

SUBSCRIPTS AND ABBREVIATIONS	
'WM'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE WALL MOUNTED AT SPECIFIED HEIGHT OR IN COMPLIANCE WITH CODE REQUIREMENTS. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'WP'	INDICATES THAT THE DESIGNATED DEVICE SHALL BE WEATHER PROOF AND RATED FOR EXTERIOR CONDITIONS INSTALLATION.
'AC'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE COUNTERTOP. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE COUNTER. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'AFF'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE INSTALLED ABOVE THE FINISHED FLOOR. A NUMERIC VALUE SHALL REPLACE THE '#' SYMBOL AND SHALL DESIGNATE THE SPECIFIC HEIGHT ABOVE FINISHED FLOOR. ALL HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
'UC'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE MOUNTED ON THE UNDERSIDE OF THE ELEVATED CANOPY.
'CM'	INDICATES THAT THE DESIGNATED DEVICE IS TO BE CORNER MOUNTED AT SPECIFIED HEIGHT. ALL WALL MOUNTED HEIGHTS ARE TO BE CONFIRMED WITH THE PROJECT'S ARCHITECT PRIOR TO ROUGH-IN.
●	FIELD COORDINATE ELEVATION.

NOTES TO CONTRACTOR	
1.	EVERY SYMBOL SHOWN ON LEGEND MAY NOT APPEAR ON DRAWINGS. REFER TO GENERAL ELECTRICAL NOTES FOR WALL-MOUNTED DEVICE MOUNTING HEIGHTS.
2.	REFERENCE SPECIFICATIONS FOR MATERIALS AND METHODS.
3.	COMPLETE INSTALLATION OF ALL PRODUCTS SHALL BE IN COMPLIANCE WITH ALL CODES, INDUSTRY STANDARDS, COMMON PRACTICES AND MANUFACTURER'S INSTRUCTIONS.
4.	ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.

GENERAL NOTES	
1.	ALL 120V POWER REQUIRED FOR THE FUNCTIONALITY OF EACH SYSTEM SHALL BE A DEDICATED CIRCUIT AND ON EMERGENCY POWER WHEN AVAILABLE. PROJECT'S ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL POWER TO MAIN CONTROL PANELS, REMOTE POWER SUPPLIES AND ALL HEAD END EQUIPMENT. SYSTEM INSTALLERS SHALL COORDINATE LOCATIONS AND CONNECTIONS WITH THE PROJECT'S ELECTRICAL CONTRACTOR.
2.	THE PROJECT'S ELECTRICAL CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONDUITS, FLOOR BOX, BACK BOXES, JUNCTION BOXES, RACEWAYS, AND SLEEVES REQUIRED TO ESTABLISH CLEAR PATHWAYS FOR ALL SYSTEMS. ALL CONDUITS, SLEEVES, BOXES, AND RACEWAYS SHALL BE PROPERLY SIZED TO MAINTAIN A 40% MAXIMUM FILL RATIO. THE INSTALLER FOR EACH SYSTEM SHALL PROVIDE THE ELECTRICAL CONTRACTOR WITH SHOP DRAWINGS INDICATING LOCATIONS AND SIZES OF CONDUITS BEYOND THOSE SHOWN ON THE CONTRACT DOCUMENTS.
3.	ALL EXPOSED SYSTEMS WIRING OR WIRING ROUTING ACROSS NON-ACCESSIBLE CEILINGS SHALL BE ROUTED IN CONDUIT, PROVIDED AND INSTALLED BY THE PROJECT'S ELECTRICAL CONTRACTOR. SIZE CONDUIT AS REQUIRED TO ROUTE SYSTEMS WITH 40% CABLE FILL RATIO. MINIMUM CONDUIT SIZE SHALL BE 3/4".
4.	EACH SYSTEM INSTALLER SHALL BE RESPONSIBLE FOR ENSURING ALL EXTERIOR WALL PENETRATIONS ARE PROPERLY SEALED TO PREVENT ANY MOISTURE FROM ENTERING BUILDING.
5.	NO CONDUITS SHALL BE INSTALLED ON THE EXTERIOR OF THE BUILDING. IF EXTERIOR CONDUITS ARE REQUIRED FOR A COMPLETE INSTALLATION, EACH SYSTEM CONTRACTOR SHALL COORDINATE WITH THE PROJECTS CONSULTANT PRIOR TO ANY ROUGH-IN.
6.	EACH SYSTEM INSTALLER SHALL PROVIDE AND INSTALL PROTECTIVE BUSHINGS ON ALL CONDUIT STUB OUTS AND SLEEVES TO PREVENT CABLE DAMAGE. BUSHING TO BE INSTALLED PRIOR TO CABLE INSTALLATION. CUTTING BUSHING AND INSTALLING AFTER CABLE IS INSTALLED WILL NOT BE ACCEPTED.
7.	ALL CABLE SHALL BE ROUTED DOWN CORRIDORS, PARALLEL AND PERPENDICULAR TO THE BUILDING WALLS AND STRUCTURE. CABLE TO EACH DEVICE SHALL BRANCH OFF OF A MAIN CORRIDOR TRUNK, ROUTING CABLES THROUGH CLASSROOMS, OFFICES, STORAGE ROOMS, RESTROOMS OR ANY TYPE OF ROOM OTHER THAN A CORRIDOR WILL NOT BE ACCEPTED. ENTER ALL ROOMS ABOVE THE ASSOCIATED ROOM DOORWAY.

TECHNOLOGY GENERAL NOTES	
1.	CONTRACTOR SHALL COORDINATE WITH THE SYSTEM ENGINEER PRIOR TO THE INSTALLATION OF RACKS AND RACK EQUIPMENT. NO RACKS SHALL BE PERMANENTLY INSTALLED WITHOUT WRITTEN APPROVAL OF THE PROPOSED LOCATIONS.
2.	THE SELECTED, INSTALLING CONTRACTOR MUST BE A CERTIFIED INTEGRATOR/INSTALLER AUTHORIZED BY THE SPECIFIED SYSTEM MANUFACTURER TO INSTALL THE CABLE PLANT AND CONNECTIVITY PRODUCTS. REFER TO SPECIFICATIONS FOR PRODUCT TYPE AND DESCRIPTION.
3.	SYSTEM WIRING AND EQUIPMENT INSTALLATION SHALL BE IN ACCORDANCE WITH GOOD ENGINEERING PRACTICES AS ESTABLISHED BY ANSIEA/ITIA, BICSI, AND THE NEC.
4.	ALL WIRING SHALL MEET ALL STATE AND LOCAL ELECTRICAL CODES.
5.	ALL TELECOMMUNICATIONS SYSTEMS EQUIPMENT AND MOUNTING LOCATIONS SHALL BE IN COMPLIANCE WITH ADA ACCESSIBILITY STANDARDS.
6.	ALL INDUSTRY STANDARD CATEGORY 6 CABLE PRACTICES MUST BE FOLLOWED FOR ALL DATA CABLEING.
7.	ALL CABLES/WIRING ARE TO BE INSTALLED WITH A MINIMUM OF 12 INCHES OF SEPARATION FROM AC POWER CABLES, INTERCOM, FIRE ALARM, SECURITY CABLES IN ANY PARALLEL OPEN WIRE RUN.
8.	ALWAYS CROSS OTHER SYSTEM CABLES AT A 90 DEGREE ANGLE.
9.	ALL CABLES AND TERMINATION COMPONENTS SHALL BE MACHINE LABELED AT BOTH ENDS. LABEL ALL CABLES PER TS DRAWINGS AND/OR SPECIFICATIONS. FINAL CABLE/OUTLET IDENTIFICATION LABELS SHALL BE COORDINATED WITH THE OWNER AND ENGINEER.
10.	CONTRACTOR TO PROVIDE LIGHTNING PROTECTION ON ALL COMMUNICATION CABLE BETWEEN BUILDINGS.
11.	ALL EXPOSED CABLEING ROUTED IN PLENUM SHALL BE PLENUM-RATED. ALL NON PLENUM-RATED CABLEING INSTALLED IN PLENUM SPACES SHALL BE INSTALLED IN CONDUIT.
12.	NO TERMINATION OR SPLICES SHALL BE INSTALLED IN OR ABOVE CEILINGS UNLESS NOTED OTHERWISE.
13.	CONTRACTOR SHALL MAINTAIN WALL RATING WITH PROPER FIRE BLOCKING METHODS.
14.	ALL CABLE INSTALLED SHALL ROUTE TO THE CENTER OF THE ROOM IN WHICH IT SERVES AND THEN TO THE OUTLET LOCATION IT IS INTENDED FOR. EACH CABLE SHALL HAVE A 10' SERVICE LOOP AT THE CENTER OF EACH ROOM AND A 3' SERVICE LOOP ABOVE EACH OUTLET LOCATION.
16.	PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO EACH VIDEO SURVEILLANCE CAMERA ON THE ENTIRE PROJECT. REFERENCE VIDEO SURVEILLANCE LEGEND, NOTES, FLOOR PLANS, DETAILS, AND SCHEDULE.
17.	PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO THE BUILDING'S ACCESS CONTROL HEAD END PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
18.	PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO THE BUILDING'S INTRUSION DETECTION PANEL. TERMINATION OF THIS CABLE SHALL BE COORDINATED WITH THE SYSTEM INSTALLER.
19.	PROVIDE AND INSTALL ONE (1) CATEGORY 6 CABLE TO EACH LIGHTING CONTROL HUB ON THE ENTIRE PROJECT. COORDINATE EXACT QUANTITY AND LOCATIONS WITH THE LIGHTING CONTROL SYSTEM INSTALLER. CONTRACTOR TO ASSUME A MINIMUM OF TEN (10) PER PROJECT.
20.	PROVIDE AND INSTALL TWO (2) CATEGORY 6 DATA CIRCUITS TO EACH FSD (ALL VARIATIONS OF), CMP, WMP, AND DS ON THE ENTIRE PROJECT. COORDINATE ANY DISCREPANCIES WITH ENGINEER.
21.	PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO THE LOCAL AIR UNIT CONTROLLER IN EACH MDF AND IDF.
22.	PROVIDE AND INSTALL ONE (1) CATEGORY 6 DATA CIRCUIT TO EACH ACCESS CONTROL VIDEO DOOR STATION AND MASTER STATION ON THE ENTIRE PROJECT. COORDINATE EXACT LOCATION AND TERMINATION REQUIREMENTS WITH THE DOOR STATION INSTALLER, PRIOR TO INSTALLATION.

