

# SKATE PARK SYSTEMS SPECIFICATIONS

## SUMMARY

- **Section 1 - General**
  - Submittals
  - Warranty
  - Insurance
  - Quality Assurance
  - Deviations from Specification
  
- Section 2 - Products**
  - Manufacturers
  - Skate Park Systems

## SECTION 1-GENERAL

### SUBMITTALS:

- **PRODUCT DATA:**

Submit manufacturer's product literature indicating materials, finish, and other information required to demonstrate compliance with engineering specifications. If equipment is other than specified, a component by component description of variations from the specifications must be included with the manufacturer's literature.

- **DRAWING SUBMITTALS:**

A plan view drawing shall be submitted. A three-dimensional drawing of the main composite structures shall also be submitted for review. Equipment layout shall conform to industry standards for spacing and placement of obstacles.

- **SAMPLES:**

If equipment is other than specified, submit samples including, but not limited to: support post, shear panel, foot, deck, rail assembly, and surfacing materials.

### WARRANTY:

As a minimum, manufacturer shall provide proof of:

Twenty-year limited warranty on all Metal Structures.

Five-year limited warranty on Galvanized Steel Approach Plate.

Two-year limited warranty on all HDPE composition panels and Skatelite Pro surface products.

Lifetime limited warranty on hardware.

One-year limited warranty on all other parts.

**INSURANCE:**

Manufacturer must carry a minimum of \$51 million in Product Liability Insurance, and provide proof of such insurance with bid.

**QUALITY ASSURANCE:**

Manufacturer: At least ten completed skate parks constructed with the same materials and construction techniques. Upon request, provide list of completed structures to the Owner's Representative with skate park owner's name, address, phone, and representative's name.

Lead Installer: At least ten completed skate parks constructed with the same materials and construction techniques. Upon request, provide list of completed structures to the Owner's Representative with skate park owner's name, address, phone, and representative's name.

**DEVIATIONS FROM SPECIFICATION:**

If equipment offered differs from the provisions contained in this specification, such deviations must be explained in detail and submitted with the bid.

**SECTION 2-PRODUCTS**

**MANUFACTURERS:**

Skate Park Equipment: Details and specifications representing the minimum acceptable standard of quality have been based on skate park equipment by Spohn Ranch.

**SKATE PARK SYSTEMS:**

**GENERAL SPECIFICATIONS:**

- **COMPONENTS:** All steel frameworks shall be hot dipped galvanized after fabrication. All galvanizing coating shall meet or exceed the specifications of ASTM 123-89-A. No on-site fabrication will be accepted.
- **STEEL TUBING:** All tubing used to manufacture components shall be an electrical resistance welded high strength steel tubing. All components will be free of sharp edges and excess weld spatter and shall be cleaned in a five stage bath system, as a rust inhibitor, and a sealer to prevent flash rusting before coating. The fabricated steel framework is hot dip galvanized after fabrication. All galvanizing coating shall meet or exceed the specifications of ASTM 123-89-A.
- **SUBSTRATES:** All polyethylene shall be controlled-density material with fiberglass reinforcement, UV-stabilized color, and an anti-static compound additive. All polyethylene products shall meet or exceed the following specifications: Density (ASTM D-792-91); Tensile Values (ASTM D-638); Flexural Modulus (ASTM D-790); Hardness (ASTM D-2240); Impact Strength (ASTM D-256); Expansion (ASTM D-696).
- **HARDWARE:** Plated floor torx self tapping screws will be used to attach skate surface. Plated bottom head torx drive self tapping screws will be used to attach enclosure and railings.

- **MATERIALS COATING:** All steel components shall be fabricated to completion prior to the cleaning and galvanization process. All galvanizing coating shall meet or exceed the specifications of ASTM 123-89-A. All zinc coating shall meet or exceed the specifications of ASTM B-63385.
- **ANCHORING:** All feet shall anchor directly into the concrete footings or surface. Concrete anchors shall consist of 1/2-13 galvanized stud-style interlocking wedge anchors. Asphalt anchors shall consist of 1/2-13 x 8" threaded rod.
- **SKATING SURFACE:** All surfacing shall be 1/4" thick phenolic fiber laminate. All phenolic fiber laminate products shall meet or exceed the following specifications: Water Absorption 2.15%; Tensile Strength 19,200 psi X, 13,100 psi Y; Flexural Strength (Face in Tension) 22,000 psi X, 17,300 psi Y; Flexural Strength (Edge in Tension) 20,400 psi X, 16,100 psi Y; Hardness (ASTM D-2240); Impact Strength (Face) 2.48 ft. lb. Per in. of width X, 1.46 ft. lb. Per in. of width Y; ); Impact Strength (Edge) 0.68 ft. lb. Per in. of width X, 0.62 ft. lb. Per in. of width Y; Thermal Expansion 5.2 X, 12.8 Y.
- **EDGING:** All phenolic panels shall be bordered by a minimum 3/16" thick x 1.5" wide galvanized steel strap, manufactured to ASTM A-36 tolerances from hot rolled steel.
- **CORNER PLATE:** Where any two ramp planes meet in a location without coping, the phenolic panels shall be bordered by a minimum 3/16" thick x 3" double-wide galvanized steel strap, manufactured to ASTM A-36 tolerances from hot rolled steel. The corner plate shall be one piece.
- **COPING:** All coping shall consist of 2" i.d. Schedule 40 hot-rolled black pipe with galvanized coating. All coping shall be finished with a minimum 3/16" x 3" galvanized peg plate.
- **APPROACH PLATES:** All ramps shall feather into the concrete or asphalt with a 1/4" thick galvanized steel plate, manufactured to ASTM A-36 tolerances from hot rolled steel. Approach plates shall range from 6" tall to 16" tall depending upon the angle of approach and the presence or absence of a radius.

