



What's New

 **ADVANCE
POWERPACK**
for Autodesk® Revit®
2021

Table of contents

WELCOME TO GRAITEC POWERPACK FOR REVIT 2021	4
NEW OPTIONS & IMPROVEMENTS – GENERAL.....	5
Compliance with Revit® 2020 and Revit® 2021	5
Modifications on the Ribbon	5
Graitec Learning from start page.....	5
NEW OPTIONS & IMPROVEMENTS – POWERPACK	7
Save and Load Ribbon Configuration.....	7
3D Grids	7
Align Grids.....	8
Grids Bubble visibility.....	9
Move XY.....	10
Batch Export.....	10
Navisworks Clashes.....	11
Cable Tray Reference Level.....	12
Structural Analytical tools.....	13
Toggle Structural Element	13
Toggle Analytical Floors	13
Improvements.....	14
Numbering	14
Pipe openings	14
Split Pipes.....	15
NEW OPTIONS & IMPROVEMENTS – REINFORCEMENT DETAILING	16
End Bar Symbol.....	16
Generation of the reinforcement for constructive dispositions	17
Edge reinforcement generator.....	18
Cranked bars	20
Reinforcement around opening generator	21
Reinforcement layers	23
New format of dialog windows.....	25
New tagging method for multiple rebars	27
Improvements.....	27
Rebar visibility	27
Cover setting assignments	29
Use and management of bar diameters	30
Bending details.....	32
Rebar schedule schemas	34

Welcome to GRAITEC PowerPack for Revit 2021

GRAITEC is very pleased to present the latest version of Advance PowerPack for Revit 2021, part of the Graitec Advance Suite.

Note that starting with the current version, all Advance BIM Designers functionalities for reinforcement design and detailing that are working in the Revit environment are combined with PowerPack for Revit and are available under one common PowerPack brand.

For this reason, this document contains the description of new options and improvements on PowerPack related to the reinforcement detailing on the Revit environment. However, all other novelties and improvements related to design calculations, that are common also for the Advance BIM Designers standalone modules, are described in a separate document - What's new in Advance BIM Designers 2021.

New Options & Improvements – General

The 2021 release of PowerPack for Revit includes powerful detailing tools, new global functionalities for all users, improvements on existing tools to become the must have add-on for daily use on Revit.

Compliance with Revit® 2020 and Revit® 2021

PowerPack for Revit 2021 is compliant with both Autodesk Revit® 2020 and Autodesk Revit® 2021.



Modifications on the Ribbon

Main features & benefits:

- Increased readability and unification of ribbons
- Easy search for commands

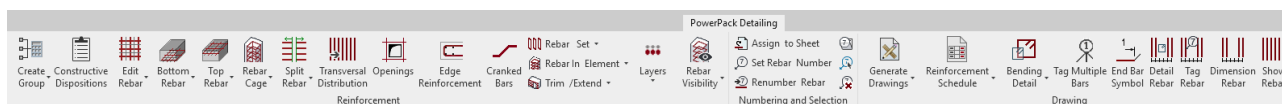
To make it easier to find commands typical for different GRAITEC PowerPack for Revit 2021 package configurations, changes have been made to the distribution of commands available on PowerPack ribbons.

Three ribbons are now available: *PowerPack*, *PowerPack Detailing* and *PowerPack Design*.

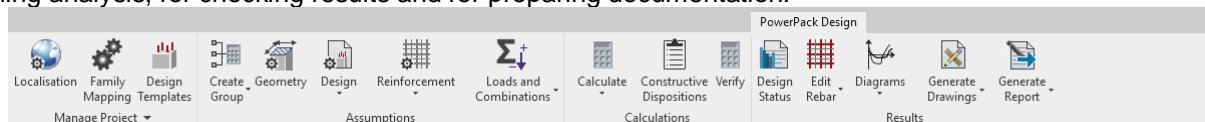
On the **PowerPack** ribbon, users can find all commands available so far on the *Graitec PowerPack* ribbon with new options, including ribbon management.



On the **PowerPack Detailing** ribbon, users can find commands to quickly create 3D rebar cages, commands to facilitate the work with the reinforcement and commands to simplify the creation of drawing documentation.



On the **PowerPack Design** ribbon, users can find commands for designing rebar cages according to international design codes, including commands: for managing project, for assigning calculation settings, for running analysis, for checking results and for preparing documentation.



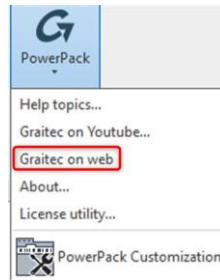
Graitec Learning from start page

Main features & benefits:

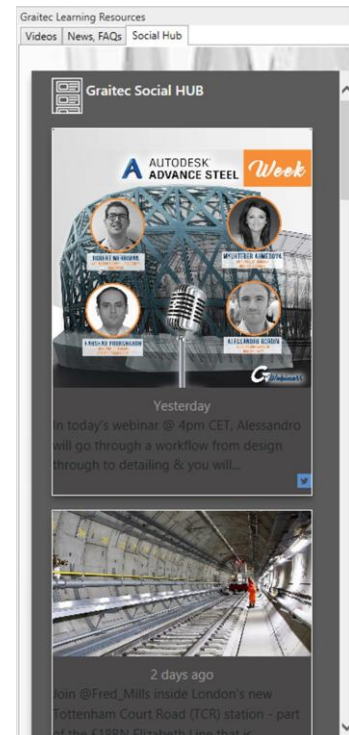
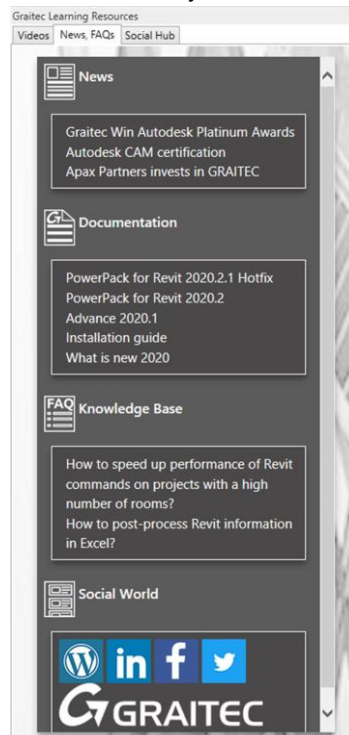
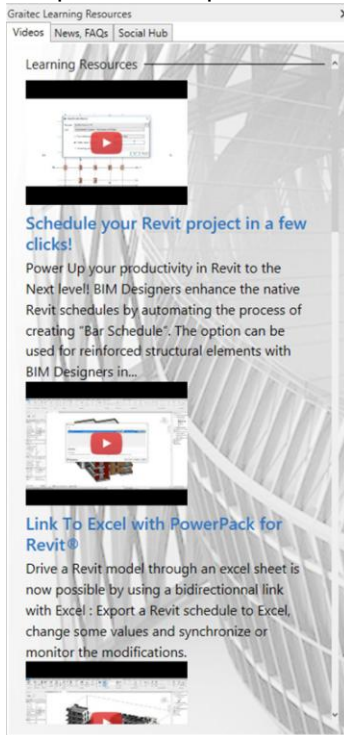
- Quick access to Graitec online services
- Promote our web marketing activities

This version proposes a dedicated panel to quickly access Videos, News, FAQs and Social Hub. This panel can be activated in the general dialog box for the option.

What's New in GRAITEC PowerPack for Revit 2021



The panel is composed of three different tabs to directly access web content.



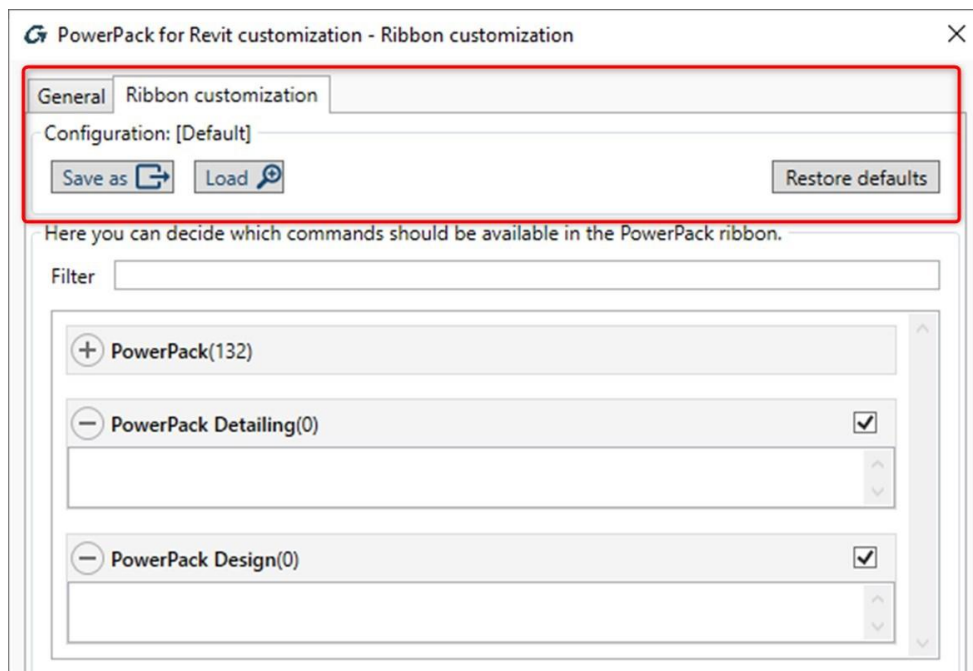
New Options & Improvements – PowerPack

Save and Load Ribbon Configuration

Main features & benefits:

- Save a custom configuration of the Ribbon
- Easily standardize Ribbon configuration deployment on several computers

Graitec Ribbon Customization tool allows a Revit user to show/hide features in Revit Ribbon. This configuration can now be saved in a *.xml file. Thus, it could be possible to load it on another computer, for example to standardize the Ribbon configuration by enabling only the desired tools.



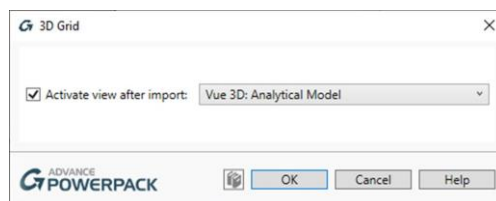
3D Grids

Main features & benefits:

- Quickly make visible Grids in 3D views
- Groups all links into a Revit symbol
- Possibility to manage visibility of those 3D grids and level with native Revit tools

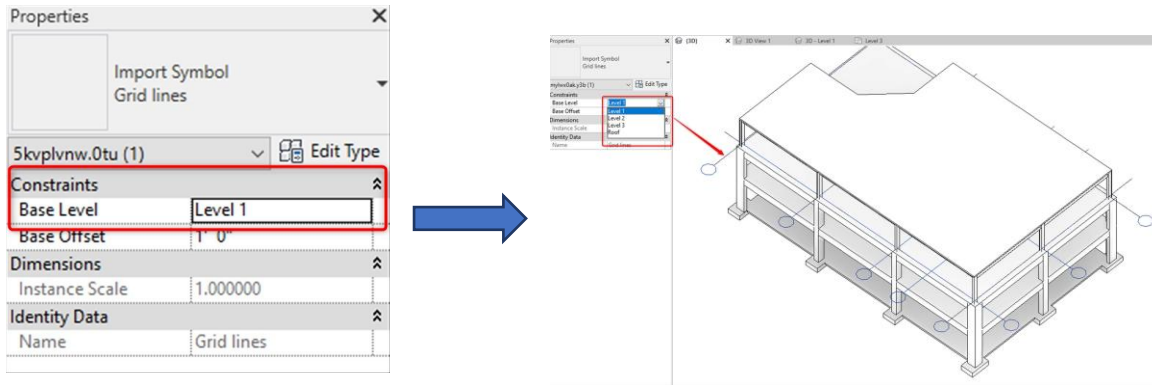
This new feature enables users to convert all Grids among a Revit Project into Revit symbol, making them visible in a 3D view.

By picking one grid, the 3D grids feature will convert all Revit grids and propose to the user to open a specific Revit view.

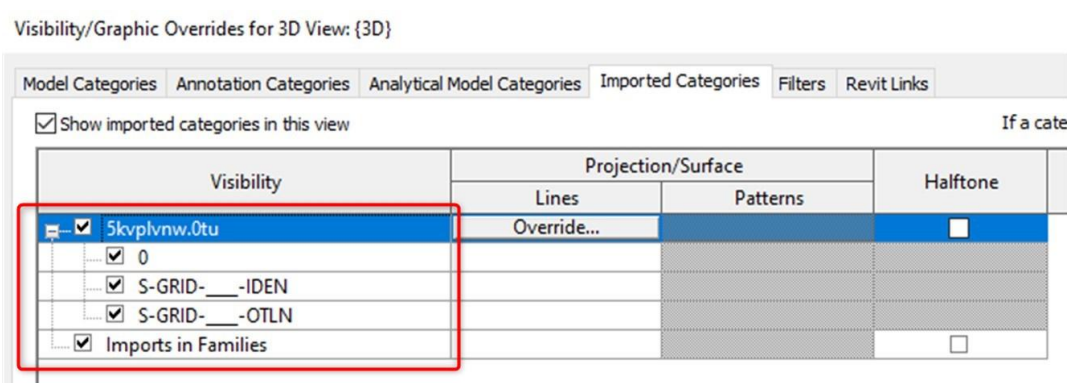


Grids will be then visible in 3D views, and their level can be set through native Revit instance parameter of the symbol.

What's New in GRAITEC PowerPack for Revit 2021



As the grids will be associated with a Revit Import Symbol, users have to manage the common Visibility/Graphics Overrides windows in order to switch the grids visibility on/off.



