



THE SCHOOL DISTRICT OF PHILADELPHIA

BOARD OF EDUCATION
Office of Capital Programs
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Addendum No. 1

Subject: SDP Contract No. B-086C of 2019/20
Exterior Door Replacement

Location: Mitchell Elementary School

This Addendum dated February 4, 2021 shall modify and become part of the Contract Documents. Any items not mentioned herein, or affected by, shall remain strictly in accordance with the original document.

SPECIFICATIONS

SECTION 011135 – ABATEMENT TECHNICAL SPECIFICATION

1. **REVISE** Part 1, section 3, on Page #4 the Scope of Work as follows:
 - a. Delete all scope for the Cafeteria
 - b. Delete all scope for classroom 221
 - c. Delete all scope for Hallway H319

SECTION 0084113 – ALUMINUM ENTRANCES AND STOREFRONTS

1. **ADD** Specification Section 084113 – Aluminum Entrances and Storefronts in its entirety as part of Addendum.

SECTION 099123 – PAINTING

1. **REVISE** paragraph 3.8 to include:
 - C. Stain-Finish Woodwork with Sealer: Provide the following stain finish with sealer over existing interior woodwork: *Note: Mock-up with adhesion test per ASTM-D3359 is required prior to installation of this system.
 1. Waterborne Satin-Varnish Finish: Two finish coats of waterborne clear satin varnish over a sanding sealer. Wipe wood filler before applying stain.
 - a. Filler Coat: [Optional Open-grain wood filler \(if needed\)](#).
 - b. Stain Coat: Minwax Performance Series 250 VOC Interior Wood Stain.
 - c. 1st Coat: Wood Classics Waterborne Polyurethane Satin Finish, A68F90.
 - d. 2nd Coat: Wood Classics Waterborne Polyurethane Satin Finish, A68F90.

Addendum No. 6 (cont'd)

DRAWINGS

DRAWING D1.1

1. **ADD:** Add the following to Demolition Note #4: To strip paint and finish from door and frame contractor shall apply a minimum of two coats of Dumond Smart Strip – Advanced Paint Remover. Paint and finishes shall be removed as outlined in manufacturer's guidelines and data sheets. Contractor shall utilize plastic scrapers, scotch brite pads, nylon brushes and other miscellaneous hand tools to remove paint, finishes and paint remover from intricate wood grooves and woodwork. Once complete, door shall be rinsed thoroughly to remove product in preparation of new finishes. After door and frame are cleaned, they shall be sanded to like new condition without damaging door to receive new stain and urethane coating system prior to door hardware being reinstalled and doors rehung. Contractor shall be responsible for any adjustment or minimal planning of doors that may be required for doors to close and work correctly that may have been affected by swelling of wood during stripping and cleaning process.

DRAWING A6.1

1. **CLARIFICATION:** Frame W1 shall utilize Specification Section 084113 – Aluminum Entrances and Storefronts ADDED as part of Addendum.
2. **ADD:** Add remark to Doors NE-1D, NE-1E NE-1F, NE-2D, NE-2E and NE-2F as follows: "Wood Doors shall be stripped and prepared as per Note 4 on Drawing D1.1 and expanded upon in Addendum. Once door is stripped and sanded to like new condition. Door shall receive new stain and urethane finish. (3) wire mesh glass panes above floral pattern in each door leaf shall be replaced with uninsulated tempered laminated glass. Each pane is approximately 2'-4" High X 8" wide that is being replaced."
3. **CLARIFICATION:** NE-1D, NE-1E NE-1F, NE-2D, NE-2E and NE-2F doors include a total of 12 door leaves. This means the wire glass identified in the remark above shall include a total of 24 panes of glass to be replaced in all the doors being restored.
4. **CLARIFICATION:** The following abbreviations in the GLAZING TYPE Schedule are as follows: "LAM" is abbreviated for Laminated and "IG" is abbreviation for "Insulated Glass"

BIDDER QUESTIONS SUBMITTED & RESPONSES

1. Q. Due to the limited scope of work on this project, can the MBE/WBE ranges be reduced.

Answer: A Combined Goal of 10/15% MBE/WBE Participation is acceptable

2. Q. The scope of work for the asbestos shows, work in the cafeteria. This is a spline ceiling, not a drop ceiling, usually those types of ceiling cannot be reused. Will a new acoustical ceiling need to be installed or spline? While at the pre-bid, it looked like the pipe insulation at this location of work was new. Was the pipe insulation already abated? Please confirm the actual scope of work.

