APPENDIX 13
SPECIAL STANDARDS FOR
DEPARTMENT OF HOUSING AND DINING SERVICES

1. **LOCK STANDARDS:**

<table>
<thead>
<tr>
<th>STANDARD</th>
<th>TYPE/MANUFACTURER</th>
<th>SYTLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Door Closure</td>
<td>LCN 4041 or 4111</td>
<td>Finish 26D or Stat depending where Must be installed with thru bolts and machine screws</td>
</tr>
<tr>
<td>Panic Bar</td>
<td>Von Duprin 99 Rim Panic device</td>
<td>Finish 26D or US10 Depending where</td>
</tr>
<tr>
<td>Mortise Lock</td>
<td>ML2267 Corbin Russwin NSM trim or equivalent locks with approval Onity Integra 3 stand alone with deadbolt</td>
<td></td>
</tr>
<tr>
<td>Lever lock</td>
<td>Schlage “D” series vandal resistant or equivalent with approval</td>
<td>Finish 26D or US10 Depending where</td>
</tr>
<tr>
<td>Push and Pull plates</td>
<td>Rockwood</td>
<td></td>
</tr>
<tr>
<td>Kick plates</td>
<td>Rockwood</td>
<td></td>
</tr>
</tbody>
</table>

USE THESE STANDARDS WHEN DESIGNING WORK WITHIN UCB STUDENT HOUSING & DINING FACILITIES.

2. **BATHROOM STANDARDS:**

- Delta lavatory faucet 501wf
- TOTO auto flush TETIDNCR-32 flush valve
- TOTO floor mount water closet CT705 color Cotton
- TOTO wall mount water closet CT708 color Cotton
- Bobrick bathroom partitions Sierra series.
- Tones series tile from Spectra flooring for the walls.
- Esquire tile Ashanti series for the floor.
- Epoxy grout for the floor.
- Non-sanded grout for the walls
- Corian shower walls, counter tops, sinks and shower pans.
- Cement board paneling for tile sub surface
- Esquire tile Ashanti series for the floor.
- Tile: floor to ceiling on all walls except shower walls (Corian Panels) in bathrooms

3. **ELECTRICAL???”
- VCT in rooms; no carpet
- Sound proof hall director apartment

**LEEDS??????**
- No exposed pipes or conduits
Any exposed conduits including telephone/data to be painted

When installing new pumps use (Grundfos).

4. PLUMBING STANDARDS
   In sink erator disposers model Pro SS
   Delta valves on kitchens, lavatories and bathtubs.
   Spirovent air eliminators
   Armstrong Rada Thermostatic Mixing Valve
   Buderus high efficiency cast iron boilers

Buell Laminate doors with WilsonArt Congo Spruce 7062-60 laminate

Floor topping (pre tile) sloped to two drains in each bathroom, one drain centrally located and one by the showers

Hallways and elevators wide to accommodate future maintenance and construction equipment

END OF SECTION APPENDIX 13
# Security System Standards & Design Guidelines

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General

The following document is the UCB Housing & Dining Services Security System Standards & Design Guide and is meant to address issues and questions that relate directly to the specification & installation of physical security, door hardware, access control and video surveillance systems.

Housing and Dining Services (HDS) is a unique auxiliary campus operation responsible for providing safe and secure residential facilities and dining services to over 8,500 students, faculty and staff. Our 24/7 service model requires that buildings and facilities are safe, secure and well maintained year round. Our systems and materials need to be easy to maintain and have a durability that matches up well to the harsh use, and sometime abuse, of our customers. Doors, locks, door hardware, video, security and access control systems all need to be designed with the knowledge that Housing and Dining facilities see heavy use and even vandalism on a regular basis and is generally greater than that seen in other campus buildings or facilities. In order to be able to manage and maintain our facilities and systems efficiently and effectively, Housing and Dining Services requires contractors to design to, build with and follow a number of additions and modifications to the University of Colorado Boulder materials, construction and IT standards. All projects done on behalf of Housing and Dining Services must follow these additional HDS standards & guidelines.

Door hardware selection is to be carefully coordinated with UCB Design Guidelines, HDS Technical Criteria and design meetings with the HDS Integrated Security Manager. The responsibility for wiring of the hardware and Card Access System components needs to be carefully and specifically defined for hardware, electrical, and security system contractors.

Several areas within this document may indicate that any questions, substitutions or approvals should be directed to the architect. Depending on the overall scope and design approach on any given project, the “UCB Project Manager” may need to be substituted as the primary point of contact, where applicable.

All of the information contained within is subject to change without notice; all reasonable efforts are made to keep this manual up-to-date.

Related documents:
http://www.colorado.edu/facilitiesmanagement/pdc/construction/standards/index.html
Division 8 Doors and Windows
Division 27 ITS & Communications Standards
Online Access Control System

Housing & Dining Services utilizes an existing electronic access control system that operates with our Campus OneCard. This system should be incorporated into the project. Hardware schedules will need to be created/revised in order to accommodate hardware integration. The campus standard system is the SoftwareHouse CCure 800 and only factory certified dealers are authorized to purchase and install such equipment. HDS Access Services can provide the names of at least three such dealers for competitive bidding purposes. Further discussions with the Owner (Project Manager and HDS Access Services) will be required for proper specification and installation of access control and CCTV systems. The Owner is the Security Consultant for campus security systems.

The University's campus-wide Access Control System is designed to provide access control to campus buildings via the Campus OneCard. It can also provide access control to building offices, classrooms, computer labs, high-security areas, etc. In the case of perimeter control, each exterior door must be equipped with the following hardware:

- Fail-secure (locked when unpowered) electric locking device (electric strike or electric panic device)
- Door contact/switch (to monitor the status of the door <open/closed>)
- Motion/Request-To-Exit Sensor (REX) (shunts the door contact when the door is opened from the inside)

Designated exterior and interior security doors will also be equipped with a magnetic stripe card reader. At these locations, spare wiring should also be provided to accommodate a future proximity reader. One (1) exterior door will be designated to be equipped with a key-override for emergency and maintenance personnel use in the event that the Card Access System is not available (e.g. system failure) and no other exits are to have key accessibility unless specifically called for. The location of the key-override exterior door is typically determined either by the location where emergency vehicles would most commonly respond to, or by the location of the fire alarm annunciator panel.

1. The design team will be responsible for a total turn-key installation that is compatible with existing security system and utilizes equipment by the same manufacturer (Software House CCURE 800 and Onity). Provide all system design, wiring, device installation and termination, system testing and system certification. All C-Cure locations require door contacts and request-to-exit sensors.
2. The security integrator shall provide a turn-key installation including all CCURE low voltage wiring.
3. The electrical contractor shall furnish and install a dedicated conduit raceway system as specified by the security system design and coordinated with the security integrator. The CCURE pathway must be independent of, and cannot share or be attached to, any IT raceway, cable tray, etc.
4. Provide wiring for IP based surveillance cameras at all C-Cure locations. Refer to Video Surveillance section.
5. Existing devices or equipment may not be re-used.
6. In locations where existing devices are to remain, the conduits that serve them must be concealed (i.e., replace existing conduit as necessary to accomplish this).
7. All database programming is performed by owner.
8. CCURE system shall be fully integrated with ADA devices on all doors wherever applicable.
Qualifications
The CCURE system must be furnished and installed by a factory authorized security integrator who also meets the following minimum requirements:

1. Physical offices located within 100 miles of the Boulder campus.
2. Firm has achieved the status of Advanced Integrator (or higher certification) from a Tyco/Software House approved training center. Certified technicians shall be at the local level.
   a. The project manager and/or lead technician assigned to the project shall be personally certified at the Installer/Maintainer level (or higher).
   b. Photocopies of certifications should be included in the security system submittals.
3. A “parts & smarts” installation approach is not permissible. Unless otherwise approved, the security integrator shall provide a turn-key installation including but not limited to all low voltage wiring, installation, termination of field devices and control panels, system programming, provisioning, testing and certification.

Controllers
HDS Standard: Software House iSTAR Pro (8 or 16 reader configuration)
Special applications: Software House iSTAR eX (4 doors) - must be approved by HDS

Card Readers
Software House RM1-MP mag-stripe reader (without keypad).
Recessed double-gang j-boxes are required for all CCURE card reader locations
iStar panel outputs shall be used to control all door locks. Do not use RM4 outputs to control door locks.

Door Hardware
Existing devices or equipment (where applicable) may not be re-used.
Maglocks and shear-locks are not permitted unless written approval has been obtained.

Door Contacts: Sentrol 1078C (typical)
Locate all door position switches on top of door and recessed in the top door frame rail within 6” of the latch side of the frame. Do not locate door contacts in the vertical section or stile. Any exceptions must be approved by HDS Access Services.

Request To Exit Device: SoftwareHouse/Kantech TREX (unless incorporated into exit device)

Refer to section 087100 for additional detailed specifications & requirements

Wire & Cable Requirements
All CCURE cabling shall be furnished purple/violet in color and plenum rated where required by code.
All card reader wiring must be “home run”. Daisy-chain wiring configuration of card readers & any RM bus devices is not allowed.
Refer to appendices for additional information & typical wiring requirements
Power Supplies
- SoftwareHouse apS - for iStar Controllers
- Altronix Maxim33 - for electric strikes & locksets
- Von Duprin PS873-BB - for exit devices with electric latch retraction. Must be located within 50’ of door.

Peripherals
- SoftwareHouse addressable I-8 and R-8 input/output modules with DCM enclosures
- Altronix RBST relays where required
- GRI 6644 End-Of-Line resistor packs shall be used to supervise all inputs on the system.

Physical Location Requirements
The CCURE security system “head-end equipment” (control panels and power supplies) should reside and terminate in the MDF Room unless otherwise indicated. Ensure that adequate wall space is reserved for this equipment during the initial design stage. Coordinate with the HDS Project Manager and Security Manager.

Fail-Safe Hardware
On rare circumstances, building code may require certain doors to be “fail-safe”. In these scenarios, a single fire-alarm relay shall be provided at the CCURE panel head-end (MDF) for this purpose. Do not use relays in the field.
Offline Access Control System

Housing & Dining Services utilizes an existing offline (battery powered) electronic access control system that operates with our Campus OneCard. The standard product is the Onity Integra5 CT series locksets and this system should be incorporated into the project.

1. Onity locks must be furnished and field installed by a factory authorized dealer with physical offices located within 100 miles of the Boulder campus. Due to warranty concerns, it is not acceptable for the general contract to purchase locks or equipment thru a dealer and then perform the installation themselves.

2. Approved model numbers:
   a. KTA-M-DK-626-<handing> Onity Mortise Lock w/ deadbolt & keypad (all student rooms)
   b. KTA-M-L-626-<handing> Onity Mortise Lock (non-student room doors)
   c. KTA-M-RM-VD Onity Interface to Von Duprin 99 series exit devices

3. All locks shall be full mortise style unless otherwise approved.

4. On student rooms, the interior level shall be oriented in the “down” position (pointing towards the floor).

5. Onity locks and the “front desk card encoding unit” are to be furnished by the project. A dedicated data jack and 110VAC quad receptacle is required for the front desk security workstation.

6. All new doors must be factory prepped according to Onity installation templates.

7. General contractor shall coordinate any required adjustment or alignment required between doors & frames with the door supplier and security contractor to ensure proper operation.

8. There is typically a 12 week lead time for Onity locks.

9. Onity locks shall be left programmed in “construction mode”. Final programming is by owner.

10. Spares: A quantity of 8% spare Onity locks shall be furnished by the project and turned over to CU prior to project completion.

11. Refer to section 087413 for additional information & requirements.

Mechanical Locksets & Conventional Keys

The intent of combining the use of both CCURE & Onity access control systems on HDS projects is to ensure that all lockable doors are equipped with a card reader. Use of traditional key cylinders should be minimized to the greatest extent possible, as coordinated with HDS during the design stage.

1. Mechanical key cylinders are allowed only where they have been approved in advance by the HDS Integrated Security manager. Examples of typical key cylinder locations are to bypass the designated CCURE card readers for emergency entry. Other examples may include keyed removable Mullions, panic exit alarms, padlocks, etc.

2. HDS utilizes a patented Medeco restricted keyway system. Refer to section 087100 for specific requirements.

3. Standard finish for all HDS door hardware shall be 626 / US32D or equivalent. Note that this differs from the published campus standards.

4. Vertical rod exit devices are not permitted unless approval has been obtained from HDS Access Services. Concealed vertical rods are not permitted under any circumstances.

5. Flush bolts & automatic flush bolts are not permitted unless required by code and coordinated with HDS Access Services.

6. ALL keys from the project must be transmitted directly to HDS Access Services thru the project manager. This includes but is not limited to keys furnished with office fixtures, elevators, bathroom fixtures, fire extinguisher cabinets & pull stations, display cases, millwork, access panels, mechanical equipment & controls, etc.

On all renovation and new construction projects, all elevators (new and existing) shall be provisioned to accommodate future access control and surveillance camera systems. Minimum requirements are as follows:

1. Pre-wiring for card reader (reader should reside within the cab/car station)
2. Pre-wiring for surveillance camera
3. Wiring requirements specific for security systems:
   a. Traveler cable requirements:
      i. Four (4) pairs of 18 gauge, stranded, shielded conductors for access control communications and power. These cables shall terminate in the car station panel.
      ii. Two (2) coaxial cables. One coax cable shall terminate in the car station panel and the second coax shall terminate on the top of cab for connection to security camera.
      iii. Provide dedicated 110VAC power outlet on top of cab for local camera power.
   b. Machine room requirements:
      i. Provide a standard data drop with two (2) CAT5E jacks dedicated for security controls.

Additional Requirements for Residence Halls

1. Existing devices or equipment may not be re-used.
2. Maintain location of all existing card readers/electric strikes and motion sensors where they are presently located.
   a. In locations where existing devices are to remain, the conduits that serve them must be concealed (i.e., replace existing conduit as necessary to accomplish this).
3. Add CCURE card readers and all peripherals at the Great Room area.
4. Provide CCURE card readers on corridor doors within the building that separate public or common areas from bedroom areas.
5. Provide CCURE card readers on all RAP classrooms.
6. ADA Door Operators:
   a. Provide campus standard LCN pneumatic door operator on entry doors at the entry plazas (only one operator at pairs of doors). The operator shall be fully integrated with the CCURE system where applicable. Any substitutions shall be coordinated with HDS Access Services.
7. Provide all bedroom entry doors from corridors with a wide-angle, one-way door viewer.
8. Provide Rockwood kick plates on doors in the following locations:
   a. All exterior doors
   b. Common Bathroom doors
   c. Stairway doors
   d. Custodial closets
   e. Mechanical rooms
   f. IT Room and Closets
   g. Corridors
9. Provide floor or wall-mounted door stops. Verify with Owner.
10. Closet doors in student rooms, where provided, shall have pull handles & roller latches.
12. Provide magnetic hold-open devices on the doors at the following locations:
   a. Main entry doors to each wing unless part of security system
   b. Kitchen & Vending
   c. Stairways unless part of security system
   d. Laundry Rooms
13. Provide LCN model 1261 door closer on all student rooms. Spring hinges are not permitted.
Video Surveillance System

Housing & Dining Services utilizes an existing IP network video management system. The NVR management software is Milestone Systems - Corporate Edition v4.0. Cameras furnished as part of the project will be integrated into this system.

All servers, workstations, data storage, software licensing and active network connectivity will be provided by owner. Cameras and related peripherals (mounts, patch cords, etc.) shall be provided by the security integrator and incorporated into the existing infrastructure.

With few exceptions, HDS solely utilizes IP network cameras manufactured by Axis Communications. The cameras shall be powered via POE (provided via CU furnished network switches).

The video surveillance system shall be furnished & installed by a factory authorized security integrator with physical offices located within 100 miles of the Boulder campus. The security integrator shall employ staff with current certifications for both the Milestone Corporate software platform and Axis Network Cameras.

1. The cameras, as sighted by the owner, are required at all exterior door locations, the reception desk and within the elevator cabs. At exterior doors, the cameras are typically installed on the interior of the building. Outdoor cameras are rarely specified and must be carefully coordinated with the owner.
2. Additional camera locations may be required (e.g. public lobbies, elevators, point of sale areas, classrooms, loading docks, etc.). Specific requirements will be determined during the design meetings.
3. All camera locations require CAT6 cabling, RED in color.
4. The CAT6 cabling shall be furnished & installed by the datacom contractor (not the security integrator). The CAT6 cabling may reside within the normal data raceways. Low voltage power cabling (exterior cameras) may not reside within the data raceway.
5. Contact the CU project manager to arrange a site walk for locations prior to electrical rough-in.
6. The security integrator shall program, install & focus all cameras. Owner will provide IP addressing information and will be available to assist the integrator during the provisioning phase.
7. Necessary cameras mounting brackets and adapter plates are to be furnished & installed by security integrator.
8. Refer to the equipment schedule (or contact HDS Access Services) for a current list of approved Axis camera models, mounts and peripherals suitable for the project.

System Commissioning

At least four weeks prior to project completion, building turnover or occupancy:

1. Fiber feeds & data network must be fully operational.
2. Security Integrator shall provide Owner with port charts/spreadsheets to facilitate database & panel programming.
3. A punch list walkthrough inspection, system testing & acceptance for all systems (door hardware, access control and video surveillance) shall be scheduled with Owner.

All deficiencies and punch list items shall be fully rectified and accepted by the owner at least one week prior to turnover or occupancy.
Questions / Contacts

UCB Project Manager:

HDS Integrated Security / Access Services Manager:
Jeff Spivey
University of Colorado Boulder
Housing & Dining Services - IT
159 UCB
Boulder, CO 80309
(303) 492-5672
jeff.spivey@colorado.edu

Approved Vendors (contact HDS Access Services for a current list):

<table>
<thead>
<tr>
<th>Company</th>
<th>Phone</th>
<th>Contact</th>
<th>CCURE</th>
<th>Onity</th>
<th>Video</th>
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<tr>
<td>Systems Integration Corp.</td>
<td>303-920-8800</td>
<td>Brian FitzGerrell</td>
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<td>SimplexGrinnell</td>
<td>720-941-2292</td>
<td>Paul Brown</td>
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<td>719-896-6037</td>
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<td>Henry Bros. Electronics</td>
<td>720-235-1321</td>
<td>Hallie Hotchkiss</td>
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<tr>
<td>Colorado Doorways</td>
<td>303-312-0270</td>
<td>David Dupuis</td>
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Appendices

The following reference documents have been included at the end of this manual:

1. Section 087100 (Door Hardware & Access Control) – Typical Spec
2. Section 087413 (Offline Card Key Locks) – Typical Spec
3. SoftwareHouse CCURE Equipment, Power Supplies & Peripherals
4. Onity Offline Locks, Installation Templates & Peripherals
5. Wiring Diagrams & Elevations *(section reserved for future use)*
   
   Contact HDS Access Services for further information
SECTION 087100 - DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Furnish and install all commercial door hardware and electrified door hardware as shown on the Drawings or specified herein, or as required to complete the Work.

B. Intent of Hardware Groups
   1. The following schedule of hardware sets shall be considered a guide only, and the supplier is cautioned to refer to general conditions, special conditions, and the preamble of this section. It shall be the hardware supplier's responsibility to furnish all required hardware.
   2. Where items of hardware aren't definitely or correctly specified and are required for completion of the Work, a written statement of such omission, error, or other discrepancy shall be sent to the Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.
   3. Adjustments to the Contract Sum will not be allowed for omissions or items of hardware not clarified prior to bid opening.

C. Related sections:
   1. Division 1 – General Requirements
   2. Division 6 – Finish Carpentry: Installation of Finish Hardware
   3. Division 7 – Joint Sealants.
   4. Division 8 – Hollow Metal Doors and Frames
   5. Division 8 – Flush Wood Doors
   6. Division 8 – Aluminum Doors and Frames
   7. Division 8 – Special Doors
   8. Division 26 - Sections for connections to electrical power system.
   9. Division 28 – Electronic Safety and Security, Sections for low-voltage wiring work and for access control devices installed at door openings and provided as part of a security access system.

1.3 REFERENCES

A. Use date of standard or code in effect as of Bid date.

B. State and Local Codes including Authority Having Jurisdiction.

C. ANSI/BHMA A156 – Builders Hardware Manufacturers Association Builders Hardware Standards

D. NFPA – National Fire Protection Association
1. NFPA 80 – Fire Doors and Windows
2. NFPA 105 – Smoke and Draft Control Door Assemblies

E. UL – Underwriters Laboratories
1. UL 10C – Fire Tests of Door Assemblies (Positive Pressure)
2. UL 1784 - Air Leakage Tests of Door Assemblies
3. UL 294 – Access Control System Units

F. ANSI A117.1 – Accessible and Usable Buildings and Facilities

G. ADA – Americans with Disabilities Act

H. DHI – Door and Hardware Institute

I. SDI – Steel Door Institute

J. WDMA – Window and Door Manufacturers Association

1.4 LEED SUBMITTALS:

A. Credit MR 4.1 and Credit MR 4.2: For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.

B. Credit MR 5.1 and 5.2: List of proposed regional materials. Identify each regional material along with the location of its manufacture, processing and raw material source, and cost.

1.5 SUBMITTALS

A. Submit copies of the finish hardware shop drawings in accordance with Division 01.

B. Product Data: Submit manufacturer's complete product literature for specified hardware items, detailed installation diagrams and instructions, including:
1. Preparation instructions and recommendations.
2. Storage and handling requirements and recommendations.
3. Installation methods.

C. Door Hardware Schedule: Prepared by or under the supervision of the supplier's Architectural Hardware Consultant, detailing fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.
1. Check specified hardware for suitability and adaptability to details and surrounding conditions. Indicate unsuitable or incompatible items and proposed substitutions in hardware schedule.
2. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
3. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening.
4. Organize door hardware sets in same order as in the Door Hardware Schedule at the end of Part 3.
5. Content: Include the following information:
a. Type, style, function, size, label, hand, degree of swing, and finish of each door hardware item.
b. Manufacturer of each item.
c. Fastenings and other pertinent information.
d. Location of each door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
e. Explanation of abbreviations, symbols, and codes contained in schedule.
f. Mounting locations for door hardware.
g. Door and frame sizes and materials.

D. Electrified Hardware Drawings:
1. Submit elevation drawings showing relationship of all electrical hardware components to door and frame prior to electrical rough-in. Indicate number and gage of wires required.
2. Include wiring drawing showing point to point wire hook up for all components.
3. Include system operations descriptions for each type of opening; describe each possible condition.

