

ProtaStructure Release Notes

v2021 (5.0.366 – 5.1.25)

17.12.2020

Please contact us for your training and technical support queries

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Contents

Introduction.....	5
ProtaStructure 2021 Installation Steps.....	6
Installing ProtaStructure 2021 for the first time	6
Updating an Existing Version of ProtaStructure 2021	6
Alternative 1: Updating by Using the Installer.....	6
Alternative 2: Updating by Using the ‘Automatic Updates’	7
New Features and Enhancements	8
Modeling.....	8
Purlin, Girt and Cladding Enhancements	8
Frame Member Enhancements.....	9
Extend Columns End Points to Other Members.....	11
Truss Members Snap	12
Custom Truss Editor Enhancements.....	13
Reset All Filters.....	14
Batch-Edit of ‘Transfer Member’ Property in Member Tables	14
Top and Bottom Del-Z Values in Corewalls	15
Enhancements in Brace Insertion Algorithm.....	15
Performance and Memory Enhancements	16
Release Notes in Update Window	16
Rod Sections in Profile Database.....	16
Loading	17
Snow, Rain, and Roof Live Load Cases	17
Load Combination Generation Enhancements.....	18
Enhancements in Wind Load Calculation.....	18
Code Support.....	19
Thailand Seismic and Wind Code Support	19
Better Visibility in Wind Code Selection.....	19
Analysis.....	20
Analysis Post-Processor Enhancements.....	20
Mesh Enhancements	20
Improvements in Shell Wall Group Sum Operations	20
Automated Target Displacement Calculation for Pushover Analysis	20

Improvements in Building Assessment Procedures.....	21
Drift Check for Multi-Storey Columns.....	21
Design.....	22
Automated Wall End Zones (Boundary Elements) for Core-walls	22
Pad Footing.....	24
Beam Settings Enhancements.....	25
BIM Integration.....	26
IFC Import and Export Enhancements	26
Improvements in ETABS Export.....	26
Improvements in SAP2000 Export.....	27
Detailing.....	27
Shearwall Web bar Layout Options for Ductile Detailing.....	27
Beam Elevation Sorting.....	28
Reports	28
Self-Weights in Beam Load Analysis Checks Report	28
Story Materials in Pre-Analysis Checks Report.....	29
Imposed Load Reduction Factors in Pre-Analysis Report.....	29
ProtaSteel	30
Transfer of Sag Rods to ProtaSteel	30
New Multiple Selection Window.....	30
Hollow Section Base Plate Connection Macro.....	31
Zoom Fit to Macros and Other Objects.....	31
Manual Connection Macro Command on Right-Click Menu.....	32
Manual Connection Macro Wizard.....	32
A New Manual Connection Placement Type: On Object.....	32
Auto Name Increment for Detail Objects and Sections	33
Viewport Label Settings	33
Annotation Grouping for Anchor Bolts	33
Shear Stud Insertion by Distance.....	34
Performance Improvements in Welded Pipe Connection Macro.....	34
Improvements in Connection Design Checks and Reports.....	34
Resolved Support Tickets and Enhancement Requests.....	Error! Bookmark not defined.
Other Fixes.....	Error! Bookmark not defined.
Thank You	35

Introduction

After the official release of **ProtaStructure 2021 (5.0.366)** on 7-July-2020, several official updates are released with the following schedule:

Version	Release Date
5.0.366	7-July-2020 (First Customer Shipment)
<i>Optional weekly beta updates and hotfixes ...</i>	
5.0.393	30-July-2020
<i>Optional weekly beta updates and hotfixes ...</i>	
5.0.404	14-Aug-2020
<i>Optional weekly beta updates and hotfixes ...</i>	
5.0.424	1-Sep-2020
<i>Optional weekly beta updates and hotfixes ...</i>	
5.0.454	2-Oct-2020
<i>Optional weekly beta updates and hotfixes ...</i>	
5.1.25	17-Dec-2020

Significant improvements and stability enhancements are made through these updates. Besides these, important and useful new features are introduced that will help to increase your productivity. This document summarizes the cumulative updates since the first official release of **ProtaStructure 2021**.

As a part of our continuous delivery and support commitment, we regularly provide new features and improvements with our free updates and new releases to all maintained users. Updating your software to the latest version is highly recommended to get the most out of **ProtaStructure**.

ProtaStructure 2021 Installation Steps

ProtaStructure 2021 updates are deployed dynamically without the need for an installation package. Installation packages for the latest release can always be found in the **Downloads** section at www.protasoftware.com or **Prota Help Center**.

The latest **ProtaSteel 2021 (3.1.6236.3468)** is available with **ProtaStructure 2021 (5.1.25)** installation. To get the latest ProtaSteel updates, please download and install the latest ProtaStructure 2021 (5.1.25) from the download page on the Prota Software web site.

Installing ProtaStructure 2021 for the first time

1. Download the latest installer from the **Downloads** section in www.protasoftware.com or **Prota Help Center**
2. Make sure that you have the latest Windows updates and graphics card driver. Also, make sure that your system configuration meets the minimum requirements listed in <https://www.protasoftware.com/frequently-asked-questions>
3. Run the installer and follow the installation wizard instructions. Necessary prerequisite runtime libraries will be automatically installed by the installer.

Updating an Existing Version of ProtaStructure 2021

Alternative 1: Updating by Using the Installer

If you have the latest installer, you can use it to update the existing version of ProtaStructure 2021.

1. Before running the installer, remove the previous installations of **ProtaStructure2021**, **ProtaSteel2021**, and **ProtaMeshgen2021**. These are listed as separate items in **Windows Control Panel > Add or Remove Programs**
2. Please make sure you have cleaned the contents of the folders given below. To delete some of the directories, you need to make them visible from the menu **Control Panel > Folder Options > Make hidden files and folders visible** regarding safety permissions of your operating system.
 - a. *C:\Program Files(x86)\Prota\ProtaStructure2021*
 - b. *C:\Users\<UserName>\AppData\Roaming\Prota\ProtaStructure\R5*
 - c. *C:\ProgramData\Prota\ProtaSteel2021*
 - d. *C:\Users\<UserName>\AppData\Local\VirtualStore\ProgramData\Prota\ProtaSteel2021*
 - e. *C:\Users\<UserName>\AppData\Local\VirtualStore\Program Files(x86)\Prota\ProtaStructure2021*

3. Make sure that you have the latest Windows updates and graphics card driver. Also, make sure that your system configuration meets the minimum requirements listed in <https://www.protasoftware.com/frequently-asked-questions>
4. Run the installer and follow the installation wizard instructions. Necessary prerequisite runtime libraries will be automatically installed by the installer.

Alternative 2: Updating by Using the 'Automatic Updates'

ProtaStructure will automatically notify you if there is a new '**Beta**' or '**Official**' version of ProtaStructure 2021. You can see the notifications on **Welcome Page** in the program. Alternatively, you can click on the **Help > Check Updates...** button to see if there are any updates available for your installed version of ProtaStructure.

1. Make sure that you are connected to the internet.
2. Click on the update notification on the welcome page.
3. Click on the **Download Update** button to start downloading the updates. Updated files will be replaced automatically and ProtaStructure will be restarted.
 - a. Alternatively, click on "**Help > Check Updates...**".

For updates, new license codes are not required, and you do not need to reactivate ProtaStructure again.

Important Note 1:

ProtaStructure is not supported on the Windows 7 operating system. Windows 7 does not have the latest required software libraries to ensure the smooth running of ProtaStructure. During installation on Windows 7, unexpected errors may occur, which are beyond our control.

Microsoft removed support for Windows 7 on 13-January-2015. Extended support ceased on 14 January 2020. Windows 7 users wanting to use ProtaStructure must upgrade to Windows 10.

Important Note 2:

You can optionally subscribe to '**Beta**' updates to get the weekly builds of ProtaStructure. However, the beta updates are not official stable releases so they contain untested features and you may encounter bugs and errors. **It is at your own risk to subscribe to beta updates.**

Beta updates can be subscribed from **Settings > View & Save > Update Channel**

If you have subscribed and roll-back to the previous stable release, you must uninstall ProtaStructure 2021 and reinstall again using the installer for the stable release. Please refer to the '**Updating an Existing Version of ProtaStructure 2021**' step on the previous page.

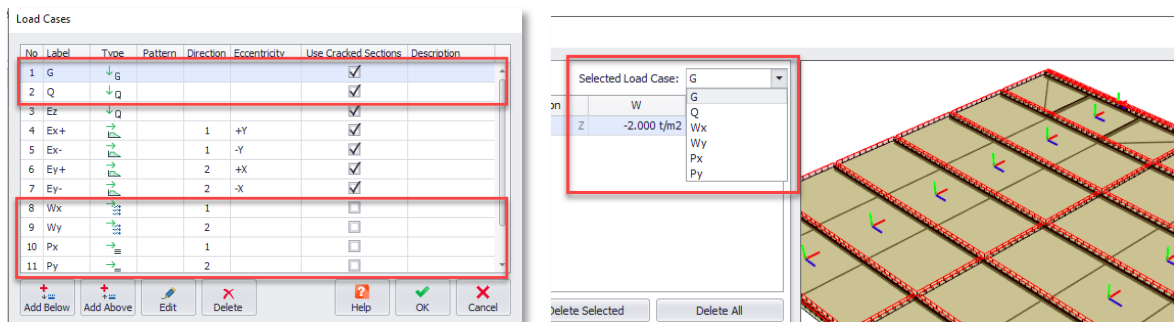
New Features and Enhancements

Modeling

Purlin, Girt and Cladding Enhancements

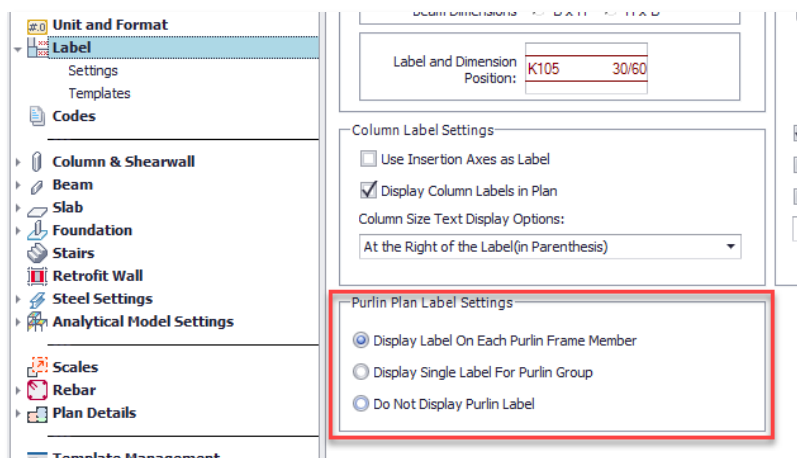
Load Assignment

The loading table in purlin, girt, and cladding UI now follows the existing load cases. In the previous versions, the UI was showing only a few preset load cases such as G, Q, S, Wx+, Wy+. Please make sure that the load cases and combinations are defined before applying any loads on these members, otherwise, the load list will be empty.



Purlin Labels

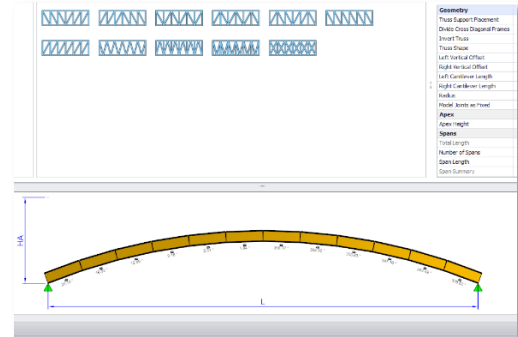
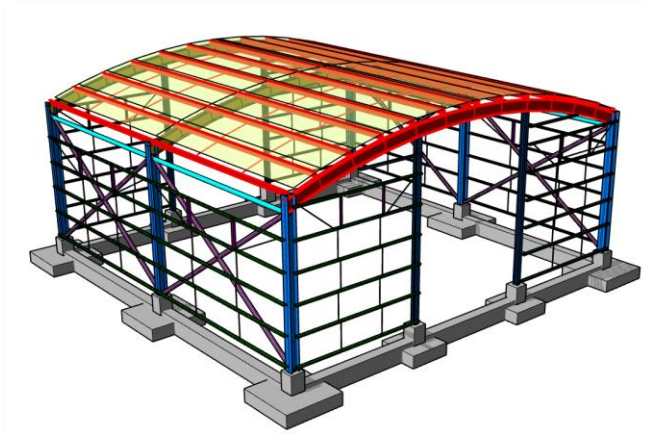
You can now set the display options for purlin labels using **Settings > Label > Purlin Plan Label Settings**. With the new options, you can either display a label on each purlin frame, display a single label for the entire group, or hide the label completely.



