CSiBridge v22.1.0 Release Notes

Notice Date: 04-June-2020

This document lists changes made to CSiBridge since v22.0.0, released 15-January-2020. Items marked with an asterisk (*) in the first column are more significant.

Analysis

Enhancements Implemented

*	Ticket	Description
*	4069	An enhancement was made to add a plane-stress plasticity model with von Mises (J2) yield criteria for modeling multi-axial yielding and strain-hardening behavior for metallic materials. This model has options for linear isotropic and kinematic hardening as well as isotropic saturation hardening. The material property data (Define menu > Materials) has been expanded with two types of nonlinear material data, Uniaxial and Coupled. The nonlinear material specification called "Nonlinear Material Data" in previous versions of the software is now called "Uniaxial Nonlinear Data". This data defines the stress-strain curve and hysteresis type used in fiber hinges and directional layers of nonlinear layered shell properties. The "Coupled Nonlinear Data" defines the coupled modeling type and associated parameters and is used in coupled layers of nonlinear layered shell properties. A concrete material will use the existing coupled concrete model "Modified Darwin-Pecknold Concrete". All other materials will use the new coupled model "Von Mises Plasticity".
*	4153	The number of processors that can run load cases in parallel in a given session is now limited to eight. This prevents excessive competition for disk resources and allows for more internal parallelization of certain algorithmic processes. It is still recommended to limit the number of parallel load cases to the number of physical cores on the machine if less than eight. Load cases for a given model can still be run on multiple machines and combined into a single set of results on one machine.
	4160	Optimizations have been made to speed up the plotting of deformed shapes and generation of .AVI files for multi-stepped load cases. This will primarily affect direct-integration and staged construction load cases in models with a large number of elements.
*	4489	A change was made to clarify the behavior of a link element when the effective stiffness is used for stiffness-proportional damping - this occurs when "Stiffness Used for Stiffness-proportional Viscous Damping" in the Link Property Data (Define menu > Section Properties > Link/Support Properties) is set to “Effective Stiffness (KE)" or if a linear direct-integration time-history load case starts from the unstressed state (zero initial conditions). When this setting is used, the effective stiffness will be used for stiffness-proportional damping at all times, even if the link has zero nonlinear stiffness and zero nonlinear force. Previously, nonlinear direct-integration time-history load cases set the damping due to effective stiffness to zero when both the stiffness and force in the link was zero, and linear direct-integration time-history load cases set the damping due to effective stiffness to zero if the same condition was met in the initial condition (either the initial state or the end of a nonlinear load case that the linear load case continues from). This change does not affect nonlinear direct-integration time-history load cases where the link has "Stiffness Used for Stiffness-proportional Viscous Damping" set to "Initial Stiffness" or "Tangent Stiffness".

API

Enhancements Implemented

*	Ticket	Description
	4070	An enhancement was made to the Application Programming Interface (API) to add the functions SapModel.PropArea.GetShellLayer_2 and SetShellLayer_2, which get and set the definitions of all the layers in a layered-shell property. These new functions include the option to get and set the material behavior type, either Directional or Coupled, which was

*	Ticket	Description
		not available in the now superseded functions GetShellLayer_1 and SetShellLayer_1. If the function SetShellLayer_1 is used, the material behavior type defaults to Directional for all layers.
*	4278	The CSiBridge API can now be used to start and/or connect to a running instance of CSiBridge on a Remote Computer that is running the new API Service for distributed computing. Simultaneous runs can be started on multiple Remote Computers using an API script or plug-in, and results can be merged to the Main Computer programmatically, without user intervention, as they become available. Possible applications that can be sped up by distributed computing include parameter studies, Monte Carlo simulations, or performance-based design requiring a large number of load cases to be run.

