



Richmond Metropolitan Transportation Authority (RMTA)

All Electronic Tolling ITS & Civil Elements

ADDENDUM-02

Key dates (unchanged as of Addendum-01):

Bid Due Date – 2/11/2025, 10AM local time

Complete Contract Addendum upload date – 1/21/2025

Deadline for Inquiries – 1/31/2025, 1PM local time

ITB Revisions & Final Plans

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1 Summary of Changes (original ITB pages referenced):

- A. Invitation to Bid (IB-1,2) – Principal work items and quantities revised
- B. Invitation to Bid (IB-3) – “Optional Services” quantities changed to “Additional Services Quantities”; Items and quantities revised
- C. Invitation to Bid (IB-4) – Ancillary Equipment list broken up into the following:
 - a. Gantry Area Ancillary Equipment
 - b. Roadside Cabinets Ancillary Equipment
 - c. Shelter Ancillary Equipment
- D. Invitation to Bid (IB-5) – “Bids for this Contract...” Paragraph: “Optional Services” changed to “Additional Services”
- E. Bid for General Construction Contract (P-2) – items and quantities revised
- F. Bid for General Construction Contract (P-3) – “Optional Services” quantities changed to “Additional Services Quantities”; Items and quantities revised
- G. Bid Bond (PB-1) – “WHEREAS, the Contractor...” paragraph: “Pier Protection” changed to “All Electronic Tolling ITS & Civil Elements”
- H. Contract Agreement (C-2) – “Term of Contract” paragraph: sealed proposal due date changed to “February 11, 2025”
- I. RMTA Supplemental Specifications Index (i, ii) – bookmark errors removed
- J. Special Provision Environmental and Earthwork (SP-F-2) – “Inlet Protection Ty. A” changed to “Inlet Protection Ty. B”; added “Check Dam (Rock) TY. II
- K. Special Provision Hydraulic Cement Concrete Operations (SP-C-7) – “Shelter Site Work Pad”; “Technical Shelter Foundation”; and “Generator Foundation replaced with “Tech Shelter Site Foundation”

2 Revised sheets

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. AET PW-2025

ALL ELECTRONIC TOLLING ITS & CIVIL ELEMENTS

INVITATION TO BID

The Richmond Metropolitan Transportation Authority (RMTA), 901 East Byrd Street, Suite 1120, Richmond, Virginia 23219 until 10:00 AM local time, will receive sealed Proposals for the above project on Tuesday, February 11, 2025 at which time (10:30AM) and place the bids will be publicly opened and read.

Under this contract, the All Electronic Tolling ITS & Civil Elements project will deliver the concrete foundations by June 23, 2025; electrical/communications components & devices by July 11, 2025; the paved shoulder by July 18, 2025; and all remaining work (including grading, drainage, and roadway elements) will be completed by December 1, 2025. Note: environmental permitting, gantry device installation, major component acquisition (items not listed below such as: generator, roadside cabinets, tech shelter, etc.), and tech shelter delivery & assembly will be handled by others. The generator, roadside cabinets, and tech shelter ancillary equipment line items are to include the cost of acquiring, transporting from storage to the Powhite roadside installation location, and installing the items listed on the ancillary equipment list (as well as similar items as needed to complete the installation of the generator, roadside cabinets, and tech shelter equipment).

The principal items of work and approximate quantities are as follows:

<u>Item:</u>	<u>Quantity:</u>	<u>Unit:</u>
Mobilization	1	Ea.
Clearing and Grubbing	.5	Acre
Selective Tree Removal, Trimming, & cleanup	.5	Acre
Temp. Silt Fence Ty. A	744	LF
Inlet Protection Ty. B	1	Ea.
Earthwork	1	LS
Permanent Seed	500	<u>Lbs</u>
Fertilizer	25	<u>Lbs</u>
Sediment Retention Roll	300	LF
Check Dam (Rock) TY. II	2	Ea.

Remove Existing Guardrail	360	LF
Guardrail GR-2	750	LF
Guardrail GR-2A	150	LF
Guardrail Terminal GR-7	1	Ea.
Guardrail Attenuator TL-3	1	Ea.
Maintenance of Traffic	1	LS
NS Flexible Pavement <u>Planing</u> 4"	190	SY
Asphalt Concrete TY. SM-9.5E 4"	40	Ton
Rumble strips Cylindrical Asphalt	180	LF
Pavement Marking Eradication	450	LF
Type B Class VI Pavement Marking	450	LF
2 Cabinets and Ancillary Equip.* Installation (including transport)	1	LS
Gantry Area Ancillary Equipment*	1	LS
Tech Shelter Ancillary Equipment *	1	LS
Tech Shelter Site Foundation	1	Ea.
Non Standard Concrete Foundation (roadside cabinets)	2	Ea.
Toll Gantry Foundation	2	Ea.

*Ancillary equipment lists attached on following sheets

Additional Services Quantities

*Additional Services Quantities list attached on following sheets

ROADSIDE CABINET ESTIMATED ANCILLARY EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	Dis connect Switch, 240VAC, 30 Amp, Fused, VH221NDSGL	Schneider Electric	2	EA
2	5 1/2' (3RU) Black Rack Panel, 102-1824	Rack Solutions	2	EA
3	#8 AWG THHN, Black Insulation,	NNC	50	LF
4	#8 AWG THHN, White Insulation,	NNC	50	LF
5	#8 AWG THHN, Green Insulation,	NNC	50	LF
6	#8 AWG THHN, BLACK Insulation	NNC	50	LF
7	#8 AWG THHN, WHITE Insulation	NNC	50	LF
8	#8 AWG THHN, GREEN Insulation	NNC	50	LF
9	Dist Block, 3-P, 175Amp, 4 output per pole, Input @2-14, Output #4 -14AWG	Marathon 1423970	2	EA
10	Dist Block, 1-P, 175Amp, 4 output per pole, Input @2-14, Output #4 -14AWG	Marathon 1421970	2	EA
11	Surge Suppressor Panel Guard, IG3240RC3	Intermatic	2	EA
12	3/4" PVC Sched 80 Conduit, 10 Foot Length	Cantex	2	EA
13	3/4" PVC Sched 80 Conduit 90 Degree Elbow	Cantex	2	EA
14	#2 AWG Bare Tinned Copper Wire, Concentric 36-7561-01 250FT Reel	Thermoweld	15	LF
15	30AMP Type H Fuses for VH221NDSGL Disconnect Switch	Essential Electric	4	EA
16	Cabinet Ground Bar Kit, Sq D PK18GTACP	Schneider Electric	2	EA
17	Anchor "J" Bolts, 3/4"-10 x 18" Length, Galvanized, w/Nut & Washer 21Y477	Grainger	20	EA
18	Pickup, transport, off-load and set/install both roadside cabinets (one NB and one SB) to the designated site beside the gantry pad on the Cabinet PAD. Set cabinet on Contractor installed "J" anchor bolts (priced above) and secure in place. Cabinet shall be completely level and all MFGR instructions for installation shall be followed. Cabinet anchors to be set when concrete is poured with cabinet base template.	Contractor	1	LS
19	Wire the HVAC to each cabinet per drawings which will include procurement of the parts and assembly of the panel with Marathon distribution blocks and the Intermatic SPD. This shall also include the installation of the fused disconnect switch on each cabinet and internal AC wiring for both HVAC units per the drawings.	Contractor	1	LS

GANTRY AREA ESTIMATED EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	#2 AWG Bare Tinned Copper Wire, Concentric 36-7561-01 250FT Reel	Thermoweld	1	LF
2	3/4" x 10 Ft Copper or Copper Clad Steel Ground Rods F4P GR-34X10C	City Elect Supply	21	EA
3	Exothermic Weld One Shots for connections to ground ring GT1181VPlus	nVent Erico	38	EA
4	#2 AWG XHHW, Black Insulation, SIMpull #112987	NNC	1000	LF
5	#2 AWG XHHW, White Insulation, SIMpull #218107	NNC	500	LF
6	#8AWG XHHW, Green Insulation, SIMpull, #553230	NNC	1500	LF
7	#1/0 AWG XHHW, Black Insulation, SIMpull, #113001	NNC	1500	LF
8	#8 AWG XHHW, Green Insulation, SIMpull, #952739	NNC	250	LF
9	Conduit, 3" Trade size, PVC Sched 80, 10Ft length AE53DA42	Cartex	60	EA
10	Conduit 3" - 90 degree Elbow PVC Sched 80	Cartex	24	EA
11	Conduit 3" - 45 degree elbow PVC Sched 80	Cartex	9	EA
12	Conduit 3" Female Adapter PVC Sched 80 to GRC	Elliot Electric	11	EA
13	Conduit 4" Trade size, PVC Sched 80 10 FT length A53EA42	Cartex	24	EA
14	Conduit 4" - 90 degree Elbow PVC Sched 80	Cartex	11	EA
15	Conduit 4" - 45 degree Elbow PVC Sched 80	Cartex	3	EA
16	Conduit 4" Female Adapter PVC Sched 80 to GRC	Cartex	6	EA
17	Conduit 2" Trade Size, PVC Coated Rigid Galvanized Steel	Calbond	4	LF
18	Conduit 2" - 90 degree Elbow PVC Sched 80	Cartex	5	EA
19	Conduit 2" - 45 degree Elbow PVC Sched 80	Cartex	1	EA
20	Conduit 2" Female Adapter PVC Sched 80 to GRC	Cartex	7	EA
21	Conduit 2" Trade Size, PVC Sched 80, 10 Ft Length A53CA12	Cartex	40	EA
22	Hand Hole 48"x48"x48", Polymer Concrete w/Cover, T22, PG4848BA48	Quazite	2	EA
23	Hand Hole 24"x36"x36", Polymer Concrete w/Cover, T22, PG2436BA36 JB-S3	Quazite	3	EA
24	Hand Hole 24"x36"x24", Polymer Concrete w/Cover, T22, PG2436BA24 JB-23	Quazite	8	EA
25	Integra Enclosure, Polycarbonate, 8"H x 6"W x 4" Deep single door H8064HLL	Solutions direct	1	EA
26	8" x 6" back plate, Aluminum for Integra Enclosure ABP-86	Solutions direct	1	EA
27	Din Rail, 35mm x 7.5mm x 1 meter	Newark	1	EA
28	WAGO Din Rail 4 position ground terminal block, green #281-657	Newark	1	EA
29	WAGO Din Rail 4 Position Terminal Block, Gray #2002-1401	Newark	1	EA
30	WAGO Din Rail 4 Position Terminal Block, RED #2002-1403	Newark	2	EA
31	Phoenix Contact Terminal Block End Plate #0800886	Newark	4	EA
32	Miniature CKT Breaker, Din Rail Mount, 120VAC 15 Amp FAZ-B15/1-NA EATO	Newark	2	EA
33	Hand Hole 13"x24"x24", Polymer Concrete w/Cover, T22, PG1324287612 JB-S	Quazite	2	EA
34	Hand Hole 30"x49"x36", Polymer Concrete w/Cover, T22, PG3048BA36	Quazite	1	EA
35	AIR TERMINAL, 2" TAPER, 18" LENGTH, COPPER 38-7231-10	Thermoweld	1	EA
36	AIR TERMINAL ADHESIVE BASE, FOR 1/2" TERMINAL, 38-7242-21	Thermoweld	1	EA
37	M1 Structural Adhesive/Sealant 10.1 oz tube 38-7547-00	Thermoweld	4	EA
38	AIR TERMINAL ADHESIVE BASE, 1/2" TERMINAL, FOR SHELTER	Thermoweld	1	EA
39	Cable Gland, NYLON, MNPT 1/2", 0.39 to 0.55" cable, Gray	Grainger	6	EA
40	3/4" PVC Sched 80 Conduit, 10 Foot Length	Cartex	2	EA
41	3/4" PVC Sched 80 Conduit 90 Degree Elbow	Cartex	2	EA
42	GFCI Outlets, 20 Amp, 2097TRWRWCCD4, Weatherproof	Legrand	2	EA
43	RACO 5320 Single Gang Weatherproof Box	Gordon Electric	2	EA
44	1" Rigid Galvanized Steel Conduit, Threaded, 10ft length	Allied Tube & Conduit	22	EA
45	1" Rigid Galvanized Steel Conduit 90 degree elbows	Allied Tube & Conduit	2	EA
46	RACO 233 4Square box, 2 1/2" deep, 8-1" KO	Grainger	3	EA
47	1" Galvanized Conduit Sealing Lock Nut RACO 1204	Grainger	10	EA
48	#12 AWG Copper THHN, Black insulation,	NNC	250	LF
49	#12 AWG Copper THHN, White insulation,	NNC	250	LF
50	#12 AWG Copper THHN, Green insulation,	NNC	250	LF
51	Stamped Adhesive Cable Clip, for full size cable, tinned, 38-7549-11	Thermoweld	28	EA
52	Assemble and test the Integra Enclosure & Din Rail components for the power distribution within the Gantry Cladding for the power distribution (2 ea GFCI Outlets and the Gantry LED Lighting) in accordance with the drawings. Install the Integra Enclosure/Power Distribution box in the location inside the gantry cladding as directed by RMTA.	Contractor	1	LS

SHELTER ESTIMATED ANCILLARY EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	Cable Tray Bonding Strap Kit	Chats worth Products	6	EA
2	Conduit, 1" Trade, EMT, 10 Ft length	Allied Tube & Conduit	5	EA
3	Shelter Load Center, SE QO124M200P, 24/36 dkt Schneider Electric	Zoro	1	EA
4	Breaker, Single Pole, 70Amp, QO 170 Schneider Electric	SimplyBreakers.com	2	EA
5	Breaker, Dual Pole, 30 Amps, 240VAC, QO 230 Schneider Electric	SimplyBreakers.com	5	EA
6	Breaker, Single Pole, 15 Amp, QO 115 Schneider Electric	SimplyBreakers.com	9	EA
7	Breaker, Dual Pole, 20 Amps, 240VAC, QO 220 Schneider Electric	SimplyBreakers.com	1	EA
8	Breaker, Single Pole, 30Amp, QO 130 Schneider Electric	SimplyBreakers.com	1	EA
9	Breaker, Single Pole, 20 Amp, QO 120 Schneider Electric	SimplyBreakers.com	4	EA
10	Ladder Rack, Telco, 12" Wide, 10ft Length, black PN 11252-712	Chats worth Products	4	EA
11	Ladder Rack Corner Bracket, 15" Length, black PN 11959-715	Chats worth Products	3	EA
12	Ladder Rack Junction Splice Kit, black, PN 11298-701	Chats worth Products	3	EA
13	Ladder Rack Ceiling Kit 5/8" Rod (5/8-11), PN 11310-003	Chats worth Products	12	EA
14	Ceiling 5/8-11 Nuts for Rods, SS pk of 10	McMaster-Carr	2	EA
15	Ladder Rack ceiling mount brack for 1 1/2" rack PN 11408-003	Chats worth Products	20	EA
16	Ladder Rack Wall Bracket Support for 15" LR 11421-715 (Mod for No J bolts)	Chats worth Products	4	EA
17	Master Ground Buss Bar, 4" x 20" x 1/4" with standoffs PN 40158-020	Chats worth Products	10	EA
18	Conduit 1 1/4" EMT Compression Coupling	Southwire	10	EA
19	Conduit, 1 1/4" Trade Size EMT, 10 Ft length Allied Tube & Conduit	Gordon Electric	3	EA
20	GFCI Outlets, 20 Amp, 2097TRWRWCCD4, Weatherproof	Legrand	2	EA
21	Light Switch, Dimmer, Illumatech IP710-040-D0Z	Leviton	1	EA
22	Conduit Bodies Type LB, 2", Threaded, coated iron, LB200M	Thomas & Betts	7	EA
23	PLT-13142, 11,500 Lumen 80W att LED Flood Light 120-277V	1000bulbs.com	3	EA
24	PLT-80033 8840 Lumen 65Watt LED Light fixture ceiling mount	1000bulbs.com	6	EA
25	LEDD-10005 LED Emergency BACKUP driver 20 Watt 90 minute	1000bulbs.com	2	EA
26	PLTS-50289 LED EXIT Sign, RED Letters, single or double face 90 Min Emerg	1000bulbs.com	1	EA
27	PLT-90381 Surface Mount Kit for PLT-80033	1000bulbs.com	6	EA
28	Light Switch, Dimmer, Illumatech IP710-040-D0Z	Leviton	1	EA
29	RACO 5320 Single Gang Weatherproof Box	Gordon Electric	2	EA
30	RACO 5180 Dual Gang Cover	Gordon Electric	2	EA
31	RACO 2913 - 3/4" EMT Compression Fittings	Zoro	6	EA
32	RACO 2915 - 1 1/4" EMT Compression Fittings	Grainger	6	EA
33	RACO 857 - Dual Switch Plates	Zoro	1	EA
34	RACO 233 4Square deep box with 8 Ea 1" KO	Gordon Electric	6	EA
35	Hand Hole 30"x48"x36" Polymer Concrete w/Cover, T22	Quazite	1	EA
36	Bolt, 18-8 stainless, 3/8-24 x 2 1/2" 92198A361 (PK of 10)	McMaster-Carr	1	EA
37	Nut, 18-8 stainless, 3/8-24, hex head, 92673A128 (PK of 25)	McMaster-Carr	1	EA
38	Washer, Lock, 18-8 stainless, 3/8", 91007A641 (PK of 25)	McMaster-Carr	1	EA
39	#3/0 AWG XHHW, Black Insulation, SIMpull #113027 (GENSET PWR OUT)	NNC	150	LF
40	#3/0 AWG XHHW, White Insulation, SIMpull #553880 (GENSET PWR OUT)	NNC	75	LF
41	#4 AWG XHHW, Green Insulation, SIMpull #558627	NNC	75	LF
42	Disconnect Switch (UTIL Service & Generator) VH224DSGL Schneider Electric	Essential Electric	2	EA
43	Disconnect Switch, 240VAC, 30 Amp, Fused, VH221NDSGL ((BLDG HVAC))	Schneider Electric	2	EA
44	3/4" Conduit Body, Type LB	Thomas & Betts	1	EA
45	3/4" Conduit, EMT, 10 Ft length	Allied Tube & Conduit	2	EA
46	3/4" Conduit, PVC Sched 80, 10 Ft length,	Cantex	3	EA
47	3/4" Conduit, PVC Sched 80, 90 Deg elbow	Cantex	4	EA
48	3/4" Conduit, EMT, 90 Deg Elbow	Allied Tube & Conduit	2	EA
49	3/4" Conduit, Rigid Galvanized Steel, 10 Ft Length	Allied Tube & Conduit	1	EA
50	3/4" PVC Coupling to RMC	Allied Tube & Conduit	1	EA
51	#12 AWG Copper THHN, Black insulation,	NNC	250	LF
52	#12 AWG Copper THHN, White insulation,	NNC	250	LF
53	#12 AWG Copper THHN, Green insulation,	NNC	250	LF
54	30AMP Type H Fuses for VH221NDSGL Disconnect Switch	Essential Electric	4	EA

SHELTER ESTIMATED ANCILLARY EQUIPMENT LIST (CONTINUED)

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
55	Stamped Adhesive Cable Clip, for full size cable, tinned, 38-7549-11	Thermoweld	10	EA
56	Ethernet, CAT6, Direct Bury, Shielded, PN 6ESCMXBLK 500ft reel	TrueCable	1	EA
57	CAT6 RJ-45 Punchdown, Keystone Jack, White PN 6EPD90CMPTWHT	TrueCable	2	EA
58	Dual Jack, Single Gang Wall Plate for Keystone Jacks PN 2PFPWHT	TrueCable	1	EA
59	Network/Server Cabinets, 45" Depth, 30" Width, 48RU SR48UBDPWD	Eaton/Tripplite	4	EA
60	Server Cable Vertical Cable Mgmt, SCRCABLERINGVRT	Eaton/Tripplite	4	EA
61	1.9kW Single-Phase 120V Basic PDU, 14 NEMA 5-15/20R Outlets, NEMA L5-20P, 15 Ft cord, PDUV20	Eaton/Tripplite	4	EA
62	EDS G509-T 9G-port full Gigabit managed Ethernet switch High Temp	Moxa	6	EA
63	SFP-1GLXLC-T Fiber Optic Module, 10km max	Moxa	4	EA
64	SFP-1GSXLC-T Fiber Optic Module, 550m max	Moxa	8	EA
65	Belden 3108A 22AWG 3 Pair EIA RS485 comm cable	Wire&Cable YW	50	LF
66	Belden 1 pair, shielded, 24AWG #9841	NNC	100	LF
67	Conduit, 1" EMT 90 deg Elbow	Allied Tube & Conduit	5	EA
68	Conduit, 1" EMT Couplings, Compression	Allied Tube & Conduit	5	EA
69	Off-Load, Place and install 50KW Emergency Diesel Generator (CAT), Fill or have filled the 24Hr runtime sub-base fuel tank (est 137 gal), and provide personnel to be present for start-up test. The 50 KW Generator shall use the #3/0 AWG wiring (listed above) along with the #12 AWG wiring for the generator heater and battery charger, the ATS start signal and the E-Stop switch (both #14ga wire pairs) and one CAT 6 Ethernet cable. The generator shall be wired to the generator disconnect switch (VH222DSGL) and then into the ATS. The ATS shall also be wired to the Utility Power Disconnect switch and the Utility Meter. The ATS shall be wired to the building load center. The Contractor shall test all connections prior to the start of the generator to ensure there are no wiring errors.	Contractor	1	LS
70	Trench an estimated 170 feet of 13" wide x 31" deep (estimated) for power conduit. This would be used for four 3" trade size Sched 80 PVC conduit configured as 2 over 2 and back filled trench with sand & clean fill per drawings. This would be a run of 145 feet and a second run of 25 feet with hand holes installed as per drawings.	Contractor	1	LS
71	Trench an estimated 170 feet of 17" wide x 40" deep (estimated) for Communication conduit. This would be used for two 2" trade size Sched 80 PVC conduit configured as 2 over 2 (and 1 - 4" and 1 - 3" trade size) and back filled trench with sand & clean fill per drawings. This would be a run of 145 feet and a second run of 25 feet with hand holes installed as per drawings.	Contractor	1	LS

ADDITIONAL SERVICES ESTIMATED EQUIPMENT LIST

Item #	Item Description and/or Part Number	Vendor	QTY	UOM
1	Directional Bore from SB Gantry Roadside Cabinet to the Forest Hill Ave Comm Shack and install a minimum of 2" HDPE SDR11 Conduit. Pull in three MAX-CELL cloth inner-duct with pull strings installed. ESTIMATE 1950 FEET.	Contractor	1	LS
2	Install 50/125 um OM4 Multimode Corning sx fiber cable from AET Shelter Comm Hand hole near the guard rail/drive entry all the way to the Forest Hill Ave Comm Shack. This will include using Corning UNICAM LC Connectors on all fiber optic cable ends. The 50/125 um fiber optic cable shall be pulled into the 2" conduit from the 30"x48" hand hole near the guard rail/drive way into the AET shelter using provided conduit and innerduct. This cable will be terminated on a fiber optic patch panel in the AET Shelter. Estimate 2315 feet of fiber optic cable to be pulled (Path from AET Shelter, via 30x48" handhole to and over gantry to the SB roadside cabinet and then pulled into the directionally bored conduit/innerduct. The fiber optic cable shall be one continuous pull with no splice points.	Contractor	1	LS

AET PW-2025 All Electronic Tolling ITS & Civil Elements Bid Tabulation

_____) (INSERT BIDDER FIRM NAME HERE)

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	Mobilization	Ea.	1		
2	Clearing and Grubbing	Acre	0.5		
3	Selective Tree Removal, Trimming, & cleanup	Acre	0.5		
4	Temp. Silt Fence Ty. A	LF	744		
5	Inlet Protection Ty. B	Ea.	1		
6	Earthwork	LS	1		
7	Permanent Seed	Lbs	500		
8	Fertilizer	Lbs	25		
9	Sediment Retention Roll	LF	300		
10	Check Dam (Rock) TY. II	Ea.	2		
11	Remove Existing Guardrail	LF	360		
12	Guardrail GR-2	LF	735		
13	Guardrail GR-2A	LF	150		
14	Guardrail Terminal GR-7	Ea.	1		
15	Guardrail Attenuator TL-3	Ea.	1		
16	Maintenance of Traffic	LS	1		
17	NS Flexible Pavement Planing 4"	SY	190		
18	Asphalt Concrete TY. SM-9.5E 4"	Ton	40		
19	Rumble strips Cylindrical Asphalt	LF	180		
20	Pavement Marking Eradication	LF	450		
21	Type B Class VI Pavement Marking	LF	450		
22	2 Cabinets and Ancillary Equip. Installation (including transport)	LS	1		
23	Gantry Area Ancillary Equipment	LS	1		
24	Tech Shelter Ancillary Equipment	LS	1		
25	Technical Shelter Site Foundation	Ea.	1		
26	Non Standard Concrete Foundation	Ea.	2		
27	Toll Gantry Foundation	Ea.	2		
				Total	

(SIGN HERE)

(INSERT HERE)

Signature of Owner, Partner, or Corporate Officer:

Title:

TOTAL

AET PW-2025 All Electronic Tolling ITS & Civil Elements (Additional services) Bid Tabulation

(_____) (INSERT BIDDER FIRM NAME HERE)

ITEM NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	AMOUNT
1	Directional Bore from SB Gantry Roadside Cabinet to the Forest Hill Ave Comm Shack and install a minimum of 2" HDPE SDR11 Conduit. Pull in three MAX-CELL cloth inner-duct with pull strings installed. ESTIMATE 1950 FEET.	LS	1		
2	Install 50/125 um OM4 Multimode Corning six fiber cable from AET Shelter Comm Hand hole near the guard rail/drive entry all the way to the Forest Hill Ave Comm Shack This will include using Corning UNICAM LC Connectors on all fiber optic cable ends. The 50/125 um fiber optic cable shall be pulled into the 2" conduit from the 30"x48" hand hole near the guard rail/drive way into the AET shelter using provided conduit and innerduct. This cable will be terminated on a fiber optic patch panel in the AET Shelter. Estimate 2315 feet of fiber optic cable to be pulled (Path from AET Shelter, via 30x48" handhole to and over gantry to the SB roadside cabinet and then pulled into the directionally bored conduit/innerduct. The fiber optic cable shall be one continuous pull with no splice points.	LS	1		
				Total	

(SIGN HERE)

(INSERT HERE)

Signature of Owner, Partner, or Corporate Officer: _____

Title: _____

TOTAL _____

RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY

RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. AET PW-2025

ALL ELECTRONIC TOLLING ITS & CIVIL ELEMENTS

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that _____
_____, as Principal/Contractor, and
_____, as Surety, legally authorized to do
business in the Commonwealth of Virginia, are held and firmly bounded unto the Richmond
Metropolitan Transportation Authority, as Authority, in the amount of FIVE (5) PERCENT OF
THE DOLLAR VALUE OF THE TOTAL AMOUNT WRITTEN IN THE BID, on which the
Contract is awarded lawful money of the United States of America, for the payment of which, well
and truly to be made, we bind ourselves, our heirs, executors, administrators, successors and
assigns, jointly and severally and firmly by these presents:

WHEREAS, the Contractor is herewith submitting its Bid for Contract No. AET PW-2025
entitled ALL ELECTRONIC TOLLING ITS & CIVIL ELEMENTS, in connection with the
Richmond Expressway System; and

NOW, THEREFORE, the condition of this obligation is such, that if the Contractor shall be
awarded the Contract upon said Bid and shall, within fifteen (15) calendar days after the date of
written notice of such award, enter into and deliver a Contract and the prescribed Contract Bond
for the faithful performance of the Contract, together with the required proof of proper insurance
coverage and other necessary documents, then this obligation shall be null and void; otherwise, to
remain in full force and effect, and the Contractor and Surety will pay unto the Authority the
difference in money between the amount of the Total Amount written in the Bid of said Contractor
and the amount for which the Authority may legally contract with another party to perform the

PB-1

The Contractor agrees as follows:

Indemnification: The Contractor shall indemnify and hold harmless Richmond Metropolitan Transportation Authority, and all officers, directors and employees of the named entity, (individually and collectively), from any and all liability, loss, damage, expense, cause of action, suits, claims or judgments arising from injury to person or property resulting from activity arising out of this contract; and shall, at its own cost and expense, defend any and all suits which may be brought against such parties, either alone or in conjunction with others upon any such liability or claim or claims and shall satisfy, pay and discharge any and all judgments and fines that may be recovered against such parties in any such action or actions, provided, such indemnity shall not extend to the negligence of such parties and, provided, further, that such parties shall give the Richmond Metropolitan Transportation Authority written notice of any such claim or demand.

Cancellation of Contract: The Authority reserves the right to cancel and terminate any resulting contract, in part or in whole, without penalty, upon 60 days written notice. Any contract cancellation notice shall not relieve the contractor of the obligation to deliver and/or complete all work tasks in progress prior to the effective date of cancellation.

Term of Contract: Sealed proposals for the above project are due Tuesday, February 11, 2025 at 10:00 AM at which time (10:30AM) and place the bids will be publicly opened and read. The work under this contract shall be completed no later than December 1, 2025, with the concrete foundations to be completed by June 23, 2025 and the paved shoulder by July 18, 2025.

Scope of Work: A complete list of all bid items and estimated quantities is included beginning on sheet P-2 in BID FOR GENERAL CONSTRUCTION CONTRACT.

Anti-Discrimination: By submitting their (bids/proposals), (bidders/offerors) certify to the Commonwealth that they will conform to the provisions of the Federal Civil Rights Act of 1964, as amended, as well as the Virginia Fair Employment Contracting Act of 1975, as amended, where applicable, the Virginians With Disabilities Act, the Americans With Disabilities Act and §2.2-4311 of the *Virginia Public Procurement Act*. If the award is made to a faith-based organization, the organization shall not discriminate against any recipient of goods, services, or disbursements made pursuant to the contract on the basis of the recipient's religion, religious belief, refusal to participate in a religious practice, or on the basis of race, age, color, gender or national origin and shall be subject to the same rules as other organizations that contract with public bodies to account for the use of the funds provided; however, if the faith-based organization segregates public funds into separate accounts, only the accounts and programs funded with public funds shall be subject to audit by the public body. (*Code of Virginia, § 2.2-4343.1 E*).

