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. Hollow metal doors and frames which meets the certification goals as established by the Victor Valley Community College District (VVCCD) Program for the individual Project requirements, of the following types.

B. Section includes hollow-metal work.
   1. Hollow-metal doors and frames of stock design.
   2. Hollow metal doors and frames of custom design.

1.3 QUALITY ASSURANCE

A. Standard Hollow Metal Quality Standard: ANSI/SDI A250.8


C. Fire-Rated Doors and Frames: Positive-pressure testing.

1.4 DEFINITIONS

A. Minimum Thickness: Minimum thickness of base metal without coatings according to NAAMM-HMMA 803 or SDI A250.8.

1.5 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, core descriptions, fire-resistance ratings, temperature rise ratings, and finishes.

B. LEED Submittals:
   1. Product Data for Credit MR 4: For products having recycled content, documentation indicating percentages by weight of postconsumer and pre-consumer recycled content. Include statement indicating cost for each product having recycled content.
C. Shop Drawings: Include the following:

1. Elevations of each door type.
2. Details of doors, including vertical- and horizontal-edge details and metal thicknesses.
3. Frame details for each frame type, including dimensioned profiles and metal thicknesses.
4. Locations of reinforcement and preparations for hardware.
5. Details of each different wall opening condition.
6. Details of anchorages, joints, field splices, and connections.
7. Details of accessories.
8. Details of moldings, removable stops, and glazing.
9. Details of conduit and preparations for power, signal, and control systems.

D. Samples for Initial Selection: For units with factory-applied color finishes.

E. Samples for Verification:

1. For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches (75 by 127 mm).
2. For "Doors" and "Frames" subparagraphs below, prepare Samples approximately 12 by 12 inches (305 by 305 mm) to demonstrate compliance with requirements for quality of materials and construction:

   a. Doors: Show vertical-edge, top, and bottom construction; core construction; and hinge and other applied hardware reinforcement. Include separate section showing glazing if applicable.
   b. Frames: Show profile, corner joint, floor and wall anchors, and silencers. Include separate section showing fixed hollow-metal panels and glazing if applicable.

F. Schedule: Provide a schedule of hollow-metal work prepared by or under the supervision of supplier, using same reference numbers for details and openings as those on Drawings. Coordinate with final Door Hardware Schedule.

G. Recycled Content: For products having recycled content, documentation indicating percentages by weight of post consumer and pre-consumer recycled content. Include statement indicating costs for each product having recycled content.

1.6 INFORMATIONAL SUBMITTALS

A. Product Test Reports: For each type of hollow-metal door and frame assembly, for tests performed by a qualified testing agency.

B. Oversize Construction Certification: For assemblies required to be fire rated and exceeding limitations of labeled assemblies.

1.7 QUALITY ASSURANCE


C. Fire-Rated Doors and Frames: Positive-pressure testing.

PART 2 - PRODUCTS

2.1 STEEL AND IRON MATERIAL

A. Recycled Content of Steel Products: Minimum percentage of steel with an average recycled content of steel products so that post consumer recycled content plus one-half of pre-consumer recycled content is provided.
   1. Steel Recycled Content: Percentage postconsumer recycled content or minimum percent pre-consumer recycled content at Contractor’s option.

2.2 REGULATORY REQUIREMENTS

A. Fire-Rated Assemblies: Complying with NFPA 80 and listed and labeled by a qualified testing agency acceptable to authorities having jurisdiction for fire-protection ratings and temperature-rise limits indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

   1. Smoke- and Draft-Control Assemblies: Provide an assembly with gaskets listed and labeled for smoke and draft control by a qualified testing agency acceptable to authorities having jurisdiction, based on testing according to UL 1784 and installed in compliance with NFPA 105.

B. Fire-Rated, Borrowed-Light Assemblies: Complying with NFPA 80 and listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction for fire-protection ratings indicated, based on testing according to NFPA 257 or UL 9.

2.3 INTERIOR DOORS AND FRAMES

A. Construct interior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.


C. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.


G. Commercial Doors and Frames: NAAMM-HMMA 861.
2.4 EXTERIOR HOLLOW-METAL DOORS AND FRAMES

A. Construct exterior doors and frames to comply with the standards indicated for materials, fabrication, hardware locations, hardware reinforcement, tolerances, and clearances, and as specified.

B. Heavy-Duty Doors and Frames: SDI A250.8, Level 2.


D. Hollow-Metal Doors and Frames: NAAMM-HMMA 860.

E. Commercial Doors and Frames: NAAMM-HMMA 861.

2.5 FRAME ANCHORS

A. Jamb Anchors:
   1. Masonry Type: Adjustable strap-and-stirrup or T-shaped anchors to suit frame size with corrugated or perforated straps.
   2. Stud-Wall Type: Designed to engage stud, welded to back of frames.
   3. Compression Type for Drywall Slip-on Frames: Adjustable compression anchors.
   4. Post installed Expansion Type for In-Place Concrete or Masonry: Bolts with expansion shields or inserts. Provide pipe spacer from frame to wall, with throat reinforcement plate, welded to frame at each anchor location.

B. Floor Anchors: Formed from same material as frames.

2.6 MATERIALS

A. Recycled Content of Steel Products: Postconsumer recycled content plus one-half of pre-consumer recycled content not less than 25 percent.

B. Cold-Rolled Steel Sheet: ASTM A 1008/A 1008M.

C. Hot-Rolled Steel Sheet: ASTM A 1011/A 1011M.

D. Metallic-Coated Steel Sheet: ASTM A 653/A 653M, Commercial Steel (CS), Type B.

E. Frame Anchors: ASTM A 879/A 879M.

F. Inserts, Bolts, and Fasteners: Hot-dip galvanized according to ASTM A 153/A 153M.

G. Power-Actuated Fasteners in Concrete: Fastener system of type suitable for application indicated, fabricated from corrosion-resistant materials, with clips or other accessory devices for attaching hollow-metal frames of type indicated.

H. Grout: ASTM C 476, except with a maximum slump of 4 inches (102 mm), as measured according to ASTM C 143/C 143M.
I. Mineral-Fiber Insulation: ASTM C 665, Type I (blankets without membrane facing); consisting of fibers manufactured from slag or rock wool; with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively; passing ASTM E 136 for combustion characteristics.

J. Glazing: Comply with requirements in Section 088000 "Glazing."

K. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

2.7 FABRICATION

A. Fabricate hollow-metal work to be rigid and free of defects, warp, or buckle. Accurately form metal to required sizes and profiles, with minimum radius for metal thickness. Where practical, fit and assemble units in manufacturer's plant. To ensure proper assembly at Project site, clearly identify work that cannot be permanently factory assembled before shipment.

B. Hollow-Metal Doors: Steel-Stiffened Door Cores.

C. Hollow-Metal Frames: Where frames are fabricated in sections due to shipping or handling limitations, provide alignment plates or angles at each joint, fabricated of same thickness metal as frames.

D. Fabricate concealed stiffeners and edge channels from either cold- or hot-rolled steel sheet.

E. Hardware Preparation: Factory prepare hollow-metal work to receive templated mortised hardware; include cutouts, reinforcement, mortising, drilling, and tapping according to SDI A250.6, the Door Hardware Schedule, and templates.

F. Stops and Moldings: Provide stops and moldings around glazed lites and louvers where indicated. Form corners of stops and moldings with butted or mitered hairline joints.

2.8 STEEL FINISHES

A. Prime Finish: Clean, pretreat, and apply manufacturer's standard primer.

B. Factory Finish: Clean, pretreat, and apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, complying with SDI A250.3.

C. Toxicity: Solvent coating systems are not permitted and Electroplated coating systems are not permitted.

2.9 ACCESSORIES

A. Vision Panels: Vision panels shall be 6” wide x 24” tall. Vision panel shall be 6” off of the strike side and 6” below the head of the door.
PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

A. Manage construction waste in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Submit documentation to satisfy the requirements of that Section.
   1. Set aside scrap material to be returned to manufacturer for recycling into new product.

