



What's New

PowerPack for Autodesk Revit 2024.1.1

Rebar Project for France

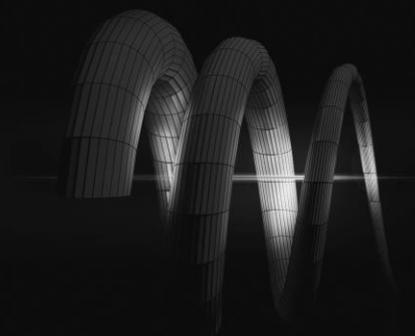


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1. Welcome to Graitec Powerpack for Revit 2024.1.1

We are thrilled to announce the release of PowerPack for Revit 2024.1.1, our latest advancement tailored specifically for the French construction market. This update concentrates on enhancing rebar performance, significantly boosting the efficiency and usability of our solutions for Revit users.

With the new PowerPack for Revit, users will experience unprecedented improvements across several key areas:

- **Enhanced Rebar Detailing and Management:** New Reinforce Continuous Elements tool offers streamlined modelling and documentation processes, reducing the need for extensive 3D modelling while enhancing accuracy and reducing file sizes.
- **Enhanced Visualization and Usability:** The introduction of Automatic Symbols on Fabrics and the refined tool for wall fabric templates implementation significantly improve the visualization and application of structural elements. These enhancements ensure closer alignment with on-site execution standards and streamline the design process, making it more intuitive and efficient.
- **Advanced Scheduling and Calculation Tools:** The updated Reinforcement Schedule and improved features such as Calculate Average Rebar Diameter and Rebar Reinforcement Ratio enhance the precision of structural calculations and project planning, optimizing both material usage and project coordination.
- **Workflow Foundations Process:** Facilitating the exchange of footing data between Revit and Advance Design or Arche. These improvements allow for seamless export and import of isolated and continuous footings, including dimensions and materials, enhancing collaboration and accuracy effortlessly.

Our commitment to continuous improvement ensures that the PowerPack for Revit remains a crucial tool for architects, engineers, and designers. The enhancements in this release aim to streamline workflows, reduce errors, and provide a more integrated and intuitive experience.

We invite you to explore the new features and improvements in PowerPack for Revit 2024.1.1, confident that they will significantly enhance your project's efficiency and outcomes.

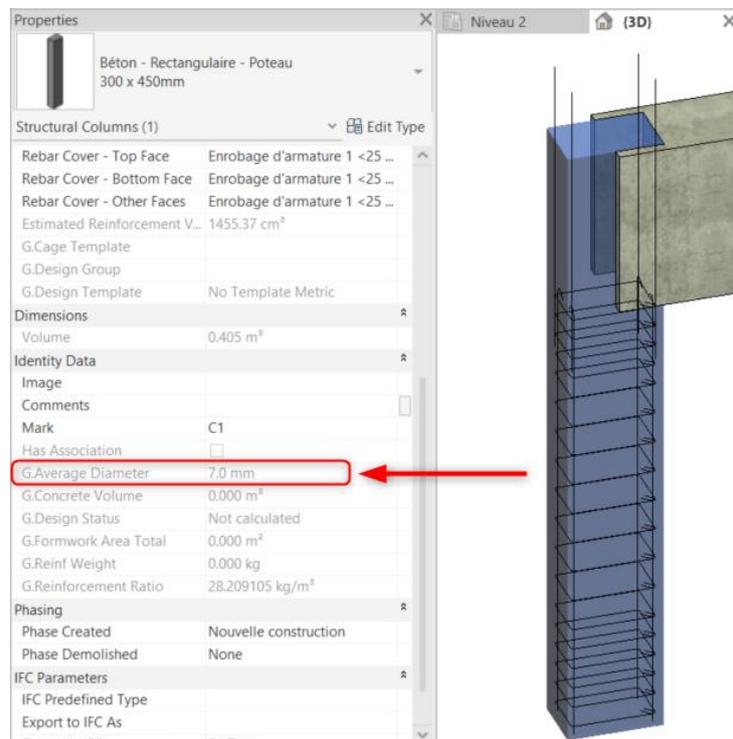


2. PowerPack for Revit Start Edition

2.1. Calculate Average Rebar Diameter

This update introduces the "G. Average Diameter" parameter, enhancing structural calculations for engineers by accurately computing the average diameter of the rebar used in a **structural element** automatically. Streamlined calculations increase efficiency, reduce errors, and optimize material usage, resulting in cost reductions.

To make use of this new functionality, just choose any structural element within the project and look up the "G. Average Diameter" parameter in the property table of the element.

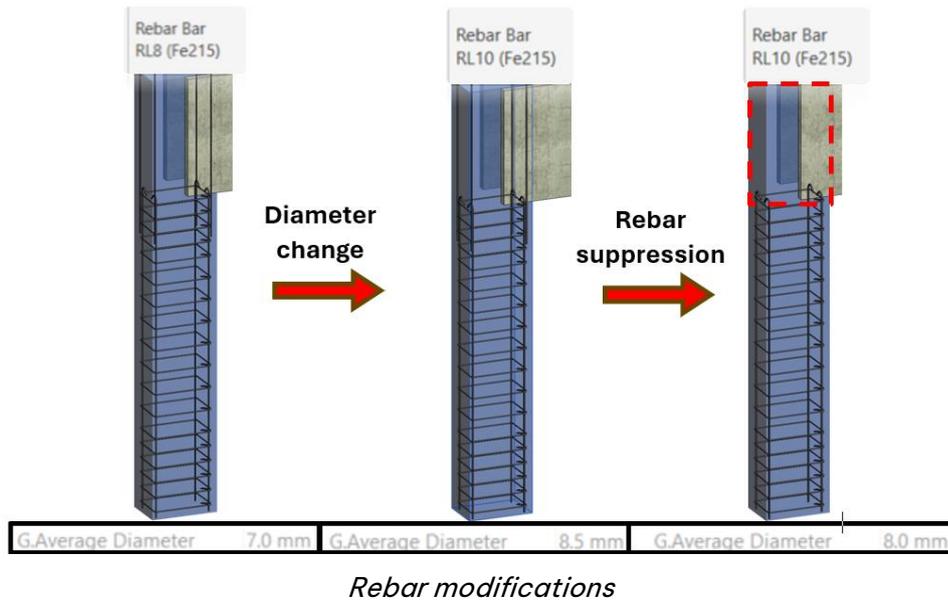


Average diameter in the element's properties

To calculate the average diameter, the PowerPack considers both the diameter and weight of the rebars, using the following formula:

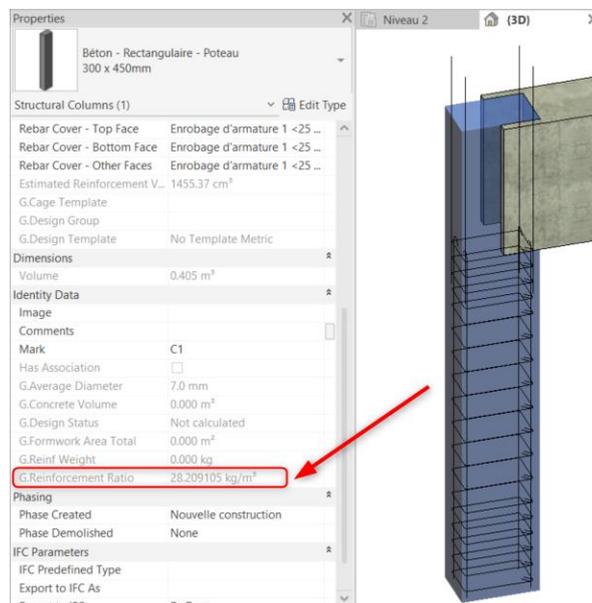
$$\varnothing_m = \frac{\sum \varnothing_i \times P_i}{\sum P_i}$$

This parameter, generated by the PowerPack, dynamically adjusts the average diameter based on any modifications made to the rebar in the structural elements.



2.2. Rebar Reinforcement Ratio

This latest version introduces improvements to rebar detailing and project management by embedding essential metrics directly into your Revit projects. It automatically calculates the **rebar ratio** for structural hosts and stores this information in a shared parameter called "**G. Reinforcement Ratio**", simplifying technical documentation, and improving overall project accuracy.



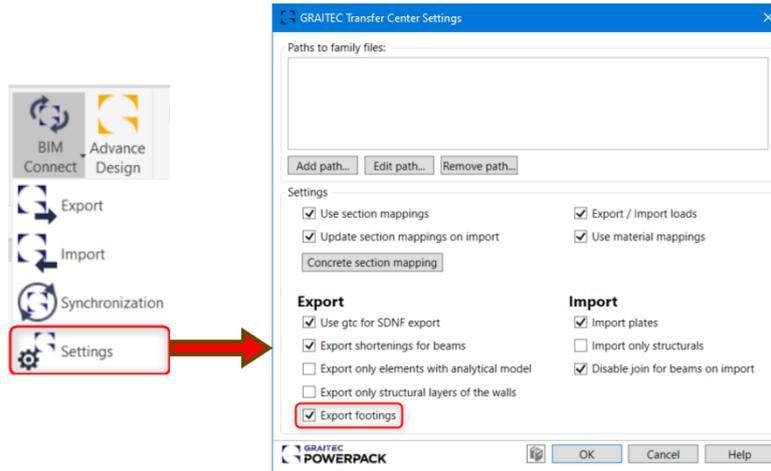
Reinforcement ration in the element's properties

This PowerPack-generated parameter shows the reinforcement ratio for any selected element in the property table, regardless of the reinforcement method used, and updates automatically with any rebar modifications in the structural elements.

2.3. Workflow Foundations

Our latest update introduces a groundbreaking feature that significantly enhances **BIM workflows**, specifically focusing on the exchange of **footing** data between Revit and software like Advance Design or Arche. This innovative update ensures complete export and import capabilities for both isolated and continuous footings, covering every detail from dimensions to materials. By integrating physical model footings directly into your workflow, you can enhance collaboration and accuracy without manual updates.

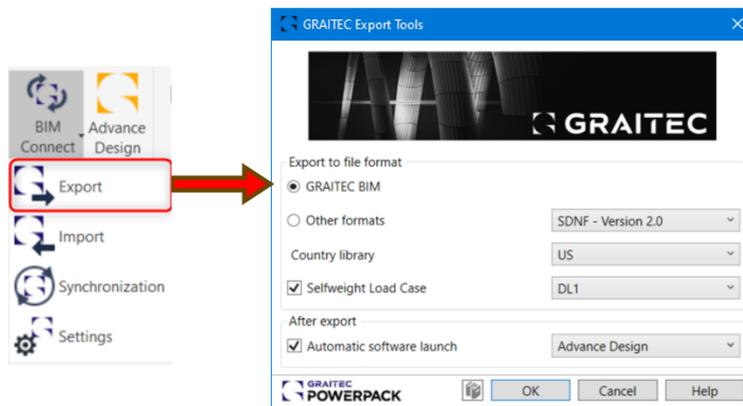
The tool is available in the **Powerpack => Bim Connect => Settings**.



Settings interface

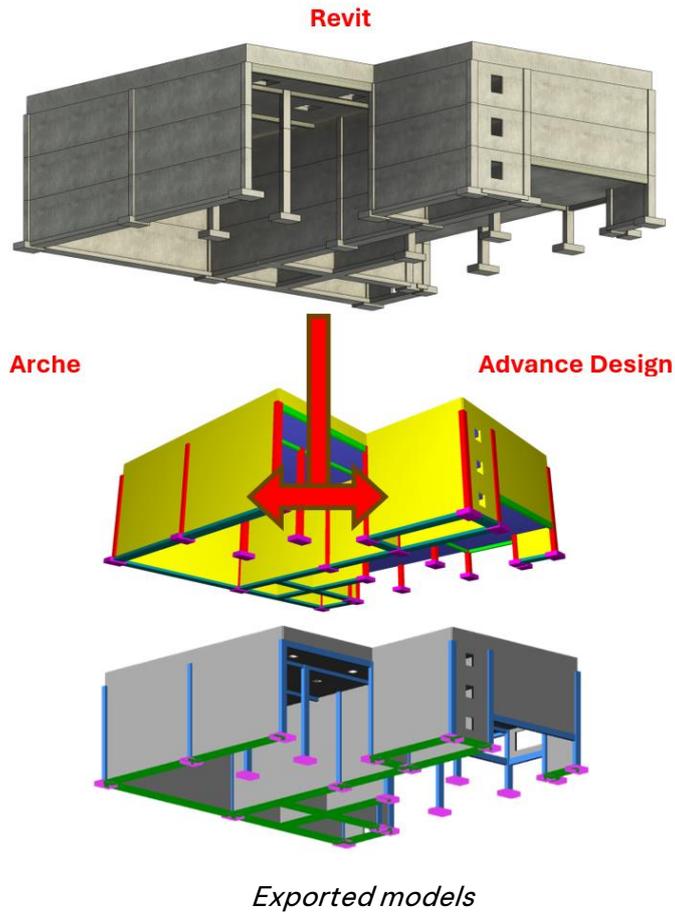
2.3.1. Exporting

To export foundations for other software like Advance Design and Arche, users must activate the “Export footings” parameter in the Bim Connect settings and then proceed to export the model for the desired software.



Export setting interface

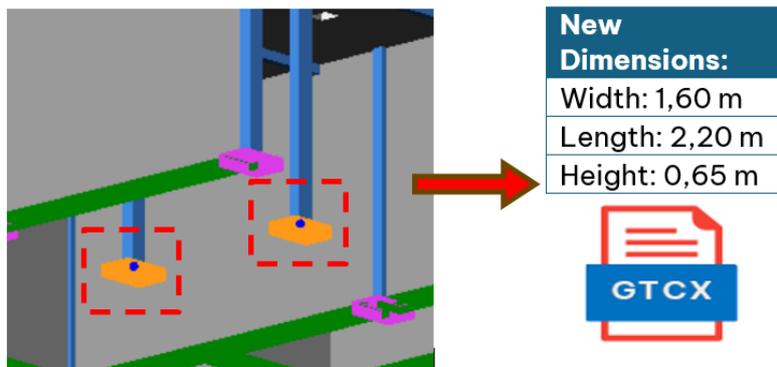
Once this is done, the project export will include the presence of footings in the model with the correct dimensions.



2.3.2. Importing

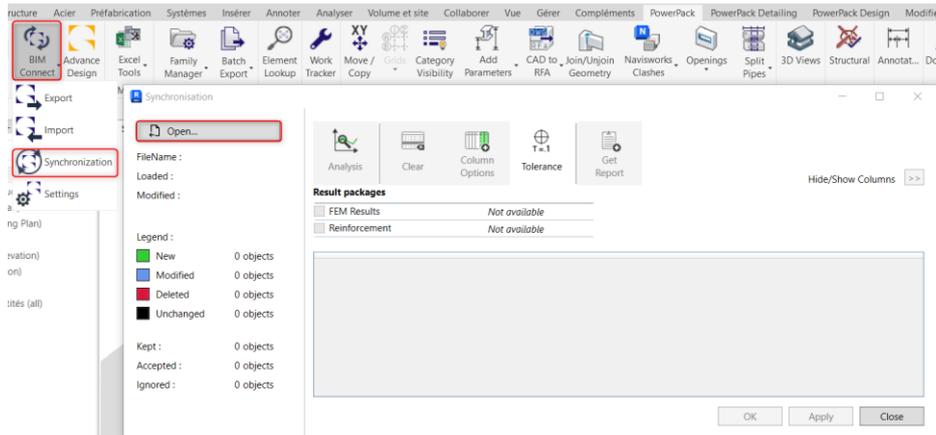
To import the modifications made to the footings into Revit, the user needs to:

- **Step 1:** Export a document "GTCX" format from Arche or Advance Design.



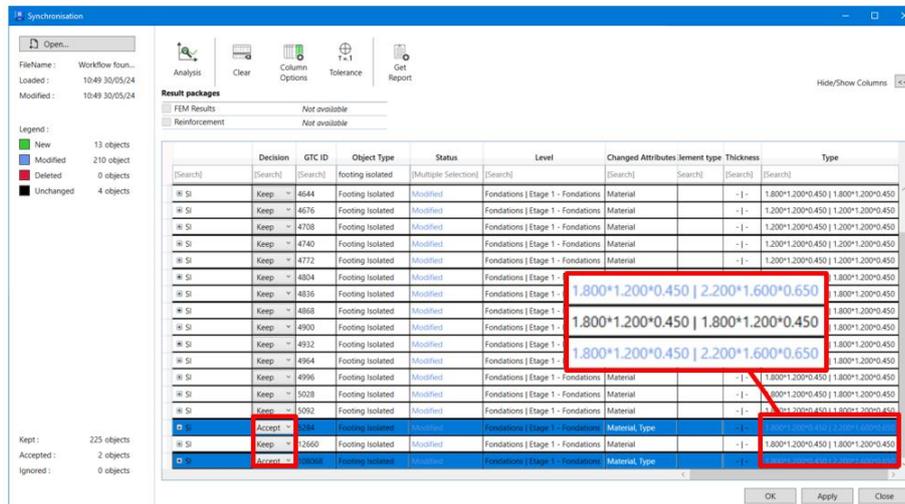
Export to GTCX format with the applied modifications

- **Step 2:** Load the GTCX document into Revit using BIM Connect.



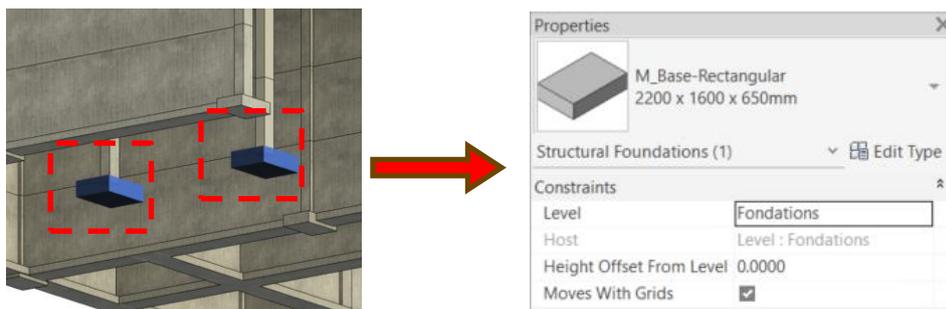
Importation process

- **Step 3:** Search and accept the desired modifications to implement.



Modifications implemented

- **Step 4:** Verify the import results.



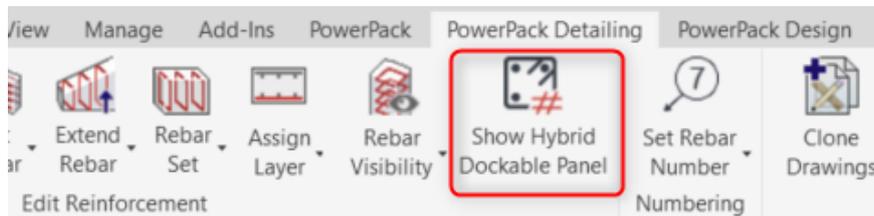
Import results

3. PowerPack Rebar Detailing for Revit

3.1. Reinforcement Continuous Elements

Enhance your Revit reinforcement process for **continuous elements** with our innovative tool, which enables **cross-section** view reinforcement using native families and precise rebar **quantification** without the need for full 3D modelling. These clever Hybrid Rebars leverage familiar Revit elements for effortless quantity calculations based on formulas and details. A dedicated side panel puts all controls at your fingertips.

