

# Release Notes for RISA-3D

## Version 22.0.2 Enhancements/Corrections

- General:
  - Updated the license manager to use a new identity provider for cloud licenses and allow single sign-on.
- Steel:
  - Updated the Simpson Strong-tie Yield Link shape list for latest changes on available shapes.

## Version 22.0.1 Enhancements/Corrections

- Interface/Graphics:
  - Corrected an issue with the truss, geodesic dome, circular arc, cone, circular radius, and cylinder templates not allowing decimals for some input values.
  - Fixed an issue where maximum values were not shown in the time history trace plot.
  - Corrected a graphics issue on high-resolution monitors where the reaction elevation dialog for RISAFoundation integration might have an oversized height.
  - Fixed the Point Moving loads Property Panel selection of BLC.
- Detail Report:
  - Fixed an issue where maximum values for deflection were not shown on summary diagrams in detail report.
  - Fixed an issue where opening a detail report for a buckling-restrained brace member with results from capacity-limited load combinations might cause the model to close unexpectedly.
- General:
  - Resolved an issue that prevented STAAD files from being imported successfully.
  - Updated the default seismic design rules to include default concrete wall design rules.
  - Fixed an issue where the coplanar check for tapered member area loads could not be triggered when the first three base nodes for the area load were collinear.
  - Updated the links for the 'Training' and 'Tutorial' buttons in the startup dialog to point to the new RISA training platform site.
- Hot Rolled Steel:
  - Updated warning message to clarify capacity-limited design requires SCBF/BRB braces with VBrace member types.
  - Fixed an issue where the unity check display for buckling-restrained brace members in 3D view might conflict with detail report and spreadsheet output.
- Cold Formed Steel:
  - Updated the default max and min panel thicknesses in Cold Formed Steel (CFS) wall design rules.
- Wood:
  - Fixed an issue in perforated wood wall design where wall regions with aspect ratio exceeding 3.5 were not properly ignored in shear capacity consideration.

- Fixed an issue in perforated wood wall design where the Co factor could be accounted twice in the final shear unity check.
- Removed the display of sheathing area ratio (r) in detail reports for perforated wood walls under SDPWS 2021 as it is not needed.
- Performance:
  - Improved solution speed for story drift qualification and calculation in large models.
- Spreadsheet:
  - Fixed an issue where the concrete shear bar spacing input under the Members Design Rules spreadsheet could not hold values in metric units properly.
- Integration:
  - Fixed an issue where concrete code ACI 318-19 (22) was transferred to RISACONNECTION as ACI 318-19.
  - Fixed an issue where base plate connections might be shown twice in RISACONNECTION after integration.
  - Added checks to require parallel members for the beam splice connections to prevent integration issues with RISACONNECTION.

## Version 22.0 Enhancements/Corrections

- Concrete:
  - Added ACI 318-19 (22) concrete code for concrete design.
  - Fixed an issue that ASTM A615M concrete rebar list was not displayed in order in the Design Rules spreadsheet
  - Fixed an issue for required rebar number when explicit rebar is used for concrete members
  - Fixed an issue that caused incorrect shear bar spacing when the units changed from imperial to metric.
- Wood:
  - Added options for stud spacings of 12" and less in the design rules of wood walls.
  - Added 'Net Round' as a selectable shape type for Custom wood in the Shape Selection dialog.
  - Resolved an issue that caused an exception message when setting 'Member Type' to 'None' for wood members when adding a section set.
  - Corrected an issue where the 'Shape Type' list was initially empty in the 'Add Member Design List' dialog for wood members.
- Interface/Graphics:
  - Added new hotkeys for most common commands and a hotkey customization tool that allows users to change hotkey settings.
  - Added functionality allowing users to move nodes using the mouse.
  - Added measure distance tool (F5) functionality in wall panel editor view.
  - Added the capability to delete the rotation bin from the 3D view toolbar.
  - Improved Result View Settings with a custom scale factor slider for better visibility of member force diagrams.
  - Corrected a graphical overlay issue where the plate material set legend was obscuring the plate contour result legend.
  - Fixed an issue where undoing changes in the Wall Panel Editor did not reflect the updated display of wall panel openings.

- Updated URLs in the Subscription Login Dialog to direct users to the revised sections of the customer portal website.
- Corrected a spelling mistake in the Member Forces button label on the ribbon toolbar.
- Fixed a graphical display bug where setting the spring stiffness units to kN/cm incorrectly showed as k/in.
- Corrected an issue where envelope joint reactions were overlapping in the display.
- Fixed an issue where the Labeling drop-down under the Members tab of the Results View Settings may be inactivated when the deflected shape display is on.
- Fixed an issue that Select Box, Select Line, and Select Polygon tools do not work for diaphragms.
- Improved the display of model render view so that labels are not obscured.
- General:
  - Added tapered area load option for member area loads.
  - Added a tooltip description to the 'Match' tool in the Modify tab.
  - Enhanced the detachment functionality for nodes from diaphragms in models integrated from RISAFloor.
  - Corrected an issue that caused an exception message when selecting plates via the select elements by property tool.
  - Fixed a rare issue where clicking on subgrade springs triggered an exception message.
  - Corrected an issue where the slab Internal Force Summation Tool (IFST) failed to detect slab elements in locked view mode.
  - Corrected the error message displayed when a certain value is entered in the Parabolic Arc Template dialog.
  - Updated the minimum wind pressure used in the wind load generator to be 16psf for ASCE 7-10 and 7-16.
- Operations:
  - Enhanced spreadsheet functionality to enable selection of multiple individual lines using the Ctrl-key.
  - Resolved a spreadsheet issue where a blank new row is not created after pressing the Enter key.
  - Fixed an issue where double-clicking on a boundary condition unintentionally altered boundary conditions of other nodes.
  - Resolved an issue where the 'Clear Results' warning incorrectly appeared when using 'Show Selected Lines in Current View' in the results spreadsheet.
  - Fixed a rare issue where models with certain metric units caused the program to become unresponsive during solution.
  - Corrected an issue that Reset All Program Defaults does not apply to Project Grid default.
  - Fixed an issue where adding a new row to the Project Grid spreadsheet in a solved model resulted in the deletion of analysis results.
- Spreadsheet:
  - Improved Warning Log dialog design for better visibility and accessibility across various screen sizes and resolutions.
  - Corrected the functionality of the Find and Replace tool within spreadsheets.
  - Fixed an issue where the drift definition spreadsheet may have inaccurate nodal elevations display temporarily if the node labels were copied into the spreadsheet.
- Detail Report:

- Resolved an issue where using the Previous and Next buttons in the Detail Report incorrectly reset the Load Combination dropdown to Envelope.
- Clarified the seismic detailing results for the width-to-thickness ratio check to show either 'Pass' or 'Fail' when using AISC 341/358 - 2010 and 2016 codes.
- Corrected minor descriptive inaccuracies in the seismic detailing report for CMU wall panels.
- Resolved an issue that sorting BRB members in Code Check spreadsheet may cause unity check display issues in detailed reports.
- Solution:
  - Fixed a rare issue that caused an exception message running a dynamic solution.
- Masonry:
  - Resolved a rare issue that caused an exception message when solving a model with masonry walls.
  - Fixed an issue in the 'Masonry Wall Seismic Rule' dialog where 'Special Boundary Conditions' and '1.5x Shear ASD' settings required two attempts to save successfully when altering wall types.
  - Corrected a rare issue that prevents the model from being saved when drawing and creating openings in masonry wall panels.
  - Updated the default Masonry strength f'm in the Material Spreadsheet to be 2000psi.
- Steel:
  - Resolved an issue causing the program to close unexpectedly when solving seismic load combinations with three or more VBraces in the center quarter length of a beam.
- Printing/Reports:
  - Corrected an issue that caused an exception message when retrieving a 'Saved view' when there are none saved to begin with.
  - Fixed issue where new elements were not included in the print report when selecting the 'All' option in the 'Element Type' dropdown.
- Design:
  - Resolved the exception message issue triggered by renaming Design Rule Label to 'Typical'.
- Integration:
  - Resolved an issue with incorrect load transfer into RISACONNECTION based on member orientation for continuous beams over column connection.
  - Corrected a problem in preventing the transfer of continuous beam over column connections to RISACONNECTION with invalid arrangements.
  - Fixed an issue that allowed continuous beam over column connections to integrate when located on a non-top most floor.
  - Resolved an issue where the program pauses when transferring data from RISACONNECTION to RISA-3D for a second time.
  - Fixed an issue with incorrect unit conversion of user-defined loads in RISAFoundation when switching from imperial to metric units in a RISA-3D.
  - Resolved an integration issue with RISAFoundation where changing units in RISA-3D after initial integration caused discrepancies.

## Version 21.0.2 Enhancements/Corrections

- General:
  - Converted to cloud-based subscription licensing.

## Version 21.0.1 Enhancements/Corrections

- Operations:
  - Added a new feature to export results spreadsheet data to Excel spreadsheets.
  - Added the ability to set diaphragm stiffness by right clicking on any cell within the Diaphragm spreadsheet when the model is integrated from RISAFloor.
  - Improved the duplicate node check to reduce the solution time.
  - Enhanced the End Releases dialog to correctly reflect 'Various' end releases when multiple members are selected.
  - Improved the speed for graphical rendering of color contours.
  - Enhanced the Copy A Basic Load Case dialog with options to copy or not copy the Load Category.
  - Enhanced the Axis tab in the Model Settings so the state of the Converting Existing Data checkbox will be saved when clicking Set as Default.
  - Updated the program initialization behavior to ensure default files (.def) are updated properly when upgrading the programs.
  - Fixed an issue where the vertical component was not added as a BLC when generating overstrength seismic load combinations.
  - Corrected an Exception Message when no additional matches are found in the Find and Replace tool.
  - Corrected an issue which did not clear generated seismic loads when setting the seismic code to None.
  - Fixed an issue which sometimes locked functionality in windows (detail reports, spreadsheets, dialogs) when moving them to another monitor.
  - Resolved an Exception Message when adding a new material from the Edit Section Set dialog.
  - Corrected an issue that prompted an exception message when printing a flat file.
  - Fixed an issue where the 'Save Database as default' option was not working properly in the Shape Selection dialog.
  - Resolved an Exception Message when starting a new model while the contour diagram is displayed.
  - Fixed an issue where filtering solid inputs was not reflected in the printed report.
  - Resolved an issue where the 'Save Current Settings as Default' was not working properly for the Project Grid.
  - Fixed the bottom bar graphics during solution to not show the blinking save icon since a backup is not saved while a solution is in progress.
  - Resolved an issue where the Wind Load Generator did not generate loads for the NBC 2015 and NTC 2004 codes.
  - Corrected an issue where newly created wood redesign lists were not displayed in the Design List dropdown.
  - Fixed an issue where the wood and aluminum shape database was not updating when first launching the program after setting the default region to Canada during installation.
  - Resolved an issue with the installation where the date of the default files in the INI path were overwritten with the date of installation.
- Wood:
  - Updated the wood SCL LVL database for Roseburg based on latest design values.
- Aluminum:

- Updated the Aluminum 2020 ASD design code to limit the scope to building structures per the updated specification.
- Printing/Reports:
  - Added the 'Checked By:' parameter back into printed reports and spreadsheets.
  - Added the ability to customize the report logo when printing a Load Generator report.
  - Fixed an issue where the Additional Comments field was missing when selecting Print Footer with Comments while taking a snapshot.
  - Resolved an issue where custom Print Options from the Load Generators were not retained.
  - Corrected an issue where the navigational buttons at the bottom of the report printing preview screen did not work when there was no content added to the report
- Detail Report:
  - Added the right-click menu options for expanded diagrams in the Detail Report.
  - Enhanced graphical behavior to render Load Combination results for Detail Reports opened from Batch results spreadsheets.
  - Fixed an issue that suppressed the warning message (Detail Report Based on Less than 10 Sections) in the detail report when opening a model file with saved results.
  - Corrected an issue that might close the program unexpectedly when opening the detail report of a brace member when solving with overstrength load combinations.
  - Resolved an issue that might close the program unexpectedly when opening a Buckling Restrained Brace (BRB) detail report.
  - Fixed an issue in the Detail Report Options which was not retaining settings after using Set As Default.
- Integration:
  - Added continuous beam over column connection integration support from RISA-3D to RISACONNECTION.
  - Fixed an issue that was preventing valid connections from being transferred between RISA-3D and RISACONNECTION.
  - Resolved a graphical issue for a model integrated from RISAFloor where the LL Reduction checkbox was not visible in enlarged force diagrams.
  - Corrected an issue where the program closed unexpectedly for specific models when integrating to RISAFoundation with dynamic results.
- Interface/Graphics:
  - Added the global axis box into the Wall Panel editor window.
  - Improved user operability by merging the member end release I and J code tabs into a single tab.
  - Enhanced the View/Edit Time History Function dialog so clicking the graph puts the row with corresponding data in the Values table into focus.
  - Resolved an issue where dialogs were hidden from view for certain multiple screen configurations.
  - Fixed an issue with missing chart title and vertical axis information in the Time History Trace results.
  - Corrected an issue where the location of the Quick Access Toolbar was reset when the user moved it below the Ribbon toolbar.
- General:
  - Added a button to direct users to the RISA feedback page.
  - Fixed an Exception Message when scaling wall panels using a specified origin of Center of Selection.

- Fixed an issue where checking the Calculate Residual Mass box in the Dynamics dialog while solving a suggested design would result in a blank error message.
- Fixed an issue with the Wall Internal Force Summation Tool which was not updating when the load combination was changed.
- Fixed an issue where attempting to open a removed model file from the Recent Projects dialog box would prompt an exception message.
- Enhanced backward compatibility when the program cannot recognize model file data generated from future versions.
- Fixed an issue where the local axis label was not being positioned according to the defined Model View Settings.
- Analysis:
  - Fixed an issue with wood members where the batch or envelope solution was using an incorrect time effect factor.
- Concrete:
  - Updated program to correctly calculate  $V_c$  for longitudinal reinforcement by taking the larger value between equations a and b in Table 22.5.5.1 of ACI 318-19.
  - Implemented provisions to distinguish between the compression strength capacity of walls and columns according to CSA A23.3-14, where it was previously undifferentiated in the program.
  - Corrected the equation used to determine the axial tension capacity of concrete columns from ACI Section 22.4.3 to ACI Section 22.4.2.
- Masonry:
  - Corrected an issue that displayed incorrect masonry rebar.
- Plates:
  - Fixed an error that produced an invalid polygon error when drawing plates.
- Spreadsheet:
  - Fixed an issue in the Seismic Design Rule spreadsheet where Z Factor and Hinge Location were not able to be deleted.
  - Corrected an issue in the Members spreadsheet where design values were unable to be cleared.

## Version 21.0 Enhancements/Corrections

- General:
  - Added compliance with the 2021 International Building Code.
    - Added compliance with the 2021 International Building Code.
    - Added compatibility with SDPWS 2021.
    - Added compatibility with AA ADM1-2020 aluminum design code.
    - Added compatibility with AISI S100-20, AISI S240-20 and S400-20.
  - Resolved an Exception Message when clearing a basic load case from the Basic Load Cases spreadsheet with the loads spreadsheet open.
  - Corrected an issue that would close the program unexpectedly in certain models with concrete wall panels solved with the CSA A23.3-14 design code.
  - Improved behavior of copying nodes such that new nodes generated are numbered in an orderly fashion.
- Interface/Graphics:
  - Updated the user interface to enhance user experience and make it easier to navigate and interact with the program.

- Enhanced the '2D Lock ON' visual to appear when opening a model with the 2D mode enabled.
- Resolved a graphical issue where the Basic Load Case description did not populate when viewing loads graphically.
- Resolved an issue with the Ignore After tool in the seismic tab of the Wall Panel Design results spreadsheet.
- Fixed an issue where the reactions were not able to be displayed through the Quick View toolbar after solving the model.
- Resolved an issue where the Radial Drawing Grid would not update in the 3D view.
- Fixed a graphical issue where minimized ribbon toolbar dropdowns did not expand to the full application width.
- Analysis:
  - Added a warning for users to perform a model merge or check analysis results when duplicate nodes are detected in the model.
  - Enhanced the ability to detect misaligned wall panels that would cause polygon mesher errors to be triggered for models integrated with RISAFloor.
  - Corrected an issue that the P-Delta amplification factor was included for ASD solutions of AISI S100-16 and AA ADM1-05 design codes.
  - Resolved an issue with the calculation of brace forces for models with flexible diaphragms that are solved with Capacity-Limited load combinations.
  - Fixed an issue where the Wind Load Generator was not updating the Base Elevation and Height correctly after modifying the Length unit.
- Cold Formed Steel:
  - Resolved a warning issue that would incorrectly hide results in the Detail Report for Cold Formed Steel Wall Panels and state the CFS code was set to 'None'.
- Detail Report:
  - Added more information to variables that are used within the detail report for steel members.
  - Enhanced reporting of design capacity summaries in the Detail Report for concrete members.
  - Reorganized layout of wood wall detail report for enhanced clarity.
  - Updated the description for S and Z as the Elastic Section Modulus and Plastic Section Modulus.
  - Improved reporting of governing load combination in the Detail Report for concrete members.
  - Improved reporting of equation used for calculation of the moment gradient factor calculation for Hot Rolled Steel design using the Canadian codes.
  - Resolved a rendering issue for the Detail Report of wood members solved with CSA O86-09: Ultimate design code.
  - Corrected a graphical error that would incorrectly display the governing load combination for certain limit states in the Code Check Summary Display section of the Detail Report for concrete members.
  - Resolved incorrect summary display of Bending Steel Requirement checks for concrete members.
  - Corrected a graphical issue that prevented the analysis of a concrete deep beam from being shown in the detail report.
  - Corrected an issue that prevented the SGAF factor from being considered in Wood Wall Design unity check ratios.



- Fixed an issue that prevented rendering of Detail Report results for Hot Rolled Steel members solved with iterative stiffness adjustment per AISC.
- Resolved overlapping display issues with texts in the Rebar Detailing section of Detail Report for concrete members.
- Fixed a graphical issue causing some member's Detail Report to show up blank.
- Removed display of Detail Reports results for Excluded and Inactive Wall Panels
- Fixed the reporting of the deflection ratios for a member such that they are consistent throughout the program.
- Hot Rolled Steel:
  - Resolved an issue with the properties of certain HSS shapes in the Canadian Hot Rolled Steel database.
- Integration:
  - Improved integration functionality to prevent invalid results by limiting users to set design codes in RISAFloor for integrated models.
  - Fixed an issue where the wall panel rendering, analysis mesh, and contours were not displaying for a model imported from Revit.
  - Corrected a rare issue that would prompt an error message “related to process address space” when importing a model from REVIT.
- Masonry:
  - Improved calculation of governing required shear strength  $V_{su}$  in the Seismic Shear Strength Check in Special Masonry Wall Panels to account for applicable limits.
  - Fixed an issue where the 'Special Inspection' checkbox was not available for the UBC 1997: ASD masonry design code.
- Operations:
  - Improved the right click menu option Create Point Loads from Moving Loads to display in the Properties Panel.
  - Resolved an issue where the program closed unexpectedly after switching the display of batch results between Load Combination and Element.
  - Fixed an issue where the automatic Check For Updates was unable to be turned off neither when installing the program manually nor via a silent install.
  - Resolved an issue when generating a Project Grid Arc using negative radial increments.
  - Corrected an issue that would unexpectedly shutdown specific models upon solving with results present.
  - Fixed an issue where the Save Database As Default option was not working properly in the Shape Database.
  - Resolved an issue that generated an 'Unhandled Error' message when adding additional load cases in the Basic Load Cases Spreadsheet.
  - Corrected an issue with loading saved Drawing Grids.
  - Resolved an issue where negative Project Grid increments were added as positive.
  - Fixed an issue where the Edit Project Grid Line dialog did not reflect the correct axes.
  - Resolved an issue where the internal cold formed record counter would become mismatched and prevent the program from opening model files.
- Printing/Reports:
  - Added the report logo to printed graphics.
  - Improved the ability to filter loads and results spreadsheets within the report printing.
  - Resolved an issue where the time was not included in the footer for printed graphics.
  - Corrected a printing issue where input and results were not filtered as expected when using the Filter Input and Filter Results feature.

- Spreadsheets:
  - Enhanced the spreadsheet behavior to prevent invalid entries when using the Fill command.
  - Resolved an issue with sorting the UC Shear In Plane column in the Concrete Seismic Design spreadsheet.
  - Fixed the display of weight and volume for solid elements in the Material Takeoff Spreadsheet.
  - Corrected an issue in the Distributed Loads spreadsheet for wall panels that prevented the use of the Fill command for the Start and End Location.
  - Resolved an issue in the Surface Loads spreadsheet where the Fill and Math commands did not update the Magnitude column.
  - Fixed an issue where the Load Category was not able to be copied and pasted in the Basic Load Cases spreadsheet.
  - Corrected a metric units issue where the center to center rebar spacing was still in inches when increasing the number of rebar layers.
  - Resolved an issue that reset the row focus when editing loads through the Basic Load Cases spreadsheet.

### **Version 20.0.6 Enhancements/Corrections**

- Detail Report:
  - Corrected an issue that displays incorrect design results within the member detail report if the report is generated after the Code Check spreadsheet has been sorted.

### **Version 20.0.5 Enhancements/Corrections**

- Analysis:
  - Fixed an issue that would prevent low magnitude open structure area loads from being applied to the model.

### **Version 20.0.4 Enhancements/Corrections**

- Detail Report:
  - Added the Detail Report for wood flexible diaphragm region design.
  - Added missing descriptions in the seismic detailing report for CMU wall panels.
  - Updated the format of Detail Reports for members and walls for better data presentation
  - Addressed a rare graphical issue with the P-M Interaction Diagram for Column Concrete Members when axial load is zero.
  - Fixed an issue that caused an exception message when opening the wall panel detail report.
  - Resolved a graphical issue that prevented the display of the separation of automatic span detected in the deflection diagram of hot rolled steel beam members.
  - Fixed an issue with segmented wood walls that may not have been using the governing aspect ratios.
  - Corrected display issues that omitted Detail Report warnings for concrete members.

- Resolved graphical display of reinforcement layouts in the Detail Report for Concrete members and Concrete wall panels.
- Resolved graphical display of Unity Check and Design Capacity Summaries that mismatched calculations in Detail Report of elements across multiple materials.
- Corrected issues with opening/closing Detail Report that created an incorrect display of information in Detail Report.
- Resolved various graphical display issues within the Detail Report across multiple materials that were inconsequential to the final results.
- Fixed a graphical issue within the wood detail report that would display the incorrect required axial load when metric units were used.
- Integration:
  - Added compatibility between RISA-3D and RISACONNECTION for Vertical Brace Diagonal Extended Shear Tab with and without Gusset connection.
  - Added compatibility between RISAFloor/RISA-3D and RISACONNECTION for Column Cap Plate Moment connections.
- Interface/Graphics:
  - Added functionality to show input and output information graphically when hovering over elements. Hover Detail settings are accessible through the Application Settings and the right click menu.
  - Added an option in the Application Settings to filter out unused parameters from the color coding legend.
  - Added a graphical denotation when the 2D Lock is being used.
  - Updated the default graphical view to show diaphragms upon opening model files.
  - Corrected various dimension lines for images in the shape selection dialog.
  - Fixed a graphical issue where loads were not properly displayed in the 3D View after solution.
  - Resolved a graphical issue that would prevent T-beams from rendering properly in RISA-3D for models integrated from RISAFloor.
  - Corrected a graphical issue when displaying force diagrams in the 3D View where Member End Offsets were not properly considered.
  - Resolved an issue where scaling wall panels produced incorrect graphics in the 3D View after solving.
- Operations:
  - Added functionality into the warning log dialog to find and select elements reported in the warning log.
  - Added 'Center of Selection' as an origin option for the Copy and Move Rotate functions.
  - Enhanced the program behavior to determine instabilities better in rare cases where wall corner nodes and hold-downs were misaligned due to inconsistencies in node coordinates at the decimal level.
  - Fixed an issue in the Load Combination Generator to account for all the wind load permutations under Case 4.
  - Resolved an Exception Message when changing the diaphragm stiffness using the diaphragm spreadsheet command.
  - Corrected an issue in the Select by Property dialog to properly overwrite the selection while in a locked view.
  - Fixed an issue where a .rt3 file was able to be created through the file explorer.
  - Resolved an issue where modifying the Project Grid cleared solution results.

- Corrected an issue which prevented the trim/extend feature from using elements from RISAFloor as reference members.
- Fixed an unhandled error presented when setting up support types at member ends in the Deflection Ratio Options for members.
- Printing/Reports:
  - Added project notes as an available section for the printed report.
  - Resolved an issue with report printing where changing the options for one Detail Report is affecting all added Detail Reports.
  - Fixed floating text and text format presentation when printing reports.
  - Corrected a display issue when printing the moving load pattern from the Edit Moving Load Pattern Definition dialog.
  - Resolved an issue that prevented the heading to load properly in the printed reports.
- Spreadsheet:
  - Added the ability to make spreadsheets full screen with a maximize option.
  - Fixed an issue where the Load Combinations spreadsheet might switch load category inputs between OL9 and NLX.
- General:
  - Updated the Wind Load Generator to reflect wind speed as m/s when metric units are used.
  - Fixed an issue related to showing the incorrect units warning message within the Wind Load Generator.
  - Resolved an issue where the Rebar tab was not active when accessing the Member Design Rule Editor from the Properties Panel.
  - Fixed an issue where the Rectangular Tank with Stiffeners template was swapping the width and length values.
  - Corrected a display issue with section properties of general shapes in the Detail Report when using metric units.
  - Resolved an issue that caused an exception message due to lengthy node labels.
  - Fixed an issue where the 'Save Database as default' checkbox was not retaining the selected database in the Shape Selection dialog.
- Analysis:
  - Resolved an issue that prevented the program from solving when diaphragms are only attached to a single node.
  - Corrected an issue where certain models with large area loads would cause the program to close unexpectedly when solving.
  - Resolved an issue which prevented the program from providing users a warning to clear dynamic results after the dynamic mass input is updated.
- Hot Rolled Steel:
  - Added logic to bypass flexural torsional buckling and torsional buckling code checks when Ltorque is set to zero for a hot rolled steel member.
  - Resolved an issue where the program was unnecessarily checking seismic ductility ratios for seismic members defined as minimal ductility.
  - Corrected an issue with the calculation output of the Column Flange Bracing Force in SMF RBS systems.
- Wood:
  - Corrected a graphical issue that would report an incorrect modulus of elasticity (E') value for wood members.
  - Corrected a display issue that an additional reduction factor Co incorrectly shown in the Detail Report for FTAO design of Wood Walls.

- Masonry:
  - Resolved an issue where copying a Masonry wall panel might yield different design results when comparing the original identical wall panel.
- Concrete:
  - Corrected an issue where the calculation of the moment gradient factors (e.g. U1y, U1z) per the CSA code may use a wrong lower-bound limit when the calculated factor is negative.
  - Resolved a minor discrepancy between the axial loads (Nu) used in shear capacity (Vc) calculations for concrete members per ACI 318-19 code.
- Design:
  - Fixed an issue where solving with Suggested Design was creating a solution loop.
- Plates:
  - Fixed an issue where the Select Element by Property was not properly considering plate thickness as a criteria.

### **Version 20.0.3 Enhancements/Corrections**

- Updated the interoperability between RISA programs and RISA-Revit link.

### **Version 20.0.2 Enhancements/Corrections**

- Integration:
  - Added the ability to export reactions to a file format that can be imported as loads by ADAPT Builder.
  - Added the ability to export Envelope Member End Reactions to SDS2.
  - Added a warning message to alert the users that Notional Loads cannot be generated for a structure with a semi-rigid diaphragm.
  - Enhanced integration procedure for tnxTower model files to automatically correct certain input information that does not affect the model.
  - Improved connection integration process such that changes made in RISACONNECTION are preserved when roundtripping to RISAFloor and RISA-3D.
  - Fixed an issue producing an erroneous warning about slab thickness for models with no concrete members when integrating from RISAFloor.
  - Resolved an issue that allowed steel joists from RISAFloor to be integrated to RISA-3D
- Operations:
  - Added the ability to match properties of one element to another element.
  - Resolved an issue that would assign a Wall Boundary Condition when straps were assigned to a wall panel.
  - Fixed an issue where program generated nodes by the load generator can still be deleted when setting the load generator code to 'None' even if they have user applied loads on them.
  - Corrected the application of line loads when an existing partial length line load is present.
  - Fixed a rare issue that would cause an Exception Message when using the 'Global Move Rotate' command.

- Resolved an issue that would change the member length of a member after performing a 'Rotate' command.
- Corrected an issue where bins could not be positioned in between two existing bins in some cases.
- Resolved an issue that allowed a corrupt shape to be added to the shape database if given the same name as a shape already defined for a different material.
- Hot Rolled Steel:
  - Resolved an Exception Message when solving a custom single angle shape using the iterative stiffness adjustment method.
  - Corrected the reported equation and calculation for the Shear Buckling Slenderness Limit in the member Detail Report.
  - Corrected the calculation of the elastic critical buckling stress ( $F_e$ ) when calculating critical buckling stress.
- Cold Formed Steel:
  - Corrected the axial capacity used in the interaction equation to consider the governing axial capacity out of all the axial limit states.
- Concrete:
  - Added a warning message when no strength load combinations are solved when concrete members are present in the model.
  - Corrected the governing concrete shear strength calculation for round concrete columns.
  - Resolved an Exception Message when opening the detail report of some concrete columns with custom rebar flexural rebar layout.
  - Fixed an issue in calculation of the size effect modification factor ( $\lambda_s$ ) in ACI 318-19 code when metric units are used.
  - Resolved a rare issue that would provide different unity check results for concrete walls depending on the method of solution (single load combination vs. envelope vs. batch + envelope).
- Masonry:
  - Corrected the maximum allowable design shear strength that can be taken per the masonry design code for special reinforced masonry shear walls.
  - Fixed an issue to use  $d$  (effective depth) or  $d_v$  (actual depth) properly according to updated masonry codes for lintel shear design.
  - Resolved an issue with vertical reinforcement calculation for Seismic Masonry Wall Panels when set to an explicit spacing.
  - Corrected the behavior of the 'Reinforced' toggle button in the Masonry Wall Design Rule spreadsheet.
- Wood:
  - Improved the routine to determine the specific gravity adjustment factor of a shear panel based on the chord or stud material - whichever produces a greater reduction.
  - Fixed an issue that applied the specific gravity adjustment factor to wood walls when being analyzed per Wood Canadian Code (CAN CSA).
- Wall Panel:
  - Improved the Wood and CFS wall panel graphics to better represent straps in the 3D View.
  - Fixed the ability to detach wall panels from diaphragms.
  - Resolved an Exception Message 'index was outside the bounds of the array' when opening Wood Wall Detail Reports.
- Plates:

- Fixed an 'invalid polygon, points should be on the same plane' error which prevented a valid plate from being drawn.
- Corrected an issue where plates with end releases were not correctly considering thermal loads.
- Solution:
  - Resolved the discrepancy between base shears and total reactions between RISAFloor and RISA-3D due to 'Super DL' load category.
  - Corrected a behavior that resulted in different total Z reactions for a particular load combination when performing a single load combination solution compared to a batch + envelope solution.
- Detail Report:
  - Matched the governing results of the masonry detail report such that they are properly reported in the Design Summary and Region Design sections of the detail report.
  - Updated the deep span warning message in the concrete member Detail Reports to clarify when one or more spans are less than 1 foot.
  - Corrected a graphical issue that prevented reporting the correct pier seismic check in the detail report for concrete wall panels.
  - Removed the display of the effective depth of the masonry wall in the region criteria of the detail report.
- General:
  - Added the ability to save customized Results View Settings as a default.
  - Resolved an issue where defining Lcomp,bot and Lcomp,top by inserting commands of Lbyy and Lbzz was not being recognized properly in the model.
  - Corrected the base shear calculations for the NBC 2015 where Csx and Csy were previously switched.
  - Corrected a rare issue that would close the program unexpectedly when setting members as 'Euler Buckling'.
- Interface/Graphics:
  - Added the functionality of Clone View to open a new 3D View window with the same settings and orientation of the original window.
  - Resolved an issue with customized 'Load Display' ribbon toolbar cut off after changing Type to Load Category or Load Combination.
  - Fixed a graphical issue with the model not being properly displayed during rotation of the 3D view.
  - Fixed an issue with unity check displayed as 9.99 for some members with No Calculation (NC).
  - Fixed an issue that prompted additional input of seismic coefficients when seismic values have already been defined for a dynamic analysis.
  - Fixed a graphical issue regarding inputs for periods and site parameters in the seismic load generator when NBC 2015 code is used.
  - Fixed a graphical display issue which prevented from showing accurate deflected shape of members.
  - Fixed an issue with magnitude of Z axis nodal spring stiffness not displayed correctly in model view.

## **Version 20.0.1 Enhancements/Corrections**

- Analysis:

- Corrected an issue that prevented negative analysis offsets from being added to a member.
- Corrected a rare issue where the Code Check results were affected by modifying a member label or type and re-solving.
- Aluminum:
  - Resolved a graphical issue for the calculation of  $B_c$  in the Axial Compression check for aluminum members that referenced incorrect equations from Table B4.2 when the value used equations from Table B4.1.
- Cold Formed Steel:
  - Resolved an issue where the chord compression capacity was inconsistent across different CFS wall panels.
- Concrete:
  - Fixed a units issue in the Properties Panel for the unbraced length inputs of concrete columns (ex: using m instead of mm, or ft instead of in).
  - Corrected an issue where the model would not load due to Custom Rebar Layouts not loading properly.
- Masonry:
  - Implemented larger reinforcement spacing options for masonry wall design.
  - Updated the assumption for the maximum usable compressive strain ( $\epsilon_{mu}$ ) in seismic masonry wall checks to be 0.0025.
  - Corrected an issue that prompted an erroneous “Unsupported Masonry Code Warning” for masonry walls.
- Wood:
  - Corrected an issue that prevented the Wind ASIF being applied to wood walls.
- Wall Panel:
  - Corrected a graphical display error that did not show the correct capacity of a shear panel in the Summary section of the wood wall panel Detail Report.
- Solution:
  - Resolved an issue that showed Error 2123 when solving a model with inactive wall panels and/or diaphragms.
- Detail Report:
  - Added a warning message in the Detail Report when an unsupported code is selected for concrete wall panel design.
  - Resolved an issue that occasionally prevented wall panel Detail Reports from opening.
- Spreadsheet:
  - Added additional member label information to the Members column when copying and pasting data from Results spreadsheets into external spreadsheets.
  - Resolved an issue in the Materials spreadsheet where the option chosen for Table B.4 was not being properly changed in the Aluminum tab.
  - Resolved an issue where the 'ALL' command was allowed as an I and J node in the Members spreadsheet.
  - Resolved an issue where the program would unexpectedly close after entering 'ALL' as a node label in the Diaphragms spreadsheet.
- Printing:
  - Resolved an issue when printing the Node Coordinates spreadsheet where data would overlap the page footer.
  - Corrected an issue where BLC headers were not shown for Loads spreadsheets in the printed report.
  - Resolved an error that was occasionally shown when printing a Contour Cut Diagram.



- General:
  - Resolved an issue where duplicate shapes in the database caused model files to not open properly.
  - Fixed an Exception Message that sometimes occurred during a Model Merge.
  - Resolved an issue where the Member End Releases were not properly updated to a fully fixed condition after using partial fixity.
  - Improved the deflected shape display to not allow load combinations with moving loads to be selected.
- Interface/Graphics:
  - Improved the 3D View to update the displayed loading based on the single load combination that was solved.
  - Improved the selection behavior of the program to include diaphragms in “View Only” mode.
  - Centered the model file name in the title bar.
  - Corrected a graphical issue where sorting the Code Check spreadsheet would change the displayed enveloped UC results for concrete members.
  - Resolved an issue where the colored unity check ratio in the model view was inconsistent with the unity check ratio in the detail report for BRB members.
  - Resolved a graphical issue where reactions were displayed at LOCKED nodes.
  - Resolved a display issue that caused the word “Tether” to appear without the node label in the Boundary Conditions spreadsheet when the Tether to Node condition is used with the checkbox “Set the boundary codes for All the directions for this node to the same code”.
- Operations:
  - Resolved a “logo not selected” error when trying to access the Advanced Application Settings.
  - Resolved an issue preventing the program from launching due to corrupted custom Load Combination defaults.
  - Corrected an issue that prevented the overstrength and omega factors from being saved within the Load Combinations spreadsheet.
  - Corrected an issue that removed seismic and wind loads from the model when notional loads failed to generate.
  - Resolved a “could not complete moving load path” error message when the load path was properly defined.
  - Resolved an issue that made the program unresponsive when solving after entering “View Only” mode.
  - Resolved an issue that prevented the use of the NBC 2015, Parametric Design Spectra.
- Integration:
  - Corrected an issue where certain models were not integrating from RISAFloor to RISA-3D.
  - Resolved an issue where some column elements from RISAFloor were not loading properly in RISA-3D.
  - Resolved an issue that caused Model Merge to give an error for some RISAFloor items in RISA-3D.
  - Corrected an issue that swapped the axes for wind and seismic parameters after detaching the model from RISAFloor.
  - Resolved an issue where saved drawing grids would cause the program to close when integrating to RISAFoundation from RISA-3D.

- Enhanced the Connection Results spreadsheet to only show invalid connections for the current program.
- Resolved an issue that prevented the transfer of beam-column connections from RISA-3D to RISAConnection when the member designated as Beam was parallel to the global vertical axis.

## **Version 20.0.0 Enhancements/Corrections**

- Analysis:
  - Added Geometric Nonlinear Stiffness method as option for P-Delta analysis.
  - Added the ability to use negative analysis offset.
  - Improved the semi-rigid diaphragm mesh generation around a column footprint.
  - Improved distribution of member area loads to wall panels.
  - Fixed an issue with brace tension compression signage when negative load factor is used in Capacity-Limited load combinations (e.g. -0.7ELX-CL).
  - Resolved an issue with flexible diaphragm not considering openings in calculation of tributary width of the lateral elements.
  - Resolved an issue with transient loads in BRB calculation.
  - Addressed an issue that considered an incorrect unit weight for wood structural panels in CFS walls.
  - Resolved an issue that caused the dynamic solution of RISAFloor models to unexpectedly close the program.
  - Corrected an issue that caused the program to close unexpectedly in rare cases when solving for an enveloped solution after adjusting the load combinations spreadsheet.
  - Corrected an issue that caused the program to close unexpectedly when solving for an Envelope Only solution.
  - Resolved an issue that could cause the program to clear results if the displayed results were changed to be based on Basic Load Case.
  - Corrected the behavior of the Internal Force Summation Slab Tool.
  - Updated Story Drift to only include nodes within the boundary of a RISAFloor diaphragm.
  - Enhanced the ability to detect corrupted wall panel regions that would cause polygon mesher errors to be triggered for models integrated with RISAFloor.
  - Correct an issue where the column flange bracing force demand was being calculated incorrectly.
  - Resolved an issue with dynamic analysis using the Standard Solver.
  - Fixed an issue with error code 2102 when running dynamic analysis multiple times.
  - Resolved an issue that opening the time history function with a specific model file may cause an exception message.
- Aluminum:
  - Applied the aluminum flexural rupture check from Section F.2 to all shapes (except single angles) for ADM 2015.
  - Corrected the phi factor to determine the nominal flexural capacity of aluminum shapes.
- Cold Formed Steel:
  - Updated connector spacing requirements per AISI for Face-to-Face Cold Formed Steel sections.

