Release Notes for RISA-2D

Version 20.0 Enhancements/Corrections

- Hot Rolled Steel:
    - Added the analysis and design of back-to-back hot rolled channel members.
    - Added an enhancement that alpha_m calculation under NZS code will conservatively default to 1.0 when explicit unbraced lengths are used.
    - Fixed an issue that the Cb factor for steel members may not be taken as 1.0 conservatively if Lcomp references an explicit value from Lb.
    - Resolved an issue where the input for Cb factor may not persist when it was added in the member spreadsheet.
- Concrete:
    - Added the CSA A23.3-14 concrete design code for concrete wall panels.
    - Fixed an issue where concrete members may not report strong-axis moments and shears if the member is rotated.
- Masonry:
    - Added larger reinforcement spacing options for masonry wall design.
- Wood:
    - Added Incision factor Ci in sawn lumber design.
    - Added the Specific Gravity Adjustment Factor to reduce the shear capacity for wood framed shear walls.
    - Fixed an issue where specific model files may have 'nan (ind)' results for LVL wood members under 2001 NDS code.
    - Corrected an issue where the Cr (repetitive use factor) would equal 1.0 regardless if it was enabled.
    - Fixed an issue where the Kz factor may not be calculated correctly under CSA 086 code.
- General:
    - Resolved an issue that the program tries to save models as RISA-3D files if they are imported from DXF.
    - Updated the text in the Units Selection to say 'Material Stiffness' instead of 'Material Strengths'.
    - Updated the location where user data files are stored during default installation to prevent certain file access issues.
    - Enhanced silent install functionality by disabling the program from launching after install.
- Analysis:
    - Fixed an issue that custom member end releases may not be saved and applied properly in analysis.
- Interface/Graphics:
    - Fixed an issue that surface load display may not update when switching units.
    - Resolved an issue that recent project files are not listed in the Starting a Model dialog when launching the program.
    - Updated a display issue where the concrete cover dimension in the rebar detailing view in concrete detailed reports may not be up to scale when using custom rebar layouts.
    - Fixed an issue where the display of member section properties under the Properties tab in the Member double-click dialog may not be refreshed correctly when switching between members.
    - Enhanced the area load magnitudes to reflect the 'Decimal Places for Input' specified in the Application Settings.
- Operations:
    - Resolved an issue that users cannot switch member functions between 'Lateral' and 'Gravity' under the Members spreadsheet.
    - Fixed an issue that edits for default file locations under Application Settings may not stay after reopening the program.
    - Fixed an issue that data in the Drift Definition spreadsheet may not be saved with the model file.
    - Fixed an issue that detailed reports may not be opened properly for concrete columns designed under the AS 3600-2001 code.

- Resolved an issue where CSA wood material properties would not properly save, causing a 'check wood materials' warning message when opening the model.
- Printing/Reports:
    - Fixed an issue that the font may not be recognized by older versions of Adobe PDF printer when printing wall detailed reports.
    - Fixed an issue that when printing a report, the spreadsheets may be shrunk and not fit the page size.
    - Fixed an issue that the footer of the masonry wall detailed report does not display properly.

Version 19.0 Enhancements/Corrections

- General:
    - Updated terminology in the program such that nodes can be tethered to other nodes rather than slaved.
    - Updated the warning message for models solved without P-Delta when P-Delta is required by code.
    - Corrected a graphical issue where the reported member deflection ratio turning red would not match the corresponding pass or fail design rule limit.
    - Resolved an issue where the maximum story drift was not properly displayed.
    - Fixed an issue with non-physical members causing incorrect moment capacity results in some models.
    - Resolved an issue on governing moving load steps missing in the Wall Panel Forces spreadsheet.
- Analysis:
    - Improved solution efficiency and behavior with compression and tension only members.
    - Improved solution convergence behavior with Tension Only, Compression Only, and Euler Buckling members in combination with P-Delta effects.
    - Corrected an issue where thermal loads applied to inactive tension/compression only members were erroneously included in the calculation.
    - Resolved a units issue where analysis offsets using metric units were not properly converted.
    - 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.
- Hot Rolled Steel:
    - Added A913 Gr.65 material to default U.S. hot rolled steel materials.
    - Updated cross sectional properties of Canadian wide flange W690x802 in the shape database.
    - Updated Cb limit to be 1.5 for single angle hot rolled members for the AISC 13th, 14th, and 15th Editions.
    - Updated the hot rolled steel compression capacity for wide flange members to consider the flexural-torsional buckling limit state if Ltorque is greater than either Lby-y or Lbz-z per Section E4 for AISC 15th and 14th Editions.
    - Updated the compression calculations for slender prismatic tapered wide flange members using AISC 360-16.
    - Updated the code checks for steel members with slender elements to properly include the limit state of FTB per AISC 14th Section E7.
    - Fixed an error in the Eurocode Hot Rolled Steel database where the Zy and Zz values were erroneously inverted for rectangular tube sections.
    - 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.
    - Corrected an issue where Cb was still being calculated despite a custom user input for unbraced length.
    - Fixed an issue resulting in negative weak axis moment capacity for channels.
    - Corrected an issue where bending was being considered erroneously in the unity check for single angles per Canadian code in some cases.
    - 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.

- 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.
- Revised the leg slenderness classification for single angles per Canadian code to only consider the longer leg.
- Resolved a conservative error in Qs calculation for tapered wide flange members when equation E7-9 was used.
- 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.
- 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.
  - Updated the shear calculation for Z shapes to include two flanges for shear area.
  - Updated the capacities reported in the member detail report to reflect the safety factors for members analyzed using AISI 1999:ASD.
  - Corrected an issue where the distortional properties for CFS 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 calculating sigma_t when the connector spacing was set to zero.
  - Revised the flexural-torsional buckling stress, Fcre, 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 Fcre (Eq. 2.2-1) which is for singly symmetric sections.
  - 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.
  - 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 the incorrect unbraced length was being reported in some cases when the beam would experience negative bending.
  - Corrected the safety factors used to calculate the allowable capacities reported in the detail report for members analyzed using older cold-formed steel codes 2010 or older.
  - Corrected the safety factor for shear using the CANACERO 2016 code.
  - 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 lateral torsional buckling moment capacity (Mn,LTB) calculation for solid rectangular shapes to use Mnu instead of Mnp per ADM 2015 section F4.
  - Updated the shear capacity calculation to consider shear rupture per ADM 2015.
  - Updated the shear capacity calculation for flat webs supported on one edge per ADM 2015 Section G.3 instead of G.2.
  - Corrected the calculation of the stiffened element depth, h, for wide flange and channel shapes per the AISC 14th Edition.
  - 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 an issue where moment capacity per ADM2015 check could be controlled by Section F8 from ADM2010.
  - Corrected Lv calculation for Round Tube shear capacity per ADM 2015, Section G4.
- Concrete:
  - Added the ACI 318-19 concrete code for beams, columns and wall panels.
  - Added additional metric bar sizes for the ASTM A615M rebar set.
  - Added the AS/NZS 4671:2001 rebar set.
  - Added a warning message for concrete wall seismic design to better explain the aspect ratio limits.
  - Refined deep beam qualification criteria according to ACI 318-14 Section 9.9.

- Corrected an issue where minimum vertical reinforcement in concrete walls was being calculated too conservatively for some models.
- Wood:
  - Added LRFD wood design for NDS 2018 and NDS 2015 codes.
  - Updated the Simpson Holddown, Simpson Chord Straps, and Canadian Simpson Holddown schedules based on the 2017-2018 Simpson Strong-Tie Wood Construction Connectors catalog.
  - Improved optimization of wood wall panels designed using the FTAO method.
  - For multi-ply members, updated the Cp calculation to use the smaller Cp value from both directions instead of a conservative Le/d value.
  - Resolved an issue where CSA wood material properties would not properly save, causing a "check wood materials" warning message when opening the model.
  - 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 Kyy and Kzz 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.
  - Corrected an issue where the incorrect value of Fb was used in the calculation for the adjusted bending design value for wood members 5in x 5in and larger.
  - Resolved an issue where the wood bending capacities using CSA 086 were reported in the wrong units in the Member Detail Report.
  - Resolved a graphical error for wood members using CSA 086-14 where the shear capacity was reported incorrectly in the Member Detail Report.
  - Corrected the shear design value for glulam members using NDS 18 LRFD.
- Masonry:
  - Corrected an issue where masonry walls in some cases were being designed over the user defined UC limit.
- Spreadsheets:
  - 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 a problem when using metric units where the Member Beam Deflection spreadsheet values were incorrectly increased by a factor of 25.4.
  - 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.
  - Fixed a graphical issue in the Material Takeoff spreadsheet where the incorrect units were displayed in the header.
- Operations:
  - Resolved an issue that would cause the program to close unexpectedly when viewing plate contour results and re-solving the model on Windows 7 using a non-Aero Theme desktop.

