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RESEARCH REPORT: RR 25505
(CSI # 03100)

BASED UPON ICC EVALUATION SERVICE
LEGACY REPORT NO. NER-515

REEVALUATION DUE DATE:
December 1, 2007

GENERAL APPROVAL - Reevaluation/Clerical Modification - Polysteel Forms, Forms For Type V Construction.

DETAILS

The above products are approved under the description, identification and findings of Report No. NER-515 dated March 1, 2004, of the ICC Evaluation Service, Incorporated. The report, in its entirety, is attached and made part of this general approval.

The parts of Report No. NER-515 marked by the asterisks are deleted by the Los Angeles Building Department from this approval.

The approval is subject to the following conditions:

1. Complete design and calculation shall be prepared by an engineer licensed in the State of California and approved by the structural plan check.
2. The form work shall be used in areas where combustible material are permitted by the codes.
3. Alternate design shall comply with Prescriptive Method for Insulating Concrete Forms in Residential construction (PCA publication No. EB 118), dated May 1998, subject to all applicability limits of Table 1.1 contained therein. The PCA document must be available to structural plan check upon request.

RR 25505
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American Polysteel, LLC
RE: Polysteel Forms, Stay-In Place EPS Forms for Construction

4. Continuous inspection by Deputy Inspectors shall be provided during the taking of test specimens and the placing of reinforced concrete. Any exception shall be approved by structural plan check supervisors.

DISCUSSION

The clerical modification is to change the company address.

The approval is based on tests and analyses.

This general approval will remain effective provided the Evaluation Report is maintained valid and unrevised with the issuing organization. Any revisions to the report must be submitted to this Department, with appropriate fee, for review in order to continue the approval of the revised report.

This general approval of an equivalent alternate to the Code is only valid where an engineer and/or inspector of this Department has determined that all conditions of this Approval have been met in the project in which it is to be used.

Addressee to whom this Research Report is issued is responsible for providing copies of it, complete with any attachments indicated, to architects, engineers and builders using items approved herein in design or construction which must be approved by Department of Building and Safety Engineers and Inspectors.

YEUAN CHOU, Chief
Engineering Research Section

GB/tm
RR25505/wp8.0
R01/13/06
2C/1910.10/1914.4/1921.6

Attachments: ICC ES Legacy Report No. NER-515 (7 Pages).



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Legacy report on the 2000 International Building Code®, the 2000 International Residential Code®, the 2002 Accumulative Supplement to the International Codes™, the 1999 Standard Building Code®, the BOCA® National Building Code/1999, the 1997 Uniform Building Code™, and the 1998 International One and Two Family Dwelling Code®

DIVISION 03 - CONCRETE
Section 03130 - Permanent Forms

AMERICAN POLYSTEEL, LLC
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1.0 SUBJECT

PolySteel® Forms :

- 1.1 PS-3000 Series, 6", 8" and 10" Waffle-Grid Forms
1.2 PS-4000 Series, 6" and 8" Flat-Wall Forms

2.0 PROPERTIES FOR WHICH EVALUATION IS SOUGHT

- 2.1 Formwork for structural concrete
2.2 Surface burning characteristics - Foam Plastic
2.3 Crawl space fire evaluation
2.4 4-Hr Fire Resistive Rated Load Bearing Wall Assembly
2.5 Installation in buildings of noncombustible construction.

3.0 DESCRIPTION

3.1 General

PolySteel® Forms are used as permanent formwork for structural load bearing or non-loadbearing concrete walls for buildings of combustible construction and buildings of noncombustible construction when installed in accordance with section 4.7 of this report. Applications include foundation, basement, retaining walls and above grade walls.

PolySteel® Forms are hollow core forms of expanded polystyrene face shells connected with galvanized steel cross ties. The expanded polystyrene (EPS) foam plastic blocks have a standard length of 48 inches (1219 mm). The outer faces of the EPS blocks present a continuous flat surface of polystyrene ready to receive exterior and interior wall finishes. The steel cross ties provide a mechanism for attaching interior and exterior wall coverings since each tie has a minimum 1 inch (25.4 mm) wide steel furring strip recessed no more than 0.50 inches (12.7 mm) below the block surface. The PolySteel® Forms are available in two styles, waffle-grid wall forms and flat-wall forms.

