



LISTING INFORMATION OF
Fox Blocks Insulating Concrete Form (ICF) Products
SPEC ID: 32745

Fox Blocks, a Division of Airlite Plastics Co.
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United States

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LISTING INFORMATION

Fox Blocks ICFs

Fox Blocks ICFs are Insulating Concrete Form (ICF) systems that are formed of expanded polystyrene with polypropylene plastic cross-ties. Fox Blocks ICFs are pre-assembled ICF forms with a reversible, interlocking connection design. The systems are available in the following sizes and configurations:

- 4" Straight
- 4" 90° Corner
- 4" 45° Corner
- 6" Straight
- 6" 90° Corner
- 6" 45° Corner
- 6" Corbel Ledge
- 6" Taper Top
- 6" T-Block (Short)
- 6" T-Block (Long)
- 6" Radius Blocks (5',6',7',8',9' &10')
- 8" Straight
- 8" 90° Corner
- 8" 45° Corner
- 8" Corbel Ledge
- 8" Taper Top
- 8" T-Block (Short)
- 8" T-Block (Long)
- 8" Curb Block
- 10" Straight
- 10" 90° Corner
- 12" Straight
- 12" 90° Corner
- High Extender

Fox Blocks Compact ICFs

Fox Blocks Compact ICFs are Insulated Concrete Form (ICF) systems that are formed of expanded polystyrene with polypropylene plastic cross-ties. Fox Blocks Compact ICFs are pre-assembled ICF forms with a reversible, interlocking connection design. The systems are available in the following sizes and configurations:

- 4" Straight
- 4" 90° Corner
- 4" Taper Top
- 6" Straight
- 6" 90° Corner
- 6" 45° Corner
- 6" Corbel Ledge
- 6" Taper Top
- 8" Straight
- 8" 90° Corner

- 8" 45° Corner
- 8" Corbel Ledge
- 8" Taper Top
- 10" Straight
- 10" Corbel Ledge
- 10" Taper Top
- 12" Straight
- 12" Corbel Ledge
- 12" Taper Top

Fox Blocks Reveal ICFs

Fox Blocks Reveal is a type of Fox Blocks ICFs which are insulating concrete form systems formed of expandable polystyrene, and with polypropylene plastic cross-ties. The Fox Blocks Reveal ICF has only one side of foam plastic panel, where the opposing side is a temporary plywood sheathing that is to be removed from installation site after curing of the concrete. The Fox Blocks Reveal products are available in the following configurations:

- 4" Straight
- 6" Straight
- 8" Straight
- 10" Straight
- 12" Straight

Fox Blocks Compact Reveal ICFs

Fox Blocks Compact Reveal is a type of Fox Blocks Compact ICFs which are insulating concrete form systems formed of expandable polystyrene, and with polypropylene plastic cross-ties. The Fox Blocks Compact Reveal ICF has only one side of foam plastic panel, where the opposing side is a temporary plywood sheathing that is to be removed from installation site after curing of the concrete. The Fox Blocks Compact Reveal products are available in the following configurations:

- 4" Straight
- 6" Straight
- 8" Straight
- 10" Straight
- 12" Straight

Fox Blocks and Fox Blocks Reveal Ratings

Product/Assembly	Standard	Rating (if applicable)
Fox Blocks and Fox Blocks Reveal ICFs	ASTM E119	Design No. FXB/ICF 240-01
	CAN/ULC S101	
	ASTM E2634, including: ASTM C578 (EPS) ASTM D635 (cross-tie) ASTM D638 (cross-tie) ASTM D732 (cross-tie) ASTM D1761 (cross-tie) ASTM D1929 (cross-tie) ASTM E84 (EPS)	Type II EPS CC1 classification Min. tensile strength: 32.3 kN/m ² (675 lb/ft ²) Min. shear strength: 3080 psi Refer to Table 2 of CCRR-1010 Min. Ignition Temp. 350°C (662°F) FSI ≤ 25, SDI ≤ 450 Meets ASTM E2634 Section 6.3.1

	UL 1715 (ICF)	
	ICC-ES AC353	CCRR-1010
	ASTM E283 (4" ICF)	Max air infiltration 0.02 cfm/ft ²
	ASTM E331 (4" ICF)	No water leakage after 2 hours; 15 psf pressure differential
	CAN/ULC S717.1, including: CAN/ULC S701 (EPS) ASTM D635 (cross-tie) ASTM D638 (cross-tie) ASTM D732 (cross-tie) ASTM D1761 (cross-tie) ASTM D1929 (cross-tie)	Type 2 EPS CC1 classification Min. tensile strength: 32.3 kN/m ² (675 lb/ft ²) Min. shear strength: 3080 psi Refer to Table 2 of CCRR-1010 Min. Ignition Temp. 350°C (662°F)

Fox Blocks Compact and Fox Blocks Compact Reveal Ratings

Product/Assembly	Standard	Rating (if applicable)
Fox Blocks Compact and Fox Blocks Compact Reveal ICFs	ASTM E119	Design No. FXB/ICF 240-02
	CAN/ULC S101	
	ICC-ES AC353 (2012)	CCRR-1010
	ASTM C578 (EPS)	Type II EPS
	ASTM D635 (Cross-tie)	CC2 Classification
	ASTM D1761 (Cross-tie)	Refer to Table 2 of CCRR-1010
	ASTM D1929 (Cross-tie)	Min. Ignition Temp. 350°C (662°F)
	ASTM E84 (EPS)	FSI ≤ 25, SDI ≤ 450
	UL 1715 (ICF)	Meets ICC-ES AC353 (2012), Section 3.4

CODE COMPLIANCE RESEARCH REPORT

Evaluation Method	Building Code	CCRR Number
ICC-ES AC353	2015, 2012 and 2009 International Building Code	CCRR-1010
	2015, 2012 and 2009 International Residential Code	
	2016 California Building Code	
	2016 California Residential Code	

Product	Product Approval No.
Fox Blocks, Fox Blocks Compact and Fox Blocks Reveal	FL # 7497

Attribute	Value
Code Reports	Yes
Criteria	CAN / ULC S701 (2011)
Criteria	CAN/ULC S717.1 (2012)
Criteria	ASTM E2634 (2011)

Criteria	ICC-ES AC353 (2012)
Criteria	ASTM C578 (2012a)
Criteria	CAN / ULC S101 (2014)
Criteria	ASTM E119 (2016a)
CSI Code	03 11 19 Insulating Concrete Forming
Intertek Services	Certification
Intertek Services	Code Compliance Research Report
Listed or Inspected	LISTED
Listing Section	CONCRETE FORMS
Spec ID	32745