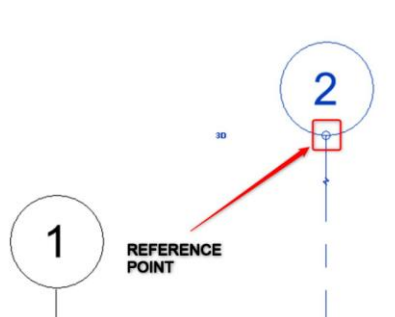
Align Grids

Main features & benefits:

- Make a homogenous rendering of the grids by aligning them easily
- Do not struggle with Revit snapping point for align grids

When selecting several grids in Revit, the snapping mode is no longer available, making it impossible to precisely align a selection of grids to a dedicated point.

Those two features move the base of the bubble's grid automatically to the point on the view specified by a click.



The total length of the grid will not be changed.



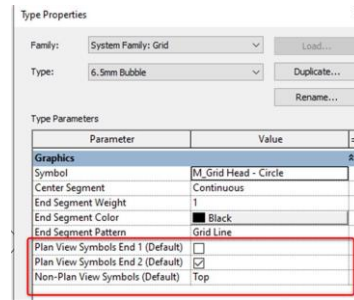
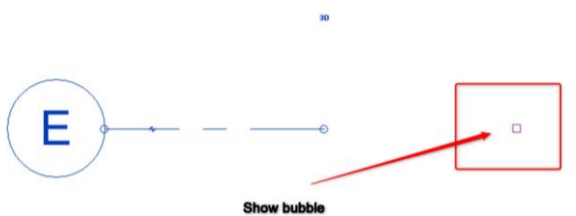
Naturally, Graitec PowerPack proposes two alignment methods: horizontally and vertically.

Grids Bubble visibility

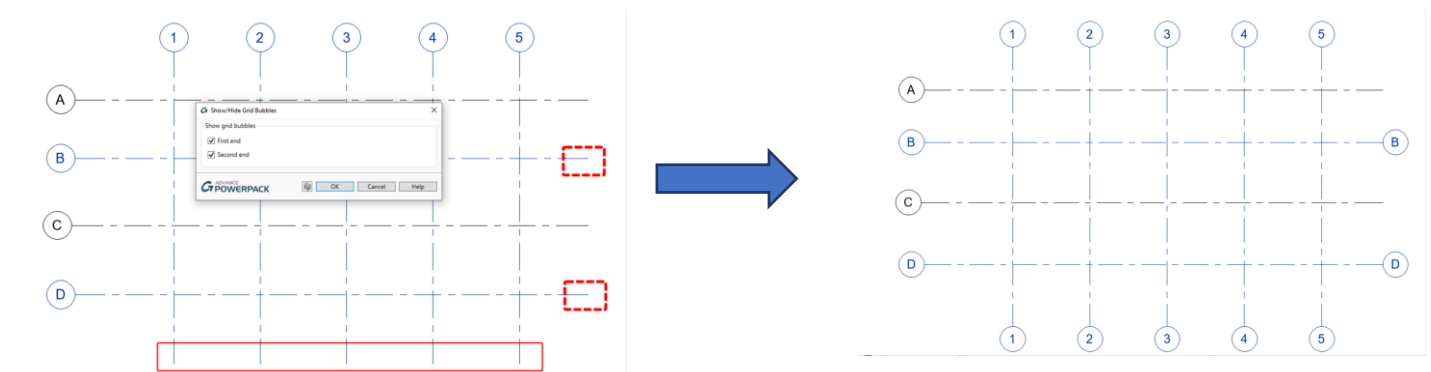
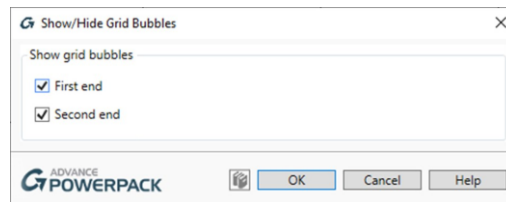
Main features & benefits:

- Save clicks on showing/hiding the bubble on each extremity of grids
- Use one single command to manage this topic

Native Revit commands propose two complementary functions to manage bubble visibility on grids, either through properties palette or smart symbols when selecting one grid.



With this new command, users will have one single tool that will allow them to show/hide bubbles on one or on a selection of grids.

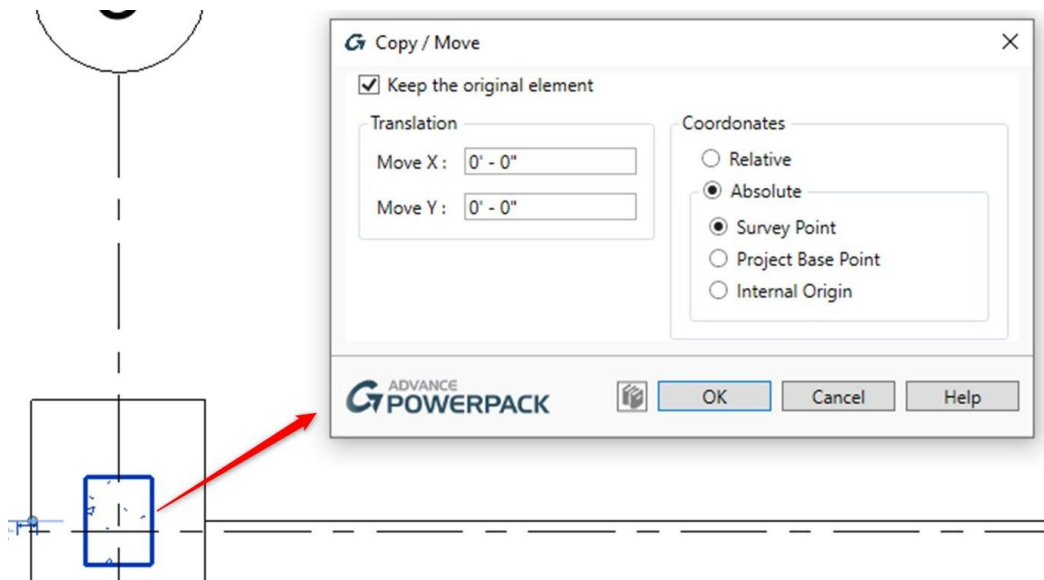


Move XY

Main features & benefits:

- Offers accuracy in placement when moving or copying Revit objects.

The previous command Move XY was improved in this version, offering some new options to place a selected object exactly where you point.



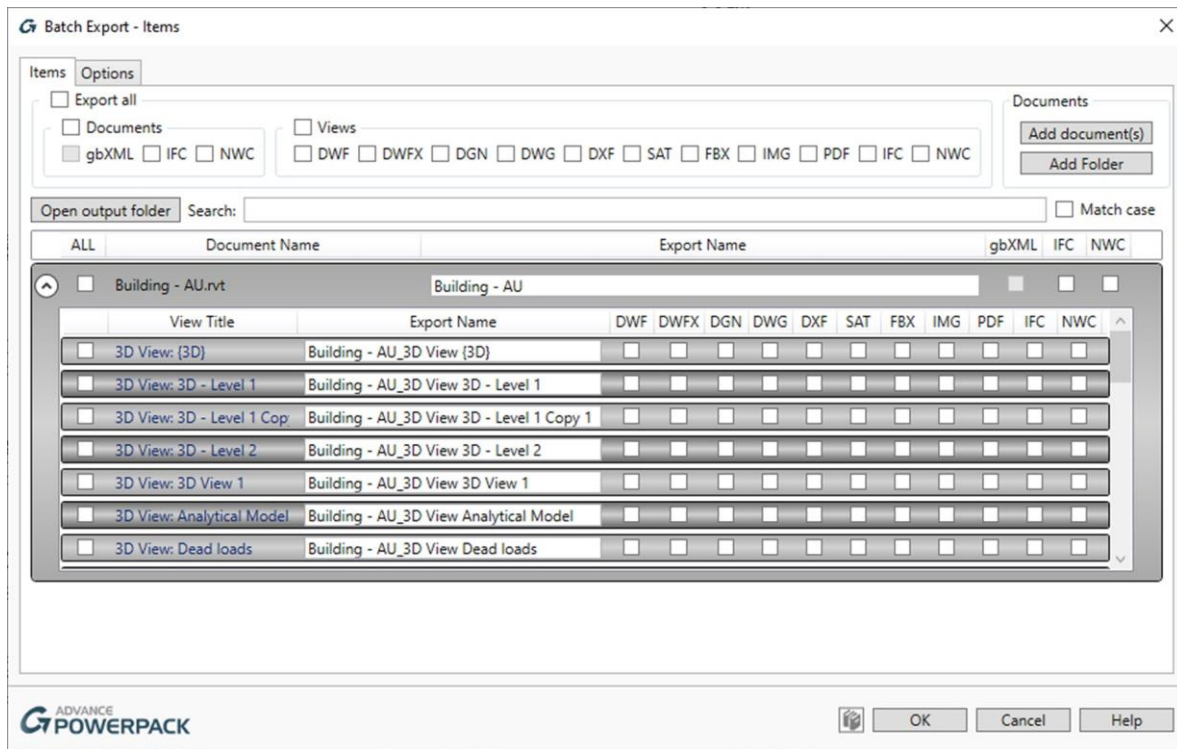
After selecting an object, users will be able to enter exact coordinates where to move or copy the elements, according to any referential system existing in Revit.

Batch Export

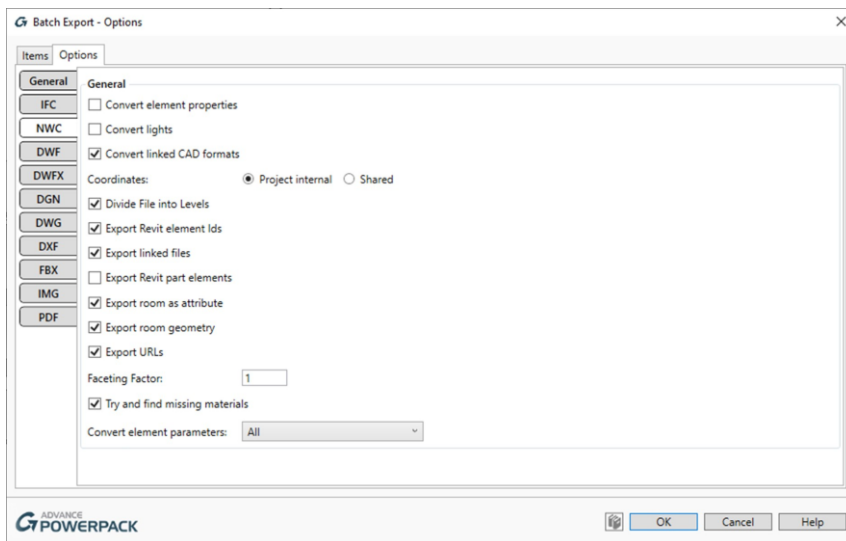
This new command is a general functionality to export a Revit Project and Revit views into multiple target formats:

- Revit projects into:
 - gbXML
 - IFC
 - NWC
- Views into:
 - DWF
 - DWFX
 - DGN
 - DWG
 - DXF
 - SAT
 - FBX
 - Image
 - PDF

In this dialog box, users will be able to select multiple Revit projects and views and associate them with the expected target format. All exported files will be generated in the output folder.



Each export file formats can be customized through the options tab. This tab offers access to a full and complete list of various settings.



Navisworks Clashes

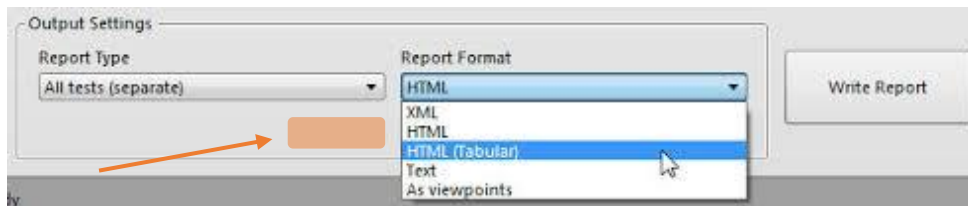
Main features & benefits:

- Strengthens the workflow between Revit and Navisworks, both products being available in the AEC Collection
- Take advantage of benefits from advanced Clash Detection available in Navisworks to create consistent Revit models

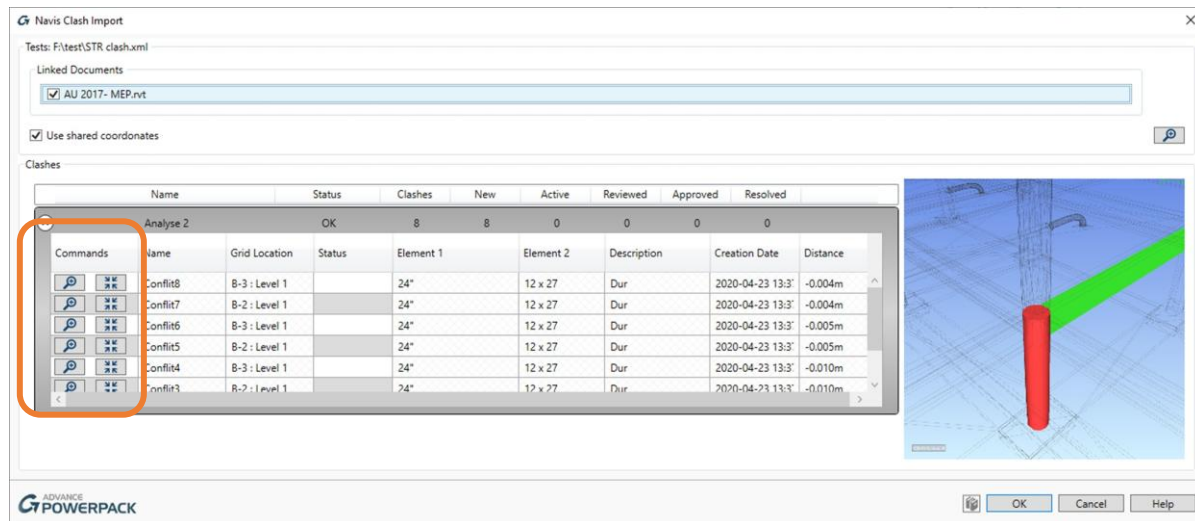
With this new feature, Clashes on Revit models detected by Navisworks can be visualized inside Revit. The workflow starts with sending Revit models to Navisworks for executing a clash detection.