3.1.1 PS-3000 Series Waffle-Grid Wall Forms: The EPS waffle-grid blocks have a height of 16 inches (406 mm) and are available in three nominal core sizes of 6 inches (153 mm), 8 inches (203 mm) and 10 inches (254 mm) having actual outside widths of 9.25 inches (235 mm), 11 inches (279 mm) and 14 inches (356 mm) respectively. The EPS waffle-grid blocks consist of two expanded polystyrene foam boards of varying thicknesses, held together by steel cross ties spaced 12 inches (305 mm) on center.

When stacked, the EPS Waffle-grid blocks form oval-shaped vertical cores spaced 12 inches (305 mm) on center, and oval-shaped horizontal cores spaced 16 inches (406 mm) on center. Reinforcement and concrete are placed in the vertical and horizontal cores. See Figure 1 for EPS Waffle-grid foam block dimensions.

3.1.2 PS-4000 Series Flat-Wall Forms: The EPS flat wall blocks have a height of either 12 inches (305 mm) or 24 inches (610 mm) and are available in two sizes having inside cavity dimensions of 6 inches (153 mm) or 8 inches (203 mm). The EPS flat wall blocks consist of two expanded polystyrene foam boards with a thickness of 2.5 inches (64 mm). Held together by steel cross ties spaced 6 inches (153 mm) on center. The actual widths of the 6 inches (153 mm) and 8 inch (203 mm) flat wall forms are 11 inches (280 mm) and 13 inches (330 mm) respectively.

When stacked, the EPS flat wall blocks form a constant width cavity within which vertical and horizontal reinforcement is positioned. When filled with concrete the blocks form a solid, flat concrete wall. See Figure 2 for EPS flat foam block dimensions.

3.2 Materials

3.2.1 Expanded Polystyrene: Form units are molded from expanded polystyrene beads manufactured by BASF Corporation (ICC-ES Legacy NER-479), Styrochem® U.S. Ltd. (ICC-ES Legacy NER-238), Huntsman Chemical Corporation (ICC-ES Legacy NER-384), or AFM Corporations's R-Control Perform Guard EPS (ICC-ES Legacy NER-551). The forms have minimum average density of 1.5 pcf (24 kg/m³), with a flame spread index (FSI) of 25 or less and a maximum smoke development index (SDI) of 450 or less when tested under ASTM E 84.

ICC-ES legacy reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, Inc., express or implied, as to any finding or other matter in this report, or as to any product covered by the report.



3.2.2 Steel Cross Ties: The steel cross ties may be one of the following configurations:

3.2.2.1 Expanded hot dipped galvanized flattened steel cross ties 8.75 inches high (222 mm) by 0.052 inches (1.32 mm) thick complying with ASTM A 1008 and having a minimum yield strength of 33 ksi (228 MPa). Each end of the cross tie is bent with a 1 inch (25.4 mm) 90° return. A hot dipped galvanized steel strip complying with ASTM A 653 having a minimum yield strength of 33 ksi (228 MPa) that is 2 inches (50.8 mm) wide, 10 inches (254 mm) long, and having a minimum thickness of 0.013 inches (0.33 mm) is sandwiched around the 1 inch (25.4 mm) returns of the expanded steel cross tie to provide a 1 inch (25.4 mm) wide by 10 inch (254 mm) long furring strip having a double thickness of galvanized steel totaling a minimum thickness of 0.026 inches (0.66 mm). Galvanizing complies with ASTM A 924 having a minimum coating class of G90 (Z180).

3.2.2.2 Galvanized steel welded wire cross ties 3 inches (76 mm) shorter than the height of the block. Steel wire is welded in a rectangular grid pattern with spacing dimensions ranging from 1.65 inches to 4 inches (42 mm to 102 mm). Each end of the cross tie has a galvanized steel strip 1.75 inches (45 mm) wide which is bent length-wise forming an L-shaped member 0.25 inch by 1.5 inches (6 mm by 38 mm) providing a 1.5 inch (38 mm) wide furring strip. All welds at wire-to-wire and wire-to-strip connections are resistance welds in accordance with AWS c.1.3. Wire complies with ASTM A 641, soft temper with a Class 1 zinc coating (galvanized) having a minimum diameter of 0.120 inch (3 mm) and having a minimum tensile strength of 60 ksi (413 MPa). Steel strips comply with ASTM A 653 and have a minimum thickness of 0.030 inch (0.76 mm) with a minimum yield stress of 25 ksi (172 MPa). The steel strip is zinc-iron alloy coated (galvanized) by the hot-dip process having a minimum coating class of A60 (ZF 180).

3.2.3 Concrete: Normal weight concrete complying with Chapter 19 of the Code, with a minimum compressive strength of 2500 psi (17250 kPa) at 28 days and a maximum aggregate size of 3/8 inch (9.53 mm) when using the 6" and 8" Waffle-Grid Forms and 3/4 inch (19.05 mm) when using the 10" waffle-Grid form and 6" and 8" Flat Wall Forms.

3.2.4 Reinforcement: The concrete is reinforced with deformed steel reinforcing bars, complying with the applicable Code with a minimum yield strength of either 40 ksi (275 kPa) or 60 ksi (413 kPa) depending on the structural design.

4.0 INSTALLATION

4.1 General

The PolySteel® Forms are installed as formwork for either load bearing or non-loadbearing walls for residential and commercial construction. These walls include foundations, basements, retaining walls and above grade walls. Structural calculations and details of concrete shall be prepared in accordance with the manufacturer's instructions, ACI 318, the applicable model Code and shall be approved by the building official, and is outside the scope of this evaluation report.

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 job site during installation.

The instructions within this report govern if there are any conflicts between the manufacturer's instructions and this report.

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4.1.1 Interior Finishes: Forms exposed to the interior shall be finished with an approved 15 minutes thermal barrier such as ½ inch (12.7 mm) thick gypsum wallboard as required by the applicable code. The interior gypsum wallboard is attached to furring strips on the PolySteel® Forms, with minimum No. 6 by 1-1/4 inch (31.75 mm) self tapping screws. Spacing of the screws is a maximum 12 inches (304.8 mm) on center in the horizontal and vertical directions. Adhesives in accordance with ASTM C 557 are permitted for attaching the interior finishes to the forms in conjunction with the mechanical fasteners.

4.1.2 Exterior Finishes: Forms exposed to the exterior shall be finished with an approved exterior wall covering installed in accordance with the applicable code. The wall covering shall be attached to the PolySteel® Forms furring strips with approved corrosion-resistant, coarse-threaded, self-tapping screws, having sufficient length to penetrate the furring strips a minimum of 1/4 inch (6.4 mm). No. 6 and No. 8 screws in forms using expanded steel cross ties have an allowable pullout capacity of 23 pounds (102 N) and 27 pounds (120 N) respectively. No. 6 and No.8 screws in forms using welded wire cross ties have an allowable pullout capacity of 49 pounds (218 N) and 59 pounds (262 N) respectively.

For portland cement stucco finishes, an approved metal or wire fabric lath shall be attached to the PolySteel® Forms furring strips with minimum No. 6, lath-head screws or 1 inch (25.4 mm) long galvanized self-tapping sheet metal screws. The screw spacing shall be 8 inches (203.2 mm) on center vertically and 12 inches (304.8 mm) on center horizontally. The stucco finish shall be applied in accordance with the applicable code.

An EIFS finish system shall be installed in accordance with its current ICC-ES Legacy Evaluation Report. Other approved exterior finishes are permitted and shall be installed as required by the applicable code.

4.1.3 Installation: The PolySteel® Form units shall be constructed with vertical cavities aligned. Reinforcement shall be installed as required by the approved construction documents. The forms shall be assembled and braced, and concrete placed as described in the detailed procedures approved by the manufacturer.

For basement installation, walls shall be constructed as noted above and drainage system around the basement wall shall be provided as noted in the manufacturer's instructions. Waterproofing and damproofing of basement walls shall be as required by the manufacturer's instructions and as approved by the building official. No backfill is permitted applied against the wall until the complete flooring system or bracing is in place. Backfill of the basement wall shall be free of construction debris, sharp objects, or large rocks.

4.2 Attic or Crawl Space Installation

In jurisdictions that have adopted the *Standard Building Code*® and the *BOCA National Building Code*, the PolySteel® Forms shall be permitted to be installed exposed in an attic or crawl space without a thermal barrier under the following conditions:

- 4.2.1** entry to the attic or crawl space is limited to service of utilities;
- 4.2.2** there are no interconnected attic or basement areas;
- 4.2.3** air in the attic or crawl space is not circulated to other parts of the building;

*

~~4.2.4 ventilation of the attic or crawl space shall be provided in accordance with the applicable Code.~~

~~4.2.5 Attic or Crawl space installation shall be limited to forms expanded from beads manufactured by BASF Corporation, Huntsman Chemical Corporation or Styrochem U.S. Ltd.~~

4.3 Allowable Concrete Lift Rates

Concrete shall be placed in the forms at a rate noted in the table below with a maximum rate of 5 feet per hour (1.5 m/hr).

Concrete Temp - ° F	LIFT RATE -FT/HR
40° (4.44° C)	2.5 (0.75 m/hr)
50° (10° C)	3.0(0.9 m/hr)
60°(15.56° C)	3.5(1.05 m/hr)
70° (21.11° C)	4.0(1.2 m/hr)
80° (26.67° C)	4.5(1.35 m/hr)
90° (32.22° C)	5.0(1.5 m/hr)

4.4 Design

4.4.1 General The PolySteel® Forms are installed as formwork for foundation and basement load bearing and non-load bearing walls and above grade load bearing and non-load bearing walls for residential and commercial construction.

Design calculations and details for specific applications shall be furnished to the code official verifying compliance with this report and the applicable Code. The individual preparing such documents shall possess the necessary credentials regarding competency and qualifications as required by the applicable Code and the professional registration laws of the state where the construction is undertaken.

~~4.4.2 Prescriptive Design ICF: PolySteel® Forms are defined as Waffle Grid and Flat insulating concrete form wall systems and may be designed and reinforced using the load tables for either Waffle Grid or Flat ICF forms in Sections 1916 and 1804.6.2 of the *Standard Building Code*® or Sections R404.4 and R611 of the *International Residential Code*® provided the building conforms to the applicability limits defined in Sections 1916.2 and 1804.6.2.1 of the *SBC* or Sections R404.4.1 and R611.2 of the *IRC*. When using this prescriptive design method, the wall thickness is limited as noted in the applicable code sections referenced above.~~

~~4.4.3 Non-Prescriptive Design: When the ICF forms are installed on buildings that do not conform to the applicability limits of Sections 1916.2 and 1804.6.2.1 of the *SBC* or Sections R404.4.1 and R611.2 of the *IRC*, the structural analysis and design of the concrete shall be prepared in accordance with ACI 318 and Chapter 19 of the *Standard Building Code*®, *International Building Code*®, *BOCA National Building Code* or *Uniform Building Code*™ or Section R611 of the *International Residential Code*®, as applicable.~~

4.4.4 Prescriptive Design of ICF by PCA Pub. EB118: The forms are also permitted to be designed and reinforced in accordance with *Prescriptive Method for Insulating Concrete Forms in Residential Construction*, PCA publication EB118 provided the building conforms to the applicability limits defined in Table 1.1 of the Prescriptive Method.

4.5 Wood Construction in Areas of Very Heavy Termite Infestation

~~4.5.1 In jurisdictions that have adopted the *Standard Building Code*® *International One and Two Family Dwelling Code*, and the *International Residential Code*™, where foam plastic insulation is used with wood construction in areas of very heavy termite infestation, the foam plastic shall be installed in accordance with sections 1916.7.5 and 2603.3 of the *Standard Building Code*®, Section 323.4 of the *International One and Two Family Dwelling Code* and Section R324.4 of the *International Residential Code*™. Areas of very heavy termite infestation shall be determined in accordance with Figure 2304.1.4 *SBC*, Figure 301.2(6) *I&2FDC* and Figure R301.2(6) *IRC*.~~

~~4.5.2 PolySteel® Forms manufactured with AFMR-Control Perform Guard EPS are termite resistant and are not restricted under Section 4.5.1 of this report.~~