DRAWING INDEX

FXB/ICF 240-01

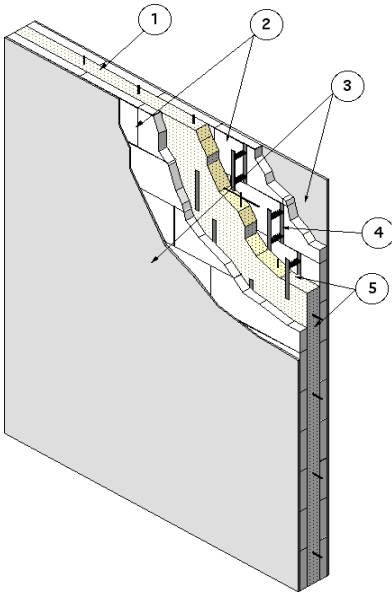
FXB/ICF 240-02

FXB/ICF 240-01



Division 03 – Concrete
03 11 00 Concrete Forming
03 11 19 Insulating Concrete Forming

Airlite Plastics Co.
Design No. FXB/ICF 240-01
Fox Blocks and Fox Reveal Insulating Concrete Forms
ASTM E119 and CAN/ULC-S101
Fire Rating Only - Load Rating Not Within The Scope Of This Listing
Assembly Rating – 2 and 4 Hour



FORMED WALL THICKNESS	MAX FIRE RATING
4 in. (102 mm)	2 Hour
6 in. (152 mm)	4 Hour
8 in. (203 mm)	4 Hour
10 in. (254 mm)	4 Hour
12 in. (305 mm)	4 Hour

1. **CONCRETE:** Pour normal weight concrete (density typically between 145-155 pcf) having a min. 21 MPa (3,000 psi) nominal compressive strength into the forming system (Item 2).

2. **CERTIFIED MANUFACTURER:** Airlite Plastics Co.
- CERTIFIED PRODUCT:** Fox Blocks Insulating Concrete Forms (ICF)

CERTIFIED PRODUCT: Fox Reveal Insulating Concrete Forms (ICF)

FXB/ICF 240-01 (2 OF 2)

Division 03 – Concrete
03 11 00 Concrete Forming
03 11 19 Insulating Concrete Forming

FORMING SYSTEM: The Fox Blocks ICF and Fox Reveal ICF forming system consists of Type 2 (CAN/ULC-S701) or Type II (ASTM C578) molded expanded polystyrene (EPS) foam panels with embedded polypropylene ties that come preassembled to form nominal concrete core thicknesses of 4 in. (102 mm), 6 in. (152 mm), 8 in. (203 mm), 10 in. (254 mm), and 12 in. (305 mm). The Fox Blocks and Fox Reveal ICFs are produced in 48 in. length x 16 in. height (1220 mm x 410 mm) for all core thicknesses. The EPS panels have a nominal thickness of 2-5/8 in. (66.7 mm). The top and bottom of the EPS panels have an interlocking system which aligns the forms together as they are stacked.

Fox Blocks ICF systems have polypropylene ties spaced at 8 in. (203 mm) on center (oc) in the cavity of the ICF that include flanges acting as furring strips for mechanical fastening.

Fox Reveal ICFs have one EPS panel of the above-mentioned type and thickness on one side, and one plywood panel on the opposing side, forming nominal concrete core thicknesses of 6-5/8 in. (168 mm), 8-5/8 in. (219 mm), 10-5/8 in. (270 mm), 12-5/8 in. (321 mm), and 14-5/8 in. (371 mm). The plywood panel is to be removed after the concrete is cured. The concrete is either left exposed or is covered as described in Item 3.

3. SHEATHING AND EXTERIOR FINISHES (Optional): Not required for the fire resistance ratings described in this listing.

An approved thermal barrier may be installed subject to the requirements of the applicable Building Code.

When desired, exterior finishes may be applied to the exterior side of the forming system (Item 2) wall assembly without diminishing the assembly rating. Exterior Insulation Finish System (EIFS), any exterior stucco, brick or brick veneer, stone or stone veneer, cultured stone, and siding made from vinyl, aluminum, wood, or steel may be used. Apply exterior finishes in accordance with the manufacturer's instructions.

- 4. POLYPROPYLENE FORM TIES:** Each 48 in. (1220 mm) length of ICF has six polypropylene ties. The polypropylene ties are spaced nominally 8 in. (203 mm) oc. The polypropylene ties are open to allow concrete to flow easily, and to allow seating for the placement of horizontal and vertical rebar placement.
- 5. STEEL REINFORCEMENT:** Place the steel reinforcement before filling the forming system with concrete (Item 1). The rebar used is to be designed and placed per the applicable Code requirements and approved by a registered design professional with the appropriate license for the Authority Having Jurisdiction.
- 6. WALL ASSEMBLY:** The ICF wall assembly may be used as either an interior or exterior wall. ICFs exposed to the interior of a building shall have a thermal barrier (Item 3) attached. Exterior walls are only required to have a thermal barrier on the side facing the interior of the building. The fire resistance rating is applicable to the ICF wall assembly from either side.

Date Revised: September 7, 2017

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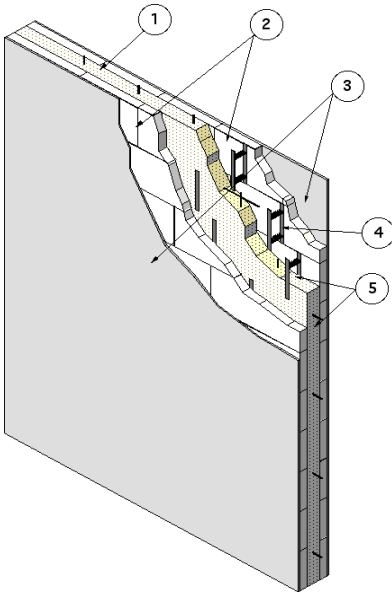
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FXB/ICF 240-02



Division 03 – Concrete
03 11 00 Concrete Forming
03 11 19 Insulating Concrete Forming

Airlite Plastics Co.
Design No. FXB/ICF 240-02
Fox Blocks Compact Insulating Concrete Forms
ASTM E119 and CAN/ULC-S101
Fire Rating Only - Load Rating Not Within The Scope Of This Listing
Assembly Rating – 2 and 4 Hour



FORMED WALL THICKNESS	MAX FIRE RATING
4 in. (102 mm)	2 Hour
6 in. (152 mm)	4 Hour
8 in. (203 mm)	4 Hour
10 in. (254 mm)	4 Hour
12 in. (305 mm)	4 Hour

- 1. CONCRETE:** Pour normal weight concrete (density typically between 145-155 pcf) having a min. 21 MPa (3,000 psi) nominal compressive strength into the forming system (Item 2).

2. CERTIFIED MANUFACTURER: Airlite Plastics Co.
- CERTIFIED PRODUCT:** Fox Blocks Compact Insulating Concrete Forms (ICF)

FORMING SYSTEM: The Fox Blocks Compact ICF forming system consists of Type 2 (CAN/ULC-S701) or Type II (ASTM C578) molded expanded polystyrene (EPS) foam

FXB/ICF 240-02 (2 OF 2)

Division 03 – Concrete
03 11 00 Concrete Forming
03 11 19 Insulating Concrete Forming

panels with embedded polypropylene ties that come preassembled to form nominal concrete core thicknesses of 4 in. (102 mm), 6 in. (152 mm), 8 in. (203 mm), 10 in. (254 mm), and 12 in. (305 mm). The Fox Blocks Compact ICFs are produced in 48 in. length x 16 in. height (1220 mm x 410 mm) for all core thicknesses. Fox Blocks Compact ICFs have an EPS panel thickness of 2-5/8 in. (63.5 mm). The top and bottom of the EPS panels have an interlocking system which aligns the forms together as they are stacked. The Fox Blocks Compact ICF system has polypropylene ties spaced at 8 in. (203 mm) on center (oc) in the cavity of the ICF that include flanges acting as furring strips for mechanical fastening.