END OF SECTION 081113
SECTION 084233 - REVOLVING DOOR ENTRANCES

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. Revolving door entrances which meets the certification goals as established by the Victor Valley Community College District (VVCCD) Program for the individual Project requirements, of the following types.

B. Section Includes:

1. Automatic revolving door entrances.

C. Related Sections:

1. Section 084113 "Aluminum-Framed Entrances and Storefronts" for adjacent aluminum entrance doors and storefront framing.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for revolving door entrances.

B. Shop Drawings: For revolving door entrances. Include plans, elevations, sections, details, and attachments to other work. Indicate enclosures, speed-control units, and other components not in manufacturer's product data.


C. Samples for Verification:

1. Finishes: For each type of exposed finish required, prepared on Samples of not less than 3 by 5 inches (76 by 127 mm).
2. Glass Samples: For each type of tinted glass; 12 inches (300 mm) square.
1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified Installer and manufacturer.

B. Product Test Reports: Based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for revolving door entrances.

C. Warranties: Samples of special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For revolving door entrances to include in operation and maintenance manuals.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation of units required for this Project.

B. Regulatory Requirements: Wings shall be capable of collapsing into a book-fold position to provide minimum aggregate parallel width of 36 inches (914 mm) when breakaway is applied within 3 inches (76 mm) of outer edges. Set maximum turning speed to comply with requirements of authorities having jurisdiction.

C. Safety Glass: Category II materials complying with testing requirements in 16 CFR 1201.

1. Safety-Glass Labeling: Where safety-glass labeling is indicated, permanently mark glass with certification label of the SGCC, another certification agency acceptable to authorities having jurisdiction, or the manufacturer. Label shall indicate manufacturer's name, type of glass, thickness, and safety-glass standard with which glass complies.

D. Revolving Door Entrance Standard: BHMA A156.27.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of revolving door entrances that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

   a. Lateral deflection of glass lite edges in excess of $1/175$ of their length or $3/4$ inch (19 mm), whichever is less.
   b. Excessive air leakage.
   c. Faulty operation of speed-control unit and hardware.
   d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
2. Warranty Period for Revolving Door Entrances: Three years from date of Substantial Completion.
3. Warranty Period for Speed-Control Units: Five years from date of Substantial Completion.
4. Warranty Period for Finishes: 20 years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Initial Maintenance Service: Beginning at Substantial Completion, provide 12 months' full maintenance by skilled employees of revolving door entrance Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper revolving door entrance operation at rated speed and capacity. Provide parts and supplies same as those used in the manufacture and installation of original equipment.

B. Continuing Maintenance Proposal: From Installer to Owner, in the form of a standard yearly maintenance agreement, starting on date initial maintenance service is concluded. State services, obligations, conditions, and terms for agreement period and for future renewal options.

1. Perform maintenance, including emergency callback service, during normal working hours.
2. Include 24-hour-per-day, 7-day-per-week emergency callback service.

PART 2 - PRODUCTS

2.1 REVOLVING DOOR ENTRANCES

A. Air Infiltration: Maximum air leakage of 1.25 cfm/sq. ft. (6.4 L/s x sq. m) of wing area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 1.57 lbf/sq. ft. (75 Pa).

B. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Windborne-Debris-Impact Resistance: Provide exterior glazing that passes basic or enhanced-protection testing requirements in ASTM E 1996 for local wind zone when tested using the large-missile test according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on the Project and shall be installed in same manner as glazing indicated for use on the Project.

D. Seismic Performance: Revolving door entrances shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
2.2 AUTOMATIC REVOLVING DOOR ENTRANCES

A. Description: Provide manufacturer's standard four-wing automatic revolving door entrance, complete with center shaft, speed-control unit, wings, enclosure walls, canopy, hardware, glass and glazing, activation devices, safety devices, and accessories as indicated.

1. Manufacturers: Subject to compliance with requirements, provide product by the following:

   a. Same manufacturer as installed at the ATC Building.

2. Powered Speed-Control Unit: Provide an electric or electrohydraulic speed regulator to permit automatic rotation of wings. Unit shall allow for manual operation when power is off. Furnish power-operation equipment to suit current characteristics of building electrical service.


5. Signal Activation: Signal from activation device begins and maintains rotation of wings for manufacturer's standard preset time.

   Motion Detectors, Presence Detectors, Combination Motion-Presence Detectors, Photoelectric Beams, Self-contained, Photoelectric Beams, Pulsed infrared, Control Mats, Push-Plate Switch, Push-Button Switch, Key Switch.


7. All-Glass Wings: Manufacturer's standard all-glass wings with tubular metal top and bottom rail members.

8. Push Bars: Manufacturer's standard push bars, finished to match wings.

9. Locks: Manufacturer's standard deadbolt locks to receive cylinders; minimum of two for each revolving door entrance.

10. Enclosure Walls: Manufacturer's standard, with 1-3/4-inch- (45-mm-) thick tubular framing members.

11. Canopy: Manufacturer's standard ceiling, fascia and framing with size, layout, materials, and exposed finishes matching enclosure walls unless otherwise indicated.

12. Floors: Extend adjacent flooring material specified in Section into enclosure as indicated on Drawings.

13. Rotating Glazed Display Case: Glazed enclosure incorporated into core, with framing matching wings and with panel on one side for access to display area.
14. Safety Devices: Manufacturer's standard safety devices as required to stop or slow rotation. Provide the following:

B. Materials: As required by design.

C. Fabrication: Fabricate revolving door entrance components to designs, sizes, thicknesses, and configurations indicated with profiles that are sharp, straight, and free of defects or deformations. Accurately fit joints with ends coped or mitered to produce hairline joints free of burrs and distortion. Prefit all hardware at the factory. Provide anchorage and alignment brackets for concealed support of assembly from the building structure.

D. Aluminum Finishes: As required by design.

E. Stainless-Steel Finishes: As required by design.

F. Copper-Alloy Finishes: As required by design.

2.3 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.


B. Stainless-Steel Sheet: ASTM A 240/A 240M, austenitic stainless steel, Type 304 or Type 316.

C. Plate, Sheet, Strip, and Bars; Bronze: ASTM B 36/B 36M, alloy UNS No. C28000 (muntz metal, 60 percent copper).

D. Steel: ASTM A 36/A 36M plate, shapes, and bars; or ASTM A 1008/A 1008M sheet.

E. Fasteners: Manufacturer's standard, of same basic metal as fastened metal, unless otherwise indicated.

F. Glazing Materials: Comply with requirements in Section 088000 "Glazing."

G. Weather Stripping: Heavy-duty, single-piece rubber or combination of rubber and felt.

H. Nonshrink, Nonmetallic Grout: Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C 1107/C 1107M; of consistency suitable for application.

I. Corrosion-Resistant Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat. Provide inert-type noncorrosive compound free of asbestos fibers, sulfur components, and other deleterious impurities.

J. Lacquer for Copper Alloys: Clear, acrylic lacquer specially developed for coating copper-alloy products.
2.4 GENERAL FINISH REQUIREMENTS

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

C. Finish revolving door entrance components to match adjacent curtain wall or storefront.

2.5 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611, AA-M12C22A41, Class I, 0.018 mm or thicker.

B. Color Anodic Finish: AAMA 611, AA-M12C22A42/A44, Class I, 0.018 mm or thicker.

C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film thickness of 1.5 mils (0.04 mm). Comply with coating manufacturer's written instructions for cleaning, conversion coating, and applying and baking finish.

D. High-Performance Organic Finish: Two-coat or Three-coat fluoropolymer finish complying with AAMA 2605 and containing not less than 70 percent PVDF resin by weight in color coat. Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.