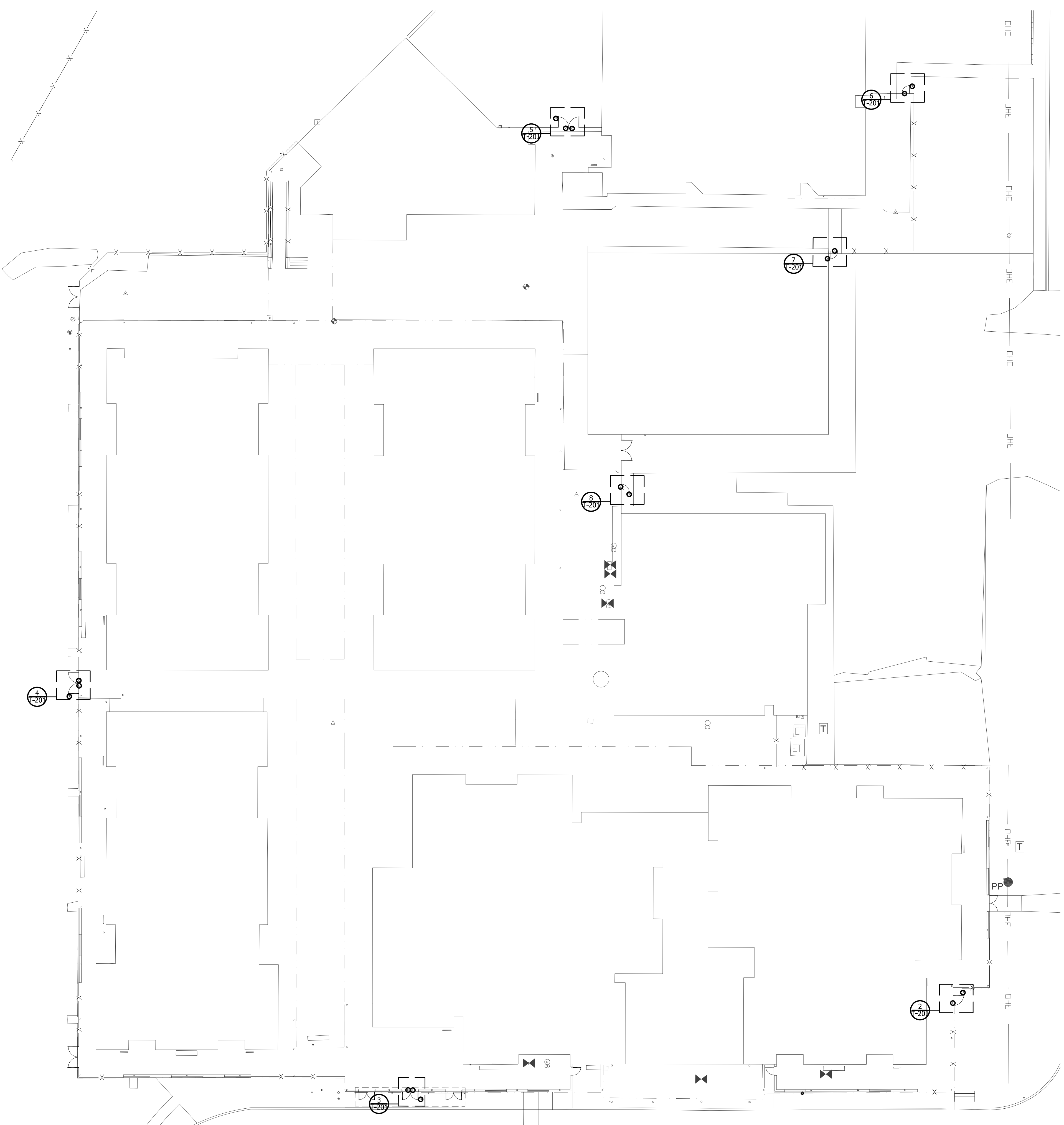
ACCESS CONTROL LEGEND	
SYMBOL	DESCRIPTION
	WALL OR MULLION MOUNTED ACCESS CONTROL PROXIMITY CARD READER.
	DOOR MOUNTED ACCESS CONTROL PROXIMITY CARD READER THAT IS INTEGRATED INTO THE DOOR HARDWARE.
	DOOR RELEASE BUTTON
	DESIGNATES THE LOCATION OF THE ACCESS CONTROL SYSTEM, CONTROL PANEL, ELECTRICAL CONTRACTOR TO PROVIDE 120V POWER TO PANEL, PROVIDE NETWORK CABLE TO PANEL, AND COORDINATE WITH THE OWNER'S TECHNOLOGY DEPARTMENT ON ACQUIRING AN IP ADDRESS.
	WALL OR MULLION MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION.
	DOOR MOUNTED, 2-WAY AUDIO/VIDEO INTERCOM DOOR STATION.
	2-WAY AUDIO/VIDEO INTERCOM MASTER STATION.
	ADA AUTO DOOR OPEN BUTTON, SHOWN FOR REFERENCE ONLY, BUTTON AND AUTO DOOR OPERATOR PROVIDED AND INSTALLED BY THE DOOR SYSTEM INSTALLER.
	DPDT MAGNETIC DOOR CONTACT/DOOR POSITION SENSOR, FLUSH MOUNTED IN DOOR FRAME, UNLESS NOTED OTHERWISE.
	LOCKDOWN BUTTON
NOTES:	
1. REFERENCE ACCESS CONTROL SCHEDULE, DETAILS, AND DIVISION 28 SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS	

