Release Notes for RISAConnection

Version 14.0.2 Enhancements / Corrections

- Converted to cloud-based subscription licensing.

Version 14.0.1 Enhancements / Corrections

- Added conventional configuration checks for shear tab connections with HSS columns.
- Added the ability to copy connection properties from one connection to another similar connection.
- Added the ability to 'Collapse All' and 'Expand All' properties within the connection property and project explorer windows.
- Added the ability to adjust size of text for 2D connection view and program interface.
- Added a progress bar to RISAConnection, displaying the loading progress of an integrated model from RISA-3D or RISAFloor.
- Enhanced user experience when clicking on inputs in the 2D or 3D view.
- Improved and expanded bolt prying calculations specifically related to the variable 'p'.
- Updated references and equations to the AISC 15th edition where it shows older codes for the extended shear tab connection.
- Corrected the effective length 'K' value for the plate compression checks for the Chevron and Extended Shear Tab Brace Connections.
- Fixed graphical display unity check reporting for concrete bearing limit with large moment methodology to accurately reflect results, eliminating the misleading 1.0 reporting.
- Corrected the eccentricity taken for the extended shear tab connection per AISC 15th edition.
- Resolved an issue that prevented the weld filler material checks from being compared properly.
- Fixed a rare issue that would cause large model files from RISA-3D to close unexpectedly when being solved.
- Corrected the effective length used for welds for the knife plate configuration of a vertical brace to base plate connection.
- Resolved an issue that prevented ASTM A500 Grade C material HSS tubes from passing the branch ductility check.
- Corrected how the program determined the dimension 'a' for bolt prying calculations.
- Corrected a rare issue that would incorrectly calculate the unbraced length for a knife plate connection.

Version 14.0.0 Enhancements / Corrections

- Added continuous beam over column connection design.
- Added additional icons in the 2D View for improved user experience.
- Added bolt pattern configuration to a Vertical Brace Chevron Connection for bolted tee attachment connection type.
- Added connection defaults for all connection types within the Defaults Viewer dialog.
- Added the ability to change text size of dimensions in the 2D view of the connection.
- Updated the program to enable subscription license users to borrow a license from the cloud service for offline use.
- Revised geometry restrictions for cap plate stiffeners to use half of the cap plate width instead of the stiffener width.
- Corrected reduction factors associated with slip critical connections to consider applied load direction with respect to location of bolt holes.
- Resolved a graphical issue that showed '-nan(ind)' as the required force for certain connection checks that were being integrated from RISA-3D.
- Corrected the alpha proration factor for welds; specifically for transverse stiffener weld for panel zone checks.

- Resolved an issue that prevented seismic loads transferring from RISA-3D to RISAConnection for ordinary moment frame connections.

Version 13.0.2 Enhancements / Corrections

- Added compatibility between RISAFloor/RISA-3D and RISAConnection for Column Cap Plate Moment connections.
- Added compatibility between RISA-3D and RISAConnection for Vertical Brace Diagonal Extended Shear Tab with and without Gusset connection.
- Updated the HILTI PROFIS login protocol to conform to HILTI updates.
- Corrected a rare issue that prevented the program from applying the full weld length to braces in the Extended Shear Tab Connection with Gusset module.
- Resolved a rare issue that prevented connections from integrating from RISAFloor to RISAConnection.
- Corrected an issue where HSS limitation checks that were removed in the AISC 360-16 code were still being checked.
- Resolved an issue that would fail a weld moment connection check for HSS A500 Grade C columns due to weld filler metal not matching.
- Corrected the calculation of the nominal stress weld strength to include the 0.60 factor for PJP welds per AISC J2-3.

Version 13.0.1 Enhancements / Corrections

- Added connection support for AISC 341-16 and AISC 358-16 seismic codes.
- Added the ability to customize the name of default connection configurations.
- Added the ability to open a new connection using a custom default connection.
- Added clarification to the Plate Flexural Yielding (Tension) (Weak Axis) warning message when bolt centerlines fall within the footprint of the column.
- Updated the load combination list to accommodate capacity-limited load combinations for models from RISA-3D.
- Corrected an issue where base plates with vertical brace connections were not being transferred from RISA-3D in some instances.
- Resolved an issue that would prevent large model files from opening.
- Corrected an issue that was showing failures for Seismic Vertical Plate Checks due to Block Shear reporting as “N/A”.
- Improved the reporting within the Web Weld Limitations section when bolt geometry results in a negative value.
- Resolved an issue that showed failures from filler weld for HSS shapes.
- Corrected an issue where some databases were not migrating from older versions during installation.
- Enhanced the web weld effective length calculation to consider asymmetrical bolt geometry.
- Fixed an issue with bearing strength calculation at bolts to always consider 'deformation at hole as design concern' per AISC 341-10 Sect D2.2(1).
- Revised the “b” value for bolt prying calculation for the Beam/Column Double Clip Angle Connection to be the distance to the centerline of angle leg instead of face of angle.
- Resolved an issue where updated connection geometry was not retained after roundtripping between RISAFloor, RISA-3D, and RISAConnection.
- Resolved an issue preventing users from borrowing a license.

Version 13.0.0 Enhancements / Corrections

- Added a new Extended Shear Tab without gusset connection
- Added an extended shear tab with top gusset plate option for diagonal vertical brace connections.

