

# **PENNDOT e-Notification**

Bureau of Business Solutions and Services  
Highway/Engineering Application Division



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## **BXLRFD**

No. 013  
October 1, 2012

**Release of Version 2.4.0.0**

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The Department's LRFD Box Culvert Design and Rating Program (BXLRFD) has been revised as described on the attached Summary of September 2012 Revisions.

The new program has been placed on PENNDOT servers for use by the Districts. Consultants, governmental agencies and others, who have a current license agreement for BXLRFD, can obtain Version 2.4.0.0 by submitting a Software Update Request form with the appropriate update fee. Updates for BXLRFD Version 2.3.0.0 require an update fee of \$500 for consultants and \$50 for governmental agencies and educational institutions. Updates for BXLRFD Version 2.2.0.0 or earlier require an additional fee documented on the BXLRFD update fee details page (<http://penndot.engrprograms.com/home/Ordering/BXLRFD.htm>). No update fee is required for Federal and State Transportation 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

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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 SEPTEMBER 2012 REVISIONS - VERSION 2.4.0.0**

Since the release of BXLRFD Version 2.3.0.0 several revision requests and user requested enhancements have been received. This release of BXLRFD Version 2.4.0.0 contains the following revisions and enhancements.

### **General**

1. The BXLRFD program has been updated to the AASHTO LRFD Bridge Design Specifications Fifth Edition 2010 and the 2012 PennDOT Design Manual Part 4.
2. The program has been revised to no longer evaluate the Fatigue limit state based on the 2010 AASHTO LRFD Specification section 5.5.3.1. (Request 215)

### **Flexural Revisions**

3. The Flexural Phi factor has been revised to comply with the 2010 AASHTO LRFD Specifications. The phi factor now varies linearly based on the strain in the section. Also, the moment axial interaction envelope has been revised to include the tension controlled strain point and the point based on  $0.1A_{gross}f'_c$ . has been removed.(Request 218)
4. The temperature and shrinkage reinforcement calculations for Serviceability have been revised to comply with new shrinkage and temperature reinforcement specifications In the 2012 DM-4 Article 5.10.8 and the 2010 AASHTO LRFD Specification. (Request 217)

### **Program Source Revisions**

5. The BXLRFD program has been updated to the Intel Fortran Composer XE 2011 Compiler. (Request 207)

### **User Manual Revisions**

6. The two right most axle loads in User Manual Figure 2.4-2 for the TK527 vehicle have been corrected. (Request 211)