2.6 STAINLESS-STEEL FINISHES

A. General: Remove tool and die marks and stretch lines or blend into finish. Grind and polish surfaces to produce uniform, directionally textured, polished finish indicated, free of cross scratches. Run grain with long dimension of each piece.

B. Directional Satin Finish: No. 4.

C. Reflective, Directional Polish: No. 7.

D. Mirrorlike Reflective, Nondirectional Polish: No. 8.

E. When polishing is completed, passivate and rinse surfaces. Remove embedded foreign matter and leave surfaces chemically clean.

2.7 COPPER-ALLOY FINISHES

A. Finish designations for copper alloys comply with the system established for designating copper-alloy finish systems defined in NAAMM's "Metal Finishes Manual for Architectural and Metal Products."

B. Buffed Finish, Lacquered: M21-O6x.
C. Hand-Rubbed Finish, Lacquered: M31-M34-O6x.

D. Medium-Satin Finish, Lacquered: M32-O6x.

E. Statuary Conversion Coating over Satin Finish: M31-C55-O6x.

PART 3 - EXECUTION

A. CONSTRUCTION WASTE MANAGEMENT

3.2 Manage construction waste in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Submit documentation to satisfy the requirements of that Section.

1. Set aside scrap material to be returned to manufacturer for recycling into new product.
SECTION 086200 - UNIT SKYLIGHTS

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. Unit skylights which meets the certification goals as established by the Victor Valley Community College District (VVCCD) Program for the individual Project requirements, of the following types.

B. Section Includes:

1. Self-flashing unit skylights with integral curbs.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of unit skylight.

1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for unit skylights.
2. Motors: Show nameplate data, power requirements, ratings, characteristics, and mounting arrangements.

B. Shop Drawings: For unit skylight work.

1. Include plans, elevations, sections, details, and connections to supporting structure and other adjoining work.

   a. Wiring Diagrams: For power, signal, and control wiring for electric motors of operable unit skylights.

4. Multiple Units: Methods of connection and structural support for multiple units clustered together.
C. Aluminum Finish Samples: For each type of exposed finish required, in a representative section of each unit skylight in manufacturer's standard size.

D. Glazing Samples: For each color and finish of glazing indicated, 12 inches (300 mm) square and of same thickness indicated for the final Work.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified installer.

B. Product Test Reports: For each type and size of unit skylight, for tests performed within the last four years by a qualified testing agency. Test results based on testing of smaller unit skylights than specified will not be accepted.

C. Field quality-control reports.

D. Sample Warranty: For special warranty.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For unit skylights to include in maintenance manuals.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer capable of fabricating unit skylights that meet or exceed performance requirements indicated and of documenting this performance by inclusion in lists and by labels, test reports, and calculations.

B. Installer Qualifications: An installer acceptable to unit skylight manufacturer for installation of units required for this Project.

1.7 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of unit skylights that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to, the following:

a. Uncontrolled water leakage.

b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

c. Yellowing of acrylic glazing.

d. Breakage of polycarbonate glazing.

e. Deterioration of insulating-glass hermetic seal.

2. Warranty Period: Five years from date of Substantial Completion.
PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Unit Skylight Standard: Comply with AAMA/WDMA/CSA 101/I.S.2/A440 for definitions and minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

B. Thermal Transmittance: NFRC 100 maximum U-factor of 0.30 Btu/sq. ft. x h x deg F or 0.32 Btu/sq. ft. x h x deg F or 0.35 Btu/sq. ft. x h x deg F or 0.50 Btu/sq. ft. x h x deg F or 0.55 Btu/sq. ft. x h x deg F or 0.60 Btu/sq. ft. x h x deg F or 0.75 Btu/sq. ft. x h x deg F.

C. Solar Heat-Gain Coefficient (SHGC): NFRC 200 maximum SHGC of 0.40, 0.35, 0.30, 0.27.

D. Outside-Inside Transmission Class (OITC): Rated for not less than 22 or 26 or 30 OITC when tested for laboratory sound transmission loss according to ASTM E 90 and determined by ASTM E 1332.

E. Windborne-Debris-Impact Resistance: Provide unit skylights that pass basic-protection testing requirements in ASTM E 1996 for local wind zone when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than unit skylights indicated for use on Project and shall be installed in same manner as unit skylights indicated for use on Project.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

G. Sun following reflector by mechanical means to allow sun access to solar gain. Reflector shall have ability to shut off sun entirely if desired.

2.2 UNIT SKYLIGHTS

A. General: Provide factory-assembled unit skylights that include glazing, extruded-aluminum glazing retainers, gaskets, and inner frames and that are capable of withstanding performance requirements indicated.

B. Unit Shape and Size: Circular.

C. Acrylic Glazing: ASTM D 4802, thermoformable, monolithic sheet, category as standard with manufacturer, Finish 1 (smooth or polished), Type UVF (formulated with UV absorber).

D. Polycarbonate Glazing: Thermoformable, extruded monolithic sheets, UV resistant, burglar-resistance rated according to UL 972, and with average impact strength of 12 to 16 ft-lb/in. (640 to 854 J/m) of width when tested according to ASTM D 256, Test Method A (Izod).

E. Insulating Glass: Clear, sealed units that comply with Section 088000 "Glazing," in manufacturer's standard overall thickness.
F. Polycarbonate-Insulating-Panel Glazing: Manufacturer's standard polycarbonate sheet with cellular cross section that provides isolated airspaces and that is coextruded with a UV-protective layer.

G. Fiberglass-Sandwich-Panel Glazing: Manufacturer's standard with uniformly colored, translucent, fiberglass-reinforced-polymer face sheets permanently adhered to a grid core.

H. Glazing Gaskets: Manufacturer's standard or EPDM, neoprene, partially vulcanized butyl tape.

I. Integral Curb: Extruded-aluminum, self-flashing type.

J. Prefabricated Curb: As specified in Section 077200 "Roof Accessories."

K. Condensation Control: Fabricate unit skylights with integral internal gutters and nonclogging weeps to collect and drain condensation to the exterior.

L. Thermal Break: Fabricate unit skylights with thermal barrier separating exterior and interior metal framing.

M. Operable Systems: Equip operable unit skylights with manufacturer's standard hinges, chain-driven operating hardware, and weather-sealing gaskets.

   1. Motor Operator: Manufacturer's standard electronic control, including switch, transformer, low-voltage motor, cover, and mounting hardware.

      a. Provide motor of size and capacity recommended by unit skylight manufacturer to suit unit skylight indicated.
      b. Rain Sensors: Provide rain sensor that automatically closes operable unit when water is detected.
      c. Remote Control: Provide motor operator with portable remote-control device.
      d. Sun following unit reflector and sun blocking capability.

N. Protective Screens: Manufacturer's standard to protect against windborne debris, hail.

2.3 ACCESSORY MATERIALS

A. Fasteners: Same metal as metal being fastened, nonmagnetic stainless steel, or other noncorrosive metal as recommended by manufacturer. Finish exposed fasteners to match material being fastened.

B. Bituminous Coating: Cold-applied asphalt mastic, compounded for 15-mil (0.4-mm) dry film thickness per coat.

2.4 ALUMINUM FINISHES

A. Mill Finish: Manufacturer's standard.
PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

A. Manage construction waste in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Submit documentation to satisfy the requirements of that Section.
   1. Set aside scrap material to be returned to manufacturer for recycling into new product.

END OF SECTION 086200
SECTION 087100 - DOOR HARDWARE

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. Door hardware which meets the certification goals as established by the Victor Valley Community College District (VVCCD) Program for the individual Project requirements, of the following types.