- Corrected the shear panel capacity for CFS walls considering the  $2w/h$  modification factor as well as LRFD and ASD factors.
- Fixed an issue where Transient Area Loads were shown inconsistently based on the Area Load Mesh.
- Resolved an Exception Message when opening a wall panel detail report after redrawing the region.
- Concrete:
  - Added the CSA A23.3-14 concrete design code for concrete wall panels.
  - Improved an overly conservative design of concrete walls when axial load is low.
  - Enhanced the beam reinforcement design to provide a warning when the explicit rebar spacing provided exceeds the maximum allowed by code.
  - Corrected a visual issue in the detail report about the design moment for concrete columns which had not affected the final calculation.
  - Fixed an issue with rebar optimization using smaller vertical rebar spacing in concrete walls.
  - Addressed a behavior that displayed an incorrect design shear value in the concrete member Detail Report when 'Optimize Rebar?' in the Concrete Rebar design rule was set to 'Explicit'.
  - Resolved an issue with optimization of vertical reinforcement in concrete wall design.
  - Corrected an issue affecting the slenderness ratio  $KL/r$  for concrete wall panels where the radius of gyration is now calculated using Eq. 6.2.5.2a (ACI 318-19).
  - Resolved an erroneous deep beam warning message.
  - Corrected the calculation of the tension capacity of concrete wall panels.
  - Resolved the calculation for equation (e) from Table 11.5.4.6 to use the absolute value moment and shear forces to determine the in-plane shear capacity for concrete walls.
  - Fixed a behavior where removing a custom rebar layout would prompt an exception message.
  - Resolved an issue causing the Properties Panel not to update after the Custom Rebar Layout name changed in dialog.
- Hot Rolled Steel:
  - Added the analysis and design of back-to-back hot rolled channel members.
  - Added an enhancement that  $\alpha_m$  calculation under NZS code will be conservatively default to 1.0 when explicit unbraced lengths are used.
  - Added the calculations for flange tension yielding for hot rolled tapered sections in the member detail report.
  - Resolved an issue with negative flexural capacity in LTB check for single angle shapes.
  - Updated the  $I_{yc}/I_y$  limits in AISC 15th edition chapter H for tapered wide flange design check.
  - Resolved a display issue in the Shear Analysis expanded calculations for certain cases which listed  $\omega$  as 1.67 instead of 1.5.
- Masonry:
  - Added seismic design consideration for masonry walls per TMS 402/ACI 530 2013 and 2016 codes.
  - Fixed a behavior that would not properly update wall stiffness based on grout properties.
  - Resolved an issue with 'Reinforced' and 'Unreinforced' flags saved in the model file for masonry walls.

- Corrected a rare issue that yielded no capacity for a custom wall design region in a Masonry wall panel.
- Fixed an issue where the Merge Lintels tool was not allowing Detail Reports to open.
- Resolved a graphical issue where some plates appeared non-coplanar.
- Corrected rare instances where the unity check would display erroneous letters in the masonry wall panel detail report.
- Fixed a behavior that caused values to change in the masonry wall design rules when certain checkboxes were toggled in the same spreadsheet.
- Wood:
  - Added Incision factor  $C_i$  in sawn lumber design.
  - Fixed the calculation of the "Co" Factor for perforated wood shear wall.
  - Resolved an issue where the flat use factor,  $C_{fu}$ , was being incorrectly applied to wood members.
- Wall Panel:
  - Added the Load Category option into the load type dropdown inside the Wall Panel Editor.
  - Improved the wood and CFS wall panel graphics to better represent hold downs at the base of the wall panels in the 3D View.
  - Improved the Design procedure of Concrete Walls using metric units to be more efficient.
  - Corrected an issue that model files may have bad record counters after performing a "Global Copy" in RISA-3D on walls that came from RISAFloor.
  - Refined the behavior of the Properties Panel to always have a Design Method selected when switching the wall panel material between CFS and wood.
  - Fixed the display of the available load types to view in the wall panel editor.
  - Resolved an issue that prevented Concrete Wall reinforcement to be designed based on metric spacing rules assigned.
  - Corrected an issue that allowed projected distributed loads to be applied to wall panel edges.
- Plates:
  - Enhanced the printed Contour Cut Distribution diagram to show location units.
  - Corrected a visual issue that prevented the local axes from being displayed for plates.
- Solution:
  - Added internal checks to prevent corrupted area loads from being applied to the model.
  - Enhanced the meshing routine to better handle complex models.
  - Corrected an issue where solving a batch + envelope solution with moving loads would cause the model to close unexpectedly.
  - Resolved an exception message in some cases when P-delta was included in the analysis.
  - Fixed behavior of program to solve a model for a solution after deleting time history loads.
  - Corrected an issue with notional loads in BRB code check.
  - Fixed an issue where an unstable node was not properly identified in the Locked Node View.
  - Resolved an issue which prevented the viewing of time history results using trace, export, and animation.
  - Fixed an issue in design forces of BRB members when running an Envelope only analysis.

- Printing/Reports:
  - Added Moving Load Patterns as an option to the Report Printing Dialog.
  - Enhanced the printing of the Moving Loads spreadsheet using Print Spreadsheet to also include the Moving Load Patterns.
  - Improved the Print Selected Lines behavior for the Moving Loads spreadsheet to only include the moving load patterns corresponding with the selected lines.
  - Resolved an issue that prevented printing to network printers via URL.
  - Corrected the behavior of filtering selections in the print report dialog.
  - Fixed an issue of missing detailed location information in the printed copy of enlarged member force diagrams.
  - Corrected the labeling of the title for Node Reactions results in printed reports.
- Detail Report:
  - Enhanced the rebar detailing section of concrete beam Detail Report to properly display all rebar design information.
  - Enhanced the Detail Report for hot rolled steel members for clarity regarding the  $C_b$  factor when  $C_b$  is not program calculated.
  - Resolved a visual issue in the Concrete Wall Panel detail report related to the rebar detailing not being completely shown in the detail report.
  - Fixed an issue where  $T_u$  (Governing Torsion Demand) was sometimes being reported inconsistently in the member detail report.
  - Corrected an issue where opening a member Detail Report in some cases caused the program to close unexpectedly.
  - Corrected a graphical issue in the detail report where the shear demand / shear capacity did not match the unity check result.
  - Resolved a graphical issue where the combined axial and bending unity check for wood members in axial compression was not referencing the correct governing equation between Eq. 3.9-3 and Eq. 3.9-4.
  - Resolved an issue where the torsion demand reported in the Threshold Torsion section of the calculations did not match the force diagram nor Applied Loading - Bending/Axial section.
  - Corrected the units that are displayed imperial units in the detail reports when metric units are specified in the model.
  - Fixed rare instances where the unity ratio would be displayed as "inf" in the concrete wall panel detail report.
  - Corrected the graphical reporting of the required Vertical Bar Size in the Masonry Detail Report.
  - Resolved an issue with the Save As Default option in the Shape Database dialog not saving properly.
  - Resolved a graphical display issue showing incorrect labeling of wall panel regions in Detail Reports for wall panels.
  - Corrected a graphical error for the formula used to determine the effective depth of concrete members displayed in the Detail Report.
- Reporting:
  - Added a maximum limit of 4 decimal places when displaying end reactions in the 3D model space.
  - Resolved an issue causing the program to close unexpectedly when moving loads are animated without nodes defined along the load path.
  - Corrected an issue that gave different results between program calculated RSA scaling factors and identical user inputted RSA scaling factors.

- Fixed the behavior of the program in the Notional Load Generator with no diaphragm assigned.
- Resolved a behavior that resulted in different total Z reactions for a particular load combination when performing a single load combination solution compared to a batch + envelope solution
- Fixed the error reporting for animated shapes for moving loads for rare cases.
- Corrected the program behavior when moving load path cannot be completed during animation.
- Resolved an issue that prevented plate corner forces from being displayed in the 3D model space view.
- Performance:
  - Improved print speed for reports of large size.
  - Implemented a fail safe to prevent programs from not being able save a model or run a solution due to corrupted data files.
  - Resolved an issue that caused the program to close unexpectedly during solution if the Shear Modulus of the aluminum shape being analyzed was left blank.
- Spreadsheet:
  - Added more typical spreadsheet functionality to Moving Loads Definitions dialog.
  - Updated spreadsheet functionality within the Generate Response Spectra dialog.
  - Enhanced spreadsheet behavior to not to show Sorting Options for blank tabs.
  - Refined the behavior of the Load Combinations spreadsheet to reflect the correct moving load label after sorting the Moving Loads spreadsheet.
  - Resolved an issue preventing nested Load Combinations from updating when a new row is inserted in the Load Combinations spreadsheet.
  - Corrected the factor associated with the reversal of wind loads in the load combination generator.
  - Resolved an issue causing the program to close unexpectedly due to a corrupt default file not being recognized by the program.
  - Fixed spreadsheet behavior when using the Fill Function in the Section Set spreadsheet for Wood members.
  - Resolved an issue where transient distributed loads were unable to be copied and pasted into another basic load case.
  - Corrected an issue in the Node Coordinates spreadsheet where truncated values were saved over the actual coordinate values.
  - Fixed the graphical display of the member area load value when the number of Decimal Places for Input is adjusted in the Application Settings.
  - Updated the default deflection member design rule to start with standard DL, LL, and DL+LL ratio values.
  - Resolved an issue that prevented the Members spreadsheet from opening due to section set labels using virtual joist girder nomenclature.
  - Corrected a behavior where load combinations are instantly updated after the removal of time history loads.
  - Fixed a rare instance where diaphragms were not able to be deleted from the model.
  - Corrected an issue with the displayed units of unbraced lengths that would mislead users to enter overly conservative length.
  - Corrected the behavior of the program when using standard spreadsheet functions in the Time History Function dialog.
  - Corrected behavior of the "Use Stud Spacing" toggle box under the Suggested Design Spreadsheet.

- Fixed behavior of the "Use Suggested" toggle box in the Suggested Design Spreadsheet.
- Fixed the behavior of the copy and paste keyboard shortcuts in the Moving Load Pattern Definitions spreadsheet.
- Resolved program shortcut behavior in the Materials spreadsheet.
- Corrected the ribbon tool button to check/uncheck data entries in the Diaphragms spreadsheet.
- Resolved an issue with Math on Block not behaving as expected in the Distributed Loads spreadsheet.
- Fixed an issue that allowed the user to Paste new cells into Solids spreadsheet and not show an error message.
- Resolved a spreadsheet behavior for inputting the K factor of column members in the Members Spreadsheet.
- Corrected an issue that prevented the pasting of cells in the Wood Materials Spreadsheet.
- Resolved an issue that prevented sorting of Plate Surface Loads if Wall Panel Surface Loads were present in the model.
- Corrected copy and paste keyboard shortcut behavior in the Node Coordinates spreadsheet.
- Enhanced the sorting feature for the "Label" column in the Project Grid Spreadsheet.
- General:
  - Enhanced the reporting of concrete walls to clearly indicate the failure of minimum code reinforcements.
  - Enhanced ability to detect walls that are not rectangular, coplanar or longer than 0.5 feet.
  - Enhanced the boundary condition workflow to be more consistent with the other functions within the program.
  - Updated the location where user data files are stored during default installation to prevent certain file access issues.
  - Enhanced file saving procedure to limit file name size to prevent the file from becoming corrupted.
  - Enhanced the program behavior to default to the shape database respective to the region set in Application Settings.
  - Updated the text in the units to say 'Material Stiffness' instead of 'Material Strengths'.
  - Updated behavior of Reset All Program Defaults to apply to Model View Settings as well.
  - Corrected an issue where the program would close unexpectedly when solving dynamics in RISA-3D after transferring from RISAFloor.
  - Resolved an issue where opening a model file would result in an object reference error.
  - Fixed a rare occurrence that prevented the program from starting due to a corrupted database file.
  - Resolved an issue that caused the program to close unexpectedly when Flat File was created with Dynamic Results.
  - Corrected an issue where the template generator was not accepting negative values when specifying the "Coordinates of Origin".
  - Resolved an issue where custom shapes starting with 'RE' were causing -nan(ind) results.

- Fixed an issue that subgrade springs may be removed after switching the vertical axis (e.g. from Y to Z).
- Resolved an issue that was not properly saving a change to the Region selected in the Application Settings.
- Corrected a visual issue related to the display of the applied load to a wall panel when the direction of the load changes.
- Resolved error message reporting when entering an invalid value for the “Cb” input of the member properties pane.
- Fixed a behavior where load combinations are instantly updated after the removal of moving loads.
- Resolved an issue with saving default approximate mesh size in model settings.
- Interface/Graphics:
  - Added the ability to rotate the 3D view about a specific global axes incrementally based on a specified degree increment.
  - Added Viewer Mode to quickly show element information only for selected elements. Input and result spreadsheets are also automatically filtered based on which elements are selected.
  - Added -XY -XZ -YZ orientation views as presets.
  - Improved the reporting of the display of results in the 3D view.
  - Enhanced the Contour Cut Diagram tool to allow the contour cut line to snap to the wall mesh.
  - Relocated the Wall Panel Analysis Mesh view option to the Results View Settings dialog.
  - Improved program behavior when specifying the thickness and width of a rectangular wood section.
  - Enhanced the model render view to allow member labels to be displayed simultaneously.
  - Corrected a graphical issue pertaining to the units shown for area loads in the 3D model space.
  - Resolved a graphical display issue that prevented Transient Loads from being displayed for some elements in the 3D View.
  - Resolved an issue that caused color coding of members not to match the legend when printing graphics.
  - Resolved an issue where the values reported in the Contour Cut Distribution diagram were not utilizing the correct decimal places for output.
  - Fixed an issue which prevented the nodal coordinates to be shown when hovering over intersection of gridlines.
  - Corrected a rare occurrence of nodes regenerating themselves during solution.
  - Fixed program behavior when selecting the "Move Rotation" button after restarting a model.
  - Resolved a graphical display issue with Unity Check result in the detail report when the available strength is zero.
  - Resolved a rare case where viewing the deflected shape of the model would cause the model to disappear entirely from the 3D model space.
  - Corrected the behavior of the keyboard and button interaction of the "Set Member Section Set or Shape" dialog box.
  - Resolved an issue that prevented certain mode shapes from being animated.
  - Corrected a graphical issue with capitalization of letters when inputting letters in the spreadsheet using the “Fill” tool.



- Fixed an issue with the significant figures of node coordinate shown when switching between units.
- Resolved an issue preventing the input of the Time Step in the ribbon toolbar for Time History Animation.
- Operations:
  - Added the ability to customize the 3D view toolbar with custom bins and functions.
  - Added the ability to append TNXTower Models (.rt3 file type).
  - Enabled the right-click options within the Contour Cut Diagram Report.
  - Added the ability to expand the drawing grid inputs.
  - Added the ability to rotate the 3D axes by 45 degree increments by holding the SHIFT key while rotating.
  - Added Plates and Fluid Loads to the 3D Grid Template.
  - Enabled the ability to Copy and Rename the Default Time History Patterns.
  - Added the ability to view Boundary Conditions independent of Node visibility.
  - Enhanced program initialization not to require database files that are not critical for program startup.
  - Improved the Copy Rotate function by preventing a blank increment entry.
  - Resolved pasting of Load Categories in Basic Load Case spreadsheet.
  - Improved error and warning reporting when performing a "Model Merge".
  - Added a warning message for invalid Custom Rebar Layouts and resolved an issue resulting in an Exception Message when trying to open model files.
  - Corrected online shape designations for members when converting units.
  - Improved the usability of the Lock to Local Axis tool.
  - Enhanced program behavior when using the "Tab" keyboard button to go to the next field in the member properties pane.
  - Fixed an issue where users would lose their network license after being idle for a certain amount of time.
  - Resolved an issue with retrieving Saved Selection States if elements in the selection were copied.
  - Corrected an issue that caused an error message and prevented copying when copied elements would cause duplicates.
  - Resolved a 'Not Unique Value' exception message when applying boundary conditions to nodes with existing boundary conditions.
  - Fixed an issue where the Edit Section Set dialog did not reflect the current section set parameters and updating the Design List did not modify the actual section set.
  - Resolved an issue where the Move Rotate feature with 'adjust local axis' turned on did not rotate members about their local axis as expected.
  - Corrected an issue where adding new materials would not appear in the drop down box within the shape selection dialog box.
  - Fixed an issue with opening RISA-3D models from older versions (v4.5).
  - Resolved an issue with a false error message when detaching the model from RISAFloor.
  - Corrected behavior of the program when copying over boundary conditions using "Point-to-Point" and "Global Copy".
  - Corrected an issue where the last line of a spreadsheet was being omitted when copying and pasting.
  - Fixed an issue that prevented the program from deleting Notional Loads from the Basic Load Cases spreadsheet.

- Corrected an issue where the length of the copied member was incorrectly shown in the member properties when "Copy with Connect Bays" was used.
- Resolved an issue that prompted an exception message when performing a "Global Copy".
- Fixed an issue where changing Select by Criteria for loads does not overwrite previous selection.
- Resolved an issue that prevented the deletion of program generated nodes for applying notional loads to a model.
- Integration:
  - Enhanced error reporting when sending invalid connections to RISACONNECTION.
  - Resolved an issue where concrete T-beams integrated from RISAFloor were not reflecting the design values after solution.
  - Fixed an issue where an HSS T-connection in RISA-3D was not designed due to an erroneous 'invalid or missing supporting connections' error (requires RISA-3D v20).
  - Corrected an issue preventing RBS and WUF seismic connections from transferring into RISACONNECTION.
  - Resolved an issue where integrating to RISACONNECTION caused RISA-3D to close unexpectedly.
  - Fixed an issue that prevented a solution to be performed in RISA-3D for specific models integrated with RISAFloor.
  - Corrected an issue where transferring files from REVIT to RISAFloor would close the program unexpectedly.
  - Resolved an issue that prevented multiple roundtripping between RISA and REVIT.
  - Fixed an issue that prevented HSS connections from integrating from RISA-3D when other Beam/Column connections existed.
  - Resolved an issue that caused large merge tolerances to result in loads generated by the RISAFloor to RISA-3D link to be out-of-bound.
  - Corrected an issue that changed certain seismic moment connections to Intermediate Moment Frame connections when integrating from RISA-3D.
  - Fixed a rare issue for specific models that prevented Column/Beam Shear Tab connections from integrating from RISA-3D to RISACONNECTION.
  - Corrected an issue where Beam Splice connections were not transferring to RISACONNECTION in some instances.
  - Resolved an issue where Girder/Beam Clip Double Angle Shear connections were not transferring to RISACONNECTION in some instances.
  - Fixed an issue where some invalid connections were not being included in the warning log.
  - Resolved an issue where some beam and column splices in RISA-3D were not designed due to erroneous 'invalid or missing supporting connections' errors (requires RISA-3D v20).
  - Corrected an issue where the column force and story shear were not transferring from RISA-3D to RISACONNECTION.
  - Resolved an issue where a column moment splice connection in RISAFloor was not designed due to an erroneous 'invalid or missing supporting connections' error (requires RISAFloor v15).
  - Fixed an issue where the connection detail report button incorrectly reported an invalid connection error.
  - Resolved an issue where wind loads were not properly generated using NTC 2004.

- Corrected an issue where Column Moment Splice connections were not transferring properly in some instances.
- Resolved an issue preventing the application of notional loads for a model with a flexible diaphragm coming from RISAFloor.
- Resolved an issue where top and bottom column labels were switched for 'Column Moment Plate Splice' connections.
- Corrected an issue that was resetting work point vertical offset of Chevron Brace connections in models linked with RISA-3D
- Resolved an issue that changed the Cold Formed Steel wall sheathing from steel to wood during integration from RISAFloor to RISA-3D.
- Fixed an issue where Notional Loads were not being properly regenerated in RISA-3D for a model coming from RISAFloor.
- Resolved an issue that showed no limit state check in RISA-3D if unity check of the connection is zero.

## **Version 19.0.4 Enhancements/Corrections**

- Hot Rolled Steel:
  - Fixed a graphical issue in the double angle Detail Report where an equation in the Flexural Buckling Stress section reported 3.77 rather than 4.71 as per AISC Eq. E7-2.
  - Fixed an issue where the Simpson Yield Link Database XML was not properly updated during installation.
  - Resolved an issue where envelope results did not properly include regular and capacity-limited load combinations.
- Cold Formed Steel:
  - Fixed a graphical units issue to report the shear capacity in the Cold Formed Wall Panel Schedule in units of k/ft.
  - Resolved an issue in CFS wall design that was only designing Axial based on a 16-inch stud spacing.
  - Resolved inconsistencies with CFS wall panels where results were reported for regions that did not satisfy the h/w ratio.
  - Resolved an issue that caused CFS walls to be designed even though the code chosen for CFS members was not current enough to meet the CFS walls code.
  - Resolved an issue that prevented the proper redesign of CFS walls.
- Concrete:
  - Corrected the multi-span concrete beam Detail Report to consider all spans when reporting the governing shear force.
  - Fixed an issue where concrete reinforcement designed to 'Leave room for horizontal rebar splices' from the Model Settings was opposite the expected behavior.
  - Corrected an issue that erroneously reported seismic unity checks for concrete wall panels using an Ordinary seismic design rule.
  - Corrected a graphical issue in the detail reports for custom rebar concrete members where the total shear strength was not displayed.
- Wood:
  - Enhanced the strong axis Flexural Analysis section of glulam Detail Reports to clarify  $C_m$ ,  $E$ , and  $E_{min}$ .
  - Updated the Aspect Ratio Factor for wood wall panels using FTAO to be based on the aspect ratio of the wall segment rather than the full height of the wall panel region.

- Fixed an issue for custom wood materials where COV\_E was not updating in the Custom Wood Species Database dialog.
- Resolved a rare issue where the wood material databases were in some cases read inconsistently with multi-core processing computers which caused the incorrect display of wood species in the Materials spreadsheet.
- Plates:
  - Resolved an issue that was deleting loads applied to duplicate plates when performing a Model Merge.
- Wall Panel:
  - Enhanced the Wall Internal Force Summation Tool to only snap to points on wall panels in the same plane.
  - Updated the graphical representation of regions drawn on Wall Panels that are not rectangular.
  - Fixed an issue which prevented wall panels from being copied using Copy Local Offset.
  - Corrected an issue where using Ctrl + Z in the Wall Panel Editor sometimes caused the program to close unexpectedly.
  - Resolved an issue that caused linear loads to not be applied correctly to wall panels when the wall is moved by changing coordinates of nodes manually.
  - Resolved an Exception Message when solving after deleting a wall panel boundary condition.
  - Resolved a graphical display issue that showed an incorrect numbering of wall panel regions in Detail Report for CFS and General wall panels.
- Analysis:
  - Updated the Advanced Dynamic solver to better handle very large symmetrical models.
  - Enhanced the behavior of locked instabilities to always report LOCKED user generated nodes in the Node Reactions spreadsheet and provide the user the option to mute the instabilities notification.
  - Corrected an issue that caused the program to close unexpectedly when solving for an Envelope Only solution.
  - Fixed an issue where Excluded elements were affecting the results.
  - Resolved an issue where applying a partial distributed load would incorrectly affect the total seismic weight of the model.
  - Fixed the P-Delta divergence error message which was occasionally not properly specifying node and load combination information.
  - Resolved an issue where solving an eigensolution with only Plus X and Plus Z Eccentric Mass caused the program to close unexpectedly.
  - Corrected the calculation of the scaling factor with the NBC 2015 code.
  - Resolved an issue that prevented the Scale Factor from being properly calculated in RSA analysis.
- Graphics:
  - Improved the load graphics while panning a model.
  - Increased the text limit for the Project Notes input box within the Project Info dialog.
  - Enhanced the Moving Load arrows and text for better visibility during animation in dark mode.
  - Corrected a graphical issue where transparency values in Model View Settings were being cut off slightly.

- Fixed an issue where the checkbox to open the Diaphragm spreadsheet was not working.
- Resolved an issue that prevented the graphical representation of Enveloped Overstrength loads in the 3D View.
- Resolved a graphical issue with the deflection ratio results,  $L/y$  and  $L/z$ .
- Resolved an issue where graphically displaying nodal reactions would sometimes cause the program to unexpectedly close.
- Resolved a graphical issue for moment reactions where the arrows were inconsistently displayed.
- Resolved an issue with the display of the Strap / Hold-Down unity ratio.
- Resolved a graphical interface issue that caused the incorrect node label to be shown in the Time History Trace dialog.
- Resolved an issue where the model view changed from Color Coded to Wireframe when the Contour Diagram Tool was selected.
- Spreadsheets:
  - Improved the speed of opening spreadsheets.
  - Improved the speed and behavior of copying spreadsheet values within the program.
  - Resolved an issue where newly created rows were unable to be deleted from the Materials spreadsheet.
  - Corrected an issue that prevented concrete materials from being deleted from the Materials spreadsheet.
  - Resolved an issue that prevented copying and pasting data into the Boundary Conditions spreadsheet.
  - Fixed an issue where the program would close unexpectedly after pasting an invalid shape name in the Section Sets spreadsheet.
  - Resolved an issue where changing the material of a member would change the design list in the Members spreadsheet.
  - Resolved an issue where the Surface Loads spreadsheet was not consistent with the actual loads in the model.
  - Resolved an issue that prevented pasting loads in the local axis direction into a loading spreadsheet.
  - Resolved an issue where diaphragm drift definitions could be deleted in the Drift Definitions spreadsheet.
  - Resolved an issue that caused the program to close unexpectedly when opening the Mode Shapes spreadsheet.
- Detail Reports:
  - Improved the quality of Detail Reports for members and walls.
  - Improved the graphical scaling of the CFS Cross Section Detailing section of the Detail Report.
  - Improved the representation of large Cross Sectional Details of walls in Detail Reports.
  - Resolved a graphical display issue for the incorrect spacing of reinforcement shown in the concrete wall Detailing portion of the Detail Report.
  - Corrected an issue where the program would close unexpectedly when switching to the next member within the deflection diagram of a member Detail Report.
  - Corrected the unbraced length reported in the Elastic Buckling Stress section for hot rolled steel member Detail Reports.
  - Corrected an issue that was preventing the bending results being displayed for the masonry wall detail report.
  - Corrected graphical unity checks in the masonry wall Detail Reports.

- Fixed a Detail Report display issue for custom wood materials to report the correct COV\_E value in the Shape Properties section.
- Fixed an issue where the Detail Report was not expanding for visually or mechanically graded solid sawn custom wood materials.
- Printing:
  - Improved printing of spreadsheets to only include lines that contain information.
  - Improved the ability to filter input spreadsheets in report printing.
  - Added the ability to print from within the Time History Trace dialog.
  - Added the ability to print the detail diagram of Contour Cut results.
  - Resolved an Exception Message that would occur when printing the aluminum tab of the Materials spreadsheet.
  - Fixed an issue where the Basic Load Cases spreadsheet was unable to be printed using the Print Spreadsheet option.
  - Resolved an issue that prevented the ability to print Contour Diagrams using the Print Graphics option.
  - Resolved a graphical issue with printed reports where the report contents overlapped the footer.
  - Resolved an issue where the date and time were not displayed in the Print Report preview.
  - Corrected an issue where the program does not respond while having the print report preview open.
- Operations:
  - Increased the speed of minimizing the main window.
  - Improved cursor selection behavior when the mouse extends beyond the RISA program window.
  - Improved the speed of clearing model results before opening a new model in the same session.
  - Improved the efficiency and speed of the Model Merge function of the program.
  - Improved the behavior of the Coordinates tab of the Criteria Select tool.
  - Improved the behavior of the Response Spectra Library dialog to rename entries by pressing Enter.
  - Updated the wording within the 'New Version Available' dialog.
  - Updated the behavior of Node selection in Criteria Selection Dialog.
  - Resolved an issue that prevented File Locations from being reset to default after selecting Reset all Program Defaults.
  - Corrected an issue that prevented the Autobackup feature from backing up properly.
  - Corrected a rare issue that prevented the program from opening model files created in an earlier version of RISA-3D.
  - Resolved an Exception Message caused by empty strings in the material defaults.
  - Resolved an issue where the Member/Wall to Node drawing option was not working correctly.
  - Resolved an issue that kept member information shown in the Properties Panel after deleting that member from the Members spreadsheet.
  - Corrected an issue with the Truss Template generator where the unbraced lengths were being applied incorrectly.
  - Corrected an issue that prevented decimal inputs within the Truss template generator.
  - Corrected an issue where switching the vertical axis could inadvertently change the member rotation.

- Corrected an issue where clicking the cancel button in the Boundary Conditions dialog would still apply the settings.
- Corrected an issue where the wind load generator would cause the program to freeze in some instances.
- Resolved the inability to create Point Loads from a Load Combination that includes a Moving Load.
- Resolved an issue that included newly generated elements in previously saved selection states.
- Resolved an issue that reapplied a linear load to the active member of two duplicate members after using Model Merge to delete duplicate members.
- Fixed an issue where the wall and diaphragm Internal Force Summation Tool did not work properly after opening a saved solution.
- General:
  - Improved the behavior of the lateral load generation tools to delete unattached nodes when the lateral code is set to None.
  - Fixed a graphical issue where the X and Z parameters for wind load using IS 875: 1987 were flipped in the Wind Load Generator dialog.
  - Resolved an issue where the generated notional loads were applied to the incorrect axis.
  - Corrected a rare issue where the seismic generated loads were not being applied to the model.
  - Fixed the Slab Internal Force Summation Tool which, in some cases, could not find elements for the internal force calculations.
- Integration:
  - Enhanced the behavior of importing an SAF file into a new RISA-3D file by automatically switching the vertical axis to Z.
  - Resolved an issue in RISA-3D that made elements copied from RISAFloor unable to be edited.
  - Resolved an issue preventing HSS T-Connections from transferring to RISACONNECTION from RISA-3D due to an "invalid branch slope" error.

## **Version 19.0.3 Enhancements/Corrections**

- Cold Formed Steel:
  - Resolved an issue where studs within CFS walls were incorrectly being assumed to be braced about their weak axis by the wall sheathing.
  - Resolved an issue where Ltorque was not using the full height of a stud within a CFS wall.
- Wood:
  - Corrected a units issue where changing material strength defaults to 'psi' would change Emod to 1,000 for wood materials.
  - Corrected an issue to retain modified custom wood material labels.
- Masonry:
  - Corrected a graphical issue in Masonry wall detail reports where detailed calculations for bending design were not being shown.
- Solution:
  - Added an error message when a Custom Redesign List was created using a different database than the Default Shape Database.

- Resolved an Exception Message when trying to use the Snapshot feature before the model is saved.
- Resolved an issue that prevented a solution in RISA-3D due to an erroneous mesher error.
- Resolved an issue that caused Suggested Design not to choose a shape from the design list.
- Detail Reports:
  - Corrected a graphical issue in the Concrete wall detail report where wall region labels did not match what was shown visually and in the calculations.
  - Corrected an issue with CFS member detail reports where the required tension force was not matching force diagrams.
  - Resolved an issue that was causing the Out-of-Plane Unity Checks of Concrete wall panels to show infinity as the unity check.
  - Fixed a rare occurrence that caused concrete wall regions to be inaccurately reported as passing or failing in the wall detail reports.
- Spreadsheets:
  - Resolved an error that was given when manipulating certain cells in the Load Combination spreadsheet.
  - Resolved an Exception Message when using the Fill command in the BRB tab of the Members spreadsheet.
  - Resolved an issue that prevented copying and pasting functions from working correctly when including rho or omega in the Load Combination spreadsheet.
  - Resolved an issue that prevented large amounts of data from Excel to be copied correctly into the Load Combination spreadsheet.
- Printing:
  - Enhanced the Print Report dialog to not show Inactive or Excluded elements from the Available Reports list.
  - Added the ability to use of no sketch number in Graphical Prints.
- Graphics:
  - Resolved a graphical issue to retain the display of reactions after running a new solution.
  - Resolved a graphic display issue that was showing NC for some members when displaying Unity Check values.
  - Resolved a graphic display issue that prevented the viewing of Envelope results for models using Stainless Steel members.
  - Updated the Graphical display of loads to not show if applied to elements that are not visible in the 3D view
  - Fixed the Design Results toolbar to show the Connection Detail Results icon after designing connections.
  - Resolved a rare issue where selecting wood shapes in the shape selector dialog would not populate member properties.
- Operations:
  - Added the ability to graphically select nodes from the Boundary Condition spreadsheet
  - Enhanced the Distance Measure tool to reflect the 'Decimal Places for Input' specified in the Application Settings.
  - Enhanced the area load magnitudes to reflect the 'Decimal Places for Input' specified in the Application Settings.
  - Resolved an issue that prevented the changing of Wall Panel Boundary Conditions of some walls created in RISAFloor.



- Updated the program to prevent the creation of Shapes with the same label.
- Resolved an issue that prevented the Add Nodes tool to work when the member previously had any nodes in the location of the proposed generated nodes.
- Resolved an Exception Message when using the Global Copy tool.
- General:
  - Resolved an issue that prevented the program from opening on machines with Aero Windows themes being used.
  - Resolved an issue where a mismatch between the Section Set sizes and the Member sizes caused the member sizes to change after solution.
  - Resolved an issue where the General database (GEN\_DB32.fil) was causing unexpected program behavior.
  - Resolved an issue that prevented the Append feature to work for models with several boundary conditions.
  - Corrected an issue where the program will not open a model file if section set labels or design rule labels contain quotes.
  - Updated the Seismic Design Rule Editor to have the proper defaults for OCBF.
  - Resolved an issue that caused a crash upon solution of specific models while using Processor Cores Utilization of any option besides single.
  - Fixed the behavior of the Seismic Load Generator to prevent adding generated loads into a Basic Load Case with existing loads.
  - Resolved an issue that prevented the drawing of Wood members when Region was set to Europe.
  - Resolved an issue that caused an erroneous error stating that specific Time History loads are not valid load numbers.
  - Resolved an issue that was not properly reassigning shapes as the warning log stated it was.
  - Resolved an issue that caused Live Load Reduction to not be considered in RISA-3D if units for Force were in pounds.
  - Updated the model text file to include the full username and email address listed under Cloud ID.
  - Added a safeguard to Network licenses that go idle with the ability to 'Save and Exit' from the model to allow users to preserve their work.
- Integration:
  - Fixed a rare occurrence where the program will close unexpectedly during a solution when a semi-rigid diaphragm is assigned in RISAFloor.
  - Resolved an issue that prevented TEKLA models being exported to RISA-3D.
  - Resolved an issue where integrating from RISA-3D to RISAConnection caused an Exception Message.
  - Resolved an issue with steel joist type being changed in RISAFloor after integration with RISA-3D
  - Resolved an issue that changed specific Wood Types to None when using Director to RISA-3D.

## **Version 19.0.2 Enhancements/Corrections**

- Hot Rolled Steel:
  - Added Capacity-Limited Seismic Design for Special Concentrated Braced Frames (SCBF).

- Added the ability to choose whether to include the gravity load effects in BRB axial force diagrams.
- Enhanced the seismic detailing checks to differentiate between braced and moment frames regarding seismic requirements.
- Added the design of columns and beams according to the expected brace strength for SCBF and BRBF.
- Added design consideration for BRB under response spectra (RSA) loads.
- Corrected the capacity calculation for members with only tension loads to follow chapter D of AISC 360 instead of chapter H.
- Resolved an issue of incorrectly checking Beam/Column Ratio for a Specially Concentric Braced Frame.
- Updated the calculations for SCBF and OCBF brace required connection force and unbalanced force per AISC 341-2010 and AISC 341-2016.
- Corrected an issue where a member was being code checked even when the L/r limit was exceeded.
- Resolved an issue where width-to-thickness requirements for SMF were erroneously applied to members assigned the OMF Seismic Design Rule.
- Resolved an issue where the calculation of thermal deflection for a Hot-Rolled Steel member was affected by enabling the stiffness adjustment.
- Corrected the seismic detailing slenderness check for SCBF according to section F2.5b of AISC 341-2010 and 2016, and 13.2a of AISC 341-2005.
- Resolved an issue causing the area of the steel core to change with each solution iteration.
- Resolved an issue that showed 'No Val' in the Gov LC column of Hot Rolled Code Check spreadsheets for IS800 2007 Code.
- Cold Formed Steel:
  - Improved the visibility of code selection for CFS wall panels so that it appears greyed out when any code other than AISI S100-16 is selected.
  - Corrected an issue where CFS walls were producing erroneous node reactions.
  - Resolved a graphical display error for Stud Spacing in Cold Formed Steel Wall Detail Report.
  - Resolved an erroneous error message for Aspect Ratio not being met for Cold Formed Steel Walls.
  - Resolved an issue that was not checking the Aspect Ratio correctly for Cold Formed Steel walls with Fiberboard sheathing.
  - Resolved an error where results were shown for CFS Walls when the shear panel was not valid.
  - Corrected an issue where invalid sheathing configurations were chosen for slender CFS wall panels during optimization.
  - Corrected an issue where the program was providing a design for CFS wall panels which exceeded the allowable aspect ratio.
  - Corrected an occasional issue preventing the design of CFS walls when solving a DL only load combination.
  - Corrected an issue where CFS shapes were inaccurately reporting wrong width of the member resulting in inaccurate Open Structure area loading.
  - Corrected an issue with the optimization of CFS walls where the selection of sheathing panels was not compatible with the selected stud size.
  - Corrected an issue where the program selects invalid sheathing sizes for CFS wall panes during optimization.

- Resolved an issue that prevented CFS Wall Panel Code change to be Saved as Default.
- Wood:
  - Added the Specific Gravity Adjustment Factor to reduce the shear capacity for wood framed shear walls.
  - Corrected bending capacity of wood members due to  $C_m$  factor being applied twice during member capacity calculations.
  - Corrected an issue where the  $C_r$  (repetitive use factor) would equal 1.0 regardless if it was enabled.
  - Corrected an issue where the Total Area of Openings of a perforated shear wall was being calculated incorrectly.
  - Resolved an issue preventing wood materials from merging when appending models.
  - Corrected the imperial to metric unit conversion calculation for manually entered 'Net Rectangular' NDS wood shapes.
  - Corrected a graphical issue in the wood wall detail report where the tension stress was reported incorrectly.
  - Resolved an issue that was causing Wood Diaphragm properties to not be read correctly from Database.
  - Resolved issue preventing newly added Custom Wood Materials from being retained after closing the program.
  - Fixed an issue that allowed a Poisson's ratio greater than 0.5 to be entered in the Wood tab of the Materials spreadsheet.
  - Resolved an issue with axial tension capacity reported as zero for round wood members using NDS91&97 ASD.
  - Corrected an issue where the Wood Design List was not properly being filtered by the shape and material of the member.
  - Resolved an issue where custom Canadian wood materials were not properly retained when using Save As Defaults.
  - Corrected a graphical display issue where incorrect strap results were reported in the wood Wall Panel Detail Report.
  - Corrected an issue where the Wood Design List was not populating correctly in the properties panel after changing Material type.
- Concrete:
  - Added the ability to consider the amplified shear demand ( $V_e$ ) for Special Concrete Shear Wall per Section 18.10.3.1 of ACI 318-19 code.
  - Resolved an issue causing the program to close unexpectedly when opening a Detail Report for a concrete member with custom rebar.
  - Resolved a graphical units issue for the Out-of-Plane shear reported in the concrete wall panel Detail Report.
  - Resolved a graphical issue for concrete wall panels where the Cross Section Detailing did not match analysis.
  - Resolved an issue that was only preventing shear design of concrete beams when members met Deep Beam criteria.
  - Resolved an issue causing the moment capacity of concrete walls to erroneously be reported as zero in some models.
  - Corrected graphical issue in the concrete wall panel detail report in regard to rebar detailing.
  - Resolved an issue of '-1' being occasionally shown for Unity Check of some Concrete Wall Panels.