- Added a new Detail View when opening a new connection that gives users more control over specific parameters when opening a new connection.
- Updated text of 'Material Strengths' units to 'Material Stiffness'.
- Corrected an issue that was preventing base plate integration from RISA-3D.
- Updated the location that user data files are stored during default installation to prevent certain file access issues.
- Resolved an issue where forces associated with double sided connections were not transferred correctly to RISAConnection.
- Changed K to be 0.5 for Brace to Column Base Plate Connections to align with AISC Design Guide 29.
- Resolved an issue where the bolt bearing strength was erroneously reported as 0 in the Bolt Bearing on Girder check for double clip angle shear connections.
- Removed extraneous column checks from the Top Gusset/Beam tab of a vertical brace connection.
- Corrected the Uniform Force Method Distribution of Forces applied to both the Beam and Column when using a Vertical Brace Diagonal Connection Type.
- Fixed typos for the bolt callouts in the printed report.
- Corrected an issue related to custom shapes that made the program close unexpectedly during integration.
- Corrected an issue where using ASTM A500 Grade C material was not being considered acceptable for HSS column ductility
- Corrected an issue where the filler metal classification strength (FEXX) was not properly considering the type of electrode selected.
- Fixed an issue with the safety factor for PJP weld capacity under ASD design.
- Resolved an invalid connection error for some Girder/Beam Shear Tab connections.
- Corrected an issue where some of the units for the chevron brace required load were being reported incorrectly.
- Resolved an issue where double-sided shear connections wouldn't integrate from RISA-3D.
- Added warning message clarification that states when a knee brace connection uses the default configuration of brace to beam.
- Corrected the code check for plate elements subjected to out-of-plane loads (for in-plane moments load case) per AISC 360-16 equations 9-32 and 9-33.
- Fixed an issue where modifying the Transverse Stiffeners for a connection group caused the program to close unexpectedly.
- Corrected web doubler plate weld calculations to follow section 4.4-7 of the AISC Design Guide 13.
- Resolved an issue where the Column Shear Splice connection was not recognized in RISA-3D if the column stack was rotated.

Version 12.0.2 Enhancements / Corrections

- Added compatibility to integrate with RISA-3D v19.
- Added an asterisk to distinguish RISA-3D overstrength load combinations.
- Updated the calculation for top column distance to consider the height of the column when integrating models from RISA-3D.
- Updated the Project Explorer to report 'Seismic' rather than 'LC-1' as the controlling case for seismic chevron braces.
- Resolved an issue causing an erroneous 'invalid member slope' error message for non-sloping members.
- Corrected the calculation for max bolt edge distance to consider member coping.
- Resolved an issue where connection forces were not properly transferred from RISA-3D into RISAConnection when the model originated in RISAFloor.
- Resolved an issue preventing Vertical Brace to Baseplate connections from transferring to RISAConnection from RISA-3D.
- Resolved an issue preventing Girder/Beam Double Clip Angle connections from transferring to RISAConnection from RISA-3D due to an 'invalid shape type'.
- Resolved an issue where forces associated with double sided connections were not transferred to RISAConnection when the member was also framing into another double sided connection.

- Resolved an issue where some base plate connections did not properly transfer to RISAConnection.

Version 12.0.1 Enhancements / Corrections

- Added the ability to assign custom bolt layouts for base plate connections:
  - Added custom anchor bolt editor dialog
  - Added ability to generate bolt layouts from templates
  - Added ability to move and rotate bolt layouts
  - Added drawing grid for anchor bolt placement
- Revised calculations for standard anchor bolt layouts since the implementation of custom bolt layouts.
- Resolved an issue preventing some connections from being exported as a DXF file.
- Corrected an issue where the shear lag factor was not considered in the Beam Tensile Rupture calculation for beam to column bolted shear tab connections.
- Corrected an issue where invalid bolt geometry on vertical brace connections produced incorrect results.

Version 12.0.0 Enhancements / Corrections

- Added skewed connections for column/beam and beam/girder Shear Tab Shear connections.
- Updated the ineffective weld length calculation per AISC 15th (360-16) Edition.
- Clarified the calculation of r0 for Column Weld Strength Calculations.
- Corrected an issue where column checks were erroneously reported in the gusset/beam tab.

Version 11.0.2 Enhancements / Corrections

- Enhanced the Hilti PROFIS link to send multiple base plate connections.
- Updated the Hilti PROFIS integration which does not yet support brace to base plate connections.
- Updated the tensile stress, Fu, for plate material A529 Gr.50 to 65 ksi for new models.
- Updated the HSS Punching Shear limit state to allow ASTM A500 Grade C material as acceptable for column ductility.
- Resolved an issue where the reported capacity in the Plate Washer Punching Shear check was not using the omega safety factor.
- Added functionality in new Licensing Dashboard.

Version 11.0.1 Enhancements / Corrections

- Added Flange Plate Moment Column Cap Plate design.
  - Columns may be wide flange or HSS tube.
- Corrected an issue where the length and width dimensions were mismatched for the knee brace connection.

Version 11.0.0 Enhancements / Corrections

- Added a link with Hilti Profis to export base plate connections for anchor bolt pullout design.
- Added HSS Tube design per the Canadian (CSA S16-14/09) steel code for the following:
  - Shear Tab connection with HSS column
  - Clip Angle (One Side) connection with HSS column
  - HSS to HSS connection
  - Vertical Diagonal Brace connection with HSS column
  - Vertical Chevron Brace connection with HSS beam
  - Knee Brace connection with HSS column or HSS beam
- Updated r0 calculation for Column Flange Weld Strength for column base plate connection.

