

ICC-ES Evaluation Report

ESR-1147

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This report is subject to re-examination in two years.

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

REPORT HOLDER:

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EVALUATION SUBJECT:
INTEGRASPEC INSULATING CONCRETE FORMS (ICF)
1.0 EVALUATION SCOPE
Compliance with the following codes:

- 2009 *International Building Code*® (2009 IBC)
- 2009 *International Residential Code*® (2009 IRC)
- 2006 *International Building Code*® (2006 IBC)*
- 2006 *International Residential Code*® (2006 IRC)*

*Codes indicated with an asterisk are addressed in Section 8.0

Properties evaluated:

- Structural
- Surface burning characteristics
- Attic and crawl space fire evaluation
- Types I through IV (noncombustible) construction

2.0 USES

Integraspec insulating concrete forms (ICFs) are used as stay-in-place forms for structural concrete, load-bearing and nonload-bearing exterior and interior walls; beams and lintels; and foundation and retaining walls. The forms remain in place after placement of concrete and must be protected by an approved interior and exterior finish material as described in Sections 4.2.2 and 4.2.3 of this report, respectively. The forms may be used in Type V construction and in construction permitted under the IRC; for use in buildings of Types I, II, III and IV (noncombustible) construction, installation must be in accordance with Section 4.3.

3.0 DESCRIPTION
3.1 General:

Integraspec ICFs consist of two dovetailed expanded polystyrene (EPS) foam plastic face panels connected with plastic web spacers perpendicular to the EPS panels, forming a hollow-core ICF form. The spacers slide into plastic channel inserts molded into the interior face of the EPS panels. See Figure 1 of this report.

The forms are available in a standard length of 48 inches (1219 mm), an interlocked height of 12¹/₄ inches (311mm) and six standard overall widths, of 9 inches (229 mm), 10 inches (254 mm), 11 inches (279 mm), 13 inches (330 mm), 15 inches (381mm), and 17 inches (432 mm). The six widths have concrete core widths of, respectively, 4 inches (102 mm), 5 inches (127 mm), 6 inches (152 mm), 8 inches (203 mm), 10 inches (254 mm), and 12 inches (305 mm). The forms have interlocking edges at the top, bottom and sides. The 9-, 10-, 11-, 13-, 15- and 17-inch-wide (229, 254, 279, 330, 381 and 432 mm) forms are filled at the jobsite with concrete to provide a solid monolithic concrete wall, which complies with the flat ICF wall system requirements specified in IRC Section R611.3.

3.2 Materials:

3.2.1 Foam Plastic: The EPS panels are expanded polystyrene foam plastic having a nominal density of 1.5 pcf (24 kg/m³), and comply with ASTM C 578 as Type II. The panels are nominally 2.5 inches (64 mm) thick, and have a flame-spread index of 25 or less and a smoke-development index of 450 or less when tested in accordance with ASTM E 84.

3.2.2 Cross-ties: The cross-ties consist of channel inserts, which are embedded in the EPS panels; and web spacers, which are used to connect the channel inserts of two panels to assemble the ICF. The high-impact polystyrene channel inserts are molded into each panel at 8 inches (203 mm) on center, and have 1⁵/₈-inch-wide (41 mm) flanges that are recessed ³/₄-inch (19.1 mm) from the outer EPS panel surface; and a C-channel that is flush with the inner surface of the EPS panel to enable slotting of web spacers. The high-impact polystyrene web spacers are available in sizes to assemble ICFs to form 4-, 5-, 6-, 8-, 10- and 12-inch-thick (102, 127, 152, 203, 254 and 305 mm) concrete walls. See Figure 2.

3.2.3 Concrete: The concrete must be normal-weight concrete, complying with the applicable code, with a maximum ¹/₂-inch (12.7 mm) aggregate size for 4-, 5- and 6-inch-thick (101, 127 and 152 mm) concrete walls and a maximum ³/₄ inch (19 mm) aggregate size for 8-inch- 10-inch- and 12-inch-thick (203, 254 and 305 mm) concrete

walls. Concrete must have a minimum compressive strength of 2,500 psi (17.24 MPa) at 28 days. Under the IRC, the concrete must comply with IRC Sections R404.1 and R611.5.1.

3.2.4 Reinforcement: Walls must be reinforced with deformed steel reinforcing bars having a minimum specified yield strength of 40,000 psi (275 MPa) or 60,000 psi (414 MPa). The deformed steel bars must comply with Section 3.5.3.1 of ACI 318 and IBC Section 1903; under the IRC, reinforcement must comply with IRC Sections R404.1.2.3.7 and R611.5.2.

