What's New

PowerPack for Revit 2025
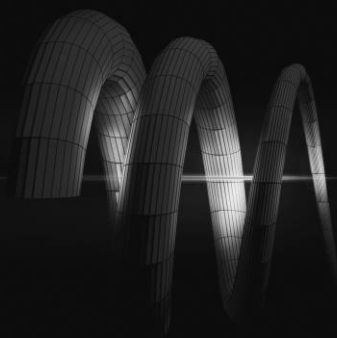
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1. Welcome to Graitec Powerpack for Revit 2025

We are very pleased to introduce the latest version of the **PowerPack for Revit 2025**. This latest update brings features and enhancements regarding BIM workflow, improving tools designed to simplify error detection for correction in analytical models.

Furthermore, users will have access to new features that enhance graphical visualization and enable checking information within a model through colour distinctions, for instance.

Our goal is to keep improving **PowerPack for Revit** functionality and usability, and we believe this update will be a valuable addition for our users.

2. General

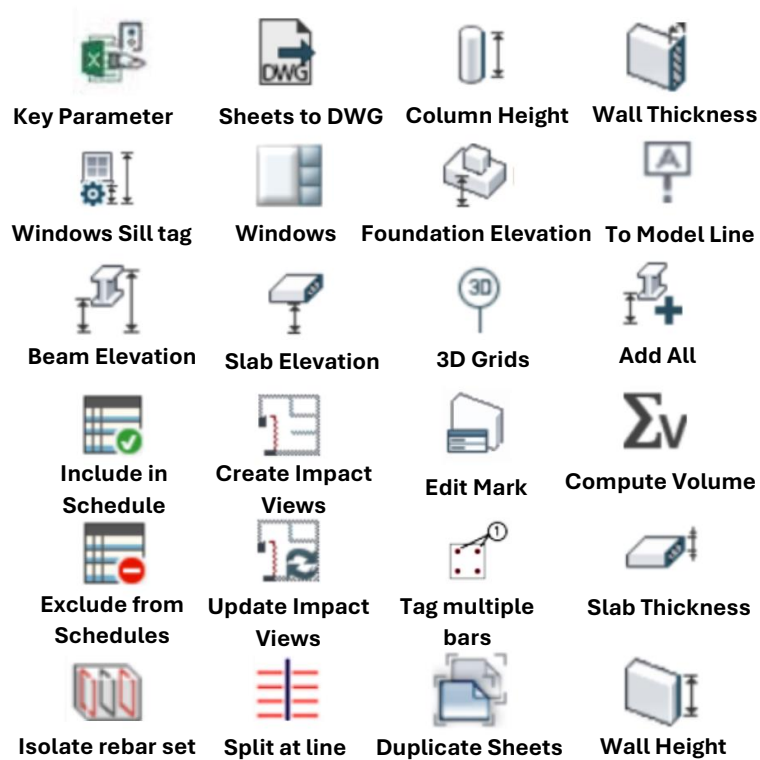## 2.1. Compatibility with Revit 2025

Autodesk Revit 2025 is transitioning to a new software development platform for improved performance and cross-platform compatibility. Consequently, the PowerPack for Revit 2025 is also being updated to .NET 8 to ensure a performance improvement.

.NET 8 framework, developed by Microsoft, is a more versatile and robust platform that supports the creation and management of modern applications across various operating systems. This migration to .NET 8 involved a huge update of the PowerPack codebase to harness the enhanced performance and security features of the framework.

The transition to .NET 8 allows the PowerPack to operate with greater **efficiency** and **reliability**. Users will notice significant performance enhancements, reduced latency, and smoother operation due to optimized memory management. Furthermore, this upgrade enhances compatibility with the latest version of Revit, ensures better security protocols, and facilitates future updates and features additions, ensuring our plugin remains at the cutting edge of construction modeling technology.

2.2. Refine and Simplify Tool Collection

As a testament to our continuous dedication to improving our platform, we've implemented some refinements aimed at delivering an even smoother and more enhanced experience for our users. In line with this effort, to **optimize** our interface and pave the way for exciting new features, we've made the decision to remove certain redundant tools. This update breathes fresh life into our system by eliminating duplicates and preparing the groundwork for future innovations.

Key Parameter	Sheets to DWG	Column Height	Wall Thickness
Windows Sill tag	Windows	Foundation Elevation	To Model Line
Beam Elevation	Slab Elevation	3D Grids	Add All
Include in Schedule	Create Impact Views	Edit Mark	Compute Volume
Exclude from Schedules	Update Impact Views	Tag multiple bars	Slab Thickness
Isolate rebar set	Split at line	Duplicate Sheets	Wall Height

Removed features

3. PowerPack Start Edition

3.1. WaterMark Manager

An enhancement has been proposed for the **Watermark Manager** in response to feedback received, incorporating minor adjustments to both the interface and functionality. In this way, this change aims to add the option of creating **additional parameters** to the watermark manager, where these additional parameters could be customized as the data is stored in the family file.

The tool is available in the **Powerpack Ribbon => Files => Watermark Manager.**
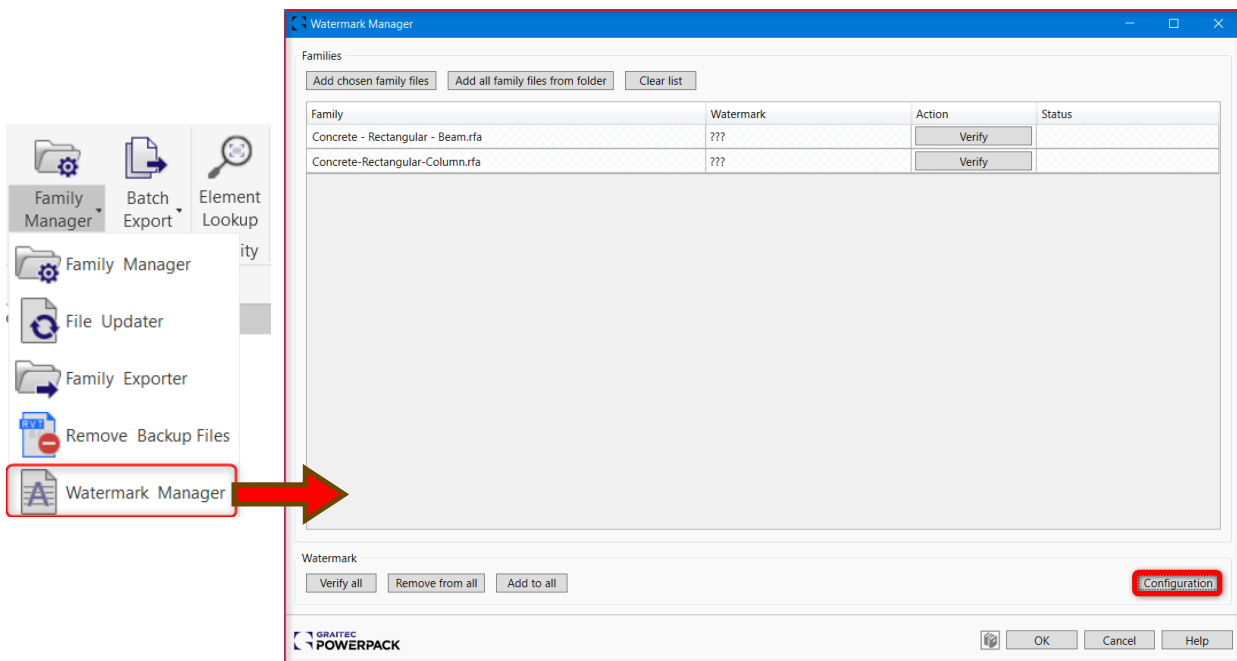
Watermark manager setting interface

