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DIVISION: 03—CONCRETE
Section: 03130—Permanent Forms

REPORT HOLDER:

REWARD WALL SYSTEMS, INC.
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EVALUATION SUBJECT:

**REWARD WALL SYSTEMS® eForm™ AND
iForm™ INSULATING CONCRETE FORMS**

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2003 *International Building Code*® (IBC)
- 2003 *International Residential Code*® (IRC)
- 2004 *Supplement to the International Codes*®
- BOCA® *National Building Code*/1999 (BNBC)
- 1999 *Standard Building Code*® (SBC)
- 1997 *Uniform Building Code*™ (UBC)
- 1998 *International One and Two Family Dwelling Code*® (IOTFDC)

Properties evaluated:

- Structural
- Surface-burning characteristics
- Crawl space fire evaluation
- Fire resistance
- Noncombustible construction

2.0 USES

Reward Wall Systems® forms are used as permanent formwork for structural concrete, load-bearing and nonload-bearing, below-grade and above-grade walls. The forms are used in construction of plain and reinforced concrete beams, lintels, exterior and interior walls, and foundation and retaining walls. The forms remain in place after placement and curing of concrete and shall be protected by approved interior and exterior finish material. The forms are recognized for use in buildings of noncombustible construction when installed in accordance with Section 4.2.8 of this report.

3.0 DESCRIPTION

3.1 General:

The Reward Wall System® eForm™ forms are classified as a waffle-grid ICF (insulating concrete form) wall system in accordance with Section R611.4 of the IRC. The Reward Wall System® iForm™ forms are classified as a flat ICF wall system in accordance with Section R611.3 of the IRC. See Figures 1 and 2 for illustrations of the forms.

3.2 eForm™ Waffle-Grid ICF:

eForm™ waffle-grid ICF forms consist of two variable-thickness expanded polystyrene (EPS) boards (face shells) connected with plastic bridge ties that separate the boards a prescribed core distance and provide a means to attach interior and exterior finishes. The forms are available in a standard length of 48 inches (1219 mm), a standard height of 16 inches (406 mm), and two standard widths of 9.25 and 11 inches (235 and 279 mm). The core has a variable thickness, with maximum nominal thicknesses of 6 inches (152 mm) for the 9.25-inch (235 mm) form and 8 inches (203 mm) for the 11-inch (279 mm) form. The cores of the forms shall be filled with concrete and reinforcing steel to construct a solid variable-thickness concrete wall. The concrete wall consists of vertical "columns" spaced 12 inches (305 mm) on center and horizontal "beams" spaced 16 inches (406 mm) on center. The top and bottom edges of the forms are provided with lap joints for interlocking of units. See Figure 1 for typical dimensions.

3.3 iForm™ Flat ICF:

iForm™ Flat ICF forms consist of two uniform-thickness EPS boards connected with plastic bridge ties that separate the EPS boards a prescribed distance and provide a means to attach interior and exterior finishes. The forms are available in a standard length of 48 inches (1219 mm), a standard height of 16 inches (406 mm) and four standard widths of 9, 11, 13 and 15 inches (229, 279, 330 and 381 mm). The forms have, respectively, 4-inch (102 mm), 6-inch (152 mm), 8-inch (203 mm) and 10-inch (254 mm) nominal concrete cores. Vertical and horizontal reinforcing steel is placed inside the forms and is supported by the ties. The forms are filled with concrete to produce solid, flat concrete walls. The top and bottom edges of the forms have a loose fit "tooth" design for interlocking of units. The taper top form is used to construct corbels in the wall at the desired locations. The ledge forms are used to construct corbels that serve as ledges for supporting exterior brick veneers. See Figure 2 for typical dimensions.

3.4 Materials:

3.4.1 Foam Plastic: The EPS foam plastic of the eForm and iForm forms has a flame-spread index of 25 or less and a

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smoke-developed index of 450 or less when tested in accordance with ASTM E 84 at a maximum thickness of 2.5 inches (64 mm), and complies with ASTM C 578-01, Type II.

3.4.2 Bridge Ties: The bridge ties are used to connect the EPS boards and for attaching interior and exterior finishes. The plastic ties have openings to permit concrete to pass through and have a seat to support horizontal steel reinforcing bars. The eForm plastic ties have a 1.50-inch-wide-by-0.125-inch-thick (38 mm by 3.2 mm) flange, are spaced 12 inches (304 mm) on center and are embedded or recessed $\frac{1}{4}$ inch (6.4 mm) into the foam plastic face shells. The iForm plastic ties are spaced 6 inches (152 mm) on center, have 1.25-inch-wide-by-0.219-inch-thick (31.7 mm by 5.56 mm) flanges, and are embedded or recessed $\frac{1}{2}$ inch (12.7 mm) into the foam plastic boards.

3.4.3 Concrete: Concrete shall be normal-weight concrete, complying with the applicable code, having a maximum $\frac{3}{4}$ -inch (19.1 mm) aggregate and a minimum compressive strength of 2,500 psi (17 250 kPa) at 28 days, except as noted in Table 1 of this report for fire-resistance-rated assemblies. If construction of the ICF wall system is based on the IRC, the concrete shall comply with Sections R404.4.5 and R611.6.1.

3.4.4 Reinforcement: Deformed steel reinforcement bars shall have a minimum yield stress of either 40 ksi (275 kPa) or 60 ksi (413 MPa), depending on the structural design, and shall comply with Section 1903 of either the IBC, SBC, BNBC or UBC, as applicable. If construction of the Reward Walls ICF system is based on the IRC, reinforcement shall comply with Sections R404.4.6 and R611.6.2 of the IRC.

