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087100 - Door Hardware

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SECTION 08 7100 - DOOR HARDWARE

1.1 SUMMARY

- A. UNH Hardware Services is to receive updated electronic copies of door and hardware information for all new construction and renovation projects as a cost of the project.
- B. See Chapter 5, Division 01, Section 017700.1.1.B.1.i Closeout Procedures - Project Record Documents for equipment list requirements for all equipment provided in this section.
- C. See Section 28 1000, Special Communications Systems for lock and latch sets and other equipment associated with card access locks.
- D. Knox Box Key Box Refer to Chapter 5, Division 10, Section 109000
- E. "Builders Hardware" includes items known commercially as builder's hardware which are required for swing, sliding and folding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame.
- F. The extent of finish hardware required is indicated on drawings and in schedules.
- G. The types of finish hardware required include the following:
 - 1. Hinges.
 - 2. Lock cylinders and keys.
 - 3. Lock and latch sets. (See 1.1 – C)
 - 4. Bolts.
 - 5. Exit devices.
 - 6. Push/pull units.
 - 7. Miscellaneous door control devices.
 - 8. Door trim units.
 - 9. Protection plates
 - 10. Weather-stripping for exterior doors
 - 11. Thresholds.
- H. If the project is a minor renovation retain the existing building keying system.
- I. Supplier: A recognized architectural finish hardware supplier, with warehousing facilities, who has been furnishing hardware in the project's vicinity for a period of not less than 2 years. Supplier must employ an experienced architectural hardware consultant who is available, at reasonable times during the course of the work, for consultation about project's hardware requirements. Supplier must have a warehouse within 100 miles of Durham, NH.
- J. Product Data: Submit manufacturer's technical product data for each item of hardware in accordance with Chapter 5, Division 01. Include whatever information may be



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necessary to show compliance with requirements, and include instructions for installation and for maintenance of operating parts and finish. This material should be marked Confidential, Attention UNH Hardware Services Supervisor.

- K. Hardware Schedule: Submit final hardware schedule in the manner indicated as follows. Coordinate hardware with doors, frames and related work to ensure proper size, thickness, hand, function and finish of hardware. Based on finish hardware indicated, organize hardware schedule into "hardware sets" indicating complete designations of every item required for each door or opening.
 - 1. Type, style, function, size and finish of each hardware item.
 - 2. Name and manufacturer of each item.
 - 3. Fastenings and other pertinent information.
 - 4. Location of hardware set cross-referenced to indications on drawings both on floor plans and in door and frame schedule.
 - 5. Explanation of all abbreviations, symbols, codes, etc. contained in schedule.
 - 6. Mounting locations for hardware.
 - 7. Door and frame sizes and materials.
 - 8. Keying information.

- L. Submittal Sequence: Submit schedule at earliest possible date particularly where acceptance of hardware schedule must precede fabrication of other work (e.g., hollow metal frames) which is critical in the project's construction schedule. Include with schedule the project data, samples, shop drawings of other work affected by finish hardware and other information essential to the coordinated review of hardware schedule. Submit initial draft of schedule along with the essential product data in order to facilitate the fabrication of other work (e.g., hollow metal frame) which is critical in the project construction schedule. Submit final draft of schedule after samples, product data, coordination with shop drawings of other work, delivery, schedules, and similar information has been completed and accepted. Submittals shall be provided to UNH Hardware Services through the Project Manager.

- M. Keying Schedule: Submit separate detailed schedule indicating clearly how the Owner's final instructions on keying of locks has been fulfilled.
 - 1. Lock shop will work with the occupants through the Project Manager to set up keying.
 - 2. Contractor shall review keying schedule with UNH Hardware Services prior to issuing keying.
 - 3. For minor/partial renovations/additions retain the building's keying system.

- N. Templates: Furnish hardware templates to each fabricator of doors, frames and other work to be factory-prepared for the installation of hardware. Upon request, check shop drawings of such other work, to confirm that adequate provisions are made for proper location and installation of hardware.

