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DIVISION OF ENGINEERING SERVICES
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METHOD OF TEST FOR SAMPLING FRESH CONCRETE

A. SCOPE

This test method describes the procedure for obtaining samples of freshly mixed concrete from stationary and paving mixers, truck mixers, agitators or dump trucks, and forms and subgrade.

B. REFERENCES

California Test 518 – Unit Weight of Fresh Concrete
AASHTO T 141 – Sampling Freshly Mixed Concrete
ASTM C 172 – Standard Practice for Sampling Freshly Mixed Concrete

C. SIZE OF SAMPLE

When the sample will be used for strength tests, it must be a minimum of 1 ft³. Smaller samples may be permitted for other routine tests.

D. WHERE SAMPLE SHOULD BE TAKEN

1. When sampling to determine whether the compressive strength conforms to a strength specification, take the sample as close as practicable to the mixer discharge.
2. When sampling to determine compressive strength for form stripping purposes, etc., take the sample as close as practicable to the final resting place of the concrete.

E. PROCEDURE FOR SAMPLING

When sampling, include every precaution necessary to obtain samples that will be representative of the true nature and condition of the concrete being sampled. Sample concrete during the placing operation as follows:

1. Sampling from stationary mixers, except paving mixers.

Obtain the sample by passing a receptacle completely through the discharge stream of the mixer at about the middle of the batch, or by diverting the stream completely so that the whole stream discharges into a container. Take care not to restrict the flow from the mixer in such a manner as to cause the concrete to segregate. These requirements apply to both tilting and non-tilting mixers.

2. Sampling from paving mixers and from haul vehicles without agitation.

Discharge the concrete onto the subgrade and collect the sample from at least 5 different portions of the pile. Samples may be obtained after concrete has passed through a spreader box.

3. Sampling from revolving drum truck mixers or agitators.

Sample from two or more regular intervals throughout the discharge of the entire batch avoiding the very beginning and the end of the discharge. If water is added to the mixer to adjust the slump at the site of the work, sample after the water is added and the concrete is thoroughly mixed. Sample by repeatedly passing a receptacle through the entire discharge stream or by diverting the stream completely so that the whole stream discharges into a container. Regulate the rate of discharge of the batch by the rate of revolution of the drum and not by the size of the gate opening.

4. Sampling from forms

Special care must be taken to obtain a representative sample. Make up the sample from several portions at different locations within the batch and at sufficient depth to include representative ingredients. Take samples prior to any finishing operations.

F. REMIXING SAMPLE

Prior to testing or molding test specimens, remix the sample with a shovel to ensure uniformity. Protect the sample from sunlight and wind during the period between taking and using. Combined testing and molding time shall not exceed 15 min from the time of sampling.

G. ADDITIONAL PROCEDURE FOR LARGE MAXIMUM SIZE AGGREGATE CONCRETE

When the concrete contains aggregate larger than appropriate for the size of the molds or equipment to be used, wet-sieve the sample as described below except test density in accordance with California Test 518.

After sampling the concrete, pass the concrete over the designated sieve and remove and discard the aggregate retained. This must be done before remixing. Shake or vibrate the sieve by hand or mechanical means until no undersize material remains on the sieve. Do not wipe mortar adhering to the aggregate retained on the sieve before it is discarded. Place only enough concrete on the sieve at any one time so that after sieving the thickness of the layer of retained aggregate is not more than one particle thick. The concrete, which passes the sieve, must fall into a batch pan of suitable size that has been dampened before use or onto a clean, moist, non-absorbent surface. Scrape any mortar adhering to the sides of the wet-sieving equipment into the batch. After removing the larger aggregate particles by wet sieving, remix the batch with a shovel (the minimum amount necessary to ensure uniformity) and proceed with testing immediately.

H. HEALTH AND SAFETY

It is the responsibility of the user of this test method to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use. Prior to handling, testing or disposing of any materials, testers must be knowledgeable about safe laboratory practices, hazards and exposure, chemical procurement and storage, and personal protective apparel and equipment.

Caltrans Laboratory Safety Manual is available at:

http://www.dot.ca.gov/hq/esc/ctms/pdf/lab_safety_manual.pdf

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(California Test 539 contains 2 Pages)**