#### **SUPPORT STRUCTURES:**

- **LOAD BEARING SUPPORT POST SYSTEM:** The decking shall attach directly atop the support posts via a special threaded locating system. The full weight of the deck and structure shall bear directly on top of the post; a threaded insert shall align and bolt the deck down. These support posts shall be fabricated from 2" o.d. minimum 13 ga. galvanized round tubing, manufactured to A-500 TYPE 1 tolerances from steel, with 7/8"-9 receivers top and bottom, and minimum 1/8" thick locator tabs for the shear panels. All zinc coating shall meet or exceed the specifications of ASTM B-63385.  
The railing is attached to the decks as part of the Load Bearing Support Post System. The threaded inserts which attach the decks into the supports extend 9" above the surface of the deck, and the railing sleeve over the top of them. They are then attached to the inserts with bolts.
- **SUPPORT POST ENCLOSURE PANELS:** Frames shall consist of a 1" x 2" x 13 ga. galvanized rectangular tubing, manufactured to A-500 TYPE 1 tolerances from steel,

with 3/4" x 9 ga. flattened expanded metal galvanized panels. They shall be attached to the support posts with 3/8" diameter stainless steel button head bolts through the locator tabs, with an additional 3/8" lock nut.

- **BASE PLATES:** The heavy-duty base plates are adjustable. The plates shall thread directly into the post supports, allowing very precise adjusting. The plates shall consist of 4" round, 1/4" thick steel base plates with a 7/8"-9 x 6" threaded shaft, with four holes designed to allow anchoring into the concrete slab. The round feet can be rotated slightly to avoid having any wedge anchors in contact with rebar or other concrete reinforcements.

#### SKATING / BIKING SURFACES:

- **DECKS:** Decks shall be fabricated from 1.5" x 2.5" x .083 galvanized tubing, manufactured to ASTM A-500 TYPE 1 tolerances from steel. They shall be framed 16" on center, and sit directly on top of the support posts, completing the base structure. There are locator cups on the undersides of the decks which slip onto the posts, and the threaded insert bolts the deck securely to the supports. All other components or accessories attach to or hang from the deck. All decks shall feature a standard ledger system that allows the integration of any type of transition or wedge component, positioned to the proper angle. The decks shall be sheeted with a layer of 5/8" thick controlled density fiberglass-reinforced polyethylene panels, and a final layer of 1/4" thick phenolic panels.
- **BANKS:** All wedges and banks shall be fabricated with 1.5" x 1.5" x .083 galvanized square tubing, manufactured to ASTM A-500 tolerances from steel. All framing shall be a minimum of 16" on center. The banks shall be sheeted with a layer of 5/8" thick fiberglass-reinforced polyethylene panels, and a final layer of 1/4" thick phenolic panels. The tops of the banks shall feature a round uni-directional ledger locator to attach them to the decks with precision. All wedges and banks above 28.125 degrees shall have a 5' radius approach base.
- **TRANSITIONS:** Transitions shall be fabricated with 1.5" x 1.5" x .083 galvanized square tubing, manufactured to ASTM A-500 tolerances from steel. All framing shall be a minimum of 16" on center. The transitions shall be sheeted with a layer of 5/8" thick fiberglass-reinforced polyethylene panels, and a final layer of 1/4" thick phenolic panels. The tops of the transitions shall feature a round uni-directional coping locator to attach them to the decks with precision.

#### RAILING:

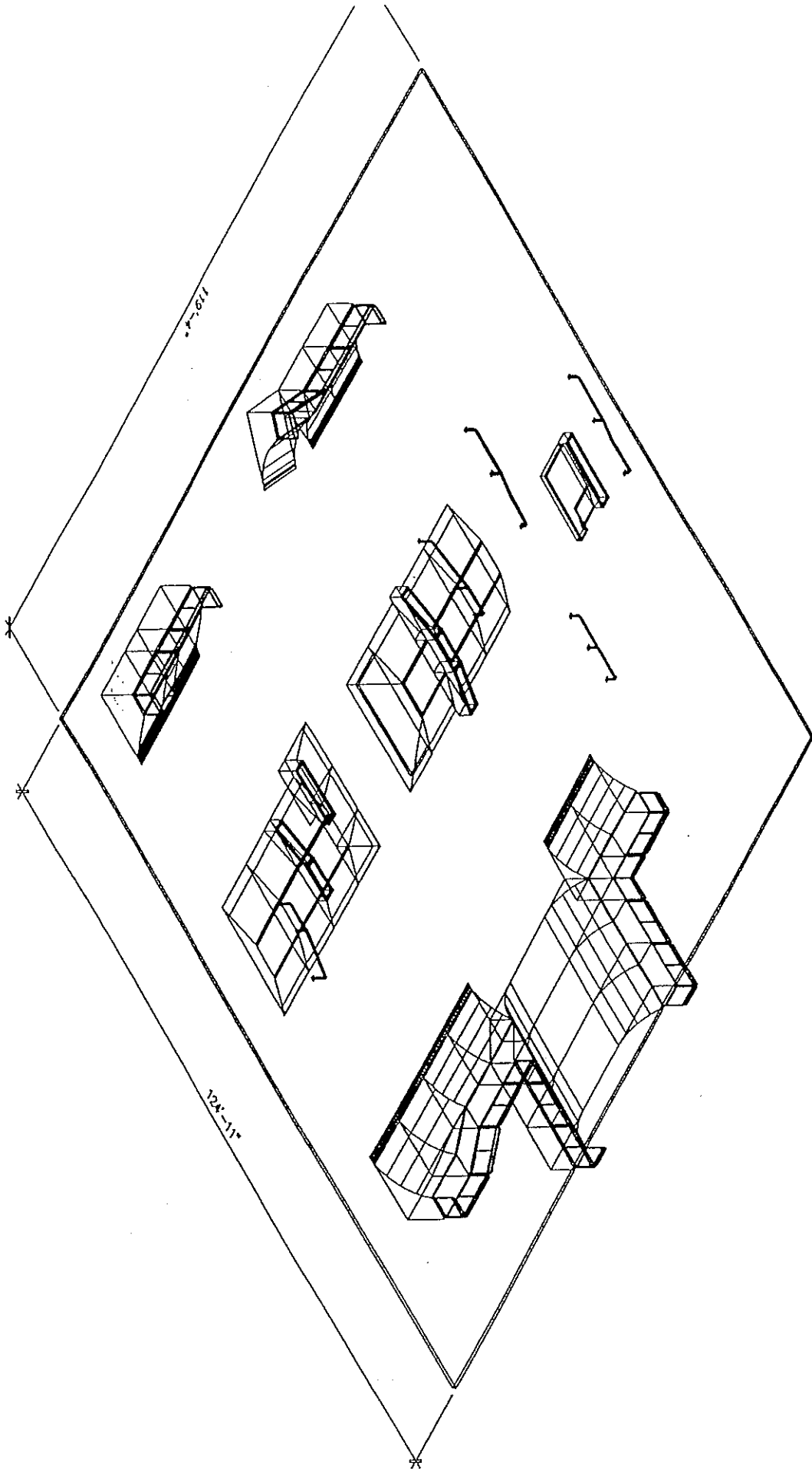
The railing is attached to the decks as part of the Load Bearing Support Post System. The threaded inserts which attach the decks into the supports extend 9" above the surface of the deck, and the hand rails sleeve over the top of them. They are constructed with 2" o.d. 13 ga. round tube outside frames, with 1" o.d. 13 ga. round tube vertical pickets. Rung spacing shall be less than 3 1/2" with a height of 42".

