

## PART 1 - DESIGN CLARIFICATION

### 1.1. INTENT

- 1.1.1. This Tender Addendum is issued to provide for modifications and/or clarifications during Design and forms part of Bid and Contract Documents for above Project.
- 1.1.2. Except as otherwise specified herein, or as shown on accompanying Drawings, work required by this Tender Addendum shall be in accordance with Specifications dated May 11, 2026 and Drawings accompanying same.

## PART 2 - SPECIFICATIONS – PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP AND SPECIFICATIONS GROUP

### 2.1. SPECIFICATIONS REVISIONS

- 2.1.1. Specification pages listed below accompany and form part of this Tender Addendum.
- 2.1.2. Each revised Section voids and supersedes previously issued Section of same number in its entirety. Each page is marked at bottom with a "Revised & Reissued" entry that includes date of this issue.
- 2.1.3. Extent of new, revised and/or deleted text is defined by leading and trailing 1 symbol, as applicable.
- 2.1.4. A new Section is added with this issue. Each page is marked at bottom with an "Issued" entry that includes date of this issue.
- 2.1.5. Revised Sections and Pages:

Section Number	Rev No.	Section Title	Page Numbers
00 01 10	R2	Table of Contents	1 thru 3
07 46 16	R1	Aluminum Siding	1 thru 6
07 46 46	R0	Fiber-Cement Siding	1 thru 4
08 06 80	R2	Glazing Schedule	1 thru 4
08 53 13	R0	Vinyl Windows	1 thru 6
08 91 00	R1	Louvres	1 thru 7

<b>PROCUREMENT AND CONTRACTING REQUIREMENTS GROUP</b>					
<b>DIVISION 00 – PROCUREMENT AND CONTRACTING REQUIREMENTS</b>					
<b>INTRODUCTORY INFORMATION</b>					
<b>Section No.</b>	<b>Section Title</b>	<b>Rev. No.</b>	<b>Date</b>	<b>Consult.</b>	<b>Page No's</b>
00 00 01	PROJECT TITLE PAGE	--	2026-05-11	SQV	1 Only
00 01 05	LIST OF CONSULTANTS	00	2026-05-11	SQV	1 and 2
00 01 10	TABLE OF CONTENTS	00	2026-05-11	SQV	1 thru 4
00 01 15	LIST OF DRAWINGS	00	2026-05-11	SQV	1 Only
<b>PROCUREMENT REQUIREMENTS</b>					
00 30 00	AVAILABLE INFORMATION	R1	2026-06-01	SQV	1 and 2
<b>CONTRACTING REQUIREMENTS</b>					
00 63 13	REQUEST FOR INTERPRETATION FORM	00	2026-05-11	SQV	1 Only
00 65 37	MAINTENANCE MATERIAL FORM (SPECIMEN)	00	2026-05-11	SQV	1 Only
*00 70 00	"AGREEMENT BETWEEN OWNER AND CONSTRUCTION MANAGER – FOR SERVICES", "SCHEDULES TO THE AGREEMENT", "DEFINITIONS" AND "GENERAL CONDITIONS", STANDARD CONSTRUCTION DOCUMENT CCDC 2 – 2020				Not Enclosed
00 71 00	AMENDMENTS TO DEFINITIONS	00	2026-05-11	SQV	1 and 2
*00 73 10	SUPPLEMENTARY CONDITIONS	00			1 thru
00 95 01	TENDER ADDENDUM No: 3	R2	2026-06-01	SQV	1 Only
<b>SPECIFICATIONS GROUP</b>					
<b>GENERAL REQUIREMENTS SUBGROUP</b>					
<b>DIVISION 01 – GENERAL REQUIREMENTS</b>					
01 10 00	GENERAL REQUIREMENTS	00	2026-05-11	SQV	1 thru 4
01 30 00	ADMINISTRATIVE REQUIREMENTS	00	2026-05-11	SQV	1 thru 9
01 40 00	QUALITY REQUIREMENTS	00	2026-05-11	SQV	1 thru 7
01 50 00	TEMPORARY FACILITIES AND CONTROLS	R1	2026-06-01	SQV	1 thru 6
01 60 00	PRODUCT REQUIREMENTS	00	2026-05-11	SQV	1 thru 5
01 70 00	EXECUTION AND CLOSEOUT REQUIREMENTS	00	2026-05-11	SQV	1 thru 12
<b>FACILITY CONSTRUCTION SUBGROUP</b>					
<b>DIVISION 02 – EXISTING CONDITIONS</b>					
02 41 00	DEMOLITION AND SALVAGE	00	2026-05-11	SQV	1 thru 6
<b>DIVISION 03 – CONCRETE</b>					
03 10 00	CONCRETE FORM AND ACCESSORIES	00	2026-05-11	TSM	1 thru 3

03 20 00	CONCRETE REINFORCEMENT & ACCESSORIES	00	2026-05-11	TSM	1 thru 3
03 03 00	CAST-IN-PLACE CONCRETE	00	2026-05-11	TSM	1 thru 7
03 35 13	CONCRETE FLOOR FINISHING	00	2026-05-11	SQV	1 thru 3
<b><i>DIVISION 04 – MASONRY</i></b>					
04 05 12	MASONRY MORTAR AND GROUT	00	2026-05-11	TSM	1 thru 6
04 05 19	MASONRY ANCHORAGE AND REINFORCING	00	2026-05-11	TSM	1 thru 5
04 21 13	BRICK MASONRY	00	2026-05-11	TSM	1 thru 4
<b><i>DIVISION 05 – METALS</i></b>					
05 50 00	METAL FABRICATIONS	00	2026-05-11	SQV	1 thru 7
05 51 00	METAL STAIRS AND BALUSTRADES	R0	2026-06-01	SQV	1 thru 8
05 51 29	METAL STAIRS AND LADDERS	00	2026-05-11	TSM	1 thru 4
05 73 13	GLAZED DECORATIVE METAL RAILINGS	R1	2026-06-01	SQV	1 thru 10
<b><i>DIVISION 06 – WOOD, PLASTICS AND COMPOSITES</i></b>					
06 10 00	ROUGH CARPENTRY	00	2026-05-11	SQV	1 thru 4
06 17 53	SHOP – FABRICATED WOOD TRUSSES	00	2026-05-11	TSM	1 thru 4
06 40 00	ARCHITECTURAL WOODWORK	R0	2026-06-01	SQV	1 thru 6
06 90 00	GENERAL INSTALLATIONS	00	2026-05-11	SQV	1 thru 5
<b><i>DIVISION 07 – THERMAL AND MOISTURE PROTECTION</i></b>					
07 11 13	BITUMINOUS DAMPPROOFING	00	2026-05-11	SQV	1 thru 2
07 13 26	SELF-ADHERING SHEET WATERPROOFING	R1	2026-06-01	SQV	1 thru 6
07 16 16	CRYSTALLINE WATERPROOFING	R1	2026-06-01	SQV	1 thru 5
07 18 13	MECHANICAL ROOM WATERPROOFING	00	2026-05-11	SQV	1 thru 5
07 18 15	BALCONY WATERPROOFING	00	2026-05-11	SQV	1 thru 4
07 21 00	BUILDING INSULATION	00	2026-05-11	SQV	1 thru 7
07 21 19	FOAMED-IN-PLACE INSULATION	R1	2026-06-01	SQV	1 thru 3
07 25 00	MISCELLANEOUS AIR/VAPOUR BARRIERS	00	2026-05-11	SQV	1 thru 8
07 31 13	ASPHALT SHINGLES	R0	2026-06-01	SQV	1 thru 6
07 46 16	ALUMINUM SIDING SYSTEM	R1	2026-06-10	SQV	1 thru 6
07 46 19	METAL SIDING SYSTEM	R1	2026-06-01	SQV	1 thru 6
07 46 46	FIBER-CEMENT SIDING	R0	2026-06-10	SQV	1 thru 4
07 62 00	SHEET METAL FLASHING AND TRIM	00	2026-05-11	SQV	1 thru 4
07 84 00	FIRESTOPPING AND SMOKE SEALS	00	2026-05-11	SQV	1 thru 12
07 92 00	JOINT SEALANTS	00	2026-05-11	SQV	1 thru 10
<b><i>DIVISION 08 – OPENINGS</i></b>					
08 06 80	GLAZING SCHEDULE	R2	2026-06-10	SQV	1 thru 4
08 11 13	HOLLOW METAL DOORS AND FRAMES	00	2026-05-11	SQV	1 thru 9
08 14 00	WOOD DOORS	00	2026-05-11	SQV	1 thru 5
08 31 13	ACCESS DOORS AND FRAMES	00	2026-05-11	SQV	1 thru 5
08 36 13	SECTIONAL OVERHEAD DOORS	00	2026-05-11	SQV	1 thru 6

08 51 66	ALUMINUM WINDOW WALL	00	2026-05-11	SQV	1 thru 26
08 53 13	VINYL WINDOWS	R0	2026-06-10	SQV	1 thru 6
08 71 00	DOOR HARDWARE	R1	2026-06-01	SQV	1 thru 5
08 80 00	GLASS AND GLAZING	00	2026-05-11	SQV	1 thru 9
08 91 00	LOUVRES	R1	2026-06-10	SQV	1 thru 7
<b>DIVISION 09 – FINISHES</b>					
09 21 16	GYPSUM BOARD ASSEMBLIES	00	2026-05-11	SQV	1 thru 15
09 30 00	TILING	00	2026-05-11	SQV	1 thru 13
09 60 13	TACTILE WARNING SURFACING	00	2026-05-11	SQV	1 thru 4
09 91 00	PAINTING	00	2026-05-11	SQV	1 thru 15
<b>DIVISION 10 – SPECIALTIES</b>					
10 28 00	WASHROOM ACCESSORIES	R1	2026-06-01	SQV	1 thru 4
<b>DIVISION 11 – EQUIPMENT</b>					
11 30 13	APPLIANCES	00	2026-05-11	SQV	1 and 2
11 81 29	FACILITY FALL PROTECTION	R1	2026-06-01	SQV	1 thru 9
<b>DIVISION 12 – FURNISHINGS</b>					
<b>DIVISION 13 – SPECIAL CONSTRUCTION</b>					
13 48 00	ACOUSTIC ISOLATED FLOATING FLOORS	R1	2026-06-01	SQV	1 thru 3
<b>SITE AND INFRASTRUCTURE SUBGROUP</b>					
<b>DIVISION 31 – EARTHWORK</b>					
31 23 00	EXCAVATION AND FILL	00	2026-05-11	SQV	1 thru 7
31 23 20	EXCAVATION, TRENCHING, AND BACKFILL	00	2026-05-11	GWE	1 thru 5
<b>DIVISION 32 – EXTERIOR IMPROVEMENTS</b>					
32 17 23	PAVEMENT MARKINGS	00	2026-05-11	SQV	1 and 2
<b>DIVISION 33 – UTILITIES</b>					
33 31 16	PUBLIC SANITARY UTILITY SEWER PIPING	00	2026-05-11	GWE	1 thru 6
33 34 00	SANITARY SEWERAGE FORCE MAINS	00	2026-05-11	GWE	1 thru 5
33 46 13	FOUNDATION DRAINAGE	00	2026-05-11	SQV	1 and 2

**LEGEND**

\* - Specifications prepared by Consultants other than Square Vis Architects Inc. have been prefixed with an asterisk. These Specifications are not included under, nor governed by Square Vis Architects Inc.'s seal.

