the **Modify** panel, click the "Split Element" tool.



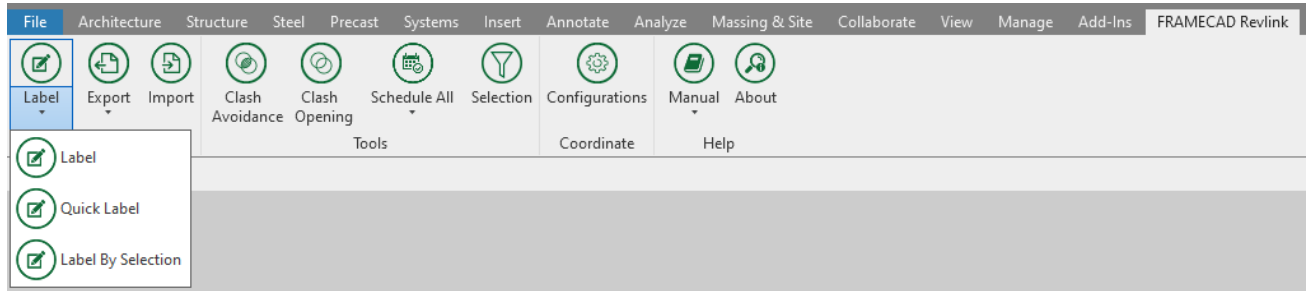
Place the cursor over the selected points where you want to apply the breakpoint, and with your mouse, left-click on it. When choosing the walls, you'll notice that you now have three individual wall objects that will be exported as separate panels. Adjust the wall lengths as required, and the walls should be ready for Export.



3 FRAMECAD RevLink Features

3.1 FIM Labelling System

When clicking on the **FRAMECAD RevLink** tab, on the **Label** drop-down arrow, you'll have two options: **Label / Quick Label** or **Label by Selection**.



3.1.1 LABEL

The purpose of this command is to give users more control over the labelling arrangement and create FC IDs and parameters for each object. This functionality comprises two steps:

1. Determine which objects should be labelled (**PreSelectForm**)
2. Determine how these objects should be labelled (**LabelForm**)

The first click on the **Label** button will open the **PreSelectForm** window.

PreSelectForm

Walls | Ceilings | Floors | Roofs

☒ Family Type Filter

☐ 100BLK_12P-BS-Interior	☐ 76S_19Gb-BS-1.0FRR	☐ FR
☐ 147T_25Cld_10Gb	☐ 76S_R13_2x13Gb-BS	☐ Gei
☐ 147T_40Cld_10Gb	☐ 90BLK_12PBd-BS	☐ Gei
☐ 150BLK	☐ 90T_10Gb-BS	☐ Gei
☐ 150BLK_12PBd-BS	☐ 90T_10Gb-BS-Sktg	☐ Gei
☐ 150BLK_12P-BS-Interior	☐ 90T_25Linea_10Gb	☐ Gei
☐ 150BLK_35Strp_13Gb	☐ 90T_40Cld_10Gb	☐ Gei
☐ 150C_35Strp_13Gb	☐ 90T_40Cld_13Gb	☐ Gla
☐ 150C_35Strp_13Gb-BS	☐ 90T_70Bv_10Gb	☐ Gla
☐ 150Conc	☐ 92S_16Gb_32Gb-1.0FRR	☐ Sto
☐ 152S_200BLK_13Gb	☐ 94T_10Gb-BS	
☐ 152S_90Bv_10Gb	☐ 94T_10Gb-BS Tiled	
☐ 152S_90Bv_13Gb	☐ 94T_25Cld_10Gb	
☐ 200BLK	☐ 94T_25Linea_10Gb	
☐ 200BLK_12P_BS_Interior	☐ 94T_40P_10Gb	
☐ 200BLK_12PBd-BS	☐ 96S_32Gb_42Gb-2.0FRR	
☐ 200BLK_15P	☐ Curtain Wall	
☐ 200BLK_20P_Strp_10Gb	☐ Curtain Wall Exterior	
☐ 200BLK_25Strp_10Gb	☐ Curtain Wall Interior	
☐ 200BLK_35Strp_13Gb	☐ Exterior Glazing	
☐ 200BLK_35Strp_13Gb Tiled	☐ Exterior_Brick over Block on Metal Stud	
☐ 200BLK_Foundation	☐ Exterior_Metal Clad Timber Stud on Block	
☐ 200BLK_Hotblk_10P-BS	☐ Footing 300 wd	
☐ 300Conc_Retaining	☐ Footing 450 wd	
☐ 64T_13Gb-BS	☐ Footing 900 wd	
☐ 70Bv_45Cavity	☐ Foundation - 150mm Concrete	
☐ 70T_10Gb-BS	☐ FRC_89S_10Gb	
☐ 76S_13Gb-BS	☐ FRC_89S_10Gb Tiled	

☒ Base Level Filter

☐ 0. Ground Floor FFL

☐ 1. First Floor FFL

☐ Ground Floor Joist

☐ 2. Roof FFL

☐ FloorPanel Level

☒ Structural Usage Filter

☐ NonBearing

☐ Bearing

☐ Shear

☐ Combined

Create Schedule

☒ Walls ☒ Ceilings ☒ Floors ☒ Roofs

Group Option

☒ Apply parameters to selected families inside Group Models

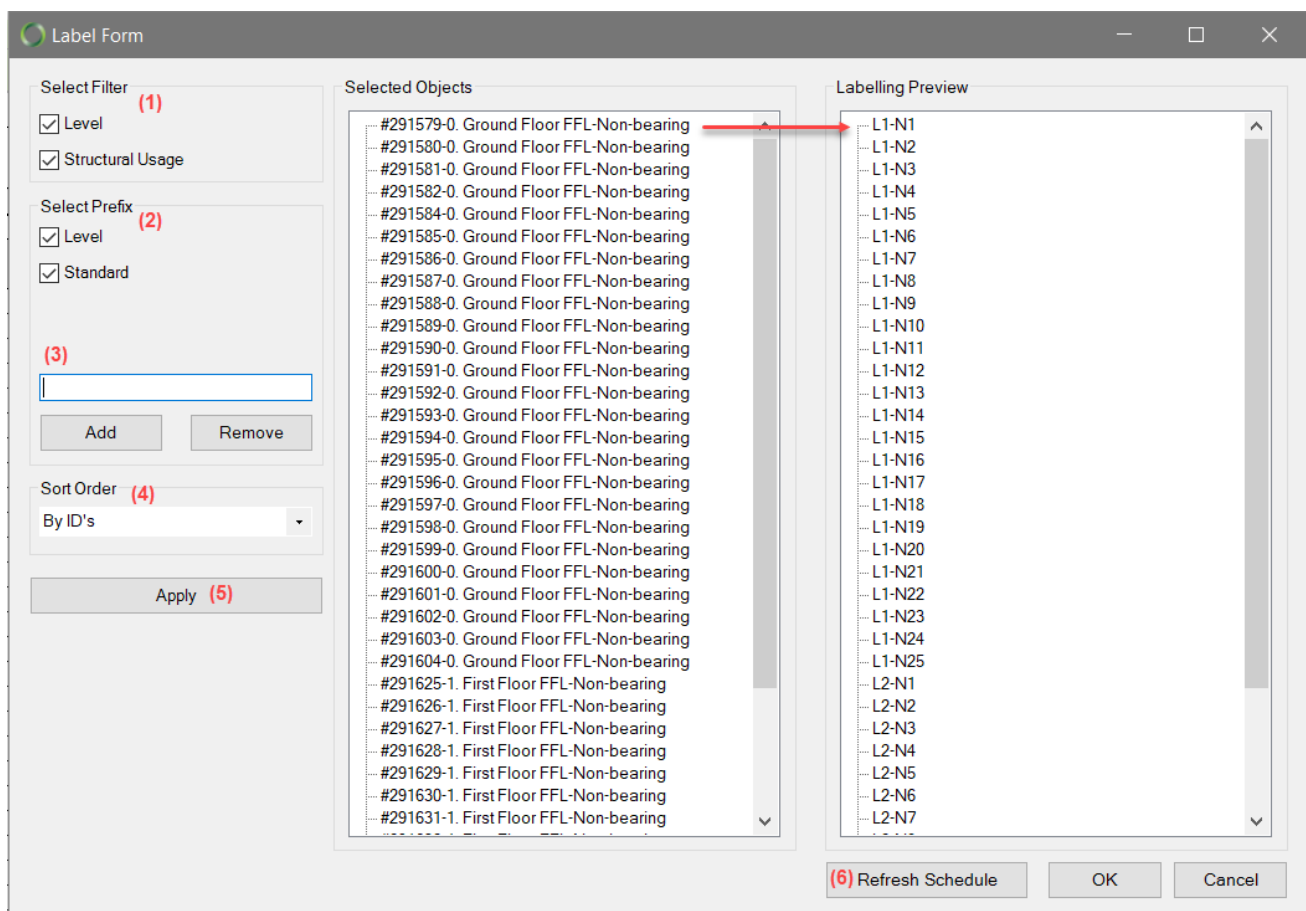
Note: This option will automatically ungroup and regroup existing Group Models

Confirm Cancel

- Click over the tabs to see the available filtering options for each object.
- Select the required family type.
- If desired, add a base-level filter to the selection. For walls, there's an additional option to filter them by structural usage.
- Under "Create Schedule", you can choose to create Schedules for other objects.
- Only select "Apply parameters to selected families inside Group Models" if you wish to add Labels to different families that are grouped in the same Group Model.

Once done, click the "Confirm" button. The labelling Schedule will be created, and a new window called **Label Form** will pop up.

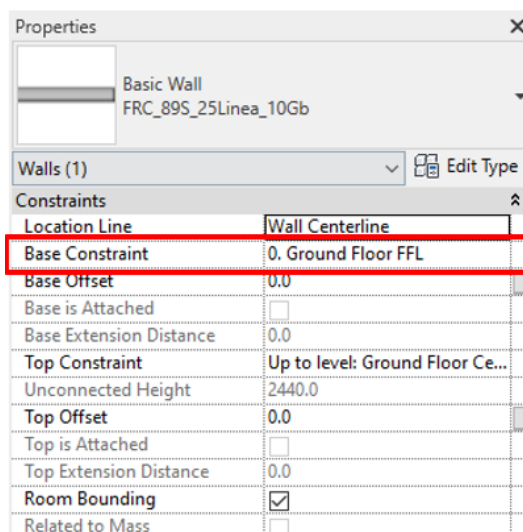
Here you can use filters and then determine which prefix/shortening to use for labelling.



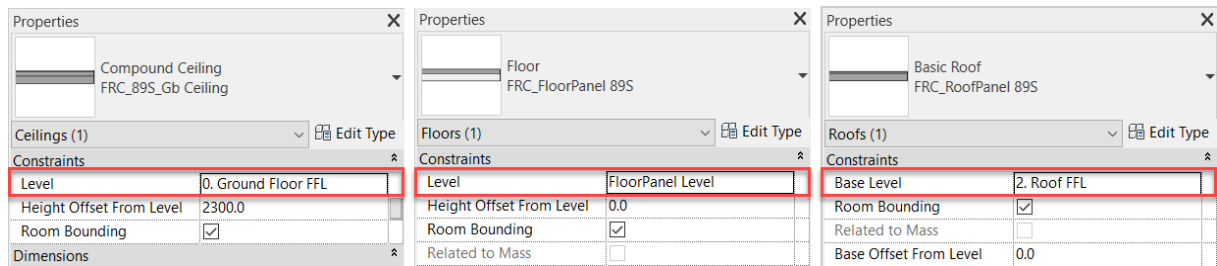
1) Apply Filters

- a) By Level - This filter considers the levels created by the users while modelling the project.

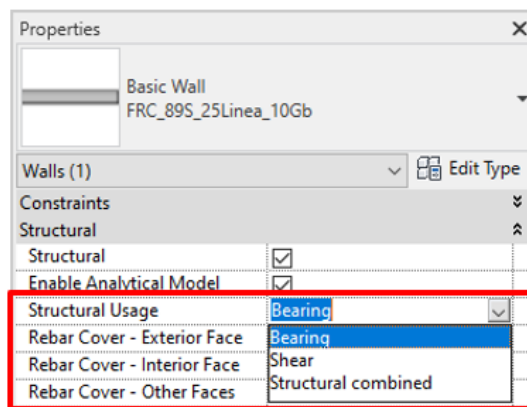
For walls, it takes into consideration the configuration that was specified for each wall base level constraint. You can check the base constraint by going under the **Properties** palette of the wall object.



