

# PennDOT e-Notification

Bureau of Business Solutions and Services  
Highway/Engineering Applications Division



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## ABLRFD

No. 016  
March 17, 2014

## Release of Version 1.13.0.0

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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 January 2014 Revisions – Version 1.13.0.0".

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 1.12.0.0**, can obtain the updated version by submitting an Update Request form along with an **update fee of \$500 for private organizations and \$50 for governmental agencies**. Updates for **ABLRFD Version 1.11.0.0 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 JANUARY 2014 REVISIONS - VERSION 1.13.0.0

Since the release of ABLRFD Version 1.12.0.0 several revision requests and user requested enhancements have been received. This release of ABLRFD Version 1.13.0.0 contains the following revisions and enhancements.

### Input Revisions

1. The program has been modified to produce a warning when the rear face batter slope of abutments and retaining walls is greater than a 1:3 ratio of horizontal to vertical ratio. (Requests 317)
2. The program has been revised to exit with error messages when errors are found upon reading the input. Previously, for certain input files the program would read in the input with errors and crash when the input checks are performed. (Request 347)
3. A new parameter was added to the SOI command to either include or omit the inclination factors when calculating the bearing resistance for soil. Previously, the program would always apply the inclination factors. (Request 361)

### Output Revisions

4. The Crack Control – Analysis output table has been modified for footings to display the allowable crack control spacing for bars when the minimum bar spacing has been violated. Previously, the program would always display an allowable crack control spacing of zero when the minimum bar spacing was violated for footings. (Request 339)
5. The headings on the Footing Stability tables have been revised to indicate that the loads are factored. Previously, the table headings did not explicitly state whether loads were factored or not. (Request 340)
6. The Moment Axial Interaction tables have been revised to now provide the section thickness and the effective depth at each design location. Previously, the program did not explicitly display the section thickness and the effective depth for each design location. (Request 349)
7. The Factored Forces and Moment Axial Interaction output tables with Stem Cutoff Location information have been revised to prevent empty table headers with no numbers from appearing for bars that cannot be cutoff. Previously, the program would print an empty table for those bars that could not be cutoff. (Request 358)

### **Loading Revisions**

8. For certain input files with a short stem height, the height of the Partial EH-V force triangle would sometimes be taller than the stem height leading to a cryptic error message. The program has been corrected so that when this condition occurs, the height of the Partial EH-V force triangle is set equal to the stem height. (Request 301)
  
9. Approach Slab Loads have been added as a user input to the program in accordance with BD-628M, Sheet 2, Note 14. When the Approach Slab Loads are entered using the new ASL command, the approach slab is modeled as a simple span between the abutment and the sleeper slab, and the Earth Surcharge and Live Load Surcharge loads are not included for the Final stage. In order to implement Note 14, two separate runs of ABLRFD are required. One run with the ASL command and one without the ASL command. Previously, approach slab loads could only be accounted for through the Earth and Live Load Surcharge input parameters. (Request 303)

### **Settlement Revisions**

10. A check has been added to the settlement routines to prevent a divide by zero error when calculating Secondary Consolidation. Previously, the program would crash when the divide by zero was encountered. (Request 350)

### **Crack Control Revisions**

11. When performing the crack control calculations for the bottom footing reinforcement, the calculation of the  $d_c$  value has been revised to prevent the program from subtracting the 1 inch foundation unevenness thickness more than once. Previously, the program could potentially subtract more than 1 inch of foundation unevenness for the bottom footing reinforcement. (Request 378)

### **User Manual Revisions**

12. The description of Concrete/Rock Friction Angle parameter on the RCK command has been revised to provide more complete information and guidance on how the parameter should be set. (Requests 342)
  
13. The User Manual Section 3.6 has been revised to clarify how the section thickness at design locations within the stem are calculated for a Type II abutment. (Request 353)

## **Engineering Assistant Revisions**

14. The lower limits of the Void Ratio and Compression Index on the CNS command have been changed to 0.0. Previously, the lower limits were set at 0.1 for the Void Ratio and 0.001 for the Compression Index.  
(Requests 351)