3.2.5 Other Components: When required by the code official, wood members in contact with concrete for plates or windows and door framing, must be pressure-treated in accordance with the applicable code or be of a naturally-durable species, and must be attached with hot-dipped galvanized steel fasteners in accordance with IBC Section 2304.9.5 or IRC Section R317.3, as applicable. Materials other than wood are permitted for window and door framing if approved by the code official.

3.2.6 Standard and Accessory Forms: Standard and accessory forms include the Standard Form Unit; 90° Corner Unit; 45° Corner Unit; Taper Top Panel; Integra-Back; and IntegraT-wall.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 IBC Design Method, Including Alternate IBC Wind Design in Accordance with ICC-600-2008: Concrete walls formed by Integraspec ICFs must be designed and constructed in accordance with IBC Chapters 16 and 19, as applicable. Footings and foundations must be designed and constructed in accordance with IBC Chapter 18.

Solid concrete walls formed by flat ICFs may be designed and constructed in accordance with the prescriptive provisions of Section 209 of the ICC Standard for Residential Construction in High Wind Regions (ICC 600-2008), subject to the limitations in Exception 1 of IBC Sections 1609.1.1 and 1609.1.1.1. Design and construction under the provisions of ICC 600-2008 are limited to the resistance of wind forces.

4.1.2 IRC Design Method: Insulating concrete walls formed by the Integraspec ICFs, which comply with IRC Section R611.3.1 as flat insulating concrete wall forms, must be designed and constructed in accordance with IRC Sections R404.1.2 and R611, for flat wall systems. Integraspec ICFs not complying with the dimensional requirements found in IRC Table R611.3 [i.e., solid concrete walls thicker than 10 inches (254 mm)] must be designed and constructed in accordance with the provisions of Section 4.1.1. of this report.

The 4- and 5-inch-thick (102 and 127 mm) concrete walls are limited to above-grade construction in accordance with IRC Section R611.

Footings and foundations must be designed and constructed in accordance with IRC Chapter 4.

4.1.3 Alternate IRC Design Method: When the Integraspec ICFs are used to construct buildings that do not conform to the applicability limits of IRC Sections R404.1.2 and R611.2, 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, and IBC Chapters 16, 18 and 19 as noted in Section 4.1.1 of this report.

4.2 Installation:

4.2.1 General: The Integraspec ICFs must be installed in accordance with this report, the applicable code and Phil-Insul Corporation's published installation instructions. The published installation instructions and this report must be strictly adhered to, and a copy of these instructions must be available at the jobsite at all times during installation.

The Integraspec ICF wall system must be supported on concrete footings complying with IBC Chapters 18 and 19, or IRC Chapter 4, as applicable. Vertical reinforcement bars embedded in the footing must extend into the base of the wall system the minimum development length necessary for compliance with Chapter 12 of ACI 318 (IBC and IRC). Vertical and horizontal reinforcement bars must have concrete protection in accordance with, and must be placed as required by, the design and the applicable code. Additional reinforcement around doors and windows must be described in the approved plans. Concrete quality, mixing and placement must comply with IBC Section 1905 or IRC Sections R404.1.2.3 and R611.5.1, as applicable. Window and door openings must be built into the forms, with the same dimensions as the "rough stud opening" specified by the window or door manufacturer, prior to the placement of the concrete. Connections of concrete walls to footings, floors, ceilings and roofs must be in accordance with IRC Section R611.9, or be engineered in accordance with the IBC, whichever code is applicable. Anchor bolts used to connect wood ledgers and plates to the concrete must be cast in place, with the bolts sized and spaced as required by design and the applicable code. Details must be prepared to accommodate the specific job situation, in accordance with the applicable code and the requirements of this report, subject to the approval of the code official.

4.2.2 Interior Finish:

4.2.2.1 General: The installation details in this section (Section 4.2.2) address compliance with the thermal barrier and interior finish requirements of the codes. The interior side of the forms must be covered with a thermal barrier consisting of minimum $\frac{1}{2}$ -inch-thick (12.7 mm) gypsum wallboard complying with ASTM C 36 or ASTM C 1396. The gypsum wallboard must be placed either vertically or horizontally and must be attached to the flanges of the cross-ties with minimum $1\frac{5}{8}$ -inch-long (41 mm), No. 6, Type W, coarse-thread gypsum wallboard screws spaced 12 inches (305 mm) on center horizontally and 16 inches (406 mm) on center vertically. The screws must be of sufficient length to penetrate beyond the back side of the cross-tie flanges a minimum of $\frac{1}{4}$ inch (6.4 mm). Gypsum wallboard joints must be taped and filled with joint compound in accordance with GA-216 or ASTM C 840. See Section 4.2.2.2 for installation details when used as walls of attics or crawl spaces without a covering on the interior face.

