SECTION 087163 - DETENTION DOOR HARDWARE

Revise this Section by deleting and inserting text to meet Project-specific requirements.

This Section uses the term "Architect." Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
	* + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
			1. SUMMARY
				1. Section includes detention door hardware for the following:

Swinging detention doors.

Sliding detention doors.

* + - * 1. Related Requirements:

Retain subparagraphs below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 221513 "General-Service Compressed-Air Piping" and Section 221519 "General-Service Packaged Air Compressors and Receivers" for compressed-air systems.

* + - 1. COORDINATION
				1. Templates: Obtain and distribute, to the parties involved, templates for detention doors, frames, and other work specified to be factory prepared for installing detention door hardware.
				2. Electrical System Roughing-In: Coordinate layout and installation of electrically powered detention door hardware with connections to [**power supplies**] [**perimeter security system**] [**detention monitoring and control system**] [**fire-alarm system and detection devices**] [**and**] [**building control system**].
				3. Compressed-Air System Roughing-In: Coordinate layout and installation of pneumatic detention door hardware with connections to [**compressed-air supplies**] [**detention monitoring and control system**] [**fire-alarm system and detection devices**] [**and**] [**building control system**].
			2. PREINSTALLATION MEETINGS
				1. Detention Keying Conference: In addition to Director’s Representative, Contractor, and Architect, conference participants shall also include Installer. Incorporate detention keying conference decisions into Project's final Detention Keying Schedule after reviewing detention door hardware keying system including, but not limited to, the following:

Preliminary key system schematic diagram.

Requirements for key-control system.

Requirements for access control.

Address for delivery of keys.

<**Insert requirements to suit Project**>.

Retain "Preinstallation Conference" paragraph below if Work of this Section is extensive or complex enough to justify a conference.

* + - * 1. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

Inspect and discuss power and control system roughing-in and other preparatory work performed by other trades.

Review sequence of operation for each type of detention door hardware.

Review and finalize a construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.

Coordinate first subparagraph below with "Field Quality Control" Article.

Certifying procedures.

<**Insert agenda items**>.

* + - 1. SUBMITTALS
				1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
				2. Manufacturer’s installation instructions shall be provided along with product data.
				3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
				4. Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for each type of detention door hardware.

* + - * 1. Shop Drawings: For each type of detention door hardware.

Include plans, elevations, sections, and attachment details.

Include diagrams for power, signal, and control wiring; differentiate between manufacturer-installed and field-installed wiring for detention door hardware. Include the following:

System schematic.

Point-to-point wiring diagram, including location of connections.

Riser diagram.

Elevation of each detention door type.

Retain "Compressed-Air System Diagrams" subparagraph below for pneumatic detention door hardware.

Compressed-Air System Diagrams: For compressed-air piping for door-control systems; differentiate between manufacturer-installed and field-installed piping for pneumatic detention door hardware. Include the following:

System schematic.

Point-to-point piping diagram.

Riser diagram.

Elevation of each detention door type.

Retain options in subparagraphs below to suit Project or delete if not required.

Detail interface between electrically powered detention door hardware and [**perimeter security**] [**detention monitoring and control**] [**fire-alarm**] [**and**] [**building control**] system.

Detail interface between pneumatic detention door hardware and [**perimeter security**] [**detention monitoring and control**] [**fire-alarm**] [**and**] [**building control**] system.

* + - * 1. Detention Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing fabrication and assembly of door hardware as well as installation procedures and wiring diagrams. Coordinate the Detention Door Hardware Schedule with detention doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of detention door hardware.

Integrate detention door hardware indicated in "Detention Door Hardware Schedule" Article into Project's final Detention Door Hardware Schedule, and indicate complete designations of every item required for each detention door and opening.

Keying Schedule: Coordinate detention keying with other door hardware in Project's final Keying Schedule.

Indicate each detention lock and type of key cylinder using the following prefixes: "P" for paracentric, "M" for mogul, "HS" for high security, and "C" for commercial.

Indicate security level of each item.

* + - * 1. Qualification Data: For qualified [**Installer**] [**supplier**] [**and**] [**Architectural Hardware Consultant**].

Retain "Product Certificates" paragraph below to require submittal of product certificates from manufacturers.

* + - * 1. Product Certificates: For each type of detention door hardware.

Certify that detention door hardware complies with listed fire door assemblies.

Retain "Product Test Reports" paragraph below if retaining "Regulatory Requirements" paragraph in "Detention Door Hardware, General" Article.

* + - * 1. Product Test Reports: For each type of [**detention lock and latch**] [**security door closer**] [**and**] [**sliding detention door device**], for tests performed by [**manufacturer and witnessed by a qualified testing agency**] [**a qualified testing agency**].
				2. Examination reports documenting inspections of substrates, areas, and conditions.
				3. Anchor inspection reports documenting inspections of built-in and cast-in anchors.
				4. Field quality-control reports documenting inspections of installed products.
				5. Sample Warranties: For special warranties.
				6. Operation and Maintenance Data: For detention door hardware to include in emergency, operation, and maintenance manuals.
				7. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Director’s Representative's continued adjustment, maintenance, and removal and replacement of detention door hardware.

Retain "Initial Maintenance Service" paragraph below if required and consider including a provision for submitting a continuing maintenance agreement proposal. Revise starting date if required. Obtain a copy of maintenance agreement before retaining or revising paragraph below.

* + - * 1. Initial Maintenance Service: Beginning at Substantial Completion, provide [**three**] [**six**] [**nine**] [**12**] <**Insert number**> months' full maintenance by skilled employees of detention door hardware Installer. Include monthly preventive maintenance, repair or replacement of worn or defective components, lubrication, cleaning, and adjusting as required for proper detention door hardware operation. Provide parts and supplies the same as those used in the manufacture and installation of original equipment.
				2. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

See Evaluations for discussion on specifying extra materials.

Detention Door Hardware: <**Insert detailed descriptions and specific numbers of units**>.

Electrical Parts: <**Insert detailed descriptions and specific numbers of units**>.

Pneumatic Parts: <**Insert detailed descriptions and specific numbers of units**>.

Security Fasteners: Furnish not less than one box for every 50 boxes or fraction thereof, of each type and size of security fastener installed.

Tools: Provide [**two**] <**Insert number**> sets of tools for installing and removing security fasteners.

* + - 1. QUALITY ASSURANCE
				1. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer and an authorized representative of detention door hardware manufacturer for installation and maintenance of units required for this Project.
				2. Supplier Qualifications: Detention door hardware supplier with warehousing facilities in Project's vicinity who is, or employs, a qualified Architectural Hardware Consultant, available during the course of the Work to consult with Director’s Representative about detention door hardware and keying.

Retain "Detention Door Hardware Supplier Qualifications" subparagraph below if required.

Detention Door Hardware Supplier Qualifications: An experienced detention door hardware supplier who has completed projects with electrically powered[**and pneumatic**] detention door hardware similar in material, design, and extent to that indicated for this Project, whose work has resulted in construction with a record of successful in-service performance, and who is acceptable to manufacturer of primary materials.

Engineering Responsibility: Prepare data for electrically powered[**and pneumatic**] detention door hardware, including Shop Drawings, based on testing and engineering analysis of manufacturer's standard units in assemblies similar to those indicated for this Project.

Scheduling Responsibility: Preparation of Detention Door Hardware and Keying schedules.

* + - * 1. Architectural Hardware Consultant Qualifications: A person who is currently certified by DHI as an Architectural Hardware Consultant and who is experienced in providing consulting services for detention door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

DHI has four certification designations: Architectural Hardware Consultant (AHC); Certified Door Consultant (CDC); Electrified Hardware Consultant (EHC); and Architectural Opening Consultant (AOC), which signifies that a consultant has earned AHC, CDC, and EHC certification. CDCs are trained to specifically understand door and frame requirements. Retain second or third option in subparagraph below if Project includes electrically operated door hardware.

[**Architectural Hardware Consultant (AHC)**] [**Architectural Hardware Consultant (AHC) who is also an Electrified Hardware Consultant (EHC)**] [**Architectural Openings Consultant (AOC)**].