Since ceilings, floors, and roofs are level-based objects, it will consider the level in which they reside. You can also check what level is being considered by going under the **Properties** palette of the object.



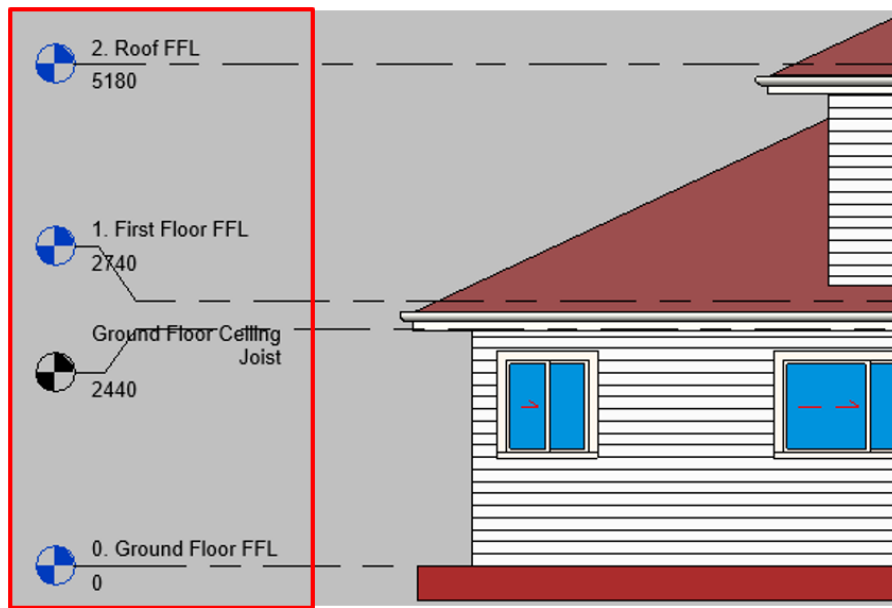
- b) By Structural Usage – This option is only suitable for walls and considers the Structural Usage defined by the users. This filter separates these objects between Structural (bearing, shear or structural combined) and Architectural (non-bearing). This configuration can be defined under the **Properties** palette of the wall object.



2) Define Prefix

- a) Level – This option is only activated if the Level filter is selected first.

An "L" prefix will take place, which is the level's shortening. The number next to it represents the levels sequence according to the objects selected before in the **PreSelect** Form. For instance, in the picture below, only walls are chosen. The "0. Ground Floor FFL" level will get the "L1" shortening as it is the first known story from the selection. The subsequent level will follow the sequence. Therefore, "1. First Floor FFL" will get the L2 prefix.



b) **Standard** – This option is only activated if the Structural Usage filter is selected first.

Walls with structural usage defined as "bearing, shear or structural combined" will get the "L" prefix, which is the shortening for Load-bearing. Walls with no structural usage definition will get the "N" prefix, which stands for Non-bearing.

- 3) **Add / Remove Customized Prefix** – In this field, you can customize a prefix and add or delete them as desired.
- 4) **Sort Order** - The default sequence of results will reflect the order by object IDs, which means it will follow the object creation order. If a different rearrangement is preferred, two other options are available: 'Top to bottom first' or 'Left to Right first'.
- 5) **Apply** – Click on this button to generate the labelling scheme and check if the label arrangement will be set as desired. The window on the left is associated with the window on the right. Always click "Apply" before clicking "OK". Otherwise, the scheme won't take place.
- 6) **Refresh Schedule** – This button allows users to add or remove objects from the labelling scheme. For instance, if you already applied wall labels but now have a new wall in your model that needs to be labelled. Open the existing Labelling Schedule for walls, search for the desired object and under the "FIM-Scheduled" column, tick the corresponding box to add the element to the list. Then go back to the **Label Form** and click the Refresh button. The new wall should be included in the arrangement.

<FRAMECAD Labelling Schedule For Walls>							
A	B	C	D	E	F	G	H
Type	Family	Length	Structural Usage	Base Constraint	Top Constraint	FIM-Scheduled	FIM-Label
90T_25Linea_10Gb							
90T_25Linea_10Gb	Basic Wall	6727	Non-bearing	Level 1	Unconnected	☒	
FRC_89S_10Gb							
FRC_89S_10Gb	Basic Wall	3775	Non-bearing	Level 1	Up to level: Level 2	☐	N-5
FRC_89S_10Gb	Basic Wall	5565	Non-bearing	Level 1	Up to level: Level 2	☐	N-6
FRC_89S_10Gb	Basic Wall	3665	Non-bearing	Level 1	Up to level: Level 2	☐	N-8
FRC_89S_10Gb	Basic Wall	3049	Non-bearing	Level 1	Up to level: Level 2	☐	N-9
FRC_89S_10Gb	Basic Wall	1100	Non-bearing	Level 1	Up to level: Level 2	☐	N-11

If it's the case where you don't want to modify a specific label or want to remove it from the arrangement, you can untick the corresponding box and click 'refresh schedule'. The list will constantly be updated according to the box selection defined in this Schedule.

The procedure is the same for Ceilings and Floor Panels, but they will have individual Schedules.

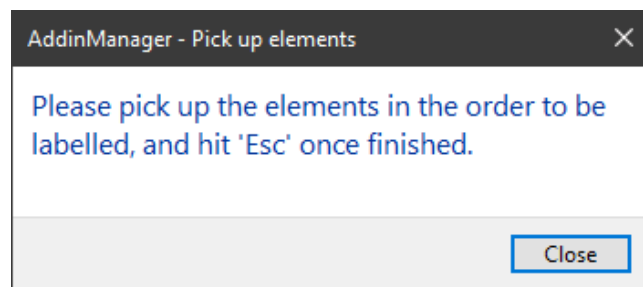
3.1.2 QUICK LABEL

This command is a quick option for labelling. It auto labels and add FC IDs and parameters to all existing walls, ceilings, and floor and roof objects. This function won't consider any filtering or shortening arrangements. The wall objects will automatically get name tags with an "N" or "L" prefix + a number that follows the sequence of wall creation (e.g. N-1, N-2, L-1). Ceilings will get a "Ce" prefix + the sequence number, Floors will get the "Fl" prefix + the sequence number and Roofs will get the "Ro" prefix + the sequence number.

3.1.3 LABEL BY SELECTION

This command is another option for labelling. This tool allows users to apply them by selecting the objects in the desired order to be labelled.

When triggering the 'Label by Selection' function, an instruction message will pop up.



- Close this dialogue box, and start picking the objects in the order you would like to apply the labels. You have to click on the object you want to select. Move the mouse pointer above the object, and click your mouse button when it highlights.

Note: Selection boxes are not allowed. To add more objects to the selection, it is not necessary to hold *ctrl* key. As soon as you click on the next object, it will automatically add them to the selection.

- Once finished with the selection, press *Esc* on your keyboard.
- A new labelling window will open. Here, you can define the prefix to use and what is the starting number. Click 'Apply' to add the change to your selection.

Label by Selection Form

Labelling Options

Prefix Starting Number

Test 1

Preview

Test-1

Apply Clear

Last Recorded Number

N-40

Current Selection

- Wall-ID:291579 : N-1
- Wall-ID:291603 : N-24
- Wall-ID:291585 : N-6
- Wall-ID:291581 : N-3
- Wall-ID:291580 : N-2
- Wall-ID:291582 : N-4

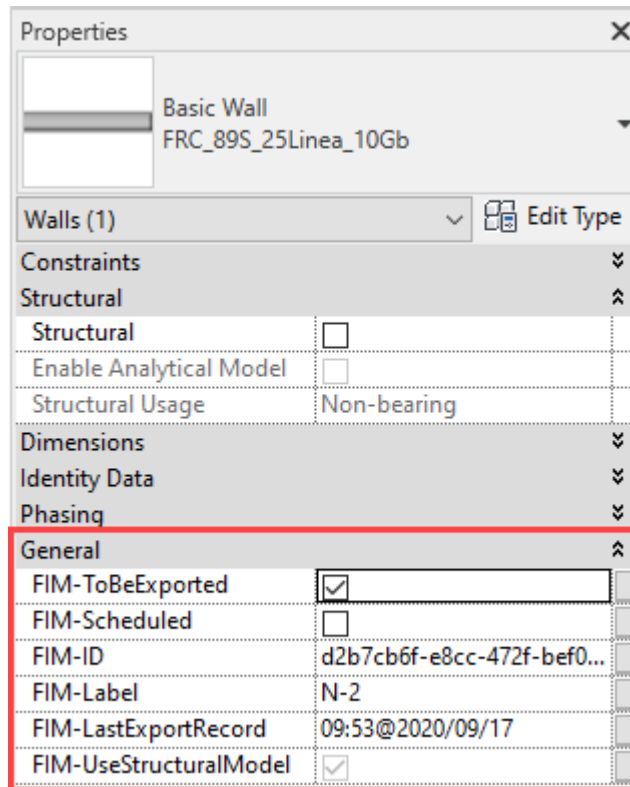
OK Close

Status: Not Yet Label

The 'Last Recorded Number' is the last number used in your FIM-Labels for each object. For the example above, throughout all the walls in the project, the largest number last used was 40.

3.1.4 Modifying FIM Labels

The FIM-Labels will appear under the General parameter of the object family. Changes to the names can be made there as desired.



The screenshot shows the 'Properties' window for a 'Basic Wall' object. The 'General' section is expanded and highlighted with a red box. It contains the following parameters:

Parameter	Value
FIM-ToBeExported	☒
FIM-Scheduled	☐
FIM-ID	d2b7cb6f-e8cc-472f-bef0...
FIM-Label	N-2
FIM-LastExportRecord	09:53@2020/09/17
FIM-UseStructuralModel	☒

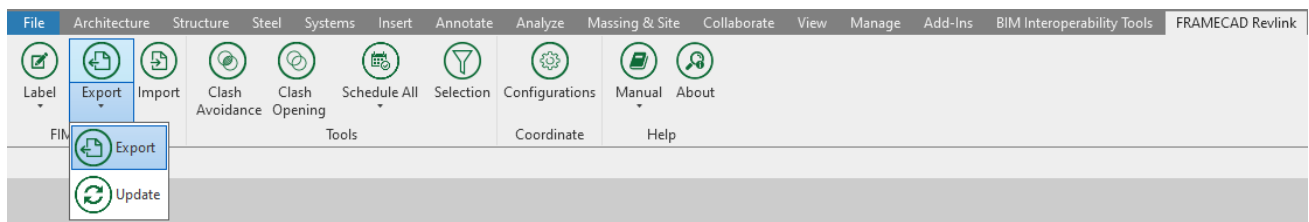
Alternatively, in the **Schedule** tables (Labelling Schedule or FIM Export Schedule [\[Section 3.3\]](#)), you can also see these labels and change the names there as desired.

If new objects have been added since the last time you set up FIM labels, it's recommended to use the **Label** command to create the FC parameters for these new objects. If you **Label** the objects again and keep the existing elements in the **Label Form** scheme, all of the current labels and FIM IDs will be lost and replaced with new ones. Likewise, if you **Quick Label** again, you'll lose existing information and get new ones. Therefore, be cautious when there are FIM-IDs already established in your project. Always use the **Label** command with the Wall/Ceiling/Floor Labelling Schedule and the Refresh button available in the **Label Form**.

NOTE: If no labelling arrangement is specified, a 'NIL' prefix (shortening for None or No value) and a number next to it will automatically be applied. Numbering will be according to the sequence of the object creation (e.g. NIL-1, NIL-2).

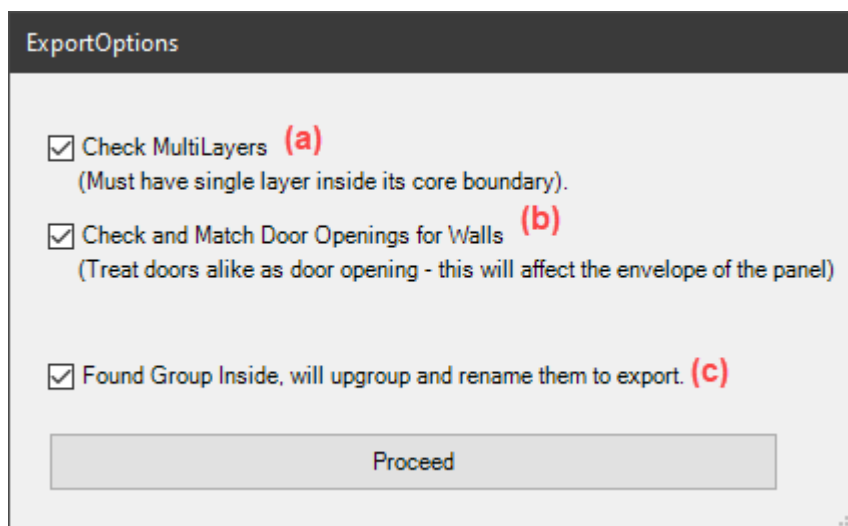
3.2 EXPORT

When clicking on the **FRAMECAD RevLink** tab, go to the **Export** drop-down arrow. You'll have two options: **Export** or **Update**.