### SKATING COMPONENTS:

- **GRIND RAILS:** Grind Rails shall be constructed of 2"x3" 11 gauge (.120" wall) rectangular hot rolled black steel tubing. Base plates shall be constructed of 1/4" x 6" x 8" hot rolled black steel. Grind Rails shall be hot dipped galvanized after fabrication.
- **MANUAL BOX WITH PLANTER:** Frames shall be constructed of 2"x2" 14 gauge (.083" wall) hot rolled black steel tubing and 1"x2" 14 gauge (.083" wall) hot rolled black steel tubing. Frame assemblies shall be hot dipped galvanized after fabrication. Substrate and skate surface are typical - 5/8" SkateTron and 1/4" SkateLite Pro. Sides shall be enclosed with 1/2" SkateTron. All edging shall be 1/4" formed angle plate hot dipped galvanized after fabrication.
- **PLANTERS:** All planters shall be fabricated with 1.5" x 1.5" x .083 galvanized square tubing, manufactured to ASTM A-500 tolerances from steel. All framing shall be a minimum of 16" on center, with a 3/4" x 9 ga. flattened expanded metal perforation barrier welded to each exterior face of the structure. The planters shall be sheeted with a layer of 1/2" thick fiberglass-reinforced polyethylene panels, and the horizontal faces shall be sheeted with a final layer of 1/4" thick phenolic panels.

### MINIMUM DESIGN REQUIREMENTS:

- 1 ea 4' Tall x 16' Wide Quarter Pipe (Hipped into Mini Ramp)
- 1 ea 4' Tall Mini Ramp (with Floor) x 24' Wide
- 1 ea 4' Tall x 16' Wide Quarter Pipe (Hipped into Mini Ramp)
- 1 ea 4' to 6' Tall x 8' Wide Raked Quarter Pipe
- 1 ea 6' Tall x 8' Wide Quarter Pipe
- 1 ea 2' Tall Fun Box with Grind Rail
- 1 ea 2' Tall Fun Box with Wedges, Planters and Filled Corners
- 1 ea 3 Side Pyramid with Planter
- 1 ea 2' Tall x 16' Wide Fun Box with Grind Rail and Double-Raked
- 3 ea Free-Standing Grind Rail
- 1 ea Compound Manual Box
- 1 ea 5' Radiused Wedges with Kicker
- 1 ea 4' Tall x 24' Wide Quarter Pipe (with Hipped Section)



## SECTION 08110 – STEEL DOORS AND FRAMES

### PART 1 – GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes steel doors and frames.
- B. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 4 Section “Unit Masonry” for building anchors into and grouting frames in masonry construction.
  - 2. Division 8 Section “Flush Wood Doors” for solid-core wood doors installed in steel frames.
  - 3. Division 8 Section “Door Hardware” for door hardware.
  - 4. Division 8 Section “Glazing” for glass in steel doors and frames.
  - 5. Division 8 Section “Painting” for field painting primed doors and frames.

#### 1.3 SUBMITTALS

- A. Product Data: For each type of door and frame specified, including details of construction, materials, dimensions, hardware preparation, core, label compliance, profiles, and finishes.
- B. Shop Drawings: Showing fabrication and installation of steel doors and frames. Include details of each frame type, elevations of door design types, conditions and openings, details of construction, location and installation requirements of door and frame hardware and reinforcements, and details of joints and connections. Show anchorage and accessory items.
- C. Door and Frame Schedule: Submit schedule of doors and frames using same reference numbers of details and openings as those on Contract Drawings.
  - 1. Indicate glass and glazing requirements.

## 1.4 QUALITY ASSURANCE

- A. Provide doors and frames complying with ANSI/SDI 100 "Recommended Specifications for Standard Steel Doors and Frames" and as specified.
- B. Fire-Rated Door Assemblies: Units that comply with NFPA 80, are identical to door and frame assemblies tested for fire-test-response characteristics per ASTM E 152, and are labeled and listed by UL, Warnock Hersey, or another testing and inspecting agency acceptable to authorities having jurisdiction.

## 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Deliver doors and frames cardboard-wrapped or crated to provide protection during transit and job storage.
- B. Inspect doors and frames on delivery for damage. Minor damages may be repaired provided refinished items match new work and are acceptable to Architect; otherwise, remove and replace damaged items as directed.
- C. Store doors and frames at building site under cover. Place units on minimum 4-inch high wood blocking. Avoid using nonvented plastic or canvas shelters that could create a humidity chamber. If cardboard wrappers on doors become wet, remove cartons immediately. Provide minimum ¼-inch spaces between stacked doors to promote air circulation.

## PART 2 – PRODUCTS

### 2.1 MANUFACTURERS

- A. Available Manufacturers" Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include, but are not limited to, the following:
  - 1. Steel Doors and Frames.
    - a. Amweld Building Products, Inc.
    - b. Benchmark Commercial Doors.
    - c. Ceco Door Products.
    - d. Curries Co.
    - e. Fenestra Corp.
    - f. Kewanee Corp.
    - g. Mesker Door, Inc.
    - h. Pioneer Industries.
    - i. Republic Builders Products.
    - j. Steelcraft.

