

SPECIFICATIONS FOR

**2020 RENOVATIONS AT THE
DEPTFORD HIGH SCHOOL**

575 South Fox Run Road
Deptford, New Jersey 08096

AND

**2020 ADDITIONS AND RENOVATIONS AT THE
DEPTFORD MIDDLE SCHOOL**

890 Bankbridge Road
Deptford, New Jersey 08096

for

DEPTFORD TOWNSHIP BOARD OF EDUCATION

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Deptford, New Jersey 08096

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DATE: December 9, 2020 "Issued for Bid"

DEPTFORD BID# 21-01

GA # 20-07

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SECTION 08100 – FRP FIBERGLASS DOORS

1.0 GENERAL DESCRIPTION

- A. **WORK INCLUDED:** The fiberglass doors and aluminum sub-frames required for this work are indicated on the drawings and include, but is not necessarily limited to:
 - 1. The installation of new opening systems that include aluminum sub-frames, fiberglass doors, fiberglass panels, door hardware and glass.
 - 2. Only wide stile fiberglass doors are to be used.

1.1 QUALITY ASSURANCE

- A. **MANUFACTURER'S CERTIFICATION:** Manufacturer is to have a minimum of 10 years experience in the production of pre-installed hardware and pre-assembled door systems, using the type of materials specified for this project.
- B. **DISSIMILAR METALS:** Wherever aluminum is in contact with steel, concrete or other materials potentially creative of electrolytic action, provide all required permanent isolation of the aluminum by back painting with first-quality bituminous paint.
- C. **INSTALLER'S QUALIFICATIONS:** For the installation of the entrance systems, use only mechanics who are thoroughly trained and experienced in the skills required and who are completely familiar with the manufacturer's recommended methods of installation plus the requirements of this work.
- D. **WARRANTY:**
 - 1. System manufacturer will guarantee THE ENTIRE SYSTEM FOR A PERIOD OF 10 YEARS.
 - 2. The Fiberglass doors are guaranteed for 10 YEARS AGAINST CORE RELATED PRODUCT FAILURE.
 - 3. Warranties are to be in writing and MUST be submitted before final invoices for payment will be reviewed.

1.2 TESTING AND PERFORMANCE REQUIREMENTS

- A. Entrance systems to be supplied and installed that will comply with requirements for system performance characteristics as determined by the testing methods listed.
- B. Copies of recent test reports must accompany the Product Data Submittal package, the reports required for this project are as follows:
 - 1. Thermal Performance Test
 - 2. Structural Performance Test
 - 3. FRP Face Sheet Test
- C. Thermal Performance for complete Door and Frame Entry System:
 - 1. Thermal Transmission: U-value of not more than 0.28,BTU/HR-FT-F per AAMA 1503.1-1988.

SECTION 08100 – FRP FIBERGLASS DOORS

- 2. Air Infiltration: Not more than 0.26 CFM/FT, per ASTM E283-91.

D. FRP FACE SHEETS AND CORE PERFORMANCE:

- 1. Materials to be tested in accordance with (per ASTM E84) Ratings will be as follows: (per ASTM E84-79a)

	FLAME SPREAD	SMOKE DEVELOPED
<u>FRP EXTERIOR</u> (Class C)	145	345
<u>FRP INTERIOR</u> (Class A)	10	320
<u>POLYSTYRENE CORE</u>	15	125

- 2. IMPACT STRENGTH OF FRP Face Sheets-per ASTM D256-Izod Impact Strength, Maintains 95% of physical Flexural Strength after 30 months of outdoor exposure. 13.5
- 3. Barcol Meter Hardness test on FRP Face Sheets-not more than 50, per ASTM D2583.
- 4. COLOR RETENTION of FRP Face Sheets-Color will not change more than 5.0 DE units after exposure to 500,000 Langleys.

1.3 MANUFACTURERS

- A. ACCEPTABLE MANUFACTURERS: The products outlined in this specification are not the exclusive property of any one manufacturer. However, it should be noted that the manufacturers, listed in this specification, will have to make some modifications to their standard products, and, that new dies and designs may be required to adhere to the demands of this specification. Approved equal substitutions will be considered in accordance with Specification Section 01300-Submittals.

