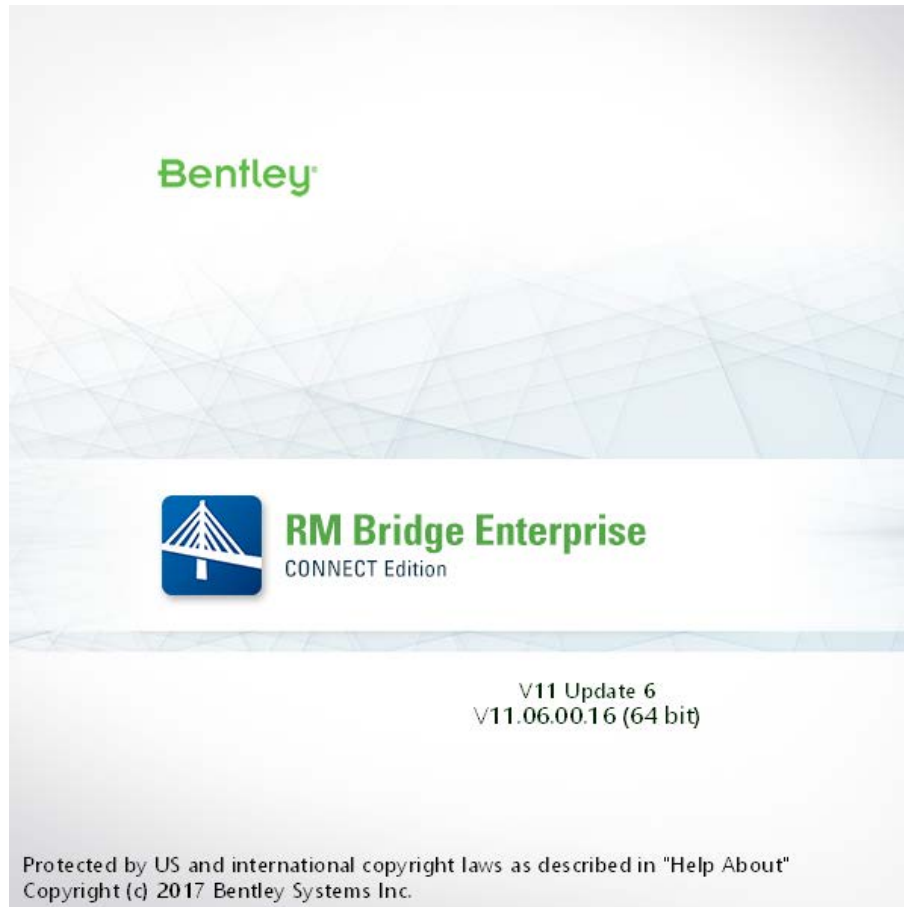# RM Bridge CONNECT Edition V11 Update 6 Release Notes

Enhancements in RM Bridge CONNECT Edition V11 Update 6:

RM Bridge CONNECT Edition V11 Update 6 (V11.06.00.XXX) contains the following enhancements and error corrections:

1. BIM Workflow: Transfer Cross-frames from OpenBridge Modeler (OBM) to RM
2. FEM Enhancements: Composite Forces in Partial Composite Cross-sections
3. Optimization for Wind Load Analysis
4. Optimization for Live Load Analysis
5. Enhancement in Lane Definition in Analyzer
6. New Option for Length Measurement in Modeler and Analyzer
7. New Option for Presenting Eigen Mode Shape Information in Results
8. Response Spectra Per South Korean Standard (KDS17:2018)
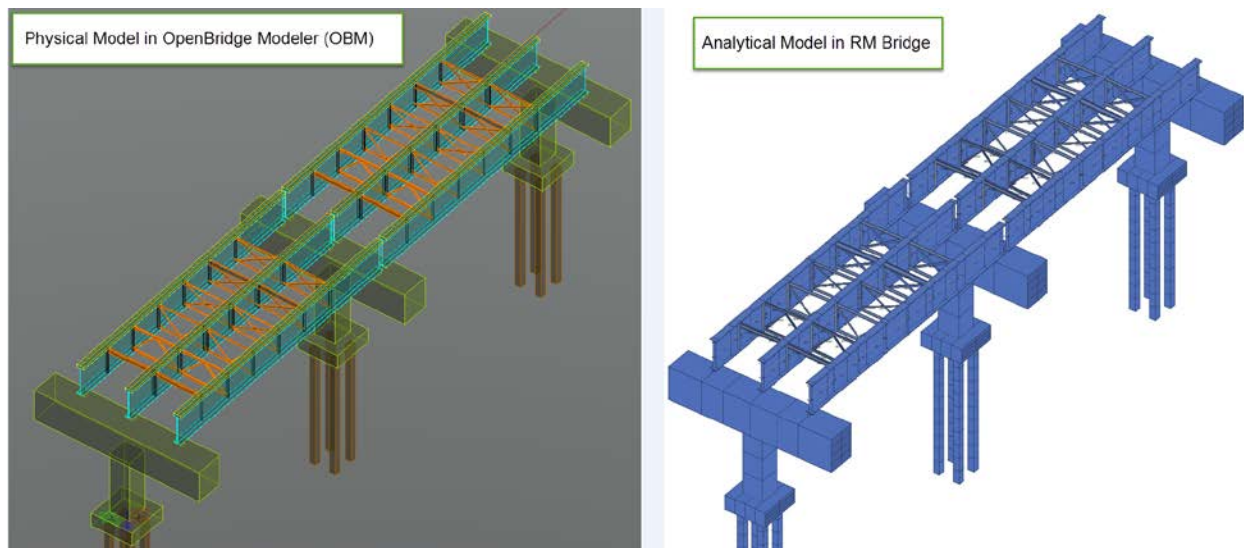9. Enhancements in GUI
10. Error Corrections

If you get an installation error message 1603 or 2738, please follow these steps:

1. Click on the Start menu, choose Run, type cmd and click OK
2. For 32-bit OS
   - To unregister the VBScript engine, run this command:
     reg delete "HKCU\SOFTWARE\Classes\CLSID\{B54F3741-5B07-11CF-A4B0-00AA004A55E8}" /f
   - To unregister the JScript engine, run this command:
     reg delete "HKCU\SOFTWARE\Classes\CLSID\{F414C260-6AC0-11CF-B6D1-00AA00BBBB58}" /f
3. 64-bit OS
   - To unregister the VBScript engine, run this command:
     reg delete "HKCU\SOFTWARE\Classes\Wow6432Node\CLSID\{B54F3741-5B07-11CF-A4B0-00AA004A55E8}" /f
   - To unregister the JScript engine, run this command:
     reg delete "HKCU\SOFTWARE\Classes\Wow6432Node\CLSID\{F414C260-6AC0-11CF-B6D1-00AA00BBBB58}" /f
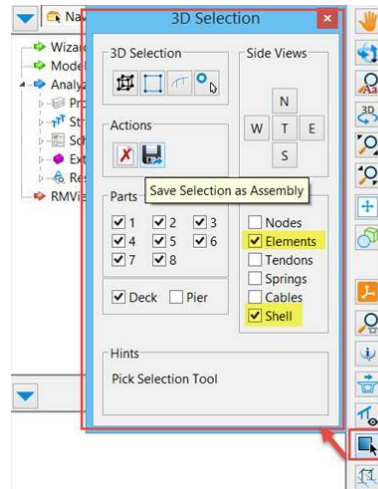4. Retry installation