Bridge Design and Rating

Enhancements Implemented

*	Ticket	Description
	3468	Service design and rating checks for steel I-girder and U-girder bridges per the AASHTO code may now consider non-zero tensile-stress limits for the slab concrete. Previously the slab could only be specified to take unlimited tension or no tension. Now an additional option is available to limit the tension to a user-specified scale factor multiplied by the square-root of the concrete strength, f'c. This option has been added to the Steel-I Comp Service and Steel-U Comp Service requests for AASHTO design and rating.
*	3741	A change has been made to how the unrestrained lengths of the top-flanges are calculated for the constructability checks of steel U-girder bridge sections. By way of background, the top-flange unrestrained length is measured based on the locations of internal diaphragms, external diaphragms, and the supports. Staggered external diaphragms on the left- and right-hand side of the girder can be at different longitudinal locations. Previously staggered external diaphragms were assumed to support both top flanges of the U-girder regardless of which side they were connected to. This could lead to shorter unrestrained lengths than expected and produce unconservative results. Now, when the unrestrained lengths for the left and right top flanges are not equal due to different staggered diaphragm locations on the two sides of the U girder, the longer unrestrained length will be used for the design of both top flanges. This value is reported in the table "Bridge Design Section Cuts and Panels" as field value "MaxTFUnbrL" and the design output table for the construction staged and nonstaged design checks. The result now may be slightly conservative in some cases. This change affects the superstructure constructability design requests for all codes.
*	3782	The Chinese JTG D62 2004 bridge superstructure design code has been updated to the latest JTG 3662-2018.
*	3822	The development length at the ends of rebar/reinforcement can be defined in the Bridge Modeler for use in bridge design and rating. This has been implemented based on the AASHTO LRFD, CAN/CSA-S6, and EUROCODE codes. The development length is computed automatically based on the bar diameter, yield strength, and specified or assumed concrete properties. An additional scale factor may be specified for the model to adjust the calculated values for additional information or design/rating needs. In addition, an embedment ratio may be specified at both ends of each bar to account for hooks or bends that shorten or eliminate the development length. The reduction in effective rebar area is taken as linear over the development length.
*	3973	Bridge superstructure design and rating for concrete Tee-beam bridge sections has been added according to the AASHTO code (all LRFD versions). The following design checks are available: Stress, Shear, and Flexure. The following rating checks are available: Shear, Flexure, Minimum Rebar, and Service. Design and rating checks can be defined automatically when creating a bridge model from the Quick Bridge new-model template. Results can be displayed in graphical form, plotted along the length of the superstructure. Full output is available in tabular form. Detailed design reports for individual stations will be available in a future release.

*	Ticket	Description
*	4131	An enhancement was implemented for concrete bridge rating per the AASHTO code where three reliability factors were added to the Minimum Rebar Rating requests to match the AASHTO LRFD equation 5.6.3.3-1. These factors are Gamma1 to account for variability in the flexural cracking strength of the concrete, Gamma 2 for the variability of prestress, and Gamma3 for the ratio of the nominal yield stress of reinforcement to ultimate strength. Previous versions of the rating algorithm were using the corresponding equation from the AAASHTO 2007 edition, which did not have these reliability factors. Impacted rating request are MinRebar - ConcBox, MinRebar - Multicell Conc Box, and MinRebar - Precast Comp. Impacted Resistance Code versions: AASHTO LRFD 2011 and newer.

