

# SYSTEMS GUIDANCE DRAWINGS

**MARCH 2024**

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**SYSTEMS GUIDANCE DRAWINGS**

APPLICABILITY OF CURRENT VERSION

SUPERSEDES AUGUST 2019 VERSION

FOR PROJECTS THAT ARE BASELINED AFTER MARCH 29, 2024



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Project teams shall refer to their executed project contracts for applicable document versions/revisions.

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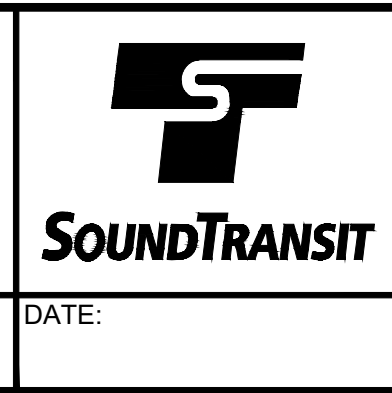
03/29/24 | 10:38 AM | HARRISBK C:\USERS\HARRISBK\Sound Transit\TECHNICAL STANDARDS AND REQUIREMENTS PROJECTS - DRAWINGS UPDATE 2023\GUIDANCE DRAWINGS\SYSTEMS\GUI-JZI001.DWG

No.	DATE	DSN	CHK	APP	REVISION
3	2/2024	----	----	----	2023 REVISED GUIDANCE DRAWINGS
2	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
1	1/2019	----	----	----	2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE
0	9/2017	----	----	----	GUIDANCE DRAWINGS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE



SCALE: NTS
FILENAME: GUI-JZI001
CONTRACT No.: RTA/LR
DATE: X/2023

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

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INDEX OF DRAWINGS  
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DRAWING No.:	GUI-JZI001
FACILITY ID:	
SHEET No.:	REV:
	3



**COMMUNICATIONS SYMBOLS**

(1) DOUBLE-SIDED VMS DISPLAY WITH (2) FIXED CAMERAS	VMS-XX
(2) FLAT PANEL TV DISPLAYS BACK TO BACK WITH FIXED CAMERAS	FPTV-XX
(1) FLAT PANEL TV DISPLAY WITH FIXED CAMERAS	FPTV-XX-YY
DOOR OR GATE EQUIPPED WITH MAGNETIC DOOR CONTACTS ONLY	
CARD READER AND NETWORK IP DOOR CONTROLLER	
PTZ DOME CAMERA (CAM)	
FIXED CAMERA (CAM)	
TELEPHONE (PBX)	
EMERGENCY TELEPHONE (ETEL)	
PASSENGER EMERGENCY TELEPHONE (PET)	
DATA OUTLET (DATA)	
RECESSED WALL MOUNTED JUNCTION/BOX	5R01
CEILING MOUNTED PULL/JUNCTION BOX	
WALL MOUNTED PULL/JUNCTION BOX	
PULL BOX	PB
SC HH	
CIVIL INSTALLED CONDUIT/SCHEDULE IDENTIFIER TAG, SEE CIVIL REFERENCE DRAWINGS, E0X-JESXXX, E0X-JESXXX	CPXX

**COMMUNICATIONS CABLE LEGEND**

DESCRIPTION	SYMBOLS
INDICATES LOCATION NO. CODE INDICATES FIBER DISTRIBUTION PANEL INDICATES INSTANCE NO.	XXX-FDP-YY
INDICATES LOCATION NO. CODE INDICATES FIBER PATCH PANEL INDICATES INSTANCE NO.	XXX-FPP-YY
INDICATES LOCATION NO. CODE INDICATES DISTRIBUTION CABINET INDICATES INSTANCE NO.	XXX-DC-YY
INDICATES LOCATION NO. CODE INDICATES FIBER DISTRIBUTION CABINET INDICATES INSTANCE NO.	XXX-FDC-YY
SPLICE ENCLOSURE	
CABLE NUMBERING DESIGNATION:  INDICATED FIBER COUNT AND TYPE DESIGNATION INDICATES NODE 1 INDICATES NODE 2 INDICATES SEQUENTIAL NO. "A" SERVES EB BORE, "B" SERVES WB BORE	XF-XXX-YYY-01A
FIBER SPLICES	
COILED FIBER CABLE	
FIBER OPTIC CABLE	
COAXIAL CABLE	
CAT 6 CABLE	
SERIAL CABLE	
MULTICONDUCTOR CABLE	
CAT6 PATCH PANEL	

**RACEWAY SYMBOLS**

DESCRIPTION	SYMBOLS
INDICATES LOCATION NO L0X INDICATES TRACTION ELECTRIFICATION MANHOLE INDICATES HANDHOLE NO. 01	L0X-MHTE-01
INDICATES LOCATION NO L0X INDICATES SIGNALING & COMMUNICATIONS MANHOLE INDICATES HANDHOLE NO. 01	L0X-MHSC-01
INDICATES LOCATION NO L0X INDICATES SIGNALING & COMMUNICATIONS HANDHOLE INDICATES HANDHOLE NO. 01	L0X-HHSC-01
INDICATES LOCATION NO L0X INDICATES TRACTION ELECTRIFICATION NEGATIVE FEEDER INDICATES FEEDER NUMBER	L0X-TENF-06
INDICATES LOCATION NO L0X INDICATES TRACTION ELECTRIFICATION POSITIVE FEEDER INDICATES FEEDER NUMBER	L0X-TEPF-06
INDICATES LOCATION NO L0X INDICATES TRACTION ELECTRIFICATION EMI RISER CABLE INDICATES FEEDER NUMBER	L0X-EMIR-06
INDICATES SIGNALING & COMMUNICATIONS DUCTBANK INDICATES DUCTBANK NO. 24600 INDICATES DUCTBANK TYPE	SC-24600 (6-4)
INDICATES MEDIUM VOLTAGE ELECTRICAL DUCTBANK INDICATES DUCTBANK NO. 24800 INDICATES DUCTBANK TYPE	MV-24800 (4-4)
INDICATES QUANTITY OF CONDUITS INDICATES 1-1/2" CONDUIT	(2) 1-1/2"C
INDICATES LOCATION NO L0X INDICATES COMMUNICATIONS SYSTEM DATA CONDUIT INDICATES CONDUIT NO. 01A	L0X-CD-01A
INDICATES LOCATION NO L0X INDICATES COMMUNICATIONS SYSTEM POWER CONDUIT INDICATES CONDUIT NO. 01A	L0X-CP-01A
CONDUIT, CONCEALED/EMBEDDED (NIC)	
CONDUIT RUN, EXPOSED/SURFACE (NIC)	

**FIBER CABLE BUFFER TUBE CONFIGURATION**

TYPICAL (6, 12, 24, 36, 48, 144) COMM FIBER CABLES:

FIBERS	BUFFER TUBE COLOR
F1-F12	BLUE
F13-F24	ORANGE
F25-F36	GREEN
F37-F48	BROWN
F49-F60	SLATE
F61-F72	WHITE
F73-F84	RED
F85-F96	BLACK
F97-F108	YELLOW
F109-F120	VIOLET
F121-F132	ROSE
F133-F144	AQUA

No.	DATE	DSN	CHK	APP	REVISION
1	2/2024				2024 REVISED GUIDANCE DRAWINGS
0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE

SCALE: NTS  
FILENAME: GUI-JZN002  
CONTRACT No.: RTA/LR  
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**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

COMMUNICATIONS  
GENERAL SYMBOLS & LEGEND

DRAWING No.: GUI-JZN002
FACILITY ID:
SHEET No.: 1

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**PUBLIC ADDRESS SYSTEM SYMBOLS**

**FIELD CONTROL SYSTEM**

**DESCRIPTION**

**SYMBOLS**

CEILING MOUNT "BOX SPEAKER" HIGH-POWER COAXIAL	
SURFACE SPEAKER - FLUSH MOUNT	
SURFACE MOUNT "BOX SPEAKER" HIGH-POWER HI-Q	
ELEVATOR SPEAKER	
ANS MICROPHONE FOR LEVEL CONTROL (CEILING MOUNT)	
MICROPHONE PUSH TO TALK	
AUDIO TRANSFORMER	
SPEAKER	
AMBIENT NOISE SENSOR	
AUDIO CABLE	
AUDIO NETWORK BUS	
SPEAKER CABLE	

**RADIO SYSTEM SYMBOLS**

RADIO DIVIDER/ ANTENNA	
RADIO ANTENNA	
DISTRIBUTION ANTENNA SYSTEM	
UPLINK NOISE POWER IN 12.6 KHZ ENBW CHANNEL (dBm)	
STRONGEST UPLINK SIGNAL POWER FOR CLOSE PORTABLE RADIO TO DISTRIBUTED ANTENNA SPACING [3 FEET] (dBm)	
DOWNLINK SIGNAL POWER (dBm)	
LOWEST POWER UPLINK SIGNAL ON DISTRIBUTED ANTENNA SYSTEM (dBm)	
NOMINAL TUNNEL RADIATING CABLE UPLINK SIGNAL POWER (DBM)	

	POWER WIRING CONNECTION		LOGIC	APPLICATION SOFTWARE LOGIC
	SOFTWARE SIGNAL CONNECTION		ALARM	APPLICATION ALARM PROCESSING
	FIBER OPTIC CABLE, (SINGLE MODE)		I/O	PLC INPUT/OUTPUT MODULES
	FIBER OPTIC CABLE		HISTORIAN	HISTORICAL DATA SERVER
	NORMALLY OPEN DRY CONTACT		PLC	PLC PROCESSOR
	NORMALLY CLOSED DRY CONTACT		GRAPHICS	GRAPHICS APPLICATION
	PUSH BUTTON - NORMALLY OPEN		HMI	HUMAN MACHINE INTERFACE
	PUSH BUTTON - NORMALLY CLOSED		BMS GRAPHICS	COMPUTER SYSTEM PROVIDING GRAPHIC STATUS, CONTROL AND DATA MANAGEMENT FOR THE BMS
	DISCRETE INPUT (FROM DRY CONTACT)		EQUIP. POINT I.D.	POINT I.D. AS IDENTIFIED IN LOGIC
	DISCRETE OUTPUT - VOLTAGE		EQUIPMENT NAME	PHYSICAL EQUIPMENT OR CONTROL PANEL
	MILLI AMP ANALOG SIGNAL			POWER METER
	MOMENTARILY ON DISCRETE SIGNAL		ITC	INTERFACE TERMINAL CABINET
	MOMENTARILY OFF DISCRETE SIGNAL		PLC	PROGRAMMABLE LOGIC CONTROLLER
	MAINTAINED SIGNAL		PLC	PROGRAMMABLE LOGIC CONTROLLER
	ANALOG SIGNAL		RIO	REMOTE INPUT/OUTPUT CHASSIS
	FLOATING POINT NUMBER		ETH	ETHERNET SWITCH
	INTEGER		FDP	FIBER DISTRIBUTION PANEL
	SIGNAL DIRECTION ARROWS - POINTING FROM ORIGIN TO DESTINATION		BMS	BUILDING MANAGEMENT SYSTEM CONTROL PANEL
	COMMUNICATION CHANNEL		DC	DISTRIBUTION CABINET (COMM)
	SOLENOID			
	BUZZER			
	INSTRUMENT			
	LIGHTING			
	LIGHT SWITCH / OCCUPANCY SENSOR			
	TERMINAL STRIP FOR HARDWIRED CONNECTIONS			
	ACCESS CARD READER			

DESIGNED BY:					
DRAWN BY:					
CHECKED BY:					
APPROVED BY:					
1	2/2024	2024 REVISED GUIDANCE DRAWINGS			
0	8/2019	REVISED SYSTEMS DIRECTIVE DRAWINGS			
No.	DATE	DSN	CHK	APP	REVISION

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE

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 CONTRACT No.: RTA/LR  
 DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

COMMUNICATIONS GENERAL SYMBOLS & LEGEND

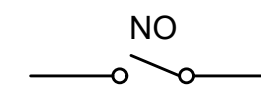
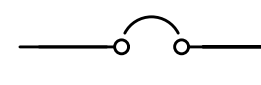
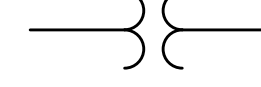

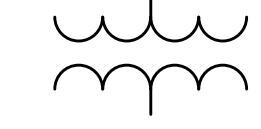
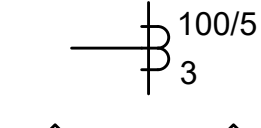
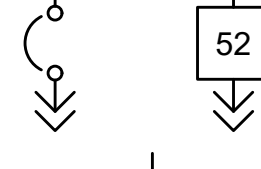
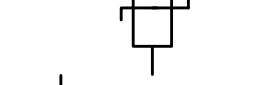
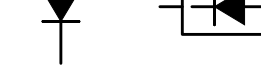

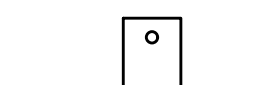

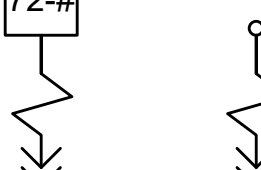
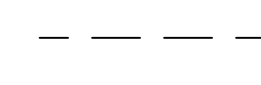
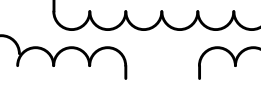



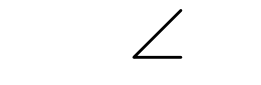

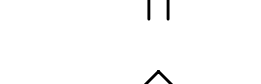


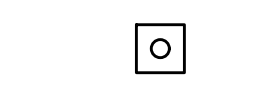


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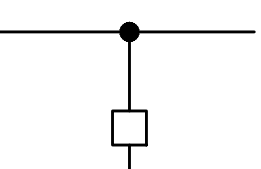
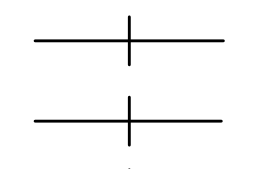
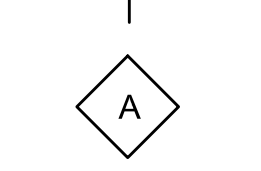
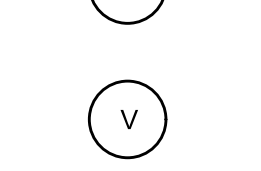
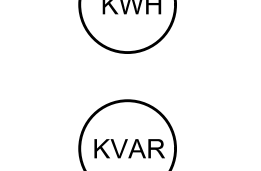
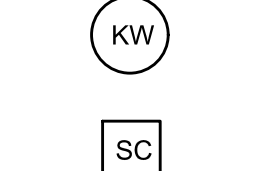
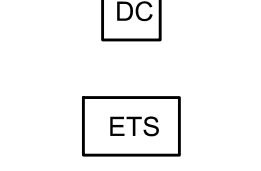
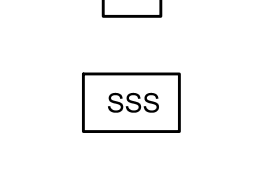
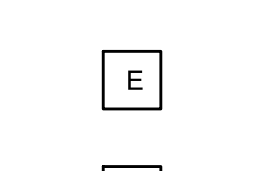
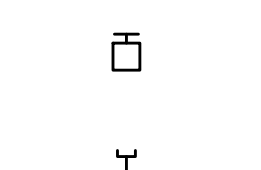
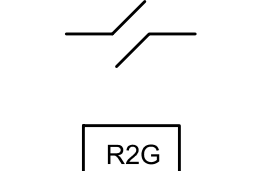
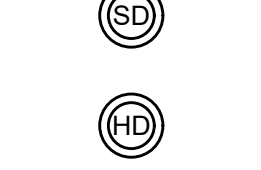
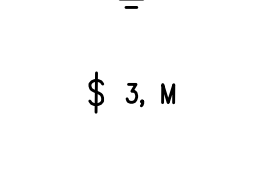


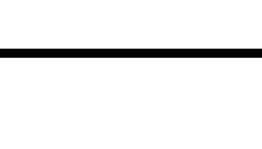
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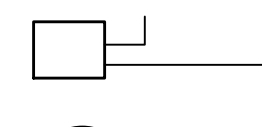
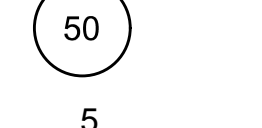
SHEET No.: 1 REV: 1

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### TRACTION ELECTRIFICATION SYSTEM LEGEND

	DISCONNECT SWITCH, (NC) NORMALLY CLOSED, (NO) NORMALLY OPEN. ALL SWITCHES NC UNLESS OTHERWISE SHOWN.
	CIRCUIT BREAKER, ALL CIRCUIT BREAKERS NORMALLY CLOSED UNLESS OTHERWISE SHOWN.
	POTENTIAL TRANSFORMER
	CABLE POTHEAD / CABLE CONNECTOR
	POWER TRANSFORMER
	CURRENT TRANSFORMER UPPER NUMBER DESIGNATES CURRENT RATIO LOWER NUMBER DESIGNATES QUANTITY OF TRANSFORMER
	WITHDRAWABLE, MV AC BREAKER
	SURGE ARRESTER
	DIODE / 12 OR 6 PULSE TRACTION RECTIFIER OR TPSS
	FUSE
	REMOVABLE FUSE
	SHUNT OR TPSS BUS CONNECTION
	WITHDRAWABLE DC CIRCUIT BREAKER WITH SERIES TRIP
	DIRECTION OF CONTROL OR RELAY INFLUENCE LINE
	RECTIFIER TRANSFORMER, 12 PULSE
	BALANCE TRANSFORMER, INTERPHASE TRANSFORMER
	DELTA TRANSFORMER WINDING CONNECTION
	WYE TRANSFORMER WINDING CONNECTION
	OPEN DELTA CONNECTION
	TEST SWITCH
	OCS SECTION INSULATOR
	INTERLOCK
	LIGHT
	EMERGENCY LIGHT
	EXTERIOR LUMINAIRE
	RECEPTACLE

	IMPEDANCE BOND
	PAIR OF INSULATED JOINTS IN RAIL
	PHASE
	LCMS ANNUNCIATOR (PLC MONITOR SCREEN) AND SCADA
	AMMETER
	VOLTMETER
	KILOWATT HOUR METER
	KILOVAR METER
	KILOWATT METER
	SCADA AND LCMS
	DCAM INTERFACE
	EMERGENCY TRIP STATION
	CURRENT TRANSDUCER
	SUBSTATION SHUTDOWN STATION
	VOLTAGE TRANSDUCER
	ELECTRICAL INTERLOCK
	MECHANICAL KEY INTERLOCK
	ETS, SSS PUSH BUTTON
	UTILITY GROUND CONNECTION
	OCS INSULATED OVERLAP
	RAIL VOLTAGE MONITORING AND GROUNDING SYSTEM
	SMOKE DETECTOR
	HEAT DETECTOR
	GROUND
	3 WAY SWITCH
	EQUIPMENT ENCLOSURE
	INDICATES REMOVAL


	NON-FUSED DISCONNECT SWITCH
	RELAY OPERATING COIL. NUMBER DESIGNATES DEVICE FUNCTION.
5	EMERGENCY STOP PUSH BUTTON
23	FAN CONTROL
26R1	RECTIFIER OVERTEMP ALARM (1ST. STAGE)
26R2	RECTIFIER OVERTEMP TRIP (2ND. STAGE)
27	AC SUPPLY UNDERVOLTAGE RELAY
27A	DC FEEDER UNDERVOLTAGE RELAY
27B	LOSS OF AUXILIARY DC VOLTAGE
27BH	LOSS OF AC INPUT TO AUXILIARY POWER
27C	BATTERY UNDERVOLTAGE
32	REVERSE POWER RELAY
32A	DC REVERSE POWER RELAY
33N	NEGATIVE CUBICLE DOOR SWITCH
33R	RECTIFIER DOOR SWITCH
33T	TRANSFORMER DOOR SWITCH
47	PHASE SEQUENCE
49T1	TRANSFORMER OVERTEMP ALARM (1ST STAGE)
49T2	TRANSFORMER OVERTEMP TRIP (2ND STAGE)
50/51	PHASE FAULT TIME OVERCURRENT RELAY (INST. AND TIME DELAY)
50N/51N	GROUND FAULT TIME OVERCURRENT RELAY (INST. AND TIME DELAY)
52	AC CIRCUIT BREAKERS
59	OVER VOLTAGE RELAY
59X	CONTROL VOLTAGE OVERVOLTAGE
64G/H	DC STRUCTURE ENCLOSURE FAULT DETECTION TRIP AND MONITORING RELAY
64V	RAIL-TO-GROUND VOLTAGE RELAY
72	DC CIRCUIT BREAKERS
74	VISUAL ALARM
76	DC DIRECT ACTING OVERCURRENT TRIP DEVICE
82	LOAD MEASURING RELAY
83	RECLOSE RELAY
85RX	TRANSFER TRIP RELAY (RECLOSE)
85NX	TRANSFER TRIP RELAY (LOCKOUT)
86	AC LOCKOUT RELAY
86X	AC LOCKOUT AUXILIARY RELAY
186	DC LOCKOUT RELAY
186X	DC LOCKOUT AUXILIARY RELAY
98-1	RECTIFIER DIODE FAILURE ALARM
98-2	RECTIFIER DIODE FAILURE TRIP
150	DC RATE OF RISE AND OVERCURRENT RELAY

No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED GUIDANCE DRAWINGS
1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	8/2017				GUIDANCE DRAWINGS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE



SCALE: NTS
FILENAME: GUI-JZN005
CONTRACT No.: RTA/LR
DATE: 2/2024

**SOUND TRANSIT**  
**GUIDANCE DRAWINGS**  
SYSTEMS

TRACTION POWER  
LEGEND

DRAWING No.: <b>GUI-JZN005</b>	
FACILITY ID:	
SHEET No.:	REV: 2

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OVERHEAD CONTACT SYSTEM SYSTEM LEGEND

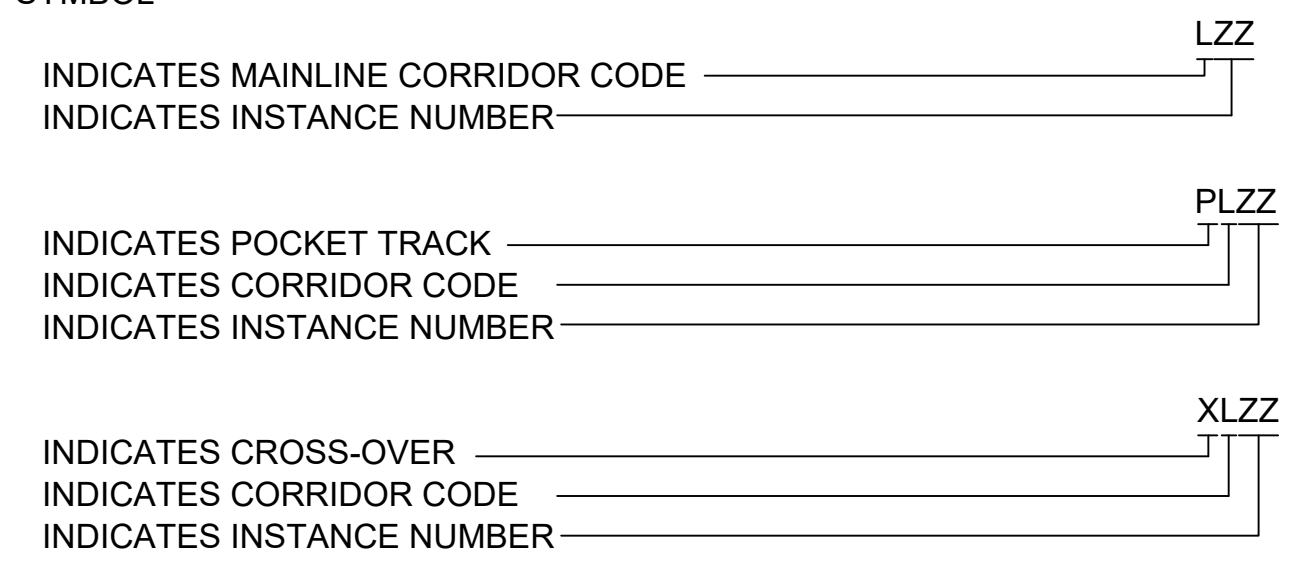
	OCS INSTALLATION
	SUPPORT REGISTRATION
	FERRULE ATTACHMENT
	CROSS-SPAN SUPPORT
	HEAD-SPAN SUPPORT
	OCS CANTILEVER
	OCS BACK TO BACK CANTILEVER
	OCS TWIN CANTILEVER
	OCS PULL-OFF
	POLE WITH OCS DC FEEDER
MPA	POLE WITH MIDPOINT ANCHOR
	SPAN LENGTH (FT)
	OCS POLE
	OCS POLE W/ DOWN GUY
	REMOVE STRUCTURE OR ASSEMBLY
	ABANDON STRUCTURE OR ASSEMBLY
	FIXED TERMINATION, SINGLE WIRE
	FIXED TERMINATION, SIMPLE CATENARY
	FIXED TERMINATION W/ SPRING ASSEMBLY
	BALANCE WEIGHT ANCHOR, SIMPLE CATENARY BWA
	BALANCE WEIGHT ANCHOR, SINGLE CONTACT WIRE BWA
	CONSTANT TENSION SPRING ANCHOR, SIMPLE CATENARY CTST

	TRACK CENTERLINE
	IN-RUNNING CATENARY
	OUT-OF-RUNNING TERMINATION
	SECTION INSULATOR (BRIDGING)
	SECTION INSULATOR (NON-BRIDGING)
	FEEDER CABLE TAP ON OCS
	JUMPER, IN-SPAN
	JUMPER, POTENTIAL EQUALIZING
	JUMPER, CONTINUITY
	WIRE CROSSING SHOWING CONTACT BRIDGE
	ALONG TRACK SPAN LENGTH IN FEET BETWEEN SUPPORT STATIONINGS XXX'
	IN RUNNING/OUT OF RUNNING POTENTIAL EQUALIZING JUMPER
	FULL FEEDING/CONTINUITY JUMPER

	TPSS	TRACTION POWER SUBSTATION
	SW	POLE MOUNTED SWITCH
	EB	EYEBOLT
	X"	CATENARY STAGGER IN INCHES (DIRECTION AND MAGNITUDE)
	0"	ZERO STAGGER
	ZZZ	STRUCTURE SUPPORT #
	LZZ	WIRE RUN NUMBER

OCS WIRE RUNS CONVENTION

- CORRIDOR CODE L  
N: NORTH CORRIDOR  
S: SOUTH CORRIDOR  
E: EAST CORRIDOR
- INSTANCE NUMBER ZZ:
  - IN GENERALLY STARTS WITH 01 AT THE BEGINNING OF THE CORRIDOR AND COUNTS UP IN THE OUTBOUND DIRECTION OF THE CORRIDOR.
  - FOR MAINLINE WIRE RUNS ZZ SHALL BE AN ODD NUMBER FOR THE OUTBOUND TACK AND AN EVEN NUMBER FOR THE INBOUND TRACK.
  - ADDITIONALLY, PARALLEL WIRE RUN ON THE OUTBOUND AND INBOUND TRACKS SHALL BE SEQUENTIAL WITH THE LESSER NUMBER BEING FOR THE OUTBOUND TRACK
  - IF THERE ARE TWO OR MORE WIRE RUNS ON THE OUTBOUND OR INBOUND TRACK STRETCHING THE SAME GENERAL DISTANCE AS A SINGLE WIRE RUN ON THE OPPOSITE TRACK, ADD AN A, B, ETC. TO THE END OF THE INSTANCE NUMBER TO MAINTAIN SEQUENTIAL NUMBERING USING THE ODD AND EVEN NUMBERS DESCRIBED ABOVE.
  - IF THE INSTANCE NUMBER BECOMES 100 OR GREATER, ADD A THIRD DIGIT AND THE INSTANCE NUMBER TAKES THE FOR OF ZZZ.
- SYMBOL



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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024	----	----	----	2024 REVISED GUIDANCE DRAWINGS
1	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
0	8/2017	----	----	----	GUIDANCE DRAWINGS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE

SCALE: NTS  
FILENAME: GUI-JZN006  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**


OVERHEAD CONTACT SYSTEM LEGEND

DRAWING No.: GUI-JZN006
FACILITY ID:
SHEET No.: 2



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						DESIGNED BY:				LINE IS 1" AT FULL SCALE		SCALE: NTS	<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>  CENTRAL CONTROL SYSTEMS BMS, EVS, TCS INTERFACE DIAGRAM		DRAWING No.:	GUI-JBS400
						DRAWN BY:						FILENAME: GUI-JBS400			FACILITY ID:	
3	2/2024					CHECKED BY:						CONTRACT No.:				
2	8/2019					APPROVED BY:						RTA/LR	SHEET No.:	REV:		
1	1/2019						SUBMITTED BY:			DATE:						
0	8/2017						DATE:			DATE:						
No.	DATE	DSN	CHK	APP	REVISION					DATE:						

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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024	----	----	----	2024 REVISED GUIDANCE DRAWINGS
1	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
0	8/2017	----	----	----	GUIDANCE DRAWINGS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:

LINE IS 1" AT FULL SCALE

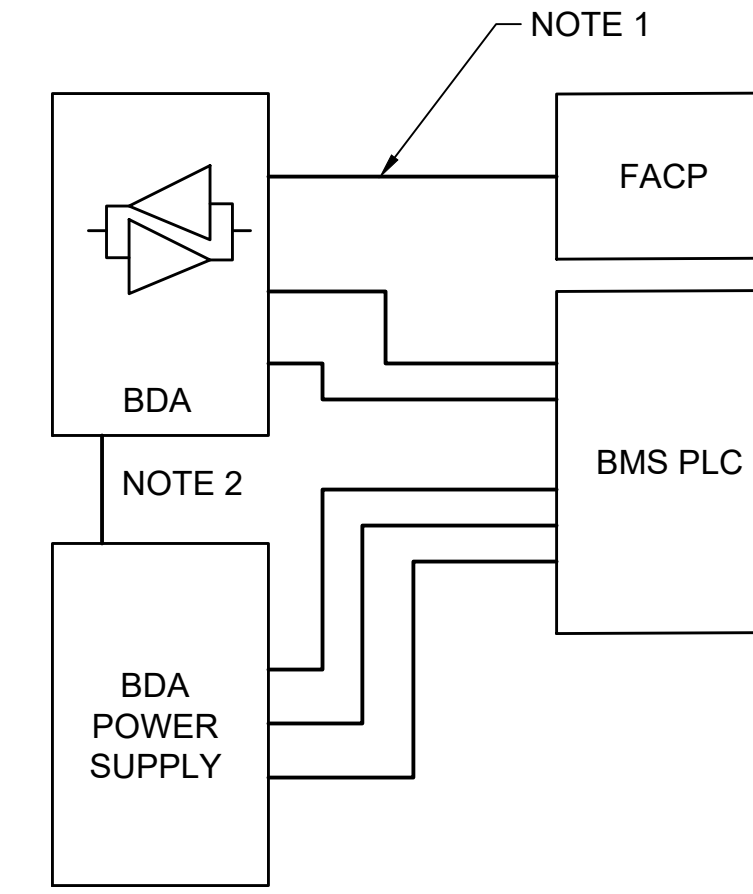
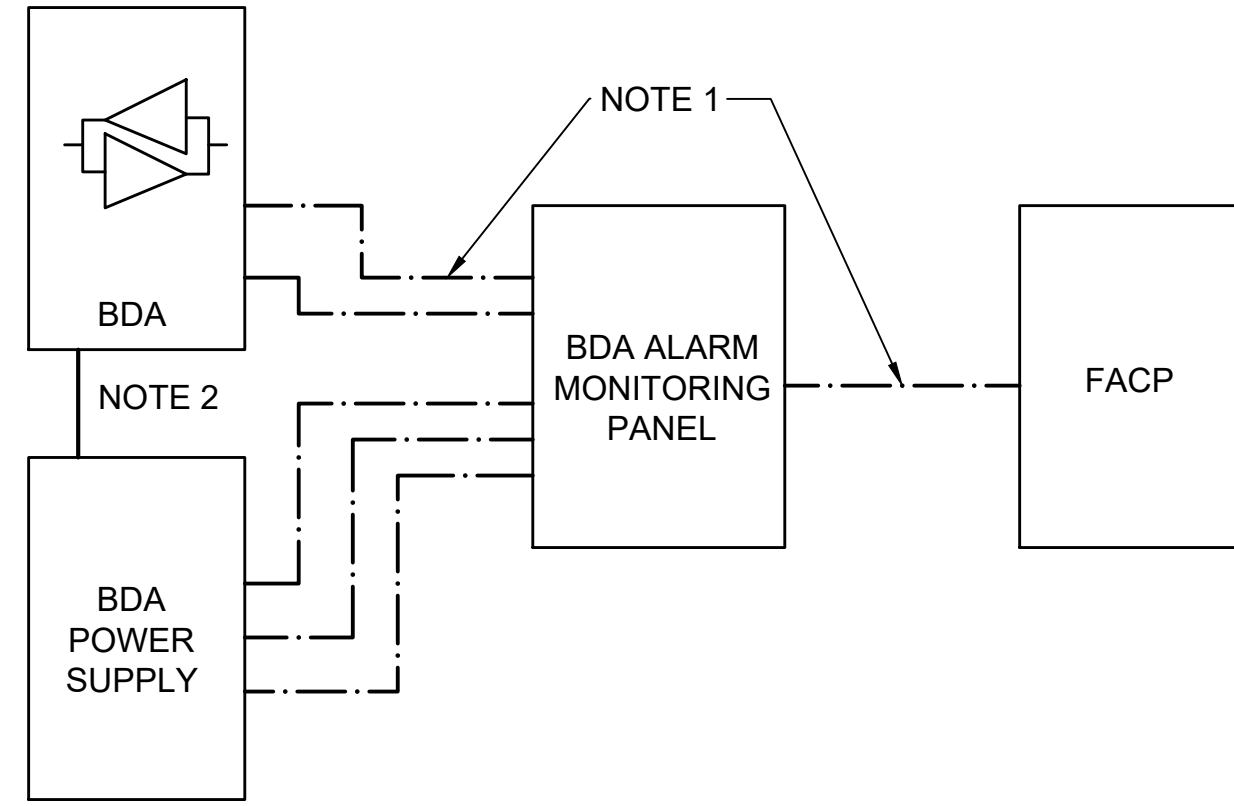


SCALE:	
FILENAME:	GUI-JBS401
CONTRACT No.:	RTA/LR
DATE:	2/2024

**SOUND TRANSIT  
 GUIDANCE DRAWINGS  
 SYSTEMS**  
 CENTRAL CONTROL SYSTEM  
 BMS/EVS SYSTEMS INTERFACE DATA TABLE

DRAWING No.:	<b>GUI-JBS401</b>
FACILITY ID:	
SHEET No.:	2

- NOTES:**
1. LOOP MONITORED CONNECTION
  2. POWER AND ALARMS TO BDA



EQUIPMENT TYPE	BDA I/O DESCRIPTION	POINT TYPE	PLC TAG TEMPLATE	LOCAL DDC	LOCAL MONITORING PANEL	FACP (SUPERVISORY SIGNAL)
BDA	3. MALFUNCTION OF THE DONOR ANTENNA(S)	DI	BDA_XX_ANT_FAIL_DI		X	
	4. FAILURE OF ACTIVE RF-EMITTING DEVICE(S)	DI	BDA_XX_RF_FAIL_DI		X	
	6. ACTIVE SYSTEM COMPONENT MALFUNCTION.	DI	BDA_XX_COMP_FAIL_DI		X	
BDA POWER SUPPLY	1. LOSS OF NORMAL AC POWER SUPPLY	DI	BDA_XX_ACPWR_FAIL_DI		X	
	70-PERCENT REDUCTION OF OPERATING CAPACITY	DI	BDA_XX_BATT_LOW_DI		X	
	2. SYSTEM BATTERY CHARGER(S) FAILURE.	DI	BDA_XX_BATT_CHG_FAIL_DI		X	
	7. MALFUNCTION OF THE COMMUNICATIONS LINK BETWEEN THE FIRE ALARM SYSTEM AND THE EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM.	DI	BDA_XX_FACP_LINK_FAIL_DI		X	
BDA OTHER SIGNALS (NEW)	8. OSCILLATION OF ACTIVE RF-EMITTING DEVICE(S)	DI	BDA_XX_OSCILLATION_DI		X	
	SUMMARY ALARM FROM LOCAL MONITORING PANEL TO FACP					X
NOTE: ADJUSTED TO MEET IFC 510-2022 4.2.5						

**GARAGE BASED RADIO BDA**  
NTS

EQUIPMENT TYPE	BDA I/O DESCRIPTION	POINT TYPE	PLC TAG TEMPLATE	LOCAL DDC	REMOTE BMS BMS SCADA	LOCAL MONITORING PANEL	FACP (SUPERVISORY SIGNAL)
BDA	3. MALFUNCTION OF THE DONOR ANTENNA(S)	DI	BDA_XX_ANT_FAIL_DI			N/A	N/A
	4. FAILURE OF ACTIVE RF-EMITTING DEVICE(S)	DI	BDA_XX_RF_FAIL_DI	X	X	N/A	N/A
	6. ACTIVE SYSTEM COMPONENT MALFUNCTION.	DI	BDA_XX_COMP_FAIL_DI			N/A	N/A
BDA POWER SUPPLY	1. LOSS OF NORMAL AC POWER SUPPLY	DI	BDA_XX_ACPWR_FAIL_DI			N/A	N/A
	70-PERCENT REDUCTION OF OPERATING CAPACITY	DI	BDA_XX_BATT_LOW_DI			N/A	N/A
	2. SYSTEM BATTERY CHARGER(S) FAILURE.	DI	BDA_XX_BATT_CHG_FAIL_DI			N/A	N/A
	7. MALFUNCTION OF THE COMMUNICATIONS LINK BETWEEN THE FIRE ALARM SYSTEM AND THE EMERGENCY RESPONDER RADIO ENHANCEMENT SYSTEM.	DI	BDA_XX_FACP_LINK_FAIL_DI			N/A	N/A
BDA OTHER SIGNALS (NEW)	8. OSCILLATION OF ACTIVE RF-EMITTING DEVICE(S)	DI	BDA_XX_OSCILLATION_DI			N/A	N/A
	SUMMARY ALARM FROM LOCAL MONITORING PANEL TO FACP						X
NOTE: ADJUSTED TO MEET IFC 510-2022 4.2.5							

**STATION BASED RADIO BDA**  
NTS

No.	DATE	DSN	CHK	APP	REVISION
3	2/2024				2024 REVISED GUIDANCE DRAWINGS
2	8/2019				REVISED SYSTEM DIRECTIVE DRAWINGS
1	1/2019				2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE
0	8/2017				GUIDANCE DRAWINGS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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SCALE: NTS	CONTRACT No.: RTA/LR
FILENAME: GUI-JRS100	DATE: 2/2024

**SOUND TRANSIT**  
**GUIDANCE DRAWINGS**  
 SYSTEMS  
 COMMUNICATIONS  
 RADIO BIDIRECTIONAL AMPLIFIER  
 INTERFACE DIAGRAM

DRAWING No.:	GUI-JRS100
FACILITY ID:	
SHEET No.:	REV:
	3

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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024	----	----	----	2024 REVISED GUIDANCE DRAWINGS
1	8/2019	----	----	----	REVISED SYSTEM DIRECTIVE DRAWINGS
0	1/2019	----	----	----	2019 GUIDANCE DWG REVISIONS - GENERAL UPDATES

DESIGNED BY:	
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APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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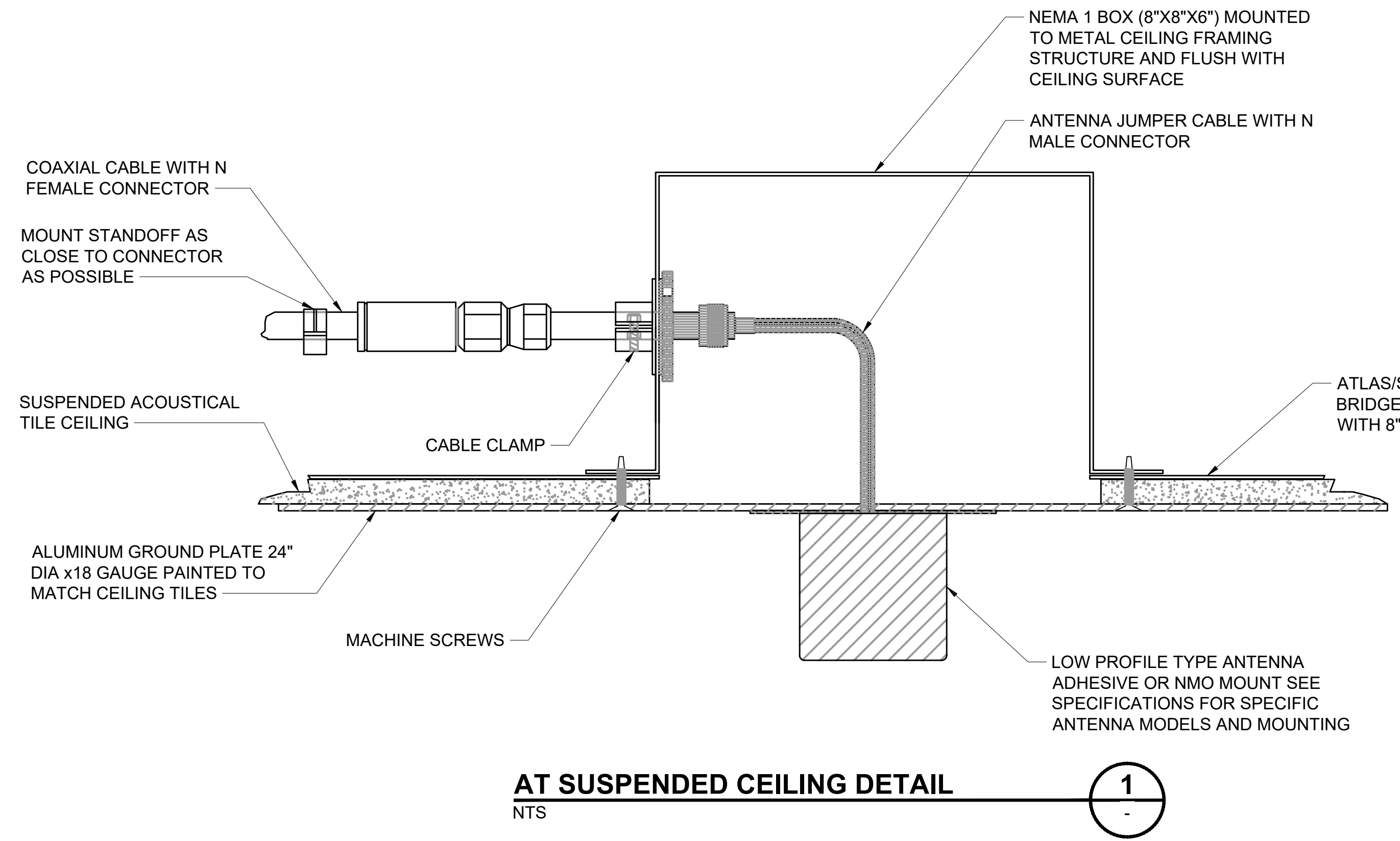
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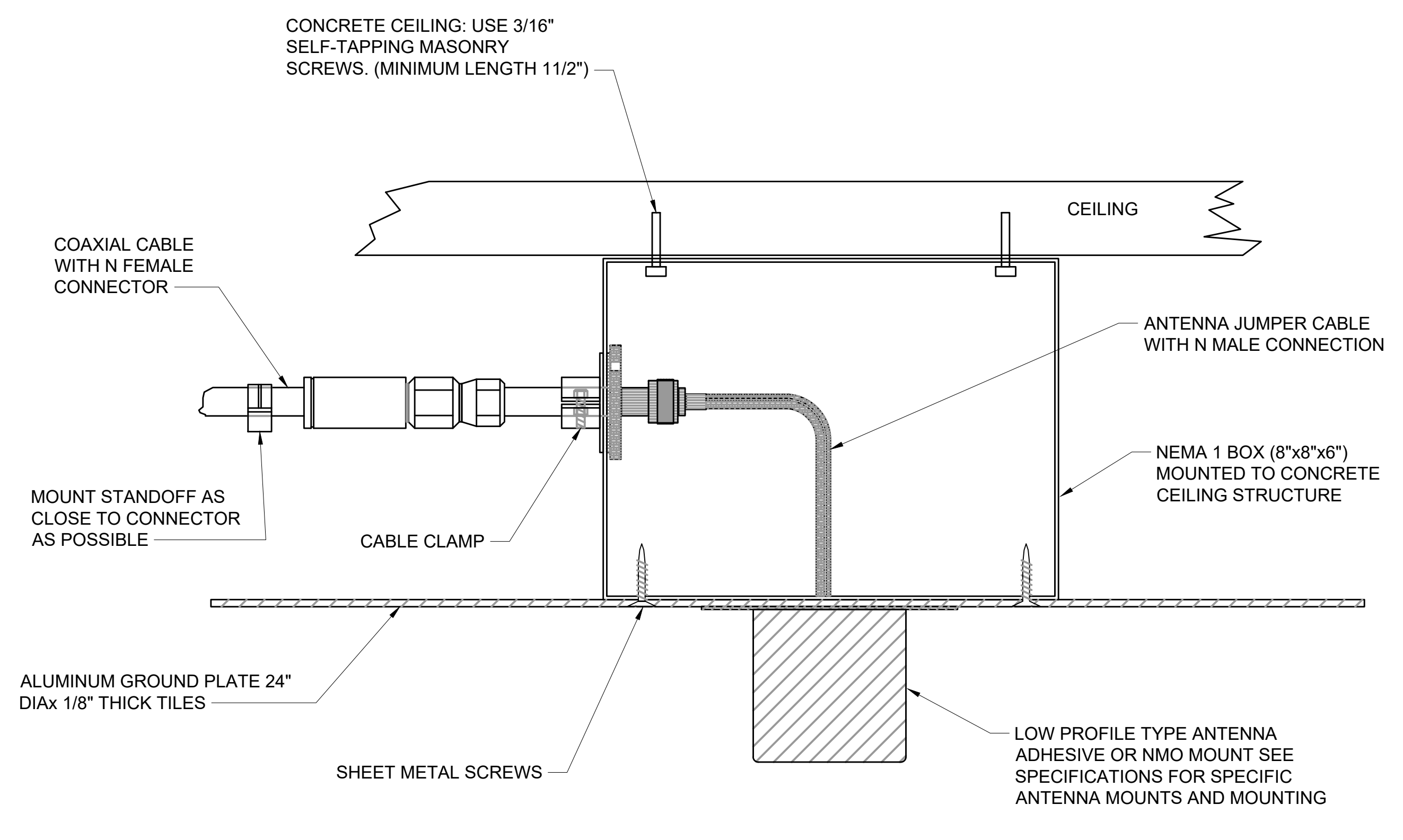
SCALE:	NTS
FILENAME:	GUI-JRS102
CONTRACT No.:	RTA/LR
DATE:	2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>  COMMUNICATIONS RADIO EMERGENCY RADIO SYSTEM
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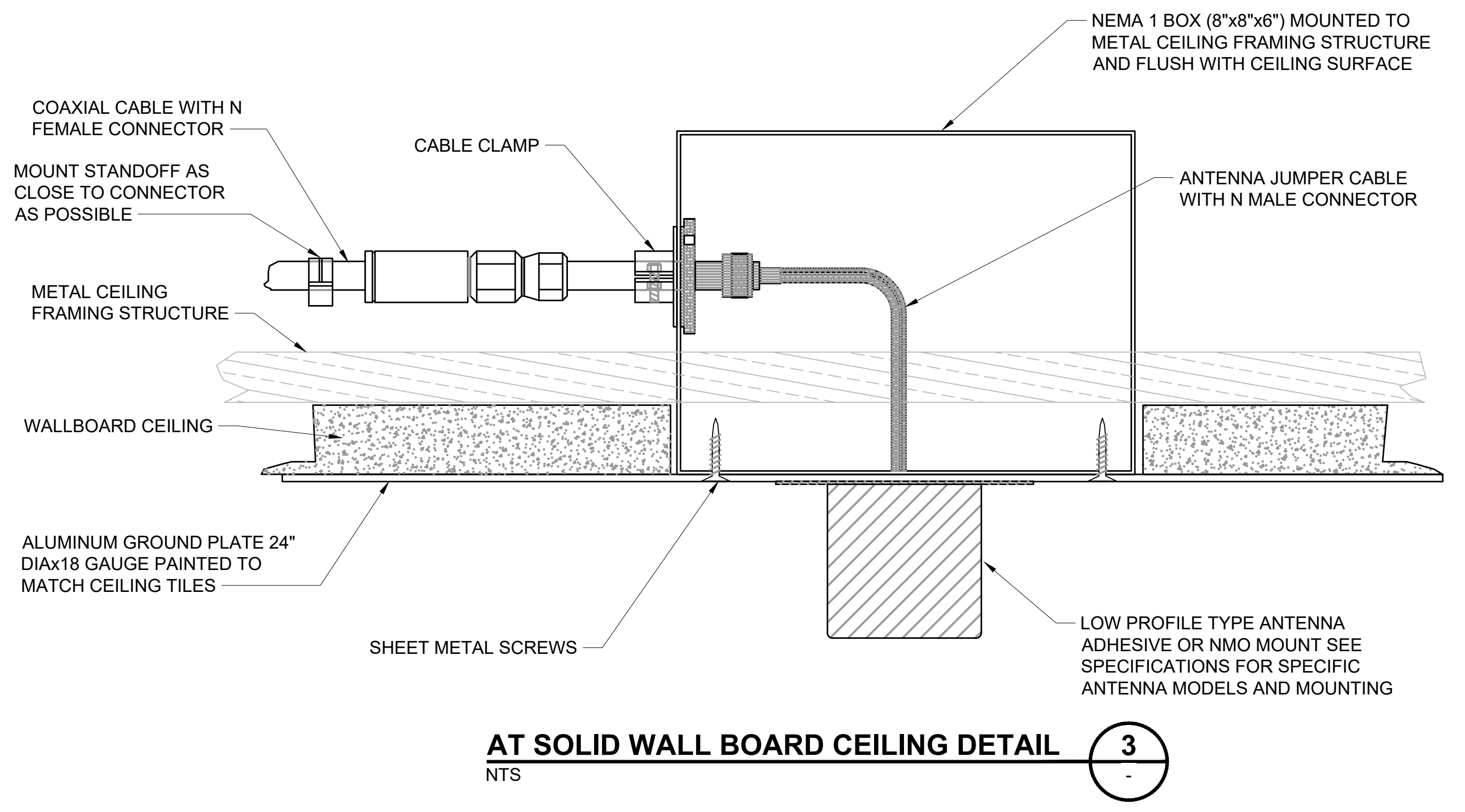
DRAWING No.:	GUI-JRS102
FACILITY ID:	
SHEET No.:	2



**AT SUSPENDED CEILING DETAIL**  
NTS



**AT CONCRETE CEILING DETAIL**  
NTS



**AT SOLID WALL BOARD CEILING DETAIL**  
NTS


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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED GUIDANCE DRAWINGS
1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	1/2019				2019 GUIDANCE DWG REVISIONS - GENERAL UPDATES

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

DESIGNED BY:		DATE:		REVIEWED BY:		DATE:	
DRAWN BY:		DATE:		REVIEWED BY:		DATE:	
CHECKED BY:		DATE:		REVIEWED BY:		DATE:	
APPROVED BY:		DATE:		REVIEWED BY:		DATE:	

LINE IS 1" AT FULL SCALE



**SOUNDTRANSIT**

SCALE: NTS  
FILENAME: GUI-JRS103  
CONTRACT No.: RTA/LR  
DATE: 2/2024


**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

COMMUNICATIONS  
RADIO SYSTEMS TYPICAL ANTENNA

DRAWING No.:	GUI-JRS103
FACILITY ID:	
SHEET No.:	2

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					DESIGNED BY:				LINE IS 1" AT FULL SCALE 	SCALE: NTS	<b>SOUND TRANSIT                  GUIDANCE DRAWINGS                  SYSTEMS</b>  COMMUNICATIONS TYPICAL TRANSIT FIBER BACKBONE HIGH LEVEL	DRAWING No.:
					DRAWN BY:					FILENAME: GUI-JCS100		FACILITY ID:
					CHECKED BY:					CONTRACT No.:		SHEET No.:
					APPROVED BY:					RTA/LR		REV:
0	2/2024				2024 NEW GUIDANCE DRAWINGS	SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:	2/2024		0
No.	DATE	DSN	CHK	APP	REVISION							

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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024	----	----	----	2024 NEW GUIDANCE DRAWINGS

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:

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SUBMITTED BY:
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DATE:
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REVIEWED BY:
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DATE:
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LINE IS 1" AT  
FULL SCALE



SCALE: NTS
FILENAME: GUI-JCS105
CONTRACT No.: RTA/LR
DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>
COMMUNICATIONS TYPICAL STATION BACKBONE FIBER FIBER SPLICE ENCLOSURE DETAILS

DRAWING No.: <b>GUI-JCS105</b>
FACILITY ID:
SHEET No.: 0
REV: 0

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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWINGS
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DRAWN BY:
CHECKED BY:
APPROVED BY:

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SUBMITTED BY:
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DATE:
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REVIEWED BY:
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DATE:
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LINE IS 1" AT  
FULL SCALE



SCALE: NTS
FILENAME: GUI-JCS130
CONTRACT No.: RTA/LR
DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>
COMMUNICATIONS BACKBONE FIBER SINGLE LINE FOR CENTRAL LINK FIBER PROJECT

DRAWING No.: <b>GUI-JCS130</b>
FACILITY ID:
SHEET No.: 0
REV: 0





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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWINGS

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DRAWN BY:
CHECKED BY:
APPROVED BY:

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE



SCALE: NTS
FILENAME: GUI-JCS160
CONTRACT No.: RTA/LR
DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b> COMMUNICATIONS FIBER PATCH PANEL ENCLOSURE DETAILS	
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DRAWING No.: GUI-JCS160
FACILITY ID:
SHEET No.: 0
REV: 0

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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWINGS

DESIGNED BY:
DRAWN BY:
CHECKED BY:
APPROVED BY:

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE



SCALE: NTS
FILENAME: GUI-JCS170
CONTRACT No.: RTA/LR
DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b> COMMUNICATIONS TCN/EFN BACKBONE NETWORK BLOCK DIAGRAM	
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DRAWING No.: GUI-JCS170
FACILITY ID:
SHEET No.: 0
REV: 0

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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWINGS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE



**SOUNDTRANSIT**

SCALE:	NTS
FILENAME:	GUI-JCS171
CONTRACT No.:	RTA/LR
DATE:	2/2024

**SOUND TRANSIT  
 GUIDANCE DRAWINGS  
 SYSTEMS**  
 COMMUNICATIONS  
 TCN, TPSS AND RADIO NETWORK BLOCK DIAGRAM

DRAWING No.:	GUI-JCS171
FACILITY ID:	
SHEET No.:	REV: 0

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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWINGS

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CHECKED BY:
APPROVED BY:

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DATE:
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REVIEWED BY:
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DATE:
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LINE IS 1" AT FULL SCALE



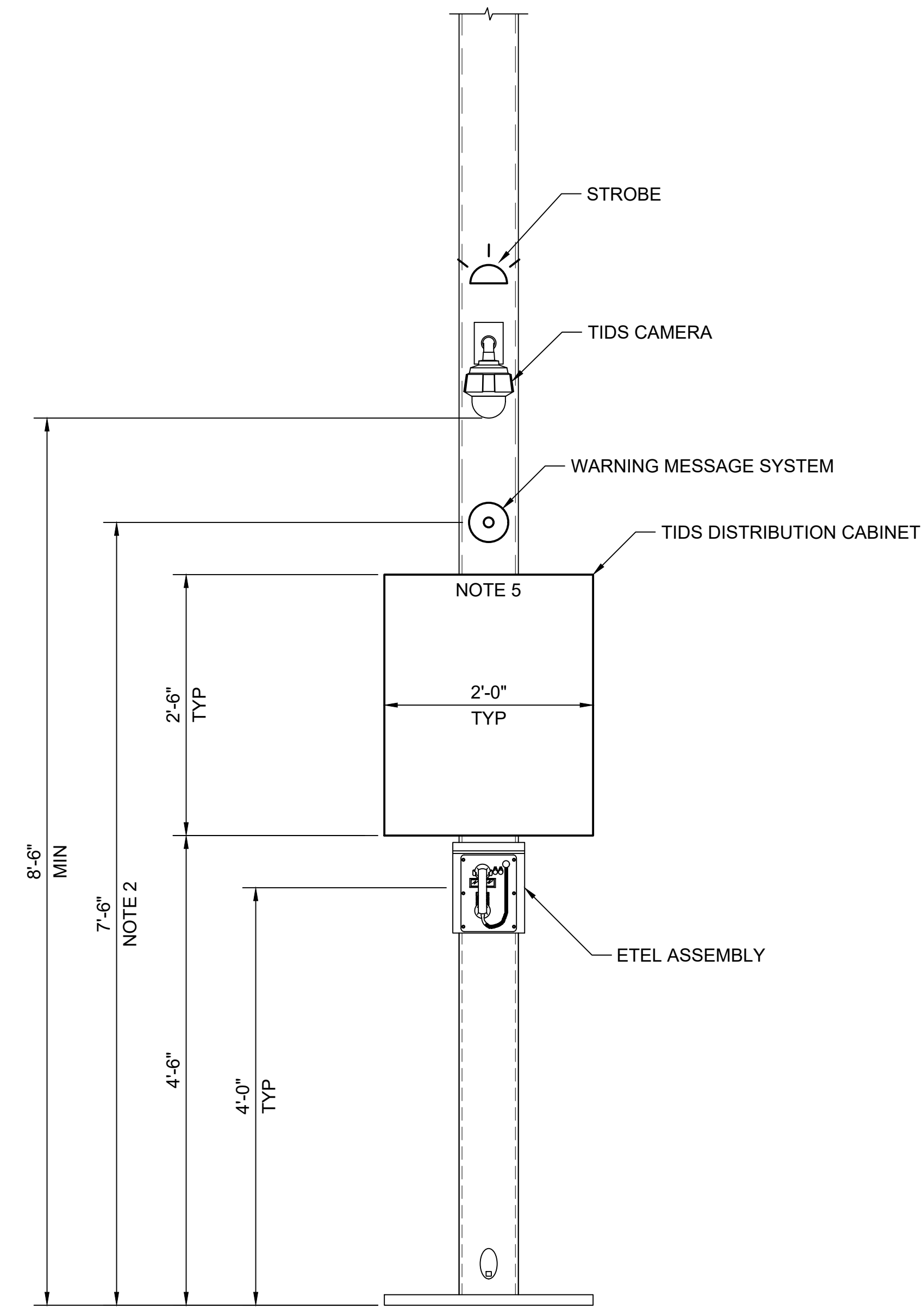
SCALE: NTS
FILENAME: GUI-JCS180
CONTRACT No.: RTA/LR
DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>
COMMUNICATIONS
FIBER DISTRIBUTION PANEL TCN CONNECTION DIAGRAM
JUNIPER MX204

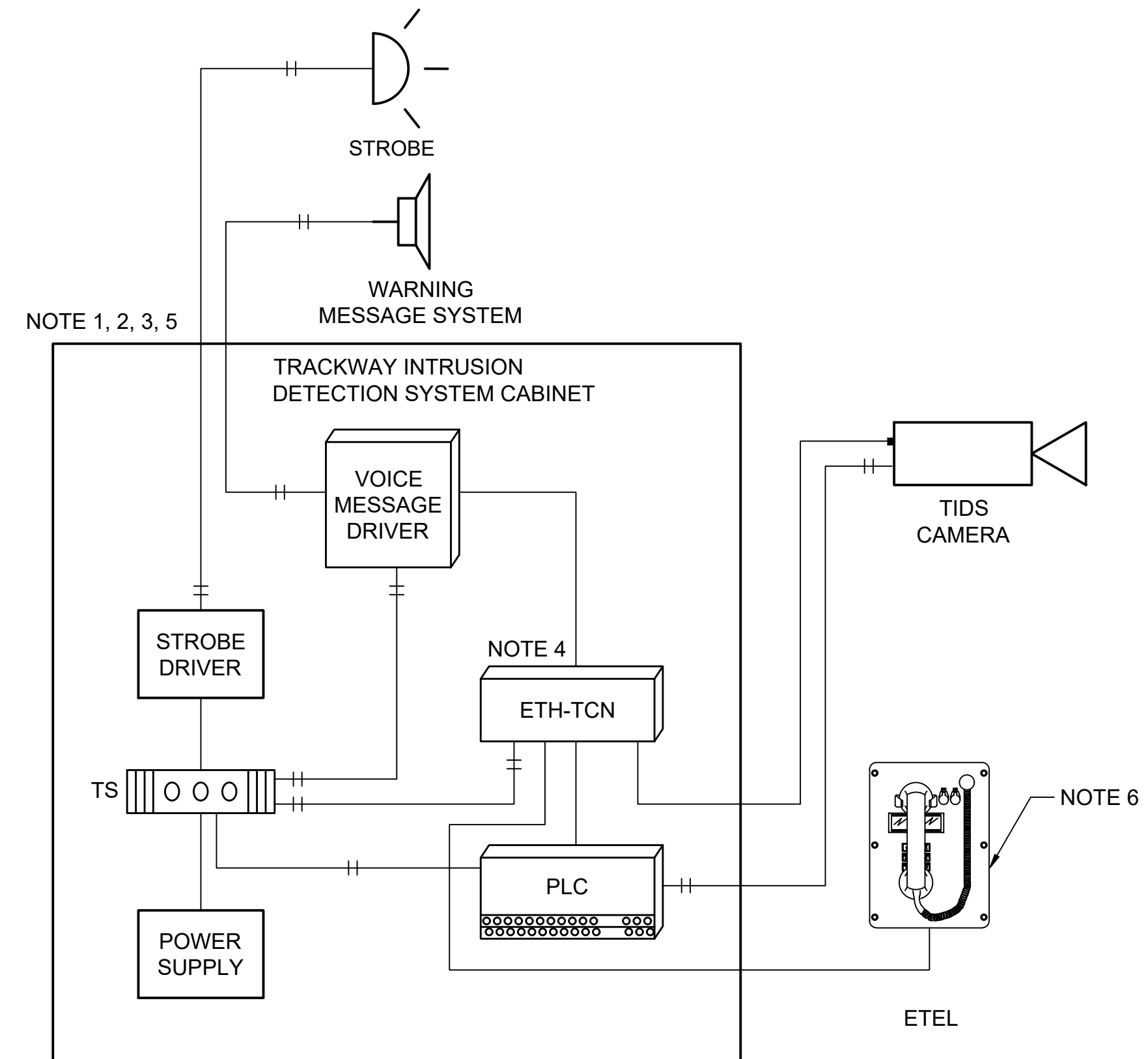
DRAWING No.: GUI-JCS180
FACILITY ID:
SHEET No.: 0
REV: 0



- GENERAL NOTES:**
- COORDINATE POWER AND SIGNAL CABLE AND CONDUIT TO THE NEAREST TPSS, COMMUNICATION CABINET, SIGNAL BUNGALOW, OR COMMUNICATION BUNGALOW.
  - TRACK INTRUSION DETECTION SYSTEM (TIDS) OPERATION:
    - TIDS CAMERA DETECTS INTRUSION AND CLOSSES A CONTACT THAT TERMINATES ON THE TCS REMOTE I/O.
    - LOGIC FROM THE TCS REMOTE I/O STARTS THE STROBE AND THE SPEAKER.
    - THE STROBE AND HORNS ARE ENABLED FOR SIX MINUTES.
    - THE REMOTE I/O SHALL ALARM AT THE LCC TCS SYSTEM.
    - LOGIC AND GRAPHICS IS PROVIDED AT THE LCC TO BE ABLE TO MANUALLY RESET EACH STROBE AND HORN. ONE RESET FOR EACH LOCATION.
    - VIDEO IMAGE IS RECORDED AT THE LCC
  - FOR TUNNEL PORTAL ENTRANCE LOCATION TIDS CAMERAS SHALL BE INSTALLED ON TUNNEL FACE ABOVE THE PORTAL.
  - CONTRACTOR TO INSTALL AND CONNECT SOUND TRANSIT PROVIDED AND CONFIGURED TCN ACCESS SWITCH.
  - STEEL NEMA 4X ENCLOSURE. DIMENSIONS APPROXIMATE.
  - TUNNEL PORTAL OR PLATFORM ASSOCIATED FUNCTIONS WILL NOT HAVE AN ETEL.



