CSiBridge® 2017 (Version 19.0.0)
Release Notes

Notice Date: 2016-11-16

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.

Changes from v18.2.0 (Released 2016-08-19)

User Interface

Enhancements Implemented

*	Incident	Description
	82572 93310	An enhancement has been implemented to allow customization of the keyboard shortcuts when using the menu interface.
	82573	An enhancement has been implemented to enable keyboard shortcut keys when using the menu interface instead of the ribbon.
	95060	An enhancement was implemented to enhance several of the edit menu forms to allow them to remain open for repetitive use with a new apply button.
	97401	The Advanced > Edit > Show Duplicates command has been changed to Select Duplicates. Previously, the Show Duplicates command highlighted objects of the same type that had the same connectivity by displaying them in a magenta color, but this color would disappear upon moving the mouse. The new command will highlight the duplicated objects by selecting them instead. This has the added advantage that they can be shown alone without the rest of the model (command Show Selection Only), displayed in a table, or otherwise manipulated. Another change was made to the "Merge Duplicates" command in that it will no longer merge joints in the same location that have different merge numbers. This is different from the "Select Duplicates" command which will select joints in the same location irrespective of the merge numbers.

Bridge Modeler

Enhancements Implemented

*	Incident	Description
*	92160	An option has been added to the Bridge Modeler when updating the linked model to create additional local sections cuts for each girder of steel I-girder bridge sections. Such girder-only section cuts will be created at changes in the steel I-girder section, at staggered diaphragms (cross frames), and at splice locations wherever a full-width section cut does not exist. The girder-only section cuts include the steel girder itself and the tributary width of the slab. The number and longitudinal location of the girder-only section cuts may differ between the girders in the bridge section. As a result, the graphical display and table output for analysis and superstructure design/rating results may consist of different longitudinal locations for each girder. This feature only applies when the bridge object is updated as an Area Object Model (not a Spine Model) and the steel girders in the bridge section are modeled as Mixed or Shell (not Frame). This assures that the steel I-girder web and flanges are modeled separately, which is required for this feature to be effective. When this option is selected, bridge design and rating must use girder forces calculated from analysis rather than live-load distribution factors (LLDF), since the full-width bridge response to be distributed is not available at the local section cuts.
	96195	A new action “Clear and Create Linked Model” has been added to the Action dropdown list in Update Bridge Structural Model form. When selecting this new option, the previous program-

*	Incident	Description
		generated linked model will be cleared (and cleaned) first, and new linked model will then be created. The original action "Update Linked Model" works as usual, i.e., updating linked bridge model by preserving user modifications on the program-generated objects. The new action "Clear and Create Linked Model" is now the default option. Note that for both actions, the user-created objects will be always preserved.
	97340	The Bridge Modeler has been enhanced for the modeling of beam-type diaphragms for steel I-girder bridge sections when updating the linked model as area-objects and using mixed or shell models for the steel girders. Previously the beam-type diaphragm was modeled as a frame object connected to the top web-flange junctures of the adjacent girders. The specified vertical position of the diaphragm was represented with insertion points using the top-center point of the section as the cardinal point plus joint offsets as required. A rigid-body constraint was assigned to the top and bottom girder web-flange junctures to represent the effect of the diaphragm over the depth of the web. However, this could over-constrain the girder web and perhaps underestimate the local stresses. Now, a connection plate is required to be specified when defining beam-type diaphragms. This will replace the body constraint to more realistically capture the load transfer between the diaphragm and the girder. In addition, the diaphragm frame-object cardinal point is now located at the middle-center point of the frame section and the frame object is located at the desired elevation without joint offsets when the frame object is within the girder-web depth. The net effect of these changes is more realistic modeling and more accurate local stresses. When opening older model files where a beam-type diaphragm had been defined without connection plates, a default connection plate size will be assumed. This will not affect the model until the bridge object is updated. We recommend that you review and revise such models as necessary for the appropriate size to use for the connection plates. Note that the connection plate defined for beam-type diaphragms will affect their use in steel U-girder models as well, even though the diaphragms themselves are modeled with shell webs and frame flanges and have not otherwise changed in this version.

