



# ACCUMET 2000

## "Dry Joint" Composite Wall System Specification 07410

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### 1.0 GENERAL

#### 1.1 RELATED WORK

- 1.1.1 Section 03300 Cast-in Place Concrete
- 1.1.2 Section 04200 Unit Masonry
- 1.1.3 Section 05100 Structural Metal Framing
- 1.1.4 Section 05500 Metal Fabrications
- 1.1.5 Section 07195 Air Barriers
- 1.1.6 Section 07200 Insulation
- 1.1.7 Section 07513 Membrane Roofing
- 1.1.8 Section 07600 Flashing and Sheet Metal

#### 1.2 SYSTEM DESCRIPTION

- 1.2.1 Custom made, preformed, prefinished, aluminum composite, dry joint modular wall and soffit system.

#### 1.3 PERFORMANCE REQUIREMENTS (DESIGN CRITERIA)

- 1.3.1 Panel: Metal panel system, including its support and attachments, shall be designed to resist positive and negative wind loads as calculated in the latest edition of the National Building Code of Canada and its supplement, using a 1/30 return period. Adequate stiffening shall be provided to prevent wind induced vibrations and fatigue problems.
- 1.3.2 Deflection Movement: Maximum deflection not to exceed L/180. The panel shall exhibit no permanent deformation when subject to these loads. Allowance shall be made in the panel design for movement within the system caused by deflection in the building structure.
- 1.3.3 Thermal Movement: Allowance shall be made for expansion and contraction of all parts of the metal panel assembly caused by surface temperatures varying from minus 40 degrees Celsius to plus 40 degrees Celsius. Such variation in temperature shall not cause buckling, stress on enclosed or adjoining materials or fasteners, or in any way impair the performance or appearance of the system.
- 1.3.4 Sub system design to incorporate a gridlock to eliminate rocking of the Z-bars on drywall or other support sub-wall systems.
- 1.3.5 Weep Drainage: system shall provide clear, internal paths of drainage that weep any trapped moisture to the exterior. Weep water shall discharge in a manner that avoids staining of architectural finishes, collecting in puddles or the formation of icicles.
- 1.3.6 Water Tightness: Exterior fascia and wall panels shall be designed to the rain screen principles as published by the National Research Council and prevent water infiltration into the interior systems. No panel joint caulking will be permitted.
- 1.3.7 System must have been successfully tested by an accredited testing facility to the ASTM E283 standard test method for air infiltration.
- 1.3.8 System must have been successfully tested by an accredited testing facility to the ASTM E331 standard test method for water infiltration.
- 1.3.9 No panel joint caulking will be permitted.
- 1.3.10 Fastening: Panel assembly shall be fastened to the building structure in a manner, which transmits all loads to the main structure without exceeding the capacity of any fastener.
- 1.3.11 Fire Resistance: Where required by building type, classification, occupancy, height or building size, Aluminum composite panel system shall be tested by an accredited testing facility, to The Standard Method of Fire Test of Exterior Wall Assemblies, CAN4-S134-M92 and be approved for use in non-combustible construction in accordance with the latest edition of the National Building Code of Canada, Article 3.1.5.5, Sentences (1) through (8).

## 1.4 FIELD QUALITY CONTROL

- 1.4.1 Inspection: the manufacturer's representative prior to the enclosure and concealment of these products shall carry out thorough inspections of the air barrier and insulation in the system.
- 1.4.2 All walls and openings are to within  $\pm 3\text{mm}$  ( $\pm 1/8"$ ) of location shown on architectural drawings. Also, structure is to be plumb within 1:1000 of overall height.
- 1.4.3 Final inspection and approval of completed work shall be carried out by the manufacturer's representative and the contractor.