3.4.5 Other Components: When required by the code official, wood members in contact with concrete for plates or windows and door framing shall be preservative-treated in accordance with the applicable code, and shall be attached with hot-dipped galvanized steel fasteners. Materials other than wood, such as vinyl, are permitted for window and door framing if approved by the code official.

3.5 Standard and Accessory Forms:

3.5.1 eForms:

- $9\frac{1}{4}$ - (235 mm) and 11-inch (279 mm) standard forms.
- Right-hand $9\frac{1}{4}$ - (235 mm) and 11-inch (279 mm) 90-degree corner forms [long leg 36 inches (914 mm), short leg 12 inches (305 mm)].
- Left-hand $9\frac{1}{4}$ - (235 mm) and 11-inch (279 mm) 90-degree corner forms [long leg 36 inches (914 mm), short leg 12 inches (305 mm)].
- $9\frac{1}{4}$ -inch (914 mm) 45-degree corner unit.

3.5.2 iForms:

- 9-, 11-, 13- and 15-inch (229, 279, 330 and 381 mm) universal standard forms (no top or bottom, left or right).
- Universal 9-inch (229 mm) 90-degree corner form for both left- and right-hand corners [long leg 25 inches (635 mm), short leg 13 inches (330 mm)] (no top or bottom, left or right). The form is also available as an extended version with a 31-inch long leg and 19-inch short leg.
- Universal 11-inch (279 mm) 90-degree corner form for both left- and right-hand corners [long leg 27 inches (686 mm), short leg 15 inches (381 mm)] (no top or bottom, left or right). The form is also available as an extended version with a 33-inch long leg and 21-inch short leg.
- Universal 13-inch (330 mm) 90-degree corner form for both left- and right-hand corners [long leg 29 inches (737 mm), short leg 17 inches (432 mm)] (no top or bottom, left or

right). The form is also available as an extended version with a 35-inch long leg and 23-inch short leg.

- Universal 15-inch (381 mm) 90-degree corner form for both left- and right-hand corners [long leg 31 inches (787 mm), short leg 19 inches (483 mm)] (no top or bottom, left or right).
- 45-degree corner form for the 9-, 11- and 13-inch forms (229, 279 and 330 mm) (no top or bottom, left or right).
- 11- and 13-inch (279 and 330 mm) ledge forms.
- 11- and 13-inch (279 and 330 mm) taper top forms.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: Structural analysis and design of the concrete shall be prepared in accordance with the manufacturer's recommended design procedure, ACI 318 and Chapter 19 of the applicable code; and design loads shall comply with Chapter 16 of the applicable code, except when constructed in accordance with the prescriptive provisions of the IRC or the SBC or Section 4.1.4 of this report.

4.1.2 Reward Wall Systems eForm™: Reward Wall Systems eForm™ forms are defined as waffle-grid insulating concrete form wall systems and shall be designed and reinforced using the load tables for waffle-grid ICF forms in Sections R404.4 and R611 of the IRC, provided the building conforms to the applicability limits defined in Sections R404.4.1 and R611.2 of the IRC, or Sections 1916 and 1804.6.2 of the SBC, provided the building conforms to the applicability limits defined in Sections 1916.2 and 1804.6.2.1 of the SBC. When using code-prescriptive design methods, the wall thickness shall be limited as noted in the applicable code sections referenced above.

When the eForm waffle-grid ICF forms are components of buildings that do not conform to the applicability limits of Sections R404.4.1 and R611.2 of the IRC, or Sections 1916.2 and 1804.6.2.1 of the SBC, the structural analysis and design of the concrete shall be prepared in accordance with ACI 318 and Chapter 19 of the IBC, BNBC, SBC or UBC, as applicable. Use of the empirical design approach specified in the codes is prohibited for the design of concrete walls formed by the eForm system.

4.1.3 Reward Wall System iForm™: Reward Wall System iForm™ forms are defined as flat ICF wall systems and shall be designed and reinforced using the load tables for flat ICF forms in Sections R404.4 and R611 of the IRC, provided the building conforms to the applicability limits defined in Sections R404.4.1 and R611.2 of the IRC, or Sections 1916 and 1804.6.2 of the SBC, provided the building conforms to the applicability limits defined in Sections 1916.2 and 1804.6.2.1 of the SBC. When using code-prescriptive design methods, the wall thickness shall be limited as noted in the applicable code sections referenced above.

Design of foundation wall reinforcement may also be in accordance with the following code sections:

- IBC Section 1805.5 and Tables 1805.5(1), 1805.5(2) and 1805.5(3)
- IRC Sections R404.1 and R404.1.2, and Tables R404.1.1(1), R404.1.1(2) and R404.1.1(4)
- BNBC Section 1812.3.2 and Tables 1812.3.2(1) and 1812.3.2(2)
- SBC Section 1804.6 and Table 1804.6.1(A)
- IOTFDC Section 404.1 and Tables 404.1.1(1) and 404.1.1(2)

When the iForm flat ICF forms are used to construct buildings that do not conform to the applicability limits of Sections R404.4.1 and R611.2 of the IRC or Sections 1916.2 and 1804.6.2.1 of the SBC, the structural analysis and design of the concrete shall be in accordance with ACI 318 and Chapter 19 of the IBC, BNBC, SBC or UBC, as applicable. Use of the empirical design approach specified in the codes is permitted for the design of concrete walls formed by the iForm system.