- Resolved an issue that was displaying incorrect units in the Concrete member Detail Reports using Non ACI codes.
- Masonry:
  - Resolved an issue on rebar optimization in masonry wall boundary zone.
  - Corrected an issue where masonry wall results would change after multiple solutions in rare instances.
  - Fixed a graphical issue with masonry lintels after switching vertical axes.
  - Fixed an issue preventing changes to the Custom Wall Design Rule from being retained for masonry walls.
  - Corrected an issue where the masonry wall Detail Report for shear in plane limit state was showing a FAIL when there is no in plane shear in the panel.
- Plates:
  - Improved the warning and error checking for the Degenerate Plate Check.
  - Corrected an issue when applying projected surface loads to 3-node plates would cause an exception error message.
  - Resolved an issue that prevented submeshing plates properly.
  - Fixed inconsistent behavior using the Rotate Axis function for single plates.
- Solution:
  - Added the ability to view Semi-Rigid Diaphragm submesh after Dynamic solution.
  - Improved the area load mesher to provide better results at larger area load mesh sizes.
  - Improved the minimum length threshold for wall mesher to avoid mesher snapping issues.
  - Enhanced the snapping algorithm to resolve some cases of Error Code 2125 where errors were detected in the polygon input for the mesher.
  - Resolved an issue where incorrect UC was reported in the expanded Bending & Axial Interaction Check section of Detail Reports for Stainless Steel HSS members.
  - Fixed an issue that the 3D display of nodal reactions may not include results from overstrength LCs properly.
  - Fixed an issue causing a Dynamic Solution to be cleared when changes were made to the Load Combinations spreadsheet.
  - Resolved an issue with Inactive walls not properly being excluded from the calculation for Mass in the Seismic Load Generation.
  - Resolved a graphics issue preventing reactions from displaying after a dynamic solution is performed.
  - Resolved an issue where some models would not solve when wall surface loads were added.
  - Resolved an issue preventing the ability to solve a dynamic solution in some models.
  - Resolved an issue that was not correctly showing the Delta Max values in the Wall Panel Detail Report when an Envelope Only solution was performed.
  - Resolved an issue preventing the ability to explicitly select sheathing panels for Wood or CFS walls.
  - Resolved an issue causing Plate and Wall Panel Contour Diagrams to not be smooth.
  - Resolved an issue causing dynamic solution results from being deleted after making changes to the scale factor.
  - Corrected an issue causing reactions to display when only the option to view the Member Results was selected.
  - Resolved a rare issue that was not allowing Saved Results to be read when reading File that was saved to a cloud location.

- Detail Reports:
  - Enhanced the Detail Report for wood members to show the how torsion is incorporated into the shear analysis.
  - Improved the display of member local axes in Detail Reports.
  - Enhanced the Bending and Axial Interaction Check section of aluminum Detail Reports for clarity.
  - Resolved a graphical issue in the Detail Report where the incorrect axial force was reported in the Applied Loading - Bending/Axial section.
  - Resolved a graphical display issue of some wood members not showing the correct Unbraced lengths in the Design Properties section of Detail Reports.
  - Resolved an issue that was preventing Detail Report Diagrams to properly display when Envelope solution was run.
  - Resolved an issue causing some information to be excluded when printing fully expanded Wall Panel Detail Reports.
  - Corrected labeling of Combined Check in Wall Detail Report for Masonry Walls.
  - Resolved a unit conversion issue in the display of results in the Detail Report for Wood Members being analyzed with CSA Codes.
  - Resolved units issues in the concrete wall panel Detail Report.
  - Resolved graphical units issues in the masonry wall panel Detail Report.
  - Corrected a graphic display issue in Detail Reports where 'Lcomp,top' was reported as the variable label when the controlling value of the unbraced length was 'Lcomp,bot'.
  - Resolved an issue resulting in an Exception Message when opening the Detail Report for concrete members defined as Vbrace, HBrace, or None.
  - Resolved a display issue of axial compression demand in Detail Report when force unit is in pounds.
  - Fixed a graphic display issue where units were inconsistently reported in the Detail Report for masonry wall panels when custom units settings were specified.
  - Resolved graphical display error of units shown in Wall Panel Detail Reports.
  - Resolved text being cutoff for Concrete Wall Interaction Diagrams in Detail Report.
  - Fixed a graphic display issue where the incorrect value for Omega was listed in the Detail Report for the Shear Analysis of a Hot Rolled Steel member.
  - Resolved a graphic display issue in Wall Panel Detail Reports where unity checks were reported for partial height regions when using the Transfer In or Transfer Out option.
- Spreadsheets:
  - Improved the speed and functionality for all Input spreadsheets.
  - Improved the speed of the actions made in the Load Combinations spreadsheet.
  - Added the ability to sort Wall Panel Results spreadsheets.
  - Refined the 'Spreadsheet to open after static solution' behavior to also display all results spreadsheets that were already open.
  - Updated the functionality of Members spreadsheet to allow adding lines from any tab.
  - Resolved an issue on sorting by Absolute Maximum and Minimum in Member Forces spreadsheet.
  - Fixed the block fill function in the Wall Design Rules spreadsheet.
  - Resolved an issue that prevented the Members spreadsheet from opening due to the RISASection shape name.
  - Corrected an issue allowing negative values to be entered into the 'Min # Bars Per Layer' in the Wall Design Rules spreadsheet.

- Corrected an issue where the program would produce an Exception Message after values in the Load Combination spreadsheet.
- Resolved an issue causing an Exception Message to appear when using the Fill command to make loads Active in the Distributed or Point Loads spreadsheet.
- Fixed an issue which removed the filter from the Envelope results spreadsheet after changing the display of Batch results.
- Corrected the behavior of selecting columns of data in various input spreadsheets.
- Resolved an issue causing Diaphragms levels to be incorrectly ordered in spreadsheet.
- Resolved an issue that caused an erroneous error message when trying to Undo adding a line to a spreadsheet.
- Resolved an issue preventing the Copy with Headers feature from working within the Basic Load Case Spreadsheet.
- Resolved an issue causing an exception message to appear when making changes to the Seismic Design Rule for CFS members in the Advanced tab of the Members spreadsheet.
- Fixed 'Undo the last operation' function while in the Wall Panels Spreadsheet.
- Corrected an issue preventing the ability to choose 'Graphical Highlight' when the Solids spreadsheet is open.
- Fixed sorting of 'Activation' column in the Advanced tab of the Members Spreadsheet.
- Fixed an issue with the display of the envelope unity check (UC) result for BRB members in the detailed reports may change after sorting the UC column in the Code Check spreadsheet.
- Printing:
  - Resolved an issue preventing the ability to print to PDF in some instances.
  - Resolved an issue causing the program to close unexpectedly in some instances when attempting to print.
  - Fixed a printing issue by setting a default design code if any codes were erroneously blank.
  - Resolved an issue that prevented report sections from being added to the Current Report for printing.
  - Fixed an issue where printing a wood wall expanded Detail Report printed a summary report instead.
  - Fixed an issue that prompted an Exception Message when Printing Graphics.
  - Resolved an issue that caused the program to close unexpectedly when printing to large paper formats with high print quality.
  - Corrected 'View Extents' display when printing graphics.
- Graphics:
  - Improved the program to display the Results View Settings that were active prior to clearing results when a new solution is performed.
  - Updated Reactions to show Magnitude by default when using Quick View option.
  - Improved the graphical display of distributed loads on wall panels to update when changes are made to the wall panel geometry.
  - Corrected a graphical issue where shear unity checks were not being displayed.
  - Corrected a graphical display issue where the global axes headers in the Seismic and Wind Load Options dialog were inconsistent with the applied load direction.
  - Corrected a graphics issue where the incorrect code reference was reported in the Seismic Load Generator dialog when a SDC A was specified.

- Corrected graphical issue in the concrete wall panel Detail Report where the units did not match model settings units.
- Resolved an issue with minimum reactions missing in the moving load reaction graphic display.
- Corrected a graphical issue related to the Cross Section Detailing for Cold Formed Steel Walls when dimensions change from imperial to metric.
- Fixed a graphical issue to show the original member properties in the Properties Panel after using the Split tool.
- Resolved a graphical display error that showed 1 for member labels set to kyy that did not have a value entered manually for the member.
- Resolved a graphic display issue preventing the display of Node Reactions when enabled through the Quick View toolbar.
- Corrected the display of Enveloped reactions to show maximum and minimum reactions.
- Corrected an issue that caused loads to display after disabling the view of Member Results.
- Resolved a graphic display issue that prevented updating of graphs when Tracing Nodes using Time History Loading.
- Operations:
  - Enhanced the interface behavior to switch between open windows when using Ctrl+Tab and Ctrl+Shift+Tab.
  - Improved the Copy/Move features related to Local Axes to have the Local Axes label shown when the tool is activated.
  - Improved the speed of navigating within the Shape Selection dialog.
  - Added the ability to toggle the graphical view of Wall Panel Boundary Conditions on and off.
  - Updated the Member Design Rules to not allow Min Depth to be larger than Max Depth.
  - Resolved an issue preventing the 'Save Current Settings as Defaults' option from working within the Generate Project Grid Lines dialog.
  - Resolved an issue where switching units to metric and specifying a 'Net Rectangular' wood shape size used a FS suffix instead of MFS.
  - Resolved an issue preventing the ability to change wood members from a Section Set to the Shape Database in the Properties Panel.
  - Resolved an issue where the Design List was not properly being saved in the Section Set dialog box.
  - Resolved an issue where the Design List was unable to be selected when using a wood SCL material.
  - Resolved an Exception Message when performing Undo after deleting a custom wood material.
  - Resolved an issue where negative member rotation prevented the Seismic Design Rule from being applied.
  - Resolved an issue preventing members from being drawn when a decimal value was entered into the offset field under the Member to Member draw options.
  - Resolved an Exception Message which appeared in some instances when using the Global Copy feature.
  - Corrected an issue where copying or moving plates using Local Offset used the wrong axis.
  - Resolved the inability to copy triangular area loads.

- Fixed an issue preventing the Flip Axis tool from working for selected plates.
- Corrected an issue keeping the 'Keep Tool Active' option selected after choosing a different tool from the Modify tab.
- Resolved a false warning when drawing partial line loads using the Apply to Selected feature.
- Resolved an issue preventing new point loads inputted via spreadsheet to be properly added to the Basic Load Cases spreadsheet.
- Corrected an issue preventing loads from being applied to lintels when Z is the vertical axis of the model.
- Resolved an issue causing distributed loads to become inactive when using the Split Members tool.
- Resolved an issue causing nodes to be duplicated when drawing member area loads which, in turn, prevented them from being copied properly.
- Resolved the inability to read in some custom shapes with the model.
- Resolved an issue causing a model file to become corrupt when custom shapes are added.
- Fixed an issue where custom shapes with certain name formats (e.g. names starting with numeric values) could not be saved properly.
- Corrected a rare issue where the program prevented users from recalculating section properties for a custom shape.
- Corrected an Exception Message when trying to access the Snap View buttons.
- Resolved an Exception Message when running a Model Merge in some instances.
- Corrected an issue that caused plate elements to be removed when performing a Model Merge.
- Resolved an Exception Message that appeared during solution after deleting and regenerating load combinations.
- Resolved an Exception Message when creating a saved selection state.
- Resolved several issues with retrieving saved selections in Lock/DimLock mode.
- Resolved an issue of showing warning messages for elements that are set to Inactive or Exclude.
- Corrected an issue with the analysis of members that were affected by setting loads to 'Inactive'.
- Corrected an issue where member activation turns from Inactive to Exclude after checking the Inactive (makes Active) box in the Select Elements by Property window.
- Resolved an issue preventing program generated nodes from being deleted.
- Corrected an issue preventing blank time history input files from being deleted.
- Resolved occasional errors when reading/writing to the Time History library.
- Resolved an issue causing the solution to be cleared when accessing the Pan option through the right-click menu.
- Resolved an error that was given when trying to scroll through Expanded Diagrams of member Detail Reports.
- Resolved an issue that caused an error message when trying to adjust width of Available Sections for Report window.
- Resolved an issue where the model saved results were being deleted when performing a 'Save As'.
- Corrected an issue where the unstable model dialog box and locked nodes were prompted for a model with a P-Delta divergence.
- Fixed a rare issue that would prevent the program from initializing due to the license manager.



- General:
  - Enhanced silent install functionality by disabling the program from launching after install.
  - Resolved an issue causing the program to close unexpectedly after modifying the Unscaled Base Shear when Dynamic results are present.
  - Resolved an issue that using Notional Load Generator for models with both rigid and semi-rigid diaphragms may cause an exception message.
  - Updated Reactions to show Magnitude by default when using Quick View option.
  - Resolved an issue on erroneous information shown in the properties panel after splitting members with partial length distributed load.
  - Resolved an issue preventing the program from suggesting designs from international redesign lists.
  - Resolved an issue where the ALL boundary condition created when using the 2D mode was affected by adding a new boundary condition.
  - Resolved an issue preventing newly added RSA coordinates from being automatically reordered to descending upon solving a dynamic solution.
  - Resolved an inability to view Virtual Joists in the Shape Selection dialog.
  - Corrected an issue causing incorrect density values listed in the Materials spreadsheet for the General Material Type.
  - Fixed an issue that in certain cases the Subgrade Springs feature generated springs with CS0 stiffness.
  - Resolved an issue where an Exception Message may appear when clicking the triple dots in the Seismic Design Rule spreadsheet.
  - Resolved an issue where the Generated Time History phase would give an exception message if the entry was outside of the acceptable bounds.
  - Resolved an issue with inconsistent warning messages for wall panel regions exceeding aspect ratio limits.
  - Corrected an issue causing program generated seismic loads to be deleted when an eccentricity other than 5% was entered.
  - Corrected the application of stiffness reduction factor onto nominal flexural capacity for aluminum members.
  - Resolved an issue preventing changes to the 'Stiffness Adjustment' from being saved as a default.
  - Resolved an issue causing an empty error message dialog to appear when creating a new Redesign List.
  - Resolved an issue preventing Notional Loads from generating after an attempt has been made to generate loads based on a time history load combination.
  - Corrected the wall panel boundary conditions when using the 'convert existing data' option while changing the vertical axis.
  - Resolved a graphical display error that prevented the ability to view semi-rigid diaphragm contours.
  - Resolved issues related to regenerating loads using Seismic Load Generator.
  - Corrected an issue where nodes created in RISAFloor that were copied in RISA-3D became uneditable.
  - Resolved an issue where the RSA scaling factor did not properly apply the controlling I/R limit.
  - Corrected a graphics issue where the incorrect code reference was reported in the Seismic Load Generator dialog when Seismic Design Category A was specified.

- Resolved an issue causing the value of Ct to change after pressing Calc Loads when determining the Static Base Shear.
- Corrected application of wind loading when using Wind Load Generator.
- Resolved an issue that was created by inactive Nodal Mass and Nodal Displacements affecting solutions.
- Resolved the inability to copy triangular area loads.
- Resolved an issue that caused Wall Panel Forces to be reported as zero when analyzed using a Moving Load.
- Resolved an issue where the Time History Sinusoid was not being drawn properly.
- Resolved a rare issue that was not allowing Saved Results to be read when reading File that was saved to a cloud location.
- Resolved a Graphical Display issue of Response Spectra Graph not updating with changes made in RSA Generator dialog.
- Improved the behavior of the Ribbon Toolbar such that the options on the Home tab are available when spreadsheets are open.
- Updated the geometric checks per updated Simpson's Yield-Link Design Guide for beams and columns when assigning a Simpson Yield-Link as an end release.
- Resolved an issue causing an error message after deleting all General shapes from the Shape Database.
- Corrected an issue preventing the background color from resetting to white after selecting the option to 'Reset all Program Defaults' in the Application Settings.
- Resolved an issue that caused the program to close unexpectedly when solving a load combination including Time History, but no Time History loads are defined.
- Corrected an issue where some units remained Imperial in the Add Shape window after being changed to Metric.
- Corrected the ability to change the Load Step input when multiple Animations are opened.
- Corrected an issue where aluminum members were not receiving the correct stiffness adjustment factor in some cases.
- Resolved an issue where an error message may occur when the Wall Internal Force Summation Tool is used when wall panels and other elements are selected.
- Corrected the rare case that the preview of RISASection shapes in the Shape Selection dialog was incorrect.
- Resolved an issue in some models originating from RISAFloor where an exception message appeared when attempting to delete a member after a solution has been run.
- Resolved the inability to transfer RISAFloor/RISA-3D models to RISAConnection for some users.
- Resolved an issue preventing some models from transferring to RISAFoundation due to missing scaling factor data.
- Resolved an issue causing the program to close unexpectedly in some instances when integrating with RISAConnection.
- Resolved an issue that was causing Boundary Conditions from RISAFloor to overwrite those chosen in RISA-3D.
- Resolved an issue preventing copied elements from RISAFloor from being deleted, causing the program to close unexpectedly.
- Resolved an issue preventing some models created in a previous version of RISAFloor from integrating.
- Resolved a rare occurrence that caused the model file to close unexpectedly when adding Lcomp\_bot value to a member after integrating from RISAFloor to RISA-3D.

- Resolved an issue preventing foundation elements from being retained after changes are made to the RISAFloor and/or RISA-3D models. Resolved an issue about potential shape loss assigned in RISA-3D after double round-tripping between RISAFloor and RISA-3D.
- Resolved a rare issue that would cause RISA-3D to close unexpectedly during the integration from RISAFloor.
- Improved the Reaction Elevation Variations dialog to recall the last input when integrating from RISA-3D to RISAFoundation.
- Resolved the inability to load specific shapes from RISASection into RISA-3D Database.
- Resolved an issue that caused elements linked to RISAFloor to have labels editable in RISA-3D.
- Resolved an issue that caused labels of element created in RISAFloor to not be updated in RISA-3D.
- Resolved an issue that caused relabeling of nodes to not work in RISA-3D models that originated in RISAFloor.
- Resolved an issue that prevented the deleting of materials in RISA-3D if the model originated in RISAFloor.
- Resolved an issue preventing Vertical Brace to Baseplate connections from transferring to RISAConnection from RISA-3D.
- Updated license manager application that prevented a limited number of users to launch the program.
- Enhanced silent install functionality by disabling the program from launching after install.
- Adjusted behavior of program launch when Windows color profiles are corrupted.
- Removed requirement of specific media system files to be installed for the program to run.
- Integration:
  - Corrected an issue where nodes created in RISAFloor that were copied in RISA-3D became uneditable.
  - Updated the Rendered view of RISAFloor Gravity members to include Wood and Steel Joist members.
  - Resolved an issue that was preventing the modification of Masonry Design Rules if the model originated in RISAFloor and had both Gravity and Lateral Masonry Walls.
  - Resolved an issue in some models originating from RISAFloor where an exception message appeared when attempting to delete a member after a solution has been run.
  - Resolved an issue for models originating in RISAFloor that prevented the ability to sort some spreadsheets.
  - Resolved an issue that was causing Boundary Conditions from RISAFloor to overwrite those chosen in RISA-3D.
  - Resolved an issue preventing copied elements from RISAFloor from being deleted, causing the program to close unexpectedly.
  - Resolved an issue that was caused by being able to edit the Function of Hot Rolled members from RISAFloor.
  - Resolved an issue preventing some models created in a previous version of RISAFloor from integrating.
  - Corrected values reported by the Internal Force Summation Tool when obtaining wall panel forces with flexible diaphragms.

- Resolved a rare occurrence that caused the model file to close unexpectedly when adding Lcomp\_bot value to a member after integrating from RISAFloor to RISA-3D.
- Corrected an issue causing erroneous P-Delta divergence when the model is created in RISAFloor.
- Resolved an issue preventing foundation elements from being retained after changes are made to the RISAFloor and/or RISA-3D models.
- Resolved an issue about potential shape loss assigned in RISA-3D after double round-tripping between RISAFloor and RISA-3D.
- Resolved a rare issue that would cause RISA-3D to close unexpectedly during the integration from RISAFloor.
- Resolved an issue that caused elements linked to RISAFloor to have labels editable in RISA-3D.
- Resolved an issue that caused labels of element created in RISAFloor to not be updated in RISA-3D.
- Resolved an issue that caused relabeling of nodes to not work in RISA-3D models that originated in RISAFloor.
- Resolved an issue that prevented the deleting of materials in RISA-3D if the model originated in RISAFloor.
- Improved the Reaction Elevation Variations dialog to recall the last input when integrating from RISA-3D to RISAFoundation.
- Resolved an issue preventing some models from transferring to RISAFoundation due to missing scaling factor data.
- Resolved an issue causing the program to close unexpectedly in some instances when integrating with RISAConnection.
- Resolved the inability to transfer RISAFloor/RISA-3D models to RISAConnection for some users.
- Resolved an issue preventing Vertical Brace to Baseplate connections from transferring to RISAConnection from RISA-3D.
- Resolved the inability to load specific shapes from RISASection into RISA-3D Database.
- Corrected the rare case that the preview of RISASection shapes in the Shape Selection dialog was incorrect.

## **Version 19.0.1 Enhancements/Corrections**

- General:
  - Added the ability to select the spreadsheet to automatically open after solution including disabling the Node Reactions spreadsheet.
  - Added a warning message when deleting nodes that define rigid diaphragms.
  - Added a checkbox "Keep Tool Active" for the Modify tools.
  - Improved the speed of the Wall Panel internal plate mesher.
  - Improved the Filter Results function to default to the 'Filter out UnSelected Items' option.
  - Improved the Wind Load Combination Generator by adding the option to choose None from the list of additional options available.
  - Resolved an issue causing program generated nodes to be locked for instabilities.
  - Resolved an issue preventing units from updating in some sections of the Detail Report for walls and in the wood Member Properties dialog.

- Corrected an issue allowing Nodes to be tethered to themselves.
  - Corrected an issue allowing more than 999 segments to be created when using the Split Members and Add Nodes tools.
- Resolved an issue that prevented deleting of loads when using the Click to Apply option of the Delete Multi tool.
- Enhanced the Material Take Off to list General walls independently from the other wall types.
  - Resolved an issue where loads hidden from view when the Lock and DimLock options are on got deleted when using the Delete Multi option.
  - Resolved an issue where the Internal Force Summation Tool (IFST) was not properly considering only the elements in a Locked view.
  - Resolved an issue preventing nodes to be regenerated when seismic and wind loads are generated a second time.
- Interaction:
    - Added consideration of accidental torsion for semi-rigid diaphragms for models from RISAFloor.
    - Added the ability to transfer skewed shear tab connections from RISA-3D to RISACONNECTION.
    - Fixed an issue where boundary conditions were automatically generated at the base of walls that are supported by a semi-rigid diaphragm.
    - Resolved an issue preventing wall panel boundary conditions from being deleted for models under RISAFloor.
    - Resolved an issue where a model created in RISAFloor with CFS walls would close unexpectedly during solution in RISA-3D.
    - Fixed an issue to prevent the I and J Offset parameters from being edited in RISA-3D if the Start and End Col Eccentricity from RISAFloor was checked.
    - Resolved an issue where semi-rigid wind load reactions were not equal and opposite for WL+Z and WL-Z.
    - Resolved an issue causing Drift Definitions to become corrupt when integrating with RISAFloor.
    - Corrected an issue preventing some shape properties from loading from RISASECTION files.
    - Resolved an issue where brace forces for an OCBF seismic system were not properly transferring to RISACONNECTION.
    - Resolved an issue preventing the Reset Defaults option from working within the Application Settings when the model originated in RISAFloor.
  - Wood:
    - Resolved an issue preventing the glulam database from automatically updating when switching between versions of the CSA code.
    - Corrected an issue where the incorrect value of Fb was used in the calculation for the adjusted bending design value for wood members 5in x 5in and larger.
  - Plates:
    - Improved error message reporting when the Submesh Plates tool is unable to mesh the plates.
    - Resolved an issue that occasionally prevented plates from being able to be Auto Submeshed.
  - Solving:

- Improved the warning message for members requiring P-Delta analysis to appear prior to solution.
- Corrected an issue preventing concrete wall panels from being analyzed when the 'Enforce code required P-Delta analysis' is unchecked.
- Corrected an issue where acceleration was incorrectly calculated in a Response Spectrum Analysis when using metric units.
- Resolved an issue where changes made to the Load Combination spreadsheet caused a Dynamic Solution to be cleared.
- Resolved an issue preventing seismic detailing results from being properly reported after modifying the seismic design rule.
- Resolved an issue causing erroneous transient loads when a flexible diaphragm is used and area loads are applied.
- Wall Panels:
  - Corrected an issue preventing loads applied along vertical wall panel edges from being considered in analysis.
  - Improved the behavior of Distributed Loads applied to Wall Panels with sloped edges.
  - Improved error messages for CFS walls when stud and sheathing selections are incompatible.
  - Resolved an issue where the UC for shear in concrete wall panels was erroneously reported as -1.
  - Resolved an issue preventing hold down boundary conditions from being generated at openings of CFS wall panels.
  - Corrected an issue preventing the design of some CFS shear wall panels.
  - Resolved an issue preventing the shear capacity for wood walls from being adjusted for wind loading.
  - Corrected an issue where results were reported for wall panel regions with the Transfer In option checked in the Wall Panel Rules spreadsheet.
  - Corrected an issue where a superfluous warning message is produced in some cases for CFS walls.
- Detail Reports:
  - Added the ability to open multiple enlarged force diagrams within the member Detail Report.
  - Updated deflection and shear diagram titles in member Detail Reports to be lower case y and z to indicate member local axis.
  - Improved error reporting for Custom Rebar not being within the cross section of a member.
  - Resolved an issue preventing member force or deflection diagrams from updating when switching between Load Combinations and Members in the Detail Report.
  - Resolved an issue where the UC in the Detail Report for CFS walls was reported incorrectly.
  - Corrected an issue where the incorrect governing Load Combination was reported in Enlarged Diagrams.
  - Corrected the following sections in the wood wall Detail Report: Wood Wall Summary (to report the total shear and max unit shear), Shear Panel Design (fixed the reported Adjusted Capacity), and the Chord Design (updated the header to reflect the governing UC).
  - Resolved an issue preventing the graphical display of concrete wall seismic piers in the wall panel Detail Report.

- Corrected the reported number of tension bars in the masonry wall Detail Report.
- Corrected an issue where the envelope force diagrams were not graphically displaying max and min values.
- Resolved a graphical issue where concrete metric shape properties were not properly reported in the Detail Report.
- Resolved a graphical display issue in Detail Reports where bending stresses for concrete members were off by a factor of 1000.
- Resolved a graphical display issue in the Rebar Detailing section of the Detail Report for members assigned a Customer Rebar Layout.
- Resolved an issue preventing the display of the controlling LC in the Detail Reports for concrete beams.
- Spreadsheets:
  - Resolved an issue preventing the copy and paste functions from working within some spreadsheets.
  - Resolved an issue preventing the Save as Defaults option from working within the General tab of the Materials spreadsheet.
  - Resolved an issue preventing materials using quotation marks from being saved as defaults.
  - Resolved an issue causing spreadsheets to open outside of the display window.
  - Resolved an issue preventing the Repeat Current Row option from working in spreadsheets.
  - Updated shortcut keys for input spreadsheets.
- Printing:
  - Resolved an issue preventing Detail Reports for Wall Panels from being added in the Print Report dialog.
  - Corrected an issue where BLC headers were not being shown in the printed report.
  - Resolved an issue preventing items from being removed once added to the Miscellaneous section of the Print Report dialog.
- Graphics:
  - Added the ability to display loads simultaneously with results.
  - Resolved an issue to show gridlines in the Wall Panel Editor for walls in the YZ plane when Z is the vertical axis.
  - Resolved a graphical display issue with the drawing grid in the Wall Panel Editor.
  - Resolved a graphical display issue where members with Detailing Information were rotated in the rendered view.
  - Resolved a graphical display issue that caused plates to disappear when using the Extend tool.
  - Resolved a graphical issue where distributed loads displayed incorrectly when transient loads were present.
  - Resolved an issue causing incorrect member labels to be displayed in the 3D view when viewing results.
  - Corrected an issue that caused the display of Project Grid Bubbles when the Vertical Global Axis was changed in the Model Settings.
- Operations:
  - Reduced the program launch time.
  - Resolved an issue preventing the program from opening for some users after performing the Windows Update Nov 2020.
  - Resolved a "Sequence Contains No Elements" issue preventing the program from opening in some cases.

- Resolved an issue causing a model file to become corrupt when custom shapes are added.
- Resolved an issue where a multi-threaded solution would produce different results than a single thread solution for models using Indian steel code IS 800-2007.
- Resolved a Not Unique Value issue caused by duplicate Member Design Rule labels which prevented models from opening.

## **Version 19.0 Enhancements/Corrections**

- Interaction:
  - Enabled integration with RISAFloor, RISAFoundation and RISACconnection.
  - Added the ability to transfer Response Spectra Analysis (RSA) results from RISA-3D to RISAFoundation.
  - Added the ability to import and export models from Autodesk Revit.
  - Added the ability to import and export models from Tekla Structures.
  - Added the ability to import and export to CIS/2 file format with detailing information.
  - Added the ability to import tnxTower files.
  - Added the ability to export SDNF files.
  - Added the ability to import STAAD files.
  - Resolved an issue where saved drawing grids would cause the program to close when integrating to RISAFoundation from RISA-3D.
  - Resolved an issue causing a duplicate node for a plate generated by semi-rigid diaphragms in RISAFloor.
  - Corrected an issue where saved results were incidentally deleted after integrating between RISAFloor and RISA-3D and sometimes unexpectedly close.
  - Corrected an issue where a customized wood schedule prevented a model from transferring to RISA-3D from RISAFloor.
  - Corrected an issue where nodes from non-rigid diaphragms in RISAFloor were included in the Drift Definitions spreadsheet, which only supports rigid diaphragms.
  - Resolved an issue where wind loads were conservatively generated for internal bays on some semi-rigid diaphragms.
  - Resolved an issue preventing the camber design rule for % DL from being retained when transferring between RISAFloor and RISA-3D.
  - Fixed an issue where RISAFloor member design rule camber information was not properly retained after integration.
  - Resolved an issue causing unexpected RSA results for some models transferred from RISAFloor.
  - Resolved an issue where certain models with semi-rigid diaphragms integrating from RISAFloor were reporting a non-planar plate mesh error.
  - Corrected an issue causing the program to close during solution due to slender wall panels integrated from RISAFloor.
  - Fixed an issue preventing hold downs and/or straps from being assigned to wood wall panels in some models integrated from RISAFloor.
  - Resolved a rare issue where Concrete Wall Panel Regions in RISAFloor caused the program to close in RISA-3D.
  - Resolved an issue where using shapes from RISASection prevented some User Defined shapes from being available in the Shape Database.



- Resolved an issue that was preventing integration with RISACONNECTION v11 for models with quotations in the material label.
- Fixed an issue where dynamic mass line loads applied in RISAFloor were not considered in the calculation of seismic weight in some cases.
- Resolved an issue preventing base plates and member end reactions for lateral base plate connections from transferring to RISACONNECTION.
- Resolved an issue causing an erroneous Invalid Connection error for columns assigned with a single column base plate connection.
- Resolved an issue preventing Vertical Brace to Baseplate connections from transferring to RISACONNECTION from RISA-3D
- Resolved an issue where forces associated with double sided connections were not transferred to RISACONNECTION when the member was also framing into another double sided connection.
- Updated the calculation for top column distance to consider the height of the column when integrating models to RISACONNECTION.
- Corrected the top column distance for vertical brace connections integrated with RISACONNECTION which was conservatively affecting the column flange bending check.
- Concrete:
  - Added the ACI 318-19 concrete code for beams, columns and wall panels.
  - Resolved an issue which was providing erroneous Deep Beam warnings.
  - Resolved a graphical issue in the Rebar Detailing diagrams with custom reinforcement for concrete columns.
- Hot Rolled Steel:
  - Added Seismic Detailing per AISC 341-16 and AISC 358-16.
  - Added Buckling Restrained Brace (BRB) seismic checks to the Seismic Detailing feature.
  - Added the ability to assign Simpson StrongTie Yield Link at member end releases.
  - Improved the compactness class determination for single angles with the consideration of Clause 11.1.2 and 11.1.3 according to CSA S16-14 and CSA S16-09.
  - Updated Material Defaults to Include ASTM A500 Grade C for Round and Rectangular HSS sections.
  - Clarified the seismic detailing results for the width-to-thickness ratio check to show either 'Pass' or 'Fail' when using AISC 341/358 - 2010 and 2016 codes.
  - Corrected an issue where the slenderness check per AISC 341 section F1.5b was being applied to vertical X braces.
  - Resolved an issue where false miscellaneous seismic check/warning would be given for some V and inverted-V brace configurations.
  - Resolved an issue where AISC 358 prequalification limits for beams were causing erroneous Miscellaneous Seismic Checks for columns.
  - Resolved an issue where seismic braces were designed for overstrength load combinations when the Overstrength Reqd option was unchecked.
- Solving:
  - Improved the status bar during solution to show the status of each iteration, and to show the Load Step in progress for Moving Loads.
  - Resolved an issue where a Response Spectra Analysis would cause moment reactions in some members with pinned end releases and rigid end offsets.
  - Resolved a rare issue preventing Node Reaction results from populating after a solution is run a second time.

- Resolved an issue causing the solution file to be deleted for models containing saved moving load results.
- Resolved an issue that showed results for Cold Formed Steel members when no design should have been given due to P-Delta analysis not being performed.
- Resolved an issue where K factors were being calculated for all material types when they should only be applied to hot rolled steel members.
- Resolved a rare issue preventing the display of Eigensolution results.
- Corrected an issue where the slenderness check per AISC 341 section F1.5b was applied to vertical X braces.
- Plates:
  - Added the ability to assign an Orthotropic material to plates.
  - Removed a conservative plate stiffness reduction of 1.5%.
- Solids:
  - Added Corner Force results for solids.
  - Added the ability to use the Internal Force Summation tool on solid elements.
- Wood:
  - Added the ability to edit and delete Custom Wood Materials.
  - Corrected the display of the COV\_E parameter for custom wood materials.
  - Resolved an issue causing an erroneous 'No 16 in. thickness values in database...' warning message for wood members less than 16 inches thick.
  - Corrected an issue with Cm value in E'min calculation under the combined bending and axial compression check under NDS codes.
  - Updated the calculation for the flat use factor, Cfu, for solid sawn members 5' or thicker.
  - Resolved an issue where compression analysis according to CSA 086-14 was reporting incorrect values for Fc and Kzc.
  - Resolved an issue where CSA wood material properties would not properly save, causing a 'check wood materials' warning message when opening the model.
  - Resolved an issue preventing copied wood Redesign Lists from saving.
- Aluminum:
  - Corrected the LTB slenderness calculation for Aluminum Rectangular Bars per ADM 2015 Eqn. F4-7.
- Wall Panels:
  - Added Cold Formed Steel Wall Panels
    - AISI S400-15 w/S1-16 & AISI S240-15
  - Improved the Wood Wall Definition Editor by adding drop-down options for stud spacing.
  - Enhanced the Wall Panel Editor to open as a new tab alongside the 3D View.
  - Improved the wall panel meshing algorithm and the snapping tolerance to handle walls with very small offsets (e.g. less than 1in).
  - Updated the graphical In-Plane Shear Capacity being shown in the spreadsheets and Detail reports for Concrete Walls.
  - Resolved a graphical issue in the masonry Detail Report where the Region Section did not correctly report Fail.
  - Resolved a mesh tolerance issue for wall panels that was unconservatively affecting masonry lintel forces and code check.
  - Resolved an issue where lightly loaded concrete wall panels were reporting a capacity of nearly zero.

- Corrected an issue preventing the 'Slender Compression Failure ( $P_u > .75P_c$ )' warning message from displaying in the Detail Report for slender concrete wall panels.
- Resolved an issue preventing the width of concrete Walls Panels to be converted when project Units were changed.
- General:
  - Added the ability to swap the I and J ends of a member.
  - Added the ability to include up to 100 custom other load cases.
  - Added the ability to Move elements Point-to-Point.
  - Added the ability to apply a scaling factor to Basic Load Cases.
  - Added the ability to set loads to inactive.
  - Added the ability to use the Tab key to cycle through items that are able to be selected within the 3D view.
  - Added move point to point functionality.
  - Added plates and solids to the Material Takeoff spreadsheet with the ability to exclude.
  - Added the ability to disable the Smart Ribbon behavior which opens a specific tab on the ribbon toolbar after a particular action is performed.
  - Improved keyboard shortcut behavior for switching between different property input regions.
  - Updated terminology in the program such that nodes can be tethered to other nodes rather than slaved.
  - Increased the upper limit for the number of Segments able to be created using the Split and Add Nodes tools.
  - Improved behavior of Copy, Paste and Fill tools.
  - Added the ability to view more than one Detail Report at a time.
  - Improved the behavior of the Undo command.
  - Corrected the rotation axis command in the Copy Rotation Tool.
  - Improved Line Loads by automatically populating the End Magnitude when the Start Magnitude is entered in the Property Panel.
  - Improved the behavior of the Retrieve Saved View tool.
  - Corrected an issue allowing Nodes to be tethered to themselves.
  - Resolved an issue preventing the generation of Project Grid Arcs with negative radial increments.
  - Resolved an issue where the Properties Panel did not properly update member design properties.
  - Resolved an issue where copied shapes were not saving to the database.
  - Resolved an issue where spreadsheets remained open when the program was minimized.
  - Resolved an issue to correctly display the node coordinates on hover after using the Move operation.
  - Resolved an issue where all nodes were selected when the Ignore option was chosen in the Coordinates tab of the Select by Property tool.
  - Resolved an issue preventing the Tab key from functioning in the Properties Panel after a value is entered into an empty field.
  - Resolved an issue preventing Time History animations from being exported.
  - Resolved an issue causing the location of point loads on some members to change when the Model Merge tool was used.
  - Resolved an issue preventing forces from being displayed in the Properties Panel when using the Internal Force Summation Tool.

- Corrected an issue where saving results in a model caused transient area loads to be doubled in the Distributed Loads spreadsheet.
- Fixed an issue preventing member end releases from being edited after assigning partial fixity.
- Resolved an issue causing the program to freeze when trying to split a member into a large number of segments.
- Corrected an issue where leaving the base elevation blank in the wind load generator would produce erroneous results in some cases.
- Resolved an issue causing instabilities at nodes generated by lateral load generators.
- Corrected an issue where the option to Filter out Unselected Items from Results did not work for plates with the Color Contour displayed.
- Resolved an issue where member area loads did not properly get copied when using the Global Copy tool.
- Fixed an issue preventing the option to disable Save Results with Model.
- Corrected an issue where some drawing tools were enabled while using the Snapshot feature.
- Resolved an issue where changes to the member label were not retained after closing the model.
- Resolved an issue where force values displayed in the Property Panel when using the Internal Force Summation Tool were not consistent with the Internal Force Summation pop-up dialog.
- Resolved an issue where graphical display of node coordinates weren't updating after moving the node.
- Detail Reports:
  - Added the expanded Torsional Analysis calculations in the member Detail Report for hot rolled HSS members.
  - Modified the Detail Report to clarify that the shear force includes torsion (not applicable to concrete).

Fixed a graphical issue in the hot rolled steel Detail Report for the reported shear stress due to torsion value.

  - Modified the Detail Report for wood members when the beam stability factor is 1 due to the member being fully braced.
  - Updated the graphical display of Slender Bending Span results shown in the Detail reports for Concrete Walls.
  - Resolved a graphical display error that showed incorrect Available Shear Capacity in Concrete Wall Detail Report.
  - Resolved a graphical issue in the Cross Section Detailing section for masonry out of plane reinforcement.
  - Corrected the display of values reported in the concrete member Detail Report for the depth to the equivalent rectangular stress block and for the depth to the neutral axis.
  - Resolved an issue where the masonry wall panel Cross Section Detailing graphic did not reflect the correct Wall Design Rule parameters.
  - Fixed a graphical issue in the Concrete Rebar Detailing section of the Detail Report for concrete beams with custom rebar defined.
  - Corrected a graphical issue in the Detail Report for the Shear Analysis according to CSA 086-14 which was incorrectly reporting  $V_r$  and  $F_v$ .
  - Fixed a display issue for concrete wall panels where the reinforcement layout in the Cross Section Detailing graphic did not match the wall design rule.

