



**LONG BEACH COMMUNITY COLLEGE DISTRICT  
CONTRACTS MANAGEMENT DEPARTMENT  
4901 EAST CARSON STREET  
LONG BEACH, CA 90808  
Ph. (562) 938-4843**

**BID NO. 23-005 BUILDING MM CONSTRUCTION TRADES 2 PROJECT  
AT THE  
PACIFIC COAST CAMPUS**

**ADDENDUM NO. 1**

**November 3, 2022**

**This Addendum forms a part of the Contract Documents and modifies the original Contract Documents. Please acknowledge the inclusion of this and all addenda issued prior to the bid submission deadline to reflect the referenced changes, additions, revisions and/or clarifications. A space to acknowledge the addenda is provided on your bid submission document as well as electronically on the “Addenda” tab in PlanetBids. Your failure to comply with both requirements may result in your bid being deemed non-responsive.**

**Note:** It is the responsibility of all bidders to notify all subcontractors from whom they request bids and from whom they accept bids of all changes contained in this addendum.

**ADDENDUM NO. 2 CONTENTS**

**I. REVISIONS TO DRAWINGS  
II. REVISIONS TO SPECIFICATIONS  
III. ATTACHMENTS**

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**I. REVISIONS TO DRAWINGS**

1. **G0.001** – *Updated Sheet Index*
2. **T0.000** – *Updated Telecommunication Symbols Description.*
3. **TY0.001** – *New Sheet General Notes, Legend, Abbreviations, and Sheet Index.*
4. **TY0.002** – *New Sheet with Schedules (Cameras, Access Control, Lockdown Button)*
5. **TY1.201A** – *New Sheet First Floor Plan - North*
6. **TY1.201B** – *New Sheet First Floor Plan - South*
7. **TY6.001** – *New Sheet Access Control Details*
8. **TY6.002** – *New Sheet Access Control Details*
9. **TY6.003** – *New Sheet Access Control Details*
10. **TY6.004** – *New Sheet Typical Security Camera Details*

## **II. REVISIONS TO SPECIFICATIONS**

1. The following specification sections are New Specification Sections.

- 28 05 00 – *Common Work Results for Electronic Safety and Security*
- 28 13 00 – *Physical Access Control System*
- 28 23 00 – *Video Surveillance System*

## **III. ATTACHMENTS**

1. SECTION I. – ADDENDUM 2 DRAWINGS – (10) Full Size Sheets
2. SECTION II. – ADDENDUM 2 SPECIFICATIONS – (3) 8 ½” x 11” Specification Sections.

**\*\*\*END OF ADDENDUM NO. 2\*\*\***

**LONG BEACH COMMUNITY COLLEGE DISTRICT**



**Mireille Hernandez**  
**Interim Deputy Director, Purchasing and Contracts**

SHEET NUMBER	SHEET NAME	2022-0110 DSA BACK CHECK 1
16-SECURITY		
TY0.001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX	
TY0.002	SCHEDULES	
TY1.201A	FIRST FLOOR PLAN - NORTH	
TY1.201B	FIRST FLOOR PLAN - SOUTH	
TY6.001	DETAILS	
TY6.002	DETAILS	
TY6.003	DETAILS	
TY6.004	DETAILS	
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TOTAL: 326		

SHEET NUMBER	SHEET NAME	2022-0110 DSA BACK CHECK 1
09-FIRE ALARM		
FA0.001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX	•
FA0.002	NOTES	•
FA1.001	SITE PLAN	•
FA1.201A	FIRST FLOOR PLAN - NORTH	•
FA1.201B	FIRST FLOOR PLAN - SOUTH	•
FA1.202A	ROOF PLAN - NORTH	•
FA1.202B	ROOF PLAN - SOUTH	•
FA5.001	RISER DIAGRAM	•
FA5.002	CALCULATIONS	•
FA6.001	DETAILS	•
FA6.002	DETAILS	•
FA6.003	DETAILS	•
FA6.004	DETAILS	•
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10-FIRE PROTECTION		
FP0.001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX	•
FP1.001	SITE PLAN	•
FP1.201A	FIRST FLOOR PLAN - NORTH	•
FP1.201B	FIRST FLOOR PLAN - SOUTH	•
FP3.001	SECTIONS	•
FP3.002	SECTIONS	•
FP6.001	DETAILS	•
FP6.002	DETAILS	•
FP6.003	SEISMIC BRACE DETAILS	•
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11-TELECOM		
T0.000	TELECOM SYMBOLS AND NOTES	•
T0.001	TELECOM STANDARDS (1 OF 3)	•
T0.002	TELECOM STANDARDS (2 OF 3)	•
T0.003	TELECOM STANDARDS (3 OF 3)	•
T1.000	TELECOM SITE PLAN	•
T1.001A	TELECOM 1ST FLOOR PLAN - NORTH	•
T1.001B	TELECOM 1ST FLOOR PLAN - SOUTH	•
T1.001RA	TELECOM ROOF PLAN - NORTH	•
T1.001RB	TELECOM ROOF PLAN - SOUTH	•
T2.001	TELECOM ENLARGED PLANS	•
T2.002	TELECOM RACK ELEVATIONS	•
T3.001	TELECOM RISER DIAGRAMS	•
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12-AV		
AV0.000	AV SYSTEM LEGEND	•
AV1.001	AV TYPICAL SYSTEMS KEY - 1ST FLOOR	•
AV3.001	AV SYSTEM - ENLARGED PLANS	•
AV3.002	AV SYSTEM - ENLARGED PLANS	•
AV3.003	AV SYSTEM - ENLARGED PLANS	•
AV3.004	AV SYSTEM - ENLARGED PLANS	•
AV3.005	AV SYSTEM - ENLARGED PLANS	•
AV3.006	AV SYSTEM - ENLARGED PLANS	•
AV3.007	AV SYSTEM - ENLARGED PLANS	•
AV3.008	AV SYSTEM - ENLARGED PLANS	•
AV3.051	AV SYSTEM SECTIONS & ELEVATIONS	•
AV3.052	AV SYSTEM SECTIONS & ELEVATIONS	•
AV3.053	AV SYSTEM SECTIONS & ELEVATIONS	•
AV3.054	AV SYSTEM SECTIONS & ELEVATIONS	•
AV3.055	AV SYSTEM SECTIONS & ELEVATIONS	•
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13-EAV		
EAV0.000	AV INFRASTRUCTURE LEGEND	•
EAV0.001	AV INFRASTRUCTURE STANDARD DETAILS	•
EAV0.002	AV INFRASTRUCTURE STANDARD DETAILS	•
EAV1.001	AV INFRASTRUCTURE PLAN - 1ST FLOOR	•
EAV3.001	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.002	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.003	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.004	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.005	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.006	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.007	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.008	AV INFRASTRUCTURE - ENLARGED PLANS	•
EAV3.051	AV INFRASTRUCTURE SECTIONS AND ELEVATIONS	•
EAV3.052	AV INFRASTRUCTURE SECTIONS AND ELEVATIONS	•
EAV3.053	AV INFRASTRUCTURE SECTIONS AND ELEVATIONS	•
EAV3.054	AV INFRASTRUCTURE SECTIONS AND ELEVATIONS	•
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14-CURTAIN WALL		
CW0.001	COVER SHEET	•
CW0.002	GENERAL NOTES & DOOR SCHEDULE	•
CW0.003	SECTION PROPERTIES	•
CW0.004	SECTION PROPERTIES	•
CW1.001	FLOOR PLAN - NORTH	•
CW1.002	FLOOR PLAN - SOUTH	•
CW2.001	BUILDING ELEVATIONS	•
CW2.002	BUILDING ELEVATIONS	•
CW3.001	OPG3000 ELEVATION	•
CW3.002	OPG3000 ELEVATION	•
CW3.003	OPG3000 ELEVATION	•
CW3.004	OPG3000 ELEVATION	•
CW3.011	AFG7251T ELEVATION	•
CW3.012	AFG7251T ELEVATION	•
CW3.013	AFG7251T ELEVATION	•
CW4.001	OPG3000 SECTION DETAILS	•
CW4.002	OPG3000 SECTION DETAILS	•
CW4.003	OPG3000 SECTION DETAILS	•
CW4.004	OPG3000 SECTION DETAILS	•
CW4.011	AFG7251T SECTION DETAILS	•
CW4.012	AFG7251T SECTION DETAILS	•
CW4.013	AFG7251T SECTION DETAILS	•
CW4.014	AFG7251T SECTION DETAILS	•
CW4.015	AFG7251T SECTION DETAILS	•
CW5.001	OPG3000 PLAN DETAILS	•
CW5.002	OPG3000 PLAN DETAILS	•
CW5.003	OPG3000 PLAN DETAILS	•
CW5.004	OPG3000 PLAN DETAILS	•
CW5.005	OPG3000 PLAN DETAILS	•
CW5.006	OPG3000 PLAN DETAILS	•
CW5.007	OPG3000 PLAN DETAILS	•
CW5.008	OPG3000 PLAN DETAILS	•
CW5.021	AFG7251T PLAN DETAILS	•
CW5.022	AFG7251T PLAN DETAILS	•
CW5.023	AFG7251T PLAN DETAILS	•
CW5.024	AFG7251T PLAN DETAILS	•
CW6.001	AFG7251T ISOMETRIC DETAILS	•
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15-SUNSHADE		
SS0.001	CANOPY DETAILS	•
SS1.001	PLAN VIEW OF SUNSHADE "SS-1"	•
SS2.001	SECTION "A" & DETAIL "1"	•
SS3.001	DETAILS "B" & "C", SECTIONS "2 & 3" & ISOMETRIC VIEW	•
SS4.001	PLAN VIEW OF SUNSHADE "SS-2"	•
SS5.001	SECTION "D" & DETAILS "4 & 5"	•
SS6.001	SECTION "E"	•
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SHEET NUMBER	SHEET NAME	2022-0110 DSA BACK CHECK 1
05-STRUCTURAL		
S0.000	COVER SHEET AND SHEET LIST	•
S0.001	GENERAL NOTES	•
S0.002	GENERAL NOTES	•
S0.003	GENERAL NOTES	•
S0.004	GENERAL NOTES	•
S0.005	GENERAL NOTES STATEMENT OF SPECIAL INSPECTIONS SHEET 1	•
S0.006	GENERAL NOTES STATEMENT OF SPECIAL INSPECTIONS SHEET 2	•
S0.007	ABBREVIATIONS	•
S0.011	TYPICAL REINFORCING STEEL DETAILS	•
S0.012	TYPICAL CONCRETE SLAB ON GRADE DETAILS	•
S0.013	TYPICAL CONCRETE SLAB ON GRADE DETAILS	•
S0.041	TYPICAL MISCELLANEOUS STEEL DETAILS	•
S0.051	TYPICAL METAL DECK DETAILS	•
S0.052	TYPICAL METAL DECK DETAILS	•
S0.061A	TYPICAL INTERIOR METAL STUD DETAILS	•
S0.061B	TYPICAL INTERIOR METAL STUD DETAILS	•
S0.061C	TYPICAL METAL STUD SOFFIT / CEILING TO BARE METAL DECK DETAILS	•
S0.062A	TYPICAL EXTERIOR METAL STUD DETAILS	•
S0.062B	TYPICAL METAL STUD DETAILS FOR INTERIOR/EXTERIOR WALLS	•
S0.062C	TYPICAL EXTERIOR METAL STUD DETAILS	•
S0.063A	TYPICAL METAL STUD DETAILS FOR INTERIOR/EXTERIOR WALLS	•
S0.063B	TYPICAL METAL STUD DETAILS FOR INTERIOR/EXTERIOR WALLS	•
S0.063C	TYPICAL METAL STUD DETAILS FOR INTERIOR/EXTERIOR WALLS	•
S0.071	SUSPENDED MEP & CEILING	•
S0.072	SUSPENDED MEP & CEILING	•
S1.100	3D ISOMETRIC VIEWS	•
S2.201	OVERALL FOUNDATION PLAN	•
S2.201A	FOUNDATION PLAN - NORTH	•
S2.201B	FOUNDATION PLAN - SOUTH	•
S2.202	OVERALL ROOF FRAMING PLAN	•
S2.202A	ROOF FRAMING PLAN - NORTH	•
S2.202B	ROOF FRAMING PLAN - SOUTH	•
S2.202C	STEEL JOIST PLAN AT ROOF OVERHANG, SECTIONS & DETAILS	•
S2.203	DUCT SUPPORT FRAMING PLAN AND DETAILS	•
S3.321	FOUNDATION SCHEDULE AND DETAILS	•
SS.501	EXTERIOR BUILDING SFERS ELEVATIONS - NORTH WING	•
SS.501A	INTERIOR BUILDING SFERS ELEVATIONS - NORTH WING	•
SS.502	FRAME ELEVATIONS - SOUTH WING	•
SS.503	STEEL SCBF DETAILS	•
SS.503A	STEEL SCBF DETAILS	•
SS.504	STEEL DRAG DETAILS - SOUTH WING	•
SS.511	EXTERIOR BUILDING ELEVATIONS - NORTH WING	•
SS.512	EXTERIOR BUILDING ELEVATIONS - SOUTH WING	•
SS.513	INTERIOR BUILDING ELEVATIONS - SOUTH WING	•
SS.521	WALL SECTIONS	•
SS.522	WALL SECTIONS	•
SS.523	WALL SECTIONS	•
SS.524	WALL SECTIONS	•
SS.525	WALL SECTIONS	•
SS.530	FENCE ELEVATIONS	•
SS.601	MISCELLANEOUS STEEL DETAILS	•
SS.602	MISCELLANEOUS STEEL DETAILS	•
SS.610	EQUIPMENT ANCHORAGE DETAIL	•
SS.621	MISCELLANEOUS CONCRETE DETAILS	•
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06-MECHANICAL		
M0.001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SEET INDEX	•
M0.002	SCHEDULES	•
M1.001	SITE PLAN	•
M1.201A	FIRST FLOOR HVAC PLAN - NORTH	•
M1.201B	FIRST FLOOR HVAC PLAN - SOUTH	•
M1.202A	ROOF PLAN - NORTH	•
M1.202B	ROOF PLAN - SOUTH	•
M1.211A	FIRST FLOOR PIPING PLAN - NORTH	•
M1.211B	FIRST FLOOR PIPING PLAN - SOUTH	•
M5.001	CONTROL DIAGRAMS	•
M5.002	CONTROL DIAGRAMS	•
M5.003	CONTROL DIAGRAMS	•
M5.004	DETAILS	•
M5.002	DETAILS	•
M5.003	DETAILS	•
M5.004	DETAILS	•
M5.005	DETAILS	•
M5.006	DETAILS	•
M7.001	TITLE 24 COMPLIANCE FORMS	•
M7.002	TITLE 24 COMPLIANCE FORMS	•
M7.003	TITLE 24 COMPLIANCE FORMS	•
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07-PLUMBING		
P0.001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX	•
P0.002	SCHEDULES	•
P1.001	SITE PLAN	•
P1.200A	UNDERGROUND PLAN - NORTH	•
P1.200B	UNDERGROUND PLAN - SOUTH	•
P1.201A	FIRST FLOOR PLAN - NORTH	•
P1.201B	FIRST FLOOR PLAN - SOUTH	•
P1.202A	ROOF PLAN - NORTH	•
P1.202B	ROOF PLAN - SOUTH	•
P5.001	ISOMETRIC - DOMESTIC WATER	•
P5.002	ISOMETRIC - WASTE & VENT	•
P5.003	ISOMETRIC - STORM DRAIN AND OVERFLOW DRAIN	•
P6.001	DETAILS	•
P6.002	DETAILS	•
P6.003	DETAILS	•
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08-ELECTRICAL		
E0.001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX	•
E0.002	SCHEDULES	•
E0.003	SCHEDULES	•
E0.004	SCHEDULES	•
E1.001	LIGHTING SITE PLAN	•
E1.002	POWER SITE PLAN	•
E1.201A	FIRST FLOOR LIGHTING PLAN - NORTH	•
E1.201B	FIRST FLOOR LIGHTING PLAN - SOUTH	•
E1.211A	FIRST FLOOR POWER PLAN - NORTH	•
E1.211B	FIRST FLOOR POWER PLAN - SOUTH	•
E1.212A	ROOF POWER PLAN - NORTH	•
E1.212B	ROOF POWER PLAN - SOUTH	•
E1.221A	FIRST FLOOR EGRESS PHOTOMETRIC PLAN - NORTH	•
E1.221B	FIRST FLOOR EGRESS PHOTOMETRIC PLAN - SOUTH	•
E5.001	MV SINGLE LINE DIAGRAM	•
E5.002	SINGLE LINE DIAGRAM	•
E6.001	DETAILS	•
E6.002	DETAILS	•
E6.003	DETAILS	•
E6.004	DETAILS	•
E7.001	TITLE 24 COMPLIANCE FORMS	•
E7.002	TITLE 24 COMPLIANCE FORMS	•
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SHEET NUMBER	SHEET NAME	2022-0110 DSA BACK CHECK 1
01-GENERAL		
G0.000	COVER SHEET	•
G0.001	SHEET INDEX	•
G0.100	PROJECT INFORMATION	•
G0.200	SYMBOLS & ABBREVIATIONS	•
G0.300	ACCESSIBILITY REQUIREMENTS & DETAILS	•
G0.301	ACCESSIBILITY REQUIREMENTS & DETAILS	•
G0.302	ACCESSIBILITY REQUIREMENTS & DETAILS	•
G0.401	CAMPUS SITE PLAN	•
G0.500	FIRE ACCESS SITE PLAN	•
G0.501	LIFE SAFETY / EGRESS PLANS	•
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02-CIVIL		
C0.010	TITLE SHEET	•
C1.100	EROSION CONTROL PLAN	•
C1.200	DEMOLITION PLAN	•
C1.300	GRADING AND PAVING PLAN	•
C1.310	GRADING AND PAVING PLAN	•
C1.400	UTILITY PLAN	•
C1.410	UTILITY PLAN	•
C5.000	CIVIL DETAILS	•
C5.010	CIVIL DETAILS	•
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03-LANDSCAPE		
L0.000	LANDSCAPE COVER SHEET	•
L1.000	HARDSCAPE SCHEDULE & NOTES	•
L1.100	HARDSCAPE PLAN	•
L2.100	HARDSCAPE LAYOUT PLAN	•
L3.100	HARDSCAPE DETAILS	•
L3.200	HARDSCAPE DETAILS	•
L3.300	HARDSCAPE DETAILS	•
L3.400	HARDSCAPE DETAILS	•
L3.500	HARDSCAPE DETAILS	•
L3.600	HARDSCAPE DETAILS	•
L4.000	IRRIGATION SCHEDULES & NOTES	•
L4.100	IRRIGATION PLAN	•
L5.100	IRRIGATION NOTES	•
L6.100	IRRIGATION DETAILS	•
L6.200	IRRIGATION DETAILS	•
L6.300	IRRIGATION DETAILS	•
L7.100	PLANTING PLAN	•
L8.100	PLANTING DETAILS & NOTES	•
L9.100	PLANTING IMAGES	•
L10.100	SITE FURNISHING PLAN	•
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04-ARCHITECTURE		
A0.100	DOOR SCHEDULE & TYPES	•
A0.200	WINDOW SCHEDULE & TYPES	•
A0.300	FINISH SCHEDULE	•
A1.001	SITE PLAN - PATH OF TRAVEL	•
A1.101	COMPOSITE PLANS	•
A1.201A	CONSTRUCTION PLAN - NORTH	•
A1.201B	CONSTRUCTION PLAN - SOUTH	•
A1.202A	ROOF PLAN - NORTH	•
A1.202B	ROOF PLAN - SOUTH	•
A1.351A	SLAB & EXT DIMS PLAN - NORTH	•
A1.351B	SLAB & EXT DIMS PLAN - SOUTH	•
A1.501A	REFLECTED CEILING PLAN - NORTH	•
A1.501B	REFLECTED CEILING PLAN - SOUTH	•
A1.601A	FINISH PLAN - NORTH	•
A1.601B	FINISH PLAN - SOUTH	•
A2.000	BUILDING AXONS	•
A2.001	EXTERIOR MATERIALS	•
A2.101	BUILDING ELEVATIONS	•
A2.201	BUILDING SECTIONS	•
A3.001	ENLARGED - ANTHRO / ARCH 1	•
A3.002	ENLARGED - ARCH 2	•
A3.003	ENLARGED - ARCH 3, RECORDING, & WELLNESS	•
A3.004	ENLARGED - ARCH 4 / STORAGE	•
A3.005	ENLARGED - MEETING	•
A3.006	ENLARGED - HORTICULTURE / GENERAL CLRIM	•
A3.007	ENLARGED - OFFICE	•
A3.100	ENLARGED - RESTROOM / RESTROOM ACC. SCHEDULE	•
A4.101	EXTERIOR WALL SECTIONS	•
A4.102	EXTERIOR WALL SECTIONS	•
A5.101	TYPICAL EXTERIOR ASSEMBLIES	•
A5.102	EXTERIOR DETAILS	•
A5.103	EXTERIOR DETAILS	•
A5.105	EXTERIOR DETAILS - PLAN	•
A5.106	EXTERIOR DETAILS - PLAN	•
A5.120	EXTERIOR DETAILS - ROOF	•
A5.130	EXTERIOR DETAILS - DOOR/WINDOW DETAILS	•
A5.131	EXTERIOR DETAILS - DOOR/WINDOW DETAILS	•
A5.201	CANOPY DETAILS	•
A5.202	CANOPY DETAILS	•
A5.203	CANOPY DETAILS	•
A5.501	PARTITION TYPES	•
A5.601	INTERIOR DETAILS	•
A5.602	INTERIOR DETAILS	•
A5.611	BASE AND TRANSITIONS	•
A5.701	INT DOORS AND WINDOWS DETAILS	•
A5.801	CEILING DETAILS, TYP	•
A5.802	CEILING DETAILS, TYP	•
A5.803	CEILING DETAILS	•
A5.901	MILLWORK DETAILS	•
A5.902	MILLWORK DETAILS	•
A6.100	SIGNAGE MESSAGE SCHEDULE	•
A6.201	SIGNAGE LOCATION PLAN - NORTH	•
A6.202	SIGNAGE LOCATION PLAN - SOUTH	•
A6.601	SIGNAGE DETAILS	•
A6.602	SIGNAGE DETAILS	•
A6.603	SIGNAGE DETAILS	•
A6.604	SIGNAGE DETAILS	•
A6.605	SIGNAGE DETAILS	•
A6.606	SIGNAGE DETAILS	•
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FOR DSA USE ONLY



## BUILDING MM - CONSTRUCTION TRADES II

1305 EAST PACIFIC COAST HIGHWAY,  
LONG BEACH, CA 90806

### Gensler

500 South Figueroa Street  
Los Angeles, California 90071  
United States

Tel 213.327.3600  
Fax 213.327.3601

Date	Description
08/02/2021	DSA SUBMISSION
01/10/2022	DSA BACK CHECK 1
1 10/20/2022	ADDENDUM 2

Seal / Signature



TELECOMMUNICATION SHEET SET	
SHEET NUMBER	SHEET TITLE
0 - TELECOMMUNICATION REFERENCE & DETAILS	
T0.000	TELECOM SYMBOLS AND NOTES
T0.001	TELECOM STANDARDS (1 OF 3)
T0.002	TELECOM STANDARDS (2 OF 3)
T0.003	TELECOM STANDARDS (3 OF 3)
1 - TELECOMMUNICATION PLANS	
T1.000	TELECOM SITE PLAN
T1.001A	TELECOM 1ST FLOOR PLAN - NORTH
T1.001B	TELECOM 1ST FLOOR PLAN - SOUTH
T1.001RA	TELECOM ROOF PLAN - NORTH
T1.001RB	TELECOM ROOF PLAN - SOUTH
2 - TELECOMMUNICATION ENLARGED PLANS	
T2.001	TELECOM ENLARGED PLANS
2 - TELECOMMUNICATION RACK ELEVATIONS	
T2.002	TELECOM RACK ELEVATIONS
3 - TELECOMMUNICATION RISER DIAGRAMS	
T3.001	TELECOM RISER DIAGRAMS

SEPARATION DISTANCE BETWEEN POWER CABLES AND DATA CABLES			
CONDITION	MINIMUM SEPARATION DISTANCE		
	< 2 kVA	2-5 kVA	> 5kVA
UNSHIELDED POWER LINES OR ELECTRICAL EQUIPMENT IN PROXIMITY TO OPEN OR NONMETAL PATHWAYS.	5"	12"	24"
UNSHIELDED POWER LINES OR ELECTRICAL EQUIPMENT IN PROXIMITY TO A GROUNDED METAL CONDUIT PATHWAY.	2.5"	6"	12"
POWER LINES ENCLOSED IN A GROUNDED METAL CONDUIT (OR EQUIVALENT SHIELDING) IN PROXIMITY TO A GROUNDED METAL CONDUIT PATHWAY.		3"	6"
ELECTRICAL MOTORS AND TRANSFORMERS.			48"

SEPARATION DISTANCE BETWEEN DATA CABLES AND SPECIFIC EMI SOURCES	
SOURCE OF DISTURBANCE	MINIMUM SEPARATION DISTANCE
FLUORESCENT LAMPS	5"
NEON LAMPS	5"
MERCURY VAPOUR LAMPS	5"
HIGH-INTENSITY DISCHARGE LAMPS	5"
ARC WELDERS	31"
FREQUENCY INDUCTION HEATING	39"

50' DISTANCE LIMIT RULE	
A.	IN NO CASE MUST A NON-LISTED OUTSIDE PLANT OR INCOMING SERVICE OUTDOOR RATED CABLE EXCEED 50 FEET FROM THE POINT OF ENTRANCE INTO ANY BUILDING. IF ON-SITE CONDITIONS RESULT IN A CASE WHERE THE CABLE EXCEEDS THE DISTANCE LIMIT THE CONTRACTOR MUST ADVISE A SOLUTION WITH THE PROJECT CONSULTANT. IN ALL CASES THE SOLUTION WOULD NEED TO INVOLVE EITHER TRANSITIONING FROM OUTDOOR NON-LISTED TO INDOOR LISTED CABLE VIA A SPLICE POINT (E.G. SPLICE CASE OR SPLICE ENCLOSURE FOR FIBER, PROTECTOR BLOCK FOR COPPER ETC.) OR THE ALTERNATIVE SHOULD BE TO ENCLOSE THE OUTDOOR RATED CABLE WITHIN INTERMEDIATE METAL CONDUIT (IMC) OR RIGID METAL CONDUIT (RMC) THAT IS PROPERLY SEALED AND BONDED TO A GROUNDING ELECTRODE. RETAINING THE OUTDOOR CABLE WITHIN CONDUIT SHOULD EFFECTIVELY EXTEND THE POINT OF ENTRANCE INTO THE BUILDING.

OSP DETECTION TAPE INCLUSION	
A.	IN ORDER TO REDUCE THE CHANCE OF ACCIDENTAL DIG-UP OF OUTSIDE PLANT DUCTBANK ELEMENTS IN THE FUTURE, PROVIDE A DETECTABLE WARNING TAPE CONTAINING METALLIC TRACINGS ALONG THE DUCTBANK PATH AT 12" BELOW GRADE MINIMUM. COLOR OF THE DETECTABLE TAPE SHALL BE ORANGE OR WHICHEVER COLOR THE COMMON GROUND ALLIANCE (CGA) HAS CURRENTLY DETERMINED FOR TELEVISION AND COMMUNITY ANTENNA TELEVISION (CATV) CABLES.

