

SAP2000 v24.2.0 Release Notes

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Notice Date: 14-February-2023

This document lists changes made to SAP2000 since v24.1.0, released 11-October-2022. Items marked with an asterisk (*) in the first column are more significant.

Analysis

Enhancements Implemented

*	Ticket	Description
	9094	The following enhancements have been made to the analysis messages, as shown in the Analysis .LOG file, the Analysis Messages form, and the table "Analysis Messages": (1.) The affected element type and element name are now given whenever applicable. (2.) The Windows system error message text is now given for file IO errors. (3.) The "Results deleted" informational messages are no longer shown for either user-initiated or internal operations that would cause the results of a load case to be deleted. These messages were correct, but sometimes caused confusion, when load cases were automatically re-run due to an iterative process like finding the structural period to use for auto-wind or auto-seismic load cases.
	9223	The Analysis Monitor form has been enhanced for running load cases in parallel so the now the Summary tab displays the Run Tag and the Status of completed load cases (e.g., "Finished", "Not Finished", "Could not Start", etc.), making it possible to easily identify load cases that didn't complete while the analysis is still running or after it is done.

API

Enhancements Implemented

*	Ticket	Description
	9013	An enhancement has been made to the Application Programming Interface to add new functions <code>cAutoSeismic.GetASCE716</code> and <code>cAutoSeismic.SetASCE716</code> for the ASCE 7-16 auto-seismic loading.
	9023	Two related enhancements for the Application Programming Interface (API) were implemented. (1) New functions <code>PropFrame.GetTube_1</code> and <code>PropFrame.SetTube_1</code> were added. These are similar to <code>PropFrame.GetTube</code> and <code>PropFrame.SetTube</code> , but they accept an additional argument corresponding to the corner radius of the tube section whose dimensions they retrieve or set. (2) Functions <code>GetInsertionPoint_1</code> and <code>SetInsertionPoint_1</code> were documented in the <code>CSI_OAPI_Documentation.chm</code> file. These had been available in previous versions but not documented. They are similar to <code>GetInsertionPoint</code> and <code>SetInsertionPoint</code> but they accept an additional argument corresponding to the Mirror about Axis3 flag of the frame objects whose insertion points they retrieve or set.
	9219	A new API example for the IronPython programming language has been added to the <code>CSI_OAPI_Documentation.chm</code> file. In addition, the Python (COM) and Python (.NET) examples have been updated to work with the latest versions of Python and their required packages.

Data Files

Enhancements Implemented

*	Ticket	Description
	9075	Minor corrections have been made to the Chinese frame-section database file ChineseGB08.xml. These include (1.) Changing section name YB-WH700X300X12X38 to YB-WH700X300X12X28, with the corresponding change in flange thickness, and (2.) Minor changes to the section moduli of several sections. No section property values affecting analysis were changed, and the effects on design properties is insignificant. These changes only affect models that import these properties from the new database file. Models that imported properties from an earlier database file will not be affected. This new Chinese frame-section database file was previously included in the Chinese installation for SAP2000 v24.1.0, but is new for the the regular installation of present release v24.2.0.

Database Tables

Enhancements Implemented

*	Ticket	Description
	9205	An enhancement has been implemented to include the program name, program version, and the version for each table in the export of table and field keys to the XML file from within the software. Additionally, the menu command for this export has been changed to "Options > Database > Write Table and Field Keys to XML File" to better reflect the information being exported. Previously, the command was "Options > Database > Write Default Table Names to XML". The resulting XML file as applied to all possible tables is now automatically included in the installation folder. This can be compared between versions of the software to see which tables have been changed. This information can be used to update programs and scripts that work with exported/imported database tables or API applications that use the table functions for editing and/or display.

