

## ACCESS CONTROL PERFORMANCE SPECIFICATION

### 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 the Manufacturer's guidelines and codes, as described in the following specifications.

The equipment and application shall be Policy AD-65 compliant.

##### 1.1.2 Work Included in this section.

A. Installation of access control system

B. Equipment Schedule  
See Scope Document and Drawings

C. See Appendix for door library type.

D. 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.

E. System Programming

- The Contractor shall complete the programming of all inputs, outputs, readers, doors, and iStar panels, forced door events, held door events, and panel supervision events (comm fail, battery, tamper, etc.). Ensure all events are downloaded to controller.
- 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, hereinafter referred to as "Owner."

- B. The Contractor shall perform all the work described in this document along with any work not expressly mentioned in the specifications, but necessary for the proper execution of the same. It is not the intent to delineate or describe every detail and feature of the 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 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 the 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 the Owner in obtaining the relevant permits.

### 1.2.3 Documentation to be submitted by Contractor upon Completion of System Installation

- A. "As-built" drawings: Upon completion of installation, the Contractor shall prepare approved electronic drawings of the system. These "as-built" drawings shall include 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 shall be included in the “as-built” drawings.

“As-built” drawings 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 system's operation and maintenance.

#### 1.2.4 System Approvals

- A. The system shall be the standard product of one manufacturer, and the manufacturer shall have been in business manufacturing comparable 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.

#### 1.2.5 Quality Assurance

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

#### 1.2.6 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 at least twelve (12) months (parts and labor), commencing upon the date of acceptance by the Owner. A qualified factory-trained service representative shall provide a warranty service.

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

### 1.2.8 Building Security

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

## 1.3 Handicapped Door Opener Interface

### 1.3.1 Handicap Door Operation

#### A. Exterior Door Button

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

#### B. Interior Door Operation

1. The button unlocks the door and then opens the door when the building is locked.
2. The button triggers a request to exit input on the GCM module.
3. The button opens the door when the building is unlocked.

C. Any use of wireless handicapped buttons MUST be approved by the Office of Physical Security.

## 1.4 PoE, Wireless, and Keypad Equipped Locksets

1.4.1 Approvals – PoE, wireless, and keypad equipped wireless locksets must be approved by the Office of Physical Security.

## 1.5 Magnetic Locks

### 1.5.1 Approvals

The use of magnetic locks is prohibited unless approval from the Office of Physical Security is granted. All approved magnetic locks shall be installed in accordance with all life safety regulations and NFPA codes to include blue manual bypass egress stations and code required ties to building fire alarm system.

## PRODUCTS

### 2.0 Access Control System

#### 2.0.1 Access Control System

The existing system utilizes Software House CCure 9000 software running on a MAS SAS enterprise architecture. The hardware consists of Sensormatic iStar

Ultra G2 series Controller(s) and associated hardware, which provides for the physical connection to readers, locking hardware, sounder, door status switches, and request to exit devices.

Sensormatic has been approved as a Proprietary Item, and substitutions will not be permitted without the Owner's permission.

## 2.0.2 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 2 GB RAM to exceed the University's requirement of 500,000 card records in local memory, a transactional buffer size to retain a minimum of 10,000 transactions in the event of a network failure.
- C. Programming Software: The Programming Software shall include the following features:
  1. LAN/WAN connection with CCure Host
  2. Fully configurable operator privilege authority level control
  3. CCure parameter editing and storage
  4. CCure and iStar software upgradeability
  5. LAN/WAN Communications database management
  6. Event history buffer uploading

## 2.0.3 Sensormatic System Interface Requirements

- A. All Installations: The Sensormatic access control systems 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.

## 2.1 Sensormatic System Materials

### 2.1.1 Sensormatic System Hardware Description

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 iStar Ultra G2 Panel
  - a. System Accessories
    - i. 2GB RAM or greater
    - ii. iStar power supply with 7-amp hour battery backup for the panel
2. HID Reader- Signo20 (University Standard Reader)
3. 6 amps @ 12 vdc for card readers
4. 10 amps @ 24 vdc for door controls (strikes/latch retraction)

5. Electric door strikes to be rated for continuous duty
6. Electrified doors need to be low current not to exceed 1 amp
7. Bosch DS160i request to exit motion sensor with built-in door ajar sounder.
8. Interlogix #1078c door monitor switches
9. System Sensor MHW sounder (for exterior doors)
10. Handicapped door opener interface
11. Von Duprin EPT-10 power transfer device or equivalent

## 2.2 Sensormatic iStar Ultra G2 Controller

### 2.2.1 iStar Ultra G2 Controller Description

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

### 2.2.2 iStar System Interface Requirements

- A. Programming: Panel is to be programmed in Encrypted mode. If utilizing existing panel, communications shall be changed to run Encrypted and firmware updated.
- B. Grounding: The Contractor shall properly earth-ground the iStar panel to prevent electrostatic charges and other transient electrical surges from damaging the iStar panel.
- C. Primary power: The Contractor shall connect the iStar panel to a dedicated 120 VAC power source through the external iStar power supply.
- D. 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.
- E. Communications: The Contractor shall connect the iSTAR Ultra G2 to the Penn State SecNET for communications and programming with one of the CCure host servers.
- F. Enclosure: The Contractor shall install the iStar Ultra G2 in a 16 AWG metal wall-mounted lockable cabinet with tamper switches on the front and rear. (Standard Sensormatic Cabinet).

## 2.3 HID Reader- Signo20

### 2.3.1 Interfacing Requirements

- A. Grounding: The Contractor shall properly earth-ground the Signo20 reader to prevent electrostatic charges and other transient electrical surges from damaging the reader.
- B. Mounting: The Contractor shall mount the reader vertically, except where it is not possible. A stainless-steel decora style single gang switchplate. Reader to be mounted 42” on center.

## 2.5 Interlogix 1078C Door Monitor Switch (or an Approved Equivalent)

### 2.5.1 Interlogix 1078C Description

The 1078C Door Monitor Switch specified herein shall monitor 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 is read.

### 2.5.2 1078C Feature/Capability Summary

- A. Contact shall be a hermetically sealed magnetic reed switch.
- B. A reed switch shall be potted in the contact housing with a polyurethane-based compound.
- C. Housings shall be molded of flame-retardant ABS plastic.

### 2.5.3 1078C System Requirements

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

## 2.6 Bosch DS-160i Request to Exit Motion Detector

### 2.6.1 Bosch DS-160i Request to Exit Motion Detector Description

The DS-160i request to exit motion detector specified herein shall provide a means to bypass the Door Monitor Switch and/or the unlocking of the controlled door upon exiting. The built-in sounder activates when there is a forced or held door condition.

### 2.6.2 Bosch DS-160i Feature/Capability Summary

- A. Coverage: The DS-160i shall provide coverage for single or double door use.
- B. DS-160i shall be mounted above the door on the wall or ceiling.
- C. Two sets of relays shall be Form "C" contacts.
- D. Selectable fail-safe/secure modes. Set to fail secure.
- E. Sounder for annunciation of held and force door conditions.

### 2.6.3 Bosch DS-160i System Interface Requirements

- A. ACM Module Connection: The Contractor shall connect the DS-160i to the ACM module.

## 2.7 Power Supply

### 2.7.1 Power Supply Features/Capability Summary

- A. 4-amp at 12 VDC (panel)
- B. 8-amp continuous supply current 24 VDC. (lock power supply)
- C. Automatic switchover to stand-by battery when AC fails.
- D. Thermal and short-circuit protection with auto-reset.
- E. Battery failure and battery presence supervision.
- F. AC failure supervision.

#### 2.7.2 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 Backup: The Contractor shall provide at least 12 hours of backup power in case of primary power failure.

### 2.8 Electric Latch Retraction

#### 2.8.1 Electric Latch Retraction

##### A. Electric Latch Retraction (EL) - Option

The EL feature allows for the remote unlocking of exit devices. An access control system can activate an output to retract the latch bolt and immediately change an exit door to push-pull operation. The EL feature is the alternative to manual dogging. No means of manual dogging shall be accessible on latch device.

The latch retraction should be of low current motorized model. Latch retraction motor shall draw 1Amp or less.

#### 2.8.2 Features/Capability Summary

##### A. Electric Latch Retraction

- Fail secure to keep the door locked in the event of power failure.
- Interfaces with automatic door opener for handicapped entrances.
- Can be retrofit into existing door hardware.

#### 2.8.3 Interface Requirements

##### A. Electric Latch Retraction

- The Contractor shall provide a continuous current electric transfer for transferring power from the frame to the door.
- iStar Connection: The Contractor shall connect the electric latch retraction to the iStar panel through a set of SPDT contacts.

### 2.9 Electric Door Strikes



Electric door strikes shall be of the appropriate model for the associated door's lockset. Any other substitution shall be submitted to PSU for approval. Note: The Security vendor shall be responsible for specifying and installing the appropriate model of the electric strike.

#### 2.9.1 Electric Door Strike Description

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

#### 2.9.2 Electric Door Strike Features/Capability Summary

- A. Fail secure to keep the 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.

#### 2.9.3 Electric Strike Interface Requirements

- A. Power: The Contactor shall connect the electric strike to the 24VDC power supply.

### 3.0 Execution

#### 3.1 Installation

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

- A. Installation criteria are defined in these specifications and 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. Attending construction meetings.
- D. Keep updated drawings at the site.
- E. Meet construction deadlines per schedule.

#### 3.3 Programming

The contractor is responsible for the 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 events including forced door, held door, communication failure/restore times, door shunt times, and system supervisory.
- C. Program maps to populate door, controller, and other hardware related objects on PSU floorplan templates.
- D. Other programming tasks as required by the Owner. These additional programming requirements shall be coordinated between the Owner and Contractor
  - The Office of Physical Security shall be responsible for setting up and maintaining unlocking events, schedules, and clearances.
  - Vendor is responsible for removing any temporary clearances created for testing.

### 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 forth by the manufacturer.
- C. Acceptance Test Plan Form: An Acceptance Test Plan Form shall be prepared/provided by the contractor prior to the acceptance walkthrough.

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 walkthrough.

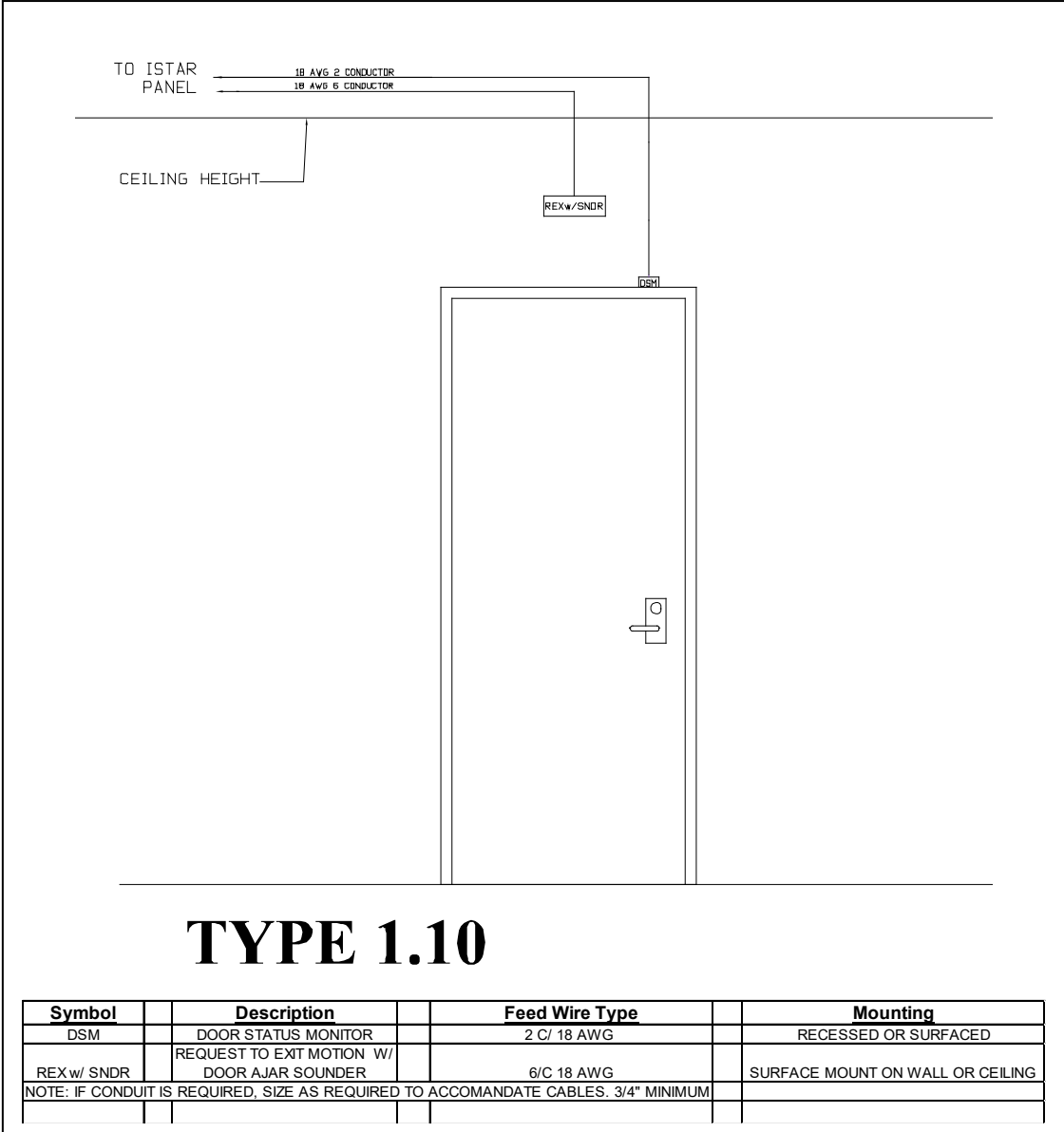
### 3.5 Commissioning

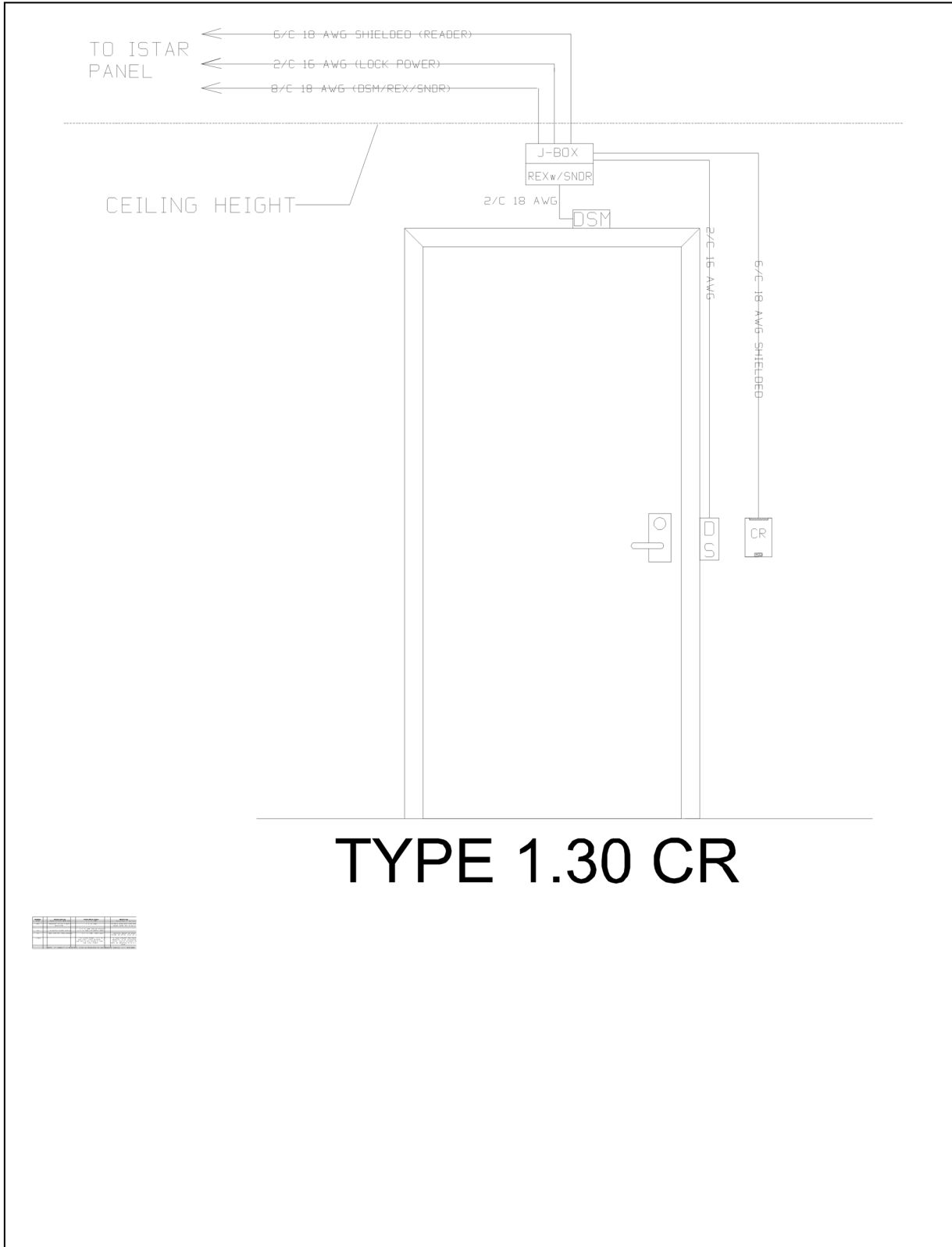
The Contractor shall certify completion in writing and schedule the commissioning walk-through. The contractor shall provide all the tools and personnel needed to conduct an efficient commissioning process.

