



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

ROY COOPER
GOVERNOR

J. ERIC BOYETTE
SECRETARY

DATE: June 25, 2020

TO: Project Engineers
Project Design Engineers

FROM: B. C. Hanks, P.E.
State Structures Engineer

SUBJECT: STRIP SEAL EXPANSION JOINTS

In order to provide a joint that can adequately withstand high volumes of vehicular and truck traffic on primary routes, strip seal expansion joint details with application guidance have been developed.

Detail a standard strip seal expansion joint for bridges with a calculated total thermal movement, $M_{TOT} \leq 2.5$ inches (64 mm) and located on any of the following:

- US Routes with a design year ADTT $\leq 2,500$;
- NC Routes with a design year ADT $\geq 10,000$;
- NC Routes with a design year ADTT ≥ 300 .

Strip seal expansion joints consist of a neoprene gland installed into steel "P" shaped retainer rails. To ensure the neoprene gland can be installed, maintain a 2 inch (50 mm) minimum roadway surface joint opening, normal to the centerline of joint at the 60°F (16°C) setting temperature. In addition, ensure there is a 1 inch (25 mm) minimum formed opening, normal to the centerline of joint when the superstructure is fully expanded. During plan development, use Standard Drawings SSEJ1, SSEJ2, SSEJ3, and SSEJ4.

For a strip seal expansion joint located at an interior bent, detail a permitted construction joint in the bridge deck in each adjacent span. For a strip seal expansion joint located at an end bent, detail a permitted construction joint in the bridge deck and the approach slab. The permitted construction joint shall be located a minimum distance of 2'-6" (760 mm), normal to the centerline of strip seal expansion joint. For heavy skewers, increase the distance to the location of the permitted construction joint in the bridge deck to prevent interference with the bent or end bent diaphragm.

Mailing Address:
NC DEPARTMENT OF TRANSPORTATION
STRUCTURES MANAGEMENT UNIT
1581 MAIL SERVICE CENTER
RALEIGH, NC 27699-1581

Telephone: 919-707-6400
Fax: 919-250-4082
Customer Service: 1-877-368-4968

Location:
1000 BIRCH RIDGE DRIVE
RALEIGH, NC 27610

Website: ncdot.gov

Strip seal expansion joints shall be turned up into a recessed area of the barrier rail along the skew. This requires extending the barrier rail on the approach slab when strip seal expansion joints are used at end bents.

Cover plates in the recessed areas of the barrier rail or sidewalk are required over strip seal expansion joints. Cover plates shall be oriented with the bolts on the side of approaching traffic. Design Manual [Figures 6-27, 6-29, 6-30](#), and [6-53](#) through [6-56](#) have been updated.

For staged construction, temporary gland(s) should be installed in the first stage(s). Coordinate with the Traffic Control Engineer for the removal of the temporary gland(s) and installation of the final continuous gland.

Design Manual [Figures 6-136](#) through [6-139](#) have been developed to show strip seal expansion joint examples.

Payment for the strip seal expansion joints shall be at the lump sum price for “Strip Seal Expansion Joints”. Place the following note on the plans:

For Strip Seal Expansion Joints, see Special Provisions.

This policy is effective as soon as practical, but not later than the October 2020 letting. The online [Design Manual](#) has been updated.

BCH/THC/ksl

Cc: G. Muchane, P. E.
W. K. Fischer, P. E.
B. Tharrington, P. E.
T. M. Bruton, P.E.
V. G. Mabry
D. C. Muller, P. E., FHWA
Division Bridge Program Managers
Division Bridge Maintenance Engineers
Regional Bridge Construction Engineers
Area Construction Engineers