B. Section includes:

1. Mechanical door hardware for the following:
   a. Swinging doors.
   b. Sliding doors.
   c. Folding doors.

C. Related Sections:
   1. Section 081113 "Hollow Metal Doors and Frames" for astragals provided as part of labeled fire-rated assemblies and for door sile ncers provided as part of hollow-metal frames.
   2. Section 084229.23 "Sliding Automatic Entr ances" for entrance door hardware, except including cylinders.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product indicated. Include construction and installation details, material descriptions, dimensions of individual components and profiles, and finishes.

B. Shop Drawings: Details of electrified door hardware, indicating the following:

   1. Wiring Diagrams: For power, signal, and control wiring.

C. Samples for Initial Selection: For plastic protective trim units in each finish, color, and texture required for each type of trim unit indicated.

D. Samples for Verification: For exposed door hardware of each type required, in each finish specified, prepared on Samples of size indicated below. Tag Samples with full description for coordination with the door hardware schedule. Submit Samples before, or concurrent with, submission of door hardware schedule.
E. Other Action Submittals:

1. Door Hardware Schedule: Prepared by or under the supervision of Installer, detailing fabrication and assembly of door hardware, as well as installation procedures and diagrams. Coordinate final door hardware schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

2. Keying Schedule: Prepared by or under the supervision of Installer, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations that are coordinated with the Contract Documents.

1.4 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For electrified door hardware, from the manufacturer.

   1. Certify that door hardware approved for use on types and sizes of labeled fire-rated doors complies with listed fire-rated door assemblies.

C. Product Test Reports: For compliance with accessibility requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified testing agency, for door hardware on doors located in accessible routes.

D. Warranty: Special warranty specified in this Section.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance Data: For each type of door hardware to include in maintenance manuals. Include final keying schedule.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: Supplier of products and an employer of workers trained and approved by product manufacturers and an Architectural Hardware Consultant who is available during the course of the Work to consult with Contractor, Architect, and Owner about door hardware and keying.

B. Architectural Hardware Consultant Qualifications: A person who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project and who is currently certified by DHI as follows:

   1. For door hardware, an Architectural Hardware Consultant (AHC).

C. Source Limitations: Obtain each type of door hardware from a single manufacturer.

D. Fire-Rated Door Assemblies: Where fire-rated door assemblies are indicated, provide door hardware rated for use in assemblies complying with NFPA 80 that are listed and labeled by a
qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C, unless otherwise indicated.

E. Smoke- and Draft-Control Door Assemblies: Where smoke- and draft-control door assemblies are required, provide door hardware that meet requirements of assemblies tested according to UL 1784 and installed in compliance with NFPA 105.

1. Air Leakage Rate: Maximum air leakage of 0.3 cfm/sq. ft. (3 cu. m per minute/sq. m) at the tested pressure differential of 0.3-inch wg (75 Pa) of water.

F. Electrified Door Hardware: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction.

G. Means of Egress Doors: Latches do not require more than 15 lbf (67 N) to release the latch. Locks do not require use of a key, tool, or special knowledge for operation.

H. Accessibility Requirements: For door hardware on doors in an accessible route, comply with the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines.

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.

   a. Exit Devices: Two years from date of Substantial Completion.
   b. Manual Closers: 10 years from date of Substantial Completion.

1.8 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

B. Maintenance Service: Beginning at Substantial Completion, provide six months' full maintenance by skilled employees of door hardware Installer. Include quarterly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper door and door hardware operation. Provide parts and supplies that are the same as those used in the manufacture and installation of original products.
PART 2 - PRODUCTS

2.1 SCHEDULED DOOR HARDWARE
   A. Provide door hardware for each door. Refer to hardware in ATC Building for College standard door hardware. If all types of hardware required exist in the ATC Building supplement as required with additional hardware. Confirm with College exact material to be used prior to implantation.

2.2 HINGES
   A. Hinges: BHMA A156.1.

2.3 SELF-CLOSING HINGES AND PIVOTS
   A. Self-Closing Hinges and Pivots: BHMA A156.17.

2.4 CENTER-HUNG AND OFFSET PIVOTS
   A. Center-Hung and Offset Pivots: BHMA A156.4.

2.5 CONTINUOUS HINGES
   B. Pin-and-Barrel-Type Hinges:
   C. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

2.6 AUXILIARY LOCKS
   A. Bored Auxiliary Locks: BHMA A156.5.
   B. Mortise Auxiliary Locks: BHMA A156.5.
   C. Narrow Stile Auxiliary Locks: BHMA A156.5.
   D. Push-Button Combination Locks: BHMA A156.5.

2.7 SURFACE BOLTS
   A. Surface Bolts: BHMA A156.16.
2.8 MANUAL FLUSH BOLTS
   A. Manual Flush Bolts: BHMA A156.16.

2.9 AUTOMATIC AND SELF-LATCHING FLUSH BOLTS
   A. Automatic and Self-Latching Flush Bolts: BHMA A156.16.

2.10 EXIT DEVICES AND AUXILIARY ITEMS
   A. Exit Devices and Auxiliary Items: BHMA A156.3.

1. Manufacturers: Subject to compliance with requirements, provide products by the following:
   a. Von Duprin; an Ingersoll-Rand company.

2.11 LOCK CYLINDERS
   A. Lock Cylinders: Tumbler type, constructed from brass or bronze, stainless steel, or nickel silver.
   B. Standard Lock Cylinders: BHMA A156.5.
   D. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.
   E. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.

2.12 KEYING
   A. Keying System: Factory registered, complying with guidelines in BHMA A156.28, Appendix A.
   1. Coordinate with the College for keying of the project. Conform to their existing system and priority schedule and requirements.

2.13 HARDWARE
   A. Operating Trim: BHMA A156.6.
   B. Coordinators: BHMA A156.3.
   C. Carry-Open Bars: BHMA A156.3.
   D. Astragals: BHMA A156.22.
E. Surface Closers: BHMA A156.4.
F. Concealed Closers: BHMA A156.4.
G. Closer Holder Release Devices: BHMA A156.15.
H. Wall- and Floor-Mounted Stops: BHMA A156.16.
I. Overhead Stops and Holders: BHMA A156.8.
J. Door Gasketing: BHMA A156.22.
K. Thresholds: BHMA A156.21.
L. Sliding Door Hardware: BHMA A156.14.
M. Folding Door Hardware: BHMA A156.14.
N. Auxiliary Hardware: BHMA A156.16.

2.14 FINISHES

A. Provide finishes complying with BHMA A156.18.
B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

A. Manage construction waste in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Submit documentation to satisfy the requirements of that Section.
   1. Set aside scrap material to be returned to manufacturer for recycling into new product.
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. Automatic door openers which meets the certification goals as established by the Victor Valley Community College District (VVCCD) Program for the individual Project requirements, of the following types.

B. Section Includes:

1. Power door operators for sliding doors.

C. Related Requirements:

1. Section 033000 "Cast-in-Place Concrete" for installing recessed metal frames for control mats in concrete.
2. Section 084229.23 "Swinging Automatic Entrances" for swinging doors and frames packaged with automatic door operators.

1.3 DEFINITIONS

A. AAADM: American Association of Automatic Door Manufacturers.

B. Activation Device: A control that, when actuated, sends an electrical signal to the door operator to open the door.

C. Double-Egress (Doors): A pair of doors that simultaneously swing with the two doors moving in opposite directions with no mullion between them.

D. Double-Swing (Doors): A pair of doors that swing with the two doors moving in opposite directions with a mullion between them; each door functioning as a single-swing door.

E. Safety Device: A control that, to avoid injury, prevents a door from opening or closing.

F. For automatic door terminology, see BHMA A156.10 and BHMA A156.19 for definitions of terms.
1.4 ACTION SUBMITTALS

A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic door operators.
   2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

B. Shop Drawings: For automatic door operators.
   1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
   2. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
   3. Indicate locations of activation and safety devices.
   4. Include diagrams for power, signal, and control wiring.
   5. Include plans, elevations, sections, and attachment details for guide rails.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of automatic door operator.