Modeling

Enhancements Implemented

*	Incident	Description
*	18878 37418 45772	An enhancement has been implemented to expand and enhance the hysteresis models for nonlinear energy dissipation. This enhancements applies to the nonlinear materials used in fiber hinges and the layered shell, to single degree-of-freedom (non-interacting) frame hinges, and to the multi-linear plastic link. These hysteresis models include: (1) Isotropic model, which dissipates the most energy; this was previously available only for frame hinges. (2) Kinematic model, typically suitable for metals; this was previously available. (3) Takeda model for simple degradation; this was previously available. (4) Pivot model, typically for reinforced concrete; this was previously available for hinges and links but not materials; the reloading behavior has been slightly modified so as to load from the pivot point to the backbone curve along the secant line, rather than along the backbone curve as done previously. (5) Concrete model, representing compression and tension behavior differently; this is new and similar to the model in Perform-3D; it can also be used in reverse to represent tension-only behavior. (6) Degrading model, capturing energy and stiffness degradation with kinematic behavior; this is new and similar to the model in Perform-3D. (7) BRB Hardening model, for representing buckling-restrained braces; this is new and similar to the model in Perform3D. The behavior of the existing models has been improved for the cyclic behavior during strength loss.
	67569	An enhancement has been made to update the frame hinge definitions to follow ASCE 41-13 guidelines. Older files with automated FEMA hinges will now follow the new guidelines. Also the performance point calculations for pushover curves have been updated to ASCE 41-13.
*	86202	A new parametric P-M2-M3 frame hinge has been implemented for use with performance-based design and other types of nonlinear analysis. This hinge can be used for double-symmetric steel and reinforced-concrete frame sections. The axial capacity can be different in tension and compression. The P-M2-M3 interaction surface is assumed to be smooth and is represented by a few simple parameters. Strength loss and energy degradation can be captured. Deformation capacities can be

*	Incident	Description
		defined and reported as part of the performance checks. Parametric P-M2-M3 hinge properties can be user-defined or automatically created from frame sections.

Section Designer

Enhancements Implemented

*	Incident	Description
	56200	An enhancement has been implemented to import sections from DXF files into Section Designer. A list of importable entity types and the layers they are on in the DXF file is presented to the user. The user can specify the layers and the entity types from those layers to be imported and what Section Designer entities they should be mapped onto. As necessary, based on entity mapping, other parameters such as material, thickness, rebar designation, spacing, etc. can also be specified.

Analysis

Enhancements Implemented

*	Incident	Description
	45404 76493	An enhancement has been implemented that provides two alternatives to how frame nonlinear hinges are represented in the analysis model. Previously the hinge was internal to the frame element, but now the hinges may be modeled instead as a zero-length link elements connecting multiple frame elements that represent the full length of the member. The main reason for doing this is to allow nonlinear modal time-history analysis (Fast Nonlinear Analysis, FNA) to account for nonlinearities in frame hinges, as well as to provide more damping control for nonlinear direct-integration time-history analysis. This new feature are available only with the Ultimate license level. This change has several implications: (1) When performing FNA for such a model, it is important to use Ritz modal analysis to capture the modes that represent the link nonlinear deformations. (2) This approach introduces a very small amount of elastic flexibility at the hinge locations, which may cause slight differences in both linear and nonlinear behavior compared to a frame member without hinges. For the same reason, slight differences in results for all load cases may be expected from previous versions of SAP2000 in models having frame hinges. Isotropic hinges will now be slightly more flexible (previously they were rigid before yield), fiber and non-isotropic hinges will be slightly less flexible (these previously had some flexibility before yield). (3) Additional rotational mass degrees of freedom may be present at the hinge locations. (4) Convergence behavior should generally be improved for nonlinear static and direct-integration time-history load cases, particularly for cases where multiple hinges in the same frame object were dropping load at the same time. (5) For hinges modeled as links, the stiffness-proportional damping used for direct-integration time-history analyses may now be specified by the user to be proportional to the initial stiffness of the hinge (the current behavior), the tangent stiffness, or a mixture of the two. Tangent-stiffness damping is generally more realistic, but may increase computation time. Initial-stiffness damping generally leads to faster convergence during analysis, but may overestimate damping and hence be unconservative.
	94345	The analysis of time-history load cases with large numbers of applied frame loads has been made faster. This can particularly affect multi-step vehicle loads applied to frame structures.
*	95326	The size of the saved analysis results files has been reduced for multi-step nonlinear static and nonlinear direct-integration time-history load cases. This will reduce the amount of disk space required for these types of load cases in models using non-isotropic single degree of freedom frame hinges, fiber P-M-M frame hinges, directional layered shell elements, and/or nonlinear link elements. Linear elastic shell and solid elements will also exhibit some reduction in disk-space requirements. This may also result in some speed increase when running the analysis and displaying results, particularly for load cases with many steps. The amount of data saved will be reduced for other types of elements in subsequent releases of the product.