4.2.2.2 Attic and Crawl Space Installation: When the Integraspec ICFs are used as walls of attics and crawl spaces and no ignition barrier is applied to the interior space side of the foam plastic, all of the following conditions must be 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.
- Attic ventilation is provided when required by IBC Section 1203.2 or IRC Section R806, as applicable.

- Under-floor (crawl space) ventilation is provided when required by IBC Section 1203.3 or IRC Section R408.1, as applicable.
- Combustion air is provided in accordance with IMC (*International Mechanical Code*[®]) Section 701.

4.2.3 Exterior Finish:

4.2.3.1 Above Grade: The Integraspec ICFs must be covered on the exterior with an approved wall covering in accordance with the applicable code or a current ICC-ES evaluation report. Under the IRC, the walls must be flashed in accordance with IRC Section R703.8. The approved exterior wall covering must be attached to the flanges of the cross-ties with No. 8, Type W, course-thread gypsum wallboard screws. The screws must be corrosion-resistant and have sufficient length to penetrate beyond the back side of the cross-tie flange a minimum of $\frac{3}{8}$ inch (9.5 mm). The screws have an allowable withdrawal capacity of 28 pounds (125 N) and a lateral capacity of 57 pounds (254 N). The fastener spacing must be designed to support the gravity loads of the wall covering and 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 ICC-ES evaluation report for proprietary materials.

4.2.3.2 Below Grade: Materials used to dampproof below-grade walls must be specified by Phil-Insul Corporation and must be free of solvents, hydrocarbons, ketones and esters that will adversely affect the EPS foam plastic. Applicable dampproofing and waterproofing requirements are in IBC Section 1807 and IRC Section R406, as applicable. Compliance is required with the drainage requirements in IBC Section 1805.4 or IRC Section R405.1, as applicable. No backfill may be applied against the wall until the complete floor system is in place, unless the wall is designed as a freestanding wall that does not rely on the floor system for structural support.

4.2.4 Foundation Walls: Integraspec ICFs used as a foundation stem wall when supporting wood-framed or concrete construction must be supported on concrete footings complying with the applicable code. Design and installation of the Integraspec ICFs as foundation stem walls must comply with IBC Section 1807.1.5 or IRC Sections R404 and R404.1.2, as applicable. For concrete foundation walls under the IRC, vertical reinforcement size and spacing must be in accordance with IRC Tables R404.1.2(2), R404.1.2(3), R404.1.2(4) and R404.1.2(8). For concrete foundation walls under the IBC, vertical reinforcement size and spacing must be in accordance with IBC Table 1807.1.6.2. Under the IRC, alternate design and construction may be in accordance with ACI 318, ACI 332 or PCA 100.

4.2.5 Retaining Walls: Integraspec ICFs used to form concrete retaining walls must be reinforced with steel reinforcing bars designed in accordance with accepted engineering principles and Section 4.1.

4.2.6 Protection Against Termites: Where the probability of termite infestation is defined as “very heavy” by the code official, 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), as applicable.

4.3 Types I, II, III and IV (Noncombustible) Construction:

4.3.1 General: The assemblies described in this section (Section 4.3) comply with IBC Section 1406.2.1.1.

4.3.2 Interior Finish: The interior side of the forms must be covered with a thermal barrier consisting of minimum $\frac{1}{2}$ -inch-thick (12.7 mm) regular gypsum wallboard installed as described in Section 4.2.2.1. Other interior finish thermal barriers are acceptable, provided they are equivalent to minimum $\frac{1}{2}$ -inch-thick (12.7 mm) regular gypsum wallboard, and applied in accordance with a current ICC-ES evaluation report.

4.3.3 Exterior Finish: One of the following exterior finishes, described in Sections 4.3.3.1 through 4.3.3.3, must be installed over the exterior of the ICFs:

4.3.3.1 EIFS and One-coat Stucco: The below-listed EIFS (exterior insulation and finish system) or one-coat stucco lamina may be installed over the exterior of the forms using the reinforcing fabric or lath, base coat and finish coat materials described in the applicable ICC-ES evaluation report. Installation of the lamina must be in accordance with the wall covering manufacturer's published installation instructions, specific to ICFs.