C. Field quality-control reports.

D. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For automatic door operators, safety devices, and control systems, to include in maintenance manuals.

1.7 QUALITY ASSURANCE

A. Installer Qualifications: An authorized representative who is trained and approved by manufacturer for installation and maintenance of units required for this Project.

   1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

B. Certified Inspector Qualifications: Certified by AAADM.

1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of automatic door operators that fail in materials or workmanship within specified warranty period.
1. Failures include, but are not limited to, the following:
   a. Faulty or sporadic operation of automatic door operator, including controls.
   b. Deterioration of metals, metal finishes, and other materials beyond normal weathering or use.

2. Warranty Period: Two years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 AUTOMATIC DOOR OPERATORS, GENERAL

A. General: Provide operators of size recommended by manufacturer for door size, weight, and movement; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for occupancy type indicated; and according to UL 325. Coordinate operator mechanisms with door operation, hinges, and activation and safety devices.

B. Electromechanical Operating System: Self-contained unit powered by permanent-magnet dc motor; with closing speed controlled mechanically by gear train and dynamically by braking action of electric motor, connections for power and activation- and safety-device wiring, and manual operation including spring closing when power is off.

C. Housing for Overhead Concealed Operators: Fabricated from minimum 0.125-inch- (3.2-mm-) thick, extruded or formed aluminum and extending full width of door opening including door jambs to conceal door operators and controls. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.

D. Brackets and Reinforcements: Fabricated from aluminum with nonstaining, nonferrous shims for aligning system components.

E. Fire-Door Package: Consisting of UL-listed latch mechanism, power-reset box, and caution signage for fire-rated doors. Latch mechanism shall allow door to swing free during automatic operation; when fire is detected, latch actuator shall cause exit hardware to latch when door closes. Provide latch actuators with fail-secure design.

F. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

2.2 POWER DOOR OPERATORS

A. Standard: BHMA A156.10.

B. Performance Requirements:

1. Opening Force:
a. Power-Operated Doors: Not more than 50 lbf (222 N) required to manually set door in motion if power fails; not more than 15 lbf (67 N) required to open door to minimum required width.

b. Power-Operated Swinging Doors: Not more than 30 lbf (133 N) required to manually open door if power fails.

c. Breakaway Device for Power-Operated Doors: Not more than 50 lbf (222 N) required for breakaway door or panel to open.

2. Entrapment-Prevention Force: Not more than 40 lbf (178 N) required to prevent stopped door in the last 10 degrees of opening from moving in the direction of opening; not more than 30 lbf (133 N) required to prevent stopped door from moving in direction of closing.

C. Configuration: Operator to control single sliding door, pair of sliding doors.

D. Operation: Power opening and power-assisted spring closing. Provide time delay for door to remain open before initiating closing cycle as required by BHMA A156.10.

E. Operating System

F. Features: Electromechanical.

G. Microprocessor Control Unit: Solid-state controller

1. Adjustable opening and closing speed.
2. Adjustable opening and closing force.
3. Adjustable backcheck.
4. Adjustable hold-open time from zero to 30 seconds.
5. Adjustable time delay.
6. Adjustable acceleration.
7. Adjustable limit switch.
8. Obstruction recycle.
9. Automatic door re-open if stopped while closing.
10. On-off/hold-open switch to control electric power to operator; key operated.

H. Controls: Activation and safety devices according to BHMA standards.

I. Exposed Finish: Class I, clear anodic finish or Class II, clear anodic finish or Class I, color anodic finish or Class II, color anodic finish.

2.3 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

B. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304, stretcher-leveled standard of flatness, in manufacturer's standard thickness.

C. Brass Sheet: ASTM B 36/B 36M, Alloy UNS No. C26000 (cartridge brass, 70 percent copper), in manufacturer's standard thickness.
D. Bronze Sheet:  ASTM B 36/B 36M, Alloy UNS No. C28000 (muntz metal, 60 percent copper) or Alloy UNS No. C23000 (red brass, 85 percent copper), in manufacturer's standard thickness.

E. Expanded Aluminum Mesh:  Aluminum sheet according to the geometry of ASTM F 1267.

F. Polycarbonate Sheet:  ASTM C 1349, Appendix X1, Type II, coated, mar-resistant, UV-stabilized polycarbonate with coating on both surfaces.

G. Fasteners and Accessories:  Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.4 CONTROLS

A. General:  Provide controls, including activation and safety devices, according to BHMA standards; for condition of exposure; and for long-term, maintenance-free operation under normal traffic load for occupancy type indicated.  Coordinate activation and safety devices with door operation and door operator mechanisms.

B. Motion Sensors:  Provide detection field sizes and functions required by BHMA A156.10.

C. Presence Sensors.

D. Photoelectric Beams.

E. Control Mats:  According to performance requirements in BHMA A156.10.

F. Push-Plate Switch.

G. Push-Button Switch.

H. Key Switch.

I. Wireless or Remote Radio-Control Switch.

J. Electrical Interlocks.

2.5 FABRICATION

A. Factory fabricate automatic door operators to comply with indicated standards.

B. Form aluminum shapes before finishing.

C. Fabricate exterior components to drain condensation and water passing joints within operator enclosure to the exterior.

D. Use concealed fasteners to greatest extent possible.  Where exposed fasteners are required, use countersunk Phillips flat-head machine screws, finished to match operator.
E. Provide metal cladding, completely covering visible surfaces before shipment to Project site. Fabricate cladding with concealed fasteners and connection devices, with accurately fitted joints with ends coped or mitered to produce hairline joints free of burrs and distortion, and with allowance for thermal expansion at exterior doors.

2.6 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying strippable, temporary protective covering before shipping.

B. Apply organic and anodic finishes to formed metal after fabrication unless otherwise indicated.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within range of approved Samples and are assembled or installed to minimize contrast.

2.7 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611.

B. Color Anodic Finish: AAMA 611.

C. Baked-Enamel or Powder-Coat Finish: AAMA 2603 except with a minimum dry film.

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANGEMENT

A. Manage construction waste in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Submit documentation to satisfy the requirements of that Section.

1. Set aside scrap material to be returned to manufacturer for recycling into new product.

END OF SECTION 087113
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. Glazing which meets the certification goals as established by the Victor Valley Community College District (VVCCD) Program for the individual Project requirements, of the following types.

B. Section includes glazing for the following products and applications, including those specified in other Sections where glazing requirements are specified by reference to this Section:

1. Windows.
2. Doors.
3. Storefront framing.
4. Skylights.
5. Interior borrowed lites.

C. Related Sections:
1. Section 084229.23 "Sliding Automatic Entrances."
2. Section 084233 "Revolving Door Entrances."
3. Section 088113 "Decorative Glass Glazing."
4. Section 088300 "Mirrors."

1.3 DEFINITIONS
A. Glass Manufacturers: Firms that produce primary glass, fabricated glass, or both, as defined in referenced glazing publications.

B. Glass Thicknesses: Indicated by thickness designations in millimeters according to ASTM C 1036.

C. Interspace: Space between lites of an insulating-glass unit.

1.4 PERFORMANCE REQUIREMENTS
A. General: Installed glazing systems shall withstand normal thermal movement and wind and impact loads (where applicable) without failure, including loss or glass breakage attributable to the following: defective manufacture, fabrication, or installation; failure of sealants or gaskets...
B. Delegated Design: Design glass, including comprehensive engineering analysis according to ASTM E 1300 by a qualified professional engineer.

C. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes acting on glass framing members and glazing components.

1.5 ACTION SUBMITTALS

A. Product Data: For each glass product and glazing material indicated.

B. LEED Submittals:

1. Product Data for Credit IEQ 4.1: For glazing sealants used inside the weatherproofing system, documentation including printed statement of VOC content.

