

RELEASE NOTES

for

BRASS-GIRDER™ Version 8.4

September 2019

General

The BRASS™ incident tracking system can be found at www.wydot-brass.com. Users without an account on the incident tracking system can request an account by clicking on the "Open a Technical Support 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

- Created a new prestress girder example from the PCI *Bridge Design Manual* Example 9.1b. (1524)
- Updated the GUI grid control to use Spread .NET Version 12. (1528)
- Revised comparison tolerance when checking if concrete shear stress is tensile, which triggers the use of the tension shear equations. (1532)
- Removed redundant prestress strand location warnings that were issued when analyzing each member of a girder system. (1548)
- Updated the GUI to reference the .NET Framework 4.7.2. (1550)
- Updated the BrDR integration modules to reference the .NET Framework 4.7.2. (1562)
- Updated the Beam Profile help topics with a note to clarify leg orientation. The “left” end of a leg is considered to be located at the level of the superstructure. (1568)
- Updated the grid control so the sheet tab labels use a smaller non-bold font. In the previous version, some sheet tabs for certain grid controls could not be accessed, e.g., the Permit Load Rating tabs on various Specification Check Map tabs. (1574)

- Updated the installation with respect to the Start Menu format to create an individual menu for this application. Windows 10 is only a one-tier menu system, so using an overall BRASS menu to house submenus for all the BRASS applications could no longer be done. (1578)
- Updated the various stylesheets (save, route summary, and translator summary) from Version 1.0 to Version 3.0. (1590)
- Migrated the help system from the .doc-based RoboHelp 8 help to a .htm-based RoboHelp 2019. The resulting help system is still a .chm file. (1597)
- Reorganized several data classes to be consistent with other code. (1606)
- Updated the member line data class to store a location indicator (Left Exterior, Interior, or Right Exterior), which is necessary for internal processes. (1611)
- Revised the import module of the translator to convert certain input to different units before it is saved in the .girder file. This includes converting:
 - start distances, range lengths, and span lengths from inches to feet
 - loads from kips/in to kips/ft
 - moments from in-kips to ft-kipsThese now match the entry/display units in the GUI forms. (1614)
- Revised notes in the intermediate output related to there being no tensile reinforcement present. The note now reports the combined moment in ft-kips from all the stages. For dead load stages, the combo number will not be shown. (1615)
- Revised the schedule figures for bracing so the first cross frame is not in yellow but rather a dashed black line. This was done to clarify that a cross frame is not placed at the start of the range but rather at the end of each space in the range. (1635)
- Increased the anchorage loss length validation limit from 100 ft to 1000 ft. A warning is still issued when the limit is exceeded, so the analysis can still be performed. (1641)
- Revised the Library Section Selection form to check if there are any sections available for the beam material. If there are none, a message to that effect is issued. Also, if the Library Section Selection form is empty and the OK button is selected, nothing is populated in the Library Section grid on the Beam Profile form. (1645)

Bug Fixes

- Corrected the validation to default the bay bracing start distance for the right member to that for the left member. This change addressed the validation error that was issued when the file was saved and when an analysis was run. (1536)
- Updated the Bracing Schedules form to calculate and show the proper value for the End Distance (Right Member) cell. (1537)
- Corrected the view setting for the Voided Slab tab of the User Sections form so the tab is shown for LRFD for certain control settings on the Preferences form. (1545)