Bridge Design

Enhancements Implemented

*	Incident	Description
*	92160	Bridge strength design and rating of steel I-girder bridges per the AASHTO code has been enhanced to better account for the controlling section within each panel. Specifically, (1) For unbraced lengths where the member is nonprismatic, the lateral torsional buckling resistance of the compression flange at each section within the unbraced length is taken as the smallest resistance within the unbraced length under consideration. The moment gradient modifier Cb will be taken as 1.0. (2) For unbraced lengths containing a transition to a smaller section at a distance less than or equal to 20% of the unbraced length from the brace point, the lateral torsional buckling resistance is determined assuming the transition to the smaller section does not exist provided that the lateral moment of inertia of the flange of the smaller section is equal to or larger than 0.5 the corresponding value in the larger section. This enhancement affects the Steel I Comp Strength design request and the Steel I Comp Strength rating request for the AASHTO LRFD code, all versions and interims. For this enhancement to be effective, it is necessary to have bridge section cuts at each nonprismatic girder-section transition. This can be assured using the new enhancement of the Bridge Modeler to create local girder-only section cuts. See Enhancement 92160 for the Bridge Modeler described elsewhere in these Release Notes.

Frame Design

Enhancements Implemented

*	Incident	Description
	96435	The automatic calculation of K-factors during frame design now accounts for the effect of frame property modifiers, whether assigned to frame objects or defined in frame section properties, or both. The K-factors computed for the frame object being designed can be affected by the relative stiffness of connected elements, and this is what has changed under this enhancement. Frame design results may be different in the present release compared to previous versions due to this change. No other results are affected.

Results Display & Output

Enhancements Implemented

*	Incident	Description
*	16567 40433 46668 47298 55092	Step-by-step energy plots are now available for nonlinear direct-integration time-history load cases and for nonlinear static/staged-construction load cases. Previously they were only available for linear and nonlinear modal time-history cases. In addition, plots of the input ground accelerations and/or load function are now available for nonlinear direct-integration time-history and nonlinear static load cases.

Application Programming Interface

Enhancements Implemented

*	Incident	Description
	97339	An enhancement has been implemented to provide v18 (2016) API compatibility in v19 (2017). Tools built against the v18 API should continue to work in v19 without the need to change references or recompile.

Miscellaneous

Enhancements Implemented

*	Incident	Description
	95227	The version number has been changed to v19.0.0 for a new major update. CSiBridge v19 will be known as CSiBridge 2017.

User Interface and Display

Incidents Resolved

*	Incident	Description
	76332	An incident was resolved where pressing the keyboard "Alt" key did not provide underlined letters in the menu interface for keyboard access keys. This did not affect the ribbon interface.
	93698	An incident was resolved in which the delete button on the Define Load Case form would become disabled when one or more construction scheduler load cases were present, removing the ability to delete load cases of other types. This was a user interface issue only and did not affect results.
	95899	An incident was resolved in which the Display > Member Load Assigns > Load Case command was not working when using the menu instead of the ribbon. The menu has now been updated to include this command under Display > Object Load Assigns.
	96201	An incident was resolved in which external plugins were not included on the Tools menu when using the program with menus instead of the ribbon.
	96765	An incident was resolved in which the language translation of certain forms was not available and some forms that were translated could cause an error when trying to input data. This only affected users running the program with the user interface translated.