Answer: Abatement in the Cafeteria and the other out of scope spaces has been determined to have already taken place and are no longer required of this project scope.

3. Q. Note on drawing show to refinish existing doors, while on site, existing doors were recently painted. Are we to strip and refinish or are we to repaint?

Answer: Yes, doors are to be stripped of paint and all finishes to receive new stain and urethane finish as specified and described in Note #4 on D1.1. Note #4 has been added to in Addendum to detail process of stripping and restoring existing wood doors.

4. Q. Please provide spec for aluminum storefront.

Answer: Storefront Specification 084113 has been added as part of Addendum.

End of Addendum

SECTION 084113 - ALUMINUM-FRAMED ENTRANCES AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Exterior and interior storefront framing, including exterior punched openings.
2. Exterior and interior manual-swing entrance doors and door-frame units.

B. Related Requirements:

1. Division 7 Section "Joint Sealants" for joint sealants installed as part of aluminum entrance and storefront systems.
2. Division 8 Section "Door Hardware" for hardware preparations required for aluminum entrance and storefront systems.
3. Division 8 Section "General Glazing" for insulated and non-insulated glazing assemblies to be installed in aluminum-framed storefront framing and doors.
4. Division 8 Section "Fire-Rated Glazing" for fire-rated entrance and storefront assemblies.
5. Division 8 Section "Glazed Aluminum Curtain Walls" for exterior sun shades installed onto aluminum storefront framing.
6. Divisions 26 through 28 Electrical Sections for power wiring and low voltage requirements for electrified hardware.

1.3 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Sustainable Design Submittals: Refer to Division 1 Section "LEED Requirements."
- C. Shop Drawings: For aluminum-framed entrances and storefronts. Include plans, elevations, sections, full-size details, and attachments to other work.
 1. Include details of provisions for assembly expansion and contraction and for draining moisture occurring within the assembly to the exterior.
 2. Include full-size isometric details of each vertical-to-horizontal intersection of aluminum-framed entrances and storefronts, showing the following:

- a. Joinery, including concealed welds.
 - b. Anchorage.
 - c. Expansion provisions.
 - d. Glazing.
 - e. Flashing and drainage.
3. Show connection to and continuity with adjacent thermal, weather, air, and vapor barriers.
- D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.
- E. Fabrication Sample: Of each vertical-to-horizontal intersection of assemblies, made from 12-inch lengths of full-size components and showing details of the following:
1. Joinery, including concealed welds.
 2. Anchorage.
 3. Expansion provisions.
 4. Glazing.
 5. Flashing and drainage.
- F. Entrance Door Hardware Schedule: As indicated in Division 8 Section "Door Hardware." Prepare doors and frames for approved, prescribed hardware in the factory to the greatest extent possible.

1.5 INFORMATIONAL SUBMITTALS

- A. Preconstruction Laboratory Mockup Testing Submittals:
1. Testing Program: Developed specifically for Project.
 2. Test Reports: Prepared by a qualified preconstruction testing agency for each mockup test.
 3. Record Drawings: As-built drawings of preconstruction laboratory mockups showing changes made during preconstruction laboratory mockup testing.
- B. Qualification Data: For Installer.
- C. Energy Performance Certificates: For aluminum-framed entrances and storefronts, accessories, and components, from manufacturer.
1. Basis for Certification: NFRC-certified energy performance values for each aluminum-framed entrance and storefront.
- D. Product Test Reports: For aluminum-framed entrances and storefronts, for tests performed by manufacturer and witnessed by a qualified testing agency.
- E. Quality-Control Program: Developed specifically for Project, including fabrication and installation, according to recommendations in ASTM C 1401. Include periodic quality-control reports.
- F. Source quality-control reports.
- G. Field quality-control reports.
- H. Sample Warranties: For special warranties.