4.1.4 Alternative Design: In lieu of calculations required by Section 4.1.1 of this report, the structural design of reinforced concrete formed by the eForms and iForms for residential construction is permitted to comply with the *Prescriptive Method for Insulating Concrete Forms in Residential Construction* (publication EB118), dated May 1998, published by the Portland Cement Association (PCA), subject to all applicability and use limits for flat or waffle-grid ICF walls defined in Table 1.1 of that document. The PCA document shall be made available to the code official upon request. Buildings constructed with the Reward Walls ICF wall system and designed in accordance with this section (Section 4.2.4) shall be limited in height to two stories plus a basement, where the maximum unsupported wall height is 10 feet (3048 mm).

4.1.5 Design in Accordance with the IRC: Insulating concrete walls constructed with the Reward Walls ICF wall system shall be designed and constructed in accordance with Sections R404.4 and R611 of the IRC.

4.1.6 Design in Accordance with the Reward Walls Installation, Structural Technical Manual: The structural design of reinforced concrete formed by the eForms and iForms is permitted to comply with the *Reward Walls Installation, Structural Technical Manual*, dated January 1, 2000, provided the buildings constructed with the systems are limited to two stories plus a basement, where the maximum unsupported wall height is 10 feet (3048 mm). Evidence shall be submitted to the code official that the applied loads are less than the tabulated loads.

4.2 Installation:

4.2.1 General: Reward Wall Systems® forms shall be installed in accordance with the manufacturer's published installation instructions, this report and the applicable code. The manufacturer's published installation instructions and this report shall be strictly adhered to and a copy of these instructions shall be available at all times on the jobsite during installation.

4.2.2 Interior Finish: The forms shall be finished on the interior of the building with an approved 15-minute thermal barrier, such as minimum 1/2-inch-thick (12.7 mm) regular gypsum wallboard complying with ASTM C 36. Except as required for fire-resistance-rated construction in Section 4.2.7 and Table 1 of this report, the gypsum board shall be installed vertically or horizontally and attached to the flanges of the plastic ties with No. 6, 2-inch-long (51 mm), coarse-thread gypsum wallboard screws spaced as required by the applicable code.

4.2.3 Exterior Finish:

4.2.3.1 Above Grade: The forms shall be covered on the exterior with an approved wall covering in accordance with the applicable code or a current evaluation report, except when regulated by the IRC, in which case the forms shall be covered on the exterior with a water-resistive barrier in accordance with Sections R703.1 and R703.2 of the IRC, and with an approved wall covering in accordance with the IRC or a current evaluation report.

The exterior wall covering shall be designed and installed in accordance with the applicable code or a current evaluation

report. When the wall covering is required to be attached to structural members, the wall covering shall be attached to the flanges of the plastic ties with coarse-thread drywall screws having a minimum allowable pullout and lateral capacity of 70 pounds (311 N). The screws shall be corrosion-resistant and have sufficient length to penetrate the flanges of the plastic ties a minimum of 1/4 inch (6.4 mm). The maximum spacing of the screws shall be designed to resist the gravity loads of the wall covering and to resist the negative wind pressures. Negative wind pressure capacity of the exterior wall covering shall be the same as that recognized in the applicable code for the generic wall covering or as listed in the current evaluation report for proprietary materials.

4.2.3.2 Below Grade: For basement wall installations, Reward Wall System form surfaces shall be dampproofed or waterproofed in accordance with the applicable code. The dampproofing and waterproofing materials shall be approved by the code official, and shall be free of solvents, hydrocarbons, ketones and esters that will adversely affect the EPS foam plastic. No backfill is permitted to 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 Crawl Space Installation: The Reward Wall Systems® forms may be installed exposed in a crawl space without a covering applied to the crawl space side of the foam plastic, provided all the following conditions are met:

1. Entry to the crawl space is limited to service of utilities and heat producing appliances are not permitted.
2. There are no interconnected basement areas.
3. Air in the crawl space is not circulated to other parts of the building.
4. Ventilation of the crawl space is provided in accordance with the applicable code.

4.2.5 Foundation Walls: The eForm and iForm wall systems are permitted to be used as foundation stem walls when supporting wood-framed construction provided the forms are supported on approved concrete footings complying with the applicable code. For jurisdictions adopting the IRC, compliance with Section R404 is required; for jurisdictions adopting the SBC, compliance with Section 1804.6.2 is required; for jurisdictions adopting the IOTFDC, compliance with Section 404 is required. Compliance with UBC Table 18-I-C is mandatory in jurisdictions adopting the UBC.

4.2.6 Protection Against Termites: In jurisdictions that have adopted the IRC, SBC or IOTFDC, where the probability of termite infestation is defined as "very heavy" by the code official, the foam plastic shall be installed in accordance with Section R320.4 of the IRC, Sections 1916.7.5 and 2603.3 of the SBC, or Section R323.4 of the IOTFDC, as applicable. Areas of very heavy termite infestation shall be determined in accordance with Figure R301.2(6) of the IRC, Figure 2304.1.4 of the SBC and Figure 301.2(6) of the IOTFDC, as applicable.

4.2.7 Fire-resistance-rated Wall Assemblies: Walls constructed with Reward Wall System forms have fire-resistance ratings for bearing and nonbearing wall assemblies as shown in the Table 1 of this report.

