RM Bridge CONNECT Edition V11 Update 9 Release Notes (August 2020)

Enhancements in RM Bridge CONNECT Edition V11 Update 9:

RM Bridge CONNECT Edition V11 Update 9 (V11.09.00.XXX) contains the following enhancements and error corrections:

1. BIM Workflow: Revised Model Transfer from OpenBridge Modeler (OBM)
2. BIM Workflow: Import and Update Build Order for Segmental Bridges Transferred from OpenBridge Modeler (OBM)
3. Reinforcement Design -Phase II
4. Australian Code Update AS5100
5. Plot Element Moment Curvature Diagram
6. New Element Hinge Action (ElemHinge)
7. New “Find” Button to Search in the Actions and Tree
8. AddCon Output List File
9. Error Corrections

Note: *All enhancements will be available in OpenBridge Designer (OBD) CE V10.08.02 and error corrections are only included in RM Bridge standalone download (V11.08.01. xx).*
Note*: RM Bridge View automatically will be installed with RM Bridge, RM Bridge Advanced, and RM Bridge Enterprise on your machine. Prior to installing the latest version, please uninstall any pre-existing RM Bridge View.*

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

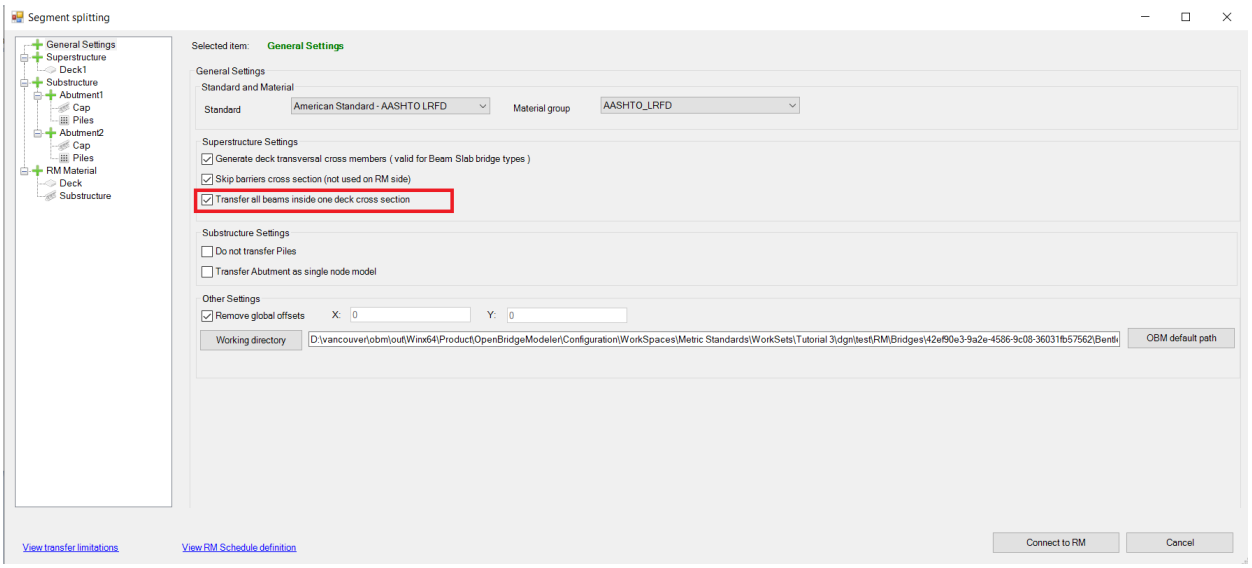
- To unregister the VBScript engine, run this command:
  reg delete "HKCU\SOFTWARE\Classes\Wow6432Node\CLSID\{B54F3741-5B07-11CF-A4B0-00AA004A55E8}" /f
- To unregister the JScript engine, run this command:
  reg delete "HKCU\SOFTWARE\Classes\Wow6432Node\CLSID\{F414C260-6AC0-11CF-B6D1-00AA00BBBB58}" /f

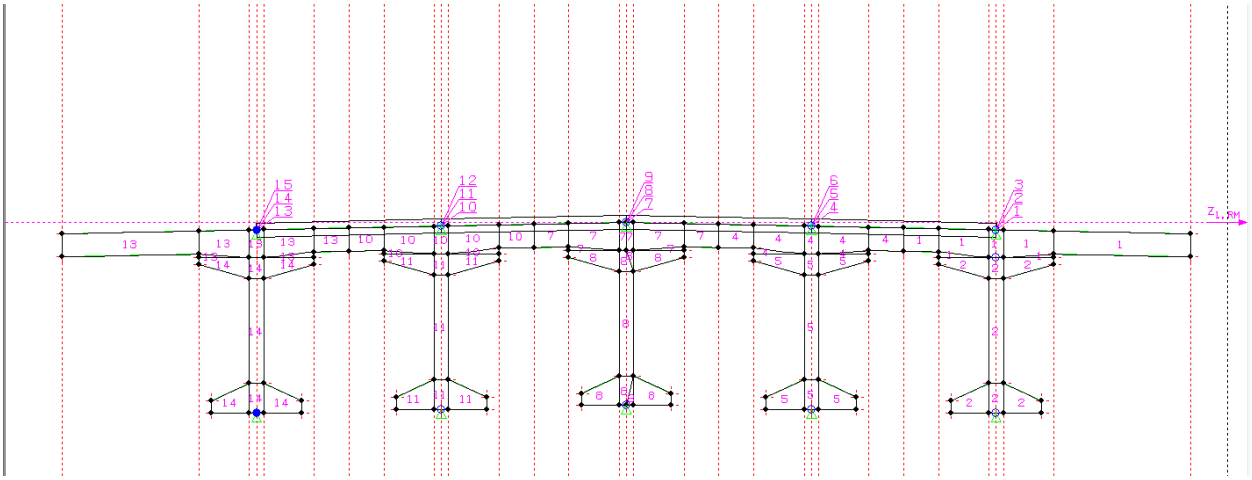
4.Retry installation

1. BIM Workflow: Revised Model Transfer from OpenBridge Modeler (OBM)

New option for transferring OBM models is now available in model transfer dialog in General Setting page. This new option allows to put all beams inside a single cross section while transferring physical model from OBM to RM. This new option should be used for simple standard bridges and considering the following criteria:

i. All beams must have the same template from begin to end
ii. All beams must have the same variation from begin to end
iii. Bridges on a curve alignment with a beam in the middle following the alignment should use the general model transfer.





Cross-section transferred in RM

2. BIM Workflow: Import and Update Build Order for Segmental Bridges Transferred from OpenBridge Modeler (OBM)

New option for transfer and update build order for segmental bridge types from OBM to RM is now available. The updated model will be transfer to OBM automatically when user select export model to OBM. The physical model in OBM will be updated when user accept changes in OBM.

