

SECTION 08 45 23

2-3/4" INSULATED TRANSLUCENT FIBERGLASS SANDWICH PANEL WALL SYSTEM

PART 1 - GENERAL

1.1 SUMMARY

- .1 Section includes the insulated translucent sandwich panel system and accessories as shown and specified. Work includes providing and installing:
 - .1 Flat factory prefabricated structural insulated translucent sandwich panels.
 - .2 Aluminum installation system
 - .3 Aluminum sill flashing
- .2 Related Sections:
 - .1 Structural Steel/Concrete/Rough Carpentry: Section _____
 - .2 Masonry: Section _____
 - .3 Flashing and Sheet Metal: Section _____
 - .4 Sealants: Section _____
 - .5 Glazing: Section _____

1.2 SUBMITTALS

- .1 Submit manufacturer's product data. Include construction details, material descriptions, profiles and finishes of components.
- .2 Submit shop drawings. Include elevations and details.
- .3 Submit manufacturer's color charts showing the full range of colors available for factory finished aluminum.
 - .1 When requested, submit samples for each exposed finish required, in same thickness and material indicated for the work and in size indicated below. If finishes involve normal color variations, include sample sets consisting of two or more units showing the full range of variations expected.
 - .1 Sandwich panels: 14" x 28" units (356mm x 711mm)
 - .2 Factory finished aluminum: 5" long sections (127mm)
- .4 Submit Installer Certificate, signed by installer, certifying compliance with project qualification requirements.
- .5 Submit product reports from a qualified independent testing agency indicating each type and class of panel system complies with the project performance requirements, based on comprehensive testing of current products. Previously completed reports will be acceptable if for current manufacturer and indicative of products used on this project.
 - .1 Reports required are:
 - .1 International Code Council Evaluation Report (ICC-ES)
 - .2 Flame Spread and Smoke Developed (CAN4-S102-M/UL 723/ASTME 84) – Submit UL Card
 - .3 Burn Extent (ASTM D 635)
 - .4 Color Difference (ASTM D 2244)
 - .5 Translucent Fibreglass Reinforced Plastic (FRP) Faced Wall, Roof and Skylight Systems (ULC - AC177)
 - .6 Impact Strength (UL 972)
 - .7 Bond Tensile Strength (ASTM C 297 after aging by ASTM D 1037)
 - .8 Bond Shear Strength (ASTM D 1002)
 - .9 Beam Bending Strength (ASTM E 72)

- .10 Insulation U-Factor (NFRC 100)
- .11 NFRC System U-Factor Certification (NFRC 700)
- .12 Solar Heat Gain Coefficient (NFRC or Calculations)
- .13 Condensation Resistance Factor (AAMA 1503)
- .14 Air Leakage (ASTM E 283)
- .15 Structural Performance (ASTM E 330)
- .16 Water Penetration (ASTM E 331)
- .17 1200°F Fire Resistance (SWRI)
- .18 LEED Credits
- .19 Daylight Autonomy

1.3 QUALITY ASSURANCE

.1 Manufacturer's Qualifications

- .1 Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten (10) consecutive years and which can show evidence of those materials being satisfactorily used on at least six (6) projects of similar size, scope and location. At least three (3) of the projects shall have been in successful use for ten (10) years or longer.
- .2 Panel system must be listed by the International Code Council – Evaluation Service which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an approved agency.
- .3 Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC04 “Sandwich Panels” AC177 “Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems” as regulated by the ICC-ES.

.2 Installer’s Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least five (5) consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

.3 Performance Requirements: The manufacturer shall be responsible for the configuration and fabrication of the complete panel system.

- .1 When requested, include structural analysis data signed and sealed by the qualified professional engineer responsible for their preparation.
- .2 Standard panel system shall have less than 0.01cfm/ft² air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and, structural testing by ASTM E 330.
- .3 Structural Loads: Provide system capable of handling the following loads:
 - .1 Positive Wind Load: _____
 - .2 Negative Wind Load: _____
 - .3 Seismic Load: _____

1.4 DELIVERY STORAGE AND HANDLING

- .1 Deliver panel system, components and materials in manufacturer's standard protective packaging.
- .2 Store panels on the long edge; several inches above the ground, blocked and under cover in accordance with manufacturer's storage and handling instructions.

1.5 WARRANTY

- .1 Submit manufacturer's and installer's written warranty agreeing to repair or replace panel system work which fails in materials or workmanship within one year of the date of delivery. Failure of materials or workmanship shall include leakage, excessive deflection, deterioration of finish on metal in excess of normal weathering and defects in accessories, insulated translucent sandwich panels and other components of the work.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- .1 The basis for this specification is for products manufactured by Kalwall Corporation. Other manufacturers may bid this project provided they comply with all of the performance requirements of this specification and submit evidence thereof. Listing other manufacturers' names in this specification does not constitute approval of their products or relieve them of compliance with all the performance requirements contained herein.
- .2 Installed by Thermal Systems KWC Ltd. Calgary, AB Tel: (403) 250-5507 or Fax: (403) 250-5508.