4.2.8 Installation in Buildings Required to Be of Noncombustible Construction: For the purposes of this report, noncombustible construction is defined as Type I, II, III or IV under the IBC, Types 1, 2, 3 or 4 under the BNBC, Types I, II, III or IV under the SBC, and Types I and II under the UBC. The Reward Walls eForms and iForms are recognized for use in buildings of noncombustible construction provided the eForms or iForms are used to form solid concrete walls and comply with the following:

4.2.8.1 Exterior Walls of Buildings of Any Height: The walls shall have an exterior wall covering complying with Section 4.2.8.1.1, 4.2.8.1.2 or 4.2.8.1.3; an interior wall covering complying with Section 4.2.8.1.4; and shall have fireblocking complying with Section 4.2.8.1.5:

4.2.8.1.1 EIFS and One Coat Stucco—Exterior Finish: The following EIFS or one-coat stucco lamina shall be installed over the exterior of the forms using the reinforcing fabric or lath, base coat and finish coat materials described in their evaluation reports:

- Dryvit Systems, Inc., Outsulation System as described in ESR-1232.
- Senergy, LLC, Senerflex EIFS as described in ER-3850.
- Sto Corp., Sto EIF Classic System Class PB system as described in ER-3906.
- Sonneborn/ChemRex Inc., Sonneborn Flex Wall Stucco System EIFS as described in ER-5678.
- Omega Products International, Inc., Omega Akroflex as described in ER-4898.
- Omega Products International, Inc., One Coat Stucco, Omega Diamond Wall as described in ESR-1194.
- Total Wall, Inc., SoftCoat PB System as described in ER-5245.
- Parex, Inc., Standard System as described in ER-5555.

4.2.8.1.2 Brick Veneer—Exterior Finish: Anchored brick veneer shall be attached to the flanges of the plastic ties with fasteners as described in Section 4.2.3.1 of this report, spaced as required in the applicable code. The 4-inch-thick (102 mm) brick veneer shall comply with the applicable code and shall be installed with a minimum 1-inch (25.4 mm) air gap between the face of the exterior EPS formwork and the brick. The brick shall 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.

4.2.8.1.3 Exterior Plaster—Exterior Finish: Metal lath and exterior plaster shall comply with the applicable code, and the exterior plaster shall be a minimum of $\frac{7}{8}$ inch (22 mm) thick. The lath shall be attached to the flanges of the plastic ties with fasteners as described in Section 4.2.3.1 of this report, spaced as required in the applicable code.

4.2.8.1.4 Interior Finish: The forms shall be finished on the interior with an approved 15-minute thermal barrier such as $\frac{1}{2}$ -inch-thick (12.7 mm) gypsum board as required by the applicable code. The gypsum board shall be installed vertically and attached to the flanges of the plastic ties with No. 6 by 2-inch-long (3.9 mm by 51 mm) coarse-thread gypsum wallboard screws spaced 12 inches (305 mm) on center in the field of the board and 8 inches (203 mm) on center on the perimeter.

4.2.8.1.5 Fireblocking: Foam plastic on the interior shall be discontinuous at floor lines. Floor-to-wall intersections shall be constructed to prevent the passage of flame, smoke and hot gases from one floor to another. See Figure 3.

4.2.8.2 One-story Buildings: The following conditions apply:

4.2.8.2.1 Fire Sprinklers: The building shall be equipped throughout with an automatic sprinkler system in accordance with the applicable code.

4.2.8.2.2 Exterior Finish: The foam plastic on the exterior face of the foam wall shall be covered with aluminum of a thickness of not less than 0.019 inch (0.48 mm), or corrosion-resistant steel having a base-metal thickness of 0.0160 inch

(0.41 mm). Attachment of the metal wall covering shall be designed by a registered design professional.

4.2.8.2.3 Interior Finish: The forms shall be finished on the interior with an approved 15-minute thermal barrier such as $\frac{1}{2}$ -inch-thick (12.7 mm) regular gypsum board as required by the applicable code. The gypsum board shall be installed and attached as described in Section 4.2.2 of this report.

4.2.8.2.4 Fireblocking: Foam plastic on the interior shall be discontinuous at floor lines. Floor-to-wall intersections shall be constructed to prevent the passage of flame, smoke and hot gases from one floor to another. See Figure 3.

4.3 Special Inspections:

4.3.1 IBC: Special inspection is required in accordance with IBC Section 1704 for placement of reinforcing steel and concrete, and for concrete cylinder testing. Special inspection in accordance with IBC Section 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.

4.3.2 IRC: For walls designed in accordance with Section 4.1.5, special inspection is not required.

4.3.3 UBC: Special inspection is required in accordance with UBC Section 1701 for placement of reinforcing steel and concrete, and for concrete cylinder testing. When approved by the code official, special inspection may be waived when all the following conditions are met:

1. Walls are a maximum of 8 feet (2.4 m) high, and are limited to use in single-story construction of Group R, Division 3, or Group U, Division 1, Occupancies.
2. Maximum height of a concrete pour is 48 inches (1219 mm). Succeeding lifts shall be placed in accordance with UBC Section 1905.10.5.
3. Installation is by installers acceptable to Reward Wall Systems, Inc.
4. Design of the wall uses half the allowable stresses or loads permitted by the UBC.
5. Installation instructions indicate methods used to verify proper placement of concrete.

4.3.4 BNBC: Special inspection is required as noted in BNBC Section 1705.4, and shall include, but shall not be limited to: verification of material specifications for concrete, reinforcing steel and formwork materials; installation of reinforcing steel; formwork installation; bracing; and concreting operations.

4.3.5 SBC: Special inspection is required as noted in SBC Section 1707.1, and shall include, but shall not be limited to: verification of material specifications for concrete, reinforcing steel and formwork materials; installation of reinforcing steel; formwork installation; bracing; and concreting operations.