- O. Product Handling:



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1. Tag each item or package separately, with identification related to final hardware schedule, and include basic installation instructions with each item or package.
 2. Packaging of Hardware is the responsibility of the supplier. As material is received by hardware supplier from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set number to match set numbers of approved hardware schedule. Two or more identical sets may be packed in the same container.
 3. Inventory Hardware jointly with representatives of the hardware supplier and the hardware installer until each is satisfied that the count is correct.
 4. Deliver individually packaged hardware items at the proper times to the proper locations (shop or project site) for installation.
 5. Provide secure lock-up for hardware delivered to the project, but not yet installed. Control handling and installation of hardware items which are not immediately replaceable, so that completion of the work will not be delayed by hardware losses, both before and after installation.
- P. Tool and Maintenance Instructions for Maintenance: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance and removal and replacement of finish hardware.
- Q. All locks must meet ANSI specification A156.13 tested and listed for series 1000, Grade 1, operational, grade 2 security. With a five (5) year limited warranty and all locks must be compatible with ASSA Twin 6000 Series. All locks and latches shall be 2 3/4" BS.
1. The Contractor will be responsible for supplying and installing temporary cylinders for all locks for the project and for supplying and installing the permanent cylinders as part of the project.
- R. Building Card Access System:
1. Contractor shall coordinate with UNH Hardware Services and UNH Housing for the installation of all card access systems.
 2. System purchases shall be consistent with material and equipment used for existing card access to maintain continuity with existing and future card reader projects on the University campus. UNH Housing will review and provide assistance to the contractor in the installation and commissioning of all card access systems.
 3. Card Access systems shall be coordinated with the electrical subcontractor's work.

PART 2 - PRODUCTS

- 2.1 General: Manufacturer's product designations: one or more manufacturers are listed for some hardware types required. Provide either the product designated, or where more than one manufacturer is listed, the comparable product of one of the other



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manufacturers which comply with requirements including those specified elsewhere in this section, Optional manufacturers shall not be used unless authorization is given in writing by UNH Hardware Services.

2.2 MATERIALS AND FABRICATION

- A. Hand of door: drawings show direction of slide, swing or hand of each leaf. Furnish each item of hardware for proper installation and operation of door movement as shown.
- B. Base Metals: produce hardware units of basic metal and forming method indicated, using manufacturer's standard metal alloy, composition, temper and hardness, but in no case of lesser (commercially recognized) quality than specified for the applicable hardware units by applicable ANSI A156 series standard for each type hardware item and with ANSI A156.18 for finish designations indicated. Do not furnish "OPTIONAL" materials or forming methods for those indicated, except as otherwise indicated.
- C. Fasteners: provide hardware manufactured to conform to published templates generally prepared for machine screw installation. Do not provide hardware which has been prepared for self-taping sheet metal screws, except as specifically indicated.
- D. Furnish screws: for installation with each hardware item. Provide Phillips flat-head screws except as otherwise indicated. Finish exposed (exposed under any condition) screws to match hardware finish or, if exposed in surfaces or other work, to match finish of such other work as closely as possible, including "prepared for paint" in surfaces to receive painted finish.
- E. Provide concealed fasteners: for hardware units which are exposed when door is closed, except to extent no standard units of the type specified are available with concealed fasteners. Do not use thru-bolts for installation where bolt head or nut on the opposite face is exposed in other work, except where it is not feasible to adequately reinforce the work. In such cases, provide sleeves for each thru-bolt or use sex screw fasteners.
- F. FINISH: With the exception of door closers, "Precision exit devices", thresholds and weather-stripping, all hardware items shall be furnished in US10, US10B, US32D, or US26D finish, or as specifically approved otherwise by UNH.

Door Closers: Manufacturer's Standard Gray or Tan

Thresholds: Mill Finish Aluminum.

Precision Exit Device: Use US32D.

2.3 HINGES

- A. All hinges shall be steel or solid bronze, ball bearing non radius type. All hinges for exterior doors shall be bronze.



B. The following is a guide for hinge size and type required for this specification:

	<u>Manufacturer</u>	<u>Exterior</u>	<u>Interior</u>
1 3/4" Doors up to 3'0" wide	Stanley Hager	FBB191-4 1/2" BB1191-4 1/2"	FBB179-4 1/2" BB1279-4 1/2"
1 3/4" Doors over 3'0" wide	Stanley Hager	FBB199-4 1/2" BB1199-4 1/2"	FBB168-4 1/2" BB1168-4 1/2"

- C. The width of hinges shall be sufficient to clear all trim.
- D. Two hinges shall be provided for each door leaf up to and including five feet (5') in height. An additional hinge shall be required for each additional two and one half (2'6") or fraction thereof in height. Provide a minimum of 4 hinges for doors 2" thick or thicker regardless of height.
- E. All lockable exterior doors, and all lockable out swinging interior doors so indicated in hardware sets, shall be furnished with non-removable pins (NRP). Exceptions are fire, smoke, and stairwell doors.
- F. Where listed in hardware sets use Stanley Spring Hinge #2060-R, Hager 1250. Refer to finish section for hinge finish.

