# Code Compliance Research Report
# CCRR-0425

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**Revision Date: 11-15-2025**
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**DIVISION: 03 00 00 – CONCRETE**
**Section: 03 11 19 – Insulating Concrete Forming**

**REPORT HOLDER:**
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**REPORT SUBJECT:**
**A-ONE Insulating Concrete Forms™ (ICFs)**

## 1.0 SCOPE OF EVALUATION

**1.1** This Research Report addresses compliance with the following Codes:

- 2024, 2021, 2018 *International Building Code®* (IBC)
- 2024, 2021, 2018 *International Residential Code®* (IRC)
- 2025, 2022 *California Green Building Standards Code, Title 24, Part 11* (CALGreen)

NOTE: This report references section numbers from the most recent edition of the Codes cited. Section numbers in earlier versions may differ.

**1.2** A-ONE Insulating Concrete Forms™ (ICFs) have been evaluated for the following properties (see Table 1):

- Physical properties
- Surface-burning characteristics
- Attic and crawl space fire evaluation
- CALGreen, material conservation and resource efficiency

**1.3** A-ONE Insulating Concrete Forms™ (ICFs) have been evaluated for the following uses (see Table 1):

- Stay-in-place structural concrete formwork, load-bearing and non-load-bearing types in either below-grade or above-grade wall applications
- Beams, lintels, exterior and interior walls, foundations, and retaining walls
- Type I, II, III, IV, and V construction under the IBC and IRC
- Attics and crawl spaces

## 2.0 STATEMENT OF COMPLIANCE

The A-ONE ICF system complies with the Codes listed in Section 1.1, for the properties stated in Section 1.2 and uses stated in Section 1.3, when installed as described in this report, including the Conditions of Use stated in Section 6.

## 3.0 DESCRIPTION

**3.1 A-ONE Insulating Concrete Forms™ (ICFs):** Are a stay-in-place insulating concrete forms (ICFs) system for solid (flat) concrete walls. The A-ONE ICFs consist of two foam plastic panels that are connected by plastic cross-ties which are partially embedded in the foam plastic panels. The expanded polystyrene panels form the outside surfaces of the finished wall, held together by the polypropylene cross-ties. The forms have interlocking top and bottom edges to facilitate stacking. The A-ONE ICF system complies with ASTM E2634-18 and is a flat ICF system as defined in IBC Section 1903.4 and IRC Sections R608.3 and R508.4.4.

The A-One ICFs come in 4-, 6-, 8-, 10-, and 12-inch widths and are configured as straight, half-block, 45 degree and 90-degree corners. The 6-inch and 8-inch blocks are also manufactured in taper-top and brick ledge configurations. The A-ONE ICF forms are 16 inches tall and 48 inches long with overall widths of 9, 11, 13, 15, and 17 inches.

**3.2 Foam Plastic Panels:** The EPS foam plastic panels are 16 inches high, 48 inches long, and 2-1/2 inches thick. The panels have a nominal density of 1.4 pcf. The panels have a flame-spread index of 25 or less and a smoke developed index of 450 or less when tested in accordance with ASTM E84 and comply with ASTM C578 as Type II.

**3.3 Cross-Ties:** Polypropylene cross-ties are spaced 8 inches on-center horizontally and connect the EPS panels at a fixed clear distance. The one-piece cross-ties consist of two flanges that are molded into the foam plastic panels and webbing that connects the two flanges. The flanges are recessed 1/2 inch below the exterior surface of the EPS panels. The flanges are

used for attachment of exterior and interior finish materials. The flanges have a width of 2.5 inches and full height of the form. The cross-ties have openings to permit concrete to flow throughout the form and are designed to support horizontal steel reinforcing bars. See Figure 1. The 90-degree and 45-degree corner forms use the same cross-ties used in the straight forms. The 90-degree corner includes an additional polypropylene outside corner bracket.

