

## CSI SECTION 07 24 00 - Exterior Insulation & Finish System (EIFS) - Class PB

### HZ Plywood Standard EIFS System

#### SYSTEM OVERVIEW

##### Miami-Dade County NOA No. 12-0214.10

*This system has been designed in accordance with Florida Building Code for use in the High Velocity Hurricane Zones.*

- The system does not contribute structural strength to the wall. It is dependent on the substrate wall for support and attachment.*
- Substrate construction must resist all design loads. Sheathing attachment to framing must resist design negative windloads because it transfers those loads to the framing. Appropriate safety factors must be applied.*
- All penetrations and terminations of the system must be made weather-tight, typically by sealants and/or flashings.*
- The EPS in EIFS has a maximum service temperature of 165°F (74°C). Dark colors will increase the surface temperature of the EIFS wall.*

#### PART 1 - GENERAL

##### 1.1 SECTION INCLUDES

- Manufacturer's requirements for the proper design, use, installation of HZ Plywood Standard Class PB EIF System.

##### 1.2 RELATED SECTIONS

- Section 06 16 00 - Sheathing
- Section 07 62 00 - Sheet Metal Flashing and Trim
- Section 07 90 00 - Joint Protection
- Section 08 50 00 - Windows
- Section 09 21 16 - Gypsum Board Assemblies

##### 1.3 REFERENCES

- ASTM B117 Test Method for Salt Spray (Fog) Testing.
- ASTM C1135 Test Method for Determining Tensile Adhesion Properties of Structural Sealants.
- ASTM D968 Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
- ASTM D1037 Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials
- ASTM D2247 Practice for Testing Water Resistance of Coatings in 100 Percent Relative Humidity.
- ASTM D2294 Standard Test Method for Creep Properties of Adhesives in Shear by Tension Loading (Metal-to-Metal).
- ASTM D2794 Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact)
- ASTM D3273 Standard Test Method for Resistance to Growth of Mold on the Surface of Interior Coatings in an Environmental Chamber
- ASTM E84 Test Method for Surface Burning Characteristics of Building Materials.
- ASTM E330 Test Method for Structural Performance by Uniform Static Air Pressure Difference.
- ASTM E331 Test Method for Water Penetration by Uniform Static Air Pressure Difference.
- ASTM E695 Method for Measuring Relative Resistance to Impact Loading.
- ASTM E2134 Standard Test Method for Evaluating the Tensile-Adhesion Performance of an Exterior Insulation and Finish System (EIFS)
- ASTM E2273 Standard Test Method for Determining the Drainage Efficiency of Exterior Insulation and Finish Systems (EIFS) Clad Wall Assemblies

- O. ASTM E2430 Standard Specification For Expanded Polystyrene (“EPS”) Thermal Insulation Boards For Use In Exterior Insulation and Finish Systems (“EIFS”)
- P. ASTM E2485 Standard Test Method for Freeze/Thaw Resistance of Exterior Insulation and Finish Systems (EIFS) and Water Resistive Barrier Coatings
- Q. ASTM E2486 Standard Test Method for Impact Resistance of Class PB and PI Exterior Insulation and Finish Systems (EIFS)
- R. ASTM G155 and G153 Accelerated Weathering for Exposure of Nonmetallic Materials.
- S. Fed Spec TT-C-555B Coating, Textured (For Interior and Exterior Masonry Surfaces)
- T. MIL STD 810B Military Standard, Environmental Test Methods
- U. TAS 201 Large Missile Impact
- V. TAS 202 Air Infiltration
- W. TAS 202 Uniform Static Air Pressure Test
- X. TAS 202 Water Resistance Test
- Y. TAS 203 Cyclic Wind Pressure Loading

#### 1.4 SYSTEM DESCRIPTION

##### A. Description:

1. HZ Plywood Standard Class EIFS System consisting of Adhesive, Expanded Polystyrene Insulation Board (EPS), Base Coat with embedded Reinforcing Fabric mesh, primer (optional), and Finish coat installed over plywood with gypsum sheathing. See Current Miami Dade Assembly NOA for Required Components

##### B. EIFS Functional Criteria:

##### 1. General:

- a. Insulation Board: At system termination, completely encapsulate insulation board edges by mesh reinforced base coat. The use of and maximum thickness of insulation board shall be in accordance with applicable building codes and manufacturer’s requirements.
- b. Flashing: Flashing shall be continuous and watertight. Flashing shall be designed and installed to prevent water infiltration behind the EIFS. Refer to Division 07 Flashing Section for specified flashing materials.
- c. See Current ICC Evaluation Service Report or Contact manufacturer’s Technical Department for Design Windloads. Refer to manufacturer’s Miami Dade NOA for assembly requirements.
- d. Inclined surfaces shall follow the guidelines listed below:
  - (1) Minimum slope: 6 in (152 mm) of vertical rise in 12 in (305 mm) of horizontal run.
  - (2) For sloped surfaces, run of slope shall be a maximum of 12 in (305 mm).
  - (3) Usage not meeting above criteria shall be approved by manufacturer in writing prior to installation.
- e. The building interior shall be separated from the insulation board by ½ in (12.7 mm) of gypsum board or equivalent 15 minute thermal barrier.