- 1. ALL RESIDENCE HALL DORMITORY ROOMS, WITH FIRE-RATED DOORS, SHALL HAVE SPRING LOADED HINGES OR DOOR CLOSERS.

G. Installation of Stanley Spring Hinges:

- 1. Spring hinges shall only be mounted on center and/or bottom hinge location (never on top hinge location).

- H. Half (1/2) surface hinges shall only be used in Fire, Smoke, Stairwell and Hall Doors.
- I. Double Acting Spring Hinges (where required): shall be Bommer type 3029, 3023, 3024. Size to be determined by size and weight of door. Three (3) hinges shall be used. Center hinge shall be placed as close as possible to top hinge for maximum support.
- J. Continuous hinges as manufactured by Pemko or Select, are permitted.

2.4 LOCKSETS AND LATCHSETS

- A. General: All lever handle locks shall be mortise.
- B. All Locksets and Latchsets shall be Lever Handle Mortise - Best 45H Series Heavy Duty with 15H, 14H or 3H trim.
 - 1. Substitution of the following may be used only with written authorization of UNH Hardware Services:



- a. Schlage L Series Heavy Duty, with L03, L06 or L17 trim.
- b. Marks Mortise Lock.

C. Locks shall be compatible with room function, manufactured from heavy wrought steel, zinc dichromate finish. Minimum thickness of .093. Locks are to have adjustable armored front. Latchbolts to be with full 3/4" throw. No plastic delrin or eelcon parts will be acceptable. Deadbolts shall be full 1" throw with hardened steel inserts. Strikes are to be made of brass, bronze or stainless steel with a full curved lip.

1. LOCK FUNCTIONS: THE FOLLOWING LIST, ALTHOUGH NOT ALL INCLUSIVE, ADDRESSES MANY LOCK FUNCTIONS USED AT THE UNIVERSITY OF NEW HAMPSHIRE:

a. Closets	F01 Passage
b. Single person bathrooms	F19 Privacy
c. Offices (indiv. and suites)	F04 Office lock
d. Housekeeping closets	F05 Classroom lock
e. Classrooms	F05 Classroom lock
f. Elec/Mech/ /Elev machine rms.	F07 Storeroom lock
g. Telecom*	F07 Storeroom lock
h. Main building entrances	F09 Public Entrance
i. Dorm Rooms (individual and suites)	F20 Office lock w/ deadbolt*
j. Apartments (individual bedrooms)	F20 Office lock w/ deadbolt*
k. Apartments (entry door)	F20 Office lock w/ deadbolt*

* Where card access control is not provided.

- D. Lock cases to be closed in on all sides to protect inner mechanism from foreign matter. All locksets regardless of trim shall be listed by Underwriters Laboratories for Class A and lesser labeled doors.
- E. All trim is to be thru-bolted through the lock case to assure correct alignment and proper operation. Provide knurled tactile warning on trim at doors to hazardous area; coated or surface applied warning is not acceptable.
- F. Locksets shall conform to Federal Specifications FFH-106 Series 86 and 87 and be certified as meeting ANSI A156.13 BHMA tested and listed for series 1000, Grade 1, Operational, Grade 2 Security with a five year limited warranty.
- G. For existing conditions or minor renovations hardware type that is presently existing in the immediate area may be used providing that it meets ADA and UNH Hardware Standards.

2.5 MORTISE DEAD BOLTS

- A. Arrow - N Series.



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- B. Substitution of the following may be used only with the authorization of UNH Hardware Services: Best 48H Series.

2.6 TUBULAR DEADBOLT

- A. Tubular deadbolts shall be Lori 4520 Series: No Substitutions shall be allowed

2.7 AUXILIARY PUSH BUTTON LOCKS

- A. Push button locks .
 1. Schlage Co. 100 Series
 2. Kaba Eplex 5000
 3. Simplex 900 Series

2.8 MORTISE CYLINDERS

- A. All mortise cylinders shall be 1 1/4" in length and shall include cylinder rings.

