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FROM: Ian M. Salada *IMS*

TO: Telecommunications & Software Support

RE: Design and Construction Standards Update

DIVISION(S): 28

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Completed

AUG 28 2009

Minor change to correct format problem or typographical errors
No entry in the revision log required

Revision Log Entry Required

Description of Change: Upload new specifications document to standards.

Copy of changes sent via email also
clh291
cal9

Replace the existing “Security Access Controls Specifications” Word Document in Section 28 00 00 with the attached Word Document. Update the Version Date.

END of revision

Update Commentary:

Section was updated primarily for the following reasons:

- 1) To update equipment specifications to reflect current manufacturer offerings.
- 2) To correct details associated with specified equipment.

The Pennsylvania State University

A.C.E.S.

Building Name

Access Control Specification

A.C.E.S.

August 4, 2009

Document History
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1.0 General

1.1 Scope of Work

1.1.1 Introduction

The Contractor shall provide, install, and program a functionally complete integrated access control, electronic locking, and door monitoring system per Manufacturer’s guidelines and codes, as described in the following specifications.

1.1.2 Work included under this section

A. Installation of access control system including:

SAMPLE INFORMATION

1. Sensormatic access control panel.
 - Sensormatic iStar panel
2. Three (3) Card reader doors/door sets.
3. Six (6) Monitored doors/door sets.
4. Seven (7) Controlled doors/door sets (electric locking).

B. Door Schedule

See Appendix 1 for door schedule.

See Appendix 2 for door library for **Type**

C. System Wiring

- All system wiring shall be plenum rated.
- Wire gauge and shielding shall follow the manufacturer’s installation guidelines.
- All wiring shall be installed in accordance with the National Electric Code (NEC) and the National Fire Protection Agency (NFPA).
- All wiring shall be concealed where possible. All exposed wiring shall be installed in a protective housing such as conduit or Wiremold.
- Cables penetrating floors and firewalls must be routed through a metallic sleeve and properly fire stopped to meet national and local fire codes. All walls and floors shall maintain their existing fire rating.

D. System Programming

- The Contractor shall complete the programming of all inputs, outputs, readers, events, doors, and iStar panels.
- The Contractor shall utilize the University’s standard naming conventions.

1.1.3 Related Work Specified under Other Sections of these Specifications (Related sections)

- A. This work shall be done in strict accordance with these Contract Documents prepared for The Pennsylvania State University, herein after referred to as “Owner”.
- B. The Contractor shall perform all work described in this document along with any work not expressly mentioned in the specifications, but obviously necessary, for the proper execution of the same. It is not the intent to delineate or describe every detail and feature of work. No additions to the contract sum will be approved for any materials, equipment, and/or labor to perform work hereunder unless it can be clearly shown to be beyond the scope and intent of the drawings and specifications and absolutely essential to the proper prosecution of the work.
- C. Work under this contract consists of the complete installation and includes, but is not necessarily limited to, the furnishing of all labor, superintendence, material, tools, and equipment necessary to complete all the work as specified hereinafter.

1.2 General Conditions

1.2.1 Submittals at Bid Time

For bid evaluation, bid submittals shall include two (2) sets of the items described below:

- A. Specification sheets (cut sheets) of all proposed equipment.
- B. Equipment list identifying:
- Model number of each unit
 - Quantities of each type of device
 - Unit costs

- C. Specification Compliance: Shall constitute a letter submitted with the bid, responding to specification sub-sections individually, indicating exceptions, substitutions, and alternatives. The Contractor shall submit requests for substitutions (as well as all relevant technical data pertaining to substituted equipment) to the specifier ten (10) days prior to the close of bid for evaluation and approval.

1.2.2 Documentation to be Submitted by Contractor After Award of Contract

- A. Drawings: Shop drawings to provide details of proposed system and the work to be provided. These include point-to-point drawings of systems and wiring diagrams of individual devices.
- B. Permits: The Contractor shall be responsible for identifying requirements for permits from all building, police, and fire authorities for the installation of the system(s) specified herein and shall assist Owner in obtaining the relevant permits.

1.2.3 Documentation to be Submitted by Contractor upon Completion of System Installation

- A. “As-builts”: Upon completion of installation, the Contractor shall prepare “as-built” drawings of the system. These “as-builts” shall be AutoCAD (Revision 14 or greater) drawings of each floor plan indicating exact device locations, panel terminations, cable routes, and wire numbers as tagged and color-coded on the cable tag.

In addition, final point-to-point wiring diagrams of each type of device (in AutoCAD) shall be included in the “as-builts.”

“As-builts” shall be submitted to the Owner for approval prior to the system acceptance walk through.

- B. Operation and Maintenance Manuals: One (1) set of operating manuals shall be provided explaining the operation and maintenance of the system.
- C. Paperwork to be placed inside of iStar panel:
- iStar installation manual
 - Reader and reader interface manual
 - Door release hardware manuals
 - Request to exit motion detector manuals

- Power supply manuals
- All wiring notes

1.2.4 On-site Security Personnel Training

Upon completion of the installation, the Contractor shall furnish training in the complete operation of the system.

1.2.5 System Approvals

- A. The system shall be the standard product of one manufacturer, and the manufacturer shall have been in business manufacturing similar products for at least five (5) years.
- B. After-Sales Support: The Contractor shall be a factory-authorized and trained dealer of the system and shall be certified to maintain/repair the system after system acceptance.

1.2.6 Quality Assurance

- A. All equipment, systems, and materials furnished and installed under this section shall be installed in accordance with the applicable standards of:
 - 1. National codes: NEC and NFPA
 - 2. Approvals and Listings: UL
 - 3. Pennsylvania Department of Labor and Industry
 - 4. EIA/TIA Telecommunications wiring standards
 - 5. Local Authorities Having Jurisdiction

1.2.7 Guarantee of Work

All components, parts, and assemblies supplied by the Manufacturers and installed by the Contractor shall be warranted against defects in material and workmanship for a period of at least twelve (12) months (parts and labor), commencing upon date of acceptance by Owner. A qualified factory-trained service representative shall provide warranty service.

1.2.8 Service/Maintenance

- A. The Contractor shall be responsible for maintenance and repair of the system during the warranty period, free of charge (parts and labor), including the repair of workmanship defects,.
- B. The installer shall correct any system defect within six (6) hours of receipt of call from Owner.

- C. The Contractor shall offer extended service/maintenance agreements up to four (4) years after the warranty expires. The agreement shall be renewable monthly, quarterly, or yearly.

1.2.9 Building Security

Building security shall remain functional during installation. Doors and door locking shall remain operational. University Police must be notified if it is not possible to lock the doors at the end of each workday. Failure to comply will result in removal from the approved vendor list.

1.3 Handicapped Door Opener Interface

1.3.1 Handicapped Door Operation

A. Exterior Handicapped Button

- 1. Button is disabled when building is locked.
- 2. Button is enabled with a valid card read when building is locked.
- 3. Button opens door without card read when building is unlocked.

B. Interior Handicapped Button

- 1. Button unlocks door then opens door when building is locked.
- 2. Button triggers request to exit input on RM-4 module.
- 3. Button opens door when the building is unlocked.

1.4 Reader LED Operation

1.4.1 LED Sequencing

- A. LED table for Mercury card readers and Schlage VIP open architecture locks:

Red LED	Green LED	Indication
On	Off	Online – Door Locked
Off	Off	Offline or reader tamper
Off	On	Access granted or door unlocked
Off	Fast flash	Access Granted
Off	Slow flash	Door unlocked
Fast flash	Fast flash	Alarm: door forced/held open

- B. Sensormatic card readers use standard set-up as specified in apC/iStar technical manual.

2.0 Products

2.1 Access Control System

2.1.1 Access Control System Description

The Pennsylvania State University has initiated a multi-phase access control project for the University Park campus. The existing system utilizes Software House CCure800/8000 software running on a CCure server. The hardware consists of Sensormatic iStar Controller and associated hardware, which provides for the physical connection to readers, locking hardware, door status switches, and request to exit devices.

Sensormatic has been approved as a Proprietary Item and substitutions will not be permitted without permission of Owner.

2.1.2 Sensormatic System Feature/Capability

The following indicates system capabilities and capacities:

- A. LAN/WAN Communications: CCure host server to local iStar panel.
- B. The iStar panels shall have a minimum of 64MB RAM to exceed the University requirement of 10,000 card records and 3,000 event storage capabilities to retain event information in the case of network failure.
- C. Programming Software: The Programming Software shall include the following features:
 - 1. LAN/WAN connection with CCure Host
 - 2. Fully configurable user authority level control
 - 3. CCure parameter editing and storage
 - 4. CCure and iStar software upgrade ability
 - 5. LAN/WAN Communications database management
 - 6. Event history buffer uploading

2.1.3 Sensormatic System Interface Requirements

- A. All Installations: The Sensormatic access control system shall be installed in accordance with the National Electric Code and the local Authority Having Jurisdiction (AHJ).
- B. The Sensormatic access control hardware shall be installed in accordance with UL requirements.

2.2 Sensormatic System Materials

2.2.1 Sensormatic System Hardware Description

A. Sensormatic System: The access control system shall be provided, at a minimum, with the following components. Additional accessories shall be provided based on the quantities and features required for the application.