Inserting Purlins on Trusses with Only Top or Bottom Chords

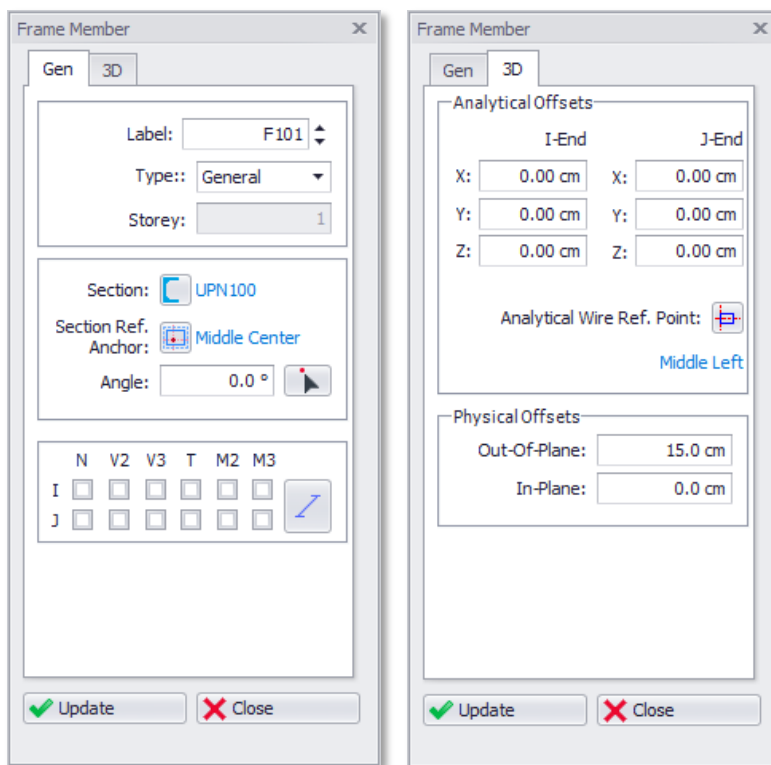
You can delete all diagonals and vertical members of a truss and leave it with only a top chord and bottom chord. This technique can be used to model arched members or other configurations of your choosing.

You can now insert purlins on these kinds of trusses which consist of only top chords or bottom chords.



Frame Member Enhancements

Frame members are enhanced so that you can control more parameters for a more accurate insertion.



Section Anchors

Frame sections can be anchored similar to beams or columns, so that, they enlarge only to a specific direction when their section is changed. If Middle-Center is selected, the section will enlarge (or shrink) in each direction.

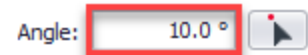


Local Axis Angle

Local axis angle can be specified by several methods now.

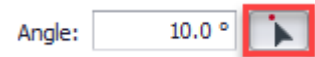
Method 1: Direct Input

Just type in the value of the local axis angle in the **Angle** field. The section will be rotated counter clock-wise with positive values.

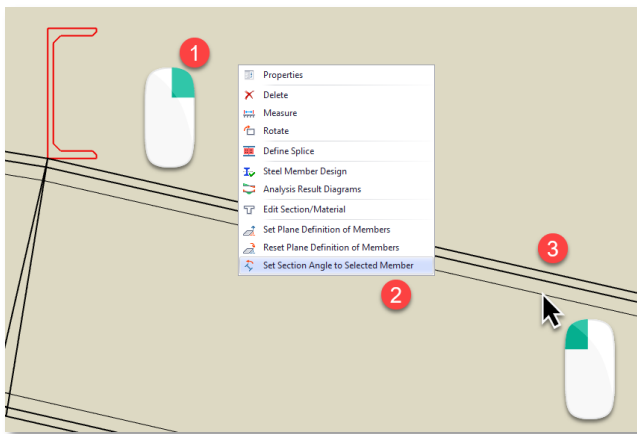


Method 2: Adjust to Member

You can use the button on the property window to adjust the angle to an existing member. Just click the button and pick the member.

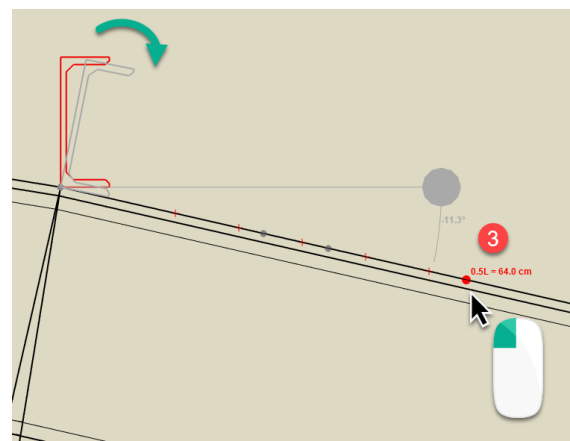
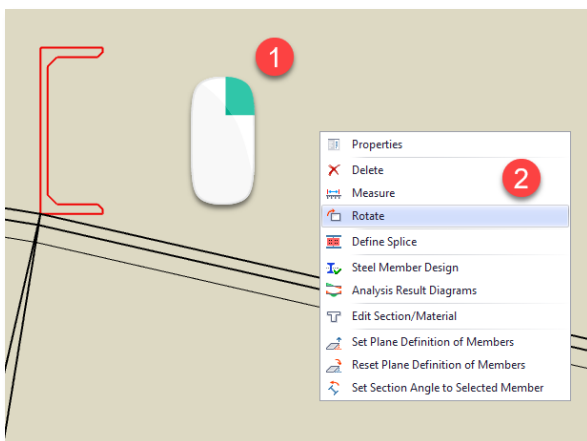


Alternatively, you can select a single frame or multiple frames and select '**Set Section Angle to Selected Member**' on the right-click menu. See the picture below. Beam Members can also be rotated this way.



Method 3: Interactive Rotation

For the cases where you want to show the angle on the screen dynamically by **picking other points** or by using the **dynamic input system** (F2), you can select the frame member and use the **Rotate** command on the **right-click** menu (or contextual ribbon tab)



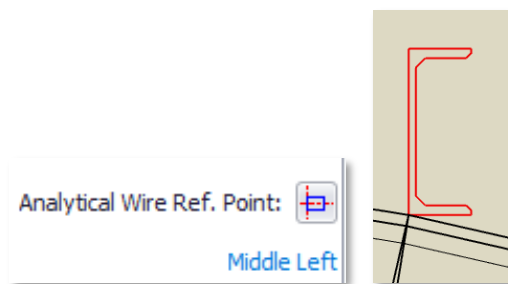
Analytical Offsets

While inserting the frame members, you may need to use different end offsets when parallel offsets are not sufficient. This may be usually the case for vertical and horizontal braces or truss frames. The offset values you enter in these fields will also affect the analysis line of the frame.

I-End		J-End	
X:	0.00 cm	X:	0.00 cm
Y:	0.00 cm	Y:	0.00 cm
Z:	0.00 cm	Z:	0.00 cm

Analytical Wire Reference Point

By this option, you can select the point that the section will be placed with respect to the analytical wire. For example, if the Middle Left option is selected, the analytical line will pass through the middle-left corner of the section and the section will be placed accordingly.



Physical Offsets

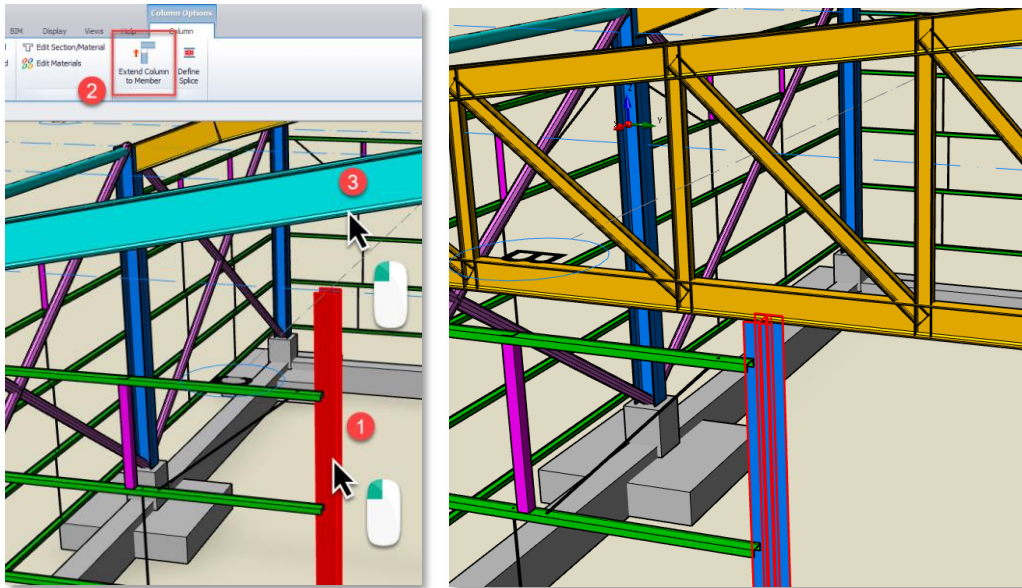
Out-of-Plane and In-Plane physical offsets are used to shift the member parallel to the analytical wire. Unlike analytical offsets, physical offsets will not affect the analysis wire and should be used for constructability purposes. Large values should be avoided.

Physical Offsets	
Out-Of-Plane:	15.0 cm
In-Plane:	0.0 cm

Extend Columns End Points to Other Members

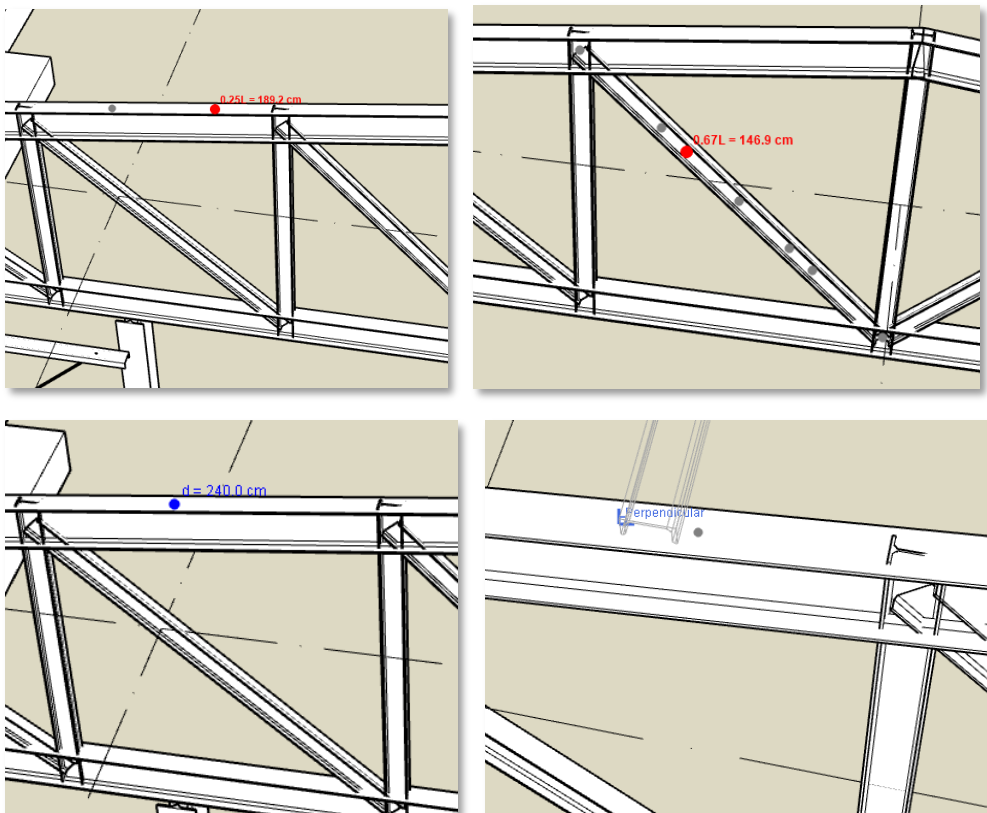
You can now extend column member endpoints to align to other **beams, frames, and trusses**.

1. Select a single column or multiple columns
2. Right Click and select “**Extend Column to Member**”
3. Alternatively, you can select the same command under the **Column Options** contextual ribbon tab.
4. Pick the member to be aligned to. It can be a portal beam, frame member, or a truss.



