

CSiBridge v26.0.0 Release Notes

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This document lists changes made to CSiBridge since v25.3.1, released 11-July-2024. Items marked with an asterisk (*) in the first column are more significant.

API

Enhancements Implemented

*	Ticket	Description
*	10748	An enhancement has been implemented, adding two new bridge modeler API functions DeckSection.SetTopSlabProfileData and DeckSection.GetTopSlabProfileData to set and retrieve the bridge section top slab profile data.
*	10757	Following enhancements have been made to the API: CSiBridge (CSiBridge1.dll) and cross-product API (CSiAPIv1.dll) libraries have been updated to target .NET Standard 2.0, increasing range of compatibility to API clients targeting .NET Standard 2.0, .NET Framework 4.6.1 to 4.8.1 and .NET (Core) 2 to .NET 8. Increased support for complex plugins where dependencies of the plugin might conflict with dependencies of CSiBridge. Better error handling for API clients calling API functions that were not implemented by the connected version of CSiBridge. The Remote API feature, used to start and/or connect to a running instance of CSiBridge on a Remote Computer, has been disabled with the release of CSiBridge v26.0.0. This functionality may be added back to the program in a future release. Please see API help file for details regarding backward and forward compatibility.

Bridge Design and Rating

Enhancements Implemented

*	Ticket	Description
*	6966	An enhancement has been implemented to add bridge superstructure design according to AS 5100.5:2017 for concrete composite bridge sections, including precast concrete I-girder, U-girder, concrete box-girder and concrete Super-T bridge sections, considering both strength and service checks.
*	9877	The strength design of substructure (bent) columns has been added according to the Eurocode 2-2004 code. Design is performed by defining and running one or more design requests, which can specify a set of load combinations, bent columns, column stations, and other parameters to be considered. Similar columns and stations with similar reinforcement can be designed together. The cross section used to calculate capacity can be different from that used for demand, so that different section shapes, materials, and rebar layout can be quickly iterated for design. Design results are available in database tables for display, export, and reporting.
*	10493	An enhancement has been implemented to add bridge design and rating according to the CAN/CSA-S6-19 code. This covers concrete box girder bridges, precast concrete bridges, and steel I and U-girder bridges.

Bridge Modeler

Enhancements Implemented

*	Ticket	Description
*	818	A new bridge deck section template, concrete voided slab, has been implemented in the bridge modeler. A bridge object with this new bridge deck section can be modeled as a spine model, area model, or solid model. Currently there is no design/rating of this new bridge section.
*	10651	An enhancement has been implemented in the bridge modeler to allow pile pier and shaft pier advanced foundation types to be assigned to wall-type bents.

Installation and Licensing *Enhancements Implemented*

*	Ticket	Description
*	10628	The version number has been changed to v26.0.0 for a new major release.

Results Display and Output *Enhancements Implemented*

*	Ticket	Description
	10770	A change was made to remove the demand sub-report from the non-staged constructability calculation report to better match the staged output. This change applies to design check calculation reports for steel I and U non-staged constructability reports for all versions of AASHTO and to steel I non-staged constructability calculation reports for all versions of the Canadian bridge design.
*	10807	An enhancement was made to display frame force/moment diagrams with colored contours. Mouse hover works to trace the moment value at a specific frame location.

Structural Model *Enhancements Implemented*

*	Ticket	Description
*	10742	A new link property "Sumitomo Viscoelastic Damper" has been implemented to represent the behavior of high-damping rubber vibration control damper devices produced by Sumitomo Rubber Industries. The nonlinear damper behavior is a combination of elastic, plastic, and viscous damping behavior and can be enabled for any of the translational degrees of freedom independently. Information about the damper and its parameters is available in the "Sumitomo Viscoelastic Damper Link Property" technical note provided with the program.

User Interface *Enhancements Implemented*

*	Ticket	Description
*	10544	CSiBridge has been updated to support Microsoft's .NET 8. This does not affect most users directly, except perhaps by associated changes to the Application Programming Interface (API), either by explicit use of the API by the user or through the use of third-party applications or Plug-ins. API programmers should see Ticket 10757 for more information. Users experiencing problems with third-party applications or Plug-Ins should contact the supplier for an updated application or Plug-In that will work with CSiBridge v26.0.0.

API

Incidents Resolved

*	Ticket	Description
	10701	An incident was resolved where the cBMAbutmentAssign.GetSubstructureAssignment and cBMAbutmentAssign.SetSubstructureAssignment API functions were not updating the horizontal offset values.

