RELEASE NOTES

for

BRASS-GIRDER™

Version 8.9

June 2022

General

The BRASS™ Incident Tracking System can be found at https://www.wydot-brass.com. Users without an account for the incident tracking system can request an account by clicking on the "Open a New Account" link/button and e-mailing the address or calling the phone number listed. A username and password will be created and sent to the user. All BRASS™ technical support questions should be logged in this system.

Program Maintenance

The following issues were addressed for this release. The incident number is listed in parentheses after each issue if applicable.

Maintenance

➢ Added warnings to the output file when the calculated Resistance Factor Total Modifier for a limit state and type is different from the entered override value. (1570)

➢ Updated the GUI grid control to use Spread.NET Version 15. (2028)

➢ Updated the analysis engine and translators to the Intel Fortran Compiler 2021.5. (2052, 2074)

➢ Updated the GUI to Microsoft Visual C++ 2022. (2070)

➢ Updated the Troubleshooting help topic with a new entry titled: Self-load summary and self-load actions are incorrect for a reinforced concrete T-beam member. (2079)

➢ Revised the Deck Geometry: Deck form help topic to clarify each travelway location default value when no curb is entered. (2087)

- Revised the Specification Control: Steel help topic for the Use Appendix A6 field. (2093) The second paragraph now reads:

    "BRASS™ internally checks for the applicability of Appendix A6 by assessing the yield stress of the flanges and web, the noncompact slenderness limit, the flange proportions, and the skew angle of the member. The skew angle is only available for input when the deck geometry is input. For a girder line with no deck geometry input, the user must manually make the determination if the skew angle is less than the Appendix A6 limit and set this checkbox accordingly. Additionally, per AASHTO LRFD A6.1, Appendix A shall only be used for members with intermediate diaphragms or cross-frames placed in contiguous lines parallel to the supports. The user must manually make this determination and set this checkbox accordingly."

- Migrated the help system from the HTML-based RoboHelp Classic 2019 help to HTML-based RoboHelp 2020. The resulting help system is still a .chm file. (2127)

- Revised the GUI to compare the existing input data sent into a form with the possibly changed data upon leaving the form when the OK button is selected. If nothing changed, the Save button is not enabled and the data file does not need to be saved and rerun. Previous versions flagged a possible change whenever the OK button was used to close a form and enabled the Save button, which indicated that the data file needed to be saved and any results files were out-of-date. The Apply button also has this new behavior now. (2145)

- Changed the default stage assigned to the Deck, Curb, Median and Wearing Surface on the Deck Loads form from (Not Assigned) to 1. (2146)

- Implemented automated process to assist with testing input forms and data exchange. (2148)

- Updated the Creating a New GUI File section of the GUI: Manage Files help topic with a new paragraph below the bullet list to explain that defaults are set based on the member material selected on the New File Defaults form when creating a new file. Note that an existing GUI file may be used as a template and saved as a new file name provided the material type is not changed. (2149)

- Revised the note at the bottom of the Schedules: Concrete Shear help topic to list the Standard Specification default shear indicator for one-span prestressed concrete as Simplified (V_{ci}, V_{cw}) Procedure (No Limit) and the LRFD Specification default shear indicator for both reinforced and prestressed concrete as Simplified Procedure (AASHTO LRFD 5.7.3.4.1). (2166)

- Removed the obsolete LRFD Simplified (V_{ci}, V_{cw}) Procedure shear indicator options from the Schedules: Concrete Shear and Points of Interest: Shear forms in the GUI. If this procedure was specified for the Shear Indicator in existing data files, it will be changed to the General Procedure (AASHTO LRFD 5.7.3.4.2) option. The corresponding help topics were updated accordingly. (2167)

- Added the following note to the Deck Profile: Reinforcement and Beam Profile: Reinforcement forms help topics to clarify the entry of the reinforcement Development Length and % Strength fields. (2168)

    "The Development Length input should only be that length which is within the actual span being considered by BRASS™. For example, if the reinforcement development length is 12 inches long and 3 inches of it extends past the exterior centerline of bearing, enter 9 inches for the Development Length and 25% (3"/12") for the % Strength."

- Updated the Output: Intermediate form help topic to clarify when the Point of Interest options are applied. (2169) The new sentence reads:

    "These options are applied to generated points of interest that are not specified on the Points of Interest: Points form."

Bug Fixes

- Revised the analysis engine to ignore the longitudinal reinforcement check when a point of interest is within five percent of the maximum factored moment location in a span for concrete members. (1583/1730)

- Corrected the GUI behavior with respect to replacing standard live loads when a new set of standard live loads is detected, i.e., those stored in the Preferences file. (2025)

- Corrected note and figure links to display a pop-up window. This affected the following forms: Control: Structure B, Deck Profile: Slab, Factors: Load Factors (LRFD), and Standard Live Loads: Definitions (LRFD). (2042)

- Revised the concrete analysis module to calculate the flexural resistance K factor (AASHTO MBE 6A.5.6) for strength limit states and all live load combinations because it is dependent on the total factored moment. (2055)

- Corrected an error with determining the outside reinforcement row when more than one row has the same distance. This issue was corrected for bottom rows, so Row 1 is the outside row when Row 2 or Row 3 has the same distance. A similar change was made for the rows in the top of the section. All bars at the same depth should be placed in the same row, so the number of bars in the outside row can be determined, which is used to calculate the bar spacing used in the crack control check. (2092)

- Corrected a live load action array subscript so the reaction is used for the bearing rating. (2095)

- Revised the GUI to detect an invalid vehicle or section library path, issue an error message accordingly, and still open the data file. (2104)

- Revised LRFD translator to better process the CONC-LONG-REINF command when the first parameter is set to ALL and the longitudinal reinforcement check is to be ignored. This special case of ignoring the longitudinal reinforcement check for all points is now passed to the GUI using the specification check map objects, which are exposed for editing to the user on the Specification Control: Spec. Check Map (Strength) form. (2140)

- Corrected the input report to show the Angle column in the Legs table under the Control section. This only applies to frame structures. (2174)

Enhancements

➢ Implemented the 'Generate points of interest at node points' option in the Point of Interest: Generation Control dropdown on the Control: Analysis form. This new option is used like the other generate options to transfer component schedule data to the points of interest. This new option may create numerous intermediate output files depending on the output control settings. (1816)

➢ Revised the Cross Section Code drop-down on the Control: Distribution form to include Cross Section 'cs' for a corrugated steel plank deck on any beam. Additionally, the Deck Geometry: Deck form was revised with an input for the corrugated plank thickness. This corrugated plank thickness is deducted from the slab thickness when calculating the dead load of the slab. The weight of the corrugated plank and any material filling the troughs must be entered as a uniform weight using the Deck Loads: Uniform Loads form. (2057)

➢ Revised the analysis engine to provide the lane load concentrated load positions if applicable in the UNFACTORED GIRDER ACTIONS DUE TO APPLIED LIVE LOADS report. The Output: Primary form help topic for Truck Positions was updated to reflect lane loads. (2085)

Program Verification

The NCHRP 12-50 process was used to perform regression testing on this version of BRASS-GIRDER™. This process compares key results from this version of BRASS-GIRDER™ with the previous version.