After clicking the configuration button in Watermaker Manager, a dialog box will appear with the generic parameters and custom parameters. Clicking the add parameters icon allows you to create a new customized parameter. Simply enter the name of the new parameter and click "OK."
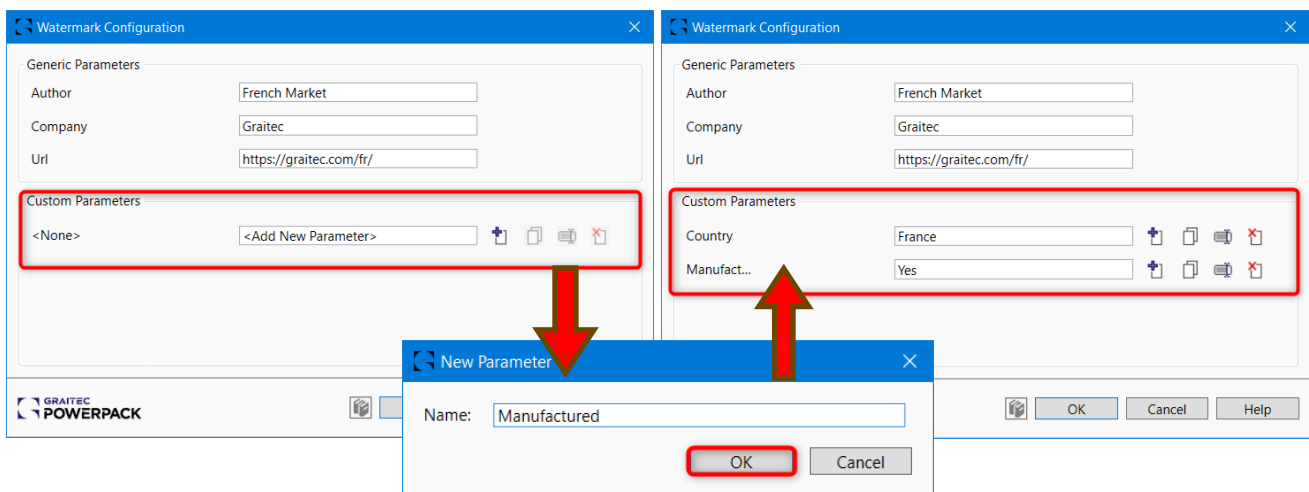
Example for custom parameters

Once created, you can remove, rename or duplicate all customized parameters by clicking on the adjacent symbols.

After selecting the parameters for the family watermark, users can now efficiently verify and implement watermarks to all the desired Revit families, visible in the family type properties.

Example of a watermarked family

Note: Although the watermark may initially appear as a value in the Manufacturer, URL, or other type parameters, simply deleting these values from the family will not eliminate it. The genuine watermark is securely encrypted within the family itself and can only be fully eradicated through the explicit use of the Remove function provided by the Powerpack's **Watermark Manager** tool.
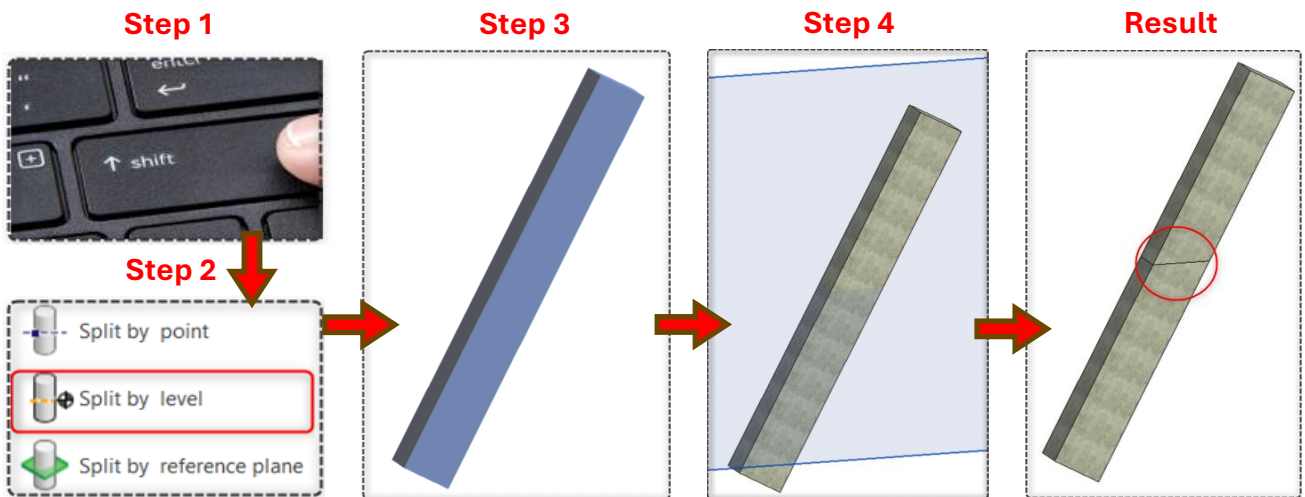
3.2. Split Columns for Slanted Columns

This tool is being significantly updated to make it applicable not only to vertical columns but also to slanted ones. This enhancement preserves existing functionalities while introducing a setting for users to specify the cut's orientation. By extending the tool's capabilities to accommodate **slanted columns**, users gain greater flexibility in structural design, enriching project possibilities and enhancing overall design flexibility.

The tool is available in the **Powerpack Ribbon => Structural => Split by Point/Level / Reference Plane.**
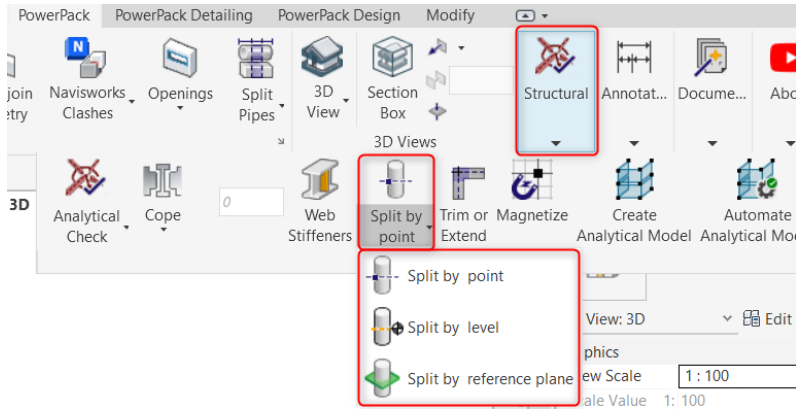
To use this command, the user needs to:

1. Hold the button "Shift" on the keyboard if you want the split horizontal, else split will be perpendicular.

2. Chose which function you want to apply

3. Select the element that you want to split

4. Select the intersection/ level/ reference plane

*How to use command "Split Columns for Slanted Columns"*

3.3. Rebar Imports for Linear Elements

Presenting a new implementation for Revit, we've redefined the import process for **reinforcement** data from GTCX files generated by the Tricalc software. This creates a 3D model that includes all the necessary steel reinforcements based on the calculation performed.
This new feature simplifies detailed rebar modeling for **linear elements**, footings, columns, more than ever before. Leveraging existing geometry imports, our solution seamlessly integrates into your workflow, enhancing BIM project management.