TELECOMMUNICATION SYMBOLS	
SYMBOL	DESCRIPTION
	WALL PHONE OUTLET - PROVIDE ONE DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN. MOUNT AT 48" AFF UNLESS NOTED OTHERWISE.
	WALL STANDARD COMMUNICATION OUTLET - PROVIDE TWO DATA DROPS COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN. MOUNT AT PROJECT'S STANDARD RECEPTACLE HEIGHT UNLESS NOTED OTHERWISE.
	FLOOR STANDARD COMMUNICATION OUTLET - PROVIDE TWO DATA DROPS COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. STUB ONE 1.25" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. MOUNT IN ELECTRICAL FLOOR BOX UNLESS NOTED OTHERWISE. EXACT LOCATION TO BE COORDINATED BY ARCHITECT.
	WIRELESS COMMUNICATION OUTLET - PROVIDE TWO DATA DROPS COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE.
	WALL WIRELESS COMMUNICATION OUTLET - PROVIDE TWO DATA DROPS COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. MOUNT AT 120" AFF UNLESS NOTED OTHERWISE.
	WALL DATA COMMUNICATION OUTLET - PROVIDE QUANTITY OF DROPS AS INDICATED BY SUBSCRIPT COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. MOUNT AT PROJECT'S STANDARD RECEPTACLE HEIGHT UNLESS NOTED OTHERWISE.
	FLOOR DATA COMMUNICATION OUTLET - PROVIDE QUANTITY OF DROPS AS INDICATED BY SUBSCRIPT COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. MOUNTED IN FLAT PANEL IN-WALL BACKBOX. SEE EAV DRAWINGS FOR INFORMATION OF THE FLAT PANEL IN-WALL BACKBOX. STUB ONE 1.25" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. EXACT LOCATION TO BE COORDINATED BY ARCHITECT.
	DATA COMMUNICATION OUTLET FOR FLAT PANEL - PROVIDE TWO DATA DROPS COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. MOUNTED IN FLAT PANEL IN-WALL BACKBOX. SEE EAV DRAWINGS FOR INFORMATION OF THE FLAT PANEL IN-WALL BACKBOX. STUB ONE 1.25" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE.
	DATA/CATV COMMUNICATION OUTLET FOR FLAT PANEL - PROVIDE TWO DATA DROPS AND ONE COAX DROP COMPLETE WITH CAT6A AND RG-6 CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. MOUNTED IN FLAT PANEL IN-WALL BACKBOX. SEE EAV DRAWINGS FOR INFORMATION OF THE FLAT PANEL IN-WALL BACKBOX. STUB ONE 1.25" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE.
	CEILING DATA COMMUNICATION OUTLET FOR FLAT PANEL DISPLAY- PROVIDE TWO DATA DROP COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE.
	DATA FOR AV ROOM CONTROL PANEL - PROVIDE ONE DATA DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. NO FACEPLATE. STUB ONE 1.25" CONDUIT FROM AV BACKBOX TO CABLE TRAY ON THE SAME FLOOR AS SHOWN. SEE EAV DRAWINGS FOR INFORMATION OF THE AV BACKBOX.
	DATA FOR AV ROOM SCHEDULING PANEL - PROVIDE ONE DATA DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. NO FACEPLATE. STUB ONE 1" CONDUIT FROM AV BACKBOX TO CABLE TRAY ON THE SAME FLOOR AS SHOWN. SEE EAV DRAWINGS FOR INFORMATION OF THE AV BACKBOX.
	SYSTEM FURNITURE STANDARD COMMUNICATION OUTLET - PROVIDE TWO DATA DROP COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. COORDINATE WITH THE ARCHITECT AND FURNITURE CONSULTANT FOR MOUNTING HEIGHT.
	CEILING DATA COMMUNICATION OUTLET FOR PROJECTOR - PROVIDE TWO DATA DROPS COMPLETE WITH CAT6A CABLES, CONNECTORS AND TERMINATIONS AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE.
	WALL DATA FOR SECURITY CAMERA - PROVIDE ONE DATA DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. NO FACEPLATE. TERMINATE WITH MODULAR JACK IN CAMERA HOUSING. STUB ONE 1.25" CONDUIT FROM CAMERA HOUSING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. COORDINATE WITH ARCHITECT AND OWNER FOR EXACT LOCATION.
	DATA FOR EMERGENCY PHONE (BLUE PHONE) - PROVIDE ONE DATA DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. NO FACEPLATE. TERMINATE WITH MODULAR JACK IN EMERGENCY PHONE HOUSING. STUB ONE 1.25" CONDUIT FROM EMERGENCY PHONE HOUSING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. COORDINATE WITH ARCHITECT AND OWNER FOR EXACT LOCATION.
	CEILING DATA FOR SECURITY CAMERA - PROVIDE ONE DATA DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. NO FACEPLATE. TERMINATE WITH MODULAR JACK IN CAMERA HOUSING. STUB ONE 1.25" CONDUIT FROM CAMERA HOUSING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. COORDINATE WITH ARCHITECT AND OWNER FOR EXACT LOCATION.
	DATA FOR SECURITY CARD READER - PROVIDE TWO DATA DROPS COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. NO FACEPLATE. TERMINATE WITH MODULAR JACK IN SECURITY TERMINAL CABINET ABOVE EACH DOOR, PER SECURITY DETAILS. STUB ONE 1.25" CONDUIT FROM CARD READER HOUSING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. COORDINATE WITH ARCHITECT AND OWNER FOR EXACT LOCATION.
	WALL DATA FOR CYBERDATA IP66 OUTDOOR HORN SPEAKER - PROVIDE ONE DATA DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. MOUNT AT 120" AFF UNLESS NOTED OTHERWISE. COORDINATE WITH ARCHITECT AND OWNER FOR EXACT LOCATION.
	CEILING DATA FOR CYBERDATA IP66 OUTDOOR HORN SPEAKER - PROVIDE ONE DATA DROP COMPLETE WITH CAT6A CABLE, CONNECTOR AND TERMINATION AS REQUIRED. STUB ONE 1.25" CONDUIT FROM 5 SQUARE TELECOMMUNICATION OUTLET BOX WITH SINGLE GANG PLASTER RING TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. COORDINATE WITH ARCHITECT AND OWNER FOR EXACT LOCATION.
	FURNITURE FEED POKE-THRU DEVICE. WIREMOLD 4FFATC SERIES WITH FURNITURE FEED COVER. PROVIDE ONE 1.5" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. EXACT LOCATION TO BE COORDINATED BY ARCHITECT.
	FURNITURE FEED POKE-THRU DEVICE. WIREMOLD RC9AM2TC SERIES. PROVIDE ONE 2" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. EXACT LOCATION TO BE COORDINATED BY ARCHITECT.
	5"x5"x4" JUNCTION BOX. PROVIDE ONE 1.5" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. MOUNT AT PROJECT'S STANDARD RECEPTACLE HEIGHT UNLESS NOTED OTHERWISE.
	6"x6"x4" JUNCTION BOX. PROVIDE ONE 2" CONDUIT TO CABLE TRAY ON THE SAME FLOOR AS SHOWN UNLESS NOTED OTHERWISE. MOUNT AT PROJECT'S STANDARD RECEPTACLE HEIGHT UNLESS NOTED OTHERWISE.
	19" TELECOMMUNICATIONS RACK.
	TELECOMMUNICATIONS GROUND BUS BAR.
	FIRE RETARDANT - 75" PLYWOOD BACKBOARD, PAINTED WITH TWO COATS OF WHITE FIRE RETARDANT PAINT PRIOR TO INSTALLATION. EACH SHEET OF PLYWOOD BACKBOARD SHALL BE 4' WIDE X 8' HIGH.
	TELECOMMUNICATIONS BASKET CABLE TRAY. 12" WIDE x 4" DEEP. UNO. MOUNT ABOVE ACCESSIBLE CEILING. COORDINATE LOCATION WITH DUCTWORK, PLUMBING, FIRE PROTECTION, ELECTRICAL, AND LIGHT FIXTURES.
	TELECOMMUNICATIONS LADDER CABLE RUNWAY. SIZE AS INDICATED ON DRAWINGS.
	EMT CONDUIT CONCEALED IN SLAB OR UNDER FINISHED FLOOR. ROUTE AS INDICATED.
	EMT CONDUIT CONCEALED IN WALL OR ABOVE FINISHED CEILING. ROUTE AS INDICATED.
	EMT CONDUIT STUB UP INTO ACCESSIBLE CEILING UNLESS NOTED OTHERWISE.
	CONDUIT ABOVE CEILING UNLESS NOTED OTHERWISE. CONDUIT SHALL BE CONCEALED.
AFF	ABOVE FINISHED FLOOR
BFC	BELOW FINISHED CEILING
UNO	UNLESS NOTED OTHERWISE
TR	TELECOMMUNICATION ROOM
ER	EQUIPMENT ROOM
TGB	TELECOMMUNICATION GROUNDING BUSBAR
TMGB	TELECOMMUNICATION MAIN GROUNDING BUSBAR
TBB	TELECOMMUNICATION BONDING BACKBONE

CONDUIT INSTALLATION NOTES	
THE RACEWAY SYSTEM FOR TELECOM CABLE SHALL FOLLOW THE NEC AND ALL LOCAL CODES GOVERNING THIS PROJECT. ADDITIONAL REQUIREMENTS ARE AS FOLLOWS:	
1.	A PULL CORD (NYLON, 1/8" MINIMUM) SHALL BE INSTALLED WITHIN ALL CONDUITS.
2.	A PULL ROPE (NYLON/POLYESTER, 3/8" MINIMUM) SHALL BE INSTALLED WITHIN ALL OUTSIDE PLANT CONDUITS. MINIMUM TENSILE STRENGTH OF ROPE SHALL BE 2000 LBS PER FOOT.
3.	PULL CORD AND PULL ROPE WITHIN ALL CONDUITS SHALL BE RE-PULLED AFTER EACH USE. CONDUITS SHALL NOT REMAIN EMPTY.
4.	CONDUIT SHALL RUN IN MOST DIRECT ROUTE POSSIBLE, USUALLY PARALLEL WITH BUILDING LINES.
5.	CONDUIT SLEEVES SHOULD BE RIGID GALVANIZED STEEL FOR PENETRATIONS OF CONCRETE SLABS, CONCRETE WALLS, ALL SLEEVES SHALL BE RIGIDLY INSTALLED USING APPROPRIATE FITTINGS AND ALL PENETRATIONS SHALL BE GROUTED AROUND THE SLEEVE. SLEEVES SHALL PROJECT A MINIMUM OF 4" BEYOND WALL OR FLOOR SURFACE. ALL PENETRATIONS SHALL BE FIRESTOPPED.
6.	CONDUIT RUN SHALL CONTAIN NO CONTINUOUS SECTIONS LONGER THAN 100 FEET. IF RUNS TOTAL MORE THAN 100 FEET, PULL POINTS OR PULL BOXES SHALL BE INSTALLED.
7.	CONDUIT RUNS TO WORK AREAS SHALL SERVE NO MORE THAN ONE COMMUNICATION OUTLET. DAISY CHAINING IS NEVER ALLOWED.
8.	CONDUIT SHALL HAVE NO MORE THAN TWO 90 DEGREES OF BENDS AT ANY POINT OR MORE THAN 180 DEGREES OF CUMULATIVE BENDS BETWEEN PULL POINTS.
9.	INSTALL CONDUITS WITH A MINIMUM OF BENDS AND OFFSETS. BENDS SHALL NOT KINK OR DESTROY INTERIOR CROSS SECTION OF RACEWAY. FACTORY MADE BENDS SHALL BE USED FOR RACEWAY'S 1" TRADE SIZE AND LARGER. BENDS RADIUS SHALL BE 6 TIMES INTERNAL DIAMETER FOR CONDUIT SIZES UP TO 2". A CONDUIT GREATER THAN 2" SHALL HAVE BEND RADIUS AT LEAST 10 TIMES DIAMETER OF CONDUIT. DO NOT USE PULL BOX IN LIEU OF A BEND RADIUS. BEND RADIUS ON CABLING SHOULD ALWAYS BE MADE WITHIN THE CONDUIT.
10.	DO NOT INSTALL CONDUIT OVER OR ADJACENT TO BOILERS, INCINERATORS, HOT WATER LINES, OR STEAM LINES.
11.	REAM ALL CONDUIT ENDS AND FIT THEM WITH AN INSULATED BUSHING TO ELIMINATE SHARP EDGES THAT MAY DAMAGE CABLES.
12.	AFTER INSTALLATION, LEAVE CONDUITS CLEAN, DRY AND UNOBSTRUCTED, REAMED AND FITTED WITH BUSHINGS.
13.	ELECTRICAL METALLIC TUBING AND RIGID METAL CONDUIT ARE THE ONLY ALLOWED TYPES FOR INTERIOR BUILDING. FLEXIBLE METAL CONDUIT IS NEVER ALLOWED.
14.	CONDUIT SYSTEM INSTALLATION: 14.1 CABLE IN EXTERIOR, ABOVE GRADE LOCATIONS: RIGID GALVANIZED STEEL. 14.2 INTERIOR LOCATIONS: EMT AND RMC. 14.3 CABLE BELOW GRADE: SCHEDULE 40 PVC.
15.	ALL METALLIC CONDUITS SHALL BE APPROPRIATELY GROUNDED AS SPECIFIED IN THE NEC, ANSII/IEA J-STD-607-B AND PER MANUFACTURER'S SPECIFICATIONS.
16.	CONDUITS ARE TO BE CLEARLY MARKED AT EACH END TO INDICATE THE TRADE (E.G. AV, TELECOM) THAT THE CONDUIT IS INTENDED TO SUPPORT.
17.	CABLE PATHWAY SHOULD BE LESS THAN 270 FEET. THE LENGTH SHALL BE MEASURED FROM THE OUTLET IN THE WORK AREA TO PATCH PANEL IN THE RACK.
18.	FOR OUTSIDE PLANT CONDUITS ROUTES PROVIDE A SITE LEVEL ACCESSIBLE HANDHOLE EVERY (2) 90 DEGREE BENDS OR 180 DEGREES IN BENDS TOTAL. DISTANCE BETWEEN EACH HANDHOLE SHALL NOT EXCEED 600 FEET DISTANCE. DO NOT USE HANDHOLE IN LIEU OF A BEND RADIUS. BEND RADIUS ON CABLING SHOULD ALWAYS BE MADE WITHIN THE CONDUIT.
19.	OUTSIDE PLANT LOCATIONS, ROUTES, AND PULL POINTS ARE INDICATIVE ONLY. CONTRACTOR TO REVIEW THE PROJECT SITE AND SUBMIT SHOP DRAWING WHICH INCLUDES BUT IS NOT LIMITED TO ROUTES, CONFIGURATION OF CONDUITS, AND DESIGN OF HANDHOLES AND MANHOLES FOR REVIEW BY THE DESIGN TEAM BEFORE COMMENCING WORK.
20.	CONTRACTOR TO SUBMIT PRE-CAST HANDHOLE AND MANHOLE PRODUCTS WHICH ARE TO BE INTEGRATED INTO THE OUTSIDE PLANT COMMUNICATIONS DUCTBANK FOR REVIEW BEFORE COMMENCING WORK.
21.	CONTRACTOR SHALL PROVIDE A 2" CONDUIT SLEEVES EXTENDING INTO ACCESSIBLE CEILING AS NECESSARY INTO AREAS AND ROOMS WHERE OUTLET CONDUITS CANNOT EXTEND INTO THE ADJACENT CORRIDOR.

GENERAL PROJECT NOTES	
A.	ALL MOUNTING HEIGHTS ARE TO THE CENTER LINE OF THE DEVICE BACKBOX UNLESS NOTED OTHERWISE.
B.	ALL BOXES AND CONDUITS IN WALLS AND CEILINGS SHALL BE FLUSH MOUNTED OR CONCEALED UNLESS NOTED OTHERWISE.
C.	ALL EXTERIOR OUTLETS SHALL BE EXTERIOR RATED OUTLET, IP-67 RATED (NEMA 6).
D.	EXACT LOCATION OF ALL TELECOM OUTLETS LOCATED IN FURNITURE AND MILLWORK TO BE VERIFIED WITH ARCHITECT PRIOR TO INSTALLATION.
E.	ELECTRICAL OUTLETS SHALL BE PROVIDED WITHIN THREE-SIX INCHES OF COMMUNICATION OUTLETS AT EQUAL HEIGHT.
F.	IT SHALL BE UNDERSTOOD ALL INFORMATION WITHIN THIS DRAWING PACKAGE IS DIAGRAMMATIC TO SHOW THE DESIGN INTENT. ANY FIELD DEVIATIONS FROM THE DRAWINGS BY THE CONTRACTOR HOWEVER, SHALL BE SUBMITTED IN WRITING TO THE ARCHITECT OR CONSULTANT. IF FIELD DEVIATIONS ARE NOT SUBMITTED BEFOREHAND, THE INDIVIDUAL CHANGE(S) WILL BE CONSIDERED OUT OF SCOPE FROM THE ARCHITECT AND CONSULTANT'S OVERALL DESIGN AND SPECIFICATION FOR THE PROJECT.

FOR DSA USE ONLY



## BUILDING MM - CONSTRUCTION TRADES II

1305 EAST PACIFIC COAST HIGHWAY,  
LONG BEACH, CA 90806

**Gensler**

500 South Figueroa Street  
Los Angeles, California 90071  
United States

Tel 213.327.3600  
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△	Date	Description
	08/02/2021	DSA SUBMISSION
	01/10/2022	DSA BACK CHECK
2	10/20/2022	ADDENDUM 2

Seal / Signature














Project Name	BUILDING MM - CONSTRUCTION TRADES II
Project Number	05.2882.000
Description	TELECOM SYMBOLS AND NOTES

Scale	12" = 1'-0"
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



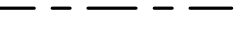



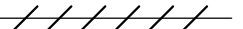



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SECURITY LEGEND

SYMBOL	DESCRIPTION
	MULTISENSOR CAMERA - CEILING MOUNTED. PROVIDE SS DEEP BACK BOX W/ 1.5' EMT CONDUIT STUBBED INTO NEAREST ACCESSIBLE CEILING SPACE (U O N.) PROVIDE ALL CONDUITS, CONDUIT SUPPORT, CONNECTORS, COUPLINGS, PLASTIC BUSHINGS, PULL STRINGS, OUTLET BOX, AND MUDRING. PROVIDE AND INSTALL (1) CAT 6A CABLE AND BISCUIT JACK INSIDE SS DEEP BACK BOX. IF THE CAMERA MOUNTS TO A STRUCTURE DIFFERENT FROM THE ONE THAT THE CAMERA TERMINATES INTO, AND THE DATA CABLE RUNS UNDERGROUND, THEN THE DATA CABLE SHALL BE THE APPROPRIATE OSP-RATED CABLE AND SHALL TERMINATE INTO A PROTECTIVE DEVICE WITHIN 50 FEET OF ENTERING INTO THE BUILDING WHERE THE CAMERA TERMINATES. REFER TO THE SURVEILLANCE CAMERA SCHEDULE FOR INFORMATION SPECIFIC TO EACH CAMERA LOCATION.
	MULTISENSOR CAMERA - WALL MOUNTED. PROVIDE SS DEEP BACK BOX W/ 1.5' EMT CONDUIT STUBBED INTO NEAREST ACCESSIBLE CEILING SPACE (U O N.) PROVIDE ALL CONDUITS, CONDUIT SUPPORT, CONNECTORS, COUPLINGS, PLASTIC BUSHINGS, PULL STRINGS, OUTLET BOX, AND MUDRING. PROVIDE AND INSTALL (1) CAT 6A CABLE AND BISCUIT JACK INSIDE SS DEEP BACK BOX. IF THE CAMERA MOUNTS TO A STRUCTURE DIFFERENT FROM THE ONE THAT THE CAMERA TERMINATES INTO, AND THE DATA CABLE RUNS UNDERGROUND, THEN THE DATA CABLE SHALL BE THE APPROPRIATE OSP-RATED CABLE AND SHALL TERMINATE INTO A PROTECTIVE DEVICE WITHIN 50 FEET OF ENTERING INTO THE BUILDING WHERE THE CAMERA TERMINATES. REFER TO THE SURVEILLANCE CAMERA SCHEDULE FOR INFORMATION SPECIFIC TO EACH CAMERA LOCATION.
	SINGLE SENSOR CAMERA - CEILING MOUNTED. PROVIDE SS DEEP BACK BOX W/ 1.5' EMT CONDUIT STUBBED INTO NEAREST ACCESSIBLE CEILING SPACE (U O N.) PROVIDE ALL CONDUITS, CONDUIT SUPPORT, CONNECTORS, COUPLINGS, PLASTIC BUSHINGS, PULL STRINGS, OUTLET BOX, AND MUDRING. PROVIDE AND INSTALL (1) CAT 6A CABLE AND BISCUIT JACK INSIDE SS DEEP BACK BOX. IF THE CAMERA MOUNTS TO A STRUCTURE DIFFERENT FROM THE ONE THAT THE CAMERA TERMINATES INTO, AND THE DATA CABLE RUNS UNDERGROUND, THEN THE DATA CABLE SHALL BE THE APPROPRIATE OSP-RATED CABLE AND SHALL TERMINATE INTO A PROTECTIVE DEVICE WITHIN 50 FEET OF ENTERING INTO THE BUILDING WHERE THE CAMERA TERMINATES. REFER TO THE SURVEILLANCE CAMERA SCHEDULE FOR INFORMATION SPECIFIC TO EACH CAMERA LOCATION.
	SINGLE SENSOR CAMERA - WALL MOUNTED. PROVIDE SS DEEP BACK BOX W/ 1.5' EMT CONDUIT STUBBED INTO NEAREST ACCESSIBLE CEILING SPACE (U O N.) PROVIDE ALL CONDUITS, CONDUIT SUPPORT, CONNECTORS, COUPLINGS, PLASTIC BUSHINGS, PULL STRINGS, OUTLET BOX, AND MUDRING. PROVIDE AND INSTALL (1) CAT 6A CABLE AND BISCUIT JACK INSIDE SS DEEP BACK BOX. IF THE CAMERA MOUNTS TO A STRUCTURE DIFFERENT FROM THE ONE THAT THE CAMERA TERMINATES INTO, AND THE DATA CABLE RUNS UNDERGROUND, THEN THE DATA CABLE SHALL BE THE APPROPRIATE OSP-RATED CABLE AND SHALL TERMINATE INTO A PROTECTIVE DEVICE WITHIN 50 FEET OF ENTERING INTO THE BUILDING WHERE THE CAMERA TERMINATES. REFER TO THE SURVEILLANCE CAMERA SCHEDULE FOR INFORMATION SPECIFIC TO EACH CAMERA LOCATION.
	ACCESS CONTROL PANEL - REFER TO SPECIFICATIONS SECTION 28.13.00 FOR DESIGN CRITERIA SPECIFIC TO THIS PROJECT. INSTALLING CONTRACTOR SHALL ALSO REFER TO THE MATRIX OF RESPONSIBILITY AS SHOWN ON THIS SHEET.
	SECURITY DOOR CONTACT - PROVIDE SS DEEP BACK BOX ABOVE THE DOOR WITH A 1.25' EMT CONDUIT STUBBED INTO THE NEAREST ACCESSIBLE CEILING SPACE (U O N.) PROVIDE ALL CONDUITS, CONDUIT SUPPORT, CONNECTORS, COUPLINGS, PLASTIC BUSHINGS, PULL STRINGS, OUTLET BOX, AND MUDRING. PROVIDE (1) 22AWG / 2-C PLENUM-RATED CABLE TO THE CLOSEST IDF.
	REQUEST-TO-EXIT DEVICE - TYPICALLY INTEGRATED INTO THE ELECTRIFIED LOCKING HARDWARE BY DIVISION 8. REFER TO SPECIFICATIONS SECTION 08.71.00 AND TYPICAL DOOR DETAILS. IF LOCKING HARDWARE NECESSITATES EXTERNAL REX, PROVIDE SINGLE GANG BOX WITH FLEX CONNECTION TO THE SS DEEP BACK BOX ABOVE THE DOOR. REFER TO ACCESS CONTROL DOOR DETAILS. PROVIDE APPROPRIATE CABLING BETWEEN THE CARD READER AND THE SS DEEP BACK BOX ABOVE THE DOOR.
	LOCKDOWN BUTTON - WALL MOUNTED. PROVIDE SINGLE GANG BOX AT 46" TO THE TOP WITH A 1" EMT CONDUIT CONNECTED TO THE SS DEEP BACK BOX ABOVE THE DOOR. PROVIDE ALL CONDUITS, CONDUIT SUPPORTS, CONNECTORS, COUPLINGS, PLASTIC BUSHINGS, PULL STRINGS, OUTLET BOX, AND MUDRING. PROVIDE APPROPRIATE CABLING BETWEEN THE LOCKDOWN BUTTON AND THE SS DEEP BACK BOX ABOVE THE DOOR.
	ELECTRIFIED DOOR HARDWARE BY DIVISION 8 CONTRACTOR. PROVIDE AND INSTALL 1" EMT CONDUIT CONNECTED TO THE SS DEEP BACK BOX ABOVE THE DOOR. PROVIDE APPROPRIATE CABLING BETWEEN THE ELECTRIFIED LOCKING HARDWARE AND THE SS DEEP BACK BOX ABOVE THE DOOR.
	CARD READER - WALL MOUNT. PROVIDE A SINGLE GANG BACK BOX AT 46" TO THE TOP WITH A 1" EMT CONDUIT CONNECTED TO THE SS DEEP BACK BOX ABOVE THE DOOR. PROVIDE ALL CONDUITS, CONDUIT SUPPORTS, CONNECTORS, COUPLINGS, PLASTIC BUSHINGS, PULL STRINGS, OUTLET BOX, AND MUDRING. PROVIDE APPROPRIATE CABLING BETWEEN THE CARD READER AND THE SS DEEP BACK BOX ABOVE THE DOOR.
	CARD READER - MULLION MOUNT. MOUNT READER TO THE MULLION FRAME OF THE DOOR AS SHOWN ON THE DRAWINGS. UTILIZE THE MULLION FRAME CHANNEL AS A WIRE PATHWAY. COORDINATE ALL ACTIVITIES RELATED TO THIS TYPE OF READER WITH THE DIVISION 8 CONTRACTOR.

INFRASTRUCTURE LEGEND

SYMBOL	DESCRIPTION
	NOTE CALLOUT
	DETAIL CALLOUT - NUMBER ON TOP DENOTES DETAIL NUMBER - NUMBER ON BOTTOM DENOTES SHEET IT IS SHOWN
	BUILDING NUMBER
	CONCEALED CONDUIT
	EXPOSED CONDUIT
	UNDERGROUND CONDUIT
	FUTURE CONDUIT
	CABLE TO BE REMOVED
	EXISTING CABLE TO BE ABANDONED OR RETURNED
	CONDUIT TURNED UP
	CONDUIT TURNED DOWN
	CONDUIT WITH CAP

CEILING TYPE ABBREVIATIONS

ABBREVIATION	DESCRIPTION
ACT	ACOUSTICAL TILE
HL	HARD LID CEILING
NC	NO CEILING

IN THE EVENT ABBREVIATIONS NOT MENTIONED HEREIN ARE USED, PREFERENCE WILL BE MADE TO ANSI Y1.1, MILITARY STANDARD ABBREVIATIONS, AND OTHER STANDARD INDUSTRY CONVENTIONS.