Products are to be from FRP Architectural Doors, Inc Series Heavy Wall FD55. Fire Rated FRP Doors Series FR45/60/90. Other acceptable manufactures provided they adhere to specification are Curries Assa/Abloy or approved equal. FRP doors must incorporate Kemlite RFP face sheet with extended U/V protection or approved equal.

1.4 SUBMITTALS

A. PRODUCT DATA:

- 1. Submit manufacturer's technical data for each type stile classification of door. Include all frame sections, elevations and details.
- 2. Include details of: Main frame corner joint construction on doors, stile and rail size, core material, vision lite moldings, louvers and factory finishing specifications.

SECTION 08100 – FRP FIBERGLASS DOORS

3. Submit two samples of each door stile classification that shows rails, stiles, core, joint construction, edge trim and closer reinforcing.
 4. Submit manufacturer of FRP face sheets.
- B. TEST REPORTS: Two copies of current test reports are to be included with the submittals.
- C. SHOP DRAWINGS: Submit signed and sealed shop drawings and calculations by a NJ registered professional engineer for the fabrication and installation of the Doors and Frames, and associated components of the work. Include wall elevations and detail sections of every typical composite member. Show frame anchoring, frame repairs to existing frames, glazing details, interior and exterior wall repairs and any other component or accessory required to complete each door opening.

1.5 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. IDENTIFICATION: Each door and frame will be tagged with a mark or number which correlates with designation system used for shop drawings.
- B. PROTECTION: All materials will be protected during transit and storage from soiling and deterioration.

2.0 DOORS, FRAMES AND PANELS

2.1 CLASSIFICATIONS OF DOOR SYSTEMS, FRAMES AND PANELS:

- A. Door systems for this project are based on the following stile classification. Pre-approved manufacturers who have a standard product offering in that classification are listed.
- B. Classifications are as follows:

FRP Architectural Doors, Inc Series Heavy Wall FD55. Fire Rated FRP Doors Series FR45/60/90. Other acceptable manufactures provided they adhere to specification are Vale V600, Curries Assa/Abloy or approved equal.

2.2 MATERIALS

- A. ALUMINUM MEMBERS:
1. Doors, sub-frames, miscellaneous components and entrance systems accessories are to be **by the same manufacturer**.
 2. Provide alloy and temper as recommended for resistance to corrosion and color control. Aluminum member references are ASTM B 221 for extrusions and ASTM B 209 for sheets.

SECTION 08100 – FRP FIBERGLASS DOORS

2.3 ALUMINUM FRAMES & CLADDING:

- A. Refer to Storefront Specification Section 08411 for door frame requirements including signed and sealed shop drawings and calculations.
 - 1. VERTICAL MEMBERS-All sub-frames will be full height of opening.
- B. ALUMINUM COLOR FINISH: As specified in Storefront Specification Section 08411.

2.4 FIBERGLASS (FRP) FACE SHEETS

- A. THICKNESS AND COLOR:
 - 1. FRP face sheets will be .120 minimum thickness with a pebble-like surface with aluminum or galvanized steel backing sheet to meet current IBC code requirements. Face sheets shall be manufactured by Kemlite with extended UV protection or approved equal.
 - 2. COLOR shall be selected from the full range of available manufacturer's options.

2.5 FIBERGLASS (FRP) PANELS

- A. ALUMINUM EDGED FIBERGLASS (FRP) PANELS:
 - 1. CONSTRUCTION: Panels will be constructed of two sheets of .120 fiberglass sheets bonded to 3/4" core material. Panel thickness will be 1-3/4". A 1-3/4" x 2" x 1/8" wall thickness aluminum frame surrounds the perimeter of the panel.

WOOD EDGED PANELS WILL NOT BE ACCEPTED.
 - 2. CORE MATERIAL: Core Insulation will be high density expanded polystyrene. Core to have compressive strength ASTM D1621 - 25psi density with a nominal R-Value of 6.5. Core material must have a proven record for use in door fabrication without delaminating. Fill all openings, including frames.

