

Illinois Tollway Base Sheet Revisions			
Section M	Base Sheet Drawings		
	Drawing	Modification Summary	Effective: 2018-03-01
	Pole Assembly (ITS)-Series 1000		
M-ITS-1000	Elevation Views Pole Mounted ITS Element Assembly		
	Added disconnect switch detail sheet.		
	Minor editorial changes.		
	Dynamic Message Sign (ITS)-Series 1100		
M-ITS-1100	DMS Type 1 Electrical Plan		
	Minor editorial changes.		
M-ITS-1101	DMS Type 1 Site Grounding Plan		
	Minor editorial changes.		
M-ITS-1102	DMS Type 1 Typical Site Wiring Detail		
	Minor editorial changes		
M-ITS-1103	DMS Type 2-Cantilever Electrical Plan		
	Minor editorial changes.		
M-ITS-1104	DMS Type 2-Butterfly Electrical Plan		
	Minor editorial changes		
M-ITS-1105	DMS Type 2 Site Grounding Plan		
	Clarified coarse wash gravel specifications.		
	Minor editorial changes.		
M-ITS-1106	DMS Type 2 Site Wiring Details		
	Minor editorial changes		
M-ITS-1107	DMS Cabinet Layout Detail		
	Minor editorial changes.		
M-ITS-1108	DMS Cabinet Wiring Diagram		
	Minor editorial changes.		
	Cabinet Wiring (ITS)-Series 1200		
M-ITS-1200 to M-ITS-1255	Cabinet Wiring Diagrams		
	Revised DIN3 IP relay to DIN4.		
M-ITS-1200 to M-ITS-1207, M-ITS-1210, M-ITS-1255	Cabinet Wiring Diagrams		
	Added single mode fiber patch panel.		
M-ITS-1200 to M-ITS-1202, M-ITS-1223 to M-ITS-1254	Cabinet Wiring Diagrams		
	Added power over ethernet injector(s).		
M-ITS-1200	ITS Pole Mounted Enclosure (CCTV and MVDS)		
	Added second sheet showing scale layout.		
M-ITS-1203 to M-ITS-1205, M-ITS-1211 to M-ITS-1222, M-ITS-1231 to M-ITS-1254	Cabinet Wiring Diagrams		
	Clarified MVDS wiring.		
M-ITS-1256	Tower Mounted CCTV ITS Assembly, 300' CAT6 or Less		
	Retired.		
	Roadway Weather Information System (ITS)-Series 1300		
M-ITS-1300	RWIS Pole, Sensor Mounting Detail		
	Sheet redrawn with new pole-mounted RWIS design		
M-ITS-1301	RWIS Cabinet Wiring Diagram		
	Sheet redrawn with new pole-mounted RWIS design.		
	RWIS connected to fiber.		
M-ITS-1302	Typical RWIS Site Installation Plan		
	Sheet redrawn with new pole-mounted RWIS design.		
	Added non-intrusive pavement sensor.		
M-ITS-1303	RWIS Road Surface Sensor Pole		
	Retired.		
	Tower Mounted CCTV (ITS)-Series 1500		
M-ITS-1502	ITS Details Tower Mount Camera Assembly		
	Reference to M-ITS-1256 changed to M-ITS-1255 to reflect changes in 1200 series.		
	Plaza Electrical (Business System)-Series 2500		
M-BUS-2501	Legend, Symbol List, Abbreviations and Equipment Schedules		
	Minor editorial changes.		
M-BUS-2525	I-Pass Only (IPO) Lane Island Plan and Details 12 Foot Wide Lane		
	Minor editorial changes.		
M-BUS-2526	Toll Equipment Wiring Diagram ACM and IPO Lanes		
	Minor editorial changes.		
M-BUS-2558	VES Wash System Suggested Conduit Routing		
	Minor editorial changes.		

GENERAL NOTES:

1. RWIS POLES SHIELDED BY GUARDRAIL SHALL BE LOCATED A MINIMUM OF 5' BEHIND THE GUARDRAIL POST. SEE ILLINOIS TOLLWAY STANDARD (SECTION C OF STANDARDS) FOR MORE INFORMATION. ALL OTHER POLES SHALL BE LOCATED OUTSIDE THE CLEAR ZONE. FINAL LOCATION TO BE APPROVED BY THE ENGINEER.
2. 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.
3. PROVIDE A 1½" 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.
4. ALL CONDUITS ENTERING THE ENCLOSURE SHALL BE SEALED. SEE "ITS POLE MOUNTED ENCLOSURE, ITS ASSEMBLY (CCTV OR MVDS)" SPECIAL PROVISION FOR MORE DETAIL FOR RODENT PROTECTION.
5. CONTRACTOR TO PROVIDE ALL POWER, COMMUNICATIONS AND GROUND WIRING REQUIRED FOR SYSTEM OPERATION.
6. 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.
7. GROUND RODS SHALL BE PLACED A MINIMUM OF 10' FROM THE FOUNDATION. A GROUND WELL SHALL BE INCLUDED TO PERMIT ACCESS TO THE GROUND ROD CONNECTION. CONNECTION TO THE GROUND BUSBAR AND THE GROUND ROD SHALL BE EXOTHERMICALLY WELDED.
8. A FLAT STEEL MESH PANEL ALONG WITH A COMMERCIALLY AVAILABLE HYDROPHOBIC LOW DENSITY COMPOSITE BACKFILL MATERIAL (KNOWN AS O-SET 250) SHALL BE INSTALLED BETWEEN THE ANCHOR BASE AND THE POLE TO PREVENT THE ENTRY OF RODENTS INTO THE POLE. SEE SPECIAL PROVISIONS FOR MORE DETAILS.
9. BACKFILL PER ILLINOIS TOLLWAY STANDARD H1. BACKFILL SHALL BE TO THE TOP OF THE POLE BASE ON ALL SIDES.
10. ALL CABLING (INCLUDING CABLING INSIDE THE ENCLOSURE) IS OUTDOOR RATED.
11. CONSTRUCT A 4 FT. X 4 FT. CONCRETE SERVICE PAD 6 INCHES FROM THE POLE BASE ON THE SAME SIDE AS THE RPU ENCLOSURE, CENTERED ON THE RPU ENCLOSURE.
12. THIRTY DAYS PRIOR TO INSTALLING ANY SENSORS, THE CONTRACTOR SHALL COORDINATE DEVICE CONFIGURATION WITH THE ENGINEER.
13. THE DISCONNECT SWITCH, SUPPORT, AND ASSOCIATED CONDUIT SHALL BE INSTALLED FOR RWIS SITES WHERE THE UTILITY SERVICE INSTALLATION IS GREATER THAN 500 FEET FROM THE RPU ENCLOSURE OR LOCATED ON THE OPPOSITE SIDE OF THE ROADWAY FROM THE RPU ENCLOSURE.
14. ALL SLOPE RATIOS ARE EXPRESSED AS UNITS OF VERTICAL DISPLACEMENT TO UNITS OF HORIZONTAL DISPLACEMENT (V:H).
15. FINAL PLACEMENT HEIGHTS OF THE SENSORS SHALL BE BASED ON SITE CONDITIONS, ILLINOIS TOLLWAY OPERATIONAL NEEDS, AND AS PER MANUFACTURER'S MOUNTING RECOMMENDATIONS. THE HEIGHT SHALL BE APPROVED BY THE ENGINEER ONLY AFTER REVIEW BY ILLINOIS TOLLWAY ITS OPERATIONS.

