

## WSDOT FOP FOR WAQTC TM 2

### *Sampling Freshly Mixed Concrete*

#### Scope

This method covers procedures for obtaining representative samples of fresh concrete delivered to the project site and on which tests are to be performed to determine compliance with quality requirements of the specifications under which concrete is furnished. The method includes sampling from stationary, paving and truck mixers, and from agitating and non-agitating equipment used to transport central mixed concrete.

This method also covers the procedure for preparing a sample of concrete for further testing where it is necessary to remove aggregate larger than the designated size for the test method being performed. The removal of large aggregate particles is accomplished by wet sieving.

Sampling concrete may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices.

**Warning** – Fresh Hydraulic cementitious mixtures are caustic and may cause chemical burns to skin and tissue upon prolonged exposure.

#### Apparatus

- Wheelbarrow
- Cover for wheelbarrow (plastic, canvas, or burlap)
- Shovel
- 5 gal bucket for water

#### Procedure

Use every precaution in order to obtain samples representative of the true nature and condition of the concrete being placed being careful not to obtain samples from the very first or very last portions of the batch. The size of the sample will be 1.5 times the volume of concrete required for the specified testing, but not less than 1 ft<sup>3</sup> after wet-sieving, if required.

**Note 1:** Sampling should normally be performed as the concrete is delivered from the mixer to the conveying vehicle used to transport the concrete to the forms; however, specifications may require other points of sampling, such as at the discharge of a concrete pump.

- **Sampling from stationary mixers, except paving mixers**

Obtain the sample after a minimum of 1/2 m<sup>3</sup> (1/2 yd<sup>3</sup>) of concrete has been discharged. Perform sampling by passing a receptacle completely through the discharge stream, or by completely diverting the discharge into a sample container. If discharge of the concrete is too rapid to divert the complete discharge stream, discharge the concrete into a container or transportation unit sufficiently large to accommodate the entire batch and then accomplish the sampling in the same manner as given for paving mixers. Take care not to restrict the flow of concrete from the mixer, container, or transportation unit so as to cause segregation. These requirements apply to both tilting and nontilting mixers.

- **Sampling from paving mixers**

Obtain material from at least five different locations in the pile and combine into one test sample. Avoid contamination with subgrade material or prolonged contact with absorptive subgrade. To preclude contamination or absorption by the subgrade, sample the concrete by placing a shallow

container on the subgrade and discharging the concrete across the container. The container shall be of a size sufficient to provide a sample size that is in agreement with the nominal maximum aggregate size.

- **Sampling from revolving drum truck mixers or agitators**

Obtain the sample after a minimum of 1/2 m<sup>3</sup> (1/2 yd<sup>3</sup>) of concrete has been discharged. Do not obtain samples until after all of the water has been added to the mixer. Do not obtain samples from the very first or last portions of the batch discharge. Sample by repeatedly passing a receptacle through the entire discharge stream or by completely diverting the discharge into a sample 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.

- **Sampling from open-top truck mixers, agitators, non-agitating equipment or other types of open-top containers**

Sample by whichever of the procedures described above is most applicable under the given conditions.

- **Sampling from pump or conveyor placement systems**

Obtain sample after a minimum of 1/2 m<sup>3</sup> (1/2 yd<sup>3</sup>) of concrete has been discharged. Do not obtain samples until after all of the pump slurry has been eliminated. Sample by repeatedly passing a receptacle through the entire discharge system or by completely diverting the discharge into a sample container. Do not lower the pump arm from the placement position to ground level for ease of sampling, as it may modify the air content of the concrete being sampled. Do not obtain samples from the very first or last portions of the batch discharge.

Transport samples to the place where fresh concrete tests are to be performed and specimens are to be molded.

Combine and remix the sample minimum amount necessary to ensure uniformity. Protect the sample from direct sunlight, wind, rain, and sources of contamination.

Complete test for temperature and start tests for slump and air content within 5 minutes of obtaining the sample. Complete tests as expeditiously as possible. Start molding specimens for strength tests within 15 minutes of obtaining the sample.

Report results on concrete delivery ticket (i.e., Certificate of Compliance).

The name of the qualified tester who performed the field acceptance test is required on concrete delivery tickets containing test results.

### **Wet Sieving**

When required for slump testing, air content testing or molding test specimens the concrete sample shall be wet-sieved, prior to remixing, by the following:

1. Place the sieve designated by the test procedure over dampened sample container.
2. Pass the concrete over the designated sieve. Do not overload the sieve (one particle thick.)
3. Shake or vibrate the sieve until no more material passes the sieve.
4. Discard oversize material including all adherent mortar.
5. Repeat until sample of sufficient size is obtained.
6. Mortar adhering to the wet-sieving equipment shall be included with the sample.

**Note 1:** Wet-sieving is not allowed for samples being utilized for density determinations according to the FOP for AASHTO T 121.

## Performance Exam

### Checklist Sampling Freshly Mixed Concrete FOP for WAQTC TM 2

Participant Name \_\_\_\_\_

Exam Date \_\_\_\_\_

#### Procedure Element

Yes No

1. The tester has a copy of the current procedure on hand?
2. Obtain a representative sample:
  - a. Sample the concrete after  $\frac{1}{2}$  cy discharged?
  - b. Pass receptacle through entire discharge stream or completely divert discharge stream into sampling container?
  - c. Transport samples to place of testing?
  - d. Sample remixed?
  - e. Sample protected?
  - f. Correct sample size?
3. Start tests for slump and air within 5 minutes of sample being obtained?
4. Start molding cylinders within 15 minutes of sample being obtained?
5. Protect sample against rapid evaporation and contamination?

First Attempt: Pass      Fail

Second Attempt: Pass      Fail

Signature of Examiner \_\_\_\_\_

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Comments:

