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**Construction Information Memorandum No. 4 - 2018**

TO: Region Engineers

ATTN: Area Operations, Construction, and Local Transportation Engineers

FROM: Winston J. Powe, P.E. *WJP*  
State Construction Engineer

RE: "Dry Runs" and "Wet Checks" for Bridge Concrete Superstructures

The purpose of this CIM is to call attention to Subarticle 2:6:B:1.3 of the Construction Manual regarding requirements for project personnel to measure and record both the cover over the top mat of the steel reinforcement and the slab/deck thickness before ("dry runs") and after placement of concrete ("wet checks") for a bridge deck. The requirements for the "dry run" are also outlined in Subitem 510.03(c)6.c of the Standard Specifications.

Attached are copies of the above-mentioned section of the Construction Manual and specification, which provides the language requiring the measurements to be taken and in what manner they should be obtained. In the case of "wet checks", the Contractor should provide a work bridge for taking these measurements.

Please ensure that your inspection personnel are familiar with these requirements. It is essential that these measurements are taken correctly and recorded in a field book and that any necessary adjustments are made to ensure bridge decks are constructed in conformance with the plans and specifications.

WJP/JLB/BMW/CWH/cwh

Attachments

pc: Mr. George Conner, PE                      Mr. Tim Colquett, PE                      FHWA  
ARBA    AAPA    ALBCA  
ACIA     ACEA    CIM File

PART: 2 SECTION: 6	ARTICLE: B	SUB-ARTICLE: 1.3	PAGE: 20 of 26
DATE ISSUED: AUGUST 15, 2000		REVISION DATE:	
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"Superstructure - Bridge Deck" cont.			

and firmly tied. The spacing can be spot checked with a ruler and visually inspected instead of actually measuring every bar that is placed.

When using permanent metal deck forms the slab thickness, bottom steel reinforcement clearance, etc., are measured to the top corrugation of the form. If the bottom steel reinforcement were placed by measuring from the bottom corrugations the proper concrete cover would not be attained at the top corrugations. The same holds true for the proper slab thickness. Therefore, it is essential that measurements be made to the top corrugation.

Once the steel reinforcement is in place, the contractor must place the screed supports or headers in order for the concrete cover and slab thickness to be checked. When using a longitudinal screed, transverse headers will be set for the screed to run on. When using a transverse screed, longitudinal rails or supports will be set up outside the overhang for the screed to run on.

After the screed is in place and set with the appropriate camber, a trial run should be made over the deck. During this trial run, the distance from the top mat of the steel reinforcement to the bottom of the screed should be measured and recorded. This distance should be equal to the required concrete cover shown on the plans less the deflection expected in the beams or girders due to the weight of the concrete for longitudinal screeds. This distance should be equal to the required concrete cover shown on the plans for transverse screeds. The required concrete cover should, therefore, be present once the beams have deflected. The slab thickness should also be measured and recorded during the trial run in the same manner used to check the clearance on the top mat of steel reinforcement. These measurements should be taken in each bay (midway between each girder) at the following locations: each end, the quarter points and the center of the pour.

Once the concrete has been placed and screeded, the actual concrete cover over the top mat of steel reinforcement and the actual slab thickness should be measured and recorded. The slab thickness may vary by + 1/4 inch as long as the surface tolerance of 1/8 inch in ten feet is maintained. These measurements should be taken in two bays at the following locations as a minimum: each end and the center of the pour. Any variations greater than those previously mentioned will require that additional checks be made. The contractor should provide a work bridge as required in the specifications for taking these measurements.

The final finish is then applied and it is obtained by either wood floating or burlap drag. The curing should begin immediately behind this finishing operation. Plastic shrinkage cracks and other problems that can be detrimental to the deck can occur if the curing is delayed.

The straight edging of the deck concrete, as specified in the Standard Specifications, should be performed in conjunction with the initial finish or immediately thereafter. This should allow time to correct any areas not meeting specification tolerances.

The final texture will be obtained by cutting/sawing transverse grooves into the deck after it has been cured in accordance with the Specification unless otherwise shown on the plans.

Grooving the bridge deck after the concrete has been cured requires special equipment designed especially for grooving hardened concrete. Because of the differences that are present with the equipment manufacturers, the contractor should discuss his/her equipment and procedure at the pre-pour conference. The following are adjustments that can be allowed during the grooving operation:

1. The location of the first groove at an open joint can be spaced from two to eight inches away from the back edge of the embedded armor plate or expansion dam.

During the placing operation, the concrete shall be placed in strips just ahead of the screed for the entire length or width of the pour, whichever applicable. A small roll of grout shall be kept on the leading edge of the screed so that all depressions ahead of the screed will be filled.

C. Finishing.

(1) General Screed Requirements.

All screeds shall be mechanically operated. Screeds and screed supports shall be designed so that they may be pre-set to provide the finish grade and cross-section of the concrete deck surface shown on the plans. They shall be of substantial construction so that the proper settings will be maintained throughout the pour. Screed supports shall be placed and adjusted to properly provide for the deflection of forms, falsework, and structural supporting members which will occur during the placement of concrete. Immediately before concreting operations are started, the screed shall be operated over the full length and width of the bridge segment to be paved. This test run shall be made with the screed adjusted to its finishing position. While operating the screed during this test, all aspects of the screed and supports shall be checked for proper adjustments. After the Contractor has satisfied himself that the finishing equipment has been adjusted to conform with plan and specification requirements, another test run shall be made for the Engineer for the purpose of recording slab thickness and steel clearance measurements prior to the pour being made.

(2) Longitudinal Screeds.

Longitudinal screeds shall be supported at the ends by transverse headers or by a section of slab previously poured. Screeds must be long enough to span the entire pour as required by the plans and specifications. Intermediate screed supports between approved construction joints will not be permitted. Screeding shall be accomplished by working the longitudinal screed parallel to the centerline of the road (from low side to high side on superelevated curves) in such a manner that laitance, surplus water, and inert materials are removed from the surface.

(3) Transverse Screeds.

Transverse screeds shall be of sufficient weight {mass} to strike off the plastic concrete placed in front of the screed without "riding up" on the concrete. Transverse screeds shall be supported by vertically adjustable rails set a sufficient distance from the gutter line to allow free movement of the screed from gutter line to gutter line. Supports for the screed rail shall be located a maximum of 18 inches {450 mm}, center-to-center, with the slab overhang support brackets located a maximum of 24 inches {600 mm}, center-to-center. Exceptions to the maximum allowable screed rail and support bracket spacing will be considered if the increased spacing is adequately addressed in the design calculations that are required as a part of the Working Drawings (for falsework). Satisfactory means of load distribution with minimum rail deflection shall be provided. The screed rails for any deck pour shall be completely in place for the full length of the pour and shall be firmly secured prior to making test runs and subsequently placing deck concrete. In making the test runs, a "tell-tale" device attached to the screed carriage may be used to check the proper clearance on the top mat of the reinforcing steel.

(4) Work Bridges.

Portable work bridges shall be provided and used to perform finishing and inspection work on the bridge deck after the screeding operation. Surface tolerance as described in Subitem 510.03(c)6.d shall be accomplished before grooving the deck surface.

(5) Final Finishing.

The final finish behind longitudinal screeds shall be obtained by wood floating or by broom finish. The final finish behind transverse screeds shall be obtained by either wood floating, broom finish or burlap drag. Brooms for broom finishing shall have medium to stiff nylon bristles. The final texture shall be obtained by the cutting of transverse grooves in the cured concrete.