The tool is available in the **Powerpack Ribbon => BIM Connect => Import.**
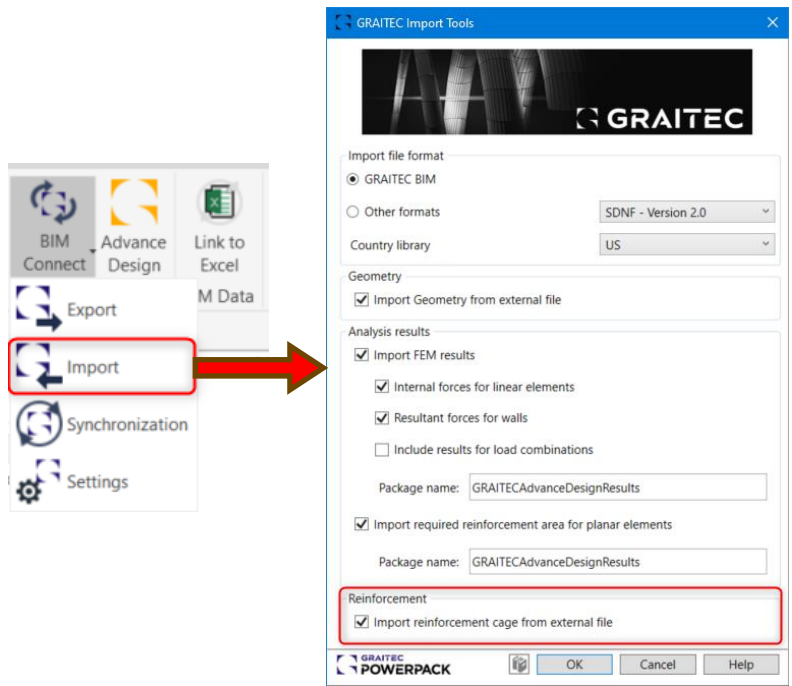
Import setting interface

Once the GTCX file is generated from Tricalc, the user can import it into the project. In the dialog box that appears, it is important to activate the option "Import reinforcement cage from external file."
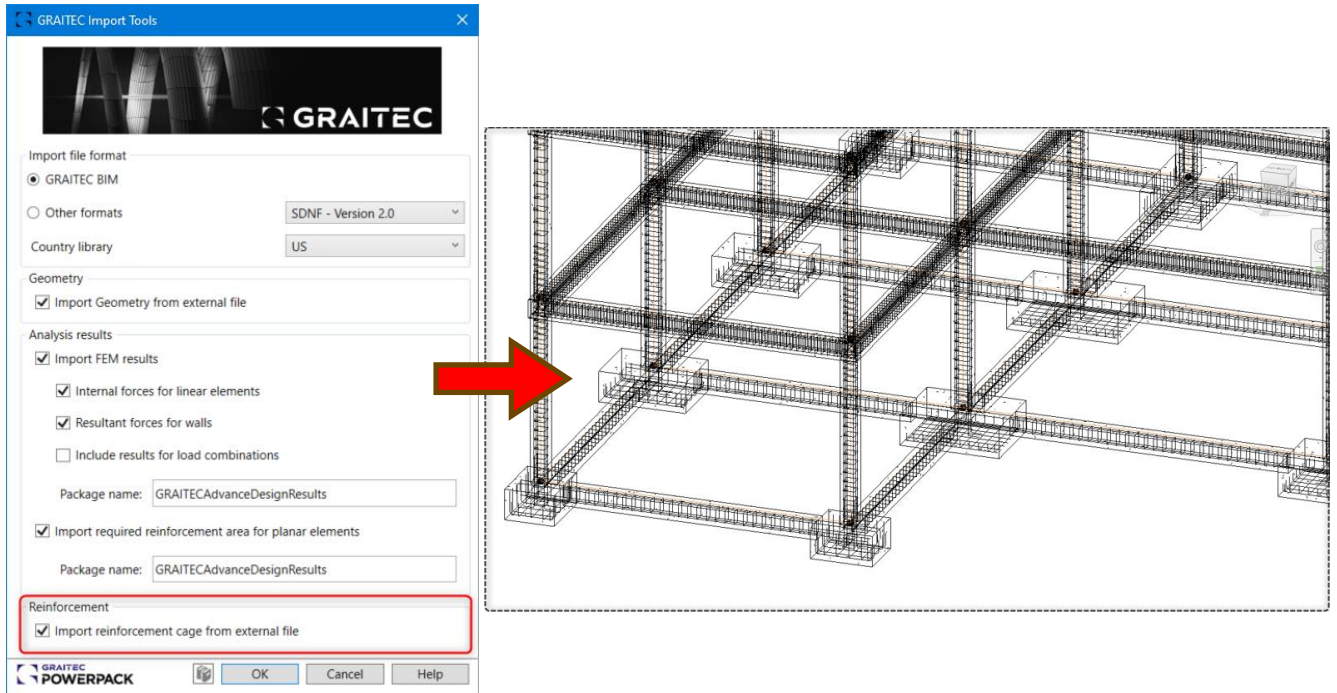

Rebar Imports for linear elements

Note: If any of the imported reinforcements are selected, Revit identifies them as native elements in its own format, allowing them to be modified using Revit tools.

4. PowerPack for Revit

4.1. Visualization for analytical members

In our PowerPack 2025 update, we're enhancing the **visualization** of analytical elements. Each structural type now features its own distinct **colour** automatically, eliminating the need for manual filter creation like previous versions. This improvement ensures clarity and efficiency in model interpretation, effortlessly streamlining workflows.

To create an analytical model, the tool is in the **Powerpack Ribbon => Structural => Create Analytical Model.**
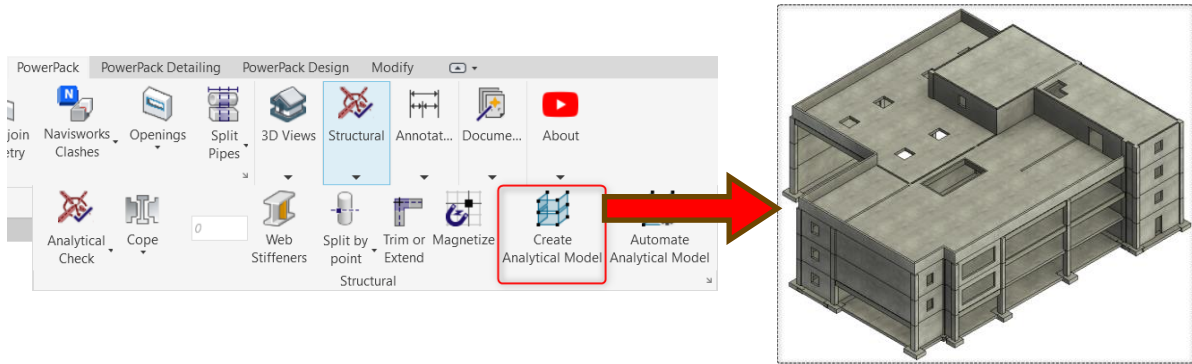
Example of Creating an Analytical Model

After creation, the results of the enhancements are displayed as shown below.