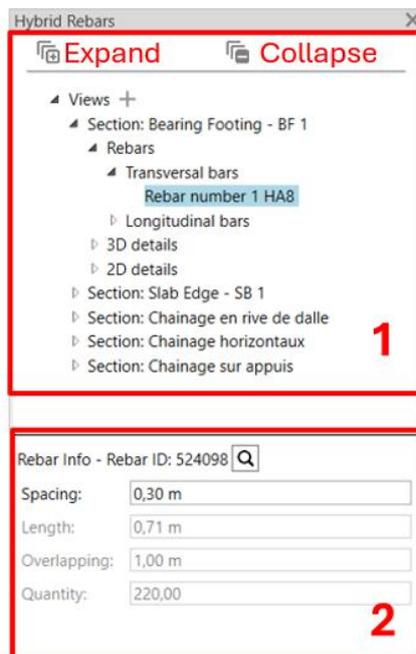
The tool is available in the **Powerpack Detailing => Edit Reinforcement => Show Hybrid Dockable Panel**.



Hybrid Rebars function in the ribbon

3.1.1. Hybrid Dockable Panel

For our new feature, we have created a side panel that offers intuitive and extensive control for the user. The panel can be placed anywhere in the project interface and can be docked like the project browser or properties panel.



Hybrid Panel

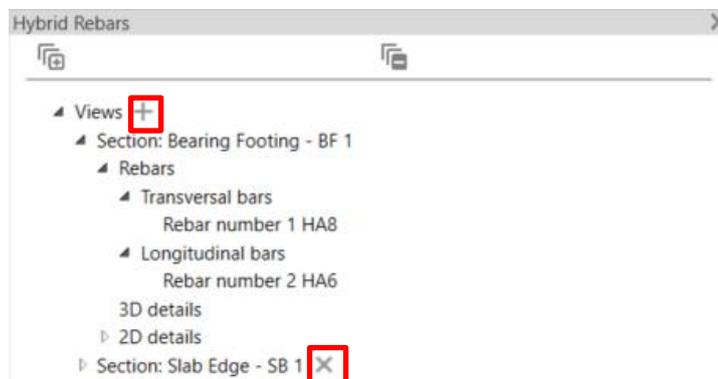
The hybrid panel is divided into:

1. The section that displays the views, rebars, and details added.
2. The section that displays the information and parameters of the selected elements.

Moreover, the user can expand or collapse all the items automatically by clicking the “Expand” button to expand and the “Collapse” button to collapse.

3.1.2. View Definition

To use the new functionality, the first step is to add the views that will be worked on. All the section and plan views can be inserted in the panel.

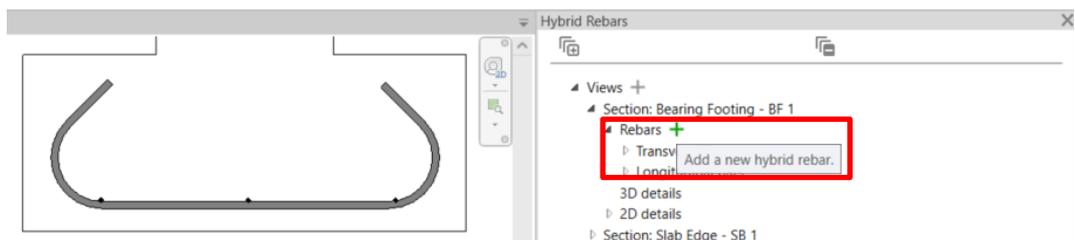


Adding views in the panel

In the panel, the user can add a view to their views tree by clicking the “+” button, which always adds the current view. Additionally, views can be removed from the panel by clicking the “x” button next to the view.

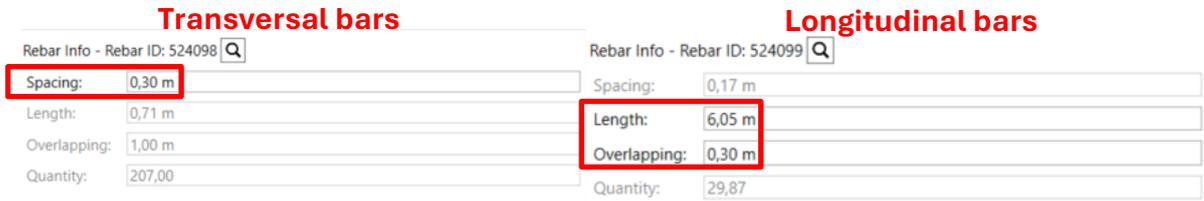
3.1.3. Hybrid Rebars Definition

Once the views are defined, the user needs to create the rebars using the native family from Revit and add them to their rebar tree.



Adding rebars

The rebars can be added to your hybrid section by clicking "Add a new hybrid rebar," which will appear when the mouse is near the "Rebars" name, and then select the bars created. Based on their shape and placement orientation, they will be automatic categorized as either transversal or longitudinal bars.



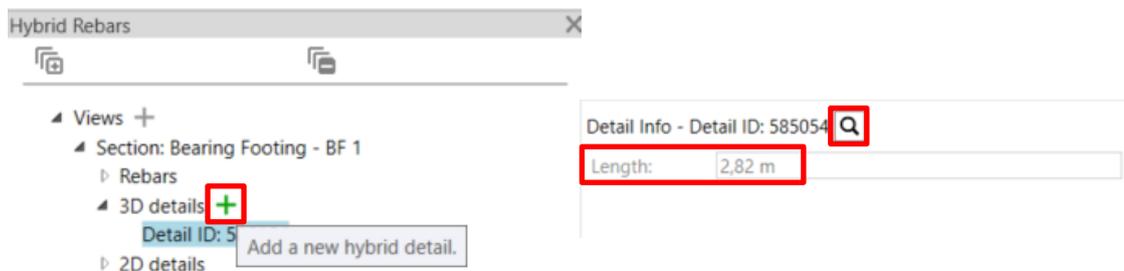
Key parameters

Next, it is necessary to define specific parameters for both types of rebars, which will be used to calculate the quantity for each type. Transversal bars only require a simple "spacing" value. Longitudinal bars, however, need both the "stock length" of the rebar and the "overlapping length".

Additionally, the bars can be selected and displayed instantly by clicking the "zoom" button.

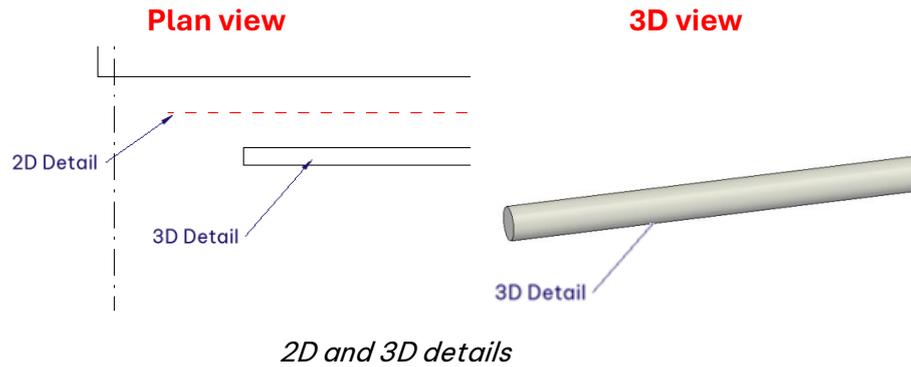
3.1.4. Definition of Distribution

After the rebars definition, it's necessary to define the distribution path with the 2D or/and 3D details items to any view in the model.