**PART 1 – GENERAL**

**1.1. GENERAL INSTRUCTIONS**

- 1.1.1. Read and conform to:
  - 1.1.1.1. CCDC 2 – 2020, Stipulated Price Contract as amended in the Contract Documents.
  - 1.1.1.2. Division 1 requirements and documents referred to therein.

**1.2. SUMMARY**

- 1.2.1. Section Includes: Provide aluminum siding system including but not limited to following:
  - 1.2.1.1. 1... aluminum siding (V-Groove Planks Style) ... 1
  - 1.2.1.2. sub-girts.
  - 1.2.1.3. closures, flashings and corner stiffeners.
  - 1.2.1.4. caulking and sealants.
  - 1.2.1.5. backpainting.
- 1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
  - 1.2.2.1. Provision of “Maintenance Material Form” for receiving extra/spare material for Owner’s future use: Section 00 65 37, Maintenance Material Form (Specimen).
  - 1.2.2.2. Provision of structural steel studs and exterior sheathing: Section 05 41 00, Structural Steel Stud Framing System.
  - 1.2.2.3. Provision of air/vapour barrier system: Section 07 25 00, Miscellaneous Air/Vapour Barriers.
  - 1.2.2.4. Sealing of joints between siding and adjacent construction: Section 07 92 00, Joint Sealants.

**1.3. REFERENCES**

- 1.3.1. Abbreviations and Acronyms:
  - 1.3.1.1. PVDF: Polyvinylidene Fluoride.
- 1.3.2. Reference Standards:
  - 1.3.2.1. AAMA 2604-22
    - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusion and Panels (with Coil Coating Appendix)
  - 1.3.2.2. ASTM B117-19
    - Standard Practice for Operating Salt Spray (Fog) Apparatus
  - 1.3.2.3. ASTM B209/B209M-21
    - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
  - 1.3.2.4. ASTM B221M-21
    - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)
  - 1.3.2.5. ASTM B244-09(21)
    - Standard Test Method for Measurement of Thickness of Anodic Coatings on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments
  - 1.3.2.6. ASTM D523-14(18)
    - Standard Test Method for Specular Gloss
  - 1.3.2.7. ASTM D714-02(17)
    - Standard Test Method for Elevating Degree of Blistering of Paints

- |           |                   |  |
|-----------|-------------------|--|
| 1.3.2.8.  | ASTM D968-22      | - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive                                      |
| 1.3.2.9.  | ASTM D2244-22     | - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates |
| 1.3.2.10. | ASTM D2247-15(20) | - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity                                       |
| 1.3.2.11. | ASTM D3363-22     | - Standard Test Method for Film Hardness by Pencil Test  |
| 1.3.2.12. | ASTM D4214-07(15) | - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films  |

**1.4. SUBMITTALS**

- 1.4.1. Product Data: Submit Product data sheets on each Product being used, including:
- 1.4.1.1. preparation instructions and recommendations.
  - 1.4.1.2. storage and handling requirements and recommendations.
  - 1.4.1.3. installation methods.
- 1.4.2. Shop Drawings: Submit Shop Drawings for fabrication and installation of aluminum siding in accordance with Section 01 30 00. Show materials, gauges, dimensions, layouts and installation details.
- 1.4.3. Samples: Submit 2 – 300 mm (12") long sample sections of (each) siding profile and (each) colour specified. Ensure finished work matches reviewed samples in colour, gloss and texture.

**1.5. CLOSEOUT SUBMITTALS**

- 1.5.1. Operational and Maintenance Data: Submit maintenance instructions to Owner for recommended cleaning materials and methods for panels and trim.

**1.6. MAINTENANCE MATERIAL SUBMITTALS**

- 1.6.1. Extra Stock Materials:
- 1.6.1.1. Supply to Owner at completion of job, full size metal siding panels equaling 2% of amount installed as spare siding paneling of each colour, packaged in original cartons. Ensure maintenance materials are from same production run as installed materials.
  - 1.6.1.2. Supply to Owner at completion of job, quantity of each grid and exposed component equaling 2% of amount installed as spare, packaged in original cartons. Execute Section 00 65 37.

**1.7. QUALITY ASSURANCE**

- 1.7.1. Qualifications:
- 1.7.1.1. 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.
- 1.7.2. Mock-Ups: Construct minimum 10 m<sup>2</sup> (100 sq ft) mock-up sample at Project location designated by Consultant for review. Once reviewed with no objections recorded, sample remains part of finished work and used as a quality reference standard for balance of Project.

**1.8. DELIVERY, STORAGE AND HANDLING**

- 1.8.1. Delivery and Acceptance Requirements: Conduct transport of materials to site storage compound in such a manner to prevent in-transit damage. These measures include, but are not limited to crating, polyethylene wrapping system, etc.
- 1.8.2. Storage and Handling Requirements:
- 1.8.2.1. Store materials on site in a manner to prevent damage thereto, or deterioration of finish.
- 1.8.2.2. Stockpile panels tilted to provide water run-off, free from ground contact on firm, level, non-staining supports extending full width of sheet and spaced not more than 450 mm (36") apart. Where possible, pile individual sheets or panel length and types separately. Cover components with opaque polyethylene sheet to protect from direct sunlight and moisture penetration. Vent to allow air movement.

**PART 2 – PRODUCTS****2.1. MANUFACTURERS**

- 2.1.1. Manufacturer List: Products of following manufacturers are permitted subject to conformance to requirements of Drawings, Schedules and Specifications:
- 2.1.1.1. Alumarch Aluminum Architectural Products; [www.alumarch.com](http://www.alumarch.com)
- 2.1.1.2. Longboard® Architectural Products; [www.longboardproducts.com](http://www.longboardproducts.com)
- 2.1.1.3. **1...** Vedrex; [www.vedrex.ca](http://www.vedrex.ca)
- 2.1.2. Substitution Limitations: This Specification is based on Longboard Architectural Products "Cladding 6" V-Groove Planks". Comparable Products from manufacturers listed or not listed herein may be reviewed provided they meet requirements of this Specification. **... 1**

**2.2. MATERIALS**

- 2.2.1. **1...** Aluminum Cladding and Components:
- 2.2.2. 6-inch (152mm) V-Groove planks extruded aluminum 6063 T5
- 2.2.3. Finish coating: powder coated finish
- 2.2.4. Color: Dark Cherry
- 2.2.5. Gloss: 30 ± 5
- 2.2.6. Thickness: 1/16 inch (1.57mm) base metal thickness
- 2.2.7. Profile: 6-inch (152mm) V-Groove X 24 ft (7315.2mm) plank
- 2.2.8. Accessories:
- 2.2.9. Trim Components: Starter Strip, Back-to-Back Starter, 5/8" Starter J-Track, 5/8" J-Track, 5/8" Two Piece J-Track, 7/8" J-Track, 7/8" Two Piece J-Track, 1-3/8" Two Piece J-Track, 3/4" Inside Corner, 1" Outside Corner, 2" Corner Set, 3/16" Outside Corner, 3" Smooth Corner, 3" V-Groove Corner, 5/8" Termination Set, 7/8" Termination Set, 1-3/8" Termination Set, 1/2" Flat Reveal, 3/4" U-Reveal Set, 1-1/2" U-Reveal Set, 1-1/2" Flat Reveal Set, 3/4" T&G U-Reveal, 1-1/2" T&G U-Reveal, 1/2" T&G Flat Reveal, 2" Offset Flat Reveal, in same material and finishes as ceiling planks.
- 2.2.10. Plank Clips: 316 Stainless steel Quick-Screen Clips that are shipped loose for field installation.
- 2.2.11. Fastening: Butt-Joint Fastening Kit (Aluminum backing plate & 4 x rivets), 1/16" U-Shims. **...1**
- 2.2.12. Performance/Design Criteria:
- 2.2.12.1. Design aluminum siding and fasteners to support a positive wind load of 0.9 kN/m<sup>2</sup> (20 psf) and a negative wind load of 0.5 kN/m<sup>2</sup> (12 psf), with maximum deflection of L/180 of the span at full load.