Version 18.0 Enhancements/Corrections

- Analysis:
  - Added compatibility with *IBC 2018*.
  - Added *ASCE 7-16*
    - Added Load Combination generation
    - Added design response spectra
  - Added *NBC 2015* Canadian building code provisions
    - Added Load Combination generation
    - Added design response spectra

- Added capability to designate member end support as cantilever or not cantilever in order to calculate the proper deflection ratio.
- Improved the optimization process for Suggested Designs for members and section sets.
- Corrected the Cb coefficient calculation for Hot Rolled members when the user enters Lb out in the Lcomptop.
- Corrected an issue when the point loads are applied at the ends of member in the same location as a boundary condition.
- Hot-Rolled Steel:
  - Added member design per the *AISC 15th Edition Manual (360-16): ASD & LRFD*.
  - Updated 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 C1 to use the widely accepted Lopez, Yong and Serna method.
  - Corrected a metric units display problem for Fye 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 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.
  - Resolved a graphics issue where the axial force diagram for concrete members was not displaying properly in the Member Detail Report.
- Masonry:
  - Added the view of the FEA analysis to the shear and moment diagrams for masonry lintel detail reports.
  - Updated the tabulated radius of gyration values for masonry walls per the 2007 NCMA TEK 14-1B document.
- Wood:
  - Added *AWC-NDS 2018* wood code (ASD).
  - Added strap design for wood shear walls.
  - 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:
  - Added 14" and 16" depth CS shapes from SSMA database for cold formed steel design.
  - Improved R factor implementation for C and Z shapes.
  - Corrected an issue where changing the cold formed steel code after running multiple solutions was not automatically clearing the stiffness matrix.
- 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.
- General:
  - Increased the DXF file limit for the number of polylines the program can import as a drawing grid to 5000.
  - Corrected a display issue with the Envelope Only spreadsheet results not opening on the first click.
  - Corrected display of Results toolbar after the Solve Again with Suggested Shapes is performed.

Version 17.0.1 Enhancements/Corrections

- Resolved an issue introduced in the Windows 10 Semi-Annual Update (KB 4103721) which prevented Standalone Licensing functions from operating as expected.
- Resolved an issue in which subscription licenses would become non-responsive during the upgrade process.

Version 17.0 Enhancements/Corrections

- General:
    - The member exclude feature now applies to the Member Forces Maximum and End Reactions spreadsheets.
    - Beam deflections spreadsheet now allows sorting of members in terms of their deflection value.
    - Improved the status bar in Design Results spreadsheet.
    - Improved the Load Combination Generator so it will not generate multiple identical load combinations for the same code.
    - Updated the Copy/Paste functionality so that the column headers would not erroneously paste into the program. They now will only paste if you're in an external program.
    - Corrected wrong units reporting in the Wall Panel Forces spreadsheet. Force in pounds was reporting as kips.
    - Corrected a unit conversion issue for the wall panel axial and shear forces.
    - Corrected a unit conversion issue in the detail report for unbraced lengths after the model is solved.
    - Corrected an error message that was mistakenly generated for story drifts using Elevation type.
    - Fixed a problem where opening a model with results from the current version would give an erroneous message about the results being from an older version.
- Analysis:
    - Added deflection optimization and design checks for beam members.
    - Improved convergence procedure for Tension Only members.
    - Added the option to specify a Design Rule at the time of drawing a member.
    - Improved the mesher for the Automesh plate drawing tool to be more robust.
    - Updated Tension/Compression-Only behavior to solve one more iteration after converging to use the correct model stiffness.
    - Updated the Service and Strength L/y ratio to use the legacy deflection method.
    - Improved design checks of custom WT members integrated from RISASection whose orientation did not match the default in RISA-2D.
    - Deflection ratio updated to be only in terms of local deflection.
    - Corrected a problem where Envelope Only solutions gave a slightly conservative value for story drift.
- Hot-Rolled Steel:
    - Added Stainless Steel member design per *AISC 14th (360-10): ASD & LRFD*.
    - Added the 2014 EuroCode for steel member design (*EN 1993-1-1:2014*).
    - Added consideration of the L-Torque unbraced length for all EuroCode(*EN 1993-1-1*) member design.
    - Added the *British Annex 2014* to into the 2014 EuroCode member design (*EN 1993-1-1:2014*).
    - AISC Direct Analysis Method Stiffness Adjustment for both axial and flexural now applies to all member types, not just Beams, Columns, Vbraces.
    - Added 14" and 16" depth CS shapes from SSMA database for cold formed steel design.
    - Changed the buckling curve for EuroCode (*EN 1993-1-1:2014*) HSS members to be based on imperfection factor for cold formed (0.49) instead of hot finished (0.21 or 0.13) which was used previously.
    - Fixed display of governing equation for *CSA S16-09* code check in detail report.
    - Added Stainless Steel spreadsheets to the options for the printed report.
    - Resolved a display bug that affected the Detail Report after sorting the Code Check column in the Stainless Steel design results spreadsheet.
- Concrete:

- Added the 2014 European concrete code (*EN 1992-1-1:2014*).
- Enhancements to the Custom Rebar Layout dialog:
  - Added spreadsheet functions for easier data input (TAB and ENTER keys).
  - Added the option to highlight and copy data from several cells at once.
  - Added access from the Concrete Members spreadsheet directly to the Custom Rebar Layout dialog through a new Set Layout dialog.
  - Fixed a problem where using the undo command and saving would modify Custom Rebar Layouts in your model.
- Added custom Cm inputs for concrete wall panels.
- Updated the Concrete Reinforcing spreadsheet region labels when the Transfer check-boxes are used for concrete wall panels.
- Updated the effective flange thickness calculations for concrete T-Beams per the *ACI 318-14* code to account for the span limit changing due to overhang distance.
- A factor of 1.43 is now applied to the cracked moment of inertia for concrete beams and columns for service load combinations per *ACI 318* and *CSA A23.3* commentaries.
- Corrected an issue which caused a wall to be designed for the wrong rebar spacing when the Group Wall checkbox was selected.
- Corrected an error in the bar spacing calculation for concrete walls in tension when an Envelope solution is solved.
- Corrected a problem where the optimized shear steel would not fit in the concrete member when metric units were selected.
- Fixed a problem with the concrete column solver where, for certain column lengths, the interaction diagram would fail and give a message about a missing rebar layout.
- Masonry:
  - Added the *TMS 402-16* masonry code.
  - Fixed a problem where the in-plane shear reinforcement spacing design was over-conservative per the the *ACI 530-13 ASD* masonry code.
  - Corrected a crash when code is set to None and a detail report is opened.
- Wood:
  - Added design of wood shear walls per the Canadian *CSA O86* wood design codes.
  - Added design of Structural Composite Lumber materials per the Canadian *CSA O86-14* code.
  - Corrected an error in the CF factor calculation for Custom Wood Species. Now the program will always default to CF = 1.0 unless the user manually enters a value.
  - Custom Wood Species now uses the user designated Type to code select appropriate chapter for design.
  - Increase factor of 40% is now applied to wood walls in models with load combinations for wind applied to roofs.
  - Added a new wood wall Aspect Ratio factor per the *ANSI/AWC SDPWS-2015 section 4.3.4.2* which applies to FTAO and Segmented walls who have an aspect ratio greater than 2:1.
  - Corrected erroneous capacity equation references for wood members designed per the *CSA O86-14* code.
  - Corrected a display issue with hold downs in the detail report.
  - Fixed a problem where the program would check the overall material for a wall rather than the custom chord material for a wall, which would cause an erroneous message.
  - Fixed an issue where Custom Wood Material inputs would give an erroneous message about a missing E05 input value.
- Cold-Formed Steel:
  - Added Cold Formed Steel codes:
    - *AISI S100-16*
    - *CANACERO-2016*
    - *CSA S136-16*
  - The Distortional Buckling Factor Beta from *AISI S100 Eqn C3.1.4-7* is now taken as 1.0 for all unbraced lengths except those left blank or using the Segment command.
  - Corrected a calculation that affected the lateral-torsional buckling for face-to-face Cee shapes.

- Aluminum:
  - Corrected an error where aluminum members gave a design check value of infinity (reported as '-nan(ind)' in the output) when they were set as non-physical members.
  - Corrected an issue where some aluminum members were not checking yielding and rupture limit states for flexure.
  - Corrected an issue when changing units after solving the model where the values would not update properly.
  - Corrected an error in the bending capacity calculation for aluminum pipes in tension.
  - Corrected Aluminum code checks to include the limit state *F.8.1.1*.
  - Corrected the unbraced length for aluminum members that were using Lbout instead of Lcomp.

Version 16.0.1 Enhancements/Corrections

- Added subscription licensing capabilities.
- Discontinued support of the 32-bit version of the program.
- Updated the program install to improve behavior for network licenses.
- Added silent install behavior back into the program.
- Added "Frequencies" "Mode Shapes" topics to the Report Printing options. They were erroneously removed in V16.
- Corrected an un-conservative error with the strong axis flexural strength for channels.
- Corrected an issue where opening a model with saved moving load results would cause a crash.
- Corrected an issue in the maximum tab of the Member Forces spreadsheet where the program was not giving the correct values in specific instances.