Category		Colour
	Analytical Beams	
	Analytical Columns	
	Analytical Floors	
	Analytical Braces	
	Analytical Foundation Slabs	
	Analytical Walls	

New Visualization for Analytical Members

Note: Revit offers a Dynamo script to generate the analytical model, but the 'Create Analytical Model' tool will produce clearer results with these new options for colorizing analytical members and it will be faster in terms of model generation.
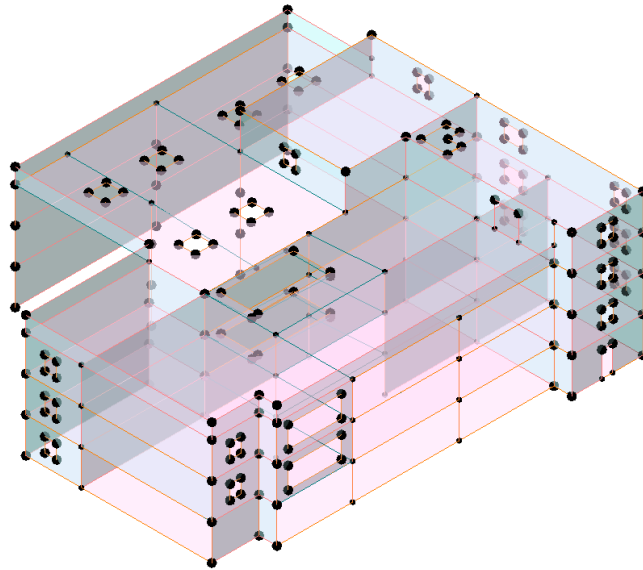
Analytical Model created by the native Revit function

4.2. Improvements in the Numbering Tool

Our proposal significantly enhances the "**Numbering Nested Families**" and "**Assembly Numbering**" features within the PowerPack's Numbering tool, particularly focusing on nested family components. These improvements allow users to systematically group and number nested items more effectively. For instance, users can now assign unique numbers to piles within a nested Pile-Cap. Additionally, we have extended the numbering capability to elements within newly created assemblies, enhancing usability and applicability.

Furthermore, we've enriched the user experience by implementing a feature that highlights selected elements when using the "**Pick one by one**" option for element selection. This ensures both accuracy and efficiency in the assembly numbering process, making it more intuitive and user-friendly.
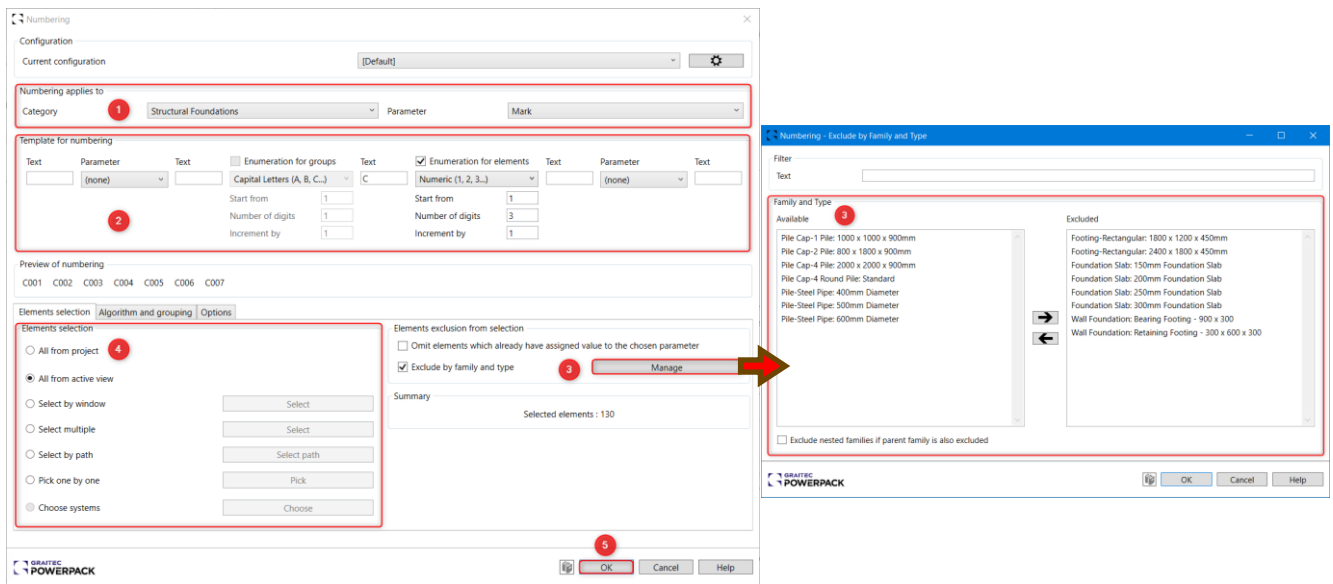
The tool is available in the **Powerpack Ribbon => Annotations => Numbering.**
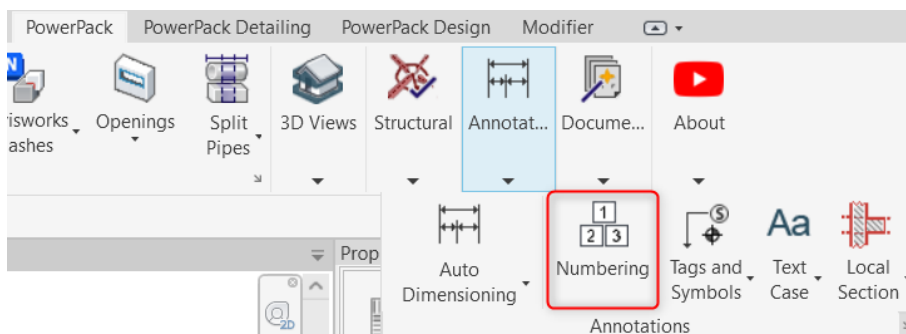
4.2.1. Numbering Nested Families

To use the Nested Families numbering, the user needs to:

1. Choose the category and parameter for change.
2. Describe the template for numbering.
3. Manage the family and type for numbering.
4. Select the elements.
5. Confirm the action in dialog box.

How to use command "Numbering nested families"