- 3. SHEATHING AND EXTERIOR FINISHES:** An approved thermal barrier must be installed in accordance with the applicable Building Code.

When desired, exterior finishes may be applied to the exterior side of the forming system (Item 2) wall assembly without diminishing the assembly rating. Exterior Insulation Finish System (EIFS), any exterior stucco, brick or brick veneer, stone or stone veneer, cultured stone, and siding made from vinyl, aluminum, wood, or steel may be used. Apply exterior finishes in accordance with the manufacturer's instructions.

- 4. POLYPROPYLENE FORM TIES:** Each 48 in. (1220 mm) of length of Fox Blocks Compact ICFs have six polypropylene ties. The polypropylene ties are spaced nominally 8 in. (203 mm) oc. The polypropylene ties are open to allow the flow around of concrete, and to allow seating for the placement of horizontal and vertical rebar placement.

- 5. STEEL REINFORCEMENT:** Place the steel reinforcement before filling the forming system with concrete (Item 1). The rebar used is to be designed and placed per the applicable Code requirements and approved by a registered design professional with the appropriate Authority Having Jurisdiction.

- 6. WALL ASSEMBLY:** The ICF (Item 2) wall assembly may be used as either an interior or exterior wall. ICFs exposed to the interior of a building shall have a barrier (Item 3) attached. Exterior walls are only required to have a thermal barrier on the side facing the interior of the building. The fire resistance rating is applicable to the ICF (Item 2) wall assembly from either side.

Issue Date: 03-01-2014
Revision Date: 12-21-2019
Renewal Date: 01-31-2021

DIVISION: 03 00 00—CONCRETE
Section: 03 11 19—Insulating Concrete Forming

REPORT HOLDER:
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REPORT SUBJECT:
Fox Blocks Insulating Concrete Forms
Fox Blocks Compact Insulating Concrete Forms
Fox Blocks Reveal Insulating Concrete Forms
Fox Blocks Compact Reveal Insulating Concrete Forms

1.0 SCOPE OF EVALUATION

This Research Report addresses compliance with the following Codes:

- 2018, 2015 and 2012 International Building Code® (IBC)
- 2018, 2015 and 2012 International Residential Code® (IRC)
- 2016 California Building Code® (CBC)
- 2016 California Residential Code® (CRC)
- 2016 California Green Building Standards Code®, Title 24, Part 11 (CALGreen)

NOTE 1: This report references 2018 Code sections. Earlier versions of the code may have different section numbers

NOTE 2: As the CBC and CRC are based on the IBC and IRC, IBC and IRC code sections referenced within this CCRR are the same as that of the CBC and CRC.

The Fox Blocks, Fox Blocks Compact, Fox Blocks Reveal, and Fox Blocks Compact Reveal systems have been evaluated for the following properties:

- Physical properties
- Surface-burning characteristics
- Attic and crawl space fire evaluations

- Fire-resistance-rated construction
- Exterior walls in Types I, II, III, and IV construction

See Table 1 for applicable Code sections related to these properties.

2.0 USES

Fox Blocks, Fox Blocks Compact, Fox Blocks Reveal and Fox Blocks Compact Reveal insulating concrete forms (ICFs) are used as stay-in-place formwork for structural concrete load-bearing and non-load-bearing exterior and interior walls, concrete beams, lintels, foundation walls, and retaining walls. The forms may be installed in attics and crawl spaces without a covering on the interior side when installed in accordance with Section 4.3.2. The forms may be used in fire-resistance-rated construction, provided installation is in accordance with Section 4.8. The forms may be used in Types I, II, III, or IV (noncombustible) construction provided installation is in accordance with Section 4.9.

3.0 DESCRIPTION

3.1 Fox Blocks: The Fox Blocks forms consist of two 2.625 inch thick expanded polystyrene (EPS) foam plastic panels, separated by injection-molded polypropylene plastic cross-ties that are partially embedded into the EPS panels. The cross-ties maintain the EPS panel facings at a clear distance of 4, 6, 8, 10, or 12 inches. The Fox Blocks form system complies with ASTM E2634 and is a flat ICF system as defined in IRC Section R608.3. In addition to straight forms, 45-degree angle, 90-degree corner, corbel ledge, taper top, T-block, curb, and 6 inch radius forms are also available. See Figure 1 for an illustration of the forms.

3.2 Fox Blocks Compact: The Fox Blocks Compact forms consist of two 2.625 inch thick expanded polystyrene (EPS) foam plastic panels, and injection-molded polypropylene plastic cross-ties that are connected at the job site to "grippers", which are molded into the EPS panels. The cross-ties maintain the EPS panel facings at a clear distance of 4, 6, 8, 10, or 12 inches. If a larger cavity is desired, a



polypropylene web extension gripper is used to connect two cross-ties to form 14, 16, 18, 20, 22, or 24 inch wide cavities. The Fox Blocks Compact system is a flat ICF system as defined in IRC Section R608.3 [2012, 2009 – R611.3]. In addition to straight forms, corbel ledge, and taper top forms are also available. See Figure 1 for illustrations of the forms.

3.3 Fox Blocks Reveal: The Fox Blocks Reveal forms consist of one 2.625 inch thick expanded polystyrene (EPS) foam plastic panel and one 3/4 inch thick plywood panel, separated by injection-molded polypropylene plastic cross-ties that are partially embedded into the EPS and plywood panels. The plywood panel is for temporary use and is to be removed after curing of the concrete core by removing the fastener that connects the cross-tie flange to the plywood panel. The cross-ties maintain the EPS and plywood panel facings at a clear distance of 6-5/8, 8-5/8, 10-5/8, 12-5/8, or 14-5/8 inches. The Fox Blocks Reveal ICF system complies with ASTM 2634 and is a flat ICF system as defined in IRC Section R608.3. It is available in straight forms only.

3.4 Fox Blocks Compact Reveal: The Fox Blocks Compact Reveal forms consist of one 2.625 inch thick expanded polystyrene (EPS) foam plastic panel and one 3/4 inch thick plywood panel, separated by injection-molded polypropylene plastic cross-ties that are connected at the job site to "grippers", which are molded into the EPS and attached to plywood panels with fasteners. The plywood panel is for temporary use and is to be removed after curing of the concrete core by removing the fastener that connects the gripper to the plywood panel. The cross-ties maintain the EPS panel facings at a clear distance of 4, 6, 6-5/8, 8, 8-5/8, 10, 10-5/8, 12, 12-5/8 or 14-5/8 inches. The Fox Blocks Compact Reveal ICF system complies with ASTM E2634 and is a flat ICF system as defined in IRC Section R608.3. It is available in straight forms only.

