
SECTION 08255 - FRP FLUSH DOORS

PART 1 GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General Conditions, Special Provisions and the Howard County Department of Public Works Design Manual, Volume IV, "Standard Specifications and Details for Construction", as modified and added to apply to this section. In case of conflict between the standard specifications and the specifications herein, and other contract documents, the more stringent requirement shall govern only to the extent of such conflict.

1.2 SUMMARY

- A. Fiberglass reinforced polyester (FRP) flush doors.

1.3 RELATED SECTIONS

- A. Division 8 Section "Door Hardware" for door hardware except as specified in this Section.

1.4 PERFORMANCE REQUIREMENTS

- A. General: Provide door assemblies that have been designed and fabricated to comply with specified performance requirements, as demonstrated by testing manufacturer's corresponding standard systems.
- B. Air Infiltration: For a single door 3'-0" x 7'-0", test specimen shall be tested in accordance with ASTM E 283 at pressure differential of 6.24 psf. Door shall not exceed 0.90 cfm per linear foot of perimeter crack.
- C. Water Resistance: For a single door 3'-0" x 7'-0", test specimen shall be tested in accordance with ASTM E 331 at pressure differential of 7.50 psf. Door shall not have water leakage.
- D. Cycle Slam Test Method, NWWDA T.M. 7-90: Minimum 5,000,000 Cycles.
- E. Swinging Security Door Assembly, Doors and Frames, ASTM F 476: Grade 40.
- F. Thermal Transmission, Exterior Doors, U-Value, AAMA 1503-98: Maximum of 0.29 BTU/hr x sf x degrees F. Minimum of 55 CRF value.
- G. Tensile Strength, FRP Doors and Panels, Nominal Value, ASTM D 638: 14,000 psi.
- H. Water Absorption, FRP Doors and Panels, Nominal Value, ASTM D 570: 0.20 percent after 24 hours.
- I. Indentation Hardness, FRP Doors and Panels, Nominal Value, ASTM D 2583: 55.
- J. Abrasion Resistance, Face Sheet, Taber Abrasion Test, 25 Cycles at 1,000 Gram Weight with CS-17 Wheel: Maximum of 0.029 average weight loss percentage.
- K. Stain Resistance, ASTM D 1308: Face sheet unaffected after exposure to red cabbage, tea, and tomato acid. Stain removed easily with mild abrasive or FRP cleaner when exposed to crayon and crankcase oil.
- L. Chemical Resistance, ASTM D 543. Excellent rating.
 - 1. Acetic acid, Concentrated.
 - 2. Ammonium Hydroxide, Concentrated.

3. Citric Acid, 10%.
4. Formaldehyde.
5. Hydrochloric Acid, 10%
6. Sodium hypochlorite, 4 to 6 percent solution.

1.5 SUBMITTALS

- A. Product Data: Submit manufacturer's product data, including description of materials, components, fabrication, finishes, and installation.
- B. Shop Drawings: Submit manufacturer's shop drawings, including elevations, sections, and details, indicating dimensions, tolerances, materials, fabrication, doors, and finish.
- C. Samples:
 1. Door: Submit manufacturer's sample of door showing face sheets, core, and finish.
 2. Color: Submit manufacturer's samples of standard colors of doors.
- D. Test Reports: Submit certified test reports from qualified independent testing agency indicating doors comply with specified performance requirements.
- E. Maintenance Manual: Submit manufacturer's maintenance and cleaning instructions for doors, including maintenance and operating instructions for hardware.
- F. Warranty: Submit manufacturer's standard warranty.

1.6 QUALITY ASSURANCE

- A. Manufacturer's Qualifications:
 1. Continuously engaged in manufacturing of doors of similar type to that specified, with a minimum of 25 years successful experience.
 2. Evidence of a compliant documented quality management system.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Delivery: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying opening door mark and manufacturer.
- B. Storage: Store materials in clean, dry area indoors in accordance with manufacturer's instructions.
- C. Handling: Protect materials and finish from damage during handling and installation.

1.8 WARRANTY

- A. Warrant doors, against failure in materials and workmanship, including excessive deflection, and deterioration of finish or construction in excess of normal weathering.
- B. Warranty Period: Ten years starting on date of Substantial Completion. In addition, a limited lifetime (while the door is in its specified application in its original installation) warranty covering: failure of corner joinery, core deterioration, delamination or bubbling of door skin.