- Updated Block Shear calculation with proper Ubs values for multiple rows of bolts.
- Corrected the custom image for report printing.
- Resolved an issue that was preventing integration from RISAFloor v14 and RISA-3D for models with quotations in the material label.
- Fixed an issue where connection rules assigned to tapered wide flanges were not transferring from RISA-3D to RISAConnection.
- Corrected the Top Column Distance for vertical brace connections integrated with RISA-3D which was conservatively affecting the Column Flange Bending check.

Version 10.0.1 Enhancements / Corrections

- Added End Plate Stiffener weld checks for weld type and strength per AISC Design Guide 4, 2nd Edition, pg. 18.
- Added a check for End Plate connections beam flange weld type per AISC Design Guide 4, 2nd Edition, pg. 18.
- Added the option to reduce available bolt strength by the prying effects factor Q per the alternative method in AISC 15th (360-16) and 14th (360-10) pg. 9-13 or AISC 13th (360-05) pg. 9-12.
- Updated bolt tension at column check to include prying force for vertical brace diagonal connections.
- Relabeled stiffener limit states to better clarify whether a limit state pertains to end plate stiffeners or transverse stiffeners.
- Revised program default units for both weight densities and moments to k/ft^3 and kips-ft respectively.
- Corrected an error where the ey eccentricity used to calculate the moment due to eccentricity in a bolt group was being measured incorrectly in some cases.
- Corrected the eccentricity used for the girder to beam shear tab connection for the plate flexural rupture check.
- Corrected an error where the length of weld was erroneously doubled in comparison with the weld strength in the Double Angle Weld Strength check.

Version 10.0.0 Enhancements / Corrections

- Added connection design per the AISC 15th (360-16) Edition Steel Construction Manual.
    - Added new materials for members and plates per section A3.1a.
    - Updated the available bolt materials per section A3.3.
    - Updated nominal hole dimensions per Table J3.3.
    - Added new out of plane yielding checks for column web connections.
    - Updated the HSS connection checks per the revised Chapter K tables.
- Added more detail to the HSS Punching Shear check by separating from the HSS Limitations check.
- Added column web out of plane buckling and punching shear checks per the requirements of AISC 15th (360-16).
    - Added a Global setting to apply the column out of plane web checks from AISC 15th (360-16) to all codes.
- Added integration between RISA-3D and RISAFloor for wide flange beam to HSS Tube moment connections.
- Improved the installation to preserve any previously saved company logo artwork.
- Updated the 'Export to RISA' button for integrated connection design models.
- Revised the omega factor for shear to be 1.67 for all members based on Section G1 with exception of members following Section G2.1(a).
- Corrected an error in the demonstration version where the demo watermark was not properly displayed on the print out.

Version 9.0.0 Enhancements / Corrections

- Added the following connections for Wide Flange beam to HSS Tube columns:
    - Flange Plate Moment per AISC 360-10 (14th edition)
    - Direct Weld Moment per AISC 360-10 (14th edition)

    - Flange Plate Moment per AISC 360-05 (13th edition)
    - Direct Weld Moment per AISC 360-05 (13th edition)
    - Flange Plate Moment per CSA S16-2014
    - Direct Weld Moment per CSA S16-2009
- Added "Axial Transfer Load" and "Shear Transfer Load" inputs for Vertical Diagonal Brace connections to allow for the design consideration of transfer forces at the beam to column sub-connection.
- Updated the calculation and application of the Base Material Proration factor for Weld Strength calculations:
    - This factor will now only be included in weld strength capacity calculations where the strength of the base material is not directly calculable.
    - This factor can now be toggled off in the (Global) Project Settings.
- Updated the HSS Transverse and Flexural Plastification limit states to always display both compression and tension checks for OCBF seismic connections.
- Updated beam flange to column flange welds to no longer allow the weld length to exceed the column flange width.
- Improved the input options for tapered gusset plates by adding the new "Custom Angle" tapered input angle.
- Improved the calculation of Whitmore gusset area when the Whitmore section crosses into the column web.
- Added an option to adjust the print size of 2D and 3D connection images in the printed report.
- Added support for connection integration from demonstration versions of RISA-3D and RISAFloor into the demonstration version of RISAConnection.
- Corrected the calculation of gross area in the Flange Compression check for direct weld moment connections where the beam flange is wider than the column.
- Corrected an error where double shear was not being considered in the bolt bearing check on double sided shear connections.
- Corrected a display error on small scale connections which cut the display length of the supporting girder shorter than the length of the connection.
- Corrected the minimum tensile stress (Fu) for F1554 Gr. 105 anchor bolts.
- Improved the material call outs for DXF exported files.
- Corrected an error where the Whitmore section for a brace to base plate connection crossed a column web but did not report failure.
- Corrected labeling error which erroneously referenced column supporting members on beam to girder connections.
- Corrected grammatical errors in the Check Anchor Bolt Placement warning message for a Column Base Plate.

Version 8.0.2 Enhancements / Corrections

- Resolved an issue introduced in the Windows 10 Semi-Annual Update (KB 4103721) which prevented Standalone Licensing functions from operating as expected.
- Improved Report Printing options:
    - Improved selection options in the Report Printing dialog:
    - Added the option to attached external PDFs to the printed report.
- Improved the HSS Plastification checks for shear tab plates on rectangular HSS columns:
    - Removed the HSS Flexural Plastification check for direct weld shear tabs to rectangular HSS columns to meet compliance with the *AISC 360-10 Chapter K* provisions. This check is required for round HSS connections, but not rectangular HSS.
    - Removed the HSS Transverse Plastification check for direct weld shear tabs to rectangular HSS columns which only see shear load. Per *AISC 360-10 Chapter K*, this check is only required when there is axial load in the connection.
- Updated the wording of the 'Eccentricity Consideration' input to "Eccentric Moment Calculation" and its options to better clarify the functionality.
- Corrected an error where the Max Edge Distance bolt check was considering all bolt edge distances, not just those 'to the nearest edge' per the code requirements.