SECURITY GENERAL NOTES	
1.	THE SECURITY SYSTEM INSTALLERS SHALL BE RESPONSIBLE FOR CONNECTING ALL APPLICABLE SYSTEM EQUIPMENT TO THE OWNER'S NETWORK.
2.	THE SYSTEM INSTALLER SHALL PROPERLY SUPPORT ALL INSTALLED SYSTEM CABLEING FROM AN APPROVED CABLE SUPPORT SYSTEM AS DETAILED IN SPECIFICATIONS. NO CABLEING SHALL BE ROUTED AND TIED DIRECTLY TO BUILDING STEEL, CEILING GRID SUPPORT, CONDUIT, PIPING, OR DUCTWORK. THE CABLE SUPPORT SYSTEM SHALL BE DIRECTLY CONNECTED TO THE BUILDING'S STEEL JOIST. AT LOCATIONS WHERE THE BOTTOM OF THE JOIST IS MORE THAN 5' ABOVE THE CEILING, THE SYSTEM INSTALLER SHALL PROVIDE AND INSTALL THREADED ROD AND ALL REQUIRED MATERIALS TO CONNECT THE THREADED ROD TO THE BUILDING STEEL AND THE CABLE SUPPORT SYSTEM TO THE THREADED ROD. CABLE PATHWAY SHALL NOT BE HIGHER THAN 5' ABOVE THE CEILING AT ANY LOCATIONS.
3.	SECURITY CAMERA SYSTEM INSTALLER SHALL PROVIDE A CEILING MOUNTED INSTALLATION KIT RECOMMENDED BY THE MANUFACTURER OF THE CAMERA. EACH CEILING MOUNTED CAMERA KIT SHALL HAVE A SUPPORT WIRE ATTACHED TO THE BUILDING'S STRUCTURE TO PREVENT THE CAMERA FROM DROPPING TO THE FLOOR AT ANY TIME. AT NO POINT SHALL THE WEIGHT OF THE CEILING MOUNTED SECURITY CAMERA BE SUPPORTED BY THE CEILING GRID SYSTEM OR CEILING TILES. ALL CEILING MOUNTED CAMERAS SHALL BE FLUSH MOUNTED.
4.	ALL EXTERIOR AND WALL MOUNTED CAMERA LOCATIONS AND MOUNTING HEIGHTS MUST BE COORDINATED WITH THE OWNER PRIOR TO ROUGH-IN. COORDINATION MEETINGS SHALL BE SCHEDULED THROUGH THE ARCHITECT'S PROJECT MANAGER.
5.	PROVIDE AND INSTALL MAGNETIC DOOR CONTACT AT ALL ROOF HATCHES ON THE ENTIRE PROJECT. CONTACTS TO BE CONNECTED TO THE BUILDING'S INTRUSION DETECTION SYSTEM.
COORDINATE MONITORING REQUIREMENTS WITH THE INSTALLER FOR EACH SYSTEM AND THE OWNER. PROGRAM SYSTEM TO ALERT THE OWNER DESIGNATED PERSONNEL UPON A MONITORED ALARM EVENT	

TECHNOLOGY LEGEND	
'D#'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A NETWORK CONNECTION. THE '#' SHALL BE REPLACED WITH NUMERIC TEXT THAT IDENTIFIES THE TOTAL NUMBER OF CATEGORY 6 NETWORK CABLES THAT ARE TO BE INSTALLED AT THE TECHNOLOGY OUTLET LOCATION. CONTRACTOR TO PROVIDE AND INSTALL CATEGORY 6 NETWORK CABLES, CATEGORY 6 CONNECTORS, STAINLESS STEEL FACEPLATES WITH IDENTIFICATION WINDOWS, LABELS, BLANK INSERTS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED OUTLET LOCATION. ALL FACEPLATES PROVIDED SHALL CONTAIN A MINIMUM 4-PORTS AND SHALL BE APPROPRIATELY SIZED TO ACCOMMODATE THE NUMBER OF CIRCUITS BEING INSTALLED AT THIS TECHNOLOGY OUTLET LOCATION. MAXIMUM OF SIX(6) DATA CABLES PER OUTLET.
'W'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WALL MOUNTED TELEPHONE CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (1) CATEGORY 6 NETWORK CABLE, (1) CATEGORY 6 CONNECTOR, STAINLESS STEEL WALL TELEPHONE FACEPLATE, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. CONTRACTOR SHALL MOUNT THIS OUTLET AT ADA HEIGHT (MATCH LIGHT SWITCH HEIGHT) AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 9" OF CLEARANCE ON ALL FOUR SIDES OF THE BACK BOX. OUTLETS SHALL REMAIN CLEAR OF ROOM DOORS, CABINET DOORS, APPLIANCE DOORS, AND SLIDING DRAWERS.
'AP'	DESIGNATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR THE USE OF A WIRELESS ACCESS POINT CONNECTION. CONTRACTOR TO PROVIDE AND INSTALL (2)CATEGORY 6 NETWORK CABLE, (2) CATEGORY 6 CONNECTOR, (2) CAT 6 BISCUIT JACK FACEPLATE WITH IDENTIFICATION WINDOWS, LABELS, AND ANY OTHER MATERIALS REQUIRED TO FURNISH A COMPLETE FUNCTIONAL AND TESTED CIRCUIT AT EACH LOCATION SHOWN. REFERENCE SPECIFICATIONS FOR PATCH CABLE REQUIREMENTS.
'FF'	INDICATES THAT THE ASSOCIATED TECHNOLOGY OUTLET IS INTENDED FOR FURNITURE FEED, ALLOWING CABLEING TO ROUTE INTO A MODULAR FURNITURE SYSTEM. CONDUIT SHALL BE SIZE TO ACCOMMODATE THE NUMBER CABLE ROUTING INTO TO THE FURNITURE SYSTEM.
'VF'	VOICE OUTLET WITH CABLE AND TERMINATION AS INDICATED.
NOTES:	
REFERENCE TECHNOLOGY GENERAL NOTES, PLAN KEYED NOTES, AND ALL OTHER SYSTEM LEGENDS/NOTES. THE STRUCTURED CABLING SYSTEM CONTRACTOR SHALL PROVIDE AND INSTALL CATEGORY 6/6A CABLE TO ALL SYSTEMS' EQUIPMENT REQUIRING NETWORK CONNECTIVITY.	

RACEWAY LEGEND	
	INDICATES THE LOCATION OF A FLOOR MOUNTED BOX AND RACEWAY FOR LOW VOLTAGE. CONTRACTOR TO PROVIDE AND INSTALL A FLOOR BOX. EACH FLOOR BOX SHALL HAVE ONE (1) SINGLE GANG PORT WITH ONE (1) 1" CONDUIT (PER EVERY SIX(6) CATEGORY 6 OR FOUR(4) CATEGORY 6A CABLES) AND ONE (1) DOUBLE GANG PORT WITH ONE (1) 1 1/2" CONDUIT UNLESS NOTED OTHERWISE. ALL CONDUITS SHALL ROUTE FROM THE FLOOR BOX DIRECTLY TO THE WALL INDICATED AND STUB-UP INTO THE NEAREST ACCESSIBLE PLENUM CEILING.
	INDICATES THE LOCATION OF A CEILING MOUNTED OUTLET. CONTRACTOR SHALL MOUNT THIS OUTLET AT +12" ABOVE THE CEILING AND COORDINATE ALL FINAL LOCATIONS WITH OTHER TRADES ON THE PROJECT TO VERIFY THAT THE LOCATION OF THE OUTLET MAINTAINS 12" OF CLEARANCE FROM THE FRONT OF THE FACEPLATE FOR OWNER ACCESS.
	INDICATES THE LOCATION OF A NEW LOW VOLTAGE OUTLET. CONTRACTOR TO PROVIDE ONE (1) DOUBLE GANG BACK BOX WITH A SINGLE GANG REDUCER ONE (1) 1" CONDUIT STUBBING INTO THE NEAREST, ACCESSIBLE PLENUM CEILING.
	INDICATES THE LOCATION OF A NEW LOW VOLTAGE OUTLET. CONTRACTOR TO PROVIDE ONE (1) DOUBLE GANG BACK BOX WITH ONE (1) 1 1/2" CONDUITS STUBBING INTO THE NEAREST, ACCESSIBLE PLENUM CEILING.
	INDICATES THE LOCATION OF A NEW LOW VOLTAGE OUTLET. CONTRACTOR TO PROVIDE ONE (1) SINGLE GANG BACK BOX WITH ONE (1) 3/4" CONDUITS STUBBING INTO THE NEAREST, ACCESSIBLE PLENUM CEILING.
NOTES:	
A. SYSTEM INSTALLER TO PROVIDE AND INSTALL A PLASTIC PROTECTIVE BUSHING ON ALL CONDUIT STUB-UP AND SLEEVES, PRIOR TO ROUTING CABLEING IN CONDUIT, CUTTING BUSHING TO FIT ROUND INSTALLED CABLE WILL NOT BE ACCEPTED	
B. NO CONDUITS SHALL EXCEED FOR 40% MAXIMUM FILL RATIO. CONTRACTOR TO PROVIDE ADDITIONAL CONDUITS REQUIRED.	
C. ANY CONDUIT INSTALL FOR AUDIO /VIDEO SYSTEMS SHALL INCLUDE AT LEAST ONE (1) 1 1/4" CONDUIT.	