Design – Concrete Frame

Enhancements Implemented

*	Ticket	Description
	8777	An enhancement has been made to the concrete beam design code "Eurocode 2-2004" in which the $\tan(\theta)$ is now optimized for DCM and DCL frames per EN 1998-1:2004 even where there is a seismic load. Previously, $\tan(\theta)$ was not optimized for cases with seismic load irrespective of framing type. It is still taken as 1 for DCH beams with a seismic load. The previous results were slightly conservative. Also, because of tolerance issues, and only on rare occasions, the design could show shear failure when the $\tan(\theta)$ was optimized for non-seismic cases. This latter issue is also fixed.
*	9150	An enhancement has been made to concrete frame design to add a new crack-width (serviceability) design or check according to Eurocode 2-2004 and Italian NTC 2008 codes. This feature is available for beam (M3) design and for the design or check of column reinforcement. The crack width, concrete stress, and steel stresses are calculated and compared against the limits imposed by the Eurocode 2-2004. The design/check results are displayed in the right-click design detail report, display design info, and database tables. The feature is currently limited to prismatic frame sections only.

Design – Concrete Shell

Enhancements Implemented

*	Ticket	Description
	9329	An enhancement has been made to the Display Concrete Shell Design Results form to include an option to display the results on the deformed shape.

**External Import and Export
Enhancements Implemented**

*	Ticket	Description
	6711	An enhancement to the export of IFC files has been implemented. Several recently deprecated IFC objects are no longer output when a SAP2000 model is exported. Line and area objects are no longer exported to the architectural coordination view as IfcColumnStandardCase, IfcBeamStandardCase, IfcMemberStandardCase, IfcWallStandardCase, IfcSlabStandardCase objects and are exported as IfcColumn, IfcBeam, IfcMember, IfcWall, or IfcSlab objects because the "standard case" subtypes of these objects have been deprecated in IFC 4x1. However, all the "standard case" subtypes of these objects are still imported from IFC files when present. Section properties with a trapezoidal type are now exported as IfcArbitraryClosedProfileDef sections instead of IfcTrapeziumProfileDef sections because IfcTrapeziumProfileDef has been deprecated in IFC 4x3. Note that IfcTrapeziumProfileDef sections were never imported.
	6719	Several related enhancements to the export of frame section properties to IFC were implemented. (1) Several frame section property types not previously exported are now exported. These include: concrete precast I, concrete precast U, concrete precast super-tee, cold formed C, cold formed Z, cold formed hat, cold formed tee, cold formed angle, cold form box, and cold formed pipe. Previously these profiles were exported as generic IfcProfileDef objects with a name matching the SAP2000 section name. (2) Angle sections with different horizontal and vertical leg thicknesses are now exported as IfcArbitraryClosedProfileDef objects. Previously they were exported as IfcLShapedProfileDef with a leg thickness equal to the average of the horizontal and vertical leg thicknesses. (3) Angle section fillet radii, if defined, are exported.
	9024	An enhancement to the import and export of IFC files has been implemented. SAP2000 mirrored frame objects are now exported to IFC2x3 with an IfcDerivedProfileDef that refers to an IfcCartesianTransformationOperator2D specifying a mirror operation and exported to IFC4 with an IfcMirroredProfileDef section. Conversely IFC architectural objects and structural analysis objects whose section is an IfcDerivedProfileDef that refers to an IfcCartesianTransformationOperator2D specifying a mirror operation or an IfcMirroredProfileDef are now imported as mirrored frame objects.

**Installation and Licensing
Enhancements Implemented**

*	Ticket	Description
	9007	The version number has been changed to v24.2.0 for a new intermediate release.

**Results Display and Output
Enhancements Implemented**

*	Ticket	Description
	9268	A change has been made to not display vehicles when animating the deformed shape of multi-step results on screen. The vehicles were making it difficult to review results on screen. Vehicle visualization is still available when creating a video using the File > Create Video > Create Multi-step Animation Video command.

**User Interface
Enhancements Implemented**

*	Ticket	Description
	8225	An enhancement has been made to the user interface to speed up display and editing of time-history, response-spectrum, steady-state, and power-spectral-density functions with many (e.g., more than tens of thousands) data points.