- Added the restriction that a tapered gusset plate on SCBF Diagonal Brace connections may only use the "2t Linear" Offset" for the Gusset Plate Clearance. This was made because the "8t Elliptical Offset" theory is based on rectangular plates only.
- Removed erroneous second set of Beam Tensile Yield and Beam Tensile Rupture checks that were being checked against seismic level loads in seismic moment connections.
- Corrected an error in the effective eccentricity calculation for weld strength checks where the shear load has a negative sign.
- Corrected an error in the calculation of anchor bolt area in the Anchor Bolt Bearing limit state check.
- Corrected an error where Property Grid tabs were cut short on high resolution monitors.

Version 8.0.1 Enhancements / Corrections

- Added the new 'Required Load Calculation' result report to show detailed calculations of how the forces in a Vertical Brace connection are derived.
- The loading type (ASD vs. LRFD) is now shown in the Property Grid for *AISC 360-05* and *AISC 360-10* design codes.
- The program now reports which configuration (Conventional or Extended) applies to the Rotational Ductility check for shear plates.
- Improved the selection options in the Report Printing Dialog.
- Clarified the code references for coped beam checks for both the *AISC 360-05* and *AISC 360-10* design codes.
- Clarified a failure warning message on the Column Flange Bending check.
- Removed the unnecessary 'Branch Aspect Ratio Check' on HSS connections where the branch is not an HSS section.
- Corrected an error in the Bolt Interaction at Column check for Canadian design where the bolt shear strength was erroneously taken as zero.
- Corrected an issue which did not save the proper bolt edge distance geometry for Base Plate connections in previously saved models which resulted in an erroneous model view where the column floated above the base plate.
- Corrected an problem where the clip angle would not grow in length to accommodate more bolts on a double-sided beam to column shear connection.
- Corrected an problem which would not save the proper beam offset distance for the Girder/Beam Clip Angle Shear connection.
- Corrected an error where the Whitmore section was not being correctly calculated on tapered gussets and resulted in a limit state error.
- Corrected an error where slip critical bolt checks were not properly considering two slip planes when connected to double column web stiffeners.
- Corrected an error where the Max Edge Distance bolt check was considering the inside bolts rather than just the outside bolts.
- Corrected an error in the length of ineffective zone calculation in the Weld Strength check for a C shaped weld on an HSS member.
- Corrected an error where the plate flexural buckling Vn capacity was incorrectly multiplied by the phi factor twice.
- Fixed an error which flashed a black initialization window at program start up.
- Fixed an issue where custom default RISAConnection Model Settings were not used when a model exported from RISA-3D or RISAFloor.

Version 8.0.0 Enhancements / Corrections

- Added a Vertical Brace to Column Base Plate connection.
    - Brace and gusset connect to the column flange or web.
    - Designed per methodology in *AISC Design Guide #29: Vertical Bracing Connections - Analysis and Design*.
    - WF, Tube, or Pipe shape columns available.

- Added double-sided shear connections:
  - Beam to column shear connections with beams on either side of the column web.
  - Beam to girder shear connections with beams on either side of the girder web.
  - Two sided connections with staggered bolts.
  - Added positive and negative sign convention for shear load input to properly consider two sided shear connections.
- Added weak axis moment connections:
  - Added design for Flange Plate Moment connections between a beam and a column web.
  - Added design for Direct Weld Moment connections between a beam and a column web.
- Added the ability to taper (cut back) gusset plates on Vertical Diagonal Brace and Knee Brace connections.
- Added design for Vertical Brace connections per the Canadian design codes: *CSA S16-09* and *CSA S16-14*.
- Added a new entry to allow the user to define the location of the eccentricity on shear beam to column and beam to girder connections.
- RISA-3D and RISAFloor integration enhancements:
  - HSS Truss connections may now be imported from RISA-3D version 16 and newer.
  - Double-sided shear connections may now be imported from RISA-3D or RISAFloor.
  - Added an option to import a welded web plate on a Direct Weld Moment connection from RISA-3D.
  - Allow RISA-3D integrated Chevron and Diagonal Brace connections with two braces to have different brace shapes.
  - Corrected an error where the gusset-beam connection for a Chevron Brace connection would not carry over the connection type when integrated with a RISA-3D model.
- Updated input dialog boxes.
- Corrected some graphical errors that occurred on high resolution or 4K monitors.
- Removed the unnecessary 'Check Workpoint Offset' check for Knee Brace connections.
- Corrected a rounding error that resulted in erroneous failure of the Rotational Ductility check.
- Corrected a metric unit conversion error for the development length check under Web Weld Limitations.
- Corrected an error where clicking ENTER in the Notes section of Global Model Settings closed the dialog rather than advancing to the next line down.
- Corrected an error where the list of Available Connections would not scroll to the right.

