

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

Sampling Requirements

For placement of one class of concrete 50 cys or less

- Sample initial truck after ½ cy has been discharged from the truck (this material may not be placed in the forms)
- Sample each truck, after ½ cy has been discharged from truck, until one truck meets all applicable acceptance test requirements.
- After one truck meets the acceptance test requirements, the remaining concrete may be visually inspected.

For placement of one class of concrete greater than 50 yds

- Sample initial truck after ½ cy has been discharged from the truck (this material may not be placed in the forms)
- Sample each truck until two successive loads meet all applicable acceptance test requirements. Once two loads meet the acceptable standard, the sampling and testing frequency may decrease to one for every five truck loads.
- For all trucks, after the initial truck, sample the concrete after a minimum of ½ yd³ of concrete has been discharged into the forms.

Random Sample Selection

Concrete samples other than initial load samples or samples for questioned acceptance will be taken from each subplot by a random selection. Sublots are determined by the designated sampling frequency in the *Standard Specifications*. Random selection will be accomplished by using WSDOT Test Method T 716, Method of Random Sampling for Locations of Testing and Sampling Sites

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 ft³ 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**

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**

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**

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?	<input type="checkbox"/>	<input type="checkbox"/>
2. Obtain a representative sample:		
a. Sample the concrete after ½ cy discharged?	<input type="checkbox"/>	<input type="checkbox"/>
b. Pass receptacle through entire discharge stream or completely divert discharge stream into sampling container?	<input type="checkbox"/>	<input type="checkbox"/>
c. Transport samples to place of testing?	<input type="checkbox"/>	<input type="checkbox"/>
d. Sample remixed?	<input type="checkbox"/>	<input type="checkbox"/>
e. Sample protected?	<input type="checkbox"/>	<input type="checkbox"/>
f. Correct sample size?	<input type="checkbox"/>	<input type="checkbox"/>
3. Start tests for slump and air within 5 minutes of sample being obtained?	<input type="checkbox"/>	<input type="checkbox"/>
4. Start molding cylinders within 15 minutes of sample being obtained?	<input type="checkbox"/>	<input type="checkbox"/>
5. Protect sample against rapid evaporation and contamination?	<input type="checkbox"/>	<input type="checkbox"/>

First attempt: Pass Fail

Second attempt: Pass Fail

Signature of Examiner _____

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Comments:

