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15. Counterbalance: Helical torsion spring type, housed in steel tube or pipe barrel and supporting curtain with deflection limited to 0.03 inch per foot (1:400 mm/sec) of span. Adjustable spring tension required.
16. Hood: Not required.
17. Motor Operation: Provide UL-listed electric operator; size as recommended by manufacturer to move door in either direction at minimum 8 inches (203 mm), maximum 1 foot (305 mm) per second.
    a. Manual Override: Hoist.
    b. Timer to Close: Not required.
    c. Operation Supply Voltage: 115/208/230V 1 phase 60Hz.
    d. Signaling Device: Horn and strobe combination.
    e. Actuation Device: Provide push button, key switch, pull cord, loop detector, motion detector, treadle switch, and radio control.
    f. Motor Mounting: Wall mounted, right hand side.
    g. Motor Enclosure: Not required.
    h. Obstruction Safety Detection:
        1) Primary, Monitored: Reflective photo-eyes.

2.03 OVERHEAD COILING SHEET DOORS

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify conditions meet manufacturer's requirements before starting work.

3.02 INSTALLATION

A. Install in accordance with manufacturer's written instructions.
B. Fit and align assembly, including hardware. Level and plumb to provide smooth operation.

3.03 ADJUSTING

A. Adjust operating assemblies for smooth and noiseless operation.

END OF SECTION

SECTION 083613
SECTIONAL DOORS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Overhead sectional doors, electrically operated.
B. Operating hardware and supports.
C. Electrical controls.

1.02 REFERENCE STANDARDS

A. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process; 2025a.
B. ITS (DIR) - Directory of Listed Products; Current Edition.
C. NEMA EN 10250 - Enclosures for Electrical Equipment (1000 Volts Maximum); 2024.
D. NEMA ICS 2 - Industrial Control and Systems Controllers, Contactors and Overload Relays Rated 600 Volts; 2008 (Reaffirmed 2020).
E. NEMA MG 00001 - Motors and Generators; 2024.
F. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
G. UL (DIR) - Online Certifications Directory; Current Edition.
H. UL 325 - Standard for Door, Drapery, Gate, Louver, and Window Operators and Systems; Current Edition, Including All Revisions.

1.03 SUBMITTALS

A. Shop Drawings: Indicate opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
B. Product Data: Show component construction, anchorage method, and hardware.
C. Samples: Submit two panel finish samples, minimum 6 inch by 6 inch (152 by 152 mm) in size, illustrating color and finish.
D. Manufacturer's Installation Instructions: Include any special procedures required by project conditions.
E. Manufacturer's Qualification Statement.
F. Installer's Qualification Statement.
G. Operation Data: Include normal operation, troubleshooting, and adjusting.
H. Maintenance Data: Include data for motor and transmission, shaft and gearing, lubrication frequency, spare part sources.
I. Warranty: Submit manufacturer warranty and ensure forms have been completed in Owner's name and registered with manufacturer.

1.04 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the products specified in this section with minimum three years of documented experience.
B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years documented experience and approved by manufacturer.
C. Comply with applicable code for motor and motor control requirements.

1.05 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.
B. Warranty: Include coverage for electric motor and transmission.
C. Provide five year manufacturer warranty for electric operating equipment.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Sectional Doors:
    1. Basis of Design: Overhead Door Corporation; Model 426: www.overheaddoor.com.

2.02 STEEL DOORS

A. Steel Doors: Flush steel, insulated; standard lift operating style with track and hardware; complying with DASMA 102, Commercial application.
    1. Performance: Withstand positive and negative wind loads equal to 1.5 times design wind loads specified by local code without damage or permanent set, when tested in accordance with ASTM E330/E330M, using 10 second duration of maximum load.
    2. Door Nominal Thickness: 2 inches (51 mm) thick.
    3. Thermal Transmittance: U-factor (Usi-factor) of 0.31 Btu/hr sq ft degrees F (1.76 W/sq m K), maximum, in accordance with DASMA 102.
    4. Air Leakage Rate: Less than 0.40 cfm/sf (2.0 L/sec/sq m) when tested in accordance with ASTM E283 at test pressure difference of 1.57 psf (75 Pa).
    5. Exterior Finish: Factory finished with acrylic baked enamel; Industrial Brown color.
    6. Interior Finish: Factory finished with acrylic baked enamel; Industrial Brown color.
    7. Electric Operation: Electric control station.
B. Door Panels: Steel construction; outer steel sheet of 20 gauge, 0.0359 inch (0.91 mm) minimum thickness, flush profile; inner steel sheet of 20 gauge, 0.0359 inch (0.91 mm) minimum thickness, flat profile; core reinforcement sheet steel roll formed to channel shape, rabbeted weather joints at meeting rails; polyurethane insulation.
C. Window Frame: Manufacturers standard, finish to match.
D. Glazing: Polycarbonate; single pane; clear; nominal 1/4 inch (6.4 mm) overall thickness.

2.03 COMPONENTS

A. Track: Galvanized steel angles, 0.094 inch (2.4 mm) minimum thickness; 2-5/16 x 4 inch (59 x 102 mm) size, continuous one piece per side; galvanized steel mounting brackets 1/4 inch (6 mm) thick.
B. Hinge and Roller Assemblies: Heavy duty hinges and adjustable roller holders of galvanized steel; floating hardened steel bearing rollers, located at top and bottom of each panel, each side.
C. Lift Mechanism: Torsion spring on cross head shaft, with braided galvanized steel lifting cables.
D. Sill Weatherstripping: Resilient hollow rubber strip, one piece; fitted to bottom of door panel, full length contact.
E. Jamb Weatherstripping: Roll formed steel section full height of jamb, fitted with resilient weatherstripping, placed in moderate contact with door panels.
F. Head Weatherstripping: EPDM rubber seal, one piece full length.
G. Panel Joint Weatherstripping: Neoprene foam seal, one piece full length.
H. Lock: Inside center mounted, adjustable keeper, spring activated latch bar with feature to retain in locked or retracted position; interior and exterior handle.

2.04 MATERIALS

A. Sheet Steel: Hot-dipped galvanized steel sheet, ASTM A653/A653M, with G60/Z180 coating, plain surface.
B. Insulation: Foamed-in-place polyurethane, bonded to facing.
C. Metal Primer Paint: Zinc molybdate type.

2.05 ELECTRIC OPERATION

A. Operator, Controls, Actuators, and Safeties: Comply with UL 325; provide products listed by ITS (DIR), UL (DIR), or testing agency acceptable to authorities having jurisdiction.
    1. Provide interlock switches on motor operated units.
    2. Provide tamperproof operation cycle counter.
B. Electric Operators:
    1. Mounting: Side mounted on cross head shaft.
    2. Motor Enclosure:
        a. Exterior Doors: NEMA MG 00001, Type 4; open drip proof.
    3. Motor Rating: 1 hp (735 W); continuous duty.
    4. Motor Voltage: 208 volts, three phase, 60 Hz.
    5. Motor Controller: NEMA ICS 2, full voltage, reversing magnetic motor starter.
    6. Controller Enclosure: NEMA EN 10250, Type 1.
    7. Opening Speed: 12 inches per second (300 mm/s).
    8. Brake: Adjustable friction clutch type, activated by motor controller.
    9. Manual override in case of power failure.
C. Wiring Terminations: Provide terminal lugs to match branch circuit conductor quantities, sizes, and materials indicated; enclose terminal lugs in terminal box sized to comply with NFPA 70.
D. Control Station: Provide standard three button (Open-Close-Stop) momentary-contact control device for each operator complying with UL 325.
    1. 24 volt circuit.
    2. Surface mounted, at interior door jamb.
    3. Entrapment Protection Devices: Provide sensing devices and safety mechanisms complying with UL 325.
        a. Primary Device: Provide electric sensing edge, wireless sensing, NEMA 1 photo eye sensors, or NEMA 4X photo eye sensors as required with momentary-contact control device.
E. Safety Edge: Located at bottom of sectional door panel, full width; electro-mechanical sensitized type, wired to stop and reverse door direction upon striking object; hollow neoprene covered to provide weatherstrip seal.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
B. Verify that electric power is available and of the correct characteristics.

