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Standard Specification for Prefabricated Masonry Panels[1]

This standard is issued under the fixed designation C 901; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope*

1.1 This specification covers the structural design and quality control of fabrication for load-bearing and non-load-bearing prefabricated masonry panels. Methods of prefabrication, field erection, and jointing are not covered in this specification.

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

2. Referenced Documents

2.1 *ASTM Standards:*~~*A82 Specification for Steel Wire, Plain, for Concrete Reinforcement*~~
~~A116 Specification for Metallic-Coated Steel Woven Wire Fence Fabric~~
~~A153 Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware[3]~~
~~A167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip~~
~~A185 Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement[2]~~
~~A615/A615M Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement[2]~~
~~A616/A616M Specification for Rail-Steel Deformed and Plain Bars for Concrete Reinforcement~~
~~A617/A617M Specification for Axle-Steel Deformed and Plain Bars for Concrete Reinforcement[5]~~
~~B227 Specification for Hard-Drawn Copper-Clad Steel Wire~~
~~C34 Specification for Structural Clay Load-Bearing Wall Tile~~
~~C55 Specification for Concrete Brick[7]~~
~~C62 Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)[7] [2]~~
C 67 ~~Test Methods for Sampling and Testing Brick and Structural Clay Tile[7]~~
~~C73 Specification for Calcium Silicate Brick (Sand-Lime Brick)[7]~~
~~C90 Specification for Loadbearing Concrete Masonry Units[7]~~ Test Methods for Sampling and Testing Brick and Structural Clay Tile
C 109/C 109M ~~Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)~~
~~C126 Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick, and Solid Masonry Units[7]~~ Test Method for Compressive Strength of Hydraulic Cement Mortars (Using 2-in. or [50-mm] Cube Specimens)
C 140 ~~Test Methods of Sampling and Testing Concrete Masonry Units and Related Units[7]~~
~~C212 Specification for Structural Clay Facing Tile[7]~~
~~C216 Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)[7]~~ Test Methods for Sampling and Testing Concrete Masonry Units and Related Units
C 270 Specification for Mortar for Unit Masonry
C 476 ~~Specification for Grout for Masonry[7]~~
~~C652 Specification for Hollow Brick (Hollow Masonry Units Made from Clay or Shale)[7]~~
~~C744 Specification for Prefaced Concrete and Calcium Silicate Masonry Units[7]~~ Specification for Grout for Masonry
C 780 Test Method for Preconstruction and Construction Evaluation of Mortars for Plain and Reinforced Unit Masonry
C 1019 ~~Test Method of Sampling and Testing Grout[7]~~ Test Method for Sampling and Testing Grout
C 1180 Terminology of Mortar and Grout for Unit Masonry

[1] This specification is under the jurisdiction of ASTM Committee C15 on Manufactured Masonry Units and is the direct responsibility of Subcommittee C15.05 on Masonry Assemblies.

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~~[2] Annual Book of ASTM Standards, Vol 01.04.~~

[2] For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

***A Summary of Changes section appears at the end of this standard.**

C 1232 Terminology of Masonry
C 1314 Test Method ~~of~~for Compressive Strength of Masonry Prisms
C 1357 Test Methods for Evaluating Masonry Bond Strength
E 72 ~~Methods of Conducting Strength Tests of Panels for Building Construction[8]~~
~~E447Test Methods for Compressive Strength of Laboratory Constructed Masonry Prisms~~ Test Methods of Conducting Strength Tests of Panels for Building Construction
E 518 ~~Test Methods for Flexural Bond Strength of Masonry[7]~~ Test Methods for Flexural Bond Strength of Masonry
2.2 *Other Standards:*
TMS 402/ACI 530/ASCE 5 Building Code Requirements for Masonry Structures[3]
TMS 602/ACI 530.1/ASCE 6 Specification for Masonry Structures[3]

