



8960 W. Larkspur Drive, Ste. 105 Peoria AZ. 85381 Phone 888.623.ICCF (4223)
Email: info@theperfectblock.com

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, 2015 and 2018 International Building Code (IBC)

2012, 2015 and 2018 International Residential Code (IRC) Chapter 6 section describing exterior concrete wall system and further described as screen grid wall in same section.

2019 - 2023 Los Angeles Approval Research Report RR-26155 first page attached.

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 on our web sites technical page 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 on our web sites technical page 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 (winds $\geq$ 157 mph, 70 m/s, 252 km/hr)

Miami-Dade County, Broward County, and Monroe County. ASCE 7-05, 7-10

Can be downloaded on our web sites technical page 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 down-loadable at; <http://theperfectblock.com/technical-downloads/>



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USES

General: The Perfect Block™ Insulated Composite Concrete Form (ICCF) Wall System is 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" 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 ©, 2022, 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.



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Email: info@theprecblock.com

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 (winds $\geq$ 157 mph, 70 m/s, 252 km/hr)

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 damp-proofed 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
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.



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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

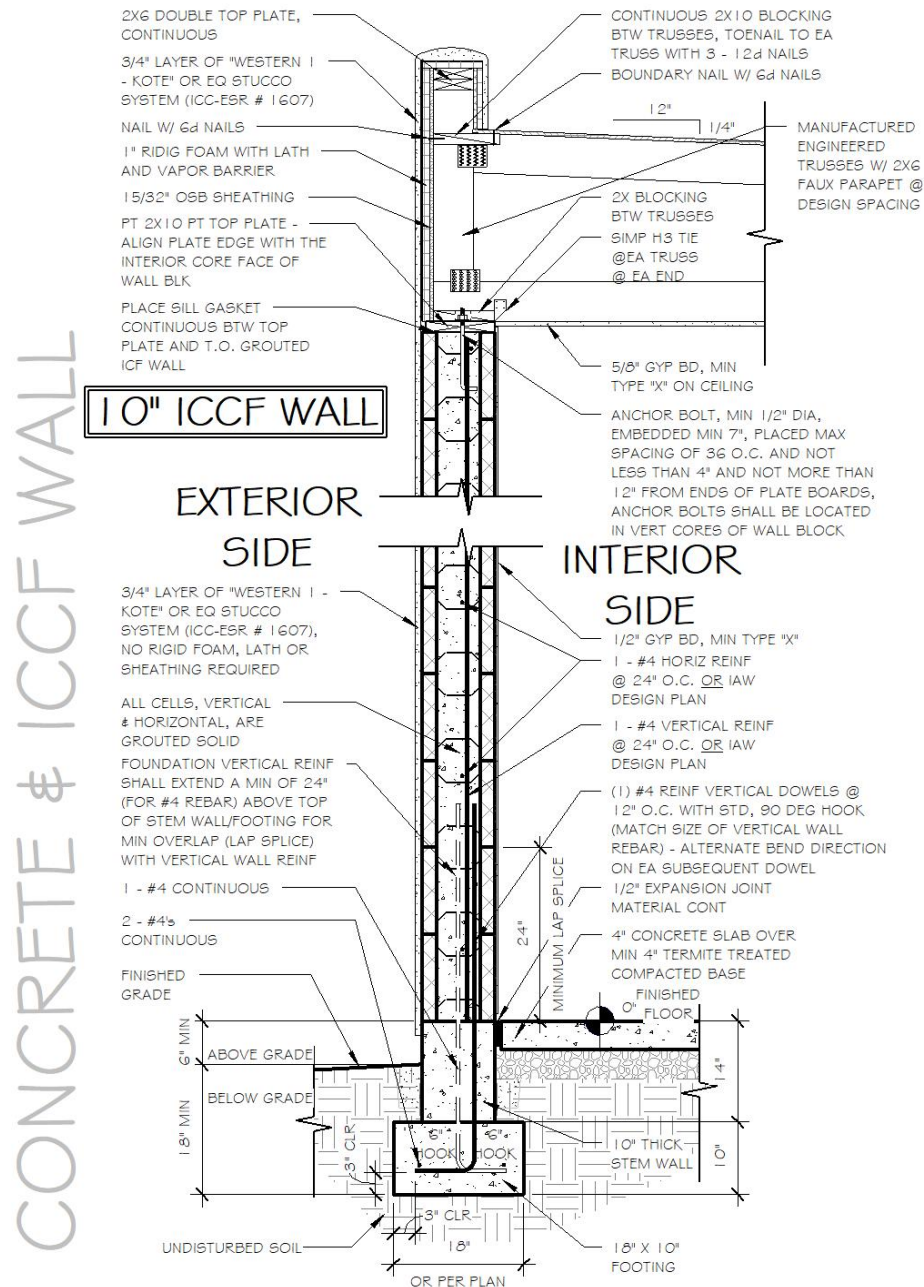


Figure 1



8960 W. Larkspur Drive, Ste. 105 Peoria AZ. 85381

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Email: info@theperfectblock.com

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

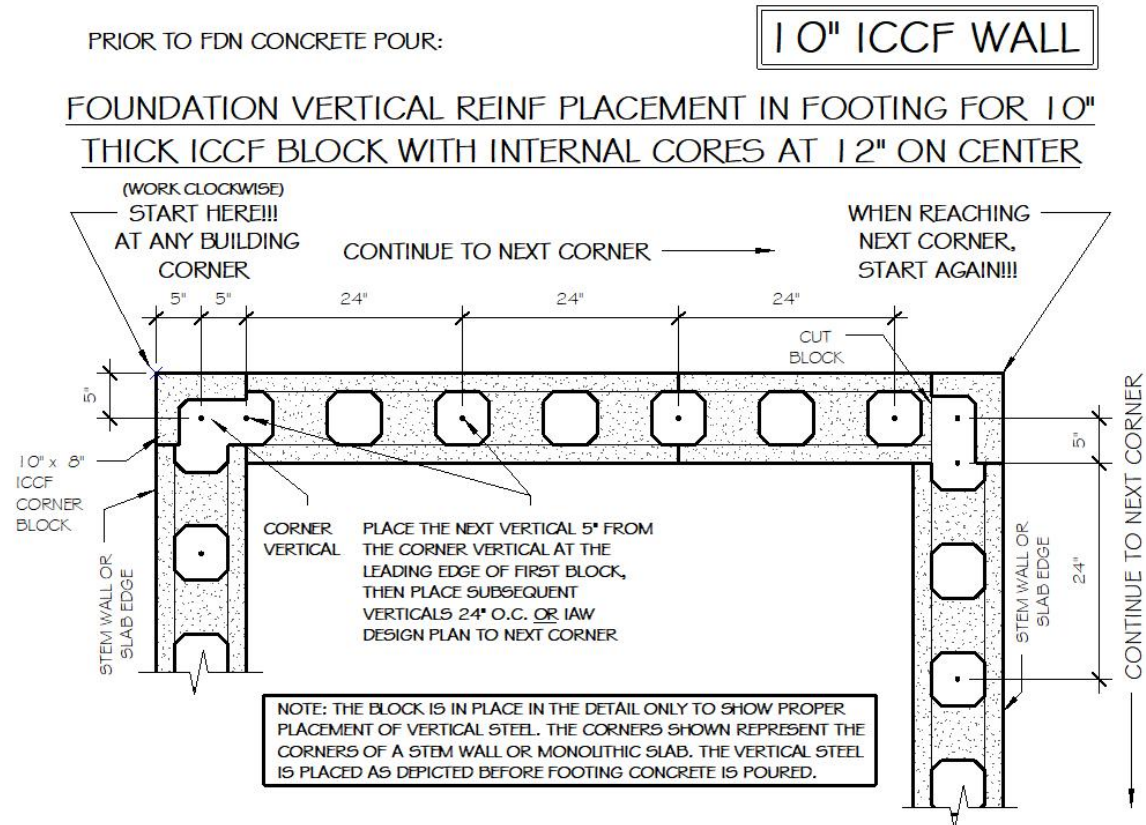


Figure 2



8960 W. Larkspur Drive, Ste. 105 Peoria AZ. 85381

Phone 888.623.ICCF (4223)

Email: info@thepreciseblock.com

TYPICAL THE PERFECT BLOCK™ REINFORCING STEEL PLACEMENT

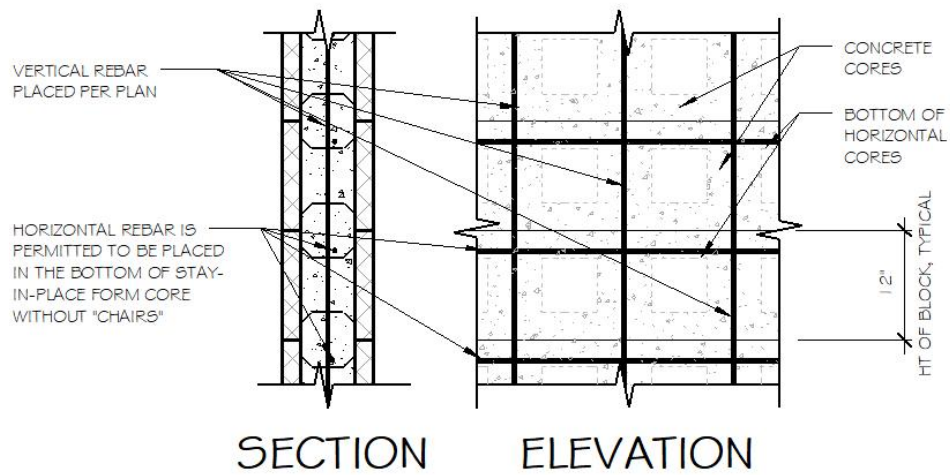


Figure 3

CITY OF LOS ANGELES

CALIFORNIA

**BOARD OF
BUILDING AND SAFETY
COMMISSIONERS**

VAN AMBATIELOS
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ELVIN W. MOON



ERIC GARCETTI
MAYOR

DEPARTMENT OF
BUILDING AND SAFETY
201 NORTH FIGUEROA STREET
LOS ANGELES, CA 90012

OSAMA YOUNAN, P.E.
GENERAL MANAGER
SUPERINTENDENT OF BUILDING

JOHN WEIGHT
EXECUTIVE OFFICER

Eco Building Systems
8960 W. Larkspur Drive, Suite 105
Peoria, AZ 85381

Attn: Jerry Kachlic
(602)577-0858

RESEARCH REPORT: RR 26155
(CSI # 03 11 19)

REEVALUATION DUE

DATE: October 1, 2023
Issued Date: October 4, 2021
Code: 2020 LARC

GENERAL APPROVAL – Renewal - The Perfect Block™ Insulated Composite Concrete Form (ICCF) Wall System

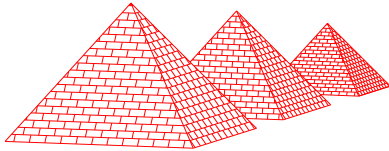
DETAILS

The Perfect Block™ Insulated Composite Concrete Form (ICCF) Wall System is classified as a screen-grid wall system as described in Section R608.3.3 of the 2020 LARC. Screen-grid wall systems shall comply with Table R608.3 and Figure R608.3(3) and shall have a minimum nominal thickness of 6 inches for the vertical and horizontal concrete members (cores).

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, and walls. Walls constructed as described in this report are permitted to be used as load-bearing and non-load bearing walls and foundation and retaining walls. The forms remain in place and must be protected by an approved interior and exterior finish material as described below. The forms may be used in Type V construction and any construction permitted under the 2020 ASSSSSSSSSSSSSSSSSS Los Angeles Residential Code (LARC). The forms may be used in Types I, II, III, and IV (noncombustible) construction when installed as described below. See Figures 1, 2, 3, and 4 for The Perfect Block™ ICCF Wall System construction and block details.

The Perfect Block™ Insulated Composite Concrete Form (ICCF) Wall System are hollow core forms of a lightweight mixture of recycled expanded polystyrene (EPS) ground into an aggregate, Portland cement, proprietary admixtures and water. The EPS blocks have a density between 20 and 24 pcf. The forms may be stacked horizontally or vertically. The forms are available in standard thicknesses of 6, 8, 10, and 12 inches and standard height 12 inches. Standard length is 48 inches. The hollow horizontal and vertical cores of the forms are filled with field-installed concrete and reinforcing steel to construct a reinforced structural concrete wall with vertical and

RR 26155
Page 1 of 9



Precision Structural Engineering, Inc.

