MATERIAL

1 GENERAL

1.1 DOCUMENT

1.1.1 This section of the specification forms part of the Contract Documents and is to be read, interpreted, and coordinated in conjunction with all other parts.

SN: *Specifier to coordinate, delete or incorporate applicable major related sections of work specified elsewhere:*

1.2 RELATED SECTIONS

1.2.1 [Section 05100 – Structural Steel.]
1.2.2 [Section 05410 – Exterior Metal Studs.]
1.2.3 [Section 05500 – Metal Fabrications.]
1.2.4 [Section 06100 – Rough Carpentry.]
1.2.5 [Section 07200 – Insulation and Weather Barriers.]
1.2.6 [Section 07500 – Roofing Membrane.]
1.2.7 [Section 07600 – Flashing and Gutters.]
1.2.8 [Section 07920 – Sealants.]
1.2.9 [Section 00000 – Other Related Major Building Components.]
1.2.10 [Division 15 – Mechanical.]
1.2.11 [Division 16 – Electrical.]

1.3 REFERENCES

1.3.1 AAMA 501.1, Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors Using Dynamic Pressure.

1.3.2 AAMA 508, Voluntary Test Method and Specification for Pressure Equalized Rain Screen Wall Cladding Systems.

1.3.3 ASTM E283-84, Test Method for Rate of Air Leakage Through Exterior Windows, Curtain Walls and Doors.

1.3.4 ASTM E331-86, Test Method for Water Penetration of Exterior Windows, Curtain Walls, and Doors by Uniform Static Pressure Difference.

1.3.5 ASTM E330, Structural Performance.

1.3.6 ASTM E1233, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential.

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SN: *Specifier to select appropriate Authorities having jurisdiction / Building Code governing the project and territory.*

1.4 DESIGN CRITERIA

1.4.1 The design, fabrication and erection of a complete aluminum building panel system is the responsibility of this subcontractor and is based on the performance criteria specified. The system shall be a dry joint system which shall incorporate a pressure equalized "rainscreen" system on a complete air and vapour seal, not only allowing air and vapour which enters the panel chamber to drain to the exterior of the wall, but will also allow air into the pressuring chamber to provide instantaneous pressure equalization. Vents and drain holes shall be inconspicuously located and in such positions as not to contribute to staining, streaking or marking of the panel face. Emphasis shall be placed upon the prime integrity of the critical inner air/vapour seal.

1.4.2 Design and install specified Aluminum building panel system and all connections to withstand earthquake forces in accordance with the requirements of [Governing Building Code.]

1.4.3 The specified Aluminum building panel assembly shall be designed to accommodate the structural inter-storey drifts and other movements without breakage, dislodgment or connection failure.

1.4.4 Wind and suction loads normal to the plane of the assembly shall be calculated in accordance with the [Governing Building Code.]

1.4.5 The Aluminum building panel system, including connection hardware and all related components shall be designed to withstand local positive and negative wind-load pressure at a maximum deflection of L/180 at perimeter of panels under full loading.

1.4.6 Provide for free noiseless thermal movement of components as may be caused by a temperature variation.

1.4.7 Allow for movement in cladding caused by deflection in structure.

1.4.8 Design wall system to allow for the unobstructed movement of air between the exterior and interior sides of metal cladding in Accordance with industry accepted Rain Screen Principles.

1.4.9 Ensure panel exhibits no permanent deformation when subject to design criteria specified.

1.4.10 The system shall provide clear internal paths of drainage in order to drain any trapped moisture to the exterior, discharging moisture in a manner avoiding staining of architectural finishes, collecting in puddles, formation of unsafe icicles and dripping onto pedestrians.

1.4.11 Fasten panel assembly to building structure in a manner which transmits all loads to the main structure without exceeding the capacity of any fastener.

1.4.12 Panels shall not warp or buckle when under full design loads.

1.4.13 All fastenings and connectors shall be concealed. Connection and attachment devices shall not cause staining to cladding or other adjoining materials. The anchorage system shall be designed so that the panels are secured yet "free-floating", to accommodate expansion and contraction.

1.4.15 The system shall not incorporate sealant between panel joints. Individual panels themselves to incorporate Joint Reveal Strip as part of custom bent interlocking perimeter without the use of any extrusions or clips or filler strips at intermediate horizontal or vertical panel joints.

1.5.16 Anchor assemblies or connection hardware, including all related connections, tracks, girts, fasteners, etc., for and related to the cladding panels shall be designed, engineered, furnished and installed as required in compliance with the specified design and performance criteria. All such items are schematic and do not necessarily indicate the exact required scope, type, shape or profile. Location and methods of anchoring panels shall be the subcontractor's responsibility, who shall design the cladding panels and connections to suit each specific condition in an acceptable manner complying with requirements specified.