Bridge Design and Rating

Incidents Resolved

*	Ticket	Description
	10616	An incident has been resolved to set the torsional demand to zero for Steel U Non-Staged constructability design checks for Eurocode and Indian codes. In previous versions the entire section torsion was incorrectly assigned to each Steel U girder. Also, an error in the calculation of effective slab width for nonprismatic Steel U sections was corrected. In the previous versions, at some sections, the effective slab width was calculated to be smaller, resulting in overly conservative demand/capacity ratios.
	10632	An incident has been resolved for the calculation of the eta factor per EN 1993-1-5 5.1.2 Note 2 used in shear web buckling. In previous versions the value was incorrectly evaluated as zero leading to incorrect classification of webs for shear design. This affected Eurocode steel U-girder, Steel U Strength and Constructability design requests.
*	10686	An incident was resolved where the auto generated steel column hinges for bridge seismic design were incorrectly generated resulting in the program giving a message that these hinges will be ignored.
*	10732	An incident has been resolved for composite bridge design and rating when there were two or more bridge objects in a model, the design/rating request could fail depending on the order in which the bridge objects were updated. When this happened, the workaround was to clear all bridge objects and first update the target bridge object to be designed, then update the remaining bridge objects.
*	10774	An incident has been resolved for precast concrete I-girder bridge design and rating where the results for flexure design requests and all rating requests would be incorrect when tendons were assigned to the composite precast I-girders. This error affected all design and rating codes. This error was introduced through Ticket 9889 and affected v25.1.0 through v25.3.1. Models with these precast concrete I-girders which have been designed or rated in one of the affected versions should be rerun in v26.0.0 or later.

Bridge Modeler

Incidents Resolved

*	Ticket	Description
	10706	An incident has been resolved in the bridge modeler for straight bridges with non-zero grade and the Method to Keep Bearing Vertical in the Update Bridge Structure Model form set to Vertical Section Cut. In this case, the bridge deck objects would be incorrectly created at the wrong locations at the ends of each span when the global z coordinate of the span layout line at the span end was not zero.
	10756	An incident has been resolved in the bridge modeler where the rail track line object could not be generated when the model contained user-defined area objects with five or more points. When the problem happened, the program would not generate any rail track objects.

Graphics

Incidents Resolved

*	Ticket	Description
	9844	An incident has been resolved related to the colors used to display lane width in DirectX graphics mode when the stations of the lane definition were running in reverse direction. This was a display issue only and did not occur in standard graphics mode.

Results Display and Output
Incidents Resolved

*	Ticket	Description
	10728	An incident has been resolved for the calculation of composite bridge girder output vertical locations when the bridge girder force output location was set to 'Distance From Top of the Bridge Section' for Interior Girder 1 and subsequent girders, if the haunch height and/or top flange thickness of the girders was different than that of the left exterior girder, then the girder force output vertical location was calculated incorrectly.
	10766	An incident has been resolved for bridge design result tables for IRC-2011 where the steel U-girder non-staged constructability design check tables 59 and 60 for positive and negative flexure shear results were missing after the design was successfully done. This was a display issue and did not affect the design results.
	10785	An incident was resolved where, for nonlinear static, staged construction, and nonlinear direct-integration time-history load cases, joint loads applied to restrained degrees-of-freedom applied in previous load cases/stages were not being reported in the base reactions and joint reactions output. Joint loads applied in a load case/stage would be reported correctly in that load case/stage but left out in any subsequent load case/stage which continued from it. This was a reporting issue.
*	10804	An incident has been resolved for bridge live load analysis results, where (1) If one or more load patterns of type Permit Veh Live, Vehicle Fatigue, Permit Veh Fatigue, Vehicle Deflection, and/or any of the Euro Load Model vehicles (referred to as pattern type group B) were defined without any load patterns of type Vehicle Live, Train Live, or Wind (referred to as pattern type group G), the program would not process the analysis, with a load assignment error popping up. (2) If n load pattern types of group G and m load pattern types of group B were defined, then the analysis results of one of the load patterns in group G and the rest of load patterns in group B would be (m+1) times the correct solution. (3) If none of the load pattern types of group B were defined, then the results for all the load pattern types of group G were correct. When the corresponding load cases were placed in load combinations for design or rating, the results would be over-conservative.

Section Designer
Incidents Resolved

*	Ticket	Description
	9032	An incident has been resolved for torsional shear stress calculation in section designer for a section designer section or user-defined bridge section, where the shear stresses due to torsion could have been calculated incorrectly if at least one of the edges of two or more polygons were drawn to be overlapped and the other edges of the polygons were not parallel. When this happened, the Saint Venant's torsional constant of the section designer section was also calculated incorrectly.

Structural Model
Incidents Resolved

*	Ticket	Description
	10646	An incident has been resolved for the super-T frame section and super-T bridge section property calculations in which the section properties would be calculated incorrectly when the super-T frame section was defined with a closed flange. In this case, the values of the frame section and bridge section properties were larger than expected. This error affected the analysis results only when the bridge object was modeled as a spine model.

User Interface
Incidents Resolved

*	Ticket	Description
	10645	An incident was resolved where it was not possible to delete the last reference line in the list via the user interface because the OK button on the form was disabled. The work around was to use the interactive database.

*	Ticket	Description
	10715	An incident has been resolved for the Bridge Object Data form where editing the span end station such that one of the internal span layout points of any span was coincident with one of the bridge layout line points and the layout line point was kinked, would present an error message and not accept the data. This issue only affected the form editing and did not affect the bridge model creation.