3.02 PREPARATION

A. Prepare opening to permit correct installation of door unit to perimeter air and vapor barrier seal.
B. Apply primer to wood frame.

3.03 INSTALLATION

A. Install door unit assembly in accordance with manufacturer's instructions.
B. Anchor assembly to wall construction and building framing without distortion or stress.
C. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
D. Fit and align door assembly including hardware.
E. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.04 TOLERANCES

A. Maximum Variation from Plumb: 1/16 inch (1.5 mm).
B. Maximum Variation from Level: 1/16 inch (1.5 mm).
C. Longitudinal or Diagonal Warp: Plus or minus 1/8 inch (3 mm) from 10 ft (3 m) straight edge.
D. Maintain dimensional tolerances and alignment with adjacent work.

3.05 ADJUSTING

A. Adjust door assembly for smooth operation and full contact with weatherstripping.
B. Have manufacturer's field representative present to confirm proper operation and identify adjustments to door assembly for specified operation.

3.06 CLEANING

A. Clean doors and frames and glazing.
B. Remove temporary labels and visible markings.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.
B. Do not permit construction traffic through overhead door openings after adjustment and cleaning.

END OF SECTION

SECTION 084313
ALUMINUM-FRAMED STOREFRONTS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Aluminum-framed storefront, with vision glass.
B. Aluminum doors and frames.
C. Weatherstripping.

1.02 REFERENCE STANDARDS

A. AAMA 501.2 - Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems; 2015.
B. AAMA 503 - Voluntary Specification for Field Testing of Newly Installed Storefronts, Curtain Walls and Sloped Glazing Systems; 2014.
C. AAMA 609 & 610 - Cleaning and Maintenance Guide for Architecturally Finished Aluminum (Combined Document); 2015.
D. AAMA 611 - Specification for Anodized Architectural Aluminum; 2026.
E. AAMA 1503 - Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections; 2009.
F. AAMA CW-10 - Care and Handling of Architectural Aluminum from Shop to Site; 2015.
G. ASCE 7 - Minimum Design Loads and Associated Criteria for Buildings and Other Structures; Most Recent Edition Cited by Referring Code or Reference Standard.
H. ASTM B209/B209M - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate; 2021a.
I. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2021.
J. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric); 2021.
K. ASTM E283/E283M - Standard Test Method for Determining Rate of Air Leakage Through Exterior Windows, Skylights, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen; 2019.
L. ASTM E330/E330M - Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference; 2014 (Reapproved 2021).
M. ASTM E331 - Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference; 2000 (Reapproved 2023).
N. ASTM E783 - Standard Test Method for Field Measurement of Air Leakage Through Installed Exterior Windows and Doors; 2002 (Reapproved 2018).
O. ASTM E1105 - Standard Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls, by Uniform or Cyclic Static Air Pressure Difference; 2015 (Reapproved 2023).

1.03 ADMINISTRATIVE REQUIREMENTS

A. Preinstallation Meeting: Conduct a preinstallation meeting one week before starting work of this section; require attendance by all affected installers.

1.04 SUBMITTALS

A. Product Data: Provide component dimensions, describe components within assembly, anchorage and fasteners, glass and infill, door hardware, and internal drainage details.
B. Shop Drawings: Indicate system dimensions, framed opening requirements and tolerances, affected related work, expansion and contraction joint location and details, and field welding required.
    1. Include design engineer's stamp or seal on shop drawings for attachments and anchors.
C. Design Data: Provide framing member structural and physical characteristics, engineering calculations, and dimensional limitations.
D. Hardware Schedule: Complete itemization of each item of hardware to be provided for each door, cross-referenced to door identification numbers in Contract Documents.
E. Field Quality Control Submittals: Report of field testing for water penetration and air leakage
F. Designer's qualification statement.
G. Installer's qualification statement.
H. Specimen warranty.

1.05 QUALITY ASSURANCE

A. Designer Qualifications: Design structural support framing components under direct supervision of a Professional Structural Engineer experienced in design of this Work and licensed in the State in which the Project is located.
B. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience and approved by manufacturer.

