

**FY 2017/2018 QC Category No. 8B**  
**STATEWIDE INSPECTION GUIDELIST**  
**Concrete Materials**

***PRODUCTION LIMITS***

1. Cold weather placements: mixing permitted if air temperature is 40°F or greater. [Spec. 346-7]
2. Hot weather placements: approved hot weather mix required if concrete temperature is above 85°F. Concrete rejected if 100°F or above. [Spec. 346-7 and 400-7]
3. Monitor surface moisture evaporation rate during placement and prevent the rate from exceeding 0.1 lb/ft<sup>2</sup>/hr unless countermeasures such as application of evaporation retarder or fogging are employed. [Spec. 400-16]
4. Transit time: For agitator trucks, reject concrete that exceeds 60 minutes (non-retarded) and 90 minutes (water-reducing and retarding admixture) between the initial introduction of water into the mix and complete discharge. All concrete must be in its final position a maximum of 15 minutes after discharge from the truck unless approved in advance by the Engineer. [Spec. 346-7]
5. When concrete placement stops for 90 min. or more, perform initial plastic properties tests on the next batch. [Spec. 346-8]

***MIXING AND DELIVERY OF CONCRETE***

6. Concrete delivery ticket information is completely and accurately entered with required signatures that are legible prior to start of concrete placement and the ticket is in an electronically generated printed form. [Spec. 346-6]
7. Batch weights are within 1% (2% if load is 3 CY or less) of the design mix quantities and all cementitious materials are added together for the verification. Coarse and fine aggregate are verified separately. If any are out of tolerance, District Materials Office notified and Plant notified so corrective action can be taken. [MM 9.2 Volume II]
8. Mixer ID card must be in ready mix truck, if not, load rejected and truck out of service until ID card restored. [MM 9.2 Volume II, Spec. 346-8 and Form 675-050-05]
9. Drum revolution counter must be operating properly, if not, note on ID card. [MM9.2 Volume II, Spec. 346-8]
10. Water measuring device on truck must operate properly and calibration information must be in truck and have been done within last 12 months. [Spec. 346-8, MM 9.2 Volume II]
11. Water may be added at the placement site, provided the water does not exceed the water to cementitious materials ratio as defined by the mix design. [Spec. 346-7]

12. If jobsite water is added, mix concrete an additional 30 revolutions at mixing speed per spec.; do not add water if mixing revolutions have already exceeded 130. [Spec. 346-7]
13. If slump is within tolerance, the load can be placed but if slump is outside tolerance, reject the load. Concrete placement may proceed for the QC truck and the load after the QC truck while plastic properties tests are in progress. [Spec. 346-7 and 346-8]
14. Concrete should be discharged before a maximum of 300 drum revolutions is reached. [Spec. 346-7]
15. For high slump (6" or greater) or self-consolidating concrete, a grate must be placed over conveyance equipment to capture lumps and balls. [Spec. 346-6]

### **SAMPLING AND TESTING**

16. Samples must be taken at the point of final placement: end of buckets, conveyor belts, pump hoses or chutes except that when discharged directly from mixer into bucket and the bucket is discharged within 20 minutes, samples may be taken directly from mixer. [Spec. 346-7]
17. Maximum LOT size must be per spec. and acceptance samples must be randomly selected by load number then taken from center of load. [ASTM C-172, Spec 346-5 and Spec. 346-9]
18. Sampling and testing equipment in proper condition and calibration: thermometers, slump cones, pressure meters (PM)/rollameters (RM), cylinder molds. [ASTM C-1064, 143, 231, 173, 470, Spec. 346-5, FM 5-501]
19. Concrete temperature must be measured correctly. [ASTM C-1064, Spec. 346-5]
20. W/C ratio must be computed correctly. [FM 5-501, Spec. 346-8]
21. Percent air test must be performed correctly. [ASTM C-173 (RM), C-231(PM), Spec. 346-5]
22. Slump test must be performed correctly and the results must be per Spec 346-6. [ASTM C-143, Spec 346-5 and 346-6]
23. Concrete sample cylinders must be prepared properly at the site, and all cylinders will be clearly identified as outlined in the Sample/Lot Numbering System instructions located on the State Materials Office website. Prior to transporting, cure and protect specimens in accordance with the requirements of ASTM C-31. [Spec. 346-9]
24. Cylinder transported from field to lab in proper manner and must be at the lab within 48 hours of placement in molds. For drilled shafts, initially cure acceptance cylinders for 48 hours before transporting to the laboratory. [Spec. 346-9 & 346-3, ASTM C 31]
25. Provide Sample Transmittal Card properly filled out. [Form 675-050-04]

## **MASS CONCRETE**

26. Mass Concrete Control Plan (MCCP), as formulated by the Specialty Engineer, approved by the Engineer, at least 14 days prior to the first anticipated mass concrete placement. [Spec. 346-3]
27. Mass concrete Specialty Engineer or his/her designated employee must be at the jobsite and personally inspect and approve monitoring devices and verify that the process for recording temperature readings is effective for the first placement of each size and type of component. [Spec. 346-3]
28. If 35°F differential or the maximum 180°F core limit is exceeded, adjustments must be made immediately, as recommended by the Specialty Engineer, while heat is high, and subsequent mass placements must not proceed until the Engineer approves revised MCCP. [Spec. 346-3]
29. Temperature monitoring data must be recorded at intervals of 6 hours or less until there is certainty that the maximum temperature differential and maximum core temperature has peaked and is diminishing; however, do not remove the temperature control mechanisms until the core temperature is within 50°F of the ambient temperature. Data, including a final report, must be transmitted to the Engineer within 3 days. [Spec. 346-3]
30. An Engineering Analysis Scope must be submitted, that includes a structural integrity and durability analysis to evaluate the condition of the mass element if the 35° differential or the maximum 180°F core limit is exceeded. [Spec. 6-4 and 346-3]
31. When instrumentation and temperature measuring are omitted for a mass concrete element the checklist of requirements as shown in Attachment 8B-1 must be met. [Spec. 346-3]