1. Section 087100   
   Door Hardware
   1. PART 1  GENERAL
      1. RELATED REQUIREMENTS
         1. Section 080671 - Door Hardware Schedule:  Schedule of door hardware sets.
      2. REFERENCE STANDARDS
         1. ADA Standards - 2010 ADA Standards for Accessible Design; 2010.
         2. BHMA A156.1 - Standard for Butts and Hinges; 2021.
         3. BHMA A156.2 - Bored and Preassembled Locks and Latches; 2022.
         4. BHMA A156.3 - Exit Devices; 2020.
         5. BHMA A156.4 - Door Closers and Pivots; 2024.
         6. BHMA A156.6 - Standard for Architectural Door Trim; 2021.
         7. BHMA A156.7 - Template Hinge Dimensions; 2016.
         8. BHMA A156.8 - Door Controls - Overhead Stops and Holders; 2021.
         9. BHMA A156.16 - Standard for Auxiliary Hardware; 2023.
         10. BHMA A156.17 - Self Closing Hinges & Pivots; 2019.
         11. BHMA A156.18 - Standard for Materials and Finishes; 2020.
         12. BHMA A156.21 - Thresholds; 2019.
         13. BHMA A156.22 - Standard for Gasketing; 2021.
         14. BHMA A156.115 - Hardware Preparation in Steel Doors and Frames; 2016.
         15. BHMA A156.115W - Hardware Preparation in Wood Doors with Wood or Steel Frames; 2006.
         16. NFPA 80 - Standard for Fire Doors and Other Opening Protectives; 2022.
         17. NFPA 252 - Standard Methods of Fire Tests of Door Assemblies; 2022.
         18. UL (DIR) - Online Certifications Directory; Current Edition.
         19. UL 10C - Standard for Positive Pressure Fire Tests of Door Assemblies; Current Edition, Including All Revisions.
   2. PART 2  PRODUCTS
      1. DESIGN AND PERFORMANCE CRITERIA
         1. Provide specified door hardware as required to make doors fully functional, compliant with applicable codes, and secure to extent indicated.
         2. Provide individual items of single type, of same model, and by same manufacturer.
         3. Provide door hardware products that comply with the following requirements:
            1. Applicable provisions of federal, state, and local codes.
            2. Fire-Rated Doors:  NFPA 80, listed and labeled by qualified testing agency for fire protection ratings indicated, based on testing at positive pressure in accordance with NFPA 252 or UL 10C.
            3. Hardware Preparation for Steel Doors and Steel Frames:  BHMA A156.115.
            4. Hardware Preparation for Wood Doors with Wood or Steel Frames:  BHMA A156.115W.
            5. Products Requiring Electrical Connection:  Listed and classified by UL (DIR) as suitable for the purpose specified.
         4. Fasteners:
            1. Provide fasteners of proper type, size, quantity, and finish that comply with commercially recognized standards for proposed applications.

Aluminum fasteners are not permitted.

Provide phillips flat-head screws with heads finished to match door surface hardware unless otherwise indicated.

* + - * 1. Provide machine screws for attachment to reinforced hollow metal and aluminum frames.

Self-drilling (Tek) type screws are not permitted.

* + - * 1. Provide spacers or sex bolts with sleeves for through bolting of hollow metal doors and frames.
        2. Fire-Rated Applications:  Comply with NFPA 80.

Provide wood or machine screws for hinges mortised to doors or frames, strike plates to frames, and closers to doors and frames.

Provide steel through bolts for attachment of surface mounted closers, hinges, or exit devices to door panels unless proper door blocking is provided.

* + 1. HINGES
       1. Manufacturers:
          1. McKinney; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
          3. Substitutions:  See Section 016000 - Product Requirements.
       2. Hinges:  Comply with BHMA A156.1​​.
          1. Self Closing Hinges:  Comply with BHMA A156.17.
          2. Butt Hinges:  Comply with BHMA A156.1 and BHMA A156.7 for templated hinges.

Provide hinge width required to clear surrounding trim.

* + - * 1. Provide hinges on every swinging door.
        2. Provide non-removable pins on exterior outswinging doors.
        3. Provide following quantity of butt hinges for each door:

Doors From 60 inches High up to 90 inches High:  Three hinges.

Dutch Doors:  Two hinges each leaf.

