

SECTION 08 71 00  
DOOR HARDWARE

## PART 1 – GENERAL

## 2.1 SUMMARY

- A. This Section includes all labor, materials, equipment and related services necessary for the fabrication, delivery and installation of the work shown on the drawings and/or specified herein, including but not limited to the following:

1. Finish hardware for swinging doors

## 2.2 RELATED DOCUMENTS

- A. Division 1: Administrative, procedural, and temporary work requirements
- B. Specification Technical Sections:
1. Section 08 11 13 – Hollow Metal Doors and Frames
  2. Section 08 14 16 – Flush Wood Doors

## 2.3 QUALITY ASSURANCE:

- A. The hardware supplier shall have in his employ an architectural hardware consultant (AHC) or a person with equivalent number of years required for AHC qualifications. This person shall be recognized as having the ability to be fully responsible for the scheduling, detailing and execution of this section of the specifications and related items. This qualified consultant shall be responsible for processing all submissions, correspondence, technical matters related to the finish hardware and it's application specified in this section.
- B. Regulatory Requirements: Comply with the Americans with Disabilities Act (ADA) and with code provisions as adopted by authorities having jurisdiction.
1. Door Hardware: Provide hardware as required by accessibility regulations and requirements of authorities having jurisdiction. These include, but are not limited to, the following:
    - a. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
    - b. Door Closers: Comply with the following maximum opening-force requirements indicated:
      - 1) Interior Hinged Doors: 5 lbf (22.2 N) applied perpendicular to door.
      - 2) Sliding or Folding Doors: 5 lbf (22.2 N) applied parallel to door at latch.
      - 3) Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
    - c. Thresholds: Not more than 1/2 inch (13 mm) high. Bevel raised thresholds with a slope of not more than 1:2.

2. NFPA 101: Comply with the following for means of egress doors:
  - a. Latches, Locks, and Exit Devices: Not more than 15 lbf (67 N) to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
  - b. Delayed-Egress Locks: Lock releases within 15 seconds after applying a force not more than 15 lbf (67 N) for not more than 3 seconds.
  - c. Door Closers: Not more than 30 lbf (133 N) to set door in motion and not more than 15 lbf (67 N) to open door to minimum required width.
  - d. Thresholds: Not more than 1/2 inch (13 mm) high.

2.4 REFERENCES:

- A. ANSI A115 Standards for door and frame preparation
- B. ANSI A156 Standards for finish hardware
- C. NFPA 80
- D. Other applicable life safety or building codes.

2.5 SUBMITTALS:

- A. The hardware supplier shall, if requested, submit for approval one sample of each of the hardware items listed prior to receiving approval of the finish hardware schedule. The approved samples shall be available for installation as part of the project, if the supplier determines it to be in his best interest to do so.
- B. The submission list accompanying samples shall include the following information:

Item	Catalog No.	Manufacturer
Lockset	6666	Lock Company
- C. The hardware supplier shall, if requested, submit for approval one sample of each of the hardware items listed prior to receiving approval of the finish hardware schedule. The approved samples shall be available for installation as part of the project.
- D. Samples required for use as physical templates by other trades shall be purchased and paid for by the respective trade requiring them.
- E. The finish hardware supplier shall submit for approval a complete and detailed finish hardware schedule using a vertical typewritten format. The finish hardware schedule shall contain a listing of the name of each manufacturer and the product listing for the series included in the hardware schedule.
- F. It shall be the responsibility of the finish hardware supplier to meet with the owner or the

owner's representative, and provide a detailed keying schedule listing the respective key symbol and location for the locksets having the corresponding key symbol.

- G. Provide five (5) regular copies of the finish hardware schedule for approval.
- H. The finish hardware supplier shall make available to the general contractor a detailed list of template numbers and templates required for each of the door manufacturers that require templates.

2.6 DELIVERY, STORAGE AND HANDLING:

- A. The finish hardware shall be delivered to the jobsite and received there by the general contractor. The general contractor shall prepare a locked storage room with adequate shelving, for all hardware. The storage room shall be in a dry, secure area, and shall not include storage of other products by other trades.
- B. All finish hardware shall have the necessary screws, bolts and other fastenings required for correct installation of each item. The cylinders, locksets, exit devices and door closers shall be clearly marked with the respective individual door or heading number.
- C. After the hardware has been installed and prior to the acceptance of the building by the owner, it shall be the general contractors responsibility to properly protect the hardware and the hardware finish from all dents, scratches, defacing that may occur during the construction period. Hardware that is considered damaged or scratched during the construction period shall be replaced by the general contractor at no cost to the owner or hardware supplier. Hardware items with paint on them shall be cleaned and/or replaced by the general contractor at no charge to the owner or hardware supplier.

2.7 WARRANTY:

- A. The finish hardware specified for this project shall be guaranteed against defects in material and workmanship for a period of (1) year from date of completion and acceptance of this building. In addition, door closers shall carry a guarantee of ten (10) years from date of completion and acceptance of this building.
- B. If an item of hardware is found to be defective by reasons of defects in material and workmanship, it shall be replaced by the hardware supplier at no charge to the owner. The installation of the replacement item shall be the responsibility of the general contractor if within the building guarantee period specified under general conditions, or by the owner if beyond the building guarantee period.

2.8 COORDINATION

- A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing door hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing door hardware to comply with indicated requirements.

PART 2 – PRODUCTS

2.1 SCHEDULED DOOR HARDWARE

- A. General: Provide door hardware for each door to comply with requirements in this Section and the Door Hardware Schedule at the end of Part 3.
  - 1. Door Hardware Sets: Provide quantity, item, size, finish or color indicated, and named manufacturer's products.
- B. Designations: Requirements for design, grade, function, finish, size, and other distinctive qualities of each type of door hardware are indicated in the Door Hardware Schedule at the end of Part 3. Products are identified by using door hardware designations, as follows:
  - 1. Named Manufacturer's Products: Product designation and manufacturer are listed for each door hardware type required for the purpose of establishing minimum requirements. Manufacturers' names are abbreviated in the Door Hardware Schedule.
  - 2. References to BHMA Standards: Provide products complying with these standards and requirements for description, quality, and function.

2.2 HINGES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - 1. Hinges:
    - a. Hager Companies (HAG).
    - b. McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
    - c. PBB, Inc. (PBB).
    - d. Stanley Commercial Hardware; Div. of The Stanley Works (STH).
  - 2. Continuous Geared Hinges:
    - a. Hager Companies (HAG).
    - b. McKinney Products Company; Div. of ESSEX Industries, Inc. (MCK).
    - c. Pemko Manufacturing Co., Inc. (PEM).
    - d. Zero International, Inc. (ZRO).
- B. Quantity: Provide the following, unless otherwise indicated:
  - 1. Two Hinges: For doors with heights up to 60 inches (1524 mm).
  - 2. Three Hinges: For doors with heights 61 to 90 inches (1549 to 2286 mm).
  - 3. Four Hinges: For doors with heights 91 to 120 inches (2311 to 3048 mm).
  - 4. For doors with heights more than 120 inches (3048 mm), provide 4 hinges, plus 1 hinge for every 30 inches (750 mm) of door height greater than 120 inches (3048 mm).
- C. The following is a guide for hinge size and type required for this project.

	Manufacturer	Interior:
1-3/4" Doors	Stanley	FBB179-4 1/2"
up to 3'-0" wide	Hager	BB1279-4 1/2"

McKinney PPB	TA-TB2714-4 1/2" BB81
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1-3/4" Doors over 3'-0" wide	Stanley Hager McKinney PPB	FBB168-4 1/2" BB1168-4 1/2" T4A-T4B3786-4 1/2" 4B81
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- D. Template Requirements: Except for hinges and pivots to be installed entirely (both leaves) into wood doors and frames, provide only template-produced units.
- E. Hinge Options: Comply with the following where indicated in the Door Hardware Schedule or on Drawings:
  - 1. Nonremovable Pins: Provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for the following applications:
    - a. Outswinging exterior doors.
    - b. Outswinging corridor doors with locks.
  - 2. Corners: Square.
- F. Continuous-Geared Hinges: Provide concealed, heavy-duty, extruded aluminum, continuous geared type. Each hinge shall have special nylon bearings spaced 2-9/16" on center with counter sunk screw holes located between bearings also on 2-9/16" center. Each hinge shall have a continuous extruded cap with self jiggling flanged leafs intermeshing the full length of the door. Hinge length shall be 1" less than door height.
  - 1. Product: Roton 780 Series Heavy Duty Concealed Leaf Hinge manufactured by Hager Companies
- G. Fasteners: Comply with the following:
  - 1. Machine Screws: For metal doors and frames. Install into drilled and tapped holes.
  - 2. Wood Screws: For wood doors and frames.
  - 3. Threaded-to-the-Head Wood Screws: For fire-rated wood doors.
  - 4. Screws: Phillips flat-head screws; machine screws (drilled and tapped holes) for metal doors, wood screws for wood doors and frames. Finish screw heads to match surface of hinges.