**TYPICAL OCS POLE LOCATION** 1  
NTS



**TRACK INTRUSION DETECTION - DIAGRAM** 2  
NTS

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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED GUIDANCE DRAWINGS
1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	8/2017				GUIDANCE DRAWINGS

DESIGNED BY:	
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APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE

SCALE: NTS  
FILENAME: GUI-JCS202  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

COMMUNICATIONS GUIDEWAY TRACK INTRUSION DETECTION BLOCK DIAGRAM

DRAWING No.:	GUI-JCS202
FACILITY ID:	
SHEET No.:	REV: 2

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No.	DATE	DSN	CHK	APP	REVISION
1	2/2024				2024 REVISED GUIDANCE DRAWINGS
0	1/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

DESIGNED BY:

DRAWN BY:

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APPROVED BY:

SUBMITTED BY:

DATE:

REVIEWED BY:

DATE:

LINE IS 1" AT FULL SCALE



SCALE:  
NTS

FILENAME:  
GUI-JCS203

CONTRACT No.:  
RTA/LR

DATE:  
2/2024

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

COMMUNICATIONS  
FARE VENDING  
INTERFACE DIAGRAM

DRAWING No.:  
**GUI-JCS203**

FACILITY ID:

SHEET No.: REV:  
1 1



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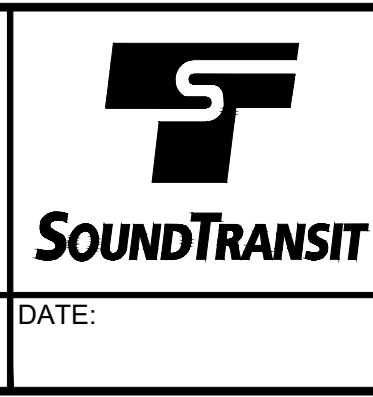
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No.	DATE	DSN	CHK	APP	REVISION
3	2/2024	----	----	----	2024 UPDATES
2	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
1	1/2019	----	----	----	2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE
0	8/2017	----	----	----	GUIDANCE DRAWINGS

DESIGNED BY:	
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APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE



SCALE:	NTS
FILENAME:	GUI-JCS302
CONTRACT No.:	RTA/LR
DATE:	2/2024

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

COMMUNICATIONS  
PS VMS SYSTEMS  
BLOCK DIAGRAM

DRAWING No.:	<b>GUI-JCS302</b>
FACILITY ID:	
SHEET No.:	3

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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024	----	----	----	2024 REVISED GUIDANCE DRAWINGS
1	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
0	1/2019	----	----	----	2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE

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APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT  
FULL SCALE



SCALE:	NTS
FILENAME:	GUI-JCS303
CONTRACT No.:	RTA/LR
DATE:	2/2024

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

COMMUNICATIONS  
TYPICAL CCTV FUNCTIONAL  
BLOCK DIAGRAM

DRAWING No.:	GUI-JCS303
FACILITY ID:	
SHEET No.:	REV: 2

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No.	DATE	DSN	CHK	APP	REVISION
3	2/2024	----	----	----	2024 UPDATES
2	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
1	8/2019	----	----	----	2019 GUIDANCE DWG REVISION - GENERAL UPDATE
0	8/2017	----	----	----	GUIDANCE DRAWINGS

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 CHECKED BY:  
 APPROVED BY:

SUBMITTED BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
 REVIEWED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

LINE IS 1" AT FULL SCALE



SCALE: NTS  
 FILENAME: GUI-JCS304  
 CONTRACT No.: RTA/LR  
 DATE: 2/2024

**SOUND TRANSIT  
 GUIDANCE DRAWINGS  
 SYSTEMS**  
 COMMUNICATIONS  
 ETEL. PET, CES, PBX SYSTEMS  
 BLOCK DIAGRAM

DRAWING No.: **GUI-JCS304**  
 FACILITY ID:  
 SHEET No.: \_\_\_\_\_ REV: 3

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No.	DATE	DSN	CHK	APP	REVISION
3	2/2024	----	----	----	2024 UPDATES
2	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
1	1/2019	----	----	----	2019 GUIDANCE DWG REVISION - GENERAL UPDATE
0	8/2017	----	----	----	GUIDANCE DRAWINGS

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DRAWN BY:

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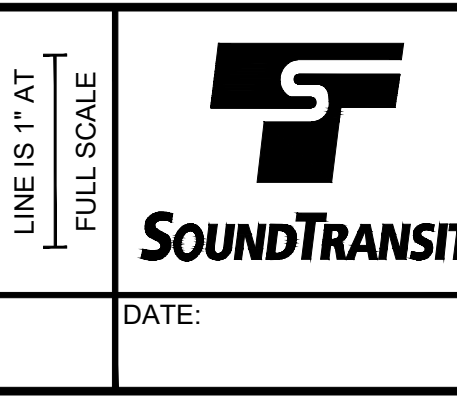
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SUBMITTED BY:

DATE:

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DATE:



SCALE:  
NTS

FILENAME:  
GUI-JCS305

CONTRACT No.:  
RTA/LR

DATE:  
2/2024

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

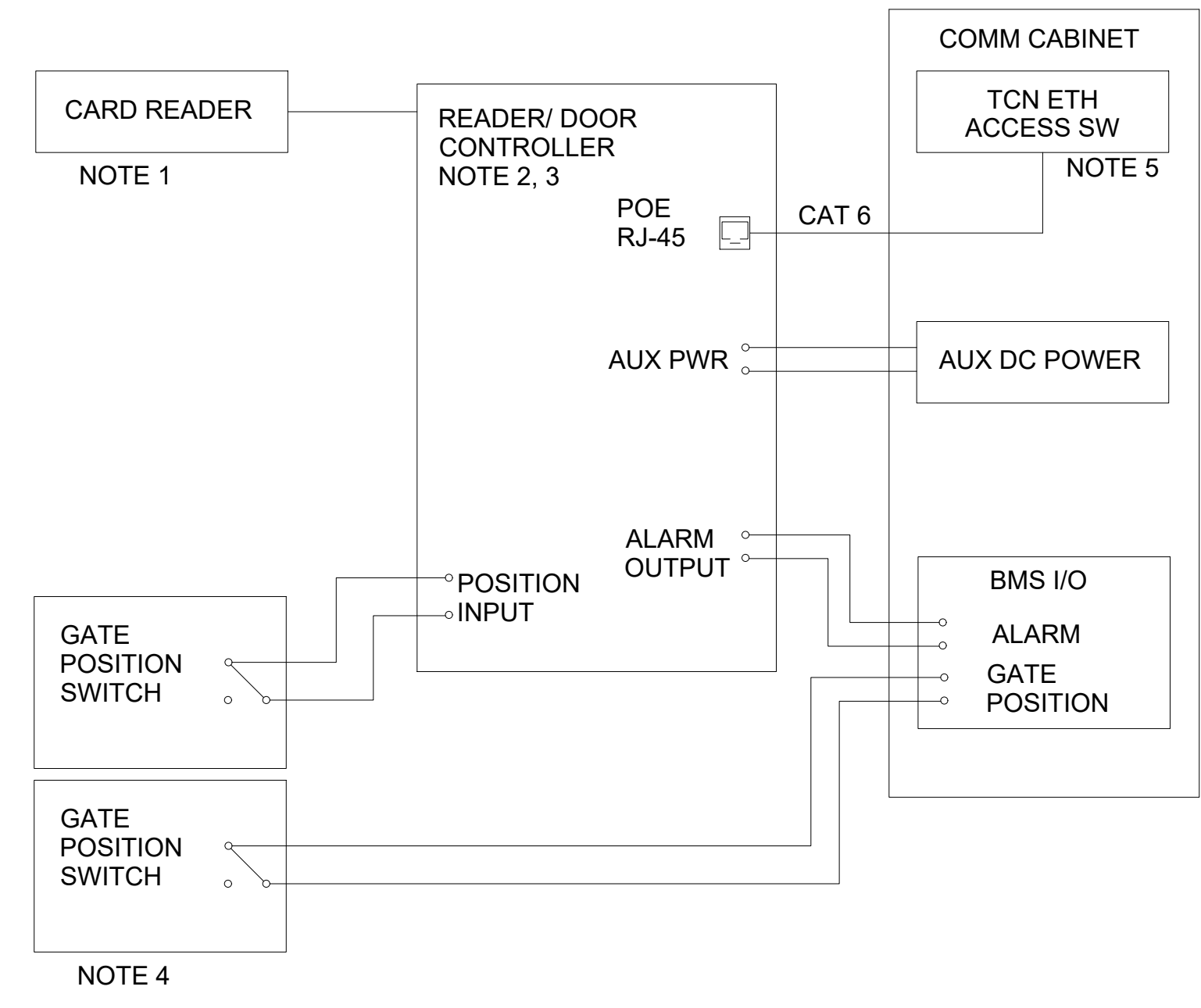
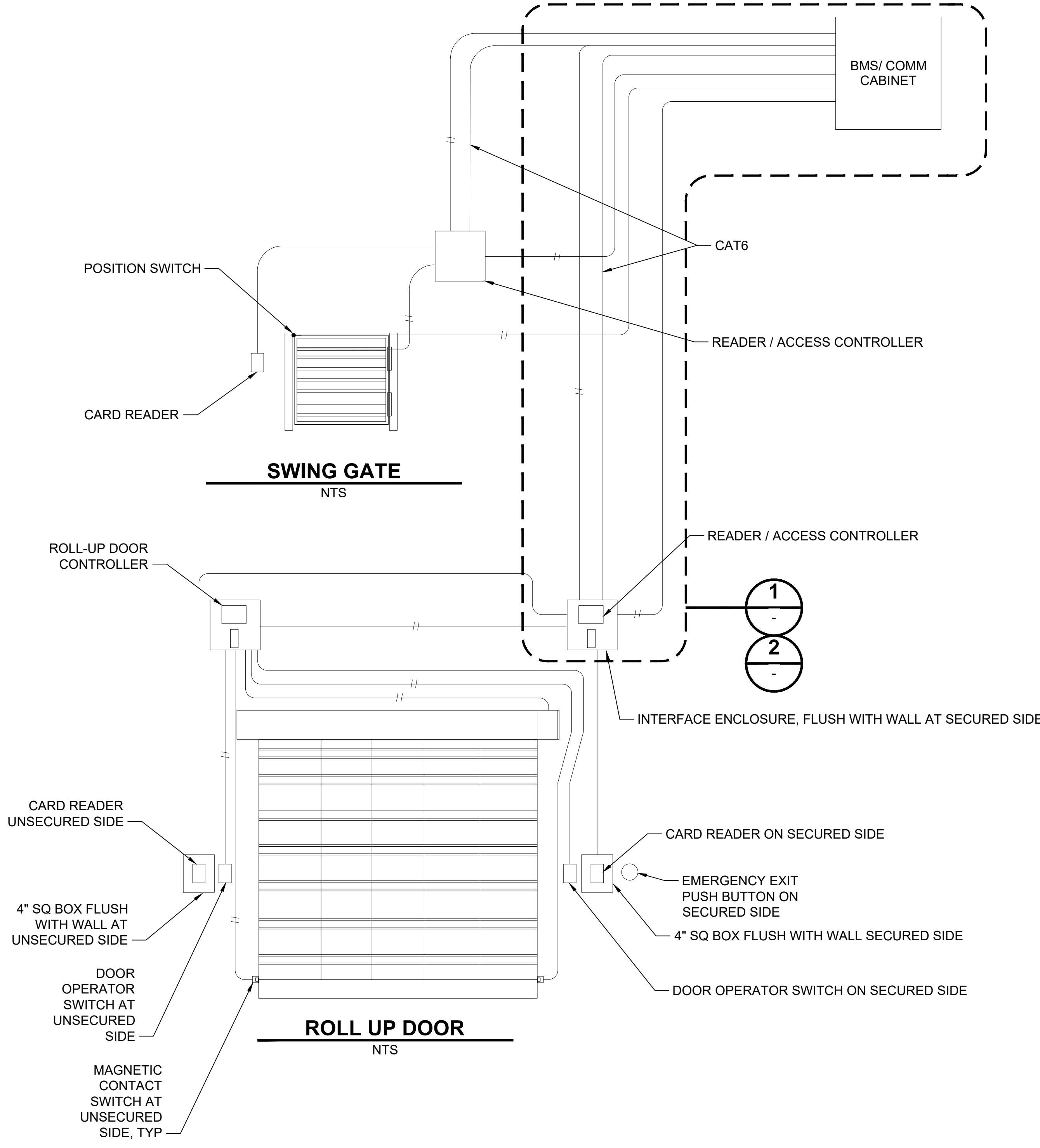
COMMUNICATIONS  
CROSS - SYSTEM FUNCTIONS  
FOR CCTV, EPHONE & PA/VMS

DRAWING No.:  
**GUI-JCS305**

FACILITY ID:

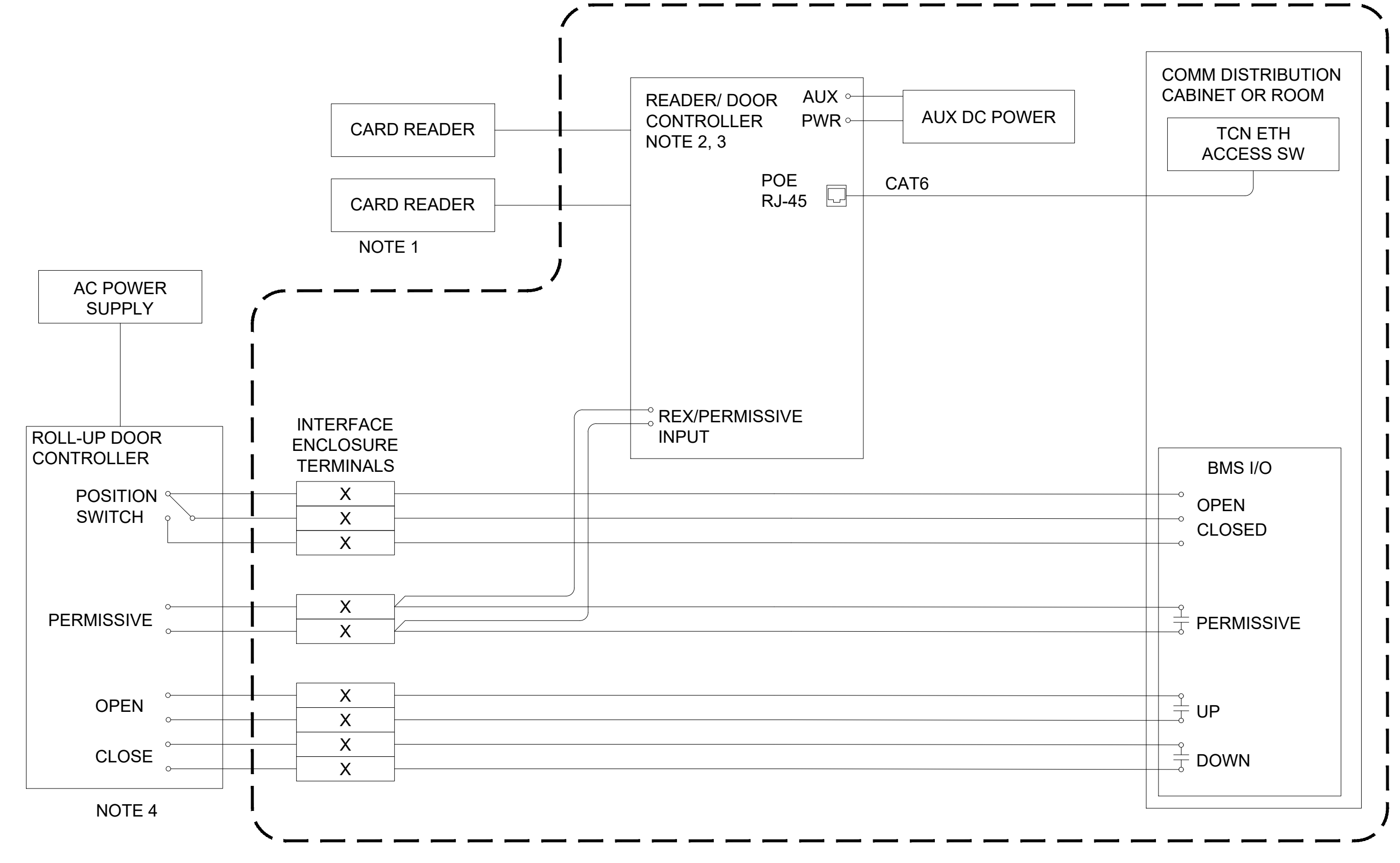
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**SWING GATE WIRING DETAIL** 1  
NTS

- GENERAL NOTES:**
- COORDINATE WITH ARCHITECTURAL DOOR SCHEDULE FOR REQUIRED FEATURES AND FUNCTIONALITY AT EACH DOOR / GATE. THIS INCLUDES CONFIGURATION OF ADJACENT EGRESS DOORS THAT DETERMINE NEED FOR ADDITIONAL CARD READERS OR EMERGENCY EXIT PUSH BUTTONS.
  - INTEGRATED IP ACCESS CARD READER / DOOR CONTROLLER POWER OVER ETHERNET (POE) COMPATIBLE. INTEGRATE ACCESS CARD READER / DOOR CONTROLLER TO ENABLE OPERATOR SWITCH FUNCTION.
  - INTEGRATE ACCESS CARD READER / CONTROLLER EQUIPMENT INCLUDING TERMINALS AND RELAYS TO ACHIEVE REQUIRED FUNCTIONALITY WITHIN ENCLOSURE. PROVIDE UL LISTING FOR ASSEMBLY.
  - CONTACTS SHALL CLOSE WHEN DOOR / GATE IS CLOSED.
  - COORDINATE CONDUIT AND CONTROL CONDUCTORS TO IMPLEMENT REQUIRED FUNCTIONALITY AT EACH DOOR / GATE.
  - CONTRACTOR SHALL PROVIDE LICENSES AND CONFIGURE THE HEADEND ACS AND BMS SOFTWARE FOR THE DOORS/ GATES ADDED.
  - SEE JCD604 FOR COMMUNICATIONS DEVICE POWER ARCHITECTURE.



**ROLL-UP DOOR OR GRILL WIRING DETAIL** 2  
NTS

**NOTE:**  
ELECTRICAL DESIGNER SHALL COORDINATE DOOR CONTROLLER POWER SUPPLY AND CONDUIT.

No.	DATE	DSN	CHK	APP	REVISION
3	2/2024				2024 REVISED GUIDANCE DRAWINGS
2	8/2019				REVISED SYSTEMS DRAWINGS
1	1/2019				2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE
0	8/2017				GUIDANCE DRAWINGS

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APPROVED BY:

SUBMITTED BY: DATE: REVIEWED BY: DATE:

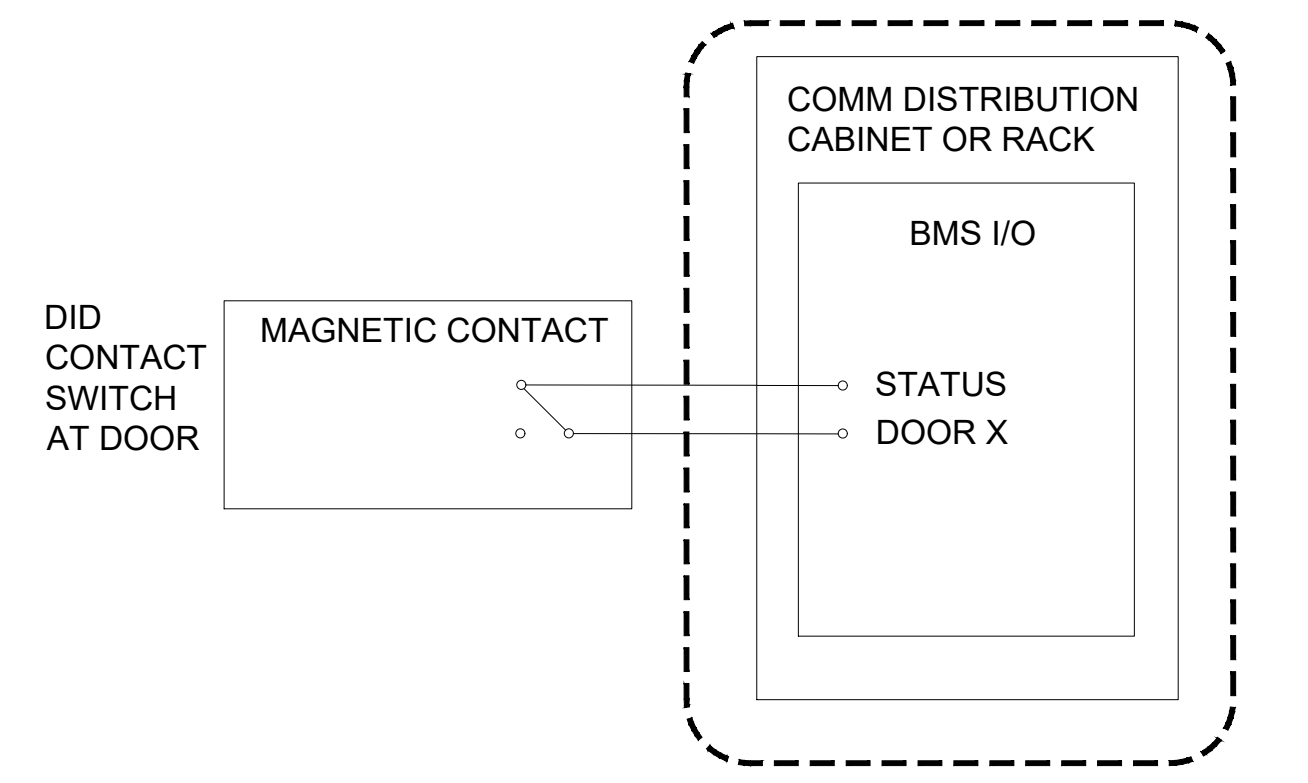
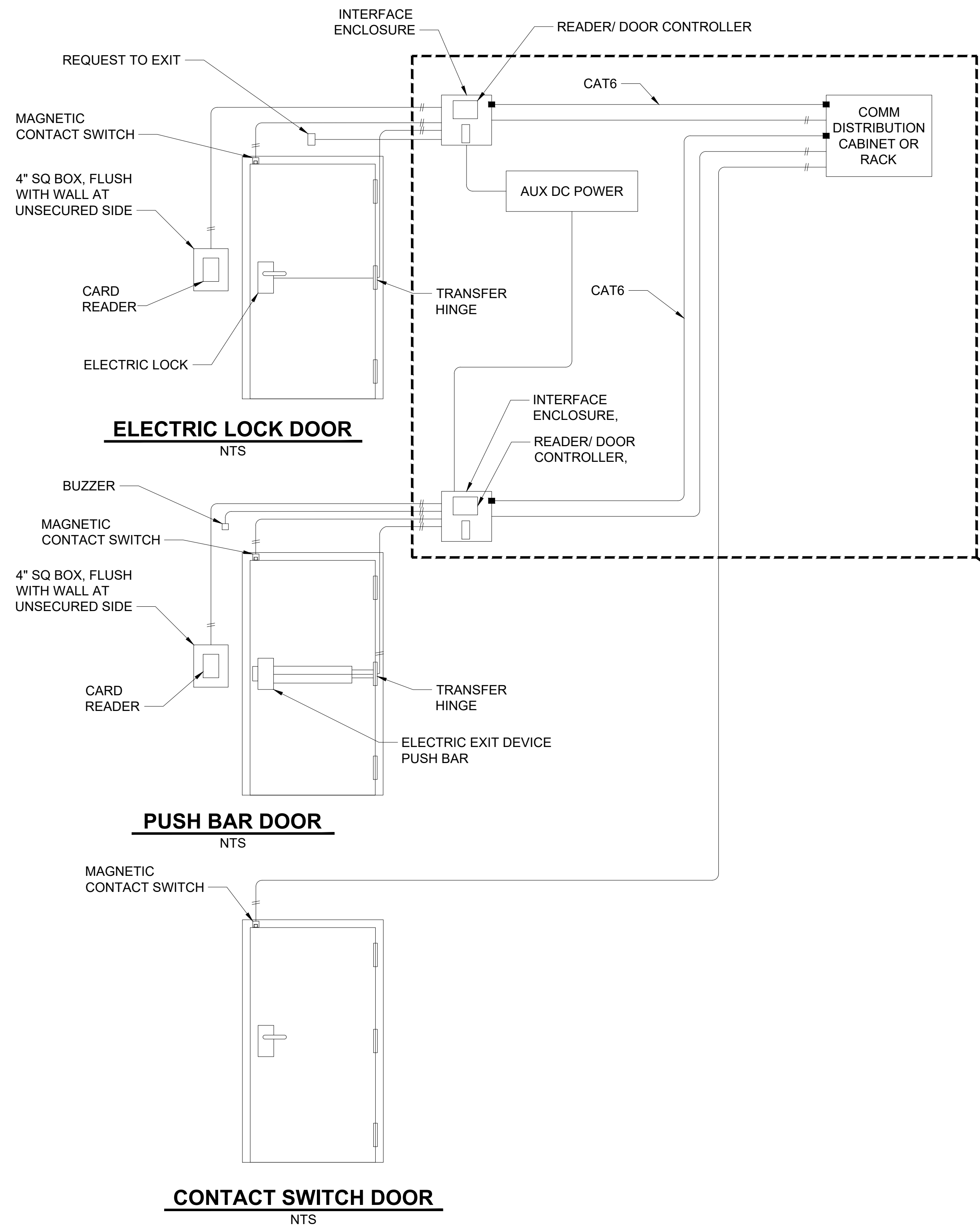
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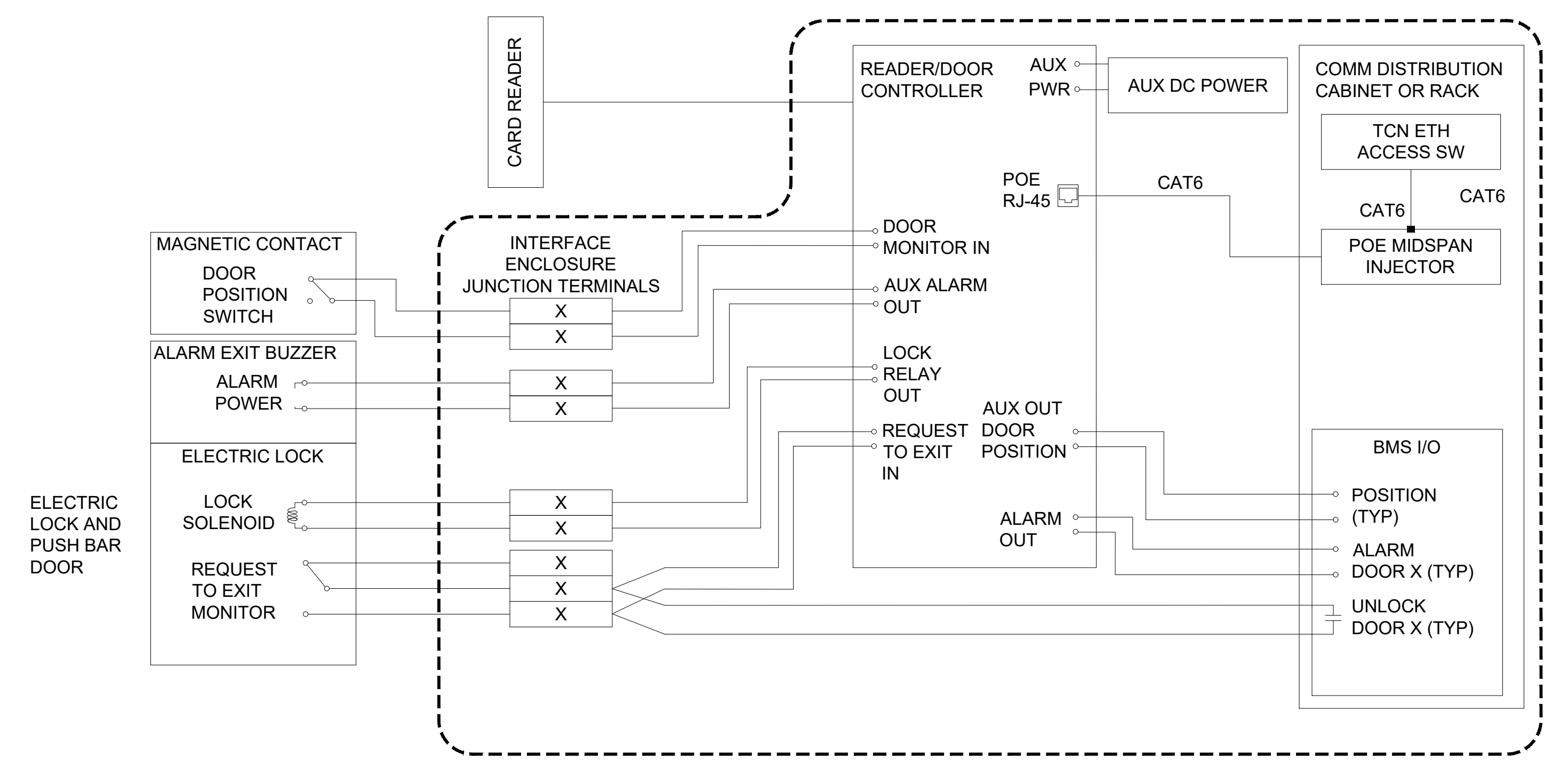
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FILENAME: GUI-JCS400  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**  
COMMUNICATIONS ACCESS CONTROL SYSTEM STATION GATES BLOCK DIAGRAM

DRAWING No.: **GUI-JCS400**  
FACILITY ID:  
SHEET No.: REV: 3



**DOOR MONITORING WIRING DETAIL 1**  
NOT TO SCALE



**ACCESS CONTROL WIRING DETAIL 2**  
NOT TO SCALE

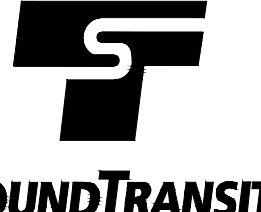
- GENERAL NOTES:**
1. CONTRACTOR SHALL PROVIDE LICENSES AND CONFIGURE THE HEADEND ACS AND BMS SOFTWARE FOR THE ADDED DOORS.
  2. COORDINATE WITH ARCHITECTURAL DOOR SCHEDULE. INDIVIDUAL ELEMENTS ARE NOT APPLICABLE FOR ALL LOCATIONS.
  3. SEE JCD604 FOR COMMUNICATIONS DEVICES POWER ISOLATION ARCHITECTURE.
  4. VERIFIED CARD READER PREVENTS BUZZER FROM SOUNDING AND ALARM AT BMS.
  5. BMS DESIGNER, DOOR CONTROL DESIGNER AND COMMUNICATION DESIGNER SHALL COORDINATE LOCATION AND SCOPE DEFINITION OF AUXILIARY POWER SUPPLY TO POWER ELECTRONIC LOCKS APPROPRIATELY. CONSTRUCTION SEQUENCING SHOULD BE CONSIDERED.

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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED GUIDANCE UPDATES
1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	1/2019				2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE

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APPROVED BY:	

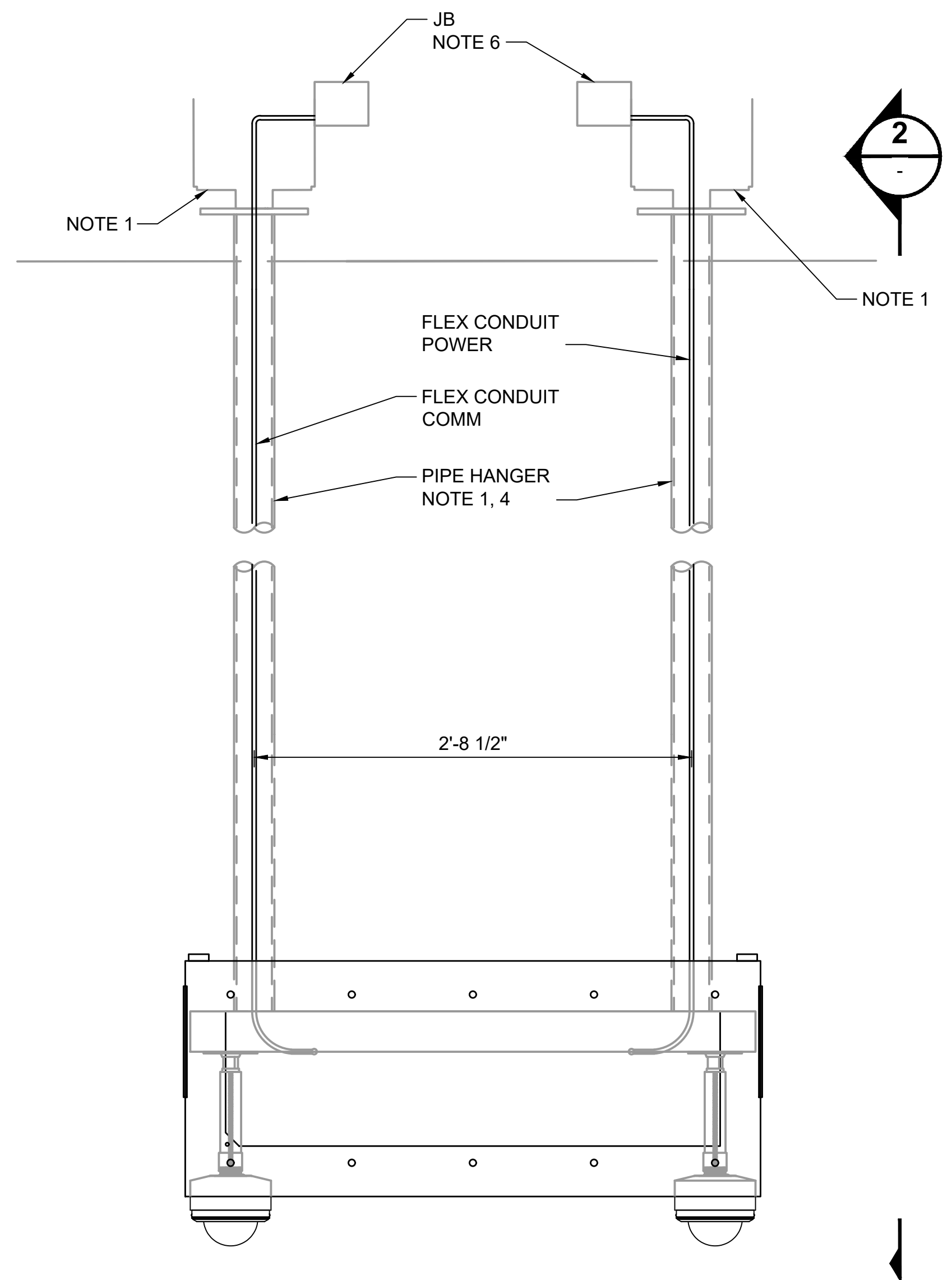
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FILENAME: GUI-JCS401	
CONTRACT No.:	
RTA/LR	
DATE:	2/2024

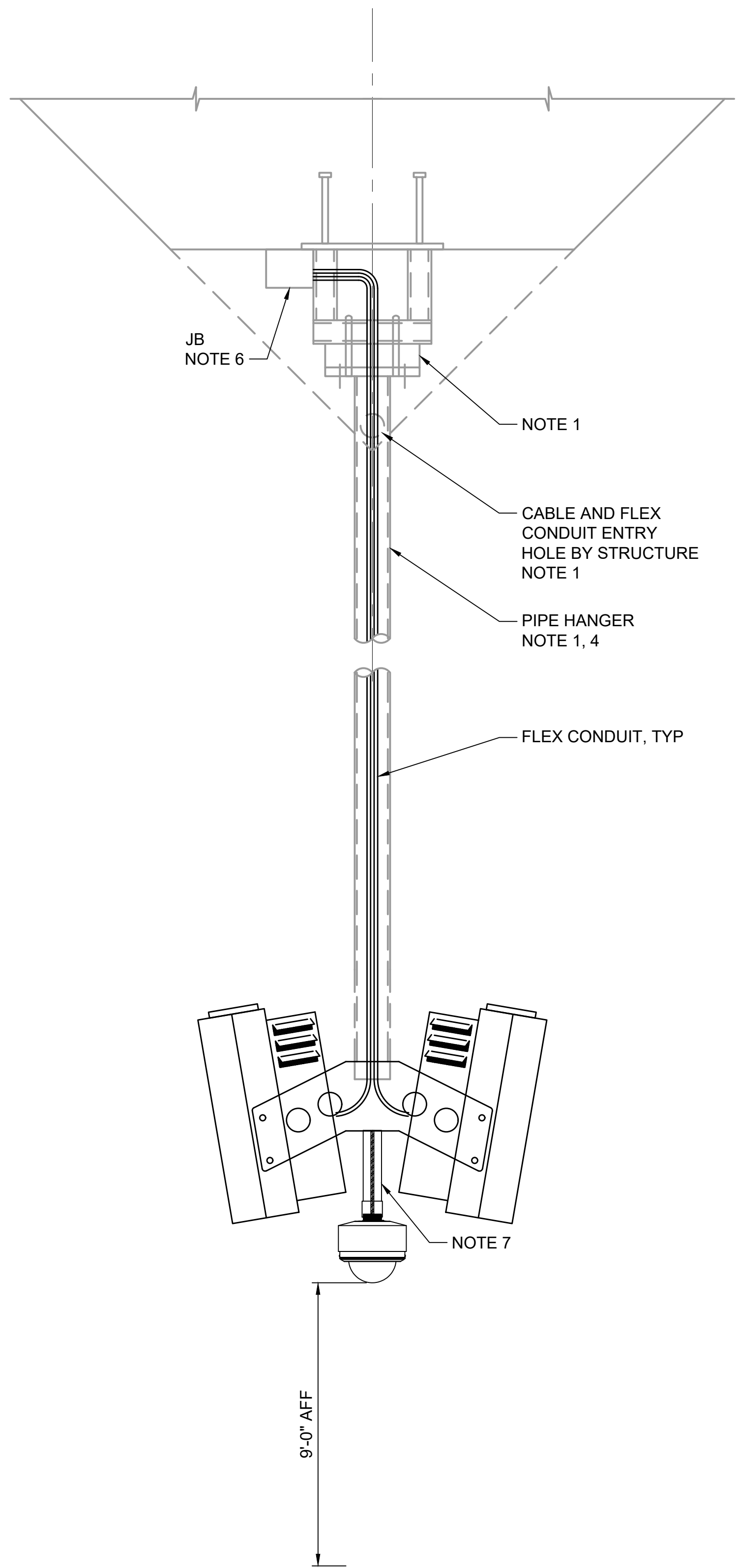
<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
COMMUNICATIONS ACCESS CONTROL SYSTEM STATION DOORS BLOCK DIAGRAM	

DRAWING No.:	GUI-JCS401
FACILITY ID:	
SHEET No.:	REV:
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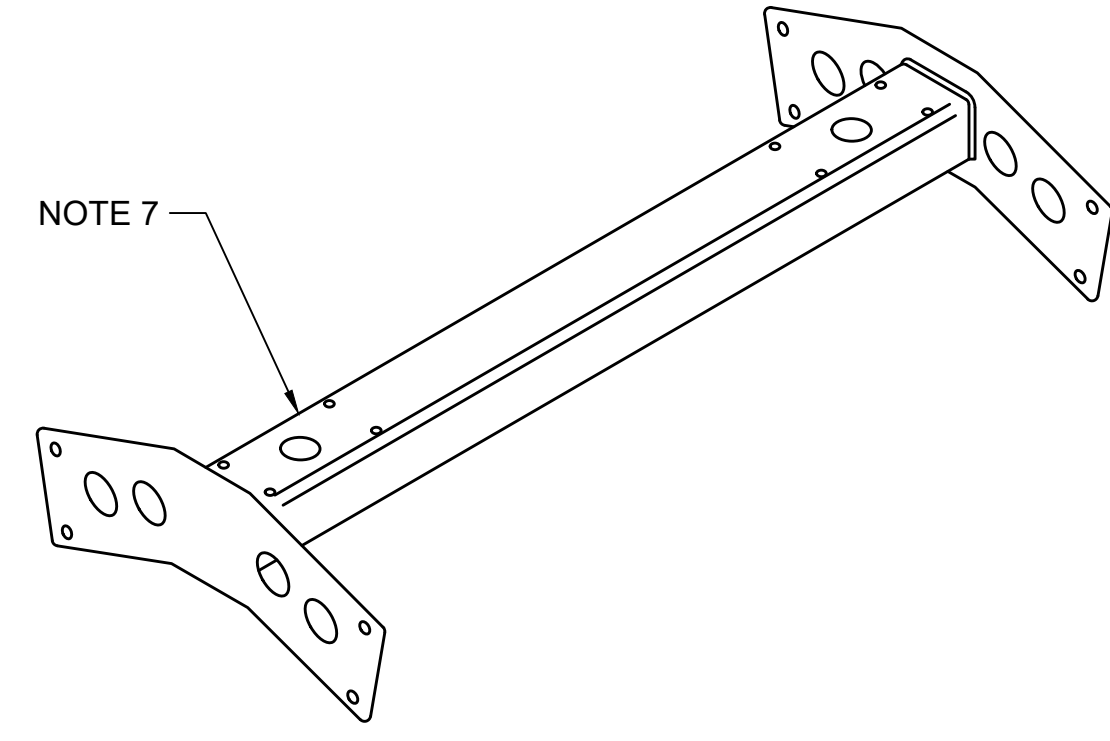
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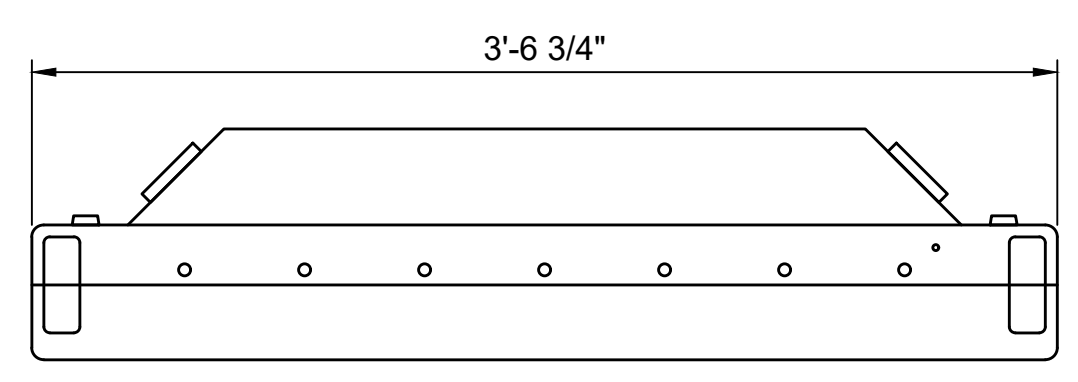
**VMS-CAMERA ASSEMBLY - FRONT VIEW** (1)  
SCALE: NTS



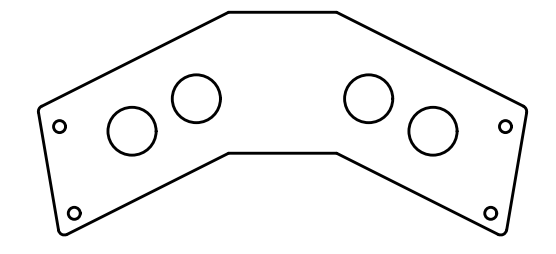
**VMS-CAMERA ASSEMBLY - SIDE VIEW** (2)  
SCALE: NTS



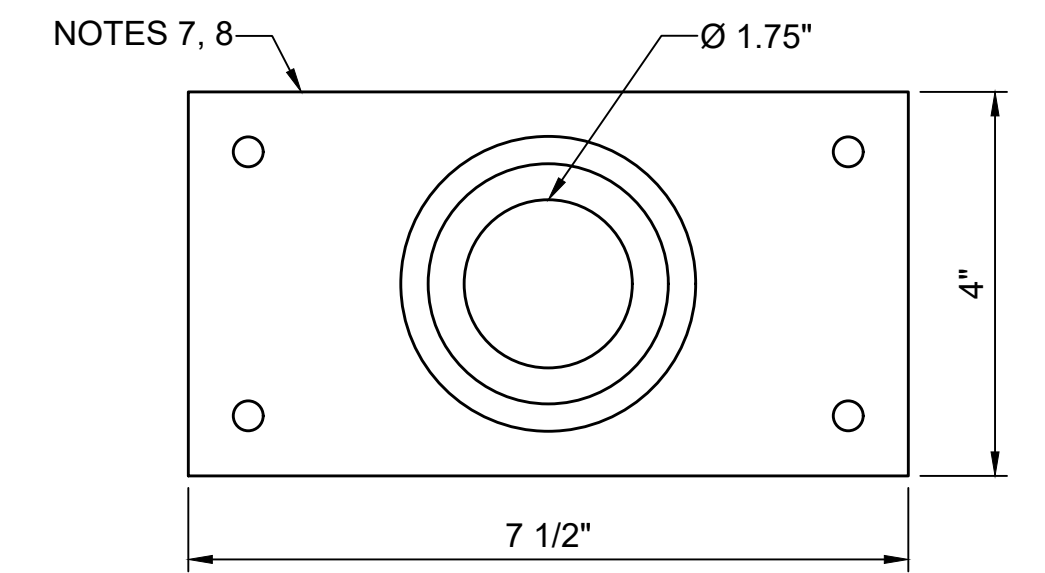
**VMS MOUNTING BRACKET** (3)  
SCALE: NTS



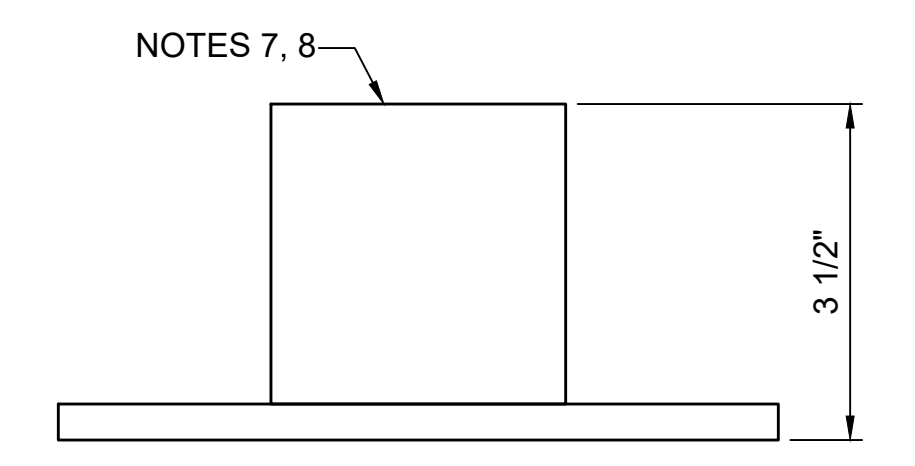
**VMS - TOP VIEW** (4)  
SCALE: NTS



**MOUNTING BRACKET - SIDE VIEW** (5)  
SCALE: NTS



**MOUNTING SHOE - TOP VIEW** (6)  
SCALE: NTS



**MOUNTING SHOE - FRONT VIEW** (7)  
SCALE: NTS


**NOTES:**

1. STRUCTURE SHOWN MAY NOT REPRESENT ACTUAL STATION STRUCTURE ELEMENTS. SEE STATION ARCHITECTURAL/STRUCTURAL DRAWINGS FOR APPLICABLE PLATFORM/STATION STRUCTURES FOR MOUNTS.
2. MAXIMUM WEIGHT PER VMS-CAMERA ASSEMBLY SHALL BE NO MORE THAN 300 LBS (INCLUDES TWO DISPLAYS AND TWO CAMERAS); PIPE HANGERS AND OTHER STRUCTURAL ELEMENTS SHALL SUPPORT FULL WEIGHT OF ASSEMBLY.
3. PIPE HANGER SHALL INCLUDE CONDUITS FOR POWER AND COMM AS SHOWN.
4. ADJUST PIPE HANGERS FOR VMS AND CAMERAS TO MEET REQUIRED HEIGHT ABOVE FINISHED FLOOR.
5. VMS SHALL BE 100% COMPATIBLE TO THE EXPECTED PA/VMS SYSTEM UPGRADE TO PIMS SYSTEM.
6. MOUNT JUNCTION BOX IN OPTIMAL LOCATION TO PROVIDE TRANSITION FROM CANOPY CONDUIT INTO PIPE HANGER; COORDINATE WITH STRUCTURAL TO PROVIDE ANY NECESSARY PENETRATIONS TO FEED CABLE THROUGH PIPE HANGER TO DISPLAY MOUNTS. SEE DRAWINGS E31-JCP401 AND E31-JCP402.
7. VERIFY MOUNTING BRACKET AND SHOE ASSEMBLY ARE COMPATIBLE WITH CAMERA MOUNT PRIOR TO INSTALLATION.
8. PROVIDE MOUNTING SHOE AND INSTALL PER MANUFACTURER RECOMMENDATIONS.