All doors commissioned in any project must provide journal replay to the Office of Physical Security confirming the operation of the commissioned doors.

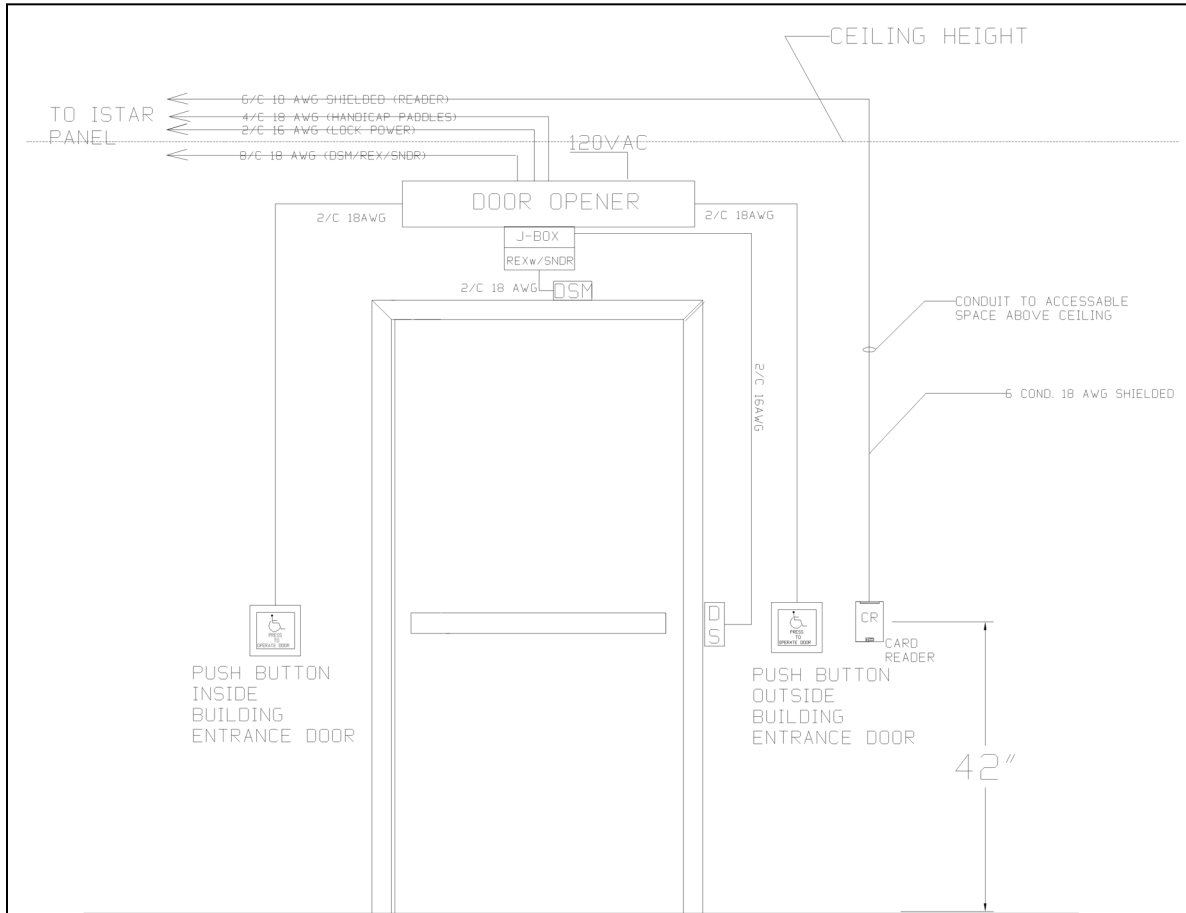


# Appendix





**TYPE 1.30 CR**

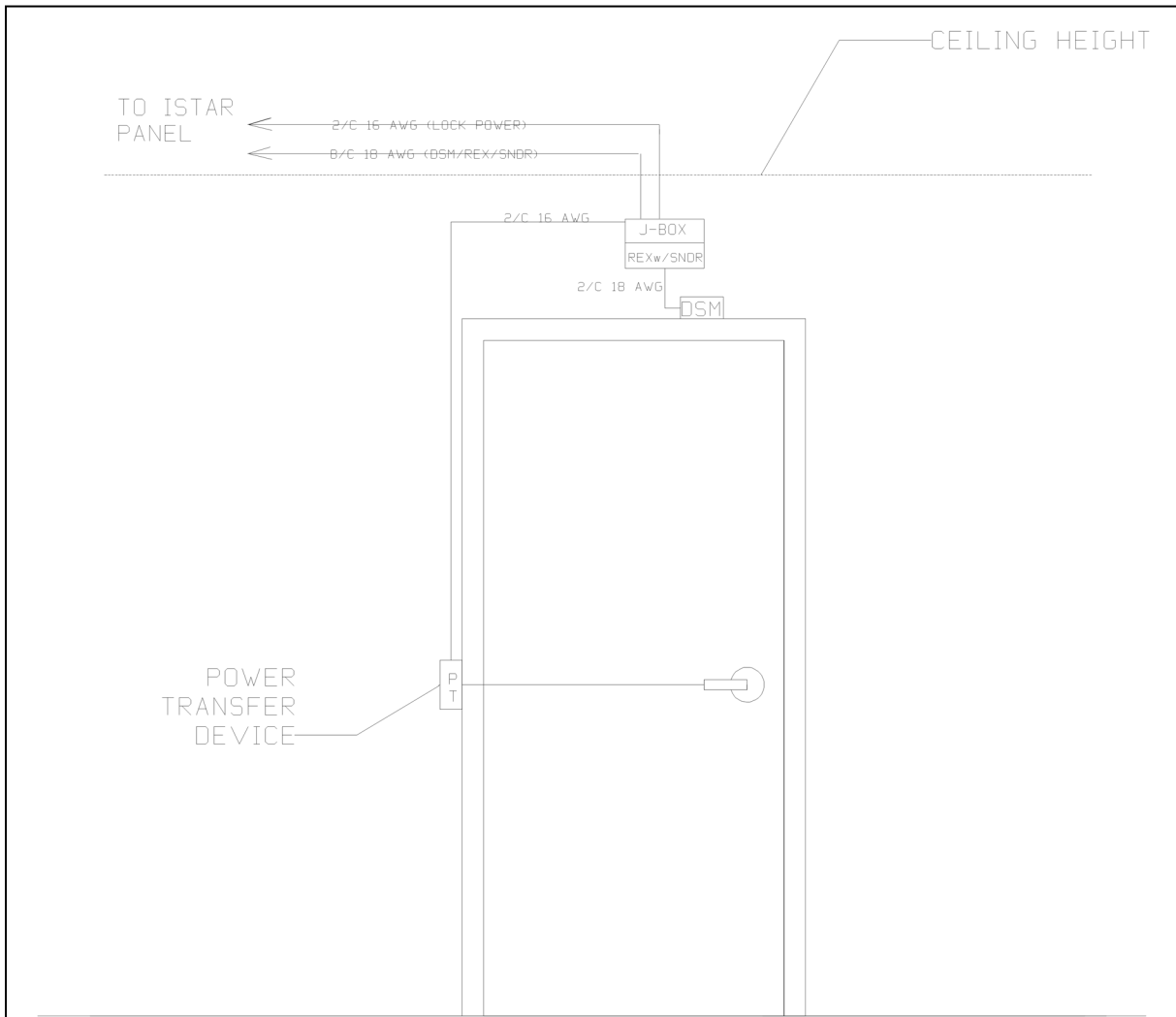


## TYPE 1.30 CR ADA w/ STRIKE

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX w/ SNDR	REQUEST TO EXIT WITH SOUNDER	8 CONDUCTOR	
EL	ELECTRIC LATCH RETRACTION	1 PAIR 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 18 GAUGE SHEILDDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
HANDICAPPED PADDLES	HANDICAPPED PADDLE ACTIVE ON VALID CARD READ	2 PAIR 18 GAUGE	
TH	POWER TRANSFER HINGE		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 1.30ADA

