Release Notes for ADAPT-PT/RC

Version 23.0.1 Enhancements/Corrections

General:
- Updated the license manager to use a new identity provider for cloud licenses and to allow single sign-on.

Version 23.0.0 Enhancements/Corrections

Design:
- Added support for ACI 318-19(22) design code.
- Enhanced the calculation of the effective depth calculation used in the evaluation of one-way shear strength to consider all steel in the tension zone, including tendons and base reinforcement.
- Corrected an issue with the calculation of rho,w used in the equations for one-way shear strength capacity per ACI code.
- Corrected an issue with the calculation of As,min for the upturned beams with unbonded tendons for ACI code.
- Corrected the issue where in some cases the wrong Mu was used in the calculation of the ratio Vu*dp/Mu, for one-way shear strength per ACI code.

Licensing:
- Modified the program to better support cloud-based subscription licensing.

Version 22.0.2 Enhancements/Corrections

Licensing:
- Converted to cloud-based subscription licensing.

Version 22.0.1 Enhancements/Corrections

Design:
- Corrected cracked section properties for deflection calculation in models with transverse beams.
- Corrected the punching shear f'c cap per ACI 318-19 Section 22.6.5.5.
- Corrected the reported reference location for critical sections when referenced from the face of a drop cap.
- Corrected the reference location of a critical section for punching shear when the first critical section is outside of the drop cap.
- Corrected the calculation of live load deflections during skip loading.

Licensing:
- Corrected an issue where the license manager was not registered in some systems during the installation process.

Version 22.0.0 Enhancements/Corrections

Design:

- Enhanced the program to allow Punching shear design for columns with drop caps and drop panels modeled at the same support.
- Implemented User Input for DCR (Demand Capacity Ratio) limit to better control design algorithm convergence.
- Improved punching shear calculation to ensure stud rails meet minimum length requirements.
- Corrected an issue where an incorrect shear capacity equation was used in certain models at Beams & One-Way Slabs.
- Corrected an issue in the calculation of Live Load Deflection for 2019 code in RC mode.
- Corrected an issue in the calculation of WBAL extension tendons using tendon shape four.

Reporting:
- Corrected the reporting of one way shear capacity Vn for unreinforced sections (ACI 318-2019).

Licensing:
- Corrected an issue where PTRC licenses were showing in use when no machine was logged into the license.

Version 21.0.0 Enhancements/Corrections

Design:
- Added Australian - AS3600 (2018) design code.
- Added the ability to model openings or penetrations around supports for punching shear check when ACI or Canadian design codes are used.
- Added option to limit stud spacing to 3d/4, as per ACI-318 Table 8.7.7.1.2.
- Corrected an issue where in some cases two-way shear strength, vc, was calculated based on adjusted, lower values of f'c.

Reporting:
- Added Stirrups report in the Base Reinforcement report.
- Corrected an issue where the provided rebar was nor reported correctly in the tabular report.
- Improved labeling of spans in the tabular report 34-Design Moment and Moment Capacity.

Operations:
- Corrected the input for inclusion of transverse beams in the calculation of minimum reinforcement to accept the user setting (ACI-318 codes).

Version 20.0.1 Enhancements/Corrections

Operations
- Corrected the input for yield strength of longitudinal reinforcement to accept user entries.

Design:
- Updated the formula for calculation of effective moment of inertia for EuroCode (EC2).

Licensing:
- Corrected an issue where users with network license cannot open the program in RC mode.
- Corrected an issue where the program stalls when users enter PTinput with subscription licensing.
- Corrected an issue where the program was not obtaining a license on first launch for subscription licensing.

Version 20.0 Enhancements/Corrections

General:

- ACI 318-2019 design code implemented.
- A clarifying note was added to the lateral load input window stating that lateral joint moments are to be inserted as centerline moments, not those at face of support.
- The default for Lateral load reversal was set to YES.
- The Lateral load factors in the two additional load combinations was defaulted to 1.0 from 1.6 as per seismic and wind loads being generated at ultimate force level.

Analysis:

- An improvement was made to handling of moment value resolution at end spans and the interpretation of these moments for additional longitudinal reinforcement due to axial tension from internal forces when inclined stirrups are used for the EC2 design code.

