

# Quality Control Tests

## Sampling Fresh Concrete (ASTM C 172)

Concrete used for testing should be representative of the entire batch.

### TO GET A COMPOSITE SAMPLE:

- Take two or more portions from the middle-third of the truckload
- Take the sample after all the water has been added

- Obtain a minimum 1-cubic-foot sample size if cylinders are to be made
- Start slump or air content within 5 minutes; cylinders within 15 minutes after sampling
- Check tests made on the first portion of concrete cannot be used for acceptance or rejection



## Slump (ASTM C 143)

Slump measures the consistency of concrete and often reflects a change in the amount of mix water, temperature, setting, and hydration.

### TO PERFORM A SLUMP TEST:

- Dampen slump cone; place it on a level, moist, nonabsorbent, rigid surface that won't be jarred or vibrated during the test
- Fill the cone in three layers of equal volume
- Rod each layer 25 times
- Smooth the top surface, then slowly lift the cone
- Measure the distance, in inches, that the center of the top surface has settled

## Air Content (ASTM C 231)

Air content measures the amount of air bubbles in fresh concrete. Entrained air is purposely added to concrete for freeze-thaw resistance. Too much air results in low strength.

### TO PERFORM AN AIR CONTENT TEST:

- Fill the bowl of the meter in three equal layers
- Rod each layer 25 times followed by 10 to 15 taps with a rubber mallet
- Clamp the top assembly onto the bowl, filling the void space with water
- Pump air into the chamber to the specified mark
- Close the petcocks, then release the air into the bowl
- Tap the bowl sharply and read the percentage of air on the dial gauge



## Making and Protecting Cylinders (ASTM C 31)

Cylinders are made and tested to determine compliance with strength specifications.

### TO MAKE A CYLINDER:

- Place cylinder mold on a level, rigid, horizontal surface, free from vibration and other disturbances and as close as possible to the location where it will be stored for the first 24 hours
- Fill the mold in three equal layers
- Rod each layer 25 times, penetrating into the previous layer about 1 inch. If voids are left by rodding, tap the side of the mold lightly to close them
- Strike-off the surface and cover immediately to prevent evaporation
- Store cylinders made to check design strength on site for 16 to 24 hours at a temperature of 60° to 80° F, then ship to the testing lab
- Protect cylinders from damage during storage and shipping