- Resolved an issue where custom print reports were not retained in the original program after using the Director tool to integrate between multiple programs.
- Resolved a graphical display issue in the Cross Section Detailing for concrete Wall Panels.
- Spreadsheets:
  - Added masonry wall panels, general material wall panels, and wood wall sheathing to Material Takeoff spreadsheet.
  - Added input spreadsheet for solids.
  - Added Find/Replace functionality to the right-click menu in all Input spreadsheets.
  - Improved the Enveloped Wall Panel Results spreadsheet to include an asterisk on Load Combination numbers that are overstrength.
  - Improved the Math on Block tool to apply the function to only valid highlighted cells in the spreadsheet.
  - Improved behavior of copy, paste and fill tools for input spreadsheets.
  - Improved the Member Design Rules spreadsheet to include Max Axial Check.
  - Added the ability to type directly into the Category column of the Basic Load Case spreadsheet.
  - Added the ability to sort Nodal Deflections spreadsheet when showing Batch Result grouped by element.
  - Added the ability to designate the type of lateral force resisting frame in the Seismic Design Rules spreadsheet.
  - Improved the speed and functionality for all Results spreadsheets.
  - Resolved an issue causing results in the Story Drift spreadsheet to change after results are saved.
  - Corrected an issue that enabled certain columns to be sorted in the Member Forces spreadsheet.
  - Resolved an issue in the Member Deflections spreadsheet where the absolute deflection (y) was incorrectly reported as the relative deflection (y') in the Beam Check tab.
  - Resolved an issue allowing the maximum spacing to be less than the minimum spacing for concrete wall vertical rebar when using the Fill Cells tool.
  - Fixed a graphical display issue where the per unit of length was not included in the heading of the Plate Forces spreadsheet.
  - Corrected the display of the number of decimal places for values entered in the Boundary Conditions spreadsheet.
  - Resolved an issue preventing the ability to sort the Distributed Loads spreadsheet.
  - Resolved an issue preventing the Fill Cells command from working within the Seismic Design Rules spreadsheet.
- Printing:
  - Added the ability to print Dynamic Data and Member Detailing Data.
  - Added the ability to scroll within the Print Preview dialog.
  - Added the Time History Loads spreadsheet into the Report Printing dialog.
  - Improved Report Templates to save the specific order of the sections in the report.
  - Improved the titles of spreadsheets within Printed Reports to reflect the title displayed on the spreadsheets when opened.
  - Corrected an issue where landscape oriented images did not rotate to fit portrait oriented reports when printing.
  - Resolved an issue causing a portion of the expanded Detail Report to be excluded from the Print Report when using landscape orientation.

- Corrected an issue where BLC headers were not being shown in the printed report.
- Resolved a printing issue producing blank pages in the printed report PDF.
- Resolved a rare issue that caused the program to close when attempting to print graphical image.
- Resolved an issue where certain Masonry Wall design results spreadsheets were not included in the Print Report.
- Resolved an issue preventing spreadsheet row numbers from being printed.
- Graphics:
  - General:
    - Corrected a graphical issue where member lengths displayed incorrectly in the 3D view after changing member node.
    - Improved the color coded display of Member Forces and Column Stiffener Check.
    - Resolved rare occurrence of arrows not being displayed properly in 3D View for Area Loads.
  - Results:
    - Added the ability to scale the deflected shape of the model in fractions of a whole number.
    - Enhanced the Quick View Member Label and Member Color options so that when one is changed, the other is updated to match in the 3D view.
    - Improved the display of member diagrams in the 3D view by Increasing the available range.
    - Improved the display of member force diagrams in the 3D view by disabling the member Unity Check display.
    - Improved the display of the Locked Node View by selecting the entire wall panel when the instability is a hidden node within the wall panel.
    - Corrected description of axis directions in the Slab-IFST dialog.
- Operations:
  - Added the License Manager Version number in the About RISA-3D dialog.
  - Added the ability to recover a file if the model file closes unexpectedly in an integrated program.
  - Enhanced the program to start up on the users primary screen.
  - Improved opening a model with saved results such that the Project Information dialog appears in front of the Warning Log.
  - Resolved an issue preventing a model from opening due to an erroneous Foreign Key Constraint error.
  - Resolved a rare issue that caused an exception message to appear during solution.
  - Resolved an issue causing the model file to become corrupt after using the Append feature multiple times.
  - Resolved an issue producing an Exception Message when opening a masonry Wall Detail Report with merged lintels.
  - Resolved an issue where applying an area load in some cases would cause an Exception Message.
  - Resolved a mouse issue during modeling which resulted in an 'arithmetic operation overflow' error.
  - Resolved an issue preventing the program from launching in demonstration mode after receiving the 'S303 - Connection Error' message.
  - Resolved an issue causing an erroneous Base Exchange Compatibility Warning when integrating with Tekla Structures.

- Fixed an issue where custom shapes created in RISAFoundation were not retained when integrating.
- Resolved an issue preventing the Windows Start menu to appear when RISA-3D was full screen.

## **Version 18.0.5 Enhancements/Corrections**

- General:
  - Added the ability to increase and decrease the text size displayed in a model.
  - Improved the Automesh feature to detect and create plate corners at existing nodes.
  - Improved the Move-Rotate tool by rotating all elements when the 'Apply to Selected' option is clicked, despite no elements being selected.
  - Added a message to alert the user when an invalid value for the shear modulus has been entered for a Material.
  - Added the ability to cut a Contour Diagram through the right click menu.
  - Enabled the option to Pan from the right click menu.
  - Improved the behavior of templates such that newly created elements will be selected with the Dim Lock feature enabled.
  - Resolved an issue where deflections were reported for Inactive members.
  - Resolved an issue that prevented the generation of members to 'Connect Bays' when copying.
  - Fixed an issue where design properties edited through the Properties Panel were not properly applied to the member.
  - Corrected an issue where Model Merge deleted duplicate nodes which were defined by other elements.
  - Resolved an issue where incorrect values of Ct were reported in models created in version 17 or earlier.
  - Resolved an issue where drawing an area load would, in some cases, create a duplicate node.
  - Resolved an issue where changes in the Application Settings would be applied even when the Cancel button was selected.
  - Resolved an issue where the warning log was not cleared after re-solving using Suggested Design.
  - Resolved an issue causing a Member to rotate about its own local axis when using the Move-Rotate command about a global axis.
  - Resolved an issue where incorrect node labels were defined while drawing new plates.
  - Corrected an issue that enabled the user to edit lateral loads generated by the program.
  - Corrected an issue allowing duplicate Seismic Design Rule Labels.
  - Resolved an issue where some generated seismic loads were displayed as zero kips.
  - Resolved an issue where open structure area loads were not being applied to all members.
  - Resolved an issue where the span direction was incorrect for area loads defined perpendicular to an edge.
  - Resolved an issue with changing the section set material for shapes using internal sizes.
- Interaction:
  - Added functionality to link models with ArchiCAD.

- Speed:
  - Improved the speed of opening input and results spreadsheets.
  - Improved the speed of cancelling while a solution is in progress.
  - Improved the speed of opening new model files from outside of the program while the program is open.
  - Improved spreadsheet functionality and speed as the program is used over time.
  - Improved the speed of the program when animated results are displayed.
  - Improved the speed of toggling the results display spreadsheets between Load Combinations and Elements.
- Wood:
  - Added the E05 wood parameter into the Custom Wood dialog.
  - Added factored compression resistance into the Combined Bending + Axial section for glulam Detail Reports per Clause 7.5.12 (CSA 086).
  - Added the ability to open the Custom Wood Database without needing to define a Custom Wood Material prior.
  - Resolved an issue that prevented SCL materials from being recognized for wood members designed with CSA 086.
  - Resolved an issue where lambda was not correctly considered in the wood flexural capacity.
  - Resolved an issue to correct the governing location for wood members designed with CSA 086.
  - Resolved an issue where the moment component was not being considered in the Bending and Axial Compression Analysis for wood members designed with CSA 086.
  - Corrected an issue where material type was not correctly displayed in the Shape Selection dialog for wood materials.
  - Corrected an issue where the incorrect value for unbraced length was used in the calculation for the slenderness ratio of wood members.
  - Corrected a display issue where incorrect metric units were shown in the wood Shape Selection dialog.
  - Resolved an issue where negative bending allowable stress was used for glulam members when positive bending allowable stress should be used.
  - Corrected an issue that prevented the Wood Type from saving for newly added Custom Wood Species.
- Wall Panels:
  - Added the Flip Wall Axis option to the Modify ribbon toolbar.
  - Enhanced the Flip Wall Axis option to consider openings.
  - Improved the display of selected wall panel edges when applying loads.
  - Added a warning message to alert users when attempting to draw on wall panels without first deleting regions.
  - Improved Diagram Report to show discontinuity in the force diagram where openings occur.
  - Fixed an issue where hold downs were not designed for interior boundaries of segmented wood wall panels.
  - Resolved issues preventing edits to be made to the Design Rules for openings in wood wall panels.
  - Resolved an issue preventing point loads from being applied to wall panels.
  - Resolved an issue that prevented wood wall header results to be shown when using FTAO in Wood Walls.
- Graphics:



- Added the ability to display loads on a deflection animation.
- Improved 3D view of locked nodes when instabilities are detected.
- Improved the display of plates when showing an animation of deflection.
- Enhanced display of Degenerate Plates by activating Dim Lock.
- Corrected a display issue with the values on the X-axis in the Contour Diagram Report.
- Resolved an issue preventing the color coded unity check to be viewed while animating the deflected shape.
- Resolved an issue preventing the graphical display of member forces while using the Filter Results command.
- Resolved an issue where the display of a Load Combination did not include all applied area loads.
- Resolved an issue where the magnitude of animated moving loads were always displayed in units of kips.
- Corrected a display issue where Partial Length line loads were reported as 0-100% in the Property Grid.
- Corrected an issue where the Diagram Report displayed a different force diagram than the Wall Panel Contour Cut.
- Resolved a display issue caused by making an animation window full screen.
- Corrected a display issue where details in the information box were incorrectly reported when member deflection ratio labels were displayed in the 3D view.
- Resolved an issue where a Contour Diagram for a single wall would display on several walls.
- Corrected the graphic display of transient wall panel loads.
- Resolved an issue where the Contour Diagram reset the contour basis to Qx.
- Detail Reports:
  - Added the Unity Check to the top of the Detail Reports.
  - Added a vertical tracking line that follows the cursor when viewing enlarged force diagrams.
  - Improved enlarged deflection diagrams by indicating support locations for multispan members.
  - Resolved a graphical display issue with metric units in Masonry Wall Panel detail reports.
  - Resolved an issue where column interaction diagrams were erroneously displayed in Detail Reports for concrete members when no rebar layout was defined.
  - Resolved an issue where the Multiple Screen Window Behavior was preventing a previously opened detail report from staying open.
  - Corrected the display of maximum and minimum forces in enlarged force diagrams for members with custom rebar defined.
- Spreadsheets:
  - Added the ability to reset the spreadsheet column widths to Default values.
  - Added the ability to sort by relative deflections in the Beam Defl tab of the Member Deflections spreadsheet.
  - Added the ability to use the Fill Cells, Copy, and Paste commands into cells with drop down lists.
  - Improved Member spreadsheet by filtering available Design Lists for each material.
  - Enabled the Fill Cells command in the Wall Design Rules spreadsheet.
  - Improved the Seismic Design Rules spreadsheet by disabling the ability to edit the Overstrength Req'd check box for columns.

- Improved the Member Deflections spreadsheet by filtering out material types where deflections aren't calculated for Service and/or Strength Load Combinations respectively.
- Enabled Math on Block in the Boundary Conditions spreadsheet for boundary conditions defined as springs.
- Improved results reporting by including an asterisk to indicate which load combinations include overstrength factors in Envelope spreadsheets.
- Improved the Load Combinations spreadsheet by preventing invalid values from being input in the BLC column.
- Added error message when trying to create a new line in the Advanced tab of the Wall Panel spreadsheet.
- Resolved an issue where the order of load combinations was different between the Combination and Design tab of the Load Combinations spreadsheet.
- Fixed a graphical issue where the header of the Plate Forces spreadsheet did not correlate with the selected length units.
- Fixed the Copy/Paste command in the Member Advanced Data spreadsheet.
- Resolved an issue preventing a row from being deleted from the General tab in the Materials spreadsheet.
- Resolved an issue preventing the Math operation from working in the Wall Design Rules spreadsheet.
- Resolved an issue preventing a new row from being added to the Drift Definitions spreadsheet.
- Resolved an issue preventing a valid Section Set from being pasted into another row in the Section/Shape column of the Members spreadsheet.
- Resolved an issue where the Filter Results selection did not affect the Material Takeoff spreadsheet.
- Resolved an issue preventing the Ignore After option from working in the Code Check spreadsheet.
- Resolved an issue for stainless steel members where Fill Cells command filled the wrong cell in the Members spreadsheet.
- Resolved an issue that prevented information from being pasted into the Function column of the Time History Loads spreadsheet.
- Resolved an issue causing information to be pasted in the wrong location in the Time History Loads spreadsheet.
- Resolved an issue with sorting in the Member Forces spreadsheet.
- Resolved an issue preventing the Fill Cells operation to work for partially fixed advanced members.
- Resolved an issue where members assigned custom supports did not have an asterisk in the Beam Defl tab of the Member Deflection spreadsheet.
- Resolved an issue where the Property Grid and 3D view did not update when a shape was copy and pasted in the Section Set spreadsheet.
- Resolved an erroneous error message that appeared after deleting all Time History Loads from the spreadsheet.
- Printing:
  - Added the option to include the Spectra Scaling Factors report in the Report Printing options.
  - Enhanced printed spreadsheets by adjusting the column widths.
  - Added the ability to adjust the text size of spreadsheets when printing a report.
  - Improved the flexibility of the Print Report Layout to allow for resizing of lists.

- Reduced the file size of PDF reports.
- Added the ability to include sections from the Advanced tab in Report Templates.
- Added the ability to print the Wall Suggested Design spreadsheets for Masonry and Wood wall panels.
- Improved printed Model Settings by adding sub-headers for each section.
- Added the ability to change view options of individual detail report within a printed report.
- Improved Detail Report Options for Wall Panels in Report Printing.
- Improved the titles of spreadsheets to better represent the tables being included in a report.
- Enabled a larger Report Preview by rearranging items in the Report Print dialog.
- Resolved an error in the page numbers when printing reports with non-default page numbering.
- Resolved an issue where bottom plate stresses were included in the report when Top Stresses Only option was checked.
- Resolved an issue that prevented all Node Reactions from being displayed in printed reports.
- Resolved an issue where only a portion of the spreadsheet would print when the Print Entire Spreadsheet option was selected.
- Resolved an issue preventing the Print Preview to be displayed in its entirety.
- Resolved an issue where spreadsheets and graphics were overlapping the report footer.
- Resolved an issue with the flat file to report the correct number of lines in the Global Data section.
- Resolved an issue where enabling the Member End Point option did not update the reported Member Section Forces.
- Resolved an issue preventing detail reports from fitting to the page in landscape orientation.
- Resolved an issue preventing the full expanded detail report for wall panels from being printed.
- Operations:
  - Customized Sentinel RMS 9.6 for use with RISA Network Licenses.
  - Improved messaging when database files are unable to be located.
  - Improved Log File reporting when an error message occurs on startup.
  - Resolved several Exception Messages for specific models.
  - Resolved an issue preventing the ability to scroll through the list of RISASection shapes in the Shape Database dialog.
  - Resolved an issue preventing program initialization when certain file locations are changed from the default in Application Settings.
  - Resolved an issue preventing warnings from being reported when mesher errors occur.
  - Corrected a display issue where the windows taskbar hid the program interface when maximized.
  - Resolved an issue that prevented the program from initializing on first startup.
  - Resolved an issue that caused the program to close unexpectedly during the animation of Time History Loads.
  - Resolved an issue where the program was reporting an 'unable to obtain lock' error message.
  - Resolved an issue preventing nodes from being deleted after using the Undo function.

## Version 18.0.4 Enhancements/Corrections

- General:
  - Enabled the Click to Locate option for the DXF Underlay tool.
  - Enabled the Contour Diagram feature when displaying color contour results for plates and wall panels in the graphical view.
  - Enabled the Contour Cut Diagram Report which displays the contour diagram in an expanded view.
  - Fixed an issue preventing an element from being selected with a single click while using the modify tools.
  - Resolved an issue to correct the left and right height options in the truss generator.
  - Resolved an issue with Perpendicular Snap Setting creating zero length members.
  - Resolved an issue where performing a Full Model Merge was not merging all crossing members.
  - Corrected the Model Merge tool to apply to all members when the whole model is unselected.
  - Resolved an issue where point loads were always applied at 0' when using the Apply to Selected option.
  - Corrected an issue for a specific model where erroneous load was generated using the Wind Load Generator.
  - Resolved an issue where the seismic weight reported in the seismic load generator did not match the sum of the node reactions.
  - Corrected an erroneous P-Delta warning message after solution.
  - Resolved an issue when solving with suggested design when the 'enforce code required P-Delta analysis' option is turned off.
  - Corrected the behavior of Story Drift values in the spreadsheet turning red if they exceed the allowable amount.
  - Resolved several Exception Messages for specific models.
  - Fixed an issue to properly report the version number in the model text file.
- Speed:
  - Improved spreadsheet functionality and speed as the program is used over time.
  - Increased the speed of the Round Off Joint Coordinates tool.
  - Increased the speed for the Degenerate Plate Check tool.
  - Improved the speed of the rectangular tank generator.
  - Resolved an issue where deleting large amounts of selected elements took an excessive amount of time.
- Hot-Rolled Steel:
  - Corrected the display of the slenderness ratio in compression in the Detail Report.
- Concrete:
  - Added the AS/NZS 4671:2001 rebar set.
  - Added the lintel force diagrams to concrete wall panel Detail Reports.
  - Added the concrete design values to the expanded diagrams in the Detail Report.
  - Resolved a graphical issue where the concrete column rebar was not displayed in the Rebar Detailing diagram.
  - Corrected an issue for concrete beams using custom shear reinforcement instead of using the design rule.
  - Resolved a graphical display issue in the Wall Panel Editor results where concrete reinforcement was shown using metric bar sizes.

- Resolved a graphical issue where concrete lintels were not displayed on the same plane as the wall in the wall panel editor.
- Wood:
  - Corrected the Members spreadsheet to specify the system factor, KH, for Canadian codes.
  - Resolved an issue where the positive and negative bending allowable stresses were switched for glulam materials.
  - Resolved a graphical error for wood members using CSA 086-14 where the shear capacity was reported incorrectly in the Member Detail Report.
  - Resolved an issue where the wood bending capacities using CSA 086 were reported in the wrong units in the Member Detail Report.
- Masonry:
  - Enhanced the masonry wall panel Detail Report to list the total lintel depth in the geometry summary.
  - Fixed the units for required and available forces reported in the Design Summary of the masonry wall panel Detail Report.
  - Corrected the text in the masonry wall Detail Report to display 'Boundary Reinforcement' instead of 'Diagonal Reinforcement'.
  - Resolved an exception message when opening the Detail Report for a masonry wall panel.
- Wall Panels:
  - Added an error message to alert users when attempting to draw openings over wall design regions.
  - Resolved an issue to allow multiple grid lines to be specified in the Wall Panel Editor.
  - Resolved an issue to enforce the start and end location logic for distributed loads on wall panels.
  - Resolved a graphical issue that allowed point loads using percentage to be applied beyond the geometry of a wall panel.
  - Resolved an issue where full length distributed loads applied to wall panels retained partial length information.
  - Resolved an issue where wall panel reinforcement was not utilizing the Wall Design Rules.
  - Increased the visibility of the selected plates when using the Wall Panel Internal Force Summation Tool.
  - Resolved an issue where wall panels would show their deflected shape when the Internal Force Summation Tool was in use.
- Graphics:
  - Enhanced the force diagrams displayed graphically by increasing the allowable decimal places for the magnitudes.
  - Resolved a graphical issue where column rotation was not displaying correctly for some members.
  - Corrected a display issue where members were not color coded based on their Section Set.
  - Corrected the member label graphical display to show the correct unbraced length dimensions.
  - Resolved an issue with graphically displayed loads where the magnitudes did not reflect duplicate or seismic factors from the load combination.
  - Resolved a graphical issue where tapered wall surface loads were incorrectly displayed.

- Resolved a graphical issue where projected line loads were displayed using the full magnitude.
- Resolved an issue with the graphical display of loads in load combinations with the category set to None.
- Resolved a display issue for transient area loads.
- Corrected a display issue where the transient member distributed loads were shown after the results were cleared.
- Corrected the deflected shape button to behave as a toggle to change display options.
- Resolved an issue with the Internal Force Summation Tool only displaying results for the first solved load combination.
- Detail Reports:
  - Added the wall panel label into the Detail Report.
  - Enhanced the expanded envelope force diagrams to properly report the maximum, minimum values, and relative load combinations.
  - Enhanced the detail report enlarged force diagrams to behave as a slider.
  - Enhanced the effective shear area reported in the expanded detail report calculations to provide clarity on factors used to account for shear stress distribution.
  - Corrected the display of the deflection ratio in the Detail Report enlarged deflection diagram.
  - Updated the deflection ratio reported in the Detail Report for multi-span beams.
  - Corrected a display issue that caused the detail report axial diagram to be increased by 12.
- Spreadsheets:
  - Added a Spreadsheet dropdown menu where you can open spreadsheets and show open spreadsheets.
  - Added Undo and Redo options into the right-click menu from within spreadsheets.
  - Added a Save As Default feature to the Load Combinations spreadsheet.
  - Enhanced the wall panel point and distributed loads to be edited from the Loads spreadsheets.
  - Added a Re-Solve button to the Suggested Design spreadsheet.
  - Corrected an issue where the spreadsheet width was not saved.
  - Resolved an issue preventing the properties from being changed through the Section Sets spreadsheets.
  - Resolved an issue preventing all section sets from appearing when modifying members through the Members spreadsheet.
  - Corrected the ability to copy and paste flexural rebar design parameters in the Members spreadsheet.
  - Corrected an issue that changed the load type after copy and pasting into Basic Load Cases spreadsheet.
  - Corrected an error in the Load Combination spreadsheet after deleting spreadsheet lines.
  - Corrected an issue where the sorted display was not saved in the Node Reactions spreadsheet after the spreadsheet was closed.
- Printing:
  - Added the Model Settings to the Advanced tab in the Report Printing dialog.
  - Added the ability to Print Selected Lines in spreadsheets.
  - Enhanced printed spreadsheets by adjusting the column widths.
  - Enhanced spreadsheet behavior to print as displayed if sorted.

- Resolved an issue where the printed Model Setting parameters were not updated correctly.
- Corrected the Print Report to keep the Model Settings from changing locations in the report.
- Fixed missing column labels when printing the Deflection Design Rules.
- Corrected the display of the expanded Wall Detail Report to fit to the full print page.
- Corrected the behavior of the print settings: All Member Sections and Member End Points.
- Interaction:
  - Resolved an issue where certain properties were zeroed out for some hot rolled RISASection shapes.
  - Corrected an issue during save that caused incorrect file extensions for RISA-2D files imported into RISA-3D.
- Operations:
  - Enhanced the Starting a Model dialog to include access to learning tools.
  - Added options for window behavior to choose between Single Window Focus, Multiple Screen, and Auto-Docking Windows.
  - Resolved an issue where a model could not be opened from the File Explorer while an instance of RISA-3D was in progress.
  - Corrected an display issue where the edges of the application was cut off when the application was moved to multiple monitors of different resolutions.
  - Resolved an issue with online shapes that caused the program to freeze.
  - Resolved an issue where the warning log was not cleared after opening a new model.
  - Resolved some issues causing the program to shut down during initialization.

## **Version 18.0.3 Enhancements/Corrections**

- General:
  - Added the ability to import a DXF drawing grid.
  - Added the ability to quickly switch your model into 2D Mode.
  - Enhanced the Copy Global tool with 'Connect Bays' to use W8x10 for connecting members.
  - Updated the Model Merge tool to detect zero length members and eliminate them.
  - Updated the behavior when moving wall panels to retain their original openings and boundary conditions.
  - Corrected an issue where the 'Click to Locate' function for drawing grids was not working as expected.
  - Resolved an issue where changing the skew angle in the drawing grid caused additional decimal points to appear in the node coordinates.
  - Resolved an exception message caused by invalid data in the Saved Drawing Grids.
  - Resolved an issue where the active tool (ie. Draw Members) would drop after the first click.
  - Fixed an issue where the Extend tool was incorrectly deleting members.
  - Resolved an issue where splitting or adding nodes to locked elements was also modifying the unlocked portion of the model.
  - Resolved an issue where canceling a modification still produced the Clear Results warning.

- Resolved an issue where an incorrect number of duplicate members was being reported in the model merge.
- Resolved an issue that prevented Selection States to be saved with a model.
- Hot-Rolled Steel:
  - Resolved an issue where the torsional strength for a tube shape was reported with the wrong units in the Detail Report.
  - Fixed an issue where the lateral torsional buckling calculation was missing in the hot-rolled angle detail report.
- Concrete:
  - Added the moment interaction diagrams in the Detail Report for concrete rectangular columns.
  - Enhanced the metric bar size notation for reinforcement when ASTM A615M rebar is selected.
  - Resolved an issue with concrete columns where perimeter bar sizes were reported as CUSTOM despite having assigned Design Rules.
  - Resolved an issue where Custom Rebar Layouts were not saving.
  - Resolved an exception message when opening the detail report for a round concrete beam.
  - Resolved a graphical display error where concrete column detail reports showed incorrect moment of inertia values.
  - Updated the Concrete Reinforcement spreadsheets to properly display concrete reinforcement detail.
- Wood:
  - Updated the Design tab of the Load Combinations spreadsheet to display KD when a CSA 086 wood design code is selected.
  - Updated the wood material default values in the Materials spreadsheet to include SCL materials.
  - Resolved an issue that prevented custom wood materials from being created through the Materials spreadsheet.
  - Corrected the displayed solid sawn design values in the Shape Selection database.
  - Resolved an issue opening SCL wood databases when switching design codes.
  - Corrected the shear design value for glulam members using NDS 18 LRFD.
  - Corrected an issue where the wood hold down record counter would become corrupted in some cases.
- Masonry:
  - Corrected graphical errors in the masonry wall panel Detail Report.
- Cold-Formed Steel:
  - Fixed an issue for custom ZS shapes where gamma was saved in radians instead of degrees.
  - Resolved an issue where cold formed steel properties weren't displaying correctly within the Code Check spreadsheet.
- Stainless Steel:
  - Corrected the phi and omega factors when switching between LRFD and ASD design codes.
- Graphics:
  - General:
    - Added the ability to search for inactive members and walls.
    - Added the graphical option to customize the scale of nodes.



- Added the ability to graphically display the additional boundary conditions created when using the All command.
- Added the ability to click white space to clear the current selection.
- Enhanced the graphic display of the Response Spectra input table.
- Resolved an issue where the 3D View was not showing the model.
- Resolved an issue where splitting a member was not retaining the distributed load.
- Resolved an issue where full length distributed loads retained partial length information.
- Wall Panels:
  - Enhanced the visibility of wall panels and plates to show in front of the drawing grid.
  - Corrected a graphical issue that did not launch the Wall Panel editor after double-clicking the wall panel.
  - Resolved a graphical issue that allowed point loads to be applied beyond the geometry of a wall panel.
  - Increased the visibility of the selected plates when using the Wall Panel Internal Force Summation Tool.
- Results:
  - Added the deflection ratio check to the Design Properties section of the Member Detail Report.
  - Added buttons in the Results Explorer panel to view either the Envelope or Batch spreadsheet results.
  - Enhanced the Internal Force Summation tool to report the forces in the information box in the Properties Panel and consider the selected Results View option in the 3D View.
  - Updated the Member Detail Reports to report the current member label and load combination.
  - Resolved an issue where the size adjustment setting was not applied to the Node Reactions.
  - Resolved an issue where wall panel deflection would not animate if stress contours were displayed.
  - Fixed an issue where the time steps were not changing when viewing an animated time history load combination.
- Spreadsheets:
  - Added functionality to utilize online shapes in the Section Sets spreadsheet.
  - Enhanced the spreadsheet behavior to allow the arrow keys to move the cursor within the text.
  - Refined the behavior of spreadsheets when pressing Enter to accept the entry and go to the next row.
  - Corrected an issue where pasting into the Nodal Loads spreadsheet would always assign the load type as displacement (D).
  - Corrected an exception message caused by the 'Insert Row Above Selected' option in the load spreadsheets.
  - Fixed an issue where specifying rectangular (RE) shape sizes in the Section Sets spreadsheet caused error code 1043.
  - Resolved an issue where the member size could not be changed after selecting a General section set in the Members spreadsheet.

- Fixed an issue where the 'Ignore After' and 'Show All' options were not filtering the Code Check results.
- Plates:
  - Improved the speed of the plate submesh routine.
  - Resolved an issue where incorrect label prefixes were used in the Quad and Tri plate submesh option.
  - Resolved an issue where existing plates weren't able to be submeshed using the Auto Submesh option.
  - Corrected the Degenerate Plate Check to find non-planar plates.
- Shortcuts:
  - Enabled Ctrl+Alt+M to open the Materials spreadsheet.
  - Resolved exception messages when using shortcut key combinations.
  - Resolved an issue where Ctrl+Alt+I inverted the selection instead of opening the Diaphragms spreadsheet.
  - Fixed an issue where Ctrl+Alt+L locked the unselected part of the model instead of opening the Load Combinations spreadsheet.
- Solving:
  - Resolved an issue where the program was unable to solve an Envelope solution after solving a single Load Combination.
  - Resolved an issue where the warning log was not reporting the location of a meshing error.
- Printing:
  - Added the ability to print an individual spreadsheet.
  - Added the ability to print directly from the Internal Force Summation Results dialog.
  - Added the ability to print the Rebar Detailing section of the Concrete Detail Report.
  - Corrected an error where printing reports would cause the program to unexpectedly close.
  - Resolved an issue where items added to the report weren't saved after the Report Printing dialog was closed.
  - Resolved an issue where the program wasn't loading previously created Report Templates.
- Interaction:
  - Added the ability to Append one model into another model.
  - Resolved an issue where certain RISASection files were not allowing the program to open.
- Operations:
  - Updated the program to prevent users from accessing a RISA-3D model that is already open by another user.
  - Modified the preview file (.prv) to be a hidden file.
  - Corrected an issue to properly save files with the .r3d file extension after importing DXF.
  - Resolved an issue that occasionally caused the program to freeze while Clearing Results after modifications are made with results present.
  - Resolved issues with the backup file where they sometimes could not be opened or re-saved.
  - Fixed an issue where the program would automatically minimize after clearing results.
- Licensing:
  - Updated the program to enable subscription license users to borrow a license from the cloud service for offline use.

- Added the ability to run the program in demonstration mode when no license is available.
- Added functionality in new Licensing Dashboard.

## **Version 18.0.2 Enhancements/Corrections**

- General:
  - Updated the program to make it easier to change the region as defined in Application Settings.
  - Improved functionality of the Fluid Load Generator in the Rectangular Tank Template.
  - Resolved a units issue where the Linear Force units were not properly retained in the interface.
  - Updated the application of point loads to only apply along the length of the member chosen.
  - Resolved an issue where pressing 'Apply to Selected' when elements were locked was also applying loads to the unlocked portion of the model.
  - Enhanced the selection states to differentiate between capital letters for labels that were flagging a duplicate label warning.
  - Resolved an issue where the solution was cleared after adding project grid lines.
- Analysis:
  - Improved the speed of solution for plate elements.
  - Resolved an issue preventing some models from solving a dynamic analysis with an odd number of modes.
  - Corrected an overly conservative design when using P-Delta with mt/m for Linear Force units.
- Design:
  - Resolved an issue with suggested design when the member design list differed from the assigned member shape type.
  - Fixed an issue where solving the model with the suggested design caused an erroneous P-Delta error.
- Hot-Rolled Steel:
  - Updated the hot rolled steel compression capacity for wide flange members to consider the flexural-torsional buckling limit state if  $L_{torque}$  is greater than either  $L_{by-y}$  or  $L_{bz-z}$  per Section E4 for AISC 15th and 14th Editions.
  - Updated the code checks for steel members with slender elements to properly include limit state of FTB per AISC 14th Section E7.
  - Resolved an issue where columns with pinned end releases were reporting panel zone checks.
  - Resolved an issue where the web slenderness check for members with minimal frame ductility was using moderate frame ductility requirements.
- Concrete:
  - Updated the warning reported in the Code Check spreadsheet for concrete members which qualify as deep beams.
  - Fixed an issue where certain multi-span concrete beam models were reporting inconsistent required moments when solved with a single threaded versus multi-threaded solution.
  - Resolved an issue that produced erroneous concrete reinforcement warning messages in the warning log.

- Wood:
  - Enhanced the Design List for wood members by setting defaults based on the selected material.
  - Resolved an issue that prevented users from entering a size of less than 2" (thick) and/or 3" (depth) for Full Sawn wood members.
  - Corrected an issue where wood shear panel design was incorrectly processing the shear schedule database.
  - Resolved an issue where certain wood wall panel models with applied point loads would cause the program to close unexpectedly.
  - Enabled the multi-ply and ply connection options for members using SCL or Custom wood materials.
- Masonry:
  - Resolved an issue where certain models containing masonry wall panels were not opening properly.
  - Fixed an issue where certain models were producing inconsistent out of plane masonry capacities when solved with single threaded versus multi-threaded solution.
- Aluminum:
  - Resolved an issue preventing custom solid rectangular aluminum shapes from being recognized.
- Cold-Formed Steel:
  - Resolved an issue where tubes using codes older than 2007 were erroneously reporting a code check. Cold formed tube shapes only apply to the 2016/2012/2010/2007 codes.
- Graphics:
  - Graphical View:
    - Added the Dim Lock tool which allows the user to Lock a model, but still display the Unlocked elements as greyed-out elements.
    - Resolved a display issue where selected elements were erroneously hidden when using the Lock tool.
    - Corrected a display issue where all node reactions were displayed when using the Lock tool.
    - Added the ability to use Undo while deleting members of the model.
    - Fixed an issue where models containing only solids were not properly displaying stress contours.
  - Ribbon Toolbar:
    - Corrected an issue to activate the Detail Report button from the Results tab when in Results spreadsheets.
  - 3D View:
    - Improved the graphical scaling of reactions.
    - Resolved a display issue that limited the visibility of the reaction magnitudes.
  - Properties Panel:
    - Enhanced the column widths to automatically size based on contents.
    - Resolved an issue where creating a new basic load case would use gravity factors from the previous basic load case.
    - Resolved an issue where re-assigning member end nodes was not capturing the modified member length.
    - Corrected an issue where deflection ratio options were not saved.
    - Resolved an issue where assigning an explicit wood shape was not applying the selected material.

- Selection:
  - Improved the selection of loads when using the Select Elements by Properties tool.
  - Enhanced the loads tab in the Select Elements by Property dialog by adding a checkbox to take the absolute value of the loads in the model.
  - Resolved an issue that prevented all section sets from appearing in the Select Elements by Property dialog.
- Dialogs:
  - Updated the keyboard Escape behavior to close dialogs, and not windows, when pressed.
- Spreadsheets:
  - Added the ability to filter Input spreadsheets based on the graphical selection.
  - Improved spreadsheet behavior to prompt a warning if a property is attempted to be deleted while being assigned to one or more elements.
  - Enhanced the sorting hotkey (F9) with more options while in spreadsheets.
  - Improved the speed of opening spreadsheets.
  - Decreased the time it takes to sort the Code Check spreadsheet.
  - Improved the Story Drift Results spreadsheet to switch between the By Combination and By Item presentation.
  - Added the ability to use the Fill Block command in the Boundary Conditions spreadsheet.
  - Resolved an issue to allow data to be entered in the Advanced tab of the Boundary Conditions spreadsheet.
  - Corrected issues with copy and paste in some spreadsheets.
  - Resolved an issue to show all required decimal places in the Member Torsions spreadsheet.
  - Resolved a graphical issue in the Seismic Detailing spreadsheet where certain beams erroneously reported a failing Miscellaneous Check.
  - Resolved a graphical issue where braces with the KL/r requirement unchecked in the seismic design rule were failing slenderness in the Seismic Detailing spreadsheet.
  - Fixed a graphical issue in the Material Takeoff spreadsheet where the incorrect units were displayed.
  - Fixed a display issue that was not reporting the specific governing time step in the results spreadsheets for a time history solution.
- Detail Report:
  - Enhanced the wall panel detail report to include units for the reported Required and Available values in the Detail Report Design Summary.
  - Corrected a graphical display issue where the reported moments for the Cb calculation were erroneously displayed as zero for CSA S16-14.
  - Resolved incorrect dimensions shown on the rebar detailing cross section in the Detail Report.
  - Fixed a display issue preventing wall panel design results from displaying in the detail report.
  - Resolved a display error that did not show the lintel design in masonry wall panel detail reports.
  - Resolved an issue caused by clicking to the next member from an expanded detail report diagram.
- Printing:

- Updated the default name of printed PDF files.
- Added the ability to Print directly from the Wind, Seismic, and Notional load generators.
- Added a custom or summary detail type to the wall panel detail report.
- Fixed the 'Add to Full Report' option to add member and wall detail reports when the Report Printing window is open.
- Resolved an issue preventing Flat Files from being written for certain models.
- Resolved an issue where printing the Envelope Detail Report caused the program to close unexpectedly.
- Report Printing Dialog:
  - Updated the arrows in the Available Sections For Report to better clarify the collapse/expand functionality.
  - Improved printing behavior for the Advanced items in the report printing.
  - Enhanced the Snapshot feature to display the images under the Advanced section of the Report Printing dialog.
  - Refined the presentation of the dragging/reordering sections behavior.
  - Fixed issues where using the "Select All" option to print detail reports caused the program to hang.
  - Fixed an issue where the currently selected detail reports were not properly clearing after using the "Unselect All" option.
  - Resolved an issue where images could not be re-ordered in the report.
  - Resolved an issue when specifying different values within the page report numbers.
- Print Preview:
  - Resolved an issue where the print preview page size was shown very small.
  - Resolved an issue where the print preview was not reflecting changes made to the current sections in the report.
- Interaction:
  - Added DXF import and export.
  - Resolved an issue that prevented some RISASection files from being recognized in RISA-3D.
- Operations:
  - Added the ability to access the RISA-3D Help document directly from the File menu.
  - Added a Save prompt when closing to retain newly created selection states.
  - Resolved an issue where a new model could not be opened if the current model was solved.
  - Resolved an issue where terminating the solution from the solution dialog would cause the program to lock up.
  - Fixed the Recall Last Dialog/Tool option from the right-click menu to work for all tools.
  - Resolved an issue where the program was unexpectedly closing during initialization.
  - Resolved an issue during installation where some defaults were not properly used based on the selected region.

## **Version 18.0.1 Enhancements/Corrections**

- Design:
  - Added additional metric bar sizes for the ASTM A615M rebar set.
  - Enhanced member design properties to prevent an entry of zero for Cb.

- Corrected an issue with the reporting of the lateral torsional buckling factor ( $C_b$ ) according to AISC.
- Refined deep beam criteria according to ACI 318-14 Section 9.9.1.1(a).
- Resolved an issue where concrete shear walls were not reporting qualifying seismic piers.
- Resolved a display issue for In-Plane Reinforcement of Masonry Shear Walls in Detail Reports.
- Corrected an issue with optimizing wall panel hold down selection.
- Corrected the wood wall capacity adjustment factor, ( $2w/h$ ), to apply to both seismic and wind load combinations per AWC NDS SDPWS 2015 and 2018. Previous codes applied to wind only.
- Updated the wood wall calculation of ' $\Sigma L_i$ ' per AWC NDS SDPWS 2015. This will affect the Shear Capacity Adjustment Factor, ( $C_o$ ), and the Sheathing Area Ratio, ( $r$ ).
- Resolved an issue where wood design results gave a design check value of infinity (reported as '-nan(ind)' in the output).
- Resolved a units issue for wood wall axial stud spacing results.
- Resolved a units issue for metric envelope beam deflections.
- Resolved an issue with the user input RSA scaling factor.
- Resolved an issue where the solver was not able to mesh certain area loads.
- Integration:
  - Restored the ability to import a RISA-2D model.
- Graphical View:
  - Increased the brightness of the selected items in the graphical view.
  - Improved the scaling of the load display in the 3D View.
  - Added the ability to select 'Model View Settings' and 'Results View Settings' by right clicking in the 3D model view.
  - Revised the appearance of distance tool in dark mode.
  - Corrected a display issue of the results graphically where it did not toggle between Load Combination/Category/Basic Load Case.
  - Corrected a display issue for rendered or color coded members with results present.
  - Corrected an issue that caused the 3D View not to display for some operating systems.
  - Corrected an issue with the display of animated models.
  - Resolved an issue where locking the model in certain views would cause it to close unexpectedly.
- Ribbon Toolbar:
  - Added the ability to use the Undo while drawing or modifying the model.
  - Enhanced the Results quick view button to display the unity check member label.
  - Moved the Delete All Wall Regions button next to other Delete features in the Modify tab.
  - Resolved an exception message that appeared when the Point Moving button was clicked when no moving load patterns were defined.
  - Increased the significant digits in the Wall Panel Editor drawing grid to hundredths.
- Properties Panel:
  - Updated the Point Moving Load feature to the Properties Panel, similar to other drawing tools.
  - Corrected the Properties Panel to remove rebar parameters for non-concrete members.

