

SECTION 06 12 00

STRUCTURAL INSULATED PANELS

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes: Structural Insulated Panels (SIPs).
- B. Related Sections: Section(s) related to this section include:
 - 1. Section 06 10 00 Rough Carpentry
 - 2. Section 06 09 00 Wood and Plastics Fastenings

1.02 SYSTEM DESCRIPTION

Structural Insulated Panels (SIPs) framing system consist of oriented strand board (OSB), structural lumber and polyurethane foam, connectors and fasteners supplied by manufacturer, all as shown on drawings, specified herein, and or described in manufacturers architectural detail binder.

1.03 REFERENCES

- A. ICC ES AC04 – Acceptance Criteria for Sandwich Panels.
- B. ICC ES AC05 – Acceptance Criteria for Sandwich Panel Adhesives.
- C. EPA - Registered products listing.

1.04 SUBMITTALS

- A. Product Data: Submit product data for specified products.
 - 1. Manufacturers' product sheet, evidence of code compliance, including current test data and listing report, calculations by an architect or professional engineer.
 - 2. Manufacture to provide complete panel shop drawings, showing all panel sizes, electrical layout, door and window openings and any other structural elements.
 - 3. Manufacturer's Instructions: SIP Manufacturer's construction detail book and load design charts.
- B. Calculations: Provide structural calculations by a registered architect or professional engineer [in the state of] qualified to perform such work.
- C. Quality Assurance Submittals: Submit the following:
 - 1. Certificate: Product certificate showing compliance to Third Party Quality Control program.
- D. Warranty: Warranty documents specified herein.

1.05 QUALITY ASSURANCE

- A. Installer Qualifications: Installer should be experienced in performing work of this section and should have specialized in installation of work similar to that required for this project.
- B. Source Limitations: Obtain all SIPs through one source. All accessories to be as furnished or recommended by the SIP manufacturer.

1.06 Regulatory Requirements:

- A. SIPs shall be recognized for compliance with [International Building Code, International Residential Code, or specify] in a current third party listing report.
- B. Pre-installation Meeting: Conduct pre-installation meeting to verify project requirements, foundation/structural system/substrate conditions, SIP manufacturer's installation instructions and SIP manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

1.07 DELIVERY, STORAGE & HANDLING

- A. Ordering: Comply with SIP manufacturer's ordering instructions and lead-time requirements to avoid construction delays.
- B. Delivery: Deliver materials from SIP manufacturer with identification labels or markings intact.
- C. Off-load SIPs from truck and handle using forklift or other means to prevent damage to SIPs.
- D. SIPs shall be fully supported in storage and prevented from contact with the ground.
- E. SIPs shall be fully protected from weather. Protect against exposure to rain, water, dirt, mud, and other residue that may affect SIP performance. Cover stored SIPs with breathable protective wraps. SIPs shall be stored in a protected area.

1.08 WARRANTY

- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

- B. Manufacturer's Warranty: Submit SIP manufacturer's standard warranty document. SIP Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

1. Warranty Period: [Specify term.] years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

2.01 Manufacturers:

- A. Thermocore Panel System, 1801 Hancel Parkway, Mooresville, IN 46158

2.02 Materials

- A. SIPs consisting of the following:

1. 4", 4-1/2" 6-1/2" or 8-1/4" foam core panels with 7/16" OSB/OSB (interior/exterior) skins. Each panel has a foam core of class 1/A polyurethane foam at a minimum density of 2.2 lbs.
2. OSB identified with APA or PFS performance mark with Exposure I durability rating and performance in accordance with DOC PS-2 span rating 24/16 or greater.
3. Core is a Class 1/A fire rated polyurethane foam with a minimum density of 2.2 lbs.
4. All panels are manufactured to a thickness tolerance of +/- 3/32"
5. All lumber used in panel manufacturing shall be #2 or better SPF.

2.03 Accessories

- A. Fasteners: corrosion resistant SIP screws compatible with SIP system shall be provided by the SIPs manufacturer.

