

**SECTION 08711 - DOOR HARDWARE (SCHEDULED BY NAMING PRODUCTS)****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 the following:
  - 1. Commercial door hardware for the following:
    - a) Swinging doors.
- B. Related Sections include the following:
  - 1. Division 8 Section "Steel Doors and Frames" for door silencers provided as part of the frame.
  - 2. Division 8 Section "Stainless Door and Window Frames" for door silencers provided as part of the frame.
  - 3. Division 13 Section "Cold Storage Doors" for door hardware to be installed on cold storage doors.
- C. Products furnished, but not installed, under this Section include the following. Coordinating, purchasing, delivering, and scheduling remain requirements of this Section.
  - 1. Final replacement cores and keys to be installed by Owner.

**1.3 SUBMITTALS**

- A. Product Data: Include installation details, material descriptions, dimensions of individual components and profiles, and finishes.
- B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
  - 1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
  - 2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
    - a) Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.
  - 3. Content: Include the following information:
    - a) Type, style, function, size, label, hand, and finish of each door hardware item.
    - b) Manufacturer of each item.
    - c) Fastenings and other pertinent information.
    - d) Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.

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- e) Explanation of abbreviations, symbols, and codes contained in schedule.
  - f) Mounting locations for door hardware.
  - g) Door and frame sizes and materials.
4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.
- C. Keying Schedule: Prepared by or under the supervision of supplier, detailing Owner's final keying instructions for locks. Include schematic keying diagram and index each key set to unique door designations.
- D. Qualifications Data: For firms and persons specified in "Quality Assurance" Article.
- E. Maintenance Data: For each type of door hardware to include in maintenance manuals specified in Division 1.
- F. Warranties: Special warranties specified in this Section.

**1.4 QUALITY ASSURANCE**

- A. Installer Qualifications: An experienced installer who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.
- B. Supplier Qualifications: Door hardware supplier with warehousing facilities in Project's vicinity and who is or employs a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Contractor, Engineer, and Owner about door hardware and keying.
- C. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.
- D. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.
- E. Regulatory Requirements: Comply with provisions of the following:
- 1. Where indicated to comply with accessibility requirements, comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," ANSI A117.1, as follows:
    - a) Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
    - b) Door Closers: Comply with the following maximum opening-force requirements indicated:
      - 1) Interior Hinged Doors: 5 lbf applied perpendicular to door.
      - 2) Rated Doors: Minimum opening force allowable by authorities having jurisdiction.

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- c) Thresholds: Not more than 1/2 inch high. Bevel raised thresholds with a slope of not more than 1:2.

**1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Inventory door hardware on receipt and provide secure lock-up for door hardware delivered to Project site.
- B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

**1.6 COORDINATION**

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing 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.

**1.7 WARRANTY**

- A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.
- B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
  - 1. Structural failures including excessive deflection, cracking, or breakage.
  - 2. Faulty operation of operators and door hardware.
  - 3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
- C. Warranty Period: Three years from date of Substantial Completion, unless otherwise indicated.
- D. Warranty Period for Manual Closers: 10 years from date of Substantial Completion.

**1.8 MAINTENANCE SERVICE**

- 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 SCHEDULED DOOR HARDWARE**

- A. General: Provide door hardware for each door to comply with requirements in this Section, door hardware sets indicated in door and frame schedule, and the Door Hardware Schedule at the end of Part 3.

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1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule at the end of Part 3. Products are identified by using door hardware designations, as follows:
  1. Named Manufacturer's Products: Unless indicated as "No Substitutions" product designation and manufacturer are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
  2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