**3.4 Concrete:** Concrete must be normal weight complying with the applicable Code and must have a maximum aggregate size of 3/4 inch. Concrete must have a minimum compressive strength of 3,000 psi at 28 days. Under the IRC, concrete must comply with IRC Sections R404.1 (Foundation walls and retaining walls) and R608.5.1 (walls), as applicable.

**3.5 Reinforcement:** 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), as applicable.

## 4.0 INSTALLATION

**4.1 General:** Design and installation of the A-ONE ICFs 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 Chapter 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 must be designed and constructed in accordance with the provisions of Section 209 of ICC 600, subject to the limitations found in Exception 1 of IBC Section 1609.1.1 and 16091.1.1. Design and construction under the provisions of ICC 600 are limited to resisting wind forces.

**4.2.3 IRC Method:** Solid concrete walls and foundations must be designed in accordance with IRC Section R608 and R404.1.3, as applicable for flat wall systems. Use of the 4-inch ICF forms is limited to above-grade construction.

**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 R608.2, construction must be in accordance with the prescriptive provisions of the 2017 Prescriptive Design of Exterior Concrete Walls for One- and Two-family Dwellings (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.

**4.3 Interior Finish:**

**4.3.1 General:** Except as permitted in Section 4.3.2, 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 vertically or horizontally. The thermal barrier must be attached to the cross-tie flanges with either No. 6, Type W, coarse-thread gypsum board screws or No. 6, Type S, gypsum board screws complying with ASTM C954 or C1002, spaced 16 inches on-center minimum, horizontally and vertically. 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 GA16.

**4.3.2 Attics and Crawl Spaces:** When used for walls of attics or crawl spaces, an ignition barrier complying with IBC Section 2603.4.1.6 or IRC Section R303.5.3 or R303.5.4, 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 allowed.
- 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 1202.4 or IRC Section R408.2, 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 the International Mechanical Code Section 701.
- The ICFs must have at least one label as described in section 7.0 of this report 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.

Mechanically attached wall coverings 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 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.

**4.4.2 Below Grade:** Materials used to dampproof or waterproof basement walls must be acceptable to Kingspan Insulation, 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 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, unless the wall is designed as a freestanding cantilever 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 or steel-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, provided reinforcement is designed in accordance with accepted engineering principles, Section 4.2 of this report, and 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 R305.4 as applicable. Areas of very heavy termite infestation must be determined in accordance with IBC Figure 2603.8 or IRC Figure R305.4.

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

**4.8.1 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 4.8.2 through 4.8.4.

**4.8.2 Interior Finish:** The ICFs must be finished on the interior with an approved 15-minute thermal barrier, such as 1/2-inch-thick gypsum wallboard, as required by the IBC. The gypsum wallboard must be installed and attached as described in Section 4.3.1.

**4.8.3 Exterior Finish:** The ICFs must be finished on the exterior with materials described in Sections 4.8.3.1, 4.8.3.2, or 4.8.3.3. The ICF 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.

**4.8.3.1 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 of foam plastic per wall surface area (in $lbs/ft^2$) qualified in the wall covering evaluation report for use in Types I-IV construction must be greater than 0.33 $lbs/ft^2$.

**4.8.3.2 Exterior Plaster:** Exterior plaster must comply with the applicable Code and 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.

**4.8.3.3 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 brick veneer must comply with the applicable Code 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.

**4.8.4 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.

**4.9 Fire-resistance-rated Walls:** When installed in accordance with this section, concrete walls constructed with the forms have a fire-resistance rating shown in the following table.

| A-ONE ICF | Fire-resistance Rating |
|---|---|
| 4-inch | 1 hour |
| 6-inch | 3 hours |
| 8- or 10-inch | 4 hours |

Concrete must be normal weight with a minimum 3500 psi compressive strength. The steel reinforcement must be designed by a registered design professional in accordance with the applicable Code requirements, and must be approved by the Authority Having Jurisdiction.