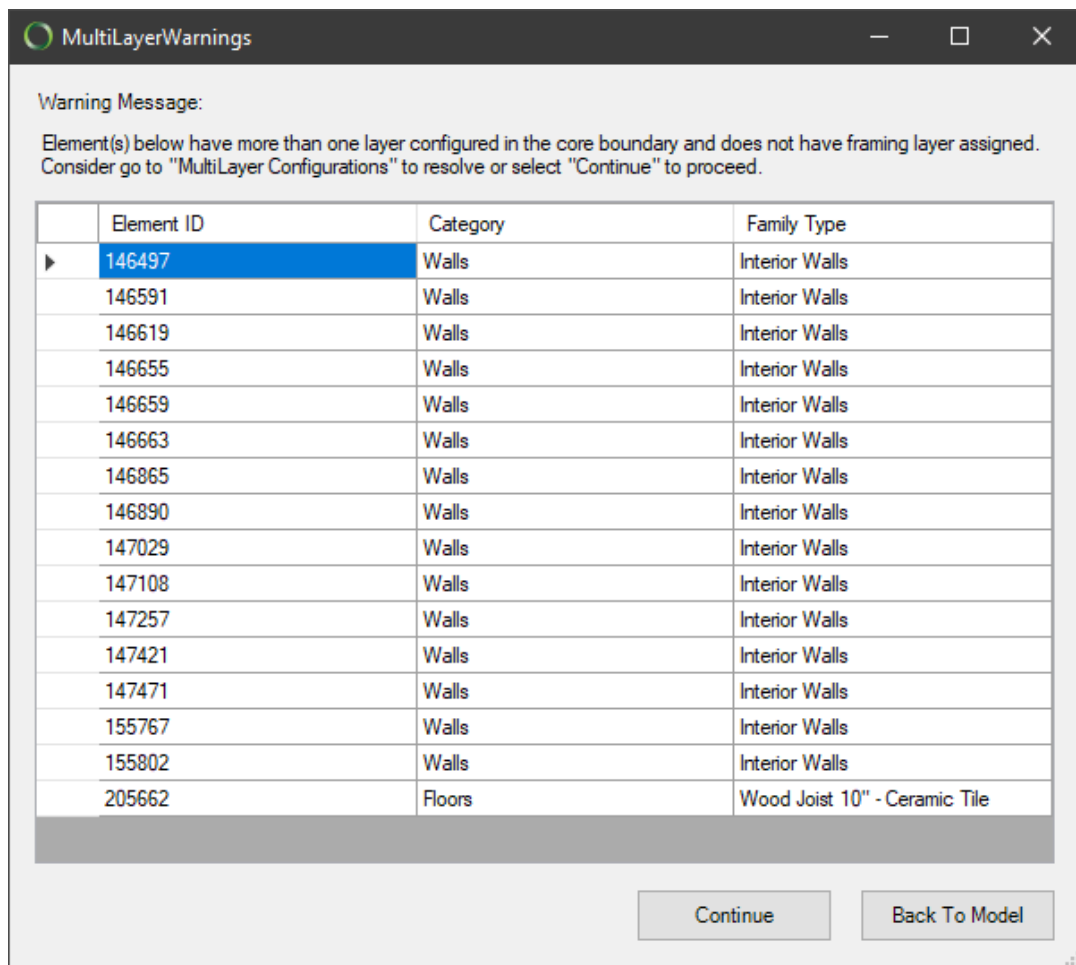


The **Export** function creates an FIM file with the outlines of the selected Revit objects, including existing openings such as doors and windows.

- Select the objects you would like to export, and on the **Export** drop-down arrow, click on the **Export** button.
- Select the folder location to save the FIM file and click Save.
- An **Export Option** window will pop up. Here you should select if you want to run some checking before proceeding with the **Export**.



- a) Check Multilayers: this option check if there are objects within the Export selection that has more than one layer in the core boundary but doesn't have framing layer assigned in the "Multilayer Configurations".



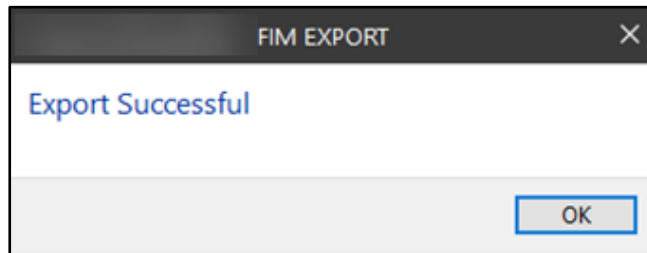
- b) Check and Match Door Openings for Walls: this option will make the wall **Export** handle unusual doors (i.e., doors that don't belong to a door family) as a door opening element. It means it will identify the contours of an opening, and if it's located at the bottom of the wall envelope, it will close the loop for it, treating that opening contour as an actual door opening (2). If this box is not selected, the exception won't be recognized, hence treating the opening as usual (1).

This option is an alternative to **Export** doors that are too close to each other, windows with sill height ≤ 0.0 , walls that use curtain walls as door openings or structural/wall openings with a base level ≤ 0.0 . However, this option **should only** be selected if such scenarios need to be addressed.

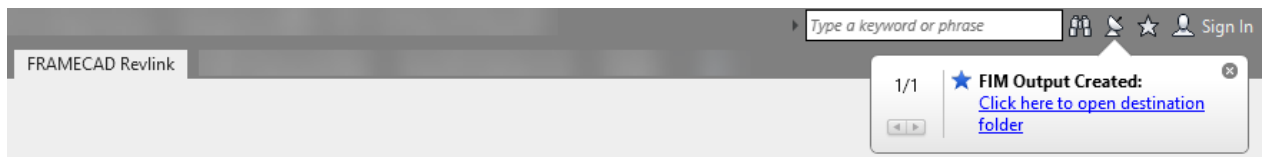


- c) Found Groups: This option will appear if group models were selected for Export. It's an option to let users know that the chosen elements inside the groups will be exported, but the groups will be renamed.

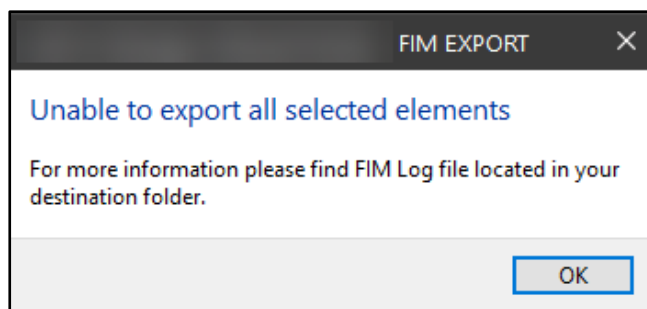
- A message dialogue box will pop up if successfully exported to confirm the procedure.



Additionally, another dialogue box will appear on the screen's top right corner. If you click on that box, this will lead you to open the destination folder you've saved your file.

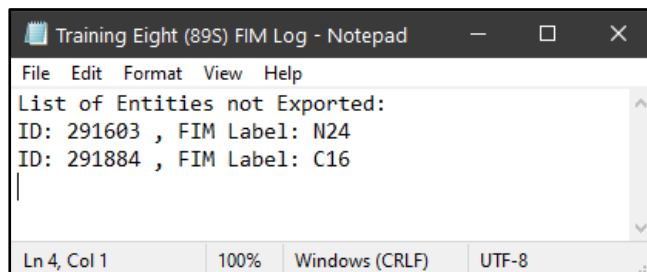


- If the plugin can't export a particular object, an error message will pop up instead of having the successful message dialogue box. In that case, an FIM log error list is created and placed in the same destination folder as your FIM file. You can use that list to track down which objects were not exported and investigate potential issues with it, such as openings, junctions, envelope shapes, etc.



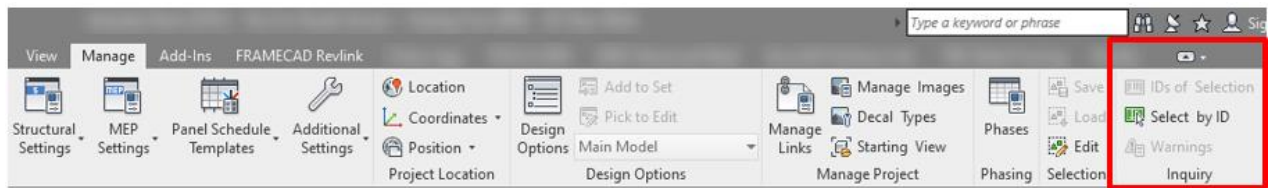
This log file is a simple (.txt) file that can be opened with any text editor.

If this happens, you can open this file and see a list of elements with their respective Revit element IDs and FIM labels.

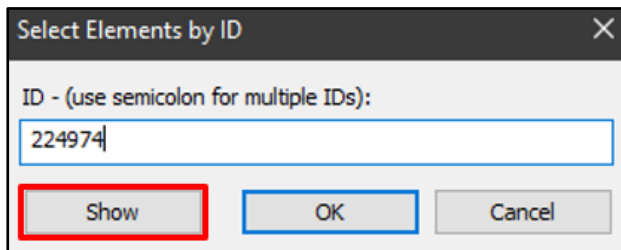


If you can't identify them by their FIM-Label, you can precisely locate an object by using their ID number in Revit.

Under the Manage tab > Inquiry panel > "Select by ID" tool.

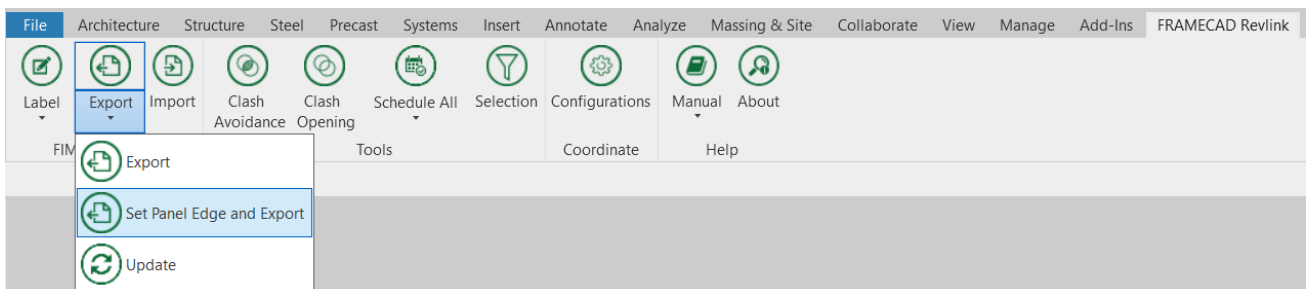


Copy the element ID number given in your FIM log list, and paste this number into the **Select Elements by ID** dialogue box. Click "Show". It will zoom in to the required object.



3.3 SET PANEL EDGE AND EXPORT

On the **FRAMECAD RevLink** tab, if the **Export** button is not changed to **Set Panel Edge and Export**, click on the drop-down arrow and then click the required tool. The primary button will change as per selection.

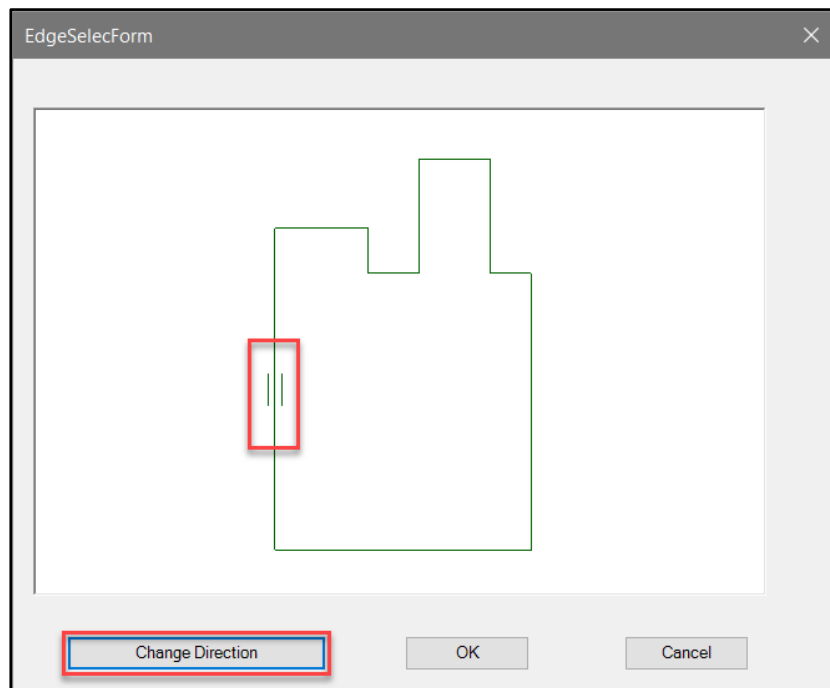


The **Set Panel Edge and Export** function will only support ceilings, floors or roof panels, and different to the usual **Export**, this tool will allow you to select the base point [0,0,0] of the panel upon Export.