1. BIM Workflow: Transfer Cross-frames from OpenBridge Modeler (OBM) to RM

Cross-frames created as part of physical models in OpenBridge Modeler (OBM) with information about materials can be transferred into RM Bridge.
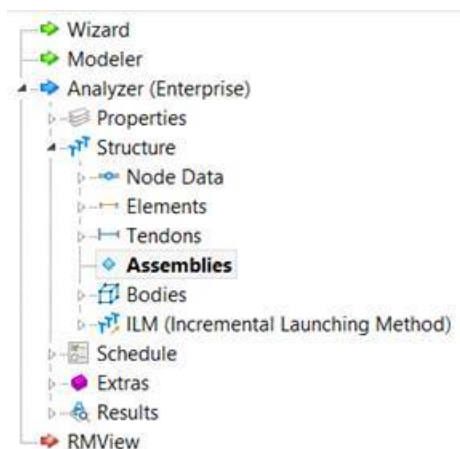
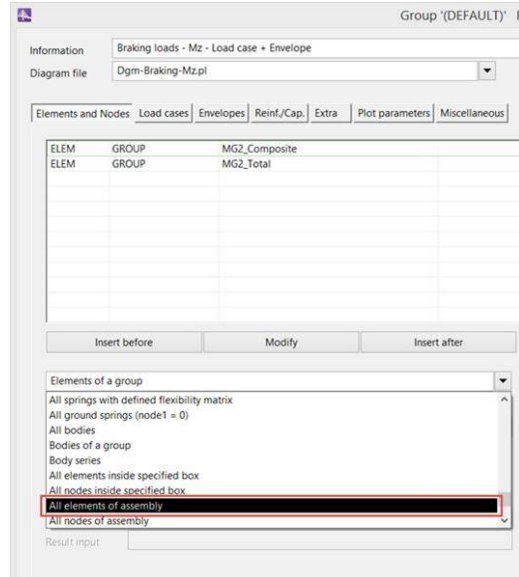## 2. FEM Enhancements: Composite Forces in Partial Composite Cross-sections

Results in partial cross-section in longitudinal direction for full composite FEM and composite hybrid FEM models are now available. To obtain the results, use the 3D Selection tool in main window to save the desired components in the cross-section as assemblies as shown below:

Saved assemblies can be reviewed under Structure:

Results for these assemblies are available by selecting desired assembly from "All elements of assembly" in RM-Set.

Note: In hybrid shell + beam cross-sections, where beam is selected as part of the integral, then program currently uses split forces in the beam for calculating integral results.

3. Optimizations for Wind Load Analysis

Wind action with Refined Method has been optimized to run six times faster. This results to significant reduction of 80% in analysis time.

Wind action (regardless of the Integration Method: Exact or Refined), for models with custom Aero Class Admittance records defined (meaning other than the default values: 1.0 for drag, lift and moment), is now optimized to run three times faster. This results to significant reduction of 66% in analysis time.

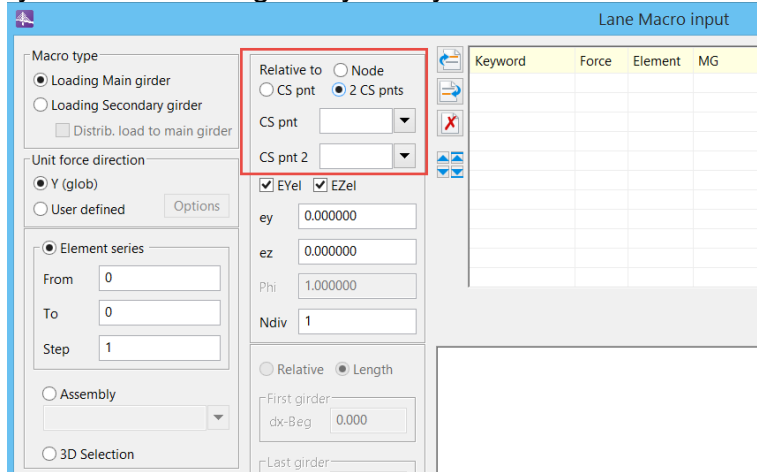## 4. Optimization for Live Load Analysis

LiveL action **with defined load functions** has been optimized for most of Load Train types. This results to significant increase in the range of two to five times in analysis speed. The analyses have been optimized for the following Load Train types:

- N F-loads (constant or variable distances)
- 1 Q-free (1 F-load, N F-loads with constant or variable distances)
- Q, interrupted with 1 F-load or N F-loads, constant or variable distances
- QXFDXFQ
- 1-sided Q-free and F
- AASHTO: 1-axle loading for Mz left and right of pier
- AASHTO: 3-axle loading for Mz left and right of pier