**4.10 Special Inspection:**

**4.10.1 IBC:** 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 1705.17 is required.

**4.10.2 IRC:** For walls designed in accordance with Section 4.2.3 or PCA 100, 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 A-ONE Insulating Concrete Forms described in this Code Compliance Research Report comply with, or are suitable alternatives to, what is specified in the 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 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 R6085.3 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 detailed in Section 4.3.2.

**5.5** Use of the ICF system in Types I, II, III, IV construction must be as described in Section 4.8.

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

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

**5.8** The A-ONE ICFs are manufactured in Rockford, MN, under a quality control program with inspections by Intertek Testing Services NA, Inc.

## 6.0 SUPPORTING EVIDENCE

**6.1** Reports of tests in accordance with ASTM E2634-18 and ASTM E119.

**6.2** Intertek Listing Report "Kingspan Insulation, LLC A-ONE Insulating Concrete Forms™ (ICFs)", on the Intertek Directory of Building Products.

## 7.0 IDENTIFICATION

**7.1** The A-ONE ICFs are identified with the manufacturer's name (Kingspan Insulation, LLC), address and telephone number, the product name (A-ONE Insulating Concrete Forms™), the Intertek Mark as shown below, and the Code Compliance Research Report number (CCRR-0425).


**7.2** The phrase "Acceptable for use in crawl spaces" is to be applied to the exposed inside face of the product so as to allow for installation of the form with labeling visible in every 160 square feet of wall surface.

## 8.0 CALIFORNIA GREEN BUILDING STANDARDS CODE

**8.1** The A-ONE ICF system was evaluated for conformity to provisions of 2025 and 2022 *California Green Building Standards Code*, Title 24, Part 11 (CALGreen) Appendix A4 "Residential Voluntary Measures".

**8.2 Conclusion:** The A-ONE ICF system as a pre-manufactured building system conforms to the provisions of 2025 and 2022 *California Green Building Standards Code*, Title 24, Part 11 (CALGreen) Appendix A4 "Residential Voluntary Measures", Division A4.4 "Material Conservation and Resource Efficiency", Section A4.404 "Efficient Framing Techniques", Sub-section A4.404.3, as a conforming building system.

## 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 the https://bpdirectory.intertek.com is recommended to ascertain the current version and status of this report.

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**TABLE 1 – PROPERTIES EVALUATED**

| PROPERTY | 2024 IBC SECTION[1] | 2024 IRC SECTION[1] | 2025 CALGreen SECTION[1] |
|---|---|---|---|
| Physical properties | 1903.3 | R404.1.3.3.6.1 and R608.4.4 | - |
| Surface-burning characteristics | 2603.3 | R303.3 | - |
| Attics and crawl spaces | 2603.4.1.6 | R303.5.3, R303.5.4 | - |
| Fire resistance | 703.2 | R302.1 | - |
| Exterior walls in Types I – IV Construction | 2603.5 | N/A | - |
| Material conservation and resource efficiency | - | - | A4.404.3 |

[1] Section numbers may be different for earlier versions of the International and California Codes.

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

| FASTENER | ALLOWABLE LOAD CAPACITY (lbf) | |
|---|---|---|
| | Lateral[1] | Withdrawal[2] |
| No. 6, Type W, coarse-thread gypsum wallboard screw | 57 | 30 |
| No.6, Type S, fine-thread gypsum wallboard screw | 53 | 29 |
| 0.108-inch diameter by $1^5/_8$-inch ring-shank, drywall nail | 39 | 15 |
| No. 10 by 2 $^1/_2$-inch, Philips flat head, steel, wood screw | 89 | 36 |
| No. 9 by 2 $^3/_4$-inch, flat head, cross-cut thread, steel, wood screw | 94 | 35 |

[1]Allowable lateral load capacity by methods of Section 6.2.4.2 of ASTM E2634.
[2]Allowable withdrawal capacity established by dividing the ultimate load by a factor of 5.