- Select the object you would like to export.

Note: For this case, you must select one object at a time, and only panels without a pitch can have their base point selected.

- On the **Export** drop-down arrow, click on the **Set Panel Edge and Export** button.
- The edge selection window should pop up.



Click on the 'Change Direction' button to change the baseline as required. Once the desired edge is selected, click 'OK'.

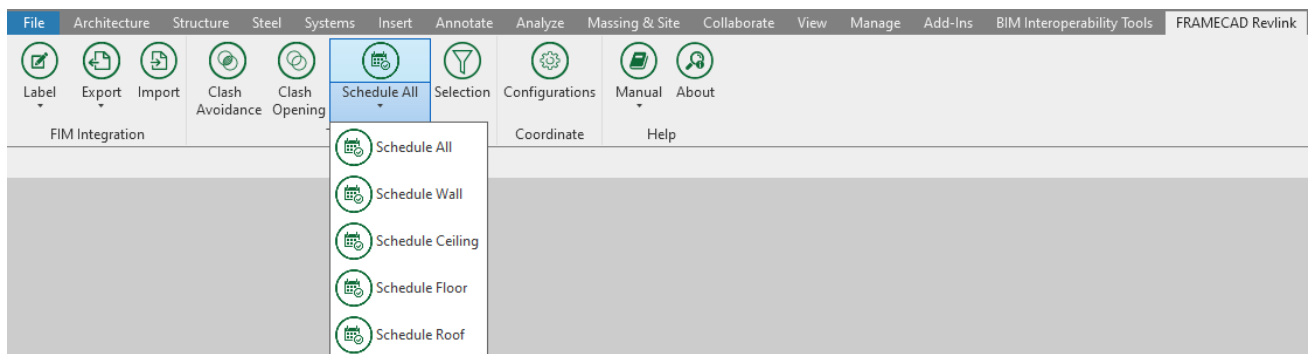
- Select the folder location to save the FIM file and click Save.
- Select any required Export Options and click 'Proceed'.
- A message dialogue box will pop up if successfully exported to confirm the procedure.

NOTE: Currently, Panel edge selection only supports panels that DO NOT have any pitch applied to it.

3.4 SCHEDULE

There are two types of Schedule tables.

- 1) For labelling purposes described in [section 3.1.1](#).
- 2) For Export purposes, which is the one generated with the **Schedule** button.



With **Schedule All** command you generate at the same time Export Schedules for all supported objects. For individual schedules you can select each object individually by clicking on their corresponding option.

Export Schedule could be handy when dealing with complex projects that have several objects, with different types of families. In comparison to the Labelling Schedule, the Export Schedule doesn't have the "FIM-Scheduled" column. Instead, it now has two different columns named as "FIM-ToBeExported" and "FIM-LastExportRecord". In the "FIM-ToBeExported" column, you can tick or untick the boxes corresponding to the elements that you would like to export. At first, if no elements are selected, by default, all objects will come unchecked. In the "FIM-LastExportRecord" column, users can check if that particular object was exported before. If yes, it will write down when was the last time and date.

<FRAMECAD Wall FIM Export Schedule>								
A	B	C	D	E	F	G	H	I
Type	Family	Length	Structural Usage	Base Constraint	Top Constraint	FIM-ToBeExported	FIM-Label	FIM-LastExportRec
FRC_89S_10Gb								
FRC_89S_10Gb	Basic Wall	3775	Non-bearing	Level 1	Up to level: Level 2	☒	N5	
FRC_89S_10Gb	Basic Wall	5565	Non-bearing	Level 1	Up to level: Level 2	☒	N6	09-28@2019/12/09
FRC_89S_10Gb	Basic Wall	3665	Non-bearing	Level 1	Up to level: Level 2	☐	N8	
FRC_89S_10Gb	Basic Wall	3049	Non-bearing	Level 1	Up to level: Level 2	☐	N9	
FRC_89S_10Gb	Basic Wall	1100	Non-bearing	Level 1	Up to level: Level 2	☐	N11	
FRC_89S_10Gb	Basic Wall	3775	Non-bearing	Level 1	Up to level: Level 2	☐	N12	

NOTE: Before clicking the Export button, if objects are selected in different views (e.g. 3D views, floor plans), this selection will override the selection under the Export Schedule > FIM-ToBeExported.

If required, FRAMECAD Schedules can be customized with the typical parameters available in Revit. Likewise, the selection can be simplified through filters or grouping arrangements. To do so, go to the **Schedule Properties** palette and under the **Other** parameter, apply the required options.

Properties

Schedule

Schedule: FRAMECAD Wall FIM Export Sche Edit Type

Identity Data

View Template <None>

View Name FRAMECAD Wall FIM Expor...

Dependency Independent

Phasing

Phase Filter Show All

Phase New Construction

Other

Fields Edit...

Filter Edit...

Sorting/Grouping Edit...

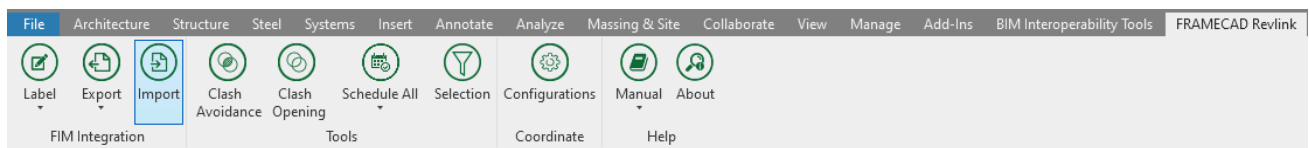
Formatting Edit...

Appearance Edit...

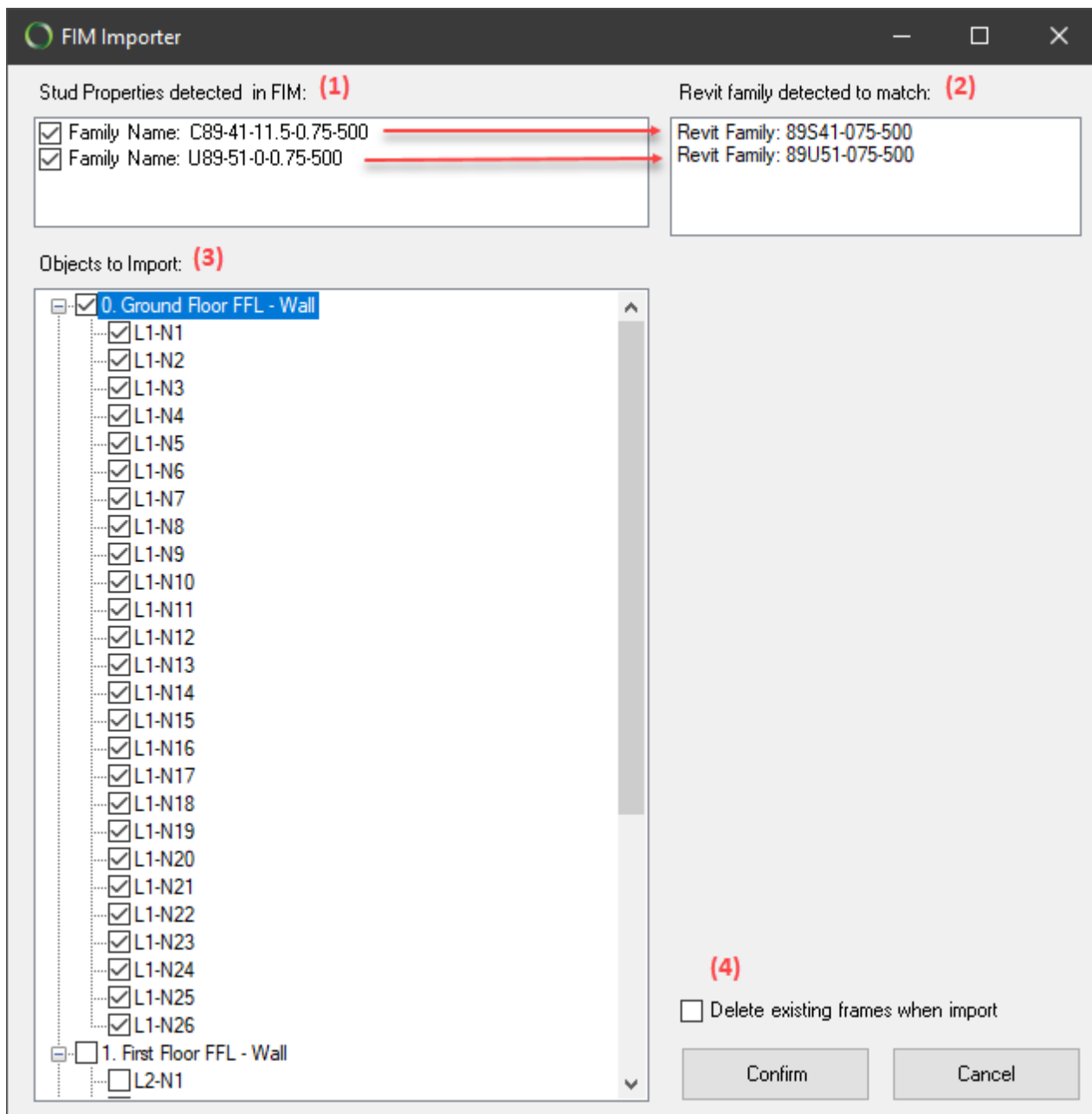
Bear in mind that if you click on any of the **Schedule** buttons again, the application will regenerate any customized schedule table to the default template. Therefore, if you have closed them before but don't want to lose the customization, you can always re-open the schedules by going under the Project Browser and then Schedules/Quantities tree view.

3.5 IMPORT

The **Import** function brings frames that were generated with Structure or Detailer into Revit.



- On the **FRAMECAD RevLink** tab, click the **Import** button.
- Locate the folder where you saved your FIM file from Structure or Detailer, and then click "Open".
- An FIM importer window will appear. Here you'll see 3 (three) dialogue boxes:



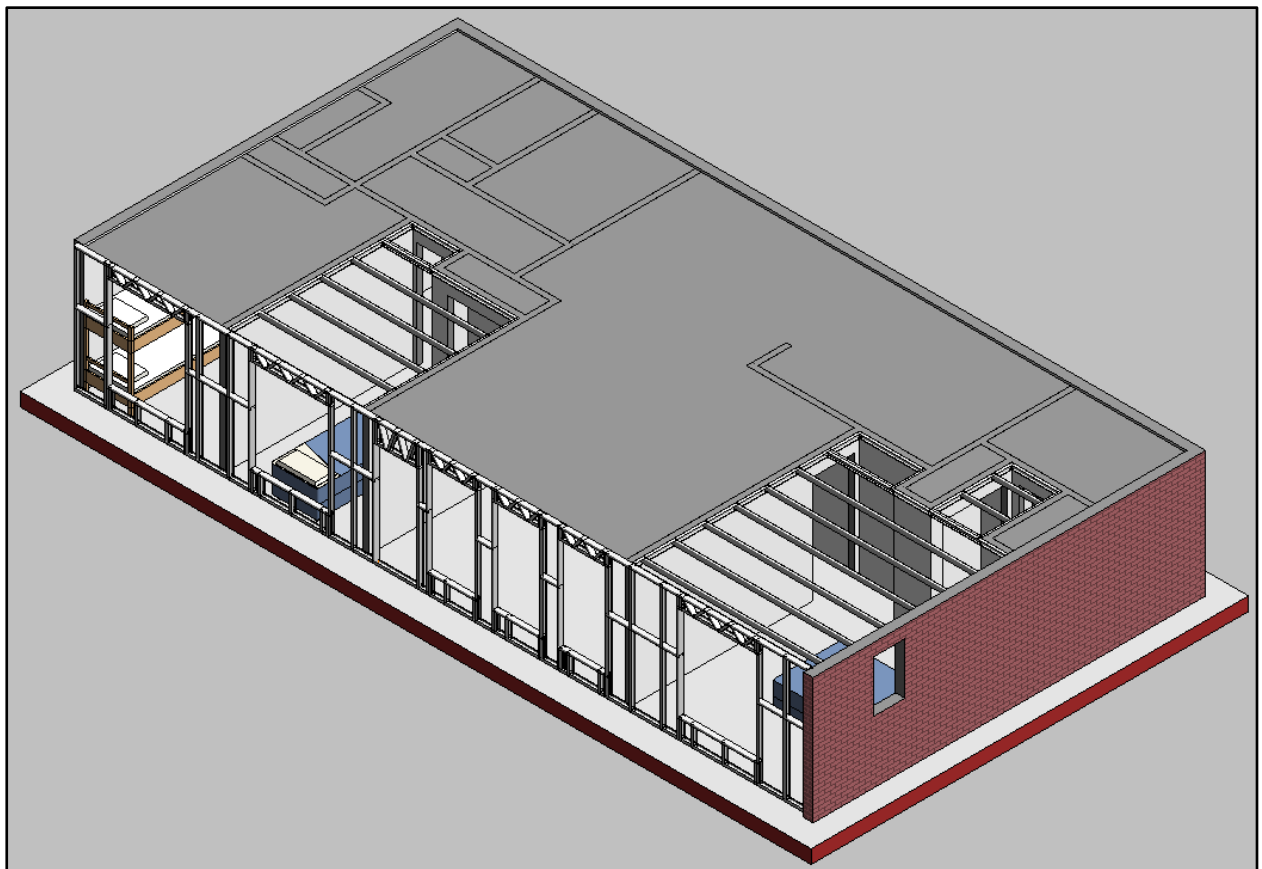
- 1) **Studs Properties detected in FIM** - this information originates from the FIM file generated in Detailer or Structure. This box will tell you what sections need to be read in Revit. For example, the first option on the picture above indicates that there are sections with the following information:

C	89	41/41	11.5	0.75	500
Shape	Web	Flanges	Lips	Gauge	Grade

- 2) **Revit family detect to match** – this dialogue identifies if, under the FRAMECAD family's catalogue ([section 2.1](#)), there's a type of family with the exact information being imported. The "Family Detected in FIM" dialogue box is correlated to the lines on the "Family Detected in Revit". If no family can be associated, it will use the "Default" family type, which is the first option in the family's catalogue.

A "Default" result indicates your family catalogue doesn't have the sections you are trying to import, and you need to review that information. Make necessary changes to the type catalogue at any stage following the procedures described in [section 2.1](#).

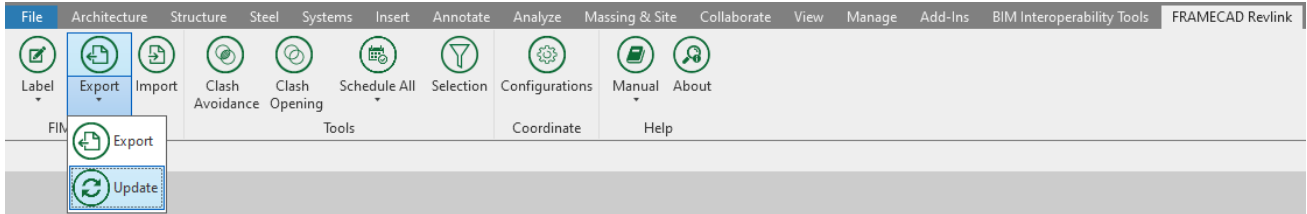
- 3) **Objects to Import** – this dialogue has a tree view that allows you to select which frames will be imported into your Revit project.
- 4) **Delete existing frames in the wall** – currently, this option is only available for walls. When checking this box, it will delete existing wall panels that were imported before and are being reimported. This option avoids duplicate panel frames in the model.
- When ready, click Confirm. If successfully imported, a message dialogue box will pop up confirming the procedure, and the frames will be placed in your project.



NOTE: If the objects remain in the same location when the Export occurred for the first time, the frames will be placed exactly on top of the objects.

3.6 UPDATE

On the **FRAMECAD RevLink** tab, if the **Export** button is not changed to **Update**, click on the drop-down arrow, and then click the **Update** button. The primary button will change from **Export** to **Update**.



The purpose of the **Update** function is to amend an existing FIM file generated from Detailer or Structure that was imported into Revit. It will include any modifications you have made to the panel frames inside the Revit environment into the existing FIM so you can import them back to Detailer.

The steps are as follows:

- Select the objects (not the assemblies) when all required changes are completed, and then click **Update**.

NOTE: You can either select just the modified objects or the objects together and run the Update for the whole project.

- A checklist form will pop up. Here you'll see three dialogue boxes:

Update Check List Form

The Source of FIM File(s) for selected Objects: **(1)**

☒ C:\Users\CarolineH\Desktop\Training Eight (89S)_Floors.fim

Frames to be Updated: **(2)**

- ☒ Training Eight (89S)_Floors.fim
 - ☒ L1-N1
 - ☒ L1-N3
 - ☒ L1-N4
 - ☒ L1-N5
 - ☒ L1-N6
 - ☒ L1-N7
 - ☒ L1-N8
 - ☒ L1-N9
 - ☒ L1-N10
 - ☒ L1-N11
 - ☒ L1-N12
 - ☒ L1-N13
 - ☒ L1-N14
 - ☒ L1-N15
 - ☒ L1-N16
 - ☒ L1-N17
 - ☒ L1-N18
 - ☒ L1-N19
 - ☒ L1-N20
 - ☒ L1-N21
 - ☒ L1-N22
 - ☒ L1-N23
 - ☒ L1-N24
 - ☒ L1-N25
 - ☒ L2-N1
 - ☒ L2-N2

☐ Include unframed objects in this Export.

Note: The Wall Layout will be exported if frames has not been found. It will be exported to the source of FIM files selected above.

Objects with FIM Label but have not been framed: **(3)**

- Wall
 - L1-N2
- Ceiling
 - L1- C12
- Floor

Confirm Cancel

- The source of FIM file** – that's the file path location of the FIM file that has been used and will be updated. When clicking on the "Confirm" button, the file in that path will be automatically regenerated, and the modifications made in Revit will take place.
- Frames to be Updated** – the tree view identifies the panel frames that will be re-exported to the new file. You can select them all by clicking on the primary file name or specify which panels should be updated by clicking on their corresponding box.
- Objects that have not been framed** – this window indicates if, within your selection, there are existing walls, ceilings or floors in your model that have FIM labels but don't have any framing.
 - When ready, click Confirm.

Reimport the FIM file into Detailer to see the new modifications.

3.6.1 Editing Frames in Revit

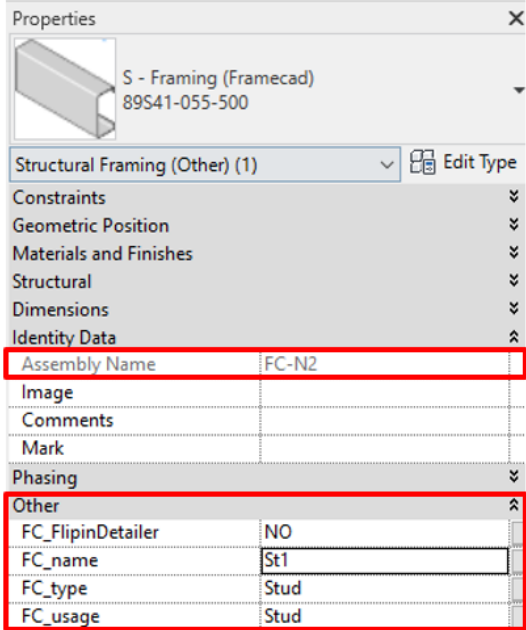
When importing the frames into Revit, they will come as an Assembly entity. The assemblies (panel frames) are all built according to FRAMECAD Revit families. In this phase, changes can still be made using Revit tools. The procedures are the same for walls, ceilings and floor panels.

- First, go inside the Assembly Editor. You can do this by double-clicking the assembly group or by selecting the assembly and clicking on the Edit Assembly button in the Modify tab.
- Once inside the Assembly Editor, the members will appear coloured as green elements. Everything you do inside the assembly group will be considered when updating the FIM file. Therefore, make sure all necessary modifications are inside the Assembly Editor.



NOTE: Do not disassemble the assemblies, as if this happens, the panel frames will be detached from the original FIM IDs, losing correlation with the modelled object. Likewise, new assemblies will not have the necessary link to the existing FIM file, so you won't be able to Update them either.

- Still inside the Assembly Editor, when selecting a frame member, for example, a Stud. Under the **Properties** palette of the element, you can check the FC parameter values. The Assembly Name will follow the Labels defined in Detailer or Structure. The values under "Other" parameters are also based on the specifications defined in Detailer or Structure. If desired, here you can change these values, and once you **Update** the FIM file, you'll see this information back in Detailer.



Properties

S - Framing (Framecad)
89S41-055-500

Structural Framing (Other) (1) Edit Type

Constraints

Geometric Position

Materials and Finishes

Structural

Dimensions

Identity Data

Assembly Name FC-N2

Image

Comments

Mark

Phasing

Other

FC_FlipinDetailer	NO
FC_name	St1
FC_type	Stud
FC_usage	Stud

When all modifications to the particular panel are done, click on the "Finish" button. The Edit Assembly dialogue will disappear, and you are now outside the Assembly Editor.

3.6.2 Editing Explicit Tools in Revit

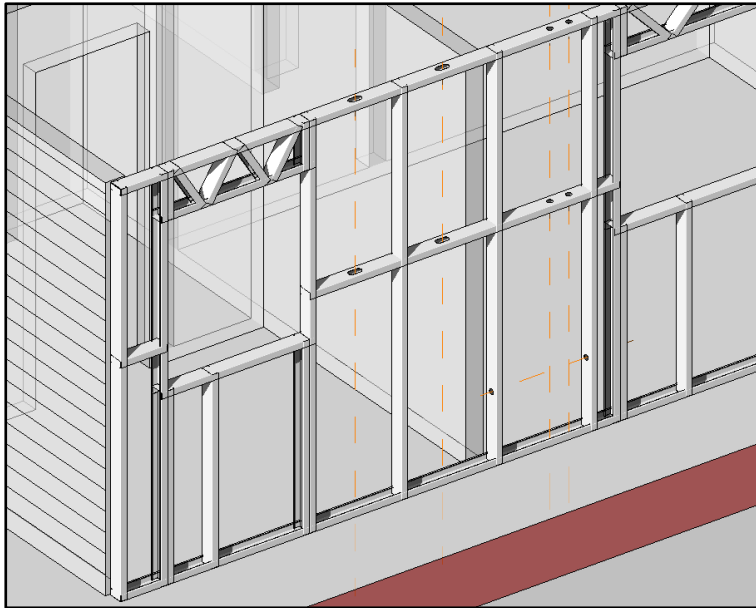
To see Explicit Toolings in Revit, they must be set up first in Detailer or Structure. For this version, the **Import** and **Update** functionalities support the following Explicit Tools:

- Standard Service Holes
- Long Service Holes
- Web Holes
- Web Notch
- Lip Notch
- Bolt Holes

Explicit tools families are voids with their location axis represented by a dash orange line. By default, the sizes for each family are configured as below, but they can be adjusted as per your requirements.

- Standard Service Hole, $\varnothing$ 34.2 mm
- Long Service Hole, 82.6 mm x 38.1 mm
- Web Holes, $\varnothing$ 13.5 mm or $\varnothing$ 3.8 mm
- Web Notch, only location axis
- Lip Notch, only location axis
- Bolt Holes, only location axis

Although the sizes can be changed in Revit, editing these values won't cause any changes to the FIM file. In this case, only the location line axis of the void will represent the route of the explicit tools.

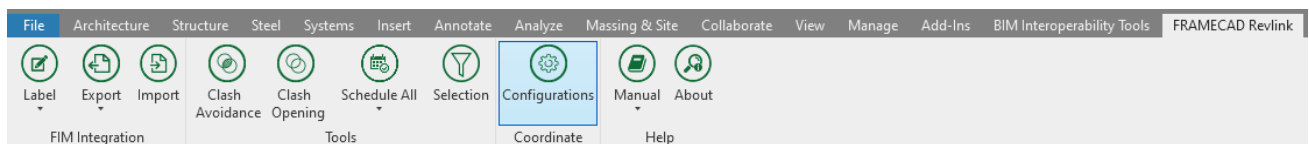


Likewise to panel frames, to edit explicit tools, it's essential to get inside the corresponding panel Assembly Editor first. Once there, they can be modified as needed and click "Finish" when ready.