CONDUIT / CABLE FILL CHART						
CONDUIT SIZE (ID)	4-PR UTP CATEGORY 3	4-PR UTP CATEGORY 5/6E	4-PR UTP CATEGORY 6	4-PR UTP CATEGORY 6A	4-PR UTP CATEGORY 3/5	12-ST ARMORED FIBER OPTIC CABLE
1"	12	9	6	4	-	-
1-1/4"	21	15	12	8	-	-
1-1/2"	28	21	16	11	1	-
2"	47	35	27	19	3	1
3"	124	93	72	50	8	3
4"	208	155	120	83	12	6
<p>A. CONDUIT SIZE FOR 25-PAIR COPPER AND FIBER OPTIC CABLES APPLY TO SLEEVE SIZES ONLY. CONDUIT SIZES SHALL BE SIZED BASED ON MAXIMUM FILL RATION AND ALLOWING INSTALLATION TO NOT EXCEED THE MAXIMUM ALLOWABLE PULL TENSION.</p> <p>B. CONDUIT FILL RATIO MAY VARY BY MANUFACTURER. THIS CHART SHALL STIPULATE A MINIMUM REQUIREMENT. CONTRACTOR SHALL REFERENCE MANUFACTURER SPECIFICATION AND DECREASE CABLE COUNT PER CONDUIT SIZE IF REQUIRED.</p> <p>C. SIZES SHOWN DEPICT THE INTERIOR DIAMETER OF THE CONDUIT.</p>						



GENERAL NOTES

A. COORDINATE ALL FINAL MOUNTING HEIGHTS, FOR WALL MOUNTED DEVICES, PRIOR TO ROUGH-IN. COORDINATE WITH ARCHITECT, OWNER AND ENGINEER.

B. REFERENCE TECHNOLOGY PLANS, NOTES & LEGENDS AND ELECTRICAL PLANS FOR ADDITIONAL INFORMATION AND DEVICE/OUTLET LOCATIONS.

C. ALL ACCESS CONTROL AND INTRUSION DEVICES SHALL CONNECT TO THE NEAREST ACCESS CONTROL/INTRUSION DETECTION PANELS. CONTRACTOR TO PROVIDE ALL NECESSARY CONDUITS.