No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED GUIDANCE DRAWINGS
1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	8/2017				GUIDANCE DRAWINGS

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CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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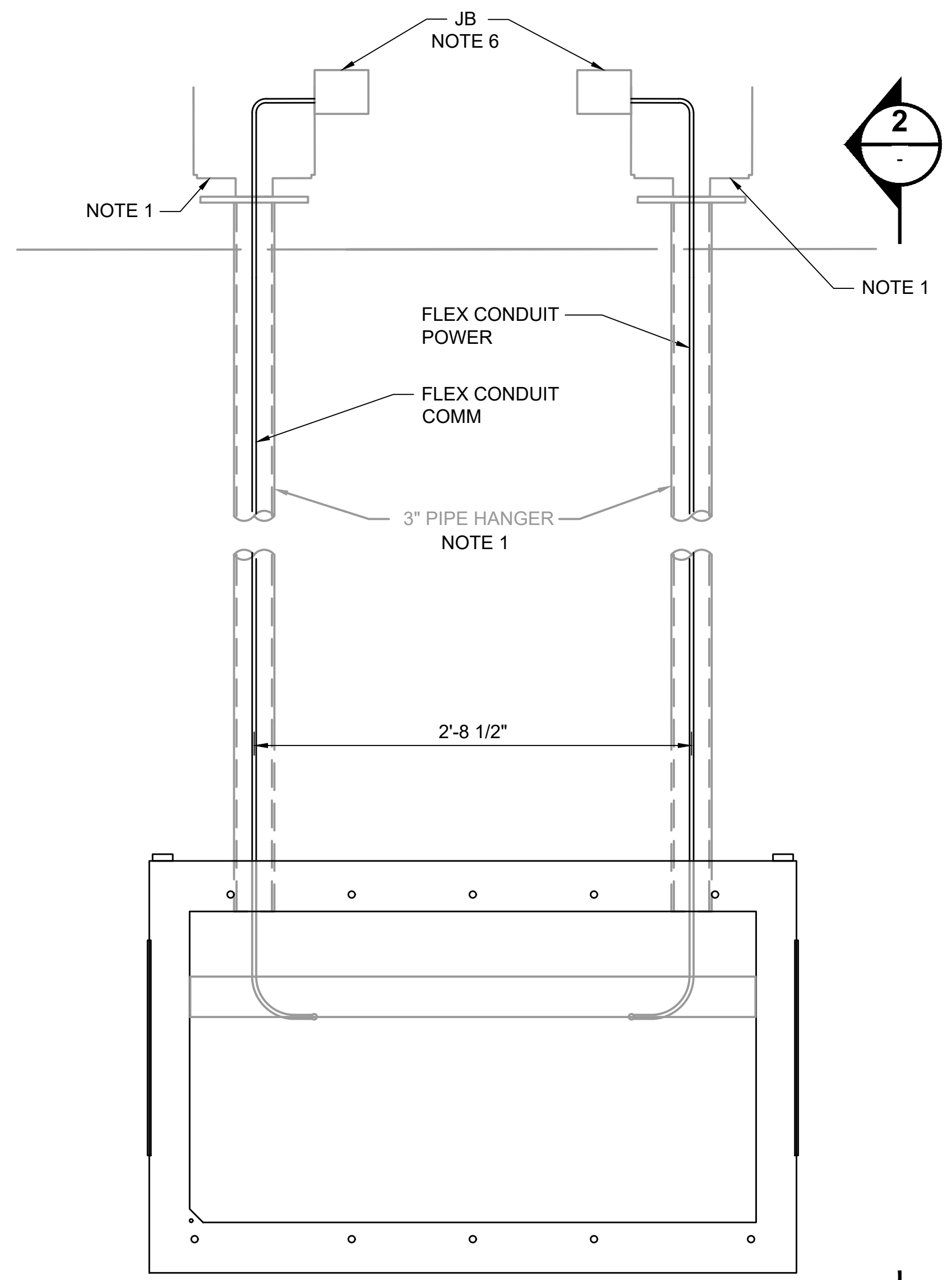
SCALE: AS NOTED	 <b>SOUNDTRANSIT</b>
FILENAME: GUI-JCD100	
CONTRACT No.:	
DATE:	2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
COMMUNICATIONS VARIABLE MESSAGE SIGN INSTALLATION DETAILS	

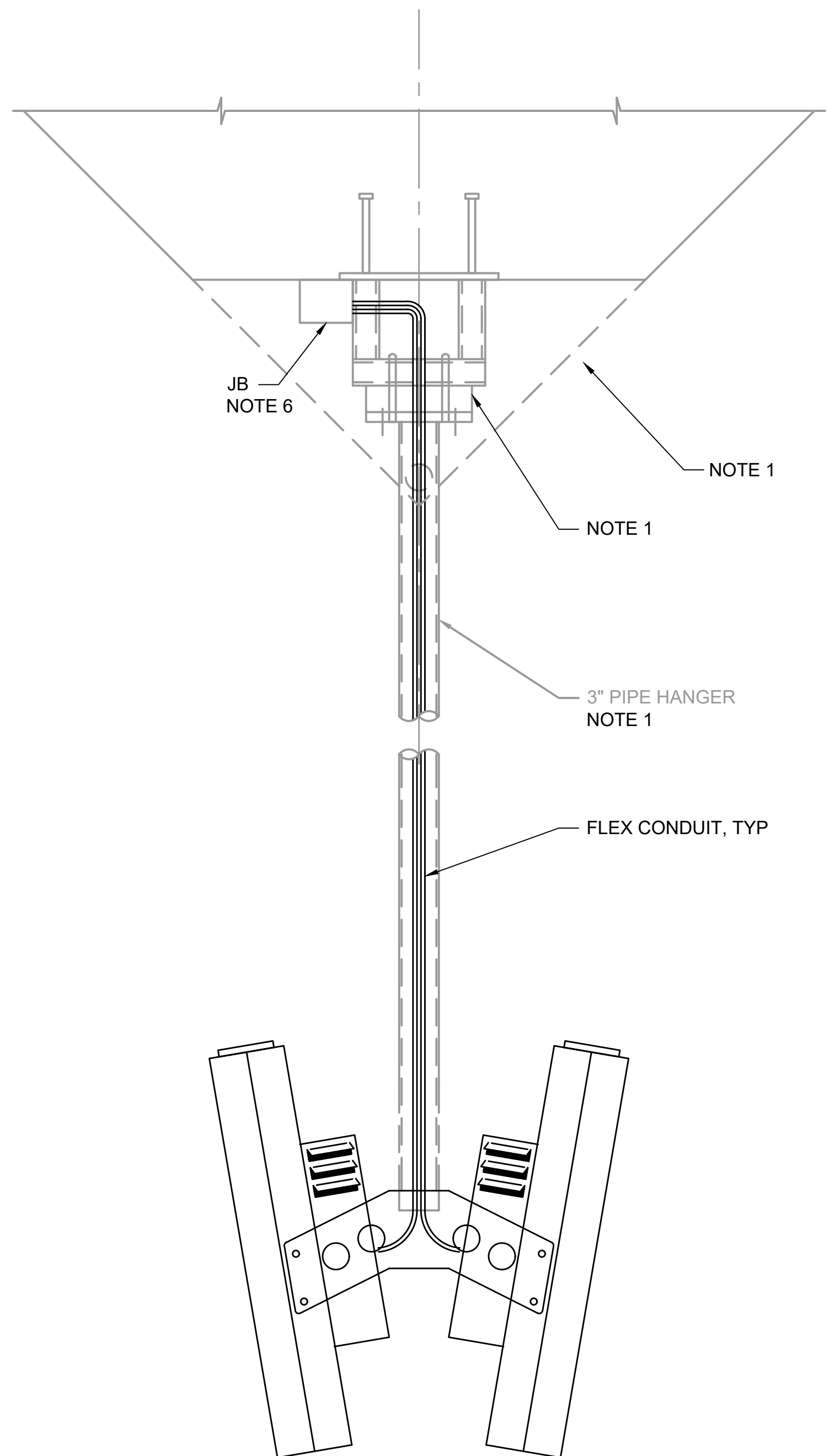
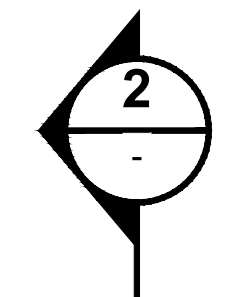
DRAWING No.:	GUI-JCD100
FACILITY ID:	
SHEET No.:	REV: 2

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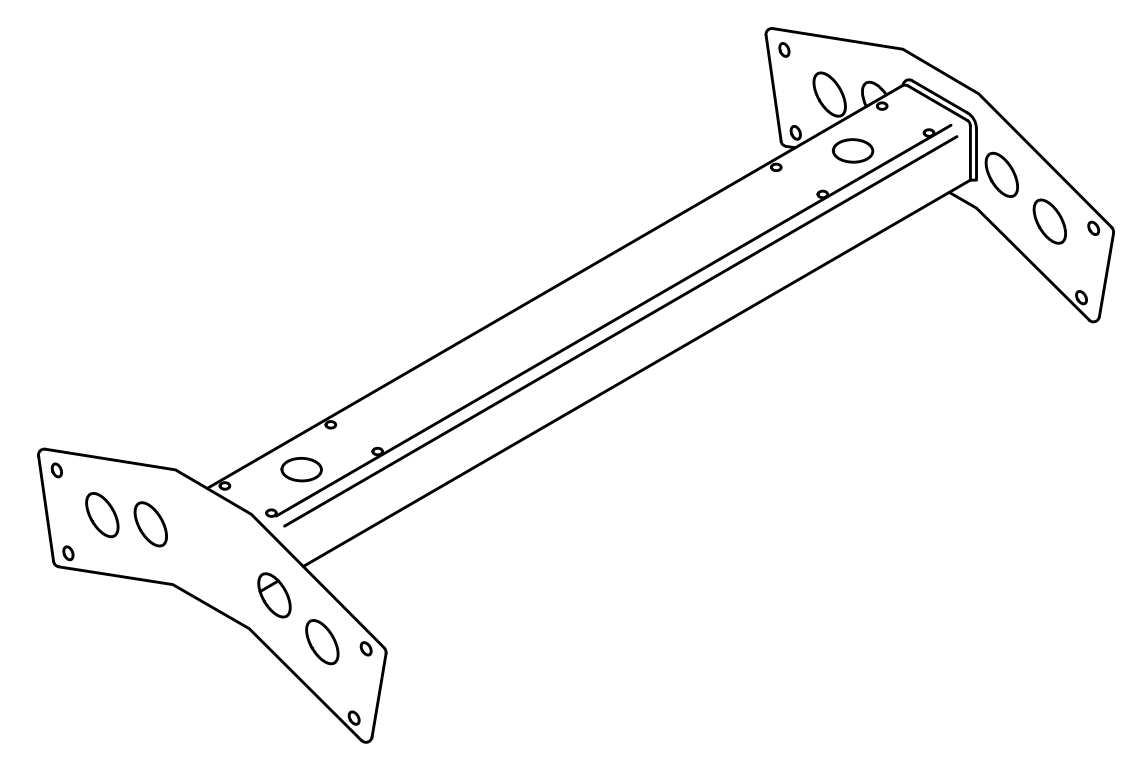
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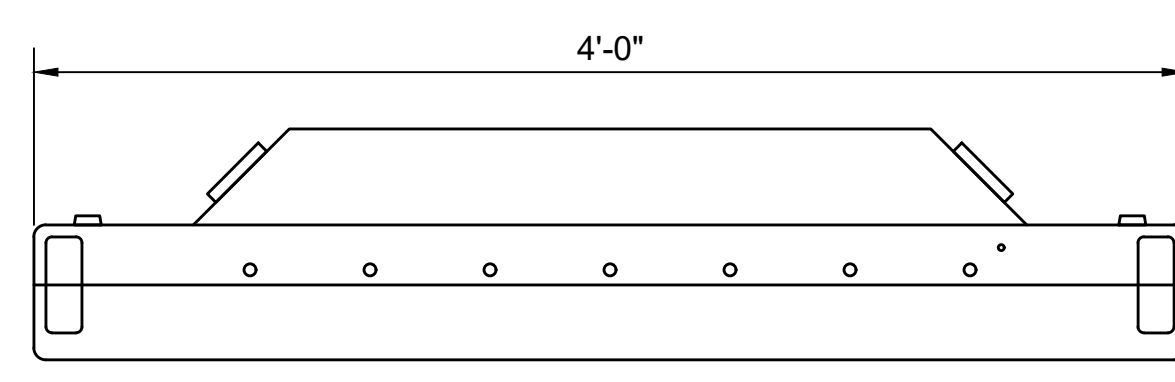
**FPTV MOUNT - FRONT VIEW**  
SCALE: NTS



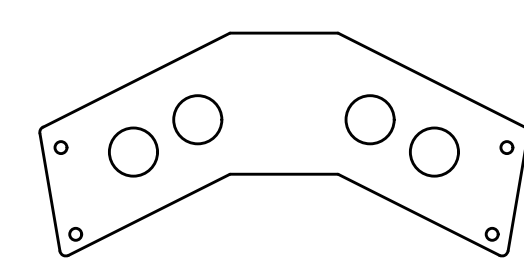
**FPTV MOUNT - SIDE VIEW**  
SCALE: NTS



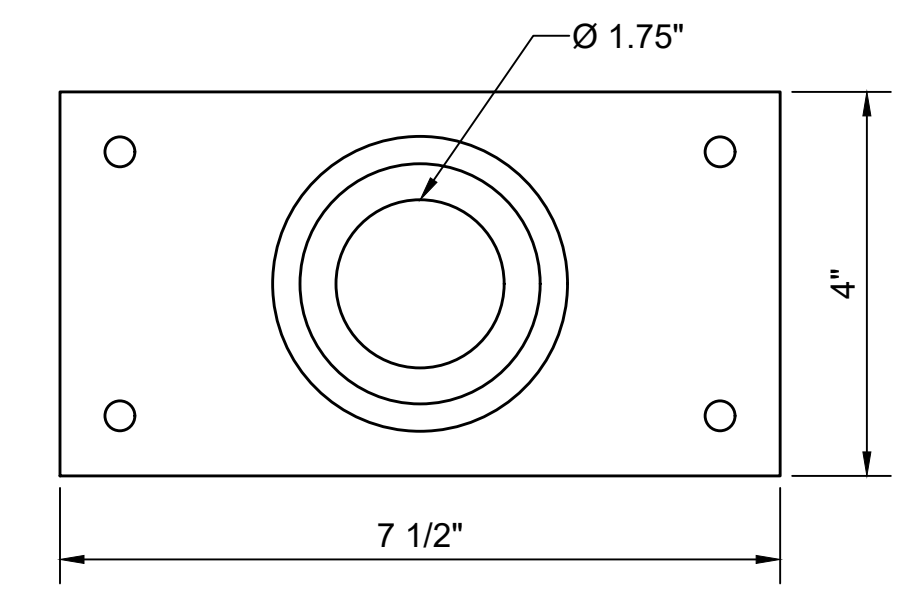
**FPTV MOUNTING BRACKET**  
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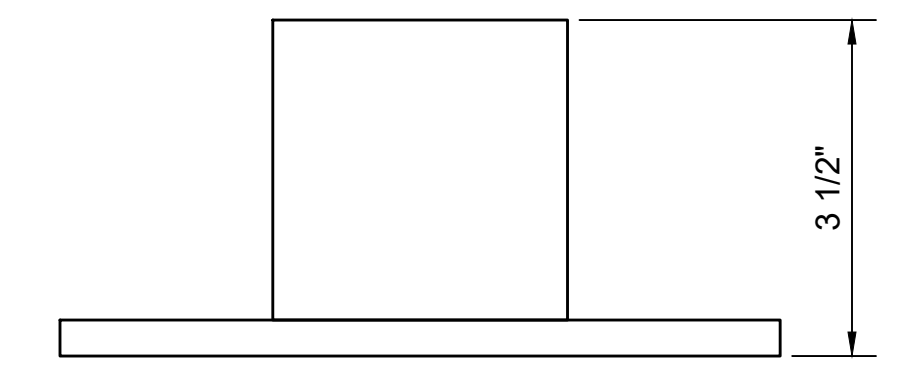
**FPTV - TOP VIEW**  
SCALE: NTS



**MOUNTING BRACKET - SIDE VIEW**  
SCALE: NTS



**MOUNTING SHOE - TOP VIEW**  
SCALE: NTS



**MOUNTING SHOE - FRONT VIEW**  
SCALE: NTS

- NOTES:**
- STRUCTURE SHOWN MAY NOT REPRESENT ACTUAL STATION STRUCTURE ELEMENTS. SEE STATION ARCHITECTURAL/STRUCTURAL DRAWINGS FOR APPLICABLE PLATFORM/STATION STRUCTURES FOR MOUNTS.
  - MAXIMUM WEIGHT PER VMS-CAMERA ASSEMBLY SHALL BE NO MORE THAN 300 LBS (INCLUDES TWO DISPLAYS AND TWO CAMERAS); PIPE HANGERS AND OTHER STRUCTURAL ELEMENTS SHALL SUPPORT FULL WEIGHT OF ASSEMBLY.
  - PIPE HANGER SHALL INCLUDE CONDUITS FOR POWER AND COMM AS SHOWN.
  - CUT PIPE TO LENGTH TO GET DISTANCE TO BOTTOM OF CAMERA SHOWN.
  - VMS SHALL BE 100% COMPATIBLE TO THE EXPECTED PA/VMS SYSTEM UPGRADE TO PIMS SYSTEM.
  - MOUNT JUNCTION BOX IN OPTIMAL LOCATION TO PROVIDE TRANSITION FROM CANOPY CONDUIT INTO PIPE HANGER; COORDINATE WITH STRUCTURAL TO PROVIDE ANY NECESSARY PENETRATIONS TO FEED CABLE THROUGH PIPE HANGER TO DISPLAY MOUNTS.

No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED GUIDANCE DRAWINGS
1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	8/2017				GUIDANCE DRAWINGS

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CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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SCALE: AS NOTED	
FILENAME: GUI-JCD101	
CONTRACT No.: RTA/LR	
DATE: 2/2024	

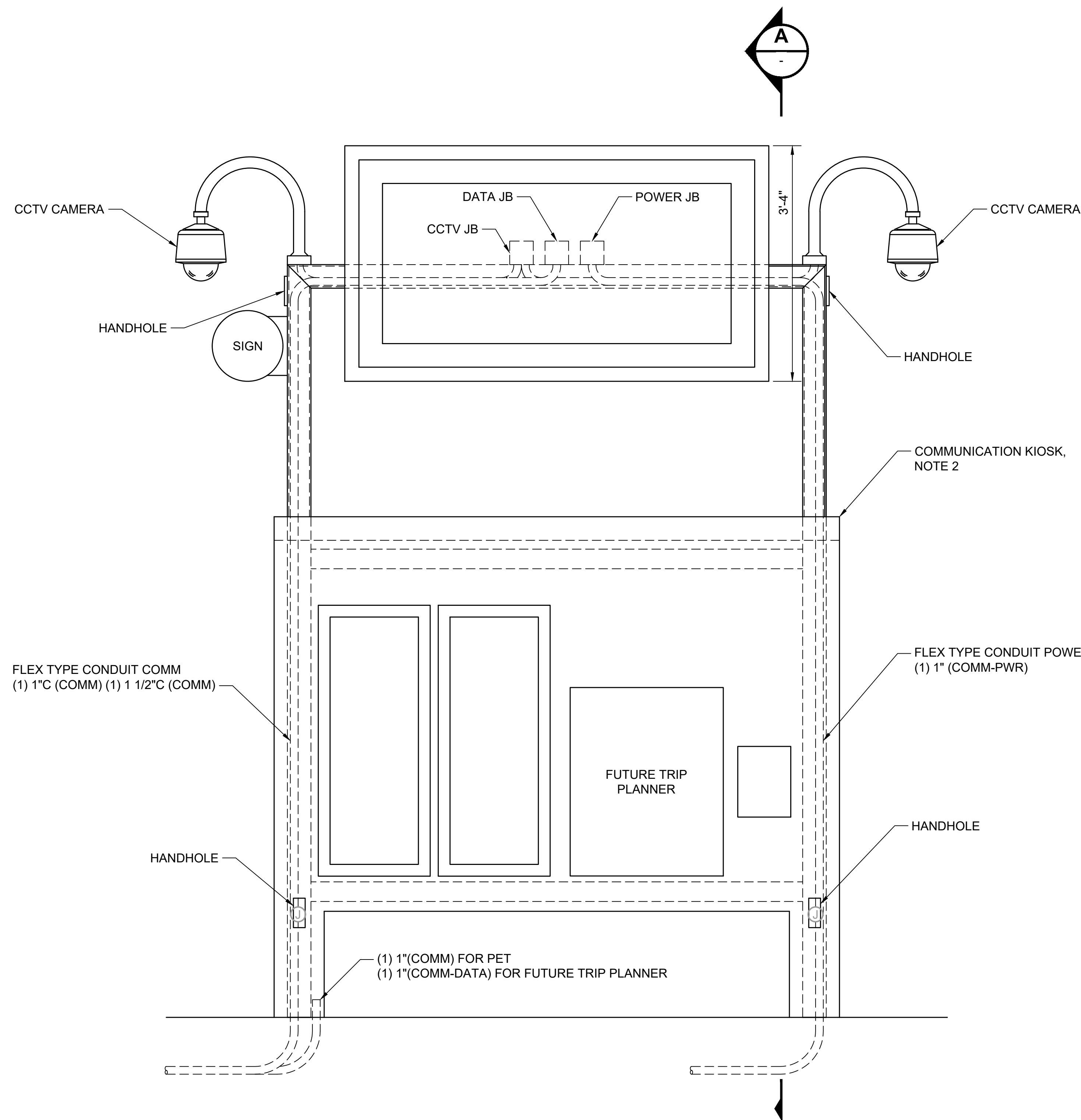
**SOUND TRANSIT**  
**GUIDANCE DRAWINGS**  
 SYSTEMS  
 COMMUNICATIONS  
 FLAT PANEL DISPLAY  
 INSTALLATION DETAILS

DRAWING No.:	GUI-JCD101
FACILITY ID:	
SHEET No.:	REV:
	2

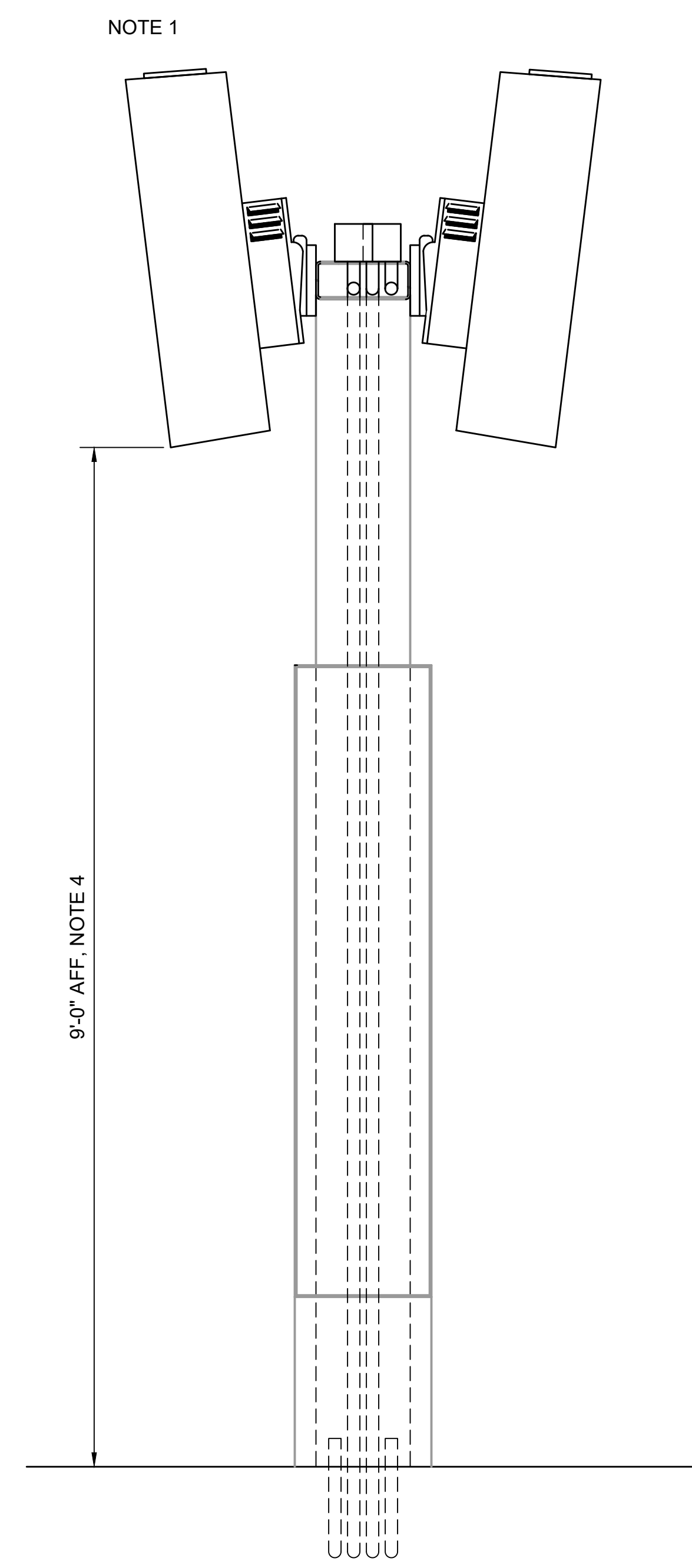


**GENERAL NOTES:**

1. SUN SHIELD AND/ OR ANTI-GLARE COATINGS TO BE ADDED IF REQUIRED BY SITE CONDITIONS.
2. CONDUIT AND JB TO BE CONCEALED FROM PUBLIC VIEW, COORDINATE WITH ARCHITECTURAL AND STRUCTURAL DRAWINGS FOR SPECIFIC MOUNTING LOCATION.
3. COORDINATE WEIGHT AND MOUNTING DETAILS WITH ARCHITECTURAL AND STRUCTURAL.
4. MUST BE INSTALLED A MINIMUM OF 9'-0" AFF. TO BOTTOM OF SCREEN.
5. DIMENSIONS SHOWN ARE MAXIMUMS AND MAY VARY BASED UPON FINAL EQUIPMENT SELECTION.
6. CONFIGURATION TYPICALLY USED IN PLAZA CONFIGURATIONS, NOT TO BE USED FOR PLATFORM KIOSKS.



**TYPICAL FLAT PANEL TV (FPTV) DETAIL** 1  
NTS



**TYPICAL FPTV SIDE VIEW** A  
NTS

03/20/24 | 2:19 PM | HARRISBK C:\USERS\HARRISBK\Sound Transit\TECHNICAL STANDARDS AND REQUIREMENTS PROJECTS - DRAWINGS UPDATE 2023\GUIDANCE DRAWINGS\SYSTEMS\GUI-JCD103.DWG

No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED GUIDANCE DRAWINGS
1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	8/2017				GUIDANCE DRAWINGS

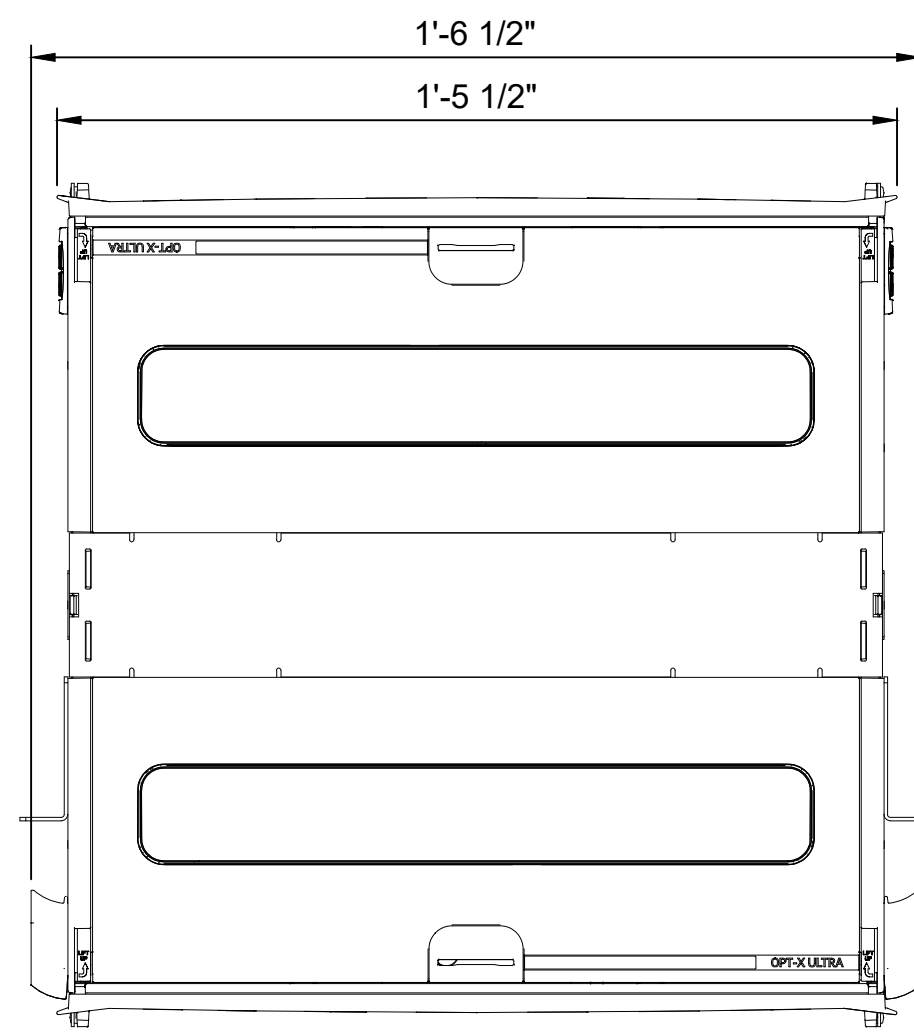
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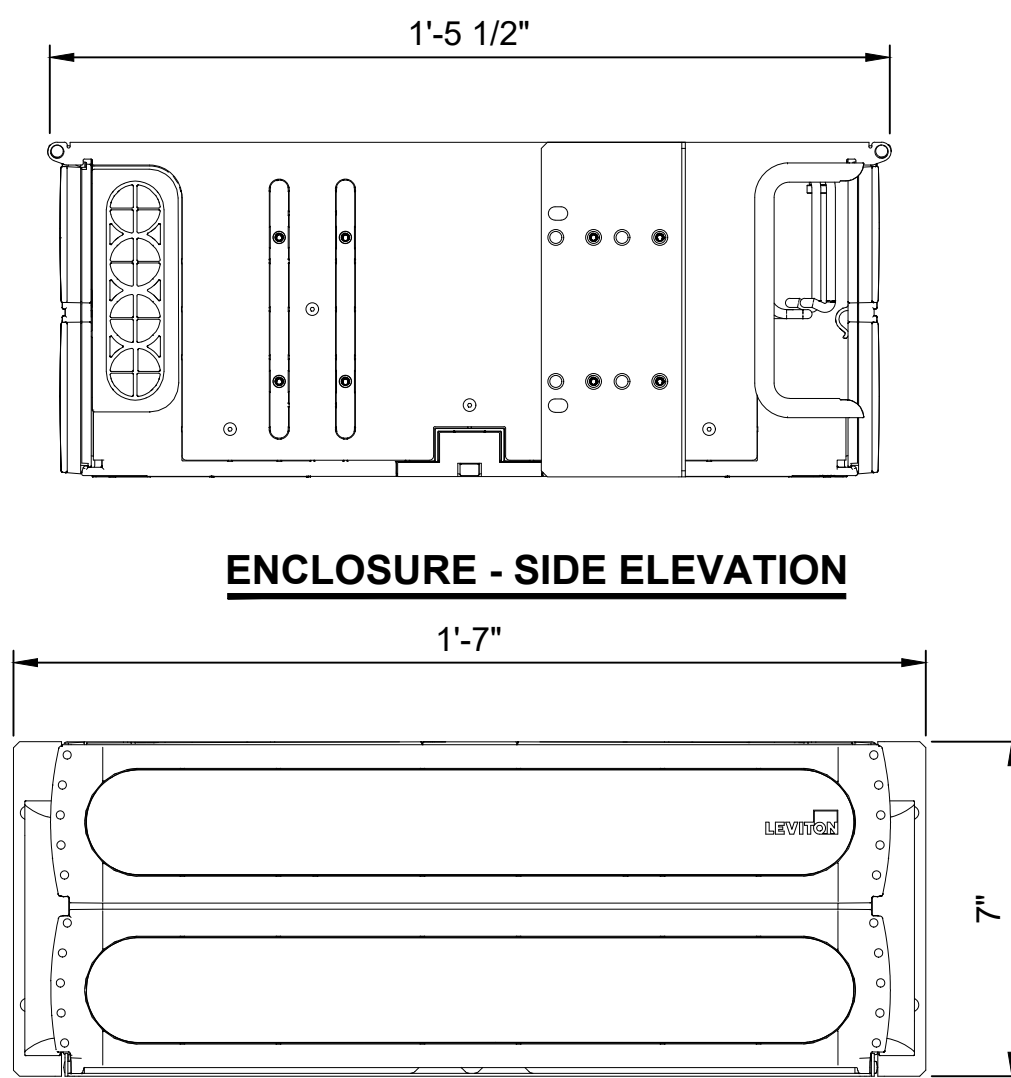
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	FILENAME: GUI-JCD103
	CONTRACT No.: RTA/LR
	DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
COMMUNICATIONS FLAT PANEL TELEVISION DETAILS	

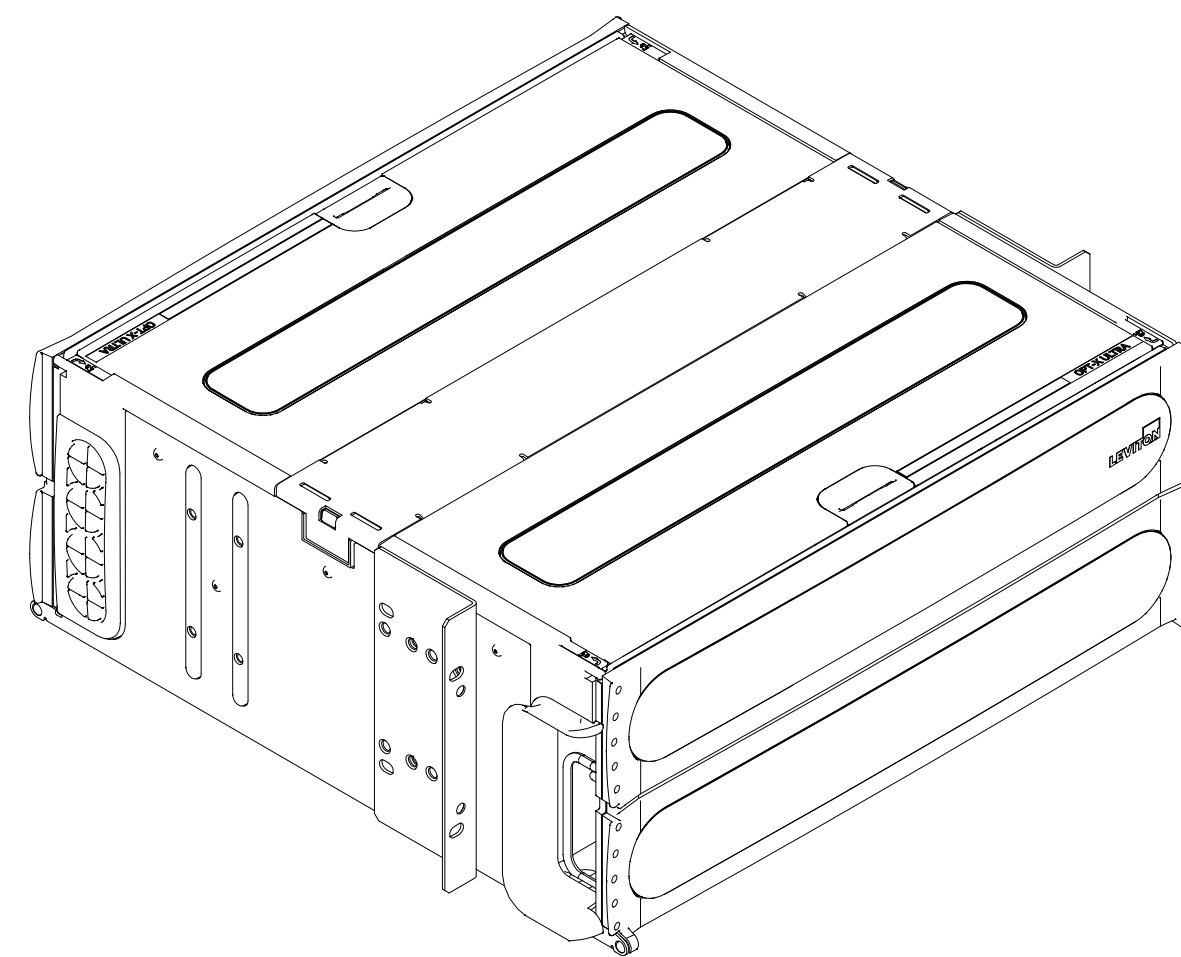
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FACILITY ID:	
SHEET No.:	REV: 2



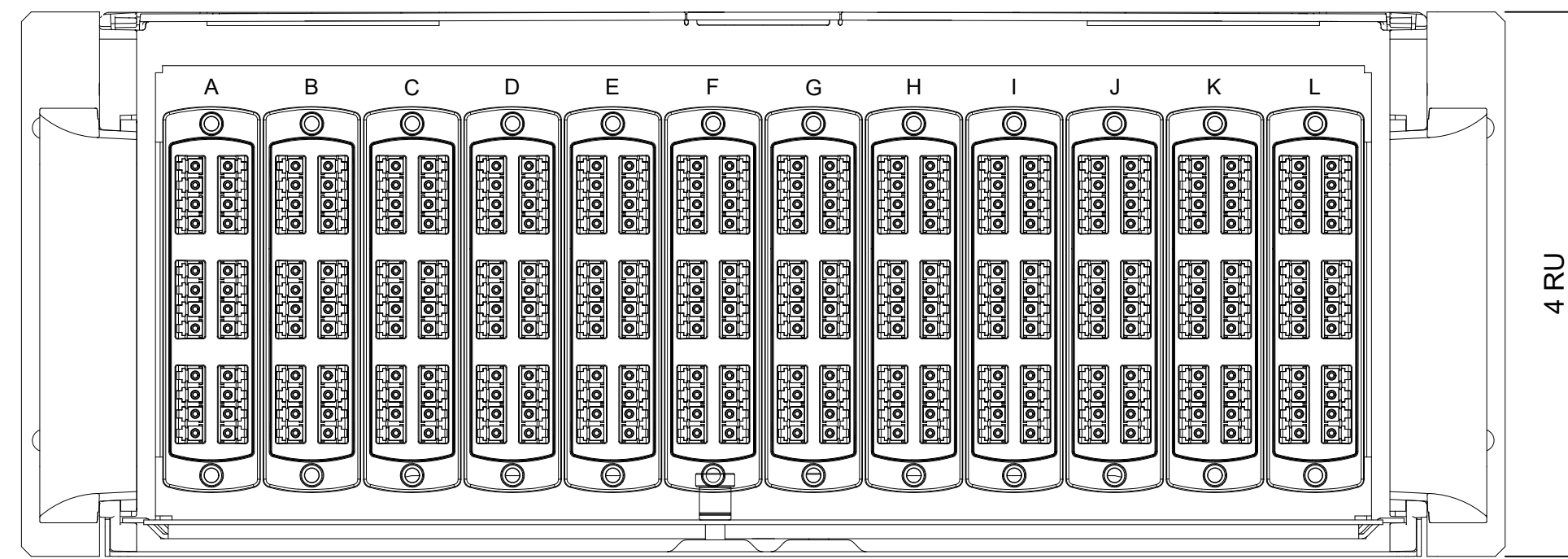
**ENCLOSURE - TOP ELEVATION**



**ENCLOSURE (CLOSED DOOR) - FRONT ELEVATION**

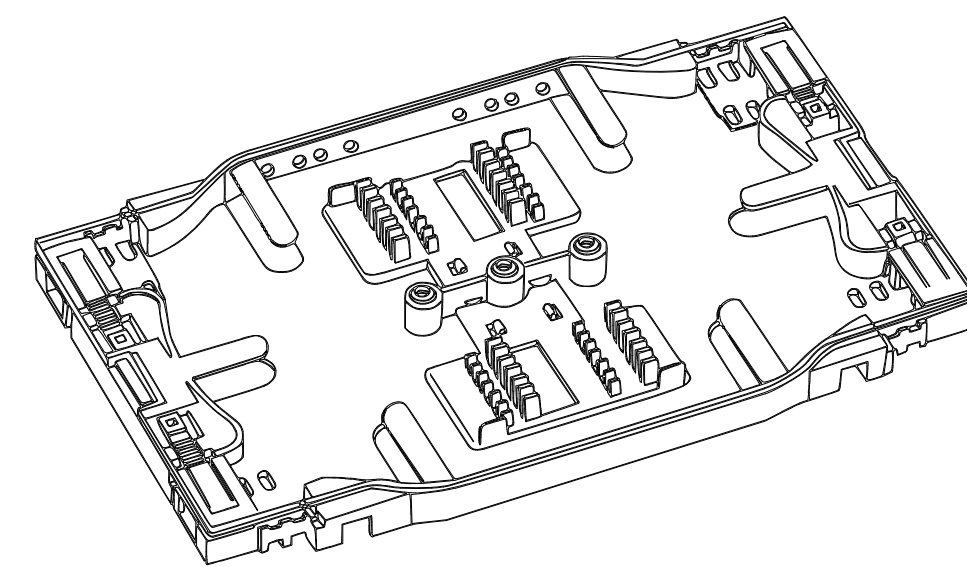


**ENCLOSURE - ISO VIEW**

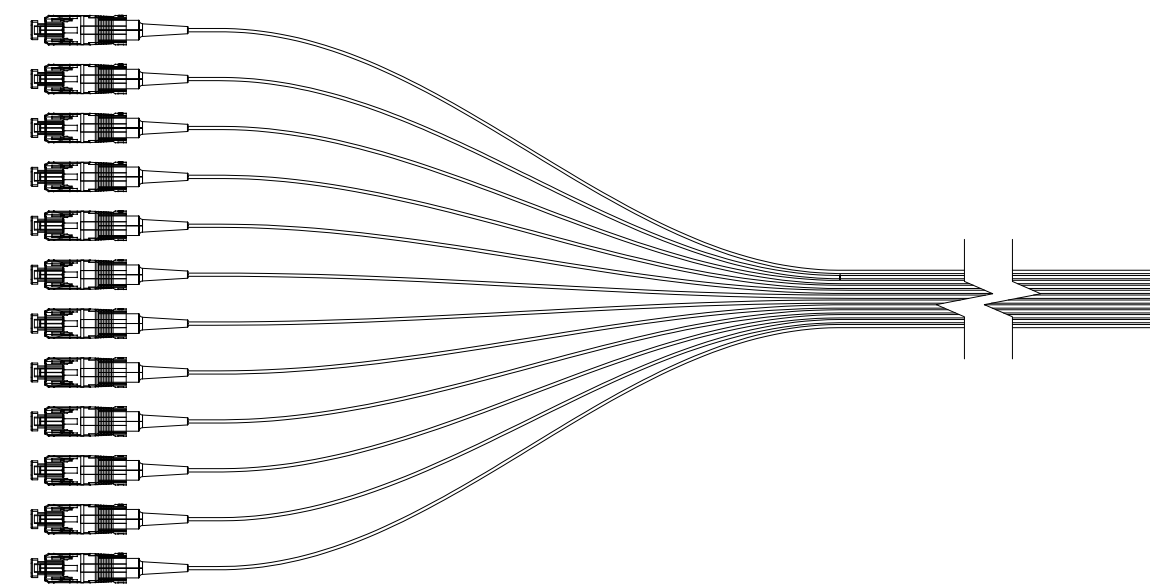


**ENCLOSURE (OPEN DOOR) - FRONT ELEVATION**

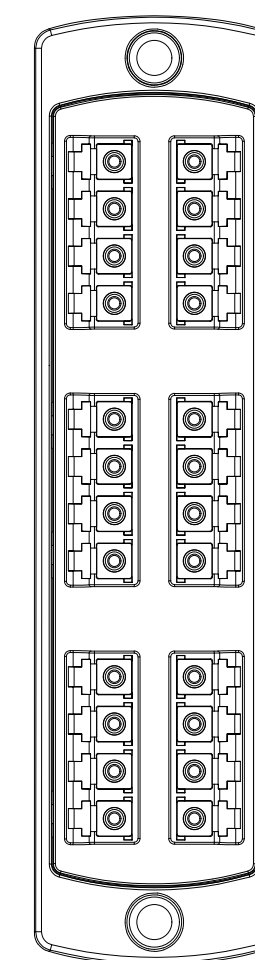
**1 4 RU FIBER ENCLOSURE**  
SCALE: NTS



**3 SPLICE TRAY (COVER REMOVED)**



**6 SINGLE MODE LC PIGTAILS**



**7 PIGTAIL ADAPTER PANEL**

SITE MATERIALS LIST (SEE NOTE 6)				
ITEM NO.	QUANTITY	VENDOR	PART NUMBER	DESCRIPTION
1	2	LEVITON	5R4UH-S12	4 RU FIBER ENCLOSURE, EMPTY, WITH SLIDING TRAY, OPT-X 2000i SDX SERIES
2	4	LEVITON	5RCMP-KT2	UNIVERSAL CABLE CLAMP KIT, MULTI-CABLE GROMMET FOR UP TO (6) (FOR ENCLOSURE MOUNTING) - NOT SHOWN
3	24	LEVITON	T5PLS-24F	INJECTION MOLDED HIGH DENSITY SPLICE TRAY, 24 FIBER SPLICING
4	2	LEVITON	SPLMT-HKT	SPLICE TRAY MOUNTING HARDWARE KIT - NOT SHOWN
5	12	LEVITON	FSSSD-060	FUSION SPLICE SLEEVE, 60mm (BAG OF 50) - NOT SHOWN
6	24	LEVITON	PKF-S2N9R1200-03M	PIGTAIL KIT, OS2 SINGLE MODE, PVC, 900 MICRON, LC, TIA COLORS 1-12, 3 METERS
7	24	LEVITON	5F100-4LL	PRECISION MOLDED PLATE (BLUE), SM (OS2), QUAD LC, 24 FIBER, ZIRCONIA CERAMIC SLEEVE
8	2	LEVITON	DPGRD-KIT	DP UNIVERSAL GROUNDING KIT - NOT SHOWN
9	2	LEVITON	5R100-14R	FIBER CABLE MANAGEMENT QUARTER-ROUND RING KIT (BAG OF 4) - NOT SHOWN

- NOTES:**
- THIS DRAWING IS AN EXAMPLE OF ENCLOSURE DETAILS.
  - THE LIST OF BILL MATERIALS SHALL BE RELEVANT TO PROJECT SPECIFICATION.
  - THIS IS MINIMUM REQUIRED FOR DETAILS.
  - THIS IS AN EXAMPLE ONLY AND NOT AS-BUILT.
  - SEE MANUFACTURE INSTRUCTIONS FOR FIBER ROUTING.
  - THE SITE MATERIALS LIST IS BASED ON LEVITON HARDWARE. FINAL HARDWARE MUST BE BASED ON SPECIFICATION REQUIREMENTS AND MEET THE SAME INTENT.

No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWINGS

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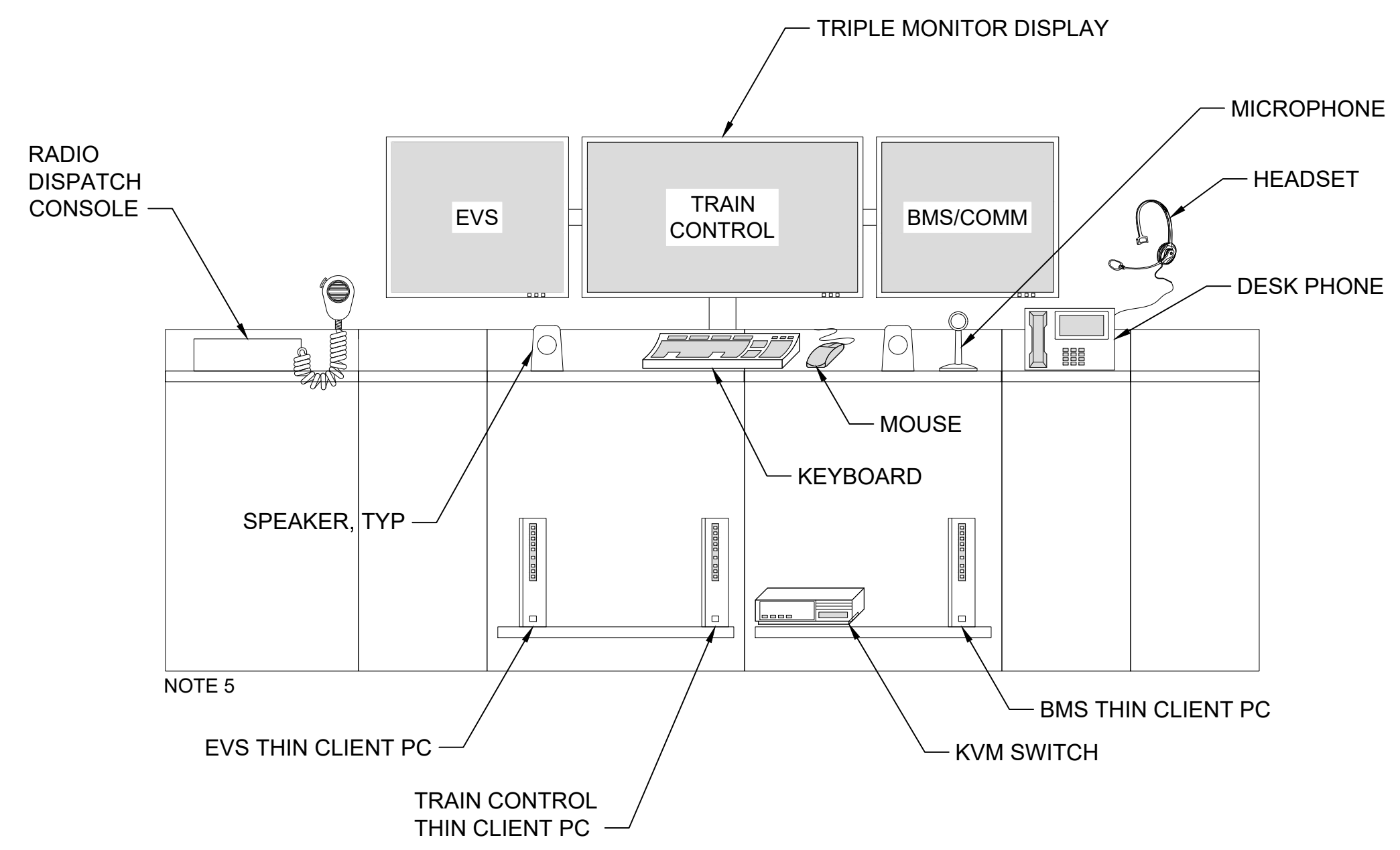
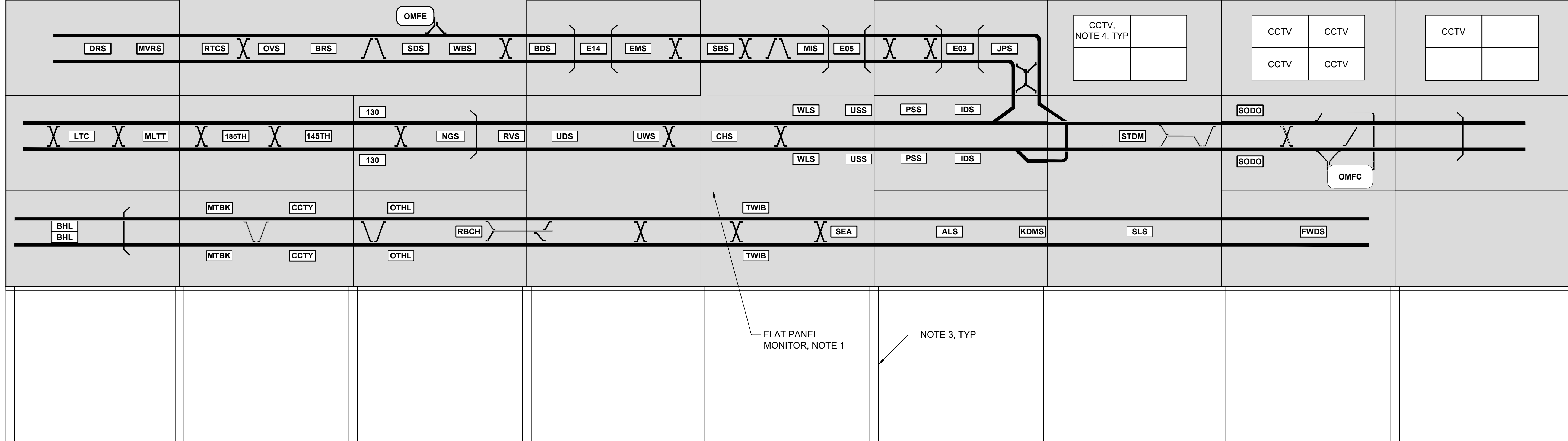
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SCALE: NTS	
FILENAME: GUI-JCD104	
CONTRACT No.: RTA/LR	
DATE: 2/2024	

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
COMMUNICATIONS TYPICAL STATION BACKBONE FIBER SPLICE ENCLOSURE DETAILS	

DRAWING No.:	<b>GUI-JCD104</b>
FACILITY ID:	
SHEET No.:	0

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**EVS / TCS / BMS WORKSTATION DESK**  
NTS

- GENERAL NOTES:**
- LED FLAT PANELS MAY BE EXISTING. COORDINATE FUTURE EXTENSION SCOPE TO UPDATE AND INCORPORATE GRAPHICS.
  - PROPOSED TRACK AND STATION ALIGNMENT DISPLAY IS CONCEPTUAL ONLY.
  - MONITORS ARE MOUNTED TO INTEGRATED VIDEO WALL FRAME.
  - DEVELOP SCOPE AND CONFIRM WITH ST TO INCORPORATE CCTV INTO VIDEO WALL.
  - PRIMARY SCADA WORKSTATIONS ARE SHOWN, ADDITIONAL WORKSTATIONS FOR CCTV/COMMUNICATIONS TO BE COORDINATED AND CONFIRMED WITH ST.
  - DRAWING INTENDED TO PROVIDE REFERENCE OF LCC FLAT PANEL DISPLAY AND TYPICAL WORKSTATION AT OMF, NOT SIZE AND QUANTITY OF CURRENT DISPLAY.

No.	DATE	DSN	CHK	APP	REVISION
3	2/2024				2024 REVISED GUIDANCE DRAWINGS
2	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
1	1/2019				2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE
0	8/2017				GUIDANCE DRAWINGS

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APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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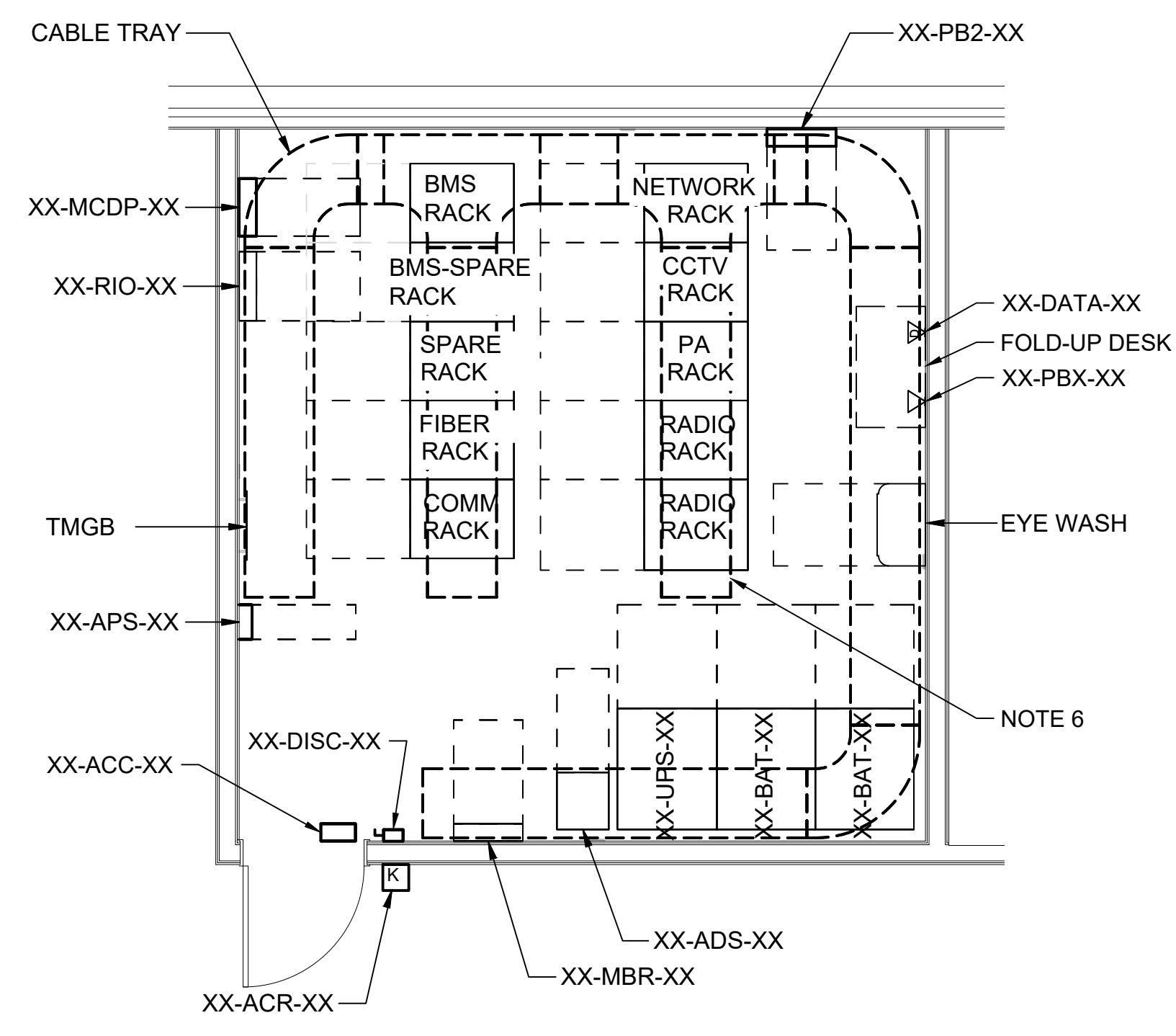
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 CONTRACT No.: RTA/LR  
 DATE: 2/2024

**SOUND TRANSIT  
 GUIDANCE DRAWINGS  
 SYSTEMS**

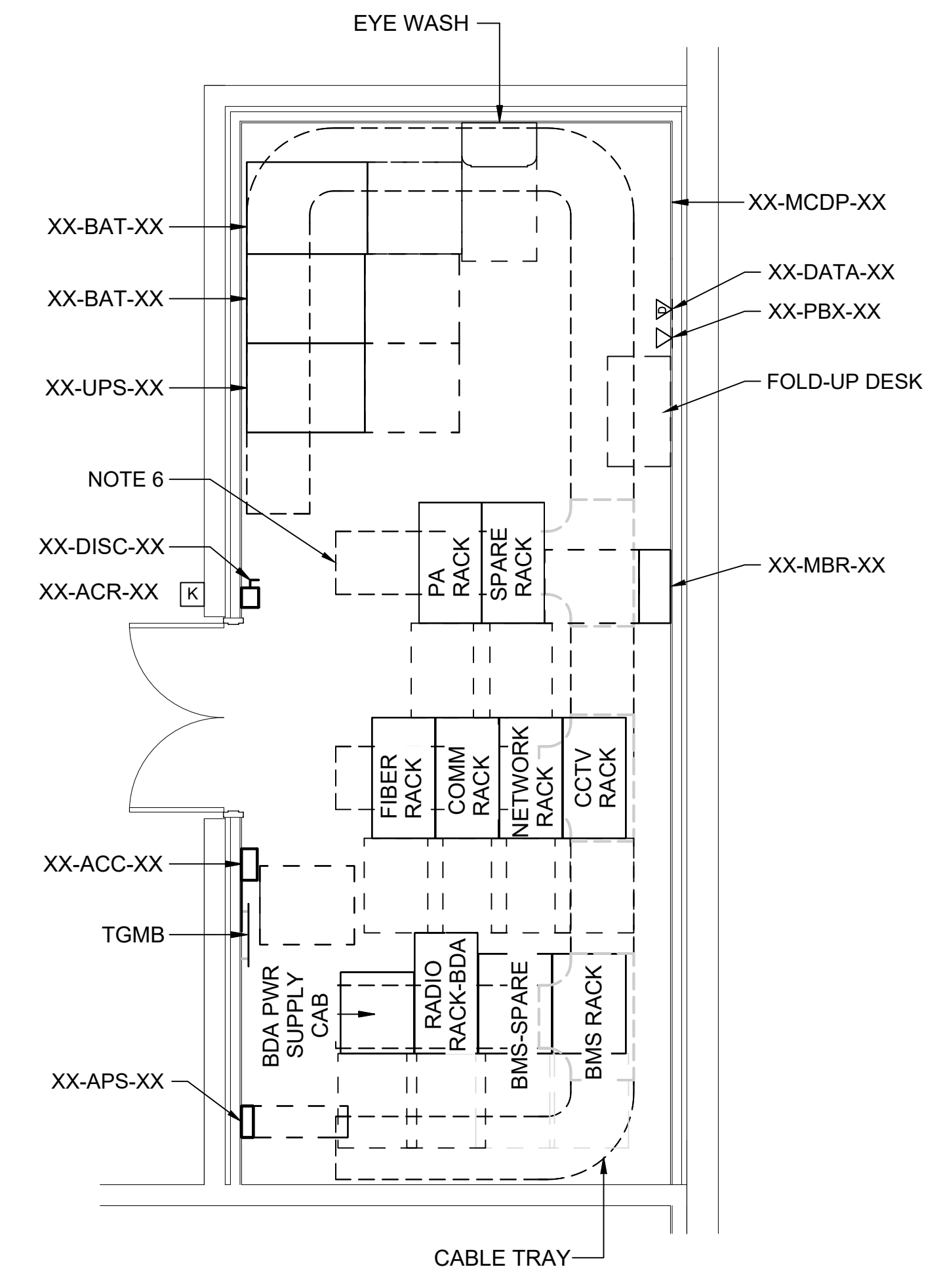
COMMUNICATIONS  
 LED FLAT PANEL  
 VIDEO WALL AT OMF

DRAWING No.:	GUI-JCD300
FACILITY ID:	
SHEET No.:	REV: 3

- GENERAL NOTES:**
1. BOND ALL TELECOM DEVICES, CABLE TRAY, AND CABINETS TO TMGB.
  2. PROVIDE SEPARATE DEDICATED BREAKER PANEL FOR UPS-ONLY POWER.
  3. XX-MDCP-XX TO BE FED VIA DISCONNECT SWITCH FROM 480-208/120V TRANSFORMER LOCATED OUTSIDE OF HOUSE.
  4. FOLLOW MANUFACTURERS REQUIREMENTS FOR SEISMIC PLACEMENT AND BRACING EQUIPMENT.
  5. NO SWING OUT RACK ALLOWED IN COMM. ROOMS WITHOUT PRIOR APPROVAL FROM SOUND TRANSIT.
  6. MINIMUM 12-INCH CLEARANCE BETWEEN TOP OF THE RACK AND BOTTOM OF CABLE TRAY.
  7. MINIMUM EQUIPMENT CLEARANCE NEC AND BICSI TDMM.
  8. REFER TO SOUND TRANSIT REQUIREMENTS MANUAL SET 815 - TELECOMMUNICATION SPACES FOR MINIMUM COMMUNICATIONS ROOM SIZE.



**COMM ROOM TYPICAL LAYOUT 1** 1  
SCALE: 1/4" = 1'-0"



**COMM ROOM TYPICAL LAYOUT 2** 2  
SCALE: 1/4" = 1'-0"

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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWINGS

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SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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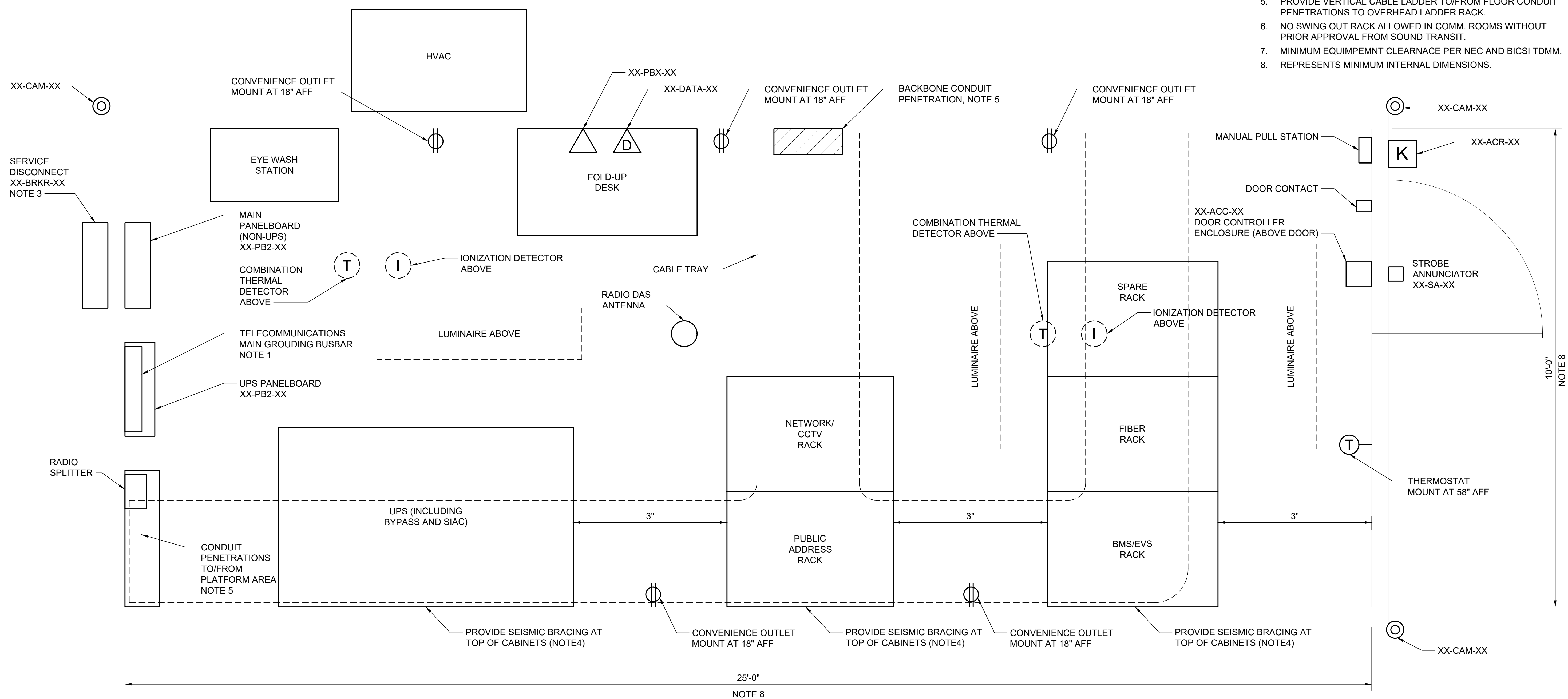
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SCALE: NTS  
FILENAME: GUI-JCD704  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**  
COMMUNICATIONS TYPICAL ROOMS LAYOUT DETAILS

DRAWING No.:	GUI-JCD704
FACILITY ID:	
SHEET No.:	REV: 0

- GENERAL NOTES:**
- BOND ALL TELECOM DEVICES, CABLE TRAY, AND CABINETS TO TBGB.
  - PROVIDE SEPARATE DEDICATED BREAKER PANEL FOR UPS-ONLY POWER.
  - EXX-BRKR-XX TO BE FED VIA DISCONNECT SWITCH FROM 480-208/120V TRANSFORMER LOCATED OUTSIDE OF BUNGALOW.
  - BUNGALOW WALLS SHALL BE CONSTRUCTED TO ACCOMMODATE SEISMIC BRACING.
  - PROVIDE VERTICAL CABLE LADDER TO/FROM FLOOR CONDUIT PENETRATIONS TO OVERHEAD LADDER RACK.
  - NO SWING OUT RACK ALLOWED IN COMM. ROOMS WITHOUT PRIOR APPROVAL FROM SOUND TRANSIT.
  - MINIMUM EQUIPEMNT CLEARNACE PER NEC AND BICSI TDMM.
  - REPRESENTS MINIMUM INTERNAL DIMENSIONS.



**COMM BUNGALOW - TYPICAL LAYOUT**  
 SCALE: 1" = 1'-0"  
 1

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No.	DATE	DSN	CHK	APP	REVISION
0	2/2024				2024 NEW GUIDANCE DRAWING

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SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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SCALE:	1" = 1'-0"
FILENAME:	GUI-JCD705
CONTRACT No.:	RTA/LR
DATE:	2/2024

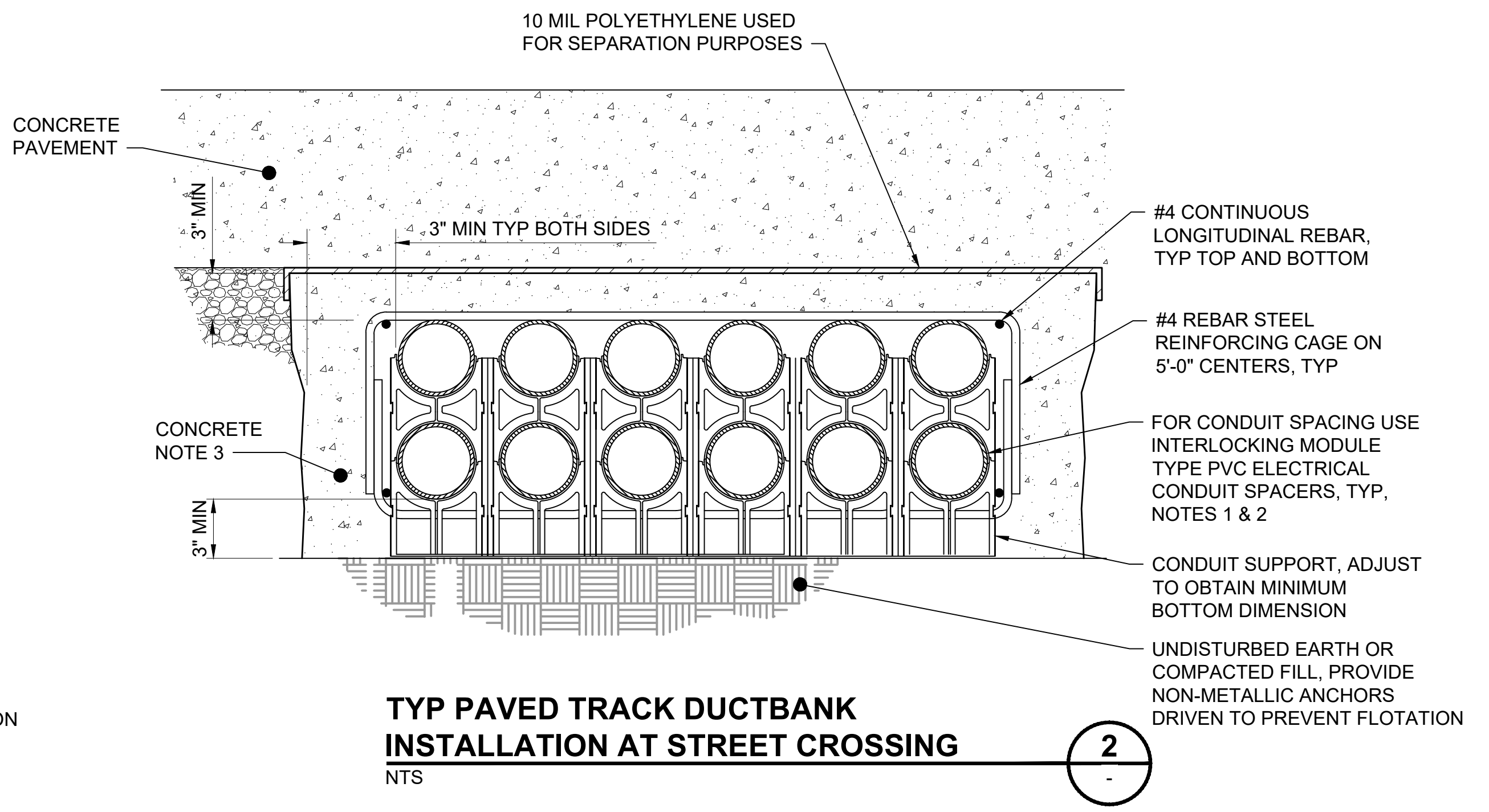
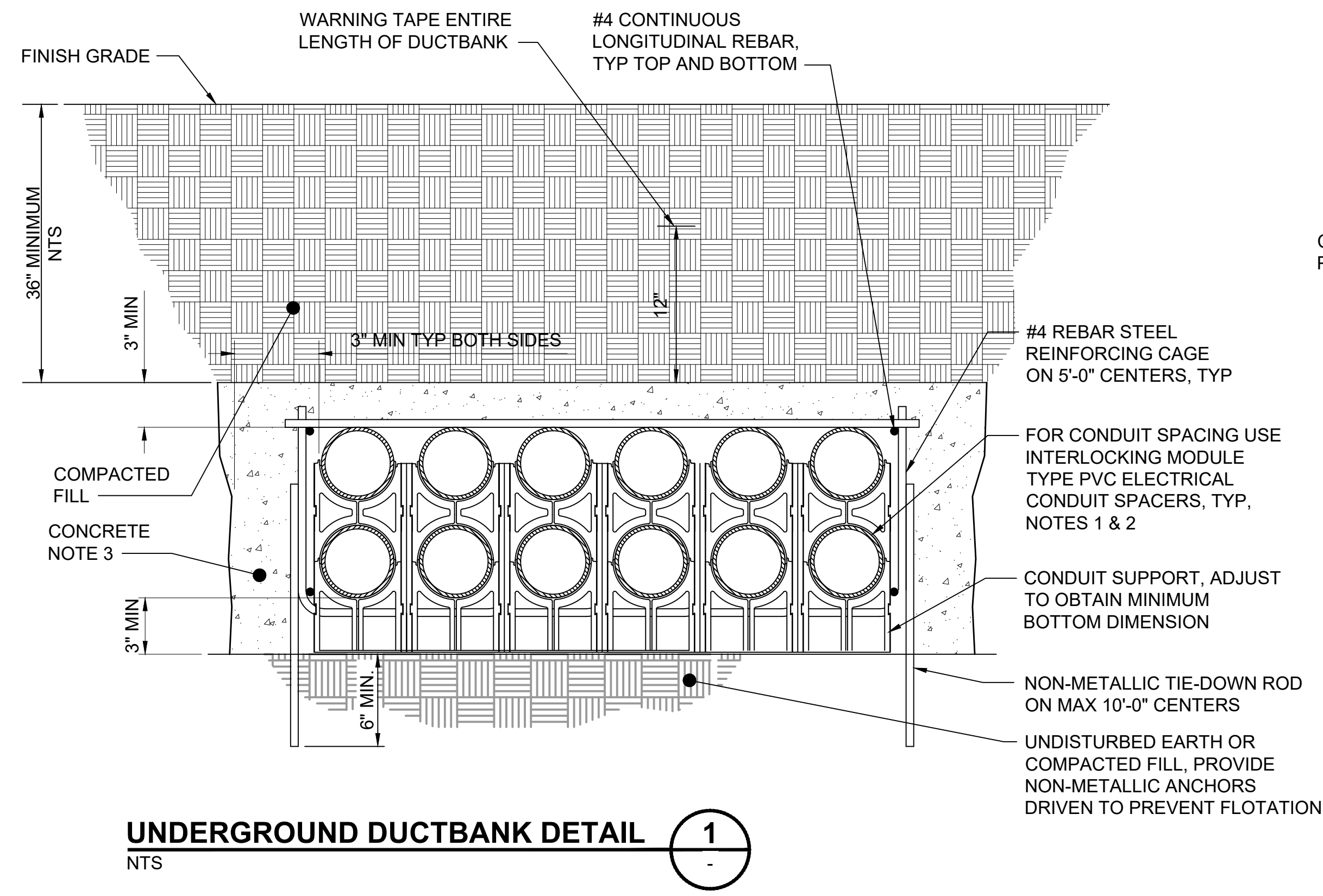
**SOUND TRANSIT**  
**GUIDANCE DRAWINGS**  
 SYSTEMS

COMMUNICATIONS  
 TYPICAL AT GRADE BUNGALOW LAYOUT  
 DETAILS

DRAWING No.:	GUI-JCD705
FACILITY ID:	
SHEET No.:	REV: 0

**GENERAL NOTES:**

1. USE PVC ELECTRICAL CONDUIT SPACERS TO MAINTAIN A SPACING OF 3" CLEAR BETWEEN CONDUITS.
2. INSTALL INTERLOCKING MODULE CONDUIT SPACERS ON 5'-0" CENTERS.
3. USE RED CONCRETE FOR CONDUIT DUCTBANK INSTALLATIONS CARRYING MEDIUM-VOLTAGE OR TRACTION POWER CABLES.




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No.	DATE	DSN	CHK	APP	REVISION
2	2/2024				2024 REVISED DIRECTIVE DRAWINGS
1	8/2019				REVISED SYSTEM DIRECTIVE DRAWINGS
0	1/2019				2019 GUIDANCE DWG REVISIONS - GENRAL UPDATE

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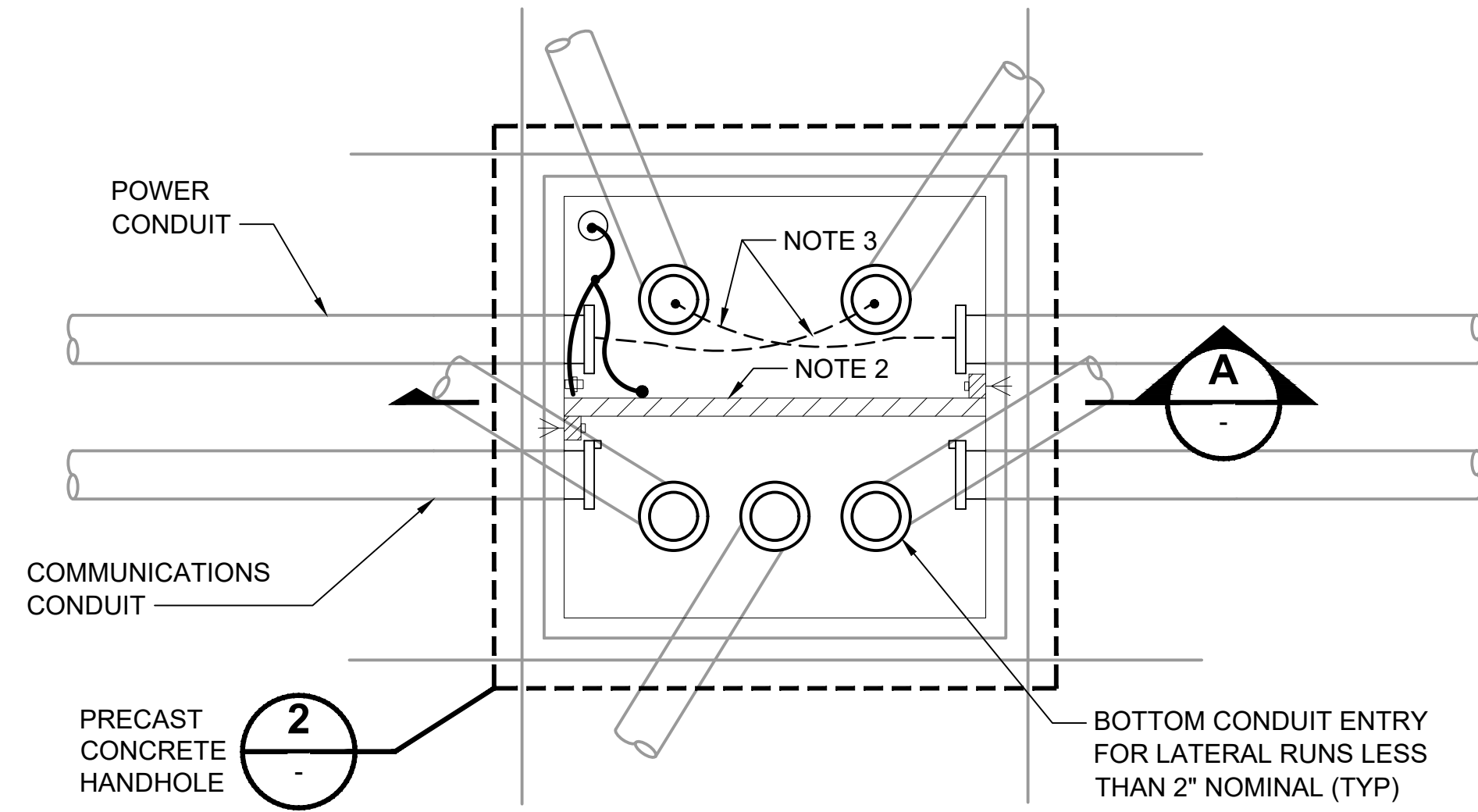


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DATE: 2/2024

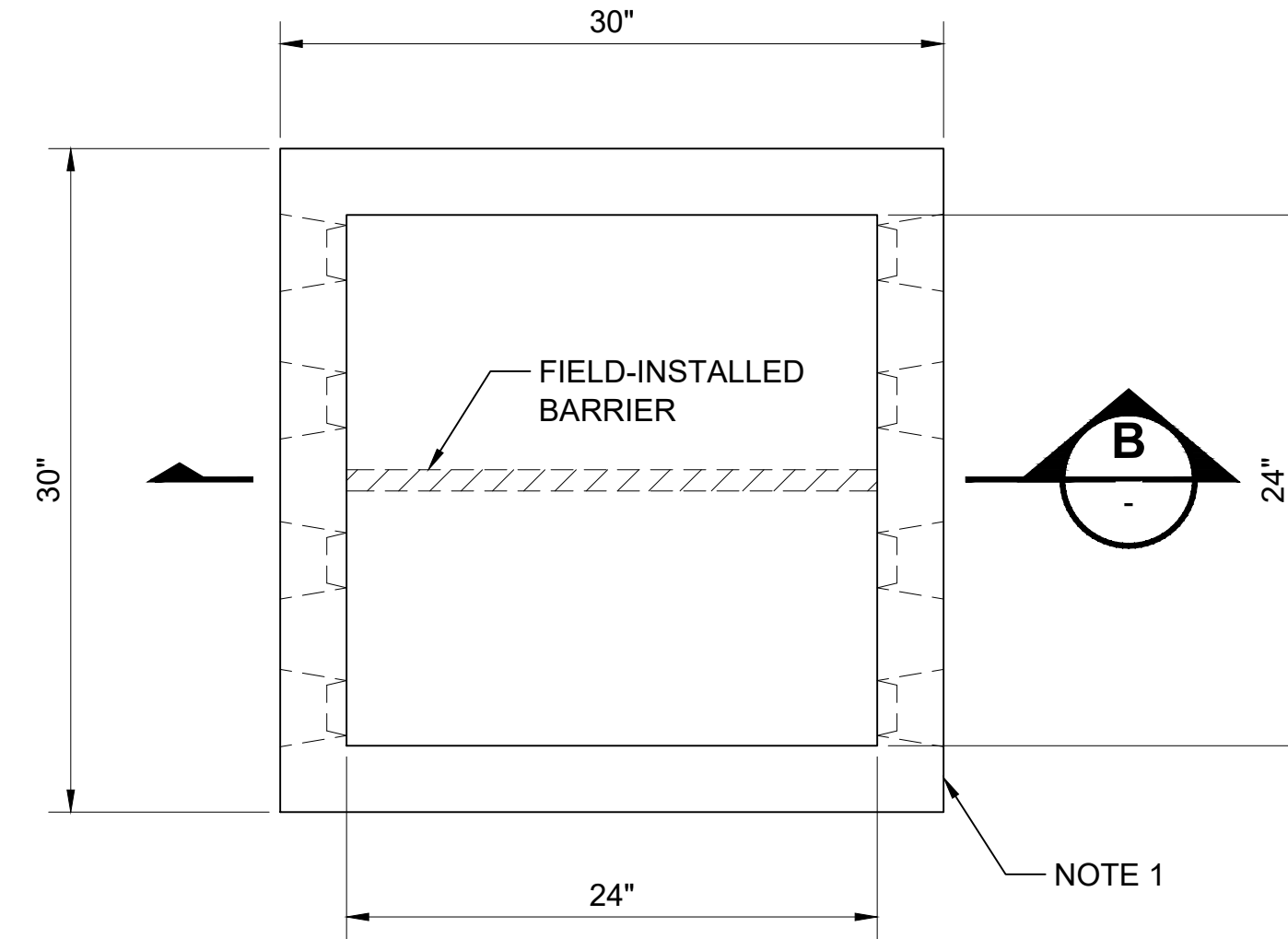
**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

SYSTEMS CONDUIT UNDERGROUND DUCTBANK / CONDUIT DETAILS

DRAWING No.:	GUI-JED100
FACILITY ID:	
SHEET No.:	REV: 2

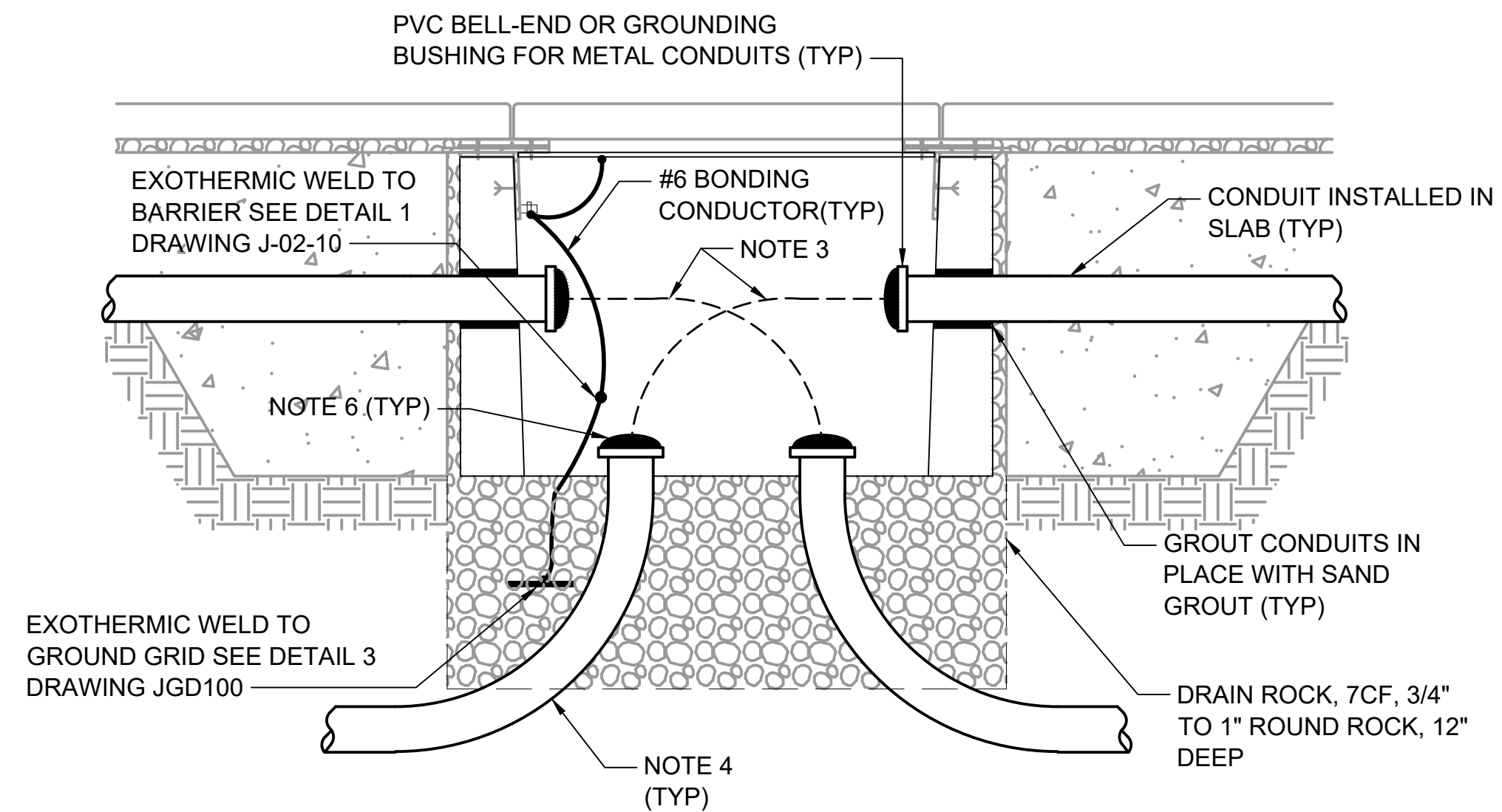


**COMMUNICATIONS / POWER CONDUIT PLAN**  
NTS

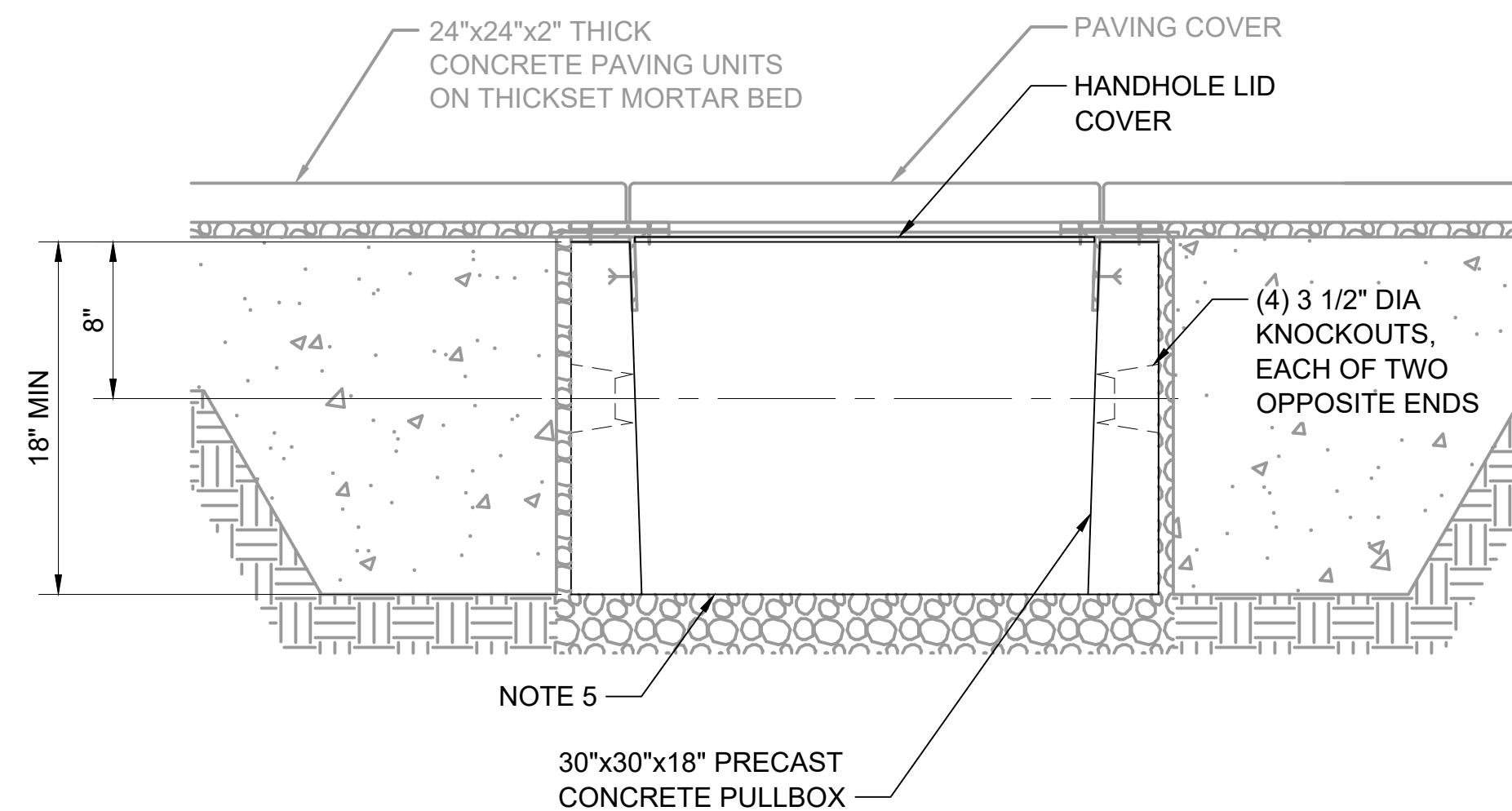


**COMMUNICATIONS/POWER PRECAST CONCRETE HANDHOLE PLAN**  
NTS

- GENERAL NOTES:**
1. INSTALL PRECAST CONCRETE UL RATED HANDHOLE WITH HANDHOLE COVER ON TOP BEFORE CONCRETE SLAB IS POURED. COORDINATE WITH ARCHITECTURAL DRAWINGS TO ALIGN WITH PLATFORM PAVING PATTERN.
  2. BARRIER SHALL BE 1/4" STEEL PLATE, HOT DIPPED GALVANIZED SIZED TO FIT IN CONCRETE HANDHOLE. MOUNT TO CONCRETE HANDHOLE WITH FOUR 1/4" ANCHORS.
  3. CONDUCTORS #4 OR LARGER SHALL ENTER LATERAL CONDUIT OPPOSITE END OF SIDE ENTRANCE.
  4. MINIMUM BEND RADIUS IS SIX TIMES DIAMETER OF CONDUIT.
  5. PROVIDE DRAIN HOLE WHEN THERE IS A CONCRETE BOTTOM FLOOR.
  6. SEAL THE CONDUIT TO PREVENT WATER ENTRY INTO THE CONDUIT.



**COMMUNICATIONS / POWER CONDUIT ENTRY SECTION**  
NTS



**COMMUNICATIONS/POWER PRECAST CONCRETE HANDHOLE SECTION**  
NTS

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No.	DATE	DSN	CHK	APP	REVISION
1	2/2024				2024 REVISED DIRECTIVE DRAWINGS
0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

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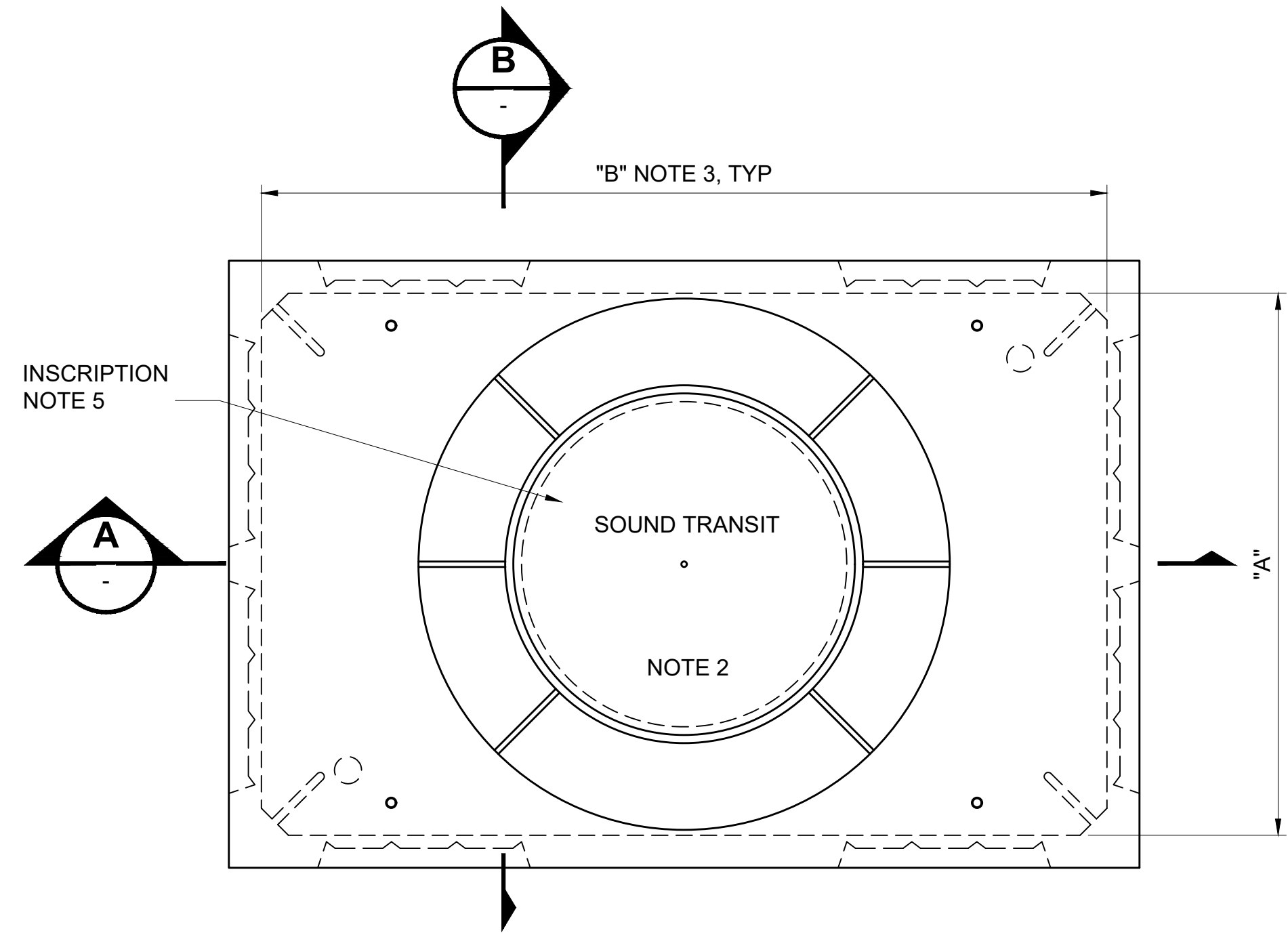


SCALE: NTS
FILENAME: GUI-JED101
CONTRACT No.: RTA/LR
DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

SYSTEMS CONDUIT COMMUNICATIONS / POWER DISTRIBUTION BOX

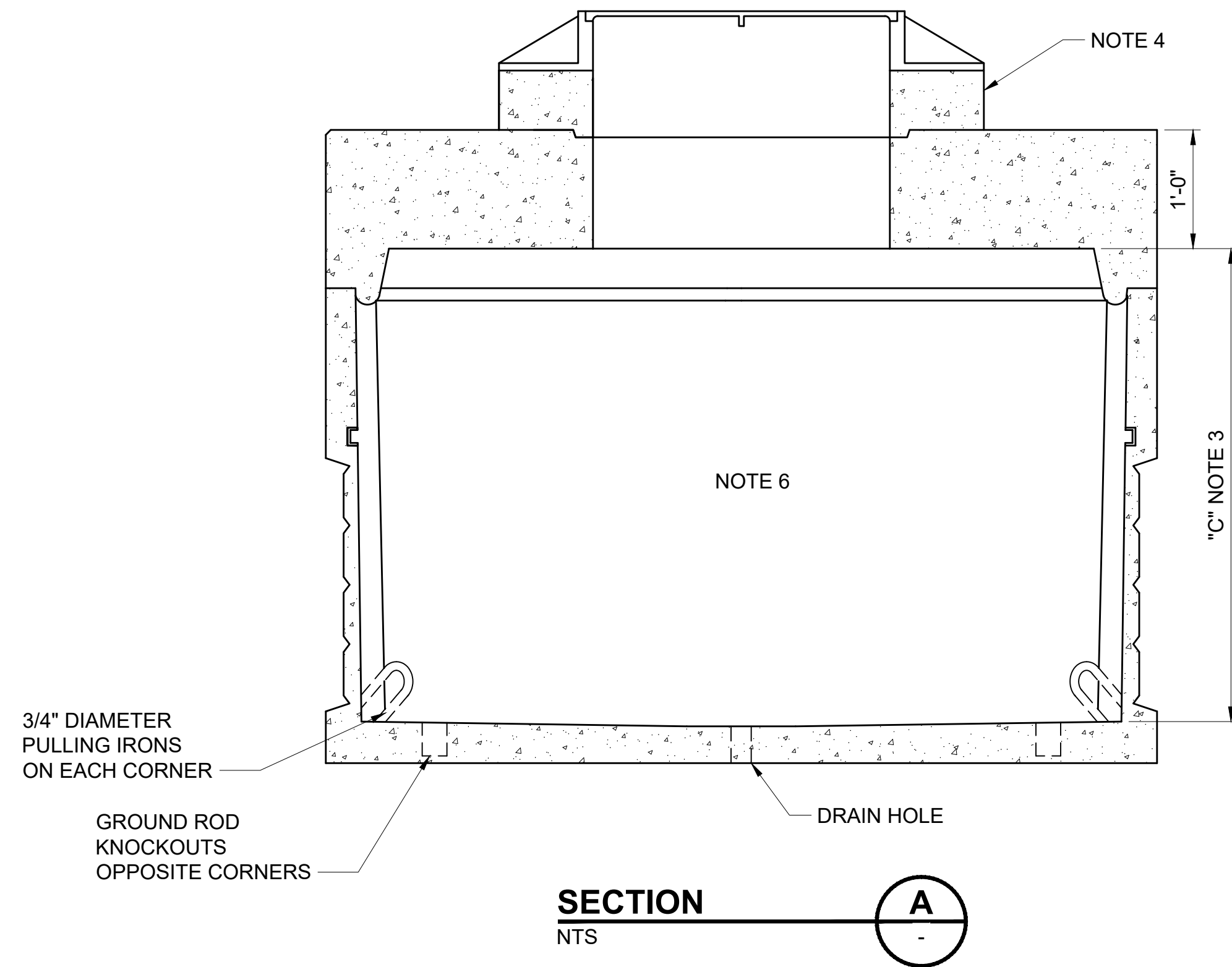
DRAWING No.:	GUI-JED101
FACILITY ID:	
SHEET No.:	REV:
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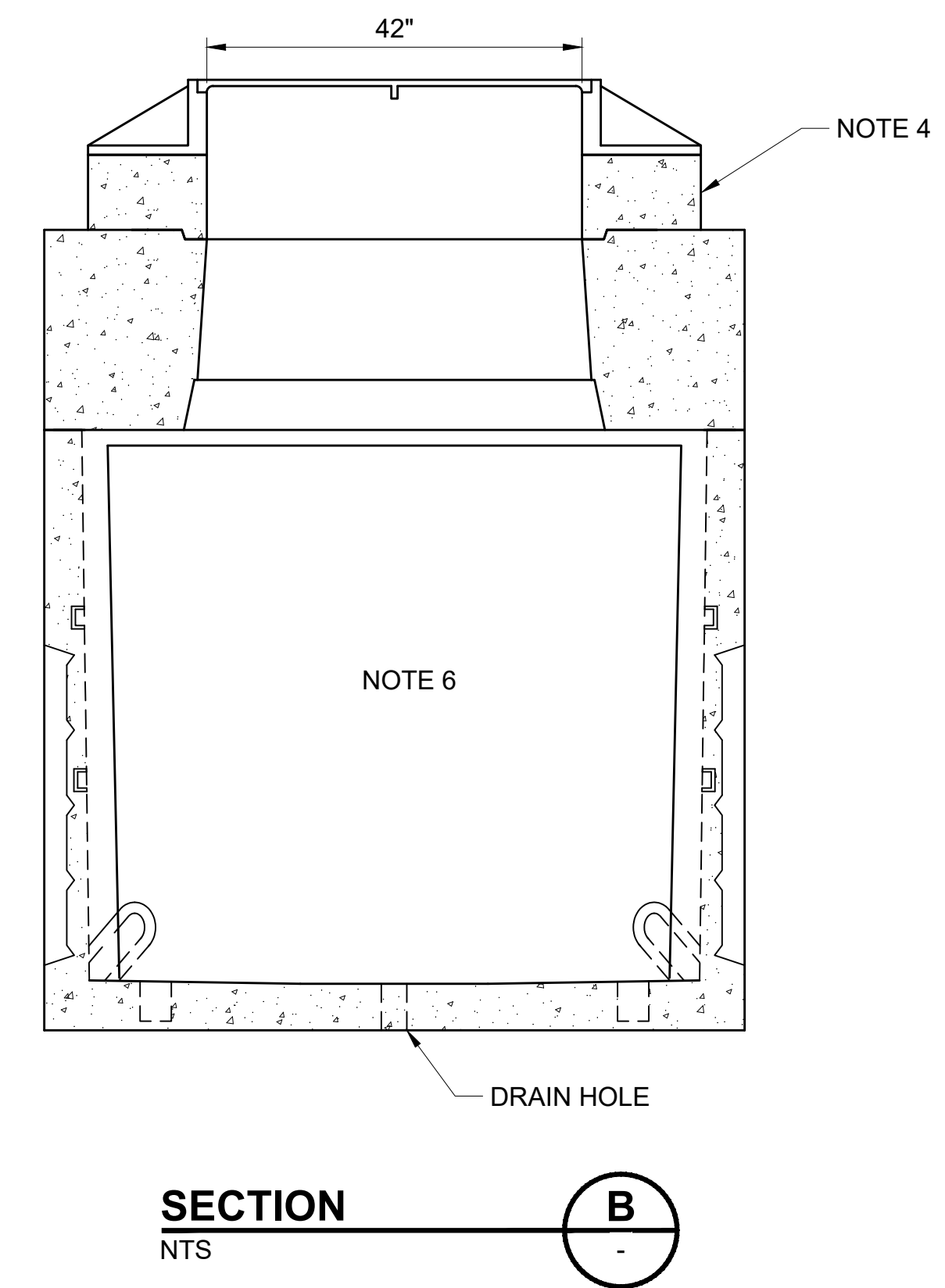
VAULT DIMENSION SCHEDULE						
VAULT TYPE	A	B	C	D	E	F
1	4'-2"	6'-6"	6'-0"			
2	6'-0"	8'-0"	7'-0"			

- GENERAL NOTES:**
- COVER, VAULT, AND CASTINGS SHALL BE DESIGNED TO WITHSTAND AASHTO H20 WHEEL LOADINGS.
  - COVER SHALL BE SLIP-RESISTANT, WATERTIGHT, AND BOLTED DOWN WITH TAMPER-PROOF BOLTS.
  - SEE VAULT SCHEDULE FOR QUANTITIES AND VAULT DIMENSION SCHEDULE FOR DIMENSIONS.
  - DIMENSIONS FOR HEIGHT DO NOT INCLUDE RISERS, IF USED.
  - PROVIDE APPROPRIATE INSCRIPTION CAST INTO COVER.
    - SC/ELECTRICAL
    - TE/ELECTRICAL
    - MV/ELECTRICAL
    - LV/ELECTRICAL
  - PROVIDE CABLE SUPPORT CHANNELS AND KNOCKOUTS OR TERM-A-DUCTS ON ENDS AND SIDES.

**PLAN**  
NTS



**SECTION A**  
NTS



**SECTION B**  
NTS

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No.	DATE	DSN	CHK	APP	REVISION
1	2/2024				2024 REVISED DIRECTIVE DRAWINGS
0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

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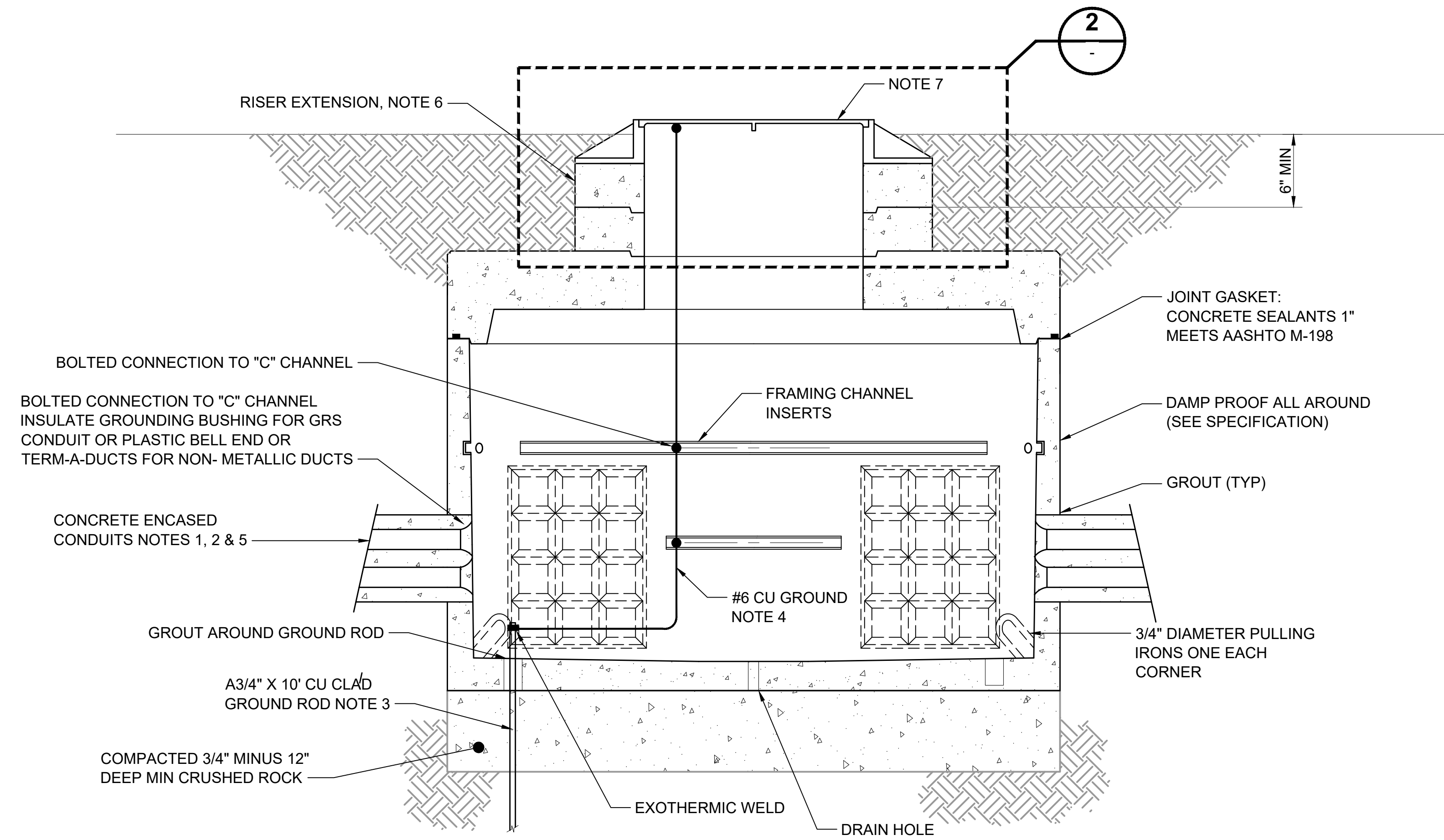
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DATE: 2/2024

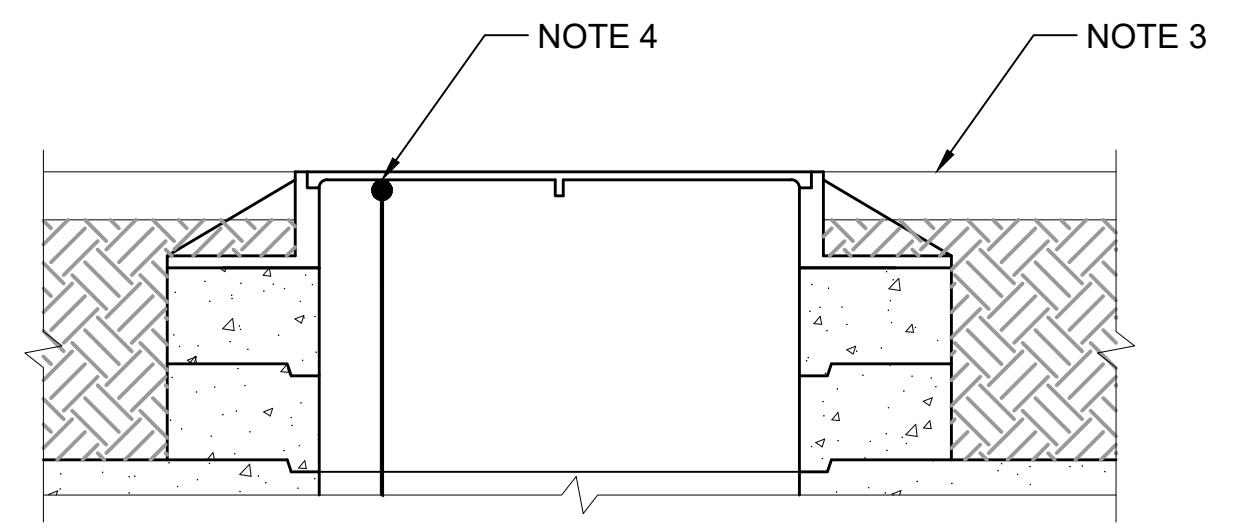
**SOUND TRANSIT GUIDANCE DRAWINGS**  
SYSTEMS  
PRECAST VAULT DETAILS

DRAWING No.:	GUI-JED102
FACILITY ID:	
SHEET No.:	REV: 1





**TYPICAL VAULT INSTALLATION SECTION** 1  
SCALE: 1" = 1'-0"



**VAULT LID - PAVED OR CONCRETE AREAS DETAIL** 2  
SCALE: 1" = 1'-0"

- GENERAL NOTES:**
1. CONDUITS SHALL ENTER VAULT WALLS AT 90° TO WALL.
  2. GRADE PERMITTING, CONDUITS SHALL SLOPE CONTINUALLY DOWN AT A MINIMUM OF 3" PER 100'-0" TO PROVIDE POSITIVE DRAINAGE TO MANHOLES.
  3. VERIFY LOCATION OF UNDERGROUND UTILITIES PRIOR TO INSTALLATION OF GROUND RODS.
  4. GROUND EMBEDDED CHANNEL METAL, LID COVER AND CONDUIT GROUNDING BUSHINGS TO GROUND ROD WITH #6 AWG CU.
  5. SEE LAYOUT PLANS FOR NUMBERS AND TYPES OF DUCTS. DIMENSIONS VARY (TYPICAL).
  6. USE ROUND ACCESS RISERS IF NECESSARY TO ACHIEVE FINAL ELEVATION.
  7. FOR VAULT INSTALLED IN UNPAVED AREAS, INSTALL MANHOLE COVER 2 INCHES ABOVE SURROUNDING GRADE AND MAKE SURE THAT POSITIVE DRAINAGE IS AWAY FROM MANHOLE.
  8. FOR VAULT INSTALLED IN PAVED OR CONCRETE AREAS, INSTALL MANHOLE COVER IN PLANE OF ASPHALT OR CONCRETE.


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No.	DATE	DSN	CHK	APP	REVISION
1	2/2024				2024 REVISED DIRECTIVE DRAWINGS
0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

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APPROVED BY:

SUBMITTED BY: DATE: REVIEWED BY: DATE:

LINE IS 1" AT FULL SCALE



SCALE: 1"=1'-0"  
FILENAME: GUI-JED103  
CONTRACT No.: RTA/LR  
DATE: 2/2024

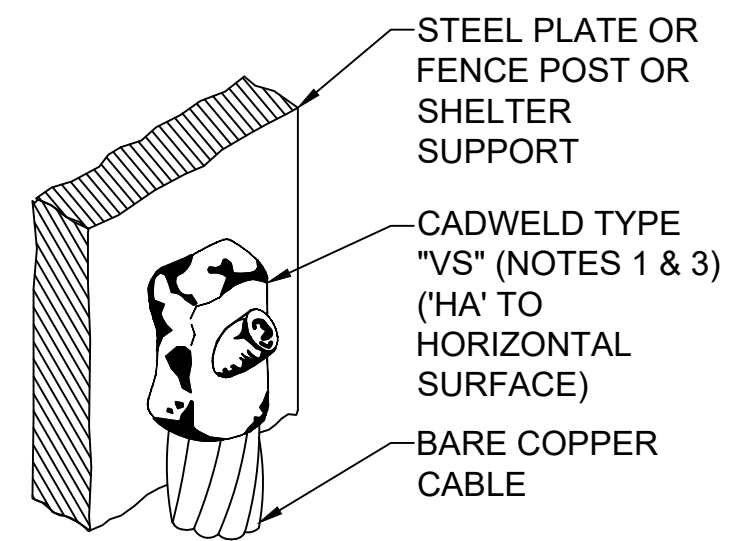
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SYSTEMS PRECAST VAULT INSTALLATION DETAILS

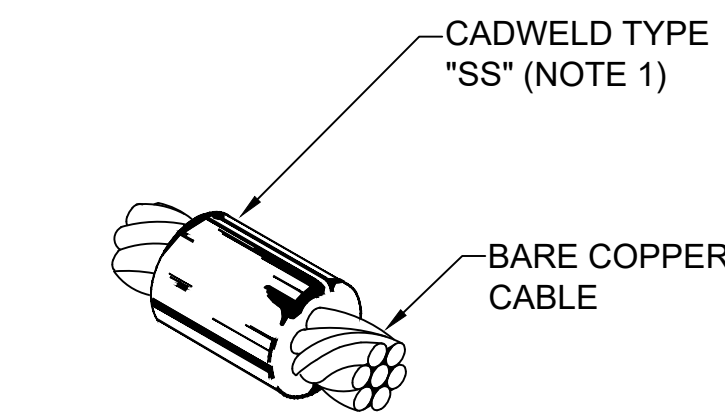
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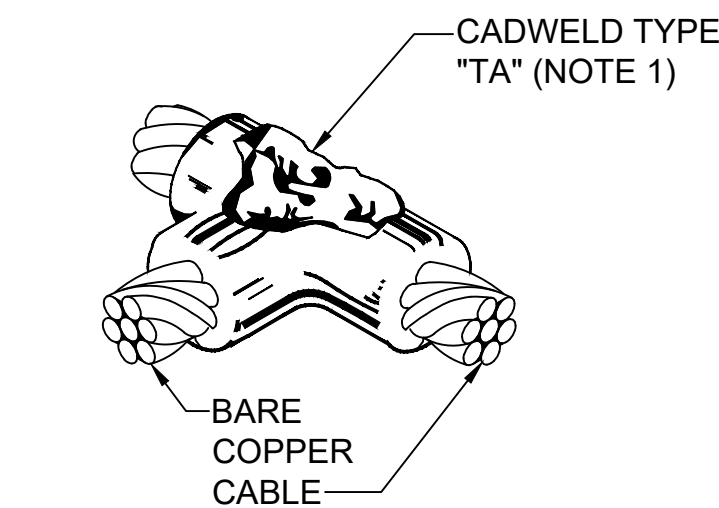
- CADWELD TYPE LISTED FOR REFERENCE ONLY AND DOES NOT PRECLUDE ANY OTHER APPROVED MANUFACTURER.
- DRILL AND TAP FOR 2-HOLE NEMA LUGS AS REQUIRED.
- COAT CONNECTION USING A DIELECTRIC BITUMASTIC COATING SO THAT THE ENTIRE CONNECTION IS COMPLETELY ENCAPSULATED. COATING SHALL BE TAPECOAT TC MASTIC BY ROYSTON OR APPROVED EQUAL.