**Analysis
Incidents Resolved**

*	Ticket	Description
	8626	An incident was resolved where the forces reported in a Fiber P-M2-M3 frame hinge could be out of equilibrium with the forces reported in the frame element that contained the hinge for nonlinear static, staged-construction, and direct-integration time-history load cases when P-Delta geometric nonlinearity was considered in the load case. The error was generally small in practical structural models, and was most pronounced in simple, statically-determinate models subject to large load increments and exhibiting significant axial nonlinearity in the fiber hinge. The error was reduced by applying the load in smaller increments. This issue only affected hinges modeled in elements, not hinges model in links (Analyze menu > Analysis Model for Nonlinear Hinges). Models run in previous versions may exhibit minor changes in convergence behavior due to this change, especially in sensitive models with significant hinge nonlinear behavior.
*	9198	An incident was resolved where the analysis model was not properly cleared from the memory and disk (.MSH file) when unlocking a model with results, and therefore subsequent actions to remove previously defined load patterns could corrupt one or more load cases, preventing them from being run. This only affected models where load patterns were deleted after unlocking the model or creating the analysis model. Only the load-case definitions were affected. Models that were reopened after being unlocked were not affected. Locked models with results were not affected, even if the load-case definitions were changed on the locked model. This error only affected v24.1.0.

**API
Incidents Resolved**

*	Ticket	Description
	7681	An incident was resolved for the Application Programming Interface (API) where the functions FrameObj.GetElm and CableObj.GetElm were returning a nonzero error value when called for objects with none/null properties assigned.
	8208	Documentation for the Application Programming Interface (API) has been updated to correct the signature of the function (procedure) cDatabaseTables.ShowTablesInExcel, and now includes a full VBA example.

**Data Files
Incidents Resolved**

*	Ticket	Description
	9095	An incident was resolved where importing a model containing a wave load pattern would reverse the 'Include Bouyant Loads' option on the wave load pattern definition. Results agreed with the model as imported.

**Database Tables
Incidents Resolved**

*	Ticket	Description
	8441	An incident was resolved where an error could be generated when using the interactive database to modify the "Case - Steady State 6 - Constant Damping" or the "Case - Steady State 7 - Interpolated Damping" tables. When this happened an error message was presented and the changes were not applied.
	9197	An incident was resolved where the load combinations specified in a database-table named set were not implemented as expected in the database-table named sets specified to be automatically output after analysis.

**Design – Cold Formed Frame
Incidents Resolved**

*	Ticket	Description
	9320	An incident was resolved for the Eurocode 3 1-3 2006 cold-formed steel frame design code in which the calculation of the elastic critical moment, M_{cr} , was missing the square in the term $(KLTB/kw)^2$. Previously, in common cases, this resulted in a slightly higher estimate of the global buckling moment capacity and the design was marginally unconservative. This affected all cross sections except for the box, pipe, rectangular, and circular shapes whose lateral-torsional buckling effects are not considered.

**Design – Concrete Frame
Incidents Resolved**

*	Ticket	Description
	6705	An incident was resolved for steel, cold-formed steel, and aluminum frame design where assigning a nonprismatic frame section as a design overwrite could cause the design to fail or an abnormal termination of the software. Now assigning a nonprismatic section as a design section is not allowed, and if one is detected during design time, it will be ignored and the analysis section property will be used instead. If it is intended to use a nonprismatic section for design, then it should be assigned to the member as the analysis section, not as a design overwrite.
	9058	An incident has been resolved in the Russian concrete frame design code SP 63.13330.2011, in which case, the “Snow Load Duration Factor” preference did not affect the calculation of long-term moment M_{l1} in strength calculation. The total load moment was correct. This affects the eta factor calculation as it affects the Φ_{lL} , K_b , D , and N_{cr} calculations (SP63 8.1.15).
*	9073	An incident was resolved for the concrete frame design code ACI 318-19 where the potential plastic zone was not identified correctly at the right (J) end of the beam while the potential plastic zone was identified correctly at the left (I) end of the beam per ACI 318-19 18.6.4.1. This caused the design to not set $\phi \cdot V_c$ to zero at the right end of the beam if the capacity shear V_p is more than half of the total design shear, which was incorrect for Special moment frames per ACI 318-19 18.6.5.2. There was no error if the frame type was NonSeismic, Ordinary, or Intermediate. This issue was introduced in SAP2000 v22.2.1 when ACI 318-19 code was introduced. Results for affected models in v22.2.1 to v24.1.0 could have been unconservative.
	9252	An incident was resolved for the Indian IS 456:2000 concrete frame design code to remove the Consider Torsion option from the preference and overwrites forms, as well as from the interactive database tables and the API functions. The design will always consider the effects of torsion for beams, but not for columns or braces. This option had no effect on the IS 456:2000 design in previous versions, so there is no change in the design results.