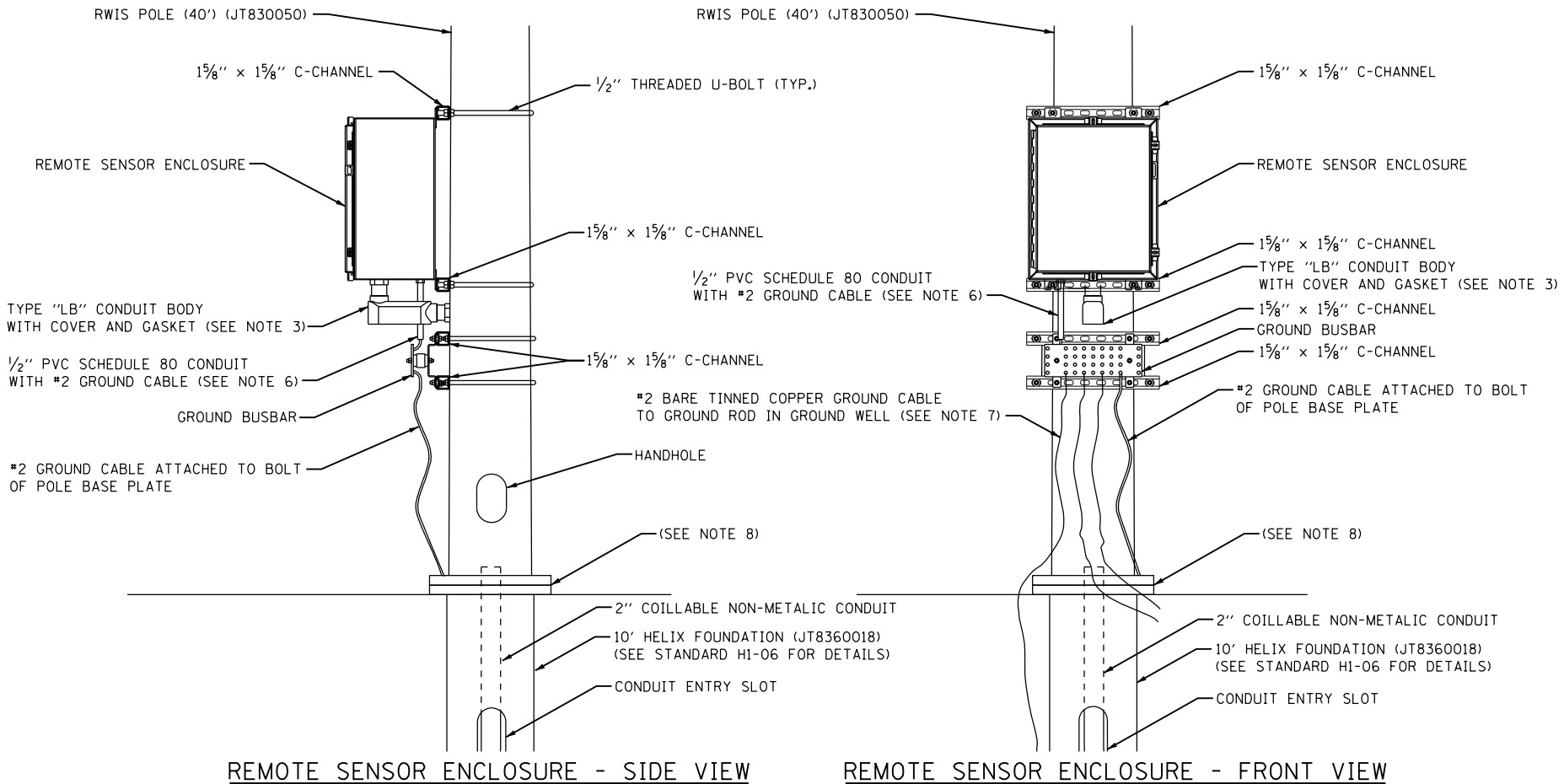
NOTE 1 TO DESIGNER

THIS BASE SHEET SHOWS TYPICAL NEW CONSTRUCTION BUT IT IS NOT A STANDARD DRAWING. IT REQUIRES COMPLETION BY THE DESIGNER PRIOR TO INSERTION INTO A CONTRACT. MICROSTATION FILES AND THE "CADD STANDARDS MANUAL" ARE AVAILABLE ON THE ILLINOIS TOLLWAY WEBSITE. THE DESIGNER SHALL ACCEPT THE RESPONSIBILITY OF THE DESIGN OF THIS SHEET UPON ITS COMPLETION AND INSERTION INTO A CONTRACT. ALL "NOTE TO DESIGNER" BOXES SHALL BE REMOVED BY THE DESIGNER PRIOR TO INSERTION OF THE SHEET INTO THE PLAN SET.

LASERS SENSORS MUST BE LOCATED WITHIN 50 FEET (ON DIAGONAL) OF THE AIM POINT ON THE BRIDGE DECK SURFACE.

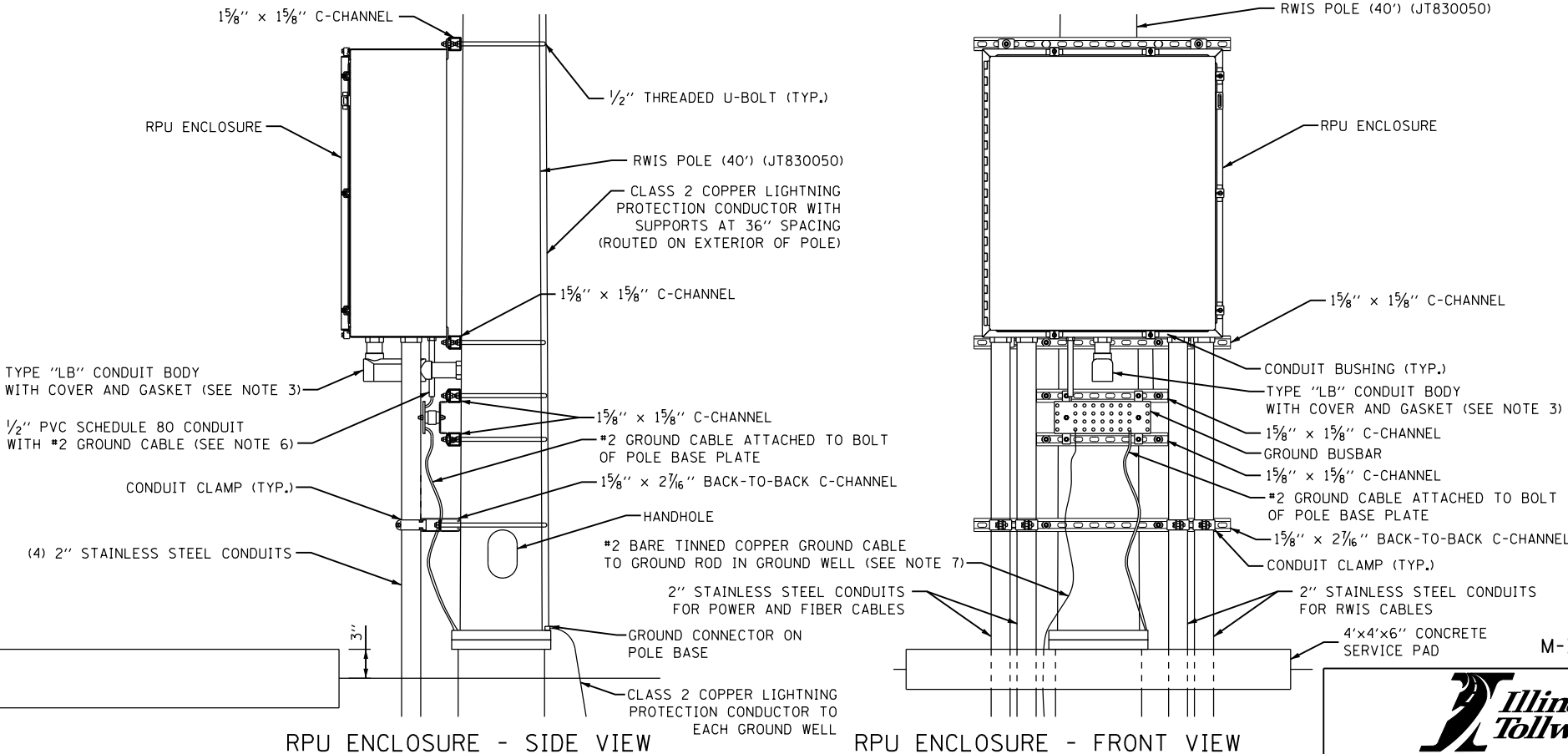
NOTE 2 TO DESIGNER

FOR BRIDGE MOUNTING APPLICATIONS, THE DESIGNER SHALL DEVELOP STRUCTURAL FOUNDATION AND POLE MOUNTING DETAILS.