## 2.2 MATERIALS

- A. **Hot-Rolled Steel Sheets and Strip:** Commercial-quality carbon steel, pickled and oiled, complying with ASTM A 569.
- B. **Cold-Rolled Steel Sheets:** Carbon steel complying with ASTM A 366, commercial quality, or ASTM A 620 drawing quality, special killed.
- C. **Galvanized Steel Sheets:** Zinc-coated carbon steel complying with ASTM A 526, commercial quality, or ASTM A 642, drawing quality, hot-dip galvanized according to ASTM A 525, with A 60 or G 60 coating designation, mill phosphatized.
- D. **Supports and Anchors:** Fabricated from not less than 0.0478-inch thick steel sheet.

## 2.3 DOORS

- A. **Steel Doors:** Provide 1-3/4 inch thick doors of materials and ANSI/SDI 100 grades and models specified below, or as indicated on Drawings or schedules:
  - 1. **Exterior Doors:** Grade III, extra heavy-duty, Model 1, full flush design, minimum 0.052 inch thick galvanized steel sheet faces.

## 2.4 FRAMES

- A. **Provide metal frames for doors, sidelights, and other openings, according to ANSI/SDI 100, and of types and styles as shown on Drawings and schedules. Conceal fastenings, unless otherwise indicated.**
  - 1. **Fabricate interior frames of minimum 0.0598-inch thick cold rolled steel sheet.**
  - 2. **Fabricate exterior frames of minimum 0.064 inch thick galvanized steel sheet.**
  - 3. **Fabricate frames with mitered or coped and continuously welded corners.**
- B. **Door Silencers:** Drill stops to receive three (3) silencers on strike jambs of single-door frames and two (2) silencers on heads of double-door frames.
- C. **Plaster Guards:** Provide minimum 0.0179 inch thick steel plaster guards or mortar boxes at back of hardware cutouts where mortar or other materials might obstruct hardware operation and to close off interior of openings.
- D. **Grout:** When required in masonry construction, as specified in Division 4 Section "Unit Masonry Assemblies".

## 2.5 FABRICATION

- A. Fabricate steel door and frame units to be rigid, neat in appearance, and free from defects, warp, or buckle. Where practical, fit and assemble units in manufacturer's plant. Clearly identify work that cannot be permanently factory assembled before shipment, to assure proper assembly at Project site. Comply with ANSI/SDI 100 requirements.
  - 1. Internal Construction: One of the following manufacturer's standard core materials according to SDI standards:
    - a. Rigid polyurethane conforming to ASTM C 591.
    - b. Rigid Polystyrene conforming to ASTM C 578.
  - 2. Clearances: Not more than  $\frac{1}{8}$ -inch at jambs and heads, except not more than  $\frac{1}{4}$ -inch between non-fire rated pairs of doors. Not more than  $\frac{3}{4}$ -inch at bottom.
    - a. Fire Doors: Provide clearances according to NFPA 80.
- B. Fabricate exposed faces of doors from only cold-rolled steel sheet.
- C. Tolerances: Comply with SDI 117 "Manufacturing Tolerances Standard Steel Doors and Frames".
- D. Fabricate concealed stiffeners, reinforcement, edge channels, and moldings from either cold- or hot-rolled steel sheet.
- E. Galvanized Steel Doors and Frames: Fabricate doors and frames at indicated exterior locations from galvanized steel sheet according to SDI 112. Close top and bottom edges of doors flush as an integral part of door construction or by addition of minimum 0.064-inch thick galvanized steel channels, with channel webs placed even with top and bottom edges. Seal joints in top edges of doors against water penetration.
- F. Exposed Fasteners: Unless otherwise indicated, provide countersunk flat or oval heads for exposed screws and bolts.
- G. Hardware Preparation: Prepare doors and frames to receive mortised and concealed hardware according to final door hardware schedule and templates provided by hardware supplier. Comply with applicable requirements of SDI 107 and ANSI A115 Series specifications for door and frame preparation for hardware.
- H. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site.

- I. Locate hardware as indicated on Shop Drawings or, if not indicated, according to the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames".
- J. Glazing Stops: Minimum 0.0359 inch thick steel.
  - 1. Provide nonremovable stops on outside of exterior doors and frames and on secure side of interior frames for glass.
  - 2. Provide screw-applied, removable, glazing beads on inside of glass.

## 2.6 FINISHES, GENERAL

- A. Comply with NAAMM's "Metal Finishes Manual" for recommendations relative to applying and designating finishes.
- B. Comply with SSPC-PA 1, "Paint Application Specification No. 1", for steel sheet finishes.
- C. Apply primers to doors and frames after fabrication.

## 2.7 GALVANIZED STEEL SHEET FINISHES

- A. 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 type coating specified in Division 9 Section "Painting" to be applied over it. Clean welds, mechanical connections, and abraded areas, and apply galvanizing repair paint specified below to comply with ASTM A 780.
  - 1. Galvanizing Repair Paint: High-zinc-dust content paint for regalvanizing welds in galvanized steel, with dry film containing not less than 94 percent zinc dust by weight, and complying with DOD-P-21035 or SSPC-Paint 20.
- B. Factory Priming for Field-Painted Finish: All galvanized steel doors and frames shall be field painted after installation. Apply air-dried primer specified below on all surfaces of doors and frames immediately after cleaning and pretreatment.
  - 1. Shop Primer: Zinc-dust, zinc-oxide primer paint complying with performance requirements of FS TT-P-641, Type II.

## 2.8 STEEL SHEET FINISHES

- A. Surface Preparation: Solvent-clean surfaces to comply with SSPC-SP 1 to remove dirt, oil, grease and other contaminants that could impair paint bond. Remove mill scale and rust, if present, from uncoated steel to comply with SSPC-SP 5 (White Metal Blast Cleaning) or SSPC-SP 8 (Pickling).