- BASF Construction Chemicals, LLC–Wall Systems, Senergy Senerflex EIFS as described in [ESR-1794](#).
- BASF Construction Chemicals, LLC–Wall Systems, Finestone Pebbletex EIFS as described in [ESR-2165](#).
- Dryvit Systems, Inc., Outsulation EIFS as described in [ESR-1232](#).
- Parex USA, Inc., WaterMaster DB System as described in [ESR-2562](#).
- Sto Corp. StoTherm Classic NExT as described in [ESR-1748](#).
- Omega Products International, Inc., Omega Diamond Wall One Coat Stucco as described in [ESR-1194](#).

4.3.3.2 Exterior Cement Plaster: Metal lath and exterior cement plaster must comply with the IBC, and the exterior plaster must be a minimum of $\frac{7}{8}$ inch (22 mm) thick. The lath must be attached to the flanges of the cross-ties with fasteners as described in Section 4.2.3.1.

4.3.3.3 Brick Veneer: Anchored brick veneer must be attached to the flanges of the cross-ties with fasteners as described in Section 4.2.3.1. The brick veneer must comply with the IBC and must be installed with a minimum 1-inch (25.4 mm) air gap between the exterior face of the EPS and the brick. The brick must be supported on a steel shelf angle attached to concrete at each floor line and at the top of each window and door opening, in accordance with the IBC.

4.3.4 Fire-blocking: Foam plastic on the interior sides of walls must be discontinuous at floor lines. Floor-to-wall intersections must be constructed to prevent the passage of flame, smoke and hot gases from one story to another. Details of floor-to-wall intersections must be provided to the code official. See Figure 3 for typical details.

4.4 Special Inspections:

4.4.1 IBC: Special inspection is required as noted in IBC Section 1704 for placement of reinforcing steel and concrete, and for concrete cylinder testing. Special inspection, in accordance with IBC Sections 1704.1 and 1704.14, is required when an EIFS wall covering is applied. Duties of the special inspector include verifying field preparation of materials, expiration dates, installation of components, curing of components, and installation of joints and sealants.

4.4.2 IRC: For walls designed and constructed in accordance with Section 4.1.2 or PCA 100 as described in Section 4.1.3, special inspection is not required. For walls

designed for use under the IRC, in accordance with the IBC as described in Sections 4.1.1 and 4.1.3, special inspection in accordance with Section 4.4.1 is required.

5.0 CONDITIONS OF USE

The Integraspec ICFs described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The ICFs must be manufactured, identified and installed in accordance with this report and Phil-Insul Corporation's published installation instructions and the applicable code. If there is a conflict between the published installation instructions and this report, this report governs.
- 5.2 Integraspec ICFs must be separated from the building interior as described in Sections 4.2.2.1, except for attic and crawl space construction as described in Section 4.2.2.2 of this report.
- 5.3 When used in attics and crawl space construction as described in Section 4.2.2.2, the Integraspec ICFs must have at least one label as described in Section 7.0 visible in every 160 square feet (14.7 m²) of exposed interior wall area.
- 5.4 Use of the Integraspec ICFs is limited to Type V construction as defined in IBC Chapter 6, and to nonfire-resistance-rated construction in accordance with the IRC, except as described in Section 4.3.
- 5.5 When use is in buildings required to be of Types I through IV (noncombustible) construction, as described in Section 4.3, the Integraspec ICFs must have at least one label as described in Section 7.0 visible in every 160 square feet (14.7 m²) of wall area, prior to the application of wall covering.
- 5.6 When required by the code official, calculations showing compliance with the design requirements of Section 4.1.1 of this report must be submitted to the code official for approval, except that calculations are not required when the building design is based on the prescriptive methods noted in Sections 4.1.2 and 4.1.3. 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.
- 5.7 In areas where the probability of termite infestation is defined as "very heavy" and when ICFs are used with wood construction, the foam plastic must be installed in accordance with Section 4.2.6.
- 5.8 Concrete quality, mixing and placement must comply with IBC Section 1905 or IRC Section R611.5.1, as applicable.
- 5.9 Special inspection must be provided in accordance with Section 4.4.
- 5.10 When required by the code official, calculations showing compliance with IRC Sections R611.5.3 and R404.1.2.3.6 must be submitted to the code official for approval. The calculations and details, establishing that the ICFs provide sufficient strength to contain concrete during placement and that the cross-ties are capable of resisting the forces created by fluid pressure of fresh concrete, must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

5.11 The Integraspec ICFs are produced for Phil-Insul Corporation by ACH Foam Technologies in Kansas City, Kansas, under a quality control program with inspections by Intertek Testing Services NA Ltd. (AA-691).