5. Enhancement in Lane Definition in Analyzer

Lane definition in Analyzer has been enhanced to give complete flexibility to define any lanes relative to node or cross section points. A new option for creating lanes relative to

node or cross section points in Analyzer have been added. These new options enable users to define any lanes on a bridge very easily.
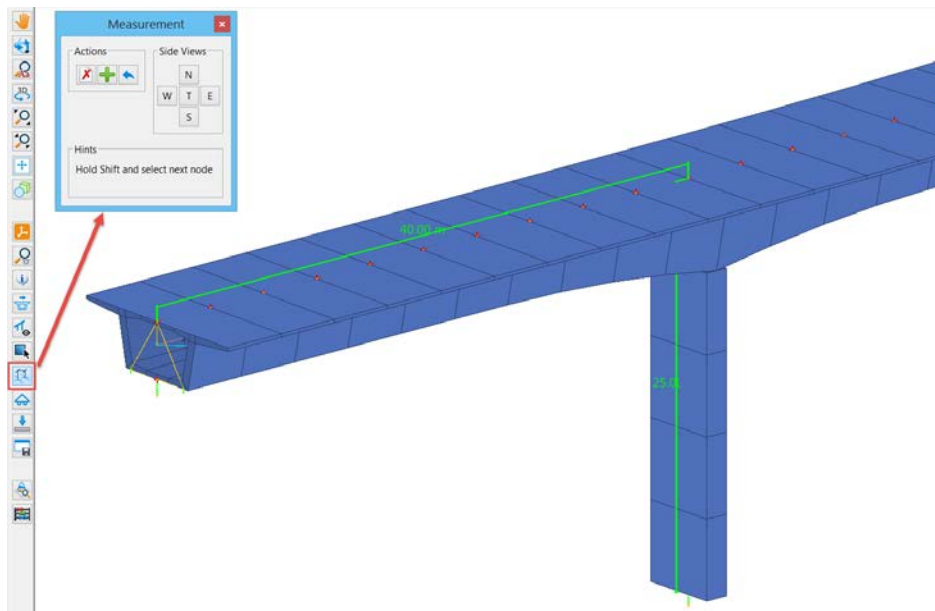

Note: Relative to node: Lane is defined relative to a node related to an element.

Relative to CS Point: Lane is defined relative to specified cross section point in element cross section.

Relative to 2 CS Points: Lane is defined relative to a middle point between specified cross section points in element cross section. In this case, Phi is calculated by program.
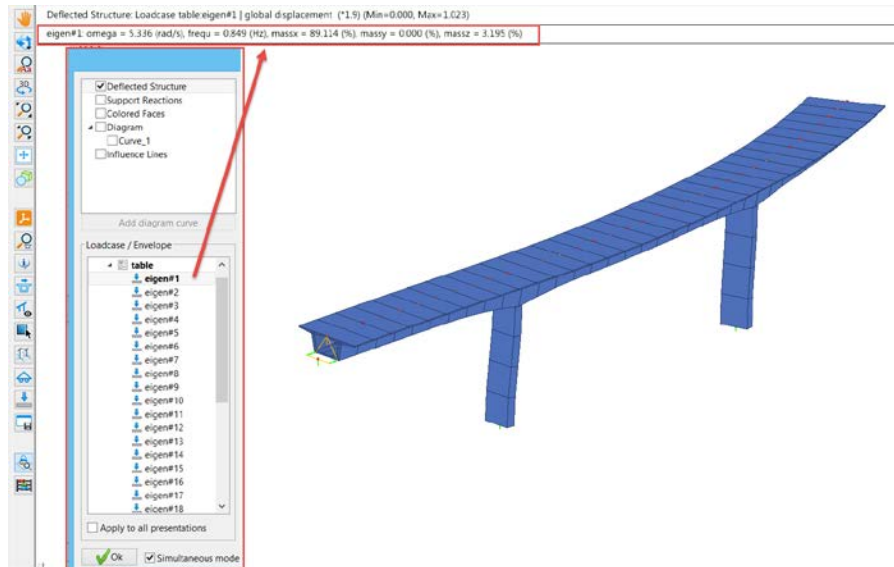

