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The Perfect Block™ OEM ICC Equivalent Product Compliance Report

Manufacturer:

Eco Building Systems Corp.
8960 W. Larkspur Drive, Ste. 105a
Peoria, AZ 85381

DIVISION: 03 - CONCRETE

Section: 03130 - Permanent Forms

The Perfect Block™ Insulated Composite Concrete Form (ICCF) Wall System manufactured by Eco Building Systems Corp.

Compliance scope with the following codes, third party accredited testing facilities, tests results and reports:

2012 and 2015 International Building Code (IBC) 2012 and 2015 International Residential Code (IRC)

2017 California LARC / LARR Report Number 261155 Engineer Assessment of The Perfect Block

Prescriptive Method for Insulating Concrete Forms in Residential Construction, Second Edition
Prepared for U.S. Department of Housing and Urban Development Office of Policy Development and Research
Washington, DC and Portland Cement Association Skokie, IL and National Association of Home Builders
Washington, DC by NAHB Research Center, Inc. Upper Marlboro, MD January 2002
Can be Download at this link; [PRESCRIPTIVE METHOD US DEPT. OF HOUSING](#)

4 Hour Fire and Flammability Testing: Report ASTM E119 # 1032554480SAT-001
Successful 4 Hour Fire Rating: ASTM E119 / UL263, ASTM E119-16a, ASTM E226-5b
Testing completed by INTERTEK, Recognized and accredited worldwide with the ability to conduct tests
to ANSI/UL, ASTM, CAN/ULC, and NFPA standards
Can be downloaded at this link; [4 HOUR FIRE ASTM E119](#)

Structural Wind Load, Impact and Cycling Hurricane and Tornado Impact Testing: Reports # H6867.01-801-44 &
Report # H6867.02-801-44-R0
Successful: ASTM E330, ASTM E1886, E1196, ICC-500 / E1996
Testing completed by INTERTEK, Recognized and accredited worldwide with the ability to conduct tests
to ANSI, ASTM, AAMA, BHMA, TAS, and FEMA standards exceeding category 5 greater than 155 mph,
Miami-Dade County, Broward County, and Monroe County. ASCE 7-05, 7-10

Can be downloaded at the following links;
[HURRICANE ASTM E330, ASTM E1886, E1196, ICC-500 / E1996](#)
[TORNADO CAT 5 TYPHOON WIND 250 mph ASTM E330, ASTM E1886, E1196, ICC-500 / E1996](#)

Structures outside the limits of prescriptive design: Complete design and calculations by a registered engineer
licensed in the jurisdiction and approved by the jurisdiction's approving authority.
Buildings not within the scope of IRC or IBC can also be designed in accordance with PCA 100 or ACI 318.
Test Front Page Results are attached.

Full test reports are downloadable at; <http://theperfectblock.com/technical-downloads/>



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USES

General: The Perfect Block™ Insulated Composite Concrete Form (ICCF) Wall System are hollow core forms of a lightweight mixture of 100% recycled expanded polystyrene (EPS) ground into an aggregate, Portland cement, proprietary admixtures and water. 85% - 87% of the volume of each block is EPS and has a density between 20 and 24 pcf (320 and 380 kg/m³). The forms may be stacked horizontally or vertically. The forms are available in standard thicknesses of 6, 8, 10, and 12 inches (152, 203, 254, and 305 mm) and standard height 12 inches (305 mm). Standard length is 48” (1219 mm). The horizontal and vertical cores of the forms are filled with concrete and reinforcing steel to construct a concrete wall with vertical and horizontal “post-and-beam”¹ members. The concrete wall consists of steel reinforced vertical and horizontal members spaced 12 inches on center (305 mm). The forms remain in place after setting of concrete and are covered with an approved exterior and interior finish material.

The Perfect Block™ Insulated Composite Concrete Form (ICCF) Wall System consists of individual blocks that form a permanent formwork system for reinforced concrete beams, lintels, walls, foundation walls and retaining walls. Walls constructed as described in this report are permitted to be used as load-bearing and non-load bearing walls resisting axial, racking and transverse loads in Type II, III and Type V construction in accordance with 2012 and 2015 IBC and IRC. The Perfect Block™ ICCF Wall System is also classified as a 4-hour fire-resistance rated, load-bearing wall when constructed in accordance with this report. See Figures 1,2, and 3 for The Perfect Block™ ICCF Wall System construction details.

Design: The Perfect Block™ ICCF Wall Systems forms are described as screen-grid ICF wall systems in Chapter 6, Section 611, Exterior Concrete Wall Construction of the 2012 *International Residential Code*© and Chapter 6, Section 608, Exterior Concrete Wall Construction of the 2015 *International Residential Code*©. The Perfect Block™ screen-grid ICF forms’ core spacings are 12 inches (305 mm) on center. The Perfect Block™ forms are to be designed in accordance with Eco Building Systems Corp. Technical Building Manual ©, October 2017, Edition.

