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DEPARTMENT OF COMMERCE
BUREAU OF STANDARDS
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SPECIFICATIONS FOR PORTABLE TESTING MACHINE FOR MAKING TRANSVERSE TESTS OF BUILDING BRICKS

I. WORKMANSHIP.

1. The parts of the portable testing machine shall fit accurately, shall be smooth, and shall have a workmanlike finish.

II. DESIGN.

1. When placed in the portable testing machine ready for test, the bricks shall be supported on a span of 7 inches and the load shall be applied at mid-span.

2. The portable testing machine shall be suitable for testing a brick having a thickness between 1-3/4 and 2-1/2 inches and a width between 3-1/2 and 4-1/4 inches.

3. The load (at mid-span) shall be applied to the brick through a knife-edge (or its equivalent) bearing on a steel plate having approximately the following dimensions:

1/4 inch thick by 1-1/2 inches wide.

4. The knife-edges (or their equivalent) by means of which forces are applied to the brick shall be so shaped and mounted that the edges are in contact with the faces of the brick, provided the difference between the greatest and the least thickness of the brick does not exceed 3/8 inch. One or both of the lower bearings shall be free to follow any movement of the brick during the test.

5. The portable testing machine shall be so made that it may be taken apart and reassembled using the tools usually available in a shop.

6. A carrying case or other means for preventing damage from handling shall be provided. A handle shall be provided for use when carrying the machine.

III. WEIGHT.

1. The weight of the portable testing machine and case shall not exceed 60 pounds.

IV. LOADS.

1. The average transverse breaking load for brick, as given in Table 1, is taken from the United States Government Master Specification for Brick, Clay, Common, Federal Specifications Board Specification No. 504, paragraph 5, Physical Requirements.

TABLE 1.--Transverse Strength of Brick

Class	Average Transverse Breaking Load, pounds
Vitrified	2170 or more
Hard	1080 or more
Medium	810 or more
Soft	540 or more

2. Portable testing machines should have a capacity about 100 per cent greater than the specified average transverse breaking load of the brick to be tested.

It is recommended that a portable testing machine have a capacity equal to one of the values given in Table 2.

TABLE 2

Class of Brick to be Tested	Capacity of Machine, pounds
Vitrified	4,000
Hard	2,000

3. Each portable testing machine shall be plainly marked with the capacity, that is, the maximum load for which it shall be used.

4. Repeated use of the portable testing machine to apply the capacity load to a specimen shall cause neither failure nor permanent deformation of any part of the machine.

5. The load shall be applied manually and it shall not require the application of a force exceeding 50 pounds to reach the capacity load.

6. The load shall be clearly and distinctly indicated by a device which is a part of the machine. The load indicating scale shall be graduated in pounds. The increase in load from any graduation to the next higher graduation shall be the same throughout the scale and shall be either 10 lbs., 20 lbs., 50 lbs., or 100 lbs. but shall not exceed 5 per cent of the capacity of the machine.

V. ACCURACY AND CALIBRATION.

1. The portable testing machine shall be so constructed that it may be calibrated in a universal or in a compressive testing machine without removing any of the parts of the portable machine.

2. Under increasing loads the load indicated shall not differ from the actual load by more than 30 lbs. plus or minus for loads between one-tenth (1/10) capacity and a load up to 600 lbs. nor by more than 5 per cent plus or minus for loads above 600 lbs.

VI. NOTES.

1. Use: United States Government Master Specifications for Brick, Clay, Common, Federal Specifications Board Specification No. 504 and for Brick, Sand-lime, Common, Federal Specifications Board Specification No. 505, specify average transverse breaking load for each class of brick.

2. The transverse test of brick can be made in a testing machine having a capacity of 4,000 pounds or less depending upon the class of brick. To avoid delays in testing brick purchased under specifications which require a transverse test there are many advantages in making the tests in the vicinity of the shipment. This often avoids the expense and delay of sending specimens to a laboratory and awaiting the test report before accepting the shipment.

3. Tests can be easily and quickly made anywhere if a portable testing machine is used.

4. Portable machines for transverse tests of brick have been made and experience with them shows that machines of this kind are practicable and that the cost of the machines is reasonable.

5. Weight: As it is very desirable that a portable machine be carried by one man, the weight has been limited to 60 lbs. It is very desirable, however, that, if practicable, the weight be less.

6. Accuracy: As the strength of bricks of the same grade varies considerably, it is believed that errors of 5 per cent in the load indicated by a portable testing machine do not detract greatly from its usefulness.

7. Disputes: The results obtained in a well-equipped materials testing laboratory are always to be preferred to those obtained on a portable testing machine. In case of dispute as to whether or not a shipment of brick complies with the specification, specimens should be submitted to a testing laboratory to settle the dispute.