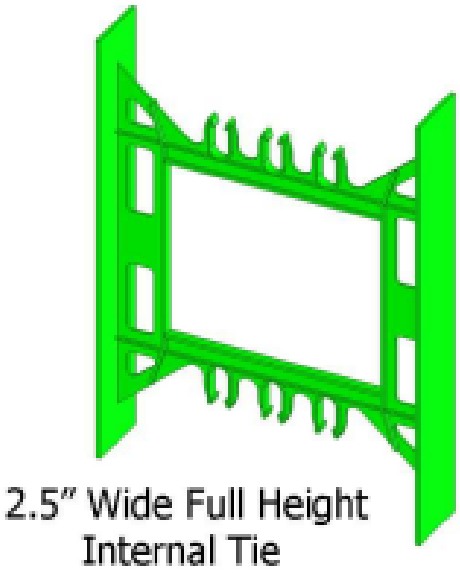


**Figure 1. A-ONE Cross-Tie**

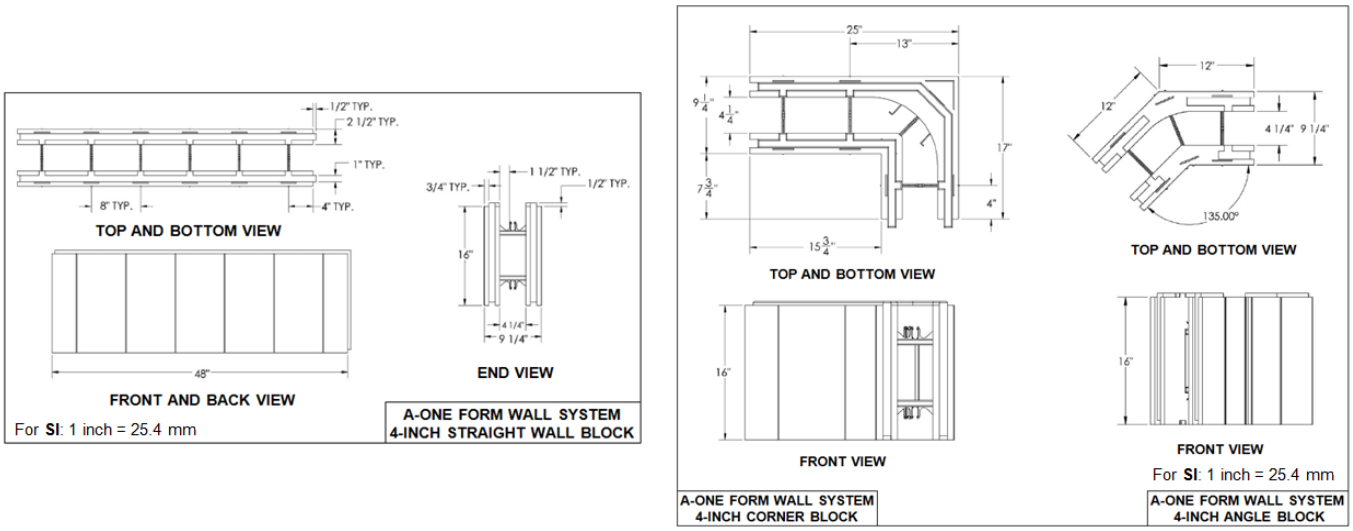


**Figure 2. A-ONE ICFs 4-inch**