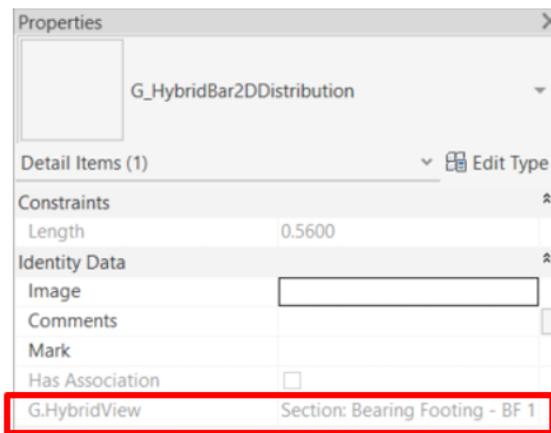


Details creation in the panel

In the panel, the user can create the hybrid details by clicking the "+" button next to the detail's name. Besides, by clicking on the created details, the panel displays detail information, including the length of the traced segment. The details can be selected and displayed instantly by clicking the "zoom" button.



These details items will be created under the detail line for 2D and as a component for 3D details. Therefore, 2D details are visible only in the created view, while 3D details are visible across all intersecting views.

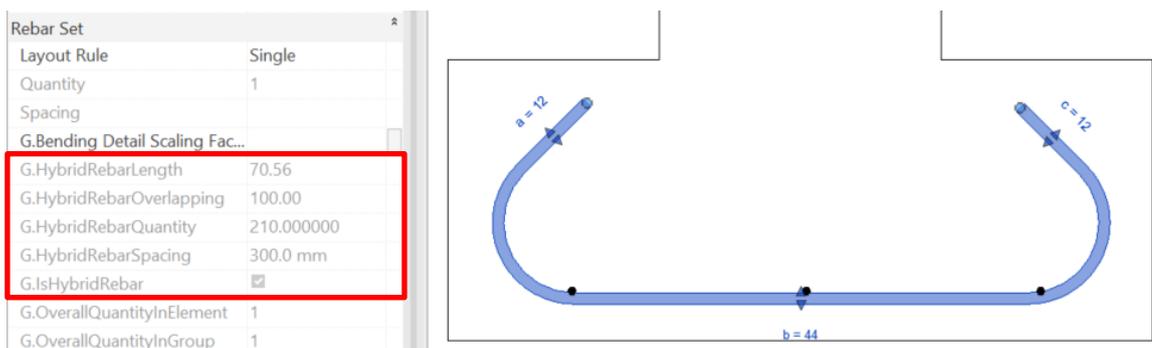


Detail's Properties

In the detail's properties, users can check the associated view of the selected details using the parameter "G.HybridView".

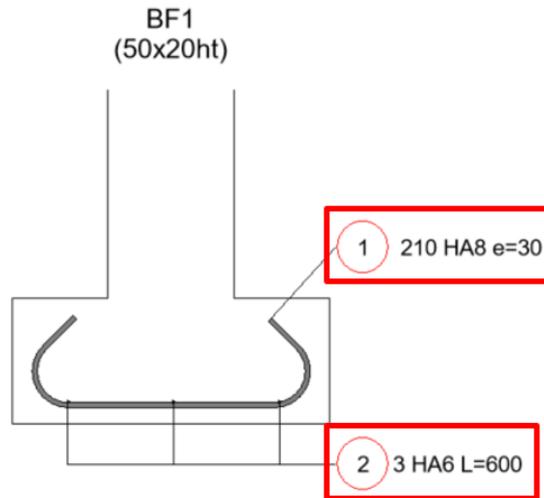
3.1.5. Applications of Hybrid Parameters

For the hybrid rebars, the tool creates new parameters in the bars properties that are populated when the user fills in the dedicated parameters.



Added parameters

The added parameters are length, overlapping, spacing, and quantity, which are calculated automatically based on the hybrid parameters and traced detail lines. Furthermore, there is another parameter called "G.IsHybridRebar", that indicates if the rebar is being used with this command.



Cross-Section

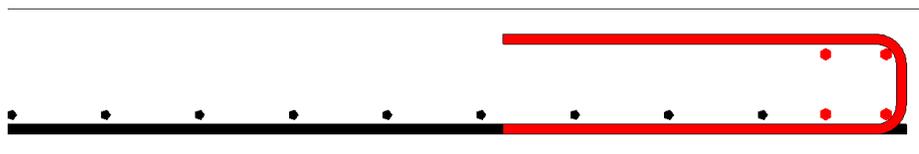
L= 59 m

Element tagged with hybrid parameters

N°	Type	Ø	Quantity	Spacing (cm)	Length (cm)	Shape (cm)	Total Length (m)
1	HA8	8	210.00	30	71		148.17
2	HA6	6	30.40	17	600		182.37
<i>Total</i>							330.54

Schedule created using hybrid parameters

Therefore, all the parameters were added as shared parameters, and they are available to use in tags and schedules.



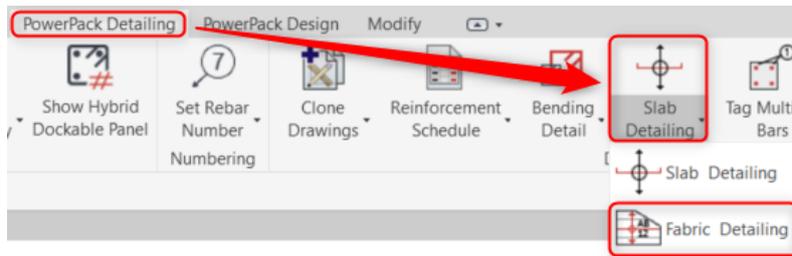
Filter created using hybrid parameter

The parameter "G.IsRebarHybrid" enables the filtering of hybrid bars from 3D bars, allowing for differentiation between them in your drawings and/or 3D views, for example to colorize those types of rebars.