1.6 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For aluminum-framed entrances and storefronts to include in maintenance manuals.
- B. Maintenance Data for Structural Sealant: For structural-sealant-glazed storefront to include in maintenance manuals. Include ASTM C 1401 recommendations for post-installation-phase quality-control program.

1.7 QUALITY ASSURANCE

- A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.
 - 1. Engineering Responsibility: Prepare data for entrance and storefront systems, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.
- B. Product Options: Information on Drawings and in Specifications establishes requirements for aesthetic effects and performance characteristics of assemblies. Aesthetic effects are indicated by dimensions, arrangements, alignment, and profiles of components and assemblies as they relate to sightlines, to one another, and to adjoining construction.
 - 1. Do not change intended aesthetic effects, as judged solely by Architect, except with Architect's approval. If changes are proposed, submit comprehensive explanatory data to Architect for review.

1.8 WARRANTY

- A. Special Warranty: Manufacturer agrees to repair or replace components of aluminum-framed entrances and storefronts that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
 - 1. Failures include, but are not limited to, the following:
 - a. Structural failures including, but not limited to, excessive deflection.
 - b. Noise or vibration created by wind and thermal and structural movements.
 - c. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
 - d. Water penetration through fixed glazing and framing areas.
 - e. Failure of operating components.
 - 2. Warranty Period: Two years from date of Substantial Completion.
 - 3. Aluminum Entrances: Door corners of heavy-walled entrances shall have a limited lifetime warranty.
- B. Special Finish Warranty: Standard form in which manufacturer agrees to repair finishes or replace aluminum that shows evidence of deterioration of factory-applied finishes within specified warranty period.
 - 1. Deterioration includes, but is not limited to, the following:
 - a. Color fading more than 5 Hunter units when tested according to ASTM D 2244.

- b. Chalking in excess of a No. 8 rating when tested according to ASTM D 4214.
 - c. Cracking, checking, peeling, or failure of paint to adhere to bare metal.
2. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

- A. Delegated Design: Engage a qualified professional engineer, as defined in Division 1 Section "Quality Requirements," to design aluminum-framed entrances and storefronts.
- B. General Performance: Comply with performance requirements specified, as determined by testing of aluminum-framed entrances and storefronts representing those indicated for this Project without failure due to defective manufacture, fabrication, installation, or other defects in construction.
 - 1. Aluminum-framed entrances and storefronts shall withstand movements of supporting structure including, but not limited to, story drift, twist, column shortening, long-term creep, and deflection from uniformly distributed and concentrated live loads.
 - 2. Failure also includes the following:
 - a. Thermal stresses transferring to building structure.
 - b. Glass breakage.
 - c. Noise or vibration created by wind and thermal and structural movements.
 - d. Loosening or weakening of fasteners, attachments, and other components.
 - e. Failure of operating units.
- C. Structural Loads: Wind Load criteria shall be as indicated on Drawings.
- D. Deflection of Framing Members: At design wind pressure, as follows:
 - 1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane not exceeding 1/175 of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch, whichever is less.
 - 2. Deflection Parallel to Glazing Plane: Limited to 1/360 of clear span or 1/8 inch, whichever is smaller.
 - a. Operable Units: Provide a minimum 1/16-inch clearance between framing members and operable units.
 - 3. Cantilever Deflection: Where framing members overhang an anchor point, as follows:
 - a. Perpendicular to Plane of Wall: No greater than 1/240 of clear span plus 1/4 inch for spans greater than 11 feet 8-1/4 inches or 1/175 times span, for spans less than 11 feet 8-1/4 inches.
- E. Structural: Test according to ASTM E 330 as follows:
 - 1. When tested at positive and negative wind-load design pressures, assemblies do not evidence deflection exceeding specified limits.