Bridge Modeler

Enhancements Implemented

*	Ticket	Description
*	2124	Modeling and loading features have been implemented for capturing bridge-rail interaction under train vehicle and other loading. Rail-track layout is defined with respect to a bridge layout line, similar to how vehicle lanes are currently defined. Tracks can be modeled as two rails or as a single rail with double stiffness. Track support properties can be defined that represent the combined effect of ballast, ties, clips, and other materials or devices that connect the rails to the bridge deck or ground (embankment). Support properties are linear in the vertical and transverse directions, but can yield in the longitudinal direction. The longitudinal stiffness and yield force can be specified to increase by a scale factor when loaded by a train vehicle in a nonlinear multi-step static load case. Rails are represented by frame objects, and are automatically connected by links representing track supports to shell (area) or solid objects representing the top slab of bridge objects. Outside of bridge objects, rails are automatically connected to ground by links representing track supports. A new type of load pattern, Train Live, is available to define step-by-step loading of vehicles on rail tracks. When a Train Live load pattern is applied in a nonlinear multi-step load case, the track support properties will be scaled for each load step at all locations between the first and last axle of the train based on the location of the train(s) for that load step. For all other linear and nonlinear load cases, the un-scaled track support properties are used. For influence-based moving load cases, vehicles acting on rail tracks will load the rails directly rather than the bridge deck like is done for lanes.
*	2357	The Bridge Modeler has been enhanced to improve the modeling of steel I-girder, U-girder and concrete I-girder bridges with two or more spans when the option Mesh Superstructure to Match Bent Bearing is set as "No" in the Bridge Object Bent Assignments form. A new type of global section cut has been introduced that consists of a collection of staggered section cuts, one for each girder. These are used to mesh the bridge object near skewed bents to more accurately capture girder lengths and their behavior near the bent without skewing the mesh to match the bent. This enhancement improves the analysis results for individual girders as well as the design or rating results for steel I-girder, U-girder and concrete I-girder bridges whenever the option Mesh Superstructure to Match Bent Bearing is set to "No" in the Bridge Object Bent Assignments form. However, analysis results for the entire bridge section may show jumps at the staggered global section cuts since they do not represent a single plane. In addition, there may be a small reduction in shears and negative moments at the bent since the girder section cuts collect forces from both sides of the bent. While this new feature provides significant improvement for the case where the superstructure meshing has been specified not to match the bent bearing, the default setting to match the mesh to bent bearing is generally recommended.
*	3140	The Bridge Modeler has been enhanced for steel U-girder bridges to allow easier specification of girder (steel beam) plate sizes and vertical web stiffeners prior to running analysis and bridge design or rating. Previously these options were only available after running bridge design or rating using the Optimize command. This new feature is accessed using the command Bridge > Spans > Steel Beam Editor. Plate sizes can only be edited when the model is unlocked, but the vertical stiffeners can be edited whether the model is locked or unlocked.

*	Ticket	Description
	3538	The Bridge Modeler has been enhanced for speed when updating a bridge object with a composite bridge section. In particular, certain computations associated with girder local section cuts are now only performed just before analysis, rather than every time the bridge object is updated. This enhancement impacts some models more than others. This change does not affect the analysis, design, or rating results.

Documentation

Enhancements Implemented

*	Ticket	Description
	4175	An enhancement was implemented to expand the Help documentation for the use of the command line to run CSiBridge in batch mode. The topic now includes the parameters used to update the bridge object and to control the running of bridge rating, superstructure design, and seismic design requests. These features were already present, just not documented.

Installation and Licensing

Enhancements Implemented

*	Ticket	Description
*	3562	The version number has been changed to v22.1.0 for a new intermediate release.

Loading

Enhancements Implemented

*	Ticket	Description
	4162	The default prestress loading assumed when a new tendon is defined has been changed to be a more realistic initial estimate. For tendon objects and bridge tendons, the stress assumed before losses will be set to 90% of the yield strength of the tendon material. For tendons defined as part of a precast I-girder frame section, the stress assumed before losses will be set to 75% of the ultimate strength of the tendon material. This value is only an initial estimate and should be reviewed and revised by the engineer based on the tendon material used, the applicable code, expected losses, and other design considerations.

User Interface

Enhancements Implemented

*	Ticket	Description
	4185	An incident was resolved to remove an unnecessary time delay that occurred when opening the first model after starting a new session.