Bridge Modeler

Incidents Resolved

*	Incident	Description
	93939	An incident was resolved for the Bridge Modeler where the command Bridge > Prestress Tendons > Copy to All Girders could generate an error message and fail to copy the tendon if the bridge section of any affected span was assigned a parametric variation for the deck width using the option "Distance Measured from Start of Span" and the distance in the parametric variation exceeded the length of the assigned span. This error only affected tendons with parabolic variation. When this occurred, the tendon was not copied and results agreed with the model as generated.
	94209	An incident was resolved for the Bridge Modeler where the options available to the user for bearing assignment ("Girder-by-Girder" or "General") at single-bearing bents was being determined by the type of bridge section used for the span after the bent, but should have been determined by the type of bridge section used for the previous span. However the bearing locations are actually controlled by the previous span when creating the model, so this could lead to incorrectly located bearings in the uncommon case where the bridge-section types were different on both sides of a single-bearing bent. When this occurred, the results were consistent with the model as generated.
*	94923	An incident was resolved for the Bridge Modeler that addressed several issues for steel U-girder bridge sections: (1) For certain models with steel U-girders modeled as mixed (shell webs and bottom flange, frame top flanges), the section cuts used to calculate bridge superstructure response were not determined correctly when the linked bridge model was updated more than once without first clearing and saving the model. This could have affected the force, moment, and stress response, and design results could have been impacted. This was usually visible as unexpected jumps in the plotted response of the superstructure. (2) The connection was not always correct between the steel U-girder and the bottom and/or top of a beam-type external diaphragm assigned at a bent if the bent was skewed and the option "Mesh U-Girder to Match Bent Bearing" in the Bridge Object Bent Assignments form was set to "No". When this occurred the diaphragm could be fully or partially disconnected from the U-girder. When this occurred the behavior was obvious and results agreed with the model as generated. (3) For steel U-girders modeled as shells (webs and flanges), U-girder internal diaphragms may not have been created correctly near the highly skewed supports. When this occurred the error was obvious and results agreed with the model as generated.
	95051	An incident was resolved that addressed two issues with the Bridge Modeler for steel I-girder bridges: (1) Staggered diaphragms may not have been be properly oriented (skewed or perpendicular) if the concrete haunch height for an adjacent girder was defined as zero or became zero due to a parametric variation in the vicinity of the diaphragm. When this occurred, the error was obvious and results agreed with the model as generated. (2) A steel I-girder in the bridge section may not be modeled correctly if all the following three conditions were met: (a) Some of the supports were skewed such that some of the section cuts were skewed, (b) Parametric variation was

*	Incident	Description
		assigned to any of the spacings between girders, and (c) Two or more staggered diaphragms were assigned at the same girder distance in two or more different girders. When these three conditions were satisfied, the steel I-girders in the vicinity of the staggered diaphragms could be generated with a small horizontal kink. The error was obvious and results agreed with the model as generated.
*	95136	An incident was resolved for the Bridge Modeler where, for a bridge section of type "Concrete Box Girder - Clipped" when updated as a solid-object model, the thickness of the two exterior girder webs was not modeled correctly at the bottom end of the sloping part of the web where it meets the soffit (lower slab). This error was generally very small, but could slightly affect the stiffness and weight of the deck section. More significantly, tendons could have been considered to be outside the girder webs when they were supposed to be inside. When this occurred, tendons modeled as forces would not load the structure at affected locations, and tendons modeled as elements were not connected to the section at affected locations. No other bridge sections were affected, and the "Concrete Box Girder - Clipped" section was not affected when updated as a spine or area-object model.
	95823	An incident was resolved for the Bridge Modeler where the commands Bridge > Prestress Tendons > Add Copy of Tendon and Copy to All Girders could create tendons with incorrect horizontal layout when copied to a sloping external girder in spans with concrete box girder bridge sections of types "Ext. Girders Sloped", "AASHTO - PCI - ASBI", and "Advanced". In particular, the horizontal parabolic or circular profile created due to vertical variation in a sloping web may become straight instead of curved at the end of the tendon. When this occurred, the shape of the tendon was obvious and editable, and results agreed with the model as generated or edited.
	97010	An incident was resolved for the Bridge Modeler where the linked bridge model could not be created or updated for composite bridge models (precast concrete or steel I- or U-girders) if the following three conditions were true: (1) There were two or more spans in the bridge, (2) One span "i" used shell objects to model the girder webs and the subsequent span "i+1" used frame objects to model the girders, and (3) The number of bridge section cuts in the span "i" was greater than the number of bridge section cuts in the span "i+1". This error was not common since the type of objects used to model the girders is normally the same for all composite spans. When this error occurred, no results were available. This error did not affect spine models.