- Corrected the selection of the rebar set for concrete members.
- Refined Property Panel behavior when a nominal wood shape is selected.
- Dialogs:
  - Added functionality to the Quick Tips button in some dialog windows.
  - Enhanced the Design List by setting defaults based on selected shape.
  - Fixed an issue in the Shape Database with shape properties not appearing in the View dialog.
  - Improved the Shape Database preview to show the actual sizes of nominal wood members.
  - Corrected an issue with deleting a Custom Rebar Layout.
  - Corrected the display of the base elevation in the Wind Load Generation to show zero instead of a very small number.
  - Updated the animation settings dialog with a checkbox to stay open.
- Spreadsheets:
  - Spreadsheets can be resized and their size is stored throughout the program use and the next session.
  - Improved the display of code check results  $>1.0$  to be shown as red and bold.
  - Fixed an issue with saving defaults in the Wall Design Rules spreadsheet.
  - Resolved an issue preventing data from being pasted in the active Basic Load Case spreadsheet.
  - Corrected an issue that caused input loads to be displayed with a multiple of a million due to international settings using commas instead of periods.
  - Added the ability to copy and paste duplicate load combinations.
  - Resolved an issue where pasted load combinations would re-sort after closing the spreadsheet.
  - Corrected a display issue with the concrete column code check spreadsheet.
  - Corrected the reported values in Member End Forces to not be the maximum force for the entire length of the member.
  - Filter Out Unselected Results was corrected to show results for only the selected items.
  - Resolved sorting issues for all input and output spreadsheets.
  - Corrected an issue so that spreadsheets are minimized when the Report Printing dialog is selected.
- Detail Report:
  - Coordinated the shape property geometric variables to match the shape database.
  - Resolved an issue where opening a concrete beam detail report would, in some cases, cause the program to unexpectedly close.
  - Revised the detail report for wood members to clarify the direction of the governing shear load.
  - Corrected an issue with the display of metric units in detail reports.
  - Corrected the display of the location in the expanded diagrams within the Detail Report.
  - Resolved spelling errors in the Detail Report of Masonry Walls.
  - Corrected an issue where more decimal places were being presented in the wall reinforcement design than were specified in the application settings.
- Detail Report Printing:
  - Fixed an issue with printing enlarged diagrams from a member detail report.
  - Corrected print issues for some models when the Add to Full Report checkbox was selected from the member detail report.



- Report Printing Dialog:
  - Fixed an issue with adding spreadsheet results to the report from the Spreadsheets tab.
  - Resolved an issue with missing selected detail reports in the Detail Reports tab.
  - Fixed an issue with printing wall panel results when choosing 'Select All' from the Detail Reports tab.
  - Corrected an issue with batch printing of wall panel detail reports for a model without wall panels.
  - Restored the ability to print load generation reports (Wind, Seismic, Notional).
  - Fixed an issue with the filter selection.
  - Corrected an issue where the created report template wasn't automatically being selected after canceling the creation of a new report template.
  - Enhanced the printing of the Detail Report to correct pagination issues.
  - Corrected issue with inability to print while Print Report Dialog was not docked.
  - Resolved a print issue with a printer on the network.
- Print Preview:
  - Corrected an error from Print Preview scroll pages.
  - Corrected the Print Preview display for margins larger than 2 inches.
- Printing:
  - Enabled the Print button directly from the dialogs where feature was previously unavailable:
    - Member Detail Reports, Wall Detail Reports, Enlarged Diagrams, Time History, Moving Loads, Response Spectra, Shape Database, Warning Logs
  - Added the ability to include Response Spectra plots in reports.
  - Aligned the flat file to match the order of the older version and corrected missing sections.
  - Enhanced the warning log print with a header.
  - Fixed an issue with printing from Edit Moving Load Pattern Definition dialog.
  - Corrected the printing of the Detail Report for masonry walls in order to print the expanded sections.
  - Resolved an issue that was causing abnormal scaling of printed graphics for Windows 7 machines.
- Operations:
  - Added the ability to open a RISA file by dragging the model over the open program.
  - Improved the program behavior to copy any missing files automatically for the user upon opening the program.
  - Fixed the Backup file opening mechanism.
  - Resolved an issue that caused a corruption of Wood Shear Wall Design Rules upon saving the model.
  - Fixed an issue with the program closing unexpectedly after undoing the creation of a wall panel.
  - Corrected an issue where applied loads were considered inactive.
  - Resolved an issue preventing newly created moving loads from being applied in the model.
  - Corrected an error caused by duplicated custom rebar layouts.
  - Corrected an issue with losing RISAFoundation information when editing and saving a RISA-3D model in V18. RISAFoundation integration is not currently supported.
- Installation/Program Opening:
  - Resolved an issue that prevented certain models from opening: Index out of Range.

- Corrected an initialization error due to
  - Duplicate labels of members, materials, etc.
  - Missing Wood Schedule files
  - Custom Rebar Layout files
  - Inability to write to the Current User registry key
- Corrected the Detail Report display of equations due to missing files in installation.
- Corrected the selection of Load Combinations due to missing files in installation.
- Corrected the installation of Regions (non-US) to a new folder.

## Version 18.0 Enhancements/Corrections

- Analysis:
  - Added solution multi-threading to utilize multiple CPU cores which drastically reduces envelope and batch solution times for models with many load combinations.
  - Corrected an issue where wind loads were not generated after switching the vertical axis from Y to Z.
  - Corrected an issue where Envelope Only solution results were not being retained after closing the program.
  - Corrected an error where area loads applied during dynamic analysis were causing error code 2018.
  - Resolved a bug that affected the story height of wall panels when diaphragm elevations were changed.
  - Fixed a problem when using metric units where the Member Beam Deflection spreadsheet values were incorrectly increased by a factor of 25.4.
- Hot-Rolled Steel:
  - Revised the leg slenderness classification for double angle detail reports to only consider the longer leg per CSA S16-14.
- Concrete:
  - Added concrete member deflection diagrams to the detail report.
  - Added a warning message for concrete seismic design to better explain the aspect ratio limits.
- Masonry:
  - Fixed the cross section detailing image for out-of-plane reinforcement of a masonry wall.
- Cold-Formed Steel:
  - Updated the capacities reported in the member detail report to reflect the safety factors for members analyzed using AISI 1999:ASD.
  - Corrected the safety factors used to calculate the allowable capacities reported in the detail report for members analyzed using cold-formed steel codes 2010 or older.
  - Revised the flexural-torsional buckling stress, ( $F_e$ ), per Section C4.1.2 for doubly symmetric shapes using AISI S100-07 which was incorrectly using  $F_e$  (Eq. C4.1.2-1) which is for singly symmetric sections.
  - Resolved a missing input parameter, connector spacing ( $a$ ), for cold formed steel when a specific procedure was followed.
- Stainless:
  - Resolved a false value of '9.999+' shown for the shear unity check of stainless steel members.

- Aluminum:
  - Updated Aluminum Round Tube flexural check to use Section B.5.5.4 in ADM 2015.
- Wood:
  - Added LRFD wood design for NDS 2018 and NDS 2015 codes.
  - Added the ability to view custom wood material properties through the material selection dialog.
  - Updated the wood shape database to reflect the overall thickness based on the number of plies selected.
  - Updated the cross-section detailing image for FTAO and Perforated wood walls to be more accurately represented in detail reports.
  - Updated the wood wall calculation of " $\sigma_{L_i}$ " per AWC NDS SDPWS 2015. This will affect the Shear Capacity Adjustment Factor, ( $C_o$ ), and the Sheathing Area Ratio, ( $r$ ).
  - Corrected the wood wall capacity adjustment factor, ( $2w/h$ ), to apply to both seismic and wind load combinations per AWC NDS SDPWS 2015 and 2018. Previous codes applied to wind only.
  - Corrected an error in calculating the moment capacity of glulam beams using CSA O86-14.
  - Corrected an issue with preserving default custom wood species in the Materials spreadsheet.
- Graphics:
  - Detail Report:
    - Improved Detail Reports to show expanded calculations for code check.
    - Improved output to show all the code references in expanded Detail Reports for all materials.
    - Enhanced the member detail report output to report the section modulus and plastic modulus.
    - Resolved an issue with missing masonry wall panel labels from the detail report.
  - Printing:
    - Added batch printing of detail reports.
    - Added an interactive Print Preview for the graphical view and reports.
    - Added a preview of the custom logo in the print reports.
    - Added functionality to edit saved custom report templates.
    - Saved page setup properties specified in Printing dialogs as default settings.
  - Viewing:
    - New graphical user interface with ribbon toolbar.
    - Added preview thumbnails for recent projects accessible from the File menu.
    - Added custom Snap View options to allow snapping to a view other than the default XY, XZ, YZ, or ISO.
    - Added synchronous display of results based on the load combination selected in the 3D View drop-down.
    - Improved graphic display options in the Quick View toolbar.
    - Resolved a graphical issue for members that were copied while displaying color coding.
    - Fixed an issue where, in some cases, selected members were not rendered correctly.
    - Resolved an issue where lengthy node labels were not properly displayed in the Properties.

- Fixed an issue preventing the display of reactions with an Envelope Only solution.
- Selection:
  - Added the ability to select and edit loads graphically.
  - Added a Connection Rule selection filter for members in the Selection Criteria dialog.
  - Added all options for tension/compression only members into the Selection Criteria dialog.
  - Added the option to Relabel Selected elements in addition to All elements.
  - Improved the Select Elements by Property tool to group section sets and shapes together.
  - Resolved an issue where Show Selected Lines in Current view was not working properly after sorting the spreadsheet.
- Spreadsheets:
  - Enhanced spreadsheets allow for improved sorting and auto-sizing columns.
  - Added all input spreadsheets into the Data Entry drop-down list.
  - Improved functionality of selecting/resizing cells in spreadsheets.
  - Fixed sorting for all input and output spreadsheets.
  - Resolved an issue that prevented the Wall Panel Design spreadsheet from sorting.
  - Revised an issue where Select Marked Lines in Current View was not working properly in the Wall Panel Forces spreadsheet.
  - Corrected the text color of failing seismic drift ratios to show red in the Story Drift spreadsheet.
  - Resolved a rare occurrence that caused the program to crash when sorting Node Coordinates spreadsheet.
- Dialogs:
  - Added the ability to resize the Wall Panel Editor window.
  - Updated the Shape Selection dialog to be more intuitive.
  - Resolved a graphics issue to properly show the entire High Level Generation tool dialog.
- General:
  - Created a progress bar for calculating seismic loads using the seismic load generation tool.
  - Enhanced the High Level Generation tools to draw continuous members.
  - Enhanced the creation of solids to extrude from the local axis.
  - Enhanced the Extend tool to extend a member to a wall panel or plate.
  - Improved the file format of the Help file.
  - Modify tools improved to allow rotation and scaling based on a click point.
  - Improved the Distance Measure tool to remain active while in use.
  - Simplified the terms "joint" and "node" to now use node exclusively in all input and output.
  - Fixed an issue in the truss generator where truss widths set to out-to-out were incorrectly using centerline dimensions.
  - Corrected an issue where using the extend tool would inadvertently move a boundary condition in some cases.
  - Corrected an issue where scaling a wall panel could lock distributed loads on the panel from being edited.

- Resolved an issue where adjacent unselected member area loads were deleted during Delete Selected Area Loads function.
- Corrected an issue where imported time history files would not retain file name upon import.
- Resolved an issue where member function would revert to Lateral after updating member size.
- Corrected an issue where nodes were internally being duplicated after integration for some models.
- Corrected an issue where reactions would graphically disappear after subsequent runs in some cases.
- Resolved a copy and paste issue to only copy RISA-3D column headers when pasting outside of the program.
- Corrected an issue where material properties were erroneously reporting as N/A in some cases.

### **Version 17.0.4 Enhancements/Corrections**

- Enhanced message to include required version number during use of the Director to transfer between programs of incompatibility.
- Corrected an issue that didn't allow program integration for models saved on a shared network location.
- Resolved an issue that was not allowing the program to fully close on exit due to a licensing error.
- Removed false error message of not being able to release subscription license on select machines.
- Fixed an issue where subsequent uses of the wind load generator using NTC 2004 would produced different forces.
- Corrected an error that prevented the import of Revit and STAAD files.
- Resolved an issue that prevented the import of select file types from other programs.
- Resolved an issue that caused solution files to be deleted when transferring between programs.
- Corrected the wood diaphragm detail report display to show the building layout for models integrated with RISAFloor.
- Resolved an issue where load categories would not transfer from RISAFloor to RISA-3D with gravity only elements in RISAFloor.
- Resolved an issue that caused RISAConnection to be unable to read previously saved solution files from RISA-3D.
- Resolved an issue where the program would terminate unexpectedly when sorting batch results by combinations.
- Resolved an issue where the program would terminate unexpectedly due to rigid end offsets in some cases.

### **Version 17.0.3 Enhancements/Corrections**

- Analysis:
  - Improved solution efficiency and behavior with compression and tension only members.

- Corrected an issue where thermal loads applied to inactive tension/compression only members were erroneously included in the calculation.
- Corrected an issue with the deflected shape for members with partial fixity end releases and intermediate nodes along the length of the member.
- Fixed an issue where the self weight of wall panels could be erroneously affected by adjacent wall panels due to internal plate numbering of the wall panel submesh.
- Resolved a units issue where analysis offsets using metric units were not properly converted.
- Hot-Rolled Steel:
  - Added A913 Gr.65 material to default U.S. hot rolled steel materials.
  - Updated  $R_y$  and  $R_t$  for A1085 material in default U.S. hot rolled steel materials.
  - Updated cross sectional properties of Canadian wide flange W690x802 in the shape database.
  - Updated the seismic detailing check for AISC 358-10 to limit the column depth of a W36 shape per section 6.5.
  - Updated the compression calculations of for slender prismatic tapered wide flange members using AISC 360-16.
  - Corrected an issue where  $C_b$  was still being calculated despite a custom user input for unbraced length.
  - Updated  $C_b$  limit to be 1.5 for single angle hot rolled members for the AISC 13th, 14th, and 15th Editions.
  - Revised the leg slenderness classification for single angles per Canadian code to only consider the longer leg.
  - Revised the flange slenderness ratio for wide flanges analyzed using AISC 15th Edition to use half the flange width instead of the full flange width.
  - Resolved an issue where the slenderness limitation was applied to brace seismic design rules when the  $KL/r$  requirement was not required.
  - Corrected an issue where bending was being considered erroneously in the unity check for single angles per Canadian code in some cases.
  - Corrected the flexural-torsional buckling strength for singly symmetric tapered wide flange members to appropriately consider torsional buckling based on the AISC Design Guide 25.
  - Revised the weak axis shear width-to-thickness ratio for WT shapes analyzed using AISC 14th Edition to use half the flange width instead of the full flange width.
  - Corrected the calculation of the stiffened element depth,  $h$ , for wide flange, tapered wide flange, and channel shapes per the AISC 13th, 14th, and 15th Editions.
  - Resolved a conservative error in  $Q_s$  calculation for tapered wide flange members when equation E7-9 was used.
- Concrete:
  - Corrected an issue where minimum vertical reinforcement in concrete walls was being calculated too conservatively for some models.
- Masonry:
  - Corrected an issue where masonry walls in some cases were being designed over the user defined UC limit.
- Wood:
  - Updated the Simpson Holddown, Simpson Chord Straps, and Canadian Simpson Holddown schedules based on the 2017-2018 Simpson Strong-Tie Wood Construction Connectors catalog.

- For multi-ply members, updated the  $C_p$  calculation to use the smaller  $C_p$  value from both directions instead of a conservative  $L_e/d$  value.
- Corrected capacity calculations for wood built-up columns with 2-5 plies per NDS section 15.3.
- Resolved an issue where the compression capacity of wood members was reported incorrectly when both effective length factors  $K_{yy}$  and  $K_{zz}$  were set to zero.
- Resolved an issue where the beam stability factor,  $CL$ , was erroneously being applied to the tension capacity for SCL members analyzed using the NDS 2018.
- Improved optimization of wood wall panels designed using the FTAO method.
- Fixed an issue preventing results from being calculated for models imported from TNXTower with wood members having  $K=0$ .
- Cold-Formed Steel:
  - Added distortional buckling consideration per the commentary in Appendix 2 when calculating the compression capacity for ZS, CS single, and CS back-to-back shapes per the AISI S100-16.
  - Fixed an issue that prevented distortional buckling from properly being taken into account for the compression capacity of CS single and ZS shapes analyzed using AISI S100-12.
  - Corrected an issue where the distortional properties for HU shapes were being calculated incorrectly.
  - Fixed an issue where the flexural-torsional buckling stress used in calculating the compression capacity of CS F2F shapes was erroneously taken as  $\sigma_t$  when the connector spacing was set to zero.
  - Revised the flexural-torsional buckling stress,  $F_{cre}$ , per Section E2.2 for doubly symmetric shapes using AISI S100-16 to be calculated as  $\sigma_t$  (Eq. 2.2-5) for doubly symmetric sections instead of  $F_{cre}$  (Eq. 2.2-1) which is for singly symmetric sections.
  - Corrected an issue where the incorrect unbraced length was being reported in some cases when the beam would experience negative bending.
  - Corrected the safety factor for shear using the CANACERO 2016 code.
  - Fixed an issue for custom ZS and CS shapes where the moment capacity based on lateral torsional buckling was not considered in the combined axial and bending interaction equation when a user input  $R$  factor was used.
  - Corrected an issue where an interaction equation from AISI 2012 code was being used in the AISI 2016 code in some cases.
- Aluminum:
  - Updated the shear capacity calculation to consider shear rupture per ADM 2015.
  - Updated the lateral torsional buckling moment capacity ( $M_{n,LTB}$ ) calculation for solid rectangular shapes to use  $M_{nu}$  instead of  $M_{np}$  per ADM 2015 section F4.
  - Updated the shear calculation for Z shapes to include two flanges for shear area.
  - Updated the shear capacity calculation for flat webs supported on one edge per ADM 2015 Section G.3 instead of G.2.
  - Fixed an issue resulting in negative weak axis moment capacity for channels.
  - Corrected an issue where moment capacity per ADM 2015 check could be controlled by Section F8 from ADM 2010.
  - Fixed an issue where the omega for rupture was used in the tensile yielding check when calculating the bending capacity for round tubes analyzed using ADM 2010.
  - Corrected  $L_v$  calculation for round tube shear capacity per ADM 2015, Section G4.
- Stainless:

- Corrected the calculation of the stiffened element depth,  $h$ , for wide flange and channel shapes per the AISC 14th Edition.
- Integration:
  - Added AISC 360-16 15th edition code as an option for connection design within RISA-3D.
  - Added vertical brace connection integration from RISA-3D to RISACONNECTION for CSA S16-14 and CSA S16-09.
  - Added the ability to specify splice connections as the connection rule for beam or column shear and moment splices.
  - Added a new warning message for splice connections with incomplete connection rules.
  - Added an error message for two-sided clip angle connections assigned to the wrong column orientation.
  - Improved calculation of seismic mass for models integrated with RISAFloor with thickened slabs, drop panels or shear caps.
  - Enhanced support for connection integration from the demonstration version of RISA-3D & RISAFloor into the demonstration version of RISACONNECTION.
  - Improved integration functionality when exporting connection results from RISACONNECTION to automatically bring RISA-3D into the foreground.
  - Updated the leaning column calculations by correcting the column length and wall centroid values.
  - Updated the tributary height used to calculate wind load to only consider floors with diaphragms for models integrated from RISAFloor.
  - Corrected an issue where the 'Design Connections' feature within RISA-3D would not provide connection design for some cases.
  - Resolved an issue where some vertical brace connections for RISA-3D models (under RISAFloor) were not properly transferring to RISACONNECTION.
  - Resolved an issue where chevron brace connections were erroneously reported as invalid.
  - Fixed an issue where connections could not be designed using the Design Connections dialog from within RISA-3D.
- General:
  - Added connections and member ends to the available report printing sections.
  - Added an error message to warn users that partial fixity end releases are not currently supported for tapered members.
  - Updated the warning message for models solved without P-Delta when P-Delta is required by code.
  - Revised the reported span for the maximum deflection ratio to say 'NA' instead of '0' when the deflection ratio is larger than  $L/10000$ .
  - Fixed an issue with non-physical members causing incorrect moment capacity results in some models.
  - Corrected a graphical issue where the reported member deflection ratio turning red would not match the corresponding pass or fail design rule limit.
  - Resolved a display error that was only allowing one decimal place to be viewed in the weight column of the Material Take Off spreadsheet. Now it is dependent on the output decimal settings.
  - Corrected an issue that did not assign all Seismic Design Rules to each section of a member physically split.



- Corrected unexpected opening and saving behavior of RISA-3D results for RISAFloor based models.
- Resolved an issue where reading in saved RISAFloor results in some cases erroneously applied a parapet to wall panels, causing them to overlap with RISA-3D wall panels.
- Resolved rare improper P-Delta Error Message when specific models from RISAFloor to RISA-3D, with non-standard units, are solved.
- Resolved a rare crash when viewing plate contour results and re-solving the model on Windows 7 using a non-Aero Theme desktop.

## **Version 17.0.2 Enhancements/Corrections**

- Resolved an issue where graphically editing member end releases from partially fixed to fully fixed was not updating the Members spreadsheet.
- Resolved an issue for members using partial fixity end releases where the deflection magnitude and forces transferring to connecting members were reversed when non-symmetric loading was applied.
- Fixed an error in the Eurocode Hot Rolled Steel database where the Zy and Zz values were erroneously inverted for rectangular and square tube sections.
- Corrected an issue for certain models where running multiple solutions of the same load combination was not properly storing the same analysis results.
- Corrected an issue where in some cases, if a suggested shape could not be determined for concrete section sets the program would terminate.
- Corrected an issue for the distribution of lateral loads to diaphragms when multiple diaphragms are present at the same level.
- Corrected an issue where plate contours were displayed incorrectly in some cases when also displaying the deflected shape.
- For models imported from RISAFloor, corrected an issue where semi-rigid wind loading would not apply to multiple diaphragms at the same level.

## **Version 17.0.1 Enhancements/Corrections**

- Improved base plate connection export to RISAConnection to now group base plate connections separately per their function (Lateral or Gravity) designation.
- Updated the tabulated radius of gyration values for masonry walls per the 2007 NCMA TEK 14-1B document.
- Resolved an issue where custom saved Drawing Grid settings would prevent program integration.
- Corrected an issue where members with point loads applied at 0% of the member length reported a moment at the opposite end when both member ends were pin-released.
- Resolved an issue where analysis offsets and member point loads would in some cases cause the program to close unexpectedly when running a solution.
- Resolved an issue where the program would close unexpectedly when trying to solve a dynamic solution for a model with analysis offsets.
- Resolved an issue where the program would close unexpectedly when insufficient memory was allocated for calculations requiring multiple iterations.
- Corrected the strong axis moment capacity for hot-rolled HSS members using the AISC 15th Edition Manual when governed by lateral-torsional buckling, Equation (F7-10).

- Corrected an issue with the static solution reporting zero results after running an RSA using the ASCE 2016 Parametric Design Spectra.
- Corrected an issue that prevented the Seismic Load Generator from performing seismic calculations for models using NBC Canadian code design. This also fixed an interface issue that prevented the Overstrength-Related Force Modification Factor (Ro) from updating.
- Corrected erroneous member forces when analysis offset and member end offsets were combined.
- Added an error message to warn users that shear deformations and partial fixity end releases in combination are not currently supported.
- Corrected an issue where round concrete columns with low bending moments and high axial compression caused the allowable axial capacity to be erroneously zeroed out.
- Corrected an issue where saved solution results for wood wall models became corrupted when the model was re-opened.
- Corrected an error where explicitly defined double sided wood wall sheathing panels would not save properly with the model file.
- Corrected an error where the wind load generation would ignore the "No Wind" checkbox selection on semi-rigid or flexible diaphragms from RISAFloor.
- Resolved an issue where using analysis offsets would prevent integration between RISA-3D and RISAFoundation.
- Corrected a display issue with the legend not properly showing the color coded items that relate to the setting chosen in the Model Display Options.
- Fixed an error where gravity-only column base plate connections were reporting RISA-3D lateral loads when exported into RISAConnection.
- Corrected an issue where column splice connections were reported with incorrect column labels once exported to RISAConnection.
- Added support for connection integration from the demonstration version of RISA-3D into the demonstration version of RISAConnection.

## Version 17.0 Enhancements/Corrections

- Analysis:
  - Added compatibility with *IBC 2018*.
  - Added *ASCE 7-16*
    - Added Load Combination generation
    - Added wind and seismic load generation
    - Added design response spectra
  - Added *NBC 2015* Canadian building code provisions
    - Added Load Combination generation
    - Added wind and seismic load generation
    - Added design response spectra
  - Added partial fixity member end releases using a rotational spring constant to reduce the stiffness of a connection.
  - Updated the display of wall panel axial results in the Detail Report with improved force summation.
  - Improved the optimization process for Suggested Designs for members and section sets.
  - Refined the "Envelope Only" solution for Story Drift to not be overly conservative.

- Improved Suggested Member design to exclude warping stress for torsionally released member ends.
- Corrected an issue with tension only members with applied thermal force.
- Corrected the  $C_b$  coefficient calculation for Hot Rolled members when the user enters  $L_{by}$  in the  $L_{comptop}$ .
- Corrected an issue when the point loads are applied at the ends of member in the same location as a boundary condition.
- Corrected an issue where members with local  $y$  analysis offsets were resulting in larger lateral deflections in local  $z$  axis of member.
- Hot-Rolled Steel:
  - Added member design per the *AISC 15th Edition Manual (360-16): ASD & LRFD*.
  - Updated the Chinese hot-rolled steel database per the Standardization Administration of the People's Republic of China (SAC) current DB Standards.
  - Updated the automated calculation of the EuroCode Moment Gradient Factor  $C_1$  to use the widely accepted Lopez, Yong, and Serna method.
  - Corrected a metric units display problem for  $F_y$  when using the Canadian hot rolled steel design code.
  - Corrected an issue where the unbraced lengths were not saving in the Member Properties dialog for Stainless Steel shapes.
  - Resolved an issue where stainless steel WT, double angle, and single angle members were reporting NA or negative code check.
- Concrete:
  - Improved how the program recognizes concrete beam spans when combined with semi-rigid diaphragms and wall panels.
  - Improved weight calculations of concrete T and L beam in Material Takeoff results.
  - Added the warning message, "P-Delta Analysis is required for all ACI 318-14 load combinations" to the concrete detail report.
  - Corrected a display issue with the concrete explicit shear reinforcement diagram in the detail report.
  - Corrected a cover value display error for circular concrete column detail reports in the flexural cross section diagram.
  - Corrected an issue where the value for "d" in the out of plane shear capacity calculation was being erroneously taken as the full thickness of the wall for concrete walls with centered reinforcement.
  - Resolved an issue where modifying the thickness of a concrete wall panel did not clear the design results.
- Masonry:
  - Added the view of the FEA analysis to the shear and moment diagrams for masonry lintel detail reports.
  - Corrected a display error which showed "Fully Grouted" in the detail report for masonry walls which were designed with partial grouting.
  - Corrected a DXF export error for a model with masonry walls that would cause the program to close.
- Wood:
  - Added *AWC-NDS 2018* wood code (ASD).
  - Added strap design for wood shear walls.
  - Corrected an issue for the *NDS-01* code where  $CF$  was incorrectly calculated as zero.
  - Corrected an issue which erroneously suppressed wood wall panel errors from showing up in the Warning Log.

- Corrected the wood wall aspect ratio check to now consider the height of the design region, rather than the full height of the wall panel.
- Resolved discrepancies with reference design values in the glulam database based on the *NDS 2015*.
- Cold-Formed Steel:
  - Improved R factor implementation for C and Z shapes.
  - Corrected an error due to rounding with the safety factor used for shear capacities for cold-formed steel members designed using the *AISI S10-16* code.
- Aluminum:
  - Corrected an issue where the aluminum pipe shear capacity was conservatively divided by two.
  - Removed the aluminum limit state F8.1.1 from the *ADM1-15* code checks as it is only applicable to the *ADM1-10* code.
- Integration:
  - Added the ability for columns from RISAFloor with pinned top and a shear splice assigned at the base to transfer to RISA-3D with pinned top and bottom end releases.
  - Resolved an issue where columns with pinned tops in RISAFloor had bending moment at the top of the column in RISA-3D.
  - Resolved a display issue where live load reduction options overlapped the stainless steel code selection in the global model settings for models from RISAFloor.
  - Corrected an error during integration from RISA-3D to RISAFoundation for models with wall panel thermal loads.
  - Fixed an error in which HSS Tube columns in diagonal brace connections were oriented incorrectly when exported from RISA-3D to RISAConnection.
  - Corrected an issue which erroneously reported an invalid vertical brace angle for RISA-3D models exporting diagonal brace connections to RISAConnection.
- General:
  - Added sorting to the Beam Deflection spreadsheet.
  - Increased the DXF file limit for the number of polylines the program can import as a drawing grid to 5000.
  - Updated the detail report for members being checked for seismic provisions to include a warning message if a member only meets one of the two flange thickness limits according to Table 6.1 of *AISC 358-10*.
  - Corrected a display problem where the enveloped joint reactions were not shown properly in the model view.
  - Corrected the display of wall panel regions shown flipped in the Wall Panel Editor versus the Detail Report.
  - Resolved an issue where moving wall panels vertically would cause the program to close unexpectedly.
  - Resolved an issue where dummy nodes created from generating lateral loading were reported as unstable.

## Version 16.0.5 Enhancements/Corrections

- Corrected an error in the iteration of member design which caused an increase in solution time.

## Version 16.0.4 Enhancements/Corrections

- Resolved an issue introduced in the Windows 10 Semi-Annual Update (KB 4103721) which prevented Standalone Licensing functions from operating as expected.
- Resolved an issue in which subscription licenses would become non-responsive during the upgrade process.
- Added capability to designate member end support as cantilever or not cantilever in order to calculate the proper deflection ratio.
- Added an error message when two files are appended with different plate local axes settings.
- Corrected an issue which caused erroneous load transfer on members which were offset with the Analysis Offset tool and also had thermal load applied.
- Corrected an issue where changing the cold formed steel code after running multiple solutions was not automatically clearing the stiffness matrix.
- Corrected display of Results toolbar after the Solve Again with Suggested Shapes is performed.
- Resolved overly conservative Suggested Members due to warping stress being included for torsionally released member ends.

## Version 16.0.3 Enhancements/Corrections

- Added 14" and 16" depth CS shapes from SSMA database for cold formed steel design.
- Added Brace to Base Plate Connection integration with RISACONNECTION.
- Improved status bar in the Design Results spreadsheet.
- Corrected an error which prevented Vertical Brace Connection to export to RISACONNECTION.
- Corrected an error which prevented HSS T-Connections at nodes with more than 2 members to export out to RISACONNECTION.

## Version 16.0.2 Enhancements/Corrections

- Added a new wood wall Aspect Ratio factor per the *ANSI/AWC SDPWS-2015 section 4.3.4.2* which applies to FTAO and Segmented walls who have an aspect ratio greater than 2:1.
- Added the wind load Gust factor calculation for flexible structures per *ASCE 7-10 section 26.9.5*.
- Improved the Seismic Load Generator to allow the manually input period to exceed the code specified upper limit for drift design.
- Improved Area Load Mesher for area loads with less than a one inch width.
- Improved the mesher for the Automesh plate drawing tool to be more robust.
- Improved the Automesh feature to include co-planar polygons.
- Added the ability to align plate local axes.
- Improved the internal meshing code for semi-rigid diaphragms.
- The member exclude feature now applies to the Member Forces Maximum and End Reactions spreadsheets.
- Deflection ratio updated to be only in terms of local deflection.
- A 1.43 factor is now applied to the cracked moment of inertia for concrete beams and columns for service load combinations per *ACI 318* and *CSA A23.3* commentaries.
- Updated the Service and Strength L/y and L/z ratios to use the legacy deflection method.

- Added the governing load combination for shear in the detail reports and spreadsheet results for concrete column members.
- Corrections to the seismic detailing design feature:
  - Added an error message for seismic moment connections assigned to non-wide flange column-beam intersections because this is not allowed per *AISC 358-10*.
  - Corrected an issue where panel zone shear for OMF columns was only checking shear from one beam rather than those on both sides of the column flange.
  - Corrected an error where OCBF brace results were reporting the incorrect demand force in tension and compression per the *AISC 341-10*.
  - Corrected an error where braces in OCBF frames were checking the wrong slenderness limit in the Seismic Detailing results.
  - Corrected an error where the Column-Beam Ratio seismic results were reporting the wrong section reference from the *AISC 358-10*.
- Resolved a problem with the Wall Panel Forces where the forces were off by a factor of 1000 when running a Gupta Response Spectra load combination.
- Corrected an issue where seismic input variables would not save in RISAFloor when the *NBC 2010* or *NBC 2005* codes were selected.
- Corrected Aluminum code checks to include the limit state *F.8.1.1*.
- Corrected the unbraced length for Aluminum members that were using *L<sub>by</sub>* instead of *L<sub>comp</sub>*.
- Resolved an issue where the stainless steel results were affected by the hot rolled steel code.
- Improved design checks of custom WT members integrated from RISASection whose orientation did not match the default in RISA-3D.
- Fixed a problem with the concrete column solver where, for certain column lengths, the interaction diagram would fail and give a message about a missing rebar layout.
- Fixed a problem where viewing a detail report for a seismic concrete wall would cause the program to quit unexpectedly.
- Corrected an issue which caused a wall to be designed for the wrong rebar spacing when the 'Group Wall' check-box was selected.
- Corrected an error in the bar spacing calculation for concrete walls in tension when an envelope solution is solved.
- Corrected a problem where the optimized shear steel would not fit in the concrete member when metric units were selected.
- Fixed an issue where Custom Wood Material inputs would give an erroneous message about a missing *E05* input value.
- Resolved a display bug that affected the Detail Report after sorting the Code Check column in the Stainless Steel Design Results spreadsheet.
- Corrected an error where a nested load combination would solve but the individual load combination caused a divergence.
- RISACONNECTION integration improvements:
  - Added RISACONNECTION integration for Flange Plate Moment connections and Direct Weld Moment connections into a column web.
  - RISACONNECTION integration now considers positive and negative shear sign convention when exporting connections for design.
  - Added RISACONNECTION integration for double-sided Column/Beam and Girder/Beam shear connections.
  - Corrected an error which prevented HSS Truss connections from exporting to RISACONNECTION.

- Corrected an error where Chevron Brace Connections would not export to RISACONNECTION if the vertical axis was set to Z.
- Fixed an error which prevented Vertical Brace Connections from exporting to RISACONNECTION when a similar beam member runs perpendicular to the connection node.

### **Version 16.0.1 Enhancements/Corrections**

- Added Stainless Steel spreadsheets to the options for the printed report.
- Fixed a problem where opening a model with results from the current version would give an erroneous message about the results being from an older version.
- Fixed a problem where selecting the Canadian *CSA S136-16: LSD* code would cause the program to shutdown.
- Fixed a problem with the Controlling Criteria being set properly for the Suggested Shapes optimization.
- Fixed a problem where using the undo command and saving would modify Custom Rebar Layouts in your model.
- Updated Tension/Compression-Only behavior to solve one more iteration after converging to use the correct model stiffness.
- Updated Subscription licensing behavior to prevent an erroneous failed log-in.
- Added an option to export a welded web plate on a Direct Weld Moment connection to RISACONNECTION.

### **Version 16.0 Enhancements/Corrections**

- Analysis:
  - Added deflection optimization and design checks for beam members.
  - Improved convergence procedure for Tension Only members.
  - Corrected a minor issue where torsional warping stresses were not considered fully in the member optimization routine.
  - Fixed a problem with Tau Beta iterations where we could have a stiffness oddity if there was a problem with convergence. This would have resulted in a failure or deflection problems in the model.
- Hot-Rolled Steel:
  - Added Stainless Steel member design per *AISC 14th (360-10): ASD & LRFD*.
  - Added the 2014 EuroCode for steel member design (*EN 1993-1-1:2014*).
  - Added consideration of the L-Torque unbraced length for all EuroCode(*EN 1993-1-1*) member design.
  - Added the *British Annex 2014* to into the 2014 EuroCode member design (*EN 1993-1-1:2014*).
  - AISC Direct Analysis Method Stiffness Adjustment for both axial and flexural now applies to all member types, not just Beams, Columns, Vbraces.
  - *AISC 341/358* Seismic design updates
    - Corrected an error in the slenderness checks for braces in OCBF frames per the *AISC 341-10* seismic detailing checks.
    - Removed an erroneous check in the seismic detailing results which required Wide Flange columns on braced frames.

- Fixed overlapping text in the detail report for seismic detailing checks on columns.
- Corrected an error where EuroCode Pipe and HSS shapes were using a Buckling Curve Imperfection factor of 0.34 instead of 0.49.
- Fixed display of governing equation for CSA S16-09 code check in detail report.
- Changed the buckling curve for EuroCode (EN1993-1-1:2014) HSS members to be based on imperfection factor for cold formed (0.49) instead of hot finished (0.21 or 0.13) which was used previously.
- Concrete:
  - Added Seismic Design of concrete walls per ACI 318-14.
  - Added the 2014 European concrete code (EN1992-1-1:2014).
  - Enhancements to the Custom Rebar Layout dialog:
    - Added spreadsheet functions for easier data input (TAB and ENTER keys).
    - Added the option to highlight and copy data from several cells at once.
    - Added access from the Concrete Members spreadsheet directly to the Custom Rebar Layout dialog through a new Set Layout dialog.
  - Added custom Cm inputs for concrete wall panels.
  - Updated the Concrete Reinforcing spreadsheet region labels when the Transfer checkboxes are used for concrete wall panels.
  - Updated the effective flange thickness calculations for concrete T-Beams per the ACI 318-14 code to account for the span limit changing due to overhang distance.
- Masonry:
  - Added the TMS 402-16 masonry code.
  - Fixed the camera tool for Masonry Summary Reports; they will now be saved to the report.
  - Corrected a problem that would cause the program to shut down if the design code is set to None and a detail report is opened.
  - Fixed a problem where the in-plane shear reinforcement spacing design was over-conservative per the the ACI 530-13 ASD Masonry code.
- Wood:
  - Added design of wood shear walls per the Canadian CSA O86 wood design codes.
  - Added design of Structural Composite Lumber materials per the Canadian CSA O86-14 code.
  - Corrected an error in the CF factor calculation for Custom Wood Species. Now the program will always default to CF = 1.0 unless the user manually enters a value.
  - Corrected an error in the design of wood members using the Custom Wood Species. Previously custom wood species were always designed per the Sawn Lumber chapter of the code, now the program designs them per the appropriate chapter depending on the input Type.
  - Corrected the graphical display of wood wall panel top plates on walls with sloping tops or parapets.
  - Corrected a unit conversion issue for wood wall deflection in the detail report.
  - Corrected erroneous capacity equation references for wood members designed per the CSA O86-14 code.
  - Corrected a display issue with hold downs in the detail report.
  - Fixed a problem where the program would check the overall material for a wall rather than the custom chord material for a wall, which would cause an erroneous message.
  - Increase factor of 40% is now applied to wood walls in models with load combinations for wind applied to roofs.



