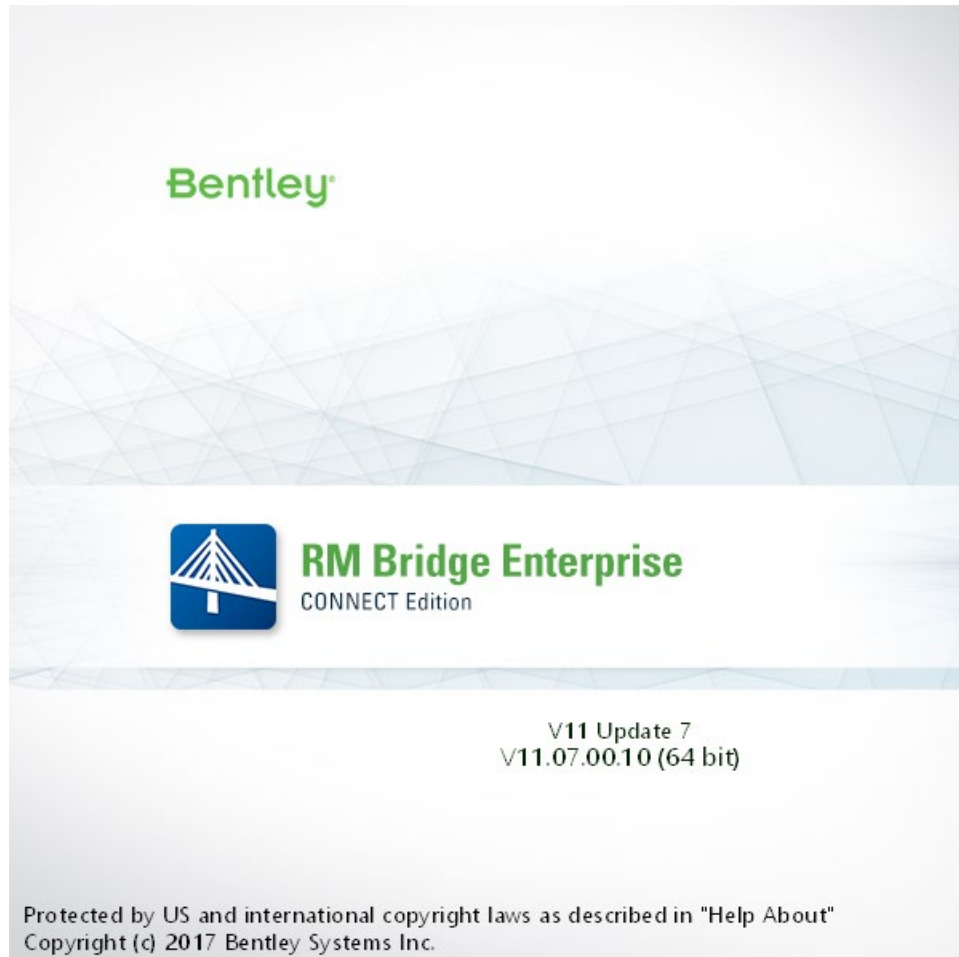




RM Bridge CONNECT Edition V11 Update 7 Release Notes (Nov 2019)



Enhancements in RM Bridge CONNECT Edition V11 Update 7:

RM Bridge CONNECT Edition V11 Update 7 (V11.07.00.XXX) contains the following enhancements and error corrections:

1. Reinforcement Design -Phase I
2. New Takeda Hysteretic Spring Element
3. New Action (SupCoex) for Reporting Concomitant Envelope Results in Different Elements
4. Optimization for Live Load Analysis
5. TrackSup Action for Displacement Results
6. Enhancements in GUI
7. Distributed uniform loads for FEM
8. Error Corrections

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. Reinforcement Design - Phase I

The new input to generate reinforcement layout from reinforcement area calculated by the program is now available. This new input "Reinforcement Design" can be found under Analyzer → Properties → Group/Attribute Sets.

