



GLASSFIBRE REINFORCED CONCRETE PANEL RAIN SCREEN

concrete skin / formparts

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1. GENERAL

1.1. SECTION INCLUDES

- A. Glassfibre reinforced concrete panel rain screen:
 - 1. Glassfibre reinforced concrete panels.
 - 2. Aluminum or galvanized metal support system.
 - 3. Flashing, weather-seals, cover plates and formed metal trim.
 - 4. Miscellaneous anchors, fasteners, sealants, and related accessories.

1.2. RELATED SECTIONS

- A. Section 03 30 00 - Cast-in-Place Concrete
- B. Section 05 12 16 - Fabricated Fireproofed Steel Columns.
- C. Section 05 40 00 - Cold-Formed Metal Framing.
- D. Section 05 50 00 - Metal Fabrications
- E. Section 06 10 00 - Rough Carpentry
- F. Section 07 25 00 - Weather Barriers
- G. Section 07 60 00 - Flashing and Sheet Metal
- H. Section 07 80 00 - Fire stopping
- I. Section 07 27 26 - Fluid-Applied Membrane Air Barriers
- J. Section 07 90 00 - Joint Protection

1.3. REFERENCES

- A. ASTM E 84 - Standard Test Method for Surface Burning Characteristics of Building Materials,
- B. ULC S114 - Determination of Non-Combustibility
- C. ASTM E 136 - Standard Test Method for Behavior of Materials in a Vertical Tube Furnace at 750 degreesC
- D. ASTM E 330 - Structural Performance of Exterior Windows, Curtain Walls, and Doors Under the Influence of Wind Loads.
- E. ASTM C 1186 - Standard Specification for Flat Fibre-Cement Sheets.
- F. ESR-2810 - ICC-ES Evaluation report for Fibre Cement Siding
- G. US Green Building Council.

1.4. DESIGN / PERFORMANCE REQUIREMENTS

- A. Glassfibre reinforced concrete rain screen: System is a rear ventilated rain screen designed to drain water and condensation to exterior. System is a complete pre-engineered system including glassfibre reinforced concrete cladding, aluminum metal support structure, closure pieces, trim and flashing.
 - 1. Wall panels shall be removable and fasteners are exposed (or concealed fastened).
 - 2. Panels are secured to an aluminum or galvanized metal support structure and secured to cold-formed metal framing.

- 3. Spacing of cold formed metal framing shall not be greater than 16 inch o.c.
- 4. Aluminum metal support structure has multiple components, with one component attaching to structure over the air barrier using an attachment bracket and one component fastening to bracket horizontally to allow for attachment of concrete panels.
- 5. Rain screen weather resistive barrier membrane should be visually inspected for breaches and repaired as specified in Section 07 27 26 - Fluid-Applied Membrane Air Barriers prior to installation of support system.
- 6. Provide metal drainage flashing to direct condensation and water infiltration within the wall to weeping points. Coordinate with Air and Water Barrier specified in Section 07 27 26 - Fluid-Applied Membrane Air Barriers .

B. Performance Requirements:

- 1. Panel system shall comply with ICC-ES Acceptance Criteria for Fibre Cement Siding Evaluation report ESR-2810.
- 2. Thermal Movement: Provide for free and noiseless vertical and horizontal thermal movement due to expansion and contraction under material temperature range of minus 20 degrees F to 180 degrees F without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.
- 3. Wind Performance: System shall withstand a design load of positive and negative pressures up to 40 psf in accordance with ASTM E 330 without buckling, opening of joints, undue stress on fasteners, or other detrimental effects; allow for ambient temperature at time of fabrication, assembly, and erection procedures.
- 4. Maximum panel deflection of 1/360 of span or less of span when tested in accordance with positive and negative pressures without cracking or damage to panel facing.
- 5. Comply with applicable seismic requirements for Project location.
- 6. Comply with ASTM C 1186.
- 7. Meet Class A per ASTM E 84.
- 8. Classified as noncombustible per ASTM E 136 & ULC S114
- 9. Panels shall contain no detectable amounts of Crystalline Silica. Panels that do contain Crystalline Silica will be rejected.
- 10. System shall accommodate positive drainage for moisture entering or condensation occurring within panel system for 100 year rain cycle.
- 11. System shall be flat with no noticeable warpage, buckling, deflections or other surface irregularities.

