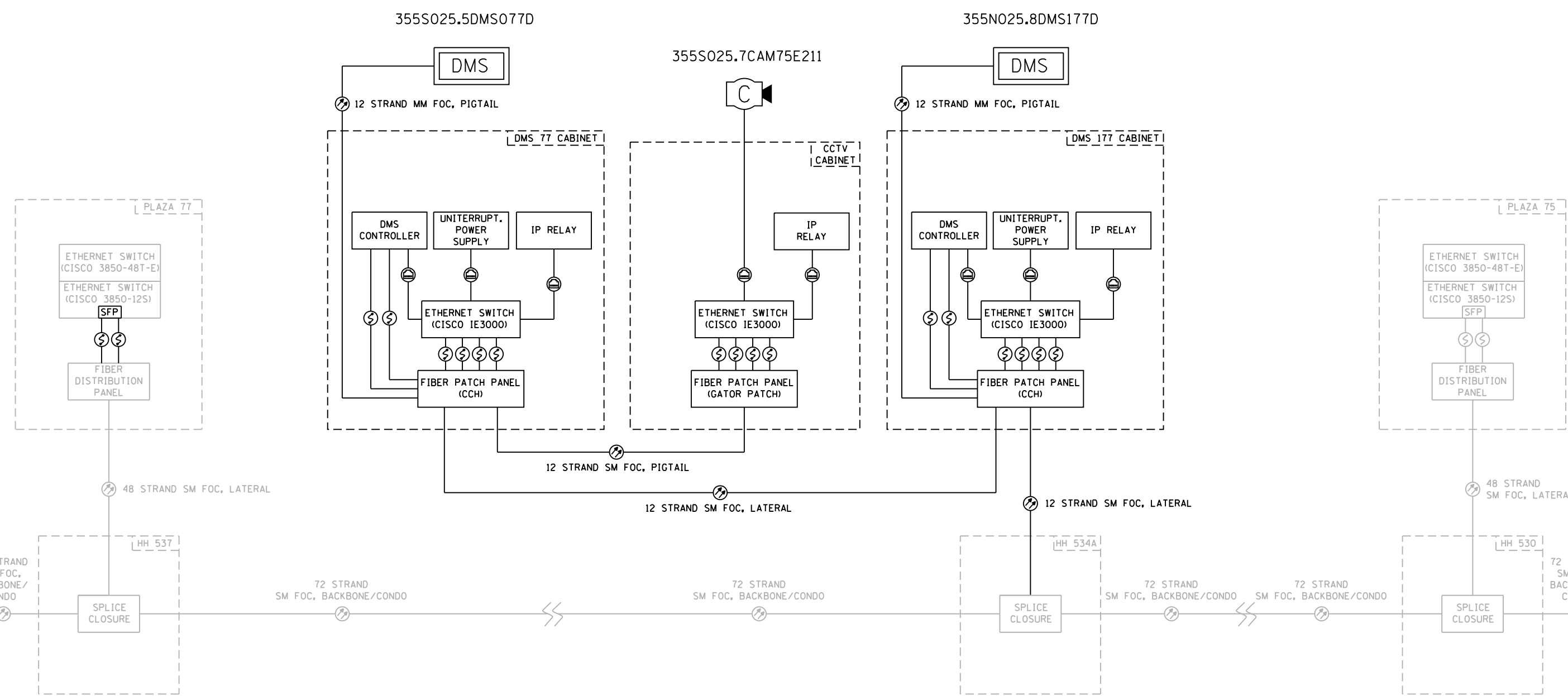


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NOTES:

1. ALL FIBER OPTIC SPLICING INVOLVING THE BACKBONE CABLE SHALL BE DONE BY THE ILLINOIS TOLLWAY'S FIBER OPTIC MAINTENANCE CONTRACTOR. CONTRACTOR SHALL COORDINATE WITH THE ENGINEER TO PROVIDE AT LEAST 72 HOURS NOTICE FOR PREPARATION OF SPLICING. FIBER OPTIC SPLICE CLOSURE WILL BE FURNISHED BY THE MAINTENANCE CONTRACTOR.
2. ALL FIBER OPTIC TRANSCEIVERS SHOWN ON THIS SHEET SHALL BE COMPATIBLE WITH SINGLE MODE FIBER. TRANSCEIVERS SHALL BE OF THE TYPE SPECIFIED IN THE SPECIAL PROVISIONS AND ARE INCLUDED IN PAY ITEM "FURNISH COMMUNICATIONS SYSTEM UPGRADE" (JT132698).
3. LOCATION #7 SHALL HAVE FIBER LINKS ESTABLISHED TO PLAZA 77 AND PLAZA 75.
4. OTHER DEVICE BACKHAUL COMMUNICATION LINKS NOT SHOWN FOR CLARITY.
5. PLAZA-TO-PLAZA COMMUNICATIONS LINKS NOT SHOWN FOR CLARITY.
6. ONLY HANDHOLES AT KEY POINTS SHOWN FOR CLARITY.
7. EQUIPMENT SHOWN FOR INSTALLATION AT PLAZA 77 SHALL BE DONE BY OTHERS AND IS SHOWN FOR INFORMATION ONLY.

LEGEND

	FIBER OPTIC CABLE		CCTV CAMERA
	CAT 6 CABLE		MICROWAVE VEHICLE DETECTION SYSTEM
	FIBER OPTIC PATCH CABLE		DYNAMIC MESSAGE SIGN
	TWISTED-PAIR COPPER CABLE		
	COAXIAL CABLE		
	FIBER OPTIC TRANSCEIVER		
	CELLULAR MODEM ANTENNA		

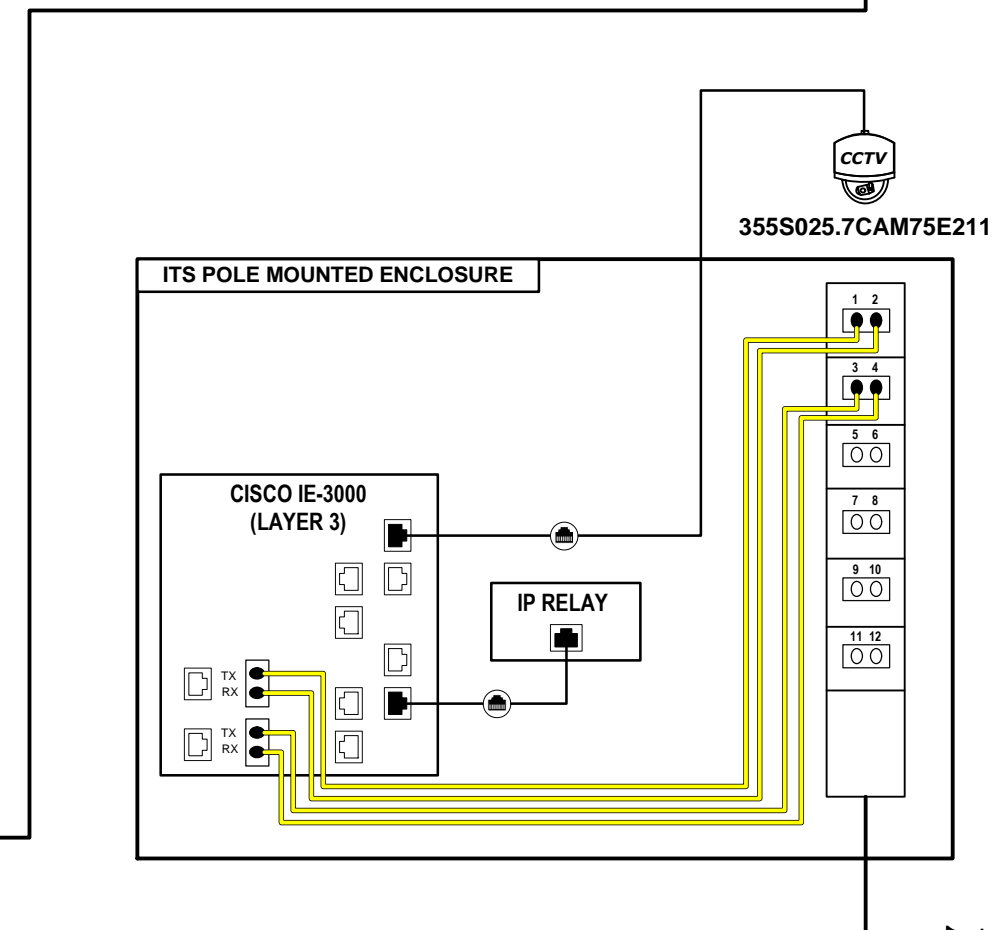
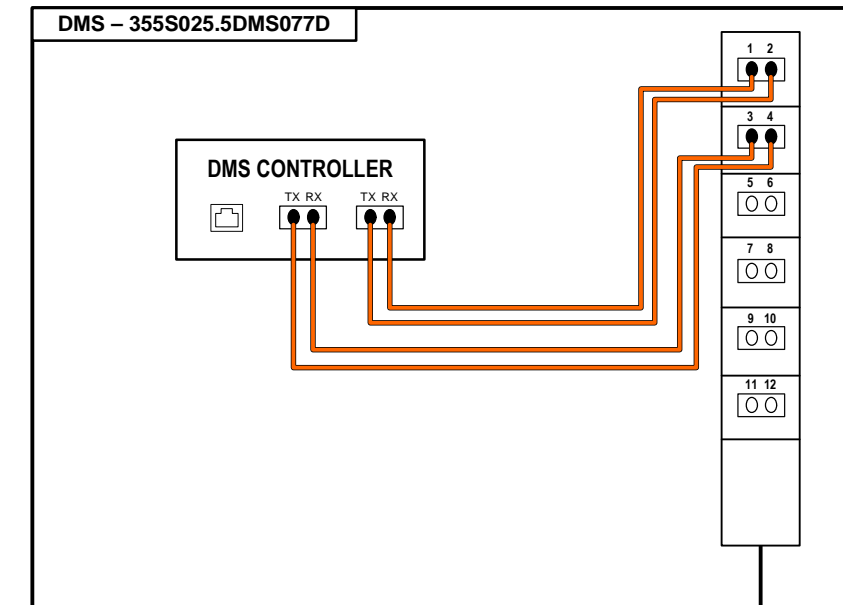
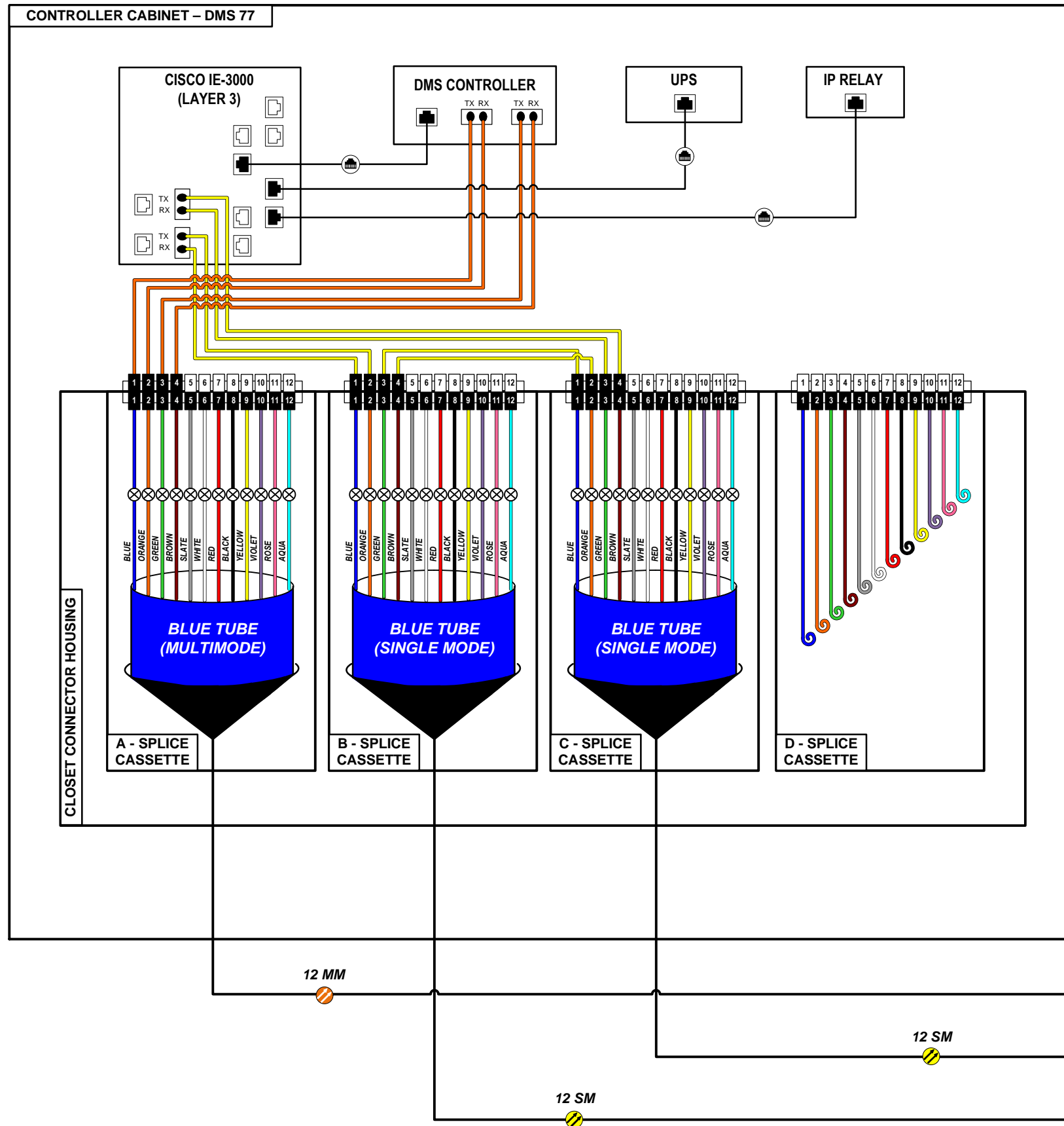
DARK LINES INDICATE ITEMS TO BE INSTALLED.
SHADED LINES INDICATE EXISTING ITEMS TO REMAIN.

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NO.	DATE

CONTRACT NO. RR-17-6001 SHT NO. ITS-102
 COMMUNICATIONS INSTALLATION DIAGRAM-LOCATION #7 DRAWING NO.
 DMS 77 & 177, I-355 M.P. 25.5 126 OF 162



TO CONTROLLER
CABINET - DMS 177
SEE SHEET ITS-104

Splice Drawings - rev2.rvt

DRAWN BY HR DATE 03/01/2017
CHECKED BY JZ DATE 03/01/2017



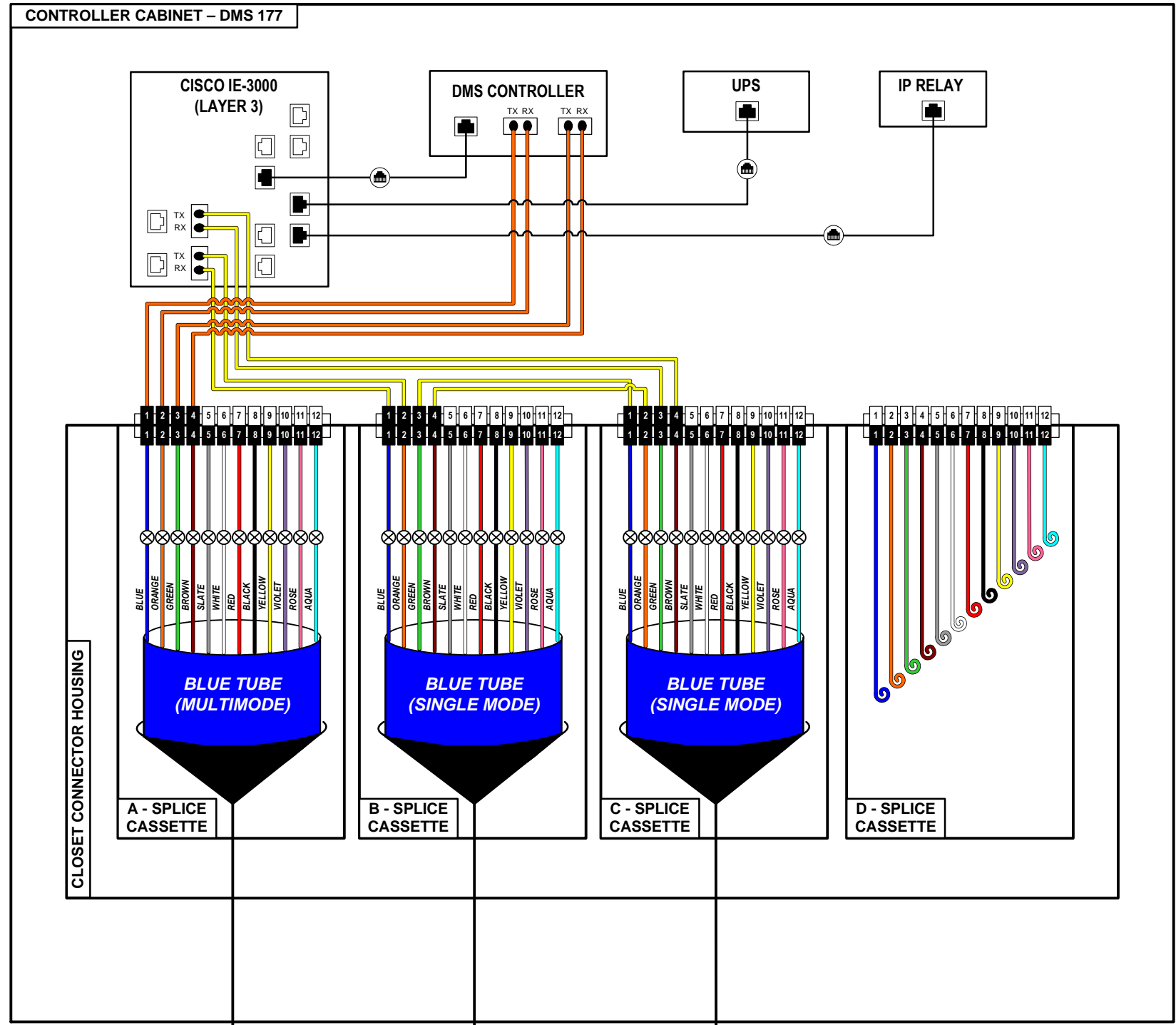
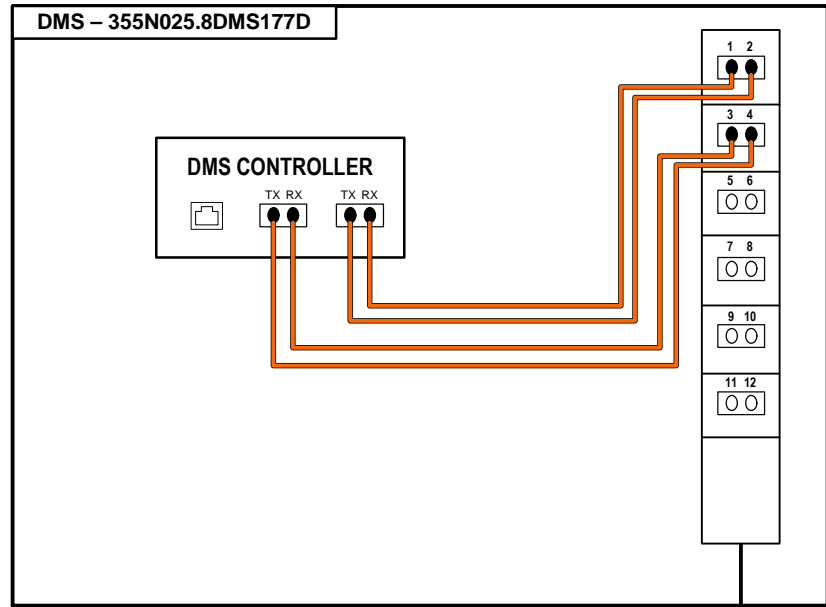
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REVISIONS	
NO.	DATE

CONTRACT NO. RR-17-6001
FIBER TERMINATION DIAGRAM - LOCATION #7
DMS 77 - I-355 SB M.P. 25.5

SHT NO. ITS-103
DRAWING NO.
127 OF 162



12 MM

12 SM

12 SM

TO CONTROLLER CABINET - DMS 77 SEE SHEET ITS-103

TO HANDHOLE HH 534A

Splice Drawings - rev2.rvt

DRAWN BY HR DATE 03/01/2017
 CHECKED BY JZ DATE 03/01/2017

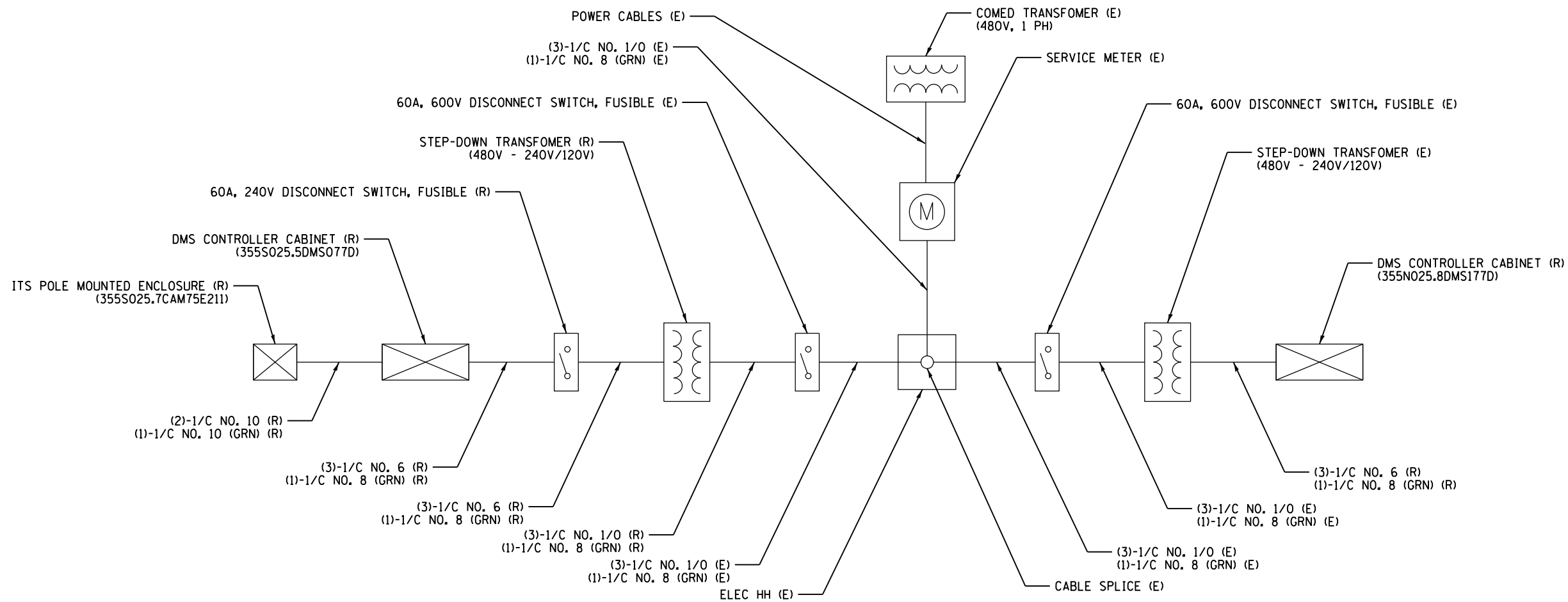


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 2700 OGDEN AVENUE
 DOWNERS GROVE,
 ILLINOIS 60515