E. Samples:
1. Upon request submit the following samples:
a. Samples: Prior to submittal of the final hardware schedule and prior to final ordering of finish hardware, submit one sample of each type of exposed hardware unit, finished as required and tagged with full description for coordination with schedule. Samples will be returned to the supplier. Units, which are acceptable and remain undamaged through submittal, review and field comparison procedures, may, after final check of operation, be used in the work, within limitations of keying coordination requirements.

F. Qualification Data: For Installer, Supplier, and Architectural Hardware Consultant. Compliance with this Section shall include letters of certification. Certifications shall be submitted for approval with and be incorporated with hardware schedule submittal. SUBMITTALS WILL NOT BE CONSIDERED WITHOUT THE CERTIFICATIONS.

G. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule. All Door Hardware Schedules must be submitted to Owner in a searchable electronic format (such as PDF, Word or Excel). Scanned documents that are not searchable will be rejected.

H. Operations and maintenance manuals:
1. Upon completion of construction and building turnover, furnish two (2) complete maintenance manuals to the owner. Manuals to include the following items:
a. Approved hardware schedule, catalog cuts and keying schedule.
b. Hardware installation and adjustment instructions.
c. Manufacturer’s written warranty information.
d. As installed "Wiring Diagrams" for each opening connected to power, both low voltage and 110 volts.
e. One complete set of special tools required for maintenance and adjustment of hardware, including changing of cylinders.

1.6 QUALITY ASSURANCE

A. Substitutions:
1. All substitution requests must be submitted within the procedures and time frame as outlined in Section 01. Approval of products is at the discretion of the architect and their consultant.

2. Items listed with no substitute manufacturers have been requested by Owner to meet existing standards.

B. Requirements of Regulatory Agencies:
1. Furnish finish hardware to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications. Furnish finish hardware to comply with the requirements of the American National Standards for Making Buildings and Facilities Accessible and Usable by Physically Handicapped People ICC/ANSI A117.1) and to comply with Americans with Disabilities Act (ADA).

2. Doors to stairs (other than exit stairs), loading platforms, boiler rooms, stages and doors serving other hazardous locations shall have knurled or other similar approved marking of door lever handles or cross bars in accordance with local building codes.

C. Installer Qualifications: An experienced installer with five (5) years documented experience who has completed door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance. Factory trained and certified by the lock, closer and panic hardware manufacturers. Alternative: can demonstrate suitably equivalent competence and experience.

D. Supplier Qualifications: Company specializing in the supply of door hardware with five (5) years documented experience and an Architectural Hardware Consultant (AHC) to properly handle, detail and service hardware in a satisfactory manner. Architectural Hardware Consultant shall be available during the course of the Work to consult with Contractor, Architect, Hardware Consultant, and Owner about door hardware and keying.

1. Scheduling Responsibility: Preparation of door hardware and keying schedules.

2. Engineering Responsibility: Preparation of data for electrified 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.

3. Hardware supplier shall be a certified direct distributor and be a full sales and service organization for the manufacturer’s listed. Compliance with this Section shall include letters of certification from the manufacturers stating the hardware supplier is a factory direct authorized distributor. Certifications shall be submitted for approval with and be incorporated with hardware schedule submittal. Submittals will not be considered without the certifications.

4. Supplier shall have warehousing facilities in Project's vicinity.

E. Architectural Hardware Consultant Qualifications: A person who is currently certified by the Door and Hardware Institute as an Architectural Hardware Consultant and who is experienced in providing consulting services for door hardware installations that are comparable in material, design, and extent to that indicated for this Project.

1. Electrified Door Hardware Consultant Qualifications: A qualified Architectural Hardware Consultant who is experienced in providing consulting services for electrified door hardware installations.

F. Source Limitations: Obtain each type and variety of door hardware from a single manufacturer, unless otherwise indicated.

1. Provide electrified door hardware from same manufacturer as mechanical door hardware, unless otherwise indicated. Manufacturers that perform electrical modifications and that are listed by a testing and inspecting agency acceptable to authorities having jurisdiction are acceptable.
G. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 and UL10C. Project requires door assemblies and components that are compliant with positive pressure and S-label requirements. Specifications must be cross-referenced and coordinated with door manufacturers to ensure that total opening engineering is compatible with UL10C Standard for Positive Pressure Fire Tests of Door Assemblies. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, plus resilient and required intumescent seals if not furnished with wood door.

H. Templates: Furnish a complete list and suitable templates, together with finish hardware schedule to contractor, for distribution to necessary trades supplying materials to be prepped for finish hardware.

I. Keying Conference: All permanent cores shall be provided by the Owner. This supplier shall assist, if requested, in preparing the key schedule with the Owner.

J. Mandatory Pre-installation Meeting:
   1. Before hardware installation, General Contractor/Construction Manager will request seminar be conducted on the installation of hardware; specifically that of locksets, closers, and exit devices. Conduct conference at Project site to comply with requirements in Division 01. The hardware supplier and the representative of the lock, closer and exit device manufacturers shall present the seminar. Seminar to be held at job site and attended by installers of hardware for aluminum, hollow metal and wood doors. Seminar to address proper coordination and installation of hardware, per finish hardware schedule for this specific project, by using installation manuals, hardware schedule, templates, physical product samples and installation videos.
   2. When any electrical hardware is specified this meeting shall also include the following trades/installers: Electrical and Security Contractors.
      a. Inspect and discuss electrical roughing-in and other preparatory work performed by other trades.
      b. Review sequence of operation for each type of electrified door hardware.
   3. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facilities needed to make progress and avoid delays.
   4. Supplier shall notify participants at least five (5) working days before meeting.
   5. Failure to hold the pre-installation conference may affect the product warranty.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Marking and packaging:
   1. Properly package and mark items according to the approved hardware schedule, complete with necessary screws and accessories, instructions and installation templates for spotting mortising tools.
   2. Packaging of door hardware is the responsibility of the supplier. As hardware supplier receives material from various manufacturers, sort and repackage in containers clearly marked with appropriate hardware set and door numbers to match the approved hardware schedule. Two or more identical sets may be packed in same container.

B. Delivery:
   1. The supplier shall deliver all hardware to the project site; direct factory shipments are not allowed unless agreed upon beforehand. Hardware supplier shall coordinate delivery times and schedules with the contractor. Inventory door hardware jointly with representatives of hardware supplier and hardware installer/contractor until each is satisfied that count is correct.
2. No keys, other than construction master keys and/or temporary keys are to be packed in boxes with the locks.

3. Contractor shall check deliveries against accepted list and provide receipt for them, after which he is responsible for storage and care. Any shortage or damaged good shall be made without cost to the owner.

C. Storage:
   1. Provide secure lock-up for door hardware delivered to the Project, but not yet installed. Control handling and installation of hardware items that are not immediately replaceable so that completion of work will not be delayed by hardware losses both before and after installation.

1.8 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

1.9 COORDINATION

A. Supplier shall coordinate the following items with the General Contractor and related trades.
   1. Coordinate work of this Section with other directly affected Sections involving manufacture of any internal reinforcement for door hardware. Furnish hardware templates to door fabricators for factory preparation to receive hardware.
   2. Furnish hardware items of proper design for use on doors and frames of thicknesses, profile, swing, security, and other indicated requirements as necessary for proper function.
   3. Coordinate solid blocking between studs of frame construction to support wall mounted items such as stops.
      a. Electrical System Roughing-in: Coordinate layout and installation of electrified door hardware with connections to power supplies, fire alarm system and detection devices and access control system.

B. A hardware conference is mandatory within 30 days of contract award.

C. Use hardware consultant to check Shop Drawings for doors and entrances to confirm that adequate provisions will be made for proper hardware installation.

1.10 WARRANTY:

A. General Warranty: Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Special Warranty: Written warranty, executed by manufacturer agreeing to repair or replace components of door hardware that fail in materials or workmanship within specified warranty period. Failures include, but are not limited to, the following:
   1. Structural failures including excessive deflection, cracking, or breakage.
   2. Faulty operation of operators and door hardware.
   3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
C. Warranty Period: Two (2) years from date of Substantial Completion, unless otherwise indicated.
   1. Warranty Period for Manual Closers: Ten (10) years from date of Substantial Completion.
   2. Warranty Period for Locksets: Seven (7) years from date of Substantial Completion.
   3. Warranty Period for Exit Devices: Three (3) years from date of Substantial Completion.

1.11 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.12 COMMISSIONING:

A. The General Contractor in conjunction with the lock manufacturer's representative, hardware installer and supplying distributor shall commission hardware. Comply with Division 01 and as follows.
   1. Test door hardware operation with climate control system both at rest and while in full operation.
   2. Test electrical and electronic hardware systems for satisfactory operation.
   3. Test hardware interfaced with fire/life-safety system for proper operation and release.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Provide the products of manufacturer designated or if more than one manufacturer is listed, the comparable product of one of the other manufacturers listed. Where only one manufacturer or product is listed, it is understood that this is the owner's Building Standard and "no substitution" is allowed.

2.2 GENERAL HARDWARE REQUIREMENTS:

A. Provide hardware materials and products of the best quality, free from imperfections and flaws in appearance, finish, or operational function.

B. Refer to Hardware Schedule below for specific hardware items, designs, functions, and finishes.

2.3 HINGES

A. Manufacturers:
   1. Ives
   2. McKinney
   3. Stanley

B. General: Provide only template-produced units.

C. Hinges shall be five-knuckle design, ball bearing as specified.
D. Hinge Base Metal: Unless otherwise indicated, provide the following:
2. Interior Hinges: Steel, with steel pin
3. Hinges for Fire-Rated Assemblies: Steel, with steel pin.

E. Quantity, regardless of quantities specified in the hardware schedule provide the following:
1. 3 - hinges per leaf for openings through 84 inches (1524 mm) high.
2. 1 - additional hinge per leaf for each additional 24 inches (762 mm) in height or fraction thereof.

F. Size, regardless of size specified in the hardware schedule provide the following:
1. Doors up to 3'6": 2 ball bearing, standard weight, 0.134 gage, 4-1/2 inch by 4-1/2 inch (114 mm by 114 mm).
2. Doors 3'-6" and over: four ball bearing, heavy weight, 0.190 gage, 5 inches x 4-1/2 inches (127 mm by 114 mm).

G. Options: NRP (non-removable pin) feature, furnish at all reverse bevel doors with locksets.

H. Provide shims and shimming instructions for proper door adjustment.

I. Electric Hinges:
1. Manufacturers:
   a. Command Access
2. Full Mortise electric Hinge:
   a. Transfer power from door frame to edge of door.
   b. Provide number and gage of concealed wires as specified.
   c. Locate electric hinges at second hinge from bottom.
   d. Provide mortar guard for each electric hinge scheduled.

J. Electric Power Transfer:
1. Manufacturers:
   a. Von Duprin
2. Transfer power from door frame to edge of door.
3. Provide sufficient number of concealed wires to accommodate electric function of specified hardware.

2.4 CONTINUOUS HINGES

A. Manufacturers:
1. Ives
2. Markar
3. Stanley

B. Continuous, Gear-Type Hinges: Extruded-aluminum, pinless, geared hinge leaves; joined by a continuous extruded-aluminum channel cap; with concealed, self-lubricating thrust bearings.

C. Furnish the Ives 112HD hinge or equal at 2" thick doors.

D. Manufacture units for proper door thickness, height, custom screw patterns and electrical and pneumatic modifications.
2.5 PIVOT SETS

A. Manufacturers:
   1. Ives
   2. Stanley
   3. Rixson

B. Pivot sets shall be high-strength forged bronze or stainless steel, tilt-on precision bearing and bearing pin.

C. Vertical adjustment range of 3/16” which includes a positive locking feature.

D. Provide pivot sets as specified in Hardware Groups.

2.6 DOOR BOLTS

A. Manufacturers:
   1. Ives
   2. Rockwood
   3. Trimco

B. Bolt Throw: Comply with testing requirements for length of bolts required for labeled fire doors, and as follows:

C. Manual Flush Bolts: designed for mortising into door edge.

D. Automatic and Self-Latching Flush Bolts: designed for mortising into door edge.
   1. Owner approval is required before automatic flush bolts are to be specified.

E. Locate centerline of manual top bolt not more than 78 inches (1981 mm) from finished floor.

F. Dust Proof Strikes - furnish with all flush bolts.

2.7 COORDINATORS

A. Manufacturers:
   1. Ives
   2. Rockwood
   3. Trimco

B. Provide coordinator for labeled pairs of doors equipped with automatic or constant latching flush bolts.

C. Provide filler bars for total opening width and closer mounting brackets.

2.8 LOCKSETS AND LATCHSETS

A. Manufacturers:
   1. Schlage
B. Latches and Locks for Means of Egress Door s: Comply with NFPA 101. Doors shall not exceed 15 lbf (67 N) to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation from the egress side.

C. Function numbers as listed in sets.

D. Mortise type:
   1. Latchbolts to have a standard 2 ¾” backset with a full ¾” throw.
   2. Latchbolts to be non-handed, field reversible without opening the lock case.
   3. Strikes to be non-handed and bridged to ensure dead latching.
   4. Thumbturn and back-plate to be manufactured from castings and comply with ANSI 117 accessibility standard.
   5. Electric operation: Manufacturer-installed continuous duty solenoid.

E. Strikes:
   1. Provide strikes with extended lips where required to protect trim from being marred by latch bolt. Provide strike lips that do not project more than 1/8” beyond doorframe trim at single doors and have 7/8” lip to center at pairs of 1-3/4” doors. Provide wrought box strikes on all locks.

F. Hardware supplier shall schedule a meeting with the Owner to review and confirm that all lock functions specified are accurate prior to ordering material.

2.9 MAGNETIC LOCKS

A. Manufacturers:
   1. Rutherford Controls (RCI)

B. Magnetic locks shall meet ANSI/BHMA A156.23-1992 classification criteria including a minimum holding force of 1500 LBF.

C. Magnetic locks shall have a Door Status Sensor (DSS) and a Security Condition Sensor (SCS).

D. Provide filler and plate(s) and bracket(s) as required for door and frame construction.

2.10 CYLINDERS AND KEYING

A. Manufacturers:
   1. Medeco – cylinder cores furnished by Owner.

B. Cylinders:
   1. Manufacturer's small format interchangeable core type, constructed from brass or bronze, stainless steel, or nickel silver.
   2. Number of Pins: Seven.
   3. Mortise Type: Threaded cylinders with required cam and trim ring(s).
   4. Rim Type: Cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
   5. Bored-Lock Type: Cylinders with tailpieces to suit locks.

C. Construction Cores: Supplier shall provide construction cores that are replaceable by permanent cores.
   1. The Owner or Owner’s Security Agent in conjunction with the supplier shall remove construction cores and install final cores.
D. Keys: Furnish keys in the following quantities:
   1. Temporary construction keys: Twenty.
   2. Construction control keys: Two.

E. Key Control System:
   1. Provide wall mounted metal cabinet with baked-enamel finish; containing key gathering envelopes, storage of removable and interchangeable lock cores, hook labels, permanent key tags, temporary key tags, signature receipt forms, visible index pin-tumbler cylinder door lock, and instruction book with key capacity of 150 percent of the number of locks.

2.11 EXIT DEVICES AND MULLIONS

A. Exit devices for Means of Egress Doors: Comply with NFPA 101. Doors shall not exceed 15 lbf (67 N) to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation from the egress side.

B. Manufacturers:
   1. Von Duprin

C. Rim and Vertical Rod devices:
   1. Touchpad shall extend a minimum of one half of the door width.
   2. Exit devices shall be touchpad style plated to the standard architectural finishes to match the balance of the door hardware.
   3. Trim: as specified in sets, function numbers as listed in sets. Levers to match lockset design.
   4. Exit devices shall be UL listed panic exit hardware. All exit devices for fire rated openings shall be UL labeled fire exit hardware.
   5. Electrically Operated Devices: Single manufacturer source for electric latch retraction devices, electrically controlled trim, power transfers, power supplies, monitoring switches and controls.
   6. Provide cylinder dogging on panic exit hardware where specified in the hardware sets.
   7. Furnish glass bead kits for exit devices as required.
   8. Through Bolts: For exit devices and trim on metal doors, non-fire-rated wood doors, fire-rated wood doors and fire-rated metal doors.
   9. After installation of all exit devices, General Contractor to have Manufacturer’s representative inspect installation. Representative shall submit a written report to the Architect with copies to the General Contractor, hardware supplier and Owner upon completion of service. This report shall include any installation errors, noting door.

D. Removable Mullion:
   1. Interior/Exterior, hollow metal or wood, mullion is removable only through the use of building keys. Mullions shall self lock when re-installed without the use of the cylinder key.
   2. Provide two-piece interlocking stabilizer set. One piece shall be installed on the mullion and the other piece installed on the door. Provide shims to adjust for door misalignment.
   3. Furnish storage brackets for securely stowing the mullion away from the door when removed.
   4. Fire-Exit Removable Mullions: Provide removable mullions for use with fire exit devices complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire and panic protection. Mullions shall be used only with exit devices for which they have been tested.

2.12 ELECTRIC STRIKE

A. Manufacturers:
   1. Von Duprin 6000 series.
   2. HES 4500 and 9600 series.

B. Electric strikes shall provide remote release of latchbolts. They shall be designed for use with the type locks shown at each opening where required. Strikes will be UL Listed for Burglary-Resistant Electric Door Strike, and where required, shall be UL listed as electric strikes for Fire Doors or Frames. Faceplates shall be stainless steel with finish as specified for each opening.

C. Solenoids shall be of the continuous duty type for the voltage specified. Plug connectors will be furnished. Strikes shall have an adjustable backbox to compensate for misalignment of door and frame.

2.13 PUSH AND PULL HARDWARE

A. Manufacturers:
   1. Ives
   2. Rockwood
   3. Trimco

B. Push-Pull Design: As scheduled.

2.14 CLOSERS

A. Manufacturers:
   1. LCN

B. Surface Door Closers:
   1. Closers shall have fully hydraulic, full rack and pinion action with a high strength cast iron cylinder and one piece forged steel piston. Cylinder body to have 1½" piston diameter with 11/16" journal double heat treated shaft, 5/8" full complement bearing, chrome silicon steel spring.
   2. Hydraulic fluid of a type requires no seasonal adjustments; fluid has constant temperature control from 49° C to –35° C.
   3. Spring power shall be continuously adjustable over the full range of closer sizes, and allow for reduced opening force for the physically handicapped.
   4. Hydraulic regulation shall be by tamper-proof, non-critical valves, adjustable with a hex wrench. Closers shall have separate adjustment for latch speed, general speed, and backcheck.
   5. Refer to door and frame details, furnish accessories such as drop plates, special templates, spacers and supports as required to correctly install door closers. Install closers to allow maximum degree of opening, position backcheck to activate well in advance of the stop position to cushion the opening swing and prevent door and frame damage. Do not use the door closer to stop door travel.
   6. Through Bolts: For surface closers at metal doors, fire-rated metal doors, non-fire-rated wood doors, and fire-rated wood doors.
   7. Coordinate with door manufacturer that the top rail of the door is sized appropriately for the surface closer.
   8. Doors swinging into exit corridors should provide for corridor clear width as required by applicable codes.
9. Install closers on room side of corridor doors, inside of exterior doors, and stair side of stairway doors.

C. Surface automatic operators (Pneumatic)
1. Where “Low Energy Power Operated Door” are indicated for doors required to be accessible to the disabled, provide pneumatically powered operators complying with the ADA and A156.19 requirements.
2. Full closing force shall be provided when the power or assist cycle ends.
3. Locate power unit, control box and exhaust away from door to minimize noise and vibration in pedestrian areas. Maximum distance from control box to operator is 50’. Control box shall be accessible to allow for adjustments in operator performance.
4. The operator will be designed to prevent damage to the mechanism if the system is actuated while the door is latched or if the door is forced closed during the opening cycle.
5. Provide complete with drop plates, brackets, or adapters for arms as required to suit details.
6. Provide plenum-rated type cable or tubing where required.
7. Hardware supplier shall provide point-to-point wiring diagrams for automatic operator(s) to general and electrical contractor prior to electrical rough in. Electrical contractor shall provide 120VAC power to control box and provide and install wiring from control box to actuators. General contractor shall install pneumatic tubing from control box to operator.
8. Furnish actuator, control box and tubing as shown in Hardware Sets.
9. Actuator buttons shall be hardwired. Wireless / battery operated transmitters are not allowed.
10. ADA operator functionality shall be fully integrated with access control system where applicable.
11. Supplier shall include an AC disconnect switch. Furnish either a standard toggle switch or toggle-less key switch manufactured by either Levitron or Hubble, install adjacent to the control box. Coordinate with electrical contractor.

D. Markings:
1. Decals: Visible from either side, instructing the user as to the operation and function of the door.

2.15 STOPS AND HOLDERS

A. Manufacturers:
1. Ives
2. Rockwood
3. Trimco

B. Provide wall stops for doors, unless other type stops are scheduled or indicated. Where wall stops are not appropriate, provide overhead stops.

C. Wrought, forged, or cast, approximately 2-1/2 inch diameter, convex rubber center, concealed fasteners.

D. Silencers for Door Frames: Neoprene or rubber; fabricated for drilled-in application to frame.

2.16 MAGNETIC HOLDERS

A. Manufacturers:
1. LCN
2. Rixson
3. ABH

B. Electromagnetic Door Holders: Coordinate with fire detectors and interface with fire alarm system for labeled fire door assemblies. Tri-voltage design, 24VAC/DC and 120VAC, with a minimum of 35 pounds of holding force. Provide extensions and coupler where required.

2.17 OVERHEAD HOLDERS AND STOPS

A. Manufacturers:
1. Glynn Johnson
2. Rixson
3. ABH

B. Type, function and fasteners shall be as specified. Size per manufacturer's selector chart. Plastic end caps, hold open mechanisms and shock blocks are not allowed. End caps must be finished same as balance of unit.

C. When the overhead holder or stop is installed with a surface closer, template closer to work with the stop or holder. Provide mounting plates with closer as required.

2.18 KICK PLATES

A. Manufacturers:
1. Ives
2. Rockwood
3. Trimco

B. Furnish .050 inches thick, 12" high x door width less 2", beveled top and 2 sides with counter sink holes for fasteners. Where glass or louvers prevent this height, supply with height equal to height of bottom rail less 2".

