

PennDOT e-Notification

Bureau of Solutions Management
Highway Applications Division



BPLRFD

No. 006
August 6, 2018

Release of Version 1.8.0.0

The Department's LRFD Bearing Pad Design and Analysis (BPLRFD) program has been revised as described in the attached "Summary of May 2018 Revisions – Version 1.8.0.0".

The new version has been placed on PennDOT servers for use by the Districts. Consultants and others, who have a current license agreement for **BPLRFD Version 1.7.0.0**, can obtain the updated version by submitting an [Update Request Form](#) along with an **update fee of \$300 for private organizations and \$50 for governmental agencies**. Updates for **BPLRFD Version 1.6.0.0 or earlier** will require an **additional fee**. For BPLRFD update fee details, refer to the [BPLRFD Fee Schedule](#). The update fee is waived for federal and state transportation agencies.

Once payment is received, an e-mail will be sent with download instructions. A valid e-mail address must be provided on the Update Form to receive the download instructions.

Please direct any questions concerning the above to:

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Attachment

Archived copies of all previously distributed e-Notifications can be obtained from the PENNDOT LRFD and Engineering Programs website at <http://penndot.engrprograms.com/home> and clicking on "e-Notification" and then "Mailing List Archives."

SUMMARY OF MAY 2018 REVISIONS - VERSION 1.8.0.0

Since the release of BPLRFD Version 1.7.0.0 several revision requests and user requested enhancements have been received. This release of BPLRFD Version 1.8.0.0 contains the following revisions and enhancements.

General Programming Revisions

1. Minor program changes have been incorporated to allow BPLRFD to continue to be run from the PennDOT BRADD software (Request 095).
2. The program is now compiled with Intel Visual Fortran Parallel Studio XE 2017 Update 5 using Visual Studio 2017 (Request 103).

Program Input Revisions

3. The program now provides the user with the option to design a single pad for a box beam (BPD command). Previously, the program would start with a two pad design and only try a single pad design if a two pad design could not be found. As a result, it was often not possible to have the program design a single pad (Request 102).
4. The lower and upper limits of the ELASTOMER THICKNESS OF PLAIN PAD parameter on the ANA command have been changed to 0.75" and 1.25" respectively, and will cause a warning if a value outside of these bounds is entered. These limits correspond to the limits on plain pad thickness in DM-4 14.7.6.3.1aP. Additionally, the default value for MINIMUM PAD THICKNESS on the BPD command now depends on the pad type, with a default of 0.75" for plain pads and 2" for laminated pads (Request 108).
5. An input parameter for laminated bearing pad shim thickness has been added to the ANA command. **NOTE: this change requires revisions to all existing laminated pad analysis input files to select a shim thickness** (Request 112).

User's Manual Revisions

6. The command and parameter descriptions in User Manual Chapters 5 and 6 and the program configuration files for EngAsst have been revised to be consistent with the functioning of the program (Request 096).
7. User Manual Chapter 5 and the program configuration files for EngAsst were reviewed for documentation of commands and parameters that are no longer used by the program. There are no commands or parameters that are no longer used, so no changes to the User's Manual or configuration files were necessary (Request 097).
8. User Manual Chapter 4 has been revised to reflect the supported versions of Microsoft Windows and to properly describe the Windows Start Menu folder containing the installed program (Request 100).

Specification Checking Revisions

9. A tolerance of 0.01" has been added to the minimum elastomer thickness comparison for shear and rotation to prevent BPLRFD from rejecting a bearing pad when the provided thickness is 0.01" smaller than the required thickness (Request 098).
10. The compressive stress resistance of the bearing pads specified in DM-4 14.7.6.3.2, is no longer divided by a beta factor. The beta factor was removed from the compressive stress resistance equation in the 2012 DM-4 but was never implemented in BPLRFD until now (Request 101).
11. The program has been revised to be consistent the AASHTO LRFD Specification, 7th Edition, and DM-4 2015 (Request 104).
12. The Method B anchorage check is no longer done for pads with dowels, because this check should be similar to the Method A anchorage check, which is only done for pads without dowels (Request 107).
13. The Method B anchorage check is no longer done for plain bearing pads, because the Method B specification checks only apply to steel-reinforced elastomeric bearings. In many cases, the Method B check was leading to program crashes for plain pads (Request 108).
14. The program will now remove the area of the hole in the bearing pad (when a hole is specified) for applied stress and compressive stress resistance calculations. In addition, the program will now always consider a hole in the bearing pad (for a single pad configuration) at the fixed end for the design of bearing pads for prestressed adjacent box beams (Request 109).
15. The program was not generating an error during analysis runs when the shape factor of a bearing pad layer is less than 3. The coefficients in the equation for calculation of strain in a bearing pad are interpolated from a table of values for shape factors from 3 to 12. The User's Manual has always stated that pads with a shape factor less than 3 would result in the program stopping, but this check has not been present for analysis runs. The program will now stop with a specification check failure for the analysis of bearing pads with a shape factor less than 3 (Request 111).