##### 2. Performance Requirements

- a. System to meet the performance and testing requirements of the International Code Council Acceptance Criteria AC 219.
- b. Shall meet the testing requirements of the Manufacturer’s Product Performance Sheet.

##### 3. Substrate Systems:

- a. Shall be engineered to withstand applicable design loads including required safety factor.
- b. Maximum deflection of substrate system under positive or negative design loads shall not exceed L/240 of span except as otherwise approved in writing by manufacturer prior to installation.
- c. Substrate dimensional tolerance: Flat within ¼ in (6.4 mm) in any 4 ft (122 cm) radius.
- d. Surface irregularities: Sheathing not over ⅛ in (3 mm); masonry not over ³⁄₁₆ in (4.8 mm).

EDITOR NOTE: COORDINATE BELOW IMPACT RESISTANCE CLASSIFICATION REQUIREMENTS

ACCORDING TO ASTM E 2486 - STANDARD TEST METHOD FOR IMPACT RESISTANCE OF CLASS PB AND PI EXTERIOR INSULATION AND FINISH SYSTEMS (EIFS).

4. Impact Resistance Classification: HZ Plywood Standard Class PB system shall be classified in accordance with ASTM E 2486 classification and impact ranges as follows.
  - a. Standard Impact Resistance, 25-49 in-lbs (2.8 – 5.6 J) Impact Range
  - b. Medium Impact Resistance, 50-89 in-lbs (5.7–10.1 J) Impact Range
  - c. High Impact Resistance, 90-150 in-lbs (10.2–17.0 J) Impact Range
  - d. Ultra High Impact Resistance, >150 in-lbs (> 17.0 J) Impact Range
5. Expansion Joints: Continuous expansion joints shall be installed at the following locations in accordance with manufacturer's recommendations:
  - a. At building expansion joints.
  - b. At substrate expansion joints.
  - c. Where EIFS abuts other materials.
  - d. Where significant structural movement occurs, such as at
    - (1) Changes in roof line.
    - (2) Changes in building shape and/or structural system.
  - e. Where substrate changes.

EDITOR NOTE: INDICATE JOINT WIDTH ON DRAWINGS FOR MOVEMENT AND EXPANSION AND CONTRACTION CONDITIONS. CONSULT WITH SEALANT MANUFACTURER FOR JOINT DESIGN RECOMMENDATIONS AND WITH EIFS MANUFACTURER FOR COORDINATION OF EIFS MATERIALS.

- f. Substrate movement and expansion and contraction of EIFS and adjacent materials shall be taken into account in design of expansion joints, with proper consideration given to sealant properties, installation conditions, temperature range, coefficients of expansion of materials, joint width to depth ratios, and other material factors. Minimum width of expansion joints shall be as follows:
    - (1) ½ in (12.7 mm) where EIFS abuts other materials.
    - (2) ¾ in (19 mm) when prefabricated EIFS panel abuts another prefabricated EIFS panel.
    - (3) Larger width where indicated on drawings.
6. Manufacturer's Detail:
  - a. Manufacturer's latest published information shall be followed for standard detail treatments.
  - b. Non-standard detail treatments shall be as recommended by manufacturer, approved by Project Designer and be part of the Contract Documents.
7. Building Code Conformance: HZ Plywood Standard Class PB EIFS shall be acceptable for use on this project under the building code having jurisdiction.

## 1.5 SUBMITTALS

- A. General: Submit Samples, Evaluation Reports and Certificates in accordance with Division 01 General Requirements Submittal Section.

## 1.6 QUALITY ASSURANCE

- A. Qualifications:
  1. Manufacturer: Shall have marketed Exterior Insulation and Finish Systems in United States for at least 20 years, and be an active member in good standing of EIMA.
    - a. Shall have completed projects of same building size and type as this project.
  2. Applicator:
    - a. Shall have attended a manufacturer's educational seminar for installation of the system.
    - b. Shall possess a current certificate of education from the manufacturer.
    - c. Shall be experienced and competent in installation of plaster-like materials.
- B. Regulatory Requirements:
  1. Insulation Board: Shall be produced and labeled under a third party quality program as required by applicable building code.

## **1.7 DELIVERY, STORAGE, AND HANDLING**

- A. Delivery: Deliver products in original packaging with manufacturer's identification.
- B. Storage: Store materials in a cool, dry location, out of sunlight, protected from weather and other harmful environment, and at a temperature above 40°F (4°C) and below 110°F (43°C) in accordance with manufacturer's instructions. Store insulation board flat.

## **1.8 PROJECT / SITE CONDITIONS**

- A. Installation Ambient Air Temperature: Minimum of 40°F (4°C) and rising, and remain so for 24 hours thereafter.
- B. Substrate Temperature: Do not apply EIFS materials to substrates whose temperature are below 40°F (4°C) or contain frost or ice.
- C. Inclement Weather: Do not apply EIFS materials during inclement weather, unless appropriate protection is employed.
- D. Sunlight Exposure: Avoid, when possible, installation of the EIFS materials in direct sunlight. Application of EIFS finishes in direct sunlight in hot weather may adversely affect aesthetics.
- E. EIFS materials shall not be applied if ambient temperature exceeds 120°F (49°C) or falls below 40°F (4°C) within 24 hours of application. Protect base coat from uneven and excessive evaporation during hot, dry weather.
- F. Prior to installation, the wall shall be inspected for surface contamination or other defects that may adversely affect the performance of the EIFS materials and shall be free of residual moisture.

## **1.9 COORDINATION AND SCHEDULING:**

- A. Coordination: Coordinate system installation with other construction operations.

## **1.10 WARRANTY**

- A. Warranty: Upon request, at completion of installation, provide manufacturer's HZ Plywood Standard System Warranty.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Manufacturer: Basis of Design - Parex USA, Inc., 4125 E. La Palma Ave., Suite 250, Anaheim, CA 92807 Contact: Architectural Sales (866.516.0061) or Technical Support (800.226.2424).
- B. Components: Obtain components of Parex HZ Plywood Standard Class EIFS System from authorized distributors. No substitutions or additions of other materials are permitted without prior written permission from Parex USA for this project.

### **2.2 MATERIALS**

- A. Adhesives: 121 Base Coat & Adhesive, copolymer based, factory blend of cement and proprietary ingredients.
- B. Insulation Board: In compliance with manufacturer's requirements for HZ Plywood Standard Class PB EIF System.
  - 1. Produced and labeled under a third party quality program as required by applicable building code and produced by a manufacturer approved by Parex USA.
  - 2. Shall conform to ASTM C 578 and ASTM E 2430, Type I and the Parex USA specification for Molded Expanded Polystyrene Insulation Board.
  - 3. Maximum size shall be 2 ft x 4 ft (610 mm x 1219 mm).
  - 4. Thickness: 1 in, minimum (25.4 mm) after rasping.
- C. Base Coat: 121 Base Coat, copolymer based, factory blend of cement and proprietary ingredients.
- D. Reinforcing Mesh:
  - 1. Parex USA 355 Standard Mesh: Weight 4.5 oz. per sq. yd. (153 g/sq m); coated for protection against alkali. Standard reinforcement of Parex EIFS, or for use with High Impact 358.14 Mesh, or Ultra High Impact 358.20 Mesh.
  - 2. Parex USA 356 Short Detail Mesh: Reinforcing mesh used for backwrapping and details.

**EDITOR NOTE: RETAIN BELOW AND SPECIFY LOCATIONS TO RECEIVE EIFS WITH HIGHER THAN STANDARD IMPACT RESISTANCE CLASSIFICATION.**

Locations: \_\_\_\_\_; ASTM E2486 Impact Classification: \_\_\_\_\_

- E. Primers: (optional) Parex USA Primer, 100% acrylic based coating to prepare surfaces for EIFS finishes.
- F. Finish:
  - 1. DPR Finish: factory blended, 100% acrylic polymer based, integrally colored finish.
    - a. Finish type, texture and color as selected by Project Designer.
- G. Water: Clean, cool, potable water.
- H. Portland Cement: ASTM C 150, Type I or Type I-II.

## 2.3 RELATED MATERIALS AND ACCESSORIES

- A. Substrate Materials:
  - 1. Gypsum Sheathing: 5/8 in (16 mm) thick, core-treated, weather-resistant, exterior gypsum sheathing complying with ASTM C79/ASTM C1396.
  - 2. Plywood: 5/8 in (16 mm) thick 5-PLY CDX Plywood, panels gapped 1/8 in at all edges.

