PCI™ Precast/Prestressed Concrete Institute

PCI Specification for Embedded Clay Thin Brick
Effective May 4, 2016

A. Thin Brick
1. Thickness not less than ½ in. (13mm) nor more than 1 in. (25mm)
2. Face size: Modular: 2-1/4 in. (57mm) high by 7-5/8 in. (190mm) long
Norman: 2-1/4 in. (57mm) high by 11-5/8 in. (290mm) long
Closure modular: 3-5/8 in. (90mm) high by 7-5/8 in. (190mm) long
Utility: 3-5/8 in. (90mm) high by 11-5/8 in. (290mm) long
3. Size, color, texture: **[Match Architect's approved samples] [Match existing adjacent brickwork]**
4. **[Insert information on existing brick if known]**
5. Special shapes: Include corners, edge corners, and end edge corners
6. Back surface texture: **[Scored] [Combed] [Wire roughened] [Ribbed] [Keybacked] [Dovetailed]**

B. Dimensional Tolerances – measure in accordance with ASTM C67
1. Thickness: Plus 0 in., minus 1/16 in. (+0, -1.6mm)
2. Face size: Plus 0 in., minus 1/16 in. for dimensions 8 in. (200mm) or less
Plus 0 in., minus 3/32 in. (+0, -2.4mm) for dimensions greater than 8 in. (200mm)
3. Warpage: not more than 1/16 in. (1.6mm) either concave or convex from a consistent plane
4. Out of square: Plus or minus 1/16 in. (±1.6mm)
5. Shape angle: Plus or minus 1 degree from specified angle

C. Properties
1. Breaking strength: Not less than 250 psi (1.7 MPa) tested in accordance with ASTM C67
2. Cold water absorption: Maximum 6% at 24 hours tested in accordance with ASTM C67
3. Efflorescence: Rated "not effloresced" when tested in accordance with ASTM C67
4. Freeze thaw resistance:
a. Uncoated brick: No detectable deterioration (spalling, cracking, or breaking) after 300 cycles tested in accordance with ASTM C666, Method A or B on assembled specimens
b. Surface coloring: No observable difference in the applied finish when viewed at a distance of 20 ft (6m) after 50 cycles tested in accordance with ASTM C67. In addition, the brick shall undergo ASTM C666 test described above
5. Pull-out strength: Not less than 150 psi (1.0 MPa) from base concrete before and after freeze thaw testing tested in accordance with specified modification to ASTM E488.

6. Chemical resistance: Rated "not affected" when tested with a 10% hydrochloric acid solution in accordance with ASTM C650.

D. Testing requirements:

1. Minimum number of test specimens: In accordance with appropriate ASTM specifications except as specified in D.1.a.
    a. Exception for freeze thaw and pull-out strength tests: Ten (10) assembled specimens measuring 8 in. by 16 in. (200mm by 405mm) long with the brick embedded into the concrete substrate (assembled specimens). The ten (10) assembled specimens are divided into five (5) Sample A assemblies and five (5) Sample B assemblies. The precast concrete substrate shall have a minimum thickness of 2-1/2 in. (63mm) plus the embedded brick thickness. The precast concrete shall have a minimum compressive strength of at least 5000 psi (34.5 MPa) and 4 to 6% entrained air. The embedded brick coursing pattern for testing purposes shall be modular size brick on a half running bond pattern with a formed raked joint geometry of no less than 3/8 in. (9mm) wide and a depth no greater than 1/4 in. (6mm) from the exterior face of the brick.

    One brick from the center of each sample assembly shall be tested for pull-out strength. Each Sample B assembly shall first be tested for freeze thaw resistance. In place of anchor specified in ASTM E488, use 3/8 in. (9mm) minimum thickness steel plate of same size as single brick face bonded with epoxy to a single brick face for each pull-out strength test. The steel plate shall have a centrally located pull-rod welded to the plate.

2. Back surface texture of samples for pull-out strength and freeze thaw resistance testing shall be the same.
3. Frequency of testing:
    a. Dimensional tolerances shall be checked prior to shipping on each run of brick supplied to the project.
    b. Cold water 24 hour absorption testing shall be conducted on every clay body/color of project specific brick prior to each shipment. Submit written documentation. The buyer reserves the right to conduct the same test prior to first shipment.
    c. All other tests specified shall be conducted for each clay body at an accredited laboratory at least every six years.

Conformance to PCI Specification for Embedded Clay Thin Brick

In an ongoing effort to provide the highest quality brick faced precast concrete architectural panels, the Precast/Prestressed Concrete Institute (PCI) has defined a process through which suppliers of thin brick will certify conformance to the "PCI Specification for Embedded Clay Thin Brick" (attached). A precaster or design professional may request that the brick manufacturer submit a letter certifying that the brick to be supplied to a project meets or exceeds the specification as is donefor other materials used in precast concrete.
PCI will no longer accept submittals of test data as such submittals served no real purpose. Previous acknowledgements of such submittals did not represent an endorsement of the products nor assurance that conformance to the PCI specification could be achieved for projects. A project specific letter of certification similar to the sample letter below and test results shall be submitted to the purchaser.

Sample letter of certification

Project: Project Name and Location

The Thin Brick supplied is [clay body/color(s) and size(s)] manufactured by [Thin Brick Manufacturer including Plant Location]. The Thin Brick was manufactured to meet the requirements of PCI Specification for Embedded Clay Thin Brick in all categories included under dimensional tolerances and properties.

Thin Brick Manufacturer Employee Signature
Employee's Title
Thin Brick Manufacturer Name