

STRUCTURE BULLETIN

NCDOT Construction Unit

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1. Curing Concrete
2. Concrete Slump
3. Training



Current Issues: Curing Concrete

Section 420-15 deals with curing concrete. Structure Bulletin Volume 4, Issue 5 dealt with curing shotcrete. Here we will deal specifically with curing bridge decks. First, use of membrane curing compound is **NOT** allowed on decks or approach slabs. While the specifications state that it may be used as a temporary measure it is rarely applied at the necessary rate and gives a false sense of security, therefore it should only be used in an emergency. The normal method used is to apply **wet** burlap and cover this with white opaque polyethylene sheeting.

First, let's look at the burlap. The objective is to keep the surface of the concrete wet for 7 days to eliminate the possibility of shrinkage cracks and to insure full hydration of the mix. If dry burlap is applied to the deck it will suck water from the deck surface and possibly cause cracking instead of preventing it. Burlap, especially new burlap, is difficult to wet. The burlap in the photo above was not soaked thoroughly and you can see the lighter dry areas clearly. A sufficient amount of burlap to cover the entire deck should be submerged in water the day before the pour. This is often done with a stock tank, kiddie pool, or just a wooden frame with a plastic liner. On pour day the burlap can be laid out on the work bridge and the excess water can drip out before placement on the deck. Keeping the workbridge behind the placed burlap and laying the new lengths ahead will keep



Concrete Slump Increase:

Volume 4, Issue 8 discussed the 7/18/20 memo from M&T allowing an increase in slump to a maximum of 6" with the use of water reducing admixtures. There have been a few recent questions related to the mix designs. As long as the original mix design listed a water reducing admixture on the form, a new mix design does not have to be submitted showing the increased allowable slump. When the concrete arrives, the inspector should check the M&T Form 903 to ensure that the admixture was used to increase the slump and that the maximum allowable water has not been exceeded. A quick review of [Vol 4, Issue 8](#) is recommended for further guidance.

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any excess water from dripping directly onto the concrete and damaging the surface.

Next the wet burlap should be covered with a layer of white, opaque polyethylene. This serves two purposes. First, the plastic traps moisture under it and inhibits water from evaporating from the wet burlap and deck surface. Second, the "white, opaque" part of the requirement is to keep heat under the plastic down. This is especially important during hot weather pours. The plastic must be overlapped at least a foot on all edges and can not contain holes that would allow evaporation.

We are often asked to use laminated curing media. It goes by several brand names, but it is a layer of plastic laminated to a layer of burlap. We do not allow this media. The material comes in large rolls, much as the polyethylene does. It is not possible to pre-saturate the rolls and then place them on the deck due to the large weight and size. Even if it were to be lifted the weight would cause damage to the deck surface during placement. As already stated, placing dry material on the deck can actually suck water from the deck and it can not be thoroughly saturated as it is being installed.

In summary:

- 1) cover the deck as soon as you can with wet burlap. I would rather see a few burlap marks in the deck surface from installing the burlap a little too soon as see shrinkage cracks in the surface.
- 2) cover this with white, opaque plastic, and
- 3) make sure it stays wet under there for at least 7 days. Soaker hoses under the plastic are commonly used after the concrete can support the weight of a worker.

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Videos: **NEW**

New videos available:

[Hydrodemolition Technologies for Bridges](#) and [Placing Latex Modified Concrete Overlays](#) have been uploaded to the NCDOT Communications YouTube site.

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

Training:

Structure Bulletins are now 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 acochran@ncdot.gov or aeerwood@ncdot.gov