3.5 Foam Plastic Panels: The EPS foam plastic panels have a nominal density of 1.5 pcf, a flame-spread index of 25 or less, and a smoke-developed index of 450 or less when tested in accordance with ASTM E84. The foam plastic complies with Type II requirements when tested in accordance with ASTM C578.

3.6 Cross-ties: The polypropylene cross-ties for the Fox Blocks and Fox Blocks Reveal forms are spaced 8 inches on center and connect the EPS panels or plywood at a fixed clear distance. The cross-ties consist of a flange that is embedded in the foam plastic panel during the molding

process, and a web that connects the two flanges. The cross-ties have openings to permit concrete placement and have slots to support horizontal steel reinforcing bars. The plastic flange, which is recessed 0.625 inches below the outer EPS surface, is used to attach exterior and interior finish materials. The flange is 1-1/2 inches wide by 16 inches high by 0.23 inch thick.

The polypropylene cross-ties and grippers for the Fox Blocks Compact and Fox Blocks Compact Reveal forms are spaced horizontally at 8 inches on center and connect the EPS panels or plywood at a fixed clear distance. The cross-ties fit into the polypropylene grippers, have openings to permit concrete placement, and have slots of support horizontal steel reinforcing bars. The plastic flange of the polypropylene grippers, which is recessed 0.625 inch below the outer EPS surface in the EPS panel, or is attached to the plywood with fasteners, is used to attach exterior and interior finish materials. The flange is 1.44 inches wide by 16 inches high by 0.23 inch thick.

3.7 Concrete: Concrete must be normal-weight concrete complying with the IBC, with a maximum 3/4 inch aggregate size. Concrete must have a minimum compressive strength of 3000 psi at 28 days except as required for fire-resistance-rated construction described in Section 4.8. Under the IRC, concrete must comply with IRC Sections R404.1 (foundation walls and retaining walls) and R608.5.1 (walls), as applicable.

3.8 Reinforcement: Deformed steel reinforcement bars must have a minimum yield stress of either 40 ksi or 60 ksi, depending on the structural design. Under the IBC, the deformed steel bars must comply with Section 3.5.3.1 of ACI 318 and IBC Section 1903. If construction is based on the IRC, reinforcement must comply with IRC Sections R404.1.3.3 (foundation walls and retaining walls) and R608.5.2 (walls).

3.9 Additional Code(s): The Fox Blocks, Fox Blocks Compact, Fox Blocks Reveal and Fox Blocks Compact Reveal are permitted under the 2016 California Green Building Standards Code®, Title 24, Part 11, Section A4.404.3, Item 3 as premanufactured building systems used to eliminate solid sawn lumber.

3.10 Additional Standards: The Fox Blocks, Fox Blocks Compact, Fox Blocks Reveal, and Fox Blocks Compact Reveal systems conform to the standard requirements of CAN/ULC-



S717.1-12 "Standard for Flat Wall Insulating Concrete Forming (ICF) Units" and ASTM E2634-11 "Standard Specification for Flat Wall Insulating Concrete Form (ICF) Systems". See Intertek Listing ["Fox Blocks Insulating Concrete Forms Products"](#).

4.0 INSTALLATION

4.1 General:

Design and installation of the Fox Blocks, Fox Blocks Compact, Fox Blocks Reveal, and Fox Blocks Compact Reveal forms must comply with this report, the applicable Code, and the manufacturer's published installation instructions, which must be available on the jobsite during installation.

4.2 Design:

4.2.1 IBC Method: Solid concrete walls must be designed and constructed in accordance with IBC Chapters 16 and 19, as applicable. Footings and foundations must be designed in accordance with IBC Chapter 18.

4.2.2 Alternative IBC Wind Design Method: Solid concrete walls may be designed and constructed in accordance with the provisions of Section 209 of ICC 600, subject to the limitations found in IBC Section 1609.1.1.1 in accordance with Exception 1 to Section 1609.1.1. Design and construction under the provisions of ICC 600 are limited to resisting wind forces.

4.2.3 IRC Method: Solid concrete walls, footings, and foundations must be designed in accordance with IRC Sections R608 and R404.1.3, as applicable for flat wall systems.

4.2.4 Alternative IRC Methods: When used to construct buildings that do not conform to the applicability limits of IRC Sections R404.1.3 and R608, construction must be in accordance with the prescriptive provisions of the 2007 Prescriptive Design of Exterior Concrete Walls (PCA 100), or the structural analysis and design of the concrete must be in accordance with ACI 318, ACI 332, and IBC Chapters 16, 18, and 19.

4.3 Interior Finish:

4.3.1 General: ICF units exposed to the building interior must be finished with an approved 15-minute thermal

barrier, such as minimum 1/2 inch thick regular gypsum wallboard complying with ASTM C1396, installed horizontally or vertically, and attached to the cross-tie flanges with minimum 1-1/2 inch long, No. 6, Type S, fine-thread gypsum board screws spaced a maximum of 12 inches on center vertically and 16 inches on center horizontally. The screws must penetrate a minimum of 1/4 inch through the flange. Gypsum board joints and screw heads must be taped and finished with joint compound in accordance with ASTM C840 or GA216. In multi-story buildings of Type V construction, when the foam plastic is continuous between floors on the interior side of the wall, the thermal barrier is not required to be carried through the floor cavity provided there is a continuous thermal barrier on both the interior side of the exterior wall and the underside of the ceiling. In buildings required to be of Types I, II, III or IV construction, the thermal barrier need not extend to the floorline (see Figure 6) provided the thermal barrier is continuous on the wall and ceiling and, there are no combustible materials on the interior face of the ICF wall in the floor/ceiling space. See Section 4.3.2 for installation details for crawl space applications without an ignition barrier on the interior face.

4.3.2 Attic and Crawl Space Installations: When the ICFs are used for walls of attic or crawl spaces, an ignition barrier complying with IBC Section 2603.4.1.6, or IRC Sections R316.5.3 or R316.5.4, is required, except when all of the following conditions are met:

- Entry to the attic or crawl space is only to service utilities, and no storage is permitted.
- There are no interconnected attic or basement areas.
- Air in the attic or crawl space is not circulated to other parts of the building.
- Under-floor (crawl space) ventilation is provided that complies with IBC Section 1203.4 or IRC Section R408.1, as applicable.
- Attic ventilation is provided when required by IBC Section 1202 or IRC Section R806, as applicable.
- Combustion air is provided in accordance with IMC (*International Mechanical Code*) Section 701.
- The ICFs must have at least one label as described in Section 7.0 visible in every 160 square feet of wall area.

4.4 Exterior Finish:

4.4.1 Above Grade: The exterior surface of the ICF must be covered with an approved wall covering in accordance with





the applicable Code or a current evaluation report. A water-resistant exterior wall envelope is not required for concrete walls complying with IBC Section 1402.2, Exception 1 and IRC Section R703.1.1, Exception 1. Concrete walls are deemed to comply with the air barrier requirements of IECC Section C402.4 and R402.4 provided joints are sealed.