Version 7.0.1 Enhancements / Corrections

- Updated the program install to improve behavior for network licenses.
- Improved the subscription license functionality to make it more robust.
- Base Plate Enhancements:
  - Enhanced base plate bolt geometry options to allow the user to move bolts to any location inside of the base plate using dimensions rather than preset layouts.
  - Updated the base plate connection plate flexural yielding (compression) check by removing an over-conservative assumption about the beta factor.
- Splice Connection Enhancements:
  - Added the option to apply double shear plates to beam shear splice connections.
  - Corrected an error which would cause splice connections with a large number of bolts built in older versions to crash in version 7.0.0.
- Brace Connection Enhancements:
  - Added a lower bound Shear factor, U, to the Brace Tensile Rupture limit states.
  - Updated the Whitmore width calculation to properly consider bolted connections with only 1 bolt per row.
  - Corrected an error in calculating the Eccentricity Modification Factor, C, for beam weld strength on vertical brace connections.
  - Corrected an error in the calculation of gross area for Knee Brace Connections.
  - Corrected errors in the Knee Brace Geometry Restrictions limit state.
- Moment Connection Enhancements:

  - Added a warning message to alert users when their input forces are outside of the design assumptions for the Moment End Plate connection types.
  - Added a new 'Bolt Constructability' check to the Geometry Restrictions check for all Bolted End Moment connections to ensure that the internal bolts do not overlap.
- Integration Enhancements:
  - Added an option to detach integrated RISAConnection models from RISA-3D, RISAFloor, or Revit.
  - Added an option to use customized loading on a RISA-3D or RISAFloor integrated model.
  - Added a better error message to warn user's about an erroneous member type designation in RISA-3D for integration with RISAConnection.
  - Corrected an error where integrated RISA-3D chevron connections were being overwritten rather than updated in the previously saved file.
  - Corrected an error which would change the selected Canadian (CSA S16) design code when a model originated in RISAFloor or RISA-3D.
- HSS Connection Enhancements:
  - Added a more descriptive error message for the HSS Flexural Plastification limit state when the Qf factor goes negative.
  - Corrected the calculation of Qf in the HSS (Beam to Column) Plastification checks to be based on the axial load in the column rather than that in the beam. Updated the Qf in the HSS T and Vertical Brace Connections to always use the customer input value.
- Miscellaneous Corrections:
  - Removed the axial and shear resultant design requirement for connecting element Shear Yield, Shear Rupture, and Block Shear limit states. This was found to be over-conservative, so now shear and tensile limit states are checked separately.
  - Added Tensile Yield, Tensile Rupture, and Tearout limit states for supporting elements which previously were checked using an axial and shear resultant approach.
  - Added Clip Angle Flexural Yield and Flexural Rupture checks to simple shear (beam to column and beam to girder) connections.
  - Fixed an over-conservative assumption for calculating the moment demand in the Bolted Angle Leg Bending check.
  - Corrected an error in the Plate Flexural Buckling for Column Web to Beam Shear tab where the stability plates were not taken into consideration for horizontal eccentricity.
  - Corrected a bug which miscalculated the depth of a coped beam section when the cope length value was set to zero (but not the cope depth).
  - Corrected an error where the program was ignoring the presence of lateral stabilizer plates when determining the unbraced length of a shear plate.
  - Clarified the seismic brace output by changing the nomenclature from 'seismic loading cases' to 'seismic loading directions'.
  - Fixed an error where dividing by a very small number resulted in an erroneous large UC value.
- Discontinued support of the 32-bit version of the program.

Version 7.0.0 Enhancements / Corrections

- Added single column base plate connection design per AISC Design Guide 1.
  - Includes design of both Fixed and Pinned base plates.
  - Supports design for Bi-axial bending.
  - Columns may be Wide Flange, HSS Tube, or HSS Pipe shapes.
  - Includes options for four different bolt layouts.
- Added knee brace (aka kicker brace) vertical brace connection design.
  - User selects whether supported by column web, column flange, or beam.
  - Concentric or Eccentric work-point options.
  - Columns / beams may be Wide Flange, HSS Tube, or HSS Pipe shapes.
  - Braces may be HSS Tubes, HSS Pipes, Channel, WT, Double Angles, or Single Angles.
- Enhanced column stiffness for beam to column moment connections:

    - Column to beam connections now allow both flange stiffeners and column web doublers to be applied simultaneously.
- RISA-3D/Floor integration enhancements:
    - Added the ability to apply a Base Plate connection rule to RISAFloor and/or RISA-3D models for integrated design with RISAConnection.
    - Added the ability to apply a Column Splice connection rule to RISAFloor models for integrated design with RISAConnection.
- RISA-3D/Floor integration corrections:
    - Fixed an integration error in which the bracing angle on a vertical brace connection was wrong if the vertical axis is Z in the RISA-3D model.
    - Fixed an orientation problem with double-angle braces on the diagonal brace connection where the brace would come in 180 degrees from its RISA-3D orientation.
- Corrected an error where the minimum PJP weld effective throat dimension was based on the thicker joined material instead of the thinner as specified by the code.

Version 6.0.2 Enhancements / Corrections

- Made Significant improvements to the behavior of Subscription licensing, including adding the ability to view current license usage.

Version 6.0.1 Enhancements / Corrections

- Added an Angle Leg Bending check for bolted clip angles in tension.
- Added a toggle button to the 2D views to graphically display the Whitmore Section for braced connections.
- Seismic Vertical Brace Enhancements:
    - Added a check to verify that all joints along the column have the same connection type (bolted or welded) for seismic vertical brace connections.
    - Added HSS beams for design of seismic Chevron connections.
    - Added HSS columns for design of seismic Diagonal Brace connections.
    - Added a check for reinforcing bar area on slotted SCBF seismic braced connections.
- Added a solid color background to enhance the view of the quick access toolbar.
- Corrected an error which prevented the Overall Brace Tearout geometry to be calculated for wide flange brace connections.
- Corrected an error in the Plate Flexural Buckling for Column Web to Beam Shear tab where the stability plates were not taken into consideration for horizontal eccentricity.
- Corrected an error where the Rotational Ductility Check was reporting a negative maximum plate thickness for connections with only horizontal bolts.