July 19th, 2018

Jerry Kachlic, CEO
Eco Building Systems Corp.
8960 W. Larkspur Dr., Ste. 105
Peoria, AZ 85381



RE: Project: Eco Building Systems Corp. on June 7, 2018 (Log # TLB 1800129)
regarding an engineering assessment of The Perfect Block Insulated
Composite Concrete Form (ICCF) Wall System
PSE's Project No.: Eco Building 218-5 Block Assessment

Dear Mr. Kachlic:

I have reviewed the following material regarding the Eco Building Systems Corp. (EBS):

- ICC Acceptance Criteria AC 345 **Stay-In-Place Form** for Post and Beam Concrete Walls with Job Site Applied Exterior Finish Systems.
- The block form consists mainly of extruded polystyrene (EPS) composite concrete mix with hollow core sections that will receive field installed reinforced structural concrete.
- The EPS material is used as **Stay-in-Place Forms and is not part of the structural element and will not contribute to the structural load carrying capacity of the finished product.**
- All vertical, such as dead, live and snow, and lateral loads, such as wind and seismic, loads as described in California Building Code structural, (CBC) will be supported by the post and beam core of reinforced concrete that will be installed on site.
- Both exterior and interior surface of the EPS will be covered with material as described in 2016 CBC Title 24, Part 2.5, Chapter 7, Wall Covering, and
- In accordance with the EBS Technical Building Guide, all editions, the ICCF shall be cladded on the exterior with an approved applied exterior finish system that complies with ICC Acceptance Criteria AC 345 Stay-In-Place Form for Post and Beam Concrete Walls with Job Site Applied Exterior Finish Systems and the Los

Angeles Building Code (LABC). The interior may be coated with the same material or an approved plaster finish or minimum ½" layer of gypsum wallboard. For below grade applications, wall surfaces shall be damp-proofed and water-proofed in accordance with requirements of Sections damp proofing and waterproofing of the most recent LABC. 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. And the section that pertains to Gypsum board and plaster of the most recent LABC.

- The site installed Reinforced Concrete cores are 12" on center in both the vertical and horizontal directions creating a grid of structural reinforced concrete similar to Screen-Grid Wall System as required by **2016 CBC Title 24, Part 2.5, Chapter 6, Wall Construction, Section R608 Exterior Concrete Wall construction.**

- **Complete construction documents, such as:**

- Structural design calculation;
- Drawings and Typical details, and;
- Specifications,

Shall be prepared by an engineer licensed in the State of California and approved by the structural plan examiner at City of Los Angeles building department.

The construction documents shall comply with both:

- California Building Code, CBC, 2016;
- City of Los Angeles Building Code, LABC.

- **Test Data;**

- Intertek document # H6867.01-801-44 and H6867.02-801-44-R0 shows that EBS has passed the following 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.
- 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.

Conclusion:

250 Main Street
Klamath Falls, OR 97601
836 Mason Way
Medford, OR 97501

Tel. (541) 850-6300
Tel. (541) 858-8500
www.structure1.com

Fax (541)850-6233
Email: info@structure1.com
Fax(541)282-7689

It is my professional opinion that the above block complies with California Building Code, CBC, 2016 edition and current edition of the City of Los Angeles Building Code, LABC.

Thank you so much for giving us the opportunity to serve you on this nice project. We hope we have provided you with excellent engineering service.
If you have any question, please feel free to contact us.

Sincerely yours,



Nabil (Bill) Taha, Ph.D., P.E.

President/ Precision Structural Engineering Inc.

Licensed in 47 States.

Also, we have completed projects in 26 countries internationally.

