

# Release Notes for RISA-3D

## 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.
- 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.

## 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 Ry and Rt 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 Cb was still being calculated despite a custom user input for unbraced length.
  - Updated Cb 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 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 ( $R_o$ ) 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.