Version 16.0 Enhancements/Corrections

- General:
  - Added compatibility with IBC 2015.
  - Added the live display of coordinates and deflection values to the mouse cursor.
  - Improved the reaction description in the graphic information label for the model view display.
  - Added the ability to view deflection ratios as a graphical member label.
  - Added a new Member Distributed Load type that is applied as a pressure to the face of the member. The program will automatically calculate the load in terms of force/length.
  - Fixed a display error which prevented the Wall Panel Editor from opening on walls with a large number of nodes in its plane.
  - Added two new tabs to the Member Forces spreadsheet to display the maximum force based on internal sections and end reactions.
  - Major improvements to the automatic model backup functionality.
  - Using the Copy to Clipboard command from spreadsheets no longer copies blank cells to the clipboard.
  - Fixed a problem where the Truss High Level Generation Tool would create web members that didn't attach properly to the chords if the Out to Out option was selected.
  - Updated a local axes error in the detail report where the enveloped moment diagram didn't match the detailed diagram that you get when you click on it.
  - Fixed a problem with envelope detail reports where the diagrams were not properly giving the maximum and minimum values.
  - Fixed a problem where the program was not using the user input Cm value and was instead manually calculating it if the member was rotated 90 or 270 degrees.
- Analysis:
  - Added new / advanced Story Drift checks and calculations.
  - Changed / improved behavior of wall panels when part of a Response Spectra Analysis.
  - Corrected an inconsistency related to plate shear modulus calculations.

- Fixed a problem where the plate contour tool would not work with very small plate models (less than a foot total length or width).
- Corrected an error where compression-only spring reaction forces were not updating in a solution with many iterations.
- Fixed a conservative problem where wall force diagrams in the detail report would report a min/max of 0 even if the forces didn't go to zero.
- Corrected a problem where a very short wall height would cause the program to shut down. A check has been added requiring a wall to be at least 6 inches tall.

- Hot Rolled Steel:
  - Added the CSA S16-14 Canadian steel design code.
  - Implemented L-torque input for the CSA S16-14 code clause 13.3.2 similar to how it is done in the AISC 13th/14th editions.
  - Added a notification to the detail report whenever the Canadian steel code overrides the user-input effective length (K) factor.
  - Improved reporting of effective yield stress for Canadian steel class 4 sections.
  - Corrected weak axis KL/r checks where K =1.0 was conservatively used instead of the actual input K factor.
  - Added a new steel shape database for Paco Steel & Engineering.
  - Corrected a minor error in the Lateral Torsional Buckling limit state for a custom input tapered wide flange shape.
  - Corrected a problem with the 2005 and 2001 Canadian steel codes with compression capacity of class 4 sections.
  - Corrected an issue with Canadian steel code checks where the unity check reported was wrong for members with near zero (but not zero) moments.
  - Fixed a problem where the program was not using the user input Cm value and was instead manually calculating it.

- Concrete:
  - Added the CSA A23.3-14 Canadian concrete design code.
  - Updated the P-little delta calculations for concrete walls to show the location along the wall where it was considered.
  - Updated the P-little delta calculations for concrete walls for the odd case where both axial forces and moment forces were below program minimum thresholds.
  - Corrected a problem in the concrete reinforcement optimization where reinforcement design could produce a code check of 1.02 instead of 1.00.
  - Corrected an error where T-beam effective flange widths were being incorrectly calculated per the ACI 318-14 design code.
  - Fixed an erroneous Kl/r > 100 message for Canadian concrete columns that use explicit reinforcement.
  - Corrected an error where a concrete beam detail report would crash after an Envelope Only solution.
  - Corrected a problem where the shear check on a multi-span concrete column was reported as controlling for the wrong span.

- Wood:
  - Added wood member design per the Canadian CSA O86-2014 design code.
  - Updated the Structural Composite Lumber databases for updated material tables.
  - Corrected an error in wood member area calculations for NDS 2012 & 2015 design codes.
  - Fixed a problem in the NDS 2012 and 2015 codes where equation 3.9-4 was implemented but the text in the detail report would report Eqn 3.9-3.
  - Updated incorrect headers for Canadian wood members with an enveloped solution.
  - Corrected Wood Cv factor to only apply to weak axis.
  - Corrected an erroneous change to the NDS 1991/97 wood design code label name.
  - Fixed a problem that showed null values for wood shapes and materials that were not existent.
  - Corrected an issue in wood design where the data could become corrupted if a custom Cfu (flat-use factor) value was used.

- Fixed a problem with FTAO wood wall design where certain walls within a multi-story wood wall stack would give N/A for the results when actual results should be given.
- Masonry:
  - Removed all reference to bond stress for masonry. This check was a holdover from the UBC-97 code and is not present in the current codes so it was removed from the program.
  - Fixed a problem where the 2011 and 2013 ASD masonry code was over-conservative in designing the in-plane shear reinforcement spacing.
  - Corrected an issue in the reported masonry wall panel output to show results based on a consistent effective width.
  - Fixed a problem with masonry walls where a wall custom region that used staggered reinforcement would use an incorrect grout spacing internally for self-weight and stiffness parameters.
- Cold-Formed Steel:
  - Added the design of Cold-Formed tube sections and face-to-face shapes.
- Aluminum:
  - Added the AA ADM1-2015 aluminum design code.
  - Added bending code checks for aluminum single angles per the AA ADM1-2015 code.
  - Added Tau B display into the detail report.
  - Updated messaging in the spreadsheet for aluminum design results to notify the user when a P-Delta solution is required.
  - Updated the strong-axis bending capacity for wide flange members to no longer be dependent on K for the 2010 and 2015 codes. An update to the specification between 2005 and 2010 changed this behavior.
  - Corrected an error which caused aluminum member forces to differ in subsequent solutions using different design codes.
  - Corrected a problem in the 2010 code where Local Buckling Interaction (section E.4) was being used as the capacity instead of as the upper limit.
  - Corrected an issue where the moment strength for pipes could be based on yield instead of rupture. The error was due to a difference in the phi factor.
  - Fixed an error in the governing equation display for aluminum pipe bending capacity.
  - Corrected an over conservative error with the weak axis code check for Z sections in the AA ADM1-10.
  - Updated the aluminum member detail report for Fs to report it about the proper axes.

Version 15.0 Enhancements/Corrections

- Hot Rolled Steel:
  - Added an SJI virtual joist database and associated design list.
  - Added missing *AISC 6th edition* double angle shapes to the AISC_Historic database.
  - Fixed a problem where KL/r for single angle members was being incorrectly reported in the detail report for Canadian design codes.
  - Corrected an error where Hot Rolled steel shapes were not properly checked for compactness before calculating the compressive capacity of the member.
  - Updated the Stiffness Adjustment behavior of the *AISC 360-10 (14th edition)* Direct Analysis Method. Previously the program was not taking the axial stiffness adjustments for beam members.
  - Fixed a problem with steel and aluminum design where using an unbraced length of zero could result in a divide-by-zero error in the Design Results spreadsheet or the member detail reports.
  - Corrected an error where all rectangular Hot Rolled steel bars were being assumed to be compact and non-slender. Now, they are properly checked per *AISC 360 Table B4.1a Case 3* (all other unstiffened elements).
  - Corrected an issue with *CSA S16* code checks where members with axial compression force greater than the Euler buckling force would report too low of a code check (though still greater than 1.0).
  - Added a limit to the *AISC 360 H1-1b* code checks so that they are never allowed to be below the pure axial code check.
  - Corrected over conservative assumptions related to bending capacity calculations of members in combined stress equations for the Indian Steel code.