If modifications are not required anymore, run the **Update** command. Go to Detailer and reimport the FIM file.

3.7 CONFIGURATIONS

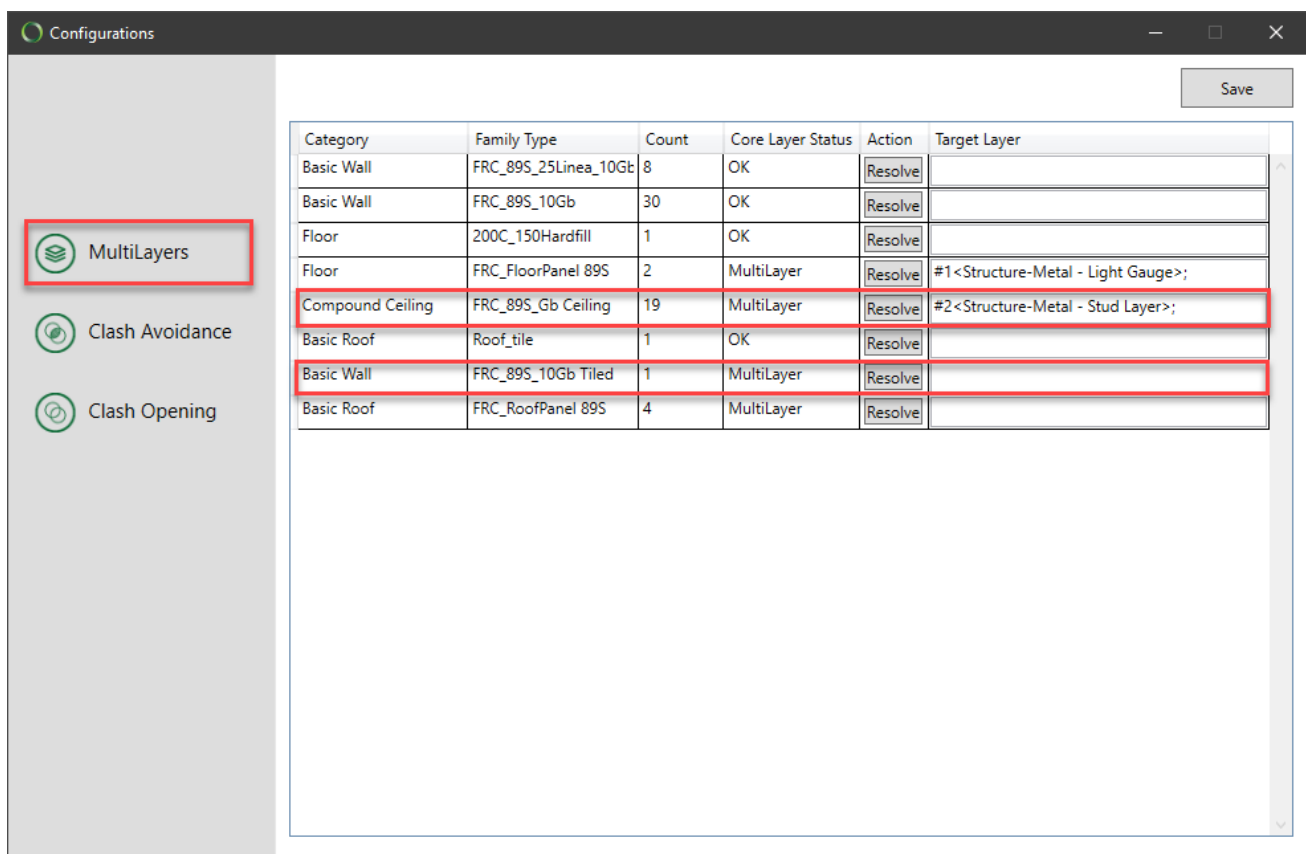
The **Configurations** command will open a **Configuration** page.



This page must be reviewed and amended before using **Clash Avoidance**, **Clash and Openings** or exporting a multilayer object.

3.7.1 Configuring a multilayer object for Export

The purpose of this configuration section is to allow users to assign different core layers for Export to apply the framing, such as double panels within an inter tenancy wall. Select the "MultiLayers" button on the left to open the configuration page.



Here you can see all object types available in the current model and their corresponding information. If the "Core Layer Status" column gives a "MultiLayer" value, that means this particular object has more than one layer inside the "Core Boundary" function.

If the "Target Layer" column is blank, no structure layers have been assigned, and if it's the case where it also has a "MultiLayers" status, then the Export of this specific object might come out wrong. During the export procedure, you can enable an option to check if any object is exported but doesn't have a framing layer assigned.

Now, to define the layers to **Export**, you should follow these steps:

- Identify the required object and click "Resolve"
- A new dialogue box will pop up. Here you'll see the object type information. Select which framing layer should apply a steel framing and then save/close the dialogue.

Layers

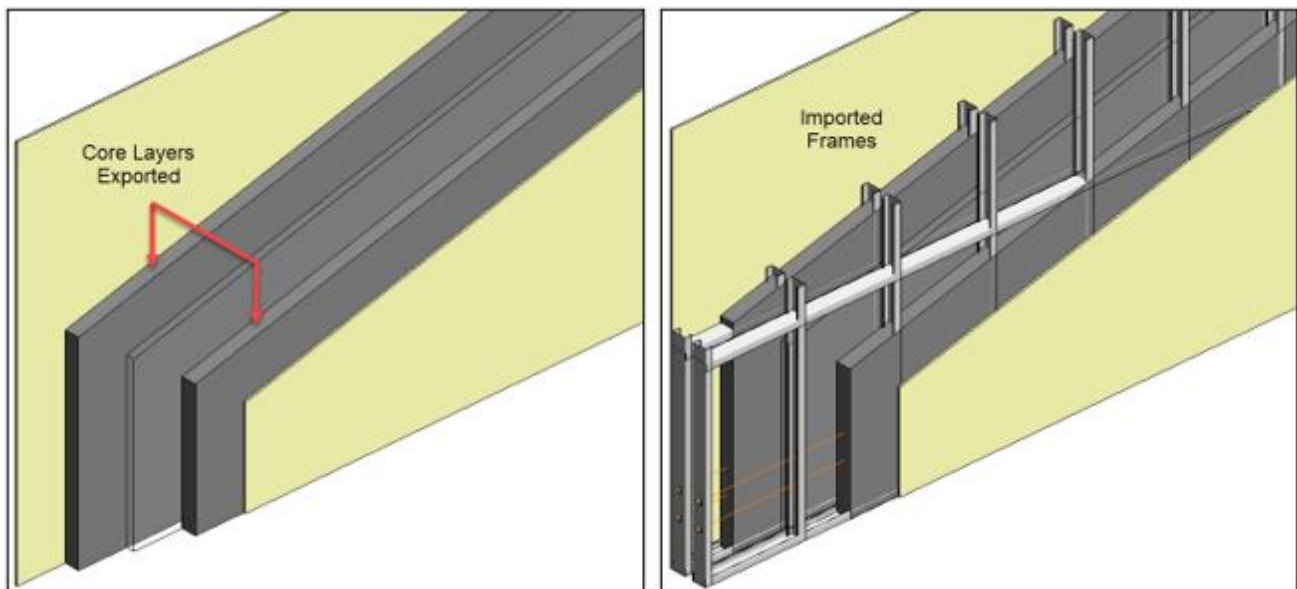
Function	Material	Thickness (ft)	Wraps	Select
Finish1	Gypsum Wall Board	0.04	True	☐
Structure	Metal - Stud Layer	0.29	True	☒
Insulation	Analytical Surface - Air Surfaces	0.16	True	☐
Structure	Metal - Stud Layer	0.29	True	☒
Finish2	Gypsum Wall Board	0.04	True	☐

Save

NOTE: If a double-framed wall is required, but the sections have different widths (thickness), the Export should occur in separate instants, creating individual FIM files for each profile.

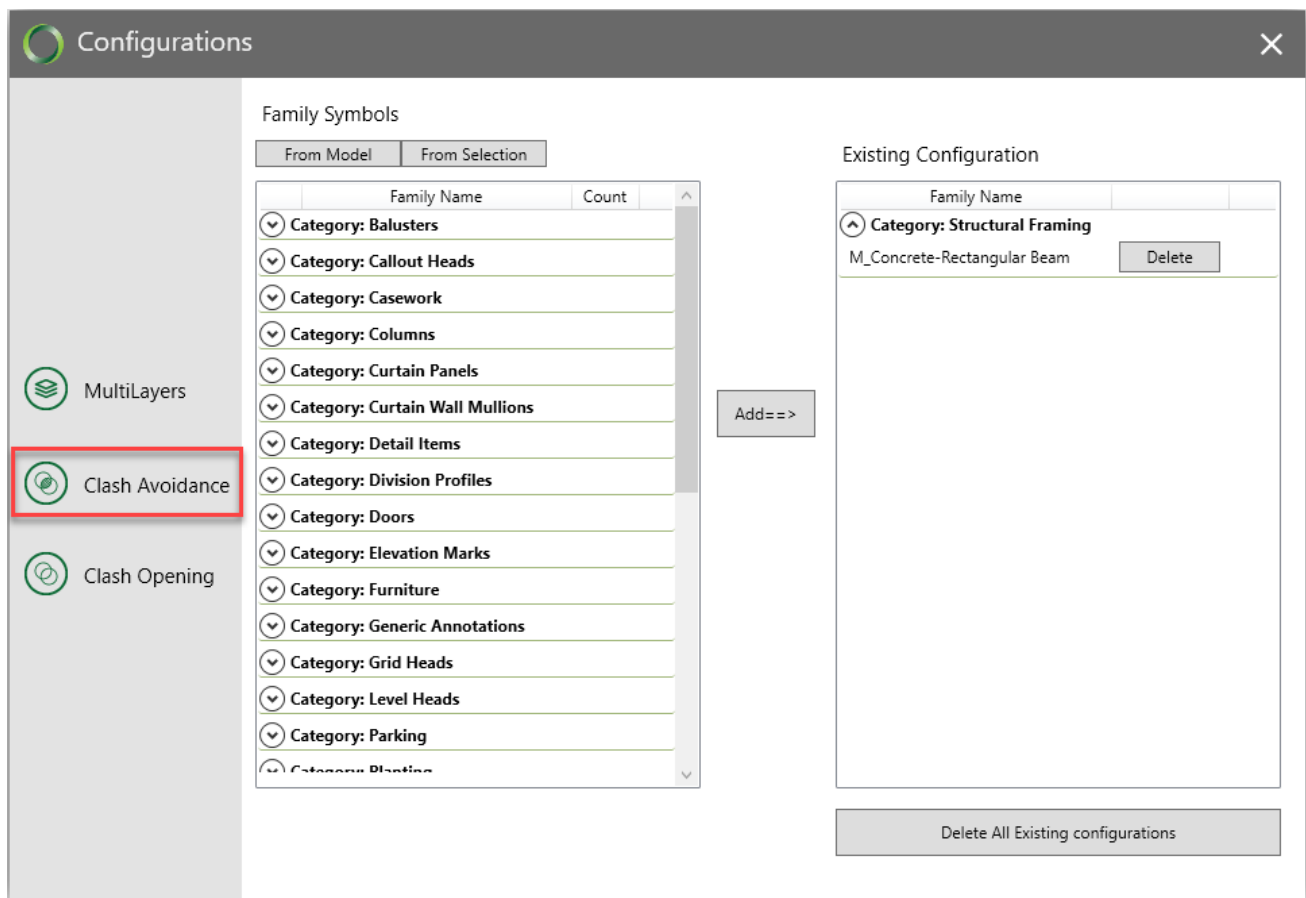
- Back in the Configuration page, if no more action is required, "Save" and close the configuration page. You can now proceed with the **Export**.

Importing the panel frames back to Revit, the frames will come on top of the layer that was exported before.