2. When tested at 150 percent of positive and negative wind-load design pressures, assemblies, including anchorage, do not evidence material failures, structural distress, or permanent deformation of main framing members exceeding 0.2 percent of span.
 3. Test Durations: As required by design wind velocity, but not less than 10 seconds.
- F. Air Infiltration: Test according to ASTM E 283 for infiltration as follows:
1. Fixed Framing and Glass Area: Maximum air leakage of 0.06 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
 2. Entrance Doors:
 - a. Pair of Doors: Maximum air leakage of 1.0 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
 - b. Single Doors: Maximum air leakage of 0.5 cfm/sq. ft. at a static-air-pressure differential of 1.57 lbf/sq. ft.
- G. Water Penetration under Static Pressure: Test according to ASTM E 331, with no evidence of water penetration through fixed glazing and framing areas when tested according to a minimum static-air-pressure differential of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
- H. Water Penetration under Dynamic Pressure: Test according to AAMA 501.1 as follows:
1. No evidence of water penetration through fixed glazing and framing areas when tested at dynamic pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
 2. Maximum Water Leakage: According to AAMA 501.1. Water leakage does not include water controlled by flashing and gutters, or water that is drained to exterior.
- I. Energy Performance: Certify and label energy performance according to AAMA 507 and 1503 and NFRC 100 as follows:
1. Thermal Transmittance (U-factor): Fixed glazing and framing areas shall have U-factor of not more than 0.36 Btu/sq. ft. x h x deg F (using $U_{cog}=0.29$), according to NFRC 100.
 2. Solar Heat Gain Coefficient: Fixed glazing and framing areas shall have a solar heat gain coefficient of no greater than 0.35 as determined according to NFRC 200.
 3. Condensation Resistance: Fixed glazing and framing areas shall have an NFRC-certified condensation resistance rating of no less than 45 as determined according to NFRC 500.
- J. Noise Reduction: Test according to AAMA 1801 and ASTM E 90, with ratings determined by ASTM E 1332, as follows:
1. Sound Transmission Class: Not less than 32 for 1-inch insulated glazing and 36 for laminated glazing.
 2. Outdoor-Indoor Transmission Class: Not less than 27 for 1-inch insulated glazing and 30 for laminated glazing.
- K. Thermal Movements: Allow for thermal movements resulting from ambient and surface temperature changes:
1. Temperature Change: 120 deg F, ambient; 180 deg F, material surfaces.
 2. Thermal Cycling: No buckling; stress on glass; sealant failure; excess stress on framing, anchors, and fasteners; or reduction of performance when tested according to AAMA 501.5.

- a. High Exterior Ambient-Air Temperature: That which produces an exterior metal-surface temperature of 180 deg F.
- b. Low Exterior Ambient-Air Temperature: 0 deg F.
- c. Interior Ambient-Air Temperature: 75 deg F.

L. Structural-Sealant Joints:

1. Designed to carry gravity loads of glazing.
2. Designed to produce tensile or shear stress of less than 20 psi.

M. Structural Sealant: Capable of withstanding tensile and shear stresses imposed by structural-sealant-glazed storefront system without failing adhesively or cohesively. When tested for preconstruction adhesion and compatibility, cohesive failure of sealant shall occur before adhesive failure.

1. Adhesive failure occurs when sealant pulls away from substrate cleanly, leaving no sealant material behind.
2. Cohesive failure occurs when sealant breaks or tears within itself but does not separate from each substrate because sealant-to-substrate bond strength exceeds sealant's internal strength.

2.2 MANUFACTURERS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Kawneer North America; an Alcoa Company "Trifab VG 451T" (thermal) and "Trifab VG 451" (non-thermal), or comparable products by one of the following:

1. EFCO Corporation.
2. TRACO.
3. Tubelite.
4. Vistawall Architectural Products; The Vistawall Group; a BlueScope Steel company.
5. YKK AP America, Inc.