3.2. Automatic Symbols on Fabrics

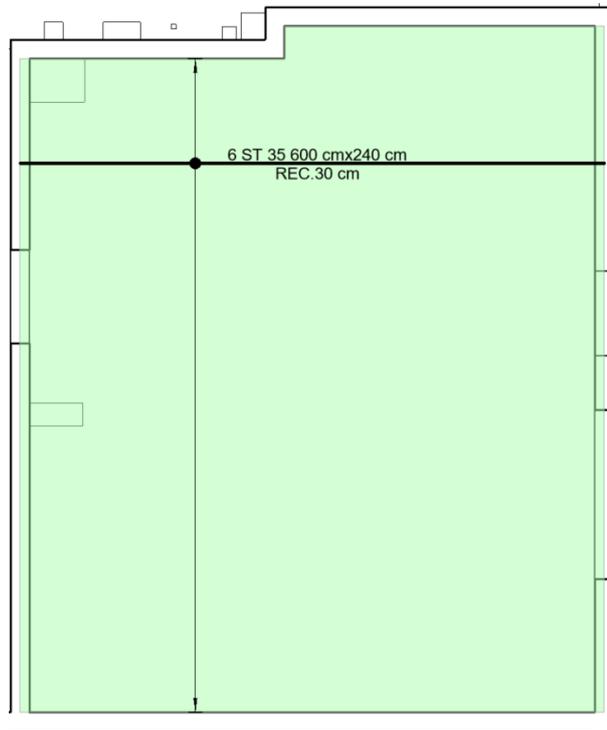
Introducing our latest implementation for Revit, enhancing slab **fabric representation** to meet execution drawing standards. This update simplifies the **visualization** of fabric areas, directions, and anchorages, ensuring clear and readable plans. Customizable symbols for entire structural **fabric areas** further improve on-site implementation and design workflow efficiency.

The tool is available in the **Powerpack Detailing => Drawing => Fabric Detailing**.



Fabric Detailing function in the ribbon

Simply select the fabric and click "Finish" to execute the command. The symbols, labels and the green region will then be displayed according to the fabric's settings directly on the plan.



Symbols on fabrics

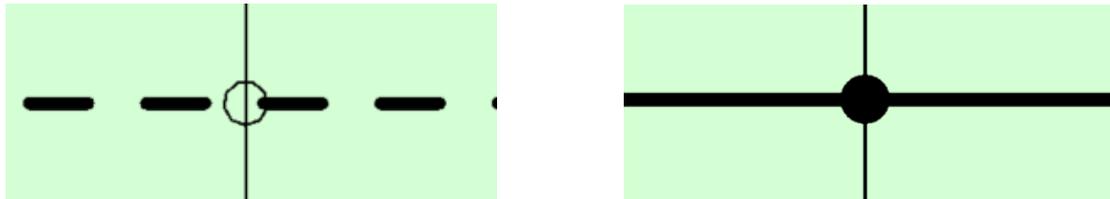
Note: *The function can be used to detail multiple fabrics at once.*

3.2.1. Symbols

Our new feature makes it easy to distinguish the location of fabrics, as follows:

- Top Location: Dotted line and an empty circle.
- Bottom Location: Continuous line and a solid circle.

Additionally, the major direction is always represented in bold to facilitate user comprehension.



High layer

Low layer

Fabrics locations

Note: *The position of the direction lines is modifiable, providing users with flexible options for symbols.*

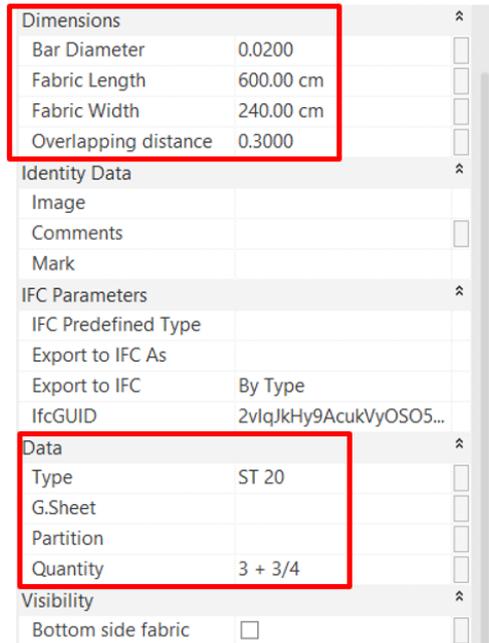
3.2.2. Label's Results

Our enhanced fabric labelling feature saves you time in project detailing. The number of lattices is automatically calculated based on the exact fabric dimensions, ensuring complete accuracy. Each label clearly displays the fabric type and any overlaps as modelled, with dimensions reflecting the precise cut size for single-row fabrics and the overall dimensions for multiple rows.



Example of label

We offer users the flexibility to customize labels as well. By clicking on the label, users can modify all the information in the properties table, allowing them to optimize fabric numbers and other details according to their needs.

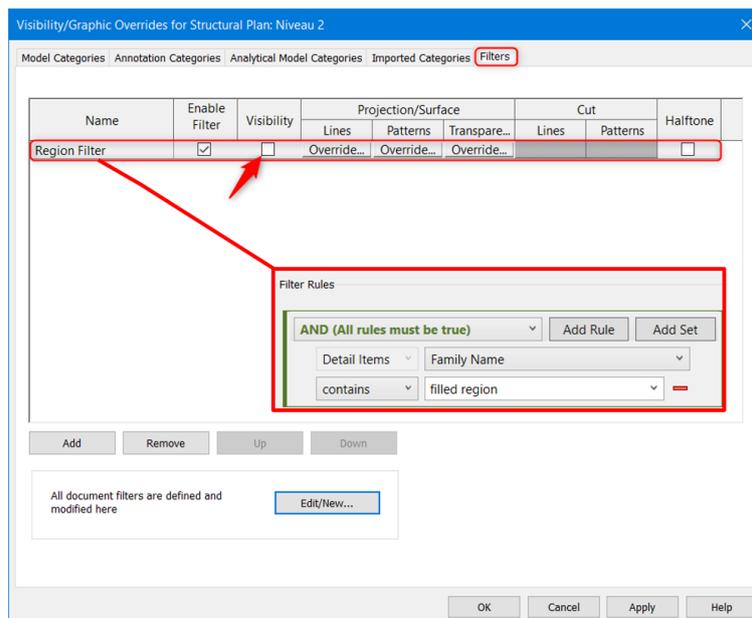


Customization of labels

Note: Modifications made in the properties table for the label do not affect the properties of the fabrics in the model.

3.2.3. Filled Region

The function enhances fabric regions by adding a green hatch, facilitating easy identification in the model. Users also have the option to turn off the hatch by creating a filter in Revit Filters, enabling customized visibility settings.