Truss Members Snap

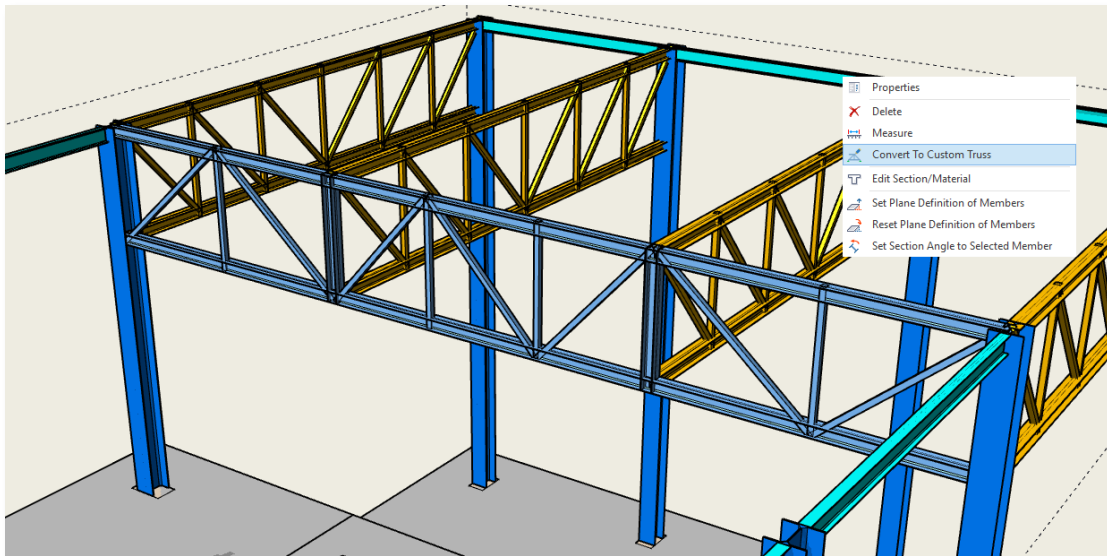
Smart object snapping is extended to include truss sub-members as well. Previously, only truss joints were snapped. Now, you can pick any point along with truss sub members. Smart points at 0.25L, 0.33L, 0.5L, 0.67L, 0.75L can be picked. Also, you can press CTRL and drag your mouse along the member to snap to certain increments.



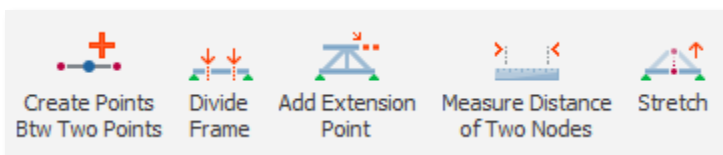
Custom Truss Editor Enhancements

Improvements in Convert to Truss

Convert to Truss operation now better recognizes the frame member sections and automatically makes them default for groups like top chords, bottom chords, diagonals, and verticals.



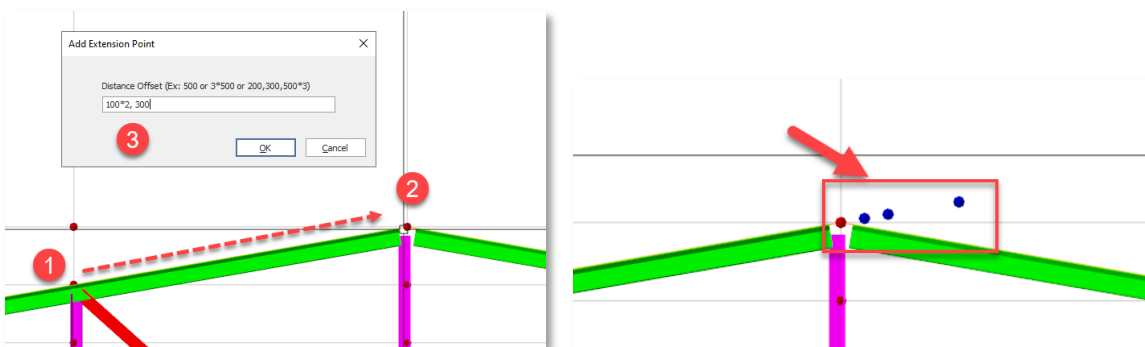
New Tools in Custom Truss Editor



Create Points Between Two Points creates several desired points between two points. Simply pick two points and enter the number of nodes. New nodes will be created at equal spacing.

Divide Frame divides a selected frame into the desired number of frames.

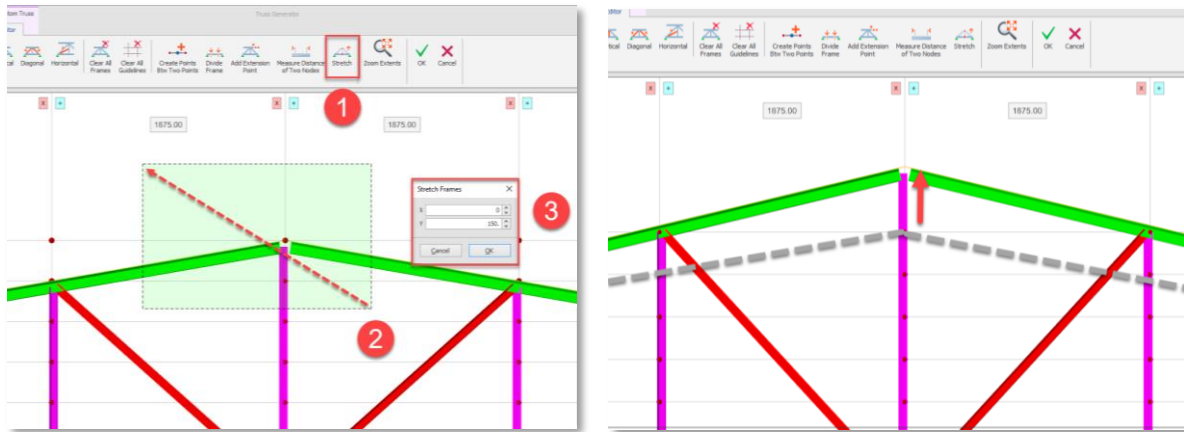
Add Extension Point allows you to add new nodes in the direction of two selected existing nodes.



Measure allows you to measure the distance between two points.

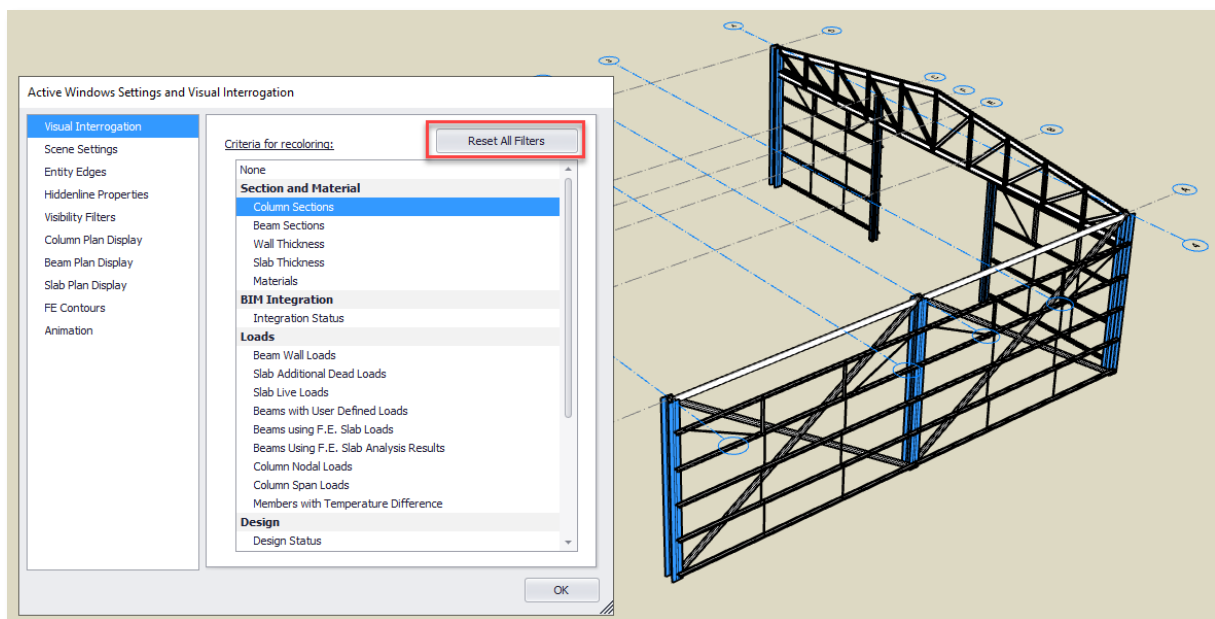
Stretch command works similar to the usual CAD Stretch command.

1. Click Stretch on the toolbar.
2. Select the members and the nodes you want to move with window selection
3. Specify ΔX and ΔY parameters on the input window.



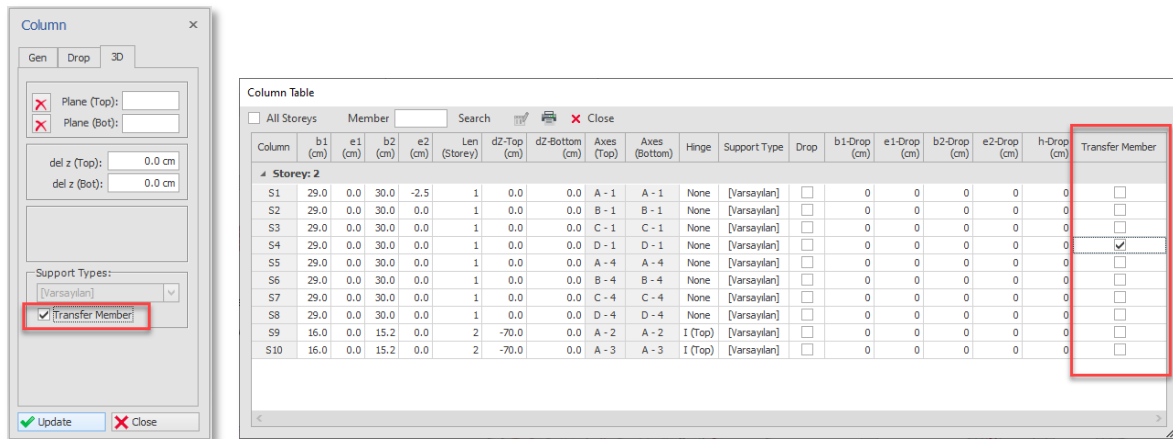
Reset All Filters

All visibility and visual interrogation filters can now be reset at once by clicking the '**Reset All Filters**' button on the **Active Window Settings and Visual Interrogation** dialog.



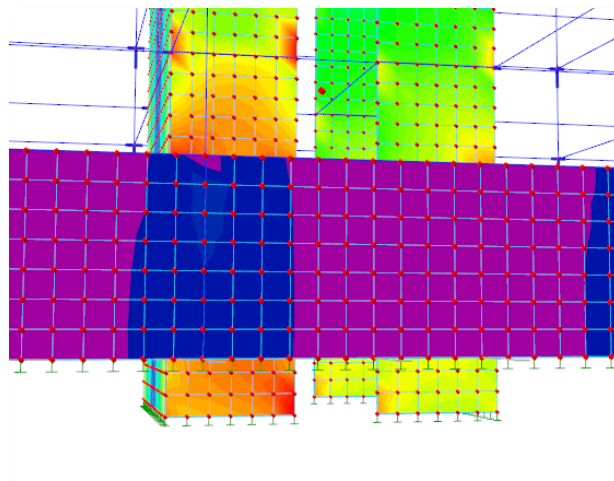
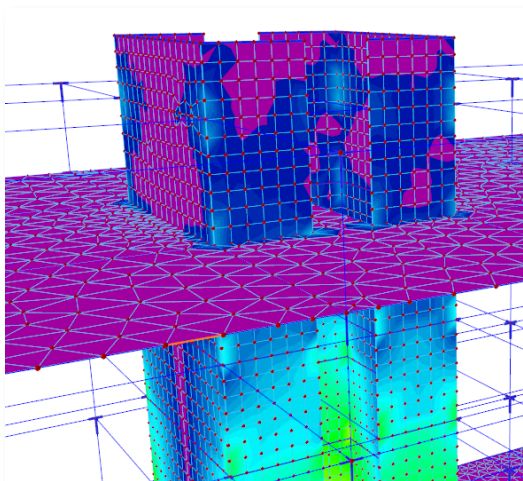
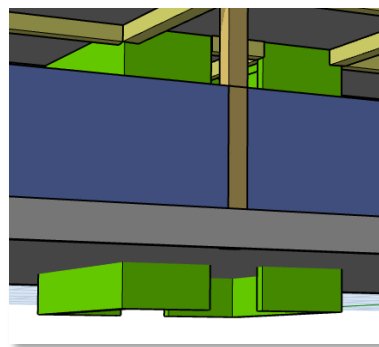
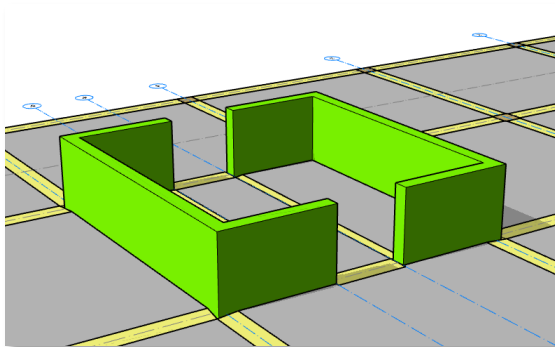
Batch-Edit of 'Transfer Member' Property in Member Tables

In ProtaStructure, columns and walls can be supported by a slab or a beam. These columns and walls will be detected and the analytical model will be created considering this condition. When set as '**Transfer Member**', ProtaStructure will not issue any discontinuity warning for these members and will utilize rigid links where necessary. 'Transfer Member' property can now be set in batch mode for multiple columns and walls.