2.9 KEYING

New keying systems shall be:

- A. The keying system shall be the ASSA TWIN Exclusive, Auxiliary = 2KA723 – 106/851 – TWIN, EXCLUSIVE ACADEMIC = 2KA600 – 227/851 – TWIN, EXCLUSIVE. This is a high security system and total compliance is essential.
- B. All cylinders shall be designed as ASSA Twin E-6000.
 1. All renovation work shall remain with keying system already in that building.
- C. Furnish the following quantities of keys:
 1. Three (3) Master Keys for each Master Key Set.
 2. One (1) Change Keys for each Cylinder. Except mechanical rooms and dogging cylinders which we would need zero keys.
- D. All cylinders, master keys and all change keys shall be sent Registered Mail, Confidential Attention: UNH Hardware Services Supervisor, Leavitt Center, 6 Leavitt Lane, Durham, NH 03824.
- E. Provide one bitting list with combination, and one expansion sheet for no less than 25 rekeys sent, Registered Mail, Confidential, Attention: UNH Hardware Services Supervisor, 6 Leavitt Lane, Leavitt Center, Durham, NH 03824.



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- F. Provide 25 additional cut keys per master key under next available changes, stamped key and side bar codes.
- G. Provide 15 extra cylinders for each style supplied.

2.10 EXIT DEVICES

A. General: All devices shall be "low profile" touch pad type as manufactured by Von Duprin or Precision with functions as listed. Horizontal touch pad to be brass, bronze, stainless steel or extruded aluminum construction. Mounting screws to be concealed. All non-fire-rated devices shall have cylinder dogging with standard six cylinder keyed to existing system as directed by Owner.

B. All devices are UL listed for casualty.

	VON DUPRIN
Sgl. Ext. Dr w/Trim	99L-NL
Sgl. Ext. Dr (exit only)	99EO
Pr. Ext. Dr w/Trim & Mullion	99L-NL
Pr. Ext. Dr EO & Mullion	99EO
Sgl. Int. Dr w/Trim (Fire Rated 1/2 hour)	For Fire Rated
Pr. Int. Dr. w/Trim (Fire Rated 1/2 hour)	Doors use Von Duprin
Pr. Int. Dr. w/Trim (Fire Rated)	99L-F w/appropriate trim

C. Precision Exit Devices: Series - APEX, is acceptable.

1. Rim Type:

- a. UL Listed 2100 Series.
- b. UL Fire Rated: FL2100 Series.

2. Surface Vertical Rod:

- a. UL Listed 2200 Series.
- b. UL Fire Rated: FL2200 Series.

3. Mortise:

- a. UL Listed 2300 Series.
- b. UL Fire Rated: FL2300 Series.

- 4. Cylinder dogging shall be used on all UL Apex listings.
- 5. Outside trim shall be 9L or 9LC.
- 6. Function as required. All out (exterior) doors shall be N/L (night latch)

D. The use of removable mullion on DBL doors whenever possible to minimize the use of vertical rods.



- E. No concealed vertical rods shall be used (NO EXCEPTIONS).^[BD1]
- F. No other substitutions will be permitted.

2.11 ALARMED EXIT DEVICES

- A. Manufacturers: Von Duprin or Precision.
 - 1. Von Duprin – Use 98 or 99 series in stainless steel for rim or mullion latching. Fire rated as applicable.
 - 2. Precision – Use Apex 2100 series for rim devices, 2200 series for exposed vertical rod devices, and 2300 series for mortise devices.

2.12 EXIT ALARMS

- A. Exit alarms for latch side of door, use DETEX EA 501 SERIES.
- B. Exit alarms for hinge side of door, use DETEX EX 502 SERIES or equivalent.
- C. Hardwired exit alarms shall be DETEX EA2500 SERIES, AC-powered. Surface mounted for new construction or renovations. One door in the building shall have an outside cylinder for deactivation. Door to be determined by the Owner.

