



## **TECHNICAL AND QUALITY STANDARDS**

**The Timberline Panel Building System is comprised of the following characteristics, materials and performance standards.**

### **PERFORMANCE REQUIREMENTS**

Timberline Panel Company (Manufacturer) Structural Insulated Panels (SIPs) are manufactured using engineered products consisting of laminated composites of structural grade oriented strand board (OSB), structural grade adhesive and expanded polystyrene (EPS) insulation specifically designed for this application.

All aspects of the Timberline SIP System lamination process are verified by a Third-Party Quality Control program audited by an Inspection Agency. Third-Party Quality Control: Activities by an inspection agency involving unannounced inspections.

To confirm third party certification of the manufacturing process, a certification mark of the accredited Inspection Agency shall be affixed to panels that meet this product specification.

Shop drawings (Timberline Panel Construction Details) shall indicate project layout and elevations, dimensions and thickness of panels, connections, details and location of joints and gaskets including panel joints and joints required for thermal movement, sealants and gaskets, method of anchorage, number of anchors, supports, reinforcement, trim, flashings, accessories, materials and finishes.

Shop drawings shall indicate preferred joint details providing a water-tight and structurally-sound wall panel system that allows no uncontrolled water penetration on either inside or outside panel surfaces.

## **STRUCTURAL INSULATED PANEL CODE COMPLIANCE**

### **International Code Council (ICC)**

#### **2007 SUPPLEMENT TO THE IRC: RB34-06/07**

#### **Section R614 - STRUCTURAL INSULATED PANEL WALL CONSTRUCTION**

Section R614 includes the prescriptive specifications and installation details submitted by the Structural Insulated Panel Association (SIPA) and APA -The Engineered Wood Association. The Timberline SIP Building System meets these code standards and exceeds these standards in installation details based on building science practices for high-performance SIP building assemblies.

#### Additional References:

SIP Panel Testing and Evaluation Reports for EPS/OSB structural insulated panels with materials and composition consistent with the Timberline product include:

2004 ICC Evaluation Service, Inc. (ICC-ES)

Acceptance Criteria for Sandwich Panels, AC04, Approved February 2004

2003 ICC Evaluation Service, Inc. (ICC-ES) ESR-1006 (11-2003)

CSI Division 7 - THERMAL AND MOISTURE PROTECTION

Section: 07210 - Building Insulation

Section: 07220 - Roof and Deck Insulation

Section: 07240 - Exterior Wall Insulation and Finish System

2002 ICC Evaluation Service, Inc. (ICC-ES) NER-467 (7-2002)

CSI Division 6 - WOOD and PLASTICS

Section: 06120 - Structural Panels

American Society for Testing and Materials (ASTM)

ASTM C578, Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation

## **QUALITY ASSURANCE**

- Installer shall have demonstrated experience acceptable to Timberline Panel Company.
- Installer experience shall be comparable in project size, materials used and scope of work to the installation work performed by Timberline Panel Company.
- Shop fabrication schedule shall be coordinated with site construction progress to avoid delay of work.
- Field fabrication is allowed to ensure proper fit but will be kept to minimum with the majority of fabrication being done under controlled shop conditions.
- Maximum deviation from vertical and horizontal alignment of erected panels is: 1/4" (6.4 mm) in 20' (6096 mm), non-accumulative.
- Timberline Panel assumes responsibility for appropriate and adequate distribution of information related to installation of the components of SIP system including, but not limited to, attachment to sub-construction, panel to panel joinery, panel to dissimilar material joinery, and joint sealing associated with the Timberline Panel Building System.



### **PRE-INSTALLATION PROCEDURES**

- Manufacturer's installation crew shall conduct a pre-installation inspection of existing on-site construction and installations prior to commencing work to verify project requirements including; coordination with building sub-trades, adherence to specified installation tolerances, substrate conditions and availability of specified tools, equipment and materials for the purpose of executing the installation process prescribed by Timberline Panel Company and to meet warranty requirements.

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

- Materials shall be delivered in Timberline Panel Company original sealed packaging.
- Project Contractor shall be instructed to unload and store panels and accessories in a dry secure location, protect finish and edges of panels and protect materials from weather in accordance with Timberline Panel Company written instructions.

### **WASTE MANAGEMENT AND DISPOSAL**

The Timberline Panel Company installation crew shall:

- Deposit packaging materials in appropriate container on-site for recycling or reuse if appropriate container(s) are available on-site.
- Avoid using landfill waste disposal procedures when recycling facilities are available.
- Collect and separate plastic, paper packaging and corrugated cardboard.

### **MANUFACTURER'S WARRANTY**

- Timberline Panel Company shall submit, for owner's acceptance, its standard warranty document executed by an authorized company official. Manufacturer's warranty is in addition to and not a limitation of other rights Owner may have under the Contract Conditions.

### **MATERIALS**

The Timberline Panel Company structural insulated panel (SIP) system is a pressure laminated composite panel manufactured by Timberline Panel Company using approved components consisting of the following:

#### ▶ **Expanded polystyrene (EPS) core:**

Insulation complying with ASTM C578-01, Type I (other densities may be specified). Insulation shall be Third-Party Certified by an approved certification organization.

#### ▶ **Oriented strand board (OSB) skins:**

An APA performance rating mark shall be identified on the panel, with an Exposure 1 durability rating; minimum physical properties shall be tested and described in APA PRP-108.