3.7.2 Configuring objects for Clash Avoidance

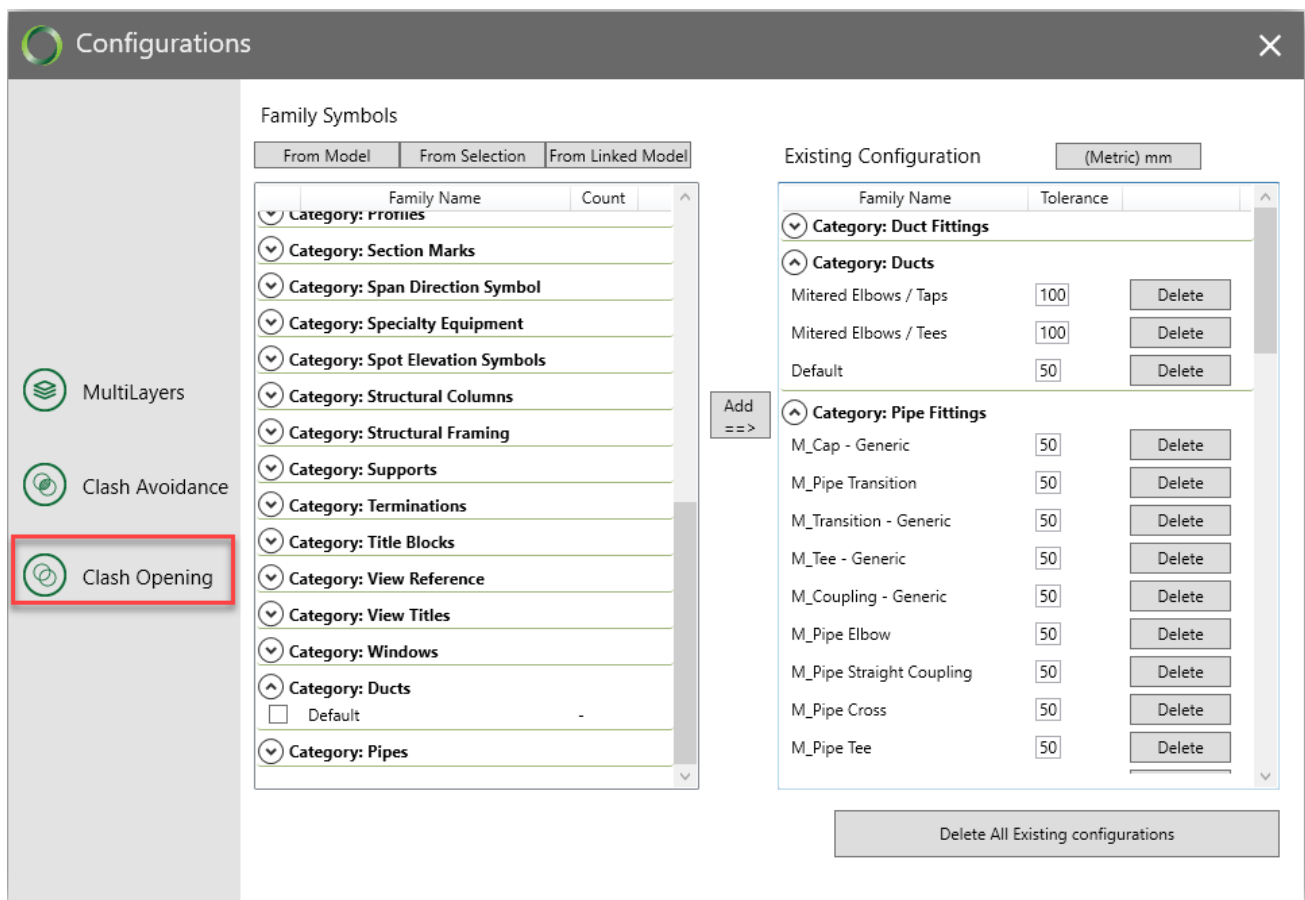
The purpose of this configuration page is so users can specify which objects should be detected when running a clash avoidance with the **Clash Avoidance** tool. To open the configuration page for this case, select the "Clash Avoidance" button on the left.



- From the "Family Symbols" box, there are two options to select the objects for clash avoidance:
 - From model: Except for MEP Fabrication objects, all other families loaded in the model will be available and enabled for selection (e.g. pipes, ducts, framings, columns).
 - From selection: If you pre-select an object from the project, this selection will automatically prompt in this section.
- When you finish selecting the objects, click "Add".
- From the "Existing Configuration" box, check if all required elements for clash avoidance are on the list. The **Clash Avoidance** tool will only find intersections if the objects are listed here.
- If you require to remove a specific object from the list, identify the object and click **Delete**. If you must clean up the whole list, click **Delete All Existing Configuration**.
- When ready, close the window. You can then proceed and use the **Clash Avoidance** tool.

3.7.3 Configuring objects for Clash and Openings

The purpose of this configuration page is so users can specify which objects should be detected when running a clash avoidance and, at the same time, determine clearances to apply rectangular openings around the intersecting objects. Select the "Clash Opening" button on the left to open the configuration page for this case.



- From the "Family Symbols" box, there are three options to select the objects:
 - From Model: Except for MEP Fabrication objects, all other families loaded in the model will be available and enabled for selection (e.g. pipes, ducts, framings, columns).
 - From Selection: If you pre-select an object from the project, this selection will automatically prompt in this section.
 - From Linked Model: objects from linked models can be selected in this section. However, only objects from linked models in a Revit file format can be selected at this stage.

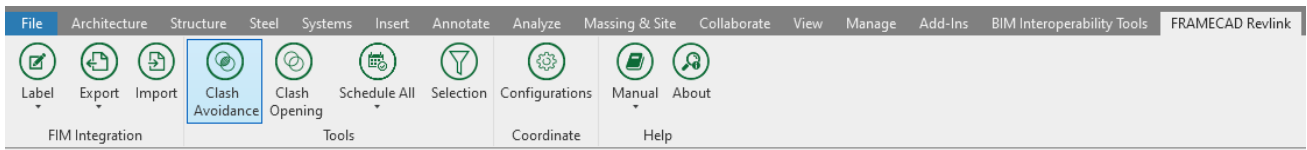
- From the "Existing Configuration" box, check if all required elements for clash avoidance are on the list.

Under the "Tolerance" column, you can also set clearances for the openings. If you set the value to 0 (zero), no clearances will be considered, and the opening will follow the dimensions according to the intersecting object.

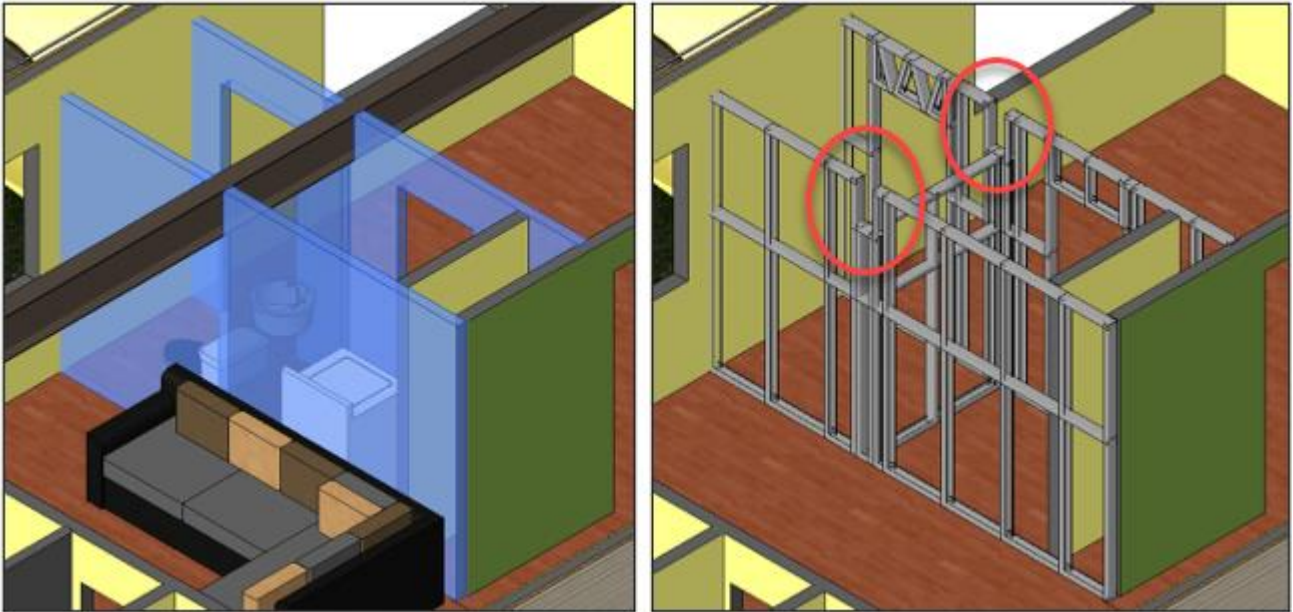
- If you require to remove a specific object from the list, identify the object and click **Delete**. If you must clean up the whole list, click **Delete All Existing Configuration**.
- When ready, close the window. You can then proceed and use the **Clash Opening** tool.

3.8 CLASH AVOIDANCE

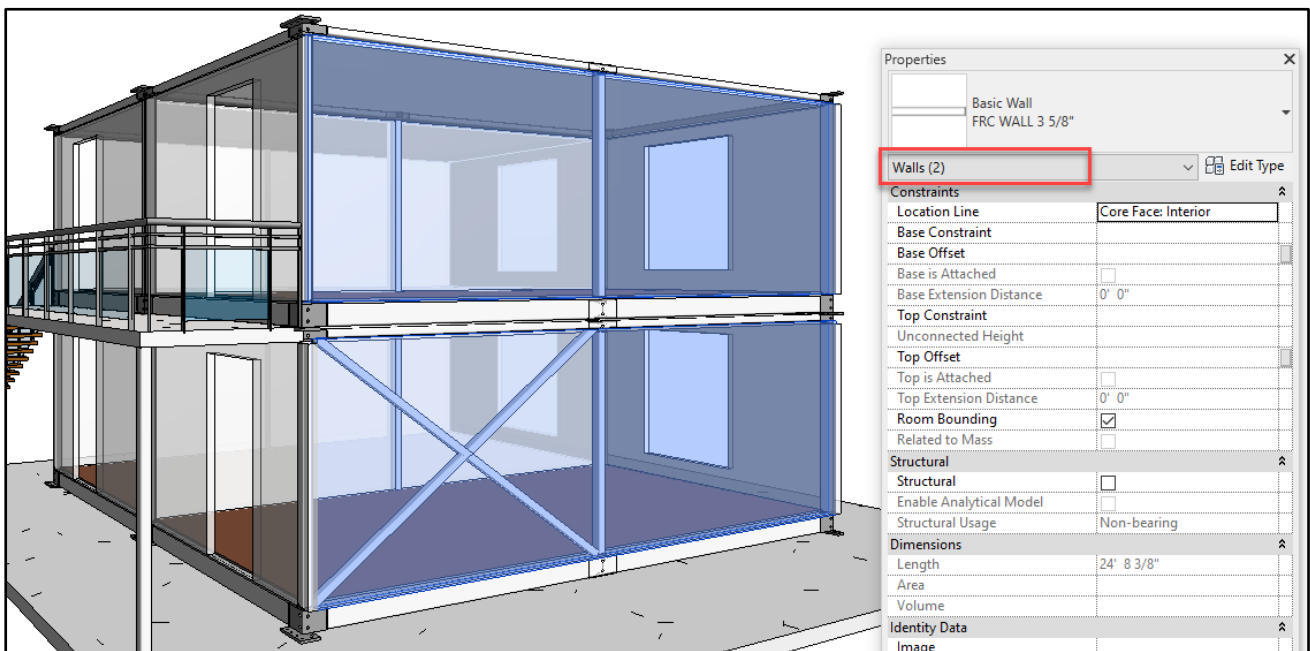
Clash Avoidance can be used during the design stage to coordinate building elements with walls and structural objects such as columns and framings.