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Stay-in-place, Foam Plastic Insulating Concrete Form (ICF) Systems for Solid Concrete Walls (AC353), dated October 2010.

7.0 IDENTIFICATION

Each bundle of Integraspec ICF panels bears a label that includes the name and address of Phil-Insul Corporation; the Integraspec trademark; the manufacturer's name (ACH Foam Technologies); the name of the inspection agency (Intertek Testing Services NA Ltd.); the evaluation report number (ESR-1147); and the phrase, "Acceptable for use in attics and crawl spaces." Also, one ICF panel in each bundle is labeled on the outer side of the panel with the same information.

Additionally, web spacers are marked with the size, the manufacturing date and lot number, the word, "Integraspec", and the evaluation report number (ESR-1147).

8.0 OTHER CODES

8.1 Evaluation Scope:

In addition to the 2009 IBC and the 2009 IRC, the products described in this report were evaluated for compliance with the requirements of the following codes:

- 2006 *International Building Code*[®] (2006 IBC)
- 2006 *International Residential Code*[®] (2006 IRC)

The products described in this report comply with, or are suitable alternatives to what is specified in, the codes listed above, subject to the provisions of Sections 8.2 through 8.5.

8.2 Uses:

See Section 2.0.

8.3 Description:

Same as Section 3.0, except for the following revisions:

- Revise Section 3.2.3 to say that concrete must comply with 2006 IRC Sections R404.4 and R611.6.1.
- Revise Section 3.2.4 to say that steel reinforcement must comply with 2006 IRC Sections R404.4.6 and R611.6.2.
- Revise Section 3.2.5 to say that attachment of wood members in contact with concrete must comply with 2006 IRC Section R319.3.

8.4 Design and Installation:

8.4.1 Design:

8.4.1.1 Method: Concrete walls formed by the Integraspec ICFs must be designed and constructed in accordance with 2006 IBC Chapters 16 and 19, as applicable. Footings and foundations must be designed and constructed in accordance with 2006 IBC Chapter 18.

8.4.1.2 IRC Method: Concrete walls formed by the Integraspec ICFs must be designed and constructed in accordance with 2006 IRC Sections R404.4 and R611 for flat ICF wall systems. Footings and foundations must be designed and constructed in accordance with 2006 IRC Chapter 4.

8.4.1.3 Alternate IRC Method: When buildings constructed under the 2006 IRC provisions do not conform to the applicability limits of 2006 IRC Sections R404.4.1 and R611.2, the structural analysis and design of the concrete must be in accordance with ACI 318 and 2006 IBC Chapter 19. The empirical design approach specified in ACI 318 Section 14.5 is applicable to the design of concrete walls formed by the Integraspec flat wall forms.

8.4.2 Installation: Same as Section 4.2, except for the following revisions:

- Revise Section 4.2.1 to say that concrete quality, mixing and placement must comply with 2006 IBC Section 1905 or 2006 IRC Section R611.6.1. Anchorage of wood ledger boards supporting bearing ends of joists or trusses to flat ICF walls must be in accordance with 2006 IRC Section R611.8.2, or be engineered in accordance with the IBC, whichever code is applicable.
- Revise Section 4.2.2.2 to say that combustion air is provided in accordance with 2006 IMC Sections 701 and 703.
- Revise Section 4.2.3.2 to say that compliance is required with drainage requirements in 2006 IBC Section 1807.4 or 2006 IRC Section R405.1, as applicable.
- Revise Section 4.2.4 to say that design and installation of foundation stem walls must comply with 2006 IBC Section 1805.5 or 2006 IRC Sections R404 and R404.1.2, as applicable.
- Revise Section 4.2.6 to say that where the probability of termite infestation is defined as “very heavy” by the code official, the foam plastic must be installed in accordance with 2006 IBC Section 2603.8 or 2006 IRC Section R320.5, as applicable.

8.4.3 Types I, II, III and IV (Noncombustible) Construction:

See Section 4.3.