4.6 4-Hr Fire Resistive Rated Load Bearing Wall Assembly

Walls constructed with PolySteel® Forms are permitted to be used in load-bearing, fire-resistive construction having a maximum 4-hour rating. Any of the forms described in this report are permitted to construct the fire-resistive wall. The concrete shall be normal-weight concrete having a minimum compressive strength of 3000 psi (20700 kPa) at 28 days, and shall be designed in accordance with Section 4.4 of this evaluation report. The exterior side of the wall shall be covered with an approved wall covering in accordance with Section 4.1.2 and the interior side of the wall shall be covered by an interior finish in accordance with Section 4.1.1.

4.7 Installation in Buildings of Noncombustible Construction

The forms are permitted to be used in buildings of noncombustible construction when installed as follows:

4.7.1 Exterior Walls of Buildings of Any Height: The following conditions shall apply:

4.7.1.1 EIFS and One Coat Stucco - Exterior Finish: The following EIFS and One Coat Stucco Wall Finishes are installed over the exterior of the forms using the Reinforcing Fabric, base coat and finish coat materials described in their Code evaluation reports.

- Senergy Inc., Senerflex EIFS as described in ICC-ES Legacy SBCCI PST & ESI Evaluation Report #9630A and ICC-ES Legacy BOCA ES Research Reports #97-86 and #99-14.
- Finestone, Finestone Pebbletex, Class PB EIFS as described in ICC-ES Legacy BOCA Research Report 96-72.1 and ICC-ES Legacy SBCCI PST & ESI Evaluation Report #9771.
- Sonneborn/ChemRex Inc., Sonneborn Flex Wall Stucco System EIFS as described in ICC-ES Legacy SBCCI PST & ESI Evaluation Report #2028.
- Master Wall, Inc., Aggre-flex EIFS as described in ICC-ES Legacy Reports SBCCI PST & ESI #9631A and ICBO ES #ER-5362.

4.7.1.2 Brick Veneer - Exterior Finish: The brick veneer shall be installed in accordance with the applicable Code.

4.7.1.3 Stucco Veneer - Exterior Finish: The stucco shall be a minimum 7/8 inch (22 mm) thick and shall be installed in accordance with the applicable Code. An approved Portland cement stucco exterior wall covering which satisfies the code

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requirement for non-combustible construction shall be installed using 1 inch (25.4 mm) by 20 gauge woven wire lath fastened to the galvanized furring strips using minimum 1 inch (25.4 mm) No. 6 lath head screws spaced 8 inches (203.2 mm) in the vertical direction and 12 inches (304.8 mm) in the horizontal direction.

4.7.1.4 Interior Finish: The forms shall be finished on the interior with an approved 15 minute thermal barrier such as ½ inch (12.7 mm) thick gypsum wallboard as required by the applicable *Code*. The gypsum wallboard shall be installed and attached as described in Section 4.1.1 above.

4.7.1.5 Fireblocking: Foam plastic on the interior shall be fireblocked at ceilings and floors using materials specified by the applicable *Code*.

4.7.2 One Story Buildings: The following conditions apply:

4.7.2.1 The building is equipped throughout with an automatic sprinkler system in accordance with the applicable *Code*.

4.7.2.2 The exterior of the foam wall is covered with metal of a thickness of not less than 0.032 inch (0.81 mm), aluminum or corrosion-resistant steel having a base metal thickness of 0.0160 inch (0.41 mm).

4.7.2.3 Interior Finish: The forms shall be finished on the interior with an approved 15 minute thermal barrier such as ½ inch (12.7 mm) thick gypsum wallboard as required by the applicable *Code*. The gypsum wallboard shall be installed and attached as described in Section 4.1 above.

4.7.2.4 Fireblocking: Foam plastic on the interior shall be fireblocked at ceilings and floors using materials specified by the applicable *Code*.

4.8 Special Inspections

Special inspection is required as noted in Chapter 17 of the applicable *Code*, for placement of reinforcing steel and concrete, concrete cylinder testing, form installation and bracing, and concrete operations. Special inspectors shall comply with the applicable *Code*.

5.0 IDENTIFICATION

Each pallet of PolySteel® Forms as described in this report shall be labeled with the manufacturer's name and/or trademark, third party agencies name and/or trademark (Omega Point Laboratories, Inc. NER-QA337) and this ICC-ES legacy report number NER-515 for field identification.

6.0 EVIDENCE SUBMITTED

6.1 Manufacturer's descriptive literature; Material Specifications for PolySteel® Forms, December 18, 1995; Protection Against Termites, data sheet; PolySteel® CSI Specifications Section 03135, Expanded Polystyrene Concrete Formwork, May 2003.

6.2 PolySteel® Forms Manuals:

6.2.1 Users Manual for PolySteel® Form, prepared by American PolySteel® Forms, dated 10-10-03, signed and sealed by David R. Jarmul, P.E.

6.2.2 PolySteel® Forms Structural Design Manual, Second Edition 1996, signed and sealed by David R. Jarmul, P.E., 10-10-03.

6.2.3 PolySteel® PS-3000 Series Details, First Edition 2003, signed and sealed by David R. Jarmul, P.E. 10-10-03.

6.2.4 PolySteel® PS-4000 Series Details, First Edition 2003, signed and sealed by David R. Jarmul, P.E., 10-10-03.

6.3 Engineering calculations:

6.3.1 Calculations signed and sealed by J. L. Berrenberg, P.E.; supplemental calculations for wind loads and earthquake forces, 9-23-95; supplemental calculations for recommended pour rates, 1-16-96; supplemental calculations on screw withdrawal, 11-7-97.

6.3.2 Calculations, signed and sealed by David R. Jarmul, P.E., 10/10/03, allowable pullout capacity of No. 6 and No. 8 Screws.

6.4 Surface burning characteristics testing under ASTM E 84 of EPS bead suppliers is covered under ICC-Es Legacy NER-479, BASF Corporation; ICC-ES Legacy NER-384 and ICC-ES Legacy SBCCI PST & ESI #9498, Huntsman Chemical Corporation; ICC-ES Legacy NER-238, Styrochem International, Inc. AFM Corporations's R-Control Perform Guard EPS, ICC-ES Legacy NER-551.

6.5 Test reports on crawl space evaluation of foam plastic without thermal barrier, prepared by Southwest Research Institute:

6.5.1 BASF foam plastic 3 inches thick 1.0 pcf; and 2 inches thick, 2.0 pcf adhered with DAP 2000 construction adhesive, SwRI Project No. 01-7788-205[3], Revised April 1997.

6.5.2 Huntsman foam plastic 3 inches thick 1,0 pcf, mechanically fastened; and 2 inch thick 2.0 pcf adhered with DAP construction adhesive, SwRI Project No. 01-7522-405, June 1996.

6.6 Test reports, Testing Consultants, Inc. (TCI), signed and sealed by J. Patrick Callahan, P.E.:

6.6.1 ASTM E 119, two-hour fire resistive limited load bearing wall assembly, TCI No. 203031, March 14, 1992.

6.6.2 Modified ASTM E 108, TCI Project No. 504114, May 5, 1995.

6.6.3 Room corner fire testing with ½ gypsum board thermal barrier and plastic electrical boxes, TCI Project No. 601010, January 25, 1996.

6.7 Test report, ignition resistance under radiant heat exposure, AGRA Earth & Environmental, Inc., AEE Job No. C95-5897, January 4, 1996, signed by Robert S. Romero and Guillermo A. Florentino, P.E.