**EDITORS NOTE: MIAMI-DADE COUNTY NOA 12-0214.10 REQUIRES 18 GA STEEL FRAME.**

- B. Flashing: Refer to Division 07 Flashing Section for flashing materials.
- C. Sealant System:
  - 1. Sealant for perimeter seals around window and door frames and other wall penetrations shall be low modulus, designed for minimum 50% elongation and minimum 25% compression, and as selected by Project Designer.
  - 2. Sealants shall conform to ASTM C920, Grade NS.
  - 3. Expansion joints between sections of Parex EIFS shall have a minimum width of 3/4 in (19 mm).
  - 4. Perimeter seal joints shall be a minimum width of 1/2 in (12.7 mm).
  - 5. Sealant backer rod shall be closed-cell polyethylene foam.
  - 6. Apply sealant to tracks or base coat EIFS.
  - 7. Refer to manufacturer's current bulletin for listing of sealants which have been tested and have been found to be compatible with manufacturer's EIFS.
  - 8. Color shall be as selected by Project Designer.
  - 9. Joint design, surface preparation, and sealant primer shall be based on sealant manufacturer's recommendations and project conditions.

**EDITOR NOTE: PART 3 EXECUTION BELOW INVOLVES ON SITE WORK AND SHOULD INCLUDE PROVISIONS FOR INCORPORATING MATERIALS AND PRODUCTS INTO THE PROJECT. TYPICALLY, "CONDITIONS OF THE CONTRACT" ESTABLISH RESPONSIBILITY FOR "MEANS, METHODS, TECHNIQUES, AND SAFETY" REQUIREMENTS OF CONSTRUCTION WITH THE CONTRACTOR. SPECIFICATIONS SHOULD AVOID CONFLICTS WITH THIS CONTRACTUAL PRINCIPLE.**

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify project site conditions under provisions of Section 01 00 00.
- B. Compliance: Comply with manufacturer's instructions for installation of HZ Plywood Standard Class PB EIFS.
- C. Substrate Examination: Examine prior to System installation as follows:
  - 1. Substrate shall be examined for soundness and other harmful conditions.
  - 2. Substrate shall be free of dust, dirt, laitance, efflorescence, and other harmful contaminants.
  - 3. Substrate construction in accordance with substrate material manufacturer's specifications and applicable building codes.
- D. Sealants and Backer Rod: To be installed, where required, in accordance with the sealant manufacturer's specifications and published literature, and using the sealant manufacturer's recommended primers.
- E. Advise Contractor of discrepancies preventing proper installation of the EIF System. Do not proceed with the system assembly work until unsatisfactory conditions are corrected.

### **3.2 PREPARATION**

- A. Protection: Protect surrounding material surfaces and areas during installation of system.
- B. Clean surfaces thoroughly prior to installation.
- C. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

### **3.3 MIXING**

- A. Mix proprietary products in accordance with manufacturer's instructions.

### **3.4 APPLICATION**

- A. General: Installation shall conform to this specification and manufacturer's Application Guide, written instructions and drawing details.
- B. Insulation Board
  - 1. Install back-wrap mesh or edge-wrap mesh at system terminations.
  - 2. Apply adhesive to backs of insulation boards with a 5/16" x 5/16 U notches with 3/4" flat segment between notches parallel to the 2 ft (61 mm) dimension of the EPS board).
  - 3. Install insulation board without gaps in a running bond pattern and interlocked at corners.
  - 4. Rasp irregularities off insulation board after the adhesive has dried a minimum of 24 hours.
- C. Apply base coat and fully embed mesh in base coat; include diagonal mesh patches at corners of openings and reinforcing mesh patches at joints of track sections. Apply multiple layers of base coat and mesh where required for specified impact resistance classification.
- D. Apply primer to base coat after drying. Primer may be omitted if it is not required by the manufacturer's product data sheets for the specified finish coat or otherwise specified for the project.
- E. Finish coat: Apply finish coat to match specified finish type, texture, and color. Do not apply finish coat to surfaces to receive sealant. Keep finish out of sealant joint gaps.

### **3.5 CLEAN-UP**

- A. Removal: Remove and legally dispose of HZ Plywood Standard Class PB EIF System component debris material from the job site.
- B. Clean EIFS surfaces and work area of foreign materials resulting from EIFS operations.