Alternate design: is allowed as slender wall with provided calculations by a licensed structural engineer and approval of plan check.

Materials: The Perfect Block® Insulated Composite Concrete Form (ICCF) Wall System consists of The Perfect Block™ ICCF blocks, concrete and reinforcing steel bars (rebar).

The Perfect Block™ ICCF Blocks are manufactured from a mixture of recycled expanded polystyrene (EPS) aggregate, Type I / II or V Portland cement, proprietary admixtures and water. Each block is molded with vertical and horizontal cores. When stacked, the blocks form vertical and horizontal cavities where concrete and rebar reinforcement are placed.

Concrete: Normal weight concrete with 3/8-inch (10 mm) maximum aggregate size and a minimum compressive strength of 2,500 psi (17.2 Mpa) at 28 days minimum.

Reinforcement: #4 deformed steel reinforcement bars with a minimum yield strength of 40 ksi (275 Mpa) and #5 deformed steel reinforcement bars with a minimum yield strength of 60 ksi (414 Mpa) complying with ASTM A 615. Horizontal reinforcement is permitted to rest directly on the bottom of horizontal cores of the blocks.

¹ Post-and-beam construction as it relates to ICCF is further described in the International Code Council (ICC) Evaluation Service (ES) AC345, Acceptance Criteria for Stay-In-Place Forms for Post and Beam Concrete Walls with Jobsite-Applied Exterior Finish Systems.



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Fire-resistive 4-hour Load Bearing or Non-Load Bearing Wall Construction: Wall assemblies constructed with The Perfect Block™ have a four-hour fire rating loaded with 4,500 lbs. per linear feet by third party approved testing laboratory Intertek document # 103254480SAT-001.

Structural Wind Load and Impact and Cycling Testing [for Hurricane and Tornado Conditions]: Wall assemblies constructed with The Perfect Block™ have passed all of the testing outlined below per the requirements of the current versions of ASTM E1886 / E1996, ASTM E330, ICC-500 sections 304.2(1), 806.2, 305.1.1, *design wind speed of 250 mph*, and FEMA by third party approved testing laboratory Intertek document # H6867.01-801-44 and H6867.02-801-44-R0

Structural Wind Load Testing (ASTM E330)

Impact and Cycling Testing (ASTM E1886 / E1996) – Large Missile

Impact and Cycling Testing (ASTM E1886 / E1996) – Cyclic Wind Loading

Tornado Impact Testing (ICC 500 / ASTM E1996) – Large Missile

Standard for the Design and Construction of Storm Shelters (ICC 500) Category 5 wind higher than 155 mph

Installation: Installation must be in accordance with the manufacturer's published Technical Building Manual. Footings, block placement, reinforcement, concrete, wood ledgers, Wood Plates, Retaining Walls, Crawl Spaces, must comply with authorities having jurisdiction or the registered structural engineer of record on the plan licensed in the associated jurisdiction of construction.

Interior Finishes: An approved thermal barrier is required to separate the ICCF wall from the interior of the building. Gypsum wallboard of not less than ½-inch (12.7 mm) is an approved thermal barrier. Other coverings that can be used are Portland cement plaster or other various proprietary materials that are tested in accordance with and meets the acceptance criteria of both the Temperature Transmission Fire Test and the Integrity Fire Test of NFPA 275.

Exterior Finish:

Above Grade: Exterior walls must be finished with a weather-resistant exterior wall envelope that complies with Section 1403 of the IBC. Wall coverings must be attached to the concrete core within the form using fasteners designed to support the weight of the wall covering and to resist applicable wind loads, to the satisfaction of the code official. Negative wind pressure capacity of the exterior finish material must be the same as that recognized in the code for generic materials or that recognized in a current report for proprietary materials.

Below Grade: Wall surfaces must be dampproofed and when required by the local building department, waterproofed in accordance to the jurisdiction and applicable codes. Waterproofing materials must be approved by Eco Building Systems Corp. and the code official.

Limitations: When plans do not conform to the applicable codes for certain jurisdictions, engineering calculations for the structural concrete in accordance with the manufacturer's recommended design procedure, PCA 100, ACI 318, and the applicable codes shall be submitted to the building official when applying for a permit. The engineering calculations shall be signed and sealed by a registered professional engineer when required.

Special Inspection: Special inspection is not required when regulation is by the IRC unless required by local codes or the building official. Special inspection may be required by the engineer of record.