RMTA SUPPLEMENTAL SPECIFICATIONS

To

VIRGINIA DEPARTMENT OF TRANSPORTATION
2020 ROAD AND BRIDGE SPECIFICATIONS

FOR
RICHMOND EXPRESSWAY SYSTEM

CONTRACT NO. AET PW-2025
ALL ELECTRONIC TOLLING ITS & CIVIL ELEMENTS

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- Fertilizer shall be 15-30-15 applied at a rate in accordance with Section 603 of the Specifications.
- H) Any changes to the proposed plan shall be submitted to the RMTA for approval.
- I) The areas beyond the project's construction area shall be protected from siltation or run-off from the project. Perimeter controls such, such as filter barrier, silt fence, diversion dikes, inlet protection, rock check dam, etc., shall be installed prior to any grubbing operations or other earth moving activities
- J) Temporary earthen structures are to be stabilized per applicable regulation. Stabilization may include temporary or permanent seeding, riprap, aggregate, sod, mulching, and or soil stabilization blankets and matting in conjunction with seeding.
- K) All channel relocations are to be constructed during the earliest stage of construction in accordance with all applicable permit requirements and shall be constructed in the dry whenever possible. Stabilization or vegetation shall be established before flow is redirected through the constructed areas as directed by the RMTA.
- L) Silt removal and sediment clean-out from erosion and siltation control items shall be performed when capacity, height, or depth has been reduced by 50%.
- M) Existing light poles located in the construction work area shall be maintained and protected at all times during construction activities.
- N) Guardrail removed during construction activities shall be replaced at the end of activities.
- O) Water pumped out of excavated areas shall be pumped through a filter bag per VDOT specifications prior to discharge.
- P) Portable concrete washout areas shall be provided by the Contractor and no concrete waste shall be discharged onto site.

MEASUREMENT AND PAYMENT

The seeding shall include site preparation, seed, fertilizer, mulching; finishing and maintaining seeded areas until final acceptance, and restoring disturbed areas prior to final acceptance. This work will not be measured for separate payment but will be included in the price bid for other items of work.

<u>Pay Item</u>	<u>Pay Unit</u>
Clearing and grubbing	Acre
Selective tree removal, trimming, & cleanup	Acre
Temp Silt Fence Ty. A	Linear Feet
Inlet Protection Ty. B	Each
Check Dam (Rock) Ty. II	Each
Earthwork	Lump Sum
Permanent Seed	Pounds
Fertilizer	Pounds
Sediment Retention Roll	Linear Feet



- L) Exposed areas shall be given a class 7 sidewalk finish in accordance with VDOT spec section 404.07(G). Cap shall have ¼" chamfered edge per VDOT spec 700.05.

MEASUREMENT AND PAYMENT

Unless designated as separate pay items, this price shall include excavation, reinforcing steel, waterstops, waterproofing, damp-proofing, anchor bolts, drain assemblies, silicone treatment, protective coating for concrete exposed to tidal waters, and trial batches.

<u>Pay Item</u>	<u>Pay Unit</u>
Tech Shelter Site Foundation	Each
Non-standard Concrete Foundation (Cabinets)	Each
Toll Gantry Foundation	Each

3 Final Plan Set

 COMMONWEALTH OF VIRGINIA Danny Baiden-Nimene, Jr. No. 56350 PROFESSIONAL ENGINEER	 COMMONWEALTH OF VIRGINIA Mark C. Burris No. 212155 PROFESSIONAL ENGINEER
Atkins Realis Project Manager	KCI Technologies Design Project Manager



RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY
(RMTA)

RMTA POWHITE ALL ELECTRONIC TOLLING
CONVERSION SITE PLAN

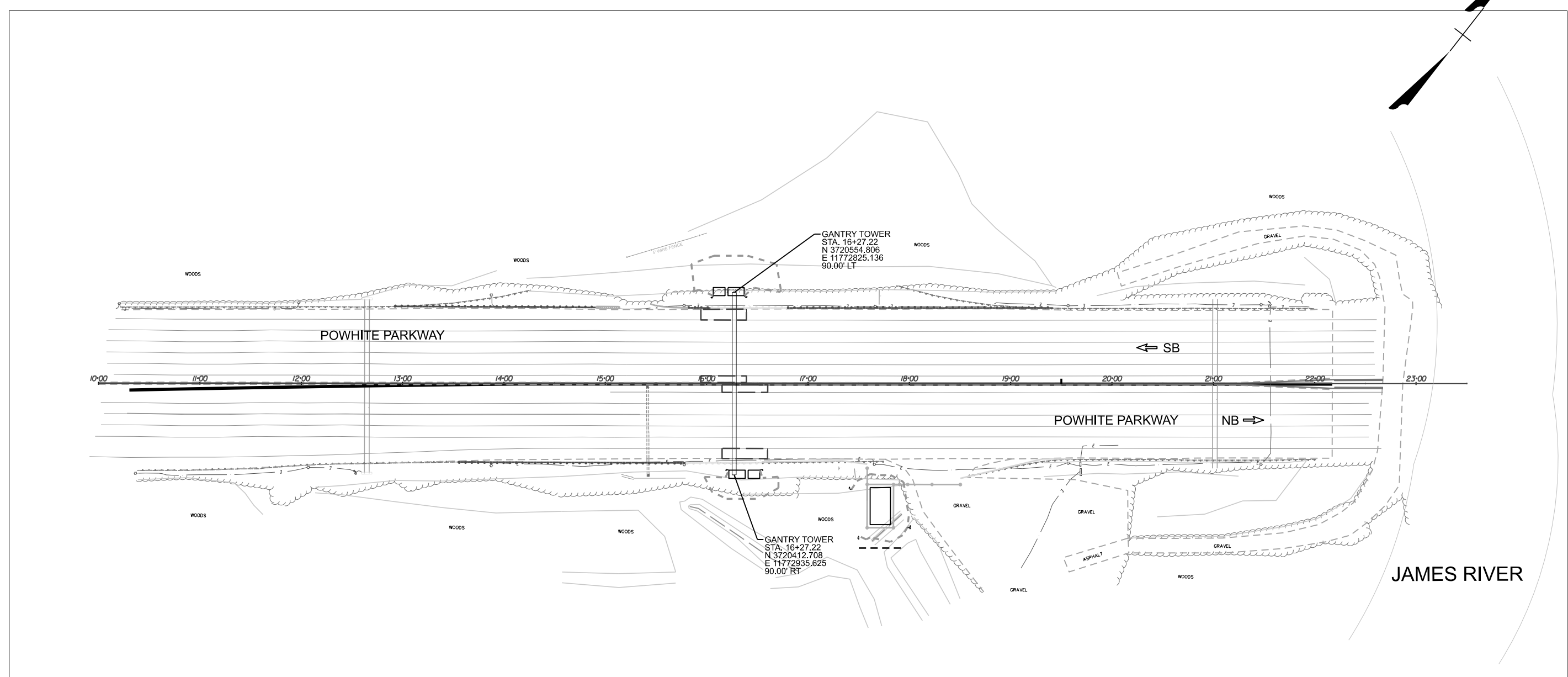
ROUTE 76 (POWHITE PARKWAY)
CITY OF RICHMOND

STATE	FEDERAL AID	STATE		SHEET NO.
	PROJECT	ROUTE	PROJECT	
VA.		76	ITS/Civil/Gantry	1

FUNCTIONAL CLASSIFICATION AND TRAFFIC DATA	
Other Freeways and Expressways	
	Fr: Powhite Pkwy Bridge To: SR 146
ADT	85000
ADT	85000
D (%) (design hour)	50
T (%) (design hour)	2
V (MPH)	45

CONVENTIONAL SIGNS

STATE LINE	-----
COUNTY LINE	-----
CITY/TOWN OR VILLAGE	-----
RIGHT OF WAY LINE	-----
FENCE LINE	-----
UNFENCED PROPERTY LINE	-----
FENCED PROPERTY LINE	-----
WATER LINE	-----
SANITARY SEWER LINE	-----
GAS LINE	-----
ELECTRIC UNDERGROUND CABLE	-----
TRAVELED WAY	-----
GUARD RAIL	-----
RETAINING WALL	-----
RAILROADS	-----
BASE OR SURVEY LINE	-----
LEVEE OR EMBANKMENT	-----
BRIDGES	-----
CULVERTS	-----
DROP INLET	-----
POWER POLES	-----
TELEPHONE OR TELEGRAPH POLES	-----
TELEPHONE OR TELEGRAPH LINES	-----
HEDGE	-----
TREES	-----
HEAVY WOODS	-----
GROUND ELEVATION	-----
GRADE ELEVATION	-----



PROJECT MANAGER: Mark C. Burris
 SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
 DESIGN BY: KCL Technologies, Inc.
 SUBSURFACE UTILITY BY, DATE: KCL November 2024

LOCATION MAP

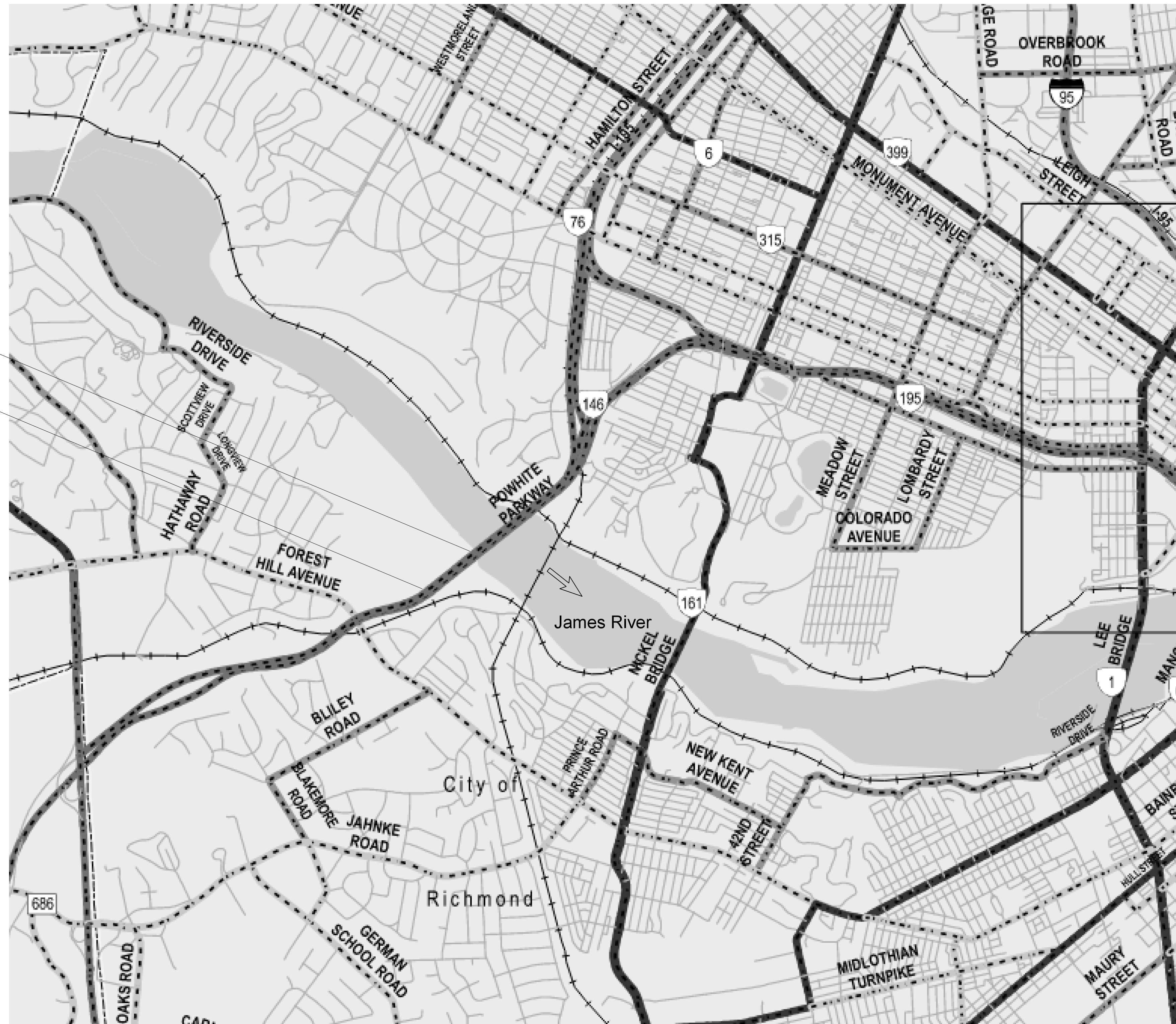
City of Richmond

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	1A

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



Proposed Project
Powhite Parkway
AET Gantry



NOT TO SCALE

PROJECT	SHEET NO.
ITS/Civil/Gantry	1A

PROJECT MANAGER _ _ _ Mark C. Burris _ _ _
 SURVEYED BY, DATE _ _ KCLTechnologies, Inc., August 2024 _ _ _
 DESIGN BY _ _ KCLTechnologies, Inc. _ _ _
 SUBSURFACE UTILITY BY, DATE _ _ KCL November 2024 _ _ _

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	1B

DESIGN FEATURES RELATING TO CONSTRUCTION
 OR TO REGULATION AND CONTROL OF TRAFFIC
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 NECESSARY BY THE DEPARTMENT

INDEX OF SHEETS

SHEET NO.	DESCRIPTION
1	TITLE SHEET
1A	LOCATION MAP
1B	INDEX OF SHEETS
1J(1) thru 1J(7)	TRAFFIC MANAGEMENT PLAN
2A	TYPICAL SECTION
2B(1) thru 2B(7)	GANTRY, CABINET PADS & TECH SHELTER PAD SITE PLAN & FOUNDATION DETAILS TECH SHELTER PROFILE & EROSION AND SEDIMENT CONTROL SUMMARY & GRAING DIAGRAM AND SUMMARY
2C(1) thru 2C(2)	CHESAPEAKE BAY PRESERVATION AREA & 100 YEAR FLOODPLAIN LIMITS
02 thru 03	ROADWAY PLANS
S-1 thru S-8	GANTRY STRUCTURAL PLANS
1 thru 22	ELECTRICAL PLANS

	PROJECT	SHEET NO.
		1B

PROJECT MANAGER _ _ _ Mark C. Burris _ _ _
 SURVEYED BY, DATE _ _ KCLTechnologies, Inc., August 2024 _ _ _
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 SUBSURFACE UTILITY BY, DATE _ _ KCL November 2024 _ _ _

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	1J(1)

Traffic Management Plan

GENERAL NOTES

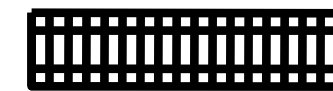
- THIS WORK CONSISTS OF THE MAINTENANCE AND PROTECTION OF THE TRAVELING PUBLIC APPROACHING THE CONSTRUCTION AREA AND WITHIN THE LIMITS OF THE CONSTRUCTION.
- MAINTAIN THE SAFETY OF PEDESTRIANS AT ALL TIMES WITHIN THE LIMITS OF CONSTRUCTION AND APPROACHING THE CONSTRUCTION AREA.
- SUBMIT, TO THE RMTA REPRESENTATIVE, CONTRACTOR'S PROPOSED TRAFFIC CONTROL OPERATIONS DURING CONSTRUCTION FOR APPROVAL PRIOR TO THE BEGINNING OF ANY WORK. ENSURE THAT ALL TRAFFIC CONTROL OTHER THAN THAT DEPICTED HEREIN IS IN ACCORDANCE WITH THE STANDARDS INDICATED BELOW.
- FURNISH, ERECT, PLACE, MAINTAIN AND REMOVE WHEN WARRANTED ALL NECESSARY TRAFFIC CONTROL SIGNS, MARKINGS AND DEVICES AND MAINTAIN TRAFFIC DURING HOURS OF CONSTRUCTION AND AT ALL OTHER TIMES IN ACCORDANCE WITH THE METHODS INDICATED ON THESE DRAWINGS AND THE FOLLOWING:
 1. THE SPECIAL PROVISIONS OF THE CONTRACT.
 2. MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (2009 EDITION).
 3. Virginia Work Area Protection Manual, 2011 Edition Rev 2.1: Nov 1, 2020.
- REFER TO SPECIAL PROVISION MAINTENANCE AND PROTECTION OF TRAFFIC DURING CONSTRUCTION GENERAL REQUIREMENTS, WITHIN THE PROJECT CONTRACT, FOR ADDITIONAL INFORMATION PERTAINING TO THE TRAFFIC CONTROL FOR THIS PROJECT.
- REFER TO THE CONSTRUCTION REQUIREMENTS, CONSTRUCTION RESTRICTIONS AND HOLIDAY RESTRICTIONS, WITHIN THE PROJECT CONTRACT, FOR ADDITIONAL INFORMATION PERTAINING TO THIS CONTRACT.
- IMMEDIATELY UPON COMPLETION OF THE WORK, REMOVE ALL WORK ZONE TRAFFIC CONTROL DEVICES WHICH WILL REMAIN THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE SPECIFIED IN THE SPECIAL PROVISIONS OF THE CONTRACT. THE DEPARTMENT WILL REMOVE ANY TRAFFIC CONTROL DEVICES ERECTED BY DEPARTMENT FORCES.
- COVER ALL SIGNS NOT IN USE AND/OR CONFLICTING SIGNS. UNCOVER THE APPLICABLE SIGNS AS DIRECTED BY THE DEPARTMENT REPRESENTATIVE.
- MAINTAIN A MINIMUM OF 250 FEET BETWEEN ALL REGULATORY, WARNING AND DESTINATION SIGNS (TEMPORARY AND PERMANENT).
- THESE PLANS ARE NOT INTENDED TO RELIEVE THE CONTRACTOR OF THEIR RESPONSIBILITY FOR THE PROTECTION OF THE PUBLIC AND THE CONSTRUCTION PERSONNEL. THE STANDARDS PRESCRIBED HEREIN ARE MINIMUMS AND ADDITIONAL PROTECTION MAY BE NEEDED IF UNANTICIPATED CONDITIONS ARE ENCOUNTERED DURING THE LIFE OF THE PROJECT. THE CONTRACTOR IS EXPECTED TO CONSTANTLY REVIEW THESE PLANS FOR ADEQUACY AND TO RECOMMEND CHANGES FOR THE DEPARTMENT REPRESENTATIVE'S APPROVAL WHEN INADEQUACIES ARE DISCOVERED.
- RETAIN A SUFFICIENT AMOUNT OF THE FOLLOWING SIGNS AVAILABLE IN CASE THEIR USE BECOMES NECESSARY: W20-10 "BE PREPARED TO STOP" AND W20-7A "FLAGGER SYMBOL". THESE SIGNS ARE NOT INTENDED TO BE PART OF THE REQUIRED NORMAL TRAFFIC CONTROL OR A SUPPLEMENT THERETO.
- NOTIFY THE RMTA'S REPRESENTATIVE AT LEAST TWO WEEKS PRIOR TO MODIFYING EXISTING TRAFFIC PATTERNS. ALL MODIFICATIONS MUST BE APPROVED BY THE RMTA'S REPRESENTATIVE.
- INSTALL AND MAINTAIN TRAFFIC CONTROL SIGNS AND DEVICES IN NEW CONDITION THROUGHOUT THE DURATION OF THE PROJECT.
- DELINEATE EVERY PIECE OF TEMPORARY BARRIER. THIS IS INCIDENTAL TO THE ITEM.
- ENSURE THAT ALL SPECIAL SIGNS HAVE AN APPROPRIATE SIZED BLACK BORDER, CORNER RADII, AND ORANGE MARGIN.
- MAINTAIN EXISTING LANE WIDTHS UNLESS OTHERWISE APPROVED.
- CRASHWORTHY END TREATMENTS MUST BE IN PLACE AT ALL TIMES DURING THE INSTALLATION, RELOCATION OR REMOVAL OF TEMPORARY BARRIER TO PREVENT EXPOSURE OF BLUNT ENDS TO TRAFFIC.
- ALL LONG TERM CONSTRUCTION SIGNING TO BE MOUNTED ON TYPE III BARRICADES UNLESS OTHERWISE NOTED.
- ALL WORK IS TO BE PERFORMED IN THE LEGAL RIGHT-OF-WAY.

- CONTRACTOR TO COORDINATE WITH THE RMTA'S REPRESENTATIVE TO COORDINATE TRAFFIC CONTROL ACTIVITIES WITH ON-GOING PROJECTS WITHIN OR ADJACENT TO THE PROPOSED WORK.
- THE MAXIMUM PERMITTED LENGTH OF A WORK ZONE IS TWO MILES. THE MINIMUM DISTANCE BETWEEN SUCCESSIVE WORK ZONE TRAFFIC CONTROL IS 2 MILES (LAST DEVICE TO FIRST DEVICE)
- PROVIDE PROTECTION TO MOTORISTS AND PEDESTRIANS FROM FALLING DEBRIS AT ALL TIMES.
- ARRANGE OPERATIONS TO MINIMIZE INCONVENIENCE OF THE TRAVELING PUBLIC TO THE EXTENT PRACTICAL.

ALLOWABLE CLOSURE TIMES:

- NB Weekday 10AM-5PM (Cones can start being placed at 10AM)
- SB Weekday 6AM-3PM (Cones can start being placed at 6AM)

Legends



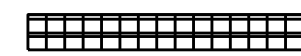
Wall Barrier



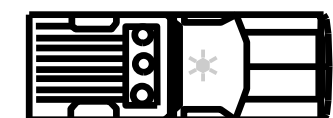
Sign



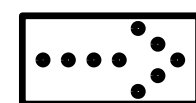
Channelizing Device



Railroad Crossing



Truck Mounted Attenuator



Arrow Board



Impact Attenuator



Existing Guardrail



Type III Barricade

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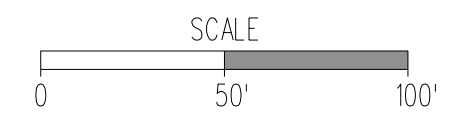
PROJECT MANAGER: Mark C. Burris
SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

REVISED	STATE	STATE		SHEET NO.
	ROUTE	PROJECT		
	VA.	76	ITS/Civil/Gantry	1J(2)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



MATCH LINE 1J(3)

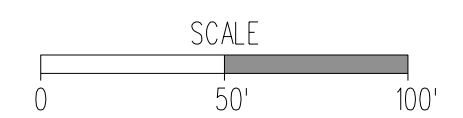
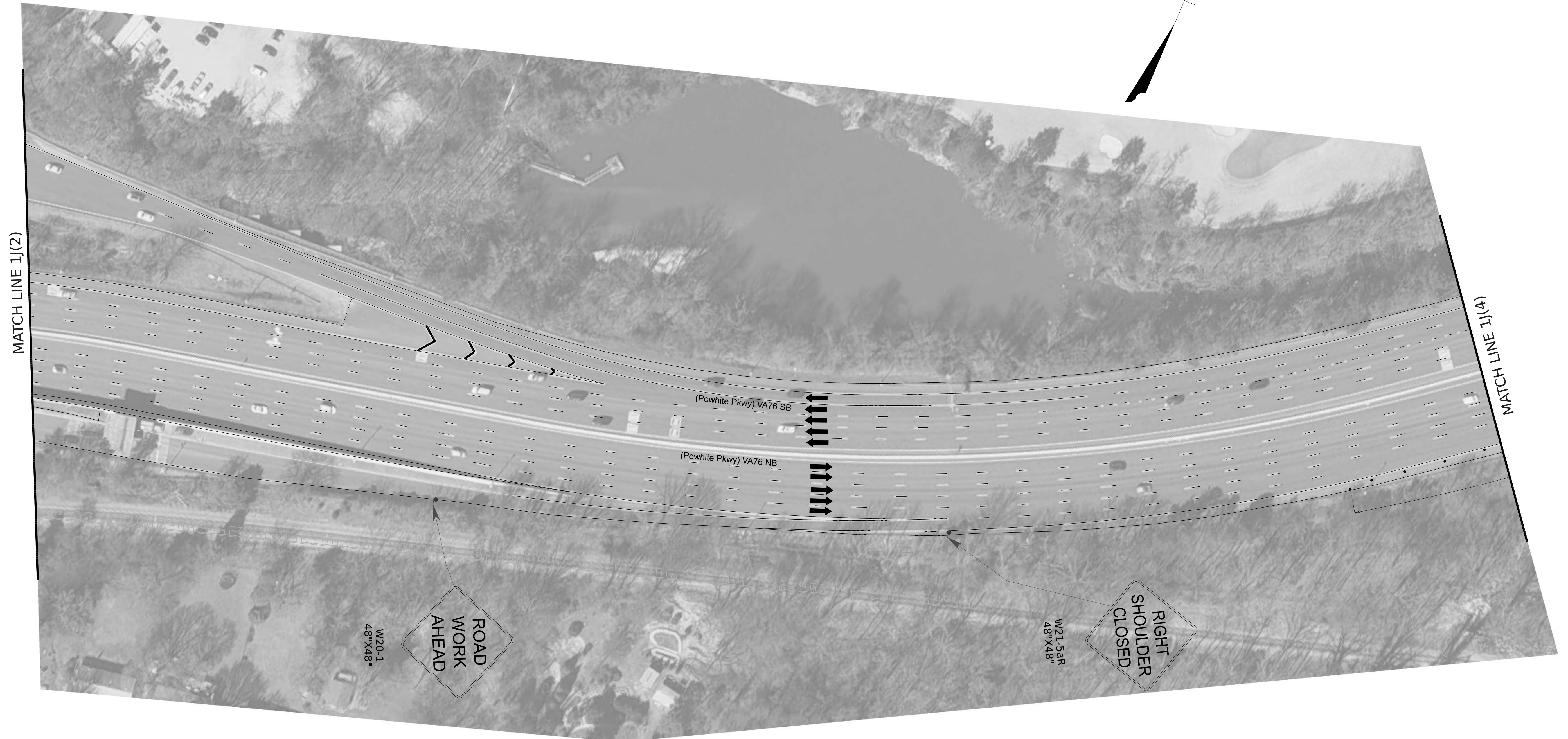
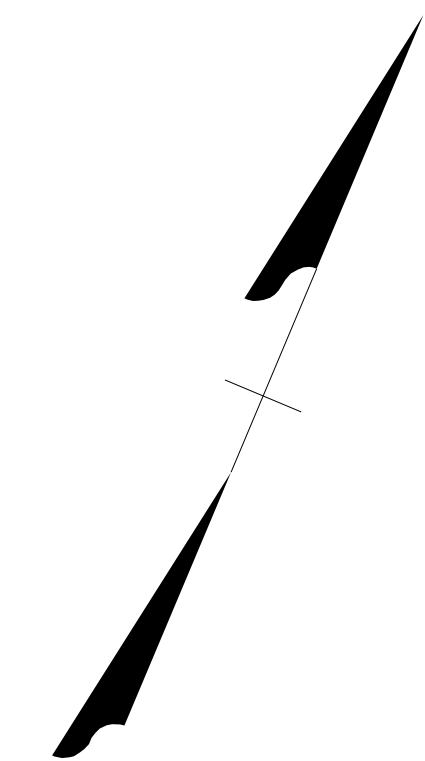


	PROJECT	SHEET NO.
		1J(2)

PROJECT MANAGER ___ Mark C. Burris ___
SURVEYED BY, DATE ___ KCL Technologies, Inc., August 2024 ___
DESIGN BY ___ KCL Technologies, Inc. ___
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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	

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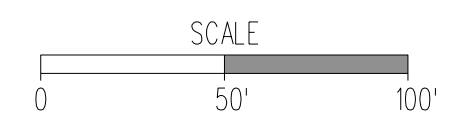
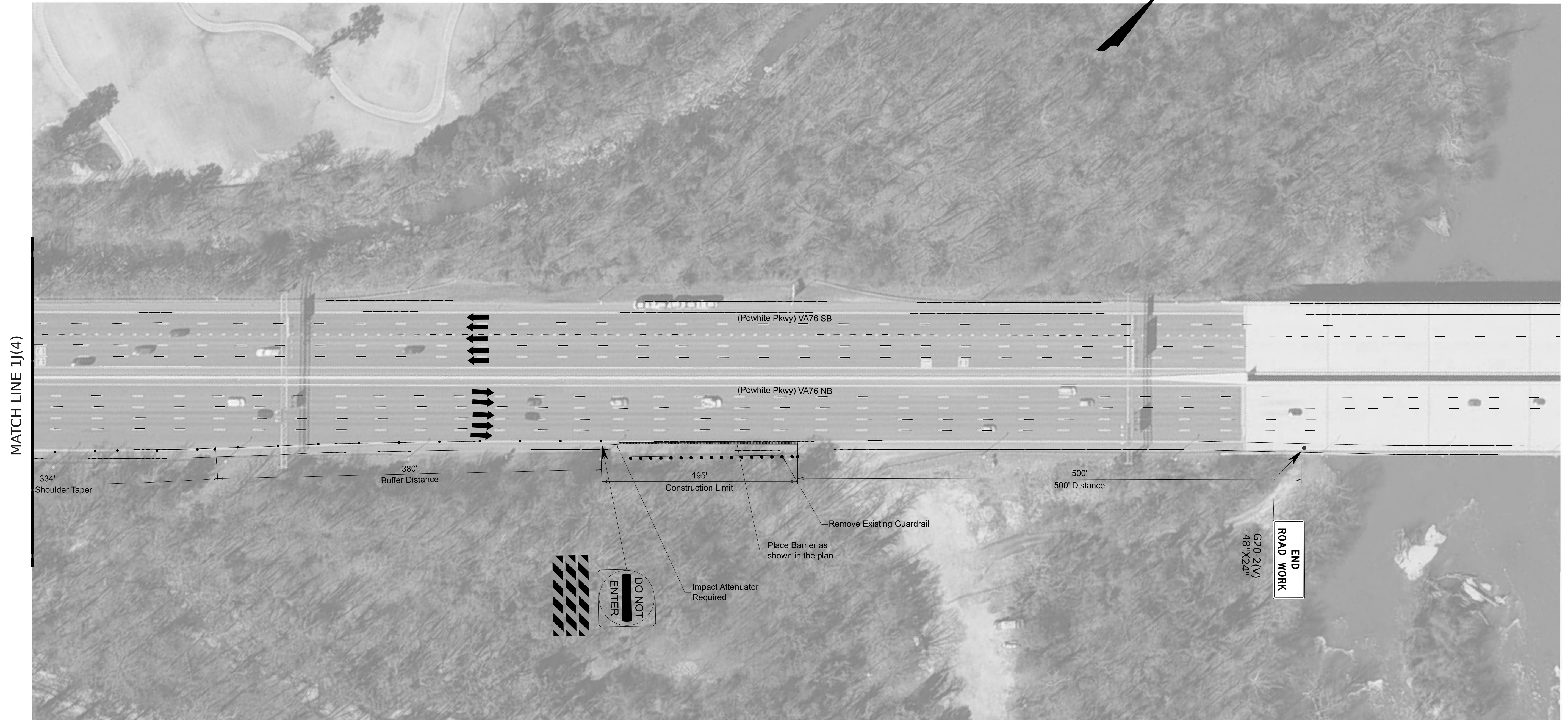