2.13 DOOR CLOSERS

- A. All door closers shall have fully hydraulic, full rack and pinion action with high strength cast iron cylinders. Checking fluid shall be high lubricity and low pour point. Hydraulic regulation shall be tamper proof, non-critical screw valves adjustable by hex wrench. Closers shall have separate adjustments for latching speed, closing speed and hydraulic back check. All closers shall be of one manufacturer and shall have a minimum of a five (5) year warranty.
 - 1. Closer shall be LCN SERIES 4010, or 4110 SERIES.
 - 2. Fore delayed action use LCN 4010-DEL Series.
 - 3. All exterior doors shall have stop motion by back check or floor stop only. Cush-n-Stop or Cush-n-Stop with hold open shall not be allowed. Door closers shall be installed on the least public side of door.
 - 4. Use parallel arm whenever possible.
 - 5. Provide hold open arms as listed in hardware sets.
 - 6. Provide delayed action closers as listed in hardware sets.
 - 7. Soffit shoe with stop projection shall not be allowed (NO EXCEPTIONS).
 - 8. No concealed floor or jamb mounted closers shall be used.
 - 9. Finish shall either match other hardware finishes or may be a separate but consistently applied finish. Closer covers may be plastic.
 - 10. Designer to minimize use of door closers only to locations necessary.



11. Where doors are equipped with closers and also exist across a corridor circulation path which is a part of the accessible route of the building, or into a exit stairwell, or other locations as shown on the plans and schedules, such doors shall also be equipped with a code-complying hold open device to maintain them in the normally open position.

2.14 PUSH/PULL HARDWARE

- A. Push/Pull handles shall be BURNS #8426b Push plates shall be BURNS #54X4"X16"
- B. Offset pull handles shall not be allowed (NO EXCEPTIONS).
- C. Flush pull hardware shall not be allowed. Exceptions are sliding closet doors and pocket doors.

2.15 DOOR STOP, BUMPERS AND HOLDERS

- A. General: It shall be the responsibility of the hardware supplier to provide door stops for all doors.
- B. Floor type bumpers shall be used wherever possible and shall be one of the following:
 1. Ives 436, 438, 436x435, 438x437.
 2. Glynn Johnson – equivalent.
 3. Rockwood – equivalent.
- C. Where necessary, determined by door height and floor type use Ives- 444 or 448.

2.16 WALL BUMPERS

- A. Where floor type bumpers cannot be used, such as on unreinforced partitions or in situations where door comes in contact with material such as glass, provide wall type stops of the following:
 1. Ives: 443, 447, or 406, 407, 408, 406 1/2, 407 1/2 (must be wrought).
 2. Baldwin – equivalent.
 3. Rockwood – equivalent.

2.17 STOPS AND HOLDERS

- A. Use Ives-445, 446, 449, 445, or 452 where possible.
- B. Where wall or floor hold opens cannot be used, hold open arm shall be used in conjunction with LCN closers.



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- C. Hold opens for fire and smoke doors and/or wherever remote control or automatic closing doors are required, recommended manufacturers will be RIXON/FIREMARK-900 SERIES OR EQUIVALENT.

2.18 SILENCERS

- A. Unless furnished by metal door frame manufacturer, provide rubber silencers for all interior pressed steel (hollow metal) frames. Silencers shall be pneumatic type 1/2" diameter with 1/8" projection.
- B. Manufacturers:
 - 1. Ives 20 series for metal or equivalent.
 - 2. Ives 21 series for wood or equivalent.
- C. Provide three (3) silencers for the strike jamb of metal frames for single doors and two (2) for the head for metal frames for pairs of doors.
- D. Provide four (4) silencers for the strike jamb for frames for single Dutch doors.

2.19 KICK-MOP ARMOR PLATES

- A. Kick plates shall be .050 gauge solid stainless steel 8" high by 1/1/2" less door width for single doors and 1" less door width for pairs of doors except where required by BARRIER FREE DESIGN STANDARDS.
- B. Kick plates shall be applied on the push side of all doors where noted.
- C. Armor plates shall be .050 gauge solid stainless steel 40" high 1 1/2" less door width for single doors and 1" less door width for pairs of doors.

2.20 THRESHOLDS

- A. Thresholds used for exterior doors shall be extruded aluminum as manufactured by Sealeze Corporation; or equivalent.
- B. Saddle type where applicable.
- C. Latch track type for vertical rod panic hardware.
- D. Frost barrier thresholds may be used on exterior doors as manufactured by Reese Enterprises Inc.
- E. All thresholds shall have horizontal center supports to prevent sagging.
- F. Threshold thickness shall be:



1. Saddle type = .200" minimum.
2. Latch track type = .130" minimum, not to exceed .50".
3. Frost barrier type = .130" minimum.

