SECTION 08 71 00

DOOR HARDWARE
02/02

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI A117.1	(2003) Accessible and Usable Buildings and Facilities

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.1	(2000) Butts and Hinges
BHMA A156.13	(2002) Mortise Locks & Latches, Series 1000
BHMA A156.16	(2002) Auxiliary Hardware
BHMA A156.18	(2000) Materials and Finishes
BHMA A156.3	(2001) Exit Devices
BHMA A156.4	(2000) Door Controls - Closers
BHMA A156.7	(2003) Template Hinge Dimensions

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 101	(2005; Errata 2006; TIA 2006; TIA 2006) Life Safety Code, 2006 Edition
NFPA 80	(2007) Standard for Fire Doors and Other Opening Protectives

STEEL DOOR INSTITUTE (SDI)

SDI 100	(1998) Standard Steel Doors and Frames

UNDERWRITERS LABORATORIES (UL)

UL Bld Mat Dir	(2008) Building Materials Directory

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Hardware schedule; G, AE

SD-03 Product Data

Hardware items; G, AE

SD-08 Manufacturer's Instructions

Installation

SD-10 Operation and Maintenance Data

Hardware Schedule items, Data Package 1; G, AE

Submit in accordance with Section 01 78 23 OPERATION AND MAINTENANCE DATA.

SD-11 Closeout Submittals

Key bitting

1.3 HARDWARE SCHEDULE

Prepare and submit hardware schedule in the following form:

Hardware Item	Quantity	Size	Reference Publication Type No.	Finish	Mfr. Name and Catalog No.	Key Control Symbols	UL Mark (If fire rated and listed)	BHMA Finish Designation

1.4 KEY BITTING CHART REQUIREMENTS

Submit key bitting charts to the Contracting Officer prior to completion of the work. Include:

a. Complete listing of all keys (AA1, AA2, etc.).

b. Complete listing of all key cuts (AA1-123456, AA2-123458).

c. Tabulation showing which key fits which door.

d. Copy of floor plan showing doors and door numbers.

e. Listing of 20 percent more key cuts than are presently required in each master system.

1.5 QUALITY ASSURANCE

1.5.1 Hardware Manufacturers and Modifications

Provide, as far as feasible, locks, hinges, and closers of one lock, hinge, or closer manufacturer's make. Modify hardware as necessary to provide features indicated or specified.

1.6 DELIVERY, STORAGE, AND HANDLING

Deliver hardware in original individual containers, complete with necessary appurtenances including fasteners and instructions. Mark each individual container with item number as shown in hardware schedule. Deliver permanent keys and removable cores to the Contracting Officer, either directly or by certified mail. Deliver construction master keys with the locks.

PART 2 PRODUCTS

2.1 TEMPLATE HARDWARE

Hardware to be applied to metal or to prefinished doors shall be made to template. Promptly furnish template information or templates to door and frame manufacturers. Template hinges shall conform to BHMA A156.7. Coordinate hardware items to prevent interference with other hardware.

2.2 HARDWARE FOR FIRE DOORS AND EXIT DOORS

Provide all hardware necessary to meet the requirements of NFPA 80 for fire doors and NFPA 101 for exit doors, as well as to other requirements specified, even if such hardware is not specifically mentioned under paragraph entitled "Hardware Schedule." Such hardware shall bear the label of Underwriters Laboratories, Inc., and be listed in UL Bld Mat Dir or labeled and listed by another testing laboratory acceptable to the Contracting Officer.

2.3 HARDWARE ITEMS

Hinges, locks, latches, exit devices, bolts, and closers shall be clearly and permanently marked with the manufacturer's name or trademark where it will be visible after the item is installed. For closers with covers, the name or trademark may be beneath the cover.

2.3.1 Hinges

BHMA A156.1, 4 1/2 by 4 1/2 inches unless otherwise specified. Construct loose pin hinges for exterior doors and reverse-bevel interior doors so that pins will be nonremovable when door is closed. Other antifriction bearing hinges may be provided in lieu of ball-bearing hinges.