- B. **Pretreatment:** Immediately after surface preparation, apply a conversion coating of type sited to organic coating applied over it.
- C. **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.

## **PART 3 – EXECUTION**

### **3.1 INSTALLATION**

- 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. After wall construction is completed, remove temporary braces and spreaders, leaving surfaces smooth and undamaged.
  - 1. Place frames before constructing enclosing walls and ceilings.
  - 2. In masonry construction, install at least three (3) wall anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Acceptable anchors include masonry wire anchors and masonry T-shaped anchors, except as otherwise required at fire-rated openings.
  - 3. Install fire-rated frames according to NFPA 80.
- C. **Door Installation:** Fit hollow-metal doors accurately in frames, within clearance specified in ANSI/SDI 100.

### **3.2 ADJUSTING AND CLEANING**

- A. **Prime Coat Touchup:** Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touchup of compatible air-drying primer.
- B. **Protection Removal:** Immediately before final inspection, remove protective wrappings from doors and frames.

**END OF SECTION**

## SECTION 08710 – DOOR HARDWARE

### PART 1 – GENERAL

#### 1.1 RELATED DOCUMENTS

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

#### 1.2 SUMMARY

- A. This Section includes items known commercially as finish or door hardware that are required for swing doors except special types of unique hardware specified in the same sections and the doors and door frames on which they are installed.
- B. This Section includes the following:
  - 1. Hinges.
  - 2. Lock cylinders and keys.
  - 3. Lock and latch sets.
  - 4. Bolts.
  - 5. Exit devices.
  - 6. Closers.
  - 7. Overhead holders.
  - 8. Miscellaneous door control devices.
  - 9. Push/pull trim.
  - 10. Protection units.
  - 11. Weatherstripping.
  - 12. Thresholds.
- C. Related Sections: The following Sections contain requirements that relate to this Section:
  - 1. Division 6 Section “Interior Architectural Woodwork” for cabinet hardware.
  - 2. Division 8 Section “Flush Wood Doors” for factory prefitting and factory premachining of doors for door hardware.

### 1.3 SUBMITTALS

- A. **General:** Submit the following in accordance with Conditions of Contract and Division 1 Specification Sections.
- B. **Product data** including manufacturers' technical product data for each item of door hardware, installation instructions, maintenance of operating parts and finish, and other information necessary to show compliance with requirements.
- C. **Final hardware schedule** coordinated with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. **Final Hardware Schedule Content:** Based on hardware indicated, organize schedule into "hardware sets" indicating complete designations of every item required for each door or opening. Include the following information.
    - a. Type, style, function, size, and finish of each hardware item.
    - b. Name and manufacturer of each item.
    - c. Fastenings and other pertinent information.
    - d. Location of each hardware set cross referenced to indications on Drawings both on floor plans and in door and frame schedule.
    - e. Explanation of all abbreviations, symbols, and codes contained in schedule.
    - f. Mounting locations for hardware.
    - g. Door and frame sizes and materials.
    - h. Keying information.
  - 2. **Submittal Sequence:** Submit final schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work that is critical in the Project construction schedule. Include with schedule the product date, samples, shop drawings of other work affected by door hardware, and other information essential to the coordinated review of schedule.
  - 3. **Keying Schedule:** Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.

4. Samples of each type of exposed hardware unit in finish indicated and tagged with full description for coordination with schedule. Submit samples prior to submission of final hardware schedule.
  - a. Samples will be returned to the supplier. Units that are acceptable and remain undamaged through submittal, review, and field comparison process may, after final check of operation, be incorporated in the Work, within limitations of keying coordination requirements.
5. Templates for doors, frames, and other work specified to be factory prepared for the installation of door hardware. Check shop drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

#### 1.4 QUALITY ASSURANCE

- A. **Supplier Qualifications:** A recognized architectural door hardware supplier, with warehousing facilities in the Project's vicinity, that has a record of successful in-service performance for supplying door hardware similar in quantity, type, and quality to that indicated for this Project and that employs an experienced architectural hardware consultant (AHC) who is available to Owner, Architect, and Contractor, at reasonable times during the course of the Work, for consultation.
  1. Require supplier to meet with Owner to finalize keying requirements and to obtain final instructions in writing.
- B. **Fire-Rated Openings:** Provide door hardware for fire-rated openings that complies with NFPA Standard No. 80 and requirements of authorities having jurisdiction. Provide only items of door hardware that are listed and are identical to products tested by UL, Warnock Hersey, FM, or other testing and inspecting organization acceptable to authorities having jurisdiction for use on types and sizes of doors indicated in compliance with requirements of fire-rated door and door frame labels.

## 1.5 PRODUCT HANDLING

- A. Tag each item or package separately with identification related to final hardware schedule, and include basic installation instructions with each item or package.
- B. Packaging of door hardware is responsibility of supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in same container.
- C. Inventory door hardware jointly with representatives of hardware supplier and hardware installer until each is satisfied that count is correct.
- D. Deliver individually packaged door hardware items promptly to place of installation (shop or Project site).
- E. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of the Work will not be delayed by hardware losses both before and after installation.

## 1.6 MAINTENANCE

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

## PART 2 – PRODUCTS

### 2.1 MANUFACTURERS

- A. **Manufacturers:** Subject to compliance with requirements, provide products by one of the following:

1. **Butts and Hinges:**
  - a. Bommer Industries, Inc.
  - b. Hager Hinge Co.
  - c. Lawrence Brothers, Inc.
  - d. McKinney Products Co.
  - e. H. Soss & Company.
  - f. Stanley Hardware, Div. Stanley Works.
  
2. **Cylinders and Locks:**
  - a. Sargent Manufacturing Company.
  - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
  - c. Yale Security Inc.
  - d. Schlage Lock, Div. Ingersoll-Rand Door Hardware Group.
  
3. **Bolts:**
  - a. Builders Brass Works Corp.
  - b. Glynn-Johnson Corp.
  - c. Hager Hinge Co.
  - d. H. B. Ives, A Harrow Company.
  - e. Quality Hardware Mfg. Co., Inc.; Div. Newman Tonks, Inc.
  - f. Stanley Hardware, Div. Stanley Works.
  
4. **Exit/Panic Devices:**
  - a. Sargent Manufacturing Company.
  - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
  - c. Yale Security Inc.
  - d. Von Duprin, Div. Ingersoll-Rand Door Hardware Group.
  - e. Adams Rite Manufacturing Co.
  
5. **Overhead Closers:**
  - a. Sargent Manufacturing Company.
  - b. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.

- c. LCN, Div. Ingersoll-Rand Door Hardware Group.
- d. Norton Door Controls, Div. Yales Security Inc.
- e. International Door Closers, Inc.
- f. Monarch Hardware & Mfg. Co., Div. Newman Tonks, Inc.
- g. Rixson-Firemark, Div. Yale Security Inc.
- h. Yale Security Inc.

6. Door Control Devices

- a. Baldwin Hardware Corp.
- b. Brookline Industries, Div. Yale Security Inc.
- c. Builders Brass Works Corp.
- d. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
- e. Glynn-Johnson Corp.
- f. Hager Hinge Co.
- g. H. B. Ives, A Harrow Company
- h. Quality Hardware Mfg. Co., Inc.; Div. Newman Tonks, Inc.
- i. Triangle Brass Manufacturing Company (Trimco).

7. Protection Plates:

- a. Baldwin Hardware Corp.
- b. Brookline Industries, Div. Yale Security Inc.
- c. Corbin & Russwin Architectural Hardware, Div. Black & Decker Corp.
- d. Hager Hinge Co.
- e. Hiawatha, Inc.
- f. H. B. Ives, A Harrow Company.
- g. Triangle Brass Manufacturing Company (Trimco).

8. Door Stripping and Seals:

- a. Hager Hinge Co.
- b. National Guard Products, Inc.
- c. Pemko Manufacturing Co., Inc.
- d. Reese Enterprises, Inc.
- e. Zero International, Inc.

9. **Thresholds:**

- a. Hager Hinge Co.
- b. National Guard Products, Inc.
- c. Pemko Manufacturing Co., Inc.
- d. Reese Enterprises, Inc.
- e. Zero International, Inc.

2.2 **SCHEDULED HARDWARE**

A. Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of finish hardware are indicated in the "Hardware Schedule" at the end of this Section. Products are identified by using hardware designation numbers of the following:

- 1. ANSI/BHMA designations used elsewhere in this Section or in schedules to describe hardware items or to define quality or function are derived from the following standards. Provide products complying with these standards and requirements specified elsewhere in this Section.
  - a. Butts and Hinges: ANSI/BHMA A 156.1-1997.
  - b. Locks and Latches: ANSI/BHMA A 156.2-1996.
  - c. Exit Devices: ANSI/BHMA A 156.3-1994.
  - d. Door Controls – Closers: ANSI/BHMA A 156.4-1992.
  - e. Auxiliary Locks and Associates Products: ANSI/BHMA A 156.5-1992.
  - f. Architectural Door Trim: ANSI/BHMA A 156.6-1994.
  - g. Template Hinge Dimensions: ANSI/BHMA A 156.7-1988 (R 1997).
  - h. Door Controls – Overhead Holders: ANSI/BHMA A 156.8-1994.
  - i. Auxiliary Hardware: ANSI/BHMA A 156.16-1993.
  - j. Materials and Finishes: ANSI/BHMA A 156.18-1993.
  - k. Thresholds: ANSI/BHMA A 156.21-1996.
  - l. Door Gasketing Systems: ANSI/BHMA A 156.22-1995.

## 2.3 MATERIALS AND FABRICATION

- A. **Manufacturer's Name Plate:** Do not use manufacturers' products that have manufacturer's name or trade name displayed in a visible location (omit removable nameplates) except in conjunction with required fire-rated labels and as otherwise acceptable to Architect.
  - 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
  
- B. **Base Metals:** 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 (commercially recognized) quality than specified for applicable hardware units by applicable ANSI/BHMA A 156 series standard for each type of hardware item and with ANSI/BHMA 156.18 for finish designations indicated. Do not finish "optional" materials or forming methods for those indicated, except as otherwise specified.
  
- C. **Fasteners:** Provide hardware manufactured to conform to published templates, generally prepared to machine screw installation. Do not provide hardware that has been prepared for self-tapping sheet metal screws, except as specifically indicated.
  
- D. **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 this other work as closely as possible including "prepared for paint" surfaces to receive painted finish.
  
- E. **Provide concealed fasteners for hardware units that are exposed when door is closed except to the extent no standard units of type specified are available with concealed fasteners.** Do not use thru-bolts for installation where bolt head or nut on opposite face is exposed in other work unless their use is the only means of reinforcing the work adequately to fasten the hardware securely. Where thru-bolts are used as a means of reinforcing the work, provide sleeves for each thru-bolt or use sex screw fasteners.

## 2.4 HINGES

- A. **Templates:** Provide only template-produced units.
- B. **Screws:** Provide Phillips flat-head screws complying with the following requirements.
  - 1. For metal doors and frames install machine screws into drilled and tapped holes.
  - 2. For wood doors install wood screws.
  - 3. For fire-rated wood doors install #12 x 1 ¼-inch, threaded to the head steel wood screws.
  - 4. Finish screw heads to match surface of hinges.
- C. **Hinge Pins:** Except as otherwise indicated, provide hinge pins as follows:
  - 1. **Out-Swing Exterior Doors:** Nonremovable pins.
  - 2. **Out-Swing Corridor Doors with Locks:** Nonremovable pins.
  - 3. **Interior Doors:** Nonrising pins.
  - 4. **Tips:** Flat button and matching plug, finished to match leaves.
- D. **Size:** Hinges shall be 4 ½ x 4 ½ inches unless otherwise indicated in the Hardware Schedule at the end of this section.

## 2.5 LOCK CYLINDERS AND KEYING

- A. Review the keying system with the Owner's Construction Project Manager and Security Department (Locksmith), obtain approvals, and provide the type required (master, grandmaster or great-grandmaster).
- B. Permanently inscribe each key with number of lock that identifies cylinder manufacturer's key symbol, and notation, "DO NOT DUPLICATE".
- C. **Key Material:** Provide keys of nickel silver only.
- D. **Key Quantity:** Furnish three (3) change keys for each lock, five (5) master keys for each master system, five (5) grandmaster keys for each grandmaster system, and five (5) great-grandmaster keys for each great-grandmaster system as applicable to requirements established by Paragraph "A" above.

1. Furnish one extra blank for each lock.

## 2.6 LOCKS, LATCHES, AND BOLTS

- A. **Strikes:** 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, unless otherwise indicated.
  1. Provide flat lip strike for locks with 3 piece, antifriction latchbolts as recommended by manufacturer.
  2. Provide recess type top strikes for bolts locking into head frames, unless otherwise indicated.
  3. Provide dust-proof strikes for foot bolts, except where special threshold construction provides nonrecessed strike for bolt.
- B. **Locks and Latches:** Bored or cylindrical type complying with ANSI/BHMA A 156.2 Grade 1.
  1. Lever handles shall be provided on all locks and latches. Levers shall be solid cast zinc, brass, bronze, or stainless steel and shall be provided with matching roses. Design shall comply with all applicable handicapped standards and will be subject to approval by the Owner.
- C. **Functions** shall be as indicated in the Hardware Schedule at the end of this section.
- D. **Lock Throw:** Comply with UL requirements for throw of bolts and latch bolts on rated fire openings.
  1. Provide ½ inch minimum throw of latch for bored locks. Provide 1 inch minimum throw for all dead bolts.
- E. **Flush Bolt Heads:** Minimum of ½ inch diameter rods of brass, bronze, or stainless steel with minimum 12 inch long rod for doors up to 7' 0" in height.
- F. **Exit devices** shall conform to ANSI/BHMA 156.3, modern design. Exit devices shall be "Touch Bar" type such as Von Duprin 99 series or an approved equal. Trim on exterior doors with Function 03 shall be Von Duprin 697NL-M or similar.

1. Cylinder dogging shall be provided on all exterior exit devices with Function 03.
- G. Manual flush bolts shall conform to ANSI/BHMA A 156.16 and shall be type(s) as indicated in "Hardware Schedule" by number designations taken from this standard.
- H. Dead bolts shall conform to ANSI/BHMA A 156.5 and shall be type(s) as indicated in "Hardware Schedule" by number designations taken from this standard.

## 2.7 CLOSERS AND DOOR CONTROL DEVICES

- A. Door Closers shall conform to ANSI/BHMA A 156.4. Closers shall be Series Type C02000. All closers shall have optional features PT-4C and PT-4D. All closers shall be heavy-duty having cast-iron housings and forged steel pistons and arms and carry manufacturer's 10-year warranty.
1. Size of Units: Except as otherwise specifically indicated, comply with the manufacturer's recommendations for size of door control unit depending on size of door, exposure to weather, and anticipated frequency of use.
  2. Where parallel arms are indicated for closers, provide closer unit one size larger than recommended for use with standard arms.
  3. Where clearance between open doors and wall would cause closer body to hit wall, provide narrow projection closers with a maximum thickness of 2 ¼ inches.
  4. Access-Free Manual Closers: Provide adjustable units complying with ANSI A117.1 provisions for door openings force and delayed action closing and with applicable requirements of the Americans with Disabilities Act (ADA).
  5. Closers specified in the Hardware Sets to have built-in holders, or stops shall be set at the maximum swing angle allowed by the device or an adjacent wall, not at the 90 degree angle indicated by the door swing symbol on the drawings.
- B. Door Stops: Every door shall be provided with a door stop even though a stop may not be indicated in the Hardware Schedule. Wall stops complying with ANSI/BHMA A 156.4, Type L12101 shall be provided typically. If a wall stop is unsuitable because a door swings

- C. against a window, chalk/tackboard, coat rack, shelving, furniture, etc., then a floor stop complying with ANSI/BHMA A 156.4, Type L12141 or L12161 shall be provided. Where a door would conflict with another door, then a roller bumper complying with ANSI/BHMA A 156.4, Type L12191, L12201, or L12211 shall be provided.
- D. Overhead stops and holders shall conform to ANSI/BHMA A 156.8 and shall be type(s) as indicated in "Hardware Schedule" by number designations taken from this standard.
- E. Door silencers shall be provided for each hollow steel door frame. Silencers shall be neoprene rubber type designed for seating into pre-drilled holes in frames. Color shall be gray. See SECTION: STEEL DOORS AND FRAMES for number of silencers required per frame.

## 2.8 PUSH/PULL UNITS

- A. Push plates shall comply with ANSI/BHMA A 156.6, Type 301, and shall be fabricated from flat stainless steel, 4 inches x 16 inches.
- B. Pull handles shall comply with ANSI/BHMA A 156.6, Type J405. Pull handles shall be solid brass, bronze, or stainless steel, one-inch in diameter, 8 inches center-to-center, and with a two inch clearance. Base shall be same as specified for push plates.

## 2.9 DOOR PROTECTION UNITS

- A. Protection units shall conform to ANSI/BHMA A 156.6 and shall be fabricated from flat 0.050 inch thick stainless steel with a satin finish.
- B. Fasteners: Provide manufacturer's standard exposed fasteners for door protection units consisting of either machine screws or self-tapping screws.
- C. Fabricate protection plates not more than 1 ½ inches less than door width on hinge side and not more than ½ inch less than door width on pull side by height indicated.
  - 1. Kick Plates: 10 inches high.