5.0 CONDITIONS OF USE

The Reward Wall Systems® eForm™ and iForm™ forms 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 ICF units shall be manufactured, identified and installed in accordance with this report and the manufacturer's installation instructions. If there is a conflict between the manufacturer's published installation instructions and this report, this report shall govern.
- 5.2** The Reward Wall Systems® forms shall be separated from the interior of the building with an approved 15-

minute thermal barrier, except for crawl space construction as described in Section 4.2.4 of this report.

- 5.3 Reward Wall Systems® forms shall be limited to buildings of combustible construction [Type V (IBC and UBC), Type 5 (BNBC) and Type VI (SBC), and buildings under the IRC], except as described in Section 4.2.8 of this report.
- 5.4 When used in buildings required to be of noncombustible construction as described in Section 4.2.8 of this report, one label as described in Section 7.0 of this report shall be visible in every 160 square feet (14.7 m²) of wall area.
- 5.5 Special inspection shall be required as described in Section 4.3 of this report.
- 5.6 When used as part of a fire-resistance-rated assembly, Section 4.2.7 of this report shall apply.
- 5.7 When required by the code official, calculations showing compliance with the general design requirements of Chapter 16 of the applicable code shall be submitted to the code official for approval, except that calculations are not required when the building design is based on Section 4.1.4, 4.1.5 or 4.1.6 of this report, or foundation design is based on Section 4.1.3. The calculations and details shall be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.8 The forms are produced for Reward Wall Systems, Inc., in Wasilla, Alaska; Colorado Springs, Colorado; Conyers, Georgia; Omaha, Nebraska; Wilsonville, Oregon; Ridgeway, Virginia; Rockford, Minnesota; and

New Brighton, Pennsylvania, under a quality control program with inspections by Omega Point Laboratories, Inc. (AA-657).

6.0 EVIDENCE SUBMITTED

- 6.1 Data in accordance with the ICC-ES Acceptance Criteria for Foam Plastic Insulation (AC12), dated February 2005, including data in accordance with Section 3.3.2.2; reports of tests in accordance with ASTM C 578; reports of comparative crawl space fire tests; and a report of a room corner fire test in accordance with UL Standard 1715 and UBC Standard 26-3.
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for Concrete Floor, Roof and Wall Systems and Concrete Masonry Wall Systems (AC15), dated June 2003 (editorially revised March 2005).
- 6.3 Reports of fire-resistance tests in accordance with ASTM E 119.
- 6.4 Reports of fastener withdrawal and lateral load tests.
- 6.5 Quality control manuals.
- 6.6 Installation instructions.

7.0 IDENTIFICATION

Each pallet of forms shall be labeled with the Reward Wall Systems® name and/or trademark, the product name, the inspection agency name and/or trademark (Omega Point Laboratories) and the evaluation report number (ESR-1552). Additionally, one form on each pallet shall be labeled on both sides of the form with the same information.

TABLE 1—REWARD WALL SYSTEMS IN FIRE-RESISTANCE-RATED ASSEMBLIES⁴

TYPE-RATING ²	FORM TYPE	INTERIOR WALL SHEATHING ^{3,5}	STEEL REINFORCEMENT ¹ (MINIMUM)
Bearing wall—4 hr. Design axial load 5,000 lbf./ft. ⁸	eForm 11" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Vertical—# 5, 12 in. o.c. Horizontal—#5, 16 in. o.c.
Bearing wall—3 hr. Design axial load 3,000 lbf./ft. ⁸	eForm 9.25" width	⁵ / ₈ in. type X gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Vertical—# 5, 24 in. o.c. Horizontal—#5, 24 in. o.c.
Nonbearing wall—4 hr.	eForm 11" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Not required for fire-resistance rating
Nonbearing wall—3 hr.	eForm 9.25" width	⁵ / ₈ in. type X gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Not required for fire-resistance rating
Bearing wall—4 hr. Design axial load 5,000 lbf./ft. ⁸	iForm 13" and 15" widths	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Vertical—# 5, 12 in. o.c. Horizontal—#5, 16 in. o.c.
Bearing wall—3 hr. Design axial load 3,000 lbf./ft. ⁸	iForm 11" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Vertical—# 5, 24 in. o.c. Horizontal—#5, 24 in. o.c.
Nonbearing wall—4 hr.	iForm 13" and 15" widths	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Not required for fire-resistance rating
Nonbearing wall—3 hr.	iForm 11" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Not required for fire-resistance rating
Bearing wall—1 hr. Design axial load 2,250 lbf/ft. ⁸	iForm 9" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Vertical—#5, 24 in. o.c. Horizontal—#5, 24 in. o.c.
Bearing wall—2 hr. Design axial load 2,250 lbf/ft. ^{6,8}	iForm 9" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Vertical—#5, 24 in. o.c. Horizontal—#5, 24 in. o.c.
Bearing wall—2 hr. Design axial load 2,250 lbf/ft. ^{7,8}	iForm 9" width	¹ / ₂ in. type X gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter - both sides	Vertical—#5, 24 in. o.c. Horizontal—#5, 24 in. o.c.
Nonbearing wall—1 hr.	iForm 9" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Not required for fire-resistance rating
Nonbearing wall—2 hr. ⁶	iForm 9" width	¹ / ₂ in. gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter	Not required for fire-resistance rating
Nonbearing wall—2 hr. ⁷	iForm 9" width	¹ / ₂ in. type X gypsum wallboard, fasten 12 in. o.c. in field and 8 in. o.c. at perimeter - both sides	Not required for fire-resistance rating

For **SI**: 1 inch = 25.4 mm, 1 lbf/ft = 14.59 N/m.