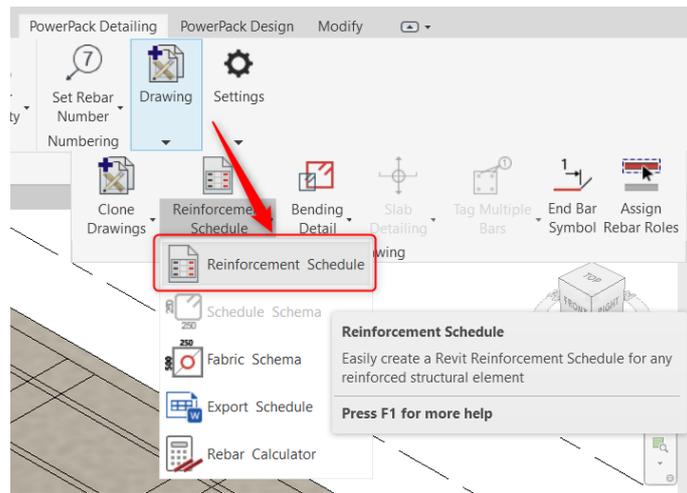
Visibility of filled regions

Note: The user can create a more accurate filter if you have other filled regions that you want to keep visible.

3.3. Real Number of Fabrics in Schedules

Introducing our latest release, which includes updated Revit BarSchedule **templates** designed for enhanced data accuracy, precise **weight calculations**, and a clearer **layout**. These improvements ensure that you have a ready-to-use experience immediately upon installation, streamlining your workflow and boosting project efficiency from the start.

The tool is available in the **Powerpack Detailing => Drawing => Reinforcement Schedule**.

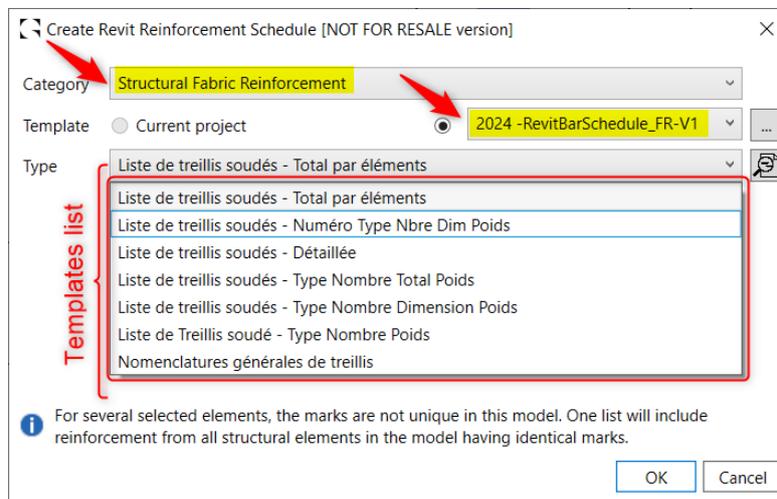


Reinforcement Schedule function

3.3.1. Templates List

To use our new feature, the user needs to:

1. Start by selecting the slab in the model.
2. Choose the category for the Reinforcement Schedule, such as fabrics.
3. Select the appropriate template and schedule type.
4. Choose a schedule type from the list of templates available for this version.



New list of templates

Once selected, the different schedules are generated for the fabrics throughout the entire model based on the chosen parameters. With the results in hand, users can utilize all Revit native functions for filtering, grouping, and more.

B	C	D	E	F	G	H	I	J	K	L
N°	Nbre	Direction Principale			Direction Secondaire			Long.[m]	Larg.[m]	Poids[kg]
		Type	Nbre	Esp.[cm]	Type	Nbre	Esp.[cm]			
02	1	HA7	16	15	HA7	40	15	2.07	1.10	9.17
03	1	HA7	24	10	HA7	60	10	3.39	2.10	43.01
04	1	HA9	24	10	HA8	30	20	4.11	2.08	59.49
05	1	HA7	24	10	HA7	60	10	3.01	2.08	37.72
06	1	HA7	16	15	HA7	40	15	2.15	2.40	20.76
07	1	HA7	16	15	HA7	40	15	2.15	2.08	18.01
09	1	HA7	16	15	HA7	40	15	2.09	1.47	12.39

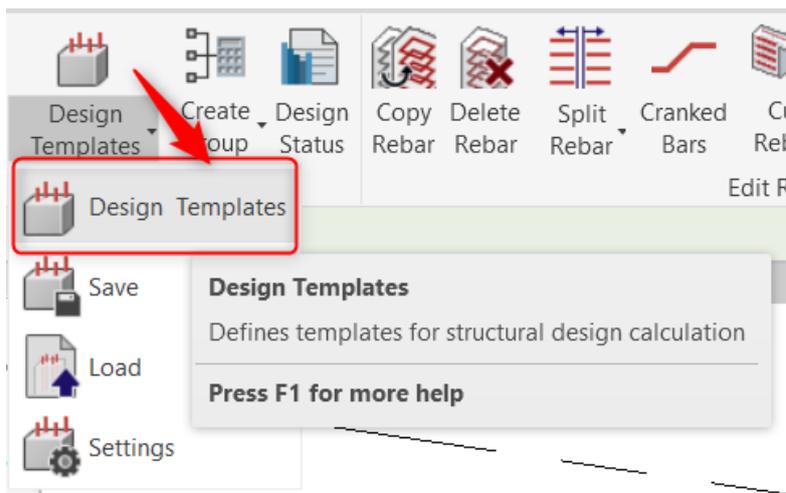
Example of a Schedule

4. PowerPack Rebar Design & Detailing for Revit

4.1. Apply Appropriate View Template

This feature streamlines design processes and ensures precision in construction modelling by accurately reflecting **wall formwork templates** and applying dimensions and **reinforcements**. It seamlessly integrates templates within Revit, facilitates precise reinforcement assignment, and simplifies the design workflow for more efficient project execution and management.

The tool is available in the **Powerpack Detailing => Create Reinforcement => Design Templates**.

