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BULLETIN
TO
DESIGN AND CONSTRUCTION PROFESSIONALS

Date: November 1, 2019

Bulletin: 0002 – 2019

Division: 08 11 13 – Hollow Metal Doors and Frames
08 71 00 – Door Hardware

Re: APS Design Guidelines and Standard Specifications Update

Item 1: This is a clarification, change or addition to the existing Atlanta Public Schools (APS) Design Guidelines and Standard Specifications dated December 1, 2010 and any previous Bulletins.

Item 2: This set of requirements and specifications should be implemented IMMEDIATELY on all projects that are in the "Construction Document" phase of the project delivery process. On projects where the "Construction" has begun, these requirements and specifications should be implemented IMMEDIATELY, WHERE PRACTICAL as to not adversely impact the schedule, budget or overall delivery of the project.

Item 3: The existing APS Design Guidelines and / or Standard Specifications, Division 08 11 13 – Hollow Metal Doors and Frames and 08 71 00 Door Hardware (dated June 28, 2019) should be updated as indicated by the attached information.

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Director of Capital Improvements

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SECTION 08 11 13
HOLLOW METAL DOORS AND FRAMES

PART I – GENERAL

1.1 SUMMARY

A. SECTION INCLUDES

1. Work under this section comprises of furnishing hollow metal doors and frames, including transom frames, sidelight and window frames with provision for glazed, paneled or louvered openings, fire labeled and non-labeled, as scheduled.

B. RELATED DOCUMENTS

1. Related documents, drawings and general provisions of contract, including General and Supplementary Conditions and Division 1 specification sections apply to this section. The latest published edition of each reference applies.

C. RELATED SECTIONS

1. 06 10 00 – Rough Carpentry
2. 08 14 13 – Wood Doors
3. 08 71 00 – Door Hardware
4. 08 74 00 – Access Control Hardware
5. 08 81 00 – Glass Glazing
6. 09 90 00 – Painting
7. 28 10 00 – Electronic Access Control and Intrusion Detection

1.2 REFERENCES

1. The intent of this document is that all hollow metal ant its application will comply or exceed the standards identified below. The latest published edition of each reference applies.

B. STANDARDS

1. ASTM – American Society for Testing and Materials.
2. ANSI – American National Standards Institute.
3. NAAMM/ HMMA – Hollow Metal Manufacturers Association.
4. SDI – Steel Door Institute.
5. ANSI/SDI-100 – Recommended Specifications for Standard Steel Doors and Frames.
6. ANSI-A250.4 – Steel Doors and Frames Physical Endurance.
7. ASTM-F 476 – Standard Test Methods for Security of Swinging Doors Assemblies.
8. SDI-105 – Recommended Erection Instructions for Steel Frames.
9. SDI-107 – Hardware on Steel Doors (reinforcement application).
10. UL752 – Ballistic Standards.

C. BUILDING CODE REFERENCES

1. ADA – Americans with Disabilities Act.
2. ANSI/UL10C - Standard for Safety for Positive Pressure Fire Tests of Door Assemblies.
3. ANSI-A117.1 – Accessible and Usable Building and Facilities.
4. FEMA 361 – Hurricane and Tornado Guidelines.
5. IBC 20013 – International Building Code.
6. NFPA 80 – Standard for Fire Doors and Other Opening Protectives.
7. NFPA-101 – Life Safety Code.

8. NFPA 105 – Standard for the Installation of Smoke Door Assemblies and Other Opening Protectives.
9. NFPA 252 – Standard Method of Fire Tests of Door Assemblies.
10. UL 1784 – Air Leakage Tests of Door Assemblies.

1.3 SUBMITTALS

A. GENERAL REQUIREMENTS

1. Submit copies of the hollow metal door and frame shop drawings in accordance with Division 1, General Requirements.
2. Submittal shall be embossed or have the imprint of a Certified, up to date, Seal stamp.

B. PRODUCT DATA

1. Submit shop drawings showing fabrication and installation of standard steel doors and frames. Include details of each frame type, elevations of door and frame types, conditions at openings, details of construction, location and installation requirements of door and frame hardware reinforcements, and details of joints and connections. Show anchorage and accessory items.

C. LEED SUBMITTALS

1. Program Based on the U.S. Green Building Council LEED Reference Guide for Green Building Design and Construction Publication for the design, construction and major renovations of commercial and institutional buildings including core and shell and K-12 school projects.
2. Credits MR 4.1 and MR 4.2: Use materials with recycled content such that the sum of the post-consumer recycled content plus one-half of the pre-consumer content constitutes at least 20% total based on cost of the total values of the material in the project.
3. Credits:
   a. MR 4.1: 1 point -recycled content is at least 10% of the total value of the materials in the entire project.
   b. MR 4.2: 1 additional point added to the MR 4.1 point – recycle content is at least 10% (MR 4.1 percentage plus an additional amount to equal a minimum of 20%) of the total value of the materials in the entire project.

D. SHOP DRAWINGS

1. Provide a schedule of doors and frames using same reference numbers for details and door openings as those on the contract documents. Shop drawings should include the following information:

   a. Material thickness and/or gauge.
   b. Door core material.
   c. Mortises and reinforcements.
   d. Anchorage types.
   e. Locations of exposed fasteners.
   f. Glazed, louvered and paneled openings.
   g. Mounting locations of standard hardware.

1.4 QUALITY ASSURANCE

A. SUBSTITUTIONS

1. All substitution requests must be submitted within the procedures and time frame as outlined in Division 1, General Requirements. Approval of products is at the discretion of the architect and his consultant.

B. MANUFACTURER QUALIFICATIONS

1. Select a qualified hollow metal distributor, who is a direct account of the manufacturer of the products furnished. In addition, that distributor must have in their regular employment an Architectural Hardware Consultant (AHC), a Certified Door Consultant (CDC), or an Architectural Openings Consultant (AOC), who will be available to consult with the Architect and Contractor regarding any matters affecting the door and frame opening.

C. FIRE RATED DOOR ASSEMBLIES

1. All labeled fire door assemblies to be of a type that have been classified and listed in accordance with the latest edition of NFPA80 and test in compliance with NFPA-252, and UL10C. A physical label is to be affixed to the fire door at an authorized facility; embossed labels are acceptable on standard 3-sided door frames.

2. For openings required to be fire rated exceeding limitations of labeled assemblies, submit manufacturer's certification that each door and frame assembly has been constructed to conform to design, materials and construction equivalent to requirements for labeled construction.

3. Project requires door assemblies and components that are compliant with positive pressure and S-label requirements. Specifications must be cross-referenced and coordinated with hardware and other door manufacturers to ensure that total opening engineering is compatible with UL10C Standard for Positive Pressure Fire Tests of Door Assemblies.

a. Certification(s) of compliance shall be made available upon request by the Authority Having Jurisdiction.

D. SEVERE STORM PRODUCTS

1. Tornado Doors: Door Systems for Federal Emergency Management Agency (FEMA) community shelters and other areas of refuge meeting the design wind pressures and missile impact loads as detailed in the National Performance Criteria for Tornado Shelters as published by FEMA/
2. Hurricane Doors: Door systems required to comply with the Miami-Dade County Product Control Approval System or the Florida Building Code Approval System meeting the requirements of Miami-Dade County test protocols PA 201, PA 202, PA 203 and Florida Building Code test protocols TAS 201, TAS 202, and TAS 203.

1.5 DELIVERY, STORAGE, AND HANDLING

A. The supplier shall deliver all materials to the project site; direct factory shipments are not allowed unless agreed upon beforehand. Supplier shall coordinate delivery times and schedules with the contractor.

B. Deliver doors cardboard wrapped or crated to provide protection during transit and job site storage. Provide additional protection to prevent damage to any factory-finished doors. Mark all doors and frames with opening numbers as shown on the contract documents and shop drawings.

C. Inspect doors and frames upon delivery for damage. Minor damages may be repaired provided refinished items are equal in all respects to new work and acceptable to the architect. Otherwise, remove and replace damaged goods as directed.

D. Store doors and frames at the building site in a dry and secure place.

1. Place units on minimum 4" high wood blocking.
2. Avoid use of non-vented plastic or canvas shelters that could create a humidity chamber.

3. If cardboard wrapper on door becomes wet, remove carton immediately.
4. Provide 1/4" spaces between stacked doors to promote air circulation.

1.6 WARRANTY

A. All doors and frames shall be warranted in writing by the manufacturer against defects in materials and workmanship for a period of one (1) year commencing on acceptance, the date of completion.

PART II - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide standard hollow metal doors and frames by one of the following:

1. Mesker, a division of dormakaba.
2. Steelcraft, an Allegion Company.

2.2 MATERIALS

A. All doors and frames shall be manufactured of commercial quality cold rolled steel per ASTM-A366 and A568 general requirements; galvanized to A60 or G60 or galvanealed to A40 minimum coating weight standard per ASTM-A924.

B. Supports and anchors shall be fabricated of not less that 18-gauge sheet steel, galvanized where galvanized frames are used.

C. Provide all hollow metal doors and frames receiving electrified hardware with molex wiring harness and concealed plug connectors on one end to accommodate up to twelve wires. Coordinate molex connectors on end of the wiring harness to plug directly into the electrified hardware and the electric hinge.

D. Where specified supply embossed steel doors with wood grain appearance. Wood grain shall follow the pattern of a stile and rail wood door with both vertical and horizontal grain patterns. Doors with vision lites are required to have wood grain window kits.

2.3 DOORS

A. Provide 1 3/4" thick doors of materials and ANSI/SDI-100 grades and models specified below, or as indicated on drawings or schedules:

1. Interior Doors: Level 2, Model 2 – Seamless Mesker NP Series.

a. Interior doors shall be minimum 20-gauge cold-rolled, gavannealed, or galvanized G90 steel face sheets to be securely bonded to the core. Doors shall have hemmed vertical edge seams, mechanically interlocked for maximum structural integrity. Optional Seamless (NVS) edge. Top and bottom of doors shall be closed and reinforced with an inverted continuous channel welded to both faces. Optional flush top available. Square edge standard. Optional beveled edges available.