Version 6.0 Enhancements / Corrections

- Seismic Detailing Checks added for Vertical Braced connections per *AISC 341-2010*:
    - Design checks for Ordinary Concentric Braced Frame (OCBF) connections per *AISC 341-10 section F1*.
    - Design checks for Special Concentric Braced Frame (SCBF) connections per *AISC 341-10 section F2*.
        - Linear or Elliptical gusset hinge line options to check the gusset plate rotation capacity/clearance.
        - Graphical view of the gusset hinge line in the 2D View.
    - Seismic braces simultaneously designed for tension and compression loading.
    - Automatic consideration of possible loading combinations (tension/compression) for connections with two braces.
    - Detailed output display of force distribution calculations (i.e. Uniform Force Method calculations).
    - Integration of seismic vertical brace connection types from RISA-3D models.
- Vertical Brace Enhancements:

  - Added wide flange brace member design.
  - Added the ability to input a brace workpoint eccentricity (vertical and/or horizontal) for Vertical Chevron connections.
  - HSS (tube and pipe) columns now available for Vertical Diagonal Brace connections.
  - HSS (tube and pipe) beams now available for Vertical Chevron Brace connections.
- Added design per the Canadian (*CSA S16-14*) steel code for the following:
  - Shear Tab connections to column or girder.
  - Clip Angle connections to column or girder.
  - Direct Weld Moment connection.
  - Flange Plate Moment connection.
- Added the MRE 1/3 Bolted End Plate connection for AISC and CSA design.
- 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.
- Corrected an error in the moment load calculation at section b-b for chevron braces with braces above the beam.
- Corrected an error in the seismic moment connection Seismic Doubler Plate Strength limit state where one of the subchecks was incorrectly reporting a pass when the subcheck (and the overall check notification) was failing.
- Fixed an error in the seismic moment connection Seismic Doubler Plate Strength limit state where switching to two-sided web plates did not increase the capacity.

Version 5.0.1 Enhancements / Corrections

- Enhancements to the Flange Plate Moment Connections in tension:
  - Updated the Beam Flexural Rupture check for Flange Plate Moment connections in axial tension to be checked per AISC 360 equation F13-1.
  - Added a new Beam Tensile Rupture limit state to Flange Plate Moment connections which are in axial tension.
- Enhancements to the Seismic Moment Connections display:
  - Clearer status bar messages for input variables.
  - Replaced "FOR REFERENCE ONLY" with "n/a" flag to denote limit states that are not required by the AISC 341/358 but are still referenced in other checks.
  - Reported the unity check value for the "n/a" reference limit states where applicable for quick checking.
  - Expanded the Seismic Width to Thickness Ratios limit state checks to better show the limiting ratios.
  - Showed the governing unity check value for the grouped Seismic Beam Web and Seismic End Plate Shear limit states.
- Elastic Weld checks now will be shown as stress values rather than force values.
- Re-arranged Bolt Bearing calculations to be easier to read.
- Improved messaging when a connection could not be designed because the shape wasn't in the shape database in a combined RISAFloor/RISA-3D/RISAConnection model.
- Removed an over-conservative assumption which took the flange area at the center of the RBS for the Beam Flange Tensile Yield and Rupture limit states
- Corrected an issue where Extended Shear Tabs were being over-conservative with rotational ductility checks on thin beams with thin webs.
- Fixed an issue with Canadian shapes where the Bolt Group Eccentricity was erroneously not being ignored when it should be.
- Corrected the calculation for the Utilization Ratio, U, for rectangular HSS truss connections per AISC 360-10 Table K2.2.
- Updated the program to allow remote desktop connections for standalone versions.

Version 5.0 Enhancements / Corrections

- Seismic Detailing Checks added for Moment Connections per AISC 341-2010 and AISC 358-2010.
- Additions / Changes to HSS Design
  - Added HSS T Connections for Rectangular tubes.
  - Renamed some HSS connection limit states for consistency between connections.
  - Added new combined interaction limit state for HSS connections experiencing shear and moment.
  - Corrected formula for shear tab flexural plastification on HSS columns.
  - Made corrections to the calculation of utilization ratio (U) for HSS connections.
- Additions / changes for Bolted End Plate Moment Connections:
  - Added flush end plate moment connections per AISC Design Guide 16.
  - Added other extended end plate moment connections per AISC Design Guide 16.
  - Added a specialty 8 bolt unstiffened end plate moment connection similar to the MRE 1/2 connection from Design Guide 16.
  - Added Bolted End Plate Moment Connections to the CSA (Canadian) code.
  - Corrected an un-conservative issue with the column web yielding limit equation for bolted end plate connections near the top of the column.
  - Corrected an un-conservative error with Flange Weld Strength calculations for fillet welds on bolted end plate moment connections. Length of weld was over estimated by a value of k1.
- Shear connections can now be analyzed with channel beam sections.
- Brace connections can now be analyzed with channel brace sections.
- Added a (Global) Project Setting to allow the user to determine which panel zone shear capacity equation they want to use.
- Added a (Global) Project Setting to allow the user to use full eccentricity for shear connections if desired.
- Added an Angle Leg Bending limit state for certain angle shear connections in tension.
- Updated the beam bolt eccentricity calculations to consider reduced (or zero) eccentricity for specific configurations defined in the AISC design manuals for shear tab and double angle connections.
- Updated interface to use a ribbon toolbar.
- Improved / Increased bearing length for local web crippling checks on end plate connections per the guidance given in AISC Design Guide 13.
- Improved the program to ignore eccentricity for "conventional" shear connections for the CSA (Canadian) code using criteria similar to the AISC 13th edition.
- The program can now be used through Remote Desktop without licensing issues.
- Changed / Clarified the wording in the bolt prying check to eliminate confusion.
- Changes to Weld Access Hole dimensions per 2005 and 2010 versions of AISC 360.
- Corrected a display issue where the plate interaction equation shown in the results was incorrect. Internal calculations used a different (but correct) equation.
- Corrected an issue with Plate Flexural Buckling calculations for shear tabs where the program would over conservatively apply phi (or omega) twice.
- Corrected the program to take the bolt group coefficient (C) for slip critical connections.
- Corrected an issue where connections named with symbols (&, %, $, et cetera) could cause a printing error or crash.
- Corrected an issue with bolt prying calculations for CSA (Canadian) code and single angle shear connections.
- Corrected an issue with the DXF export where the weld symbols for PJP and CJP were incorrectly displayed.

