

# Guideline Specifications for Pacemaker Engineered Structural Insulated Panels (SIPs)

## Part 1 – General

### 1.01 Description of Work

- A. Provide all materials, labor, and equipment to install the Pacemaker SIPs as shown on the drawings.
- B. Pacemaker SIPs are pressure laminated composites of approved oriented strand board (OSB) facers and UL Certified expanded polystyrene (EPS) insulation cores. Connected with manufacturer recommended splines and fasteners as detailed in manufactures literature; dimensional plates, headers, sills, and beams etc. supplied by contractor. See section 2.01 E

### 1.02 Related Documents

The general provisions of the contract and Division 1 General Supplementary and Special Conditions apply to the work specified in this section.

### 1.03 Submittals

- A. Provide evidence of compliance with code requirements. Contact Pacemaker Plastics for applicable code compliance report.
- B. The SIP manufacturer shall provide structural calculations reviewed by a registered engineer/architect for each panel type.
- C. Manufacturer shall certify that panels have been tested in accordance with ASTM E-72, ASTM E-119, UBC 26-3, and other applicable tests.
- D. Manufacturer shall supply a hard copy product certificate showing compliance to 3<sup>rd</sup> Party Quality Control program.
- E. Provide Data Sheets from the Pacemaker QC Manual regarding panel material components described in Section 2.01 of the specification.
- F. All submissions shall be attached to bid in order for bid to be considered.

### 1.04 Quality Assurance

- A. Each panel shall be labeled indicating the maintenance of in-plant Quality Control/3<sup>rd</sup> Party Inspection Service in compliance with national codes.
- B. Provide evidence of 3<sup>rd</sup> Party Inspection and labeling of all EPS used in the manufacturing of the SIPs. Flame, physical, and thermal properties will be covered by the EPS Manufactures Quality Control and Listing programs.
- C. SIPs Manufacturer will provide a Lamination and R-Value Warranty. Manufacturer standard forms will be submitted upon final payment.

### 1.05 Product Storage and Handling

- A. All panels shall be stored in a protected area and supported to be protected from the ground.
- B. Prior to installation panels shall be covered and protected from exposure to sunlight and moisture.

## Part 2 – Products

### 2.01 Description of Work

- A. Pacemaker SIPs – A pressure laminated panel consisting of the following:
  - 1.) Expanded Polystyrene (EPS) Core – minimum of .95 pcf complying with ASTM C-578 Type 1. EPS manufacturer must provide certification per section 1.04 B of this specification.
  - 2.) Oriented Strand Board – shall be identified on the panel with an APA or PFS performance rating mark, with an Exposure 1 durability rating; minimum physical properties shall be tested and as described in APA PRP-108 or PFS PRP-133.
  - 3.) Adhesives – class 2, type II designed for structural lamination as supplied by Ashland Adhesive NER-165 and Rohm and Haas Company NER-451.
- B. Splines – Splines for use in joining the SIPs shall be as recommended by the manufacturer and be installed as detailed in the manufacturer's literature.
- C. Fasteners – Shall be a corrosive resistant .190" shank diameter and a 5/8" pancake head with a #3 square head drive screw for roof, corner, and attachment of panel to frame. In addition, zinc galvanized screws, nails or staples for spline and plate attachment. All fasteners as supplied or recommended by panel manufacturer.
- D. Caulk/Sealant/Adhesive – Shall be compatible with all components of the panel as supplied or recommended by the panel manufacturer. Installed as detailed in the manufacturer's literature.
- E. Dimensional Lumber – SPF #2 or better or equivalent engineered lumber supplied by the contractor.



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### 2.02 Performance Characteristics

- A. Sizes – panels are available from 4'x8' to 8'x28'
- B. Thermal Resistance

#### R-Value Design Chart

Panel Thickness	R-Value at 75 deg. F	R-Value at 40 deg. F
4 9/16"	14.9	16.0
6 9/16"	22.6	24.3
8 5/16"	29.3	31.6
10 5/16"	37.0	39.9
12 5/16"	44.7	48.3

Typical Pacemaker SIPs section – 7/16" OSB both sides, Type 1 certified EPS core R-Values are for panels alone and do not include air films, cladding materials or reflective barrier.

- C. Dimensional Tolerance – Shall comply with values listed in the manufacturer's Quality Control Manual.
- D. Structural Testing – Each panel type shown on the drawings shall meet or exceed performance standards when tested for:

ASTM E72	ASTM E695
Transverse Load	Impact Testing
Axial Compressive Load	ASTM E1803
Racking Shear	Cold Creep
Header Loading	

Tested values shall meet or exceed those stated on the manufacturer's load design charts and applicable technical data report.
- E. Fire Testing – The panel with approved finishes shall have successfully passed the following fire tests as conducted by fire agencies approved and listed by NES.
  - 1.) ASTM E-119 – 1-hour fire resistant wall assembly
  - 2.) UBC 26-3 – corner room test
- F. Wind uplift shall be calculated for recommended fastening of roof panels by certified engineering professional.

### 2.03 Manufacturers/Contractors

- A. All components called for in this section to be obtained from the panel manufacturer or its approved supplier.
- B. Manufactures approved to supply panels and materials called for in this section are:
  - 1.) Pacemaker Plastics Co., Inc.  
126 New Pace Rd. PO Box 279  
Newcomerstown, Ohio 43832  
1-800-446-2188
  - 2.) or Equal

## Part 3 – Installation

### 3.01 General

- A. The contractor shall inspect conditions of substrate, grade, foundation and other conditions, which may affect the proper installation of panels. Any adverse conditions are to be reported in writing to the construction manager. Do not proceed with installation until adverse conditions are corrected.
- B. Installation shall be in strict accordance with manufacturer's published instructions, details and the drawing, which are part of the contract documents for the project. Any conflict between these documents shall be resolved in writing. Deviations from manufacturer's standard details and load design values shall be calculated and signed and/or sealed by a registered architect/engineer.

### 3.02 Protection

- A. When storing panels do not allow them to come into ground contact. Stored panels must remain dry. Do not allow panels to be stored in an unsupported manner. Improper storage may cause tolerance problems in the field.
- B. Roof panels must be fully protected from weather by roofing materials to provide temporary protection at the end of the day or when rain or snow is imminent.
- C. Remove and replace insulated wall and roof panels, which have become excessively wet or damaged before proceeding with installation of additional panels or other work.
- D. The Construction Manager shall remove all refuse created by the installation of the work in this section.

