

# Release Notes for RISAFoundation v4

## Version 4.0.1 Enhancements/Corrections

### *Enhancements*

- Enhanced performance on 64-bit operating systems to allow use of up to 4 GB of memory.
- Simplified database shape comparisons to reduce program start-up time.
- Retaining Wall Enhancements:
  - Updated the retaining wall detail report by adding the Soil Bearing Check section. Previously this check only showed up in the Retaining Wall Results spreadsheets.
  - Updated the shear check location for retaining wall footings. Previously the program checked a distance "d" from the wall face for the toe and directly at the face of wall for the heel. Now it will determine the net shear direction and perform the shear check accordingly.
  - Updated the way graphic reactions are shown for retaining walls. The program will now divide the entire reaction force by two and show it graphically at the end nodes of the retaining wall.
  - Updated the reinforcement checks for retaining wall footings. Previously the toe was only checked for bottom reinforcement and the heel only checked for top reinforcement. The program will now check both the heel and toe for top and bottom reinforcement design.
  - Added a check for retaining walls comparing total passive force versus total active force. If passive force exceeds active force a warning is given in the detail report and the design is halted.
  - Fixed an issue with retaining walls where the program would give an instability if the length of the toe or heel of the footing was shorter than the "d" of the footing.
- Updated saving results behavior when working in linked programs so that clicking the Save Results button once will save the results for all linked programs.
- Added validation to confirm that all Design Rules are valid upon opening a model.
- Enhanced spreadsheet behavior so that column widths will be remembered when they are updated.
- Added additional licensing information to Help - About screen for commuted licenses.
- Increased the number of allowable pile elements in a model from 1000 to 1500.
- Updated the overturning moment calculations for shear loads applied to slabs. Previously the shear load was assumed to act at the mid-height of the slab, but it has been updated so the overturning calculations consider the forces at the top of slab.
- Removed limitation on rebar Fy on Concrete tab of Materials spreadsheet. Added warning for ACI codes when rebar Fy exceeds allowable.

### *Corrections*

- Corrected a results reading problem where saved results would not be read in for models integrated with a RISA-3D model that had boundary conditions at varying elevations.
- Corrected an issue with network license validation that could cause a slow down with the user interface.
- Corrected an issue where processing of line loads with extremely small (or zero) values could cause "INF" results.
- Corrected a problem with the spreadsheet reporting of Footing Shear Checks within the Footing Results spreadsheet for Canadian, Indian, and Mexican codes.
- Corrected a metric units issue with pile cap one-way shear checks.

## Version 4.0.0 Enhancements/Corrections

- Added Retaining Walls to RISAFoundation:
  - Added the ability to model cantilever or propped walls.
  - Added the ability to handle sloped backfill.
  - Added the ability to review / print load diagrams showing all wall loading for any load combination.
- Automatic calculation of Ka and Kp based on soil definitions.

- Added ACI 318-2011 design code.
- Added the Canadian (CSA 23.3-2004) design code.
- Added the Saudi (SBC 304-2007) design code.
- Added a "Force Top and Bottom" steel option for slab reinforcement to the Design Rules. (This may reduce temp / shrinkage bar requirements in bottom of footing.)
- Added footing optimization based on overturning moment and sliding safety factors.
- Added the governing load combination to the pedestal code checks section of the footing detail reports.
- Added hydrostatic (HL) loads to the Load Combination Generator.
- Updated the "d" calculation for footings to now be equal to the footing thickness minus cover minus one bar diameter. Previously we considered only half of the bar diameter. The new "d" is more conservative, as we do not know how the rebar mat will be placed.
- Modified concrete shear tie design to round to the nearest 10 mm when metric units are used.
- Modified footing optimization routines to better handle cases with net uplift.
- Corrected an issue where a footing with a large negative moment could receive overly conservative reinforcement for resisting positive moment.
- Modified the logic for footing reinforcement. This should only affect cases where temperature / shrinkage requirements resulted in reinforcement demand between  $\frac{4}{3} * A_{s_{required}}$  and  $A_{s_{required}}$ .
- Corrected an issue with the Slab Soil Pressures spreadsheet where the maximum solid pressure could erroneously be listed as zero.
- Corrected an issue where inserting points via the Point Coordinates spreadsheet could cause pedestal locations to move.
- Corrected an issue with overturning moment stability factor calculations when the mat contains pedestals with a different density concrete material than that of the footing/slab.