POLYSTYRENE CORES ARE REQUIRED.
 - 3. COLOR shall be selected from the full range of available manufacturer's options.
 - 4. FIXED FRP PANEL: Panel will be two sheets of .120 fiberglass sheets bonded to 3/4" core material. Panel thickness shall be 1".

3.0 EXECUTION and INSTALLATION

- A. SIZES AND PROFILES: the sizes for door and frame units and profile requirements as listed or shown in these Specifications are approximate. All bidders are responsible for visiting job site and measuring each tag for bidding purposes.
- B. EXACT ORDER SIZES: ALL PROPER MEASURING AND ORDERING OF

SECTION 08100 – FRP FIBERGLASS DOORS

MATERIALS IS THE SOLE RESPONSIBILITY OF THE SUPPLIER/INSTALLER.

- C. TOLERANCES between doors and frames are 1/8" around all sizes of single doors and 1/8" on hinge jambs and header with 3/16" in center of pairs, 1/4" at threshold.
- D. NOTIFY OWNER at least 48 hours before schedule date of installation for each opening and for each day of work.
- E. PROVIDE barrier protection and warning signs around each opening before starting to work. This protection is for the people who may be using the building while the work is in progress.
- F. COMPLY with all life safety code procedures that effect the use of the opening while work is being done. These procedures will be provided by an official of the building being worked on.
- G. SET NEW THRESHOLDS in a bed of cement and press to a level line. However, never let threshold be raised more than an extra 1/2" on any one side.
- H. PERIMETER CAULK new door frame on both sides of frame and with a matching color caulk to the finish of the frame.
- I. INSTALLERS ARE TO CLEAN up every day leaving area in a safe and usable condition.

END OF SECTION 08100

SECTION 08110- STEEL DOORS AND FRAMES

1.1 GENERAL

- A. Submit Product Data for each type of door and frame specified. Approved equal substitutions will be considered in accordance with Specification Section 01300-Submittals.
- B. Quality Assurance: Comply with ANSI/SDI 100.
- C. Fire-Rated Door Assemblies: NFPA 80, identical to assemblies tested per ASTM E 152, and labeled and listed by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.

1.2 PRODUCTS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
 - 1. Amweld Building Products, Inc.
 - 2. Benchmark Commercial Doors.
 - 3. Ceco Door Products.
 - 4. Copco Door Co.
 - 5. Curries Co.
 - 6. Deansteel Manufacturing Co.
 - 7. Fenestra Corp.
 - 8. Kewanee Corp.
 - 9. Mesker Door, Inc.
 - 10. Pioneer Industries.
 - 11. Republic Builders Products.
 - 12. Steelcraft.
 - 13. Or approved equal.
- B. Cold-Rolled Steel Sheets: ASTM A 366 (ASTM A 366M), commercial quality, or ASTM A 620 (ASTM A 620M), drawing quality.
- C. Galvanized Steel Sheets: ASTM A 526 (ASTM A 526M), commercial quality, or ASTM A 642 (ASTM A 642M), drawing quality, with A 60 or G 60 (Z 180 or ZF 180) coating designation, mill phosphatized.
- D. Steel Doors: Provide 1-3/4-inch- (44-mm-) thick doors of materials and ANSI/SDI 100 grades and models specified below, or as indicated on Drawings or schedules:
 - 1. INTERIOR WOOD GRAINED EMBOSSED DOORS: Grade I, heavy-duty, Model 2, seamless design, minimum 16 gage thick, wood grain pattern, engraved with factory painting/staining with UV protective topcoat to be selected from manufacturer's full range of finish selections, including custom finish to match Owner's established building standard. NOTE: Factory finishing process and final finish must meet or exceed that established by Steelcraft Graintech Series. Owner/Architect reserve the right to reject any noticeably different or less aesthetically acceptable specialty finish by others.