Analysis

Incidents Resolved

*	Ticket	Description
*	1916	An incident was resolved for the Bridge Modeler with steel I-girder and steel U-girder bridge sections where the sub-meshing of area (shell) objects that model the steel girders themselves could be inconsistent for curved bridges, thereby producing obviously unrealistic force, moment, and stress results for the affected girders. This only affected curved steel girders modeled as shell objects, not mixed or frame models. When this occurred, the number of sub-meshed area elements representing the flange was different on the left and right sides of the web. This did not affect the continuity of the model due to the use of edge constraints, and it did not affect the overall behavior of the model. Only the section cuts used to plot the force, moment, and stress results on the Bridge Object Response Display form and used for bridge superstructure design and rating were affected. No other results were affected. This error was not common and could be avoided by changing the Preferred Maximum Submesh Size on the Update Bridge Structural Model form. When this error occurred, the effect on results was obvious.
*	4490	An incident was resolved where the nonlinear stiffness of Damper-Exponential type links was being included in linear and modal load cases that used the stiffness from a nonlinear load case, including P-delta load cases. This issue only affected CSiBridge versions 21.0.0 to 22.0.0 when the option "Stiffness Used for Linear and Modal Load Cases" in the Damper-Exponential type link property was set to "Effective Stiffness from Zero, Else Nonlinear" or "Nonlinear Stiffness". This had the effect of stiffening the model for the affected load cases. Now the stiffness will bet to zero for linear and modal load cases using the stiffness from a nonlinear load case unless the option "Effective Stiffness" is chosen for Damper-Exponential type link properties.

Bridge Design and Rating

Incidents Resolved

*	Ticket	Description
*	3542	An incident was resolved for AASHTO bridge rating of steel I-girder bridges where the rating could fail to produce results at stations near the connection between two spans if (1) there was no support (bent) at the connection, (2) there was no full-width diaphragm at the connection, and (3) the number of girders were different between these two spans. No other results were affected.
	3559	An incident was resolved for superstructure design of concrete box girder bridges where the shear MCFT design results in the table Bridge Super Design AASHTOLRFDxx 04a - CBoxShearMCFT-TorsionRslt reported the field Tcr incorrectly. It was using the compressive stress fpc in equation 5.8.2.1-4 of AASHTO with a negative sign, which produced incorrect results when fpc was not zero, and could even report Tcr as "NaN" when the compressive stress fpc was less than -1.0. The compressive stress fpc is now assumed as positive in compression when calculating the Tcr, although it is still reported as negative in the tables consistent with the sign convention of CSiBridge. This incident impacted the design check ConcBox Shear - MCFT - AASHTO LRFD for all versions of the code.
	3928	An incident was resolved for the bridge design of concrete bridge sections per the Eurocode and Indian code where the reported force in the concrete compression block was switched for positive flexure and negative flexure. In other words, the compression-block for positive flexure was reported as being for negative flexure, and vice-versa. The reported values themselves were correct, and no other results were affected. This reporting error affected the flexure design check for all types of concrete bridge sections, but only for the Eurocode and Indian code.
*	3959	An incident was resolved for the bridge design and rating of steel I-girder and U-girder bridges per the AASHTO code using PennDOT amendments where the classification of internal shear panels was incorrect. The incorrect classification was not taking into account the PennDot amendment DM4 6.10.9.1 which considers an internal panel to be stiffened if