1.5. SUBMITTALS

- A. Submit under provisions of Section 01 30 00 - Administrative Requirements.
- B. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Product data describing system materials and fabrication
 - 2. Preparation instructions and recommendations.
 - 3. Storage and handling requirements and recommendations.
 - 4. Installation methods.
- C. Shop Drawings:
 - 1. Layout, profiles and dimensions for panels, product components, edge conditions, special shapes, and trim pieces.
 - 2. Installation details including attachment methods, fasteners, joints, corners, openings, intersections with adjacent materials, flashings, closures, trim, and other critical conditions.
 - 3. Layout of glassfibre reinforced concrete panels on wall and locations of special pieces and trim/
- D. Calculations: Structural calculations signed and sealed by a professional engineer registered in the State where project is located,
- E. LEED Submittals: Provide documentation of how the requirements of Credit will be met:
 - 1. Product Data for Credit MR 2.1 and 2.2: For products being recycled, documentation of total weight of project waste diverted from landfill.
 - 2. Product Data for Credit MR 4.1 and MR 4.2: For products having recycled content, documentation including percentages by weight of post-consumer and pre-consumer recycled content
 - a. Include statement indicating costs for each product having recycled content.
 - 3. Product Data for Credit EQ 4.1: For adhesives used to laminate gypsum board panels to substrates, including printed statement of VOC content
 - 4. Product Data for Credit IAQ 4.6 (Schools): For products used in school construction, including certification meeting CHPS Low-Emitting Material criteria Section 01 35 00 - Special Procedures
 - 5. Product Data for Credit MR 5.1 and Credit MR 5.2: Submit data, including location and distance from Project of material manufacturer and point of extraction, harvest or recovery for main raw material.
 - a. Include statement indicating cost for each regional material and the fraction by weight that is considered regional.
- F. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- G. Verification Samples: For system specified, two panel assembly samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns and attachment profile, fasteners, brackets and anchors.
- H. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
- I. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking, cleaning and maintenance of all components.

1.6. QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in production of glassfibre reinforced concrete rain screens of the type specified with a minimum 10 years documented experience.
- B. Installer Qualifications: Company specializing in installation of glassfibre reinforced concrete rain screen products of the type specified with a minimum 5 years documented experience.
- C. Design structural elements under direct supervision of Professional Engineer experienced in design of this Work and registered in the state of the project.
- D. Pre-installation Meetings: Conduct pre-installation meeting to verify project requirements, substrate conditions, and manufacturer's installation instructions.
- E. Field Measurements: Verify actual dimensions by field measurement before fabrication; show recorded measurements on shop drawings.
- F. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.
 - 1. Finish areas designated by Architect.
 - 2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.
 - 3. Refinish mock-up area as required to produce acceptable work.

1.7. DELIVERY, STORAGE, AND HANDLING

- A. Inspect product components immediately upon delivery at site. Notify manufacturer of damage prior to installation of materials.
- B. Store products in accordance with the manufacturer's instructions and in manufacturer's unopened packaging until ready for installation.
- C. Do not store exterior wall system components in contact with other materials that might cause staining, denting, surface damage, or other deleterious effects

1.8. SEQUENCING

- A. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
- B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9. PROJECT CONDITIONS

- A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.10. WARRANTY

- A. Warrant the materials specified for a period of 10 years from the date of substantial completion against defects.
- B. Warrant the workmanship of the installed system for a period of 2 years from the date of substantial completion against defects.

2. PRODUCTS

2.1. MANUFACTURERS

- A. Acceptable Manufacturer:
Rieder NORTH AMERICA, Distributed in Canada by **Sound Solutions, Inc**
389 Deerhurst Dr.; Brampton, ON, Canada L6T 5K3
Toll Free Tel: 877-740-0303 | Tel: 416-740-0303 | Fax: 416-740-0696
mail@soundsolutions.ca | www.soundsolutions.ca
- B. Substitutions: Not permitted.
- C. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements.

2.2. FIBREC GLASSFIBRE REINFORCED CONCRETE RAIN SCREEN SYSTEM

- A. **concrete skin** panels – glassfibre reinforced concrete skin is an extruded panel made from pure mineral raw materials, (sand cement, water) and reinforced with AR (alkali-resistant) glassfibres as continuous linear glassfibre strands and short fibres in the matrix.
- B. **formparts**: Same extruded concrete skin panels as above but factory formed into "L" parts or "U" part, and or curved shapes. Panels to be monolithic shapes formed in mold using a single sheet of 13mm thick wet concrete. Single sheets that are mechanically joined will NOT be accepted.
- C. Corners to be:
 - a. Soft – radius of 20mm +/-5mm
 - b. Medium – radius of 15mm +/-5mm
 - c. Sharp – Radius of 8mm +/- 4mm

2.3.