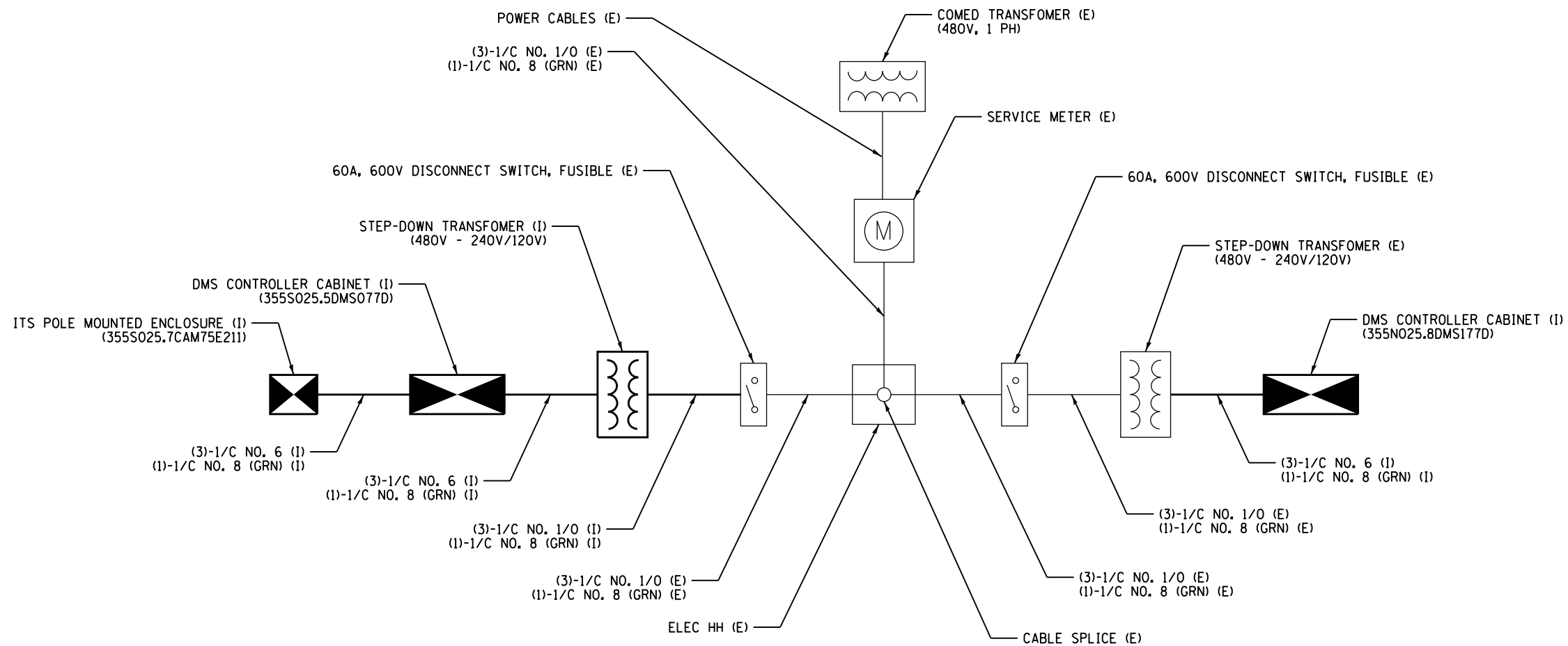
REVISIONS	
NO.	DESCRIPTION

CONTRACT NO. RR-17-6001
 FIBER TERMINATION DIAGRAM - LOCATION #7
 DMS 177 - I-355 NB M.P. 25.8

SHT NO. ITS-104
 DRAWING NO.
 128 OF 162



REMOVAL SCHEMATIC



PROPOSED SCHEMATIC

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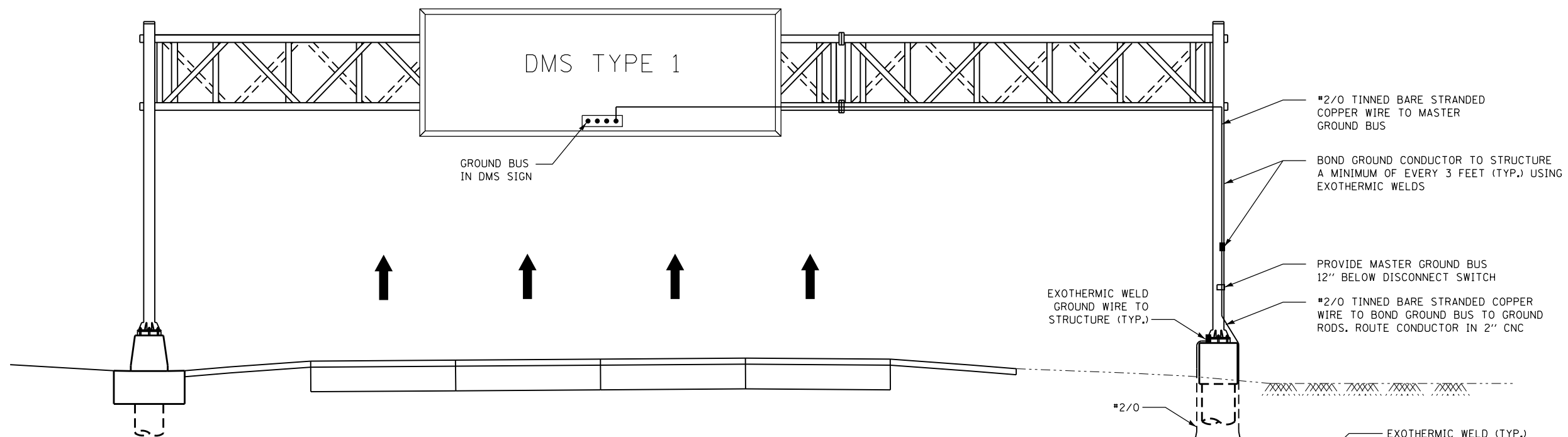
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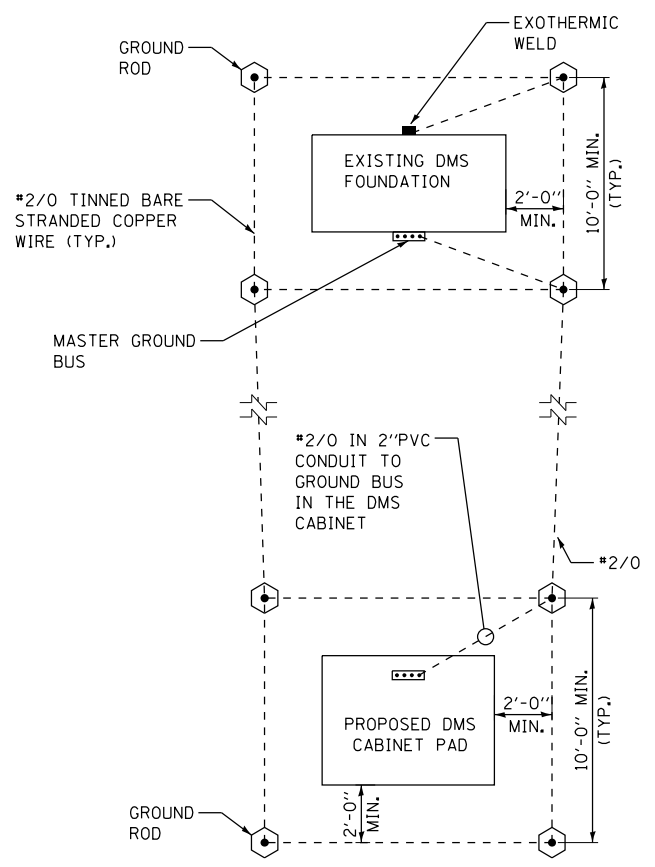
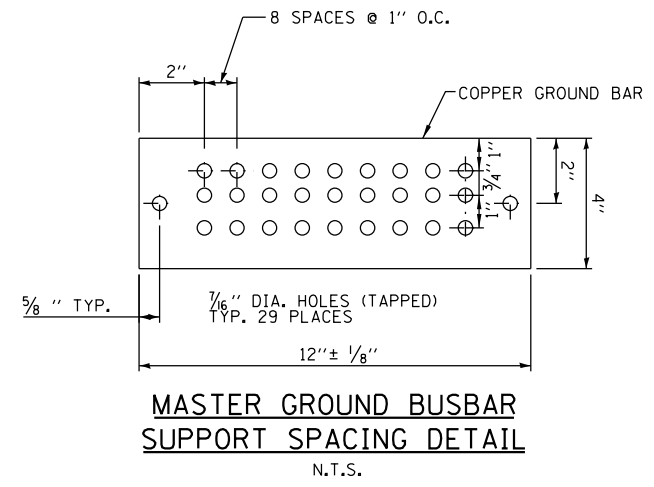
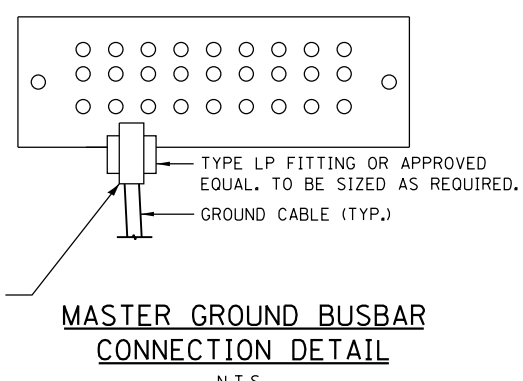
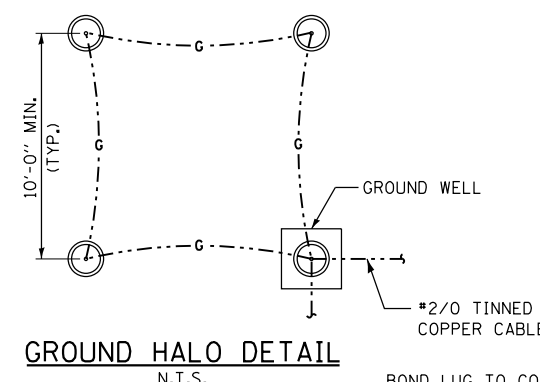
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 POWER SCHEMATIC - LOCATION #7
 DMS 77 & 177, I-355 M.P. 25.5

SHT NO. ITS-105
 DRAWING NO.
 129 OF 162



GENERAL NOTES:

1. GROUNDING SYSTEM SHALL BE PLACED WITHIN ILLINOIS TOLLWAY RIGHT-OF-WAY.
2. GROUND MOUNTED CONTROL CABINET SHALL BE PLACED UPSTREAM OF THE STRUCTURE AT THE LOCATION SHOWN ON THE PLAN VIEWS.
3. INSTALL MARKER TAPE DIRECTLY ABOVE GROUNDING ELECTRODE CONDUCTORS.
4. THE COST OF ALL MATERIALS, ALL GROUND BUSBARS, EXOTHERMIC WELDING, GROUND WELL, GROUND RODS AND ALL OTHER ITEMS TO COMPLETE THE GROUNDING ELECTRODE SYSTEM SHALL BE INCLUDED IN PAY ITEM JT134035 - ITS ELEMENT SITE GROUNDING.
5. SEE SHEET ITS-120 FOR GROUND WELL DETAILS



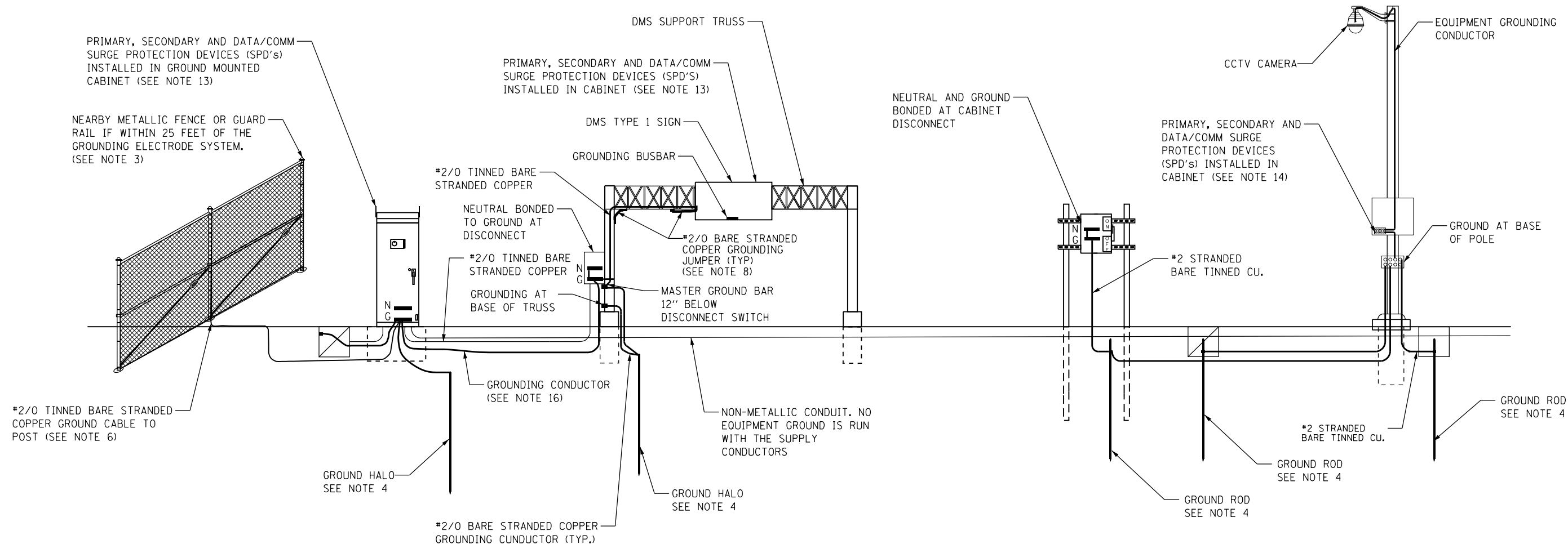
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 DRAWN BY HR DATE 03/01/2017
 CHECKED BY JZ DATE 03/01/2017



REVISIONS	
NO.	DESCRIPTION

CONTRACT NO. RR-17-6001
DMS TYPE 1
 SITE GROUNDING PLAN

SHT NO. ITS-106
 DRAWING NO.
 130 OF 162



DMS SITE GROUNDING DETAIL
(NTS)

NOTES:

1. ADDITIONAL GROUND RODS SHALL BE ADDED TO GROUNDING ELECTRODE CONDUCTOR AS REQUIRED UNTIL RESISTANCE TO GROUND IS 5 OHMS OR LESS. FOR DEVICE AND POWER SERVICE LOCATIONS. IF ADDITIONAL GROUND ROD ELECTRODES ARE REQUIRED IN ORDER TO ACHIEVE REQUIRED RESISTANCE THEY SHALL RADIATE OUT FROM EXISTING GROUND ROD ELECTRODES, THESE SHALL BE CONNECTED WITH #2/0 TINNED BARE STRANDED CONDUCTOR, AND SHALL BE 20' FROM CONNECTED GROUND ROD. ALL COMMUNICATION EQUIPMENT GROUNDING SITES SHALL BE TESTED FOR RESISTANCE TO GROUND USING THE THREE-POINT FALL-OF-POTENTIAL TEST PER ANSI/IEEE STD 81. SEE ITS ELEMENT SITE GROUNDING SPECIAL PROVISION FOR PROCEDURES.
2. GROUND RODS SHALL NOT BE ROUTED THROUGH FOUNDATIONS.
3. FENCES AND OTHER METALLIC STRUCTURES WITH PATHS TO GROUND SHALL BE CONNECTED TO EQUIPMENT GROUND IF THEY ARE LOCATED WITHIN 25' OF THE GROUNDING ELECTRODE SYSTEM OR ANY OBJECT GROUNDED TO THE GROUNDING ELECTRODE SYSTEM.
4. GROUND RODS SHALL BE INSTALLED IN GROUND WELLS IN FINISHED GRADE UNLESS INSTALLED UNDER SHOULDERS OR PAVEMENT.
5. ALL EQUIPMENT GROUNDS SHALL BE PROPERLY CONNECTED TO A CHASSIS; ALL PAINT AND OTHER COATINGS, INCLUDING GALVANIZATION, SHALL BE REMOVED PRIOR TO TERMINATION OF A GROUND, AFTER THE GROUND IS TERMINATED A NON-OXIDIZING COATING SHALL BE PAINTED OVER THE EXPOSED METAL SURFACES.
6. GROUNDING ELECTRODE SYSTEM CONNECTIONS TO FENCING SHALL BE MADE USING HEAVY DUTY TINNED LISTED PIPE CLAMPS DESIGNED FOR GROUNDING AND STAINLESS STEEL HARDWARE.
7. ALL GROUNDING DIAGRAMS ARE SCHEMATIC ONLY.
8. ALL METALLIC MEMBERS OF THE DMS TRUSS AND THE DMS SIGN WITHIN 6 FEET OF EACH OTHER SHALL BE BONDED TOGETHER. WELDS SHALL BE CONSIDERED AN ACCEPTABLE BONDING METHOD. U-BOLT CONNECTIONS SHALL NOT BE CONSIDERED AN ACCEPTABLE BONDING METHOD.
9. AT LEAST AN 8 INCH MINIMUM BENDING RADIUS SHALL BE MAINTAINED ON ALL GROUNDING ELECTRODE CONDUCTORS. THE ANGLE OF ANY BENDING SHALL NOT BE LESS THAN 90 DEGREE.
10. GROUNDING CONDUCTORS SHALL ALWAYS ROUTE AS STRAIGHT AS POSSIBLE. "U" FORM JUMPERS SHALL BE ACCEPTABLE ONLY FOR GATES AND DOORS.
11. THE QUANTITY OF GROUNDING ELECTRODE CONDUCTORS CONNECTED TO A GROUND ROD ELECTRODE SHALL BE LIMITED TO THREE.
12. WHENEVER POSSIBLE, GROUND ROD ELECTRODES SHALL BE INSTALLED NO CLOSER THAN 11' FROM A FOUNDATION.
13. EVERY COPPER CONDUCTOR OR CABLE ENTERING OR LEAVING A DMS ENCLOSURE, THE DMS CONTROLLER, OR THE CCTV ELECTRONICS ENCLOSURE SHALL BE PROTECTED, WITH A SURGE PROTECTION DEVICE.
14. DIAGRAM OMITS EQUIPMENT GROUNDING INSIDE ENCLOSURES.
15. GROUNDING CONDUCTOR SHALL BE #2/0 TINNED BARE STRANDED COPPER. CONTRACTOR SHALL INSTALL GROUND RODS AS NECESSARY TO ENSURE GROUND RESISTANCE AT DMS CABINET IS 5 OHMS OR LESS.
16. IF THERE IS A METAL HANDRAIL WITHIN 20 FEET OF CONTROL CABINET CONNECT HANDRAIL TO GROUNDING SYSTEM WITH #2/0 TINNED BARE STRANDED COPPER CONDUCTOR.

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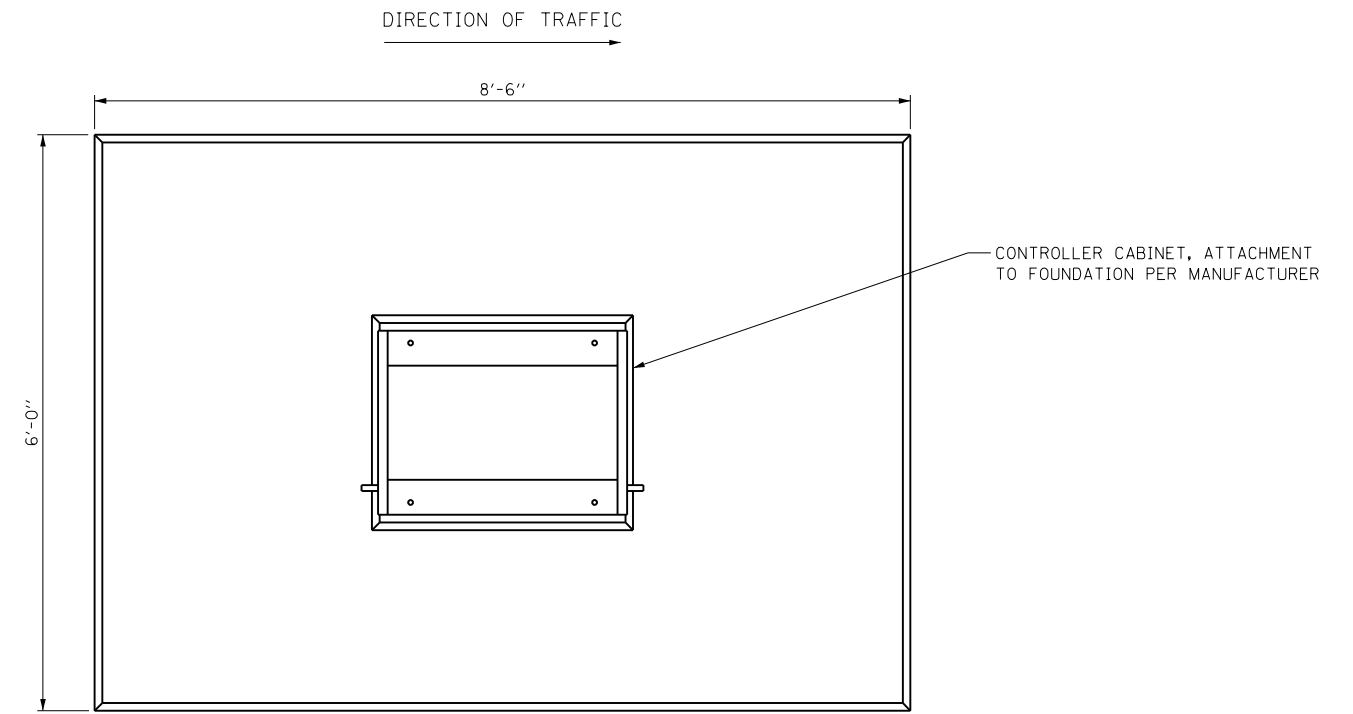
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CONTRACT NO. RR-17-6001
DMS TYPE 1
TYPICAL SITE WIRING DETAIL

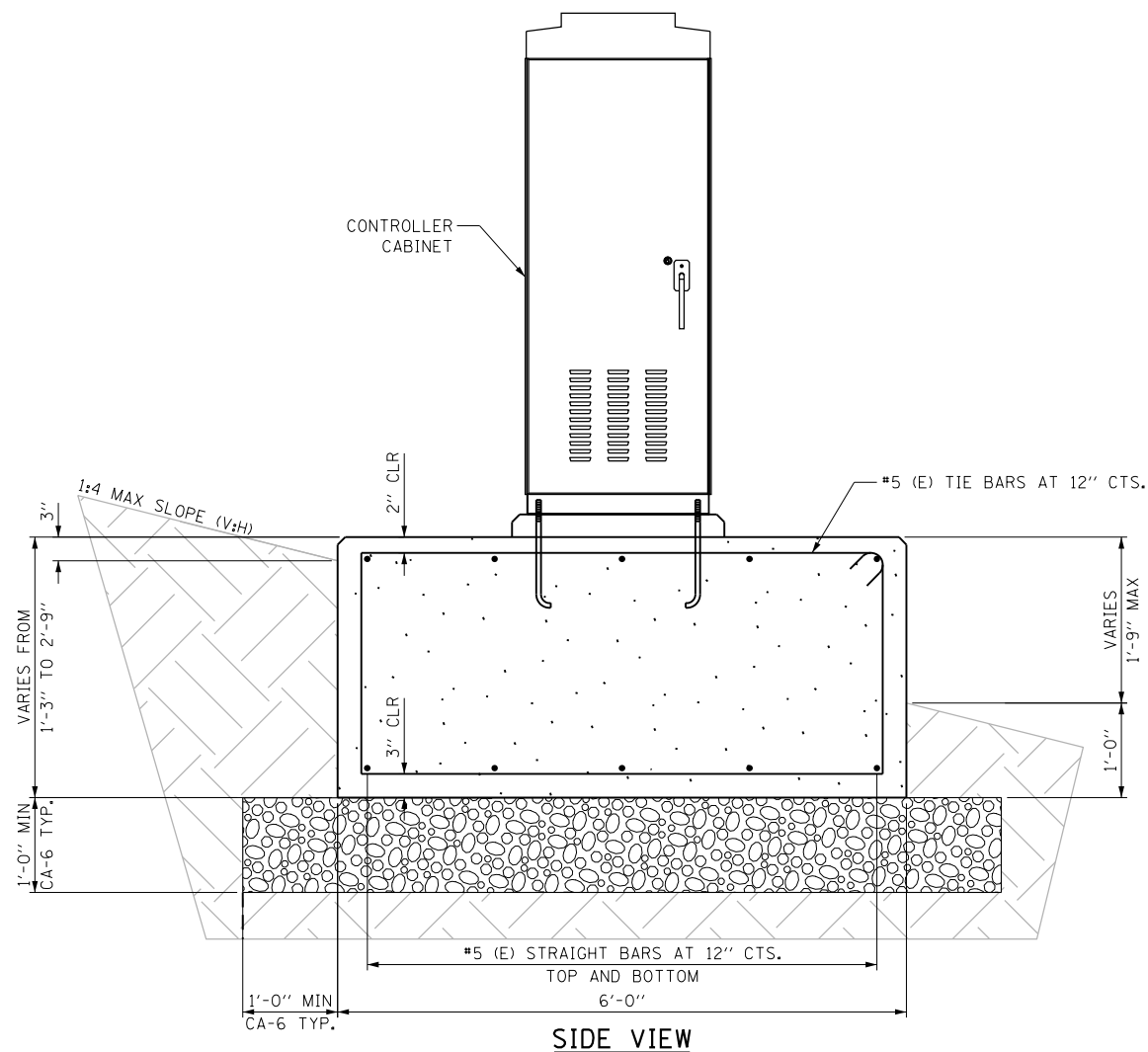
SHT NO. ITS-107
 DRAWING NO.
 131 OF 162

DMS CABINET FOUNDATION NOTES

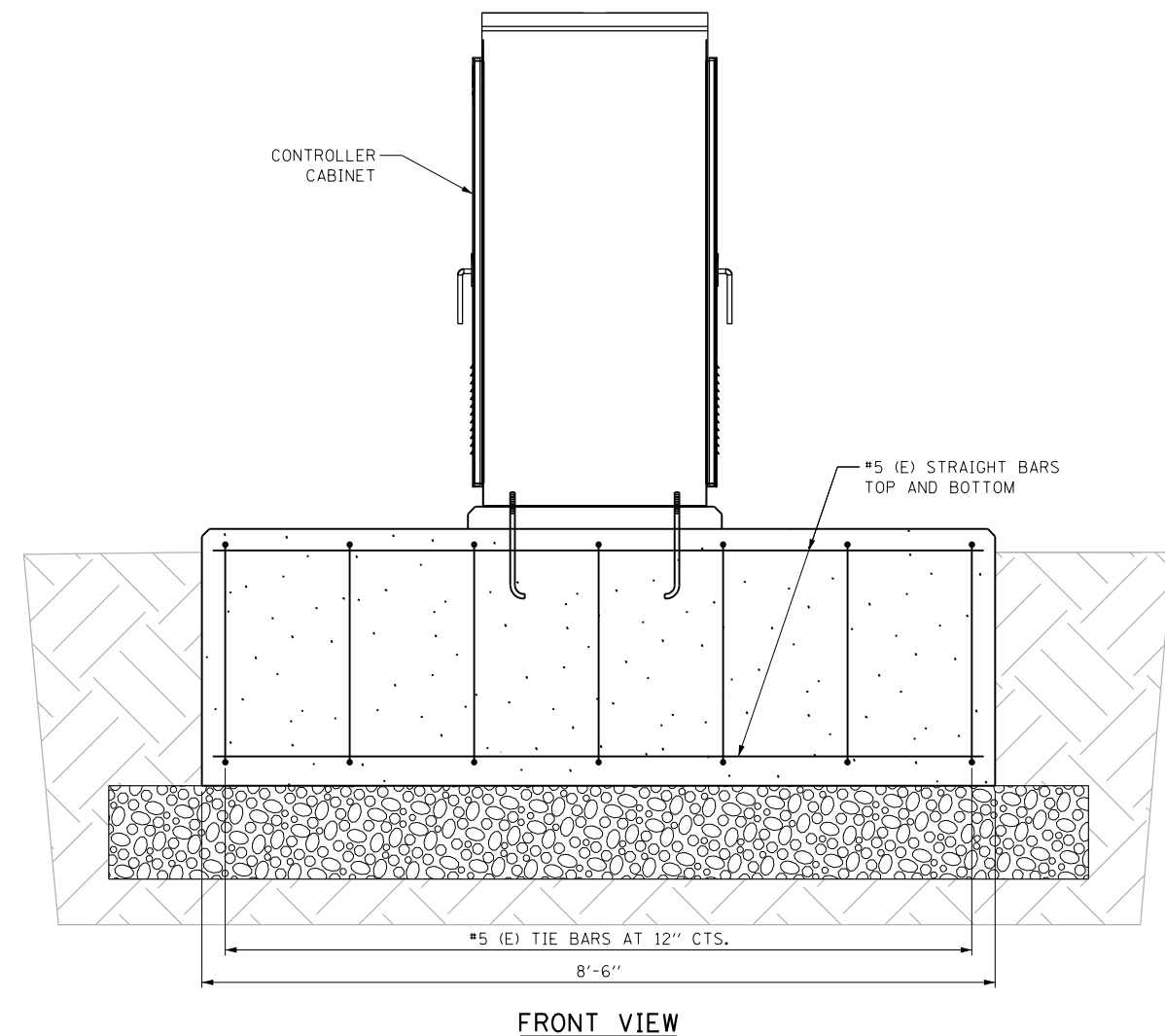
1. CONCRETE = 4,000 PSI (MIN.)
2. ALL REINFORCEMENT BARS SHALL BE EPOXY COATED (E) AND SHALL CONFORM TO THE REQUIREMENTS OF AASHTO M-31 (ASTM A615), GRADE 60 DEFORMED BARS.
3. PROVIDE SHOP DRAWINGS PRIOR TO CONSTRUCTION.
4. INCLUDE CONDUITS REQUIRED AT EACH SITE PER SITE INSTALLATION PLANS.
5. REINFORCEMENT BENDING DETAILS SHALL BE IN ACCORDANCE WITH THE "MANUAL OF STANDARD PRACTICE FOR DETAILING REINFORCED CONCRETE STRUCTURES", ACI 315, LATEST EDITION.
6. COVER FROM FACE OF CONCRETE TO FACE OF REINFORCEMENT BARS SHALL BE 3" FOR ALL SURFACES UNLESS OTHERWISE SHOWN.
7. EXPOSED CONCRETE EDGES SHALL HAVE 3/4" CHAMFERS.
8. USE THIS DETAIL FOR EXISTING GRADE CROSS SLOPES LESS THAN 1:4 (V:H).
9. CONDUITS ENTERING THE FOUNDATION ARE NOT SHOWN FOR CLARITY. CONTRACTOR SHALL INSTALL CONDUITS OF THE SIZE AND QUANTITY PER PLAN. CONTRACTOR SHALL DETERMINE CONDUIT ENTRY INTO THE FOUNDATION AND COORDINATE WITH THE ENGINEER FOR APPROVAL PRIOR TO PLACING CONCRETE.