2.3.1.1 Butt Hinges

Quantity per Door Leaf (Minimum):

Door Height	Hinges
Up to 5'-0"	1 pair
5'-1" to 7'-7"	1-1/2 pair
7'-8" to 10'-0"	2 pairs
10'-1" to 12'-6"	2-1/2 pairs

Hinge Height (Minimum):

Door Height	Hinge Height
Up to 3'-0"	4-1/2"
3'-1" to 4'-0"	5"

Door Height	Hinge Height
Over 4'-0"	6"

Width: Minimum for clearance of trim and 180-degree swing.

Exterior Hinges: Nonremovable pin.

Joint Tolerance: 0.012 inch maximum, gauged in CLOSED position.

Finish: Satin stainless steel No. 630.

Manufacturers listed below are for basis of design.

Types:

No.	Type Description	BHMA	Mfctr 1	Mfctr 2
H1	Regular weight, two ball races, full mortise, stainless steel	A5112	Stanley; FBB191	McKinney; TA2314
H3	Hinges or pivots furnished by door manufacturer			
H4	Electrified Power Transfer Hinge: regular weight, two ball races, full mortise, stainless steel. Power supply provided by DISTRICT.		Von Duprin (basis of design) Model EPT-2	
H5	Electrified Power Transfer Pivot: stainless steel; furnished by door manufacturer. Power supply provided by DISTRICT.			

2.3.2 Locks and Latch Sets

All locks and latches shall be compatible with Langley AFB master key system and Best Grand Master Key system, and shall have interchangeable cores.

2.3.2.1 Mortise Locks

BHMA A156.13, Series 1000, Grade 1 and DHI A115.1.

Materials: Brass or stainless steel.

Trim: Wrought or forged lever handles and roses.

Core Cylinders: Interchangeable, removable; minimum of six pins.

Bolt Throw: 5/8 inch minimum.

Lever Backset: 2 3/4 inches.

Manufacturers and Products:

a. Best; 15H.
b. Sargent; LNL.

c. Schlage; 06.

2.3.2.2 Tactile Warning

Knurl lever handles for touch identification on exterior side of doors to Mechanical Room, Electrical Room, and Communications Room; ANSI A117.1, Section 4.29.3.

2.3.2.3 Finish

Satin stainless steel No. 630.

2.3.2.4 Electrical Locks

A156.25 Electrified locking devices.

2.3.2.5 Types and Manufacturers

No.	Type Description	BHMA	Best	Sargent	Schlage
L1	Mortise entrance with lever handle	F12,F13	35H7F3H	8245-LNL	L9456P-03A
L3	Mortise latch with lever handle	F01	35H0N3H	8215-LNL	L9010-03A
L5	Mortise utility room lock with lever handle	F07	35H7EW3H	8204-LNL	L9080-03A
L16	Lock by exit device manufacturer; furnish cylinders for keying to other locks as required; furnish electric strike where noted				

2.3.2.6 Keying System

a. Lock Cylinders: Operate by grand master key system that allows for future expansion.

b. Keylocks: Key new locks into existing Bestmaster key system.

c. Keys: Two per lock; tag with schedule information.

d. Master Keys: Four; send by registered mail to Contracting Officer.

e. Furnish lock manufacturer's removable core maximum security keying system.

2.3.3 Construction Key System

Removable construction core system for locks.

2.3.4 Exit Devices

BHMA A156.3.

Furnish fire exit devices at fire-rated doors.

2.3.4.1 Removable Mullion

By exit device manufacturer, where scheduled.

2.3.4.2 Trim

Levers: Von Duprin 03.

2.3.4.3 Finish

Exit Device: Satin Chromium-plated No. 626.

Removable Mullion: Extruded aluminum, 980A or 5654.