The outcome is that both the piles and the pile cap from a nested family are numbered consecutively.
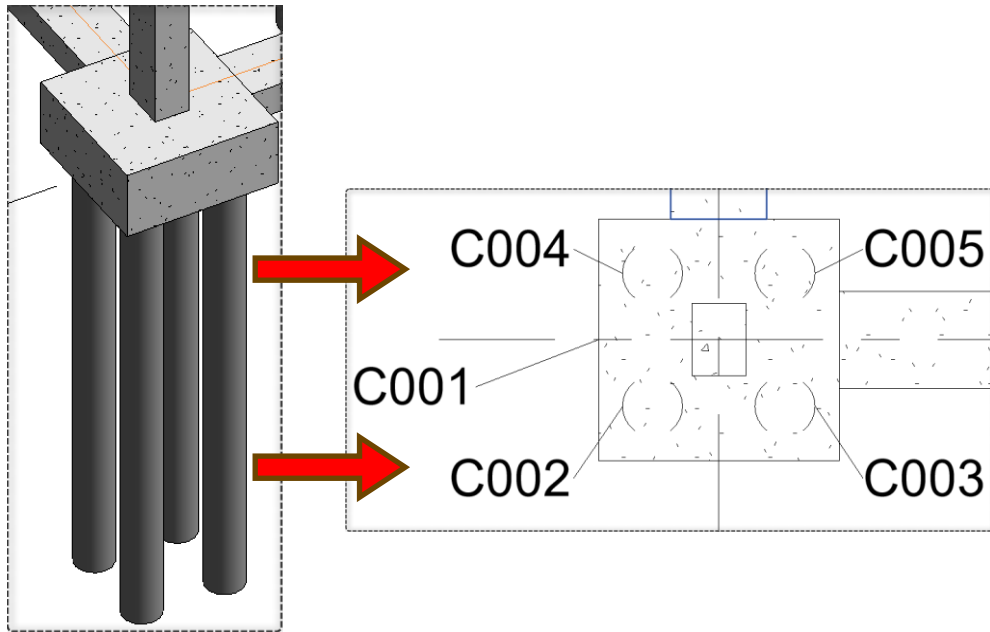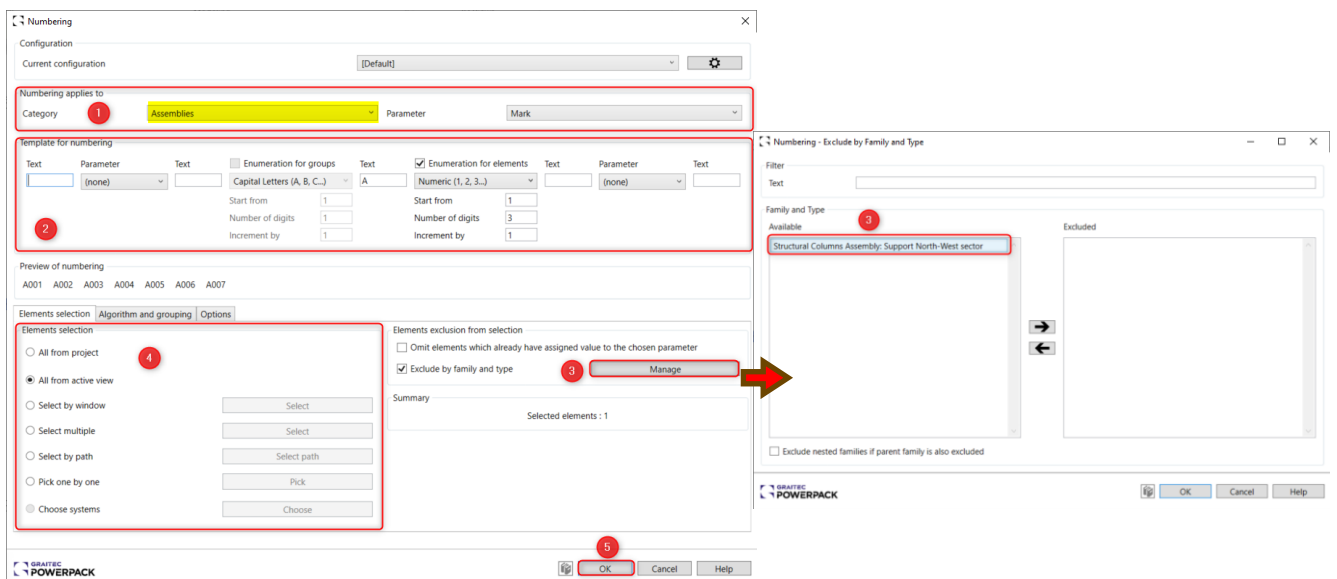

*Numbering Results*

4.2.2. Assembly Numbering

In this case, to use this tool for an assembly, the user needs to:

1. Select the category and parameter to modify. **It is now possible to choose "Assemblies"** as a category for numbering.
2. Describe the template for numbering.
3. Manage the family and type for numbering. All assemblies available for numbering.
4. Select the elements.
5. Confirm the action in dialog box.

How to use command "Assembly numbering"

In this case, the result is that all selected assemblies are consecutively numbered.

Created assembly
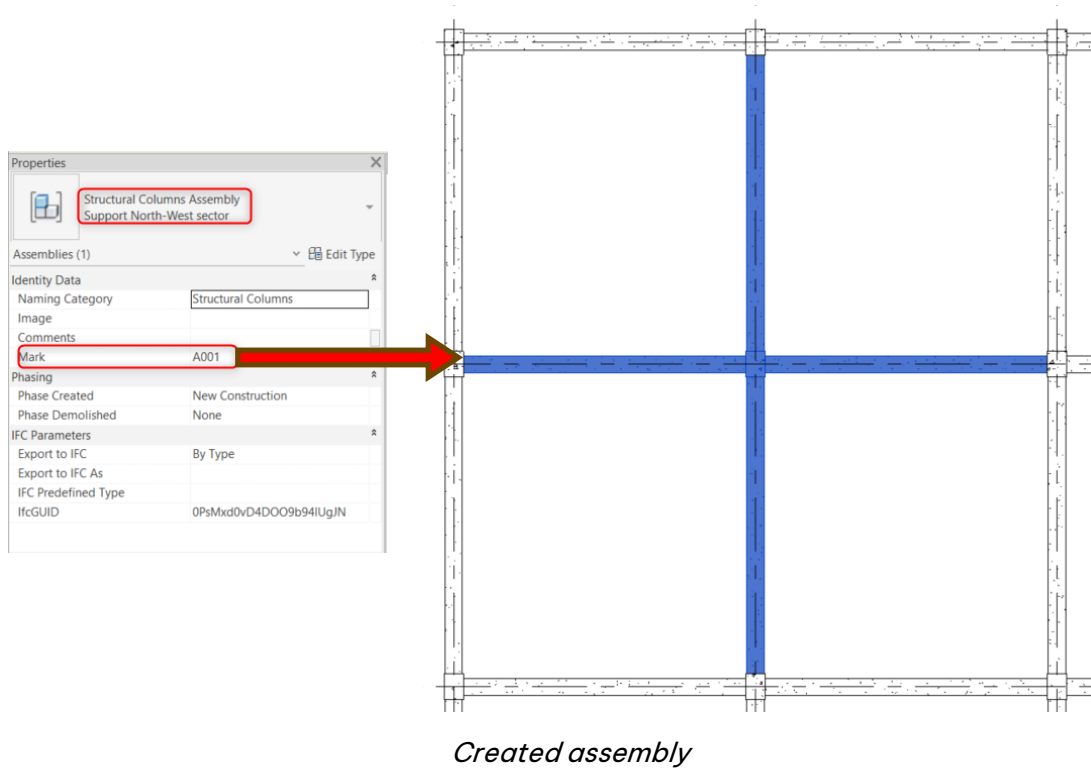
4.2.3. Pick one by one

The "Pick one by one" option now highlights chosen elements, ensuring users stay informed about their selections. Once elements are chosen, users simply need to press "Enter" or "Esc" to confirm their selection.
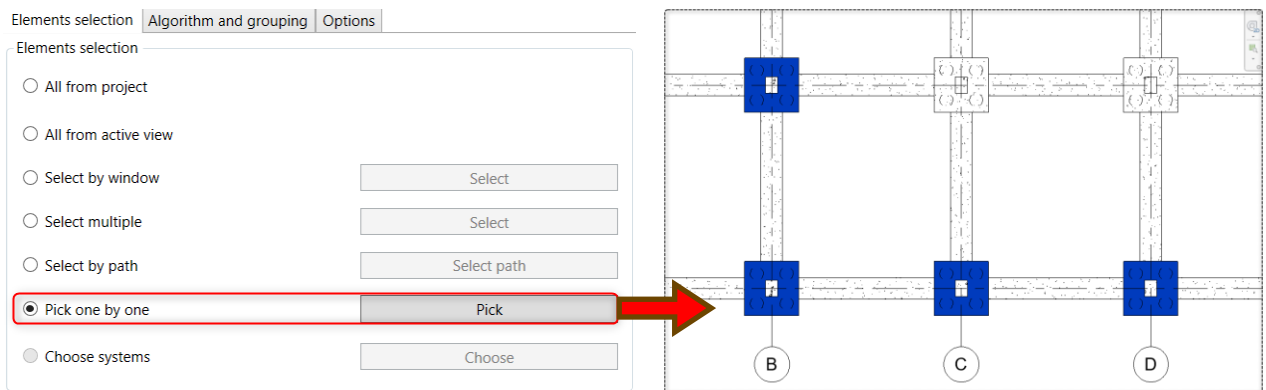

How to use command "Pick one by one"

4.3. Element Lookup - Color Splasher

Introducing the upgraded **element lookup** command, now with **color-coding** and **legend creation**, transforming architecture and engineering workflows. Users can effortlessly apply colors to highlight parameters like diameters or section types, enhancing clarity instantly. This feature streamlines data interpretation by allowing quick identification of elements based on their values, making it an essential tool for professionals across all fields.