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JANUARY 2024
 date

revisions

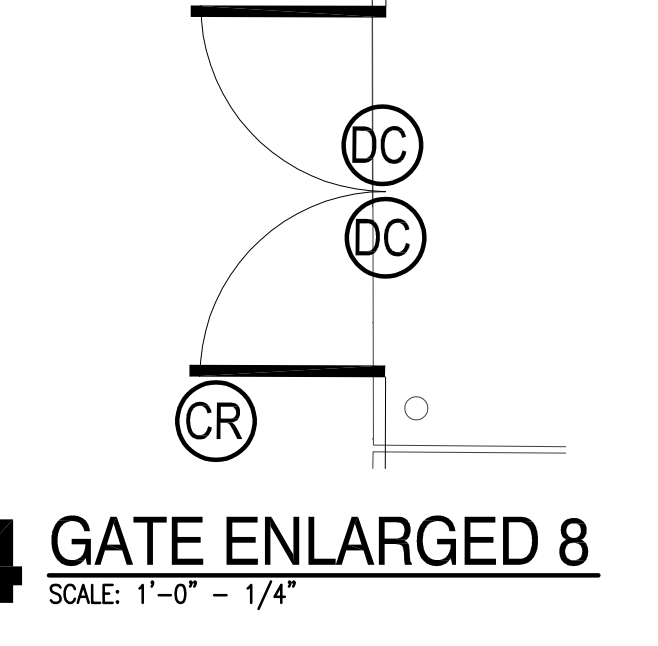
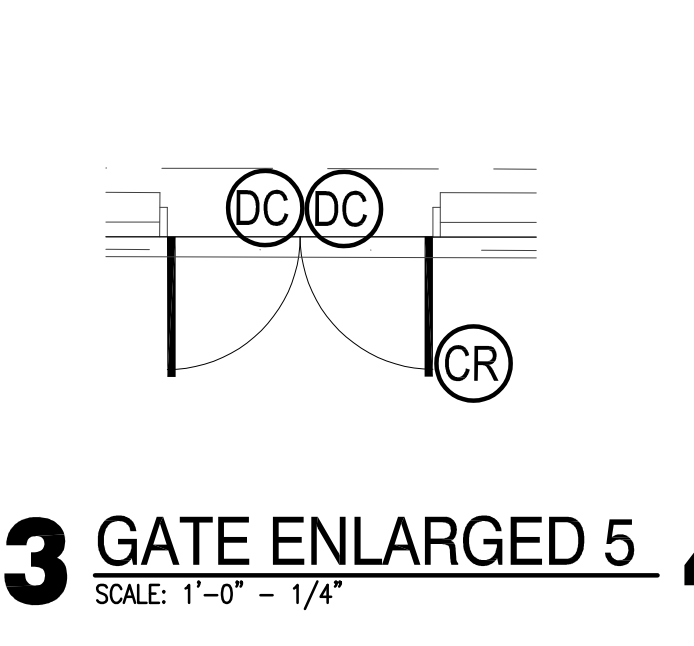
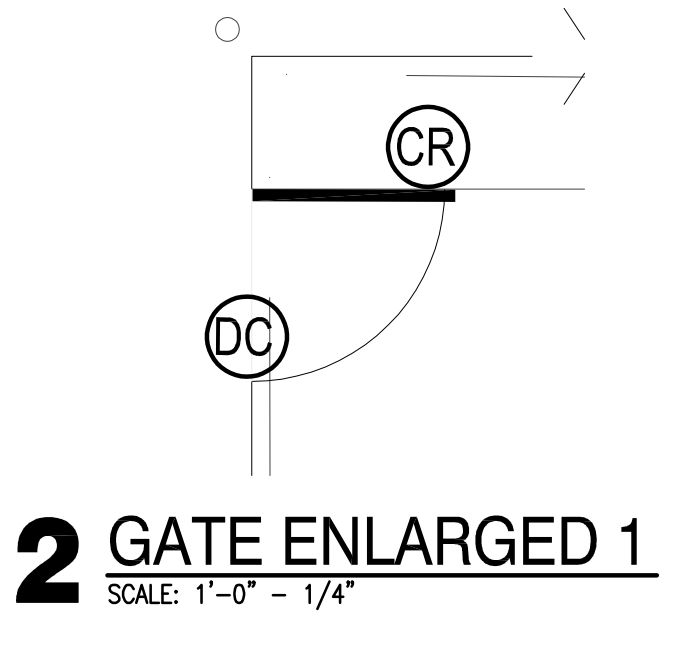
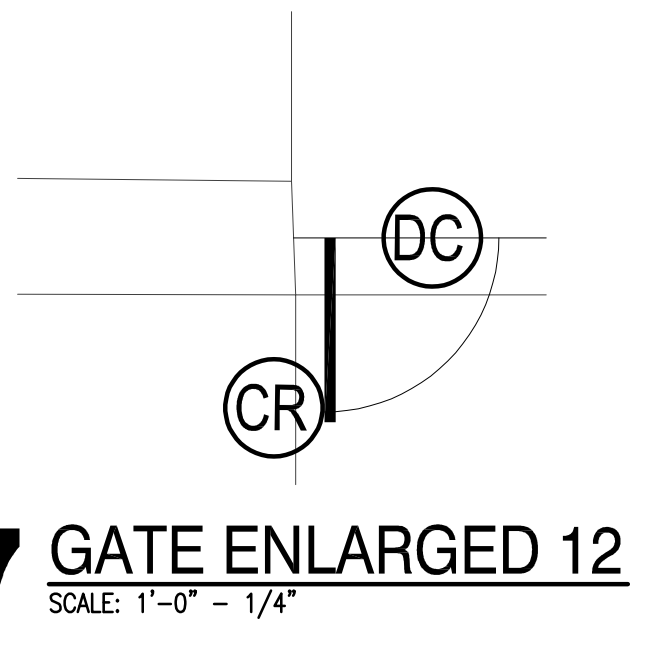
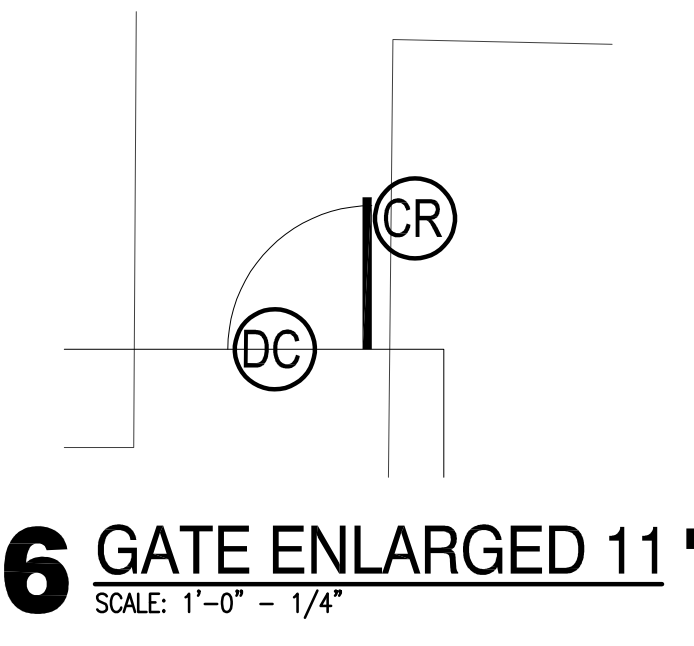
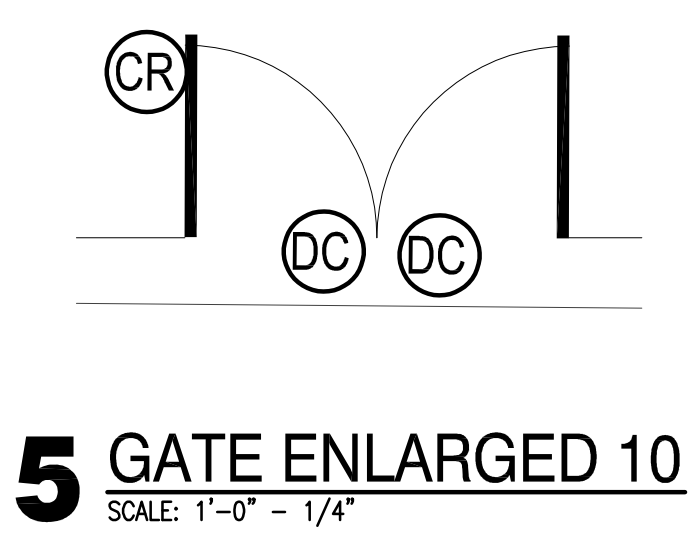
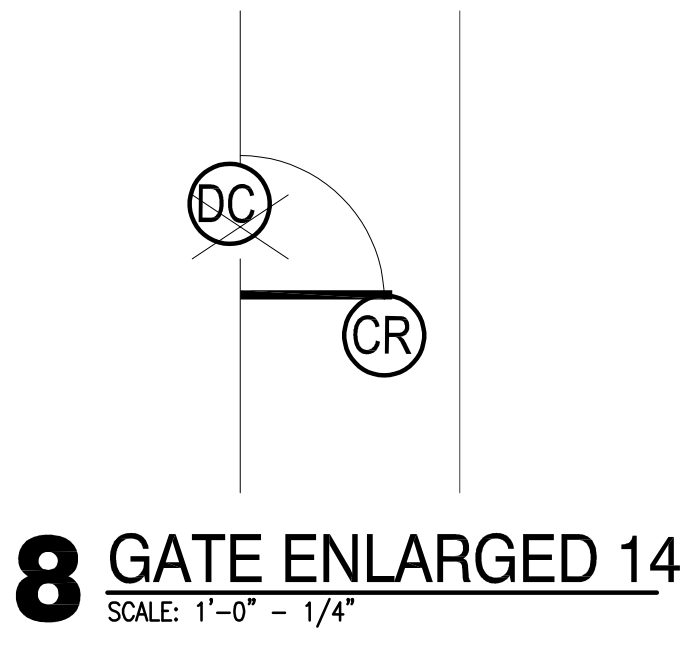
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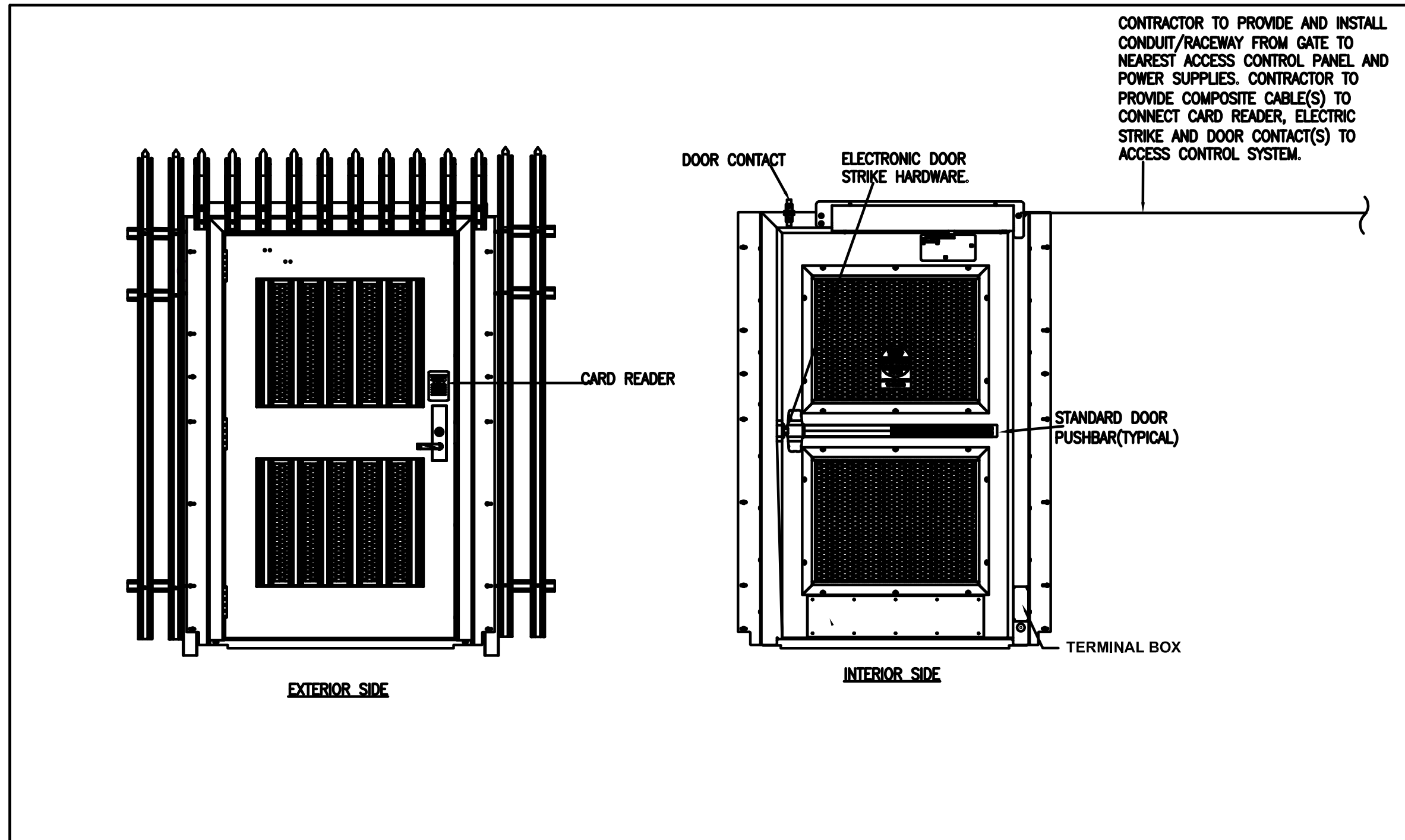