Top and Bottom Del-Z Values in Corewalls

If you assign Del-Z values to corewall panels before merging them, they will now be considered in the merged corewall as well. All the panels should have the same DelZ value and their top or bottom edge should not be inclined.



Enhancements in Brace Insertion Algorithm

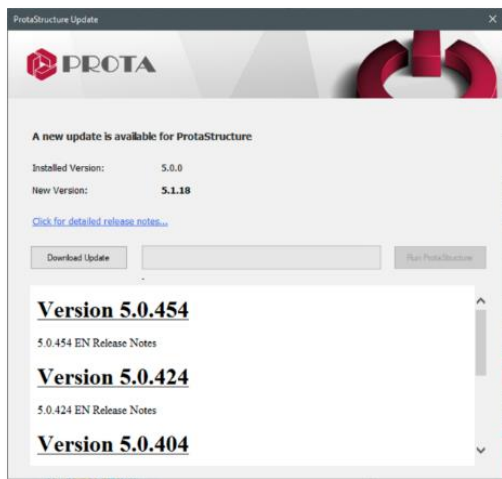
Insertion algorithm for braces is improved so that reported issues in member angles are resolved.

Performance and Memory Enhancements

Significant performance and memory improvements are made. Pick Selection and Window Selection is faster now. Memory usage and management of graphics windows are also improved to release the memory when required.

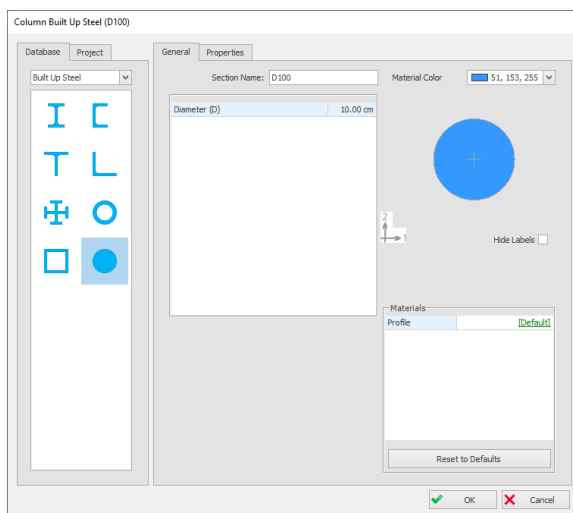
Release Notes in Update Window

Summary of Release Notes is now displayed on the update window. It will be activated after the 5.1.25 release.



Rod Sections in Profile Database

Circular solid steel sections (rods) are now a part of the 'Built-up Steel' profile database.



Loading

Snow, Rain, and Roof Live Load Cases

Snow, Rain, and Roof live load cases can be defined by using 'Loading Generator'.

Generally in codes, it is recommended to define different load cases for these loads and they are recommended to be included in the loading combinations with different coefficients. Especially these definitions are important in steel structures where roof loading is prominent.

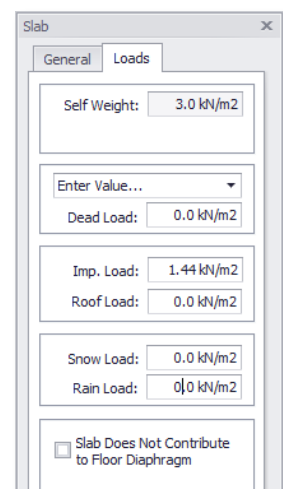
- ☐ Define Combinations for Roof Live Load (Lr):
- ☐ Define Combinations for Snow Load (S):
- ☐ Define Combinations for Rain Load (R):

By checking these options, you can define individual load cases for "Roof Live Load (Qr, Lr in ASCE-based specifications)", "Snow Load (S)" and/or "Rain Load (R)" instead of "Live Load Case (Q)" to roof level slabs and elements (such as roof cladding, purlin, beam.). For example, if you check the Roof and Snow Load fields, a different set of combinations (in the form of Qr or S or R) will be generated for each of these load cases. Even if you assign loads for all of them, these three load cases will not be automatically considered in the same combination simultaneously. However, you are free to consider these at the same time by editing any combination.

No	Combination	LL Red	R/C	Steel	D	L	Lr	S	R	Ez	Ex+
1	D+L+Lr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	1.60	0.50	0	0	0	0
2	D+L+S	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	1.60	0	0.50	0	0	0
3	D+L+R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	1.60	0	0	0.50	0	0
4	D+L *F+Lr	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	0.50	1.60	0	0	0	0
5	D+L *F+S	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	0.50	0	1.60	0	0	0
6	D+L *F+R	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	0.50	0	0	1.60	0	0
7	Dc+Lc+Ez+Ex+	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	1.00	0	0.20	0	1.00	1.00
8	Dc+Lc-Ez+Ex+	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	1.20	1.00	0	0.20	0	1.00	-1.00

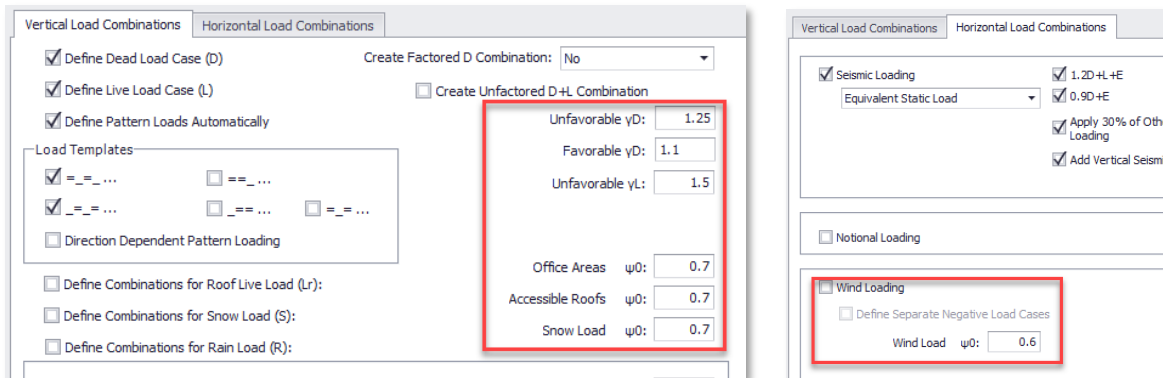
In some codes (eg Eurocode) these load cases are applied with different coefficients (as Qr and S or Qr and R). No codes consider the snow and rain loads together.

If you define a load in the "Live Load (Q)" field together with "Roof Live Load (Qr)" for a member at roof level, both of these loads will be applied together. Therefore, a load should not be defined in the "Q" field for such elements, unless specifically preferred.



Load Combination Generation Enhancements

Loading Generator wizard is revisited and significant improvements are made for Eurocodes, US codes, and similar codes. Also, user feedback is reviewed and implemented in the software. For Eurocodes, Partial factors for dead and live loads (γ_G and γ_Q) and combination values for accompanying actions for imposed loads and wind loads (ψ_0) are exposed to the user for further editing. These values are already automatically taken from the selected national annex.



Please read our [Design Guide on Loading Generator](#) for more information.

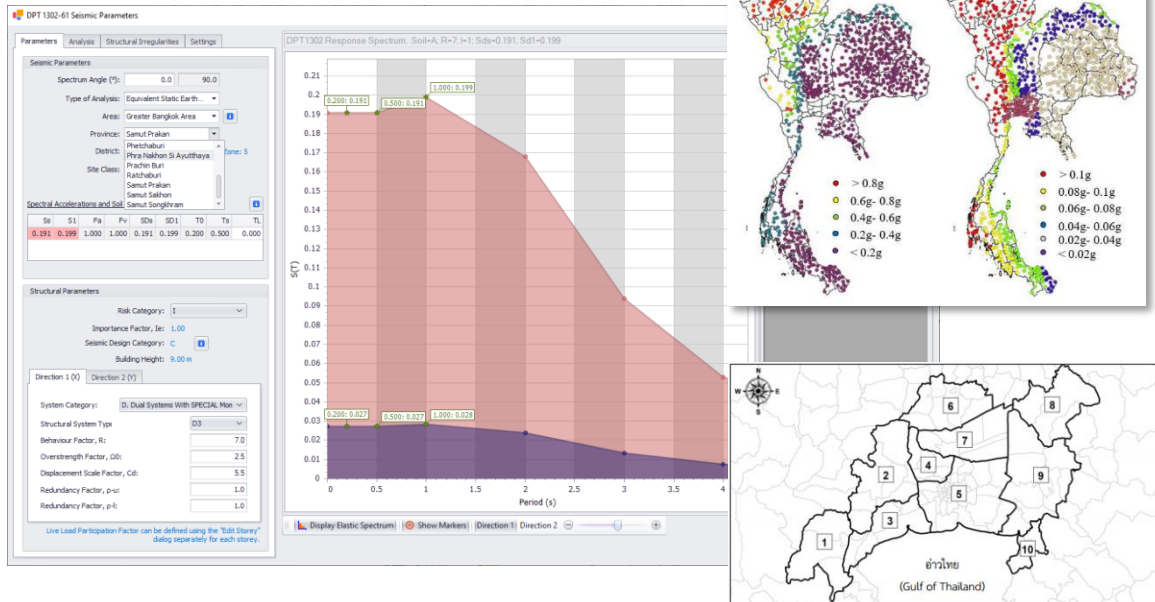
Enhancements in Wind Load Calculation

Stability improvements are made and user feedback is implemented in the wind load calculation module. Calculations and generated load cases are now tightly coupled to selected wind code.

Code Support

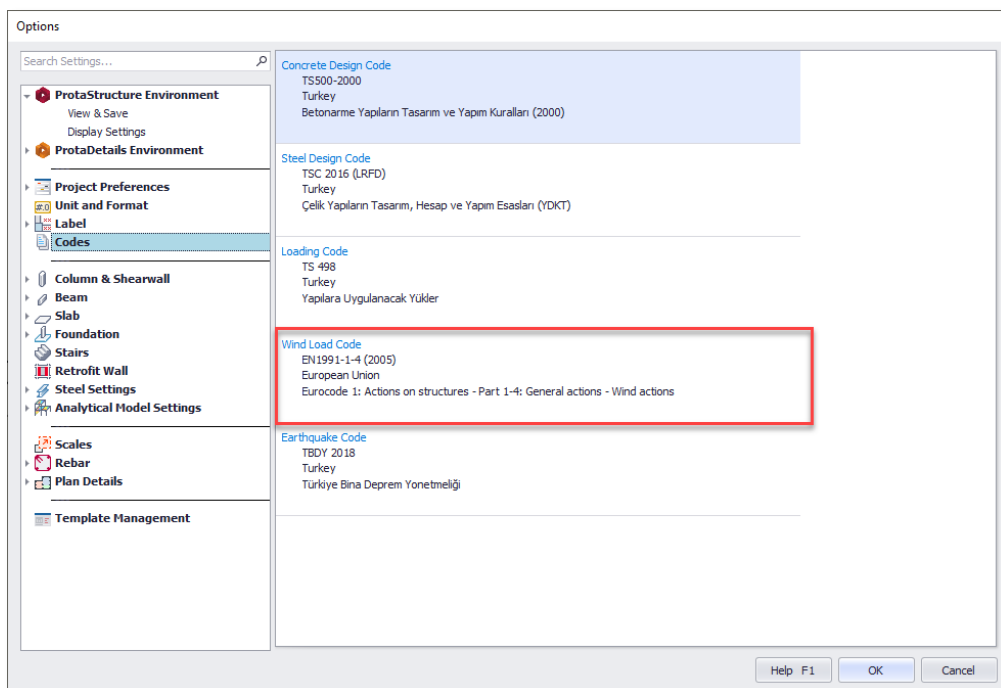
Thailand Seismic and Wind Code Support

Seismic and Wind loads can now be calculated according to DPT Standard 1301/1302-61 and 2012 Wind Code.



Better Visibility in Wind Code Selection

Wind codes now can be explicitly selected on **Settings > Codes**. In the previous versions, the wind code selection was embedded in the wind load module.