¹Steel reinforcement is the minimum required for the design loads given.

²Concrete shall be normal-weight concrete [(150-155 lb/ft³) (2403-2483 kg/m³)] with a 3000 psi (20 684 kPa) compressive strength.

³See Section 4.1 of this report for type of fastener.

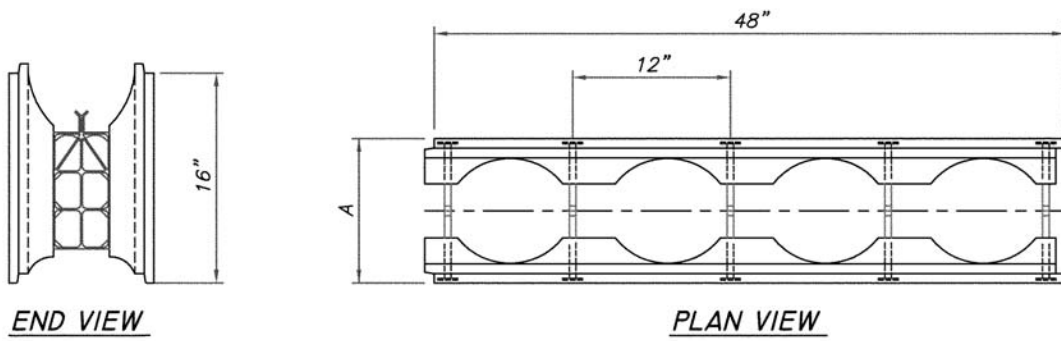
⁴Exterior finishes: not required to achieve assembly rating. The following are permitted to be applied to the exterior side of the wall assembly without diminishing the assembly rating: any exterior insulation and finish system (EIFS), any exterior stucco, brick or brick veneer, stone or stone veneer, cultured stone and siding made from vinyl, aluminum, wood or steel. Exterior finishes shall be applied in accordance with the applicable code and the manufacturer's published installation instructions. When the wall is required to be of noncombustible construction, then exterior finishes shall be limited to those listed in Section 4.2.8 of this report.

⁵The wall assembly may be used as either an interior or exterior wall. When used as an interior wall, both sides of the form shall be protected with the interior wallboard as noted in the table.

⁶Concrete shall be sand-lightweight or lightweight structural concrete.

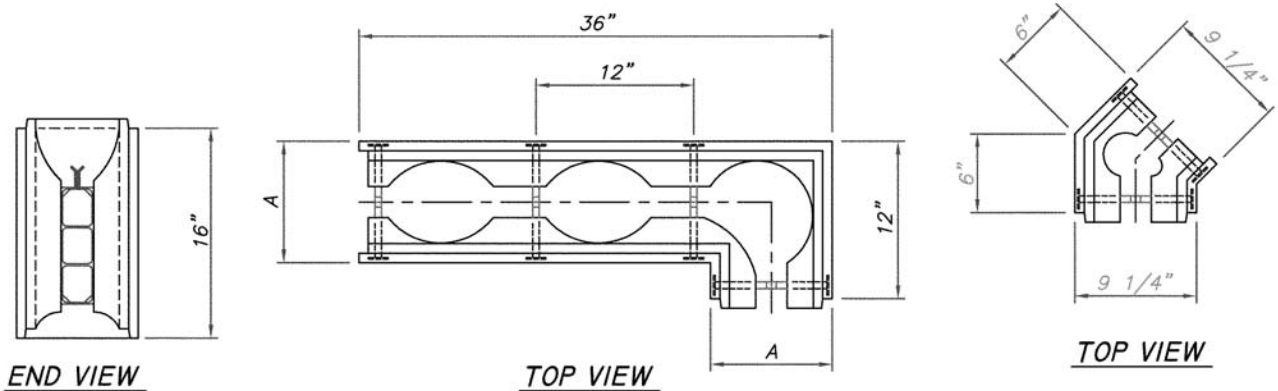
⁷Interior walls only.

⁸Design loads are based on 10-foot wall heights.



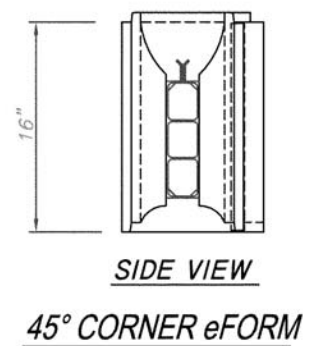
DIMENSION
A
9 1/4"
11"

STRAIGHT eFORM



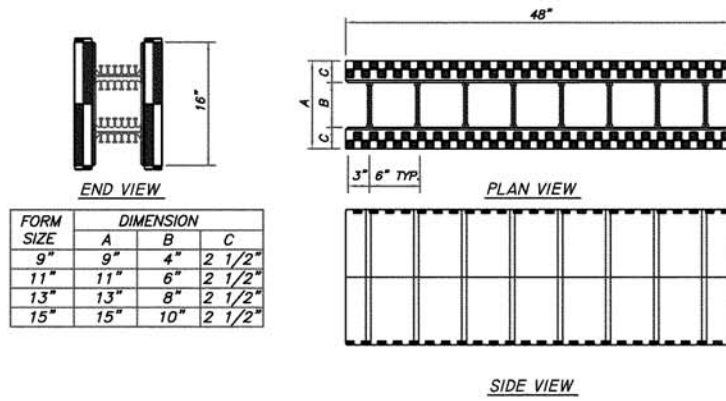
DIMENSION
A
9 1/4"
11"

