

STRUCTURE BULLETIN

NCDOT Construction Unit

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Specification Question:

Question: True or False? I can accept concrete from the truck on a deck pour before it is placed in the pump?

Answer: Yes and No.

Explanation: As always, all cylinders must be made from the discharge end of the pump. Any time cylinders are made, slump, temperature, and air pot must also be run. Therefore, final acceptance of the concrete mix is made at the pump discharge. However, Section 420-5 of the Construction Manual allows a correlation to be made between the truck and pump to account for losses in slump and air, thereby allowing concrete to be accepted at the truck (except when cylinders are made of course). In this case concrete cannot be rejected at the truck. Here's how it works:

We all know that pumping concrete can change the characteristics of the concrete slightly. Most of the time, pumped concrete loses air and slump, but not in every case. Many factors can affect these losses, but the primary factor is the pump boom angle. When a pump has long vertical or near vertical drop, higher losses are common, compared to a boom that is stretched out horizontally, which tends to lose less.

Correlating Truck to Pump:

- 1) On the first load, the Technician should run a chase, pot, and slump from the truck after the Contractor adjusts the water.
- 2) Concrete is placed in the pump and a sample is taken at the discharge end of the pump after any grout or slick pack used to lubricate the lines is completely clear of the lines. (This sample should be taken from a location off the deck, but with a similar angle in the pump in which the pour will be started)

1. Specification Questions
2. Rebar Cover
3. New Training



Freezing Weather:

Temperatures this week in the mountains will approach 0°F. During extreme freezes we need to insure that there are no confined voids in structures that are holding water. In areas such as dowel holes, grout pots, and even CSL tubes water can freeze, expand and crack the concrete. Above is an example of an end bent which cracked when water in the anchor bolt void froze and expanded. Contractors should be sure to either blow out the water, add RV antifreeze, or fill the void with compressible material (such as backer rod).

- 3) Compare the results from the truck and pump and record them. If the sample out of the pump is acceptable, begin pumping on the deck.
- 4) Perform the same correlation on the second truck and as many other trucks as needed until a consistent correlation of losses is achieved.
- 5) At this point, concrete can be accepted at the truck by adjusting the truck results by the determined correlation (except for when cylinders are made!)
- 6) The technician should run additional correlation tests for the following: when cylinders are required, when changing spans, when switching pumps, or if a variation in slump, Chase reading, or excessive boom angle is noticed.

The above procedure is an optional way to sample concrete for bridge decks only and allows for fewer technicians to be required. If alternate methods of sampling are proposed or if there are any questions on the above procedure, contact your Area Construction Engineer.

Sampling Concrete From a Pump: Did you know that how you obtain your sample from a pump can affect the air content? There are two options for obtaining your sample in a wheelbarrow:

- 1) Use a shovel to fill the wheelbarrow. Ensure that this is done before the concrete is vibrated!
- 2) Place the concrete in the wheelbarrow directly from the pump hose with a **continuous** stream from the pump. (Never stop the pump to fill the wheelbarrow. This causes the concrete to “plop plop” into the wheelbarrow and cause the air to be knocked out of the sample)

If you have other questions regarding this matter please contact us at the links below or ask your Area Construction Engineer.

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

New Training

[NCDOT Construction Unit Training YouTube playlist.](#)

Winter Structure Inspector Training:

Division 10 Structure Inspector Training will take place January 30th and 31st. Times and places will be confirmed soon.