2. Exterior Doors: Level 3, Model 2 – Seamless Mesker NP Series.

a. Exterior doors shall be minimum 16-gauge cold-rolled, gavannealed, or galvanized G90 steel face sheets to be securely bonded to the core. Doors shall have hemmed vertical edge seams, mechanically interlocked for maximum structural integrity. Optional Seamless (NVS) edge. Top and bottom of doors shall be closed and reinforced with an inverted

continuous channel welded to both faces. Provide optional flush top and sealed to prevent water infiltration. The bottom channel shall include weep-holes. Square edge standard. Optional beveled edges available.

3. Security Doors: Level 3, Model 2 – Seamless Mesker NVS Series.

    a. Doors shall be minimum 16-gauge steel with both lock and hinge rail edge of door continuously wire welded the entire height of the door. Doors shall be reinforced, stiffened, insulated, and sound deadened with continuous 20 Gauge vertical steel stiffeners spaced not more than 6" (152) apart. The stiffener ends shall be welded together at the top and bottom ends. All spaces between stiffeners shall be insulated with Polystyrene Core. The top of all doors shall be closed flush by the addition of a 16-gauge screwed-in top cap and sealed to prevent water infiltration. The bottom channel shall include weep-holes.

4. Bullet Resistant Doors

    a. Bullet resistant hollow metal doors shall be constructed as certified and tested to the requirements of UL 752. Fully weld vertical edge seams for enhanced strength and aesthetic appearance. Internal door construction and concealed armor plate shall vary and is dependent on the required ballistic rating. Provide ballistic level doors as follows:

        1) Level 1: Super 38 Automatic
        2) Level 2: .357 Magnum Revolver
        3) Level 3: .44 Magnum Revolver
        4) Level 4: 30-06 Rifle

    b. Subject with compliance to the outline requirements, provide products by the following manufacturers:

        1) Mesker, a division of dormakaba.
        2) Steelcraft, an Allegion Company.
        3) Curries, an Assa Abloy Company.

B. All doors shall be reinforced for hardware as shown below where necessary to preclude the use of thru-bolts.

    1. Exit Devices: 14-gauge
    2. Door Closers: 14-gauge box.

C. Full Flush Type Door Construction;

    1. Polystyrene: Reinforced, stiffened, sound deadened and insulated with rigid polystyrene core bonded to the inside faces of both panels with contact adhesive. Fill voids around the perimeter of the door with honeycomb.
    2. Honeycomb: Reinforced, stiffened, sound deadened and insulated with impregnated Kraft honeycomb core completely filling the inside of the doors and laminated to inside faces of both panels using contact adhesive applied to both panels and honeycomb core.
    3. Steel Stiffened: Vertically steel stiffeners and sound deadened with fiberglass batt insulation. Fill areas between stiffeners with fiberglass.
    4. Temperature Rise Doors: Solid Mineral fiberboard one-piece core material to comply with 250 Degree F (121 Degree C) maximum temperature rise rating.

D. All doors to be square edge standard and have top and bottom channels of not less than 16-gauge, flush or inverted, welded to the face sheets. Doors shall have a full height 14-gauge hinge rail reinforcement channel, or individual 10-gauge hinge reinforcements.

E. All door lock edges (not square-edge standard) shall be beveled 1/8” in 2” and shall have top and bottom channels of not less than 16-gauge, flush or inverted, welded to the face sheets. Doors shall have a full height 14-gauge hinge rail reinforcement channel, or individual 10-gauge hinge reinforcements.

F. All doors to conform to ANSI-A250.4 Level “A” criteria and shall be tested to 1,000,000 operating cycles and 23 twist tests. Certification of Level “A” doors are to be submitted with approval drawings by supplier upon request. Do no bid or supply any type or gauge of door not having been tested and passed these criteria.

2.4 FRAMES

A. Provide hollow metal frames for doors, transoms, sidelights, borrowed lights, and other openings, of types and styles as shown on the drawings and schedules. Conceal fastenings unless otherwise indicated.

1. Interior Frames: Level 2, 16-gauge
2. Exterior Frames: Level 2, 16-gauge, galvanized or galvanealed
3. Security Grade Frames: 14-gauge

    a. Mesker, a division of dormakaba.
    b. Steelcraft, an Allegion Company.

B. All frames over 36” in width shall be 14 gauge.

C. Frames shall be 12, 14, or 16 gauge, cold-rolled, galvannealed, or galvanized G90 steel to be break-formed to the design specifications required. Frames shall be knocked-down or welded, ground smooth upon request. Mitered corners shall have a strong, secure, four-tab interlocking system to maintain neat mitered joints and corners. Standard frame to have ½” returns; standard stop heights to be 5/8” high. Frames will be supplied with welded on sill anchors.

D. All frames shall have minimum 7-gauge hinge reinforcements, 14-gauge lock strike reinforcing, and 14-gauge closer reinforcing.

E. All frames shall have minimum 7-gauge hinge reinforcements with an additional high frequency 12-gauge hinge reinforcement welded to the top hinge, 14-gauge lock strike reinforcing, and closer reinforcing.

F. Provide temporary shipping bars to be removed before setting frames.

G. All frames with drilled stops shall receive three (3) silencers on strike jambs of single frames and two (2) silencers on heads of double frames. Code requires all holes in frames to be filled with fasteners or product.