Insert requirements for mockups if required.

* + - 1. DELIVERY, STORAGE, AND HANDLING
				1. Inventory detention door hardware on receipt and provide secure lockup for detention door hardware delivered to Project site.
				2. Tag each item or package separately with identification related to the Detention Door Hardware Schedule, and include basic installation instructions with each item or package.
				3. Deliver detention door keys to Director’s Representative by registered mail or overnight package service[**.**][**, addressed as follows:**]

<**Insert name and address of Director’s Representative's representative**>.

* + - 1. WARRANTY

When warranties are required, verify with Director’s Representative's that warranties stated in this article are not less than remedies available to Director’s Representative under prevailing local laws.

* + - * 1. Special Warranty: Manufacturer agrees to repair or replace components of detention door hardware that fail in materials or workmanship within specified warranty period.

Failures include, but are not limited to, the following:

Structural failures including excessive deflection, cracking, or breakage.

Faulty operation of operators and detention door hardware.

Deterioration of metals, metal finishes, and other materials beyond normal weathering or detention use.

Verify available warranties and warranty periods for units and components.

Warranty Period: [**Three**] <**Insert number**> years from date of Substantial Completion.

Warranty Period for Continuous-Pin Detention Hinges: [**10**] <**Insert number**> years from date of Substantial Completion.

Warranty Period for Security Door Closers: [**10**] <**Insert number**> years from date of Substantial Completion.

1. PRODUCTS

Manufacturers and products listed in SpecAgent and Masterworks Paragraph Builder are neither recommended nor endorsed by the AIA or Deltek. Before inserting names, verify that manufacturers and products listed there comply with requirements retained or revised in descriptions and are both available and suitable for the intended applications.

* + - 1. PERFORMANCE REQUIREMENTS

Not all types of detention door hardware have been tested according to performance requirements in "Swinging Detention Door Assemblies" paragraph below. If only specific types must comply with requirements, relocate paragraph to appropriate detention door hardware article.

* + - * 1. Swinging Detention Door Assemblies: Provide detention door hardware as part of a detention door assembly that complies with security grade indicated, when tested according to ASTM F1450, based on testing manufacturer's standard units in assemblies similar to those indicated for this Project.

Retain both "Bullet Resistance" and "Tool-Attack Resistance" subparagraphs below if required. Compliance with ratings for bullet and tool-attack resistance is not required by ASTM F1450 unless otherwise indicated. Indicate on Drawings or in a detention door schedule which doors are required to be bullet resistant and which are required to be tool-attack resistant.

Bullet Resistance: Comply with [**Level 3**] <**Insert level**> rating when tested according to UL 752; where indicated [**on Drawings**] [**in door schedule**].

Listed and labeled as bullet resistant by a testing agency acceptable to authorities having jurisdiction.

Tool-Attack Resistance: Comply with small-tool-attack-resistance rating when tested according to UL 1034 and UL 437; where indicated [**on Drawings**] [**in door schedule**].

* + - 1. DETENTION DOOR HARDWARE, GENERAL
				1. Provide detention door hardware for each door as scheduled in "Detention Door Hardware Schedule" Article to comply with requirements in this Section.

Detention Door Hardware Sets: Provide quantity, item, size, finish, or color indicated.

Sequence of Operation: Provide electrically powered detention door hardware function, sequence of operation, and interface with other building control systems indicated.

* + - * 1. Electrically Powered Detention Door Hardware: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
				2. Source Limitations: Obtain mechanical detention door hardware from same manufacturer as that of electrically powered or pneumatic detention door hardware.
				3. Regulatory Requirements:

Fire-Rated Detention Door Assemblies: Provide detention door hardware for assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

Where indicated to comply with accessibility requirements, comply with [**the U.S. Architectural & Transportation Barriers Compliance Board's ADA-ABA Accessibility Guidelines**] [**Uniform Code A117.1**] [**and**] <**Insert regulation**>.

Design Consultant to review code references and verify that the referenced sections/tables are current. Note that code references shall be based on the current version of the Uniform Code.

Insert additional regulatory requirements, such as release force for latches and locks or opening force for sliding doors, if required.

Coordinate remaining Part 2 articles with the Detention Door Hardware Schedule.

If more than one type of a particular product is required, copy applicable paragraphs in Part 2 articles below and insert a unique paragraph heading for each to differentiate the products.

* + - 1. DETENTION HINGES
				1. Standard for Electric Detention Hinges: UL 634.

Copy "Utility-Door Detention Hinges," "Food-Pass Detention Hinges," "Full-Surface Detention Hinges," "Half-Surface Detention Hinges," "Gap-Mounted Detention Hinges," and "Continuous-Pin Detention Hinges" paragraphs below and re-edit for each product.

* + - * 1. Utility-Door Detention Hinges: Heavy weight, plain bearing; fabricated from cast iron or steel; 3/8-inch-diameter, case-hardened,[**fully welded,**] steel hinge pin; full surface.

[Leaves: [**Drilled for countersunk security fasteners] [Solid**](http://www.specagent.com/LookUp/?ulid=5752&mf=04&src=wd)].

Size: Minimum 3 by 4 by 0.200 inch.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1758.

Finish: BHMA 600.

* + - * 1. Food-Pass Detention Hinges: Heavy weight, plain bearing; fabricated from cast iron or steel; 3/8-inch-diameter, case-hardened,[**fully welded,**] steel hinge pin; with applied stop preventing door from opening more than 90 degrees and supporting door in horizontal position as a shelf; full surface.

Leaves: [**Drilled for countersunk security fasteners**] [**Solid].**

Size: Minimum 3 by 4 by 0.200 inch.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1758.

Finish: BHMA 600.

* + - * 1. Full-Surface Detention Hinges: Extra heavy weight; two heavy-duty thrust bearings with hardened-steel ball bearings; fabricated from steel plate; 3/4-inch-diameter, case-hardened, fully welded, steel hinge pin.

Leaves: [**Drilled for countersunk security fasteners**] [**Solid].**

Size: Minimum 5 by 5-1/4 by 1/2 inch.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1758.

Finish: BHMA 600.

* + - * 1. Half-Surface Detention Hinges: Extra heavy weight; two heavy-duty thrust bearings with hardened-steel ball bearings; fabricated from steel plate; 3/4-inch-diameter, case-hardened, fully welded, steel hinge pin.

Leaves: [**Drilled for countersunk security fasteners**] [**Solid].**

Size: Minimum 5 by 5-1/4 by 1/2 inch.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1758.

Finish: BHMA 600.

* + - * 1. Gap-Mounted Detention Hinges: Extra heavy weight; two heavy-duty thrust bearings with hardened-steel ball bearings; fabricated from steel plate; 3/4-inch-diameter, case-hardened, fully welded, steel hinge pin.

Leaves: [**Drilled for countersunk security fasteners**] [**Solid].**

Size: Minimum 5 by 6 by 1/2 inch.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1758.

Finish: BHMA 600.

* + - * 1. Continuous-Pin Detention Hinges: Minimum 0.109-inch-thick, stainless-steel hinge leaves with minimum overall width of 4 inches; with 1/4-inch-diameter continuous pin; fabricated to full height of detention door and frame. Finish components after milling and drilling are complete. Fabricate continuous-pin detention hinges to template screw locations.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1758.

Finish: BHMA 630.

* + - 1. MECHANICAL DETENTION LOCKS AND LATCHES
				1. Lock Mountings:

Hollow-Metal Detention Doors: Mount detention lock to back of [**0.179-inch nominal-thickness steel**] [**0.183-inch nominal-thickness, galvanized-steel**] cover plate for installation in lock pocket fabricated into detention door. Attach cover plate to hollow-metal detention door with security fasteners.

Bar-Grille Detention Doors: Mount detention lock to back of [**galvanized-**]steel enclosure welded to flat horizontal bars of bar-grille detention door; cover with [**0.179-inch nominal-thickness steel**] [**0.183-inch nominal-thickness, galvanized-steel**] plate. Attach plate with security fasteners.