- 250 Main Street, Klamath Falls, Oregon 97601
Tel: 541-850-6300, Fax: 541-850-6233
e-mail: bill@structure1.com, Web: www.structure1.com
Linkedin: nabil.taha55, Skype: nabil.taha55,

ECO BUILDING SYSTEMS CORP. FIRE TEST REPORT

SCOPE OF WORK

ASTM E119 TESTING ON LOAD-BEARING ASSEMBLY CONTAINING ECO BUILDING SYSTEMS CORP. THE PERFECT BLOCK™ INSULATED COMPOSITE CONCRETE FORM

REPORT NUMBER

103254480SAT-001

TEST DATE

03/02/18 – 3/05/18

ISSUE DATE

03/16/18

RECORD RETENTION END DATE

03/16/28

PAGES

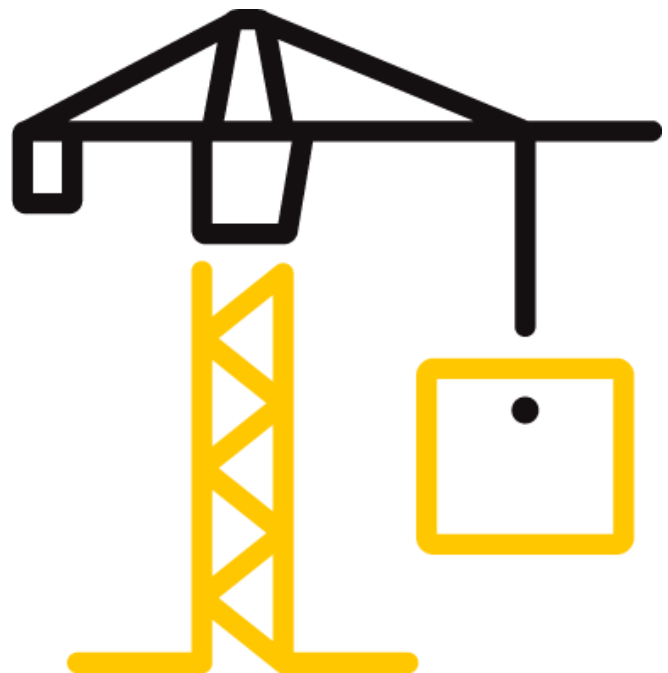
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DOCUMENT CONTROL NUMBER

ATI 00662 (07/24/17)

RT-R-AMER-Test-2782

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TEST REPORT FOR ECO BUILDING SYSTEMS CORP.

Report No.: 103254480SAT-001

Date: 03/16/18

REPORT ISSUED TO

ECO Building Systems Corp.

8960 W Larkspur Drive

Suite 105

Peoria, AZ 85381

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Eco Building Systems Corp., 8960 W Larkspur Dr., Suite 105, Peoria, AZ 85381 to evaluate the fire-resistance characteristics of an asymmetrical wall assembly containing The Perfect Block™ Insulated Composite Concrete Form (ICCF). Testing was conducted at the Intertek B&C test facility in Elmendorf, Texas. Two walls were built with The Perfect Block® ICCF 10 in. asymmetric blocks and tested in order to obtain the fire-resistance classifications for both sides. Testing outlined below was completed per the requirements of the current version of ASTM E119/UL 263. Results obtained are tested values and were secured by using the designated test method(s). A summary of test results and the complete graphical test data is reported herein.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

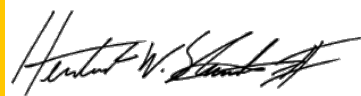
Wall System: Asymmetrical Load-bearing Wall Assembly

Combustible Components: Insulated Composite Concrete Form (ICCF) Wall composed of recycled expanded polystyrene (EPS) beads and cement.

ASTM E119 Test Results

The asymmetrical assembly described and tested in this report **did meet** the Conditions of Acceptance of ASTM E119 when exposed to **a fire-resistance rating of 240 minutes (4 Hours) on both sides.** Construction summary of the full assembly is located in Section 5 of this test report.

For INTERTEK B&C:

COMPLETED BY:	Abel de Hoyos	REVIEWED BY:	Herbert W. Stansberry II
TITLE:	Senior Project Manager– Fire Resistance	TITLE:	Engineering Supervisor
SIGNATURE:		SIGNATURE:	
DATE:	03/16/18	DATE:	03/16/18

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ECO BUILDING SYSTEMS CORP. TEST REPORT

SCOPE OF WORK

TORNADO IMPACT AND STRUCTURAL WIND LOAD TESTING ON EBS 10 INCH ASYMMETRIC INSULATED COMPOSITE CONCRETE FORM (ICCF) BLOCK WALL SYSTEM

REPORT NUMBER

H6867.01-801-44-R0

TEST DATE(S)