Version 4.0.2 Enhancements / Corrections

- Added compatibility for the RISA-Tekla Link V4
- Updated INI file behavior to explicitly add the database directory default location at the creation of the INI file.
- Corrected an issue with the bolt prying calculations for the CSA code and single angle shear connectors.
- Corrected a display issue where shapes that did not have a root / k value defined could cause odd images in the 3D view.

Version 4.0.1 Enhancements / Corrections

- Improved integration with RISA-3D v12.0 and RISAFloor 8.0.
- Added connection design for symmetric tapered wide flange member ends.
- Enhanced the web yielding, buckling, and crippling calculations to include increased capacity when doubler plates are included.
- Improved the behavior of the program when the RISAConnection.INI file is not present or has missing data.
- Improved the Block Shear capacity calculation for uncoped beams. Previous versions were using a capacity which ignored the presence of the beam flange.
- Corrected an issue where the Canadian Steel Design Code was erroneously reporting code checks for HSS connections.
- Corrected an issue where the program was over conservatively using the 0.85*Ag maximum net area limit for cases that were not similar to bolted splice plates.
- Fixed the ability to directly type in a member shape within the Project Properties rather than choosing it from the Shape Selection dialog.

Version 4.0 Enhancements / Corrections

- Added HSS connections:
  - Slotted brace connections for HSS Tube and Pipe braces
  - Knife Plate brace connection for HSS Tube and Pipe braces
  - End Tee connections for HSS Tube and Pipe braces
  - HSS Tube and Pipe columns for Shear Tab connections
  - HSS Tube columns for Clip Angle and End Plate shear connections
- Added connections for the Canadian (S16-09) steel code:
  - Shear Tab connections to column or girder
  - Clip Angle connections to column or girder
  - Direct Weld Moment connection
  - Flange Plate Moment connection
  - Added metric bolt materials (A325M and A490M) as well as metric bolt sizes
  - Added Canadian materials for members and welds
- Added WT Braces for Diagonal and Chevron braces.
- Enhanced Bolt Prying calculations so that prying forces are included with Bolt Tension code checks.
- Improved the calculation of the Shear Lag Factor (U) for angle braces to be less conservative based on the larger value of Case 2 or 8 from AISC Table D3.1.
- Improved the bolt bearing calculations per user note in AISC 14th edition section J3.10.
- Added the ability to save defaults in the Global Parameters dialog.
- Added the ability to save defaults in the Units dialog.
- Improved the formatting of printed output.
- Changed the Panel Zone Shear limit state check to be based on panel zone shear demand rather than moment.
- Moved registry information from HKey Local Machine to HKey Current User to better comply with Windows best practices.
- Removed the Column Flange Bending limit state from the Column/Beam Shear Tab connection as it doesn't apply.
- Corrected the Stiffener Compression checks for moment connections which were previously considering the capacity of just one of the two stiffeners.
- Corrected the value used for Block Shear Reduction Coefficient (Ubs) for braces with multiple rows of bolts.
- Corrected an issue where the 8 Bolt End Plate Moment connections were not correctly reporting a failure in the Bolt Prying assumptions.
- Corrected a reporting issue with Stiffener Weld Limitations on column transverse stiffeners where a failure was erroneously reported.

- Corrected a report printing issue where results from a load combination that did not govern may have been printed erroneously.
- Corrected a problem with the bolt edge distance calculation for the Minimum Edge Distance check.
- Corrected an issue in AISC where conventional shear tab connections were designed as if they were extended.

Version 3.0.1 Enhancements/Corrections

- Modified the program to better support the RISA-Tekla link
- Enhanced the connection grouping behavior for integration with RISA-3D and RISAFloor. Properties which previously could only be modified at the connection group level may now be modified for individual connections within the group.
- Added slip critical information to DXF drawing output
- Enhanced the compression capacity calculations for various failure states to consider the case when KL/r > 25
- Removed Max Weld Length limitations in a number of connections for which it was not deemed applicable
- Overhauled the Rotational Ductility checks for shear tab connections. Previous checks were overly conservative
- Modified weld assumptions for end plate shear connections to neglect fillet distance on either side of plate per AISC design examples.
- Now accounting for connection eccentricities in beam and column shear splice connections.
- Improved the way we report local buckling checks for end plate stiffeners
- Corrected an issue in integration with RISA-3D / RISAFloor where RISAConnection could identify the wrong governing LC
- Corrected a units conversion issue with RISA-3D / RISAFloor integration for cases where strength and stress units were not consistent
- Corrected an issue where weld strength of doubler plates was incorrectly using the 1.5 strength increase factor intended for welds loaded at 90 degrees
- Corrected an issue where the plate flexural buckling check (for shear tab connections) was being overly conservative with its calculation of shear demand
- Corrected an issue where continuity plate stiffener welds were not correctly accounting for weld angle in the base material proration factor calculation
- Corrected an issue where 8ES bolted end plate connections were not identifying a failure with the bolt prying assumptions