Section Designer
Incidents Resolved

*	Incident	Description
	95156	An incident was resolved for Section Designer where modifying certain properties of a Caltrans shape could change the section inadvertently even if the Cancel button was clicked after making these changes. Specifically, any changes made in the Caltrans Section Properties definition form to Ring Cover data and/or Prestress Tendon Data would be applied to the section regardless of whether the OK or Cancel button was clicked on this form or the Frame Properties forms. In some cases, this could lead to an inconsistent shape definition since only some of the modified data was saved upon Cancel. The actual properties used for the model could be seen in Section Designer or the database tables, and results agree with these properties. Affected sections can be corrected by the user in the new version or any previous version of the software by modifying the section in Section Designer and clicking OK to save the changes. Opening an affected model in the new version will not automatically correct the sections.
	96094	An incident was resolved for section designer where the section properties and the geometry of a section designer section containing two or more box shapes could be calculated incorrectly if two of the box shapes were attached along one edge and aligned on another edge. This was not common.

Loading
Incidents Resolved

*	Incident	Description
*	94759	An incident was resolved for the Bridge Modeler where the actual bridge area loads applied could be different than expected from the load specification when the bridge deck width was not constant along the bridge layout line due to a specified parametric variation. The error was on the order of cos(theta), where theta is the angle between the edge of the area load with deck-width variation and the edge of the area load if the width did not have variation. In most cases this caused the applied load to be too large, but the load could be either too large or too small near skew supports where a non-zero parametric deck-width variation applied, depending on the relation between the skew angle and angle theta. In most cases the effect was small. Bridge point loads and line loads were not affected. No other load types were affected, including self-weight.
	95828	An incident was resolved in bridge area load generation using the Bridge Area Load Distribution Definition Data form, when the Reference Location was Left Edge of Deck, the program correctly considered right-ward direction to be positive for parametric variations, but when the Reference Location was Right Edge of Deck, the program incorrectly considered right-ward direction to be the positive direction for the parametric variation.

Analysis
Incidents Resolved

*	Incident	Description
	48689	An incident was resolved where nonlinear properties for link objects were being considered during analysis for the Plus license-level of the software even though this was documented as not being available and a warning message indicating such was displayed prior to analysis. The results were correct for the nonlinear properties. This restriction will now be enforced during analysis consistent with the displayed message and with documented license-level features.
	94209	An incident was resolved where Caltrans idealized hinges sometimes failed to be created for sections with irregular interaction surfaces. This mostly affected such hinges when a large number of points were requested on each P-M curve, causing the calculation of the moment-curvature to fail for axial forces near the poles of the surface. Now such points are excluded from the generated hinge. This was not a common problem.
	95370	An incident was resolved where the rigid-end length offset specified by the user for a frame member would get reduced slightly every time the model was run. This happened only if the rigid-end offset was user specified and was not automatically calculated by program. Also it happened only if the frame object needed to be broken into element at the rigid-end offset boundary. This was true for Non-prismatic members and if hinges were specified at the ends of the member. The difference in the offset length was equal to twice the joint auto merge length tolerance specified in the model. The actual offset length used in the analysis was reported in the tables and in information provided by right clicking the member.
	96077	An incident was resolved where the reported stresses and element joint forces for plane and asolid types of area objects excluded the effects of temperature and strain loads when applied in a nonlinear static or direct-integration time-history load case. The error in the joint forces affected reactions at joints connected to plane/asolid objects, as well as section cuts through these types of objects. The effect of temperature and strain loads applied to plane/asolid objects upon the rest of the structure was correct, including all displacements and forces or stresses in all other elements. Only the stresses in the loaded plane/asolid objects themselves were affected, as well as the connected joint reactions and section cuts. Results reported for linear load cases were not affected, nor were nonlinear modal time-history (FNA) load cases.
	96360	An incident was resolved where the analysis could terminate abnormally when running large moving-load cases due to an internal memory limitation. A similar problem could occur during analysis or when recovering analysis results for models with a very large number of load patterns, moving-load points, load cases, or load combinations. When this occurred, results were not available. Otherwise, results were not affected. This was not common, and only affected version 18.2.0.

*	Incident	Description
*	97759	An incident was resolved where incorrect results could be produced for iterative nonlinear direct-integration time-history load cases for models where all degrees of freedom were restrained. No other type of load case was affected. The joint displacements for these load cases did not necessarily match the applied ground displacements, or were not necessarily zero at joints without applied displacement load. Forces and stresses were consistent with the incorrect joint displacements. The incorrect displacement results were random and could vary from one run to the next. Only models where all degrees of freedom were restrained, whether explicitly or implicitly, were affected, which is not a common case. When this occurred, the error was obvious in that the joint displacements did not match the specified values, which could be zero.

Bridge Design

Incidents Resolved

*	Incident	Description
	94836	An incident was resolved where bridge superstructure design or rating of steel I-girder or U-girder bridges could sometimes generate an error message about locating non-prismatic sections for the variation of the steel I- or U-girders. This would typically occur on skewed or curved bridges when running a design or rating request, or when recalculating the resistance during design/rating optimization of the steel girder. This error was caused by extremely small non-prismatic segments that were generated due to numerical round-off for complex geometry. When this occurred, no design/rating results were available bridge object. Results that were produced were not affected. This error could affect all codes and all design/rating requests for steel I- and U-girder bridges.
	95198	An incident was resolved for the rating of steel I-girder bridges using the AASHTO LRFD code where the flange lateral stress fl was always being set to zero when the parameter "Use Stage Analysis" was specified as "No" for a "Steel I Comp Strength" rating request. The value fl = 0 was reported in the design output and all other results were consistent with this value. Now the flange lateral stress fl is calculated as documented for the AASHTO LRFD code (all versions and interims). Only the specified type of rating request was affected, and only when "Use Stage Analysis" was set to "No".
	95280	An incident was resolved for bridge superstructure design of steel I-girder bridges with the AASHTO LRFD 2014 code when using the Pennsylvania Department of Transportation (PennDOT) amendments where the top and bottom web bending stresses due to dead load were not calculated correctly when evaluating PennDOT eq. 6.10.1.9.3P-1. Previously the strength design check was reporting compressive web stresses at yield moment for the demand rather than those due to dead load, resulting in an incorrect demand-capacity ratio (DoverC) being calculated.

Results Display and Output

Incidents Resolved

*	Incident	Description
	83104	An incident was resolved in which the advanced report writer would generate an error when trying to show certain tables from within the Create Custom Report form.
*	91438	An incident was resolved where shell thickness overwrites using joint patterns incorrectly switched the thickness values assigned to the third and fourth joints of each quadrilateral element. For shell objects that were meshed into multiple elements, this error affected each individual element. Thickness overwrites specified directly for each node (joint) of the shell object were not affected, only those specified by reference to a joint pattern. Triangular elements were not affected. Other shell assignments using joint patterns were not affected, including joint offsets, temperature loads, and pressure loads. Shell objects created by the Bridge Modeler were not affected because they use direct specification of thickness overwrites rather than joint patterns.
	94046	An incident was resolved in which an abnormal condition could occur when displaying a frame object stress diagram if the frame object was a non-prismatic section that combined different frame sections with different number of stress points.

*	Incident	Description
	95501	An incident was resolved where the multi-value parameters in the Display Shell Stress form were not correctly enabled for enveloping load combinations. This was a user interface issue only and did not affect results.
	95778	An incident was resolved in which the display of shell and solid stresses was not displaying arrows for SMax and SMin when requested. This was a display issue only and did not affect results.
	96082	An incident was resolved where for certain bridge models with tendons the shear diagram would show unexpected jaggedness when the bridge was modeled with shell elements. The shear diagram was smoother when the bridge was modeled with frame elements.
	96608	An incident was resolved where CSiBridge would terminate when trying to display section-cut results for a moving-load case in the database tables. When this occurred, the section cut results were not available. No other results were affected. Section-cut results for bridge object models were not affected.

Aplication Programming Interface

Incidents Resolved

*	Incident	Description
	96187	An incident was resolved where the API function SapModel.CoordSys.GetCoordSys_2 was not available and was also missing from the API documentation.
	97279	An incident was resolved for the Application Programming Interface (API) where the argument "Duration" for functions GetStageDefinitions_1 and SetStageDefinitions was declared as Integer instead of Double. Similarly, the argument "Age" for functions GetStageData_1 and SetStageData_1 was declared as Integer instead of Double. These functions are members of SapModel.LoadCases.StaticNonlinear. Values that are set or returned by these functions are rounded to the nearest integer. This has been corrected in the newly provided functions GetStageDefinitions_2, SetStageDefinitions_1, GetStageData_2, and SetStageData_2 where arguments "Duration" and "Age" are declared as Double. The old functions are retained for backward compatibility, but use of the new functions is recommended to correct this issue. "Duration" and "Age" are specified as days, and the error could be significant for shorter time periods using non-integral numbers of days. Analysis results using the old functions will agree with the integer number of days actually set and visible in the load case definitions.