

CSiBridge® 2014 (Version 16.0.1) Release Notes

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Notice Date: 2013-09-27

This file lists all changes made to CSiBridge since the previous version. **Most changes do not affect most users.** Incidents marked with an asterisk (*) in the first column of the tables below are more significant and are included in the ReadMe file.

Changes from v16.0.0 (Released 2013-08-05)

User Interface and Graphics Enhancements Implemented

*	Incident	Description
	56114	Multiple grid system can now be displayed in the graphical user interface at the same time when multiple coordinate/grid systems have been defined. Previously only the grid system associated with the current display coordinate system was shown. Now the user can select which grid systems to display, and these will all be shown with respect to the current display coordinate system in any 3-D view. In addition, the selected grid systems will be displayed in any 2-D view (plan or elevation) for those systems with a coplanar grid plane, provided that the Z axis of the grid system is parallel to the Z axis of the current display coordinate system. Snapping can be enabled at the intersections of grid lines from different grid systems when viewing such a 2-D view.

Loading Enhancements Implemented

*	Incident	Description
	35880	The behavior of the multi-lane scale factors used in the moving-load load case has been changed so that a value of zero actually scales the load by zero. Previously zero was interpreted as the default value of unity. Specifying zero in a database table will now be interpreted as zero, but a blank value or no specification in a database table will still default to unity. This change affects very few models.
*	56548	Automated Wind loading has been added according to the AS/NZS 1170.2-2011 code. This was released in CSiBridge 2014 v16.0.0 but inadvertently omitted from the Release Notes.

Analysis Enhancements Implemented

*	Incident	Description
*	42468	The ability to define multiple mass sources has been added. This does not affect most users. Previously there was a single mass source definition that specified whether the mass used for analysis should be calculated from elements and additional masses; or from loads present in specified load patterns; or both. Now multiple, named specifications of mass source can be defined. This could be used, for example, to represent different equipment configurations in a structure or different locations of eccentric mass. There is always a default mass source that is used for all analyses unless otherwise specified, and this behavior is unchanged from previous versions of the software. Now an alternative definition of mass source can be specified to be used for any nonlinear static, staged-construction, or nonlinear direct-integration time-history load case. This mass source will be used for all other load cases that continue from, or use the stiffness of, that load case. Automated lateral loads will be calculated using the mass source specified for the load case in

* Incident	Description
	which they are assigned. The same lateral load pattern cannot be used with different mass sources, so additional lateral load patterns can be defined for use with different mass sources as required. The assembled joint mass is reported for each defined mass source actually used in a load that has been analyzed.
48008	The conjugate-displacement method of displacement control for nonlinear static load cases has been simplified. The basic conjugate displacement is calculated as the weighted average of all displacements in the structure, with each displacement degree of freedom being weighted by the load acting on that degree of freedom. Previously the direction of loading (positive or negative) was also being adjusted in an adaptive manner such that the largest change in hinge deformation at each loading step was monotonic. However, this latter consideration of hinge deformations sometimes gave unexpected oscillatory results, and so it has been removed. Now only the basic conjugate displacement is being used when this method is selected. The monitored-displacement method of displacement control has not been changed.
* 57640	A change has been made to how negative values are processed when generating mass from the mass source. All mass from materials, properties, and added mass are always positive, except joint mass which may be positive or negative. Mass generated from loads, when requested, is positive when the loads are downward (-Z), and negative when the loads are upward (+Z). Previously, the positive and negative contributions to mass were summed for each individual element and set to zero if negative. This was done before adding the contribution of the element mass to the structure. Now, instead, positive and negative values from each element will be retained, assembled for the structure, and reported in the database table "Assembled Joint Mass". During equation solution, if any negative values are detected after accounting for constraints, they will be set to zero and a warning will be printed in the analysis log file. Most users and most models will be unaffected by this change. However, the results may differ from previous versions in cases where significant upward loads were included in the mass source. The purpose of this enhancement is to enable users with special needs to change the mass distribution in a model, such as for investigating the effect of eccentric mass on mode shapes. See also Incident 42468 for multiple mass sources.

