PSLRFD

No. 010
June 27, 2011

Release of Version 2.5.0.0

The Department's LRFD Prestressed Concrete Girder Design and Rating (PSLRFD) program has been revised as described in the attached "Summary of March 2011 Revisions – Version 2.5.0.0".

The new program has been placed on PennDOT servers for use by the Districts. Consultants and others, who have a current license agreement for **PSLRFD Version 2.4.0.0**, 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 2.3.0.0 or earlier** will require an **additional fee**. For PSLRFD update fee details, refer to the following link: http://penndot.engrprograms.com/home/Ordering/PSLRFD.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:

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Attachment

SUMMARY OF MARCH 2011 REVISIONS - VERSION 2.5.0.0

Since the release of PSLRFD Version 2.4.0.0 several revision requests and user requested enhancements have been received. This release of PSLRFD Version 2.5.0.0 contains the following revisions and enhancements.

Input Revisions

1. The program has been revised to avoid a warning message for the "X1" dimension of a bulb tee beam on the BDM command when the dimension was specified as less than the upper limit given in the User Manual. Previously, the upper limit was reported as 13 inches rather than 18 inches. (Request 404)

2. An input check has been added to report a warning message when an unsymmetrical debonding pattern is specified. Previously, no warning message was provided when an odd number of strands were debonded in a row containing an even number of bonded strands. (Request 415)

3. The program has been revised to report a Chief Bridge Engineer (CBE) message when the strand diameter or the strand area input parameters exceed the upper limits on the SCD or SCA command. Previously, a warning message was provided when the diameter or area upper limit was violated. This allows strands larger than the oversized 1/2" strand (diameter 0.52") to be used with a corresponding CBE message reported. (Request 446)

4. The upper limit for the Drape Point Location parameter has been revised from 40% to 45% on the DPL command. (Request 447)

Output Revisions

5. The program has been enhanced to provide a Summary Output. The summary output consists of three sub-reports: TS&L / Design Summary, Q/A - Q/C Summary, and Detailer Summary. (Request 296)

6. The program has been revised to clarify the warning messages provided for debonded analysis runs with the total number of debonded strands exceeding the maximum allowable number of debonded strands. (Request 340)

7. The program has been enhanced to report Chief Bridge Engineer (CBE) in the Summary of Specification Check Warnings Table. Previously, each page of the output report needed to be checked to ensure no CBE warning existed. (Request 417)

8. The program has been revised to report the correct CGS at the centerline of bearing for debonded and straight spans. Previously, for debonded spans of design runs the centerline of bearing CGS was reported as the same as the mid-span CGS when the last span of the bridge was debonded. Also, for debonded and straight spans of analysis runs the centerline of bearing CGS was reported as zero. (Request 427)

9. The program has been revised to report the composite section modulus at the top of beam as negative when the neutral axis is located above the top of the beam. (Request 402)

Structural Analysis Revisions

10. The program has been modified to consider a cross section at the first interior support. Previously, a cross section was not considered at the first interior support which could result in unsymmetrical DC2 results for a symmetrical bridge. (Request 425)

11. The program has been revised to modify the location of concentrated dead loads placed near the end of the bridge to avoid a tolerance issue that could result in the load being ignored for reactions. (Request 426)

Distribution Factor Revisions

12. The program has been modified to identify distribution factors when violated applicability checks apply for non-controlling distribution factors. Previously, Chief Bridge Engineer warning messages for violated applicability checks could be reported when the distribution factor was controlled by cross frame action, but the Computed Distribution Factors output table would not identify which distribution factors had range of applicability warning messages. (Request 416)

Strand Design Revisions

13. The program has been modified to reduce the number of strands selected when designs are controlled by minimum reinforcement requirements by ensuring the maximum eccentricity is being considered. Previously, a longer span length could have fewer strands than a shorter span length with all other geometry being the same.   (Request 256)

14. The program has been modified to reduce the number of strands selected for certain draped cases where strands were added to resolve failed draping rather than trying to reduce the eccentricity. Previously, some designs had more strands selected than required. (Requests 257, 258, 263)

Rating Revisions

15. The program has been revised to use the sign of the live load stress to determine if a rating factor can be computed rather than the sign of the live load moment. Previously, when the neutral axis for the composite transformed section was located in the slab the rating factors computed at the top of the beam could print as asterisks in the rating tables. Also, when the neutral axis is above the top of the beam, the opposite live load moment is considered when computing rating factors for the top of the beam. (Request 402)

16. The program has been revised to set the drape point based on the current span being rated. Previously, the drape point was being set based on the first span resulting in possible shear ratings less than one near the draping point of design runs. (Request 428)

Specification Revisions

17. The program has been revised to use 0.42 as the maximum ratio of c/de before considering the section over-reinforced. Previously, 0.43 was used as the limit for prestressed sections due to a sharp drop off in the ultimate moment capacity of over-reinforced sections. The sharp drop off was rectified by a correction to the moment resistance equation for over-reinforced sections as part of Request 38. (Request 394)

Design Revisions

18. The program has been enhanced to consider the minimum beam depth requirements of AASHTO LRFD Article 2.5.2.6.3 as required by DM-4 Article D2.5.2.6.3. The Minimum Depth parameter on the DES command defaults to being computed by Article 2.5.2.6.3. A CBE warning message is provided if the beam depth violates the minimum required. Previously, the Minimum Depth defaulted to the minimum beam depth in the standard beam tables.   (Request 413)

User Manual Revisions

19. The standard detail reference for the beam notch depth has been updated from BC-755M to BD-661M and BD-662M. (Request 438).