- Fixed a problem in the single angle bending capacity calculation where the program was conservatively using the leg local buckling limit state even when the leg was in tension.
- Concrete:
  - Added the *ACI 318-14* concrete code.
  - Governing load combinations for concrete beam shear and bending code checks have been added to the member results spreadsheets and detail reports.
  - Added consideration of Icracked for concrete members designed with the Indian, Australian, New Zealand, and Eurocodes.
  - Added a "13M" bar option to the ASTM A615M rebar set.
  - Fixed a problem with concrete wall panels where the axial/bending code check results were omitted and gave a "-1" value if there was a very high axial tension in the wall.
  - Corrected an error where concrete columns with closely spaced nodes along the length caused the member detail report to shut the program down.
  - Corrected an error in the Canadian *CSA A23.3-04* design code shear capacity strain value calculation.
  - Fixed an issue with the concrete column solver that could cause the interaction diagram capacity point to land inside of the interaction diagram when it should land directly on it.
  - Corrected an issue where concrete wall panel interaction diagrams may have been plotted incorrectly.
  - Corrected an issue where shear strength for circular concrete columns was being calculated conservatively.
  - Added Warning Messages that indicate that concrete wall design requires a P-Delta analysis for in-plane design.
  - Fixed an error where some portions of the concrete wall panel detail reports were not using consistent units.
  - Fixed an issue with concrete wall panels where the wrong governing load combination was reported if Pu>0.75 *Pc for slender wall checks.
  - Fixed an issue with concrete and masonry wall panels where the forces in full-height walls were over conservative due to incorrect transfer of loads from regions above and below openings.
  - Corrected the detail report for cases where an explicit rectangular reinforcement layout was used for a circular section. Previously the detail report information was only partially given.
  - Corrected an issue with concrete column interaction code checks for Response Spectra Analysis.
  - Updated concrete wall panel behavior to better handle batch solutions when there are design failures in the wall.
  - Corrected an issue where adjusting the thickness of concrete wall panel did not change the self-weight of the wall panel.
- Masonry:
  - Added a masonry wall summary detail report.
  - Fixed a problem in the masonry wall detail report where the shear strength due to steel reinforcement (Vs) could be negative.
  - Corrected an error with the masonry wall shear reinforcement calculation. The gamma factor is now applied to the Fvm calculation.
  - Fixed a problem with masonry lintels where a spacing of 0" is incorrectly reported if shear reinforcement is required per the Batch solution.
  - Corrected an error where the governing masonry wall panel results would change when the model was re-solved.
  - Fixed a problem with optimization with boundary zone reinforcement for in-plane masonry wall design. The program would choose more bars than necessary.
  - Fixed a tolerance issue with the shear code check for in-plane masonry wall design that conservatively provided more boundary zone bars than necessary for code checks near 1.0.
- Wood:
  - Added the *AWC NDS-2015 (ASD)* wood code.
  - Added *NDS-2015* Mechanically Graded (MSR & MEL) material databases.
  - Added the *2015 AWC SDPWS* wood shear wall panel schedules for both OSB and plywood.

- Updated the Custom Wood Materials spreadsheet to allow more specific material input (material Type and custom CF size factor).
- Updated Weyerhaeuser Trus Joist materials in the wood SCL material database per updated published values.
- Added the ability to use Effective Length (K) factors for both stud and chord axial compression design in wood wall panels.
- Suppressed the wood material validity check for models which do not contain wood members.
- Segmented wood wall panels with slender end regions now get design results for their conforming regions. Previously, no design was done for the entire wall.
- Fixed an error where full sawn wood shape names were not properly reflecting the selected metric units.
- Corrected an issue where the custom wood material strengths were not properly reflecting the unit selection.
- Fixed an error where the Flat Use factor (Cfu) was incorrectly calculated for square timbers.
- Corrected an error where the Canadian wood design System factor (KH) was not properly applied to built up members.
- Fixed an error where the Canadian wood design System factor (KH) would not save with the model file.
- Corrected a problem with wood member allowable stress values being reported as zero graphically in the double-click dialog.
- Fixed an issue with the wood wall panel Force Transfer Around Openings design method when an Envelope Only solution was present.
- Fixed a problem with glulam wood members where the "d" in le/d considerations was using a value larger than the actual by 1/2".
- Corrected an error where wood PSL Parallam columns were using the incorrect compressive capacity design value.
- Corrected an issue with the unit conversions for the Canadian wood design code.
- Corrected errors in the maximum shear panel capacity checks for wood wall panels.
- Fixed an error in Canadian wood member design where the compressive capacity reduction factor was not properly applied to nailed built-up members.
- Cold-Formed:
  - Added 4" and 8" HDS shapes to the Dietrich Cold-Formed shape database.
  - Fixed a member capacity discrepancy when I-J end is flipped for cold formed steel channel shapes.
- Aluminum:
  - Fixed a discrepancy in the axial capacity calculation when the L_torque unbraced length is set to zero for aluminum members.
- Dynamics:
  - Corrected an issue with the graphical display of deflected members for mode shape views when color coded or rendered display is used.
- Wall Panels:
  - Added a tool to delete all wall panel regions. Regions are automatically regenerated the next time a model is solved.
  - Added a Wall Panel Forced results spreadsheet.
  - Added the display of the governing moving load step for wall panel design results.
  - Added the ability to inactivate wall panels.
  - Optimized the processing of wall panel results to speed up the solution time by remembering the cut locations for each wall region. This information can then be used in all load combinations.
  - Corrected an error with the Wall Panel Editor grid display when more than 100 characters are entered.
  - Added a Warning Message to inform users that point moments will not apply to a wall panel without a dummy member.
  - Corrected a problem that caused over conservative shear forced at the ends of masonry lintels, wood headers, and regions above concrete wall panel openings.
- Licensing/Installations:

- Updated the RISA Key Manager to work properly from a Remote Desktop connection without giving a false error message (error #12).
- Added WMVCore.dll to the installations so the program can operate in Windows Enterprise environments.
- General:
    - Added enveloped member detail reports for Hot Rolled steel, Cold Formed steel, Wood, Aluminum, and General material members.
    - The Material Takeoff spreadsheet can now be filtered using the Exclude Unselected Items button from the model view.
    - Corrected an issue where the AISC Direct Analysis Method amplification of second order effects could be mistakenly applied to models which did not include any members or materials which require the application of this method.
    - Fixed a problem where the programs wouldn't close down properly from the taskbar.
    - Fixed a problem where the wrong deflected shape was animated when viewing the animation prior to displaying the static deflected shape.
    - Fixed an issue with the graphical display of enveloped reactions displaying with the opposite signage.
    - Corrected an error where Euler Buckling members were giving full code check results even though they were only seeing a small amount of compression.
    - Corrected an issue with the sorting tool in the Envelope Joint Reactions spreadsheet.
    - Corrected an error where the Application Settings "Lock Isolated Instabilities" option would not apply until the program closed and re-opened.
    - Fixed a problem with Help files not working when the program was installed to a folder with a period in the name.
    - Corrected a graphical display and printing problem with Footing detail reports.
    - Updated the orientation of a landscape image so the image is rotated counter-clockwise instead of clockwise.
    - Corrected an error in the printout nomenclature for projected loads.
    - Fixed an error where the time stamp was no longer showing up on printed reports.
    - Corrected a minor unconservative error with the torsional shear stress calculations for rectangular members.
    - Updated the wording in message boxes about shape database changes to clarify the behavior.
    - Fixed an issue where the program would not give a message at start-up about custom shapes in the model and whether those shapes should be saved to the database or not.
    - Corrected an error in the Sy calculation for singly symmetric RISASection imported shapes.
    - Added a field for Torsional Unbraced length. This will affect flexural torsional buckling and torsional buckling for some HR, CF and AL codes.

Version 14.0 Enhancements/Corrections

- Cold Formed Steel:
    - AISI S100-12
    - CANACERO-2012
    - CSA S136-12
    - Added code checks for back to back cold formed steel members.
    - Updated Unbraced Length assumptions for CFS members.
- Masonry:
    - Added the ACI 530-13 masonry code.
    - Corrected an issue where the masonry wall panel shear check results where displaying values that did not correspond to the governing load combination.
    - Fixed an issue with the detail report for masonry walls where the shear and moment diagrams could be inaccurate if the wall thickness was changed during that session.
    - Updated the "a" calculation for masonry in-plane strength design. Previously the "b" was always using the effective thickness. Now the program checks the "a" value against the length of the boundary zone. If

the "a" is greater than the boundary zone then the effective thickness is used. If the "a" is less than the boundary zone then the nominal width is used.

- Addressed an issue with masonry wall panels where the tolerance between the design UC and the user's max UC was increased to alleviate changes in reinforcement for the same load combination.

- Hot Rolled Steel:
  - Added the AISC Historic shape database.
  - Updated an error in the Chinese Single Angle Shape Database where the program was previously taking rx as rz.
  - Corrected an issue with the detail report display of KL/r values for tapered members in the AISC 13th / 14th editions. Code checks were correct, but KL/r values could be incorrect for yy value and show na for zz value.
  - Corrected a problem where an error message flag caused negative capacity results for hot-rolled steel members.

- Wood:
  - Added wood member design per the Canadian CSA Standard 086-09 design code.
  - Added new glulam material databases per NDS Tables 5B and 5D.
  - Improved error reporting for mismatched wood sizes/species/grades.
  - Fixed an issue where we were not properly filtering out the non-full height region results for wood wall panels with a segmented design.
  - Corrected a problem with explicit wood header materials unintentionally changing when deleting lines from the Wood Materials spreadsheet.

- Concrete:
  - Updated the dimensioning of column reinforcement in the detail report to account for the presence of stirrups.
  - Updated the shear area of steel output to be on a per foot basis vs a per inch basis in the detail report.
  - Corrected an issue with the viewing of detail reports for concrete round columns for the NZS code.
  - Corrected an issue where concrete wall panel in-plane transfer parameters were not being updated when solving one LC from another. This affected the Δ_{NS} value for a batch solution.