- 2.2.12.2. Movement: Accommodate movement within system without damage to components or movement within system; movement between system and perimeter components when subject to seasonal temperature cycling; dynamic loading and release of loads; deflection of structural support framing.
- 2.2.12.3. Drainage: Provide positive drainage to exterior for moisture entering or condensation occurring within panel system.
- 2.2.13. Aluminum Extrusions: ASTM B221M, minimum 3 mm (1/8") wall thickness, size accurately formed as shown on Drawings, extruded aluminum alloy AA-6063-T6 for aluminum. Ensure surfaces are free from defects impairing appearance, strength and durability.
- 2.2.14. Aluminum Sheet: ASTM B209/B209M, minimum thickness 0.635 mm (0.025") of type and characteristics to match finished extrusions; ensure sheet which is not exposed is Utility Aluminum mill finished; for intricate forming with decorative finishes use AA-1100 and for siding and exposed panels use AA-3003 with specified finish.
- 2.2.15. Extruded Aluminum Siding (Battens):
- 2.2.15.1. Sizes:
- 2.2.4.1.1. Batten Base: 50 mm x 50 mm x 5650 mm (2" x 2" x 18'-6").
- 2.2.4.1.2. Batten: 50 mm x 50 mm x 5650 mm (2" x 2" x 18'-6").
- 2.2.4.1.3. Batten: 50 mm x 200 mm x 5650 mm (2" x 8" x 18'-6").
- 2.2.4.1.4. Batten Cap: 50 mm x 200 mm (2" x 8").
- 2.1.1.1. Permitted Product: "Knotwood Batten System" by Alumarch Aluminum Architectural Products.
- 2.1.2. Finishes: Provide 1 of following systems:
- 2.1.2.1. 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: "Duramar" by PPG Industries; [www.ppgideascape.com](http://www.ppgideascape.com) or "Fluropon® Classic" by Sherwin-Williams Coil Coatings; [www.coil.sherwin.com](http://www.coil.sherwin.com) with following characteristics:

Description	Performance Characteristics
-------------	-----------------------------

- |                                     |  |
|-------------------------------------|--|
| 2.1.2.1.1. Coating Thickness:       | 0.0063 +/- 0.0013 mm (0.25 mil +/- 0.05 mils) primer<br>0.025 mm (1.0 mil) colour coat |
| 2.1.2.1.2. Pre-Treatment:           | Multi-Stage Cleaning with Chemical Conversion Coating                                  |
| 2.1.2.1.3. Gloss (ASTM D523 @ 60°): | Low and medium gloss   |
| 2.1.2.1.4. Pencil Hardness          | (ASTM D3363): F minimum  |
| 2.1.2.1.5. Abrasion Resistance      | Falling Sand (ASTM D968): 20 l/ml  |
| 2.1.2.1.6. Acid Resistance          | 10% Muriatic Acid Spot Test: 15 minutes — no attack                                    |



2.1.2.1.7. Alkali Resistance Mortar

Pat Test 100% R.H. @ 100°F: 24 hours — no attack

2.1.2.1.8. Colour Retention

0 yrs, 45° South Florida

(ASTM D2244):  $\Delta E < 5.0$ 

2.1.2.1.9. Humidity Resistance:

ASTM D714, ASTM D2247,

4000 hrs, 100% R.H. @ 100°F: Few #8 blisters maximum

2.1.2.1.10. Salt Spray Resistance:

ASTM B117, 4000 hrs

5% NaCl @ 100°F: 1/16" maximum undercutting

2.1.2.1.11. Chalking Resistance:

10 yrs, 45° South Florida

(ASTM D4214): No more than #8 (#6 for Whites)

2.1.2.1.12. Erosion Resistance:

10 yrs, 45° South Florida

(ASTM B244): Maximum 5%

2.2.15.2. High Performance Coating Finish Process: (1 Coat Dry System) meeting or exceeding AAMA 2604. Permitted Product: "Interpon D2000 Ultra Durable Polyester Powder Coating" by Akzo Nobel Coatings, Inc.; [www.akzonobel.com](http://www.akzonobel.com) with following characteristics:

2.2.15.2.1. Coating Thickness: 0.060 mm to 0.115 mm (2.4 mils to 4.5 mils) with no reading less than 0.045 mm (1.8 mils)

2.2.15.2.2. Pre-Treatment: Multi-Stage Cleaning with Chemical Conversion Coating

2.2.5.2.3. Gloss (ASTM D523 @ 60°): 20% – 80%

2.2.5.2.4. Pencil Hardness

(ASTM D3363): F minimum

2.2.5.2.5. Abrasion Resistance

Falling Sand (ASTM D968): 40 l/ml

2.2.5.2.6. Acid Resistance

10% Muriatic Acid Spot Test: 15 minutes — no attack

2.2.5.2.7. Alkali Resistance Mortar

Pat Test 100% R.H. @ 100°F: 24 hours — no attack

2.2.5.2.8. Colour Retention

0 yrs, 45° South Florida

(ASTM D2244):  $\Delta E < 5.0$ 

2.2.5.2.9. Humidity Resistance

ASTM D714, ASTM D2247,

3000 hrs, 100% R.H. @ 100°F: Few #8 blisters maximum

2.2.5.2.10. Salt Spray Resistance

ASTM B117, 4000 hrs

5% NaCl @ 100°F: 1/16" maximum undercutting

2.2.5.3. Colours and Sheens: To be selected by Consultant. Include for texture and specialty finishes.

**PART 3 – EXECUTION****3.1. EXAMINATION**

3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.

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**PART 1 – GENERAL**

**1.1. GENERAL INSTRUCTIONS**

- 1.1.1. Read and conform to:
  - 1.1.1.1. CCDC 2 – 2020, Stipulated Price Contract as amended in the Contract Documents.
  - 1.1.1.2. Division 1 requirements and documents referred to therein.

**1.2. SUMMARY**

- 1.2.1. Section Includes: Fiber Cement Plank Lap Siding.
- 1.2.2. Trim, Fascia, Molding, and Accessories.

**1.3. REFERENCES**

- 1.3.1. ASTM C1185, Standard Test Methods for Sampling and Testing Fiber-Cement Flat Sheet, Roofing and siding Shingles, and Clapboards; 2023.
- 1.3.2. AASTM C1186, Standard Specification for Flat Fiber-Cement Sheets; 2022, with 2023 Editorial Revision.
- 1.3.3. ASTM D3359, Standard Test Methods for Rating Adhesion by Tape Test; 2023.
- 1.3.4. ASTM E84, Standard Test Method for Surface Burning Characteristics of Building Materials; 2020.
- 1.3.5. ASTM E119, Standard Test Methods for Fire Tests of Building Construction and Materials; 2024.
- 1.3.6. ASTM E136, Standard Test Method for Assessing Combustibility of Materials Using a Vertical Tube Furnace at 750 Degrees C; 2022.
- 1.3.7. ASTM E330/E330M, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2021.
- 1.3.8. ICC-ES Evaluation Reports ESR-2290 and ESR-2273 (IBC, IRC, CBC, CRC); Current Editions.

**1.4. SUBMITTALS**

- 1.4.1. Product Data: Submit Product data sheets on each Product being used, including:
  - 1.4.1.1. Product data sheets
  - 1.4.1.2. Storage and handling requirements
  - 1.4.1.3. Preparation instructions
  - 1.4.1.4. Installation instructions
  - 1.4.1.5. Operation and maintenance instructions
- 1.4.2. Shop Drawings: Submit Shop Drawings for fabrication and installation in accordance with Section 01 30 00. Show dimensions, layout, joints, construction details and specifications.
- 1.4.3. Samples: Submit 2 minimum 4-inch x 6-inch (100 mm x 150 mm) representing selected product, color, texture, and patterns for each finish product specified.

**1.5. CLOSEOUT SUBMITTALS**

- 1.5.1. Operational and Maintenance Data: Submit maintenance instructions to Owner for recommended cleaning materials and methods for panels and trim.

**1.6. MAINTENANCE MATERIAL SUBMITTALS**

- 1.6.1. Extra Stock Materials:
  - 1.6.1.1. Supply to Owner at completion of job, full size siding panels equaling 2% of amount installed as spare siding paneling of each colour, packaged in original cartons. Ensure maintenance

materials are from same production run as installed materials.

- 1.6.1.2. Supply to Owner at completion of job, quantity of each grid and exposed component equaling 2% of amount installed as spare, packaged in original cartons. Execute Section 00 65 37.

**1.7. WARRANTY**

- 1.7.1. Manufacturer Warranty: Plank, Soffit, and Trim: 30-year Warranty. Color-Plus Finish: 15-year Warranty. When installed and maintained in accordance with manufacturer's written requirements, warranty for 15-years from date of purchase covering peeling, cracking, and chipping.

**1.8. QUALITY ASSURANCE**

- 1.8.1. Qualifications:

- 1.8.1.1. 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.

- 1.8.2. Mock-Ups: Construct minimum 48-inches wide x 60-inches high or similar area as fits the layout of the building exterior

- 1.8.3. Include outside corner on one end of mockup and inside corner on the other end.

- 1.8.4. Finish areas designated by Architect.

- 1.8.5. Obtain approval of mock-up from Architect prior to commencement of Work.

**1.9. DELIVERY, STORAGE AND HANDLING**

- 1.9.1. Delivery and store products in manufacturer's unopened packaging with labels intact until ready for installation.

- 1.9.2. Store siding flat on a smooth level surface and carry on its side.

- 1.9.3. Protect edges and corners from chipping.

- 1.9.4. Store materials under dry, waterproof, well-ventilated cover, elevated above grade, and kept dry prior to installation.

- 1.9.5. Store and dispose of solvent-based materials, and materials used with solvent-based materials, in accordance with requirements of the Authorities Having Jurisdiction

- 1.9.6. Protect materials from damage, dust, or other detrimental conditions.

- 1.9.7. Field Conditions: Maintain environmental conditions including temperature, humidity, and ventilation in accordance with the limits indicated in the manufacturer's written instructions.

- 1.9.8. Do not install products in conditions outside of the manufacturer's stated limits.

**PART 2 – PRODUCTS**

**2.3. MANUFACTURERS**

- 2.3.1. Manufacturer List: Products of following manufacturers are permitted subject to conformance to requirements of Drawings, Schedules and Specifications:

- 2.3.1.1. James Hardie Building Products, Inc.; Hardie Plank Lap Siding; [www.jameshardie.com](http://www.jameshardie.com)

- 2.3.2. Substitution Limitations: Comparable Products from manufacturers listed or not listed herein may be reviewed provided they meet requirements of this Specification.

**2.4. MATERIALS**

- 2.4.1. Fiber Cement Vented Soffit Panels:

- 2.4.2. Type A, Grade II, ASTM C1186.