1. Sensormatic panel iStar.
 - System Accessories:
 - a) 64 MB RAM or greater
 - b) iStar power supply with 7 amp hour battery backup for panel and door strikes
2. Mercury part # WS-10 hood required for outdoor readers.
3. Mercury MR-10 Card Readers
4. Sensormatic RM-4 personality module
5. Von Duprin PS873 power supplies for electric latch retraction activation
6. Von Duprin exit hardware mounted request-to-exit switches
7. Von Duprin electric latch retraction solenoids
8. Von Duprin 6000 Series electric door strikes
9. Sentrol #1078C door monitor switches
10. Detection Systems DS150i request-to-exit motion detectors
11. System Sensor PA440 door ajar sounders
12. Tripp-Lite Model# IBAR4 or equivalent surge suppressor.
13. Handicapped door opener interfaces.
14. Altronix AL400ULACMCB or equivalent power supply
15. Von Duprin EPT-10 power transfer device

2.3 Sensormatic iStar (Advanced Processing Controller)

2.3.1 iStar Advanced Processing Controller Description

The iStar specified herein shall be used to control the locking/unlocking of doors

2.3.2 iStar Feature/Capability Summary

The following indicates the iStar / iStar capabilities, capacities, and formats:

- A. Advanced Processing Controller (iStar): The iStar shall include the following features:
 - 1. Must have re-programmable FLASH memory for software upgrades and future product enhancements.
 - 2. Must contain a 3,000 Event history buffer (minimum)
 - 3. Must support 10,000 or greater card holders
 - 4. Possess the capability of 255 time commands for automatic input, output, and reader mode control
 - 5. Must have the ability of elevator control
 - 6. Must possess real-time full-year clock and calendar
 - 7. Must retain up to 80 hours of memory retention in the event of extended power failure
- B. Inputs and Outputs: The Inputs and Outputs shall include the following features:
 - 1. Thirty-two supervised and programmable inputs
 - 2. Sixteen programmable Form C SPDT dry contacts rated at 2.5 amps @ 30V AC/DC outputs for reader controlled unlocking of doors

2.3.3 iStar System Interface Requirements

- A. Grounding: The Contractor shall properly earth ground the iStar panel to prevent electrostatic charges and other transient electrical surges from damaging the iStar panel.
- B. Primary power: The Contractor shall connect the iStar panel to a dedicated 120 VAC power source through the external iStar power supply.
- C. Power supervision: The external power supply shall provide contacts that activate when there is an AC power failure and the system will report a “Power Failure” message to the CCure server.
- D. Communications: The Contractor shall connect the iStar to the MSS485 terminal server for communications and programming with the CCure host server.

- E. Housing: The Contractor shall install the iStar in a 16 AWG metal wall mounted lockable cabinet with tamper switches on the front and rear. (Standard Sensormatic Cabinet).

2.4 Mercury Security Corporation – Model MR-10 Card Reader

2.4.1 MR-10 Card Reader Description

The card reader specified herein shall be used to read Pennsylvania State University *id+* cards for the purpose of providing access control to secured areas of the University Park campus.

2.4.2 MR-10 Feature/Capability Summary

The following indicates reader capabilities and formats:

- A. The MR-10 shall be used to read standard ABA (American Banking Association) Track II cards.
- B. Read speed shall be from 3 to 50 inches per second.
- C. Communication formats shall be either clock/data or wiegand.
- D. Reader head shall provide a life expectancy greater than 1,000,000 reads.
- E. Outdoor applications shall have the optional weather hood installed.
- F. Reader shall be equipped with two visual indicators (LEDs) and an audible tone.
- G. Housing shall be die cast metal and the mounting hardware shall be stainless steel.
- H. Reader shall be capable of normal operation indoor, outdoors, and between the temperatures of -40°C and $+75^{\circ}\text{C}$.

2.4.3 MR-10 Interfacing Requirements

- A. Sensormatic RM-4 Personality Module: The Contractor shall install an RM-4 to interface the MR-10 reader to the iStar panel.
- B. Grounding: The Contractor shall properly earth ground the RM-10 reader to prevent electrostatic charges and other transient electrical surges from damaging the reader.
- C. Mounting: The Contractor shall mount the reader vertically, except where it is not possible. Then, the reader should be mounted with read slot along the bottom of the unit.

2.5 Sensormatic RM-4 Personality Module

2.5.1 RM-4 Personality Module Description

The RM-4 module specified herein shall connect and work as an interface between the MR-10 reader and the iStar access control panel. The RM-4 shall also provide inputs and outputs for the connection of a door status switch, request to exit switch, and door strike relay.

2.5.2 RM-4 Feature/Capability Summary

The following outlines RM-4 capabilities and formats:

- A. The RM-4 shall be used to interface communications between the MR-10 card reader and the iStar access control panel.
- B. The RM-4 shall be used to connect and supervise the door status switch and the request to exit switch/motion.
- C. Provide an output/trigger for door strike relay.
- D. Convert the clock/data communication format from the reader to RS485.
- E. Create an address for the reader to the iStar.

2.5.3 RM-4 System Requirements

- A. Grounding: The Contractor shall properly earth ground the RM-4 to prevent electrostatic charges and other transient electrical surges from damaging the RM-4.
- B. Housing: The Contractor shall install the RM-4 in a NEMA Type 1 hinged, lockable enclosure along with the door strike relay (Altronix RSBN-TTL or Equivalent).

2.6 Sentrol 1078C Door Monitor Switch

2.6.1 Sentrol 1078C Description

The 1078C Door Monitor Switch specified herein shall provide a means of monitoring the status of the controlled door. The switch will monitor the door for forced entry and indicate if the door is left ajar after a valid card read.

2.6.2 1078C Feature/Capability Summary

- A. Contact shall be hermetically sealed magnetic reed switch.
- B. Reed switch shall be potted in the contact housing with a polyurethane-based compound.

- C. Housings shall be molded of flame retardant ABS plastic.

2.6.3 1078C System Requirements

- A. RM-4 Connection: The Contractor shall connect the 1078C to the appropriate input on the RM-4.
- B. Supervision Resistor: The Contractor shall connect the supervision resistor provided with the RM-4 at the 1078C for the supervision of the wiring between the resistor and the RM-4.
- C. Securing the 1078C: The Contractor shall secure the 1078C in place by placing a light coating of silicon RTV caulk.

2.7 Sensormatic DS-150i Request to Exit Motion Detector

2.7.1 DS-150i Request to Exit Motion Detector Description

The DS-150i request to exit motion detector specified herein shall provide a means of shunting the Door Monitor Switch and/or the unlocking of the controlled door upon exiting.

2.7.2 DS-150i Feature/Capability Summary

- A. Coverage: The DS-150i shall provide coverage for single or double door use.
- B. DS-150i shall be mounted above the door on the wall or ceiling.
- C. Two sets of relays that shall be Form “C” contacts.
- D. Selectable fail safe/secure modes

2.7.3 DS-150i System Interface Requirements

- A. RM-4 Connection: The Contractor shall connect the DS-150i to the RM-4 module.

2.8 Altronix AL400ULACMCB Power Supply (or Equivalent)

2.8.1 Altronix Power Supply Description

The AL400ULACMCB distributes and routes power to access control systems and accessories. It will convert an 115VAC 50/60Hz input into eight (8) independently controlled PTC protected class 2 power limited 12VDC or 24VDC outputs. Outputs are activated by an open collector sink or normally open (NO) dry trigger input from an Access Control System, Card Reader, Keypad, Push Button, PIR, etc.

The unit will route power to a variety of access control hardware devices including: Mag Locks, Electric Strikes, Magnetic Door Holders, etc. Outputs will operate in both fail-safe and/or fail-secure modes.

The FACP Interface enables Emergency Egress, Alarm Monitoring, or may be used to trigger other auxiliary devices. The fire alarm disconnect function can be configured for the following modes: a) eight (8) outputs affected or b) four (4) outputs affected and four (4) outputs unaffected (50/50 mode).

2.8.2 Altronix Power Supply Features/Capability Summary

- A. 4 amp continuous supply current at 12 VDC or 24 VDC.
- B. Eight (8) Access Control System trigger inputs.
- C. Fire Alarm disconnect
- D. Automatic switchover to stand-by battery when AC fails.
- E. Thermal and short-circuit protection with auto reset.
- F. Battery failure and battery presence supervision.
- G. AC failure supervision.

2.8.3 Altronix Power Supply Interface Requirements

- A. Primary Power: The Contractor shall connect the power supply to a non-switched, dedicated 120 VAC power source.
- B. Power Supervision: The Contractor shall connect the power supply's supervisory outputs to the iStar.
- C. Battery Back-up: The Contractor shall provide for a minimum 12 hours of back-up power in the event of primary power failure.

2.9 Von Duprin 98/99 Series - Electric Latch Retraction and Request to Exit Options

2.9.1 Von Duprin Electric Latch Retraction and Request to Exit Description

- A. Electric Latch Retraction (EL)- Option
The EL feature allows for the remote unlocking of exit devices. A control station operator can flip a switch or an access control system can activate an output to retract the latch bolt and immediately change an exit door to push-pull operation. A powerful, continuous-duty solenoid retracts the latch bolt for unlocking either momentary or for extended periods of time. The EL feature is an alternative to manual dogging. EL devices are also useful with automatic door operators and

may be applied to fire-rated devices when under the control of an **automatic fire alarm system.**

- B. Request to Exit (RX)– Option: The RX (Request-to-Exit) feature is used to signal the use of an opening. These devices are equipped with one internal SPDT switch which monitors the touch bar. The device can be connected to a security console or may be used as a single door alarm when used with a horn and power supply. A continuous current electric transfer must be used for transferring power from the frame to the door.

