

# Release Notes for RISA-3D 9.1

## Version 9.1.0 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 (Fy) 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 Cb 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( $0.044 * I * S_{ds} > 0.01$ ).
- 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 Mn 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 9.1.1 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<sub>ny</sub> 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.