



Modular Joint Installation

Responsibility

It is the responsibility of installer to understand all the requirements of this document before attempting to install modular joints.

- Failure to perform any of the steps outlined in this document will result in underperformance or failure of the product.
- Failure to perform any of the steps outlined in this document shall void any warranties, either expressed or implied, regarding modular joints.

It is the responsibility of The D.S. Brown Company to provide written instructions regarding the proper installation and handling of modular joints.

It is the responsibility of The D.S. Brown Company to provide technical support, training, and quality control testing as requested by the installer, contractor, or owner of the project.

- Technical support, training, and quality control testing are available for a fee.

Product Description

Modular joints are supplied in full length or staged construction lengths.

Consult product data sheets for proper modular joint sizes or requirements.

Construction shall be in accordance with the state's standard specifications book for highway construction, plus project special provisions.

Welding shall be in accordance with the AASHTO/AWS D1.5:2002 bridge welding codes or the state's approved welding specifications/codes.

Modular joints will be supplied with an AASHTO M270 Grade 50 (ASTM-A572, ASTM-A36 or ASTM-A992 steel). Product steel grades may vary by state.

Product Safety

Please review each component's SDS before installation to

fully understand the safety concerns related to this system. Failure to do so could result in serious injury or death.

All jobsite safety rules and regulations as specified by the owner or project management are to be followed and are not superseded by any statement in this document.

The following guidelines are recommendations consistent with the SDS literature. These recommendations are not intended to supersede or replace any existing requirements set forth by local laws or polices.

Personal Protective Equipment (PPE):

- Use approved respiratory protection when airborne exposure is excessive
- Use protective clothing
- Safety glasses with side shields
- Safety harness
- Hard hats
- Steel toe shoes
- Proper glove wear to properly handle the modular joints and to protect your hands
- Proper weight rated safety strips for picking the modular joints up from the ground
- Proper hooking devices for moving the modular joints from one location to another
- Workers not wearing the proper PPE equipment shall not enter the installation area

Material Storage

All modular joints shall be stored in a location where there will be no damage to the modular joints themselves.

All modular joints shall be stored on top of support items that will prevent contaminants from entering the support boxes.

Equipment Needed

Properly rated crane/cranes for the installation and removal of the modular joints.

Properly rated safety straps for the installation and removal of the modular joints.

Properly rated spreaders for picking the modular joints up from the ground and moving them around.

Modular Joint | Installation Instruction

2 of 3

Proper tools for adjusting the temperature setting and the installation on the modular joints.

- Multiple come-alongs
- Wrenches / open end wrenches, large crescent wrenches, large sockets, measuring tapes
- Large drill for sockets
- Wooden/steel wedges
- Welder and necessary welding equipment
- Cut off saw
- Drill and drill bits
- Plywood and a circular saw
- Blow pipe and 175/185 air compressor with hose or a backpack air blower
- Installation tools for the installation of strip seal glands if needed

Block-Out Preparation

Block-outs will be formed prior to the pouring of the concrete deck.

Block-outs will be formed to all related dimensions on the preapproved construction plans.

Block-outs that have rebar already established in them may have to be moved or cut loose in order to allow the modular joint to be placed inside the block-out.

Material Notes

Edge beams, center beams, and support bars shall be AASHTO M270, Grade 50 Steel (ASTM A572) or ASTM A709 Grade 50 (ASTM A572). All other materials shall be AASHTO M270, Grade 36 (ASTM A36) or AASHTO M270 Grade 50 (ASTM 572) Steel.

Support bars, stainless steel sliding surfaces shall be ASTM A240, Type 304, and have a No.8 mirror finish.

Stud anchors shall be AASTO M169 (ASTM A108) steel and automatically end welded with complete fusion. Repair studs using weld procedure A-SM-stud-REP-01.

All steel in the expansion joint devices, except stainless steel, shall be hot dipped galvanized after fabrication in accordance with AASHTO M111 (ASTM A123). Repair damaged galvanizing in accordance with ASTM A70, Annex A1. Due to tank limitations, assemblies may be dipped in sections and shop spliced after galvanizing. Repair of any galvanizing shall be in accordance with ASTM A780.

Lifting devices may be welded to parts for galvanizing if necessary. When their usage is complete, remove and grind flush at all connecting locations. Repair galvanized locations per ASTM A780.

5/8" x 3 1/2" square head A307 spring access plate bolt (Item M2) may either be coated with zinc plating or mechanical galvanizing.

Springs and bearings shall be made using AASTO M270, Grade 36, (ASTM A36) or better steel with hardness Type A durometer 60 + or – 7 neoprene or natural rubber. PTFE on springs and bearings shall be 100 percent virgin material, premium grade.

Neoprene strip seal shall meet requirements of ASTM D5973. Neoprene strip seal shall be continuous, and shop installed with lubricant adhesive in the first stage of a modular joint if staging is present. Remainder of the strip seal shall be rolled up on the field splice end. The strip seal shall be field installed with the supplied lubricant adhesive in the remaining stages, once field welding has been completed. The strip seal will be continuous, and shop installed at the manufacturing facility in a completed modular joint before shipping. **NO field splices of the strip seal glands shall be permitted.** The contractor shall protect the strip seal gland from damage during construction. Strip seal gland shall also be protected and clear from any damage during the field welding process.

General Notes

Material and workmanship shall be in accordance with the LRFD Bridge Design Specifications adopted by the American Association of State Highway and Transportation Officials (AASHTO), contract plans and specifications.

Expansion joints are designed to accommodate fatigue loading.

Modular joints can be equipped with temperature adjustment devices to allow for adjustments per field engineers recommendations.

All steel surfaces in contact with the neoprene seal, shall be cleaned prior to the installation of that neoprene seal.

Welding shall be in accordance with the AASHTO/AWS D1.5: 2002 Bridge Welding Codes.

Care will be taken during the shipping and the moving of the modular joints.

Set edge beams and rails at 0" - 1/4" below roadway grade.

The modular expansion joint assemblies shall be inspected by the D.S. Brown Company's QC department and the States / DOT QC department.



Modular Joint | Installation Instruction

3 of 3

All full penetration or partial groove welds should be magnetic tested or ultrasonically tested before installation of the joints.

Any tightly adherent weld spatter needs not be removed in coating areas to be cast inside the concrete.

Installation

Field engineer shall determine the joint opening on the day of the installation.

Place modular joint in block-out and properly align both horizontally and vertically (Joint must follow roadway grade and cross slope).

Bend or remove conflicting rebar as approved by the engineer.

Field locate and drill holes in the bottom of the block-out for joint support hardware.

After setting modular joint to grade, tighten all support connections. Field tack weld joint supports to support boxes after all temperature settings and adjustments have been made.

Remove or loosen all temporary support devices, lifting devices, and adjustment devices soon after attachment to the bridge structure. Repair any damaged galvanized surfaces in accordance with ASTM A780 procedures or State approved equivalent method.

The contractor must place some sort of form work so that no concrete can flow into any support boxes or into the joint gap opening. ****Note: Getting concrete into any support boxes will damage the joint and void any and all warranties.**

When there is less than 2 inches of clearance under any support box/boxes then there must be a pourable grouting material (approved by the state) that must be placed under the support box/boxes. There must be complete support under all support boxes.

Pour and vibrate concrete into the block-out to ensure proper consolidation around all embedded components.

Remove formwork after the proper cure time on the concrete, to be determined by a field engineer.

Note: Every state has their own specs on material components. Information presented in this document are guidelines only and may not represent your state's procedures. The D.S. Brown Company will follow each individual state's specs when putting together plans, materials, etc. These are modular joint installation guidelines only.