WINDING CREEK
 ELEMENTARY SCHOOL
 SECURITY UPGRADES

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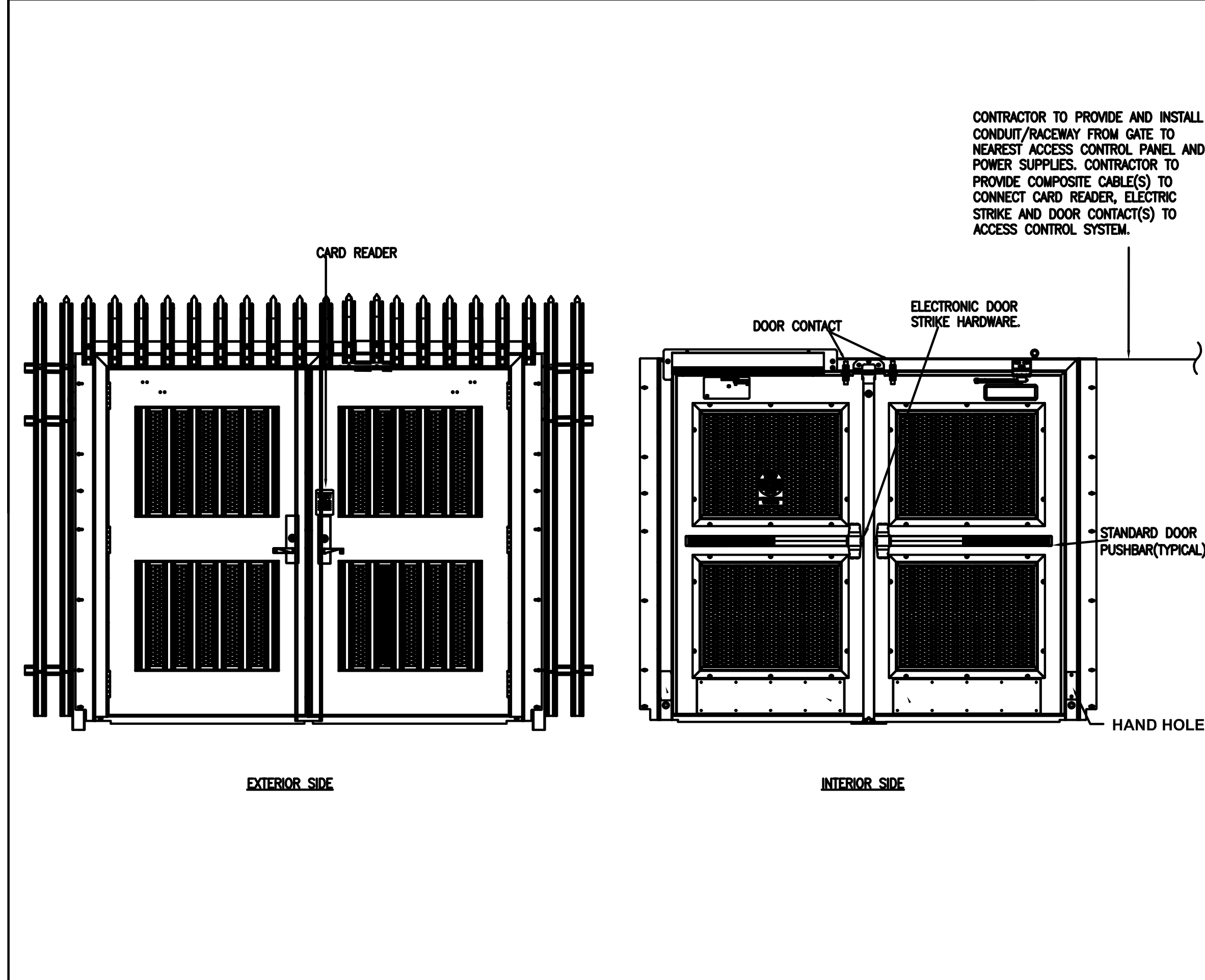
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01 EGRESS GATE - SINGLE DOOR

NOT TO SCALE



02 EGRESS GATE - DOUBLE DOOR

NOT TO SCALE

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WINDING CREEK
ELEMENTARY SCHOOL
SECURITY UPGRADES

sheet no:

T-402



2600 Van Buren St., Suite 2635
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Salas O'Brien Registration: CA# 7058
Expiration Date: 6/30/2025
Salas O'Brien Project Number: 2024-01098-00

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SYSTEMS SPECIFICATIONS

Security System Specifications

Part 1 - General

- 2.01 Manufacturers
 - Security System Manufacturer shall be DSC or DMP. See plans for the specific manufacturer required (no substitutions)
 - Installer shall be certified by manufacturer to install and program the specified systems. (no substitutions)
 - Peripheral device Manufacturers shall be according to equipment list. (No Substitutions)
 - Cable Manufacturer shall be Genesis. (Or Equivalent)

Security Systems Equipment

- security alarm control shall be dsc model # pc4020 or dmp model # x550n-g. (no substitutions)
- security alarm control communicator shall be dsc model # t-link#250, dpm n/a. (no substitutions)
- security alarm keypad shall be dsc model # lcd4501 or dmp model # 7873. (no substitutions)
- security alarm keypad for all kitchen locations shall be dsc model # lcd4501 or dmp model # 7073. (no substitutions)
- security alarm 8 zone hardware expander shall be dsc model # pc4108 or dmp model # 714-8. (no substitutions)
- security alarm 16 zone hardware expander shall be dsc model # pc4116 or dmp model # 714-16. (no substitutions)
- security alarm power supply shall be dsc model # pc4204 or dmp systems = altronic model # smp3pmtcx. (no substitutions)
- security alarm power supply cabinet shall be dsc model # pc4051c. dmp n/a. (no substitutions)
- security alarm cabinet locks shall be dsc model # 11 or dmp model # 301. (no substitutions)
- security alarm 35'35" motion detector shall be honeywell model # dh-8035. (no substitutions)
- security alarm 50'x60" motion detector shall be honeywell model # dh-8050. (no substitutions)
- security alarm window glass break sensor shall be honeywell model # fg-730. (no substitutions)
- security alarm door contact shall be ge model # 10766-m. double pole double throw for all doors (no substitutions)
- each single door or double door shall be wired with 4 conductor wire.
- dmp systems shall be wired with 2 zones per single door or double door. one zone for security alarm and one zone for "door held open alert"
- security alarm c channel door magnets shall be gtl model # mc180
- security alarm surface window contact shall be aleph model # ps-1541. (or equivalent approved by mps)
- security alarm overhead door & roof hatch contact shall be amesco model # s401c. (no substitutions)
- Contractor to provide and install a total of 5 wireless holdup buttons. 3 to be installed in administration area offices and 2 on the reception counters.

- 1.01 Systems Installation
 - installer shall be certified by manufacturer to install & program the specified systems.

- installer shall perform all programming required to complete the installation. moore public schools shall not be required to assist in any part of the installation or programming.