C. Fasteners: Manufacturer's standard machine or self-tapping screws.

2.19 THRESHOLDS

A. Manufacturers:
1. National Guard Products
2. Pemko
3. Zero International

B. Accessibility Requirements: Where thresholds are indicated to comply with accessibility requirements, comply with the Accessibility Guidelines for Buildings and Facilities ANSI A117.1
   1. Bevel raised thresholds with a slope of not more than 1:2.

C. Type as listed in sets.

D. Cope at jambs.

E. Where thresholds occur at openings with one or more mullions, they shall be cut for the mullions and extended continuously for the entire opening.

F. Furnish with non-ferrous Stainless Steel Screws and Lead Anchors.
2.20 DOOR BOTTOMS

A. Manufacturers:
   1. National Guard Products
   2. Pemko
   3. Zero International

B. Type as listed in sets.

C. Supplier shall provide door bottoms where smoke door assemblies are installed where pressurization is provided to restrict smoke movement.

2.21 WEATHER-STRIPPING

A. Manufacturers:
   1. National Guard Products
   2. Pemko
   3. Zero International

B. Door Gasketing: Provide continuous weather-stripping on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated or scheduled. Provide non-corrosive fasteners for exterior applications and elsewhere as indicated. Type as listed in sets.
   1. Apply to head and jamb stops.

C. Fire, Smoke and Draft Control Seals:
   1. Smoke-Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled based on testing according to UL 1784.
   2. Fire-Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled based on testing according to UL 10C.
   3. Gaskets must comply with UL10C.
   4. Intumescent seals shall be provided by the wood door manufacturer.

D. Where rain drips are specified in hardware groups, provide NGP 16A x full frame width, unless detailed otherwise.

2.22 LATCH PROTECTORS

A. Manufacturers:
   1. To Be Determined
   2. Trimco

B. Latch protectors shall be the CU standard, contact Lockshop for product number prior to submittal.

2.23 FIRE DEPARTMENT LOCK BOX:

A. Supplier shall provide Knox Model No. 3200 Knox Vault (recessed or surface mount as required by Owner) or other lock box as required by local fire department, in quantity and location as directed by the fire department and approved by the Architect. Recessed mount shall be furnished with recessed mounting kit (RMK) for new concrete or masonry construction.
2.24 MISCELLANEOUS

A. Boxed Power Supplies: Modular unit in NEMA enclosure; filtered and regulated; voltage rating and type matching requirements of door hardware served; and listed and labeled for use with fire alarm systems. All Von Duprin PS873 power supplies shall include an AC disconnect switch. Supplier shall furnish either a standard toggle switch or toggle-less key switch manufactured by either Leviton or Hubble, install adjacent to the power supply. Coordinate with electrical contractor.

B. Furnish items not categorized in the above descriptions but specified by manufacturer’s names in Hardware Sets.

C. Supplier shall review Security/Electrical Plan for locations of security equipment provided by others.

2.25 FABRICATION

A. Base Metals: Produce door hardware units of base metal, fabricated by forming method indicated, using manufacturer's standard metal alloy, composition, temper, and hardness. Furnish metals of a quality equal to or greater than that of specified door hardware units and BHMA A156.18. Do not furnish manufacturer's standard materials or forming methods if different from specified standard.

2.26 FASTENERS

A. Including, but not limited to, wood or machine screws, bolts, nuts, anchors, etc. of proper type, material, and finish required for installation of hardware.

B. Use Phillips head for exposed screws. Do not use aluminum screws to attach hardware.

C. Provide self-tapping (TEC) screws for attachment of sweeps and stop-applied weatherstripping only.

D. Through Bolts: For exit devices and surface closers on non-rated metal doors, fire-rated metal doors non-fire-rated wood doors, and fire-rated wood doors unless door blocking is provided:

2.27 FINISHES

A. Finish of hardware at aluminum doors and frames shall match door and frame, coordinate with Architect.


C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

D. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are
acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 ACCEPTABLE INSTALLERS:

A. Factory trained and certified by the lock, closer and panic hardware manufacturers. Alternative: can demonstrate suitably equivalent competence and experience.

B. Automatic operator installer shall be factory trained, certified by AAADM, and experienced to perform the work.

3.2 EXAMINATION

A. The General Contractor in conjunction with the hardware installer and supplying distributor shall examine doors and frames as follows.
   1. Examine doors and frames, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance. Ensure that walls and frames are square and plumb before hardware installation.
   2. Examine roughing-in for electrical power systems to verify actual locations of wiring connections before electrified door hardware installation.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. Beginning of installation means acceptance of existing conditions.

3.3 PREPARATION

A. Wood Doors: Comply with DHI A115-W series.

B. Steel Doors and Frames: Comply with DHI A115 series.
   1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI/SDI A250.6-97.

C. Process hardware for aluminum doors in accordance with DHI handbook, Processing Hardware for Custom Aluminum Doors and Frames.

D. Door and Frame Manufacturer(s) to prepare doors and frames for electronic hardware furnished by Security Contractor.

3.4 INSTALLATION

A. Install hardware in accordance with manufacturer's instructions and applicable requirements of SDI, WDMA, NFPA 80, BHMA, and DHI.

B. Install each door hardware item to comply with manufacturer's written instructions. NOTE: NO POWER DRIVEN TOOLS SHALL BE USED FOR INSTALLATION OF LOCKSETS AND HARDWARE ON DOORS.
C. Use the templates provided by hardware item manufacturer.

D. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:
   2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
   3. Conform to ANSI A117.1 for positioning requirements for the handicapped.
   4. Where new hardware is to be installed near existing doors/hardware scheduled to remain, match locations of existing hardware.

E. Wherever cutting and fitting are required to install hardware on surfaces which are to be painted or finished by others, coordinate removal, storage, and reinstallation or application of surface protections with finishing work specified in other Sections. Do not install surface-mounted items until finishes have been completed on the substrate. Set units level, plumb, and true to line and location. Adjust and reinforce the attachment substrate as required for proper installation and operation.

F. Drill and countersink units, which are not factory-prepared for anchorage fasteners. Space fasteners and anchors in accordance with referenced standards.

G. Drill pilot holes for fasteners in wood doors and/or frames.

H. Drawings typically depict doors at 90 degrees; doors will actually swing to maximum allowable. Template hardware for maximum allowable degree of swing.

I. Gaskets: install jamb-applied gaskets before closers, overhead stops, rim strikes, etc, template other hardware accordingly. Install sweeps across bottoms of doors before astragals, cope sweeps around bottom pivots, trim astragals to tops of sweeps. Door Jambs must be cleaned of all dirt, grease, oil, solvents or solvent residue and dust before applying Pressure-Sensitive Adhesive backed Gasketing, Smoke Seal or Weatherstripping.

J. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 07 Section "Joint Sealants."

K. Locate floor stops where they do not impede traffic

L. Boxed Power Supplies: Locate power supplies as indicated or, if not indicated, above accessible ceilings. Verify location with Architect.
   1. Configuration: Provide one power supply for each door opening.
   2. Configuration: Provide the least number of power supplies required to adequately serve doors with electrified door hardware.

M. Install each door hardware item to comply with manufacturer's written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 09 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

N. Automatic operator installation:
   1. Installer shall have in there employment a certified American Association of Automatic Door Manufacturers (AAADM) inspector.
   2. Do not install damaged components. Fit joints to produce hairline joints free of burrs and distortion. Rigidly secure non-movement joints.
3. Mounting: Install automatic door operators/headers plumb and true in alignment with established lines and grades. Anchor securely in place.
   a. Install surface-mounted hardware using concealed fasteners to greatest extent possible.
   b. Set headers and arms level and true to location with anchorage for permanent support.
   c. Install actuators where indicated, wire to operator(s) as required.

4. Door Operators: Connect door operators to electrical power distribution system as specified in Division 26 Sections.

5. Sealants: Comply with requirements specified in Division 7 Section "Joint Sealants" to provide weather tight installation.

3.5 ADJUSTING

A. Adjust and check each operating hardware item, and each door assembly to ensure proper operation and function. Lubricate moving parts with lubrication type recommended by manufacturer.

B. Replace units, which cannot be adjusted and lubricated to operate freely and smoothly.

C. Hardware damaged by improper installation or adjustment methods to be repaired or replaced to Owner’s satisfaction.

D. Make final adjustments and lubrication immediately prior to final acceptance.
   1. Door Closers: Closers shall be adjusted so that from an open position of 90 degrees, the time required to move the door to an open position of 12 degrees shall be 5 seconds minimum.
   2. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.
   3. Door control devices backcheck shall be properly located for protection of the door, frame, and applied hardware.
   4. Spring Hinges: Adjust to achieve positive latching when door is allowed to close freely from an open position of 30 degrees. Adjust so that from the open position of 70 degrees, the door shall move to the closed position in 1.5 seconds minimum.
   5. Electric Strikes: Adjust horizontal and vertical alignment of keeper to properly engage lock bolt.

3.6 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of Substantial Completion.

3.7 FINAL ADJUSTMENT

A. Wherever hardware installation is made more than one month prior to acceptance or occupancy of a space or area, return to the work during the week prior to acceptance or occupancy, and make final check and adjustment of all hardware items in such space or area. Clean operating
items as necessary to restore proper function and finish of hardware and doors. Adjust door control devices to compensate for final operation of heating and ventilating equipment.

3.8 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain door hardware and door hardware finishes.

B. Operator Training: Instruct operating staff in proper operation of access control system, including hands-on training. Minimum of eight (8) man-hours covering the operations for each system installed.

3.9 CLEANUP

A. Remove protective material from hardware where present.

B. Upon completion and verification of performance of installation, remove surplus materials, excess materials, rubbish, tools and equipment.

3.10 CONTINUED MAINTENANCE SERVICE

A. Approximately six months after the acceptance of hardware in each area, the Installer, accompanied by the representative of the latch and lock manufacturer, shall return to the project and re-adjust every item of hardware to restore proper function of doors and hardware. Consult with and instruct Owner's personnel in recommended additions to the maintenance procedures. Replace hardware items that have deteriorated or failed due to faulty design, materials or installation of hardware units. Prepare a written report of current and predictable problems in the performance of the hardware.

3.11 ACCEPTANCE

A. Warranty shall not start until Owner Acceptance. Acceptance shall be withheld until the following activities have been successfully completed:
   1. Commissioning per paragraph 1.12.
   2. Delivery and Acceptance of all Operations and maintenance manuals.

3.12 DOOR HARDWARE SCHEDULE

A. Hardware supplier is responsible for handing and sizing all products as listed in the hardware heading. Quantities listed are for each pair of doors, or for each single door.

B. All Door Hardware Schedules must be submitted to Owner in a searchable electronic format (such as PDF, Word or Excel). Scanned documents that are not searchable will be rejected.

C. Schedule to be developed.
<table>
<thead>
<tr>
<th>Description</th>
<th>Manufacturer</th>
<th>Model/Series</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Hanging Devices</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Continuous Hinges</td>
<td>Ives</td>
<td>224HD or 112HD</td>
</tr>
<tr>
<td>Standard Weight Butt Hinge</td>
<td>Ives</td>
<td>5BB1</td>
</tr>
<tr>
<td>Heavy Weight Butt Hinge</td>
<td>Ives</td>
<td>5BB1HW</td>
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<tr>
<td>Spring Hinge</td>
<td>Ives</td>
<td>3SP1</td>
</tr>
<tr>
<td>Electric Hinge</td>
<td>Command Access</td>
<td>ETH2WH - 2/18GA</td>
</tr>
<tr>
<td>Electric Power Transfer</td>
<td>VON</td>
<td>EPT</td>
</tr>
<tr>
<td><strong>Locksets and Latchsets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Use of keyed functions shall be carefully reviewed and coordinated with the Housing &amp; Dining Access Services manager.</td>
<td>section 087413 Battery Operated Locksets.</td>
<td></td>
</tr>
<tr>
<td><strong>Heavy Duty Mortise Locksets and Latchsets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Passage</td>
<td>Schlage</td>
<td>L9010 06A</td>
</tr>
<tr>
<td>Privacy</td>
<td>Schlage</td>
<td>L9040 06A</td>
</tr>
<tr>
<td>Office Entry</td>
<td>Schlage</td>
<td>L9050 06A</td>
</tr>
<tr>
<td></td>
<td>Onity</td>
<td>See 087413</td>
</tr>
<tr>
<td>Office Entry with Deadbolt</td>
<td>Schlage</td>
<td>L9453 06A</td>
</tr>
<tr>
<td></td>
<td>Onity</td>
<td>See 087413</td>
</tr>
<tr>
<td>Classroom</td>
<td>Schlage</td>
<td>L9070 06A</td>
</tr>
<tr>
<td></td>
<td>Onity</td>
<td>See 087413</td>
</tr>
<tr>
<td>Storeroom</td>
<td>Schlage</td>
<td>L9080 06A</td>
</tr>
<tr>
<td></td>
<td>Onity</td>
<td>See 087413</td>
</tr>
<tr>
<td>Student Rooms</td>
<td>Onity</td>
<td>See 087413</td>
</tr>
<tr>
<td>HD/Faculty Apartments</td>
<td>Onity</td>
<td>See 087413</td>
</tr>
<tr>
<td><strong>Exit Devices - Rim</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Single Door – Exterior</td>
<td>Von Duprin</td>
<td>99NL – 990NL</td>
</tr>
<tr>
<td>Pair of Doors – Exterior</td>
<td>Von Duprin</td>
<td>99NL – 990DT</td>
</tr>
<tr>
<td>Fire Rated Single Door</td>
<td>Von Duprin</td>
<td>99L-F – 996L - 03</td>
</tr>
<tr>
<td>Fire Rated Pair of Doors</td>
<td>Von Duprin</td>
<td>99L-F – 996L - 03</td>
</tr>
</tbody>
</table>
Exit Devices – Surface Vertical Rod

OWNER APPROVAL IS REQUIRED BEFORE VERTICAL ROD DEVICES ARE SPECIFIED.

Non Rated Pair of Doors Von Duprin 9927 series

Fire Rated Pair of Doors Von Duprin 9927-F series

Cylinder Dogging required at all non fire rated devices.

Removable Mullion

Key Removable Mullion – Non-Rated Pair of Door Von Duprin KR4954

Key Removable Mullion – Fire Rated Pair of Door Von Duprin KR9954

Mullions shall accept small format interchangeable core cylinders only.

Coordinator

Coordinator Ives COR x FL X MB

Automatic Flush bolts – Hollow Metal Doors only

Metal Door Ives FB31P

Ives (Top Bolt with Auxiliary Fire Latch) FB32

Constant Latching Flush bolts

Wood Door Ives FB61P

Ives (Top Bolt with Auxiliary Fire Latch) FB62

Metal Door Ives FB51P

Ives (Top Bolt with Auxiliary Fire Latch) FB52

Manual Flush bolts

Fire Rated Wood Door Ives FB358

Wood Door Ives FB358 or FB458

Fire Rated Metal Door Ives FB458

Metal Door Ives FB458

Dust Proof Strike (at all doors with bottom bolt)

Dust Proof Strike Ives DP1 or DP2
### Surface Closer

<table>
<thead>
<tr>
<th>Surface Closer</th>
<th>LCN</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Doors</td>
<td>LCN</td>
<td>4041</td>
</tr>
<tr>
<td>Exterior Outswing with Stop Arm</td>
<td>LCN</td>
<td>4041 SCUSH</td>
</tr>
<tr>
<td>Interior In swing</td>
<td>LCN</td>
<td>4041 RW/PA</td>
</tr>
<tr>
<td>Interior Outswing</td>
<td>LCN</td>
<td>4041 EDA</td>
</tr>
<tr>
<td>Student Rooms</td>
<td>LCN</td>
<td>1261</td>
</tr>
<tr>
<td>HD &amp; Faculty Apartments</td>
<td>LCN</td>
<td>1261</td>
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### Pneumatic Automatic Operator

<table>
<thead>
<tr>
<th>Pneumatic Automatic Operator</th>
<th>LCN</th>
<th>Series</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pull Side</td>
<td>LCN</td>
<td>4810 Series</td>
</tr>
<tr>
<td>Push Side</td>
<td>LCN</td>
<td>4820 Series</td>
</tr>
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</table>

Furnish required control box, tubing and actuators.

### Overhead Stops and Holders

<table>
<thead>
<tr>
<th>Overhead Stops and Holders</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heavy Duty Surface</td>
<td>Glynn Johnson 90 Series</td>
</tr>
<tr>
<td>Heavy Duty Concealed</td>
<td>Glynn Johnson 100 Series</td>
</tr>
<tr>
<td>Medium Duty Surface</td>
<td>Glynn Johnson 450 Series</td>
</tr>
<tr>
<td>Medium Duty Concealed</td>
<td>Glynn Johnson 410 Series</td>
</tr>
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</table>

### Door Stops

<table>
<thead>
<tr>
<th>Door Stops</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall</td>
<td>Ives  WS406CCV/CVX</td>
</tr>
<tr>
<td>Floor (Interior)</td>
<td>Ives FS436 or FS438</td>
</tr>
<tr>
<td>Floor (Exterior)</td>
<td>Ives FS18S or FS444</td>
</tr>
</tbody>
</table>

### Magnetic Hold Open

<table>
<thead>
<tr>
<th>Magnetic Hold Open</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wall</td>
<td>LCN   SEM7850</td>
</tr>
<tr>
<td>Floor</td>
<td>LCN   SEM7820</td>
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</tbody>
</table>

### Accessories

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Push Plate</td>
<td>Ives  8200 6&quot; x 16&quot;</td>
</tr>
<tr>
<td>Pull Plate</td>
<td>Ives  8303-0 6&quot; x 16&quot;</td>
</tr>
<tr>
<td>Kick Plate (Single Door)</td>
<td>Ives  8200 10&quot; x 2&quot; LDW</td>
</tr>
<tr>
<td>Kick Plate (Pair of Doors)</td>
<td>Ives  8200 10&quot; x 1&quot; LDW</td>
</tr>
<tr>
<td>Mop Plate</td>
<td>Ives  8200 6&quot; x 1&quot; LDW</td>
</tr>
<tr>
<td>Lock Protector</td>
<td>Ives  LG12</td>
</tr>
<tr>
<td>Item</td>
<td>Manufacturer</td>
</tr>
<tr>
<td>-------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Threshold</td>
<td>NGP</td>
</tr>
<tr>
<td>Architect to coordinate with project conditions.</td>
<td></td>
</tr>
<tr>
<td>Smoke Seal</td>
<td>NGP</td>
</tr>
<tr>
<td>Weatherstrip at Head</td>
<td>NGP</td>
</tr>
<tr>
<td>Weatherstrip at Jambs</td>
<td>NGP</td>
</tr>
<tr>
<td>Door Sweep</td>
<td>NGP</td>
</tr>
<tr>
<td>Rain Drip</td>
<td>NGP</td>
</tr>
<tr>
<td>Astragal</td>
<td>NGP</td>
</tr>
<tr>
<td>Metal Frame Silencer</td>
<td>Ives</td>
</tr>
<tr>
<td>Wood Frame Silencer</td>
<td>Ives</td>
</tr>
</tbody>
</table>
## Access Control

<table>
<thead>
<tr>
<th>Product</th>
<th>Manufacturer</th>
<th>Model</th>
</tr>
</thead>
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<tr>
<td>Electric Strike</td>
<td>HES</td>
<td>9600 Series</td>
</tr>
<tr>
<td></td>
<td>VON</td>
<td>6000 Series</td>
</tr>
<tr>
<td>Latch Retraction Panic Hardware</td>
<td>VON</td>
<td>EL99 Series</td>
</tr>
<tr>
<td>Electric Lever Trim</td>
<td>VON</td>
<td>E996L -03</td>
</tr>
<tr>
<td>Magnetic Lock</td>
<td>Rutherford Controls</td>
<td>8310 or 8320 - DSS/SCS</td>
</tr>
<tr>
<td>Battery Operated Lockset</td>
<td>Onity</td>
<td>See specification section 087413</td>
</tr>
</tbody>
</table>

END OF SECTION 087100
SECTION 087413 – OFFLINE CARD KEY ACCESS CONTROL (Stand-Alone Locks)

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following:

1. The contractor shall design, furnish and install a complete offline card key access system where necessary to ensure the proper operation of all specified doors in project areas.

2. Performance Requirements: to meet the minimum performance requirements, the Contractor shall be responsible for:

   a. Designing, furnishing and installing a fully operational system.
   b. Providing the design in the form of Shop Drawings to the Architect for approval prior to installation. The design data furnished shall be of sufficient detail to enable the Architect to determine whether the equipment, materials and installation the Contractor proposes to furnish comply with the requirements specified.
   c. Providing all software installation, configuration, and programming necessary for a fully operational system.
   d. Providing detailed control and checking for each item of equipment and materials provided, each portion of the installation, the final installation, and remedy of any and all defects therein.

3. Items not specifically mentioned herein but necessary for a fully operational system shall be furnished, matching in quality and finish the items described or specified.

B. Intent of Specification

1. The following specification shall be considered a guide only, and the contractor is cautioned to refer to general conditions, special conditions, and the preamble of this section. It shall be the contractor’s responsibility to furnish and install all required hardware.

2. Where items of hardware aren’t definitely or correctly specified and are required for completion of the Work, a written statement of such omission, error, or other discrepancy shall be sent to the Architect, prior to date specified for receipt of bids for clarification by addendum; or, furnish such items in the type and quality established by this specification, and appropriate to the service intended.

3. Adjustments to the Contract Sum will not be allowed for omissions of items not clarified prior to bid opening.

C. Related sections:

1. Division 1 – General Requirements
2. Division 8 – Hollow Metal Doors and Frames
3. Division 8 – Flush Wood Doors
4. Division 8 – Aluminum Doors and Frames
5. Division 8 – Special Doors
6. Division 26 - Sections for connections to electrical power system.
7. Division 28 – Electronic Safety and Security, Sections for low-voltage wiring work and for access control devices installed at door openings and provided as part of a security access system.

1.3 SYSTEM DESCRIPTION

A. Furnish and install an electronic lock system, complete and including without limitation, the following components:
   1. Complete programming, data storage and software.
   2. Connector package, encoder and cable, as necessary, to interface with minimum recommended computer system.
   3. Lock units.
   5. Portable programmer for lock units.
   6. Special tools.
   7. Operating manuals.
   8. On-site training of staff.

