PennDOT e-Notification

Bureau of Solutions Management
Highway Applications Division

pennsylvania
DEPARTMENT OF TRANSPORTATION

STLRFD
No. 018
April 4, 2023

Release of Version 2.8.0.0

The Department's LRFD Steel Girder Design and Rating (STLRFD) program has been revised as described in the attached "Summary of February 2023 Revisions – Version 2.8.0.0".

The new version has been placed on PennDOT servers for use by the Districts. Consultants and others, who have a current license agreement for **STLRFD Version 2.7.0.0**, can obtain the updated version by submitting an Update Request Form along with the **update fee of $500 for private organizations or $50 for governmental agencies**. Updates for **STLRFD Version 2.6.0.0 or earlier** will require an **additional fee**. For update fee details, refer to the STLRFD 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 Request Form to receive the download instructions.

Please direct any questions concerning the above to:

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Attachment

SUMMARY OF FEBRUARY 2023 REVISIONS - VERSION 2.8.0.0

Since the release of STLRFD Version 2.7.0.0 several revision requests and user requested enhancements have been received. This release of STLRFD Version 2.8.0.0 contains the following revisions and enhancements.

Specification Related Revisions

1. The calculations of the LRFD Specifications, Chapter 6, Appendix D have been added to the program. For some girder configurations, Appendix D will lead to a larger lateral torsional buckling capacity (Request 648).

2. Rolled beam designs now include a check of a Category C' fatigue detail at the point of maximum fatigue moment, similar to what has previously been done for plate girders (Request 752).

3. The web concentrated load checks, previously implemented for rolled beams only, are no also applied to plate girders and built-up sections (Request 858).

4. The program has been revised to use the built-up section effective flange dimensions as described the User's Manual section 3.3.4 for the flange proportion checks on the DUCTILITY AND WEB/FLANGE PROPORTION CHECK output report (Request 865).

5. A check has been added to include a MINIMUM NEGATIVE FLEXURE CONCRETE DECK REINFORCEMENT warning in the Specification Check Warnings output report only when the deck stress exceeds the limits in LRFD Specifications section 6.10.1.7 (if factored stress is deck is computed) and the reinforcement entered on the ABU/ARP/APL command exceeds that entered on an SST command (Request 886).

6. The calculation of the basic development length of the slab reinforcement has been revised to the LRFD Specifications, 8th Edition method. The modified development length has been added to the MINIMUM NEGATIVE FLEXURE CONCRETE DECK REINFORCEMENT (PART 2) output report (Request 899).

Program Input Revisions

7. Users can now input minimum load factors for Strength limit states for MC1 and MC2 loads on the LDF command. These minimum load factors are only used by the program to compute the minimum factored reaction for each limit state. If not entered by the user, the minimum load factors for MC1 and MC2 will default to 0.0. **Any input files with MC1 or MC2 loads may need to be revised to provide minimum load factors other than 0.0** (Request 127).

8. The warning message that appears when a rolled beam has been defined with a yield strength less than 36 ksi has been revised to specifically refer to the rolled beam, rather than to web and flange yield strengths (Request 645).

9. The upper limit on transverse stiffener spacing has been increased from 18 feet to 25 feet (Request 777).

10. The user now has the ability to enter a separate set of load factors via the Load Factor (LDF) command for each special live load entered by the user. The user still has the ability to enter load factors to be applied to every special live load or for all special live loads that do not have separate live load factors entered (Request 782).

11. The Sidewalk Dead Load on the PLD Command now allows negative values both in Engineering Assistant and in STLRFD without a warning message. Previously, a negative value could not be entered in Engineering Assistant (Request 860)

12. The user now has the choice of whether to perform specification checks for the uncured slab condition if they have also entered a deck pour sequence. Previously, the program would always perform the uncured slab specification checks, potentially leading to overly conservative results (Request 864).

13. The error messages regarding “Valid values” have been updated for all data types (integers, reals, and doubles) to correctly indicate that the upper and lower bound values are also acceptable input values (Request 874).

