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GENERAL

1. Other Documents

This section of the specification forms part of the Contract Documents and are to be used, interpreted and coordinated with all other parts.

2. Section Includes

- A. Super Panel High Density Fibre Cement Panels
- B. Support System and Accessories
- C. Breathable Membrane

3. Related Sections

- 1. Section 05 41 00 - Cold-Formed Metal Framing
- 2. Section 07 21 00 - Thermal Insulation
- 3. Section 07 26 00 - Vapor Resistive Barriers
- 4. Section 07 27 00 - Vapor Permeable Barriers
- 5. Section 07 62 00 - Sheet Metal Flashing and Trim
- 6. Section 08 44 10 - Glazed Aluminum Curtain Walls
- 7. Section 08 51 10 - Windows
- 8. Section 09 21 00 - Gypsum Board Assemblies
- 9. Allowances: Refer to Section 01 21 00 - Allowances for effect on work of this Section.
- 10. Alternates: Refer to Section 01 23 00 - Alternates for effect on work of this Section.

4. Submittals

- A. Submit shop drawings of panel systems, components, façade material, panel layout and accessories to the Architect for review.
- B. Submit 100mm x 150mm sample of proposed colour to Architect for approval.
- C. Submit samples of accessories, as requested by Architect.
- D. Submit manufacturer's data sheets covering the care and recommended maintenance procedures for incorporation into maintenance manuals.
- E. Submit copies of manufacturer's warranties

5. Quality Assurance

- A. Installers shall have a minimum five (5) years of proven experience in the installation of similar products specified on projects of similar size and scope.

- B. If requested, install a full wall mock up on the building in a location, as directed by the architect. The mock up shall incorporate panels, and all required finishing accessories and adjacent materials including flashing, doors, windows, and trim.

6. Design Requirements

- A. Air space at top and bottom of building, or wall termination, for buildings less than 60 ft (18m), shall be 25mm to facilitate airflow from behind the panels. Perforated aluminum screen to allow minimum 50% free airflow. Opening at small windows may be reduced according to Engineered Assemblies Standard System Design Guidelines. Do not block vertical airflow at windows, doors, eaves, or at the base of the building. Airflow shall be continuous from bottom to top so there is air movement behind each panel. For walls over 60 feet high (18 m), the ventilated cavity between rear of panels and exterior wall shall be increased to (30 mm). Air flow behind the panels is critical to the performance of the Rear Ventilated Rain Screen design.
- B. Fasteners shall accommodate thermal expansion/contraction without excessive stress to the panel. Each panel shall have central lock points to support gravity loads.
- C. Design and install cladding system to allow for thermal movement of local climate with at least 60 degrees C ambient or panel temperature fluctuations, without causing undue stress on fasteners or panel or other detrimental effects.
- D. Design to accommodate, by means of control joints, movement in wall system and between wall system and building structure, caused by structural movements, without permanent distortion, damage to in fills or racking of joints.
- E. Design members and suspension system to withstand gravity load, live loads, including negative loads, as calculated in accordance with the building code.
- F. Structural panel supports shall provide the minimum L/300 deflection stiffness required by the panel manufacturer. Panels shall not deflect more than L/180.
- G. Maintain the following installation tolerances: Maximum offset from true alignment between two adjacent members abutting end to end in line: 1mm.

7. Delivery, Storage and Handling

- A. Deliver, store and handle materials in accordance with the instructions of the manufacturer. Poor care of the products can lead to cancellation of warranty.
- B. Remove damaged materials from the site.
- C. Coordination with other trades
- D. All penetrations through the façade for the work of other trades shall be fitted with a watertight sleeve

8. Warranty

- A. Provide manufacturer's ten (10) year warranty from date of production to maintain the mechanical qualities, water tightness and frost resistance, with exception of a gradual change caused by normal wear (aging), providing the panels are correctly installed on a ventilated construction according to the installation procedures of the manufacturer.
- B. The warranty shall not be valid in case of damages caused by abnormal climatologic circumstances

9 PRODUCTS

A. High Density Fibre Reinforced Cement Panels

- 1. Product: Super Panel through color high density fibre cement panels as distributed by CemTrade GmbH in Germany and German Construction Systems (2011) Inc. in Canada. Super Panel is a fully compressed, autoclaved, fiber, cement sheet. The color is through the sheet. Applications include exterior facades, fascias, soffits and interior cladding.
 - a.) **** NOTE TO SPECIFIER **** Delete application not required.
 - 1) Application: Exterior.
 - 2) Application: Interior.
 - b.) Thickness: 8 mm
 - c.) Dimensions: 1200 or 1250mm wide x 2500mm or 3050mm long
 - d.) Front Surface: through-colored, c/w a hydrophobic, UV resistant, anti-graffiti, matte finish
 - e.) Graffiti Removal: Cemval Contra Graffiti (CCG)
 - f.) Back Surface: Moisture balanced, so panels may be painted without removal
 - g.) Physical characteristics: High density fibre reinforced cement panels
 - h.) Max water absorption: 25%
 - i.) Natural humidity: 10 -15%
 - j.) Movement in extreme weather conditions: 2.5 mm/m
 - 1) Temperature: -5° C to +100° C
 - 2) Moisture: 20 to 90 %
 - k.) Thermal conductivity: 0.36W/mK
 - l.) Thermal expansion coefficient: 0.00001 °C⁻¹
 - m.) Combustibility Class: A1; CAN/ULC S114 - 05 (non-combustible)
 - n.) Frost resistance: excellent
 - o.) Oil, acids, bases, salts resistance: good
 - p.) Moisture impermeability: excellent
 - q.) Wear resistance: excellent
 - r.) Bending resistance (ambient conditions)
 - 1) perpendicular rupture to fibres: 25 N/mm²
 - 2) parallel rupture to fibres: 16.5 N/mm²
 - s.) Compression resistance: 40 N/mm²
 - t.) Resilience: 2 Nmm/mm²
 - u.) E modulus of elasticity (ambient conditions): 8500 MN/mm².
 - v.) Endurance class: Category A, i.e. EN 12467
 - w.) Resistance class: Class 4, i.e. EN 12467
- 2. Acceptable Distributor:
 - German Construction Systems (2011) Inc.
 - Contact: Jack Lam at 604-983-2220, or jack@superpanel.ca
 - Alternate Contact: Richard Campbell at 604-679-7849, or richard@paneltek.ca

