

PennDOT e-Notification

Bureau of Business Solutions and Services
Highway/Engineering Applications Division



SPLRFD

No. 006
January 9, 2017

Release of Version 1.6.0.0

The Department's LRFD Steel Girder Splice Design and Analysis (SPLRFD) program has been revised as described in the attached "Summary of September 2016 Revisions – Version 1.6.0.0".

The new program has been placed on PennDOT servers for use by the Districts. Consultants and others, who have a current license agreement for **SPLRFD Version 1.5.0.0**, can obtain the updated version by submitting an Update Request form along with the **update fee of \$300 for private organizations and \$50 for governmental agencies**. Updates for **SPLRFD Version 1.4.0.0 or earlier** will require an **additional fee**. For SPLRFD update fee details, refer to the following link: <http://penndot.engrprograms.com/home/Ordering/SPLRFD.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

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 SEPTEMBER 2016 REVISIONS - VERSION 1.6.0.0

Since the release of SPLRFD Version 1.5.0.0, several revision requests have been received. This release of SPLRFD Version 1.6.0.0 contains the following revisions.

Program Input Revisions

1. The program will now accept input values of 0.0 for the moments and shears due to live loads. Previously, entering 0.0 for live loads would cause the program to crash (Request 109).
2. The program has been enhanced to now accept lateral stresses as part of the program input and include them in the design and analysis of the flange splice plates and bolts (Requests 117, 139).
3. An input check has been added to ensure that the flange splice plates defined on the FSP command are consistent with the plate configuration selected on the CTL command (i.e. If configuration 1 is chosen for the flange splice configuration on the CTL command, the user should not enter dimensions for inner flange splice plates) (Request 122).
4. Checks have been added to verify that the user entered both the TOTAL NUMBER OF BOLTS as well as the MAXIMUM BOLT DISTANCE on the Flange Splice Bolt (FSB) command for flange bolt analysis problems. Additional documentation has been added to describe how to calculate the TOTAL NUMBER OF BOLTS (Requests 124, 140).
5. An input parameter, RESISTANCE FACTOR FOR BOLTS IN SHEAR, has been added to the miscellaneous (MIS) command to allow the user to enter the resistance factor corresponding to type of bolts being used (Request 130).
6. The BOLTS PER GAGE LINE input of the WSB command has been revised to have an upper limit of 81 bolts per gage line in order to be consistent with the internal limits of the WEB BOLT PITCH (WBP) command. In addition, the documentation of the WBP command has been revised to better illustrate how to enter a splice where the web splice has multiple pitch distances (Requests 131, 141).
7. The lower limit on the MAXIMUM BOLT PITCH on the FSB command has been lowered to 1.875" to match the lower limit on the MINIMUM BOLT PITCH. A check has been added to the program to ensure that the MAXIMUM BOLT PITCH is greater than or equal to the MINIMUM BOLT PITCH (Request 135).
8. A check has been added to ensure that the tensile strengths entered on the GAS command are greater than or equal to their respective yield strengths. Additionally, the program will default to 58 ksi for the ultimate strength only if the yield strength has been entered as 36 ksi. For all other yield strengths, the user must provide a corresponding ultimate strength (Request 137).
9. The default bolt hole diameter for bolts greater than one inch in diameter has been increased to bolt diameter + 1/8". Previously, the bolt hole diameter for all bolts defaulted to bolt diameter + 1/16" (Request 142).

Specification-Related Revisions

10. The flange resistance modification factor, R_g , is now considered when computing the resistance of the flange splices (Requests 110, 138).
11. The smaller girder section at the splice is now determined by multiplying the noncomposite moment of inertia by the smaller yield stress of the top or bottom flange (Request 119).
12. Dead loads are no longer considered when computing the fatigue stress range. The fatigue stress range now only considers live loads and uses the section properties based on the signs of the live load moments (Request 128).

Program Documentation Revisions

13. The first page of the program User's Manual has been revised to be consistent with other engineering programs (Request 118).
14. The User's Manual now describes how to enter multiple instances of a command where multiple instances are allowed. The new description will allow input files not created with EngAsst to be read in successfully by EngAsst (Request 121).
15. The User Manual Chapter 5 descriptions for parameters that are no longer used by the program have been revised to make it clearer and easier to see that the input value is not needed (Request 125).
16. The User Manual Section 6.13.2 description of the calculation of the effective slab width for the SLAB WITH COMPOSITE GIRDER (SLB) command has been revised to be consistent with the current LRFD Specifications (Request 129).
17. Chapter 4 of the User's Manual has been revised to include Windows 10 in the list of supported operating systems and to describe the new program group containing the program on the start menu (revised because of changes in Windows 10) (Request 136).
18. A clarification has been added to the MAXIMUM BOLT DISTANCE input description on the FSB command. This value is used with analysis runs of the program, and is only used to determine if the distance between extreme fasteners is greater than or less than 50 inches (Request 143),

Program Output Revisions

19. A program warning message that refers to DM-4 Table 6.13.2.6.6-1 was revised to now correctly refer to the LRFD Specifications Table 6.13.2.6.6-1 (Request 120).
20. Warnings and error messages have been added to the program regarding the entry of the web bolt pitch (WBP) command. The WBP command should not be entered for a web bolt design problem, so a warning will now be generated and the program will ignore the input. The WBP command must be entered for a web bolt analysis

program, so an error will now be generated if the WBP command is not entered for an analysis problem. Previously, the program would generate a poorly worded error for the web bolt analysis case (Request 123).

21. The page layout of the output file has been enhanced to allow for more characters per page width and more lines per page in the PDF output file. The new layout has 99 characters per page width and 83 lines per page. The Table of Contents now includes a second level which is converted to a second level of bookmarks to assist in navigating the PDF file (Request 127).

Programming Revisions

22. The program has been revised to ensure that even if the block shear checks output report is turned off, the specification checks will still be done and the title of the output report will appear on the table of specification check failures at the end of the program output (Request 126).
23. The subroutine LRFDPAUSE will no longer be called if the program is run as an APRAS run, and the OTPTOC routine has been modified to accommodate very long file paths (Request 132).