2.9.2 Von Duprin Features/Capability Summary

- A. Electric Latch Retraction
 - 1. Fail secure to keep door locked in the event of power failure
 - 2. Interfaces with automatic door opener for handicapped entrances.
 - 3. Can be retrofit into existing Von Duprin door hardware
- B. Request to Exit
 - 1. One internal SPDT switch
 - 2. Can be retrofit into existing Von Duprin door hardware

2.9.3 Von Duprin Interface Requirements

- A. Electric Latch Retraction
 - 1. Power: EL requires a separate power supply Von Duprin PS 873 with 872-1 option board.
 - 2. Power supply requires 120VAC
 - 3. The Contractor shall provide a continuous current electric transfer for transferring power from the frame to the door.
 - 4. iStar Connection: The Contractor shall connect the electric latch retraction to the iStar panel through a set of SPDT contacts.
- B. Request to Exit
 - 1. RM-4 Connection: The Contractor shall connect the RX switch to the RM-4 module.
 - 2. The Contractor shall provide a continuous current electric transfer for transferring power from the frame to the door.

2.10 Von Duprin 6000 Series Electric Door Strikes

Electric door strikes shall be Von Duprin 6000 Series of the appropriate model for the associated door's lock. Any other substitution shall be submitted to PSU for

approval. Note: Security vendor shall be responsible for specifying and installing of the appropriate model of electric strike.

2.10.1 Von Duprin 6000 Series Door Strike Description

Von Duprin electric door strikes provide remote release of a locked door. They allow the door to be opened without retracting the latch bolt. When the door closes, the beveled latch bolt rides over the lip and falls into the electric strike pocket.

2.10.2 Von Duprin 6000 Series Features/Capability Summary

- A. Fail secure to keep door locked in the event of power failure
- B. Rated for continuous duty for daytime unlocking of doors
- C. Tested to over 500,000 cycles
- D. Holding strength greater than 1500 lbs.
- E. UL Listed for Burglary-Resistant and Electric Strike for fire doors and frames.

2.10.3 Von Duprin 6000 Series Interface Requirements

- A. Power: The Contactor shall connect the electric strike to the Altronix power supply.
- B. RM-4 Connection: The Contractor shall connect the latch bolt status switch to the appropriate input on the RM-4.
- C. Supervision Resistor: The Contractor shall connect the supervision resistor provided with the RM-4 at the latch bolt status switch for the supervision of the wiring between the resistor and the RM-4.

2.11 System Sensor PA400 Mini-Alert Sounder

2.11.1 System Sensor PA400 Mini-Alert Sounder Description

The PA400 Mini-Alert Sounder is a low current sounder (12mA @ 12VDC) that mounts to a standard single gang electrical box. It will be used for annunciation of doors that have been propped open. It will typically be installed adjacent to the monitored door.

2.11.2 System Sensor PA400 Mini-Alert Sounder Features/Capability Summary

- A. The PA400 is capable of producing greater than 90db of audio.
- B. Mounts to a standard 2-1/2" deep single-gang box.

2.11.3 System Sensor PA400 Mini-Alert Interface Requirements

- A. Connection: The Contractor shall connect the PA400 to the appropriate outputs on the RM-4 module or apC8/X panel.
- B. Mounting: The Contractor shall mount the PA400 above the protected door unless otherwise specified.
- C. Activation: The PA400 shall be programmed to activate when the door is held or propped open.

3.0 Execution

3.1 Installation

Install all equipment and materials in accordance with the “current” recommendations of the manufacturer. The work shall also be in accordance with:

- A. Installation criteria defined in these specifications and in the construction documents.
- B. Approved submittals.
- C. Applicable requirements of the referenced standards.

3.2 Supervision

The contractor shall provide the following services as part of the contract:

- A. Supervision of sub-contractors.
- B. Coordination of other contractors for system related work (electrical contractor, finish hardware contractor, door contractor, architect, and general contractor).
- C. Attend construction meetings.
- D. Keep updated drawings at the site.
- E. Meet construction deadlines per schedule.

3.3 Programming

Programming of the system shall include the following tasks:

- A. Programming system configuration parameters (hardware and software, door location/number, communication parameters).
- B. Programming operational parameters such as unlocking/locking times, events, door shunt times, and communication failure/restore times.
- C. Other programming tasks required by Owner. These additional programming requirements shall be coordinated between Owner and Contractor.

3.4 Testing

- A. Operational Testing: The contractor shall perform thorough operational testing and verify that all system components are fully operational.
- B. Hard-copy System Printout: The contractor shall submit a hard-copy system printout of all components tested and certify 100 percent operation indicating all devices/panels/units have passed the test criteria set fourth by the manufacturer.

- C. Acceptance Test Plan Form: An Acceptance Test Plan Form shall be prepared/provided by the contractor prior to the acceptance walk through.

This form shall include separate sections for each device/panel/unit as well as a column indicating the manufacturer's performance allowance/margin, a column indicating the result of the testing performed by the contractor (pass/fail), and an empty column for recording findings during the walk-through.

3.5 Commissioning

The Contractor shall certify completion in writing and schedule the commissioning walk-through. The contractor shall provide all the tools and personal needed to conduct an efficient commissioning process.

3.6 Training.

Contractor shall provide up to three (3) hours of on site training which shall include training on the proper installation and programming of all related hardware and software and include training of departmental end-user.

Appendix

1. Door Schedule

(See Attached Library for **Door Type** and print for locations)

Type: DSM = Door Status Monitor

EL = Electric Locking (Controlled Door)

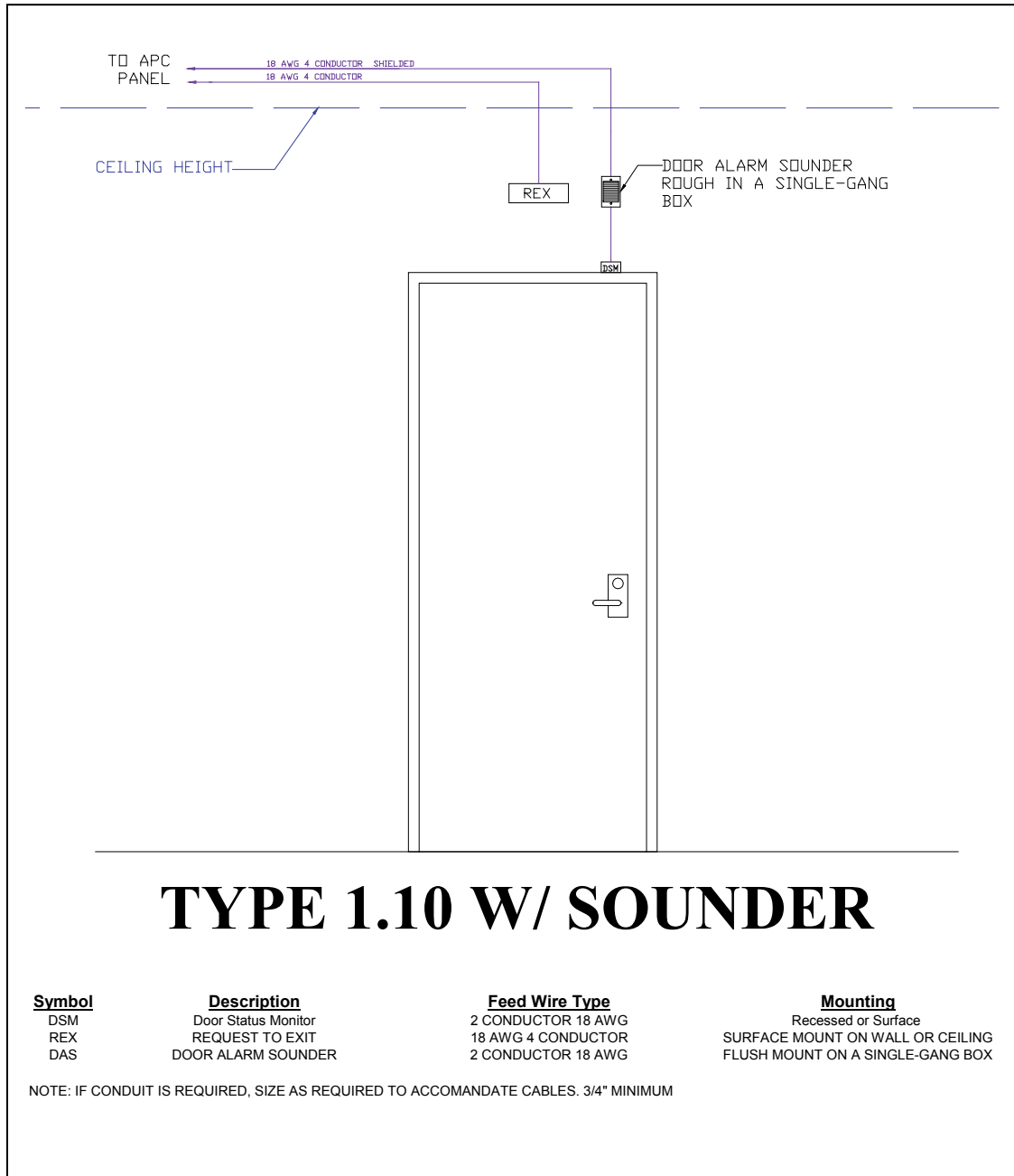
CR = Card Reader

SAMPLE INFORMATION

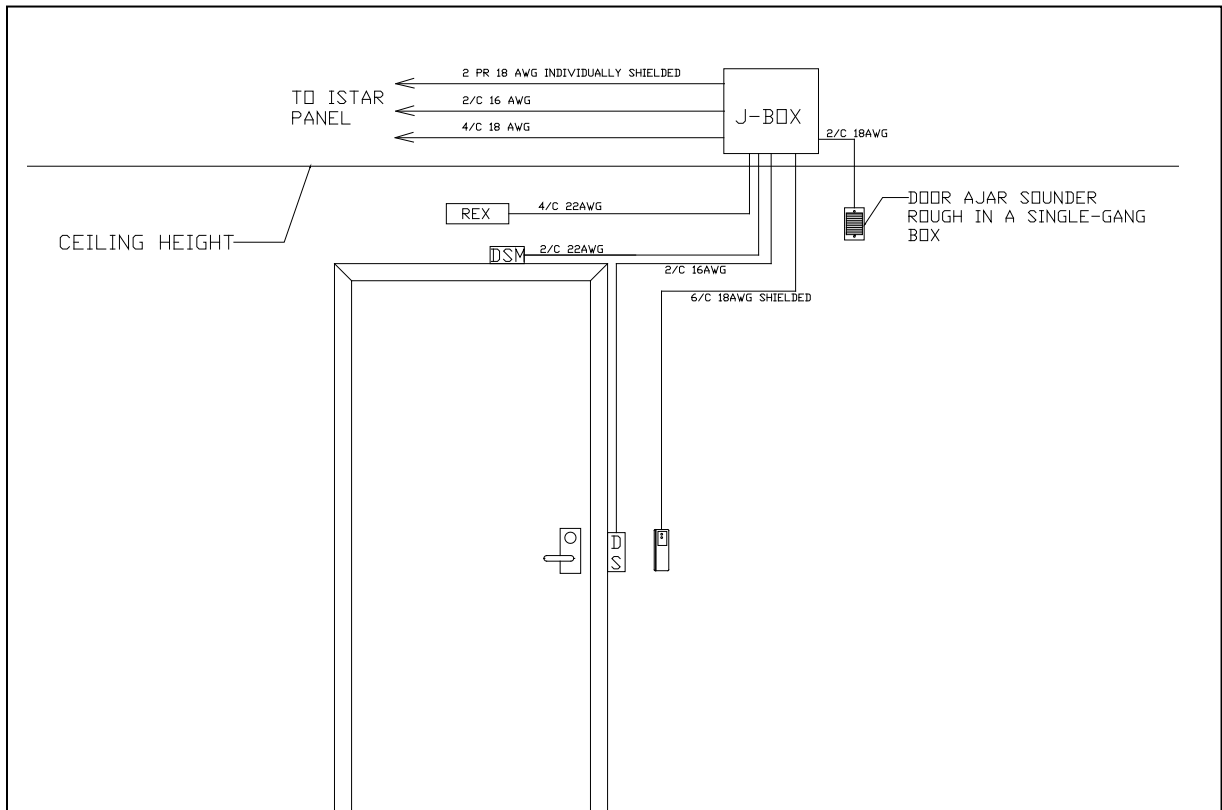
- Southwest Entrance F102.1 (CR) **Type 2.00ADA**
 - 1- Mercury card reader
 - 1- Mercury weather hood
 - 2- Electric locking devices
 - 2- Door status switches
 - 1- Door ajar sounder
 - 2- Request to exit switches
 - 1- Handicapped Opener Interface
- Southwest Entrance F102.2 (EL) **Type 2.33**
 - 2- Electric locking devices
 - 2- Door status switches
 - 2- Request to exit switches
- East Entrance F103.1 (CR) **Type 2.00ADA**
 - 1- Mercury card reader
 - 1- Mercury weather hood
 - 2- Electric unlocking devices
 - 2- Door status switches
 - 1- Door ajar sounder
 - 2- Request to exit switches or 1 PIR
 - 1- Handicapped Opener Interface
- Telecommunications Room T202.1 (CR) **Type 1.30**
 - 1- Mercury card reader
 - 1- Electric unlocking device
 - 1- Door status switch (DSM)
 - 1- Request to exit switch/PIR
 - 1- Door Ajar Sounder
- North Entrance F101.1 (EL) **Type 1.34**
 - 1- Electric unlocking devices
 - 1- Door status switches

- 1- Request to exit switch
- 1- Door ajar sounder
- North Entrance F101.2 (EL) **Type 1.40**
 - 1- Electric unlocking device
 - 1- Door status switch
 - 1- Request to exit switch
- North Entrance F101.3 (EL) **Type 1.40**
 - 1- Electric unlocking device
 - 1- Door status switch
 - 1- Request to exit switch
- North Entrance F101.4 (EL) **Type 1.40**
 - 1- Electric unlocking device
 - 1- Door status switch
 - 1- Request to exit switch
- North Entrance F101.5 (EL) **Type 1.40**
 - 1- Electric unlocking device
 - 1- Door status switch
 - 1- Request to exit switch
- North Entrance F101.6 (EL) **Type 1.40**
 - 1- Electric unlocking device
 - 1- Door status switch
 - 1- Request to exit switch
- Southwest Stairwell Exit Z101.1 (DSM) **Type 1.10**
 - 1- Door status switch
 - 1- Door ajar sounder
- Southeast Stairwell Exit Z102.2 (DSM) **Type 1.10**
 - 1- Door status switch
 - 1- Door ajar sounder
- North Stairwell Exit Z103.2 (DSM) **Type 1.10**
 - 1- Door status switch
 - 1- Door ajar sounder
- Loading Dock 111 Garage Door (DSM) **Type 1.10**
 - 1- Door status switch
 - 1- Door ajar sounder

