PENNDOT e-Notification

Bureau of Information Systems
Application Development Division

BXLRFD No. 001 May 14, 2003	**Release of Version 1.3**

The Department's LRFD Box Culvert Design and Rating Program (BXLRFD) has been revised as described on the attached Summary of May 2003 Revisions – Version 1.3. The User's Manual has also been revised and it is now available in Adobe Acrobat PDF format.

Consultants and others, who have a current license agreement for BXLRFD Version 1.2, can obtain the updated version for a license update fee of $500 for private organizations and $50 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/.

Direct any questions concerning the above to:

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SUMMARY OF MAY 2003 REVISIONS - VERSION 1.3

Since the release of BXLRFD Version 1.2 several revision requests and user requested enhancements have been received. This release of BXLRFD Version 1.3 corrects the following known problems and provides enhancements. There are still several outstanding enhancements and problems that will be addressed in the future releases of BXLRFD. What follows are two lists, one containing the revisions included in Version 1.3 and the other containing revisions that have yet to be included in the BXLRFD program.

BXLRFD Version 1.3 contains the following revisions:

1. The output routines have been revamped to decrease program size and to allow easier modification. A blank page that appears when no warnings are present at the end of the input echo has been removed. (Request 014)

2. Revised program to show HL-93 rating information during an Analysis run for Live Load Code "B". (Request 020)

3. Revised how the program calculates bearing pressure to resolve a negative pressure (uplift) issue. Revised the foundation pressure output to show a corresponding pressure for each wall and the effective foundation bearing width. Created a new foundation pressure summary output table that shows the maximum foundation pressure under each wall for each limit state. (Request 021)

4. Added information to the User Manual stating which components in the culvert have impact applied. (Request 022)

5. The parameter definition file is now named BXLRFD.PD, previously it was using the .PDF file extension that would cause confusion with Adobe Acrobat Files. (Request 024)

6. Updated contact information in Chapter 9 of the User Manual. (Request 025)

7. Added Rating Tonnage to the output. (Request 026)

8. Added Live Load option "D" for design that is the same as "A" except the ML-80 vehicle is included. (Request 028)

9. Added a pause to the program that prevents automatic closing of the run-time window after the program has executed. (Request 030)

10. Provided the User Manual in an Adobe Acrobat PDF file. (Request 031)

11. Added the Total Weight of Culvert based on segment length to the Quantities Table in the output. (Request 032)

12. Revised the PHL-93 dual tandem axle weight to 110 kN (25 kips) to get maximum negative moment at the interior wall of a twin cell culvert. (Request 035)

13. Revised tire patch calculation as per DM4 2000 Section 3.6.1.2.5. (Request 036)

14. Added c/de check for calculation of d_v for compliance with DM-4 2000 Section 5.8.2.9P. (Request 039)

15. Revised the User Manual to describe how the program locates shear regions. Added new input check to make certain all haunches are 45 degrees, excluding fish channels. (Request 044)

16. Added new Serviceability Tables to the program that check maximum and minimum spacing, temperature and shrinkage, and crack control criteria for an Analysis run. (Request 047)

17. Revised the program to use the average height of fill to identify which shear equations to use and then use the average height of fill in the equations. (Request 048)

18. Revised how the program calculates section properties for the haunch when a shear region extends into it. (Request 049)

19. Revised the User Manual for the TVA and BVA commands so that the Shear steel information is consistent with the program. (Request 050)

20. Revised the Limit State Table (Table 3.4-2) in the User Manual to clarify which limit states the program uses. (Request 054)

21. Revised the program to allow negative rating values that indicate a failure. Also a footnote was added to describe the significance of the negative rating factor.(Request 055)

22. Revised Maximum Temperature and Spacing limits to meet DM-4 2000 Section 5.10.3 standards. (Request 056)

23. Added a new input parameter for the Maximum Impact Factor for the P-82 Truck Load. (Request 057)

24. Revised the User Manual for the minimum strip width used by the program for precast culverts under a fill of less than 2 feet. The minimum strip width for precast culverts under a fill of less than 2 feet is now taken as either maximum of ELAT or two times the segment length. Also application of impact in bearing pressure calculations was removed. (Request 059)

25. Revised program to not require a maximum bar or wire size for an analysis run. (Request 60)

The following is a list of reported problems, user requests and clarifications that have not been addressed in Version 1.3.3

1. Add a U-channel design/Analysis capability to the program. (Request 027)

2. Add a second concrete density input item. One is used for calculating the Modulus of Elasticity and the other for load considerations. (Request 033)

3. Revise program to be compatible with the APRAS/ABAS program. (Request 034)

4. Add shear reinforcement design capabilities to the program with detailed design including bar sizes and spacing. (Request 037, 038)

5. Revise program to display Resistance Demand Ratios in the OUI file when they are displayed in the output. (Request 046)

6. Revise headings in the OUI file to be more meaningful. (Request 051)

7. Add shear region geometry checks and warnings to program for an analysis run when a single bar is entered. (Request 052)

8. Add TK527 Truck Load to the program and use when ML-80 is used. (Request 058)

9. Eta Factor values will set to 1.0 by default. (Request 062)

10. Locations where shear is evaluated will be revised. (Request 069)

11. Shear Region Error message information will be clarified. (Request 073)