



# BUREAU OF MATERIALS

# MATERIALS

# PROCEDURES

**MP NUMBER: 1-08**  
**EFFECTIVE DATE: 07/01/2008**

**APPROVAL:** *Eileen Sheehy*

## FIELD INSPECTION AND TESTING OF CONCRETE

### **PURPOSE:**

To establish a standard procedure for the field inspection of concrete.

### **SUPERSEDES:**

Materials Procedure Number 1 - Dated 10/01/2001

### **REFERENCES:**

Special Provisions, Supplemental Specifications  
N.J.D.O.T. Standard Specifications for Road and Bridge Construction, Addenda and Attachments  
AASHTO T-141-Sampling of Freshly Mixed Concrete  
ASTM C-1064-Temperature of Freshly Mixed Concrete  
AASHTO T-119-Slump Test  
AASHTO T-152-Air Content Type B (Forney)  
AASHTO T-196-Air Content Type B1 Volumetric Method, Rollometer  
AASHTO T-121-Weight Per Cubic Yards, Yield and Water Cement Ratio of Concrete  
AASHTO T-23-Molding Concrete Cylinders and Beams  
AASHTO T-22-Compressive Strength of Cylindrical Concrete Specimens  
ASSHTO T-97-Flexural Strength of Concrete Using Simple Beam with Third Point Loading

### **FORMS:**

LB-125 - Portland Cement Concrete Proportions  
LB-201 - Portland Cement Concrete-Inspection/Testing  
LB-296 - Notice of Non-Complying Material  
LB-326 - Cylinder Data Card  
Random Sampling Plan

## **I Assignment procedures:**

The Team Leader shall:

1. Receive the next day's orders from the RE or from the ME's Office.
2. Assign inspectors to scheduled pours. Inspectors must be certified as an ACI Concrete Field Technician, Grade 1 or NJDOT In-house Concrete Technician.
3. Assure that all equipment is properly maintained and operational.
4. Supervise and assist the inspector(s) with sampling and testing or perform tests when workload requires it.
5. Assure that all tests are performed in compliance with NJDOT Standard Specifications and established procedures.
6. Assure that all required forms are completed accurately in a timely manner.
7. Provide the inspector(s) with the following:
  - a. Time, location, approximate quantity, class and type of mix for each pour and each project.
  - b. The pertinent information on the form LB-125.
  - c. Telephone numbers of the ME, RE, and the concrete supplier.
  - d. A random sampling schedule for each pour if concrete cylinders are to be made.
  - e. The pertinent information including specifications for air entrainment, slump tests, type of mixing, time limitations and revolutions allowed.
  - f. The proper equipment and appropriate forms needed to accomplish their duties.

## **II Sampling Fresh Concrete:**

- A. Procedure: AASHTO T-141
- B. Apparatus  
Concrete Receptacle (Wheel Barrow)  
Square Tipped Shovel  
Scoop  
Slump Cone  
Tamping Rod  
Flat, moist non-absorbent rigid surface  
Ruler  
Air Content Meter  
Concrete Thermometer  
Brush or Sponge  
Seals, applicable molds and coverings when strength tests are required
- C. Documentation:

1. Assure that the concrete truck has been approved.
2. Check concrete ticket for information required by Section 903.03.03 of the Standard Specifications.

D. Random Sampling and Timeliness of Tests:

Use random sampling plan to determine necessary trucks to be tested for compressive strength.

1. The size of the sample shall be a minimum of one cubic foot. Smaller samples are permitted for routine air content and slump tests.
2. Sampling from stationary mixers, revolving drum truck mixers, or agitators. The sample shall be taken after at least one-quarter cubic yard of concrete has been discharged. Sample by repeatedly passing a receptacle through the entire discharge stream or by completely diverting the discharge into a sample container. Sample should not be obtained until all water has been added.
3. Tests are to be run within specified time limits.

*IMPORTANT: While slump and air entrainment tests are being performed, discharge from the truck being tested shall be halted!*

E. Re-mixing the Sample:

The sample shall be transported to the place where testing is to be performed and shall be re-mixed to form a composite sample. The sample specimen shall be protected from rapid evaporation and contamination during the period between sampling and testing.

**III** Slump Test:

- A. Procedure: AASHTO T-119
- B. Reporting Results

Notify construction personnel of the test results. If the slump does not comply with the specification, notify plant inspection. Complete Form LB-296 (if applicable) and Form LB-201.

**IV.** Air Content:

- A. Procedure: AASHTO T-15  
AASHTO T-196
- B. Checking Accuracy of Air Meter

Regularly check the accuracy of the air meter. Additional checks should be made when air results are questionable.

C. Reporting Results

Notify construction personnel of the test results. If the result of the air test does not comply with the specification, notify plant inspection. Complete Form LB-296 if applicable and complete Form LB-201.

D. Calibrate Apparatus As per Manufacturers Recommendations.

V. **Concrete Aggregate Verification Test:**

When the aggregate is in question, a sample of plastic concrete, weighing at least two pounds (2 lbs.) shall be taken from the air meter chamber. It shall be placed on a one-half inch (1/2") sieve and washed with water to clean the aggregate of mortar and fines. The clean aggregate shall then be evaluated to verify the coarse aggregate specified on delivery slip.

VI. **Weight Per Cubic Yards, Yield and Water Cement Ratio of Concrete:**

Procedure: AASHTO T-121

VII. **Molding Concrete Specimens:**

A. Procedure AASHTO T-23

Note: Care should be taken to ensure that the seal is not embedded to the point where it will be covered by flow of the mortar.

Note: During hot weather the 28-day cylinders shall be immediately immersed in saturated lime water.

B. Reporting Results

Complete Forms LB-201 and LB-326. Original report and cylinder data cards shall accompany specimens when they are delivered to the Laboratory. All original forms must have original signatures.

C. Marking Specimens

After removing specimens from molds, specimens shall be marked with waterproof ink for identification. The identification must include job title (Route and Section number), seal number and date made. Indicate lot number, class of concrete, and day of test, i.e., 3-day, 7-day, 28-day, etc.

D. Transporting Specimens

1. Procedure: AASHTO T23

NOTE: Extreme care should be taken when transporting specimens. Specimens shall be placed in the transporting vehicle in such a manner as to prevent damage by rolling or jarring. Under no circumstances should specimens be stacked.

**VII. Distribution of Forms**

<u>Form</u>	<u>Distribution</u>
LB-201	<ol style="list-style-type: none"><li>1. Original with LB-326 to Laboratory</li><li>2. Project Field Office File</li><li>3. RE</li></ol>
LB-296	<ol style="list-style-type: none"><li>1. Original - Bureau of Materials Materials Headquarters</li><li>2. RE</li><li>3. Regional Materials Office</li><li>4. Regional Construction Engineer</li><li>5. Project Field Office</li></ol>