REMOTE SENSOR ENCLOSURE - SIDE VIEW

REMOTE SENSOR ENCLOSURE - FRONT VIEW



RPU ENCLOSURE - SIDE VIEW

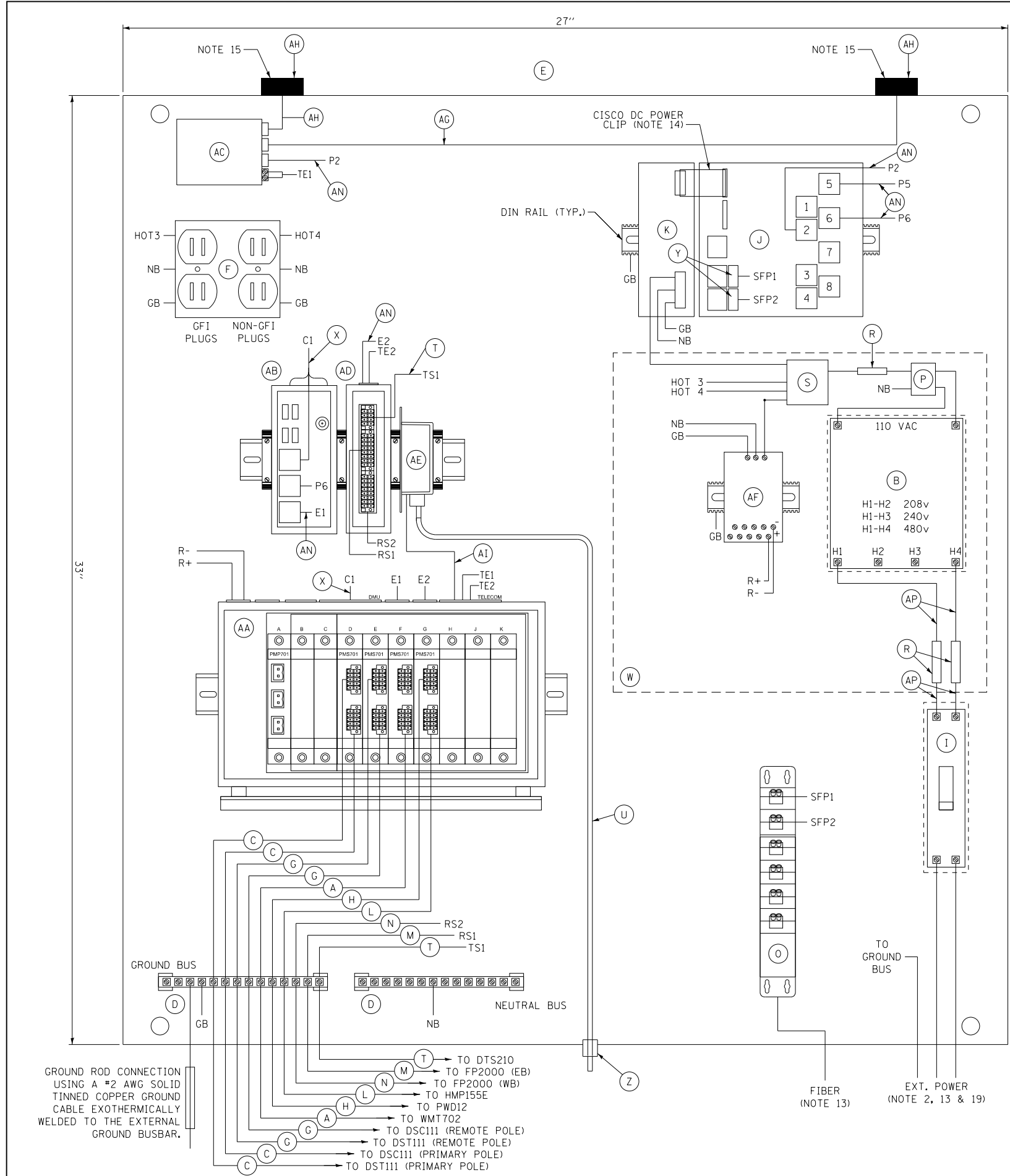
RPU ENCLOSURE - FRONT VIEW

M-ITS-1300



RWIS POLE, SENSOR MOUNTING DETAIL (SHEET 2 OF 2)

DATE
3-01-2018



ITEM	DESCRIPTION
A	WMT700 CABLE, VAISALA 237890
B	CONTROL POWER TRANSFORMER, 1000VA, 208/240/480-120VAC, 1PH SQUARE D/CLASS 9070 - T1000 D95
C	DSC11/DST111 CABLE (PRIMARY POLE), VAISALA 216547
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/A36H3012SS6LP & A36P30
F	TWO DUPLEX 120V RECEPTACLES, ONE GFCI AND NON-GFI (SEE NOTE 9) HUBBELL/GFR5362 & BR20WR
G	DSC11/DST111 CABLE (REMOTE POLE), VAISALA DR221742150M
H	PWD12 CABLE, VAISALA 217148
I	480V, 2P, 30A CIRCUIT BREAKER WITH TERMINAL SHIELD EATON/HFD2030L & 625B229C07
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	HMP155E CABLE, VAISALA 220497
M	FP2000 TYPE IIA CABLE (EB SENSOR), VAISALA 76420300
N	FP2000 TYPE IIA CABLE (WB SENSOR), VAISALA 76421500 (FOR SENSORS GREATER THAN 500' FROM RWIS ENCLOSURE USE TYPE V CABLE, VAISALA 76420500)
O	SMF PATCH PANEL WITH LC CONNECTORS FIBER CONNECTIONS G620U012LAN-XXX-0
P	120VAC SURGE SUPPRESSOR, MOUNTED ON DIN RAIL COOPER CROUSE HINDS/MA15/D/1/S1 OR APPROVED EQUAL
Q	PANDUIT WIRING DUCT (OR EQUIVALENT) PANDUIT/FIX1LG6 WITH COVER-CILG6
R	10 AMP FUSE, GOULD (Mersen)/ATM-10
S	SPLICE BLOCK, ALTECH/38041
T	DTS210 CABLE (20 METERS), VAISALA
U	1/8" PRESSURE HOSE, VAISALA
V	NOT USED FOR THIS SHEET APPLICATION
W	CLEAR PLEXIGLASS SAFETY COVER ENCOMPASSING ITEMS R, S, B, P, & 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	DMU703 CABLE, VAISALA 210267
Y	(2) CISCO GLC-LX-SM-RGD = 1 GBPS SM SFP MODULES
Z	PRESSURE PORT, VAISALA 16941DM
AA	POWER MANAGEMENT UNIT, VAISALA PMU701
AB	DATA MANAGEMENT UNIT, VAISALA DMU703
AC	CDMA MODEM ASSEMBLY (FOR VERIZON NETWORK)
AD	DIGITAL ROAD INTERFACE, VAISALA DRI701
AE	PRESSURE SENSOR, VAISALA PTB110
AF	AC/DC POWER UNIT - 24VDC, VAISALA
AG	WIRELESS MODEM ANTENNA CABLE, WITH SMA CONNECTORS PCTEL/PROFLEX PLUS 195-RG58/U
AH	WIRELESS MODEM ANTENNAS, PCTEL/BMLPVDB700/2500
AI	PTB110 CABLE, VAISALA 210271-250
AJ	NOT USED FOR THIS SHEET APPLICATION
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, & AF) 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. NOT USED FOR THIS SHEET APPLICATION
 11. NOT USED FOR THIS SHEET APPLICATION
 12. NOT USED FOR THIS SHEET APPLICATION
 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. THE CELL MODEM ANTENNAS SHALL BE PROPERLY SEALED TO PREVENT WATER PENETRATION INTO THE CABINET.
 16. NOT USED FOR THIS SHEET APPLICATION
 17. NOT USED FOR THIS SHEET APPLICATION
 18. CABLES TO BE ROUTED THROUGH POLE.
 19. NOT USED FOR THIS SHEET APPLICATION
 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 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 ITEM B.
 26. ALL INTERNAL ENCLOSURE ROUTED AND TERMINATED CAT6 CABLE SHALL BE TEMPERATURE RATED.
 27. ALL INTERNAL 24VAC, 120VAC (STARTING ON SECONDARY SIDE OF ITEM B) AND ANY DC VOLTAGE POWER FEEDS USE #16 AWG CABLE.

