PENNDOT e-Notification

Bureau of Business Solutions and Services
Highway/Engineering Application Division

pennsylvania
DEPARTMENT OF TRANSPORTATION

SIGN

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Release of Version 1.4.0.0

The Department's Sign Structure Analysis (SIGN) program has been revised as described on the attached Summary of Version 1.4.0.0 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 1.3.0.0**, can obtain the updated version by submitting a Software Update Request form along with an **update fee of $50**. Updates for **SIGN Version 1.2.0.0 or earlier** require an **additional fee**. For more details concerning the SIGN update fees, please refer to the following link: http://penndot.engrprograms.com/home/Ordering/SIGN.htm.   The update fee is waived for federal and state transportation agencies.

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" and, then on, "Update Form".

Please direct any questions concerning the above to:

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Attachment

SUMMARY OF VERSION 1.4.0.0 REVISIONS

SIGN Version 1.4.0.0 contains the following revisions and enhancements:

General Program Revisions

1. All real number program variables are now stored as double precision variables. This provides more accurate calculations and more consistency when comparing program results after compiler and system upgrades. Previously, the program used only used double precision for the structural analysis module. (Request 041)

2. A data overflow error when the Debug version of SIGN is run via Engineering Assistant (EngAsst) was corrected. (Request 050)

User Manual Revisions

3. Additional information was provided for the Sign Panel Wt input parameter description in User Manual Section 4.9 to clarify input for VMS. (Request 048)

4. A new example problem (Example Problem 6a) was added for the new VMS Cantilever model. Other example problems were revised for new input fields and to eliminate specification check errors. (Request 052)

5. A table was added in User Manual Section 4.5.2.8 to provide the stress concentration factors for standard ST sections. (Request 053)

Input Revisions

6. A new "Design Wind Speed" input field was added to the LOADS data line. The Design Wind Speed is used to calculate the wind load acting on the supports, signs and attachment. Previously, a wind speed of 80 mph was hardcoded in the program. The default is 80 mph. (Request 037)

7. The Engineering Assistant (EngAsst) configuration files were revised so that the Splice1 and Splice2 tabs are initially disabled, but are enabled for truss models and when a non-zero value is entered for the Number Chord Splices field. Previously, the Splice1 and Splice2 tabs were disabled for truss models and enabled for cantilever and centermount model. (Request 038)

8. The User's Manual says that if the Right Strut Length is left blank for a centermount structure, the right strut length is assumed to be the same as the left strut length. However, leaving the Right Strut Length blank resulted in an input error stating that the Right Strut Length is outside the range of 1' to 40' in previous versions. The right strut length is now set to the left strut length when left blank. (Revision 042)

9. A new "VMS" input field (Y/N) was added to the CRITERIA data line to indicate that the structure supports a variable message sign (VMS). The VMS designation is used to determine the appropriate Fatigue Importance Factor Category and other special design considerations for VMS structures. It is also used to differentiate between a standard cantilever model and a VMS cantilever model. Previously, the program would designate a structure as a VMS structure if at least one of the input Sign Horizontal Projected Areas was greater than zero. The default is "N". A warning message is printed if VMS is "N" and a Sign Horizontal Projected Area is greater than zero. (Request 043)

10. A default value of 2.5" was added for the Distance to Bolt Circle parameter on the Chord Splice 2 Input line for new structures ("N" entered for the New or Existing Chord Splice parameter on the Criteria line). The User's Manual states that 2.5" is the default, but previous versions only set this default for existing structures. (Request 045)

Structural Analysis Revisions

11. A new sign structure model was added for cantilever structures supporting a variable message sign (VMS) in accordance with the ITS-1003M Sign Standards. The VMS Cantilever is similar to the standard 2-strut cantilever with the addition of cross bracing between the struts. The VMS Cantilever model also includes a chord splice to the standard stub connection from ITS-1003M. (Request 036)

Specification Check Revisions

12. The equation used to compute the required number of chord splice bolts for the 75% of allowable load case for the two-post planar truss model (Model Type 2) was corrected. Previous versions required more bolts than required by the specifications. (Request 039)

13. The automatically generated fatigue check for centermount struts (Fatigue Detail #18) at the strut-to-post connection is now performed. In previous versions, the check was supposed to be done, but a coding error prevented it. (Request 044)

<u>Loading Revisions</u>

14. The sign wind loads for single strut centermount structures and the tapered tube structures were corrected. Only half the sign wind load was applied to the strut for these models in v1.3.0.0. (Request 046)

15. A maximum sign support spacing of 5' was added for variable message signs (VMS) in accordance with the ITS-1003M Sign Standards. Previously, a maximum sign support spacing of 6' was used for all signs. (Request 047)

16. The ice load on variable message signs (VMS) now includes ice on top and sides of the sign. The depth of the VMS is assumed to be constant and is based on the input Sign Horizontal Projected Area divided by the sign width. (Request 049)

17. The sign support dead load was added to the Load Output Table. Previously, the Load Table did not include the weight of the sign supports. (Request 051)

<u>Footing Design/Analysis Revisions</u>

18. The input top footing reinforcement cover for is now used as the side cover when calculating the footing reinforcement spacing. Previously, the top and bottom covers were inconsistently used for the side cover for separate spacing calculations. (Request 040)