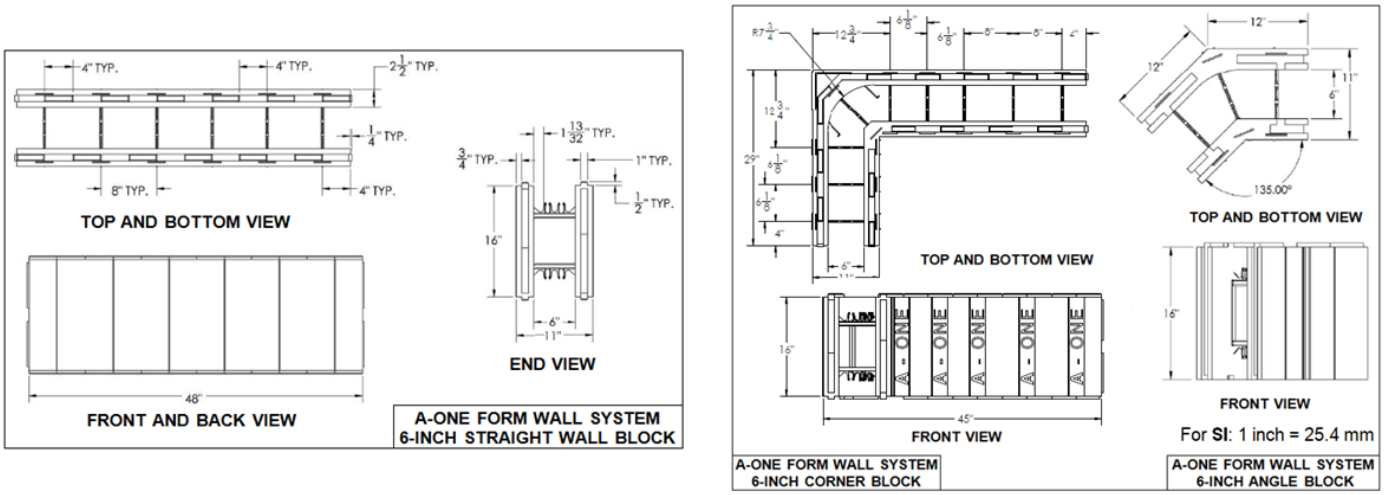


**Figure 3. A-ONE ICFs 6-inch**

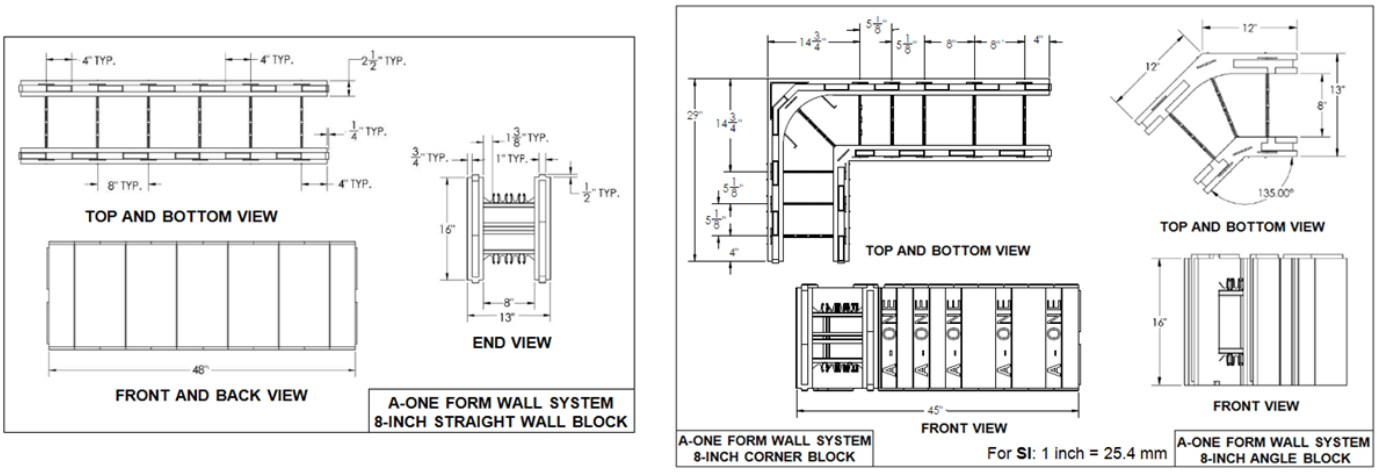


**Figure 4. A-ONE ICFs 8-inch**