6.8 Quality Control Manuals for PolySteel® Manufacturing Plants, prepared by Omega Point Laboratories:

6.8.1 Airlite Plastics Co., Omaha, NE, OPL No. 16583-1, December 2003, Revision A. 6", 8" and 10" Waffle-Grid Forms.

6.8.2 Foam Fabricators, Inc., Jefferson, GA, OPL No. 16582-1, July 2003, Revision A, 6" and 8" Waffle-Grid Forms.

- 6.8.3** Foam Fabricators, Inc., Fort Madison, IA, OPL No. 16802-1, September 2003, Revision A, 6" and 8" Flat Wall Forms.
- 6.8.4** Foam Concepts, Inc., Uxbridge, MA, OPL NO. 16581-1, January 2004, Revision A, 6' and 8" Waffle-Grid Forms.
- 6.9** Manufacturer's descriptive literature for AFM R-Control Perform Guard® EPS termite resistant expanded polystyrene insulation.
- 6.10** Test reports and letters on 4 hour fire resistive testing under ASTM E 119 for 6 inch thick PolySteel Form concrete wall, Omega Point Laboratories:
- 6.10.1** Test Report, Project No. 8503-106742, January 10, 2001, William E. Fitch, P.E.
- 6.10.2** Letter report, engineering analysis of variances for tested assembly to actual field installations, February 6, 2001, John D. Nicholas.
- 6.10.3** Letter, engineering rational for various bead suppliers and ASTM E 119 testing, July 25, 2000, John D. Nicholas.
- 6.10.4** Letter, engineering rational for Styrochem U.S. Ltd., MC 590 beads and ASTM E 84 testing, February 6, 2001, John D. Nicholas.
- 6.10.5** Letter, engineering evaluation for brick veneer exterior, January 11, 2004, signed by Tim M. Mattox.
- 6.11** Test report, AFM Perform Guard EPS testing under ASTM C 578 and ASTM E 84, Underwriters Laboratories Inc., Project No. 94NK29264, November 30, 1994, Karen Foxx-Smith and R.K. Laymon.
- 6.12** Test data for noncombustible use of EIFS was submitted for the following companies and products:
- 6.12.1** Senergy Inc., Senerflex EIFS as described in ICC-ES Legacy SBCCI PST & ESI Evaluation Report #9630A and ICC-ES Legacy BOCA ES Research Report #97-86.
- 6.12.2** Sonneborn/ChemRex Inc., Sonneborn Flex Wall Stucco System EIFS as described in ICC-ES Legacy SBCCI PST & ESI Evaluation Report #2028.
- 6.12.3** Finestone, Finestone Pebbletex, Class PB EIFS as described in ICC-ES Legacy BOCA Research Report 96-72.1.
- 6.12.4** Master Wall, Inc., Aggre-flex EIFS as described in ICC-ES Legacy Reports SBCCI PST & ESI #9631A and ICBO ES #ER-5362.

7.0 CONDITIONS OF USE

The ICC-ES Subcommittee for the National Evaluation Service finds that the PolySteel® Forms described in this report comply with or are suitable alternates to that specified in the ~~2000 International Building Code®, the 2000 International Residential Code®, the 2002 Accumulative Supplement to the International Codes™, the 1999 Standard Building Code®, the BOCA® National Building Code/1999, the 1997 Uniform Building Code™, and the 1998 International One and Two Family Dwelling Code®~~ subject to the following conditions:

- 7.1** This Evaluation Report and the manufacturer's published installation instructions, when required by the code official, shall be submitted at the time of permit application. Design calculations and details for specific applications are required in accordance with section 4.4 of this report.
- 7.2** The PolySteel® 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 of this report.~~
- Penetrations of the 15 minute Thermal Barriers for piping, conduit, and ducts is limited to steel pipes or steel sleeves encasing non-metallic pipe and conduit and steel ducts.
- Documentation shall be submitted to the code official for approval of alternate methods to protect penetrations of foam plastic.
- 7.3** PolySteel® Forms shall be limited to buildings of combustible construction, except as permitted in Section 4.7 of this report.
- 7.4** PolySteel® Forms have only been evaluated as formwork for structural concrete. For structural design see Section 4.4 of this report.
- 7.5** ~~When the foam plastic forms are used with wood construction, see Section 4.5 of this report.~~
- 7.6** Special inspection shall be required as covered in Section 4.8 of this report.
- 7.7** When used as part of a fire resistance rated assembly Section 4.6 of this report shall apply.
- 7.8** The forms are manufactured at the following locations:
- Omaha, NE, by Airlite Plastics Co., 6", 8" and 10" Waffle-Grid Forms.
 - Jefferson, GA, by Foam Fabricators, Inc., 6" and 8" Waffle-Grid Forms.
 - Fort Madison, IA, by Foam Fabricators, Inc., 6' and 8" Flat Wall Forms.
 - Uxbridge, MA, by Foam Concepts, Inc., 6" and 8" Waffle-Grid Forms.
- 7.9** This report is subject to periodic re-examination. For information on the current status of this report, consult the ICC-ES website.