Design:

- An improvement was where the program was checking the least critical section (octogonal-shaped) outside of the shear reinforced zone even when the first section at d/2 from face of support passed allowable stress and did not require reinforcement.
- An improvement was made to the punching shear check when the seismic drift option is enabled from the Floor Design>Shear Design. When checking critical sections outside of the shear-reinforced zone (octagonal-shaped sections) the program was using the section critical area for determining reinforcement necessary to meet the drift requirement. This resulted in increasing reinforcement moving away from the support face. The critical section to be used for all locations within 4*h from column face is the first critical section area at d/2 from support face.
- An improvement was made to handling of minimum reinforcement for one-way RC slabs per ACI 318-14 Section 7.6.1.1. In prior versions minimum flexural reinforcement for beams was also being applied to one-way RC slabs as was the requirement to limit minimum reinforcement to 1.33*As,ult when As,min>As,ult.

Results:

- An issue was resolved where crack widths were reported as zero and graphical results were not produced. The issue was from non-converging equilibrium state due to incorrect consideration of prestressing force for prestressed sections.

Version 2019.0 Enhancements/Corrections

General:

- The Indian IS 456:2000 (Reaffirmed in February 2016)-RC and Indian IS 1343:2012 (Reaffirmed in November 2017)-PT design codes included.
- An improvement was made to allow for up to 500 entries for base reinforcement.

Design:

- Design Classification for Indian Code (IS 1343):
  - Type 1: No Tensile Stress in Service Total and Sustained
  - Type 2 (v1): Allowable Tensile Stress for Service Sustained and Total load combination – 3.0 MPa
  - Type 2 (v2): Allowable Tensile Stress for Service Sustained load combination – 0.0 MPa Allowable Tensile Stress for Service Total load combination – 4.5 MPa

- - Type 3: Design based on cracked section. The design values are taken from Table 10 based on the concrete grade, modified by coefficients based on the depth of the member.
  - New improvements have been made for punching shear according to ACI318-14. These include:
    - The option to consider critical sections outside the shear reinforced zone with either a rectilinear or octagonal-shaped critical section. ACI 318-14 Sections 22.6.4.2, 22.6.6.1.
    - The option to apply two-way shear provisions for minimum reinforcement for seismic drift. ACI 318-14 Sections 18.14.5.1.
    - Application of minimum two-way shear reinforcement at critical sections is based on the requirement at the first section d/2 from face of support.

Results:
- A correction was made related to improper display of crack widths when the EC2 code was selected.

Version 2018.1 Enhancements/Corrections

Analysis:
- An issue was corrected related to tendon data integrity and model crashing when geometry was modified and out of sync with multiple tendons A, B, and C.
- Improvements were made to changes to span geometry that caused incongruent lateral moments synchronization with latest geometry.

Version 2018.0 Enhancements/Corrections

General:
- The Australian AS3600-2009 & Hong Kong CoP 2013 design codes were implemented.
- In PT mode, a new option is provided for calculating the required force to meet minimum precompression (P/A) based on the design section areas at mid-span and supports.

Analysis:
- A fix was implemented for consideration of precompression in the stress calculation when Tendon B is in use and the start/end anchor is located at a distance away from the centerline of support.

Design:
- The program now considers and provides options for inclined stirrups per EC2-2004 for one-way shear design. Methodology and equations used in program have been expanded to include requirements in Section 6 as related to resistance and shear requirement when inclined stirrups are used.
- The program checks the minimum thickness of slab required when shear reinforcement is required per EC2 Section 9.3.2-1.
- For EC2, the program now includes a check to ensure reinforcement is provided to meet 1.15*Mcr for unbonded, PT beams. This complies with requirements in Section 9.2.1.1- 4 of the EC2 code.
- A new Design Option has been provided for one-way RC and PT slabs to consider transverse beams for calculation of minimum reinforcement. The previous version automatically included the T.B. section geometry in the calculation.
- A fix is included in the calculation of one-way slab and beam stirrup spacing that was being influenced by an incorrect scaling factor when using the Chinese code.

Results:

- Tendon elongations are reported in the summary page of Buildersum when Calculated Force Method is used for post-tensioning force calculation.

