FY 2018/2019 QC Category No. 10C
STATEWIDE INSPECTION GUIDELIST
Bridge Structures - Concrete Decks

FORMING

1. Removable form concerns: form material and dimensions, accurate positioning, and adequate capacity to support the load of plastic concrete. Welding of form hardware (removable or SIP) to structural steel is not permitted. [Spec. 400-5]

2. Stay-in-place (SIP) metal form systems have numerous Spec requirements. Check for coating defects on all surfaces of polymer coated SIP form elements prior to their installation. [Spec. 400-5]

3. For prestressed concrete beam superstructures, check beam cambers and adjust forms for deviations in camber from those shown in the original plans. Discuss this issue at the preconstruction conference with the latest camber data available from the prestressed yard. [Spec. 400-5, 450-16, Good Practice]

4. Expansion joints may be placed before or after deck planing but must be within tolerance in either case. [Spec. 400-10]

PLACING AND TYING REBAR

5. Rebar shall be stored properly aboveground and be free of foreign matter. Rebar shall be kept away from conditions capable of producing rust. Hot bending, welding or flame cutting are not allowed. [Spec. 415-3 and 415-4]

6. Rebar shall be tied within 1inch of plan position; the tolerance for concrete cover is minus 1/4 inch or plus 1/2 inch from the plan dimensions. Splices shall be securely clamped or tied. [Spec. 415-5]

7. Tying for each mat: a double strand single tie used at every intersection on the periphery and every third location in the interior. [Spec. 415-5]

8. On removable forms, plastic bar supports and steel supports with either molded plastic legs, plastic coated leg tips or plastic protected rails, are allowed. Do not use metal bar supports in contact with removable forms or floor surfaces in extremely aggressive environments. [Spec. 415-5]

SCREED DRY RUN

9. Perform dry runs after rebar has been placed and screed rails and headers are set. Thickness and clearances should be checked in every bay at longitudinal intervals not greater than 10 ft. [Spec. 400-7 & Good Practice]
10. Deck thickness and rebar clearance measurements should be taken from the bottom of

the screed rollers and the screed rollers should be directly over the point where the measurement is to be taken. If the deck thickness measurement during the dry run is less than the required plan thickness, beam deflection calculations must prove adequate to allow the required deck thickness. [CPAM 10.3 and Good Practice]

PLACING DECK CONCRETE

11. Do not place bridge deck concrete if during placement the average wind velocity forecast exceeds 15 mph as reported by the National Weather Service. [Spec. 400-7]

12. Approvals are required for screed or strike off device. Concrete must be placed in continuous strips (transverse or longitudinal) with no time for initial set between strips except at planned joints. [Spec. 400-7 and Good Practice]

13. The minimum concrete placement rate is 20 yd^3/hr for placements 50 yd^3 or less and 30 yd^3/hr for those placements greater than 50 yd^3. All deck concrete between construction joints must be in place before initial set of any of the concrete begins. [Spec. 400-7]

14. Temporary erection supports must be released for steel beams prior to deck placement. Intermediate diaphragms must be placed at least 48 hours before deck placement. [Spec. 400-7]

15. Unhardened concrete must be completely protected from rain and running water in a manner that does not contact the concrete. Do not place concrete during rain. [Spec. 400-7]

16. Metal forms and rebar shall be sprayed with cool fresh water just prior to placement of concrete for decks in hot weather. If re-spraying of forms and rebars is required after concrete placement starts, do not spray onto the fresh concrete unless authorized by the Engineer. [Spec. 400-7]

SCREEDING AND FINISHING

17. Prior to all concrete placements, all bulkheads and rails must be set to proper grade and the screed adjusted for all variances. [Spec. 400-7]

18. Intermediate screed rails are not permitted unless approved by the Engineer. [Spec. 400-7]

19. For short and miscellaneous bridges, the deck must be checked longitudinally with a 10 foot straightedge, half lapped, 5 ft transversely and deficiencies greater than 1/8 inch corrected. [Spec. 400-15]

20. For long bridges, the deck must be planed to a minimum of ¼ inch depth, not to exceed ½ inch, and meet or exceed the profilograph smoothness criteria. [Spec. 400-15]

21. For short and miscellaneous bridges after water sheen and before initial set, the plastic deck surface must be finished with burlap drag, fine broom or float. No blemishes, marks, or scratches are allowed greater than 1/16 inch in depth. [Spec. 400-15 & Good Practice]

22. For long bridges, correct all flaws such as cavities, blemishes, marks, or scratches that will not be removed by 1/4 inch planing. [Spec. 400-15]

23. When required by plans crack control grooves must be installed either by tooled "V" groove prior to initial set or by early entry dry cut saw. [Spec. 400-9]

CURING

24. Monitor surface moisture evaporation rates during placement and do not exceed 0.1 $lb/ft^2/hr$ unless countermeasures for retaining moisture such as application of evaporation retarder or fogging are employed. Do not apply water to the concrete to aid finishing operations unless authorized by the Engineer. [Spec. 400-16]

25. For Long bridge decks, application of a Type 2 (white) curing compound to the deck surface must be complete within 2 hours from the initial placement of concrete applied when the surface is damp with a minimum spread rate of 0.06 gal/yd^2 or 1 gal/150 square feet. For Short bridges, apply curing compound as above but after the initially placed concrete has been floated, straightedged, textured and a damp surface condition exists. The spread rate must be reported to the Engineer. [Spec. 400-16]

26. Curing compound for barrier walls must be applied at the proper spread rate within 30 minutes or before loss of water sheen and must remain in place for at least 7 days [Spec. 400-16]

27. Properly sealed curing blankets must be placed as soon as possible with minimal effect on the surface texture for a minimum of 7 days. Wet all curing blankets immediately after placing and maintain in a saturated condition throughout the seven-day curing period. Blanket materials must meet specifications and burlap-polyethylene sheeting is required to have a minimum weight of 1-1.8 ounces/square feet for two layers or 0.6-0.7 ounces/square feet for four layers. [Spec. 925-3, 400-16]

28. Heavy loads must not be applied for 14 days after concrete placement unless approved by the Engineer, based on beam or cylinder breaks. [Spec. 400-17]

FORM REMOVAL

29. Time of removal for forms shall be determined from minimum time requirement, compressive strength tests, time versus strength curve (S/T Curve) per specification, with consent of the Engineer. Detailed specifications for cylinder testing and strength determination are required in order to remove forms. Apply membrane curing

compound to all surfaces stripped of forms within one hour of loosening. [Spec. 400-14 and 400-16]

GROOVING

30. Grooving shall take place after concrete smoothness requirements have been met, and after planing for Long bridges but before opening to traffic. [Spec. 400-15]

31. Prior to grooving, a detailed smoothness evaluation must be performed for long bridges. At least ¼ inch depth of longitudinal planing is required to achieve acceptable ride quality. [Spec. 400-15]

32. Grooves must be continuous from gutter to gutter, within 18 inch of gutter; and must be per specifications at joints, for skews, and for spacing and depth. [Spec. 400-15]