H. Provide minimum 0.0179” 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.

I. All frame components to comply with ANSI A250.8 (R2008). Fire labeling in accordance with NFPA and available in FM (standard), WHI (Intertek) and Underwriters Laboratories.

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. Clearances shall comply with the requirements of NFPA 80 Chapter 5.

B. Fabricate exposed faces of doors and panels, including stiles and rails of non-flush units, from only cold-rolled steel sheet.

C. Tolerances shall comply with SDI-117 "Manufacturing Tolerances Standard Steel Doors and Frames."

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

E. Unless otherwise indicated, provide exposed fasteners with countersunk flat or oval heads for exposed screws and bolts.

F. At exterior locations and elsewhere as shown or scheduled, assemblies fabricated as thermal-insulating door and frame assemblies and tested per ASTM C 236 or ASTM C 976 on fully operable door assemblies.

1. Unless otherwise indicated, provide thermal-rated assemblies with a minimum U-value rating of 0.41 Btu/sq. ft. x h x deg F.

G. Where shown, or scheduled, provide door and frame assemblies fabricated as “sound-reducing type” tested per ASTM E 1408, and classified per ASTM E 413.

1. Unless otherwise indicated, provide acoustical assemblies with STC sound ratings of 33 or better.

H. Prepare doors and frames to receive mortised and concealed hardware per 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.

I. Reinforce doors and frames to receive surface-applied hardware. Drilling and tapping for surface-applied hardware may be done at Project site. Provide internal reinforcements for all doors to receive door closers and exit devices.

J. Locate hardware as indicated on Shop Drawings or, if not indicated, per the Door and Hardware Institute's (DHI) "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."

K. Provide glazing stops with minimum 0.0359-inch- thick steel or 0.040-inch- thick aluminum.

L. Provide non-removable stops on outside of exterior doors and on secure side of interior doors for glass, louvers, and other panels in doors.

M. Provide screw-applied, removable, glazing beads on inside of glass and other panels in doors.

N. Exposed door and frame surfaces to be cleaned and treated then coated with rust inhibitive primer. Water-based primer and color paint finishes to be free of Hazardous Air Pollutants (HAPS) and Volatile Organic Compounds (VOVS).

PART III - EXECUTION

3.1 INSTALLATION

A. Install steel doors, frames, and accessories per factory installation instructions and in accordance with ANSI A250.11, per shop drawings, and manufacturer's data as specified.

B. Comply with provisions of SDI-105, “Recommended Erection Instructions for Steel Door Frames,” 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. Except for frames located in existing concrete, masonry, or gypsum board assembly construction, place frames before constructing enclosing walls and ceilings.

2. In masonry construction, install at least 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. Use additional anchors as required for height per manufacturers’ installation instructions.

3. At existing concrete or masonry construction, install at least 3 completed opening anchors per jamb adjacent to hinge location on hinge jamb and at corresponding heights on strike jamb. Set frames and secure to adjacent construction with bolts and masonry anchorage devices. Use additional anchors as required for height per manufacturers’ installation instructions.

4. In metal-stud partitions, install at least 3 wall anchors per jamb at hinge and strike levels. In steel-stud partitions, attach wall anchors to studs with screws. Secure Sill Anchors to floor. Use additional anchors as required for height per manufacturers’ installation instructions.

5. Drywall series frames are designed for installation in interior applications after construction of wood or metal stud and drywall applications. Drywall series frames are provided with adjustable jamb lock anchors for secure installation. Install frames per manufacturers’ installation instructions. Adjust anchors and secure sill and baseboard anchors as provided.

6. Install fire-rated frames per NFPA 80.

   a. To ensure compliance with Positive Pressure criteria as required by UBC7-2, UL10C, NFPA5000 and all applicable Local, State and National Code Jurisdictions, all Doors and Frames should be checked for accurate installation per Manufacturers installation instructions to provide proper fire and Smoke Gasketing as tested and listed using a PL2 Frame Set or similar Tool.

C. Fit hollow-metal doors accurately in frames, within clearances specified in ANSI/SDI 100. Install fire rated doors with clearances specified in NFPA 80.

3.2 ADJUSTING AND CLEANING

A. Immediately after erection, sand smooth any rusted or damaged areas of prime coat and apply touch-up of compatible air-drying primer

B. Immediately before final inspection, remove protective wrappings from doors and frames.

END OF SECTION 08 11 13

SECTION 08 71 00
DOOR HARDWARE

PART 1 - GENERAL

1.1 SUMMARY:

A. Section Includes: Finish Hardware for door openings, except as otherwise specified herein.
   1. Door hardware for steel (hollow metal) doors.
   2. Door hardware for aluminum doors.
   3. Door hardware for wood doors.
   4. Door hardware for other doors indicated.
   5. Keyed cylinders as indicated.

B. Related Sections:
   1. Division 6: Rough Carpentry.
   2. Division 8: Aluminum Doors and Frames
   3. Division 8: Hollow Metal Doors and Frames.
   4. Division 8: Wood Doors.
   5. Division 26 Electrical

C. References: Comply with applicable requirements of the following standards. Where these standards conflict with other specific requirements, the most restrictive shall govern.
   1. Builders Hardware Manufacturing Association (BHMA)
   2. NFPA 101 Life Safety Code
   3. NFPA 80 -Fire Doors and Windows
   4. ANSI-A156.xx- Various Performance Standards for Finish Hardware
   5. UL10C – Positive Pressure Fire Test of Door Assemblies
   6. ANSI-A117.1 – Accessible and Usable Buildings and Facilities
   7. DHI /ANSI A115.IG – Installation Guide for Doors and Hardware
   8. ICC – International Building Code

D. Intent of Hardware Groups
   1. Should items of hardware not definitely specified be required for completion of the Work, furnish such items of type and quality comparable to adjacent hardware and appropriate for service required.
   2. Where items of hardware aren't definitely or correctly specified, are required for completion of the Work, a written statement of such omission, error, or other discrepancy to be submitted to Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

E. Allowances
   1. Refer to Division 1 for allowance amount and procedures.

F. Alternates
   1. Refer to Division 1 for Alternates and procedures.

1.2 SUBSTITUTIONS:

A. Comply with Division 1.

1.3 SUBMITTALS:

A. Comply with Division 1.
B. Special Submittal Requirements: Combine submittals of this Section with Sections listed below to ensure the "design intent" of the system/assembly is understood and can be reviewed together.
C. Product Data: Manufacturer's specifications and technical data including the following:
   1. Detailed specification of construction and fabrication.
   2. Manufacturer's installation instructions.

3. Wiring diagrams for each electric product specified. Coordinate voltage with electrical before submitting.
4. Submit 6 copies of catalog cuts with hardware schedule.
5. Provide 9001-Quality Management and 14001-Environmental Management for products listed in Materials Section 2.2.

D. Shop Drawings - Hardware Schedule: Submit 6 complete reproducible copy of detailed hardware schedule in a vertical format.
1. List groups and suffixes in proper sequence.
2. Completely describe door and list architectural door number.
3. Manufacturer, product name, and catalog number.
4. Function, type, and style.
5. Size and finish of each item.
6. Mounting heights.
7. Explanation of abbreviations and symbols used within schedule.
8. Detailed wiring diagrams, specially developed for each opening, indicating all electric hardware, security equipment and access control equipment, and door and frame rough-ins required for specific opening.

E. Templates: Submit templates and "reviewed Hardware Schedule" to door and frame supplier and others as applicable to enable proper and accurate sizing and locations of cutouts and reinforcing.
1. Templates, wiring diagrams and "reviewed Hardware Schedule" of electrical terms to electrical for coordination and verification of voltages and locations.

F. Samples: (If requested by the Architect)
1. 1 sample of Lever and Rose/Escutcheon design, (pair).
2. 3 samples of metal finishes.

G. Contract Closeout Submittals: Comply with Division 1 including specific requirements indicated.
1. Operating and maintenance manuals: Submit 3 sets containing the following.
   a. Complete information in care, maintenance, and adjustment, and data on repair and replacement parts, and information on preservation of finishes.
   b. Catalog pages for each product.
   c. Name, address, and phone number of local representative for each manufacturer.
   d. Parts list for each product.
2. Copy of final hardware schedule, edited to reflect, "As installed".
3. Copy of final keying schedule
4. As installed “Wiring Diagrams” for each piece of hardware connected to power, both low voltage and 110 volts.
5. One set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.4 QUALITY ASSURANCE

A. Comply with Division 1.
1. Statement of qualification for distributor and installers.
2. Statement of compliance with regulatory requirements and single source responsibility.
3. Distributor's Qualifications: Firm with 3 years’ experience in the distribution of commercial hardware.
   a. Distributor to employ full time Architectural Hardware Consultants (AHC) for the purpose of scheduling and coordinating hardware and establishing keying schedule.
   b. Hardware Schedule shall be prepared and signed by an AHC.
4. Installer's Qualifications: Firm with 3 years experienced in installation of similar hardware to that required for this Project, including specific requirements indicated.
5. Regulatory Label Requirements: Provide testing agency label or stamp on hardware for labeled openings.
   a. Provide UL listed hardware for labeled openings in conformance with requirements for class of opening scheduled.

b. Underwriters Laboratories requirements have precedence over this specification where conflict exists.

6. Single Source Responsibility: Except where specified in hardware schedule, furnish products of only one manufacturer for each type of hardware.

B. Review Project for extent of finish hardware required to complete the Work. Where there is a conflict between these Specifications and the existing hardware, notify the Architect in writing and furnish hardware in compliance with the Specification unless otherwise directed in writing by the Architect.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Packing and Shipping: Comply with Division 1.
1. Deliver products in original unopened packaging with legible manufacturer's identification.
2. Package hardware to prevent damage during transit and storage.
3. Mark hardware to correspond with "reviewed hardware schedule".
4. Deliver hardware to door and frame manufacturer upon request.

B. Storage and Protection: Comply with manufacturer's recommendations.

1.6 PROJECT CONDITIONS:

A. Coordinate hardware with other work. Furnish hardware items of proper design for use on doors and frames of the thickness, profile, swing, security and similar requirements indicated, as necessary for the proper installation and function, regardless of omissions or conflicts in the information on the Contract Documents.

B. Review Shop Drawings for doors and entrances to confirm that adequate provisions will be made for the proper installation of hardware.

1.7 WARRANTY:

A. Refer to Conditions of the Contract

B. Manufacturer’s Warranty:
1. Closers: Ten years
2. Exit Devices: Five Years
3. Locksets & Cylinders: Three years
4. All other Hardware: Two years.

1.8 OWNER’S INSTRUCTION:

A. Instruct Owner’s personnel in operation and maintenance of hardware units.

1.9 MAINTENANCE:

A. Extra Service Materials: Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels. Comply with Division 1 Closeout Submittals Section.
1. Special Tools: Provide special wrenches and tools applicable to each different or special hardware component.
2. Maintenance Tools: Provide maintenance tools and accessories supplied by hardware component manufacturer.
3. Delivery, Storage and Protection: Comply with Owner’s requirements for delivery, storage and protection of extra service materials.

B. Maintenance Service: Submit for Owner’s consideration maintenance service agreement for electronic products installed.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. The following manufacturers are approved subject to compliance with requirements of the Contract Documents. Approval of manufacturers other than those listed shall be in accordance with Division 1.

Item:	**Manufacturer:**	**Approved:**
Hinges	Stanley	Bommer, McKinney, Hager
Continuous Hinges	Stanley 660 series	Select, ABH
Keyed Removeable Mullion	Precision KR822	Von Duprin KR54F

Locksets	Best 9k	*Campus Standard, no sub*
Cylinders	Best	*Campus Standard, no sub*
Exit Devices	Precision 2000	Von Duprin 98/99 series
Closers	Stanley QDC 100	LCN 4040
Automatic Operators	Dorma ED-900	LCN 4640
Protection Plates	Trimco	Rockwood, Glynn Johnson
Overhead Stops	ABH	Rixson, Glynn Johnson
Door Stops	Trimco	Rockwood, Glynn Johnson
Flush Bolts	Trimco	ABH, Burns
Coordinator & Brackets	Trimco	ABH, Burns
Threshold & Gasketing	National Guard	Reese, Zero
Key Cabinet	Telkee, Inc.	*Campus Standard, no sub*
Security Key Box	Key Systems	*Campus Standard, no sub*
Padlocks	Best	*Campus Standard, no sub*

2.2 MATERIALS:

A. Hinges: Shall be Five Knuckle Ball bearing hinges

1. Template screw hole locations
2. Bearings are to be fully hardened.
3. Bearing shell is to be consistent shape with barrel.
4. Minimum of 2 permanently lubricated non-detachable bearings on standard weight hinge and 4 permanently lubricated bearing on heavy weight hinges.
5. Equip with easily seated, non-rising pins.
6. Non-Removable Pin screws on all out swinging exterior doors.
7. Sufficient size to allow 180-degree swing of door
8. Provide hinge type as listed in schedule.
9. Furnish 3 hinges per leaf to 7 foot 6 inch height. Add one for each additional 30 inches in height or fraction thereof.
10. Tested and approved by BHMA for all applicable ANSI Standards for type, size, function and finish
11. UL10C listed for Fire rated doors.

B. Geared Continuous Hinges:

1. Tested and approved by BHMA for ANSI A156.26-1996 Grade 1, heavy duty
2. Anti-spinning through fastener
3. UL10C listed for 3 hour Fire rating
4. Lifetime warranty
5. Sufficient size to permit door to swing 180 degrees

C. Cylindrical Type Locks and Latchsets:

1. Tested and approved by BHMA for ANSI A156.2, Series 4000, Operational Grade 1, Extra-Heavy Duty, and be UL10C listed.
2. Fit modified ANSI A115.2 door preparation.
3. Locksets and cores to be of the same manufacturer
4. Locksets to have anti-rotational studs that are thru-bolted.
5. 2-3/4 inch (70 mm) backset.
6. 9/16 inch (14 mm) throw latchbolt.
7. Keyed lever to be removable only after core is removed, by authorized control key
8. Provide locksets with 7-pin removable and interchangeable core cylinders
9. Core face must be the same finish as the lockset.
10. Functions and design as indicated in the hardware groups.
11. All interior doors to have Lost Motion (LM) option series feature per APS standard.
12. Only Intruder Function Locksets (BEST model number 9K3-7IN) will be allowed for all classrooms and for student bathroom main entry door (not stalls) per APS standard.
13. Only storeroom function locksets (BEST model number 9K3-7D) will be accepted for storage rooms and custodial closets per APS standards.

14. Only storeroom function locksets (Best model number 9K3-7D) will be excepted for interior doors that are outfitted with electric strikes, such as tech storage, computer labs, etc.
15. Privacy locksets are to be on adult bathrooms only when they are located inside workrooms, otherwise storeroom function locksets are to be installed per APS standards.
16. Testing storage rooms are to have storeroom function locksets along with a MAG lock/badge access
17. No mortise locks will be accepted per APS standards.