**2.2 HINGES AND PIVOTS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Hinges:
    - a) Bommer Industries, Inc. (BI).
    - b) Hager Companies (HAG).
    - c) McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
    - d) Stanley Commercial Hardware; Div. of The Stanley Works (STH).
- B. Standards: Comply with the following:
  1. Butts and Hinges: BHMA A156.1.
  2. Template Hinge Dimensions: BHMA A156.7.
- C. Quantity: Provide the following, unless otherwise indicated:
  1. Three Hinges: For doors with heights 61 to 90 inches.
- D. Size: As indicated in the hardware schedule at the end of part 3 of these specifications.
- E. Template Requirements: Provide only template-produced units.
- F. Hinge Weight: Unless otherwise indicated, provide the following:
  1. Interior Doors: Heavy-weight hinges.
  2. Doors with Closers: Antifriction-bearing hinges.
- G. Hinge Base Metal: Unless otherwise indicated, provide the following:
  1. Exterior Hinges: Stainless steel, with stainless-steel pin.
  2. Interior Hinges: Stainless steel, with stainless-steel pin.
  3. Hinges for Fire-Rated Assemblies: Stainless steel, with stainless-steel pin.
- H. Hinge Options: Comply with the following where indicated in the Door Hardware Schedule or on Drawings:
  1. Maximum Security Pin: Fix pin in hinge barrel after it is inserted.

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2. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
  - a) Outswinging exterior doors.
3. Corners: Square.
- I. Fasteners: Comply with the following:
  1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
  2. Screws: Phillips flat-head screws; machine screws (drilled and tapped holes) for metal doors. Finish screw heads to match surface of hinges.

**2.3 LOCKS AND LATCHES**

- A. Manufacturers: Subject to compliance with requirements, provide products by the following: **(NO SUBSTITUTIONS)**
  1. Mechanical Locks and Latches:
    - a) Schlage Lock Company; an Ingersoll-Rand Company (SCH).
- B. Standards: Comply with the following:
  1. Bored Locks and Latches: BHMA A156.2.
- C. Bored Locks: BHMA Grade 1; Series 4000.
- D. Lock Functions: Function numbers and descriptions indicated in the Door Hardware Schedule comply with the following:
  1. Bored Locks: BHMA A156.2.
- E. Lock Throw: Comply with testing requirements for length of bolts to comply with labeled fire door requirements, and as follows:
  1. Bored Locks: Minimum 1/2-inch latchbolt throw.
- F. Backset: 2-3/4 inches, unless otherwise indicated.

**2.4 EXIT DEVICES**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Adams Rite Manufacturing Co. (ARM).
  2. American Device Manufacturing Company; Member of The DORMA Group (ADM).
  3. Arrow Architectural Hardware; Div. of ESSEX Industries, Inc. (AAH).
  4. Corbin Russwin Architectural Hardware; Div. of Yale Security Inc. (CR).
  5. NT Dor-O-Matic Hardware Div.; an Ingersoll-Rand Company (NTD).
  6. NT Monarch Hardware; an Ingersoll-Rand Company (NTM).
  7. Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
  8. Von Duprin; an Ingersoll-Rand Company (VD).

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9. Yale Security Inc.; Div. of Williams Holdings (YAL).
- B. Standard: BHMA A156.3.
  1. BHMA Grade: Grade 1.
- C. Certified Products: Provide exit devices listed in BHMA's "Directory of Certified Exit Devices."
- D. Panic Exit Devices: Listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for panic protection, based on testing according to UL 305.
- E. Fire Exit Devices: Complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection, based on testing according to UL 305 and NFPA 252.
- F. Outside Trim: Lever with cylinder; material and finish to match locksets, unless otherwise indicated.

**2.5 CYLINDERS AND KEYING**

- A. Manufacturers: Subject to compliance with requirements, provide products by the following:
  1. Cylinders: Same manufacturer as for locks and latches.
  2. Cylinders:
    - a) Schlage Lock Company; an Ingersoll-Rand Company (SCH).
- B. Standards: Comply with the following:
  1. Cylinders: BHMA A156.5.
- C. Cylinder Grade: BHMA Grade 1.
- D. Cylinders: Manufacturer's standard tumbler type, constructed from brass or bronze, stainless steel, or nickel silver, and complying with the following:
  1. Number of Pins: Six.
  2. Bored-Lock Type: Cylinders with tailpieces to suit locks.
    - a) High-Security Grade: BHMA Grade 1A, listed and labeled as complying with pick- and drill-resistant testing requirements of UL 437 (Suffix A).
- E. Permanent Cores: Manufacturer's standard; finish face to match lockset; complying with the following:
  1. Interchangeable Cores: Core insert, removable by use of a special key, and usable with other manufacturers' cylinders.
  2. Removable Cores: Core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.
- F. Construction Keying: Comply with the following:
  1. Construction Master Keys: Provide cylinders with feature that permits voiding of construction keys without cylinder removal. Provide 10 construction master keys.