When the wall covering is mechanically attached to structural members, the wall covering must be attached to the flanges of the embedded cross-ties with fasteners, described in Table 2, having sufficient length to penetrate through the flange a minimum of 1/4 inch. The fasteners have an allowable fastener withdrawal and lateral shear strength as noted in Table 2.

The fastener spacing must be designed to support the gravity loads of the wall covering and to resist the negative wind pressures. The negative wind pressure capacity of the exterior finish material must be the same as that recognized in the applicable Code for generic materials, or that recognized in a current evaluation report for proprietary materials and must not exceed the maximum withdrawal capacity of the fasteners listed in Table 2.

Wall coverings attached to the exposed concrete side of the Fox Blocks Reveal or Fox Blocks Compact Reveal systems must be designed using approved fasteners.

4.4.2 Below Grade: Materials used to dampproof or waterproof basement walls must be acceptable to Airlite Plastics Co., the designer, or the contractor, and must comply with the applicable Code or a current evaluation report. The material must be compatible with the ICF foam plastic units, and free of solvents that will adversely affect the EPS foam plastic panels. Dampproofing, waterproofing, and drainage requirements must comply with the applicable Code. No backfill may be applied against the wall until the complete floor system is in place or the wall is adequately braced, unless the wall is designed as a freestanding wall that does not rely on the floor system for structural support.

4.5 Foundation Walls: The ICF system may be used as a foundation stem wall when supporting wood-framed construction, provided the structure is supported on concrete footings complying with the applicable Code. For jurisdictions adopting the IRC, compliance with Section R404 is required.

4.6 Retaining Walls: The ICF system may be used to construct retaining walls, with reinforcement designed in accordance with accepted engineering principles, Section 4.2 of this report and the applicable Code.

4.7 Protection Against Termites: Where the probability of termite infestation is defined by the Code official as "very heavy", the foam plastic must be installed in accordance with IBC Section 2603.8 or IRC Section R318.4, as applicable. Areas of very heavy termite infestation must be determined in accordance with IBC Figure 2603.8 or IRC Figure R301.2 (6).

4.8 Fire-resistance-rated Construction: The forms may be used to construct fire-resistance-rated wall assemblies as described in Intertek Design Listings FXB/ICF 240-01 for Fox Blocks and Fox Blocks Reveal forms, and FXB/ICF 240-02 for Fox Blocks Compact and Fox Blocks Compact Reveal forms. See Intertek Listing "Fox Blocks Insulating Concrete Forms Products" at <https://bpdirectory.intertek.com> for current details.

4.9 Use in Buildings Required to be of Types I, II, III, and IV Construction:

4.9.1 General: Exterior walls constructed with the ICFs for use in buildings required to be of Type I, II, III, or IV construction must comply with the applicable conditions cited in Sections 4.9.2 through 4.9.4.

4.9.2 Interior Finish:

4.9.2.1 Buildings of Any Height: The ICFs must be finished on the interior with an approved 15-minute thermal barrier, such as 1/2 inch thick gypsum board, as required by the IBC. The gypsum board must be installed and attached as described in Section 4.3.1.

4.9.2.2 Alternate Interior Finish for One-story Buildings: For one-story buildings, the interior finish may be in accordance with IBC Section 2603.4.1.4, provided all the conditions in that section are met.

4.9.3 Exterior Finish:

4.9.3.1 Buildings of Any Height: The ICFs must be finished on the exterior with materials described in Sections 4.9.3.1.1, 4.9.3.1.2, 4.9.3.1.3, and 4.9.1.3.4. The ICFs must have at least one label as described in Section 7.0 visible in





every 160 square feet of wall area prior to applying the wall covering.

4.9.3.1.1 Exterior Finish – EIFS and One-coat Stucco: EIFS and one-coat stucco wall coverings may be applied over the ICF, provided the wall covering system is recognized in a current evaluation report and is recognized for use in Types I, II, III, and IV construction. The wall covering system must be installed in accordance with the respective evaluation report and the maximum mass per wall surface area (in lbs/ft²) qualified in the wall covering evaluation report must be greater than 0.361 lbs/ft² (which is the maximum-tolerance mass of the EPS panel on the exterior side of the concrete wall). Acceptable EIFS wall coverings include the following:

- Dryvit Systems, Inc. Outsulation® System as described in ESR-1232;
- Sto Corp. StoTherm Classic Premier and Essence as described in ESR-1720;
- Sto Corp. StoTherm® ci® as described in ESR-1748.

4.9.3.1.2 Exterior Plaster: Exterior plaster must comply with the applicable Code, and the exterior plaster must be a minimum of 7/8 inch thick. The lath must be attached to the flanges of the cross-ties with fasteners described in Section 4.4.1.

4.9.3.1.3 Exterior Finish – Brick Veneer: Anchored brick veneer must be attached to the flanges of the cross-ties with fasteners as described in Section 4.4.1. The 4 inch thick brick veneer must comply with the IBC and must be installed with a minimum 1 inch air gap between the face of the exterior EPS panel and the brick. The brick must be installed with a steel shelf angle attached to the concrete and installed at each floor line and at the top of each window and door opening.

4.9.3.1.4 Other Exterior Wall Coverings: Other wall coverings must be demonstrated to the satisfaction of the building official as meeting the requirements of IBC Section 2603.5. Assemblies tested in accordance with NFPA 285 must include EPS having a maximum mass per wall surface area (in lbs/ft²) greater than 0.361 lbs/ft² (1.76 kg/m²) (which is the maximum-tolerance mass of the EPS panel on the exterior side of the concrete wall).

4.9.4 Fireblocking: Foam plastic on the interior side of exterior walls and on both sides of interior walls must be discontinuous at floor lines. The intersections must be

constructed to prevent the passage of flame, smoke and hot gases from one floor to another.

4.10 Special Inspection:

4.10.1 IBC: Special inspection is required as noted in IBC Section 1705 for placement of reinforcing steel and concrete, and for concrete cylinder testing. When an EIFS wall covering is applied, special inspection in accordance with IBC Sections 1704.1 and 1705.16 is required.

4.10.2 IRC: For walls designed in accordance with Section 4.2.3 or PCA 100 (Section 4.2.4), special inspection is not required. When walls are designed in accordance with the IBC, as described in Section 4.2.4, special inspection is required as described in Section 4.10.1.

5.0 CONDITIONS OF USE

The Fox Blocks, Fox Blocks Compact, Fox Blocks Reveal, and Fox Blocks Compact Reveal Insulating Concrete Forms described in this Research Report comply with, or are a suitable alternative to, what is specified in those Codes listed in Sections 1.0 and 2.0 of this report, subject to the following conditions:

5.1 The ICFs must be manufactured, identified, and installed in accordance with this Research Report, the manufacturer's published installation instructions, and the applicable Code. The provisions in this report take precedence over the provisions in the manufacturer's instructions.

