

PennDOT e-Notification

Bureau of Business Solutions and Services
Highway/Engineering Applications Division



SPLRFD

No. 004
October 1, 2012

Release of Version 1.4.0.0

PENNDOT's LRFD Steel Girder Splice Design and Analysis Program (SPLRFD) has been revised as described on the attached Summary of September 2012 Revisions – Version 1.4.0.0.

The new program has been placed on PENNDOT servers for use by the Districts. Consultants, governmental agencies and others, who have a current license agreement for SPLRFD, can obtain Version 1.4.0.0 by submitting a Software Update Request form with the appropriate update fee. Updates for SPLRFD Version 1.3.0.0 require an update fee of \$300 for consultants and \$50 for governmental agencies and educational institutions. Updates for SPLRFD Version 1.2.0.0 or earlier require an additional fee documented on the SPLRFD update fee details page (<http://penndot.engrprograms.com/home/Ordering/SPLRFD.htm>). No update fee is required for Federal and State Transportation Agencies. The forms for Software Update Request and Request for PennDOT's Engineering Software License can be downloaded from the web site at <http://penndot.engrprograms.com>.

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 2012 REVISIONS - VERSION 1.4.0.0

Since the release of SPLRFD Version 1.3.0.0 several revision requests and user requested enhancements have been received. This release of SPLRFD Version 1.4.0.0 contains the following revisions and enhancements.

Specification Related Revisions

NOTE: Unless otherwise indicated, the specification changes described below are in accordance with LRFD Specifications 5th Edition / 2012 DM-4 requirements

1. New methods for calculating the design flexural effects have been implemented in the program, superseding prior "design moment" calculations. These new expressions have simplified the calculations, and have resulted in extensive revisions to the program and program output. **All existing SPLRFD input files will need to be revised for the new input command ASR (Adjacent Section Resistance). Existing input files will no longer work with SPLRFD unless revised** (Requests 081, 091, 092).
2. New factors were added to the calculations of AASHTO equation 6.8.2.1-2 inside the program. However, since all holes are assumed to be "drilled full-size or subpunched and reamed to full size" inside SPLRFD, there are no changes to the final calculations of the program (Request 082).
3. The Fatigue limit state has been split into Fatigue-I and Fatigue-II limit states (Request 083).
4. The program will now print warnings if the user has entered values other than 1.0 for any of the eta factors. The lower limit of 1.1 for the product of the eta factors for the fatigue limit states of nonredundant structures has been removed. The upper limit of 1.16 for the product of the eta factors for strength and service limit states remains (Request 084).
5. The minimum required bolt tensions from AASHTO Table 6.13.2.8-1 have been implemented in the program (Request 086).
6. The surface condition coefficient, K_s , for Class C has been reduced to 0.33 from 0.40, as per AASHTO Table 6.13.2.8-3 (Request 087)
7. A new shear rupture check (AASHTO Equation 6.13.5.3-2) has been added to the program (Request 089).
8. The design bolt force for the bearing check on the inner plates of the flange splice is now based on the total force in the inner plates. Previously, it was only using half of the force in the inner plates (Request 098).
9. The fatigue design stress for the web splice plates of a simple span girder has been revised to be calculated based on the live load effects only. However, for a splice of a multi-span girder, the program continues to compute the dead load plus the fatigue live load stress for positive and negative moments to determine the fatigue stress range due to changing section properties (Request 100).

SUMMARY OF SEPTEMBER 2012 REVISIONS - VERSION 1.4.0.0

10. The FLANGE SPLICE BOLT SPECIFICATION CHECKS - SHEAR STRENGTH output report now checks shear independently for each shear plane between the splice plates and girder flange (once for the plane between the outer plate and flange and again for the inner plates and flange). Previously, the program did a single check assuming the bolt was in double shear (Request 101).

User's Manual Revisions

11. The PennDOT email domain has been updated to "pa.gov" in the User's Manual and on the Revision Request form (Request 080).

Input Revisions

12. Input consistency checks were added to ensure the user has entered a shear capacity for both sides of the splice as well as making sure the flexural resistances (F_r) entered on the ASR command do not exceed the yield stresses entered on the GAS command (Request 095).