Note: Reinforcement design has been implemented for Shear web, longitudinal, and bending attribute sets 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

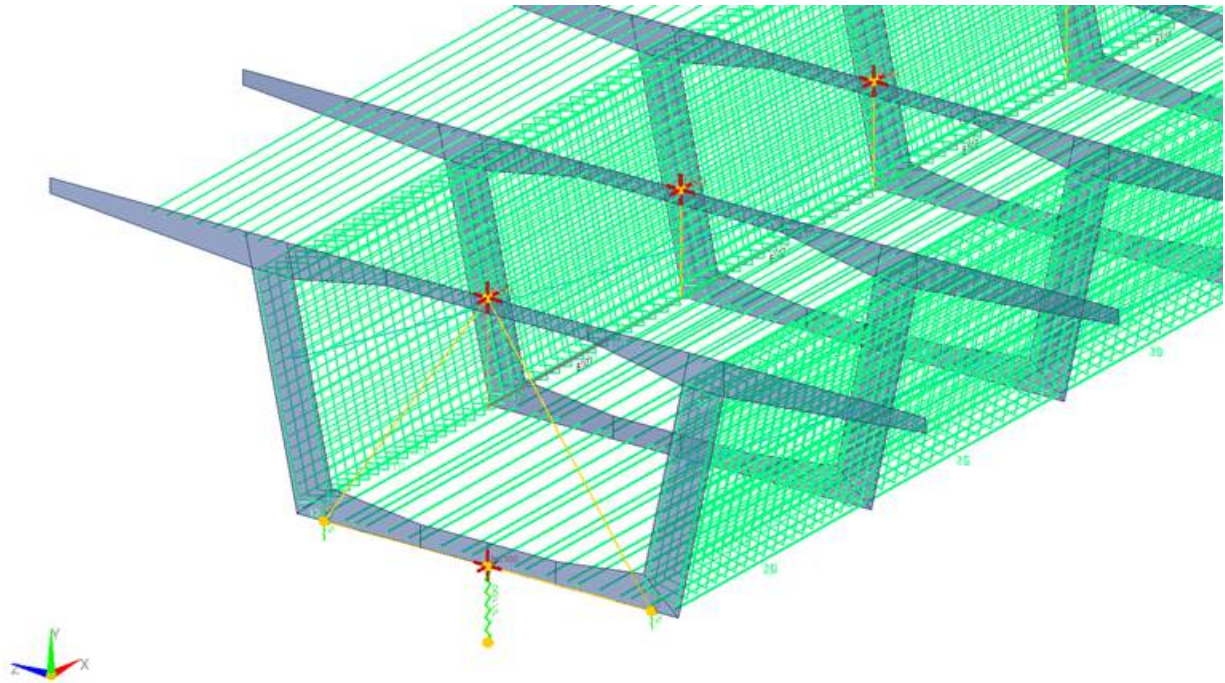
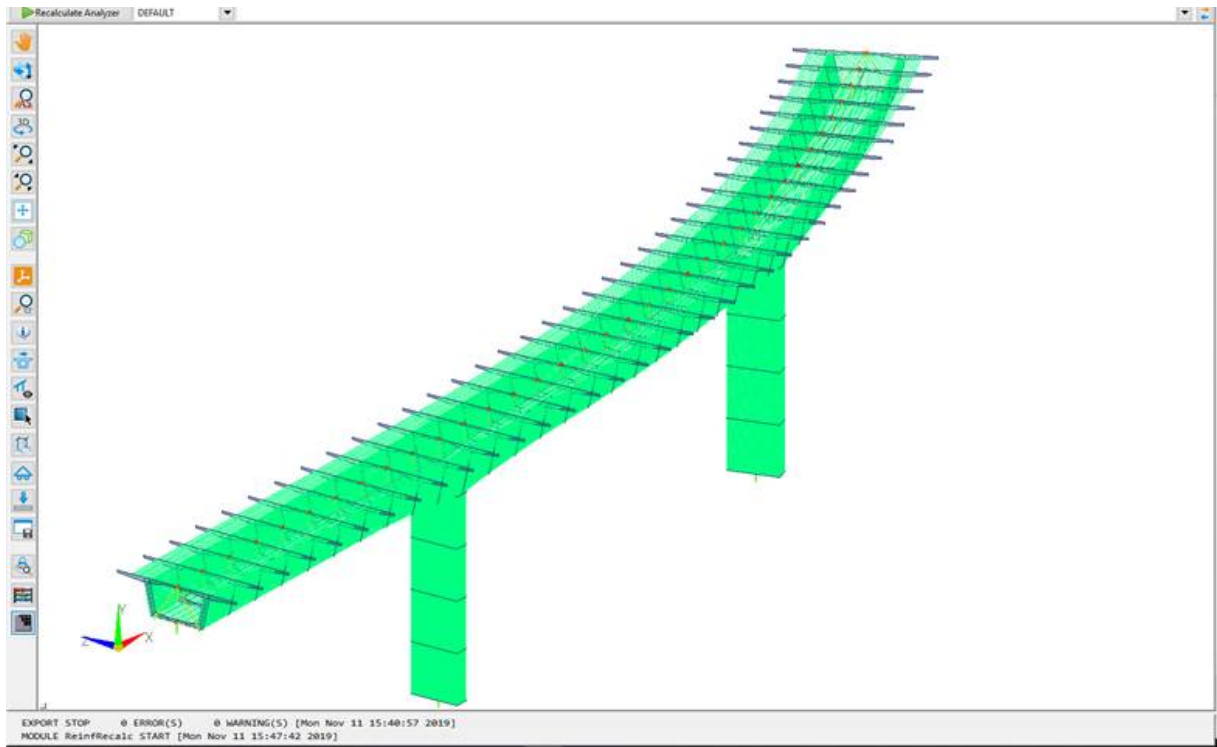
To compute the reinforcement layout, user need to use the new icon “Recalculate Reinforcement” from the main window. Reinforcement layout from view option in the main window as shown below:

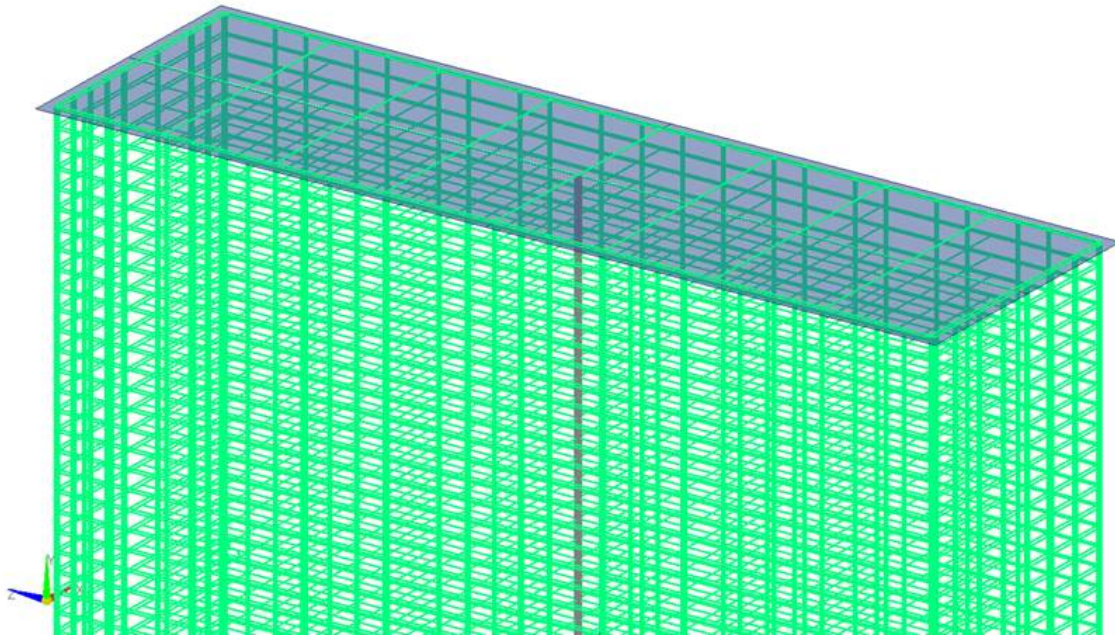


View Element/Node/Cross Section/Tendon

<input checked="" type="checkbox"/> Draw nodes	<input checked="" type="checkbox"/> Draw elements
<input checked="" type="checkbox"/> Draw node numbers >	<input checked="" type="checkbox"/> Draw element numbers >
<input checked="" type="checkbox"/> Draw node eccentricities	<input checked="" type="checkbox"/> Draw element eccentricities
<input checked="" type="checkbox"/> Draw node supports	<input checked="" type="checkbox"/> Draw element centre line
<input checked="" type="checkbox"/> Draw fem nodes	<input checked="" type="checkbox"/> Draw beam elements <input type="button" value="Comp."/>
<input checked="" type="checkbox"/> Draw fem elements	<input checked="" type="checkbox"/> Draw cable elements
<input checked="" type="checkbox"/> Draw fem numbers >	<input checked="" type="checkbox"/> Draw spring elements
<input checked="" type="checkbox"/> Draw fem eccentricities	<input type="checkbox"/> Draw support conditions
<input checked="" type="checkbox"/> Draw fem centre line	<input type="checkbox"/> Draw hinges
<input type="checkbox"/> Draw fem centre face	<input type="checkbox"/> Draw directions