B. Source Limitations: Obtain all components of aluminum-framed entrance and storefront systems as well as glazed aluminum curtain wall systems, including operable units and accessories, from same manufacturer.

2.3 FRAMING

A. Framing Members: Manufacturer's extruded- or formed-aluminum framing members of thickness required and reinforced as required to support imposed loads and operable components, including swinging doors.

1. Thermal Barrier (Exterior Assemblies): Compliant with AAMA TIR-A8 and tested in accordance with AAMA 505; thermally broken system using manufacturer's standard 1/4-inch separation, consisting of a two-part, chemically-cured, high-density polyurethane or similar material; mechanically and adhesively joined to aluminum sections.
2. Glazing System: Retained mechanically with gaskets on four sides.
3. Glazing Plane: Center, with ability to be glazed from the interior or exterior.
4. Finish: Clear anodic finish.
5. Fabrication Method: Screw spline, shear block or field-fabricated stick system.

- B. Backer Plates: Manufacturer's standard, continuous backer plates for framing members, if not integral, where framing abuts adjacent construction.
- C. Brackets and Reinforcements: Manufacturer's standard high-strength aluminum or zinc-plated steel with nonstaining, nonferrous shims for aligning system components.
- D. Fasteners: Zinc-plated steel concealed fasteners; hardened aluminum alloys or AISI 300-series nonmagnetic, nonstaining stainless steel fasteners where exposed.
- E. Accessories: 0.050-inch aluminum sill flashing end dams; 3-point attachment system.
- F. Materials:
 - 1. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.
 - a. Sheet and Plate: ASTM B 209; 5005-H14 aluminum alloy, 0.050-inch thick.
 - b. Extruded Bars, Rods, Profiles, and Tubes: ASTM B 221.
 - c. Extruded Structural Pipe and Tubes: ASTM B 429.
 - d. Structural Profiles: ASTM B 308.
 - 2. Steel Reinforcement: Manufacturer's standard zinc-rich, corrosion-resistant primer complying with SSPC-PS Guide No. 12.00; applied immediately after surface preparation and pretreatment. Select surface preparation methods according to recommendations in SSPC-SP COM, and prepare surfaces according to applicable SSPC standard.
 - a. Structural Shapes, Plates, and Bars: ASTM A 36.
 - b. Cold-Rolled Sheet and Strip: ASTM A 1008.
 - c. Hot-Rolled Sheet and Strip: ASTM A 1011.
- G. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.
 - 1. Flame-Spread Index: 25 or less.
 - 2. Smoke-Developed Index: 450 or less.

2.4 VENTING WINDOWS

- A. Aluminum Windows: Equal to Kawneer "GLASSvent;" manufacturer's standard narrow profile, operable vent units, complying with AAMA/WDMA/CSA 101/I.S.A440, with self-flashing mounting fins, with units flush with exterior of storefront or curtain wall framing, and as follows:
 - 1. Window Type: Awning/Project-Out, unless otherwise indicated on Drawings.
 - 2. Minimum Performance Class: AW.
 - 3. Minimum Performance Grade: 65.
 - 4. Aluminum Extrusions: ASTM B 221, alloy and temper recommended by manufacturer for strength, corrosion resistance, and application of required finish, but not less than 0.064-inch thickness at any location for main frame and sash members.
 - a. Thermally Improved Construction: Fabricate window units with an integral, concealed, low-conductance thermal barrier; located between exterior materials and window members exposed on interior side; in a manner that eliminates direct metal-to-metal contact.