PROJECT	SHEET NO.
	1J(3)

PROJECT MANAGER: Mark C. Burris
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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	1J(4)

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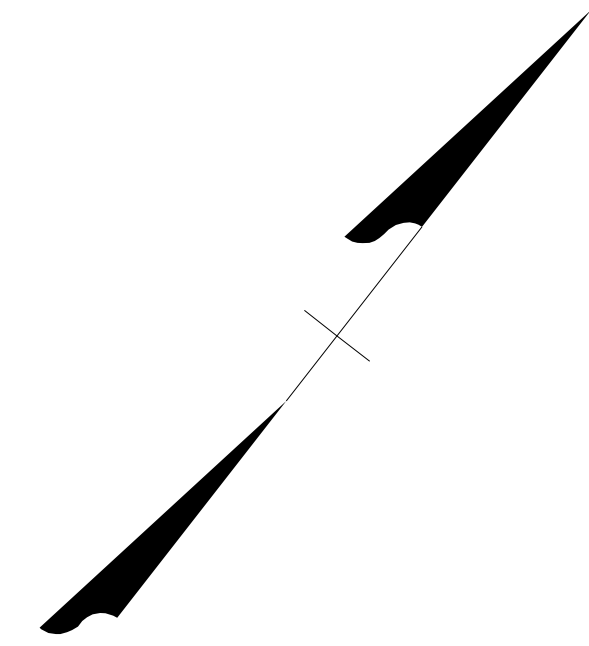


PROJECT	SHEET NO.
	1J(4)

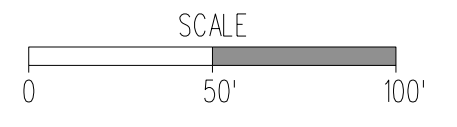
PROJECT MANAGER: Mark C. Burris
 SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
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REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	1J(5)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



MATCH LINE 1J(6)

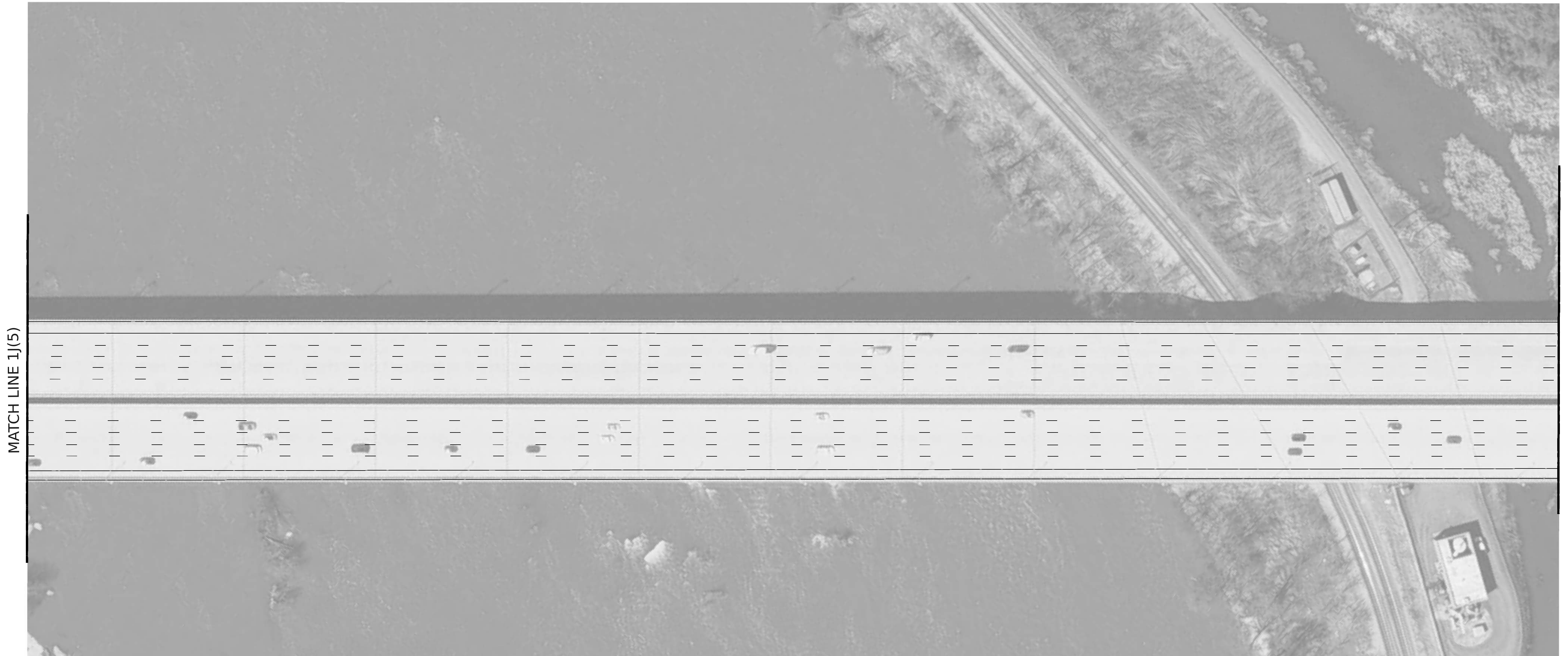
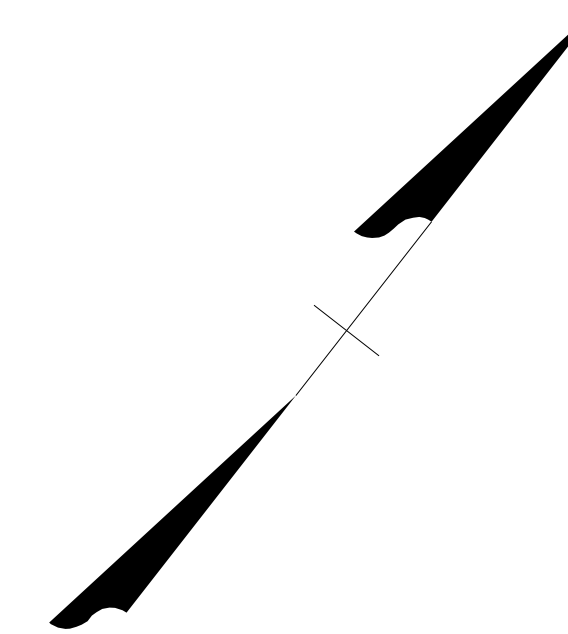


PROJECT	SHEET NO.
	1J(5)

PROJECT MANAGER: Mark C. Burris
SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

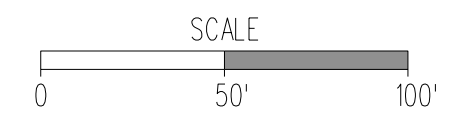
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



MATCH LINE 1J(5)

MATCH LINE 1J(7)

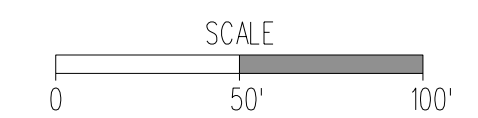
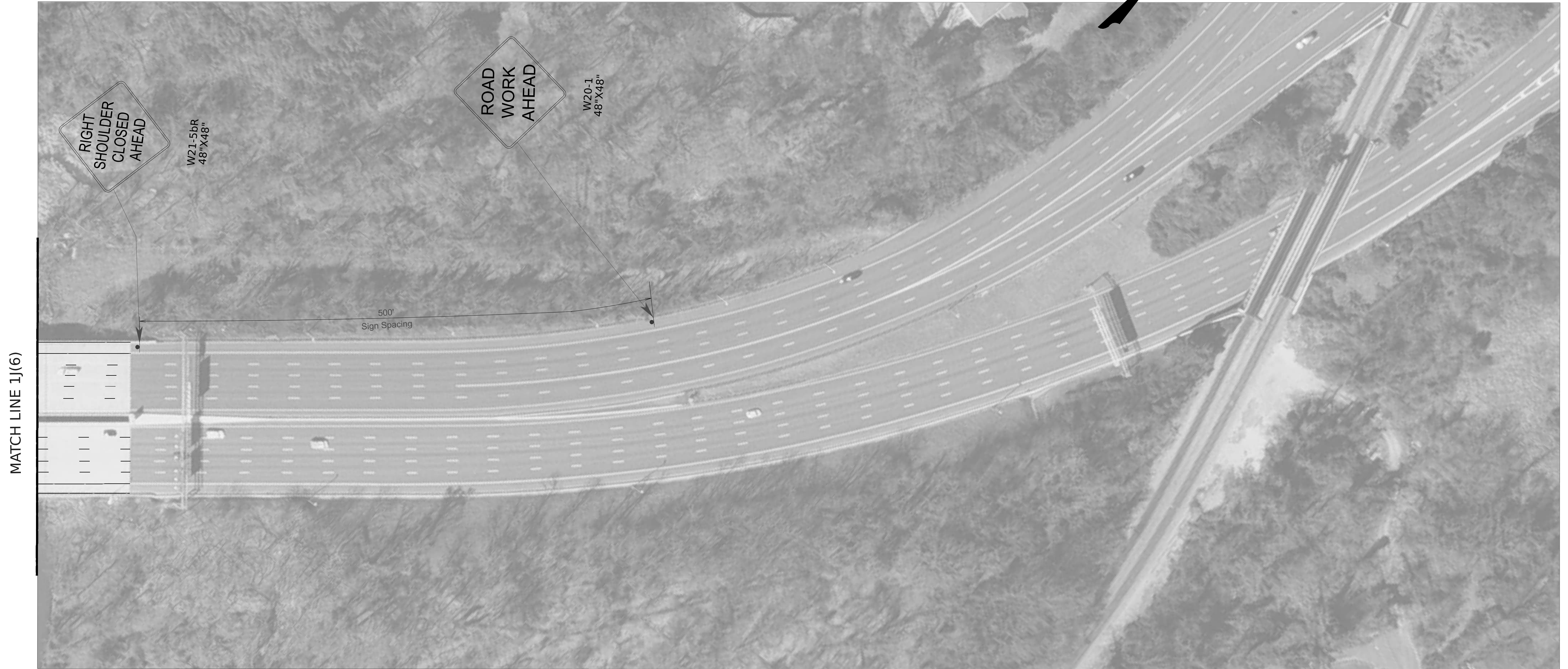
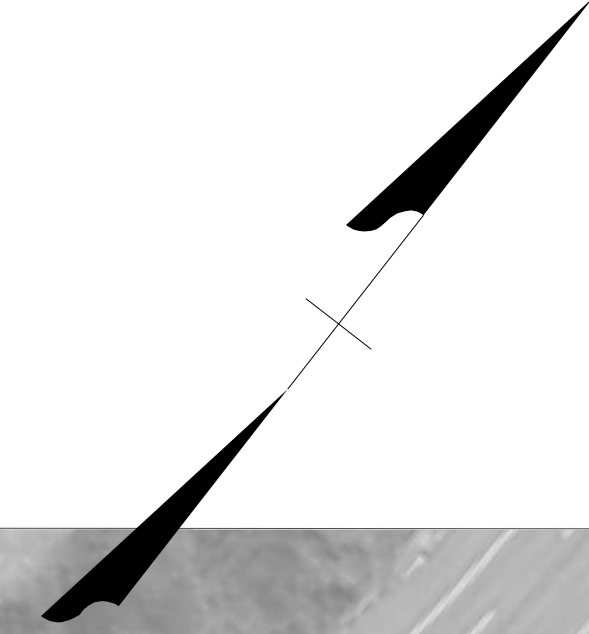


PROJECT	SHEET NO.
ITS/Civil/Gantry	1J(6)

PROJECT MANAGER: Mark C. Burris
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REVISED	STATE	STATE		SHEET NO.
	ROUTE	PROJECT		
	VA.	76	ITS/Civil/Gantry	1J(7)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



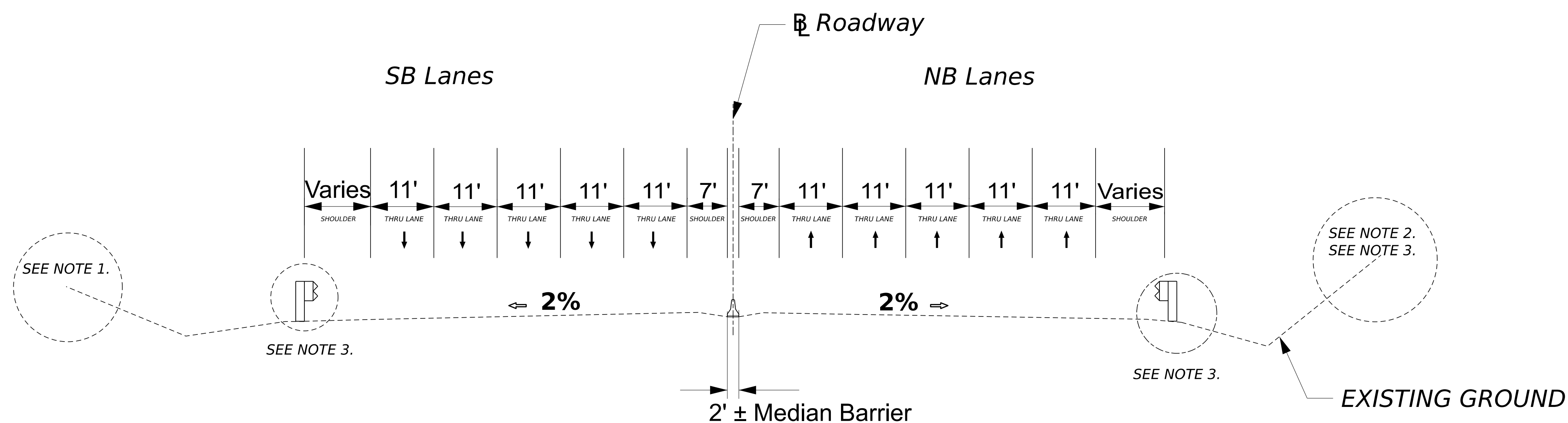
PROJECT	SHEET NO.
	1J(7)

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 SUBSURFACE UTILITY BY, DATE: KCL November 2024

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	2A

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

TYPICAL SECTION



Powwhite Parkway Gantry Plan
 Sta. 11+00 to Sta. 22+00
 NOT TO SCALE

Notes:

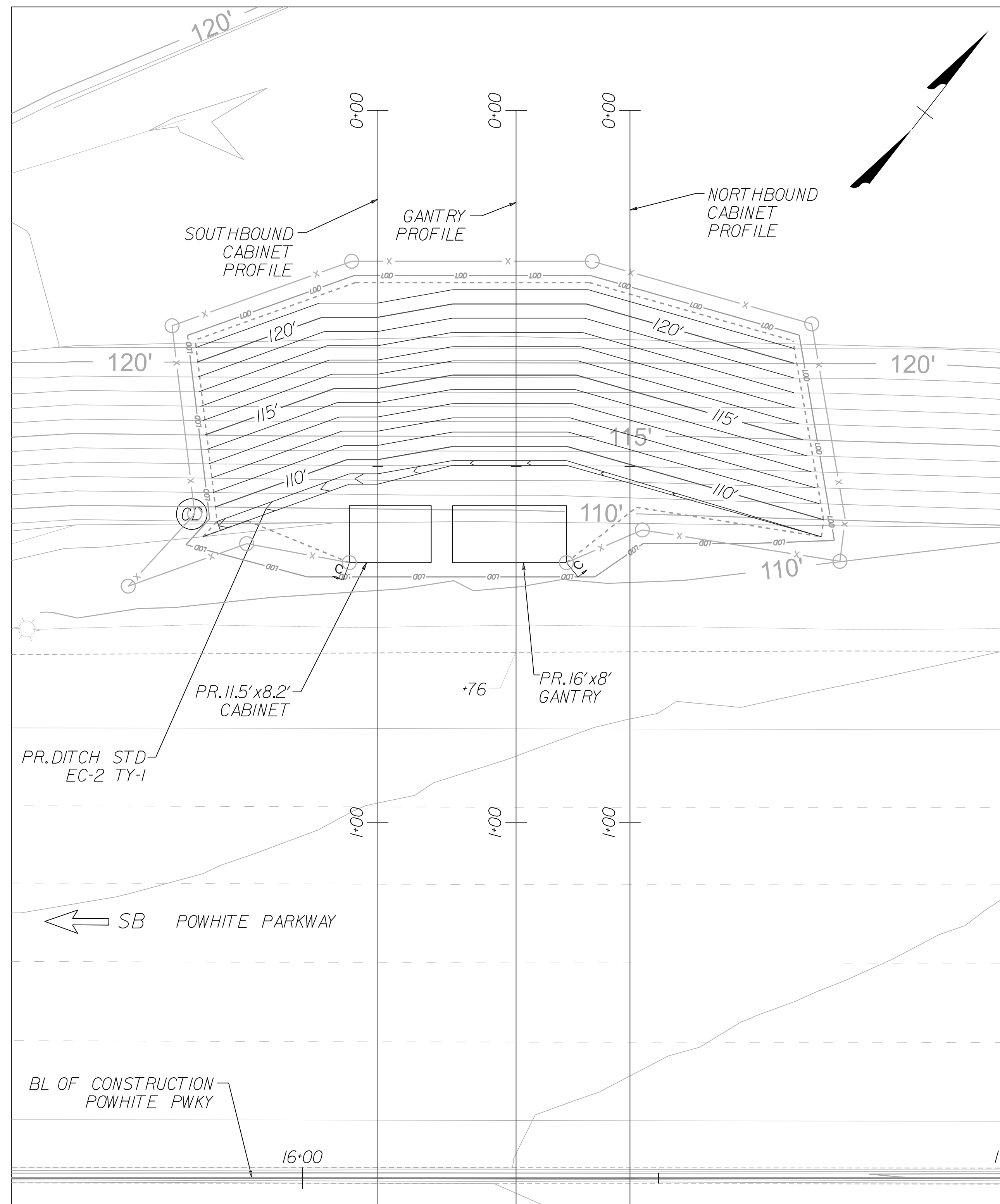
1. See Sheet 2B(1) for SB Gantry and Cabinet Pad Site Plan Details.
2. See Sheet 2B(2) for NB Gantry and Cabinet Pad Site Plan Details.
3. See Sheet 2B(3), 2B(4) & 2B(5) for NB Tech Shelter Pad Site Plan Details.

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DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

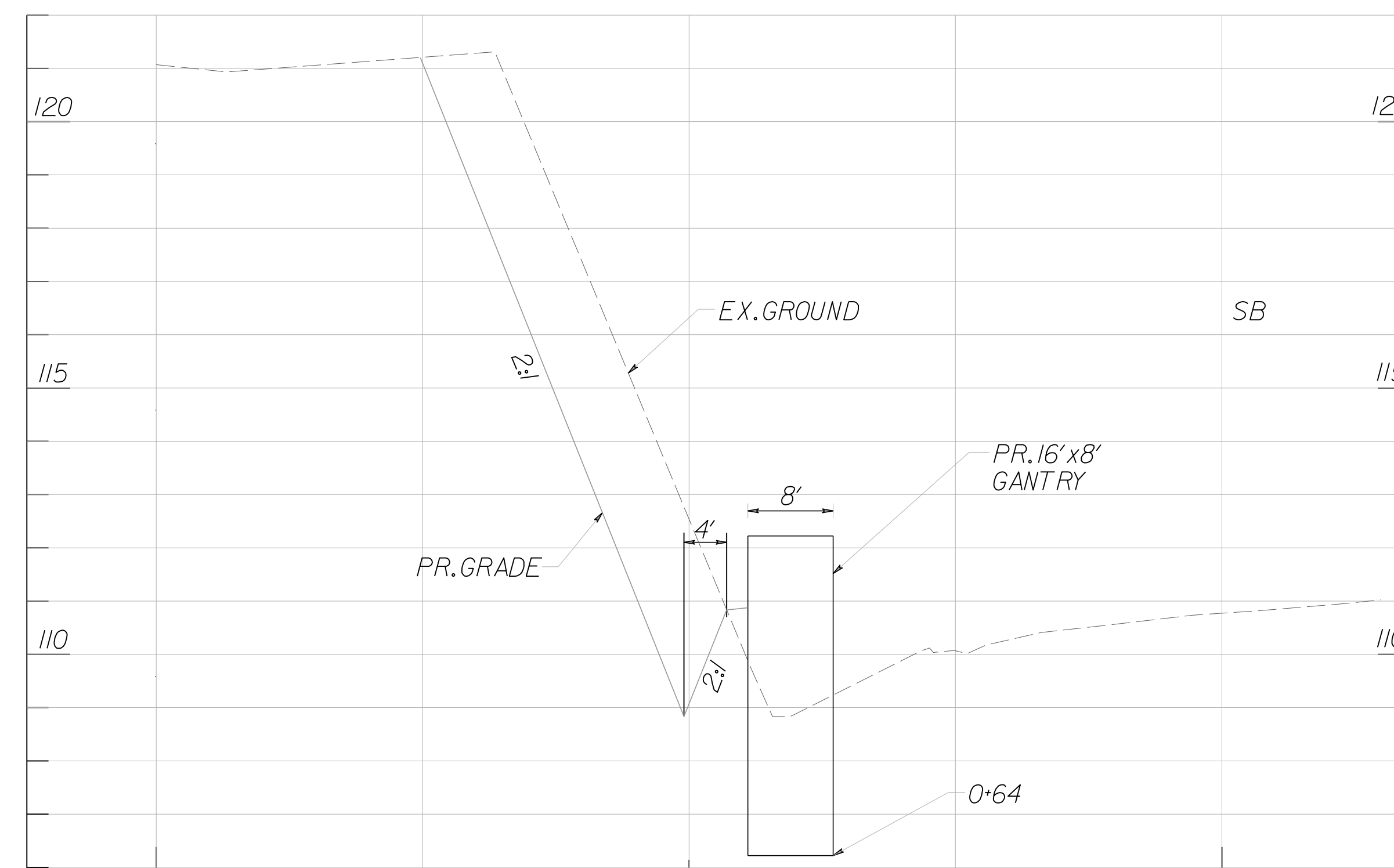
REVISED	STATE	ROUTE	STATE	SHEET NO.
			PROJECT	
	VA.	76	ITS/Civil/Gantry	2B(1)

SB GANTRY CAP AND CABINET PAD SITE PLAN DETAILS

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

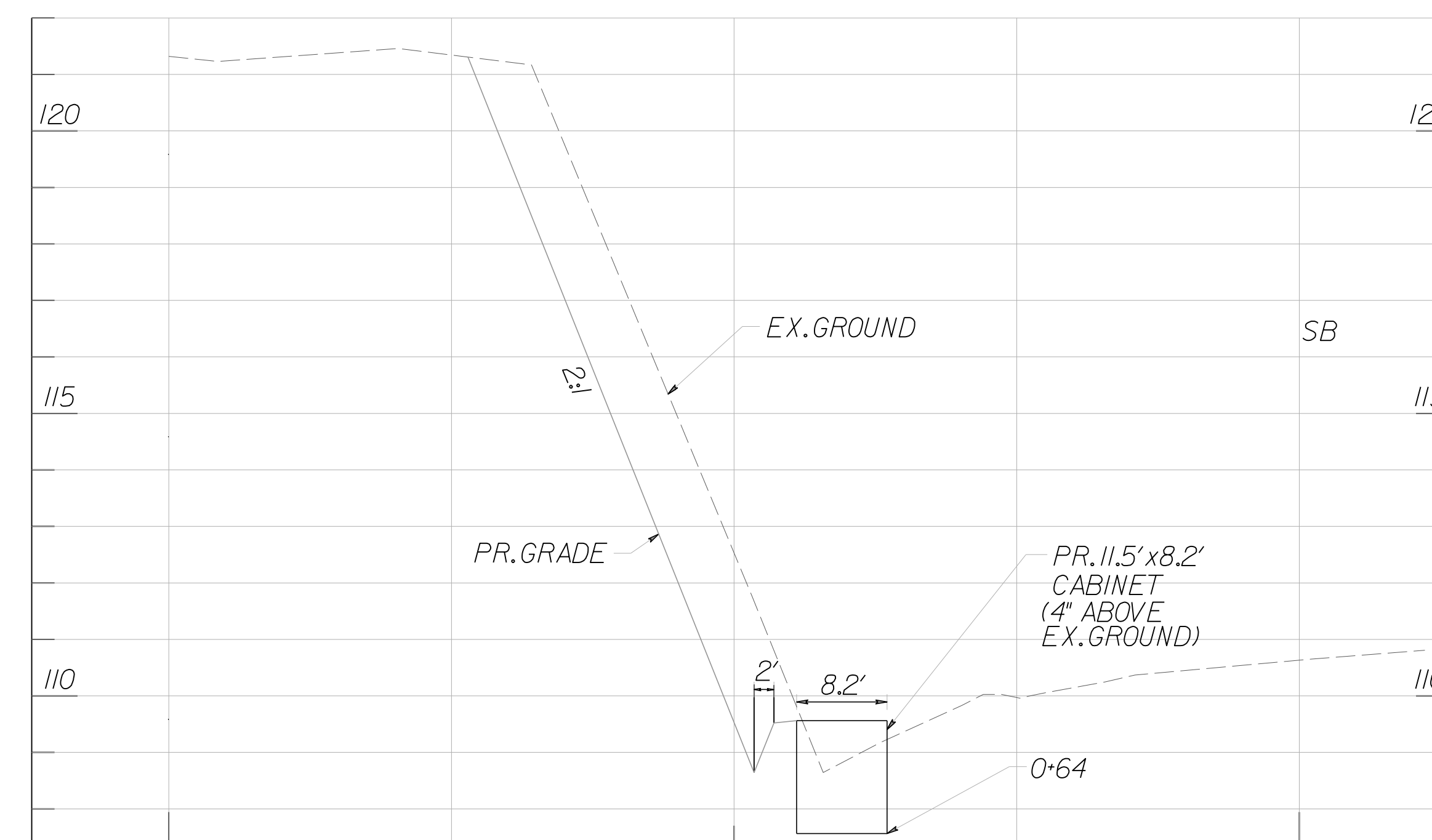


SOUTHBOUND GANTRY AND CABINET PLAN



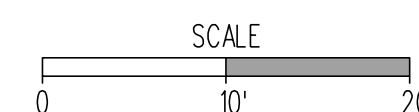
GANTRY PROFILE

H: 1"=10'
V: 1"=2'



SOUTHBOUND CABINET PROFILE

H: 1"=10'
V: 1"=2'



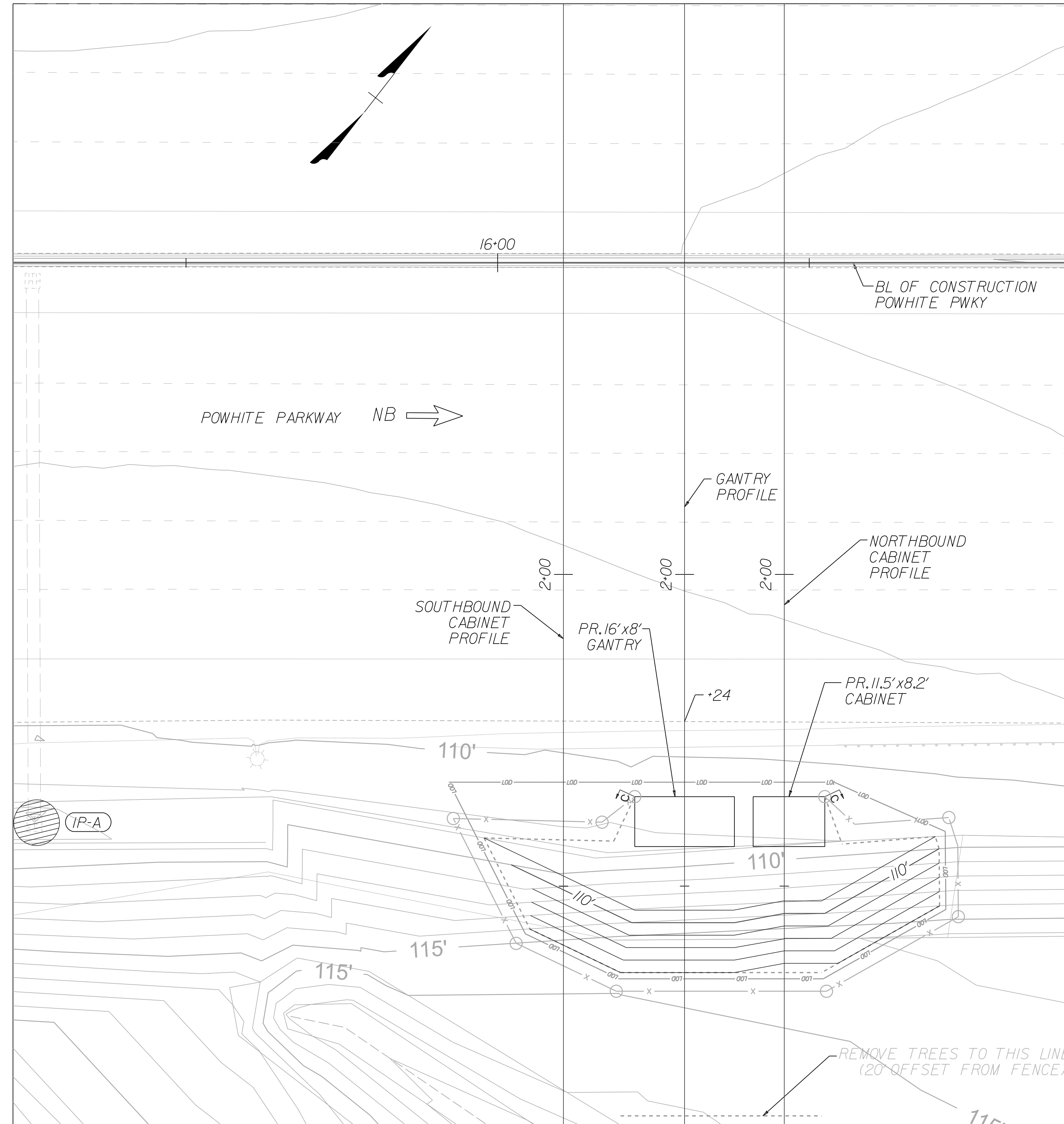
▽ (CD) DENOTES ROCK CHECK DAM, TYPE II, VDOT ST'D EC-4.