First and second options in "Steel-Plate Detention Doors" subparagraph below coordinate with 7- and 10-gage designations for uncoated steel, respectively; third and fourth options coordinate with 7- and 10-gage designations for metallic-coated steel.

Steel-Plate Detention Doors: Mount detention lock to inside surface of [**0.179-inch nominal-thickness steel**] [**0.134-inch nominal-thickness steel**] [**0.183-inch nominal-thickness, galvanized-steel**] [**0.138-inch nominal-thickness, galvanized-steel**] enclosure with integrally formed mounting flanges. Attach enclosure to steel-plate detention door with [**security fasteners**] [**rivets**].

Copy paragraphs below and re-edit for each product.

Locks in "Utility-Door Mechanical Deadlocks, Paracentric Cylinder" paragraph below are designed for use on small swinging doors, such as access panels, plumbing space doors, electric panel doors, and infrequently used hatches.

* + - * 1. Utility-Door Mechanical Deadlocks, Paracentric Cylinder:

Function: Lockbolt retracted and extended by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**].

Lockbolt: 1-1/2 inches high by 3/4 inch thick; 5/8-inch throw.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Utility-Door Mechanical Deadlocks, Mogul Cylinder" paragraph below are designed for use on small swinging doors, such as access panels, plumbing space doors, electric panel doors, and infrequently used hatches.

* + - * 1. Utility-Door Mechanical Deadlocks, Mogul Cylinder:

Function: Lockbolt retracted and extended by mogul cylinder; keyed [**one side**] [**two sides**].

Lockbolt: 1-1/2 inches high by 3/4 inch thick; 5/8-inch throw.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Utility-Door Mechanical Snaplatches, Paracentric Cylinder" paragraph below are designed for use on small swinging doors, such as food-pass doors, observation panels, gun-locker doors, and other small doors where snaplocking is needed and deadlocking is not required.

* + - * 1. Utility-Door Mechanical Snaplatches, Paracentric Cylinder:

Function: Automatic snaplatch when door is closed; latchbolt retracted by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides]**.

Latchbolt: 1 inch high by 7/16 inch thick; 5/16-inch throw.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Utility-Door Mechanical Snaplatches, Mogul Cylinder" paragraph below are designed for use on small swinging doors, such as food-pass doors, observation panels, gun-locker doors, and other small doors where snaplocking is needed and deadlocking is not required. Locks in "Utility-Door Mechanical Snaplatches, Paracentric Cylinder" paragraph above have paracentric cylinders; locks in paragraph below have mogul cylinders.

* + - * 1. Utility-Door Mechanical Snaplatches, Mogul Cylinder:

Function: Automatic snaplatch when door is closed; latchbolt retracted by mogul cylinder; keyed [**one side**] [**two sides**].

Latchbolt: 1 inch high by 7/16 inch thick; 5/16-inch throw.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Mechanical Concealed Snaplatches, Paracentric Cylinder" paragraph below are designed for use on small swinging doors, such as observation panels, wickets, covers, and other small doors.

* + - * 1. Mechanical Concealed Snaplatches, Paracentric Cylinder:

Function: Automatic snaplatch when door is closed; latchbolt retracted by five-tumbler paracentric cylinder; keyed one side. When closed, latch is concealed within lock case.

Latchbolt: 1 inch high by 7/16 inch thick; 7/16-inch throw.

Provide angled strike.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Sliding-Door Mechanical Deadlatches, Paracentric Cylinder" paragraph below are designed for use on sliding doors, such as entrance, safety vestibule, and corridor doors.

* + - * 1. Sliding-Door Mechanical Deadlatches, Paracentric Cylinder:

Function: Hookbolt snaplatches and automatically deadlocks through action of plunger pin when door is closed (slam locking); hookbolt raised by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**].

Hookbolt: 1/2-inch-thick, case-hardened steel; 5/8-inch lift.

Provide case-hardened-steel deadlock plunger pin.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1643.

Locks in "Sliding-Door Mechanical Deadlocks, Paracentric Cylinder" paragraph below are designed for use on sliding doors, such as entrance, safety vestibule, corridor, and inmate cell doors.

* + - * 1. Sliding-Door Mechanical Deadlocks, Paracentric Cylinder:

Function: Hookbolt raised and lowered by [**five**] [**six**]-tumbler paracentric cylinder (no slam locking); keyed [**one side**] [**two sides**].

Hookbolt: 1/2-inch-thick, case-hardened steel; 5/8-inch lift.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1643.

Locks in "Mechanical Snaplatches, Paracentric Cylinder" paragraph below are designed for use on swinging doors, such as corridor, dining room, and recreational area doors.

* + - * 1. Mechanical Snaplatches, Paracentric Cylinder:

Function: Automatic snaplatch when door is closed (slam locking); latchbolt retracted by half turn and extended by full turn in opposite direction of [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**].

Retain first subparagraph below if required.

Knob operation retracts latchbolt unless deadlocked. Locate knobs on [**one side**] [**two sides**].

Latchbolt: 2-inch-high by 3/4-inch-thick steel, with two case-hardened-steel insert pins; 3/4-inch throw; [**1/2-inch**] [**1-1/4-inch**] bolt projection when retracted.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Mechanical Deadlatches/Deadlocks, Paracentric Cylinder" paragraph below are designed for use on swinging doors, such as day room, dining room, and recreational area doors.

* + - * 1. Mechanical Deadlatches/Deadlocks, Paracentric Cylinder:

Function: Automatic snaplatch and automatic deadlock through action of actuator when door is closed (slam locking); latchbolt retracted by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**].

Latchbolt: 2-inch-high by 3/4-inch-thick steel, with two case-hardened-steel insert pins; 3/4-inch throw; [**1/2-inch**] [**1-1/4-inch**] bolt projection when retracted.

Deadlock Actuator: 3/4-inch-high by 3/4-inch-thick steel; 1/2-inch throw.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Mechanical Deadlocks, Paracentric Cylinder" paragraph below are designed for use on swinging doors where slam locking is not required, such as holding cell, segregation cell, control room, armory, key cabinet, storage, utility, and hollow-metal access doors.

* + - * 1. Mechanical Deadlocks, Paracentric Cylinder:

Function: Deadlocked in both locked and unlocked position; latchbolt retracted and extended by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**].

Latchbolt: 2-inch-high by 3/4-inch-thick steel, with two case-hardened-steel insert pins; 3/4-inch throw; [**1/2-inch**] [**1-1/4-inch**] bolt projection when retracted.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Cremone Bolt Mechanical Snaplatches, Parcentric Cylinder" paragraph below are designed for use on swinging doors or active leaf of pairs of swinging doors where slam locking is needed.

* + - * 1. Cremone Bolt Mechanical Snaplatches, Paracentric Cylinder:

Function: Automatic snaplatch and deadlocking when door is closed (slam locking); latchbolt retracted and extended by five-tumbler paracentric cylinder; keyed [**one side**] [**two sides**]. Lever operation [**one side**] [**two sides**] retracts head and foot rods, unless deadlocked, for three-point locking.

Latchbolt: 2-inch-high by 3/4-inch-thick steel, with two case-hardened-steel insert pins; 3/4-inch throw.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Cremone Bolt Mechanical Deadlocks, Paracentric Cylinder" paragraph below are designed for use on swinging doors or the active leaf of pairs of swinging doors where doors may be subject to mass attack. Delete inactive leaf for single door.

* + - * 1. Cremone Bolt Mechanical Deadlocks, Paracentric Cylinder:

Function: Active leaf deadlocks when door is closed (no slam locking); active-leaf deadbolt retracted and extended by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**]. Active-leaf lever operation [**one side**] [**two sides**] retracts active-leaf head and foot bolts unless deadlocked.

Inactive Leaf: Head and foot bolts deadlocked by [**five**] [**six**]-tumbler, inactive-leaf paracentric cylinder. Inactive-leaf lever operation [**one side**] [**two sides**] retracts inactive-leaf head and foot bolts unless deadlocked.

Deadbolt: 2-inch-high by 3/4-inch-thick steel, with two case-hardened-steel insert pins; 3/4-inch throw.

Head and Foot Bolts: 7/8-inch diameter; 3/4-inch throw.

