1 General

1.1 SUMMARY

SPEC NOTE: This Specification has been prepared to assist the Specifier in preparing a Project or Master Specification. It follows guidelines established by Construction Specifications Canada (CSC) and therefore may be used with most Master Specification systems with minor editing.

SPEC NOTE: Following is written as a complete stand alone Master Specification Section for provision of [ ] on a Project. It can also be used as supplementary information for incorporation into another Specification Section. Spec Notes will identify which articles or paragraphs should be copied into another Specification Section as applicable.

.1 Section Includes: Provide Accuform aluminum plate panels including but not limited to following:

.1 custom made preformed, prefinished or post painted aluminum plate panel system. System uses rear ventilated dry joint rain screen construction.

.2 Related Sections: Following description of work is included for reference only and shall not be presumed complete:

.1 Cast-in Place Concrete: [Section 03 30 00, Cast-In-Place Concrete.] [Division 03, Concrete.]

.2 Unit Masonry: [Section 04 20 00, Unit Masonry.] [Division 04, Masonry.]

.3 Structural Metal Framing: [Section 05 41 00, Structural Metal Stud Framing System.] [Division 05, Metals.]

.4 Metal Fabrications: [Section 05 50 00, Metal Fabrications.] [Division 05, Metals.]

.5 Thermal Insulation: [Section 07 21 00, Building Insulation.] [Division 07, Thermal and Moisture Protection.]

.6 Vapour Barriers: [Section 07 25 00, Miscellaneous Air/Vapour Barriers.] [Division 07, Thermal and Moisture Protection.]

.7 Air Barriers: [Section 07 25 00, Miscellaneous Air/Vapour Barriers.] [Division 07, Thermal and Moisture Protection.]

.8 Flashing and Sheet Metal: [Section 07 62 00, Sheet Metal Flashing and Trim.] [Division 07, Thermal and Moisture Protection.]

.9 Joint Sealants: [Section 07 92 00, Joint Sealants.] [Division 07, Thermal and Moisture Protection.]

1.2 REFERENCES

.1 Abbreviations and Acronyms:

.1 PVDF: Polyvinylidene Fluoride.

.2 Reference Standards:

.1 AAMA 2604-22 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusion and Panels (with Coil Coating Appendix)

.2	AAMA 2605-22	- Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusion and Panels (with Coil Coating Appendix)
.3	ASTM A653/A653M-23	- Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot Dip Process
.4	ASTM A792/A792M-23	- Standard Specification for Steel Sheet, 55% Aluminum-Zinc Alloy-Coated by the Hot-Dop Process
.5	ASTM B117-19	- Standard Practice for Operating Salt Spray (Fog) Apparatus
.6	ASTM D714-02(17)	- Standard Test Method for Evaluating Degree of Blistering of Paints
.7	ASTM D968-22	- Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive
.8	ASTM D1308-20	- Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Coating Systems
.9	ASTM D2244-22	- Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates
.10	ASTM D2247-15(20)	- Standard Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity
.11	ASTM D4214-07(15)	- Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films
.12	ASTM E283/E283M-19	- Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen
.13	ASTM E330/E330M-14(21)	- Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
.14	ASTM E331-00(23)	- Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
.15	ASTM E1233/E1233M-14(21)	- Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Cyclic Air Pressure Differential

1.3 SUBMITTALS

.1 Shop Drawings:

.1 Shop Drawings shall clearly indicate by reflected ceiling plans, wall elevations and/or section details all material thicknesses, finishes, connections, inserts, joint conditions, method of anchorage, number of anchors, supports, reinforcements, methods of supporting and integrating mechanical and electrical fixtures, trim and accessories.

.2 Ensure calculations are signed and sealed by a licensed Engineer, attesting to the ability of the aluminum panel assembly to withstand the specified loads, including self-weight, wind, seismic, thermal and building movements.

.3 Identify panels on Shop Drawings as to building location to facilitate panel removal and replacement due to construction and/or occupant damage.

1.4 QUALITY ASSURANCE

.1 Qualifications:

.1 Manufacturers: Have a minimum of 10 years' experience in the manufacture of aluminum plate panel systems.

.2 Installers: Provide work of this Section executed by competent installers with minimum 5 years' experience in the application of Products, systems and assemblies specified and with approval and training of the Product manufacturers.

1.5 DELIVERY, STORAGE AND HANDLING

.1 Storage and Handling Requirements:

.1 Package, crate and cover components to protect surfaces from damage and deterioration in accordance with manufacturer's instructions.

.2 Store components off ground to prevent twisting, bending and defacement. Slope to shed moisture. Refer to any additional storage requirements as stated in manufacturer's installation instructions.

.3 Material should be handled to prevent damage to the Product and in accordance with manufacturer's instructions.