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**Oakhurst Dairy – New Milk Cooler**

2. Construction Cores: Provide construction cores that are replaceable by permanent cores. Provide 10 construction master keys.
  - a) Replace construction cores with permanent cores, as directed by Owner.
  - b) Furnish permanent cores to Owner for installation.
- G. Keying System: Unless otherwise indicated, provide a factory-registered keying system complying with the following requirements:
  1. Existing System: Master key or grand master key locks to Owner's existing system.
- H. Keys: Provide nickel-silver keys complying with the following:
  1. Stamping: Permanently inscribe each key with a visual key control number and include the following notation:
    - a) Notation: **"DO NOT DUPLICATE."**
  2. Quantity: In addition to one extra blank key for each lock, provide the following:
    - a) Cylinder Change Keys: Three.
    - b) Master Keys: Five.
    - c) Grand Master Keys: Five.
    - d) Great-Grand Master Keys: Five.

**2.6 CLOSERS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Surface-Mounted Closers:
    - a) Arrow Architectural Hardware; Div. of ESSEX Industries, Inc. (AAH).
    - b) Cal-Royal Products, Inc. (CRP).
    - c) Corbin Russwin Architectural Hardware; Div. of Yale Security Inc. (CR).
    - d) DORMA Door Controls Inc.; Member of The DORMA Group (DC).
    - e) LCN Closers; an Ingersoll-Rand Company (LCN).
    - f) Norton Door Controls; Div. of Yale Security Inc. (NDC).
    - g) Rixson-Firemark, Inc.; Div. of Yale Security Inc. (RIX).
    - h) Sargent Manufacturing Company; Div. of ESSEX Industries, Inc. (SGT).
    - i) Yale Security Inc.; Div. of Williams Holdings (YAL).

**2.7 PROTECTIVE TRIM UNITS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  1. Metal Protective Trim Units:
    - a) Baldwin Hardware Corporation (BH).
    - b) Hager Companies (HAG).
    - c) Hiawatha, Inc. (HIA).
    - d) Ives: H. B. Ives (IVS).
    - e) NT Quality Hardware; an Ingersoll-Rand Company (NTQ).
    - f) Pawling Corporation (PAW).
    - g) Rockwood Manufacturing Company (RM).

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- h) Triangle Brass Manufacturing Company, Inc. (TBM).
- 2. Stainless Steel: 0.050 inch thick; beveled top and 2 sides.
- B. Fasteners: Provide manufacturer's standard exposed fasteners for door trim units consisting of either machine or self-tapping screws.
- C. Furnish protection plates sized 1-1/2 inches less than door width on push side and 1/2 inch less than door width on pull side, by height specified in Door Hardware Schedule.

**2.8 DOOR GASKETING**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Door Gasketing:
    - a) Hager Companies (HAG).
    - b) National Guard Products, Inc. (NGP).
    - c) Pemko Manufacturing Co., Inc. (PEM).
    - d) Reese Enterprises, Inc. (RE).
    - e) Zero International, Inc. (ZRO).
- B. Standard: Comply with BHMA A156.22.
- C. General: Provide continuous weather-strip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide noncorrosive fasteners for exterior applications and elsewhere as indicated.
  - 1. Perimeter Gasketing: Apply to head and jamb, forming seal between door and frame.
- D. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL 10B or NFPA 252.
- E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.
- F. Gasketing Materials: Comply with ASTM D 2000 and AAMA 701/702.

**2.9 THRESHOLDS**

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Hager Companies (HAG).
  - 2. National Guard Products, Inc. (NGP).
  - 3. NT Dor-O-Matic Hardware Div.; an Ingersoll-Rand Company (NTD).
  - 4. Pemko Manufacturing Co., Inc. (PEM).
  - 5. Reese Enterprises, Inc. (RE).
  - 6. Zero International, Inc. (ZRO).
- B. Standard: Comply with BHMA A156.21.