1.4 REFERENCES

A. Use date of standard or code in effect as of Bid date.
B. State and Local Codes including Authority Having Jurisdiction.
C. American National Standards Institute
   1. ANSI A156.13 – Mortise Locks and Latches
   2. ANSI A156.18 – Material and Finishes
D. NFPA – National Fire Protection Association
   1. NFPA 80 – Fire Doors and Windows
E. UL – Underwriters Laboratories
   1. UL10C – Fire Tests of Door Assemblies (Positive Pressure)
F. ANSI A117.1 – Accessible and Usable Buildings and Facilities.
G. ADA – Americans with Disabilities Act.
H. BHMA – Builders Hardware Manufacturers Association
I. DHI – Door and Hardware Institute
J. SDI – Steel Door Institute
1.5 SUBMITTALS

A. Submit under provisions of Division 01.

B. **Product Data:** Manufacturer's data sheets on each product to be used.
   1. Preparation instructions and recommendations.
   2. Storage and handling requirements and recommendations.
   3. Installation methods.

C. **Shop Drawings:**
   1. Drawings showing layout, location, profiles and product components, including anchorage, accessories and finish colors.
   2. Locksets as shown in Section 087100

D. **Quality Assurance Submittals:** Refer to Quality Assurance requirements for information description.
   1. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
   2. Manufacturer's Field Reports: Manufacturer's field reports specified herein.

E. **Closeout Submittals:**
   1. Operation and Maintenance Data.
   2. Warranty documents.

F. **Selection Samples:** For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

G. **Verification Samples:** For each finish product specified, two samples, minimum size 6 inches (150 mm) square, representing actual product, color, and patterns.

1.6 **Quality Assurance Submittals:** Refer to Quality Assurance requirements for information description.

   1. **Qualification Data:** For Manufacturer and Contractor, Compliance with this Section shall include letters of certification. Certifications shall be submitted for approval with and be incorporated with submittal. Submittals will not be considered without the certifications.
   2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
   3. Manufacturer's Field Reports: Manufacturer's field reports specified herein.

B. **Closeout Submittals:**
   1. Operation and Maintenance Data.
   2. Warranty documents.

C. **Submittal Sequence:** Submit shop drawings at earliest possible date, particularly where approval of the shop drawings must precede fabrication of other work that is critical in Project construction schedule.
1.7 QUALITY ASSURANCE

A. Requirements of Regulatory Agencies:
   1. Furnish material to comply with the requirements of laws, codes, ordinances, and regulations of the governmental authorities having jurisdiction where such requirements exceed the requirements of the Specifications.
   2. Furnish material to comply with the requirements of the regulations for public building accommodations for physically handicapped persons of the governmental authority having jurisdiction and to comply with Americans with Disabilities Act (ADA) and ANSI A117.1 Accessible and Usable Buildings and Facilities.

B. Manufacturer Qualifications:
   1. Manufacturer capable of providing field service representation during construction and operation.

C. Installer Qualifications:
   1. Installer shall have had experience in the installing and servicing of electronic lock systems and shall be approved by the manufacturer of the system.
   2. Manufacturer trained.
   3. Manufacturer certified or acceptable to manufacturer.

D. Fire-Rated Door Assemblies: Provide door hardware for assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to NFPA 252 and UL10C. Project requires door assemblies and components that are compliant with positive pressure and S-label requirements. Specifications must be cross-referenced and coordinated with door manufacturers to ensure that total opening engineering is compatible with UL10C Standard for Positive Pressure Fire Tests of Door Assemblies. Provide proper latching hardware, non-flaming door closers, approved-bearing hinges, plus resilient and required intumescent seals if not furnished with wood door.

E. Templates: Furnish a complete list and suitable templates, together with finish hardware schedule to contractor, for distribution to necessary trades supplying materials to be prepped for finish hardware.

F. Mandatory Pre-installation Meetings:
   1. Installer shall conduct pre-installation meeting with General Contractor/Construction Manager to verify project requirements and substrate conditions.
   2. Review and finalize construction schedule and verify availability of materials, Installer's personnel, equipment, and facility needed to make progress and avoid delays.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Inventory material on receipt from manufacturer and provide secure lock-up for material delivered to Project site so that completion of work will not be delayed by losses both before and after installation.

B. System components, including locksets must be stored in a dry temperature controlled environment.
C. Any shortage or damaged good shall be made without cost to the owner.

1.9 COORDINATION

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

1.10 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of material that fail in materials or workmanship within specified warranty period.

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

   a. Structural failures including excessive deflection, cracking, or breakage.
   b. Faulty operation of material.
   c. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.
   d. Failure due to programming and embedded factory installed system information.

2. Warranty Period: Two (2) years from date of Substantial Completion.

3. Contractor/manufacturer/installer shall be notified immediately of defective products, and be given a reasonable opportunity to inspect the goods prior to return. Manufacturer will not assume responsibility, or compensation, for unauthorized repairs or labor.

1.11 MAINTENANCE SERVICE

A. Maintenance Tools and Instructions: Furnish a complete set of specialized tools and maintenance instructions as needed for Owner's continued adjustment, maintenance, and removal and replacement of door hardware.

1.12 EXTRA MATERIALS

A. Deliver to Owner extra materials from same production run as products installed. Package products with protective covering and identify with descriptive labels.

B. Quantity: Furnish quantity of items listed equal to 8 percent of amount installed not to exceed 30 of each item.

   1. Locks.
   2. Panic trim.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: Onity (formerly TESA ESI), which is located at: 2232 Northmont Parkway Suite 100; Duluth, GA 30096; Toll Free Tel: 866-to-Onity; Tel: 770-497-3949; Fax: 770-448-6305; Email: moreinfo@onity.com; Web: www.Onity.com
2.2 AUTHORIZED SUPPLIER AND INSTALLERS

A. System Integration Corp – 4699 Nautilus Court South Suite 205, Boulder, CO 80301
   Brian FitzGerrell 303-920-8800  brianf@integrationcorp.com

B. Henry Bros Electronics – 3964 Youngfield St. Wheatridge, CO 80033
   Hallie Hotchkiss 720-235-1321  HHotchkiss@hbe-inc.com

C. Colorado Doorways – 3333 E 52nd Ave, Denver, CO 80216
   David Dupuis 303-312-0270  dupuis@codoor.com

2.3 MANUFACTURED UNITS

A. Electronic Locks:
   1. Keying: Locks shall be opened by an authorized keycard upon insertion and removal.
   2. Lock shall have capacity of up to 3000 individual cardholders.
   3. Lock shall have internal audit trail of up to 1184 entries in lock - must include time, date, door identification, card holder identification and function performed.
   4. Lock shall utilize track three (3) of the magnetic stripe card, leaving tracks one (1) and two (2) available for other applications.
   5. Programming of lock must be performed by hand held, portable programmer and must not require the use of a laptop or palmtop computer.
   6. Lock shall have internal clock and calendar to provide for timed events and changes in modes of operation.
   7. Lock reader shall operate on ISO/ABA standard, high coercivity magnetic stripe keycards.
   8. Lock shall operate off of four (4) standard AA alkaline batteries. These must not come in a proprietary package and must be available from any wholesale or retail source.
   9. Lock shall retain a non-volatile transaction memory.
  10. Lock shall operate by a motorized clutch.
  11. Lock reader shall require vertical insertion of card into the read head located at top of lock.
  12. Lock shall permit free egress.
  13. Lock shall be applicable in interior or exterior applications.
  14. Lock shall provide green LED for insertion and removal of valid keycard and red LED for insertion and removal of invalid keycard.
  15. Lock shall provide low battery indication.
  16. Lock low battery indication shall be solid green LED and flashing red LED for 1-1/2 seconds after insertion and removal of valid keycard.
  17. Cards to allow access to multiple rooms.
  18. Mortise with deadbolt to allow projection of deadbolt externally after the insertion and removal of valid keycard and the lifting up of the external handle.
  19. Lost cards in system shall be replaceable and upon insertion of new sequential card the lost card shall be invalidated in lock. This issuance of a new sequentially encoded card and invalidation process shall not require reprogramming of lock by any means other than new card insertion into reader.
  20. Lock shall reset to operating mode immediately after release of handle or on a programmable time should the handle not be activated.
  21. Lock card reader shall be designed to allow liquids to pass through and drain without affecting lock operation.
  22. Batteries shall be accessible from the interior of the door.
  23. Lock shall utilize freewheeling clutch operation.
  24. Clutch shall enable latch retraction by external handle shaft after insertion and removal of valid keycard.
25. Use of authorized card shall allow deadbolt activation from the exterior of the door.
26. Mechanical override models shall accept any ANSI standard 1 inch (25 mm) mortise lock cylinder.

B. Physical Characteristics:
1. Weight - 9.8 lb. (4.5 kg).
2. Lock dimensions - 9-1/2 inches by 3-1/8 inches by 3-1/4 inches (241 mm by 79 mm by 83 mm).
3. Temperature Range - minus 32 degrees F (0 degrees C) / 161 degrees F (72 degrees C) with standard alkaline batteries.
4. Humidity - Up to 95 percent without condensation.
5. Power Supply - 4 AA alkaline batteries (included).
6. Power Consumption - 20 mA in standby mode.

C. Product:
1. Locksets shall be mortise type, anti-tamper trim handle with free moving clutch. Provide Grade 1, ANSI/BHMA 156.25, UL listed mortise lock equipped with adjustable armored front. Provide either standard mortise lockset with deadbolt or mortise lock latch only as required by Owner.
2. Product shall be the Onity Integra5 series of electronic lock with high coercivity encoder.
   a. Onity KTD-M-L-626 Mortise latch only (no keypad or override)
   b. Onity KTA-M-DK-626 Mortise lock with deadbolt and keypad
   c. Onity KTA-RIM-VD-626 Rim panic lock/interface (without bar) (without keypad or key override)
3. Finish: Satin Dull Chrome, US26D / BHMA 626

2.4 SOFTWARE PACKAGE – Furnished by Owner.
2.5 PORTABLE PROGRAMMER – Furnished by Owner.
2.6 WORKSTATIONS & SERVER – Furnished by Owner.
2.7 FRONT DESK ENCODER UNIT
   A. Furnish one complete front desk card encoder unit including Standard Hi-Co Motorized Encoder, communications distributor and related cables. Installation will be performed by Owner.
2.8 KEYCARDS
   A. Activation of all units shall be by insertion of encoded keycards.
   B. Keycards use high coercivity standard ISO/ABA mag-stripe cards.
   C. Quantity - 5,000.
EXECUTION

2.9 DESIGNING OF SYSTEM

A. Contractor shall design a complete offline Card Key Access system.

B. Doors to be served are as specified in Section 087100 Door Hardware.

2.10 EXAMINATION

A. Compliance: Comply with manufacturer's Product Data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

B. Templates: After approval of shop drawings, furnish lock templates to door and frame manufacturer for fabrication.

C. Site Verification of Conditions: Verify substrate conditions are acceptable for product installation in accordance with manufacturer's instructions.

1. Verify doors and areas where equipment is to be installed are in compliance with electronic locking system manufacturer's requirements.

D. Do not begin installation until areas, supporting construction and substrates have been properly prepared.

E. If preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

2.11 PREPARATION

A. Steel Doors and Frames: Comply with DHI A115 Series.

1. Surface-Applied Door Hardware: Drill and tap doors and frames according to ANSI/SDI A250.6.

B. Wood Doors: Comply with DHI A115-W Series.

C. Clean surfaces thoroughly prior to installation.

D. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

2.12 INSTALLATION

A. Installation personnel shall be trained and approved by system manufacturer.

B. Mounting Heights: Mount door hardware units at heights as follows unless otherwise indicated or required to comply with governing regulations.


2. Wood Doors: DHI WDHS.3, "Recommended Locations for Architectural Hardware for Wood Flush Doors."
C. Install of system components shall comply with manufacturer’s instructions and recommendations. Where cutting and fitting are required to install material onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Contractor shall install door hardware, head-end equipment (computer(s), system software, and other equipment and materials as necessary to provide a complete and functional offline card key access system.

2.13 TRAINING OF OWNER’S PERSONNEL

A. Provide instruction of owner’s personnel to ensure the security system is operated properly. All training shall be accomplished before owner’s personnel are allowed to operate system. System’s manufacturer to provide option for on site technical personnel to assist with final training and grand opening support.

B. Provide owner with software package, data files, lock mastering design and system manuals.

2.14 ADJUSTING

A. Installers shall adjust and check each lock to ensure proper operation or function of every unit, and replace that which cannot be adjusted to operate freely and smoothly as intended for the application made.

2.15 CLEANING AND PROTECTION

A. Clean adjacent surfaces soiled by door hardware installation.

B. Clean operating items as necessary to restore proper function and finish.

C. Provide final protection and maintain conditions that ensure that door hardware is without damage or deterioration at time of Substantial Completion.

2.16 DEFECTIVE MATERIAL AND/OR DEFECTIVE INSTALLATION GUIDELINES

A. The following will be considered defective materials:

1. Unauthorized substitutes.
2. Items delivered with missing broken, damaged or defaced parts.
3. Items of incorrect function or finish.

B. The following will be considered as defective installation:

1. Items broken, damaged or defaced during installation.
2. Items incomplete, misaligned or incorrectly located.

END OF SECTION 087413
iSTAR Pro supports up to 16 readers
iSTAR Pro is an intelligent, powerful 16-door controller that works with both the C•CURE 800/8000 and C•CURE 9000. iSTAR Pro’s strong feature set provides a solution to the most demanding access control applications.

Its streamlined design features the latest technology and a minimum of circuit boards to provide a highly dependable, cost-effective solution for enterprise-wide access control.

iSTAR Pro uses a General Controller Module (GCM) which includes standard 64 MB memory that can be increased to 128 MB using a field-installable, industry-standard 64 MB SDRAM module. The GCM controls up to two Access Control Modules (ACM) with each supporting up to eight Wiegand or RM readers. The ACM also includes 16 supervised inputs and eight output relays for door control. iSTAR Pro also includes two PCMCIA slots, alphanumeric LCD, and DIP switches for configuration and diagnostics, as well as various network and serial communication ports.

iSTAR eX supports up to eight readers
iSTAR eX is a four- or eight-door Ethernet-ready controller that provides FIPS 197-validated 256-bit encryption. iSTAR eX is also listed for FIPS 140-2, the U.S. government’s most rigorous standard for cryptographic products. This is ideal for government applications or for any enterprise looking for the highest security available in the industry today.

Initially available with four door support, iSTAR eX is easily field upgradable to eight readers using a USB security key. Additional RM readers (5-8) can be activated by inserting the security key into a USB port located on the panel.

iSTAR eX works with C•CURE 800/8000 and C•CURE 9000 and other Software House controllers to provide the most demanding customers with a solution they can use across their entire corporation. Whether installed at the corporate headquarters with hundreds of employees, or at the regional sales branches with only a few employees, iSTAR eX ensures that the same security policies and procedures are implemented across the entire corporation.

In the same vein, iSTAR eX provides government facilities with a highly secure option for protecting their Sensitive Compartmented Information Facilities (SCIFs) which can be small, classified areas with a limited number of doors.
Easy to setup with DHCP/DNS/WINS
iSTAR controllers support Dynamic Host Configuration Protocol (DHCP) to simplify installation. DHCP is a communications protocol that lets network administrators centrally manage and assign Internet Protocol (IP) addresses from a central point. When a device is plugged into a different place on the network, iSTAR sends a new IP address to the administrator. For easy setup, iSTAR controllers also support Domain Name System (DNS), which translates domain names into IP addresses, and Windows Internet Naming Service (WINS), a system that determines the IP address associated with a particular computer on the network.

Ensure Effective Communication with Clusters
iSTAR Pro controllers support Ethernet and RS-232 communication topologies and contain a PC Card Type II (PCMCIA) slot for additional types of communications. iSTAR eX contains two onboard Ethernet ports for communications. Communication is peer-to-peer, meaning that the controllers communicate without the need for host intervention. A single connection from the host supports multiple controllers through a TCP/IP subnet.

Clusters are user-defined groups of up to 16 controllers and can be created to enhance security by separating a widely dispersed facility into different controlled areas. A cluster is led by a master controller which manages the primary communication between the host computer and the rest of the controllers within the cluster. The master controller communicates all event and cardholder data between the cluster and the C•CURE 800/8000 and C•CURE 9000 host. The other controllers in the cluster or “members” communicate through the master to the other controllers in the cluster to link events and control anti-passback in the area secured by this cluster of controllers. To ensure constant security, clusters also feature a secondary communication path in the event the master controller loses communication with the network.

Control Security Better with Global Anti-Passback
Global anti-passback is critical for ensuring uncompromised security. Using a cluster configuration as described above, the iSTAR controllers can easily share cardholder status and location. The controllers are then able to send an anti-passback violation notice to the C•CURE 800/8000 system should a cardholder pass a card back to another person to use or if that same cardholder tries to access the same area more than once during a specified period. Similarly, tailgating, or following another cardholder into a secured area without presenting a separate badge, can easily be flagged.

Keypad Commands Provide the Ultimate in Flexibility
Used with C•CURE 800/8000, keypad commands provide a powerful way to activate events. These commands include anything from triggering a duress call and sounding an alarm, to locking and unlocking doors, directly from an RM reader keypad. Commands can be configured to require a card presentation and/or a PIN to validate the command.

Extended Card Numbers Enhance Security
iSTAR controllers support extended card numbers allowing you to comply with certain federal guidelines (such as FIPS 201) that require a Cardholder Unique Identifier (CHUID), which is comprised of multiple field lengths. In addition, iSTAR controllers support card numbers of up to 256 bits, eliminating the need for multiple facility codes, site codes, or offset in order to avoid card duplication. Longer card numbers offer greater protection against card duplication and are especially valuable to customers who require card numbers that exceed ten digits.

How Many Cards or What Kind - You Decide
Used with C•CURE 800/8000 and C•CURE 9000, iSTAR controllers allow administrators to assign up to five cards per cardholder record rather than having to create a separate record for each card. Using this powerful feature, users can assign a PIN as one of the cards for a flexible and secure solution. This simplifies the management and maintenance of personnel records.

For additional flexibility, iSTAR controllers can support up to 128 card formats system-wide and ten card formats per reader, including smart cards. This expanded ability to use multiple card types (such as 26-bit, 37-bit, or Corporate 1000) at a single reader frees customers from having to consolidate or re-issue new cards.

Easily Test and Troubleshoot with Configuration Diagnostics
iSTAR controllers include a built-in suite of diagnostics to test and troubleshoot hardware components such as inputs, outputs, reader ports, last card read, PCMCIA cards, and battery charger state. In addition, via the Internet, you can retrieve real-time status and diagnostics of:
- controller time/boot time
- total/available memory
- connection status
- firmware and OS versions
- hardware (MAC) and IP addresses
- downloaded clearances and cardholders

Plus, for easy installation and quick troubleshooting, iSTAR controllers include an LCD.
Data Security is Critical

iSTAR eX combines AES encryption with the strict guidelines set forth by US government regulations to provide a highly secure solution. AES specifies a FIPS 140-2 approved cryptographic algorithm that can be used to protect electronic data. iSTAR eX communicates with C•CURE 800/8000 and C•CURE 9000 using 256-bit FIPS 140-2 validated AES encryption making it the first security system in the industry to satisfy this rigorous requirement from the federal government.

Secure communication for the iSTAR Pro is provided using RSA Data Security’s RC4 technology implemented using Microsoft® CryptoAPI. Multi-key authentication for real-time communication and password authentication for use with the local diagnostic configuration utility provide a barrier against intrusion into all iSTAR controllers.

Additionally, all iSTAR controllers address the needs of businesses to protect critical security data. With instant database backup and restore capabilities, iSTAR controllers provide a highly reliable security solution and ensure that important data is protected, even during communications failure.

Easily Upgradeable

All iSTAR controllers feature the ability to flash new functionality directly from the host, ensuring that you always have the very latest technology.