- Dynamic Solution Improvements
  - Added a Ritz Vector dynamic solution option.
  - Added a dynamics solution option for considering residual rigid response.
  - Minor changes to simplify the dynamic solution dialog.
  - Corrected an issue where modes with a frequency higher than the last frequency defined in the spectra did not get assigned the proper zero period acceleration.

- Improved Install Behavior
  - Improved ability of Network Client versions to find a license server.
  - Reorganized all files (databases, defaults, etc) into new sub-folder locations.
  - Added an option in the installer to install to the Program Files and Documents folders.

- Loading:
  - Moving loads can now be included in a Batch + Envelope solution.
  - Increased the width of the Load Combinations to allow for 10 Basic Load Cases per Load Combination.
  - Added a feature to generate point loads per a specific moving load time step.
  - Enhanced the Load Combination Generator in order for each RISA program to read its own default settings.
  - Corrected load combination equations for the SBC 301 2007 Saudi Arabia code.

- Installation & Licensing Updates:
  - Released an update version of Sentinel RMS License Manager to be compatible with Windows Server 2012 R2.
  - Fixed the Network.ini behavior to allow for the file to be placed in the root RISA directory and still be seen by the client installs.

- General Updates:
  - Enhanced the Wall Panel Editor with local dimensions for openings and design regions.
  - Added a "Memory" to the Copy Loads with Members checkbox in the Copy Offset tool

- Added an option to the truss generator to allow for pinned end releases.
- Added the ability to save a video of the animated deflected shape and mode shapes.
- Added links to all Warning Log messages that take you directly to the relevant section in the help file.
- Added new icon to "Select Marked Lines in the Model View" toolbar icon.
- Added a graphic verification that confirms if you are running in a demonstration version.
- Changed the name of the Global Parameters dialog to Model Settings. Changed the name of the Plot Options dialog to Model View Options. Changed the name of the Preferences dialog to Application Settings.
- Corrected an issue where the footer for PDF reports was not included on the last page.
- Corrected an issue related to envelope solution reporting a moving load step for a non-moving load combination.
- Fixed a rare memory allocation issue with the Joint Reactions calculation that could cause the program to shut down if an unstable model with multiple load combinations was run with tension-only members.
- Corrected the DXF export display for metric Footings Details.
- Fixed a problem where the internal PDF writer would print spreadsheet results as images rather than text, causing PDF sizes to be much larger than necessary.
- Corrected a units conversion issue with joint reaction COG calculations when units where changed with existing calculations.
- Common input spreadsheet entries will be merged for appended models.

Version 13.0 Enhancements/Corrections

Enhancements

- Added the ability to add a Custom Logo to the report header.
- Add the ability to view Batch and Envelope results simultaneously.
- Moving Load enhancements:
    - Added the step location for moving load results to indicate where the moving load is located when it gives the reported results.
    - Updated the moving load animation with play/pause control.
    - Added the ability to view a specific moving load step in the moving load animation.
    - Added the AREMA Chapter 15 Cooper E-80 (Railway loading) to the moving loads database.
- Added a Trim/Extend tool.
- Enhanced Concrete Design Rules to give a dialog with an image to show exactly what is being updated. An easier explicit reinforcement option is also available.
- Moved Basic Load Case dropdown to the top of all Apply Load dialog boxes.
- Added compatibility with Windows 8.1.
- Updates to hold-downs and straps:
    - Updated the wood wall hold-down databases, adding USP hold-downs and updating the design values for Simpson hold-downs.
    - Added the ability to add the hold-down eccentricity to wood shear walls.
    - Strap forces have been adjusted to account for the chord width.
- Wood Updates:
    - Updated wood allowable stress values based on several NDS Addenda.
    - Applied the 2007 Addendum to the AF&PA NDS-05/08 regarding wood design values, changing the Northern Species and adding Coast Sitka Spruce and Yellow Cedar.
    - Added the Hem Fir North, No. 1 & Btr species grade combination to the wood material database.
    - Clarified the CF (size factor) and Cfu (flat use factor) variables for visually graded timbers per NDS Table 4D.
- Added ASTM A1085 material and Design Lists to U.S. program defaults.
- Masonry wall updates:
    - Added the Icr Factor and Effective Height Factor, K, to be used for masonry wall design and analysis.

- Added many additional pieces of information to masonry wall detail reports to make hand verification easier.
  - Added maximum horizontal bar spacing provisions for masonry shear walls.
  - Updated the masonry wall design output spreadsheets to show the governing code check. Masonry gives multiple checks in the detail report for both combined checks and shear checks and previously only the first value was reported in the spreadsheet results rather than the maximum.
  - Corrected an error where masonry wall panels would report the incorrect governing shear load for wall regions that require shear reinforcement.
  - Corrected reporting of allowable shear and controlling load combinations.
- General graphical interface updates:
  - Added the ability to graphically select items from various input and results spreadsheets.
  - Updated the design of the Wall Panel Editor dialog. This includes adding the saving of wall drawing grids and viewing wall panel nodes within the editor.
  - Added a color coding option based on maximum deflection ratio.
  - Enhanced the Wall Panel Editor to allow deletion of Boundary Conditions.
  - Added the ability to view Joint Reactions graphically with an Enveloped solution.
  - Added the right-click menu option to "Select Items in Current View" to a number of results spreadsheets.
- Moved registry information from HKey Local Machine to HKey Current User to better comply with Windows best practices.
- Add the 1.43 stiffness adjustment for service-level loads for concrete wall panels per ACI 318-11 Section R10.10.4.1.
- Enhanced reinforcement checks on members with custom rebar layouts to include ACI 10.5.3 checks.
- Revised dynamic results to now always show Mass Participation regardless of whether or not RSA was included.
- Enhanced both Indian 2007 and Euro 2005 code compression routines to treat Tapered WF members as welded.
- Added an external utility to specify a license server for network client installs to use.
- Added a new unbraced length code "Lb out" for Lcomp-top and Lcomp-bot, which allows you to reference and use the Lb out unbraced length.
- Redefined the blank/empty condition for Lcomp-top unbraced length entry so that it now uses the full length of the physical member.
- Updated the Hot-Rolled Steel calculations for shear capacity. There are h/tw thresholds used where h = d - 2*k. The program was previously using h = d - 2*tf.
- Re-ordered the Member Spreadsheet so "Type" comes before "Design List".
- Modified the lateral torsional buckling code checks for tapered members (per AISC Design Guide 25) to better handle cases with zero moment at the ends of a member.
- Added notes to report printing options when envelope results are unavailable for printing during a batch solution (or vice versa).
- The equations of local buckling per ADM-05 Section 4.7 are now referenced in the member Detail Report.
- The program now ignores axial forces less than 0.5% of the compression capacity for Aluminum member analysis in order to avoid major code check differences in members with axial force close to zero.
- Licensing enhancements:
  - Added an auto-save during a Windows shut down.
  - Updated the program to allow remote desktop connections for standalone versions.
  - Created an install / initialization log file to better diagnose license commuting issues.

Corrections

- Corrected an error in which units were not being shown in the Concrete Shape Database.
- Fixed a few Model Display Options settings that were not able to save into the defaults.
- Separated the color contour controls for the wall panels and plates.
- Corrected an issue related to the number of decimals when printing Dynamics results.

- Corrected an issue where code checks for Cold Formed Steel sections with a user defined Cb value could over conservatively use a Cb of 1.0.
- Fixed a problem with Custom Wood Material entry which could cause an erroneous message.
- Corrected an issue where Masonry Wall Panels could report incorrect reinforcement for in-plane forces if the Load Combination which controlled design did not have the maximum moment force.
- Corrected a problem with the shear reinforcement total steel area and capacity for concrete column design.
- Fixed a problem with the Contour Cutting Tool, where it would not work if only certain portions of the model were selected. Now it works in all cases.
- Corrected an issue with code checks on single angle members for the CSA-05 steel code.
- Corrected an error in Aluminum round tube analysis where the code check was calculated using force/stress rather than force/force.
- Corrected an error in which printing single solution moving load results would cause a program crash.
- Corrected an issue where member force diagrams could display with incorrect units if the unit settings were changed post-solution.
- For Aluminum design the program was incorrectly (conservatively) using the omega for tensile rupture rather than the smaller omega it was supposed to.
- Fixed a units problem with the headers in the Design Results spreadsheet for Aluminum if the units are not set as Standard Imperial.
- Fixed a calculation error for the axial compression capacity of a tapered wide flange column.
- Corrected a problem with user entered values of Cb in Cold Formed Steel.
- Fixed a problem for Cold Formed Steel members where fully braced members would provide a lower moment capacity than non-fully braced members.
- Corrected an issue with concrete L-beams that didn't indicate the correct negative reinforcement width in the detail report.
- Corrected an incorrect code reference for the bending capacity of singly symmetric Aluminum shapes.
- Removed the solution warning related to Tau_beta when using any code other than the AISC 13th and 14th Editions since it is not applicable for any other code.
- Removed an irrelevant error message related to inadequate wall panel reinforcing.
- Enhanced the Section Sets to better locate the RISASection database.
- Corrected a code check calculation error for an axial member in compression when using the AA ADM1-10: ASD Building Code.
- Fixed an issue where beam thermal force calculations are conservatively incorrect when using Metric units if the load combination factor is not 1.0.

