PennDOT e-Notification

Bureau of Solutions Management
Highway Applications Division

pennsylvania
DEPARTMENT OF TRANSPORTATION

PSLRFD

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Release of Version 2.15.0.0

The Department's LRFD Prestressed Concrete Girder Design and Rating (PSLRFD) program has been revised as described in the attached "Summary of April 2022 Revisions – Version 2.15.0.0".

The new version has been placed on PennDOT servers for use by the Districts. Consultants and others, who have a current license agreement for **PSLRFD Version 2.14.0.0**, can obtain the updated version by submitting an Update Request Form along with the **update fee of $500 for private organizations and $50 for governmental agencies**. Updates for **PSLRFD Version 2.13.0.0 or earlier** will require an **additional fee**. For update fee details, refer to the PSLRFD Fee Schedule. The update fee is waived for federal and state transportation agencies.

Once payment is received, an e-mail will be sent with download instructions. A valid e-mail address must be provided on the Update Form to receive the download instructions.

Please direct any questions concerning the above to:

Shyhhann Ji, P.E.
PA Office of Administration | Infrastructure and Economic Development
Bureau of Solutions Management | Highway Applications Division
Phone: (717) 787-8822 | Fax: (717) 705-5529
e-mail: sji@pa.gov

Attachment

Since the release of PSLRFD Version 2.14.0.0 several revision requests and user requested enhancements have been received. This release of PSLRFD Version 2.15.0.0 contains the following revisions and enhancements.

Input Revisions

1. An input check will now give a warning message when the CDF command parameter Centerline Exterior Beam to Curb minus CDF command parameter Distance to Outermost Wheel is less than 2 feet. (Request 669)

2. The Sidewalk Dead Load on the PLD Command now allows negative values both in Engineering Assistant and in PSLRFD without a warning message. Previously, a negative value could not be entered in Engineering Assistant. (Request 711)

Output Revisions

3. Concrete stress output reports that correspond to Service Rating Factors now include Live Load Stresses. These reports are printed for Design Loads and each rating vehicle used for Service Rating Factors. These live load stresses allow simpler verification of the Service Rating Factors that depend on concrete stresses. Also, a new output report now gives the moment capacity based on 90% of fpy stress in the bottom row of prestressing strands at each analysis point. Previously, the moment capacity based on 90% of fpy was reported once per span. (Request 657)

4. All input commands are now reported in the Input Summary section of the output. Previously, some of the input data was only being reported other sections of the output. (Request 531)

5. A new Specification Checking output option allows reporting of intermediate values used to compute shear resistance. (Request 650)

6. The message at the bottom of the Final Tensile Stresses output table has a more detailed explanation of the meaning of the plus sign that appears in the "If Code Failure" column of the output table. (Request 708)

7. For NEXT Type F and Type D Beam analysis runs with zero strands specified in the first strand row, a warning message will now appear and up to five alternate strand patterns are provided which have strands in the first strand row. The alternate patterns will have the same number of strands and the strand CGS at mid-span will be the same as the original strand pattern or slightly less than the original strand pattern CGS. (Request 604)

Design Revisions

8. The criteria for selecting strand patterns in I-beam cross sections now avoids patterns where lower strand rows in the bottom flange have fewer strands then higher strand rows in the bottom flange. Previously, sometimes the bottom strand row would have as few as three strands while the second row would have five strands and the third row would have 15 strands. This caused fabrication issues for the prestressed beam fabricators. (Request 722)

9. The optimization of the beam concrete strength (f'c) uses the beam sizes selected for the initial f'c value entered by the user and now redesigns the beams for reduced f'c values. The new behavior may produce a beam with a smaller f'c value because the strand pattern is designed each time the beam is redesigned. The prior procedure used the selected beam sizes and the initial strand pattern and performed an analysis with the reduced f'c values. (Request 512)

Distribution Factor Revisions

10. The program now runs when distribution factors are entered as zero. Previously, a program crash would result when the distribution factors were entered as zero. An input check requires the pedestrian distribution factor to be zero when entered with the design distribution factor entered as zero. (Request 741)

11. The program now runs when reaction distribution factors are entered as zero for an analysis run with the P-82C loading combination. Previously, a program crash would result when the reaction distribution factors were entered as zero for an analysis run with the P-82C loading combination. Additionally, the program will now report reactions equal to zero for other live loads. Previously, the program would return reaction values calculated with the shear distribution factor if the reaction distribution factors were entered as zero. (Request 742)

User's Manual Revisions

12. The User's Manual beam designations given in Tables 3.22-1 through 3.22-8 now agree with the valid Beam Designations for parameter 2 of the BDM Command. The description for parameter 2 of the BDM Command refers the user to Tables 3.22-1 through 3.22-8 for available designations. (Request 505)

13. Chapter 5 of the User's Manual now provides information on limits for repeatable parameters of input command for Engineering Assistant. (Request 588)

14. The equations used to compute the required area of longitudinal slab reinforcement have been verified to be based on AASHTO LRFD 8th Edition Equations 5.6.3.1.1-3 and 5.6.3.2.2-1. (Request 709)

15. The Revision Request Forms (User Manual and Word Template) do not refer to a PennDOT fax number. (Request 744)

Special Live Load Revisions

16. The program has been enhanced to allow up to 8 special live loads to be entered in a single run. Previously, the limit was 5 special live loads in a single run. (Request 423)

17. The limit states used for Special Live Loads now depends on the Vehicle Type specified on the SLL command. Specifying the 'P' Vehicle Type results in ratings for the Strength II and Service IIIA limit states. Specifying the 'D' Vehicle Type results in ratings for the Strength I, Strength II, Service I, Service III, and Service IIIA limit states (if pedestrian loads are entered, ratings will also be calculated for the Strength IP, Service IP, and Service IIIP limit states). (Request 670)

Debonding Revisions

18. The program was revised to correctly identify debonding strand patterns that would result in strands in adjacent columns being debonded. Previously, debonding strand patterns that did not require strands in adjacent columns to be debonded would report an inaccurate warning message. (Request 735)

Girder Stability Revisions

19. The Bearing Rotational Stiffness parameter is now correctly written to the input file for BRADD runs of PSLRFD. Also, the numbering of parameters on the GS3 command is now correct in the User's Manual. (Request 738)

20. On the GIRDER STABILITY/HANGING GIRDER output report, the bottom of beam stress check status is now correctly reported at debonding locations. Prior to this change, the stress check status reported at the debonding location was actually the stress check status for the midspan location. The allowable stress value is also now reported for the debonding and midspan locations. (Request 739)

Programming Revisions

21. The "strand row to start debonding", parameter 4 on the SCD command, can now be larger than the number of strand rows being used in the current design trial. Previously, this would result in an endless loop. (Request 723)

22. The program is now updated to be consistent with BRADD version 3.2.6.0. (Request 727)

23. PSLRFD has been revised to use the Intel Fortran Compiler Classic OneAPI version 2021.4.0 for compilation and linking. (Request 734)