**Design – Concrete Shell
Incidents Resolved**

*	Ticket	Description
*	9061	An incident has been resolved where the following sequence of actions in the graphical user interface could cause an abnormal termination of the software: (1) In one model window, display concrete shell design results, (2) Switch to a different model window and display results of any type, then (3) Switch back to the first model window and attempt to right-click on an area element to see a detailed plot of the concrete shell design contours.

* Ticket	Description
9098	An incident has been resolved for the Eurocode 2-2004 concrete shell design result data table. Previously, the table showed max and min rows for load combinations that contained response spectrum, steady state, power spectral density, or multi-step (such as response history) load cases, and the combo display option was set to envelope. This was inconsistent with combinations of other combinations which only presented the max result. Now only the max row of design results is shown for all load combinations when the combo display option is set to envelope. Similar behavior is exhibited for individual load cases that represent enveloped response. Multiple rows are shown only when step-by-step or correspondence results are requested, when applicable.

Design – Steel Frame Incidents Resolved

* Ticket	Description
5881	An incident was resolved for steel frame design codes "Eurocode 3-2005" and "Italian NTC 2018" where the design did not correctly separate the seismic forces from the nonseismic forces for load combinations where snow load or temperature load coexisted with seismic load, in addition to any dead and live load. Dead load and live load forces are always correctly taken as nonseismic, and the seismic load forces were correctly taken as seismic, but the forces from the snow load and temperature load were also taken as seismic. This resulted in an error while calculating the design forces for amplified forces per EC8 6.6.3(1)P, Eqn. 6.6 ($N_{Ed} = N_{Ed,G} + 1.1 * \Gamma_{ov} * N_{Ed,S}$, and so on for M_{Ed} and V_{Ed}). This was not a concern for load combinations that did not mix seismic load with snow or temperature load. The results for affected load combinations were conservative.
7466	An incident was resolved where null lines, null areas and null solids were being included when lateral supports for frames were being traced. This affected the unbraced-length calculations of frame members for design purposes. The calculated unbraced length was being reported in the design report and the error was obvious.
7520	An incident was resolved for steel frame design codes "Chinese 2010" and "Chinese 2018" to improve the effective-length factor calculation for columns for the case where the beams framing into the columns are fixed at the far end. The previous μ_{eff} factors were slightly conservative for sway columns, while for non-sway columns the previous μ_{eff} factors were slightly unconservative.
8548	An incident was resolved where rotational restraints, when not specified for all three rotational degrees-of-freedom, may not have been recognized as representing fixed joints in expected directions for calculating the frame K-Factors used in some designs. When this happened, the error in K-factors was obvious. No analysis results were affected. The K-factors will still need to be checked and possibly overwritten with appropriate values if the restraint directions are at an angle to the principal directions of the frame member. The need for K-factors can be avoided by using direct design methods allowed in some codes.
8571	An incident was resolved for steel frame design codes "Eurocode 3-2005" and "Italian NTC 2018" where the design used the (EN 1993-6 Annex A) equation instead of the EC3 6.3.3(4)-6.62 equation in the check for the combined effect of axial compression and bending even in the absence of torsion. The EN 1993-6 Annex A equation is applicable only in the presence of torsion. The resulting PMM ratio was slightly conservative, and the difference was generally insignificant.
* 8684	An incident was resolved for the Italian NTC 2008 and NTC 2018 steel frame design codes where the P-M-M Interaction Ratios reported for fully-braced members could be incorrect when "Method A" or "Method Both" were selected for "Method Used for Buckling in P-M-M" in the design preferences. For fully-braced members, the equivalent moments were obtained from the previously designed member that was not fully braced, hence the results reported for affected members could be reported differently on the display, in the design details, and in the tables, depending on the order in which the members were designed. Affected results could be conservative or unconservative. Models using "Method B" were not affected. Models with fully-braced steel members designed using the NTC 2008 or NTC 2018 code with "Method A" or "Method Both" should be redesigned with the new version.