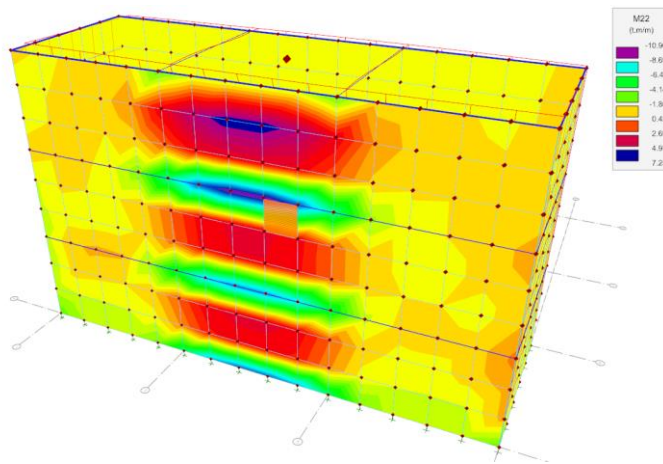


Analysis

Analysis Post-Processor Enhancements

Improved Contour Coloring

Contour coloring is improved so that the spectrum of calculated values is now distinguished better.



Stability and performance improvements are also made in **Diagram and Displacement Scaling**, **Solid View**, and **Selected Member Display**.

Mesh Enhancements

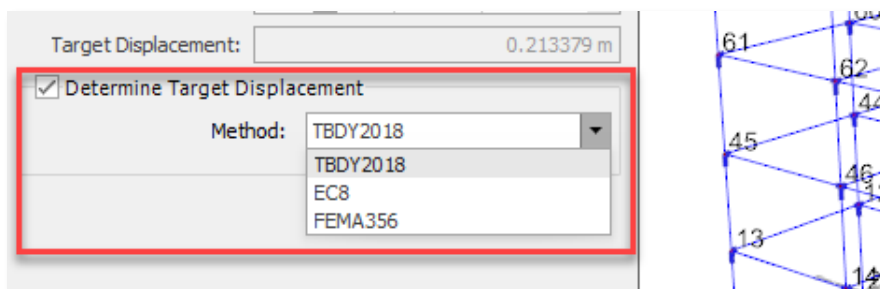
Stability and performance improvements are made in the **Meshing of Slabs with Column Outlines** and **Transfer Walls**.

Improvements in Shell Wall Group Sum Operations

Group sum (section cut) operations in **meshed rectangular** and **corewalls** are significantly improved. The results are now created by the solver and the section cut definitions are exported to various other analysis software.

Automated Target Displacement Calculation for Pushover Analysis

Target displacement can be determined for static pushover analysis using the methods described in FEMA356, Eurocode 8, and Turkish EQ Code.

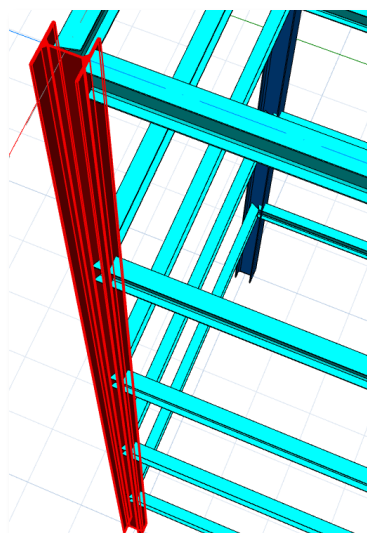


Improvements in Building Assessment Procedures

Stability and performance improvements are made and user feedback is implemented in building assessment procedures.

Drift Check for Multi-Storey Columns

Drift checks can now be done for the columns spanning more than one story. Previously these columns needed to be split at each story level.



RELATIVE STOREY DRIFT CHECK:

(TBEC 2018 - Cl. 4.9.1.3(a))

h : Storey Height
 Δ_{lax} : Reduced Relative Storey Drift ($U_{column,top} - U_{column,bottom}$)
 δ_{eff} : Effective Relative Storey Drift ($\Delta_{lax} * R/I$)

Earthquake Direction: 1 (Angle From X 0.000 Deg)

Fundamental Period (T) = 0.442 sec Sa(T,DD3) = 0.20378g Sa(T,DD2) = 0.54330g $\lambda = 0.375$

Partition Wall Connections: Flash Without Flexible Joint - Relative Drift Limit = 0.008K

At Concrete Storeys: K = 1, At Steel Storeys: K = 0.5

Load Case: Ex+

Storey	h (m)	Δ_{lax} (m)	δ_{eff} (m)	$(\delta / h)_{eff}$	$\lambda(\delta / h)_{eff}$
Storey: 5	3.000	0.000157	0.001099	0.000073	0.000027 ≤ 0.008 ✓
Storey: 4	3.000	0.000208	0.001459	0.000486	0.000182 ≤ 0.008 ✓
Storey: 3	3.000	0.000225	0.001572	0.000524	0.000197 ≤ 0.008 ✓
Storey: 2	3.000	0.000220	0.001540	0.000513	0.000193 ≤ 0.008 ✓
Storey: 1	3.000	0.000140	0.000977	0.000326	0.000122 ≤ 0.008 ✓

Load Case: Ex-

Storey	h (m)	Δ_{lax} (m)	δ_{eff} (m)	$(\delta / h)_{eff}$	$\lambda(\delta / h)_{eff}$
Storey: 5	3.000	0.000157	0.001099	0.000073	0.000027 ≤ 0.008 ✓
Storey: 4	3.000	0.000208	0.001459	0.000486	0.000182 ≤ 0.008 ✓
Storey: 3	3.000	0.000225	0.001572	0.000524	0.000196 ≤ 0.008 ✓
Storey: 2	3.000	0.000220	0.001540	0.000513	0.000193 ≤ 0.008 ✓
Storey: 1	3.000	0.000140	0.000977	0.000326	0.000122 ≤ 0.008 ✓

Dir 1... Relative Storey Drifts satisfies the Limits. ✓

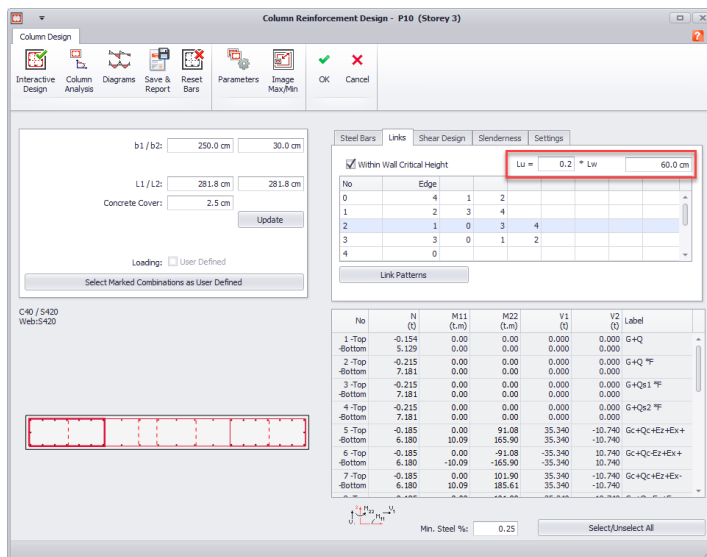
Design

Automated Wall End Zones (Boundary Elements) for Core-walls

Designing end zones (boundary elements) in shearwalls is a challenging task and different codes suggest different approaches. In ProtaStructure, you can automatically layout end zones by using a percentage of related wall leg.

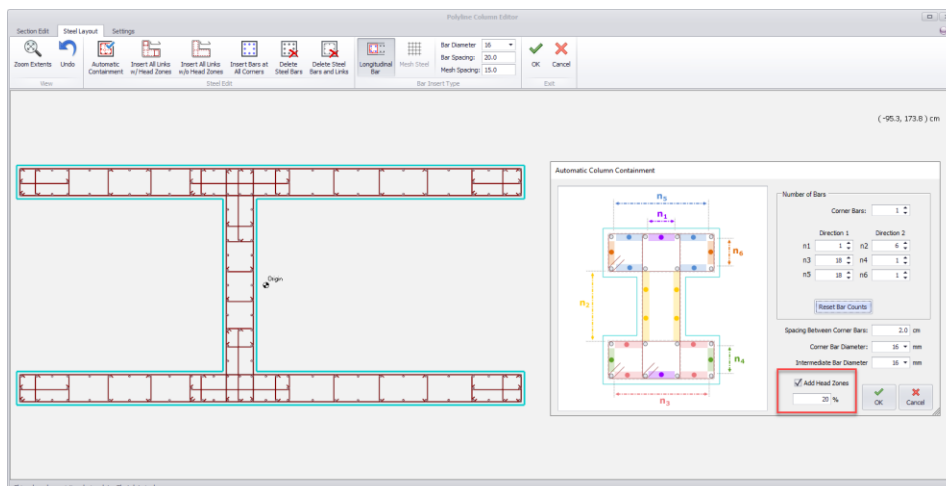
Rectangular Walls

Rectangular shearwall end-zones are laid-out automatically without the need for 'Polyline Column Editor'. In the building critical height- which is usually $H_w/6$ - the end zone lengths are automatically selected as $0.2L_w$, and, $0.1L_w$ outside critical height. The length of the end-zones can be edited in the **Column Reinforcement Design > Links** section.



Corewalls with Known Shapes

End zones of the corewalls with known shapes such as **E, C, L, T, or H** can be laid out automatically using the **Polyline Column Editor**. The percentage of end zones concerning the wall leg can be specified by the user.

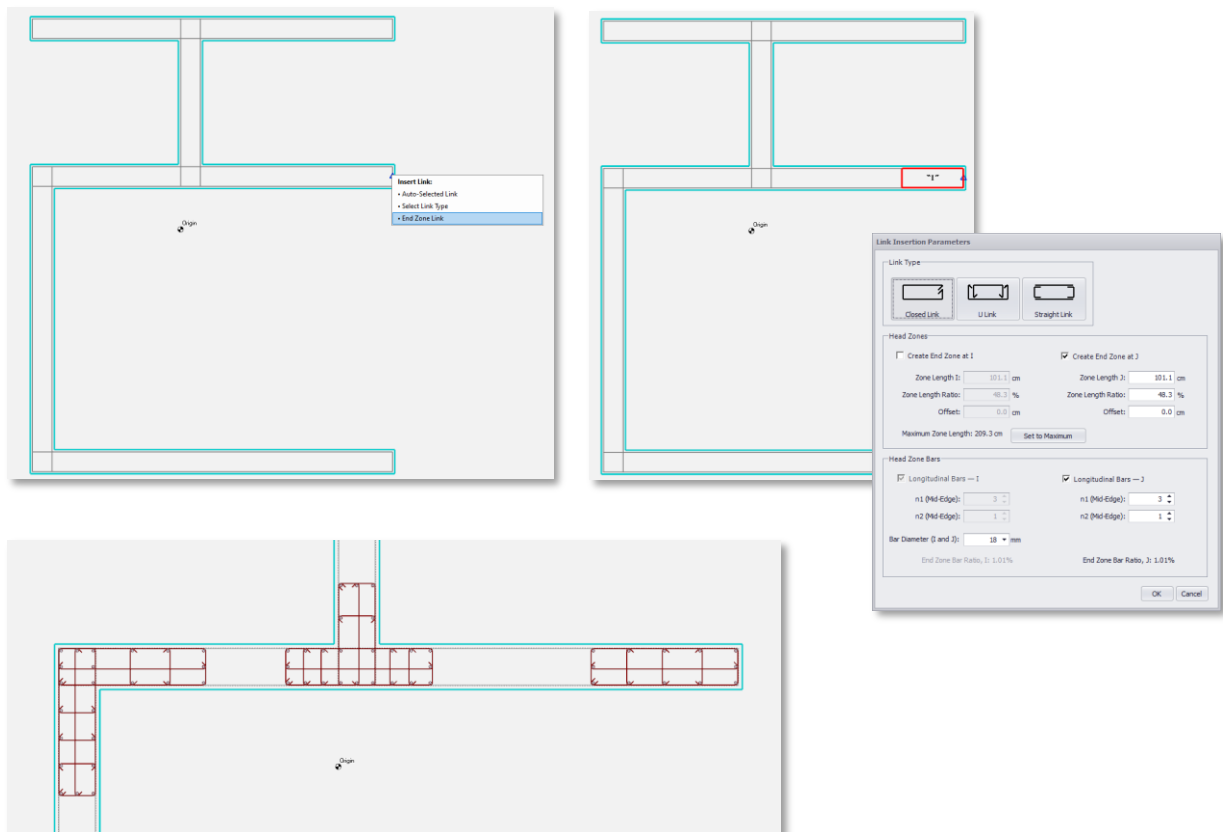


Corewalls with Irregular Shapes

For random shapes, full automation is not always possible. But we have developed tools to make it as easy as possible for you to insert the end zone rebars.