3. Reinforcement Design - Phase II

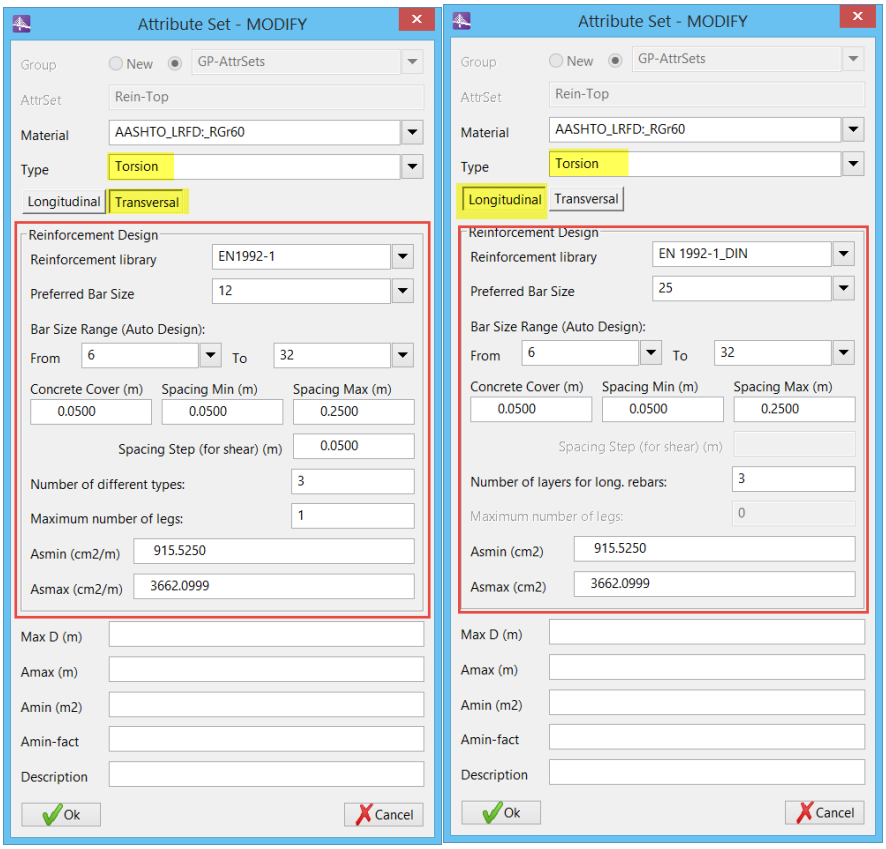
The previous implementation for longitudinal reinforcement layout has been enhanced to produce optimal bar distribution for longitudinal and torsional attribute set.

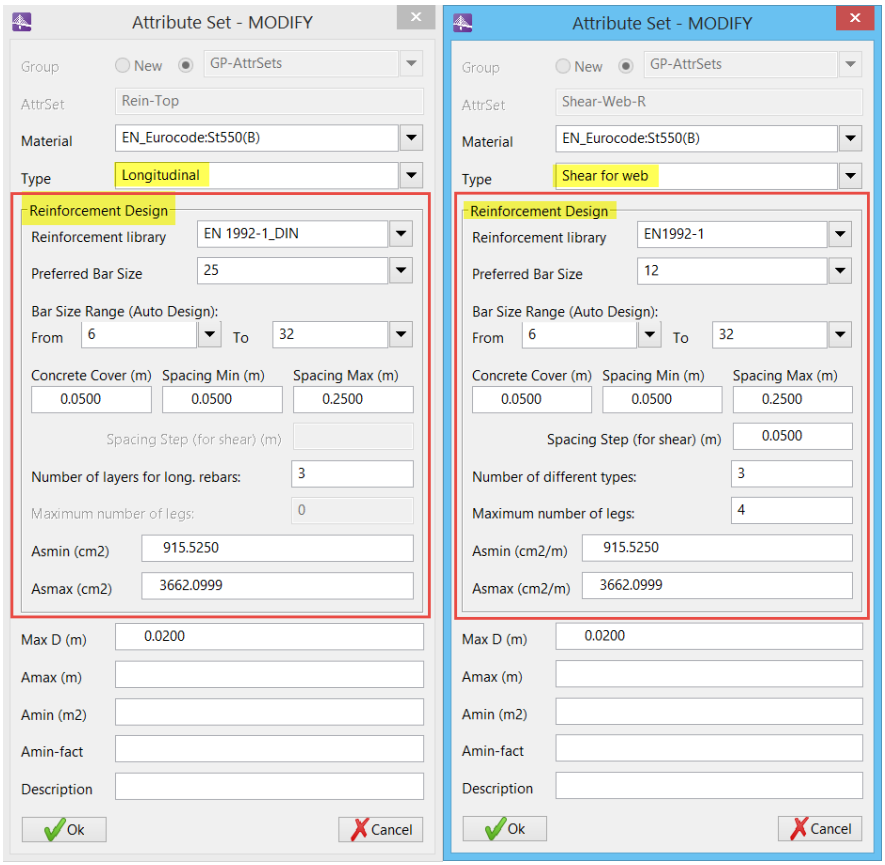
The input for "Reinforcement Design" can be found under Analyzer→Properties→Group/Attribute Sets.

Note: Reinforcement design has been implemented for Torsion reinforcement. Shear web and longitudinal attribute sets are already implemented in the phase I. These attribute sets need to be assigned in appropriate positions in the cross-section in the Modeler.

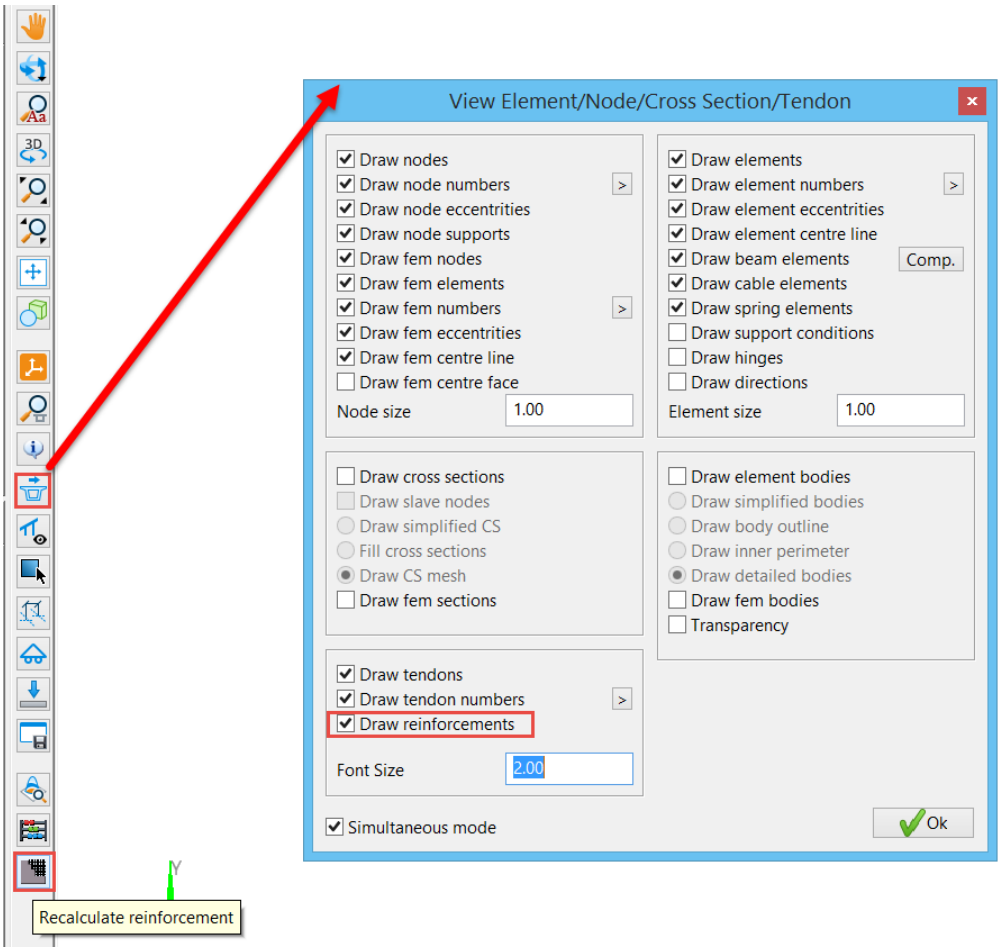
The following input need to be filled:

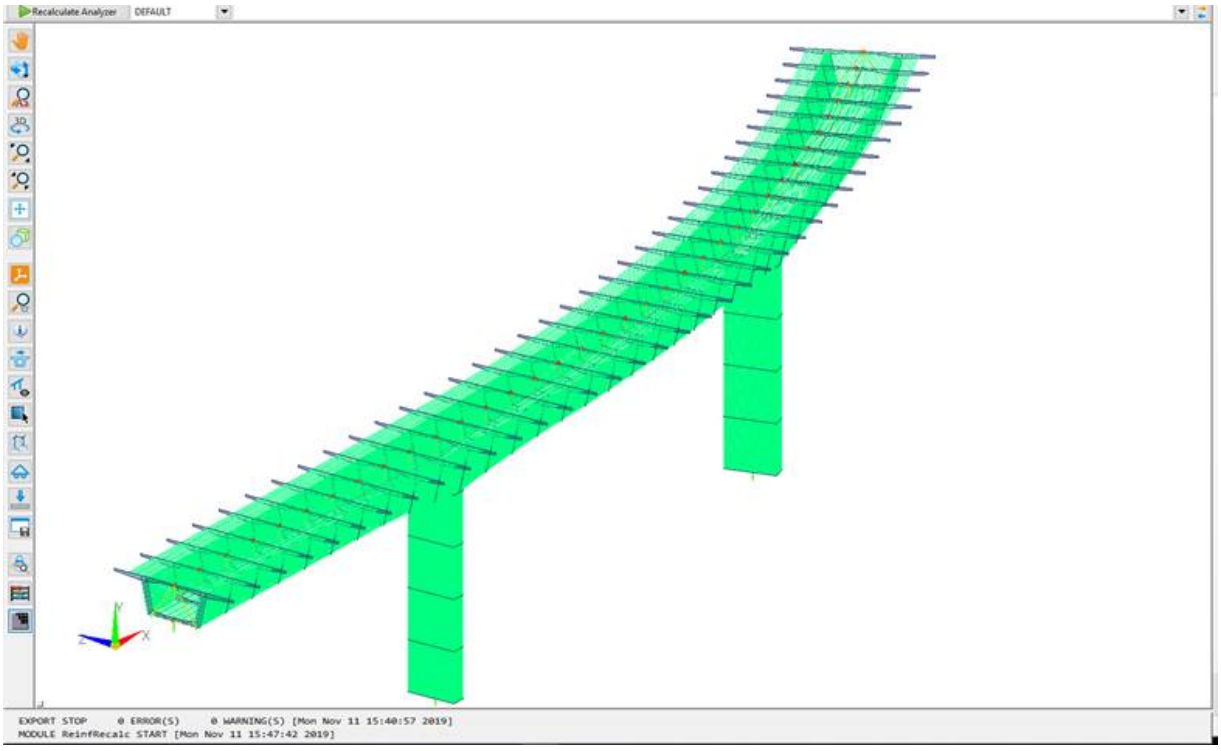
- Reinforcement Library: library of reinforcement for different design code can be selected from drop down menu.
- Preferred Bar Size: program generate the reinforcement layout for preferred bar size. If the requirements are not satisfied, then program search for reinforcement from bar size range.
- Bar Size Range From: minimum acceptable bar size when preferred bar is not suitable.
- Bar Size Range To: maximum acceptable bar size when preferred bar is not suitable.
- Concrete Cover: maximum distance from the face of the bar to surface
- Spacing Min: minimum distance from the face of one bar to face of other
- Spacing Max: maximum distance from the face of one bar to face of other
- Spacing Step (for shear): increment increase from minimum spacing to accomplish the shear reinforcement layout.
- Number of layers for longitudinal rebars: program uses this number of possible different types of reinforcement layout for designing longitudinal reinforcement
- Number of different types (for shear web): program uses this number of possible different types of reinforcement layout for designing shear web reinforcement.
- Maximum number of legs (for shear web): maximum number of legs for shear web reinforcement design which can be used. The minimum number of legs is 2
- Asmin: Minimum reinforcement area which is used by program for designing reinforcement layout
- Asmax: Maximum reinforcement area which is used by program for designing reinforcement layout

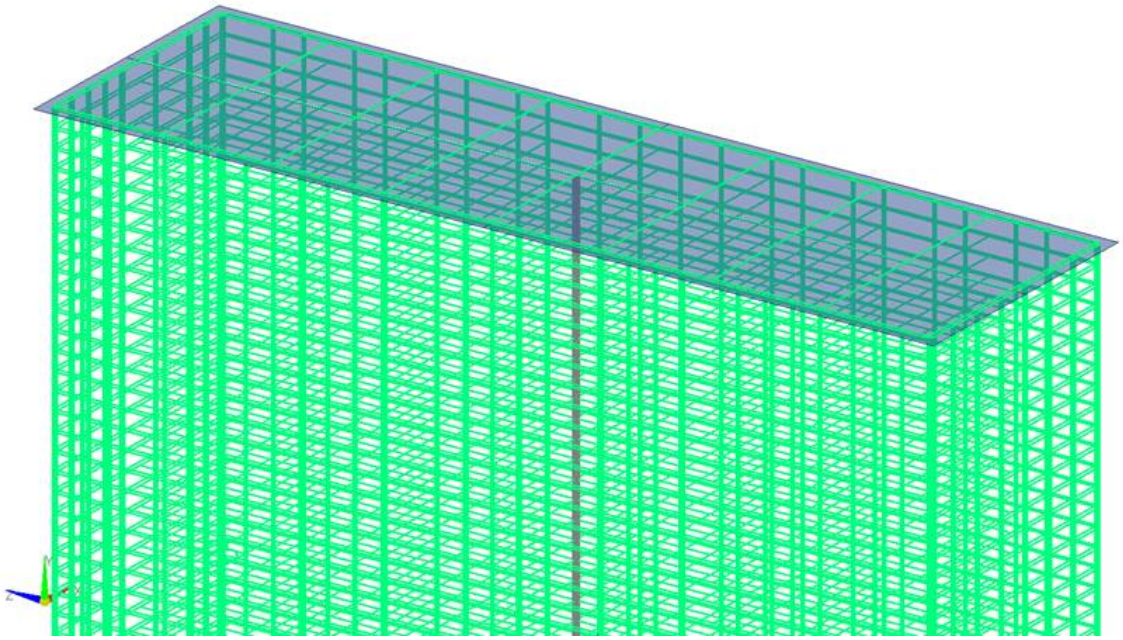

Attribute Set - MODIFY
Group
New
GP-AttrSets
AttrSet
Rein-Top
Material
AASHTO_LRFD:_RGr60
Type
Torsion
Longitudinal
Transversal
Reinforcement Design
Reinforcement library
EN1992-1
Preferred Bar Size
12
Bar Size Range (Auto Design):
From
6
To
32
Concrete Cover (m)
Spacing Min (m)
Spacing Max (m)
0.0500
0.0500
0.2500
Spacing Step (for shear) (m)
0.0500
Number of different types:
3
Maximum number of legs:
1
Asmin (cm2/m)
915.5250
Asmax (cm2/m)
3662.0999
Max D (m)
Amax (m)
Amin (m2)
Amin-fact
Description
Ok
Cancel
Attribute Set - MODIFY
Group
New
GP-AttrSets
AttrSet
Rein-Top
Material
AASHTO_LRFD:_RGr60
Type
Torsion
Longitudinal
Transversal
Reinforcement Design
Reinforcement library
EN 1992-1_DIN
Preferred Bar Size
25
Bar Size Range (Auto Design):
From
6
To
32
Concrete Cover (m)
Spacing Min (m)
Spacing Max (m)
0.0500
0.0500
0.2500
Spacing Step (for shear) (m)
Number of layers for long. rebars:
3
Maximum number of legs:
0
Asmin (cm2)
915.5250
Asmax (cm2)
3662.0999
Max D (m)
Amax (m)
Amin (m2)
Amin-fact
Description
Ok
Cancel