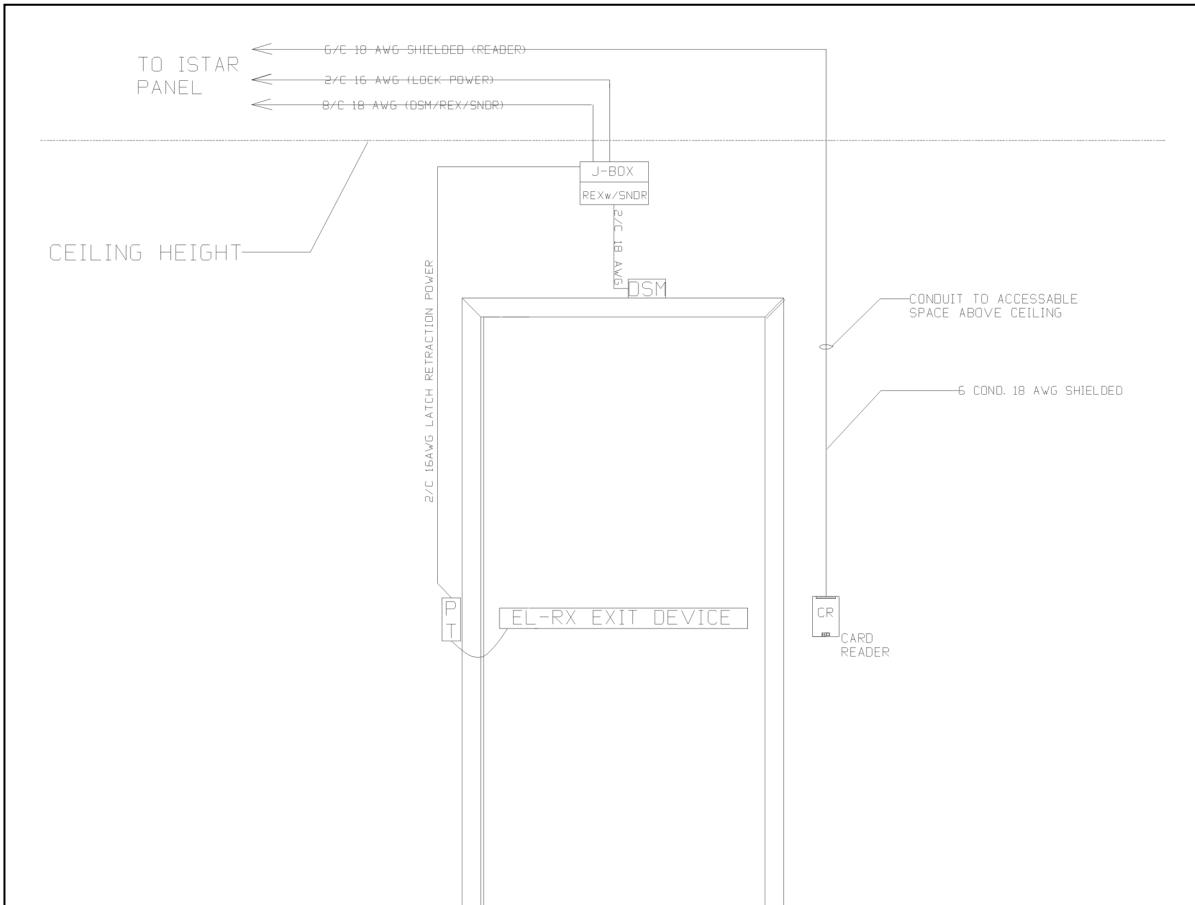


## TYPE 1.34 EL with ELECTRIC MORTIS LOCK

<b>Symbol</b>	<b>Description</b>	<b>Feed Wire Type</b>	<b>Mounting</b>
DSM	Door Status Monitor	2/C 18AWG	Recessed or Surface
ES	ELECTRIC STRIKE	2/C 16 AWG (STRIKE)	FLUSH
REX w/ SNDR	REQUEST TO EXIT MOTION DETECTOR WITH DOOR AJAR SOUNDER	6/C 18AWG	SURFACE
J-BOX			6 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR

NOTE-15 CONDUIT IS REQUIRED. SIZE AS REQUIRED TO ACCOMMODATE CABLES

**Type 1.34 EL**



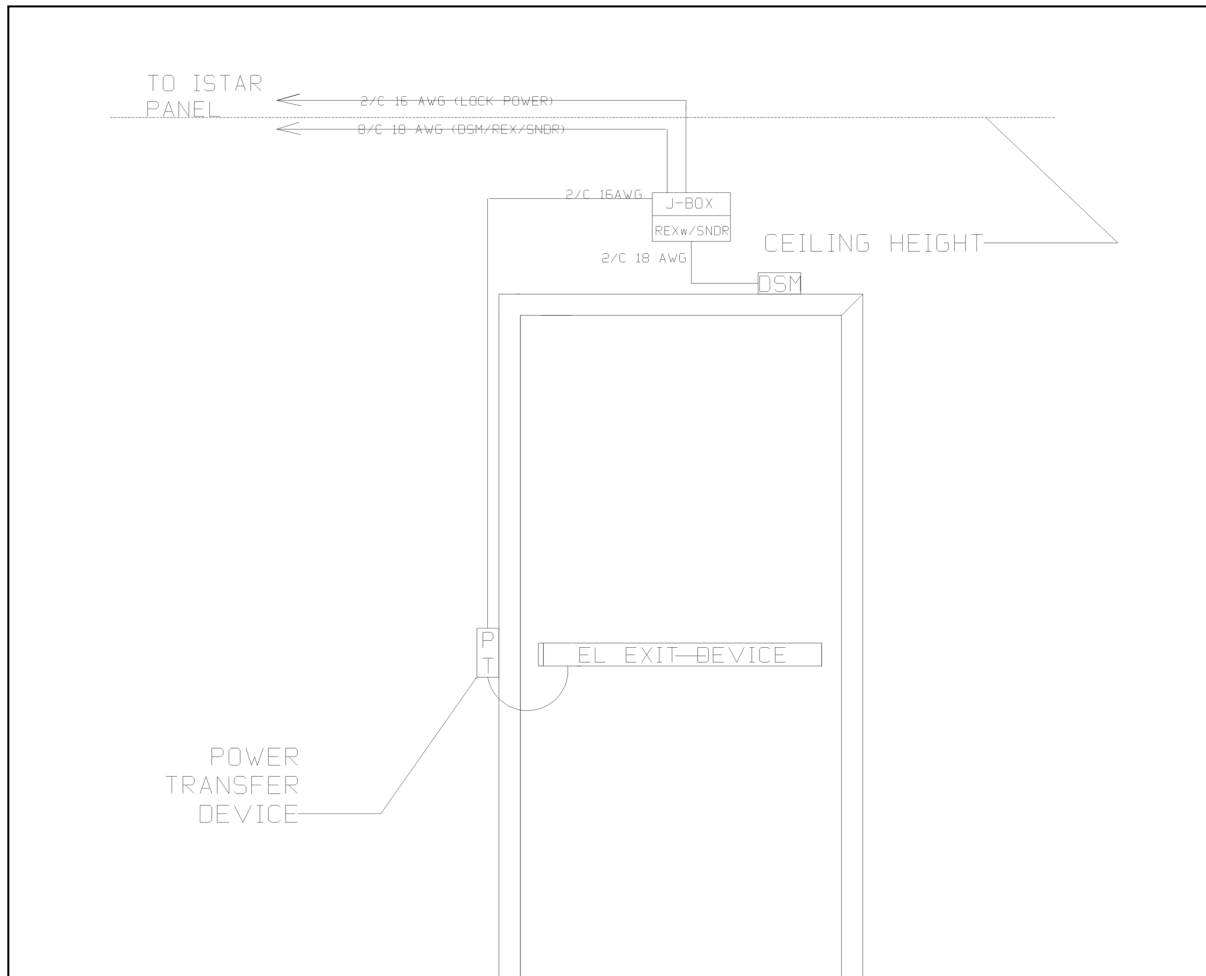
## TYPE 1.35 CR w/ LATCH RETRACTION

<b>Symbol</b>	<b>Description</b>	<b>Feed Wire Type</b>	<b>Mounting</b>
DSM	Door Status Monitor	2/C 18AWG	Recessed or Surface
LR	LATCH RETRACTION	2/C 14AWG	
REX w/ SNDR	REQUEST TO EXIT MOTION DETECTOR WITH DOOR A.JAR SOUNDER	6/C 18AWG	SURFACE MOUNT ON CENTER ABOVE DOOR OR ON CEILING
CR	MAG STRIPE CARD READER	6/C 18AWG SHIELDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
J-BOX			6 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
PT	VON DUPRIN EPT-10		MOUNTS IN DOOR JAMB