- All alarm junctions and or splices shall be soldered and insulated.

- All circuits and wiring shall be labeled at all terminating ends.

- All devices shall be mounted according to the manufactures specifications.

- All devices shall be properly adjusted and tested prior to job completion.

- All zone expansion module shall be DMP 714-16 and Relay Output Module shall be DMP 860.

- All cabinets shall be labeled outside with their corresponding module and zone numbers and installed with lock.

- All cabinets shall be labeled inside with module number by the corresponding module and zone list definitions.

- If a new dsc main control panel is required, it shall have a T-LINKTL250 installed

- all new dsc or dmp main control panels shall have a cat 6 cable ran back to the nearest idf for network connectivity.

- Each expansion cabinets shall have two non-shielded16 gauge 4 conductor cables ran from the main control to the expansion cabinet.
- all keypads shall be wired individually back to new power supply.

- all sirens shall be wired individually and connected to new power supply.

- All devices such as motion detectors, glass break detectors, door contacts, keypads etc. shall be labeled with their corresponding module and zone number. Label shall be visible from the floor.

- All motion detectors shall be sealed to prevent air and insects from entering.

- All steel doors shall have wide gap contacts installed.

- All door contacts shall be recessed and door magnets shall be glued in place.

- All devices such as door contact (double doors wire as one), motion detectors, glass break detectors, etc. shall be wired individually on separate zones with end of line resistors at the devices.

- All devices such as motion detectors, glass break detectors, door contacts, keypads, sirens, etc. shall be labeled with their corresponding module and or zone number. label shall be visible from the floor.

- All air conditioning condensers accessible from the outside and roof shall have pressure switches installed on the high pressure side and be connected to the security alarm.

- Protective grommets shall be installed on all conduits to protect wire.

- All devices shall be wired with NON shielded cable.

- All panels, power supplies and modules shall be grounded.

- All wire shall be run in J hooks above ceiling with a minimum space of 4" from ceiling deck. All wire shall be in separate pathways 6" from other system wiring. No wire ties allowed. No wire shall be run between the red iron and roof deck.

- All wire visible from the finished floor shall be covered in decorative wire molding.

- All wire ran between building shall be in conduit and shall be non shielded direct burial cable. It shall be a minimum of 4 conductor 16 AWG copper.

- Installer shall have a commercial burglar technician on the job site at all times during installation.

- Installer will work closely with the electrical and or masonry contractors to ensure conduit, back boxes, door frame access conduit, etc. are in the proper locations and accessible.

- Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.

- Follow and adhere to installation practices specified by the Manufacturers.

1.02 Products Installed but not Supplied Under This Section

- All conduit and EMT required for Fire cabling pathway in/out of closets and in/out of wall cavities at the work area. EMT or Conduit for pathways shall have no more than two 90 degree sweeps and no continuous section over 100'.
- All core holes and poke through devices in the floor for the installation of Fire cabling.
- All core holes and EMT sleeves between floors for the routing of Fire cabling.
- Back boxes for the mounting of Fire Devices.

- Drag line or pull string at the back boxes fished through EMT or conduit to the other end for installing Fire Cabling.

1.03 Quality Assurance

1.03.01 Qualifications

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.

1.03.02 Bidder/Installer Qualifications

- Bidding contractor shall be a local licensed Commercial Burglar Alarm Company with licensed Commercial Burglar Alarm technician(s) on staff.
- bidding contractor shall be certified by manufacturer to install & program the specified systems.
- bidding contractor shall perform all programming required to complete the installation. moore public schools shall not be required to assist in any part of the installation or programming.
- bidding contractor shall have at least one year experience installing dsc/dmp equipment.
- bidding contractor shall have a minimum of 5 years experience installing commercial burglar alarms.
- bidding contractor shall be able to provide insurance at the request of the owner.
- bidding contractor shall have a commercial burglar technician on the job site at all times during installation

1.04 Delivery, Storage, and Protection

- Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.
- Contractor is responsible for all materials, tools and vehicles left on the job site.
- Follow Manufacturer's recommendations for handling of materials.

1.05 Project Conditions

1.05.01 Environmental Requirements

- Contractor shall ensure that any pollutants produced during the Work are disposed off according to local, state or national regulations. Follow the most stringent guidelines.
- It is preferred that the Contractor recycle any used or un-used components during the course of the construction project.

1.06 Sequencing

- Contractor shall coordinate with Owner's project manager on sequencing of various trades and construction teams for the lifecycle of the project.

1.07 Scheduling

- Contractor shall provide a detailed construction schedule with hard dates for completion of roughing in cables, terminations and testing once scheduling sequence has been determined to the Owner's Project Manager.

1.08 Warranty

- Contractor shall provide a 1 year parts and labor warranty against defective workmanship and/or system component failure. (1 year warranty shall begin at job completion)

Part 2 - Products

2.02 Source Quality Control

- Materials shall be purchased from Distributors authorized by system Manufacturers to sell new and unused components.

Part 3 -

3.01 Field Quality Control

- Contractor shall make available all ceiling and termination work for inspection by Manufacturer's representative or owner's representative.
- Contractor shall replace all defective components.

3.02 Adjusting

- No additional work outside of the contract scope of work shall be completed without the approval of the Owner or Owner's representative.

3.03 Cleaning

- Contractor shall sweep and mop the floors of all equipment rooms or connection point closets prior to turnover to the Owner.

3.04 Protection

- It is the responsibility of the Contractor to ensure equipment is protected from dust and water during the project with appropriate materials.
- Remove all protective covers and protective materials from equipment prior to turnover to Owner.

3.05 Schedules

- Coordinate work with Owner's project manager and follow scheduling sequence as established by Owner's project manager.
- It is recommended that the Contractor schedule closely with any other systems contractor to ensure turnover date is met.
- Contractor bidding will work closely with the electrical and or masonry contractors to ensure conduit, back boxes, door frame access conduit, etc. are in the proper locations and accessible.

End of Section

1.02 Submittals

1.03.01 Prior to installation

- Show compete map of system design for approval by Owner.

Security System Installation Completion Check List

Part 1 - General

1.01 Section Includes

- Security System Completion Check List

1.02 Completion Check List

- A map of the entire system showing device numbers and wire routes has been left inside the main control panel and a copy has been given to Jack Phillips with MPS.

- All panel programming has been checked and is correct.

- Panel(s) has been tested for proper operation.

- All zones have been tested to verify proper description at keypad.

- All zones have been tested to verify proper reporting to the monitoring station.

- All zones have been tested to verify they are in their proper partition(s).

- All sirens and strobes have been tested for proper operation.

- All motion detectors have been adjusted for proper sensitivity and have been walk tested.

- All motion detectors have been sealed to prevent air and insects from entering.

- All glass break detectors have been adjusted for proper sensitivity and tested.

- All cabinets are labeled on the outside with module numbers and zone numbers.

- All cabinets are labeled on the inside with module numbers by the corresponding module and zone descriptions.

- All user codes have been programmed and tested for proper partition access.