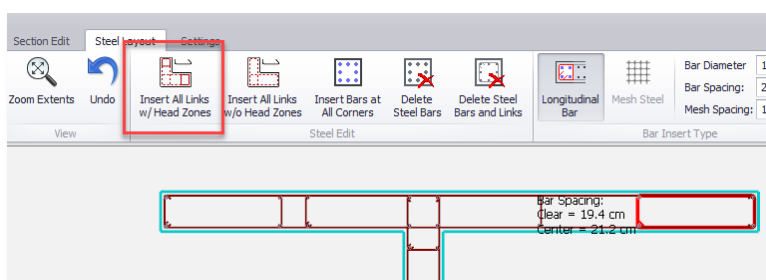
Method 1: Inserting End Zone Rebars Manually

1. Simply right-click on the short edge of a wall leg when a triangular indicator is shown.
2. Select **'End Zone Link'** and drag on the screen.
3. Fine-tune the end zone options on the window and click OK to create the end zone links and longitudinal bars.



Method 2: Inserting End Zone Bar Automatically

You can use the **'Insert All Links w/ End Zones'** button on the ribbon bar to create all **'End Zone Links'** and **'Horizontal Web Links'** automatically. Currently, this command only inserts the end-zone links and horizontal web links, but it will be enhanced to place longitudinal bars and tie-bars as well.

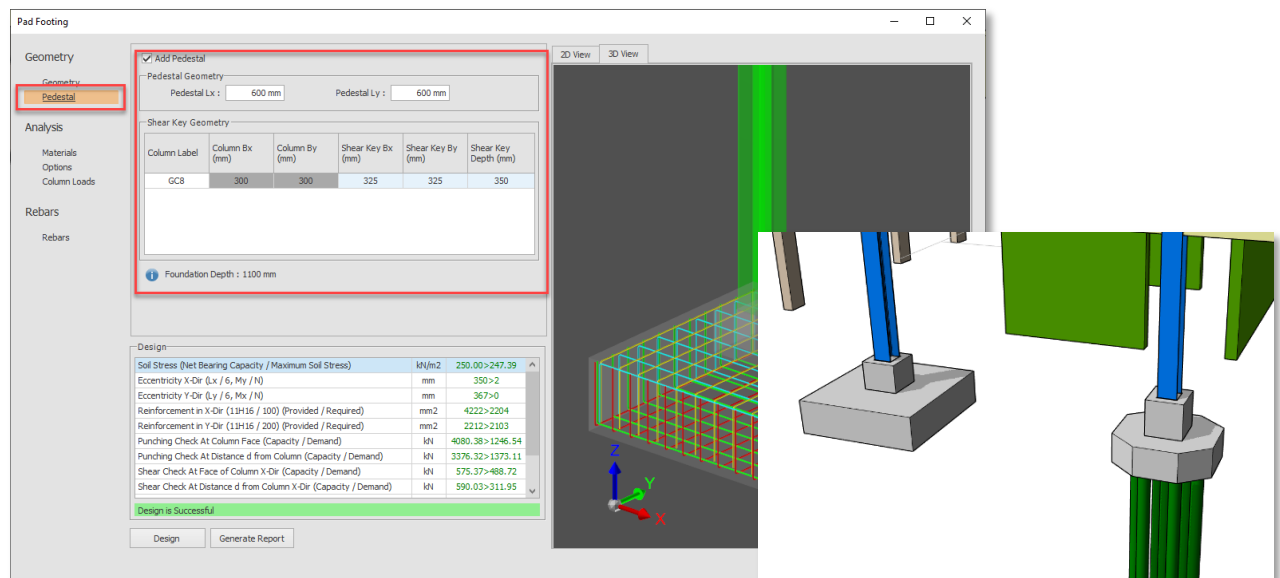


Pad Footing

Pedestal Under Steel Columns

In ProtaStructure, concrete columns are visually extended into foundation depth by default. This extension does not change the analytical model but it affects the detailing of the column. However, steel columns are not extended downwards.

When you insert a pad footing or a pile cap under a steel column, there is a new option to add a pedestal underneath the column. The pedestal itself is not designed.

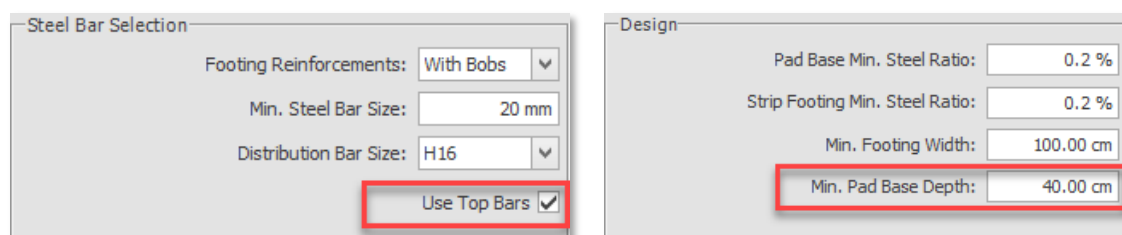


Foundation Settings: Use Top Bars

The new pad footing design module in ProtaStructure 2021 supports the design of top bars in the footing. You can turn on/off the calculation of top bars for all footings using the **Settings > Foundation > Use Top Bars** option. You must update the design of existing pad footings for this setting to take effect.

Foundation Settings: Minimum Footing Depth Setting

You can also control the minimum footing depth that will be considered in the design using the **Settings > Foundation > Min. Pad Base Depth** option. You must update the design of existing pad footings for this setting to take effect.



Stability Enhancements and Design Optimizations

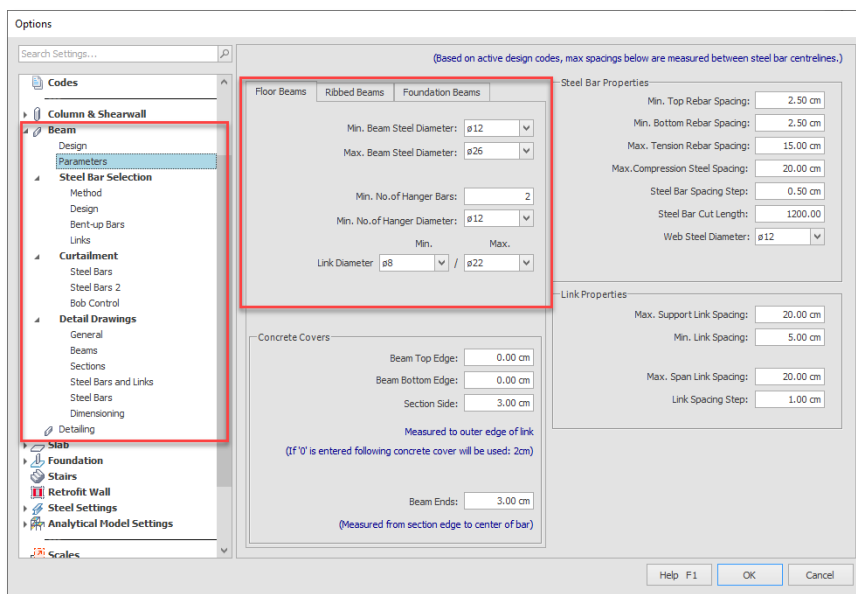
Several stability enhancements and design optimizations are made and user feedback is implemented in the pad footing module.

Beam Settings Enhancements

ProtaStructure provides comprehensive design and detailing options for RC beam members. We have reorganized the beam settings to avoid confusion and increase usability.

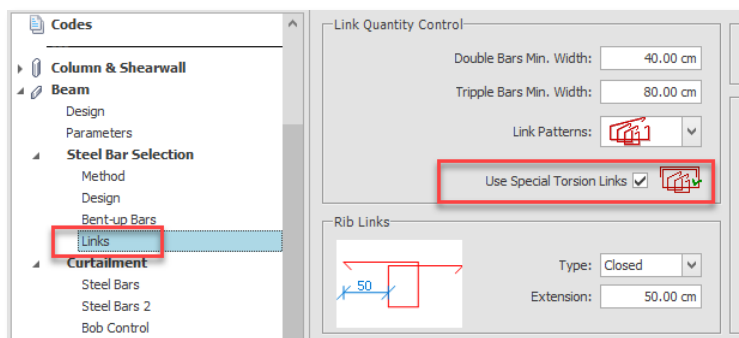
Reorganization and Improvement in Floor, Rib, and Foundation Beam Settings

Floor, rib, and foundation beam settings are separated and reorganized.



Use Special Torsion Links

The 'Use Special Torsion Links' option is revisited for better clarity. In the previous version, the usage was not intuitive. Special torsion links may be required when there is a big torsional moment on the beam.



BIM Integration

IFC Import and Export Enhancements

IFC Import and export operations are improved based on user feedback. Since IFC content and interpretations can vary among structural and architectural software, the problematic cases are resolved as different IFC files are received from our users.

Improvements in ETABS Export

ETABS export functionality is revised and user feedback is implemented. Following items are supported now:

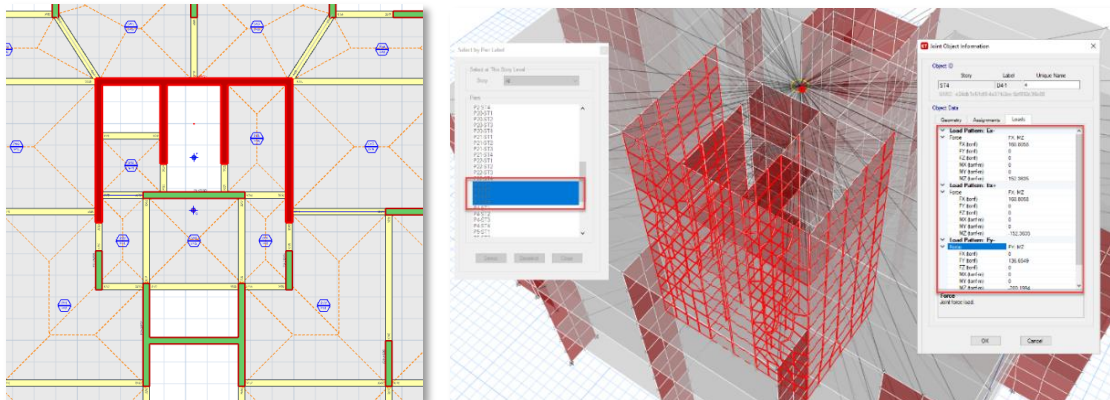
- Equivalent Static Forces are now exported to Diaphragm Master Joints.

Important Note:

ETABS has its method of detecting diaphragm master joint. When exporting to e2k, a separate joint is created in diaphragm master coordinates and EQS loads are assigned to it. You will need to assign this joint to the diaphragm manually. e2k file format does not allow this operation.

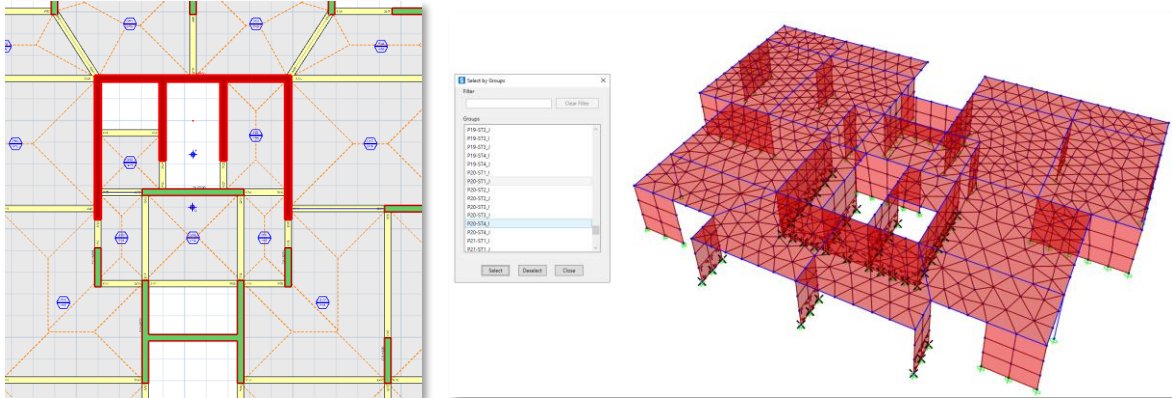
For RSA loads, you need to perform mode superposition analysis in ETABS to obtain the results. Spectrum functions, load cases, stiffness, and mass properties are exported to ETABS by ProtaStructure. Pay attention to use the accidental eccentricities.

- Corewalls are assigned separate PIER definitions in addition to rectangular walls.
- Section modifiers for shell members are now exported consistently with the ones in ProtaStructure.