To compute the reinforcement layout, user need to use the new icon “Recalculate Reinforcement” from the main window. Reinforcement layout from view option in the main window as shown below:


View Element/Node/Cross Section/Tendon
Draw nodes
Draw node numbers
Draw node eccentrities
Draw node supports
Draw fem nodes
Draw fem elements
Draw fem numbers
Draw fem eccentrities
Draw fem centre line
Draw fem centre face
Node size
1.00
Draw elements
Draw element numbers
Draw element eccentrities
Draw element centre line
Draw beam elements
Comp.
Draw cable elements
Draw spring elements
Draw support conditions
Draw hinges
Draw directions
Element size
1.00
Draw cross sections
Draw slave nodes
Draw simplified CS
Fill cross sections
Draw CS mesh
Draw fem sections
Draw element bodies
Draw simplified bodies
Draw body outline
Draw inner perimeter
Draw detailed bodies
Draw fem bodies
Transparency
Draw tendons
Draw tendon numbers
Draw reinforcements
Font Size
2.00
Simultaneous mode
Ok
Recalculate reinforcement


Recalculate Analyzer
DEFAULT
EXPORT STOP 0 ERROR(S) 0 WARNING(S) [Mon Nov 11 15:40:57 2019]
MODULE ReinfRecalc START [Mon Nov 11 15:47:42 2019]



User can access the output of reinforcement design as xls format is the project folder.

	A	B	C	D	E	F	G	H
1	Units :Reinf.long.(cm2)Length(m)							
2								
3	Attribute name:			Rein-Bot				
4	RefSetType:			Longitudinal				
5	Reinforcement Library:			EN1992-1				
6	Preferred Bar Size:			25				
7	Bar Size From:			16				
8	Bar Size To:			32				
9	Concrete Cover:			0.05				
10	Spacing Min:			0.10				
11	Spacing Max:			0.30				
12	Number of layers of rebar:			3.00				
13	Asmin:			105.00				
14	Asmax:			500.00				
15								
16								
17	Element		A1+A2	Asreq	Asprov	Bar#		
18	Begin	101	105.00	105.00	107.99	22#25		
19	End	101	105.00	105.00	107.99			
20	Begin	102	105.00	105.00	107.99	22#25		
21	End	102	105.00	105.00	107.99			
22	Begin	103	105.00	105.00	107.99	22#25		
23	End	103	105.00	105.00	107.99			
24	Begin	104	105.00	105.00	107.99	22#25		
25	End	104	105.00	105.00	107.99			
26	Begin	105	105.00	105.00	107.99	22#25		
27	End	105	105.00	105.00	107.99			
28	Begin	106	105.00	105.00	107.99	22#25		
29	End	106	105.00	105.00	107.99			
30	Begin	107	105.00	105.00	107.99	22#25		
31	End	107	105.00	105.00	107.99			
32	Begin	108	105.00	105.00	107.99	22#25		
33	End	108	105.00	105.00	107.99			
34	Begin	109	105.00	105.00	107.99	22#25		
35	End	109	105.00	105.00	107.99			
36	Begin	110	105.00	105.00	107.99	22#25		
37	End	110	105.00	105.00	107.99			
38	Begin	111	105.00	105.00	107.99	22#25		
39	End	111	105.00	105.00	107.99			

Rein-Bot | Shear-Web-L | Shear-Web-R | Rein-L1 | Rein-L2 | Rein-R1

	A	B	C	D	E	F	G	H	I
1	Units :Reinf.long.(cm2)Length(m)								
2									
3	Attribute name:			Shear-Web-L					
4	RefSetType:			Shear					
5	Reinforcement Library:			EN1992-1					
6	Preferred Bar Size:			12					
7	Bar Size From:			8					
8	Bar Size To:			16					
9	Concrete Cover:			0.05					
10	Spacing Min:			0.10					
11	Spacing Max:			0.25					
12	Spacing Step:			0.05					
13	Number of layers of rebar:			5.00					
14	Number of legs in stirrups:			4.00					
15	Asmin:			5.00					
16	Asmax:			500.00					
17									
18									
19	Element		A1+A2	Asreq	Asprov	Bar#			
20	Begin	101	7.83	10.56	11.31	21#12L2@0.2000			
21	End	101	5.65	10.56	11.31				
22	Begin	102	5.65	7.78	9.05	16#12L2@0.2500			
23	End	102	5.65	7.78	9.05				
24	Begin	103	5.65	7.78	9.05	16#12L2@0.2500			
25	End	103	5.65	7.78	9.05				
26	Begin	104	5.65	7.78	9.05	16#12L2@0.2500			
27	End	104	5.65	7.78	9.05				
28	Begin	105	5.65	7.78	9.05	16#12L2@0.2500			
29	End	105	5.65	7.78	9.05				
30	Begin	106	5.65	7.78	9.05	16#12L2@0.2500			
31	End	106	5.65	7.78	9.05				
32	Begin	107	5.65	7.78	9.05	16#12L2@0.2500			
33	End	107	6.12	7.78	9.05				
34	Begin	108	6.12	10.56	11.31	20#12L2@0.2000			
35	End	108	8.33	10.56	11.31				
36	Begin	109	7.84	13.34	15.08	26#12L2@0.1500			
37	End	109	11.00	13.34	15.08				
38	Begin	110	10.57	16.12	22.62	41#12L2@0.1000			
39	End	110	13.82	16.12	22.62				

Rein-Bot | Shear-Web-L | Shear-Web-R | Rein-L1 | Rein-L2 | Rein-R1 | Rein-R2

4. Australian Code Update per AS5100: 2017

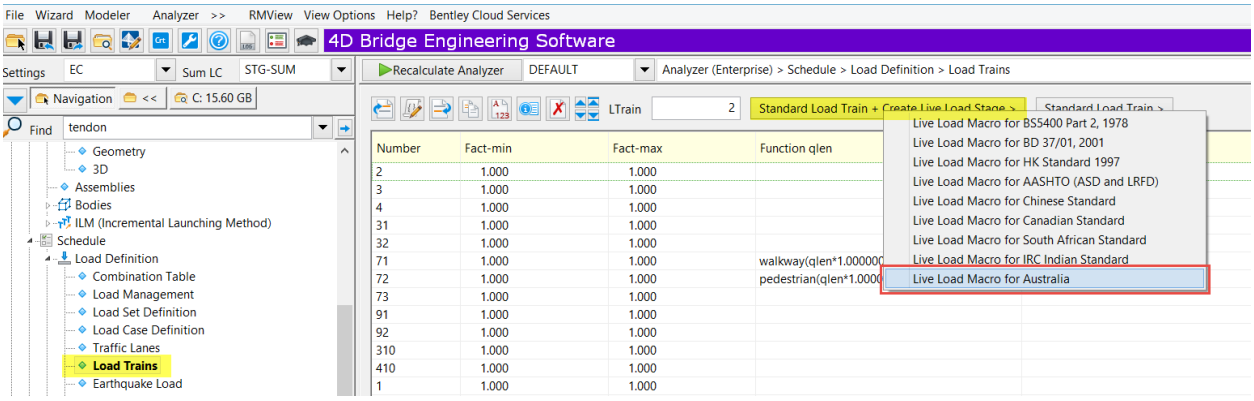
The following items have been added and updated in Indian Code per AS5100 2017.