6. New Option for Length Measurement in Modeler and Analyzer

A new option for length measurement has been added in Modeler and Analyzer. This option allows users to graphically validate the length of span, height of piers, etc.
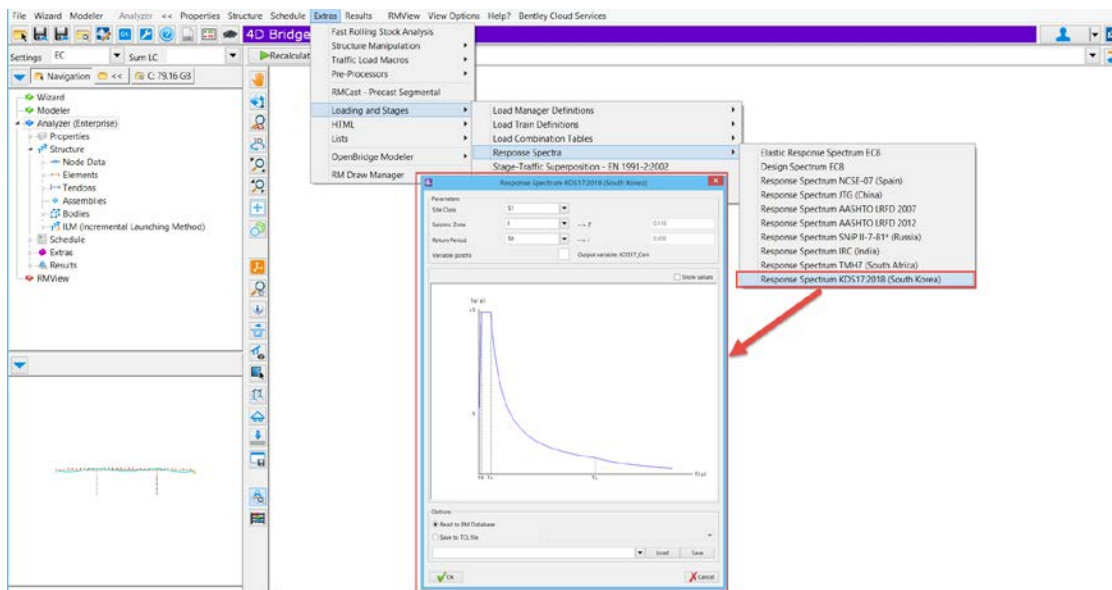
7. New Option for Presenting Eigen Mode Shape Information in Results

Eigen mode shape results is now presented graphically in the main window. User can check the results for each mode graphically with no need for checking the results in the list file.

8. Response Spectra Per South Korean Standard (KDS 17:2018)

A new response spectrum for South Korea Standard (KDS17:2018) has been added. User can access this response spectra from Extras→ Loading and Stages → Response Spectra.
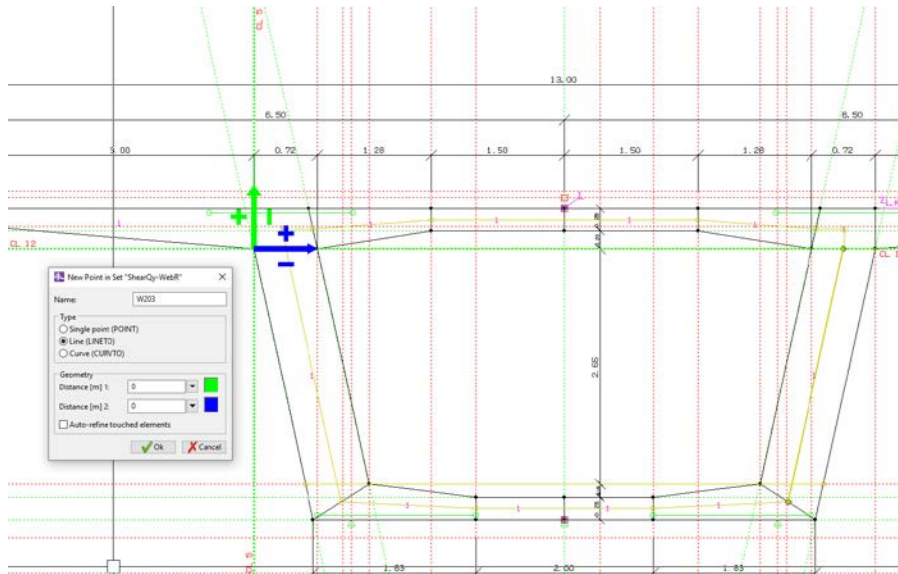
9. Enhancements in GUI