- Updated the program open behavior for structural composite lumber databases to minimize problematic start-ups.
- Cold-Formed Steel:
  - Added Cold Formed Steel codes:
    - *AISI S100-16*
    - *CANACERO-2016*
    - *CSA S136-16*
  - The Distortional Buckling factor Beta from *AISI S100 Eqn C3.1.4-7* is now taken as 1.0 for all unbraced lengths except those left blank or using the segment command.
  - Corrected a calculation that affected the lateral-torsional buckling for face-to-face Cee shapes.
- Aluminum:
  - Corrected an error where Aluminum members gave a design check value of infinity (reported as '-nan(ind)' in the output) when they were set as non-physical members.
  - Corrected an issue where some aluminum members were not checking yielding and rupture limit states for flexure.
  - Corrected an issue when changing units after solving the model where the values would not update properly.
  - Corrected an error in the bending capacity calculation for aluminum pipes in tension.
- Integration:
  - RISA-3D & RISAFoundation:
    - Added the ability to see RISAFoundation footings in RISA-3D in an integrated model.
    - Fixed a problem with pile punching shear capacity that would cause an incorrect value if different concrete codes were selected in a combined RISA-3D/RISAFoundation model.
  - RISAFloor & RISA-3D:
    - Fixed an issue with semi-rigid wind loads, where a wind code update would cause loads to double. Also, changing the wind code to None would not cause the semi-rigid wind loads to delete.
    - Fixed an error in RISAFloor that caused a line load applied along a wall, that extends past the wall, to show up as two loads in RISA-3D.
    - Corrected an issue for certain models where RISAFloor beams were transferred to RISA-3D as sloped.
    - Corrected an error where the seismic weight of floors with manually applied Dynamic area loads was not calculating correctly in RISAFloor to RISA-3D integrated models.
  - RISAFloor, RISA-3D & RISACONNECTION:
    - Added the option to save custom shapes to the local database when exporting a connection with a custom shape from RISA-3D or RISAFloor to RISACONNECTION.
    - Updated the graphical view of RISACONNECTION results in RISA-3D to show for all members at the connection, rather than just one as previously displayed.
    - Fixed an issue in a combined RISAFloor, RISA-3D and RISACONNECTION model where base plates would not be transferred if Connection Rules were only applied in RISA-3D.
    - Corrected an error where custom Connection Rule labels caused the connections to be ignored during the RISACONNECTION design export.
    - Corrected an error where Connection Rules with a quotation mark in the label did not properly export to RISACONNECTION for design.

- Fixed a problem with RISA-3D to RISACONNECTION integration where a sloping tower face connection wouldn't transfer connections because of the slope.
- Fixed an error where the axial force in the column in RISA-3D was not transferring correctly to RISACONNECTION.
- Corrected an error where Knee Brace connections would export from RISA-3D into RISACONNECTION with an incorrect brace direction.
- General:
  - Added Plate elements to the Material Takeoff results spreadsheet.
  - Enhanced the Load Combination Generator to include response spectra Load Categories.
  - Updated the Copy/Paste functionality so that the column headers would not erroneously paste into the program. They now will only paste if you're in an external program.
  - Added the option to specify a Design Rule at the time of drawing a member.
  - Project Grid Improvements:
    - Added the ability to draw snap points between radial and straight grids.
    - Corrected the coordinate order of the DXF import of Project Grids.
    - Corrected the Project Grid spreadsheet for Z axis vertical.
    - Corrected the Project Grid generator for the X & Z project grid labels.
  - Fixed an issue where the Load Combination Generator would generate multiple identical load combinations for the same code.
  - Corrected wrong units reporting in the Wall Panel Forces spreadsheet. Force in pounds was reporting as kips.
  - Corrected a unit conversion issue for the wall panel axial and shear forces.
  - Corrected an error where the Seismic Load Generation Approximate Period ( $T_a$ ) was being calculated at the parapet height, rather than the floor height.
  - Corrected a unit conversion issue in the detail report for unbraced lengths after the model is solved.
  - Corrected a units issue with the 'Create Point Load from Moving Loads' tool.
  - Fixed an error that caused multiple Boundary Conditions on the same wall panel.
  - Corrected the Time History Trace Export to include the RX, RY and RZ directions.
  - Corrected an error message that was mistakenly generated for story drifts using Elevation type.
  - Discontinued the support of RISAFoot inside RISA-3D.

## **Version 15.0.3 & 15.0.4 Enhancements/Corrections**

- Updated the program install to improve behavior for network licenses.
- Improved the subscription license functionality to make it more robust.
- Added the framework to import a Tekla Structures model into RISA-3D once the RISA-Tekla V7 Link is released.
- Added "Frequencies" "Mode Shapes" topics to the Report Printing options. They were erroneously removed in V15.0.2
- Improved the area load mesh to work better for odd framing situations.
- Corrected an un-conservative error with the strong axis flexural strength for channels.
- Corrected an issue where opening a model with saved moving load results would cause a crash.

- Corrected an issue in the maximum tab of the Member Forces spreadsheet where the program was not giving the correct values in specific instances.
- Corrected an issue where the Exclude feature would not work properly in RISA-3D in a RISAFloor/RISA-3D integrated model.
- Corrected an error where base plate loads were not properly transferred from RISA-3D to RISAConnection.
- Discontinued support of the 32-bit version of the program.

## **Version 15.0.2 Enhancements/Corrections**

- General:
  - Added two new tabs to the Member Forces spreadsheet to display the maximum force based on internal sections and end reactions.
  - Major improvements to the automatic model backup functionality.
  - Improved the STAAD import functionality to give better error messaging and better steel material defaults for unsupported values.
  - Fixed a problem where the deflection values displayed on the cursor didn't match the Joint Deflections spreadsheet if the Magnification Factor was not set as 1.0.
  - Corrected an issue where RISA-3D models created members that referred back to RISAFloor for the unbraced length value.
  - Using the Copy to Clipboard command from spreadsheets no longer copies blank cells to the clipboard.
  - Fixed a problem where the Truss High Level Generation Tool would create web members that didn't attach properly to the chords if the Out to Out option was selected.
- Wall Panels:
  - Updated the P-little delta calculations for concrete walls to show the location along the wall where it was considered.
  - Updated the P-little delta calculations for concrete walls for the odd case where both axial forces and moment forces were below program minimum thresholds.
  - Fixed a problem where the 2011 and 2013 ASD masonry code was over-conservative in designing the in-plane shear reinforcement spacing.
  - Fixed a problem where the Exclude command did not work for the Wall Panel Forces spreadsheet.
  - Fixed a conservative problem where wall force diagrams in the detail report would report a min/max of 0 even if the forces didn't go to zero.
  - Fixed a problem with printing out-of-plane concrete lintel detail reports where the program would print the in-plane report instead of the out-of-plane report.
  - Fixed a automatic meshing error where perpendicular walls framing into one another were causing the internal mesh to fail.
  - Corrected an issue in the reported masonry wall panel output to show results based on a consistent effective width.
- Analysis:
  - Improved the integrated automatic meshing of semi-rigid plates and wall panel plates in a RISAFloor/RISA-3D model.
  - Corrected an issue where plate and wall panel contour tools were mistakenly linked.
  - Fixed a problem where the plate contour tool would not work with very small plate models (less than a foot total length/width).

- Corrected a problem where the shear check on a multi-span concrete column was reported as controlling for the wrong span.
- Loading:
  - Added a new Member Distributed Load type that is applied as a pressure to the face of the member. The program will automatically calculate the load in terms of force/length.
  - Improved the member area load mesh accuracy.
- Hot Rolled Steel:
  - Added a new steel shape database for Paco Steel & Engineering.
  - Eliminated an erroneous warning about beam depth for seismic detailing checks.
- Wood:
  - Fixed a problem in the NDS 2012 and 2015 codes where equation 3.9-4 was implemented but the text in the detail report would report Eqn 3.9-3.
  - Corrected an erroneous change to the NDS 1991/97 Wood Design Code label name.
  - Fixed a problem that showed null values for wood shapes and materials that were not existent.
- Aluminum:
  - Corrected an error which caused aluminum member forces to differ in subsequent solutions using different design codes.
- RISACONNECTION Integration:
  - Added the ability to apply a column Baseplate Connection Rule to column members. Now column Baseplate connections may be exported to RISACONNECTION for design.
  - Added the ability to apply Knee Brace Connection Rules to kicker braces. Now these brace connections can be exported to RISACONNECTION for design.
  - Corrected an error where invalid connection rule application crashed the program during Connection export.
  - Corrected an issue where a Chevron Brace connection would erroneously be reported as invalid due to other bracing framing in near the brace intersection point.
  - Fixed an issue where connections were being grouped improperly.

## **Version 15.0.1 Enhancements/Corrections**

- Corrected a problem that could cause Story Drift Definition data to become corrupted when joints were added or deleted.
- Corrected a problem with Story Drift output where the drift values reported were divided by Rho even if Rho wasn't used in the load combination.
- Corrected an issue in wood design where the data could become corrupted if a custom Cfu (flat-use factor) value was used.
- Corrected a problem with single angle bending for aluminum members where the code check equation, H.3.1, was erroneously reporting a failure.
- Corrected an interface issue where Load Categories with a (-) sign could not be selected by the user in the Basic Load Cases spreadsheet.
- Corrected a problem where a very short wall height would cause the program to shut down. A check has been added requiring a wall to be at least 6 inches tall.

## **Version 15.0 Enhancements/Corrections**

- General:

- Added compatibility with IBC 2015.
- Added a new & improved Project Grid system that supports skewed and arc grid lines.
- Added the live display of coordinates and deflection values to the mouse cursor.
- Added a No Wind/Drift checkbox to the Diaphragm spreadsheet to allow mezzanine floor levels to be ignored for wind and drift calculations in integrated RISAFloor/RISA-3D models.
- Added parapets for walls.
- Added parapet wind loading for main wind force resisting systems in integrated RISAFloor/RISA-3D models.
- Flexible diaphragms on sloped roofs can now attribute loads to the sloped members instead of just the members at the ceiling in integrated RISAFloor/RISA-3D models.
- Added error checking for generation of sloped roof wind loads on non-planar roof planes.
- Improved the reaction description in the graphic information label for the model view display.
- Added the deflection ratios to the member label toggle button menu.
- Re-added the ability to automatically relabel 3D-only elements under a RISAFloor model. This had been removed in RISAFloor v10.0.1.
- Fixed a display error which prevented the Wall Panel Editor to open for walls with a large number of nodes in its plane.
- Hot Rolled Steel:
  - Added the CSA S16-14 Canadian steel design code.
  - Implemented L-torque input for the CSA S16-14 code clause 13.3.2 similar to how it is done in the AISC 13th/14th editions.
  - Added a notification to the Detail Report whenever the Canadian Steel Code overrides the user-input effective length (K) factor.
  - Improved reporting of effective yield stress for Canadian steel class 4 sections.
  - Corrected weak axis  $KL/r$  checks where  $K = 1.0$  was conservatively used instead of the actual input K factor.
  - Corrected a minor error in the Lateral Torsional Buckling limit state for a custom input tapered wide flange shape.
  - Corrected a problem with the 2005 and 2001 Canadian Steel Codes with compression capacity of class 4 sections.
  - Corrected an issue with Canadian steel code checks where the unity check reported was wrong for members with near zero (but not zero) moments.
- Concrete:
  - Added the CSA A23.3-14 Canadian concrete design code.
  - Improved the concrete reinforcement optimization to fix a problem where reinforcement design could produce a code check of 1.02 instead of 1.00.
  - Corrected an error where T-beam effective flange widths were being incorrectly calculated per the ACI 318-14 design code.
  - Fixed an erroneous  $Kl/r > 100$  message for Canadian concrete columns that use explicit reinforcement.
  - Corrected an error where a concrete beam detail report would crash after an Envelope Only solution.
- Aluminum:
  - Added the AA ADM1-2015 aluminum design code.
  - Added bending code checks for aluminum single angles per the 2015 code.
  - Added Tau B display into the detail report.

- Updated the strong-axis bending capacity for wide flange members to not be dependent on K for the 2010 and 2015 codes. An update to the specification between 2005 and 2010 changed this behavior.
- Updated messaging in the spreadsheet for aluminum design results to notify the user when a P-Delta solution is required.
- Corrected a problem in the 2010 code where Local Buckling Interaction (section E.4) was being used as the capacity instead of as the upper limit.
- Corrected an issue where the moment strength for pipes could be based on yield instead of rupture. The error was due to a difference in the phi factor.
- Fixed an error in the governing equation display for aluminum pipe bending capacity.
- Corrected an over conservative error with the weak axis code check for Z sections in the AA ADM1-10.
- Wood:
  - Added wood member design per the Canadian CSA O86-2014 design code.
  - Updated the Structural Composite Lumber databases for updated material tables.
  - Updated incorrect headers for Canadian wood members with an enveloped solution.
  - Corrected Wood Cv factor to only apply to weak axis.
  - Fixed a problem with FTAO wood wall design where certain walls within a multi-story wood wall stack would give N/A for the results when actual results should be given.
  - Corrected an error in wood member area calculations for NDS 2012 & 2015 design codes.
- Masonry:
  - Removed all reference to bond stress for masonry. This check was a holdover from the UBC-97 code and is not present in the current codes so it was removed from the program.
  - Fixed a problem with masonry walls where a wall custom region that used staggered reinforcement would use an incorrect grout spacing internally for self-weight and stiffness parameters.
- Cold-Formed Steel:
  - Added the design of Cold-Formed Tubes and Face-to-Face shapes.
- Analysis:
  - Added new / advanced Story Drift checks and calculations.
  - Replaced the existing Top of Member Offset feature with new Analysis Offset feature which allows any member to be offset from its center-line in any direction for analysis.
  - Updated rigid end offset behavior to allow framing, loading and wall panels to interact within the rigid end offset location.
  - Changed / improved behavior of wall panels when part of a Response Spectra Analysis.
  - Corrected an error where compression-only spring reaction forces were not updating in a solution with many iterations.
  - Fixed a mesher issue where semi-rigid diaphragms were having a problem with joints located near but not on the diaphragm.
  - Corrected an error where very long and skinny member area loads would not solve.
  - Corrected an inconsistency related to plate shear modulus calculations.
- RISAConnection Integration:
  - Added a warning in RISA-3D about brace orientation for RISA-3D and RISAConnection integration.

- Corrected an error with RISA-3D to RISACONNECTION integration where braced connections were incorrectly recognizing perpendicular framing as part of the connection.
- Corrected an error in the RISA-3D to RISACONNECTION integration where a brace connection would incorrectly recognize another brace member near the connection as part of the connection.
- Fixed RISACONNECTION integration errors due to RISA-3D not properly recognizing connection members.

## Version 14.0.2 Enhancements/Corrections

- Made significant improvements to the behavior of Subscription licensing, including adding the ability to view current license usage.
- Fixed a mesher problem that was giving a slaved node error in a combined RISAFloor/RISA-3D slab model
- Disabled design of wall panels for Response Spectra Analysis with no Dominant Mode
- Fixed a problem where moving between tabs in the double-click dialog of RISA-3D under RISAFloor, or RISAFOUNDATION under RISA-3D, would result in an erroneous error about node labels.
- Corrected an issue where using the graphical exclude tool for material takeoff would remove previously excluded elements from the material takeoff spreadsheet.
- Changed the way that time history analysis works at the first time step. Previously the static load was being applied as part of the first time step, now the static load is applied prior to the first time step. In 14.0.1 the program was essentially "dropping" all of the static load onto the structure on Step 1, similar to an impact load.
- Restored ability to have steel use a manually input  $C_b$  factor other than 1.0.

## Version 14.0.1 Enhancements/Corrections

- Hot Rolled Steel:
  - Added a limit to the *AISC 360 H1-1b* code checks so that they are never allowed to be below the pure axial code check.
  - Updated the Adjust Stiffness behavior of the *AISC 360-10 (14th edition)* steel code Direct Analysis Method. Previously the program was not taking the axial stiffness adjustments for beam members, though the code specifies this should occur for all members.
  - Fixed a problem with steel and aluminum design where using an unbraced length of zero could result in a divide by zero error in the Design Results spreadsheet or the member detail reports.
  - Corrected an issue where  $KL/r$  errors may not have been reported properly in a envelope solution that contained overstrength load combinations.
  - Corrected an error where all rectangular Hot Rolled Steel bars were being assumed to be compact and non-slender. Now, they are properly checked per *AISC 360 Table B4.1a Case 3* (all other unstiffened elements).
  - Corrected an issue with *CSA S16* code checks where members with axial compression force greater than Euler buckling would report an erroneously low code check (though still greater than 1.0).

- Corrected over conservative assumptions related to bending capacity calculations of members in combined stress equations for the Indian steel code.
- Fixed a problem for single angle bending where the program was conservatively using the Leg Local Buckling limit state even when the leg was in tension.
- Concrete:
  - Governing load combinations for concrete beam shear and bending code checks have been added to the member results spreadsheets and detail reports.
  - Added the consideration of lcracked for concrete members for the Indian, Australian, New Zealand and Eurocodes.
  - Updated concrete wall out-of-plane shear checks to consider shear friction for vertical reinforcement in cases where there is axial tension in the wall.
  - Added a "13M" bar option to the *ASTM A615M* rebar set.
  - Updated concrete wall panel behavior to better handle batch solutions when there are design failures in the wall.
  - Updated the out-of-plane shear capacity calculations for wall panels to use the exact "d" based on the vertical bar in the wall. Previously we were using the average "d" between the vertical and horizontal bar.
  - Fixed an issue with concrete and masonry wall panels where the forces in full-height walls were overconservative due to incorrect transfer of loads from regions above and below openings.
  - Corrected an issue where the T-beam effective slab width was not adjusting properly for the *ACI 318-14* code.
  - Corrected the detail report for cases where an explicit rectangular reinforcement layout was used for a circular section. Previously the detail report information was only partially given.
  - Corrected an issue with concrete column interaction code checks for Response Spectra Analysis.
  - Corrected an issue where adjusting the thickness of a concrete wall panel did not change the self-weight of the wall panel.
- Wood:
  - Added the ability to use Effective Length (K) Factors for both stud and chord axial compression design in wood wall panels.
  - Segmented wood wall panels with slender end regions now get design results for their conforming regions. Previously, no design was done at all for these walls.
  - Suppressed the wood material validity check for models which do not contain wood members.
  - Fixed an Envelope Only solution issue with the wood wall panel Force Transfer Around Openings design method.
  - Fixed a problem with glulam wood members where the "d" in  $l_e/d$  considerations was using a value equal to  $d + 1/2$ ".
  - Corrected an error where wood PSL Parallam columns were using the incorrect compressive capacity design value.
  - Corrected an issue with units conversion for the Canadian wood design code.
  - Corrected errors in the maximum shear panel capacity checks for wood wall panels.
  - Fixed an error in Canadian wood member design where the compressive capacity reduction factor was not properly applied to nailed built up members.
- Masonry:
  - Added the option to change the cover in a masonry wall for out-of-plane design.



- Added the option to define a single non-centered bar in a masonry wall for out-of-plane design.
- Fixed a tolerance issue with the shear code check for in-plane masonry wall design that conservatively provided more boundary zone bars than necessary for code checks near 1.0.
- Fixed a Batch solution problem with masonry lintels where, if shear reinforcement is required, a spacing of 0" is incorrectly reported.
- Corrected the reported maximum axial force in the detail report for out-of-plane strength design of masonry walls.
- Corrected an error where the governing masonry wall panel results would change when the model was re-solved.
- Fixed an issue with out-of-plane masonry wall design where a fully grouted wall would give different results than a similar partially grouted wall with reinforcement spaced at 8" oc.
- Analysis:
  - Added live load reduction for beams and columns in RISA-3D models that are linked to RISAFloor.
  - Corrected a minor unconservative error with the torsional shear stress calculations for rectangular wood and steel members.
- Dynamics:
  - Improved the dialog behavior for Time History- Advanced Settings.
  - Updated the Spectra Scaling Factor dialog to work better for models that do not have rigid diaphragms.
  - Corrected an issue with the graphical display of deflected members for mode shape views when color coded or rendered display is used.
  - Fixed a minor Warning Log problem when importing a time history where an erroneous message could be given.
  - Fixed a problem where viewing a detail report after running a time history analysis could cause the program to shut down.
- Wall Panels:
  - Added a tool to delete all wall panel regions. Regions are automatically regenerated the next time a model is solved.
  - Added a warning message to inform users that point moments will not apply to a wall panel without a dummy member.
  - Corrected an error with the Wall Panel Editor grid display when more than 100 characters are entered.
  - Corrected a problem that caused overconservative shear forces at the ends of masonry lintels, wood headers and regions above concrete openings.
- Licensing/Installations:
  - Updated the RISA Key Manager to work properly from remote desktop without giving a false error message (Error #12).
  - Added WMVCore.dll to installs so that program can operate in Windows Enterprise environments.
  - Added an option for subscription licensing.
- RISACONNECTION Integration:
  - Added the ability to export connections with wide flange braces in diagonal and chevron brace connections.
  - Added the ability to export seismic brace connection data into RISACONNECTION.
  - Added an automatic repair when opening models with corrupted Connection Rules.

- Fixed an integration problem between RISA-3D and RISACONNECTION where the connection grouping was not being controlled by the Connection Rules and a connection was ending up in the wrong group.
- General:
  - The Material Takeoff spreadsheet can now be filtered using the Exclude Unselected Items button from the model view.
  - Updated the wording in message boxes about shape database changes to clarify the behavior.
  - Fixed an issue where the program would not give a message at start-up about custom shapes in the model and whether those shapes should be saved to the database or not.
  - Corrected an issue that could cause extra member area loads to be created when using the Copy command.
  - Corrected an error in the elastic section modulus ( $S_y$ ) calculation for singly symmetric RISASECTION imported shapes.
  - Fixed a problem with the signage on reversible wind loads with quartering where the signage on some of the partial load factors was incorrect.
  - Changed the program function regarding seismic detailing results and envelope solutions to prevent inconsistent results.

## Version 14.0 Enhancements/Corrections

- Added Time History analysis:
  - Direct Integration (HHT) or Modal Superposition solution options.
  - Sinusoidal load generator with ramp up and coast down adjustments.
  - Ability to import or export time history functions.
  - Option to directly define boundary / soil spring damping.
  - Joint trace plots with user plot controls.
  - Ability to batch export joint trace data.
  - Ability to modify the frequency and magnitude of forcing functions via spreadsheet input.
  - Deflection animation views with ability to export MP4 or WMV movie files.
- Steel:
  - Added an SJI virtual joist database and associated design list.
  - Added missing AISC 6th edition double angle shapes to the AISC\_Historic database.
  - Fixed a problem where single angle  $KL/r$  was being incorrectly reported in the detail report for Canadian codes.
  - Corrected an error where Hot Rolled steel shapes were not properly checked for compactness before calculating the compressive capacity of the member.
- Concrete:
  - Added the ACI 318-14 concrete code.
  - Fixed a problem with concrete wall panels where the axial/bending checks were omitted and gave a "-1" value if there was a very high axial tension in the wall.
  - Corrected an error where concrete columns with closely spaced nodes along the length caused the member detail report to shut the program down.
  - Corrected an error in the Canadian CSA A23.3-04 design code shear capacity strain value calculation.

- Fixed an issue with the concrete column solver that could cause the interaction diagram capacity point to land inside of the interaction diagram when it should land directly on it.
- Corrected an issue where concrete wall panel interaction diagrams could be plotted incorrectly.
- Corrected an issue where shear strength for circular concrete columns was being calculated conservatively.
- Added Warning Messages that indicate that concrete wall design requires P-Delta for both in-plane and out-of-plane design.
- Fixed an error where some portions of the concrete wall panel detail reports were not using consistent units.
- Fixed an issue with concrete wall panels where the wrong governing load combination was reported if  $P_u > 0.75 * P_c$  for slender wall checks.
- Masonry:
  - Added a masonry wall summary detail report.
  - Fixed a problem in the masonry wall detail report where the shear strength due to steel reinforcement ( $V_s$ ) could be negative.
  - Corrected an error with the masonry wall shear reinforcement calculation. The gamma factor is now applied to the  $F_{vm}$  calculation.
  - Corrected an error in the calculation of "a" for out of plane masonry wall panels.
- Wood:
  - Added the *AWC NDS-2015 (ASD)* wood code.
  - Added *NDS-2015 Mechanically Graded (MSR & MEL)* material databases.
  - Added the *2015 AWC SDPWS* diaphragm and wood shear wall panel schedules for both OSB and plywood.
  - Updated the Custom Wood Materials spreadsheet to allow more specific material input (material Type and custom CF size factor).
  - Updated Weyerhaeuser Trus Joist materials in the wood SCL material database per updated published values.
  - Fixed an error where full sawn wood shape names were not properly reflecting the selected metric units.
  - Corrected an issue where the custom wood material strengths were not properly reflecting the unit selection.
  - Fixed an error where the Flat Use Factor ( $C_{fu}$ ) was incorrectly calculated for square timbers.
  - Corrected an error where the Canadian wood design System Factor ( $KH$ ) was not properly applied to built up members.
  - Fixed an error where the Canadian wood design System Factor ( $KH$ ) would not save with the model.
  - Corrected a problem with wood member allowable stress values being reported as zero graphically in the double-click dialog.
- Cold-Formed:
  - Added 4" and 8" HDS shapes to the Dietrich Cold-Formed Shape database.
  - Fixed a member capacity discrepancy when I-J end is flipped for CFS channel shapes.
- Aluminum:
  - Fixed a discrepancy for the axial capacity when  $L_{torque}$  is set to zero for aluminum members.
- Program Integration:

- Corrected an issue where RISA-3D can now read in RISASection files which are saved to a location other than the C drive.
- Corrected an issue that added extra dead load into a slab floor semi-rigid diaphragm once brought into RISA-3D from RISAFloor.
- Fixed the auto-generation of boundary conditions in walls over semi-rigid diaphragms in a combined RISAFloor/RISA-3D model.
- Fixed an issue in combined RISAFloor and RISA-3D models where end offsets were causing an incorrect error which prevented the model from solving in RISA-3D.
- Updated the program to allow export from RISA-3D to RISAFoundation if Tension-Only members are present.
- Added the ability to use HSS columns and beams for Vertical Brace and Chevron Brace connections for export to RISAConnection.
- Removed the restriction that a valid tnxTower license was required to open a .RT3 file. Now, only a valid RISA-3D license is required.
- Updated the defaults in the Dynamics dialog in a combined RISAFloor and RISA-3D model so that the "Include Load Combination..." option is unchecked.
- General:
  - Added enveloped member detail reports for Hot Rolled steel, Cold Formed steel, Wood, Aluminum, and General material members.
  - Added a Wall Panel Forces results browser.
  - Added the display of the governing moving load step for wall panel design results.
  - Added the ability to inactivate wall panels.
  - Fixed an error where Canadian *NBC 2005* seismic design period ( $T_a$ ) values were not being saved with the model input.
  - Optimized the processing of wall panel results to speed up the solution time by remembering the cut locations for each wall region and use it for every load combination.
  - Corrected an issue where the AISC Direct Analysis Method amplification of second order effects could be mistakenly applied to models which did not include any members or materials which require the application of this method.
  - Fixed a problem where the programs wouldn't close down properly from the taskbar.
  - Fixed a problem where the wrong deflected shape was animated when viewing the animation prior to displaying the static deflected shape.
  - Fixed an issue with the graphical display of enveloped reactions displaying with the opposite signage.
  - Corrected an error where Euler Buckling members were giving full code check results even though they were only seeing a small amount of compression.
  - Removed Planar Diaphragms from the program. Previous models' diaphragms are automatically converted to Membrane.
  - Corrected the Internal Force Summation Tool for walls and slabs with unselected elements.
  - Corrected the categorization of beam and column Extended End Plate Splice connections as moment connections in the Connection Rules spreadsheet.
  - Fixed a problem caused by the Repeat Current Line command in the Connection Rules spreadsheet which caused the Connection Rules to become corrupted.
  - Corrected an issue with the sorting tool in the Envelope Joint Reactions spreadsheet.
  - Corrected an error where the Application Settings "Lock Isolated Instabilities" option would not apply until the program closed and re-opened.

- Fixed a problem with Help files not working when the program was installed to a folder with a period in the name.
- Corrected a graphical display and printing problem with Footing detail reports.
- Updated the orientation of a landscape image so the image is rotated counter-clockwise instead of clockwise.
- Corrected an error in the printout nomenclature for projected loads.
- Fixed an error where the time stamp was no longer showing up on printed reports.

## **Version 13.0.1 Enhancements/Corrections**

- Installation & Licensing Updates:
  - Released an update version of Sentinel RMS License Manager to be compatible with Windows Server 2012 R2.
  - Fixed the Network.ini behavior to allow for the file to be placed in the root RISA directory and still be seen by the client installs.
  - Corrected an issue with tnxTower .RT3 models not opening in the current version unless the user had administrative privileges.
- Masonry Updates:
  - Updated the "a" calculation for masonry in-plane strength design. Previously the "b" was always using the effective thickness. Now the program checks the "a" value against the length of the boundary zone. If the "a" is greater than the boundary zone then the effective thickness is used. If the "a" is less than the boundary zone then the nominal width is used.
  - Corrected an error that could cause masonry out-of-plane bending capacity of an over-reinforced wall to be reported as zero.
  - Corrected the out-of-plane stiffness calculation for partially reinforced masonry walls.
  - Addressed an issue with masonry wall panels where the tolerance between the design UC and the user's max UC was increased to alleviate changes in reinforcement for the same load combination.
- Miscellaneous Updates:
  - Added the ability to save a video of the animated deflected shape and mode shapes.
  - Added links to all Warning Log messages that take you directly to the relevant section in the help file.
  - Added new icon to "Select Marked Lines in the Model View" toolbar icon.
  - Added a graphic verification that confirms if you are running in a demonstration version.
  - Changed the name of the Global Parameters dialog to Model Settings. Changed the name of the Plot Options dialog to Model View Options. Changed the name of the Preferences dialog to Application Settings.
  - Improved the calculation of Cb values in RISA-3D where the steel beam bracing is based on RISAFloor data.
  - The detail report for footings in RISA-3D will now be updated/refreshed when switching between unit systems.
  - Diaphragms at unselected floor levels no longer are rendered, making it much easier to investigate mutli-floor models.
  - Added a Degenerate Plate Check tool to identify and fix plates that are not planar, or that are poorly shaped.

- Added a non-coplanar warning message to RISAFloor models with roof wind loads where the wind load can't be applied because the roof joints are not coplanar.
- Corrected an issue where the footer for PDF reports was not included on the last page.
- Corrected flexible diaphragm load attribution to no longer consider "Column," "VBrace," or "None" member types.
- Corrected an issue related to envelope solution reporting a moving load step for a non-moving load combination.
- Corrected an issue with the detail report display of KL/r values for tapered members in the AISC 13th / 14th editions. Code checks were correct, but KL/r values could be incorrect for yy value and show na for zz value.
- Fixed a rare memory allocation issue with the Joint Reactions calculation that could cause the program to shut down if an unstable model with multiple load combinations was run with tension-only members.
- Fixed a unit conversion error for wood members in tension per the Canadian design code.
- Corrected an issue where wall panel in-plane transfer parameters were not being updated when solving one LC from another. This affected the  $\Delta_{NS}$  value for a batch solution.
- Corrected an issue with the Delete Joints routine which could cause items (usually members) to reference joints that no longer exist.
- Corrected an issue when clearing an eigensolution between dynamic analyses that would cause the program to shut down.
- Corrected an issue that caused a pedestal in a RISAFoundation from RISA=3D integrated model to display incorrectly in Metric units.
- Corrected a problem where an error message flag caused negative capacity results for hot-rolled steel members.
- Corrected the DXF export display for metric Footings Details.
- Corrected an issue where RISA-3D was not automatically creating boundary conditions at the bottom of wall panel stacks.
- Fixed a problem where the internal PDF writer would print spreadsheet results as images rather than text, causing PDF sizes to be much larger than necessary.

## Version 13.0 Enhancements/Corrections

- Cold Formed Steel:
  - AISI S100-12
  - CANACERO-2012
  - CSA S136-12
  - Added code checks for back to back cold formed steel members.
  - Added L-Torque to CFS members. L-Torque applies to AISI-12 C4.1.2 & C4.2.
  - Updated unbraced length assumptions for CFS members.
- Masonry:
  - Added the ACI 530-13 masonry code.
  - Corrected an issue where the masonry wall panel shear check results were displaying values that did not correspond to the governing load combination.
  - Fixed a problem with the calculation of "a" for out-of-plane strength design of masonry walls, where the program was producing bending capacities smaller than actual.

- Fixed an issue with the detail report for masonry walls where the shear and moment diagrams could be inaccurate if the wall thickness was changed during that session.
- Hot Rolled Steel:
  - Added the AISC Historic shape database.
  - Added Kaiser Bolted Bracket moment connections for Seismic Detailing code checks.
  - Revised OCBF brace connection force reporting for seismic detailing results to be limited by the overstrength load combinations.
  - Updated an error in the Chinese Single Angle Shape Database where the program was previously taking rx as rz.
- Wood:
  - Added wood member design per the Canadian CSA Standard O86-09 design code.
  - Added new glulam material databases per NDS Tables 5B and 5D.
  - Improved error reporting for mismatched wood sizes/species/grades.
  - Fixed a problem where a wood wall would give erroneous warnings about mis-aligned straps due to the presence of perpendicular walls.
  - Fixed an issue where we were not properly filtering out the non-full height region results for wood wall panels with a segmented design.
  - Corrected a problem with explicit wood header materials unintentionally changing when deleting lines from the Wood Materials spreadsheet.
- Aluminum:
  - Added L-Torque to aluminum members when calculating the member's axial compression capacity for the ADM 2010.
- Concrete:
  - Updated the dimensioning of column reinforcement in the detail report to account for the presence of stirrups.
  - Updated the shear area of steel output to be on a per foot basis vs a per inch basis in the detail report.
  - Corrected an issue with the viewing of detail reports for concrete round columns for the NZS code.
- Dynamic Solution Improvements
  - Added a Ritz Vector dynamic solution option.
  - Added a dynamics solution option for considering residual rigid response.
  - Minor changes to simplify the dynamic solution dialog.
  - Corrected the Spectra Scaling Factor calculation to include the importance factor.
  - Corrected an issue where modes with a frequency higher than the last frequency defined in the spectra did not get assigned the proper zero period acceleration.
- Improved Install Behavior
  - Improved ability of Network Client versions to find a license server.
  - Reorganized all files (databases, defaults, etc) into new sub-folder locations.
  - Added an option in the installer to install to the Program Files and Documents folders.
- RISAFloor/RISA-3D to RISAConnection Integration Improvements.
  - Update to include new end plate moment configurations.
  - Update to allow transfer of channel connections as beams and braces.
  - Update to allow transfer of seismic moment connection parameters per AISC 341-10 and AISC 358-10
  - Added a Connection Type field to the Connection Rules spreadsheet to filter list of connections.
  - Corrected an issue with RISA-3D/RISAConnection interaction where having Z as your vertical axis could incorrectly produce member / connection orientation errors.

- Addressed erroneous RISA-3D and RISACONNECTION integration warning related to invalid member slope.
- Loading:
  - Moving loads can now be included in a Batch + Envelope solution.
  - Increased the width of the Load Combinations to allow for 10 Basic Load Cases per Load Combination.
  - Added a feature to generate point loads per a specific moving load time step.
  - Enhanced the Load Combination Generator in order for each RISA program to read its own default settings.
  - Corrected load combination equations for the SBC 301 2007 Saudi Arabia code.
  - Corrected an issue with the Append command that caused the Mx loads to turn into X direction loads.
  - Corrected an error where nodes for the Perp member area load were being rearranged in the spreadsheet.
- Wall Panels:
  - Added the option to detach a wall panel from a diaphragm.
  - Added a Point to Point Internal Force Summation Tool for Walls and Slabs.
  - Enhanced the Wall Panel Editor with local dimensions for openings and design regions.
- General:
  - Semi-Rigid diaphragms added to a linked RISAFloor ES/RISA-3D model.
  - Added an option to the truss generator to allow for pinned end releases.
  - Added a "Memory" to the Copy Loads with Members checkbox in the Copy Offset tool.
  - Improved the capability of tnx Tower to integrate with RISA-3D and RISAFoundation. Previously RISAFoundation input would not be read in after the .rt3 file was created.
  - Common input spreadsheet entries will be merged for appended models.
  - Linked the unbraced length and K factors for columns between RISA-3D and RISAFloor. Now the model will use the same values in both 3D and Floor instead of maintaining separate values.
  - Corrected a units conversion issue with joint reaction COG calcs when units were changed with existing calculations.
  - Fixed an issue where project grids were omitted from the creation of a flat file incorrectly.

## **Version 12.0.2 Enhancements/Corrections**

- Eliminated the need to manually edit the Windows registry for Network Client Installations.
- Improved the reporting of the local buckling limit state for Aluminum members.

## **Version 12.0.1 Enhancements/Corrections**

### **Enhancements**

- Updated the design of the Wall Panel Editor dialog. This includes adding the saving of wall drawing grids and viewing wall panel nodes within the editor.
- Added an external utility to specify a license server for network client installs to use.



- Added the “No\_Cars” and “Full” options to the Cooper-E80 loads in the Moving Load Database.
- Added a new unbraced length code “Lbyy” for Lcomp-top and Lcomp-bot, which allows you to reference and use the Lbyy unbraced length.
- Redefined the blank/empty condition for Lcomp-top unbraced length entry so that it now uses the full length of the physical member.
- Updated the Hot-Rolled Steel calculations for shear capacity. There are  $h/tw$  thresholds used where  $h = d - 2*k$ . The program was previously using  $h = d - 2*tf$ .
- Re-ordered the Member Spreadsheet so “Type” comes before “Design List”.
- Modified the lateral torsional buckling code checks for tapered members (per AISC Design Guide 25) to better handle cases with zero moment at the ends of a member.
- Added notes to report printing options when envelope results are unavailable for printing during a batch solution (or vice versa).
- The equations of local buckling per ADM-05 Section 4.7 are now referenced in the member Detail Report.
- The program now ignores axial forces less than 0.5% of the compression capacity for Aluminum member analysis in order to avoid major code check differences in members with axial force close to zero.
- Licensing enhancements:
  - Added an auto-save during a Windows shut down.
  - Updated the program to allow remote desktop connections for standalone versions.
  - Created an install / initialization log file to better diagnose license commuting issues.

## Corrections

- Corrected an issue with two-way area load attribution for cases with extremely light load or extremely small area load mesh size.
- Corrected an error in which units were not being shown in the Concrete Shape Database.
- Fixed a display issue with projected tapered wall panel surface loads.
- Fixed a few Model Display Options settings that were not able to save into the defaults.
- Separated the color contour controls for the wall panels and plates.
- Removed the reporting of erroneous seismic detailing information from the Model Settings portion of the printed report.
- Corrected an issue related to the number of decimals when printing Dynamics results.
- Resolved the missing graphics legend when printing in Windows 7.
- Corrected an issue where code checks for Cold Formed Steel sections with a user defined  $C_b$  value could over conservatively use a  $C_b$  of 1.0.
- Fixed incorrect code references for seismic detailing checks using the AISC 341-10 and AISC 360-10 specifications.
- Fixed an issue where RISAFloor/RISA-3D/RISAFoundation integrated models with generated lateral loads and flexible diaphragms did not pass all load category information into RISAFoundation.
- Fixed a problem with the Canadian automated Wind Load Generator where the wind pressures used for a rectangular structure were transposed.
- Fixed a problem with Custom Wood Material entry which could cause an erroneous message.