2. Door Library



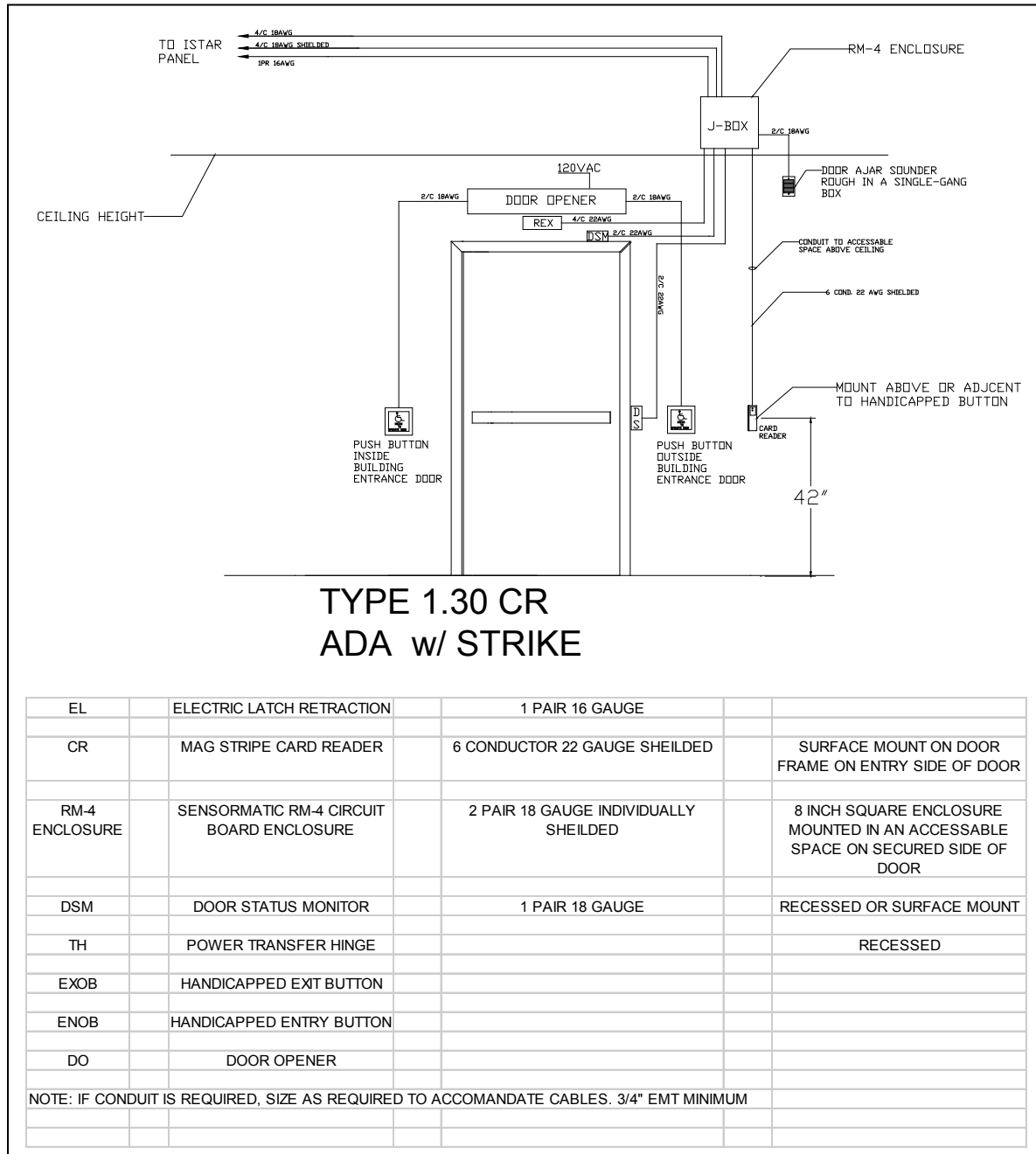
Type 1.10



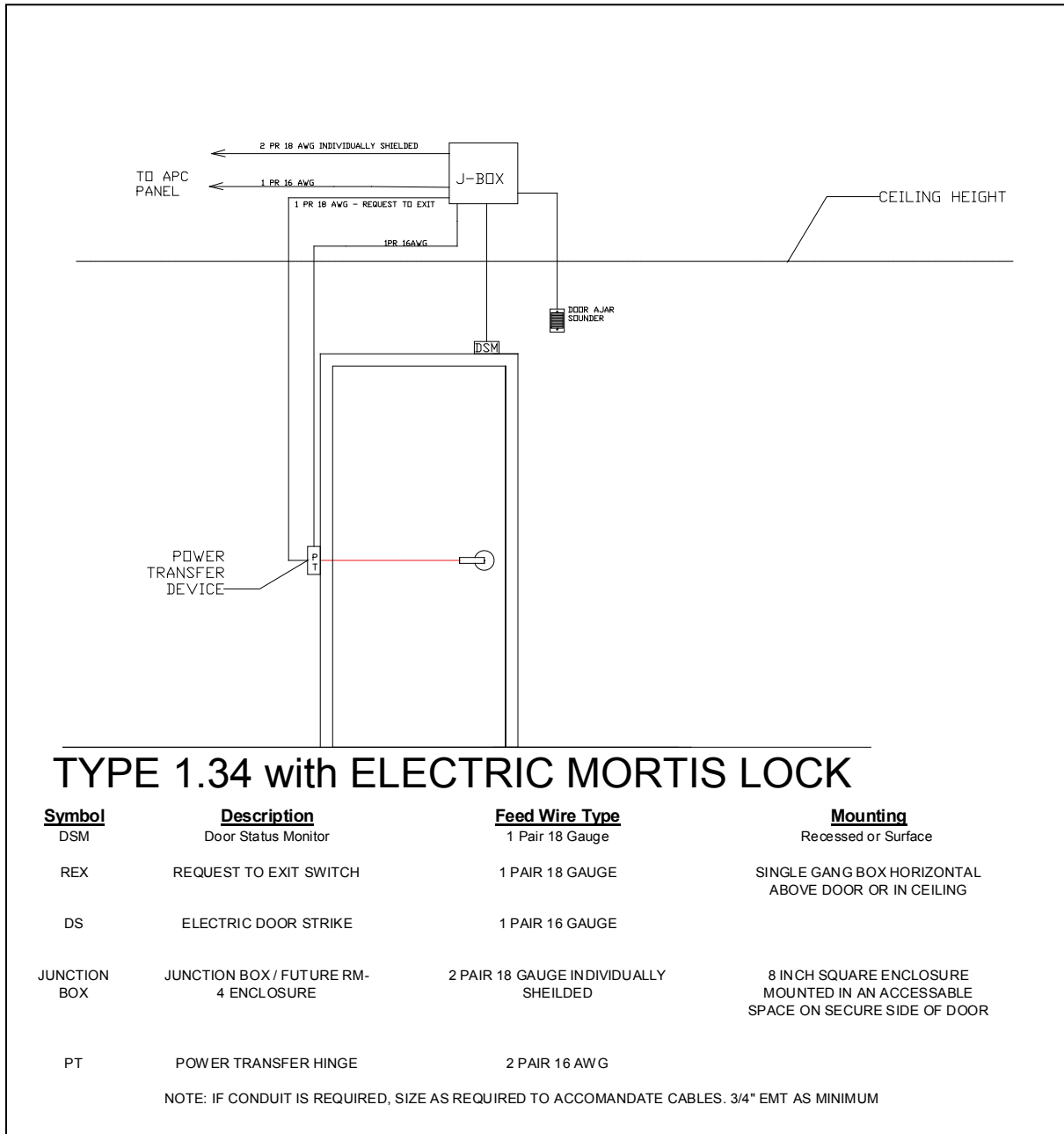
TYPE 1.30 CR

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX	REQUEST TO EXIT MOTION DETECTOR	2 PAIR 18 GAUGE	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
DS	ELECTRIC DOOR STRIKE	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 22 GAUGE SHEILDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
DAS	DOOR AJAR SOUNDER	2/C 18AWG	SURFACE OR RECESSED
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD HOUSING	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE INSIDE SECURED AREA MUST BE MOUNTED WITHIN 25' OF DOOR
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" MINIMUM			

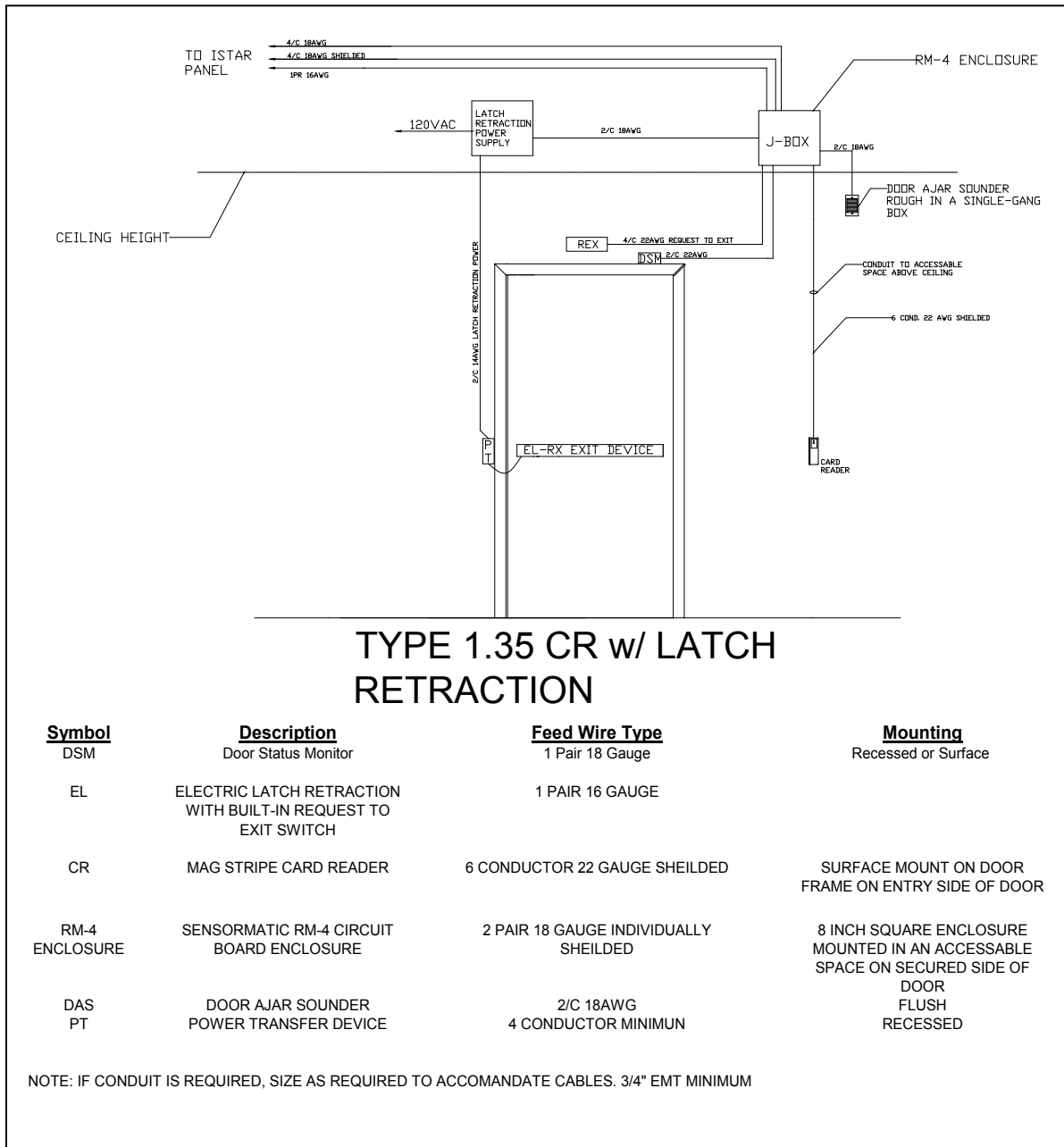
TYPE 1.30 CR



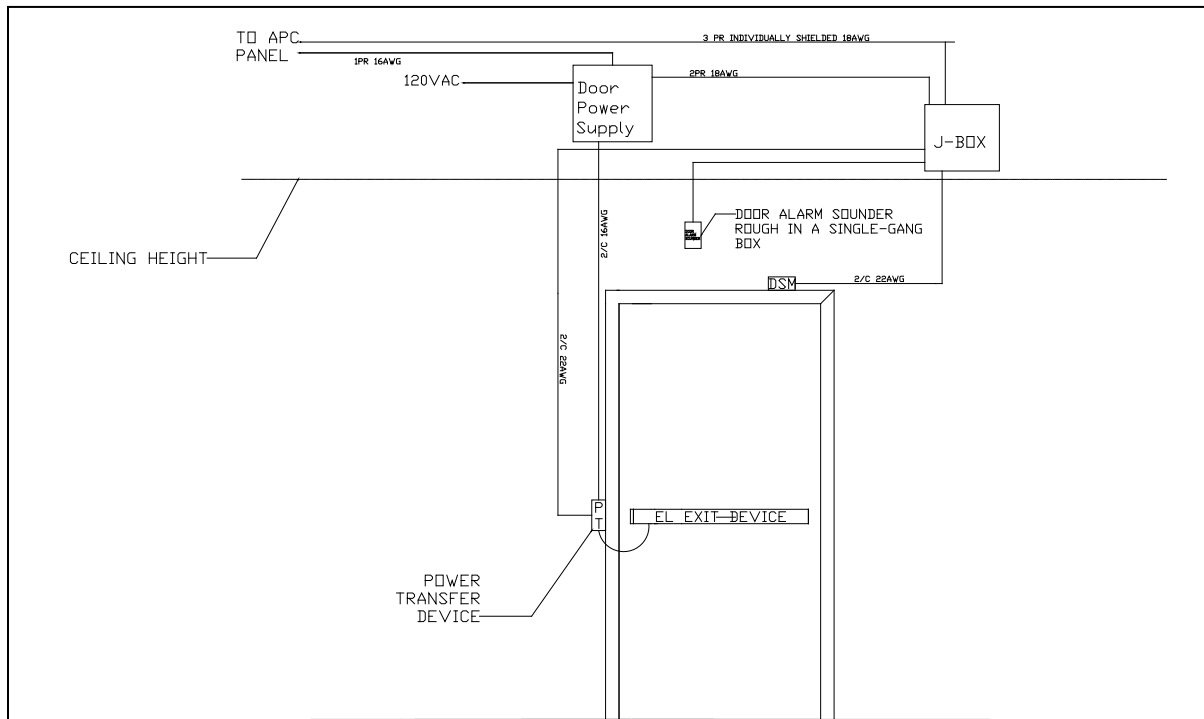
Type 1.30ADA



Type 1.34 EL



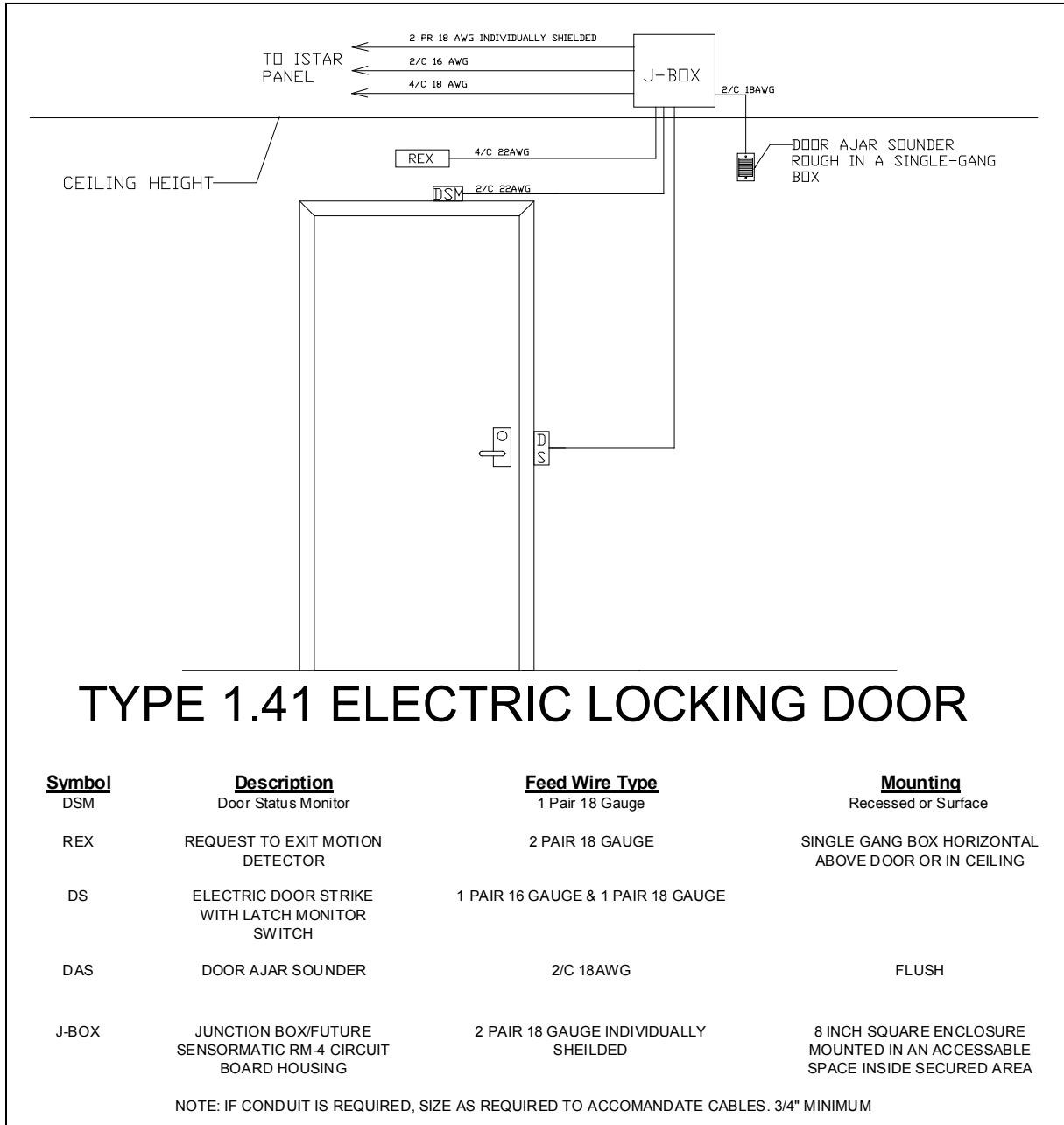
TYPE 1.35 CR w/ Latch Retraction



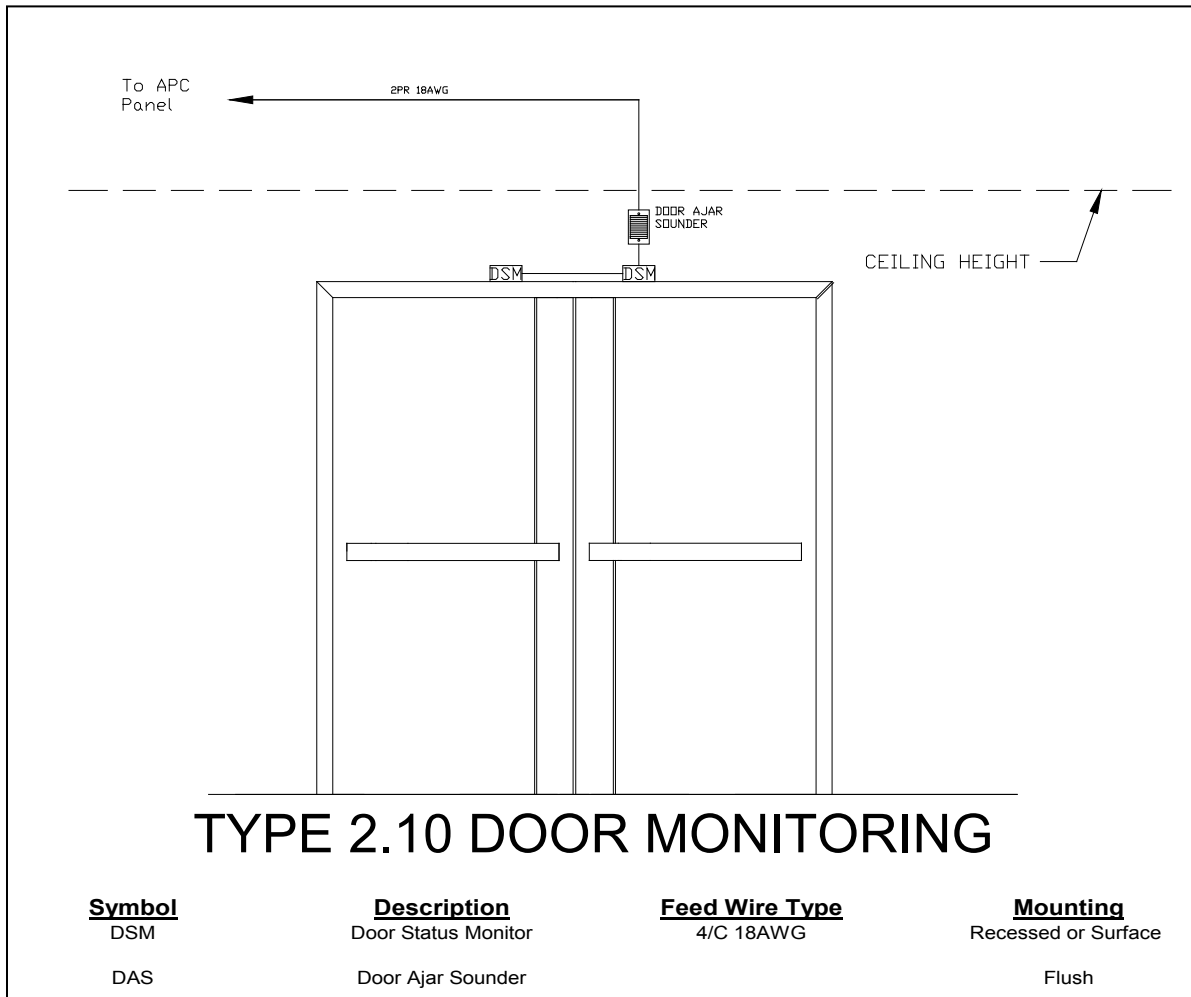
TYPE 1.40 ELECTRIC LOCKING DOOR

<u>Symbol</u>	<u>Description</u>	<u>Feed Wire Type</u>	<u>Mounting</u>
DSM	Door Status Monitor	2/C 22AWG	Recessed or Surface
EL	ELECTRIC LATCH RETRACTION WITH BUILT-IN REQUEST TO EXIT SWITCH	EL 2/C 16 AWG - RX 2/C 22AWG	
DAS	DOOR AJAR SOUNDER	2/C 18 AWG	FLUSH
J-BOX	JUNCTION BOX/ FUTURE SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	RECESSED