Several GUI enhancements have been implemented to improve the user experience. They include:

9.1 Placing the Point at Intersection of Cross-section in Modeler

A new graphical display for placing points at intersection of cross-section in Modeler has been added. Display has been extended to indicate direction of construction line and side for positive and negative input.

9.2 Improvements in Link Definition

A new option for subdividing the link elements has been added. When this new option is enabled, program will calculate all parts which are between link start/end parts and it will generate additional beam elements. If this option is disabled, program will create a single beam element for entire link.

Also, a new option to define a material and group for link segments have been added.

Note: When a cross member is added, program automatically will place beam numbers:
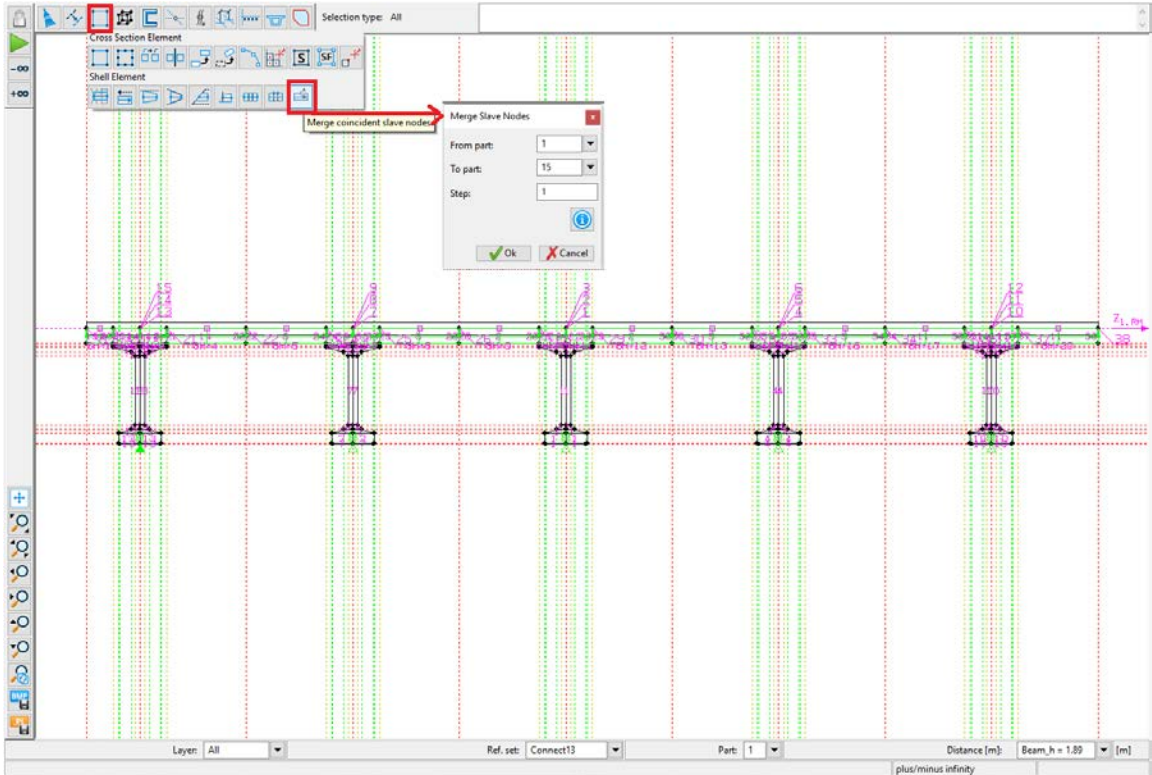
- o *If Automatic numbering schema is enabled, then the program will get next available beam number.*
- o *If Automatic numbering schema is disabled, then program will compute maximum beam number used in project and apply and offset of 100 to generate a new beam number for link segment.*