- The monitoring station has the correct account information such as call list, zone descriptions etc. End of Section

1.09 References

- NFPA-70 National Electrical Code 2008 edition
- NFPA-72 National Fire Alarm Code
- UL 1666 - Standard for Safety of Flame Propagation Height
- NFPA 262 - Flame Travel and Smoke of Wires and Cables
- Local Authority Having Jurisdiction

1.10 Definitions

AWG - American Wire Gauge

BICSI - Building Industry Consulting Service International

EIA - Electronics Industry Alliance

FCC - Federal Communications Commission

NECA - National Electrical Contractors Association

NFPA - National Fire Protection Agency

UL - Underwriters Laboratory

Access Control System Specifications

Access Control Equipment

Part 1 - Manufacture

- Access Control Manufacturer shall be Keyscan. (No Substitutions)
- Peripheral device Manufacturers shall be according to equipment list. (No Substitutions)
- Cable Manufacturer shall be Genesis. (Or Equivalent)

1.01 Access Control Equipment Description

- Access Control System Manufacture shall be Keyscan (No Substitutions)
- Access Control Management Software = Aurora (This software is already installed and in use. It is listed for information purposes only)
- Reader Control Panels shall be (No Substitutions) Keyscan CA 4500 = 4 Door Keyscan CA 8500 = 8 Door
- Each Reader Control Panel shall be equipped with (2) 16VAC 40VA Transformer
- Each Reader Control Panel shall be equipped with (1) 12V 7AH Battery
- One 2,4 or 8 Door Reader Control Panel per site shall be equipped with (1) Keyscan Netcom2p module. If the site has an existing 2,4 or 8 Door Control Panel with a Netcom2P already installed, then a Netcom 2P is not needed and CIM or CIM-Link modules shall be used to connect the new Control Panel to the existing Control Panel.
- All Reader Control Panels shall be linked together with either CIM or CIM-Link modules.
- Each new Reader Control Panel shall be capable of 4 doors minimum

Card Readers shall be (No Substitutions)

- HID 40NKS00000000 Signo Wall Mount reader (for use in all locations except where mullion mount reader size is required to fit)
- HID 20NKS00000000 Signo 20 Mullion Reader (For use on mullion mount locations where single gang reader is too large.
- ALL READERS REQUIRE 22# STR OAS WIRE.

Access Control Strikes and locks shall be (No Substitutions unless approved by Moore Public Schools)

- RCI 016X32D ¼ inch Rim(ONLY USE IF ½ INCH RIM WILL NOT FIT)
- RCI 0162X32D ¼ inch Rim
- RCI F0162X32D ¼ inch Rim Fire Rated
- RCI F2164 RECESSED ALL-IN-ONE STRIKE

- Where storm doors are installed, install compatible power motor and power supply to activate door hardware unless installed by door contractor.

- Egress Motions shall be (No Substitutions) BOSCH DS160 OR HONEYWELL IS310

- Door Contacts shall be GE Model # 10704M Double Pole Double Throw (To be utilized for Access Control and Security Alarm) (See security alarm specs)

- DOOR LOCK RELEASE BUTTON SHALL BE (NO SUBSTITUTIONS) RCI PART # 909S ROCKER SWITCH

- Power Supply for locking hardware **Power supply in Keyscan Controller is for the Control and Readers only.

- Power Supplies shall be sized to meet requirements of Strikes and locks with a maximum of 80% amp load.
- Power Supply shall have form "C" contacts for supervision that is connected to Keyscan Control Aux Input.
- 24 VDC Securtron- AccuPower- AGM20-SC16C, AOD5-8C or equal.

2.01 Systems Installation

- All junctions and or splices shall be soldered and insulated.
- All circuits and wiring shall be labeled at all terminating ends.
- All devices shall be mounted in accordance to the manufactures specifications.
- All devices shall be properly adjusted and tested prior to job completion.
- All controllers shall be labeled outside with their corresponding modules and installed with lock.
- All controllers shall have a Cat 6 network cable Blue in color ran from the nearest network cabinet and labeled with drop number.

- All card readers shall be labeled with their corresponding reader number.

- All doors with access control shall have contacts installed for door status indication. Steel doors shall have wide gap door contacts installed.

- All doors with access control shall have egress motions installed to allow system to detect proper egress. (including doors with panic exit hardware.)

- Protective grommets shall be installed on all conduits to protect wire.

- All panels, power supplies and modules shall be grounded.

- All wire shall be run in J hooks above ceiling with a minimum space of 6" from ceiling deck. All wire shall be in separate pathways 6" from other system wiring. No wire ties allowed. No wire shall be run between the red iron and roof deck.

- All wire visible from the finished floor shall be covered in decorative wire molding.

- All wire ran between building shall be in conduit and shall be direct burial cable.

- Installer shall have a licensed Access Control technician on the job site at all times during installation.

- Installer will work closely with the electrical and or masonry contractors to ensure conduit, back boxes, door frame access conduit, etc. are in the proper locations and accessible.

- Follow and adhere to installation practices specified by NFPA-70 National Electric Code, Edition 2008.

- Follow and adhere to installation practices specified by the Manufacturers.

3.01 Bidder/Installer Qualifications

- Bidding contractor shall be a local licensed Access Control Company with licensed Access Control technician(s) on staff.
- Bidding contractor shall have at least one year experience installing Keyscan Access Control Systems.
- Bidding contractor shall have a minimum of 5 years experience installing commercial Access Control Systems.
- Bidding contractor shall be able to provide insurance at the request of the owner.
- Bidding contractor shall have a commercial Access Control technician on the job site at all times during installation.

3.01.1 Submittals

- Show compete map of system design for approval by Owner.

3.01.2 Prior to installation

- Show compete map of system design for approval by Owner.

3.01.3 Prior to final acceptance

- Provide a soft CAD copy As-Built showing layout of Controller Panel, Card Readers, Power Supplies and all mounted equipment upon Substantial Completion.

- Ensure all warranties specify that the Owner is entitled to all rights guaranteed by the warranty for various components.

3.02 Quality Assurance

3.02.1 Qualifications

- Install all components as directed by Manufacturer's installation guidelines.
- All products shall bear the mark of UL or ETL for performance level.
- System installation shall meet all applicable Local/State codes and safety requirements where project is located.
- All products shall be new and un-used in original packaging.

Access Control Installation Completion Check List

Part 4 - General

4.01 Section Includes

- Access Control System Completion Check List

4.02 Completion Check List

- A map of the entire system showing device numbers and wire routes has been left inside the main controller panel and a copy has been given to Rodney Cobb with MPS.
- All system programming has been checked and is correct.
- Panel(s) has been tested for proper operation.
- All card readers are labeled with reader number and have been tested to verify proper operation.
- All user card and key fobs have been programmed into system and tested to verify proper operation.
- All egress motion detectors have been adjusted for proper sensitivity and have been walk tested.
- All controllers are labeled on the outside with module numbers.
- All controllers are labeled on the inside with module numbers by the corresponding module.

End of Section

4.03 Products Installed but not Supplied Under This Section

- All conduit and EMT required for Fire cabling pathway in/out of closets and in/out of wall cavities at the work area. EMT or Conduit for pathways shall have no more than two 90 degree sweeps and no continuous section over 100'.
- All core holes and poke through devices in the floor for the installation of cabling.
- All core holes and EMT sleeves between floors for the routing of cabling.
- Back boxes for the mounting of Devices.

- Drag line or pull string at the back boxes fished through EMT or conduit to the other end for installing Cabling.

4.04 References

- NFPA-70 National Electrical Code 2008 edition
- NFPA-72 National Fire Alarm Code
- UL 1666 - Standard for Safety of Flame Propagation Height
- NFPA 262 - Flame Travel and Smoke of Wires and Cables
- Local Authority Having Jurisdiction

4.05 Definitions

AWG - American Wire Gauge

BICSI - Building Industry Consulting Service International

EIA - Electronics Industry Alliance

FCC - Federal Communications Commission

NECA - National Electrical Contractors Association

NFPA - National Fire Protection Agency

UL - Underwriters Laboratory

4.06 Delivery, Storage, and Protection

- Contractor shall ensure that materials delivery to work area shall be coordinated with construction site manager responsible for materials distribution to all trades.
- Contractor is responsible for all materials, tools and vehicles left on the job site.
- Follow Manufacturer's recommendations for handling of materials.

4.07 Project Conditions

4.07.1 Environmental Requirements

- Contractor shall ensure that any pollutants produced during the Work are disposed off according to local, state or national regulations. Follow the most stringent guidelines.

- It is preferred that the Contractor recycle any used or un-used components during the course of the construction project.

4.07.2 Field Measurements

- Contractor shall coordinate with electrical engineer on project that the main electrical service ground has a resistance to earth of less than 5 ohms.
- Contractor shall ensure that all field testers have been calibrated from the Manufacturer within 1 year.
- All field test results will be documented and submitted to Moore Public Schools, Technology Department.

4.08 Sequencing

- Contractor shall coordinate with Owner's project manager on sequencing of various trades and construction teams for the lifecycle of the project.

4.09 Scheduling

- Contractor shall provide a detailed construction schedule with hard dates for completion