- 2.4.3. Non-combustible Material, ASTM E136.
- 2.4.4. Flame Spread Index: 0, ASTM E84.
- 2.4.5. Smoke Developed Index: <5, ASTM E84.
- 2.4.6. Net Free Ventilation: 5-square inches per linear foot (10583 sq. mm per linear meter).
- 2.4.7. Thickness: ¼-inch (6 mm).
- 2.4.8. Type: Smooth 12-inches (305 mm) x 12-feet (3658 mm).
- 2.4.9. Color: Midnight Black
- 2.4.10. Accessories: Hardie Trim Trim Boards; [www.jameshardie.com](http://www.jameshardie.com)
- 2.4.11. Batten Board: 2-1/2 inch (63 mm) width.
- 2.4.12. 5/4 Boards: 5-1/2 inch (140 mm) width.
- 2.4.13. Color: Midnight Black
- 2.4.14. Texture: Smooth
- 2.4.15. Length: 12-feet (3658 mm).
- 2.4.16. Thickness: ¾-inch (19 mm) x 1-inch.
- 2.4.17. Seam Tape: HardieWrap
- 2.4.18. Flashing: HardieWrap Flashing Tape, HardiWrap Flex Flashing Tape
- 2.4.19. Wood Framing Fasteners:
- 2.4.20. 4d common corrosion resistant nails.
- 2.4.21. 6d common corrosion resistant nails.
- 2.4.22. 8d box ring common corrosion resistant nails.
- 2.4.23. 0.089-inch (2.2 mm) shank x 0.221-inch (5.6 mm) head x 2-inches (51 mm) corrosion resistant siding nails.
- 2.4.24. 0.093-inch (2.4 mm) shank x 0.222-inch (5.6 mm) head x 2-inches (51 mm) corrosion resistant siding nails.
- 2.4.25. 0.093-inch (2.4 mm) shank x 0.222-inch (5.6 mm) head x 2-1/2 inches (64 mm) corrosion resistant siding nails.
- 2.4.26. 0.091-inch (2.3 mm) shank x 0.221-inch (5.6 mm) head x 1-1/2 inches (38 mm) corrosion resistant siding nails.
- 2.4.27. 0.091-inch (2.3 mm) shank x 0.225-inch (5.7 mm) head x 1-1/2-inches (38 mm) corrosion resistant siding nails.
- 2.4.28. 0.121-inch (3 mm) shank x 0.371-inch (9.4 mm) head x 1-1/4 inches (32 mm) corrosion resistant roofing nails.
- 2.4.29. No. 11 gauge 1-1/4 inches (32 mm) corrosion resistant roofing nails.
- 2.4.30. No. 11 gauge 1-1/2 inches (38 mm) corrosion resistant roofing nails.
- 2.4.31. No. 11 gauge 1-3/4 inches (44 mm) corrosion resistant roofing nails.
- 2.4.32. 16 gauge 1-1/2 inches (38 mm) stainless finish nails.
- 2.4.33. Masonry Walls: Aerico Stud Nail, ET&F ASM No. 144-125, 0.14-inch (3.6 mm) shank x 0.30-inch (7.6 mm) head by 2-inches (51 mm) long corrosion resistant nails.

## PART 3 – EXECUTION

### 3.1. EXAMINATION

- 3.1.1. Do not begin installation until substrates have been properly prepared.
- 3.1.2. Examine substrate, clean and repair to eliminate conditions detrimental to installation.
- 3.1.3. Do not commence with the Work until unacceptable conditions are remedied.

3.1.4. Verify that weather barrier is installed over substrate and ready to receive the Work.

3.1.5. If framing preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation prior to commencement of Work.

**3.2. PREPARATION**

3.2.1. Surface Preparation: Clean surfaces thoroughly prior to installation.

3.2.2. Prepare surfaces using methods recommended by manufacturer's written requirements.

3.2.3. Protect surrounding work areas and surface during installation.

3.2.4. Repair punctures or tears in weather barrier prior to installation of siding.

3.2.5. Weather Barrier: See Section 07 25 00, Weather Barriers. Ensure weather barrier is installed with penetration and junction flashing in accordance with manufacturer's written requirements and the Authorities Having Jurisdiction.

**3.3. INSTALLATION**

3.3.1. Install in strict accordance with manufacturer's written installation instructions at locations shown on Drawings.

3.3.2. Panels may be installed as soffit or ceiling over wood or steel framing.

3.3.3. 20-gauge (33 mil) minimum to 16-gauge (54 mil) in compliance with the Authorities Having Jurisdiction.

3.3.4. Additional framing may be necessary to ensure proper fastening of siding.

3.3.5. Finishing: Finish in accordance with paint manufacturer's written application instructions.

3.3.6. Finish unprimed siding with a minimum of one coat of manufacturer approved primer and one coat of 100 percent acrylic exterior grade topcoat or two coats of manufacturer approved high quality alkali resistant 100 percent acrylic exterior grade topcoat within 90-days of installation

3.3.7. Finish factory primed siding with a minimum of one coat of manufacturer approved high quality 100 percent acrylic exterior grade paint within 180-days of installation.

**3.4. SITE QUALITY CONTROL**

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

3.4.2. Protect installed products until date of Substantial Completion.

3.4.3. Touch-up, repair or replace damaged areas prior to date of Substantial Completion.

**3.5. CLEANING**

3.5.1. Leave siding work clean and free of grime, dirt and sealant stains. Remove stains on adjacent work of other trades resulting from sealant work.

3.5.2. Clean siding in accordance with manufacturer's written instructions using materials and methods acceptable to manufacturer.

**END OF SECTION**

**PART 1 – GENERAL**

**1.1. GENERAL INSTRUCTIONS**

- 1.1.1. Read and conform to:
  - 1.1.1.1. CCDC 2 – 2020, Stipulated Price Contract as amended in the Contract Documents.
  - 1.1.1.2. Division 1 requirements and documents referred to therein.

**1.2. SUMMARY**

- 1.2.1. Section Includes: Provide glazing schedule including but not limited to following:
  - 1.2.1.1. vision glass types (VG).
  - 1.2.1.2. spandrel glass types (SG).
  - 1.2.1.3. miscellaneous glass types (GL).
- 1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
  - 1.2.2.1. Installation of glazing units: Section 05 73 13, Glazed Decorative Metal Railings.
  - 1.2.2.2. Installation of glazing units: Section 08 11 13, Hollow Metal Doors and Frames.
  - 1.2.2.3. Installation of glazing units: Section 08 14 00, Wood Doors.
  - 1.2.2.4. Installation of glazing units: Section 08 44 13, Glazed Aluminum Curtain Wall.
  - 1.2.2.5. Installation of glazing units: Section 08 51 66, Aluminum Window Wall.
  - 1.2.2.6. Installation of glazing units: Section 08 80 00, Glass and Glazing.

**1.3. REFERENCES**

- 1.3.1. Abbreviations and Acronyms:
  - 1.3.1.1. CGL: Clear Float Glass.
  - 1.3.1.2. FGIA: Fenestration & Glazing Industry Alliance; [www.fgiaonline.org](http://www.fgiaonline.org).
  - 1.3.1.3. HSGL: Heat-Strengthened Glass.
  - 1.3.1.4. LGL: Laminated Glass.
  - 1.3.1.5. PVB: Polyvinyl Butyral.
  - 1.3.1.6. TGL: Tempered Glass.
- 1.3.2. Reference Standards:
  - 1.3.2.1. CAN/CGSB-12.8-97 - Insulating Glass Units
  - 1.3.2.2. CAN/CGSB-12.9-M87 - Spandrel Glass

**1.4. SUBMITTALS**

- 1.4.1. Samples:
  - 1.4.1.1. Submit samples of materials in accordance with Section 01 30 00 identifying quality and type of glass before commencing work. Ensure samples are clearly labelled with manufacturer's name and type.

- 1.4.1.2. Submit following samples:
- 1.4.1.2.1. 300 mm x 300 mm (12" x 12") tempered glass.
- 1.4.1.2.2. 300 mm x 300 mm (12" x 12") laminated glass.
- 1.4.1.2.3. Vision Glass (VG): 300 mm x 300 mm (12" x 12") of each VG glass unit type complete with specified glass pane types and thicknesses, Low 'E' coating, ceramic frit as required, spacer, primary and secondary seals in colour indicated.
- 1.4.1.2.4. Spandrel Glass (SG): 300 mm x 300 mm (12" x 12") of each SG glass unit type complete with specified glass pane types and thicknesses, Low 'E' coating, water-based silicone coating, spacer, primary and secondary seals in colour indicated.

## **1.5. WARRANTY**

- 1.5.1. Manufacturer Warranty: Warrant factory sealed insulating units against defects for a period of 10 years. Warrant factory sealed insulating units free from condensation, fogging of material, obstruction of vision as result of dust or film formation on internal glass surfaces by any cause, under normal conditions anticipated under this Project, other extrinsic glass breakage, but including breakage due to thermal shock and temperature differential due to inherent glass or glazing fault.

## **PART 2 – PRODUCTS**

### **2.1. MANUFACTURERS**

- 2.1.1. Manufacturer List for Insulated Glass Units: Products of following manufacturers are permitted subject to conformance to requirements of Drawings, Schedules and Specifications:
  - 2.1.1.1. Oldcastle Building Envelope; [www.obe.com](http://www.obe.com)
  - 2.1.1.2. Prelco; [www.prelco.ca](http://www.prelco.ca)
  - 2.1.1.3. Saand Inc.; [www.saand.ca](http://www.saand.ca)
  - 2.1.1.4. Trulite Glass & Aluminum Solutions, LLC; [www.trulite.com](http://www.trulite.com)
  - 2.1.1.5. Viracon; [www.viracon.com](http://www.viracon.com)

### **2.2. MATERIALS**

- 2.2.1. Glazing Materials:
  - 2.2.1.1. For glass material types, refer to "Related Sections" specified herein.
  - 2.2.1.2. Primary Seal: Provide a polyisobutylene based sealant exhibiting excellent long-term stability remaining permanently flexible, even at low temperatures, "ADOTHERM™ PIB Series" by ADCO; [www.adcocorp.com](http://www.adcocorp.com). Provide in black or grey colour as selected by Consultant.
  - 2.2.1.3. Secondary Seal: Provide 1 of following:
    - 2.2.1.3.1. 2 component high-modulus elastomeric silicone sealant. Provide in colour specified herein.
    - 2.2.1.3.2. 1 component high-modulus, moisture cure elastomeric silicone sealant. Provide in colour specified herein.
  - 2.2.1.4. Low Emissivity Glass Coating (Low 'E'): To glass units specified herein, as applicable and unless otherwise designated apply Low 'E' coating to No. 2 surface of a sealed insulating glass unit to meet criteria specified herein. Permitted manufacturers and applicators of Low 'E' coatings are AGC Glass Company North America; [www.agc-yourglass.com](http://www.agc-yourglass.com), Cardinal Glass Industries; [www.cardinalcorp.com](http://www.cardinalcorp.com), Guardian Industries Corp.; [www.guardianglass.com](http://www.guardianglass.com), Pilkington Building Products; [www.pilkington.com](http://www.pilkington.com), Viracon; [www.viracon.com](http://www.viracon.com) and Vitro Architectural Glass; [www.vitro.com](http://www.vitro.com). Uniformly apply Low 'E' coating to glass. Edge delete Low 'E' coating where silicone sealant is in contact with glass.