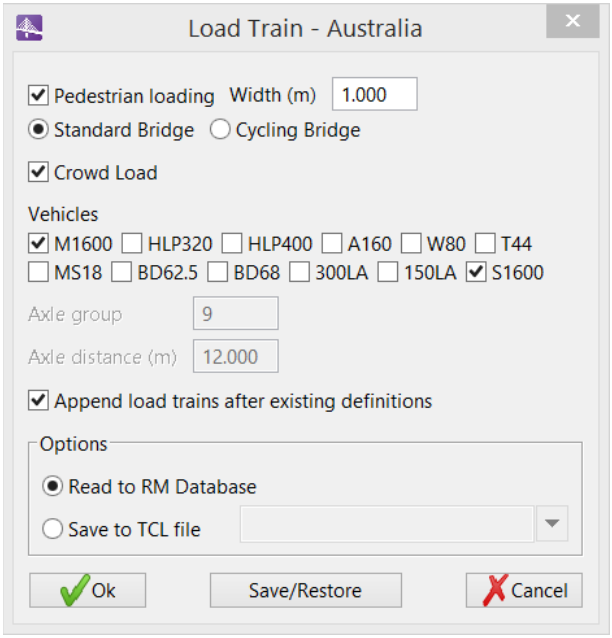
4.1 New Live Load Macro

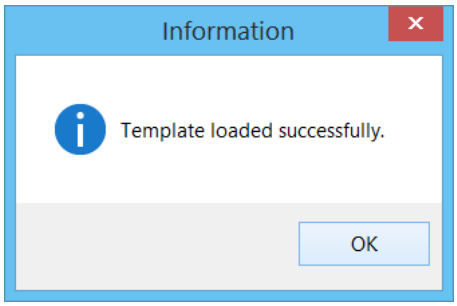
A new live load macro per Australian standard is now available. It includes all factors and combinations for M1600, S1600, pedestrian loading, etc. The interface is very user friendly and a stage for Live Load analysis which include all superposition files needed for calculating maximum/minimum results will be generated automatically by program. This new macro can be found in Load Trains and Traffic Load Macros under Extras.

Note: Users need to create the lanes before using live load macros.

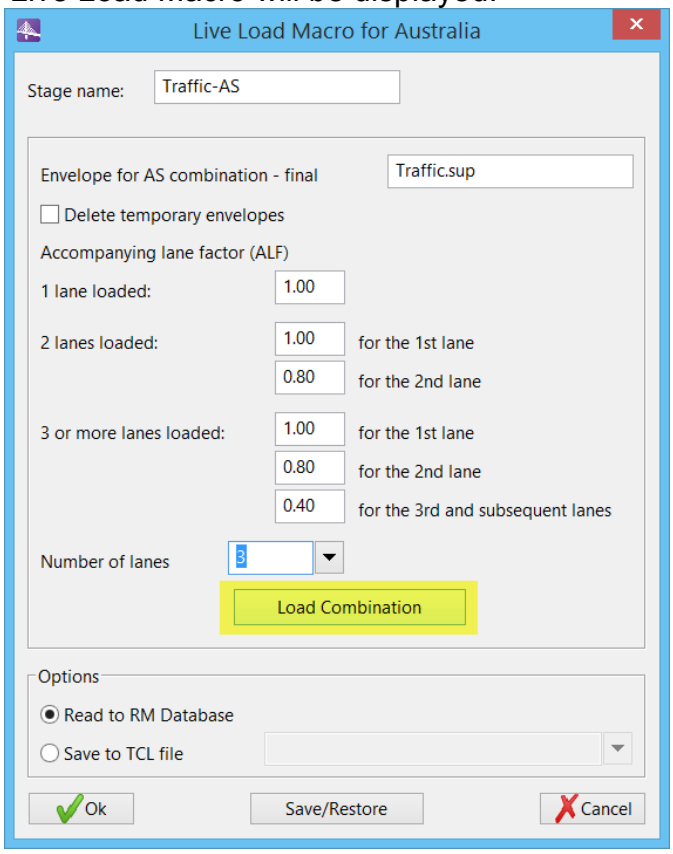
When user click on Live Load Macro for Australia Standard, the list of load train will be displayed.

