

Release Notes for RISA-3D 8.1.0

Version 8.1.0 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 Plot 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 8.1.1 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 Cb 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 Fv' 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.
- 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.
- Corrected problem with seismic mass value used in Fp calculation for diaphragms in Envelope Solutions.
- Fixed a problem where the diaphragm loads from a RISAFloor model with saved results would incorrectly read the transient loads in RISA-3D.
- Fixed a bug where duplicate nodes were being created during the transition from RISAFloor to RISA-3D.
- Corrected a problem that would cause the Wall Results spreadsheet to not display results for masonry walls, though the detail report showed results.
- Corrected an issue with the naming convention of diaphragms. Previously deleted diaphragms could cause a duplicate labeling issue which affected the application of diaphragm loads.
- Corrected an issue where girders receiving a negative load from supported members were displaying 1#Q0 in the Vibration Results spreadsheet.

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 Fv and Fv' 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.
- Changed 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.
- 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 Plot Options default file which could cause interface issues and / or incorrectly trigger error messages.
- Corrected the Izz value for the 358TSB18 shape in the Dietrich database.
- Corrected a unit's conversion issue associated with the embedded RISAFoot 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.
 - Changed default boundary condition of wood shear walls to be continuously pinned. This results in FEM deflection results that are closer to hand calculations.
 - 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
 - Corrected various issues with units conversion
 - Ability to read saved results.
- Elastic deflection calculations for perforated walls were applying the Co factor twice.

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 Help files 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 (τ_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.

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 plot 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 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 overconservatively 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 $\Phi \cdot M_n$ 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.