## 2.10 WEATHERSTRIPPING

- A. **General:** Provide head, jamb, and sill weatherstripping complying with ANSI/BHMA A 156.22 and of the specific types indicated in the "Hardware Schedule" by number designations taken from this standard.
- B. **Replaceable Seal Strips:** Provide only those units where resilient or flexible seal strip is easily replaceable and readily available from stocks maintained by manufacturer.
- C. **Weatherstripping at Jambs and Heads:** Provide bumper-type resilient insert and metal retainer strips, surface applies, and of following metal, finish, and resilient bumper material:
  - 1. **Extruded aluminum with natural anodized finish, 0.062 inch minimum thickness of main walls and flanges.**
    - a. **Expanded Neoprene:** Cellular rubber conforming to ASTM D 1056 Type 2 (closed-cell), Class B (low-swell, oil-resistant), Grade 2 (compression-deflection-9psi), and self-extinguishing.
    - b. **¼ inch by ¾ inch.**  
Or
    - c. **Solid neoprene conforming to MIL R 6855, Class II, Grade 40.**
    - d. **Flexible, hollow bulb or loop insert**  
Or
    - e. **Flexible vinyl hollow bulb or loop insert.**
- D. **Weatherstripping at Door Bottoms:** Provide sweep strip consisting of contact-type resilient insert and metal housing and of following metal, finish, and resilient seal strip:
  - 1. **Extruded aluminum with natural anodized finish, 0.062 inch minimum thickness or main walls and flanges with means to retain a slide in resilient seal strip.**
  - 2. **Flexible neoprene seal strip designed to slide into retaining grooves in metal housing.**

## 2.11 THRESHOLDS

- A. **General:** Thresholds shall be aluminum conforming to ANSI/BHMA A 156.21, J35100, or J35180 at exterior mechanical or electrical room doors, and J32130 at all other exterior door locations, unless otherwise indicated on the drawings.
- B. Thickness of metal shall not be less than 0.125 inches for thresholds with reinforcing ribs on underside and not less than 0.20 inches for clear span thresholds.
- C. Width of thresholds shall be as required to suit conditions but in no case less than four inches.
- D. Length shall be as required by door width.

## 2.12 HARDWARE FINISHES

- A. Provide finishes that match those established by ANSI/BHMA.
- 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 by referenced standards for the applicable units of hardware.
- C. The designations used below to indicate hardware finishes are those listed in ANSI/BHMA A 156.18, "Materials and Finishes", including coordination with the traditional U.S. finishes shown by certain manufacturers for their products.
  - 1. The finish of hinges on exterior doors – Code 626.
  - 2. Finish of all other hinges – Code 652.
  - 3. Finish of protection plates – Code 630.
  - 4. Lock and latch sets – Code 630 or 626.
  - 5. Finishes not otherwise indicated – Code 626 or 630.
  - 6. Finish of door closers – Code 689.

## PART 3 – EXECUTION

### 3.1 INSTALLATION

- A. Mount hardware units at heights indicated in following applicable publications, except as specifically indicated or required to comply with governing regulations and except as otherwise directed by Architect.
  - 1. “Recommended Locations for Builders Hardware for Standard Steel Doors and Frames” by the Door and Hardware Institute.
  - 2. NWWDA Industry Standard I.S.1.7, “Hardware Locations for Wood Flush Doors”.
- B. Install each hardware item in compliance with the manufacturer’s instructions and recommendations. Where cutting and fitting is required to install hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation or application of surface protection with finishing work specified in the Division 9 Sections. Do not install surface-mounted items until finishes have been completed on the substrates involved.
- 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 that 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 complying with requirements specified in Division 7 Section “Joint Sealants”. Cut ends of thresholds to match door frame configuration.
- F. Weatherstripping and Seals: Comply with manufacturer’s instructions and recommendations to the extent installation requirements are not otherwise indicated.

### 3.2 ADJUSTING, CLEANING, AND DEMONSTRATING

- A. Adjust and check each operating item of hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate freely and smoothly or as intended for the application made.
  - 1. Where door hardware is installed more than one month prior to acceptance or occupancy of a space or area, return to the installation during the week prior to acceptance or occupancy and make final check and adjustment of all hardware items in such space or area. 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.
- B. Clean adjacent surfaces soiled by hardware installation.
- C. Instruct Owner's personnel in the proper adjustment and maintenance of door hardware and hardware finishes.

### 3.3 HARDWARE SCHEDULE

- A. General: Provide hardware for each door to comply with requirements of Section "Door Hardware", hardware set numbers indicated in door schedule, and in the following schedule of hardware sets.

- 1. Interior Doors:

- HW-1

- 1 ½ pr.

- Hinges A8133

- 1 ea.

- Classroom Lock F84

- HW-2

- 1 ½ pr.

- Hinges A8112

- 1 ea.

- Storage Lock F86

- 1 ea.

- Closer C02011 (C02021 – Rooms 117A, 122,

- 126B)

HW-3

1 ½ pr. Hinges A8112  
1 ea. Closer C02021 (F02011 – Rooms 120, 121)  
1 ea. Passage Latch F75  
1 ea. Dead Bolt E1171  
1 ea. Kickplate J102

HW-4

1 ½ pr. Hinges A8112  
1 ea. Passage Latch F75  
1 ea. Closer C02011

HW-5

1 ½ pr. Hinges A8112  
1 ea. Office Lock F81  
1 ea. Closer C02011

HW-6

1 ½ pr. Hinges A8112  
1 ea. Office Lock F81  
1 ea. Closer C02021

HW-7

3 pr. Hinges A8112  
2ea. Exit Devices, Type 1, Function 08  
2 ea. Closers C02021  
1 ea. Keyed Removable Mullion Type 22 (Single  
Rabbit)  
1 ea. Cylinder for Mullion E09211  
2 ea. Kickplates J102

HW-8

3 pr. Hinges A8112  
2ea. Closers C02011  
2 ea. Push Plates J301  
2 ea. Pull Handles J405  
2 ea. Flush Bolts L14081 (Inactive Leaf)  
1 ea. Dead Bolt E1141  
2 ea. Kickplates J102

HW-9

1 ½ pr. Hinges A8133  
1 ea. Storage Lock F86

2. Exterior Doors:

HW-100

(By Aluminum Door Supplier)

HW-101

(By Aluminum Door Supplier)

HW-102

3 pr.	Hinges A2112
1 ea.	Exit Device, Type 3, Function 03
2 ea.	Closers C02021
2 ea.	Flush Bolts L14081 (Inactive Leaf)
2 ea.	Kickplates J102
1 ea.	Threshold as specified
1 Set	Weatherstripping as specified

END OF SECTION 8710