02/27/18 - 03/16/18

ISSUE DATE

03/19/18

RECORD RETENTION END DATE

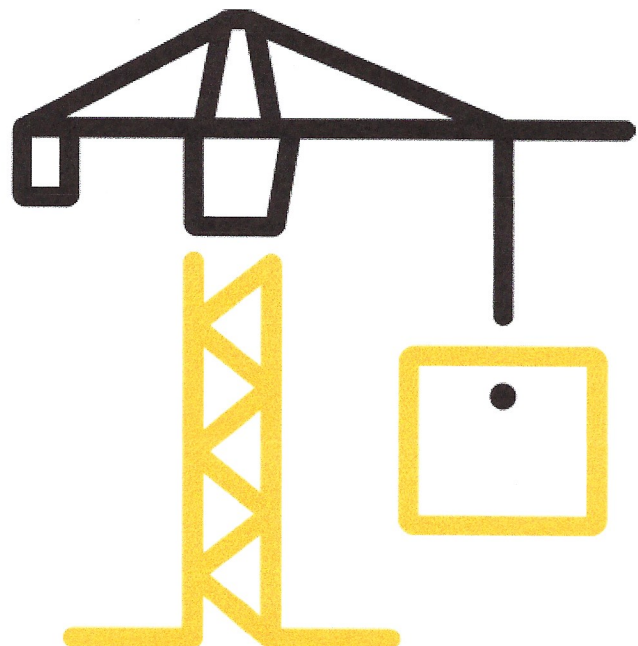
03/16/22

PAGES

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DOCUMENT CONTROL NUMBER

ATI 00479 (07/24/17)
RT-R-AMER-Test-2805
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1909 10th Street, Suite 100
Plano, Texas 75074

Telephone: 469-814-0687
www.intertek.com/building

TEST REPORT FOR ECO BUILDING SYSTEMS CORP.

Report No.: H6867.01-801-44-r0

Date: 03/19/18

REPORT ISSUED TO

ECO BUILDING SYSTEMS CORP.

8960 W Larkspur Drive, STE 105
Peoria, Arizona 85381

SECTION 1

SCOPE

Intertek Building & Construction (B&C) was contracted by Eco Building Systems Corp. to perform testing in accordance with ICC 500-2014 Section 804 Tornado Impact and Section 806.2 Tornado Wind Pressure according to FEMA 361 *Guidance for Community and Residential Safe Rooms* on their EBS 10 Inch Asymmetric insulated composite concrete form (ICCF) block wall system. Results obtained are tested values and were secured by using the designated test method(s). Testing was conducted at Intertek B&C test facility in Plano, Texas.

This report does not constitute certification of this product nor an opinion or endorsement by this laboratory.

SECTION 2

SUMMARY OF TEST RESULTS

TITLE	RESULTS
Design Pressure	+11,970 Pa (+250.00 psf)
1.2 x Positive Pressure	+14, 364 Pa (+300.00 psf)
Negative Design Pressure	-11,970 Pa (-250.00 psf)
1.2 x Negative Design Pressure	-14, 364 Pa (-300.00 psf)
Impact Test	See Results

For INTERTEK B&C:

COMPLETED BY: Clint Barnett

TITLE: Technician

SIGNATURE:

Digitally Signed by: Clint Barnett

DATE: 03/19/18

REVIEWED BY: Andy Cost

TITLE: Manager

SIGNATURE:

Digitally Signed by: Andy Cost

DATE: 03/19/18

CAB:jc

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TEST REPORT FOR ECO BUILDING SYSTEMS CORP.

Report No.: H6867.01-801-44-r0

Date: 03/19/18

SECTION 3

TEST METHOD(S)

The specimens were evaluated in accordance (general accordance if deviated from method; all deviations must be described within test report) with the following:

ASTM E 330-14, *Standard Test Method for Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference.*

ASTM E 1886-13, *Test Method for Structural Performance of Exterior Windows, Curtain Walls, Doors, and Impact Protective Systems Impacted by Missile(s) and Exposed to Cyclic Pressure Differentials. (Impact Only)*

ICC 500-2014, *Standard for the Design and Construction of Storm Shelters. Chapters 804 and 806.2*

SECTION 4

MATERIAL SOURCE/INSTALLATION

Test specimens were provided by the client. Representative samples of the test specimen(s) will be retained by Intertek B&C for a minimum of four years from the test completion date.