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

### TYPE 1.35 CR w/ Latch Retraction



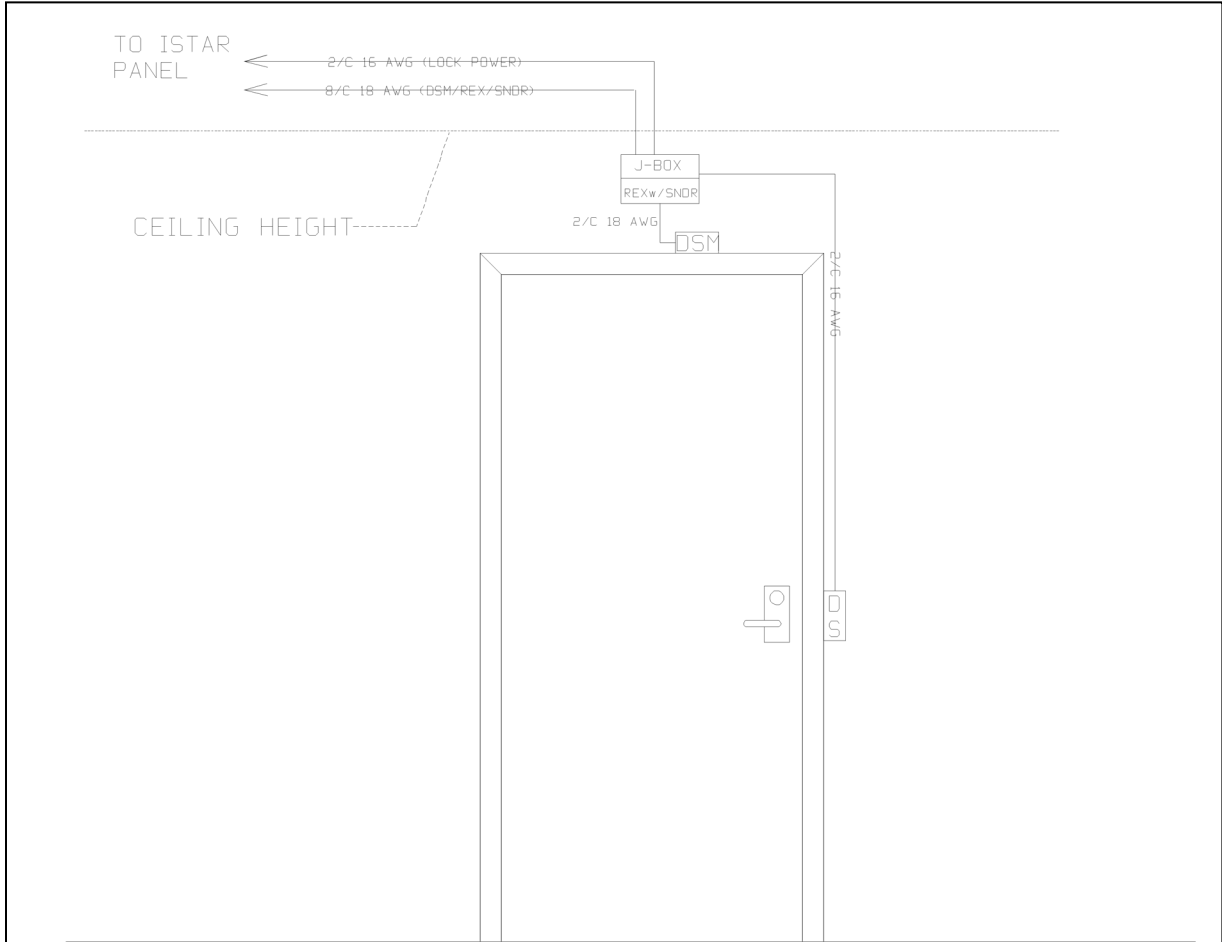


## TYPE 1.40 LATCH RETRACTION

<u>Symbol</u>	<u>Description</u>	<u>Feed Wire Type</u>	<u>Mounting</u>
DSM	Door Status Monitor	2/C18AWG	Recessed or Surface
EL	ELECTRIC LATCHBOLT RETRACTION	2/C 16 AWG	FLUSH
REX w/ SNDR	REQUEST TO EXIT WITH BUILT-IN DOOR AJAR SOUNDER	6/C 18AWG	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
J-BOX			6 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSIBLE SPACE ON SECURED SIDE OF DOOR

NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMMODATE CABLES

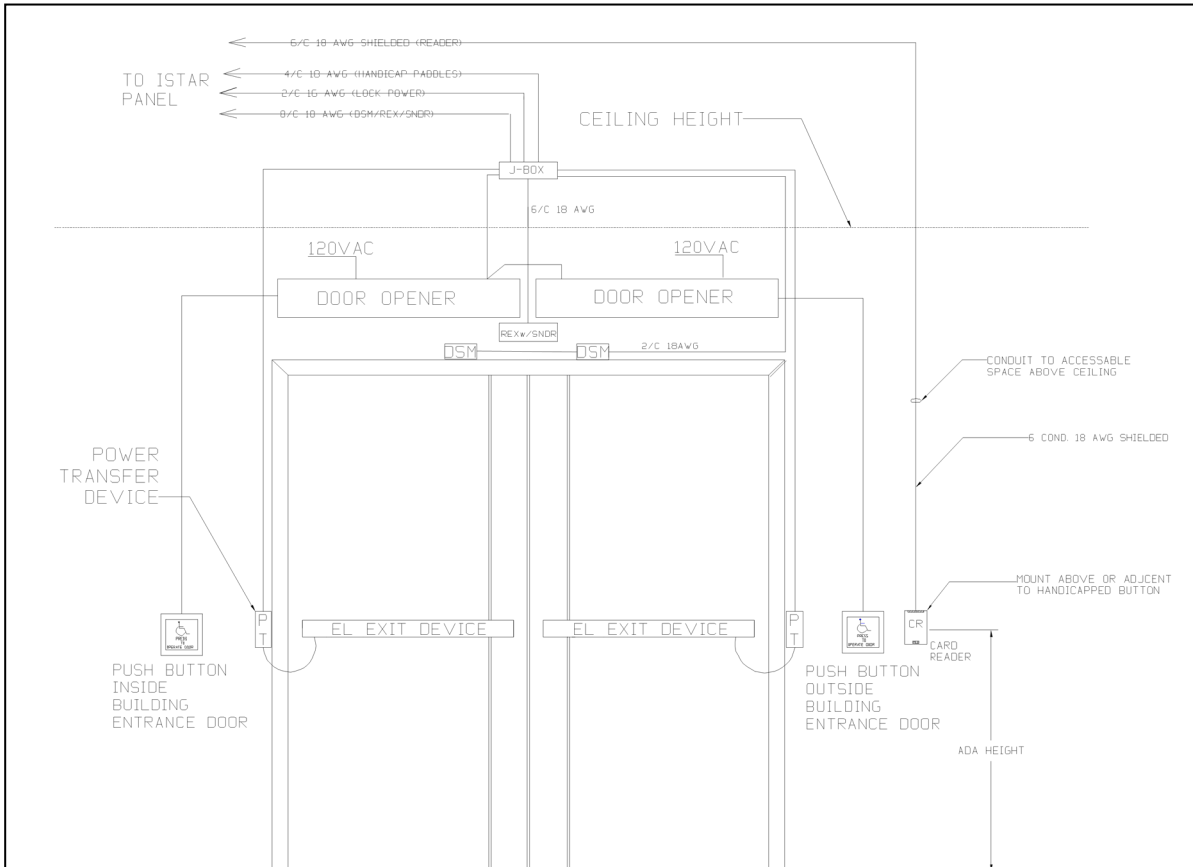
### Type 1.40 EL



# TYPE 1.41 EL ELECTRIC LOCKING DOOR

<u>Symbol</u>	<u>Description</u>	<u>Feed Wire Type</u>	<u>Mounting</u>
DSM	Door Status Monitor	2/C 18AWG	Recessed or Surface
DS	ELECTRIC DOOR STRIKE	2/C 16 AWG	FLUSH
REX w/ SNDR	REQUEST TO EXIT MOTION DETECTOR WITH DOOR AJAR SOUNDER	6/C 18AWG	SURFACE
J-BOX			6 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES.			