DMS CONTROLLER CABINET AND FOUNDATION



SIDE VIEW



FRONT VIEW

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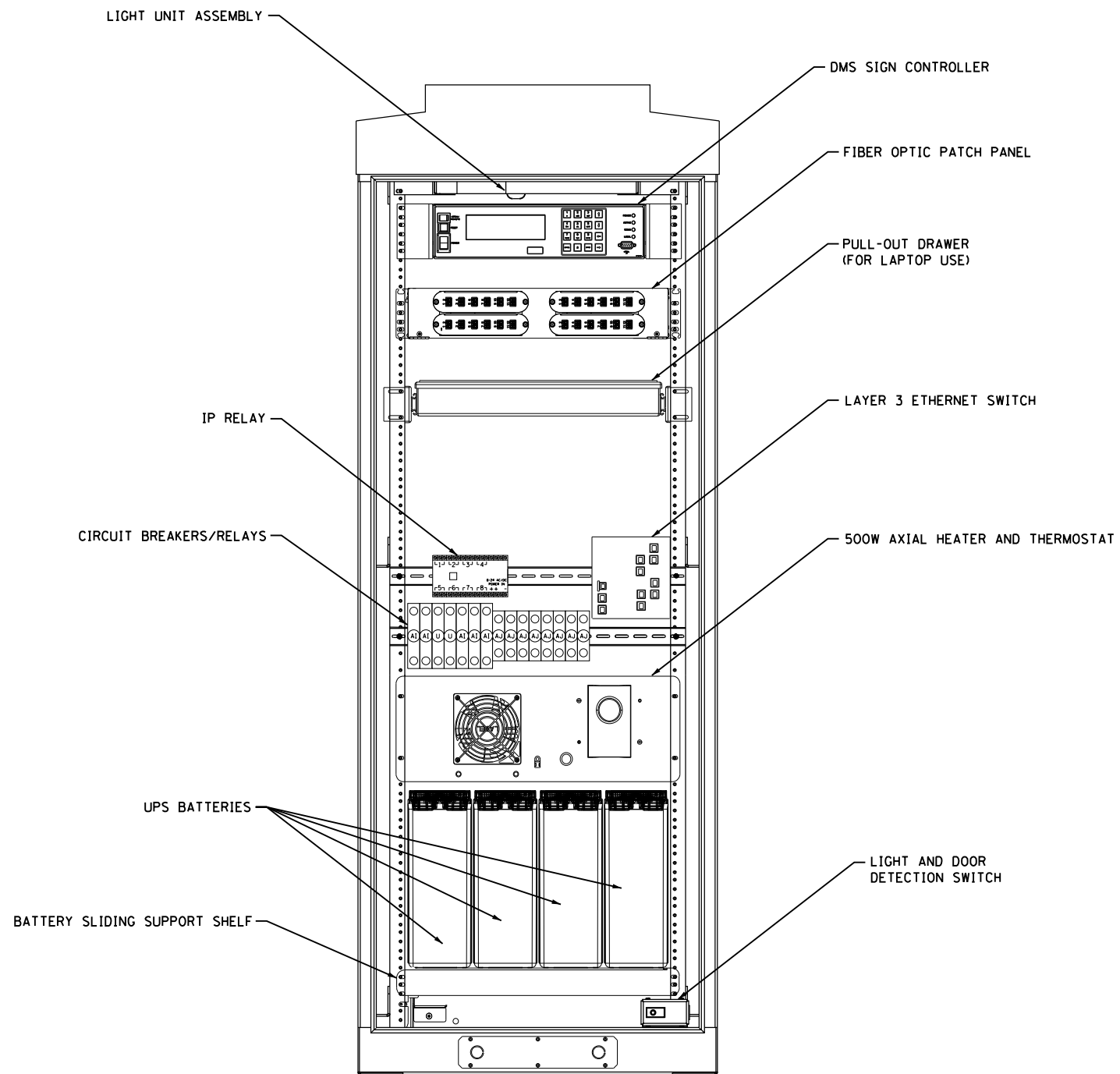
JACOBS
 525 W. Monroe, Suite 1600, Chicago, IL 60661

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 2700 OGDEN AVENUE
 DOWNERS GROVE,
 ILLINOIS 60515

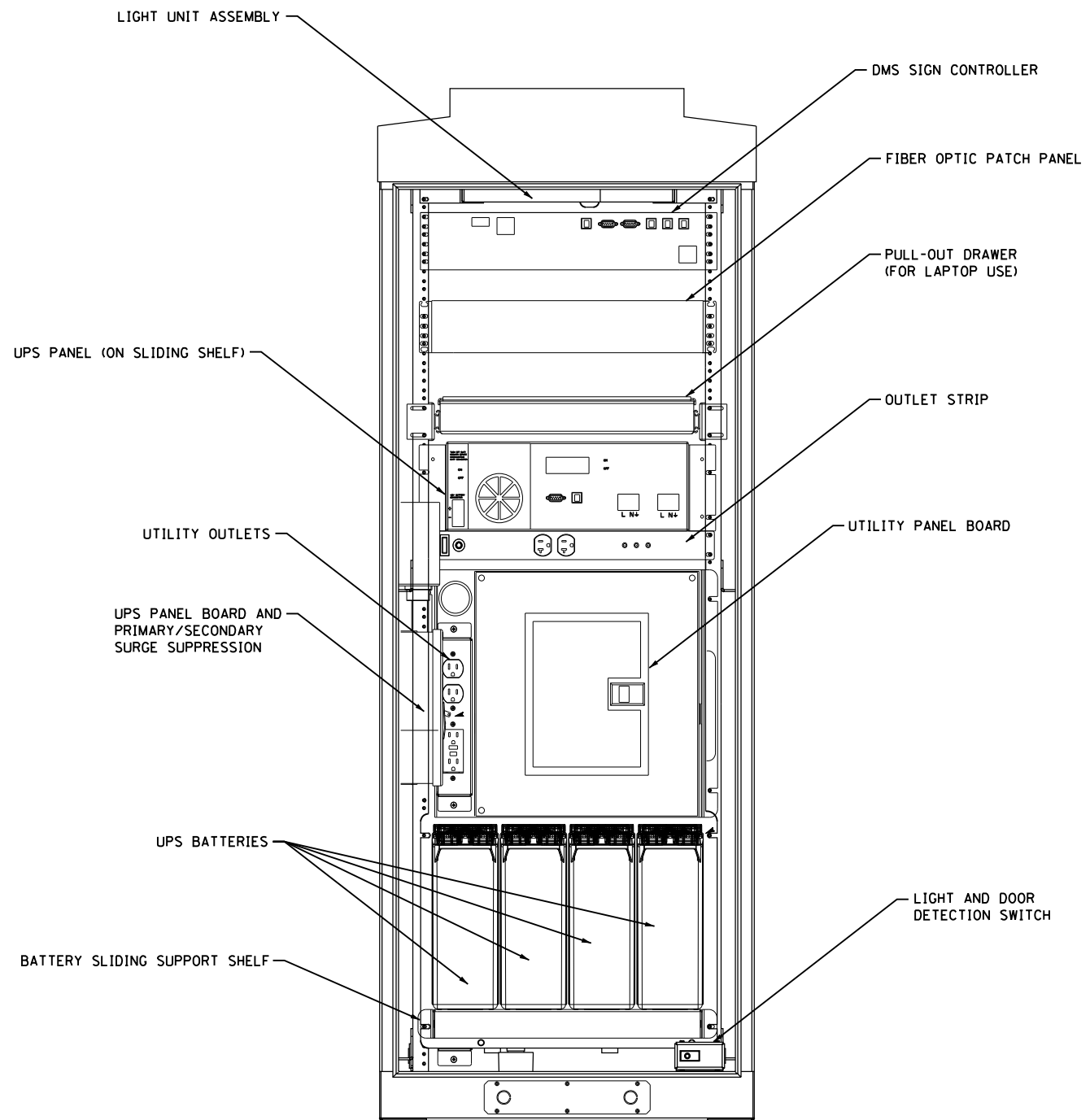
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NO.	DESCRIPTION

CONTRACT NO. RR-17-6001
 DMS CABINET FOUNDATION DETAIL, TYPE A

SHT NO. ITS-108
 DRAWING NO.
 132 OF 162



COMMUNICATIONS COMPARTMENT
(NO DOOR SHOWN)



POWER COMPARTMENT
(NO DOOR SHOWN)

TYPE 334 DMS CABINET LAYOUT DETAILS
SCALE: NTS

- NOTES:
1. SPLICE BLOCK, LOAD SHED RELAY, CONTROL POWER TRANSFORMER & DIN IP RELAY MOUNTED ON SIDE WALL ADJACENT UTILITY PANEL BOARD.

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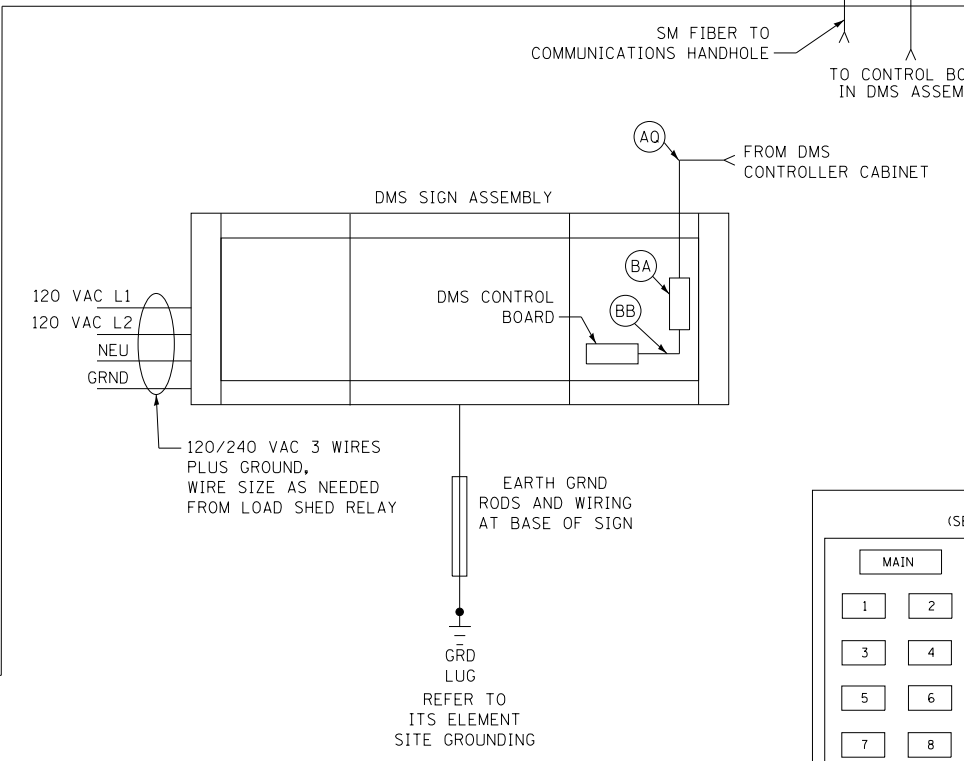
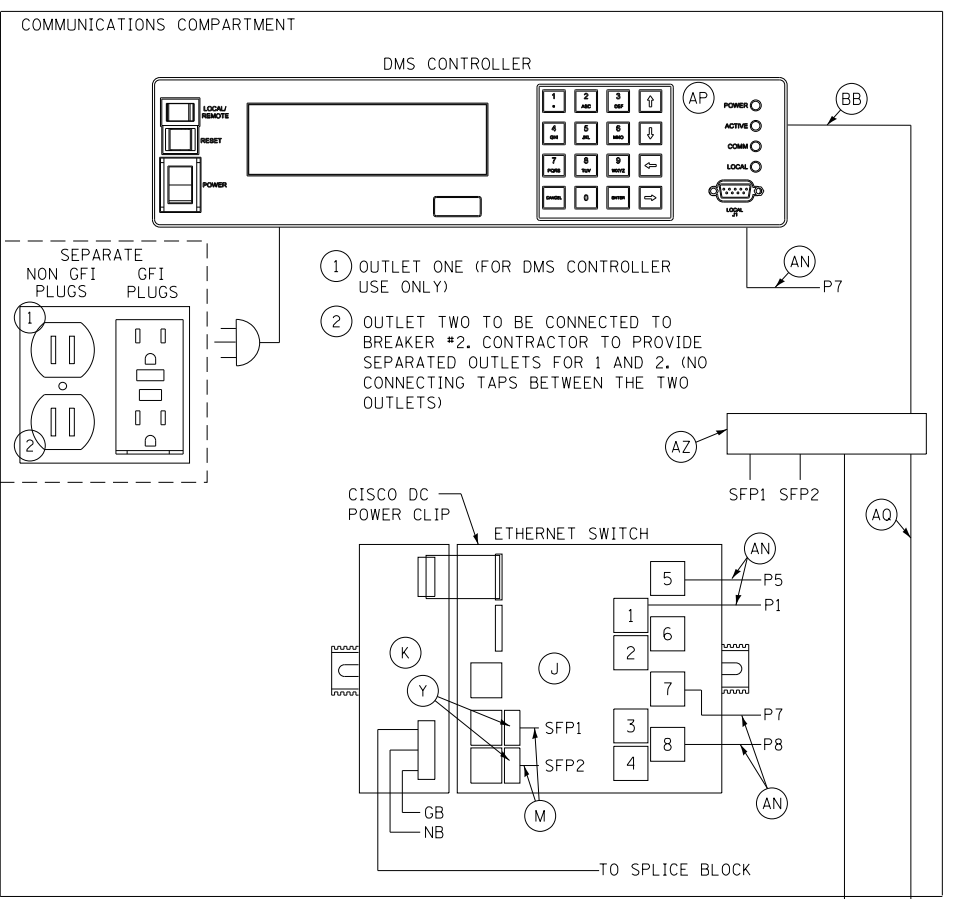
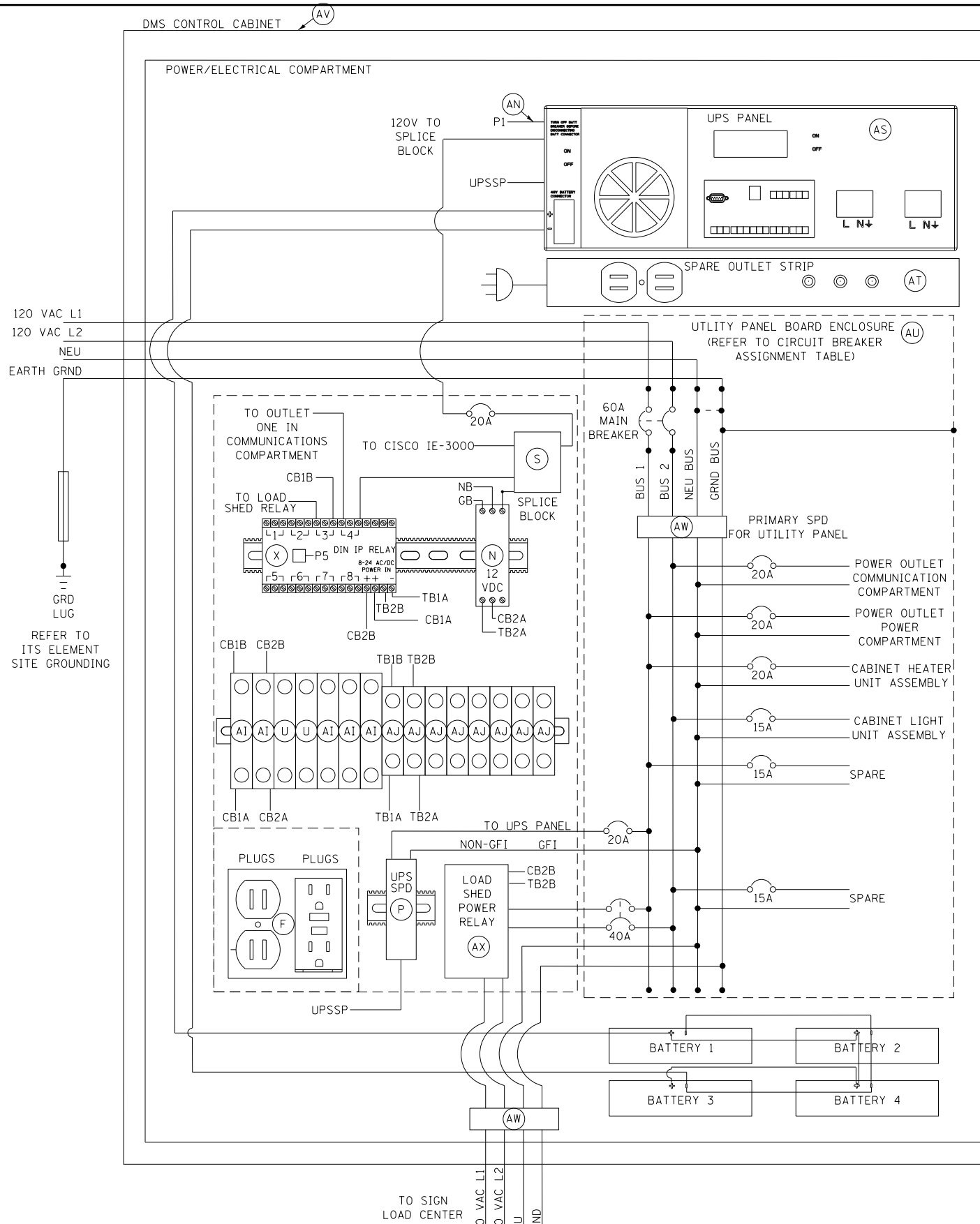
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REVISIONS	
NO.	DATE

CONTRACT NO. RR-17-6001
 DMS CABINET LAYOUT DETAIL

SHT NO. ITS-110
 DRAWING NO. 134 OF 162



- ITEM DESCRIPTION
- A-E NOT USED
- F TWO DUPLEX 120V RECEPTACLES, ONE GFCI (HUBBLE GFR5362TR) AND ONE STANDARD (HUBBLE BR20WR)
- G-I NOT USED
- J CISCO MODEL 8 ELECTRICAL PORT AND TWO FOC PORT SWITCH CISCO/IE-3000-8TC-E
- K CISCO POWER SUPPLY, CISCO/PWR-IE-3000-AC=
- L NOT USED
- M 2 METER - SMFO LC-SC DUPLEX JUMPERS, CORNING/047202R5120002M
- N AC/DC POWER SUPPLY, 12VDC, 10 WATTS, MEAN WELL/MDR-10-12
- O NOT USED
- P 120VAC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL COOPER CROUSE HINDS/MA15/D/1/SI OR APPROVED EQUAL
- O-R NOT USED
- S SPLICE BLOCK, ALTECH/38041
- T NOT USED
- U 5A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB050
- V-W NOT USED
- X POWER CONTROLLER, 8-CHANNEL DIN ETHERNET RELAY DIGITAL LOGGERS/DIN 3
- Y (2) GLC-LX-SM-RGD = 1 GBPS SM SFP MODULES
- Z NOT USED
- AA-AH NOT USED
- AI 2A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB020
- AJ TERMINAL BLOCK, ALLEN BRADLEY/1492-CD8
- AK-AM NOT USED
- AN INDOOR/OUTDOOR RATED CAT6 (1000MBS, TEMPERATURE HARDENED) THESE ARE THE CAT6 CABLES ROUTED INSIDE CABINET
- AO NOT USED
- AP DMS CONTROLLER
- AO 12 STRAND MM FOC, PIGTAIL
- AR NOT USED
- AS UPS PANEL ALPHA TECHNOLOGIES FXM1100 WITH BATTERIES
- AT OUTLET STRIP
- AU DMS MANUFACTURER UTILITY PANEL ENCLOSURE
- AV DMS CONTROL CABINET TYPE 334 NEMA 3R
- AW 120/240VAC MTL ZONE DEFENDER MODEL ZD16100
- AX LOAD SHED POWER RELAY MAGNECRAFT MODEL W199APX-34 WITH COVER
- AZ RACK MOUNTED FIBER PATCH PANEL
- BA PATCH PANEL ASSEMBLY (GATOR PATCH)
- BB 2 METER FIBER JUMPER, CORNING (TYPE AND CONNECTION PER DMS MANUFACTURER)

CIRCUIT BREAKER ASSIGNMENT TABLE
(SEE UTILITY PANEL BOARD CIRCUIT BREAKER LOCATIONS)

MAIN		CIRCUIT BREAKER DESCRIPTION	AMPS	CIRCUIT BREAKER LOCATION
1	2	POWER OUTLET POWER COMPARTMENT	20	1
		POWER OUTLET COMMUNICATION COMPARTMENT	20	2
3	4	SPARE	15	3
		SPARE	15	4
5	6	CABINET HEATER UNIT ASSEMBLY	20	5
		UPS PANEL	20	6
7	8	CABINET LIGHT UNIT ASSEMBLY	15	7
		POWER RELAY	40	8
9	10	NOT USED	-	9
		NOT USED	-	10
11	12	NOT USED	-	11
		NOT USED	-	12

NOTE:

- FABRICATOR TO PROVIDE CABINET DRAWINGS SUBMITTAL FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- ENTIRE COMPLETED SYSTEM SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH MOTOROLA R56 MANUAL AND THE APPLICABLE ARTICLES OF SECTION 250 OF THE NATIONAL ELECTRICAL CODE.