2.3 MORTISED LOCKS & LATCHES

- 1. Locksets for this project shall be mortise type with solid cast stainless steel lever handle with sectional trim.
- 2. Latchbolts shall be two piece mechanical anti-friction ANSI Standard 156.13 1000.
- 3. Strikes shall be curved lip stainless steel ANSI Standard A115.1, 4 7/8" x 1 1/4".
- 4. Locks and cylinders shall be manufactured and supplied by the same manufacturer. All locksets and cylinders for this project shall be manufactured in the United States of America by a recognized and reputable lock manufacturer.
- 5. Locksets for labeled fire doors shall have a fusible link or other mechanism to prevent latchbolt retraction in the event of fire.
- 6. Provide knurling or tactile warning on trim at doors indicated.
- 7. The following is a guide to the manufacturers and designs acceptable for this project.

Sargent                      8100                      Series LNL                      Design

8. The following is a list of lock functions as indicated under "hardware sets":

	FUNCTION	Sargent
A	Storeroom	57
B	Entrance	51
C	Passage	10
D	Classroom	55
E	Vestibule	72
F	Privacy	20

2.4 HEAVY DUTY CYLINDRICAL LOCKSETS

- Where indicated by the lock function listings below, locksets shall be heavy duty bored or cylindrical type.
- The following is a list of manufacturers and designs acceptable for this project:

Sargent 10 Line LL Design

- Strikes for metal frames shall conform to ANSI standard A115.2 and shall be 4-7/8" x 1-1/4" with curved lip.
- All locksets for this project, shall be by the same manufacturer and shall be manufactured in the USA by a reputable builders hardware manufacturer.
- The following is a list of lock functions as indicated under "hardware sets":

	FUNCTION	Sargent
1	Storeroom	04
2	Entrance	05
3	Passage	15
4	Classroom	37
5	Vestibule	16
6	Privacy	65

2.5 MORTISE DEADLOCKS

- Where mortise deadlock functions are listed in the hardware set numbers, provide 2 3/4" backset mortise deadlock having a heavy gauge wrought steel case. The case size shall be no less than 3 3/4" x 2 3/4" x 1" with a bronze adjustable lock front 1 1/8" x 4 5/8" (bevel adjustment 1/8" in 2").
- The deadbolt shall be 1" throw cast or extruded bronze.
- The following manufacturers and model numbers will be acceptable:

Sargent 4800 Series

- The following functions shall be required where specified:

FUNCTION	SARGENT
I	4

II	5
III	6
IV	7

2.6 EXIT DEVICES:

1. Exit devices for this project shall be the product of one manufacturer and shall be of scheduled type.
2. All exit hardware regardless of type and function shall be made of non-ferrous parts of stainless steel or bronze. Exit devices with internal parts of steel, aluminum or die cast metal other than bronze or stainless steel will not be acceptable.
3. The touch pad shall retract the latchbolt by means of a sliding motion of the touch pad towards the lock stile, activating the lever arm for easy operation and reduced friction.
4. Provide locking function for all exit devices.
5. All exit devices, regardless of function, except for fire rated devices, shall have one point cylinder dogging. The cylinder for cylinder dogging shall be a six (6) pin cylinder keyed to the building masterkey system as specified under Section, "Keying."
6. Trim for exit devices shall be one of the following as specified:
  - (a) Pull handles as specified in Section Push and Pull Bars.
  - (b) Solid brass lever handle with cast escutcheon for all fire rated doors.
7. Devices for fire rated doors shall be listed by Underwriters Laboratories for 3 hour A label doors. Exit devices with ratings of less than 3 hours or listed with Laboratories other than Underwriters Laboratories shall not be considered acceptable for this project. All fire exit devices required to be installed on fire rated doors shall carry a supplementary label bearing the marking: "Fire Doors To Be Equipped With Fire Exit Hardware".
8. Where removable mullions are required for pairs of doors, provide a fire rated U.L. listed channel iron mullion. Fire rated U.L. listed mullions shall be provided for all pairs of doors requiring mullions whether the door carries a fire rating or not.
9. Provide exit models by one of the following manufacturers:

Sargent            80 Series

2.7 KEYING:

1. All locks and cylinders shall be as required by Owner's instructions and shall be operated by masterkey group AA and grand masterkey group A. Provide 6 pin tumbler key removable and interchangeable core cylinders for this project.
2. It is required that the key systems have visual key control and that all keys and cylinders be stamped with the alphanumeric key symbol designated for each key change as recommended by the Nomenclature for Masterkey Systems established by the Door and Hardware Institute.
3. Provide each key removable core cylinder with a construction masterkey core of brass or plastic. The construction cores shall be used by the General Contractor throughout the construction period. One (1) week prior to acceptance of the building, or at the owners request, the successful hardware contractor shall visit the building and by use of a special control key, shall remove the brass or plastic construction cores from all cylinders and replace them with the permanent cores required with each cylinder.

4. Provide a total of six grand masterkeys, six masterkeys and two (2) special control key for removing the key removable core cylinder. Provide a total of six (6) construction masterkeys for the temporary cores.
5. Provide a minimum of four (4) keys for each keyed different change.
6. Provide a total of ten (10) spare cores to be turned over to the owners for their use.

2.8 KEY CABINET:

1. Furnish a wall mounted key cabinet in grey neutratone finish with a capacity capable of containing all the keyed different and alike changes required for this project and an additional 20% greater quantity for future expansion.
2. Provide a complete cross-indexing system, including: 1.Hook number, 2.Key number, 3. Description of item to which key belongs.
3. It shall be the responsibility of the hardware supplier to receive the keys from the lock manufacturer. He shall then prepare a complete type-written cross-file index system as prescribed in the manufacturers key index manual. It shall also be the hardware supplier's responsibility to attach the keys to the fibre tags and to install on corresponding numbered hook in the key cabinet.
4. It shall be the general contractor's responsibility to install the key cabinet where directed by the Owner.
5. Key control systems of the following manufacturers will be acceptable for this project:
  - Telkee, Inc.
  - Key Control Systems, Inc.

2.9 DOOR CLOSERS:

1. All door closers for this project shall be the product of one manufacturer and shall have either a die cast aluminum or a cast iron case. The die cast aluminum shall be a special R14 aluminum alloy and shall contain a minimum of 14% silica for hardness to resist wear and minimize porosity of the aluminum case. Provide technical documentation regardless of which closer is proposed in order to verify that the door closer case is a minimum R14 aluminum alloy containing 14% silica for minimum porosity and wear, and designed for high tensile strength, without brittleness.
2. Door closers shall be full rack and pinion type construction, non handed and sized from 1 thru 6 in accordance with ANSI A117.1 handicap code.
3. All closers shall have separate adjustable, non critical key control valves, one each for the following:
  - (a) closing speed
  - (b) latching speed
  - (c) back check positioning valve and/or delayed action
4. Hydraulic fluid shall be of a type requiring no seasonal adjustment for varying temperatures.
5. The pinion shall be heavy duty double heat treated steel construction with a minimum 11/16" diameter.



6. The cylinder bore shall be no less than 1 1/2" diameter to provide maximum oil displacement, and to permit non-critical control of all valves.
7. The following door closer products shall be considered acceptable for this project:  
Sargent - 281 (handicap sized)
8. The hardware contractor shall insert in the hardware schedule, beside each door listing, the required degree of opening for each door. If the door swing is over 140 degrees, parallel arm type closers shall be used. Door closers mounted on corner brackets, or top jamb application, shall not be permitted. Where indicated in the hardware set numbers, provide a parallel track arm mounted on the hinge side of the door frame head.
9. Provide hold open arms, where specified, in accordance with the hardware set numbers.
10. Door closers with push-n-stop arms shall be provided for all exterior, out-swing doors and other openings as specified under hardware sets. They shall have heavy forged steel parallel arms and soffit plates attached to the frame by six (6) screws. The forged steel soffit plate shall have a positive stop bracket with an adjustable tension hold-open feature controlled with a slotted screw or control knob, permitting adjustment from hold-open to no hold-open and full restraint of door movement.
11. Where door closers are noted to require delayed action feature, provide closers as specified herein, but having a separate delayed action valve, to permit adjustment of delayed action cycle. When adjusted, the door closer shall close at a controlled rate of speed, through the delayed action cycle range.
12. The installing contractor shall be responsible for proper installation of door closers in accordance with degree of opening indicated on hardware schedule. The installing contractor shall be responsible for adjustment of the three individual valves, for proper control as follows:
  - 1- closing speed,
  - 2- latching speed,
  - 3- delayed action, or backcheck.