This detection test has to be exported in an XML file to be read by PowerPack.

What's New in GRAITEC PowerPack for Revit 2021



Thus, the Navis Clash import tool can read this file, offer a preview of the clash, zoom around the affected zone or isolate the objects involved in the collision.

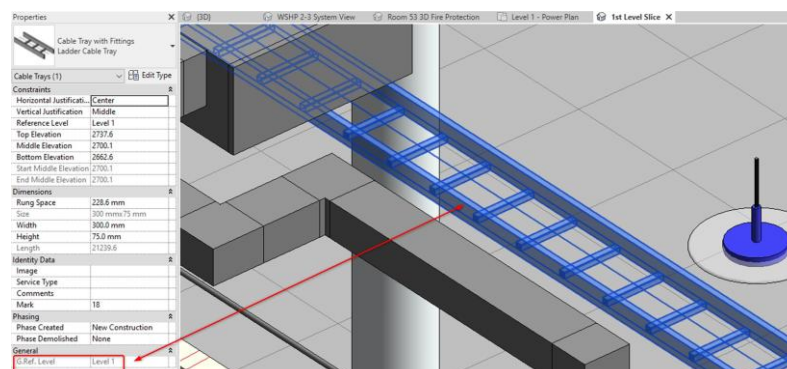
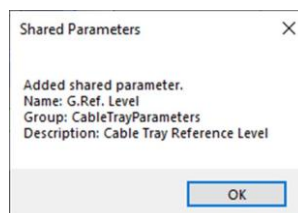


Cable Tray Reference Level

Main features & benefits:

- Enable usage of Reference Level parameter for this category for schedules (not available in Revit out of the box)

In the Add parameters set of features, a new tool is now available for another Revit object category, cable tray. This function works exactly like the other ones, meaning that you just need to launch the tool in order to have a shared parameter which indicates the reference level for all Cable tray objects in the model. This parameter can be used for creating your own schedule or tags.



Structural Analytical tools

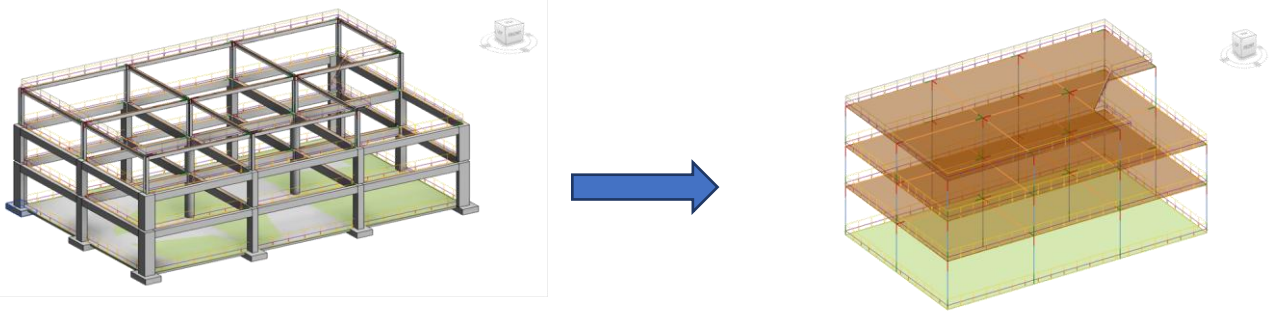
The two new following commands were proposed to complete the existing range of tools in PowerPack, dedicated to help users manipulate analytical models in Revit. These two commands help to efficiently manage the visibility for some objects, and will be particularly useful when users will need to select or correct nodes in the model.

Toggle Structural Element

Main features & benefits:

- Quickly hide the formwork model, thus saving many clicks when usually you would go into visibility/graphic windows and select a set of categories

This command enables users to hide or reveal the formwork structure, meaning all structural elements in the view by one simple click.

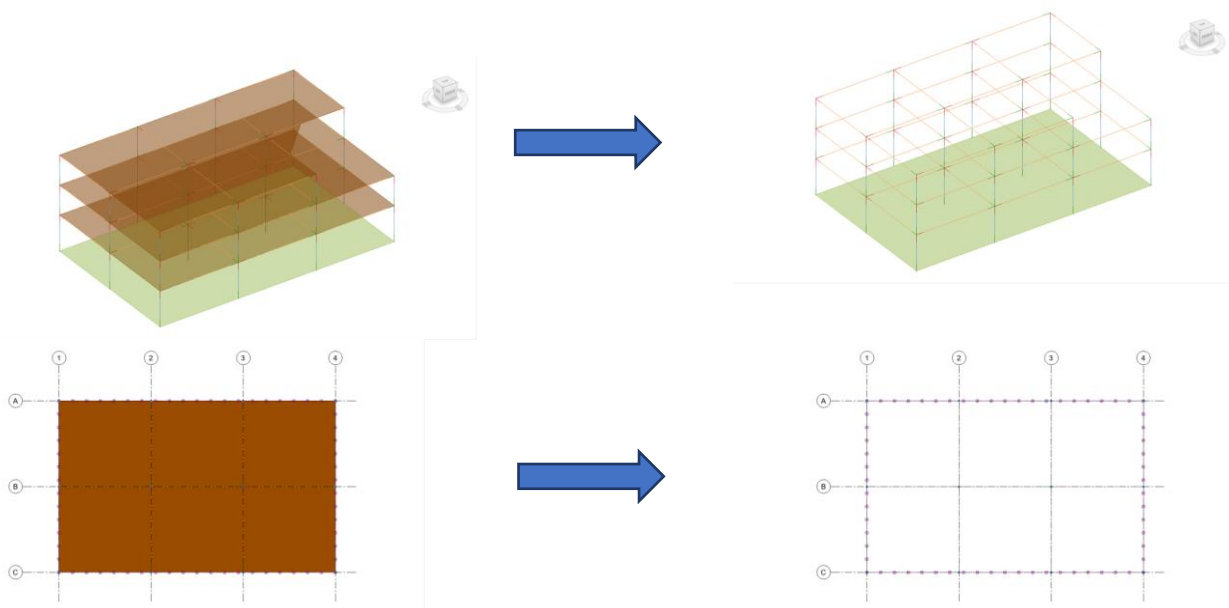


Toggle Analytical Floors

Main features & benefits:

- Quickly hide Analytical floors in Revit views, thus saving many clicks when usually you would go into visibility/graphic windows and select a set of categories

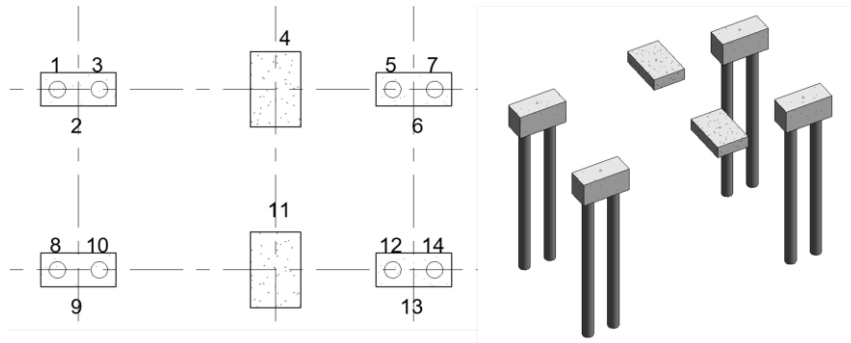
This command enables a user to hide or reveal all the analytical floors in the active view by one simple click, working in both structural plans and 3D views.



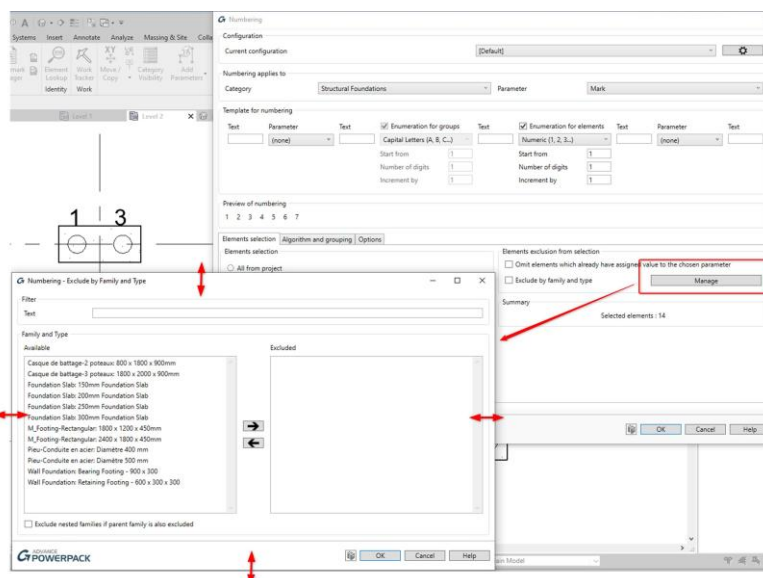
Improvements

Numbering

Numbering was improved to better manage the numbering process with Revit Models which include nested families. The previous version numbered nested Revit families before it continued to number the individual version of the family. It could cause some limitations in case of Pile caps, for example, which is no longer the case. Simple families or nested families can be numbered according to the algorithm method chosen in the dialog box.

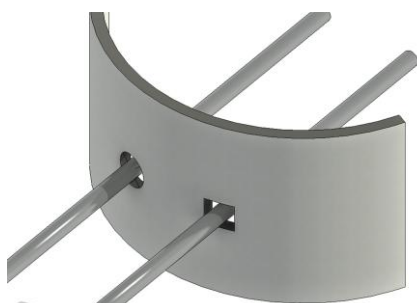


In addition, the dialog box for managing the exclusion of Family and Type is now stretchable on each edge, allowing for better visibility of the family name in the column which displays the list of families available in the project.



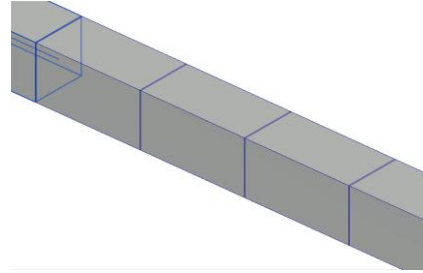
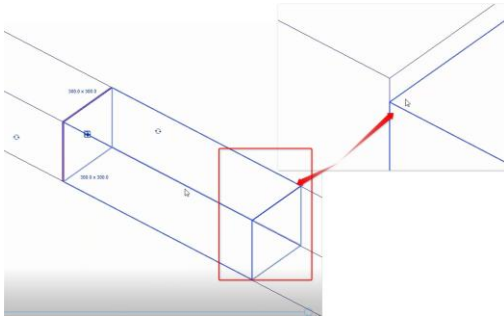
Pipe openings

Pipe openings command will now work when a pipe is intersecting a circular wall. Therefore, rectangular or circular openings can now be created on circular walls.



Split Pipes

In the previous version, a small offset could appear after splitting MEP objects, between each single new element generated with the Split pipes commands.



Now this issue was resolved, and the Split pipes command generates aligned elements after splitting, consistent with the initial geometry.

New Options & Improvements – Reinforcement detailing

The 2021 release of PowerPack for Revit includes powerful detailing tools, new global functionalities for all users, improvements on existing tools to become the must have add-on for daily use on Revit.

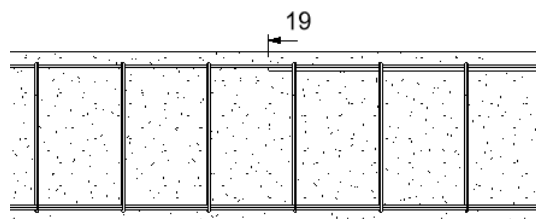
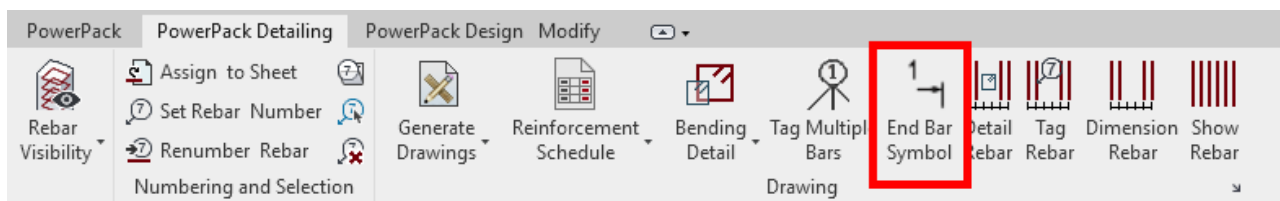
With PowerPack for Revit 2021 version, the modeling capabilities of reinforcement in Autodesk Revit® have been significantly increased. A number of novelties have been introduced, including new generators for modeling reinforcement (as a constructive reinforcement around openings), new options to simplify document creation (as improvements to rebar schedules) and a set of new options for detailing (as ticks and tags for ends of rebars).