The tool is available in the **Powerpack Ribbon => Identity => Element Lookup.**
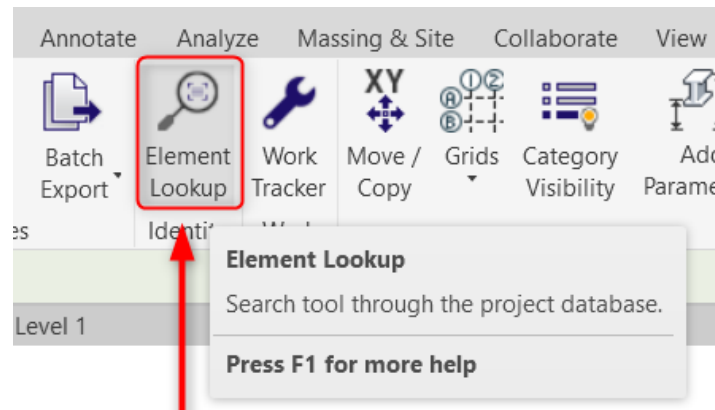
4.3.1. Element Search

To search for elements to use the element lookup improvements, the user needs to:

1. Click the "Colourise" button.
2. Select the scope of selection.
3. Choose the categories.
4. Select the desired parameter of the elements.
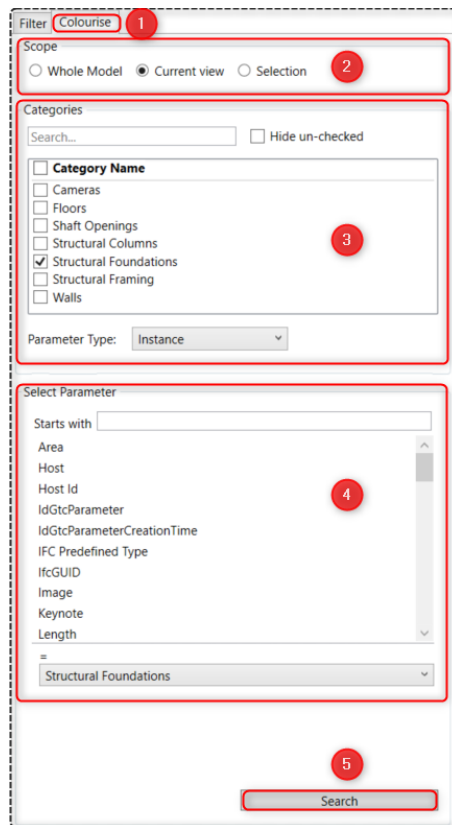5. Click the "Search" button to finalize the search.

*Figure 1: How to search for elements in "Element Lookup – Color Splasher"*

4.3.2. Search Results

After finishing the search and obtaining the desired results, the user has numerous options to utilize with our new feature, as illustrated in the figure below.

Search results interface

1. **Isolate/Hide elements:** Easily isolate or hide selected elements to focus on specific parts of your project.
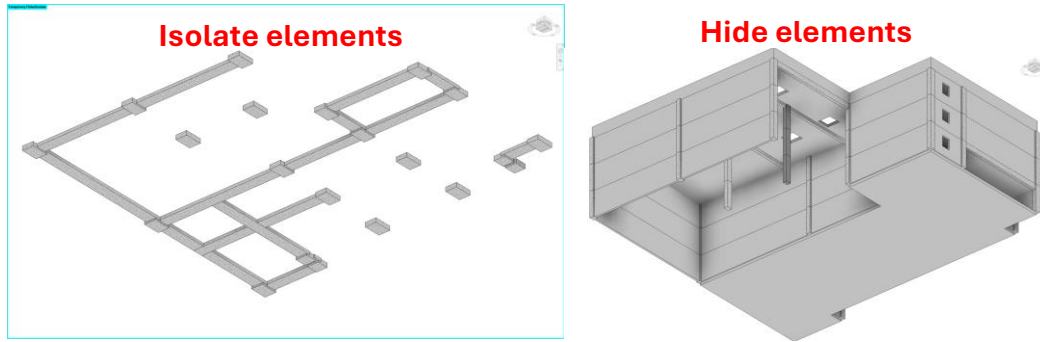
Isolate/Hide Elements function

2. **Automatically assign colors:** For each value of the selected parameter, this feature assigns a unique colour to elements sharing the same selected parameter value. In the example below, the selected parameter was "Length," and therefore, colours were applied based on this criterion. Users can click multiple times to randomly reassign colours across all selected elements.
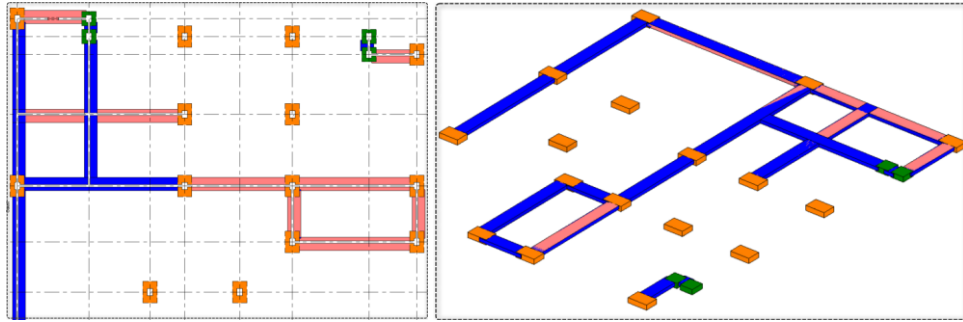

Automatically assign colors function

3. **Apply colors:** Apply colors to elements in the current view or across multiple views, ensuring consistent visualization throughout your project. Users have the capability to apply colors to elements in plan or 3D views, constrained by model display styles such as Wireframe, Hidden Line, Shaded, and Consistent Colors.