STANDARD 90° CORNER eFORM

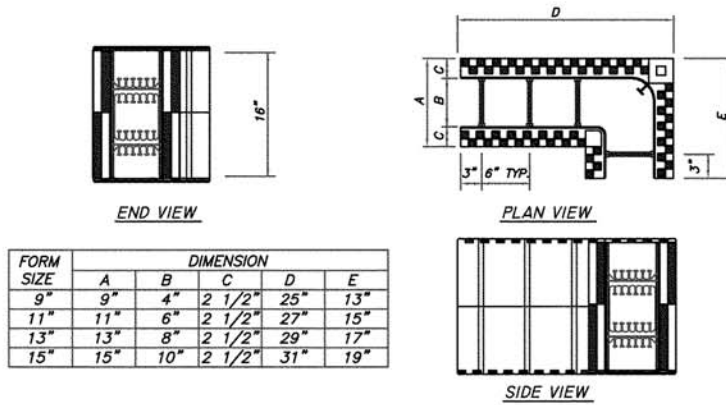


45° CORNER eFORM

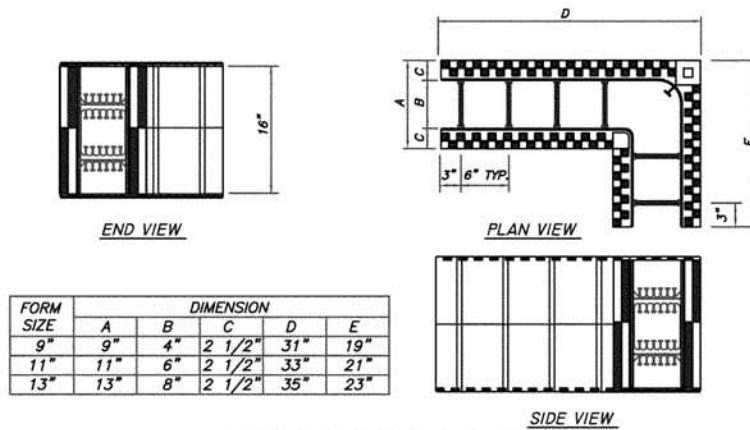
FIGURE 1—eFORMS



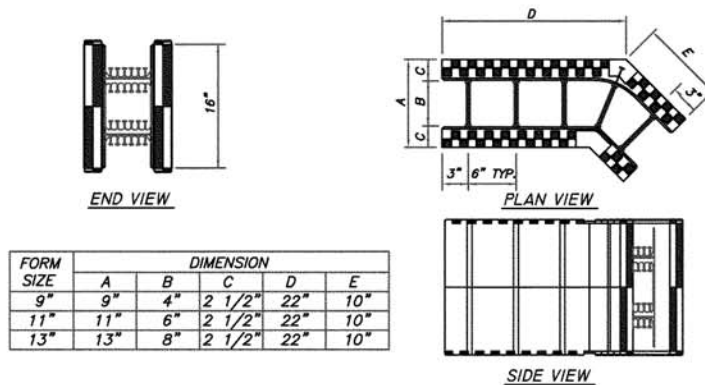
STRAIGHT IFORM



STANDARD 90° CORNER IFORM

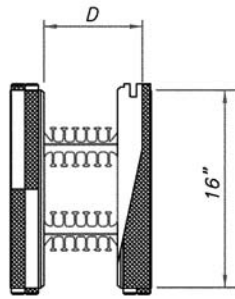


EXTENDED 90° CORNER IFORM

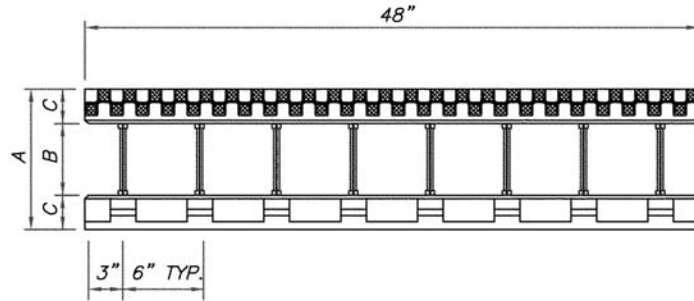


45° CORNER IFORM

FIGURE 2—IFORMS

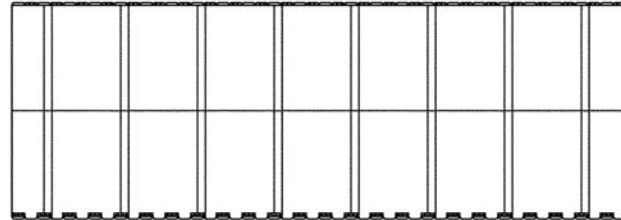


END VIEW



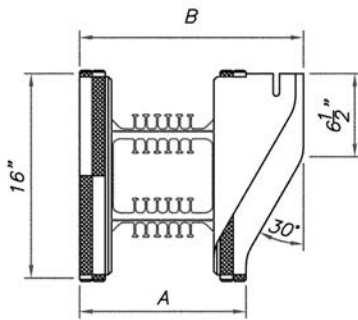
PLAN VIEW

FORM SIZE	DIMENSION			
	A	B	C	D
11"	11"	6"	2 1/2"	7 7/8"
13"	13"	8"	2 1/2"	9 7/8"