- 2.2.1.5. Factory sealed insulating glass units to requirements of CAN/CGSB-12.8 using dual seal. Maintain separation of panes with non-corrosive desiccant filled spacer core. Dehydrate air space and hermetically seal inner and outer panes at periphery with flexible sealer. Ensure thermal resistance of glazing system edge seals are minimum 0.06 m<sup>2</sup>•°C/W for units having service conditions of interior building relative humidity of greater than 35% and minimum 0.035 m<sup>2</sup>•°C/W for other areas.
- 2.2.1.6. Spandrel Glass with Opacifier: Conforming to CAN/CGSB-12.9-M, Type 2, Class A, Style 3 Organic Coated, Form M, monolithic heat strengthened with water-based coloured silicone coating with a minimum dry film thickness of 0.165 mm (6.5 mils), "OPACI-COAT-300®", Silicone Coating" by ICD High Performance Coatings; [www.icdcoatings.com](http://www.icdcoatings.com).
- 2.2.2. Fabrication: Manufacture factory sealed insulating glass units in accordance with FGIA's "IGMAC Certification Program Manual".

### **PART 3 – EXECUTION**

#### **3.1. GLAZING SCHEDULE**

##### **3.1.1. Vision Glass Types (VG):**

##### **3.1.1.1. Type VG-1: Factory sealed insulating glass unit assembly consisting of:**

- 3.1.1.1.1. Outboard Pane: minimum 8 mm (5/16") thick heat strengthened glass (HSGL).
- 3.1.1.1.2. Low 'E' Coating: "SunGuard® SuperNeutral SNR 50" by Guardian Industries on surface #2.
- 3.1.1.1.3. Air Space: 12.7 mm (1/2") thick 90% Argon filled.
- 3.1.1.1.4. Spacer: Black stainless steel.
- 3.1.1.1.5. Secondary Sealant Colour: Black.
- 3.1.1.1.6. Inboard Pane: minimum 6 mm (1/4") thick clear float glass (CGL).

##### **3.1.1.2. Type VG-2: Factory sealed insulating glass unit assembly consisting of:**

- 3.1.1.2.1. Outboard Pane: minimum 8 mm (5/16") thick heat strengthened glass (HSGL).
- 3.1.1.2.2. Low 'E' Coating: "SunGuard® SuperNeutral SNR 50" by Guardian Industries on surface #2.
- 3.1.1.2.3. Air Space: 12.7 mm (1/2") thick 90% Argon filled.
- 3.1.1.2.4. Spacer: Black stainless steel.
- 3.1.1.2.5. Secondary Sealant Colour: Black.
- 3.1.1.2.6. Ceramic Frit: pattern to meet bird friendly guidelines on surface #3.
- 3.1.1.2.7. Inboard Pane: minimum 6 mm (1/4") thick clear float glass (CGL).

##### **3.1.1.3. Type VG-3: Factory sealed insulating glass unit assembly consisting of:**

- 3.1.1.3.1. Outboard Pane: minimum 8 mm (5/16") thick heat strengthened glass (HSGL).
- 3.1.1.3.2. Low 'E' Coating: "SunGuard® Neutral 78/65" by Guardian Industries on surface #2.
- 3.1.1.3.3. Air Space: 12.7 mm (1/2") thick 90% Argon filled.
- 3.1.1.3.4. Spacer: Black stainless steel.
- 3.1.1.3.5. Secondary Sealant Colour: Black.
- 3.1.1.3.6. Ceramic Frit: pattern to meet bird friendly guidelines on surface #3.
- 3.1.1.3.7. Inboard Pane: minimum 6 mm (1/4") thick clear float glass (CGL).



~~3.1.2. Spandrel Glass Types (SG):~~

~~3.1.2.1. Type SG-1: Factory sealed insulating glass unit assembly consisting of:~~

~~3.1.2.1.1. Outboard Pane: minimum 8 mm (5/16") thick heat strengthened glass (HSGL).~~

~~3.1.2.1.2. Low 'E' Coating: "VRE-46" by Viracon on surface #2.~~

~~3.1.2.1.3. Air Space: 12.7 mm (1/2") thick 90% Argon filled.~~

~~3.1.2.1.4. Spacer: Stainless steel.~~

~~3.1.2.1.5. Secondary Sealant Colour: Black.~~

~~3.1.2.1.6. Coating: water based silicone coating opacifier in colour selected later by Consultant.~~

~~3.1.2.1.7. Inboard Pane: minimum 6 mm (1/4") thick tempered glass (TGL).~~

~~3.1.3. 1... Vision Glass Types (GL):~~

~~3.1.3.1. Type GL-1: Factory sealed insulating glass unit assembly consisting of:~~

~~3.1.3.2. Outboard Pane: minimum 6 mm (1/4") thick tempered glass (GLT).~~

~~3.1.3.3. Low 'E' Coating: SNR-50 by Guardian Industries on Surface #2.~~

~~3.1.3.4. Air Space: 12.7 mm (1/2") thick Argon filled.~~

~~3.1.3.5. Spacer: Black stainless steel.~~

~~3.1.3.6. Secondary Sealant Colour: Black ... 1~~

~~3.1.3.7. Type GLT: Single glass unit consisting of:~~

~~3.1.3.7.1. Glass Type: clear tempered glass (TGL) with pattern to meet bird friendly guidelines.~~

~~3.1.3.7.2. Glass Thickness: 6 mm (1/4").~~

~~3.1.3.8. Type GL-3: Laminated glass (LGL) unit consisting of:~~

~~3.1.3.8.1. Outboard Pane: 6 mm (1/4") thick clear heat strengthened glass (HSGL).~~

~~3.1.3.8.2. Interlayer: 1.6 mm (0.060") thick frosted PVB.~~

~~3.1.3.8.3. Inboard Pane: 6 mm (1/4") thick clear heat strengthened glass (HSGL).~~

**END OF SECTION**

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**PART 1 - GENERAL**

**1.1. GENERAL INSTRUCTIONS**

- 1.1.1. Read and conform to:
  - 1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.
  - 1.1.1.2. Division 1 requirements and documents referred to therein.

**1.1. SUMMARY**

- 1.2.1. Section Includes: Provide vinyl windows including but not limited to following
  - 1.2.1.1. Factory-fabricated vinyl fixed-over slider window
  - 1.2.1.2. membrane tie-ins to adjacent envelope assemblies ensuring full compatibility and insulation continuity.
  - 1.2.1.3. sealing joints within work of this Section, at abutting joints of this work and interface work of adjacent trades.
- 1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
  - 1.2.2.1. Provision of glazing types: Section 08 06 80, Glazing Schedule.
  - 1.2.2.2. Provision of gypsum board finish on interior side of window wall: Section 09 21 16, Gypsum Board Assemblies.

**1.1. REFERENCES**

- 1.3.1. ASTM E283: "Standard Test Measurement for Field Measurement of Air Leakage Through Installed Exterior Windows, Curtain Walls and Doors under Specified Pressure Differential across the Specimen".
- 1.3.2. ASTM E-330: Standard Test Method for Structural Performance of Exterior Windows, Curtain Walls and Doors by Uniform Static Air Pressure Difference".
- 1.3.3. ASTM E331: "Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference".
- 1.3.4. AAMA 501.1 "Standard Test Method for Water Penetration of Windows, Curtain Walls and Doors using Dynamic Pressure".
- 1.3.5. ASTM-E783: "Standard Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors".
- 1.3.6. ASTM E1105: "Test method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference".
- 1.3.7. ASTM--E1186: "Standard Practice for Air Leakage Site Detection in Building Envelopes and Air Barrier Systems:
- 1.3.8. AAMA/WDMA/CSA 101/I.S.2/A440-08 and 11 NAFS – North American Fenestration Standard /Specification for Window, Does and Skylights.
- 1.3.9. A440S1-09: Canadian Supplement to AAMA/WDMA/CSA 101/I.S.2/A440-08 NAFS – North American Fenestration Standard / Specification for Windows, Doors and Skylights.
- 1.3.10. Glazing Recommendations for sealed Insulating Units by Insulating Glass Manufacturers Alliance of Canada (IGMAC).
- 1.3.11. ANSI//NFRC 100 "Procedure for Determining Fenestration Product U – Factors".
- 1.3.12. ANSI//NFRC 200: "Procedure for Determining Fenestration Product Solar Heat Gain Coefficient and Visible Transmittance at Normal Incidence".

1.3.13. IGCC//IGMAC and CGSB 12.8-97 – Standard Specifications for Sealed Insulating.

1.3.14. IGCC - Classification of Insulating Glass Units; Insulated Glass Certification Council.

### **1.1. SUBMITTALS**

1.4.1. Shop Drawings:

1.4.1.1. Submit Shop Drawings for work of this Section in accordance with Section 01 30 00 for Consultant's review before any work is fabricated. In addition to minimum requirements indicate following:

1.4.1.1.1. Indicate with plans, sections, elevations and sufficient full size details to indicate components and methods of assembly, materials, finishes, colour and their characteristics relative to their purpose and other fabrication information.

1.4.1.1.2. Identify and describe material types and components being supplied, their manufacturers, wall thicknesses of extrusions and shapes including connections and grades, attachments, reinforcing, anchorage and locations of fastenings.