PART 2 - PRODUCTS

2.1 MANUFACTURER

- A. Special-Lite, Inc.

2.2 FRP FLUSH DOORS

- A. Model: SL-17 Flush Doors with SpecLite3 fiberglass reinforced polyester (FRP) face sheets.
- B. Door Opening Size: As indicated on the Drawings.
- C. Construction:
 - 1. Door Thickness: 1-3/4 inches.
 - 2. Stiles and Rails: Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T5 alloy recovered from industrial processes, minimum of 2-5/16-inch depth.
 - 3. Corners: Mitered.
 - 4. Provide joinery of 3/8-inch diameter full-width tie rods through extruded splines top and bottom integral to standard tubular shaped stiles and rails reinforced to accept hardware as specified.
 - 5. Securing Internal Door Extrusions: 3/16-inch angle blocks and locking hex nuts for joinery. Welds, glue, or other methods are not acceptable.
 - 6. Furnish extruded stiles and rails with integral reglets to accept face sheets. Lock face sheets into place to permit flush appearance.
 - 7. Rail caps or other face sheet capture methods are not acceptable.
 - 8. Extrude top and bottom rail legs for interlocking continuous weather bar.
 - 9. Meeting Stiles: Pile brush weatherseals. Extrude meeting stile to include integral pocket to accept pile brush weatherseals.
 - 10. Bottom of Door: Install bottom weather bar with nylon brush weatherstripping into extruded interlocking edge of bottom rail.
 - 11. Glue: Use of glue to bond sheet to core or extrusions is not acceptable.
- D. Face Sheet:
 - 1. Material: SpecLite3 FRP, 0.120-inch thickness, finish color throughout.
 - 2. Protective coating: Abuse-resistant engineered surface. Provide FRP with SpecLite3 protective coating, or equal.
 - 3. Texture: Pebble.
 - 4. Color: as selected by Architect.
 - 5. Adhesion: The use of glue to bond face sheet to foam core is prohibited.
- E. Core:
 - 1. Material: Poured-in-place polyurethane foam.
 - 2. Density: Minimum of 5 pounds per cubic foot.
 - 3. R-Value: Minimum of 9.
- F. Hardware:
 - 1. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.

2.3 MATERIALS

- A. Aluminum Members:
 - 1. Aluminum extrusions made from prime-equivalent billet that is produced from 100% reprocessed 6063-T5 alloy recovered from industrial processes: ASTM B 221.
 - 2. Sheet and Plate: ASTM B 209.
 - 3. Alloy and Temper: As required by manufacturer for strength, corrosion resistance, application of required finish, and control of color.
- B. Fasteners:
 - 1. Material: Aluminum, 18-8 stainless steel, or other noncorrosive metal.
 - 2. Compatibility: Compatible with items to be fastened.
 - 3. Exposed Fasteners: Screws with finish matching items to be fastened.

2.4 FABRICATION

- A. Sizes and Profiles: Required sizes for door, shall be as indicated on the Drawings.
- B. Coordination of Fabrication: Field measure before fabrication and show recorded measurements on shop drawings.
- C. Assembly:
 - 1. Complete cutting, fitting, forming, drilling, and grinding of metal before assembly.
 - 2. Remove burrs from cut edges.
- D. Welding: Welding of doors is not acceptable.
- E. Fit:
 - 1. Maintain continuity of line and accurate relation of planes and angles.
 - 2. Secure attachments and support at mechanical joints with hairline fit at contacting members.

2.5 HARDWARE

- A. Hinges: Provide manufacturer's standard continuous hinges.
- B. Premachine doors in accordance with templates from specified hardware manufacturers and hardware schedule.
- C. Hardware Schedule: As indicated on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine areas to receive doors. Notify Architect of conditions that would adversely affect installation or subsequent use. Do not proceed with installation until unsatisfactory conditions are corrected.

3.2 PREPARATION

- A. Ensure frames are plumb, level, square, and in tolerance.

3.3 INSTALLATION

- A. Install doors in accordance with manufacturer's instructions.
- B. Install doors plumb, level, square, true to line, and without warp or rack.
- C. Separate aluminum from other metal surfaces with bituminous coatings or other means approved by Architect.
- D. Repair minor damages to finish in accordance with manufacturer's instructions and as approved by Architect.
- E. Remove and replace damaged components that cannot be successfully repaired as determined by Architect.