D. Padlocks:
1. Padlocks shall be furnished for all gate locations.
2. All padlocks shall be Best model number 41B722TM5

E. Exit Devices:

1. Exit devices to meet or exceed BHMA for ANSI 156.3, Grade 1.
2. Exit devices to be tested and certified by UL or by a recognized independent laboratory for mechanical operational testing to 10 million cycles minimum with inspection confirming Grade 1 Loaded Forces have been maintained.
3. Exit devices chassis to be investment cast steel, zinc dichromate.
4. Exit devices to have stainless steel deadlocking ¾" through latch bolt.
5. Touchpad to be "T" style constructed of architectural metal with matching metal end caps.
6. Touchbar assembly on wide style exit devices to have a ¼" clearance to allow for vision frames.
7. All exposed exit device components to be of architectural metals and "true" architectural finishes.
8. Provide strikes as required by application.
9. Fire exit hardware to conform to UL10C and UBC 7-2. UL tested for Accident Hazard.
10. Exit devices to have field reversible handing.
11. Provide heavy duty vandal resistant keyed lever trim with heavy duty investment cast stainless steel components and extra strength shock absorbing overload springs. Lever shall not require resetting. Lever design to match locksets and latchsets.
12. No cylinder dogging allowed on any panic device per APS standards.
13. No vertical rods allowed per APS standards.

F. Door Closers shall:

1. Tested and approved by BHMA for ANSI 156.4, Grade 1
2. UL10C certified.
3. Closer shall have extra-duty arms and knuckles
4. Conform to ANSI 117.1
5. Maximum 2 7/16 inch case projection with non-ferrous cover.
6. Separate adjusting valves for closing and latching speed, and backcheck.
7. Provide adapter plates, shim spacers and blade stop spacers as required by frame and door conditions
8. Mount closers on non-public side of door, unless otherwise noted in specification.
9. Closers shall be non-handed, non-sized and multi-sized.
10. Closers shall always be thru bolted.

G. Automatic Operators shall:

1. Be listed under UL10C and UL325.
2. Be capable of functioning on doors weighing up to 350 lb.
3. Conform to ANSI A156.10 and A156.19 and be suitable for use in both full energy and low energy applications.
4. Incorporate the following adjustment capabilities: opening force, closing force, open speed, close speed, and open check speed.
5. Incorporate a non-ferrous cover not exceeding 6 inches square in section.
6. Incorporate a separate On-Off-Hold Open switch.
7. Be microprocessor controlled and incorporate a position encoder.

8. Readily function with standard activation and safety sensors, provide activation devices as required.
9. Function as a manual door closer without power applied, and shall power open/ spring close with power applied.
10. Function with 115 VAC electrical service for operator and standard low voltage connections for activation.

H. Door Stops: Provide a dome floor or wall stop for every opening as listed in the hardware sets.

1. Wall stop and floor stop shall be wrought bronze, brass or stainless steel.
2. Provide fastener suitable for wall construction.
3. Coordinate reinforcement of walls where wall stop is specified.

I. Over Head Stops: Provide a Surface mounted or concealed overhead when a wall stop cannot be used or when listed in the hardware set.
1. Concealed overhead stops shall be heavy duty bronze or stainless steel.
2. Surface overhead stops shall be heavy duty bronze or stainless steel.

J. Kickplates: Provide with four beveled edges ANSI J102, 10 inches high by width less 2 inches on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish. Kickplates to be used on all class room doors per APS standards.

K. Mop plates: Provide with four beveled edges ANSI J103, 4 inches high by width less 1 inch on single doors and 1 inch on pairs of doors. Furnish oval-head countersunk screws to match finish.

L. Armor Plates: Provide ANSI J101 with four beveled edges, 40 inches high by width less 1 inch on single or pairs of doors. Furnish oval-head countersunk screws to match finish.

1. Provide cutouts for hardware as listed in the hardware sets.
2. Provide Warnock Hersey labeled plates for 3 hour metal fire doors where allowed by local authority.

M. Door Bolts: Flush bolts for wood or metal doors.
1. Manual flush bolts, Certified ANSI/BHMA 156.16 at openings where allowed local authority.
2. Provide Dust Proof Strike, Certified ANSI/BHMA 156.16 at doors with flush bolts without thresholds.

N. Coordinator and Brackets: Provide a surface mounted coordinator when automatic bolts are used in the hardware set.
1. Coordinator, Certified ANSI/BHMA A1156.3 Type 21A for full width of the opening.
2. Provide mounting brackets for soffit applied hardware.
3. Provide hardware preparation (cutouts) for latches as necessary.

O. Seals: All seals shall be finished to match adjacent frame color. Seals shall be furnished as listed in schedule. Material shall be UL listed for labeled openings.

P. Weatherstripping: Provide at head and jambs only those units where resilient or flexible seal strip is easily replaceable. Where bar-type weatherstrip is used with parallel arm mounted closers install weatherstrip first.
1. Weatherstrip shall be resilient seal of (Neoprene, Polyurethane, Vinyl, Pile, Nylon Brush, Silicone)
2. UL10C Positive Pressure rated seal set when required.

Q. Door Bottoms/Sweeps: Surface mounted or concealed door bottom where listed in the hardware sets.
1. Door seal shall be resilient seal of (Neoprene, Polyurethane, Nylon Brush, Silicone)
2. UL10C Positive Pressure rated seal set when required.

R. Thresholds: Thresholds shall be aluminum beveled type with maximum height of ½" for conformance with ADA requirements. Furnish as specified and per details. Provide fasteners and screws suitable for floor conditions.