2 Products

2.1 MANUFACTURERS

.1 Accuform Series Panels:

.1 Permitted Manufacturer:

.1 Northern Facades
6435 Northwest Drive
Mississauga, Ontario
L4V 1K2
Phone: (905)-671-3971
Fax: (905)-671-3971

2.2 MATERIALS

.1 Performance/Design Criteria:

.1 Structural Design:

.1 Calculate wind Load in accordance with local building code. Provide adequate stiffening to prevent excessive deflection, wind induced vibrations or fatigue problems.

.2 Ensure panel system is tested according to ASTM E330/E330M, ASTM E331 and ASTM E1233/E1233M.

.3 Ensure perimeter framing does not deflect more than L/180 between supports.

.4 Ensure stress on panel does not exceed manufacturer's recommended maximum value to avoid permanent deformation.

.5 Fasteners: Designed to transmit all loads to main structure without exceeding capacity of any fastener.

.6 Thermal Movement: Ensure allowance is made for expansion and contraction of all parts of panel assembly caused by surface temperatures varying from -40 deg C to 60 deg C. Ensure such variation in temperature does not cause buckling stress on enclosed or adjoining materials or fasteners, or in any way impair performance or appearance of system.

.2 Static Air Infiltration: Provide air barrier system to a performance level of 300 Pa of pressure with a leakage rate less than 0.3 L/s*m^2 when tested in accordance with ASTM E283/E283M.

.3 Water Tightness: Ensure exterior wall panels are designed to the rain screen principle as published by the National Research Council of Canada and prevent water infiltration into the interior systems. No panel to panel joint caulking will be permitted in the wall or soffit area.

.2 Panels:

.1 Minimum 2 mm (0.080"), 3000 series alloy, solid aluminum sheet, tension leveled.

.2 Panel Tolerances:

.1 Panel Bow: Not to exceed 0.8% of panel overall dimension in width or length.

.2 Length & Width: +0 mm (0"), -3.2 mm (-1/8").

.3 Squareness: 1.3 mm/lin m.

.3 Panel Size: As indicated on Drawings.

.4 Panel Reveal Depth: [25 mm (1")] [50 mm (2")] [75 mm (3")].

.5 Panel Layout: As indicated on Drawings.

.6 Panel Weight: Less than 9.765 kg/m^2 (2 lbs/sq ft).

.7 Panel Finish: Refer to "Finishes" specified herein.

.8 Accuform support extrusion to be used to secure panel to structure.

2.3 ACCESSORIES

.1 Ensure fasteners are coated with an anti-corrosion coating system or made from 300 series stainless steel. Coating type to be determined based on intended use and environmental factors.

.2 Wherever practical at corners, jambs and abutments, use standard Accuform Extrusions including following:

.1 Corner Extrusion with Cap painted to match panel unless otherwise noted.

.2 End Termination Extrusion with Cap painted to match panel unless otherwise noted.

.3 Top Termination Extrusion.

.3 Where panels are over 1220 mm (48") wide, install intermediate clips at project recommended spacing.

.4 Incorporate weep holes to ensure drainage of assembly where required.

.5 Sub-Girts: Engineered to suit Project requirements as indicated on Drawings.

.6 Sub-Framing Thermal Spacer:

.1 1.9 mm (14 ga) [Galvalume™ in accordance with ASTM A792/A792M] [galvanized in accordance with ASTM A653/A653M] steel with integral glass fibre reinforced polyamide thermal isolator pad, with adjustable depth and suitable for vertical and horizontal sub-girts.

.2 Effective R-Value to be determined by Consultant in combination with Insulation system.

.3 Permitted Product:

.1 "ISOClip" by Northern Facades Ltd.
6451 Northwest Drive
Mississauga, ON L4V 1K2
Phone: 905-740-2050
Toll free: 844-740-2050
Email: info@isoclips.com

.4 Provide a dielectric separator wherever 2 dissimilar metals are in contact with each other.

.7 Substrate wall sheathing: Refer to Division 05 or 09 for requirements.

.8 Air/Vapour Barrier: Refer to Division 07 for requirements.

.9 Openings: Provide and coordinate openings with the work of other installers. Provide holes to accommodate work of other Sections in panel prior to finishing. Reinforce perimeter of holes greater than 300 mm x 300 mm (12" x 12") to manufacturer's standard.

.10 Finishes:

SPEC NOTE: Use following for 3-coat finish system.

