

STRUCTURE BULLETIN

NCDOT Construction Unit

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Post Tensioning Cored Slabs & Box Beams

The 2024 Standard Specifications had several changes of note. One is dealing with the method of post tensioning cored slabs and box beams. Previously, the strands were completely tensioned before the keyways were grouted. In 2024, the procedure changed to: tension the strand 50%, grout the keyways and wait for strength, tension the strands to 100%. There are a couple of reasons for this change.

First, this helps prevent rolling of the exterior slabs off the bearing pad. This was a problem in recent years, and the new grouting sequence should help resist this action. Additionally, always check the bridge seats with a straightedge while the concrete is still plastic to ensure they are correct, and the slabs will fully bear on them.

Second, partial stressing after the keyway is grouted and cured compresses the grouted keyway and allows the completed slab to act more as a composite member. We want them all to (cont.)

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Grouting Issues:

If you have worked on many precast bridges, you may have seen a contractor mixing grout in a mixer and just adding water with a hose until it "looks good". This is a poor practice and should not be allowed. Adding 16oz of additional water beyond what the mix calls for can reduce the 3-day compressive strength of the grout from around 5000 psi to 3700 psi. That's one water bottle reducing the strength 25%.

Always read the manufacturer's directions either from the bag or the producer's website. It takes less than 5 minutes and can save you from a failing sample. If the contractor doesn't have something to measure water to the ounce for mixing grout, he is not mixing correctly. For more information on how to properly make grout cubes, check out the NCDOT Structure Inspector YouTube video on sampling grout [HERE](#).



act as one member, not a dozen individual beams. The new method improves load transfer between individual units.

For units with multiple strand locations, you should always tension from the center out. A deck with three strand locations would be tensioned first at the middle strand, then at the end strands. This will allow for a more even bearing between the units.



When the contractor installs the strands, they are coated in oil and encased in a poly sleeve. Both these measures are for corrosion protection of the strand. After they are installed in the conduit, the sleeve should be trimmed back so as not to interfere with tensioning, and the contractor should clean the exposed strand with a solvent. This will allow for a better grip between the wedges and strand.

Also, on a safety note: Never stand in line with the axis of the jack or the dead end of the strand. If the wedges lose grip on the strand, you could very well learn what a shish kebob feels like.

As always, the Area Construction Engineers below are available to answer any additional questions for you.

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Videos:

Inspection training videos can be found on the [Construction Unit YouTube playlist](#).

Training:

The 2024 Structure Inspector Training series on Bridge Rehabilitation is now complete. The final versions of the PDF presentations can be found at this link - [Final PDF's of 2024 Structure Training](#). The sessions were videoed again this year and will be available on the [YouTube channel](#) when editing is complete.

Structure Bulletins are archived on the [Construction Unit](#) website under [Construction Resources](#).

If you have a topic you would like to see addressed in a future edition of the Structure Bulletin, please [email](#) us at either aegriffith@ncdot.gov or aeaward@ncdot.gov