9.3 Merge Slave Nodes in Cross-section

A new option for merging the slave nodes in cross-section with shell elements has been added.

With this new option, users can merge two slave parts at the same position into a single slave part.
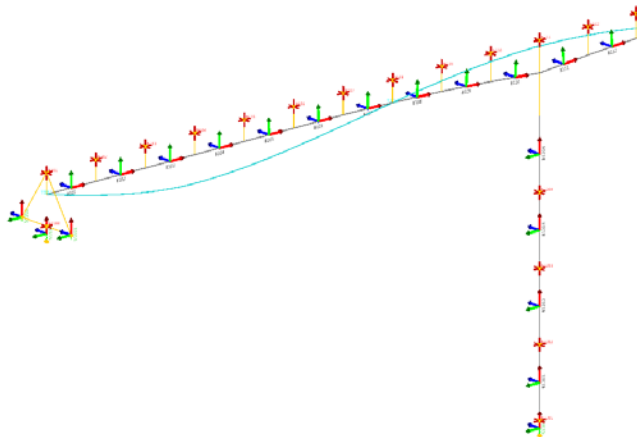
How it works:
- o Select the beam parts interval where the program will search for any two or more slave parts at same position;
- o Based on the selected parts, the program will search through all shell elements assigned to them;
- o When two or more salve parts at same position is found, program will highlight corresponding shell elements;
- o When ok is pressed, the program will merge these slave parts into one and apply all needed corrections.

9.4 Display Local Axis at Middle of Elements
For better visualization, local axis is now displayed at middle of elements.

9.5 Enhancement in Uniform Eccentric Element Load

A new option for placing eccentric loads relative to the cross-section points has been added to Uniform Eccentric Loads (QEXG). With this new option, users have complete flexibility to add Uniform Eccentric Loads in any location define on the segments.

9.6 Enhancement in Copying Tendons in Modeler

When a tendon is copied from one part to another part inside the same cross section, geometry points will automatically be updated to reflect the new position. If the tendon point has the same cross section point name between part elements, in "Geometry" menu, the tendon point should be automatically assigned to the correspondent part and User won't need to open Geometry menu and perform the modification.

10.   Error Corrections

The following errors have been corrected:

- In situations, where post yield stiffness factor was close to 1, the program was using a much smaller tolerance than necessary. This tolerance value was set to 0.1% which is now increased to 0.5%.
- The Intel Parallel Sparse solver selection for action Buckle and Failure were not implemented and hence were failing to solve in such situations. User had to default to old solver in such situation to solve buckling or failure problem. This issue is now corrected in this release.
- FSGM load type was found to be not working on FEM bodies when moment was applied. This issue is now corrected.
- The issue between differences in the results of UltRes in V10 and V11 has been fixed.
- The modification made in Reference Sets using option "Insert cross section at intersection point" inside cross section window in RM Modeler. In the previous version, when reference sets name is copied, If the reference set names from

source cross section are the same as the one from destination, then program generated default names like "_0001" which was not suggestive. After improvement, the new generated name will keep original one and add reference set part number. Eg: reference set name = "PT1"

- o In previous version program generated "_0001"
- o Now program generates "PT1.1"

- The issue related to GUI numbering schema has been fixed. In the previous version, when user selects option to edit/copy a main girder or pier, the input for numbering schema GUI controls was zero but that main girder has already some numbering applied. This issue has been fixed by loading existing numbers and fill them into GUI when user selects edit/copy options.

Product Interoperability
- OpenBridge Modeler
- MicroStation, GEOPAK, MXROAD