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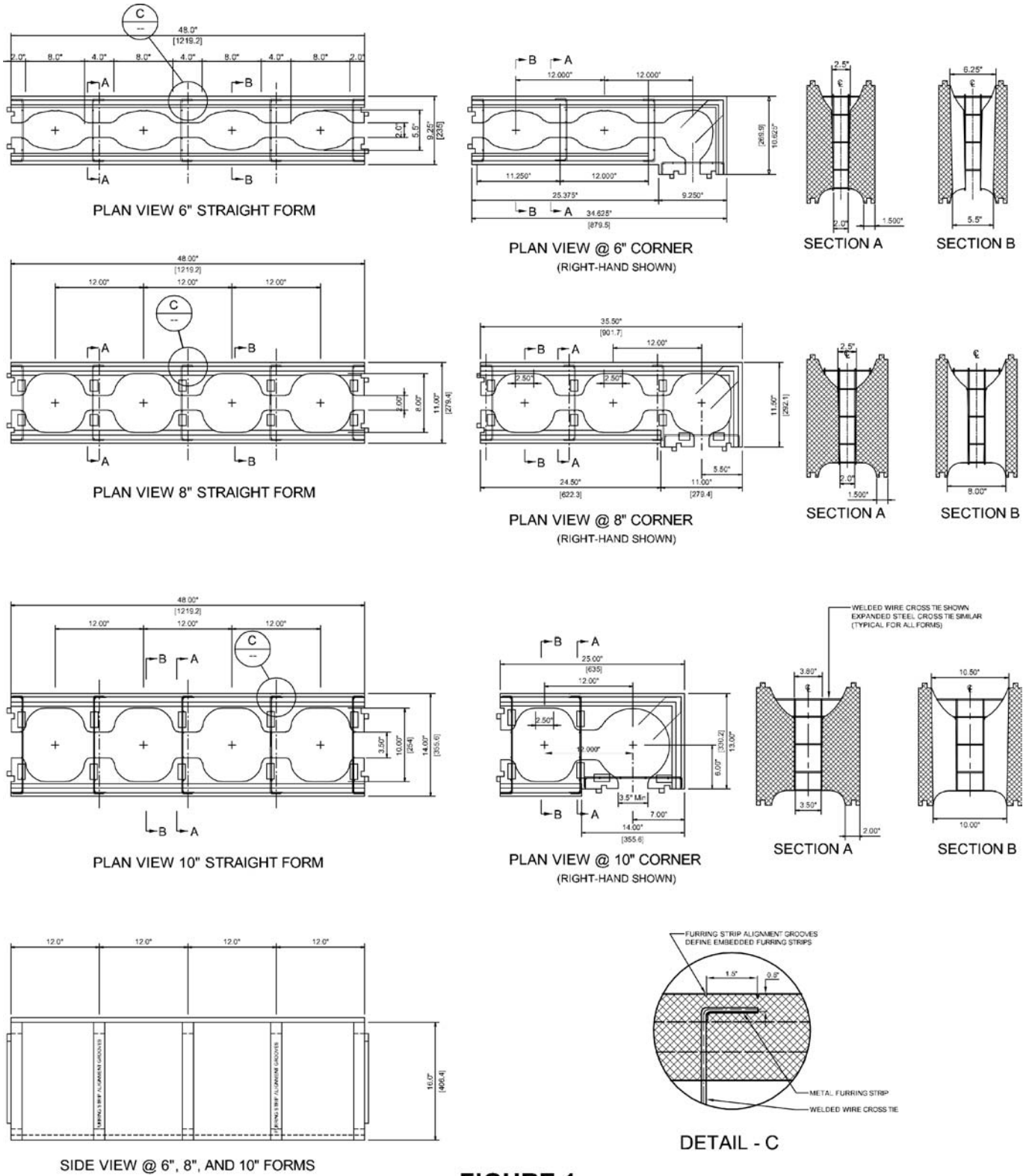


FIGURE 1

American PolySteel Waffle-Grid PS-3000 Series Form