1.4.1.1.3. allowances for thermal and structural movement between components and thermal isolation materials.

1.4.1.1.4. line of airseal, water drainage, venting and water shed continuous, clearly shown and defined, including continuity of air seal and membrane flashing with adjacent trades.

1.4.1.2. Include description of materials, metal finishing specifications and other pertinent information.

1.4.2. Samples: Submit samples in accordance with Section 01 30 00. Submit following samples in the sizes indicated:

1.4.2.1. 1 samples, minimum 300 mm (12") square of each windows, with each specified glass.

### **1.1. QUALITY ASSURANCE**

1.5.1. Qualifications:

1.5.1.1. Insulating Glass Unit Fabricators: Ensure insulating glass unit fabricators have membership and certification in FGIA. Ensure FGIA members participate in certification program and successfully pass a Compliance Audit within last 6 months.

1.5.1.2. 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.

1.5.1.3. Sealant Certification:

1.5.1.3.1. Submit written certification from sealant manufacturer that sealant applications in specified systems have been reviewed and approved as completely appropriate for its intended uses in systems as shown and detailed on Shop Drawings, designating drawing number, date and revision, with regard to design criteria and other requirements of the Contract Documents and compatibility with components and adjacent materials together with life expectancy of sealant materials detailed and specified. Ensure specific reference is made to compatibility of glass edge seal with adjacent materials, together with life expectancy of sealant materials detailed and specified.

1.5.1.3.2. Submit Product information on the sealant to be used, complete with recommendations and installation instructions.

1.5.1.3.3. Ensure weather seal sealants are verified by SWRI in accordance with ASTM C719 and ASTM C661.

1.5.1.4. Provide each type of product from a single manufacturing source to ensure uniformity

1.5.2. Visual Mock-Ups:

1.5.2.1. Erect mock-up at designated location for Independent Consultant's and Consultant's review.

Provide mock-up for 1 complete occupancy unit minimum.

- 1.5.2.2. Mock-up will be tested by an independent inspection and testing company for meeting minimum for air and water infiltration and environmental separation performance requirements in accordance with recognized industry standards as determined, reviewed and approved by Independent Consultant.
- 1.5.2.3. Adjust mock-up at no extra cost to Owner as required to obtain no objections recorded of Independent Consultant and Consultant.
- 1.5.2.4. Mock-up when reviewed with no objections recorded, acts as minimum standard for balance of Work.
- 1.5.2.5. Mock-up may become part of permanent Work.

#### **1.1. DELIVERY, STORAGE AND HANDLING**

- 1.6.1. Delivery and Acceptance Requirements: Transport materials to site storage in a manner to prevent in-transit damage. These measures include, but are not limited to, crating, polyethylene wrapping system, etc.
- 1.6.2. Storage and Handling Requirements:
  - 1.6.2.1. Store in a dry, protected area on site, in original undamaged containers with manufacturer's labels and seals intact.
  - 1.6.2.2. Brace frames to maintain squareness and rigidity during shipment and installation.
  - 1.6.2.3. Provide glass units with interlayer protection between lites. Keep glass and interleaving dry and store cases in clean, cool, dry areas with temperatures above dewpoint. Circulation of cool, dry air in storage areas is essential. Open cases and inspect units periodically for moisture accumulation. Do not store glass in direct sunlight without an opaque protective covering over same.
  - 1.6.2.4. Remove damaged or unsatisfactory materials from site and replace with new materials to satisfaction of Consultant at no cost to Owner.
  - 1.6.2.5. Comply with unpacking procedures as recommended by framing and glass manufacturers.

#### **1.1. WARRANTY**

- 1.7.1. Manufacturer Warranty:
  - 1.7.1.1. Warrant work of this Section for a period of 5 years against labour and material defects and/or deficiencies in accordance with General Conditions of Contract. Promptly correct any defects or deficiencies which become apparent within warranty period (labour and materials required to repair or replace windows should air leakage or water ingress occur during warranty period), to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to air leakage and water ingress of windows, structurally sound and free from distortion, deflection, misalignment, continuity of air/vapour barrier, glass units are free from condensation, fogging of material, obstruction of vision, loosening of glazing and anchorage buckling, water penetration beyond air/vapour seal, fading, discolouration of finish, failure of glazing, joint sealant against staining, adhesion and cohesion, bond failure and extensive colour fading.
  - 1.7.1.2. Warrant water based silicone opacifier for a period of 10 years against defects and/or deficiencies in accordance with General Conditions of Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner.

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**PART 2 - PRODUCTS**

**2.1. MANUFACTURERS**

- 2.1.1. Manufacturer List: Products of following manufacturers are permitted subject to conformance to requirements of Drawings, Schedules and Specifications:
  - 2.1.1.1. Vinyl Window Designs; [www.vinylwindowdesigns.com](http://www.vinylwindowdesigns.com)
  - 2.1.1.2. Regal Windows & Doors; [www.regalaluminum.com](http://www.regalaluminum.com)
- 2.1.2. Manufacturer List for Insulated Glass Units: Refer to Section 08 06 80.

**2.2. MATERIALS**

- 2.2.1. Performance/Design Criteria:
- 2.2.2. Standards Compliance: CAN/CSA A440-00
- 2.2.3. Air: (A3) Maximum of 0.04 cfm/ft<sup>2</sup> (0.02 L/sm<sup>2</sup>) for FIXED and OPERABLE windows when tested under a pressure difference of 1.6PSF (75PA).
- 2.2.4. Water: Water Tightness Test Pressure in the Laboratory to 15 PSF (720 Pa).
- 2.2.5. Test Pressure in the Field to 2/3 of Laboratory test pressure when tested to ASTM E 1105-00 (CYCLED).
- 2.2.6. Structural: performance of window mullions and couplers: maximum deflection of L/175 at design wind pressure.
- 2.2.7. Wind Loads: Windows shall meet wind pressure loads as per geographical location and in accordance with relevant local building codes. Design Pressure for Project by Engineers per NAFS, minimum acceptable Class CW-PG 30.
- 2.2.8. Operable Windows to be equipped with Continuous Center Seal Technology employing a triple weather seal system. Center seal fusion bonded at each of the four corner joints.
- 2.2.9. Thermal Movement: Allow for thermal movement without causing buckling stresses on glass, joint seal failure, undue stress on structural elements, damaging loads on fasteners, reduction of performance, or detrimental effects.
- 2.2.10. Thermal Performance – Per NFRC 100, 200, & 500
  - 2.2.10.1. Frame:
    - 2.2.10.2. Multi-chamber uPVC vinyl construction for strength and energy efficiency
    - 2.2.10.3. Fusion-welded corners for a water and airtight seal, strength, and squareness
    - 2.2.10.4. Nominal frame depth: 4-5/8 inches
    - 2.2.10.5. Colour: Virgin Vinyl Extrusion Finish, Smooth, clean, Black
    - 2.2.10.6. Configuration:
      - 2.2.10.7. Fixed upper lite over horizontal sliding lower sash
      - 2.2.10.8. Operable sash to slide horizontally
      - 2.2.10.9. Integral pull rail and removable sash for cleaning
    - 2.2.10.10. Glazing:
      - 2.2.10.11. Factory-glazed insulated glass units
      - 2.2.10.12. Double-glazed sealed units, 7/8 inch overall thickness
      - 2.2.10.13. Low-E coating with Argon gas fill
      - 2.2.10.14. Tempered safety glazing where required by code

- 2.2.10.15. Hardware:
- 2.2.10.16. Manufacturer's standard cam locks
- 2.2.10.17. Corrosion-resistant rollers
- 2.2.10.18. Hidden tilt latches or lift-out sash hardware, as applicable to selected series
- 2.2.10.19. Window limiters at all Second-Storey Windows
- 2.2.10.20. Screens:
- 2.2.10.21. Full insect screen on operable sash
- 2.2.10.22. Fiberglass mesh in aluminum or vinyl frame
- 2.2.10.23. Accessories:
- 2.2.10.24. Interior jamb extensions as required
- 2.2.10.25. Vinyl brickmould and trim profiles where indicated
- 2.2.10.26. Fasteners, flashings, and sealant compatible with adjacent material

### **PART 3 - EXECUTION**

#### **3.1. EXAMINATION**

- 3.1.1. Verification of Conditions:
  - 3.1.1.1. Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.
  - 3.1.1.2. Ensure openings and recesses to receive work of this Section are within permitted tolerances.
- 3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

#### **3.2. INSTALLATION**

- 3.2.1. Install window frames, hardware, operators, accessories and other components according to the manufacturer's installation guidelines, shop drawings, and pre-installation orientation and training guidelines.
- 3.2.2. Install frames square, level and plumb.
- 3.2.3. Anchor frames in accordance with manufacturer's shop drawings and installation guidelines.
- 3.2.4. Coordinate installation with wall flashings and other components of the work.
- 3.2.5. Adjust operating sash and hardware for proper operation and to provide tight fit at contact points and weather-stripping. Remove and reinstall units that do not operate properly because they were not installed square, level and plumb.
- 3.2.6. Install insulation to rough opening clearance gaps as shown in the shop drawings.
- 3.2.7. Seal frame perimeter as shown in the relevant contract documents.

#### **3.3. SITE QUALITY CONTROL**

- 3.3.1. Field Test: Conduct field test if required by owner/architect to determine water tightness of window and door system. Field test to be performed in accordance to ASTM E 1105-00 (CYCLED), after test frame has been adjusted, cleaned and lubricated according to manufacturer's testing guidelines. Water penetration resistance tests shall be conducted at a static pressure equal to 2/3 (0.667) of the test pressure specified for the applicable product designation.

#### **3.4. CLEANING**

- 3.4.1. Clean work of this Section in accordance with "Cleaning Procedure" as recommended by the manufacturer and as recommended by finish applicator.

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- 3.4.2. Clean and polish glass in accordance with GANA 01-0300 including removal of markings indicating presence of glass.

**3.5. PROTECTION**

- 3.5.1. Protect finishes with strippable coating that will not mar, nor deface finish on removal, or a similar method designed to afford an equivalent amount of protection. Leave protected coating intact until damage risk is past or immediately prior to final cleaning.
- 3.5.2. In addition to foregoing, ensure finish surfaces are protected by adequate covering to ensure no detrimental effect on any and contaminants or other effects or elements.