Version 2017.0 Enhancements/Corrections

General:
- The Canadian Standard, CSA A23.3-2014, was implemented.
- The program was improved to allow the user to override the assumed density for concrete when SW is auto-calculated in the Loading input window.
- Printer functionality was improved for consistency in selection of a printer in the program FILE menu. The printer selection assigned in this setting will be retained until modified again.
- The program was improved by providing an option to include the area of drop panels, drop caps, or transverse beams when calculating minimum reinforcement over supports for two-way slabs.
- The base reinforcement input window was improved to allow for expanding the window size.

Analysis:
- An issue was corrected for the Canadian design code where the program was improved to suppress the requirement for drop panels to extend L/6 to either side for the drop depth to be considered for flexural capacity. This provision does not apply to the Canadian design codes.

Design:
- The calculation of effective width for ACI 318-2014 was corrected to include the check of 2x span/8 + bw.
- The program was improved to recognize design sections in a PT model that are RC sections without post-tensioning in the section. The improvements check for proper minimum reinforcement requirements of RC sections, disregard stress checks related to the Initial combination, and disregard requirements for the section capacity to exceed 1.2*Mcr.
- For the ACI design codes, the program adjusts required reinforcement when the minimum flexural requirement exceeds that of strength by one-third. The adjustment is made to graphical rebar in Buildersum for individual service combinations and reflected in the envelope. ACI 318-2014 Section 9.6.1.3.

Results:
- A new option was added in Report Generator for creating a Microsoft Excel (.xls) file in tandem with a tabular report. The Excel file is created for the project cover and any other tabular report. It is not operable for graphical output.
- When MKS units are selected, punching shear calculated and allowable stresses are now reported in Report Generator output as kg/cm2 instead of T/cm2.
- In the Buildersum Summary report block 7 for one-way slabs and beams, the program now indicates design sections where the ratio Vu/Phi,Vc is greater than 1.0 with RED colored line indicating reinforcement is required.
- An issue was fixed in the Buildersum Summary report block 1 (Member Elevation) where a graphical offset was present in the view when a drop cap, drop panel or Transverse Beam were modeled.
- The program now reports maximum and minimum tensile and compressive stress on graphical stress results.
- The report cover now includes a time stamp.
- An improvement was made where Buildersum experienced file input errors when generating report content.

Version 2016.0 Enhancements/Corrections

General:
- The ACI2014/IBC2015 codes were implemented.
- A new feature was added that allows input of base shear reinforcement for beams and one-way slabs. The program checks demand against base input and provides additional bars. Modifications were made to Block 12 of the Report Generator to report a status check for base reinforcement.
- When two-way slabs are set as the design scope, the punching shear input in the "Material-Reinforcement" input window allows for separate rails/side entry.
- The program splash screen was updated and graphics improved.
- From the "Load Combinations" input window, when lateral loads are selected to be input, the combination factors for the LAT load case were changed to 1.6 as the default.
- Updated example files were created for compatibility with the new version and BMP file compression.
- An improvement was made to allow the structural geometry view to visible after the print function is used.
- An issue was resolved where an error message that appears when an existing model using the EC2-Singapore Annex code selections.
- Service combinations were made editable and active in RC program mode.

Analysis:
- The program was improved to format solution units for the MKS unit system consistent with input units.
- A correction was made to the calculation for the concrete modulus of elasticity (E) when lightweight or semi-lightweight concretes are selected in the "Material-Concrete" input window.
- An option was created to compress BMP files under the OPTIONS tab in the program shell. When selected, the program reduces the file size for all .BMP files created after exiting the Recycler window.
- A correction was made to file delete operations in PTRC Input editor to be more persistent.

Design:
- A new feature was added that recommends slab thickness for one- and two-way slabs.
- The default value for allowable stress when beam design scope is selected was changed to 7.5*sqrt(f'c) for US units and equivalent for SI and MKS unit systems when the ACI code is selected.
- A new feature was added to the "Design Settings" input window for the BS code to suppress allowable stress increase. When this is selected, the program obtains a solution such that the input allowable stress condition is capped and the resulting force and profile satisfy design criteria.
- Improvements were made to the rebar curtailment module such that lengths resulting from curtailment override settings for minimum bar lengths in the "Criteria-Minimum Bar Extension" input.

Results:
- In the Buildersum Summary Report, additional values for As, required (in2 or mm2) were added. The program reports at each side of supports and at midspan.
- Precompression (P/A) was added to the Buildersum Summary Report.
- The deflection summary from Block 14 of the Report Generator and the graphical deflection output were included as a second page in the Buildersum Summary Sheet.