Apply colors function

4. **Generate legend:** Generate a legend based on the assigned colors, providing clear and concise information about element categorization and properties. For the creation, the user needs to choose the legend name and additional information for the legend such as Category, Family Name, Type Name, and Count.
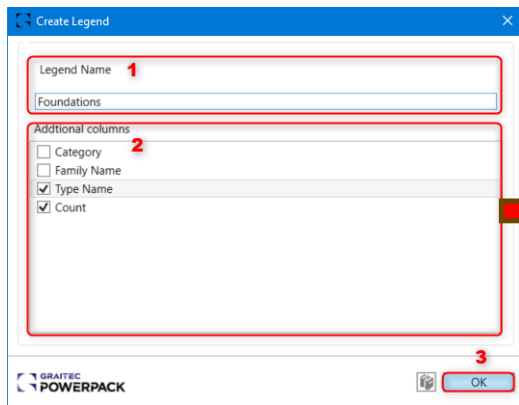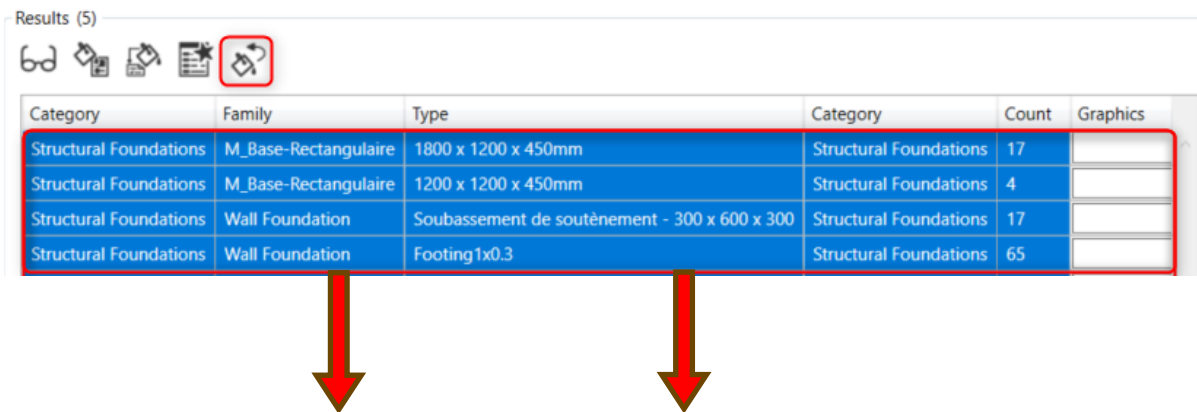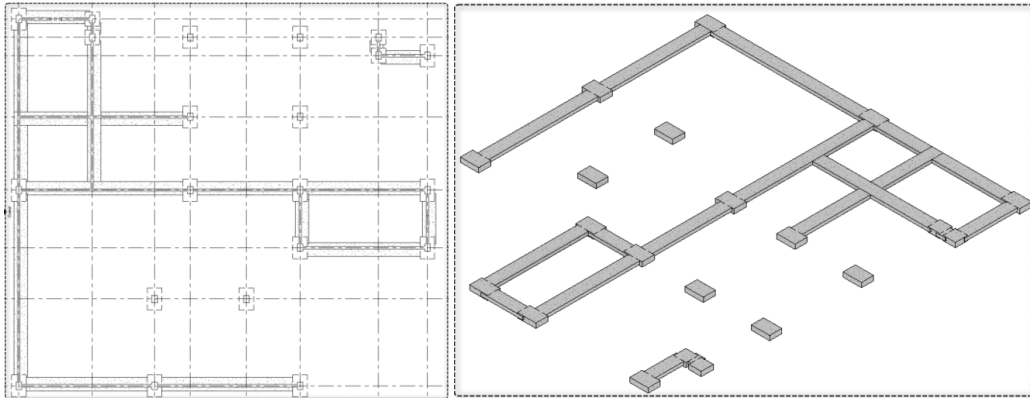

Generate legend function

5. **Revert to original colors:** Quickly revert the colors of elements back to their original states in the current view or across multiple views, allowing for restoration of default settings.

Revert to original colors function

## 4.4. Analytical Model Check Sphere visualization

In our PowerPack, the previous 'Detect errors' tool has been replaced by the enhanced "**Analytical Check**" feature, which now provides visual feedback for disconnected nodes in analytical models. Now, instead of just listing errors, each issue is represented by a **red sphere** within the model space, with its size adjusting based on your chosen tolerance. This enhancement offers users a more intuitive and efficient way to identify and address model discrepancies.

The tool is available in the **Powerpack Ribbon => Structural => Analytical Check.**
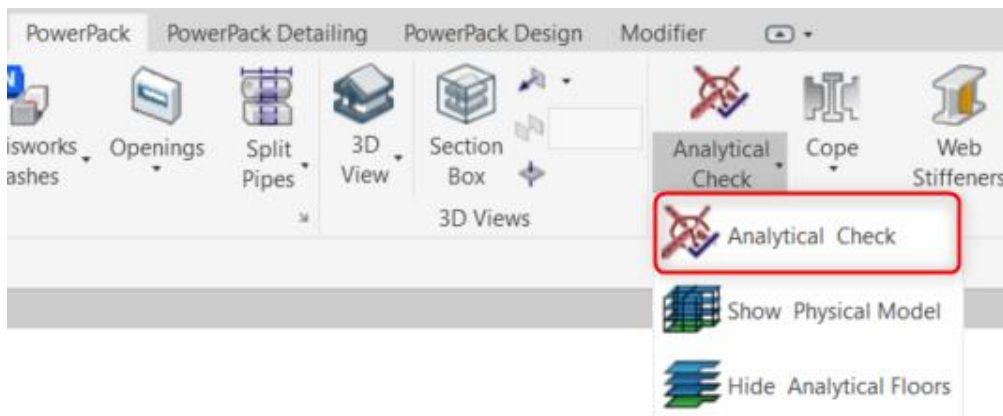
To utilize the Analytical Model Check Sphere visualization, users must:

1. Define the scope and rules for analytical checking.
2. Run the analytical check.
3. Examine the results to address any issues.
4. Activate the "Show Spheres" option to display each problem in the model.
5. Modify the sphere scale as needed.
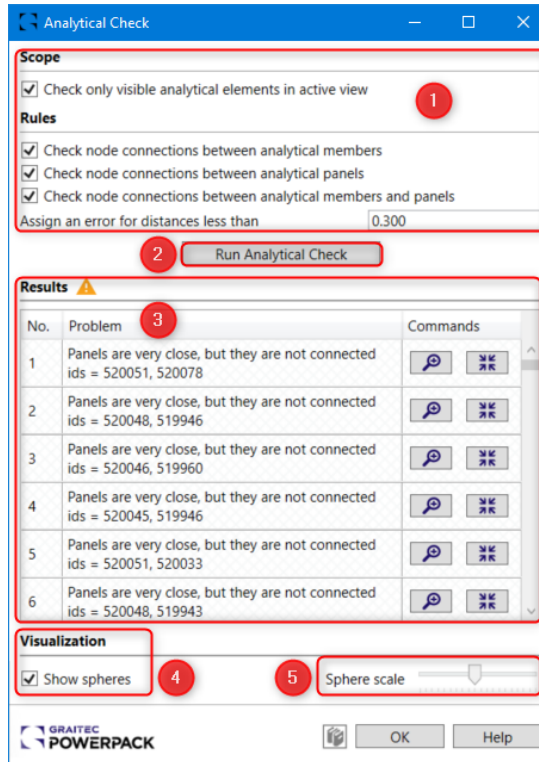
How to use command "Analytical Check"

In the **scope**, users can opt to run the function solely for analytical elements within the active view. Conversely, if they wish to include the entire project, they can uncheck this option.

In the function's **rules**, users can select the element node connections they wish to analyze. This includes connections between analytical members, analytical panels, and/or between analytical members and panels. Furthermore, users can specify tolerance distances for error assignment.