PROJECT MANAGER: Mark C. Burris
SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

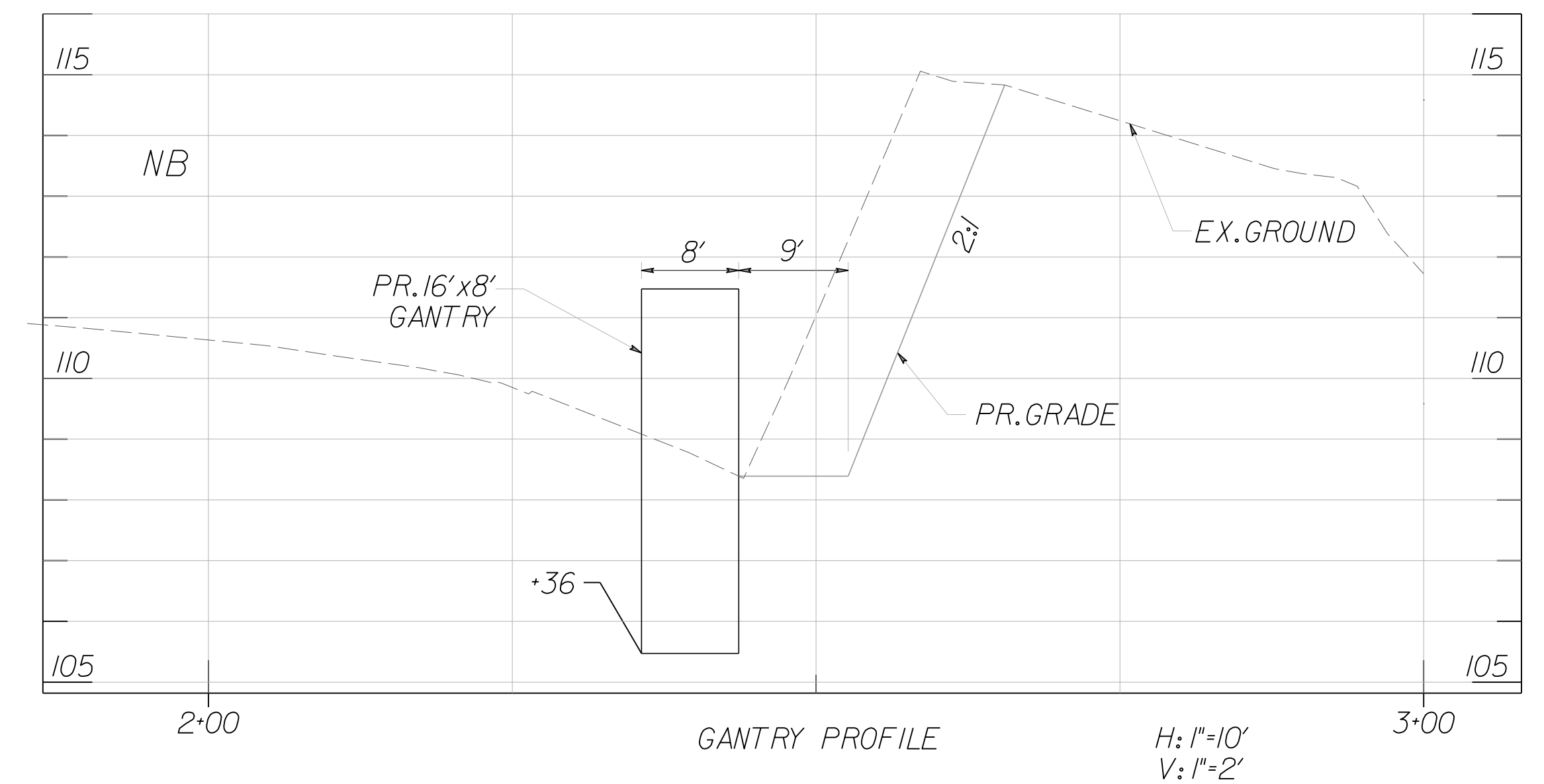
NB GANTRY CAP AND CABINET PAD SITE PLAN DETAILS

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	2B(2)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

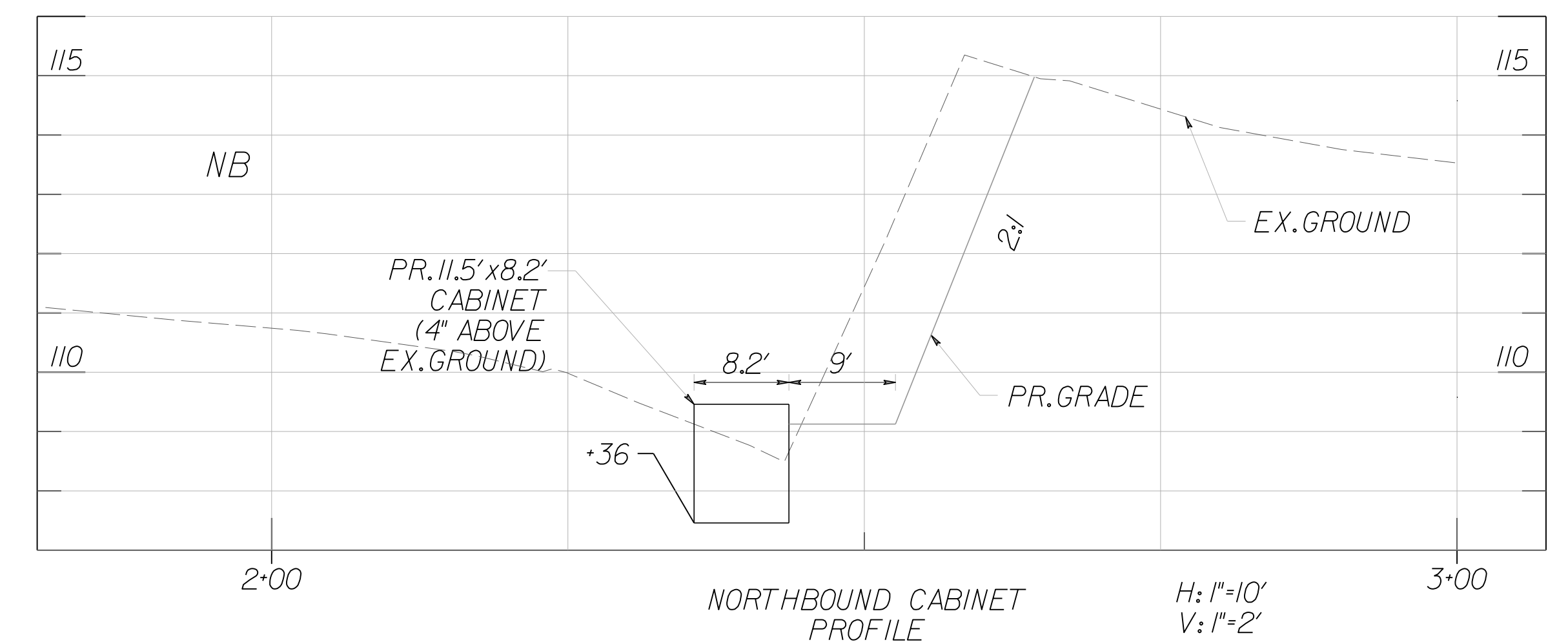


NORTHBOUND GANTRY AND CABINET PLAN



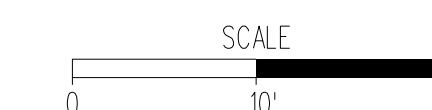
GANTRY PROFILE

H: 1"=10'
V: 1"=2'



NORTHBOUND CABINET PROFILE

H: 1"=10'
V: 1"=2'



IP-A DENOTES INLET PROTECTION, TYPE A; VDOT ST'D EC-6

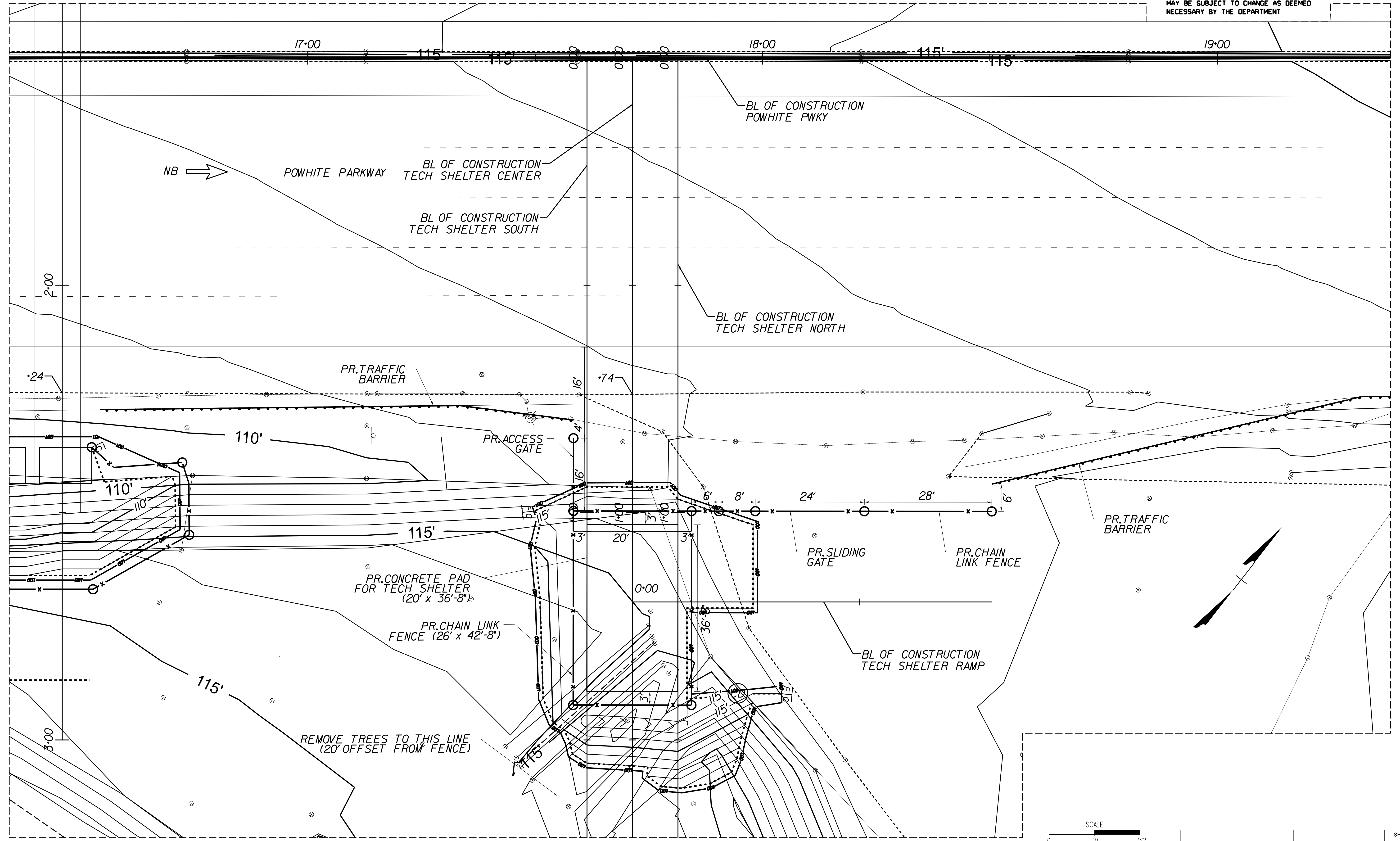
PROJECT MANAGER: Mark C. Burris
 SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
 DESIGN BY: KCL Technologies, Inc.
 SUBSURFACE UTILITY BY, DATE: KCL, November 2024

NB TECH SHELTER PAD SITE PLAN DETAILS

REVISED	STATE		PROJECT	SHEET NO.
	STATE	ROUTE		
	VA.	76	ITS/Civil/Gantry	2B(3)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

▽ (CD) DENOTES ROCK CHECK DAM, TYPE II, VDOT ST'D EC-4.



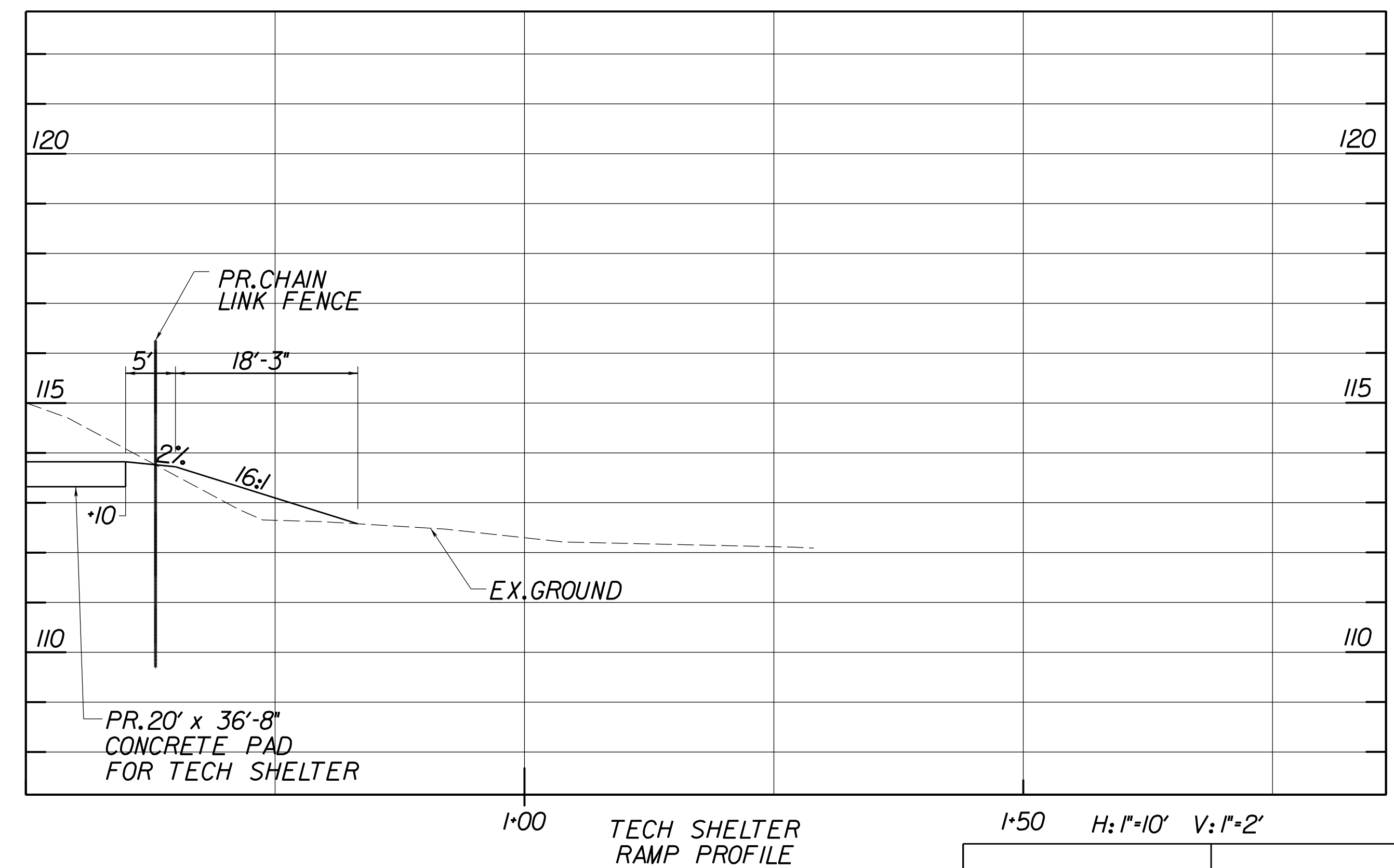
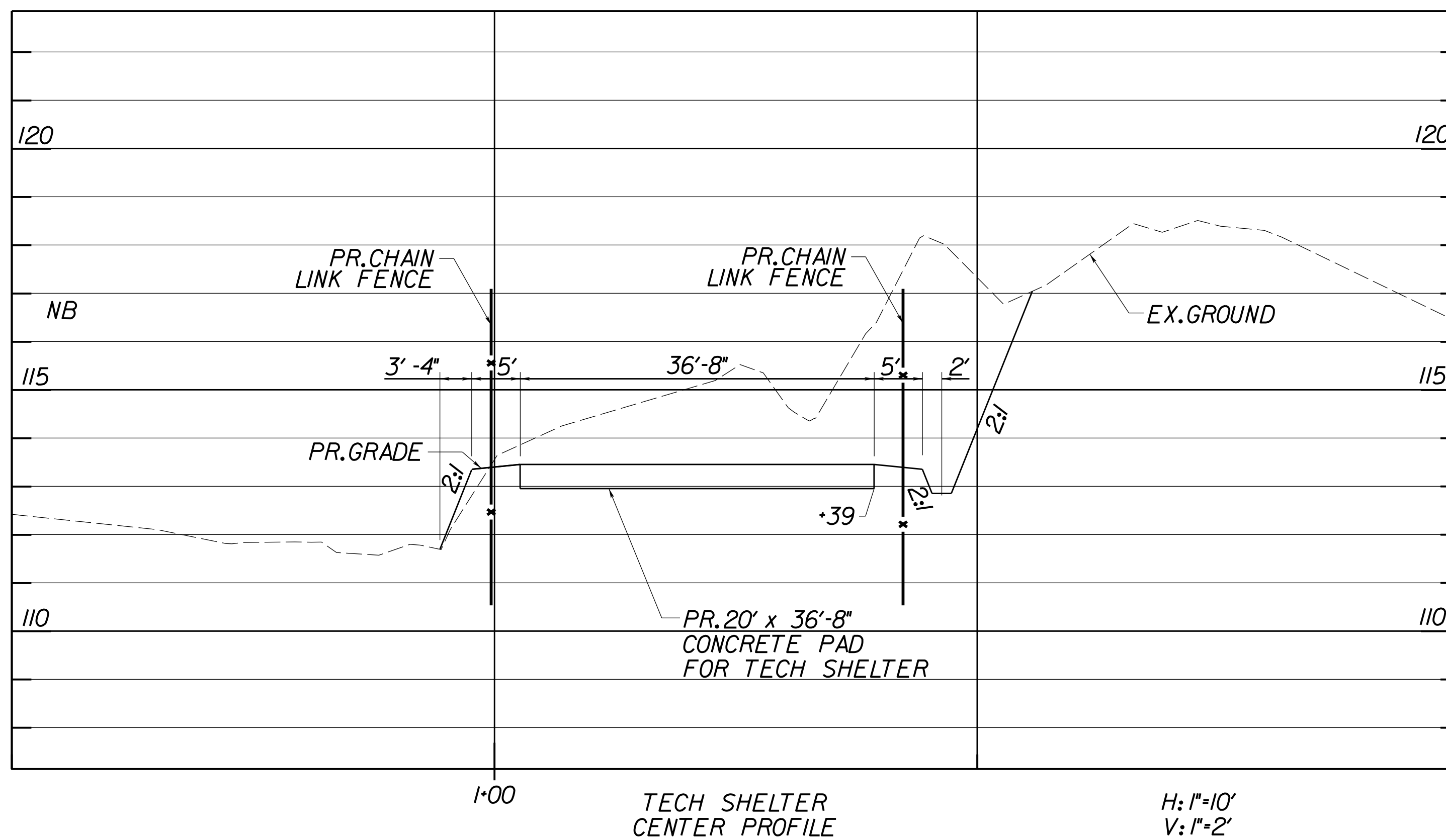
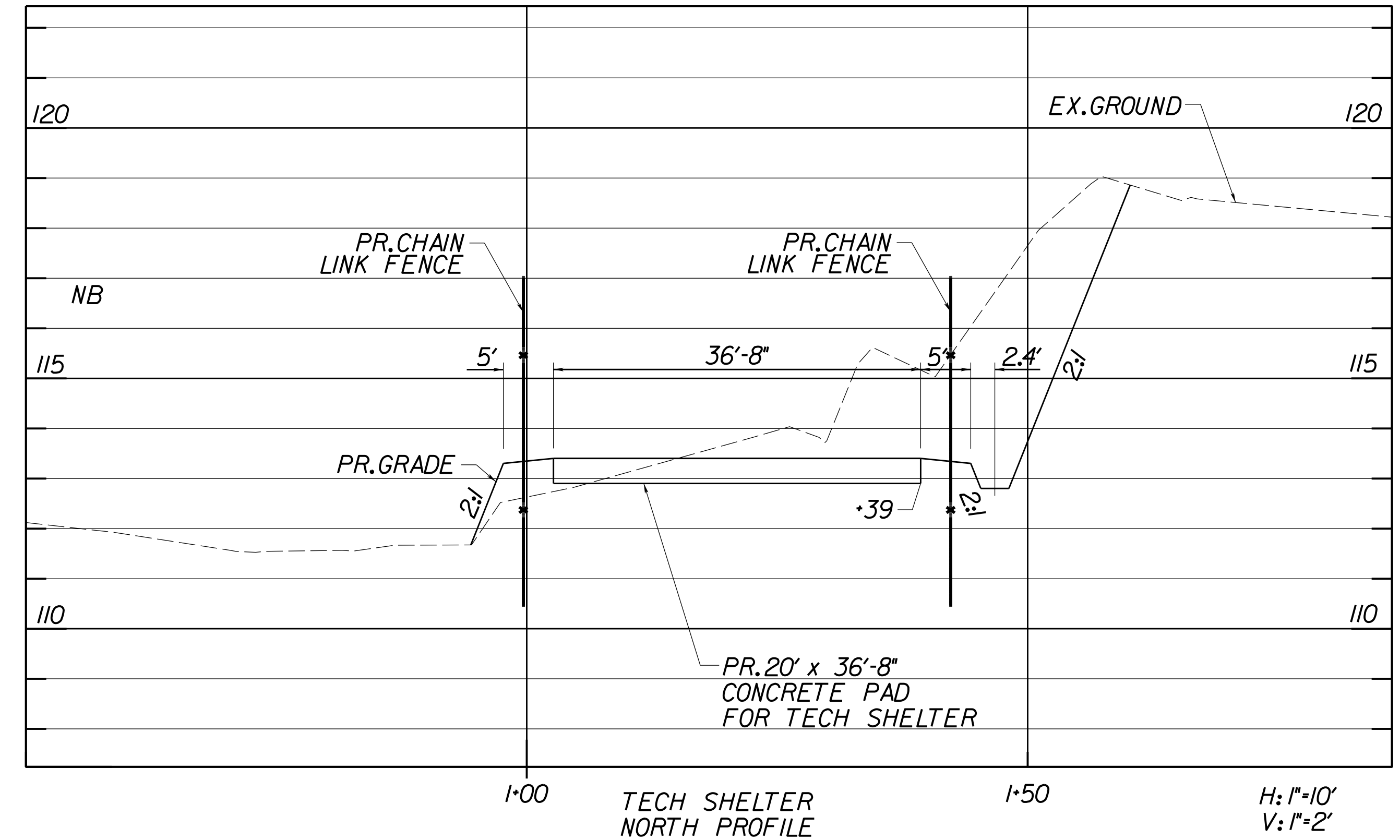
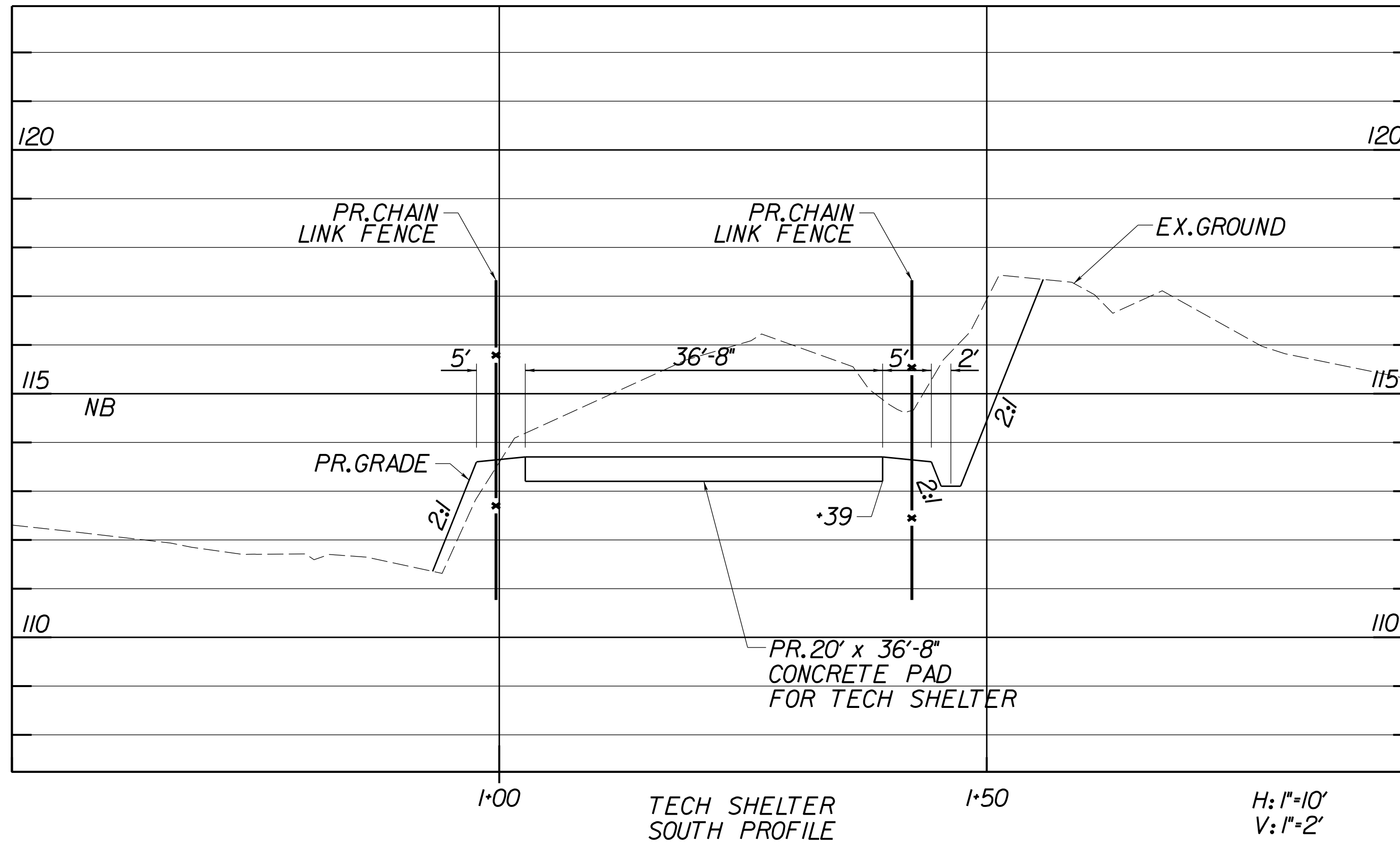
\$TIME\$T AMPS

PROJECT MANAGER: Mark C. Burzis
 SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
 DESIGN BY: KCL Technologies, Inc.
 SUBSURFACE UTILITY BY, DATE: KCL, November 2024

NB TECH SHELTER PAD SITE PLAN DETAILS

REVISED	STATE			SHEET NO.
	STATE	ROUTE	PROJECT	
	VA.	76	ITS/Civil/Gantry	2B(4)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

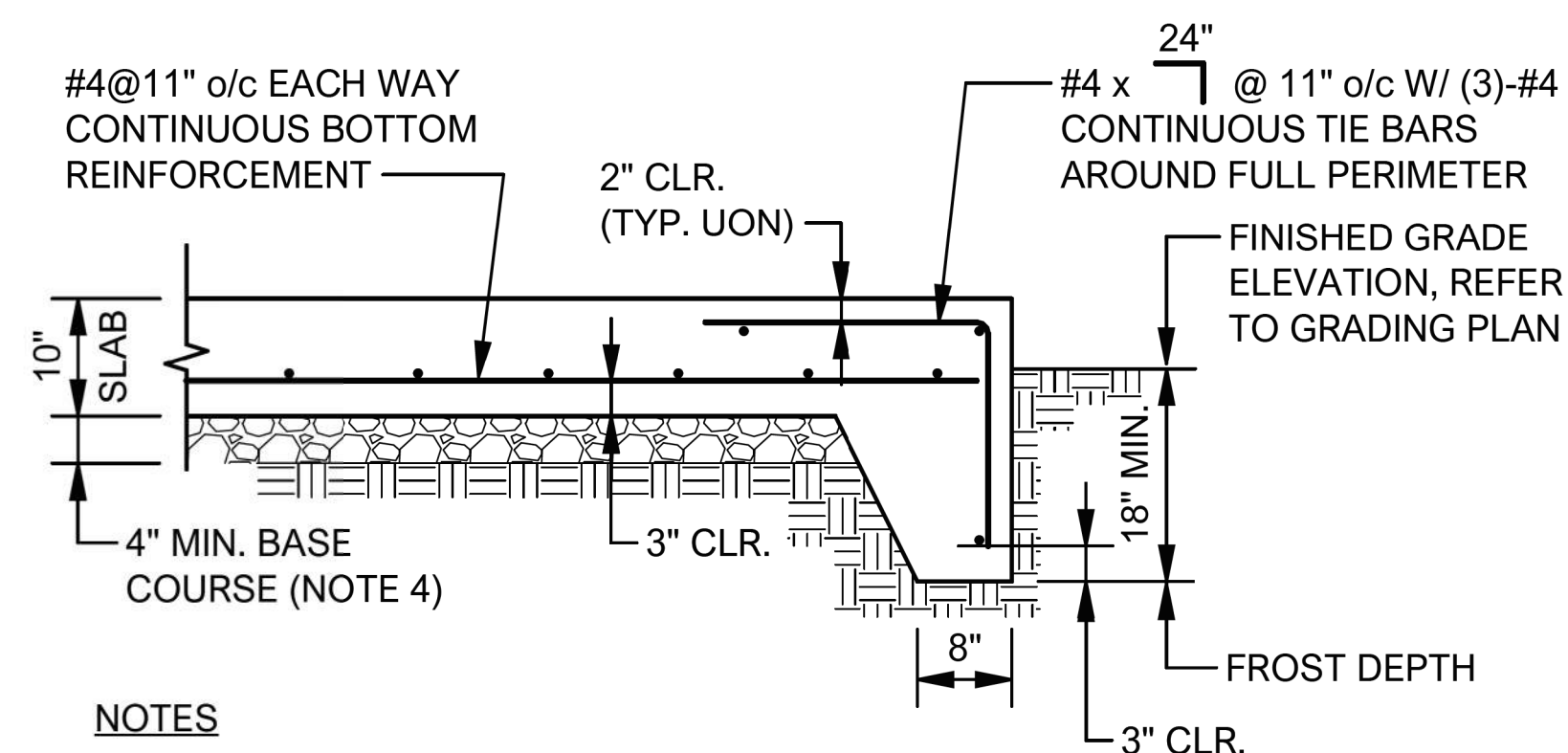


PROJECT MANAGER: Mark C. Burris
SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