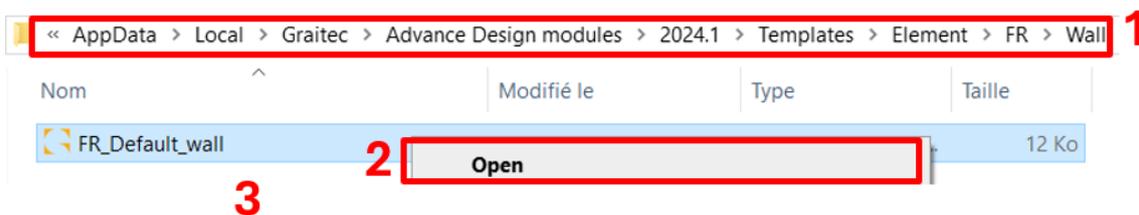


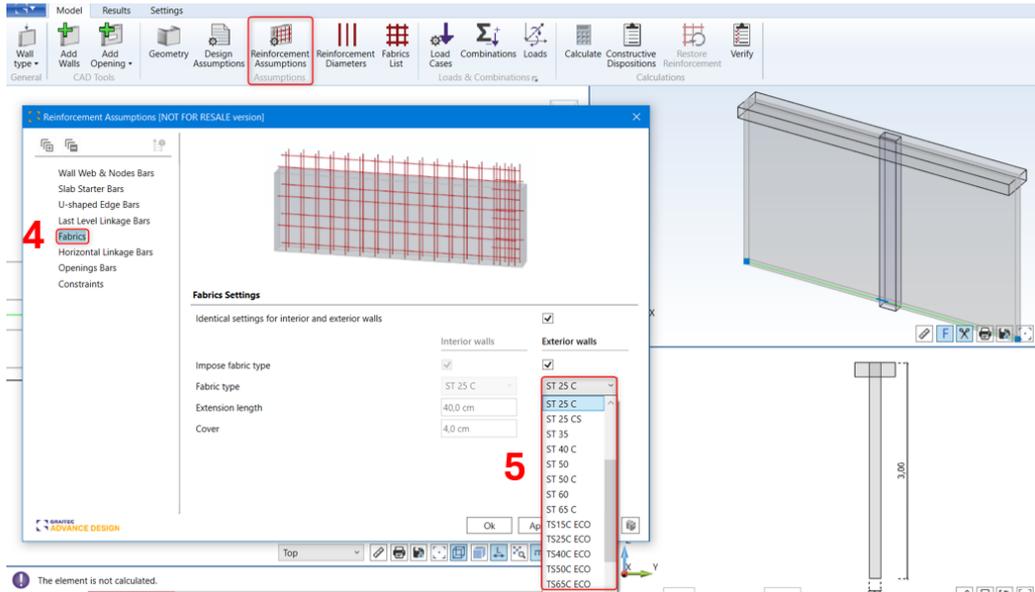
Desing Templates function

4.1.1. Customizable Templates

This enhancement provides customizable templates for walls, allowing users to easily create new templates based on the default wall templates. To create new templates, users need to:

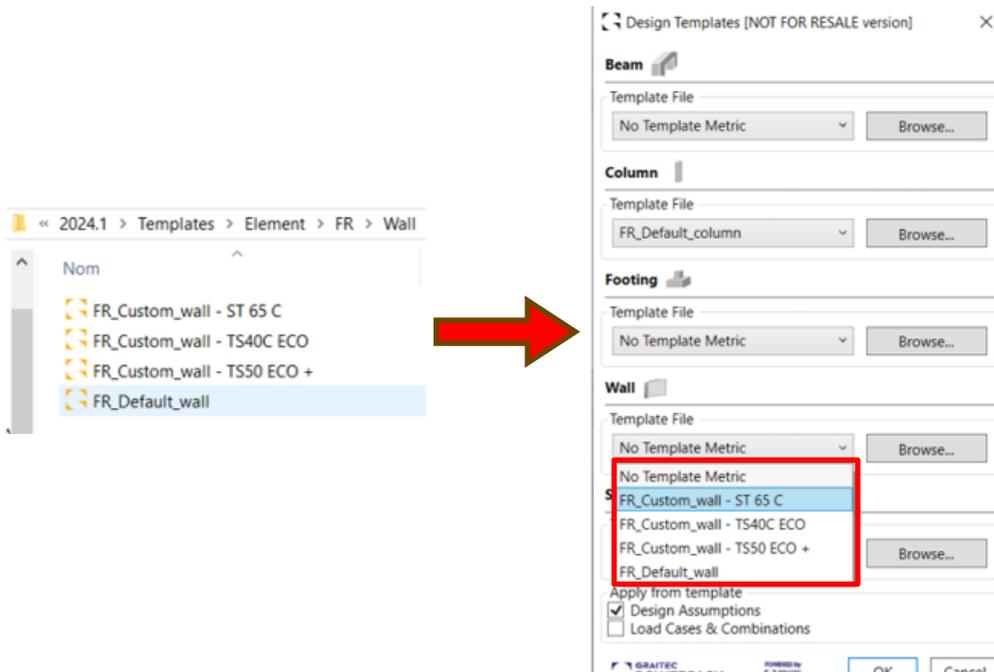
1. Locate the default template.
2. Open the project in Advance Design.
3. Select Reinforcements Assumptions.
4. Click on the Fabrics option.
5. Choose the desired fabric type and save it to the same folder.





Creation of templates

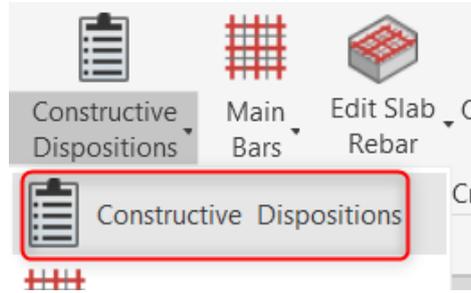
Once this is done, the created templates are in the Powerpack's template folder, as shown in the following figure, and can be utilized in your projects.



Templates list for wall reinforcement

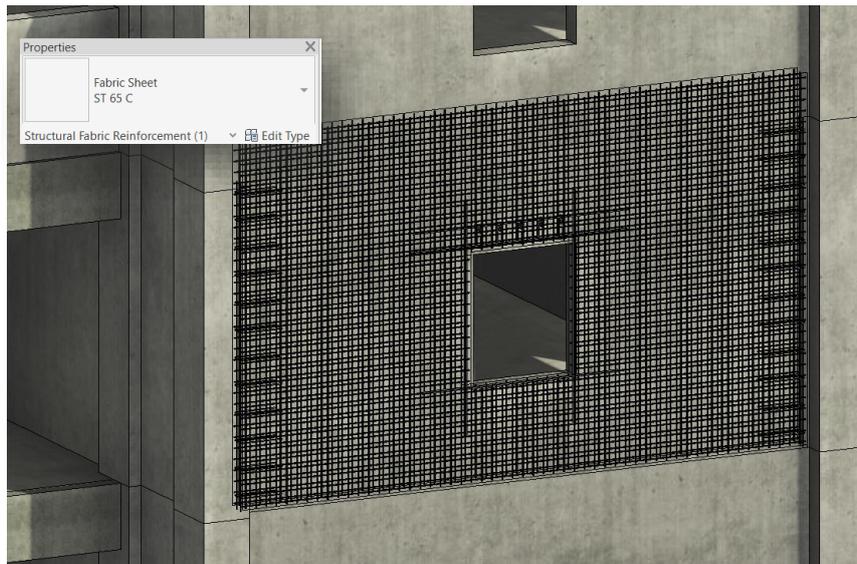
4.1.2. Set Up of the Template

After completing the previous steps, users can reinforce a wall by selecting it and then using the "Constructive Dispositions" function to apply the fabrics from the chosen template.



Template-based Reinforcement Implementation Function

The reinforcement will now be automatically applied, using the specified rebar reference and the designated bar thickness.



Reinforced wall