- Updated RISA-3D to work properly with a RISAFoot network version that requires the LS Query List registry setting to work.
- Corrected the printed report Projected Load nomenclature to be consistent with the terms used in the program.
- Graphical cover measurement for concrete members in the Detail Report have been corrected.
- Corrected an error where the program was not correctly applying the user-entered K value in the calculation of the compressive capacity per the CSA S16 Canadian Hot Rolled Steel design code.
- Corrected an issue with the spreadsheet reporting of strap forces where in certain instances the spreadsheet would report NC even if there were tension forces.
- Corrected an error in the calculation of strong axis bending capacity of WT members for the Canadian steel code.
- Corrected an issue where enveloped results may not correctly report envelope deflection ratios when local deflections are negative.
- Corrected a problem with permanently saving General Arbitrary shapes to the Shape Database.
- Corrected an issue with enveloped saved Cold Formed member results where the Phi factor was not being applied in the displayed moment capacities.
- Corrected a unit conversion issue with wood wall stiffness.
- Corrected an issue in Indian 2007 and Euro 2005 codes which could lead to incorrect buckling calculations for members with a flange thickness greater than 100mm.

- Corrected an issue in Euro 2005 code which affects the buckling calculations for S460 steel.
- Corrected a problem in the calculation of Mdv (moment capacity for high shear) per the IS 800: 2007. Capped "beta" value at 1.0.
- Corrected an error where unselected loads were being deleted when the "Delete Selected Loads" tool was used.
- Corrected a unit conversion issue with Joint Reaction Center of Gravity calculations when units where changed with existing results.
- Corrected an issue where some wood members were not properly displaying the design values in the Properties tab of the Member Information dialog.

Version 12.0 Enhancements/Corrections

Enhancements

- Added 64-bit version capability.
  - The program will run in 64-bit addressing space, expanding Windows memory limits.
  - Allows for increased program limits when running on a 64-bit operating system.
- Added the ability to import a DXF underlay; Allows users to snap to the underlay when drawing members and walls.
- Added the AF&PA NDS-12 (ASD) wood code.
- Added the ACI 530-11 (ASD & Strength) masonry code.
  - Added many supplemental values and extra messaging to masonry wall detail reports.
  - Added option for masonry walls to define the wall area (RMEH or NCMA). Prior versions used only the Reinforced Masonry Engineer Handbook.
- Added the AISI S100-10 (ASD & LRFD)/CSA S136-10: LSD/CANACERO 2010 (ASD & LRFD) cold-formed steel code.
- Added the AA ADM1-10 (ASD & LRFD) aluminum code.
- Added design for tapered members per AISC Design Guide 25.
- Added the CSA S16-09 Canadian steel code.
  - Added code checks for class 4 sections.
  - Added code checks for single angles for both bending and tension/compression.
  - Updated the Canadian steel database per the 10th edition manual.
- Added the NBC 2010 Canadian building code provisions.
  - Added the design response spectra.
  - Added the load combinations (service and strength) to the Load Combination Generator.
- Added the U.K. National Annex provisions to the 2005 EuroCode Hot-Rolled steel design (NA to BS EN 1993-1-1:2005).
- Enhanced modeling with wood materials:
  - Revised dialogs for selecting and adding wood materials to be more user-friendly.
  - Easier access to the Custom Wood Materials spreadsheet.
  - New dialogs allow the user to view/confirm the material design properties.
  - Updated the structural composite lumber design lists so that shape selections match proprietary products.
- Custom moving loads are now saved with the input file.
- Improved animation window controls.
- Improved the accuracy of CSA S16-09 member capacity calculations for Class 3 and Class 4 members.
- Updated the display of the units for Mass.
- Reduced start-up times by using a faster shape-to-database comparison.
- Updated hold-down databases for newer Simpson catalogs (per IBC 2006/2009).
- Added a Virtual Joist Girder database and design list per SJI recommendations.
- Cold-Formed Steel Updates
  - Added AISI provision B4 to the check of the flanges for weak-axis bending.
  - Added the full elastic computation for the "I_s" values in the AISI B4 provision.

- Fixed an error in the calculation of S_{ey} for ZS shapes.
- Increased the maximum number of modes allowed in a dynamic solution from 500 to 2,000.
- Updated the K factor calculation dialog to remove reference to K-out.

Corrections

- Corrected an issue which would cause color-coded code checks to display all black for concrete members.
- Corrected an issue which would cause the program to shut down if viewing color-coded code checks.
- Corrected the calculation of the weak axis bending capacity of non-compact and slender channels designed to AISC 13th or 14th edition steel codes.
- Corrected an issue where wood wall design results were not given for a wall with two regions stacked on top of each other with no diaphragm present.
- Corrected an issue where the program was incorrectly calculating some cross section properties for the principal axes of single angles.
- Corrected a calculation error relating to minimum vertical reinforcement in concrete shear walls.
- Corrected some issues with concrete column optimization which could cause overly conservative code checks.
- Corrected an issue where an install path with long file / directory names could cause the program to fail to launch when using file association.
- Corrected a bug in Cold-Formed Cb calculations where Cb could change (conservatively) in a non-AISC Hot-Rolled steel code was selected.
- Corrected an error in the CF factor calculation for 12" wide members.
- Fixed values for H and HN sections in the Chilean Steel shapes database.
- Corrected an issue with the Australian steel code where members with axial force greater than Euler buckling capacity would calculate a negative moment capacity.
- Fixed a refreshing issue with General shapes where they would not show up within the "Assign Shape Directly" dialog.
- Corrected a bug in which sorting the member force results for a concrete member would cause the detail report force diagram to change.
- Fixed an issue with concrete and masonry walls where the code check would incorrectly produce "INF" or some design forces could be reported as zero.
- Fixed an issue that didn't remember user entered seismic Ta for Canadian codes.
- Corrected errors in the Chinese shape database for the following shapes: TM170X250 and TW150X300A.
- Fixed an issue that caused a major error while using the Out-of-Plane-Flip tool on a wall panel.
- Corrected an issue where h/w ratios for wood walls with multiple openings could be calculated incorrectly for the FTAO design method.
- Corrected a problem with exporting models using Rigid Links to DXF.
- Removed "Trimmer" from wood wall opening detail reports, as it had no impact on the design.
- Corrected an issue with lintel forces for masonry walls where the design ignores any applied forces if the lintel depth went to the top of the wall.
- Fixed an issue where some footings would not be designed if the allowable soil bearing was set to "Gross."
- Corrected a display bug in which the graphical display dimensions for a General Arbitrary shape did not update when the shape properties were edited.
- Corrected an issue with shear and deflection diagrams of single angles with nodes along the length of the physical member.
- Corrected an error in which area loads were not being properly copied when using the Mirror Copy command.
- Changed Le/d calculation for SCL wood members to use actual rather than nominal dimensions.
- Updated Append behavior to compare the Section Set information between two models before appending. Previously a member defined as Section Set 1 in one model would become Section Set 1 in the 2nd model even if the two shapes were not the same.
- Fixed a units conversion issue with wood wall stiffness.