CABINET AND TECH SHELTER PAD FOUNDATION PLAN DETAILS

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	2B(5)

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

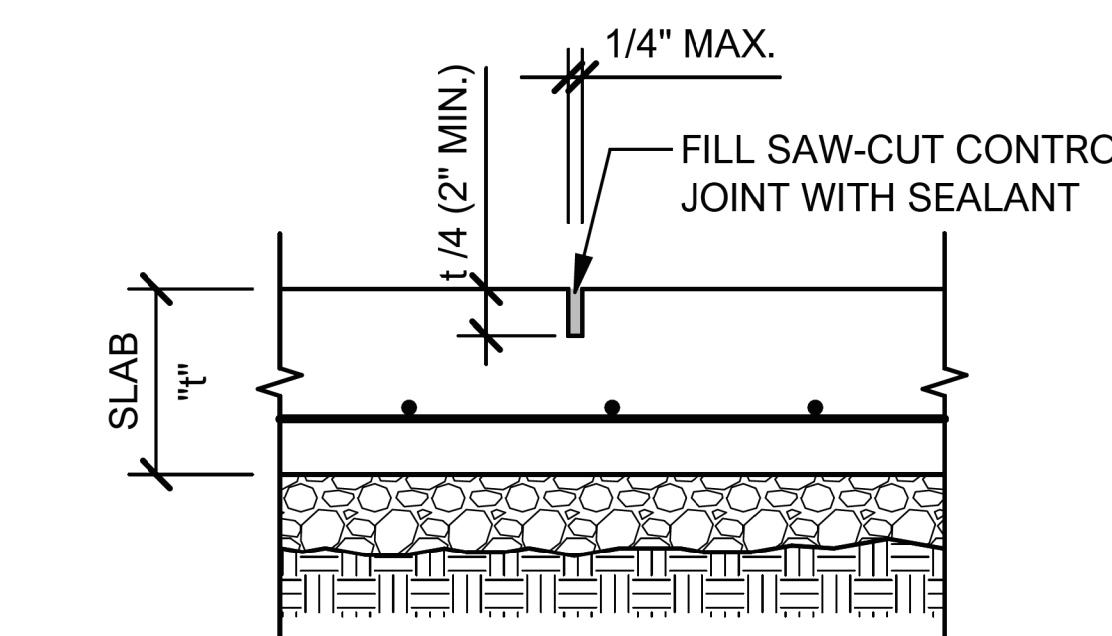


NOTES

- FOUNDATION SLAB IS BEEN DESIGNED FOR A PERSCRIPTIVE BEARING PRESSURE OF 1,500 PSF IN ACCORDANCE WITH THE VIRGINIA UNIFORM STATEWIDE BUILDING CODE (2021 EDITION) CHAPTER 18.
- CONCRETE FOR FOUNDATION SHALL HAVE A MINIMUM 28-DAY COMPRESSIVE STRENGTH OF 4,500 PSI CONTAINING NORMAL WEIGHT AGGREGATE AND HAVE A MAXIMUM WATER-TO-CEMENT RATIO OF 0.45 AND AIR-ENTRAINMENT OF 6%.
- LAP CONTINUOUS REINFORCEMENT A MINIMUM LENGTH OF 22" AND STAGGER LAP SPLICE LOCATIONS OF ADJACENT BARS WHERE PRACTICAL.
- BASE COURSE SHALL BE GRAVEL OR CRUSHED STONE CONTAINING NOT MORE THAN 10% MATERIAL PASSING THROUGH No. 4 SIEVE.
- DOWELS, INSERTS, AND OTHER EMBEDDED ITEMS FOR COMPONENTS ATTACHING TO THE FOUNDATION SLAB ARE SPECIFIED BY OTHERS AND SHALL BE COORDINATED BY THE CONTRACTOR.
- PROVIDE COONSTRUCTION AND CONTROL JOINTS AT A MAXIMUM SPACING OF 30'-0". REFER TO: **B** **C**

A TYPICAL FOUNDATION SLAB DETAIL

SSK-01 1/2" = 1'-0"

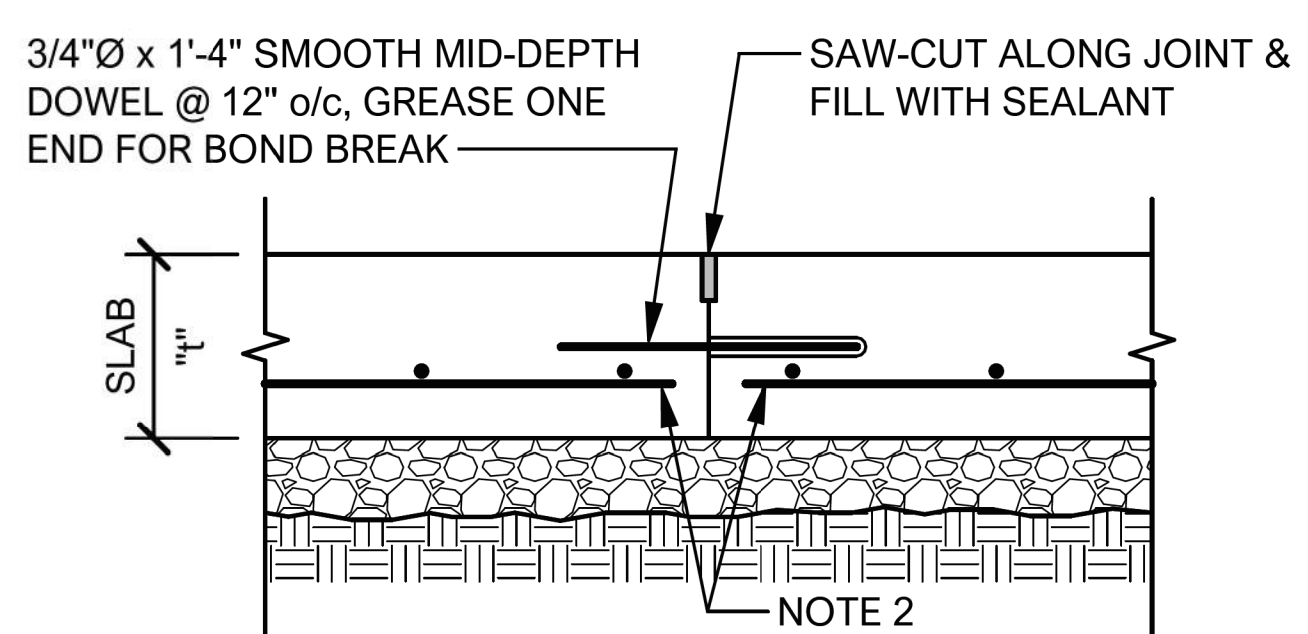


NOTES:

- CONTRACTOR TO PROVIDE A JOINT LAYOUT DRAWING FOR REVIEW AND APPROVAL OF THE PRIOR TO PLACING THE SLAB.
- MAXIMUM CONTROL JOINT SPACING = 36 x "t"
- CONTROL JOINTS SHALL BE SAW-CUT AS SOON AS CONCRETE SURFACE IS FIRM ENOUGH TO AVOID DAMAGE, BUT NO LATER THAN 12 HOURS AFTER INITIAL PLACEMENT.

B TYP. SAW-CUT CONTROL JOINT

SSK-02 3/4" = 1'-0"



NOTES:

- CONTRACTOR TO PROVIDE A JOINT LAYOUT DRAWING FOR REVIEW AND APPROVAL OF THE ARCHITECT AND ENGINEER PRIOR TO PLACING SLAB.
- TERIMATE REINFORCEMENT EACH SIDE OF JOINT.

C TYP. CONSTRUCTION JOINT

SSK-02 3/4" = 1'-0"

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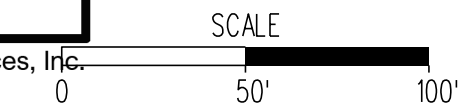
<p>McLaren KCI A DIVISION OF KCI McLaren Technical Services, Inc. 601 East Pratt Street, Suite 302 Baltimore, Maryland 21202 410.243.8787 www.mgmclaren.com</p>	SHEET TITLE	PROJ. NO.	SHEET NO.
	TYPICAL FOUNDATION SLAB DETAIL	00004623_001	
	SCALE	DATE	
	1/2" = 1'-0"	01-07-2025	
	DRAWN BY	CHECKED BY	
	BEF	BEF	
	APPROVED BY		
			SSK-01

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P:\00046\0004623_001\0004623_001.rvt 1/17/2025 10:35:09 AM

<p>McLaren KCI A DIVISION OF KCI McLaren Technical Services, Inc. 601 East Pratt Street, Suite 302 Baltimore, Maryland 21202 410.243.8787 www.mgmclaren.com</p>	SHEET TITLE	PROJ. NO.	SHEET NO.
	TYPICAL JOINT DETAILS	00004623_001	
	SCALE	DATE	
	3/4" = 1'-0"	01-07-2025	
	DRAWN BY	CHECKED BY	
	BEF	BEF	
	APPROVED BY		
			SSK-02

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PROJECT	SHEET NO.
	2B(5)

PROJECT MANAGER: Mark C. Burris
SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	2B(7)

GRADING DIAGRAM AND SUMMARY

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

- $\pm 130 \rightarrow$ Fill Denotes fill quantity from computer listings and/or manual cross-sections.
- $\leftarrow \pm 130$ Cut Denotes cut quantity from computer listings and/or manual cross-sections. Quantity adjusted for demolition of pavement.
- Denotes C.Y. root mat material in cut areas which is included in Regular Excavation quantities.
- Denotes C.Y. root mat material removed from fill sections and backfilled with (specify material) (Backfill with Regular Excavation and/or Borrow Excavation)
- Denotes C.Y. Regular Excavation from private entrances.

- Denotes C.Y. fill for private entrances.
- Denotes C.Y. unsuitable material above subgrade which is included in Regular Excavation.
- Denotes C.Y. of excavation of unsuitable mat'l. below subgrade and backfilled with (specify material)
- Denotes C.Y. Regular Excavation from drainage ditches.
- Denotes C.Y. Minor Structure Excavation.

- Denotes C.Y. existing pavement to be removed as "Demolition of Pavement" from fill sections and backfilled with (specify mat'l.)
- Denotes C.Y. existing pavement to be removed as Demolition of Pavement in cut sections within construction limits and is not included in the Regular Excavation quantities.
- Denotes C.Y. Haul. (Haul Material shown will be C.Y. of mat'l. not compacted.)
- Denotes C.Y. fill for S.W.M. (Stormwater Management Basin)
- Denotes C.Y. cut from S.W.M. (Stormwater Management Basin)
- Denotes Borrow Material (Min. CBR, specify)
- Denotes Surplus Material.
- Denotes C.Y. fill for drainage ditches.

- ⊗ Denotes item(s) to be paid for on the basis of plan quantities in accordance with the applicable provisions of the current VDOT Road and Bridge Specifications.
- ① Cut quantity shown does not include the material removed as Demolition of Pavement.
- ② Quantity shown for use in Grading Diagram only. See other Summaries for pay item(s).
- ③ Included in Total Regular Excavation.
- ④ Included in Roadway Cut quantity.
- ⑤ Quantities for Temporary Sediment Basins and Temporary Sediment Traps are included with the Stormwater Management Basin quantities.
- ⑥ Denotes pay item.
- ⑦ Included in total fill quantity.
- ⑧ This quantity comes from the computer listings and/or manual cross-sections and may be adjusted for other quantities.
- ⑨ Volumes obtained for Cut Ditches and Fill Ditches not included in computer listings.
- ⑩ Includes settlement of in-place soil.

Location	⊗ Roadway Cut		Root Mat In Cut Sections	Root Mat In Fill Sections	⊗ ⑨ Cur - Ditches		⑨ Fill - Ditches		Unsuitable Material		⑩ Roadway Fill	Entrances		Total Regular Excavation ⑥	Total Fill	② Demolition of Pavement		⑤ Stormwater Management Basins	② Stormwater Management Basins	⑥ Borrow (Embankment)	
	①	⑧			C. Y.		Below Subgrade	Above Subgrade	C. Y.			C. Y.				Cut	Fill				C. Y.
	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.	C. Y.
														4269	11						
FORMULAS	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S				
TOTALS	③	④	③	⑦	③	⑦	③	⑦	④	⑦	③	⑦	③	⑦	4269	11				⑦	

FORMULAS

Roadway Cut (C) = Unadjusted Cut from Computer Listings or Manual Cross-Sections minus (-) Demolition of Pavement.
 Roadway Fill (J) = Fill Required plus (+) Material for Backfill of Demolition of Pavement Areas in Fill (for heights of fill < 3 feet below subgrade)
 Total Reg. Excav. (M) = C + E + F + H + K
 Total Fill (N) = J + E + G + H + L + R
 Borrow (S) = [N - (C + F + K + P + Q - D - I) x Compaction Factor] ÷ Compaction Factor for Borrow Site
 (Embankment) (S) = N - (C + F + K + P + Q - D - I) (Embankment = Total Fill - Usable Cut) Estimated Material to be obtained off-site.

The borrow quantity shown was computed on the basis of the average shrinkage or swell factor for the general vicinity of the project. The contractor will be responsible for determining the actual factor for the site(s) from which he proposes to secure borrow material needed to complete this project.

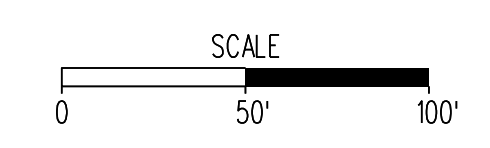
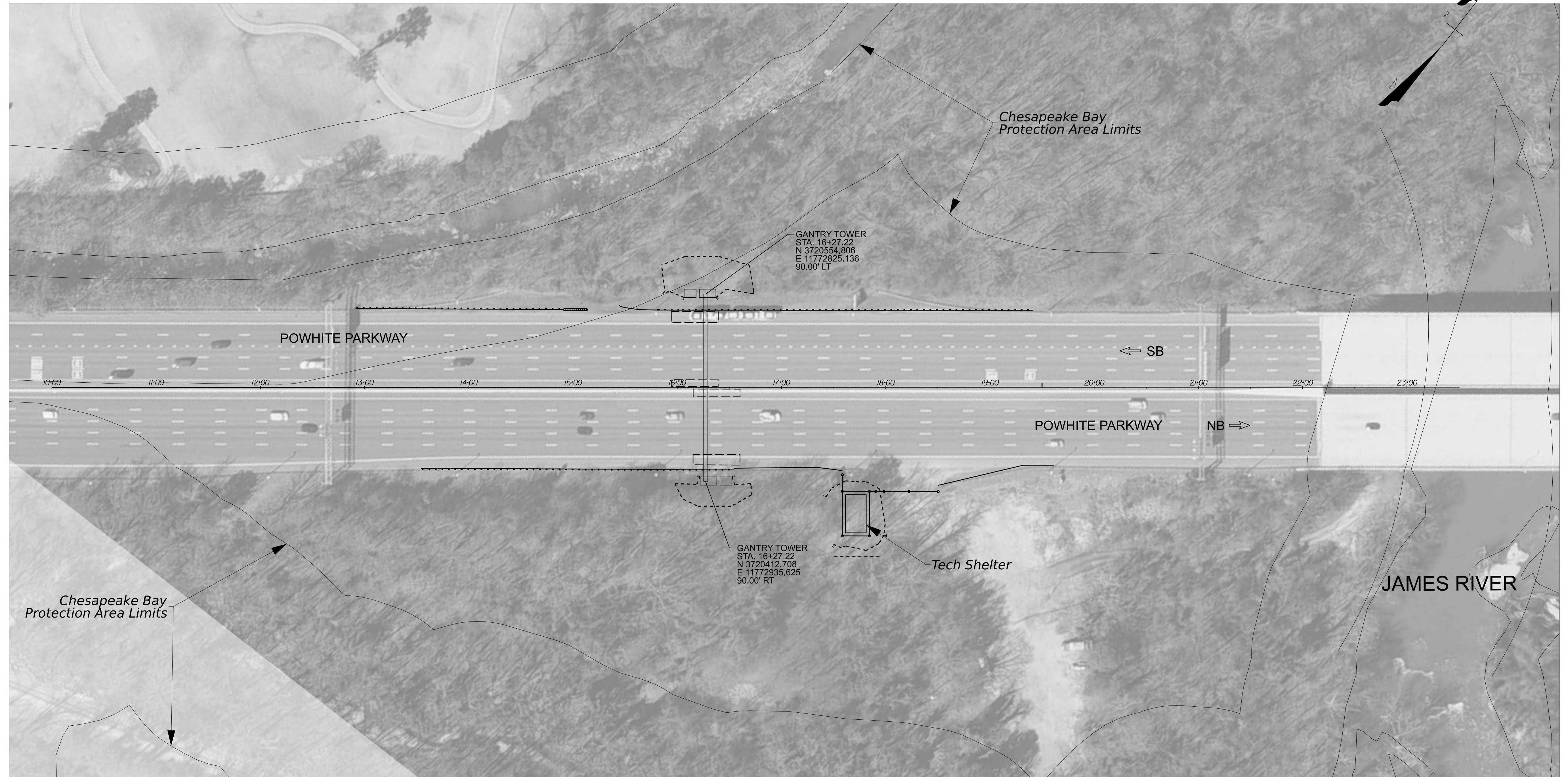
The embankment quantity shown has not been adjusted for shrinkage or swell factors. The contractor will be responsible for determining the effect of the shrinkage or swell factor of the embankment material, and no adjustment will be made in pay quantities for this factor. The contractor shall determine the actual quantity of embankment material needed to complete this project.

PROJECT MANAGER: Mark C. Burris
SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

REVISED	STATE	STATE		SHEET NO.
		ROUTE	PROJECT	
	VA.	76	ITS/Civil/Gantry	2C(1)

Chesapeake Bay Preservation Area Limits

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



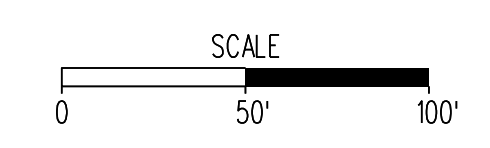
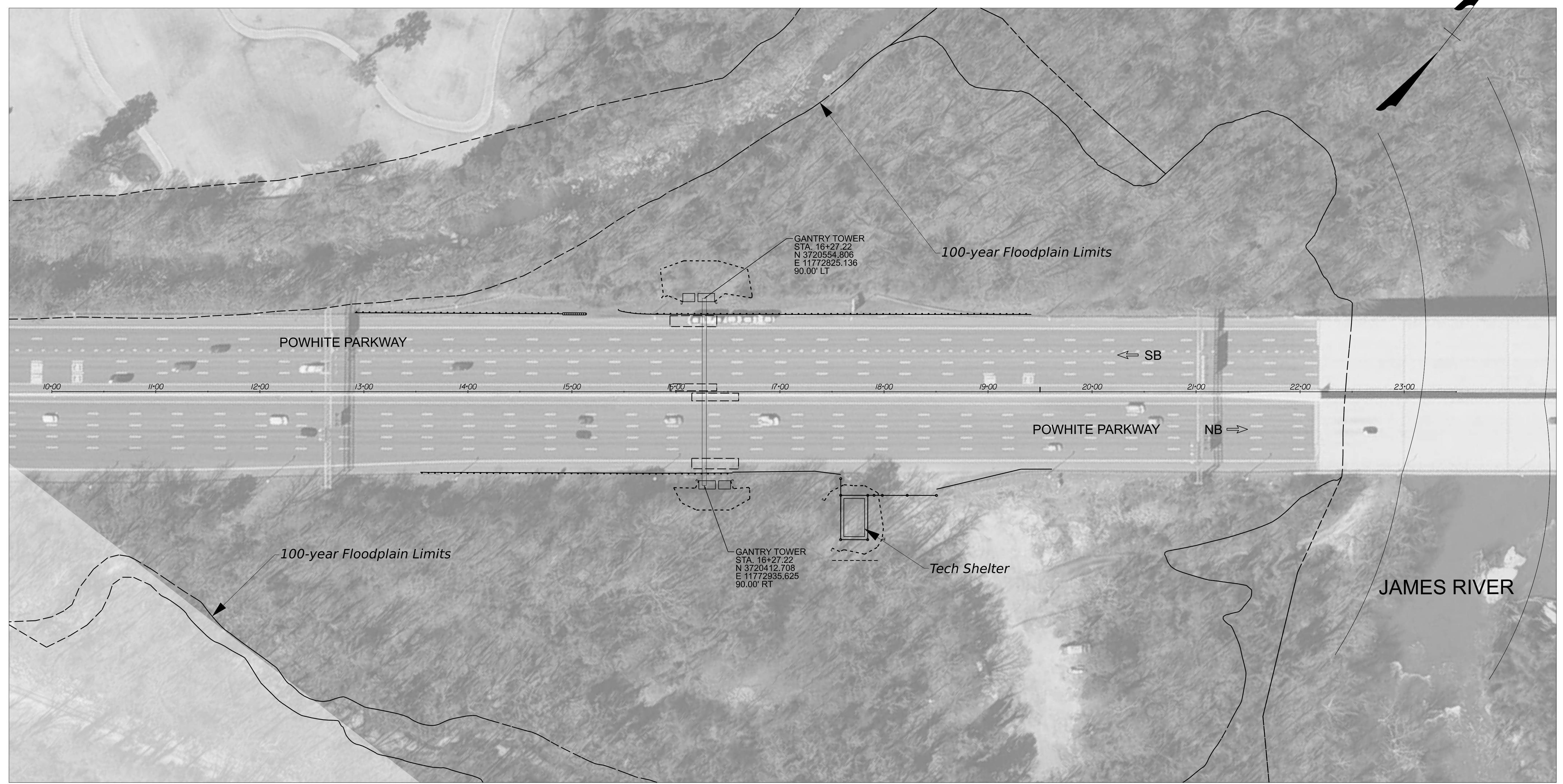
PROJECT	SHEET NO.
	2C(1)

PROJECT MANAGER: Mark C. Burris
SURVEYED BY, DATE: KCL Technologies, Inc., August 2024
DESIGN BY: KCL Technologies, Inc.
SUBSURFACE UTILITY BY, DATE: KCL November 2024

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.	76	ITS/Civil/Gantry	2C(2)

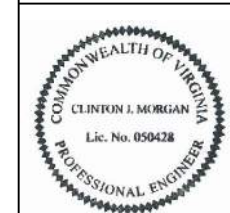
Chesapeake Bay 100-year Floodplain Limits

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT



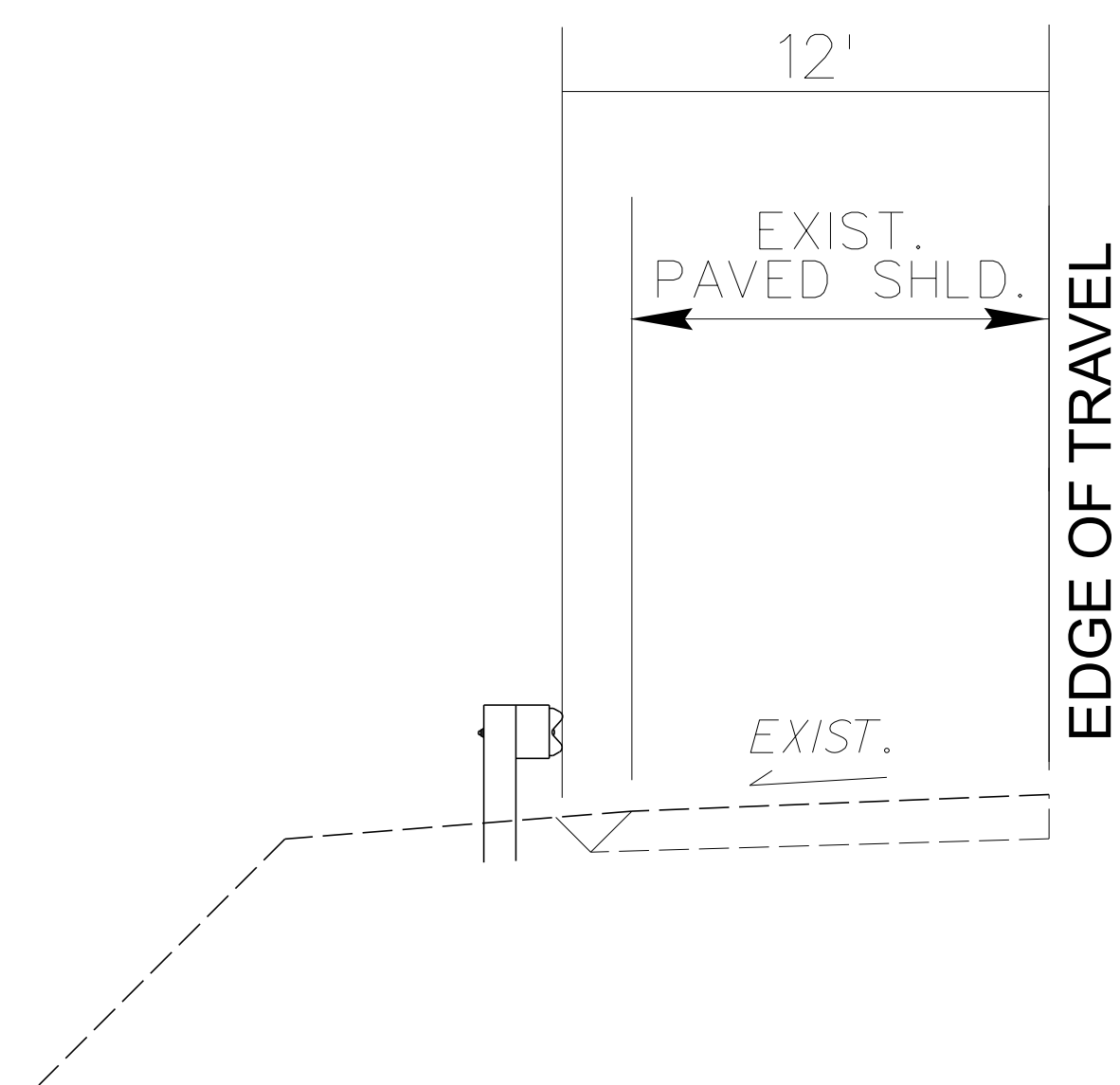
PROJECT	SHEET NO.
	2C(2)

PROJECT MANAGER _____
SURVEYED BY, DATE _____
DESIGN BY _____
SUBSURFACE UTILITY BY, DATE _____

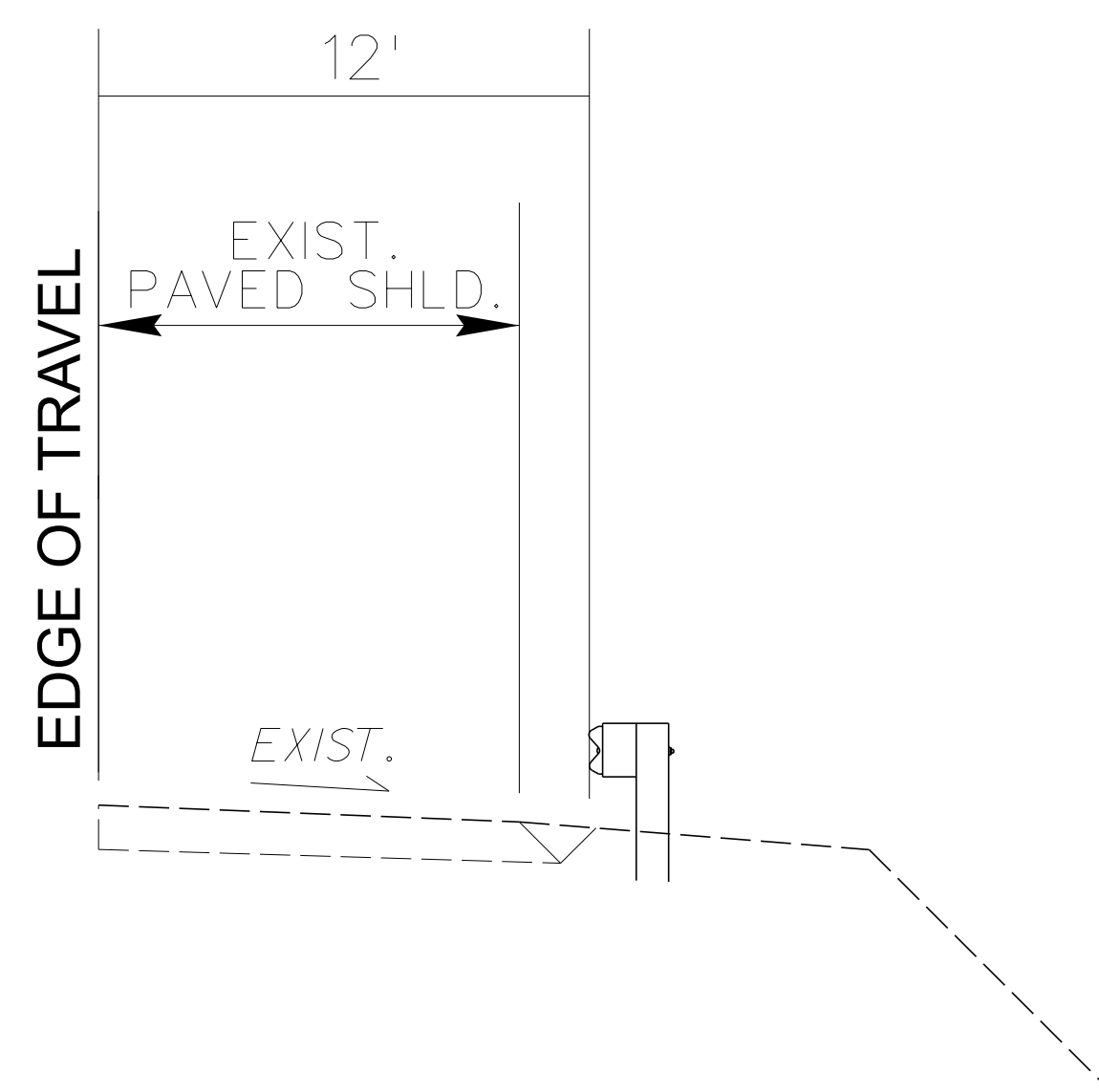
REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.		RMTA AET TOLL GANTRY	02