B. Substructure

1. **Vertical Girts or Hat Channels**

- a.) Vertical girts, or hat channels are to be 25mm deep, 18 gauge, AZ55 Galvalume
- b.) Front fastened systems: Girts behind panels to be vertical to allow vertical ventilation
- c.) Girt locations as determined and approved by structural engineer, to align with modular panel fasteners spaced based on manufacturer's panel load data.
- d.) Preformed Galvalume girts to be used at inside and outside corners to ensure corners are straight and closed visually.
- e.) Preformed Galvalume girts are to be used at intermediary panel locations and where panels come together.
- f.) Cavity behind panel to provide at least 25mm of unrestricted space.
- g.) Gap between panels to be minimum of 8mm to allow for expansion and contraction.
- h.) EPDM gasket strips, available from German Construction Systems (2011) Inc., are to be installed between the panel and the vertical girt to allow for more movement between panel and support system.
- i.) Substructure to account for control joints of building to ensure a girt is not connected across the control joint.
- j.) Panels are not to be installed across two aligned vertical girts, so that expansion and contraction of the two girts apply forces to a panel.
- k.) Perforated, preformed black aluminum bug screen to be used at top and bottom of wall, where opening is 25mm wide, with minimum 50% free air flow at screen.

2. **Horizontal z-girt depth to suit insulation thickness, as indicated in drawings**

3. **Fasteners**

- a.) Colour matched stainless steel rivets, supplied by German Construction Systems (2011) Inc. No dissimilar materials permitted, in selection of fasteners.
- b.) All holes are pre-drilled at same 10mm diameter
- c.) Fixed holes take a stainless steel bushing and a rivet
- d.) Floating holes take a rivet only.

4. **Vent Screen**

- a.) Vent screens to be continuous, located at top and bottom of panel system, manufactured by German Construction Systems (2011) Inc. from perforated aluminum, painted black

5. **Flashings:**

- 1) Flashings at edges, top and bottom of panel system, re: architectural drawings

C. **Breathable Membrane/Air Barrier**

- 1. Delta™-Fassade S: Underlayment for open joint rain screen wall systems. Vapour permeable water-resistive barrier with tear-resistant, thermo-bonded, non-woven polyester substrate and waterproof acrylic polymeric coating stabilized against oxidation and UV degradation

Supplied by German Construction Systems (2011) Inc.

Alternate

- SRP AirOutshield UV™ Underlayment for open joint rain screen wall systems. UV resistant, black coated, spun bonded polyester, breathable membrane with a nominal weight of 270g/m² by SRP Canada.

Supplied by German Construction Systems (2011) Inc.

10 EXECUTION

A. Preparation

- B. Inspect the work and notify the architect of any conditions that will affect the installation or performance of the work.
- C. Verify site dimensions prior to commencement of the work
- D. Maintain sheathing membrane integrity.
- E. Verify flashings is in place, sealed with waterproof membrane and covered with building membranes.

11 Installation

- A. Installation as per manufacturer's instructions.
- B. Spaces between panels and between panels and trims, jambs, etc are to be the same width as the thickness of the panel. Maintain dimensions required by manufacturer for minimum distances from edge for holes and penetrations.
- C. Space at top and bottom of each wall should be at least 25mm, as per manufacturer's details.
- D. Installation to allow for thermal expansion of the panel.
- E. Holes are to be drilled as per manufacturer's written instructions
- F. Size of rivets as per manufacturer's written instructions. No other types of fasteners are approved.
- G. Panels to be aligned in straight, level and aligned manner, in consistent method allowing enough ventilation behind panel.
- H. Install panels with joints centred over framing. All fasteners to be installed straight to the panel and in a consistent manner.
- I. Do not install using damaged, warped or misaligned material.
- J. Where panels fit into accessories, allow room for expansion.
- K. Finished installation shall be properly secured, free of rattles, distortions, waviness, and protrusions, damaged or chipped components.
- L. Breathable membrane /air barrier must be installed according to manufacturer's instructions. No penetrations are to be left in installed membrane.

12 CLEANUP

- A. Upon completion of work remove all equipment, tools, surplus materials and garbage.
- B. Panel installation site shall be left in a clean condition free from construction debris.

END OF SECTION