Version 11.0 Enhancements/Corrections

Enhancements

- Added AISC 360-10 (14th Edition) ASD and LRFD code checks for hot rolled steel members.
- The AISC Database has been updated to include new shapes in the 14th Edition AISC Manual.
- Added ACI 318-11 code checks for concrete members and walls.
- Added ability to assign openings in concrete wall panels.
- Added Canadian Parametric Design Spectra per NBC 2005 to the Response Spectra Library.
- Added CSA S136-04 and CSA S136-07 code checks for cold formed steel members.
- Added the location of demand and capacity points on interaction diagrams for concrete walls.
- Added Load Combination Generation files for the Saudi SBC 301-2007 code.
- Added the ability to print Response Spectra and Moving Load input data.
- Added tension code checks for aluminum single angles.
- Added the ability to flip the opening locations of wall panels.
- Added the ability to print section properties from the Shape Database dialogs.
- Added optional ability to copy headers with spreadsheet data. (Optional based on a Tools-Preference setting.)
- Expanded the Torsional Buckling / Flexural Torsional Buckling code checks for AISC 360-05 (13th Edition) and AISC 360-10 (14th Edition) to apply to shapes other than WT's and LL's.
- Modified the treatment of masonry and wood Wall Panels to automate stiffness updates within the optimization / Suggested Shapes results.
- Improved masonry Wall Panel definitions to be based on Wall Design Rules so that it will be easier to change multiple walls at the same time.
- Improved reporting of Overturning Moment Safety Factors when RISAFoot runs from within RISA-2D. (This affects Load Combinations built with Basic Load Case numbers rather than load Categories).
- Improved / reorganized the Solution tab of Model Settings to be more user-friendly and easier to read.
- Updated properties in the Cold Formed Steel Database (based on bend radius changes).
- Improved the code checks for concrete columns for cases where the column is subjected to net tension plus bending.
- Removed the obsolete Trade Arbed database from the installation routines.
- Enhanced performance on 64-bit operating systems to allow use of up to 4 GB of memory.
- Added spacing and minimum steel reinforcement area checks for concrete walls.
- Added the calculation of C_v for shear capacity of single angles for the AISC 14th Edition.
- Principal axis notation was added to the detail report for aluminum single angles.
- Enhanced spreadsheet behavior so that column widths will be remembered when they are updated.
- Simplified database shape comparisons to reduce program start-up time.
- Updated the Draw Wall Panels dialog to remember a previous action.
- Added validation to confirm that all Design Rules are valid upon opening a model.
- Changed member detail reports to show AISC-style report when AISC design is used. This happens when foreign codes are unclear on provisions.
- Updated wood wall header output to state whether the header is controlled by bending or shear.
- Added a restriction on single angles such that "depth" leg cannot be shorter than "width" leg.
- Renamed AISI NAS-07 to S100-07 based on code naming conventions.
- Removed the upper limit of 3.0 on C_b for bending capacity for the AISC 14th Edition.
- Removed moment magnification for the ACI 318-08 code, as a P-Delta analysis is required.
- Removed a limitation on the entry of F_y values on the Concrete tab of the Materials spreadsheet. Added a warning log message for ACI codes when code limits for F_y are exceeded.
- User-defined wall panel boundary conditions are now consistent across masonry, concrete, and general wall types.
- Updated shear panel optimization and hold-down selection in wood walls to be based on wall design rule's Max Shear Check and Max Bending Check respectively. Previously this value was always taken as 1.0.

- Updated masonry design for both ASD and Strength so that the Wall Design Rules - Max Shear Check column works properly. Previously it was assumed that the maximum shear check was always 1.0.
- Updated Chilean Steel database per Acero Diseño Estructural Manual – Segunda Edicion

Corrections

- Corrected an issue where shapes from older RISASection files (version 1.1 and earlier) had issues with shear deformation.
- Corrected a bug that caused the weak-axis bending strength of wide flanges members with slender flanges to be overestimated in the AISC 360-05 (13th Edition) code.
- Corrected an issue with distributed loads on tapered Wide Flange steel members where a portion of the distributed load could get ignored.
- Corrected an issue with Canadian design of single angles where compression code checks were reporting a value of 0.0 rather than 'No Calc'.
- Corrected an issue related to aluminum databases and single angle flexural-torsional buckling code checks.
- Corrected an issue with the aluminum code related to the allowable bending stresses for rectangular tubes subjected to a minor axial force.
- Corrected a units conversion issue related to rebar strength for custom rebar layouts.
- Corrected a units conversion issue related to thermal loading on plate elements.
- Eliminated Lateral-Torsional Buckling code checks for cold formed HU sections bent about their y-y axis.
- Fixed a units conversion problem with RISASection shape properties used in RISA-2D
- Corrected a display issue where envelope solutions for cold formed steel members were not properly showing phi and omega values.
- Corrected an issue where the Replace and Resolve function was not properly interacting with the graphical Exclude feature.
- Corrected an issue with the shear code check of multi-span concrete columns where the controlling shear location was always assumed to be at the end of the member.
- Corrected an issue where the 'j' value displayed in a masonry wall detail report could be erroneously shown as 1.0. (This was a display issue only; the calculations were correct.)
- Corrected an issue with the calculation of As_max for the IS456 Indian concrete design code.
- Corrected an issue where the Gupta modal combination method would cause a wall panel model to crash during Response Spectra Analysis solution.
- Fixed a unit conversion issue with the Material Take Off output so that the volume of concrete is only based on the density unit.
- Corrected a problem where wall panel stiffness was incorrectly overestimated when using metric units due to a unit conversion error.
- Fixed a metric units problem with masonry lintels where the "check to make sure that the reinforcement fits within the member geometry" was not working correctly.
- Corrected an issue where concrete columns in tension would not design shear reinforcement spacing in the center span region.
- Fixed the display of incorrect governing equation numbers for bending capacities on flat aluminum plates in the detail reports.
- Updated an issue with wood wall panel optimization where having multiple design rules could cause an individual wall to be designed to a different wall design rule.
- Fixed an issue with masonry walls where the stiffness was not being reset when you make a change in the Wall Design Rules spreadsheet.

Version 10.1 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).
- Provides story deflections for each story in a multi-story wall.
- Added AF & PA NDS-08:ASD Wood code.
- Added ACI 530-08 Masonry code.
- Added ACI 318-08 Concrete code.
- 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.
- 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.
- 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
- 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 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.
- 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.
- Added a graphical re-labeling options so that users can re-label existing items based on the current selection state. This also allows user to apply a different prefix to selected items.
- 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.
- 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 +1370 plf shear capacity.
- Removed the KL/r limitation check for members that are marked as "tension only."
- 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.
- 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.
- 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.
- The EuroCode for Hot Rolled Steel (1993-1-1) now uses the AISC Cb formula to calculate the C1 coefficient for beam lateral-torsional buckling. This variable will be overridden when the user enters a value in the design data for the member.

Corrections

- 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.
- Corrected the calculation of effective section modulus for Mny 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.
- Fixed miscellaneous errors with detail reports for concrete beams when custom shear rebar layouts were used
- 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.
- 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 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 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 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 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 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 models with wall panels to crash when exporting to DXF.
- 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.

Version 10 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.
- Updated the names assigned to all design code options to match ANSI naming convention.
- Added drawing of flexural reinforcement in the column cross section to concrete column detail reports.
- Added the ability to apply distributed and point loads oriented along the wall panel local axes.
- 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.
- Added a Tools - Application Settings option to turn off the Sum of Reactions check.
- Added equation C-F9-1 from steel code commentary (AISC 360-05) to account for the bending capacity of a fully braced WT with stems in compression
- Added an option to use a non-iterative (Tau = 1.0) method for the AISC 360-05 / 13th edition Direct Analysis method.
- Modified the AISC direct analysis method to ignore the sway flags.
- Modified the Concrete Column detail reports so that they always show the interaction diagram regardless of what loading is applied to them.

- RISA-2D no longer includes internal wall panel joints when checking against the program limits for maximum number of joints.
- Reduced the memory usage associated with envelope results for wall panels.
- Added network file security to prevent multiple users from opening / editing the same file at once.

Corrections

- Corrected a database issue where some HSS round members had an incorrect wall thickness listed.
- 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 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.
- Corrected the allowable shear stress calculations for the Indian steel code per section 6.4.2
- Corrected a unit's conversion issue within the bar strain calculation for concrete. This could cause ACI code checks to use an incorrect phi factor.
- 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.
- Corrected an issue where Canadian code checks were not being performed on single angles designated as Euler buckling members.
- Corrected issues where program could erroneously report that input forces did not equal the sum of reactions.
- 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.
- 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 where the use of design lists with tapered members could cause the code check 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 a Euro code issue where the program calculated a zero moment capacity for one direction of a tube shape.
- 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.
- 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 with the Fc (allowable compression stress) value for the "Western Cedar" species in the wood material database.
- Corrected an issue where the program was refusing to do a code check (because fb>FbE) even though the member was in tension.
- 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.

Version 9.1 Enhancements / Corrections

Version 9.1 Wood Wall Panel Enhancements

- Added the ability to model wood shear walls with openings, incorporating three design options: Segmented, Perforated and Force Transfer Around Openings.
- 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.
- Application of 2w/h adjustment factors for shear capacity for seismic load combinations.
- Automated the 40% stress increase for wind load combinations (compared to seismic) for wood shear walls and diaphragms.
- Added the ability to attach wood wall panels to a beam or column via a strap.
- 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.
- 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.
- Modified the chord force and strap force calculations to more closely match typical design practice. See Wood Wall - Design for more details.
- Improved the load attribution for vertical loads applied to the "ineffective" sections of a segmented shear wall.
- Improved reporting and warning messages for straps.
- Improved reporting for situations where no panels could be found within the limits specified in **Design Rules.**
- 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 an issue where strap forces for batch and single solutions were not consistent.
- Corrected a units conversion issue with the self weight of wood wall panels.

Version 9.1 Code Related Enhancements/Corrections

- Added EC3 2005 Euro steel code.
- Added BSEN 2004 Euro concrete code.
- Added the 2007 edition of the Saudi concrete code (*SBC 304*).
- 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 a problem in the Canadian steel code calculations for members classified as "slender". The allowable moment capacity was being reported as negative when it should have provided an error message.
- 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 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 Cw equals zero per the User Note / code commentary.
- Added a 3.0 upper limit to the Cb calculation for *AISC 13th Edition*. Previous versions of the LRFD code did not include this limit.
- Corrected an issue where 2001 NDS stress values were used for when doing code checks for Glu-Lam beams per 91/97 NDS.