FILE: 2015\CX\24306_Kinley_Herrn_Task_6a\700_CADD_Files\713_Traffic_Files\Sheet\135_DMS05_9172-ah-DMS_Cabinet_Wiring_Diagram.dgn

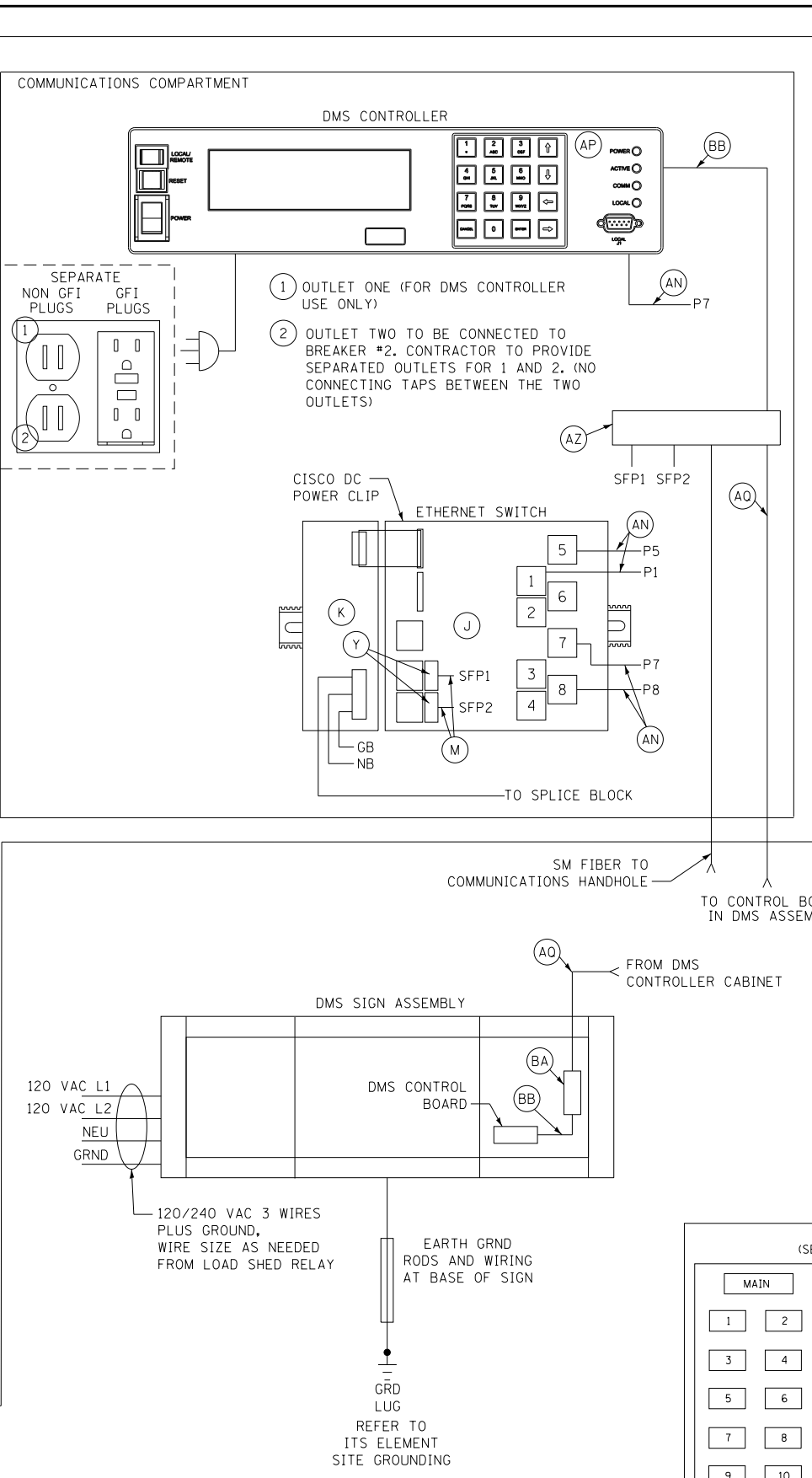
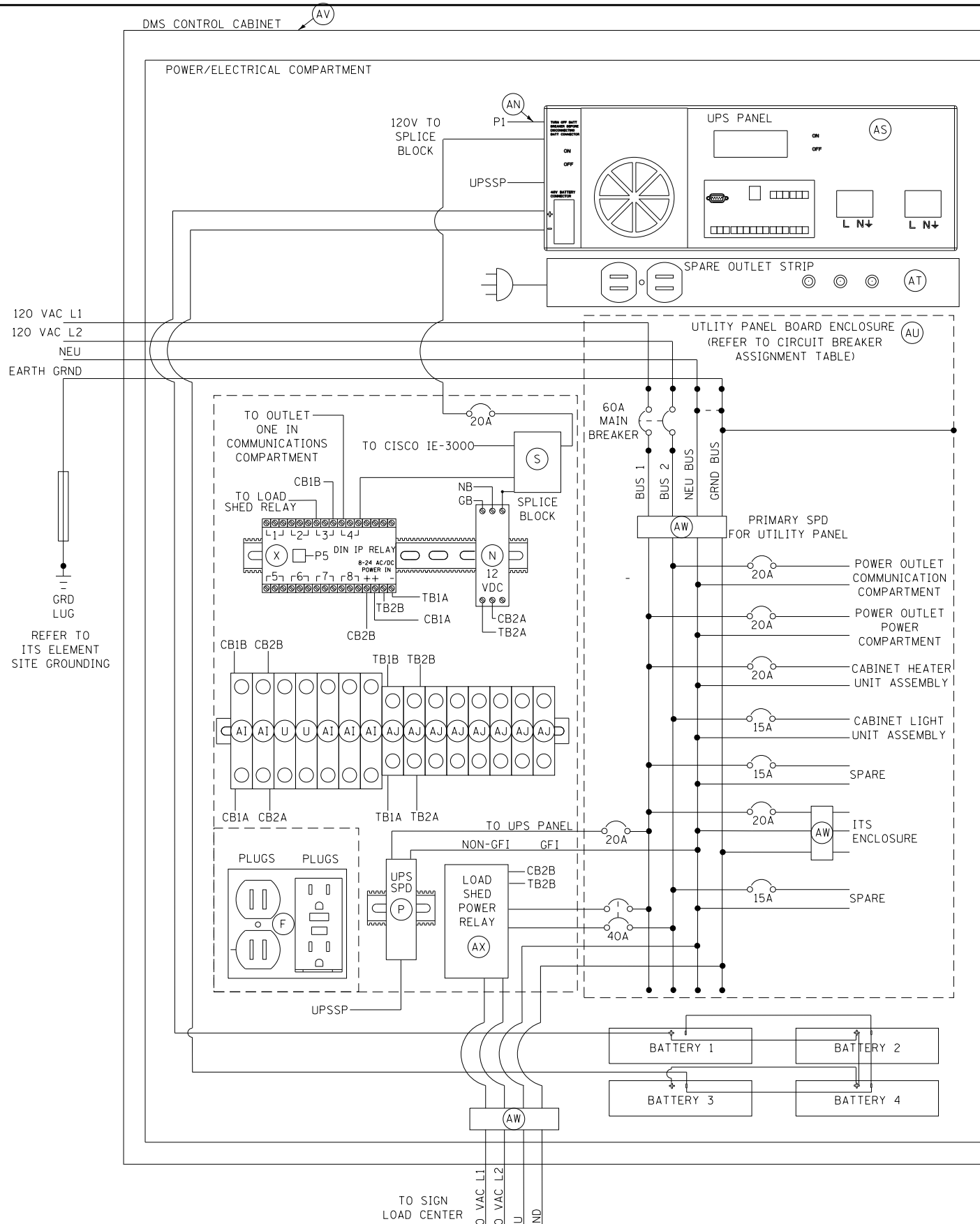
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 ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. RR-17-6001
DMS CABINET WIRING DIAGRAM
 SHT NO. ITS-111
 DRAWING NO. 135 OF 162



- ITEM DESCRIPTION
- A-E NOT USED
 - F TWO DUPLEX 120V RECEPTACLES, ONE GFCI (HUBBLE GFR5362TR) AND ONE STANDARD (HUBBLE BR20WR)
 - G-I NOT USED
 - J CISCO MODEL 8 ELECTRICAL PORT AND TWO FOC PORT SWITCH CISCO/IE-3000-BTC-E
 - K CISCO POWER SUPPLY, CISCO/PWR-IE-3000-AC=
 - L NOT USED
 - M 2 METER - SMFO LC-SC DUPLEX JUMPERS, CORNING/047202R5120002M
 - N AC/DC POWER SUPPLY, 12VDC, 10 WATTS, MEAN WELL/MDR-10-12
 - O NOT USED
 - P 120VAC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL COOPER GROUSE HINDS/MA15/D/1/SI OR APPROVED EQUAL
 - Q-R NOT USED
 - S SPLICE BLOCK, ALTECH/38041
 - T NOT USED
 - U 5A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB050
 - V-W NOT USED
 - X POWER CONTROLLER, 8-CHANNEL DIN ETHERNET RELAY DIGITAL LOGGERS/DIN 3
 - Y (2) GLC-LX-SM-RGD = 1 GBPS SM SFP MODULES
 - Z NOT USED
 - AA-AH NOT USED
 - AJ 2A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB020
 - AJ TERMINAL BLOCK, ALLEN BRADLEY/1492-CD8
 - AK-AM NOT USED
 - AN INDOOR/OUTDOOR RATED CAT6 (1000MBS, TEMPERATURE HARDENED) THESE ARE THE CAT6 CABLES ROUTED INSIDE CABINET
 - AO NOT USED
 - AP DMS CONTROLLER
 - AO 12 STRAND MM FOC, PIGTAIL
 - AR NOT USED
 - AS UPS PANEL ALPHA TECHNOLOGIES FXM1100 WITH BATTERIES
 - AT OUTLET STRIP
 - AU DMS MANUFACTURER UTILITY PANEL ENCLOSURE
 - AV DMS CONTROL CABINET TYPE 334 NEMA 3R
 - AW 120/240VAC MTL ZONE DEFENDER MODEL ZD16100
 - AX LOAD SHED POWER RELAY MAGNECRAFT MODEL W199APX-34 WITH COVER
 - AZ RACK MOUNTED FIBER PATCH PANEL
 - BA PATCH PANEL ASSEMBLY (GATOR PATCH)
 - BB 2 METER FIBER JUMPER, CORNING (TYPE AND CONNECTION PER DMS MANUFACTURER)

CIRCUIT BREAKER ASSIGNMENT TABLE
(SEE UTILITY PANEL BOARD CIRCUIT BREAKER LOCATIONS)

MAIN		CIRCUIT BREAKER DESCRIPTION	AMPS	CIRCUIT BREAKER LOCATION
1	2	POWER OUTLET POWER COMPARTMENT	20	1
		POWER OUTLET COMMUNICATION COMPARTMENT	20	2
3	4	SPARE	15	3
		SPARE	15	4
5	6	CABINET HEATER UNIT ASSEMBLY	20	5
		UPS PANEL	20	6
7	8	CABINET LIGHT UNIT ASSEMBLY	15	7
		POWER RELAY	40	8
9	10	ITS ENCLOSURE	20	9
		NOT USED	-	10
		NOT USED	-	11
		NOT USED	-	12

NOTE:

- FABRICATOR TO PROVIDE CABINET DRAWINGS SUBMITTAL FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
- ENTIRE COMPLETED SYSTEM SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH MOTOROLA R56 MANUAL AND THE APPLICABLE ARTICLES OF SECTION 250 OF THE NATIONAL ELECTRICAL CODE.

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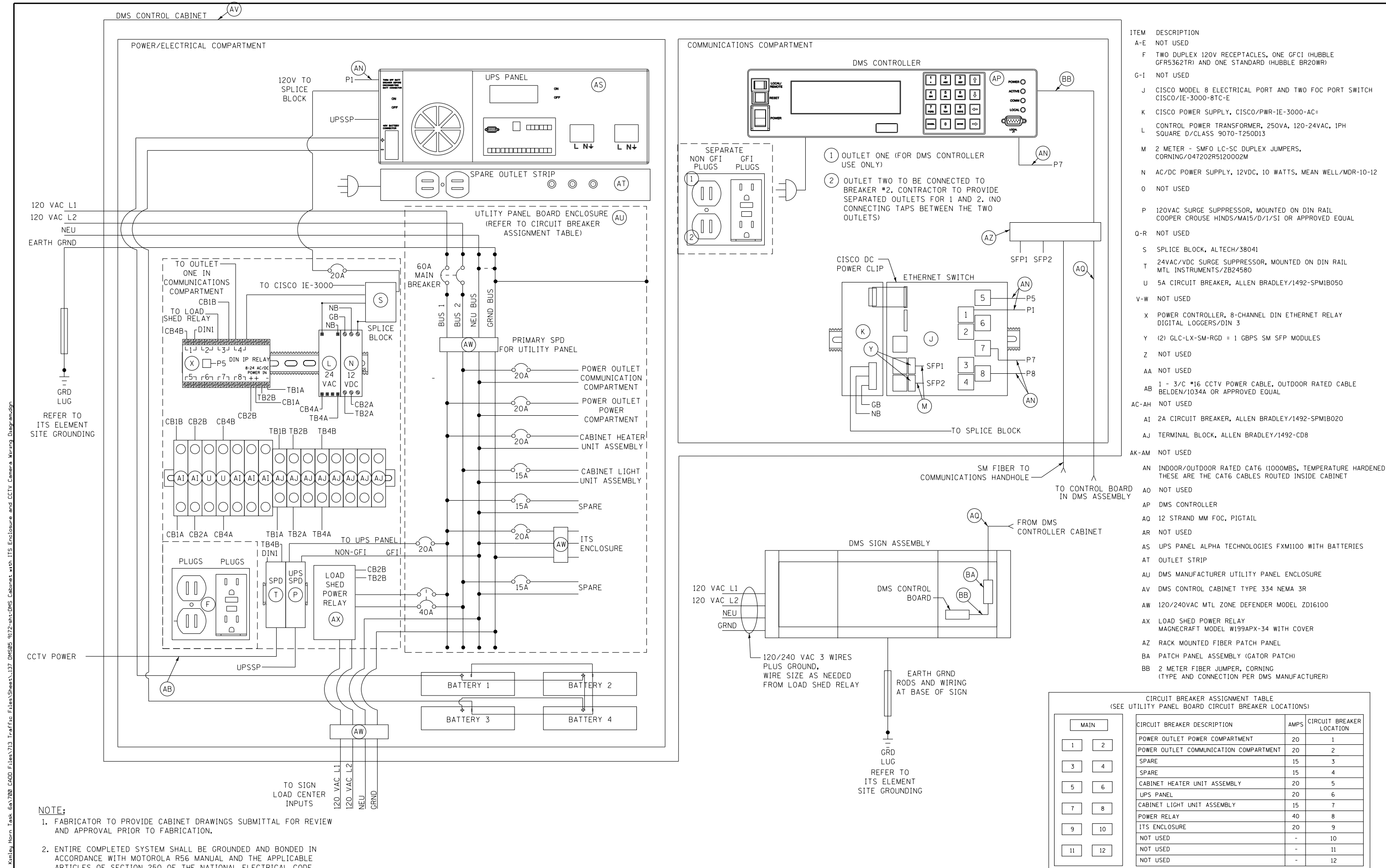
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ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. RR-17-6001
DMS CABINET WITH ITS ENCLOSURE WIRING DIAGRAM
SHT NO. ITS-112
DRAWING NO. 136 OF 162

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NOTE:
 1. FABRICATOR TO PROVIDE CABINET DRAWINGS SUBMITTAL FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
 2. ENTIRE COMPLETED SYSTEM SHALL BE GROUNDED AND BONDED IN ACCORDANCE WITH MOTOROLA R56 MANUAL AND THE APPLICABLE ARTICLES OF SECTION 250 OF THE NATIONAL ELECTRICAL CODE.

- ITEM DESCRIPTION
- A-E NOT USED
 - F TWO DUPLEX 120V RECEPTACLES, ONE GFCI (HUBBLE GFR5362TR) AND ONE STANDARD (HUBBLE BR20WR)
 - G-I NOT USED
 - J CISCO MODEL 8 ELECTRICAL PORT AND TWO FOC PORT SWITCH CISCO/IE-3000-8TC-E
 - K CISCO POWER SUPPLY, CISCO/PWR-IE-3000-AC=
 - L CONTROL POWER TRANSFORMER, 250VA, 120-24VAC, 1PH SQUARE D/CLASS 9070-T250D13
 - M 2 METER - SMFO LC-SC DUPLEX JUMPERS, CORNING/047202R5120002M
 - N AC/DC POWER SUPPLY, 12VDC, 10 WATTS, MEAN WELL/MDR-10-12
 - O NOT USED
 - P 120VAC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL COOPER GROUSE HINDS/MA15/D/1/SI OR APPROVED EQUAL
 - Q-R NOT USED
 - S SPLICE BLOCK, ALTECH/38041
 - T 24VAC/VDC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL MTL INSTRUMENTS/ZB24580
 - U 5A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB050
 - V-W NOT USED
 - X POWER CONTROLLER, 8-CHANNEL DIN ETHERNET RELAY DIGITAL LOGGERS/DIN 3
 - Y (2) GLC-LX-SM-RGD = 1 GBPS SM SFP MODULES
 - Z NOT USED
 - AA NOT USED
 - AB 1 - 3/C #16 CCTV POWER CABLE, OUTDOOR RATED CABLE BELDEN/1034A OR APPROVED EQUAL
 - AC-AH NOT USED
 - AI 2A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB020
 - AJ TERMINAL BLOCK, ALLEN BRADLEY/1492-CDB
 - AK-AM NOT USED
 - AN INDOOR/OUTDOOR RATED CAT6 (1000MBS, TEMPERATURE HARDENED) THESE ARE THE CAT6 CABLES ROUTED INSIDE CABINET
 - AO NOT USED
 - AP DMS CONTROLLER
 - AQ 12 STRAND MM FOC, PIGTAIL
 - AR NOT USED
 - AS UPS PANEL ALPHA TECHNOLOGIES FXM100 WITH BATTERIES
 - AT OUTLET STRIP
 - AU DMS MANUFACTURER UTILITY PANEL ENCLOSURE
 - AV DMS CONTROL CABINET TYPE 334 NEMA 3R
 - AW 120/240VAC MTL ZONE DEFENDER MODEL ZD16100
 - AX LOAD SHED POWER RELAY MAGNECRAFT MODEL W199APX-34 WITH COVER
 - AZ RACK MOUNTED FIBER PATCH PANEL
 - BA PATCH PANEL ASSEMBLY (GATOR PATCH)
 - BB 2 METER FIBER JUMPER, CORNING (TYPE AND CONNECTION PER DMS MANUFACTURER)

CIRCUIT BREAKER ASSIGNMENT TABLE
(SEE UTILITY PANEL BOARD CIRCUIT BREAKER LOCATIONS)

CIRCUIT BREAKER DESCRIPTION	AMPS	CIRCUIT BREAKER LOCATION
POWER OUTLET POWER COMPARTMENT	20	1
POWER OUTLET COMMUNICATION COMPARTMENT	20	2
SPARE	15	3
SPARE	15	4
CABINET HEATER UNIT ASSEMBLY	20	5
UPS PANEL	20	6
CABINET LIGHT UNIT ASSEMBLY	15	7
POWER RELAY	40	8
ITS ENCLOSURE	20	9
NOT USED	-	10
NOT USED	-	11
NOT USED	-	12

REVISIONS

NO.	DATE	DESCRIPTION

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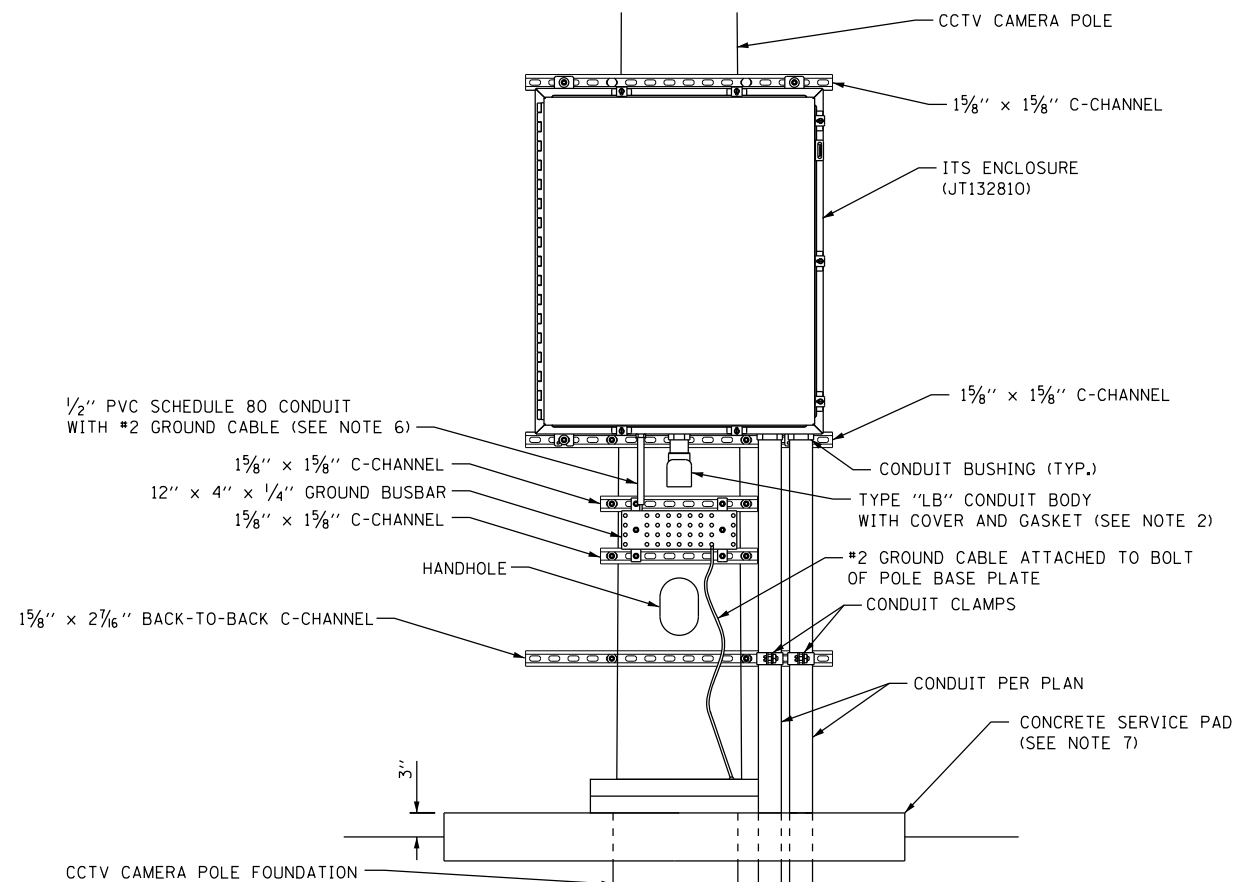
THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY
 2700 OGDEN AVENUE
 DOWNERS GROVE,
 ILLINOIS 60515

CONTRACT NO. RR-17-6001 SHT NO. ITS-113
DMS CABINET WITH ITS ENCLOSURE AND CCTV CAMERA WIRING DIAGRAM DRAWING NO. 137 OF 162

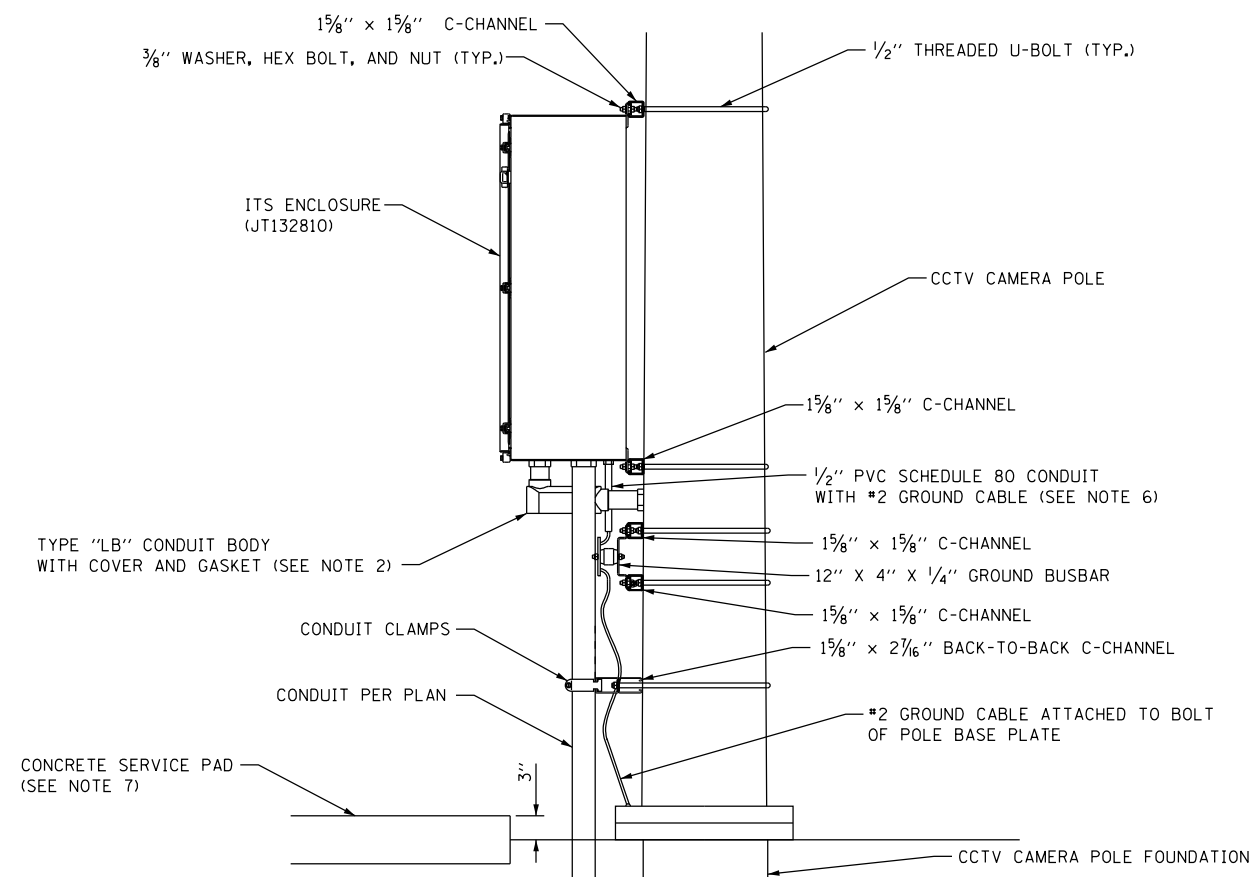
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GENERAL NOTES:

1. ANY GROUND CABLES ROUTED INSIDE THE ENCLOSURE SHALL BE GREEN INSULATED TYPE RHW CONDUCTORS. ANY GROUND CONDUCTORS THAT ARE BURIED SHALL BE BARE COPPER TINNED. ANY GROUND CONNECTED TO THE EXTERNAL GROUND BUSBAR SHALL BE EXOTHERMICALLY WELDED TO THE BUSBAR. PVC SCH 80 CONDUIT SHOULD BE GROMMETTED ON END GOING TO BUSBAR TO PREVENT RODENTS AND INSECTS FROM ENTERING.
2. PROVIDE A 1/2" ALUMINUM CONDUIT NIPPLE WITH LB FITTING FOR ROUTING ITS ELEMENT CABLES INSIDE THE POLE TO THE EQUIPMENT ENCLOSURE. DRILL AND TAP POLE FOR THE CONDUIT NIPPLE. CABLE SLACK SHALL BE PULLED AND FASTENED WITHIN THE TOP OF THE POLE. PROPER CABLE STRAIN RELIEF SHALL BE INSTALLED AND APPROVED BY THE ENGINEER. ALL CABLE RUN INSIDE THE POLE SHALL NOT HANG BELOW THE TOP OF THE HANDHOLE COVER ON THE POLE.
3. ALL CONDUITS ENTERING THE ENCLOSURE SHALL BE SEALED WITH DUCT SEAL PUTTY TO PREVENT RODENTS OR INSECTS FROM ENTERING THE ENCLOSURE. THE LB FITTING FROM THE POLE TO THE ENCLOSURE SHALL BE SEALED ON THE POLE SIDE AND THE ENCLOSURE SIDE. UPON COMPLETION OF INSTALLATION, ALL OPEN CONDUITS SHALL BE FILLED WITH 4 INCHES OF STEEL WOOL AND 4 INCHES OF SPRAY FOAM SEALANT TO SEAL GAPS AND CRACKS, FOR RODENT PROTECTION. WORK IS INCIDENTAL TO CABINET INSTALLATION.
4. CONTRACTOR TO PROVIDE ALL POWER, COMMUNICATIONS AND GROUND WIRING REQUIRED FOR SYSTEM OPERATION. THIS WORK IS INCLUDED IN PAY ITEM "ITS POLE-MOUNTED ENCLOSURE (CCTV OR MVDS)" (JT132810).
5. ATTACH PVC SCH 80 CONDUIT TO POLE FOR SUPPORT. USE METAL BUSHING WHEN CONNECTING PVC TO CABINET. USE GROMMETS AT BOTH ENDS OF CONDUIT TO SEAL CONDUIT BUT ALLOW GROUND CABLE TO RUN THROUGH BOTH ENDS.
6. ALL CABLING (INCLUDING CABLING INSIDE THE ENCLOSURE) IS OUTDOOR RATED. CAMERA CABLE PART NUMBERS ARE: CAT-6E CABLE (BELDEN CATALOG NO. 7953A) AND #14 AWG 3/C CCTV POWER CABLE (BELDEN CATALOG NO. 9367). THE GROUND WIRE (WHITE) IN THE 3/C #14 AWG POWER CABLE SHALL BE TAPED GREEN. ANY OTHER ITS ELEMENT WILL USE SPECIFIC CABLE ASSOCIATED TO THAT ELEMENT.
7. CONSTRUCT A 4"x4"x6" CONCRETE SERVICE PAD AT ALL LOCATIONS. THIS WORK IS INCLUDED IN ITS POLE-MOUNTED ENCLOSURE (CCCTV OR MVDS) (JT132810). SEE SHEET ITS-115 FOR CONCRETE SERVICE PAD DETAILS AT LOCATIONS WITH CROSS SLOPES GREATER THAN 4:1 (H:V).