*	Ticket	Description
*	8983	An incident was resolved for steel frame design where the link lengths for eccentric braced frames (EBF) could be incorrect when a model is created or opened in the same SAP2000 instance where another model containing EBFs was previously opened and designed. In this situation the length of the links were incorrectly used from the previously opened model instead of determining the link lengths for the newly created/opened model. This affected all steel frame design codes that perform design for EBFs.
	9034	An incident was resolved for the Eurocode 3-2005, Italian NTC 2008, and Italian NTC 2018 steel frame design codes in which the calculation of the elastic critical moment, M_{cr} , was missing the square in the term $(KLT/kw)^2$. Previously, in common cases, it resulted in a slightly higher estimate of the global buckling moment capacity and the design being marginally unconservative. This affected all cross sections except for the box, pipe, rectangular, and circular shapes whose lateral-torsional buckling effects are not considered.
	9066	An incident has been resolved for the Italian NTC 2008 and NTC 2018 steel frame design codes where now the coefficient "C1" has been renamed to "Psi" to be consistent with the design codes.
*	9224	An incident was resolved for steel frame design code AISC 360-16 where the torsional capacity of box sections was calculated incorrectly when the web and flange thicknesses were different. The calculated $\phi * T_n$ was higher (unconservative) when the thickness of the web was smaller than the thickness of the flange. When the thickness of the web was larger than the thickness of the flange, the calculation of $\phi * T_n$ was correct.
	9242	An incident was resolved for steel frame design codes "AISC 360-16" and "AISC 360-10" when using OCBF where the design reported, "Section is not seismically compact for moderately ductile members (AISC 341-16 E3.4a, 5.2b, Table I-8-1)" instead of "Section is not seismically compact for highly ductile members (AISC 341-16 F1.5a, D1.1, Table D1.1)" for brace members.
	9258	An incident was resolved where the unbraced length for lateral-torsional buckling (LTB) did not work properly for the lateral brace points applied on top or bottom using the command Design > Lateral Bracing. This affected steel frame design for codes Eurocode 2-2004 and NTC 2008-2018; cold-formed steel design for codes AISI-16 and Eurocode 3 1-3 2006; and aluminum frame design for codes AA 2015-2020 and EN 1999:2007. In addition, the brace points for flexural buckling about major and minor axes, as well as for the LTB, were combined for the bracing conditions specified in the overwrites or using Design > Lateral Bracing with the internal brace points, which are determined by the connection among frame members without defined joints at the intersections. Now, the brace points for lateral-torsional buckling (LTB) assigned using Design > Lateral Bracing will check for top or bottom properly. The following priority order will now be followed: (1.) The unbraced length (and resulting brace locations) defined by the overwrites will take the first priority; (2.) If there are no unbraced-length overwrites, any brace points specified using Design > Lateral Bracing will be considered next; (3) If no overwrites or brace points are explicitly specified, brace points will be internally determined by the connections between frame members. By specifying a ratio for an unbraced length type using the overwrites, the number of brace points will be internally determined, and the brace point locations will be arranged such that they are symmetric about the center line of the member and the distance between the adjacent braced points is the specified unbraced length (L). For the brace points closest to the ends of the frame element, they will be placed at a distance (L_{end}) that is always less than or equal to the specified unbraced length L (i.e., $L_{end} \leq L$). However, for the design stations that are within this L_{end} , the brace points are the end joint of the element and the other point is at the location that is of the unbraced length L away from the end joint. These brace points are used only to determine the shape of the moment diagram needed to compute intermediate design parameters. The unbraced length L is still used to calculate the axial compression and moment capacity under consideration of global buckling.