.1 Finishing Performance Requirements: (3 Coat Wet System (primer/colour coat/clear coat)) including thermal setting application of 70% fluoropolymer resin minimum, PVDF with added colour pigment finish exceeding or meeting AAMA 2605 requirements. Ensure fluoropolymer baked resins form a continuous physically locked finish during manufacturing process. Apply fluoropolymer finish after multistage chemical treatment cleaning providing corrosion resistance surface ready to receive primer. During baking process apply primer in accordance with manufacturer's recommendations followed by a flash process whereby evaporating solvent and then fluoropolymer finish sprayed on to aluminum; apply another flash procedure and then bake for approximately 10 minutes when aluminum surface reaches a temperature of 232 deg C (450 deg F). Permitted Products: "Duranar XL" by PPG Industries; www.ppgideascapes.com or Fluropon® Classic" by Sherwin-Williams Coil Coatings; www.coil.sherwin.com with following characteristics:

.1	Humidity Resistance: ASTM D714, ASTM D2247, 3000 hrs, 100% R.H. @ 100°F:	Few #8 blisters maximum
.2	Salt Spray Resistance: ASTM B117, 3000 hrs 5% NaCl @ 100°F:	1.6 mm (1/16”) maximum undercutting
.3	Chemical Resistance: ASTM D1308, Procedure 6.2:	No discolouration or blistering after 15 minute spot test with 10% muriatic acid. No discolouration or blistering after 18 hr spot check with 20% sulfuric acid.
.4	Abrasion Resistance Falling Sand (ASTM D968):	50 ℓ/ml
.5	Colour Retention 5000 hrs, 45° South Florida (ASTM D2244):	ΔE <5.0
.6	Chalking Resistance 10 yrs, 45° South Florida (ASTM D4214):	No more than #8

SPEC NOTE: Use following for 2-coat finish system.

.2 High Performance Coating Finish Process: (2 Coat Wet System) including thermal setting application of 70% fluoropolymer resin minimum, PVDF with added colour pigment finish exceeding or meeting AAMA 2604 requirements. Ensure fluoropolymer baked resins form a continuous physically locked finish during manufacturing process. Apply fluoropolymer finish after multistage chemical treatment cleaning providing corrosion resistance surface ready to receive primer. During baking process apply acrylic or epoxy primer in accordance with manufacturer’s recommendations followed by a flash process whereby evaporating solvent and then fluoropolymer finish sprayed on to aluminum; apply another flash procedure and then bake for approximately 10 minutes when aluminum surface reaches a temperature of 232 deg C (450 deg F). Permitted Products: “Duranar” by PPG Industries; www.ppgideascapes.com or Fluropon®” by Sherwin-Williams Coil Coatings; www.coil.sherwin.com with following characteristics:

.1	Humidity Resistance: ASTM D714, ASTM D2247, 1500 hrs, 100% R.H. @ 100°F:	Few #8 blisters maximum
.2	Salt Spray Resistance: ASTM B117, 1500 hrs 5% NaCl @ 100°F:	1.6 mm (1/16”) maximum undercutting
.3	Abrasion Resistance Falling Sand (ASTM D968):	20 ℓ/ml

.4 Colour Retention
5000 hrs, 45° South Florida
(ASTM D2244): ΔE <5.0

.5 Chalking Resistance
10 yrs, 45° South Florida
(ASTM D4214): No more than #8

3 Execution

3.1 EXAMINATION

.1 Verification of Conditions:

.1 Prior to installation, inspect structure to ensure walls and openings are within +/-3 mm (+/-1/8”) of location shown on Architectural Drawings. Also, ensure structure is plumb within 1:1000 of overall height. Do not proceed with installation until building is within these tolerances.

.2 Prior to start of work found in this Section inspect work of previous trades to ensure it is in accordance with Contract Documents. If not, do not proceed with work and notify Contractor immediately in writing to resolve differences before proceeding with work.

.2 Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

3.2 PREPARATION

.1 Develop all dimensions from the Architectural Drawings and where required coordinate with field dimensions to obtain final panel layout.

3.3 INSTALLATION

.1 Ensure support system is attached to structure as required to transmit design loads.

.2 Ensure framing and other components are straight to match plane of panel as required to meet installed panel tolerances with straight, sharply formed edges. Form curved components to a true arc.

.3 After their correct position has been determined and allowances for expansion, building movement, uniform joint width and alignment of all parts have been determined, fasten components permanently.

.4 Installed panels shall not deviate from overall plane or alignment by more than 1:1000. Joints are not less than their dimensioned width, or more than 10% greater than their dimensioned width at any location along their full length and are not wavy, out of line or of different width from panel to panel.

.5 Install flashings to divert moisture to exterior.

.6 Install exterior aluminum cladding to structural supports using hidden mechanical fasteners.

3.4 SITE QUALITY CONTROL

.1 Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.

3.5 CLEANING

.1 Remove excess materials, debris and equipment at completion.

.2 Clean panels free of grime and dirt at time of installation.

END OF SECTION