5. Mullions: Between adjacent windows, fabricated of extruded aluminum matching finish of window units.
 6. Fasteners, Anchors, and Clips: AISA 300-series (400-series for self-drilling); nonmagnetic stainless steel, or other noncorrosive material, compatible with aluminum window members, trim, hardware, anchors, and other components of window units. Fasteners shall not be exposed, except for attaching hardware.
 - a. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.128 inch thick, reinforce interior with nonmagnetic stainless steel to receive screw threads, or provide standard, noncorrosive, pressed-in, spline grommet nuts.
 7. Hardware: Manufacturer's standard stainless steel, steel and bronze, including the following:
 - a. Hinges: Stainless steel, 4-bar type.
 - b. Cam-action handles and strikes: White bronze.
 - c. Steel or bronze operating arms.
 8. Sliding-Type Weather Stripping: Woven-pile weather stripping of wool, polypropylene, or nylon pile and resin-impregnated backing fabric; complying with AAMA 701/702.
 9. Insect Screens: Provide removable insect screen on each operable exterior sash, with operable wicket for venting handle access, and with screen frame finished to match window unit, complying with SMA 1004 or SMA 1201, and as follows:
 - a. Aluminum Wire Fabric: 18-by-18, 18-by-16, or 18-by-14 mesh of 0.013-inch-diameter, coated aluminum wire.
- B. Glazing: Same as adjacent aluminum-framed entrances and storefront glazing.

2.5 ENTRANCE DOOR SYSTEMS

- A. Entrance Doors: Manufacturer's standard and heavy glazed entrance doors and flush aluminum entrance doors for manual-swing operation. Provide the following types of doors, as indicated on the Drawings:
1. Standard Door Construction: 1-3/4-inch overall thickness, with minimum 0.125-inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet welded
 - a. Basis of Design: Equal to Kawneer "500 Standard Entrance" swing doors.
 - b. Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
 - c. Door Design: Wide stile; 5-inch nominal width for vertical stiles and top rails; 10-inch nominal width for bottom rails; 6-inch nominal width for intermediate rails.
 - 1) Verify stile and rail dimensions indicated for entrance doors will properly accommodate and conceal prescribed hardware components, including, but not limited to, exit devices and closers. Report any discrepancies to the Architect.
 - d. Glazing Stops and Gaskets: Square or beveled, snap-on, extruded-aluminum stops and preformed gaskets.
 - 1) Provide non-removable glazing stops on outside of door.

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2. Heavy-Walled Entrance Doors: Heavy duty glazed entrance doors for high-traffic applications. Adjoining framing members shall be of same aluminum thickness at connection points and of profile required to accommodate door thickness.
 - a. Basis of Design: Equal to Kawneer “500 Heavy Wall” swing doors.
 - b. Door Construction: 2-inch overall depth, with minimum 0.1875 (3/16) -inch-thick, extruded-aluminum tubular rail and stile members. Mechanically fasten corners with reinforcing brackets that are deeply penetrated and fillet weld. Doors shall be designed and constructed to resist both lever arm and torsion forces, as intended for high-traffic applications.
 - 1) Thermal Construction: High-performance plastic connectors separate aluminum members exposed to the exterior from members exposed to the interior.
 - 2) Door Design: Wide stile; 5-inch nominal width for vertical stiles and top rails; 10-inch nominal width for bottom rails; 6-inch nominal width for intermediate rails.
 - a) Verify stile and rail dimensions indicated for entrance doors will properly accommodate and conceal prescribed hardware components, including, but not limited to, exit devices and closers. Report any discrepancies to the Architect.
 - 3) Glazing Stops and Gaskets: Square or beveled profile, snap-on, minimum 0.050-inch-thick extruded-aluminum stops and preformed gaskets, of EPDM or thermoplastic elastomeric extrusions.
 - a) Provide nonremovable glazing stops on outside of door.
3. Flush Entrance Doors: Flush-style doors with aluminum sheet facing applied to backer board on both interior and exterior surfaces.
 - a. Basis of Design: Equal to Kawneer “Flushline Entrances.”
 - b. Construction: Minimum 0.125-inch-thick tubular stile and rail framing system, with mechanically-fastened mitered corners with reinforcing brackets and 3/8-inch-diameter, full-width galvanized steel tie rods; internal reinforcing for hardware attachment.
 - c. Thermal Performance: Poured-in-place, 5 lb/sq. ft. polyurethane core, interlocked with framing components.
 - d. Facing: Minimum 0.062-inch-thick aluminum sheet, bonded to manufacturer’s standard hardboard backer on interior and exterior faces of door; facing sheets shall be terminated with integral extruded reglets. Fiberglass-reinforced polyester (FRP), acrylic modified polyester (AMP) or other facing materials are not acceptable.
 - 1) Texture: Smooth; embossed texture is not acceptable.
 - 2) Finish: Dark Bronze.
 - e. Vision Lites: Provide narrow lite or half lite openings where indicated; mechanically-fastened with low-profile aluminum perimeter trim with mitered corners, designed to accommodate glazing type as scheduled.

