

SAMPLING PROCEDURE

TESTING FOR CHLORIDES IN CONCRETE

1.0 PURPOSE

The purpose of this sampling procedure is to acquire samples of hardened concrete material for the laboratory determination of the presence of low levels of chloride ion in the hardened concrete, while maintaining sample integrity and preventing cross-contamination of the materials. This procedure is applicable to sampling for single depth determinations of chloride levels as well as sampling for gradients of chlorides with depth. This method does not apply to concretes with aggregate larger than 1-1/2 inches.

2.0 REFERENCE STANDARDS

- 2.1 AASHTO T 260, "Sampling and Testing for Total Chloride Ion in Concrete and Concrete Raw Materials"
- 2.2 State of Florida, FDOT, Method FM5-516, "Determining Low-Levels of Chloride in Concrete and Raw Materials"

3.0 MATERIALS AND EQUIPMENT REQUIRED

- 3.1 The following materials and equipment will be necessary to accomplish the sampling:
 - 3.1.1 1/2-inch Heavy Duty or hammer drill, battery powered or electric if power source available.
 - 3.1.2 Three carbide-tipped masonry drill bits, 3/8-inch or 1/2-inch diameter.
 - 3.1.3 Distilled water in spray or "squirt" bottle
 - 3.1.4 Containers for specimens. Containers must be clean, dry, have a tight fitting cover and be non- reactive to the specimens. Use cleaned, empty 35 mm film canisters or laboratory moisture tins with covers.
 - 3.1.5 Permanent black marker for labeling samples.
 - 3.1.6 Clean rags, cloths and small brushes
 - 3.1.7 Can of compressed air or "Dust-Off"
 - 3.1.8 Hole depth measuring device

4.0 PROCEDURE FOR SINGLE DEPTH SAMPLING

- 4.1 Spray each drill bit with distilled water and wipe dry with clean cloth. Blow surface of bit flutes with compressed air to assure that no water remains.
- 4.2 Wipe latent dust from surface of concrete to be sampled and blow off with compressed air.

- 4.3 Drill into concrete for a depth of at least one inch for small aggregate concrete and at least two inches for aggregate size of one-inch or larger .
- 4.4 Brush drill powder into container, cover and label.
- 4.5 Move four inches away and repeat procedure, putting sample in same container to make composite sample.
- 4.6 Clean bit with distilled water and set aside to dry. Use different bit for next sample location.

5.0 PROCEDURE FOR GRADIENT DEPTH SAMPLING

- 5.1 Spray each drill bit with distilled water and wipe dry with clean cloth. Blow surface of bit flutes with compressed air to assure that no water remains.
- 5.2 Wipe latent dust from surface of concrete to be sampled and blow off with compressed air.
- 5.3 Drill into concrete for a depth of one inch.
 - 5.3.1 Brush drill powder into container, cover and label.
 - 5.3.2 Move two inches away and repeat procedure, putting sample in same container to make composite sample.
 - 5.3.3 Move two inches away and repeat procedure, putting sample in same container to make composite sample.
- 5.4 Clean bit with distilled water and set aside to dry. Use different bit for next sample location and for each depth change.
- 5.5 Blowout each hole with compressed air so that no drill powder remains in the hole or around its surface.
- 5.6 Drill into same holes in concrete for an addition depth of one inch.
 - 5.6.1 Brush drill powder into container, cover and label.
 - 5.6.2 Move to next existing hole and repeat procedure, putting sample in same container to make composite sample.
 - 5.6.3 Move to next existing hole and repeat procedure, putting sample in same container to make composite sample.
- 5.7 Repeat procedure for as many depths and locations as desired, taking care to clean and dry the bits between each sample depth and location to prevent cross-contamination of specimens.