End Bar Symbol

Main features & benefits:

- Quick marking of bar ends on drawings
- Possibility to insert tags
- Highly configurable

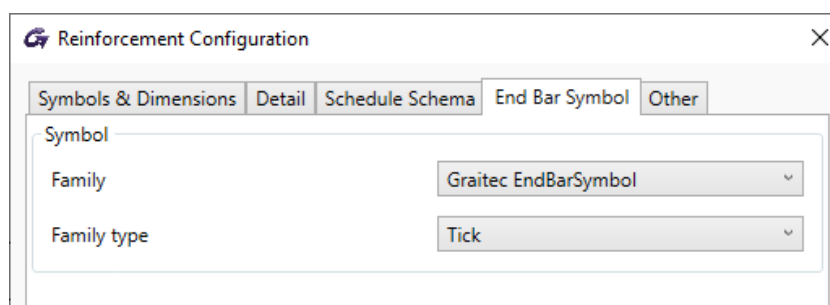
A new *End Bar Symbol* command, available on the Detailing ribbon, allows for a quick definition on 2D views of a special symbol showing location of **ends of straight bars**. It is useful especially for cases when rebars overlap on the view.



The *End Bar Symbol* command supports two usage scenarios:

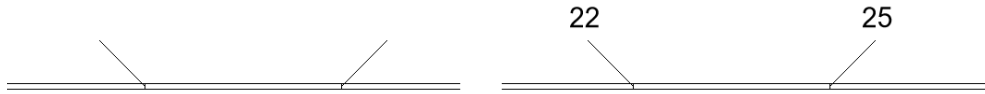
- called with existing rebar selection - symbols are defined automatically at both ends of selected bars,
- called without any selection - a symbol is defined at the end which is closer to the indicated point on the bar.

The type of bar end symbol depends on the family used (*Detail items* category). The default family and type are selected in the *Reinforcement Configuration* window.



The family supplied with the program (Graitec EndBarSymbol) contains two types of symbols:

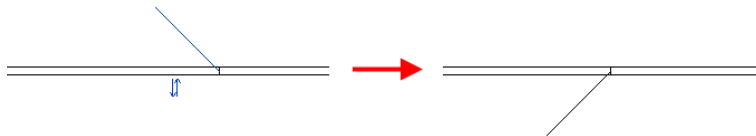
- tick (with or without bar mark annotation)



- tag (with or without bar mark annotation)



This family also allows for easy configuration of the size of the components as well as easy flipping



Type Properties

Family: Graitec EndBarSymbol Load...

Type: Tag Duplicate... Rename...

Type Parameters

Parameter	Value
Structural	
Section Shape	Not Defined
Dimensions	
Tag - Arrow Head Height	1.0
Tag - Arrow Head Length	2.0
Tag - Arrow Length	5.0
Tag - Vertical Offset	100.0
Tag - Vertical Line Length	3.0
Tick - Angle	45.00°
Tick - Length	10.0
Identity Data	
Visibility	
Show Tag Arrow	<input checked="" type="checkbox"/>
Show Tag Line	<input checked="" type="checkbox"/>
Show Tick	<input type="checkbox"/>

[What do these properties do?](#)

<< Preview OK Cancel Apply

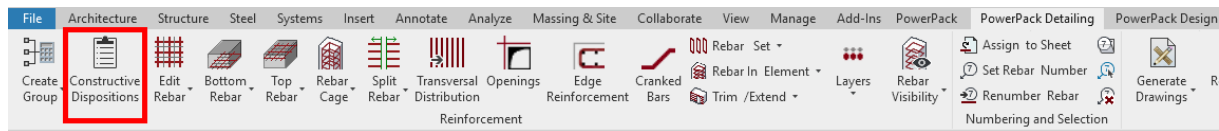
Generation of the reinforcement for constructive dispositions

Main features & benefits:

- Quick generation of the reinforcement cage without calculations
- Generated reinforcement complies with the minimal constructive dispositions
- Greatly facilitates the modeling of typical reinforcement

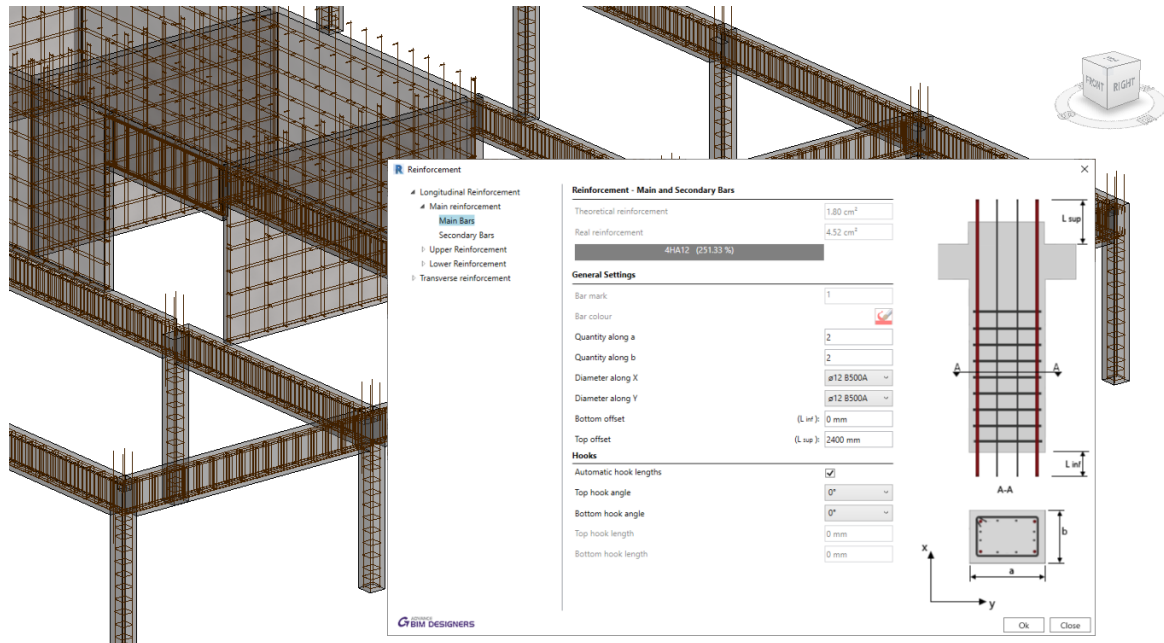
The *Constructive Dispositions* command is now available on the Detailing and Design ribbon and allows for quick generation of a full 3d reinforcement cage on selected concrete beams, columns, footings and walls.

What's New in GRAITEC PowerPack for Revit 2021



The key is that the generated reinforcement is generated without full design calculations but at the same time it is compliant with the current program reinforcement settings and meets all minimum requirements according to the selected design code.

This functionality is especially useful when you want to generate (in seconds) a 3D reinforcement on an element and then use it as a base for preparing the required reinforcement model, which can be done by adjusting the obtained cage.



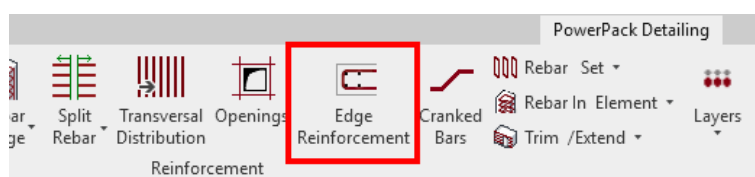
Note that for a previously designed element, running this command will delete the existing results and reinforcement, replacing it with a minimum reinforcement. Note also that after this operation, the element is not calculated and verified, so the generated reinforcement may not meet the standard conditions for given loads and geometry.

Edge reinforcement generator

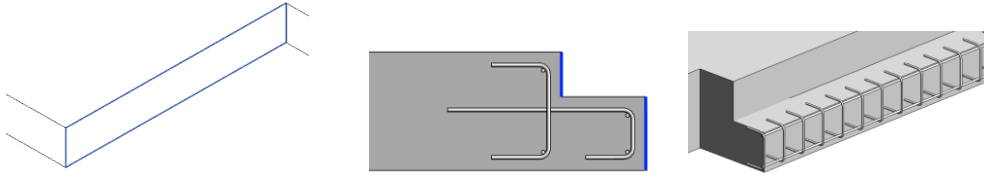
Main features & benefits:

- Easy generation of constructive reinforcement along edges
- Highly configurable

The new *Edge Reinforcement* command is used to quickly generate structural reinforcement along the edges of elements such as slabs or walls. It is available on the *PowerPack Detailing* ribbon:

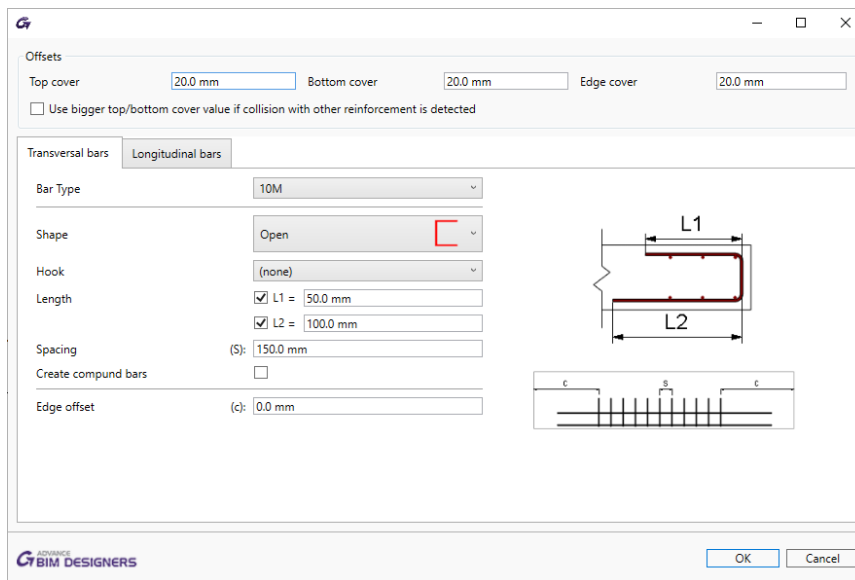


This command works by selecting one (or more) edge face(s), so that the reinforcement can be generated for multiple configurations.

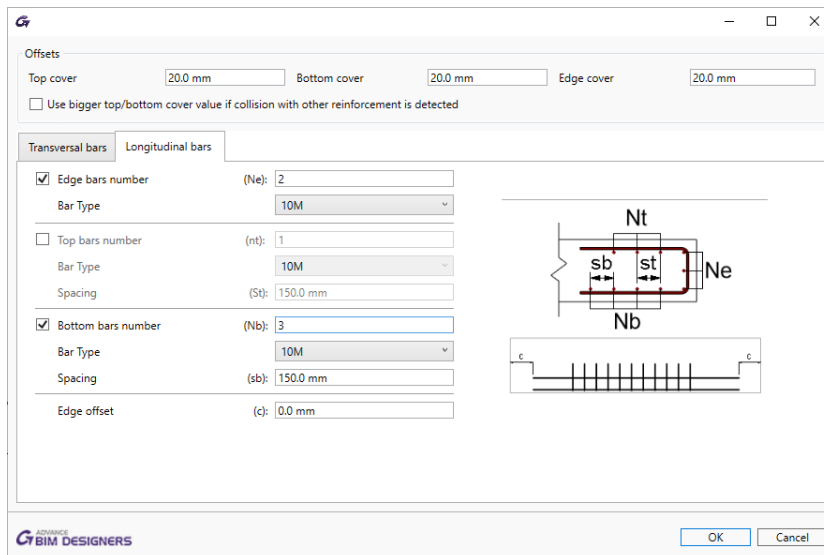


The configuration window allows setting the parameters for:

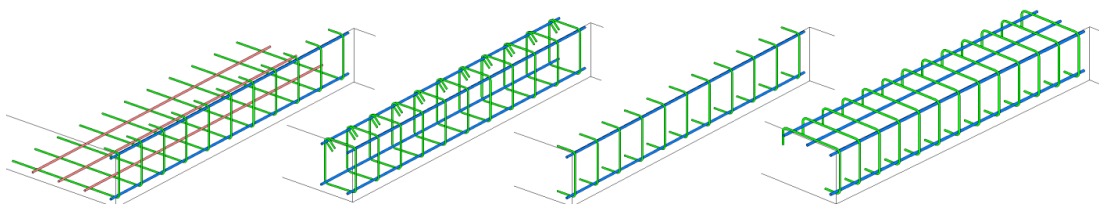
- transverse reinforcement (open or closed)



- and longitudinal bars, separately for vertical, top and bottom distributions.