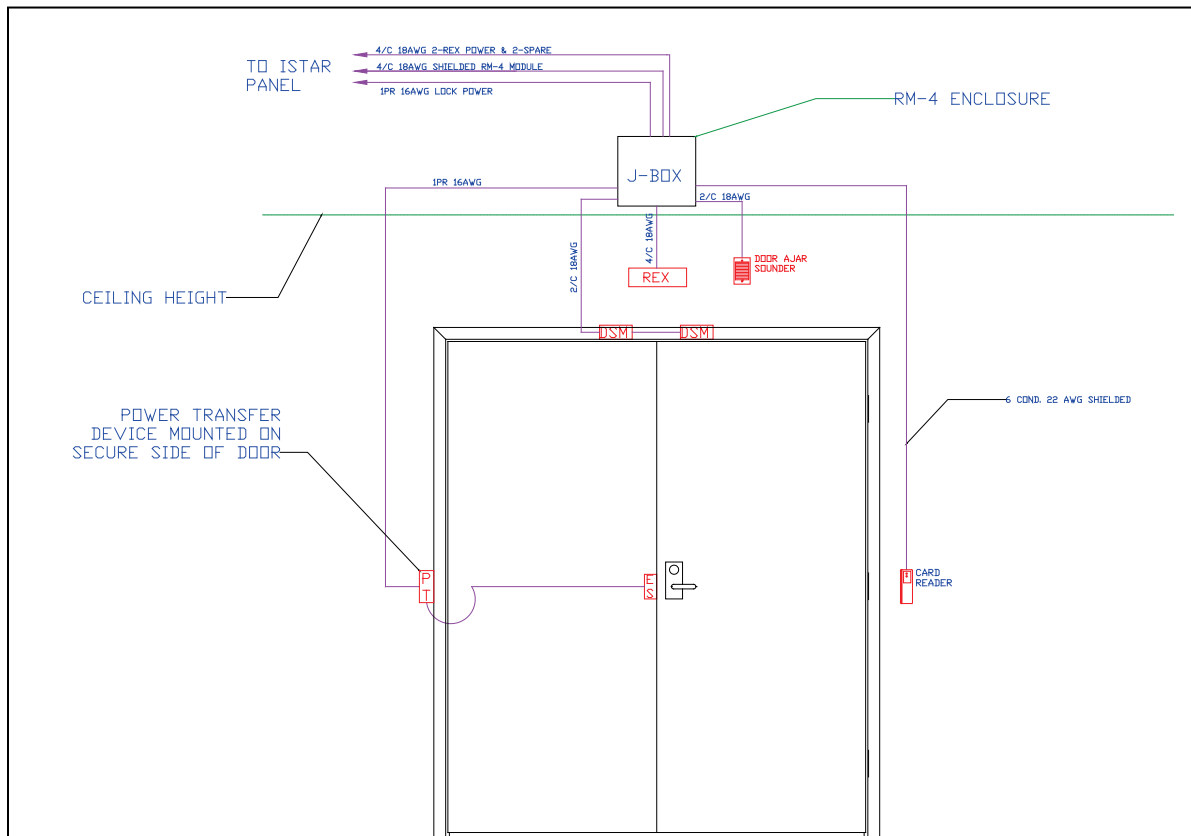
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM



Type 1.41 EL



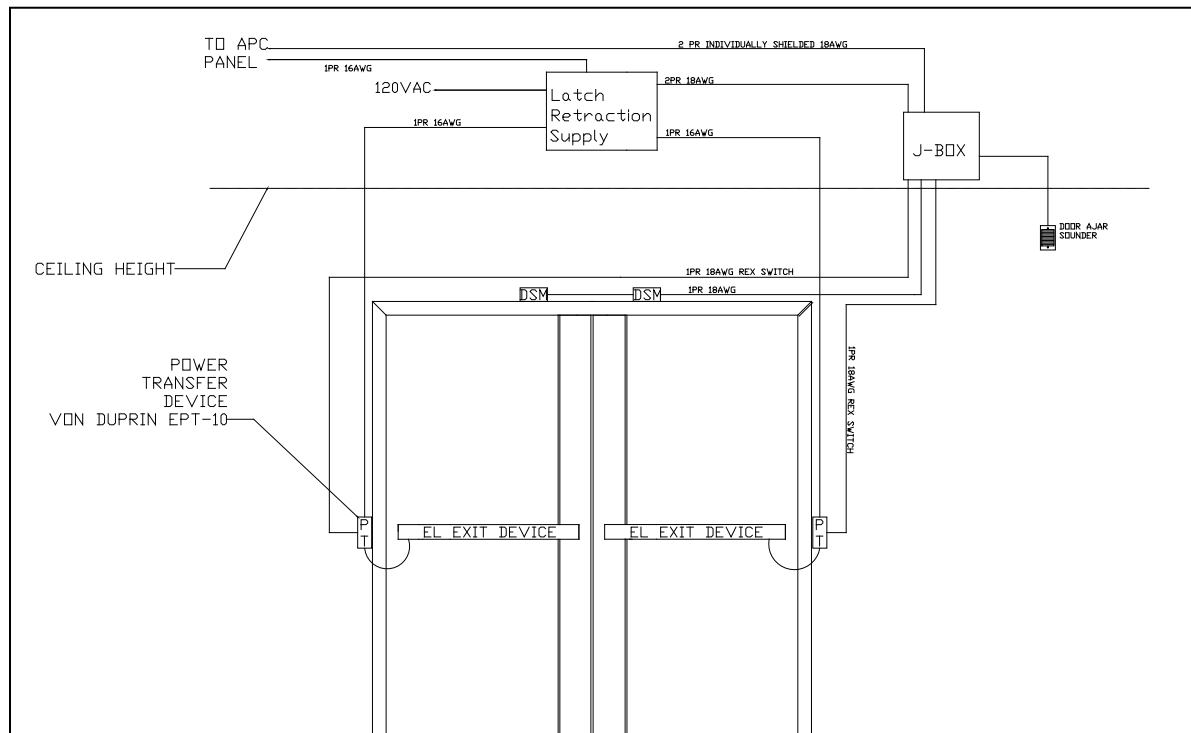
TYPE 2.10 DSM



TYPE 2.30 DOUBLE W/ INACTIVE LEAF

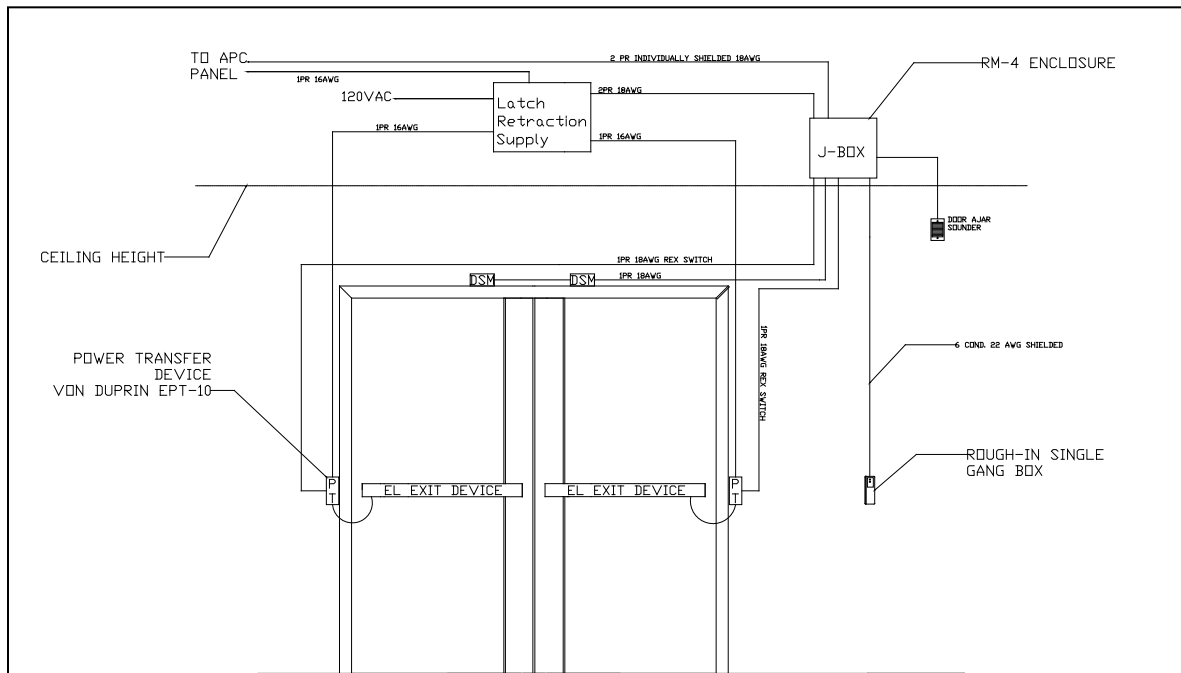
<u>Symbol</u>	<u>Description</u>	<u>Feed Wire Type</u>	<u>Mounting</u>
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX	REQUEST TO EXIT MOTION DETECTOR	2 PAIR 18 GAUGE	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
ES	ELECTRIC DOOR STRIKE	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 22 GAUGE SHIELDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
RM ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHIELDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSIBLE SPACE ON SECURE SIDE OF DOOR
PT	POWER TRANSFER DEVICE	2 PAIR 16 AWG	