2. Laboratory Test Reports for Credit IEQ 4: For glazing sealants used inside the weatherproofing system, documentation indicating that they comply with the testing and product requirements of the California Department of Health Services' "Standard Practice for the Testing of Volatile Organic Emissions from Various Sources Using Small-Scale Environmental Chambers."

C. Glass Samples: For each type of the following products; 12 inches (300 mm) square.

1. Tinted glass.
2. Patterned glass.
3. Coated glass.
4. Wired glass.
5. Fire-resistive glazing products.
6. Laminated glass with colored interlayer.
7. Insulating glass.

D. Glazing Accessory Samples.

E. Delegated-Design Submittal: For glass indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.6 INFORMATIONAL SUBMITTALS

A. Qualification Data: For installers manufacturers of insulating-glass units with sputter-coated, low-e coatings.

B. Product Certificates: For glass and glazing products, from manufacturer.

C. Product Test Reports: Based on evaluation of comprehensive tests performed by a qualified testing agency, for tinted glass coated glass insulating glass.
1. For glazing sealants, provide test reports based on testing current sealant formulations within previous 36-month period.

D. Preconstruction adhesion and compatibility test report.

E. Warranties: Sample of special warranties.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications for Insulating-Glass Units with Sputter-Coated, Low-E Coatings: A qualified insulating-glass manufacturer who is approved by coated-glass manufacturer.

B. Installer Qualifications: A qualified installer who employs glass installers for this Project who are certified under the National Glass Association's Certified Glass Installer Program.

C. Glass Testing Agency Qualifications: A qualified independent testing agency accredited according to the NFRC CAP 1 Certification Agency Program.

D. Sealant Testing Agency Qualifications: An independent testing agency qualified according to ASTM C 1021 to conduct the testing indicated.

E. Source Limitations for Glass: Obtain ultraclear float glass tinted float glass coated float glass laminated glass and insulating glass from single source from single manufacturer for each glass type.

F. Source Limitations for Glazing Accessories: Obtain from single source from single manufacturer for each product and installation method.

G. Glazing Publications: Comply with published recommendations of glass product manufacturers and organizations below, unless more stringent requirements are indicated. Refer to these publications for glazing terms not otherwise defined in this Section or in referenced standards.

1. GANA Publications: GANA's "Glazing Manual."

H. Safety Glazing Labeling: Where safety glazing labeling is indicated, permanently mark glazing with certification label of the SGCC or another certification agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, type of glass, thickness, and safety glazing standard with which glass complies.

I. Fire-Protection-Rated Glazing Labeling: Permanently mark fire-protection-rated glazing with certification label of a testing agency acceptable to authorities having jurisdiction. Label shall indicate manufacturer's name, test standard, whether glazing is for use in fire doors or other openings, whether or not glazing passes hose-stream test, whether or not glazing has a temperature rise rating of 450 deg F (250 deg C), and the fire-resistance rating in minutes.
J. Insulating-Glass Certification Program: Permanently marked either on spacers or on at least one component lite of units with appropriate certification label of IGCC.

1.8 WARRANTY

A. Manufacturer's Special Warranty for Coated-Glass Products: Manufacturer's standard form in which coated-glass manufacturer agrees to replace coated-glass units that deteriorate within specified warranty period. Deterioration of coated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning coated glass contrary to manufacturer's written instructions. Defects include peeling, cracking, and other indications of deterioration in coating.

1. Warranty Period: 10 years from date of Substantial Completion.

B. Manufacturer's Special Warranty on Laminated Glass: Manufacturer's standard form in which laminated-glass manufacturer agrees to replace laminated-glass units that deteriorate within specified warranty period. Deterioration of laminated glass is defined as defects developed from normal use that are not attributed to glass breakage or to maintaining and cleaning laminated glass contrary to manufacturer's written instructions. Defects include edge separation, delamination materially obstructing vision through glass, and blemishes exceeding those allowed by referenced laminated-glass standard.

1. Warranty Period: 10 years from date of Substantial Completion.

C. Manufacturer's Special Warranty on Insulating Glass: Manufacturer's standard form in which insulating-glass manufacturer agrees to replace insulating-glass units that deteriorate within specified warranty period. Deterioration of insulating glass is defined as failure of hermetic seal under normal use that is not attributed to glass breakage or to maintaining and cleaning insulating glass contrary to manufacturer's written instructions. Evidence of failure is the obstruction of vision by dust, moisture, or film on interior surfaces of glass.

1. Warranty Period: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 GLASS PRODUCTS, GENERAL

A. Thickness: Where glass thickness is indicated, it is a minimum. Provide glass lites in thicknesses as needed to comply with requirements indicated.

• Windborne-Debris-Impact Resistance: Provide exterior glazing that passes enhanced-protection testing requirements in ASTM E 1996 for local wind zone when tested according to ASTM E 1886. Test specimens shall be no smaller in width and length than glazing indicated for use on the Project and shall be installed in same manner as glazing indicated for use on the Project.

B. Thermal and Optical Performance Properties: Provide glass with performance properties specified, as indicated in manufacturer's published test data.
2.2 GLASS PRODUCTS

A. Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I (clear) unless otherwise indicated.

B. Ultraclear Float Glass: ASTM C 1036, Type I, Quality-Q3, Class I, complying with other requirements specified and with visible light transmission not less than 91 percent and solar heat gain coefficient not less than 0.87.

C. Heat-Treated Float Glass: ASTM C 1048; Type I; Quality-Q3; Class I (clear) unless otherwise indicated; of kind and condition indicated.

D. Pyrolytic-Coated, Self-Cleaning, Low-Maintenance Glass: Clear float glass with a coating on first surface having both photocatalytic and hydrophilic properties that act to loosen dirt and to cause water to sheet evenly over the glass instead of beading.

E. Uncoated Tinted Float Glass: Class 2, complying with other requirements specified.

F. Polished Wired Glass: ASTM C 1036, Type II, Class 1 (clear), Form 1, Quality-Q6, complying with ANSI Z97.1, Class C.

G. Film-Faced Polished Wired Glass: ASTM C 1036, Type II, Class 1 (clear), Form 1, Quality-Q6 and complying with testing requirements in 16 CFR 1201 for Category II materials.


J. Patterned Wired Glass: ASTM C 1036, Type II.


L. Reflective-Coated Vision Glass: ASTM C 1376, coated by pyrolytic process vacuum deposition (sputter-coating) process, and complying with other requirements specified.

M. Ceramic-Coated Spandrel Glass: ASTM C 1048, Condition B, Type I, Quality-Q3, and complying with other requirements specified.

N. Silicone-Coated Spandrel Glass: ASTM C 1048, Condition C, Type I, Quality-Q3, and complying with other requirements specified.

O. Reflective-Coated Spandrel Glass: ASTM C 1376, Kind CS; coated by pyrolytic process] [vacuum deposition (sputter-coating) process, and complying with other requirements specified.

P. One way Glass: Vision Glass conforming to ASTM C.

2.3 LAMINATED GLASS

A. Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, and with other requirements specified. Use materials that have a proven
B. Windborne-Debris-Impact-Resistant Laminated Glass: ASTM C 1172, and complying with testing requirements in 16 CFR 1201 for Category II materials, with "Windborne-Debris-Impact Resistance" Paragraph in "Glass Products, General" Article, and with other requirements specified. Use materials that have a proven record of no tendency to bubble, discolor, or lose physical and mechanical properties after fabrication and installation.

C. Glass: Comply with applicable requirements in "Glass Products" Article as indicated by designations in "Laminated-Glass Types" Article.

2.4 INSULATING GLASS

A. Insulating-Glass Units: Factory-assembled units consisting of sealed lites of glass separated by a dehydrated interspace, qualified according to ASTM E 2190, and complying with other requirements specified.

B. Glass: Comply with applicable requirements in "Glass Products" Article and in "Laminated Glass" Article as indicated by designations in "Insulating-Glass Types" Article and in "Insulating-Laminated-Glass Types" Article.