**Drafting and Editing
Incidents Resolved**

*	Ticket	Description
	8908	An incident was resolved where a frame section assignment applied by using the Copy Assigns and Paste Assigns operations could be lost (i.e., revert to the frame section assigned before the Paste Assigns operation) after running the analysis. This only occurred if a steel frame design had been run before the Copy and Paste operations were performed.

**External Import and Export
Incidents Resolved**

*	Ticket	Description
	2140	An incident was resolved where the orientation of double-angle sections exported to IFC was incorrectly rotated by 180 degrees.
	8661	Two related incidents affecting the export of models to IFC files were resolved. (1) Frame objects with a cardinal point other than 5, the middle-center of the section, were exported to Architectural Coordination View and Structural Analysis View IFC 4 files with contradictory information. Their cardinal point was properly specified in their associated IfcMaterialProfileSetUsage object but their "Body" IfcShapeRepresentation attribute did not reflect the position cardinal point. This incident did not affect export to IFC 2x3 files. All versions of SAP2000 capable of exporting to IFC files were affected. (2) Beams were exported with their "Axis" IfcShapeRepresentation attribute oriented parallel to their SAP2000 axis 2 instead of axis 1. This incident affected export to Architectural Coordination View and Structural Analysis View IFC 2x3 and IFC4 files. Again, all versions of SAP2000 capable of exporting to IFC files were affected.
	9036	An incident was resolved that addressed four issues affecting the import of DXF files: (1.) 3DFace objects were not imported; (2.) Objects were not imported if the DXF file contained any lightweight polyline objects, and (3.) Requested axes rotations were not applied. When these issues occurred, the effects were obvious, and the results agreed with the model as imported. (4.) DXF files could not be imported into an already open SAP2000 model. These issues affected SAP2000 v24.1.0. only. Note that lightweight polylines were not imported in earlier versions of SAP2000, though they didn't affect the import of other objects.
	9047	An incident affecting the import of circles and arcs from DXF files was resolved. When the user selected a SAP200 "Global Up" direction other than the DXF Z axis, circles and arcs were imported in incorrect locations. When this occurred, the error was obvious and the results agreed with the model. Rotating the DXF file in the originating CAD program and aligning the Z axis with the desired "Global Up" direction avoided the problem. All versions of SAP2000 capable of importing circles and arcs from DXF file were affected.
	9298	An incident affecting the import of CIS/2 STEP files was resolved in which some STEP "externally bound" entity definitions incorrectly combined sub-definitions and data defined outside of these sub-definitions. When the user attempted to import such a file, SAP2000 became unresponsive for a long while and eventually displayed an error message referring the user to an error file in which the problematic entities were identified but the syntax error itself was left unexplained and instead listed as a "bad allocation". When this occurred, no model was created. All versions of SAP2000 capable of importing CIS/2 files were affected. A related enhancement has been implemented. SAP2000 can now import CIS/2 files in which the magnitudes of vectors are specified with the "LENGTH_MEASURE" keyword, even though this keyword is unnecessary and normally omitted.

**Graphics
Incidents Resolved**

*	Ticket	Description
	8313	An incident was resolved where the graphical display of frame releases was not displaying the release at the I-end if the frame contained a release at the J-end and neither M2 nor M3 was released at both ends. This was a graphical display issue only.