5.2 When required by the Code official, calculations showing compliance with the general design requirements of the applicable Code must be submitted to the building official for approval, except where calculations are not required under IRC Section R608.1. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.3 When required by the Code official, calculations and details showing compliance with IRC Section R08.5.3 and R404.1.3.3.6 must be submitted, establishing that the ICFs provide sufficient strength to contain concrete during placement and the cross-ties are capable of resisting the forces created by fluid pressure of fresh concrete. The calculations and details must be prepared by a registered



design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.4 The ICFs must be separated from the building interior with an approved 15-minute thermal barrier, except for attic and crawl space construction as described in Section 4.3.2.

5.5 The plastic cross-ties must be stored indoors away from direct sunlight.

5.6 Special inspection must be provided in accordance with Section 4.10 of this report.

5.7 The Fox Blocks forms are manufactured by Airlite Plastics Co. in Anchorage, AK; Bruce, AB; Cap-Pelé, NB; Colorado Springs, CO; Decatur, AL; Jerome ID; Keller, TX; McFarland, CA; Nazareth, PA; Nixa, MO; Northbridge, MA; Omaha, NE; Phoenix, AZ; Post Falls, ID; Starbuck, MB; Vaudreuil-Dorion, QC; Watertown, SD; the Fox Blocks Reveal, Fox Blocks Compact and Fox Blocks Compact Reveal forms are manufactured by Airlite Plastics Co. in Nazareth, PA; Omaha, NE. The forms are produced under a quality control program with inspections conducted by Intertek Testing Services NA Inc.

6.0 SUPPORTING EVIDENCE

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Stay-in-place, Foam Plastic Insulating Concrete Form (ICF) Systems for Solid Concrete Walls (AC308), dated October 2012, editorially revised October 2015.

6.2 Data in accordance with ASTM E2634-11.

6.3 Data in accordance with CAN/ULC-S717.1-12.

6.4 Intertek Listing Report "[Fox Blocks Insulating Concrete Form \(ICF\) Products](#)".

7.0 IDENTIFICATION

The Fox Blocks, Fox Blocks Compact, Fox Blocks Reveal, and Fox Blocks Compact Reveal forms are identified by a marking bearing the report holder's name (Airlite Plastics Co.), the product name, the manufacturing location, the serial number, the Intertek Mark, and the Code Compliance Research Report number (CCRR-1010).

When use is in an attic or crawl space without an ignition barrier, as described in Section 4.3.2, one label bearing the evaluation report number and the phrase "Acceptable for use in attics and crawl spaces" must be visible in every 160 square feet of exposed exterior wall area.

When use is in buildings required to be of Type I, II, III, or IV construction, one label must be visible in every 160 square feet of wall area.

8.0 OTHER CODES

This section is not applicable.

9.0 CODE COMPLIANCE RESEARCH REPORT USE

9.1 Approval of building products and/or materials can only be granted by a building official having legal authority in the specific jurisdiction where approval is sought.

9.2 Code Compliance Research Reports shall not be used in any manner that implies an endorsement of the product by Intertek.

9.3 Reference to <https://bpdirectory.intertek.com> is recommended to ascertain the current version and status of this report.

This Code Compliance Research Report ("Report") is for the exclusive use of Intertek's Client and is provided pursuant to the agreement between Intertek and its Client. Intertek's responsibility and liability are limited to the terms and conditions of the agreement. Intertek assumes no liability to any party, other than to the Client in accordance with the agreement, for any loss, expense or damage occasioned by the use of this Report. Only the Client is authorized to permit copying or distribution of this Report and then only in its entirety, and the Client shall not use the Report in a misleading manner. Client further agrees and understands that reliance upon the Report is limited to the representations made therein. The Report is not an endorsement or recommendation for use of the subject and/or product described herein. This Report is not the Intertek Listing Report covering the subject product and utilized for Intertek Certification and this Report does not represent authorization for the use of any Intertek certification marks. Any use of the Intertek name or one of its marks for the sale or advertisement of the tested material, product or service must first be approved in writing by Intertek.





TABLE 1A – PROPERTIES EVALUATED UNDER IBC AND IRC

PROPERTY	IBC SECTION ¹	IRC SECTION ¹
Physical Properties	N/A	R404.1.3.3.6.1 [R404.1.2.3.6.1] and R608.4.4 [R611.3]
Surface Burning Characteristics	2603.3	R316.3 [R316.1]
Attic and Crawl Space Applications	2603.4.1.6 and 2603.9 [2603.4.1.6 and 2603.10]	R316.5.3, R316.5.4 and R316.6
Fire Resistance	703.2	R302.1
Exterior Walls in Types I – IV Construction	2603.5	N/A

¹2015 Code sections are shown with 2012 Code sections in parenthesis, where different

TABLE 1B – PROPERTIES EVALUATED UNDER CBC AND CRC

PROPERTY	CBC SECTION	CRC SECTION
Physical Properties	N/A	R404.1.3.3.6.1 and R608.4.4
Surface Burning Characteristics	2603.3	R316.3
Attic and Crawl Space Applications	2603.4.1.6 and 2603.9	R316.5.3, R316.5.4 and R316.6
Fire Resistance	703.2	R302.1
Exterior Walls in Types I – IV Construction	2603.5	N/A

TABLE 2 – ALLOWABLE WITHDRAWAL AND LATERAL CAPACITIES OF FASTENERS IN CROSS-TIE FLANGES

FASTENER ¹	ALLOWABLE LOAD CAPACITY (lbf)	
	Lateral	Withdrawal
2 ¹ / ₂ -inch-long, No.10 wood screw	68	38
1 ⁵ / ₈ -inch-long, No. 6 coarse-thread drywall screw	45	29
1 ⁵ / ₈ -inch-long, No. 6 fine-thread drywall screw	37	32
2-inch-long, 0.098-inch-diameter ring shank drywall nail	19	16
2-inch-long, No. 8 saw tooth-thread exterior deck screw	71	36

¹Fasteners must be of sufficient length to penetrate through the flange a minimum of 1/4 inch