Provide foot bolt receptacle(s).

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Bolts in "Mechanical (Head) (and) (Foot) Bolts(, Paracentric Cylinder)" paragraph below are designed for use on the inactive leaf of pairs of swinging doors.

* + - * 1. Mechanical [**Head**] [**and**] [**Foot**] Bolts[**, Paracentric Cylinder**]:

Delete last option in "Function" subparagraph below for hollow-metal doors.

Function: Bolt retracted and extended by [spanner-type key] [five-tumbler paracentric cylinder][; enclosed in iron or steel case with steel cover].

Latchbolt: 1-inch-diameter steel; 3/4-inch throw.

Foot Bolt Receptacle: Spring-loaded mechanism; brass.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

* + - 1. ELECTROMECHANICAL DETENTION LOCKS AND LATCHES
				1. Connectors: Provide electromechanical detention locks and latches with factory-wired plug connector with 6-inch wire pigtail.

Provide security ring for installation of electromechanical detention lock in hollow-metal detention frame, welded to frame or access cover.

Equip direct-current, solenoid-operated detention locks and latches with diode transient voltage protection at each locking device.

Copy paragraphs below and re-edit for each product.

Locks in "Solenoid-Operated Deadlatches, Paracentric Cylinder" paragraph below are designed for use on swinging doors, such as entrance, sally port, corridor, and inmate cell doors, that are unlocked from remote locations.

* + - * 1. Solenoid-Operated Deadlatches, Paracentric Cylinder:

Function: Remote switch activates electric solenoid that retracts latchbolt; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**]; if latchbolt is retracted by key, it remains retracted until relocked by key.

Latchback: Latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is activated; latchbolt extends when power is discontinued**].

If power fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 2-inch-high by 3/4-inch-thick hardened steel; 3/4-inch throw.

Provide internal deadlock indicator switch.

Provide roller-type deadlock actuator.

Voltage: 120-V ac.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Motor-Operated Deadlatches, Paracentric Cylinder " paragraph below are designed for use on swinging doors, such as entrance, sally port, corridor, and inmate cell doors, that are unlocked from remote locations. Locks in "Solenoid-Operated Deadlatches, Paracentric Cylinder" paragraph above are operated by solenoid; locks below by motor, which is quieter.

* + - * 1. Motor-Operated Deadlatches, Paracentric Cylinder:

Function: Remote switch activates electric motor that retracts latchbolt; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**]; if latchbolt is retracted by key, it remains retracted until relocked by key.

Latchback: Latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is activated; latchbolt extends when power is discontinued**].

If power fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 2-inch-high by 3/4-inch-thick hardened steel; 3/4-inch throw.

Provide internal deadlock indicator switch.

Provide roller-type deadlock actuator.

Voltage: [**120-V ac**] [**24-V dc**].

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Sliding-Door, Motor-Operated Deadlatches, Paracentric Cylinder" paragraph below are designed for use on sliding doors, such as entrance, sally port, corridor, and inmate cell doors, that are unlocked from remote locations.

* + - * 1. Sliding-Door, Motor-Operated Deadlatches, Paracentric Cylinder:

Function: Remote switch activates electric motor that raises hookbolt; spring-loaded actuator pin pushes door open 1 to 3 inches; automatic latching and deadlocking when door is closed (slam locking). Hookbolt can be mechanically raised by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**]; if hookbolt is raised by key, it remains raised until relocked by key.

Latchback: Hookbolt remains raised [**until door is opened 2 inches, then lowers**] [**as long as control switch is in open position; hookbolt lowers when control switch is moved to locked position**].

If power fails, hookbolt automatically deadlocks (fail secure).

Hookbolt: 1-3/4- by 1/2-inch-thick, case-hardened steel; 3/4-inch throw.

Provide internal deadlock indicator switch.

Provide case-hardened-steel deadlock actuator.

Voltage: 120-V ac.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Solenoid-Operated Deadlatches, Mogul Cylinder" paragraph below are designed for use on swinging doors, such as entrance, sally port, corridor, and inmate cell doors, that are unlocked from remote locations.

* + - * 1. Solenoid-Operated Deadlatches, Mogul Cylinder:

Function: Remote switch activates electric solenoid that retracts latchbolt; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by mogul cylinder; keyed [**one side**] [**two sides**].

Latchback: Latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is activated; latchbolt extends when power is discontinued**].

Feature in "Local Electric Key (LEK)" subparagraph below is optional; retain if required.

Local Electric Key (LEK): Inmate key operates lock electrically when enabled; staff key always operates lock manually and electrically.

Retain one of first two subparagraphs below or delete both if not required; listing for use on fire doors is unavailable with "Key Holdback" subparagraph.

Key Holdback: If latchbolt is retracted by key, it remains retracted until relocked by key.

Knob operation retracts latchbolt; always active.

If power fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 1-1/2-inch-high by 3/4-inch-thick hardened steel; 1-inch throw.

Provide internal deadlock indicator switch.

Provide roller-type deadlock actuator.

Voltage: 120-V ac.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Motor-Operated Deadlatches, Mogul Cylinder" paragraph below are designed for use on swinging doors, such as entrance, sally port, corridor, and inmate cell doors, that are unlocked from remote locations.

* + - * 1. Motor-Operated Deadlatches, Mogul Cylinder:

Function: Remote switch activates electric motor that retracts latchbolt; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by mogul cylinder; keyed [**one side**] [**two sides**].

Latchback: Latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is in open position; latchbolt extends when control switch is moved to locked position**].

Feature in "Local Electric Key (LEK)" subparagraph below is optional; retain if required.

Local Electric Key (LEK): Inmate key operates lock electrically when enabled; staff key always operates lock manually and electrically.

Retain one of first two subparagraphs below or delete both if not required; listing for use on fire doors is unavailable with "Key Holdback" subparagraph.

Key Holdback: If latchbolt is retracted by key, it remains retracted until relocked by key.

Knob operation retracts latchbolt; always active.

If power fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 1-1/2-inch-high by 3/4-inch-thick hardened steel; 1-inch throw.

Provide internal deadlock indicator switch.

Provide roller-type deadlock actuator.

Voltage: [**120-V ac**] [**24-V dc**].

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Solenoid-Operated Deadlatches, Commercial Cylinder" paragraph below are designed for use on swinging doors, hung in standard 2-inch hollow-metal frames, that are unlocked from remote locations. Manufacturers also have models of similar construction that fit in 3-inch frames.

* + - * 1. Solenoid-Operated Deadlatches, Commercial Cylinder:

Function: Remote switch activates electric solenoid that retracts latchbolt; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by [**high-security**]commercial cylinder; keyed [**one side**] [**two sides**].

Latchback: Latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is activated; latchbolt extends when power is discontinued**].

Feature in "Local Electric Key (LEK)" subparagraph below is optional; retain if required.

Local Electric Key (LEK): Inmate key operates lock electrically when enabled; staff key always operates lock manually and electrically.

If power fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 1-1/2-inch-high by 5/8-inch-thick hardened steel; 3/4-inch throw.

Provide internal deadlock indicator switch.

Deadlock Actuator: Stainless steel.

Strike: Stainless steel.

Voltage: 24-V dc.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Motor-Operated Deadlatches, Commercial Cylinder" paragraph below are designed for use on swinging doors, hung in standard 2-inch hollow-metal frames, that are unlocked from remote locations. Manufacturers also have models of similar construction that fit in 3-inch frames.

* + - * 1. Motor-Operated Deadlatches, Commercial Cylinder:

Function: Remote switch activates electric motor that retracts latchbolt; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by [**high-security**]commercial cylinder; keyed [**one side**] [**two sides**].

Latchback: Latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is in open position; latchbolt extends when control switch is moved to locked position**].

Feature in "Local Electric Key (LEK)" subparagraph below is optional; retain if required.

Local Electric Key (LEK): Inmate key operates lock electrically when enabled; staff key always operates lock manually and electrically.

If power fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 1-1/2-inch-high by 5/8-inch-thick hardened steel; 3/4-inch throw.

