

University of Houston Master Specification

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SECTION 28 1300 - ACCESS CONTROL

Maintain Section format, including the UH master spec designation and version date in bold in the center columns of the header and footer. Complete the header and footer with Project information.

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

Delete hidden text after this Section has been edited for the Project.

Designer is required to adhere to the University's "Network Infrastructure Design Standards," "UH System IT Facilities: Baseline Standards," and "Electronic Access Control Design Guide" available in Owner's Design Guidelines on the University Information Technology and Facilities Planning and Construction web sites.

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 work of this Section.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
 - 1. The current version of the *Uniform General Conditions for Construction Contracts*, State of Texas, available on the web site of the Texas Facilities Commission.
 - 2. The University of Houston's Supplemental General Conditions and Special Conditions for Construction.

1.2 SUMMARY

- A. Section Includes:
 - 1. Coordination with Other Trades and Parts of the Contract.
 - 2. Submittals.
 - 3. Quality Assurance.
 - 4. Parts and Manufacturers.
 - 5. Installation and Testing.
- B. Pre-Qualification
 - 1. Contractor is required to be an AccessNSite Access Control System (ACS) Certified Vendor.
- C. Division of Scope

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1. ACS Contractor

- a. AccessNSite is the existing access control system for the University of Houston, UH at Sugar Land and UH at Katy campuses. The System uses existing Cougar One Cards tied to the University's student and employee database.
- b. Provide and install all specified components for access-controlled doors including the following:
 - 1) Non-IP-based cabling, card readers
 - 2) Intelligent door controller
 - 3) System enclosures
 - 4) Card reader panels
 - 5) Input panels
 - 6) Output panels
 - 7) Interface relays
 - 8) Power distribution modules
 - 9) Door contacts
 - 10) End of line resistors
 - 11) Egress motion detectors
 - 12) Exit buttons
 - 13) Door prop horns
 - 14) Key switches
 - 15) System power supplies
 - 16) Fused relay outputs
 - 17) Back up batteries
 - 18) Power distribution modules for fail-safe locks only (to be tied into the building fire alarm system)
- c. Owner will provide all ACS client software and licenses as required to support the project. Owner will program all access control components in existing University centrally-managed access control system.
- d. Provide door lock power supplies in Section 08 7100 "Door Hardware" (except for power supplies for latch retraction exit devices, which will be provided by the door hardware supplier and will be by the same manufacturer as the exit devices).

2. ACS Contractor (Electrified Door Hardware):

- a. Refer to Section 08 7100 for additional information regarding electrified hardware.
- b. Provide all electrified door hardware as fail-secure entry with free mechanical egress, except where required to be fail-safe entry according to NFPA life safety code and University of Houston Fire Marshal.

3. Electrical Contractor:

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- a. Provide dedicated 120VAC power circuits, conduit, raceways, back boxes, j-boxes, fittings, hardware and earth grounds as necessary to provide a complete working system for the access control system.
 - b. Provide 120VAC connections to access control head end equipment and access control system power supplies and door locking power supplies.
 - c. Provide conduit to all access control and security devices to accessible ceilings, including but not limited to:
 - 1) Card readers
 - 2) Electrified door hardware
 - 3) Door contacts
 - 4) End of line resistors
 - 5) Request to exit devices
 - 6) Audible alarm devices
 - 7) System power supplies
 - 8) Door release buttons
 - 9) ADA door operators push plates
 - 10) Door hold open devices
 - 11) Power supplies for electrified door hardware and electrified exit devices
 - 12) Automatic door operators and associated controls
 - 13) Vehicle gate operators and associated controls
 - 14) All other access control and security related devices.
 - d. Provide homeruns from the access-controlled doors to accessible ceilings. Within the accessible ceiling provides secondary pathways to include the use of basket tray and or saddle bags to the access control panel.
 - e. Provide necessary masonry coordination for the back-box installations.
 - f. Coordinate patching and painting of all items relating to conduit, raceways, J boxes, fittings hardware and earth grounds, conduit, and conduit installations.
 - g. Attend final walkthrough and system commissioning to resolve any electrical issues.
4. Elevator Contractor (only where card access is specified):
- a. Elevator components and other elevator equipment are specified in Division 14. Refer to those specifications for elevator operations.
 - b. Provide demarcation box(s) in elevator room.
 - 1) One dry contact per floor for remote elevator actuation by access control system.
 - 2) One input per floor for elevator indication to access control system.
 - 3) Other inputs/outputs as specified in the Drawings and Specifications.
 - c. Provide wiring to the Cab
 - d. Install Card Readers furnished by the ACS Contractor
 - e. Perform life safety, software and testing
 - 1) Follow all code requirements.