The installing contractor shall be responsible for providing the correct spring power adjustment, from size 1 thru 6, as individually required for each door leaf and as set forth in Part III Execution.
13. Where top rail of door is insufficient in height to mount the closer directly to the rail, drop bracket plates shall be provided.
14. Provide sex nuts and bolts mounting for closers on all wood doors without hardwood internal blocking.

2.10 MAGNETIC DOOR HOLDERS

1. Where called for in the hardware set numbers, provide a wall mounted electromagnetic door release.
2. The hardware supplier shall verify the voltage required for this item.
3. Products of the following manufacturers will be acceptable for this project:

Sargent	1500 Series
Norton Door Controls	6900 Series

2.11 DOOR STOPS:

1. It shall be the responsibility of the hardware supplier to provide door stops for all doors in accordance with the following requirements.
2. Wall type bumpers with a concealed type flange shall be used wherever possible and shall be one of the following:
  - Ives - 407 1/2
  - Hager - 236W
  - Rockwood - 409
3. Where wall type bumpers cannot be used, such as on unreinforced partitions or in situations where door comes in contact with material such as glass, or any other obstruction, provide dome type floor stops of the proper height.
  - Ives - 436, 438
  - Hager - 241F, 243F
  - Rockwood - 440, 442
4. Exterior doors striking masonry and other doors specified to have door holders shall have cast bronze wall or floor type door stops holders with hook or staple to engage door and to selectively hold in open position. The following will be acceptable:
  - Ives - 452-5
  - Hager - 270D

2.12 SURFACE OVERHEAD DOOR STOP & HOLDER:

1. Exterior doors, except for those requiring door closers, and where specified, shall be provided with a surface mounted, extra heavy duty overhead door holder and shock absorber. Each door holder shall have a case hardened steel engagement and stop plate, placed between the bronze arms at center pivot. The hold-open feature shall engage and release the door automatically by means of a small handle. The shock absorber shall be encased in an extruded bronze door bracket to be applied to the door by no less than four (4) sex bolts.
2. The following products will be acceptable:
  - Glynn-Johnson - 90H Series

2.13 SILENCERS:

1. Provide rubber silencers for all interior pressed steel (hollow metal) frames. Silencers shall be pneumatic type 1/2" diameter with 1/8" projection.
2. Provide 3 silencers for the strike jamb of metal frames for single doors and two for the head for metal frames for pairs of doors. Provide 4 silencers for the strike jamb for frames for single dutch doors.

2.14 PUSH - KICK - MOP ARMOUR PLATES:

1. Push plates shall be .050 gauge solid bronze 16" high by 8" wide.

2. Kick plates shall be .050 gauge solid bronze 8" high by 2" less door width.
3. Kick plates shall be applied on the push side of all doors where noted.
4. Armor plates shall be .050 gauge solid bronze 40" high by 2" less door width.

2.15 PULLS:

1. Pull units for doors with exit devices and for doors with push plates shall be 1" diameter solid bronze round bar, 10" center to center, with 2 1/2" projection and 1 1/2" clearance. Where used with exit devices, the pull unit shall be through bolted top and bottom. Locate pull below the cylinder for doors with exit devices.

