AASHTO Accreditation Policy and Guidance on Masonry Unit and Prism Testing

This policy is based on the content of ASTM C1716/C1716M-24, ASTM C140/C140M-24, and ASTM C1314-23b.

1. Objective

1.1. The objective of this document is to describe how testing agencies can resolve nonconformities related to compressive strength testing of masonry units and prisms and how the AASHTO Accreditation Program identifies testing agencies on the AASHTO Accreditation Program Directory accordingly.

2. Policy

2.1. The AASHTO Accreditation Program (AAP) accredits testing agencies for ASTM C140/C140M and ASTM C1314, which require compressive strength testing machines to conform to ASTM C1716/C1716M, the Standard Specification for Compression Testing Machine Requirements for Concrete Masonry Units, Related Units, and Prisms.

2.2. During an assessment, the compression machine is evaluated for conformance to ASTM C1716/C1716M requirements when a testing agency requests an assessment for ASTM C140/C140M and ASTM C1314. This evaluation involves checking the dimensions of the machine relative to the specimens the testing agency tests.

2.2.1. The testing agency is required to present evidence of typical strength and dimensions of specimens being tested using ASTM C140/C140M and ASTM C1314. During an assessment, the mathematical and graphical solutions of the Annex of ASTM C1716/C1716M are used to determine the maximum bearing width of the upper platen for specimens with strengths less than or equal to 5000 psi or the maximum support width for specimens with strengths greater than 5000 psi.

2.2.2. The final report for the CCRL assessment will indicate whether the laboratory is capable of testing full-size concrete masonry units for ASTM C140/C140M and prisms constructed of full-size concrete masonry units for ASTM C1314, or only capable of testing specimens that have been reduced in size. If an applicable nonconformity is not written, the laboratory's accreditation listing will be updated in the AASHTO Accreditation Program Directory to reflect the sizes indicated in the CCRL report.

2.2.3. However, if the testing agency tests specimens that have a maximum diagonal dimension of the bearing surface that is larger than what's calculated as the maximum bearing width or maximum support width, whichever applies, a nonconformity will be noted in the report that is similar to this example:

2.2.3.1. It was understood that the laboratory tested 15.6 inch by 7.5 inch specimens with a strength less than 5,000 psi, and the maximum bearing width of the platen and blocks used above the specimens was not sufficient to meet the requirements when testing specimens with these dimensions and strengths [Reference: Section 7.1 of C140 and C1716].

2.3. If the testing agency chooses to resolve the nonconformity by purchasing new equipment, the following must be submitted:

2.3.1. Evidence of purchase including a packing slip and a description of product specifications.

2.3.2. Pictures of the new setup, including pictures of the dimensions of the platen and, if applicable, bearing block;

2.3.3. the length of the gap from the socket to the top surface of the platen; and

2.3.4. the length of the internal diameter of the hemispherical head socket.

Note: These measurements are used in conjunction with the specimen size noted during the assessment to determine conformance with the mathematical solution in Annex A1.2.2 of C1716 and the requirements of Section 4.9 and Annex A1.2.1.2 of C1716.

2.3.5. Records of any standardizations or checks required for conformance with AASHTO R 18 (for example, a record for the check of the planeness of a newly purchased bearing block).

2.4. If the testing agency chooses to resolve the nonconformity by reducing the size of the concrete masonry units, the resulting units shall have no face shell projections or irregular webs and shall have at least one fully enclosed four-sided cell. For ASTM C140/C140M, the specimens shall be reduced by saw cutting at the laboratory, but for ASTM C1314, saw cutting shall be performed in the field before construction of the prism.

2.4.1. If the nonconformity is noted for ASTM C140/C140M and the testing agency chooses to reduce their test specimens, the following must be submitted:

2.4.1.1. A photo of the saw that will be used to cut the specimens and evidence that it is equipped with a diamond saw blade per Section 7.2.4 of ASTM C140/C140M.

2.4.1.2. Photos of the specimens including measurements of the dimensions. The pictures shall include the display of the reading of the measuring device while the length, width, and diagonal of the bearing surface of the specimen are being measured.

2.4.2. If the nonconformity is noted for ASTM C1314 and the testing agency chooses to reduce their test specimens, the following must be submitted:

2.4.2.1. An explanation describing how the testing agency will ensure that the concrete masonry units used to construct prisms will be reduced in the field prior to constructing the prisms in the field.

2.4.2.2. Photos of the specimens including measurements of the dimensions. The pictures shall include the display of the reading of the measuring device while the length, width, and diagonal of the bearing surface of the specimen are being measured.

2.5. Following the resolution of the nonconformity, the laboratory's accreditation listing will be updated in the AASHTO Accreditation Program Directory to indicate whether the testing agency is able to test full-size specimens or only reduced-size specimens for ASTM C140/C140M and ASTM C1314.

C140 (Full-Size Concrete Masonry Units)
C140 (Reduced-Size Concrete Masonry Units)

C1314 (Prisms Constructed of Full-Size Concrete Masonry Units)
C1314 (Prisms Constructed of Reduced-Size Concrete Masonry Units)

2.6. The testing agency cannot be accredited for testing full-size specimens based on the testing performed by subcontractors using compression machines that conform to C1716/C1716M for testing full-size specimens.

2.7. The AASHTO Accreditation Program does not accredit laboratories for only testing coupons.