* Ticket	Description
8984	An incident was resolved where the extruded display of cold-formed angle sections were shown as cold-formed channel (C) sections when the "Show Frame Section Thickness in Extruded View" option was unchecked on the Display Options form.
9043	An incident was resolved where design results, such as reinforcement ratios, that were displayed as text on frame objects could overlap the frame object itself. This issue only affected Classical (GDI+) graphics mode in v24.1.0.
9151	An incident was resolved the size of text displayed in the graphical user interface could be scaled incorrectly in Classical (GDI+) graphics mode compared to DirectX mode. This affected images exported to EMF files, since these are based on Classical graphics mode.

Results Display and Output Incidents Resolved

* Ticket	Description
7571	An incident was resolved where plotting displacement results from different load cases in different windows at the same time, and then changing view directions in the windows, could lead to incorrect results being displayed. This only affected the displacement display as described here, not tabulated results nor any other type of results.
8314	An incident was resolved where the units listed in the footer of the printed graphics for various plot forms were incorrect. The plotted data and axis labels were in the current display units while the listed units in the footer were always database units, instead of the current display units. Note that the database units are those in effect when the model is first created or imported, and that are also used for analysis. This affected the Display Plot Function Traces, Hinge Results, Fiber Results, Pushover Curve, Spectra Comparison for Soil-Structure Interaction Effects, Material Stress-Strain Curve Plot, and Material Property Time Dependence Plot forms.
8389	An incident was resolved where the values displayed for plots of displacement contours on solid objects were not correct for units other than database units. For reference, database units are those in effect when the model is first created or imported, and these units are shown in the analysis .LOG file.
* 8544	An incident was resolved where the advanced report writer could experience an abnormal termination when a previously saved named report was opened and an attempt was made to display a table in it.
9063	An incident has been resolved for the concrete shell design where the Save/Show Named Display commands did not work for concrete shell design results. This was a display issue only and did not affect the design results when displayed or tabulated.
9096	An incident was resolved where the deformed shape option did not work when displaying shell stresses. This issue only affected v24.1.0. Results were not affected.
9100	An incident was resolved where, when scrolling over the graphical display of the deformed shape, the values of joint displacement shown at the mouse cursor were given in the global coordinate system (or the selected user coordinate system) rather than in the joint local coordinate system, even though they were labelled as being for U1, U2, ..., R3. No other results were affected. In particular, values shown when right-clicking on the joint were correctly given in the joint local coordinate system. This issue only affected v24.1.0. Previous versions were not affected.
* 9204	An incident was resolved where the software could terminate abnormally when attempting to display Plane, Asolid, Solid, or Soil stress plots in a newly added model window when the same type of stress plots were already being displayed in an existing model window. This was a display issue only, and no results were affected.
9348	An incident was resolved where the calculation of the ASCE 41-13 NSP target displacement for static pushover plots (Display menu>Static Pushover Curve) would sometimes fail to produce a result for the case where the pushover curve has a slight stiffening effect in the small-displacement range. The iterative procedure to determine the target displacement has been improved to handle this case. However, curves that stiffen significantly are outside of the scope of the specification, and may still fail to produce a target displacement, as expected.

**Structural Model
Incidents Resolved**

*	Ticket	Description
*	9020	An incident was resolved where program-calculated section modulus values about the 3-axis were incorrect for user-defined double angle sections. Essentially, the section modulus values for the top and bottom fibers were flipped. The issue only affected versions 24.0.0 and v24.1.0 of the software. Imported double-angle sections were not affected. Models opened or imported in the the new version will be automatically corrected. Any steel frame design previously performed using affected sections should be re-run using the latest version. In most cases, the design will not be affected because the smaller of the two section moduli would be used.
	9038	An incident was resolved where drawn section cut on screen results were different in some cases when saved as quad section cuts. The saved quad section cut results were in error when edge constraints were present. If edge constraints were cut they were being included in the results even if the area element they belonged too were not to be included in the results.
	9295	An issue was resolved where Parametric P-M2-M3 hinges created by assigning an auto hinge to a frame object (Assign menu > Frame > Hinges) may have had invalid yield-surface or force-deformation parameters. When this issue occurred, the model was unable to run due to the invalid parameters.