

## DESCRIPTION OF INSPECTION

The inspection was designed to include a review of the laboratory's quality assurance system, an examination of the apparatus and an observation of the test procedures used in determining the physical properties of concrete masonry units as set forth in ASTM Specification C140.

The ASTM Standards on which the work was based are as follows: C140, C1093, C1552 and E4.

### Documentation

The inspection of the laboratory's documentation was designed to include a review of the laboratory's quality system and quality system manual as described in ASTM Standard Practice C1093. The quality system is defined in C1093 as the organizational structure, responsibilities, procedures, processes, capabilities, and resources for implementing quality management. The quality system, as listed in Section 8 of C1093, includes the requirements for equipment calibration and verification and records of calibration and verification, inspection of facilities, agency accreditation, proficiency sample testing and records, test records, traceability of calibration, external audit records, and test methods. The quality system manual, as listed in Section 9 of C1093, includes the requirements for organization and organizational policies, staff, facilities and equipment, equipment calibration and verification, test records and reports, sample management, diagnostic and corrective actions, internal quality system reviews, and subcontracting.

### Apparatus

#### Measurement of Dimensions of CMU(s) (C140)

Apparatus used in making measurements of concrete masonry units was checked for conformance to the size and readability requirements of C140.

#### Compression Test Apparatus (C140, C1552, and E4)

Apparatus used in making compressive strength tests include the compression machine in which specimens are tested; the bearing blocks, the bearing plates (if applicable) used in testing the specimens when the bearing blocks are not of a suitable size; and the capping equipment and materials used to obtain smooth load bearing surfaces on specimens.

Compression Machine - Unless otherwise noted, only one testing machine was inspected. During this inspection, several of the more important mechanical and design features were noted; the design, dimensions, and surface planeness of bearing blocks were checked for conformance to the requirements of C140; and the accuracy of load indication was verified.

The verification tests were made using force measuring instruments (load cells) calibrated at the National Institute of Standards and Technology. In these tests, each load indicator was set at the zero position customarily employed by the laboratory. The selection of test points was made based on loads consistent with the range of use of the material being inspected. Test loads were approached by increasing the load to the test point as specified in Method E4.

Bearing Plates - The bearing plates were checked for proper thickness, planeness, and dimensions required for the test specimens presented in the inspection.

Capping Equipment and Materials - The apparatus was checked for conformance to the requirements of C1552, with particular attention being given to the dimensions, planeness, surface condition, and thickness of both capping and casting plates. The use of the capping material was observed including an examination of a capped specimen.

Absorption and Moisture Content (C140)

The balances and ovens used in determining the absorption and the moisture content were checked for conformance to C140, with particular attention being given to the sensitivity of the balance and proper temperature of the oven.

**Procedures**

The concrete masonry unit testing procedures which were observed and discussed during the inspection are as follows: sampling and identifying, measurement of dimensions, capping, absorption and moisture content, compression test, and specimen preparation. The laboratory's conformance to specified procedures was as indicated in the Summary of Findings.

All departures noted were reviewed in detail with laboratory personnel with particular attention being given to those matters described in the Footnote Section.