3. ~~Materials and Manufacture~~

~~3.1*Masonry Units*— Masonry units shall conform to the following applicable specifications:~~
~~3.1.1*Brick*—Specification C62 for building brick, Specification C216 for facing brick, Specification C126 for ceramic glazed structural clay tile, facing brick, and solid masonry units, and Specification C652 for hollow brick.~~
~~3.1.2*Concrete Masonry Units*—Specification C55 for concrete building brick, Specification C90 for hollow load-bearing concrete masonry units, and Specification C744 for prefaced concrete masonry units.~~
~~3.1.3*Calcium Silicate Face Brick* —Specification C73 for calcium silicate face brick.~~
~~3.1.4*Structural Clay Tile*—Specification C212 for structural clay facing tile, Specification C34 for structural clay load-bearing wall tile, and Specification C126 for ceramic glazed structural clay tile, facing brick, and solid masonry units.~~
~~3.2*Mortar and Grout*— Mortar and grout shall conform to the following applicable specifications:~~
~~3.2.1*Mortar*—Specification C270 for mortar for unit masonry.~~
~~3.2.2*Reinforced Masonry*—Specification C476 for grout for masonry.~~
~~3.2.3Other mortars may be used, provided properties for such construction are established by tests made in accordance with Test Methods E72~~Terminology
3.1 The terms used in this specification are identified in Terminologies C 1180 and C 1232.
~~3.3*Metal Ties, Fittings, Anchors, Lifting Inserts, and Other Embedded Metal*—All metal embedded in masonry walls shall comply with the applicable specifications in accordance with 3.4 and, except for structural reinforcement, shall be coated with a corrosion-resistant material, such as copper, zinc, or other material having equivalent or better corrosion-resistant qualities, or shall be made of stainless steel type 304 or 316 (see Specification A167). Upon request by the purchaser, evidence satisfactory to the purchaser shall be provided that all corrosion-resistant metal is adequate in the atmospheric and material environment in which it is to be used.~~
~~3.3.1Zinc coatings on iron or steel shall conform to Class B-1, B-2, or B-3 of Specification A153.~~
~~3.3.2Zinc coating on wire shall conform to Class 3 of Specification A116.~~
~~3.3.3Copper-coated wire shall conform to Grade 30HS of Specification B227.~~
~~3.3.4Stainless steel shall conform to type 304 or type 316 in Specification A167.~~
~~3.4*Reinforcement*— Reinforcement shall conform to the following applicable specifications:~~
~~3.4.1Specification A82 for cold-drawn steel wire for concrete reinforcement.~~
~~3.4.2Specification A185 for welded steel wire fabric for concrete reinforcement.~~
~~3.4.3Specification A615 or A615M for deformed and plain billet-steel bars for concrete reinforcement.~~
~~3.4.4Specification A616 for rail-steel deformed and plain bars for concrete reinforcement.~~
~~3.4.5Specification A617/A617M for axle-steel deformed and plain bars for concrete reinforcement.~~

4. ~~Structural Design~~ Materials and Manufacture

4.1 *Masonry*—Masonry units, mortar, grout, reinforcement, anchors, ties, and accessories shall conform to TMS 602/ACI 530.1/ASCE 6.

5. Structural Design

5.1 *General*—Structural design of panels shall be performed in accordance with the provisions of the applicable local building code and the requirements of ~~this specification. In the absence of a local building code, the requirements of a national model building code shall govern. The applicable code shall be identified on the plans.~~ TMS 402/ACI 530/ASCE 5. Structural design of panels shall consider all loading and restraint conditions from initial fabrication to in-service conditions in the completed structure, including storage, transportation, and erection. The design loads shall be of the type and magnitude required by the applicable building code. Panels and connections required to resist wind, seismic, or other dynamic loads shall be designed to resist the required positive and negative forces in all directions. The joints between dissimilar materials within each panel, between panels,

~~[8] Annual Book of ASTM Standards, Vol 01.06.~~
[3] Available from The Masonry Society, 3970 Broadway, Suite 201-D, Boulder, CO 80304–1135, http://www.masonrysociety.org.