Bridge Design and Rating Enhancements Implemented

* Incident	Description
56944	An enhancement has been implemented for the bridge seismic design report, giving the choice of specifying a user XML contents file or allowing the program to automatically generate a custom report for the model.

Results Display & Output Enhancements Implemented

* Incident	Description
55512	An option has been added when displaying Frame Design D/C ratios onscreen that allows the user to specify a threshold value above which the ratios are shown, making it easier to identify the critical members. This option also allows the members above the specified threshold to be selected, providing further control of display, tabular output, or assignment of design overwrites.
* 56115	A new option has been added to display the bearing pressure acting on area (shell) objects as calculated by analysis due to the presence of area springs assigned to the top and/or bottom faces of the objects.
56116	An option has been added for the display of stress contours and stress arrows for shell objects to show the stresses normalized with respect to material strength. The strength used for this purpose is the yield strength (Fy) for steel, cold-formed steel, rebar, and tendon materials; the minimum yield strength (Fcy or Fty) for aluminum materials; and the compressive strength (f'c) for concrete materials. Zero stresses are plotted for other materials.

* Incident	Description
57323	Stress output for frame members has been enhanced to include shear stresses S12 and S13, the principal stresses Smax and Smin, and the von Mises stress SVM. These stresses are available for certain thin-walled sections, as well as for rectangular and circular sections. Section Designer sections can produce stresses as defined by the user. Stresses can be plotted and are available in tabular form.

External Import/Export Enhancements Implemented

* Incident	Description
51454 54842	The export and import of IFC files has been enhanced and corrected as follows: (1) IFC 4 format is now supported. IFC 2x3 files can still be imported and exported. (2) Several IFC entities that previously were not imported or were not imported correctly can now be imported. See the IFC Import Export Technical Note for supported entities. (3) The exported file now has an .ifc extension. Previously it was given an .stp extension. (4) Exported GUIDs of SAP 2000 objects are now consistent with their internally stored GUIDs. In the case of models converted from earlier versions of CSiBridge in which there are no internally stored GUIDs, the assigned GUIDs are stored when the CSiBridge model is saved. (5) Pipe and circular sections were previously exported to IFC with a diameter twice their actual diameter. In addition, pipe sections were not being exported as hollow sections. These issues have been corrected. (6) Files can be exported either as a "structural analysis view" or an "architectural coordination view". Previously only the "architectural coordination view" was available. Both can be imported, as before. (7) Options are now provided on export and import to select the types of objects to process.

Documentation Enhancements Implemented

* Incident	Description
31848	The "Bridge Seismic Design" design manual has been updated to better explain the modeling of the abutment for the example model described in "Step 1".
39304	The context sensitive help was updated to reflect a previous enhancement to the definition of material properties, which allows new materials to be added based upon a region, material type, standard, and grade. This was previously released in v16.0.0, but inadvertently omitted from the Release Notes.
48121	The help topic "Section Cuts" has been updated to clarify the definition of the positive and negative sides of quadrilateral areas for the item "Results Reported Are on This Side of Elements."
49884	The "Bridge Superstructure Design Manual" has been updated to more clearly state the applicability of live load distribution factors for different bridge types and different design codes. No results have been affected.
55475	A new technical note has been added to the documentation which describes the frame stress calculations for various section shapes.

User Interface and Display Incidents Resolved

* Incident	Description
43972	An incident was resolved where assigning area springs to the top or bottom face did not work when a language other than English was used in the graphical user interface. The assigned spring values would be zero in this case, and the results were consistent with the model.
56928	An error was resolved where in some cases the form used to edit segments of a layout line may not work correctly when the segment is a curve to the left.