Identification: Each strapped pallet of The Perfect Block™ ICCF forms bears a label carrying The Perfect Block™ name and address and date of manufacture.

Special Jurisdiction Compliance: The Perfect Block™ products conform to those special jurisdictions with their own applicable codes and acceptance criterion. Also design and calculations can be used by a registered engineer licensed in the state of those special jurisdictions when approval is needed by the structural plan check.

Product Details:

For Reference Only

TYPICAL THE PERFECT BLOCK™ ICCF WALL SECTION

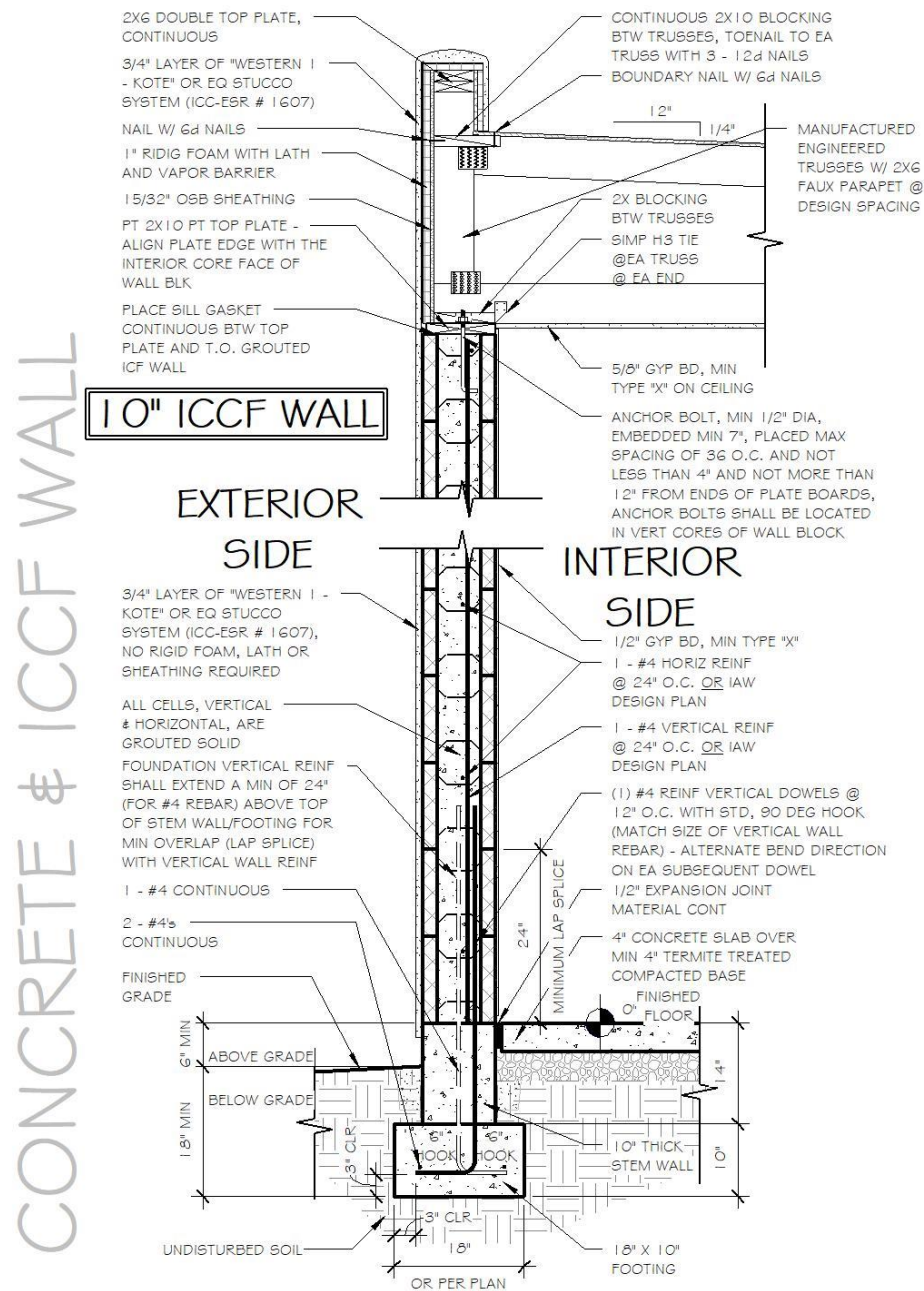


Figure 1

TYPICAL THE PERFECT BLOCK™ STEEL REINFORCEMENT PLACEMENT IN FOOTING STEM WALL @ 24" O.C.