Improvements in SAP2000 Export

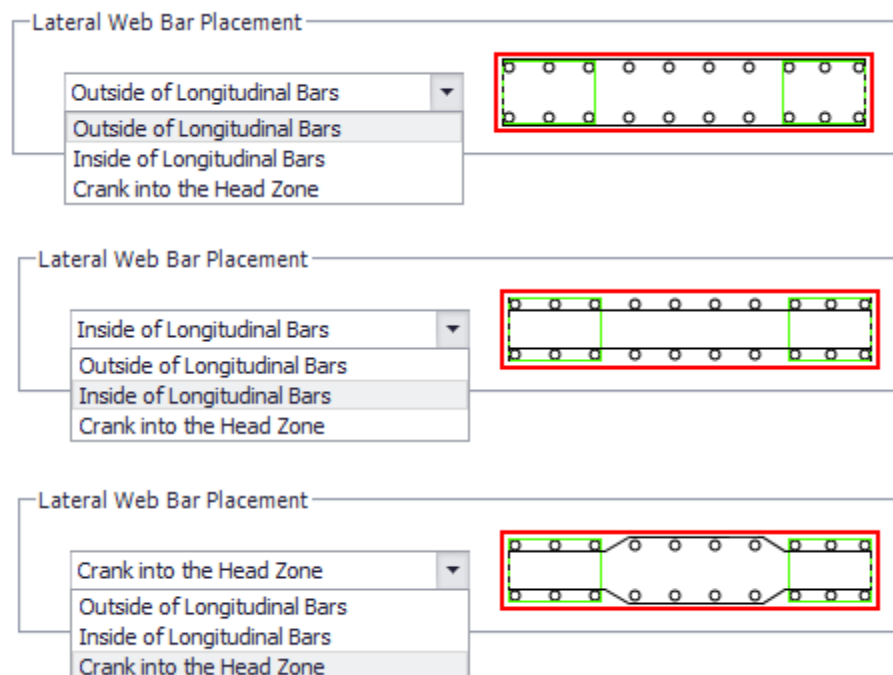
Groups and **Section Cut Definitions** for rectangular walls and corewalls are now automatically communicated to SAP2000 for convenience.



Detailing

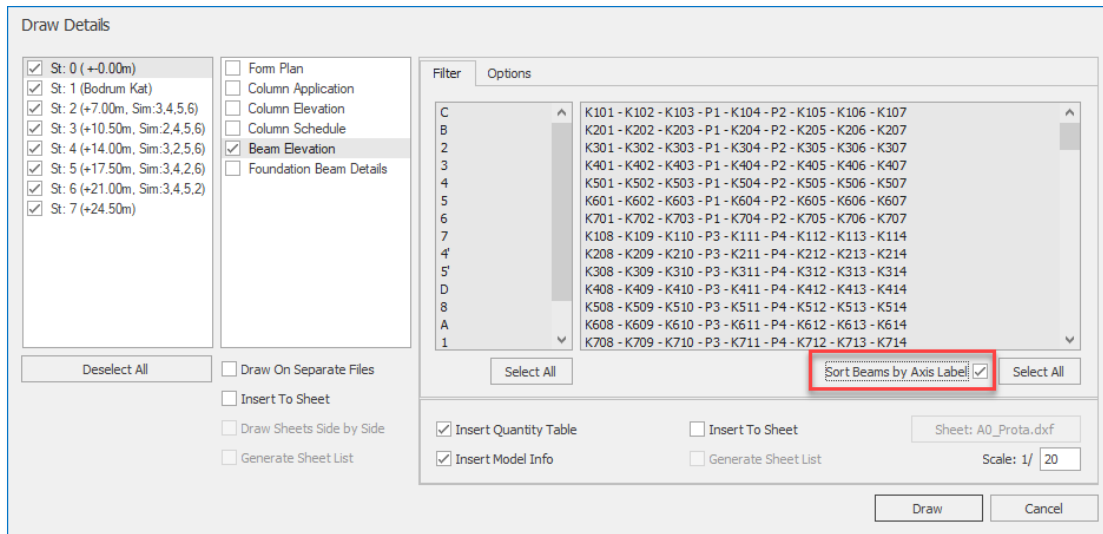
Shearwall Web bar Layout Options for Ductile Detailing

ProtaStructure now supports different shearwall web bar layout options for ductile detailing. The conventional practice is to wrap the horizontal web bar outside end-zone longitudinal bars, which is the first option. Second and third options provide better confinement by putting web bars completely in the core or crank them into end zones. These kinds of detailing options are suggested by some of the seismic codes.



Beam Elevation Sorting

Beam elevation drawing can now be sorted to axis label and story in ProtaDetails.



Reports

Self-Weights in Beam Load Analysis Checks Report

Beam self weights are now included in the Beam Load Analysis Report.

Beam Loads

K101
(60.0/75.0 cm L= 800.00 cm)

Self Weight: $g = 11.25 \text{ kN/m}$

Adjustment Loads: $g = -1.43 \text{ kN/m}$
Partial Distributed Loads (m, kN/m):

D101	x=	0.00	4.00	8.00
	g=	0.00	36.00	0.00
	q=	0.00	8.00	0.00
D108	x=	0.00	4.00	8.00
	g=	0.00	36.00	0.00
	q=	0.00	8.00	0.00

Reactions: GI= 179.644 kN QI= 32.000 kN GJ= 179.644 kN QJ= 32.000 kN

K102
(60.0/75.0 cm L= 800.00 cm)

Self Weight: $g = 11.25 \text{ kN/m}$

Adjustment Loads: $g = -1.43 \text{ kN/m}$
Partial Distributed Loads (m, kN/m):

D102	x=	0.00	4.00	8.00
	g=	0.00	36.00	0.00
	q=	0.00	8.00	0.00
D109	x=	0.00	4.00	8.00
	g=	0.00	36.00	0.00
	q=	0.00	8.00	0.00

Reactions: GI= 179.363 kN QI= 32.000 kN GJ= 179.363 kN QJ= 32.000 kN

Story Materials in Pre-Analysis Checks Report

Default material assignments for different stories are now summarized in the pre-analysis checks report.

Materials:

Concrete Grades: (Default)

		F_{ck} (N/mm ²)	F_{cd} (N/mm ²)	F_{ctd} (N/mm ²)	E (N/mm ²)
Columns	C35	35.00	23.33	1.38	33200.0
Walls	C35	35.00	23.33	1.38	33200.0
Beams	C35	35.00	23.33	1.38	33200.0
Slabs	C35	35.00	23.33	1.38	33200.0
Ribbed Slabs	C35	35.00	23.33	1.38	33200.0
Foundations	C30	30.00	20.00	1.28	31800.0

Concrete Grades: (Storey: 1 Basement)

		F_{ck} (N/mm ²)	F_{cd} (N/mm ²)	F_{ctd} (N/mm ²)	E (N/mm ²)
Columns	C40	40.00	26.67	1.47	34550.0
Walls	C40	40.00	26.67	1.47	34550.0
Beams	C40	40.00	26.67	1.47	34550.0
Slabs	C40	40.00	26.67	1.47	34550.0
Ribbed Slabs	C40	40.00	26.67	1.47	34550.0

Steel Grades: (Default)

		F_{yk} (N/mm ²)	F_{yk} (N/mm ²)	E (N/mm ²)
Columns	S420	420.00	365.22	200000.0
Walls	S420	420.00	365.22	200000.0
- Web Longitudinal	S420	420.00	365.22	200000.0
- Web Horizontal	S420	420.00	365.22	200000.0
Beams	S420	420.00	365.22	200000.0
Slabs	S420	420.00	365.22	200000.0
Ribbed Slabs	S420	420.00	365.22	200000.0
Foundations	S420	420.00	365.22	200000.0
Links	S420	420.00	365.22	200000.0

Steel Grades: (Storey: 1 Basement)

		F_{yk} (N/mm ²)	F_{yk} (N/mm ²)	E (N/mm ²)
Columns	S420	420.00	365.22	200000.0
Walls	S420	420.00	365.22	200000.0
- Web Longitudinal	S420	420.00	365.22	200000.0
- Web Horizontal	S420	420.00	365.22	200000.0
Beams	S420	420.00	365.22	200000.0
Slabs	S420	420.00	365.22	200000.0
Ribbed Slabs	S420	420.00	365.22	200000.0
Links	S420	420.00	365.22	200000.0

Imposed Load Reduction Factors in Pre-Analysis Report

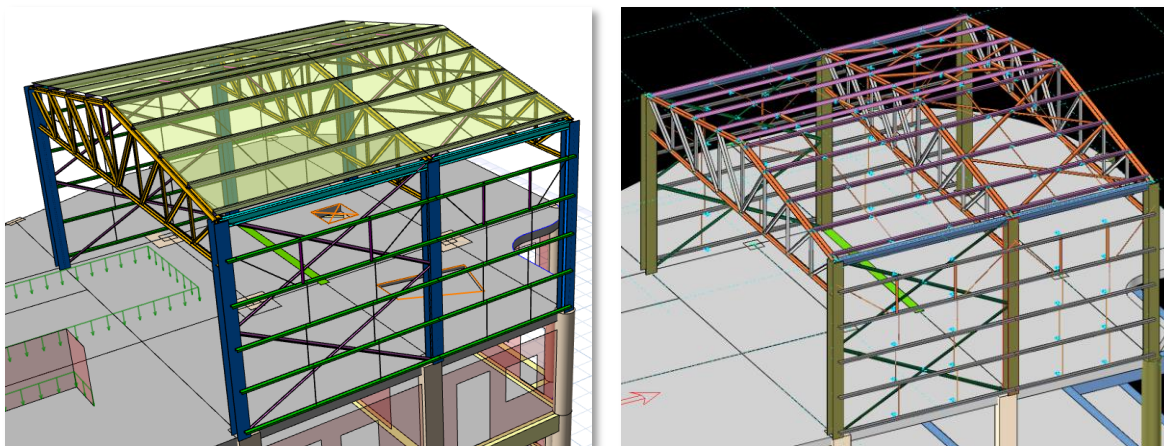
Live load reduction factors are added to the story table in the pre-analysis checks report.

Storey	Storey Height (cm)	Level (cm)	Live Load Participation Factor	Live Load Reduction Factor
7	350.00	2450.00	0.30	0.000
6	350.00	2100.00	0.30	0.000
5	350.00	1750.00	0.30	0.000
4	350.00	1400.00	0.30	5.000
3	350.00	1050.00	0.30	12.000
2	350.00	700.00	0.30	20.000
1 (Basement)	350.00	350.00	0.30	29.000

ProtaSteel

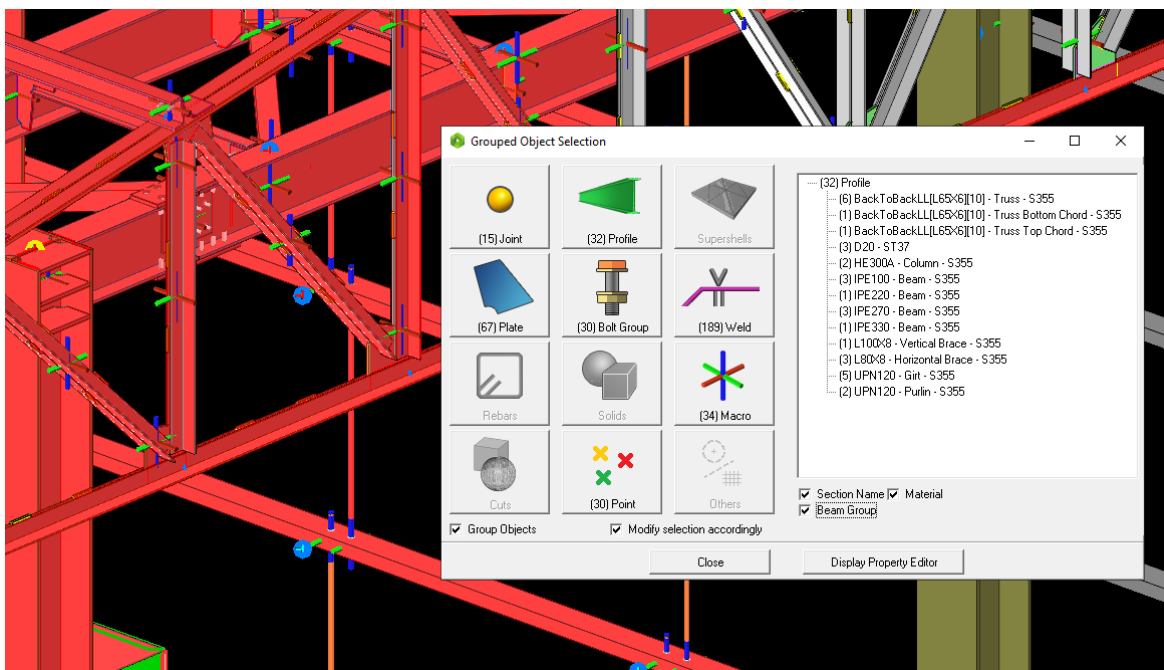
Transfer of Sag Rods to ProtaSteel

Sag-rods that are inserted in ProtaStructure are now transferred to ProtaSteel as well. Sag-rod macro is also available in ProtaSteel.