* Incident	Description
57153	An incident has been resolved where the command Orb > Print > Print Setup would sometimes generate an error message and be unable to change the printer settings. No results were affected.
57426 57539	An incident has been resolved in the Load Case Data Form for Nonlinear Static and Nonlinear Static Staged Construction definitions in which the initial condition is always shown as Zero Initial Conditions regardless of the previous selection. This was a form initialization error and did not affect the analysis results as long the user did not click the OK button to accept this error.
58009	An incident was resolved in which a runtime error was generated if four or more coordinate systems were defined in a model and the fourth or later system was selected as the active coordinate system from the dropdown in the lower right corner of the main window.

Graphics and Drafting

Incidents Resolved

* Incident	Description
56558	An incident has been resolved where the extruded view for a line object with a nonprismatic section assigned was incorrect if there was more than one segment specified in the nonprismatic section definition and one of the segments was a prismatic section designer section (i.e., the beginning and end sections of this non-prismatic segment are the same section designer section). This was only a display issue and no analysis results were affected.

Section Designer

Incidents Resolved

* Incident	Description
50051	An incident was resolved for Section Designer where the fibers generated for the built-in channel section did not have the correct location or area. This could affect the behavior of fiber hinges generated from such a section. This error was obvious when viewing the fibers in Section Designer. This was corrected for v16.0.0 but inadvertently omitted from the Release Notes.

Bridge Modeler

Incidents Resolved

* Incident	Description
57494	An incident was resolved in the bridge modeler in which a redundant full-width diaphragm was created at the beginning of the bridge object if the start abutment was specified to use a double bearing bent with a diaphragm.
57612	An incident was resolved in which a "Run-time error 6 (overflow)" message occurred when trying to define a new AASHTO-PCI-ASBI bridge deck section. This error affected version 16.0.0 only.

Loading

Incidents Resolved

* Incident	Description
57592	An incident was resolved where parametric bridge line and area loads were, in certain cases, being applied to tendon objects in the generated model rather than to the bridge superstructure objects. This could cause a loss of load, although the effect was usually small. This error affected version 16.0.0 only, not previous versions.

Analysis

Incidents Resolved

* Incident	Description
57317	An incident was resolved where the hysteresis loop for uncoupled frame hinges (P, M3, etc.) using the pivot model was always using the default pivot parameters (alpha = beta = 1, eta = 0) instead of the values specified by the user. The error was obvious by looking at the hysteresis response.

Frame Design

Incidents Resolved

*	Incident	Description
	50920	An incident was resolved where steel frame design for T-shaped sections was incorrect for CAN/CSA S16-01 code when design moment was negative. Program was not correctly enforcing the lateral torsion buckling capacity. The bending capacity for positive moment was correct. This was corrected for v16.0.0 but inadvertently omitted from the Release Notes.
*	51148	An incident was resolved where the frame design (steel, concrete, aluminum, cold-formed) would not consider a multi-valued load case in a design combination if step-by-step results were requested but the particular case was not the last case in the combination. When this error occurred, the contribution of the affected load case to the load combination was zero. This error did not occur if enveloping results were requested or the case was not multivalued or the case was the last one in the combination list.

Bridge Design and Rating

Incidents Resolved

*	Incident	Description
	57850	An incident was resolved for bridge superstructure design/rating in which a run-time error was generated after clicking the "Design/Rating Tab > Optimize" button if the regional settings were such that a comma (,) was used as the decimal separator.

Results Display and Output

Incidents Resolved

*	Incident	Description
	56847	An incident was resolved in which opening a v15 model containing plane elements in v16 could result in a runtime error when displaying the plane element stresses and right clicking on an element to get more detailed results. This was a graphical issue only and did not affect the results.
	57577	An incident was resolved where an exception (run-time error) was generated when clicking the "Home > Display > Show Shell Stresses" button for the second time to display the shell stress contours for a staged-construction load case.
	58531	An incident was resolved where an error message was generated when displaying frame forces or stresses for a moving load case when cables were present in the model as displayed on the screen, or when requesting tabular output for frame forces or stresses for a moving load case when cables were included in the group selected for output. After the error message was displayed, graphical and/or tabular results were available for frame and tendon objects, but not for the cable objects. When all cables were excluded from the graphical or tabular output, no error message was generated. In any case, the results for frame and tendon objects were not affected, and the results for cable objects were not available. This error affected version 16.0.0 only.