Node size <input type="text" value="1.00"/>	Element size <input type="text" value="1.00"/>
<input type="checkbox"/> Draw cross sections	<input type="checkbox"/> Draw element bodies
<input type="checkbox"/> Draw slave nodes	<input type="radio"/> Draw simplified bodies
<input type="radio"/> Draw simplified CS	<input type="radio"/> Draw body outline
<input type="radio"/> Fill cross sections	<input type="radio"/> Draw inner perimeter
<input checked="" type="radio"/> Draw CS mesh	<input checked="" type="radio"/> Draw detailed bodies
<input type="checkbox"/> Draw fem sections	<input type="checkbox"/> Draw fem bodies
<input checked="" type="checkbox"/> Draw tendons	<input type="checkbox"/> Transparency
<input checked="" type="checkbox"/> Draw tendon numbers >	
<input checked="" type="checkbox"/> Draw reinforcements	
Font Size <input type="text" value="2.00"/>	
<input checked="" type="checkbox"/> Simultaneous mode	<input checked="" type="button" value="Ok"/>

Recalculate reinforcement





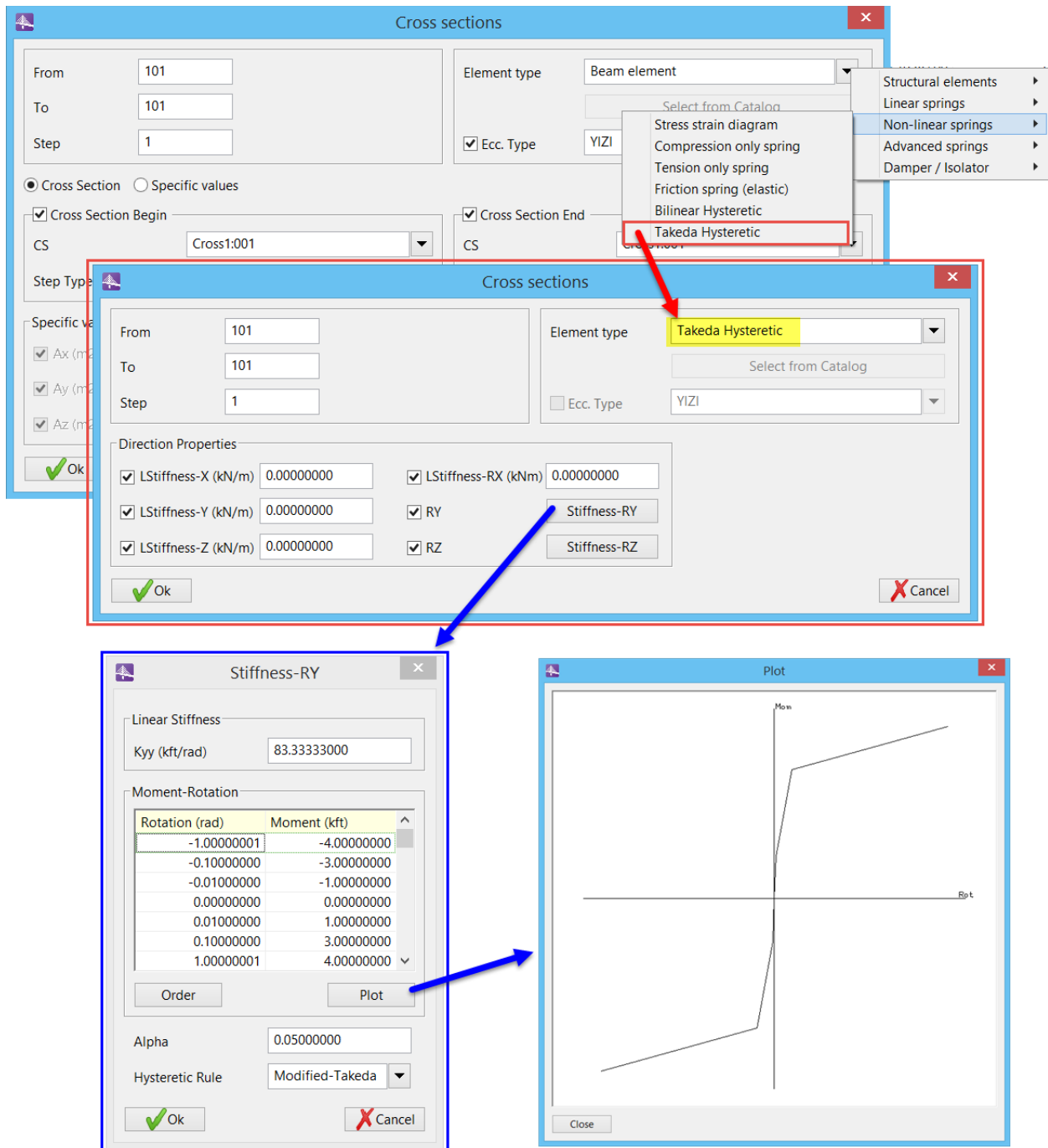
User can access the output of reinforcement design as xls format is the project folder.