1.06 MOCK-UPS

A. Construct One mock-up, 10 feet (3.1 m) long by 10 feet (3.1 m) wide, indicating construction and installation details.
B. Locate where directed.
C. Mock-up may remain as part of work.

1.07 DELIVERY, STORAGE, AND HANDLING

A. Handle products of this section in accordance with AAMA CW-10.
B. Protect finished aluminum surfaces with wrapping. Do not use adhesive papers or sprayed coatings that bond to aluminum when exposed to sunlight or weather.

1.08 FIELD CONDITIONS

A. Do not install sealants when ambient temperature is less than 40 degrees F (5 degrees C). Maintain this minimum temperature during and 48 hours after installation.

1.09 WARRANTY

A. Correct defective Work within a five year period after Date of Substantial Completion.
B. Provide five year manufacturer warranty against failure of glass seal on insulating glass units, including interpane dusting or misting. Include provision for replacement of failed units.
C. Provide five year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Aluminum-Framed Storefronts:
    1. Arcadia, Inc: www.arcadiainc.com/#sle.
    2. Coral Architectural Products, a division of Coral Industries, Inc: www.coralap.com/#sle.
    3. Kawneer North America: www.kawneer.com/#sle.
    4. Oldcastle BuildingEnvelope: www.oldcastlebe.com/#sle.
    5. Trulite Glass & Aluminum Solutions, LLC: www.trulite.com/#sle.
    6. Substitutions: See Section 016000 - Product Requirements.

2.02 BASIS OF DESIGN -- FRAMING FOR INSULATING GLAZING

A. Center-Set Style, Thermally-Broken:
    1. Basis of Design: Kawneer North America; Trifab VersaGlaze 601T..
    2. Vertical Mullion Dimensions: 2 inches wide by 6 inches deep (51 mm wide by 152 mm deep).

2.03 BASIS OF DESIGN -- SWINGING DOORS

A. Medium Stile, Monolithic Glazing:
    1. Basis of Design: Kawneer North Americs; 350 Standard Entrances.
    2. Thickness: 1-3/4 inches (43 mm).

2.04 ALUMINUM-FRAMED STOREFRONT

A. Aluminum-Framed Storefront: Factory fabricated, factory finished aluminum framing members with infill, and related flashings, anchorage and attachment devices.
    1. Glazing Rabbet: For 1 inch (25 mm) insulating glazing.
    2. Finish: Class I natural anodized.
        a. Factory finish all surfaces that will be exposed in completed assemblies.
        b. Coat concealed metal surfaces that will be in contact with cementitious materials or dissimilar metals with bituminous paint.
    3. Finish Color: As selected by Architect from manufacturer's standard line.
    4. Fabrication: Joints and corners flush, hairline, and weatherproof, accurately fitted and secured; prepared to receive anchors and hardware; fasteners and attachments concealed from view; reinforced as required for imposed loads.
    5. Construction: Eliminate noises caused by wind and thermal movement, prevent vibration harmonics, and prevent "stack effect" in internal spaces.
    6. System Internal Drainage: Drain to the exterior by means of a weep drainage network any water entering joints, condensation occurring in glazing channel, and migrating moisture occurring within system.
    7. Expansion/Contraction: Provide for expansion and contraction within system components caused by cycling temperature range of 170 degrees F (95 degrees C) over a 12 hour period without causing detrimental effect to system components, anchorages, and other building elements.
    8. Movement: Allow for movement between storefront and adjacent construction, without damage to components or deterioration of seals.
    9. Perimeter Clearance: Minimize space between framing members and adjacent construction while allowing expected movement.
B. Performance Requirements
    1. Wind Loads: Design and size components to withstand the specified load requirements without damage or permanent set, when tested in accordance with ASTM E330/E330M, using loads 1.5 times the design wind loads and 10 second duration of maximum load.
        a. Design Wind Loads: Comply with requirements of ASCE 7.
        b. Member Deflection: Limit member deflection to flexure limit of glass in any direction, with full recovery of glazing materials.
    2. Water Penetration Resistance on Manufactured Assembly: No uncontrolled water on interior face, when tested in accordance with ASTM E331 at pressure differential of 8 psf (390 Pa).
    3. Air Leakage: 0.06 cfm/sq ft (0.3 L/sec sq m) maximum leakage of storefront wall area when tested in accordance with ASTM E283/E283M at 1.57 psf (75 Pa) pressure difference.
    4. Condensation Resistance Factor of Framing: 50, minimum, measured in accordance with AAMA 1503.