- A correction was made for the calculation of spacing of shear studs when drop caps/panels are modeled. The stud spacing is now sequential and referenced from the face of support.
- An issue was fixed where resulting reactions in columns did not consider the LL skip factor when applied.
- Improvements were made to the Buildersum Summary Sheet to show the Singapore Annex heading in the Criteria data block.

Version 2015.0 Enhancements/Corrections

General:
- The program was updated for 32- and 64-bit Windows 10 compatibility.
- The Brazilian-NRB 6118 design code was implemented.
- The Singapore SS EN 1992-1-1/NA:2008-06 Annex to the EC2 design code was implemented.
- Span labels can now be customized in the Span Geometry input window for all spans other than cantilevers.
- A new labels column was included in the Loading input window for user-defined notes related to load input.
- Sorting functionality was implemented to the loading input matrix for each column.
- Base rebar for RC designs now properly shows all base reinforcement in the Structural Geometry 3D view window.
- Improvements were made to the project conversion messages when opening a RC project in PTinput and vice versa.

Analysis:
- A new default load combination for Strength design of 1.4*SW+1.4*DL+1.0*HYP (for PT) and 1.4*SW+1.4*DL (for RC) has been included in the Load Combination input window.
- A fix for the saving of column stiffness to the .ADB file format was included.
- An improvement was made for crack width solution convergence for BS and EC codes when the limit was set to 0.3mm.
- A fix was made for incorrect balanced/equivalent loads for Tendons B and C when active in a design.
- A fix was made for Error 75-Path/File read and write error when a new model was created.
- A fix was made for Error 13 associated with the 3D geometry viewer in PTInput when ultra HD resolution displays are used.
- An improvement was made to the rebar maximum strain value (Epsilon_su)5.0e-002 in Material data input file.
- A fix was made to an error message when reading deflections when no service combination was selected/defined.
- A fix was made to incorrect friction losses when the Calculation Force design option is used with right-end stressed tendons.

Design:
- A new rebar curtailment module was implemented. This includes user or code prescribed customization for longitudinal bar arrangements in beams and slabs for top and bottom reinforcement at cantilever, exterior and interior conditions. The module can be invoked within the Buildersum Summary module for on-demand modifications to the reinforcement output.

- Rebar curtailment templates were implemented. This allows the user to save specific bar arrangement configurations for crossover use among multiple users.
- A new rebar scheduling feature was included. This schedule includes data transferred from the rebar curtailment input including the bar mark, bar size, bar diameter, quantity, bar length, shape codes, bar area and weight of bar. The schedule can be saved as .XLS format.
- The default value for beam allowable stress was changed from 6*sqrt(f'c) to 7.5*sqrt(f'c) or SI equivalent for the ACI code.
- A fix was included for the incorrect calculation of shear capacity for I-section due to errors in section idealization.
- Source codes for Designer.exe for PTRC and Builder were merged to be in sync with the latest improvements.
- Improvements were made to shear design symmetry when skipped LL is combined with reversible lateral loading.
- Additional improvements were made to the calculation of shear rebar (As/ft) given in report when Fy is different for longitudinal and shear rebar.

Results

- The program includes an automatic rebar spacing check for minimum spacing between longitudinal bars. Design code minimum requirements are checked and the program reports the number of layers required to fit the quantity of bars. This layer output is located in the Buildersum Summary Report Sections 3.3 and 5.3. Where the layer output exceeds 1, the user is required to adjust the cover input and rerun for a more accurate solution.
- Span labels are shown in Block 2 of the Buildersum Summary Report.
- The precompression (P/A) is reported in Block 4-Section 4.15 of the Buildersum Summary Report. The reported value is taken at the mid-span of each span.
- An error related to locating adptrgexe.exe file when generating reports from Report.
- A fix was made for incorrect symmetry of stress values in the recycling screen for segmental input when spans are symmetric.
- Improvements were made to incorrect geometry in the Buildersum Summary sheet when the model has significant reference height (Rh).

*Release notes for versions prior to v2015 can be found in the program files at C:\Program Files (x86)\ADAPT\ADAPT-PTRC 2020\log_ptrc.text