	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
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

2. New Takeda Hysteretic Spring Element

A new Takeda hysteretic element is now available. Takeda Hysteretic element is used in dynamic time history analysis when Non-linear spring option is selected under Recalc pad. Takeda element has linear stiffness in static/eigen calculation and nonlinear properties used only in time history calculation. This element does not consider any p-delta effects occurring due to axial load and translation of spring element. Click on F1 Help for more information.

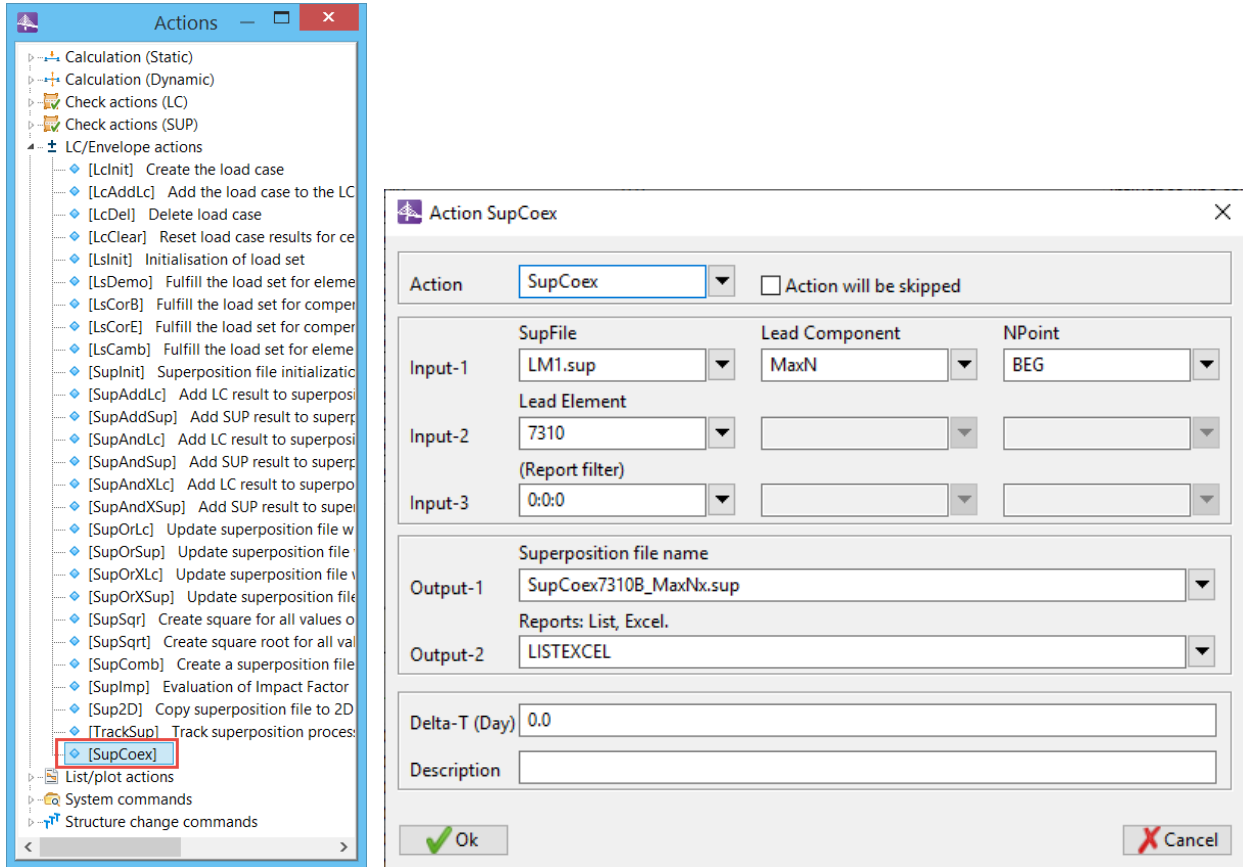


3. New Action (SupCoex) for Reporting Concomitant Envelope Results in Different Elements

A new action “SupCoex” for reporting concomitant results in superposition file is now available. This action generates one new superposition file and the correspondent output list/excel files with all structure co-exiting results occurring in an envelope scheme, for one chosen leading component and leading element. The new

superposition file saves all structure elements displacements / forces / stresses calculated in that occurrence.

All various and original sources of load cases and/or superposition files that contribute to the leading tracking result component in the leading element is also presented in an output list/excel file.