The available settings allow for many different layout configurations, for example:

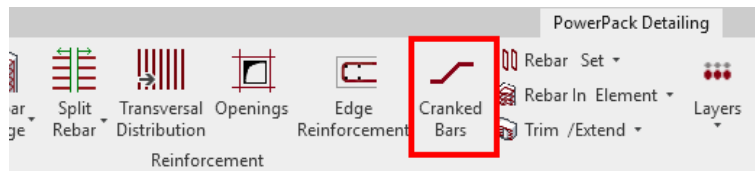


Cranked bars

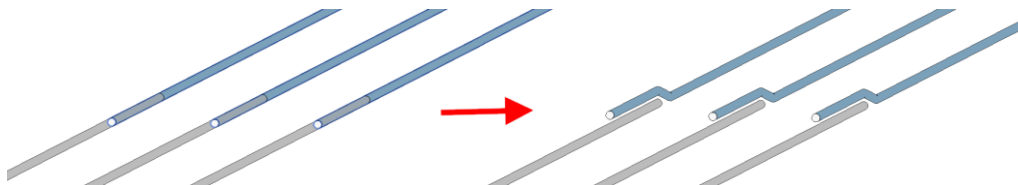
Main features & benefits:

- Easy generation of cranks at ends of reinforcement bars
- Advanced configuration possibilities

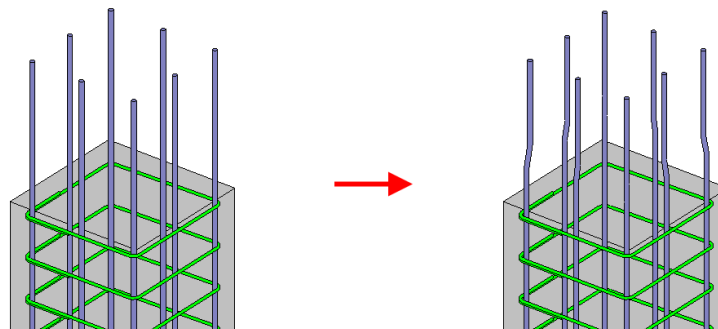
The new *Cranked Bars* command is used to quickly generate cranks at selected ends of longitudinal reinforcement bars. The command is available on the *PowerPack Detailing* ribbon:



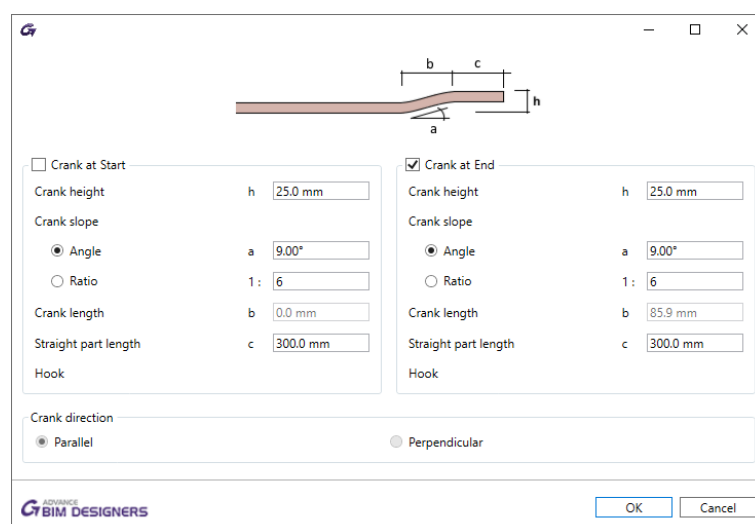
This command is especially helpful in all situations where we want to avoid collisions of collinear bars.



One example of application is the bending of the upper main bars in columns.

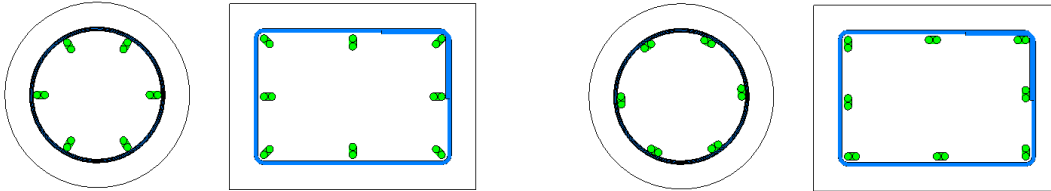


On the setting dialog, opened after selecting the reinforcement bars and calling the command, it is possible to set the crank on one of the bar ends or on both ends simultaneously. For each of them we can set the geometry parameters independently.



Cranks can be defined on straight bars, also with hooks, modeled individually or distributed. In the case of bars in distribution, cranks are defined in a direction perpendicular to the direction of distribution. In the case of individual bars, the direction of cranks depends on the 'Crank direction' option:

- Perpendicular - bars are bended in a direction perpendicular to the closest edge of the host element; in case of bars in a corner it's the direction of a bisector.
- Parallel – bars are bended in a direction parallel to the closes edge.

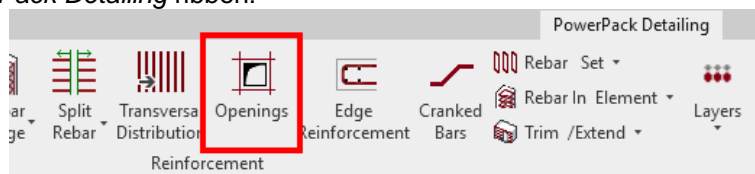


Reinforcement around opening generator

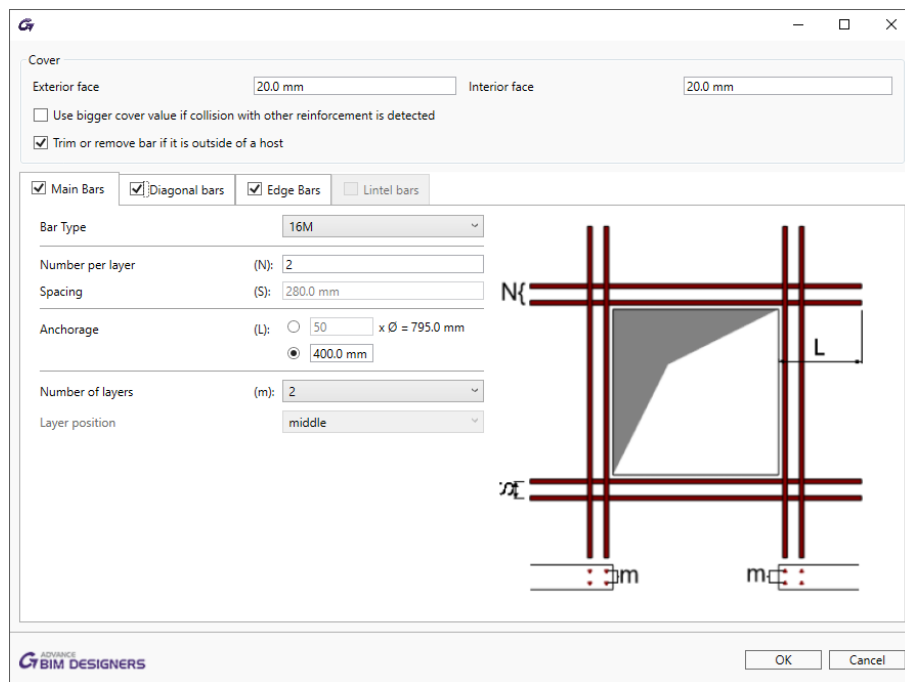
Main features & benefits:

- Easy generation of constructive reinforcement around openings
- Highly configurable

The new *Openings* command is used to quickly generate constructive reinforcement around openings. It is available on the *PowerPack Detailing* ribbon:



The command supports the generation of reinforcement around openings on slabs and walls and allows generating rebars for multiple separate openings at once. For a selected opening it opens the configuration window with parameters related to concrete cover and tabs for different reinforcement bar types.



What's New in GRAITEC PowerPack for Revit 2021

The *Cover* section allows the manual control of the cover, the automatic cutting of bars in case of holes close to the edge and the option to automatically adjust the cover to the existing reinforcement, to keep the correct 3D arrangement of bars.

Cover

Exterior face

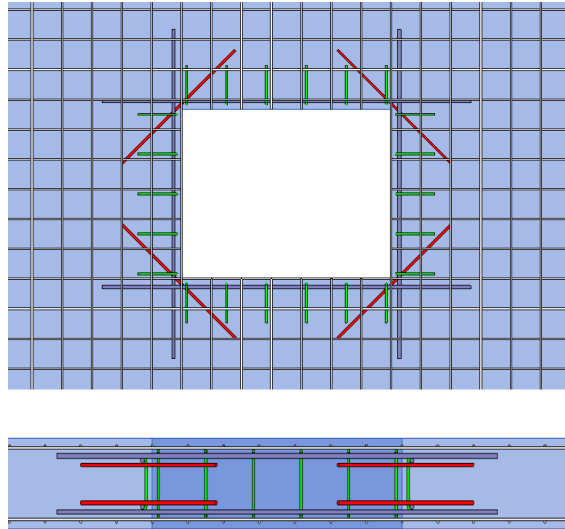
20.0 mm

Interior face

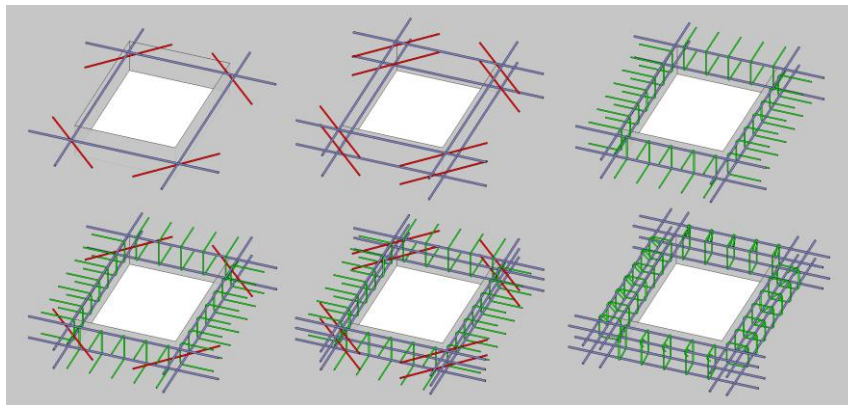
20.0 mm

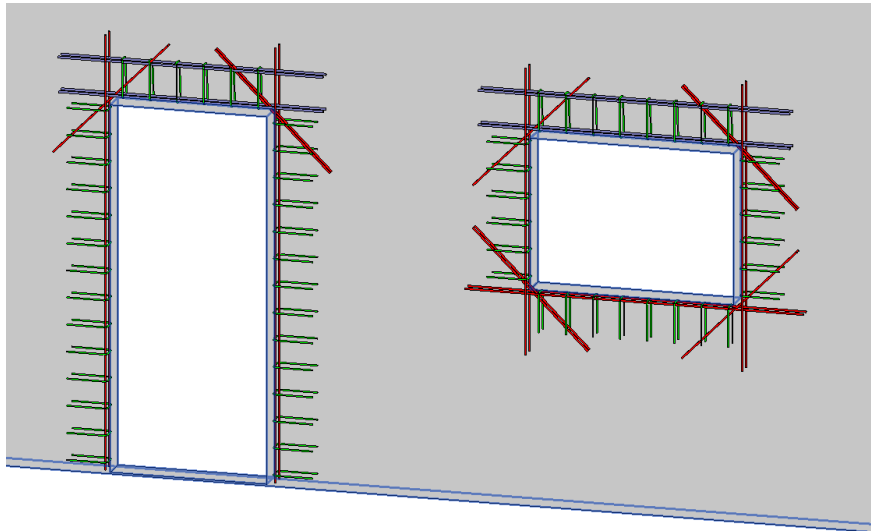
☒ Use bigger cover value if collision with other reinforcement is detected

☒ Trim or remove bar if it is outside of a host

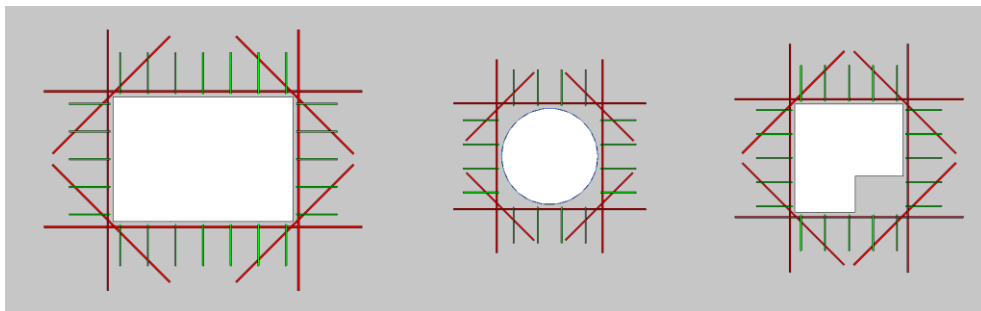


The remaining parameters are available on independent tabs separately for four optional reinforcement types: Main bars (longitudinal bars along edges), Diagonal bars (bars that are perpendicular to bisectors of corners), Edge bars (transverse bars along edges) and Lintel bars (longitudinal and transversal bars above openings on walls). Thanks to the wide range of settings, many different bar configurations are possible.





In the case of nonrectangular shapes of openings, the reinforcement is generated on its rectangular external perimeter



Reinforcement layers

Main features & benefits:

- Possibility of assigning the reinforcement to layers
- Easy layer management
- Allows for quick display of the reinforcement for selected layers

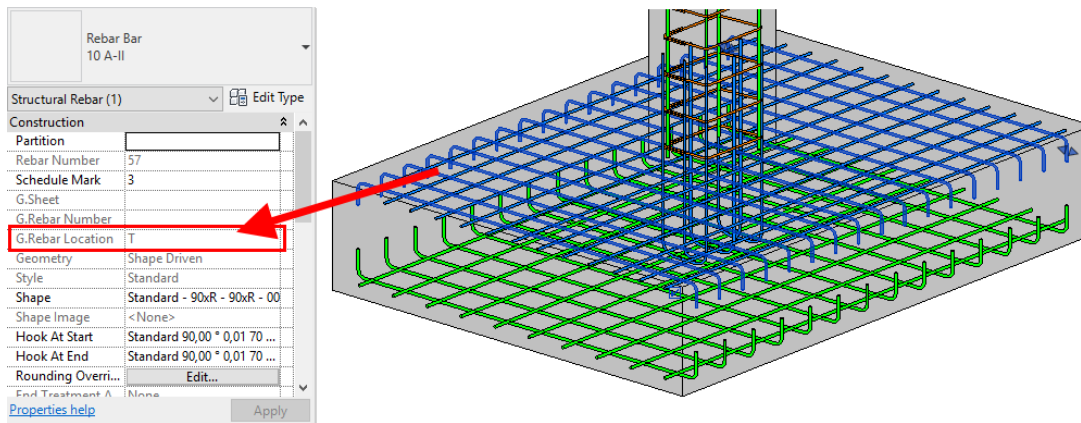
With the latest version, a new functionality has been introduced for assigning reinforcement to a layer (for example Top or Bottom), for easy and quick filtering of the reinforcement.

The layer might refer to a geometrical location of reinforcement but also to another purpose, such as its function.