ITS ENCLOSURE - FRONT VIEW



ITS ENCLOSURE - SIDE VIEW

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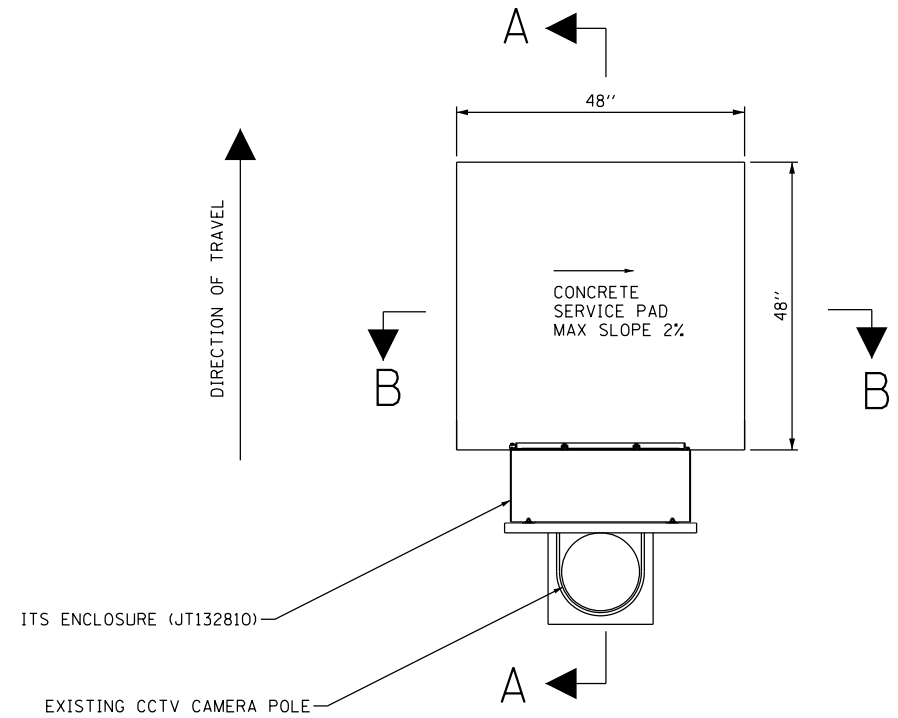
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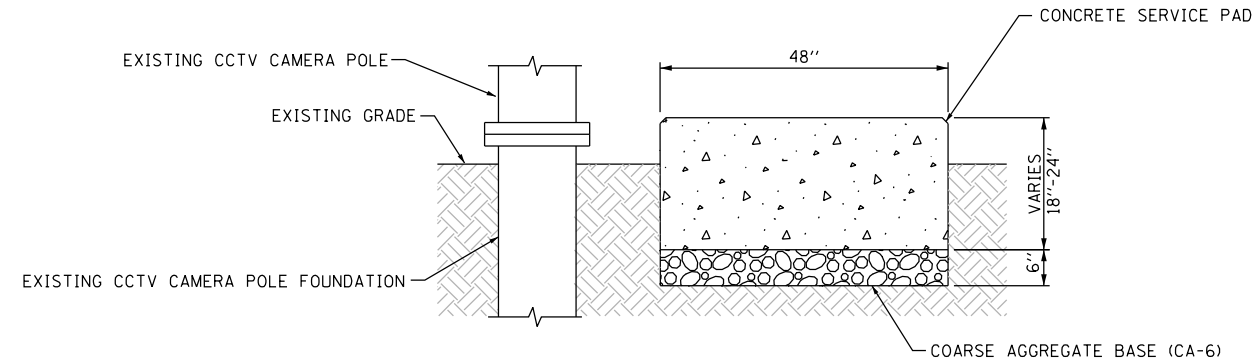
REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. RR-17-6001
**ITS POLE MOUNTED ENCLOSURE
 TYPICAL MOUNTING DETAILS**

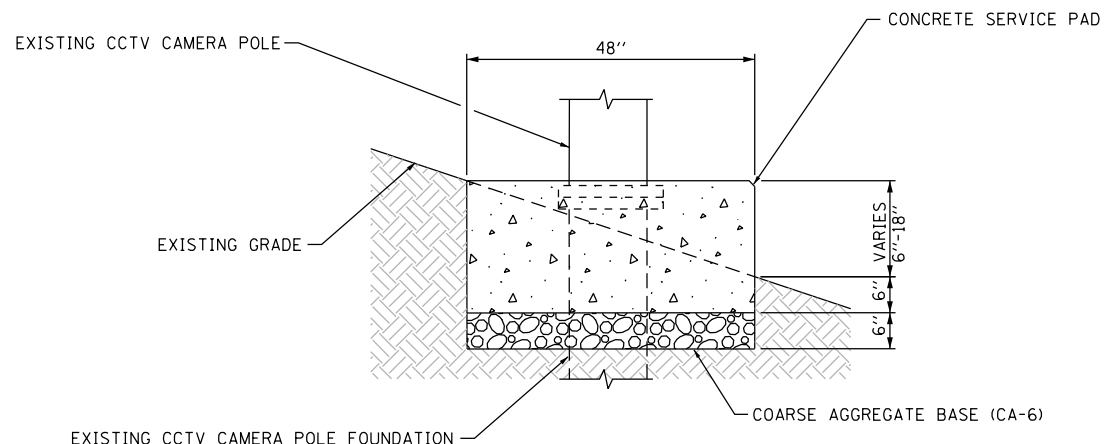
SHT NO. ITS-114
 DRAWING NO.
 138 OF 162



**ITS MAINTENANCE PAD FOR CCTV CAMERA POLE
PLAN VIEW**



SECTION A-A



SECTION B-B

- NOTES:
- ON SLOPES UP TO AND INCLUDING 4:1 (H:V), A CONCRETE SERVICE PAD SHALL BE INSTALLED FOR MAINTENANCE (MAX. SLOPE 2%) AS SHOWN ON SHEET ITS-114. AT CAMERA POLE LOCATIONS ON SLOPES STEEPER THAN 4:1, THESE DETAILS SHALL BE UTILIZED.
 - CONCRETE SHALL BE IDOT CLASS S1.
 - ALL EXPOSED CONCRETE EDGES SHALL HAVE A 1" MINIMUM CHAMFER.
 - ALL WORK SHOWN IN THIS DETAIL IS INCLUDED IN PAY ITEM "ITS POLE MOUNTED ENCLOSURE (CCTV OR MVDS)" (JT132810).

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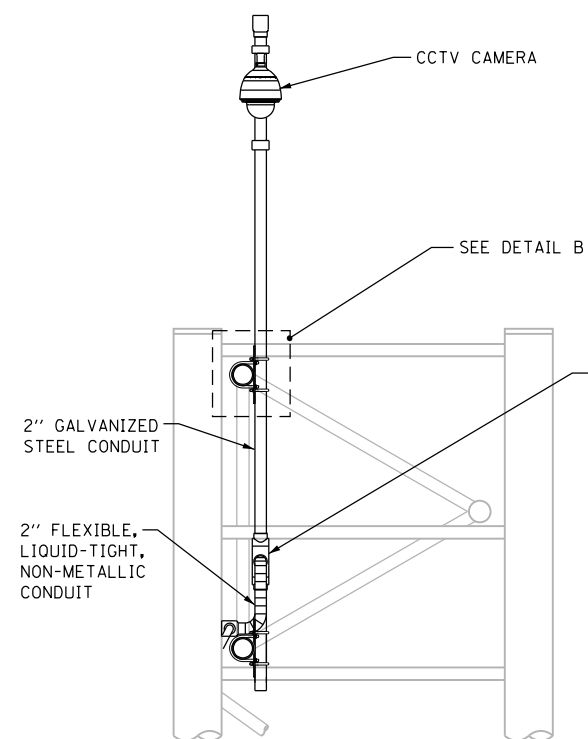
CONTRACT NO. RR-17-6001
TYPICAL CONCRETE SERVICE PAD DETAIL

SHT NO. ITS-115
 DRAWING NO.
 139 OF 162

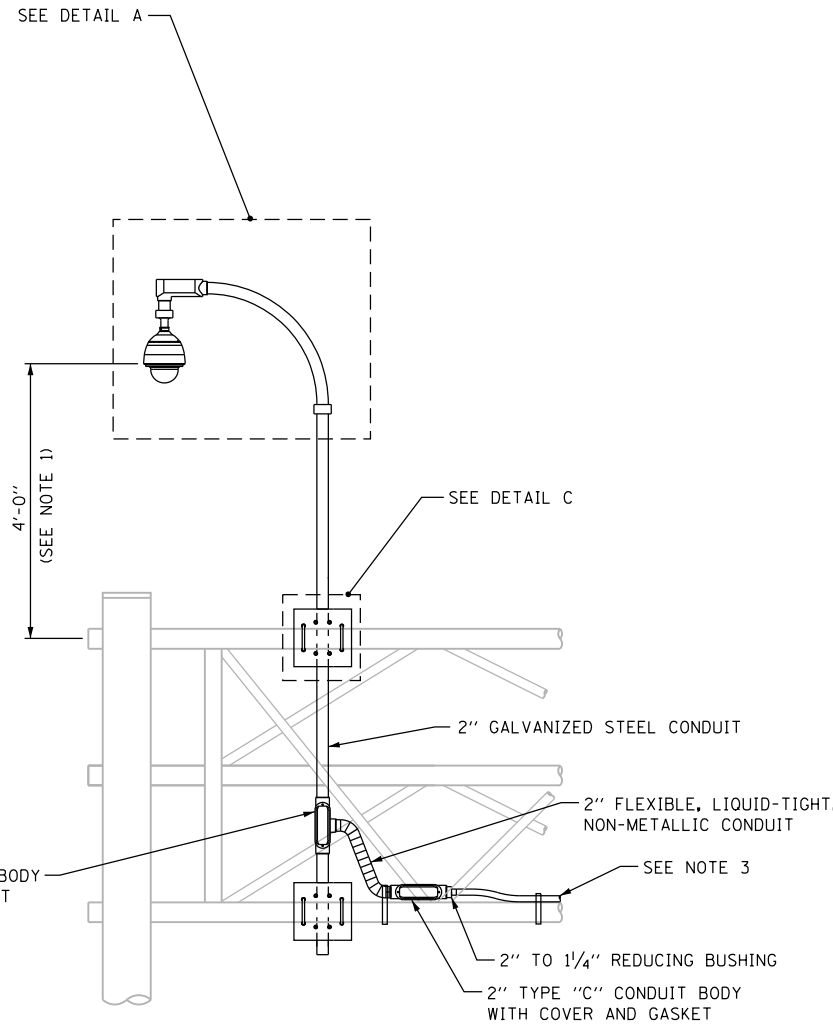
NOTES:

1. CONTRACTOR SHALL VERIFY WITH ENGINEER AND TRAFFIC OPERATIONS CENTER MANAGER REGARDING THE EXACT MOUNTING HEIGHT OF CAMERA AT EACH SITE.
2. ALL MATERIALS REQUIRED TO MOUNT CCTV CAMERA TO SIGN STRUCTURE ARE INCLUDED IN PAY ITEM "CCTV CAMERA, ITS ASSEMBLY MOUNTED ON STRUCTURE (TYPE A)" (JT132825).
3. SEE SHEET ITS-122 FOR CONDUIT ON STRUCTURE MOUNTING DETAILS.

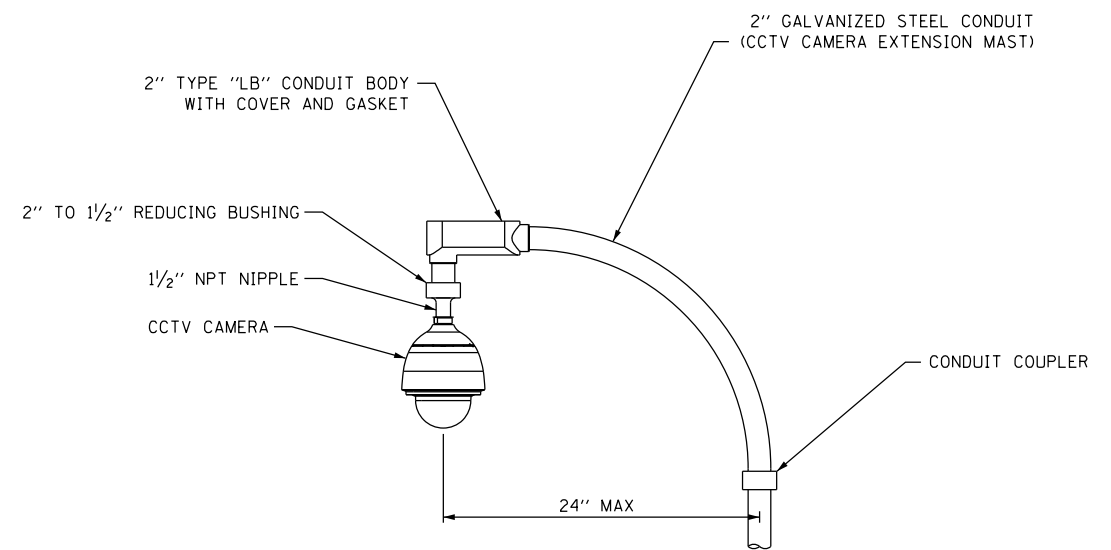
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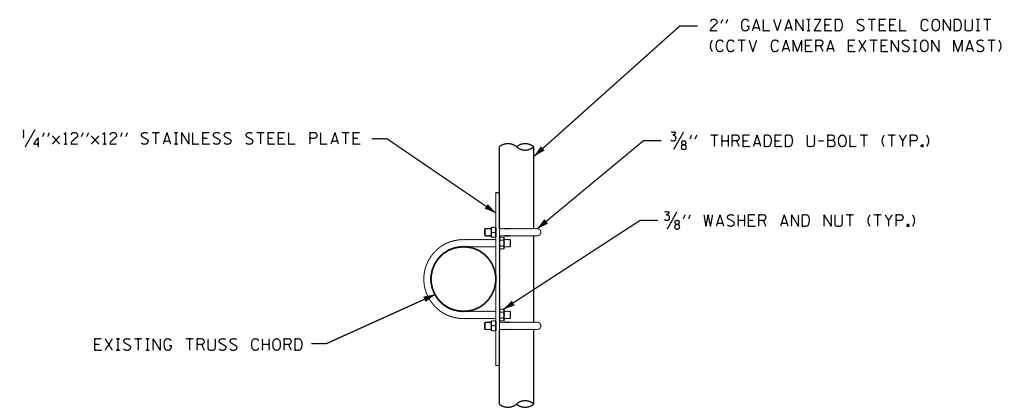
**TYPE A CAMERA MAST ON EXISTING SIGN STRUCTURE
SIDE VIEW**



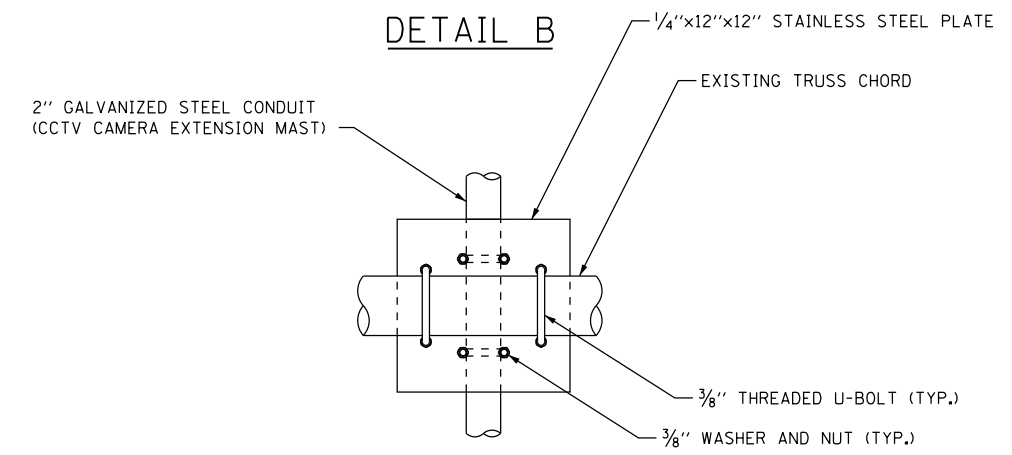
**TYPE A CAMERA MAST ON EXISTING SIGN STRUCTURE
FRONT VIEW**



DETAIL A



DETAIL B



DETAIL C

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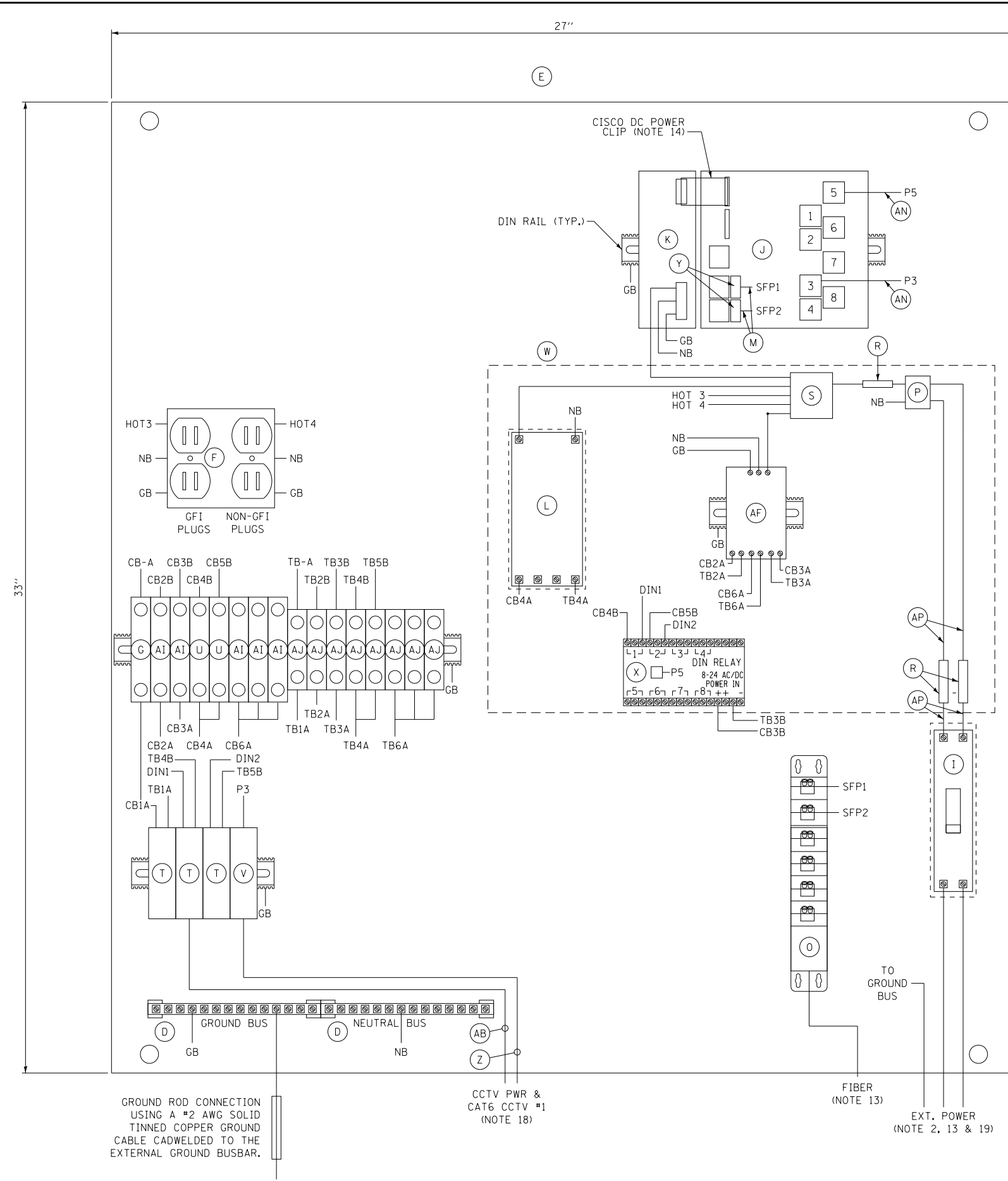
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NO.	DESCRIPTION