* + 1. EXIT DEVICES
       1. Manufacturers:
          1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. dormakaba; Architectural Hardware Series:  8000:  www.dormakaba.com/#sle.
          3. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
          4. Von Duprin, an Allegion brand; \_\_\_\_\_:  www.allegion.com/us/#sle.
       2. Exit Devices:  Comply with BHMA A156.3, Grade 1.
          1. Lever design to match lockset trim.
          2. Provide cylinder with cylinder dogging or locking trim.
          3. Provide exit devices properly sized for door width and height.
          4. Provide strike as recommended by manufacturer for application indicated.
          5. Provide UL (DIR) listed exit device assemblies for fire-rated doors and panic device assemblies for non-fire-rated doors.
    2. LOCK CYLINDERS
       1. Manufacturers:
          1. BEST, dormakaba Group; \_\_\_\_\_:  www.bestaccess.com/#sle.
          2. dormakaba; \_\_\_\_\_:  www.bestaccess.com/#sle.
       2. Lock Cylinders:  Provide key access on outside of each lock, unless otherwise indicated.
          1. Provide cylinders from same manufacturer as locking device.
          2. Provide cams and/or tailpieces as required for locking devices.
    3. CYLINDRICAL LOCKS
       1. Manufacturers:
          1. Corbin Russwin, Sargent, or Yale; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. BEST, dormakaba Group​; 9K Series​:  www.bestaccess.com/#sle.
       2. Cylindrical Locks (Bored):  Comply with BHMA A156.2, Grade 1, 4000 Series.
          1. Bored Hole:  2-1/8 inch diameter.
          2. Latchbolt Throw:  1/2 inch, minimum.
          3. Backset:  2-3/4 inch unless otherwise indicated.
          4. Strikes:  Provide manufacturer's standard strike for each latchset or lockset with strike box and curved lip extending to protect frame in compliance with indicated requirements.

Finish:  To match lock or latch.

* + 1. DOOR PULLS AND PUSH PLATES
       1. Manufacturers:
          1. Rockwood; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
       2. Door Pulls and Push Plates:  Comply with BHMA A156.6.
          1. Pull Type:  Straight, unless otherwise indicated.
          2. Push Plate Type:  ​Flat, with rounded corners​, unless otherwise indicated.

Edges:  Beveled, unless otherwise indicated.

* + - * 1. Material:  Aluminum, unless otherwise indicated.
        2. On solid doors, provide matching door pull and push plate on opposite faces.
        3. On glazed storefront doors, provide matching door pulls/push plates on both faces unless otherwise indicated.
    1. DOOR PULLS AND PUSH BARS
       1. Manufacturers:
          1. Rockwood; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. dormakaba; TG9335 Series:  www.dormakaba.com/#sle.
          3. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
       2. Door Pulls and Push Bars:  Comply with BHMA A156.6.
          1. Bar Type:  Bar set, unless otherwise indicated.
          2. Material:  Aluminum, unless otherwise indicated.
    2. CLOSERS
       1. Manufacturers; Surface Mounted:
          1. BEST, dormakaba Group; EHD9000:  www.bestaccess.com/#sle.
          2. dormakaba; 7300 Series, 7400 Series, 8600 Series, 8900 Series, STA8900 Series, and QDC100 Series:  www.dormakaba.com/#sle.
          3. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
          4. LCN, an Allegion brand; \_\_\_\_\_:  www.allegion.com/us/#sle.
       2. Closers:  Comply with BHMA A156.4, Grade 1.
          1. Type:  Surface mounted to door.
          2. Provide door closer on each exterior door.
          3. Provide door closer on each fire-rated and smoke-rated door.

Spring hinges are not an acceptable self-closing device, unless otherwise indicated.