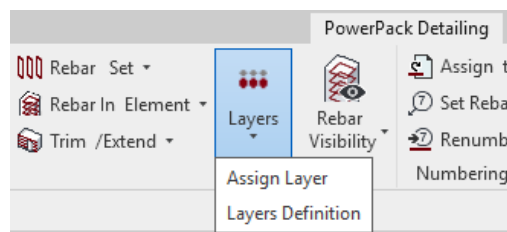
The information about the assigned layer is stored using shared parameters: *G.Rebar Location* for Structural Reinforcement and *G.Fabric Location* for Structural Fabric Reinforcement.

The assignment is done automatically and manually. The automatic method is applied during reinforcement generation using calculation modules or reinforcement generators in PowerPack. For example, the top bars in the foundation have an automatically assigned value T (a default name for a top reinforcement). Note - automatic assignment is made to the selected rebars, for example in the case of a foundation to the lower and upper bars in the pad.

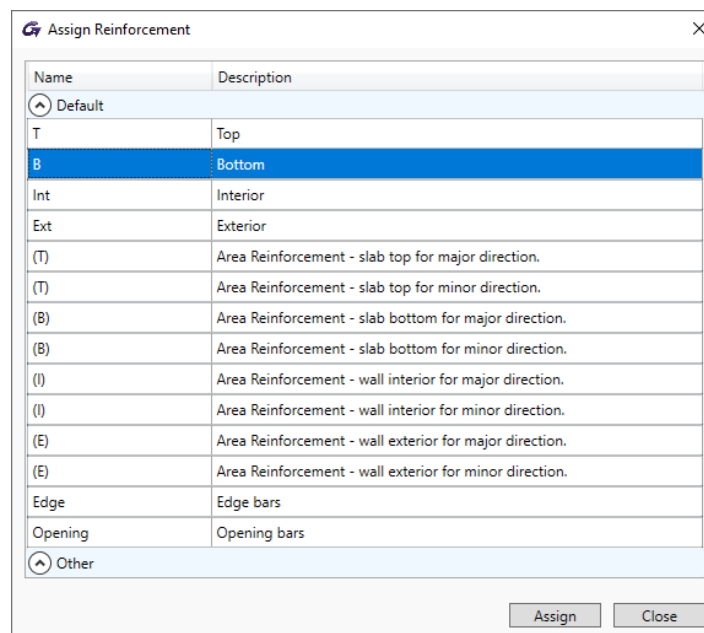
What's New in GRAITEC PowerPack for Revit 2021



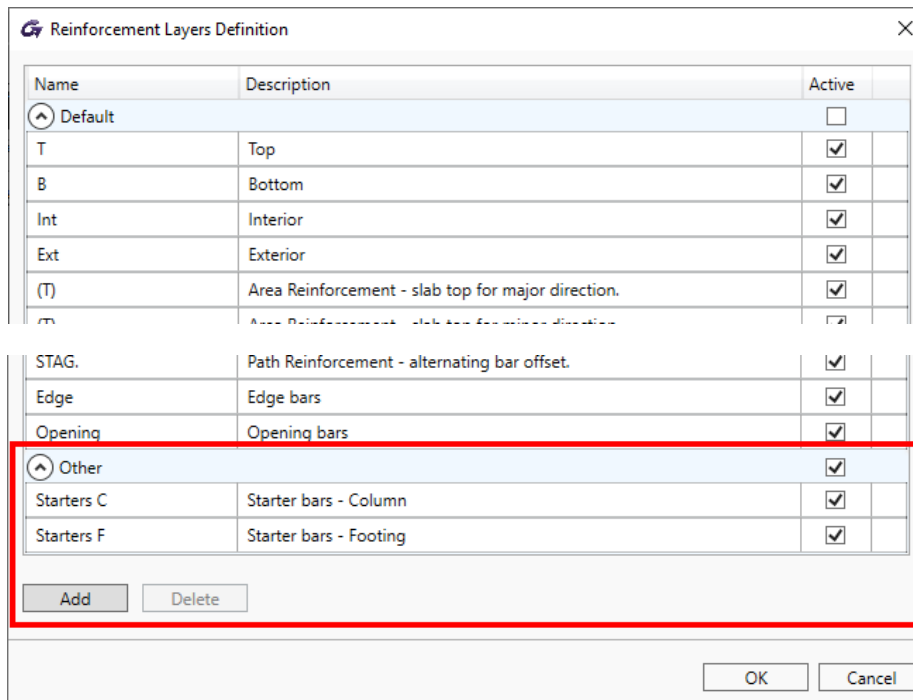
The manual assignment is done for selected reinforcement using the *Assign Layers* command, which is available in the *PowerPack Detailing* ribbon.



The *Assign Layers* command opens a special dialog with the list of default/predefined layers.



The content of the list is based on the configuration from the Reinforcement Layers Definition window, opened by the *Layers Definition* command. The user can modify names for default layers, use the *Active* option to limit the list of layers that can be available during the assignment and add new positions/layers to the *Other* group.



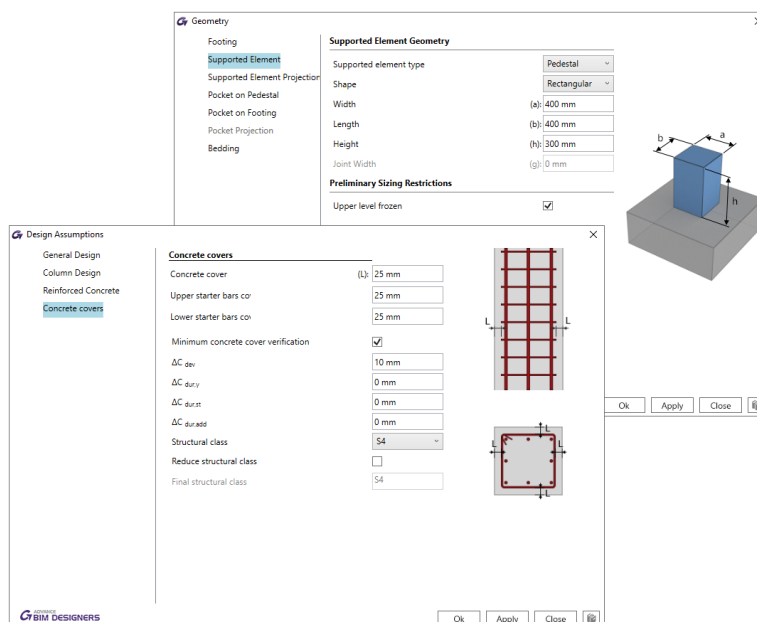
The value of the layer parameter is mainly used in the new options of the tools for controlling the reinforcement visibility - see the part of the document related to improvements to the rebar visibility.

New format of dialog windows

Main features & benefits:

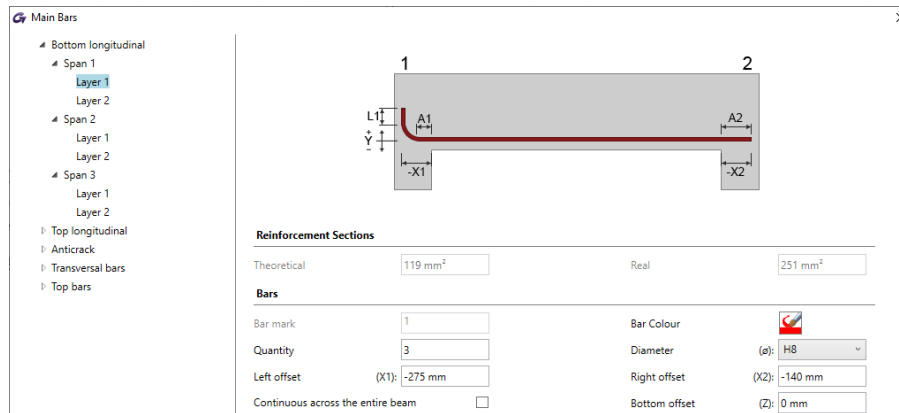
- Unified appearance and behavior of the main dialogs
- Easier data entry
- The ability to modify parameters for many elements thanks to the tree menu

The dialogs for defining the geometry, for defining the design assumptions and for editing the reinforcement have been completely modified. All windows have a uniform appearance, size, layout and data input. In addition, the individual dialogs have been grouped and are available in the list on the left side of the main window for the group.



What's New in GRAITEC PowerPack for Revit 2021

The list on the left side of dialog windows may have a tree structure. In addition to increasing the transparency of the selection of individual options, the tree structure offers additional functionalities, including the property inheritance function. It is very useful especially in the case of windows for reinforcement editing, as it allows modifying one of the features (e.g. diameter) at once for a reinforcement group by changing the parent position in the tree. Let's see an example for a three-span beam with two layers of bottom reinforcement:



Depending on the selection in the tree, the changes of the parameter in the window will apply:

<ul style="list-style-type: none"> Bottom longitudinal <ul style="list-style-type: none"> Span 1 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 2 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 3 <ul style="list-style-type: none"> Layer 1 Layer 2 	<ul style="list-style-type: none"> Bottom longitudinal <ul style="list-style-type: none"> Span 1 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 2 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 3 <ul style="list-style-type: none"> Layer 1 Layer 2 	<ul style="list-style-type: none"> Bottom longitudinal <ul style="list-style-type: none"> Span 1 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 2 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 3 <ul style="list-style-type: none"> Layer 1 Layer 2 	<ul style="list-style-type: none"> Bottom longitudinal <ul style="list-style-type: none"> Span 1 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 2 <ul style="list-style-type: none"> Layer 1 Layer 2 Span 3 <ul style="list-style-type: none"> Layer 1 Layer 2
only to the first layer on Span 1	to both layers on Span 1	to all layers on all spans	to first layer on all spans

Note that we can use multiselect with using CTRL keyboard button – as on the last case.

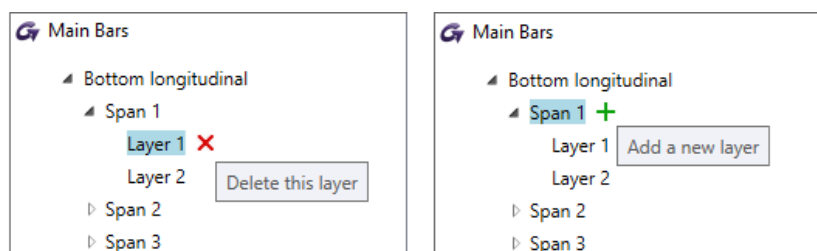
If a parameter has a different value on selected layers, then * mark (for a value) or text *Varies* (for a list) is shown. Entering any value in such a field will set the same value for all these layers.

Hooks

Hook angle (1): *VARIES*

Hook length (L1): * mm

To remove existing or add a new item (e.g. a reinforcement layer), use the + or x icons shown by hovering the cursor over the corresponding item in the list.



New tagging method for multiple rebars

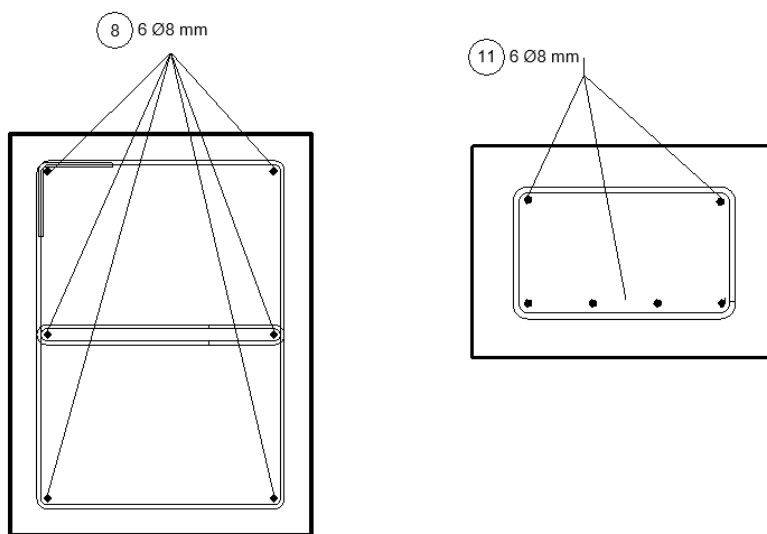
Main features & benefits:

- Allows tagging individual bars using the common tag

A new command is added to the detailing ribbon - *Tag Multiple Bars*:



It is used to create a special common tag for selected multiple individual rebars having the same bar mark.



This multi-rebar tag is intended to annotate identical longitudinal bars in a section that are modeled as single bars (as on the left picture) but can also be used for a mix of single bars and bars in a set (as on the right picture above).

The command supports two work scenarios – either selecting bars one by one after calling the command or selecting bars before calling it. The command uses the default tag/current loaded family for Reinforcement rebars (can be set in the Annotate ribbon -> Tag panel drop-down -> Loaded Tags and Symbols -> Structural rebar).