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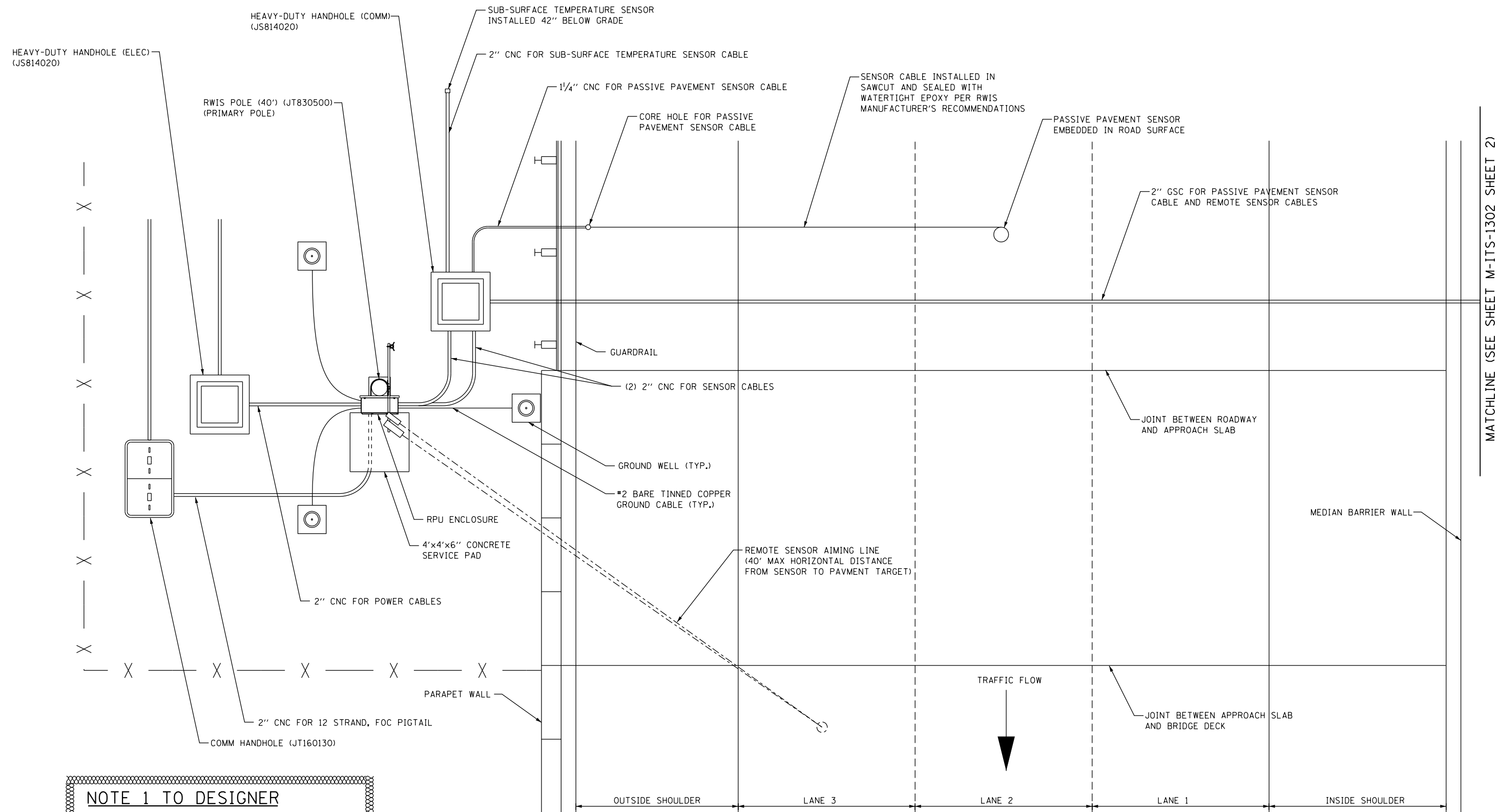
M-ITS-1301



RWIS CABINET WIRING DIAGRAM

DATE

3-01-2018



MATCHLINE (SEE SHEET M-ITS-1302 SHEET 2)

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LASERS SENSORS MUST BE LOCATED WITHIN 50 FEET (ON DIAGONAL) OF THE AIM POINT ON THE BRIDGE DECK SURFACE.

NOTE 2 TO DESIGNER

THE DESIGNER SHALL COMPLETE THE COMPONENT REQUIREMENTS TABLE AS REQUIRED TO INDICATE WHICH COMPONENTS ARE TO BE INSTALLED ON EACH POLE MOUNTED ITS ASSEMBLY. DESIGNER TO EXPAND CHART AS NECESSARY.