**END OF SECTION**

**PART 1 - GENERAL**

**1.1. GENERAL INSTRUCTIONS**

- 1.1.1. Read and conform to:
  - 1.1.1.1. CCDC 2 - 2020, Stipulated Price Contract as amended in the Contract Documents.
  - 1.1.1.2. Division 1 requirements and documents referred to therein.

**1.2. SUMMARY**

- 1.2.1. Section Includes: Provide louvres including but not limited to following:
  - 1.2.1.1. additional steel support framing.
  - 1.2.1.2. extruded aluminum prefinished wall louvres.
  - 1.2.1.3. bird screens.
  - 1.2.1.4. caulking.
- 1.2.2. Related Sections: Following description of work is included for reference only and shall not be presumed complete:
  - 1.2.2.1. Provision of concrete walls: Section 03 30 00, Cast-In-Place Concrete.
  - 1.2.2.2. Provision of masonry walls: Section 04 20 00, Masonry Units.
  - 1.2.2.3. Provision of louvres within curtain wall system: Section 08 44 13, Glazed Aluminum Curtain Wall.
  - 1.2.2.4. Provision of louvres within window wall system: Section 08 51 66, Aluminum Window Wall.

**1.3. REFERENCES**

- 1.3.1. Abbreviations and Acronyms:
  - 1.3.1.1. AMCA: Air Movement and Control Association International, Inc.; [www.amca.org](http://www.amca.org).
  - 1.3.1.2. PVDF: Polyvinylidene Fluoride.
  - 1.3.1.3. SSPC: The Society for Protective Coatings (formerly known as Steel Structures Painting Council); [www.sspc.org](http://www.sspc.org).
- 1.3.2. Reference Standards:
  - 1.3.2.1. AAMA 2605-22
    - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusion and Panels (with Coil Coating Appendix)
  - 1.3.2.2. AMCA 500-L-12(15)
    - Laboratory Methods of Testing Louvers for Rating
  - 1.3.2.3. AMCA 511-21
    - Certified Ratings Program – Product Rating Manual for Air Control Devices
  - 1.3.2.4. ASTM A653/A653M-22
    - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
  - 1.3.2.5. ASTM B117-19
    - Standard Practice for Operating Salt Spray (Fog) Apparatus
  - 1.3.2.6. ASTM B209/B209M-21
    - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate
  - 1.3.2.7. ASTM B221M-21
    - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric)



- |           |                   |  |
|-----------|-------------------|--|
| 1.3.2.8.  | ASTM B244-09(14)  | - Standard Test Method for Measurement of Thickness of Anodic Coatings on Aluminum and of Other Nonconductive Coatings on Nonmagnetic Basis Metals with Eddy-Current Instruments |
| 1.3.2.9.  | ASTM C920-18      | - Standard Specification for Elastomeric Joint Sealants  |
| 1.3.2.10. | ASTM D523-14(18)  | - Standard Test Method for Specular Gloss  |
| 1.3.2.11. | ASTM D714-02(17)  | - Standard Test Method for Evaluating Degree of Blistering of Paints   |
| 1.3.2.12. | ASTM D968-17      | - Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive  |
| 1.3.2.13. | ASTM D2244-16     | - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates   |
| 1.3.2.14. | ASTM D2247-15(20) | - Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity   |
| 1.3.2.15. | ASTM D3363-20     | - Standard Test Method for Film Hardness by Pencil Test  |
| 1.3.2.16. | ASTM D4214-07(15) | - Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films  |
| 1.3.2.17. | CISC/CPMA 2-75    | - A Quick-Drying Primer for Use on Structural Steel  |
| 1.3.2.18. | CSA G40.20-13(18) | - General Requirements for Rolled or Welded Structural Quality Steel   |
| 1.3.2.19. | SSPC-05           | - The Society for Protective Coatings, "Systems and Specifications, SSPC Painting Manual, Volume 2"  |

#### **1.4. SUBMITTALS**

- 1.4.1. Shop Drawings:
  - 1.4.1.1. Submit Shop Drawings for work of this Section in accordance with Section 01 30 00. In addition to minimum requirements indicate following:
    - 1.4.1.1.1. structural supports and framing provided as part of this Section.
    - 1.4.1.1.2. provision for structural and thermal movement between louvres and adjacent materials.
  - 1.4.1.2. Employ a licensed engineer specified herein is responsible for:
    - 1.4.1.2.1. production and review of Shop Drawings.
    - 1.4.1.2.2. sealing and signing each Shop Drawing and any associated calculations performed.
- 1.4.2. Samples: Submit samples in accordance with Section 01 30 00. Submit following samples in sizes indicated:
  - 1.4.2.1. louvres minimum 600 mm (24") square.
  - 1.4.2.2. louvre flashing minimum 300 mm (12") square.

#### **1.5. QUALITY ASSURANCE**

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

- 1.5.1.2. Licensed Professionals: Employ a licensed engineer carrying a minimum \$2,000,000.00 professional liability insurance and is registered in the Province of Ontario.

**1.6. DELIVERY, STORAGE AND HANDLING**

- 1.6.1. Delivery and Acceptance Requirements: Coordinate deliveries to comply with construction schedule and arrange for strategic off-the-ground, undercover storage locations.
- 1.6.2. Storage and Handling Requirements:
- 1.6.2.1. Properly wrap louvres with protective coverings and put in suitable crates to prevent distortion and damage. Carefully unload, handle and store to prevent damage.
- 1.6.2.2. Protect work of this Section from damage. Protect other work from damage resulting from this Work. Repair or replace damaged work to satisfaction of Consultant at no cost to Owner.

**1.7. WARRANTY**

- 1.7.1. Manufacturer Warranty: Warrant work of this Section for period of 5 years against defects and/or deficiencies in accordance with General Conditions of the Contract. Promptly correct any defects or deficiencies which become apparent within warranty period, to satisfaction of Consultant and at no expense to Owner. Defects include but are not limited to extensive colour fading.

**PART 2 - PRODUCTS**

**2.1. MANUFACTURERS**

- 2.1.1. Manufacturer List: Products of following manufacturers are permitted subject to conformance to requirements of Drawings, Schedules and Specifications:
- 2.1.1.1. The Airolite Company, LLC; [www.airolite.com](http://www.airolite.com)
- 2.1.1.2. Construction Specialties Ltd.; [www.c-sgroup.com](http://www.c-sgroup.com)
- 2.1.1.3. Greenheck Fan Corporation; [www.greenheck.com](http://www.greenheck.com)
- 2.1.1.4. Ruskin Company; [www.ruskin.com](http://www.ruskin.com)
- 2.1.1.5. TenPlus Architectural Products Ltd.; [www.tenplus-online.com](http://www.tenplus-online.com)
- 2.1.1.6. Ventex Inc.; [www.ventexinc.com](http://www.ventexinc.com)
- 2.1.2. Substitution Limitations: Comparable Products from manufacturers listed herein may be reviewed provided they meet requirements of this Specification.

**2.2. MATERIALS**

- 2.2.1. Performance/Design Criteria:
- 2.2.1.1. Material thicknesses stated herein are a minimum. Be responsible for engineering calculations to ensure structural adequacy of wall louvres and louvred penthouses.
- 2.2.1.2. Structural Design:
- 2.2.1.2.1. Ensure louvre members deflect no more than L/180 of span between supports when subjected to wind load of 958 Pa (20 psf) applied horizontally to louvre face.
- 2.2.1.2.2. Employ a licensed engineer specified herein to:
- 2.2.1.2.2.1. design components for work of this Section requiring structural performance.
- 2.2.1.2.2.2. be responsible for determining sizes, joint spacing to allow thermal movement and loading of components in accordance with applicable codes and regulations.
- 2.2.1.3. Vibration Control: Ensure louvre members do not vibrate when subjected to above wind loading. Provide integral bosses as required.

- 2.2.1.4. Wind Driven Rain Performance: When tested in accordance with AMCA 500-L and AMCA 511 for a 1220 mm x 1220 mm (48" x 48") sized decorative or storm class louvre, following result apply:
  - 2.2.1.4.1. Static Air Pressure Drop Performance: Maximum 0.15" x 0.20" water gauge pressure loss at 1000 fpm.
  - 2.2.1.4.2. Minimum 45% Free Area.
  - 2.2.1.4.3. AMCA certified Class A for wind speed of 47 kph (29.1 mph) and rainfall rate of 76 mm/hour (3"/hour).
  - 2.2.1.4.4. AMCA certified Class A for wind speed of 80 kph (50 mph) and rainfall rate of 200 mm/hour (8"/hour).
- 2.2.1.5. Thermal Movement: Design louvres to accommodate expansion and contraction of components due to temperature changes.
- 2.2.2. Aluminum Extrusions: ASTM B221M, size accurately formed as shown on Drawings, extruded aluminum alloy AA-6063-T5 for aluminum. Ensure surfaces are free from defects impairing appearance, strength and durability.
- 2.2.3. Aluminum Sheet: ASTM B209/B209M, type and characteristics to match finished extrusions; ensure sheet which is not exposed is Utility Aluminum mill finished; for intricate forming with decorative finishes use AA-1100 and for exposed panels use AA-3003 with specified finish.
- 2.2.4. Galvanized Steel Sheet: Supply commercial quality to ASTM A653/A653M with Z275 (G90) zinc coating, exposed surfaces prefinished as specified, "8000 Series" in colour later selected by Consultant.
- 2.2.5. Fasteners: Supply screws, bolts, nuts, washers, rivets and other fasteners incorporated into aluminum sections of tamperproof aluminum or ANSI Series 300 stainless steel.
- 2.2.6. Anchoring Devices: Aluminum, non-magnetic stainless steel or other non-corrosive metal compatible with aluminum. Steel anchors may be used provided they are zinc coated and insulated from aluminum.
- 2.2.7. Sealant for Precast Areas: Non-sag type, multi-component polyurethane sealant conforming to ASTM C920, Type M, Grade NS, Class 25, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:
  - 2.2.7.1. "MasterSeal® NP 2™" by BASF; [www.master-builders-solutions.basf.com](http://www.master-builders-solutions.basf.com).
  - 2.2.7.2. "Sikaflex -2c NS" by Sika Canada Inc.; [www.sika.ca](http://www.sika.ca).
  - 2.2.7.3. "DYmeric 240" by Tremco Canada; [www.tremcosealants.com](http://www.tremcosealants.com).
- 2.2.8. Sealant for Areas other than Precast: Non-sag type, 1 component ultra low-modulus, pre-pigmented, neutral cure elastomeric silicone sealant conforming to ASTM C920, Type S, Grade NS, Class 50, Use NT, G, M, A and O. Supply in standard colours as selected. Supply 1 of following:
  - 2.2.8.1. "DOWSIL™ 790 Silicone Building Sealant" by The Dow Chemical Company; [www.consumer.dow.com](http://www.consumer.dow.com).
  - 2.2.8.2. "GE SilPruf LM SCS2700" by Momentive Performance Materials; [www.momentive.com](http://www.momentive.com).
  - 2.2.8.3. "Spectrem 1" by Tremco Canada; [www.tremcosealants.com](http://www.tremcosealants.com).
- 2.2.9. Structural Steel Supports: Supply new material conforming to CSA G40.20, Grade 300W, cleaned to SSPC-SP 3 requirements and shop primed with primer conforming to CISC/CPMA 2-75.
- 2.2.10. Bituminous Coating: Supply "Bakor 810-07" by Henry Company; [www.henry.com](http://www.henry.com).
- 2.2.11. Blades, Heads, Jambs and Sills: Supply minimum 2.06 mm (0.08") thick; blades fixed type, stormproof profile.