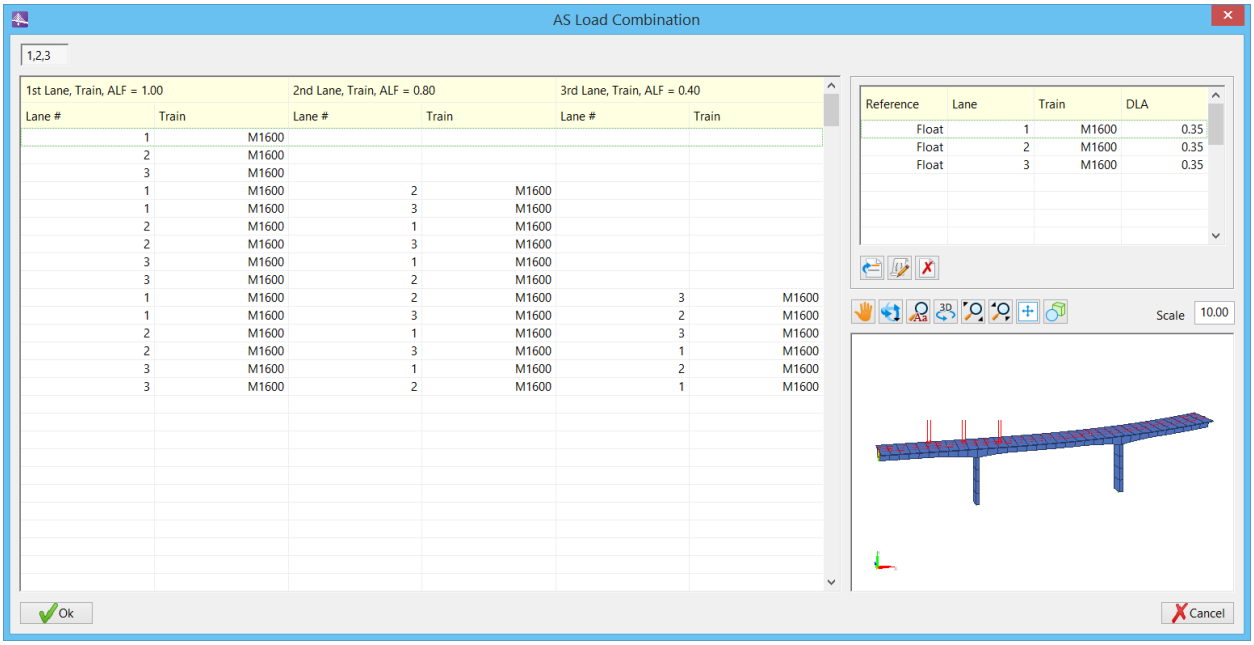




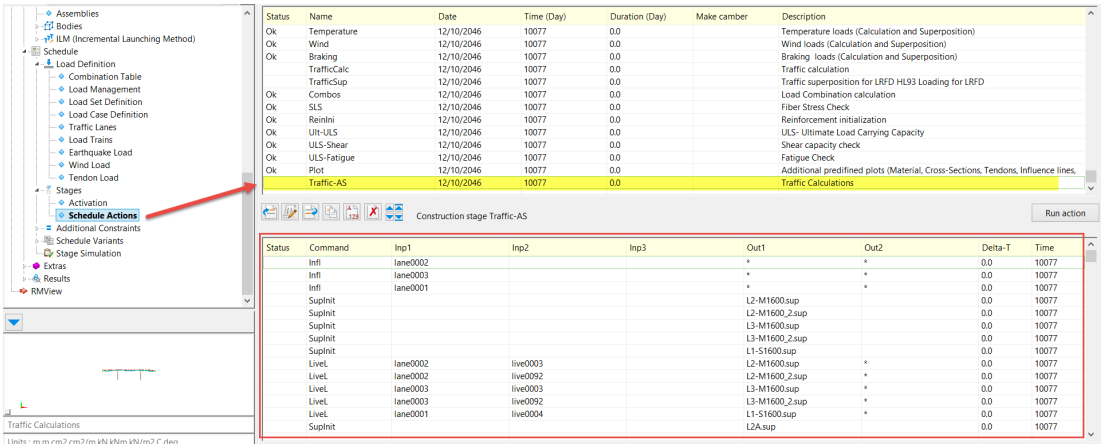


When user click OK, the load train template will be loaded in the program and new dialog box for Live Load Macro will be displayed.



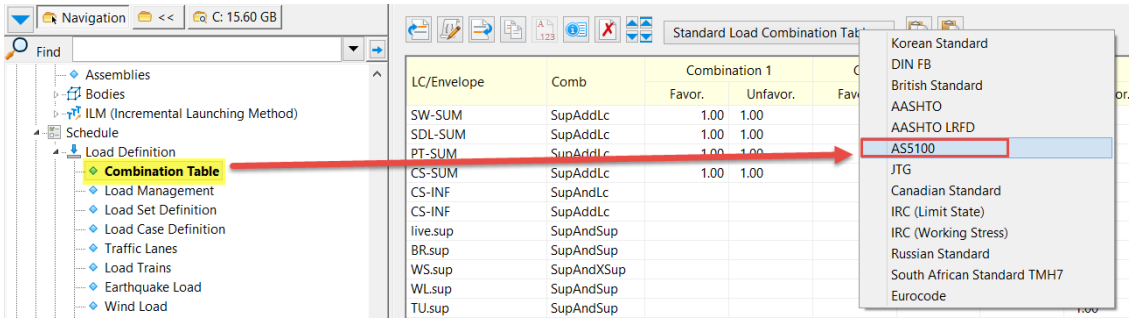


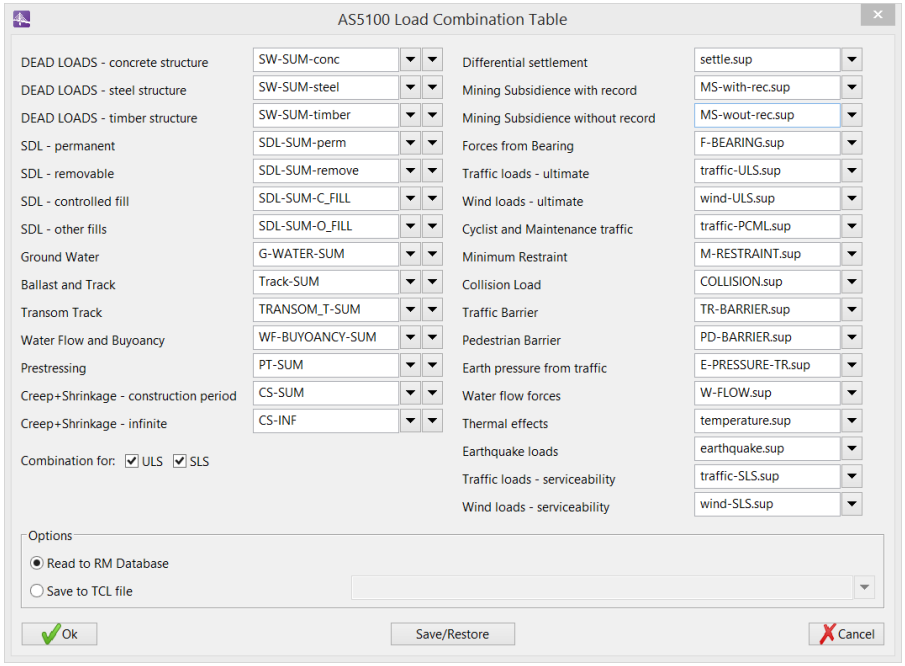
Note: If user select Float lane as reference, program will automatically generate all possible combinations of float lanes and trains.



4.2 Updated Load Combination Table

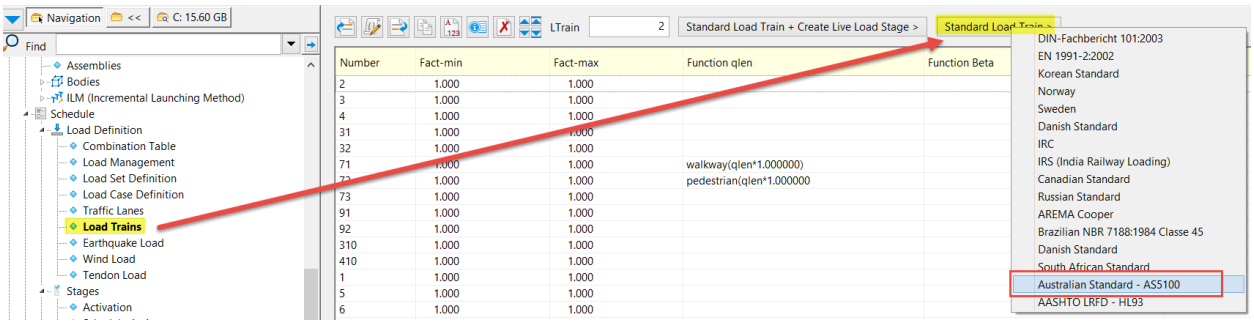
Load Combination Table for Indian code has been updated per AS5100: 2017. The updated load combination table can be found under Load Definition and Extras.