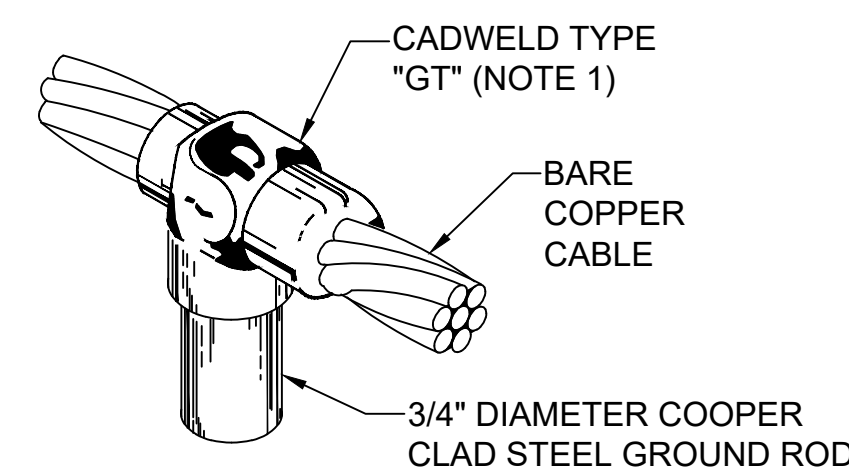
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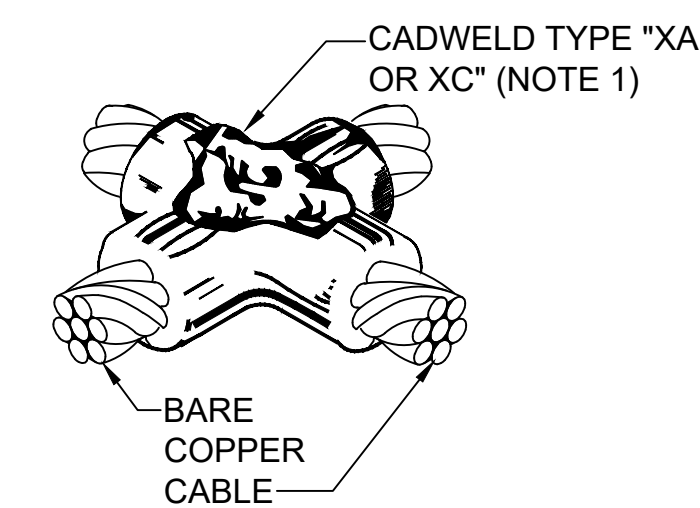
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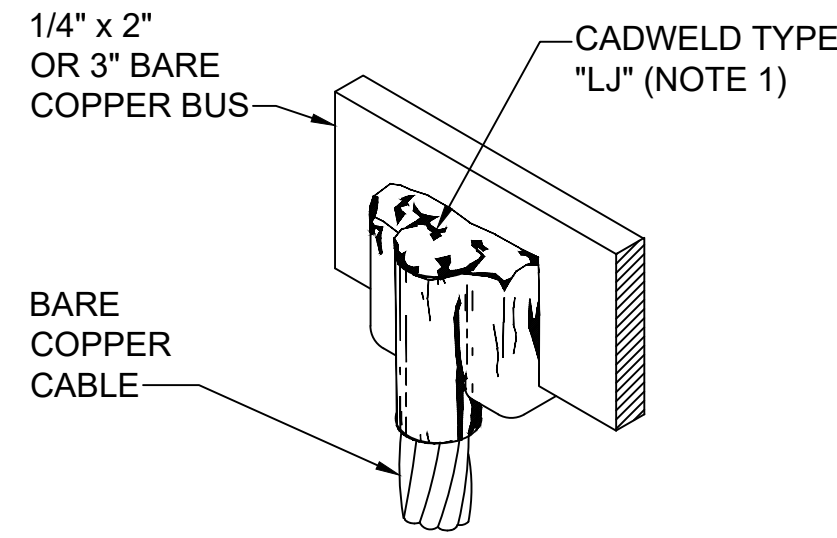
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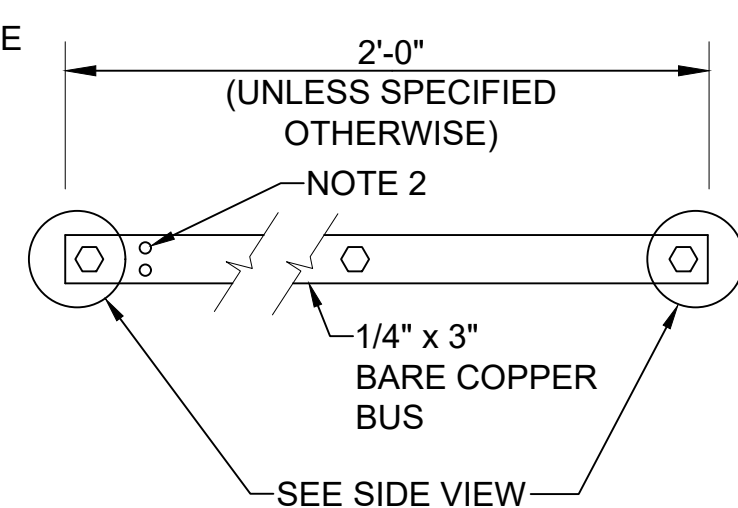
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**GROUND CABLE CROSS CONNECTION**  
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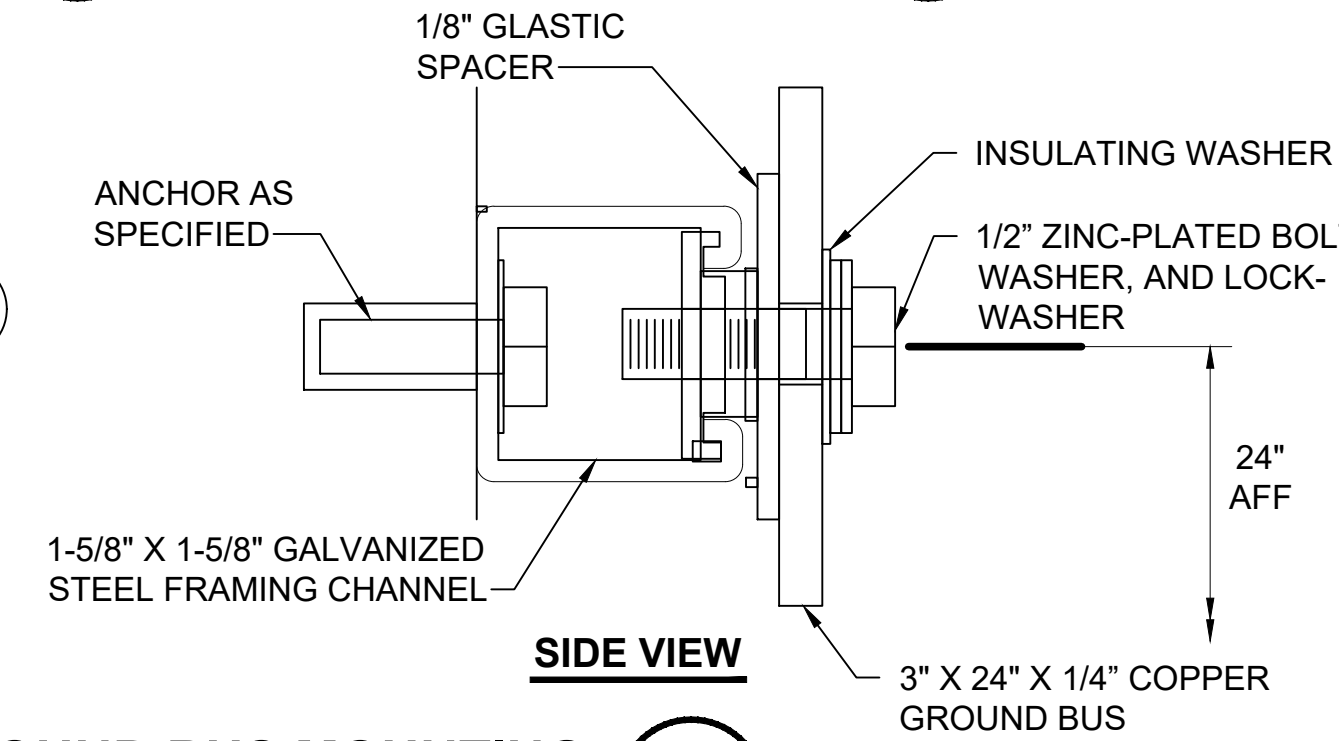


**GROUND BUS CONNECTION**  
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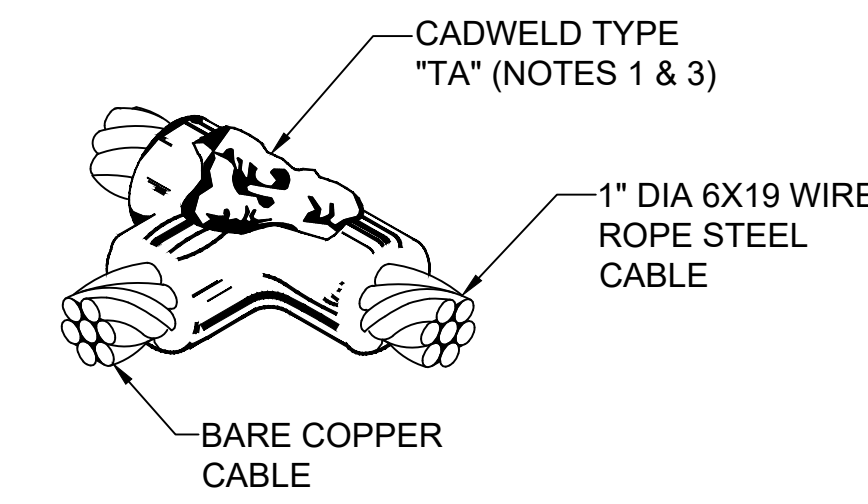


**FRONT VIEW**

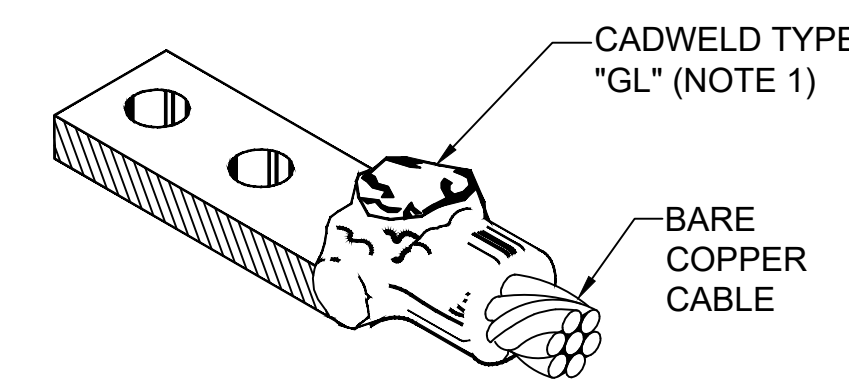
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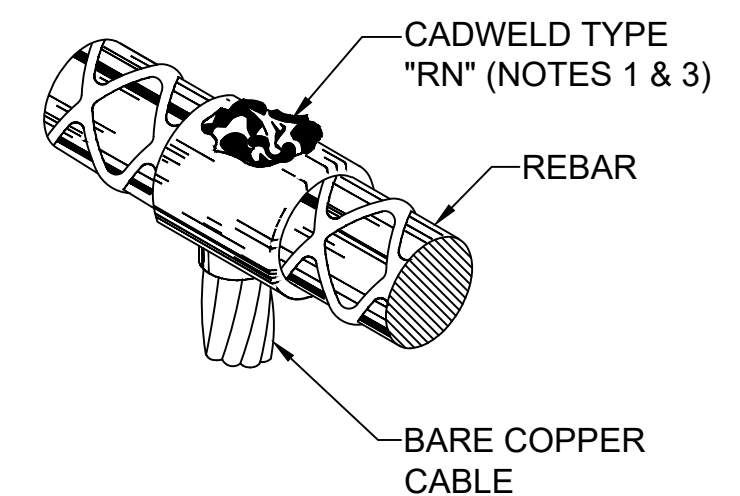
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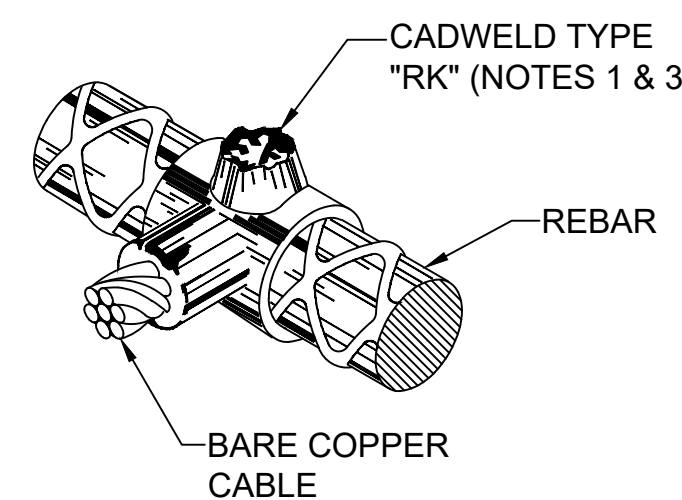
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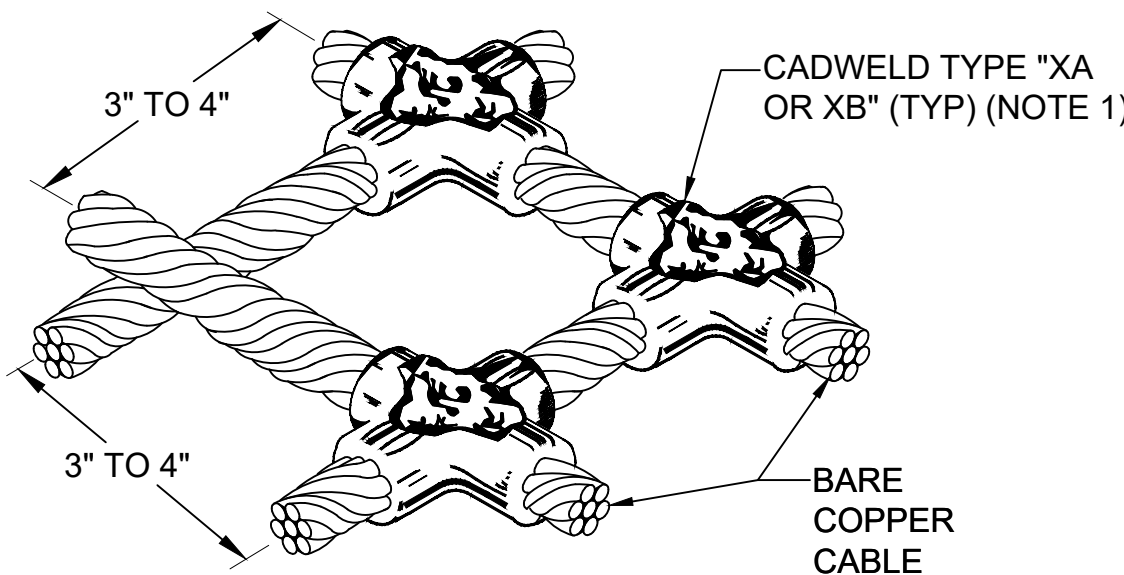
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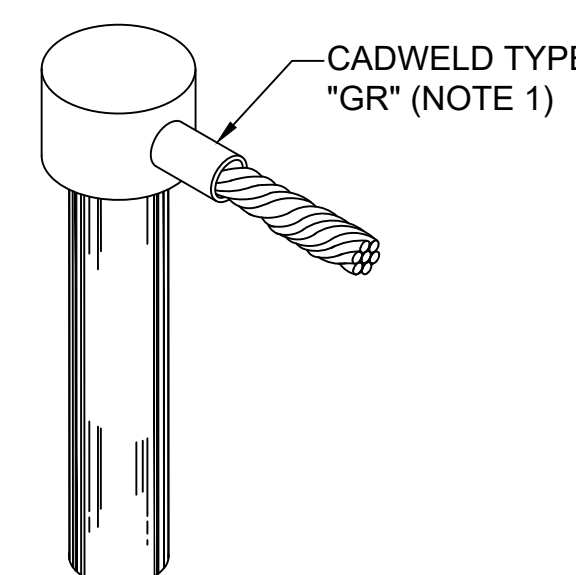
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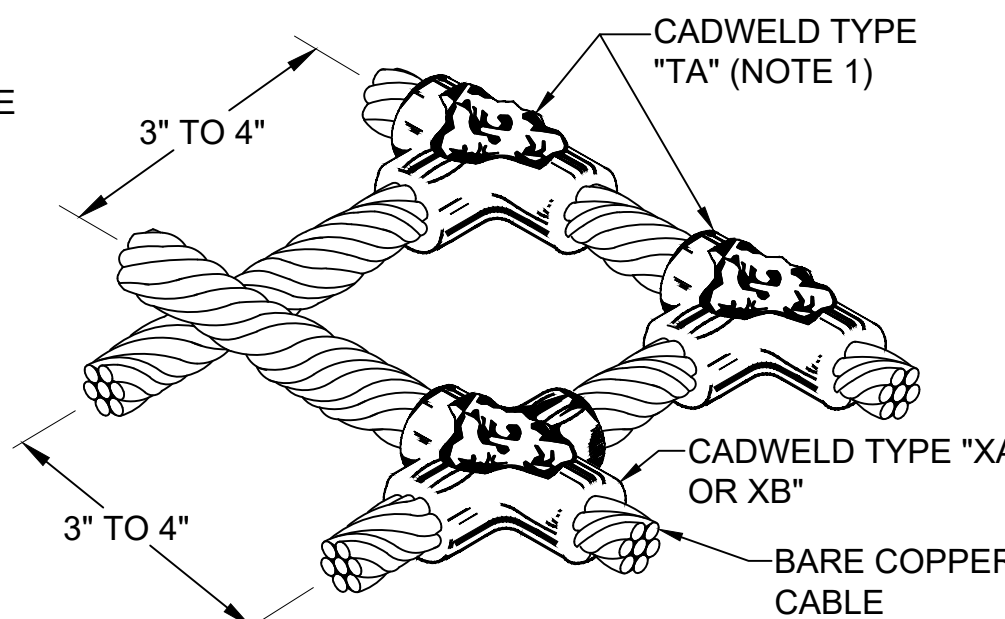
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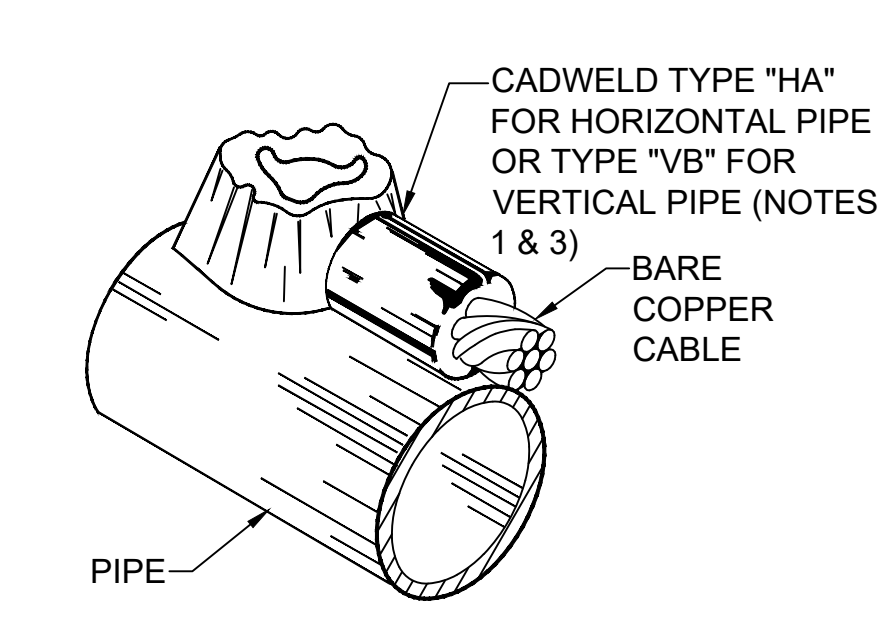
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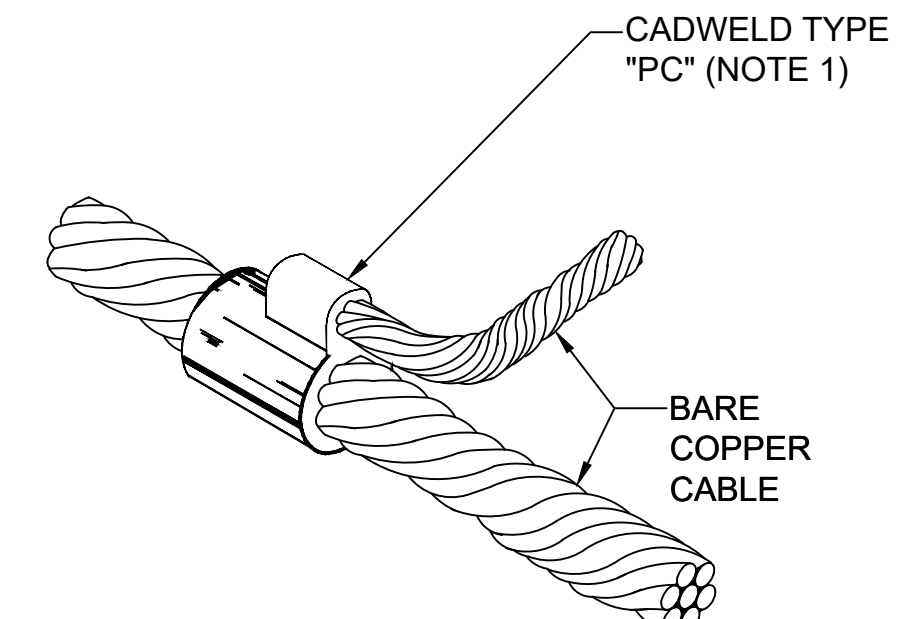
**GROUND ROD CONNECTION**  
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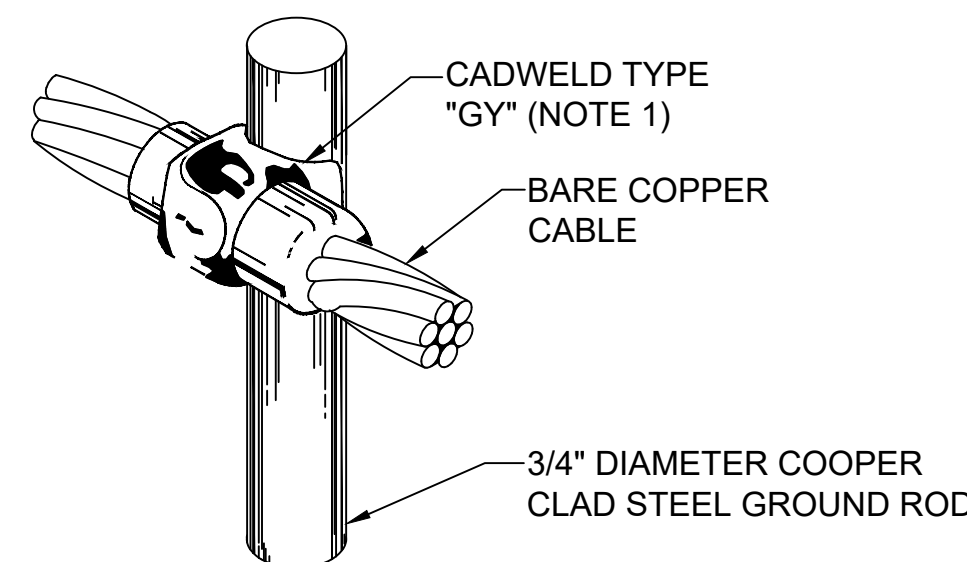
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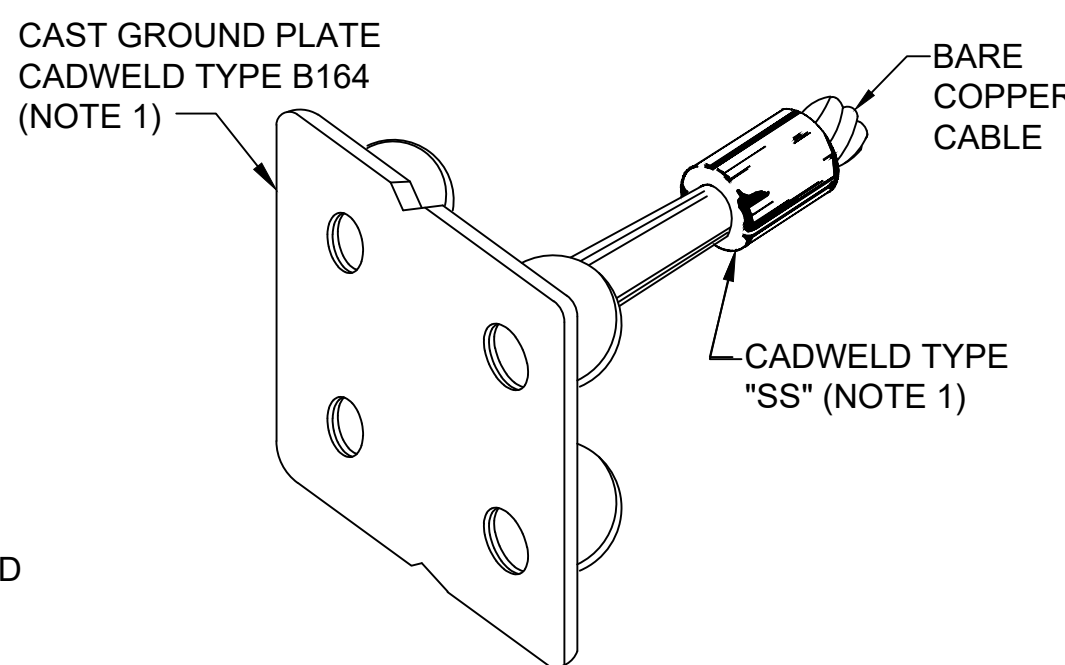
**GROUND CABLE TO PIPE**  
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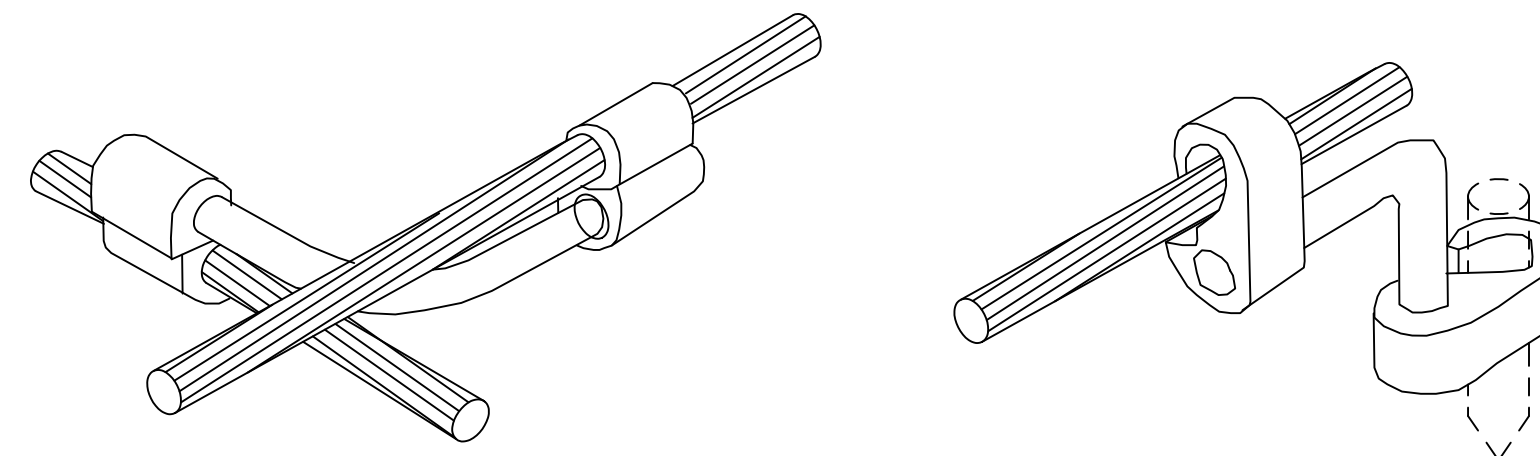
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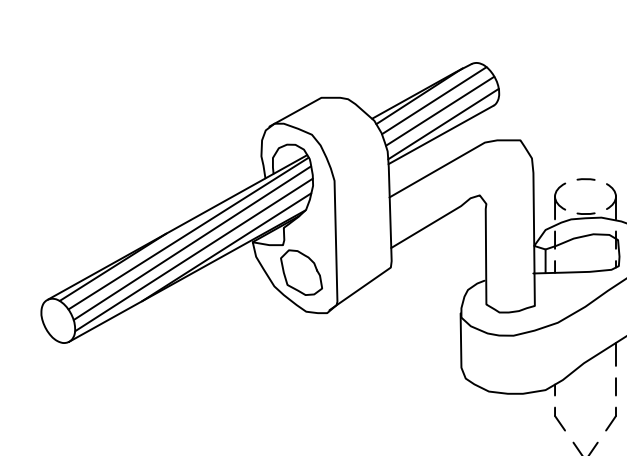
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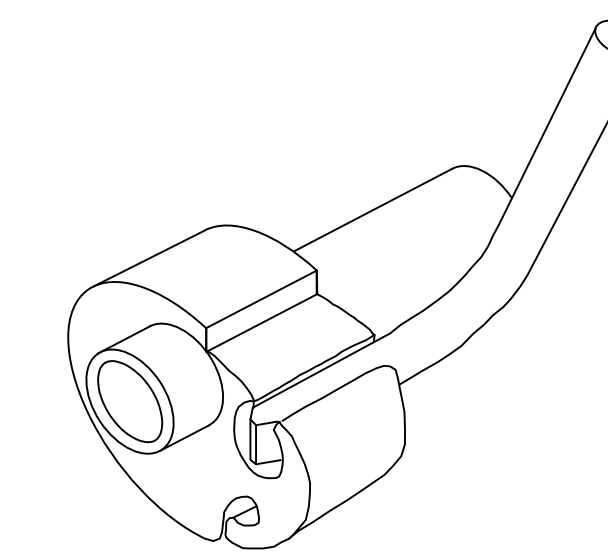
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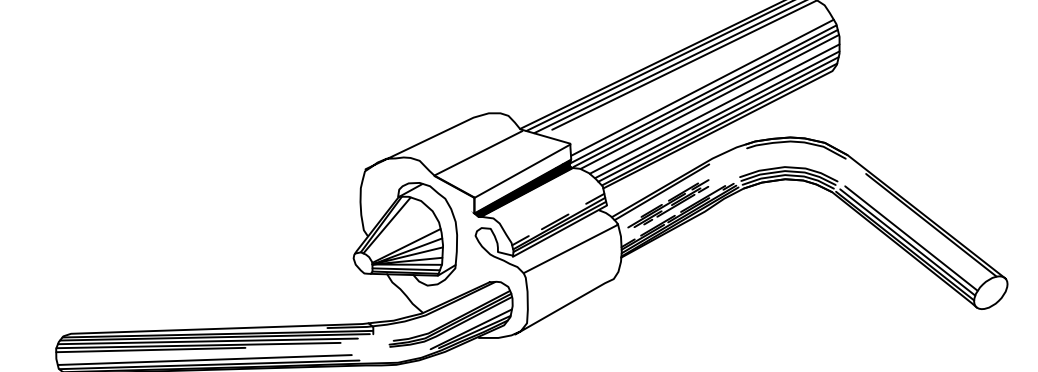
**GROUND GRID CROSS CONNECTION**  
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**CABLE TO GROUND ROD CONNECTION**  
NTS



**SINGLE TAP CONNECTION**  
NTS




**CONTINUOUS RUN CONNECTION**  
NTS

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0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

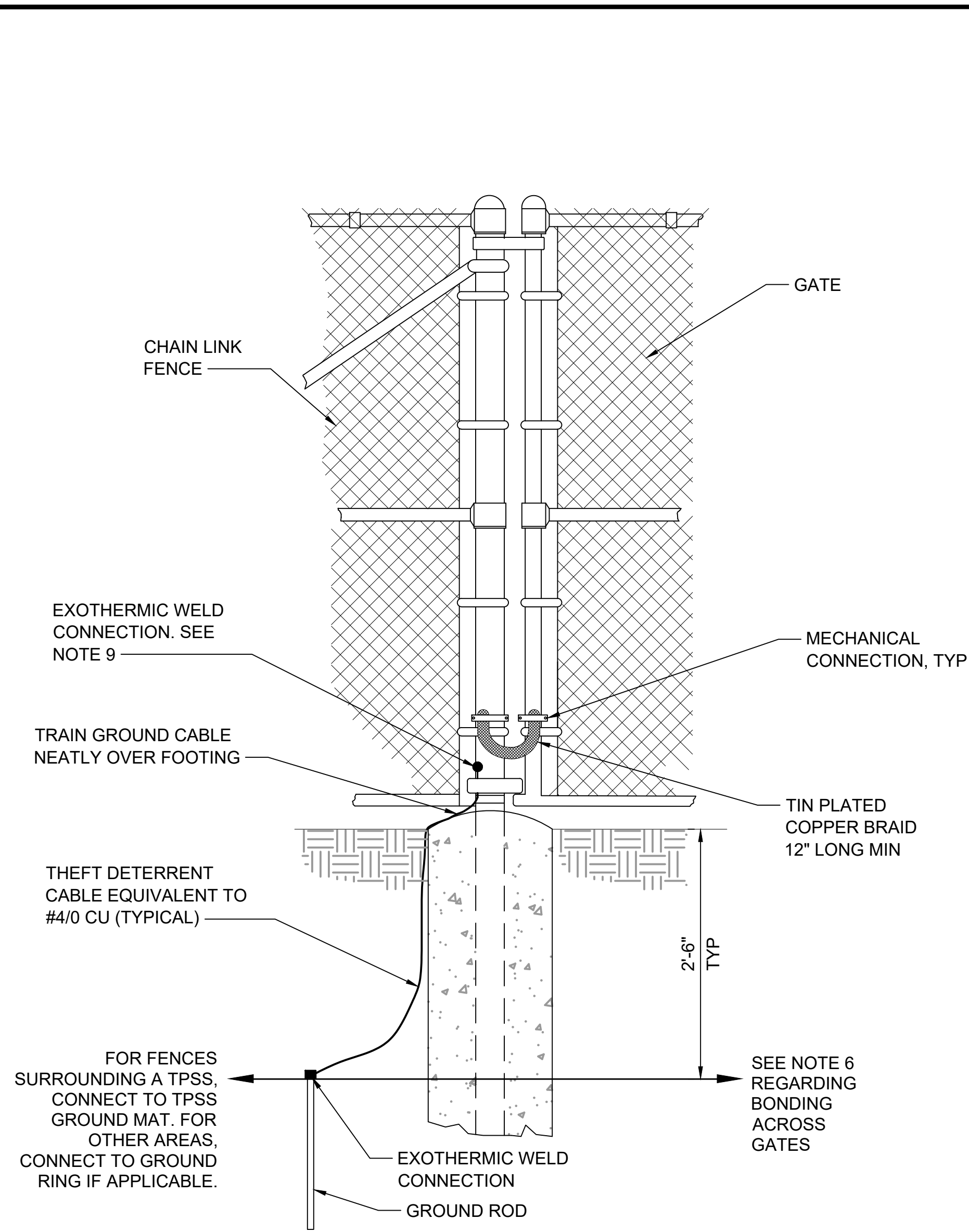
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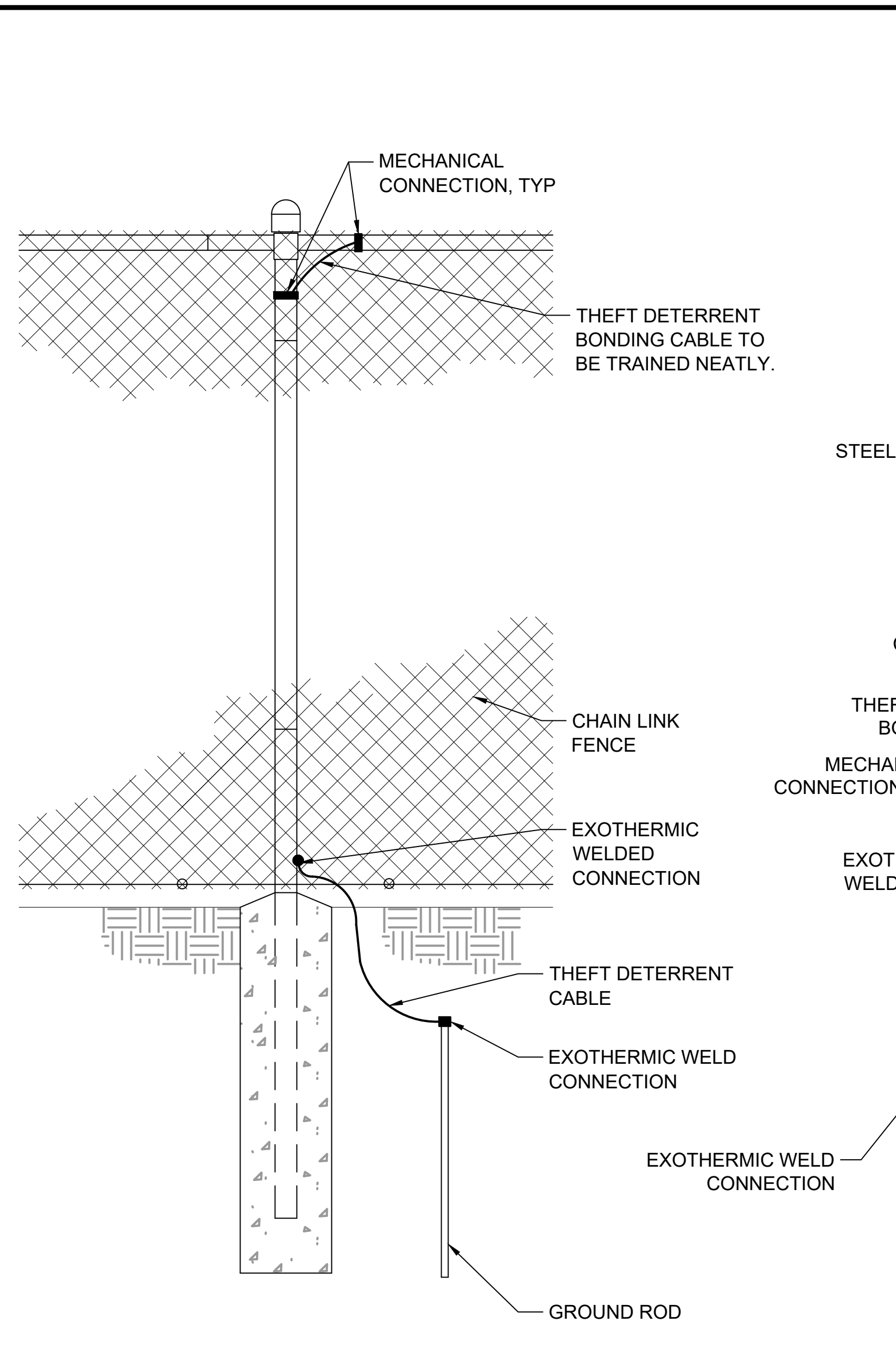
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<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
GROUNDING TYPICAL GROUNDING DETAILS	

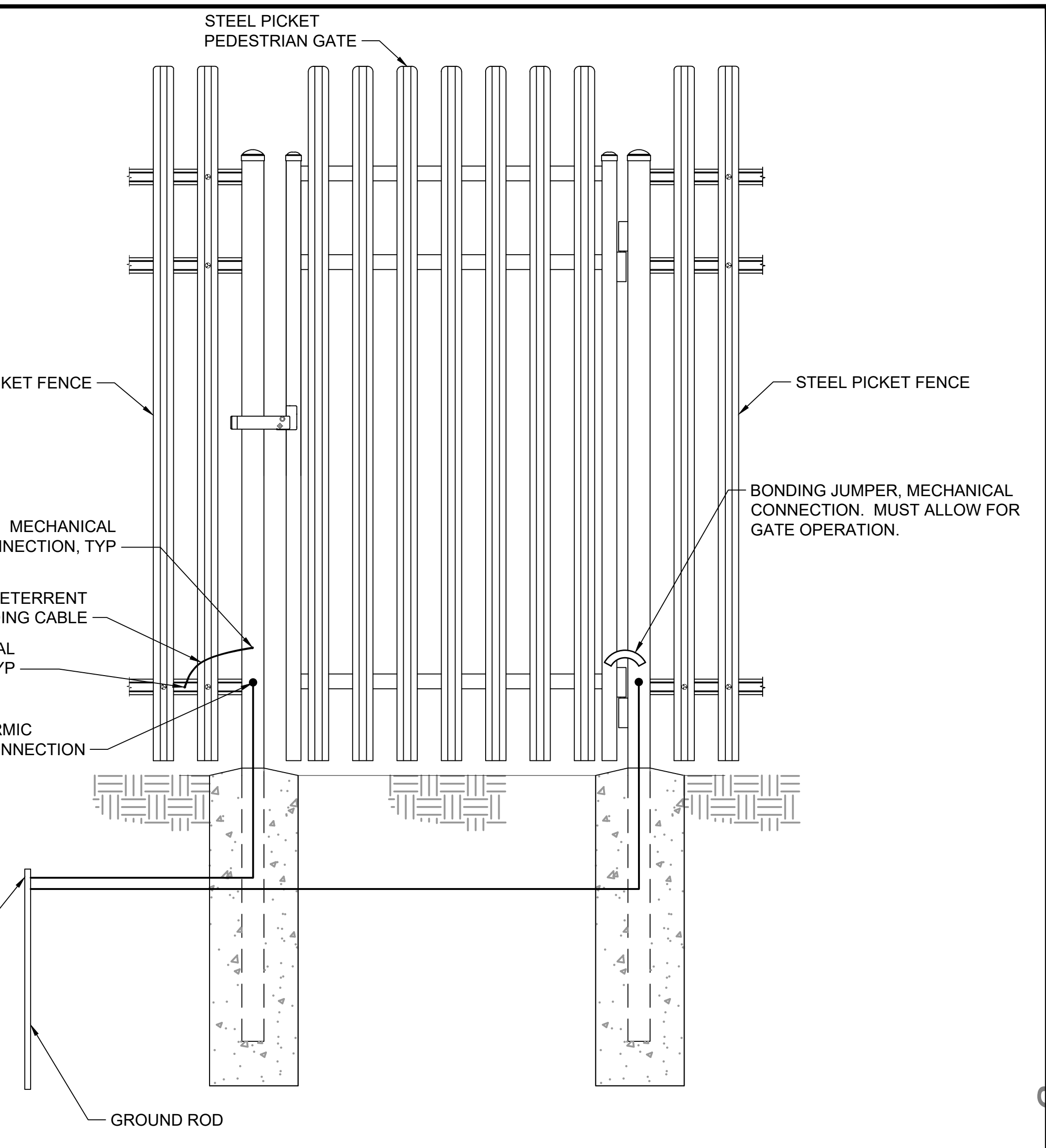
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FACILITY ID:	
SHEET No.:	REV: 1



**GROUNDING DETAIL - TYPICAL FENCE POST AND GATE** ①  
SCALE: NTS



**GROUNDING DETAIL - TYPICAL CHAIN LINK FENCE POST** ②  
SCALE: NTS



**GROUNDING DETAIL - TYPICAL STEEL PICKET GATE** ③  
SCALE: NTS

- NOTES:**
- SEE CIVIL DETAILS STD-CSD101 THROUGH STD-CSD113 FOR TYPICAL FENCE LAYOUT. DETAILS AND NOTES ON THIS DRAWING MUST APPLY TO ALL FENCE TYPES. CONNECTORS AND COMPONENTS MUST BE ADJUSTED ACCORDINGLY TO ENSURE COMPATIBILITY IN ACCORDANCE TO THE MANUFACTURER RECOMMENDATIONS AND THE SPECIFIC APPLICATION. SEE NOTE 7.
  - GROUNDING APPLICABLE FOR ALL CONDUCTIVE FENCES THAT ARE AT RISK OF BEING ENERGIZED PER ST'S REQUIREMENTS AND IN ACCORDANCE WITH NATIONAL AND LOCAL CODES AND STANDARDS, SUCH AS BUT NOT LIMITED TO THE BELOW:
    - SURROUNDING A SUBSTATION. SEE THE TRACTION POWER SECTION OF THE REQUIREMENTS MANUAL FOR ADDITIONAL REQUIREMENTS AND DETAILS.
    - WITHIN 15 FEET OF CENTERLINE OF TRACK OR IN PROXIMITY OF OCS OR UNDER OCS CROSSING.
    - NATIONAL ELECTRICAL CODE (NEC) ARTICLE 250
  - ALL CONNECTIONS BETWEEN GROUND CABLE AND GROUND RODS AND BETWEEN GROUND CABLE AND FENCE POSTS MUST BE EXOTHERMIC WELD TYPE.
  - BONDING TYPE CONNECTIONS BETWEEN FENCE POSTS AND GATES MAY USE MECHANICAL CONNECTIONS. CONNECTORS AT GROUNDING TEST WELLS MUST BE BOLTED TYPE (REMOVABLE).
  - ALL EXPOSED BONDING AND GROUNDING TO BE ON THE SECURED SIDE OF THE FENCE.
  - BOTH SIDES OF THE GATE TO BE BONDED TO EACH OTHER.
  - PRODUCT DATA AND SPECIFICATIONS OF ALL MATERIALS MUST BE SUBMITTED FOR REVIEW AND APPROVAL PRIOR TO PROCUREMENT. DETAILS TO BE SUBMITTED FOR ST REVIEW AND APPROVAL FOR FENCES THAT HAVE DIFFERENT CONFIGURATION THAN SHOWN ON THIS DRAWING.
  - THEFT DETERRENT WIRE SHALL BE USED FOR ALL EXPOSED GROUNDING APPLICATIONS. MATERIALS TO BE CORROSION RESISTANT AND COMPATIBLE WITH INTERFACING COMPONENTS. SEE SPECIFICATION 34 23 26 FOR ADDITIONAL DETAILS.
  - SEE DIR-JGD100 FOR TYPICAL GROUNDING CONNECTION TYPES. ALL GROUNDING CONNECTIONS FOR THE THEFT DETERRENT CABLE MUST FOLLOW MANUFACTURER RECOMMENDATIONS.
  - PARTS TO BE INSTALLED TO PREVENT CORROSION, INCLUDING INTERFACES WITH EXISTING COMPONENTS. ALUMINUM MUST NOT COME IN DIRECT CONTACT WITH ANY BARE STEEL PARTS, INCLUDING STAINLESS STEEL.
  - EXISTING COATING SYSTEMS TO BE REMOVED WHERE THE CONNECTIONS ARE MADE ON THE FENCING.

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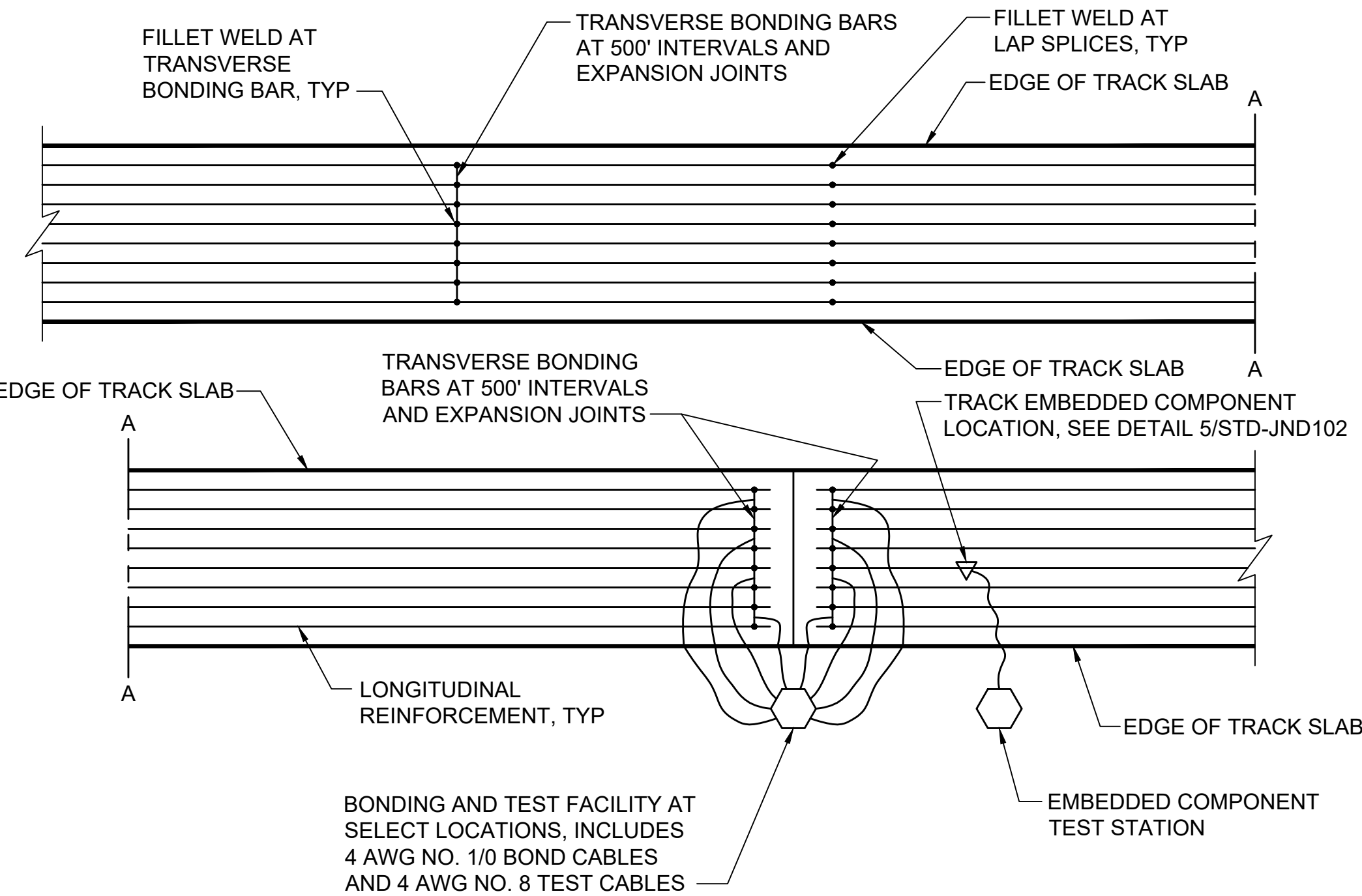
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FILENAME: GUI-JGD101  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

GROUNDING  
TYPICAL GATE POST AND FENCE GROUNDING  
DETAIL

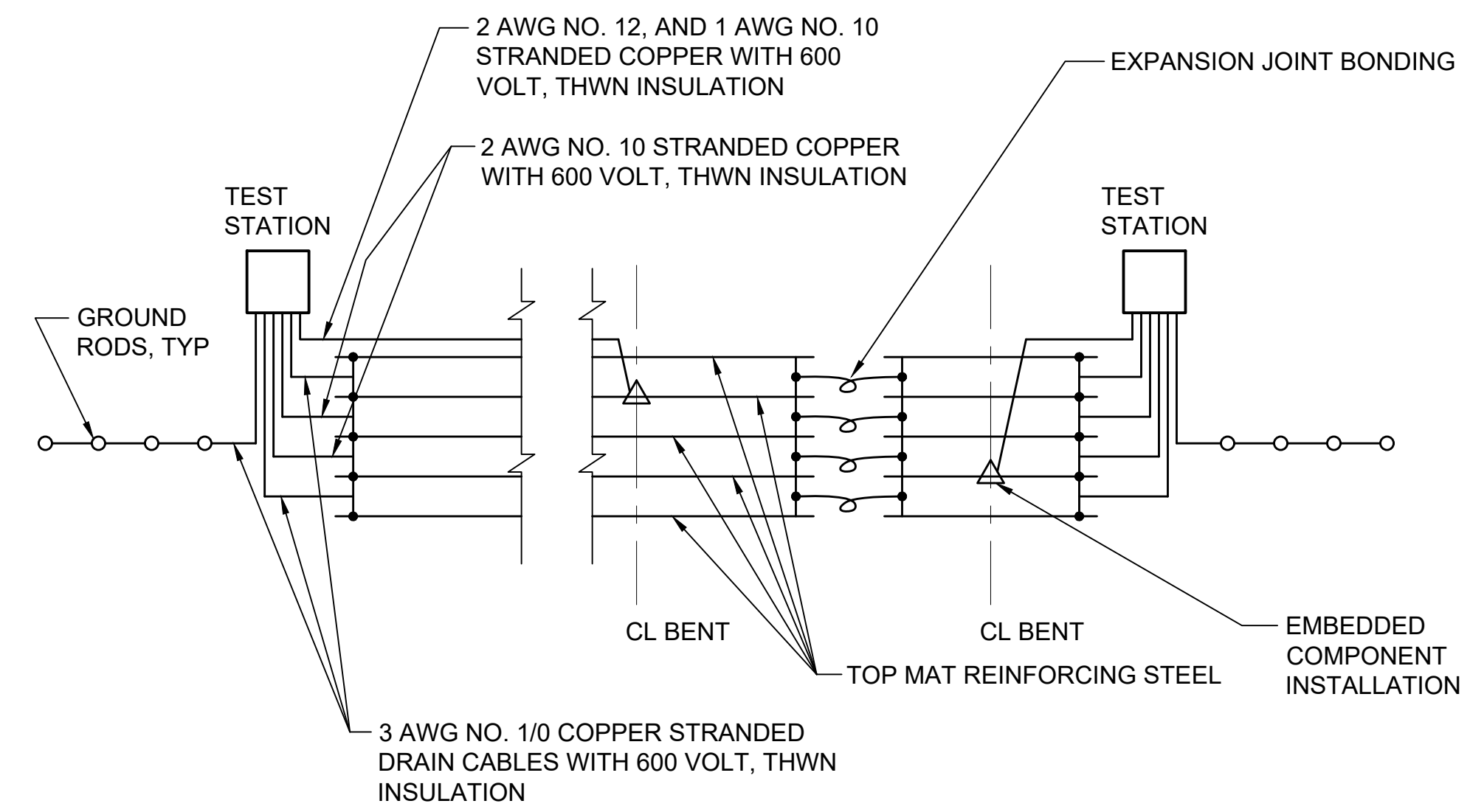
DRAWING No.:	GUI-JGD101
FACILITY ID:	
SHEET No.:	REV:
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**NOTES:**

1. LONGITUDINAL REINFORCEMENT MUST BE CONTINUOUS BETWEEN TRANSVERSE BONDING BARS.
2. TRANSVERSE BONDING BAR MUST BE CONTINUOUS.

**TYPICAL TRACK SLAB BONDING SCHEMATIC** 1  
NTS



**NOTES:**

1. ALL TOP LAYER REINFORCING STEEL SHALL BE WELDED TO PROVIDE ELECTRICAL CONTINUITY.
2. LOCATION OF STRAY CURRENT MITIGATION COMPONENTS SHALL BE IDENTIFIED BEFORE COMPLETION OF THE STRUCTURAL BRIDGE DESIGN.

**BRIDGE STRAY CURRENT MITIGATION SCHEMATIC** 2  
NTS

**GENERAL NOTES:**

1. ALL CORROSION CONTROL/CATHODIC PROTECTION WORK SHALL BE DONE UNDER THE DIRECT SUPERVISION OF A REGISTERED CORROSION ENGINEER OR A NACE INTERNATIONAL CATHODIC PROTECTION SPECIALIST.
2. EXACT LOCATIONS OF ALL STRUCTURES SHALL BE DETERMINED BY THE CONTRACTOR IN THE FIELD. CONTRACTOR SHALL FIELD ADJUST CATHODIC PROTECTION TO AVOID DAMAGE TO ANY AND ALL EXISTING STRUCTURES. ALL FIELD ADJUSTMENTS SHALL BE APPROVED BY THE ENGINEER.
3. ALL CORROSION CONTROL/CATHODIC PROTECTION INSTALLATION WORK SHALL BE PERFORMED IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL REQUIREMENTS.
4. CORROSION CONTROL/CATHODIC PROTECTION FACILITIES SHALL BE PLACED TO AVOID CONFLICTS WITH TRAFFIC LANES AND OTHER NON ACCESSIBLE LOCATIONS.
5. CORROSION CONTROL WORK TYPICALLY INCLUDES DIELECTRIC COATING AND CATHODIC PROTECTION OF UNDERGROUND FERROUS PIPELINES, REMOTE MONITORING SYSTEMS AT TRACTION POWER SUBSTATIONS, ELECTRICAL CONTINUITY OF TRACK SLAB REINFORCEMENTS AND ELECTRICAL ISOLATION OF THE RUNNING RAILS.
6. ANY PROPOSED MODIFICATIONS TO THE CORROSION CONTROL/CATHODIC PROTECTION SYSTEMS SHALL BE SUBMITTED IN WRITING TO THE ENGINEER FOR APPROVAL.
7. ALL TEST FACILITIES SHALL BE INSTALLED IN ACCESSIBLE LOCATIONS, OUT OF TRAFFIC LANES.
8. PROVIDE A MINIMUM OF 12 INCHES OF SLACK IN TEST STATION WIRES TO EXTEND TEST STATION PANEL ABOVE GRADE.

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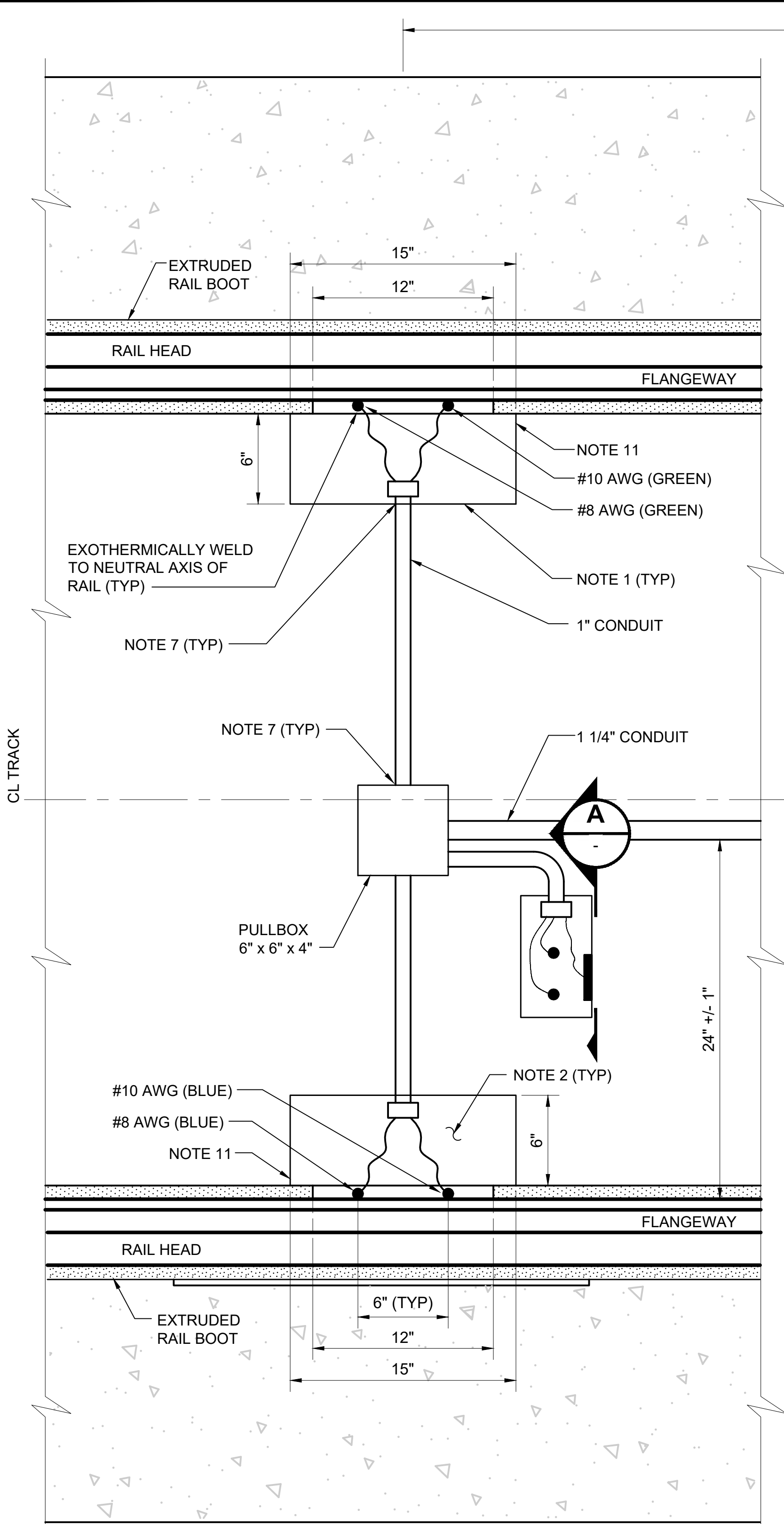
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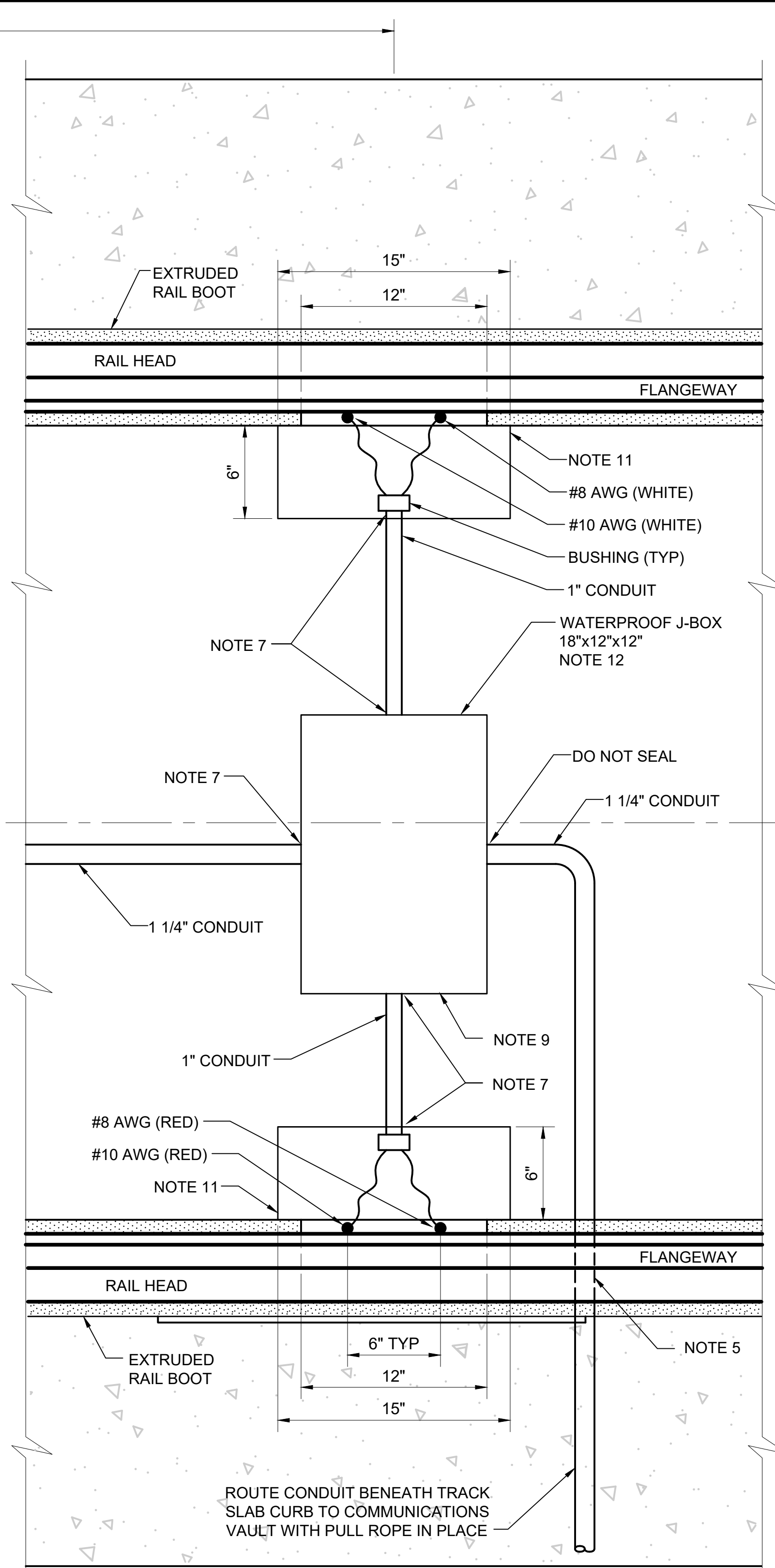
**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

GROUNDING REINFORCING STEEL BONDING SCHEMATICS

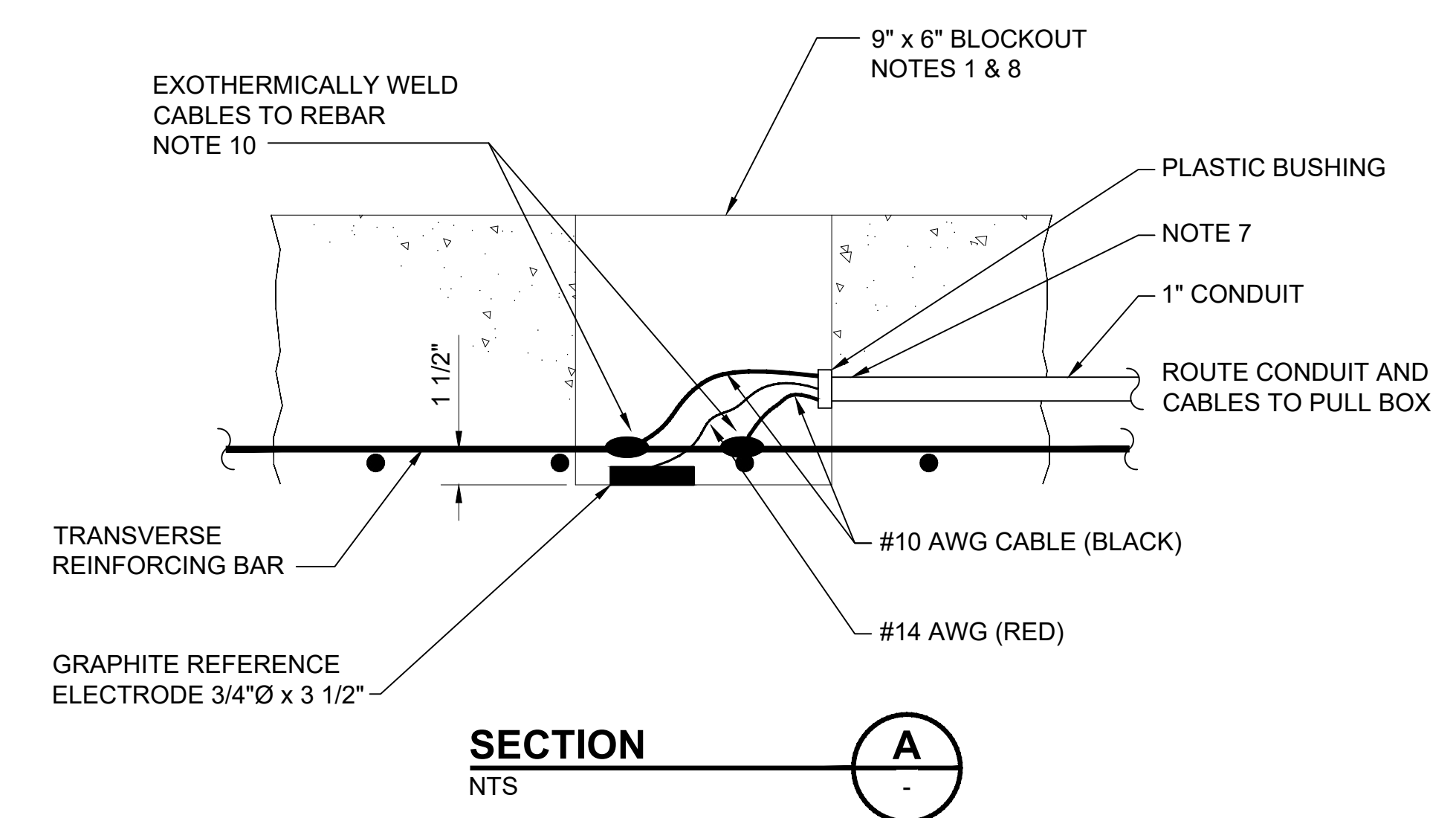
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FACILITY ID:	
SHEET No.:	REV: 1



**DETAIL 1**  
NTS



**DETAIL 2**  
NTS



**SECTION A**  
NTS

- GENERAL NOTES:**
1. PROVIDE BLOCKOUT IN TRACK SLAB FOR TEST CABLE CONNECTIONS.
  2. CUT BOOT IN EXOTHERMIC WELD AREA AS NECESSARY. LEAVE MINIMUM 1" OF BOOT TO EDGE OF BLOCKOUT.
  3. ALL WIRING XHHW EXCEPT AS NOTED.
  4. PROVIDE MINIMUM 6" OF CONCRETE COVER OVER CONDUIT AND PULL BOXES.
  5. MAINTAIN 6" MINIMUM DISTANCE BETWEEN CONDUIT AND RAIL.
  6. PROVIDE CONTINUOUS CABLE FROM POINT OF RAIL CONNECTION TO WATERPROOF JUNCTION BOX.
  7. PROVIDE WATER TIGHT SEAL WITH SINGLE COMPONENT SILICONE ELASTOMER.
  8. PATCH BLOCKOUT FOR REFERENCE ELECTRODE WITH CONCRETE MIX USED FOR TRACK SLAB.
  9. IDENTIFY AND TAG ALL CABLES. PROVIDE A MINIMUM OF 48" OF EXCESS CABLE NEATLY COILED AND BUNDLED IN JUNCTION BOX.
  10. EXOTHERMICALLY WELD CABLES TO RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPOXY.
  11. AFTER TEST OF EXOTHERMIC WELD AND CABLE, FILL THE BLOCKOUT WITH ELASTOMERIC GROUT AND FINISH TO MATCH SURROUNDING GRADE.
  12. MOUNT J-BOX WITH LID 1/2" ABOVE TOP OF RAIL. CONCRETE FINISH AROUND J-BOX TO MATCH DRAINAGE FLOW GRADIENT OF TRACK SLAB.

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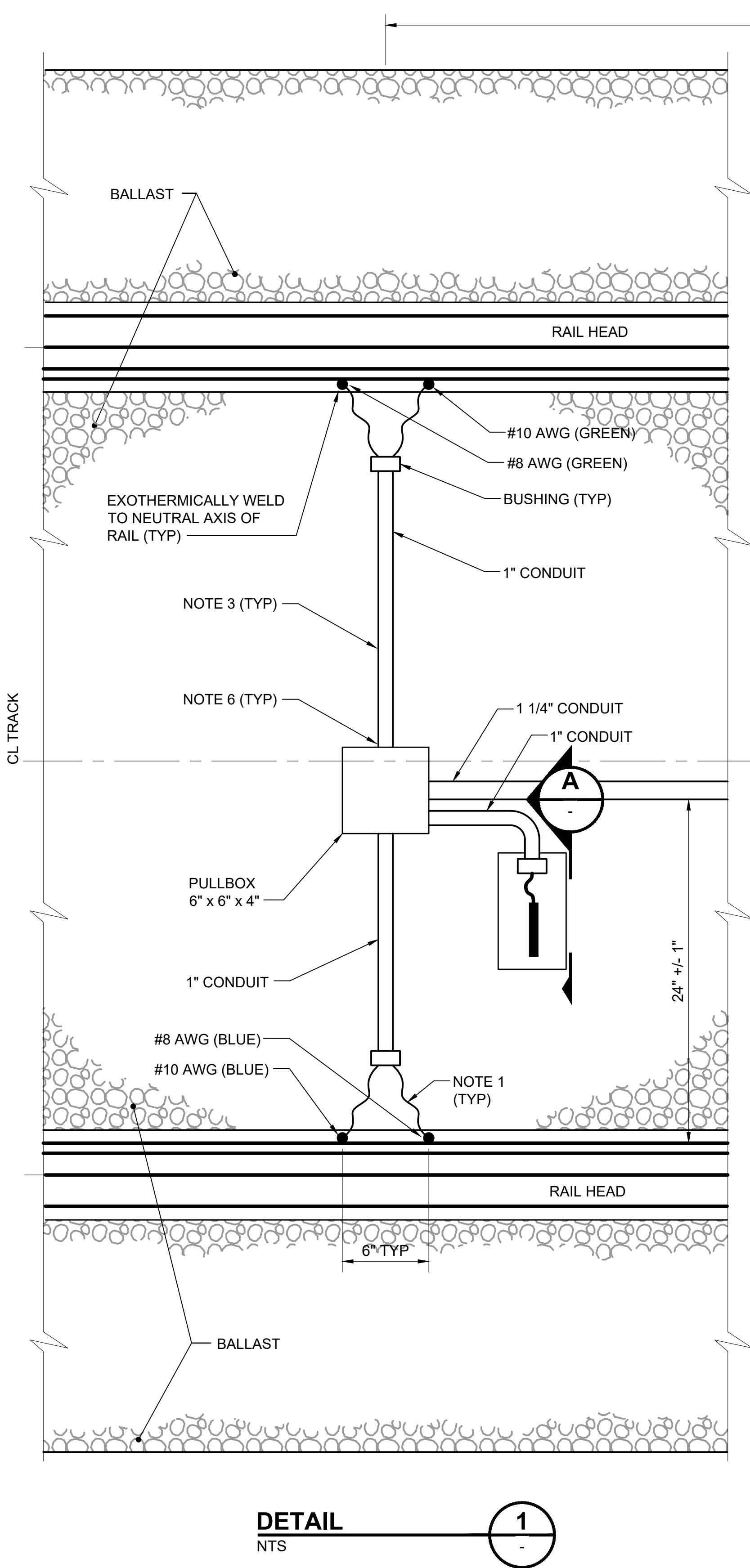
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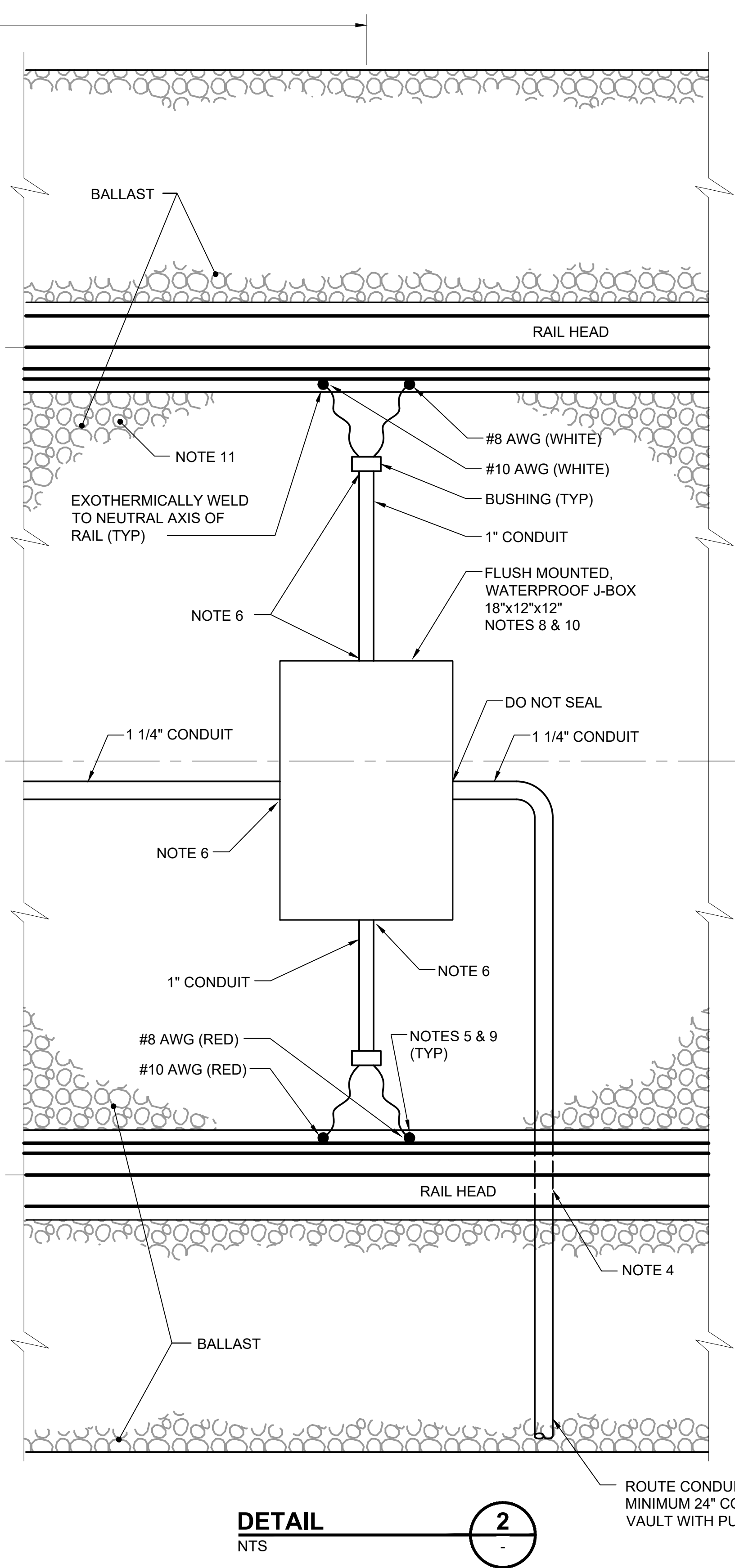
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**GUIDANCE DRAWINGS**  
 SYSTEMS  
 GROUNDING  
 TRACK ISOLATION MONITOR CONFIGURATION  
 EMBEDDED TRACK

DRAWING No.:	<b>GUI-JGD103</b>
FACILITY ID:	
SHEET No.:	REV: 1

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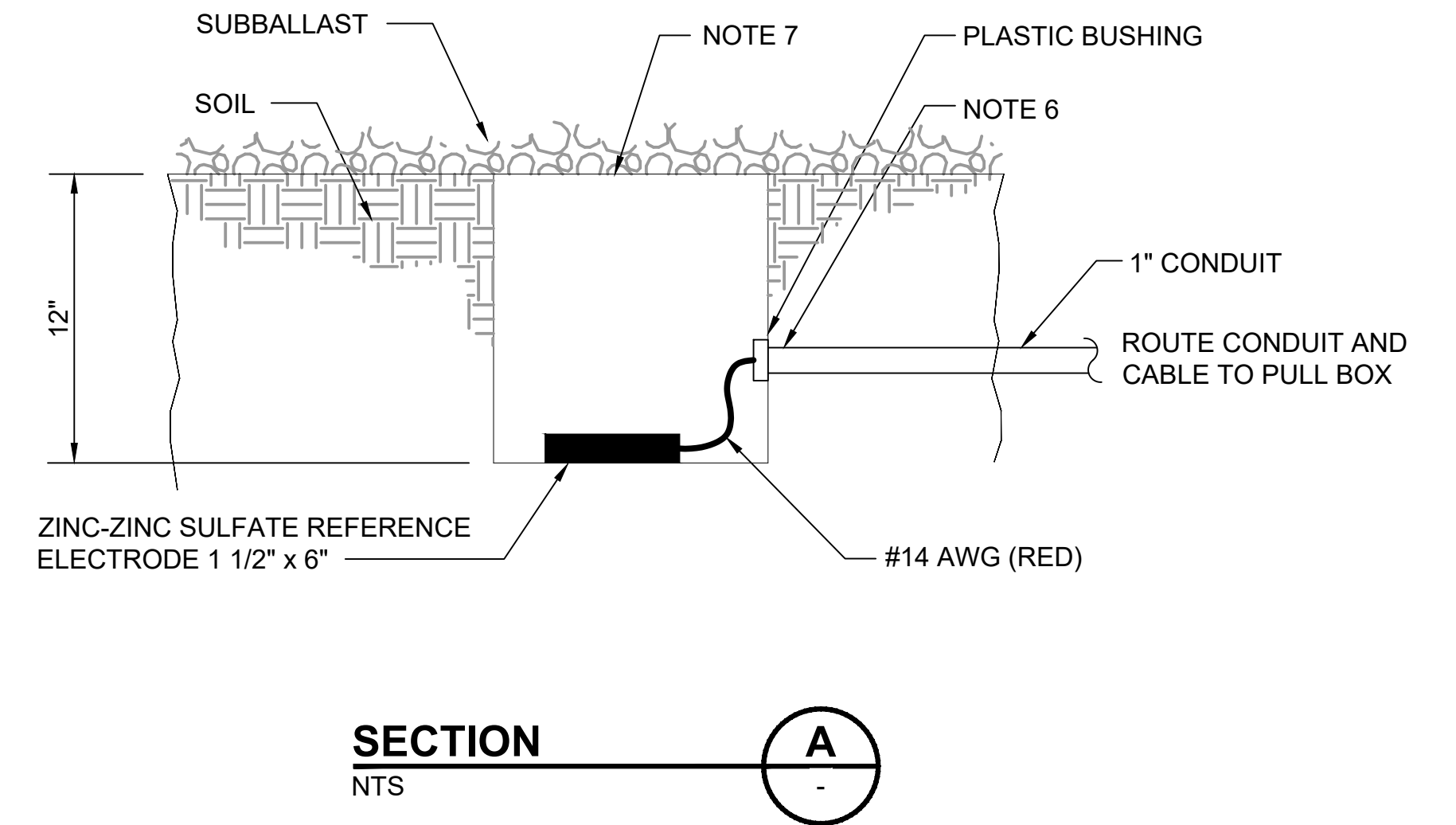
**DETAIL 1**  
NTS



**DETAIL 2**  
NTS

**GENERAL NOTES:**

1. PROVIDE SINGLE CONDUCTOR STRANDED COPPER TEST CABLE.
2. ALL WIRING XHHW EXCEPT AS NOTED.
3. PROVIDE MINIMUM 9" OF BALLAST COVER OVER CONDUIT AND PULL BOXES.
4. MAINTAIN 10" MINIMUM DISTANCE BETWEEN CONDUIT AND RAIL.
5. PROVIDE CONTINUOUS CABLE WITH MINIMUM 2" OF SLACK FROM POINT OF RAIL CONNECTION TO MONITORING JUNCTION BOX.
6. PROVIDE WATER TIGHT SEAL WITH SINGLE COMPONENT SILICONE ELASTOMER.
7. FILL EXCAVATION FOR REFERENCE ELECTRODE WITH SOIL.
8. IDENTIFY AND TAG ALL CABLES. PROVIDE A MINIMUM OF 48" OF EXCESS CABLE INSIDE OF BOX. NEATLY COIL AND BUNDLE EXCESS IN JUNCTION BOX.
9. EXOTHERMIC WELD CABLES TO RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPOXY.
10. PLACE BOX IN BALLAST WITH LID 2" +/- 1/2" ABOVE TOP ELEVATION OF CROSS TIE.
11. PLACE BALLAST AND COMPACT IN A MANNER TO PREVENT DAMAGE TO CONNECTIONS, CABLE, CONDUIT AND BOXES.



**SECTION A**  
NTS

ROUTE CONDUIT BENEATH RAIL WITH A MINIMUM 24" COVER TO COMMUNICATIONS VAULT WITH PULL ROPE IN PLACE.

No.	DATE	DSN	CHK	APP	REVISION
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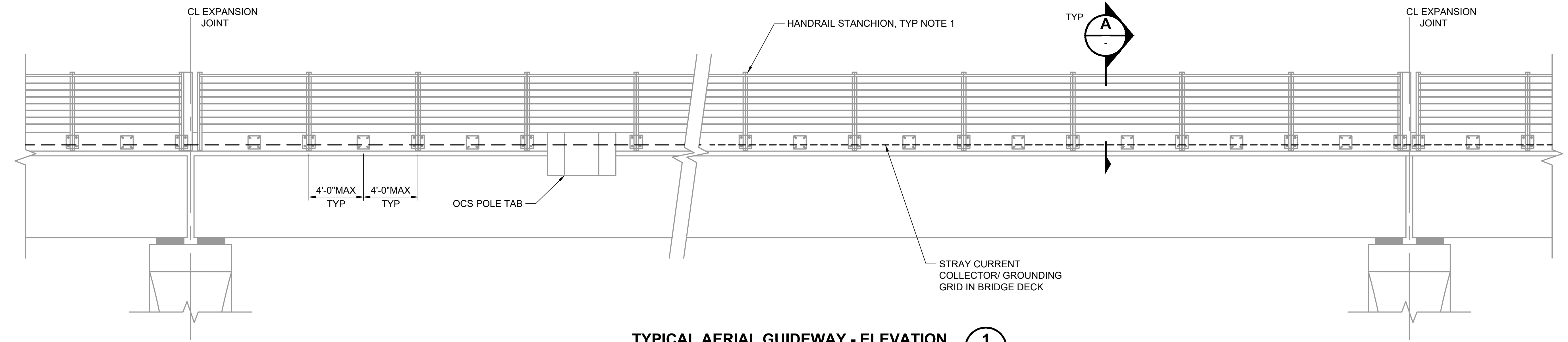
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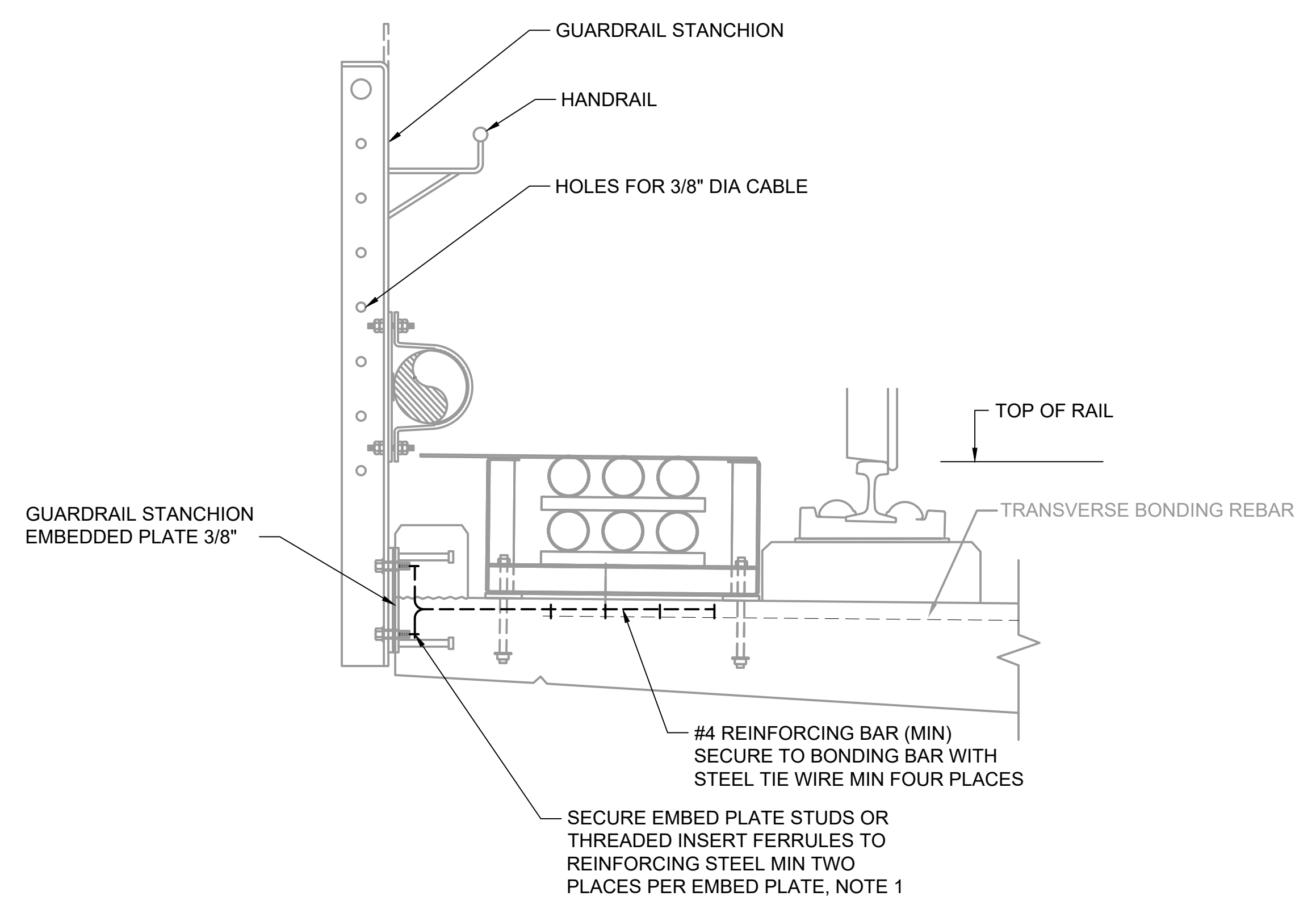
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DRAWING No.:	GUI-JGD104
FACILITY ID:	
SHEET No.:	REV: 1

**GENERAL NOTE:**  
 1. THIS GROUND CONNECTION IS TO BE MADE AT EVERY GUARDRAIL STANCHION.



**TYPICAL AERIAL GUIDEWAY - ELEVATION** 1  
 SCALE: 1/4" = 1'-0"



**SECTION** A  
 SCALE: 1" = 1'-0"

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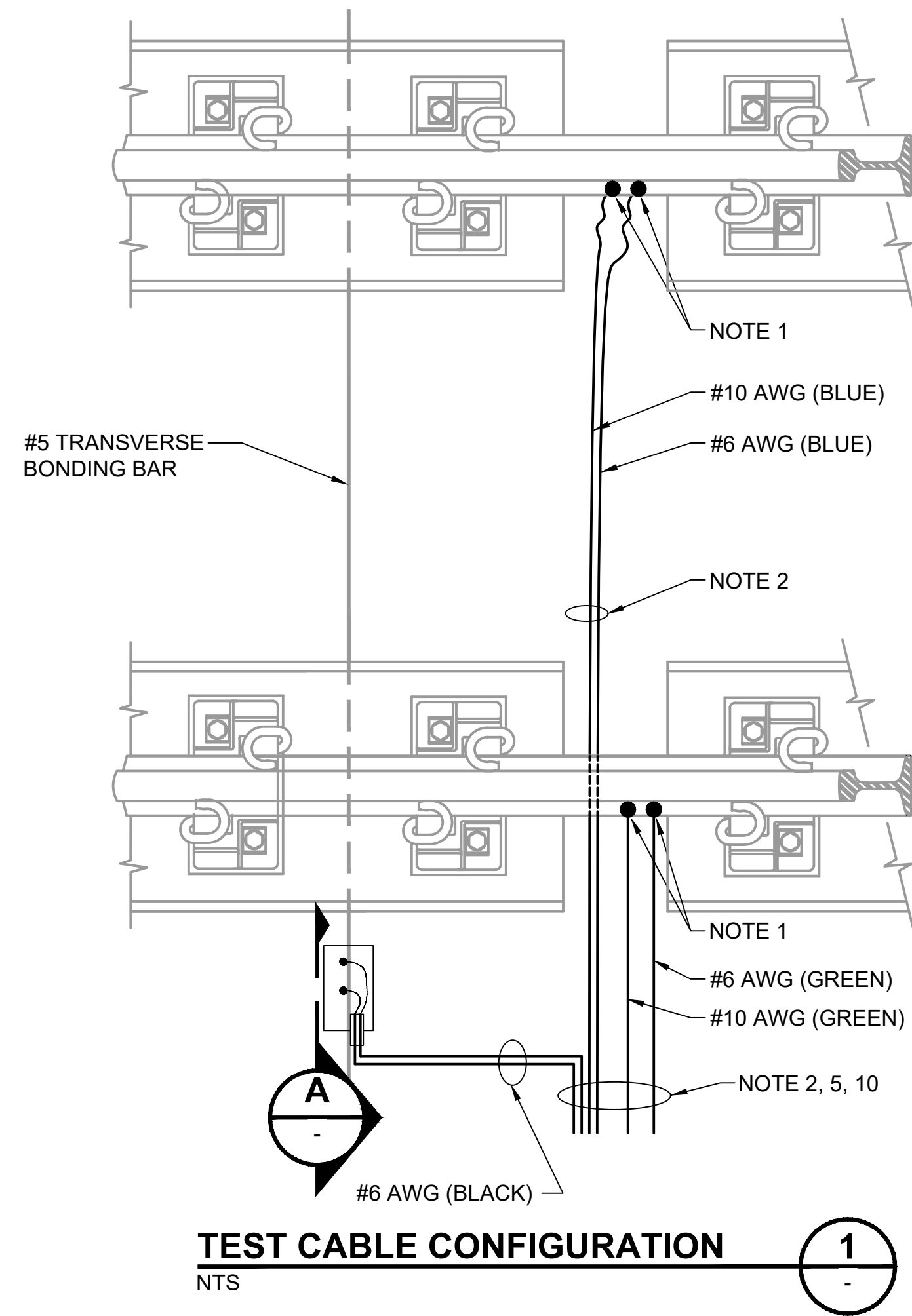
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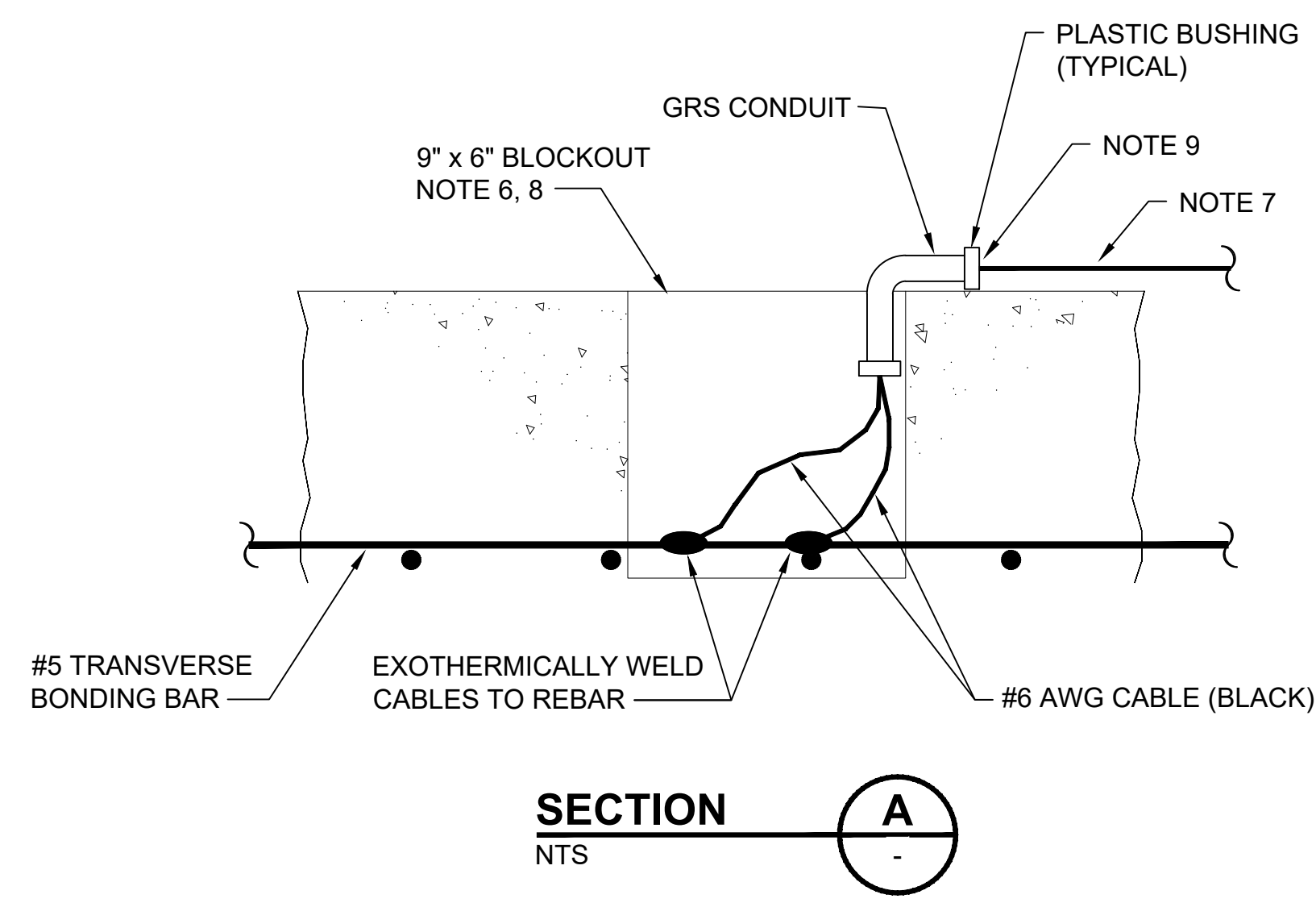
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	DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
GROUNDING AERIAL GUIDEWAY HANDRAIL GROUNDING DETAIL	

DRAWING No.:	GUI-JGD109
FACILITY ID:	
SHEET No.:	REV: 1



**TEST CABLE CONFIGURATION** 1  
NTS



**SECTION A**  
NTS

**GENERAL NOTES:**

1. EXOTHERMICALLY WELD CABLES TO NEUTRAL AXIS OF RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPOXY.
2. BUNDLE CABLES AT 30° MINIMUM SPACING WITH APPROVED HEAT SHRINK SLEEVES AND ROUTE TO GROUNDING TEST BOX.
3. ALL CABLES TO HAVE XHHW INSULATION.
4. GROUNDING TEST BOXES TO BE LOCATED AT COLUMN SUPPORTS AT 1500' (+/-) INTERVALS.
5. PROVIDE APPROVED RESTRAINING DEVICE WITH ANCHOR TO GUIDEWAY.
6. PATCH BLOCKOUT WITH APPROVED CEMENTITIOUS GROUT.
7. ROUTE (2) #6 AWG CABLES TO TEST BOX.
8. DEVELOP DIMENSIONS FOR BLOCKOUT BASED ON GIRDER REINFORCING CONFIGURATION.
9. SEAL CONDUIT WITH SINGLE COMPONENT SILICONE ELASTOMER.
10. ROUTE CABLES IN CONDUIT TO GROUNDING TEST BOX.


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No.	DATE	DSN	CHK	APP	REVISION
1	2/2024				2024 REVISED DIRECTIVE DRAWINGS
0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

DESIGNED BY:	
DRAWN BY:	
CHECKED BY:	
APPROVED BY:	

SUBMITTED BY:	DATE:	REVIEWED BY:	DATE:
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LINE IS 1" AT FULL SCALE



SCALE: NTS  
FILENAME: GUI-JGD110  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

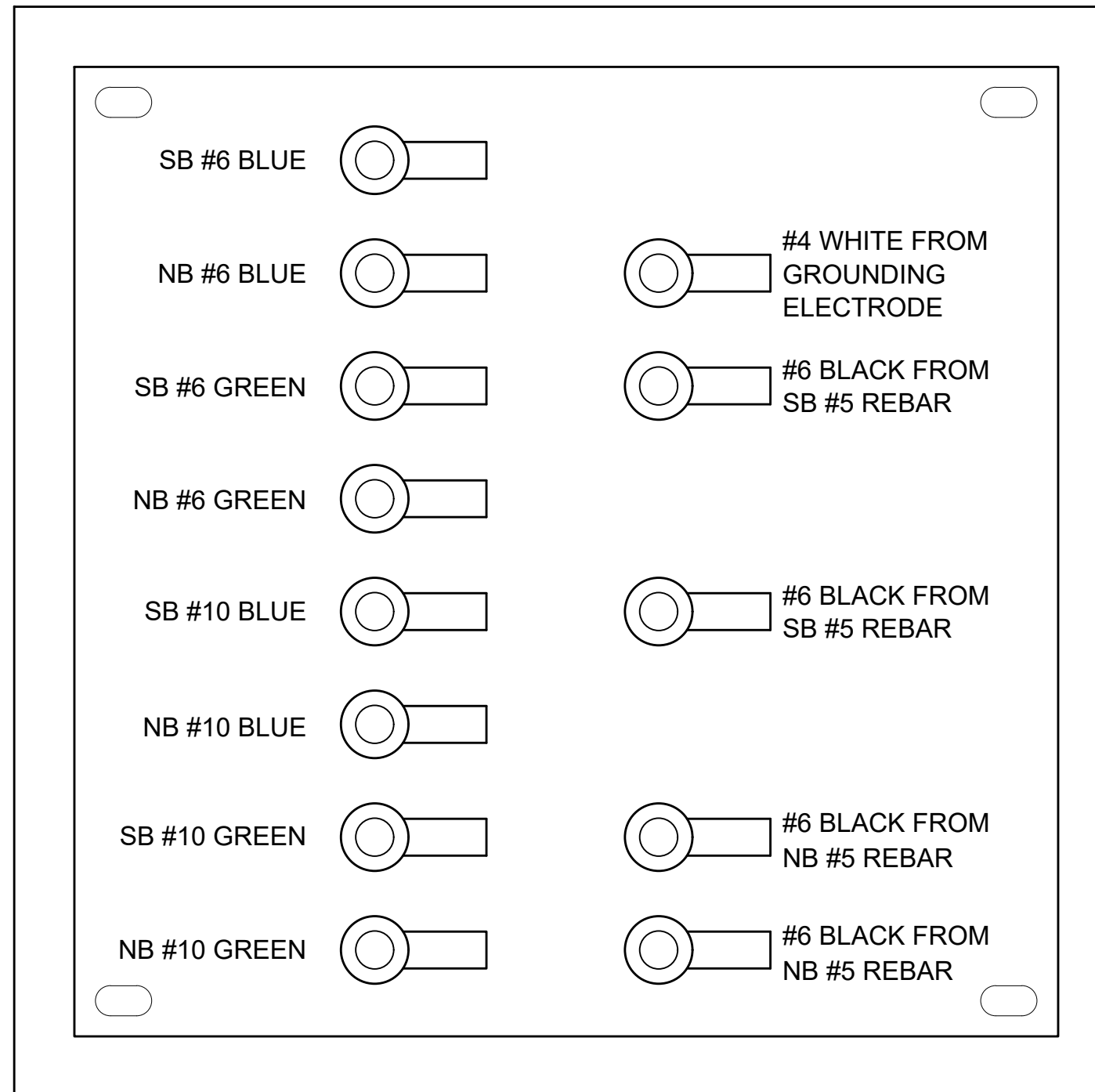
GROUNDING  
AERIAL GUIDEWAY GROUNDING ELECTRODE  
WIRING LAYOUT

DRAWING No.:	GUI-JGD110
FACILITY ID:	
SHEET No.:	REV: 1

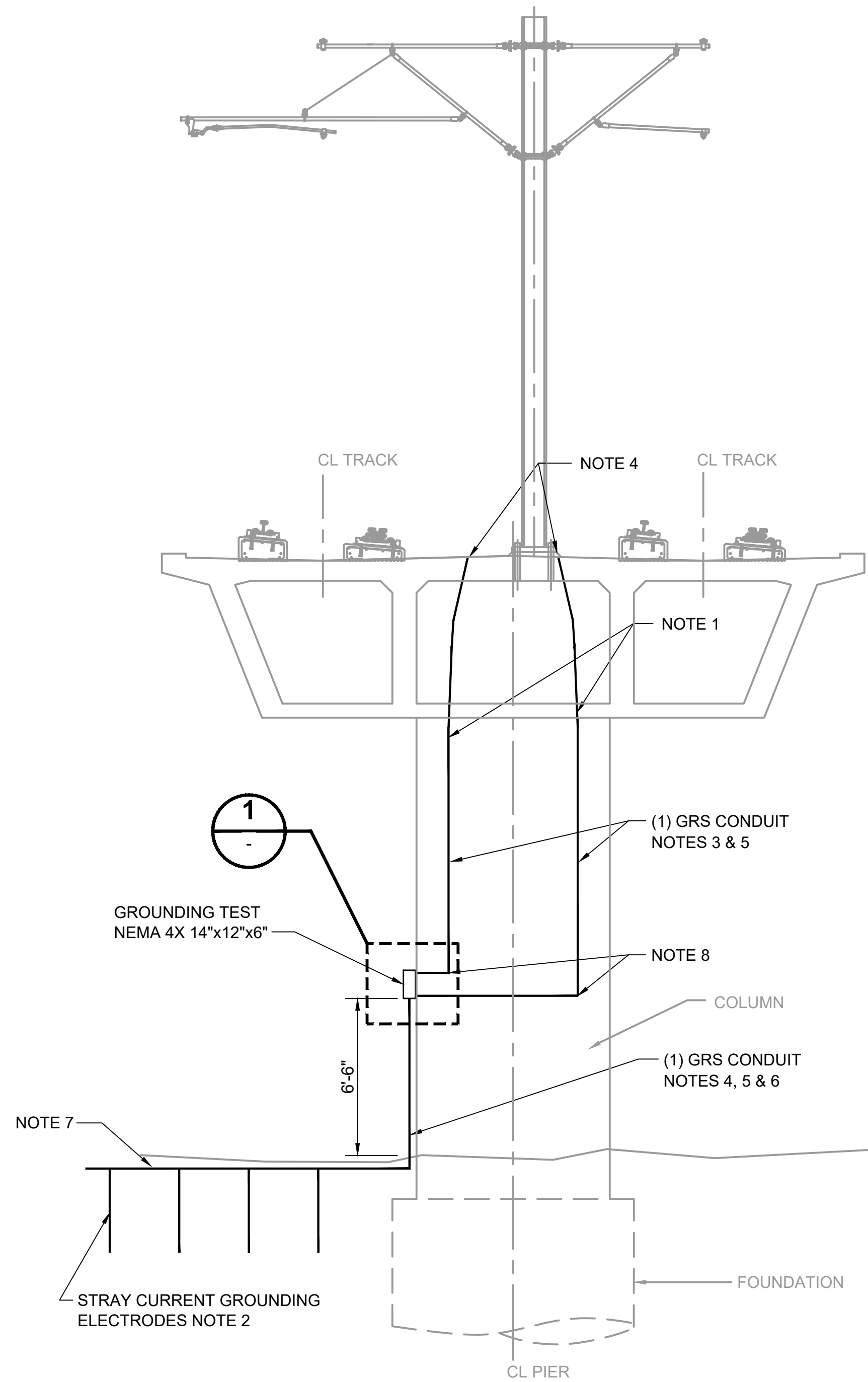
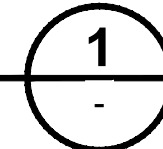


**GENERAL NOTES:**

1. STRAY CURRENT MONITORING WIRES ROUTED TO GROUNDING TEST BOX. SEE DWG JGD110 FOR WIRING DETAILS.
2. GROUND ELECTRODE ARRAY TO BE BASED ON SOIL RESISTIVITY AT SITE TO BE A MAXIMUM OF 25 OHMS TO REMOTE EARTH. ARRAY ARRANGEMENTS TO CONFORM TO LIMITS OF RIGHT-OF-WAY. STEEL SHAFTS AT COLUMN FOUNDATIONS MAY BE USED FOR GROUND ELECTRODE AT DESIGNATED BENTS.
3. GRS CONDUIT SIZE TO BE MINIMUM 1 1/4 INCH OR AS REQUIRED BY NATIONAL ELECTRIC CODE.
4. CONDUIT TO BE SEALED WITH SINGLE COMPONENT SILICONE ELASTOMER AND PROVIDED WITH A PLASTIC BUSHING.
5. CONDUIT TO BE SURFACE MOUNTED AND SUPPORTED WITHIN 3 FEET OF TERMINATION AND AT MAXIMUM INTERVALS OF 10 FEET. MINIMUM 1/4 INCH SPACER TO BE USED BETWEEN GRS CONDUIT AND CONCRETE SURFACE. CONDUIT MAY BE EMBEDDED WITHIN CAST-IN-PLACE GIRDERS AND COLUMNS.
6. GRS CONDUIT TO BE MINIMUM 1 INCH OR AS REQUIRED BY NATIONAL ELECTRIC CODE. EXTEND CONDUIT TO MINIMUM 18 INCHES BELOW GRADE.
7. #4 AWG XHHW GROUNDING ELECTRODE CABLE. DIRECT BURIAL A MINIMUM OF 24 INCHES.
8. PROVIDE 1/4" DIAMETER WEEP HOLE FOR MOISTURE DRAINAGE.

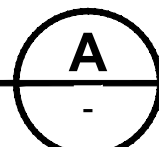


**GROUNDING TEST BOX PANEL**  
NTS



**AERIAL GUIDEWAY GROUNDING TEST BOX TYPICAL SECTION**

NTS

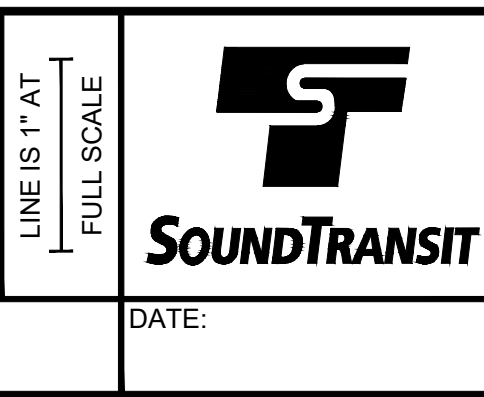


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No.	DATE	DSN	CHK	APP	REVISION
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0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

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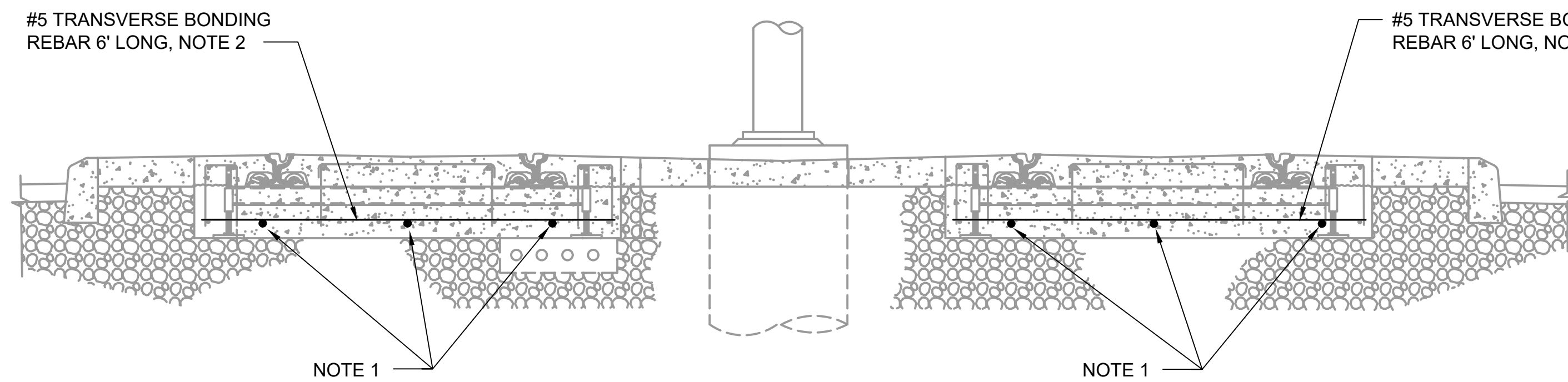
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CONTRACT No.: RTA/LR
DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
GROUNDING AERIAL GUIDEWAY TEST BOX AND GROUNDING ELECTRODES TYPICAL SECTION	

DRAWING No.:	GUI-JGX200
FACILITY ID:	
SHEET No.:	REV: 1

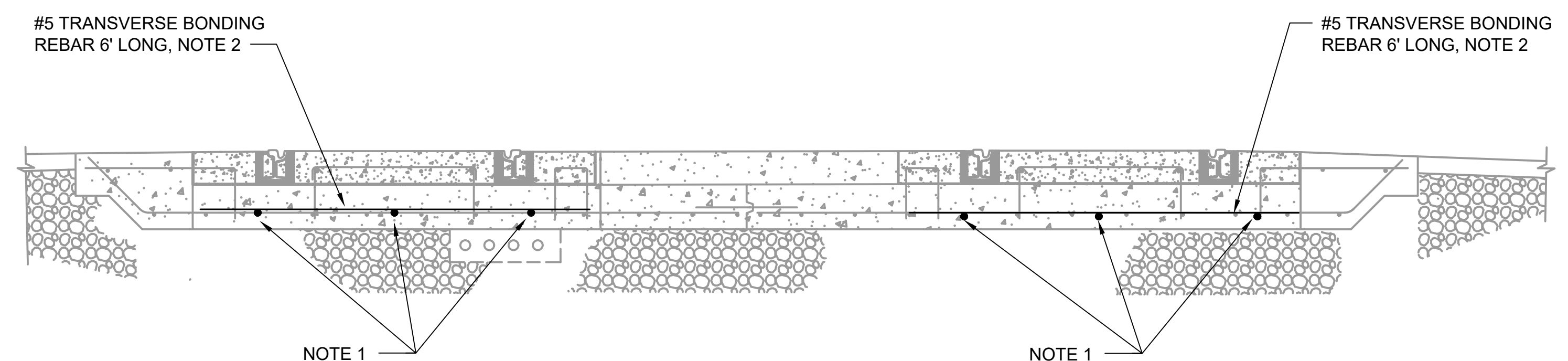
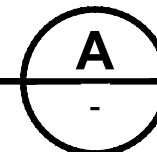
**GENERAL NOTES:**

1. THREE LONGITUDINAL REBARS FOR EACH TRACK TO BE MADE ELECTRICALLY CONTINUOUS BY WELDING AT LAP SPLICES.
2. PLACE A CONTINUOUS #5 TRANSVERSE BONDING REBAR, 6 FEET LONG, WITHIN 18" OF EACH EXPANSION JOINT AND WELD TO ALL LONGITUDINAL REBARS.
3. BOND CABLE TO HAVE ADEQUATE SLACK TO ACCOMMODATE EXPANSION AND CONTRACTION OF TRACK SLAB. TOTAL LENGTH AS REQUIRED.
4. BOND CABLES 10' OR LESS IN TOTAL LENGTH TO BE MINIMUM #2 AWG. BOND CABLES GREATER THAN 10' IN TOTAL LENGTH TO BE MINIMUM 1/0 AWG. CABLE INSULATION TO BE XHHW.
5. TWO BOND CABLES TO BE INSTALLED FOR EACH TRACK. BOND CABLE CONNECTIONS TO BE SPACED AT CENTERLINE OF EACH RAIL +/- 6".
6. REINFORCING STEEL PATTERN MAY VARY FOR SPECIFIC CONTRACT LOCATIONS. CONTRACTOR TO CONFORM TO CONTRACT DRAWINGS FOR SPECIFIC LAYOUTS.
7. WELDED REBAR TO CONFORM TO ASTM A706 AND AWS D1.4.
8. PROVIDE BOND CABLES ACROSS EMBEDDED SPECIAL TRACKWORK AS FOR EXPANSION JOINTS.



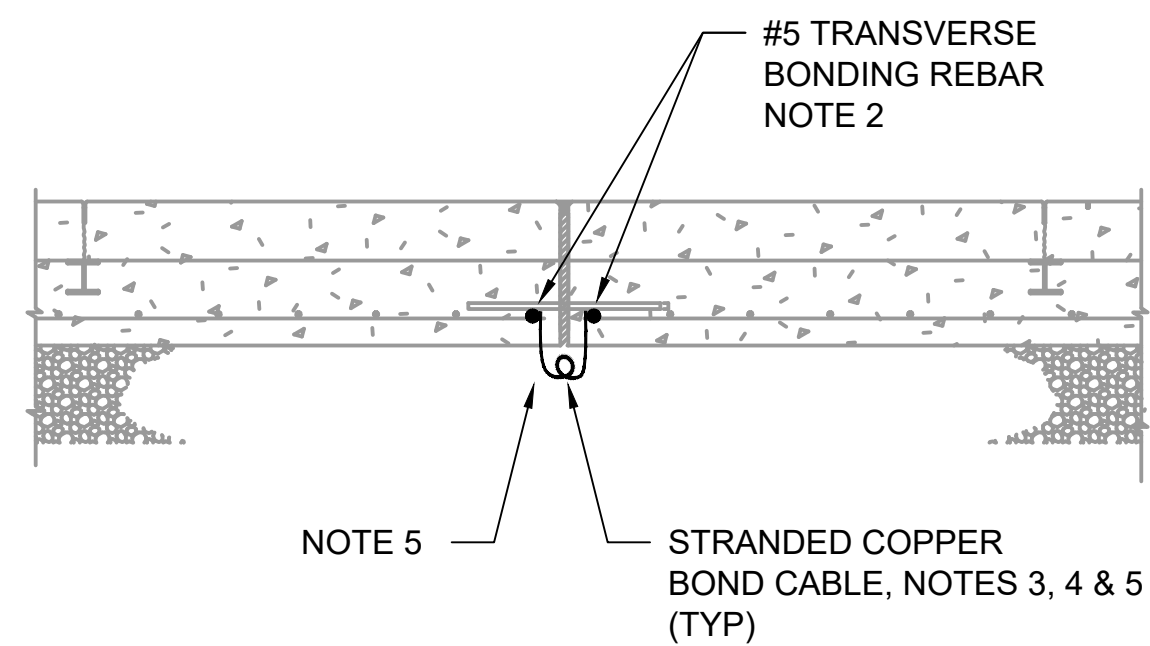
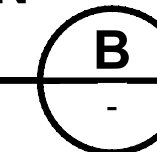
**ELECTRICAL BONDING AT MIDBLOCK ROAD  
TYPICAL SECTION**

SCALE: 1/2"=1'-0"



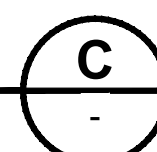
**ELECTRICAL BONDING AT ROAD INTERSECTION  
TYPICAL SECTION**

SCALE: 1/2"=1'-0"



**EXPANSION JOINT  
TYPICAL SECTION**

SCALE: 1/2"=1'-0"



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0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

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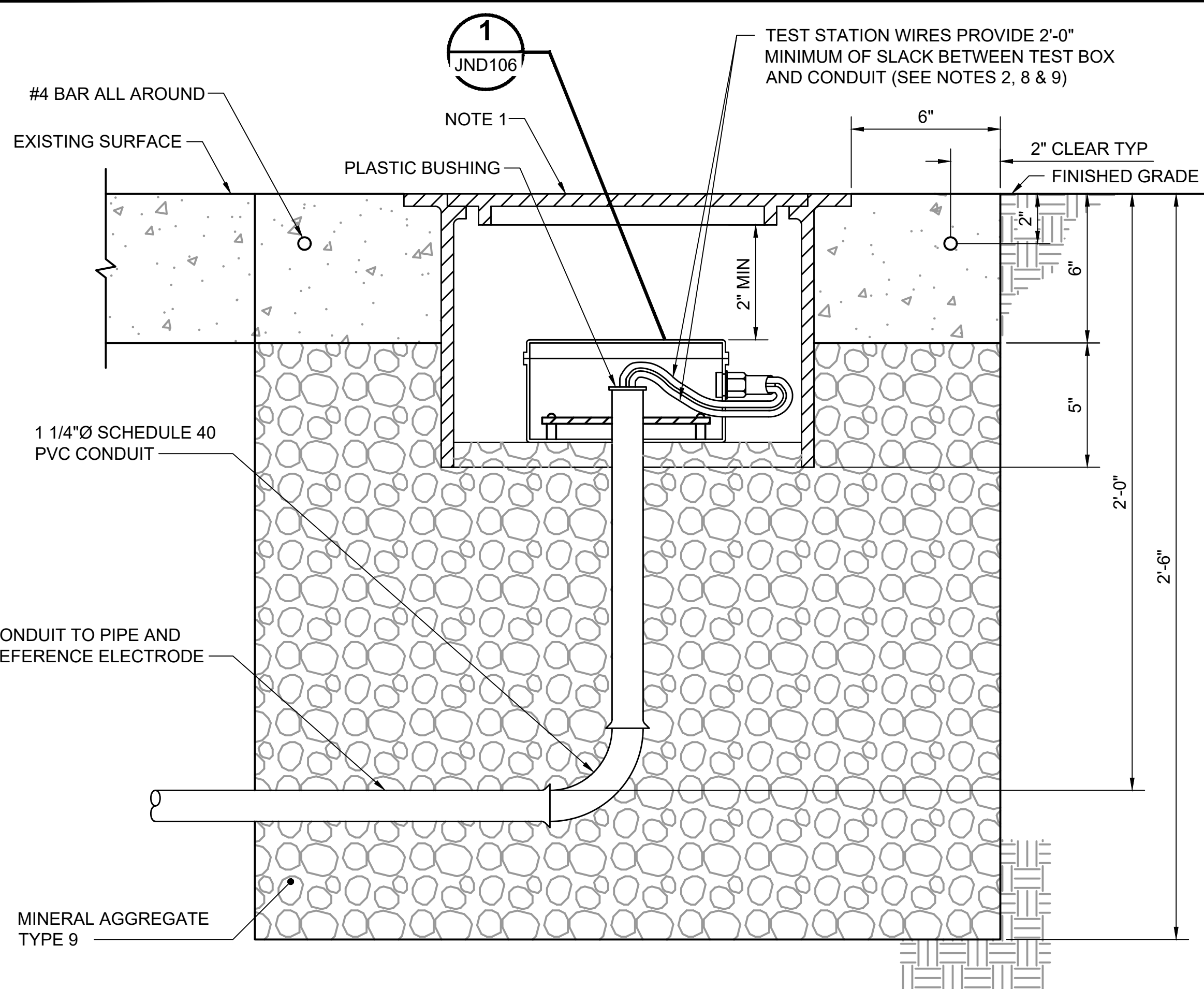
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SCALE: 1/2"=1'-0"
FILENAME: GUI-JGX201
CONTRACT No.: RTA/LR
DATE: 2/2024

**SOUND TRANSIT  
GUIDANCE DRAWINGS  
SYSTEMS**

GROUNDING  
EMBEDDED TRACK ELECTRICAL CONTINUITY  
TYPICAL SECTIONS

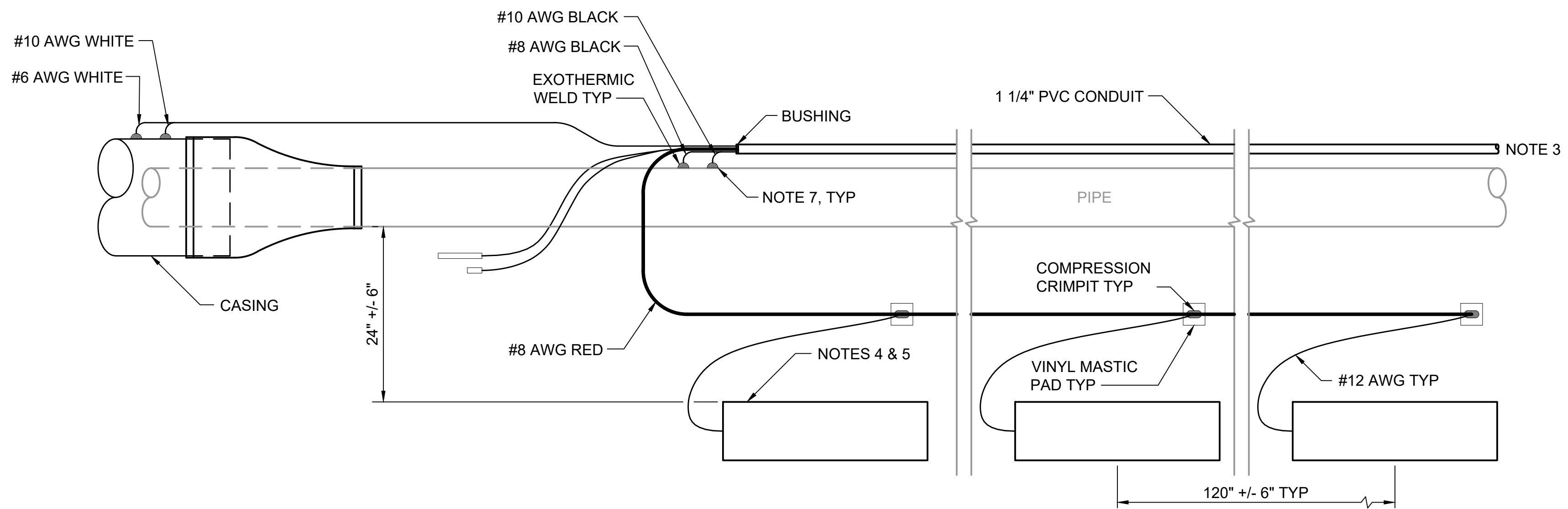
DRAWING No.:	GUI-JGX201
FACILITY ID:	
SHEET No.:	REV:
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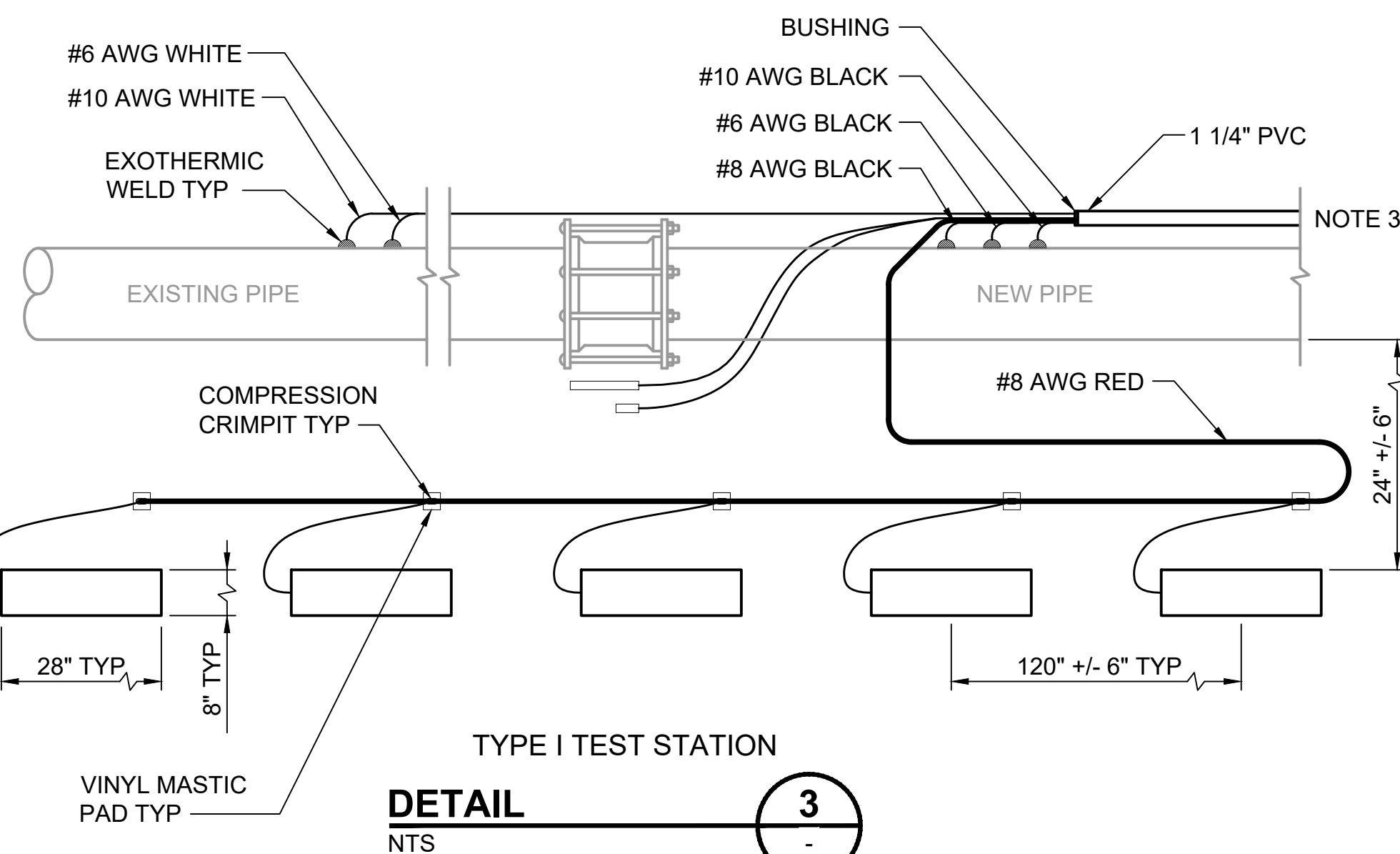
**TEST STATION - NON-TRAFFIC AREA**  
NTS

**GENERAL NOTES:**

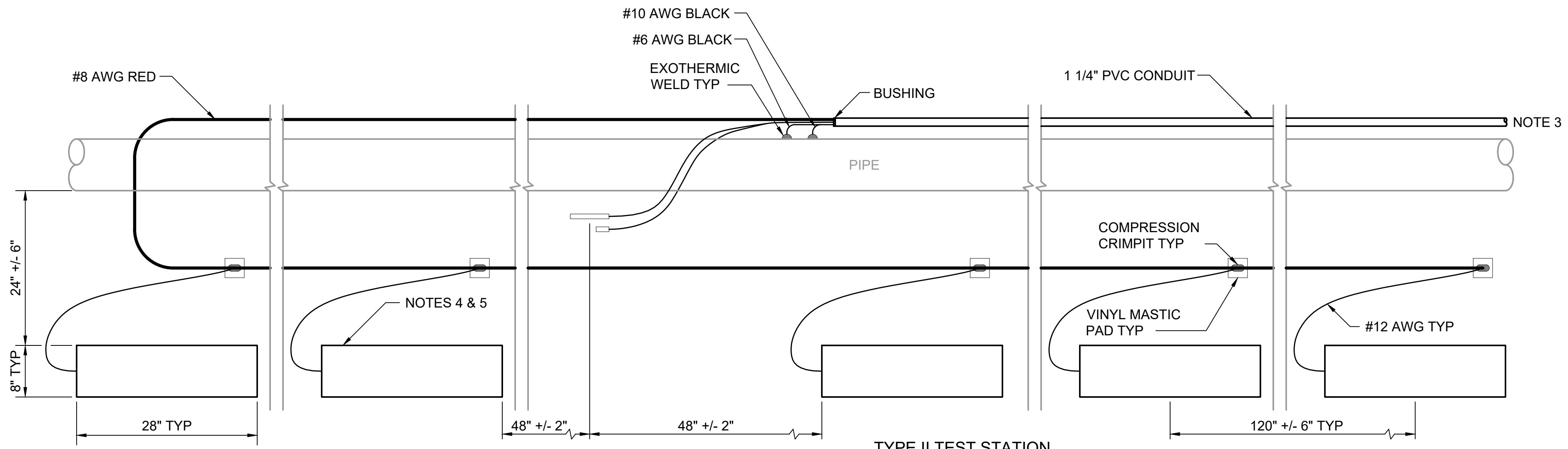
1. PROVIDE STANDARD WATER METER BOX AND LID AS APPROVED BY SEATTLE PUBLIC UTILITIES OR APPROVED EQUAL.
2. BUNDLE WIRES WITH NYLON CABLE TIES AT CONDUIT AND AT 6" INTERVALS TO TESTBOX.
3. ROUTE TO TEST STATION (SEE DETAIL 1 THIS SHEET).
4. MAGNESIUM ALLOY ANODE, ASTM B843, 32D5 WITH A FACTORY ATTACHED WIRE OF #12 TW INSULATED SOLID COPPER SILVER SOLDERED (45% SILVER) TO THE GALVANIZED STEEL CORE. MINIMUM WIRE LENGTH OF 10 FEET. FILL THE CORE CAVITY WITH ELECTRICAL SEALING COMPOUND TO INSURE FULLY INSULATED AND PROTECTED CONNECTION. CENTER ANODE INGOT IN A COTTON BAG AND SURROUND WITH A BACKFILL MIXTURE CONSISTING OF 75% HYDRATED GYPSUM, 20% BENTONITE, AND 5% SODIUM SULFATE. TOTAL PACKAGED WEIGHT TO BE 72 POUNDS +/- 5%. PROVIDE PACKAGED ANODES IN MULTIPLE LAYER PAPER SACKS, PALLETIZED, AND FILM WRAPPED FOR SHIPPING.
5. PLACE WITHIN PIPELINE TRENCH EXCAVATION AT 6" +/- 2" HORIZONTAL FROM PIPELINE AT DEPTHS INDICATED ON DETAIL.
6. PROVIDE STRANDED COPPER WIRING WITH XHHW TYPE INSULATION UNLESS SPECIFICALLY DESIGNATED OTHERWISE.
7. BEFORE BACKFILL IS PLACED, PROVIDE ELECTRICAL CONTINUITY TESTING OF ALL EXOTHERMIC WELD CONNECTIONS.
8. PROVIDE ELECTRICAL CONTINUITY TESTING OF ALL CABLES BEFORE AND AFTER BACKFILL IS PLACED IN ACCORDANCE WITH SPECIFICATIONS.
9. PROVIDE VERIFICATION TESTING OF ALL WIRING AFTER TERMINATION TO PANEL BOARD IN ACCORD WITH APPROVED TESTING PLAN.



**DETAIL**  
NTS



**DETAIL**  
NTS




**DETAIL**  
NTS

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0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

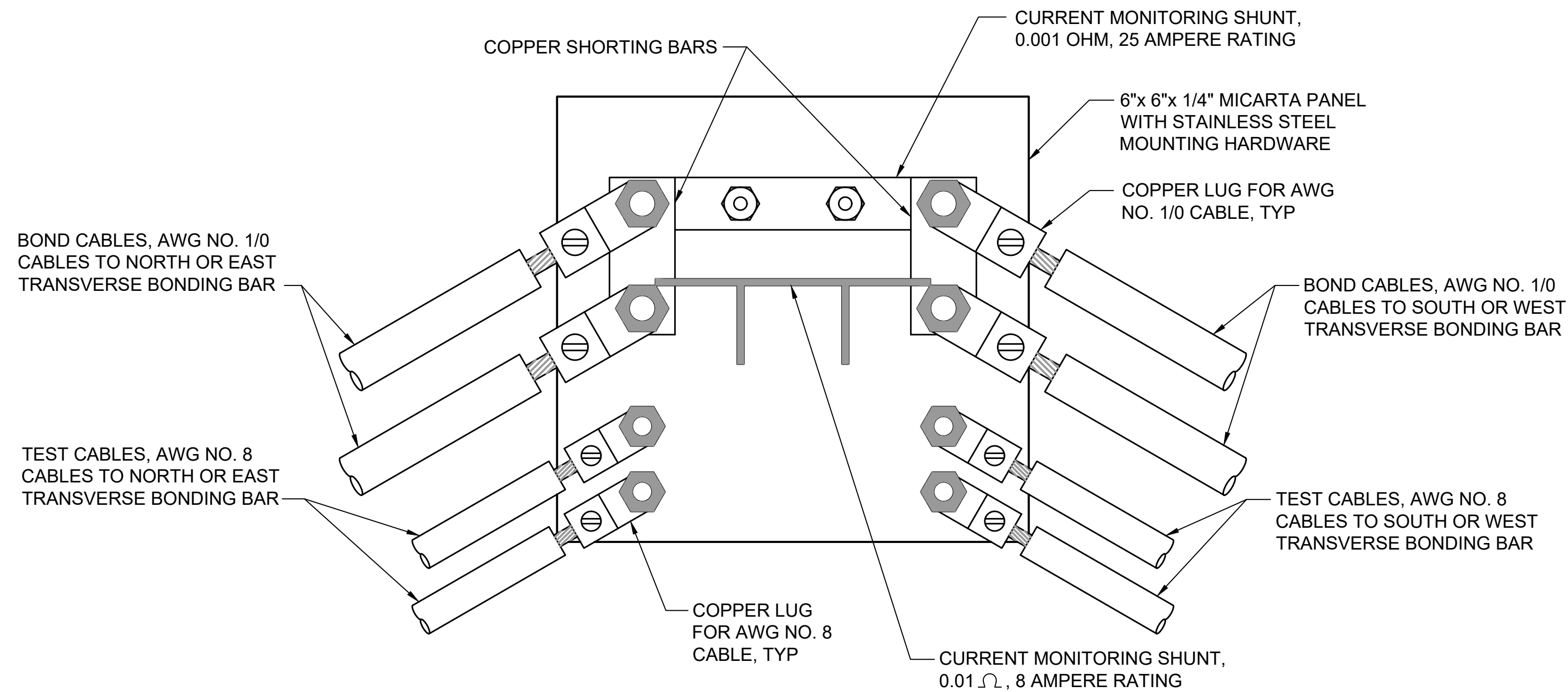
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FILENAME: GUI-JND105	
CONTRACT No.:	RTA/LR
DATE:	2/2024

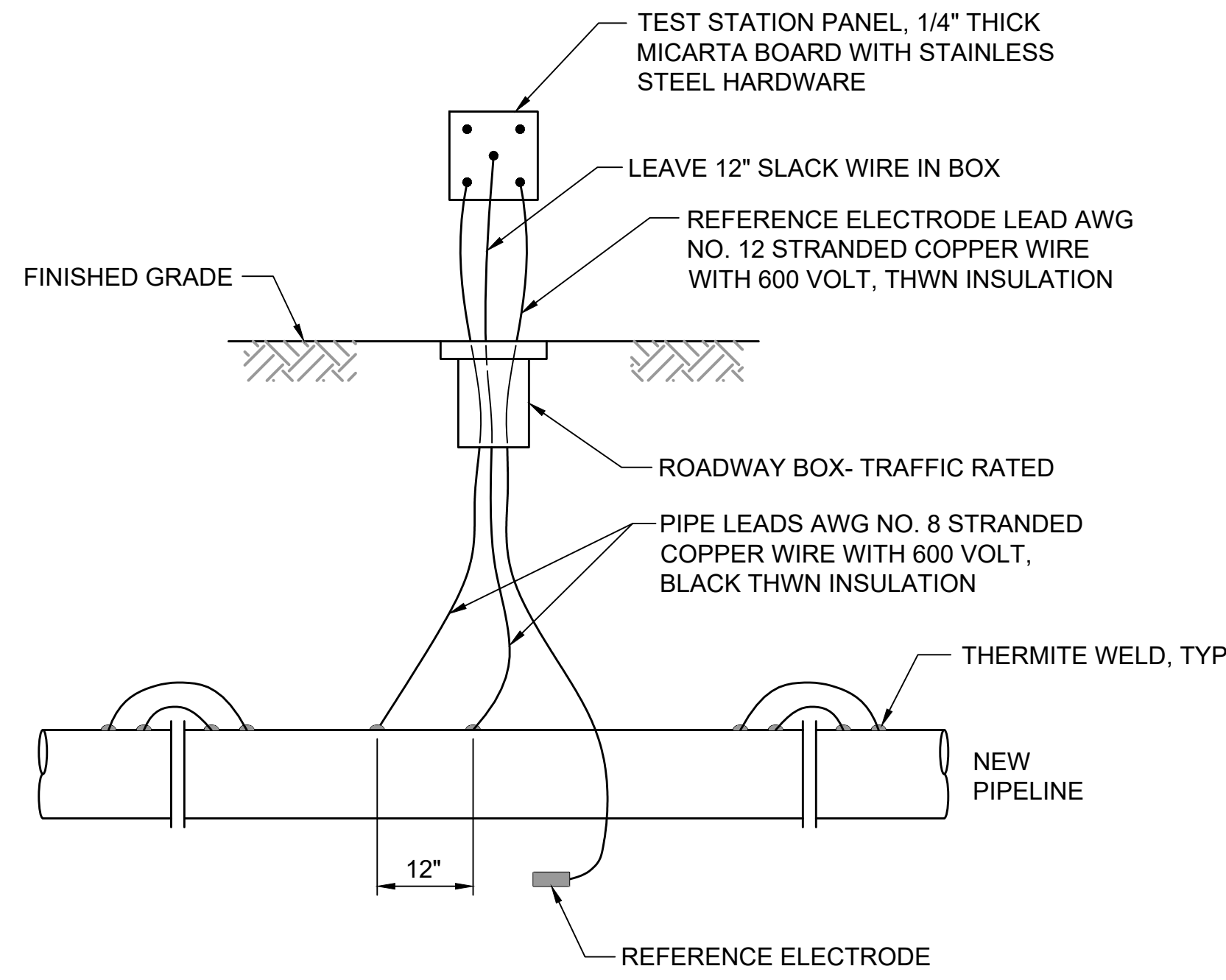
<b>SOUND TRANSIT</b> <b>GUIDANCE DRAWINGS</b> SYSTEMS	
CORROSION CONTROL GALVANIC CATHODIC PROTECTION DETAILS	

DRAWING No.:	GUI-JND105
FACILITY ID:	
SHEET No.:	REV:
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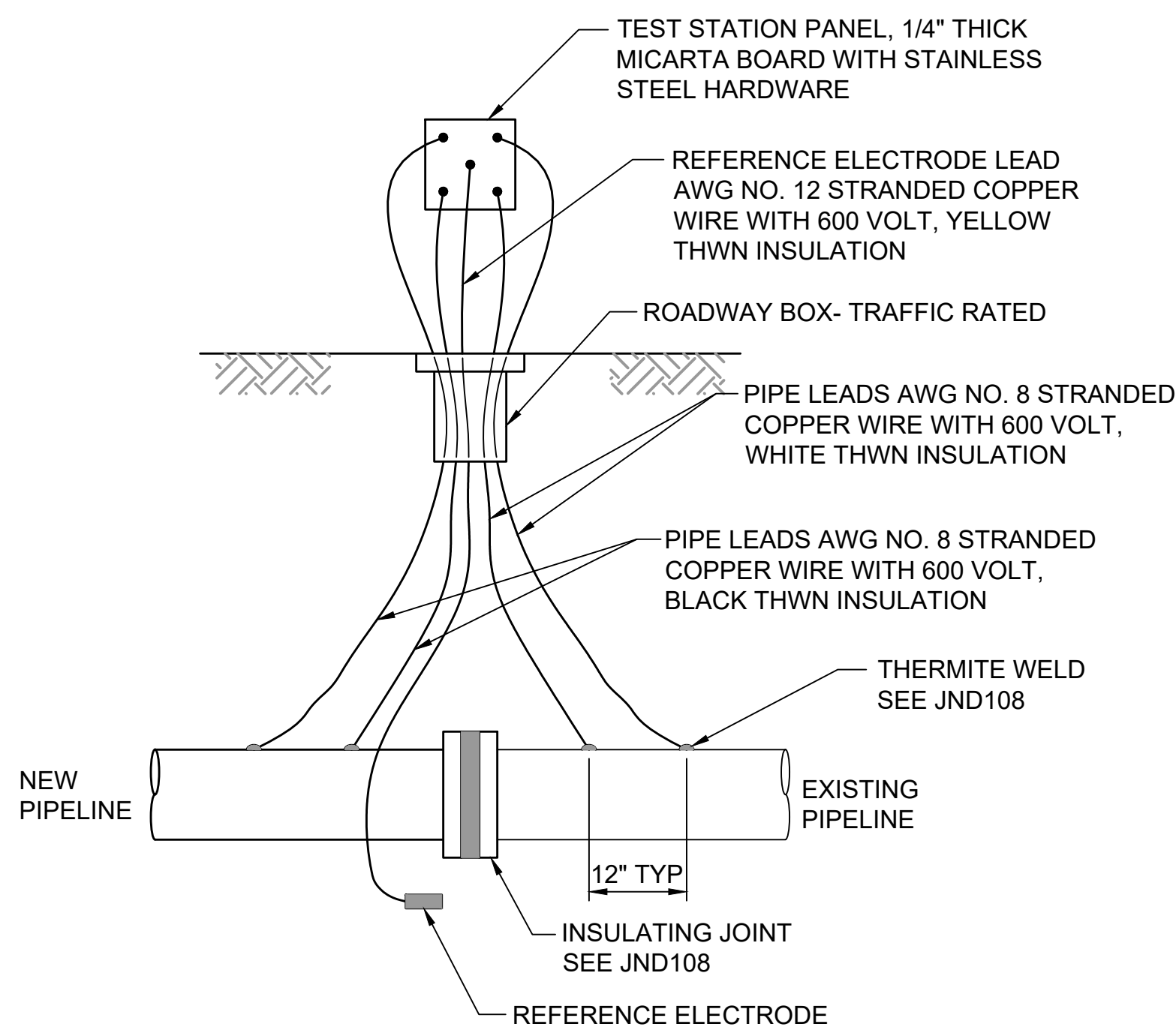


- NOTES:**
1. ALL MOUNTING HARDWARE TO BE STAINLESS STEEL AND SIZED TO ACCEPT THE WIRE LUG MOUNTING HOLE.
  2. PROVIDE ADEQUATE CABLE LENGTH TO ALLOW FOR A MINIMUM OF 1 FOOT OF SLACK ABOVE FINISHED GRADE.
  3. INSTALL TEST STATION IN TRAFFIC BOX AT AN ACCESSIBLE LOCATION.

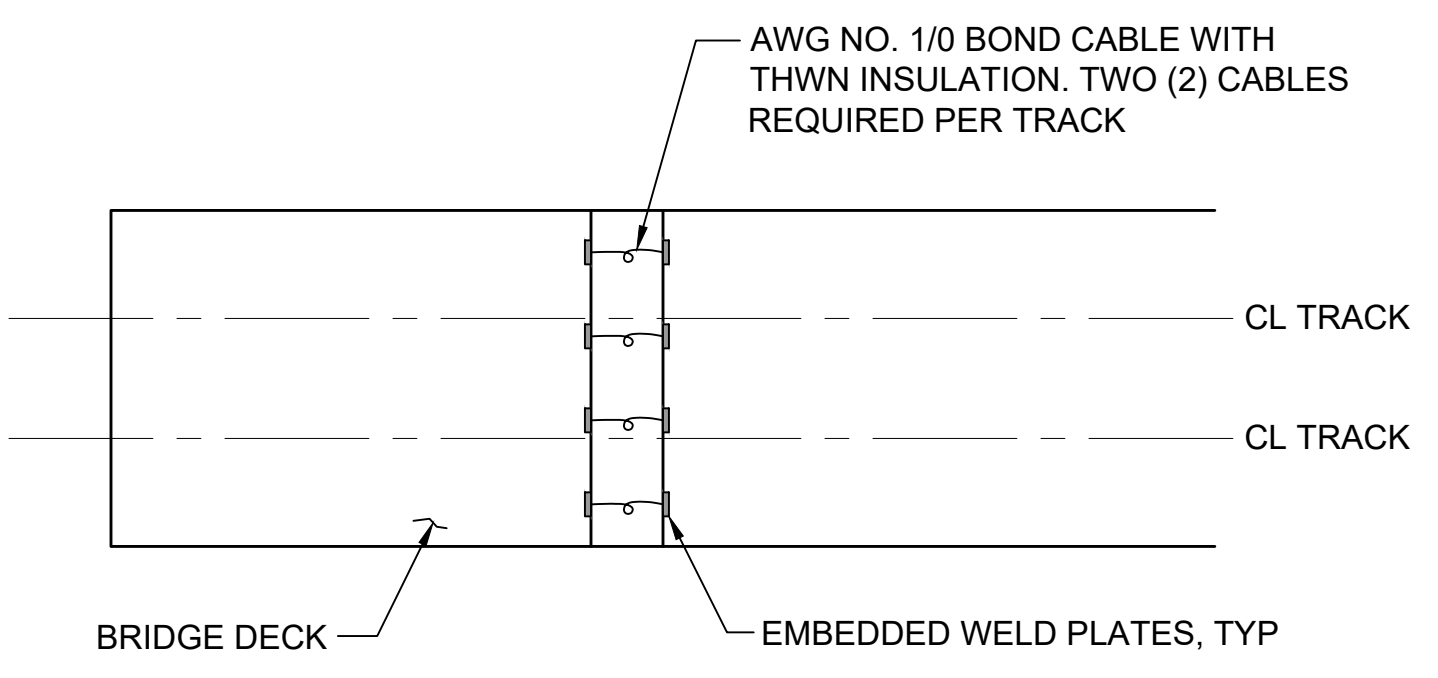
**REINFORCEMENT TEST STATION (TRACK SLAB)** 1  
NTS JND105



**CATHODIC PROTECTION/STRAY CURRENT TEST STATION** 2  
NTS



**INSULATING JOINT TEST STATION** 3  
NTS



- NOTES:**
1. LEAVE SUFFICIENT SLACK IN BOND CABLES TO ALLOW FOR BRIDGE MOVEMENT.
  2. EMBEDDED WELD PLATES SHALL BE ATTACHED TO THE ELECTRICALLY CONTINUOUS REINFORCEMENT LAYER BY THE USE OF BOND CABLES OR DIRECT WELD TO REINFORCEMENT.

**BONDING AT EXPANSION JOINT** 4  
NTS

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No.	DATE	DSN	CHK	APP	REVISION
1	2/2024				2024 REVISED DIRECTIVE DRAWINGS
0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

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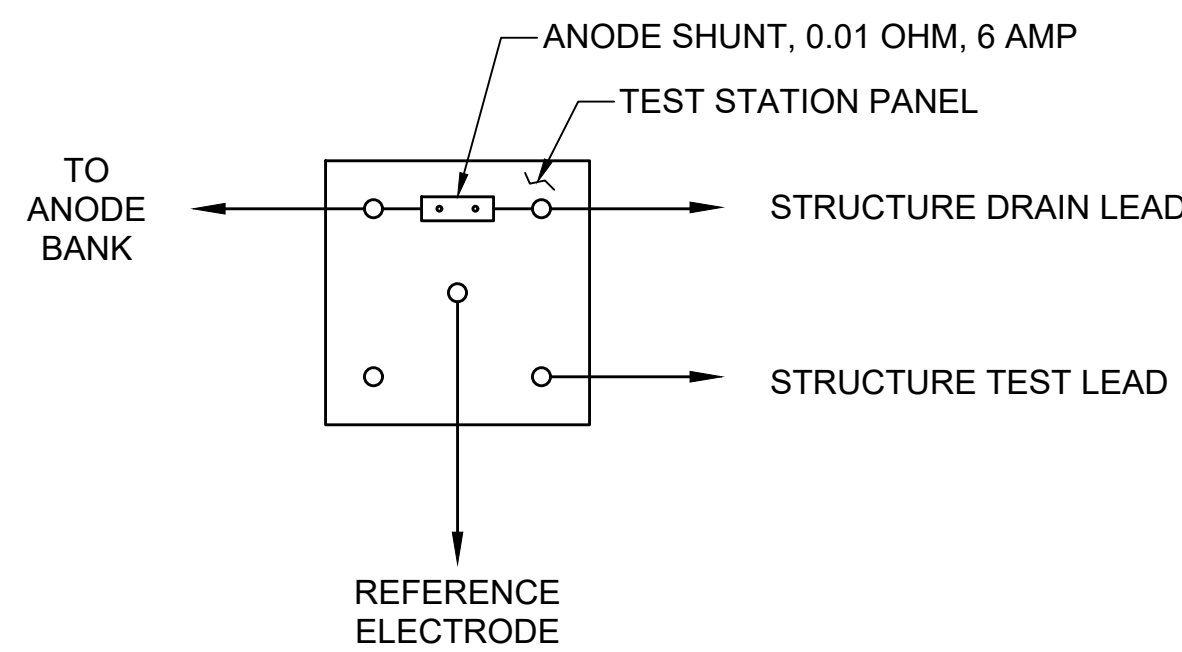
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CONTRACT No.: RTA/LR  
DATE: 2/2024

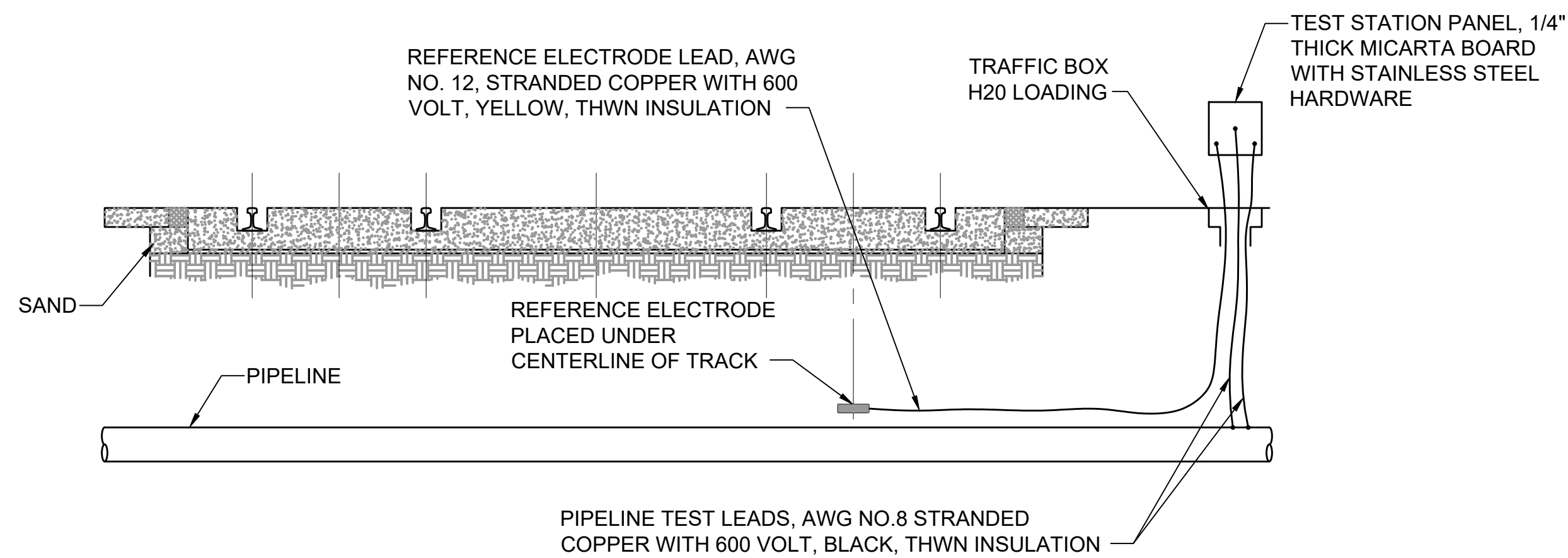
**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

CORROSION CONTROL GALVANIC CATHODIC PROTECTION SECTIONS AND DETAILS

DRAWING No.:	GUI-JND106
FACILITY ID:	
SHEET No.:	1



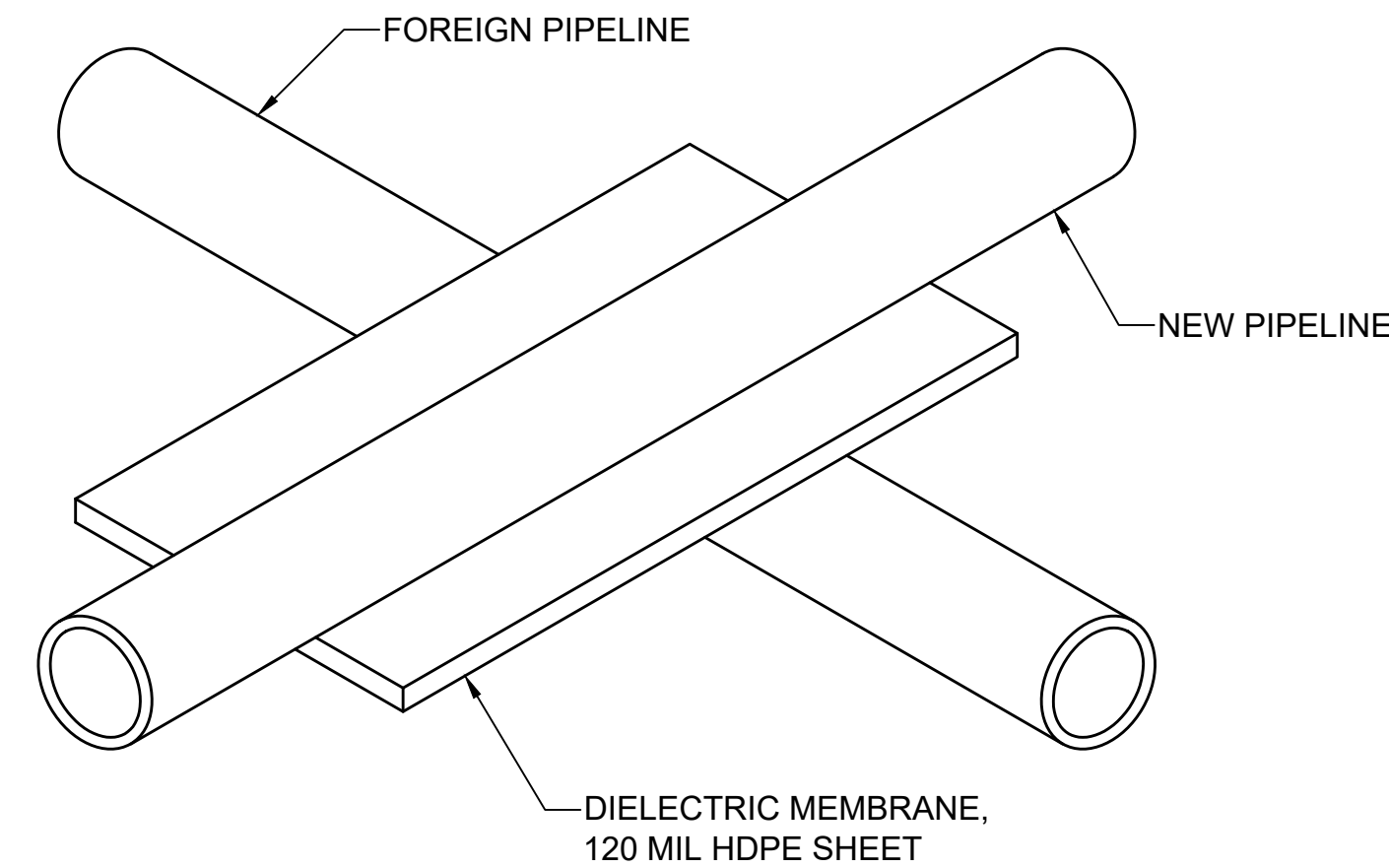
**GALVANIC CATHODIC PROTECTION SCHEMATIC** 1  
NTS



**NOTES:**

1. LOCATE TEST STATION OUT OF TRAFFIC LANES AND AT AN ACCESSIBLE LOCATION.
2. REFERENCE ELECTRODE TO BE PLACED UNDER THE CENTERLINE OF TRACK.
3. PROVIDE ADEQUATE CABLE LENGTH TO ALLOW FOR A MINIMUM OF 1 FOOT OF SLACK ABOVE FINISHED GRADE.

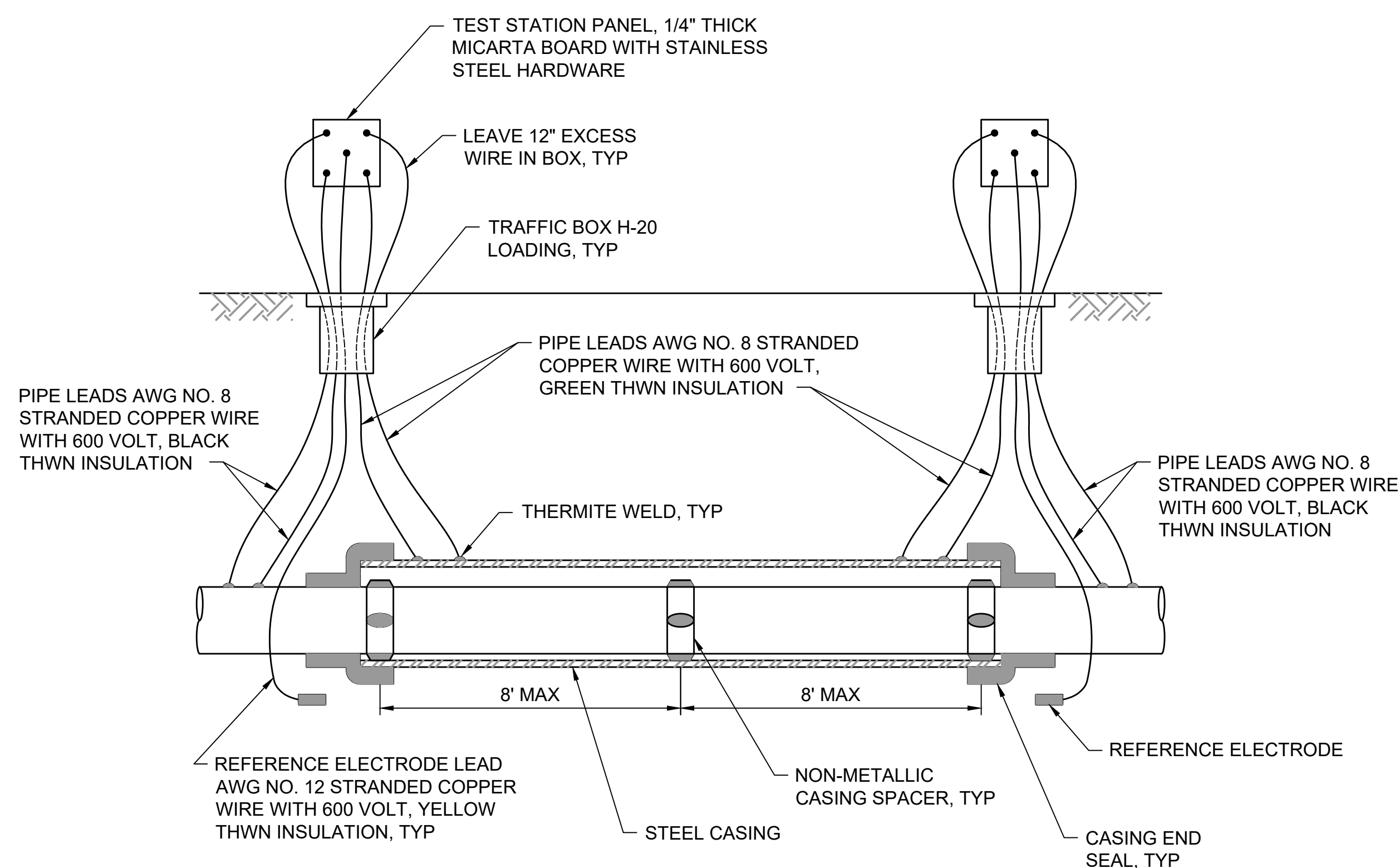
**TRACK REFERENCE ELECTRODE INSTALLATION** 2  
NTS



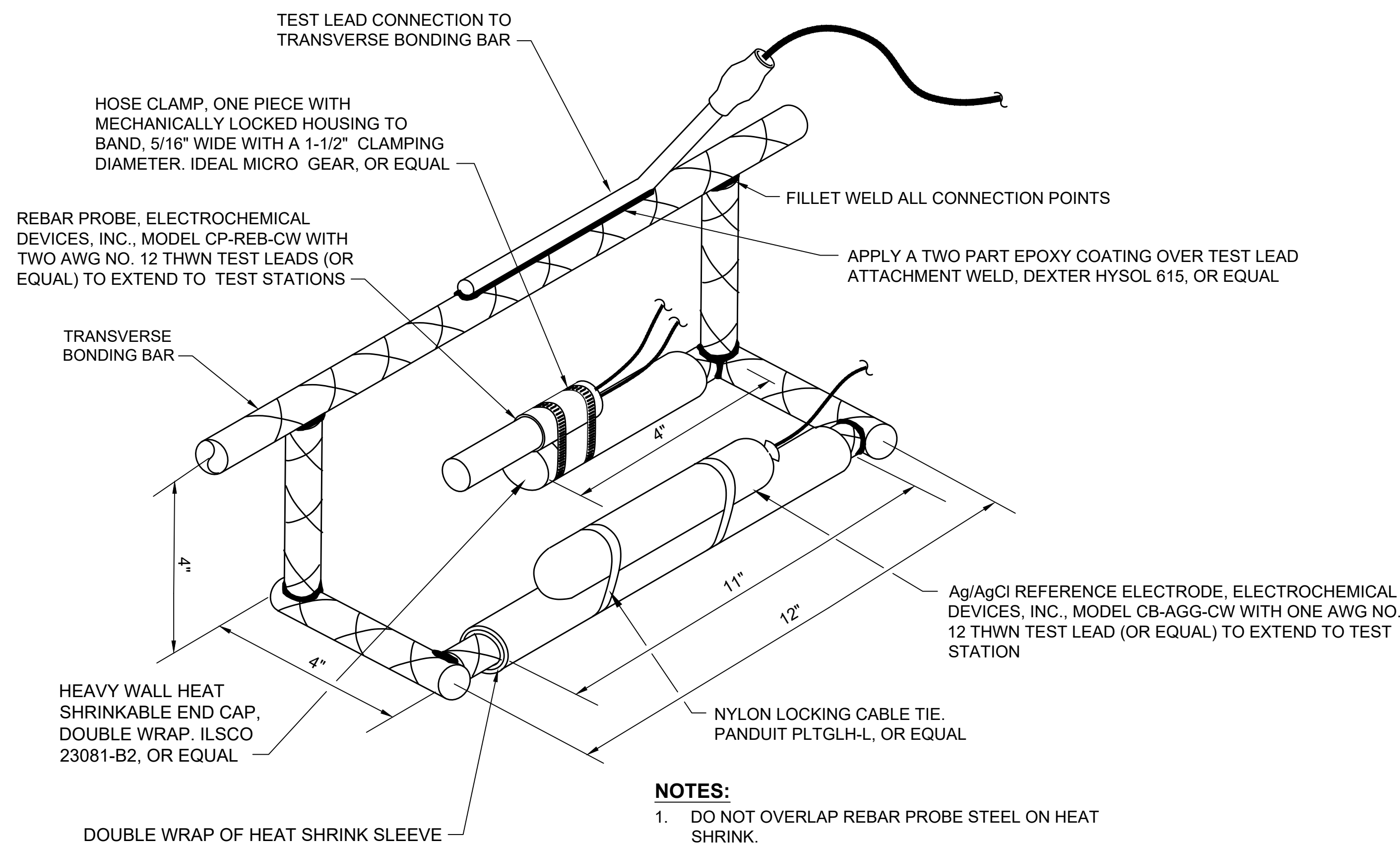
**NOTES:**

1. PLACE DIELECTRIC MEMBRANE BETWEEN PIPELINES IN BOTTOM PIPELINE TRENCH, CENTERED OVER FOREIGN PIPELINE CROSSING.
2. LENGTH OF DIELECTRIC MEMBRANE SHALL BE 5 TIMES THE DIAMETER OF THE FOREIGN PIPELINE.
3. MINIMIZE DIRECT CONTACT BETWEEN PIPELINES AND DIELECTRIC MEMBRANE BY THE USE OF A SUITABLE PIPE BEDDING MATERIAL.

**FOREIGN STRUCTURE ISOLATION** 3  
NTS



**CASING INSTALLATION AND TEST STATION** 4  
NTS



**NOTES:**

1. DO NOT OVERLAP REBAR PROBE STEEL ON HEAT SHRINK.

**TRACK SLAB EMBEDDED COMPONENT INSTALLATION** 5  
NTS

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0	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS

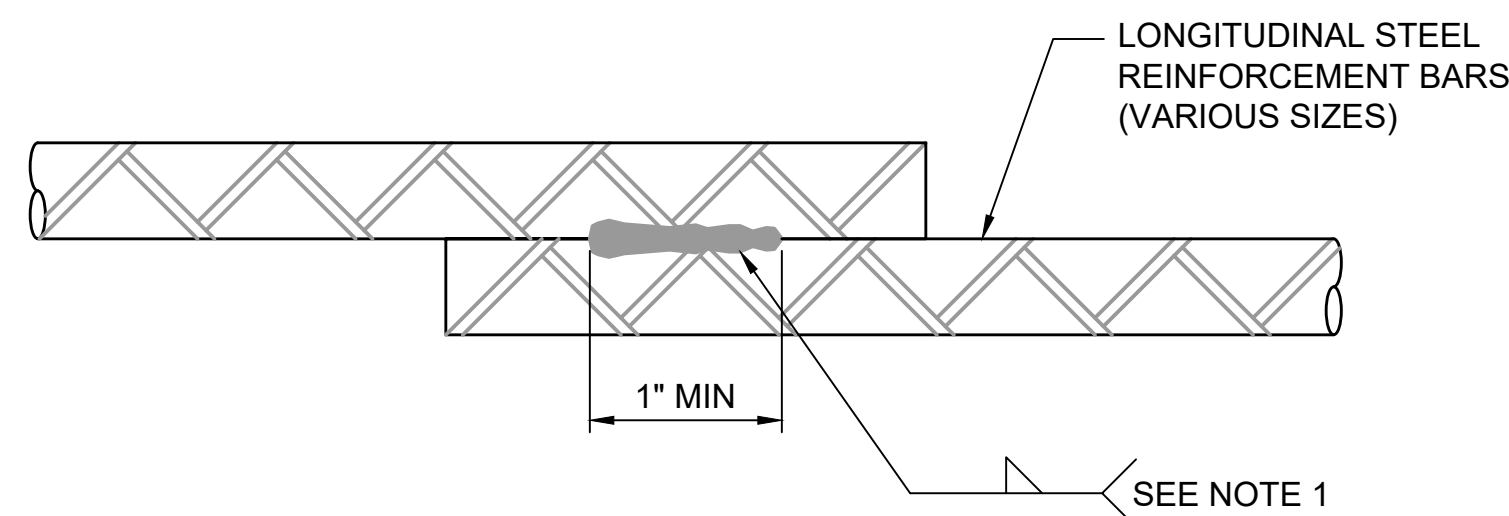
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FILENAME: GUI-JND107	
CONTRACT No.:	
DATE:	2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>	
CORROSION CONTROL ELECTRICAL CONTINUITY FOR METALLIC PIPING DETAILS	

DRAWING No.:	GUI-JND107
FACILITY ID:	
SHEET No.:	REV:
	1



**NOTES:**

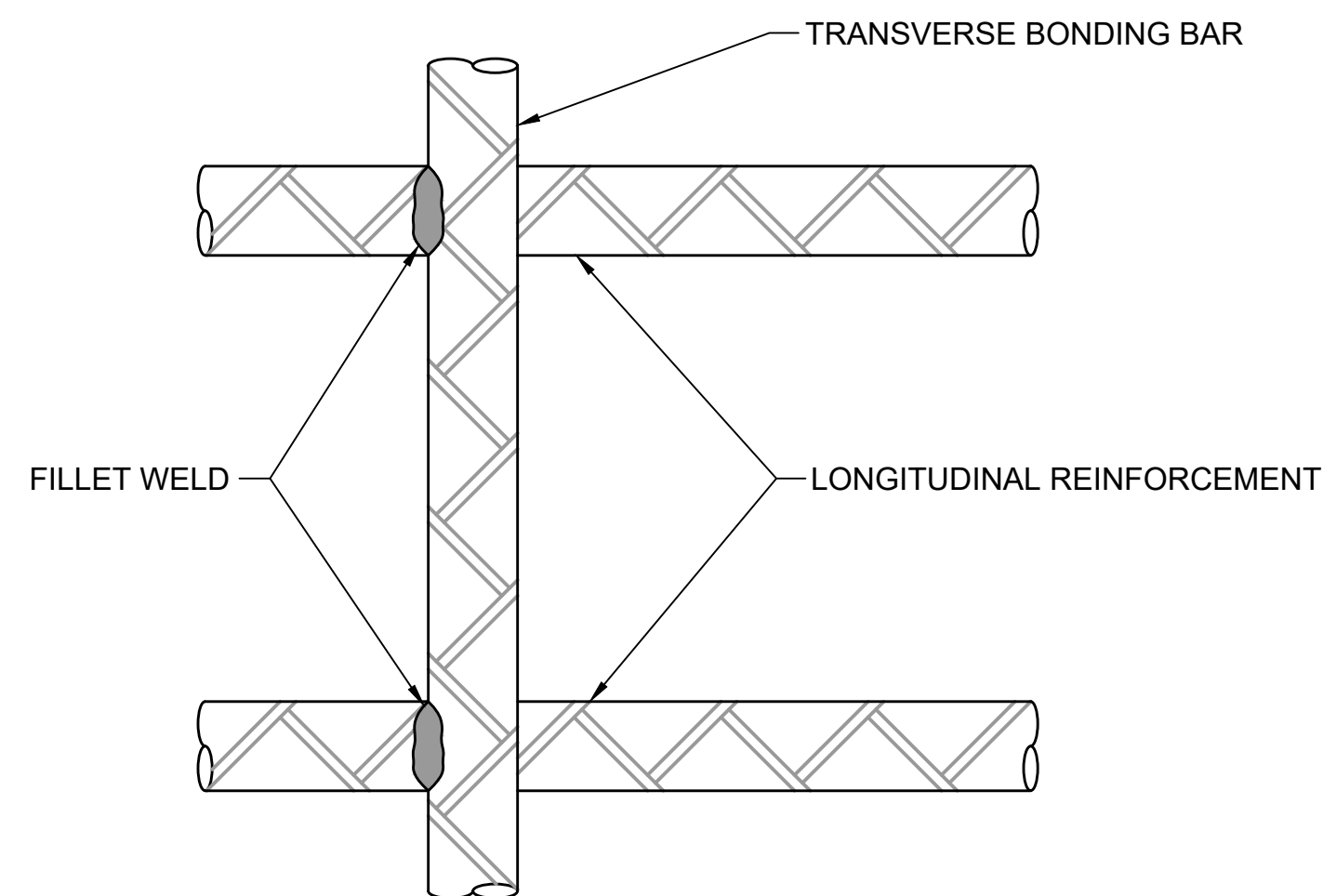
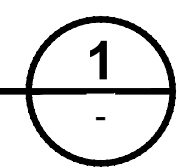
1. SIZE OF FILLET WELD TO BE IN ACCORDANCE WITH THE FOLLOWING:

MATERIAL THICKNESS (IN)	WELD SIZE (IN)
.25	.125
.25 TO .50	.1875
>.75	.3125

2. REINFORCEMENT SIZE DEPENDS ON STRUCTURAL DESIGN.

**LONGITUDINAL REINFORCEMENT WELD**

NTS

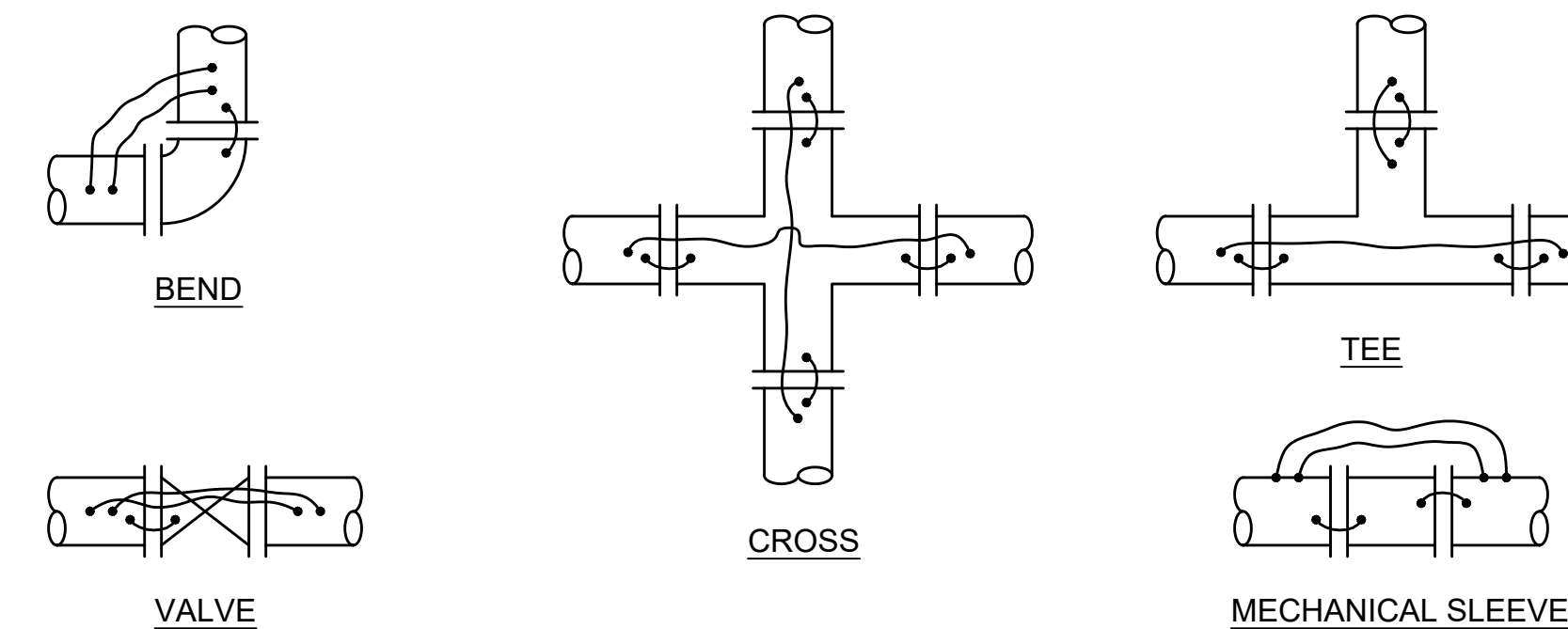
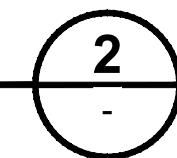


**NOTES:**

1. SPACING BETWEEN LONGITUDINAL REINFORCEMENT IN ACCORDANCE WITH STRUCTURAL DESIGN.
2. WELD ALL LONGITUDINAL REINFORCEMENTS TO A CONTINUOUS TRANSVERSE COLLECTOR BAR.
3. REINFORCEMENT SIZE DEPENDS ON STRUCTURAL DESIGN.
4. MINIMUM SIZE OF TRANSVERSE COLLECTOR BAR SHALL BE NO. 6 REINFORCEMENT.
5. FOR SIZE OF FILLET WELD REFER TO DETAIL 1

**TRANSVERSE BONDING BAR REINFORCEMENT WELD**

NTS

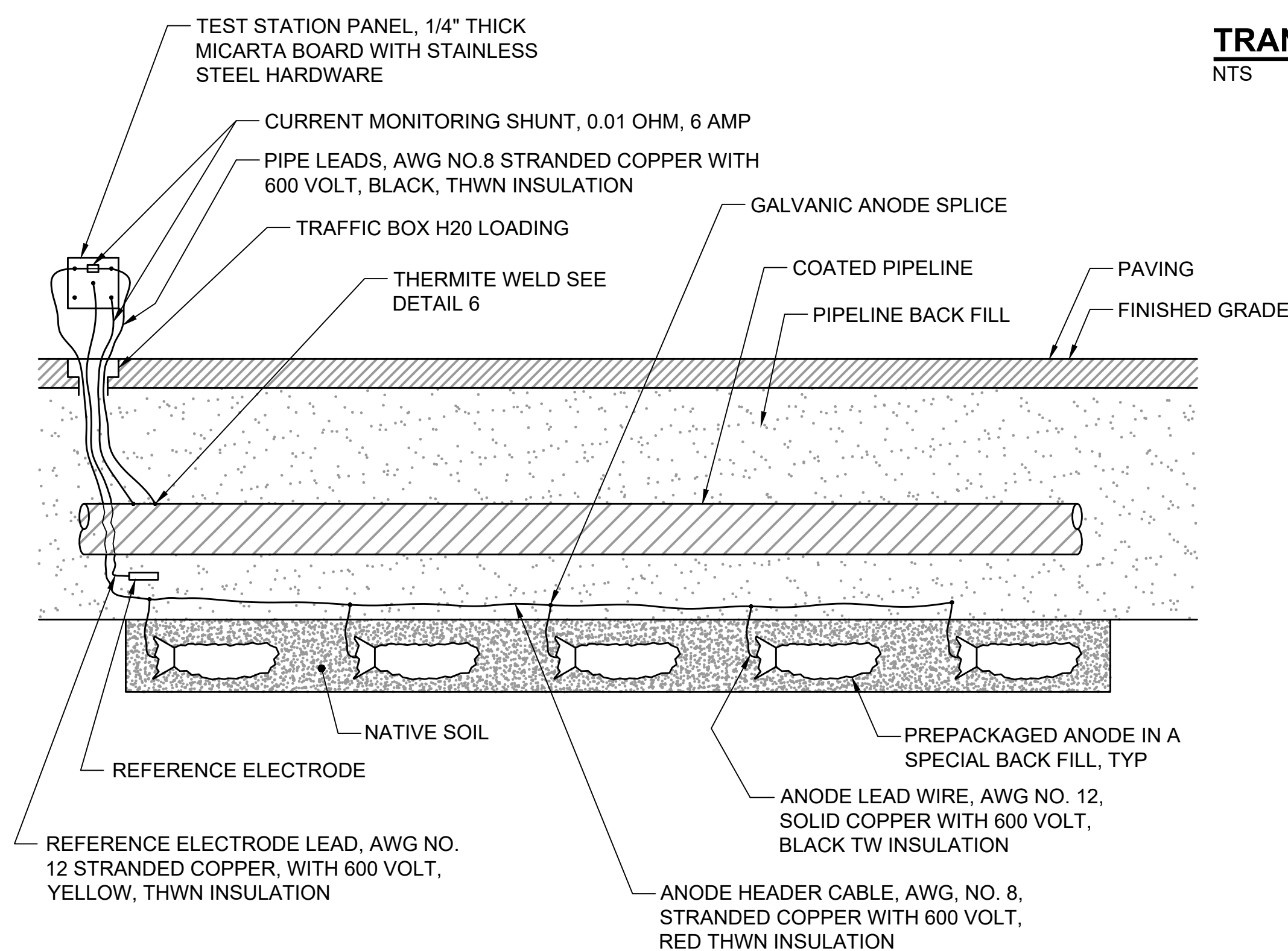
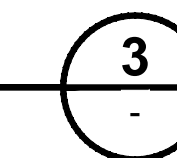


**NOTES:**

1. SEE DETAIL 6/STD-JND104 FOR THERMITE WELDING PROCEDURE.
2. COATING REQUIRED FOR ALL WELD LOCATIONS.
3. WIRE SIZE FOR BONDS DEPENDS ON ELECTRICAL RESISTANCE OF PIPE.
4. USE A MINIMUM OF TWO BONDS PER PIPE JOINT.