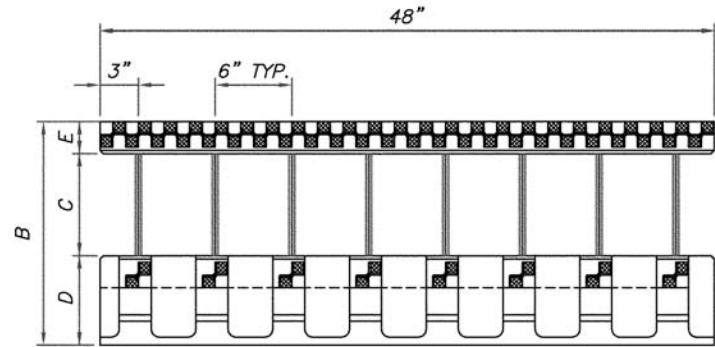


SIDE VIEW

IFORM TAPER TOP

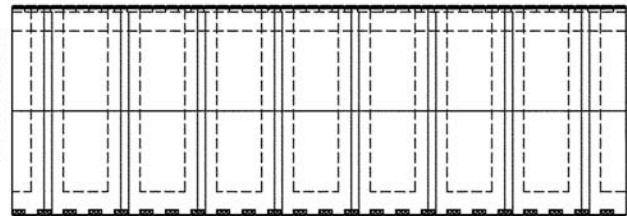


END VIEW



PLAN VIEW

FORM SIZE	DIMENSION				
	A	B	C	D	E
11"	11"	15 1/2"	6"	8"	2 1/2"
13"	13"	17 1/2"	8"	8"	2 1/2"



SIDE VIEW

IFORM LEDGE FORM

FIGURE 2—iFORMS (Continued)

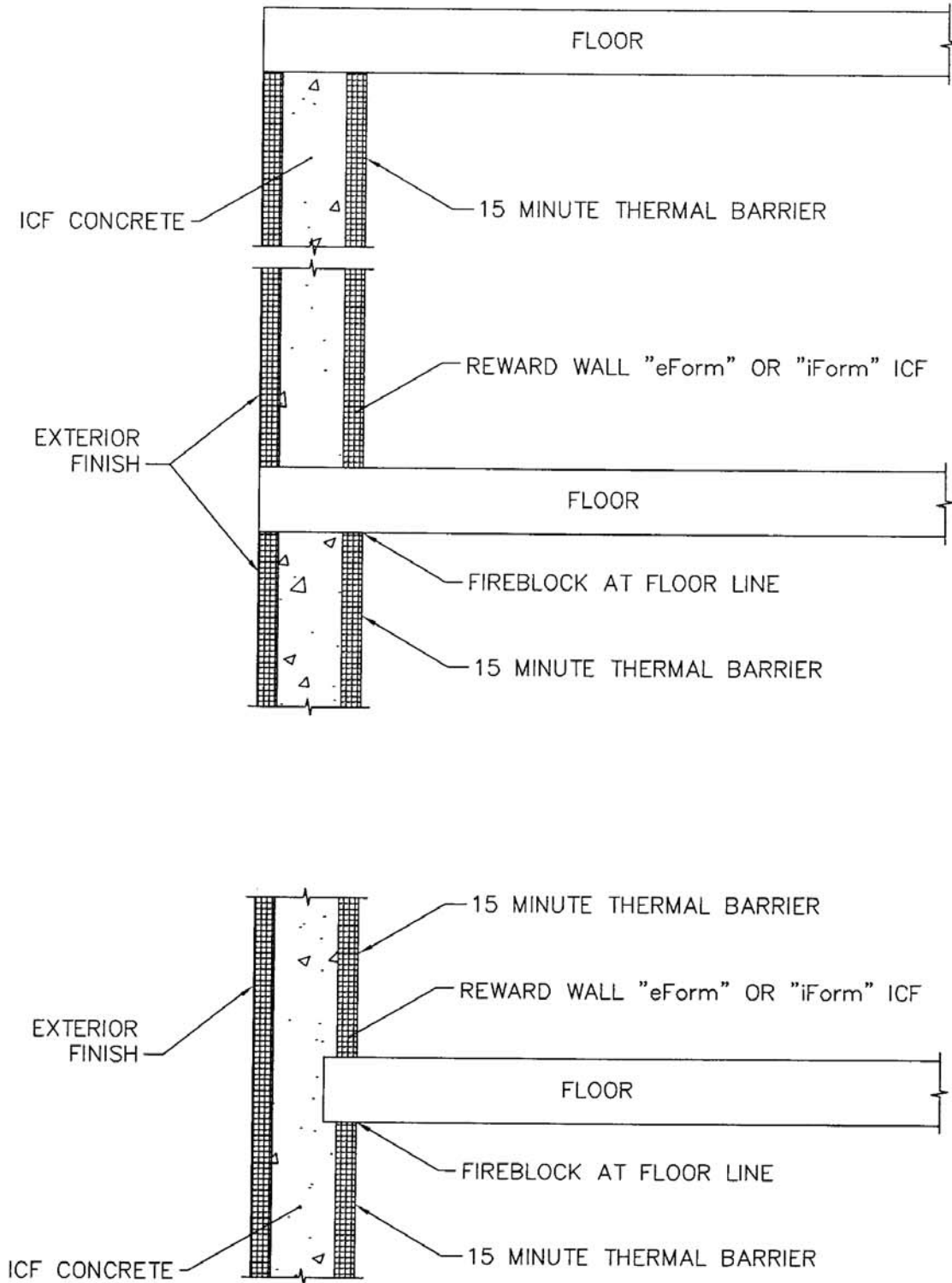


FIGURE 3—TYPICAL FLOOR-WALL DETAIL FOR NONCOMBUSTIBLE CONSTRUCTION