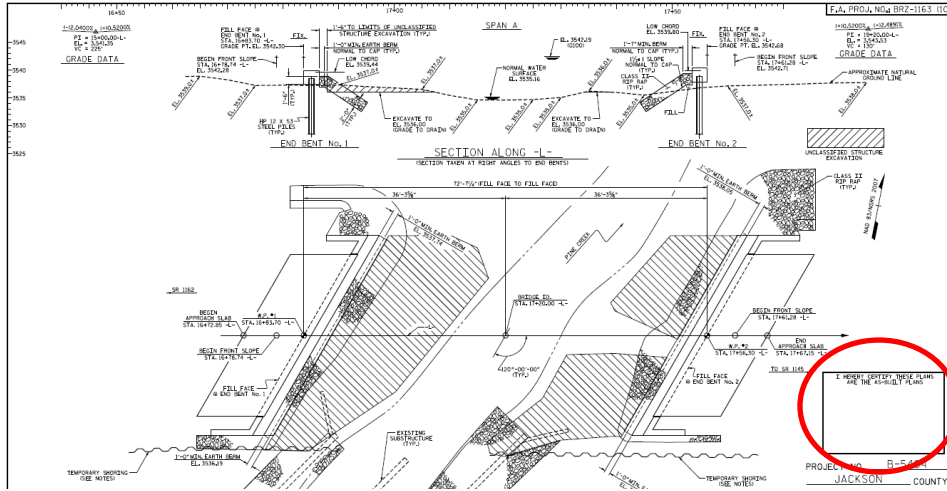


STRUCTURE BULLETIN

NCDOT Construction Unit



1. Current Issues
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[Website email](#)

Current Issues: No Rise Certification

Most stream crossings have a place on the General Drawing for the engineer to sign and stamp that the drawing is an as built and was constructed as depicted. One area we have to verify is the hydraulic opening under the bridge. It is vital that this verification is done **before** the superstructure is placed, since it can be extremely difficult to grade under the bridge after the slabs or girders are set. Before placing these units verify that the dimensions are correct. Check that the slopes in front of the end bents are on the correct slope and elevations. There have been cases where the contractor placed the rip-rap too high and had to go back after the bridge was complete to remove rip-rap by hand and re-grade the slope. Rip-rap on these slopes is not placed on top of the ground but should be inset in the ground to provide the proper slope.

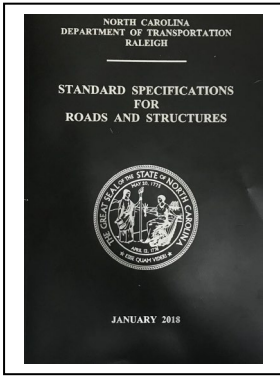
If you find a situation where it is not possible to construct this area as shown on the plans you should contact the Hydraulics Unit so they can check the model and see whether the situation is acceptable.

Updates:

To go along with the Specification Question in this issue, always make sure the contractor is using proper finishing and curing methods.

That means as **soon as the forms are removed** the contractor must finish the surface in accordance with section 420-17. Waiting a day, a week, or a month later to finish the surface is not acceptable.

If the forms are removed before the curing period defined in section 420-15 has expired the contractor must continue curing with one of the other methods until the required curing is attained. Normally this would be application of curing compound but could also be the wet curing method.



Special Provision Questions:

Question: When can the contractor wreck cap forms?

Answer: Every situation we encounter is not addressed in the specs, so we will go through the logic of the requirements. The two concepts to think of when removing forms are confinement and dead load bending. Forms that hold concrete to the proper shape until it has enough strength to do so itself are confining the mix. Forms that support the concrete to

keep it from deforming or bending under its own weight are preventing dead load bending. Table 420-1 goes through most situations. Before allowing the contractor to remove forms ask yourself how the concrete will try to move if the form is removed.

A good example is for interior bent caps. Contractors commonly want to remove the side forms early so they can begin finishing. The specifications state that cap forms are not to be removed until the concrete has a compressive strength of 2400 psi. If the side forms are removed you would be removing the force confining the concrete to its shape. The paragraph after the table states *“Remove forms for ornamental work, railing, parapets, walls less than 10 feet in height, curb faces on bridge superstructures and vertical surfaces that do not carry loads, any time after 3 hours if the concrete is set sufficiently to permit form removal without damage to the member.”* While removing the side forms of a cap after 3 hours is not advised, removing them the next day should not be a problem.

What about the bottom forms of an interior bent cap? If these are removed it would subject the cap to dead load bending. In other words the cap would try to sag under its own weight. If these are removed too early it would likely produce cracking in the bottom of the cap. Removal of these bottom forms should never be done before the concrete attains the required 2400 psi compressive strength.

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New Videos:

A new video has been added to the [Construction Unit YouTube playlist](#). [Substructure Rehabilitation Part I](#) is the first video in the structure rehabilitation series. More will follow in the coming weeks.

Training:

This winter Structure Inspector Training will introductory level material designed for those with limited structure related experience. Details are still being worked out, so check back to see the schedule. Additionally, the CON 802 Basic Structure Inspection class will be revised and used as the text

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

Below is a QR code link to the Structure Bulletin Archive.



If you have a topic you would like to see addressed in a future edition of the Structure Bulletin please [email](mailto:acoched@ncdot.gov) us at either acoched@ncdot.gov or aeawood@ncdot.gov