Version 9.1 Other Wall Enhancements/Corrections

- Added a more sophisticated 'j' calculation for masonry walls. Previous version had automatically assumed a value of 0.9.
- Corrected a problem with the units conversion of wall panel reactions.
- Corrected an issue where the self weight of walls was not included in the weight used in the automatic Seismic load generation.
- Updated the criteria for masonry lintel reinforcement spacing checks. Previously some bar arrangements would give a false warning message about the spacing.
- Corrected an issue associated with opening a model that had saved dynamic results for wall panels.
- 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 reactions would be erroneously removed from the Joint Reactions spreadsheet when a graphical exclude was performed.

Version 9.1 Miscellaneous Enhancements

- Added a customizable graphic toolbar with new Model Display Options button for easier graphical view of results.
- Added the ability to put a sketch number (and prefix) with graphic printing.
- Added re-design lists for newly added composite lumber Species.
- 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 requirement only applies to hot-rolled steel models.
- Improved displayed Fv and Fv' values for Glu-Lam beams to better distinguish between strong and weak axes.
- Changed display of continuously free boundary conditions for wall panels to improve clarity.
- Added RSA method and damping ratio to the input file. Previously this information did not get stored with the file.
- Added ability to use Design Results spreadsheets to select or unselect members in an envelope solution.
- 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 stiffness adjustment factor (tau_b) to detail reports for AISC 13th edition.
- Added **Bending Span** results to column detail reports for members with custom rebar layouts.
- 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.
- Improved the reporting of concrete column results designed by the PCA Load Contour Method.

Version 9.1 Miscellaneous Corrections

- 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 issue where some spreadsheet operations (Fill block, etc) were not available in some spreadsheets (Design Rules).
- 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 reading of the Model Display Options default file which could cause interface issues and/or incorrectly trigger error messages.

- 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 the 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.
- 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 the spacing of shear ties was not properly taking into account the **Global Parameter** setting for increments.

Version 9.0 Enhancements / Corrections

Walls Panels Enhancement

- Added Wall Panels, giving users the ability to model entire portions of walls without using plates.
  - Ability to create Masonry walls with openings to get reinforcement design for in plane forces and the ability to design lintels.
  - Ability to create Wood walls (currently without openings) and get design results for in plane loads.
  - Ability to create General walls with uniform properties and openings for analysis. A way for analysis of concrete walls.

Interface and Graphics Enhancements / Corrections

- Changed notation for "projected" global axes from L and V to PX and PY.
- Improved dialog behavior by highlighting the Use? Checkboxes and added in a Clear Use Boxes button.
- Fixed a bug with the rendering of deflection diagrams for pipe shapes.
- Dynamic_graphics added in the INI file.

Steel Design Enhancements / Corrections

- Added changes to the AISC database based on the 13th Edition Manual.
- Added a Roll Back On Cancel action to the Model Settings – Code settings to properly account for cases where users changed from 13th Edition ASD to 13th Edition LRFD and canceled the change before exiting.
- Changed logic for using R value for cold formed steel.
- Added Slenderness checks for Indian code IS 800
- Corrected the calculation of rz (radius of gyration about principal axis) of user defined single angles created in RISA-2D.
- Corrected the dimensions in the Euro Steel database for HD360x147, HE1000A and HE1000AA.
- Corrected a units conversion issue with the Canadian Code which could result in the moment capacity being reported as a negative number.

Concrete Design Enhancements / Corrections

- Added ACI 2005 code.
- Changed Fy in the rebar layout dialog so that it is tied to stress units, to be consistent with definition of Fy in the Design Rules.
- Corrected an issue which could cause the display of incorrect stress block selection in the detail reports.
- Fixed bugs related to rebar optimization for extremely wide beams.

- Fixed Unity Check for columns under the Mexican code that need reinforcement close to the maximum specified .
- Corrected a bug where the program was not properly re-assigning a rebar layout for naming conflicts.
- Corrected an issue where crack control requirements for concrete members could produce a tight rebar spacing.
- Corrected a units conversion issue with the y1 and z values in custom rebar layouts.
- Identified a compatibility issue in the concrete code settings between the current version and RISA-2D version 8.0. Issue only applies to version 9.0 (or newer) files being opened in RISA-2D version 8.0 or older. These older versions may incorrectly identify which concrete design code was chosen when they try to open a file saved by a newer version.

Loading Enhancements / Corrections

- Increased Load Combination limit to 5000.

Miscellaneous Enhancements / Corrections

- Added CIS/2 Detailing.
- Added the ability to turn off the time / date stamp.
- Added a log of members that had invalid or missing design lists.
- Added a warning log that will tell you which entries were not read properly or caused the file to be considered "corrupted".
- KeyID added to input file.
- Enhanced the status bar display to work better with multi-monitor or odd resolution screens.
- Improved the Truss Generator to allow user to specify "segment" for the unbraced lengths.
- Improved the Truss Generator to better recognize triangular trusses and eliminate creation of duplicate end joints.
- Enabled users to delete point loads using graphical Delete Load feature.
- Changed the Emin calculation for SCL members.
- Removed the potential for "padded spaces" from dialog boxes. When these fields were being padded this would prevent the user from entering data in those fields.
- Corrected a member orientation issue associated with opening a RISA-2D file in RISA-3D.
- Corrected the display of saved Cold Formed code checks in the Design Results spreadsheet. Program was improperly reading in the Phi factors from the saved results file.
- Corrected an issue in the Load Combinations spreadsheet, where adding a line in the spreadsheet would confuse nested load combinations.
- Fixed a bug that could cause distributed loads to be cut off if a model merge were performed on non-physical members.
- Corrected a K factor issue where Nodes with blank lines in the Boundary Conditions spreadsheet were being interpreted as restrained joints for the K approximation.
- Corrected an issue where the R_B calculation for wood members was computed as if the bottom of the beam were in compression when the top flange was actually in compression. Generally resulting in a conservative error.
- Corrected corruption to the Report Name database.
- Corrected a bug where the program was incorrectly handling duplicate shapes. This bug only occurred when a file was opened which contained a shape that matched the name (but not the properties) of an existing database shape. Program would incorrectly re-assign the member to the database shape.
- Corrected a bug where a model with the ALL boundary condition could not be appended.
- CF correction for SCL lumber in 2005 NDS.
- Corrected report printing to re-adjust report widths to allow for wider / Landscape pages.
- Corrected a bug where copying and pasting from results browsers could result in a memory error based on an "out of range" spreadsheet setting.

Version 8.0.3 Enhancements / Corrections

Miscellaneous Enhancements/Corrections

- Corrects a length conversion bug in the rebar database. If length units were other than feet, the program had been erroneously converting rebar cutoff lengths entered in as a % of length.

Version 8.0.2 Enhancements / Corrections

Enhanced Concrete Design Features

- Added Mexican Concrete Design Code

Miscellaneous Enhancements/Corrections

- Corrected a Bug where a report or a results spreadsheet could not be printed

Version 8.0.1 Enhancements / Corrections

Enhanced Loading Features

- Added ASCE-7 2005 Load Combinations to the Load Combination Generator

Enhanced Analysis Features

- Added a Sparse Solver to Speed Up Solution Times and Reduce Memory Requirements

Enhanced Steel Design Features

- Added AISC 13th Edition Steel Code
  - Ability to Use 1.6*P-Delta Effect for ASD Design
  - Ability to Reduce Flexural Stiffness for Certain Members of Lateral Resisting System Based on the Axial Load in the Members. This is Done on a LC by LC Basis.
  - Ability to Reduce Axial Stiffness for Certain Members of the Lateral Resisting System
- Changed the BS Steel Code to Distinguish Between H and I Sections when Choosing which Strut Curve to Use
- Corrected Bug in AISC Cb Calculation when Using the "Segment" Code

Enhanced Concrete Design Features

- Added Mexican Concrete Design Code

Enhanced Wood Design Features

- Added NDS 2005 Wood Code
- Corrected a Bug in the 2001 Wood Database that was Using a Lower Fc Value for DFL #2 Posts and Timbers

Miscellaneous Enhancements / Corrections

- Added Graphical Filtering for Shape Optimization
- Double Wheel Click Now Calls Up a Full Screen View
- Added INI Only Option to Turn Off the Dynamic Mouse Graphics Features
- Corrected a Bug with the Block Fill Command that was Only Allowing the First 3 Cells of the Block to be Filled
- Corrected a Bug with the Internal Force Summation Tool that Could Cause a Crash for Models with Triangular Plate Elements
- Corrected a Bug where Changing the Member Type of a Concrete Member Did Not Clear the Stiffness Matrix.