CONTRACT NO. RR-17-6001
**CCTV CAMERA, ITS ASSEMBLY
 MOUNTED ON STRUCTURE (TYPE A)**

SHT NO. ITS-116
 DRAWING NO.
 140 OF 162



- ITEM DESCRIPTION
- A NOT USED FOR THIS SHEET APPLICATION
 - B NOT USED FOR THIS SHEET APPLICATION
 - C NOT USED FOR THIS SHEET APPLICATION
 - D TWO (2) GROUNDING BAR SYSTEM HOFFMAN/PGS2K. BONDED OR SEPARATED AS REQUIRED.
 - E NEMA 4X STAINLESS STEEL, 36"H X 30"W X 12"D ENCLOSURE WITH 33"x27" PANEL, HOFFMAN/A36H30I2SS6LP & A36P30
 - F TWO DUPLEX 120V RECEPTACLES, ONE GFCI AND NON-GFI (SEE NOTE 9) HUBBELL/GFR5362 & BR20WR
 - G 24VDC, 1P, 15A CIRCUIT BREAKER SCHNEIDER ELECTRIC/MGN61510
 - H NOT USED FOR THIS SHEET APPLICATION
 - I 480V, 2P, 30A CIRCUIT BREAKER WITH TERMINAL SHIELD CUTLER HAMMER/HFD2030L & 625B229G07
 - J 8 ELECTRICAL PORT AND TWO FOC PORT SWITCH CISCO MODEL CISCO/IE-3000-8TC-E
 - K CISCO POWER SUPPLY, CISCO/PWR-IE-3000-AC-
 - L CONTROL POWER TRANSFORMER, 250VA, 120-24VAC, 1PH SQUARE D/CLASS 9070-T250D13
 - M 2 METER - SMFO LC-LC DUPLEX JUMPERS, CORNING/040402R522002M
 - N NOT USED FOR THIS SHEET APPLICATION
 - O SMF PATCH PANEL WITH LC CONNECTORS FIBER CONNECTIONS G620U012LAN-100-0
 - P 120VAC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL COOPER CROUSE HINDS/MA15/D/1/SI OR APPROVED EQUAL
 - Q PANDUIT WIRING DUCT (OR EQUIVALENT) PANDUIT/FIX1LG6 WITH COVER-C1LG6
 - R 10 AMP FUSE, GOULD (MERSEN)/ATM-10
 - S SPLICE BLOCK, ALTECH/38041
 - T 24VAC/VDC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL MTL INSTRUMENTS/ZB24580
 - U 5A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB050
 - V CAT6 PoE+ SURGE SUPPRESSOR, MOUNTED ON COMMON DIN RAIL MTL INSTRUMENTS/ZB24590 OR APPROVED EQUAL
 - W CLEAR PLEXIGLASS SAFETY COVER ENCOMPASSING ITEMS L, R, S, B, P, N, X & AF. (THE INSTALLER SHALL PERMANENTLY AFFIX A LABEL STATING "DANGER 480 VAC" OR "DANGER 240 VAC" OR "DANGER 120 VAC" FOR 120 VAC AS FIELD CONDITIONS WARRANT.)
 - X POWER CONTROLLER, 8-CHANNEL DIN ETHERNET RELAY DIGITAL LOGGERS/DIN 3
 - Y (2) CISCO GLC-LX-SM-RGD = 1 GBPS SM SFP MODULES
 - Z CATEGORY 6 CABLE, 23AWG, OUTDOOR RATED CABLE BELDEN/7953A
 - AA NOT USED FOR THIS SHEET APPLICATION
 - AB 1 - 3/C #16 CCTV POWER CABLE, OUTDOOR RATED CABLE BELDEN/1034A OR APPROVED EQUAL
 - AC NOT USED FOR THIS SHEET APPLICATION
 - AD NOT USED FOR THIS SHEET APPLICATION
 - AE NOT USED FOR THIS SHEET APPLICATION
 - AF AC/DC POWER SUPPLY, 24VDC WAVETRONIX - CLICK-204
 - AG NOT USED FOR THIS SHEET APPLICATION
 - AH NOT USED FOR THIS SHEET APPLICATION
 - AI 2A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB020
 - AJ TERMINAL BLOCK, ALLEN BRADLEY/1492-CD8
 - AK NOT USED FOR THIS SHEET APPLICATION
 - AL TRANSFORMER COVERS, SQUARE D/9070FSC2
 - AM NOT USED FOR THIS SHEET APPLICATION
 - AN INDOOR/OUTDOOR RATED CAT6 (1000MBS, TEMPERATURE HARDENED) THESE ARE THE CAT6 CABLES ROUTED INSIDE CABINET
 - AO NOT USED FOR THIS SHEET APPLICATION
 - AP #10 AWG

- NOTES:
1. ALL POWER WIRING SHALL BE RHH/RHW WITH WIRE TERMINALS OR TINNED.
 2. CONTRACTOR TO VERIFY CORRECT TRANSFORMER TAPS ARE USED BASED ON INCOMING POWER SOURCE.
 3. ALL CABLES AND EQUIPMENT SHALL BE PROPERLY DRESSED AND LABELED. ALL CONDUITS SHALL BE PROPERLY PLUGGED WITH DUCT SEAL PUTTY (RAINBOW TECHNOLOGIES OR EQUIVALENT).
 4. NOT USED FOR THIS SHEET APPLICATION.
 5. EACH 120VAC OUTLET, PS OR TRANSFORMER (ITEM F, K, L, AF & N) SHALL BE FED FROM A SEPARATE INPUT LINE.
 6. MOUNT ITEMS J & K ON A 15 INCH CONTINUOUS SECTION OF DIN RAIL. THE DIN RAIL SHALL BE INSTALLED WITH THE CENTER LINE NO LESS THAN 5 INCHES FROM ANY OBSTACLE ABOVE AND NO LESS THAN 4 INCHES FROM ANY OBSTACLE BELOW. ALL DIN RAIL SHALL BE GROUNDED.
 7. ALL CABLES INSTALLED WITHIN THE CABINET AND POLE SHALL BE OUTDOOR RATED.
 8. NOT USED FOR THIS SHEET APPLICATION
 9. THE GFI OUTLETS LOAD SHALL NOT BE CONNECTED TO ANY OTHER LOAD IN THE ENCLOSURE. THE 1900 QUAD BOX GFI'S ARE INTENDED TO BE UTILIZED FOR EXTERNAL EQUIPMENT ONLY. EACH OUTLETS TAB SHALL BE BROKEN SO THEY ARE INDEPENDENT.
 10. ALL BREAKERS SHALL BE LABELED (e.g. CAMERA-AC, CAMERA-DC, DIN RELAY-AC, DIN RELAY-DC, CELL MODEM-AC ETC.).
 11. THE GROUND WIRE IN THE 3/C #16 CCTV POWER CABLE SHALL BE TAPED GREEN.
 12. USE THE MOUNTING TABS ON THE IP RELAY UNIT TO MOUNT THE UNIT DIRECTLY TO THE BACK PLATE. REFER TO THE IP RELAY WIRING TABLE FOR WIRING DETAILS.
 13. ALL CABLES SHALL ENTER THE ENCLOSURE FROM THE BOTTOM.
 14. POWER FEED TO THE CISCO IE3000 SWITCH SHALL BE FROM THE 120VAC INPUT WHEN THE ENCLOSURE IS AC POWERED.
 15. NOT USED FOR THIS SHEET APPLICATION
 16. IF A SOLAR GENERATOR IS CONNECTED, THEN ITEM P AND THE SECONDARY SIDE OF ITEM B SHALL BE CONNECTED UNTIL A FINAL AC CONNECTION IS MADE.
 17. ITEM X IS USED TO CONTROL POWER TO THE CAMERAS AND DETECTORS. ALL 120VAC CONNECTIONS ON ITEM X SHALL BE PROTECTED.
 18. CABLES TO BE ROUTED THROUGH POLE.
 19. WHEN A 24VDC TO 120VAC POWER GENERATOR IS CONNECTED, THEN THE 480VAC TO 120VAC STEP DOWN TRANSFORMER IS BYPASSED.
 20. NOT USED FOR THIS SHEET APPLICATION
 21. NOT USED FOR THIS SHEET APPLICATION
 22. DIN RAIL SHALL BE INSTALLED AS ILLUSTRATED ON DRAWING. DIN RAIL SHALL BE GROUNDED TO THE GROUND BUS.
 23. BOND NEUTRAL AND GROUND BUSES TOGETHER, WHEN REQUIRED. TIE THE CABINET AND ENCLOSURE INTO THE GROUND BUS.
 24. ITEM W SHALL BE FORMED AND MOLDED TO FIT AROUND THE AREA DENOTED BY THE DASHED LINE. THE PLEXIGLASS SHALL BE MOUNTED TO THE BACKPLATE WITH SUFFICIENT AIR HOLES TO ALLOW HEAT TO ESCAPE THE AREA. THERE SHALL ALSO BE OPENINGS ON THE BOTTOM TO ALLOW CABLES TO BE PASSED FROM THE AC SECTION TO THE OTHER SECTIONS OF THE ENCLOSURE.
 25. ITEM AL SHALL BE PLACED ON ITEMS B AND L.
 26. ALL INTERNAL ENCLOSURE ROUTED AND TERMINATED CAT6 CABLE SHALL BE TEMPERATURE RATED AND INCIDENTAL TO THE CONTRACT.
 27. ALL INTERNAL 24VAC, 120VAC (STARTING ON SECONDARY SIDE OF ITEM B) AND ANY DC VOLTAGE POWER FEEDS USE #16 AWG CABLE.

ITS ASSEMBLY CABINET - IP RELAY WIRING TABLE					
IP TERMINAL	IP TERMINAL ASSIGNMENT	CONNECTION FROM		CONNECTION TO	
		DEVICE	CONNECTION	DEVICE	CONNECTION
1	CCTV1	IP RELAY	1 NC	CIRCUIT BREAKER	CB4B
		IP RELAY	1 COMM	SURGE SUPPRESSOR	DIN 1
2	NOT USED				
3	NOT USED				
4	NOT USED				
5	NOT USED				
6	NOT USED				
7	NOT USED				
8	NOT USED				

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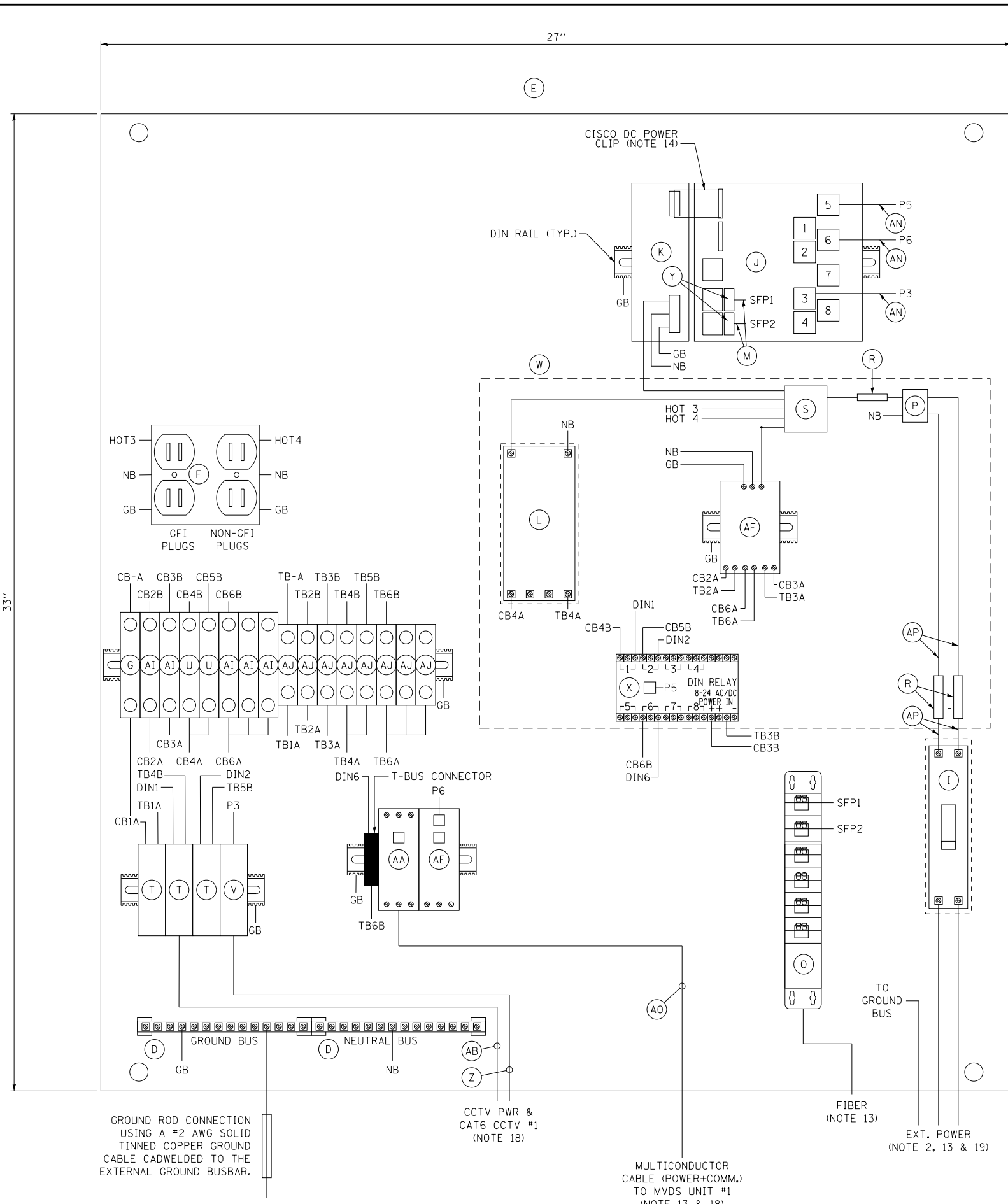


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 DOWNERS GROVE,
 ILLINOIS 60515

REVISIONS		
NO.	DATE	DESCRIPTION

CONTRACT NO. RR-17-6001
 TYPICAL CABINET WIRING DIAGRAM
 CCTV
 SHT NO. ITS-117
 DRAWING NO. 141 OF 162

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- ITEM DESCRIPTION
- A NOT USED FOR THIS SHEET APPLICATION
 - B NOT USED FOR THIS SHEET APPLICATION
 - C NOT USED FOR THIS SHEET APPLICATION
 - D TWO (2) GROUNDING BAR SYSTEM HOFFMAN/PGS2K. BONDED OR SEPARATED AS REQUIRED.
 - E NEMA 4X STAINLESS STEEL, 36" H X 30" W X 12" D ENCLOSURE WITH 33" X 27" PANEL, HOFFMAN/A36H3012SS6LP & A36P30
 - F TWO DUPLEX 120V RECEPTACLES, ONE GFCI AND NON-GFI (SEE NOTE 9) HUBBELL/GFR5362 & BR20WR
 - G 24VDC, 1P, 15A CIRCUIT BREAKER SCHNEIDER ELECTRIC/MGN61510
 - H NOT USED FOR THIS SHEET APPLICATION
 - I 480V, 2P, 30A CIRCUIT BREAKER WITH TERMINAL SHIELD CUTLER HAMMER/HFD2030L & 625B229G07
 - J 8 ELECTRICAL PORT AND TWO FOC PORT SWITCH CISCO MODEL CISCO/IE-3000-8TC-E
 - K CISCO POWER SUPPLY, CISCO/PWR-IE-3000-AC-
 - L CONTROL POWER TRANSFORMER, 250VA, 120-24VAC, 1PH SQUARE D/CLASS 9070-T250D13
 - M 2 METER - SMFO LC-LC DUPLEX JUMPERS, CORNING/040402R522002M
 - N NOT USED FOR THIS SHEET APPLICATION
 - O SMF PATCH PANEL WITH LC CONNECTORS FIBER CONNECTIONS G620U012LAN-100-0
 - P 120VAC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL COOPER CROUSE HINDS/MA15/D/1/SI OR APPROVED EQUAL
 - Q PANDUIT WIRING DUCT (OR EQUIVALENT) PANDUIT/FIXILG6 WITH COVER-CLG6
 - R 10 AMP FUSE, GOULD (MERSENI)/ATM-10
 - S SPLICE BLOCK, ALTECH/38041
 - T 24VAC/VDC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL MTL INSTRUMENTS/ZB24580
 - U 5A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB050
 - V CAT6 PoE+ SURGE SUPPRESSOR, MOUNTED ON COMMON DIN RAIL MTL INSTRUMENTS/ZB24590 OR APPROVED EQUAL
 - W CLEAR PLEXIGLASS SAFETY COVER ENCOMPASSING ITEMS L, R, S, B, P, N, X & AF. (THE INSTALLER SHALL PERMANENTLY AFFIX A LABEL STATING "DANGER 480 VAC" OR "DANGER 240 VAC" OR "DANGER 120 VAC" FOR 120 VAC AS FIELD CONDITIONS WARRANT.)
 - X POWER CONTROLLER, 8-CHANNEL DIN ETHERNET RELAY DIGITAL LOGGERS/DIN 3
 - Y (2) CISCO GLC-LX-SM-RGD = 1 GBPS SM SFP MODULES
 - Z CATEGORY 6 CABLE, 23AWG, OUTDOOR RATED CABLE BELDEN/7953A
 - AA SENSOR SURGE SUPPRESSION, WAVETRONIX - CLICK-200 OR ISS ZONE BARRIER ZB 24510
 - AB 1 - 3/C #16 CCTV POWER CABLE, OUTDOOR RATED CABLE BELDEN/1034A OR APPROVED EQUAL
 - AC NOT USED FOR THIS SHEET APPLICATION
 - AD NOT USED FOR THIS SHEET APPLICATION
 - AE RS-232 / RS-485 TO ETHERNET CONVERTOR WAVETRONIX - CLICK-301 OR ISS-MOXA P5150A, 0K-35A
 - AF AC/DC POWER SUPPLY, 24VDC WAVETRONIX - CLICK-204 OR ISS LAMBDA DSP100-24
 - AG NOT USED FOR THIS SHEET APPLICATION
 - AH NOT USED FOR THIS SHEET APPLICATION
 - AI 2A CIRCUIT BREAKER, ALLEN BRADLEY/1492-SPMIB020
 - AJ TERMINAL BLOCK, ALLEN BRADLEY/1492-CD8
 - AK NOT USED FOR THIS SHEET APPLICATION
 - AL TRANSFORMER COVERS, SQUARE D/9070FSC2
 - AM NOT USED FOR THIS SHEET APPLICATION
 - AN INDOOR/OUTDOOR RATED CAT6 (1000MBS, TEMPERATURE HARDENED) THESE ARE THE CAT6 CABLES ROUTED INSIDE CABINET
 - AO NOT USED FOR THIS SHEET APPLICATION
 - AP #10 AWG

- NOTES:
1. ALL POWER WIRING SHALL BE RHH/RHW WITH WIRE TERMINALS OR TINNED.
 2. CONTRACTOR TO VERIFY CORRECT TRANSFORMER TAPS ARE USED BASED ON INCOMING POWER SOURCE.
 3. ALL CABLES AND EQUIPMENT SHALL BE PROPERLY DRESSED AND LABELED. ALL CONDUITS SHALL BE PROPERLY PLUGGED WITH DUCT SEAL PUTTY (RAINBOW TECHNOLOGIES OR EQUIVALENT).
 4. NOT USED FOR THIS SHEET APPLICATION.
 5. EACH 120VAC OUTLET, PS OR TRANSFORMER (ITEM F, K, L, AF & N) SHALL BE FED FROM A SEPARATE INPUT LINE.
 6. MOUNT ITEMS J & K ON A 15 INCH CONTINUOUS SECTION OF DIN RAIL. THE DIN RAIL SHALL BE INSTALLED WITH THE CENTER LINE NO LESS THAN 5 INCHES FROM ANY OBSTACLE ABOVE AND NO LESS THAN 4 INCHES FROM ANY OBSTACLE BELOW. ALL DIN RAIL SHALL BE GROUNDED.
 7. ALL CABLES INSTALLED WITHIN THE CABINET AND POLE SHALL BE OUTDOOR RATED.
 8. NOT USED FOR THIS SHEET APPLICATION
 9. THE GFI OUTLETS LOAD SHALL NOT BE CONNECTED TO ANY OTHER LOAD IN THE ENCLOSURE. THE 1900 QUAD BOX GFI'S ARE INTENDED TO BE UTILIZED FOR EXTERNAL EQUIPMENT ONLY. EACH OUTLETS TAB SHALL BE BROKEN SO THEY ARE INDEPENDENT.
 10. ALL BREAKERS SHALL BE LABELED (e.g. CAMERA-AC, CAMERA-DC, DIN RELAY-AC, DIN RELAY-DC, CELL MODEM-AC ETC.).
 11. THE GROUND WIRE IN THE 3/C #16 CCTV POWER CABLE SHALL BE TAPED GREEN.
 12. USE THE MOUNTING TABS ON THE IP RELAY UNIT TO MOUNT THE UNIT DIRECTLY TO THE BACK PLATE. REFER TO THE IP RELAY WIRING TABLE FOR WIRING DETAILS.
 13. ALL CABLES SHALL ENTER THE ENCLOSURE FROM THE BOTTOM.
 14. POWER FEED TO THE CISCO IE3000 SWITCH SHALL BE FROM THE 120VAC INPUT WHEN THE ENCLOSURE IS AC POWERED.
 15. NOT USED FOR THIS SHEET APPLICATION
 16. IF A SOLAR GENERATOR IS CONNECTED, THEN ITEM P AND THE SECONDARY SIDE OF ITEM B SHALL BE CONNECTED UNTIL A FINAL AC CONNECTION IS MADE.
 17. ITEM X IS USED TO CONTROL POWER TO THE CAMERAS AND DETECTORS. ALL 120VAC CONNECTIONS ON ITEM X SHALL BE PROTECTED.
 18. CABLES TO BE ROUTED THROUGH POLE.
 19. WHEN A 24VDC TO 120VAC POWER GENERATOR IS CONNECTED, THEN THE 480VAC TO 120VAC STEP DOWN TRANSFORMER IS BYPASSED.
 20. NOT USED FOR THIS SHEET APPLICATION
 21. NOT USED FOR THIS SHEET APPLICATION
 22. DIN RAIL SHALL BE INSTALLED AS ILLUSTRATED ON DRAWING. DIN RAIL SHALL BE GROUNDED TO THE GROUND BUS.
 23. BOND NEUTRAL AND GROUND BUSES TOGETHER, WHEN REQUIRED. TIE THE CABINET AND ENCLOSURE INTO THE GROUND BUS.
 24. ITEM W SHALL BE FORMED AND MOLDED TO FIT AROUND THE AREA DENOTED BY THE DASHED LINE. THE PLEXIGLASS SHALL BE MOUNTED TO THE BACKPLATE WITH SUFFICIENT AIR HOLES TO ALLOW HEAT TO ESCAPE THE AREA. THERE SHALL ALSO BE OPENINGS ON THE BOTTOM TO ALLOW CABLES TO BE PASSED FROM THE AC SECTION TO THE OTHER SECTIONS OF THE ENCLOSURE.
 25. ITEM AL SHALL BE PLACED ON ITEMS B AND L.
 26. ALL INTERNAL ENCLOSURE ROUTED AND TERMINATED CAT6 CABLE SHALL BE TEMPERATURE RATED AND INCIDENTAL TO THE CONTRACT.
 27. ALL INTERNAL 24VAC, 120VAC (STARTING ON SECONDARY SIDE OF ITEM B) AND ANY DC VOLTAGE POWER FEEDS USE #16 AWG CABLE.

ITS ASSEMBLY CABINET - IP RELAY WIRING TABLE					
IP TERMINAL	DESCRIPTION	CONNECTION FROM		CONNECTION TO	
		DEVICE	CONNECTION	DEVICE	CONNECTION
1	CCTV1	IP RELAY	1 NC	CIRCUIT BREAKER	CB4B
		IP RELAY	1 COMM	SURGE SUPPRESSOR	DIN 1
2	NOT USED				
3	NOT USED				
4	NOT USED				
5	NOT USED				
6	NOT USED				
7	MVDS 1	IP RELAY	7 NC	CIRCUIT BREAKER	CB7B
		IP RELAY	7 COMM	T-BUS	DIN 7
8	NOT USED				

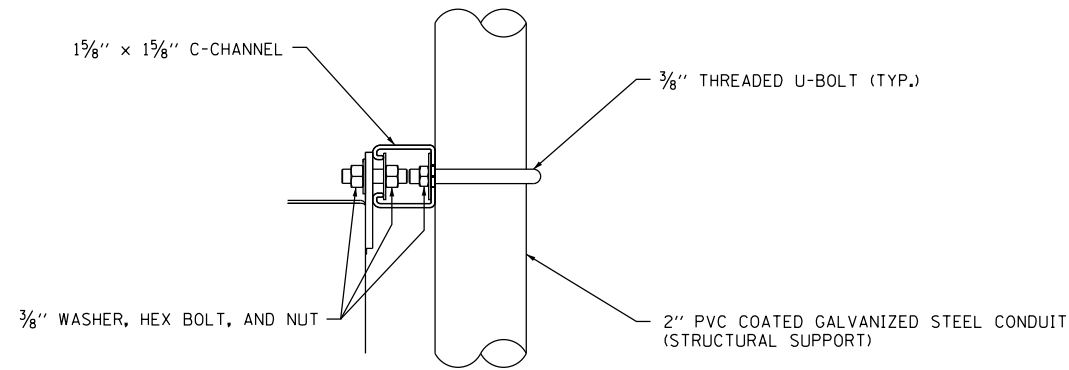
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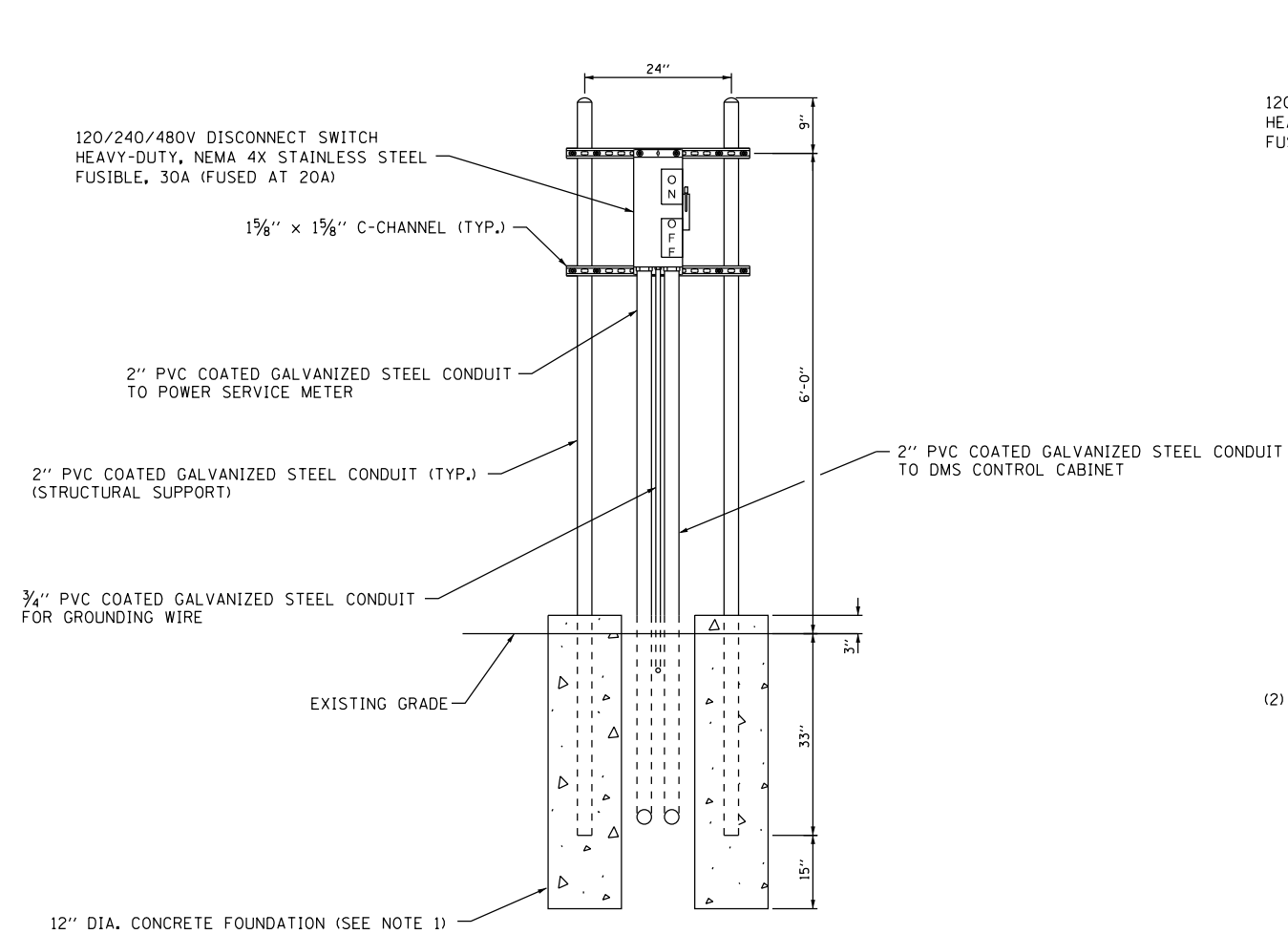
CONTRACT NO. RR-17-6001
 TYPICAL CABINET WIRING DIAGRAM
 CCTV AND MVDS
 SHT NO. ITS-118
 DRAWING NO. 142 OF 162