2.5 FIRE-PROTECTION-RATED GLAZING

A. Fire-Protection-Rated Glazing, General: Listed and labeled by a testing agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252 for door assemblies and NFPA 257 for window assemblies.

B. Monolithic Ceramic Glazing: Clear, ceramic flat glass; 3/16-inch (5-mm) nominal thickness.

C. Film-Faced Ceramic Glazing: Clear, ceramic flat glass; 3/16-inch (5-mm) nominal thickness; faced on one surface with a clear glazing film; complying with testing requirements in 16 CFR 1201 for Category II materials.

D. Laminated Ceramic Glazing: Laminated glass made from 2 plies of clear, ceramic flat glass; 5/16-inch (8-mm) total nominal thickness; complying with testing requirements in 16 CFR 1201 for Category II materials.

E. Fire-Protection-Rated Tempered Glass: [1/4-inch- (6.4-mm-)] [3/8-inch- (9.5-mm-)] [1/2-inch-(12.7-mm-)] thick, fire-protection-rated tempered glass, complying with testing requirements in 16 CFR 1201 for Category II materials.

F. Fire-Protection-Rated Laminated Glass: 5/16-inch- (8-mm-) thick, fire-protection-rated laminated glass, complying with testing requirements in 16 CFR 1201 for Category II materials.

G. Laminated Glass with Intumescent Interlayers: Laminated glass made from multiple plies of uncoated, clear float glass; with intumescent interlayers; complying with testing requirements in 16 CFR 1201 for Category II materials.
H. Gel-Filled, Double Glazing Units: Double glazing units made from two lites of uncoated, clear, fully tempered float glass; with a perimeter metal spacer separating lites and dual-edge seal enclosing a cavity filled with clear, fully transparent, heat-absorbing gel; complying with testing requirements in 16 CFR 1201 for Category II materials.

2.6 GLAZING GASKETS

2.7 GLAZING SEALANTS

2.8 GLAZING TAPES

2.9 MISCELLANEOUS GLAZING MATERIALS

2.10 MONOLITHIC-GLASS TYPES

2.11 LAMINATED-GLASS TYPES

2.12 INSULATING-GLASS TYPES

2.13 INSULATING-LAMINATED-GLASS TYPES

PART 3 - EXECUTION

3.1 CONSTRUCTION WASTE MANAGEMENT

A. Manage construction waste in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Submit documentation to satisfy the requirements of that Section.
   1. Set aside scrap material to be returned to manufacturer for recycling into new product.
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. Sliding automatic entrances which meets the certification goals as established by the Victor Valley Community College District (VVCCD) Program for the individual Project requirements, of the following types.
B. Section includes exterior, sliding, power-operated automatic entrances.
C. Related Requirements:
   1. Section 033000 "Cast-in-Place Concrete" for forming recesses in concrete for recessed thresholds.

1.3 DEFINITIONS
A. AAADM: American Association of Automatic Door Manufacturers.
B. Activation Device: A control that, when actuated, sends an electrical signal to the door operator to open the door.
D. Safety Device: A control that, to avoid injury, prevents a door from opening or closing.
E. For automatic door terminology, refer to BHMA A156.10 for definitions of terms.

1.4 ACTION SUBMITTALS
A. Product Data: For each type of product.
   1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for automatic entrances.
   2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
B. Shop Drawings: For automatic entrances.

Victor Valley Community College District
New Science/Health Building
Outline Specifications

SLIDING AUTOMATIC ENTRANCES
084229.23 - 1
1. Include plans, elevations, sections, hardware mounting heights, and attachment details.
2. Indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.
3. Include diagrams for power, signal, and control wiring.
4. Indicate locations of activation and safety devices.
5. Include hardware schedule and indicate hardware types, functions, quantities, and locations.

C. Samples for Initial Selection: For units with factory-applied color finishes.
   1. Include Samples of hardware and accessories involving color or finish selection.

D. Samples for Verification: For each type of exposed finish required, in manufacturer's standard sizes.

E. Delegated-Design Submittal: For automatic entrances.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For Installer.

B. Product Certificates: For each type of automatic entrance.

C. Product Test Reports: For each type of automatic entrance, for tests performed by a qualified testing agency.

D. Field quality-control reports.

E. Sample Warranties: For manufacturer's special warranties.

1.6 CLOSEOUT SUBMITTALS

A. Operation and Maintenance Data: For automatic entrances, safety devices, and control systems to include in operation and maintenance manuals.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: A manufacturer with company certificate issued by AAADM indicating that manufacturer has a Certified Inspector on staff.

B. Installer Qualifications: Manufacturer's authorized representative who is trained and approved for installation and maintenance of units required for this Project.
   1. Maintenance Proximity: Not more than two hours' normal travel time from Installer's place of business to Project site.

C. Certified Inspector Qualifications: Certified by AAADM.
1.8 WARRANTY

A. Special Warranty: Manufacturer agrees to repair or replace components of automatic entrances 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. Faulty operation of operators, controls, and hardware.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

2. Warranty Period: Two years from date of Substantial Completion.

B. Special Finish Warranty: Manufacturer agrees to repair or replace components on which finishes fail in materials or workmanship 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: 10 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 AUTOMATIC ENTRANCE ASSEMBLIES

A. Source Limitations: Obtain sliding automatic entrances from single source from single manufacturer.

B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.

C. Power-Operated Door Standard: BHMA A156.10.

2.2 PERFORMANCE REQUIREMENTS

A. Delegated Design: Engage a qualified professional engineer, as defined in Section 014000 "Quality Requirements," to design automatic entrances.

B. Structural Performance: Automatic entrances shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to ASCE/SEI 7.
C. Windborne-Debris Impact Resistance: Automatic entrances shall pass large-missile-impact and small-missile-impact and cyclic-pressure tests of ASTM E 1996 according to the IBC local wind zone.

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes.

E. Operating Temperature Range: Automatic entrances shall operate within the minus 20 to plus 122 deg F range.

F. Air Infiltration: Maximum air leakage through fixed glazing and framing areas of 1.25 cfm/sq. ft. (6.4 L/s x sq. m) of fixed entrance-system area when tested according to ASTM E 283 at a minimum static-air-pressure difference of 6.24 lbf/sq. ft. (300 Pa).

G. Entrapment-Prevention Force:
   1. Power-Operated Sliding Doors: Not more than 30 lbf (133 N) required to prevent stopped door from closing.

2.3 SLIDING AUTOMATIC ENTRANCES

A. General: Provide manufacturer's standard automatic entrances including doors, sidelites, framing, headers, carrier assemblies, roller tracks, door operators, controls, and accessories required for a complete installation.

B. Sliding Automatic Entrance:
   2. Configuration: Biparting-sliding doors with two sliding leaves, transom, and pocketed sidelites on each side.
   3. Configuration: Single-telescoping-sliding door with two or Biparting-telescoping-sliding doors with four sliding leaves, transom, and sidelite(s).
   4. Sliding-Door Carrier Assemblies and Overhead Roller Tracks: Carrier assembly that allows vertical adjustment; consisting of nylon- or delrin-covered, ball-bearing-center steel wheels operating on a continuous roller track, or ball-bearing-center steel wheels operating on a nylon- or delrin-covered, continuous roller track. Support doors from carrier assembly by cantilever and pivot assembly.
   5. Sliding-Door Threshold: Threshold members and bottom-guide-track system with stainless-steel, ball-bearing-center roller wheels.
   6. Controls: Activation and safety devices as indicated on Drawings and according to BHMA standards.
7. Finish: Finish framing, door(s), and header with Class I, clear anodic finish or Class II, clear anodic finish or Class I, color anodic finish or Class II, color anodic finish or finish matching adjacent storefront.