- Revised validation to check that the appropriate strand group type (pre- or post-tensioned) has been assigned to each strand profile row. (1549)
- Corrected an error related to a valid dead load group not being set when in fact it was. (1585)
- Added a new input for multi-web prestressed concrete beams (double-tee or tri-deck) to assist with calculating the LRFD live load distribution factors. This input is the distance from the centerline of the exterior web of the exterior beam to the outside edge of the beam. This distance is then adjusted by the curb width or travelway location to calculate d_e for use in the LRFD live load distribution factor equations. (1593)
- Corrected an error that was affecting certain flexural resistance calculations. There was an internal floating-point tolerance that affected the strength of the mild reinforcement near the ends of the beam. (1609)
- Added validation to the export from the GUI to the analysis engine to detect when the number of cross section ranges exceed the limits of the engine. Exceeding the limits was causing unexpected results. (1610)
- Corrected the translator to process Parameter 3 on the STEEL-SPECIFICATION command appropriately when echoing the command. The old BRASS-GIRDER(LRFD) Version 2.4 did not produce this error, so the newer engine compiler has stricter format requirements. (1618)
- Added missing sections to the input report stylesheet for the mixed beam type for reinforced concrete members. This includes Beam Profile schedules for Library Section, User Section, Top Flange, Web, and Bottom Flange. (1620)
- Corrected the engine analysis to detect if small dead loads exist. Because the loads were small as input and then converted to kips/in for internal use, the engine considered them non-existent. A custom tolerance was added for determining if dead loads exist. (1623)
- Revised the import to the engine to consider a reinforcement row even when the yield strength is zero. The yield strength can be zero at the start or end of range when the reinforcement has not started to develop yet. The section properties report was revised to check if the reinforcement is different on each side of a change point and write the information for both sides if so. This issue only occurred if Define Fully-Developed Mild Reinforcement was unchecked on the Control form. (1624)
- Revised the GUI to correct the labels for the Concrete Stress (DL+PS+LL) and $0.5[DL+PS]+LL$ output controls on the Output tab of the Points of Interest form. They were switched. Additionally, when a data file up to Version 8.3.0.3001 is opened, the point of interest Concrete Stress output options are corrected by switching the output options to what they should have been. (1625)
- Revised the GUI to save the Apply to Entire Structure setting on the Concrete Stress Limits(LRFD) tab of the Schedules form. This setting was not being saved to the data file. (1627)
- Revised the analysis engine to check if a non-composite steel section is in the negative flexure region of a partially-composite continuous-span member, and if so use the 0.95 factor per AASHTO LRFD 6.10.4.2.2 and AASHTO MBE 6A.6.4.2.2. (1628)

- Revised the GUI to check the status of the backup file and issue a detailed message when the file's read-only attribute is checked. If this is not done, a cryptic message is issued and the data file will not open. (1629)
- Corrected the behavior of the Reinforcement tabs of the Beam Profile form to not add a new schedule when "Apply to Entire Structure" was selected and not schedules had been input. These tabs behave differently than other Beam Profile tabs because multiple reinforcement rows can be present for the same range. (1631)
- Corrected the view setting for the Timber tab of the Materials form so the tab is shown for ASD and LRFD for certain control settings on the Preferences form. (1642)
- Updated analysis engine to analyze the applicable fatigue limit states when a fatigue truck is specified for a floorbeam analysis. (1644)
- Corrected the LRFD analysis of steel members to detect if an unbraced length is nonprismatic with respect to the steel beam, and if so, limit the moment gradient modifier (C_b) to 1.0. (1650)

Enhancements

- Enhanced the engine to allow more concentrated and distributed loads. Concentrated loads were increased from 70 to 200. Distributed loads were increased from 38 to 100. (317)
- Enhanced the engine to detect uplift and transfer that information to the routing report. (1541)
- Enhanced the program with options to ignore positive OR negative moment (never both) at any point of interest in a concrete member. See the Flexure Consideration Indicator on the Axial & Reinf. tab of the concrete Points of Interest form. (1584)
- Enhanced the LRFD live load distribution factor module to consider a new timber deck type: glue laminated deck panels on glue laminated stringers. See the Distribution tab of the Control form. (1640)
- Enhanced the GUI export to the analysis engine to set the Output Specification Checks and Output Load Combinations control options for the points of interest generated for the splice locations when one of the user-defined points options on the Point of Interest: Generation Control drop-down is selected. These are the same settings that are used when one of the 10th points options is selected. The user will now be able to obtain intermediate output for the splice locations without having to manually enter points of interest for the splice locations. (1649)

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.