Database Tables

Incidents Resolved

*	Incident	Description
	57293	An incident was resolved where the database tables defining linear direct-integration time-history load cases were not being exported to text, Excel, or Access files. If such exported files were imported, these load cases would be present but all time-step, damping, and loading data would be zero. Similarly, these tables were not available in the Interactive Database Editor. No other load-case types were affected. Only v16.0.0 was affected.

Data Files (*.BDB, *.B2K, *.\$BR)

Incidents Resolved

*	Incident	Description
	57489	An incident was resolved where importing a model from database tables (text, Excel, Access files) sometimes failed. When this occurred, the import would appear to succeed, showing the import log with or without any warnings and errors from the data file, but the model would then be unavailable in the graphical user interface for further modeling, analysis, design or display.

Application Programming Interface

Incidents Resolved

*	Incident	Description
	41376	An incident has been resolved for the Open API function SapModel.PropLink.GetMultiLinearPoints where the function would fail and return a non-zero error code in the case where more than one degree of freedom had a multi-linear force-deformation relationship defined for the given link property. No results were affected. This was released in CSiBridge 2014 v16.0.0, but not reported in the release notes.

External Import/Export

Incidents Resolved

*	Incident	Description
	55064	An incident was resolved for the DXF import in which arcs with an aperture of less than three degrees were not being imported.
	57683	An incident was resolved for the LandXML import in which three issues were corrected. (1) The import would terminate if the closing XML tag for the Application element was not explicitly defined. (2) The import of alignments would fail if the first part was not a straight line. (3) The conversion to a layout line would fail if the vertical profile start station was not zero.
	57877	An incident was resolved that addressed several issues with the CIS/2 file import and export: (1) If the CIS/2 file was written in feet units and the file included more than one CIS/2 global_unit_assigned_context entity then the joint coordinates would not import correctly. (2) If column orientations in the CIS/2 file were specified as angles in degrees rather than as vectors then the column orientation would not import correctly. (3) If force units chosen in CSiBridge were kilonewtons then the CIS/2 file exported would have the force units undefined. (4) Error reporting for the import of CIS/2 files has been improved.

Documentation

Incidents Resolved

*	Incident	Description
	41169	Minor documentation errors have been corrected in the Open API documentation. These are documentation errors only and do not affect the behavior or results of the product. These include: (1) PropArea.GetShell_1() call had the syntax for the deprecated call, and the example was also using the deprecated call. (2) PropMaterial.AddMaterial() call was not documented. (3) SapObject.SapModel.PropMaterial.SetOConcrete_1 & GetOConcrete_1 had the following parameter which was not present in the actual list of arguments: eFu: The effective tensile stress. [F/L2] This argument was removed from the documentation. (4) SapObject.SapModel.PropMaterial.GetORebar() call was moved from "Definitions->Properties-Material" to "Obsolete Functions" branch in OAPI documentation since there's a newer version (GetORebar_1()). (5) For SapObject.SapModel.PropLink.SetGap() call, the documentation for the argument "dis" was given as "c(*) = xxx" instead of "dis(*) = xxx".

*	Incident	Description
	46010	A documentation error has been corrected for the "Steel Frame Design Manual" for code "AISC 360-05/IBC 2006" in which the inequality sign in Eqn. AISC H1-1a, H1.3a was reversed. It has been corrected from less-than-or-equal to greater-than-or-equal. This was a documentation error only. The design results were correct. This was corrected in CSiBridge 2014 v16.0.0 but left out of the release notes.

Miscellaneous

*	Incident	Description
	57774	The version number has been changed to v16.0.1 for a new minor release.