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 three times in analysis speed.

5. TrackSup Action for Displacement Results

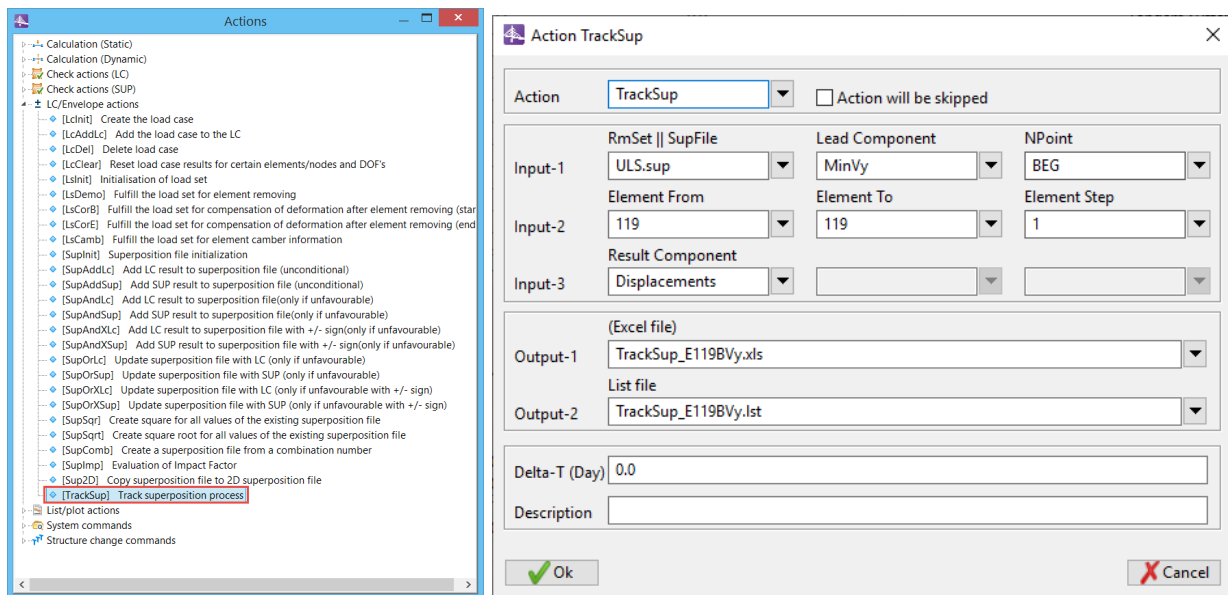
“TrackSup” action is now enhanced to also track displacements in superposition file. This action generates one list/excel output file with all various and original sources of load cases and/or superposition files that contribute to the final tracking displacement result component.

The output file for this action contains the final result along with the factorized results for each original load case and/or superposition file. The correspondent load factors used in each load case and/or superposition file are also indicated.

A schedule can have as many “TrackSup” actions as desired and they can be positioned inside a schedule action at any stage.

Notes:

- All the fields presented in this action should be filled out before running the “TrackSup” action.
- This action can be performed in schedule actions outside of load management and after summation load cases have been finalized.
- This action will be enhanced for summation load cases results generated in the load management table in the next release. User will have possibility of running this action during the different construction stages and when summation load cases are not yet completed and/or finalized.