- Corrected an issue where Masonry Wall Panels could report incorrect reinforcement for in-plane forces if the Load Combination which controlled design did not have the maximum moment force.
- Corrected a problem with the shear reinforcement total steel area and capacity for concrete column design.
- Fixed a problem with the Contour Cutting Tool, where it would not work if only certain portions of the model were selected. Now it works in all cases.
- Corrected an issue with code checks on single angle members for the CSA-05 steel code.
- Corrected an error in Aluminum round tube analysis where the code check was calculated using force/stress rather than force/force.
- Corrected a bug in which the "Delete Displayed Loads on Items by Clicking the Items Individually" tool was not working for member area loads.
- Corrected an error in which printing single solution moving load results would cause a program crash.
- Corrected an issue where RISA-3D may not hand over the "distance to top of column" value to RISACONNECTION. This resulted in over conservative calculations for some column stiffener checks.
- Corrected a bug which caused a program crash when adding new lines to the Concrete Materials spreadsheet.
- Corrected a bug which caused a program crash when deleting lines from the Member Design Rules spreadsheet.
- Corrected an issue where member force diagrams could display with incorrect units if the unit settings were changed post-solution.
- For Aluminum design the program was incorrectly (conservatively) using the omega for tensile rupture rather than the smaller omega it was supposed to.
- Fixed a units problem with the headers in the Design Results spreadsheet for Aluminum if the units are not set as Standard Imperial.
- Fixed an issue where an irregular framing situation could cause a Wall Panel meshing problem.
- Corrected an issue related to the graphic display of enveloped Joint Reactions.
- Fixed a calculation error for the axial compression capacity of a tapered wide flange column.
- Fixed a problem in a combined RISAFloor, RISA-3D and RISAFoundation model where saved RISA-3D and RISAFoundation results could be erroneously erased.
- Corrected a problem with user entered values of  $C_b$  in Cold Formed Steel.
- Fixed a problem with the design of Concrete Shear Reinforcing in RISA-3D where RISAFloor interaction could cause some over conservative tie spacing.
- Fixed a Masonry Wall Panel problem where the allowable bending stress,  $F_b$ , in plane was using  $1/3 \cdot f'_m$  rather than  $0.45 \cdot f'_m$  for the 2011 ASD design.
- Corrected a tolerance problem with the Copy-Rotate tool.
- Fixed a problem for Cold Formed Steel members where fully braced members would provide a lower moment capacity than non-fully braced members.
- Corrected an issue with concrete L-beams that didn't indicate the correct negative reinforcement width in the detail report.
- Corrected an incorrect code reference for the bending capacity of singly symmetric Aluminum shapes.
- Removed the solution warning related to  $\tau_{\beta}$  when using any code other than the AISC 13th and 14th Editions since it is not applicable for any other code.
- Removed an irrelevant error message related to inadequate wall panel reinforcing.
- Enhanced the Section Sets to better locate the RISASection database.

- Updated out of plane masonry design to de-couple the location of the axial and bending checks. Previously both checks were always taken from the location of maximum bending, rather than having them taken from separate locations when appropriate.
- Corrected a code check calculation error for an axial member in compression when using the AA ADM1-10: ASD Building Code.
- Fixed an issue where beam thermal force calculations are conservatively incorrect when using Metric units if the load combination factor is not 1.0.

## Version 12.0 Enhancements/Corrections

### Enhancements

- Enhanced Report Printing options:
  - Added the ability to include Detail Reports.
  - Added the ability to include RISA Screen Shots/Graphics.
  - Added the ability to include non-RISA images.
  - Now the user can add a Custom Logo to the report header.
- Add the ability to view Batch and Envelope results simultaneously.
- Moving Load enhancements:
  - Added the step location for moving load results to indicate where the moving load is located when it gives the reported results.
  - Updated the moving load animation with play/pause control.
  - Added the ability to view a specific moving load step in the moving load animation.
  - Added the AREMA Chapter 15 Cooper E-80 (Railway loading) to the moving loads database.
- Added a Trim/Extend tool.
- Enhanced Concrete Design Rules to give a dialog with an image to show exactly what is being updated. An easier explicit reinforcement option is also available.
- Moved Basic Load Case dropdown to the top of all Apply Load dialog boxes.
- Added a Geodesic Dome to the High Level Generation options.
- Added compatibility with Windows 8.1.
- Updates to hold-downs and straps:
  - Updated the wood wall hold-down databases, adding USP hold-downs and updating the design values for Simpson hold-downs.
  - Added the ability to add the hold-down eccentricity to wood shear walls.
  - Strap forces have been adjusted to account for the chord width.
- Wood Updates:
  - Updated wood allowable stress values based on several NDS Addenda.
  - Applied the 2007 Addendum to the AF&PA NDS-05/08 regarding wood design values, changing the Northern Species and adding Coast Sitka Spruce and Yellow Cedar.
  - Added the Hem Fir North, No. 1 & Btr species grade combination to the wood material database.
  - Clarified the CF (size factor) and Cfu (flat use factor) variables for visually graded timbers per NDS Table 4D.
- Added ASTM A1085 material and Design Lists to U.S. program defaults.
- Masonry wall updates:

- Added the Icr Factor and Effective Height Factor, K, to be used for masonry wall design and analysis.
- Added many additional pieces of information to masonry wall detail reports to make hand verification easier.
- Added maximum horizontal bar spacing provisions for masonry shear walls.
- Updated the masonry wall design output spreadsheets to show the governing code check value for both In Plane and Out of Plane results. Masonry gives multiple checks in the detail report for both combined checks and shear checks and previously only the first value was reported in the spreadsheet results rather than the maximum.
- Corrected an issue with staggered and both faces reinforcement for masonry walls where the bending capacity was overly conservative.
- Corrected an error where masonry wall panels would report the incorrect governing shear load for wall regions that require shear reinforcement.
- Corrected reporting of allowable shear and controlling load combinations.
- RISA-Revit Link enhancement: RISA wood walls now export sheathing and nailing information into Revit.
- General graphical interface updates:
  - Added the ability to graphically select items from various input and results spreadsheets.
  - Added a color coding option (3D/2D) based on maximum deflection ratio.
  - Added the ability to turn off the input of Detailing Information used only for exporting information to a steel detailing program.
  - Enhanced the Wall Panel Editor to allow deletion of Boundary Conditions.
  - Added the ability to specify plate element size in the Rectangular Tank Generator.
  - Added the ability to view Joint Reactions graphically with an Enveloped solution.
  - Added the right-click menu option to "Select Items in Current View" to a number of results spreadsheets.
  - Updated the Node/Member labeling so that labels are synchronized in combined RISAFloor/RISA-3D/RISAFoundation models.
- Moved registry information from HKey Local Machine to HKey Current User to better comply with Windows best practices.
- Add the 1.43 stiffness adjustment for service-level loads for concrete wall panels per ACI 318-11 Section R10.10.4.1.
- Enhanced reinforcement checks on members with custom rebar layouts to include ACI 10.5.3 checks.
- Revised dynamic results to now always show Mass Participation regardless of whether or not RSA was included.
- Updated general shape stress analysis to use the square-root-sum-of-squares method to combine orthogonal stresses on doubly symmetric shapes. Previously the orthogonal stresses were directly summed as a conservative approach.
- Enhanced both Indian 2007 and Euro 2005 code compression routines to treat Tapered WF members as welded.

## Corrections

- Updated RISA-3D to work properly with a RISAFoot network version that requires the LS Query List registry setting to work.

- Corrected the printed report Projected Load nomenclature to be consistent with the terms used in the program.
- Graphical cover measurement for concrete members in the Detail Report have been corrected.
- Corrected an error where the program was not correctly applying the user-entered K value in the calculation of the compressive capacity per the CSA S16 Canadian Hot Rolled Steel design code.
- Corrected an issue with the spreadsheet reporting of strap forces where in certain instances the spreadsheet would report NC even if there were tension forces.
- Corrected an error in the calculation of strong axis bending capacity of WT members for the Canadian steel code.
- Corrected an issue where enveloped results may not correctly report envelope deflection ratios when local deflections are negative.
- Corrected a problem with permanently saving General Arbitrary shapes to the Shape Database.
- Corrected an issue with enveloped saved Cold Formed member results where the Phi factor was not being applied in the displayed moment capacities.
- Corrected a unit conversion issue with wood wall stiffness.
- Corrected an issue in Indian 2007 and Euro 2005 codes which could lead to incorrect buckling calculations for members with a flange thickness greater than 100mm.
- Corrected an issue in Euro 2005 code which affects the buckling calculations for S460 steel.
- Corrected a problem in the calculation of Mdv (moment capacity for high shear) per the IS 800: 2007. Capped "beta" value at 1.0.
- Rectangular Tank Generator changes:
  - The Generator now uses full length physical members instead of the piece wise members previously generated.
  - Corrected an offset error with single angles and channels.
  - Corrected an orientation error with channels.
- Corrected a problem that was caused by running the envelope solution in RISA-3D under RISAFloor. If there were gravity-only walls and an envelope solution was run in RISA-3D the program would shut down.
- Corrected an issue where over strength load combinations were being included in code checks even though the load combination material flag was not checked.
- Corrected calculation of the Mv factor for the NBC 2005 Seismic Load Generation.
- Re-enabled the "Adjust Local Axis" option for the Copy-Rotate Tool. This was accidentally disabled in a previous release.
- Corrected an issue that causes the units in RISAFoundation to be off when both the units are changed and an Undo is performed in RISAFloor or RISA-3D in a combined RISAFloor/RISA-3D/RISAFoundation model.
- Corrected an error where unselected loads were being deleted when the "Delete Selected Loads" tool was used.
- Corrected a unit conversion issue with Joint Reaction Center of Gravity calculations when units were changed with existing results.
- Corrected an issue where a load combination with a moving load and over strength factors would cause a crash.
- Corrected an issue with seismic dynamic loads applied as line loads where some of the loads would not be considered.
- Corrected an issue where some wood members were not properly displaying the design values in the Properties tab of the Member Information dialog.

## Version 11.0.2 Enhancements/Corrections

### Enhancements/Corrections

- Enhanced modeling with wood materials:
  - Revised dialogs for selecting and adding wood materials to be more user-friendly.
  - Easier access to the Custom Wood Materials spreadsheet.
  - New dialogs allow the user to view/confirm the material design properties.
  - Updated the structural composite lumber design lists so that shape selections match proprietary products.
- Added the U.K. National Annex provisions to the 2005 EuroCode Hot-Rolled steel design (NA to BS EN 1993-1-1:2005).
- Custom moving loads are now save with the input file.
- Improved animation window controls.
- Added automatic save of RISAFloor results when transferring a model from RISAFloor to RISA-3D.
- Improved the accuracy of CSA S16-09 member capacity calculations for Class 3 and Class 4 members.
- Updated the display of the units for Mass.
- Corrected a bug in Cold-Formed Cb calculations where Cb could change (conservatively) in a non-AISC Hot-Rolled steel code was selected.
- Corrected an error in the CF factor calculation for 12" wide members.
- Corrected a problem with deleting distributed loads using a spreadsheet.
- Updated the masonry P-Little Delta procedure to properly account for all support conditions.
- Corrected an issue where 64-bit network clients were not displaying the Key ID in the Help-About dialog.
- Fixed values for H and HN sections in the Chilean Steel shapes database.
- Corrected a member optimization issue in RISA-3D under RISAFloor where RISA-3D would not recommend smaller shapes for members which were now well below failing due to a decrease in loads.
- Corrected an issue with the Australian steel code where members with axial force greater than Euler buckling capacity would calculate a negative moment capacity.
- Fixed a refreshing issue with General shapes where they would not show up within the "Assign Shape Directly" dialog.
- Corrected a bug in which sorting the member force results for a concrete member would cause the detail report force diagram to change.
- Fixed an issue with concrete and masonry walls where the code check would incorrectly produce "INF" or some design forces could be reported as zero.
- Fixed an issue that didn't remember user entered seismic Ta for Canadian codes.
- Corrected DXF grids import to include arcs.
- Corrected errors in the Chinese shape database for the following shapes: TM170X250 and TW150X300A.
- Corrected a problem with reading CIS/2 files containing quotation marks.
- Fixed an issue with the Cm calculation for out of plane concrete wall design. The program was previously using a value of 0.6 when it should have been using 1.0.
- Fixed an issue that caused a major error while using the Out-of-Plane-Flip tool on a wall panel.

- Fixed a tolerance issue which could cause the seismic self-weight calculation to be incorrect when member area loads are used as part of the self-weight.
- Corrected an issue where h/w ratios for wood walls with multiple openings could be calculated incorrectly for the FTAO design method.
- Corrected a problem with exporting models using Rigid Links to DXF.
- Removed "Trimmer" from wood wall opening detail reports, as it had no impact on the design.
- Fixed a units issue with the Deflection Ratio value on the detail report for out of plane concrete wall design. Previously this ratio was conservatively off by a factor of 12.
- Fixed an issue with out of plane design of concrete walls where the in plane axial force (entire wall) was being used instead of the per foot axial force.
- Corrected an issue with lintel forces for masonry walls where the design ignores any applied forces if the lintel depth went to the top of the wall.
- Fixed an issue that didn't save the dynamic solution inside RISA-3D from under RISAFloor.
- Fixed an issue with out of plane concrete walls where the minimum moment was not being used in all cases.
- Fixed an issue where some footings would not be designed if the allowable soil bearing was set to "Gross."
- Corrected an error where a RISA-3D model under RISAFloor would not solve a dynamic solution unless the user had previously used the Seismic Load Generation to generate nodes on the diaphragm.
- Corrected an error where user-input seismic parameters were being incorrectly reported on the printed output.
- Corrected a display bug in which the graphical display dimensions for a General Arbitrary shape did not update when the shape properties were edited.
- Corrected an issue with shear and deflection diagrams of single angles with nodes along the length of the physical member.
- Fixed an issue with the axial, shear and moment enveloped diagrams for concrete walls in the out-of-plane direction.
- Corrected an error in which area loads were not being properly copied when using the Mirror Copy command.
- Changed Le/d calculation for SCL wood members to use actual rather than nominal dimensions.
- Corrected an issue with ACI threshold torsion calculations which caused them not to be reported for envelope solutions.
- Updated Append behavior to compare the Section Set information between two models before appending. Previously a member defined as Section Set 1 in one model would become Section Set 1 in the 2nd model even if the two shapes were not the same.
- Corrected a minor issue with AISC 13th and 14th editions where incorporating torsional shear stresses into the code check was overly conservative.
- Corrected an issue where outdated information was sent to RISACONNECTION from RISA-3D and/or RISAFloor due to inconsistencies.

## **Version 11.0.1 Enhancements/Corrections**

- RISA-Revit Link Updates
  - Compatible with RISA-Revit Link 2013 version 2
  - Added BIM ID's for RISAFloor slab openings.

- Fixed a wall panel issue where changes made to walls would affect all walls except one.
- RISAConnection Integration
  - Corrected column connection orientation when using the RISAFloor/RISA-3D to RISAConnection integration. Previously the integration was always producing a connection framed to the flange.
- RISAConnection/Tekla Structures Link Updates
  - Added compatibility to support the upcoming release of the RISAConnection/Tekla Structures Link
- Cold-Formed Steel Updates
  - Added AISI provision B4 to the check of the flanges for weak-axis bending.
  - Added the full elastic computation for the " $I_s$ " values in the AISI B4 provision.
  - Fixed an error in the calculation of  $S_{ey}$  for ZS shapes.

## Version 11.0 Enhancements/Corrections

### Enhancements

- Added 64-bit version capability.
  - The program will run in 64-bit addressing space, expanding Windows memory limits.
  - Allows for increased [program limits](#) when running on a 64-bit operating system.
- Added the ability to import a DXF underlay; Allows users to snap to the underlay when drawing members and walls.
- Added the AF&PA NDS-12 (ASD) wood code.
- Added the ACI 530-11 (ASD & Strength) masonry code.
  - Added many supplemental values and extra messaging to masonry wall detail reports.
  - Added option for masonry walls to define the wall area ([RMEH or NCMA](#)). Prior versions used only the Reinforced Masonry Engineer Handbook.
- Added the AISI S100-10 (ASD & LRFD)/CSA S136-10: LSD/CANACERO 2010 (ASD & LRFD) cold-formed steel code.
- Added the AA ADM1-10 (ASD & LRFD) aluminum code.
- Added design for tapered members per AISC Design Guide 25.
- Added the AISC 341/358-10 seismic design provisions.
- Added the CSA S16-09 Canadian steel code.
  - Added code checks for class 4 sections.
  - Added code checks for single angles for both bending and tension/compression.
  - Updated the Canadian steel database per the 10th edition manual.
- Added the NBC 2010 Canadian building code provisions.
  - Added wind and seismic load generation.
  - Added the design response spectra.
  - Added the load combinations (service and strength) to the Load Combination Generator.
- Reduced start-up times by using a faster shape-to-database comparison.
- Updated hold-down databases for newer Simpson catalogs (per IBC 2006/2009).
- Added a Virtual Joist Girder database and design list per SJI recommendations.
- Added the ability to perform concrete member design for overstrength load combinations.



- Added an upper limit on design moment for ordinary moment frames per AISC 341 commentary Section 11.2a.
- Increased the maximum number of modes allowed in a dynamic solution from 500 to 2,000.
- Added new connection features for integration with RISACONNECTION 3.0.
  - Added the AISC 360-10 (ASD & LRFD) code for RISACONNECTION integration.
  - Added support for slightly non-concentric braces.
  - Added new Connection Types to the Connection Rules spreadsheet.

## **Corrections**

- Corrected an issue which would cause color-coded code checks to display all black for concrete members.
- Corrected an issue which would cause the program to shut down if viewing color-coded code checks.
- Corrected an issue where seismic factors (Rho, Omega, Sds) were not properly applying to structure self weight. These values were using a value of 1.0 to factor the self-weight portion of the load.
- Corrected the calculation of the weak axis bending capacity of non-compact and slender channels designed to AISC 13th or 14th edition steel codes.
- Corrected an issue with the seismic detailing calculations where the horizontal component of the unbalanced brace force (for Chevron brace frames) was reported incorrectly.
- Corrected an issue where wood wall design results were not given for a wall with two regions stacked on top of each other with no diaphragm present.
- Corrected an issue where the 2b/h calculation for slender piers on segmented wood walls could be incorrect for version 10.
- Corrected an issue where the program was incorrectly calculating some cross section properties for the principal axes of single angles.
- Corrected an issue with area load attribution which caused odd transient area loads.
- Corrected a calculation error relating to minimum vertical reinforcement in concrete shear walls.
- Corrected an issue where seismic web compactness check could erroneously fail for brace members.
- Corrected some issues with concrete column optimization which could cause overly conservative code checks.
- Corrected an issue where an install path with long file / directory names could cause the program to fail to launch when using file association.
- Corrected issues related to masonry wall design regarding unreinforced walls.
- Corrected a problem with RISA-3D clearing results when using the Director tool to switch between RISAFloor and RISA-3D.

## **Version 10.0.1 Enhancements/Corrections**

### **Enhancements**

- Enhanced performance on 64-bit operating systems to allow use of up to 4 GB of memory.
- Added spacing and minimum steel reinforcement area checks for concrete walls.
- Added Seismic Design Rule selection to the member double click dialog.

- Added ability to do concrete member design for overstrength load combinations.
- Added automatic flipping of gravity loads and diaphragms to the Switch Vertical Axis tool in the Tools menu.
- Added the calculation of  $C_v$  for shear capacity of single angles for the AISC 14th Edition.
- Principal axis notation was added to the detail report for aluminum single angles.
- Added detail report warnings for members and wall panels when these elements are not considered for overstrength load combinations.
- Enhanced spreadsheet behavior so that column widths will be remembered when they are updated.
- Simplified database shape comparisons to reduce program start-up time.
- Updated the Draw Wall Panels dialog to remember a previous action.
- Updated the program to account for story shear in the Seismic Detailing Panel Zone shear demand calculations.
- Updated saving results behavior when working in linked programs so that clicking the Save Results button once will save the results for all linked programs.
- Updated the Copy Rotate tool default settings and updated the Status Bar to better prompt the user.
- Added validation to confirm that all Design Rules are valid upon opening a model.
- Changed member detail reports to show AISC-style report when AISC design is used. This happens when foreign codes are unclear on provisions.
- Updated the model deflected shape to now include solid elements. Previously when viewing the deflected shape the solids were not visible.
- Updated wood wall header output to state whether the header is controlled by bending or shear.
- Added a restriction on single angles such that "depth" leg cannot be shorter than "width" leg.
- Renamed AISI NAS-07 to S100-07 based on code naming conventions.
- Removed the upper limit of 3.0 on  $C_b$  for bending capacity for the AISC 14th Edition.
- Removed moment magnification for the ACI 318-08 code, as a P-Delta analysis is required.
- Removed a limitation on rebar  $F_y$  on the Concrete tab of the Materials spreadsheet and added a warning for ACI codes when rebar  $F_y$  exceeds allowable.
- User-defined wall panel boundary conditions are now consistent across masonry, concrete, and general wall types.
- Made the calculation of the total seismic weight consistent between the Spectra Scaling Dialog and the Insert Seismic Loads dialog. Both now compute any load between the diaphragms (or base and 1st floor diaphragm) based on the distance of the load to the floor or base.
- Removed  $L_{torque}$  from the bending capacity calculations for AISC 13th and 14th editions.  $L_{torque}$  now only affects axial capacity calculations.
- Changed column Euler buckling slenderness violations of AISC 341 Seismic Detailing from a failure to a warning.
- Updated shear panel optimization and hold-down selection in wood walls to be based on wall design rule's Max Shear Check and Max Bending Check respectively. Previously this value was always taken as 1.0.
- Updated masonry design for both ASD and Strength so that the Wall Design Rules - Max Shear Check column works properly. Previously it was assumed that the maximum shear check was always 1.0.
- Updated the M2 calculation for out of plane design of concrete walls so that there is an interior and exterior value. Previously the maximum value was being used in both instances.

- Updated the calculation of the M2 moment for concrete wall panels at each section along the height of the wall. Previously it was taking maximum M2 moment at any place along the height of the wall and using it for every section.
- Updated Chilean Steel database per Acero Diseño Estructural Manual – Segunda Edición

## Corrections

- Corrected an issue with network license validation that could cause a slow down with the user interface.
- Corrected an issue where network client computers could not find databases when launching the program in demonstration mode.
- Corrected the bending capacity of double angles in the AISC 14th Edition.
- Fixed an issue in the ASCE 7-10 Seismic Model Settings where Omega and Rho could not be anything other than 1.0.
- Fixed a unit conversion issue with the Material Take Off output so that the volume of concrete is only based on the density unit.
- Corrected a problem where wall panel stiffness was incorrectly overestimated when using metric units due to a unit conversion error.
- Fixed a problem with the load meshing for flexible diaphragms that would produce error code 2136.
- Fixed the Load Combination Generator so that the notional load direction will always be the same as wind load direction for an individual combination.
- Fixed a metric units problem with masonry lintels where check to make sure that the reinforcement fits within the member geometry was not working correctly.
- Fixed the flexible area load attribution in a RISA-3D under RISAFloor model so that inactivated members do not have load attributed to them.
- Fixed an issue with the calculation of the tributary area of double angle members for Open Structure area loads.
- Corrected a load attribution issue with area loads and metric units not matching the same attribution as imperial units, although total load was still correct.
- Corrected an issue where concrete columns in tension would not design shear reinforcement spacing in the center span region.
- Fixed the display of incorrect governing equation numbers for bending capacities on flat aluminum plates in the detail reports.
- Corrected an issue where the Web Yielding limit state could be overestimated in the continuity plate checks of the Seismic Design results.
- Corrected an issue where the phi factor was not being applied for Web Buckling calculations within the Seismic Design results.
- Updated an issue with wood wall panel optimization where having multiple design rules could cause an individual wall to be designed to a different wall design rule.
- Fixed an issue with masonry walls where the stiffness was not being reset when you make a change in the Wall Design Rules spreadsheet.
- Fixed multi-story wood walls in RISA-3D only models so that you would get results for all regions.

## Version 10.0 Enhancements/Corrections

## Enhancements

- Added AISC 360-10 (14th Edition) ASD and LRFD code checks for hot rolled steel members.
- The AISC Database has been updated to include new shapes in the 14th Edition AISC Manual.
- Added ASCE 7-10 to the Wind / Seismic Load Generation and to the Load Combination Generator.
- Added ACI 318-11 code checks for concrete members.
- Added a "Threshold Torsion" check for concrete beams.
- Added ability to assign openings in concrete wall panels.
- Added a user defined torque length to the design properties for AISC 360-05 (13th Edition) and the AISC 360-10 (14th Edition).
- Added Canadian Parametric Design Spectra per NBC 2005 to the Response Spectra Library.
- Added CSA S136-04 code checks for cold formed steel members.
- Added CSA S136-07 code checks for cold formed steel members.
- Added the location of demand and capacity points on interaction diagrams for concrete walls.
- Added a Tools-Application Settings option to add the individual Load button options back to the Data Entry Toolbar.
- Added a Copy Offset tool.
- Added Load Combination Generation files for the Saudi SBC 301-2007 code.
- Added the ability to print Response Spectra and Moving Load input data.
- Added tension code checks for Aluminum single angles.
- Added hydrostatic loads to the circular tank generation utility.
- Added the ability to click a joint to define the origin of the copy-rotate or move-rotate commands.
- Added the ability to flip local axes of Wall Panels without flipping the opening locations.
- Added the ability to print section properties from the Shape Database dialogs.
- Added optional ability to copy headers with spreadsheet data. (Optional based on a Tools-Preference setting.)
- Expanded the Torsional Buckling / Flexural Torsional Buckling code checks for AISC 360-05 (13th Edition) and AISC 360-10 (14th Edition) to apply to shapes other than WT's and LL's.
- Modified the treatment of masonry and wood Wall Panels to automate stiffness updates within the optimization / Suggested Shapes results.
- Improved the graphical Copy tools.
- Improved masonry Wall Panel definitions to be based on Wall Design Rules so that it will be easier to change multiple walls at the same time.
- Improved reporting of Overturning Moment Safety Factors when RISAFoot runs from within RISA-3D. (This affects Load Combinations built with Basic Load Case numbers rather than load Categories).
- Improved / reorganized the Solution tab of Model Settings to be more user-friendly and easier to read.
- Updated properties in the Cold Formed Steel Database (based on bend radius changes).
- Improved the code checks for concrete columns for cases where the column is subjected to net tension plus bending.
- Removed the obsolete Trade Arbed database from the installation routines.

## Corrections

- Corrected an error with Canadian NBC 2005 Seismic Load Generation where the program was using the  $S_a(0.2)$  value instead of the  $S(0.2)$  value.
- Corrected an issue where shapes from older RISASection files (version 1.1 and earlier) had issues with shear deformation.
- Corrected a bug that caused the weak-axis bending strength of wide flanges members with slender flanges to be overestimated in the AISC 360-05 (13th Edition) code.
- Corrected an issue with distributed loads on tapered Wide Flange steel members where a portion of the distributed load could get ignored.
- Corrected an issue with Canadian design of single angles where compression code checks were reporting a value of 0.0 rather than 'No Calc'.
- Corrected an issue related to aluminum databases and single angle flexural-torsional buckling code checks.
- Corrected an issue with the aluminum code related to the allowable bending stresses for rectangular tubes subjected to a minor axial force.
- Corrected an issue where seismic detailing slenderness limit failures were reported in the wrong column of the Seismic Design Results spreadsheet.
- Corrected a seismic design results issue where the connection design moments for SMF frames were being conservatively reported at the center line (rather than the face) of the column.
- Corrected some issues related to how overstrength load combinations were included in an envelope solution.
- Corrected an issue where Notional Load Generation was not properly accounting for effects of openings in wall panels.
- Corrected an issue with the Load Combination Generator where the program was producing extra (and unnecessary) load combinations.
- Corrected a units conversion issue related to rebar strength for custom rebar layouts.
- Corrected a units conversion issue related to thermal loading on plate elements.
- Corrected an issue where several Model Settings values were omitted from printed output or were printed incorrectly.
- Eliminated lateral-torsional buckling code checks for Cold Formed HU sections bent about their y-y axis.
- Fixed a units conversion problem with RISASection shape properties used in RISA-3D/RISAFloor.
- Corrected an issue with the RISA-Revit Link which could result in loads being deleted during a round-trip.
- Corrected a display issue where envelope solutions for cold formed steel were not properly showing phi and omega values.
- Corrected an issue where the Replace and Resolve function was not properly interacting with the graphical Exclude feature.
- Corrected an issue with the shear code check of multi-span concrete columns where the controlling shear location was always assumed to be at the end of the member.
- Corrected an issue where the 'j' value displayed in a masonry wall detail report could be erroneously shown as 1.0. (This was a display issue only; the calculations were correct.)
- Corrected an issue with the calculation of  $A_s_{max}$  for the IS456 Indian concrete design code.
- Corrected an issue where the Gupta modal combination method would cause a wall panel model to crash during an Response Spectra Analysis solution.

- Corrected an issue with Open Structure area loads where round members were receiving over-conservative loading.

## Version 9.1.1 Enhancements/Corrections

- Added integration with RISACONNECTION for hot rolled steel connection design.
- Made a number of enhancements associated with database shape values and presentation:
  - The AISC Database has been updated to include new shapes in the 13th Edition AISC Manual.
  - The section properties of AISC shapes have been updated to reflect new values in the 13th Edition AISC Manual.
  - When installing over an older version, the database of obsolete AISC shapes is retained as an "AISC\_Backup" shape database.
  - AISC shapes in existing models, which have section properties that differ from current database values by less than a specific tolerance, are automatically assigned the new section properties. However, if the difference in section properties exceeds the tolerance then the existing section properties are retained with a new shape name which has an \_HRA suffix.
  - Added "k" values to hot rolled steel databases to allow for better integration with RISACONNECTION
  - Design Lists updated for the new AISC shapes. Backups of older design lists are saved with a \*.bak extension.
  - Enhanced integration with RISASECTION (version 2.0) to allow for code checks on imported Hot Rolled Steel shapes
  - Added a Print function to the Edit/View dialog in the Shape Database.
  - Enhanced the graphical rendering of General and Arbitrary Shapes to allow for easier identification of strong and weak axes
- Added the IS 800-2007 Indian Steel code.
- Added tie down forces and shear forces to the Wood Wall In-Plane results spreadsheet.
- Updated the cold-formed steel databases to be fully editable.
- Improved the processing time for the creation of results browsers or flat file printing.
- Improved the "Model Merge" utility so that the trim/extend wall panels option will also correct for non-coplanar walls.
- Improved the interaction diagrams for concrete wall panels to make them more continuous.
- Added an upper limit to the lip/width ratio for cold formed steel lipped channel sections in order to properly calculate k (the plate buckling coefficient).
- Added a warning log message for masonry walls that use uncommon material strengths with uncommon block sizes. Self-weight will not be accounted for these walls and must be applied manually.
- Added a graphical Re-Labeling options so that users can selectively re-label existing items based on the current selection state. This also allows user to apply a different prefix to selected items.
- The EuroCode for Hot Rolled Steel (1993-1-1) now uses the AISC C<sub>b</sub> formula to calculate the C<sub>1</sub> coefficient for beam lateral-torsional buckling. this variable will be overridden when the user enters a value in the design data for the member.
- Fixed an issue with seismic detailing checks so that the "frames into column strong axis" check will now only be performed for beams with fully fixed ends.

- Fixed an issue where running a load combination with a moving load in a model with concrete walls would cause an error.
- Corrected an issue regarding member forces calculated from a Response Spectra Analysis when using the Direct Analysis Method which could result in un-conservative values for member moments and code checks.
- Fixed a problem that caused an overstrength error message and no results to be displayed when a moving load was solved.
- Corrected an issue with calculation of seismic and notional loads where the self weight of walls was not being properly attributed to intermediate diaphragm levels. Issue existed only for RISA-3D models that were not linked to RISAFloor.
- Corrected an issue where RSA load combinations were not properly triggering the AISC Seismic detailing calculations.
- Corrected an issue where applying seismic detailing to Hbrace members caused a results browser error.
- Corrected an issue where the Seismic Detailing Results would not display properly for members defined with the function set to "gravity only".
- Corrected the calculation of effective section modulus for  $M_{ny}$  in HU cold-formed shapes.
- Corrected an issue where point moments could be lost if applied at the same end of a member as a pinned moment release.
- Corrected a problem with wall surface loads that touched opening edges, which caused results to be reported as infinity.
- Fixed miscellaneous errors with detail reports for concrete beams when custom shear rebar layouts were used
- Fixed an issue where concrete walls would not be designed if Z is the vertical axis.
- Fixed an issue with wood walls where the header option for "Same as Opening" was not using the same material from the copied header.
- Fixed an error which could cause the Custom Wood Species counter to be off, preventing the model from opening.
- Updated the HDU wood hold-down databases to correct the HDU14 5-1/2" & 7-1/4" capacity values. The update will overwrite the old file and back it up.
- Fixed a Units issue with the chord capacity for wood shear walls
- Fixed a problem that caused wall chord tension to be reported when there was none.

## Version 9.1 Enhancements/Corrections

### Enhancements

- Added Concrete Wall Panels per ACI 318-05 and ACI 318-08 specifications:
  - Ability to design reinforcement (both shear and axial/bending).
  - Ability to design reinforcement for out of plane wall loading (axial bending and shear)
  - Provides story deflections for each story in a multi-story wall.
- Added Seismic Detailing code checks per AISC 2005:
  - Moment Frame design per AISC 358 (RBS, BFP, BUEEP, BSEEP, WUF-W)
  - Strong Column / Weak Beam calculations
  - Column checks for connection forces (i.e. continuity plate stiffeners)
  - Calculation of required strength and stiffness of beam bracing
  - Panel Zone column checks

- Concentrically Braced Frames per AISC 341
- Calculation of unbalanced forces for V and inverted V braces.
- Single Angles:
  - Added ability to designate that axial code checks should be based on geometric or principal axis buckling. See the Help File [Single Angle](#) sub-topic of Member Results for more information.
  - Added bending code checks for single angle members based on bending about geometric or principal axes. See the Help File [Single Angle](#) sub-topic of Member Results for more information.
- Made changes to the Masonry and Concrete Materials spreadsheets:
  - Moved the definition of the yield strength of the reinforcement ( $F_y$ ) from the Design Rules spreadsheet to the concrete and masonry tabs of the materials spreadsheet.
  - Moved the masonry self weight definition from the Design Rules spreadsheet to the Materials spreadsheet.
  - This could result in reduced backwards compatibility of Concrete and Masonry Materials with older versions of the program.
- Added a number of improvements for the Cold Formed Steel code checks
  - AISI 2004 Cold Formed Steel code
  - AISI 2007 Cold Formed Steel code
  - Added Mexican (Canacero) 2004 and 2007 codes
  - Updated the AISI and SSMA database shape properties to reflect the new 2007 code provisions.
  - Added Omega and Phi factors to cold formed steel detail reports and spreadsheets.
- Added AF & PA NDS-08:ASD Wood code.
- Added ACI 530-08 Masonry code.
- Added ACI 318-08 Concrete code.
- Added back in the ability of the program to launch in "Demo Mode" when a license is not detected. Feature now requires the creation of a Demo sub-folder.
- Added a tool to flip the local axes of existing wall panels.
- Modified the CL calculations for glu-lams with  $d/w < 2.0$ .
- Added the ability to graphically display wall panel Design Rules.
- Added the  $C_b$  calculation for cold formed steel members.
- Simplified the interface by splitting the Design Rules spreadsheet into a Wall Design Rules and a separate Member Design Rules spreadsheet. This could result in reduced backwards compatibility of design rules with older versions of the program.
- Simplified the Data Entry Toolbar bar moving the access of the individual load spreadsheets to be within the Basic Load Cases spreadsheet.
- Added P-Delta calculations for wall panels.
- Removed internal wall panel joints from the [program limit](#) for maximum number of joints.
- Improved the graphic display of sloped distributed loads to be more legible.
- Improved the treatment of wood wall schedules when using the Append feature.
- Improved wood wall hold down reporting in the detail report for cases where the allowable hold down force was adjusted for load duration factor or such.
- Added a Note/Warning to the detail report to alert the user when a hold down requires a chord size greater than that specified for the existing wood wall.
- Changed the stiffness used for dynamic analysis to ignore the Direct Analysis method stiffness reductions.
- Changed the Modify Member Properties dialog to allow for independent adjustment of member types, material, and design list.



- Changed the Modify Member Design dialog to be more user-friendly by introducing group boxes and re-organizing existing data.
- Improved the code checks for perforated wood shear walls by adding a check for NDS SDPWS section 4.3.5.3 (maximum unit shear capacity). This only affects walls panel with +1370plf shear capacity.
- Removed the KL/r limitation check for members that are marked as "tension only."
- Updated the ASCE 7-05 minimum base shear calculation to account for Supplement #2( $0.044 * I * S_d > 0.01$ ).
- Added the ability to append R3D or RT3 files into an existing RT3 file.
- Improved the shear code check reporting for masonry walls with a shear stress greater than Fvm. Previous results were accurate, but could be misleading about the location of the governing code check.

## Corrections

- Corrected an issue with the Tee beam flange width calculations for the Canadian Concrete code. Previously, slab thickness (conservatively) and span length (non-conservatively) limits were based on the ACI code.
- Corrected an issue with the Chinese shape database where the x-bar values for channels were incorrect and were preventing code checks from being calculated.
- Corrected an issue with the Euro Steel code checks for class 4 (slender) sections which could result in over conservative code checks.
- Corrected an issue where Floor models with flexible diaphragms would not properly solve an envelope solution which contained moving loads.
- Corrected an issue with the axial code check of aluminum tubes and Rectangular members where the allowable axial stress was incorrectly being multiplied by the member area.
- Corrected a tolerance issue with the code checking of concrete columns. The program was unnecessarily switching from Exact Integration Method to PCA Load Contour method for cases where the moments were very close to zero.
- Corrected a typo in the wood panel hold down database for HDU 14-5.5 hold downs.
- Corrected an issue where aluminum members would not display force and stress values when their design code was set to none.
- Corrected an issue with the Cm calculation for ENV2005.
- Corrected an issue where "tapered members" which do not have any taper were getting incorrect code checks.
- Corrected an issue with the Australian and New Zealand steel code check where members with only axial force could give a code check of zero.
- Corrected an issue with aluminum code checks when the allowable tension force controls the allowable bending force. Previously, the governing equations were not being reported correctly.
- Corrected an issue where the program was transposing the SX and SZ spectra scaling factors in the load combinations.
- Corrected an issue where seismic redundancy factor ( $\rho$ ) was being taken as zero if it was included with loads applied to a flexible diaphragm that came over from RISAFloor.
- Corrected an issue with the AS and NTC concrete codes where the reduction factors ( $\phi$ ) were not displaying properly on the column interaction diagrams.
- Corrected an issue which caused 1992 Eurocode equation numbers to be mistakenly referenced when the 2005 Euro Steel code was used. Code checks were correct; only the displayed equation numbers were wrong.

- Corrected a problem which could cause file corruptions associated with wood material counters.
- Corrected a tolerance issue with the BS 5950 Steel code which could cause the Table 9 stress adjustments to be ignored for members with a thickness of up to 2.5mm greater than what would normally require reduction.
- Corrected an issue with lintels for masonry wall panels where the  $M_n$  was being calculated as a negative value.
- Corrected an issue which could cause a crash when opening an RT3 (RISATower) file with saved results.
- Corrected an issue which could cause models with wall panels to crash when exporting to DXF.
- Corrected a number of issues with load attribution for sloped floors.
- Corrected an issue with wood shear walls where putting the assumed tension chord in compression (or the assumed compression chord in tension) could result in an incorrectly reported chord force. These cases no longer affect the chord force reporting.
- Corrected an issue with the concrete column rebar diagrams which could cause the detail report to crash.
- Corrected a display issue in the detail report for General wall panels where the length of the wall could be reported incorrectly.
- Corrected a tolerance issue with projected area loads where a projected load which was nearly parallel to the plane of the area load could result in -1.#IND member results.

