



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 21-13

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TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/ Stephanie J. Wagner
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SUBJECT: Pre-Compressed Foam Joint

REVISES: *Indiana Design Manual (IDM) Chapter 404, Section 404-2.06(03) & Figure 404-2J (new)*

EFFECTIVE: Immediately

Pre-compressed foam joint has been added to the list of expansion joints in section 404-2.06(03) of the IDM. This joint type is used in terminal joints, as shown on *Standard Drawing* series 503-BATJ, and may also be used as a bridge deck expansion joint in bridge rehabilitation projects. Figure 404-2J has been added to illustrate typical installation details. Designers should continue to include project-specific details on the plans, per the current practice.

IDM [Chapter 404](#), Bridge Deck, has been updated to reflect updates concerning pre-compressed foam joints. An excerpt of the changes is shown at the end of this memo.

For questions related to this design memo, please contact the Bridge Engineering Division at bridgedesignoffice@indot.in.gov.

404-2.06(03) Expansion Joints [Rev. May 2013, Apr. 2021]

Indiana is considered to have a cold climate for the purpose of expansion-joint design. See *LRFD* Table 3.12.2.1-1 for temperature-range values to use to calculate joint movements due to temperature. The joint opening width must remain between 1 inch and 4 inches using the strength load case maximum movement range, per *LRFD* 14.5.3.2.

The following provides criteria for the use of expansion joints.

1. Compression Seal Type BS. This type of seal has not performed well in the past and should not be used as an expansion joint.

2. Expansion Joint Sealing System. This joint may be used on a bridge to be rehabilitated. The maximum joint opening should not exceed 3 inches at any point in the anticipated movement range, and the maximum joint movement should not exceed 100% of the joint setting width during thermal contraction. This type of joint is recommended to only be used for expansion lengths of 150 ft or less.

3. Pre-compressed Foam Type PCF. This joint may be used on a bridge to be rehabilitated. This expansion joint may be used for any joint opening width allowed per *LRFD* 14.5.3.2. The plans should designate the expansion length, anticipated movement range, and the joint mean opening size at 60°F. Figure [404-2J](#), Pre-Compressed Foam Joint, illustrates typical details for this type of joint.

4. Strip Seal Type SS.

a. Details. The details are shown on the INDOT *Standard Drawings*.

b. Expansion Length. This expansion joint may be used for an expansion length up to 400 ft. The plans should designate the expansion length for the contractor's use of the Joint Setting Table shown in the INDOT *Standard Drawings*, which is dependent upon the ambient temperature while the deck is being poured (see item 3.c.). Therefore, the expansion length should be computed in feet for each joint location. This value should be shown on the General Plan at each joint location.

- c. Width of Opening. This joint is designed by the manufacturer to accommodate a maximum of 4 in. of movement. The width of the joint opening at installation depends upon the ambient temperature while the deck is being poured, and the expansion length of the structure at the joint location.

This joint-opening width is shown in the Joint Setting Table in the *Standard Drawings* for a range of ambient temperatures and expansion lengths.

5.

Modular Type M.

- a. Details. Figures [404-2H](#) and [404-2 I](#) illustrate typical schematic details for this joint.
- b. Expansion Length. This joint is used only where the anticipated expansion movement exceeds the length that can be accommodated by an expansion joint type SS. For an expansion movement of greater than 4 in., a modular expansion joint is recommended.
- c. Splices. Where practical, a modular joint should be full length with no field splices across the roadway width. If a field splice is required for traffic continuity, the support beams should be spaced at a maximum of 2 ft. See Figure [404-2 I](#), Section A-A
- d. Elastomeric Seal. The elastomeric seal will be one piece across the roadway width, regardless of traffic continuity considerations and the presence of a field splice in the steel armor. See the INDOT *Standard Specifications* for more information.