Provide internal deadlock indicator switch.

Deadlock Actuator: Stainless steel.

Strike: Stainless steel.

Voltage: 24-V dc.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Solenoid-Operated Gate Locks, Paracentric Cylinder" paragraph below are designed for use on swinging and sliding gates that are unlocked from remote locations.

* + - * 1. Solenoid-Operated Gate Locks, Paracentric Cylinder:

Function: Remote switch activates electric solenoid that raises an internal bolt; automatic deadlocking when gate is closed. Bolt can be mechanically retracted by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**].

Latchback: Bolt remains raised until gate is closed.

If power fails, latchbolt automatically deadlocks (fail secure).

Bolt: 5/8-inch-diameter stainless steel; 1-inch throw.

Provide internal deadlock indicator switch.

Voltage: 120-V ac.

Finish: Galvanized.

Mounting: Mount lock to gate post; mount locking tongue to gate frame.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

* + - 1. PNEUMATIC DETENTION LOCKS AND LATCHES
				1. Operation: Provide pneumatic detention locks and latches that operate when supplied with air between 40 psig minimum and 100 psig maximum.
				2. Factory install quick-connect air fitting and factory-wired plug connector with 6-inch wire pigtail.

Provide security ring for installation of pneumatic detention lock in hollow-metal detention frame, welded to frame or access cover.

Copy "Pneumatic Deadlatches, Paracentric Cylinder," "Pneumatic Deadlatches, Mogul Cylinder," and "Pneumatic Deadlatches, Commercial Cylinder" paragraphs below and re-edit for each product.

Locks in "Pneumatic Deadlatches, Paracentric Cylinder" paragraph below are designed for use on swinging doors, such as entrance, sally port, corridor, and inmate cell doors, that are unlocked from remote locations.

* + - * 1. Pneumatic Deadlatches, Paracentric Cylinder:

Function: Remote switch activates pneumatic cylinder that retracts latchbolt; latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is activated**]; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by [**five**] [**six**]-tumbler paracentric cylinder; keyed [**one side**] [**two sides**].

If power fails or compressed-air system fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 2-inch-high by 3/4-inch-thick hardened steel; 3/4-inch throw.

Provide internal deadlock indicator switch.

Provide roller-type deadlock actuator.

Voltage: 24-V dc.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Pneumatic Deadlatches, Mogul Cylinder" paragraph below are designed for use on swinging doors, such as entrance, sally port, corridor, and inmate cell doors, that are unlocked from remote locations.

* + - * 1. Pneumatic Deadlatches, Mogul Cylinder:

Function: Remote switch activates pneumatic cylinder that retracts latchbolt; latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is activated**]; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by mogul cylinder; keyed [**one side**] [**two sides**].

Features in first two subparagraphs below are optional; retain if required.

Local Electric Key (LEK): Inmate key operates lock electrically when enabled; staff key always operates lock manually and electrically.

Knob on opposite side of cylinder retracts latchbolt.

If power fails or compressed-air system fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 1-1/2-inch-high by 3/4-inch-thick hardened steel; 1-inch throw.

Provide internal deadlock indicator switch.

Provide roller-type deadlock actuator.

Voltage: 24-V dc.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

Locks in "Pneumatic Deadlatches, Commercial Cylinder" paragraph below are designed for use on swinging doors, hung in standard 2-inch hollow-metal frames, that are unlocked from remote locations.

* + - * 1. Pneumatic Deadlatches, Commercial Cylinder:

Function: Remote switch activates pneumatic cylinder that retracts latchbolt; latchbolt remains retracted [**until door is opened 2 inches, then releases**] [**as long as control switch is activated**]; automatic latching and deadlocking when door is closed (slam locking). Latchbolt can be mechanically retracted by [**high-security**]commercial cylinder; keyed [**one side**] [**two sides**].

Feature in "Local Electric Key (LEK)" subparagraph below is optional; retain if required.

Local Electric Key (LEK): Inmate key operates lock electrically when enabled; staff key always operates lock manually and electrically.

If power fails or compressed-air system fails, latchbolt automatically deadlocks (fail secure).

Latchbolt: 1-1/2-inch-high by 5/8-inch-thick hardened steel; 3/4-inch throw.

Faceplate: Stainless steel.

Provide internal deadlock indicator switch.

Provide roller-type deadlock actuator.

Voltage: 24-V dc.

Listed and labeled for use on fire doors.

Security Grade: [**1**] [**2**] [**3**] [**4**] according to ASTM F1577.

* + - 1. DETENTION LOCK TRIM
				1. Levers: Solid stainless steel.
				2. Knobs: [**Stainless steel**] [**Brass**].
				3. Escutcheons for Paracentric Locks: 0.125-inch-thick, 3-inch-diameter [**stainless steel with BHMA 630**] [**brass with BHMA 606**] finish. Attach with security fasteners.

First option in "Style" subparagraph below allows key to be removed in one position; second option allows key to be removed in two positions.

Style: [**Single wing**] [**Double wing**] [**Single or double wing as required by lock function**] [**As indicated**].

* + - * 1. Cylinder Shields for Paracentric Locks: 0.125-inch-thick, 3-inch-diameter [**stainless steel with BHMA 630**] [**brass with BHMA 606**] finish and swinging cover to protect keyhole. Attach with security fasteners.

First option in "Style" subparagraph below allows key to be removed in one position; second option allows key to be removed in two positions.

Style: [**Single wing**] [**Double wing**] [**Single or double wing as required by lock function**] [**As indicated**].

* + - 1. DETENTION CYLINDERS AND KEYING
				1. Source Limitations: Subject to compliance with requirements, provide cylinders and keying for paracentric and mogul cylinders by same manufacturer as for detention locks and latches.
				2. Paracentric Cylinders: Manufacturer's standard lever-tumbler type, constructed from one-piece spring-tempered brass; with tumblers activated by phosphor bronze springs; five tumblers per lock.
				3. Mogul Cylinders: Manufacturer's standard pin-tumbler type, minimum 2-inch diameter; body constructed from brass or bronze, stainless steel, or nickel silver; with stainless-steel tumblers and engaging cylinder balls; complying with the following:

Number of Pins: [**Five**] [**Six**] [**Seven**].

Mortise Type: Threaded cylinders with rings and straight- or clover-type cam.

Retain "High-Security Grade" subparagraph below if required.

High-Security Grade: Listed and labeled as complying with pick- and drill-resistant testing requirements in UL 437 (Suffix A).

Finish: [**BHMA 606**] [**BHMA 626**] [**BHMA 630**].

* + - * 1. Keying System: Provide a factory-registered keying system complying with the following requirements:

Paracentric cylinders operated by change keys only.

Retain "No Master Key System," "Master Key System," "Grand Master Key System," or "Great-Grand Master Key System" subparagraph below. The fewer master keys issued, the smaller the possibility of loss and therefore the greater the security.

No Master Key System: Mogul cylinders operated by change keys only.

Master Key System: Mogul cylinders operated by a change key and a master key.

Grand Master Key System: Mogul cylinders operated by a change key, a master key, and a grand master key.

Great-Grand Master Key System: Mogul cylinders operated by a change key, a master key, a grand master key, and a great-grand master key.

Retain one of two "Existing System" subparagraphs below if required.

Existing System: Master key or grand master key mogul-cylinder locks to Director’s Representative's existing system.

Existing System: Re-key Director’s Representative's existing master key system for mogul-cylinder locks into new keying system.

* + - * 1. Keys: Provide cast silicon-bronze copper alloy keys complying with the following:

Retain "Stamping" subparagraph below if key requires special marking.

Stamping: Permanently inscribe each key with a visual key-control number and include the following notation:

[**"DO NOT DUPLICATE."**] [**Information to be furnished by Director’s Representative.**] <**Insert notation.**>

Quantity: In addition to one extra blank key for each lock, provide the following:

Retain subparagraph(s) below as applicable to keying system type retained above. The fewer master keys issued, the smaller the possibility of loss and therefore the greater the security.

Cylinder Change Keys: [**Three**] <**Insert number**>.

Master Key(s): [**One**] <**Insert number**>.

