

PennDOT e-Notification

Bureau of Business Solutions and Services
Highway/Engineering Applications Division



ABLRFD

No. 013
August 27, 2012

Release of Version 1.11.0.0

The Department's LRFD Abutment and Retaining Wall Analysis and Design (ABLRFD) program has been revised as described in the attached "Summary of August 2012 Revisions – Version 1.11.0.0".

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 1.10.0.0**, 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 1.9.0.0 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 direct any questions concerning the above to:

Robert F. Yashinsky, P.E.

*PennDOT Bureau of Business Solutions and Services
Highway/Engineering Applications Division
Phone: (717) 787-8407 | Fax: (717) 705-5529
e-mail: ryashinsky@pa.gov*

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 AUGUST 2012 REVISIONS - VERSION 1.11.0.0

Since the release of ABLRFD Version 1.10.0.0 several revision requests and user requested enhancements have been received. This release of ABLRFD Version 1.11.0.0 contains the following revisions and enhancements.

General

1. The ABLRFD 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 prevent a design run, with all vertical pile/caisson foundation, from getting stuck in an infinite loop when punching shear controls during the footing design. (Request 345)

Input Revisions

3. Addition information has been added to the existing error message when the layout of piles is outside the footing width. The new information includes the footing width, the distance from the front of the footing to the first pile row and the distance from the last pile row to the end of the footing. Previously, a cryptic error message was displayed stating layout of piles was outside the footing width with no additional information. (Requests 297)
4. The Number of Pile Rows parameter on the LYA command has been revised so a minimum 2 rows of piles are required. Previously, the program would allow for entry of 1 row of piles but would result in errors. (Request 311)
5. The input check for back water level above the backfill has been revised so the check is not performed when the back water level is left to default. Previously, the program would perform this check when the backwater level was left to default and would stop with an error. (Request 314)

Loading Revisions

6. The Horizontal Earth Pressure load (EH) has been revised to apply the resultant at 1/3 times height of the soil. Previously, the program would apply the resultant at 0.4 times the height of the soil. (Request 321)
7. The program has been revised to issue a warning when ETA factors other than 1.0 are entered. (Request 324)
8. The program has been revised to no longer apply Live Load Surcharge in the Extreme I limit state. (Request 327)

Backwall Revisions

9. The program has been revised to correctly calculate the backwall section depth when the paving notch height extends below the mid-height backwall location. (Request 319a)

Flexural Revisions

10. 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 319)
11. The shrinkage and temperature 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 Specifications. (Request 320)

Spread Foundation Revisions

12. The elastic settlement of foundations on rock has been revised to meet the specifications in the 2010 AASHTO Article 10.4.6.5. The program will now calculate the elastic settlement based on either the Rock Mass Rating (RMR) or the Elastic Modulus Reduction Factor (E_m/E_i) and Joint condition. Previously the program would only use the Rock Quality Designation (RQD) with an assumed joint condition for elastic settlement. (Request 322)

NOTE: this change requires that any previously existing input files using the Rock Data Command be updated because of additional input now required.

Development Length Revisions

13. The program has been revised to remove the bar cover and spacing development length extension factor to be compliant with the 2010 AASHTO Article 5.11.2.1.2. (Request 325)

Program Source Revisions

14. The ABLRFD program has been updated to the Intel Fortran Composer XE 2011 Compiler. (Request 312)

User Manual Revisions

15. The equation for cohesion used in the calculation of sliding resistance on clayey-sandy soils, per 2012 DM-4 Article 10.6.3.4, has been revised to correct for the units. (Request 326)

16. The Load Factor Table 3.3.4.2-2 in Chapter 3 has been revised to indicate that the Earthquake and Collision Force loads are applied for both the minimum and maximum cases. Previously, the table indicated that the forces were only applied for the maximum case. (Request 328)

Engineering Assistant Revisions

17. The Wind on Substructure parameter on the Loads on Abutment card in Engineering Assistant has been revised to allow for entry of negative values. (Request 302)