

ICC-ES Evaluation Report

ESR-1935

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

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**DIVISION: 07 00 00—THERMAL AND MOISTURE
PROTECTION**
**Section: 07 24 00—Exterior Insulation and Finish
Systems**
**Section: 07 24 19—Water-Drainage Exterior Insulation
and Finish System**
REPORT HOLDER:
PAREX USA, INC.
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EVALUATION SUBJECT:
**TeifsPERMADRY, TeifsWEATHERTIGHT AND
TeifsPERMADRAIN WALL SYSTEMS**
1.0 EVALUATION SCOPE
Compliance with the following codes:

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

Properties evaluated:

PROPERTY	IBC CHAPTER	IRC CHAPTER
Exterior insulation and finish systems (EIFS)	14	R7
Weather resistance	14	R7
Fire-resistance-rated construction	7	R3
Special inspections	17	N/A
Structural – transverse wind load resistance	16	R6
Types I-IV (noncombustible) construction	26	N/A
Surface burning characteristics	26	R3
Ignition resistance	26	N/A

2.0 USES

The Teifs wall systems noted in Table 1 are exterior insulation and finish systems (EIFS) complying with IBC Section 1408 and IRC Section R703.9. The Teifs wall systems comply as an EIFS with drainage in accordance with IBC Section 1408.4.1 and IRC Section R703.9. The systems may be used in fire-resistance-rated construction

and any construction type (IBC Types I through V) when installed in accordance with this report.

3.0 DESCRIPTION
3.1 System Components:

See Table 1. The Teifs systems consist of a water-resistive barrier coating, drainage medium, expanded polystyrene (EPS) insulation board, adhesive, base coat, reinforcing mesh fabric and finish.

3.2 Insulation board:

Insulation boards must be one of the following:

- a. EPS insulation board complying with ASTM C 578, Type I, and ASTM E 2430, produced by a molder with a current ICC-ES evaluation report. The board must be labeled in accordance with the applicable report.
- b. EPS insulation board complying with ASTM C 578, Type I, and ASTM E 2430, produced by a molder participating in an approved third-party quality assurance program. The board is labeled in accordance with the applicable code.

EPS insulation boards must have a flame-spread index of 75 or less and a smoke-developed index of 450 or less, when tested in accordance with ASTM E 84 or UL723, except in Types I, II, III or IV construction where the insulation board must have a flame-spread index of 25 or less.

3.3 Substrates:

Substrates must be one of the following:

- Gypsum sheathing board complying with ASTM C 1396 or ASTM C 1177
- Fiber cement panels complying with the ICC-ES Acceptance Criteria for Fiber Cement Siding Used as Exterior Wall Siding (AC90) and with ASTM C 1186
- Fiber cement panels complying with the ICC-ES Acceptance Criteria for Reinforced Cementitious Sheets Used as Wall and Ceiling Sheathing and Floor Underlayment (AC376), and with ASTM C 1325
- Concrete-masonry complying with the code
- Concrete complying with the code
- Exterior plaster complying with the code
- Exposure 1 wood structural panels complying with DOC PS-1
- Brick masonry complying with the code

3.4 Sealants:

Sealants must comply with ASTM C 920, Type S or M, minimum Grade NS, minimum Class 25 and Use O.

4.0 DESIGN AND INSTALLATION

4.1 General:

Teifs wall systems must be installed in accordance with IBC Section 1408, IRC Section R703.9 and the manufacturer’s application instructions, specifications and installation details. These are available at <http://www.teifs.com/literature/EIFSAPG.pdf>.

4.2 Drainage:

Drainage mediums, as noted in Table 1, are:

- Teifs Weathertight: channeled insulation board
- Teifs Weathertight VNT: vertical ribbons of adhesive with flat insulation board
- Teifs PermaDry: Grade D building paper with channeled insulation board
- Teifs PermaDrain: Tyvek StuccoWrap with flat insulation board
- Teifs PermaDrain DM: drainage mat with flat insulation board
- Teifs PermaDrain ML: metal lath with flat insulation board

4.3 Wind Design:

Table 2 describes specific assemblies for which test data has been submitted. Other assemblies may be considered for approval by local officials based on testing and/or calculations of a registered design professional.

4.4 Weather Protection:

The Teifs wall systems comply with IBC Section 1403.2 and IRC Section R703.1.1.

4.5 Use in Types I through IV Construction:

Table 3 describes the assemblies using Teifs Weathertight that are qualified for use in Types I through IV construction.

4.6 Fire-resistance-rated Construction Assemblies:

Table 4 describes the assemblies using Teifs PermaDry that are qualified for use in nonload-bearing fire-resistance-rated construction. In Type V construction, the Teifs wall systems may be attached to the surface of combustible exterior fire-resistance-rated assemblies described in IBC Table 720.1(2) without changing the assigned hourly rating of the assembly. The exterior wall must have a minimum 10-foot (3048 mm) separation distance from adjacent construction.

4.7 Special Inspections:

For recognition under the IBC, special inspection of the water-resistive coating must be conducted in accordance with Section 1704.14.1 of the code. Refer to Parex USA, Inc., Third Party Inspection Guidelines for verifying field preparation of materials.

5.0 CONDITIONS OF USE

The TeifsPERMADRY, TeifsWEATHERTIGHT and TeifsPERMADRAIN wall systems 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 Installation must comply with this report, the manufacturer’s published installation instructions and the applicable code. In the event of a conflict between the manufacturer’s instructions and this report, this report governs.
- 5.2 The insulation board must be separated from the building interior by a thermal barrier complying with the applicable code.
- 5.3 Installation must be by applicators acceptable to Parex USA, Inc.
- 5.4 Termination of the system must not be less than 6 inches (152 mm) above finished grade, in accordance with IBC Section 2603.8 and IRC Section R318.4.
- 5.5 Adequacy of fasteners for concrete, masonry, brick or portland cement plaster substrates must be demonstrated to the satisfaction of the code official by a proof-load test program consisting of fastener withdrawal from the wall. The average withdrawal strength, in pounds, must be six times the required fastener load.

6.0 EVIDENCE SUBMITTED

- 6.1 Reports of tests in accordance with ASTM E 2568 and ASTM E 2273.
- 6.2 Data in accordance with the ICC-ES Acceptance Criteria for EIFS Clad Drainage Wall Assemblies (AC235), dated October 2009.
- 6.3 Data in accordance with the ICC-ES Acceptance Criteria for Water-resistive Coatings Used as Water-resistive Barriers over Exterior Sheathing (AC212), dated October 2009.

7.0 IDENTIFICATION

Each container or package of the coating or reinforcing mesh used as part of the Teifs wall systems must be labeled with the Parex USA, Inc., name and address; the product name; lot or batch number; quantity of material; storage instructions; pot life; expiration date; and the evaluation report number (ESR-1935).

Foam plastic insulation boards must be labeled in accordance with the current ICC-ES evaluation report in which the board is recognized, or as described in Section 3.2.

TABLE 1—COATING SYSTEM COMPONENTS¹

System	Water-Resistive Barrier	Drainage Medium	Adhesive Base Coats	Reinforcing Mesh	Finish
TeifsWeathertight	TeifsWeatherseal (ESR-2045)	Grooved EPS Insulation Board	TeifsBase, TeifsBase D.B.	Standard Reinforcing Mesh, Nominally 4.3 oz/yd ² minimum ³	TeifsFLEX DPR Acrylic Finish 300 Series, DPR Acrylic Finish 500 Series, or DPR Optimum Finish
TeifsWeathertight VNT	TeifsWeatherseal (ESR-2045)	VNT adhesive			
TeifsPermaDry	Grade D Building paper ²	Grooved EPS Insulation Board			
TeifsPermaDrain	Tyvek StuccoWrap (ESR-2375)	Tyvek StuccoWrap			
TeifsPermaDrain DM	Grade D Building paper ²	Drainage Mat			
TeifsPermaDrain ML	Grade D Building paper ²	Metal lath			

¹Refer to Section 3.2 for insulation boards.
²Building paper must be Grade D having a 60-minute water-resistance rating.
³Higher weight meshes are allowable.

TABLE 2—WIND LOAD DESIGN

Framing Members ³		Substrate			Insulation			
Type, Min Depth (inches)	Max. Spacing (inches o.c.)	Type	Fastener Type	Max. Fastener Spacing (inches o.c.)	Thickness (Min.)	Attachment	Allowable Wind Load (psf) ²	
							Negative	Positive
TeifsWEATHERTIGHT								
2x4 Wood ¹	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 1/4" long	6" o.c.	3/4	2-inch-diameter Wind Devil™ plastic washer with No. 8, Type W buglehead screw spaced 6" o.c. along the panel edge and 12" o.c. field; must penetrate 1 1/2 inches into wood framing or through steel framing	24	28
3 5/8-by-No-18-gage-steel	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 1/4" long	6" o.c.	3/4		21	28
TeifsPERMADRY								
2x4 Wood ¹	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 1/4" long	6" o.c.	1 1/2	2-inch-diameter Wind Devil™ plastic washer with No. 8, Type W buglehead screw spaced 6" o.c. along the panel edge and 12" o.c. field; must penetrate 1 1/2 inches into wood framing or through steel framing	29	57
2x4 Wood ¹	16	Min. 7/16-inch Wood Structural Panel	6d nails by 1 1/4 long	8" o.c. field, 6" o.c. panel edge	1 1/4	2-inch-diameter Wind Devil™ plastic washer with No. 8, Type W buglehead screw spaced 6" o.c.; must penetrate 1/2-inch through sheathing	31	57
3 5/8-by-No-18-gage-steel	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 1/4" long	6" o.c.	1 1/4	2-inch-diameter Wind Devil™ plastic washer with No. 8, Type S buglehead screw spaced 6" o.c.; must penetrate through steel framing	27	34
3 5/8-by-No-20-gage-steel	16	Min. 7/16-inch Wood Structural Panel	No. 6 self-drilling bugle head screws, 1 1/4" long	6" o.c.	1 1/4	2-inch-diameter Wind Devil™ plastic washer with No. 8, Type W buglehead screw spaced 6" o.c.; must penetrate 1/2-inch through sheathing	20	35
N/A	N/A	Concrete/ Unglazed Brick/ Cement Plaster/ Concrete Masonry	--	--	1 1/4	--	57	--
TeifsPERMADRAIN								
N/A	N/A	Concrete/ Unglazed Brick/ Cement Plaster/ Concrete Masonry	--	--	3/4	--	27	34
TeifsPERMADRAIN / TeifsPERMADRAIN DM								
2x4 Wood ¹	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 1/4" long	6" o.c.	1 1/4	2-inch-diameter Wind Devil™ plastic washer with No. 8, Type W buglehead screw spaced 6" o.c. along the panel edge and 12" o.c. field; must penetrate 1 1/2 inches into wood framing or through steel framing	31	57
2x4 Wood ¹	16	Min. 7/16-inch Wood Structural Panel	6d nails by 1 1/4 long	8" o.c. field, 6" o.c. panel edge	1 1/4	2-inch-diameter Wind Devil™ plastic washer with No. 8, Type W buglehead screw spaced 6" o.c.; must penetrate 1/2-inch through sheathing	31	57

TABLE 2—WIND LOAD DESIGN (Continued)

Framing Members ³		Substrate			Insulation			
Type, Min Depth (inches)	Max. Spacing (inches o.c.)	Type	Fastener Type	Max. Fastener Spacing (inches o.c.)	Thickness (Min.)	Attachment	Allowable Wind Load (psf) ²	
							Negative	Positive
TeifsPERMADRAIN / TeifsPERMADRAIN DM (Continued)								
3 ⁵ / ₈ -by-No-18-gage-steel	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 ¹ / ₄ " long	6" o.c.	3/4	2-inch-diameter Wind Devil™ plastic washer with No. 12, Type S buglehead screw spaced 6" o.c.; must penetrate through steel framing	27	34
3 ⁵ / ₈ -by-No-20-gage-steel	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 ¹ / ₄ " long	6" o.c.	3/4	2-inch-diameter Wind Devil™ plastic washer with No. 12, Type S buglehead screw spaced 6" o.c.; must penetrate through steel framing	20	35
TeifsPERMADRAIN ML								
3 ⁵ / ₈ -by-No-20-gage-steel	16	Any sheathing noted in Section 3.3	No. 6 self-drilling bugle head screws, 1 ¹ / ₄ " long	6" o.c.	3/4	2-inch-diameter Wind Devil™ plastic washer with No. 12, Type S buglehead screw spaced 6" o.c.; must penetrate through steel framing	31	38

SI: 1 inch = 25.4 mm; 1 psf = 0.0479 kPa.

¹Minimum nominal 2x4 wood framing, minimum specific gravity 0.42.

²Maximum positive pressure is limited to the capacity of the framing and structural sheathing, concrete, brick, concrete masonry or Portland cement plaster substrate, determined in accordance with the applicable code or the values stated in the table, whichever is less.

³Framing members must be designed to resist all positive and negative transverse design loads with a maximum allowable deflection of 1/240 of the span.

TABLE 3—ASSEMBLIES FOR USE WITH TYPES I THROUGH IV CONSTRUCTION^{1,2,3}

Framing Members			Interior Sheathing			Exterior Sheathing			Insulation Board
Min. Depth (inch)	Min Gage	Max. spacing (inches o.c.)	Type and Min. Thickness (inch)	Fastener Type	Max. Spacing (inches o.c.)	Type and Min. Thickness (inch)	Fastener Type	Max. Spacing (inches o.c.)	Thickness Maximum (inch)
3 ⁵ / ₈ -inch steel	18	16" o.c.	Min. 1/2" Type X gypsum wallboard complying with ASTM C 36 or ASTM C 1396	No. 6, 1 ¹ / ₄ -inch-long, bugle head drywall screws	8" o.c. along panel edges and 12" o.c. in the field	Min. 1/2" water-resistant core, gypsum board complying with ASTM C 1396 or ASTM C 79	No. 12, 1 ¹ / ₄ -inch-long, Type S drywall screws	6" o.c.	4

SI: 1 inch = 25.4 mm.

¹Coating system is described in Table 1.

²Tefis Weathertight and Weathertight VNT are permitted in Types I through IV construction.

³Floor levels must be blocked with 4-inch-thick (102 mm), 4 pcf (64.1 kg/m³) Thermafiber insulation (see [ESR-2331](#)).

TABLE 4—FIRE-RESISTANCE-RATED ASSEMBLIES^{1,2,3}

Framing Members		Interior Sheathing			Exterior Sheathing			Insulation Board
Type	Max. spacing (inches o.c.)	Type and Min. Thickness (inch)	Fastener Type	Max. Spacing (inches o.c.)	Type and Min. Thickness (inch)	Fastener Type	Max. Spacing (inches o.c.)	Thickness Maximum (inch)
2x4 wood	16" o.c.	Min. 5/8" Type X gypsum wallboard complying with ASTM C 36 or ASTM C 1396	1 ³ / ₄ -inch-long, with 7/16-inch diameter head galvanized nails having 0.128-inch-diameter shank	8" o.c.	Min. 5/8" water-resistant core, gypsum board complying with ASTM C 1396 or ASTM C 79	1 ³ / ₄ -inch-long, with 7/16-inch diameter head galvanized nails having 0.128-inch-diameter shank	8" o.c.	4

SI: 1 inch = 25.4 mm; 1 psf = 0.0479 kPa.

¹Coating system is described in Table 1.

²Teifs PermaDry is permitted in Fire-resistance-rated assemblies.

³Rated from both sides.