SECTION 08110- STEEL DOORS AND FRAMES

- E. Frames: Provide frames for doors, sidelights, borrowed lights, and other openings that comply with ANSI/SDI 100; fabricate to be rigid, neat in appearance, and free from defects, warp, or buckle.
1. For interior frames provide units with mitered or coped and continuously welded corners, formed from 16 gage thick cold-rolled steel.
 2. For exterior frames provide units with mitered or coped and continuously welded corners, formed from 16 gage thick galvanized steel sheet.
 3. Door Silencers: 3 on strike jambs of single-door frames and 2 on heads of double-door frames.
 4. Plaster Guards: Provide where mortar might obstruct hardware operation and to close off interior of openings.
 5. For new frame install in existing opening. Knock down frame is allowed to secure to existing opening.
 6. Grout: As specified in Division 4 Section "Unit Masonry."
- F. Tolerances: Comply with SDI 117.
- G. Fabricate concealed stiffeners, reinforcement, edge channels, louvers, and moldings from either cold- or hot-rolled steel sheet.
- H. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to SDI 107 and the hardware specification.
- I. Glazing Stops: Minimum 0.0359-inch- (0.9-mm-) thick steel or 0.040-inch- (1-mm-) thick aluminum.
1. Provide nonremovable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.
 2. Provide screw-applied, removable, glazing beads on inside of glass, louvers, and other panels in doors.
- J. Finishes, General: Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
1. Apply primers to doors and frames after fabrication.
- K. Galvanized Steel Sheet Finishes: Comply with SDI 112 and the following:
1. Surface Preparation: Clean surfaces with nonpetroleum solvent so that surfaces are free of oil or other contaminants. After cleaning, apply a conversion coating of the type suited to the organic coating applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified to comply with ASTM A 780.
 2. Galvanizing Repair Paint: SSPC-Paint 20, high-zinc-dust-content paint with dry film containing not less than 94 percent zinc dust by weight.
 3. Factory Priming for Field-Painted Finish: Where field painting after installation is indicated, apply air-dried primer specified below immediately after cleaning and pretreatment.

SECTION 08110- STEEL DOORS AND FRAMES

- a. Shop Primer: Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type II.
- 4. Field Painted Finish: Immediately after cleaning and pretreating, apply 2-coat finish consisting of prime coat and finish coat. See Section 09900, "Painting."
 - a. Color and Gloss: Match Architect's sample.
- L. Steel Sheet Finishes: Comply with SSPC-PA 1, "Paint Application Specification No. 1."
 - 1. Surface Preparation: Solvent-clean surfaces according to SSPC-SP 1. Remove mill scale and rust to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).
 - 2. Pretreatment: Immediately after surface preparation, apply a conversion coating suited to organic coating applied over it.
 - 3. Factory Priming for Field-Painted Finish: Apply shop primer that complies with ANSI A224.1 acceptance criteria, is compatible with finish paint systems indicated, and has capability to provide a sound foundation for field-applied topcoats. Apply primer immediately after surface preparation and pretreatment.
 - a. Color and Gloss: Match Architect's sample.

1.3 EXECUTION

- A. General: Install steel doors, frames, and accessories according to Shop Drawings, manufacturer's data, and as specified.
- B. Placing Frames: Comply with provisions of SDI 105, unless otherwise indicated. Set frames accurately in position, plumbed, aligned, and braced securely until permanent anchors are set.
 - 1. Except for frames located in existing concrete, masonry, or gypsum board assembly construction, place frames before constructing enclosing walls and ceilings.
 - 2. Install at least 3 anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb.
 - 3. In-place gypsum board partitions, install knock-down, slip-on, drywall frames.
 - 4. Install fire-rated frames according to NFPA 80.
 - 5. Coordinate installation of all required wiring/conduit prior to frame installation.
- C. Door Installation: Fit exiting hollow-metal doors accurately in new hollow-metal frames, within clearances specified in ANSI/SDI 100, including new door in existing frame.
 - 1. Fire-Rated Doors: Install with clearances specified in NFPA 80.
 - 2. Smoke-Control Doors: Comply with NFPA 105.
- D. Prime Coat Touchup: Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- E. Protection Removal: Immediately before final inspection, remove protective wrappings from doors and frames.

SECTION 08110- STEEL DOORS AND FRAMES

F. Labeling of the Existing Doors and Frames: The doors and frames indicated on the drawings are to remain and be repaired so that they may meet the label standard for the indicated fire rating per NFPA80. The work is to include the repair of existing hollow metal frames, fill holes in frames by installing steel plugs of the same gauge and thickness as the metal frame, provide new filler plates, secure frame to sub-frame, repair door surface, fill holes, replace hardware, replace glazing and glazing frame, fit existing door in frame, provide intumescent seal and all notes as shown on the drawings. The Contractor shall prime and repaint the entire frame to match the existing frames or the Owner's color selection. It is the Contractor's responsibility to repair / modify the doors and frames to obtain the fire rating. When the work is completed, the Contractor shall contact one of the following testing labs or approved equal, for field inspections, required documentation and required door/frame labels. All associated costs to certify and label modified doors/frames shall be paid for by the Contractor.

1. Guardian Fire Testing Laboratories, Inc., Wenonah Terrace, Tonawanda, NY
14150, Telephone (716) 835-6880, Facsimile (716) 835-5682
2. Intertek Testing Services, NA, Inc., Antioch Industrial Park, 2200 Wymore Way,
Antioch, CA 94509, Telephone (925) 756-6606, Facsimile (925) 756-6094
3. Or approved equal.

END OF SECTION 08110

SECTION 08211 - FLUSH WOOD DOORS

1.1 GENERAL

- A. Submittals: In addition to product data, submit the following:
1. Shop drawings indicating location and size of each door, elevation of each kind of door, details of construction, location and extent of hardware blocking, fire ratings, requirements for veneer matching and factory finishing and other pertinent data. For factory-machined doors, indicate dimensions and locations of cutouts for locksets and other cutouts adjacent to light and louver openings.
 2. Samples of actual materials in small sections for each face material and finish.
- B. Quality Standard: Comply with the following standard:
1. NWWDA Quality Standard: I.S.1-A, "Architectural Wood Flush Doors," of the National Wood Window and Door Association.
 2. AWI Quality Standard: "Architectural Woodwork Quality Standards" of the Architectural Woodwork Institute.
- C. Fire-Rated Wood Doors: Provide wood doors labeled and listed by UL, Warnock Hersey, or another testing and inspection agency acceptable to authorities having jurisdiction. Provide certification for fire rating required acceptable to authorized agencies having jurisdiction for oversize fire rated doors over 4'-0" wide
- D. Warranty
1. Provide manufacturer's warranty to the following term:
 - a. Interior Solid Core Doors: "Full Life of Original Installation" including rehang and refinish if door(s) do not comply with Warranty tolerance standards.

1.2 PRODUCTS

- A. Manufacturers: Subject to compliance with requirements, provide doors by one of the following or approved equal:
1. Marshfield Door Systems, Inc., quality as defined in this section.
 2. Algoma Wood Doors Inc., quality as defined in this section.
 3. Eggers Wood Doors Inc., quality as defined in this section.
 4. Mohawk Wood Doors Inc., quality as defined in this section.
 5. V-T Industries Inc., quality as defined in this section.
 6. Buell Door Company, quality as defined in this section.
 7. Or approved equal.
- B. Interior Solid Core Doors for Transparent Finish: As follows:
NOTE: ALL WOOD VENEER MUST APPEAR UNIFORM AND LIGHT IN APPEARANCE
1. Faces: Select White Birch, plain sliced.
 2. Grade: "A" Select White ONLY

SECTION 08211 - FLUSH WOOD DOORS

3. Construction: 5 plies.
 4. Core: Structural composite lumber (engineered composite core)
 5. Bonding: Stiles and rails bonded to core, then entire unit abrasive planed before veneering.
- C. Interior Fire-Rated Solid Core Doors: As follows:
1. Faces and Grade: Provide faces and grade to match non-fire-rated doors in same area of building, unless otherwise indicated.
 2. Edge Construction: Provide manufacturer's standard laminated-edge construction for improved screw-holding capability and split resistance.
 3. Pairs: Furnish formed-steel edges and astragals for pairs of fire-rated doors, unless otherwise indicated.
 4. Pairs: Provide fire-rated pairs with fire-retardant stiles that are labeled and listed for kinds of applications indicated without formed-steel edges and astragals.
- D. Pairs and Sets: Provide pair matching and set matching.
- E. Fabricate flush wood doors to comply with following requirements:
1. In sizes indicated for job-site fitting.
 2. Factory fit doors to comply with clearance requirements of referenced quality standard. Comply with requirements of NFPA 80 for fire-resistance-rated doors.
 3. Factory machine doors for hardware that is not surface applied.
 - a. Metal Removable Mullions: Pre-machine locks and formed-steel edges for hardware for pairs of doors requiring removable mullions. See the Hardware Schedule.
 4. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
 - a. Light Openings: Trim openings with moldings of material and profile indicated. * To be selected from manufacturer's standard profiles and colors unless noted otherwise. At existing buildings, metal trim shall be required to match adjacent existing to remain.
 - b. Louvers: Factory install louvers in prepared openings.
 5. Provide metal flashing at top of out swinging units.
- F. Finish wood doors at factory as factory finished.
1. Transparent Finish: Comply with requirements indicated for grade, finish system, staining effect, and sheen.
 - a. Grade: Custom.
 - b. Finish: Manufacturer's standard finish with performance requirements comparable to either AWI System TR-2 catalyzed lacquer or AWI System TR-4 conversion varnish.

SECTION 08211 - FLUSH WOOD DOORS

- c. Staining: Match Architect's sample or existing schools' wood doors or as selected by the Owner.
 - d. Effect: Filled finish.
 - e. Sheen: Semigloss.
- G. Provide soundproof seal as noted in the Hardware Schedule. Adjust Hardware and frame to align properly to have the best acoustical effect.

1.3 EXECUTION

A. Examination

- 1. Verify substrate-openings conditions.
- 2. Verify that opening sizes and tolerances are acceptable and ready to receive this work.
- 3. Do not install doors in frame openings that are not plumb or are out of tolerance for size or alignment.

B. Installation

- 1. Install fire-rated and non-rated doors in accordance with NFPA 80, manufacturers' instructions and fire rated labeling requirements.
- 2. Trim non-rated door width by cutting equally on both jamb edges.
- 3. Trim door height by cutting bottom edges to a maximum 3/4 inch (19mm).
- 4. Trim fire door height at bottom edge only, in accordance with fire rating requirements.
- 5. Pilot drill screw and bolt holes using templates provided by hardware manufacturer. (Use threaded through bolts for half surface hinges.)
- 6. Coordinate installation of doors with installation of frames and hardware.
- 7. Coordinate installation of glass and glazing.
- 8. Install door louvers and light kits plumb and level.
- 9. Reseal or refinish any doors that required site alteration.

C. Warranty Tolerances

- 1. Conform to WDMA standards and testing methods for warp, cup, bow and telegraphing.

D. Adjusting

- 1. Adjust work under provisions Division 1.
- 2. Adjust doors for smooth and balanced door movement.

E. Door and Frame Components Schedules

- 1. Refer to door and frame schedule.

END OF SECTION 08211

SECTION 08332 – WINDOW FIRE SHUTTER

PART 1 - GENERAL

1.1 SUMMARY

1. This Section includes the following types of overhead coiling window fire shutter
 - a) New Service Window in Security Vestibules
2. See Division 8 Section "Door Hardware" for lock cylinders and keying.
3. Division 16 Sections for electrical service, connections, disconnects, and circuit breakers for powered operators, and accessories.

1.2 SUBMITTALS

1. Product Data: For each product indicated.
2. Shop Drawings: Include plans, elevations, sections, details of installation and attachments to other Work.
 - a) Verify openings by field measurements before fabrication and indicate measurements on Shop Drawings.
3. Samples: For each exposed finish.

1.3 QUALITY ASSURANCE

1. Fire-Rated Shutter Assemblies: complying with NFPA 80, identical to assemblies tested per UL 10b, and labeled and listed for fire ratings indicated by UL, FM, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction for 1 Hour Label Fire Rating.
2. Connect to building fire alarm system or provide fusible link operation.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following or approved equal:
 - a) Alpine Overhead Doors, Inc.
 - b) Atlas Door Corp.; Div. of Clopay Building Products Co.
 - c) Cookson Company (The).
 - d) Cornell Iron Works Inc.
 - e) Dynamic Closures LTD.
 - f) Mahon Door Corp.
 - g) McKeon Rolling Steel Door Company, Inc.
 - h) Overhead Door Corporation.

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- i) Pacific Rolling Door Co.
- j) Raynor Garage Doors.
- k) Roll-Lite Door Corp.; Div. of Clopay Building Products Co.
- l) Southwestern Steel Rolling Door Co.
- m) Wayne-Dalton Corp.
- n) Windsor Door; a United Dominion Company.

2.2 SHUTTER CURTAIN AND CONSTRUCTION

1. Shutter Curtain: Interlocking slats in continuous length for width of window. Unless otherwise indicated, slats of material thickness recommended by door manufacturer for performance, size, and type of window indicated.
 - a) Steel Shutter Curtain Slats: ASTM A 653/A 653M with G 90 (Z 275) Zinc Coating.
 - b) Slat Type: S-configuration
2. Endlocks, General: Locate locks on every other curtain slat for curtain alignment and resistance against lateral movement.
 - a) Shutter Endlocks: Stainless steel secured to curtain slats with stainless steel rivets.
3. Bottom Bar: Continuous channel or tubular shape, in material matching curtain slats.
 - a) Astragal: Replaceable, adjustable, continuous, compressible gasket of flexible vinyl, rubber, or neoprene, that is cushion bumper for interior window.
4. Curtain Jamb Guides: Galvanized steel angles, or channels and angles, with sufficient depth and strength to retain curtain, to allow curtain to operate smoothly, and to withstand loading.
 - a) Counter Shutter: Prevent metal-to-metal contact and minimize noise of travel with continuous integral wear strips and prevent overtravel of curtain with removable stops on guides.

2.3 HOODS AND ACCESSORIES

1. Hood: Form to enclose coiled curtain and operating mechanism at opening head and act as weatherseal. Contour to suit end brackets to which hood is attached. Roll and reinforce top and bottom edges for stiffness. Provide closed ends for surface-mounted hoods and fascia for any portion of between-jamb mounting projecting beyond wall face. Provide intermediate support brackets as required to prevent sag.
2. Steel Shutter Hoods: Fabricate from not less than 0.025-inch (0.65-mm) thick steel sheet that matches slat material.
 - a) Shape: Square.
3. Smoke Seals: UL-listed and -tested, smoke-seal perimeter gaskets.

SECTION 08332 – WINDOW FIRE SHUTTER

4. Push/Pull Handles: For push-up-operated or emergency-operated shutter, provide stainless steel lifting handles on each side of shutter.
5. Slide Bolt: Fabricate with side locking bolts to engage through slots in tracks for locking by padlock, located on both left and right jamb sides, operable from coil side.
6. Fabricate locking device assembly with lock, spring-loaded dead bolt, operating handle, cam plate, and adjustable locking bar to engage through slots in tracks.
 - a) Locking Bars: Full-disc Cremone type, both jamb sides.
 - (1) Operation: From inside and outside.
 - b) Lock Cylinder: As specified in Division 8 Section "Door Hardware."
7. Chain Lock Keeper: Suitable for padlock.
8. Counterbalancing Mechanism: Adjustable, oil-tempered, heat-treated steel helical torsion springs mounted around structural carbon-steel pipe, and contained in barrel of sufficient diameter and wall thickness to support rolled-up curtain without distortion of slats and to limit barrel deflection to not more than 0.03 in./ft. (2.5 mm/m) of span under full load; with grease-sealed bearings or self-lubricating graphite bearings.
 - a) Mounting Brackets: Cast-iron or cold-rolled steel plate with bell-mouth guide groove for curtain.
9. Manual Shutter Operator: Chain hoist.

2.4 FINISHES

1. Steel Finish: Manufacturer's standard powder coating.
 - a) Color and Gloss: Selected by Owner/Architect.

PART 3 - EXECUTION

3.1 INSTALLATION

1. General: Install shutter and operating equipment complete with necessary hardware, jamb and head mold strips, anchors, inserts, hangers, and equipment supports.
 - a) Fire-Rated Shutter: Install to comply with NFPA 80.
2. Lubricate bearings and sliding parts; adjust windows to operate easily, free from warp, twist, or distortion and fitting weathertight for entire perimeter.

SECTION 08332 – WINDOW FIRE SHUTTER

3.2 DEMONSTRATION

1. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain windows. Refer to Division 1 Section "Closeout Procedures".

END OF SECTION 08332

SECTION 08411 - ALUMINUM-FRAMED CURTAIN WALL, ENTRANCES, AND STOREFRONTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, Special Conditions and other Division 0 and Division 1 Project Manual Sections, apply to this Section.

1.2 DESCRIPTION OF WORK

- A. This Section Includes:
 - 1. Exterior curtain wall framing.
 - 2. Exterior and interior manual-swing entrance doors and door-frame units.
 - 3. Exterior & interior storefronts.

1.3 DEFINITIONS

- A. ADA/ABA Accessibility Guidelines: U.S. Architectural & Transportation Barriers Compliance Board's "Americans with Disability Act (ADA) and Architectural Barriers Act (ABA) Accessibility Guidelines for Buildings and Facilities."

1.4 PERFORMANCE REQUIREMENTS

- A. General Performance: Aluminum-framed systems shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction:
 - 1. Movements of supporting structure indicated on Drawings including, but not limited to, story drift and deflection from uniformly distributed and concentrated live loads.
 - 2. Dimensional tolerances of building frame and other adjacent construction.
 - 3. Failure includes the following:
 - a. Deflection exceeding specified limits.
 - b. Thermal stresses transferring to building structure.
 - c. Framing members transferring stresses, including those caused by thermal and structural movements to glazing.
 - d. Noise or vibration created by wind and by thermal and structural movements.
 - e. Loosening or weakening of fasteners, attachments, and other components.
 - f. Sealant failure.
 - g. Failure of operating units.

SECTION 08411 - ALUMINUM-FRAMED CURTAIN WALL, ENTRANCES, AND STOREFRONTS

B. Structural Loads:

1. Wind Loads: Provide entrance and storefront systems, including anchorage, capable of withstanding wind-load design pressures calculated according to requirements of authorities having jurisdiction or the American Society of Civil Engineers' ASCE 7 "Minimum Design Loads for Buildings and Other Structures," 6.4.2, "Analytical Procedure," whichever are more stringent.
2. Seismic Loads: IBC 2018, NJ Edition.
3. Design wind load velocity at the project site is 100 mph
4. The wind load design pressures for this project are 27.5 psf @ non-corner zones and 35 psf @ corner zones.

C. Deflection of Framing Members:

1. Deflection Normal to Wall Plane: Limited to edge of glass in a direction perpendicular to glass plane shall not exceed $L/240 + 1/4$ " at openings greater than 13'6" and shall not exceed $L/175$ at openings lesser than 13'6" of the glass edge length for each individual glazing lite or an amount that restricts edge deflection of individual glazing lites to 3/4 inch (19 mm), whichever is less.
2. Deflection Parallel to Glazing Plane: Limited to $L/360$ of clear span or 1/8 inch (3.2 mm), whichever is smaller.

D. Structural-Test Performance: Provide aluminum-framed systems tested according to ASTM E 330 as follows:

1. When tested at positive and negative wind-load design pressures, systems do not evidence deflection exceeding specified limits. The maximum wind load design pressure for this project is 35 psf.
2. When tested at 150 percent of positive and negative wind-load design pressures, systems, including anchorage, do not evidence material failures, structural distress, and permanent deformation of main framing members exceeding 0.2 percent of span.
3. Test Durations: As required by design wind velocity, but not fewer than 10 seconds.

E. Water Penetration under Static Pressure: Provide aluminum-framed systems that do not evidence water penetration through fixed glazing and framing areas when tested according to ASTM E 331 at a minimum static-air-pressure difference of 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft. (300 Pa). The storefront systems shall have a maximum no leakage water performance of 12 psf and the curtain wall systems shall have a maximum no leakage water performance of 15 psf.

F. Thermal Movements: Provide aluminum-framed systems that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.
2. Interior Ambient-Air Temperature: 75 deg F (24 deg C).