



Structures Engineering Instructions (SEI)

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Approved: Wm. Michael Hedges **Date:** 3/31/2008
Wm. Michael Hedges,
Structures Program Manager

Subject: **Bridge Skew Restrictions**

Administrative Information:

Effective Date: This SEI shall be effective for the Structures Section projects from the date of approval.

Superseded SEI: None.

Exceptions: Exceptions must be approved by the Program Manager.

Disposition of SEI Content: The content of this SEI will be incorporated into a future revision to the Structures Manual.

Purpose:

The Operations Division has noted damage to bridge joints and to snow maintenance equipment caused when the angle of the bridge joint aligns with the plow angle. To provide for the best operation and longest life of our structures, and to minimize the potential for damage to maintenance equipment, bridge skews for new bridges with expansion joints will be restricted to prevent alignment of the plow with the joint.

Technical Information:

The VTrans Operations Division currently utilizes Tenco and Everest plows that all have a horizontal angle of 36.5 to 37.5 degrees Right measured from perpendicular to the long axis of the plow vehicle. Alignment of the plow and joint angles will result in damage to the joints due to the plow blade catching angles and plates on mechanical joints, and "gouging out" of the wide pavement joints. In addition, alignment of the plow and joint can result in significant damage to the plow and/or truck.

There are a number of factors that can affect the alignment of the plow with the joint. For example, the plow vehicle may not be exactly parallel to centerline when it passes over the joint, the plow may be slightly misaligned, and the width of the bridge joint is a factor.

In consideration of the factors above, the following restrictions apply on new bridges when bridge joints are required:

- 34° to 40° Right skews will not be allowed.
- 32° to 34° and 40° to 42° Right skews are not recommended, and should be avoided.

Because Local municipalities also utilize equipment that is similar to that currently in use by the Operations Division, these restrictions apply to all bridges designed for all of the bridge programs. Bridges on the Interstate System or other divided two-lane highways, which are likely to be also maintained with left angled plows will have the skew restriction for both right and left skews.

The restrictions apply to bridges with mechanical joint systems such as the Vermont Joint. It also applies to bridges with wide pavement joints such as the asphaltic plug joint. Narrow saw cut pavement joints are allowed at any skew for bridge projects. These restrictions do not apply for bridges that are to be rehabilitated.

When an existing bridge is rehabilitated that has a skew angle within the restricted skew range or a new bridge is granted an exemption from the skew restriction, the bridge joint shall be marked with delineators designed in consultation with the Operations Division. In these cases the designer should also attempt to design the joint to prevent damage to the maintenance equipment and the structure.

Implementation:

Projects that have, as of the SEI approval date, progressed beyond Preliminary Plans may continue through project development with bridge skews in the restricted range.

Transmitted Materials:

None.