Improvements

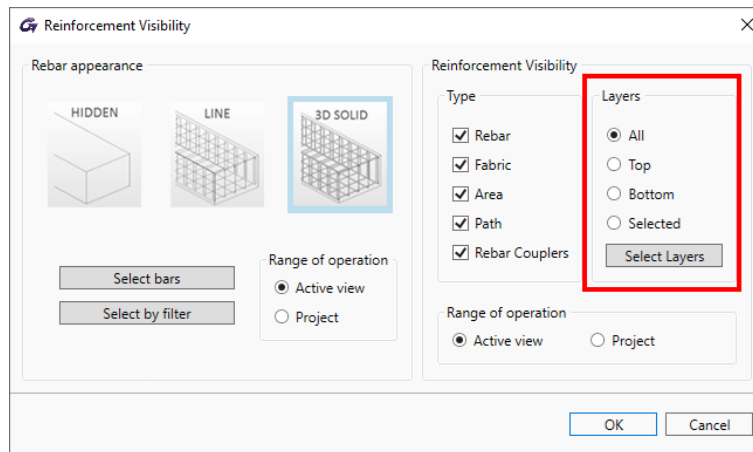
Rebar visibility

Main features & benefits:

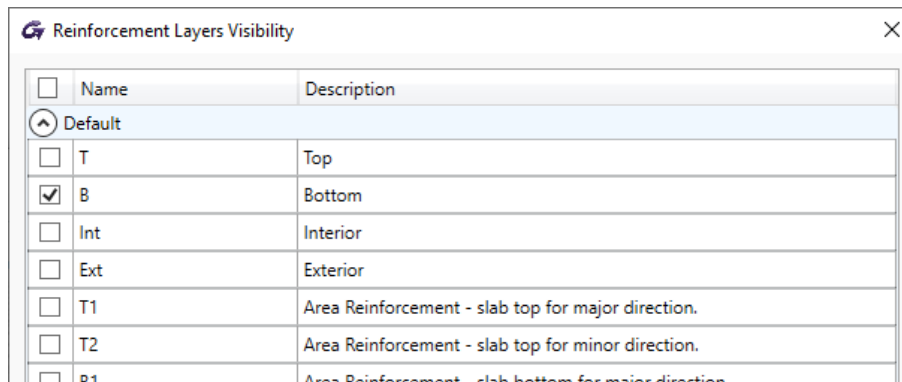
- Easy on/off display of the entire reinforcement
- Quick display of the reinforcement for selected layers

The option related to the display of the reinforcement has been enhanced with new features. A new group of options for selection by layers has been added to the Rebar Visibility functionality.

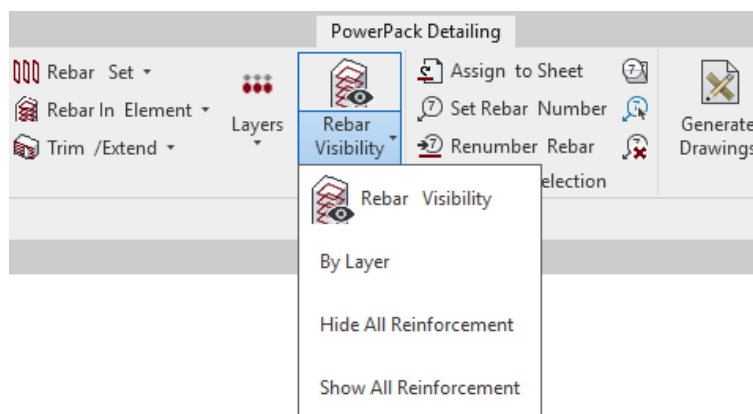
What's New in GRAITEC PowerPack for Revit 2021



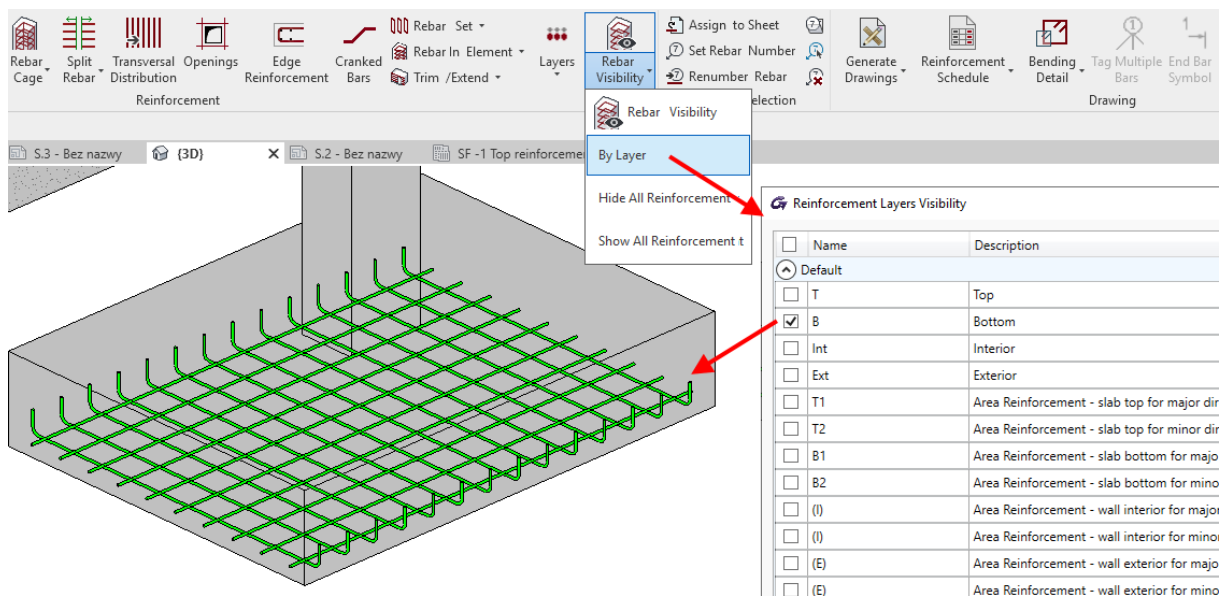
When the *Top* or *Bottom* option is selected, then an additional filtering for reinforcement is activated, respectively by the top and interior or the bottom and exterior layers. When the *Selected* option is active then the selection of layers to display is done through the dialog opened by the *Select Layers* button.



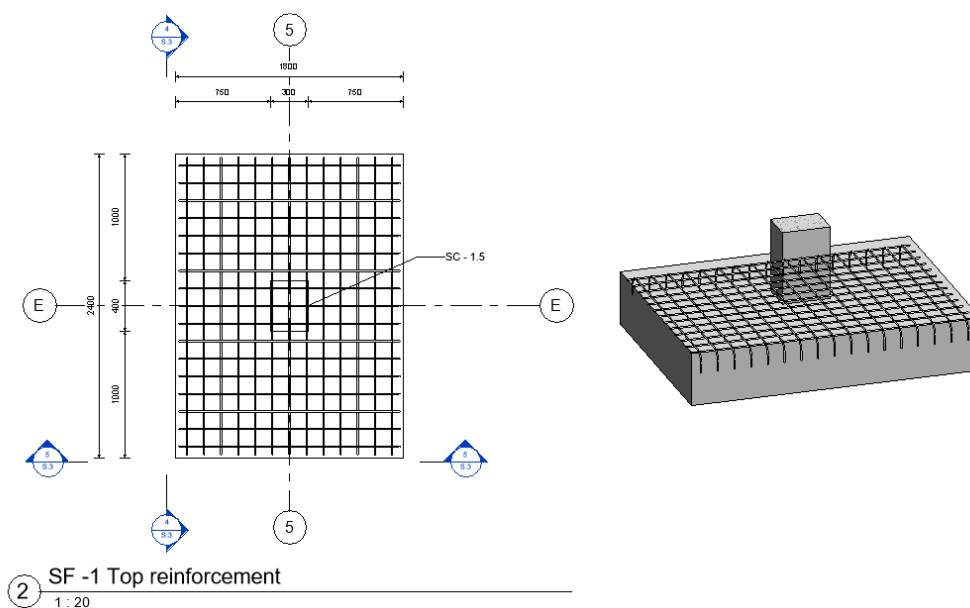
In addition, three new commands are available under the drop-down list under the Rebar Visibility: *By layer*, *Hide All Reinforcement* and *Show All Reinforcement*.



Hide All Reinforcement and *Show All Reinforcement* allow you to quickly turn off or on the visibility of the entire reinforcement in a given view. *By Layer* allows you to quickly select the reinforcement to be displayed by using the Layer property.



This is particularly useful when generating drawings with separate views, e.g. for bottom/ top reinforcement for slabs or foundations.



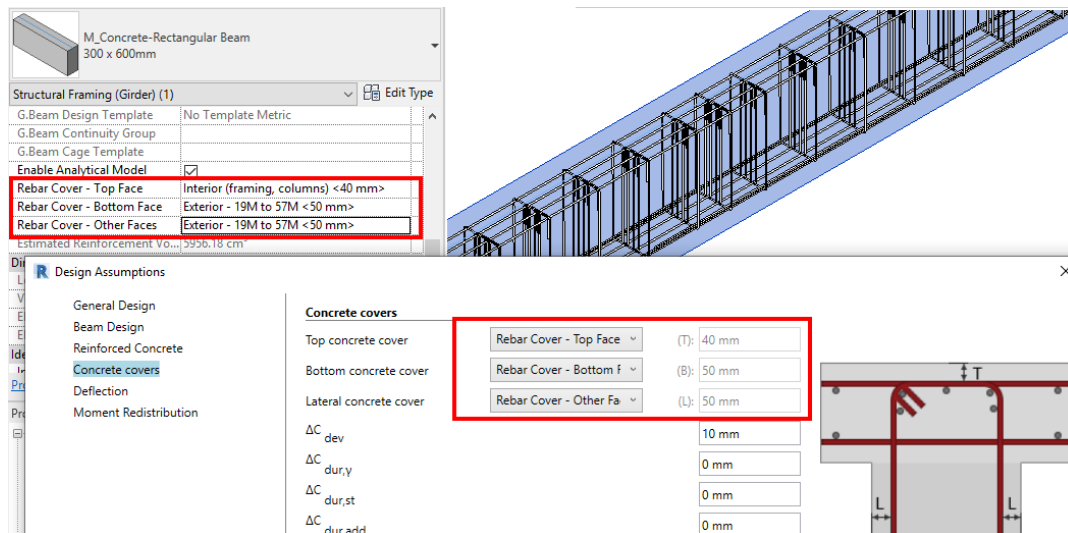
Cover setting assignments

Main features & benefits:

- Concrete cover is managed entirely by Revit settings
- Unification and greater clarity of settings
- Concrete cover can be checked during calculation or verification

For all elements managed by Reinforced Concrete modules on Revit, the mechanism for handling concrete cover has been unified. The main change is that the value of the cover can now only be set from the element properties in the Revit model. When the *Design Assumption* dialogs are opened on Revit, values of concrete covers available on the *Concrete covers* tab cannot be edited. However, the user can modify the default assignment – the Revit concrete cover, for a specific side of the element, can be associated with any concrete cover from BIM Designers.

What's New in GRAITEC PowerPack for Revit 2021



When running the design calculation, as well when running the verification, concrete cover values are checked to verify if they comply with the code provisions. If conditions are not fulfilled, then error messages are generated in the info-panel.

Beam				
Calculation results		Errors and warnings		
Type	Span	Details	Value	Limit
✗	B - 7	Incorrect bottom concrete cover (§4.4.1.1)	13 mm	25 mm
✗	B - 7	Incorrect top concrete cover (§4.4.1.1)	13 mm	25 mm

Use and management of bar diameters

Main features & benefits:

- Using current rebars family types
- Better control of bar diameters used
- Better matching of bar shapes

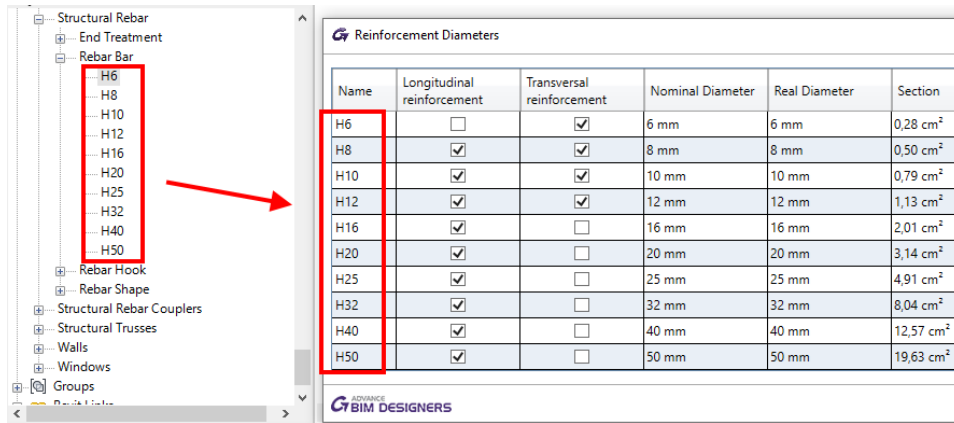
This version introduces a number of changes and improvements related to the setting up and use of diameters and types of reinforcement during the modules' operation in Revit.

Global settings

The rebar diameters used by the modules are now set globally for the entire project and not separately for each element. This makes it much easier to define and control the default settings.

Rebar diameters

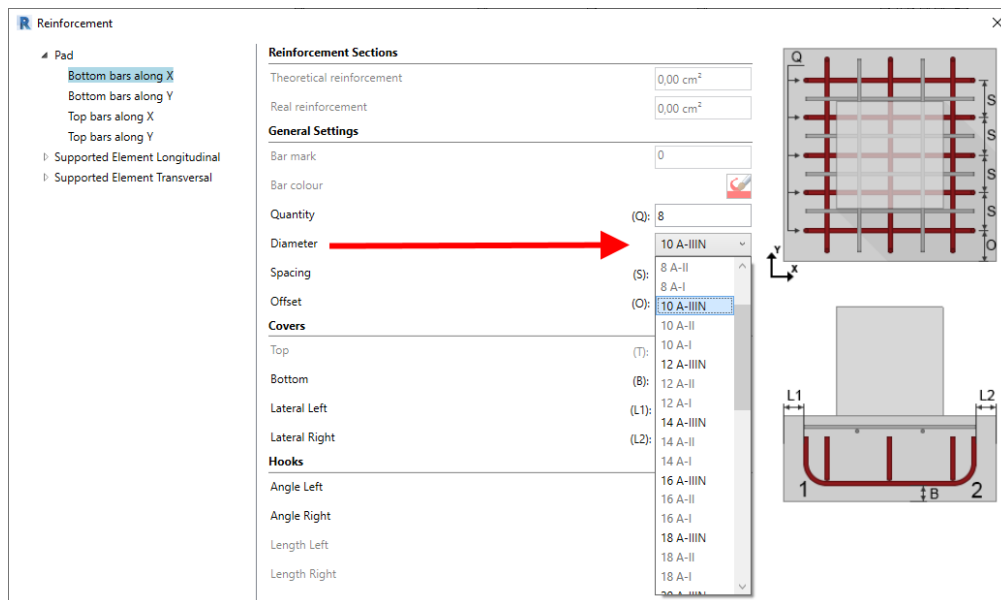
A list of available bar diameters is now loaded from the list of available Rebar types in the project. Thanks to this, modules will reinforce using only diameters used on the current Revit project.