2.3.4.4 Types (Manufacturer models are based on Von Duprin 98 Series)

No.	Type Description	BHMA	Von Duprin (Basis of Design)
X1	Rim type, active leaf; with removable mullion for pairs	Type 1 08	98L
X3	Rim type, access controlled, electrified latch retraction	-	EL99L (with hex key) dogging)
X4	Concealed rod type, access controlled, electrified latch retraction	-	EL9948L (with hex key) dogging)

2.3.5 CLOSERS

BHMA A156.4.

Size closers in accordance with manufacturer's standards. Mount regular arm closers on pull side of doors. Mount parallel arm closers on push side of doors. On pair of doors provide closer on active leaf only, unless noted otherwise.

2.3.5.1 Finish

Manufacturer's standard painted or powder coated finish, with special rust inhibiting (SRI) pretreatment for exterior doors, in color selected by Engineer from manufacturer's standard color range. Provide matching shoe and drop plates as required for installation.

2.3.5.2 Types

No.	Type Description	BHMA	Sargent	LCN
C1	Regular arm	C02011	351 Series	4010 Series
C2	Parallel arm	C02021	351-P Series	4110 Series
C3	Regular arm with hold-open	C02051	351-H Series	4010H Series
C4	Parallel arm with integral stop	C02021	351-PS Series	4110-Cush-N-Stop Series

No.	Type Description	BHMA	Sargent	LCN
C6	Parallel arm with integral stop and hold-open	C02061	351-PSH Series	4110H-Cush-N-Stop Series

2.3.6 Push-Pulls

Solid metal, not plated.

2.3.6.1 Finish

Satin stainless steel No. 630, unless indicated otherwise.

2.3.6.2 Plates

Beveled four edges, square corners.

2.3.6.3 Pulls

Bolted through door.

2.3.6.4 Push Plates

Countersink pull-through bolts and cover with push plate.

2.3.6.5 Types and Manufacturers

No.	Type Description
P1	Pull handles: Furnished by door manufacturer
P2	Push bar and pull handle: Furnished by door manufacturer

2.3.7 Stops and Holders

BHMA A156.16.

2.3.7.1 Machine Screws

In threaded anchors at concrete or masonry.

2.3.7.2 Self-Tapping Screws

At stud partitions, wood, or metal mountings.

2.3.7.3 Metal Risers

For mounting at carpet floors.

2.3.7.4 Finish

Satin chromium-plated No. 626.

2.3.7.5 Types for Each Leaf

No.	Type Description	BHMA
S2	Wall bumper	L02251

2.3.8 Bolts

BHMA A156.16.

2.3.8.1 Finish

Bright nickel No. 645.

2.3.8.2 Types and Manufacturers

No.	Type Description	BHMA
B1	Top and bottom flush bolts	L04201

2.3.9 Thresholds

One-piece full width of opening; extend beyond jamb where indicated.

Provide with stainless steel machine screws in threaded expansion anchors at concrete.

2.3.9.1 Finish

Dark bronze anodized aluminum, unless indicated otherwise.

2.3.9.2 Types and Manufacturers

No.	Type Description
T1	Saddle (smooth, 4" x 1/2")
T3	Threshold furnished by door manufacturer

2.3.10 Weatherstrip

2.3.10.1 Finish

Dark bronze anodized aluminum, unless indicated otherwise.

2.3.10.2 Seal Types and Manufacturers

No.	Type Description	PEMKO	REESE
W1	Rubber or vinyl bulb at jambs and head, and at meeting stiles of pairs	S88D	797B
	Door shoe	222DV	DB596DF
	Rain drip	346D	R201D
W2	Rubber or vinyl bulb at jambs and head, and at meeting stiles of pairs	S88D	DB596DF

No.	Type Description	PEMKO	REESE
	Door shoe	222DV	DB596DF
W3	Rubber vinyl bulb at jambs and head, and at meeting stiles of pairs	S88D	797B
	Door bottom with drip	345DV	353D
	Interlocking watershed	68DR & 347D	202D & 203D
W5	Weatherstripping furnished by door manufacturer		