- A.
 - 1. Colour: ** is Lowest cost colour - * is Premium colour
 - a. polar white *
 - b. off-white
 - c. ivory
 - d. silvergrey**
 - e. chrome
 - f. anthracite
 - g. liquid black *
 - h. sahara
 - i. sandstone
 - j. terra *
 - k. terracotta
 - l. green
 - 2. Surface:
 - a. FE - ferro / sand blasted surface

- b. FL ferro light / sand blasted surface
 - c. MA – Matt (premium price surface treatment)
3. Surface treatment:
- a. A – Natural - Interior Only
 - b. B – Hydrophobic - Exterior
4. Panel Size:
- a. 47.63 inches by 98.42 inches (1210mm by 2500 mm) by 1/2 inch (13 mm) thickness
 - b. 47.63 inches by 122" (1210mm by 3100mm)
 - c. 47.63 inches by 141.73 inches (1200 by 3600 mm) by 1/2 inch (13 mm) thickness
 - d. Tolerances: Length plus or minus 2 mm, Width plus or minus 2 mm, Thickness plus or minus 1 mm.
- B. Support Structure: Galvanized Steel or Aluminum
1. Exposed Fasteners: Provide with horizontally oriented exposed fastener attachment system.
Select One of the below
 - a. Support Bracket using angle bracket anchored directly through wall substrate into support framing.
 - b. Horizontal L Profile shelf shimming extrusions that fastens into open end of support bracket and supports.
 - c. Vertical support rails are aluminum U and Z shaped rails attached to L profile to suspend glassfibre reinforced concrete panels. Exposed fasteners attach directly to vertical support rail.
 - d. Use corrosion resistant fasteners and anchors of type, size, and spacing required for type of substrate and project conditions, to meet performance requirements specified and indicated in design calculations.
 2. Concealed Fasteners: Provide with concealed fastener system using Keil fasteners.
 - a. Support Bracket using angle bracket anchored directly through wall substrate into support framing.
 - b. Vertical L profile to suspend glassfibre reinforced concrete panels.
 - c. Horizontal support rail and panel clips for concealed fastener system use horizontal rails attached directly to L profile. Panel clips attach to glassfibre reinforced concrete panels with Keil expansion anchors that hang on horizontal rail. Adjustments of panels are accommodated through adjustable screw elements integral to panel clips.
 - d. Use corrosion resistant Keil fasteners and anchors of type, size, and spacing required for type of substrate and project conditions to meet performance requirements specified and indicated in design calculations.
- C. Flashings: Provide sheet metal flashings and trim as required for cladding system in accordance with Section 07 60 00 - Flashing and Sheet Metal.
1. Shop form components to profiles, dimensions, and thicknesses indicated on Drawings. Items to be provided include:
 - a. Aluminum flashing at bottom of air cavities and pressurized

- compartments to gravity drain water from cavity.
 - b. Formed profiles fabricated and installed to shed water within horizontal joint condition (non-continuous, interrupted at vertical U profile).
 - c. Aluminum flashing at window sills, parapet caps, transition pieces to adjacent materials and other exposed trim. Attach with clips or other means to avoid exposed fasteners.
2. Form sheet metal fabrications in longest possible lengths. Turn back all exposed edges to form hem. Fabricate vertical faces with bottom edge formed outward and hemmed to provide drip

2.4. INSTALLATION

- A. Install in accordance with manufacturer's instructions and approved shop drawings.
 1. Establish level lines for panel coursing and positioning of support rails.
 2. Attach horizontal rails with engineered fasteners and anchors.
 3. Attach rails to substrate at 24 inches o.c. or at the distance recommended by system manufacturer.
 4. Provide 1 to 2 inches of space between ends of adjacent rails for expansion and contraction.
- B. Glassfibre reinforced concrete panels: Start at bottom of wall and fasten panels into vertical aluminum profile at locations of predrilled holes in glassfibre reinforced concrete panels
 1. Layout work to avoid or minimize cuts. Site cut composite wood panels using power saw with appropriate blade type to prevent broken corners, edges and chips.
 2. Install panels with continuous vertical and horizontal joints unless otherwise indicated on the Drawings. Vertical and horizontal joints shall be open approximately 3/16 inch (5 mm) wide.
 3. Tolerances: Shim and align composite wood panels to form a level or plumb alignment of 1/4 inch in 20 feet maximum, non accumulative.
- C. Separate dissimilar metals; use gasket fasteners, isolation shims, or isolation tape where needed to eliminate possibility of electrolytic action between metals.

2.5. CLEANING

- A. Remove and replace broken, chipped, stained, or otherwise damaged panels
- B. Immediately after installing, wipe down work. Do not use wire brushes, metallic tools, or abrasives for cleaning.

2.6. PROTECTION

- A. Protect installed products until completion of project.
- B. Protect system from roof run-off, splashed water, mud, sealants, bitumen, and other contaminants from remaining work.
- C. Provide protective boards at exposed external corners, which may be damaged by construction activities
- D. Touch-up, repair or replace damaged products before Substantial Completion.

END OF SECTION