Grand Master Key(s): [**One**] <**Insert number**>.

Great-Grand Master Key(s): [**One**] <**Insert number**>.

* + - 1. SWITCHES
				1. Concealed, Magnetic Door Position Switches: Consist of actuating magnet mortised into detention door and switch mortised into frame; with stainless-steel faceplates; 24-V dc, factory wired with plug connector. Wire in series with lock monitors. Attach with security fasteners.
				2. Concealed, Mechanical Door Position Switches: Consist of metal track mortised into head of detention door connected by steel actuator arm to steel actuator mortised into frame; switch fully concealed when door is in closed position; with stainless-steel faceplate; 120-V ac; factory wired with plug connector. Action of door mechanically activates switch. Wire in series with lock monitors. Attach with security fasteners.
				3. Surface-Mounted Door Position Switches: Switch enclosed in 0.134-inch nominal-thickness steel enclosure, factory primed for painting; 120-V ac; factory wired with plug connector. Wire in series with lock monitors. Attach with security fasteners.

Galvanize enclosure for exterior locations[**and where indicated**].

* + - * 1. Strike Indicator Switches: Designed to be mortised behind strike and to indicate whether door is locked or unlocked; enclosed in metal strike box. Wire in series with door position switches. Attach with security fasteners.

Voltage: [**120-V dc**] [**240-V ac**] [**As indicated**].

Locations: [**At doors with mechanical detention lock**] [**Where indicated**].

Manufacturer: Same as detention lock.

Retain "Inmate Door-Control Switches" and "Push-Button, Inmate Door-Control Switches" paragraphs below if intercom or monitoring and control system does not include these devices.

* + - * 1. Inmate Door-Control Switches: [**Momentary**] [**Maintained-contact**] push-button switch with metal faceplate. Attach with security fasteners.

Material and Finish: [**Brass with BHMA 606**] [**Brass with BHMA 626**] [**Stainless steel with BHMA 630**] finish.

Operation: When activated from remote location, switch allows inmate operation of electric cell door lock.

* + - * 1. Push-Button, Inmate Door-Control Switches: [**Momentary**] [**Maintained-contact**] push-button switch for installation without faceplate. Attach with security fasteners.

Material and Finish: [**Brass with BHMA 606**] [**Brass with BHMA 626**] [**Stainless steel with BHMA 630**] finish.

Operation: When activated from remote location, switch allows inmate operation of electric cell door lock.

* + - 1. DETENTION OPERATING TRIM

Retain "Standard" paragraph below to specify detention operating trim if not naming manufacturers' products in this article or in "Detention Door Hardware Schedule" Article.

* + - * 1. Standard: BHMA A156.6, Grade 1.

Retain "Surface-Mounted Door Pulls," "Round, Surface-Mounted Door Pulls," "Flush Door Pulls," "Knob Pulls," and "Level-Handle Guides" paragraphs below if not naming manufacturers' products in "Detention Door Hardware Schedule" Article.

Door pulls in "Surface-Mounted Door Pulls" paragraph below are not typically used inside cells.

* + - * 1. Surface-Mounted Door Pulls: 8-3/4-inch overall length and 2-1/4-inch projection; attach to door with two security fasteners.

Material: Cast bronze with [**BHMA 606**] [**BHMA 626**] finish.

Material: Cast stainless steel with BHMA 630 finish.

* + - * 1. Round, Surface-Mounted Door Pulls: 7-inch overall length by 1-inch-diameter solid bar, with 2-1/4-inch projection; attach to door with two security through bolts.

Material: Cast or extruded bronze with [**BHMA 606**] [**BHMA 626**] finish.

Material: Cast stainless steel with BHMA 630 finish.

* + - * 1. Flush Door Pulls: 5 inches high by 4 inches wide by 1 inch deep, with 1/8-inch-thick faceplate; attach to door with four security fasteners.

Material: Formed, wrought, or cast brass/bronze with [**BHMA 606**] [**BHMA 626**] finish.

Material: Formed or cast stainless steel with BHMA 630 finish.

* + - * 1. Knob Pulls: 2-inch diameter; fabricated from solid brass with [**BHMA 606**] [**BHMA 626**] finish. Attach with security fasteners.
				2. Lever-Handle Guides: Guide tracks [**and escutcheons**]that provide selective stopping of lever handle by use of an adjustable stop; fabricated from [**steel with BHMA 633**] [**stainless steel with BHMA 630**] finish. Attach with security fasteners.
			1. SECURITY DOOR CLOSERS
				1. Standard: BHMA A156.4, Grade 1.

Certified Products: Provide security door closers listed in BHMA's "Directory of Certified Door Products."

* + - * 1. Surface-Mounted Security Door Closers:

Arms: Minimum 3/8-inch-thick by 1-1/8-inch-wide, rectangular steel main arm; 5/16-inch-thick by 1-inch-wide, rectangular steel secondary arm; full rack-and-pinion type; fabricated with orbital-riveted, pinned, or welded elbow and arm shoe/soffit plate joints designed to prevent disassembly with ordinary hand tools.

Cover: Heavy-duty metal, attached with four security fasteners.

Mounting: Attach security door closer with security fasteners.

* + - * 1. Concealed Security Door Closers:

Construction: Forged-steel arm; security roller; with track concealed in head of detention door, designed to eject foreign objects during opening and closing; fabricated with joints designed to prevent disassembly with ordinary hand tools. Closer arm and track fully concealed when door is closed.

Cover Plates: Heavy-duty metal, attached with security fasteners.

Retain subparagraph below if required.

Provide door position switch integral to closer.

* + - * 1. Unit Size: Comply with manufacturer's written recommendations for size of security door closers depending on size of door, exposure to weather, and anticipated frequency of use. Provide factory-sized closers, adjustable to comply with field conditions and requirements for opening force.
			1. DETENTION DOOR STOPS
				1. Detention Floor Stops: 1-1/2-inch-high by 2-inch-diameter, rubber bumper mounted on steel lag bolt; BHMA A156.16; install in floor with nonshrink grout; for detention doors unless wall or other type stops are indicated. Do not mount floor stops where they can impede traffic.
			2. SLIDING DETENTION DOOR DEVICE ASSEMBLIES
				1. Performance Requirements: Provide sliding detention door device assemblies, including locking device, receiver, overhead door hanger, bottom door guide, lock column, and enclosure, as a complete assembly, complying with [**Grade 1**] [**Grade 2**] according to ASTM F1643, as determined by testing manufacturers' standard units representing those indicated for Project.
				2. Assembly Construction:

Enclosure: Fabricated from 0.179-inch nominal-thickness steel plate, with 0.134-inch nominal-thickness steel [**removable**] [**hinged**] cover. Baffle openings in enclosure. Provide closures for ends of housings.

Provide sloping-top housings.[**Flat-top housings may be provided for operators mounted to ceiling.**]

Lock Column: Vertical tube enclosure fabricated from 0.134-inch nominal-thickness steel, providing mechanical locking control of detention sliding door at door location; operated by paracentric key. Doors shall be capable of being locked at top and bottom, at rear of door, in both open and closed positions, with no components projecting into door opening.

Receiver: Fabricated from 0.134-inch nominal-thickness steel plate.

Hanger Assembly: Extend steel carrier full width of door plus full extent of door travel required for clear door opening. Provide antifriction ball-bearing steel rollers with hardened members and grease shield.

Finish: Factory prime painted.

Copy paragraphs below and re-edit for each product.

* + - * 1. Mechanical-Locking, Manual-Door-Movement, Sliding-Door Device Assemblies: Doors are manually opened and closed and mechanically locked by means of jamb-mounted mechanical detention lock specified elsewhere in this Section.
				2. Electromechanical-Locking, Manual-Door-Movement, Sliding-Door Device Assemblies: Operated from remote-control panel that activates electric motors to unlock sliding doors. Doors spring open a small distance after unlocking and are manually opened and closed. Locks automatically deadlock when doors are moved to fully open or fully closed position. Provide factory-wired cable harness with plug connectors for each motor unit.