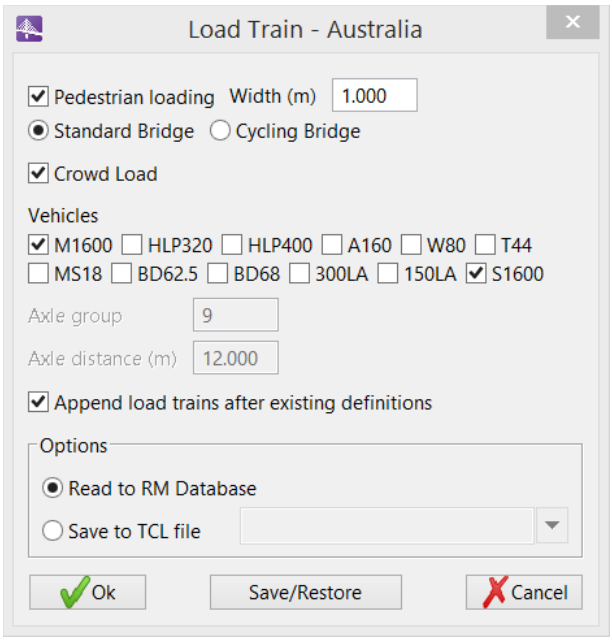




4.3 Updated Load Trains

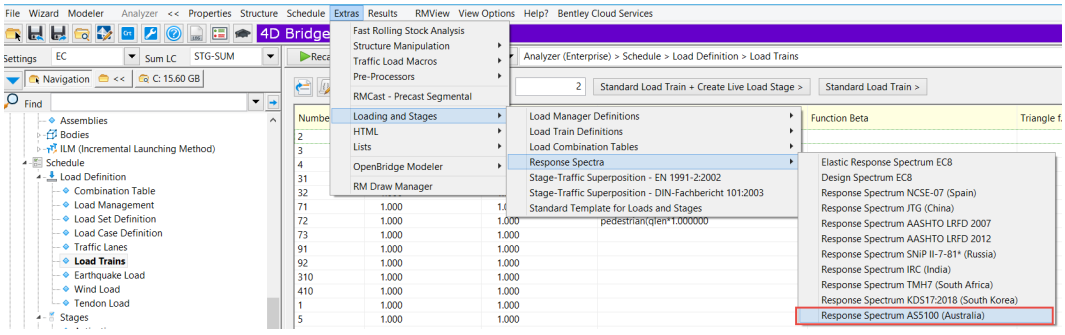
Load Trains has been updated per AS5100 2017. The updated load Trains can be found under Load Definition and Extras.

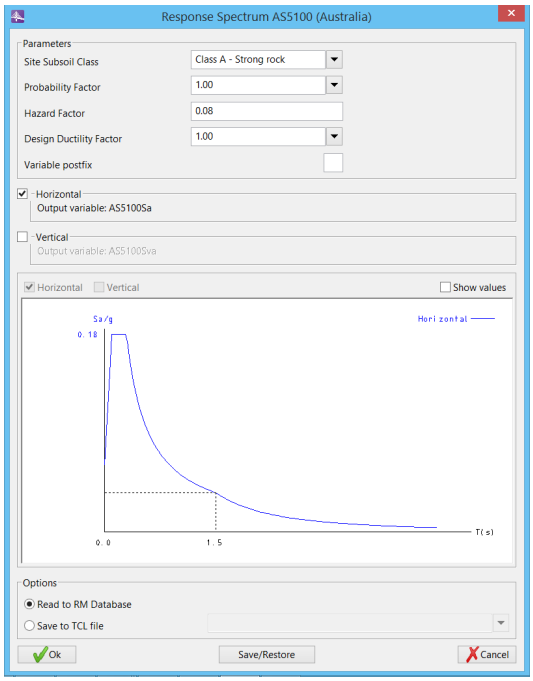




4.4 New Response Spectra Per Australian Code (AS5100: 2017)

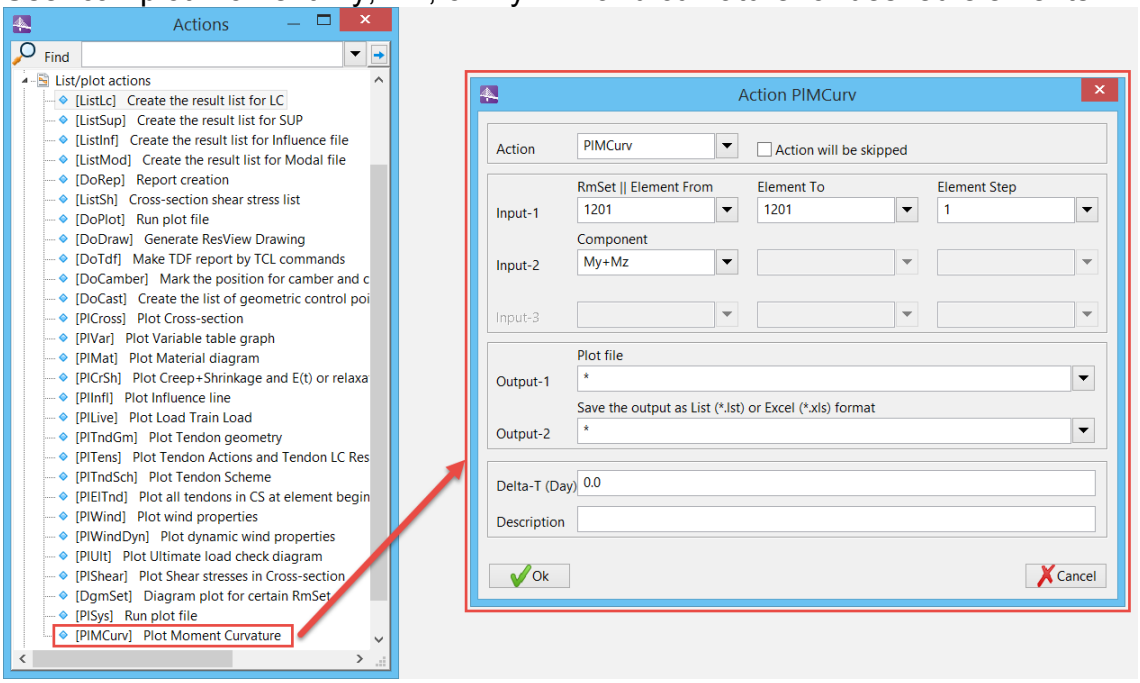
A new response spectrum for Australian Standard (AS5100:2017) has been added. User can access this response spectra from Extras→ Loading and Stages →Response Spectra.