*	Ticket	Description
		the stiffener spacing does not exceed 1.5D when longitudinal stiffeners are not present. The previous version was using the AASHTO criteria of 3D. Note that end panels were not affected since they were already using the correct PennDOT value of 0.5D. Impacted design and rating requests: Steel I and U Comp - Strength and Web Fatigue; Codes: AASHTO with PennDOT amendment - All versions.
	3965	An incident was resolved for the bridge rating of concrete bridges where the demand-capacity ratio of shear demand over the concrete capacity in the web of the beam to prevent crushing prior to the yielding of transverse reinforcement was not correctly reported in the shear rating calculation report. This incorrectly reported ratio did not have any impact on other calculated values or rating factors presented in the calculation report, tables, or plots. Impacted rating requests: Mulicell ConcBox - Shear, Precast I - Shear; Impacted codes: AASHTO LRFD - All versions.
	4181	An incident was resolved to modify the way the flange lateral bending fatigue stress range is reported. In the old version the stress range was reported as a delta of absolute values of flange lateral bending stresses read at the side tip of the flange. In the new version the stress range is reported as a delta of true values of flange lateral bending stresses read at the side tip of the flange. This change may result in a larger stress range being reported when the signs of the stresses reverse from negative to positive for the defined fatigue load case. This affects AASHTO LRFD fatigue design requests for steel I-girder bridges.
	4325	An incident was resolved for bridge superstructure design per the AASHTO LFRD code (all versions) where the DoverC ratio for the bottom flange in negative bending was reported incorrectly in the calculation report for the Steel I Comp Service Design check. This issue only affected the calculation report. Values reported in the tables were correct. In the calculation report, the overall section controlling DoverC and other D/C ratios were also correct. No other codes, bridge section types, or design request types were affected.

Bridge Modeler

Incidents Resolved

*	Ticket	Description
*	3076 3977	An incident has been resolved for the Bridge Modeler where staggered diaphragms (cross frames) were not generated correctly for steel I-girder, steel U-girder, and precast I-girder bridges in the case when a staggered diaphragm was defined such that it crossed the support between two adjacent spans that had differing numbers of girders. This could occur if the support was skewed or the two connected girders were not parallel to each other. In addition, when this error occurred for a steel I-girder bridge model, the panel numbers could be labeled incorrectly causing bridge design or rating requests to fail to run or fail to produce results. Now when this situation is encountered, the end of the diaphragm that would previously have been connected to the girder in the subsequent span will be connected instead to the end of the girder in the current span. This may cause a slight adjustment of the bearing angle of the diaphragm. This does not affect the common case where the number of girders in both spans is the same.
	3369	An incident was resolved in the Bridge Modeler where zero-length segments defined at the end of bridge tendons were sometimes deleted due to a tolerance error. This was not common, but when it did occur, it could change the shape of the last segment of the tendon. Zero-length segments are used to terminate curved tendons, and the error could cause the shape of the last finite-length segment to be straight instead of curved as specified. This error was obvious, and results agreed with the model as generated.
	3555	An incident was resolved for the Bridge Modeler where the panel length used for design of steel I-girder bridges may have been calculated incorrectly for a girder in the case where a staggered diaphragm (cross frame) was assigned to that girder and its longitudinal location was nearly identical to that of a global (full width) section cut and also close to a skewed support. This did not occur if there was another global section cut between the skewed support and the coinciding location of the staggered diaphragm and global section cut. This error was not common.