The specimen was installed into a C12x20 x 1/4" thick steel C-Channel buck with #5 rebar spaced 12" apart horizontally and 12" apart vertically. The rough opening allowed for a 1/8" shim space. The exterior perimeter of the wall panel was sealed with sealant. Installation of the tested product was performed by the client. Three brick ties were secured to the stucco with 1/4" x 2" tapcon screws at every 5th course of bricks.

LOCATION	ANCHOR DESCRIPTION	ANCHOR LOCATION
Head, Sill, Jambs	Polyurethane Spray Foam	Bottom of blocks
Head, Sill, Jambs	#5 rebar	Vertical and horizontal full width and height 12" on center welded to the steel perimeter frame.

SECTION 5

LIST OF OFFICIAL OBSERVERS

NAME	COMPANY
Clint Barnett	Intertek B&C
Andy Cost	Intertek B&C

TEST REPORT FOR ECO BUILDING SYSTEMS CORP.

Report No.: H6867.01-801-44-r0

Date: 03/19/18

SECTION 6

TEST SPECIMEN DESCRIPTION

Product Type: Insulated composite concrete form (ICCF) block wall system

Series/Model: EBS 10 Inch Asymmetric ICCF

Product Size(s):

Test Specimen

OVERALL AREA:	WIDTH		HEIGHT	
	millimeters	inches	millimeters	inches
3.04 m ² (32.67 ft ²)				
Overall Size	2438	96	1245	49
ICCF Block Size	1219	48	305	12

Panel Construction:

PANEL MEMBER	MATERIAL	DESCRIPTION
Exterior Facade	Solid Clay Brick	2" x 3-1/2" red clay brick with 3/4" thick mortar joints
ICCF Block	Recycled Expanded Polystyrene (EPS) and Cement	45"x12"x10" ICCF blocks, grout filled, and reinforced with #5 rebar
1/2" Gypsum Board	Gypsum	Secured to interior part of the ICCF blocks with joint compound
Hard Coat Stucco	Concrete	3/4" thick stucco was applied directly to the exterior of the ICCF blocks.

TEST REPORT FOR ECO BUILDING SYSTEMS CORP.

Report No.: H6867.01-801-44-r0

Date: 03/19/18

SECTION 7
TEST RESULTS

Tornado Impact Testing Per ICC-500 / ASTM E1886 – 15 pound 2x4 missile impact at 100 mph.
The temperature during testing was 21°C (70°F). The results are tabulated as follows:

Test Specimen

TITLE OF TEST	RESULTS	ALLOWED	NOTE
Uniform Load Deflection, per ASTM E330 +11,970 Pa (+250.00 psf) -11,970 Pa (-250.00 psf)	No Damage	No Damage	1, 2
Uniform Load Structural, per ASTM E330 Permanent set taken at +14,364 Pa (+300.00 psf) -14,364 Pa (-300.00 psf)	No Damage	No Damage	1, 3

Test Specimen: Orientation within ±5° of horizontal

IMPACT	#1	#2
MISSILE VELOCITY	44.81 m/s (147.00 fps) (100 MPH)	44.81 m/s (147.00 fps) (100 MPH)
IMPACT AREA	Center Panel	Left Quarter
OBSERVATIONS	Missile hit target area, No damage beyond the allowable	Missile hit target area, No damage beyond the allowable
RESULTS	Pass, See Note 4	Pass, See Note 4

IMPACT	#3
MISSILE VELOCITY	44.81 m/s (147.00 fps)
IMPACT AREA	Left top corner
OBSERVATIONS	Missile hit target area, No damage beyond the allowable
RESULTS	Pass, See Note 4

General Note: All testing was performed in accordance with the referenced standard(s).

Note 1: Loads were held for 60 seconds.

Note 2: Pressure meets the specification in ICC-500-2014 Section 304.2 and Figure 304.2(1) for a design wind speed of 250 MPH.

Note 3: Pressure meets the specification in ICC-500-2014 Section 806.2 for a design wind speed of 250 MPH.

Note 4: Impacts meet the specification in ICC-500-2014 Table 305.1.1 for a design wind speed of 250 MPH.