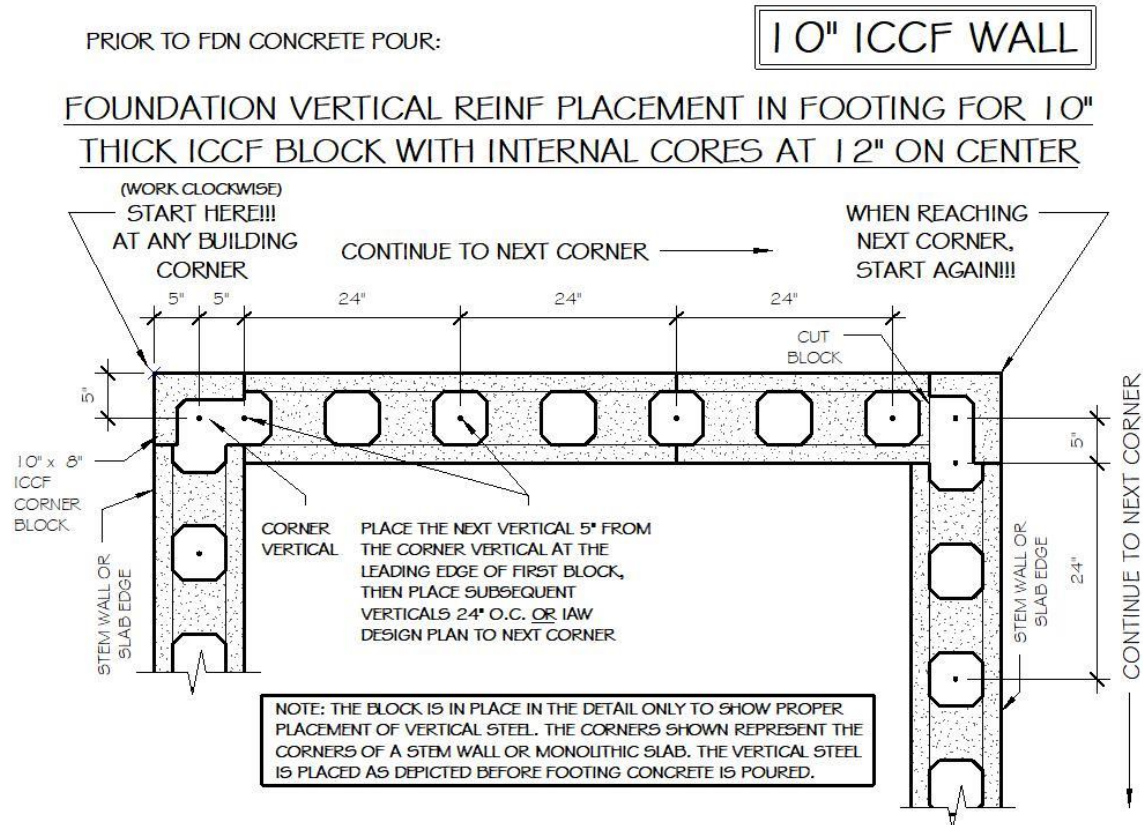


Figure 2

TYPICAL THE PERFECT BLOCK™ REINFORCING STEEL PLACEMENT

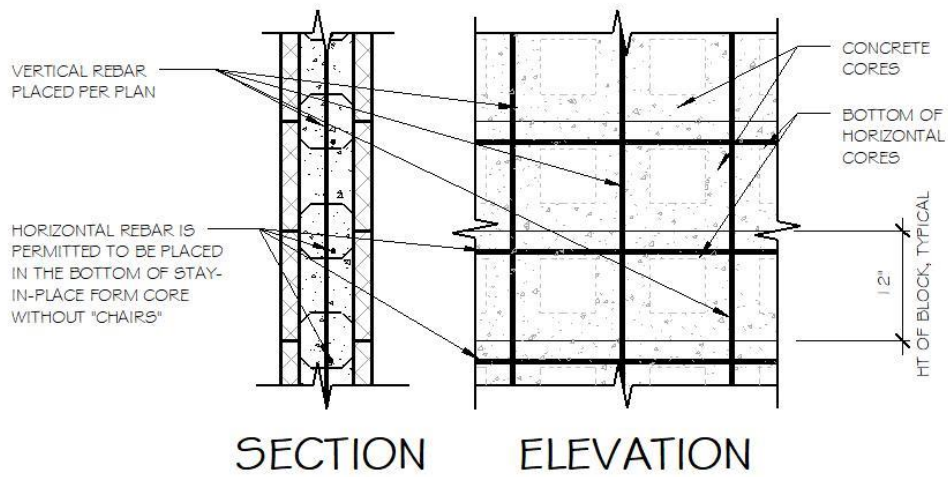


Figure 3