This solution allows using any set of diameters, including also the case of multiple types having the same diameter value. The selection regarding which diameters from the available ones should be used for longitudinal and transversal reinforcement can be done easily through the Reinforcement Diameters dialog.

Name	Longitudinal reinforcement	Transversal reinforcement	Nominal Diameter	Real Diameter	Section	Longitudinal Bending Diameter	Transversal Bending Diameter	Bent-up Bending Diameter
6 A-IIIN	<input type="checkbox"/>	<input type="checkbox"/>	6 mm	6 mm	0,28 cm ²	96 mm	30 mm	96 mm
6 A-II	<input type="checkbox"/>	<input type="checkbox"/>	6 mm	6 mm	0,28 cm ²	96 mm	30 mm	96 mm
6 A-I	<input type="checkbox"/>	<input checked="" type="checkbox"/>	6 mm	6 mm	0,28 cm ²	66 mm	21 mm	66 mm
8 A-IIIN	<input type="checkbox"/>	<input type="checkbox"/>	8 mm	8 mm	0,50 cm ²	128 mm	40 mm	128 mm
8 A-II	<input type="checkbox"/>	<input type="checkbox"/>	8 mm	8 mm	0,50 cm ²	128 mm	40 mm	128 mm
8 A-I	<input type="checkbox"/>	<input checked="" type="checkbox"/>	8 mm	8 mm	0,50 cm ²	88 mm	28 mm	88 mm
10 A-IIIN	<input checked="" type="checkbox"/>	<input type="checkbox"/>	10 mm	10 mm	0,79 cm ²	160 mm	50 mm	160 mm
10 A-II	<input type="checkbox"/>	<input type="checkbox"/>	10 mm	10 mm	0,79 cm ²	160 mm	50 mm	160 mm
10 A-I	<input type="checkbox"/>	<input checked="" type="checkbox"/>	10 mm	10 mm	0,79 cm ²	110 mm	35 mm	110 mm

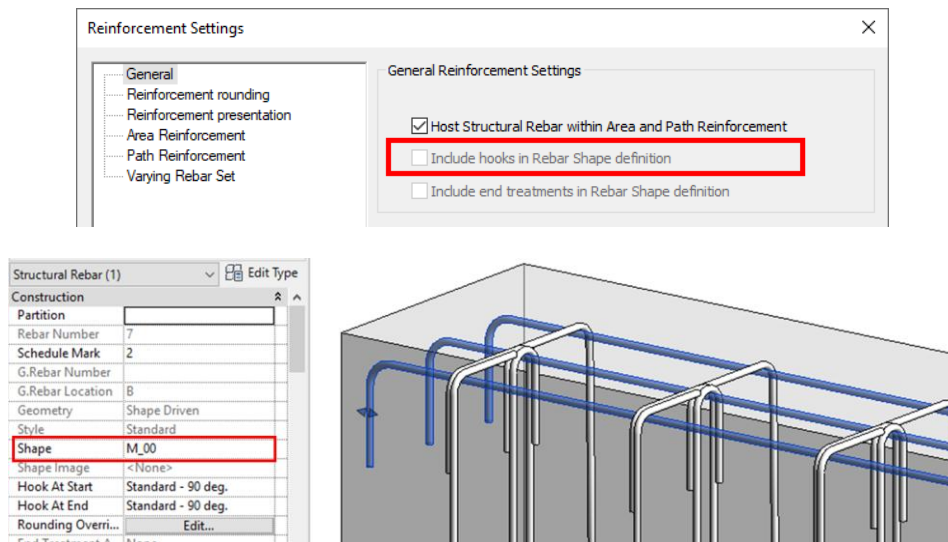
Of course, in all areas where a selection of diameters is available, the list includes all diameters currently available in the Revit project.



What's New in GRAITEC PowerPack for Revit 2021

Rebar shapes

The mechanism for matching rebar shape generated by module has been improved, especially for the case when the Revit setting option "Include hooks in rebar shape definition" is not checked. In this case bars are created using a matching rebar shape with no hooks. As a consequence, longitudinal bars with hooks will reference the straight bar with no hooks rebar shape.



Bending details

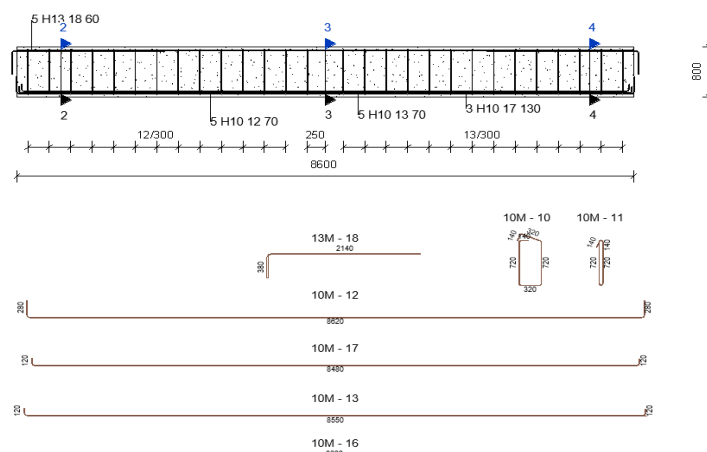
Main features & benefits:

- Better quality of bending details
- Faster placement in the drawing
- New placement method in the drawing
- Possibility for displaying bending radius

In order to improve quality and control, a number of changes have been made to the mechanisms for generating bar bending details.

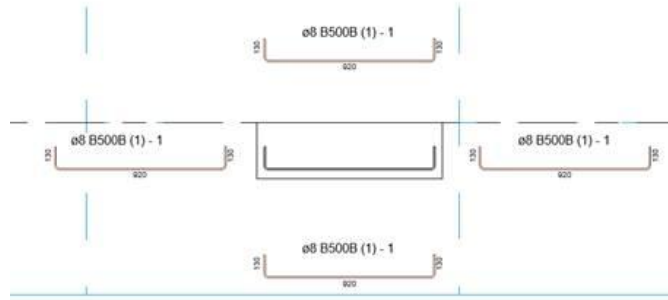
To speed up and facilitate the indication of the location of the bending details, they are now generated after indicating the point of insertion, both for individual selection of rebars and for generation of all rebars after the host element has been selected. It avoids the slowing down caused by the refreshing of diagrams when moving or zooming.

In addition to that, two new options are available to control bending details location on drawing: Ortho Mode and Chain Mode.



Ortho mode

In daily practice, users want to place the bending detail exactly below the rebar, aligned with it. So besides indicating the point of insertion on click, users have now the possibility to activate the ortho mode. The workflow is the following: launch “Bending Detail” tool, select the bar, press Shift and click. Depending on the click point, the bending detail will be placed in a perpendicular position (having the selected bar as reference) on the left/right/ top/ bottom of the bar.



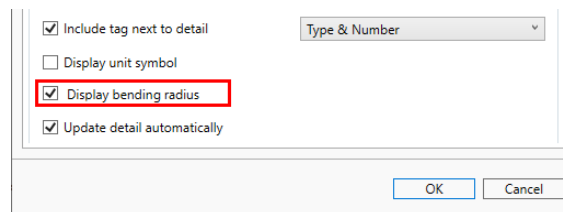
This mode is available only for individual selection of rebars.

Before the ortho mode implementation, user still had to manually align the bending detail to the correct position.

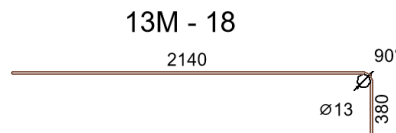
Chain mode

Before the “chain mode” implementation, the command exited after placing one bending detail. Now, the command enters a loop, until the users hits "Esc". Usually, users need to place a lot of bending details on a drawing, so this decreases the number of clicks needed.

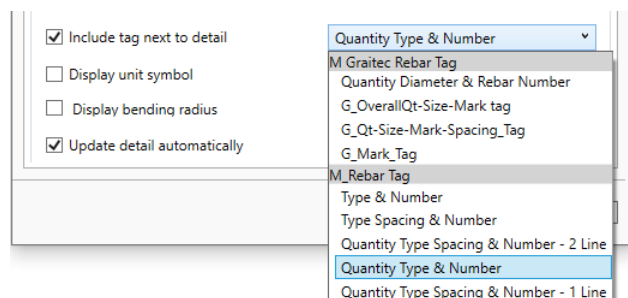
Else, a new *Display bending radius* option has been added to the *Schedule Schema* tab on the *Reinforcement Configuration* window.

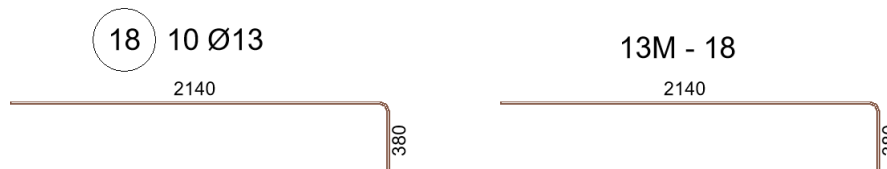


It allows displaying the bend angle, the symbol, and the value of bending diameter on the bar schemas.

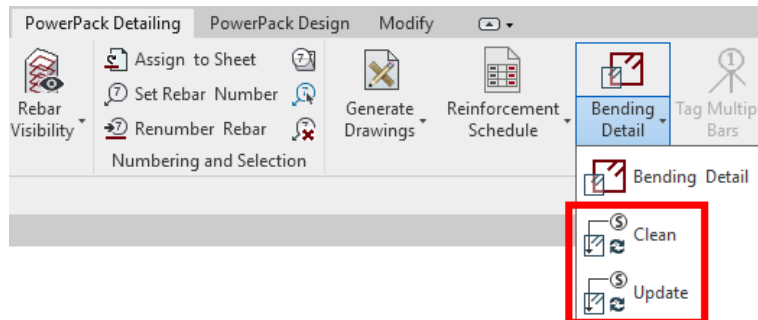


The tag for bending detail can now be selected from all the types of the current families of rebar tags loaded in the project.





The *Clean* and *Refresh* tool is now split into two separate tools that are placed under the Bending Detail command.



Clean - deletes the bending details previously generated. The user can decide the range to be removed either by selecting the host element or by choosing between “The active view” and “The whole project” from the configuration window.

Update - updates the bending details previously generated. The user can decide the range to be updated either by selecting the host element or by choosing between “The active view” and “The whole project” from the configuration window. This command is useful when the automatic update of bending details (available on the configuration window) is deactivated.

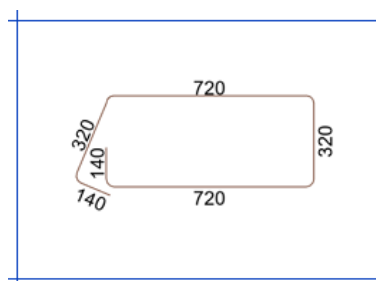
Rebar schedule schemas

Main features & benefits:

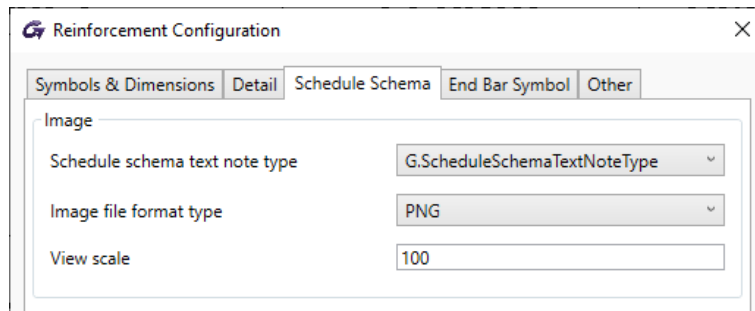
- Better quality of rebar schemas on schedules
- Possibility for displaying bending radius

In order to improve quality and control, a number of changes have been made to the mechanisms for generating bar schemas.

One of the changes is a split of the mechanism for generating schemas of rebars visible on schedules and used as bending details on drawings. Thanks to this, the representation of the schema on schedules is a single line, not the real diameter of the bar, which improves their clarity.



The scaling mechanism of schemas and fonts used has also been modified. In the *Reinforcement Configuration* window, on the *Schedule Schema* tab, you can now set the type for the text used on schedule schemas, which, in conjunction with the View scale option, makes it possible to match the size of the descriptions on the generated scheme images according to your needs.



Thus, all text used on schedule schemas has the same size and depends only on the set scale and type of text.

N°	Bars	Length	Schema
12	5#10 (B500B)	9110 mm	260 8620 260
13	5#10 (B500B)	8750 mm	120 8550 120
14	3#10 (B500B)	1400 mm	1400
15	10#13 (B500B)	2940 mm	380 2590

N°	Bars	Length	Schema
12	5#10 (B500B)	9110 mm	260 8620 260
13	5#10 (B500B)	8750 mm	120 8550 120
14	3#10 (B500B)	1400 mm	1400
15	10#13 (B500B)	2940 mm	380 2590

The new *Display bending radius* option available for bending details applies also to schedule schemes allowing the display of the bend angle and the symbol and the value of bending diameter.

