Release Notes for RISA-3D

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.
  - 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
- 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.
  - Resolved an issue that mixed up the Warren A and Warren B truss types when using the truss template generator.
  - 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 (Fe) 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 dv (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.
    - Fixed an issue with graphic display of plates when transparency is set to 100.

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 Bc 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 (emu) 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 Iyc/Iy 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 Ci in sawn lumber design.
    - Fixed the calculation of the “Co” Factor for perforated wood shear wall.
    - Resolved an issue where the flat use factor, Cfu, 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 Cb factor when Cb 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 Tu (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.