### **3.6 PROTECTION**

- A. Provide protection of installed materials from water infiltration into or behind them.
- B. Provide protection of installed stucco from dust, dirt, precipitation, and freezing during installation.
- C. Provide protection of installed finish from dust, dirt, precipitation, freezing and continuous high humidity until fully cured and dry.
- D. Clean exposed surfaces using materials and methods recommended by the manufacturer of the material or product being cleaned. Remove and replace work that cannot be cleaned to the satisfaction of the Project Designer/Owner.

END OF SECTION

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*Disclaimer: This guide specification is intended for use by a qualified designer. The guide specification is not intended to be used verbatim as an actual specification without appropriate modifications for the specific use intended. The guide specification must be integrated into and coordinated with the procedures of each design firm, and the requirements of a specific project. For additional assistance, contact Parex USA's Architectural Sales (866.516.0061) or Technical Support (800-226-2424).*

**Product Performance Sheet | Page 1**  
*HZ Plywood Standard EIFS Assembly – Class PB*

**PRODUCT PERFORMANCE**

<b>EIFS Fire Performance</b>	<b>Method</b>	<b>ICC or ASTM Criteria</b>	<b>Results</b>
Surface Burning Characteristic	ASTM E84	Individual components shall each have a flame spread <25, and smoke developed < 450	Flame Spread: 0 to 15 Smoke Developed: 0 to 15

<b>EIFS Strength</b>	<b>Method</b>	<b>ICC or ASTM Criteria</b>	<b>Results</b>
Flexural Strength	ASTM C203	No Requirement	60.6 psi (418 kPa)
Falling Ball Impact	ASTM D1037	No Requirement	92 to over 600 in-lbs
Creep Resistance of Adhesive	ASTM D2294	No Requirement	28 days 208 psf shear stress: no creep
Gardner Impact Test	ASTM D2794	No Requirement	25 to 200 in-lbs (mesh weight)
Transverse Wind Load	ASTM E330	Withstand positive and negative wind loads as specified	See Current ICC Report
Impact Load	ASTM E695	No Current Requirement	30 lb. Impact mass; no cracking
Tensile Bond Strength	ASTM E2134	Minimum 15 psi (103kPa)	Pass

<b>EIFS Environmental Durability</b>	<b>Method</b>	<b>ICC or ASTM Criteria</b>	<b>Results</b>
Abrasion Resistance	ASTM D968	No cracking or loss of film at 528 quarts (500 L) of sand	Pass @ 500 Liters
Accelerated Weathering	ASTM G153 (ASTM G23) ASTM G154	No deleterious effects* at 2000 hours when viewed under 5x magnification	2000 Hours: no deleterious effect 2000 Hours: no deleterious effect

**Product Performance Sheet | Page 2**  
*HZ Plywood Standard EIFS Assembly – Class PB*

<b>EIFS Environmental Durability</b>	<b>Method</b>	<b>ICC or ASTM Criteria</b>	<b>Results</b>
Freeze/Thaw Resistance	ASTM E 2485	No deleterious effects* at 10 cycles when viewed under 5x magnification	60 cycles: no deleterious effect
Fungus Resistance	MIL STD 810B	No Requirement	28 days: no growth
Mildew Resistance	ASTM D3273	No growth supported during 28 day exposure period	Pass
Water Penetration	ASTM E331	No water penetration beyond the plane of the base coat/EPS board interface after 15 minutes at 6.24 psf (299 Pa)	Pass
Moisture Resistance	ASTM D2247	No deleterious effects at 14 day exposure	Pass
Salt Fog Resistance	ASTM B117	No deleterious effects* at 300 hours	500 hours: no deterioration
Wind Driven Rain	F.S. TT-C-555B	No Requirement	24 hours: no penetration of water

*\*No deleterious effects: no cracking, checking, crazing, erosion, rusting, blistering.*

<b>REINFORCING MESH IMPACT RESISTANCE</b>	<b>Classification</b>	<b>Impact Range (in-lbs)</b>
355 Standard Mesh	Standard	25-49
358.10 Intermediate Impact 10 Mesh	Intermediate	50-89
358.14 High Impact 15 Mesh (Plus Standard Mesh)	High	90-150
358.20 Ultra High Impact 20 Mesh /Standard Mesh	Ultra High	>150

Where several tests on different materials are summarized, a range of values is shown. This summary has been prepared to provide quick but partial information on how certain combinations of Parex USA products perform during certain tests. It is not a complete description of the test procedures or of the results thereof. Parex USA will mail copies of original test reports at no charge on request. Please contact Parex USA's Architectural Sales at (866-516-0061) or Parex USA Technical Support at 800.226.2424 - [technicalservice@parexusa.com](mailto:technicalservice@parexusa.com) if further information is required.