S. Silencers: Furnish silencers on all interior frames, 3 for single doors, 2 for pairs. Omit where any type of seals occur.

T. Key Cabinet

1. Cabinets to control keys/key sets
2. System shall be engineered and manufactured in the United States of America
3. System shall have:

   a. Key sets shall be physically prevented from being returned to other than the original location;
   b. Lock cylinder asset holders available to match facility (BEST manufactured) key cores for direct entrapment of important (Master) keys;
   c. Key positions: 16 positions per controller/station;
   d. Assets individually latched;
   e. Lockers to provide locked storage sections with optional tracking within these cabinets of items a-c above
   f. Each storage position shall continuously track the id of the asset
   g. Cabinets/stations have the capability of asset tracking using:
      1. Touch/Buttons;
      2. RFID;
      3. Weight;
      4. Physically trapped keys;
      5. Encrypted data transmissions to and from cabinet/station on Intranet or Web;
   h. System updates deliverable over network. System remains operational during system updates
   i. Flash memory retained in the event of a long-term power failure
   j. Force users to entrap personal key in cabinet/station before removing assets.
   k. PIN and HID Proxcard required to release assets.
4. Key Systems, Security Asset Manager Electronic Key Box with no substitution will be the only type of electronic key system allowed per APS standard.

2.3 FINISH:

A. Designations used in Schedule of Finish Hardware and elsewhere to indicate hardware finishes are those listed in ANSI/BHMA A156.18 including coordination with traditional U.S. finishes shown by certain manufacturers for their products

B. Aluminum items shall be finished to match predominant adjacent material. Seals to coordinate with frame color.

2.4 KEYS AND KEYING:

A. Cylinders, removable and interchangeable core system: Existing Best CORMAX™ Patented 7-pin.

B. Permanent keys and cores: Stamped with the applicable key mark for identification. These visual key control marks or codes will not include the actual key cuts. Permanent keys will also be stamped "Do Not Duplicate."

C. Transmit Grand Masterkeys, Masterkeys and other Security keys to Owner by Registered Mail, return receipt requested.

D. Furnish keys in the following quantities:
   1. 16 each Masterkeys
   2. 3 each Change keys each keyed core

E. The Owner, or the Owner's agent, will install permanent cores and return the construction cores to the Hardware Supplier. Construction cores and keys remain the property of the Hardware Supplier.

F. Keying Schedule: Submit Hardware schedule to Locksmith Department to provide the permanent keying instructions to the successful hardware dealer for factory ordering of cores and keys.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Verification of conditions: Examine doors, frames, related items and conditions under which Work is to be performed and identify conditions detrimental to proper and or timely completion.
   1. Do not proceed until unsatisfactory conditions have been corrected.

3.2 HARDWARE LOCATIONS:

A. Mount hardware units at heights indicated in the following publications except as specifically indicated or required to comply with the governing regulations.
   1. Recommended Locations for Builder's Hardware for Standard Steel Doors and Frames, by the Door and Hardware Institute (DHI).
   2. Recommended locations for Architectural Hardware for flush wood doors (DHI).
   3. WDMA Industry Standard I.S.-1A-04, Industry Standard for Architectural wood flush doors.

3.3 INSTALLATION:

A. Install each hardware item per manufacturer's instructions and recommendations. Do not install surface mounted items until finishes have been completed on the substrate. Set units level, plumb and true to line and location. Adjust and reinforce the attachment substrate as necessary for proper installation and operation.
B. Conform to local governing agency security ordinance.
C. Install Conforming to ICC/ANSI A117.1 Accessible and Usable Building and Facilities.
   1. Adjust door closer sweep periods so that from the open position of 70 degrees, the door will take at least 3 seconds to move to a point 3 inches from the latch, measured to the landing side of the door.
D. Installed hardware using the manufacturers fasteners provided. Drill and tap all screw holes located in metallic materials. Do not use "Riv-Nuts" or similar products.

3.4 FIELD QUALITY CONTROL AND FINAL ADJUSTMENT

A. Contractor/Installers, Field Services: After installation is complete, contractor shall inspect the completed door openings on site to verify installation of hardware is complete and properly adjusted, in accordance with both the Contract Documents and final shop drawings.
   1. Check and adjust closers to ensure proper operation.
   2. Check latchset, lockset, and exit devices are properly installed and adjusted to ensure proper operation.
      a. Verify levers are free from binding.
      b. Ensure latchbolts and dead bolts are engaged into strike and hardware is functioning.
   3. Report findings, in writing, to architect indicating that all hardware is installed and functioning properly. Include recommendations outlining corrective actions for improperly functioning hardware if required.

3.5 SCHEDULE OF FINISH HARDWARE:

Architect to insert

FAQ:

-No mortice locks
-No Deadbolts of any kind
-No vertical rod panic devices
-No concealed panic devices
-No electrified devices
-No electronic locksets

-Cores are to be included for all cylinders including but not limited to padlocks, removable mullions, key switches, and digital key box positions.
-All doors should have locking function hardware as long as allowed by code. This includes all stairwell and corridor doors.
-Exterior doors should be exit only unless an electric strike is present. Key cylinders should also be at badge access points.