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

-L- GUARDRAIL PLACEMENT



STA. 12+91.28 TO 19+41.28 LT



STA. 13+54.32 TO 16+54.40 RT

PLACE GUARDRAIL IN ACCORDANCE WITH VDOT STANDARD DRAWING 507.02

NEW GR-2 GUARDRAIL

LINE	STATION	STATION	LT/RT	LENGTH
-L-	12+91.00	14+91.00	LT	200.00
-L-	15+81.00	16+03.00	LT	22.00
-L-	16+78.00	19+41.00	LT	263.00
-L-	13+54.00	15+79.00	RT	225.00
TOTAL				710.00
SAY				750.00

NEW GR-2A GUARDRAIL

LINE	STATION	STATION	LT/RT	LENGTH
-L-	16+03.00	16+78.00	LT	75.00
-L-	15+79.00	16+54.00	RT	75.00
TOTAL				150.00
SAY				150.00

4.0" MILLING

LINE	STATION	STATION	AREA (SF)	SQUARE YARDS
-L- NB	16+15	16+60	788.77	87.64
-L- SB	15+94	16+39	777.42	86.38
TOTAL				174.02
5%				182.72
SAY				190

ASPHALT CONCRETE SURFACE COURSE TYPE SM-9.5

LINE	BEG. STA.	END STA.	LENGTH	AREA / W	W1	DEPTH	TONS
-L- NB	16+15	16+60		789.26		4	19.64
-L- SB	15+94	16+39		777.03		4	19.34
SHEET TOTAL							38.98
SAY							40

Guardrail Anchor Units

LINE	STATION	STATION	LT/RT	UNITS
-L- (TL-3)	14+91	15+14	LT	1.00
-L- (GR-7)	15+44	15+82	LT	1.00
TOTAL				2
TL-3				1
GR-7				1
TOTAL				2

GUARDRAIL REMOVAL

LINE	STATION	STATION	LT/RT	LENGTH
-L-	12+91.00	14+27.00	LT	136.00
-L-	17+86.00	19+41.00	LT	155.00
-L-	13+54.00	13+71.00	RT	17.00
-L-	16+08.00	16+54.00	RT	46.00
TOTAL				354.00
SAY				360.00

RUMBLE STRIPS (RS-1)

LINE	STATION	STATION	UNITS
-L- NB SHLD	16+15	16+60	45.00
-L- NB MEDIAN	16+15	16+60	45.00
-L- SB SHLD	15+94	16+39	45.00
-L- SB MEDIAN	15+94	16+39	45.00
TOTAL			180.00

ASPHALT BINDER FOR PLANT MIX

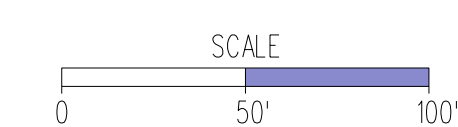
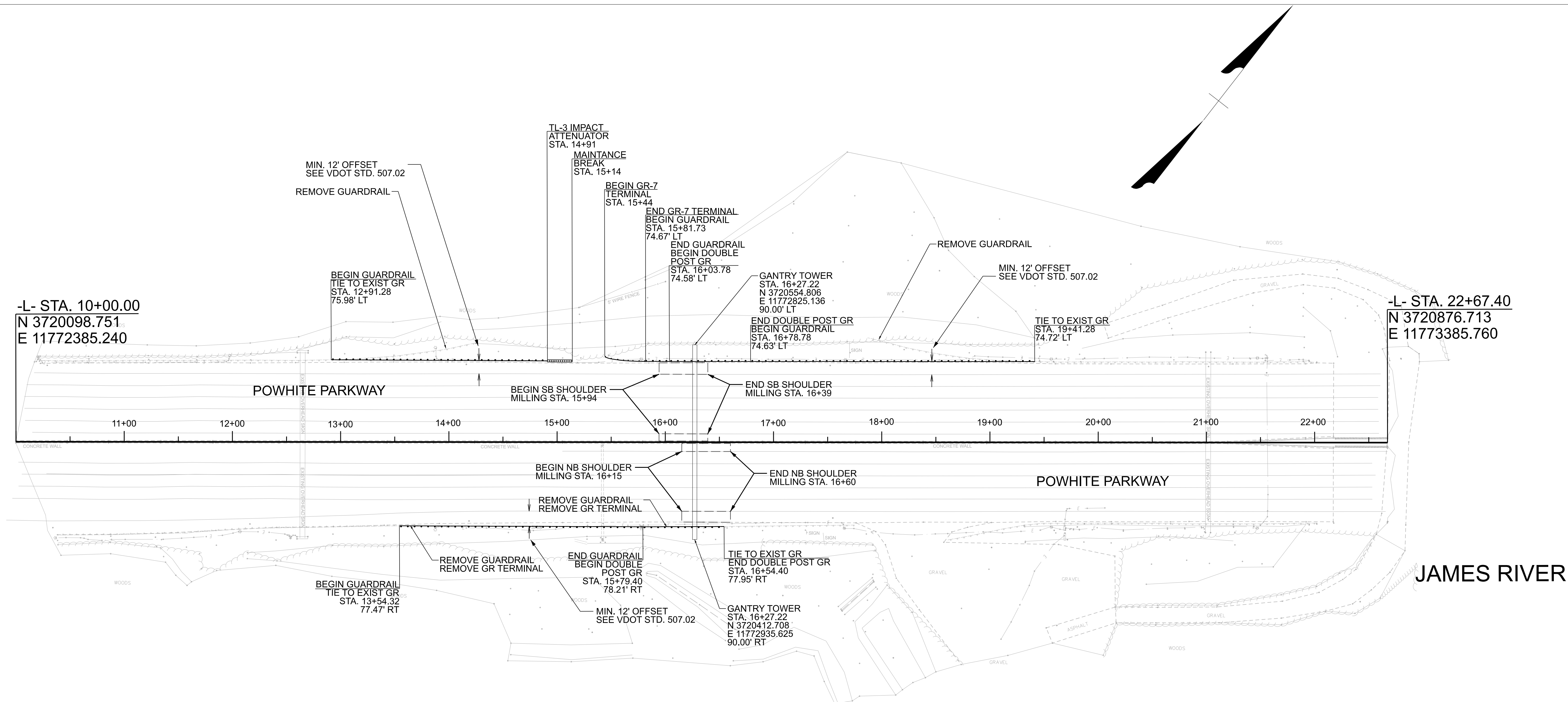
TOTAL TONS ASPHALT BINDER FOR PLANT MIX	=	2.40	TONS
	SAY	3	TONS

PROJECT MANAGER _____
SURVEYED BY, DATE _____
DESIGN BY _____
SUBSURFACE UTILITY BY, DATE _____

REVISED	STATE	ROUTE	STATE PROJECT	SHEET NO.
	VA.		RMTA AET TOLL GANTRY	03

DESIGN FEATURES RELATING TO CONSTRUCTION OR TO REGULATION AND CONTROL OF TRAFFIC MAY BE SUBJECT TO CHANGE AS DEEMED NECESSARY BY THE DEPARTMENT

ROADWAY DESIGN

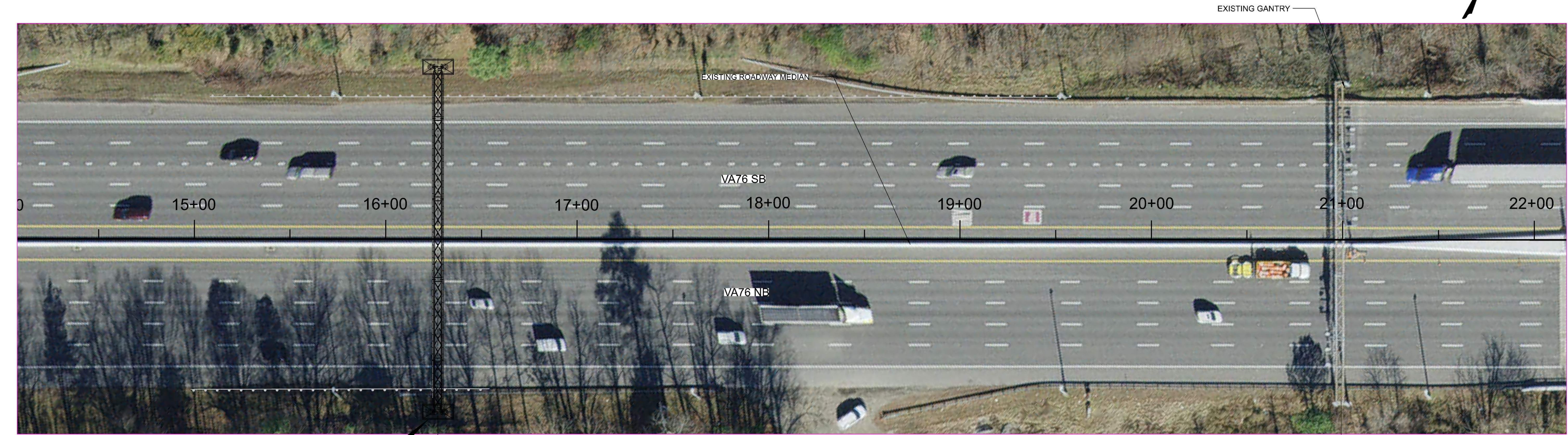


PROJECT	SHEET NO.



PROJECT LOCATION

POWHITE PKWAY GANTRY LOCATION



PROPOSED GANTRY

455'-0"

POWHITE PKWAY GANTRY PLAN

- NOTES:
1. FOR GENERAL NOTES, SEE DRAWING S-3
 2. FOR STRUCTURES DETAILS, SEE DRAWING S-4 & S-6
 3. FOR FOUNDATION DETAILS SEE DRAWING S-7



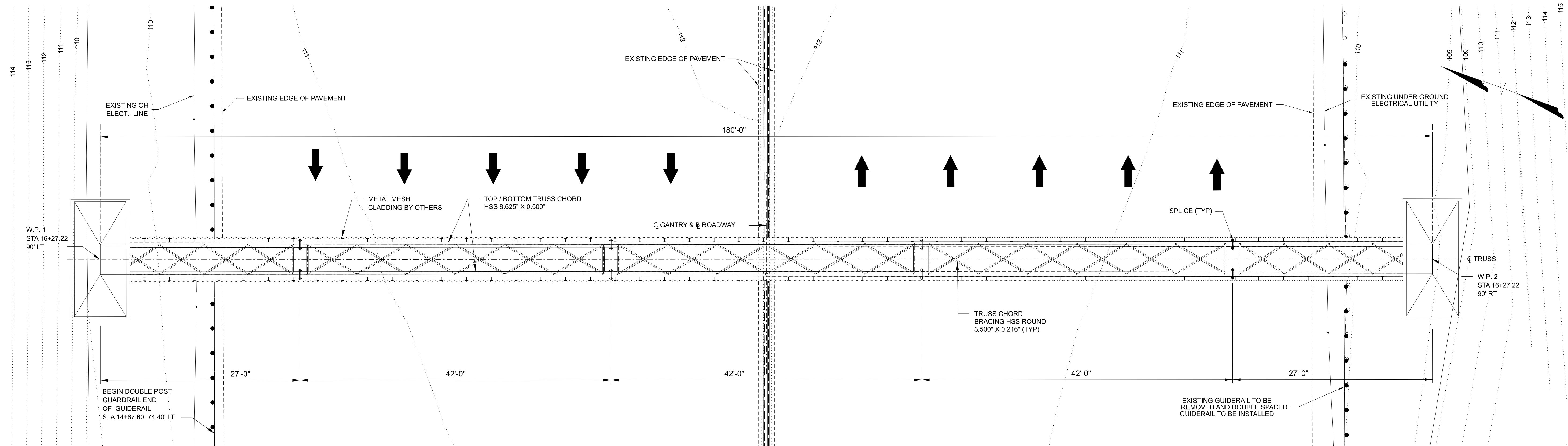
ED	DATE	BY	DESCRIPTION

PROJECT: **RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA**

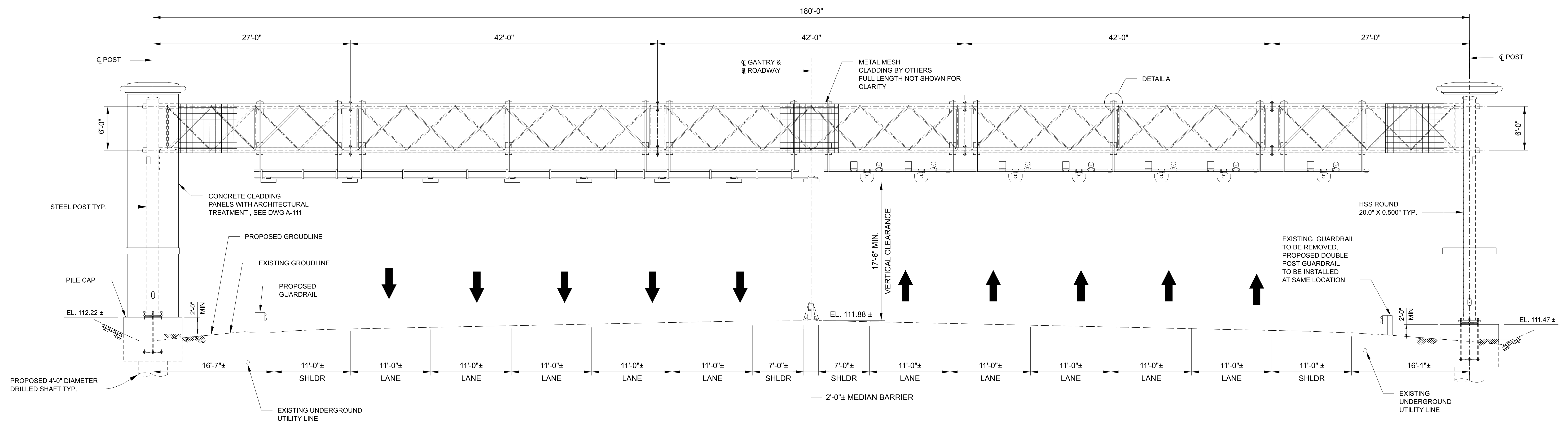
DRAWN BY: G.Garayburu
 CHECKED BY: J. Sun
 APPROVED: R. LaGatta

SCALE: As Shown
 TITLE: **GANTRY SITE PLAN**

DATE: 10/16/2024	DESIGNED BY:
SHEET: S-1	CHECKED BY:



PLAN



ELEVATION

- NOTES:
1. FOR GENERAL NOTES, SEE DWG. S-3.
 2. FOR DETAILS, SEE DWG. S-4 TO S-5.
 3. FOR FOUNDATION, SEE DWG S-6.
 4. FOR DETAIL A, SEE DWG S-5.
 5. FOR WORK POINTS, SEE DWG S-4.
 6. FOR AET EQUIPMENTS, SEE EQUIPMENT LAYOUT DRAWINGS FOR DETAILS.

<p>PROJECT: RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA</p>				<p>SCALE: As Shown</p>	<p>TITLE: GANTRY PLAN AND ELEVATION</p>	<p>DATE: 10/16/2024</p>
<p>DRAWN BY: G.Garayburu</p> <p>CHECKED BY: L.Sun</p> <p>APPROVED BY: R.LaGatta</p>				<p>REVISIONS:</p>	<p>DOC NO:</p>	<p>SHEET: S-2</p>

GENERAL NOTES:

1. CONTRACTOR SHALL BE FAMILIAR WITH THE PROPOSED MOTION SENSITIVE TOLL EQUIPMENT TO BE MOUNTED TO THE SUPPORT STRUCTURE AND SHALL COORDINATE ALL WORK WITH THE SYSTEMS INTEGRATOR RESPONSIBLE FOR THE ERECTION OF THIS EQUIPMENT. THE CONTRACTOR SHALL PAY PARTICULAR ATTENTION TO MOUNTING REQUIREMENTS FOR TOLLING EQUIPMENT. ALL EQUIPMENT MOUNTING REQUIREMENTS DEPICTED WITHIN THIS CONTRACT SHALL BE VERIFIED PRIOR TO PREPARATION OF SHOP DRAWINGS.
2. OVERHEAD ETC STRUCTURE IS DESIGNED IN ACCORDANCE WITH THE FOLLOWING DESIGN CODES THE LATEST EDITION AS APPLICABLE:
 - A. AASHTO SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS" (LTS 6) DATED 2013 AND ALL INTERIMS
 - B. VDOT GUIDELINES TO AASHTO STANDARD SPECIFICATIONS LTS 6, 2013 WITH 2015 INTERIMS
 - C. AMERICAN INSTITUTE OF STEEL CONSTRUCTION, INC. (AISC) MANUAL OF STEEL CONSTRUCTION (15TH EDITION)
 - D. AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS 9 EDITION (2020)
 - E. AMERICAN SOCIETY OF TESTING AND MATERIALS (ASTM).
 - F. AWS D1.1 STRUCTURAL WELDING CODE - STEEL
3. CONCRETE FOR FOOTINGS SHALL BE CLASS A3 (3500 psi)
4. REINFORCING STEEL SHALL CONFORM TO A615. GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF $f_y = 60000$ PSI. ALL SPLICES SHALL BE LAPPED AS PER BAR LAP CHARTS, SEE VDOT DESIGN GUIDELINES PART 2 CHAPTER 7, REINFORCING STEEL.
5. REINFORCING STEEL SHALL CONFORM TO A615. GRADE 60, WITH A YIELD STRENGTH FOR DESIGN OF $f_y = 60000$ psi. ALL SPLICES SHALL BE LAPPED AS PER BAR LAP CHARTS. MINIMUM CLEAR COVER FOR REINFORCING STEEL SHALL BE 2" EXCEPT FOR THE FOLLOWING LOCATIONS:

LOCATION CLEAR COVER

FOOTINGS — BOTTOM AND SIDES 3 IN.
6. ALL STRUCTURAL MAIN TUBES SHALL CONFORM TO ASTM A500 ,GRADE C SHALL ALSO MEET CURRENT CHARPY V NOTCH TOUGHNESS IMPACT REQUIREMENTS FOR M270, ZONE 2. ALL OTHER TUBES SHALL CONFORM TO A53 GRADE B. ALL STEEL PLATES, W SHAPES AND MISCELLANEOUS SHAPES SHALL CONFORM TO A709, GRADE 50. CHORD SPLICE MATERIAL SHALL ALSO MEET THE CHARPY V NOTCH TOUGHNESS REQUIREMENTS FOR M270, ZONE 2.
7. ALL CONNECTION BOLTS SHALL CONFORM TO ASTM F3125. GRADE A325. BOLTS OVER 1 1/2" DIAMETER SHALL CONFORM TO A449. ALL WASHERS SHALL CONFORM TO F436 AND NUTS A194. GRADE 2H. U BOLTS SHALL CONFORM TO A276. TYPE 304 (STAINLESS STEEL) OR A307. FLAT WASHERS AND HEX LOCK NUTS SHALL BE USED FOR U BOLTS. ALL ANCHOR BOLTS SHALL CONFORM TO F1554. GRADE 55 S1. ALL BOLTS SHALL HAVE A FLAT WASHER UNDER THE ELEMENT BEING TURNED.
8. OVERHEAD ETC STRUCTURE SHALL BE GALVANIZED TO CONFORM TO A123. ALL HARDWARE WITH THE EXCEPTION OF STAINLESS STEEL SHALL BE GALVANIZED TO CONFORM TO A153.
9. BASE PLATES SHALL BE IN FULL CONTACT WITH ALL FLAT WASHERS. GROUT SHALL NOT BE PLACED BETWEEN THE BASE PLATE AND CONCRETE PEDESTAL.
10. ALL WELD SIZES NOT INDICATED SHALL COMPLY WITH AWS D1.1. BRIDGE WELDING CODE.
11. FOR ELECTRONIC TOLL EQUIPMENT LAYOUT AND MOUNTING DETAILS. SEE AET DRAWINGS.
12. ANCHOR BOLTS SHALL UTILIZE A STEEL TEMPLATE TO SET AND KEEP ANCHOR BOLTS PLUMB DURING FOUNDATION CONSTRUCTION. ALL ANCHOR BOLTS SHALL BE TIGHTENED USING TURN OF NUT METHOD (30° MIN. TO 45° MAX. AFTER SNUG TIGHT). COST OF ANCHOR BOLTS, NUTS, WASHERS, AND STEEL ANCHOR PLATES ARE INCIDENTAL TO THE PRICE PAID FOR CONCRETE FOR SUPPORT STRUCTURE PEDESTALS OR GRADE BEAMS.
13. THE APPROXIMATE LOCATION OF ALL KNOWN UTILITIES IS SHOWN. THE CONTRACTOR SHALL VERIFY THE FINAL LOCATION OF ALL UTILITIES SHOWN, AND THE EXISTENCE OF ANY OTHER UNKNOWN UTILITIES, PRIOR TO THE START OF ANY CONSTRUCTION OPERATIONS.
14. Design Loads

Dead Loads:

MASH CLADDING	102 LBS/100 SF, 61% VOID RATIO
CONCRETE CLADDING	121 KIPS PER TOWER

AET EQUIPMENT, SUPPORT FRAME AND PIPES (TOTAL WEIGHT FOR EACH ITEM)

LASER SCANNER	405 LBS
VISCAM CAMERA	265 LBS
LED FLESH	233 LBS
DVAS CAMERA	40 LBS
SURVEILLANCE CAMERA	4 LBS
ANTENNA	497 LBS
AET EQUIPMENTSUPPORT FRAME	459 LBS
PIPES	12313 LBS

WIND LOADS:

WIND SPEED	90 MPH
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ED	DATE	BY	DESCRIPTION

PROJECT: **RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY
RMTA**

DRAWN BY: G.Garayburu
 CHECKED BY: I.Sun
 APPROVED BY: R.LaGatta

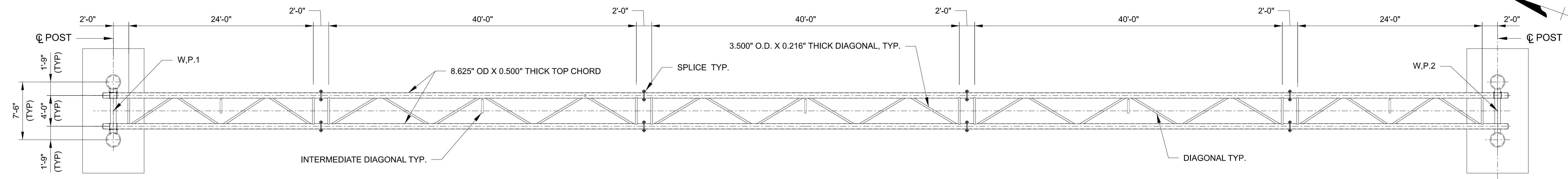
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 TOWER:

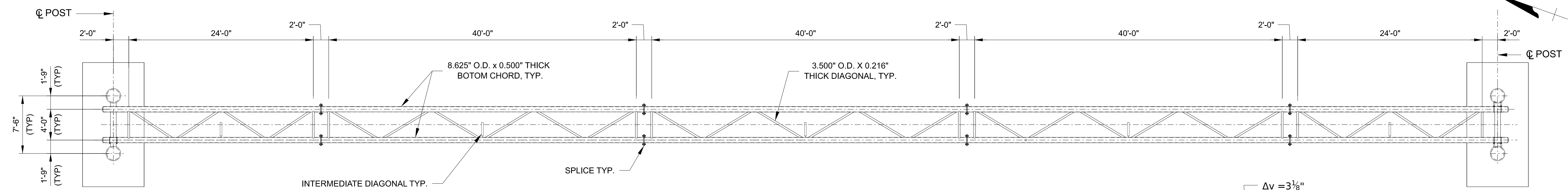
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DOC NO:
 REV NO:
 DATE: 10/16/2024
 SHEET: S-3

STAMP/SEAL

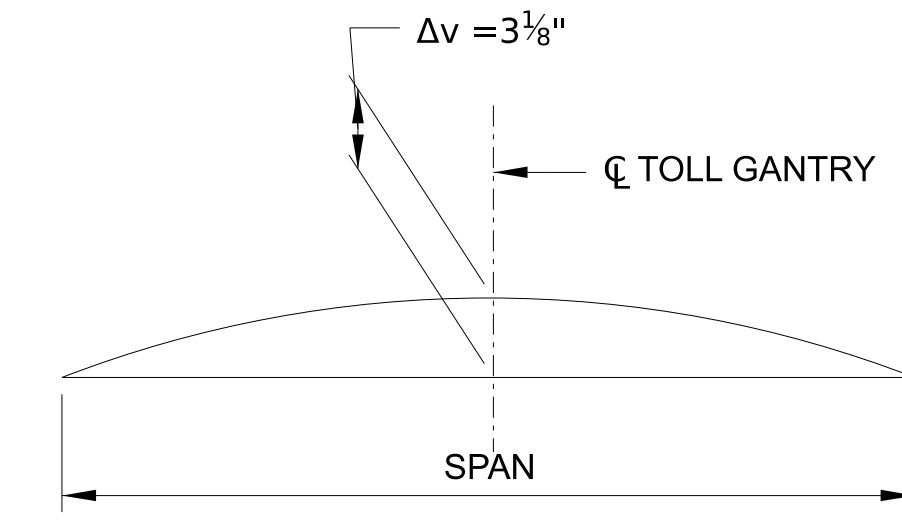


TOP CHORD PLAN
SCALE: 1/2" = 1'-0"

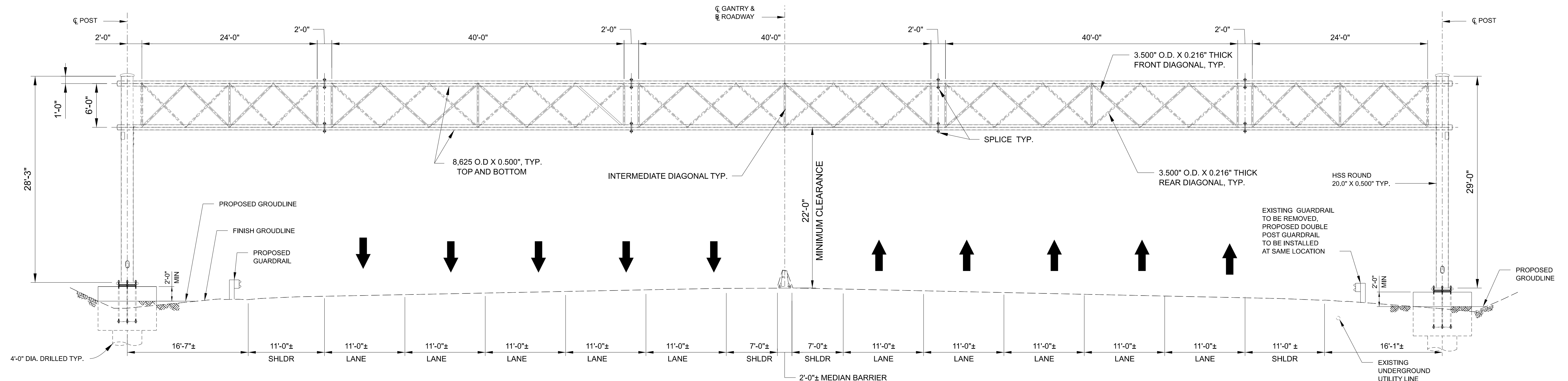


BOTTOM CHORD PLAN
SCALE: 1/2" = 1'-0"

WORKING POINT DATA				
MARK	STATION	OFFSET	NORTHING	EASTING
W.P. 1	16+27.22	90.00 LT	3720554.806	11772825.136
W.P. 2	16+27.22	90.00 RT	3720412.708	11772935.625



CAMBER DIAGRAM
SCALE: N.T.S



OVERHEAD GANTRY STRUCTURE ELEVATION
SCALE: 1/2" = 1'-0"



ED	DATE	BY	DESCRIPTION

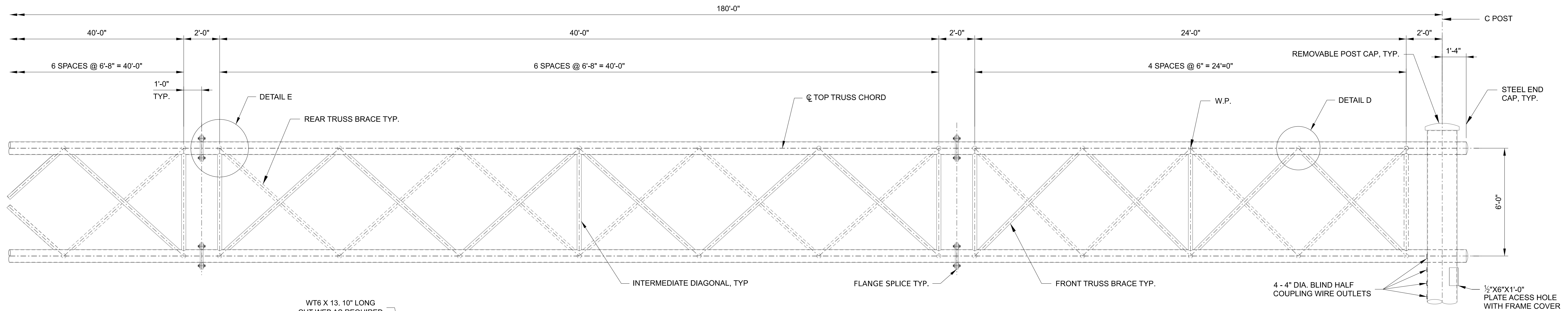
PROJECT: **RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA**

