

PENNDOT e-Notification

Bureau of Information Systems
Application Development Division



BXLRFD

No. 006
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Release of Version 1.4.0.0

The Department's LRFD Box Culvert Design and Rating Program (BXLRFD) has been revised as described on the attached Summary of October 2006 Revisions – Version 1.4.0.0.

The new program has been placed on PENNDOT servers for use by the Central Office and Districts. Consultants and others, who have a current license agreement for the BXLRFD Version 1.3 or 1.3.0.5, can obtain BXLRFD Version 1.4.0.0 by paying the license update fee of \$500 for private organizations and \$50 for governmental agencies. Updates for BXLRFD Version 1.2 will require an update fee of \$1,000 for private organizations and \$100 for governmental agencies. Updates for BXLRFD Version 1.0 and Version 1.1 will require an update of \$1,500 for private organizations and \$100 (not \$150) for governmental agencies.

The forms for Software Update Request and Request for PennDOT's Engineering Software License can be downloaded from the web site at <http://penndot.engrprograms.com>.

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 OCTOBER 2006 REVISIONS - VERSION 1.4.0.0

Since the release of BXLRFD Version 1.3.0.5 several revision requests and user requested enhancements have been received. This release of BXLRFD Version 1.4.0.0 corrects the following known problems and provides enhancements.

General Revisions

1. The BXLRFD program has been enhanced to support long file names. (Request 086)

Input Revisions

2. The character limit for the SAL command has been increased 512 characters. (Request 108)

Output Revisions

3. The program has been revised to display a more meaningful warning message when the thickness of a strip footing is greater than the left or right projection. (Request 128)

Earth Load Revisions

4. The Vertical Earth Load during the construction limit state has been modified to apply force on strip footings. The Horizontal Earth Pressure during the Construction limit state has also been revised so the height of fill is limited to the top of the culvert. (Request 078)
5. A warning message when the vertical resultant eccentricity is outside the strip footing has been modified to provide the user with more detailed information. (Request 078b)

Live Load and Live Load Distribution Revisions

6. The TK-527 load has been added to the design and analysis load options. (Request 058,131)
7. The default values for the Eta factors in the program have been changed to 1.0 and the program has been revised to prevent a value other than 1.0 from being used. (Request 062)
8. The live load distribution factor equations for less than 2 ft (600 mm) of fill have been revised to conform to DM-4 Section 4.6.2.12.1P (Request 124)

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9. The program has been revised so the user may override the live load application criteria for multi-cell culvert installations. (Request 125)
10. Lane load has been removed from the top slab of box culverts during design and analysis runs as per D3.6.1.3.3. Lane load is still applied to the other components of the culvert. (Request 134)
11. The gross vehicle weight of the ML-80 vehicle has been revised within the program to not include the 3% scale tolerance when calculating rating tonnage. The Special Live Load command gross vehicle weight no longer includes the user entered percent scale tolerance for rating tonnage calculations. (Request 137)

Shear Revisions

12. The shear reinforcement location warning messages have been revised to warn of a non-reinforced shear point of interest (POI) when shear reinforcement is specified. Also when checking if a warning message should be printed a tolerance has been added to the calculation of the first and last analyzed shear POI. (Request 110)

Crack Control and Temperature & Shrinkage Revisions

13. The Maximum Temperature and Shrinkage Spacing Values for the Right/Bottom side of walls has been modified to display the correct maximum spacing value. (Request 122)
14. The crack control equations have been revised in the program to conform to DM-4 Section 5.7.3.4. (Request 123)

User Manual Revisions

15. Miscellaneous typographical corrections have been made to the User's Manual. (Request 101, 139)
16. The format of the example input file details in Chapter 8 have been changed to match the input summary table from the output. The example files have been modified so warning messages are no longer produced during processing. (Request 109)

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17. The LRFD and ML-80 Live Loading figure in Chapter 2 has been modified to reflect the correct front axle load for the ML-80 vehicle. (Request 121)

Engineering Assistant Revisions

18. The Engineering Assistant figures have been modified to include descriptive captions (Request 105).

Programming Revisions

19. The program is now compatible with APRAS. (Request 034)
20. The program has been converted to a Windows DLL based application. (Request 094)
21. The Box Culvert program has been upgraded to the Intel Fortran compiler (v9.0.025) (Request 118)