2.05 COMPONENTS

A. Aluminum Framing Members: Tubular aluminum sections, thermally broken with interior section insulated from exterior, drainage holes and internal weep drainage system.
    1. Glazing Stops: Flush.
    2. Backer Plates at Adjacent Construction: Manufacturer's standard, continuous backer plates for framing members, if not integral.
B. Glazing: See Section 088000.
C. Swing Doors: Glazed aluminum.
    1. Thickness: 1-3/4 inches (43 mm).
    2. Top Rail: 4 inches (100 mm) wide.
    3. Vertical Stiles: 4-1/2 inches (115 mm) wide.
    4. Bottom Rail: 10 inches (254 mm) wide.
    5. Glazing Stops: Square.
    6. Finish: Same as storefront.

2.06 MATERIALS

A. Extruded Aluminum: ASTM B221 (ASTM B221M).
B. Sheet Aluminum: ASTM B209/B209M.
C. Fasteners: Stainless steel.
D. Exposed Flashings: Aluminum sheet, 20 gauge, 0.032 inch (0.81 mm) minimum thickness; finish to match framing members.
E. Concealed Flashings: Sheet aluminum, 26 gauge, 0.017 inch (0.43 mm) minimum thickness.
F. Sill Flashing Sealant: Elastomeric, silicone or polyurethane, compatible with flashing material.
G. Sealant for Setting Thresholds: Non-curing butyl type.
H. Glazing Gaskets: Type to suit application to achieve weather, moisture, and air infiltration requirements.
I. Glazing Accessories: See Section 088000.

2.07 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils (0.018 mm) thick.

2.08 HARDWARE

A. For each door, include weatherstripping, sill sweep strip, and threshold.
B. Other Door Hardware: See Section 087100.
C. Weatherstripping: Wool pile, continuous and replaceable; provide on all doors.
D. Sill Sweep Strips: Resilient seal type, retracting, of neoprene; provide on all doors.
E. Threshold: Extruded aluminum, one piece per door opening, ribbed surface; provide on all doors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify dimensions, tolerances, and method of attachment with other work.
B. Verify that storefront wall openings and adjoining water-resistive and/or air barrier seal materials are ready to receive work of this section.

3.02 INSTALLATION

A. Install wall system in accordance with manufacturer's instructions.
B. Attach to structure to permit sufficient adjustment to accommodate construction tolerances and other irregularities.
C. Provide alignment attachments and shims to permanently fasten system to building structure.
D. Align assembly plumb and level, free of warp or twist. Maintain assembly dimensional tolerances, aligning with adjacent work.
E. Provide thermal isolation where components penetrate or disrupt building insulation.
F. Install sill flashings. Turn up ends and edges; seal to adjacent work to form water tight dam.
G. Where fasteners penetrate sill flashings, make watertight by seating and sealing fastener heads to sill flashing.
H. Pack fibrous insulation in shim spaces at perimeter of assembly to maintain continuity of thermal barrier.
I. Set thresholds in bed of sealant and secure.
J. Install glass using glazing method required to achieve performance criteria; see Section 088000.
K. Touch-up minor damage to factory applied finish; replace components that cannot be satisfactorily repaired.

3.03 TOLERANCES

A. Maximum Variation from Plumb: 0.06 inch per 3 feet (1.5 mm per m) non-cumulative or 0.06 inch per 10 feet (1.5 mm per 3 m), whichever is less.
B. Maximum Misalignment of Two Adjoining Members Abutting in Plane: 1/32 inch (0.8 mm).