*	Ticket	Description
*	3575	An incident was resolved for the Bridge Modeler where a new span could not be added to a single-span bridge object if there was no bent property defined. Now a default bent property will be created and used as the support at newly added spans.
*	3746	An incident was resolved for the superstructure design and rating of steel I-girder bridges where the design/rating could fail to run in certain cases because it was unable to determine the bottom-flange lateral restraint type for a panel formed by two staggered diaphragms on opposite sides of the same girder that were within 2 inches of each other longitudinally but were defined with respect to different reference lines (layout-line station or girder distance). This 2-inch distance fell within a tolerance that disrupted the calculation of panel length. When this occurred, results were unavailable for the affected design/rating requests.
	3794	An incident was resolved for the Bridge Modeler where the tendons defined in precast concrete I-girder frame sections that are used in a precast I-girder bridge section would sometimes connect to bridge diaphragms instead of to the I-girders themselves, resulting in unexpected analysis results. Now, new bridge groups are automatically created that each contain all the precast I-girders for a single span, and these are assigned to the tendons of the precast I-girders in that span.
*	3876	An incident was resolved for the Bridge Modeler where an abnormal termination of the software could occur when moving the mouse cursor along the parametric variation curve displayed in the Parametric Variation Data form if the parametric variation control points were not defined properly to permit generating a valid curve.
	3891	An incident was resolved for the Bridge Modeler when defining segmental bridges where segmental cantilever tendons were not updating correctly in the Cantilever Tendon definition form. This issue was occurring when different piers were using different anchor and duct templates and the number of defined anchors between the templates did not match. This error could manifest as not being able to see changes in the form after they were made, or not being able to click the OK button after changes. Switching between spans in the form allowed the changes to be seen and saved. Results agreed with the model that was generated from the Bridge Modeler.
*	3921	An incident was resolved for the Bridge Modeler where an abnormal termination could occur while creating a bridge object from a blank model (not using the Quick Bridge template) when trying to open the Bridge Object Span Assignments form using the "Spans" option from within the Bridge Object Data form when the bridge object is first created. This did not occur once the bridge object was saved or updated.
	4310	An incident was resolved for the Bridge Modeler that addressed several issues relating to the creation and display of segmental bridge tendons: (1.) In rare cases, a segmental tendon was not able to be generated if it ended exactly at the end of a span. This was due to a numerical tolerance check. (2.) The offset specified for the ends of a segmental bridge tendon were shown graphically on the form where defined, but were not being used when actually creating a tendon object.(3.) When clicking the "Show All Tendons" button on the Bridge Tendon Layout Display, not all tendons were actually displayed when there was more than one type of segmental bridge tendon (Top, Bottom, Cantilever and General). This did not affect results.
	4522	An incident was resolved for the Bridge Modeler where the bottom flange was not generated for the first steel I-beam-type diaphragm, if any, in a steel I-girder bridge in the case when the bridge section was specified to model the steel I-girders using the option “Modeled as Mixed Frame and Shell”. Only the first diaphragm (closest to the start abutment) was affected. When this error occurred, the effect was obvious and the results agreed with the model as generated.

Data Files

Incidents Resolved

*	Ticket	Description
	3800	An incident was resolved for the Bridge Modeler where segmental bridge objects created in CSiBridge versions prior to v22.0.0 could not be edited for tendons when the model was opened in v22.0.0. In particular, the "Define Segmental Tendon" button on the Define Segmental Bridge Tendons form did not work and could not be used to edit or add new tendons. The bridge objects previously created were not affected and results did not change in v22.0.0.

Database Tables

Incidents Resolved

*	Ticket	Description
	3798	An incident was resolved where using the interactive database editor to modify bridge superstructure design or rating requests did not allow modification of multiple station ranges, but would instead add any changed station ranges to the previously existing station ranges. Design/rating results were consistent with the new, expanded set of station ranges. These could only be changed using the request definition form. Now these can be added, modified, or deleted using the interactive database editor.
	3971	An incident was resolved where the StepNum column in the output tables was hidden when a load combination that had step-by-step envelope results was selected for output and there were no step-by-step load cases requested at the same time. All results were present, but the step number was not shown.
	4147	An incident was resolved where scale factors for load patterns were not always exported and imported for power spectral density load cases.

Design – Concrete Frame

Incidents Resolved

*	Ticket	Description
*	3796	An incident was resolved for AASHTO 2007, 2012, and 2014 concrete frame design in which the minimum reinforcement, as required per Cl. 5.7.3.3.2 was not being enforced. The reported required reinforcement was based only on the force actions from the applied loads.

Design – Steel Frame

Incidents Resolved

*	Ticket	Description
	1833	An incident has been resolved in the steel frame design codes AISC 360-05, AISC 360-10, and AISC 360-16 in which the moment capacity in the major principal direction of an angle section for the limit state of yielding was being calculated based on the geometric axis instead of the principal axis. The design moments are now transformed to the principal axis.
*	2169	An incident was resolved for steel frame design per the CSA S16-09 and S16-14 codes where the calculated shear capacity could have been unconservative for sections that did not meet the h/w <= 1014/sqrt(Fy) limit. The shear area was also being calculated considering the section as rolled. Now the calculated shear area takes into account whether the section is rolled or not.