## 1.5 REFERENCES

- 1.5.1 ASTM A653 "Standard Specification for Sheet Steel, Zinc Coated (Galvanized) by the Hot Dip Process".
- 1.5.2. ASTM B209 Aluminum Sheet and Plate
- 1.5.3. ASTM B221 Extruded Aluminum Shapes.
- 1.5.4. ASTM E283-99 Air Infiltration and Exfiltration.
- 1.5.5. ASTM E331-00 Water Infiltration.
- 1.5.6. ASTM E330-02 Wind Load Resistance

## 1.6 SUBMITTALS (SHOP DRAWINGS)

- 1.6.1 Drawings: Contractor's drawings shall clearly indicate by reflected ceiling plans, wall elevations and/or section details all material thickness', finishes connections, inserts, joint conditions, method of anchorage, number of anchors, supports, fastenings reinforcements, method of supporting and integrating mechanical and electrical fixtures, trim and accessories.
- 1.6.2 Design: Calculations shall be signed and sealed by a Professional Engineer, attesting to the ability of the metal panel assembly to withstand the specified loads, including inward and outward loads and loads under fastenings to the structure.
- 1.6.3 Identification: Panels shall be identified on shop drawings as to building location to facilitate panel removal and replacement due to construction and/or occupant damage.

## 1.7 DELIVERY, STORAGE AND HANDLING

- 1.7.1 Package, crate and cover components to protect surfaces from damage and deterioration.
- 1.7.2 Store components off ground to prevent twisting, bending and defacement. Slope to shed moisture.

## 1.8 MOCK UP

- 1.8.1 To be part of the finished wall system installed at a location, which will display typical connections of the project.

## 2.0 PRODUCTS

### 2.1 PANEL TYPE

- 2.1.1. Form modular panels from minimum 4mm prefinished composite aluminum sheet. The composite aluminum sheet will consist of two 0.51mm minimum aluminum skins bonded in a continuous process to a thermal-plastic core in either a low-density polyethylene core (PE - for non-fire resistant applications) or solid compound (FR – for fire resistant applications). Aluminum skins to be alloy 3105 H25. Acceptable system is **Accumet 2000** (PE or FR) by **Flynn Canada Ltd.** or approved equal by the architect, 7 days prior to tender closing.

## **2.2 FABRICATION**

- 2.2.1 All work to be fabricated with straight lines, square corners or smooth bends, free from twists or warps, kinks dents and other imperfections, which may affect appearance or serviceability.
- 2.2.2 Panel flatness in all directions across the surface to be a maximum of 0.06%.
- 2.2.3 System shall have a flush appearance from the exterior with no surface fixings or other irregularities and with no reveal other than the module joint width.
- 2.2.4 Panels shall be aligned with no lap or reveal other than joint width to permit expansion and contraction.
- 2.2.5 Fasteners used to fix the aluminum composite sheet to the extruded frames within panel joint lines to be countersunk.
- 2.2.6 Thickness of metal and details of assembly and support shall provide sufficient strength and stiffness to resist distortion of finished surface.
- 2.2.7 Exposed edges and ends of metal shall be dressed smooth, free from sharp edges. Connections and joints exposed to the weather shall be constructed to exclude water.
- 2.2.8 Panels to be constructed with flanges on all sides and framed with aluminum extrusions. Provisions shall be made for individual panel drainage at panel base.

## **2.3 SUB GIRT SYSTEM**

- 2.3.1 Panel load transfer grids shall be formed from minimum 1.2mm (18 gauge) full-galvanized steel conforming to ASTM A653 Grade A Zinc coating to Z275 designation.
- 2.3.2 Transfer grid to be hat bars, Z-bars, adjustable Z-bars or combination clip and Z-bar.
- 2.3.3 Structural Members and panels shall be fastened together with interlocking clips as indicated.

## **2.4 FASTENERS**

- 2.4.1 Fasteners to be stainless steel and concealed at all locations. Sufficient quantities of fasteners of the proper size for fastening of the work shall be provided.

## **2.5 OPENINGS**

- 2.5.1 Openings shall be provided and coordinated with the work of other installers. Holes to accommodate the work of other sections to be provided in the panel prior to finishing whenever possible. The perimeter of holes greater than 300mm x 300mm shall be reinforced to details shown on drawings or the manufacturers standard.