1.4.17 Panel system shall be in compliance with the [Governing Building Code.] and local authorities having jurisdiction.

1.5 SUBMITTALS

1.5.1 Submit shop drawing and samples in accordance with [Section 01300].

1.5.2 Submit shop drawings detailing construction, assembly, profiles, materials, reinforcement installation for all conditions, method of sealing and flashing, sub-framing and accessories, colours and finishes. All materials, recommendations and details describing the proposed use, design and erection procedures for all anchorage shall be documented and fully described on the shop drawings.

SN: *Specifier to coordinate to delete or incorporate all paragraphs related to requirements for letters of assurance as applicable to the project.*

1.5.3 Engineered shop drawings shall be prepared, signed and sealed by a professional structural engineer, attesting to the ability of the Aluminum building system to withstand specified loads.

1.5.3.1 Submit letter of assurance of "professional design" and commitment for "field review" and compliance in accordance with specified Field Quality Control.

1.5.4 Submit letter of assurance of "professional field review" and "compliance" in accordance with specified Field Quality Control.

1.5.5 Submit duplicate samples of specified finish for preliminary colour section. Sample submittal shall include (third party independent testing agency) affidavit certifying material meets requirements specified herein.

1.5.5.1 Request for substitution of other manufacturer's equivalent aluminum building panel system in lieu of the aluminum building panel system specified herein are subject to the Consultant's review and pre-approval prior to Bid Closing. Only the named Panel contractor as base bid or approved alternate in this document or by addenda will be allowed to bid this project. Provide samples, data sheets and independent testing agency certified documentation's as called for under paragraphs. This evidence must include proof of conformance and test reports as specified above. ANY EXCEPTIONS TAKEN FROM THIS SPECIFICATION MUST BE NOTED ON THE APPROVAL REQUEST. IF NO EXCEPTIONS ARE NOTED, AND APPROVAL IS GIVEN, PRODUCT PERFORMANCE WILL BE AS SPECIFIED. SHOULD NON COMPLIANCE BE SUBSEQUENTLY DISCOVERED, THE PREVIOUSLY GIVEN APPROVAL WILL BE INVALIDATED AND USE OF THE PRODUCT ON THE PROJECT WILL BE DISALLOWED. Requests for approval, with all appropriate submittal data, must be received no less than 10 days prior to bid date. A list of all approved manufacturers and products will be issued by addendum. No other manufacturers will be acceptable. No verbal approval will be given.

1.5.6 Submit 600 mm (24 in) x 600 mm (24 in) finished sample panel representative of panel, attachments, reinforcement, construction and finish to the Consultant for approval.

1.5.6.1 Submit two (2) 300 mm (12 in) x 300 mm (12 in) samples of each finish selected by the Consultant.

1.6 PERFORMANCE REQUIREMENTS

1.6.1 Design, fabricate and install a dry joint, pressure equalized rainscreen aluminum modular panel system without the use of sealants, gaskets or butyl tape, tested as installed in compliance with AAMA 508, and as follows:

1.6.1.1 Pressure Equalization Cycling: Pass cycled pressure loading from 5 psf to 25 psf for 100 three-second cycles at 0.08 seconds or less; ASTM E 1233.

1.6.1.2 Air Infiltration: 0.12 cfm per sf of wall area, tested at 1.57 psf (25 mph) in accordance with ASTM E 283.

a. Maintain air/water barrier leakage rate at 0.11 to 0.13 cfm per sf at 1.57 psf when tested in accordance with ASTM E 283 in compliance with AAMA 508 criteria.

1.6.1.3 Water Penetration:

a. Static: Pass water penetration test under static pressure when tested in accordance with ASTM E 331 at a differential of 10 percent of inward acting design load, with 15 psf pressure differences for at least 15 minutes with 5 gal per sf per hour of water applied.

b. Dynamic: Pass water penetration test under dynamic pressure of 6.24 psf in accordance with AAMA 501.1.

1.6.1.4 Structural: Provide systems tested in accordance with ASTM E 330 and certified to be without permanent deformation or failure of structural members.

1.7 QUALITY ASSURANCE

1.7.1 Workers shall have a minimum of five years in panel manufacture and on site installation proven experience in this type of work and be approved by the manufacturer for installation of their products.

SN: *Specifier to coordinate to delete or incorporate following paragraphs with regards to full-size "mock-up" requirements as appropriate for the project:*

1.8 MOCKUP

1.8.1 Construct a full-size mockup on site directed by the consultant. The Consultant will determine exact number of panels and appropriate location.