#### ▶ **Adhesives**

Adhesives shall be a structural laminating adhesive for use in the temperature range of -40 to 120 °C (-40 to +250 °F) as approved by Timberline Panel Company.

**MATERIALS (Continued)**
**► Joint Materials:**

Materials for use in joining panels shall be selected by Timberline Panel Company for structural and non-structural requirements of the application.

**► Dimensional Lumber:**

Dimensional lumber for use in joining panels, plates, headers and sills shall be supplied by contractor and shall be SPF #2 kiln-dried or better or pre-engineered equivalent supplied by the contractor.

**► Panel Sizes:**

SIP panels are to be available from Timberline Panel Company in sizes from 1200 mm x 2400 mm (4' X 8') to 2440 mm x 7200 mm (8' X 24').

**► Thermal Properties:**

Thermal resistance (R-Value) calculated using ASHRAE Handbook of Fundamentals methods to provide effective thermal resistance for typical wall or roof panel assemblies.

**Thermal Resistance Values**

Calculated R-values of TIMBERLINE Structural Insulated Panels					
Core Thickness (in.)	3.625	5.625	7.375	9.375	11.375
EPS TYPE I					
R-value @75°	15.06	22.76	29.49	37.19	44.89
R-value @40°	16.29	24.67	32.00	40.38	48.76
R-value @25°	16.87	25.57	33.18	41.88	50.58
NEOPOR EPS TYPE VIII					
R-value @75°	18.79	26.41	34.29	43.29	52.29

Calculated R-Values are for a Timberline Panel Company® Structural Insulated Panel of indicated core thickness and includes (2) sheets of 7/16" OSB at .55 per side; Type I, Expanded Polystyrene Foam that meets ASTM C – 578, calculated per ASHRAE published values at 3.85 per inch at 75° F, 4.19 at 40° F and 4.35 at 25°. NEOPOR EPS stated R-value at 75°F is 4.5.

Mean temperatures are established for differing regions, and occupancies. Please consult your local jurisdiction for interpretation of Regional or National Model Energy Code Requirements.

## **FABRICATION**

- Fabrication tolerances shall comply with values in Timberline Panel Company's production procedures and quality control documentation.
- Panels shall be fabricated to dimension, size, and profile indicated on shop drawings, within specified tolerances.

## **ACCESSORY COMPONENTS**

Fasteners and Sealants used for assembling and installing the Timberline Panel Building System shall comply with manufacturer's product literature, construction details and specifications.

### **► Fasteners (Panel Screws):**

Fasteners shall be Timberline approved corrosion resistant screws for the purpose of attachment of panels to wall and roof frames. Timberline Panel approved panel screws shall have design values based on 1-1/2" side member thickness and penetration into main member minimum 2" - 2001 National Design Specification for Wood Construction (2001 NDS). Design values may be subject to adjustment factors (section 10.3 in NDS) based on conditions existing during installation as well as those expected during service life. Design value calculations are to be based on independent lab testing as outlined in ICC Acceptance Criteria AC233.

Zinc galvanized screws, nails or staples shall be used for spline and plate attachments. All fasteners used shall be as supplied or approved by manufacturer.

### **► Caulk:**

Caulking used as a sealant for components and accessories supplemental to the Timberline Panel Building System, as supplied and used by the building owner or building contractor, shall be compatible with all components supplied by the manufacturer.

### **► Foam Sealant:**

Expanding foam sealant(s) used for assembling and installing the Timberline Panel Building System shall be supplied by manufacturer.

### **► Panel Adhesive:**

Adhesives used for installing dimensional lumber used in assembly of the panel system shall be compatible with the materials used in the Timberline Panel Building System and shall be supplied by the manufacturer.

### **► Construction Adhesive:**

Construction adhesives may be used for wood-to-wood connections provided the adhesive shall not come into contact with EPS foam insulation and shall be supplied by the building owner or building contractor.

### **MANUFACTURER'S INSTRUCTIONS**

- Timberline Panel Company shall prepare, and provide for use by installer, a Timberline Panel Company **Construction Details Manual**.

### **COMPLIANCE**

- Panel installer shall comply with the methods, procedures and specifications as represented by prepared Timberline Panel **Construction Details**.

### **PREPARATION**

- Panel installer shall verify surfaces to receive panels are structurally sound, even, smooth, sound, clean, dry and free from defects detrimental to work. Installer shall notify owner and/or building contractor verbally and in writing of conditions detrimental to proper and timely completion of work.
- Installer shall not proceed with work until unsatisfactory conditions have been corrected.

### **INSTALLATION**

- Panels shall be installed in compliance with Timberline Panel Company Technical and Quality Standards and other available product data including; product technical bulletins, construction details and installation instructions.
- Manufacturer will provide components for building in accordance with panel layout drawings (shop drawings) and schedules.
- Installer shall allow appropriate component spacing, and shall anchor panels securely in accordance with panel layout drawings (shop drawings) and schedules.
- Installer shall conform to component manufacturer's instructions for installation of fasteners and sealants in compliance with the component manufacturer's product use specifications.
- Installer shall not install component parts that are observed to be defective including; warped, bowed, dented and broken members.

### **ADJUSTING AND CLEANING**

- Installer shall repair or replace damaged installed products.
- Building owner or building contractor shall repair panels with minor damage resulting from post-installation construction.
- Building owner or building contractor shall remove construction debris from project site and dispose of debris in an environmentally responsible and legal manner.

### **PROTECTION**

- Building owner or building contractor shall affect materials and methods to protect manufacturers installed products so as to ensure protection from damage during construction.