2.16 SURFACE BOLTS:

1. Surface bolts where required shall be steel cadmium plated, having a fire rating for up to 3 hours (A Label). Surface bolts shall have concealed screw fastening. Top bolts shall have a surface applied universal strike and bottom bolts shall have a flat strike.
2. Where surface bolts are specified, it is required that both top and bottom bolts be supplied. For doors up to 7'-6" the top bolt length shall be 8". Where doors are over 7'-6" in height the surface bolt length shall be increased in increments of 6" for each 6" of additional door height.
3. The following products will be acceptable:
  - Glynn-Johnson - 1630
  - Ives - 453
  - Hager - 275D

2.17 FLUSH BOLTS:

1. Extension flush bolts shall have forged bronze face plate with extruded brass lever and with wrought brass guide and strike. Rods for flush bolts shall be 12" steel or brass for doors up to 7'-6" in height. Where doors are over 7'-6" in height the flush bolt rod length shall be increased in increments of 6" for each 6" of additional door height. Plate size shall be 6 3/4" x 1" to meet ANSI A115 and SDI specifications. Bolt projection shall be 5/8".
2. Floor strikes for flush bolts shall be dustproof type cast or extruded bronze with cast bronze floor plate minimum 3 1/2" x 1 5/8" with masonry anchors for concrete floors. Provide a dustproof strike, for sill application, for all bottom flush bolts for all pairs of doors.
3. The following products will be acceptable:
  - Ives - 458
  - Hager - 282D

2.18 SELF-LATCHING FLUSH BOLTS:

1. All pairs of wood or hollow metal doors, having a fire rating listing of A (3 hour) B (1 hour or 1 1/2 hour) and C-D or E, shall require self-latching flush bolts, one top and one bottom for each inactive leaf. Upon closing, the active leaf shall actuate the cam which in turn shall move the lever in a vertical direction, thus projecting the bolt to its full 3/4" throw. The bolt mechanism shall have vertical adjustment of up to 2 inches.
2. Floor strikes for flush bolts shall be dust-proof type, cast or extruded bronze, with cast floor plates minimum 3 1/2" x 1 5/8" with masonry anchors for concrete floors.

3. The following products will be acceptable:
  - Glynn-Johnson - FB9 - FB10
  - Ives - 356 - 357
  - Hager - 293D - 294D

2.19 COORDINATORS:

1. Where pairs of fire rated doors occur, with astragals, provide a non-handed, steel housing, automatic coordinating device. This coordinator shall be surface applied to the underside of the stop at the head and shall contain an active door holding lever and a trigger mechanism for the inactive leaf. When the active door leaf is opened, the door lever for that leaf shall project into the opening, and hold the active leaf in the open position until the inactive door activates the trigger mechanism to allow the active leaf to close.
2. The coordinator shall be furnished in the correct length to span the entire width of the opening.
3. The finish of the coordinator shall be prime coat to receive the same finish paint as the door frame.
4. The following products will be acceptable:
  - Ives - 900 Series
  - Glynn Johnson - COR Series
  - Hager - 297D

2.20 HANDICAP DOOR OPERATORS:

1. The operator shall be a Horton 7000 series low energy electro-mechanical door operator.
2. The operator shall be powered open with a DC motor working through six reduction gears.
3. Closing shall be by spring force.
4. The motor is to be off when the door is in the closing mode.
5. The door can be manually operated with power on or off without damage to the operator.
6. The operator shall be actuated by No. C-1260 push plate switch mounted on both sides of door opening.
7. The operator shall include the following variable adjustments to enable it to comply with ANSI A156.19
  - Opening speed - 3 to 5 Seconds
  - Closing speed - 3 to 5 Seconds
  - Time Delay before Closing - 2 - 25 Seconds
8. The operator shall be mounted in an extruded aluminum cover.
9. It is the responsibility of the finish hardware supplier to include installation of the handicap door operator. This includes installation of this unit only. All wiring (line voltage and low voltage) to be done by the Electrician.
10. All wiring information to be supplied to the general contractor in a timely fashion by the finish hardware supplier.

2.21 THRESHOLDS - WEATHERSTRIPPING – DOOR BOTTOMS:

1. For all exterior doors not requiring floor closers, provide a flat extruded or cast aluminum threshold as detailed on drawings. Anchor thresholds with no less than four (4) machine screw anchors for 3'0" lengths. Provide non ferrous solid brass or stainless steel screws.
2. For all exterior hollow metal doors, provide an extruded aluminum perimeter seal with

neoprene gasketing material (weatherstripping) for head and jambs. The neoprene seals shall be an airfoil design to permit full and positive closure between door and jamb. The continuous aluminum brackets shall be applied on the stop with stainless steel sheet metal screws at the

corner of the rabbet located so as to provide full closure at the head and jamb perimeters.

Where the door comes in contact with the frame, the maximum projection for the continuous aluminum weatherstripping brackets shall be no more than 1/4".