2.4 ENTRANCE COMPONENTS

A. Framing Members: Extruded aluminum, minimum 0.125 inch (3.2 mm) thick and reinforced as required to support imposed loads.

B. Stile and Rail Doors: 1-3/4-inch- (45-mm-) thick, glazed doors with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular stile and rail members. Mechanically fasten corners with reinforcing brackets that are welded, or incorporate concealed tie-rods that span full length of top and bottom rails.

C. All-Glass Sliding Doors: Fabricated from 13-mm-thick tempered glass, with polished vertical edges and minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum top and bottom rails.

D. Sidelite(s) and Transom: 1-3/4-inch- (45-mm-) deep sidelite(s) and transom with minimum 0.125-inch- (3.2-mm-) thick, extruded-aluminum tubular stile and rail members matching door design.

E. Headers: Fabricated from minimum 0.125-inch- (3.2-mm-) thick extruded aluminum and extending full width of automatic entrance units to conceal door operators and controls. Provide hinged or removable access panels for service and adjustment of door operators and controls. Secure panels to prevent unauthorized access.

F. Brackets and Reinforcements: High-strength aluminum with nonstaining, nonferrous shims for aligning system components.

G. Signage: As required by cited BHMA standard.

2.5 MATERIALS

A. Aluminum: Alloy and temper recommended by manufacturer for type of use and finish indicated.

B. Steel Reinforcement: Reinforcement with corrosion-resistant primer complying with SSPC-PS Guide No. 12.00 applied immediately after surface preparation and pretreatment. Use surface preparation methods according to recommendations in SSPC-SP COM and prepare surfaces according to applicable SSPC standard.

C. Stainless-Steel Bars: ASTM A 276 or ASTM A 666, Type 304 or Type 316.

D. Stainless-Steel Tubing: ASTM A 554, Grade MT 304 or Grade MT 316.

E. Stainless-Steel Sheet: ASTM A 240/A 240M or ASTM A 666, Type 304 or Type 316, stretcher-leveled standard of flatness, in entrance manufacturer's standard thickness.
F. Brass Sheet:  ASTM B 36/B 36M, Alloy UNS No. C26000 (cartridge brass, 70 percent copper), in entrance manufacturer's standard thickness.

G. Bronze Sheet:  ASTM B 36/B 36M, Alloy UNS No. C28000 (muntz metal, 60 percent copper) or Alloy UNS No. C23000 (red brass, 85 percent copper), in entrance manufacturer's standard thickness.

H. Expanded Aluminum Mesh: Aluminum sheet according to the geometry of ASTM F 1267.

I. Polycarbonate Sheet:  ASTM C 1349, Appendix X1, Type II, coated, mar-resistant, UV-stabilized polycarbonate with coating on both surfaces.

J. Glazing:  As specified in Section 088000 "Glazing."

K. Sealants and Joint Fillers:  As specified in Section 079200 "Joint Sealants."

L. Nonmetallic, Shrinkage-Resistant Grout:  Premixed, nonmetallic, noncorrosive, nonstaining grout; complying with ASTM C 1107/C 1107M; of consistency suitable for application.

M. Bituminous Coating: Cold-applied asphalt emulsion complying with ASTM D 1187.

N. Fasteners and Accessories: Corrosion-resistant, nonstaining, nonbleeding fasteners and accessories compatible with adjacent materials.

2.6 DOOR OPERATORS AND CONTROLS

A. General: Provide operators and controls, which include activation and safety devices, according to BHMA standards, for condition of exposure, and for long-term, maintenance-free operation under normal traffic load for type of occupancy indicated.

B. Door Operators: Provide door operators of size recommended by manufacturer for door size, weight, and movement.

C. Motion Sensors:  Self-contained, K-band-frequency, microwave-scanner units; fully enclosed by its plastic housing; adjustable to provide detection-field sizes and functions required by BHMA A156.10.

D. Presence Sensors:  Self-contained, active-infrared scanner units; adjustable to provide detection-field sizes and functions required by BHMA A156.10. Sensors shall remain active at all times.

E. Photoelectric Beams: Pulsed infrared, sender-receiver assembly for recessed mounting. Beams shall not be active when doors are fully closed.

F. Control Mats: synthetic-rubber or flexible-plastic mat in safety-ribbed surface pattern, with extruded-aluminum frame; with pressure switches for low-voltage control wiring; and complying with performance requirements of BHMA A156.10.

G. Push-Plate Switch: Momentary-contact door-control switch with flat push-plate actuator.
H. Push-Button Switch: Momentary-contact door-control switch with one red-button actuator.

I. Key Switch: Recess-mounted, door-control switch with key-controlled actuator.

J. Wireless or Remote Radio Control Switch: Auxiliary radio control system consisting of header-mounted receiver and transmitter.

K. Electrical Interlocks: Unless units are equipped with self-protecting devices or circuits, provide electrical interlocks to prevent activation of operator when door is locked, latched, or bolted.

2.7 HARDWARE

A. General: Provide units in sizes and types recommended by automatic entrance and hardware manufacturers for entrances and uses indicated. Finish exposed parts to match door finish unless otherwise indicated.

B. Breakaway Device for Power-Operated Doors.

C. Deadlocks.

D. Automatic Locking.

E. Dustproof Strikes for All-Glass Sliding Doors.

F. Weather Stripping: Replaceable components.

2.8 FABRICATION

A. General: Factory fabricate automatic entrance components to designs, sizes, and thicknesses indicated and to comply with indicated standards.

1. Form aluminum shapes before finishing.
2. Weld in concealed locations to greatest extent possible to minimize distortion or discoloration of finish.
3. Use concealed fasteners to greatest extent possible.
4. Where aluminum will contact dissimilar metals, protect against galvanic action by painting contact surfaces with primer or by applying sealant or tape recommended by manufacturer for this purpose.

B. Framing: Provide automatic entrances as prefabricated assemblies. Complete fabrication, assembly, finishing, hardware application, and other work before shipment to Project site.

C. Doors: Factory fabricated and assembled in profiles indicated. Reinforce as required to support imposed loads and for installing hardware.

D. Metal Cladding: Factory-fabricated and installed metal cladding, completely covering all visible surfaces as part of prefabricated entrance assembly before shipment to Project site.
E. Door Operators: Factory fabricated and installed in headers, including adjusting and testing.

F. Glazing: Fabricate framing with minimum glazing edge clearances for thickness and type of glazing indicated, according to GANA's "Glazing Manual."

G. Hardware: Factory install hardware to greatest extent possible; remove only as required for final finishing operation and for delivery to and installation at Project site. Cut, drill, and tap for factory-installed hardware before applying finishes.

H. Controls:
   1. General: Factory install activation and safety devices in doors and headers as required by BHMA A156.10 for type of door and direction of travel.
   2. Install photoelectric beams in vertical jambs of sidelites, with dimension above finished floor as follows:

2.9 GENERAL FINISH REQUIREMENTS

A. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Apply organic and anodic finishes to formed metal after fabrication unless otherwise indicated.

C. Appearance of Finished Work: Noticeable variations in same piece are not acceptable. Variations in appearance of adjoining components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

2.10 ALUMINUM FINISHES

A. Clear Anodic Finish: AAMA 611.

B. Color Anodic Finish: AAMA 611.

C. Baked-Enamel or Powder-Coat Finish: AAMA 2603.

D. High-Performance Organic Finish: Two-coat fluoropolymer finish complying with AAMA 2604 or AAMA 2605.

E. High-Performance Organic Finish: Three-coat fluoropolymer finish complying with AAMA 2605.

PART 3 - EXECUTION

A. CONSTRUCTION WASTE MANGEMENT
3.2 Manage construction waste in accordance with provisions of Section 01 74 19 Construction Waste Management and Disposal. Submit documentation to satisfy the requirements of that Section.

1. Set aside scrap material to be returned to manufacturer for recycling into new product.

END OF SECTION 084229.23