In the **results**, the available commands allow you to zoom and center the node, or to isolate it. Afterward, you can fix the problem by manually adjusting the elements to form the proper node.
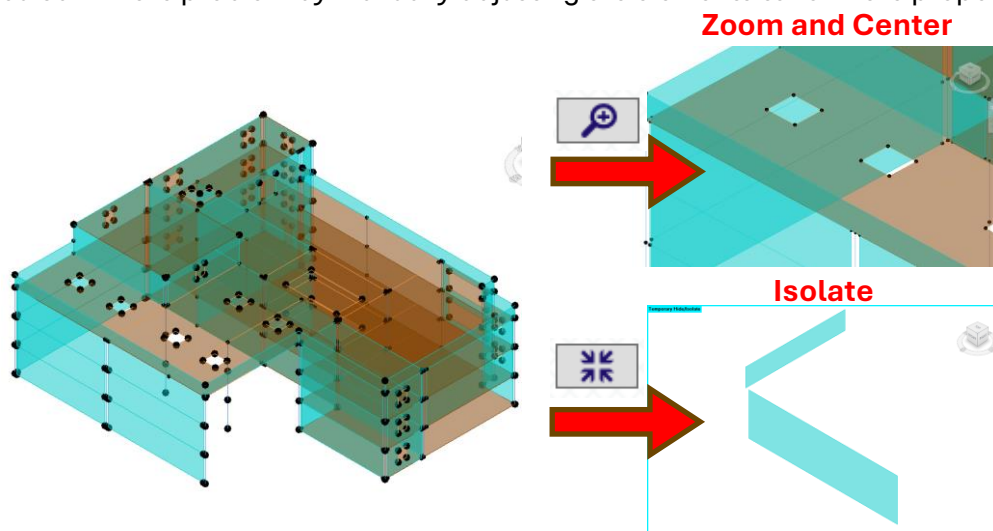
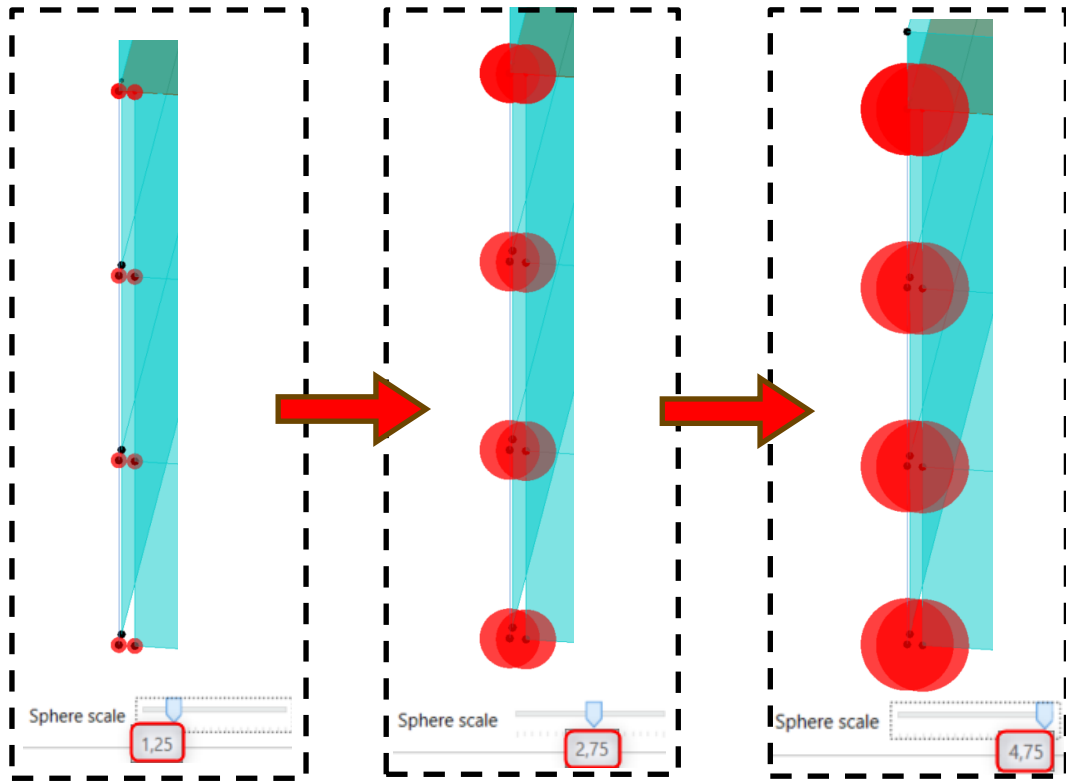
Commands available for the results

When the user selects "**Show Spheres**", a red sphere will appear in the model for each problem listed in the error list. These spheres are visible in the analytical views 3D, plan, and section. For optimal functionality and visibility of all spheres in plans and sections, it is essential to set the view range depth sufficiently deep to encompass the entire scope of the created spheres, ensuring no obstruction in both operation and display.

<div align="center">

3D VIEW   **SECTION VIEWS**   **PLAN VIEW**

</div>

<div align="center">
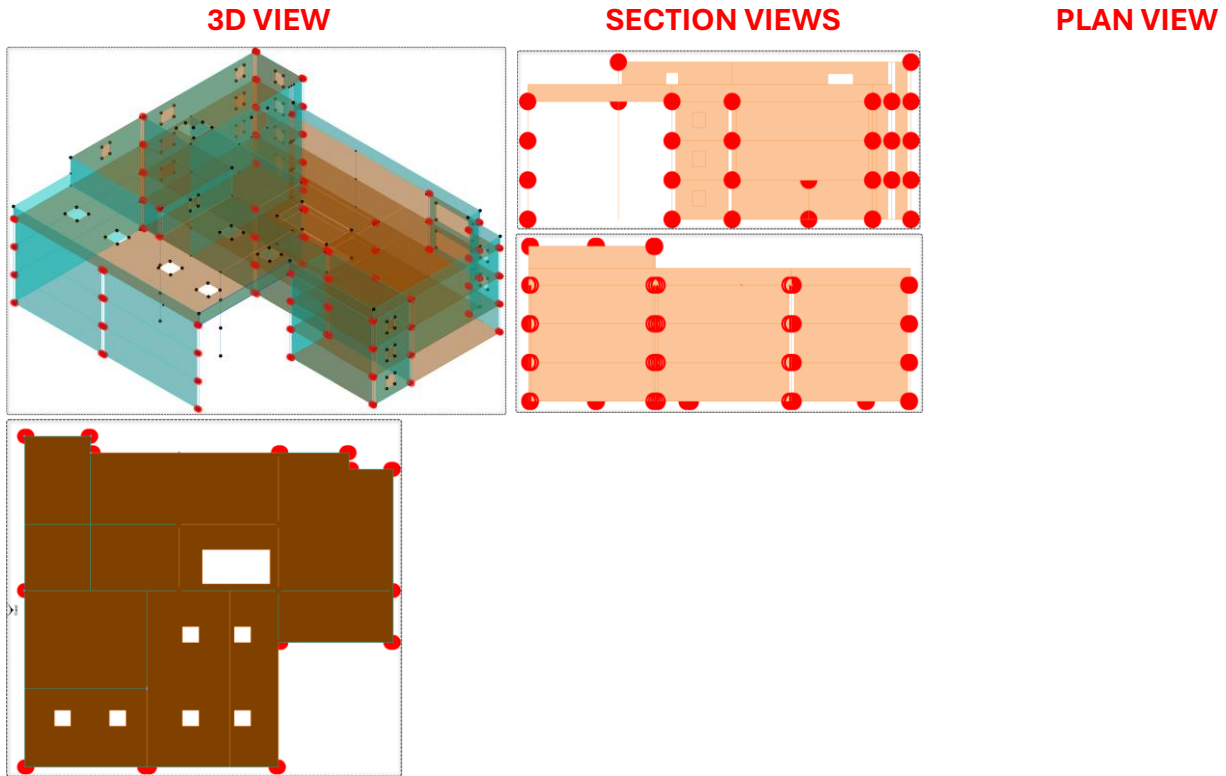
Check Sphere views

</div>

Note: The spheres are only visible when the Analytical Check function is running.

Therefore, the user can adjust the sphere **scales** from 0.25 to 5.00. This adjustment will automatically apply to all views.

Sphere Scale function