8.4.4 Special Inspection:

8.4.4.1 IBC: Special inspection is required as noted in 2006 IBC Section 1704 for placement of reinforcing steel and concrete, and for concrete cylinder testing. Special inspection, in accordance with 2006 IBC Sections 1704.1

and 1704.12, is required when an EIFS wall covering is applied. Duties of the special inspector include verifying field preparation of materials, expiration dates, installation of components, curing of components, and installation of joints and sealants.

8.4.4.2 IRC: For walls designed and constructed in accordance with Section 8.4.1.2, special inspection is not required. For walls designed for use under the 2006 IRC, in accordance with Section 8.4.1.3 of this report, special inspection in accordance with Section 8.4.4.1 is required.

8.5 Conditions of Use:

The conditions of use in Section 5.0 apply with the following revisions:

- Revise Section 5.6 to say that when required by the code official, calculations showing compliance with the design requirements of Section 8.4.1.1 must be submitted to the code official for approval, except calculations are not required when the building design is based on the prescriptive method noted in Section 8.4.1.2. 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.
- Revise Section 5.7 to say that in areas where the probability of termite infestation is defined as “very heavy” and when ICFs are used with wood construction, the foam plastic must be installed in accordance with Section 8.4.2.
- Revise Section 5.8 to say that concrete quality, mixing and placement must comply with 2006 IBC Section 1905 or 2006 IRC Section R611.6.1, as applicable.
- Revise Section 5.9 to say that special inspection must be in accordance with Section 8.4.4.
- Section 5.10 is not applicable.

8.6 Evidence Submitted:

Data in accordance with the ICC-ES Acceptance Criteria for Stay-in-place, Foam Plastic Insulating Concrete Form (ICF) Systems for Solid Concrete Walls (AC353), dated October 2007 (editorially revised April 2008).

8.7 Identification:

See Section 7.0.



Typical Standard Panel / Block



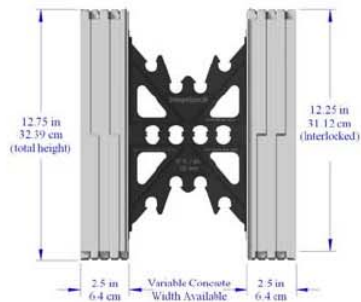
90 Deg. Corner unit



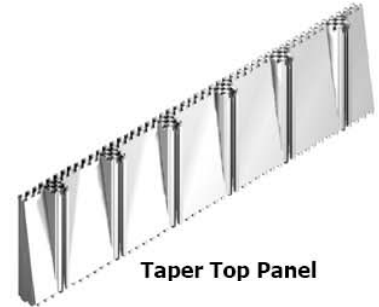
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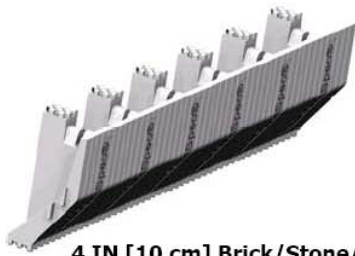
90 Deg. Commercial Corner Unit



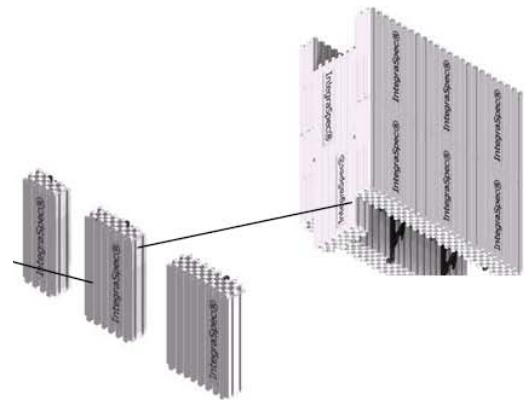
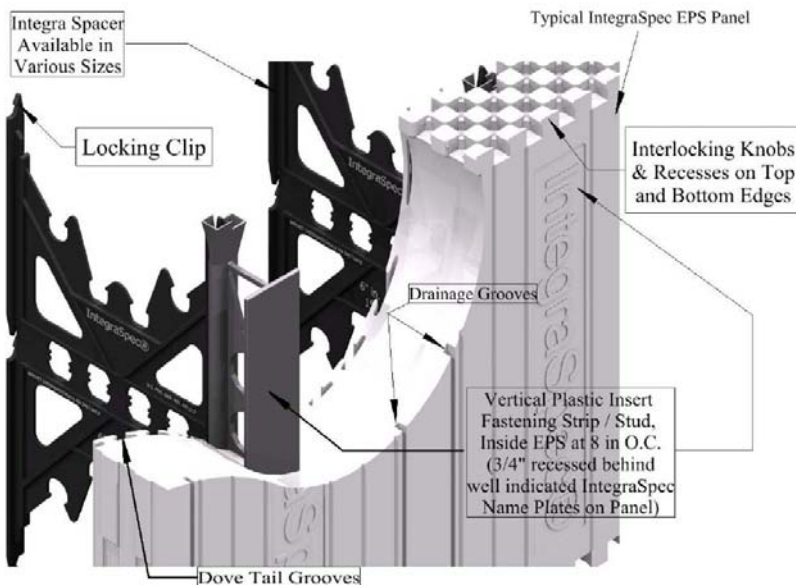
Typical IntegraSpec
(End View)



Taper Top Panel



4 IN [10 cm] Brick/Stone/
Ledger Panel



IntegraBucks – Wall End Cap. Windows
& Doors insulating buck

FIGURE 1

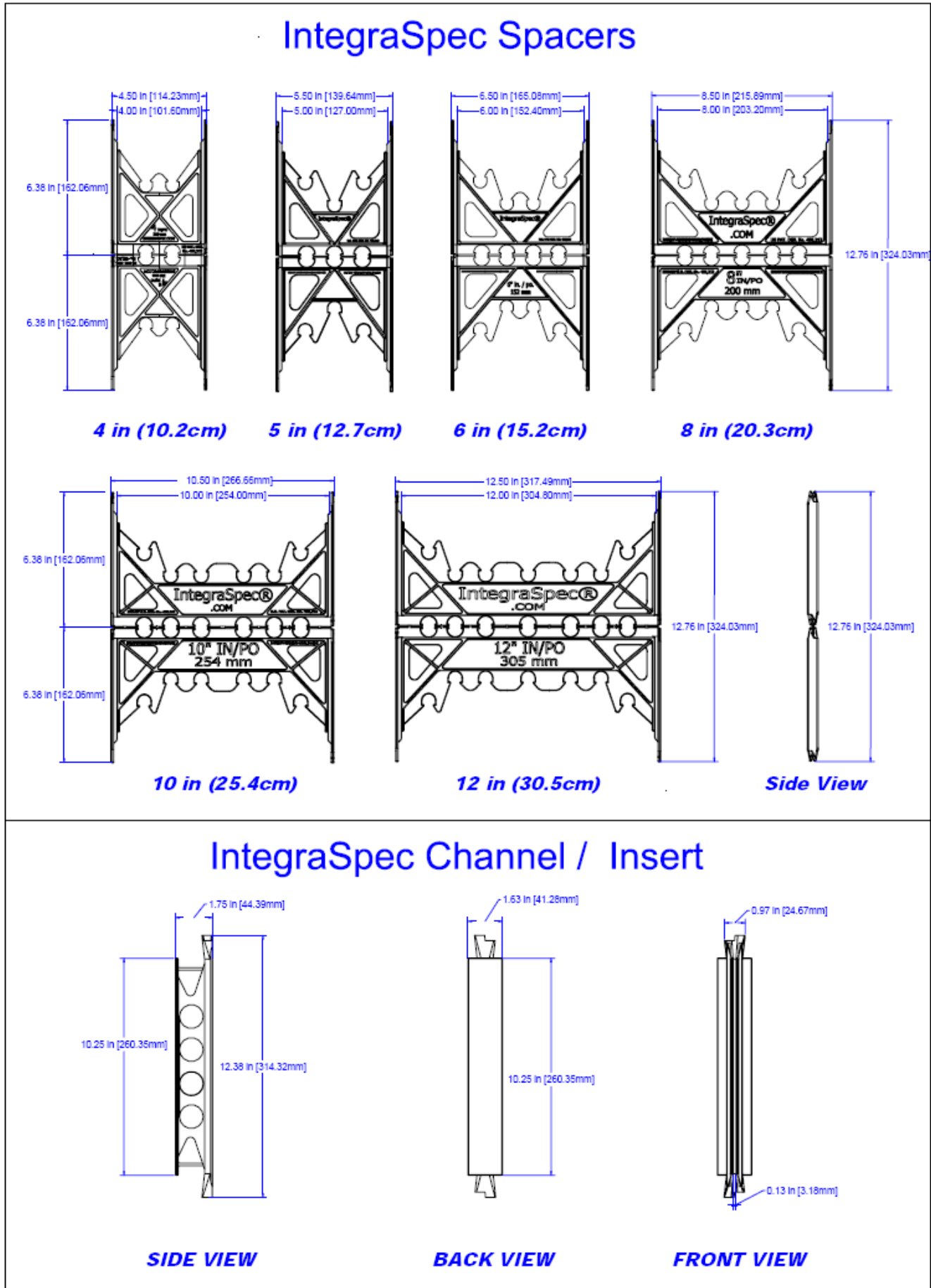


FIGURE 2

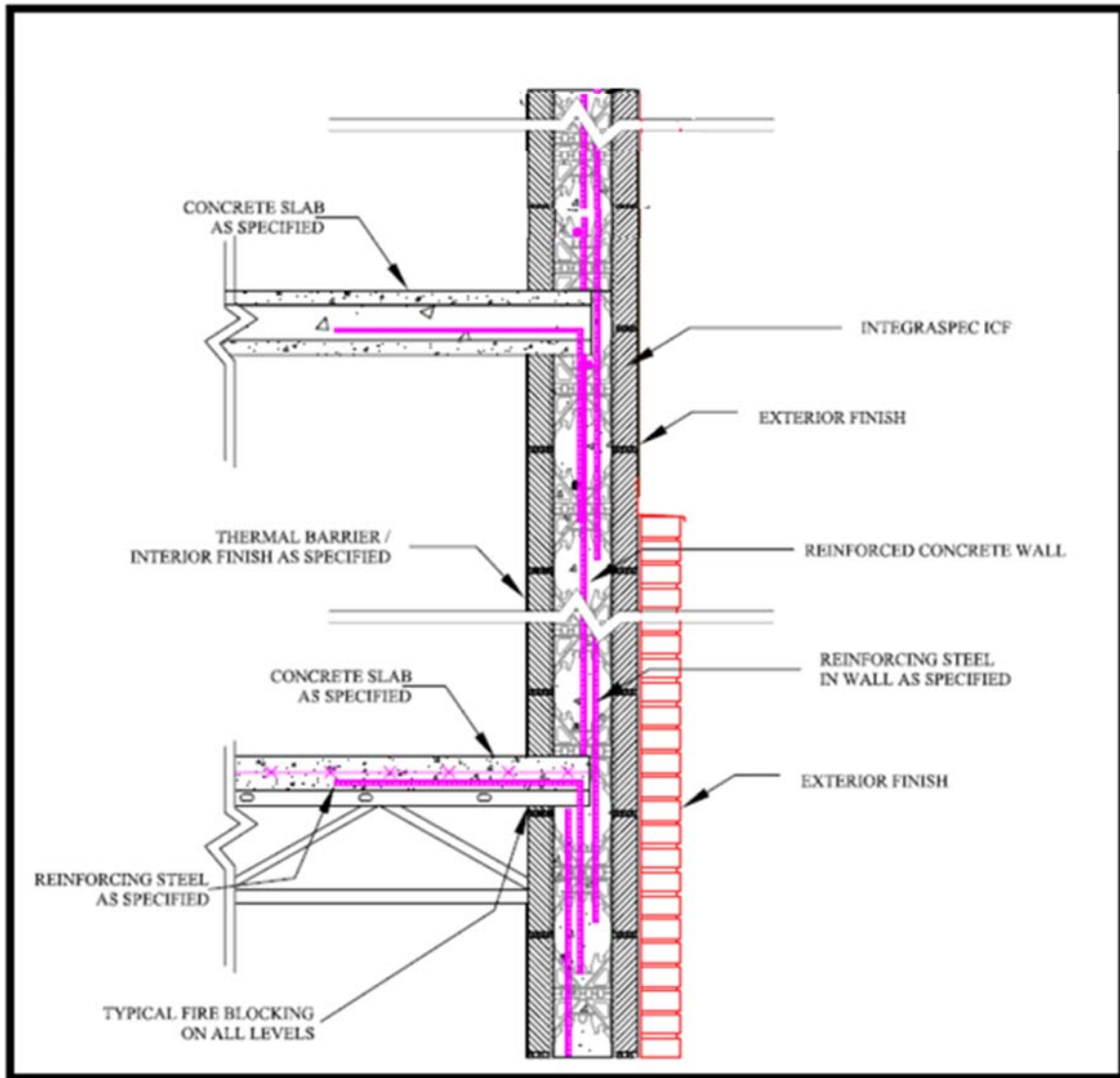


FIGURE 3—TYPICAL FLOOR-WALL FIRE-BLOCKING DETAIL FOR NONCOMBUSTIBLE CONSTRUCTION