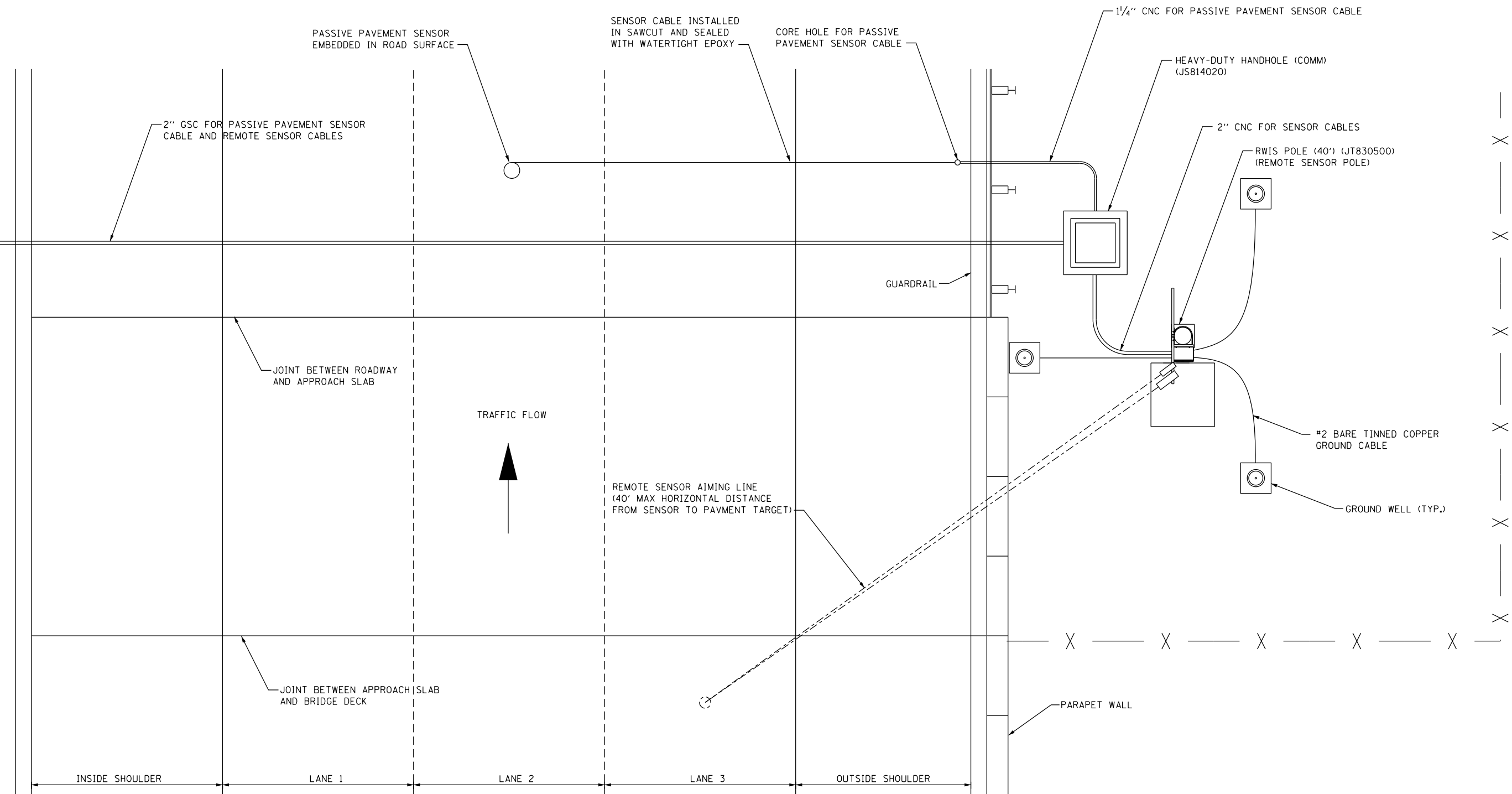
M-ITS-1302



TYPICAL RWIS SITE
INSTALLATION PLAN
(SHEET 1 OF 2)

DATE
3-01-2018

MATCHLINE (SEE SHEET M-ITS-1302 SHEET 1)



NOTE 2 TO DESIGNER

THE DESIGNER SHALL COMPLETE THE COMPONENT REQUIREMENTS TABLE AS REQUIRED TO INDICATE WHICH COMPONENTS ARE TO BE INSTALLED ON EACH POLE MOUNTED ITS ASSEMBLY. DESIGNER TO EXPAND CHART AS NECESSARY.

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M-ITS-1302



TYPICAL RWIS SITE
INSTALLATION PLAN
(SHEET 2 OF 2)

DATE
3-01-2018