

Colorado Procedure 61-21

Standard Practice for

Sampling Freshly Mixed Concrete

1. SCOPE

- 1.1 This practice covers procedures for obtaining representative samples of fresh concrete on which tests are to be performed to determine compliance with specifications.
- 1.2 The values stated in ft-lbs units are to be regarded as the standard.
- 1.3 This standard does not address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and to determine the applicability of regulatory limitations before use.

(Warning: Fresh hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.)

2. SIGNIFICANCE AND USE

- 2.1 This practice is intended to provide standard requirements and procedures for sampling freshly mixed concrete from different containers used in the transportation or placement of concrete. The detailed requirements as to materials, mixtures, air content, unit weight, temperature, number of specimens, slump, interpretation of results, and precision and bias are in specific test methods.

3. SAMPLING

- 3.1 The elapsed time shall not exceed 15 minutes between obtaining the first and final portions of the composite sample.
- 3.2 Transport the individual samples to the place where fresh concrete tests are to be performed and/or where test specimens are to be molded. They shall be combined and remixed with a shovel, the minimum amount necessary to ensure uniformity and compliance with the maximum time limits specified in Subsection 3.3.
- 3.3 Start tests for the slump, unit weight, temperature, and air content within 5 minutes after obtaining the final portion of the composite sample. Start molding specimens for strength tests within 15 minutes after fabricating the composite sample. Protect the sample from the sun, wind, and other sources of rapid evaporation, and contamination.

4. PROCEDURE

- 4.1 *Size of Sample* — Make the samples to be used for strength tests a minimum of 1 cu. ft. Smaller samples are allowed for routine air content, unit weight, temperature, and slump tests. The size of the sample is dictated by the maximum nominal aggregate size.

- 4.2 The procedures used in sampling shall include the use of precautions that will assist in obtaining samples that are representative of the nature and condition of concrete sampled as follows:
- 4.2.1 *Sampling for PCCP* — As per CP 75 sample the concrete after it has been placed on grade. Obtain samples from at least five different portions of the pile and then combine them into one sample for test purposes. Avoid contamination with subgrade material or prolonged contact with an absorptive subgrade.
- 4.2.2 *Sampling for concrete placed from a ready-mix truck* — Sample the concrete by collecting two or more portions taken at regularly spaced intervals during discharge of the middle portion of the batch. Take the samples within the time limit specified in Section 3 and combine them into one sample for test purposes. Do not obtain samples until after all of the water has been added to the mixer. No samples shall be taken before 10 % or after 90 % of the batch has been discharged. Due to the difficulty of determining the actual quantity of concrete discharged, the intent is to provide samples that are representative of widely separated portions, but not the beginning and the end of the load. Obtain a sample by repeatedly passing a receptacle through the entire discharge stream or by completely diverting the discharge into the sample container(s). 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.
- 4.2.3 *Sampling for piers, footings, walls, and caissons* – Refer to Subsection 4.2.2.
- 4.2.4 *Sampling from concrete placed by pumps* – Refer to Subsection 4.2.2..
- 4.2.5 *Sampling from conveyer placed concrete* – Refer to Subsections 4.2.1 or 4.2.2.
- 4.2.6 *Sampling from crane & bucket placed concrete* – Refer to Subsections 4.2.1 or 4.2.2.