

# PennDOT e-Notification

Bureau of Business Solutions and Services  
Highway/Engineering Applications Division



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## ABLRFD

No. 020  
June 6, 2016

## Release of Version 1.15.0.0

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The Department's LRFD Abutment and Retaining Wall Analysis and Design (ABLRFD) program has been revised as described in the attached "Summary of March 2016 Revisions – Version 1.15.0.0".

The new version has been placed on PENNDOT servers for use by the Districts. Consultants and others, who have a current license agreement for **ABLRFD Version 1.14.0.0**, can obtain the updated version by submitting an Update Request form along with an **update fee of \$400 for private organizations and \$50 for governmental agencies**. Updates for **ABLRFD Version 1.13.0.x or earlier** will require an **additional fee**. For ABLRFD update fee details, refer to the following link: <http://penndot.engrprograms.com/home/Ordering/ABLRFD.htm>. The update fee is waived for federal and state transportation agencies.

The Software Update Request form can be obtained on the PennDOT Engineering Software Support website at <http://penndot.engrprograms.com> by clicking on "Ordering/Updating" and, then on, "Update Form".

**Please note that the software will no longer be provided on a CD. Once payment is received, an e-mail will be sent with download instructions. The new installation will require a License Key that will be provided in the e-mail. A valid e-mail address must be provided on the Update Form in order to receive the download instructions.**

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 MARCH 2016 REVISIONS - VERSION 1.15.0.0**

Since the release of ABLRFD Version 1.14.0.0 several revision requests and user requested enhancements have been received. This release of ABLRFD Version 1.15.0.0 contains the following revisions and enhancements.

### **Output Revisions**

1. For analysis runs a new Minimum Reinforcement Check output table has been added to provide detailed information related to the calculation of minimum area of steel based on rho-min and temperature and shrinkage requirements. (Request 338)

### **Minimum Reinforcement Revisions**

2. The Crack Control spacing calculation has been revised to limit the calculated tensile stress in the reinforcement to be no greater than  $0.6 \cdot f_y$  based on the 2014 AASHTO LRFD A5.7.3.4. Previously, the program would use the computed tensile stress in the calculation of the Crack Control spacing without limitation. (Request 405)
3. The calculation of Cracking Moment has been revised to use a new equation from the 2015 DM-4 Section 5.7.3.3.2 which applies multiple factors. Previously, the program would calculate the Cracking Moment using a constant 1.2 factor. (Request 407)

### **Backwall Revisions**

4. When the Backwall/Stem Bar Alignment input is set to 'Y' during a design run and no valid backwall bar can be designed at the stem spacing with cutoffs, the program has been enhanced to set the backwall reinforcement spacing to the stem spacing without cutoffs and the backwall bar design process is repeated to try to find a valid design. Previously the program would end processing without finding a valid backwall reinforcement design. (Request 395)
5. The program has been modified to check the front face temperature and shrinkage steel for adequate moment capacity when negative moment is found in the backwall. Previously, the program would only report a negative moment condition and the user would have to perform hand calculations. (Request 396)

### **Settlement Revisions**

6. The calculation of Elastic Settlement on Rock has been revised to use a new Elastic Modulus input added to the RCK command. This was done because of updates to the 2014 AASHTO LRFD 10.4.6.4. Previously, the program would calculate the Elastic Modulus based on the Elastic Modulus Reduction Factor or the Rock Mass Rating input values on the RCK command. (Request 399)

### **User Manual Revisions**

7. The ABLRFD Users Manual has been revised to state that unfactored wind load should be entered for wind on substructure on the LAB command in the ABLRFD program. (Requests 398)
8. The assumption that the ABLRFD program does not consider Blast Loading has been added to the ABLRFD Users Manual. (Requests 400)
9. The Assumption and Limitation section of Chapter 2 has been revised to condense topics and update wording of some items. (Request 409)