3.04 FIELD QUALITY CONTROL

A. Provide services of storefront manufacturer's field representative to observe for proper installation of system and submit report.
B. See Section 014000 - Quality Requirements for independent field testing and inspection requirements, and requirements for monitoring quality of specified product installations.
C. Water-Spray Test: Provide water spray quality test of installed storefront components in accordance with AAMA 501.2 during construction process and before installation of interior finishes.
    1. Perform a minimum of two tests in each designated area as indicated on drawings.
    2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
D. Provide field testing of installed storefront system by independent laboratory in accordance with AAMA 503 during construction process and before installation of interior finishes.
    1. Perform a minimum of two tests in each designated area as indicated on drawings.
    2. Conduct tests in each area prior to 10 percent and 50 percent completion of this work.
    3. Field test for water penetration in accordance with ASTM E1105 with uniform static air pressure difference (Procedure A) not less than 4.18 psf (200 Pa).
        a. Maximum allowable rate of water penetration in 15-minute test is 0.5 ounce (14 gram) that is not contained in an area with provisions to drain to exterior, or collected on surface of interior horizontal framing member.
    4. Field test for air leakage in accordance with ASTM E783 with uniform static air pressure difference of 1.57 psf (75 Pa).
        a. Maximum allowable rate of air leakage is 0.09 cfm/sq ft (0.5 L/s sq m).
E. Repair or replace storefront components that have failed designated field testing, and retest to verify performance complies with specified requirements.

3.05 ADJUSTING

A. Adjust operating hardware and sash for smooth operation.

3.06 CLEANING

A. Remove protective material from pre-finished aluminum surfaces.
B. Wash down surfaces with a solution of mild detergent in warm water, applied with soft, clean wiping cloths, and take care to remove dirt from corners and to wipe surfaces clean.
C. Upon completion of installation, thoroughly clean aluminum surfaces in accordance with AAMA 609 & 610.

3.07 PROTECTION

A. Protect installed products from damage until Date of Substantial Completion.

END OF SECTION

SECTION 087100
DOOR HARDWARE

PART 1 GENERAL

1.01 REFERENCE STANDARDS

A. BHMA A156.1 - Standard for Butts and Hinges; 2021.
B. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.
C. BHMA A156.3 - Exit Devices; 2025.
D. BHMA A156.4 - Door Controls - Closers; 2019.
E. BHMA A156.6 - Standard for Architectural Door Trim; 2021.
F. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.
G. BHMA A156.13 - Mortise Locks and Latches; 2022.
H. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.
I. BHMA A156.18 - Standard for Materials and Finishes; 2020.
J. BHMA A156.19 - Power Assist and Low Energy Power Operated Swinging Doors; 2019.
K. BHMA A156.26 - Standard for Continuous Hinges; 2021.
L. BHMA A156.36 - Auxiliary Locks; 2020.
M. ICC (IBC) - International Building Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
N. ICC A117.1 - Accessible and Usable Buildings and Facilities; 2017.
O. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
P. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2025, with Amendment (2024).
Q. NFPA 101 - Life Safety Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
R. NFPA 105 - Standard for Smoke Door Assemblies and Other Opening Protectives; 2022.
S. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
T. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
U. UL 294 - Access Control System Units; Current Edition, Including All Revisions.
V. UL 305 - Standard for Panic Hardware; Current Edition, Including All Revisions.
W. UL 437 - Standard for Key Locks; Current Edition, Including All Revisions.
X. UL 1784 - Standard for Air Leakage Tests of Door Assemblies; Current Edition, Including All Revisions.