1.8.2 Mockup could be waived in lieu of representative corner sample illustrating exact system, material and attachment method.

1.8.3 Approved representative mockup sample panel shall serve as quality of standard and workmanship to be expected during field quality control inspections of the work being executed and at completion.

1.9 PRODUCT DELIVEREY, STORAGE AND HANDLING

1.9.1 Deliver all materials to the site and store in original packages with manufacturer's seals and labels intact.

1.9.2 Observe proper handling procedures during fabrication, delivery and installation to prevent damage. Replace damaged materials, which are stained, cracked, bent, chipped, scratched or otherwise unsuitable for installation at no additional cost to the Owner.

1.9.3 Store panels under cover and raised above ground to prevent damage and kept free from dampness and element extremes until required for installation.

1.10 ENVIRONMENTAL REQUIREMENTS

1.10.1 Environmental conditions for installation of materials shall be within the limits prescribed by the manufacturer of the product.

1.11 WARRANTY

1.11.1 Panels: Against oil canning or buckling due to thermal movement or building structure deflections.

1.11.2 Kynar (Duranar) Panel Finish: Against non-uniform fading during warranty period to extent that adjacent panels have a gloss and/or colour range greater than originally-accepted samples approved by the Consultant, pitting or other type of corrosion resulting from natural elements in local atmosphere, discolouration, staining or streaking of panel surface. Spray applied Finish Warranty shall be for a period of Ten (10) years from date of Substantial Completion.

1.11.3 Sealant: Against adhesive or cohesive failure of joints between dissimilar material, fluid, migration, dirt pickup, dirt runoff, chalking or visible colour change on surface or cured sealant.

1.11.4 Material and workmanship warranty against defects or deficiencies shall be for a period of One (1) year and now date of substantial completion.

1.12 MAINTENANCE

1.12.1 Submit manufacturer's documentation covering care, cleaning and maintenance of panels for incorporation into the Owner's operating and maintenance manuals.

2 PRODUCTS

2.1 ALUMINUM BUILDING PANELS

2.1.1 Acceptable Manufacturer: Sobotec Ltd. wall system as custom designed, manufactured and engineered by:

2.1.1.1 Sobotec Ltd.
67 Burford Rd.
Hamilton, ON L8E 3C6
Phone: 905-578-1278
Fax: 905-578-1446

2.1.1 Thickness: [0.062 inch] or [0.080 inch] Aluminum Sheet material.

2.1.2 Quantities: Size, profile, configuration, layout, and extent of aluminum building panels are as shown on the drawings.

SN: *Specifier to select appropriate type and colour selection of finishes required for this project:*

2.1.3 Finishes:

2.1.3.1 70% Kynar resin Duranar or Duranar XL
2.1.3.2 Colour: as specified by Architect.

2.2 PERFORMANCE AND MATERIAL CHARACTERISTICS

2.2.1 Tolerances:

2.2.1.1 Panel Bow: Maximum 1.0% of panel dimensions in width and length.

2.2.1.2 Panel dimensions: Allowance for field adjustments as recommended by manufacturer, where final dimensions cannot be established by the field measurement before completion of panel manufacturing.

2.2.1.3 Panel lines, breaks and angles shall be sharp, true and surfaces free from warp or buckle

SN: *Specifier to coordinate with the drawings and select appropriate "system" type required for the project:*

2.3 SYSTEMS

2.3.1 Sobotec Ltd. SURFLEX Modular Panel System

2.3.1.1 Dry Joint System Rainscreen Panel utilizing interlocking joint reveals without the use of any extrusions or clips or filler strips all panel to panel joints.

2.3.1.2 Panel Depth: 1 3/4 inch, nominal.

2.3.1.3 Panel Size: As indicated on Drawings. MAX Panel Size is 120" x 48". MIN Panel Size is approx. 12" x 12".

2.3.1.4 Panel Joints: ½" at typical horizontal or vertical panel to panel joints.

2.4 PANEL ACCESSORIES

2.4.1 All SURFLEX System Trims/Profiles (i.e. SURFLEX J-Starter Trim Profile at base/starting conditions, abutments, terminations or other) to be same material and colour as panels.

2.4.2 Substrate: Minimum 5/8" Plywood continuous behind panels.

2.5 SUPPORT MEMBERS, FASTENERS, CONNECTORS

2.5.1 Type, size quantity and spacing of all fasteners and other hardware and anchorage devices for panels as required to suit specified standards.

2.5.2 Fastening devices between aluminum or aluminum and other materials shall be aluminum or stainless steel that will not permit staining.