14. The stlrfd.pd file has been updated so that the default value of the parameters for the “SST” command have been changed from * to blank. This means that if an SST command is used, the user must enter a value for every parameter on the command, even if that value is 0.0 (where allowed) (Request 883).

15. Default values of 0.0 are provided for the LEFT CUTOFF POINT, RIGHT CUTOFF POINT, AND AREA OF STEEL parameters of the SST command. While these values are unrealistic, they will allow input files created with earlier versions of the program to continue to run to completion if the values had previously been left blank (Request 911)

Program Output Revisions

16. Documentation has been added to clarify the calculation of reinforcement areas from the SST command, and the MINIMUM NEGATIVE FLEXURE CONCRETE DECK REINFORCEMENT (PART 1) output report now shows the reinforcement area calculated with both the SST inputs as well as the ABU/APL/ARB inputs. The program has also been revised to always use the information entered on the SST command for the minimum negative flexure reinforcement checks. If an SST command has not been entered for a given analysis point, then the reinforcement information on the ABU/APL/ARB command will be used. (Request 824).

17. The intermediate value of k, the bend-buckling coefficient, has been added to the SERVICE LIMIT STATE - WEB BEND-BUCKLING and UNCURED SLAB FLANGE SPECIFICATION CHECK (NO LTB) (PART 1) output reports (Request 852).

18. The program will print “N/A” for the unfactored flexural stresses due to pedestrian live load (PL) for limit states other than Strength-IP on the UNFACTORED FLEXURAL STRESSES output report (Request 875).

19. A typographical error (“an” rather than “a”) occurring when a real value has no default value has been resolved (Request 909).

Program Documentation Revisions

20. Section 3.7.18 of the User's Manual has been changed to clarify that the factored moment used for the GLOBAL DISPLACEMENT AMPLIFICATION CHECK is factored for the Construction-I limit state (Request 832).

21. The User's Manual and program output have been revised to make clear that when DC2, FWS, MC2, sidewalk dead load, additional FWS, or UT2 loads are entered for a beam that is noncomposite in the final state, the loads are always applied to the noncomposite, steel-only section. (Request 844).

22. Input parameters without a default value are now indicated as such in the Engineering Assistant configuration files (shown as "Default: None") (Request 848).

23. The descriptions of the Special Live Loading (SLL) and Special Axle Load (SAL) commands have been revised to make sure the user is aware that they are able to enter revised load factors for each defined special live load (Request 849).

24. Additional text has been added to the transverse stiffener (TST) and bearing stiffener (BST) commands to reiterate that the program does not consider a defined bearing stiffener to also act as a transverse stiffener. If a bearing stiffener is also to be considered as a transverse stiffener, it must be defined on both the BST and TST commands (Request 882).

25. The code reference for Wind Program Defined command has been revised to use C3.4.2.1 instead of C6.4.2.1 and Chapters 7 and 8 of the STLRFD user's manual have also been updated with this information (Request 885).

26. The Revision Request Forms (User Manual and Word Template) no longer refer to a PennDOT fax number. (Request 894)

Programming Revisions

27. If a user enters tab or null characters on a TTL command, they will be replaced with single spaces in the program output (Request 850).

28. The tolerance for the comparison of two lengths has been changed to 0.1" from 0.05". That is, for two lengths to be considered equal, they must be within 0.1" of each other. This will make some input values easier to make consistent (Request 851).

29. A typographical error in the program source code has been resolved that now allows the local buckling rating factors to be reported on the RATING FACTORS – MOMENT FLEXURAL CAPACITY output report and used when determining the overall rating factors when Appendix A of Chapter 6 of the LRFD Specifications is being used. Previously, the program would report the lateral torsional buckling rating factor as governing even when the local buckling rating factor was smaller (Request 870).

30. The overall maximum number of analysis points in the program has been increased to resolve program crashes in several 18 and 20 span girder input files (Requests 880, 881).