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT AS MINIMUM



TYPE 2.33 ELECTRIC LOCKING (DOGGING)

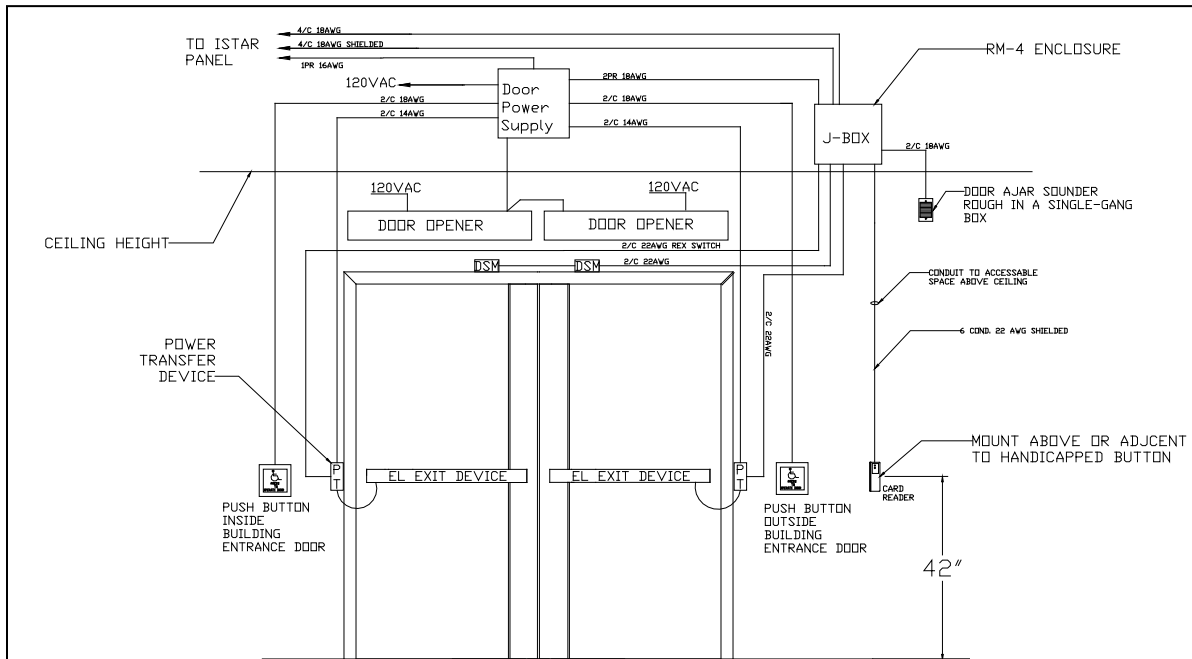
Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
EL	ELECTRIC LATCH RETRACTION WITH BUILT-IN REQUEST TO EXIT SWITCH	1 PAIR 16 GAUGE	
DAS	DOOR AJAR SOUNDER	2/C 18AWG	RECESSED
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	RECESSED
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM			



TYPE 2.35 CARD READER DOOR

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
EL	ELECTRIC LATCH RETRACTION WITH BUILT-IN REQUEST TO EXIT SWITCH	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 22 GAUGE SHEILDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHEILDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
DAS	DOOR AJAR SOUNDER	2/C 18AWG	RECESSED
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	RECESSED

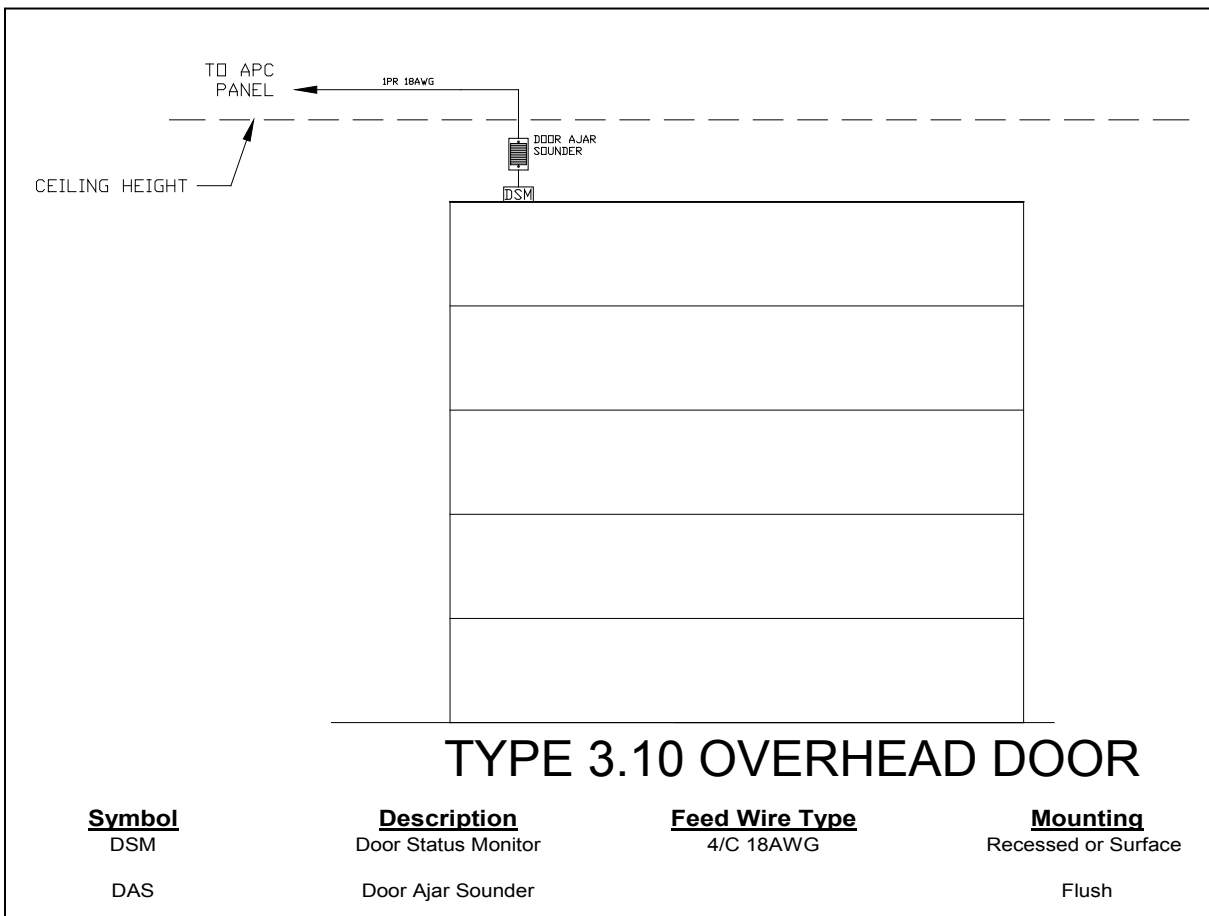
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM



TYPE 2.00 ADA

EL	ELECTRIC LATCH RETRACTION WITH REQUEST TO EXIT SWITCH	EL 2/C 14 AWG - RX 2/C 22AWG	
CR	MAG STRIPE CARD READER	6/C 22AWG SHIELDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
RM-4 ENCLOSURE	SENSORMATIC RM-4 CIRCUIT BOARD ENCLOSURE	2 PAIR 18 GAUGE INDIVIDUALLY SHIELDED	8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
DSM	DOOR STATUS MONITOR	2/C 22AWG	RECESSED OR SURFACE MOUNT
PT	POWER TRANSFER DEVICE	10/C 18AWG	RECESSED
EXOB	HANDICAPPED EXIT BUTTON		
ENOB	HANDICAPPED ENTRY BUTTON		
DO	DOOR OPENER		

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM



TYPE 3.10 DSM

3. Materials Supplied by Others

(Sample Information)

1. Electrical Contractor

- a. Conduits from accessible space in ceiling to power transfer units located on doorjamb.
- b. Conduits from accessible space in ceiling to a single-gang electrical box for card readers.
- c. Conduits from accessible space in ceiling to a horizontally mounted single-gang electrical box centered above door for request to exit motion detector. Only where required.
- d. Conduit from accessible space in ceiling to a single-gang electrical box for door-ajar sounders.
- e. Electric power for electric latch retraction power supplies.

4. Building Drawings

See below for drawing