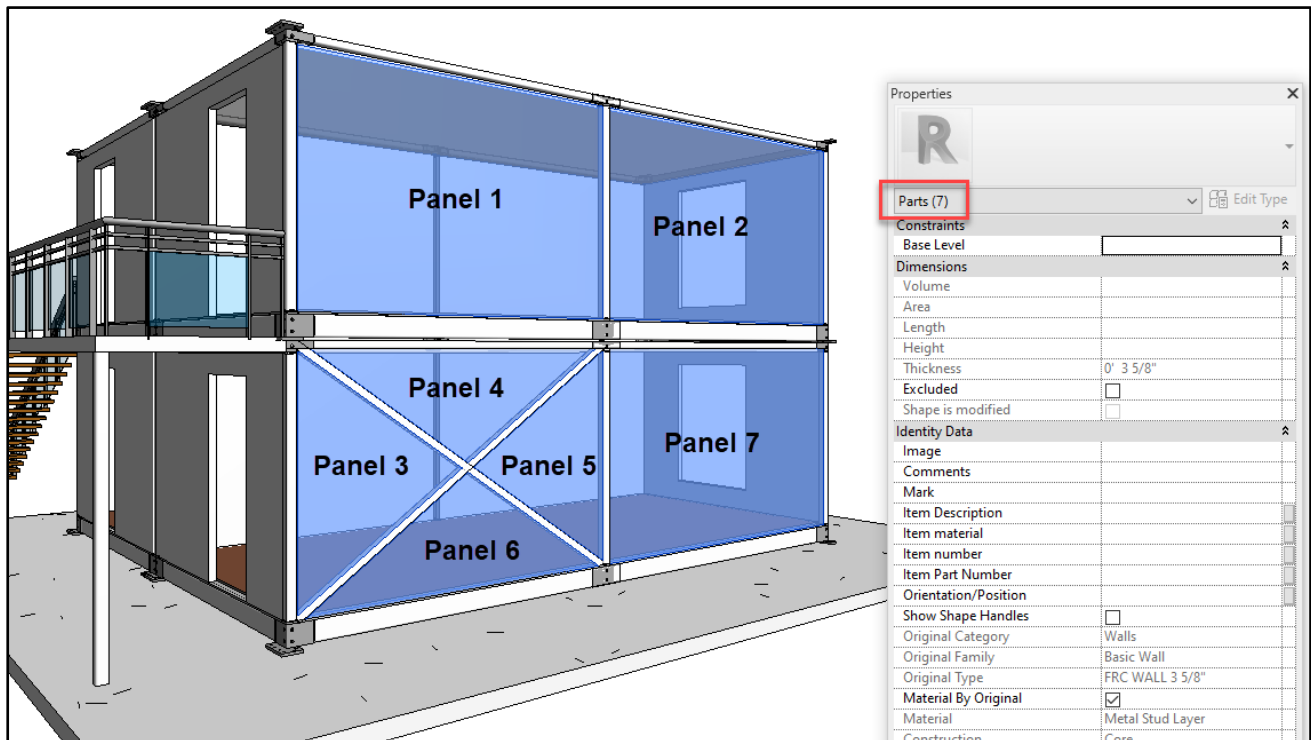


This tool detects interferences between a wall and structural objects. For instance, if a U-Beam crosses a wall, the **Clash Avoidance** tool will create structural wall parts and divide these parts according to the contour of the intersecting object.



Similarly, if columns or framings are inside a single wall, the tool will detect these elements and divide the wall parts into different segments, generating individual panels for each case:



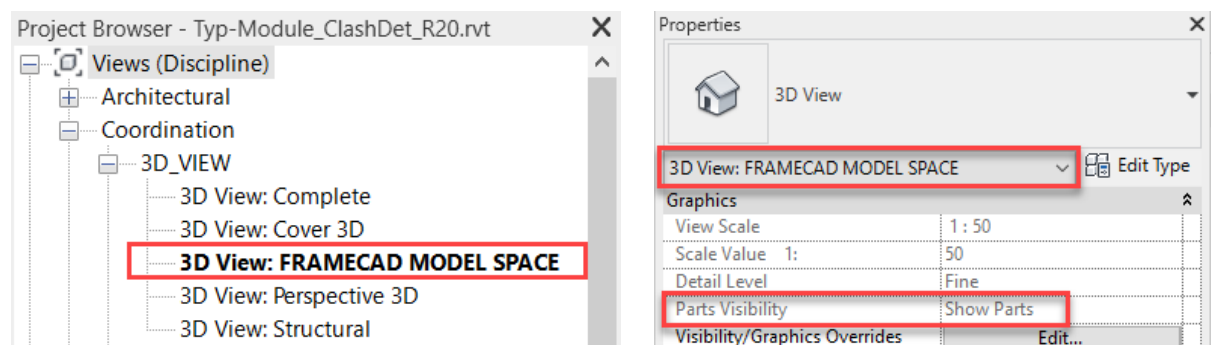


In order to activate this tool, the following steps should be considered:

- Ensure the objects' selection is properly set up under the **Configuration** page for **Clash Avoidance**.
- Go back to any view and select the wall you want to run the **Clash Avoidance**.
- Then you can click on the **Clash Avoidance** tool.
- At this phase, the tool will find the intersections among the set of selection established under the Configuration page and automatically generate the structural wall parts.

Note: The core layers define structural parts.

- Simultaneously, a new 3D View called "FRAMECAD MODEL SPACE" will be generated. This view will have the visibility of the part set to "Show Parts" so you can promptly see the new modified parts.



- Now, you can manually add clearances, adjust the shape, and restore or exclude unnecessary parts as you see fit.

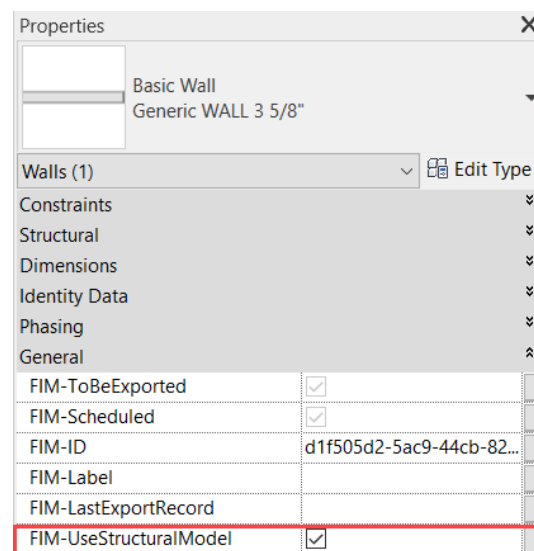
To get inside the edit mode, select the desired structural wall part, go under the Modify / Parts tab > Edit Division or Divide Parts > Edit Sketch.



Note: Some structural parts might be deleted automatically after running the Clash Avoidance tool. Remember to check if you need to restore any of them.

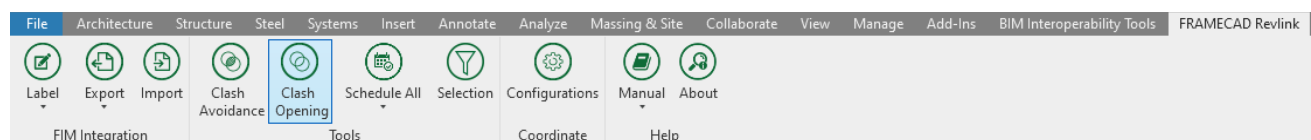
- Once finished, your wall should be ready for Export. Go to a view where you can select the original wall and proceed with the Export.

Note that the parameter "FIM-UseStructuralModel" has been automatically enabled under the General parameter of that particular wall. The structural wall parts will be considered if this box is selected when the Export occurs. If you unselect this box, any existing structural parts won't be considered, and the original wall shape will be exported instead.

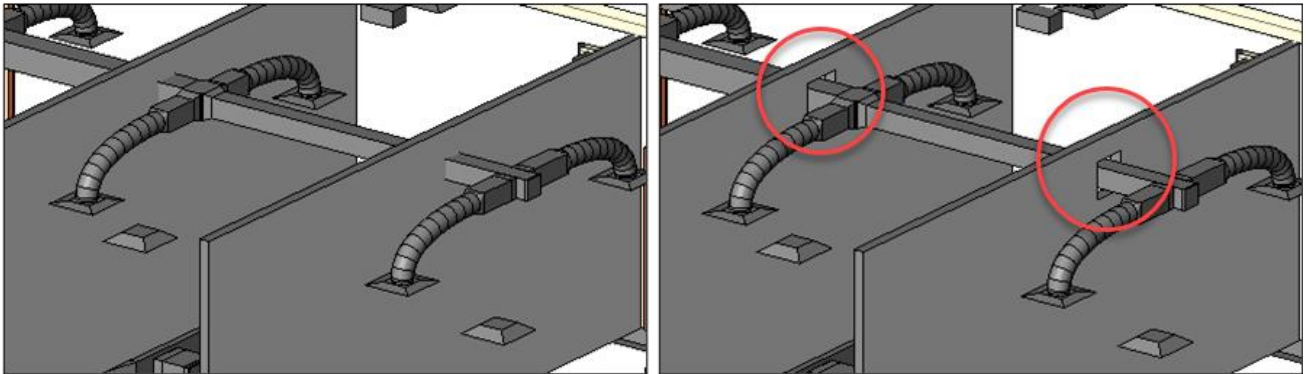


3.9 CLASH AND OPENINGS

Similarly to **Clash Avoidance**, **Clash and Openings** can also be used during the early stage of the designing process to coordinate building elements. However, this tool prevents spatial overlaps by automatically creating openings around the intersecting objects and not creating wall parts.

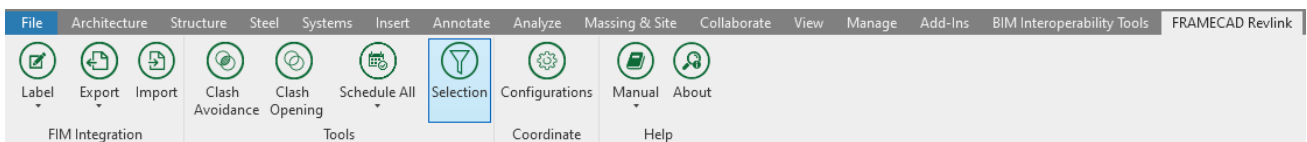


The main difference is that it detects if a structural object (e.g. column, beam) and/or a system MEP object (e.g. pipe, ducts, cable trays) is penetrating a wall to create a rectangular opening around the intersecting object. It will keep the panel as a single object (i.e. this won't split the panel into different segments or generate structural wall parts).



3.10 ADVANCED SELECTION

The **Selection** tool is designed to facilitate the selection of multiple elements in complex Revit projects to run the Export. Filters by family types and groups are available to refine the selection.



- On the **FRAMECAD RevLink** tab, click the **Selection** button.
- When the **Advanced Selection** window opens, click over the tabs to see the filtering options for each object.
- Select the required family types or groups.
- If desired, you can add a base level filter to the selection for walls, ceilings, floors and roofs. For walls, there's an additional option to filter by structural usage.
- Once done, click "Apply Selection".
- Click on "Review" to see what objects are selected in the project.
- When finished, click "OK".

Advanced Selection

Filtering Options

Walls | Ceilings | Floors | Roofs | Groups

☒ Family Type Filter

- ☐ CW 102-85-100p
- ☐ CW 102-85-140p
- ☐ CW 102-85-215p
- ☐ Exterior - Block on Mtl. Stud
- ☐ Exterior - Brick on Mtl. Stud
- ☐ Exterior - Brick Over Block w Metal Stud
- ☐ Exterior - Insulation on Masonry
- ☐ Exterior - Render on Brick on Block
- ☐ Exterior Curtain Wall
- ☐ Exterior Glazing
- ☐ Foundation - 300mm Concrete
- ☒ FRC362S_Gb
- ☒ FRCInterior_0' 5 7/6"
- ☐ Generic - 140mm Masonry
- ☐ Generic - 200mm
- ☐ Generic - 200mm - Filled
- ☐ Generic - 225mm Concrete

☒ Base Level Filter

- ☒ 01 - Entry Level
- ☒ 02 - Floor
- ☒ 03 - Floor
- ☐ Roof
- ☐ Parapet
- ☐ 04 - Floor
- ☐ 05 - Floor

☒ Structural Usage Filter

- ☒ NonBearing
- ☒ Bearing
- ☐ Shear
- ☐ Combined

Selection Set

Walls | Ceilings | Floors | Roofs

- ☒ 01 - Entry Level - Wall - 143858
- ☒ 01 - Entry Level - Wall - 144051
- ☒ 01 - Entry Level - Wall - 144180
- ☒ 01 - Entry Level - Wall - 144230
- ☒ 01 - Entry Level - Wall - 144289
- ☒ 01 - Entry Level - Wall - 145054
- ☒ 01 - Entry Level - Wall - 145109
- ☒ 01 - Entry Level - Wall - 145174
- ☒ 01 - Entry Level - Wall - 145211
- ☒ 01 - Entry Level - Wall - 145263
- ☒ 01 - Entry Level - Wall - 149189
- ☒ 01 - Entry Level - Wall - 149293
- ☒ 01 - Entry Level - Wall - 149395
- ☒ 01 - Entry Level - Wall - 149505
- ☒ 01 - Entry Level - Wall - 149551
- ☒ 01 - Entry Level - Wall - 149589
- ☒ 01 - Entry Level - Wall - 150342
- ☒ 01 - Entry Level - Wall - 152037

Apply Selection | Review | OK | Cancel