2.5.3 Use Non-Metal shims as required for panel alignment.

SN: *Specifier to coordinate, delete or select appropriate following flashing, counter flashing, gutter and trim finishing method paragraphs as required to achieve the project design appearance.*

2.6 FLASHING AND TRIM

2.6.1 Provide custom factory-fabricated integral companion flashing, trims, end caps and finishing components from same material as the aluminum building panels.

2.6.1.1 Finish: Shall be of [matching] [contrasting] colour with the Aluminum building panels.

2.6.2 Flashing and Trims: [Prefinished] [Post-painted] in accordance with [Section 07600.]

2.6.2.1 Colour: Custom colour selection to be [matching] [contrasting] colour with aluminum building panels.

2.7 SEALANT

2.7.1 Silicone sealant in accordance with [Section 079200.]

2.8 FABRICATION

2.8.1 Machine fabricated all material in accordance with reviewed shop drawings with straight lines, square corners or smooth bends, free from twists, kinks, warps, dents, and other imperfections which may affect appearance or serviceability.

2.8.2 System shall have a flush appearance from the exterior with no reveal other than module joint width.

2.8.3 Panels shall be aligned with no lap or reveal other than joint width to permit expansion and contraction.

2.8.4 Thickness of the metal and details of assembly and support shall provide sufficient strength and stiffness to resist distortion of finish surface. Exposed edges and ends of metal shall be dressed smooth, free from sharp edges and with no uniform minimum radius corners. Connections and joints exposed to weather shall be constructed to exclude water.

2.8.5 Fasteners shall be concealed.

2.8.6 Trim and flashing shall be factory-fabricated ready for assembly.

2.8.7 Design and fabricate appropriate type, size, quantity and spacing of all fasteners and other anchorage devices as required to suit the specified standards.

2.9 FINISH

2.9.1 All exposed Aluminum wall panels shall be based on approved sample panel [final approval of full-size representative sample mockup constructed on site.]

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3 EXCUTION

3.1 INSPECTION

3.1.1 Inspect the work of the others upon which the work of this section depends and report in writing to the Consultant any deflects which would impair the performance of the work.

3.2 ERECTION

3.2.1 All erection work is the responsibility of the installation team and be carried out by manufacturer's trained erection crew in accordance with reviewed shop drawings, manufacturer's specifications and compliance with the Contract Documents.

3.2.2 Erect panels plumb, true and level and in correct alignment with established lines and elevation shown on reviewed shop drawings.

3.2.3 Set all panels in locations shown on the details and shall be level, square and plumb with correct elevations and in alignment with other work.

3.2.4 Install all anchors, and flashing securely to surrounding construction spaced to afford maximum rigidity.

3.2.5 Provide all holes for mechanical and electrical services, piping, louvers, etc., penetrating panels. Provide watertight flanges, flashings, reinforcing and sealant around all penetrations exposed to the weather and or as shown on the drawings.

3.2.6 Joints shall not be less than their dimensioned width or more than five percent (5%) greater than their dimensioned width at any location along their full length and shall not be wavy, out of line or of different width panel to panel.

3.2.7 Installed panels shall not deviate from overall plane or alignment more than 1.5mm (1/16 in) in 900mm (36 in). Adjacent panels shall not deviate from plane and alignment by more than 0.79mm (1/32 in) along their length.

3.3 SEALANTS

3.3.1 Install sealant to penetrations through panels and at junctions with dissimilar materials in accordance with [Section 07920.]

3.4 FIELD QUALITY CONTROL

3.4.1 The manufacturers or suppliers professional design engineer shall be responsible for production of shop drawings and shall provide periodic inspections during construction as required. Such inspections and associated costs shall be included in Bid Price.

3.4.2 At completion of the work, the manufacturer's or supplier's professional design engineer shall submit to the consultant copies of field review reports for each site visit made and a final signed and sealed letter of assurance of "professional field review" and "compliance" indicating that all aluminum building panels have been installed in accordance with the manufacturer's specifications, the standards specified herein and the final reviewed shop drawings.

3.5 CLEANING

3.5.1 If necessary, wash panels to remove surface dust, dirt, stains and marks on the panels caused by ambient environmental weather conditions and construction activities. Provide a clean installation of the work in accordance with section [01700 – Project closeout]. Replace damaged or marred panels that cannot be fixed nor touch up accordingly to the approval of the consultant.

3.5.2 Use cleaners approved by the manufacturers of surfaces to be cleaned.

3.5.3 Protect panels from damage by other trades.

3.5.4 Remove tools, debris, equipment, and surplus materials from the site.

End of Section