DRAWN BY: G. Garayburu
 VERIFIED BY: L. Sun
 APPROVED: R. LaGatta

SCALE: As Shown
 TITLE: GANTRY DETAILS 1

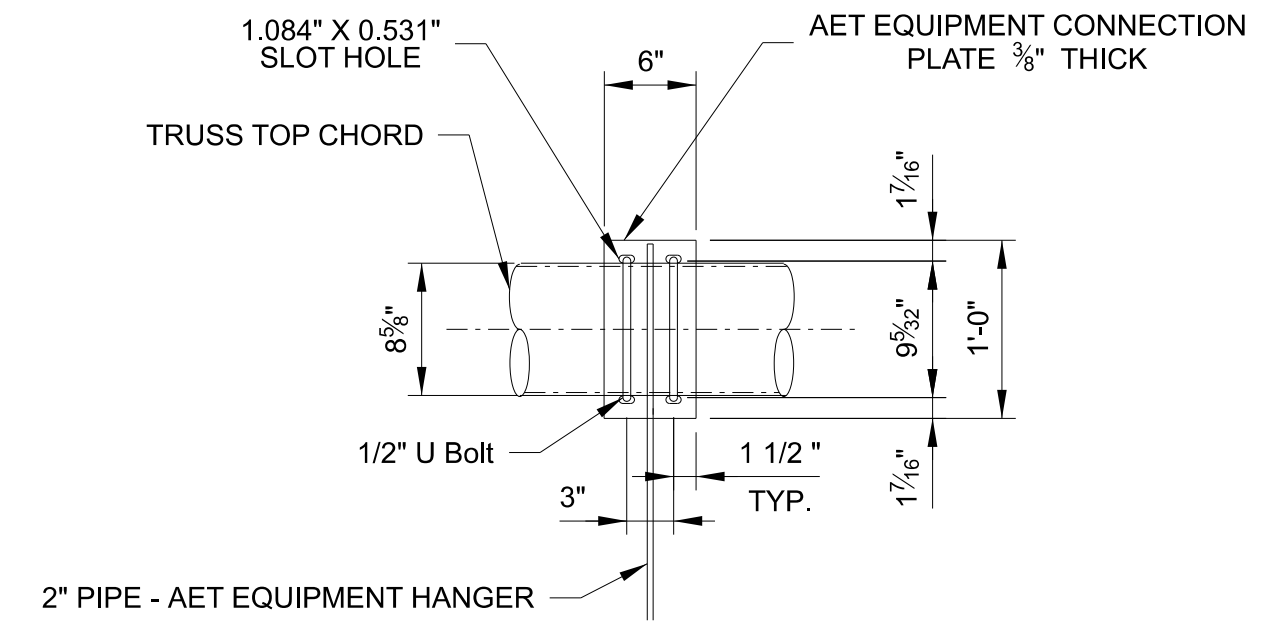
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DOC NO:
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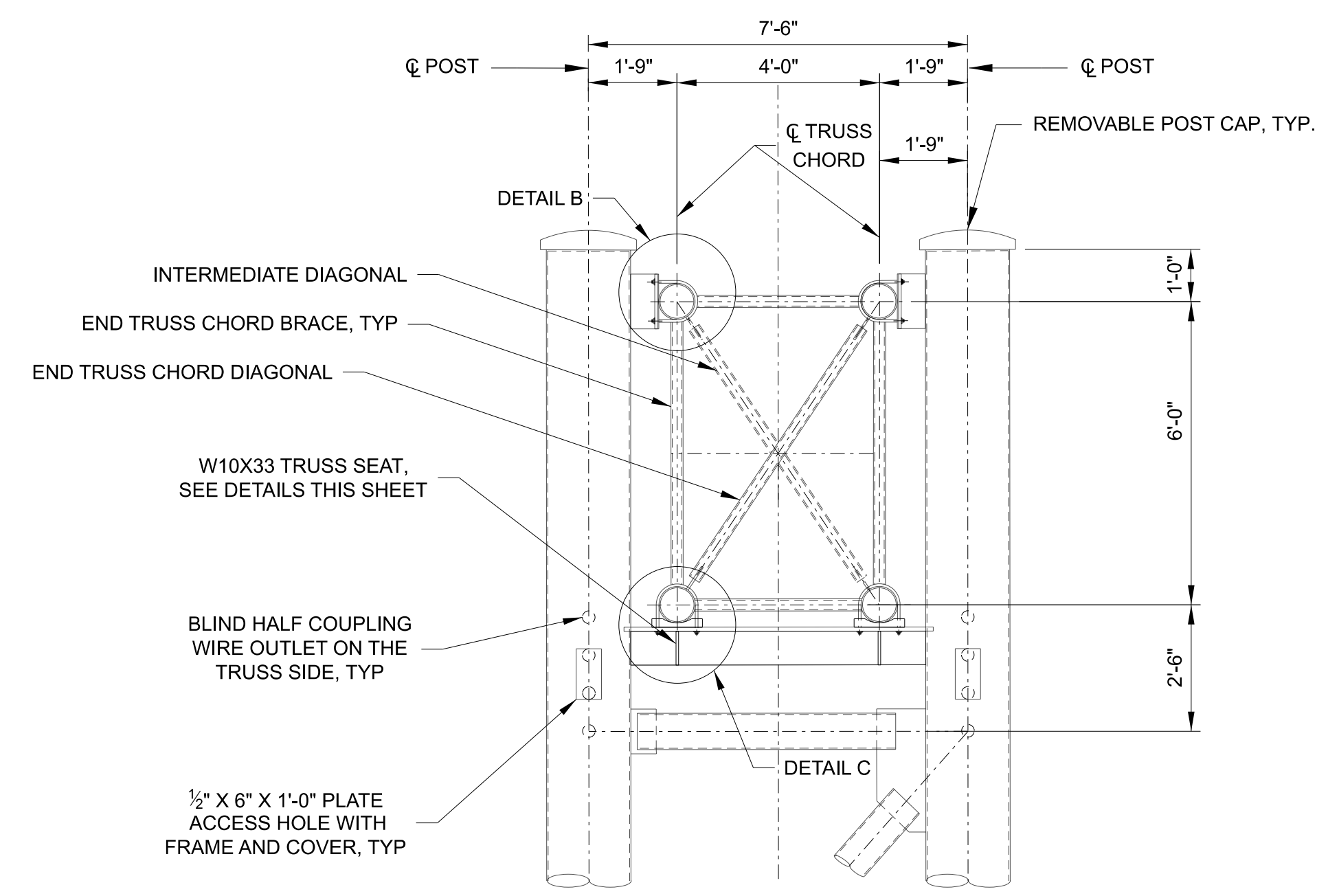


PARTIAL TRUSS ELEVATION
SCALE 3/8" = 1'-0"

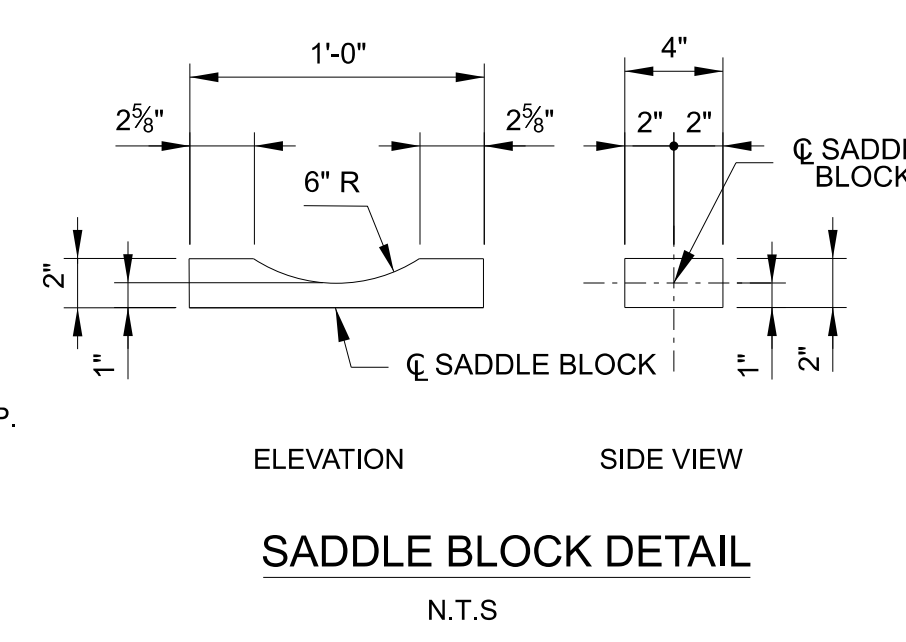
NOTE:
A-TO-B WILL PROVIDE INSTALLATION SEQUENCE AND CONNECTION DETAILS OF EQUIPMENT HANGER FRAME TO THE TRUSS.



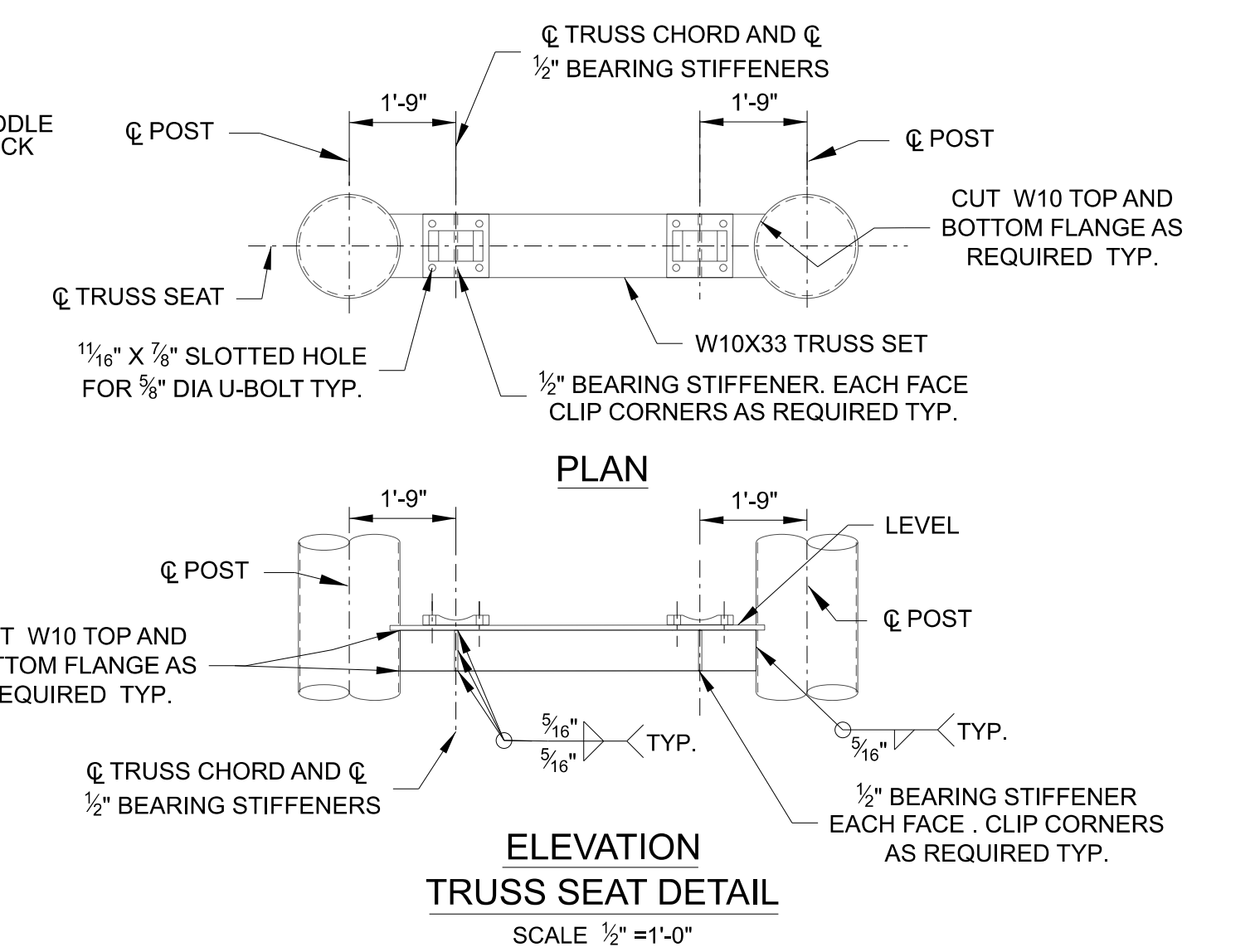
DETAIL A
AET EQUIPMENT TO TRUSS CONNECTION DETAILS
SCALE 1" = 1'-0"



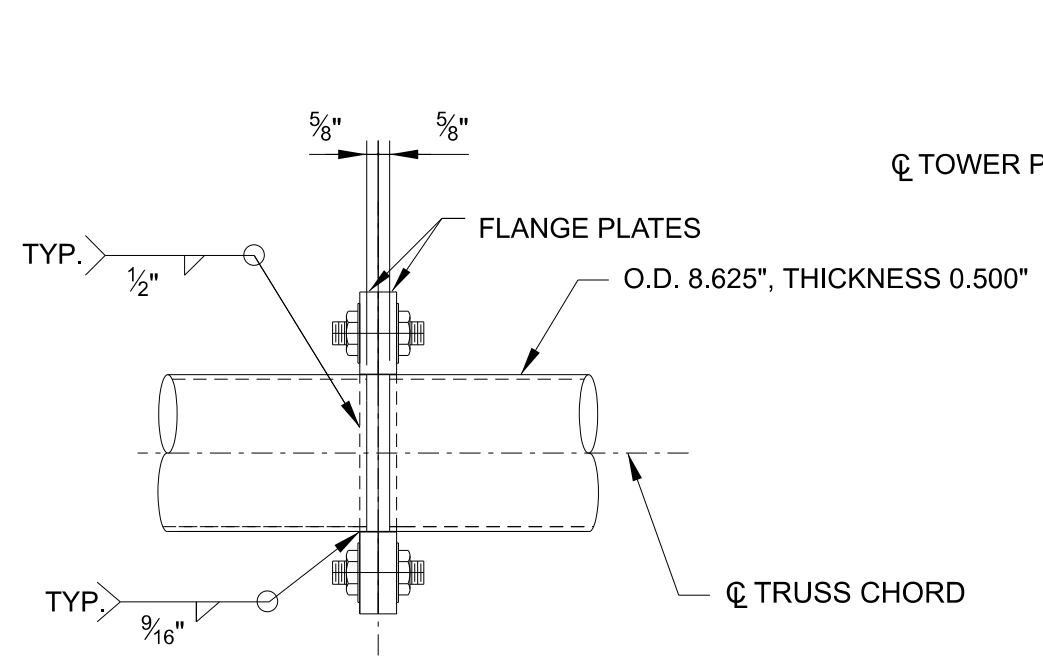
PARTIAL SIDE ELEVATION
SCALE 1/2" = 1'-0"



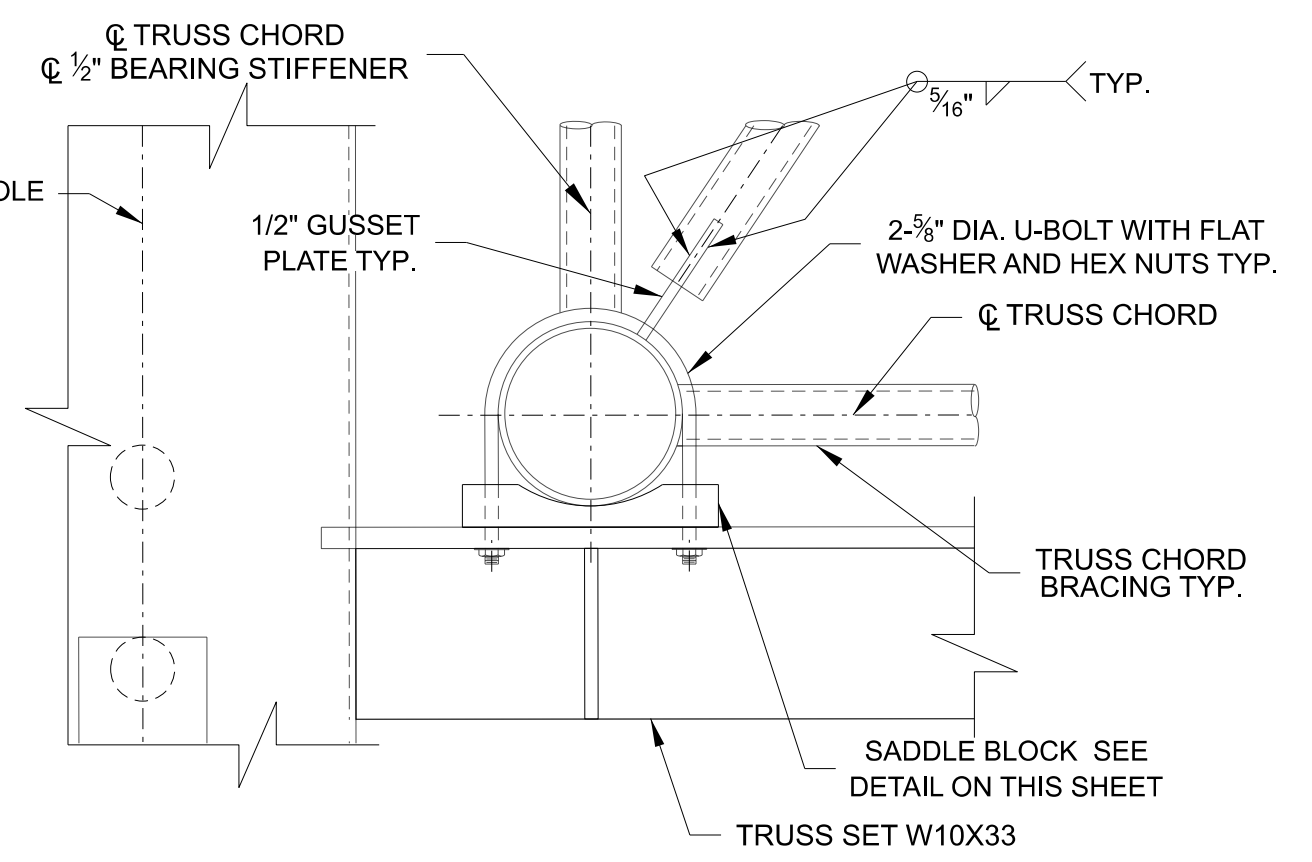
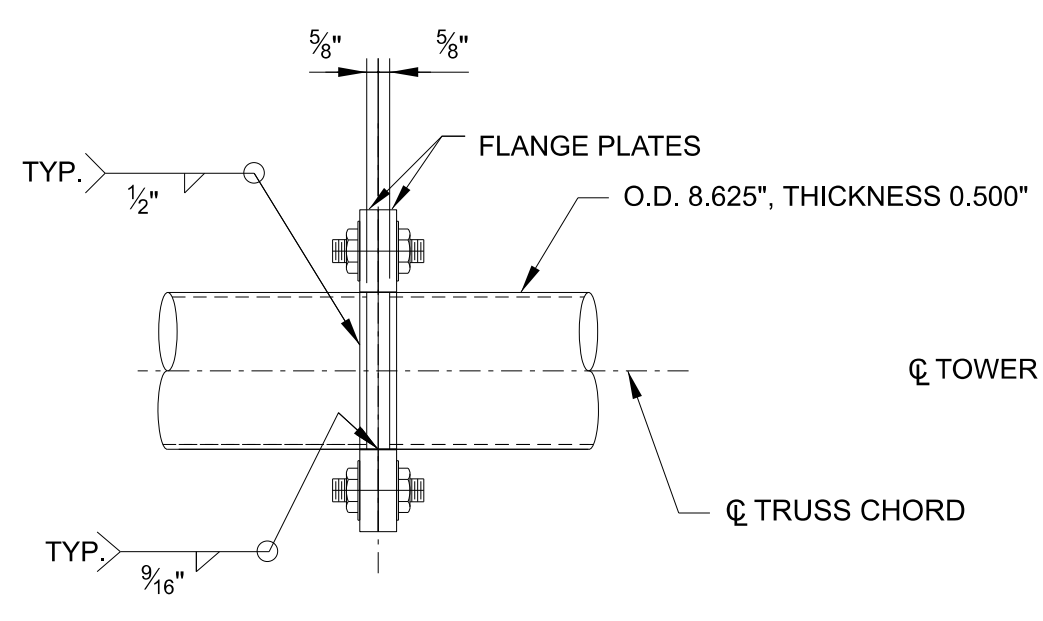
SADDLE BLOCK DETAIL
N.T.S.



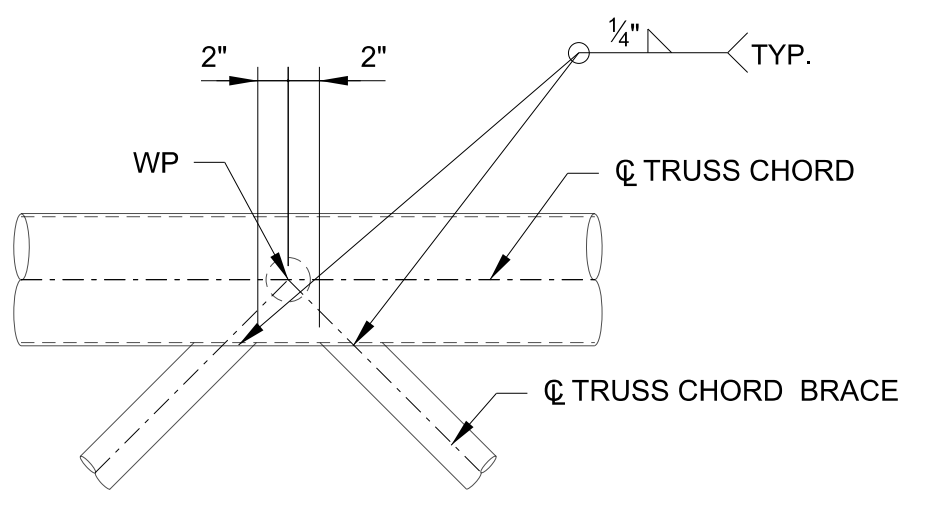
ELEVATION TRUSS SEAT DETAIL
SCALE 1/2" = 1'-0"



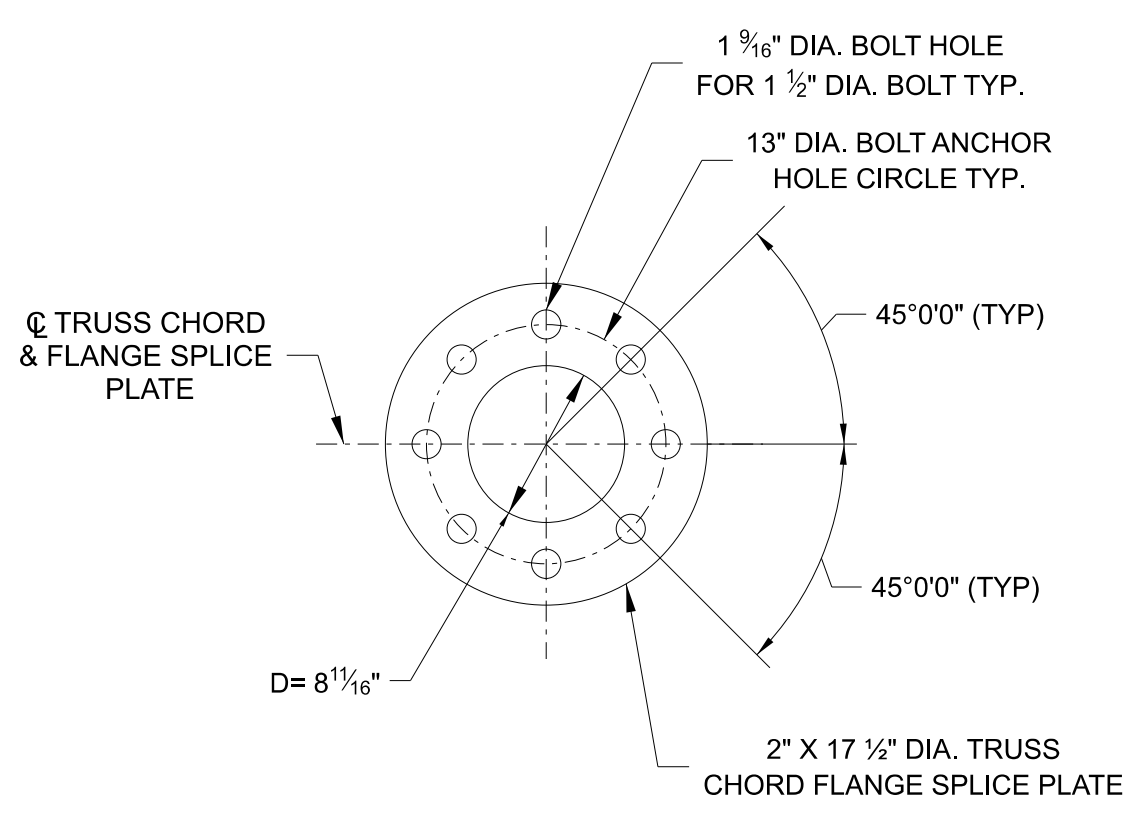
DETAIL B



DETAIL C



DETAIL D
SCALE 1" = 1'-0"



TRUSS CHORD FLANGE SPLICE DETAIL



ED	DATE	BY	DESCRIPTION

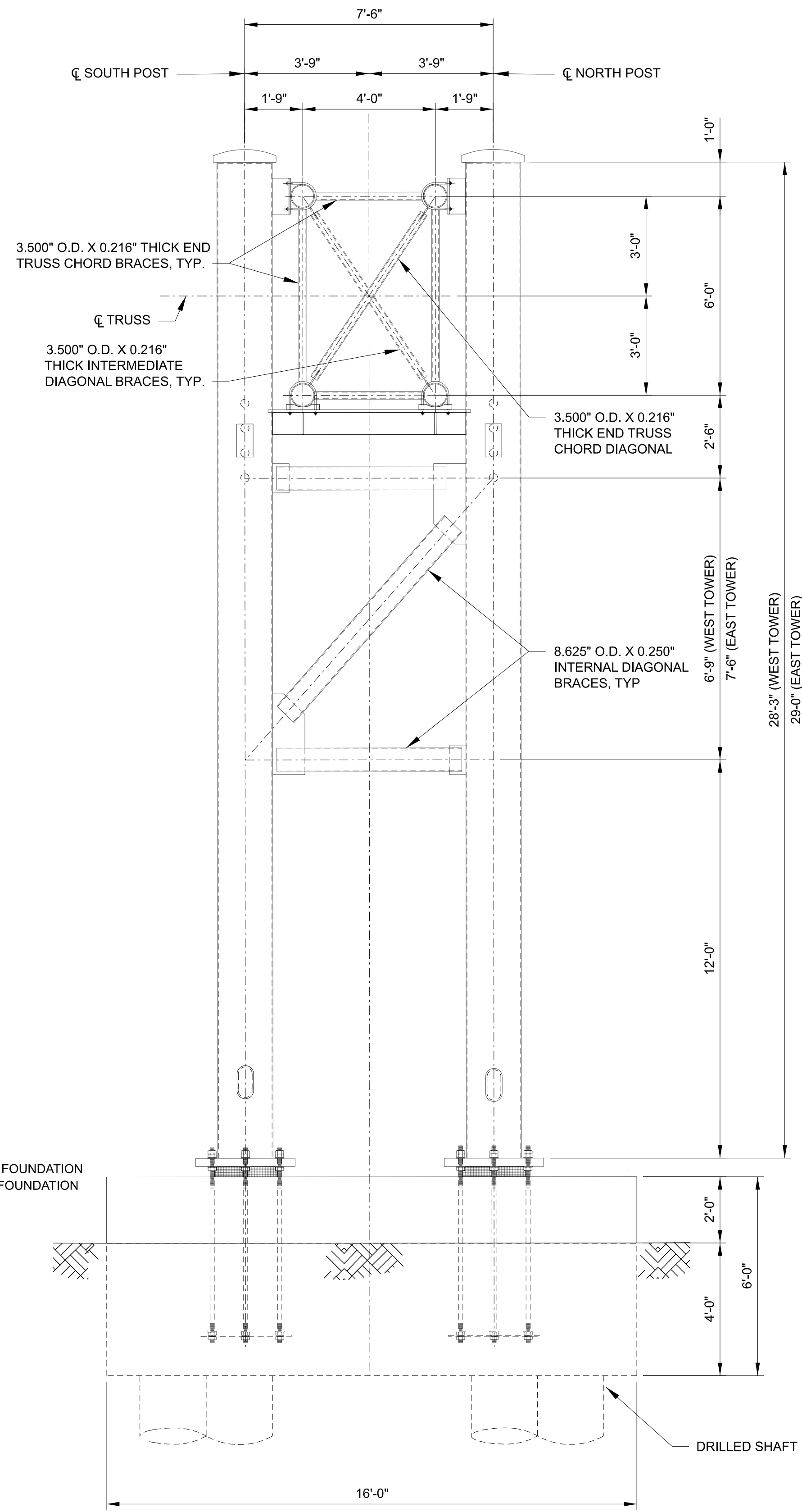
PROJECT: **RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA**