GENERAL NOTES

- ALL WORK SHALL COMPLY WITH APPLICABLE FEDERAL, STATE AND LOCAL CODES. WHERE THE CONSTRUCTION DOCUMENTS INDICATE MORE RESTRICTIVE REQUIREMENTS, THE CONSTRUCTION DOCUMENTS SHALL GOVERN. THE CONSTRUCTION DOCUMENTS SHALL NOT BE INTERPRETED AS AUTHORITY TO VIOLATE ANY CODE OR REGULATION.
- IN THE EVENT OF A CONFLICT OR INCONSISTENCY BETWEEN ITEMS INDICATED ON THE CONSTRUCTION DOCUMENTS OR WITH CODE REQUIREMENTS, WHICH PRESCRIBES AND ESTABLISHES THE MORE COMPLETE JOB OR THE HIGHER STANDARD SHALL PREVAIL.
- OMISSIONS FROM THE DRAWINGS OR SPECIFICATIONS OR THE MISDESCRIPTION OF WORK WHICH ARE CLEAR AND NECESSARY TO CARRY OUT THE INTENT OF THE CONSTRUCTION DOCUMENTS, OR WHICH ARE CUSTOMARILY PERFORMED, SHALL NOT RELIEVE THE CONTRACTOR FROM PERFORMING SUCH OMITTED OR MISDESCRIBED WORK. WORK SHALL BE PERFORMED AS IF FULLY AND CORRECTLY SET FORTH AND DESCRIBED IN THE CONSTRUCTION DOCUMENTS.
- THE CONTRACTOR SHALL CHECK ALL DRAWINGS FURNISHED IMMEDIATELY UPON RECEIPT AND SHALL PROMPTLY NOTIFY THE OWNER OF ANY DISCREPANCIES TO INSTALL A FULLY FUNCTIONAL SYSTEM.
- ALL MATERIALS AND EQUIPMENT SHALL BE NEW. ALL EQUIPMENT SHALL BEAR THE UNDERWRITERS LABEL (UL) AND SHALL BE INSTALLED IN THE MANNER FOR WHICH THEY ARE DESIGNED.
- THE CONTRACTOR SHALL NOT BORE, NOTCH OR IN ANYWAY CUT INTO ANY STRUCTURAL MEMBER WITHOUT WRITTEN APPROVAL FROM THE OWNER.
- FOR PURPOSES OF CLEARNESS AND LEGIBILITY, THE DRAWINGS ARE ESSENTIALLY DIAGRAMMATIC. THE SIZE OF EQUIPMENT IS NOT SHOWN TO SCALE. THE CONTRACTOR SHALL VERIFY ALL WORK LOCATIONS.
- THE CONTRACTOR SHALL MAINTAIN REDLINE DRAWINGS TO REFLECT ALL WORK AND CHANGES MADE, AND ANY DEVIATIONS FROM THE CONSTRUCTION DOCUMENTS. THE CONTRACTOR SHALL AFTER COMPLETION OF JOB, PROVIDE THE DISTRICT AN ELECTRONIC AND HARD COPY OF AS-BUILTS. REFER TO SPEC SECTION 270000.
- ANY DEVIATIONS FROM PLANS OR SPECIFICATIONS MUST BE APPROVED IN WRITING BY THE OWNER.
- ALL WORK MUST BE COMPLETED IN A NEAT AND PROFESSIONAL MANNER. THE WORK SITE SHALL BE KEPT CLEAN AND ALL DAMAGE TO OWNER PROPERTY REPAIRED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONDUCTING A FINAL CLEANUP OF THE WORK SITE AT COMPLETION.
- ALL DISTANCES/DIMENSIONS ON DRAWINGS ARE ESTIMATED AND MUST BE VERIFIED BY CONTRACTOR PRIOR TO ORDERING MATERIAL.
- ALL SECURITY DEVICES, CABLING AND ASSOCIATED EQUIPMENT SHALL BE INCLUDED TO PROVIDE A FULLY FUNCTIONAL SYSTEM.
- PROVIDE AND INSTALL VIDEO SURVEILLANCE IN USE SIGN AND POST AT ALL VEHICLE ENTRANCES AND LISTED BUILDING MAIN ENTRANCES. COORDINATE LOCATION(S) WITH OWNER. REFER TO SPEC SECTION 2.28.21.13.
- CONTRACTOR TO SUBMIT SHOP DRAWINGS FOR APPROVAL PER BUILDING/POLE IDENTIFYING EXACT CABLE PATHWAY TO BE USED (HORIZONTAL AND VERTICAL) TO INCLUDE DISTANCES GREATER THAN 100M WHERE ETHERNET EXTENDERS WILL BE UTILIZED.
- ALL CAMERA MOUNTING LOCATIONS SHALL BE SUBMITTED AS A SHOP DRAWING FOR APPROVAL PRIOR TO INSTALLATION.
- ALL DEVICES SHALL BE INSTALLED IN A MANNER THAT ELIMINATES THE INSTALLATION OF EXPOSED SURFACE MOUNT CONDUIT AT EXTERIOR LOCATIONS. CONDUIT SHALL BE RUN INSIDE BUILDING AND AT UNSEEN AREAS EXCEPT WHERE COST PROHIBITIVE. SIGNIFICANT IMPACT TO EXISTING AREA OR NOT FEASIBLE. PRIOR TO PLACEMENT OF EXPOSED CONDUIT CONTRACTOR SHALL SUBMIT SHOP DRAWINGS REQUESTING APPROVAL. EXPOSED CONDUIT, IF APPROVED SHALL BE PAINTED TO MATCH EXISTING BUILDING FINISH/COLOR AT NO COST TO THE DISTRICT. CONTRACTOR SHALL SUBMIT MATCHING PAINT COLOR FOR DISTRICTS APPROVAL.
- PRIOR TO CORING OF MASONRY OR CONCRETE STRUCTURE AND FACADE THESE SURFACES SHALL BE X-RAYED OR SCANNED WITH PENETRATING RADAR TO ACCURATELY LOCATE REBAR, CONDUITS, AND ANY OTHER EMBEDDED POTENTIAL OBSTRUCTIONS TO ENSURE THAT NO DAMAGE IS CAUSED TO ANY STRUCTURAL REINFORCEMENTS.
- FOR CAMERAS TO VIEW DOORS, FIELD-OF-VIEW TO BE SET TO CAPTURE AT MINIMUM PEOPLES TORSO AND HEAD TO SEE WHO ENTERED/LEFT THE DOORWAY OR AREA IN FRONT OF DOORWAY. DO NOT SET A WIDE FOV UNLESS A MINIMUM OF 40 PIXELS PER FOOT IS ATTAINED OF PERSONS.
- ANY PATCHWORK INCLUDING SUBSTRATE AND FINISH SHALL MATCH EXISTING. ALL EXISTING ITEMS ARE TO REMAIN UNLESS SPECIFICALLY NOTED WITHIN THE CONTRACT DOCUMENTS TO BE REMOVED OR SHALL BE REMOVED IN ORDER TO CONSTRUCT NEW WORK. ALL NEW FINISHES AND PATCH WORK TO MATCH EXISTING BUILDING FINISHES, INCLUDING COLOR, TEXTURE, WORKMANSHIP, ETC. UNLESS NOTED OTHERWISE. FOR DEMOLITION AND PATCHING WORK, CONTRACTOR SHALL REMOVE PORTION OF EXISTING MATERIALS AND/OR FINISHES AS NEEDED TO PROVIDE FOR THE WORK DESCRIBED WITHIN THE CONTRACT DOCUMENTS AND TO PROVIDE FOR SMOOTH TRANSITIONS BETWEEN EXISTING AND NEW MATERIALS.
- AT CAMERA INSTALL LOCATIONS, CEILING HEIGHT IS TYPICALLY 8 TO 10 FEET. WHERE INFORMATION WAS AVAILABLE, IT IS NOTED ON FLOOR PLAN.
- USE J-HOOKS FOR STATION CABLE DISTRIBUTION IN ACCESSIBLE CEILING. UON. DO NOT USE ACT WIRE HANGERS. WATER OR ELECTRICAL PIPES OR LIGHT FIXTURES TO HANG CABLE. CABLE MUST BE A MINIMUM OF SIX INCHES ABOVE CEILING AND MUST NOT COME WITHIN TWELVE INCHES OF A LIGHT FIXTURE. PER NEC 800.133, AVOID INSTALLING DATA CABLE WITHIN 2 INCHES OF HIGH VOLTAGE CABLE, TRANSFORMERS OR ELECTRICAL EQUIPMENT. IF UNAVOIDABLE, SHIELDED TWISTED PAIR (STP) CABLE MUST BE USED. ROUTE J-HOOKS AND CONDUITS PARALLEL OR PERPENDICULAR TO BUILDING WALLS AND ROUTE TO NEAREST CABLE TRAY AS APPLICABLE.
- ALL CABLING SHALL BE NEATLY DRESSED AND SECURED EVERY FIVE FEET AT A MINIMUM.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVAL AND PLACEMENT OF ACOUSTIC CEILING TILE INCLUDING REPLACEMENT OF BROKEN OR DAMAGED TILES. MATCH EXISTING.
- ALL LOCATIONS PASSING THROUGH A FIRE OR A SMOKE BARRIER MUST BE FIRE STOPPED USING APPROVED (UL CLASSIFIED) FIRE STOP MATERIAL INSTALLED, PER THE MANUFACTURERS INSTRUCTIONS.
- ALL CABLE SHALL BE PLACED WITH A MINIMUM 1 METER (2 METER MAXIMUM) MAINTENANCE LOOP AT EACH DEVICE LOCATION UON. AND A MINIMUM 3 METER (5 METER MAXIMUM) IN EACH TELECOM ROOM/CABINET UON.
- CONDUIT SHALL BE FILLED TO MAXIMUM CAPACITY (PER STANDARD) BEFORE UTILIZING ANOTHER VACANT CONDUIT.
- LOW VOLTAGE POWER CABLES AND DATA CABLES SHALL BE INSTALLED IN THE SAME CABLE TRAY AND CONDUIT SYSTEMS. THEY SHALL BE ROUTED AND SECURED IN SEPARATE BUNDLES.
- ETHERNET EXTENDERS ARE TO BE USED FOR IP DEVICES THAT EXCEED THE ETHERNET MAXIMUM DISTANCE (328 FEET). MUST BE IDENTIFIED IN AS-BUILTS.
- CONTRACTOR SHALL VERIFY THE AVAILABILITY OF OPEN NETWORK PORTS AND SUFFICIENT POE POWER ON EXISTING SWITCHES.
- ALL CABLE SHALL BE CLEARLY AND PERMANENTLY LABELED IN A STANDARD FORMAT AT BOTH ENDS AND AT ALL ACCESS POINTS PER TIA/EIA 606-A.
- PROVIDE CAT6 CABLE TO EACH CAMERA LOCATION UON. CAT6 CABLE SHALL BE ROUTED TO TELECOM ROOM AS SHOWN ON DRAWINGS OR VIA ALTERNATE ROUTE AS APPROVED BY OWNER THAT BETTER SATISFIES MINIMUM EXPOSED CONDUIT REQUIREMENTS.
- FOR EXTERIOR CAMERAS (EXCEPT DOOR CAMERAS), REFER TO SCHEMATIC IN SPECIFICATIONS FOR FIELD-OF-VIEW AREA REQUIRED TO HAVE A MINIMUM OF 20 PPF ACROSS THE HORIZONTAL CENTER OF THE FIELD OF VIEW.
- ALL ENCLOSURES TO BE SECURED WITH TAMPER-PROOF BOLTS OR BE LOCKABLE. KEYS TO BE CLEARLY IDENTIFIED AND TURNED OVER TO THE DISTRICT. WHERE FEASIBLE, KEYS TO BE THE SAME ACROSS MULTIPLE ENCLOSURES.
- ALL CAMERAS SHALL BE PERMANENTLY LABELED. COORDINATE WITH THE DISTRICT FOR LABEL TYPE, CONTENT AND PLACEMENT.
- UNDERGROUND BORING IS REQUIRED ACROSS ANY PATH OF TRAVEL - NO TRENCHING PERMITTED THROUGH SIDEWALKS OR SIMILAR.
- ALL CAMERAS SHALL BE INSTALLED A MINIMUM OF 8' ABOVE FINISHED GRADE. REFER TO CAMERA SCHEDULES FOR HEIGHT.

ABBREVIATIONS

ABBREVIATION	DESCRIPTION	ABBREVIATION	DESCRIPTION
A OR AMP	AMPERES	IDF	INTERMEDIATE DISTRIBUTION FRAME
A/E	ARCHITECT/ENGINEER	IR	INFRARED
ADA	AMERICANS WITH DISABILITIES ACT	ISP	INTERNET SERVICE PROVIDER
AFF	ABOVE FINISHED FLOOR	JB	JUNCTION BOX
AHJ	AUTHORITY HAVING JURISDICTION	LED	LIGHT EMITTING DIODE
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MDF	MAIN DISTRIBUTION FRAME
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	MH	MOUNTING HEIGHT
AWG	AMERICAN WIRE GAUGE	MM	MULTIMODE
BC	BONDING CONDUCTOR	N	NORTH
BDF	BUILDING DISTRIBUTION FRAME	NEC	NATIONAL ELECTRICAL CODE (NFPA-70)
BCSI	BUILDING INDUSTRY CONSULTING SERVICES	NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
BMS	BUILDING MANAGEMENT SYSTEM	NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
BONDING	(MECHANICAL CONNECTION TO POWER GROUND)	NIC	NOT IN CONTRACT
BOND		NIU	NETWORK INTERFACE UNIT
BTU	BRITISH THERMAL UNIT	NVR	NETWORK VIDEO RECORDER
C	COMMUNICATIONS (LOW-VOLTAGE CABLING OR OPTICAL FIBER CABLE)	OD	OUTSIDE DIAMETER
C.O.	CONDUIT ONLY WITH PULL WIRE	PA	PUBLIC ADDRESS SYSTEM
CAD	COMPUTER AIDED DESIGN	PACS	PHYSICAL ACCESS CONTROL SYSTEM
CATV	COMMUNITY ANTENNA TELEVISION (CABLE TELEVISION)	PB	PULL BOX
CBG	CALIFORNIA BUILDING CODE	POC	POINT OF CONNECTION
CEC	CALIFORNIA ELECTRICAL CODE	PPF	PIXELS PER FOOT
CKT	CIRCUIT	PSU	POWER SUPPLY UNIT
CLG	CEILING	PVC	POLYVINYL CHLORIDE
CMP	COMMUNICATIONS PLENUM (CABLE JACKET RATING)	PVT	PERFORMANCE VERIFICATION TESTING
CMR	COMMUNICATIONS RISER (CABLE JACKET RATING)	PWR	POWER
CP	CONSOLIDATION POINT	RM	ROOM
CU	COPPER	RMC	RIGID METAL CONDUIT
DAS	DISTRIBUTED ANTENNA SYSTEM	RJ	RACK UNIT
DB	DIRECT-BURIED OR DUCT BANK	S	SOUTH
dB	DECIBEL	SCS	STRUCTURED CABLING SOLUTION
DSA	DEPARTMENT OF STATE ARCHITECTS	SM	SINGLE-MODE - FIBER OPTIC CABLE
DWG	DRAWING	SW	SWITCH
EA	EACH	TB	TERMINAL BLOCK
EM	ELECTROMAGNETIC INTERFERENCE	TCPIP	TRANSMISSION CONTROL PROTOCOL / INTERNET PROTOCOL
EMT	ELECTRICAL METALLIC TUBING	TYP	TYPICAL
EOLR	END OF LINE RESISTOR	UG	UNDERGROUND
EXIST / (E)	EXISTING	UL	UNDERWRITERS LABORATORIES INC.
FOV	FIELD OF VIEW	UON	UNLESS OTHERWISE NOTED
FPS	FRAMES PER SECOND	UPS	UNINTERRUPTIBLE POWER SUPPLY
	FIRESTOP (DEFINED BY T-RATING - TEMPERATURE-TRANSFER & F-RATING - FLAME) - MAY ALSO HAVE A "SMOKE-TRANSFER" REQUIREMENT	UTP	UNSHIELDED TWISTED PAIR
		V	VOLTS
		V-A	VOLT-AMPERES
FS		VSS	VIDEO SURVEILLANCE SYSTEM
		W	WATTS
		WIFI	WIRELESS FIDELITY (LOCALIZED WIRELESS USER ACCESS INTERNET / NETWORK)
FT	FEET		
GND	GROUND (MECHANICAL CONNECTION TO EARTH)		
GRC	GALVANIZED RIGID CONDUIT		
ID	INSIDE DIAMETER OR INSIDE DIMENSION		

IN THE EVENT ABBREVIATIONS NOT MENTIONED HEREIN ARE USED, PREFERENCE WILL BE MADE TO ANSI Y1.1, MILITARY STANDARD ABBREVIATIONS, AND OTHER STANDARD INDUSTRY CONVENTIONS.

TASK RESPONSIBILITY MATRIX - SECURITY SYSTEM									
	GC	EC	SC	CC	OWNER	D08	NOTES		
PROVISION AND INSTALLATION OF CONDUIT		X							
PROVISION, INSTALLATION, AND TERMINATION OF PACS COMPOSITE CABLING			X						
PROVISION, INSTALLATION, AND TERMINATION OF DATA CABLING				X					
PROVISION AND INSTALLATION OF DOOR CONTROLLER, CARD READERS, DOOR POSITION SENSORS			X						
PROVISION AND INSTALLATION OF ELECTRIFIED LOCKING HARDWARE						X			
CABLING OF ELECTRIFIED LOCKING HARDWARE, DOOR SIDE OF HINGE TO ELECTRIFIED LOCKING HARDWARE				X					
CABLING OF ELECTRIFIED LOCKING HARDWARE, FRAME SIDE OF HINGE TO DOOR CONTROLLER / ELECTRIFIED LOCKING HARDWARE POWER									
PROVISION AND INSTALLATION OF REQUEST-TO-EXIT SENSOR						X			
PROVISION AND INSTALLATION OF ELECTRIFIED LOCKING HARDWARE POWER SUPPLY						X			
PROVISION AND INSTALLATION OF SYSTEM POWER SUPPLY			X						
PROVISION AND INSTALLATION OF ELECTRIFIED HINGES, ELECTRIC POWER TRANSFERS, DOOR CORDS							X		
PROVISION AND INSTALLATION OF POE NETWORK SWITCH			X						
CONFIGURATION OF NETWORK SWITCH					X				
INTEGRATION OF NEW DOOR CONTROLLERS / PACS DOORS TO EXISTING PACS				X					
CREATION OF ANY SITE SPECIFIC WORK GROUPS REQUIRED			X						
ASSIGNMENT OF PERSONNEL TO NEW WORKGROUPS					X				
INTEGRATION OF ADA / POWER DOORS TO PACS			X				X	REQUIRES COORDINATION BETWEEN SC AND D08	
PROVISION AND INSTALLATION OF FIRE RATED PLYWOOD BACKBOARD	X								

D08 = DIVISION 08 CONTRACTOR

EC = ELECTRICAL CONTRACTOR

GC = GENERAL CONTRACTOR

SC = SECURITY CONTRACTOR

SCOPE OF WORK

- PROVIDE PHYSICAL ACCESS CONTROL EQUIPMENT AS SHOWN ON THE DRAWINGS.
- PROVIDE VIDEO SURVEILLANCE EQUIPMENT AS SHOWN ON THE DRAWINGS.
- PERFORM PERFORMANCE VALIDATION TESTIN ON ALL COMPONENTS INSTALLED AS PART OF THIS PROJECT.
- RESTORE ARCHITECTURAL FINISHES (FLOOR, WALL, CEILING) BEING DISTURBED BY THE WORK TO ORIGINAL CONDITION.
- PROVIDE THROUGH PENETRATION FIRE-STOPPING AT ALL RATED FLOOR/WALL BARRIER.
- ALL SLEEVES (BOTH ENDS) & CONDUITS THAT END INTO A SPACE OR AT A CABLE TRAY SHALL BE FIRE-STOPPED WITH AN APPROVED ASSEMBLY CONSISTING OF AN APPROPRIATE AMOUNT OF MINERAL WOOL (SAFING INSULATION) & RE-ENTERABLE INTUMESCENT FIRESTOP PUTTY INSTALLED AS PER MANUFACTURERS INSTRUCTIONS AND APPROVED FOR USE BY THE CONSTRUCTION MANAGER.

SHEET INDEX

SHEET	DESCRIPTION
TY0.001	GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX
TY0.002	SCHEDULES
TY1.201A	FIRST FLOOR PLAN - NORTH
TY1.201B	FIRST FLOOR PLAN - SOUTH
TY6.001	DETAILS
TY6.002	DETAILS
TY6.003	DETAILS
TY6.004	DETAILS

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BUILDING MM - CONSTRUCTION TRADES II

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△	Date	Description
2	10/20/2022	ADDENDUM 2

Seal / Signature



Project Name

BUILDING MM - CONSTRUCTION TRADES II

Project Number

05.2882.000

Description

GENERAL NOTES, LEGEND, ABBREVIATIONS, AND SHEET INDEX

Scale

NOT TO SCALE

TY0.001

SECURITY CAMERA SCHEDULE

CAMERA #	BASIS OF DESIGN	CAMERA TYPE	REF. SHEET #	ROOM # - ROOM NAME	REF. BDF/MDF/IDF ROOM #	DETAIL REFERENCE	NOTES
NORTH BUILDING							
SC-101	AXIS - Q3819-PVE	MULTISENSOR WALL SURFACE MOUNTED CAMERA - 180°	TY1.201A	ROOM MM129 EXTERIOR	IDF MM127	3/TY6.004	
SC-102	AXIS - P3268-LVE	SINGLE SENSOR WALL PENDANT MOUNTED CAMERA	TY1.201A	ROOM MM129 EXTERIOR	IDF MM127	3/TY6.004	
SC-103	AXIS - P3719-PLE	MULTISENSOR CEILING SURFACE MOUNTED CAMERA - 180°	TY1.201A	ROOM MM129 EXTERIOR	IDF MM127	2/TY6.004	
SC-104	AXIS - P3719-PLE	MULTISENSOR CEILING SURFACE MOUNTED CAMERA - 180°	TY1.201A	ROOM MM124 EXTERIOR	IDF MM127	2/TY6.004	
SC-105	AXIS - P3719-PLE	MULTISENSOR WALL PENDANT MOUNTED CAMERA - 270°	TY1.201A	ROOM MM121 EXTERIOR	IDF MM127	1/TY6.004	
SC-106	AXIS - Q3819-PVE	MULTISENSOR WALL SURFACE MOUNTED CAMERA - 180°	TY1.201A	ROOM MM124 EXTERIOR	IDF MM127	3/TY6.004	
SOUTH BUILDING							
SC-107	AXIS - P3719-PLE	MULTISENSOR CEILING SURFACE MOUNTED CAMERA - 360°	TY1.201B	ROOM MM101 EXTERIOR	IDF MM118	2/TY6.004	
SC-108	AXIS - P3719-PLE	MULTISENSOR CEILING SURFACE MOUNTED CAMERA - 360°	TY1.201B	OVER HANG EXTERIOR	IDF MM118	2/TY6.004	
SC-109	AXIS - P3719-PLE	MULTISENSOR WALL PENDANT MOUNTED CAMERA - 270°	TY1.201B	ROOM MM102 EXTERIOR	IDF MM118	1/TY6.004	
SC-110	AXIS - P3719-PLE	MULTISENSOR WALL PENDANT MOUNTED CAMERA - 270°	TY1.201B	ROOM MM111 EXTERIOR	IDF MM118	1/TY6.004	
SC-112	AXIS - P3719-PLE	MULTISENSOR WALL PENDANT MOUNTED CAMERA - 270°	TY1.201B	ROOM MM 116 EXTERIOR	IDF MM118	1/TY6.004	
SC-113	AXIS - P3268-LVE	SINGLE SENSOR CEILING MOUNTED CAMERA	TY1.201B	ROOM MM105 EXTERIOR	IDF MM118	2/TY6.004	

ACCESS CONTROL SCHEDULE

READER #	DOOR #	BASIS OF DESIGN	REF. SHEET #	CONTROLLED SPACE	DOOR TYPE	DETAIL REFERENCE	NOTES
NORTH BUILDING							
AC-101	129A	SCHLAGE - MTB11	TY1.201A	MM129 - ARCHITECTURE 4	DOUBLE DOOR	2/TY6.003	
AC-102	128A	SCHLAGE - MTB15	TY1.201A	MM128 - STORAGE	DOUBLE DOOR	2/TY6.001	
AC-103	127A	SCHLAGE - MTB15	TY1.201A	MM127 - IDF	SINGLE DOOR	1/TY6.001	
AC-104	124A	SCHLAGE - MTB15	TY1.201A	MM124 - ARCHITECTURE 3	DOUBLE DOOR	2/TY6.001	
AC-105	123A	SCHLAGE - MTB11	TY1.201A	MM123 - ARCHITECTURE 2	SINGLE DOOR	1/TY6.003	
AC-106	122A	SCHLAGE - MTB11	TY1.201A	MM122 - ARCHITECTURE 1	SINGLE DOOR	1/TY6.003	
AC-107	121A	SCHLAGE - MTB11	TY1.201A	MM121 - ANTHROPOLOGY	SINGLE DOOR	1/TY6.003	
SOUTH BUILDING							
AC-108	101B	SCHLAGE - MTB15	TY1.201B	MM101 - MEETING	DOUBLE DOOR	2/TY6.001	
AC-109	120B	SCHLAGE - MTB11	TY1.201B	MM120 - HORTICULTURE	SINGLE DOOR	1/TY6.003	
AC-110	119A	SCHLAGE - MTB11	TY1.201B	MM119 - PLANT SCIENCE	SINGLE DOOR	1/TY6.003	
AC-111	118A	SCHLAGE - MTB15	TY1.201B	MM118 - IDF	DOUBLE DOOR	1/TY6.001	
AC-112	105A	SCHLAGE - MTB11	TY1.201B	MM105 - OPEN OFFICE	SINGLE DOOR	1/TY6.003	
AC-113	109B	SCHLAGE - MTB11	TY1.201B	MM105 - OPEN OFFICE	SINGLE DOOR	1/TY6.003	
AC-114	103B	SCHLAGE - MTB15	TY1.201B	MM103 - CLASSROOM	SINGLE DOOR	2/TY6.001	
AC-115	102B	SCHLAGE - MTB15	TY1.201B	MM102 - CLASSROOM	SINGLE DOOR	2/TY6.001	
AC-116	101A	SCHLAGE - MTB15	TY1.201B	MM101 - MEETING	DOUBLE DOOR	2/TY6.001	
AC-117	E101D	SCHLAGE - MTB15	TY1.201B	NORTH GATE	DOUBLE DOOR	TY1.201B	
AC-118	E101E	SCHLAGE - MTB15	TY1.201B	SOUTH GATE	SINGLE DOOR	TY1.201B	

LOCKDOWN BUTTON SCHEDULE

READER #	DOOR #	BASIS OF DESIGN	REF. SHEET #	DETAIL REFERENCE	NOTES
NORTH BUILDING					
LD-101	129A	STI - SS2242-LD-EN	TY1.201A	2/TY6.003	
LD-102	124A	STI - SS2242-LD-EN	TY1.201A	2/TY6.001	
LD-103	123A	STI - SS2242-LD-EN	TY1.201A	1/TY6.003	
LD-104	122A	STI - SS2242-LD-EN	TY1.201A	1/TY6.003	
LD-105	121A	STI - SS2242-LD-EN	TY1.201A	1/TY6.003	
SOUTH BUILDING					
LD-106	101B	STI - SS2242-LD-EN	TY1.201B	2/TY6.001	
LD-107	101A	STI - SS2242-LD-EN	TY1.201B	2/TY6.001	
LD-108	120B	STI - SS2242-LD-EN	TY1.201B	1/TY6.003	
LD-109	119A	STI - SS2242-LD-EN	TY1.201B	1/TY6.003	
LD-110	105A	STI - SS2242-LD-EN	TY1.201B	1/TY6.003	
LD-111	109B	STI - SS2242-LD-EN	TY1.201B	1/TY6.003	
LD-112	103B	STI - SS2242-LD-EN	TY1.201B	2/TY6.001	
LD-113	102B	STI - SS2242-LD-EN	TY1.201B	2/TY6.001	

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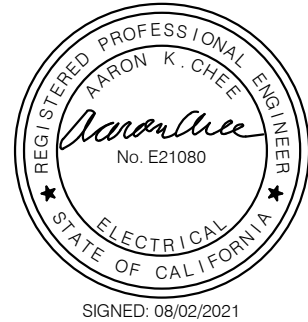


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△	Date	Description
2	10/20/2022	ADDENDUM 2

Seal / Signature



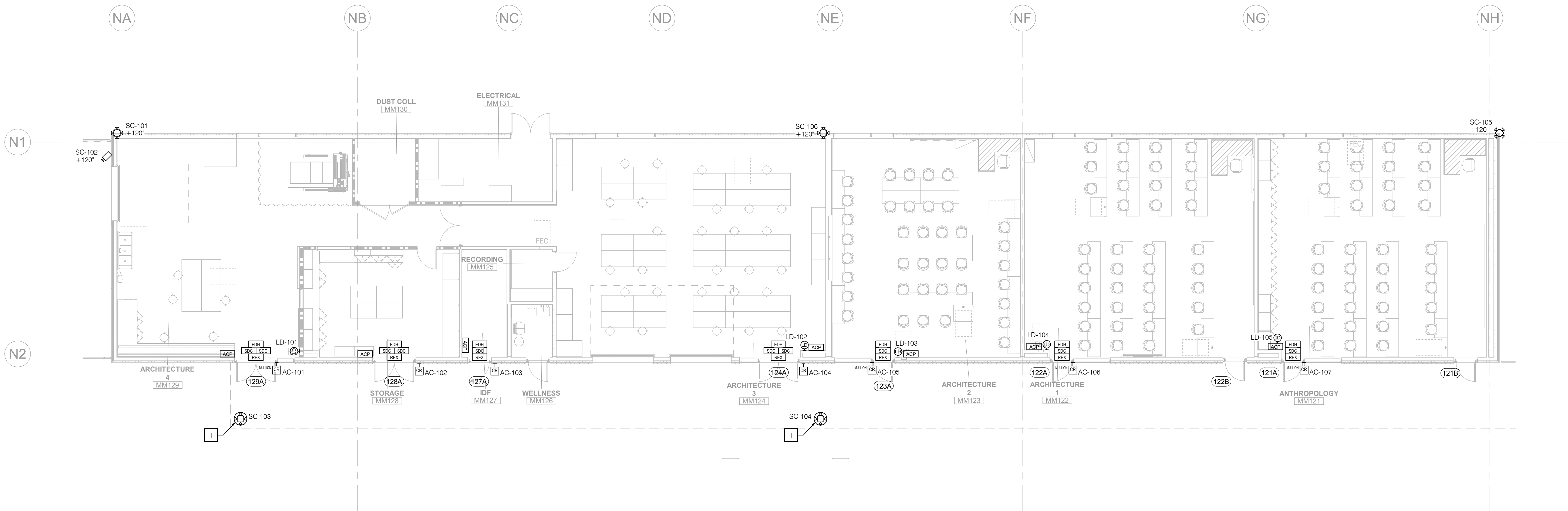
Project Name  
BUILDING MM -  
CONSTRUCTION TRADES II

Project Number  
05.2882.000

Description  
SCHEDULES

Scale  
NOT TO SCALE

TY0.002



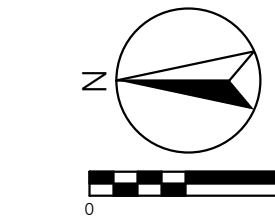
## SHEET NOTES

- 1 CEILING MOUNT CAMERA UNDER THE CANOPY.

