

# Release Notes for RISA-3D 9.0

## Version 9.0.0 Enhancements/Corrections

### *Enhancements*

- Added Aluminum member design
  - Added all shapes in the 2005 Aluminum Design Manual.
  - Added code checks per the AA ADM1-05 ASD for both buildings and bridges.
- Enhanced Seismic capabilities within the program:
  - Added a Seismic tab to the Global Parameters to permanently store seismic code information.
  - Added redundancy factor ( $\rho$ ) to the Load Combination Generator
  - Added vertical seismic force ( $E_v$ ) to the Load Combination Generator
  - Added automatic linking between parametric design spectra and the seismic tab of Global Parameters
  - Added automated I/R scaling to the Response Spectra Scaling dialog.
  - Automated the Non-Orthogonal earthquake load options (100% + 30%) within the Load Combination Generator
- Enhanced loading for sloping roof models that are transferred from RISA-Floor.
  - Enabled flexible diaphragm load attribution (wind and seismic) for sloped roofs.
  - Added the ability for the Wind Load Generator to include perpendicular sloped roof wind loads per Figure 6-6 of ASCE-7.
  - Added wind load calculations for walls and wall areas that extend above the base roof elevation. These were previously ignored.
  - Gravity loads are now brought into RISA-3D at the tops of sloped walls. They were previously applied at the base floor level elevation.
  - Added sloped roof wind load category option to the Load Combination generator.
- Added notional loads to the Load Combination Generator per AISC requirements.
- Updated the names assigned to all design code options to match ANSI naming convention.
- Added the ability to selectively include or exclude roof load options (RL, RLL, SL) from the Load Combination Generator.
- Added the ability to apply member area loads perpendicular to the plane of the load.
- Added the ability to apply distributed and point loads oriented along wall panel local axes.
- Improved load attribution for member area loads to be more accurate for non-uniform loads.
- Enhanced wood shear walls to use the controlling shear panel design for code checks of every region.
- Improved the design of headers and studs within wall panels so that only gravity load combinations are considered.
- Reduced input file size by eliminating nailing schedules and hold down schedules from all but explicitly defined wood walls and diaphragms.
- Added the multi-ply wood column design adjustment factor per NDS 15.3.2.
- RISA-3D no longer includes internal wall panel joints when checking against the program limits for maximum number of joints.
- Added network file security to prevent multiple users from opening / editing the same file at once.
- Reduced the memory usage associated with envelope results for wall panels.
- Added a Tools - Preferences option to turn off the Sum of Reactions check.
- Added a new utility to the Tools menu to assist with aligning stacked wall panels.
- Added equation C-F9-1 from steel code commentary (AISC 360) to account for the bending capacity of a fully braced WT with stems in compression

### *Corrections*

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

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

## **Version 9.0.1 Enhancements/Corrections**

### ***Enhancements***

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

## ***Corrections***

- Corrected an issue where the rho and Omega factors used in the Load Combinations spreadsheet were always set to 1.0 regardless what parameters were entered in the Seismic tab of the Global Parameters.
- Corrected an issue that caused over conservative calculations of allowable flexural stresses for aluminum round tubes and channels.
- Corrected an aluminum design issue which resulted in incorrect slenderness parameters (S1 and S2) being used for tube shapes.
- Corrected an issue with the expanded force diagrams for concrete members.
- Corrected an issue where an inactive diaphragm (combined with auto-generated seismic loads) could cause a file corruption and prevent the model from opening in version 9.0.
- Corrected an issue where information changed in the Footings tab of Global Parameters would not be remembered when closing out of the dialog.
- Corrected an issue associated with P-Delta analysis in the AISC 13th edition (ASD only) for members subjected to thermal loads. The 1.6 amplification factor on P-Delta effects was not being taken into account for the thermal loads.
- Changed a misleading Warning Log Message to be more descriptive. Instead of "Not enough solution data", the message will now inform the user that their results were generated by an older version of the program.
- Corrected a bug where some unstable plate models failed to generate the warning log message about reactions not equaling the sum of applied forces.
- Updated notation for design coefficients for EuroCode. Previously, the EC3 2004 code was mistakenly using the naming convention from the 1992 version of the code.
- Corrected an issue where appending a model could cause the wall material to be read incorrectly.
- Corrected an issue with the wood database for the "Western Cedar" species.
- Corrected an issue where the program was refusing to do a code check (because  $f_b > F_bE$ ) even though the member was in tension.
- Corrected an issue with the displayed units for wind load generation.
- Corrected an issue where rigid end offsets and custom rebar layouts could result in an overly conservative shear check.
- Fixed a units conversion issue where code checks for wood wall panels could be overly conservative.
- Fixed an issue where hard-coded wood wall panels would always give a seismic load combination as the governing load combination, even if a non-seismic load combination controlled.
- Corrected a display issue where the member detail report displayed a different  $F_v$  value than was actually used in the  $F'v$  calculation for Glulam members.