3. Weatherstripping (gasketing material) shall be classified by Underwriters Laboratories for application on fire door frames, for openings rated up to 3 hours.
4. The door bottom seal for exterior doors shall be concealed in the bottom of the door and shall be a flexible synthetic vinyl that will not take a formal set, nor break or flake in cold weather. The door bottom seal shall extend the full width of the door and shall also extend below the door bottom and compress against the top for the threshold, for complete closure. The door bottom seal shall be fastened to the recessed channel with 3 or 4 screws through the seal or the seal chassis.

2.22 FINISH:

1. With the exceptions of hinges, door closers, plates, coordinators, thresholds and weatherstripping, all hardware items shall be furnished in satin chrome 26D
2. Exceptions are as follows:
  - Hinges: Satin Chrome 26D
  - Coordinators: USP
  - Door Closers: Sprayed Aluminum
  - Plates: Satin Chrome 26D
  - Push Bars: Satin Chrome 26D
  - Pulls: 10B Satin chrome 26D
  - Thresholds: Clear Anodized
  - Weatherstripping: Clear Anodized
  - Exit Devices for Aluminum Doors: 32D Satin Stainless Steel
  - Door Closers for Aluminum Doors: Sprayed Aluminum

2.23 HARDWARE SET NUMBERS:

1. See door schedule for required hardware at each door.

PART 3 - EXECUTION:

- 3.1 INSPECTION: It shall be the general contractors responsibility to inspect all door openings and doors to determine that each door and door frame has been properly prepared for the required hardware. If errors in dimensions or preparation are encountered, they are to be corrected by the responsible parties prior to the installation of hardware.
- 3.2 PREPARATION: All doors and frames, requiring field preparation for finish hardware, shall be carefully mortised, drilled for pilot holes, or tapped for machine screws for all items of finish hardware in accordance with the manufacturers templates and instructions.

3.3 INSTALLATION/ADJUSTMENT/LOCATION

- A. All materials shall be installed in a workmanlike manner following the manufacturer's recommended instructions.
- B. Exit devices shall be carefully installed so as to permit friction free operation of crossbar, touch bar, thumb latch, lever or knob. Latching mechanism shall also operate freely without friction or binding.
- C. Door closers shall be installed in accordance with the manufacturer's instructions. Each door closer shall be carefully installed, on each door, at the degree of opening indicated on the hardware schedule. Arm position shall be as shown on the instruction sheets and required by the finish hardware schedule.
- D. The adjustments for all door closers shall be the contractor's responsibility and these adjustments shall be made at the time of installation of the door closer. The closing speed and latching speed valves, shall be adjusted individually to provide a smooth, continuous closing action without slamming. The delayed action feature or back check valve shall also be adjusted so as to permit the corrected delayed action cycle or hydraulic back check cushioning of the door in the opening cycle. All valves must be properly adjusted at the time of installation. Each door closer has adjustable spring power capable of being adjusted, in the field, from size 2 thru 6. It shall be the contractors responsibility to adjust the spring power for each door closer in exact accordance with the spring power adjustment chart illustrated in the door closer installation sheet packed with each door closer.
- E. Installation of all other hardware, including locksets, push-pull latches, overhead holders, door stops, plates and other items, shall be carefully coordinated with the hardware schedule and the manufacturers instruction sheets.
- F. Locations for finish hardware shall be in accordance with dimensions listed in the pamphlet "Recommended locations for Builders' Hardware" published by the Door and Hardware Institute.

3.4 FIELD QUALITY CONTROL: Upon completion of the installation of the finish hardware, it shall be the responsibility of the finish hardware supplier to visit the project and to examine the hardware for each door on which he has provided hardware and to verify that all hardware is in proper working order. Should he find items of hardware not operating properly, he should make a report, in writing, to the general contractor, advising him of the problem and the measures required to correct the problem.

3.5 PROTECTION: All exposed portions of finish hardware shall be carefully protected, by use of cloth, adhesive backed paper or other materials, immediately after installation of the hardware item on the door. The finish shall remain protected until completion of the project. Prior to acceptance of the project by the architect and owner, the general contractor shall remove the protective material exposing the hardware finish.

3.6 CLEANING: It shall be the responsibility of the general contractor to clean all items of finish hardware and to remove any remaining pieces of protective materials and labels.

END OF SECTION