## GENERAL NOTES

1. LBCC IT SHALL PROVIDE PoE PORTS ON PoE ENABLED SWITCH FOR THE IP CAMERAS AS SHOWN ON THE DRAWINGS. PROVIDE ONE STATIC IP ADDRESS FOR EACH NETWORK CAMERA.
2. COMMUNICATIONS CONTRACTOR SHALL PROVIDE (1) CAT6A CABLE AT EACH CAMERA LOCATION AS SHOWN ON THE DRAWINGS. THE CAT6A CABLE SHALL TERMINATE INTO A BISCUIT JACK INSIDE A SS RANDL BOX. REFER TO THE SECURITY SYMBOLS LEGEND.
3. COMMUNICATIONS CONTRACTOR SHALL PROVIDE A DATA DROP AT EACH ACCESS CONTROLLED DOOR WITH (2) CAT 6A CABLES TO TERMINATE IN THE TM400 CABINET MOUNTED ABOVE THE DOOR.
4. SECURITY CONTRACTOR TO FURNISH AND INSTALL GE INTERLOGIX 1076-N SECURITY DOOR CONTACT(S), AND WIRE AND PROGRAM AS AN INPUT POINT ON THE GENETEC SYSTEM AS SHOWN ON THE DRAWINGS.
5. THE REQUEST-TO-EXIT DEVICES SHALL BE PROVIDED BY THE DIVISION 08 CONTRACTOR AND INTEGRATED INTO THE ELECTRIFIED LOCKING HARDWARE FOR EACH ACCESS CONTROLLED DOOR.
6. ALL ELECTRIFIED LOCKING HARDWARE SHALL BE PROVIDED BY THE DIVISION 08 CONTRACTOR.
7. THE SECURITY CONTRACTOR SHALL FURNISH AND INSTALL STI-USA SS2242-LD-EN LOCKDOWN BUTTONS AS SHOWN ON THE DRAWINGS. THE SECURITY CONTRACTOR SHALL WIRE THE LOCKDOWN BUTTON TO AN INPUT TERMINAL OF THE LOCAL LPI501 CONTROLLER INSIDE THE TM400 CABINET. PROGRAM THE LOCKDOWN BUTTON IN THE GENETEC SYSTEM PER LBCC STANDARDS.

## KEY PLAN



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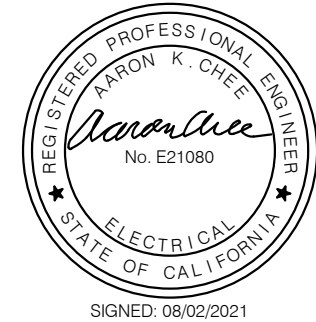
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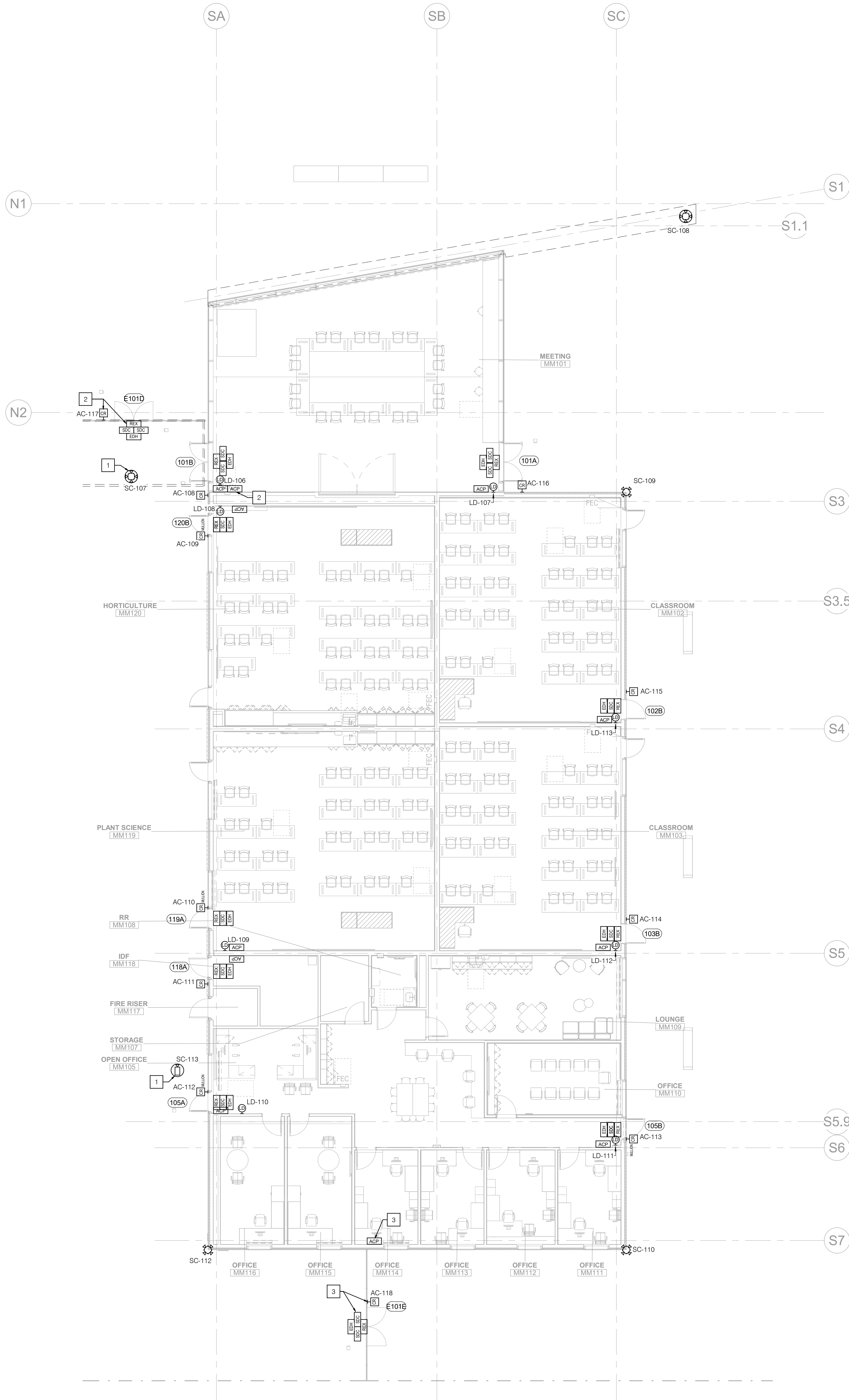
Project Number  
**05.2882.000**

Description  
**FIRST FLOOR PLAN - NORTH**

Scale  
**1/8" = 1'-0"**

Ref North

**TY1.201A**



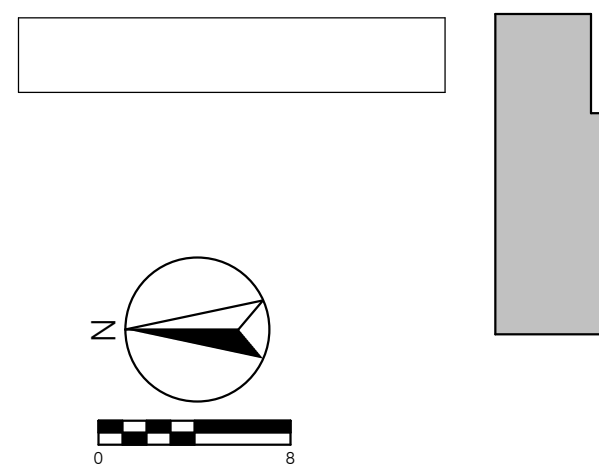
## SHEET NOTES

- 1 CEILING MOUNT CAMERA UNDER THE CANOPY.
- 2 THE ACCESS CONTROL DEVICES FOR GATE E101D SHALL CONNECT TO THE ACCESS CONTROLLER IN THE TM400 CABINET LOCATED INSIDE MEETING ROOM MM101.
- 3 THE ACCESS CONTROL DEVICES FOR GATE E101E SHALL CONNECT TO THE ACCESS CONTROLLER IN THE TM400 CABINET LOCATED INSIDE OFFICE MM114.

## GENERAL NOTES

1. LBCC IT SHALL PROVIDE PoE PORTS ON PoE ENABLED SWITCH FOR THE IP CAMERAS AS SHOWN ON THE DRAWINGS. PROVIDE ONE STATIC IP ADDRESS FOR EACH NETWORK CAMERA.
2. COMMUNICATIONS CONTRACTOR SHALL PROVIDE (1) CAT6A CABLE AT EACH CAMERA LOCATION AS SHOWN ON THE DRAWINGS. THE CAT6A CABLE SHALL TERMINATE INTO A BISCUIT JACK INSIDE A SS RANDL BOX. REFER TO THE SECURITY SYMBOLS LEGEND.
3. COMMUNICATIONS CONTRACTOR SHALL PROVIDE A DATA DROP AT EACH ACCESS CONTROLLED DOOR WITH (2) CAT 6A CABLES TO TERMINATE IN THE TM400 CABINET MOUNTED ABOVE THE DOOR.
4. SECURITY CONTRACTOR TO FURNISH AND INSTALL GE INTERLOGIX 1076-N SECURITY DOOR CONTACT(S), AND WIRE AND PROGRAM AS AN INPUT POINT ON THE GENETEC SYSTEM AS SHOWN ON THE DRAWINGS.
5. THE REQUEST-TO-EXIT DEVICES SHALL BE PROVIDED BY THE DIVISION 08 CONTRACTOR AND INTEGRATED INTO THE ELECTRIFIED LOCKING HARDWARE FOR EACH ACCESS CONTROLLED DOOR.
6. ALL ELECTRIFIED LOCKING HARDWARE SHALL BE PROVIDED BY THE DIVISION 08 CONTRACTOR.
7. THE SECURITY CONTRACTOR SHALL FURNISH AND INSTALL STI-USA SS2242-LD-EN LOCKDOWN BUTTONS AS SHOWN ON THE DRAWINGS. THE SECURITY CONTRACTOR SHALL WIRE THE LOCKDOWN BUTTON TO AN INPUT TERMINAL OF THE LOCAL LPS101 CONTROLLER INSIDE THE TM400 CABINET. PROGRAM THE LOCKDOWN BUTTON IN THE GENETEC SYSTEM PER LBCC STANDARDS.

## KEY PLAN



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Project Number

**05.2882.000**

Description

**FIRST FLOOR PLAN - SOUTH**

Scale

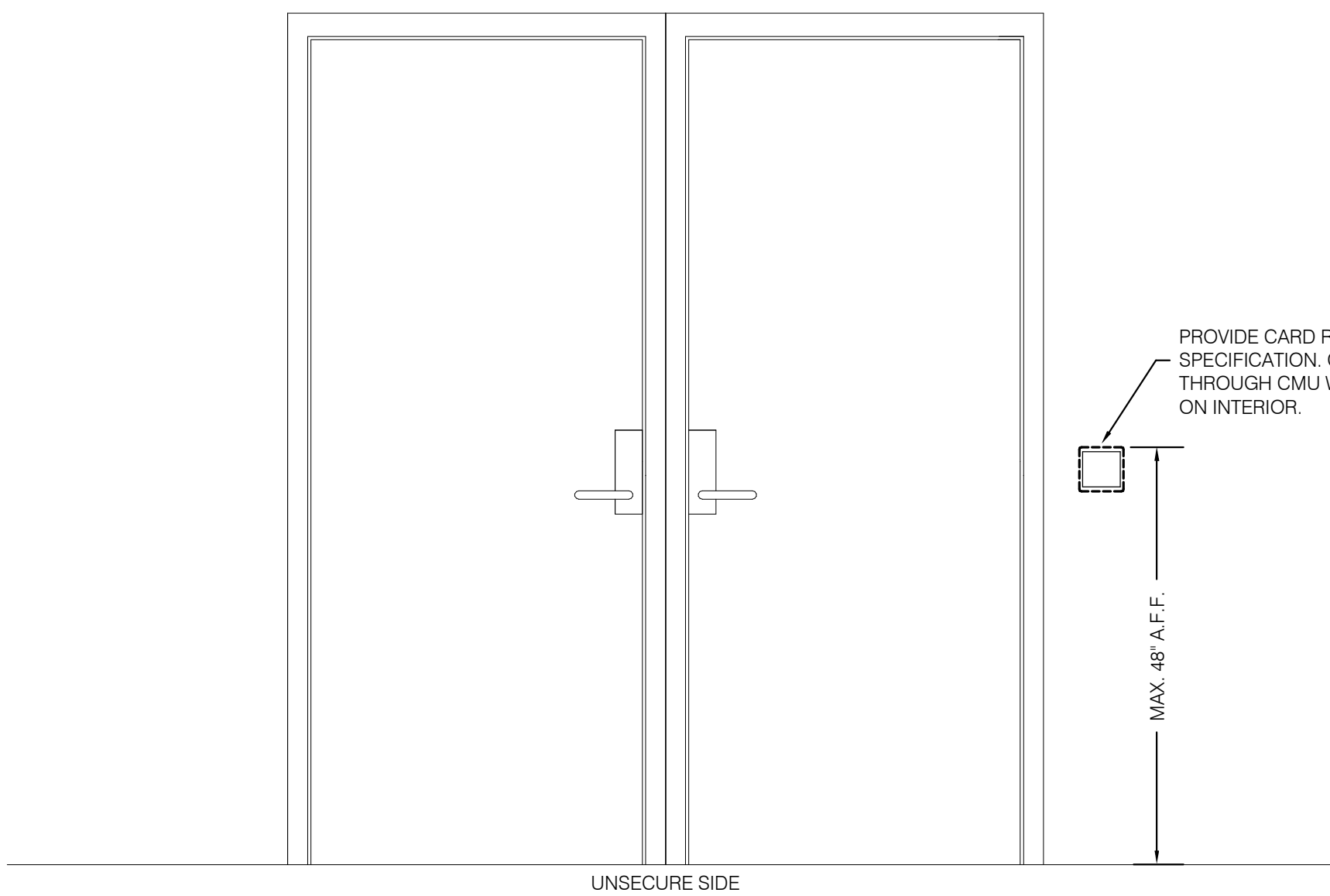
**1/8" = 1'-0"**

Ref North

**TY1.201B**



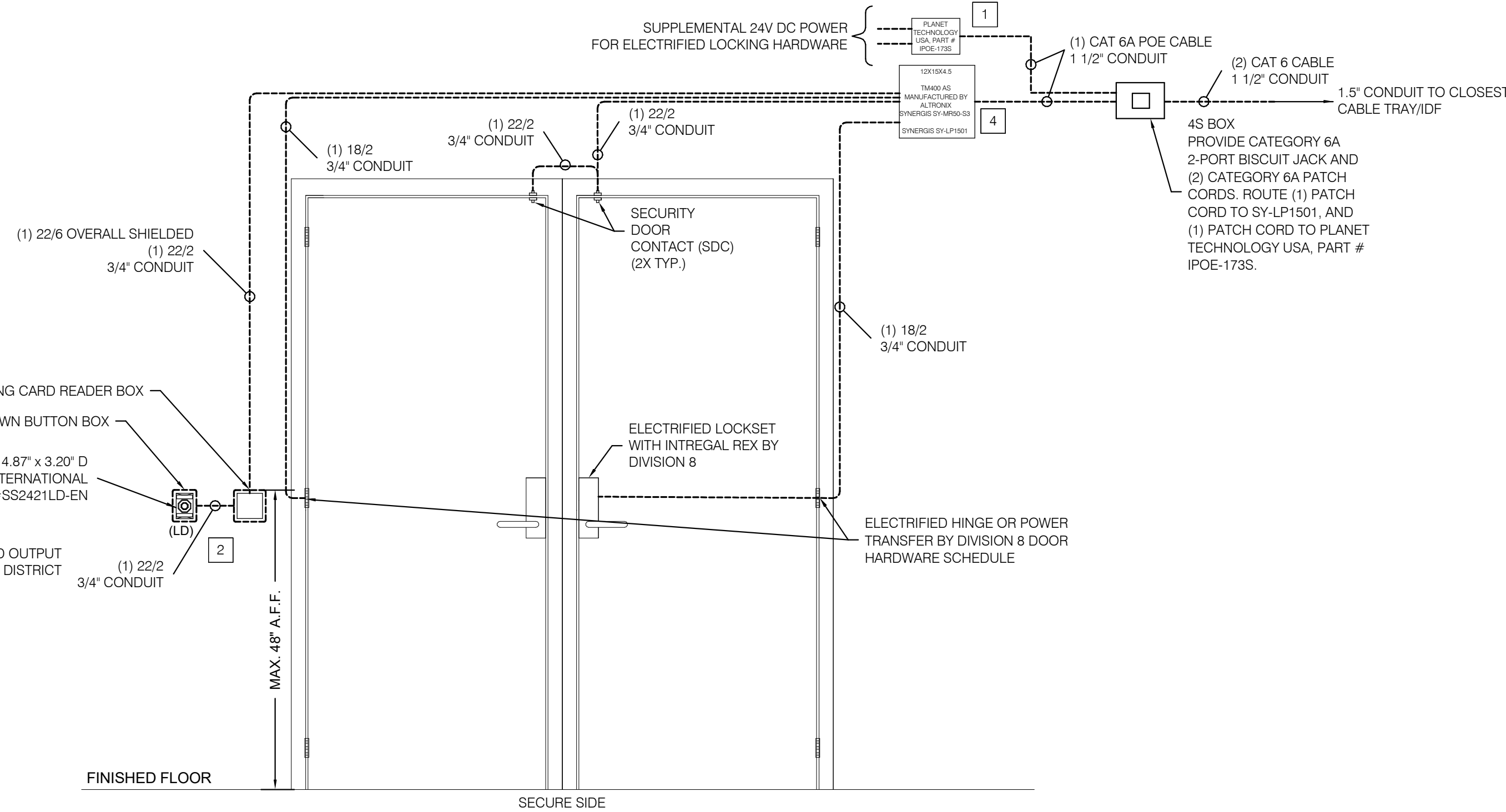
FINISHED  
CEILING



#### GENERAL NOTES

- COORDINATE LOCKING HARDWARE WITH DIV 08 HARDWARE PROVIDER.
- ELECTRICAL CONDUIT, BOXES, AND EQUIPMENT SHALL BE SURFACE MOUNTED ON SECURE SIDE OF THE PORTAL, UNLESS OTHERWISE NOTED. ALL SURFACE MOUNT CONDUIT AND BOXES SHALL BE PAINTED TO MATCH EXISTING SURFACE.
- DETAILS ARE FOR REFERENCE ONLY. SEE FLOOR PLANS FOR LEFT OR RIGHT HAND PLACEMENT OF DEVICES.
- STANDARD DETAIL SET. NOT ALL DETAILS WILL APPLY TO ALL PROJECTS.

FINISHED  
CEILING



#### NOTES

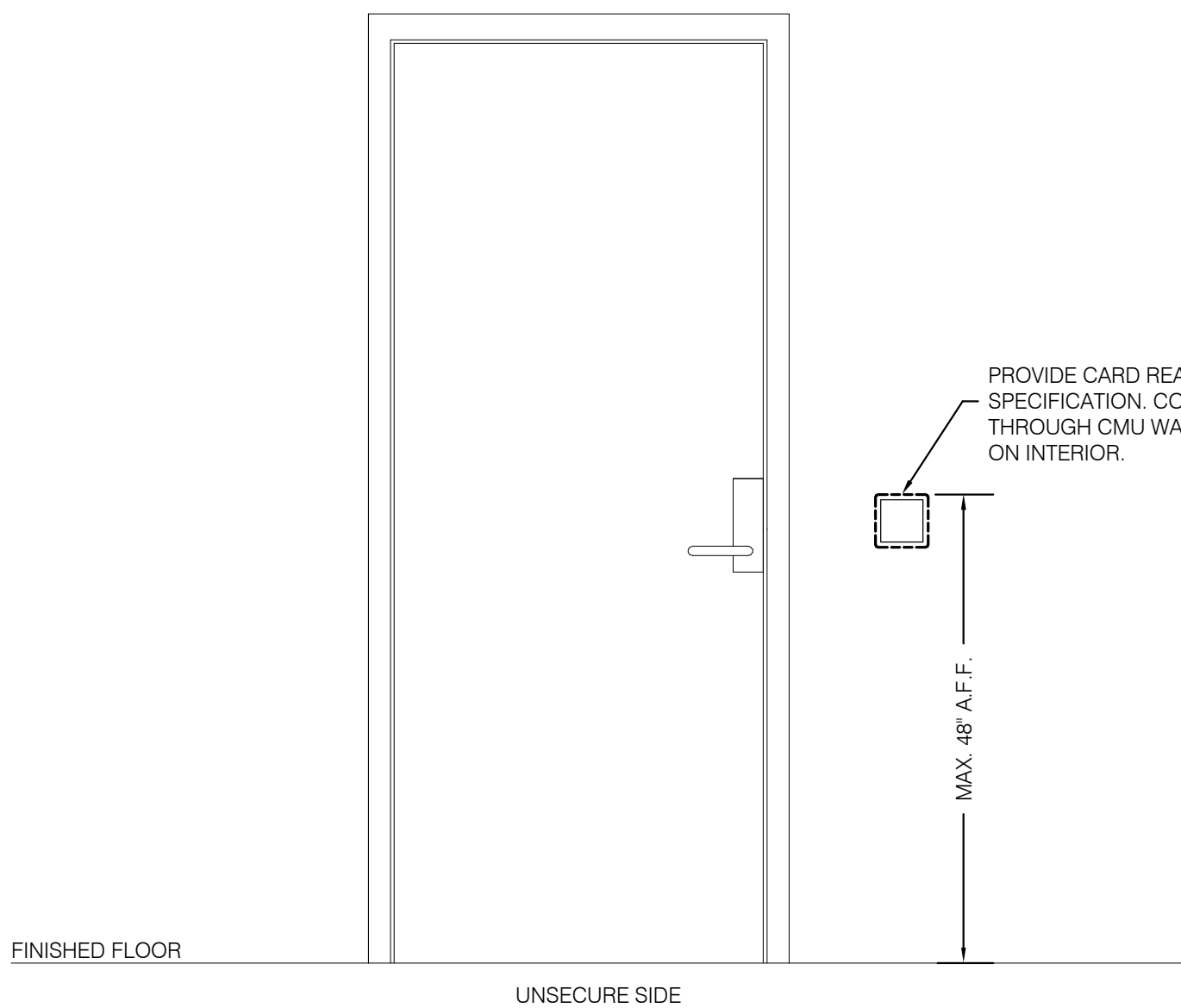
- PLANET TECHNOLOGY USA, PART # IPOE-173S. WALL MOUNT ADJACENT TO ALTRONIX TM400 ENCLOSURE.
- CONNECTION BETWEEN LOCKDOWN BUTTON BACK BOX AND CARD READER BACK BOX IS SHOWN. DIAGRAMMATICALLY, CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATION AND SUBMIT EXACT LOCATION ON SHOP DRAWINGS FOR APPROVAL BEFORE ANY WORK IS DONE.
- LOCKDOWN BUTTON SHALL INCORPORATE AN LED LIGHT WHICH SHALL ILLUMINATE IF THE LOCKDOWN BUTTON HAS BEEN ACTIVATED.
- SYNERGIS SY-MR50-S3 MAY BE POWERED BY EITHER THE IPOE173S OR THE SY-LP1501.

2

#### TYP. DOUBLE DOOR WITH ELECTRIFIED LOCK ON CONCRETE WALL

SCALE: NONE

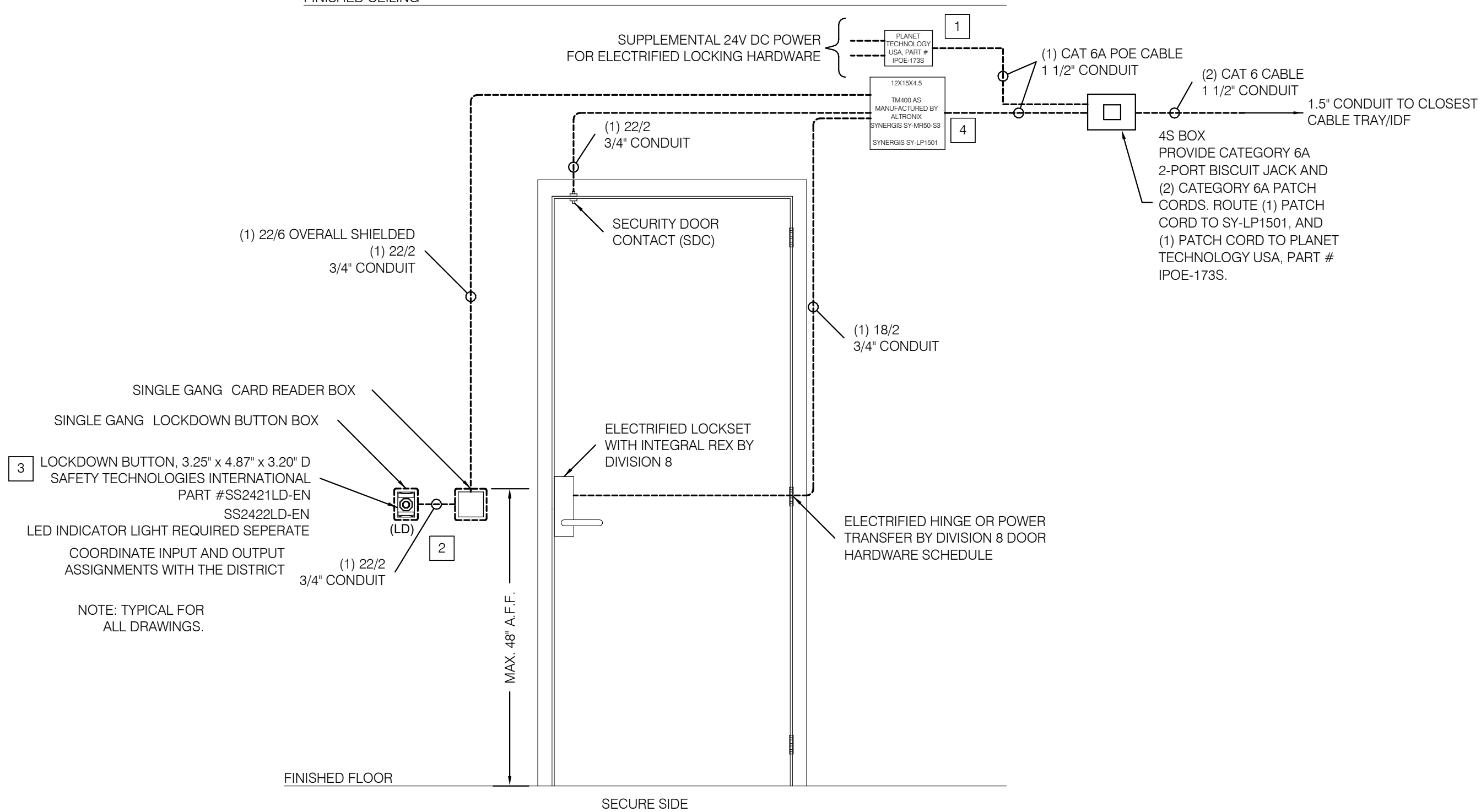
FINISHED  
CEILING



#### GENERAL NOTES

- COORDINATE LOCKING HARDWARE WITH DIV 08 HARDWARE PROVIDER.
- ELECTRICAL CONDUIT, BOXES, AND EQUIPMENT SHALL BE SURFACE MOUNTED ON SECURE SIDE OF THE PORTAL, UNLESS OTHERWISE NOTED. ALL SURFACE MOUNT CONDUIT AND BOXES SHALL BE PAINTED TO MATCH EXISTING SURFACE.
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- STANDARD DETAIL SET. NOT ALL DETAILS WILL APPLY TO ALL PROJECTS.