Choose an iSTAR architecture that makes sense for your application

Providing a security solution that is unsurpassed in the industry for its versatility and security, iSTAR Pro and iSTAR eX controllers can be used together in the same system. This provides an enterprise solution that recognizes that even the largest corporations have smaller branches and facilities that may need to use the same security standards without enormous overhead.

iSTAR and apC controllers can operate together with a C•CURE 800/8000 or C•CURE 9000 host on the same network. Although they cannot communicate directly to each other, event linking can easily be configured through the host.
### Specifications

<table>
<thead>
<tr>
<th>Feature</th>
<th>iSTAR Pro 64 MB</th>
<th>iSTAR Pro 64 MB</th>
<th>iSTAR Pro 128 MB</th>
<th>iSTAR Pro 128 MB</th>
<th>iSTAR eX 64 MB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Electrical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Input (VAC, Hz, A)</td>
<td>90 to 240 VAC, 47 to 440 Hz, 0.5 A</td>
<td>90 to 260 VAC, 47 to 440 Hz, 0.5 A</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Output (of power supply)</td>
<td>12 VDC at 5.0 A maximum</td>
<td>12 VDC at 6.5 A maximum</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery Backup</td>
<td>Rechargeable NiMH batteries provide backup of memory and RTC for 24 hours, with a 24 hour recharge time</td>
<td>Built-in UPS with 17 Ahr SLA battery provides full operational backup for four hours, with a 24 hour recharge time</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (H x W x D)</td>
<td>61.6 x 41.9 x 10.2 cm (24.25 x 16.5 x 4.0 in)</td>
<td>61.6 x 41.9 x 10.2 cm (24.25 x 16.5 x 4.0 in)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unit Weight</td>
<td>10.6 kg (23.3 lbs)</td>
<td>16.8 kg (37 lbs) with battery</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>16 AWG metal wall mounted locking cabinet with tamper switch on door</td>
<td>16 AWG metal wall mounted locking cabinet with tamper switch on door</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Inputs/Outputs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supervised Inputs</td>
<td>32</td>
<td></td>
<td></td>
<td></td>
<td>16</td>
</tr>
<tr>
<td>Input Expansion</td>
<td>Up to 128 additional, using 18 input modules on RM bus</td>
<td>Up to 64 additional, using 18 input modules on RM bus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td>16 Form C relays, 30 VAC/DC, 2.5A</td>
<td>Four Form C relays, 30 VAC/DC, 2.0A, plus four open collector outputs, wet or dry</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Output Expansion</td>
<td>Up to 128 additional, using R8 output modules on RM bus</td>
<td>Up to 64 additional, using R8 output modules on RM bus</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reader Inputs</td>
<td>16 (Eight-reader model available)</td>
<td>Four (optional four additional through RM)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Regulatory</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UL294, UL1076, CE, FCC, RoHS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0° to 50°C (32° to 122°F) 5 to 95% RH, noncondensing</td>
<td>0° to 50°C (32° to 122°F) 5 to 95% RH, noncondensing</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage Temperature</td>
<td>-20° to 70°C (-4° to 158°F)</td>
<td>-20° to 70°C (-4° to 158°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operating and Storage with Battery</td>
<td>0° to 50°C (32° to 122°F)</td>
<td>-20° to 40°C (-4° to 104°F)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Heat Dissipation</td>
<td>409 BTU/hr</td>
<td>522 BTU/hr</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Controller Capacity**

<table>
<thead>
<tr>
<th>Feature</th>
<th>iSTAR Pro 64 MB</th>
<th>iSTAR Pro 64 MB</th>
<th>iSTAR Pro 128 MB</th>
<th>iSTAR Pro 128 MB</th>
<th>iSTAR eX 64 MB</th>
</tr>
</thead>
<tbody>
<tr>
<td>Firmware version</td>
<td>up to v3.3</td>
<td>v4.0 or higher</td>
<td>up to v3.3</td>
<td>v4.0 or higher</td>
<td>v4.1 or higher</td>
</tr>
<tr>
<td>Number of personnel records with one clearance, one card/person, ten-digit cards</td>
<td>500,000</td>
<td>525,000</td>
<td>1,000,000</td>
<td>1,200,000</td>
<td>410,782</td>
</tr>
<tr>
<td>Number of personnel records with ten clearances, one card/person, ten-digit cards</td>
<td>295,000</td>
<td>295,000</td>
<td>640,000</td>
<td>680,000</td>
<td>235,774</td>
</tr>
<tr>
<td>Number of personnel records with one clearance, five cards/person, ten-digit cards</td>
<td>NA</td>
<td>170,000</td>
<td>NA</td>
<td>375,000</td>
<td>132,820</td>
</tr>
<tr>
<td>Number of personnel records with ten clearances, five cards/person, 40-digit cards</td>
<td>NA</td>
<td>110,000</td>
<td>NA</td>
<td>250,000</td>
<td>88,546</td>
</tr>
</tbody>
</table>

**Notes:**

(a) Memory allocation within iSTAR Pro and iSTAR eX is dynamic and shared between cardholders, event storage, and configuration information.
(b) To estimate how much space is needed for the personnel database in iSTAR Pro v4.0 and higher and iSTAR eX for multiple cards and/or extended card capacity, refer to the C×CURE 800/8000 v9.3 README file located in the Member Center on www.swhouse.com.
(c) iSTAR can support up to five cards for each cardholder record; each card is independent of each cardholder in the system.
The apS™ Advanced Power System provides uninterrupted power for the apC™/8X and iSTAR™ intelligent access control and alarm monitoring panels. The apS and apC/8X or iSTAR combination serves as the basic building block for any C•CURE Security Management System.

The apS connects directly to the main power fail input replacing the standard power supply provided with the apC/8X or iSTAR. When the apS senses an AC power failure it immediately notifies the host, while continuing to supply the power required to operate the panels and connected readers.

Two relay outputs are provided on the apS for connection to inputs on the apC/8X or iSTAR. One is connected to the “power fail” input, and indicates loss of AC power to the apS. A second output is connected to a general purpose input and indicates low battery voltage or impending loss of backup power.

LED indicators located on the cabinet door of the apS display AC loss and the relative battery voltage level to approximate the state of battery charge.

FEATURES & BENEFITS

- Provides uninterrupted power backup for the apC™/8X and iSTAR™
- Cabinet LEDs indicate battery voltage and AC fault
- Low battery warning
- AC failure supervision
- Single or dual battery configurations
- Dedicated interface with Main Power Fail input of apC/8X and iSTAR
- Up to 53 hours of power backup
- Cabinet width matches apC/8X and iSTAR cabinet and uses the same key
- Reverse polarity protection
- Overcurrent protection
- Thermal protection
- UL 603 compliant
**SPECIFICATIONS**

**Input**

Voltage: 120-220 VAC, 50/60 Hz
Current: 2.5 Amps AC Maximum

**Output**

DC System
Voltage: 13.8 VDC
Current: 3.75 ADC
Protection: Self resetting PTC rated at 3.75 ADC

**Battery**

Voltage: 13.8 VDC
Current: 4.5 ADC maximum
Protection: Fused at 10 ADC Fault Outputs

**AC Fault**

Output: Form C dry contact
Activation: AC power failure, blown AC fuse

**Low Battery**

Output: Form C dry contact
Activation: Below 10.3 VDC

*Transformer is end-user strappable for 240 VAC, 50/60 Hz operation.

**Batteries**

Single Rating: 12 Volt 17 Amp-hour
Dual Rating: 12 Volt 34 Amp-Hour

**Physical Characteristics**

Dimensions: 16.25 x 14.5 x 4 inches
41.28 x 36.83 x 10.16 cm
Weight: 19.5 lbs (8.8 kg)
Battery Weight (single): 13.5 lbs (6.1 kg)
Housing: 16 Gauge Carbon Steel
Operating Temperature: 32° to 122°F (0° to 50°C)

**Current Draw at 12VDC**

- Mag Stripe: RM1-MP, RM2-MP: 80mA
- Mag Stripe with LCD Display: RM2L-MP: 180mA
- Mag Stripe Mullion: RM3-MP: 80mA
- Motorola Indala Proximity: RM1-PI, RM2-PI: 80mA
- Motorola Indala Proximity with LCD Display: RM2L-PI: 180mA
- HID Proximity: RM1-PH, RM2-PH: 135mA (avg) 250mA (peak)
- HID Proximity with LCD Display: RM2L-PH: 235mA (avg) 350mA (peak)
- Wiegand: RM1-W: 80mA
- Reader Module: RM4: 75mA
- Relay Module: ARM-T1: 17mA (Relay Active)
- iSTAR GCM: 280mA
- iSTAR ACM: 130mA (no active relays) 35mA per active relay (add 35mA per active relay)
- iSTAR relay board: 35mA per active relay
- apG/8X: 120mA (add 17mA per active relay)
- apG/C: 120mA (add 17mA per active relay)
- Star Coupler: 80mA (no active relays) 17mA per active relay (add 17mA per active relay)
- Mini Star Coupler: 40mA
- R/48: 60mA (no active relays) 17mA per active relay (add 17mA per active relay)
- I/32: 310mA
- 8 Input Module: 18: 150mA
- 8 Output Module: 8: 150mA (no active relays) 17mA per active relay (add 17mA per active relay)
- MRM: 140mA
- WPSC lower: 60mA
- WPSC upper: 70mA

These currents are estimates. Voltage tolerance on 12 VDC input is ± 15%.

---

For Product Information
Software House
1-800-550-6660
www.swhouse.com
The wide-ranging suite of RM card readers offers the features and flexibility you need to handle the most demanding access control applications. Choose from four different supported card technologies: magnetic stripe, proximity, HID® iCLASS®, and multi-technology. The RM Multi-Technology reader reads both proximity and smart cards, providing an ideal solution for customers looking to transition from proximity to a more secure smart card solution.

The RM readers’ attractive polycarbonate, all-weather housing can accommodate any of the four technologies. The universal design lets you mix and match different technologies on the same system while maintaining a consistent appearance.

The red, amber, and green LED colors indicate a range of conditions: valid or invalid card reads, door forced or held open, and system or configuration errors. Plus, an audible alert can signal these conditions. A keypad option is also available for entering Personal Identification Numbers (PINs) or implementing duress functionality.

An optional backlit LCD shows the date, time, and system conditions, and can be used to display instructions to cardholders such as “Enter PIN now” on RM card readers with keypads. The LCD keypad reader is also commonly used to arm and disarm intrusion zones. In fact, a model without a read head, the RM2L-NH, is available for those applications that require only a keypad and display interface.

All RM card readers use the same cable and connectors, simplifying installation and service. The RM card readers provide two supervised inputs for door monitoring and support two ARM-1 modules for local door lock control.

All RM readers are certified and listed by UL to the stringent safety and security standards of UL 294. The RM2L-4000 and RM2L-NH are also UL 1076 listed.
**Embedded Multi-Technology Support**
The RM Multi-Technology reader offers enhanced security through MIFARE® sector encryption, and is compatible with nearly all major card formats in the industry, including ISO 14443 A/B, ISO 15693, iCLASS, MIFARE, DESFire®, FIPS 201 PIV II, and most 125 KHz formats (HID and CASI® ProxLite). The RM Multi-Technology reader is approved by the U.S. GSA for use in FIPS 201 systems.

Equipped with the RoHS compliant RM-4 module in the familiar RM housing, the RM Multi-Technology reader provides the same features and functionality as our award-winning Software House Multi-Technology reader. The reader has the ability to “flash” new card protocols or formats locally to the reader.

The RM Multi-Technology reader can be used to transition from a proximity system to a more advanced smart card system gradually or to maintain an existing universe of proximity cards while moving select personnel to smart cards. Plus, its the only multi-technology reader in the industry to provide LCD and keypad support with a UL 1076 listing.

**Embedded HID iCLASS**
The RM iCLASS reader combines the convenience and high reliability of contactless smart card technology with the advanced electronics and stylish packaging of the RM card readers. A variety of access credentials are supported including photo identification badges and combination technology.

**Magnetic Stripe**
The RM Magnetic Stripe reader utilizes flexible and versatile card reader technology. The readers support high and low coercivity cards encoded on Track 2. The RM Magnetic Stripe reader gives you the option of using cards that have been magnetically encoded for other applications (consult factory for Track 1 and 3 applications). The RM Magnetic Stripe reader is available in standard and mullion styles and is coated for weather resistance.

**Embedded Indala Proximity**
The RM Indala Proximity reader combines the time tested reliability of Indala ASP® proximity technology with the advanced electronics and stylish packaging of the RM card readers. Read range: up to 12.7 cm (5 in)1

**Embedded HID Proximity**
Software House combines the sound functionality of the HID ProxPro® proximity technology with the sharp packaging of the RM card readers to bring you the RM HID Proximity reader. The RM HID Proximity reader is available in standard and mullion styles. Read range: up to 11.4 cm (4.5 in)1

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1 Actual read range may vary depending on environmental conditions, installation surfaces, and type of card presented

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**Reader Module (RM-4)**
Embedded in the RM readers, the RM-4 provides the hardware interface between a magnetic or Wiegand read head and apC or iSTAR hardware. The RM-4 also provides the inputs and outputs that communicate between door components and apC or iSTAR hardware. Also available separately in any suitable enclosure, the RM-4 can be used to create the connectivity between other third party readers and the apC or iSTAR when used on a C•CURE 800/8000 or C•CURE 9000 system.

**Keypad**
The optional 12-button keypad can be used on most RM card reader models for entering Personal Identification Numbers (PINs) utilizing powerful keypad commands or implementing duress functionality. The keypad is made of weather-resistant material and can be configured to respond to key depressions with an audible signal. The keypad option can easily be retrofitted in the field.

**LCD**
The LCD is an optional backlit text display which is available with any RM card reader. It provides cardholders with visual feedback and prompts such as “Access Granted” or “Enter PIN”. The display consists of two lines of 16 characters and can be configured to display custom messages. The LCD is designed to be used with readers that have a keypad and is not recommended for use in harsh temperatures.

**Keypad Arming Station**
The RM2L-NH Keypad Arming Station includes the LCD and keypad, but no read head. It is ideal for arming/disarming intrusion zones when a reader is not required.

**Heater Kit**
For some outdoor installations, a thermostatically controlled heater may be necessary. The RM card readers’ embedded heater adheres directly to the mounting plate and automatically switches on at 4°C (40°F).

**Auxiliary Relay Module (ARM-1)**
The ARM-1 provides 5A output for door strikes or other equipment located near the RM card reader which significantly reduces wiring back to the apC or iSTAR controllers.

**Conformal Coating**
Conformal coating is applied to the internal electronics of the RM card readers to protect them from dust, moisture, and extreme weather conditions.
## Wiring Configurations

<table>
<thead>
<tr>
<th>Wire Label</th>
<th>From</th>
<th>To</th>
<th>Function</th>
<th>Belden Part No. or Equiv.</th>
<th>Gauge (AWG)</th>
<th>No. of Pairs</th>
<th>Shielded</th>
<th>Max. Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>apC/8X or iSTAR</td>
<td>RM Reader, RM-4, I/O Modules</td>
<td>Communication</td>
<td>9641</td>
<td>24</td>
<td>1</td>
<td>Yes</td>
<td>1,219.2 m (4,000 ft)</td>
</tr>
<tr>
<td>B</td>
<td>apC/8X or iSTAR</td>
<td>RM Reader, RM-4, I/O Modules</td>
<td>Power</td>
<td>8442/8461</td>
<td>22/18</td>
<td>1</td>
<td>No</td>
<td>Varies</td>
</tr>
<tr>
<td>C</td>
<td>ARM</td>
<td>Locking Device</td>
<td>Control</td>
<td>8461</td>
<td>18</td>
<td>1</td>
<td>No</td>
<td>Varies</td>
</tr>
<tr>
<td>D</td>
<td>ARM</td>
<td>Power Supply</td>
<td>Power</td>
<td>8461</td>
<td>18</td>
<td>1</td>
<td>No</td>
<td>7.62 m (25 ft)</td>
</tr>
<tr>
<td>E</td>
<td>RM Reader, RM-4</td>
<td>ARM</td>
<td>Relay Switching</td>
<td>9462</td>
<td>22</td>
<td>1</td>
<td>Yes</td>
<td>7.62 m (25 ft)</td>
</tr>
<tr>
<td>F</td>
<td>RM Reader, RM-4</td>
<td>Door Contact</td>
<td>Door Position</td>
<td>8442/8461</td>
<td>22/18</td>
<td>1</td>
<td>No</td>
<td>609.6 m (2,000 ft)</td>
</tr>
<tr>
<td>G</td>
<td>RM Reader, RM-4</td>
<td>Request to Exit Device</td>
<td>Egress Control</td>
<td>8442/8461</td>
<td>22/18</td>
<td>1</td>
<td>No</td>
<td>609.6 m (2,000 ft)</td>
</tr>
<tr>
<td>H</td>
<td>RM-4</td>
<td>Proximity/Wiegand</td>
<td>Reader Comm.</td>
<td>9942</td>
<td>22</td>
<td>3</td>
<td>Yes</td>
<td>60.96 m (200 ft)</td>
</tr>
<tr>
<td>H</td>
<td>RM-4</td>
<td>Proximity/Wiegand</td>
<td>Reader Comm.</td>
<td>9260</td>
<td>20</td>
<td>3</td>
<td>Yes</td>
<td>91.44 m (300 ft)</td>
</tr>
<tr>
<td>H</td>
<td>RM-4</td>
<td>Proximity/Wiegand</td>
<td>Reader Comm.</td>
<td>Alpha Wire 5386C</td>
<td>18</td>
<td>3</td>
<td>Yes</td>
<td>152.4 m (500 ft)</td>
</tr>
</tbody>
</table>

## Door Wiring Configurations

### RM Mounting Specifications

#### Standard Style

![Standard Style Mounting Diagram](image)

- **Standard Style**
  - 14.07 cm (5.54 in)
  - 4.62 cm (1.81 in)
  - 12.95 cm (5.10 in)

#### Mullion Style

![Mullion Style Mounting Diagram](image)

- **Mullion Style**
  - 12.56 cm (4.94 in)
  - 10.72 cm (4.22 in)

---

(2) Use Belden Part Number specified or equivalent product
(3) Not required if powered locally
(4) Gauge varies according to length of wire. Consult apC manual for details
(5) Length varies according to application
(6) To comply with UL requirements, use shielded, minimum 22 AWG stranded, twisted-pair cable for monitor points, DSMs, and REXs. Use Belden #9462 or equivalent
# Specificatons

## Model Operating Temperature
(with Heater)

<table>
<thead>
<tr>
<th>Model</th>
<th>Operating Temperature (with Heater)</th>
<th>Power Requirements</th>
<th>Dimensions (H x W x D)</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM Multi-Technology: RM1-4000, RM2-4000</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 170 mA avg. 220 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>588 g (21 oz)</td>
</tr>
<tr>
<td>RM Multi-Technology with LCD: RM2L-4000</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 270 mA avg. 320 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>544 g (23 oz)</td>
</tr>
<tr>
<td>RM Indala Proximity: RM1-PI, RM1-PI/C, RM2-PI, RM2-PI/C</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 80 mA</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>700 g (25 oz)</td>
</tr>
<tr>
<td>RM Indala Proximity with LCD: RM2L-PI</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 180 mA</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>764 g (27 oz)</td>
</tr>
<tr>
<td>RM HID Proximity: RM1-PH, RM2-PH</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 135 mA avg. 250 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>588 g (21 oz)</td>
</tr>
<tr>
<td>RM HID Proximity with LCD: RM2L-PH</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 235 mA avg. 350 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>644 g (23 oz)</td>
</tr>
<tr>
<td>RM HID Proximity with LCD: RM2L-PI</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 135 mA avg. 250 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>280 g (10 oz)</td>
</tr>
<tr>
<td>RM Reader Module: RM-4</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 85 mA</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>252 g (9 oz)</td>
</tr>
<tr>
<td>RM HID iCLASS: RM1-1C, RM2-1C</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 135 mA avg. 250 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>588 g (21 oz)</td>
</tr>
<tr>
<td>RM HID iCLASS with LCD: RM2L-1C</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 235 mA avg. 350 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>644 g (23 oz)</td>
</tr>
<tr>
<td>RM Magnetic Stripe: RM1-MP, RM2-MP</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 80 mA</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>588 g (21 oz)</td>
</tr>
<tr>
<td>RM Magnetic Stripe with LCD: RM2L-MP</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 180 mA</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>644 g (23 oz)</td>
</tr>
<tr>
<td>RM Magnetic Stripe Mullion: RM3-MP</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 80 mA</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>280 g (10 oz)</td>
</tr>
<tr>
<td>RM Keypad Arming Station: RM2L-NH</td>
<td>0°C to 50°C (32°F to 122°F) 95% humidity, non-condensing</td>
<td>+12 VDC, 175 mA avg. 225 mA peak</td>
<td>12.95 x 14.22 x 4.95 cm (5.10 x 5.60 x 1.95 in)</td>
<td>544 g (23 oz)</td>
</tr>
</tbody>
</table>

## Regulatory

- All Models: UL 294 (except RM-4), CE, including EN50130-4, EN50133, EN5022, EN55024, EN60950, FCC Part 15 Class A, and RoHS
- RM2L-4000, RM2L-NH: UL 1076
- RXF-4000 only: U.S. GSA Approved Products List for FIPS 201

Note: Optional heater kit recommended for temperatures below 5°C (40°F)

---

**Configuration Table**

The chart below lists the RM card readers’ configurations by model number. A diamond (◆) indicates the presence of a feature.

<table>
<thead>
<tr>
<th>Model</th>
<th>STANDARD STYLE</th>
<th>KEYPAD LCD</th>
<th>CONFORMAL COATING</th>
<th>MULLION STYLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multi-Technology</td>
<td>RM1-4000</td>
<td>◆</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td>RM2-4000</td>
<td>◆</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td>RM2L-4000</td>
<td>◆</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Proximity</td>
<td>Indala</td>
<td>RM1-PI</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RM2-PI</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RM2L-PI</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td></td>
<td>HID</td>
<td>RM1-PH</td>
<td>◆</td>
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<tr>
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<td></td>
<td>RM2-PH</td>
<td>◆</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>RM2L-PH</td>
<td>◆</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>RM3-PH</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td></td>
<td>ICLASS</td>
<td>RM1-1C</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>RM2-1C</td>
<td>◆</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>RM2L-1C</td>
<td>◆</td>
</tr>
<tr>
<td>Magnetic Stripe</td>
<td>RM1-MP</td>
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<td>◆</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>RM2-MP</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RM2L-MP</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td></td>
<td></td>
<td>RM5-MP</td>
<td>◆</td>
<td>◆</td>
</tr>
<tr>
<td>Keypad Arming Station (no read head)</td>
<td>RM2L-NH</td>
<td>◆</td>
<td>◆</td>
<td></td>
</tr>
</tbody>
</table>

---

(7) Maximum card thickness is 0.084 cm (0.033 in)
T.Rex provides a complete solution to exit detection and door surveillance for access control applications. Outstanding innovations such as X-Y Targeting and DSP implementation make T.Rex the fastest and most reliable exit detector on the market today.

X-Y Targeting detects movement in very specific areas for added security. T.Rex is the first detector on the market to offer vertical targeting using two adjustable louvers located in the detection chamber. The installer “trims” the detection area by adjusting these louvers from 90° down to 5° and rotates the lens for horizontal adjustments. These two adjustments allow the installer to mount the detector so that the detection area will not “hit” the floor along the doorjamb, defeating any attempt to circumvent door supervision by sliding objects under the door.

T.Rex utilizes infrared detection coupled with DSP sampling specifically designed for access control applications. Since a truly effective exit detector must detect the extremely fast movement of a hand (the target) about to push the door or turn the door handle, the low sensitivity of intrusion detection alone is inadequate. Coupling the intrusion detection with DSP allows T.Rex to accurately detect exits and trigger appropriate “Door Forced Open” alarms.
General
Detector Type .................................. Passive infrared
Filter Technology ............................ Digital Signal Processing (DSP)
Detector Lens ................................. Curtain-type Fresnel lens
Detection Range
  Narrow Targeting Area ................. 3 m (10 ft)
  Whole Body ................................. 6 m (20 ft)
Piezo Buzzer ................................. 90 dB at 28 VDC, 5-28 VDC,
  20 mA (XL & XL2 only)
Main Relay Contacts ....................... SPDT, 1A max @ 30 VDC max
Main Relay Timer ......................... Adjustable, 0.50 to 60 seconds
Main Relay Recycle Timer ............... Fixed, 0.75 seconds off
Lock Control Relay ..................... Available on LT2 and XL2 models
  only, solid-state relay, N.C.,
  2A max @ 30 VDC, timed at
  2 seconds fixed
Tamper Switch .............................. N.C., 100 mA max @ 30 VDC max
Indicator Light ............................ Red/Green LED
Mounting .................................. Optional backplate available for
  mounting the T.REX on a standard
  single-gang electrical box

Physical
Dimensions (H x W x D) ................ 4.5 x 19 x 4.75 cm
  (1.75 x 7.125 x 1.875 in)

Electrical
Power Consumption ...................... 12-28 VDC, 50 mA

Regulatory
Certifications .............................. UL294, CE, FCC, ULC

Product Diagram
- Tamper switch N.C.
- Function selection jumpers: Latch,
  fast/slow detection, LED disable
- Main relay
- Lock control relay
- On-board computer
- Power terminals and tamper output
- X-Y targeting using two adjustable louvers to
  target a specific area of detection such as a
  door handle or panic bar
- Main relay timer jumpers
  16-step digital timer from 0.5 to 60 seconds
- Integrated 90 dB piezo for door
  alarm controlled by remote panel
  or through on-board relay (5-28 VDC)

Detection Pattern
- 7 ft. (2.1 m)
- 3 ft. (1 m)

Single Door Mounting Positions
- Best
- Not recommended

T.Rex Plate

Product offerings and specifications are subject to change without notice. Actual products may vary from photos. Not all products include all features.
Availability varies by region; contact your sales representative. Certain product names mentioned herein may be trade names and/or registered trademarks of other companies.