1.02 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.03 SUMMARY

A. This Section includes commercial door hardware for the following:
    1. Swinging doors.
    2. Other doors to the extent indicated.
B. Door hardware includes, but is not necessarily limited to, the following:
    1. Mechanical door hardware.
    2. Electromechanical door hardware.
    3. Automatic operators.
    4. Cylinders specified for doors in other sections.
C. Related Sections:
    1. Division 01 Section "General Conditions".
    2. Division 06 Section "Rough Carpentry".
    3. Division 06 Section "Finish Carpentry".
    4. Division 08 Section "Operations and Maintenance".
    5. Division 08 Section "Hollow Metal Doors and Frames".
    6. Division 08 Section "Aluminum-Framed Entrances and Storefronts".
    7. Division 08 Section "Automatic Door Operators".
    8. Division 26 Section "Electrical"
D. Codes and References: Comply with the version adopted by the Authority Having Jurisdiction.
    1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
    2. ICC (IBC) International Building Code.
    3. NFPA 70 - National Electrical Code.
    4. NFPA 80 - Fire Doors and Windows.
    5. NFPA 101 - Life Safety Code.
    6. NFPA 105 - Installation of Smoke Door Assemblies.
    7. UL/ULC and CSA C22.2 - Standards for Automatic Door Operators Used on Fire and Smoke Barrier Doors and Systems of Doors.
    8. State Building Codes, Local Amendments.
E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:
    1. ANSI/BHMA Certified Product Standards - A156 Series.
    2. UL 10C - Positive Pressure Fire Tests of Door Assemblies.
    3. ANSI/UL 294 - Access Control System Units.
    4. UL 305 - Panic Hardware.
    5. ANSI/UL 437- Key Locks.

1.04 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation det[illegible]al components and profiles, operational descriptions and finishes.
B. Door Hardware Schedule: Prepared by or under the supervision of supplie[illegible]ware, as well as procedures and diagrams. Coordinate the final Door Hardware S[illegible]ensure proper size, thickness, hand, function, and finish of door hardware.
    1. Format: Comply with scheduling sequence and vertical format in DHI[illegible]dule."
    2. Organization: Organize the Door Hardware Schedule into door hardw[illegible]y item required for each door or opening. Organize door hardware sets in sa[illegible]d of Part 3. Submittals that do not follow the same format and order as the[illegible] to resubmission.
    3. Content: Include the following information:
        a. Type, style, function, size, label, hand, and finish of each door ha[illegible]
        b. Manufacturer of each item.
        c. Fastenings and other pertinent information.
        d. Location of door hardware set, cross-referenced to Drawings, bo[illegible]
        e. Explanation of abbreviations, symbols, and codes contained in s[illegible]
        f. Mounting locations for door hardware.
        g. Door and frame sizes and materials.
        h. Warranty information for each product.
    4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
C. Shop Drawings: Details of electrified access control hardware indicating the follo[illegible]
    1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed syst[illegible] monitoring, communication, and control of the access control system electri[illegible] manufacturer-installed and field-installed wiring. Include the following:
        a. Elevation diagram of each unique access controlled opening showing l[illegible]em components with respect to their placement in the respective door ope[illegible]
        b. Complete (risers, point-to-point) access control system block wiring dia[illegible]
        c. Wiring instructions for each electronic component scheduled herein.
    2. Electrical Coordination: Coordinate with related sections the voltages and w[illegible]lied and operated hardware openings.
D. Keying Schedule: After a keying meeting with the owner has taken place prepare[illegible]al instructions. Submit the keying schedule in electronic format. Include keying syst[illegible]mbols, hardware set numbers and special instructions. Owner must approve submitted [illegible]rmanent cylinders/cores.
E. Informational Submittals:
    1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independ[illegible]

1.05 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating a[illegible] comprising the complete door hardware installation in quantity as required in Division 01. Co[illegible] and as required in Division 01, Project Record Documents.
B. Project Record Documents: Provide record documentation of as-built doc[illegible] as a digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.06 QUALITY ASSURANCE