FINISHED  
CEILING



#### NOTES

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- SYNERGIS SY-MR50-S3 MAY BE POWERED BY EITHER THE IPOE173S OR THE SY-LP1501.

1

#### TYP. SINGLE DOOR WITH ELECTRIFIED LOCK ON CONCRETE WALL

SCALE: NONE

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Project Number

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Description

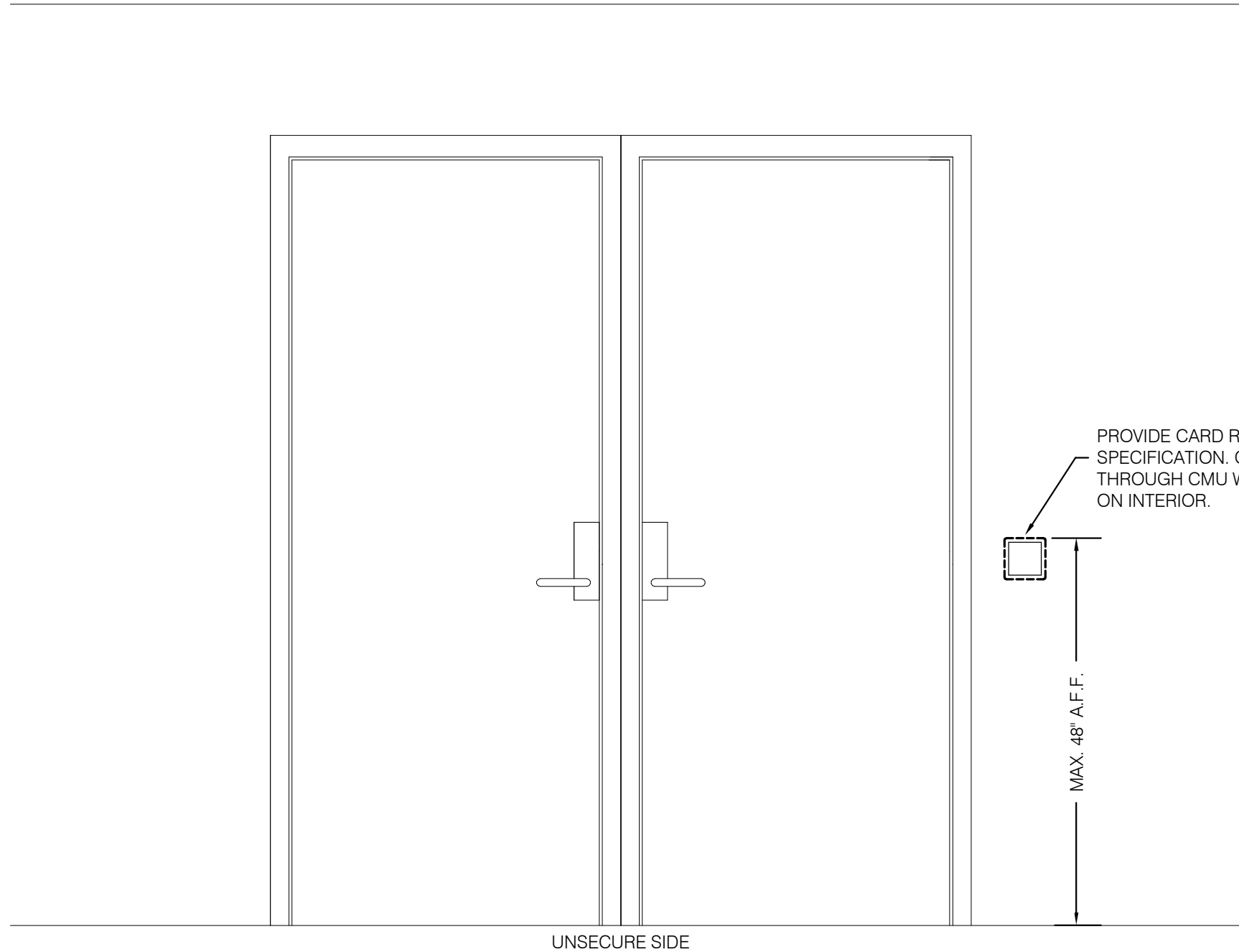
**DETAILS**

Scale

**NOT TO SCALE**

**TY6.001**

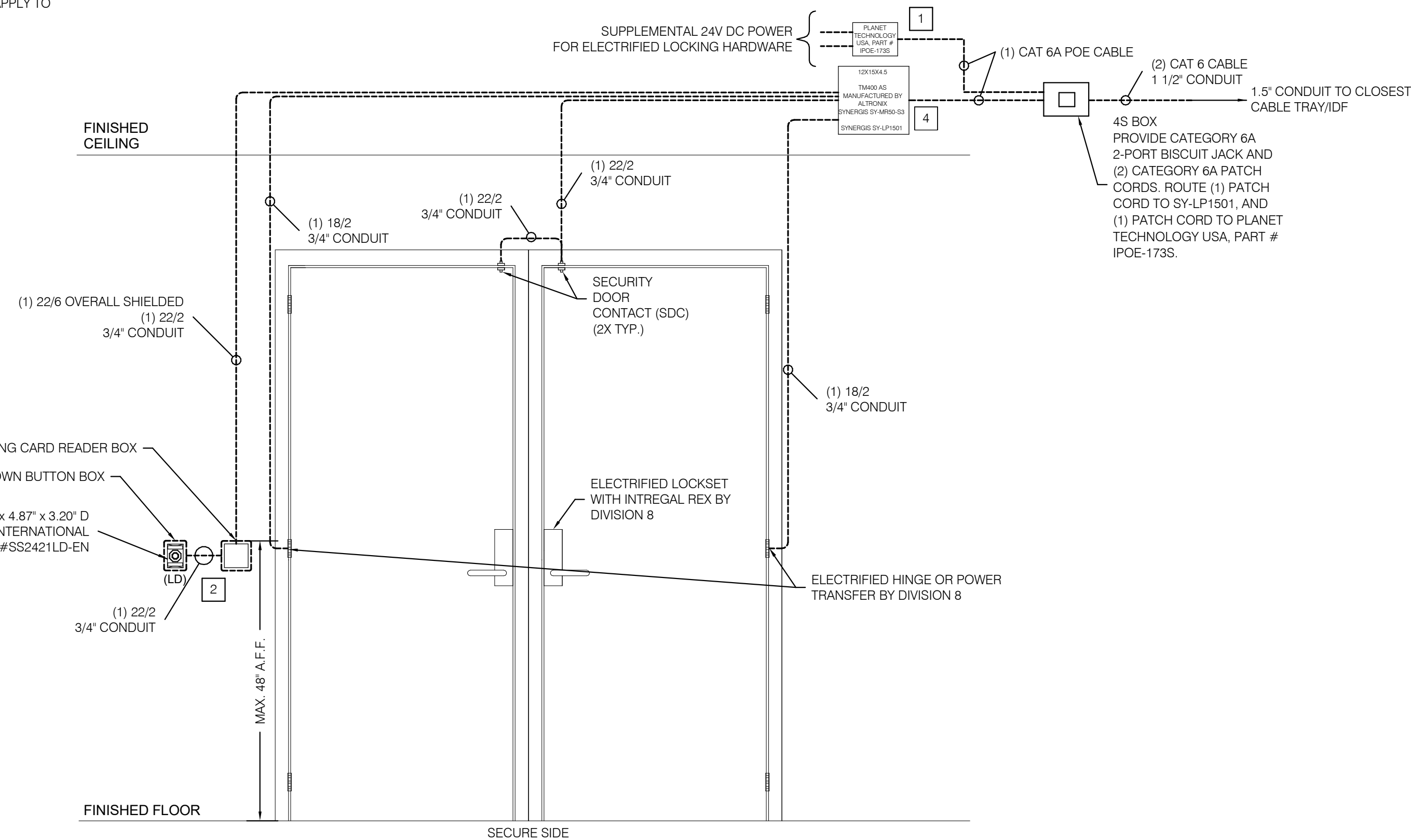
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2 TYP. DOUBLE DOOR WITH ELECTRIFIED LOCK ON GYPSUM WALL  
SCALE: NONE

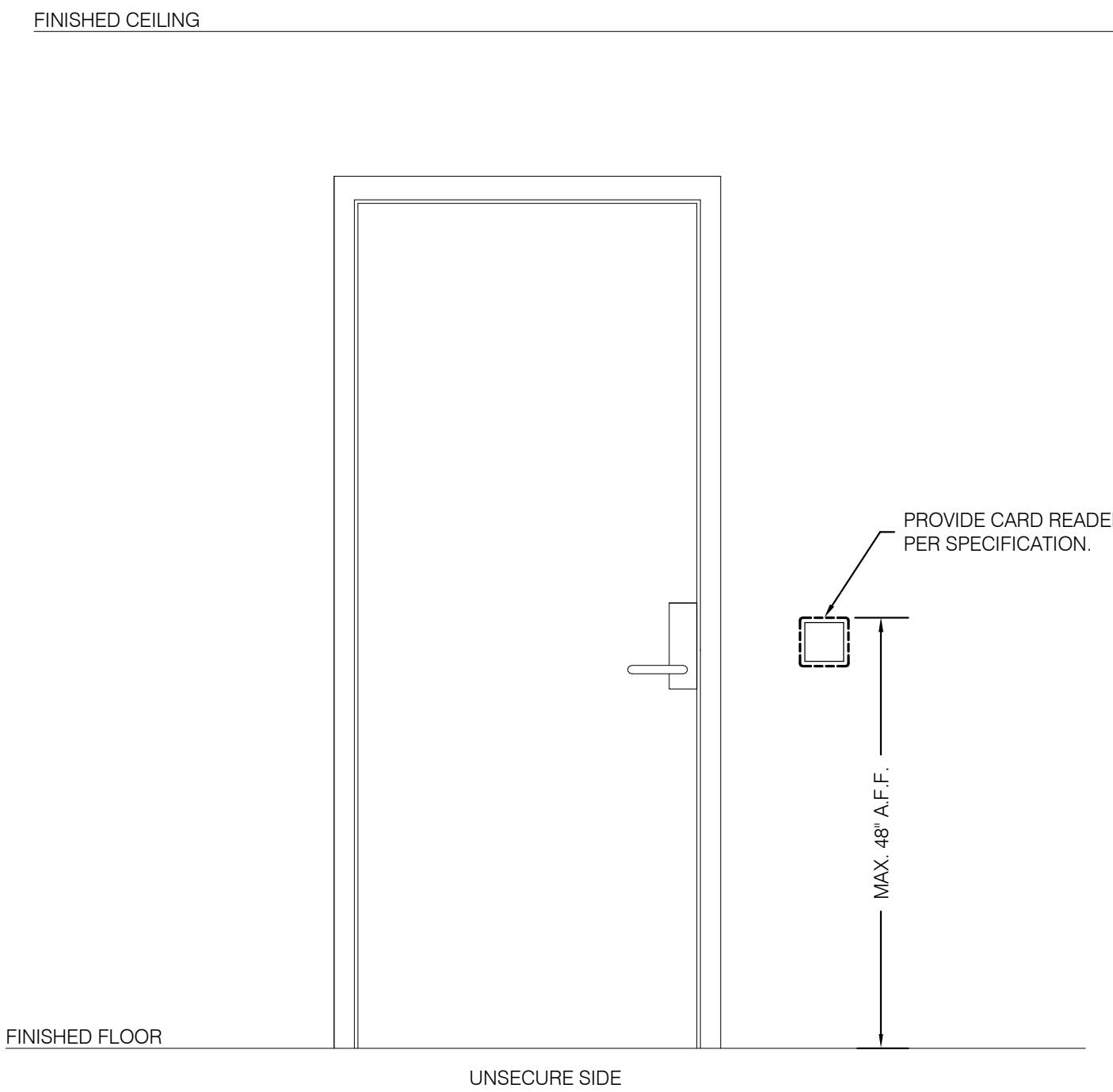
GENERAL NOTES

- COORDINATE LOCKING HARDWARE WITH DIV 08 HARDWARE PROVIDER.
- ELECTRICAL CONDUIT, BOXES, AND EQUIPMENT SHALL BE RUN INSIDE WALLS OR ABOVE CEILING LINE.
- DETAILS ARE FOR REFERENCE ONLY. SEE FLOOR PLANS FOR LEFT OR RIGHT HAND PLACEMENT OF DEVICES.
- STANDARD DETAIL SET. NOT ALL DETAILS WILL APPLY TO ALL PROJECTS.



NOTES

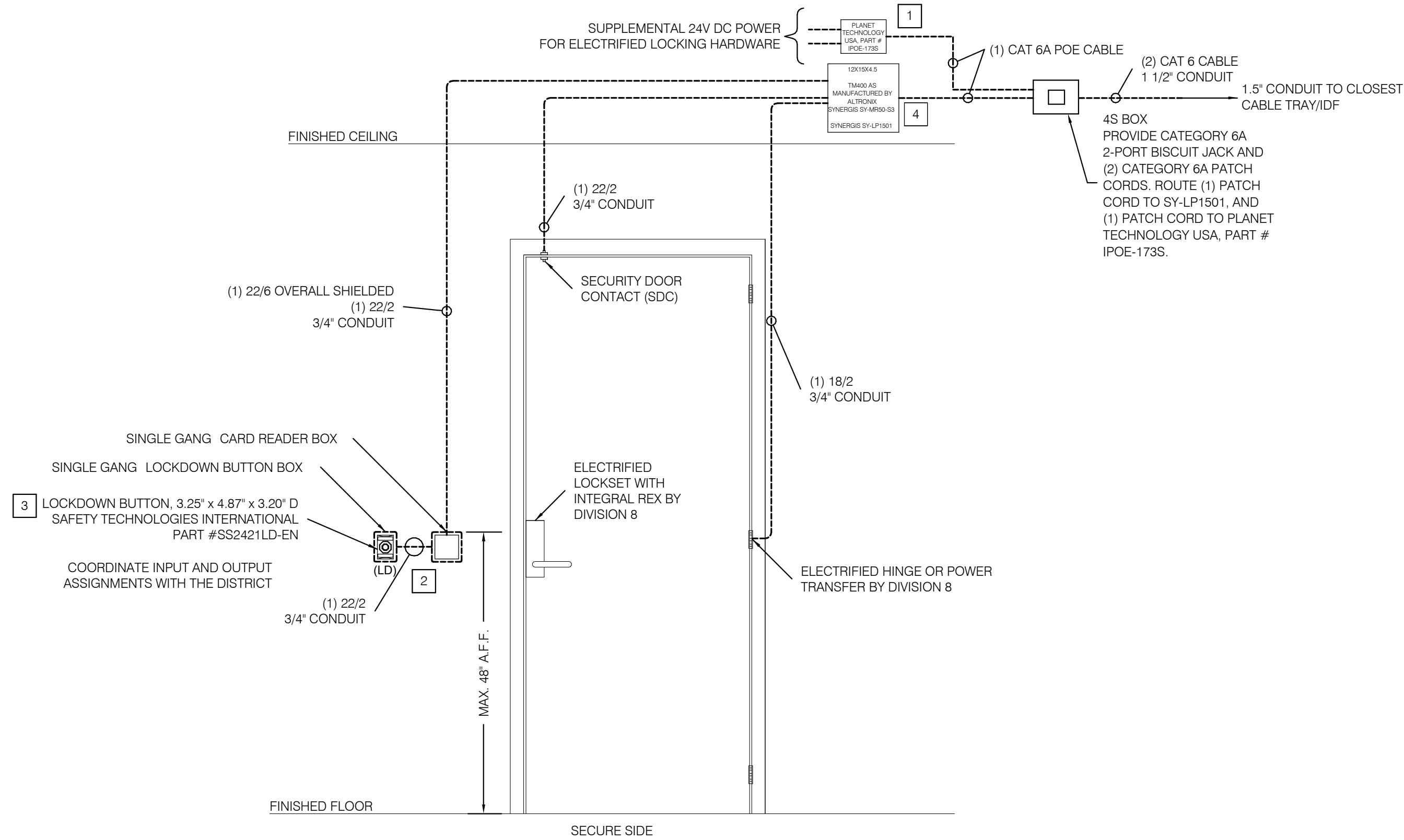
- PLANET TECHNOLOGY USA, PART # IPOE-173S. WALL MOUNT ADJACENT TO ALTRONIX TM400 ENCLOSURE.
- CONNECTION BETWEEN LOCKDOWN BUTTON BACK BOX AND CARD READER BACK BOX IS SHOWN DIAGRAMMATICALLY. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATION AND SUBMIT EXACT LOCATION ON SHOP DRAWINGS FOR APPROVAL BEFORE ANY WORK IS DONE.
- LOCKDOWN BUTTON SHALL INCORPORATE AN LED LIGHT WHICH SHALL ILLUMINATE IF THE LOCKDOWN BUTTON HAS BEEN ACTIVATED.
- SYNERGIS SY-MR50-S3 MAY BE POWERED BY EITHER THE IPOE-173S OR THE SY-LP1501.



1 TYP. SINGLE DOOR WITH ELECTRIFIED LOCK ON GYPSUM WALL  
SCALE: NONE

GENERAL NOTES

- COORDINATE LOCKING HARDWARE WITH DIV 08 HARDWARE PROVIDER.
- ELECTRICAL CONDUIT, BOXES, AND EQUIPMENT SHALL BE RUN INSIDE WALLS OR ABOVE CEILING LINE.
- DETAILS ARE FOR REFERENCE ONLY. SEE FLOOR PLANS FOR LEFT OR RIGHT HAND PLACEMENT OF DEVICES.
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NOTES

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- LOCKDOWN BUTTON SHALL INCORPORATE AN LED LIGHT WHICH SHALL ILLUMINATE IF THE LOCKDOWN BUTTON HAS BEEN ACTIVATED.
- SYNERGIS SY-MR50-S3 MAY BE POWERED BY EITHER THE IPOE-173S OR THE SY-LP1501.

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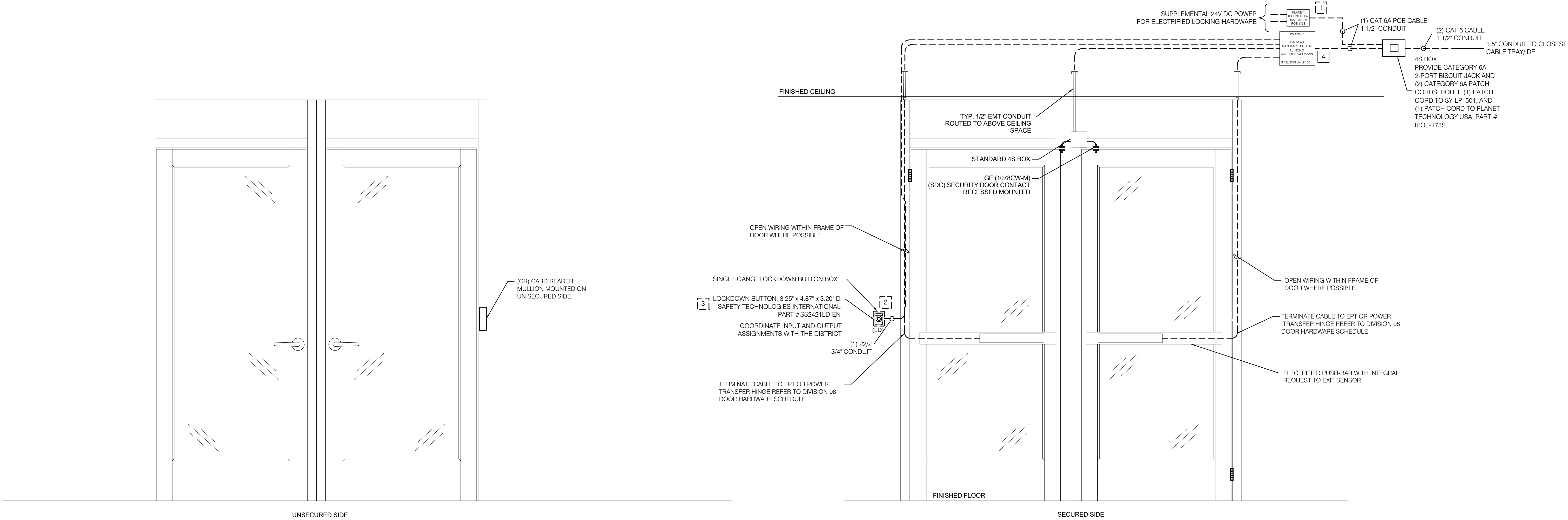
Description

DETAILS

Scale

NOT TO SCALE

**TY6.002**



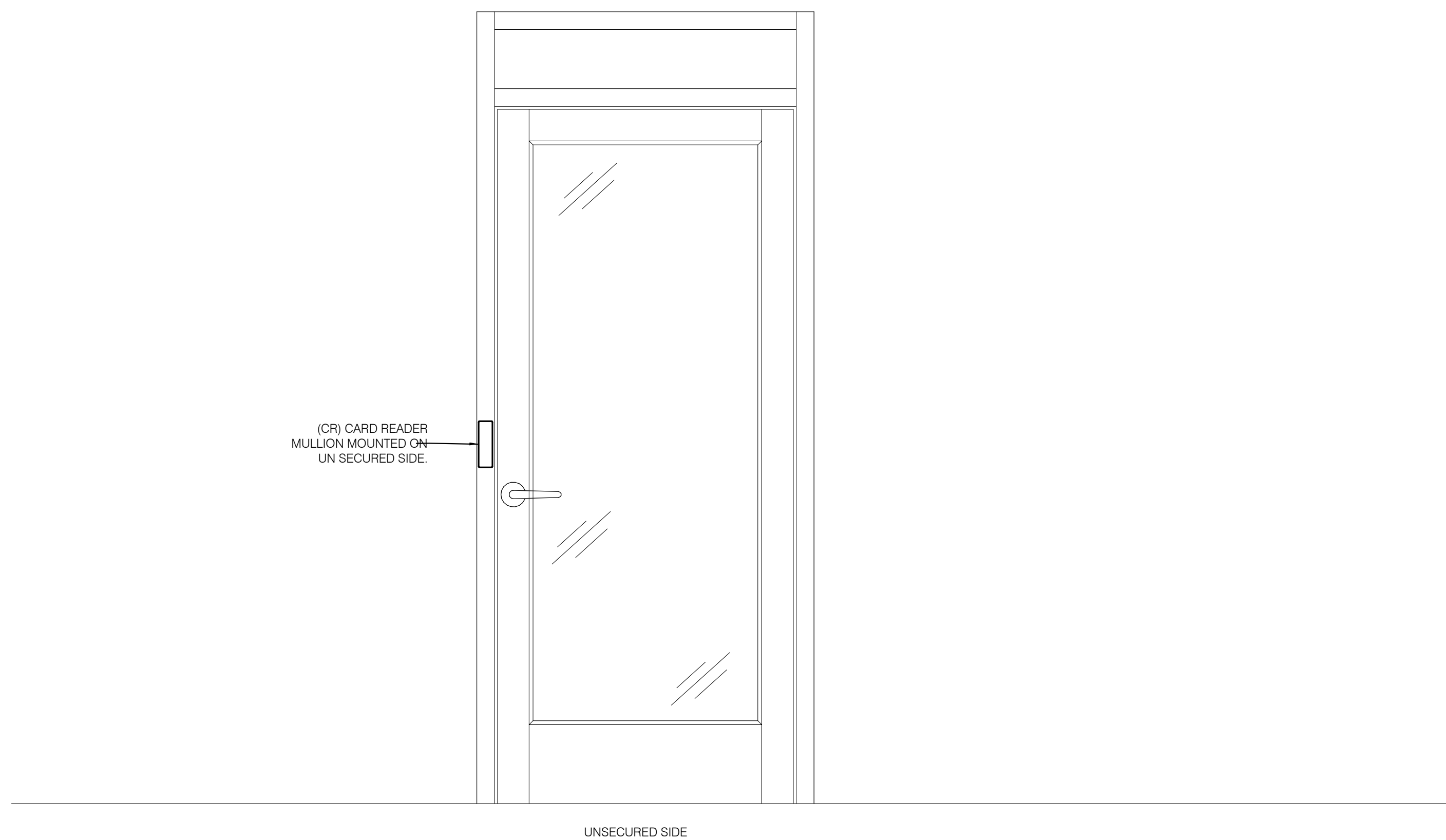
2 TYP. DOUBLE STOREFRONT DOOR WITH MULLION MOUNTED CARD READER  
SCALE: NONE

GENERAL NOTES:

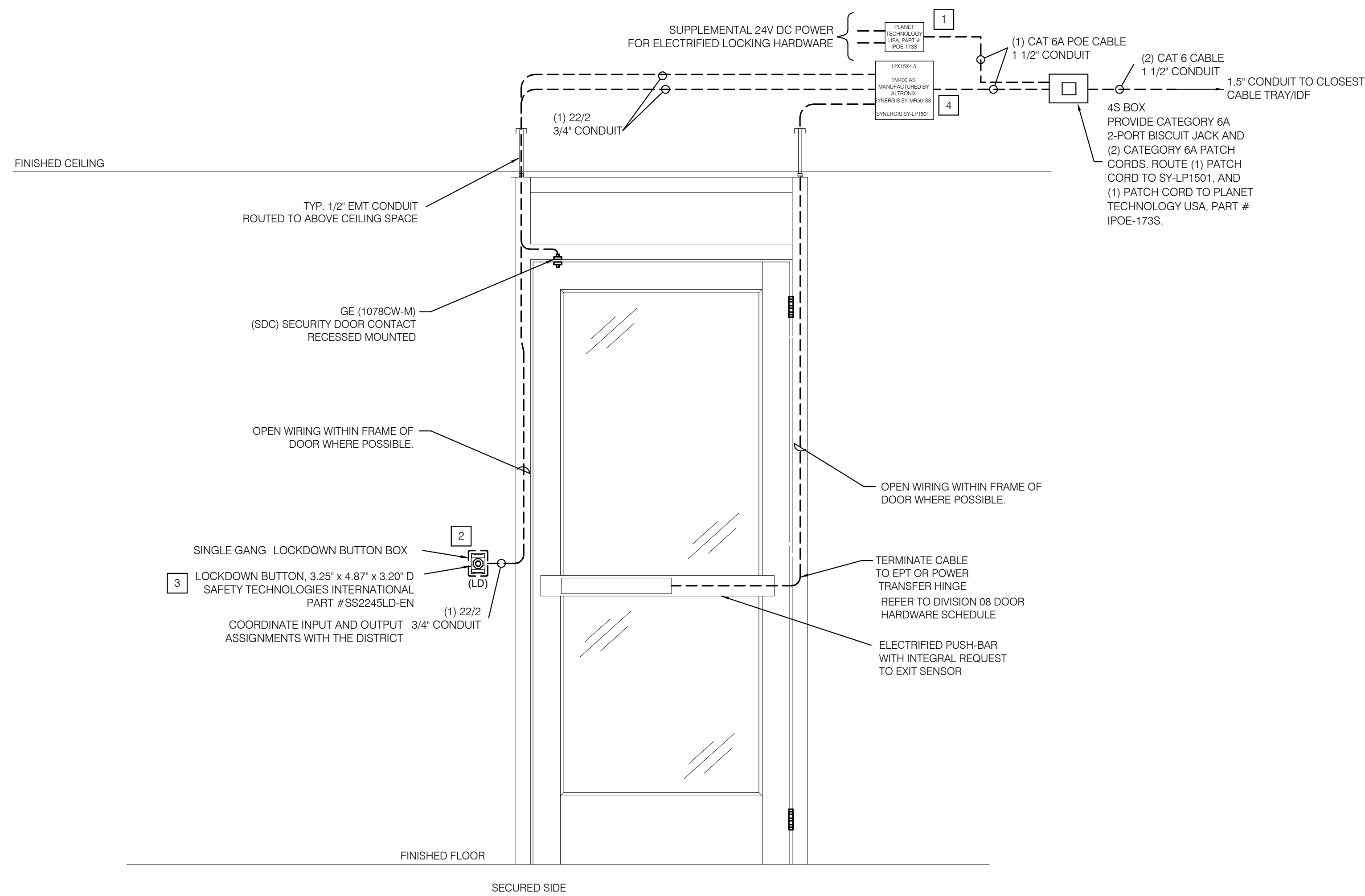
- VIEW IS SHOWN OF BOTH SIDES OF PORTAL. ELECTRICAL CONDUIT, BOXES AND EQUIPMENT SHALL BE MOUNTED ON SECURED SIDE OF PORTAL, UNLESS OTHERWISE NOTED.
- STANDARD DETAIL SET. NOT ALL DETAILS WILL APPLY TO ALL PROJECTS.