G. Extruded brass or bronze thresholds may be used only when deemed extremely necessary to meet aesthetic requirements, and must be stuff mounted.

2.21 DOOR BOTTOMS AND SEALS

A. The University limits the use of door bottoms. When they are necessary, door bottoms and weather seals shall be mechanically fastened surface mounted. Mortised units are not allowed (NO EXCEPTIONS).

2.22 THRESHOLD HARDWARE

A. Interior shall be lead anchors with sheet metal screws. Thresholds 4 feet wide and less shall have 3 anchor points. Thresholds wider than 4 feet shall have anchors no further apart than 18".

B. Exterior threshold shall be lead anchored with brass/bronze screws, double anchor point – 3 on inner side, 3 on outer side. Same distance as A.

2.23 POWERED DOOR OPERATORS

Manufacturers: LCN, Gyro-tech, or Horton 7000.

2. Provide at least one leaf of the main entrance to a primary facility with a powered door operator. It is expected that a unit will be provided on the door to any single occupant universal access restroom. Operators for other doors may be warranted based on building size and entrance proximity to existing accessible routes. All powered door operators shall have the ability to operate the doors via a proximity reader, or remote.
3. Door operator buttons shall be separate in the case of pairs of doors in a series.
4. Door operator buttons shall be either square or round, with a minimum 4" diameter or dimension, blue in color, with the international symbol of accessibility displayed unless otherwise specifically approved. All transmitters shall use a 9-volt battery.
5. The maximum total-open time for a door shall be 13 seconds of which a maximum of 5 seconds being held in the fully open position in accordance with ANSI/BHMA A-156.19.
6. Infra-red or motion detecting operators shall only be used with the approval of Facilities Design and Construction, Energy Office, Affirmative Action Office, and UNH Hardware Services.



2.24 ELECTRONIC CARD ACCESS LOCKS

GENERAL – Card access is controlled by the Housing Department. The Housing Department will coordinate with the Lockshop. The Lockshop will provide hardware information.

1. Electronic Card Access Locks are defined as products that control, monitor, and or record the accessibility of University building doors. Electronic card access products can include electric mortise and cylindrical locks, electromagnetic locks, shear locks, electric strikes, card readers, biometric devices, and electronic exit device trim. These products may require supporting products, such as power supplies, interface panels, access control panels, and controllers in addition to software.
2. Determination of the proper hardware requirements is a function of budget, the physical building constraints, the level of security required, features needed for the physical devices, and the budget. The University Housing Department currently employs a networked system for access to residential housing and several other facilities.
3. . Any key not on the Great Grand Master will have a key in the Knox box.
4. Typically exterior doors are hardwired electric strikes or EL panic hardware. Interior doors can be a mixture of standalone, hardwired, or combo depending on application.

B. STAND-ALONE COMPUTER PROGRAMMABLE DEVICES

1. General: Defined as units that retain the access information in self-contained memory and do not regularly communicate with any hardware or software controls for other door openings. Stand-alone devices are preferred for existing buildings that were not wired (or are not able to be wired) to be part of a network, or in new construction where the cost implication is too excessive. Access information and programming the locking device is accomplished via either a PDA or laptop (Windows based) with programming cables at each lock.
2. Product Performance Criteria:
 - a. Number of users.
 - b. Battery Powered.
 - c. Available Credentials:
 - 1) Mag Cards, HID Prox, FOBs, Biometric, Cylinder Override.
3. Features:
 - a. Auto Lock/Unlock Schedules.
 - b. User Access Time Zones.
 - c. Holiday periods.
4. Products:



- a. Locknetics/Schlage CM Series (users =1,000 per, audit = 1,000 events per), Mag Card, Prox., FOB, Keypad, Key Override.
- b. Sargent Profile v.G1 Stand Alone Series (users =2,000 per, audit = 2,000 events per), Mag Card, Prox., FOB, Keypad, Key Override.
- c. Persona by Ving Card (users = 1,500 per, audit = 800 events per), Mag Card, Prox., FOB, Keypad, Key Override.
- d. Onity Integra (users = 3,000 per, audit = 1,100 events per), Mag Card.
- e. Saflok MT (users = 5,000 per, audit = 5,900 events per), Mag Card, Key Override.
- f. Kaba Solitaire Prox, (users = 3,000 per, audit = 800 events per), Keypad & Prox, Key Override.
- g. Kaba Solitaire Open Architecture (users = 1,000 per, audit = 800 events per), Mag Card, Key Override.