**2.10 FABRICATION**

- A. Manufacturer's Nameplate: Do not provide 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 approved by Engineer.
  - 1. Manufacturer's identification will be permitted on rim of lock cylinders only.
- B. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18 for finishes. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.
- C. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to commercially recognized industry standards for application intended. Provide Phillips flat-head screws with finished heads to match surface of door hardware, unless otherwise indicated.
  - 1. Concealed Fasteners: For door hardware units that are exposed when door is closed, except for units already specified with concealed fasteners. Do not use through bolts for installation where bolt head or nut on opposite face is exposed unless it is the only means of securely attaching the door hardware. Where through bolts are used on hollow door and frame construction, provide sleeves for each through bolt.
  - 2. Steel Machine Screws: For the following fire-rated applications:
    - a) Mortise hinges to doors.
    - b) Strike plates to frames.
    - c) Closers to doors and frames.
  - 3. Steel Through Bolts: For the following fire-rated applications, unless door blocking is provided:
    - a) Closers to doors and frames.
    - b) Surface-mounted exit devices.
  - 4. Spacers or Sex Bolts: For through bolting of hollow metal doors.

**2.11 FINISHES**

- A. Standard: Comply with BHMA A156.18.
- B. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
- C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

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**Oakhurst Dairy – New Milk Cooler**

- D. BHMA Designations: Comply with base material and finish requirements indicated by the following:
  - 1. BHMA 626: Satin chromium plated over nickel, over brass or bronze base metal.
  - 2. BHMA 627: Satin aluminum, clear coated, over aluminum base metal.
  - 3. BHMA 628: Satin aluminum, clear anodized, over aluminum base metal.
  - 4. BHMA 630: Satin stainless steel, over stainless-steel base metal.
  - 5. BHMA 689: Aluminum painted, over any base metal.
  - 6. BHMA 690: Dark bronze painted, over any base metal.
  - 7. BHMA 718: Satin aluminum, uncoated; aluminum base metal.

**PART 3 - EXECUTION****3.1 EXAMINATION**

- A. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

**3.2 PREPARATION**

- A. Steel Doors and Frames: Comply with DHI A115 series.
  - 1. Surface-Applied Door Hardware: Drill and tap doors and frames according to SDI 107.

**3.3 INSTALLATION**

- A. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
  - 1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
- B. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.
  - 1. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
  - 2. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
- C. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

**Oakhurst Dairy – New Milk Cooler**

**3.4 ADJUSTING**

- A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
  - 1. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees.
  - 2. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.
  - 3. Door Closers: Adjust sweep period so that, from an 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 leading edge of the door.

**3.5 CLEANING AND PROTECTION**

- A. Clean adjacent surfaces soiled by door hardware installation.
- B. Clean operating items as necessary to restore proper function and finish.
- C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

**3.6 DOOR HARDWARE SCHEDULE**

Hardware Set No. G1

Door No. 103, 104, & 15: each to have the following:

3*	Hanging Devices	4.5" x 4.5" BB 1199 NRP	HAG	Finish 630
1	Exit Device	98 L	VD	Finish 630
1	Rim Cyl & Core	20-079	SCH	Finish 626
1	Surface Closer	4210	LCN	Finish 689
1	Kick Plate (interior side only on external doors)	2400 8x2 LDW x 4BE	IVE	Finish 630
1set	Gasketing	133 NA	NGP	Finish 627
1	Threshold	273X3AFG	PEM	Finish 718

Door Hardware Set No. G2

Door No. 105, 201, 202; 1, 2, & 16: each to have the following:

3*	Hanging Devices	4.5" x 4.5" BB 1199 NRP	HAG	Finish 630
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1	Lockset	“Rhodes” D70PD	SCH	Finish 626
2	Kick Plates	2400 8x2 LDW x 4BE	IVE	Finish 630
1	Cylinder Core	23-030	SCH	Finish 626
1	Closing Device	4210 series	LCN	Finish 689
1	Threshold	273X3AFG	PEM	Finish 718

Door Hardware Set No. G3

Door No. 203 & 10: each to have the following:

3*	Hanging Devices	4.5” x 4.5” BB 1199 NRP	HAG	Finish 630
1	Lock Set	“Rhodes” D40 S	SCH	Finish 626
1	Surface Device	4210 series	LCH	Finish 689
2	Kick Plates	2400 8x2 LDW x 4BE	IVE	Finish 630
1	Threshold	273X3AFG	PEM	Finish 718

END OF SECTION 08711