NOTES

- PLANET TECHNOLOGY USA, PART # IPOE-173S. WALL MOUNT ADJACENT TO ALTRONIX TM400 ENCLOSURE.
- LOCKDOWN BUTTON BACK BOX AND BACK BOX IS SHOWN DIAGRAMMATICALLY. CONTRACTOR SHALL FIELD COORDINATE EXACT LOCATION AND SUBMIT EXACT LOCATION ON SHOP DRAWINGS FOR APPROVAL BEFORE ANY WORK IS DONE.
- LOCKDOWN BUTTON SHALL INCORPORATE AN LED LIGHT WHICH SHALL ILLUMINATE IF THE LOCKDOWN BUTTON HAS BEEN ACTIVATED.
- SYNERGIS SY-MR50-S3 MAY BE POWERED BY EITHER THE IPOE173S OR THE SY-LP1501.



1 TYP. SINGLE STOREFRONT DOOR WITH MULLION MOUNTED CARD READER  
SCALE: NONE



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Description

DETAILS

Scale

NOT TO SCALE

**TY6.003**

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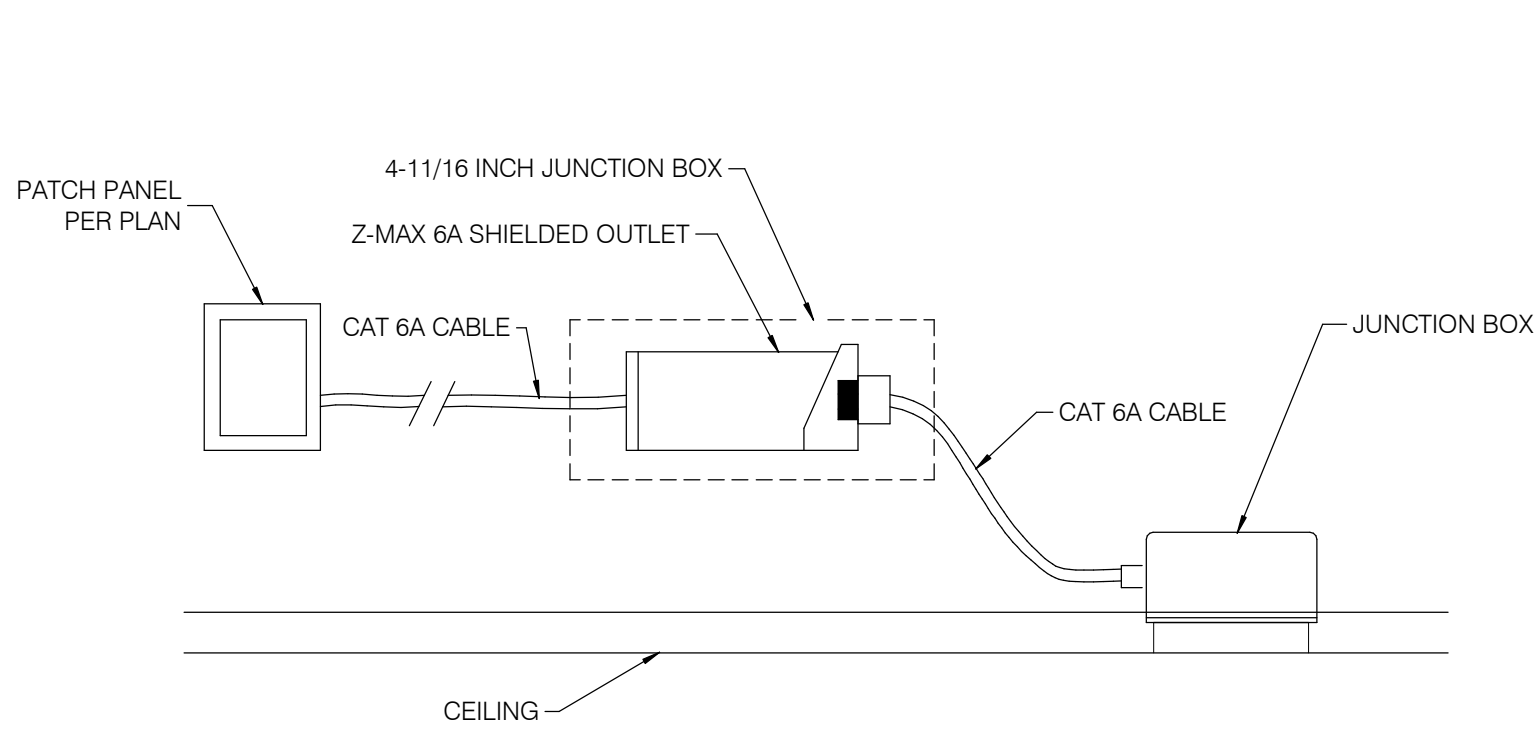
Project Name  
**BUILDING MM -  
CONSTRUCTION TRADES II**

Project Number  
**05.2882.000**

Description  
**DETAILS**

Scale  
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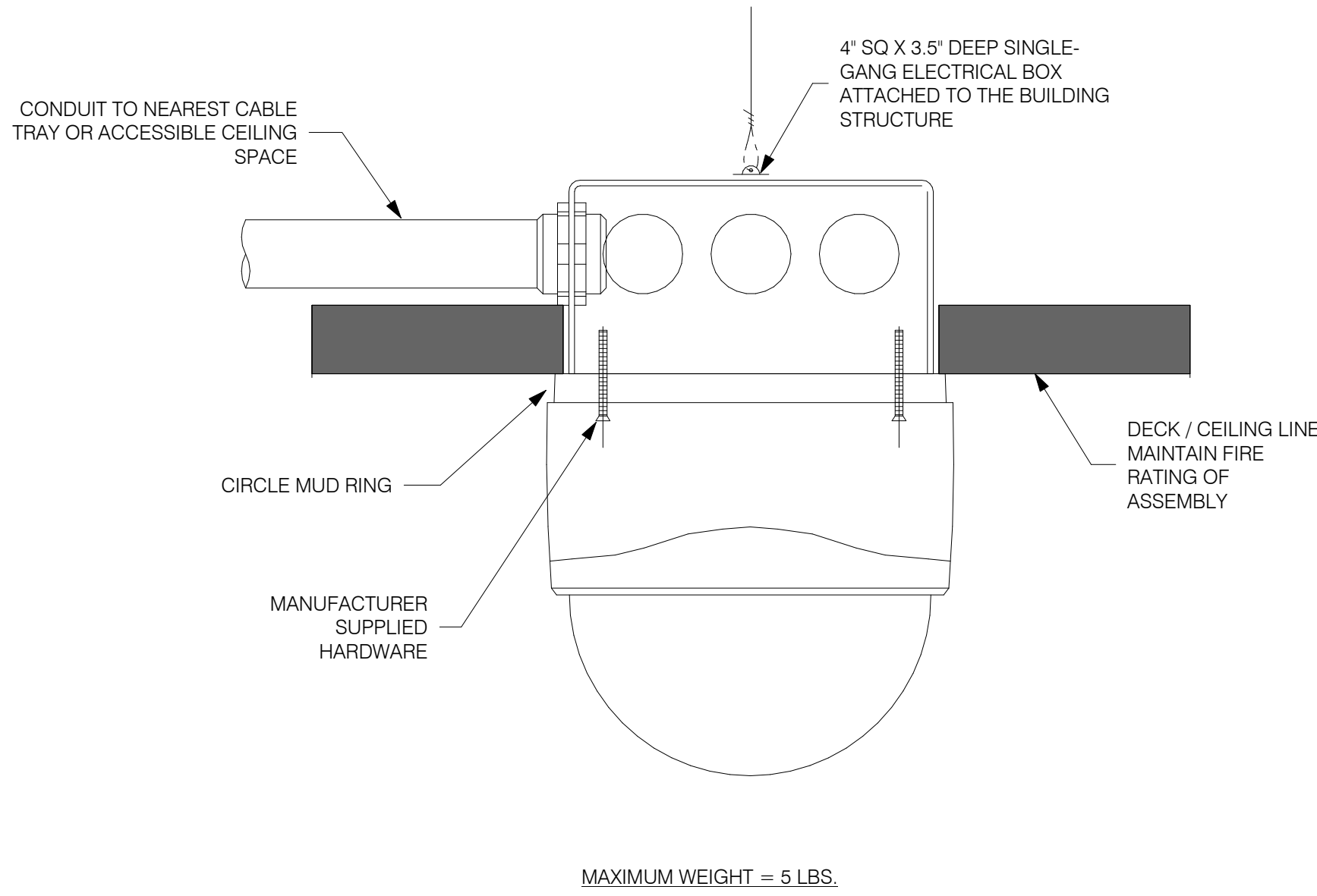
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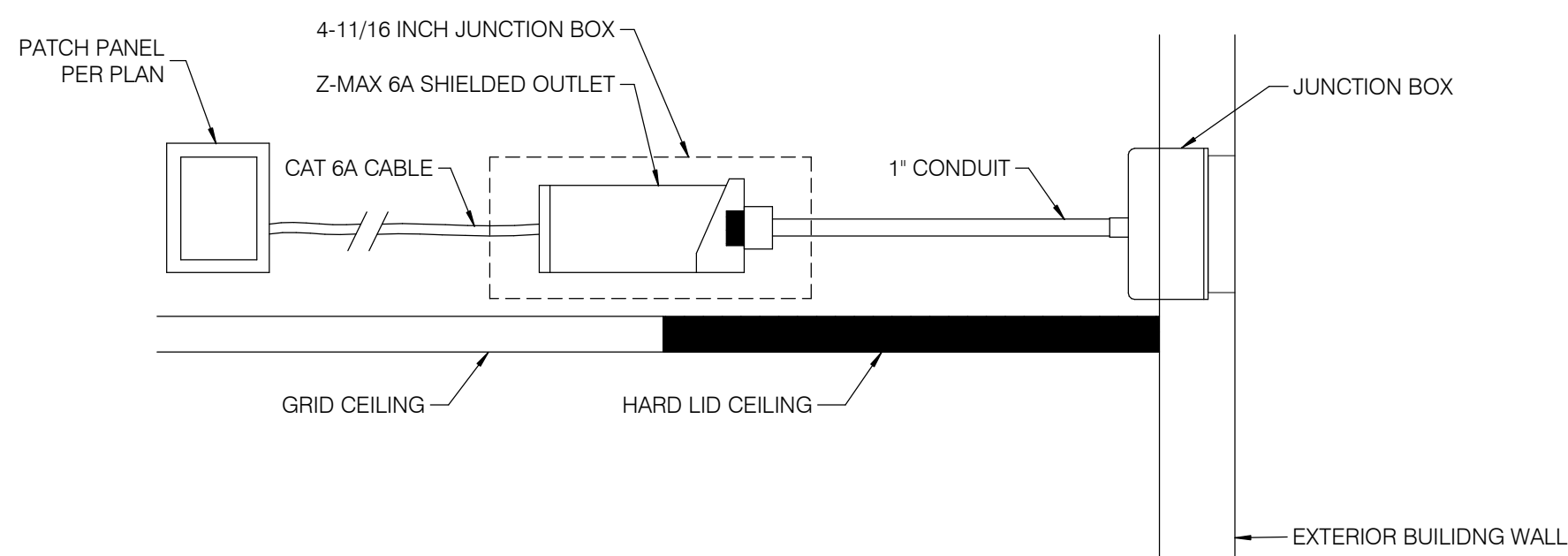
**GENERAL NOTES**

1. PROVIDE F/UTP SHIELDED PERMANENT LINK CABLING SYSTEM WITH CATEGORY 6A SHIELDED OUTLET / SURFACE BOX INSIDE FLUSH 4-11/16 INCH JUNCTION BOX LOCATED BEHIND CAMERA. PROVIDE 6A JUMPER FROM SHIELDED OUTLET TO CAMERA.

**4** TYP. CEILING MOUNTED FIXED LINK CONNECTION DETAIL  
SCALE: NONE



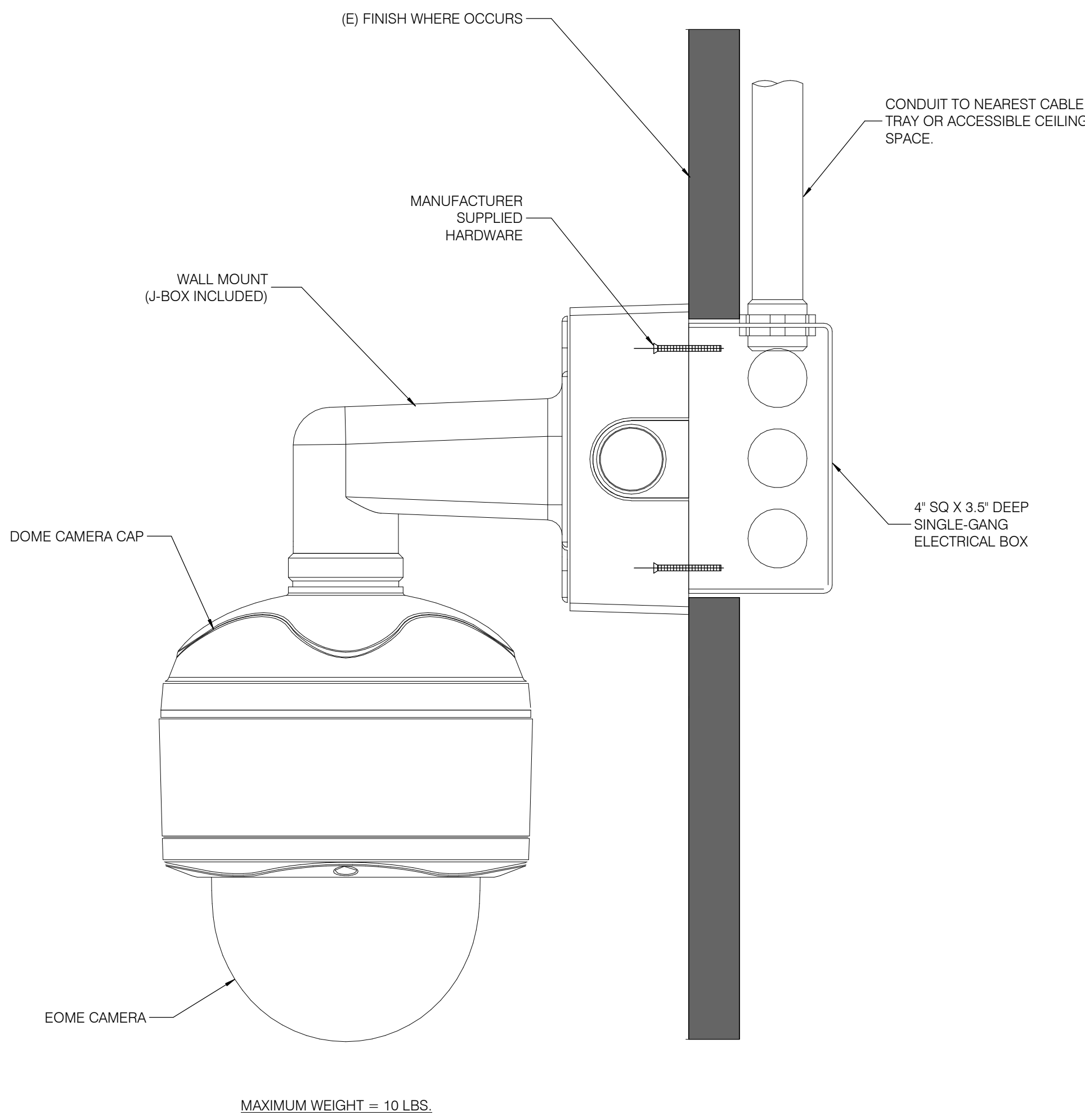
**2** TYP. DOME CEILING SURFACE MOUNTED CAMERA DETAIL  
SCALE: NONE



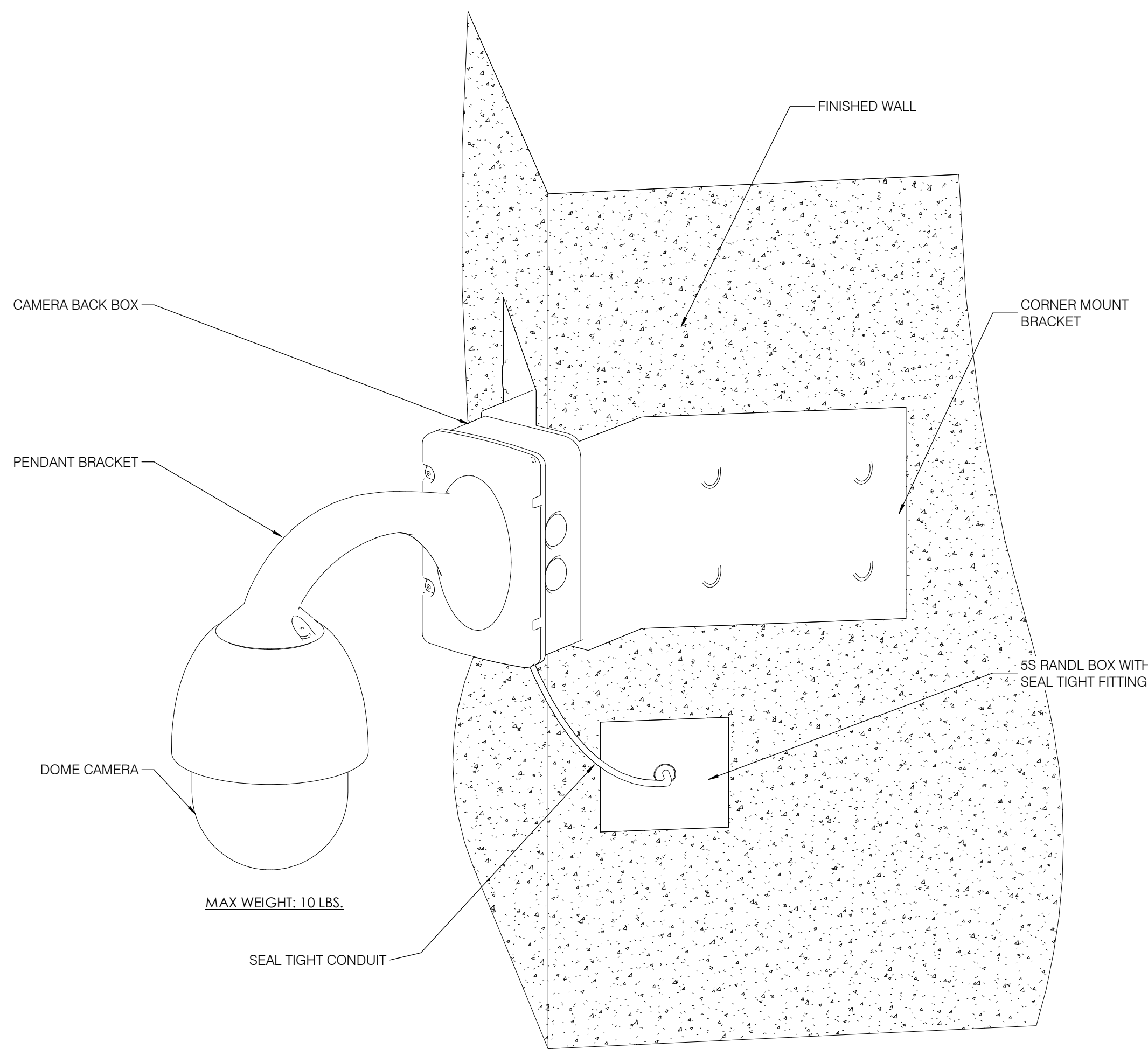
**GENERAL NOTES**

1. PROVIDE F/UTP SHIELDED PERMANENT LINK CABLING SYSTEM WITH CATEGORY 6A SHIELDED OUTLET / SURFACE BOX INSIDE 4-11/16 INCH JUNCTION BOX LOCATED AT NEAREST ACCESSIBLE CEILING SPACE TO CAMERA. PROVIDE 6A JUMPER IN CONDUIT PATHWAY FROM SHIELDED OUTLET TO CAMERA. MOUNT CAMERA TO FLUSH MOUNT JUNCTION BOX AT WALL/CEILING PENETRATION.

**5** TYP. WALL MOUNTED FIXED LINK CONNECTION DETAIL  
SCALE: NONE



**3** TYP. DOME WALL PENDANT MOUNTED CAMERA DETAIL  
SCALE: NONE



**1** TYP. CORNER MOUNTED DOME CAMERA  
SCALE: NONE

**SECTION 28 05 00 - COMMON WORK RESULTS FOR ELECTRONIC SAFETY AND SECURITY**

**PART 1 - GENERAL**

**1.1 RELATED DOCUMENTS**

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

**1.2 SUMMARY**

- A. Part 1 Includes:
1. Related Documents
  2. Summary and related sections
  3. References
  4. Definitions
  5. System Description and General Responsibilities
  6. Coordination
  7. Quality Assurance
  8. Submittals
  9. Delivery, Storage, and Handling
  10. Site Conditions
  11. Sequencing and Scheduling
  12. Warranty
  13. Extra Materials
- B. Part 2 Includes:
1. Product Options and Substitutions
  2. Materials and Equipment
  3. Equipment Modification
  4. Fabrication
  5. Source Quality Control
  6. Firestopping/Sealant Materials
- C. Part 3 Includes:
1. Examination
  2. Installation
  3. Field Quality Control
  4. Cleaning
  5. Training
- D. Related Sections:

- |    |          |                                |
|----|----------|--------------------------------|
| 1. | 28 13 00 | Physical Access Control System |
| 2. | 28 16 00 | Intrusion Detection System     |
| 3. | 28 23 00 | Video Surveillance System      |
| 4. | 28 26 00 | Duress Alarm System            |
| 5. | 28 31 00 | Fire Alarm Systems             |

### **1.3 REFERENCES**

Codes compliance - Comply with the established project edition of the following codes as applicable:

- |    |  |      |
|----|--|------|
| 1. | National Fire Alarm Codes (NFPA 72)                      | NFAC |
| 2. | All Local, State, County or Federal codes and ordinances |      |

B. Standards Compliance - Comply with the following standards as applicable:

- |     |   |      |
|-----|---|------|
| 1.  | American National Standards Institute         | ANSI |
| 2.  | American Society for Testing and Materials    | ASTM |
| 3.  | Electronics Industry Association              | EIA  |
| 4.  | Electrical Testing Laboratories               | ETL  |
| 5.  | Federal Communications Commission             | FCC  |
| 6.  | Institute of Elect. and Electronics Engineers | IEEE |
| 7.  | National Electrical Contractors Association   | NECA |
| 8.  | National Electrical Manufacturers Association | NEMA |
| 9.  | National Fire Protection Association          | NFPA |
| 10. | Occupational Safety Health Act                | OSHA |
| 11. | Underwriter's Laboratories                    | UL   |

### **1.4 DEFINITIONS**

- A. By Others or By Other Trades: By persons or parties other than the Division 28 Contractor. In this context the words "by others or by other trades" shall not be interpreted to mean "not in contract (NIC)".
- B. Certified: Equipment has been tested and found by a nationally recognized testing laboratory to meet nationally recognized standards and found to be safe for use in a specified manner; production is periodically inspected by a nationally recognized testing laboratory; and it bears a label, tag, or other record of certification.
- C. Concealed: Not visible or readily accessible such as, embedded in masonry or other construction installed behind wall furring with double partitions or above hung ceilings, in crawl spaces, in shafts.
- D. Conveniently Accessible: Capable of being serviced without climbing or crawling under or over obstacles, and with adequate working clearance both front and back.
- E. Damage: Visible or invisible abuse that negatively affects performance or appearance and creates defective materials or workmanship.



- F. Defective Materials or Workmanship: Operational failures, performance below minimum requirements, evidence that the system will not be reasonably maintainable, errors in documentation, abnormal operations, unsafe conditions, or similar unsatisfactory performance.
- G. Contractor: Company holding the contract or agreement with the Owner or its representative. The Contractor may, when permitted, sub-contract Work described in this Section to which the term contractor may apply.
- H. Exposed: Not concealed.
- I. Failure: Any deviation from intended system operation and performance, as determined by the Contract Documents and subsequent submittals and the Owner's Representative.
- J. Furnish: Purchase and deliver to the Project site complete with every necessary appurtenance, support, and accessory required for operation.
- K. Install: Unload at the delivery point at the site and perform every operation necessary to establish secure mounting and correct operation at the proper location in the Project.
- L. Labeled: Equipment embodies a valid label, symbol, or other identifying maker of a nationally recognized testing laboratory such as Underwriters' Laboratories, Inc., the laboratory makes periodic inspections of the production of such equipment, and the labeling indicates compliance with nationally recognized standards or tests to determine safe use in a specified manner.
- M. Listed: Equipment is mentioned in a list which is published by a nationally recognized laboratory which makes periodic inspection of the production of such equipment or states that such equipment meets nationally recognized standards or has been tested and found safe for use in a specified manner.
- N. Nationally Recognized Testing Laboratory: A testing laboratory which is approved, in accordance with OSHA regulations, by the Secretary of Labor.
- O. Provide: Furnish and install, completely ready for use, including all accessories required for operation.

## **1.5 SYSTEM DESCRIPTION AND GENERAL RESPONSIBILITIES**

- A. The work to be performed under this contract includes the furnishing of all labor, materials, and equipment for a video surveillance system, a physical access control system, a duress / panic system, and an audio announcement system. Work shall include all provisions of new electronics controls systems, including, physical access control, duress alarm, video surveillance, and audio. Portion of the work are to be bid as an optional add alternate, and the Owner may or may not choose to execute this work under the contract.
- B. Combined Prescriptive and Performance Design Requirements
  - 1. Division 28 includes a combination of prescriptive and performance specifications. Compliance with the performance specifications, as well as coordination and integration

of the prescription requirements, will require substantial design work on the part of the Contractor.

2. The performance requirements are intended to establish overall system performance requirements, satisfy the operational requirements, and establish the inter-coordination requirements for the Division 28 systems.
3. The prescriptive requirements establish the minimum quality, characteristics, and types of components, equipment, and materials to be used to achieve the stated system performance requirements. The Contractor is advised, however, that prescriptive specifications have not been provided to satisfy all of the specified performance requirements.
4. The Contractor shall carefully consider all of the requirements for each of the Division 28 systems when preparing its bid. Any questions regarding the intent of these requirements, the scope of the systems or their coordination requirements must be submitted in writing prior to bidding in accordance with the Instructions to Bidders. The Contractor shall have no claim for either extra compensation or extra time on the grounds that it did not understand the scope or the requirements of the Division 28 work, and/or the coordination requirements of the Division 28 work with the work of the other Divisions.
5. Compliance with the project requirements will be progressively monitored and adjusted through the submittal process, installation period, and performance verification testing.