2.2 PANEL COMPONENTS

.1 Face Sheets

- .1 Translucent faces: Manufactured from glass fiber reinforced thermoset resins, formulated specifically for architectural use.
 - .1 Thermoplastic (e.g. polycarbonate, acrylic) faces are not acceptable.
 - .2 Face sheets shall not deform, deflect or drip when subjected to fire or flame.
- .2 Interior face sheets:
 - .1 Flame spread: Underwriters Laboratories (UL) listed, which requires periodic unannounced retesting, with flame spread rating no greater than _____ and smoke developed no greater than 250 when tested in accordance with UL 723.
 - .2 Burn extent by ASTM D 635 shall be no greater than 1".
- .3 Exterior face sheets:
 - .1 Color stability: Full thickness of the exterior face sheet shall not change color more than 3 CIE Units DELTA E by ASTM D 2244 after 5 years outdoor South Florida weathering at 5 degrees facing south, determined by the average of at least three white samples with and without a protective film or coating to ensure long-term color stability. Color stability shall be unaffected by abrasion or scratching.
 - .2 Strength: Exterior face sheet shall be uniform in strength, impenetrable by hand held pencil and repel an impact minimum of _____ ft. lbs. without fracture or tear when impacted by a 3-1/4" diameter, 5 lb. free-falling ball per UL 972.
- .4 Appearance:
 - .1 Exterior face sheets: Smooth, _____ thick and _____ in color.
 - .2 Interior face sheets: Smooth, _____ thick and _____ in color.
 - .3 Face sheets shall not vary more than +/- 10% in thickness and be uniform in color.

.2 Grid Core

- .1 _____ I-beam grid core shall be of 6063-T6 or 6005-T5 alloy and temper with provisions for mechanical interlocking of muntin-mullion and perimeter. Width of I- beam shall be no less than 7/16".
- .2 I-beam Thermal break: Minimum 1", thermoset fiberglass composite.

.3 Laminate Adhesive

- .1 Heat and pressure resin type adhesive engineered for structural sandwich panel use, with minimum 25-years field use. Adhesive shall pass testing requirements specified by the International Code Council "Acceptance Criteria for Sandwich Panel Adhesives."
- .2 Minimum tensile strength of 750 PSI when the panel assembly is tested by ASTM C 297 after two exposures to six cycles each of the aging conditions prescribed by ASTM D 1037.
- .3 Minimum shear strength of the panel adhesive by ASTM D 1002 after exposure to four separate conditions:
 - .1 50% Relative Humidity at 68° F: 540 PSI
 - .2 182° F: 100 PSI

- .3 Accelerated Aging by ASTM D 1037 at room temperature: 800 PSI
- .4 Accelerated Aging by ASTM D 1037 at 182° F: 250 PSI

2.3 PANEL CONSTRUCTION

- .1 Provide sandwich panels of flat fiberglass reinforced translucent face sheets laminated to a grid core of mechanically interlocking thermally I-beams. The adhesive bonding line shall be straight, cover the entire width of the I-beam and have a neat, sharp edge.
 - .1 Thickness: 2-3/4"
 - .2 Light transmission: _____ %.
 - .3 Solar heat gain coefficient _____.
 - .4 Panel U-factor by NFRC certified laboratory: 2-3/4" thermally broken grid _____ **OR** 2-3/4" aluminum grid _____
 - .5 Complete insulated panel system shall have NFRC certified U-factor of _____.
 - .6 Grid pattern: Nominal size _____; pattern _____.
- .2 Standard panels shall deflect no more than 1.9" at 30 PSF in 10' 0" span without a supporting frame by ASTM E 72.
- .3 Standard panels shall withstand 1200°F fire for minimum one hour without collapse or exterior flaming.
- .4 Thermally broken panels:
 - .1 Minimum Condensation Resistance Factor of 80 by AAMA 1503 measured on the bond line.

2.4 BATTENS AND PERIMETER CLOSURE SYSTEM

- .1 Closure system: _____ Extruded aluminum 6063-T6 and 6063-T5 alloy and temper clamp-tite screw type closure system.
 - .2 Sealing tape: Manufacturer's standard, pre-applied to closure system at the factory under controlled conditions.
 - .3 Fasteners: 300 series stainless steel screws for aluminum closures, excluding final fasteners to the building.
- D. Finish
- .1 Manufacturer's factory applied finish which meets the performance requirements of AAMA 2604. Color to be _____ selected from manufacturer's standards; (clear anodized;) or (mill.)

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, supporting structure and installation conditions. Do not proceed with panel erection until unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Metal Protection:
 - 1. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.
 - 2. Where aluminum will contact concrete, masonry or pressure treated wood, protect against corrosion by painting contact surfaces with bituminous paint or method recommended by manufacturer.

3.3 INSTALLATION

- A. Install the panel system in accordance with the manufacturer's installation recommendations and approved shop drawings.
 - .1 Anchor component parts securely in place by permanent mechanical attachment system.
 - .2 Accommodate thermal and mechanical movements.
 - .3 Set perimeter framing in a full bed of sealant compound, or with joint fillers or gaskets to provide weather-tight construction.

- B. Install joint sealants at perimeter joints and within the panel system in accordance with manufacturer's installation instructions.

3.4 CLEANING

- A. Clean the panel system inside and outside, immediately after installation, according to manufacturer's written recommendations.

END OF SECTION 08 45 23
1/26/11