2.3.11 Miscellaneous Items

Provide as indicated in Door and Hardware Schedule

No.	Type Description	MFR/Model	MFR/Model
M1	Nameplate as indicated in text noted in Door and Hardware Schedule and specified in Section 10 14 00, SIGNAGE		
M2	Nameplate and barrier-free pictorial symbol as indicated in text noted in Door and Hardware Schedule and specified in Section 10 14 00, SIGNAGE		
M5	Pocket Door Hardware: Set	Lawrence PF619	Stanley Series 40-3940
	Pulls (No. 626 finish)	411	100-B
M8	Intrusion switch at each door leaf (provided by DISTRICT)	Sentrol/SR1078C	
M9	Lock activated by card reader (provided by DISTRICT)		

2.3.12 Exit and Fire Doors

2.3.12.1 Exit Doors

Always openable from inside by simple turn of lever handle or push on panic bar without use of key or any special knowledge or effort.

2.3.13 Special Tools

Provide special tools, such as spanner and socket wrenches and dogging keys, required to service and adjust hardware items.

2.4 FASTENERS

Provide fasteners of proper type, quality, size, quantity, and finish with hardware. Fasteners exposed to weather shall be of nonferrous metal or

stainless steel. Provide fasteners of type necessary to accomplish a permanent installation.

2.5 FINISHES

BHMA A156.18. Hardware shall have BHMA 630 finish (satin stainless steel), unless specified otherwise. Provide items not manufactured in stainless steel in BHMA 626 finish (satin chromium plated) over brass or bronze, except surface door closers which shall have aluminum paint finish, and except steel hinges which shall have BHMA 652 finish (satin chromium plated). Hinges for exterior doors shall be stainless steel with BHMA 630 finish or chromium plated brass or bronze with BHMA 626 finish. Exit devices may be provided in BHMA 626 finish in lieu of BHMA 630 finish. Exposed parts of concealed closers shall have finish to match lock and door trim. Hardware for aluminum doors shall be finished to match the doors.

PART 3 EXECUTION

3.1 INSTALLATION

Install hardware in accordance with manufacturers' printed instructions. Fasten hardware to wood surfaces with full-threaded wood screws or sheet metal screws. Provide machine screws set in expansion shields for fastening hardware to solid concrete and masonry surfaces. Provide toggle bolts where required for fastening to hollow core construction. Provide through bolts where necessary for satisfactory installation.

3.1.1 Weather Stripping Installation

Handle and install weather stripping so as to prevent damage. Provide full contact, weather-tight seals. Doors shall operate without binding.

3.1.1.1 Stop-Applied Weather Stripping

Fasten in place with color-matched sheet metal screws not more than 9 inches o.c. after doors and frames have been finish painted.

3.1.2 Threshold Installation

Extend thresholds the full width of the opening and notch end for jamb stops. Set thresholds in a full bed of sealant and anchor to floor with cadmium-plated, countersunk, steel screws in expansion sleeves.

3.2 FIRE DOORS AND EXIT DOORS

Install hardware in accordance with NFPA 80 for fire doors, NFPA 101 for exit doors.

3.3 HARDWARE LOCATIONS

SDI 100, unless indicated or specified otherwise.

3.4 FIELD QUALITY CONTROL

After installation, protect hardware from paint, stains, blemishes, and other damage until acceptance of work. Submit notice of testing 15 days before scheduled, so that testing can be witnessed by the Contracting Officer. Adjust hinges, locks, latches, bolts, holders, closers, and other items to operate properly. Demonstrate that permanent keys operate

respective locks, and give keys to the Contracting Officer. Correct, repair, and finish, as directed, errors in cutting and fitting and damage to adjoining work.

3.5 HARDWARE LOCATION

Hardware shall be as indicated on the Door and Hardware Schedule on the drawings.

Hardware for aluminum doors shall be provided under this section. Deliver Hardware templates and hardware, except field-applied hardware to the aluminum door and frame manufacturer for use in fabricating the doors and frames.

-- End of Section --