**C. Drawing Interpretation**

1. The Drawings are diagrammatic and indicate the general arrangement of systems and equipment unless indicated otherwise by dimensions or detail drawings. The Drawings installation and schematic diagrams and symbols to outline the Work to be provided. These drawings do not have any dimensional significance nor do they delineate every item required for the intended Work. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete Work are excluded.
2. The Work shall be provided in accordance with the intent expressed on the Drawings and Specifications, and in conformance with the actual building architectural and structural conditions. When in conflict, field conditions take precedence over the Contract Documents.
3. The meaning of abbreviations shall be the same whether in lower case letters or without periods.
4. The use of words in the singular shall not be considered as singular where other indications denote that more than one item is referred to.
5. Details that appear on the Contract Documents which are specific with regard to the dimensioning and positioning of the Work, are intended only for the purpose of establishing general feasibility. They do not replace engineering or field coordination by the contractor for the Work.

**D. Provide all parts and equipment for a complete and operational system for the Work of Division 28 as described herein and shown on the drawings.**

**E. Furnish and install all trenching and backfill, duct banks, conduits, raceways, sleeves, boxes, gutters, shelves, enclosures, shelf and enclosure supports, backboards, pull ropes (in unused or spare conduits) required to make all systems fully operational, including components not shown on the Drawings, but necessary for fully operational systems.**

- F. Furnish, install, terminate, test, dress, and identify all wire and cable required to make systems fully operational, including all wire and cabling not shown on the Drawings, but necessary for fully operational systems.
- G. Recognize that the Work entails integration between individual systems, as well as the design and implementation of many system and component interfaces. Take full responsibility for the complete design, installation, and performance of the total integrated system, including integration between systems and various interfaces, in order to achieve the specified operational features and system performance requirements.
- H. Fully test the systems, demonstrate their satisfactory operation, and train maintenance and operating personnel, as specified in this Section and the Sections governed by this Section.

## **1.6 COORDINATION**

- A. Coordinate with the Owner and all other trades as required to ensure that the entire Work of this Project will be carried out in an orderly, complete, and coordinated fashion.
- B. Coordinate installation of lighting and ventilation in all equipment rooms and control stations to avoid any possible interference and to enhance system function.
- C. Coordinate with the Work of all applicable Divisions and Drawings for the required electrical and mechanical control interfaces to the work of this section.
- D. If applicable, provide coordination drawings of security device plate mounting templates and internal frame conduits to the hollow metal frame manufacturer/supplier to facilitate frame preparation for electronic devices. Rework all frames for which device mounting has not been coordinated at Contractor's expenses.
- E. If applicable, obtain product data and wiring schematic information from the Division 8 and 11 Contractors/manufacturers for all approved locking and door monitoring hardware. Coordinate with the Contractors to properly wire, terminate and test all electrically controlled and monitored door/gate hardware.

## **1.7 QUALITY ASSURANCE**

- A. Division 28 requires contractors with similar work experience and specific licenses and certifications to perform the work of this section. Contractors must be certified or licensed at the time of bid where Manufacture certification or licensure is required. Required licenses and certifications shall be submitted the contractor's bid package.
- B. The Division 28 contractor shall have had experience in the design and installation of similar systems of similar project sizes and similar integration as this project to be considered qualified.
- C. The Contractor shall be responsible for all costs incurred including costs incurred by the Owner and its representatives for failure to provide the experience and key personnel as specified.



1. Deductive change orders may be issued as a result of the failure to properly engineer the work prior to construction or improperly installed work that results in costs incurred to the Owner. Examples of incurred costs are rejection of submittals for failure to follow specifications or failure to properly engineer the work; re-inspection of rejected work.
- D. The Division 28 contractor shall maintain a local service center with qualified service technicians for the duration of the Warranty.
- E. The Division 28 Contractor shall have an active C-7 or C-10 contractor's license, as required by the project scope, issued by the State of California.
- F. Key Project Personnel must have work experience with projects of similar size and complexity. Systems experience shall be demonstrated for the Key Project Personnel. Résumés of prospective key personnel shall be submitted within 30 days of contract award.
  1. Project Manager Qualifications
    - a. Five years' experience with projects of similar size and complexity.
  2. The approved Project Manager shall represent the Contractor at all times in all project matters and shall be responsible for the administrative work including but not limited to, the following:
    - a. Representation at all project meetings.
    - b. Progress schedule and progress reporting.
    - c. Payment schedule of values and pay requests.
    - d. Representation and management of all employees and sub-contractors.
    - e. Conduction of on-site performance and acceptance testing.
  3. The approved Project Engineer shall be qualified and shall be responsible for technical work including but not limited to, the following:
    - a. Preparation and signature of all engineering, shop drawings, and product data submittals.
    - b. System fabrication, field installation work, and testing.
  4. Consider all qualification and experience materials submitted as binding. Obtain the Owner's approval in writing prior to any deviations from the minimum requirements in organization, personnel, work plan, quality control plan, procurement plan or other declaration within the qualification submittal. Key project personnel substituted prior to or during the Work must meet the specification requirements and obtain the Owner's approval.
- G. Regulatory Requirements and Standards:
  1. Obtain and pay for all permits and inspections required by all legal authorities and agencies having jurisdiction for the Work. The certificates of all such permits and inspections shall be delivered to the Owner.

## **1.8 SUBMITTALS**

- A. Submit under provisions of Division 1, Submittals.
- B. Contractor is advised that approval or acceptance of product data or shop drawing submittals does not release the contractor from providing all necessary documentation per submittal requirements, nor does it obviate contractor from additional design and coordination throughout the project.
- C. Work Plan
  - 1. Submit a work plan for all work to be performed in the existing facility within 15 days of the Notice to Proceed.
- D. CPM Schedule
  - 1. Submit a Critical Path Method Schedule within 30 days of the Notice to Proceed.
  - 2. At a minimum show tasks by area such as by building, by floor or other appropriate designations.
  - 3. Include tasks that are not part of the work of this section but that may affect this section such as work by other trades or contractors or Owner review time.
  - 4. Include tasks that are not part of the work of this section but that may affect this section such as work by other trades or contractors or Owner review time.
- E. Submittal Matrix
  - 1. Prepare a matrix of submittals by type vs. section of all submittals to be made by the Division 28 contractor within 30 days of the Notice to Proceed.
  - 2. Utilize the list of required submittals listed at the end of this section as a starting point. Add columns for expected delivery dates and each specification section. If a listed submittal is not required for a specific section, indicate such with an "N/A" or other means in the column and row cross point.
- F. Schedule of Values
  - 1. Submit a Schedule of Values (SOV) based on the CPM schedule and Submittal Matrix that reflect the value of the systems and installation of work for this Division.
  - 2. That approved SOV will be used as a basis for progress payments.
- G. Product Data:
  - 1. Product data is required for all materials and equipment. Include complete bill of materials for each section with the product data submittal.
  - 2. Cross-reference submitted items to the Specifications using their related sections and paragraph numbers.
  - 3. Submit complete product data for the all system components in a single, bound submittal of one or more volumes. Provide a table of contents and labeled divider tabs for each section. Partial submittals for individual sections will be returned without review.
  - 4. Include descriptive literature, catalog cuts, illustrations, schematics, technical data sheets, and test data necessary for the Owner's Representative to ascertain that proposed equipment and materials comply with specification requirements. Include manufacturer's

name, model, catalog or part numbers. Catalog cuts shall be legible and shall clearly identify equipment being submitted.

5. Include required calculations, I/O points lists, system zone schedules, and other tabular data as necessary to clarify system sizing and configuration. Do not, however, consider such submittals as a substitute for complete shop drawings.
6. Disclosure of Product Deviations: Specifically identify and tabulate any and all deviations from the contract documents including all system functions and features. Reference the corresponding specification sections and paragraph/article numbers. All variances and deviations will be reviewed for acceptance or rejection. It will be the Contractor's sole responsibilities to comply with all other contract requirements not revealed in the disclosure of product deviations.

**H. Shop Drawings:**

1. Shop drawings are required for all systems and component assemblies.
2. AutoCAD ".dwg" files of the Contract Drawings may be made available upon request. These files may be used as a first step in the preparation of shop drawings. Do not consider the drawing plots from such files as a substitute for the shop drawings that are to be prepared by the contractor.
3. Shop drawings will not be accepted or considered unless they are submitted as a complete package for each specification section. Partial submittals covering less than a whole system or with incomplete interfaces to other systems will be rejected.
4. Standard manufacturer's drawings may not be used as shop drawings unless specifically modified for use on this project.
5. Each drawing requires a unique drawing number and revision level. Revisions shall be dated and referenced per submittal number. Delta numbers and clouds on the drawings shall be used in all instances where changes have been made to the previous submittal.
6. At a minimum, include the following shop drawings:
  - a. Floor Plans: Scaled drawings showing equipment and device locations in plan view. Include wire and cable types and quantities, raceway sizing and routing. Routing information shall indicate where rated assemblies are penetrated. Separate into as many plan series as needed to prevent overlapping information. These drawings shall be fully coordinated with other trades prior to submittal. Show relationships to adjacent surrounding structures.
  - b. Equipment and Control Room Plans and Elevations: Scaled, dimensioned drawings showing security equipment layouts in security equipment rooms, electrical/security closets, and control rooms. Include electrical J-boxes and receptacles, power, conduit sizing and routing, metal gutters, wiring ducts, cable trays, and supports. Indicate all other non-security cabinets, enclosures, and equipment within the room. All constraints and clearance requirements shall be shown in dimensioned drawings.
  - c. Cabinet, Enclosure, and Rack Elevations: Scaled, dimensioned drawings for each system equipment cabinet, enclosure, and rack showing component and equipment mounting, wire and cable routing and separation, connector and terminal block locations and labeling, and all necessary fabrication details.
  - d. System Block Diagrams: Single line block diagrams showing the general relationship between system components and the interconnection between systems. Use these drawings as a reference for the Single line diagrams and point-to-point diagrams by cross-referencing the shop drawing number of those diagrams on these drawings.

- e. Single Line Diagrams: Interconnection diagrams for the riser and trunk wiring between equipment cabinets, enclosures racks and major components. Use the same equipment designations as the floor plans and block diagrams.
  - f. Point-to-Point Diagrams: Drawings which show the wiring of each component or device of each individual system. Include details of power supply, grounding, shielding, shield grounding, surge protection, fusing, connector pin-outs, terminal assignments, and similar wiring and connection details. Use the same component and device designations as the floor plans and other shop drawings.
  - g. Device Installation Diagrams: Details which show the installation and wiring termination of each field device in each individual system. Include settings for dipswitches, jumpers, addresses, port assignments, etc. of all devices.
  - h. All other shop drawings necessary to install, fabricate, locate, identify, test, service, and repair the systems provided.
7. Shop drawings approved by the Owner's Representative OR by the Consultant Engineer is not a release from Contract requirements as defined by the Drawings, Specifications, and governing codes and regulations.

**I. Samples:**

**1. Field Samples:**

- a. Wires and Cables: Submit a one (1) foot sample length of each wire and cable type to be used with the cable identification clearly shown.
- b. Submit all required samples along with the product data submittal for review and approval prior to installation.
- c. If all wire samples cannot be submitted at the same time, submit samples with a complete list of all cables to be used noting samples which have been submitted. Update the list with each subsequent sample submittal.

**2. Devices/Equipment:**

- a. If required by Owner, submit sample assemblies of each of the following devices or equipment along with the product data submittal for review and approval by the Owner's Representative:
    - 1) Substituted products if requested by Owner.
    - 2) Custom component, board, equipment or assembly.
3. Disposition: Submitted samples become property of the Owner and will not be returned.
4. Approval of any custom or modified assemblies shall be required. Submit technical information with samples.

**J. Test Procedures:**

- 1. Initial Performance Testing: Submit test procedures, forms, and checklists for point-by-point testing. Include a listing for each individual system, each control station and control panel, each equipment room, and each major system component. At a minimum, forms shall include columns for operational/non-operational status, remarks, workmanship, and



date corrected. Submit a sample format for approval by the Owner's Representative a minimum of 20 days prior to testing.

2. Performance Verification Testing: Submit test forms which are identical to or similar to the accepted Initial Performance Testing forms. Obtain approval from the Owner's Representative for any changes in test procedure or forms.

**K. Test Results:**

1. Performance Verification Testing: Submit completed test results prior to or with the request to have the project declared substantially complete by the Owner.

**L. Record (As-Built) Documents:**

1. Maintain a current record set of as-built drawings on the job and as construction and installation progress, show the actual installed location of all items, material, and equipment.
2. Accurately record actual routing of all conduits including sizes and types.
3. The as-built drawings shall be available to the Owner's Representative for review and will be required for evaluation of progress payments.
4. Submit as-built shop drawings created from the approved shop drawings and updated from the site as-built drawing set and any other drawings required to depict the as-built conditions of the installed work.

**M. Operational Manuals:**

1. Submit the required quantity of identical manuals, which shall contain the Theory of Operation, start up, shut down and emergency procedures, and the manufacturer's operating instructions.
2. Subdivide the manual by section with tab dividers. Provide a table of contents which identifies each section and the contents therein.
3. Submit an electronic copy.

**N. Maintenance Manuals:**

1. Submit a complete set of maintenance documents as described in this Section. For documents of sizes greater than 11 x 17 inches, prints and electronic copy shall be furnished.
2. Manuals shall include the following as a minimum requirement:
  - a. Technical system description.
  - b. System schematics.
  - c. Detailed wiring diagrams to identify cabling, termination, and routing.
  - d. Panel assembly drawings to identify location of components, terminal strips, and equipment as required to correlate with system drawings.
  - e. Descriptions and drawings as required to maintain equipment from the board to the component level.
  - f. Description of software and user programmable functions. Procedures for user programmable functions shall be included.
  - g. A complete electronic copy of each unique system program.

3. For systems where the program resides on electronic media or other similar storage medium, furnish a copy of the media, or similar medium, to the Owner's Representative.
4. Where multiple systems are combined into a single integrated system, documentation shall include a description of the integrated system and the details of the interfaces between systems.
5. Provide a list of current telephone numbers and addresses of all material vendors and equipment manufacturers who have supplied components in this Project. Include separate service telephone list and purchasing telephone list cross-referencing with each component.

## **1.9 DELIVERY, STORAGE, AND HANDLING**

- A. Protect all materials and equipment from damage during storage at the site and throughout the construction period. Protect equipment and materials during shipment and storage against physical damage, dirt, dust, moisture, cold, rain, and any foreign substances that may damage the equipment.
- B. Prevent damage from rain, dirt, sun and ground water by storing the equipment on elevated supports and covering them on all sides with securely fastened protective rigid or flexible waterproof coverings.
- C. Protect conduit by storing it on elevated supports and capping the ends with suitable closure material to prevent dirt accumulation.
- D. Protect all fabricated and/or installed materials and equipment against dust, dirt, moisture, physical damage, metal debris, and any foreign substances that may damage the equipment.
- E. Protect painted surfaces with removable heavy Kraft paper, sheet vinyl or equal, installed at the factory and removed prior to final inspection.
  1. Replace equipment determined by the Owner's Representative to be damaged. Repaint and finish damaged paint on equipment and materials with the same quality of paint and workmanship used by manufacturer so that repaired areas are not obvious.

## **1.10 SITE CONDITIONS**

- A. Site Investigation
  1. Prior to commencement of work, the Contractor shall perform a site survey of all related existing systems and submit any potential problems of the design documents that may increase the installation cost of the project.
  2. Survey all locations where work is to be performed and verify existing conditions prior to shop drawing submittals.
- B. Coordination with Security Personnel

1. The owner will assign a contact person for the contractor to coordinate day to day activities and access into areas. Coordinate all system interruptions and scheduled down time with the contact person.

C. Security Requirements

1. Any special security requirements will be provided by the Owner. See Division 1.

## **1.11 SEQUENCING AND SCHEDULING**

A. General Requirements:

1. Do not begin the project without the Owner's acceptance of proposed key project personnel for the Division 28 Work.
2. Prepare, review, and coordinate with the Owner's Representative an approved construction (CPM) work schedule. Schedule work in areas and at times that will not interfere with scheduled activities as defined by the Owner's Representative.
3. Provide weekly short term (4-week schedule) updates to Owner's Representative showing day to day progress and impact to occupied areas.
4. Do not procure any equipment without accepted product data submittals. Do not perform any field installation without accepted shop drawings. Do not begin any extensive software development or programming without accepted system, operational narratives, the required Owner's coordination, and user's requirements.
5. Pre-assemble control electronics, control panels, racks, and cabinets off-site as most practical.
6. Install system control equipment, control panels, cabinets, racks, and consoles only after major construction in the area in which they are to be installed has been completed and areas have been cleaned, painted, and sealed.
7. After systems installation and prior to point-by-point performance testing, thoroughly pre-test all devices and device wiring for proper performance. Then, thoroughly pre-test each system function in each state or condition under every operating mode.

B. Coordinate all work in the existing facility with the facility contact person.

## **1.12 WARRANTY**

- A. The Contractor is to provide a warranty of the work provided under this contract (including, but not limited to, software, hardware, and peripheral equipment) as a system, including interfaces to work by others for **one year** from the date of Acceptance of the Work. Specific Division 28 sections may require longer warranty periods. Divisions of work among various suppliers, vendors, installers, subcontractors, and other parties will not be recognized or accepted.
- B. Extended Warranty: Provide itemized pricing for an Extended Service and Warranty for years 1, 2, and 3 after the initial warranty period. Describe whether all parts and labor are included in this offering.
- C. Guarantee to repair and replace defective materials or workmanship during the warranty period including labor and materials.

- D. An emergency maintenance (Warranty) request shall be defined as a system or portion of a system failure that affects building safety, security, and operation of critical components, including any access controlled door, which by failing, prevents entry into a building space through other means or direction. Failure of a single component (i.e., duress button, access controlled door which does not prevent access to a space through other means or direction, camera, or monitor) is not considered an emergency maintenance request.
- E. Respond within four hours to an emergency maintenance request. Provide a twenty-four hour telephone contact number (24 hours per day, 365 days per year). Service response time is defined as the period between the placing of a service request and the arrival of a qualified technician capable servicing the problem on-site.
- F. Maintain a sufficient parts inventory within 50 miles of the project during the warranty period to meet the guaranteed system repair times.
- G. Repair and make operational any defective materials or workmanship resulting from an emergency maintenance request within an 8-hour period from the time of the initial arrival of service personnel at the site. Correct non-emergency defective materials or workmanship within four (4) calendar days of receiving notice of the defect.
- H. Where the equipment manufacturer's warranty covers a longer time period than that required by these Specifications, the manufacturer's warranty shall govern.

### **1.13 EXTRA MATERIALS**

- A. Prior to Acceptance of the Work, deliver to the Owner all spare parts and extra materials required in each Section. All spare parts and extra materials shall be brand new in their original shipping boxes or packages and shall have one year material warranty remaining at the time of delivery. Extra materials shall be available to the Contractor to use as immediate replacements during the warranty period. All extra materials used for the warranty requirements shall be replaced by the Contractor.
- B. Special Tools:
  - 1. Provide three of each type of security screw bits used.
  - 2. Provide minimum of one of any specialty tools used.

## **PART 2 - PRODUCTS**

### **2.1 PRODUCT OPTIONS AND SUBSTITUTIONS**

- A. Comply with the General and Supplementary Conditions and Division 1 Specifications.
- B. The products named in this section and the sections governed by this section establish minimum qualities that substitutions must meet to be considered acceptable. The specified products have also been used in preparing the drawings and specifications, and therefore establish the basis for equipment sizing, wire and cable design, power consumption, and other design parameters.



- C. Substitution requests, if permitted, will be considered only if submitted in strict accordance with the followings:
  - 1. Cross-reference submitted items to the Specifications using their related Section and paragraph number.
  - 2. Submit complete product data, descriptive literature, catalog cuts, illustrations, schematics, technical data sheets, and test data necessary for the Owner's Representative to ascertain that proposed equipment and materials comply with specification requirements. Include manufacturer's name, model, catalog or part numbers. Catalog cuts shall be legible and shall clearly identify equipment being submitted.
  - 3. Disclosure of Product Deviations: Specifically identify and tabulate any and all deviations from the contract documents including all system functions and features. Reference the corresponding specification sections and paragraph/article numbers. All variances and deviations will be reviewed for acceptance or rejection. It will be the Contractor's sole responsibilities to comply with all other contract requirements not revealed in the disclosure of product deviations.
- D. The Contractor shall take full responsibility for all design, coordination, and cost associated with substitutions including, but not limited to:
  - 1. Its integration into the total system including physical mounting space, electrical interconnection, signal wiring, power, quality, electromagnetic interference, communication protocols, and similar design considerations.
  - 2. Any additional materials, equipment, components, accessories, items required for equivalent system operation and performance.
  - 3. Any necessary changes to branch power circuits, circuit protective devices, and the Work of other trades.
  - 4. Any modifications to wire, cable, and raceway design.

## **2.2 MATERIALS AND EQUIPMENT**

- A. All equipment and materials required for installation under these Specifications shall be new and without blemish or defect.
- B. Materials and equipment furnished shall be of current production by manufacturers regularly engaged in the manufacturing of such items, for which replacement parts are available. Specifications are prepared long in advance of project construction; the contractor is to use the newest model of the specified products available at bid time.
- C. All material and equipment shall be listed, labeled, or certified by Underwriters' Laboratories, Inc., where such standards have been established. Equipment and material which are not covered by UL Standard will be accepted provided equipment and material is listed, labeled, certified or otherwise determined to meet safety requirements of a nationally recognized testing laboratory. Equipment of a class which no nationally recognized testing laboratory accepts, certifies, lists, labels, or determines to be safe will be considered, if inspected or tested in accordance with national industrial standards such as NEMA or ANSI.

- D. All parts of a system shall be the product of one manufacturer. When more than one unit of the same class of equipment or material is required, such units shall be the products of a single manufacturer. Constituent parts which are similar shall be the product of a single manufacturer.
- E. All components of an assembled unit need not be products of the same manufacturer; however, all components must be acceptable to the Owner's Representative. Components shall be compatible with each other and with the total assembly for the intended service.

## **2.3 EQUIPMENT MODIFICATIONS:**

- A. When standard manufactured equipment is modified from its original condition or factory options have been exercised identify the changes as noted below.
  - 1. Clearly identify the modifications on the shop drawings.
  - 2. Clearly identify each piece of modified equipment with a label, which states, "This unit has been modified..." and identify the modification or reference. Locate the label so that a service technician or factory service personal will be able to determine the equipment in use is non-standard and that modifications are required for service, testing and replacement.
  - 3. Identify and describe the modifications on the Record Documents.
- B. Equipment modification labels are not required for jumper or switch settings.

## **2.4 FABRICATION**

- A. Fabricate enclosures to easily accommodate interconnecting cables entering from above or below through the use of auxiliary gutters, cable trays, and conduits. Protect all metal cabinet edges where conductors cross and conduit ends with protective covering or bushing.
- B. Group wires and cables by types, boards and modules, and maintain National Electrical Code clearances throughout the installation, including Class 1, Class 2, communications, and branch circuit power separations. Maintain sufficient and proper separation between microphone-level audio, line-level audio, high-level audio, and video cables.
- C. Uniformly organize equipment and cable routing throughout all enclosures, racks, and cabinets. Provide wiring ducts, raceways, wire posts, D rings, wire saddles to route and secure factory and field wiring. Provide routing for all wiring from point of entry to point of termination to maintain required separation, access to all components, and general organization to the wiring. Neatly dress, route and secure wiring.
- D. Mechanically fasten cabinet raceways and cable clamps to enclosure rear panels, rack members, console members, or to other system components. The use of adhesive fasteners (without mechanical fastener) is not permitted. Furnish and install cable support posts where necessary to properly support cables.
- E. No splices are permitted in cabinet raceways. Exception: Splice to cable shield when within two inches of cable termination is permitted.

- F. Furnish and install metal grounding type outlet strips in each equipment cabinet, enclosure, and rack. Leave a minimum of two unused receptacles at each location for future expansion. Neatly shorten and dress power cords from individual equipment to the outlet strips.
- G. Provide protection from accidental contact of all terminals or exposed conductors over 25 volts within enclosures that contain Class 2 wiring. Use non-conductive barriers, heat shrink or other acceptable methods. Tape of any kind is not permitted.
- H. Provide an isolated ground bus within each equipment cabinet, enclosure, and rack for single point termination of audio and data shields and grounds.

## **2.5 SOURCE QUALITY CONTROL**

### **A. Shop Inspections:**

- 1. The Owner's Representative shall have the right at all times to inspect or otherwise evaluate the Work performed or being performed and shall have access to the premises in which the Work is being performed.
- 2. The Owner's Representative may verify the inspections or re-inspect any item. The Owner reserves the right to reject materials and workmanship found unacceptable during inspections.

### **B. Shop Test and Demonstration**

- 1. Shop Test and Demonstration shall be a major milestone that shall commence only after all shop assembly, system integration, and software development and programming is complete. Owner's approval of the integrated shop test shall be obtained before any system components are shipped to the site for installation.
- 2. Perform a point-by-point system demonstration of the Integrated Security System including surveillance system, duress alarm system, physical access control system, and audio announcement system to show all systems functioning and communicating as a single integrated system where required.
- 3. Notify the Owner a minimum of 15 working days prior to demonstration so that the Owner may witness the demonstration.
- 4. Conduct the demonstration in strict accordance with the test procedure accepted by the Owner. Demonstrate full compliance with the required operating modes and sequences of operation under all operating modes. Record demonstration/ test results on a report which shall include a list of all personnel witnessing the demonstration, test methods used, and a record of each specific test made.
- 5. If demonstration results are not in compliance with requirements, make necessary hardware and software changes, corrections, repairs, or adjustments at no additional cost to the Owner. If corrections cannot be made during the scheduled Shop Test and another shop test is required, the Contractor shall pay for all transportation, lodging and expenses of the Owner's representatives' (maximum seven people) attending the additional tests. This process shall continue until the systems are acceptable to the Owner.

## **2.6 FIRESTOPPING/SEALANT MATERIALS**

- A. Firestop and seal all penetrations of fire walls with minimum three hour sealant or Fire Stop Putty(FSP). This includes but is not limited to all raceway, conductor, sleeve and cable tray penetrations where penetrating device does not completely seal the hole.
- B. Accepted Products: International Protective Coatings Corp. FlameSafe FSP 1100, Nelson FSP, Domtar Fire-Halt, or approved equal from other manufacturers.

## **PART 3 - EXECUTION**

### **3.1 EXAMINATION**

- A. Carefully inspect the installed Work by other trades and verify that all such Work is complete to the point where installation of the Work of this division may properly commence.
- B. In the event of discrepancy, immediately notify the Owner's Representative. Do not proceed with installation in areas of discrepancy until such discrepancies have been fully resolved.
- C. Install all equipment in accordance with all pertinent codes and regulations, the accepted design, and the referenced standards.

### **3.2 INSTALLATION**

- A. Equipment Identification:
  - 1. Install a nameplate on each individual equipment rack, enclosure, boxes, cabinet, and significant equipment item.
  - 2. Use identifiers and abbreviations defined in the Drawings whenever possible. Use plan designation for labeling, unless indicated otherwise.
  - 3. Nameplates shall be laminated black phonemic resin with a white core and engraved lettering, a minimum of 1/4" high.
  - 4. Engrave using upper case letters of uniform height; centered on device, cover plate, or enclosure; with all characters made clearly and distinctly.
  - 5. All equipment shall have the manufacturer's name, address, model number and rating on a name plate securely affixed in a conspicuous place. All equipment shall bear labels attesting to Underwriters Laboratories approval where subject to Underwriters Laboratories label service.
  - 6. Identify all field terminals and relays with device identification. Lettering shall be 3/16" high minimum.
- B. Equipment Installation:
  - 1. Install all equipment in accordance with the manufacturer's recommendations, and accepted shop drawings.
  - 2. Install all equipment in compliance with CEC requirements, NECA's "Standard of Installation", and recognized industry practices.