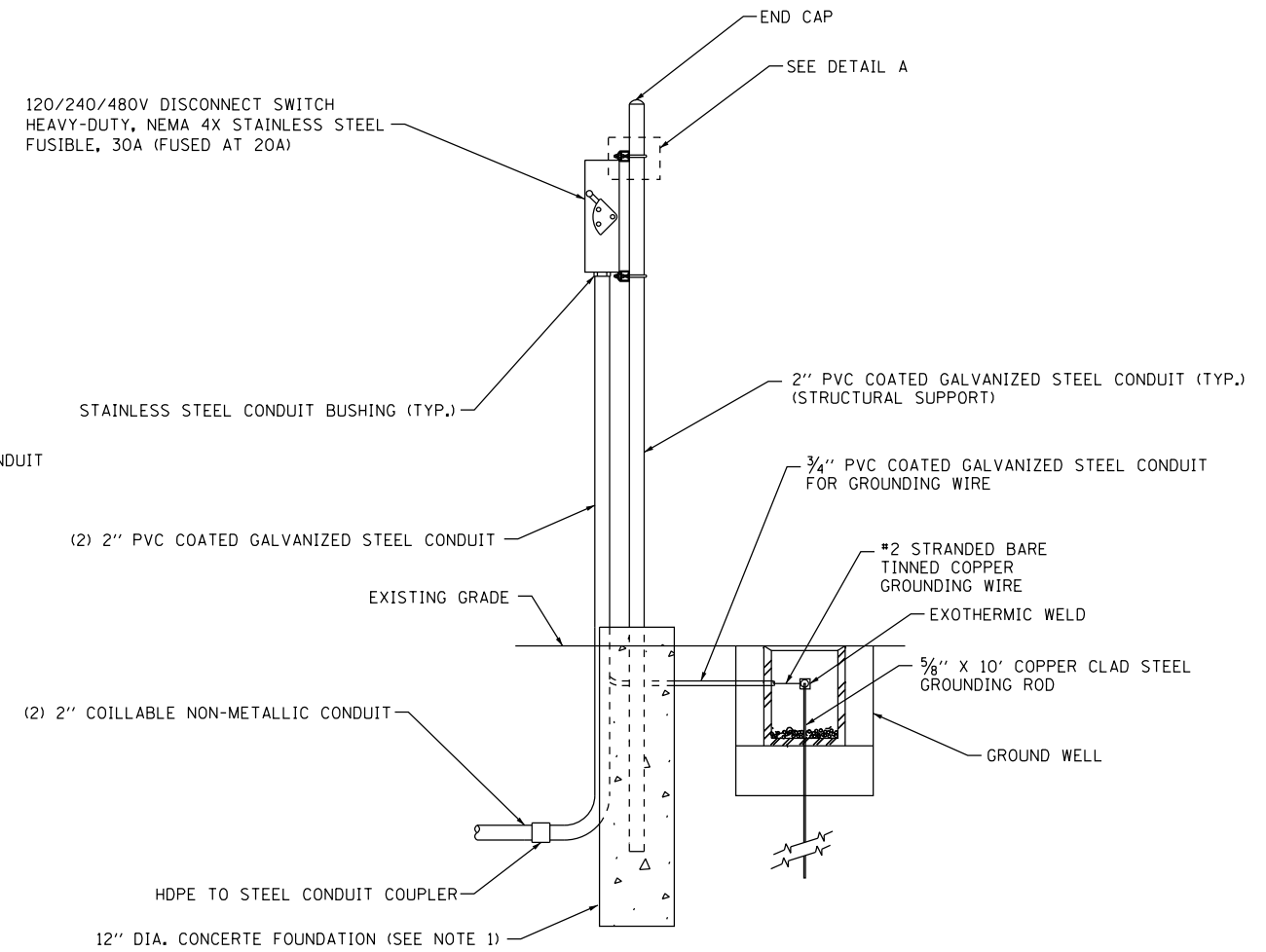
DETAIL A - TYPICAL MOUNTING ATTACHMENT CONNECTION

NOTES:

1. CONTRACTOR MAY ELECT TO CONSTRUCT A SINGLE, MONOLITHIC FOUNDATION IN PLACE OF THE FOUNDATION SHOWN ON THIS SHEET. CONTRACTOR SHALL SUBMIT ALTERNATE FOUNDATION DESIGN TO ENGINEER PRIOR TO CONSTRUCTION.
2. ALL CONCRETE SHALL BE IDOT CLASS SI.
3. DISCONNECT SWITCH, POSTS, FOUNDATION, AND MOUNTING HARDWARE ARE INCLUDED IN PAY ITEM "ITS FRAME MOUNTED DISCONNECT SWITCH" (JT132815).
4. DETAILS SHOWN IN THIS DRAWING APPLY ONLY TO LOCATIONS WHERE A STANDALONE DISCONNECT SWITCH IS REQUIRED AT A CCTV CAMERA SITE.



DISCONNECT SWITCH ON ELECTRICAL FRAME
FRONT VIEW



DISCONNECT SWITCH ON ELECTRICAL FRAME
SIDE VIEW

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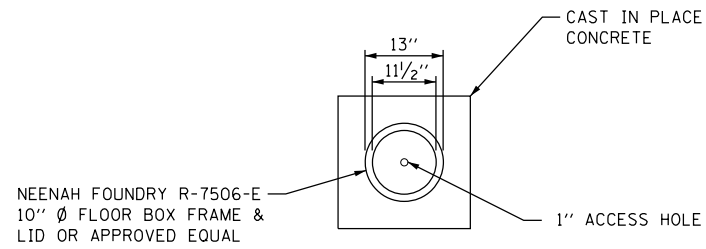
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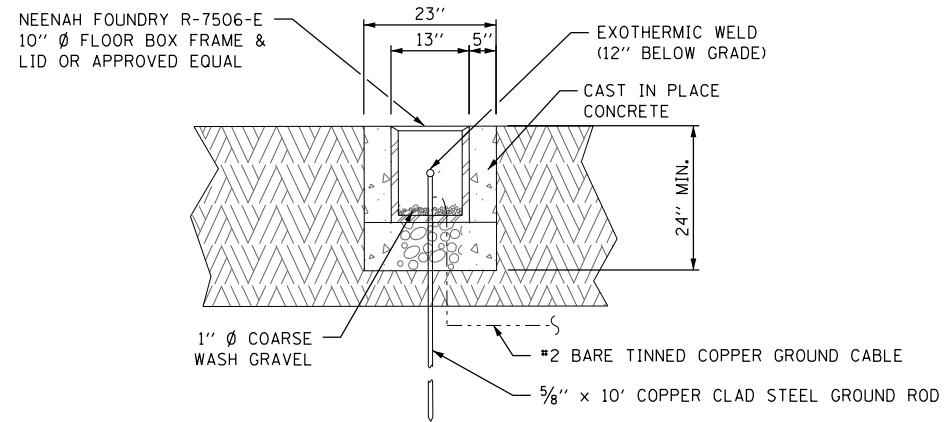
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NO.	DATE

CONTRACT NO. RR-17-6001
 DISCONNECT SWITCH ON
 ELECTRICAL FRAME WITH FOUNDATION

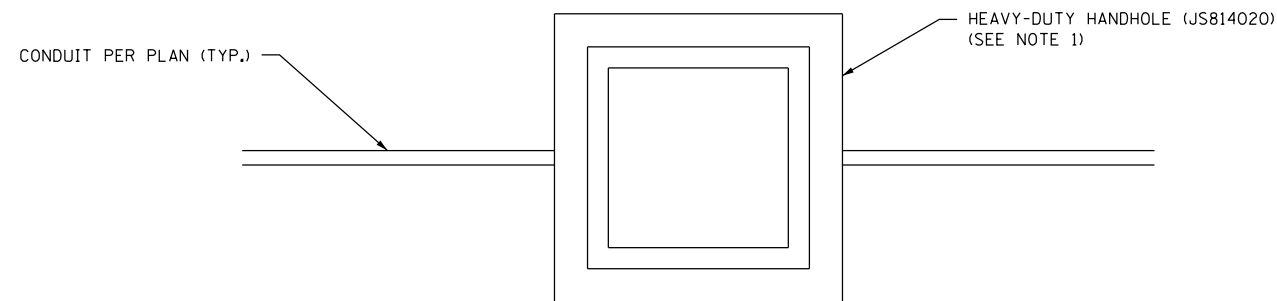
SHT NO. ITS-119
 DRAWING NO.
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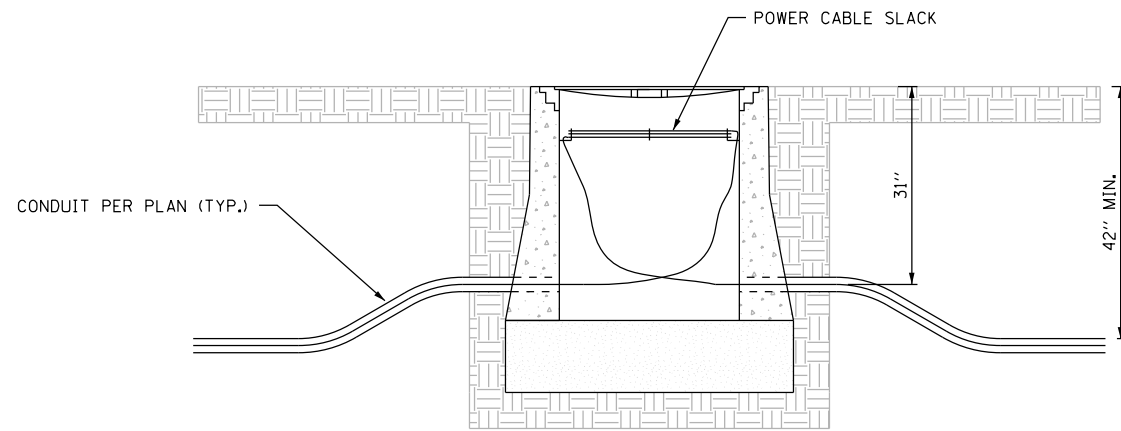
GROUND WELL - PLAN VIEW



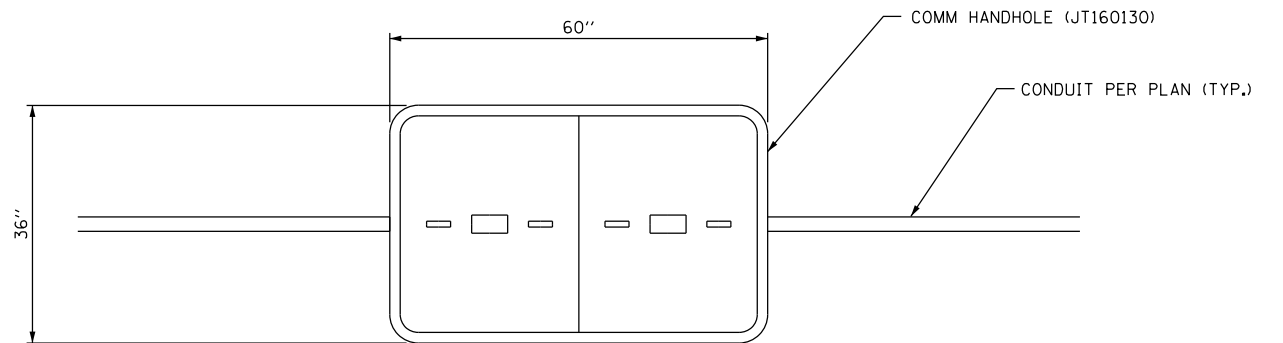
GROUND WELL - ELEVATION VIEW



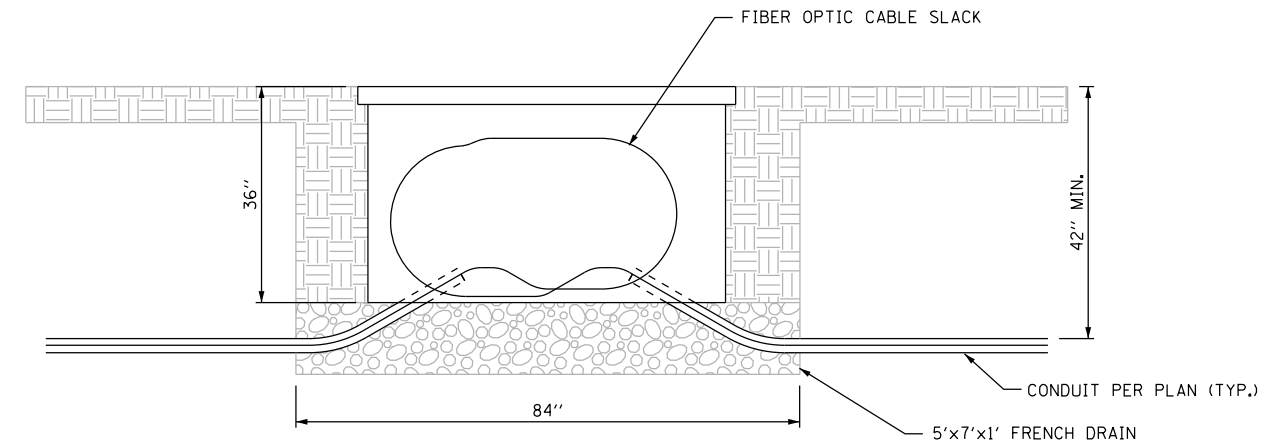
HEAVY-DUTY HANDHOLE (ELECTRICAL) - PLAN VIEW



HEAVY-DUTY HANDHOLE (ELECTRICAL) - ELEVATION VIEW



COMMUNICATIONS HANDHOLE - PLAN VIEW



COMMUNICATIONS HANDHOLE - ELEVATION VIEW

NOTES:

1. ALL GROUND RODS NOT INSTALLED IN HANDHOLES SHALL BE INSTALLED IN A GROUND WELL.
2. HEAVY-DUTY HANDHOLES SHALL BE CONSTRUCTED PER STANDARD H4-03, EXCEPT AS MODIFIED ON THIS SHEET.
3. BACKFILL SHALL BE EARTH WHICH IS FREE FROM DEBRIS, CINDERS, AND ROCKS MEASURING 2" OR GREATER IN DIAMETER. IN THE EVENT THAT EXCAVATED MATERIAL IS UNSUITABLE FOR USE AS BACKFILL, THE CONTRACTOR SHALL USE A CLEAN, NATURAL SAND. THIS SUBSTITUTE BACKFILL SHALL BE INCIDENTAL TO THE CONDUIT INSTALLATION AND WILL NOT BE PAID FOR SEPARATELY.
4. A WATERPROOF SEALING SIMPLEX DUCT PLUG SHALL BE INSTALLED AROUND THE FIBER OPTIC CABLE.
5. A WATERPROOF DUCT PLUG SHALL BE INSTALLED IN ALL EMPTY CONDUITS.
6. BACKFILL SHALL BE COMPACTED TO THE SATISFACTION OF THE ENGINEER.
7. ALL CONCRETE SHALL BE IDOT CLASS SI.
8. EACH COMMUNICATIONS HANDHOLE SHALL CONTAIN 50 FEET (15 METERS) OF FIBER OPTIC CABLE SLACK.
9. NEW CONDUITS INSTALLED IN ILLINOIS TOLLWAY FIBER OPTIC BACKBONE HANDHOLES SHALL ENTER THROUGH THE OPEN BOTTOM UNLESS OTHERWISE NOTED. DRILLING INTO THE SIDES OF BACKBONE HANDHOLES IS NOT ALLOWED.

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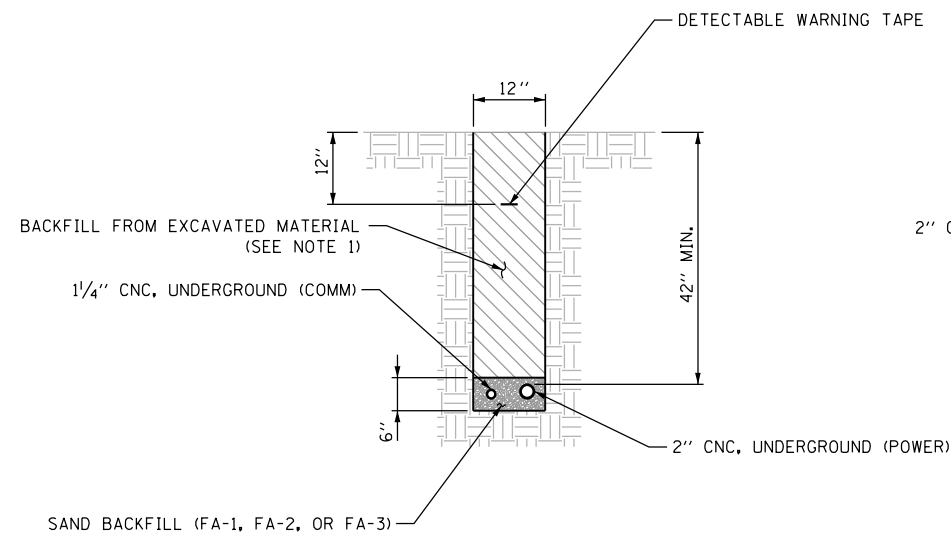
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NO.	DATE	DESCRIPTION

CONTRACT NO. RR-17-6001
**HANDHOLE AND GROUND WELL
 INSTALLATION DETAILS**

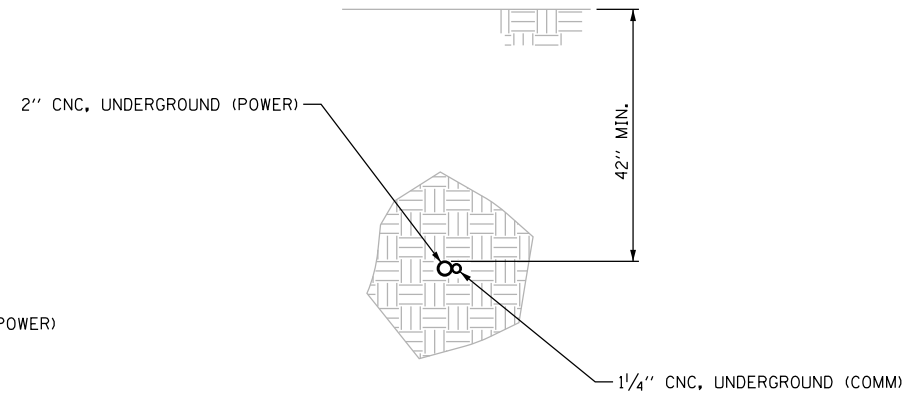
SHT NO. ITS-120
 DRAWING NO.
 144 OF 162

NOTES:

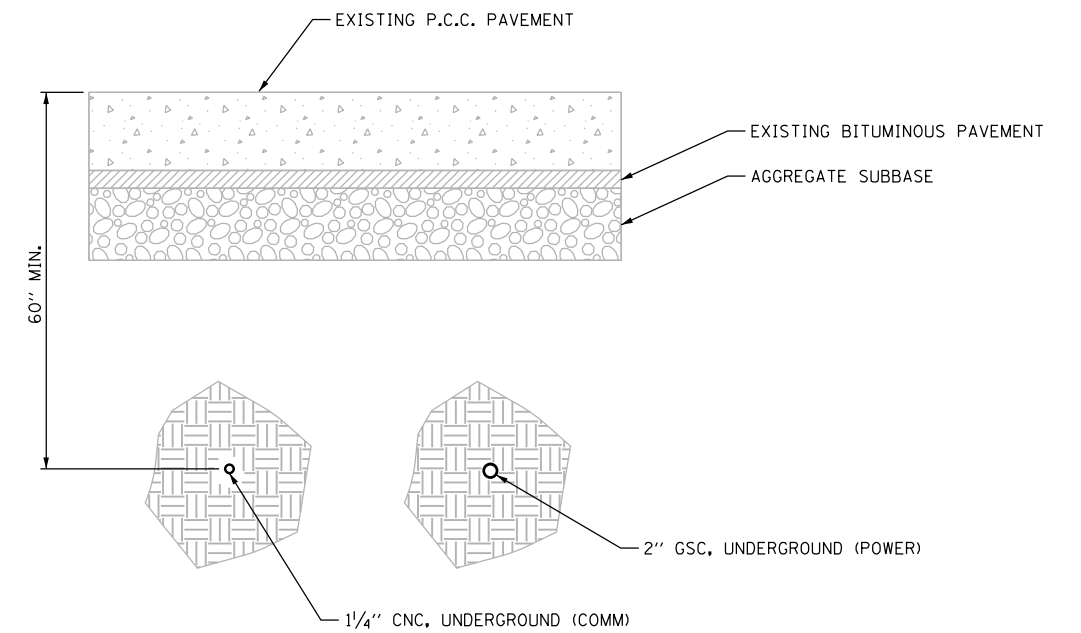
1. BACKFILL SHALL BE EARTH WHICH IS FREE FROM DEBRIS, CINDERS, AND ROCKS MEASURING 2" OR GREATER IN DIAMETER. IN THE EVENT THAT EXCAVATED MATERIAL IS UNSUITABLE FOR USE AS BACKFILL (AS DETERMINED BY THE ENGINEER), THE CONTRACTOR SHALL USE A CLEAN, NATURAL SAND. THIS SUBSTITUTE BACKFILL SHALL BE INCIDENTAL TO THE CONDUIT INSTALLATION AND WILL NOT BE PAID FOR SEPARATELY.
2. BACKFILL SHALL BE COMPACTED TO THE SATISFACTION OF THE ENGINEER.
3. INSTALLATION OF CONDUIT UNDER EXISTING PAVEMENT SHALL BE DONE BY MEANS OF DIRECTIONAL BORING.