- 2.2.12. Bird Screen: Supply 13 mm (1/2") square woven mesh of 1.6 mm (0.064") dia (16 B and S ga) aluminum wire in extruded aluminum frame, 2.5 mm (0.102") (10 B and S ga) thick.
- 2.2.13. Blank-Off Panels: Supply fixed insulated sheet steel sheet blank-off panels over back of louvres in lieu of bird screens. Ensure blank-off panel insulation R-values meet or exceed wall assembly R-value requirements.
- 2.2.14. Metal Sills: Supply 1 mm (0.040") (18 B and S ga) aluminum complete with cover plates at sill joints and drip deflectors at sill ends and at abutting vertical surfaces.

### **2.3. MANUFACTURED UNITS**

- 2.3.1. **1...** Louvre Type: Refer to Mechanical drawings and specifications. **... 1**
- ~~2.3.2. Supply aluminum construction, 150 mm (9") deep, step blade with 2.06 mm (0.081") blade and frame thickness. Provide "Model MW-9615" by C/S Construction Specialties Company.~~
- 2.3.3. Fabrication:
- 2.3.3.1. Form blades, mullions and frames to sizes and shapes indicated.
- 2.3.3.2. Provide louvre blades with extruded aluminum blade supports in section modulus and depth to resist loads anticipated and meet design requirements specified. Provide integral reinforcing ribs to prevent bowing and distortion.
- 2.3.3.3. Accurately cut and fit components to produce tight hairline junctures. Securely fasten frame members together with adequate concealed welds and seal with sealant to ensure watertight joints.
- 2.3.3.4. Fabricate bird screens using aluminum mesh securely locked into a heavy extruded aluminum channel frame. Install bird screens on the inside of louvres and screw fasten to frames to permit removal if required.
- 2.3.4. Finishes: Provide 1 of following systems:
- 2.3.4.1. Superior Performance Coating Finish Process: (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.ppgideascape.com](http://www.ppgideascape.com) or "Fluoropon® Classic" by Sherwin-Williams Coil Coatings; [www.coil.sherwin.com](http://www.coil.sherwin.com) with following characteristics:

	<b>Description</b>	<b>Performance Characteristics</b>
2.3.4.1.1.	Coating Thickness:	0.0063 mm +/-0.0013 mm (0.25 +/-0.05 mils) primer 0.025 mm (1.0 mil) min barrier coat (if applicable) 0.025 mm (1.0 mil) min colour coat 0.015 mm +/-0.0005 mm (0.6 +/-0.02 mil) clear top coat
2.3.4.1.2.	Pre-Treatment:	Multi-Stage Cleaning with Chemical Conversion Coating
2.3.4.1.3.	Gloss (ASTM D523 @ 60°):	Medium gloss
2.3.4.1.4.	Pencil Hardness (ASTM D3363):	F minimum
2.3.4.1.5.	Abrasion Resistance Falling Sand (ASTM D968):	50 t/ml

- |             |  |                                 |
|-------------|--|---------------------------------|
| 2.3.4.1.6.  | Acid Resistance<br>10% Muriatic Acid<br>Spot Test:   | 15 minutes - no attack          |
| 2.3.4.1.7.  | Alkali Resistance-Mortar<br>Pat Test 100% R.H.<br>@ 100°F:   | 24 hours - no attack            |
| 2.3.4.1.8.  | Colour Retention<br>10 yrs, 45° South Florida<br>(ASTM D2244):   | $\Delta E < 5.0$                |
| 2.3.4.1.9.  | Humidity Resistance:<br>ASTM D714, ASTM D2247,<br>4000 hrs, 100% R.H. @ 100°F: Few #8 blisters maximum   |                                 |
| 2.3.4.1.10. | Salt Spray Resistance:<br>ASTM B117, 4000 hrs<br>5% NaCl @ 100°F:  | 1/16" maximum undercutting      |
| 2.3.4.1.11. | Chalking Resistance<br>10 yrs, 45° South Florida<br>(ASTM D4214):  | No more than #8 (#6 for Whites) |
| 2.3.4.1.12. | Erosion Resistance:<br>10 yrs, 45° South Florida<br>(ASTM B244):   | Maximum 5%                      |
| 2.3.4.2.    | Superior Performance Coating Finish Process: (1 Coat Dry System) meeting or exceeding AAMA 2605 with minimum 100% fluoropolymer resin. Permitted Product: "Interpon D3000 Fluoromax Powder Coating" by Akzo Nobel Coatings, Inc.; <a href="http://www.akzonobel.com">www.akzonobel.com</a> with following characteristics: |                                 |

**Description**

**Performance Characteristics**

- |            |   |   |
|------------|---|---|
| 2.3.4.2.1. | Coating Thickness:  | 0.060 mm to 0.115 mm (2.4 mils to 4.5 mils) with no reading less than 0.045 mm (1.8 mils) |
| 2.3.4.2.2. | Pre-Treatment:  | Multi-Stage Cleaning with Chemical Conversion Coating                                     |
| 2.3.3.2.3. | Gloss (ASTM D523 @ 60°):  | 20% - 40%   |
| 2.3.3.2.4. | Pencil Hardness<br>(ASTM D3363):  | F minimum   |
| 2.3.3.2.5. | Abrasion Resistance<br>Falling Sand (ASTM D968):  | 40 t/ml   |
| 2.3.3.2.6. | Colour Retention<br>10 yrs, 45° South Florida<br>(ASTM D2244):  | $\Delta E < 5.0$  |
| 2.3.3.2.7. | Humidity Resistance<br>ASTM D714, ASTM D2247,<br>4000 hrs, 100% R.H. @ 100°F: Few #8 blisters maximum |   |
| 2.3.3.2.8. | Salt Spray Resistance<br>ASTM B117, 4000 hrs<br>5% NaCl @ 100°F:                                      | 1/16" maximum undercutting  |
| 2.3.3.3.   | Colours and Sheens: To be selected by Consultant. Include for texture and specialty finishes.         |   |

**2.4. SOURCE QUALITY CONTROL**

- 2.4.1. Tests and Inspections:

- 2.4.1.1. Structural Inspection: Ensure a licensed engineer specified herein inspects work of this Section during fabrication and submits sealed and signed Field Review Report within 5 Days of visit.

### **PART 3 - EXECUTION**

#### **3.1. EXAMINATION**

- 3.1.1. Verification of Conditions: Verify actual site dimensions and location of adjacent materials prior to commencing work. Notify Consultant in writing of any conditions which would be detrimental to the installation.
- 3.1.2. Evaluation and Assessment: Commencement of work implies acceptance of previously completed work.

#### **3.2. INSTALLATION**

- 3.2.1. Secure support frames to openings. Install louvres plumb or true to slope and at correct location in openings, with bird screens on inside. Use concealed method for attachment.
- 3.2.2. Ensure louvres connected to ductwork, plenums, silencers, etc. are sealed weathertight.
- 3.2.3. Caulk perimeter of frames to adjacent materials or to supports using joint backing and sealant. Neatly tool and finish joints.

#### **3.3. SITE QUALITY CONTROL**

- 3.3.1. Site Tests and Inspections:
- 3.3.1.1. Structural Inspection: Ensure a licensed engineer specified herein inspects work of this Section during erection/installation and submits sealed and signed Field Review Report within 5 Days of site visit.
- 3.3.2. Non-Conforming Work: Replace damaged work which cannot be satisfactorily repaired, restored or cleaned, to satisfaction of Consultant at no cost to Owner.
- 3.3.3. Manufacturer Services: Arrange for Product manufacturer's technical representative to:
- 3.3.3.1. meet and discuss installation procedures and unique conditions at the Place of the Work.
- 3.3.3.2. inspect substrate surfaces and recommend solutions to accommodate adverse conditions.
- 3.3.3.3. periodically visit and inspect installation and report unsatisfactory conditions to Trade Contractor.
- 3.3.3.4. attend final inspection and to submit written certification that Products, systems and assemblies have been installed in accordance with manufacturer's requirements.

#### **3.4. CLEANING**

- 3.4.1. Maintain aluminum work in a clean condition throughout construction period, so it will be without deterioration or damage at time of review. Select methods of cleaning which will promote achievement of uniform appearance and stabilized colours and textures for materials that weather or age with exposure.
- 3.4.2. Immediately before time of Substantial Performance, clean aluminum work thoroughly, inside and out. Demonstrate proper cleaning methods to Owner during this final cleaning. Prepare a "Cleaning and Maintenance Manual" listing types of cleaning compounds and cleaning methods of the work and submit 2 copies to Consultant.

### **END OF SECTION**