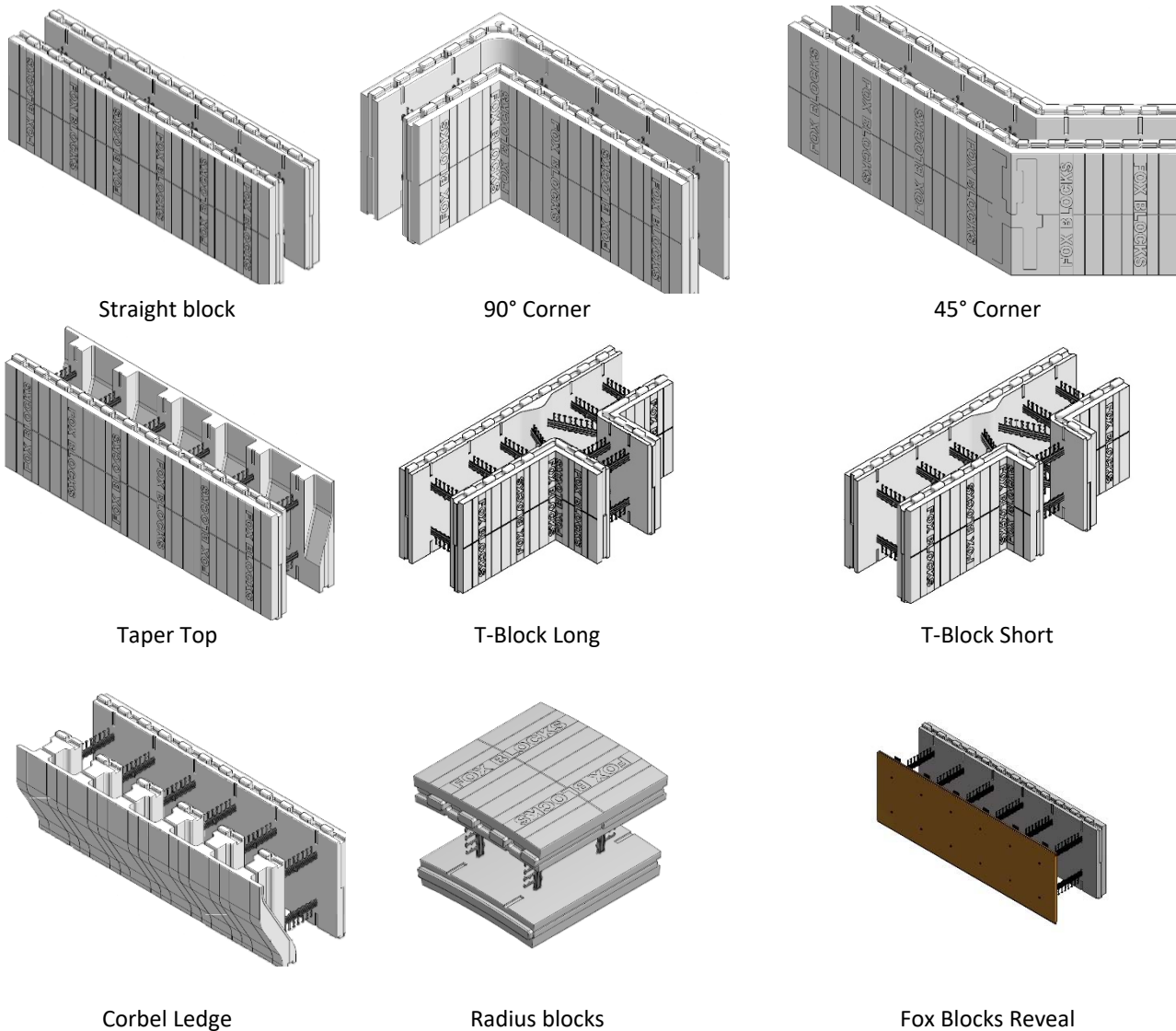


Figure 1 – FOX BLOCKS AND FOX BLOCKS REVEAL SYSTEM TYPICAL ILLUSTRATIONS

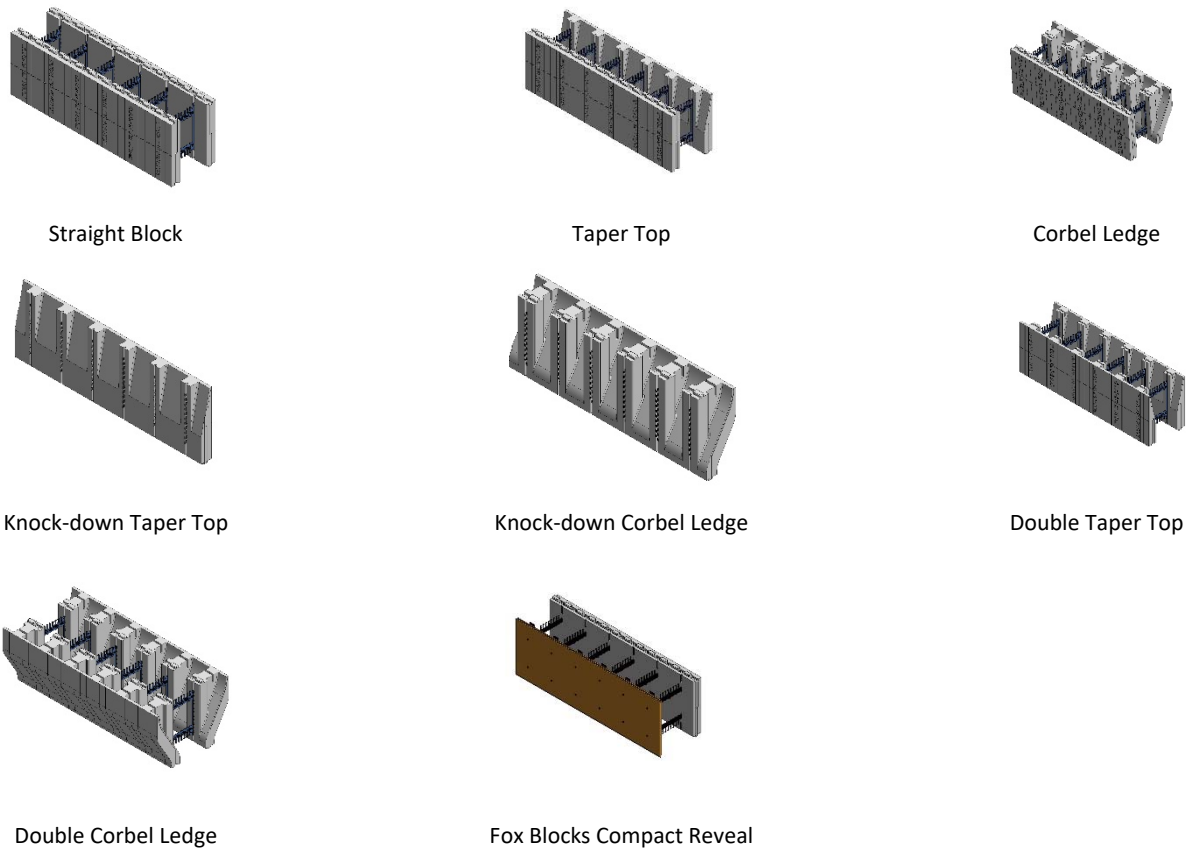


Figure 2 – FOX BLOCKS COMPACT AND FOX BLOCKS COMPACT REVEAL SYSTEM TYPICAL ILLUSTRATIONS

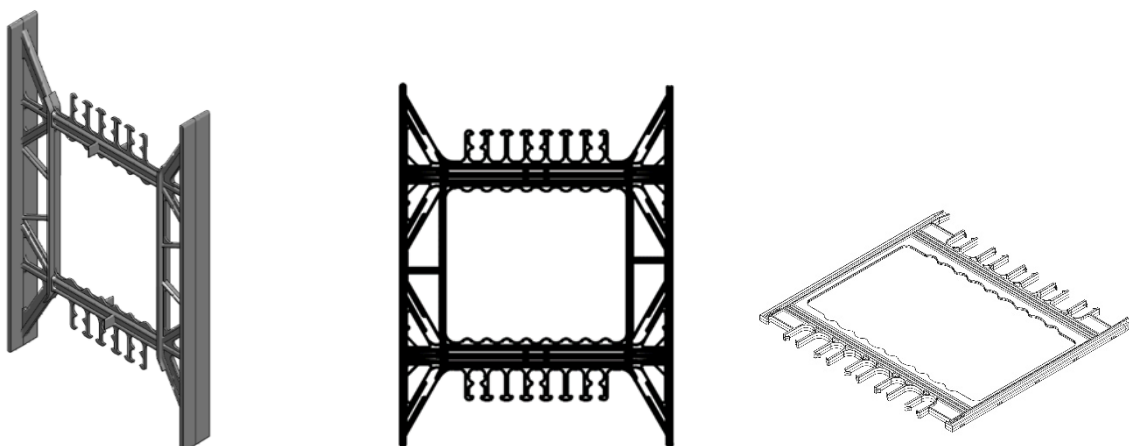


Figure 3 – FOX BLOCKS, FOX BLOCKS COMPACT, FOX BLOCKS REVEAL, AND FOX BLOCKS COMPACT REVEAL