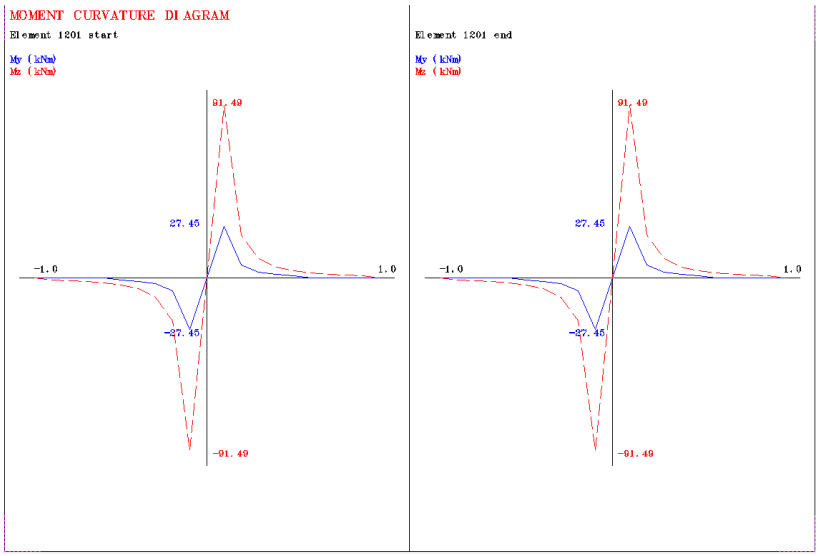




5. Plot Element Moment Curvature Diagram

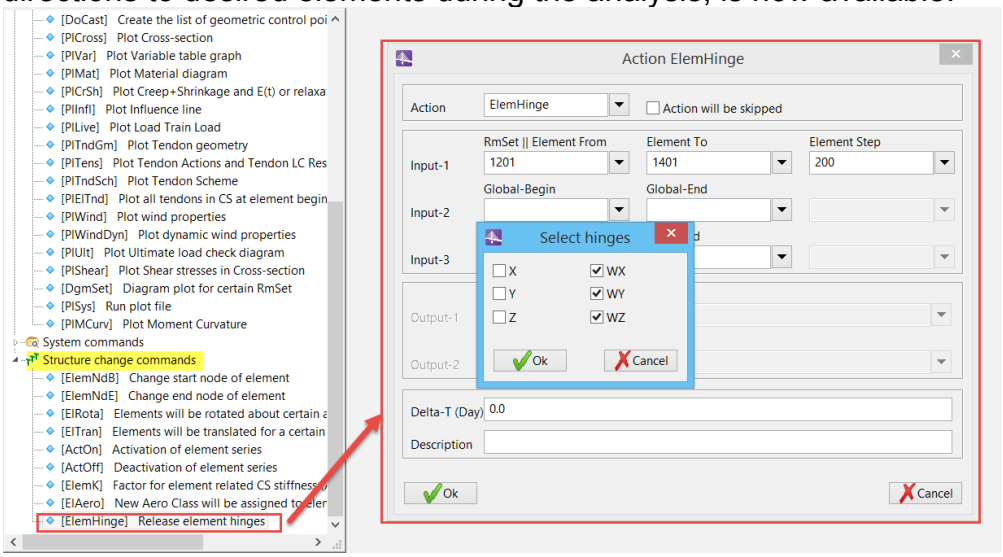
New action “PIMCurv” for plotting moment curvature diagram is now available. User can plot moment My, Mz, or My+Mz and curvature for desired elements.





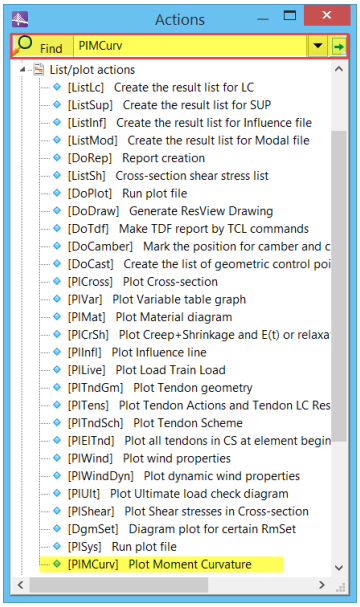
6. New Element Hinge Action (ElemHinge)

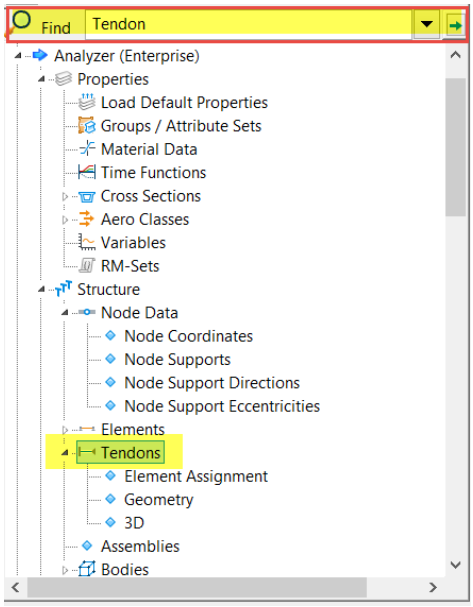
New structure change command “ElemHinge” for assigning hinges in global or local directions to desired elements during the analysis, is now available.



7. New “Find” Button to Search in the Actions and Tree

New option “Find” option for searching desired item in the tree and between Actions is now available. This new option will help users easily find the desired item. User need to type the name of item and hit the find button. Program finds the relative items and user can navigate thru them.





8. AddCon Output List File

AddCon output list file now include all iterations during optimizations. This enhancement gives better visibility to users about optimization process. In the past only last iteration was listed.

8.1 Copy Pier with Link Segments

Copy option in Piers is now enhanced to include link segments relative to the pier.

8.2 Updating Master Tendon Properties in Slave Tendons

New option for deleting multiple tendons by input a tendon number range is now available inside Modeler.

9. Error Corrections

The following errors have been corrected and are available in RM Bridge and OpenBridge Designer (OBD):

- In previous versions, when a pier with link elements were copied, the links were not copied, and user had to manually re-create them. The copy option is now fixed, and program automatically copy the link elements with pier.
- In previous versions, slave tendon parameters didn't change when user changed the master tendon parameters. This issue has been fixed and slave tendons parameters will get updated if user changes the master tendon parameters.
- The issue of inaccurate geometry generation of slave tendons for cases where the end segment point for a slave tendon was not in the list of master tendon, is now fixed.

- In mode specific damping, mode number was incorrectly interpreted as frequency leading to incorrect application of damping. This is now corrected in this release.
- Program failed to generate wind velocity grids when there were more than 1024 nodes used in defining the grid. As a result, wind buffeting analysis could not proceed. The work around was to have a fewer nodes used in defining the velocity grid. This issue is fixed in this version.
- SupCoex Null Results issue was addressed.
- SupCoex Crash issue was addressed.
- Crack width check has been fixed as specified by norm Eurocode 2 EN 1992-1-1 (2004), method 7.3.4, implemented in module CrackSup. The formula has been corrected and more details and references to norm articles have been added to the list file intermediate calculation steps. Default material diagram for 7.3.4 is NONLINEAR. Crackwidth A is obtained without added reinforcement (As(eff) = MAX(Asmin, As)), corresponding to the first iteration in the calculation process, whereas Crackwidth B is obtained with added reinforcement (As(eff) = As(load) + As) so that the crack width is right under the user's set limit (corresponding to the last iteration in the calculation process). When CrackSup parameter NoMin is present, Asmin is ignored for Crackwidth A (As(eff) = As).

Product Interoperability

- OpenBridge Modeler
- MicroStation, GEOPAK, MXROAD

Upcoming Bentley Bridge webinars

ACCELERATE GOING DIGITAL WITH OPENBRIDGE | VIRTUAL SERIES

Experience the power of ACCELERATE and jumpstart your project delivery with this live webinar series focusing on practical solutions and workflows to help you get the most out of Bentley's bridge solutions.

Through this virtual series:

- We will take you from planning to final deliverables for key bridge types and showcase the value of BrIM to the entire bridge lifecycle.
- Provide content tailored to your learning needs with modules focused on concrete, steel and segmental bridges.
- Continue to develop the project with each session, focusing on major stages of the design process and ultimately ending with the production of detailed reports, iModels and typical construction drawings.

The subject matter experts will use the OpenBridge Designer application which utilizes the modeling capabilities of OpenBridge Modeler and the analysis and design features of LEAP Bridge Concrete, LEAP Bridge Steel and RM Bridge to meet the design and construction needs of all bridge types.

Please use the links below to register for each module you would like to attend.

https://www.bentley.com/en/global-events/accelerate/2020/openbridge-virtual