A. Manufacturers Qualifications: Engage qualified manufacturers with a minimum [illegible]ars [illegible] producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.
B. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).
C. Installer Qualifications: A minimum 3 years documented experience inst[illegible] hardware similar in material, design, and extent to that indicated for this Project and whose [illegible] record of successful in-service performance.
D. Door Hardware Supplier Qualifications: Experienced commercial door h[illegible]ars documented experience supplying both mechanical and electromechanical hardware [illegible]sign, and extent to that indicated for this Project. Supplier recognized as a factory direct de[illegible]ary materials with a warehousing facility in Project's vicinity. Supplier to have on staff a e[illegible]dware Consultant (AHC) available during the course of the Work to consult with Contractor, Architect, and [illegible]n standard and electromechanical door hardware and keying.
E. Source Limitations: Obtain each type and variety of door hardware spec[illegible]n a single source unless otherwise indicated.
    1. Electrified modifications or enhancements made to a source manu[illegible]y a secondary or third party source will not be accepted.
    2. Provide electromechanical door hardware from the same manufac[illegible]or hardware, unless otherwise indicated.
F. Each unit to bear third party permanent label indicating compliance with [illegible] standards.
G. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:
    1. Function of building, purpose of each area and degree of security required.
    2. Plans for existing and future key system expansion.
    3. Requirements for key control storage and software.
    4. Installation of permanent keys, cylinder cores and software.
    5. Address and requirements for delivery of keys.
H. Pre-Submittal Conference: Conduct coordination conference in compliance w[illegible] Meetings" with attendance by representatives of Supplier(s), Installer(s), and [illegible] procedures for receiving, handling, and installing door hardware.
    1. Prior to installation of door hardware, conduct a project specific trainin[illegible] personnel on the proper installation and adjustment of their respective [illegible] of door hardware (including electromechanical hardware) for aluminum [illegible] the use of installation manuals, hardware schedules, templates and physica[illegible]
    2. Inspect and discuss electrical roughing-in, power supply connections, and [illegible]des.
    3. Review sequence of operation narratives for each unique access controlled [illegible]
    4. Review and finalize construction schedule and verify availability of materials [illegible]
    5. Review the required inspecting, testing, commissioning, and demonstration pro[illegible]
I. At completion of installation, provide written documentation that components were applied [illegible]ufacturer's instructions and recommendations and according to approved schedule.

1.07 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.
B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.
C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.08 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors [illegible]s, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Draw[illegible] of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requ[illegible]s.
B. Door and Frame Preparation: Doors and corresponding frames are to be p[illegible]d, reinforced and prewired (if applica[illegible] to receive the installation of the specified electrified, monitoring, signaling and [illegible]s control system hardware without a[illegible]nal in-field modifications.

1.09 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special [illegible]ties specified in this Article shall not [illegible]ive Owner of other rights Owner may have under other provisions of the Contra[illegible]uments and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements [illegible] Contract Documents.
B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing [illegible]r or replace components of stan[illegible] electrified door hardware that fails in materials or workmanship within speci[illegible]arranty period after Final acceptan[illegible] Owner. Failures include, but are not limited to, the following:
    1. Structural failures including excessive deflection, cracking, or breakag[illegible]
    2. Faulty operation of the hardware.
    3. Deterioration of metals, metal finishes, and other materials beyond no[illegible]eathering.
    4. Electrical component defects and failures within the systems operation.
C. Warranty Period: Unless otherwise indicated, warranty shall be one year [illegible] date of Substantial Completion.

PART 2 PRODUCTS

2.01 SCHEDULED DOOR HARDWARE

A. General: Provide door hardware for each door to comply with requirements in Door Hardware Sets and each referenced section that products are to be supplied under.
B. Designations: Requirements for quantity, item, size, finish or color, grade, function, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Sets at the end of Part 3. Products are identified by using door hardware designations, as follows:
    1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
C. Substitutions: Requests for substitution and product approval for inclusive mechanical and electromechanical door hardware in compliance with the specifications must be submitted in writing and in accordance with the procedures and time frames outlined in Division 01, Substitution Procedures. Approval of requests is at the discretion of the architect, owner, and their designated consultants.

2.02 MATERIALS

A. Hardware shall not have any visible manufacturer names on exposed materials, except cylinders, when the door is in a closed position.

2.03 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.
    1. Quantity: Provide the following hinge quantity:
        a. Two Hinges: For doors with heights up to 60 inches (1524 mm).
        b. Three Hinges: For doors with heights 61 to 90 inches (2286 mm).
        c. Four Hinges: For doors with heights 91 to 120 inches (3048 mm).
        d. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (762 mm) of door height greater than 120 inches.
    2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:
        a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.