SYSTEM CROSS-TIES

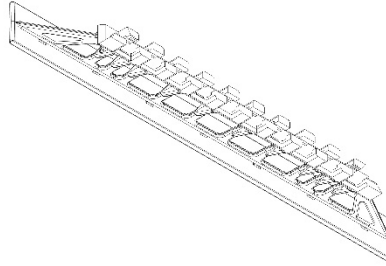


Figure 4 – FOX BLOCKS COMPACT AND FOX BLOCKS COMPACT REVEAL SYSTEM CROSS-TIE GRIPPERS

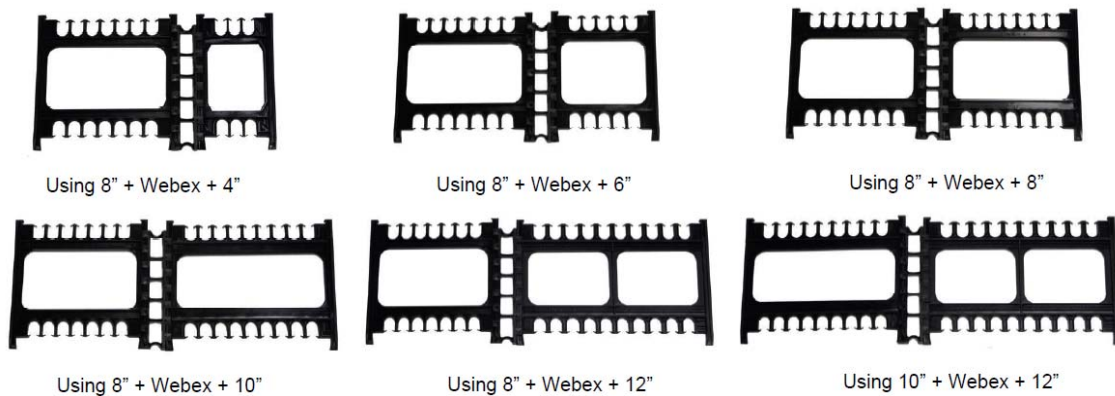


Figure 5 – FOX BLOCKS COMPACT SYSTEM CROSS-TIE EXTENSION CONFIGURATIONS

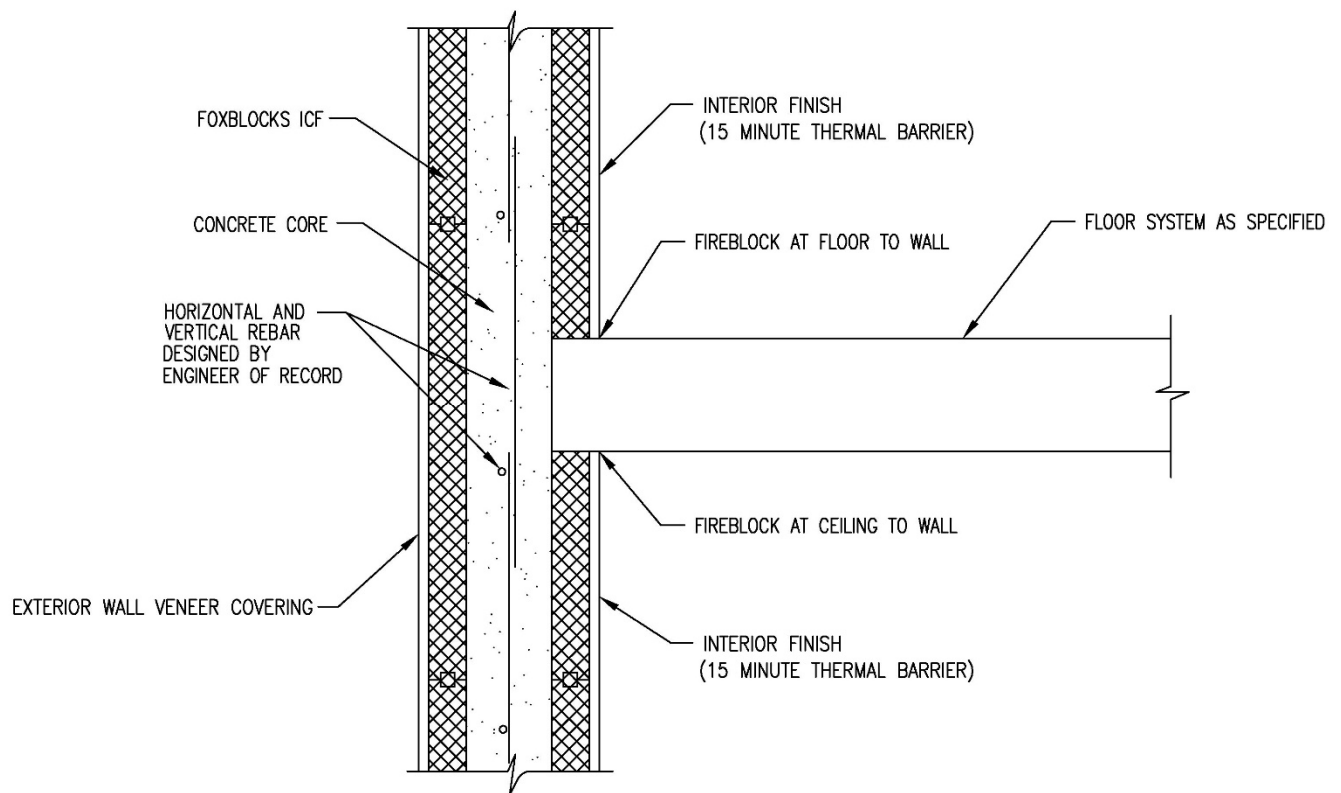


Figure 6 – TYPICAL WALL-TO-FLOOR INTERSECTION FOR TYPES I, II, III, AND IV CONSTRUCTION