Hardware for Card Access: Exit doors in the “Card Access” system shall use either an electric strike, or electrified panic hardware. Electric strikes shall be used is noise is a problem

5. Electric Strikes: Shall be the HES 9600 or equivalent, for use with panic hardware, for use with other locks use the Von-Duprin 6000 Series, or equivalent.
6. Do not use the Trine 4800.
7. Electric Latch Retraction: Use the Von-Duprin 98/99 Series with the ‘EL’ option, or the Precision 2000 Series with the ‘ELR’ option.
8. Hinges: Use the EPT “Electric Power Transfer” such as Von-Duprin EPT-2, to run wire to the door hardware whenever possible, otherwise use the Hagar, or Stanley, ETQ hinges.

C. NETWORK DEVICES: Defined as units that rely upon a separate intelligent device to ascertain access information (typically a pc or server) for each access occurrence. The devices can be as simple as a card reader controlling an electric strike or electric lock, or a variety of devices connected in a wide area network physically (via wire) or via radio frequency and wiring. New construction is typically required to allow for the planning, wiring, and preparations for the physical connections.

1. The existing network system, administered by University Housing, is a hybrid combination of hard-wired components and RF components. The Server is networked to the Access Control Panels in the building, which are wired directly to card readers, to additional Reader Modules, or wired to other Panel Interface Modules that communicate with Schlage’s Wyreless Access locks.

D. The components of this system are:

1. Network software is C-Cure by Software House running on a Server/Client PC’s.
2. Server/Clients are networked to Access Control Panels.

3. Access Control Panels (ACP) are iStar Pro Sensormatic (Ethernet) by Software House.
 4. ACPs are hard-wired to:
 - a. Software House Integrated Card Readers RM1-MP Sensormatic Electric Strikes are home-runned separately back to the ACP.
 - b. RM4 Reader Module for Third Party Readers (Weigand) hard-wired to the Card Reader; Electric Strikes are home-runned separately back to the ACP.
 - c. Panel Interface Modules for the Wyreless Access Locks Supports up to 16 locks per PIM. The PIM uses RF technology to communicate with the Wyreless Access Lock hereby avoiding the wiring from each PIM to each door unit. The access control intelligence resides in the PIM.
 - d. Wireless Access Lock supports Mag Card, Prox., Key Override credentials communicates with the PIM which determines accessibility of user.
- E. Additional Hardware Options:
1. Third Party Card Readers or Locks (wired to the RM4): Any device that supports Weigand protocols should be able to Interface with the RM4 reader
 2. Electric Strikes.
- F. Competing wired network products that could be utilized in new facilities include:
1. Schlage VIP Open Architecture.
 2. Sargent v.N1 Networked Access Control (Weigand) Prox and/or Keypad.
 3. Best IDH MAX (Mag Card, Prox, Keypad).
- G. Wireless, Networked Card Access offered by Omni Locks allows access control without requiring communication wiring in the building. The three components of the system are:
1. Network software, WAMS (Wireless Access Management Solution), that runs on MS Windows XP Professional (non-server) with SQL database The host computer connects to the Portal Gateways via:
 - a. Wireless 802.11G.
 - b. Other RF Carriers.
 - c. Ethernet 10/100/1000 BaseT.
 2. Portal Gateways which support 16, 32, 64, or 128 reader locks per gateway. They are simply an extension of the communication network. Gateways can also connect to other gateways to extend their range.
 3. WAMS Reader Locks, which store the access decision data (not stored at the Portal Gateway). WAMS Reader locks support Keypad, Mag Stripe, HID Prox, Mifare Smart Card, contactless RFID card credentials.



4. Individual reader locks can support up to 65,000 users per lock and 89,000 audit events, and contain the Door Switch Monitor, Lock Position Sensor, and REX as part of the lock. Existing or standalone Omnilocks can be upgraded to be Wireless with a field upgrade kit.

END OF SECTION 08 7100