## **2.6 FLASHINGS**

- 2.6.1 Wherever practical at corners, jambs and abutments, no flashings will be permitted. Panel design to include for these connections. Where flashings are unavoidable, use prefinished material to match composite sheet.
- 2.6.2. Exposed surfaces of aluminum extrusions to be painted to match the finish of the panels. Colour(s) \_\_\_\_\_.

## **2.7 PANEL FINISHES**

- 2.7.1 Exposed coil-coated aluminum to be finished with a two-coat FEVE Fluoropolymer; AAMA 620, second generation thermo-set fluoropolymer, Lumiflon resin coating containing 100 percent FEVE. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Diluted thermoplastic fluorocarbon / fluoropolymer resin formulated composition such as 70%, 50%, etc. is not acceptable.
- 2.7.2 Acceptable paint product manufactures:
  - 1) Coraflon by PPG
  - 2) Bonflon by ASAHI

3) Valflon by Valspar

Coil coated painted finish shall be applied in-house by ACM manufacturer. Finish to be warranted by ACM manufacturer for a period of 20 years.

- 2.7.3 Coating thickness to be 0.025mm (+- 0.005mm) to NCAA 11-12, F minimum using Eagle Turquoise T2375.
- 2.7.4 Impact test method ASTM D2794 Gardner variable impact tester.
- 2.7.5 Aluminum substrate to be alloy 3003 or 5052 conforming to ASTM B209.
- 2.7.6 Adhesion test methods NCAA 11-5 and ASTM 3359-02 crosshatched.
- 2.7.7 Colour to be: TOB Black by Alpollic

## **2.8 WEATHERING CHARACTERISTICS (to the following minimum standards)**

- 2.8.1 Humidity Resistance: Test Methods ASTM D714-56, ASTM D2247-87. Coating shall have none or few blisters after 3000 hours.
- 2.8.2 Salt Spray Resistance: Test Method ASTM B-117-85 Salt Fog Cabinet. Coating shall have none or few blisters after 3000 hours.
- 2.8.3 Chemical Resistance: Test Method ASTM D 1308-79 Procedure 6.2. No discolouration or blistering after 15 minute spot test with 10% muriatic acid. No discolouration or blistering after 18 hour spot check with 20% sulfuric acid.
- 2.8.4 Abrasion Resistance: Test Method ASTM D968-81 Falling Sand. Coating shall resist abrasion of not less than 50 litres of sand.
- 2.8.5 Colour Retention: Test Method ASTM D2244-79. No colour change greater than the 5 NBS units when measured after 5000 hours.
- 2.8.6 No objectionable chalking in excess of 8 when rated per ASTM D-659-86.

## **3.0 EXECUTION**

### **3.1 PREPARATION**

- 3.1.1 Develop all dimensions from the architectural drawings and where possible coordinate with field dimensions to obtain final panel layout.

### **3.2 INSTALLATION**

- 3.2.1. Prior to installation, inspect structural to ensure all walls and openings are within  $\pm 3\text{mm}$  ( $\pm 1/8''$ ) of location shown on architectural drawings. Also, structure is to be plumb within 1:1000 of overall height. Installation is not to proceed until the building is within these tolerances.
- 3.2.2. Support system shall be attached to the structure as required to transmit design loads.
- 3.2.3. Framing and other components shall be straight to match plane of panel as required to meet the installed panel tolerances with straight, sharply formed edges. Radiused formed components shall be bent to a true circular curve.
- 3.2.4. After their correct position has been determined and allowances for expansion, building movement, uniform joint width and alignment of all parts has been determined, the components shall be permanently fastened.
- 3.2.5. Installed panels shall not deviate from overall plane or alignment by more than 1:1000. Joints shall be not less than their dimensioned width, or more than five percent greater than their dimensioned width at any location along their full length, and shall not be wavy, out of line or of different width from panel to panel.
- 3.2.6. Install flashings to divert all moisture to the exterior.
- 3.2.7. Install exterior metal cladding to structural supports by hidden mechanical fasteners, clips and perimeter framing extrusions.
- 3.2.8. Remove all excess materials, debris and equipment at completion.
- 3.2.9. Clean all panels free of grim and dirt at time of installation.