1. Wood Screws for attachment to wood members
2. Heavy Duty Metal Screws for attachment to metal members (16 gauge to 3/16")
3. Light Duty Metal Screws for attachment to metal decks (18 gauge or thinner)

- B. SIP Gasket. Foam Gasket shall be provided by the SIP manufacturer.

- C. Dimensional Lumber: SPF, #2 or better.

2.04 Fabrication

- A. Sizes: SIPs shall be fabricated in accordance with approved Shop Drawings

- B. Thermal Resistance, R-value

Note to Specifier Select the R-value as required for each area of construction.

1. 4" thick SIP with R-value of 24
2. 4 1/2" thick SIP with R-value of 28
3. 6 1/2" thick SIP with R-value of 40
4. 8 1/4" thick SIP with R-value of 50

2.05 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

2.06 RELATED MATERIALS

- A. Related Materials: Refer to other sections for related materials as follows:

1. Dimensional Lumber: SPF #2 or better. Refer to Division 6 Carpentry Sections.

2.07 SOURCE QUALITY

- A. Source Quality Assurance: Each SIP component required shall be supplied by SIP manufacturer and shall be obtained from selected SIP manufacturer or its approved supplier.

1. Each SIP shall be labeled indicating Third Party certification.
2. Provide evidence of Third Party inspection and labeling of all insulation used in manufacture of SIPs.
3. Dimensional Tolerance - shall comply with values listed in the manufacturer's Quality Control Manual.

- B. Source Quality: Obtain SIPs from a single manufacturer.

PART 3 EXECUTION

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's listing report, Load Design Charts, Detail Book, Shop Drawings, and product data. for installation.

- B. Plans shall be reviewed by a qualified architect/engineer and shall be signed and/or sealed. Deviations from standard detail and load

design values shall be calculated and signed and/or sealed by a qualified architect/engineer.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions (which have been previously installed under other sections) are acceptable for product installation in accordance with manufacturer's instructions.
 - 1. Verify conditions of foundation/structural system/substrate and other conditions that affect installation of SIPs. Any adverse conditions shall be reported in writing. Do not proceed with installation until adverse conditions are corrected.

3.03 INSTALLATION

A. SIP Installation:

Note to Specifier Complete installation recommendations are available from the manufacturer. SIP weight and contractor preference will dictate the erection method used. The use of a crane or lift truck may be required for SIP placement. Consult with SIP manufacturer for recommended handling methods. Supplementary lifting clamps and attachments to be provided by the contractor.

1. SIP Supports: Provide level and square foundation/structural system/substrate that support wall and/or roof SIPs. For wall SIPs, hold sill plate back from edge of rim board 7/16" (11 mm) to allow full bearing of OSB skins. Provide 1 1/2" (38 mm) diameter access holes in plating to align with electrical conduit SIPs. Provide adequate bracing of SIPs during erection. Remove debris from plate area prior to SIP placement.
2. SIP Fastening: Connect SIPs by nails or staples as shown on drawings. Screws of equal strength may be substituted for nails and staples as specified by engineer. SIP sealant gasket must be used together with each fastening techniques. Where SIP Screw Fasteners are used, provide a minimum of 1" (25.4 mm) penetration into support. Join SIPs using tongue and groove. Secure attachment with nails, staples, or screws. Apply foam sealant gasket as per SIP manufacturer recommendations.
3. Thermal Barriers: Interior surfaces of SIPs shall be finished with a minimum 15-minute thermal barrier, such as 1/4" (4 mm) gypsum wallboard, nominal 1" (25 mm) wood paneling, or other approved materials. Apply code approved thermal barriers according to SIP manufacturer's recommendations.
4. Restrictions: Do not install SIPs directly on concrete. Do not cut or alter SIPs without consulting SIP manufacturer. SIPs shall be protected from exposure UV light and moisture.
5. Remove and replace insulated wall or roof SIPs that have become excessively wet or damaged before proceeding with installation of additional SIPs or other work.

3.04 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.
 1. Roof SIPs: Protect roof SIPs from weather at all times. Provide temporary protection at the end of the day or when rain or snow is imminent.
 2. After installation, cover SIPs to prevent contact with water on each exposed SIP edges and faces. Failure to do so can result in edge swelling.

END OF SECTION