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www.swhouse.com
Overview

This unit distributes and switches power to access control systems and accessories. They convert a 115VAC 60Hz input into sixteen (16) independently controlled 12VDC or 24VDC fuse protected outputs. These Fail-Safe/Fail-Secure power outputs may be converted to dry form “C” contacts. The outputs are activated by an open collector sink or normally open (NO) dry trigger input from an Access Control System, Keypad, Push Button, REX PIR, etc. Units will route power to a variety of access control hardware devices including: Mag Locks, Electric Strikes, Magnetic Door Holders, etc. The FACP Interface enables Emergency Egress, Alarm Monitoring, or may be used to trigger other auxiliary devices. The fire alarm disconnect feature is individually selectable for any or all of the sixteen (16) outputs. All interconnecting equipment must be UL Listed.

Specifications

- 12VDC and/or 24VDC outputs.
- Maximum output current:
  - 12VDC @ 11 amp and/or 24VDC @ 11.4 amp.

<table>
<thead>
<tr>
<th>Options</th>
<th>P/S 1</th>
<th>P/S 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>12VDC @ 5.5 amp</td>
<td>12VDC @ 5.5 amp</td>
</tr>
<tr>
<td>B</td>
<td>24VDC @ 5.7 amp</td>
<td>24VDC @ 5.7 amp</td>
</tr>
<tr>
<td>C</td>
<td>12VDC @ 5.5 amp</td>
<td>24VDC @ 5.7 amp</td>
</tr>
</tbody>
</table>

- 115VAC 60Hz, 7.0 amp input.
- Input fuse rated @ 3.5 amp/250V.
- Power supply input options:
  a) Two (2) common power input for either ACM8 and lock power (factory installed).
  b) Two (2) isolated power inputs (external power supply is required), (current is determined by the power supply connected, not to exceed a maximum of 10 amp total).
- Sixteen (16) Access Control System trigger inputs. Input options:
  a) Sixteen (16) normally open (NO) inputs.
  b) Sixteen (16) open collector inputs.
  c) Any combination of the above.
- Sixteen (16) independently controlled outputs. Output options:
  a) Sixteen (16) Fail-Safe and/or Fail-Secure power outputs.
  b) Sixteen (16) form “C” 5 amp rated relay outputs.
  c) Any combination of the above.
- Sixteen (16) auxiliary power outputs (unswitched) (outputs are rated 2.5 amp).
- ACM8 boards main fuse is rated at 10 amp. Output fuses are rated @ 3.5 amp.
- Red LEDs indicate outputs are triggered (relays energized).
- Fire Alarm disconnect (latching or non-latching) is individually selectable for any or all of the sixteen (16) outputs.
- Fire Alarm disconnect input options:
  a) Normally open (NO) or normally closed (NC) dry contact input.
  b) Polarity reversal input from FACP signaling circuit.
- Alarm output relay indicates that FACP input is triggered (form “C” contact rated @ 1 amp 28VDC).
- Green LED indicates FACP disconnect is triggered.
- Filtered and electronically regulated outputs (built-in power supply).
- Built-in charger for sealed lead acid or gel type batteries.
- Maximum charge current 0.7 amp.
- Automatic switch over to stand-by battery when AC fails.
- Zero voltage drop when unit switches over to battery backup (AC failure condition).
- Thermal and short circuit protection with auto reset.
- AC input and DC output LED indicators.
- AC fail supervision (form “C” contact).
- Low battery and battery presence supervision (form “C” contact).
- Enclosure accommodates up to four (4) 12AH batteries.
- Product weight: 40.1 lbs.
- Shipping weight: 44.1 lbs.
Agency Approvals

UL Listed for Access Control System Units (UL 294).


CSFM
California State Fire Marshal Approved.

Enclosure Dimensions (approximate)
26”H x 19”W x 6.25”D
Features

- Stand-alone electronic lock
- Off-line installation, no wires required
- Fits most types of doors, new construction and retrofit
- Up to 3,000 users per door
- Non-volatile memory and audit trail
- Programmable for length of time door remains open and automatic re-locking
- Lock ensures accuracy by reading the card twice, once during insertion and once during removal
- Card reader upgradeable to multiple technologies
- Office mode, for free open access
- Green and red LEDs to indicate lock status/low batteries
- Panic function, handle retracts deadbolt and latch from inside
- Suitable for outdoors and extreme weather conditions
- Includes a low consumption clock/calendar to control card shifts/timetables

Specifications

- UL and ULC listed
- ADA compliant
- Various finishes available: satin brass, polished brass, satin chrome, polished chrome, antique brass, dark bronze
- Anti-tamper trim handle with free moving clutch mechanism
- Audit trail memory: records up to the last 1,184 events, including rejections

*Lithium batteries only used for some outdoor applications -40° F/167° F (-40° C/75° C)

- Keycards: uses high and low coercivity standard ISO/ABA mag-stripe cards
- Temperature tolerance range: alkaline batteries 32° F/149° F (0° C/65° C)*
- Humidity tolerance: up to 95% without condensation
- Power supply: 4 standard alkaline 1.5 volt batteries LR6/AA type (included), approx. 4 years life
- Power consumption in stand-by mode: 20 µA
- Outside Dimensions: 3.13 x 9.5 x 1.81 in (80 x 241 x 46 mm) - escutcheon only; 6.56 x 9.5 x 3.13 in (167 x 241 x 80 mm) - including lever
- Weight: 9.5 lb. (4.3 kg) - mortise; 7.8 lb (3.5 kg) - cylindrical
Keypad
Security mode requires valid keycard plus an individual 4-digit number (PIN). Keypad mode accepts a 4-digit number shared by all users.

Prepared for Emergency Key Override*
Available for limited usage by emergency and maintenance personnel only. When the key override is used, it leaves an audit entry in the lock. It is the responsibility of the facility to provide the cylinder and to maintain key control, if this feature is implemented.

Kit Part Number Structure
(Shaded boxes indicate options)

### Cylindrical Lock

**KTD - C**

**Optional Items** (leave blank if no options selected)
- E - Prepared for Emergency Key Override
- K - Add Keypad
- EK - Prepared for Emergency Key Override and Add Keypad

**Finish**
- 606 - Satin Brass
- 626 - Satin Chrome
- 609 - Antique Brass
- 605 - Polished Brass

**Handing**
- L - Left Handed
- R - Right Handed

### Mortise Lock

**KTD - M**

**Lockcase**
- D - Standard Mortise with Deadbolt
- L - Mortise, Latch Only

**Optional Items** (leave blank if no options selected)
- E - Prepared for Emergency Key Override
- K - Add Keypad
- EK - Prepared for Emergency Key Override and Add Keypad

**Finish**
- 605 - Polished Brass
- 606 - Satin Brass
- 609 - Antique Brass
- 625 - Polished Chrome
- 695 - Dark Bronze

*Customer provides key cylinder, 1” length with Adams Rite cam.*
## Most Common Part Numbers

(all numbers given are for right handed kits, toledo lever, satin chrome finish)

<table>
<thead>
<tr>
<th>Item Description</th>
<th>Part Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard Lock with Cylindrical Latch</td>
<td>KTD-C-12-626</td>
</tr>
<tr>
<td>Standard Lock with Cylindrical Latch with Emergency Key Override</td>
<td>KTD-C-E-12-626</td>
</tr>
<tr>
<td>Keypad Lock with Cylindrical Latch</td>
<td>KTD-C-K-12-626</td>
</tr>
<tr>
<td>Keypad Lock with Cylindrical Latch with Emergency Key Override</td>
<td>KTD-C-EK-12-626</td>
</tr>
<tr>
<td>Standard Lock with Mortise, Latch Only</td>
<td>KTD-ML-626-R</td>
</tr>
<tr>
<td>Standard Lock with Mortise, Latch Only with Emergency Key Override</td>
<td>KTD-MLE-626-R</td>
</tr>
<tr>
<td>Keypad Lock with Mortise, Latch Only</td>
<td>KTD-MLK-626-R</td>
</tr>
<tr>
<td>Keypad Lock with Mortise, Latch Only with Emergency Key Override</td>
<td>KTD-MLEK-626-R</td>
</tr>
<tr>
<td><strong>Standard Lock, Mortise with Deadbolt</strong></td>
<td>KTD-MD-626-R</td>
</tr>
<tr>
<td>Standard Lock, Mortise with Deadbolt with Emergency Key Override</td>
<td>KTD-MDE-626-R</td>
</tr>
<tr>
<td><strong>Keypad Lock, Mortise with Deadbolt</strong></td>
<td>KTD-MDK-626-R</td>
</tr>
<tr>
<td>Keypad Lock, Mortise with Deadbolt with Emergency Key Override</td>
<td>KTD-MDEK-626-R</td>
</tr>
</tbody>
</table>
Integra 5
Rim Panic Interface

Features

- Cost effective access solution
- Off-line installation, no wires required
- Non-volatile memory and audit trail
- Suitable for outdoors and extreme weather conditions
- Fits all types of doors with a 5" stile or larger, new construction and retrofit

Components

- Stand-alone electronic lock or Card Reader
- Panic Bar
- Mounting Plate
- Face Plate
- Mounting Screws

Specifications

- Designed to ANSI Grade 1 specifications
- UL listed
- ADA compliant
- Free moving clutch mechanism
- Temperature tolerance range: alkaline batteries, 32°F/149°F (0°C/65°C); lithium batteries -40°F/167°F (-40°C/75°C)
- Humidity tolerance: up to 95% without condensation
- Power supply: 4 standard alkaline 1.5 volt batteries LR6/AA type (included), approximately 4 years life

Options

- K2 Commercial Hardware Series QED100
- Von Duprin® 98/99 Series Rim Panic Interface

Part Numbers

- K2 Series QED100 Rim Panic Interface Kit, Satin Chrome Finish
  KTA RIM 626
- Von Duprin® 98/99 Series Rim Panic Interface Kit, Satin Chrome Finish
  KTA RIMVD 626

*Does not include lock or bar.
IMPORTANT: PLACE T=TURN CAM AND SWITCH ACCORDING TO THE HAND OF THE DOOR.

**LOCATOR POINT**

MATCH WITH VERTICAL LINE DRAWN ON DOOR

USE OTHER SIDE OF THIS TEMPLATE FOR MARKING OPPOSITE SIDE OF DOOR

- **LOCATOR POINT**
  - 111
  - 43/8°

- **OF KNOB OR LEVER**
  - 4 3/16"

- **CORRECT LOCATION OF LOWER EDGE OF ASA STRIKE LIP ABOVE HORIZONTAL OF KNOB**
  - 2.5/8"

- **MIN. CLEARANCE FOR ANTI-FRICTION LATCH**
  - 29 1/8"

- **OF KNOB OR LEVER**
  - 118 1/8"

- **OF LOCKCASE**
  - 118 45/8"

- **HORIZONTAL**
  - 4.5

- **WIRE HOLE**
  - 32 11/4"

- **LOCATOR POINT**
  - 76 3"

- **LOCKCASE**
  - 9.5 5/8"

- **STRIKE**
  - 80 31/8"

- **BACKSET**
  - 203 8"

**NOTE:**

READ INSTRUCTIONS BEFORE USING TEMPLATE

TEAR OFF & CENTER ON DOOR EDGE

MATCH WITH VERTICAL LINE DRAWN ON DOOR EDGE

- **256006033 ELECTRONIC LOCK WITH TUBULAR LATCH INSTALLATION**

- **LOCATOR POINT**
  - INSERT LOCK IN MORTISE OF DOOR AND FACEPLATE TO SUIT FRONT THICKNESS OF LOCK.

- **OF LOCK**
  - 11/8"

- **HEIGHT**
  - 132 6 3/8" MIN.

- **OF HORIZONTAL**
  - 168 6 3/8" MAX.

- **MORTISE**
  - 1.1/8"

- **CUTTING**
  - 25 1/4"

- **CASE**
  - 5/8"

- **OF LOCKCASE**
  - 29 1/8"

- **OF STRIKE**
  - 25 1/4"

- **OF FACEPLATE**
  - 5/8"

- **OF TOP EDGE MARK DOOR**

- **OF LOCK AND DOOR THICKNESS**

- **OF KNOB AND HORIZONTAL**

- **OF LEAD WRAPPED LOCKS**

- **HORIZONTAL**
  - 118 45/8"

- **OF LOCKCASE**
  - 118 45/8"

- **OF STRIKE**
  - 80 31/8"
INSTRUCTIONS FOR PREPARING DOOR AND FRAME AND INSTALLATION OF Onity CT MORTISE LOCKS

READ THESE INSTRUCTIONS CAREFULLY BEFORE INSTALLING LOCKSET

1. Draw a horizontal centerline on both sides and edge of door at the desired knob center height (Fig. 1).

2. Using the backset locator furnished, mark two points on each side of door, above and below the horizontal centerline (Fig. 2). Draw a vertical line through the two points on each side of door.

3. Detach template and separate into two parts. Position correct side of template on outside face of door, aligning locator points with horizontal and vertical lines drawn on door as illustrated in Fig. 3. Draw a vertical line through the two points on each side of door.

4. Using the opposite side of the template position on inside face of door aligning locator points with horizontal and vertical lines drawn on door and spot required holes.

5. Center the door edge portion of the template on door edge and align the horizontal locator points with horizontal lines drawn on door. Mark outline of case mortise and face plate top reference as illustrated in Fig. 5.

6. Mortise door edge for lock case to dimensions shown on template. Insert lock in mortise, (with face plate), align top of face plate with reference mark and scribe face plate outline as illustrated in Fig. 6. Mortise to front thickness.

7. Drill required side holes through outside and inside faces of door.

8. Strike preparation. Draw a vertical centerline on the frame. One-half door thickness from stop plus any required allowance for paint, weatherstripping, etc. Position strike on frame, aligning up with reference marks drawn in frame and center mortising holes on vertical line drawn on frame. Scribe strike outline, mortise to thickness (2.5 mm., .3/32" deep), mark location of strike openings or strike box, if required. Mortise to sufficient depth to accommodate bolts or strike box.

9. Drill 3mm., 1/8" diam. Pilot holes for case attachment screws. Adjust front bevel as required by loosening screws at top and bottom of case, set bevel and securely re-tighten screws. Install lock case.

10. Attach trim. Refer to enclosed trim attachment instruction sheet for proper installation of lever handle, or knob, and electronic lock trim. Attach face plate to lock front.

11. Install strike and strike box if required. Check to be sure that bolts fully project into strike openings.
Features

- Three-track motorized reader/writer used to encode magnetic stripe cards for Integra 5 electronic locks
- 3 LEDs to indicate status
- Works with standard magnetic cards
- Custom Program Keycards in Seconds
- The flexible three track capability allows for the programming of separate instructions for the Onity Integra 5 locking system, and standard ISO systems on the same card
- The Motorized Encoder automatically draws the card into the unit, once inserted by the operator, and releases it once encoding has been completed

Specifications

- Dimensions:
  5 1/8" in H x 11 in W x 11 1/2 in D,
  260 mm L x 130 mm W x 290 mm H
- Weight: 5.29 Kg / 11.68 lbs
- Power supply: 110 / 220 VAC
- Fuse: 1A (110V) or 0.5 A (220V)
  A spare fuse is located in the fuse housing
- Consumption:
  7 W in stand by,
  12 W when reading or writing cards
- Card Coercivity:
  300 Oersteds (low),
  2750 - 4000 Oersteds (high)
- Connections: DB9 Connectors connect the encoder to the computer throughout the communication distributor. Switch to select the type of power that is supplied at the site; either 115 VAC or 240 VAC

Part Number

- Standard Hi-Co Motorized Encoder
  PT400340

Compatible with Onity Integra3 and Integra 5 electronic locking systems.
Communication Distributor

The Onity Integra 5 Communication Distributor is a serial communication device that converts a standard RS-232 signal from a PC into a full duplex RS-485 signal for the Integra 5 online peripherals. It connects both to the computer and to the online peripherals. Each of these connections requires individual cables.

Specifications

- Dimensions: 2 in H x 6 in W x 6 1/4 in D, 150 mm H x 160 mm W x 50 mm D
- Weight: 0.45 Kg / 1.0 lbs
- Power supply: 110 / 220 VAC
- Fuse: 100mA (110V) or 0.5 mA (220V)
- Consumption: 5 W

Communication Expander

The Onity Integra 5 Communication Expander is a serial communication device that splits a single full duplex RS485 input into 4 individual full duplex RS485 outputs for the Integra 5 online peripherals. The Communication Expander connects both to the Distributor and to the online peripherals. Each of these types of connections requires individual cables.

Part Numbers

- Communication Distributor
  PT400140
- Communication Expander
  PT400160

Compatible with Onity Integra3 and Integra 5 electronic locking systems.
## Housing Facilities Standards

### 2010/2011

#### HFS Facility Project Standards

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
<th>Model #</th>
<th>Dimensions</th>
<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.a</td>
<td>Grounds</td>
<td>Project staging location</td>
<td>Project Specific: Must be arranged with the PM; coordinate with PTS and Grounds.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>PM/GC</td>
<td>If parking is allowed on landscaping, the project will need to restore it and ensure a seamless match.</td>
<td></td>
</tr>
<tr>
<td>1.b</td>
<td>Parking</td>
<td>Project Specific: Must be arranged with the PM; coordinate with PTS.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>PM/GC</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>1.c</td>
<td>Project perimeter</td>
<td>Project Specific: Need to be aware of any areas/items that may be affected by project but are outside of project perimeter. These such items may still be responsibility of the project if issues arise. (PM to coordinate)</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td></td>
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</tr>
<tr>
<td>1.d</td>
<td>Utilities check/locates</td>
<td>Need to make sure that current utilities in place, if not being updated, are sufficient for future project needs. Ensure pre-project camera for underground lines is done prior to project commencement. Locates done prior to any exterior work.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td></td>
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</tr>
<tr>
<td>1.e</td>
<td>Video sewer lines</td>
<td>Check with Facilities Management Civil AE. PM to coordinate with above item.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>Done on all projects prior to design and/or construction.</td>
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</tr>
<tr>
<td>2.a</td>
<td>Landscaping</td>
<td>Irrigation/ Sprinklers</td>
<td>1. Repair existing system as needed per current campus standards or; 2. Provide new campus standard system (as determined by project scope of work)</td>
<td>Campus Standards - Section 02810</td>
<td>See Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/HFS</td>
<td>HFS/G</td>
<td></td>
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</tr>
<tr>
<td>2.b</td>
<td>Landscaping</td>
<td>Replace / refurbish existing landscaping</td>
<td>Campus standards - Section 02900, 2930, 2910, 2931, 2932, 2950</td>
<td>See Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/HFS</td>
<td>HFS/G</td>
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</tr>
<tr>
<td>2.c</td>
<td>Landscaping</td>
<td>Plantings</td>
<td>Coordinate approvals/review with Campus Landscape Architect and HFS Grounds.</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/HFS</td>
<td>HFS/G</td>
<td>Complete removal of weed and lower portion of burlap on B &amp; B plantings.</td>
<td></td>
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</tr>
<tr>
<td>2.d</td>
<td>Landscaping</td>
<td>Sod</td>
<td>Area of re-sodding 1. Damaged turf is replaced with new campus standard turf or; 2. New turf is installed throughout</td>
<td>Campus Standards - Section 02952; Grass Turf Farms is the preferred supplier.</td>
<td>See Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/HFS</td>
<td>HFS/G</td>
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</tr>
<tr>
<td>2.e</td>
<td>Landscaping</td>
<td>Water - Raw vs. Potable</td>
<td>Coordinate with HFS / FM Grounds for availability</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/HFS</td>
<td>HFS/G</td>
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<tr>
<td>2.f</td>
<td>Landscaping</td>
<td>Backflow preventors</td>
<td>Coordinate with HFS grounds</td>
<td>Campus Standard - Section 15430</td>
<td>See Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/HFS</td>
<td>HFS/G</td>
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</tr>
<tr>
<td>2.g</td>
<td>Landscaping</td>
<td>Pest Control Strip</td>
<td>Building Perimeter 18” border of Wyoming Red Rock around building perimeter for pest control</td>
<td>Campus standard - section 02960</td>
<td>See Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/HFS</td>
<td>HFS/G</td>
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<tr>
<td>3</td>
<td>Exterior</td>
<td>Building skin</td>
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<td>3.a</td>
<td>Roof</td>
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<td>3.b</td>
<td>Roof</td>
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<td>Roof</td>
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<td>3.f</td>
<td>Roof</td>
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</tbody>
</table>

