

STRUCTURE BULLETIN

NCDOT Construction Unit

[Website email](#)

Current Issue: Bridge Drainage

Once bridge decks have been poured, it will start collecting and channelling rainwater runoff. Bridge contractors often do not account for this sudden change in drainage pattern and it can cause both erosion control problems and structural problems if end bents or approach slabs are undermined.

Two locations where runoff typically causes problems are at expansion joints over end bents, and at the end of the approach slab before roadway drainage has been completed.

In this picture, water ran through the open expansion joint onto the end bent cap, which then ran under the cap eroding away a lot of carefully compacted fill. The repair will never be as good as the original construction.



As seen in this picture, a simple prevention for this is to install a temporary seal such as backer rod or pool noodles in the expansion joint opening in the area of the gutter and shoulder to keep water from flowing through the joint.



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Old Bridge Plans & Reports

Many older bridge plans are available on the connect site. These are often useful when planning for demolition or when doing a preservation job. To access these plans, go to the Connect site, then Construction, then under the Resources header, click on "Bridge Plans and Reports". Here you enter the County and the 4 digit structure number, then from the drop down, select "Structure Plans". Other useful options such as Routine Inspection Reports are also available from the drop down menu. Or click the link [HERE](#).

Structure Training Videos:

The recorded videos of the 2026 **Structure Inspector Training – Retaining Walls** are now available on our You Tube Training Video Playlist at [This Link](#).

Structure Bulletin Signup:

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Bridge Drainage, Cont.

Another common location of drainage issues is at the end of the approach slab. Contractors should divert the runoff to a nearby drainage box, or use a temporary slope drain. If slope drains are used, make sure they are properly constructed and kept clear of debris. If these slope drains fail, it can lead to undermining of the approach slab and end bent cap. Additionally, always make sure water draining down the grade is diverted prior to the bridge.



Slip Formed Barrier Plate Dowels

When a barrier rail is slip-formed, contractors will often use a removable metal plate in the location of the expansion openings to act as a blockout. To support these plates vertically and to keep them square, short pieces of rebar are often tied to the barrier rail steel and butted up against the plate. Once this plate is removed, it leaves the ends of these bars exposed and susceptible to rust. Moving forward, contractors should begin using non-corrosive bars for this such as GFRP. See picture to the left for example.

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