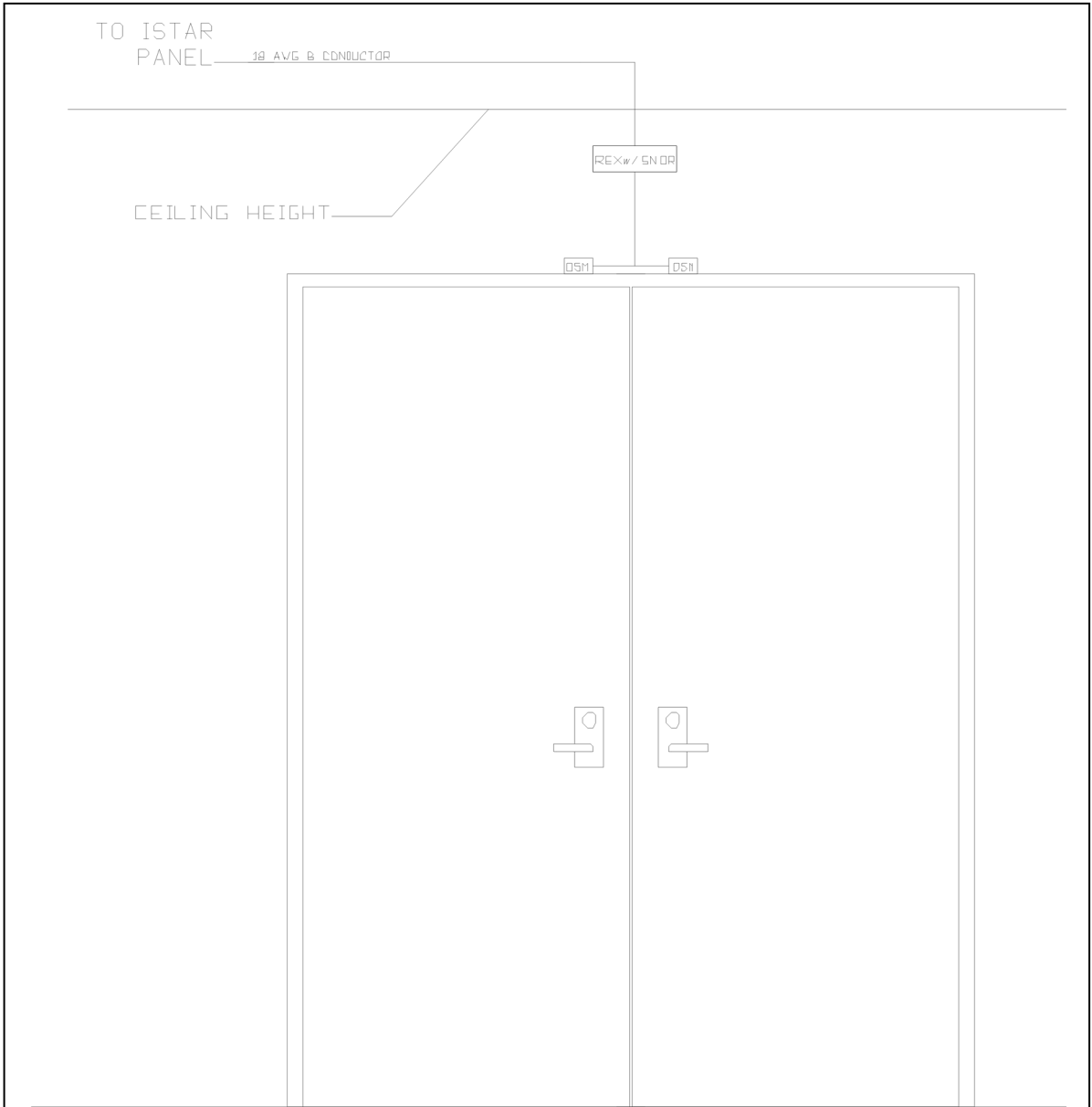
**Type 1.41 EL**



## TYPE 2.00 ADA

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX w/ SNDR	REQUEST TO EXIT WITH SOUNDER	8/C 18AWG	
EL	ELECTRIC LATCH RETRACTION	1 PAIR 16 GAUGE	
CR	CARD READER	6 CONDUCTOR 22 GAUGE SHEILDDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
J-BOX			6 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSABLE SPACE ON SECURED SIDE OF DOOR
PT	POWER TRANSFER HINGE		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			

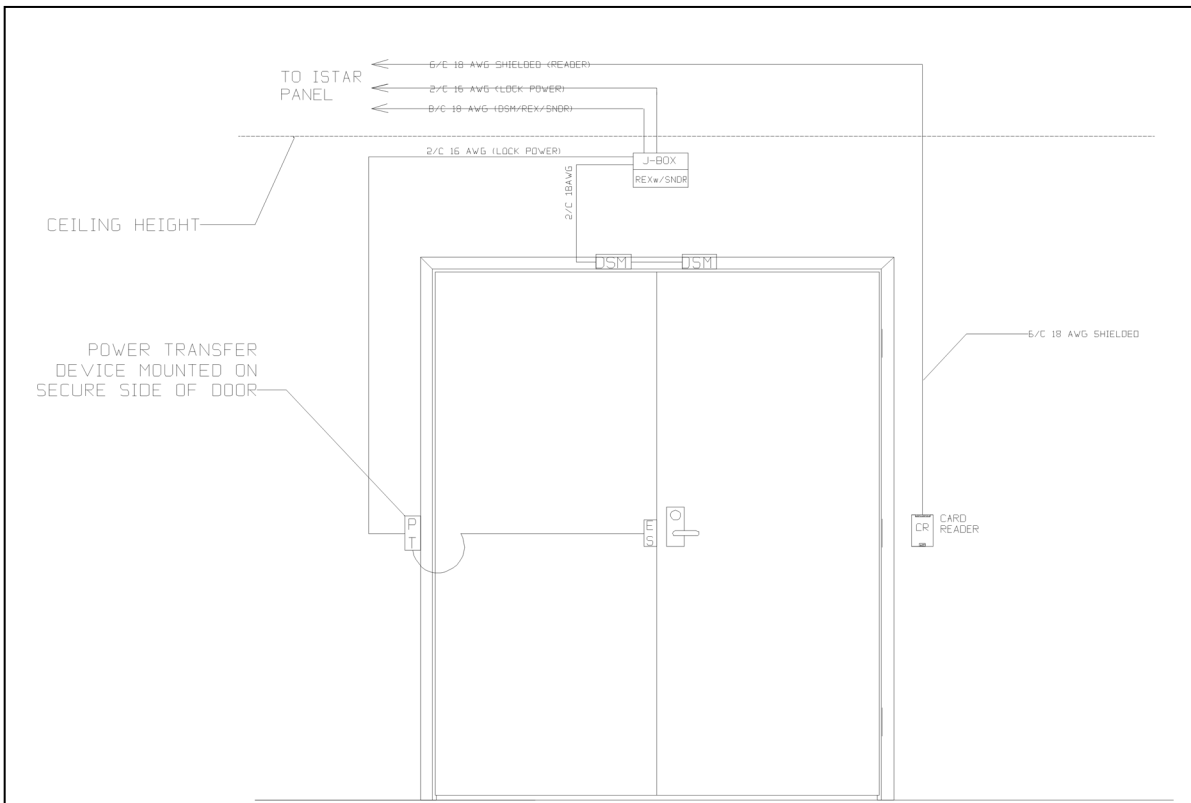
## TYPE 2.00 ADA - CR



# TYPE 2.10 AP

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	2/C 18AWG	Recessed or Surface
DSM & REX w/ SNDR	REQUEST TO EXIT MOTION DETECTOR WITH DOOR AJAR SOUNDER	8/C 18AWG	Recessed or Surface