3. If requested, submit structural and seismic mounting load calculations demonstrating adequate support and bracing for seismic zone 4.
4. Do not attach electrical materials to roof decking, removable or knockout panels, or temporary walls and partitions unless indicated otherwise. Use hangers and other supports to support the equipment and materials, intended for this purpose.
5. Locate equipment as close as practical to the locations shown on the Drawings.
6. Maintain minimum 3-foot working clearances on each side of equipment or equipment racks where access is required to inspect, service or adjust.
7. Check equipment against available mounting space indicated on the drawings. Coordinate location of equipment with existing devices to minimize interference. Bring all conflicts or clearance problems to the attention of the Owner's Representative during the preparation of shop drawings.
8. Where the Owner's Representative determines that equipment installation is not conveniently accessible for operation and maintenance, remove and reinstall equipment in a conveniently accessible manner at no extra cost.

C. Grounding and Shielding:

1. Comply with Section 27 05 26.

D. Surge Suppression:

1. Comply with Section 27 05 26.

### **3.3 FIELD QUALITY CONTROL**

A. Initial Performance Testing:

1. Initial Performance Testing is to be conducted by the Contractor.
2. Point-by-point testing shall include the sequential operation of each system and control function in each of its operating modes. All tests are to be conducted and recorded per the accepted procedure and test forms.
3. Notify the Owner's Representative ten days in advance that this activity will be occurring.

B. Performance Verification Testing:

1. Performance Verification Testing (PVT) is to be conducted by the Contractor and witnessed by the Owner's Representative.
2. Schedule point-by-point PVT only after Initial Testing has been satisfactorily completed and all necessary corrections have been made. Provide the Owner's Representative with a minimum of 10 working days' notice with a request to schedule PVT. Submit Initial Performance Test records prior to the scheduled PVT. Failure to submit test results as specified shall be cause to re-schedule testing.
3. Point-by-point testing shall include the sequential operation of each function in each of its operating modes, in addition to completion of all required performance testing and measurement.
4. Conduct point-by-point PVT testing in the presence of Owner's Representative. Record test results on the accepted test checklist which shall include a list of all personnel witnessing the tests. If test results are not in compliance with requirements, make



necessary changes or adjustments at no additional cost, and arrange for another test. This process shall continue until the systems are acceptable to the Owner's Representative.

5. Failure of any part of the system which precludes completion of system testing, which cannot be repaired in four (4) hours, shall be cause for terminating the test. Retesting of the entire system shall be rescheduled at the convenience of the Owner, and Contractor shall bear the Owner's costs to complete retesting.
6. PVT will also include inspections for contract document compliance, codes and standards compliance, and workmanship.

### **3.4 CLEANING**

- A. Comply with Division 1 requirements.
- B. Protect equipment during installation against entry of foreign matter on the inside. Vacuum clean all equipment both inside and outside before testing, operating and painting. Clean electrical connections with a suitable solvent prior to assembly.
- C. Remove from the premises and dispose of all packing material and debris on a daily basis.
- D. Upon completion of the Work, remove excess debris, materials, equipment, apparatus, tools and the like and leave the premises clean, neat and orderly.
- E. Thoroughly polish all bright metal or plated Work and remove any pasted labels, dirt or stains from the equipment.

### **3.5 TRAINING**

- A. Provide on-site, project-specific training sessions for system operations, maintenance, and programming with designated total hours as follows:

	Administrative	Operator
1. Video Surveillance System	8/4/4	4/2/2
2. Access Control System	8/4/4	4/2/2
3. Duress Alarm System	1/NA	1/NA

- B. All classroom training is to occur on site at a location provided by the Owner.
- C. All training is to review the existing systems as they apply to the equipment and systems provided under this contract. All personnel being trained are expected to have basic experience for the existing systems.
- D. Operator Training:
  1. Train security staff in the operation of the System. Operational training shall include how to monitor and control the systems provided under this contract and how to respond to system events.
- E. Administrator Training:

1. Train Owner's personnel in the site-specific programming and software trouble shooting of the System. Training will also include all user programmable features. Conduct training sessions using instructors who have been actively involved throughout construction and who are certified in writing by the manufacturers of the specific systems.
  2. Provide a combination of classroom sessions supported by audio/visual aids, and field sessions with personnel participating in hands-on for programming changes, software uploading/downloading, trouble shooting, etc.
  3. Train Owner's personnel in the basic user level maintenance and trouble shooting of the System. Structure training to identify the equipment and systems that can be serviced or reset by the on duty building engineer, how to identify systems that have failed or not working, and emergency shut down procedures.
  4. Provide a combination of classroom sessions supported by audio/visual aids, and field sessions with personnel participating in hands-on preventative, corrective maintenance and reactive maintenance.
- F. Submit an estimated training schedule 15 days prior to training for approval by the Owner's Representative. Estimate classroom and hands-on hours required for all three types of training (operational, maintenance, and programming). Include a syllabus for each class session. Provide video recording, minimum 720p, of the training sessions on solid-state media.
- G. All training materials including Operational and Maintenance (O&M) Manuals shall be reviewed and approved prior to conducting the specific training.

**SCHEDULE 28 05 00A**

**SAMPLE LIST OF DIVISION 28 SUBMITTALS**

1. CPM Schedule
2. Submittal Matrix
3. Schedule of Values (SOV)
4. Licenses and certifications
5. Key Project Personnel
6. Product Data
7. Shop Drawings
  - a. Floor Plans
  - b. Enlarged Control / Equipment Rooms and Elevations
  - c. Rack and Cabinet Elevations
  - d. Block Diagrams
  - e. Single Line Diagrams
  - f. Point- to-Point Diagrams
  - g. Schematic Diagrams
  - h. Installation Diagrams and Details
8. Calculations; UPS, Data
9. Sequence of Operations
10. Samples
11. Test Procedures
12. Test Results
13. Record Documents
  - a. Drawings
  - b. O&M Manuals
  - c. Warranty
14. Extra Materials

**SCHEDULE 280500 B**

**SUMMARY OF REQUIRED LICENSES AND CERTIFICATIONS**

This list is provided for the convenience of the Contractor only.

A. Section 28 05 00 Integrated Systems Contractors

1. Key Personnel Degree or equal
2. Local Contractors License
3. Qualifications of licensed electrician performing work onsite.

**END OF SECTION 28 05 00**

## **SECTION 28 13 00 - PHYSICAL ACCESS CONTROL SYSTEM**

### **PART 1 - GENERAL**

#### **1.1 INTENT**

- A. It is the intent of the Owner to enter into a contract with a qualified contractor to have that contractor procure, provide, install, and make fully operational a Physical Access Control System (PACS) with operational characteristics and capabilities which meet or exceed the product specification and technical performance parameters contained within this document and shown on the project drawings.
- B. This PACS shall be installed in Building MM as shown on the project drawings.

#### **1.2 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
- B. Division 8 Door Locking Hardware
- C. Section 28 05 00 Common Work Results for Electronic Security Systems
- D. Section 28 23 00 Video Surveillance System

#### **1.3 SUMMARY**

- A. Section includes a physical access control system consisting of credentials, proximity card readers, door position switches, request to exit sensors, IP compatible door controllers, headend software system, workstations, and door locking hardware (door locking hardware by Div 8 Contractor).
- B. Physical access control system shall be integrated with systems specified in:
  - 1. Division 8 Door Locking Hardware
  - 2. Section 28 23 00 Video Surveillance System

#### **1.4 DEFINITIONS Retain definition(s) remaining after this Section has been edited.**

- A. Access Level: An authorization level or security criteria that must be met before access to a controlled space is granted
- B. Access Point: A point of entry into a secure area, typically managed by a door controller and a card reader.
- C. ACS: Access Control System



- D. ALPR: License Plate Recognition
- E. API: Application Programming Interface
- F. Biometrics: A machine readable technology that identifies individuals based on reading features such as retinal scans, fingerprints, or other individualistic biological feature
- G. Credential: A card, token, keyfob, or other item which is encoded with information specific to an individual
- H. Door Controller: Device which integrates an access-controlled point to the system headend
- I. Door Strike: A door-frame mounted device which works with a mechanical lock or latch mechanism
- J. DGM: Dynamic Graphical Maps
- K. Encoder: A device utilized to record data onto an access credential
- L. Fail Safe Access Point: A door that will unlock automatically in the event of a power failure to permit entering and exiting through the door.
- M. Fail Secure Access Point: An access point that automatically locks during a power failure, preventing anyone from entering, but allowing them to exit during an emergency.
- N. Input/Output (I/O) Device: An I/O device facilitates elevator control and multi-door monitoring (in/out only).
- O. IP-based Access Control: IP access control technology utilizes the network to provide secure network-controlled access and management of physical doors at a facility or location.
- P. Magnetic Lock (Mag Lock): A locking device that consists of an electromagnet and a strike plate that works in conjunction with a mechanical lock or latch mechanism and uses electromagnetic attraction to lock and unlock a door.
- Q. Mustering: An access control software feature that quickly verifies where individuals in a particular zone at a location for easy tracking and identification.
- R. PACS: Physical Access Control System
- S. PDF: Portable Document Format. The file format used by the Acrobat document-exchange-system software from Adobe.
- T. Proximity Card (Prox Card): A access control credential that is encrypted with proximity technology and can be read by a proximity reader without having to physically insert the card into the reader, in order to grant a cardholder access to a location.
- U. Power over Ethernet (PoE): PoE carries both power and data for the access control door controller and peripheral door hardware.

- V. PoE Injector: A Power over Ethernet (PoE) injector brings PoE capabilities to non-PoE network links.
- W. Request to Exit Sensor (REX): A button or device that must be activated to release the door in order to exit without triggering a forced door alert.
- X. SDK: Software Development Kit
- Y. SSM: Server Software Module
- Z. SMA: Software Maintenance Agreement
- AA. Smart Card – An access card that can be integrated with different technologies including biometric, magnetic stripe, proprietary proximity—and has a memory feature which can contain information about the cardholder.
- BB. TCP/IP: Transport control protocol/Internet protocol incorporated into Microsoft Windows.
- CC. UI: User Interface
- DD. UPS: Uninterruptable Power Supply
- EE. VMS: Video Management System
- FF. WAN: Wide area network.
- GG. WAV: The digital audio format used in Microsoft Windows.
- HH. WMP: Windows media player.
- II. Wiegand: Patented magnetic principle that uses specially treated wires embedded in the credential card.
- JJ. Windows: Operating system by Microsoft Corporation.
- KK. Workstation: A PC with software that is configured for specific, limited security-system functions.

## **1.5 ACTION SUBMITTALS**

- A. See Section 28 05 00 – Common Work Results for Electronic Security Systems

## **1.6 INFORMATIONAL SUBMITTALS**

- A. See Section 28 05 00 – Common Work Results for Electronic Security Systems

## **1.7 CLOSEOUT SUBMITTALS**

- A. Operation and Maintenance Data: For card readers, door position sensors, request-to-exit sensors,

VMS hardware / software, storage, and work station components include all operation, troubleshooting, and maintenance manuals. In addition to items specified above, include the following:

- B. See Section 28 05 00 – Common Work Results for Electronic Security Systems

## **1.8 WARRANTY**

- A. See Section 28 05 00 – Common Work Results for Electronic Security Systems

## **PART 2 - PRODUCTS**

### **2.1 QUALITY ASSURANCE**

- A. Manufacturer of any major component or system installed as a part of this project and not named as a basis of design shall have been in the business of manufacturing such component or system for a minimum of 5 years immediately preceding the date on this document.
- B. Any major component or system installed as a part of this contract and not named as a basis of design shall have been installed in a minimum of 3 successfully completed projects of a similar size and scope. Contractor shall supply reference information with their proposal including project name, project location, and contact information for the system end-user.

### **2.2 BASIS OF DESIGN**

- A. Where a specific manufacturer's product is listed below, such product's performance characteristics and capabilities constitute the minimum acceptable, and any suggested alternates shall have characteristics and capabilities which meet or exceed the product named as the basis of design. Contractor may propose alternate products as follows –

- 1. See Section 28 05 00 – Common Work Results for Electronic Security Systems

- a. Owner shall make every effort to review proposed alternate equipment, however there is no guarantee that the Owner will review the alternate equipment proposal before the bid opening date, and the Contractor assumes all risk in proposing any such alternates. In the event that the Contractor's alternate equipment is judged by the Owner to not be an acceptable substitute after the Contractor submits a bid, the Contractor shall be responsible for providing the basis of design specified equipment at no additional cost to the Owner.

### **2.3 PACS BASIS OF DESIGN TECHNICAL PERFORMANCE SPECIFICATIONS**

- A. System Headend – Existing Genetec Synergis by Owner.
- B. Card Reader (By Div.28) – Schlage
  - 1. Standard Wall – MTB15

2. Mullion Mount – MTB11
- C. Door Controller (By Div.28) – SY-LP1501 as manufactured by Genetec / Mercury Hardware. House SY-LP1501 in Contractor provided Altronix TM-400 as shown on the project drawings.
- D. Additional Input Board (By Div. 28) – SY-MR50-S3 as manufactured by Genetec. Install in TM400 with SY-LP1501)
- E. Door Position Sensor (By Div.28) – 1076 As manufactured by GE / UTC.
- F. Request-to-Exit Sensor – Per District standard REX shall be integral to door hardware unless door hardware schedule calls out for electric door strike, in which case Div. 28 Contractor shall provide and install DS-150i as manufactured by Bosch. Contractor shall refer to door schedule.
- G. Telecom Cable (By Div.28) - Category 6A PoE++ as manufactured by Belden (typical 2 cables per data outlet).
- H. Auxiliary PoE Power Supply – (By Div.28) Planet Technology IPOE 173S. Div. 28 scope shall be installation and cabling to the door frame side of the power transfer device.
- I. Lockdown Button (By Div. 28) – SS2242-LD-EN (Illuminated Activation / Pull to Reset) as manufactured by Safety Technology. Lockdown buttons shall be added to any space typically occupied by 5 or more people. Utility spaces such as IDF/BDF, Electrical / Mechanical Closets, and Janitorial spaces do not typically receive a lockdown button.

## **2.4 POWER SUPPLIES**

- A. All door controllers and equipment connected to door controllers shall be PoE powered.

## **PART 3 - EXECUTION**

### **3.1 QUALITY ASSURANCE**

- A. Contractor shall be a factory authorized reseller / installer of all major components installed as a part of this project. Contractor shall submit proof of such authorization as a part of their bid package.
- B. Contractor shall have successfully completed a minimum of 3 projects similar in size and scope to this one and shall submit references for such projects with their bid package. Reference shall include project name, location, type of facility, system(s) installed, and end-user contact information. It is expected that substantially the same personnel will be assigned to this project as participated in the referenced projects. This would include the project engineer, project manager, and lead installation technician. If any of these personnel were not involved in the referenced project, Contractor shall supply resumes for these employees documenting their experience and qualifications related to this project.

- C. At a minimum, the lead installation technician assigned to this project shall be manufacturer certified in the installation of all major components installed as a part of this project.

### **3.2 SITE SPECIFIC SCOPES OF WORK**

- A. Division 28 Contractor shall provide and install access control devices as shown on the project drawings, details, and elevations. Include all associated field devices, controllers, cabling, conduit, boxes, connectors, and any other hardware, software, firmware, or license required to render access control system fully operational. Contractor shall coordinate with LBCC to integrate access control components installed as a part of this project with the existing District-wide Synergis access control software. Contractor scope shall include verification that all devices integrated into the existing Genetec platform function as intended.
- B. Division 28 Contractor shall be responsible for terminating electrified door hardware power supply cabling to the frame side of the power transfer device.
- C. Division 28 contractor shall configure system to not release lockdown until initiating lockdown button has been reset and authorization from senior management has been received.

### **3.3 EXAMINATION**

- A. Examine pathway elements intended for system cabling. Check raceways and other elements for compliance with space allocations, installation tolerance, hazards to camera installation and / or operation, and other conditions affecting installation.
- B. Examine roughing-in for LAN, WAN, and IP network before device installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.4 WIRING**

- A. See Section 28 05 00 – Common Work Results for Electronic Security Systems

### **3.5 CONTROL SYSTEM INSTALLATION**

- A. PACS device locations shown on drawings are approximate, and Contractor shall verify final position with the Owner before any work is done.
- B. Install all PACS components per manufacturer's installation instructions.
- C. Install key locks on any field enclosures
- D. Identify system components, wiring, cabling, and terminals according to Section 26 05 53 "Identification for Electrical Systems", and Section 28 05 00 – "Common Work Results for Electronic Security Systems". In instances where there is a discrepancy between 26 05 53 and 28 05 00, the more stringent requirement shall apply.

### **3.6 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.
- B. Tests and Inspections:
  - 1. See Section 28 05 00 – Common Work Results for Electronic Security Systems
- C. Performance Verification Test Schedule: See Section 28 05 00 – Common Work Results for Electronic Security Systems
- D. Physical access control system will be considered defective if it does not pass tests and inspections.
- E. Prepare test and inspection reports.

### **3.7 ADJUSTING**

- A. Occupancy Adjustments: When requested within 12 months of date of full system acceptance, or, when the date when Owner has acknowledged the system as being fully functional and in use, whichever is later, Contractor shall provide on-site assistance in adjusting system to suit actual occupied conditions, as directed by the District. This shall be in addition to any warranty service calls. Provide TWO (2) visits to Project during normal business hours for this purpose. Tasks shall include, but are not limited to, the following:
  - 1. Check cable connections.
  - 2. Check proper operation of readers and doors.
  - 3. Check proper operation of all integration driven functionalities.
  - 4. Perform various modifications and adjustments to the system functionality as requested by the Owner or their appointed representative.

### **3.8 CLEANING**

- A. Clean installed items using methods and materials recommended in writing by manufacturer.
- B. Clean PACS components as needed.

### **3.9 TRAINING**

- A. Training on the surveillance system shall be as follows:
  - 1. See Section 28 05 00 – Common Work Results for Electronic Security Systems

### **END OF SECTION 28 13 00**

## **SECTION 28 23 00 - VIDEO SURVEILLANCE SYSTEM**

### **PART 1 - GENERAL**

#### **1.1 INTENT**

- A. It is the intent of the Owner to enter into a contract with a qualified contractor to have that contractor procure, provide, install, and make fully operational an Electronic Video Surveillance System (EVSS) with operational characteristics and capabilities which meet or exceed the product specification and technical performance parameters contained within this document and shown on the project drawings.
- B. This EVSS shall be installed in Building MM as shown on Contract Drawings.

#### **1.2 SUMMARY**

- A. Section includes a video surveillance system consisting of:
  - 1. Fixed Interior Wall / Ceiling Mount Megapixel Camera
  - 2. Fixed Exterior Wall / Pole Mount Megapixel Camera
  - 3. Genetec Digital Video Recording and Management Software (DVRMS) *Existing, NIC*
  - 4. System Servers *Existing, NIC*
  - 5. System Workstations / Review Monitor *Existing, NIC*
  - 6. Power and Data Cabling, Conduit, and Infrastructure
- B. Video surveillance system shall be integrated with systems specified in:
  - 1. Section 28 1300: Physical Access Control System
  - 2. Section 28 1600: Intrusion Detection System

#### **1.3 RELATED SECTIONS**

- A. Section 28 0500: Common Work Results for Electronic Security Systems
- B. Section 28 1300: Physical Access Control System

#### **1.4 ABBREVIATIONS AND ACRONYMS**

- A. Following abbreviations and acronyms apply to this Section:
  - 1. CPU = Central Processing Unit
  - 2. DVD = Digital Video Disc
  - 3. DVRMS = Digital Video Recording and Management System
  - 4. FPS = Frames per Second
  - 5. GB = Gigabyte
  - 6. GBPS = Gigabyte per Second



7. HDD = Hard Disk Drive
8. HDMI = High Definition Media Interface
9. IDS = Intrusion Detection System
10. IPS = Images per Second
11. LAN = Local Area Network
12. MB = Megabyte
13. MBPS = Megabyte per Second
14. NAS = Network Attached Storage
15. LED = Light Emitting Diode
16. PACS = Physical Access Control System
17. RAID = Redundant Array of Independent Disks
18. RAM = Random Access Memory
19. SAN = Storage Attached Network
20. TCP/IP = Transport Control Protocol / Internet Protocol
21. UPS = Uninterruptable Power Supply
22. USB = Universal Serial Bus
23. PVT = Performance Verification Testing
24. V-LAN = Virtual Local Area Network
25. VMS = See DVRMS
26. VSS = Video Surveillance System
27. WAN = Wide Area Network

## **1.5 REFERENCE STANDARDS**

A. Following reference standards apply to this Section:

1. National Television System Committee - NTSC (North America)
2. Joint Photographic Experts Group – JPEG
3. Motion Joint Photographic Experts Group - MJPEG
4. Moving Picture Experts Group - MPEG
5. Underwriters Laboratory – UL
6. Federal Communications Commission – FCC
7. Interference Causing Equipment Standard – ICES (Canada)
8. Institute of Electronic and Electrical Engineers - IEEE
9. International Standards Organization – ISO
10. International Electrotechnical Commission -IEC
11. Restriction of Hazardous Substances Directive (RoHS)

## **1.6 ACTION SUBMITTALS**

A. See Section 28 05 00 Common Work Results for Electronic Security Systems

## **1.7 INFORMATIONAL SUBMITTALS**

A. See Section 28 05 00 Common Work Results for Electronic Security Systems

## **1.8 CLOSEOUT SUBMITTALS**

- A. See Section 28 05 00 Common Work Results for Electronic Security Systems

## **1.9 QUALITY ASSURANCE**

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NECA 1.
- C. Comply with NFPA 70.

## **1.10 WARRANTY**

- A. See Section 28 05 00 Common Work Results for Electronic Security Systems

## **PART 2 - PRODUCTS**

### **2.1 QUALITY ASSURANCE**

- A. Manufacturer of any major component or system installed as a part of this project and not named as a basis of design shall have been in the business of manufacturing such component or system for a minimum of 5 years immediately preceding the date on this document.
- B. Any major component or system installed as a part of this contract and not named as a basis of design shall have been installed in a minimum of 3 successfully completed projects of a similar size and scope. Contractor shall supply reference information with their proposal including project name, project location, and contact information for the system end-user.

### **2.2 BASIS OF DESIGN**

- A. Where a specific manufacturer's product is listed below, such product's performance characteristics and capabilities constitute the minimum acceptable, and any suggested alternates shall have characteristics and capabilities which meet or exceed the product named as the basis of design. Contractor may propose alternate products as follows:
  - 1. See Section 28 0500 Common Work Results for Electronic Security Systems

### **2.3 EVSS BASIS OF DESIGN TECHNICAL PERFORMANCE SPECIFICATIONS**

- A. All cameras shall be by Axis.
  - 1. Substitutions are not permitted.

2. Individual camera part numbers and mounting type are per camera schedule.

## **2.4 POWER SUPPLIES**

- A. All system components to be connected to a UPS providing a minimum of 4 hours back-up power.

## **PART 3 - EXECUTION**

### **3.1 QUALITY ASSURANCE**

- A. Contractor shall be a factory authorized reseller / installer of all major components installed as a part of this project. Proof of such authorization shall be submitted as a part of the bid package
- B. Contractor shall hold licenses as required by local, state, or federal agencies.
- C. Contractor shall have successfully completed a minimum of 3 projects similar in size and scope to this one, and shall submit references for such projects with their bid package. Reference shall include project name, location, type of facility, system(s) installed, and end-user contact information. It is expected that substantially the same personnel will be assigned to this project as participated in the referenced projects. This would include the project engineer, project manager, and lead installation technician. If any of these personnel were not involved in the referenced project, Contractor shall supply resumes for these employees documenting their experience and qualifications related to this project.
- D. At a minimum, the lead installation technician assigned to this project shall be manufacturer certified in the installation of all major components installed as a part of this project.

### **3.2 SITE SPECIFIC SCOPES OF WORK**

- A. Contractor shall provide and install video surveillance cameras as shown on the project drawings. Include all associated cabling, conduit, and any other item required to render cameras fully operational. Contractor shall coordinate with LBCC to integrate surveillance cameras installed as a part of this project with the existing District-wide Genetec Video Management System.

### **3.3 EXAMINATION**

- A. Examine pathway elements intended for EVSS cabling. Check raceways and other elements for compliance with space allocations, installation tolerance, hazards to camera installation and / or operation, and other conditions affecting installation.
- B. Examine roughing-in for all components before device installation.
- C. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.4 WIRING**

- A. Comply with requirements in Section 26 05 33 "Raceways and Boxes for Electrical Systems."
- B. Wiring Method: Install cables in raceways and or conduit unless otherwise indicated.
  - 1. Except raceways are not required in accessible indoor ceiling spaces and attics, where Contractor shall utilize self-supported J-hooks.
  - 2. Except raceways are not required in hollow gypsum board partitions.
  - 3. Conceal raceways and wiring except in unfinished spaces.
- C. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess and without exceeding manufacturer's limitations on bending radii. Provide and use lacing bars and distribution spools.
- D. Splices, Taps, and Terminations: For power and control wiring, use numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A-486B.
- E. For LAN connection and fiber-optic and copper communication wiring, comply with:
  - 1. Section 27 13 13 "Communications Copper Backbone Cabling"
  - 2. Section 27 13 23 "Communications Optical Fiber Backbone Cabling"
  - 3. Section 27 13 33 "Communications Coaxial Backbone Cabling"
  - 4. Section 27 15 00 "Communications Horizontal Cabling."
- F. Grounding: Provide independent-signal circuit grounding recommended in writing by manufacturer.

### **3.5 ELECTRONIC VIDEO SURVEILLANCE SYSTEM INSTALLATION**

- A. EVSS device locations shown on drawings are approximate, and Contractor shall verify final position with the Owner before any work is done.
- B. Install all EVSS components per manufacturer's installation instructions.
- C. Install control panel at location as directed by the Owner.
- D. Install key locks on all enclosures
- E. Identify system components, wiring, cabling, and terminals according to Section 26 05 53 "Identification for Electrical Systems."

### **3.6 FIELD QUALITY CONTROL**

- A. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

**B. Tests and Inspections:**

1. Inspection: Verify that units and controls are properly installed, connected, and labeled, and that interconnecting wires and terminals are identified.
2. Pretesting: Align and adjust system and pretest components, wiring, and functions to verify that they comply with specified requirements. Prepare IDS equipment for acceptance and operational testing as follows:
  - a. Prepare equipment list described in "Informational Submittals" Article.
  - b. Verify operation of all cameras.
  - c. Verify proper recording and playback functionality.
  - d. Verify proper operation of workstation with EVSS headend / software for logging alerts and events.
  - e. Verify all integration functionality with Access Control and Intrusion Detection Systems.
3. Performance Verification Test Schedule: Schedule tests after pretesting has been successfully completed and system has been in normal functional operation for at least 14 days. Provide a minimum of 14 working days' notice of test schedule.
  - a. Contractor shall prepare and submit to the Owner a PVT plan showing a structured and complete testing procedure. This PVT plan shall be submitted to the Owner a minimum of 14 working days prior to planned start of testing.
  - b. PVT plan shall show equipment being tested, means of testing, and pass/fail criteria.
  - c. PVT form shall include space for Contractor / Owner initials on each testing phase, along with a signature page with PVT results and follow-up notes.
4. Should any component of the system fail TWO (2) consecutive PVT tests, the Contractor shall be liable for costs incurred by the Owner to provide personnel for further PVT testing.

C. Electronic video surveillance system will be considered defective if it does not pass tests and inspections.

D. Prepare test and inspection reports.

**3.7 ADJUSTING**

- A. Occupancy Adjustments: When requested within 12 months of date of Substantial Completion, provide on-site assistance in adjusting system to suit actual occupied conditions. Provide up to TWO (2) visits to Project during normal business hours for this purpose. Tasks shall include, but are not limited to, the following:
1. Check cable connections.
  2. Check proper operation of cameras and VMS
  3. Check proper operation of all integration driven functionalities.

**3.8 CLEANING**

- A. Clean installed items using methods and materials recommended in writing by manufacturer.
- B. Clean EVSS components as needed.

**3.9 TRAINING**

- A. See Section 28 05 00 Common Work Results for Electronic Security Systems

**END OF SECTION 28 23 00**