

# RELEASE NOTES

for

## BRASS-CULVERT<sup>TM</sup>

Version 3.9

June 2022

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### General

The BRASS<sup>TM</sup> 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<sup>TM</sup> 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

- Updated the GUI grid control to use Spread.NET Version 15. (2026)
- Replaced and updated the formatting for the strip width as computed by LRFD article 4.6.2.10.2. (2036)
- Implement a .css style file for output formatting to match styles from the input report. (2044)
- Updated the analysis engine to the Intel Fortran Compiler 2021.5. (2053)
- Improved general table formatting for the HTML output. This includes factors and tables that do not include calculations. (2056)
- Updated the GUI to Microsoft Visual C++ 2022. (2072)
- Updated the translator to Microsoft Visual C++ 2022. (2073)
- Improved the detailed rating factor output to make it more readable and consistent with other table formatting used for the save and output files. (2078)
- Improved the live load distribution factor and dynamic load allowance output to make it more readable and consistent with the formatting in the save file and the rest of the output file. (2089)

- Adjusted the page breaks for repeated tables so they are printed more efficiently (not just one per page). The page breaks were also adjusted to keep content that belongs together grouped on as few pages as possible. The number of printed pages will still be large for analyses of multiple live load combinations. (2106)
- Rearranged the crack control computation output to match the LRFD Specifications. (2107)
- Revised page break locations in the primary output file to improve the printed page layout. (2122)
- 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. (2125)
- 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. (2142)
- Implemented automated process to assist with testing input forms and data exchange. (2152)
- 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 construction type and bottom slab setting 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 construction type and bottom slab setting is not changed. (2154)

## Bug Fixes

- Corrected the behavior when opening a “Preferences” file for a data set that was created with a different “Preferences” file and standard live loads. (2024)
- Corrected an error with bottom slab lane load actions, which were incorrect for culverts with no moment continuity. (2075)
- Corrected a subscript error that caused a program crash for some design cases and fixed a blown format in the output for the member number. (2076)
- Update the installation to include missing schema files. This corrected a problem with the opening data sets created by older versions of the program. (2090)
- Corrected an error that caused the program to entered a design loop for fatigue steel and the top of interior walls for a rating or design review analysis. (2091)
- Corrected headings for LFD rating output. Reworked some of the bulk data setup so that LFD matches LRFD. (2124)
- Corrected an error transferring live load combinations from the GUI to the engine. (2135)
- Updated the translator to process and save live loads (truck designations) to the translated data file when the Design Method is set to Load Factor or Service Load. (2158)
- Created a routine to check if there will be fatigue output before the page headings are written to avoid output of extra page headings and page breaks. (2159)

- Corrected the conditional that determines when to write factored action headings and improved page breaks and heading locations. (2160)
- Corrected some formatting errors in the main output file. (2161)
- Corrected an error generating page breaks in the printed version of the main output file for the MS Edge and Chrome browsers. (2162)
- Corrected errors with the cover and bar diameter for some crack control locations. (2163)
- Revised the analysis engine to write temporary analysis files to the ProgramData directory, which was implemented in Version 3.3 for storing and writing non-static files used by the GUI and analysis engine. This ProgramData directory is set during installation and is recommended to be located on a local drive, so accessing files are not subject to network lag issues. The temporary analysis files are written to the Solutis sub-directory under the ProgramData directory. (2165)
- Modified the GUI to hide the reinforcement definition options for the interior walls for design problems. The design algorithm sizes all the bars independently. (2171)
- Corrected an error with the last cell bar sizes being used in other cells for crack control calculations. (2172)

## Enhancements

- Created a Microsoft Excel file that contains the unfactored actions passed from the engine back to GUI after an analysis is run. This is available in debug mode only. (2034)
- Added a drawing of the culvert to the top of main .html output file. (2086)
- Added table of contents entries for the fatigue calculations for each live load. (2097)
- Added an option to define the reinforcement in the top and bottom of the interior wall as being the same as either the reinforcement in the outside face of the adjacent slab or the same as the reinforcement in the middle of the interior wall. Previously, the reinforcement in the outside face of the adjacent slab was always used. (2155)

## Program Verification

Regression testing was performed on BRASS-CULVERT™ using its feature that allows automatically-varying geometry and load parameters. The results of the new version were compared to the previous version and examined for any unexpected results.