

PENNDOT e-Notification

Bureau of Information Systems
Application Development Division



SIGN

No. 001
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Release of Version 1.2.0.0

The Department's Sign Structure Analysis program (SIGN) has been revised as described on the attached Summary of Version 1.2.0.0 Revisions.

The new version has been placed on PENNDOT servers for use by the Districts. Consultants and others, who have a current license agreement for **SIGN Version 1.1 or earlier**, can obtain the updated version by submitting a Software Update Request form along with an **update fee of \$50**.

The Software Update Request form can be found on the PENNDOT Engineering Software Support website at <http://penndot.engrprograms.com> by clicking on "Ordering/Updating".

Please note: Additional input fields required for the sign description data resulted in the STRUCTURE ATTACHMENT DESCRIPTION data line being divided into two new data lines, SIGN DESCRIPTION and CATWALK DESCRIPTION. Therefore, input files created for SIGN v1.1 or earlier will need to be modified before running with SIGN v1.2.0.0.

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 VERSION 1.2.0.0 REVISIONS

SIGN Version 1.2.0.0 contains the following revisions:

1. Updated and expanded the local buckling criteria equations to classify components as compact, noncompact, and slender in accordance with Section 5.5 of the fourth edition 2001 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals. A new output column has been added to indicate the maximum/slender allowable limit to the COMPACT/NON-COMPACT CRITERIA TABLE.
2. Updated and expanded the allowable axial, bending, shear, and combined stresses in accordance with Sections 5.6-5.12 of the fourth edition 2001 AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals.
3. The program has been modified to add provisions to calculate the number of bolts required for the alternate bolted connections joining the bracing components to the chords. A new BOLTED CONNECTIONS input card has been added and a new BOLTED CONNECTIONS output table has been added. The program will output the required number of bolts for three loading conditions: actual load in the member, average load in the member based on the actual load and the allowable load, and 75% of the allowable load in the member.
4. Fatigue loadings have been incorporated into the program. In accordance with Section 3.4, Table 3-1 and Section 11 of the fourth edition AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, the following fatigue loads were added:
 - Galloping (cantilever, centermount, tapered tube, 2 post planar and tri-chord structures only)
 - Natural Wind Gust (all structure types)
 - Truck-Induced Gust (all structure types)
5. Standard fatigue details based on the standard drawings have been incorporated for plain members, bolted connections, holes, welded connections, and attachments as per Table 11-2 of the fourth edition code.
15. Constant-amplitude fatigue thresholds were added.
16. A user-specified FATIGUE DETAILS input card has been added, and the CRITERIA input card has been modified to incorporate the "Number of Details" input field.

17. The following fatigue criteria input fields have been added to the LOADS input card: “Importance Factor Category”, “Mean Wind Speed”, and “Vehicle Design Speed”. An input field for the “Truck-Gust Area” has been added for both the Luminaire and Catwalk sections of the LOADS input card.
18. The STRUCTURE ATTACHMENT DESCRIPTION input card was divided into the SIGN DESCRIPTION input card and the CATWALK DESCRIPTION input card. An input field for “Horizontal Projected Area” to indicate a VMS Box has been added to the SIGN DESCRIPTION input card. **As a result, input files created for SIGN v1.1 or earlier will need to be modified before running with SIGN v1.2.0.0.**
19. The following routines were added to the program to calculate and apply the fatigue loads on the members and attachments: LDGALS, LDNCAT, LDNWGM, LDNWGS, LDTRKC, LDTRKM, LDTRKS, SRTFAT, FATDES, GALLOP, NATWND, and TRUCK.
20. New FATIGUE DETAILS and FATIGUE AXIAL/MOMENT output tables have been created to display the fatigue Combined Stress Ratio and Fatigue Loads used to generate these CSR’s for each valid fatigue detail.
21. Provisions were added to allow for the analysis of chord splice connections for both new and existing structures.
22. The “New or Existing Chord Splice” input field and the “Number of Splices” input field were added to the CRITERIA input card. Two new input cards, CHORD SPLICE 1 and CHORD SPLICE 2, were added to the program.
23. The CHORD SPLICE TABLE was added to the output to display the required number of bolts for the Chord Splice and the minimum required thickness of the Splice Plate.
24. Provisions were added for the analysis of the U-bolts and saddle blocks at the chord-tower seat detail.
25. The “Number of U-Bolts” input field has been added to the BOLTED CONNECTIONS input card. A SADDLE DETAIL TABLE has been added to the output.
26. The distribution of the uniform coupled horizontal dead loads applied to the top and back chords due to ice on the catwalk was corrected.
27. Revised Getxsc.for to allow the ST 3.0 x 8.625 to be located in the AISC Table.

28. Revised the number of spaces between the cross bracing in a 4-post 4-chord structure in the MG4PST routine.

20. In MGSTRT, corrected the variables TOPCRD and BOTCRD, which had been backwards.