Documentation

Incidents Resolved

*	Ticket	Description
	3917	An incident was resolved to correct a typo in the AASHTO concrete frame design manuals in which the manual contained an extra '2' multiplier in the denominator of AASHTO Eq.

*	Ticket	Description
		5.8.3.4.2 in section 3.4.4.2 of the manual. This was a documentation issue only. Design results produced by the software were correct.
	4300	An incident was resolved where the Help file displayed when running CSiBridge v22.0.0 could be for v21 if any version of CSiBridge v21.0.0 to v21.2.0 was installed on the same machine.

Drafting and Editing

Incidents Resolved

*	Ticket	Description
	3598	An incident has been resolved where a general reference line was not completely converted to a layout line when the increment of any two reference points were negative in both the x and y directions. When this happened the later point was not saved as a layout line control point.
	4105	An Incident was resolved where an error occurred when trying to draw a general reference line in a blank model (or grid only) while working in DirectX graphics mode. No results were affected.

Graphics

Incidents Resolved

*	Ticket	Description
	3533	An incident has been resolved where the Live Load Curb locations shown in the "Show Section Variation" form would be displayed at the wrong positions when the midpoint of the slab width was not symmetric due to unequal overhangs. This was a display issue only and no results were affected.
	3878	An incident was resolved where the option "Show Selected Girder" in the Bridge Object Response Display form did not work for bridge objects with steel I-girder bridge sections when the bridge object was updated without checking the box "Mesh Slab at Critical Steel I-Girder Locations" in the Update Bridge Structural Model form. No results were affected.

Loading

Incidents Resolved

*	Ticket	Description
*	3540	An incident has been resolved where bridge lane loading points were not being generated at skewed ends of bridge objects in the region of the top slab that extended beyond the intersection of the layout line and the end abutments. This could occur when the lane was defined to use a "Program Determined" bridge group or a user-specified group that included only area (shell) elements.The actual loading points used were clearly displayed using the command Home > Display > Show Lanes, and results were consistent with the displayed loading points.
*	3969	An incident was resolved for Bridge Modeler where bridge temperature loads assigned to steel I girder bridge sections were not being applied to sub-meshed area objects representing the slab at the locations of staggered diaphragms, section transitions, and girder splices. The temperature load was correctly assigned at all other regions of the slab.
*	4492	An incident was resolved where importing a new ASCE 7-16 Response Spectrum function from a text file (.S2K, $2K), database-table file (Excel, Access, XML), or the interactive database editor caused the two specified site coefficients Fa and Fv to be ignored and set to 1.0. This generated an incorrect response-spectrum function that could significantly affect analysis results when used in a response-spectrum load case. Using the menu command Define > Functions > Response Spectrum Functions to modify/show the function would restore the affected site coefficients to correct program calculated values, and the curve displayed correctly. Clicking OK would then save the correct values for analysis, but clicking Cancel would not. Opening an affected model in the new version of the software will now correct any affected response-spectrum functions automatically.

Results Display and Output

Incidents Resolved

*	Ticket	Description
	3553	An incident was resolved for the Bridge Object Response Display form where displacements and design results could not be displayed for the interior girders of a bridge object when there were two girders in one span and more than two girders in the subsequent span(s). Forces and stresses were able to be displayed. This was a display issue only and did not affect the analysis and design results. The displacements and design results were still available in tables and reports.

User Interface

Incidents Resolved

*	Ticket	Description
*	3574	An incident was resolved where the software could terminate when attempting to edit a reference line while using the ribbon interface. This was a user interface issue only and did not affect results.
*	3576	An incident was resolved where an abnormal termination could occur when trying to use the command Draw > Draw/Edit General Reference Line from the menu interface. This did not occur when using the ribbon interface instead of the menus.