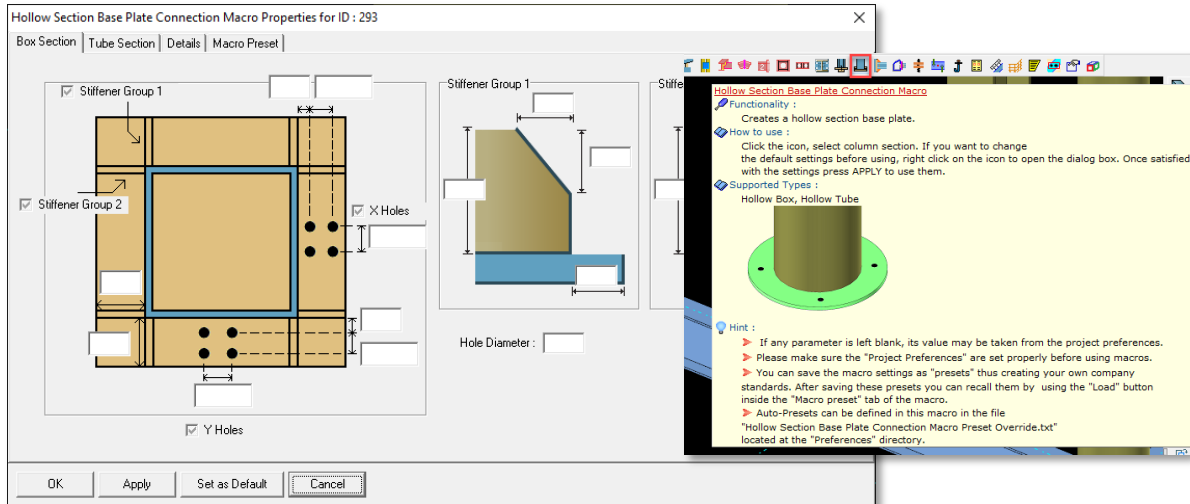
New Multiple Selection Window

Multiple selection window is re-developed to handle object filtering and grouping. This increases usability and reduces the need for the 'Selection Filter' command.



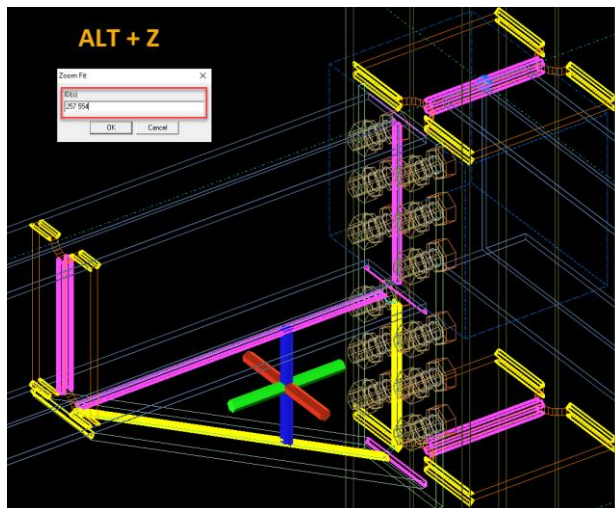
Hollow Section Base Plate Connection Macro

You can now insert base plate under **CHS**, **RHS**, and **SHS** hollow profiles. Shear key functionality will follow soon.



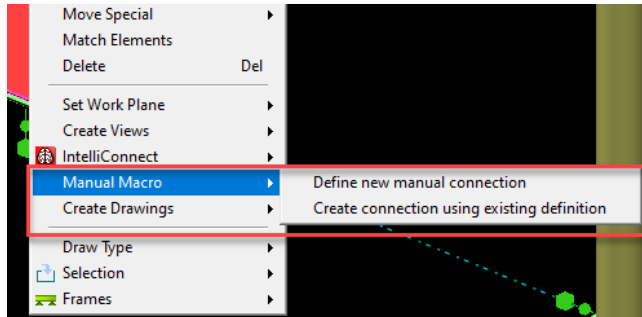
Zoom Fit to Macros and Other Objects

You can now zoom fit to macros (and other objects) by hitting **ALT+Z** on the keyboard and typing in the object ID numbers separated by a space character.



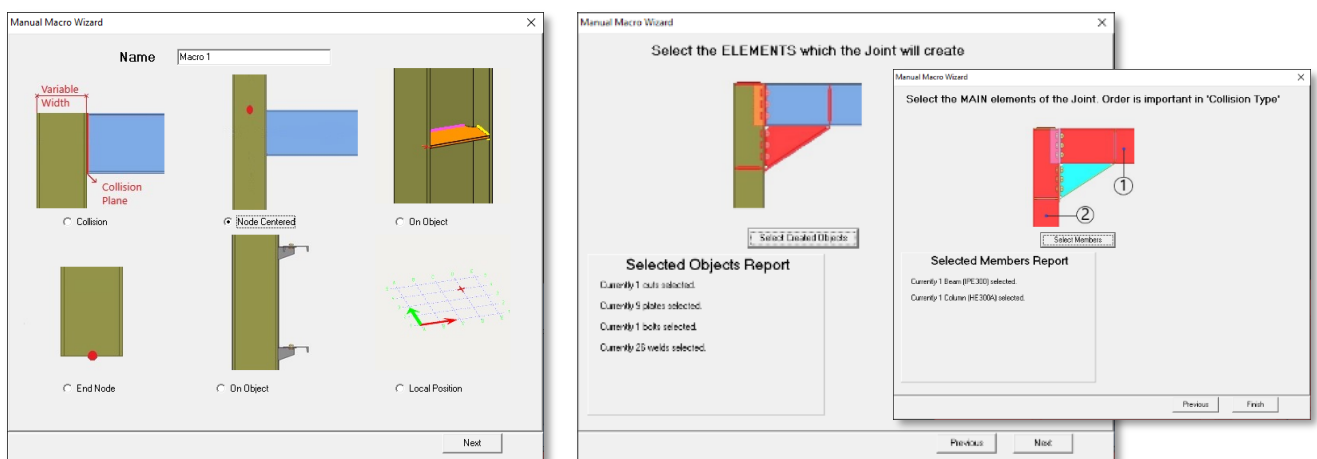
Manual Connection Macro Command on Right-Click Menu

Manual connection macro commands are now added to the **right-click menu**. You can launch the ‘**Manual Macro Wizard**’ or create a manual macro using existing settings.



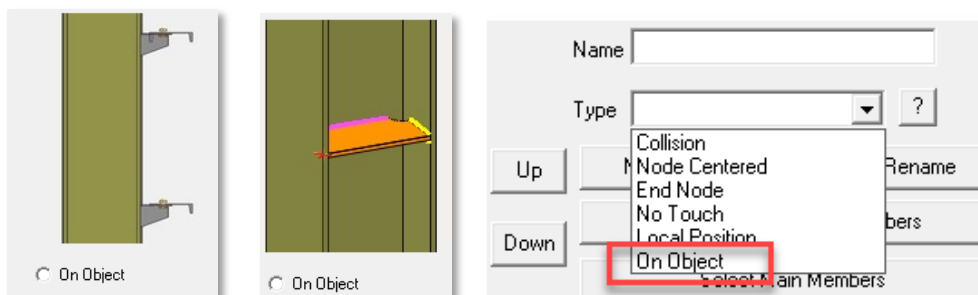
Manual Connection Macro Wizard

Creating manual connections is much easier now in ProtaSteel. You can launch the “**Manual Macro Connection Wizard**” by selecting the “**Manual Macro > Define New Manual Connection**” command on the right-click menu. You can then follow the steps in the graphical UI to define the manual connections.



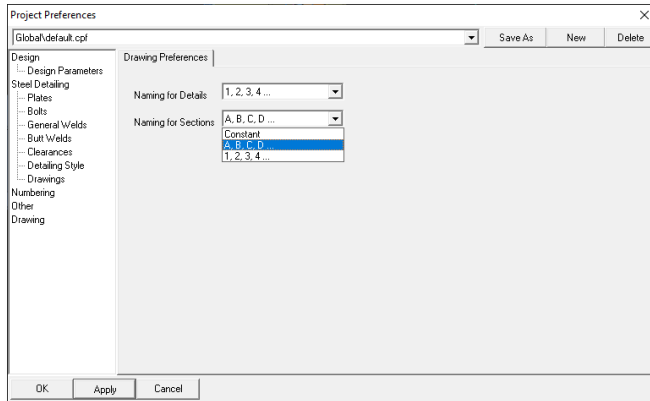
A New Manual Connection Placement Type: On Object

A new manual macro placement type, ‘**On Object**’ is introduced. This type helps you to create custom connections that need to be defined on another object rather than the interaction of multiple profiles.



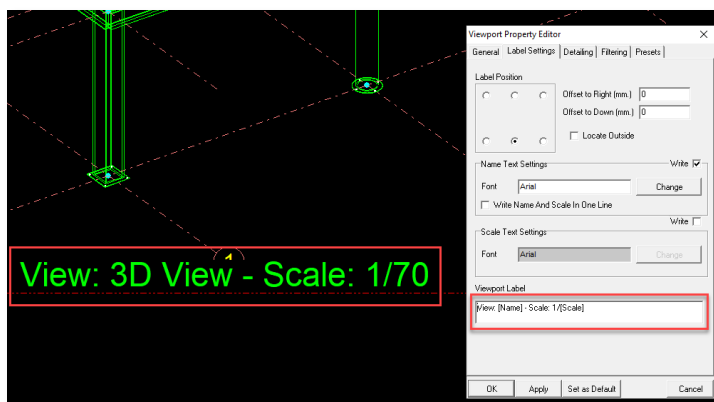
Auto Name Increment for Detail Objects and Sections

You can now set how the detail object and section names will be auto-incremented. New settings are introduced in **File > Settings > Project Preferences > Drawing**



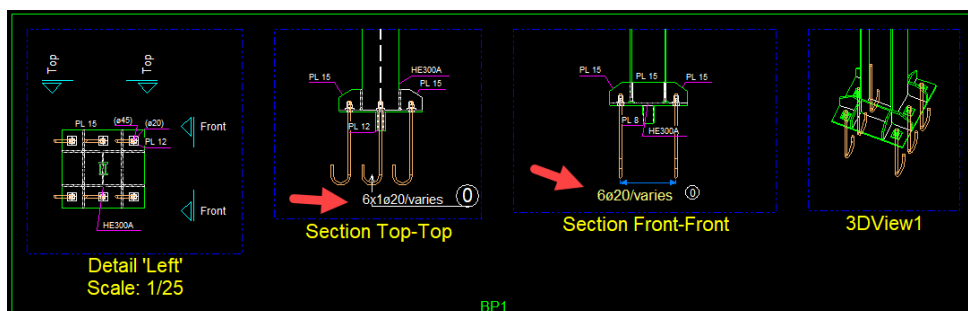
Viewport Label Settings

Viewports can be assigned custom labels in the drawing module. You can use **[Name]** and **[Scale]** keywords to use the view name that the viewport is generated from and the scale information. You can reach the Viewport Label parameter by **Double-clicking the viewport > Viewport Property Editor > Label Settings**.



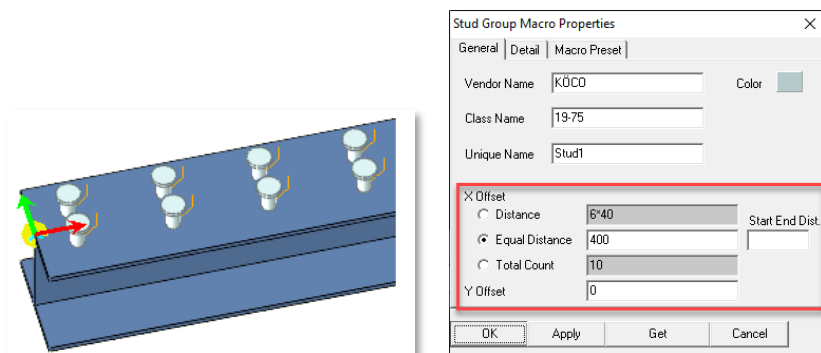
Annotation Grouping for Anchor Bolts

Unnecessary annotations are prevented by grouping the anchor bolts in connection detail drawings.



Shear Stud Insertion by Distance

Shear studs can be inserted at equal distances or a custom distance pattern.



Performance Improvements in Welded Pipe Connection Macro

Optimizations are made in welded pipe connection macro. It works faster now.

Improvements in Connection Design Checks and Reports

Additional checks are introduced and cross-reference clarifications are added for the checks that are absent in one code and available in another. Sketches in the reports are also improved for better clarity.

Thank You

Thank you for choosing the ProtaStructure Suite product family.

At Prota it is our continual aim to provide you with user-friendly, industry-leading technology for building design and documentation

Should you have any technical support requests or questions, please do not hesitate to contact us at all times through globalsupport@protasoftware.com or asiasupport@protasoftware.com (Asia Pacific)

Our dedicated online support center together with our responsive technical support team is available to help you get the most out of Prota's technology solutions.

The Prota Team

