



BUREAU OF MATERIALS MATERIALS PROCEDURES

MP NUMBER: 25-08

EFFECTIVE DATE: 07/01/2008

APPROVAL: Eileen Sheehy

REBOUND HAMMER TESTING OF HARDENED CONCRETE

PURPOSE:

To establish a standard procedure for the operation and calibration of a Rebound Hammer.

SUPERSEDES:

Materials Procedure Number 25 – Dated 10/01/2001

REFERENCES:

ASTM C805 Standard test method for rebound number of hardened concrete.
Manufacturer's Operating Instructions

FORMS:

TLB RH 1 Rebound Hammer Testing-Data Sheet
AD-40 Memorandum

I. Assignment Procedure:

The ME shall determine the need and coordinate the testing with the Team Supervisor and the RE. The Team Supervisor shall obtain from the RE all pertinent information to complete the testing with the Rebound Hammer.

II. Calibration:

The Regional Laboratory Staff shall calibrate the Rebound Hammer annually or as needed.

III. Apparatus:

Rebound Hammer
Abrasive Stone
Calibration Anvil

IV. Test Procedure:

A. Selection of Test Surface:

Concrete members to be tested shall be at least 4 inches thick and fixed within a structure. Areas exhibiting honeycombing, scaling, rough texture, or high porosity should be avoided. Concrete should be approximately the same age and moisture condition in order to be compared.

B. Preparation of Test Surface:

All surfaces may be wetted 24 hours prior to testing. A test area shall be at least 6 inches in diameter. Heavily textured, soft, or surfaces with loose mortar shall be ground smooth with abrasive stone. Concrete over six months old may require grinding to a depth of ¼ inch to obtain an acceptable surface. The contractor shall provide manpower and equipment to perform this operation. Ground and non-ground surfaces should not be compared.

C. Procedure:

Firmly hold the instrument in a position that allows the plunger to strike perpendicularly to the surface tested. Gradually increase the pressure on the plunger until the hammer impacts. After impact, record the rebound number to two significant figures. Take ten readings from each test area. No two impact tests shall be closer together than 1 inch. Examine the impression made on the surface after impact, and disregard the reading if the impact crushes or breaks through a near surface air void.

Note: When a retest is to be utilized, 6 locations in the lot shall be tested.

D. Calculation:

Disregard readings differing from the average of 10 readings by more than seven units and determine the average of the remaining readings. If more than 2 readings differ from the average by 7 units, discard the entire set of readings. Use Manufacturers conversion chart to obtain equivalent PSI.

E. Factors That May Affect the Results of the Testing:

Concrete at 32 F or less may exhibit very high rebound values. Concrete should be tested only after it has thawed. The temperatures of the rebound hammer may affect the rebound number. Different hammers of the same nominal design may give rebound numbers differing from 1 to 3 units and therefore tests should be made with the same hammer in order to compare results. If more than one hammer is to be used, a sufficient number of tests must be made on typical concrete surfaces so as determine the magnitude of the differences to be expected.

F. Reporting Results:

The testing supervisor shall prepare a memorandum to the RE summarizing the test results and distributing it with the form TLB-RH-1. A copy of the original LB-201 shall be attached when applicable.

G. Distribution of Forms:

TLB-RH-1

1. Regional Materials Office
2. Team Supervisor

AD 40 (Memorandum)

1. Original RE
2. Bureau of Materials
3. Regional Materials Office
4. Regional Construction Office
5. Team Supervisor