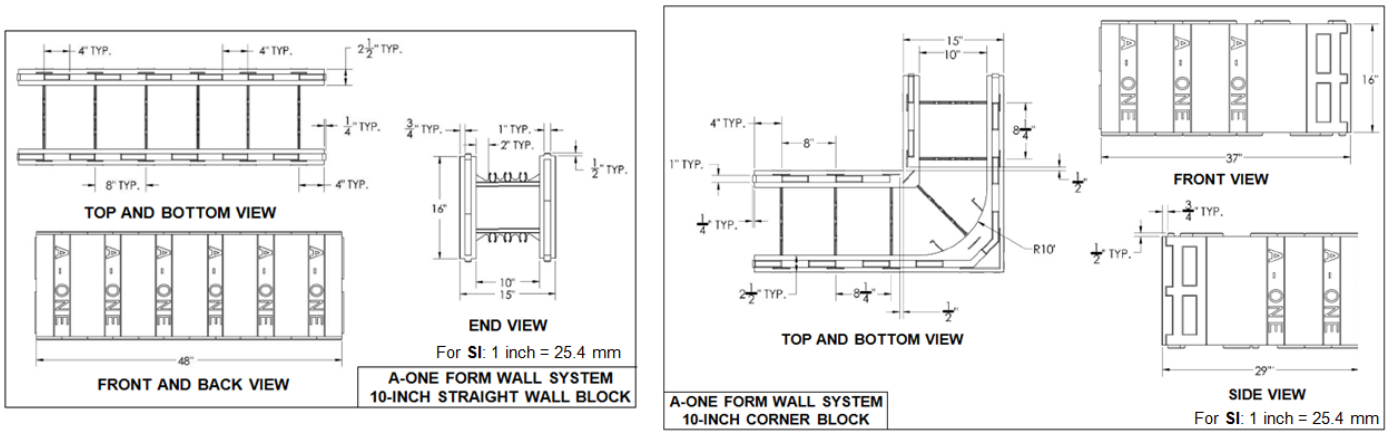


**Figure 5. A-ONE ICFs 10-inch**

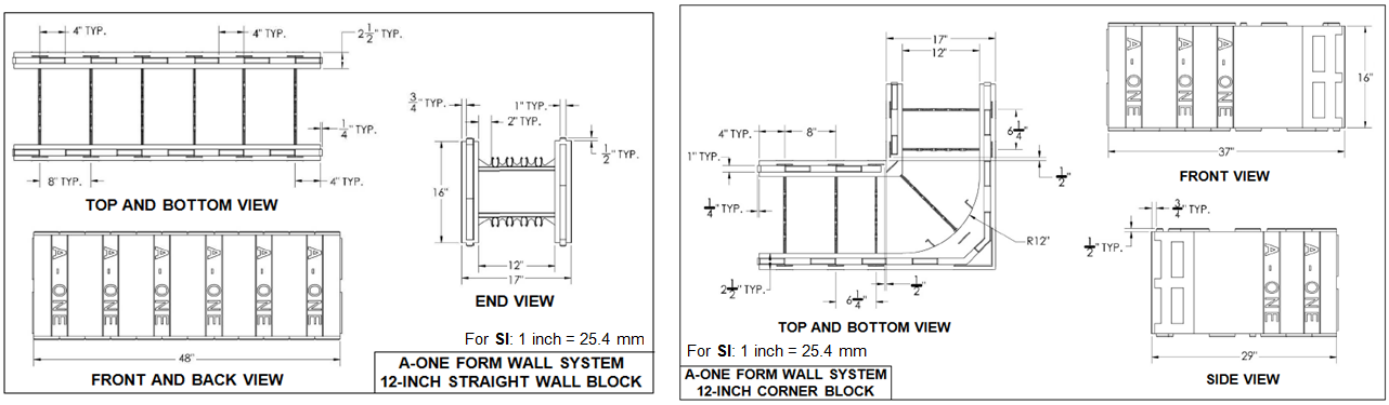


**Figure 6. A-ONE ICFs 12-inch**