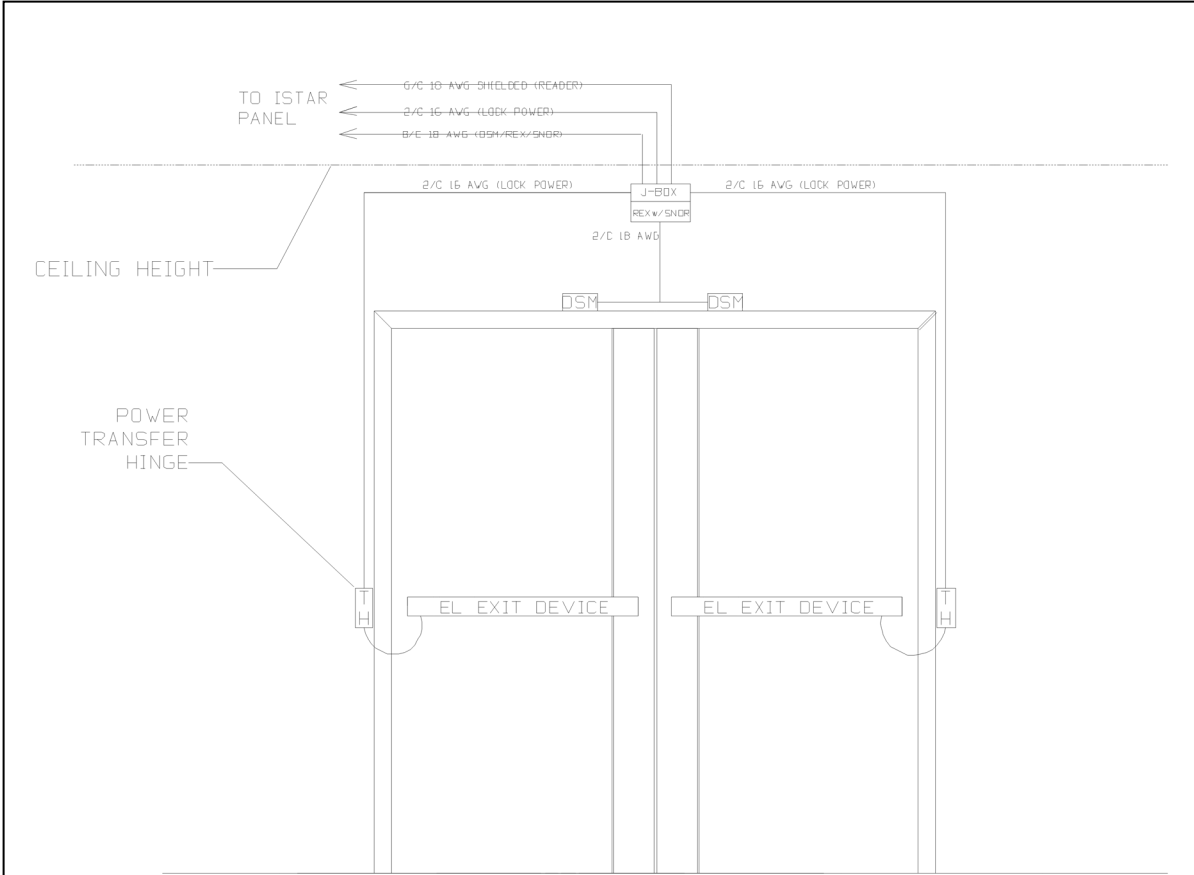
## TYPE 2.10 DSM



## TYPE 2.30 DOUBLE W/ INACTIVE LEAF

<b>Symbol</b>	<b>Description</b>	<b>Feed Wire Type</b>	<b>Mounting</b>
DSM	Door Status Monitor	2/C 18 AWG	Recessed or Surface
REX w/ SNDR	REQUEST TO EXIT MOTION DETECTOR	6/C 18 AWG	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
ES	ELECTRIC DOOR STRIKE	2/C 16 AWG	
CR	CARD READER	6/C 18 AWG SHIELDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
J-BOX			8 INCH SQUARE ENCLOSURE MOUNTED IN AN ACCESSIBLE SPACE ON SECURE SIDE OF DOOR
PT	POWER TRANSFER DEVICE	2/C 16 AWG	
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMMODATE CABLES. 3/4" EMT AS MINIMUM			

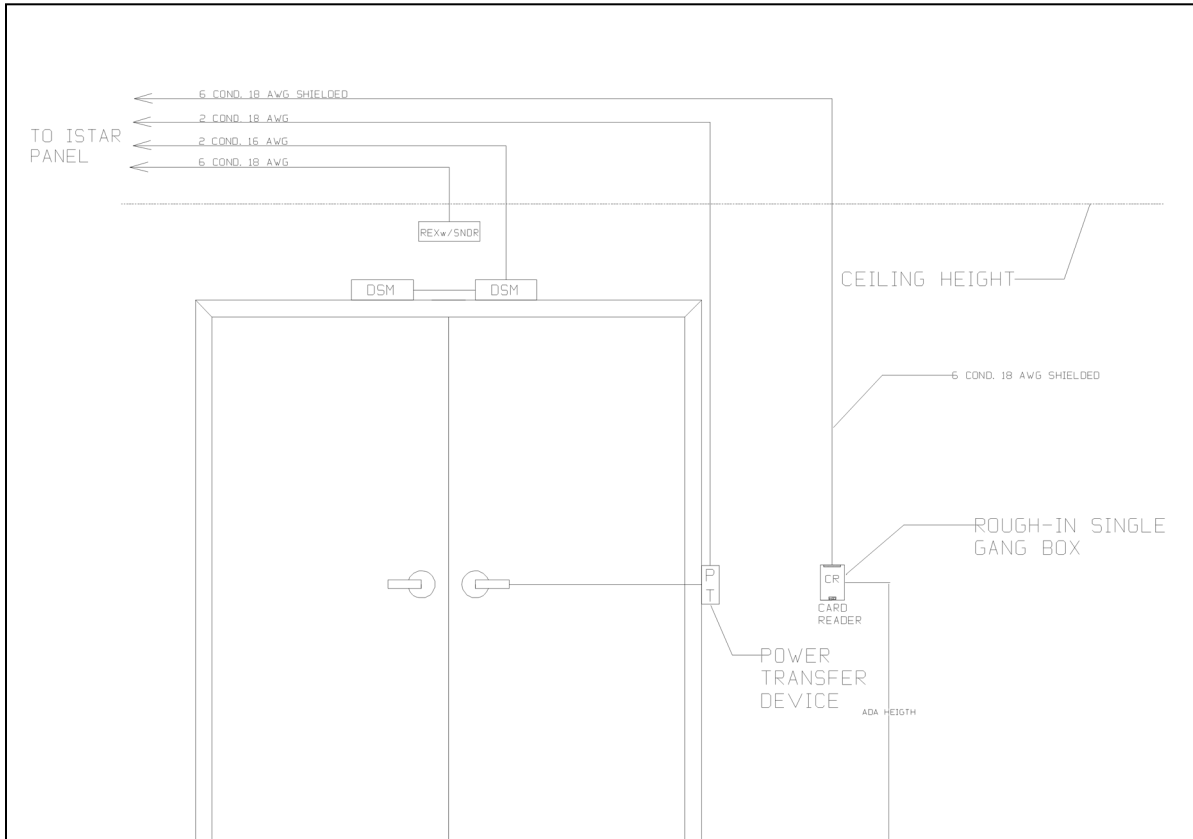
### Type 2.30



## TYPE 2.33 w/ LATCH RETRACTION

<b>Symbol</b>	<b>Description</b>	<b>Feed Wire Type</b>	<b>Mounting</b>
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX w/ SNDR	REQUEST TO EXIT MOTION DECTOR	6/C 18 AWG	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
EL	ELECTRIC LATCH RETRACTION WITH BUILT-IN REQUEST TO EXIT SWITCH	1 PAIR 16 GAUGE	
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	RECESSED
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM			