Training1
 Prestressing Basic

SUPERPOSITION LOADCASE DISTRIBUTION

Global Units : Length(m*1000),Rotation(rad*1000)

SOURCE	FCTR :	F *Vx	F *Vy	F *Vz	F *Rx	F *Ry	F *Rz
SW-SUM	1.35 :	-1.1	-35.3	-4.1	0.5	-0.0	-0.0
SDL-SUM	1.35 :	-0.0	-4.3	-0.0	0.0	0.0	-0.0
PT-SUM	1.00 :	-1.1	20.8	-0.4	-0.1	-0.0	0.2
CS-SUM	1.00 :	-1.3	-2.7	-1.1	0.1	-0.0	0.1
CS-INF	1.00 :	-0.3	-6.3	0.1	0.1	0.0	0.0
Settle-A1	1.00 :	-0.7	1.2	0.1	-0.0	-0.0	0.0
Settle-A2	1.00 :	-0.7	-5.8	-0.2	0.0	0.0	-0.2
Settle-A3	1.00 :	0.8	-6.7	-0.5	0.0	-0.0	0.2
Temp-Unif-M	0.90 :	-0.5	-1.5	0.1	-0.0	-0.0	-0.0
Temp-Grad-P	0.67 :	0.1	-1.2	-0.8	0.1	-0.0	0.0
Wind+T	-0.90 :	1.2	-0.1	-6.6	0.3	-0.0	0.0
LL-L11-T1.s	1.35 :	0.1	-2.8	-0.9	0.2	0.0	0.0
LL-L12-T2.s	1.35 :	-0.0	-1.8	-0.2	0.0	0.0	-0.0
LL-L13-T3.s	1.35 :	-0.0	-0.9	0.1	-0.0	0.0	-0.0
LL-L4-T5.su	1.35 :	-0.1	-2.1	0.7	-0.1	0.0	-0.0
LL-L11-T6.s	1.35 :	0.2	-3.2	-1.8	0.2	0.0	0.0
LL-L14-T5.s	1.35 :	0.1	-2.2	-0.9	0.1	0.0	0.0
Full result	:	-3.4	-54.8	-16.5	1.7	-0.1	0.3

SUP SOURCE	DESCRIPTION (Action : Input1 : Input2)
LL-L11-T1.sup	LiveL : 11 : 1
LL-L12-T2.sup	LiveL : 12 : 2
LL-L13-T3.sup	LiveL : 13 : 3
LL-L4-T5.sup	LiveL : 4 : 5
LL-L11-T6.sup	LiveL : 11 : 6
LL-L14-T5.sup	LiveL : 14 : 5

6. Enhancements in GUI

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

6.1 Deflected structure as default setup in results visualization

Deflected structure has been set as default setup in the Results Visualization in the main window. With this new setup, when users define a load case result under diagrams and the same load case is automatically assigned to the “deflected option”. This new setup enhances user experience and allows users to make a quick check of several load cases easily.

6.2 Removed obsolete option from train load

Obsolete option from train load have been removed.

7. Distributed uniform loads for FEM

For distributed uniform loads - QG and QEXG - the following options are now available for finite shell elements:

- Load multiplied by CS width,
- Load multiplied by CS depth,
- User area.

8. Error Corrections

The following errors have been corrected:

- The issue for creating assemblies with link elements in Modeler has been fixed.
- The issue with zoom-in option in small left window in balanced cantilever tool has been fixed.
- The missing pdf files for Ultimate Capacity Check, Robustness Check, Modeler Link Segments & Truss Modeling demo examples have been added.
- The issue of measure distance tool in Analyzer for curve bridges has been fixed.
- The load train display issue has been fixed.
- The issue with transferring different direction of geometric points from Modeler to Analyzer (e.g. geometry point in z direction in Modeler changed to y direction in analyzer) has been fixed.
- The issue with wrong display of load QEZG Local + Z elem ecc has been fixed.
- The properties of Light Weight Concrete for creep and shrinkage per Euro Code has been updated.
- The stored stress results were not accurate in superposition files for composite beams when the part beam sustained higher stresses in the earlier stages of loading. The stress leading stresses were correct.

Product Interoperability

- OpenBridge Modeler
- MicroStation, GEOPAK, MXROAD