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- 2) Owner is responsible for all software necessary to interact with all input/output points connected to the access system relating to elevators.
- 3) Provide an elevator technician for testing of the interfaces to access system.
5. Automatic Door Installer:
 - a. Provide input interface for the control of the automatic door by card reader.
 - b. Provide one contact from each ADA button for interface with ACS for "individual" ADA button controlled by card reader and/or time schedule.
 - c. Provide integral electrified door locking mechanisms for automatic "sliding" doors.
 - d. Provide integral door monitoring contacts for automatic "sliding" doors.
6. Fire Alarm Contractor:
 - a. Provide one fire alarm relay with a dry contact at each ACS Head End for input to power distribution module(s) that control emergency door release when/if "fail-safe" locks are used.
7. Technology Contractor:
 - a. Provide network connections to each ACS Intelligent Controller.
 - b. Provide network connections to PoE powered devices.
8. UIT Project Manager:
 - a. Coordinate assignment of static IP addresses.

1.3 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Follow the Submittal Administrative Requirements as stated in Section 01 3300 "Submittal Procedures." Use electronic format only.

1.4 ACTION SUBMITTALS

- A. Submit installation plan, and keep up to date throughout the Project, indicating:
 1. Equipment and personnel.
 2. Materials and staging area.
 3. Start and completion dates.
 4. Locations, including floor, room and building.
 5. Have the installation plan reviewed and approved by the subcontractor before submittal for review and approval by UH EAC Representative.
- B. Shop Drawing Submittals to include:
 1. Room penetration drawing.
 2. Security extension pathway drawing.
 3. Riser Conduit anchoring drawing.
 4. Conduit chase drawing.

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5. Security pathway drawing.
6. Junction box, gutter and pull box labeling drawing.
7. Wall enclosure elevation drawing.
8. Floor plan for all security rooms.
9. Point to point wiring schematics.
10. Door rough in elevation drawing.

- C. Manufacturer's data, including part numbers, cut sheets and detailed descriptions, for all proposed equipment.

1.5 QUALITY ASSURANCE

A. Contractor Qualifications.

1. Certified as an authorized dealer and installer of the AccessNSite System.
2. Minimum of 1-year experience installing and programming the AccessNSite System.

B. Submittal Coordination

1. Arrange meeting with all subcontractors and material suppliers involved with access control including doors, frames and door hardware supplier(s), elevators, automatic doors, entrances, and electrical.
2. Include UIT Project Manager, Owner's Campus Safety Representative and Owner's Electronic Access Control (EAC) Representative. Refer to 3.1.A "COORDINATION" below.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Refer to System Components below.

2.2 SYSTEM COMPONENTS

- A. Access Control Software: Existing.

1. Access Control Client Software:
 - a. Provided, installed, and configured by Owner.

- B. Access Control Head End Equipment – All equipment to be compatible with the Owner's centrally-managed access control system. Provide all equipment configured and flashed to AccessNSite access control system.

1. Intelligent Dual Reader Controllers (IDRC) – Mercury LP1502 Dual Reader Controller:
2. Single Reader Interface Panels (SRI) – Mercury MR50-S3 Single Reader Panel

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3. Dual Reader Interface Panels (DRI) – Mercury MR52-S3 Dual Reader Panel,
 4. Input Modules (IM) – Mercury MR16IN-S3 Input Panel,
 5. Output Modules (OM) – Mercury MR16OUT-S3 Output Panel,
 6. System Power Supplies (SPS) – Life Safety Power FPO150/250-2D82M8NL4E8M2
 7. Isolation Relays Module – Altronix – RB1224.
 - a. Substitutions are GE or Honeywell.
 8. Automatic Door Controller – Kouba – LDAADC4
 9. Elevator Interface Panel – LifeSafety Power – FP075-C8E1.
 - a. Elevator components and other elevator equipment are specified in Division 14 2100 and 14 2400. Reference those specifications for elevator operations.
- C. Access Control Field and Monitoring Devices – as shown on Drawings.
1. Card Readers--DesFire EV1 (CR-EV1)
 - a. HID Signo Reader 20
 - 1) Thin readers for mullion or single-gang switch boxes mounting. Model # 20NKS-03-0005JM.
 - b. HID Signo Reader 40
 - 1) Standard readers for wall or double-gang switch box mounting. Model # 40NKS-03-0005JM
 2. Request to Exit Motion Detectors – Bosch DS160
 - a. TP160 Trim Plate as required.
 - b. Only required if integrated request to exit does not exist within door hardware.
 3. Access Control Composite Cable
 - a. Windy City Wire – 4461230-500.
 - b. Cabling to be rated for environment it is to be installed within (i.e., plenum, riser, outdoor, indoor, indoor/outdoor).
 4. Access Control Door Contact Cable.
 - a. Windy City Wire – 4443630BR
 - b. Cabling to be rated for environment it is to be installed within (i.e., plenum, riser, outdoor, indoor, indoor/outdoor).
 5. Exit Buttons (EB) – Alarm Controls TS-2-2T
 - a. TS-2TRED.
 6. Door Contacts (DC) – George Risk Industries
 - a. Standard Gap up to 1/2 inch on steel

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- 1) ¾-inch diameter – 180-12
 - 2) 1-inch diameter – 184-12
 - b. Wide Gap 3/4-inch-plus on steel
 - 1) ¾-inch diameter – 180-12WG
 - 2) 1-inch diameter – 184-12WG
7. End-of-Line (EOL) Resistors – George Risk Industries
 - a. All supervised input circuits, including but not limited to Door Position Switches (DPS), Request-to-Exit (REX) devices, and alarm contacts, shall incorporate end-of-line supervision resistors.
 - b. Resistor specifications:
 1. Value: 2k /1k
 2. Tolerance: +5%
 3. Power rating: 1/8 watt
 4. Type: 2 Blue 2 Black, encapsulated, metal film
 5. 12" leads
 - c. George Risk Industries (GRI) model GI-6644.
8. Exterior Emergency Exit Only Local Audible Door Alarm – Designed Security Inc – ES411
 - a. K0 – No Key Switch
9. Key Switches – Schlage 653-15
 - a. Use the Owner's core.
- D. Integrated IP Enabled Access Control Devices
 1. IP Enabled Wireless Integrated Card Reader Mortise Locks – Sargent Manufacturing (SA):
 - a. SA – IN120- Series:
 - b. Reference Division 08 7100 for additional information regarding electrified hardware.
 - c. Wireless access control mortise locks interface using field replaceable wireless radio connection to an Ethernet Local Area Network (LAN).
 - d. Locks will continue to operate independently of an Ethernet (LAN) connection slowdown or failure.
 - e. Power Source: 6 AA alkaline batteries with LED indication of locked, programming mode and low capacity warning status conditions.
 - f. Complete installation to include Software Development Kit (SDK), and network and lock configuration for initial lock set-up.
 2. IP Enabled Power-over-Ethernet (PoE) Integrated Card Reader Mortise Lock – Sargent Manufacturing (SA):
 - a. SA – IN220 Series:
 - b. Refer to Section 08 7100 for additional information regarding electrified hardware.

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- c. Integrated locking unit with Ethernet power and communication connection capability directly from the locking unit back to the central system host server without additional access control interfaces or components PoE enabled network.
 - d. Real-time software accessible alarms for forced door, unknown card and door held open, with inside lever handle (request-to-exit), battery status, tampering, and door position (open/closed status) monitoring.
 - e. Network and lock configuration for initial lock setup and programming via a USB connection.
 - f. Power and communication from one Ethernet (CAT5e or higher) cable.
 - g. Real-time system lockdown capabilities.
 - h. Network Cabling Requirements: Refer to Section 27 1500 "Communications Horizontal Cabling."
3. IP Enabled Wireless Exit Hardware – Sargent Manufacturing (SA):
- a. SA – IN120-80/79 Series
 - b. Refer to Section 08 7100 for additional information regarding electrified hardware.
 - c. Wireless access control mortise locks interface using field replaceable IEEE 802.11b/g/n 2.4 GHz wireless radio connection to an Ethernet Local Area Network (LAN), facilitating central control via a Software Development Kit (SDK). Locks will continue to operate independently of an Ethernet (LAN) connection slowdown or failure.
 - d. Power Source: 6 AA alkaline batteries with LED indication of locked, programming mode and low capacity warning status conditions.
 - e. Complete installation to include Software Development Kit (SDK), and network and lock configuration for initial lock set-up.
4. IP Enabled Power-over-Ethernet (PoE) Integrated Card Reader Exit Hardware – Sargent Manufacturing (SA):
- a. SA – IN220 80/79 Series
 - b. Refer to Section 08 7100 for additional information regarding electrified hardware.
 - c. Integrated locking unit with Ethernet power and communication connection capability directly from the locking unit back to the central system host server without additional access control interfaces or components via PoE enabled network.
 - d. Real-time software accessible alarms for forced door, unknown card and door held open, with push rail (request-to-exit), battery status, tampering, and door position (open/closed status) monitoring.
 - e. Network and lock configuration for initial lock setup and programming via a USB connection.
 - f. Power and communication from one Ethernet (CAT5e or higher) cable.
 - g. Real-time system lockdown capabilities
 - h. Network Cabling Requirements: Refer to Section 27 1500 "Communications Horizontal Cabling."

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PART 3 - EXECUTION

3.1 INSTALLATION

A. Coordination – Required Submittal Coordination Meeting:

1. Coordinate meeting with all subcontractors and material suppliers involved with access control including doors, frames and door hardware supplier(s), elevator, automatic doors, entrances, and electrical. Include UIT Project Manager, Owner's Campus Safety Representative and Owner's EAC Representative.
2. Review and coordinate submittals from the following Sections prior to submittal for approval:
 - a. Section 08 1113 "Hollow Metal Doors and Frames"
 - b. Section 08 1216 "Aluminum Door Frames"
 - c. Section 08 1416 "Flush Wood Doors"
 - d. Section 08 3213 "Sliding Aluminum-Framed Glass Doors"
 - e. Section 08 4113 "Aluminum-Framed Entrances and Storefronts"
 - f. Section 08 3229.23 "Sliding Automatic Entrances"
 - g. Section 08 3229.33 "Swinging Automatic Entrances"
 - h. Section 08 7100 "Door Hardware"
 - i. Section 14 2100 "Electric Traction Elevators"
 - j. Section 14 2400 "Hydraulic Elevators"
 - k. Section 26 0501 "Electrical Basic Materials and Methods"
 - l. Section 27 1500 "Communications Horizontal Cabling"

B. INSTALLATION STANDARDS

1. Install access control system components per manufacturer's instructions and recommendations.

C. ACCESSIBILITY

1. Comply with ANSI A117.1 Accessibility Standard requirements for disabled.

D. CABLING

1. Hardwired Doors: Install properly rated cabling and wiring in conduit to the accessible ceiling area without damaging conductors, shield, or jacket. Within accessible ceilings it is acceptable to use continuous pathways such as basket tray, and non-continuous pathways such as saddle bags.
 - a. Separate access control cabling from other low voltage systems pathways. Do not install access control cabling within the same basket tray as low voltage data.
2. PoE Doors: Install data cabling to door per Section 27 1500 "Communications Horizontal Cabling."
3. Restrict cabling to a maximum distance of 500 feet (152 m) from reader interface panel.

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E. AMERICANS WITH DISABILITIES ACT ENTRANCES

1. Proximity readers may be used only at ADA entrances (in addition to magnetic stripe readers). Proximity readers are for use with special Owner-formatted HID proximity cards issued to disabled students, faculty and/or employees in order to operate automatic openers for after-hours access.
2. Installation must be approved by Owner's EAC Representative. Refer to 28 0600 for commissioning requirements.

F. EXIT BUTTONS

1. Double pole (DP) relays – connect one pole directly to the magnetic lock power and connect one pole as request to exit to the Access Control System.
2. Provide only for use with magnetic locks, in addition to an egress request to exit motion detector.

G. INSERT CIRCUIT SUPERVISION

1. Install EOL resistors at the field device end (i.e., at the door contract, REX device, etc.) for all supervised input circuits.
2. Do not install EOL resistors inside the access control panel junction boxes or intermediate wiring locations
3. Each EOL resistor should be concealed and securely affixed to avoid tampering.
4. Verify correct resistors installation by measuring resistance values during commissioning. Ensure each input is properly supervised and generates accurate fault conditions (open, short, tamper) if wiring is compromised.
5. Any deviations from EOL resistor installation standards must be documented and approved in writing by the Owner's EAC Representative prior to final acceptance

H. LABELING

1. Label access control panels with access door information provided by Owner.

I. PROGRAMMING

1. Refer to Appendix A – Access Control Programming Form for required information. Request form from Owner's EAC Representative.
2. Prior to door enrollment programming, coordinate the following with Owner's EAC Representative:
 - a. Final door labeling information for programming
 - b. Default Access Level Assignments
 - c. UH ACS System Programming Standards
3. Program all system and door setup information.
4. Owner will program all cardholders and access levels.

J. FIELD QUALITY CONTROL

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1. Engage a factory-authorized service representative to test and adjust field-assembled components and equipment installation, including connections, and assist in field testing.

K. ACCEPTANCE TESTING

1. Operational Test and Acceptance: After installation of access control equipment, cables and connections, demonstrate system capability and compliance with requirements to Owner's EAC Representative.
2. Acceptance of access control system will be independent of equipment or services provided in other Sections or by Owner.
3. Refer to Section 28 0600 "Testing for Electronic Safety and Security" for specific requirements.

3.2 PROJECT CLOSE-OUT

1. Submit As-Built drawings in .rvt, .dwg and .pdf formats showing room numbers and actual device locations and labeling. Submit within 5 business days of final system acceptance testing.
2. For access control infrastructure, provide final device locations on As-Built drawings and a spreadsheet (MS Excel) with device information that includes the door number, access control panel number, controller number and port number for access control devices (i.e., card reader, lock power, REX, door position switch).

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										Door Number N_i	REMARKS
										Programming Controller Status	
										Controller Name/Address	
										Control Input Controller Address	
										Door Temperature (F, R/A)	
										Intelligent Lock Status	
										Lock - Release - Open	
										Internal Call Display (F, R/A)	
										Alarm Open Alarm (F, R/A)	
										Control Call Reset (F, R/A)	
										Hold Open Alarm (F, R/A)	
										Valid Exit (Open) Alarm (F, R/A)	
										If Sounder Operating within Door Frame	
										End of Fire and no alarm state	
										Fire Alarm PA Button (R/A)	
										Devices: Door closed when alarm per- sist and not ready	
										Locking: Compliance with fire	
										Relay: Locking: Closing the door	
										Physical Door Closure Status	

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