Single-Door Function: In an emergency or if power fails, individual doors can be unlocked using a manual-release tool and manually moved; doors relock in either fully open or fully closed position.

Multiple-Door Function: Each door can be individually unlocked locally or from a remote panel or unlocked from a remote panel with other doors as a group. In an emergency or if power fails, door group can be manually operated from [**mechanical-release cabinet at end of cell line**] [**pilaster release adjacent to receiving jamb of each door operated by paracentric key**]; doors shall not relock in any position.

Feature in "Electric Key Switch" subparagraph below is optional; retain if required.

Electric Key Switch: Operated by [**paracentric**] [**mogul**] key and provides electric control of detention sliding-door operation at door location.

"Electromechanical-Locking, Electromechanical-Door-Movement, Sliding-Door Device Assemblies" paragraph below describes Southern Folger's "Southern Steel Model 3150LX" and "Southern Steel Model 3165LX." The 3150LX system offers multiple door functions, such as for cell doors; the 3165LX system is for individual doors, such as for vestibules, day rooms, and corridors.

* + - * 1. Electromechanical-Locking, Electromechanical-Door-Movement, Sliding-Door Device Assemblies: Operated from remote-control panel that activates electric motors to unlock sliding doors and motorized rack-and-pinion drive mechanisms to open and close doors. Doors lock in open position and deadlock when closed. Provide factory-wired cable harness with plug connectors for each motor unit.

Single-Door Function: In an emergency or if power fails, individual doors can be unlocked using a manual-release tool and manually moved; doors relock in either fully open or fully closed position.

Multiple-Door Function: Each door can be individually unlocked locally or from a remote panel or unlocked from a remote panel with other doors as a group. In an emergency or if power fails, door group can be manually operated from [**mechanical-release cabinet at end of cell line**] [**pilaster release adjacent to receiving jamb of each door operated by paracentric key**]; doors shall not relock in any position.

Feature in "Electric Key Switch" subparagraph below is optional; retain if required.

Electric Key Switch: Operated by [**paracentric**] [**mogul**] key and provides electric control of detention sliding-door operation at door location.

"Electromechanical-Locking, Pneumatic-Door-Movement, Sliding-Door Device Assemblies" paragraph below describes Southern Folger's "Folger Adam Model D2B.3P," which is for individual doors, such as for vestibules, day rooms, and corridors.

* + - * 1. Electromechanical-Locking, Pneumatic-Door-Movement, Sliding-Door Device Assemblies: Operated from remote-control panel that activates electric motors to unlock sliding doors and pneumatic system to open and close doors. Doors lock in open position and deadlock when closed. Factory install quick-connect air fitting and factory-wired cable harness with plug connectors for each motor unit; 24-V dc.

Single-Door Function: In an emergency or if pneumatic systems or electric power fails, individual doors can be unlocked using a manual-release tool and manually moved; doors relock in either fully open or fully closed position.

Feature in "Lock Control at Door" subparagraph below is optional; retain if required.

Lock Control at Door: Mechanical key release adjacent to receiving jamb of each door, contained in pilaster and operated by paracentric key.

"Pneumatic-Locking, Manual-Door-Movement, Sliding-Door Device Assemblies" paragraph below describes Southern Folger's "Folger Adam Model KR.3P" and "Southern Steel Model 8010L."

* + - * 1. Pneumatic-Locking, Manual-Door-Movement, Sliding-Door Device Assemblies: Operated from remote-control panel that activates pneumatic cylinders to unlock doors. Doors spring open a small distance after unlocking and are manually opened and closed. Locks automatically deadlock when doors are moved to fully open or fully closed position. Factory install quick-connect air fitting and factory-wired cable harness with plug connectors for each motor unit.

Single-Door Function: In an emergency or if pneumatic systems or electric power fails, individual doors can be unlocked using a manual-release tool and manually moved; doors relock in either fully open or fully closed position.

Feature in "Lock Control at Door" subparagraph below is optional; retain if required.

Lock Control at Door: Mechanical key release adjacent to receiving jamb of each door, contained in pilaster and operated by paracentric key.

Multiple-Door Function: Each door can be individually unlocked locally or from a remote panel, or unlocked from a remote panel with other doors as a group. In an emergency or if pneumatic systems or electric power fails, door group can be operated from [**remotely located auxiliary pneumatic-release system**] [**pilaster release adjacent to receiving jamb of each door operated by paracentric key**]; doors shall not relock in any position.

Feature in "Electric Key Switch" subparagraph below is optional; retain if required.

Electric Key Switch: Operated by [**paracentric**] [**mogul**] key and providing electric control of detention sliding-door operation at door location.

"Pneumatic-Locking, Pneumatic-Door-Movement, Sliding-Door Device Assemblies" paragraph below describes Southern Folger's "Southern Steel Model 8050L" and "Southern Steel Model 8065L." Only the 8050L system offers multiple door functions, such as for cell doors; the 8065L system is for individual doors, such as for vestibules, day rooms, and corridors.

* + - * 1. Pneumatic-Locking, Pneumatic-Door-Movement, Sliding-Door Device Assemblies: Operated from remote-control panel that activates pneumatic cylinder to unlock sliding doors and open and close doors. Doors lock in open position and deadlock when closed. Factory install quick-connect air fitting and factory-wired cable harness with plug connectors for each motor unit; 24-V dc.

Single-Door Function: In an emergency or if pneumatic systems or electric power fails, individual doors can be unlocked using a manual-release tool and manually moved; doors relock in either fully open or fully closed position.

Multiple-Door Function: Each door can be individually unlocked locally or from a remote panel or unlocked from a remote panel with other doors as a group. In an emergency or if pneumatic systems or electric power fails, door group can be operated from [**remotely located auxiliary pneumatic-release system**] [**pilaster release adjacent to receiving jamb of each door operated by paracentric key**]; doors shall not relock in any position.

Feature in "Electric Key Switch" subparagraph below is optional; retain if required.

Electric Key Switch: Operated by [**paracentric**] [**mogul**] key and providing electric control of detention sliding-door operation at door location.

Provide security ring for installation of pneumatic detention lock in hollow-metal detention frame, welded to frame or access cover.

* + - 1. KEY-CONTROL SYSTEM

Coordinate options for number of keys in "Security Key Cabinets" paragraph below with product models listed.

* + - * 1. Security Key Cabinets: Metal cabinet for mounting [**150**] [**300**] <**Insert number**> paracentric or mogul keys.

Cabinet: Minimum 16 inches wide by 24 inches high by 6-1/2 inches deep; formed from 0.134-inch nominal-thickness steel sheet. Provide 0.060-inch nominal-thickness, steel-sheet interior panels, supported on pivots.

Doors: Formed from same material as cabinet, supported by heavy-duty, continuous, side hinge welded to cabinet and door; with tumbler deadlock.

Cross-Index System: Set up by detention key-control manufacturer; include labels, two sets of key tags with self-locking key holders, key-gathering envelopes, temporary and permanent markers, and the following:

Retain "Card Index" or "Computer Software" subparagraph below. Verify availability with manufacturers.

Card Index: Furnish four sets of index cards for recording key information. Include three receipt forms for each key-holding hook.

Computer Software: Furnish cross-index software for recording and reporting key-holder listings, tracking keys and lock and key history, and printing receipts for transactions. Include instruction manual.

* + - * 1. Finishes:

Retain "Steel Prime Finish" subparagraph below for factory-applied primer for field painting, or retain "Steel Factory Finish" subparagraph below for factory-applied, baked-enamel or powder-coat finishes.

Steel Prime Finish: Clean, pretreat, and apply manufacturer's standard primer immediately after cleaning and pretreating.

Steel Factory Finish: Immediately after cleaning and pretreating, apply manufacturer's standard two-coat, baked-on finish consisting of prime coat and thermosetting topcoat, with a minimum dry film thickness of 1 mil for topcoat.

Color and Gloss: [**As indicated by manufacturer's designations**] [**Match Sample**] [**As selected by Architect from manufacturer's full range**] <**Insert color and gloss**>.

* + - 1. FABRICATION

Retain "Manufacturer's Nameplate" paragraph below if visibility of manufacturer's name on items is objectionable.