**PIPE JOINT BONDING DETAIL**

NTS

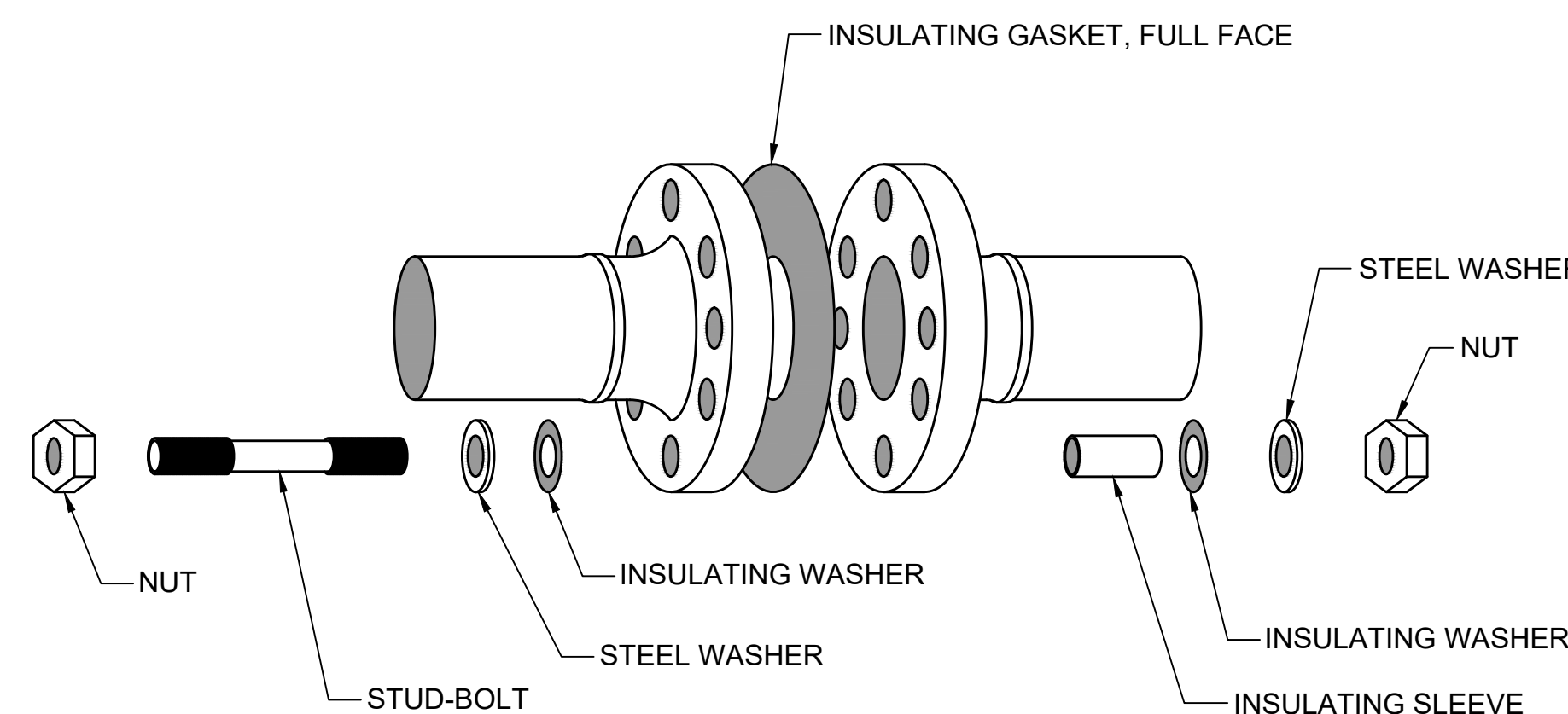
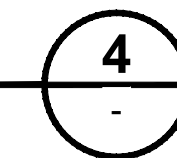


**NOTES:**

1. NUMBER AND SIZE OF ANODES, AS SHOWN ON PLAN SHEETS.
2. REMOVE OUTER PROTECTIVE WRAP (PAPER OR PLASTIC) FROM ANODES JUST PRIOR TO INSTALLATION. DO NOT DAMAGE CLOTH BACK FILL BAG.
3. BACK FILL ANODES IN NATIVE SOIL ONLY.
4. ALL TEST STATION HARDWARE SHALL BE TYPE 316 STAINLESS STEEL.

**GALVANIC ANODE INSTALLATION DETAIL**

NTS

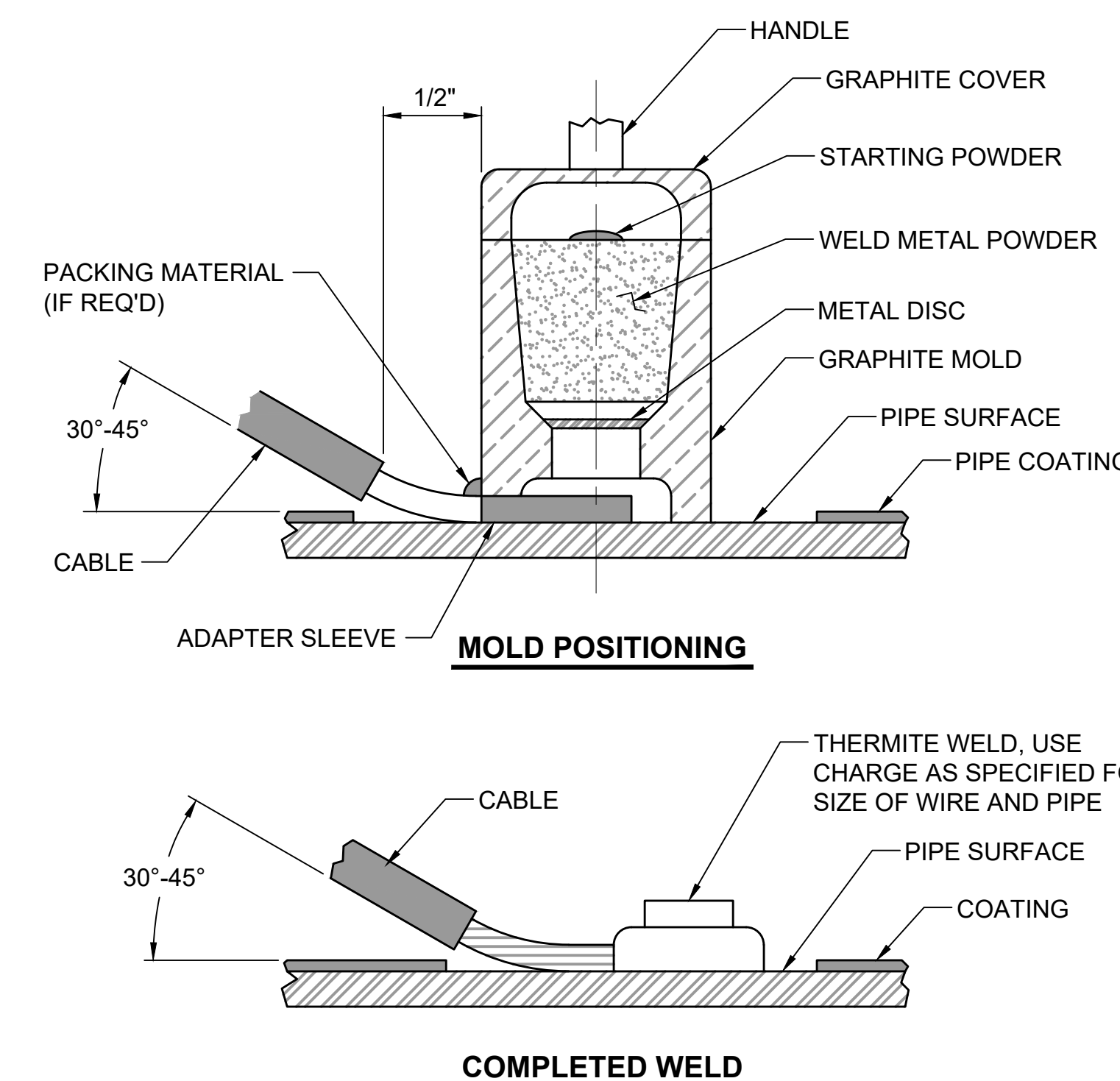
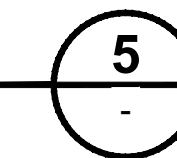


**NOTES:**

1. AFTER FABRICATION, CLEAN ALL SURFACES. REMOVE OIL, GREASE AND DIRT.
2. COAT ENTIRE INSULATING JOINT WITH COLD APPLIED COATING SYSTEM. BITUMASTIC OR PETROLATUM TAPE SYSTEM.
3. INSTALL TEST STATION, INCLUDING TWO TEST LEADS TO EACH SIDE OF INSULATING JOINT AND A PERMANENT REFERENCE ELECTRODE.

**PIPELINE INSULATION JOINT DETAIL**

NTS

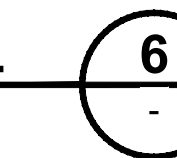


**NOTES:**

1. CLEAN SURFACE OF PIPE OR BONDING PLATE TO BRIGHT METAL.
2. STRIP INSULATION FROM END OF COPPER WIRE.
3. INSTALL ADAPTER SLEEVE ON WIRE.
4. HOLD THERMITE MOLD FIRMLY AGAINST PIPE OR BONDING PLATE, INSERT WIRE, IGNITE WELD METAL.
5. REMOVE SLAG FROM THERMITE WELD.
6. STRIKE WELD FIRMLY WITH HAMMER TO VERIFY CONNECTION.
7. COAT WELD AREA AND ALL EXPOSED COPPER.
8. FOR MORTAR COATED PIPE, COVER COATED WELD WITH A MORTAR COATING.

**THERMITE WELDING DETAIL**

NTS



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1	2/2024				2024 REVISED DIRECTIVE DRAWINGS
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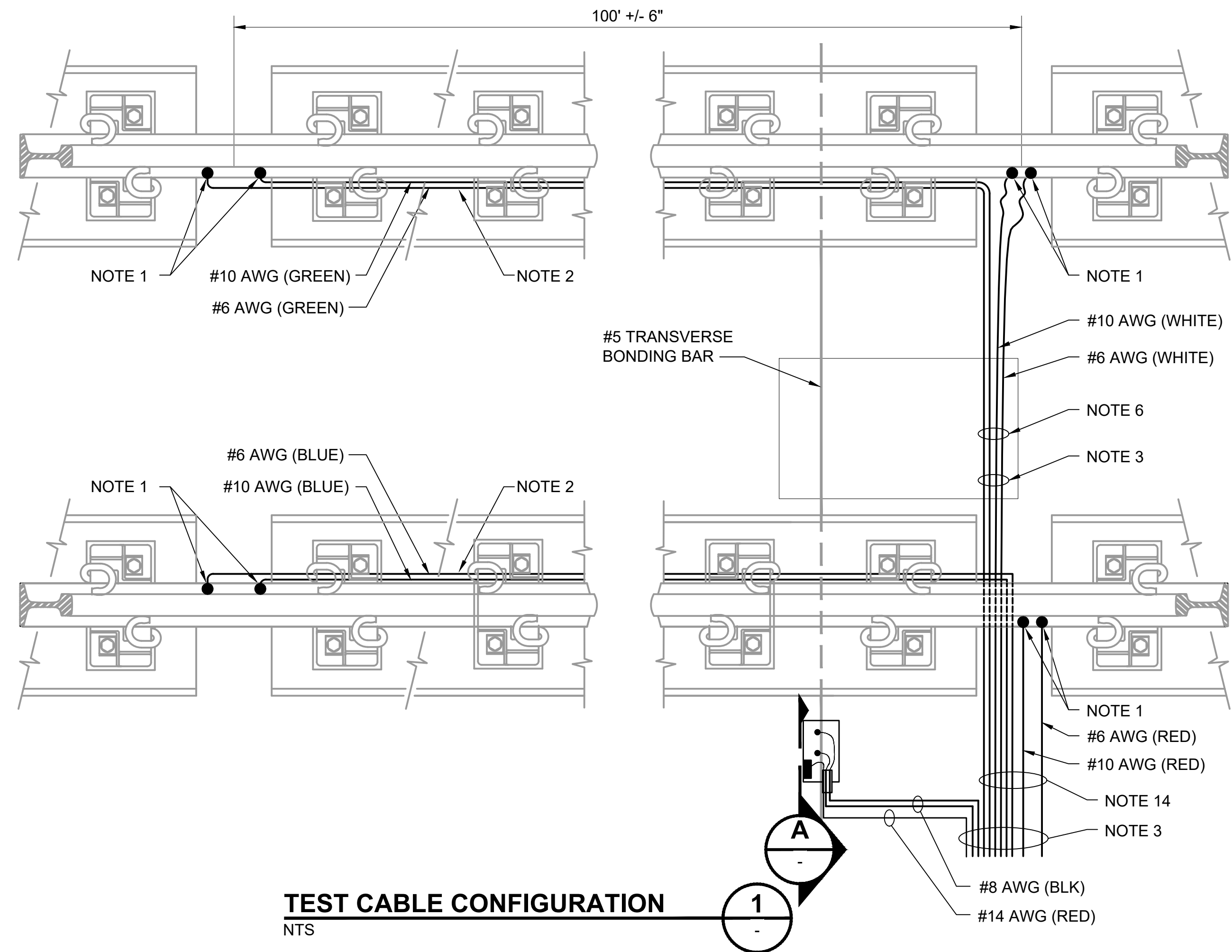
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SCALE: NTS  
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 CONTRACT No.: RTA/LR  
 DATE: 2/2024

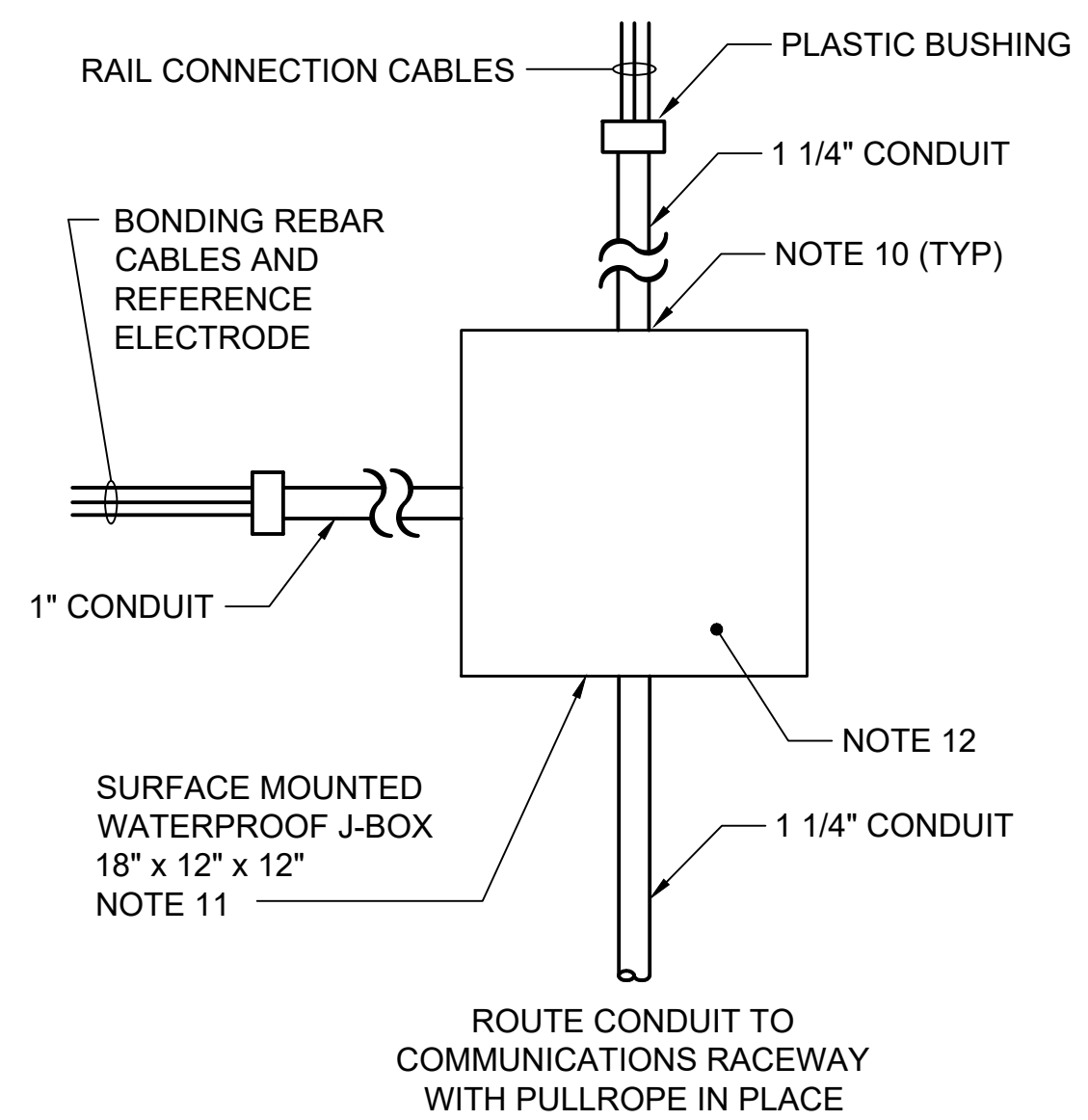
**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

CORROSION CONTROL ELECTRICAL CONTINUITY FOR METALLIC PIPING DETAILS

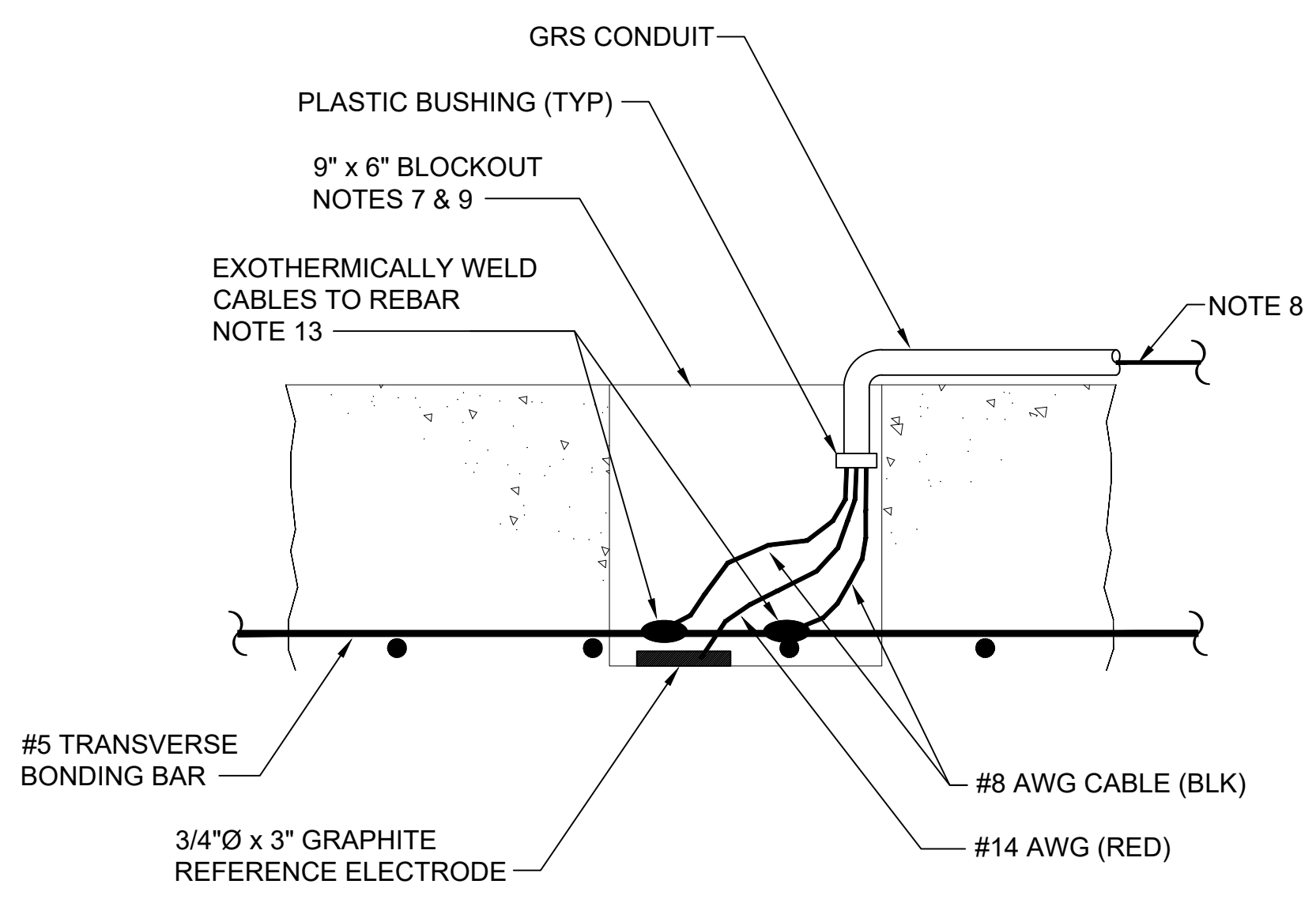
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FACILITY ID:	
SHEET No.:	REV: 1



**TEST CABLE CONFIGURATION**  
NTS



**CORROSION CONTROL JUNCTION BOX**  
NTS



**SECTION A**  
NTS

**GENERAL NOTES:**

1. EXOTHERMICALLY WELD CABLES TO NEUTRAL AXIS OF RAIL AND COAT ALL EXPOSED COPPER WITH COAL TAR EPOXY.
2. PROVIDE RAIL CABLE RETAINER CLIPS AT 18" MINIMUM SPACING. ROUTE CABLE TO AVOID CONFLICT WITH PANDROL CLIPS.
3. BUNDLE CABLES AT 30" MINIMUM SPACING WITH APPROVED HEAT SHRINK SLEEVES AND ROUTE TO CORROSION CONTROL TEST BOX.
4. ALL CABLES TO HAVE XHHW INSULATION.
5. PROVIDE TEST WIRE CONNECTIONS FOR NORTHBOUND AND SOUTHBOUND TRACKS. TAG CABLES AND JUNCTION BOX "NB" OR "SB".
6. PLACE CABLES BETWEEN RAILS IN 1" GRS CONDUIT. SURFACE MOUNT CONDUIT WITH PLASTIC BUSHING AT EACH END.
7. PATCH BLOCKOUT WITH APPROVED CEMENTICIOUS GROUT.
8. ROUTE CABLES TO CORROSION CONTROL TEST BOX.
9. DEVELOP DIMENSIONS FOR BLOCKOUT BASED ON GIRDER REINFORCING CONFIGURATION.
10. SEAL CONDUIT WITH APPROVED SINGLE COMPONENT SILICONE ELASTOMER.
11. FASTEN JUNCTION BOX TO GIRDER BETWEEN NORTHBOUND AND SOUTHBOUND TRACKS AS DIRECTED BY THE RESIDENT ENGINEER.
12. IDENTIFY AND TAG ALL CABLES. PROVIDE A MINIMUM OF 48" OF EXCESS CABLE NEATLY COILED AND BUNDLED.
13. PRE-FABRICATED CONNECTIONS MAY BE SUBSTITUTED FOR EXOTHERMIC WELD. SEE DWG JS088 (REPLACE #2 AWG SHOWN WITH #8 AWG).
14. PLACE CABLES IN 1 1/4" GRS CONDUIT WITH PLASTIC BUSHING AT RAIL. SURFACE MOUNT AND ROUTE TO CORROSION CONTROL JUNCTION BOX.


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SCALE: NTS  
FILENAME: GUI-JND109  
CONTRACT No.: RTA/LR  
DATE: 2/2024



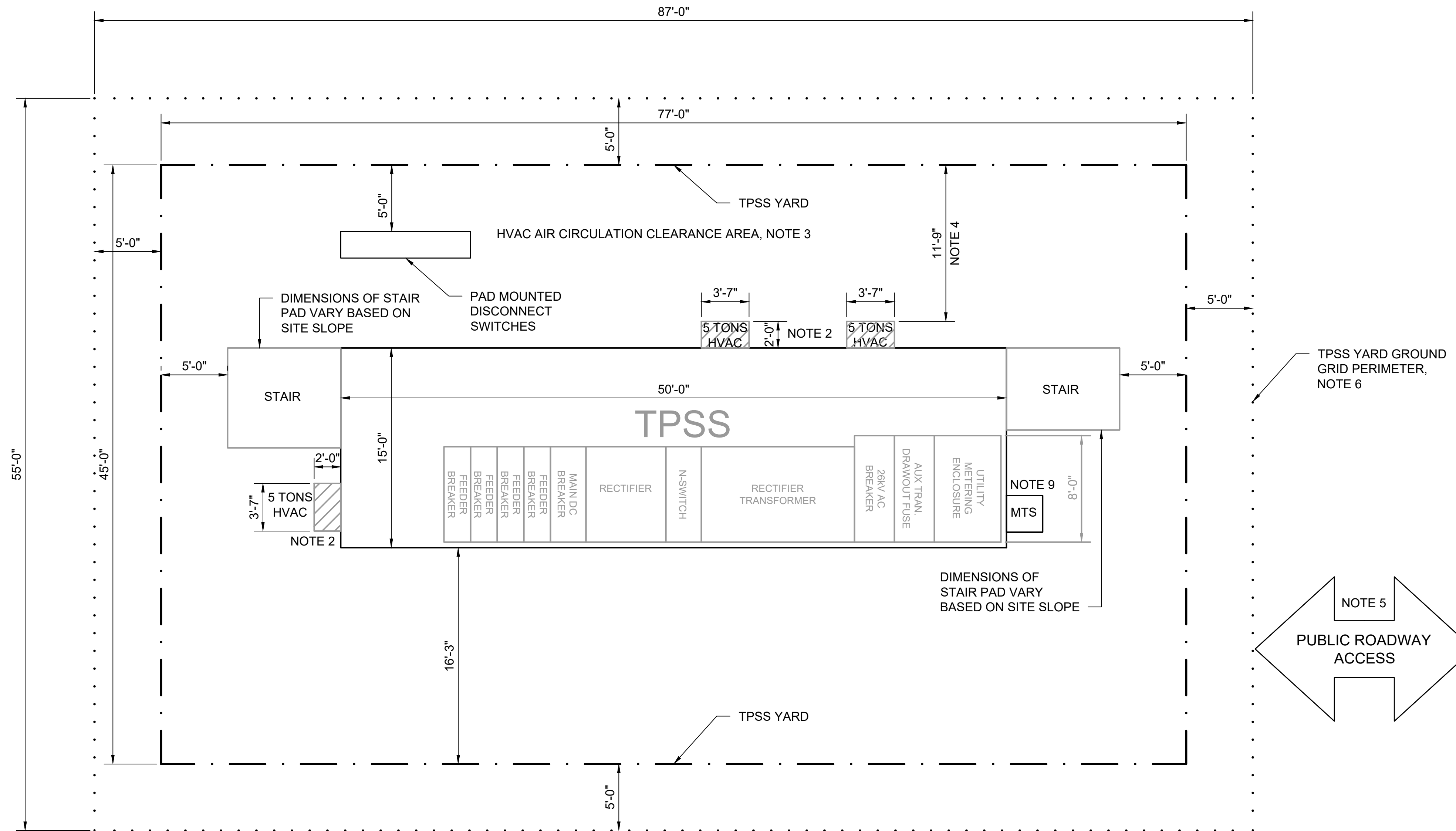
**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**

CORROSION CONTROL AERIAL GUIDEWAY CORROSION TEST BOX WIRING LAYOUT

DRAWING No.: GUI-JND109
FACILITY ID:
SHEET No.: 1

**GENERAL NOTES:**

1. DIMENSIONS ARE TYPICAL AND APPROXIMATE. YARD LAYOUT VARIES SITE-BY-SITE DUE TO CIVIL CONSTRAINTS. CLEARANCES TO FENCE ARE MINIMUMS.
2. HVAC UNITS WILL BE ON THIS WALL. EXACT LOCATION ALONG WALL TO BE DETERMINED BY TPSS MANUFACTURER.
3. HVAC UNITS ACOUSTIC ANALYSIS IS NEEDED FOR EACH SITE. ACOUSTIC CONTROL FIXTURES ARE NOT SHOWN.
4. TRAFFIC OF PUBLIC ROADWAY SHALL BE CONSIDERED WHEN DESIGNING ACCESS DRIVE AND/OR VEHICLE TURN AROUND. IF A DRIVEWAY IS DEEMED NECESSARY TO PULL OFF ROADWAY TO OPERATE GATE IT MUST CONSIDER THE MAXIMUM LENGTH OF VEHICLE OF 30 FEET. IN HIGH TRAFFIC AREA, A TURN-AROUND SHALL BE CONSIDERED.
5. COORDINATION WITH ST OPERATIONS SHALL BE PERFORMED FOR ALL SITES.
6. WHEN PUBLIC HAVE ACCESS TO THE OUTSIDE OF THE YARD FENCE, TPSS YARD GROUND GRID EXTENDS 5 FEET BEYOND METALLIC FENCE IF PROVIDED PER DCM 13.3.18 E. SEE GROUND GRID SKETCH FOR DETAILS.
7. CONSULT SOUND TRANSIT FOR DETAILS OF SERVICE VEHICLES THAT ARE REQUIRED TO ACCESS TPSS SITE.
8. EXTERNAL UTILITY METERING ENCLOSURE MAY BE REQUIRED PER UTILITY SERVICE REQUIREMENTS. METERING ENCLOSURE SHALL BE EXTERNAL TO THE TPSS YARD SECURITY FENCE AND ACCESSIBLE FOR THE PUBLIC ROW.
9. MTS UNITS WILL BE ON THIS WALL. EXACT LOCATION ALONG WALL TO BE DETERMINED BY TPSS MANUFACTURER.



**TYPICAL TPSS YARD LAYOUT**

SCALE: 3/16" = 1'-0"

1

No.	DATE	DSN	CHK	APP	REVISION
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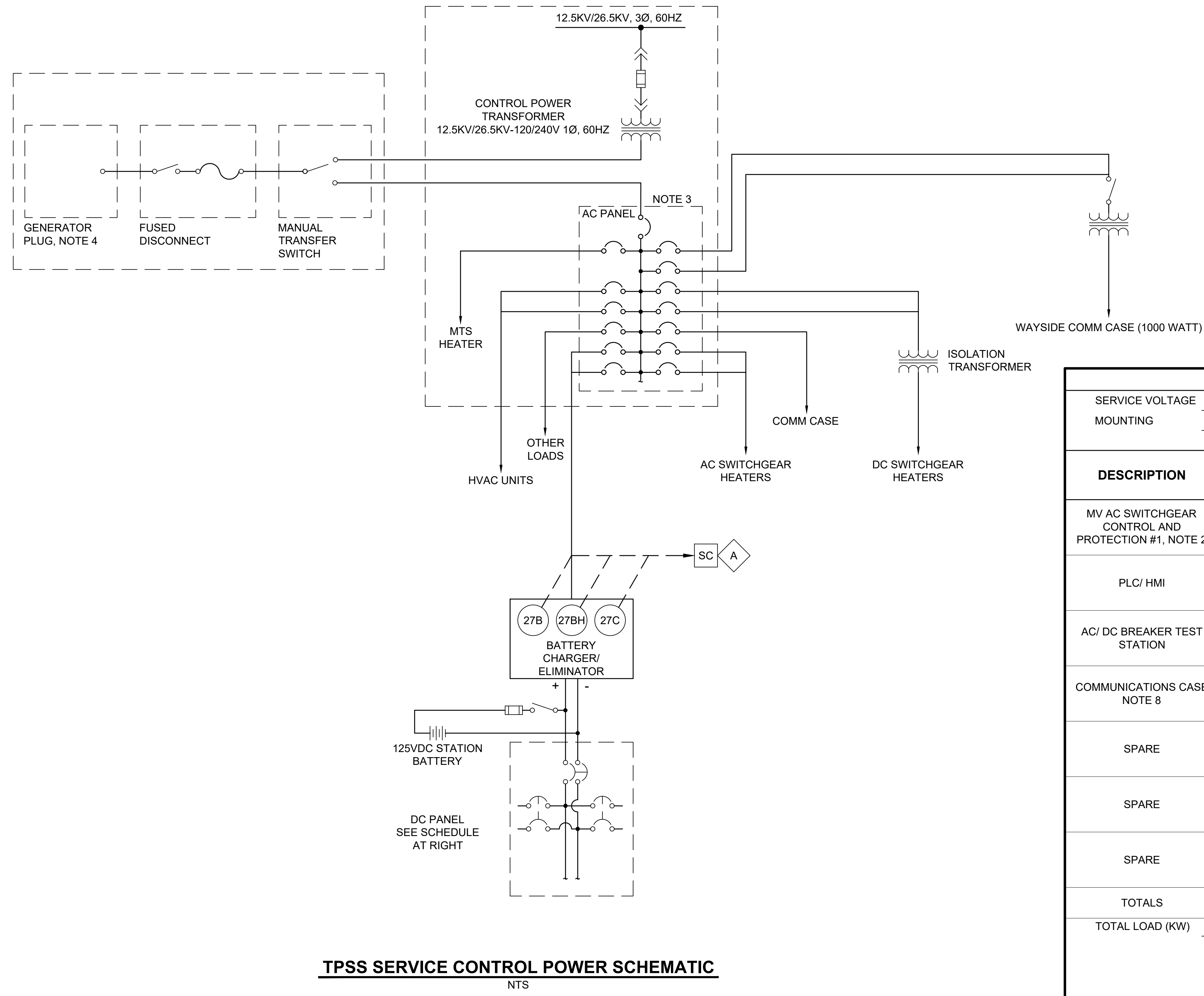
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		FILENAME: GUI-JTP100
		CONTRACT No.: RTA/LR
		DATE: 2/2024

<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>  TRACTION POWER TYPICAL TPSS YARD LAYOUT	DRAWING No.:	GUI-JTP100
	FACILITY ID:	
	SHEET No.:	REV: 2



- GENERAL NOTES:**
1. PROVIDE (1) 125VDC CIRCUIT TO SUPPLY CONTROL POWER TO MV SWITCHGEAR IN TPSS, IF NEEDED.
  2. PROVIDE CONDUITS FROM AC PANEL FOR BUILT IN PLACE TPSS.
  3. BREAKERS SHOWN TYPICALLY PROVIDE NUMBER OF BREAKERS AND TRIP RATINGS AS NECESSARY.
  4. COORDINATE GENERATOR NEED WITH ST.



**TPSS SERVICE CONTROL POWER SCHEMATIC**  
NTS

DC PANEL CIRCUIT SCHEDULE											
SERVICE VOLTAGE	125V DC		BUS RATING	200A		LOCATION	TPSS				
MOUNTING	SURFACE		BUS CONNECTION	DC 2W		DRAWING NO.					
DESCRIPTION	KW	BREAKER		CKT NO.	200A		BREAKER		KW	DESCRIPTION	
		POLE	AMP		CKT NO.	AMP	POLE				
MV AC SWITCHGEAR CONTROL AND PROTECTION #1, NOTE 2		2	20	1	2	30	2			DC SWITCHGEAR CONTROL AND PROTECTION	
				3	4						
PLC/ HMI		2	30	5	6	30	2			XFMR, RECTIFIER, NEGATIVE CONTROL AND PROTECTION	
				7	8						
AC/ DC BREAKER TEST STATION		2	30	9	10	30	2			SPARE	
				11	12						
COMMUNICATIONS CASE NOTE 8		2	20	13	14	30	2			SPARE	
				15	16						
SPARE		2	20	17	18	30	2			SPARE	
				19	20						
SPARE		2	30	21	22	30	2			SPARE	
				23	24						
SPARE		2	30	25	26	30	2			SPARE	
				27	28						
TOTALS										TOTALS	
TOTAL LOAD (KW)				MAIN (BREAKER)		200A		LINE AMPS			
				LOCATION		TOP					
				FEEDER SIZE							
				SOURCE		BATTERY/ CHARGER					

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SCALE: NTS  
FILENAME: GUI-JTS102  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**  
TRACTION POWER SYSTEMS TYPICAL TPSS SERVICE CONTROL POWER SCHEMATIC

DRAWING No.: GUI-JTS102  
FACILITY ID:  
SHEET No.: 1 REV: 1

# CONFIDENTIAL

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1	2/2024	----	----	----	2024 REVISED DIRECTIVE DRAWINGS
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LINE IS 1" AT  
FULL SCALE



SCALE:	NTS
FILENAME:	GUI-JTS103
CONTRACT No.:	RTA/LR
DATE:	2/2024

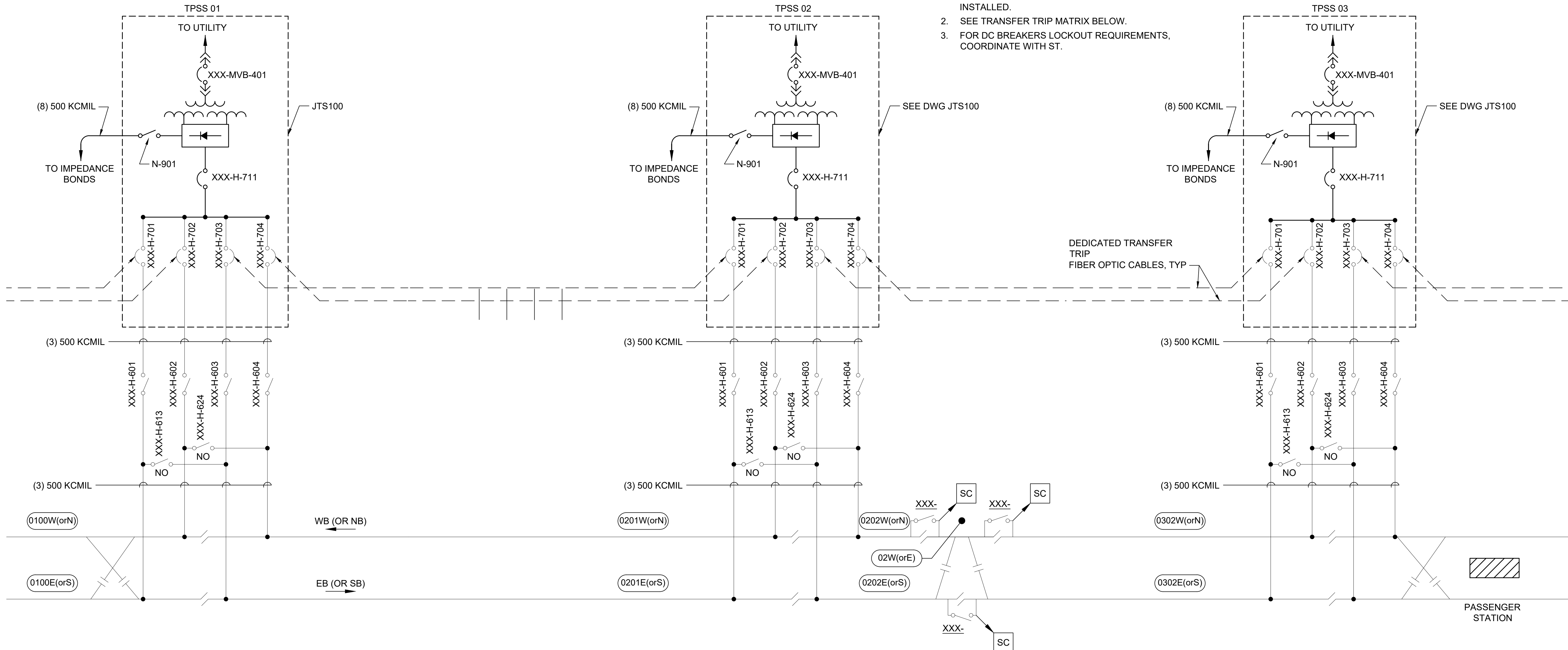
<b>SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS</b>
TRACTION POWER SYSTEMS TYPICAL LCMS CONFIGURATION DIAGRAM

DRAWING No.:	GUI-JTS103
FACILITY ID:	
SHEET No.:	1
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**GENERAL NOTES:**

1. TRANSFER TRIP: TRACTION POWER SYSTEM TRANSFER TRIP CABLE TIE-IN WORK FROM EXISTING ST TPSS'S SHALL BE FURNISHED AND INSTALLED.
2. SEE TRANSFER TRIP MATRIX BELOW.
3. FOR DC BREAKERS LOCKOUT REQUIREMENTS, COORDINATE WITH ST.



TRANSFER TRIP INITIATED BY		DC BREAKERS		TPSS ETS	TPS SSS	FCC ETS
		RECLOSE CONTROLLED BY LOAD MEASURE	LOCKOUT OVER, FAULT, INCOMPLETE SEQUENCE FAULT	TRIP / LOCKOUT	TRIP / LOCKOUT	TRIP / LOCKOUT BY SB & NB
ORIGINATING TPSS	AC MAIN BREAKER		(NOTE 3)	0	0	
	DC MAIN BREAKER		(NOTE 3)	0	0	
	DC FEEDER BREAKER	0	0	0	0	0
RECEIVING TPSS	AC MAIN BREAKER					
	DC MAIN BREAKER					
	DC FEEDER BREAKER	0	0	0	0	0

No.	DATE	DSN	CHK	APP	REVISION
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1	8/2019				REVISED SYSTEMS DIRECTIVE DRAWINGS
0	1/2019				2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE

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SCALE: NTS  
FILENAME: GUI-JTS105  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT GUIDANCE DRAWINGS SYSTEMS**  
TRACTION POWER ELECTRIFICATION SYSTEMS  
SINGLE - LINE DIAGRAM

DRAWING No.: **GUI-JTS105**  
FACILITY ID:  
SHEET No.: REV: 2

- GENERAL NOTES:**
- 48 POINTS REQUIRED.
  - THE SIZE OF EACH WINDOW SHALL BE 2"(L) X 1-1/2"(H).
  - HMI VIEW DESIGNS ARE TYPICAL AND CONCEPTUAL. SUBMIT DETAILED DESIGN FOR APPROVAL.
  - CONSULT SOUND TRANSIT FOR LATEST HMI DESIGN STANDARDS.

TPSS NAME					
ANNUNCIATION					
AC BREAKER TRIP 52	LOCKOUT RELAY 86	AC ##KV OVERVOLTAGE 59	AC ##KV UNDERVOLTAGE 27	LOSS OF PHASE 47	SUMMARY EQUIPMENT DOOR OPEN 33 N, R, T
LOSS OF CONTROL VOLTAGE AC SWITCHGEAR 27A	CHARGER SUMMARY ALARM	BATTERY UNDERVOLTAGE 27C	CONTROL VOLTAGE OVERVOLTAGE 59	EQUIPMENT REAR DOOR OPEN 33	TRANSFORMER WINDING OVERTEMP ALARM 49T1
TRANSFORMER WINDING OVERTEMP TRIP 49T2	HEALTHY LOCKOUT RELAY COIL SUMMARY	RECTIFIER DIODE OVERTEMP ALARM 26R1	RECTIFIER DIODE OVERTEMP TRIP 26R2	RECTIFIER DIODE FAILURE ALARM 98-1	RECTIFIER DIODE FAILURE TRIP 98-2
LOSS OF CONTROL VOLTAGE RECTIFIER 27B	DC ENCLOSURE GROUNDED ALARM 64G	DC ENCLOSURE ALIVE TRIP 64H	RECTIFIER NEGATIVE DISCONNECT OPEN 89N	LOSS OF CONTROL VOLTAGE DC SWITCHGEAR 27B	REVERSE CURRENT 32
FEEDER BREAKER TRIP SUMMARY	FEEDER LOCKOUT 186	FEEDER BREAKER RECLOSER 82 LOCKOUT SUMMARY	FEEDER BREAKER RECLOSER RELAY FAILURE SUMMARY ALARM	TRANSFER TRIP 85 SUMMARY	LOCKOUT RELAY 186X
GROUND RELAY 64V	ETS ACTIVATED	SSS ACTIVATED	SPARE	SPARE	SPARE
SPARE	SPARE	SPARE	SPARE	SPARE	SPARE
SPARE	SPARE	SPARE	SPARE	SPARE	SPARE

ANNUNCIATOR VIEW      EVENT MESSAGES      ALARM MESSAGES      LCMS MESSAGES      SECTIONING DIAGRAM      SINGLE LINE DIAGRAM

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3	2/2024	----	----	----	2024 REVISED GUIDANCE DRAWINGS
2	8/2019	----	----	----	REVISED SYSTEMS DIRECTIVE DRAWINGS
1	1/2019	----	----	----	2019 GUIDANCE DWG REVISIONS - GENERAL UPDATE
0	8/2017	----	----	----	GUIDANCE DRAWINGS
No.	DATE	DSN	CHK	APP	REVISION

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SCALE: NTS

FILENAME: GUI-JTS300

CONTRACT No.: RTA/LR

DATE: 2/2024

**SOUND TRANSIT**  
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SYSTEMS

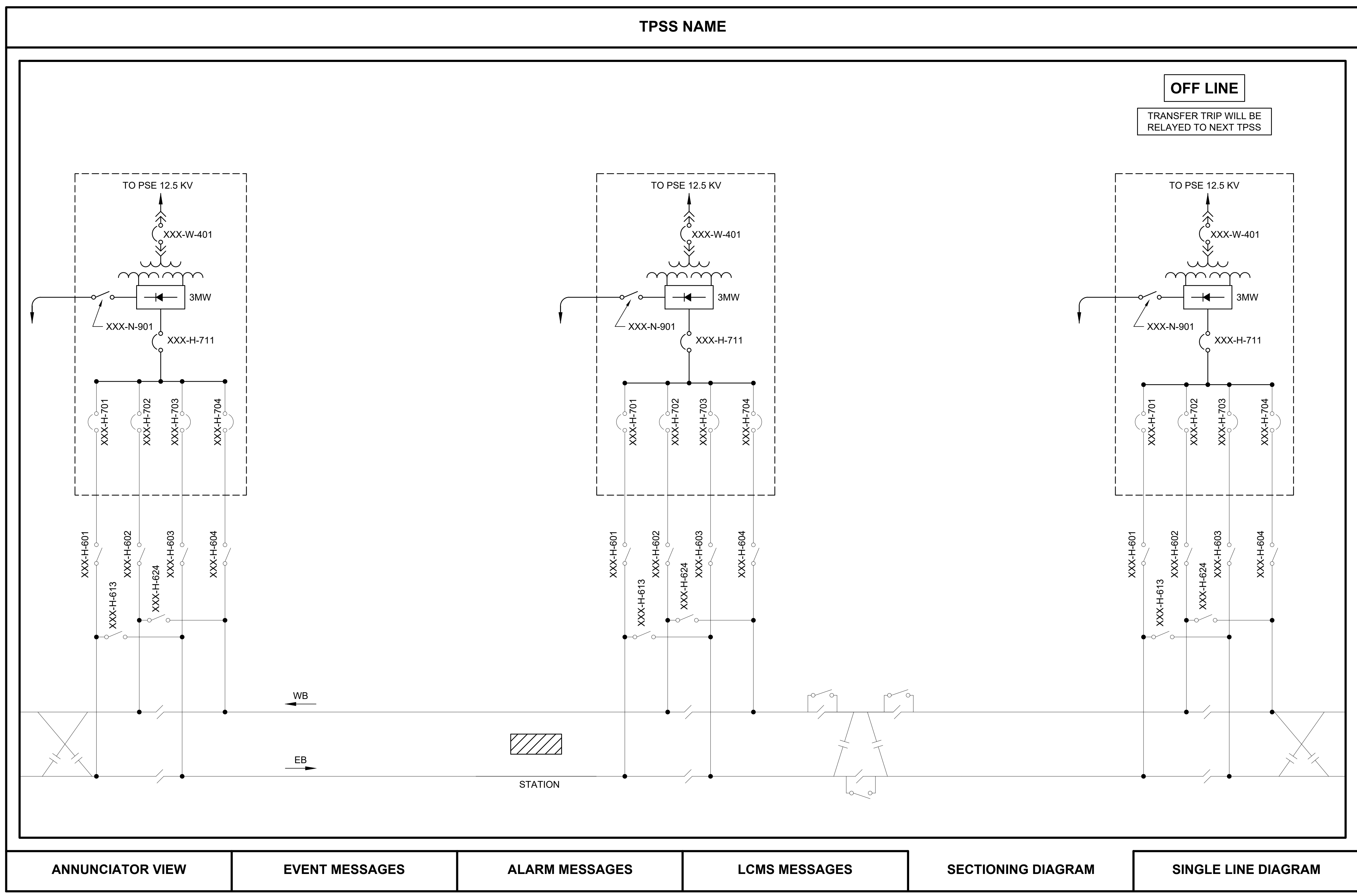
TRACTION POWER  
TYPICAL TPSS LMCS HMI  
VIEW 1 OF 5

DRAWING No.: <b>GUI-JTS300</b>	
FACILITY ID:	
SHEET No.:	REV: 3





**GENERAL NOTE:**  
 1. HMI VIEW DESIGNS ARE TYPICAL AND CONCEPTUAL. SUBMIT DETAILED DESIGN FOR APPROVAL.



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 CONTRACT No.: RTA/LR  
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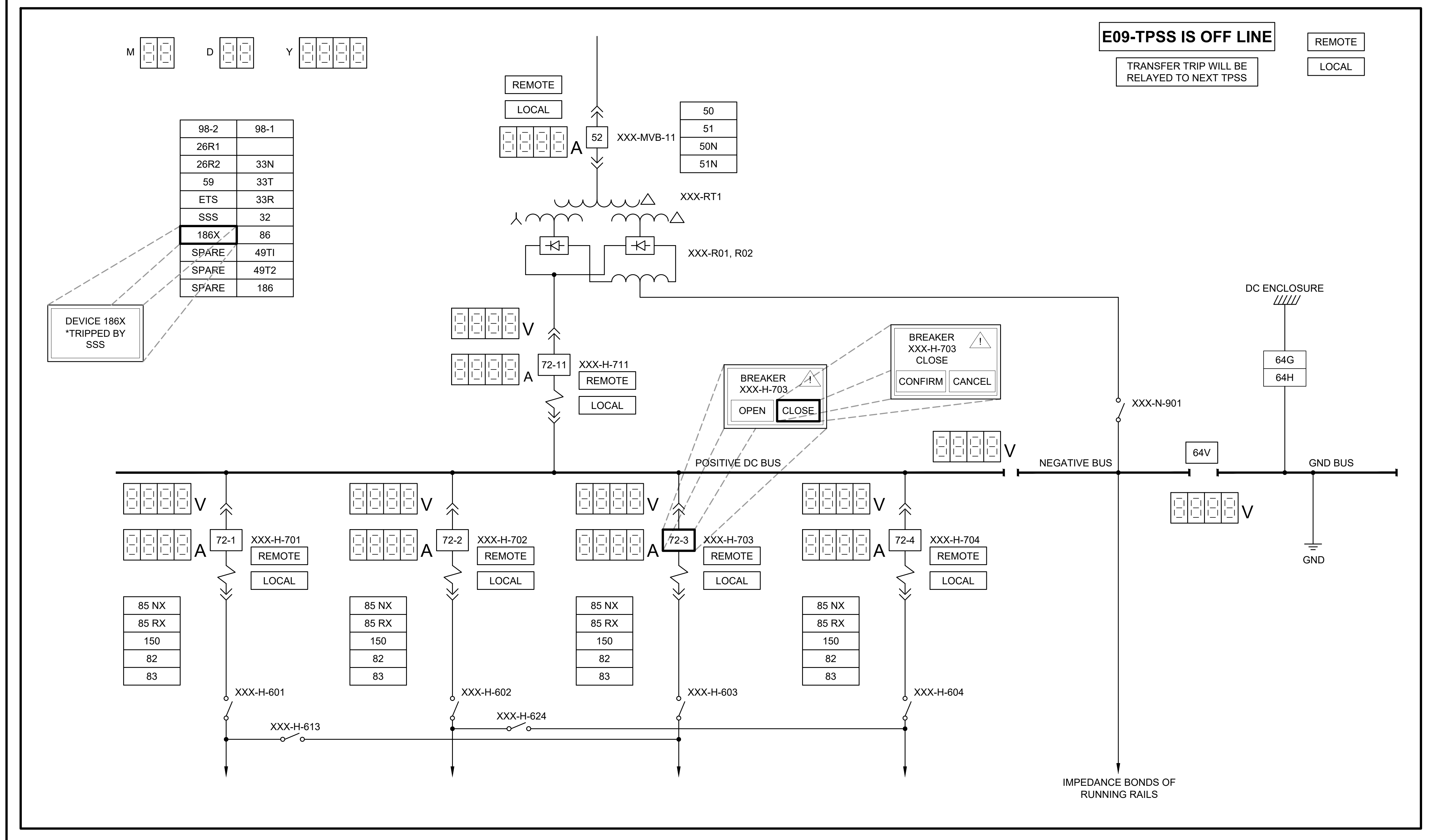
**SOUND TRANSIT  
 GUIDANCE DRAWINGS  
 SYSTEMS**

TRACTION POWER  
 TYPICAL TPSS LMCS HMI  
 VIEW 4 OF 5

DRAWING No.: <b>GUI-JTS303</b>	
FACILITY ID:	
SHEET No.:	REV: 1

**GENERAL NOTE:**  
1. HMI VIEW DESIGNS ARE TYPICAL AND CONCEPTUAL. SUBMIT DETAILED DESIGN FOR APPROVAL.

**TPSS NAME**



- ANNUNCIATOR VIEW
- EVENT MESSAGES
- ALARM MESSAGES
- LCMS MESSAGES
- SECTIONING DIAGRAM
- SINGLE LINE DIAGRAM

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SCALE: NTS  
FILENAME: GUI-JTS304  
CONTRACT No.: RTA/LR  
DATE: 2/2024

**SOUND TRANSIT**  
**GUIDANCE DRAWINGS**  
SYSTEMS

TRACTION POWER  
TYPICAL TPSS LMCS HMI  
VIEW 5 OF 5

DRAWING No.: GUI-JTS304	
FACILITY ID:	
SHEET No.:	REV: 1