CONDUIT IN TRENCH



BORED CONDUIT IN UNPAVED AREAS



BORED CONDUIT UNDER ROADWAY

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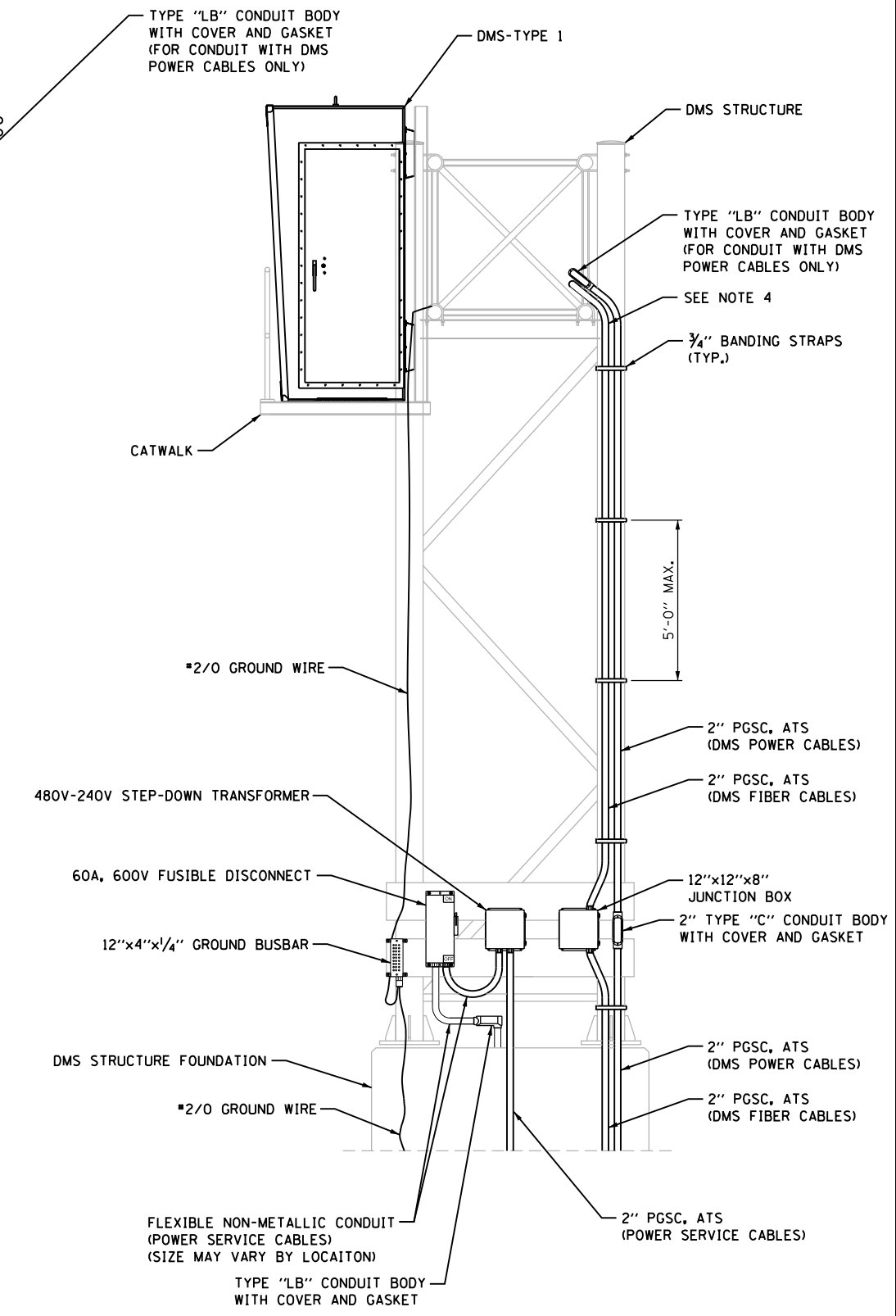
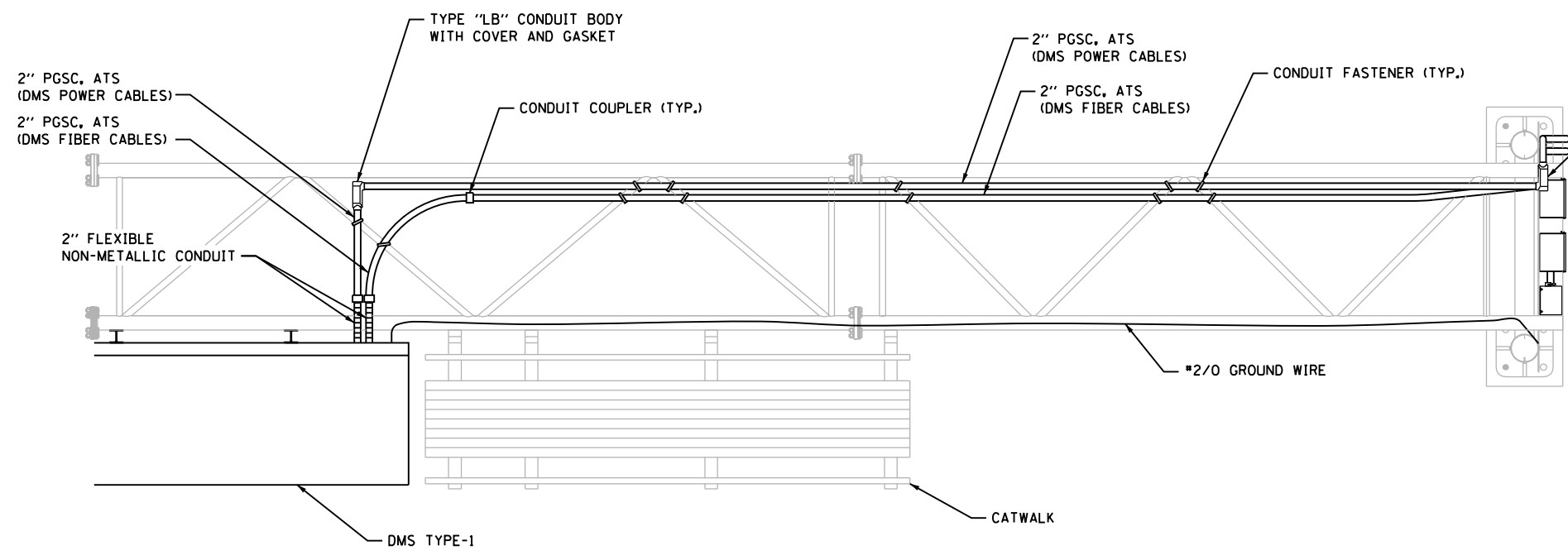


REVISIONS	
NO.	DESCRIPTION

CONTRACT NO. RR-17-6001
 TYPICAL CONDUIT INSTALLATION

SHT NO. ITS-121
 DRAWING NO.
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- NOTES:**
1. TYPICAL CONDUIT INSTALLATION IS SHOWN. SEE SITE INSTALLATION DETAIL SHEETS FOR SITE-SPECIFIC CONDUIT INSTALLATION DETAILS.
 2. GROUND BUSBAR, DISCONNECT, TRANSFORMER, AND JUNCTION BOX TO BE MOUNTED ON STEEL PLATE ATTACHED TO DMS STRUCTURE.
 3. METHODS TO SECURE CONDUITS TO STRUCTURE MAY VARY BY LOCATION. CONTRACTOR SHALL VERIFY ATTACHMENT METHODS WITH THE ENGINEER PRIOR TO BEGINNING WORK.
 4. CONTRACTOR SHALL INSTALL CONDUIT SWEEPS AND ELBOWS AS REQUIRED TO MEET MANUFACTURER RECOMMENDATIONS TO AVOID VIOLATING THE MINIMUM CABLE BENDING RADIUS OF FIBER OPTIC CABLES. CONDUIT BODIES SHALL NOT BE INSTALLED AS PULL POINTS FOR FIBER OPTIC CABLES.

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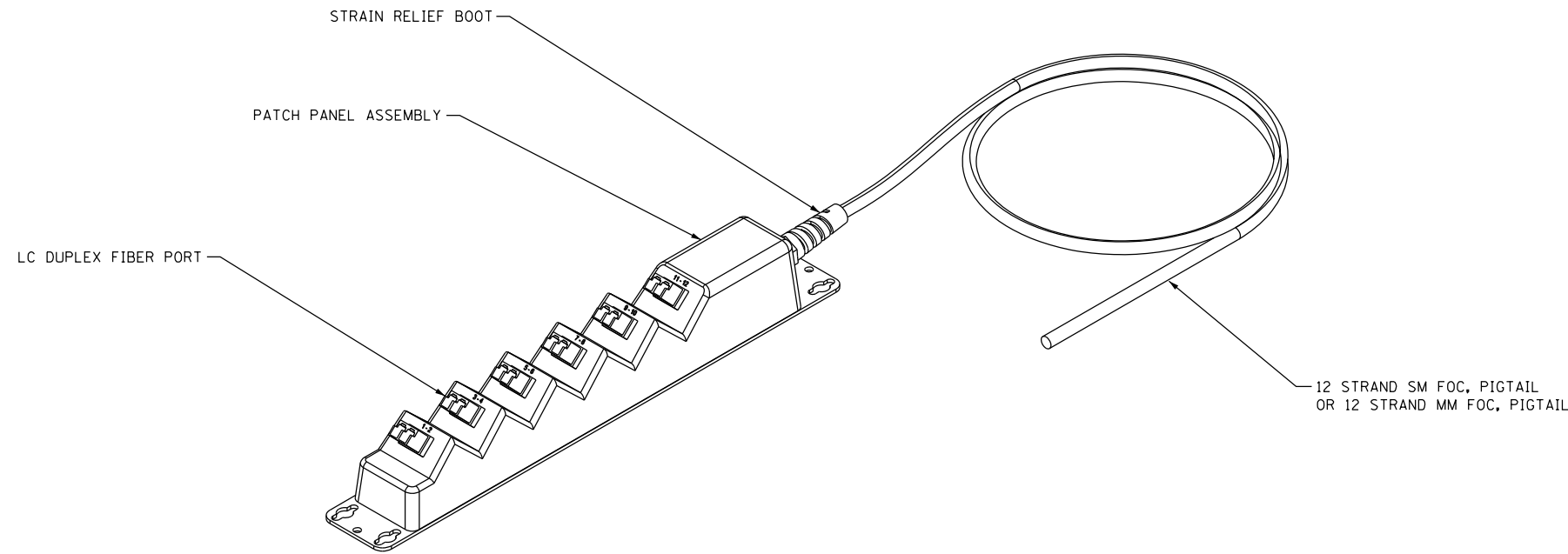
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CONTRACT NO. RR-17-6001
 TYPICAL CONDUIT ATTACHED TO STRUCTURE
 AT DMS LOCATIONS

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 DRAWING NO.
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DETAIL A - FIBER OPTIC COMMUNICATIONS, ITS ASSEMBLY (JT132830)
 FIBER OPTIC COMMUNICATIONS, ITS ASSEMBLY, MULTIMODE (JT132831)

FIBER OPTIC PIGTAIL SCHEDULE			
DEVICE LOCATION	DEVICE	MINIMUM PIGTAIL LENGTH [FT]	MINIMUM PIGTAIL LENGTH [M]
LOCATION 1	088E115.3CAM63V212	590 FT. (SINGLE MODE)	180 M. (SINGLE MODE)
	088W115.4DMS064D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
	088E115.4DMS164D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
	088W115.5CAM63V211	673 FT. (SINGLE MODE)	205 M. (SINGLE MODE)
LOCATION 2	088W120.0DMS059D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
	088W120.1CAM59E22	328 FT. (SINGLE MODE)	100 M. (SINGLE MODE)
LOCATION 3	088E128.9CAM56V212	623 FT. (SINGLE MODE)	190 M. (SINGLE MODE)
	088E129.0DMS056D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
LOCATION 4	088W134.8DMS051D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
	088W134.8CAM56E211	541 FT. (SINGLE MODE)	165 M. (SINGLE MODE)
LOCATION 5	088E137.5CAM51VV211	935 FT. (SINGLE MODE)	285 M. (SINGLE MODE)
	088E137.6DMS151D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
LOCATION 6	355N017.1CAM83V212	558 FT. (SINGLE MODE)	170 M. (SINGLE MODE)
	355N017.2DMS183D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
	355S017.2DMS083D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
	355S017.4CAM83V211	492 FT. (SINGLE MODE)	150 M. (SINGLE MODE)
LOCATION 7	355S025.5DMS077D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)
	355S025.7CAM75E211	524 FT. (SINGLE MODE)	160 M. (SINGLE MODE)
	355N025.8DMS177D	328 FT. (MULTIMODE)	100 M. (MULTIMODE)

NOTES:

- CONTRACTOR SHALL VERIFY PROPOSED CONDUIT ROUTE WITH THE ENGINEER PRIOR TO ORDERING THE FIBER OPTIC ASSEMBLY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THAT THE FIBER OPTIC PIGTAIL IS OF A SUFFICIENT LENGTH TO REACH THE ITS BACKBONE FIBER SPLICE VAULT. NO INTERMEDIATE SPLICING OF THE PIGTAIL WILL BE ALLOWED.
- CONTRACTOR SHALL USE THE LENGTH IN METERS WHEN ORDERING THE PIGTAIL. THE LENGTH SHOWN IN THE TABLE INCLUDES 50 FEET (15 METERS) OF SLACK PER HANDHOLE.

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CONTRACT NO. RR-17-6001

FIBER OPTIC COMMUNICATIONS, ITS
 ASSEMBLY INSTALLATION DETAIL

SHT NO. ITS-123

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TABLE 1: SIGN STRUCTURE INFORMATION

SIGN INFORMATION				TRUSS ELEMENT SIZES					COLUMN ELEMENT SIZES				BASE ANCHORAGE SIZES		
LOCATION NO.	DMS NO.	SIGN NO.	STATION	TRUSS LENGTH	TRUSS WIDTH	TRUSS DEPTH	TOP & BOTTOM CHORD DIA.	DIAGONALS DIA.	LEFT COLS DIA.	RIGHT COLS DIA.	W-SHAPE	DIAGONALS DIA.	BASE PLATE LEFT	BASE PLATE RIGHT	NO. & SIZE OF ANCHOR BOLTS
1	64	EW115.4D	6110+63	95'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	10.75"	SAME	W8x24	3.5"	1.5"x20.5"x1'-8.5"	SAME	(6) 1.5" DIA.
	164	EW115.4D	6110+90	95'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	10.75"	12.75"	W8x24	3.5"	1.5"x20.5"x1'-8.5"	1.5"x20.5"x1'-10.5"	(6) 1.5" DIA.
2	59	EW120.0D	6354+43	70'-0"	5'-0"	7'-0"	7"	3.25" & 2.25"	10.75"	SAME	W8x28	2.88"	1.5"x20.5"x1'-8.5"	SAME	(6) 1.5" DIA.
3	56	EW129.0D	6826+76	85'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	8.625"	SAME	W6x15	2.88"	1.25"x16"x1'-4"	SAME	(4) 2" DIA.
4	51	EW134.8D	7132+73	100'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	8.625"	SAME	W6x15	2.38"	1.25"x19"x1'-7"	SAME	(4) 1.5" DIA.
5	151	EW137.6D	7281+48	95'-0"	4'-0"	4'-0"	4"	1.66" & 1.90"	10.75"	12.75"	W8x24	3.5"	1.25"x18"x1'-6"	SAME	(4) 1.5" DIA.
6	83	NS17.3D	1007+81	85'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	8.625"	SAME	W6x15	2.88"	1.25"x16"x1'-4"	SAME	(4) 2" DIA.
	183	NS17.2D	1002+94	85'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	8.625"	SAME	W6x15	2.88"	1.25"x16"x1'-4"	SAME	(4) 2" DIA.
7	77	NS25.6D	1445+97	85'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	8.625"	SAME	W6x15	2.88"	1.25"x16"x1'-4"	SAME	(4) 2" DIA.
	177	NS25.8D	1456+33	83'-0"	4'-0"	4'-0"	4.5"	1.90" & 2.38"	8.625"	SAME	W6x15	2.88"	1.25"x16"x1'-4"	SAME	(4) 2" DIA.

- NOTES: 1. ALL TRUSSES ARE STEEL FOUR-CHORD TRUSSES.
 2. CONTRACTOR TO VERIFY THE ABOVE TABLE BEFORE PROCEEDING WITH CATWALK AND DMS MODIFICATIONS.
 3. "SAME" INDICATES THAT BOTH SIDES OF THE COLUMNS AND/OR BASE PLATES ARE IDENTICAL.
 4. DIAMETERS LISTED ARE OUTSIDE DIAMETERS ONLY FOR CIRCULAR HOLLOW PIPE OR TUBE STEEL.
 5. SEE SHEETS S-03 & S-04 FOR TYPICAL SECTIONS AND CATWALK CONNECTION DETAILS.

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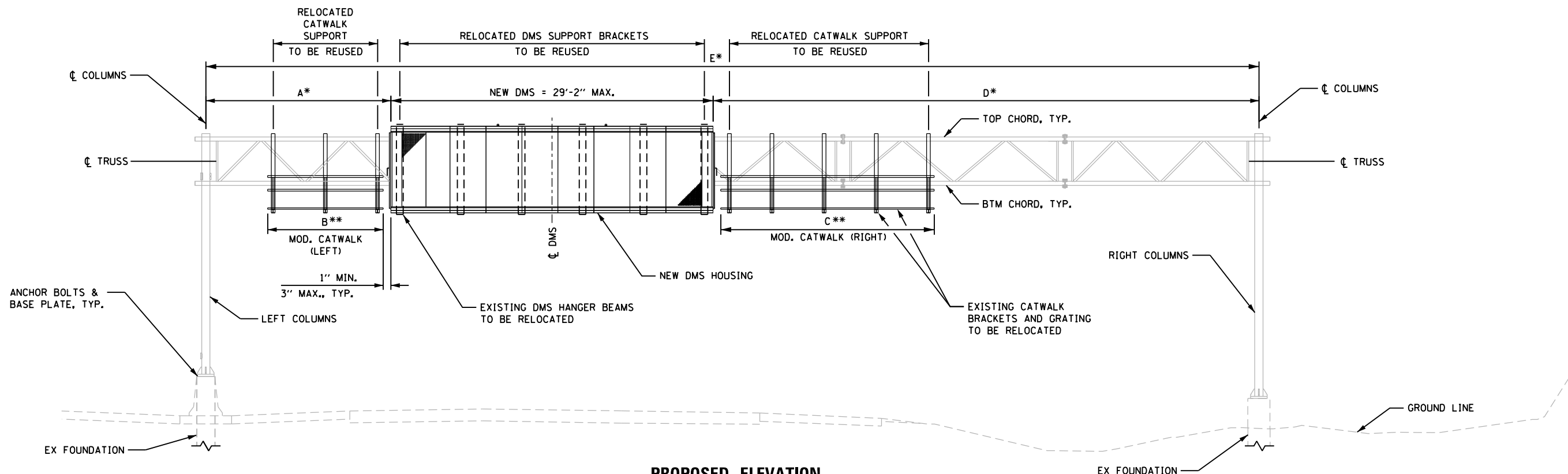
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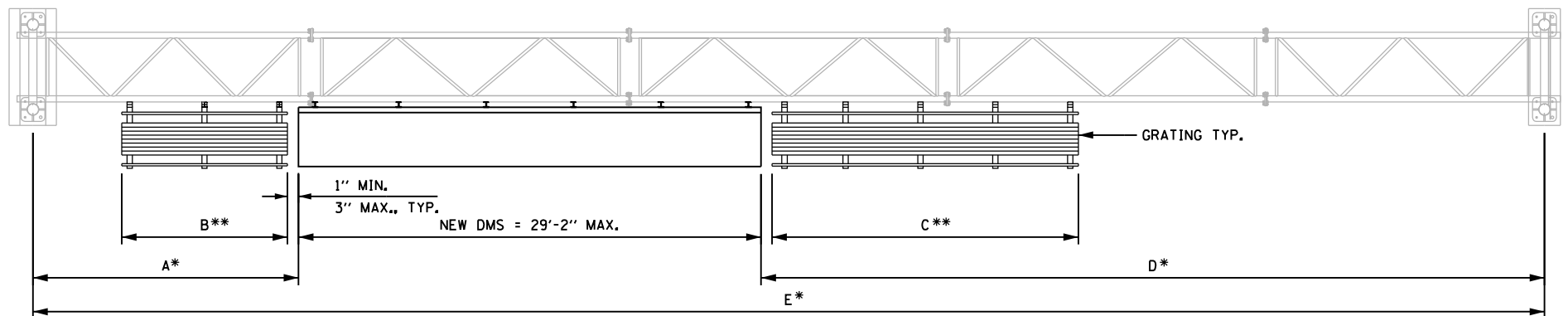
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CONTRACT NO. RR-17-6001
 SIGN STRUCTURE ELEMENTS SUMMARY TABLE

SHT NO. S-01
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PROPOSED ELEVATION
FACING DMS



TOP PLAN

NOTES:

1. ALL SIGN SPAN STRUCTURE AND FOUNDATIONS ARE EXISTING. MODIFICATIONS TYPICALLY INCLUDE INSTALLING A NEW DMS (MAXIMUM DMS WEIGHT = 4,500 LBS) AND MODIFYING EACH CATWALK AS SHOWN.
2. EXISTING CATWALKS TO BE MODIFIED AS DETAILED IN SHEET S-04. WHEN AN EXISTING CATWALK IS SHIFTED ALONG THE TRUSS, CATWALK SHALL NOT EXTEND BEYOND COLUMNS.
3. EXISTING DMS NOT SHOWN FOR CLARITY. ϕ OF EXISTING DMS LOCATED AT ϕ OF PROPOSED DMS.
4. CONTRACTOR TO FIELD VERIFY ALL DIMENSIONS AND MEMBERS AS SHOWN IN TABLE 1 ON SHEET S-01 AND CROSS SECTION SHEETS XS-01 TO XS-11 BEFORE PROCEEDING.
5. SEE ILLINOIS TOLLWAY STANDARD F17-01 FOR MORE DETAILS AND FOR GUIDANCE ON DMS AND CATWALK BRACKET SPACING.

* DIMENSIONS A, D, AND E ARE NOTED ON CROSS SECTION SHEETS XS-01 TO XS-11, SEE NOTE 3.
** DIMENSIONS B AND C ARE NOTED ON SHEET S-04.

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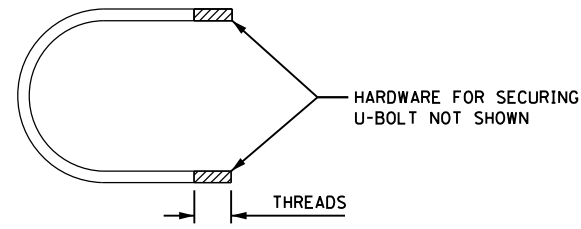
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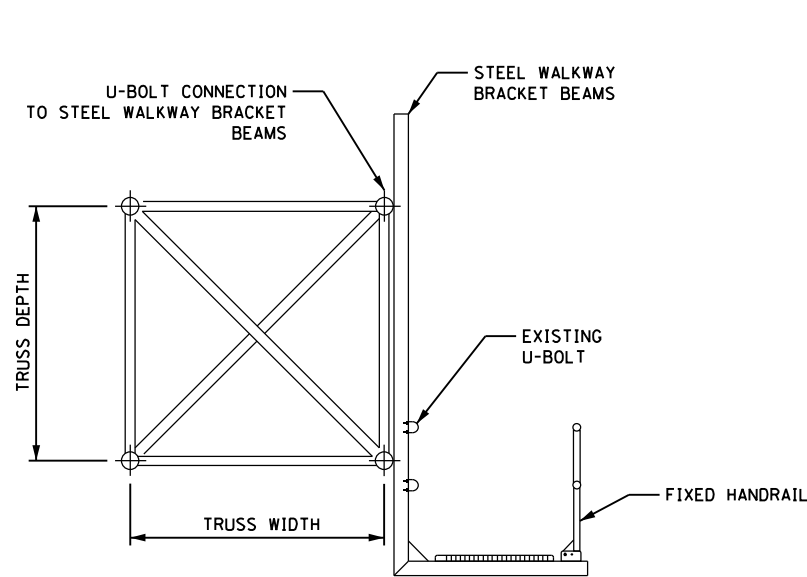
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CONTRACT NO. RR-17-6001
DMS MOUNTING AND CATWALK
MODIFICATIONS DETAILS

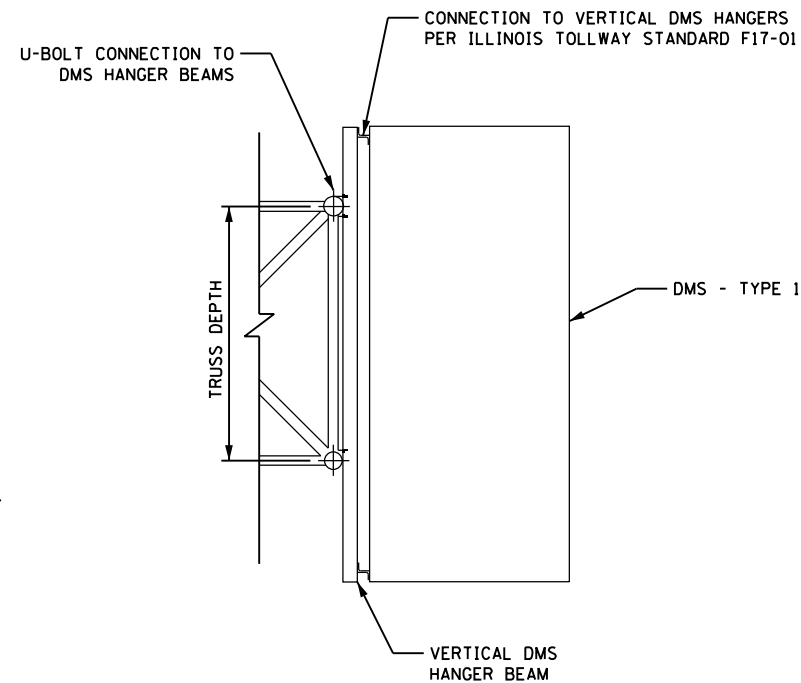
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DRAWING NO.
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TYPICAL U-BOLT DETAIL
(SEE NOTES 4 AND 5)
(FOR INFORMATION ONLY)



SECTION THRU CATWALK
(FOR INFORMATION ONLY)



SECTION THRU DMS
(FOR INFORMATION ONLY)

NOTES:

1. ANY WALKWAY BRACKETS, DMS HANGER BEAMS, GRATING, HANDRAIL, CONNECTIONS, ETC. NOT CAPABLE OF BEING REUSED SHALL BE REPLACED AS DIRECTED BY THE ENGINEER.
2. AVOID CONTACTS WITH DISSIMILAR METALS (E.G. ALUMINUM TO STEEL) BY APPLYING A PROTECTIVE COATING (E.G. PAINT, GASKET, TAPE, ETC.) AT THE POINT OF CONTACT.
3. U-BOLTS SHALL BE CONNECTED TO TRUSS CHORDS ONLY.
4. CONTRACTOR SHALL REMOVE EXISTING U-BOLTS, INCLUDING HARDWARE, AND REPLACE IN KIND OR PER MANUFACTURER RECOMMENDATION.
5. CONTRACTOR TO FIELD VERIFY SIZES OF U-BOLTS AND HARDWARE.

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DRAWN BY KB DATE 03/01/2017
CHECKED BY MJ DATE 03/01/2017

JACOBS
525 W. Monroe, Suite 1600, Chicago, IL 60661

THE ILLINOIS STATE TOLL HIGHWAY AUTHORITY
2700 OGDEN AVENUE
DOWNERS GROVE,
ILLINOIS 60515

REVISIONS	
NO.	DESCRIPTION

CONTRACT NO. RR-17-6001

CATWALK DETAILS (SHEET 1 OF 2)

SHT NO. S-03

DRAWING NO.
150 OF 162