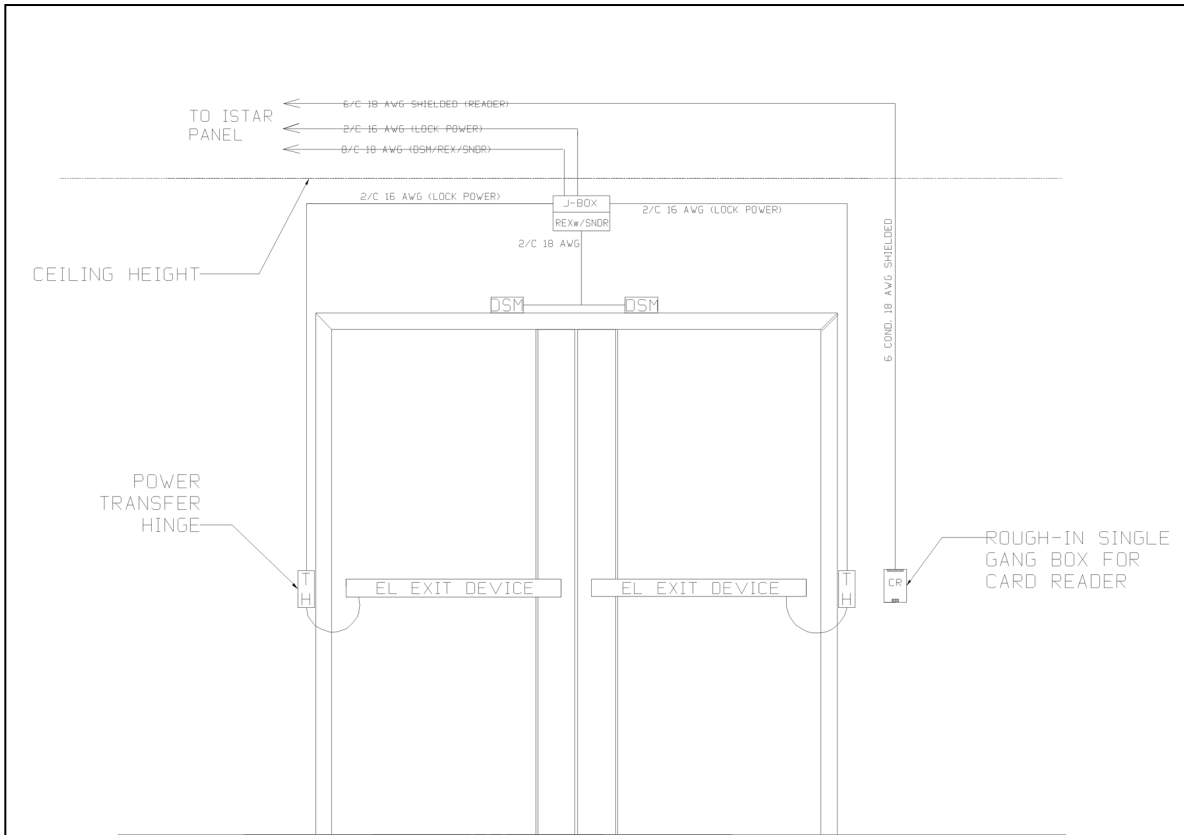
### Type 2.33 EL



## TYPE 2.34 w\ ELECTRIC MORTIS LOCK

<b>Symbol</b>	<b>Description</b>	<b>Feed Wire Type</b>	<b>Mounting</b>
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
REX w/ SDR	REQUEST TO EXIT MOTION DETECTOR	6/C 18 GAUGE	SINGLE GANG BOX HORIZONTAL ABOVE DOOR OR IN CEILING
EL	MORTIS LOCK WITH ELECTRIC LOCKING	2/C 16 GAUGE	
CR	MAG STRIPE CARD READER	6 CONDUCTOR 18 GAUGE SHEILDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	FLUSH
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" MINIMUM			

## Type 2.34 CR MORTIS LOCK

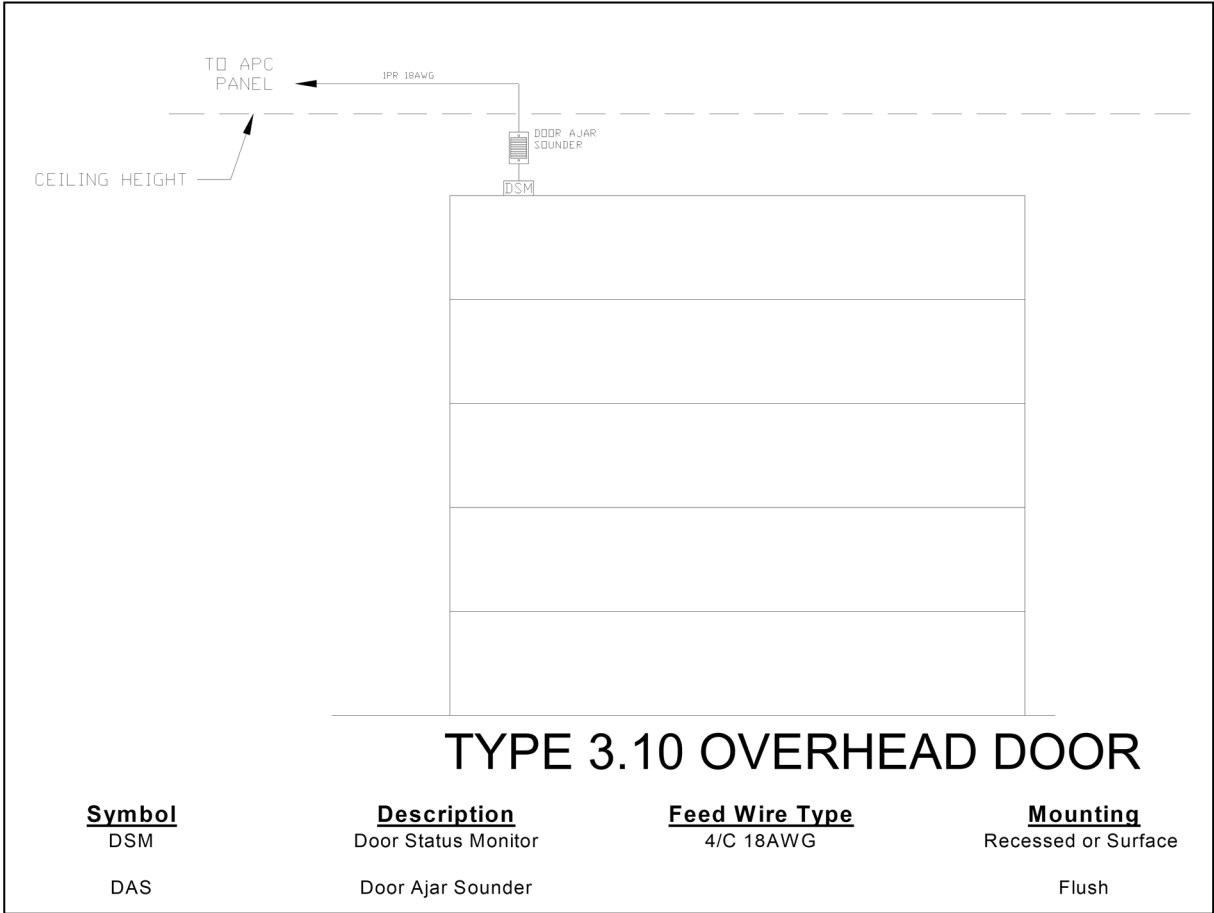


## TYPE 2.35 LATCH RETRACTION

Symbol	Description	Feed Wire Type	Mounting
DSM	Door Status Monitor	1 Pair 18 Gauge	Recessed or Surface
EL	ELECTRIC LATCH RETRACTION	1 PAIR 16 GAUGE	
CR	CARD READER	6 CONDUCTOR 18 GAUGE SHEILDDED	SURFACE MOUNT ON DOOR FRAME ON ENTRY SIDE OF DOOR
PT	POWER TRANSFER DEVICE	4 CONDUCTOR MINIMUM	RECESSED
REX w/ SNDR	REQUEST TO EXIT WITH SOUNDER	6 CONDUCTOR	
NOTE: IF CONDUIT IS REQUIRED, SIZE AS REQUIRED TO ACCOMANDATE CABLES. 3/4" EMT MINIMUM			

### Type 2.35 CR





**TYPE 3.10 DSM**