2.6 ENTRANCE DOOR HARDWARE

- A. Entrance Door Hardware: Hardware not specified in this Section is specified in Division 8 Section "Door Hardware."
- B. Weather Stripping: Manufacturer's standard replaceable components.
 - 1. Compression Type: Made of ASTM D 2000, molded neoprene, or ASTM D 2287, molded PVC.
 - 2. Sliding Type: AAMA 701/702, made of wool, polypropylene, or nylon woven pile with nylon-fabric or aluminum-strip backing.

2.7 GLAZING

- A. Glazing, including glazing gaskets and glazing sealants: Comply with Division 8 Section "General Glazing."

2.8 ACCESSORIES

- A. Fasteners and Accessories: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.
 - 1. Use self-locking devices where fasteners are subject to loosening or turning out from thermal and structural movements, wind loads, or vibration.
 - 2. Reinforce members as required to receive fastener threads.
 - 3. Use exposed fasteners with countersunk Phillips screw heads, fabricated from 300 series stainless steel.
- B. Anchors: Three-way adjustable anchors with minimum adjustment of 1 inch accommodate fabrication and installation tolerances in material and finish compatible with adjoining materials and recommended by manufacturer.
 - 1. Concrete and Masonry Inserts: Hot-dip galvanized cast-iron, malleable-iron, or steel inserts complying with ASTM A 123 or ASTM A 153 requirements.
- C. Concealed Flashing: Manufacturer's standard corrosion-resistant, nonstaining, nonbleeding flashing compatible with adjacent materials.
- D. Bituminous Paint: Cold-applied asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos, formulated for 30-mil thickness per coat.

2.9 FABRICATION

- A. Form or extrude aluminum shapes before finishing.
- B. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish. Remove weld spatter and welding oxides from exposed surfaces by descaling or grinding.
- C. Fabricate components that, when assembled, have the following characteristics:
 - 1. Profiles that are sharp, straight, and free of defects or deformations.
 - 2. Accurately fitted joints with ends coped or mitered.

3. Physical and thermal isolation of glazing from framing members.
 4. Accommodations for thermal and mechanical movements of glazing and framing to maintain required glazing edge clearances.
 5. Provisions for field replacement of glazing from interior for vision glass and exterior for spandrel glazing or metal panels.
 6. Fasteners, anchors, and connection devices that are concealed from view to greatest extent possible.
- D. Mechanically Glazed Framing Members: Fabricate for flush glazing without projecting stops.
- E. Structural-Sealant-Glazed Framing Members: Include accommodations for using temporary support device to retain glazing in place while structural sealant cures.
- F. Storefront Framing: Fabricate components for assembly using shear-block system.
- G. Entrance Door Frames: Reinforce as required to support loads imposed by door operation and for installing entrance door hardware.
1. At exterior doors, provide compression weather stripping at fixed stops.
 2. At interior doors, provide silencers at stops to prevent metal-to-metal contact. Install three silencers on strike jamb of single-door frames and two silencers on head of frames for pairs of doors.
- H. Entrance Doors: Reinforce doors as required for installing entrance door hardware.
1. At pairs of exterior doors, provide sliding-type weather stripping retained in adjustable strip and mortised into door edge.
 2. At exterior doors, provide weather sweeps applied to door bottoms.
- I. Entrance Door Hardware Installation: Factory install entrance door hardware to the greatest extent possible. Cut, drill, and tap for factory-installed entrance door hardware before applying finishes.
- J. After fabrication, clearly mark components to identify their locations in Project according to Shop Drawings.
- 2.10 ALUMINUM FINISHES
- A. As selected from Manufacturer's full range of color selections
1. Color: As selected by Architect from manufacturer's full range.
- B. Structural Sealant: Perform quality-control procedures complying with ASTM C 1401 recommendations including, but not limited to, assembly material qualification procedures, sealant testing, and assembly fabrication reviews and checks.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance of the Work.

- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

- A. Prepare surfaces that are in contact with structural sealant according to sealant manufacturer's written instructions to ensure compatibility and adhesion. Preparation includes, but is not limited to, cleaning and priming surfaces.

3.3 INSTALLATION

- A. General:

1. Comply with manufacturer's written instructions.
2. Do not install damaged components.
3. Fit joints to produce hairline joints free of burrs and distortion.
4. Rigidly secure nonmovement joints.
5. Install anchors with separators and isolators to prevent metal corrosion and electrolytic deterioration and to prevent impeding movement of moving joints.
6. Seal perimeter and other joints watertight unless otherwise indicated.

- B. Metal Protection:

1. Where aluminum is in contact with dissimilar metals, protect against galvanic action by painting contact surfaces with materials recommended by manufacturer for this purpose or by installing nonconductive spacers.
2. Where aluminum is in contact with concrete or masonry, protect against corrosion by painting contact surfaces with bituminous paint.

- C. Set continuous sill members and flashing in full sealant bed as specified in Division 7 Section "Joint Sealants" to produce weathertight installation.

- D. Install components plumb and true in alignment with established lines and grades.

- E. Install operable units level and plumb, securely anchored, and without distortion. Adjust weather-stripping contact and hardware movement to produce proper operation.

- F. Install glazing as specified in Division 8 Section "General Glazing."

- G. Install weatherseal sealant according to Division 7 Section "Joint Sealants" and according to sealant manufacturer's written instructions to produce weatherproof joints. Install joint filler behind sealant as recommended by sealant manufacturer.

- H. Entrance Doors: Install doors to produce smooth operation and tight fit at contact points.

1. Exterior Doors: Install to produce weathertight enclosure and tight fit at weather stripping.
2. Field-Installed Entrance Door Hardware: Install surface-mounted entrance door hardware according to entrance door hardware manufacturers' written instructions using concealed fasteners to greatest extent possible.

3.4 ERECTION TOLERANCES

- A. Erection Tolerances: Install aluminum-framed entrances and storefronts to comply with the following maximum tolerances:

1. Plumb: 1/8 inch in 10 feet; 1/4 inch in 40 feet.
2. Level: 1/8 inch in 20 feet; 1/4 inch in 40 feet.
3. Alignment:
 - a. Where surfaces abut in line or are separated by reveal or protruding element up to 1/2 inch wide, limit offset from true alignment to 1/16 inch.
 - b. Where surfaces are separated by reveal or protruding element from 1/2 to 1 inch wide, limit offset from true alignment to 1/8 inch.
 - c. Where surfaces are separated by reveal or protruding element of 1 inch wide or more, limit offset from true alignment to 1/4 inch.
4. Location: Limit variation from plane to 1/8 inch in 12 feet; 1/2 inch over total length.

3.5 ADJUSTING AND CLEANING

- A. Adjust doors and hardware to provide tight fit at contact points and weather stripping, smooth operation, and weathertight closure.
- B. Remove excess sealant and glazing compounds, and dirt from surfaces.

3.6 PROTECTION

- A. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer that ensure entrance and storefront systems are without damage or deterioration at the time of Substantial Completion.

END OF SECTION 084113