Revised 8/28/2011

HFS_Facility_Project_Standards_List_12-15-10.xlsx Page 1
<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
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<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.b</td>
<td>Flat Roof</td>
<td>Built-up or Single-Ply membrane</td>
<td>Campus Standard - Sectors (07510 / 15130)</td>
<td>See Campus Standards</td>
<td>N/A</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Walls</td>
<td>Campus Standard - depending on location</td>
<td>Campus Standard - Division 4</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3</td>
<td>Windows</td>
<td>Location Specific</td>
<td>Campus standard for reflectivity, transmittance, R-value, etc.</td>
<td>Campus Standard - Division 8</td>
<td>See Campus Standards</td>
<td>Project Specific</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
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<tr>
<td>4</td>
<td>Doors</td>
<td>Location Specific</td>
<td>Stonework or to match existing - see campus standards</td>
<td>Campus Standard - Division 1</td>
<td>See Campus Standards</td>
<td>Location Specific</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
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<tr>
<td>5.a</td>
<td>Hardware</td>
<td>Hinges / Closers</td>
<td>Campus Standards - Section (08730)</td>
<td>See Campus Standards</td>
<td></td>
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</tr>
<tr>
<td>5.b</td>
<td>Security - Hardware</td>
<td>*See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>PM</td>
<td>AS</td>
<td>AS</td>
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<tr>
<td>5.c</td>
<td>Cameras</td>
<td>Security Camera</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>See attached HIT specs</td>
<td>PM</td>
<td>AS</td>
<td>AS</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Gutters / Downspouts</td>
<td>Copper</td>
<td>Campus Standards - Section (07800)</td>
<td>See Campus Standards</td>
<td></td>
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<tr>
<td>6</td>
<td>Trash Receptacles</td>
<td>Campus Standard - Side opening or built-in</td>
<td>Victor Stanley, Inc., Campus Standard - Division 2, Section 02870</td>
<td>SD-42; estimated lead time 7-9 weeks</td>
<td>36 gallon</td>
<td>VS/Black w/ yellow lettering</td>
<td>PM</td>
<td>HFS/G</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td>Recycling Receptacles</td>
<td>Campus Standard - Side opening or built-in</td>
<td>Victor Stanley, Inc., Campus Standard - Division 2, Section 02870</td>
<td>SD-42; estimated lead time 7-9 weeks</td>
<td>36 gallon</td>
<td>VS/Black w/ yellow lettering</td>
<td>PM</td>
<td>HFS/G</td>
<td></td>
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</tr>
<tr>
<td>7</td>
<td>Bike Racks</td>
<td>Cora Bike Rack, Inc.</td>
<td>W7510/010</td>
<td>See for 10 bikes</td>
<td>Powder Coat - Camel Black</td>
<td>PM</td>
<td>HFS/G</td>
<td>Contact: Cora Bike Rack, Inc. 1.800.154.8624</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Plaza</td>
<td>Concrete/ Stone Power; coordinate with campus Landscape Architect</td>
<td>Campus Standard - Section (05250)</td>
<td>See Campus Standards</td>
<td>Project/ Location Specific</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS/G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.a</td>
<td>Material</td>
<td>Concrete/ Stone Power; coordinate with campus Landscape Architect</td>
<td>Campus Standard - Section (05250)</td>
<td>See Campus Standards</td>
<td>Project/ Location Specific</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS/G</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>8.b</td>
<td>Railings/Fences</td>
<td>Metal; coordinate with campus Landscape Architect</td>
<td>Campus standard - Section (05500)</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>Black</td>
<td>PM</td>
<td>HFS/G</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Plaza Furniture</td>
<td>Tables</td>
<td>Project Specific</td>
<td>Campus Standard - Section (02870)</td>
<td>Landscape Forms, Inc., Catena Style</td>
<td>42&quot; diameter table top; can vary depending on project</td>
<td>Black</td>
<td>PM</td>
<td>HFS/G</td>
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<td>Tables</td>
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<td>Landscape Forms, Inc., Catena Style</td>
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<td>Attached to carousel tables</td>
<td>See attached HIT specs</td>
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<td>9.c</td>
<td>Benches</td>
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<td>10</td>
<td>Site Walls</td>
<td>Material</td>
<td>Brick, stone; campus standard - coordinate with campus Landscape Architect</td>
<td>Campus Standard - Division 4</td>
<td>See Campus Standards</td>
<td>Project Specific</td>
<td>See Campus Standards</td>
<td>PM</td>
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<td>Campus Standard - Division 4</td>
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<td>10.b</td>
<td>Wall caps</td>
<td>Limestone/ Architectural precast; campus standard - coordinate with campus Landscape Architect</td>
<td>Campus Standard - Division 4</td>
<td>See Campus Standards</td>
<td>Project Specific</td>
<td>See Campus Standards</td>
<td>PM</td>
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<tr>
<td>11</td>
<td>Lighting</td>
<td>Site</td>
<td>Campus standard - coordinate with campus Landscape Architect</td>
<td>Campus Standard - Section (16030)</td>
<td>See Campus Standards</td>
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<td>See Campus Standards</td>
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<tr>
<td>11.a</td>
<td>Lighting</td>
<td>Site</td>
<td>Campus standard - coordinate with campus Electrical Arts</td>
<td>Campus Standard - Section (16030)</td>
<td>See Campus Standards</td>
<td>Project Specific</td>
<td>See Campus Standards</td>
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<td>Eave Lighting</td>
<td>Campus standard LED - coordinate with campus Electrical Arts</td>
<td>Campus Standard - Section (16030)</td>
<td>See Campus Standards</td>
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<td>Entryway Lighting</td>
<td>Campus standard - coordinate with campus Electrical Arts</td>
<td>Campus Standard - Section (16030)</td>
<td>See Campus Standards</td>
<td>Project Specific</td>
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<td>12</td>
<td>Site ADA Requirements</td>
<td>Code / Campus Standard</td>
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<td>Manufacturer/ Model</td>
<td>Dimensions</td>
<td>Acceptable colors</td>
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<td>Maintenance Responsibility</td>
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<tr>
<td>13</td>
<td>Entry Vestibule</td>
<td>Flooring</td>
<td>Material</td>
<td>Hercules Nop</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/</td>
<td>HFS/FS</td>
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<td>13.a</td>
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<td></td>
<td>Hercules Nop Walk-off mat at entry; gray carpet tile type</td>
<td>Van Dijk Contract</td>
<td>N/A</td>
<td>Minimum length 10’</td>
<td>PM/</td>
<td>HFS/FS</td>
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<td>Entry Walk off mat</td>
<td>Hercules Nop</td>
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<td>15</td>
<td>Entry ADA Requirements</td>
<td>Lobby / Common Areas</td>
<td>Campus Standard - automatic opener</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM/</td>
<td>HFS/M</td>
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<td>16</td>
<td>Lobby / Common Areas</td>
<td>Flooring - Public Areas</td>
<td>Carpet</td>
<td>Shaw Contract Group</td>
<td>Project Specific</td>
<td>Project/ Location Specific</td>
<td>Project Specific</td>
<td>PM/</td>
<td>HFS</td>
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<td>Carpet with carpet base; 4' high carpet base with bound edge to match carpet; Provide Fairmont 30 oz. pad or approved equal</td>
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<td>Project Specific</td>
<td>PM/</td>
<td>HFS</td>
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<td>Ceramic Tile</td>
<td>Campus Standard - Section 09000</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
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<td>16.c</td>
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<td>PM/</td>
<td>HFS</td>
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<td>18</td>
<td>Ceilings</td>
<td>Flooring</td>
<td>Lay in grid</td>
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<td>HFS</td>
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<td>Gypsum board cladding</td>
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<td>PM/</td>
<td>HFS</td>
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<td>19</td>
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<td>Flooring</td>
<td>General</td>
<td>See Campus Standards</td>
<td>4’ - T8</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM/</td>
<td>HFS</td>
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<td>4’ - T8</td>
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<td>See Campus Standards</td>
<td>PM/</td>
<td>HFS</td>
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<td>4’ - T8</td>
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<td>See Campus Standards</td>
<td>PM/</td>
<td>HFS</td>
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<td>19.c</td>
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<td>4’ - T8</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM/</td>
<td>HFS</td>
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<td>20</td>
<td>Furniture</td>
<td>Flooring</td>
<td>Chairs</td>
<td>Sauder - TBD</td>
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<td>Project Specific</td>
<td>PM/</td>
<td>Coordinate with HFS Bus. Ops.</td>
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<td>20.a</td>
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<td>Soyas</td>
<td>Sauder - TBD</td>
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<td>Project Specific</td>
<td>PM/</td>
<td>Coordinate with HFS Bus. Ops.</td>
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<td>20.b</td>
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<td>Sauder - TBD</td>
<td>N/A</td>
<td>Project Specific</td>
<td>PM/</td>
<td>Coordinate with HFS Bus. Ops.</td>
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<tr>
<td>21</td>
<td>A/V Equipment</td>
<td>Flooring</td>
<td>A/V equipment</td>
<td>Smart box/ control center/projector and projector screen as specified by CU ITS department</td>
<td>Per Campus ITS Standards - designers should review Appendix I of the Campus Standards</td>
<td>Per Campus ITS Standards - designers should review Appendix I of the Campus Standards</td>
<td>N/A</td>
<td>PM/ITS</td>
<td>HFS</td>
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Revised 8/28/2011
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<th>General Location</th>
<th>Item Description</th>
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<th>General Description</th>
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<th>Model #</th>
<th>Dimensions</th>
<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
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<tr>
<td>21 a</td>
<td>Projector</td>
<td>Manual or powered; Campus standard; PM to coordinate with campus ITS</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>N/A</td>
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<td>21 b</td>
<td>Screen</td>
<td>Campus standard; PM to coordinate with campus ITS</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
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<td>PM/ITS</td>
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<td>21 c</td>
<td>Monitor</td>
<td>LCD screen for CATV viewing</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>42&quot; Screen (Typical)</td>
<td>Black</td>
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<td>ITS</td>
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<td>22</td>
<td>Window coverings</td>
<td>Mini Blinds and Black Out Shades</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/ITS</td>
<td>ITS</td>
<td>Coordinate with room use</td>
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<td>23</td>
<td>Water Stations</td>
<td>Various halls</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/ITS</td>
<td>ITS</td>
<td>Jurified stations only in those locations that have been approved by HFS.</td>
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<td>24</td>
<td>Drinking Fountains</td>
<td>Campus standard</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/ITS</td>
<td>ITS</td>
<td>Drinking fountains are installed per Building Code; the maximum number of drinking fountains changes based on the addition of a water station</td>
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<tr>
<td>26</td>
<td>Fire Alarms/ Smoke Detectors</td>
<td>Addressable intelligent system by Simplex Grinnell as per CU FIS standards</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>Campus Standards - Sections 16100</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/ITS</td>
<td>ITS</td>
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<tr>
<td>27</td>
<td>DDC Controls</td>
<td>DDC System with &quot;Smart&quot; thermostat, set at 68-72 degrees</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>Campus Standards - Sections 16100</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>15440</td>
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<td>PM/ITS</td>
<td>PM/ITS</td>
<td>ITS</td>
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<td>28</td>
<td>Lobby / common Area ADA Requirements</td>
<td>Flooring texture (access path of travel)</td>
<td>Must comply with Building Code/Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/ITS</td>
<td>ITS</td>
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<td>Counter</td>
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<td>PM/ITS</td>
<td>PM/ITS</td>
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<td>30 b</td>
<td>Shelving</td>
<td>Laminate - Melamine</td>
<td>Project Specific</td>
<td>N/A</td>
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<td>Project Specific</td>
<td>PM/ITS</td>
<td>PM/ITS</td>
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<td>Cabinets</td>
<td>Laminate / stained wood board</td>
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<td>N/A</td>
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<td>PM/ITS</td>
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<td>*See attached IT specs</td>
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<td>PM/ITS</td>
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<tr>
<td>30 f</td>
<td>Furniture</td>
<td>Task chair</td>
<td>CCI</td>
<td>Dauphin Task Chair</td>
<td>20&quot;W x 19&quot;D x 45&quot;H</td>
<td>Project Specific</td>
<td>PM/ITS</td>
<td>PM/ITS</td>
<td>Coordinate with HFS Bus. Ops.</td>
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<td>Bulletin boards</td>
<td>**See attached bulletin board standards</td>
<td>**See attached bulletin board standards</td>
<td>**See attached bulletin board standards</td>
<td>**See attached bulletin board standards</td>
<td>**See attached bulletin board standards</td>
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<td>PM/ITS</td>
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<td>General Lighting</td>
<td>T-8 Fluorescent - LED (preferred)</td>
<td>Campus Standards - Division 16</td>
<td>See Campus Standards</td>
<td>4&quot; - 74&quot;</td>
<td>See Campus Standards</td>
<td>PM/ITS</td>
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<td>50 a</td>
<td>Desk</td>
<td>Project Specific</td>
<td>CCI</td>
<td>Dauphin Executive Office</td>
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<td>Project Specific</td>
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<td>Chair</td>
<td>CCI</td>
<td>Project Specific</td>
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<td>Project Specific</td>
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<td>*See attached IT specs</td>
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<td>Avonite/ Corian</td>
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</table>
| 34.c        | Stik             | HFS standards    | Stainless Steel - Campus Standards - Section 12440 | See Campus Standards | Single Bowl | Stainless Steel | PM | HFS | New water filling station, or at
minimum, Government spec |
| 34.d        | Plumbing hardware | HFS standards    | Delta-Campus Standards - Section 15440 | See Campus Standards | N/A | PM | HFS |          |
| 34.e        | Cabinets         | Laminate w/ melamine shelving | Project Specific | Project Specific | Project Specific | PM | HFS |          |
| 34.f        | Nitches flooring | Ceramic tile w/ dark grout | Campus Standards - Section 00000 | Project Specific | Tile installed on floor in front of only niches to a depth of 2 feet | Project Specific | PM | HFS |          |
| 34.g        | Lighting         | LED / CFL down lights | Campus Standards - Division 14 | Project Specific | PM | HFS |          |

### Student Rooms

#### Door
- Marfield solid core doors with plastic laminate faces
- Extra heavy duty 3-5 activity core doors with plastic laminate
- 3'-0" x 6'-8" min.

#### Door hardware
- Spring hinges are installed in middle and bottom hinge of student doors - deadbolts and key pads for student rooms only. **This may change depending on the type of closer's HFS decides to use; still TBD**

#### Door closer
- TBD

#### Door viewer
- TBD

#### Door mounted tack/white board
- One on the corridor side of every student room door **offset to account for door lever**

#### Over head lighting
- One fixture in each student room with 2 lamps and dual switch T-8
- 5'-0" long

#### Flooring
- Amisco
- Amisco

#### Walls, ceiling, door
- Walls, ceiling, door
- Gypsum board

#### Closet
- Each bed shall have one closet 3'-0" wide by 2'-0" deep, with one, 12" deep fixed shelf and coat rod

#### Closet door
- Marfield solid core doors with plastic laminate faces
- Marfield Door Systems, Inc.

#### Closet door hardware
- Roller catches

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Revised 6/28/2011

HFS_Facility_Project_Standards_List_12-15-10(1).xlsx
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<tr>
<th>Item Number</th>
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<tr>
<td>41</td>
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<td>Windows</td>
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<td>Operable windows required in all student rooms</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>41.a</td>
<td></td>
<td>Window sensor switch</td>
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<td>Magnetic switch to disable FCUs</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<td>41.b</td>
<td></td>
<td>window coverings</td>
<td></td>
<td>2&quot; Solar Angle Slat Blind</td>
<td>Dependant on manufacturer</td>
<td>2'' thick slats</td>
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<td>42</td>
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<td>Smoke detectors/ alarms</td>
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<td>Addressable intelligent system for Campus Standards - Section 10740</td>
<td>Campus Standard</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
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<tr>
<td>43</td>
<td></td>
<td>Furniture</td>
<td></td>
<td>Desk</td>
<td>Thurston</td>
<td>ND. 133-42 (ST)</td>
<td>42&quot; L x 24&quot; W x 30&quot; H</td>
<td>Finished natural oak</td>
<td>PM</td>
<td>HFS</td>
<td>PM to coordinate all delivery and installation issues. Coordinate with HFS Bus. Ops.</td>
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<tr>
<td>43.a</td>
<td></td>
<td>Desk/ Hutch</td>
<td>Desk Top</td>
<td>Solid oak 2 shelf desk top; hutch included as standard; finished natural oak 2-1/4&quot; square table legs</td>
<td>Thurston</td>
<td>ND. 208-CP (PA)</td>
<td>40&quot; L x 9&quot; W x 28&quot; H</td>
<td>Finished natural oak</td>
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<td>Chair</td>
<td></td>
<td>Sauder &quot;Twin&quot; task chair with casters for hard surfaces</td>
<td>Sauder</td>
<td>ND. 702-0650</td>
<td>Fabric: Shire, Espresso (Grade A)</td>
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<td>43.c</td>
<td></td>
<td>Dresser</td>
<td></td>
<td>Solid oak extra deep 3 drawer chest; three drawers of equal size, top edges are 3mm thick PVC, drawer fronts with plunge pulls</td>
<td>Thurston</td>
<td>ND. 203-24</td>
<td>32&quot; L x 24&quot; W x 30&quot; H; 32&quot; L x 38&quot; W x 30&quot; H</td>
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<td>HFS</td>
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<tr>
<td>43.d</td>
<td></td>
<td>File Cabinet</td>
<td></td>
<td>Solid oak 2 drawer file unit; Unit includes 2 drawers of equal size; bright brass plated swinging arm lock system on top drawer only, top edges are 3mm thick PVC, drawer fronts with educational pull &amp; a bottom edge</td>
<td>Thurston</td>
<td>ND. 140-G (SL)</td>
<td>27&quot; L x 22&quot; W x 26&quot; H</td>
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<td></td>
<td>Armmoire</td>
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<td>Come with rooms that have 3 or more students</td>
<td>Varies</td>
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<td>43.f</td>
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<td>Bed</td>
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<td>Extra long twin bed</td>
<td>Thurston</td>
<td>ND. 146-4HW-3</td>
<td>36&quot; x 80&quot; (mattress)</td>
<td>Finished natural oak</td>
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<td>Mattress</td>
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<td>Extra long twin mattress; Seamless mattress</td>
<td>University Sleep Products, Inc.</td>
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<td>Area rug</td>
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<td>Nutco Area Rugs</td>
<td>Nutco</td>
<td>Berber: Serged</td>
<td>8' x 9'</td>
<td>Dark Colors</td>
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<td>Currently checking on pricing of 6' x 8' rug, may become standard in the future; Coordinate with HFS Bus. Ops.</td>
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<td>Desk lamp</td>
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<td>Individual desk lamp supplied for each student with CIB bulbs</td>
<td>Changes depending on manufacturer</td>
<td>Nutco</td>
<td>Berber: Serged</td>
<td>8' x 9'</td>
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<td></td>
<td>Wall tackboard</td>
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<td>Fabricmate tackboard for each student</td>
<td>Fabricmate Systems</td>
<td>Interactive Panel System with square edge profile, melamine substrates; Edges: Resin-hardened w/ square edge; Mounting: Adhesive</td>
<td>3/4&quot; D x 1/4&quot; H; 5/8&quot; thickness</td>
<td>2100/HR70 fabric or alternate color as selected by manufacturer</td>
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<td>Student room tack boards cannot be refabricated, but must be contracted in the field</td>
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<td>Provided by HFS- ENVS; 28&quot; quart blue rectangular wastebasket</td>
<td>Rubbermaid</td>
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<td>Micro Fridge with attached Micro Wave</td>
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<td>3/4&quot;W x 10 1/4&quot;D x 43 1/2&quot;H</td>
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HFS Facility Project Standards 2010/2011
## Housing Facilities Standards

### 2010/11

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<td>53.a</td>
<td>Existing walls (renovations)</td>
<td>1/4&quot; Hardi-backer glued and nailed to existing perimeter plaster walls</td>
<td>N/A</td>
<td>N/A</td>
<td>Project Specific</td>
<td>Varies with each bathroom; White with accent color</td>
<td>PM</td>
<td>HFS/ ES/ M</td>
<td></td>
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<tr>
<td>53.b</td>
<td>Tile</td>
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<td>54</td>
<td>Ceilings</td>
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<td>54.a</td>
<td>Lighting</td>
<td></td>
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<tr>
<td>55</td>
<td>Over counter lighting</td>
<td></td>
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<td>56</td>
<td>Electrical</td>
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<td>57</td>
<td>Counters</td>
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<tr>
<td>58</td>
<td>Trash bins</td>
<td></td>
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<td>59</td>
<td>Sinks</td>
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<tr>
<td>60</td>
<td>Soap dispensers</td>
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**Notes:**
- ADA requirements
- See room requirements above to comply with ADA requirements
- See above requirements
- See Campus Standards
- PM
- HFS
- ES
- M
- PM
- HFS
- ES
- M
- FM
- LCD
- Project Specfic
- Novus
- Avonite/Corian
- MDF
- CHROME
- Project Specfic
- Project Specfic