* + - * 1. At corridor entry doors, mount closer on room side of door.
        2. At outswinging exterior doors, mount closer on interior side of door.
    1. OVERHEAD STOPS AND HOLDERS
       1. Manufacturers:
          1. Rixson or Sargent; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. dormakaba; 900 Series:  www.dormakaba.com/#sle.
          3. Glynn-Johnson, an Allegion brand; \_\_\_\_\_:  www.allegion.com/us/#sle.
       2. Overhead Stops and Holders (Door Checks):  Comply with BHMA A156.8, Grade 1.
          1. Provide stop for every swinging door, unless otherwise indicated.
    2. PROTECTION PLATES
       1. Manufacturers:
          1. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
          2. Ives, an Allegion brand; \_\_\_\_\_:  www.allegion.com/us/#sle.
       2. Protection Plates:  Comply with BHMA A156.6.
       3. Metal Properties:  Aluminum material.
          1. Metal, Heavy Duty:  Thickness 0.062 inch, minimum.
       4. Edges:  Beveled, on four sides unless otherwise indicated.
       5. Fasteners:  Countersunk screw fasteners.
    3. KICK PLATES
       1. Manufacturers:
          1. Ives, an Allegion brand; \_\_\_\_\_:  www.allegion.com/us/#sle.
       2. Kick Plates:  Provide along bottom edge of push side of every door with closer, except aluminum storefront and glass entry doors, unless otherwise indicated.
          1. Size:  8 inch high by 2 inch less door width (LDW) on push side of door.
    4. WALL STOPS
       1. Manufacturers:
          1. Rockwood; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
       2. Wall Stops:  Comply with BHMA A156.16, Grade 1 and Resilient Material Retention Test as described in this standard.
          1. Type:  Bumper, concave, wall stop.
          2. Material:  Aluminum housing with rubber insert.
    5. THRESHOLDS
       1. Manufacturers:
          1. Dunbarton Corporation; \_\_\_\_\_:  www.dunbarton.com/#sle.
          2. Pemko; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          3. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
       2. Thresholds:  Comply with BHMA A156.21.
          1. Provide threshold at each exterior door, unless otherwise indicated.
          2. Type:  Flat surface.
          3. Material:  Aluminum.
          4. Threshold Surface:  ​Fluted horizontal grooves across full width​.
          5. Field cut threshold to profile of frame and width of door sill for tight fit.
          6. Provide non-corroding fasteners at exterior locations.
    6. WEATHERSTRIPPING AND GASKETING
       1. Manufacturers:
          1. Pemko; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
          2. Hager Companies; \_\_\_\_\_:  www.hagerco.com/#sle.
       2. Weatherstripping and Gasketing:  Comply with BHMA A156.22.
          1. Head and Jamb Type:  Adjustable.
          2. Door Sweep Type:  ​Mortised or concealed automatic, encased in retainer​.
          3. Material:  Aluminum, with brush weatherstripping.
          4. Provide weatherstripping on each exterior door at head, jambs, and meeting stiles of door pairs, unless otherwise indicated.
          5. Provide door bottom sweep on each exterior door, unless otherwise indicated.
    7. SILENCERS
       1. Manufacturers:
          1. Ives, an Allegion brand; \_\_\_\_\_:  www.allegion.com/us/#sle.
          2. Rockwood; an Assa Abloy Group company; \_\_\_\_\_:  www.assaabloydss.com/#sle.
       2. Silencers:  Provide at equal locations on door frame to mute sound of door's impact upon closing.
          1. Single Door:  Provide three on strike jamb of frame.
          2. Pair of Doors:  Provide two on head of frame, one for each door at latch side.
          3. Material:  Rubber, gray color.
    8. VIEWER
       1. Manufacturers:
          1. Ives, an Allegion brand; \_\_\_\_\_:  www.allegion.com/us/#sle.
       2. Viewer:  Provide at inside of door at eye level to see who is on outside of door, with integral door knocker.
          1. Material:  ​Match door lever material​.
    9. FIRE DEPARTMENT LOCK BOX
       1. Manufacturers:
          1. Knox Company; Knox-Box Rapid Entry System, \_\_\_\_\_:  www.knoxbox.com/#sle.
       2. Fire Department Lock Box:
          1. Capacity:  Holds​ 2 ​keys.
          2. Finish:  Manufacturer's standard dark bronze.
    10. FINISHES
        1. Finishes:  Identified in Section 08 0671 - Door Hardware Schedule.
        2. Finishes:  Provide door hardware of same finish, unless otherwise indicated.
           1. ​Primary ​Finish:  ​626; satin chromium plated over nickel, with brass or bronze base material (former US equivalent US26D)​; BHMA A156.18.
           2. Secondary Finish:  ​625; bright chromium plated over nickel, with brass or bronze base material (former US equivalent US26)​; BHMA A156.18.

Use secondary finish in kitchens, bathrooms, and other spaces containing chrome or stainless steel finished appliances, fittings, and equipment; provide primary finish on one side of door and secondary finish on other side if necessary.

* + - * 1. Exceptions:

Where base material metal is specified to be different, provide finish that is an equivalent appearance in accordance with BHMA A156.18.

Hinges for Fire-Rated Doors:  Steel base material with painted finish, in compliance with NFPA 80.

* 1. PART 3  EXECUTION
     1. EXAMINATION
        1. Verify that doors and frames are ready to receive this work; labeled, fire-rated doors and frames are properly installed, and dimensions are as indicated on shop drawings.
     2. INSTALLATION
        1. Install hardware in accordance with manufacturer's instructions and applicable codes.
        2. Install hardware on fire-rated doors and frames in accordance with applicable codes and NFPA 80.
        3. Use templates provided by hardware item manufacturer.
        4. Door Hardware Mounting Heights:   Distance from finished floor to center line of hardware item.  As indicated in following list; unless noted otherwise in Door Hardware Schedule or on drawings.
           1. Mounting heights in compliance with ADA Standards:

Locksets:  40-5/16 inch.

Push Plates/Pull Bars:  42 inch.

Deadlocks (Deadbolts):  48 inch.

Exit Devices:  40-5/16 inch.

Door Viewer:  43 inch; standard height 60 inch.

* + - 1. Set exterior door thresholds with full-width bead of elastomeric sealant at each point of contact with floor providing a continuous weather seal; anchor thresholds with stainless steel countersunk screws.
    1. ADJUSTING
       1. Adjust work under provisions of Section 017000 - Execution and Closeout Requirements.
       2. Adjust hardware for smooth operation.
       3. Adjust gasketing for complete, continuous seal; replace if unable to make complete seal.
    2. CLEANING
       1. Clean finished hardware in accordance with manufacturer's written instructions after final adjustments have been made.
       2. Clean adjacent surfaces soiled by hardware installation.
       3. Replace items that cannot be cleaned to manufacturer's level of finish quality at no additional cost.
    3. PROTECTION
       1. Protect finished Work under provisions of Section 017000 - Execution and Closeout Requirements.
       2. Do not permit adjacent work to damage hardware or finish.

1. END OF SECTION