Version 3.0 Enhancements/Corrections

- Added the AISC 360-2010 (14th edition) steel code.
- Added the ability to add and design column transverse stiffeners and web doubler plates for moment connections.
- Added a Directly Welded beam to column moment connection.
- Added a Directly Welded moment splice connection.
- Updates to Bolted End Plate Moment Connections
    - Added 8 bolt option for the bolted end plate moment connections.
    - Added thin plate/prying considerations per AISC Design Guide 16.
- Updates to Vertical Brace Connections
    - Removed the restriction on gusset plate aspect ratios for bracing connections. This expands the geometry options available and removes the Uniform Force Method restrictions.
    - Added the ability to use non-concentric brace work points.
    - Added the design of gusset plate to beam or column connections to resist moment.
    - Major revisions to the chevron brace connection analysis and limit states. The Uniform Force Method is no longer used for this connection as it was found to not be applicable.
- Added a Report Printing Generator to allow quick printing of multiple connections at once.
- Added 1/2" bolt sizes to all connection types.

- Added the ability to use full depth shear tab connections.
- Added compatibility to support the upcoming release of the RISAConnection/Tekla Structures Link.
- Allow the option to switch between a welded or bolted connection for a column moment plate splice connection.
- Added the ability to consider moment due to eccentricity in clip angle shear connections.
- Added a check for combined tension and shear in bearing-type connections.
- Modified shear tab flexural yielding and rupture checks to better account for the interaction between flexure and axial forces and be more consistent with the AISC 14th edition manual.
- Corrected metric weld units to be mm instead of 16ths of an inch.
- Corrected an issue with the max edge distance for bolts.
- Corrected multiple locations where single angle bolt shear checks were doubling the capacity.
- Corrected an issue that gave incorrect results for plate flexural yielding checks.
- Converted the .NET Framework to 4.0 for Windows 8 compatibility.

Version 2.0.1 Enhancements/Corrections

- Added weld checks to verify that the weld fits on the connection.
- Added a compression buckling check for clip angle connections that are part of vertical brace connections in compression.
- Added a plate tear-out check for clip angles on a vertical brace connection in tension.
- Updated Bolt Shear strength formula to handle one-bolt connections.
- Updated Chilean Steel database per Acero Diseño Estructural Manual – Segunda Edicion.
- Fixed a problem with the minimum edge distance checks in the Geometry Restrictions at Beam limit state. Previously it was erroneously failing the minimum edge distance.
- Corrected an error where the Story Shear input force was not being considered in required load calculation for the Column Panel Zone Shear check.
- Corrected the view orientation of chevron braces in RISAConnection that come from a RISA-3D model. Previously the chevron braces showed up in RISAConnection from the opposite sides of the frame.
- Corrected an issue where the Moment Strength (No Prying) capacity check was being compared to the controlling flange force in moment connections even if it was a compression force. Now this is only checked against the tension flange force.
- Corrected an error where a group of diagonal brace connections from RISA-3D was not displaying the Group Properties properly in RISAConnection.
- Corrected an issue where the calculation of the Whitmore section would be un-conservative for bolted braces with a single row of bolts.

Version 2.0 Enhancements/Corrections

- Added Vertical Brace Connections (Concentric):
  - Supports both Diagonal and Chevron brace configurations.
  - Includes the design of all gusset connections.
  - Utilizes the Uniform Force Method.
  - Includes the design of the gusset plate (Whitmore Section).
- Added axial loads to existing shear and moment connections:
  - Checks to see if bolt prying applies.
  - Considers the angle of the load resultant for bolt and weld checks in combined shear and axial connections.
- Added column and beam splice connections (Shear and Moment).
- Added DXF export of connection details.
- Added foreign steel shape databases.
- Improved the warning / error messaging system between RISA-3D/RISAFloor and RISAConnection.

- Removed the Max Flange Thickness (Fillet) check from Flange and Web Weld Limitations based on AISC clarification that this was only a suggestion (for non-seismic connections).
- Fixed an issue with default files in RISAConnection where a file integrated with RISAFloor or RISA-3D could have multiple load combinations information saved to the default. When a user then creates a model in standalone mode, it then corrupts the file.

Version 1.1 Enhancements/Corrections

- Added integration with RISAFloor and RISA-3D. This feature will bring all materials, geometry, shapes and loading from your RISAFloor or RISA-3D model directly into RISAConnection. See the RISAFloor and RISA-3D Integration topic for more information.
- Added the ability to read foreign shape databases read from database files. Australian, British, Canadian, Chilean, Chinese, European, Indian and Mexican shapes databases are now available.
- Fixed an issue with the Beam Shear Yield check where the capacity for coped sections was based on the uncoped dimensions.
- Fixed an issue where the graphical cut-off of the beam in the three dimensional view incorrectly affected the edge distance checks.
- Corrected a problem with PJP welds incorrectly reporting a filler metal mismatch.

Version 1.0

- This is the initial release of the program. See the Overview section within the Before you Begin topic and also the Connection Modeling topic for more information.