## Version 9.0.1 Enhancements/Corrections

### Enhancements

- Added drawing of flexural reinforcement in the column cross section to concrete column detail reports.
- Added an option to use a non-iterative ( $\tau = 1.0$ ) method for the AISC 360 / 13th edition Direct Analysis method.
- Modified the AISC direct analysis method to ignore the sway flags. See the Limitations - [Stiffness Adjustment](#) section of the help file for more information.
- Improved the wall mesh routines interaction with member area loads. See [Area Load Distribution](#) in the help file for more information on the interaction between walls and area loads.
- Improved the plotting of the deflected shape for members with shear and axial releases.
- Modified the Concrete Column detail reports so that they always show the interaction diagram regardless of what loading is applied to them.
- Improved the custom rebar layout dialog to be easier to use.

### Corrections

- Corrected an issue where the  $\rho$  and  $\Omega$  factors used in the Load Combinations spreadsheet were always set to 1.0 regardless what parameters were entered in the Seismic tab of the Model Settings.
- Corrected an issue that caused over conservative calculations of allowable flexural stresses for aluminum round tubes and channels.

- Corrected an aluminum design issue which resulted in incorrect slenderness parameters (S1 and S2) being used for tube shapes.
- Corrected an issue with the expanded force diagrams for concrete members.
- Corrected an issue where an inactive diaphragm (combined with auto-generated seismic loads) could cause a file corruption and prevent the model from opening in version 9.0.
- Corrected an issue where information changed in the Footings tab of Model Settings would not be remembered when closing out of the dialog.
- Corrected an issue associated with P-Delta analysis in the AISC 13th edition (ASD only) for members subjected to thermal loads. The 1.6 amplification factor on P-Delta effects was not being taken into account for the thermal loads.
- Changed a misleading Warning Log Message to be more descriptive. Instead of "Not enough solution data", the message will now inform the user that their results were generated by an older version of the program.
- Corrected a bug where some unstable plate models failed to generate the warning log message about reactions not equaling the sum of applied forces.
- Updated notation for design coefficients for EuroCode. Previously, the EC3 2004 code was mistakenly using the naming convention from the 1992 version of the code.
- Corrected an issue where appending a model could cause the wall material to be read incorrectly.
- Corrected an issue with the wood database for the "Western Cedar" species.
- Corrected an issue where the program was refusing to do a code check (because  $f_b > F_b E$ ) even though the member was in tension.
- Corrected an issue with the displayed units for wind load generation.
- Corrected an issue where rigid end offsets and custom rebar layouts could result in an overly conservative shear check.
- Fixed a units conversion issue where code checks for wood wall panels could be overly conservative.
- Fixed an issue where hard-coded wood wall panels would always give a seismic load combination as the governing load combination, even if a non-seismic load combination controlled.
- Corrected a display issue where the member detail report displayed a different  $F_v$  value than was actually used in the  $F_v$  calculation for Glulam members.

## Version 9.0 Enhancements/Corrections

### Enhancements

- Added Aluminum member design
  - Added all shapes in the 2005 Aluminum Design Manual.
  - Added code checks per the AA ADM1-05 ASD for both buildings and bridges.
- Enhanced Seismic capabilities within the program:
  - Added a Seismic tab to the Model Settings to permanently store seismic code information.
  - Added redundancy factor ( $\rho$ ) to the Load Combination Generator
  - Added vertical seismic force ( $E_v$ ) to the Load Combination Generator
  - Added automatic linking between parametric design spectra and the seismic tab of Model Settings
  - Added automated I/R scaling to the Response Spectra Scaling dialog.

- Automated the Non-Orthogonal earthquake load options (100% + 30%) within the Load Combination Generator
- Enhanced loading for sloping roof models that are transferred from RISAFloor.
  - Enabled flexible diaphragm load attribution (wind and seismic) for sloped roofs.
  - Added the ability for the Wind Load Generator to include perpendicular sloped roof wind loads per Figure 6-6 of ASCE-7.
  - Added wind load calculations for walls and wall areas that extend above the base roof elevation. These were previously ignored.
  - Gravity loads are now brought into RISA-3D at the tops of sloped walls. They were previously applied at the base floor level elevation.
  - Added sloped roof wind load category option to the Load Combination generator.
- Added notional loads to the Load Combination Generator per AISC requirements.
- Updated the names assigned to all design code options to match ANSI naming convention.
- Added the ability to selectively include or exclude roof load options (RL, RLL, SL) from the Load Combination Generator.
- Added the ability to apply member area loads perpendicular to the plane of the load.
- Added the ability to apply distributed and point loads oriented along wall panel local axes.
- Improved load attribution for member area loads to be more accurate for non-uniform loads.
- Enhanced wood shear walls to use the controlling shear panel design for code checks of every region.
- Improved the design of headers and studs within wall panels so that only gravity load combinations are considered.
- Reduced input file size by eliminating nailing schedules and hold down schedules from all but explicitly defined wood walls and diaphragms.
- Added the multi-ply wood column design adjustment factor per NDS 15.3.2.
- RISA-3D no longer includes internal wall panel joints when checking against the program limits for maximum number of joints.
- Added network file security to prevent multiple users from opening / editing the same file at once.
- Reduced the memory usage associated with envelope results for wall panels.
- Added a Tools - Application Settings option to turn off the Sum of Reactions check.
- Added a new utility to the Tools menu to assist with aligning stacked wall panels.
- Added equation C-F9-1 from steel code commentary (AISC 360) to account for the bending capacity of a fully braced WT with stems in compression

## Corrections

- Corrected a display issue with the Canadian steel code where the  $KL/r$  shown in the detail report was based on the user entered  $K$  value rather than the value of 1.0 required by the clause which governed the code check.
- Corrected a database issue where some HSS round members had an incorrect wall thickness listed.
- Corrected the allowable shear stress calculations for the Indian Steel Code per section 6.4.2
- Corrected an issue where the  $C_b$  behavior was not properly tied to a user entered  $L_{comp}$  value.
- Corrected a unit's conversion issue within the bar strain calculation for concrete. This could cause ACI code checks (when using the exact integration method) to use an incorrect  $\phi$  value, especially for columns subjected to biaxial bending.

- Corrected an issue where the  $C_b$  value was being over-conservatively taken as 1.0 for cases where the user defined both the  $L_{comp}$  and the  $C_b$ . This was overly conservative.
- Corrected an issue where Canadian code checks were not being performed on single angles designated as Euler buckling members.
- Corrected a minor units display issue for wood wall shear capacity.
- Corrected a problem which could cause a crash when solving any load combination #1000 or higher.
- Corrected issues where program could erroneously report that input forces did not equal the sum of reactions.
- Corrected an issue where RISA-3D could write out a RISA-3D file with an erroneous RISA-2D file extension.
- Corrected an issue with the Revit Link where RISAFoundation data embedded in a RISA-3D model could get stripped out of the model after round tripping to Revit.
- Corrected a problem where header/ lintel design above wood or masonry wall openings was being skipped for headers / lintels close to the top of a wall.
- Corrected an issue where the RISAFloor grout spacing was not correctly brought into RISA-3D. Required a re-solve to get the Masonry wall code check correct.
- For masonry bending the nominal wall thickness (instead of the actual wall thickness) is now used per provision 2.3.3.3b of ACI-530.
- Corrected an issue with masonry shear walls where the location of the governing code check was reported incorrectly.
- Corrected an issue where the use of design lists with tapered members could cause the code check for tapered members to be based on an incorrect gamma value. This could also result in an incorrect error message.
- Corrected a problem with batch solutions for wood walls that caused a non-controlling chord force to be reported as controlling.
- Corrected an issue with masonry shear walls which could cause the moment capacity to be reported as zero.
- Corrected an issue in wall panel forces that caused random sign reversal of internal wall forces.
- Corrected an issue with tapered members which could cause them to ignore member point loads applied at 100% of the member length.
- Corrected an issue where some report printing sections were printing out the wrong sections.
- Corrected an issue in the RISA-3D flexible diaphragms detail report where the required capacity for wind load cases was being increased by 40% for models transferred from RISAFloor.
- Modified the wind load calculations to use the mean roof height for sloped roofs rather than the base roof elevation for models coming over from RISAFloor.
- Corrected an issue with explicitly assigned diaphragms where a failed code check would result in a warning message stating that a satisfactory panel could not be found in the panel group for models transferred from RISAFloor.
- Corrected an issue with the Revit Link where RISAFoundation data embedded in a RISA-3D model could get stripped out of the model after round tripping to Revit.
- Corrected a Euro code issue where the program calculated a zero moment capacity for one direction of a tube shape.
- Corrected an issue where duplicate / overlapping members could cause the program to freeze during solution.

- Corrected an issue with the append command where materials with non-unique labels could cause the wrong material to be assigned to members from the appended model.

### Version 8.1.3 Wood Wall and Diaphragm Enhancements

- Automated the 40% stress increase for wind load combinations (compared to seismic) for wood shear walls and diaphragms.
- Added a checkbox for Green Lumber per the NDS footnote which reduces wall stiffness when the wall has a high moisture content.
- Improved the 2b/h shear strength reduction factor so that it will not affect combinations that include wind load.
- Improved the 2b/h shear strength reduction factor for segmented walls so that each region of the wall receives its own adjustment factor rather than using the worst case for all regions.
- Modified the chord force and strap force calculations to more closely match typical design practice. See [Wood Wall - Design](#) for more details.
- Improved the load attribution for vertical loads applied to the "ineffective" sections of a segmented shear wall.
- Improved rigid diaphragm behavior to better error check and correct for models which have duplicate nodes or near zero length members.
- Added code to prevent instabilities in slender walls. Slender regions will still be ineffective for shear force, but should not result in instabilities.
- Improved reporting and warning messages for straps.
- Changed default boundary conditions for wood walls so that FEM stiffness would more closely match the NDS three term stiffness equation.
- Improved reporting for situations where no panels could be found within the limits specified in **Design Rules**.
- Changed the nomenclature for the diaphragm nailing schedules. The term "\_OT" was replaced with "\_RS". Both terms were always intended to mean "Other Rated Sheathing".

### Version 8.1.3 Other Wall Panel Enhancements

- Enhanced the graphic display of wall panel reactions to coincide with wall select states.
- Continuous boundary conditions are now stored separately for wood and masonry walls. Ensures that switching back and forth between materials will not permanently change the wall data.
- Added a warning log and detail report message to clarify that the program does not design masonry walls for net tension.
- Added a more sophisticated 'j' calculation for masonry walls. Previous version had automatically assumed a value of 0.9.
- Improved the trim-extend portion of model merge to deal more effectively with wall panels.

### Version 8.1.3 General Enhancements

- Added automatic Notional Load generation utility similar to the existing wind and seismic load generation.
- Added the 2007 edition of the Saudi concrete code (*SBC 304*).
- Added stiffness adjustment factor ( $\tau_b$ ) to detail reports for AISC 13th edition.

- Added **Bending Span** results to column detail reports for members with custom rebar layouts
- Modified program to be more compatible for future link to the 2011 release of Revit Structure.
- Modified custom toolbar registry settings to allow users who are not administrators to customize their toolbars.
- Removed option for creating new models with the "consistent" units option.
- Modified the legend range for wireframe plate contours to more closely match the range shown for color coded contours.
- Added an automatic check for "ghost reactions." Any time the applied lateral forces are not equal to the calculated lateral reactions then a warning message will appear to alert the user.
- Modified concrete shear tie design to round to the nearest 10mm when metric units are being used.
- Modified RISA-3D/RISAFloor optimization routine for members explicitly defined by the user.
- Implemented clause 13.8.2b of the Canadian Steel Code (S16-05) which can provide lower code checks for special cases of uniaxial bending
- Improved the auto update detection sequence so that it cannot falsely report the presence of an update.
- Updated Sentinel libraries to better support Windows 7. Requires an update to Sentinel SuperPro driver 7.5.0 or higher.

### Version 8.1.3 Corrections

- Updated the criteria for masonry lintel reinforcement spacing checks. Previously some bar arrangements would give a false warning message about the spacing.
- Corrected the calculation of the Beta coefficient for Canadian Steel Code bending check.
- Adjusted the axial capacity calculation for double angles and WT's using *AISC 13th Edition* to explicitly assume  $C_w$  equals zero per the User Note / code commentary.
- Added a 3.0 upper limit to the  $C_b$  calculation for *AISC 13th Edition*. Previous versions of the LRFD code did not include this limit.
- Corrected an issue where a dynamic solution could erroneously solve with tension only members specified. Issue was associated with reading in data from saved results that may not have been consistent with the data file.
- Corrected an issue with the plate contour plotting for models with applied plate thermal loads.
- Corrected an issue where having the default Model Display Options set to display a specific Load Combination number would cause problems when viewing loads in models with fewer Load Combinations.
- Corrected an issue where running a K factor auto-calc from a spreadsheet with no members defined would cause a crash.
- Corrected a problem with the units conversion of wall panel reactions.
- Corrected an issue where the spacing of shear ties was not properly taking into account the **Global Parameter** setting for increments.
- Corrected an issue where wood walls without openings were not getting their capacity adjusted based on the  $2b/h$  ratio for seismic loads.
- Corrected an issue where the program was not properly reading in explicitly set wall panel schedules.

- Corrected an issue where the program was not fully accounting for a difference in the CD (load duration factor) used in the hold down database versus the one used in the load combination.
- Corrected issue where header design was reported for the wall material even if a different material was specified for the header.
- Corrected issue where strap forces for batch and single solutions were not consistent.
- Corrected an issue where wall panel results would not be remembered when opening a saved solution.
- Corrected an issue where *2001 NDS* stress values were used for when doing code checks for Glu-Lam beams per *91/97 NDS*.
- Corrected a units conversion issue with the self weight of wood wall panels.
- Corrected an issue where the self weight of masonry lintels was being applied over-conservatively for batch solutions.
- Corrected an issue where the self weight of walls was not included in the weight used in the automatic Seismic load generation.
- Corrected an issue where the wall meshing routine could come up with a different mesh for static and dynamic solutions.
- Corrected an issue with distributed wall loads where changing the height of the wall could move the location of the applied load.
- Corrected a units conversion issue with the Canadian Seismic Force generation for braced frames.
- Corrected issues with  $\Phi M_n$  Masonry strength calculations which could result in results being reported in the wrong units or with a negative value.
- Corrected an issue associated with opening a model that had saved dynamic results for wall panels.
- Corrected an issue where torsional warping normal stresses were not being accounted for in the code checks for members with no weak axis bending moment.
- Corrected an issue with the envelope display of wall panel reactions in the Joint Reactions spreadsheet. This could result in some joint reactions being replaced with a duplicate copy of a wall panel reaction.
- Corrected an issue where wall panel surface loads applied with total height exactly equal to the mesh spacing would be excluded from the analysis.
- Corrected an issue where Wall Panel reactions would be erroneously removed from the **Joint Reactions** spreadsheet when a graphical exclude was performed.

## Version 8.1.2 Enhancements

- Enhanced the Perforated wall panel detail report to more clearly show shear capacity considering  $2w/h$  reduction.
- Added 1% loading method for seismic loading for structures assigned to Seismic Design Category A.
- Improved displayed  $F_v$  and  $F_v'$  values for Glu-Lam beams to better distinguish between strong and weak axes.
- Improved the reporting of concrete column results designed by the PCA Load Contour Method.
- Changed the torsion tolerance to 20% for HSS combined stress checks for LRFD 2nd edition to match 13th edition specification. Previous tolerance of 10% was used only because of a lack of code guidance.



- Changed display of continuously free boundary conditions for wall panels to improve clarity.
- Added the ability to put a sketch number (and prefix) with graphic printing.
- Added the ability to specify Plane Stress plates when using RISA-3D under RISAFloor.
- Added RSA method and damping ratio to the input file. Previously this information did not get stored with the file.
- Corrected the tolerance for reporting the  $KL/r$  limit for compression member. Limit now enforced for compression members where compression demand is 1% or greater of the compression capacity. Previous tolerance could result in members with high  $KL/r$  ratios failing to report the  $KL/r > 200$  message.
- Added ability to use Design Results spreadsheets to select or unselect members in an envelope solution.

### **Version 8.1.2 Miscellaneous Corrections**

- Corrected automatic out-to-out depth adjustments for non-symmetric chords generated using the Truss Generator.
- Added a warning message to the Euro Steel detail report which reports a flaw in the Euro spec which creates moment capacities equal to zero whenever  $\rho$  approaches 1.0.
- Corrected an issue where tapered members with multiple partial length distributed loads could eliminate the 2nd load if the load transition occurred at an intermediate joint.
- Corrected an issue which could cause the undo/redo counter to get off track resulting in an inability to redo changes that were made.
- Corrected an issue with the reading of the Model Display Options default file which could cause interface issues and / or incorrectly trigger error messages.
- Corrected the  $I_{zz}$  value for the 358TSB18 shape in the Dietrich database.
- Corrected a unit's conversion issue associated with the embedded RISAFloor results. No issue occurred if model was re-solved after the unit's conversion.
- Corrected a unit's conversion issue with member distributed torque loads.
- Corrected a couple of issues with the calculation of NBC Seismic Loads.

### **Version 8.1.2 Wood Design Changes**

- Added Select / Unselect functionality in RISA-3D for diaphragm regions that came from RISAFloor.
- Modified diaphragm deflection calculation for diaphragms especially for diaphragms with multiple nailing zones. Only affects diaphragms that came from RISAFloor.
- Changed a number of miscellaneous things in the design of wood shear walls:
  - Changed enveloping of Strap forces
  - Changed enveloping of studs and chords to be based on maximum code checks rather than maximum forces.
  - Application of  $2w/h$  adjustment factors for shear capacity.
  - Controlling shear force for FTAO walls with multiple openings.
  - Re-defined the  $2w/h$  adjustment factor for FTAO walls to apply to the height of the opening.
  - Added the  $2w/h$  adjustment factor to segmented walls.
  - Changed the wall to wall connectivity of stacked segmented walls. This results in FEM deflection results that are closer to hand calculations.

- o Changed default boundary condition of wood shear walls to be continuously pinned. This results in FEM deflection results that are closer to hand calculations.
- o Removed the upper bound of 1.0 on the SSRF (Shear Stiffness Reduction Factor) to allow for this to INCREASE the stiffness of the wall
- o Corrected various issues with units conversion
- o Ability to read saved results.
- o Elastic deflection calculations for perforated walls were applying the Co factor twice.

## Version 8.1.1 Enhancements / Corrections

- Added the upper and lower bound limitations for the diaphragm design forces per ASCE 7-05 section 12.10.1.1.
- Added the ability to attach wood wall panels to a beam or column via a strap.
- Enhanced the diaphragm nailing optimization to pick more appropriate nailing selections.
- Added the ability to search for members by their Member Function in the Criteria Select dialog.
- Enhanced the error checking so that the P-Delta only applies to hot-rolled steel models.
- Enhanced the seismic force calculations to less conservatively account for Seismic Design Category A (per ASCE-7 2005 section 11.7).
- Improved the graphical display of hold downs and straps in the wall panel editor.
- Added option to graphically delete wall straps and hold downs for wood shear walls.
- Added undo / redo functionality to hold down and strap creation / modification.
- Enhanced the error / warning reporting for nodes that are completely unconnected. Previously these were getting locked without any user notification, even if there was a joint load applied to them.
- Enhanced the Wind Load Generation utility to better detect invalid data (building height is less than or equal to zero).
- Added a warning message to the detail report and design results for Eurocode steel design when a shear failure causes the combined stress code checks to become infinite (i.e.  $\rho$  is greater than 1.0).
- Corrected an issue where, when running an envelope solution with the graphical display of code checks based on color, no values would display.
- Corrected a wall panel load attribution issue where a point load defined in the middle of the wall panel did not properly attribute to the wall.
- Fixed an issue with the detail report where the  $C_b$  value was not being displayed for cold formed members.
- Corrected a problem where unbraced length values entered in RISA-3D were not getting saved when the model was brought back and forth from a RISAFloor model. Issue affected beams, but not columns.
- Fixed a units conversion problem associated the *display* of some of the factors for wood Perforated and FTAO wall panels in their detail reports.
- Corrected an issue where the Internal Force Summation Tool was only updating units during solution time. Therefore, switching units with an active solution could result in incorrect force display until the model was re-solved.
- Corrected some issues with the Append command which could cause duplication of wall panel labels.
- Fixed a program crash which originated from large number of bars (200+) in a Custom Rebar Layout.

- Corrected an issue with FTAO and Perforated walls where walls with multiple openings or offset openings could report incorrect unit shear values or hold downs / chord forces.
- Fixed an issue where RISA-3D detail reports for wood wall panels would be cleared when entering RISAFoundation.
- Corrected an issue that could cause models with a large number of instabilities to crash during an envelope solution.
- Corrected a display issue with the moment diagram for slender masonry walls that diverged during slender wall calculations.
- Corrected an issue where using the Section Sets spreadsheet to modify database shape data was not automatically clearing the stiffness matrix.
- Corrected issue where some spreadsheet operations (Fill block, et cetera) were not available in some spreadsheets (Design Rules).
- Corrected an issue with the warning log where the program was incorrectly generating messages about the straps for stacked wall not properly lining up.
- Corrected an issue with the graphical copy command where the wall straps were not getting copied with the wall panel.
- Corrected an issue where the  $F_v'$  for wood members could be incorrectly displayed in the member detail reports for Glu-Lam members.
- Corrected an issue with the FTAO wood shear walls where the program was enforcing the  $2w/h$  limitations based on the full height of the pier rather than the opening height.
- Corrected an issue with Perforated walls where the wall capacity reduction factor ( $2w/h$ ) was being applied to the chord forces.
- Corrected an issue where older files (v 8.0 or older) that are opened in 8.1 or 8.1.1 may get their wind code or seismic code read in incorrectly. Files created in version 8.1 and newer could still have the wrong wind and seismic codes displayed if they are opened with an older version of the program.
- Corrected meshing errors associated with wall panels.
- Fixed a bug where duplicate nodes were being created during the transition from RISAFloor to RISA-3D.
- Fixed a problem where the diaphragm loads from a RISAFloor model with saved results would incorrectly read the transient loads in RISA-3D.
- Corrected a problem in the Canadian steel code calculations for members classified as "slender". This allowable moment capacity was being reported as negative when it should have provided an error message.
- Corrected an issue with the processing of multiple partial length distributed loads on tapered members. Issue could result in an un-reported loss of input forces if a node occurred at the location of the load transition.

## **Version 8.1 Enhancements / Corrections**

### **Enhancements**

- Added the ability to model wood shear walls with openings, incorporating three design options: segmented, perforated and force transfer around openings.
- Added flexible diaphragm analysis / loading option for RISAFloor diaphragms that are brought into RISA-3D
- Added wood diaphragm design for flexible diaphragms that are brought from RISAFloor into RISA-3D.

- Added a customizable graphic toolbar with new Model Display Options button for easier graphical view of results.
- Added an automatic region generator for shear wall panels to expedite the creation of regions especially for walls that have openings.
- Added EC3 2005 Euro steel code.
- Added BSEN 2004 Euro concrete code.
- Added NBC 2005 Canadian automatic Wind and Seismic load generation.
- Added a Shear Stiffness Adjustment factor for wood shear walls to allow the user to adjust the FEM stiffness of the walls to match the code equations reported in the wall detail reports.
- Added Custom Wood Species for commonly used composite lumber species.
- Added re-design lists for newly added composite lumber Species.

### Corrections

- Corrected an error with plate corner releases which caused the plate moment releases to be reversed. i.e. a corner release that was specified as an Mx release was really an My release.
- Corrected a compatibility issue in the concrete code settings between the current version and RISA-3D version 7.0. Issue could cause an incorrect concrete code to be chosen when reading a version 7.0 (or older) file into version 7.1 or 8.0. Correction only applies to older files being opened in the new version (8.1 or higher). New files opened in old versions can still experience the issue.

## Version 8.0.3 Enhancements / Corrections

### Enhancements

- Enhanced the status bar display for multi-monitor or odd resolution screens.
- Enhanced masonry detail reports to give more clear and relevant output.
- Enhanced the masonry horizontal shear reinforcement graphics in the wall panel editor.
- Improved wood wall panel detail reports to give more relevant output.
- Added general wall panel region detail reports.
- Enhanced wood wall panel detail report to explicitly show chord and hold down forces with the controlling load combination.
- Improved truss generator to allow user to specify "Segment" for unbraced lengths.
- Improved truss generator to recognize triangular trusses and thereby not create duplicate chord end joints.
- Improved wall panel mesher to account for joints with boundary conditions that fall within wall panels.
- Modified the way wood schedules were checked, thus removing unnecessary warnings from the warning log.
- Added code to prevent creation of non-rectangular wall panel regions which could cause errors.
- Enabled users to delete point loads using graphical delete load feature.
- Improved load generation treatment of Base Elevation to properly allow for negative elevations.
- Enhanced the Wall Panel reactions to include the display of the total moment reaction as measured from the mid point of the wall base.

- Modified Masonry Wall Panel detail reports to more consistently report out of plane forces on a per foot basis instead of basing it on the distance between reinforcing bars.

## Corrections

- Fixed a bug where the self-weight of masonry wall panels had values reversed between 140 pcf grout and 105 pcf grout.
- Corrected some unit conversions from imperial units to metric for the output in masonry detail reports.
- Fixed a bug where the allowable stress increase factor was not being considered correctly for masonry wall panels.
- Corrected calculation for stress in the steel for out of plane calculations with bars in both faces of masonry wall panels.
- Fixed miscellaneous inconsistencies between region editor input and the detail report output for masonry.
- Corrected a Wall Panel detail report error where regions that were auto-split could report an over-conservative axial force.
- Corrected graphics in masonry out of plane detail report for "both faces" and "staggered" locations of reinforcement.
- Fixed a bug where wall panel reactions were not being included in response spectra analysis scaling of base shears.
- Corrected units conversion error with the y1 and z values in custom rebar layouts.
- Fixed a units conversion problem with the Canadian code where the moment value was reported as a negative number.
- Removed wall panel end releases because they were being applied incorrectly. They will be added at a later time.
- Modified hold down design and database procedure for wood wall panels to eliminate errors.
- Corrected over-conservative wood wall panel chord force calculation in certain cases.
- Corrected an issue in the load combinations spreadsheet, where adding a line in the spreadsheet would confuse any nested load combinations below.
- Fixed a bug that would cause distributed loads to be cut off if a model merge was performed on non-physical members.
- Corrected an error where duplicate nodes would be created in a RISA-3D model that came in from RISAFloor.
- Corrected a K-factor issue where Nodes with blank lines in the Boundary Conditions spreadsheet were being interpreted as restrained joints for the K approximation.
- Enhanced program mesher for wall panels, eliminating errors.
- Fixed a problem in wall panel detail reports where envelope force and moment diagram were reported as a maximum of batch forces, as opposed to an absolute maximum of batch forces. Issue occurred only for wall panels defined with a "General" material type.
- Fixed Miscellaneous database and default issues associated with the Wood Wall Design Rules.
- Corrected an issue with the wall panel detail reports where the Window Title could list the wrong wall panel label.
- Fixed a problem in wood design where the  $R_b$  calculation was computed as if the bottom flange was in compression when the top flange was actually in compression.
- Corrected a bug that was causing surface loads applied to wall panels to be neglected over the area of the opening.

## **Version 8.0.2 Corrections**

- Corrected dimensions in Euro Steel database for HD360x147, HE1000A, HE1000AA.
- Corrected the contours and contour legends display.
- Fixed a bug where all wall panel surface loads were being placed in Basic Load Case 1 regardless of the specified BLC.
- Fixed a bug where wall panel thickness changes did not automatically clear the stiffness matrix
- Fixed a bug where envelope and batch solutions were considering the last load combination as the controlling one for wall panels only.
- Corrected miscellaneous hold down database errors for wood wall panels.
- Corrected results for wall panels with surface loads applied in the local axis directions.
- Corrected Wall Panel force diagrams in detail reports for models when the Z-axis was set to vertical.
- Corrected the "d" value calculation for masonry wall panels design.
- Corrected out of plane strength design for masonry wall panels.
- Corrected the display of the controlling location masonry wall panel design.
- Corrected miscellaneous wall panel meshing errors.

## **Version 8.0.1 Enhancements / Corrections**

- Added option to view the local axes of wall panel elements.
- Activated the "Detail Report For Current Item" in cases where it was not working.
- Changed the sorting of joint coordinates to include wall panel nodes
- Corrected the graphical display of wall panel surface loads and reaction values
- Corrected the display of grout weight in the wall panel editor.
- Corrected the top value of the wall panel surface load to consider the load factor.
- Corrected the interaction between RISA-3D and RISAFoot to allow footing design within RISA-3D.
- Corrected the calculation of  $r_z$  (radius of gyration about principal axis) of custom single angles created in RISA-3D.
- Corrected the importing of steel joists from a STAAD file.
- Fixed a bug where the program was not properly re-assigning a rebar layout for naming conflicts.
- Corrected an issue where crack control requirements for concrete members could produce tight bar spacing.
- Corrected printing of Project Grids and Wall Panel Surface Loads.

## **Version 8.0 Enhancements / Corrections**

### **Walls Panels Enhancement**

- Added Wall Panels, giving user the ability to model entire portions of walls without using plates.
  - Ability to create Masonry walls with openings to get reinforcement design for in plane and out of plane forces, as well as the ability to design lintels.

- Ability to create Wood walls (currently without openings) and get design results for in plane and out of plane loads
- Ability to create General walls with uniform properties and openings for analysis. A way for analysis of concrete walls.

### **Interface & Graphics Enhancements / Corrections**

- Changed notation for “projected” global axes from L, V, and H to Px, Py, and Pz
- Correct the display of incorrect stress block selection in the detail reports.

### **Interaction Enhancements / Corrections**

- Added the ability for the Lbyy and Lbzz values to be transferred from RISAFloor when using the Director tool.
- Added the ability for the RISAFloor selection of an "inactive diaphragm" to be saved between the RISA3D /RISAFloor transfer.

### **Concrete Design Enhancements/Corrections**

- Corrected concrete beam code checks to consider the last span in continuous concrete beams for the governing code check. The steel reinforcing design optimization was not affected.
- Corrected the Shear UC to not always be taken at the first section of a continuous beam.

### **Sloping Members**

- Ability to bring sloping members over from RISAFloor for analysis.

### **Miscellaneous Enhancements / Corrections**

- Added orthotropic plates. Plate materials with inconsistent E and G will now use both in the element stiffness formulation rather than internally defining G based on the entered E value.
- Changed Emin calculation for SCL members
- Added warning to prevent poorly formed plate from being extracted into a corrupted solid element.
- Fixed a bug where changes to the "Detach from Diaphragm" option did not automatically clear the stiffness matrix.
- Corrected possible corruption of the Report Name database which could result in seemingly unrelated memory errors.
- Corrected printing for the Project Grid spreadsheet
- Fixed Unity Check for columns under the Mexican code that need rebar close to the maximum specified.
- Corrected an issue where editing a model in the embedded version of RISAFoundation could temporarily break the existing RISA3D deflection diagram.

- Corrected member orientation issue associated with the opening of RISA-2D files in RISA-3D
- Corrected an issue with the Material Take Off results which would occur anytime more than 500 section sets were used in a model.
- Removed the potential for "padded spaces" from dialog boxes. When these fields were being padded this would prevent user from entering data in those fields.
- Corrected the display of saved Cold Formed code checks. Phi was not being properly stored in the results file.

### **Version 7.1.3 Corrections**

- Corrected a bug that could result in a crash while using the embedded version of RISAFoot 3.0. The problem only occurred when one of the Load Combinations used for footing design included an AISC 13th Edition code check with the "adjust stiffness" option of the Direct Analysis method.
- Corrected a serious bug that could result in the deleting of embedded RISAFoundation data. If a RISA-3D file with embedded RISAFoundation were saved without having first viewed the Footing data during that session, then the Foundation information would NOT be embedded in the 3D file.
- Corrected a bug related to the validation of RISAFoot version 3.0 licensing. Previously the network version of RISAFoot was not correctly authorizing.
- Corrected a 2nd bug related to RISAFoot authorization that related to launching RISA-3D from within a RISAFloor session.
- Corrected a bug related to the reading of the results file. There were instances where saved results were being discarded even when they were present and valid.
- Corrected a crash on the re-use of eigen solution results for the accelerated dynamic solver.
- Corrected a bug with the optimization of concrete reinforcement. The bug would have prevented the program from adding steel that is above the min flexural steel requirements.
- Corrected a Steel Database error in AISCD32.FIL associated with HSS6.625x0.375.

### **Version 7.1.1 Corrections**

- Corrected a bug where the use of the Automatic Response Spectra Scaling Factor in a solution could cause a crash.
- Corrected a bug in the single angle code that did not allow for single angles to bend about their Geometric axes even when this was specifically requested by the user.

### **Version 7.1 Enhancements / Corrections**

#### **Interface and Graphics Enhancements / Corrections**

- Improved dialog behavior by highlighting the Use? Checkboxes and added in a Clear Use Boxes button
- Fixed a bug with the rendering of deflection diagrams for pipe shapes
- Dynamic\_graphics in the INI file



### **Steel Design Enhancements / Corrections**

- Added changes to the AISC database based on the 13th Edition Manual. Including round HSS design thickness.
- Added a Roll Back On Cancel action to the Model Settings – Code settings to properly account for cases where users change from 13th Edition ASD to 13th Edition LRFD and cancel the change before exiting
- Changed logic for using R value for cold formed / light gage steel
- Slenderness checks for Indian code IS 800
- Updated P-Delta error messages for AISC 13th Edition Manual
- Corrected K value calculation for Indian code. Only affects cantilever type end conditions.
- Corrected K calculation issue that could cause a crash

### **Concrete Design Enhancements / Corrections**

- Added ACI 2005
- Changed  $F_y$  in the rebar layout dialog so that it is tied to stress units to be consistent with definition of  $F_y$  in the Design Rules
- Corrected warnings in shear rebar layouts for Floor
- Concrete T-beams modified in RISAFloor (negative reinforcement over  $L/10$ )
- Fixed bugs related to rebar optimization for extremely, extremely wide beams
- Corrected bug where user defined layouts may not be correctly interpreted at the exact end of the member. Only occurred when support had a width of zero (i.e. boundary condition support).
- Corrected bar callouts for custom column rebar arrangements. Only affected bars defined from left and right side of columns. Bar layers defined based on the bottom or top of section were not affected.

### **Solution & Analysis Enhancements / Corrections**

- Added routine to clear stiffness matrix for cases where Design parameters (member type or sway flag) could result in a required change to the stiffness matrix. Should only affect AISC 13th Edition.
- Internal Force Summation tool adjusted to ALWAYS be defined Left to Right or Top to Bottom

### **Loading Enhancements / Corrections**

- Increased Load Combination limit to 5000
- Added check box for copying loads when using translational, rotational, or mirror copy options
- Added torque Point Loads into the program
- Changed Seismic Use Group to Occupancy Category for ASCE7-2005.

### **Miscellaneous Enhancements / Corrections**

- Corrected bug with the Mirror command that could create poorly defined solid elements.
- Corrected a bug where the program was incorrectly handling duplicate shapes. This bug only occurred when a file was opened which contained a shape that matched the name (but not the properties) of an existing database shape. Program would incorrectly re-assign the member to the database shape.
- CIS/2 Detailing
- CF correction for SCL lumber in 2005 NDS
- Added in better status bar support for Dual Monitors
- Added restrictions on spreadsheet printing for Demo versions. Now limited to a maximum of 5 rows for each spreadsheet.
- Corrected report printing to re-adjust report widths to allow for wider / Landscape pages
- Corrected a bug where copying and pasting from results browsers could result in a memory error based on an "out of range" spreadsheet setting
- KeyID added to input file
- Demo Versions will now run out of HKEY\_Current\_User if Local\_Machine is unavailable
- Ability to turn off the time / date stamp
- Log of members that had invalid or missing design lists
- Added a warning log that will tell you which entries were not read properly or caused the file to be considered "corrupted"
- Corrected a bug where dynamic solutions could cause some "hot keys" to stop functioning in combined 3D / Floor models
- Corrected an error with reading default program settings created by an older version (pre-7.0)
- Corrected bug where Plates Spreadsheet would not open properly from the Main Menu toolbar
- Corrected bug in the truss generator that mis-calculated chord centroids when the 'Maintain Out-to-Out' distance option was selected
- Added code to prevent infinite iteration issues for footings and One-Way elements
- Added dialog to calculate detailing offsets for CIS/2 translator

## **Version 7.0.2 Enhancements / Corrections**

### **Miscellaneous Enhancements/Corrections**

- Primarily released to address some corrections in the RISAFoundation program. Refer to RISAFoundation release notes for more information.
- Corrected a length conversion bug in the rebar database. If length units were other than feet, the program had been erroneously converting rebar cutoff lengths entered in as a % of length.
- Added Security Codes for REVIT Structure Versions. There is no direct impact to the program.
- Enhanced CIS/2 link to allow for complete round trip data transfer.
- Fixed a bug in the subspace solver so that models with more than 100 DOFs, but less than 40 mass terms will solve properly.

## **Version 7.0.1 Enhancements / Corrections**

## **Enhanced Loading Features**

- Added ASCE 2005/ IBC 2006 Wind Loading Code
- Added ASCE 2005/ IBC 2006 Seismic Loading Code
- Added ASCE 2005/ IBC 2006 Response Spectra
- Added Mexican Seismic Loading Code
- Added Mexican Response Spectra
- Negative Base Elevations for Calculation of Wind and Seismic Forces are Now Allowed
- Seismic Load Associated with the Base of the Structure is Now Displayed
- Added Ability to Ignore Base Weight in Calculation of Seismic Loads

## **Enhanced Analysis Features**

- Added Submeshing of Solid Elements
- Added Plate Moment Releases
- Increased Program Limits for Joints, Plates, and Solids to 100,000 Each

## **Enhanced Steel Design Features**

- Correction to the AISC 'Cb' Calculation when Using the "Segment" Code
- Correction to EC3 Steel Code Check for Columns with Bending and Tension

## **Enhanced Concrete Design Features**

- Added Mexican Concrete Design Code

## **Interaction With Other Programs**

- Added Integration Capability with RISATower Program
- Added Member Detailing Information to be Used with Upcoming CIS/2 Translator

## **Miscellaneous Enhancements**

- Added Graphical Filtering for Shape Optimization
- Double Wheel Click Now Calls Up a Full Screen View
- Render Button Is Now a 3-Way Toggle Between Wire Frame - Color Coded - Rendered
- Added INI Only Option to Turn off the Dynamic Mouse Graphics Features
- Enhanced Handling of Instabilities in the Sparse Solver so They Are Locked and the Solution Continues

## **Miscellaneous Corrections**

- Corrected a Bug with the Mouse Wheel Pan / Zoom that Resulted In Numerous Crashes when Color Coding Legends Were Present
- Correction to the Units Conversion of Saved Drawing Grid Data

- Correction to the Units Conversion for Parametric Concrete Shapes
- Correction to the Area Load Attribution for Members with Partial Area Loads and Rigid End Offsets

## **Version 7.0.0 Enhancements / Corrections**

### **Enhanced Loading Features**

- Added ASCE-7 2005 Load Combinations to the Load Combination Generator
- Corrected an error with the attribution of Member Area Loads that was eliminating the load associated with Rigid End Offsets

### **Enhanced Analysis Features**

- Added a Sparse Solver to speed up solution times and reduce memory requirements
- Added an 8-node Solid Element

### **Enhanced Steel Design Features**

- Added AISC 13th Edition Steel Code
  - Ability to use 1.6\*P-Delta effect for ASD Design
  - Ability to reduce flexural stiffness for certain members of lateral resisting system based on the axial load in the members (this is done on a LC by LC basis)
  - Ability to reduce axial stiffness for certain members of the lateral resisting system
- Changed the BS steel code to distinguish between H and I sections when choosing which strut curve to use

### **Enhanced Wood Design Features**

- Added NDS 2005 Wood Code
- Corrected a bug in the 2001 wood database that was using a lower Fc value for DFL #2 Post and Timbers

### **Miscellaneous Enhancements / Corrections**

- Corrected a bug with the Block Fill command that was only allowing the first 3 cells of the block to be filled
- Corrected a bug with the internal force summation tool that could cause a crash for models with triangular plate elements
- Corrected a bug where changing the Member Type of a concrete member did not clear the stiffness matrix