3.5 ADJUSTING

- A. Adjust doors, hinges, and locksets for smooth operation without binding.

3.6 CLEANING

- A. Clean doors promptly after installation in accordance with manufacturer's instructions.
- B. Do not use harsh cleaning materials or methods that would damage finish.

3.7 PROTECTION

- A. Protect installed doors to ensure that, except for normal weathering, doors will be without damage or deterioration at time of substantial completion.

PART 4 – MEASUREMENT AND PAYMENT

- A. Payment will be made at the Contract lump sum price and shall constitute full compensation for all materials, equipment, labor and incidentals necessary to complete the work.

END OF SECTION 08255

SECTION 08360 – OVERHEAD SECTIONAL DOORS

PART 1 – GENERAL

1.1 SECTION INCLUDES

- A. Insulated Sectional Overhead Doors.
- B. Steel Sectional Overhead Doors.
- C. Glazed Aluminum Sectional Overhead Doors.
- D. Electric Operators and Controls.
- E. Operating Hardware, tracks, and support.

1.2 RELATED SECTIONS

- A. Section 08700 – Door Hardware: Product requirements for lock system.
- B. Section 13125 - Metal Building Systems: Steel frame and supports.
- C. Section 16130 - Raceway and Boxes: Empty conduit from control station to door operator.

1.3 REFERENCES

- A. ANSI/DASMA 102 - American National Standard Specifications for Sectional Overhead Type Doors.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

- A. Wind Loads: As indicated.
- B. Wiring Connections: Requirements for electrical characteristics.
 - 1. 115 volts, single phase, 60 Hz.
- C. Single-Source Responsibility: Provide doors, tracks, motors, and accessories from one manufacturer for each type of door. Provide secondary components from source acceptable to manufacturer of primary components.

1.5 SUBMITTALS

- A. Product Data: Manufacturer's data sheets on each product to be used, including:
 - 1. Preparation instructions and recommendations.
 - 2. Storage and handling requirements and recommendations.
 - 3. Installation methods.
- B. Shop Drawings: Indicate plans and elevations including opening dimensions and required tolerances, connection details, anchorage spacing, hardware locations, and installation details.
- C. Manufacturer's Certificates: Certify products meet or exceed specified requirements.

- D. Operation and Maintenance Data.

1.6 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer Qualifications: Authorized representative of the manufacturer with minimum five years documented experience.
- C. Products Requiring Electrical Connection: Listed and classified by Underwriters Laboratories, Inc. acceptable to authority having jurisdiction as suitable for purpose specified.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Store products in manufacturer's unopened labeled packaging until ready for installation.
- B. Protect materials from exposure to moisture until ready for installation.
- C. Store materials in a dry, ventilated weathertight location.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

- A. Insulated Steel Sectional Overhead Doors formed with hinges. Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the work include, but are not limited to, the following:
 - 1. Overhead Door Corporation (B.O.D.)
 - 2. Amarr Garage Doors
 - 3. General American Door Company

2.2 INSULATED SECTIONAL OVERHEAD DOORS

- A. Insulated Steel Sectional Overhead Doors:
 - 1. Door Assembly: Metal/foam/metal sandwich panel construction, with PVC thermal break and ship-lap design. Basis of Design: Overhead Door Sectional Steel Type 422.
 - a. Panel Thickness: 2 inches (51 mm).
 - b. Exterior Surface: Ribbed, textured.
 - c. Exterior Steel: .015 inch (.38 mm), hot-dipped galvanized.
 - d. End Stiles: 16 gauge with thermal break.
 - e. Springs:
 - 1) 10,000 cycles.
 - f. Insulation: CFC-free and HCFC-free polyurethane, fully encapsulated.
 - g. Thermal Values: R-value of 17.50; U-value of 0.057.

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- h. Air Infiltration: 0.08 cfm at 15 mph; 0.08 cfm at 25 mph.
 - i. Panel Thickness: 1-3/4 inches (44 mm).
 - 1) Exterior Surface: Flush.
 - 2) Thermal Values: R-value of 8.56; U-value of 0.17.
 - j. Partial Glazing of Steel Panels:
 - 1) Individual Lites: Insulated with ½-inch DSB, 24 inch by 7 inch (610 mm by 178 mm) window.
 - 2. Finish and Color: Two coat baked-on polyester:
 - a. Interior color, As selected by Owner from Manufacturer's full range.
 - b. Exterior color, As selected by Owner from Manufacturer's full range.
 - c. Windload Design: Provide to meet the Design/Performance requirements specified.
 - 3. Hardware: Galvanized steel hinges and fixtures. Ball bearing rollers with hardened steel races.
 - 4. Lock:
 - a. Interior mounted slide lock.
 - 5. Weatherstripping:
 - a. Bulb-type strip at bottom section.
 - b. Flexible Jamb seals.
 - c. Flexible Header seal.
 - 6. Track: Provide track as recommended by manufacturer to suit loading required and clearances available.
 - 7. Electric Motor Operation: Provide UL listed electric operator, size and type as recommended by manufacturer to move door in either direction at not less than 2/3 foot nor more than 1 foot per second. Operator shall meet UL325/2010 requirements for continuous monitoring of safety devices.
 - a. Entrapment Protection: Required for momentary contact, includes radio control operation.
 - 1) Photoelectric sensors monitored to meet UL 325/2010.
 - b. Operator Controls:
 - 1) Key operated control stations with open, close, and stop buttons exterior.
 - 2) Push-button and key operated control stations with open, close, and stop buttons interior.
 - 3) Surface mounting.
 - 4) Interior location.

3.1 EXAMINATION

- A. Do not begin installation until openings have been properly prepared.
- B. Verify wall openings are ready to receive work and opening dimensions and tolerances are within specified limits.
- C. Verify electric power is available and of correct characteristics.
- D. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

- A. Install overhead doors and track in accordance with approved shop drawings and the manufacturer's printed instructions.
- B. Coordinate installation with adjacent work to ensure proper clearances and allow for maintenance.
- C. Anchor assembly to wall construction and building framing without distortion or stress.
- D. Securely brace door tracks suspended from structure. Secure tracks to structural members only.
- E. Fit and align door assembly including hardware.
- F. Coordinate installation of electrical service. Complete power and control wiring from disconnect to unit components.

3.4 CLEANING AND ADJUSTING

- A. Adjust door assembly to smooth operation and in full contact with weatherstripping.
- B. Clean doors, frames and glass.
- C. Remove temporary labels and visible markings.

3.5 PROTECTION

- A. Do not permit construction traffic through overhead door openings after adjustment and cleaning.
- B. Protect installed products until completion of project.
- C. Touch-up, damaged coatings and finishes and repair minor damage before Substantial Completion.

END OF SECTION 08360

SECTION 08700 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

- A. Drawings and general provisions of the Contract, including General Conditions, Special Provisions and the Howard County Department of Public Works Design Manual, Volume IV, "Standard Specifications and Details for Construction", as modified and added to apply to this section. In case of conflict between the standard specifications and the specifications herein, and other contract documents, the more stringent requirement shall govern only to the extent of such conflict.

1.2 SUMMARY:

- A. Extent of finish hardware required is indicated on Drawings and in schedules.

- B. Types of finish hardware required include the following:

- 1. Hinges
- 2. Lock cylinders, keys and key cabinet
- 3. Lock and latch sets
- 4. Bolts
- 5. Closers
- 6. Door trim units
- 7. Protection plates
- 8. Astragals or meeting seals on pairs of doors
- 9. Weatherstripping for exterior doors
- 10. Thresholds for exterior doors

- C. Related Sections:

- 1. Division 8 Section "FRP Flush Doors" for continuous hinges.
- 2. Division 8 Section "Overhead Sectional Doors".
- 3. Division 13 Section "Metal Building Systems".

1.3 SUBMITTALS:

- A. Submit manufacturers technical product data for each item of hardware. Include whatever information may be necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish.
- B. Submit final hardware schedule in manner acceptable to the Engineer. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function manufacturer, type, style, and finish of hardware.
- C. Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project construction schedule. Include with schedule the product data, samples, shop drawings of other work affected by finish hardware, and other information essential to the coordinated review of hardware schedule.
- D. Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

- E. Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

1.4 QUALITY ASSURANCE:

- A. Obtain each type of hardware (latch and lock sets, hinges, closers, etc.) from only one manufacturer, although several may be indicated as offering products complying with requirements.
- B. Obtain hardware from a recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 2 years, and who is a certified hardware consultant and is available, for consultation about project's hardware requirements, to Owner, Engineer and Contractor.
- C. Comply with ANSI A117.1-1986 for Tactile Warnings on Doors to Hazardous Areas.

1.5 PRODUCT HANDLING:

- A. Deliver individually packaged hardware items at the proper times with hardware sets clearly marked, to the proper locations (shop or project site) for installation. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.
- B. Inventory hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.

PART 2 - PRODUCTS

2.1 HARDWARE:

- A. Requirements for design, grade, function, finish, size and other distinctive qualities of each type of finish hardware is indicated in this section. Products are identified by using manufacturer's product designations. One or more manufacturers are listed for each hardware type required. An asterisk (*) following a manufacturer's name indicates whose product designation is used in the Hardware Schedule for purposes of establishing minimum requirements. Provide either the product designated, or, where more than one manufacturer is listed, the comparable product of one of the other manufacturers which comply with requirements including those specified elsewhere in this Section.

2.2 MATERIALS AND FABRICATION:

- A. Drawings show direction of slide, swing or hand of each door leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- B. Do not use manufacturer's products which have manufacturer's name or trade name displayed in a visible location (omit removable nameplates), except in conjunction with required UL labels and as otherwise acceptable to Owner. Manufacturer's identification will be permitted on rim of lock cylinders only.
- C. Produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser quality than specified for the applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "optional" materials or forming methods.

- D. Provide hardware manufactured to conform to published templates, generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-tapping sheet metal screws, except as specifically indicated.
- E. Furnish screws for installation, with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces of other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
- F. Provide concealed fasteners for hardware units which are exposed when door is closed, except to extent no standard units of the type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on the opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex bolts.
- G. Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of finish hardware.
- H. Provide hardware complying with ANSI A117.1 including knurled levers and handles.

2.3 HINGES, BUTTS AND PIVOTS:

- A. Provide only template produced units. Furnish Phillips flat-head machine screws for installation of units, except furnish Phillips flat-head wood screws for installation of units into wood. Finish screw heads to match surface of hinges.
- B. Except as otherwise indicated, provide hinge as follows:
 - 1. Exterior Doors: Non-removable stainless steel pins and stainless steel hinges, US 32D.
 - 2. Interior Doors: Non-rising steel pins and steel hinges.
 - 3. Tips: Flat button and matching plug.
 - 4. Number of hinges: Provide number of hinges indicated but not less than 3 hinges for door leaf for doors 90" or less in height and one additional hinge for each 30" of additional height.
 - 5. Size: 4-1/2" x 4-1/2" unless noted otherwise.
 - 6. Finish: US 26D satin chrome unless noted otherwise.
- C. Furnish products of one of the following:
 - 1. STANLEY *
 - 2. HAGER
 - 3. McKINNLEY
 - 4. LAWRENCE

2.4 LOCK CYLINDERS, KEYING AND KEY CABINETS:

- A. Supplier shall arrange and meet with Owner to establish keying requirements and obtain instructions in writing. In general provide keying as follows:
 - 1. Provide CyberLock cylinders and master key system that match the Owner's existing grand master system.
- B. Equip locks with CyberLock cylinders, to match existing Cyberlock system, with construction master key function, permitting voiding of construction keys without cylinder removal. Coordinate with local Cyberlock vendor, Solid State Systems, Gaithersburg, MD (301-947-4500).

1. Cores: Best 5C cores.

C. Construct lock cylinder parts from brass/bronze, stainless steel or nickel silver, match other finishes.

D. Furnish 5 CyberKeys. Provide CyberLock to match existing system. Provide electronic CyberKeys. Deliver keys to Owner's representative and obtain signed receipt. Send copy of receipt to Engineer.

E. Furnish cylinders of the following, or approved equal, non interchangeable:

1. CyberLock: CL-M4

2.5 LOCKS, LATCHES AND BOLTS:

A. Provide manufacturer's standard wrought box strike for each latch or lock bolt, with curved lip extended to protect frame, finished to match hardware set.

B. Provide dust-proof strikes for foot bolts, except where special threshold construction provides non-recessed strike for bolt.

C. Provide 5/8" minimum throw of latch and deadbolt used on pairs of doors. Comply with UL requirements for throw of bolts and latch bolts on rated fire openings. Provide 2" minimum throw on other latch and deadlock bolts.

D. Except on fire-rated doors, wherever doors are equipped with exit devices, equip the units with keyed dogging device to hold the latch bolt open.

E. Finish: US 26D unless noted otherwise.

F. Mortise Lock and Latch sets shall be the product of the following:

1. BEST Standard Mortise Lock: 45H7, Storeroom Function (D)

- a. Lever and Escutcheon: 3J
- b. Mortise Cylinder: 1E74, 1-1/4" Length
- c. Trim and Finish: To be selected by Owner

G. Dead Bolt:

1. BEST Single Cylinder Deadbolt with thumb turn.

- a. Core: Provide locks to accept a 7C core.

H. Lock Guards:

1. Ives lock guard model "LG1" for exterior doors scheduled.

2.9 WEATHERSTRIPPING:

A. Except as otherwise indicated, provide continuous weatherstripping at each edge of every exterior door leaf, including a sweep. Provide type, sizes and profiles shown or scheduled. Provide non-corrosive fasteners as recommended by manufacturer for application indicated.

B. Provide only those units where resilient or flexible seal strip is easily replaceable and readily available

from stocks maintained by manufacturer.

- C. Provide bumper-type resilient insert and metal retainer strips, surface-applied of following metal, finish and resilient bumper material:
 - 1. Extruded aluminum with color anodized finish as selected by Architect from manufacturer's standard color range; 0.062" minimum thickness of main walls and flanges.
 - 2. Flexible, hollow vinyl bulb or loop insert, conforming to MIL R 6055, Class II, Grade 40.
- D. Door Sweeps: Neoprene or Vinyl material held in place by flat metal housing or flange; surface mounted to face of door with screws.
- E. Furnish products of one of the following:
 - 1. PEMKO*
 - 2. ZERO
 - 3. N.G.P.
 - 4. REESE
 - 5. HAGER

2.10 THRESHOLDS:

- A. Except as otherwise indicated provide standard extruded aluminum threshold unit of type, size and profile as shown or scheduled 1/2" high except as noted.
- B. Provide units not less than 4" wide, formed to accommodate change in floor elevation where indicated, fabricated to accommodate door hardware and to fit door frames.

2.11 HARDWARE FINISHES:

- A. Provide matching finishes for hardware units at each door or opening, to the greatest extent possible, and except as otherwise indicated. Reduce differences in color and textures as much as commercially possible where the base metal or metal forming process is different for individual units of hardware exposed at the same door or opening. In general, match items to the manufacturer's standard finish for the latch and lock set for color and texture.
- B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness and other qualities complying with manufacturer's standards, but in no case less than specified for the applicable units of hardware by referenced standards.
- C. Provide protective lacquer coating on all exposed hardware finishes of brass, bronze and aluminum, except as otherwise indicated.
- D. The designations used in schedules and elsewhere to indicate hardware finishes are the industry-recognized standard commercial finishes, except as otherwise noted.

HARDWARE SCHEDULE:

Refer to Drawings

PART 3 EXECUTION

3.1 INSTALL HARDWARE:

- A. Mount hardware units at heights indicated in "Recommended Locations for Builders Hardware for Standard Steel Doors and Frames" by the Door and Hardware Institute, except as specifically indicated or required to comply with governing regulations, and except as may be otherwise directed by Architect.
- B. Install each hardware item in compliance with the manufacturer's instructions and recommendations. Wherever cutting and fitting is required to install hardware onto or into surfaces which are later to be

painted or finished in another way, coordinate removal, storage and reinstallation or application of surface protections with finishing work specified in the Division-9 sections. Do not install surface-mounted items until finishes have been completed on the substrate.

- C. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
- D. Drill and countersink units which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with industry standards.
- E. Set thresholds for exterior doors in full bed of butyl-rubber or polyisobutylene mastic sealant.
- F. Install weatherstripping to properly contact doors.
- G. Install door sweeps to properly contact threshold.

3.2 ADJUST AND CLEAN:

- A. Adjust and check each operating item of hardware and each door, to ensure proper operation or function of every unit. Replace units which cannot be adjusted to operate freely and smoothly as intended for the application made.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. During the week prior to acceptance or occupancy, make final check and adjustment of all hardware items in project. Clean operating items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment. Replace damaged items as necessary so that all hardware works perfectly.

PART 4 – MEASUREMENT AND PAYMENT

- A. Payment will be made at the Contract lump sum price and shall constitute full compensation for all materials, equipment, labor and incidentals necessary to complete the work.

END OF SECTION 08700