**Revision:** 6/28/2011

**HFS_Facility_Project_Standards_List_12-15-10.xlsx**
## HFS Facility Project Standards

### 12-15-10

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
<th>Model #</th>
<th>Dimensions</th>
<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td></td>
<td>Hand sanitizer</td>
<td>By exit at a height of 44&quot;-48&quot; at bottom from the floor</td>
<td>5120-06 Foam Hand Sanitizer Dispenser; Push Valve; Wall Mount; ADA Compliant</td>
<td>Purell</td>
<td>SKU - 317849</td>
<td>5-1/8&quot;H x 6 1/8&quot;W x 10 3/16&quot;D; 1.25 lbs</td>
<td>Gray</td>
<td>PM</td>
<td>HFS / ES</td>
<td></td>
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<tr>
<td>02</td>
<td></td>
<td>Hand dryers</td>
<td>Mounted on wall</td>
<td>Electric hands free</td>
<td>Dyson</td>
<td>M802 - Pre Cast Aluminum</td>
<td>25.25&quot;H x 13&quot;W x 10&quot;D</td>
<td>Silver</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td></td>
<td>Paper Towels</td>
<td>Mounted on wall</td>
<td>OptiServ Hands-Free dispenser; Controlled roll towel dispenser; ADA compliant; cuts a pre-measured 11&quot; stall for maximum usage control</td>
<td>OptiServ</td>
<td>705000 Silhouette OptiServ; UPC 0 68588 70500 1</td>
<td>31 1/16&quot;W x 11 15/32&quot;H x 9 7/16&quot;D; 34 9/16&quot;D; 8.6 lbs</td>
<td>Black</td>
<td>PM</td>
<td>HFS / ES</td>
<td></td>
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<tr>
<td>04</td>
<td></td>
<td>Ancillary Shelving</td>
<td>48&quot; high wall behind tax counters; that functions as a small shelf</td>
<td>In House</td>
<td>N/A</td>
<td>3-1/8&quot; stud or 2-1/2&quot; stud depending on existing conditions</td>
<td>Varnish with each bathroom</td>
<td>N/A</td>
<td>PM</td>
<td>HFS / ES</td>
<td></td>
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<tr>
<td>05</td>
<td></td>
<td>Toilets</td>
<td>Toto low flow</td>
<td>Toto</td>
<td>Campus Standards - Division 15</td>
<td>N/A</td>
<td>White</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05.a</td>
<td></td>
<td>Flush valves</td>
<td>Dual flush with signage explaining posted on wall behind toilets</td>
<td>Sloan/Toto</td>
<td>Campus Standards - Division 15</td>
<td>N/A</td>
<td>Campus Standards - Division 15</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
<td></td>
</tr>
<tr>
<td>05.b</td>
<td></td>
<td>Toilet seats/lids</td>
<td>Not typically used, Toto low flow</td>
<td>Toto</td>
<td>Campus Standards - Division 15</td>
<td>N/A</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>06</td>
<td></td>
<td>Urinals</td>
<td>Not typically used, Toto low flow</td>
<td>Toto</td>
<td>Campus Standards - Division 15</td>
<td>N/A</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
<td></td>
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<tr>
<td>07</td>
<td></td>
<td>Toilet partitions</td>
<td>Solid color reinforced composite partitions - Bobrick Sierra Series</td>
<td>Bobrick</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>PM</td>
<td>HFS / ES</td>
<td></td>
<td></td>
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<tr>
<td>07.a</td>
<td></td>
<td>Toilet paper dispensers</td>
<td>GP Jumbo Jr. Two Roll Bathroom Tissue Dispenser; High capacity; holds two rolls up to 9&quot; in diameter</td>
<td>Georgia-Pacific</td>
<td>MFG Item # 50200; UPC 07310302001</td>
<td>20.020&quot;H x 5.670&quot;W x 12.260&quot;D</td>
<td>Translucent Smoke</td>
<td>PM</td>
<td>HFS / ES (?)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>07.b</td>
<td></td>
<td>Sanitary napkin disposal</td>
<td>In all women stalls</td>
<td>Campus Standard</td>
<td>Campus Standard - Section 10805</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td></td>
<td>Mirrors</td>
<td>Behind sinks/counters</td>
<td>1/4&quot; tempered; full counter width; backpulp to ceiling</td>
<td>Campus Standard - Section 08800</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
<td></td>
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<tr>
<td>08.04</td>
<td></td>
<td>Showers</td>
<td>Shower pans</td>
<td>Thermoflex solid surface shower pans; with polyurethane spray foam underlaid; solid set in a bed of mastic; trim piece installed along front of shower pans and floor</td>
<td>Thermaflex</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Chrome Frame</td>
<td>PM</td>
<td>HFS / S</td>
<td></td>
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<tr>
<td>08.04.a</td>
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<td>Showers</td>
<td>Shower pans</td>
<td>Thermoflex solid surface shower pans; with polyurethane spray foam underlaid; solid set in a bed of mastic; trim piece installed along front of shower pans and floor</td>
<td>Thermaflex</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Chrome Frame</td>
<td>PM</td>
<td>HFS / S</td>
<td></td>
</tr>
<tr>
<td>08.04.b</td>
<td></td>
<td>Showers</td>
<td>Shower walls</td>
<td>Seamless, solid surface panels; 2 robe hooks inside each shower stall; soap holders installed on partition walls</td>
<td>Thermaflex</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Chrome Frame</td>
<td>PM</td>
<td>HFS / S</td>
<td></td>
</tr>
<tr>
<td>08.04.c</td>
<td></td>
<td>Showers</td>
<td>Shower head location</td>
<td>project specific</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>08.04.d</td>
<td></td>
<td>Shower lighting</td>
<td>LED preferred/waterproof</td>
<td>Campus Standards - Division 16</td>
<td>Campus Standards - Division 16</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>08.04.e</td>
<td></td>
<td>Shower Valves</td>
<td>CVR Monitor LVL</td>
<td>Delta</td>
<td>DT13001 CVR MONITOR LV</td>
<td>N/A</td>
<td>Chrome</td>
<td>PM</td>
<td>HFS / M</td>
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<tr>
<td>09</td>
<td></td>
<td>Exhaust fans</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>10</td>
<td></td>
<td>Exhaust fans</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
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<tr>
<td>11</td>
<td></td>
<td>Signage outside of restroom for cleaning times</td>
<td>By HFS / ENVS</td>
<td>N/A</td>
<td>N/A</td>
<td>N/A</td>
<td>White background with black lettering</td>
<td>PM</td>
<td>HFS / ES</td>
<td></td>
<td></td>
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<tr>
<td>12</td>
<td></td>
<td>Plumbing</td>
<td>Install new bail valves for bathroom isolation (SU Standards); replace shower plumbing drain to main stack in men's; Install bail valves isolating lavatory banks (under counter)</td>
<td>Campus Standards - Division 15</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS / M</td>
<td></td>
<td></td>
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</tbody>
</table>

Revised: 8/28/2011

HFS_Facility_Project_Standards_List_12-15-10(1).xlsx

Page 9
## Housing Facilities Standards
### 2010/2011

### HFS Facility Project Standards
#### 12-15-10

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
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<th>Manufacturer</th>
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<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
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<tbody>
<tr>
<td>12.a</td>
<td>Access Panels</td>
<td>Initial access panels for maintenance issues</td>
<td>N/A</td>
<td>N/A</td>
<td>Location specific</td>
<td>location specific</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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<tr>
<td>12.b</td>
<td>Badges</td>
<td>2&quot; Red Free Zone Area; 3&quot; Red Free Zone Area</td>
<td>FEBCO - Campus Standards Division 15</td>
<td>FEBCO 8351; FEBCO 860</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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<td>12.c</td>
<td>Steam Traps</td>
<td>Room radiators</td>
<td>Tunnel or Armstrong</td>
<td>Tunnel or Armstrong</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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### Classrooms

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<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Smart Equipment</td>
<td>Smart box, protector and projector screen as specified by OU AV department (ITS)</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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<tr>
<td>13.a</td>
<td>Projector</td>
<td>Manual or powered; Campus standard; FM to coordinate with campus ITS</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
<td></td>
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<tr>
<td>13.b</td>
<td>Screen</td>
<td>Campus standard; FM to coordinate with campus ITS</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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<tr>
<td>13.c</td>
<td>Control/ “hutch”</td>
<td>Smart box control center, projector and projector screen as specified by OU/ITS department</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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<td>13.d</td>
<td>AV Equipment controls</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>Per Campus ITS Standards - designers should review Appendix 9 of the Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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### Security

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<th>Comments</th>
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<tbody>
<tr>
<td>14</td>
<td>C-Cure</td>
<td>All classroom doors</td>
<td>*See attached HIT specs; C-Cure card reader locks on all entrances/exit doors</td>
<td>C-Cure Project</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
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<tr>
<td>16</td>
<td>White Boards/ Chalk Boards</td>
<td>One per classroom; usually a chalkboard/white board combo</td>
<td>Campus Standards - Division 10; Section 10100</td>
<td>See Campus Standards for classrooms</td>
<td>Specific Location</td>
<td>N/A</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
<td></td>
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<tr>
<td>17</td>
<td>Flooring</td>
<td>Carpet tiles with carpet base</td>
<td>Shaw Contract Group</td>
<td>2 x 2 Tiles</td>
<td>Project Specific</td>
<td>PM</td>
<td>HFS/ M</td>
<td></td>
<td></td>
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<tr>
<td>17.a</td>
<td>Wall base</td>
<td>Carpet Base, 4&quot; high carpet base</td>
<td>Shaw Contract Group</td>
<td>Project Specific</td>
<td>PM</td>
<td>HFS/ M</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>16.a</td>
<td>Paint</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>PM</td>
<td>HFS/ M</td>
<td></td>
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<tr>
<td>16.b</td>
<td>Walls</td>
<td>Paint</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>PM</td>
<td>HFS/ M</td>
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<tr>
<td>17.b</td>
<td>Ceilings</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>PM</td>
<td>HFS/ M</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>18</td>
<td>Lighting</td>
<td>Special/ Project Specific Lights; 5’ T-8 Fluorescent (preferred); no halogen</td>
<td>Project Specific; or Campus Standards - Division 16; Appendix 9</td>
<td>See Campus Standards</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS/ M</td>
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<tr>
<td>18.a</td>
<td>Occupancy sensors</td>
<td>Turns lights on in an area when sensor movement and turns lights off when area not occupied</td>
<td>Hubbell for general occupancy sensor; Use Novitas for bathrooms/ wet areas</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS/ M</td>
<td></td>
<td></td>
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<tr>
<td>19</td>
<td>Window coverings</td>
<td>Operable windows required with mini-blinds and blackout shades</td>
<td>Black out Shades-Thermo Vue</td>
<td>Window specific</td>
<td>Mini-Blinds - Black</td>
<td>PM</td>
<td>HFS/ M</td>
<td>WITH operable windows</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Temporary cooling at &quot;on-campus&quot; buildings</td>
<td>Large Classrooms</td>
<td>Direct Cooling System</td>
<td>Project Specific</td>
<td>Project Specific</td>
<td>PM</td>
<td>N/A</td>
<td>HFS/ M</td>
<td></td>
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<tr>
<td>21</td>
<td>Furniture</td>
<td>PM</td>
<td>Project Specific</td>
<td>N/A</td>
<td>PM</td>
<td>HFS/ M</td>
<td>Coordinate with HFS Bus. Ops</td>
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</table>
## Housing Facilities Standards
### 2010/2011

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**Auxiliary Space**

| 09          |                  | Custodial closets |                  |                      |              |         |            |                   |                      |                          |           |
| 09.a        |                  | Flooring         | VCT              | Campus Standards - section 09060 | N/A | Project Specific | Project Specific | PM          | HFS               |                       |           |
| 09.b        |                  | Wall base        | Rubber           | Campus Standards - section 09060 | N/A | Project Specific | Project Specific | PM          | HFS               |                       |           |
| 09.c        |                  | Paint            | Semigloss        | Kwal | N/A | Project Specific | Project Specific | PM          | HFS               |                       |           |
| 09.d        |                  | Walls            | FRP or stainless steel guard at mop sink on wall | N/A | N/A | At least 18" H | Project Specific | PM          | HFS               |                       |           |
| 09.e        |                  | Ceilings         | Paint            | Kwal | Project Specific | Project Specific | Project Specific | PM          | HFS               |                       |           |
| 09.f        |                  | Lighting         | CFL with cage    | Campus Standards - Division 10 | Project Specific | N/A | Project Specific | PM          | HFS               |                       |           |
| 09.g        |                  | Dilution stations | Projected by ENVS | N/A | Project Specific | N/A | Project Specific | PM          | HFS               |                       |           |
| 09.h        |                  | House Bids       | Required at mop sink | Campus Standards - Division 15 | Project Specific | N/A | Project Specific | PM          | HFS               |                       |           |

Revised 6/28/2011

HFS Facility Project Standards List 12-15-10

Housing Facilities Standards
2010/2011
## HFS Facility Project Standards

**12-15-10**

### Housing Facilities Standards

**2010/2011**

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
<th>Model #</th>
<th>Dimensions</th>
<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.1</td>
<td>Storage</td>
<td>Rubbermaid Clean Organize/ Tool Holder Kit, Mop and tool hangers</td>
<td>-</td>
<td>Rubbermaid; available from Northern Colorado Paper</td>
<td>No. 1905</td>
<td>24” x 36” W adjustable shelves on standards and brackets; 20” L stainless steel mop rack</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.1</td>
<td>Sink/ mop sink</td>
<td>Service Sinks T &amp; S Brass</td>
<td>B-0667-RSM SERV SNK FCT</td>
<td>at least 24” x 24”</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.1</td>
<td>Aerator</td>
<td>Aerator on Service Sinks; 1.5gm</td>
<td>Nagra</td>
<td>1215TP</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 100 Storage Rooms

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
<th>Model #</th>
<th>Dimensions</th>
<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>100.a</td>
<td>Flooring</td>
<td>VCT</td>
<td>SEE ABOVE INFORMATION FOR CUSTODIAL CLOSETS</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.b</td>
<td>Wall base</td>
<td>Rubber</td>
<td>SEE ABOVE INFORMATION FOR CUSTODIAL CLOSETS</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.c</td>
<td>Paint</td>
<td>Semi gloss</td>
<td>SEE ABOVE INFORMATION FOR CUSTODIAL CLOSETS</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.d</td>
<td>Floors</td>
<td>FRP at mop sink or stainless steel</td>
<td>SEE ABOVE INFORMATION FOR CUSTODIAL CLOSETS</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.e</td>
<td>Ceilings</td>
<td>Paint</td>
<td>SEE ABOVE INFORMATION FOR CUSTODIAL CLOSETS</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.f</td>
<td>Lighting</td>
<td>OS with cage</td>
<td>SEE ABOVE INFORMATION FOR CUSTODIAL CLOSETS</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>100.g</td>
<td>Shelving</td>
<td>Project Specific</td>
<td>SEE ABOVE INFORMATION FOR CUSTODIAL CLOSETS</td>
<td>N/A</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 101 Laundry Rooms

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
<th>Model #</th>
<th>Dimensions</th>
<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>101.a</td>
<td>Washer/ Dryer</td>
<td>Front loading only with Energy Star Certification; One W/D set per 25 students; Install card reader and connect all machines to reader; See HFS standards for readers</td>
<td>N/A</td>
<td>Purchased by Vendor</td>
<td>N/A</td>
<td>N/A</td>
<td>PM/ Vendor</td>
<td>Vendor</td>
<td>PM to coordinate with RL and Vendor</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### 102 Exit Stairways

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
<th>Model #</th>
<th>Dimensions</th>
<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>102.a</td>
<td>Signage</td>
<td>Campus Standard</td>
<td>Campus Standard - Section 10400</td>
<td>N/A</td>
<td>Campus Standard - Section 10400</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>102.b</td>
<td>Walk-off material</td>
<td>Hercules Nop Walk-off mat at entries</td>
<td>Van-Dijk Contract</td>
<td>Hercules Nop File: CU Standard</td>
<td>Specific to entry vestibule size</td>
<td>7-599</td>
<td>PM</td>
<td>HFS</td>
<td>11’6” minimum length</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102.c</td>
<td>Stair treads</td>
<td>Rubber Vinyl</td>
<td>Roppe brand tread*</td>
<td>Roppe brand tread</td>
<td>Project Specific</td>
<td>Tan - Black</td>
<td>PM</td>
<td>HFS</td>
<td>*Tan Roppe brand tread is being used at WVN because it shows less dust, dirt and footprints.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>102.d</td>
<td>Railings</td>
<td>Campus Standard</td>
<td>Campus standard - Section 05500</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>Black</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
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</table>

### 103 Mechanical Items

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
<th>Model #</th>
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<th>Acceptable colors</th>
<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>103.a</td>
<td>Pumps</td>
<td>Grundfos</td>
<td>Grundfos</td>
<td>Project Location Specific</td>
<td>Project Location Specific</td>
<td>N/A</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.b</td>
<td>Valves</td>
<td>Campus Standard</td>
<td>Campus Standard Division 15</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.c</td>
<td>Steam</td>
<td>Campus Standard Division 15</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.d</td>
<td>Piping</td>
<td>Campus Standard Division 15</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.e</td>
<td>Steam control valves</td>
<td>Campus Standard Division 15</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.f</td>
<td>Steam traps</td>
<td>Campus Standard Division 15</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>103.g</td>
<td>BAS / GDC controls</td>
<td>Campus Standard Division 15</td>
<td>See Campus Standards</td>
<td>See Campus Standards</td>
<td>PM</td>
<td>HFS</td>
<td></td>
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</tr>
</tbody>
</table>

### Construction, Renovation and Remodeling Protocols

<table>
<thead>
<tr>
<th>Item Number</th>
<th>General Location</th>
<th>Item Description</th>
<th>Item Location</th>
<th>General Description</th>
<th>Manufacturer</th>
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<th>Initial Responsibility</th>
<th>Maintenance Responsibility</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>104</td>
<td>Onity Locks</td>
<td>Ensure all Onity Locks are ordered at least 12 weeks in advance of installation date; Onity has a firm 8-12 week lead time.</td>
<td>N/A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Revised 6/28/2011**

**HFS_Facility_Project_Standards_List_12-15-10(1).xlsx**

**Page 13**
### HFS Facility Project Standards

**Item Number** | **General Location** | **Item Description** | **Item Location** | **General Description** | **Manufacturer** | **Model #** | **Dimensions** | **Acceptable colors** | **Initial Responsibility** | **Maintenance Responsibility** | **Comments**
---|---|---|---|---|---|---|---|---|---|---|---

1. Ccure System

2. Washers and Dryers

3. Water heaters

4. Scheduling

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**Foot Notes**

*Attached IT specs from Jeff Spivey

**Attached HFS Bulletin Board Standards per ResLife 2010

***Phantom Load Switches - not an HDS standard yet, only included at WV-N at this time. We consciously included them at that hall, as it will have residents that fit the sustainability theme and wish to be there, and we hope will utilize the switches to save electricity.

****Occupancy Sensors in Student Rooms - not an HDS standard yet, only included at WV-N at this time.
## Signage and Bulletin Board Guidelines in the Residence Halls

**Housing and Dining Services - Renovated and RAMP Residence Halls (Updated 09.20.10)**

<table>
<thead>
<tr>
<th>Purpose</th>
<th>Location</th>
<th>Type/Size</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main Lobby and 24/7 Desk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>To build community and welcome members and visitors to the hall, To advertise in-hall community activities, To learn about the academic program, To introduce staff, To re-enforce important dates and policies, To demonstrate sustainability and reduce paper flyers, To encourage the use of the desk as the hub of communication</td>
<td>Near the 24/7 desk</td>
</tr>
<tr>
<td>2</td>
<td>To welcome community members and visitors to the hall, To be able to be specific and welcome individual groups including campus and conferences in the summer</td>
<td>Behind or very near the 24/7 desk</td>
</tr>
<tr>
<td>3</td>
<td>To list the on-call phone number, To celebrate birthday and other special awards, To highlight last minute events</td>
<td>Behind or very near the 24/7 desk</td>
</tr>
<tr>
<td>4</td>
<td>To advertise special events (ie. Global Jam, athletics, etc.), To advertise events on large poster paper</td>
<td>Behind or very near the 24/7 desk</td>
</tr>
<tr>
<td>5</td>
<td>To hang/distribute campus flyers with approval stamp from RL</td>
<td>Inside the vestibule of each main entrance</td>
</tr>
<tr>
<td>6</td>
<td>To hang large oversized signs and butcher paper signs</td>
<td>Near the 24/7 desk</td>
</tr>
<tr>
<td><strong>Floor Lobby and Hallways</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>To build individual floor community and welcome members and visitors to the floor</td>
<td>At main entrance to the floor</td>
</tr>
<tr>
<td>8</td>
<td>To build individual wing community and welcome members and visitors to the wing</td>
<td>At main entrance onto each wing</td>
</tr>
<tr>
<td>9</td>
<td>To educate residents about floor programs, To use as a passive program (policies /college student decision making)</td>
<td>Near the Resident Advisors Room</td>
</tr>
<tr>
<td>10</td>
<td>To build community and inform residents about programs</td>
<td>Near community bathroom</td>
</tr>
<tr>
<td>11</td>
<td>To educate residents about floor quiet hours and duty phone number</td>
<td>At main entrance onto the floor and each wing</td>
</tr>
<tr>
<td><strong>Resident Rooms</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

1. To build community and welcome members and visitors to the hall
2. To advertise in-hall community activities
3. To learn about the academic program
4. To introduce staff
5. To re-enforce important dates and policies
6. To demonstrate sustainability and reduce paper flyers
7. To encourage the use of the desk as the hub of communication
8. To welcome community members and visitors to the hall
9. To be able to be specific and welcome individual groups including campus and conferences in the summer
10. To list the on-call phone number
11. To celebrate birthday and other special awards
12. To highlight last minute events
13. To advertise special events (ie. Global Jam, athletics, etc.)
14. To advertise events on large poster paper
15. To hang/distribute campus flyers with approval stamp from RL
16. To hang large oversized signs and butcher paper signs
17. To build individual floor community and welcome members and visitors to the floor
18. To build individual wing community and welcome members and visitors to the wing
19. To educate residents about floor programs
20. To use as a passive program (policies /college student decision making)
21. To build community and inform residents about programs
22. To educate residents about floor quiet hours and duty phone number
<table>
<thead>
<tr>
<th></th>
<th>To communicate expectations of behavior and decision making</th>
<th>Back of Resident room doors</th>
<th>Permanent Student Code of Conduct sign</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Exit and Entrance Doors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>• To inform the community of door use</td>
<td>All exit only doors</td>
<td>Permanent plastic sign</td>
</tr>
<tr>
<td></td>
<td>• “EXIT ONLY - Community Safety is up to YOU! Make sure door securely closes after each exit. Please do not prop this door.”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>• To indicate that this is the main entrance to the hall</td>
<td>All entrance doors</td>
<td>Permanent sign</td>
</tr>
<tr>
<td>15</td>
<td>Way Finding</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To assist residents/guests in finding key locations throughout the hall</td>
<td>Outside various rooms</td>
<td>Permanent signs</td>
</tr>
<tr>
<td></td>
<td>• To identify classrooms, offices, bathrooms, kitchen/break room, vending, etc.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>• To assist the resident or guest in finding key locations</td>
<td>Near the 24/7 desk</td>
<td>Permanent sign</td>
</tr>
<tr>
<td></td>
<td>• Hall map with a “You are here” sticker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>• To name wing/floor</td>
<td>On the wing door on the first floor</td>
<td>Permanent signs</td>
</tr>
<tr>
<td></td>
<td>• To build community and identity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>• To identify floor location</td>
<td>Near floor/wing door</td>
<td>Permanent signs</td>
</tr>
<tr>
<td>19</td>
<td>Eco Star and Recycling</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• To educate about energy use and encourage sustainability</td>
<td>Main lobby</td>
<td>Permanent sign</td>
</tr>
<tr>
<td></td>
<td>• To compare two years with one another</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>• To educate and encourage recycling in the proper bins</td>
<td>Above or on recycling stations</td>
<td>Permanent signs</td>
</tr>
<tr>
<td></td>
<td>• “Landfill” and “Co-mingled Recycling”</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Emergency and Safety</td>
<td>All emergency doors</td>
<td>Permanent signs</td>
</tr>
<tr>
<td>22</td>
<td>Building Use Instructions</td>
<td>All bathrooms/stall</td>
<td>Permanent sign</td>
</tr>
<tr>
<td>23</td>
<td>Outside the Building</td>
<td>All bike racks</td>
<td>Permanent sign</td>
</tr>
<tr>
<td></td>
<td>• To educate bike rack use</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>