* + - * 1. Manufacturer's Nameplate: Do not provide 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 Architect.
				2. Base Metals: Produce detention 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 detention door hardware units and BHMA A156.18 finishes.
				3. Fasteners: Provide flat-head security fasteners with finished heads to match surface of detention door hardware.

Security Fasteners: Fabricate detention door hardware using security fasteners with head style appropriate for fabrication requirements, strength, and finish of adjacent materials.[**Provide stainless-steel security fasteners in stainless-steel materials.**]

Retain "Concealed Fasteners" subparagraph below where security is important.

Concealed Fasteners: For detention door hardware units that are exposed when detention 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 detention door hardware. Where using through bolts on hollow-metal detention door and frame construction, provide sleeves for each through bolt.

Retain "Steel Machine Screws" and "Steel Through Bolts" subparagraphs below for fire-rated detention door assemblies. NFPA 80 requires locks, latches, and surface-mounted top and bottom bolts to be secured with machine screws or through bolts.

Steel Machine Screws: For the following fire-rated applications:

Mortise detention hinges to detention doors.

Strike plates to detention frames.

Security door closers to detention doors and frames.

Steel Through Bolts: For the following fire-rated applications unless door blocking is provided:

Surface detention hinges to detention doors.

Security door closers to detention doors and frames.

Spacers Bolts: For through bolting of hollow-metal detention doors.

* + - * 1. Detention Lock Construction: Fabricate detention lock case and cover plate from steel plate. Fabricate bolts from solid sections; laminated construction is unacceptable.
			1. HARDWARE FINISHES
				1. Standard: Comply with BHMA A156.18.
				2. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.
				3. BHMA Designations: Comply with base material and finish requirements indicated by the following:

Retain one or more finish designations below; coordinate with those indicated in "Detention Door Hardware Schedule" Article. See Evaluations for discussion on finishes.

BHMA 600: Primed for painting, over steel base metal.

BHMA 606: Satin brass, clear coated, over brass base metal.

BHMA 626: Satin chromium plated over nickel, over brass or bronze base metal.

BHMA 630: Stainless steel, satin, over stainless-steel base metal.

BHMA 633: Satin brass plated, clear coated, over steel base metal.

BHMA 652: Satin chromium plated over nickel, over steel base metal.

* + - 1. SECURITY FASTENERS
				1. Operable only by tools produced by fastener manufacturer or other licensed fabricator for use on specific fastener type. Provide drive-system type, head style, material, and protective coating as required for assembly, installation, and strength, and as follows:

Pinned Torx-Plus in "Drive-System Type" subparagraph below is the most commonly used security-fastener drive system for detention work. Insert additional security fastener types with other drive systems and head styles if necessary for special applications. See Evaluations.

Drive-System Type: [Pinned Torx-Plus] [Pinned Torx] <Insert system>.

Revise "Fastener Strength" subparagraph below if different fastener strength is required.

Fastener Strength: 120,000 psi.

Socket Button Head Fasteners:

Heat-treated alloy steel, ASTM F835.

Stainless steel, ASTM F879, Group 1 CW.

Socket Flat Countersunk Head Fasteners:

Heat-treated alloy steel, ASTM F835.

Stainless steel, ASTM F879, Group 1 CW.

Socket Head Cap Fasteners:

Heat-treated alloy steel, ASTM A574.

Stainless steel, ASTM F837, Group 1 CW.

Protective Coatings for Heat-Treated Alloy Steel:

Zinc and clear trivalent chromium where indicated.

Zinc phosphate with oil, ASTM F1137, Grade I, or black oxide unless otherwise indicated.

1. EXECUTION
	* + 1. EXAMINATION
				1. Examine detention 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 of the Work.
				2. Examine roughing-in for embedded and built-in anchors to verify actual locations of detention door hardware connections before detention door hardware installation.
				3. Inspect built-in and cast-in anchor installations, before installing detention door hardware, to verify that anchor installations comply with requirements. Prepare inspection reports.

Remove and replace anchors where inspections indicate that they do not comply with specified requirements. Reinspect after repairs or replacements are made.

Perform additional inspections to determine compliance of replaced or additional work.

* + - * 1. Verify locations of detention door hardware with those indicated on Shop Drawings.
				2. Examine roughing-in for electrical power[**and pneumatic**] systems to verify actual locations of connections before detention door hardware installation.
				3. Proceed with installation only after unsatisfactory conditions have been corrected.
			1. PREPARATION

NFPA 80 restricts on-site door preparation to that required for surface-applied detention door hardware and function holes for mortise locks.

* + - * 1. Steel Detention Doors and Frames: Comply with BHMA A156.115 Series.

Surface-Applied Detention Door Hardware: Drill and tap detention doors and frames according to SDI A250.6.

* + - 1. INSTALLATION
				1. Mounting Heights: Mount detention door hardware units at heights indicated in [**DHI's "Recommended Locations for Builders' Hardware for Custom Steel Doors and Frames."**] <**Insert standard.**>
				2. Install each detention door hardware item to comply with Shop Drawings and manufacturer's written instructions. Where cutting and fitting are required to install detention 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. Do not install surface-mounted items until finishes have been completed on substrates involved.

Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.

Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.

* + - * 1. Hinge Installation:

Welding: Where indicated, weld hinges to detention doors and frames with continuous fillet weld around three sides of hinge perimeter.

Security Fasteners: Provide socket flat countersunk head machine screws; finish screw heads to match surface of detention hinges. Install into drilled and tapped holes.

* + - * 1. Install interconnecting wiring and connectors between detention door hardware devices. Terminate device wiring for detention door hardware installed in [**swinging doors at a plug-type connector located in lock pocket or door frame junction box**] [**and for**] [**sliding doors at a junction box in door frame**].
				2. Security Fasteners: Install detention door hardware using security fasteners with head style appropriate for installation requirements, strength, and finish of adjacent materials.
			1. FIELD QUALITY CONTROL
				1. Inspect installed products to verify compliance with requirements. Prepare inspection reports and indicate compliance with and deviations from the Contract Documents.
				2. Perform the following tests and inspections:

After installing electrically powered[**and pneumatic**] detention door hardware and after electrical circuitry has been energized[**and compressed-air system is functional**], test detention door hardware for compliance with requirements.

Test: Operate lock of each door and group of doors in normal remote, normal local, and emergency operating modes. Verify that remote controls operate correct door locks and in correct sequence.

Verify that lock bolts engage strikes with required bolt projection.

Verify that detention door hardware is installed, connected, and adjusted according to the Contract Documents.

Verify that electrical wiring installation complies with manufacturer's submittal and written installation requirements.

* + - * 1. Detention work will be considered defective if it does not pass tests and inspections.
				2. Perform additional inspections to determine compliance of replaced or additional work.
				3. Prepare field quality-control certification[**endorsed by Detention Specialist**] that states installed products comply with requirements in the Contract Documents.
				4. Prepare test and inspection reports.
			1. ADJUSTING
				1. Adjust and check each operating item of detention door hardware and each detention door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust detention door-control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

* + - 1. CLEANING AND PROTECTION
				1. Clean adjacent surfaces soiled by detention door hardware installation.
				2. Clean operating items as necessary to restore proper function and finish.
				3. Provide final protection and maintain conditions that ensure that detention door hardware is without damage or deterioration at time of Substantial Completion.
			2. DEMONSTRATION
				1. [**Engage a Company Service Advisor** **to train**] [**Train**] Director’s Representative's maintenance personnel to adjust, operate, and maintain detention door hardware and detention door hardware finishes.
			3. DETENTION DOOR HARDWARE SCHEDULE

Delete this article if door hardware schedule is included on the Drawings.

* + - * 1. General: Provide detention door hardware for each detention door to comply with requirements in this Section and with detention door hardware sets indicated below.

Create a schedule to include a door hardware set for each unique door hardware configuration required for the Project. Identify each set with a unique number designation. Coordinate with "Detention Door Hardware, General" Article. Insert schedule below.

See "Sample Detention Door Hardware Schedules" Article in the Evaluations for additional information.

END OF SECTION 087163