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APPROVED: R.LaGatta

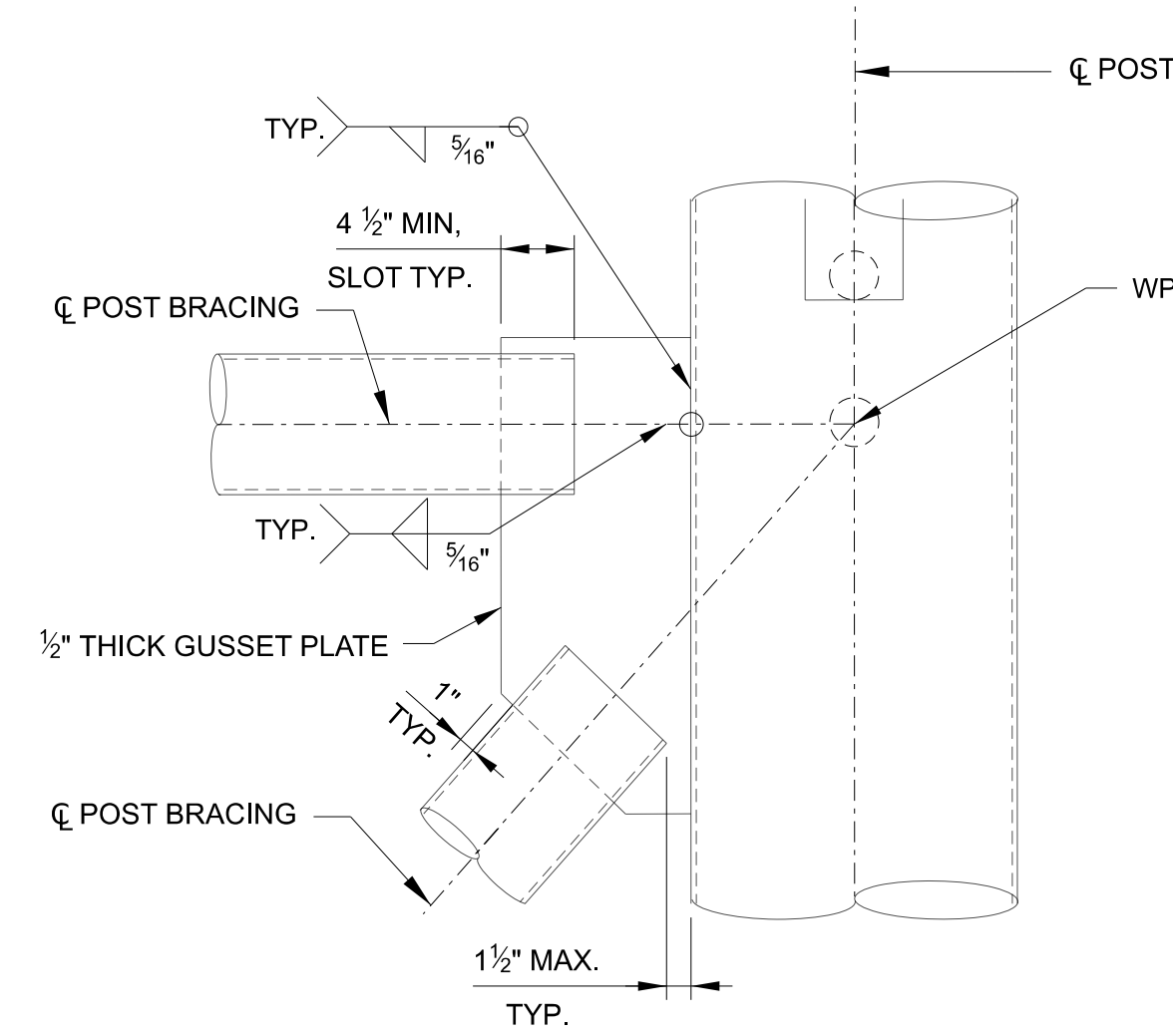
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TITLE: **GANTRY DETAILS 2**

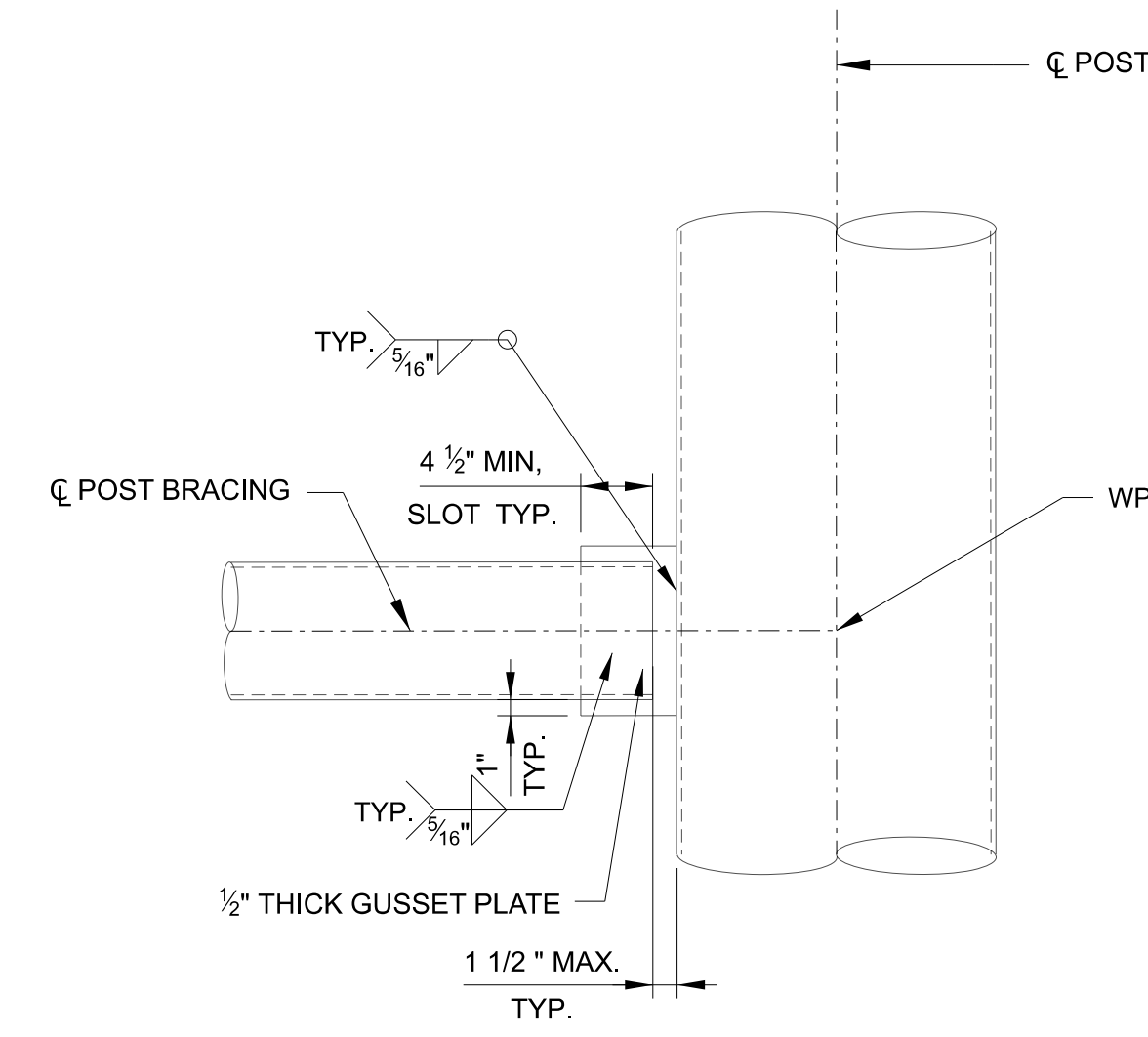
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DATE: 10/16/2024
SHEET: S-5



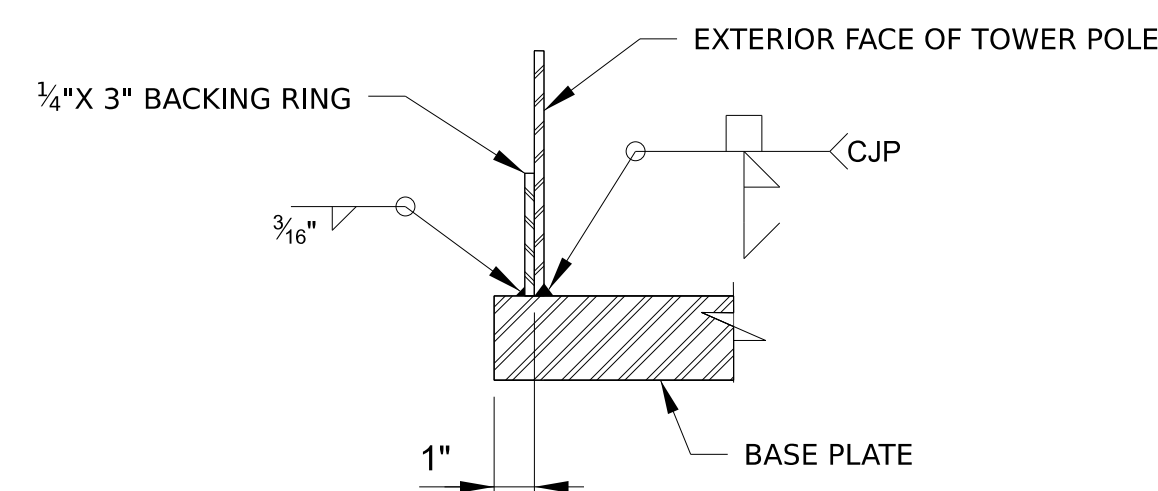
POST ELEVATION
POSTS AT NB SHOWN, SB SIMILAR
SCALE = 1/2" - 1' = 0"



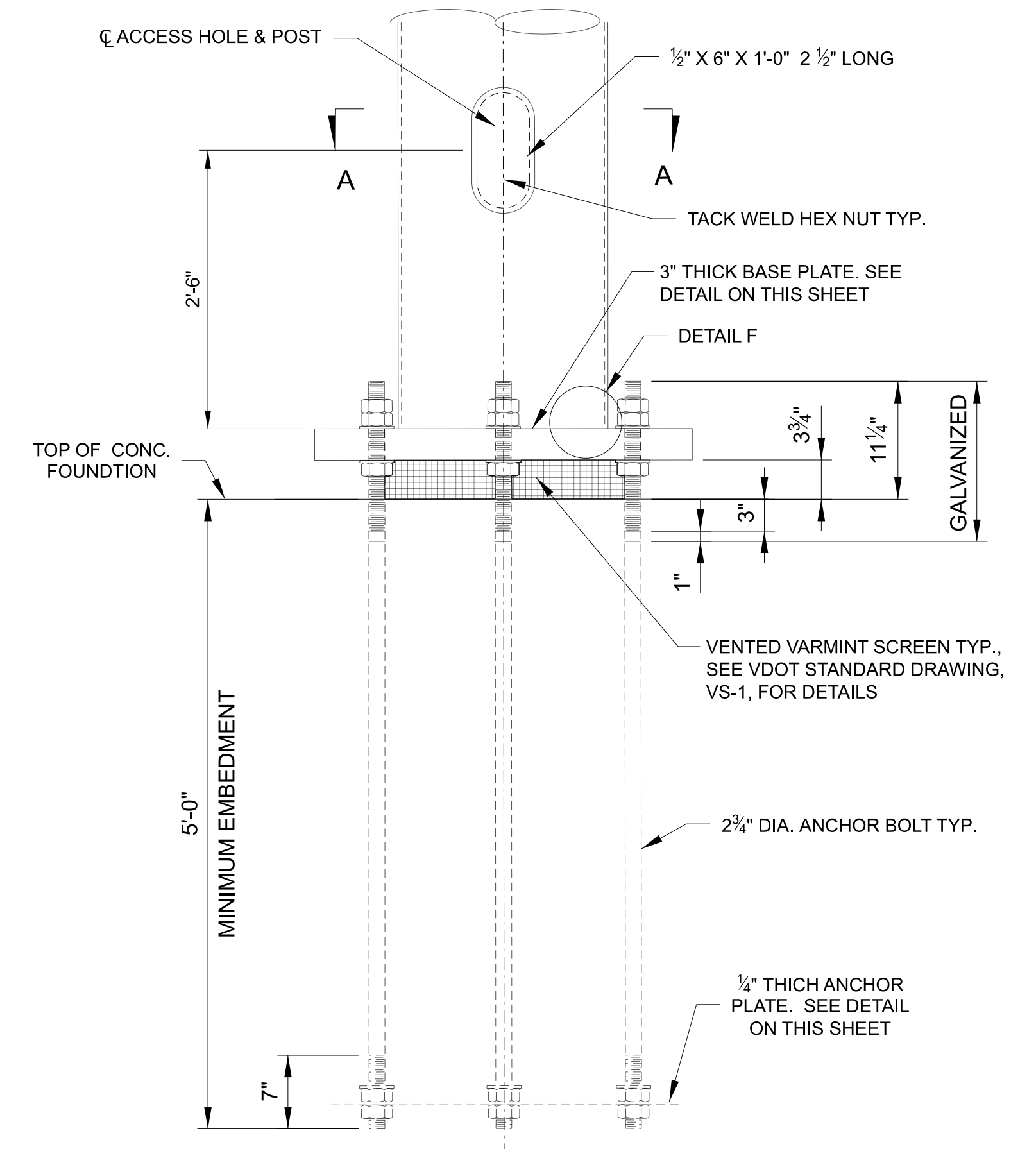
END BRACE DUAL CONNECTION
SCALE = 3/8" - 1' = 0"



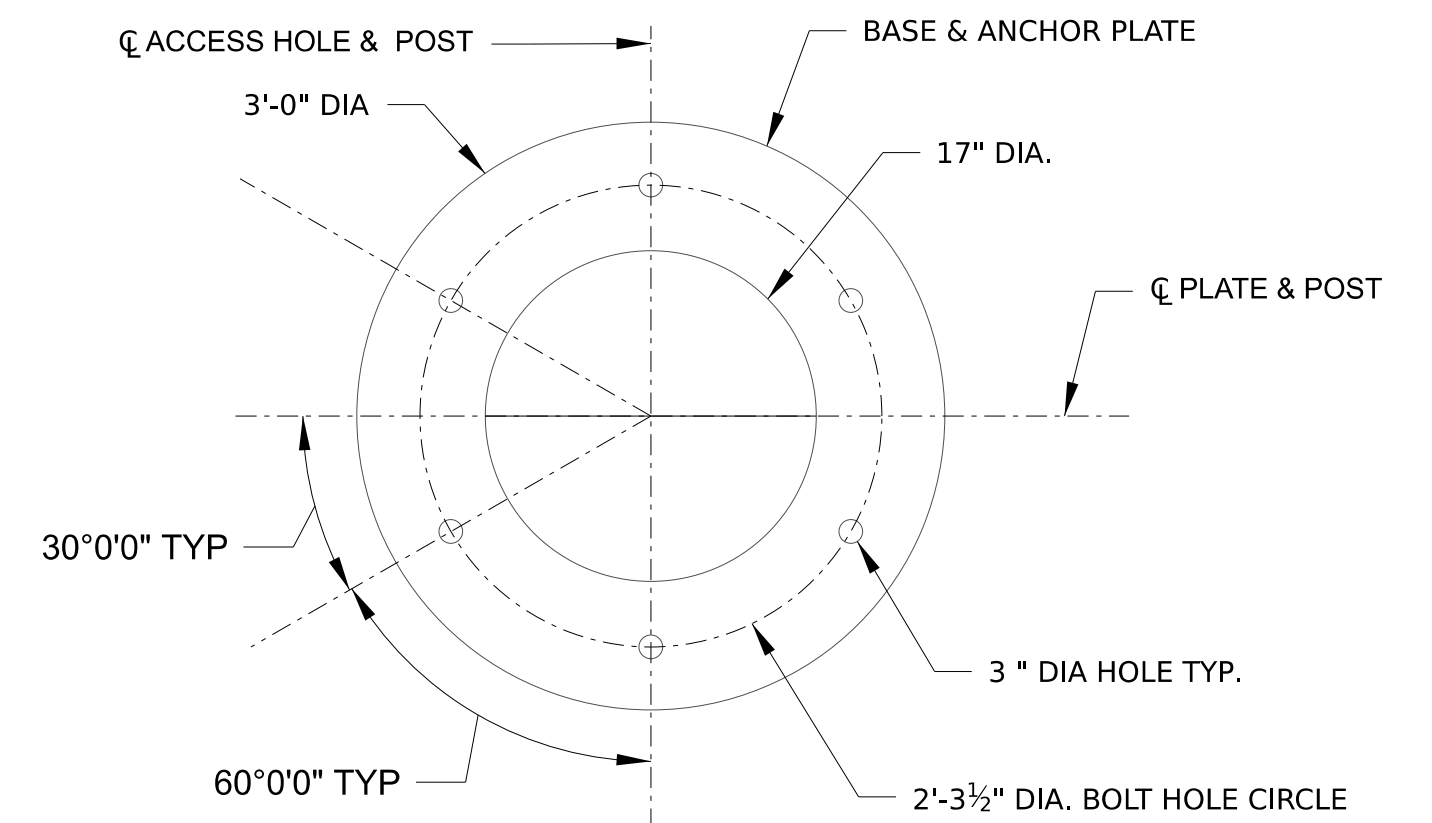
POST BRACING DETAIL
END BRACE SINGLE CONNECTION
SCALE = 3/8" - 1' = 0"



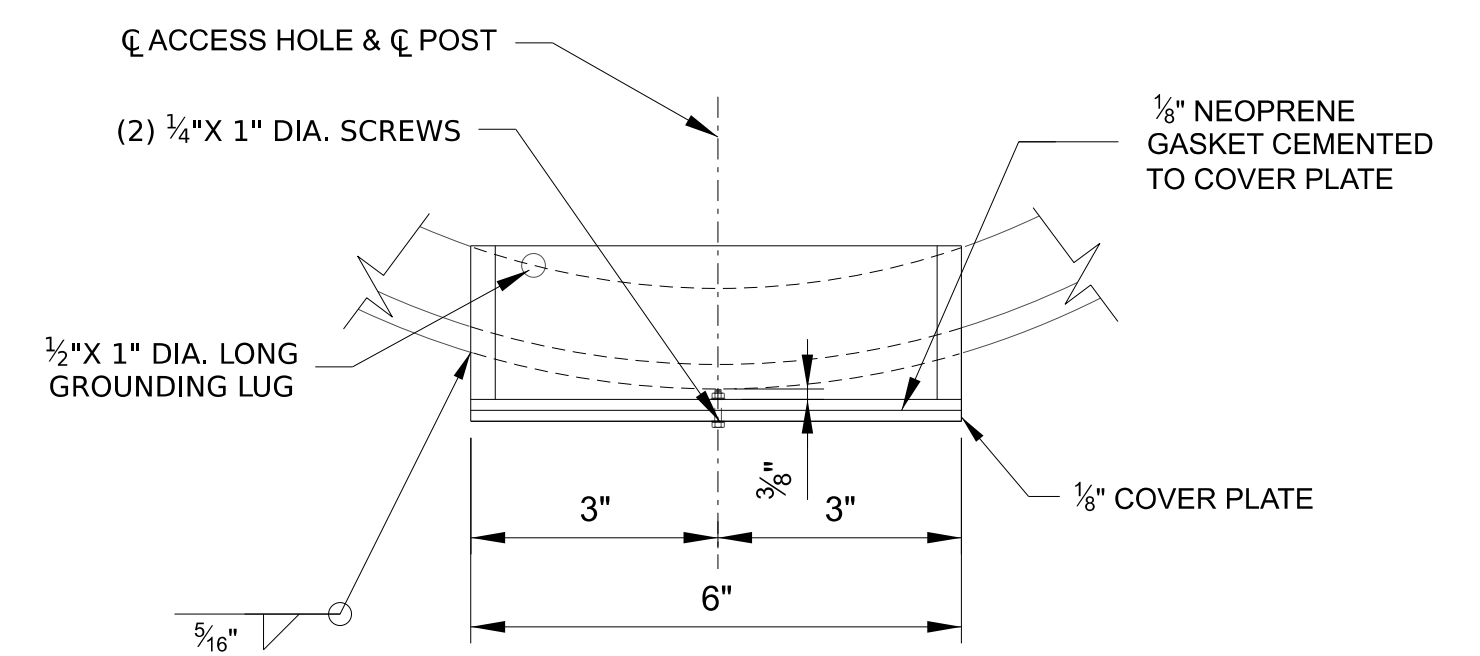
DETAIL F
BASE PLATE TO POLE WELD DETAIL



POST BRACING DETAIL
SCALE = 3/8" - 1' = 0"



BASE & ANCHOR PLATE DETAIL



SECTION A-A
ACCESS HOLE DETAIL

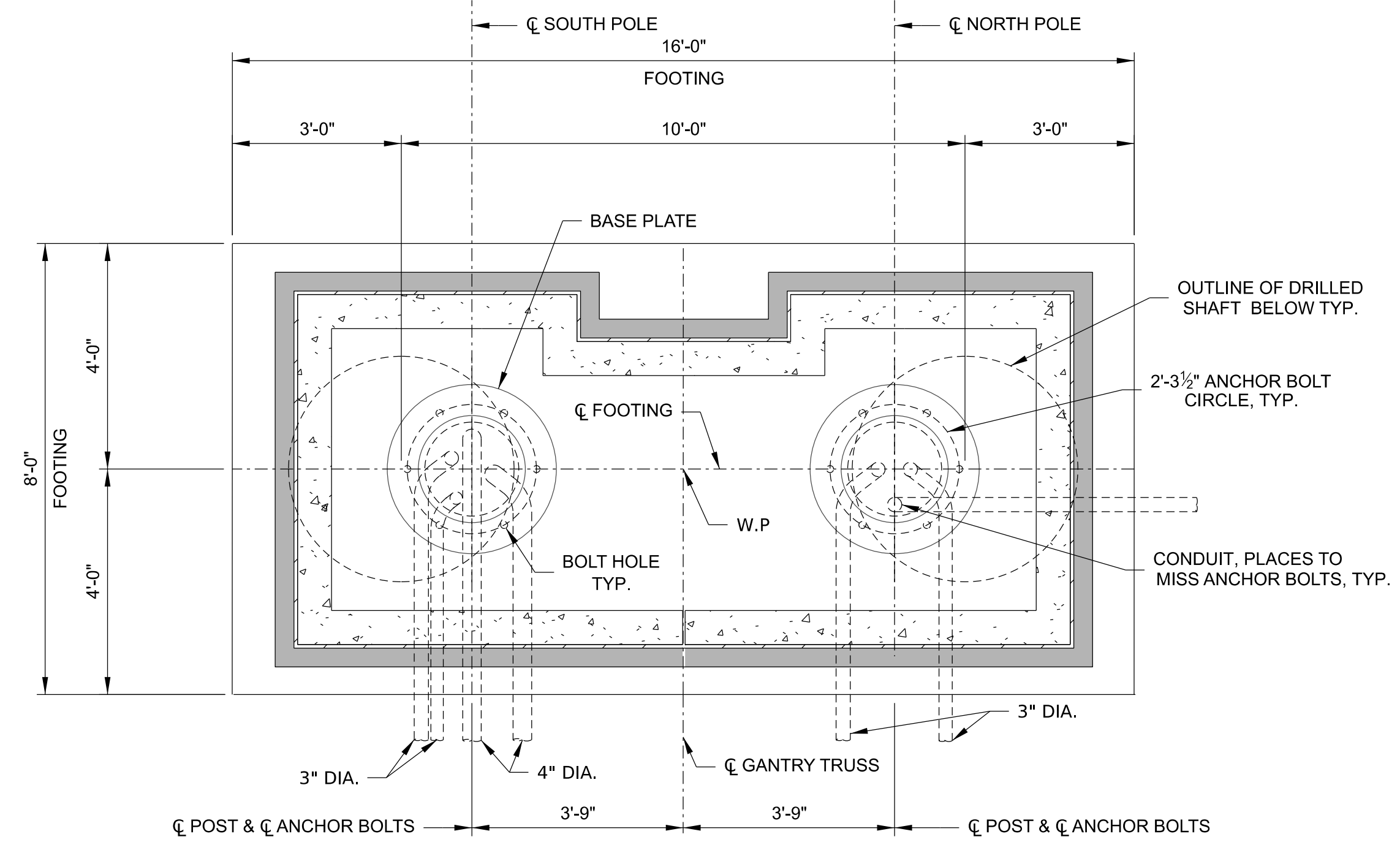


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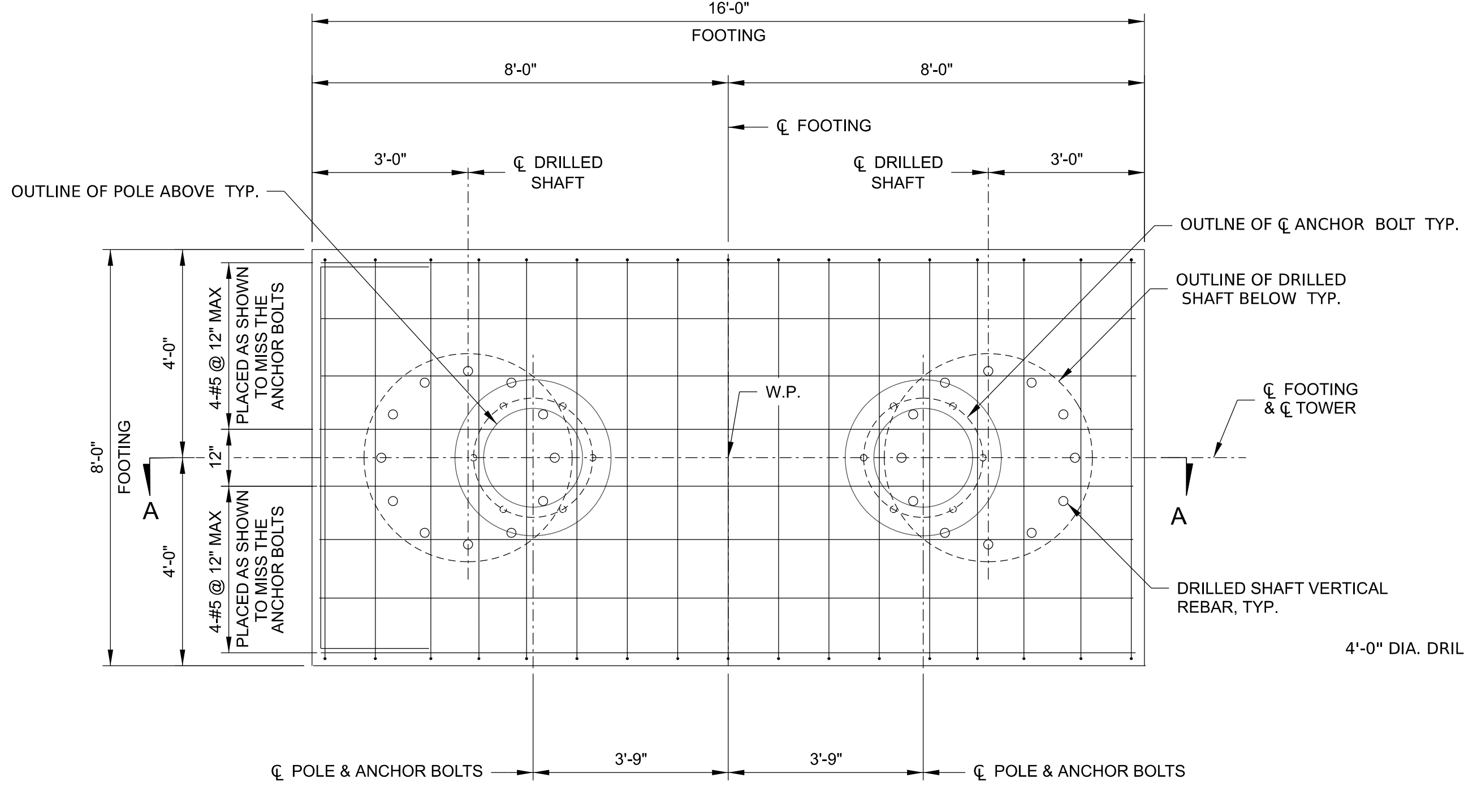
PROJECT	RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA
DRAWN BY	G. Garayburu
CHECKED BY	L. Sun
APPROVED BY	R. LaGatta
SCALE	As Shown
TITLE	GANTRY DETAILS 3

DOC NO.	10/16/2024
REV NO.	S-6

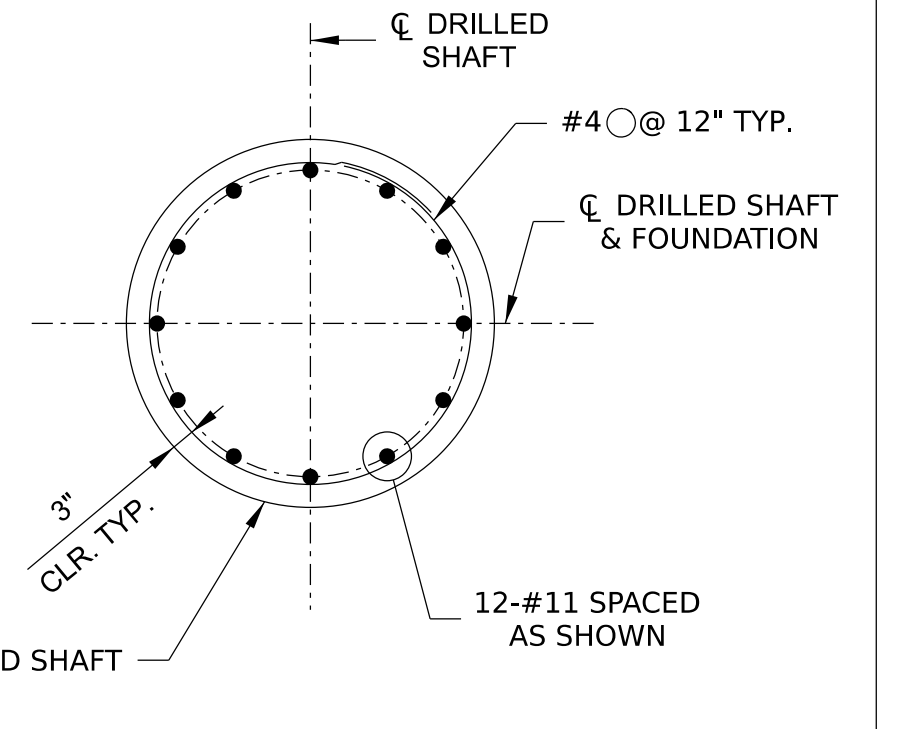
DATE	10/16/2024
SHEET	S-6



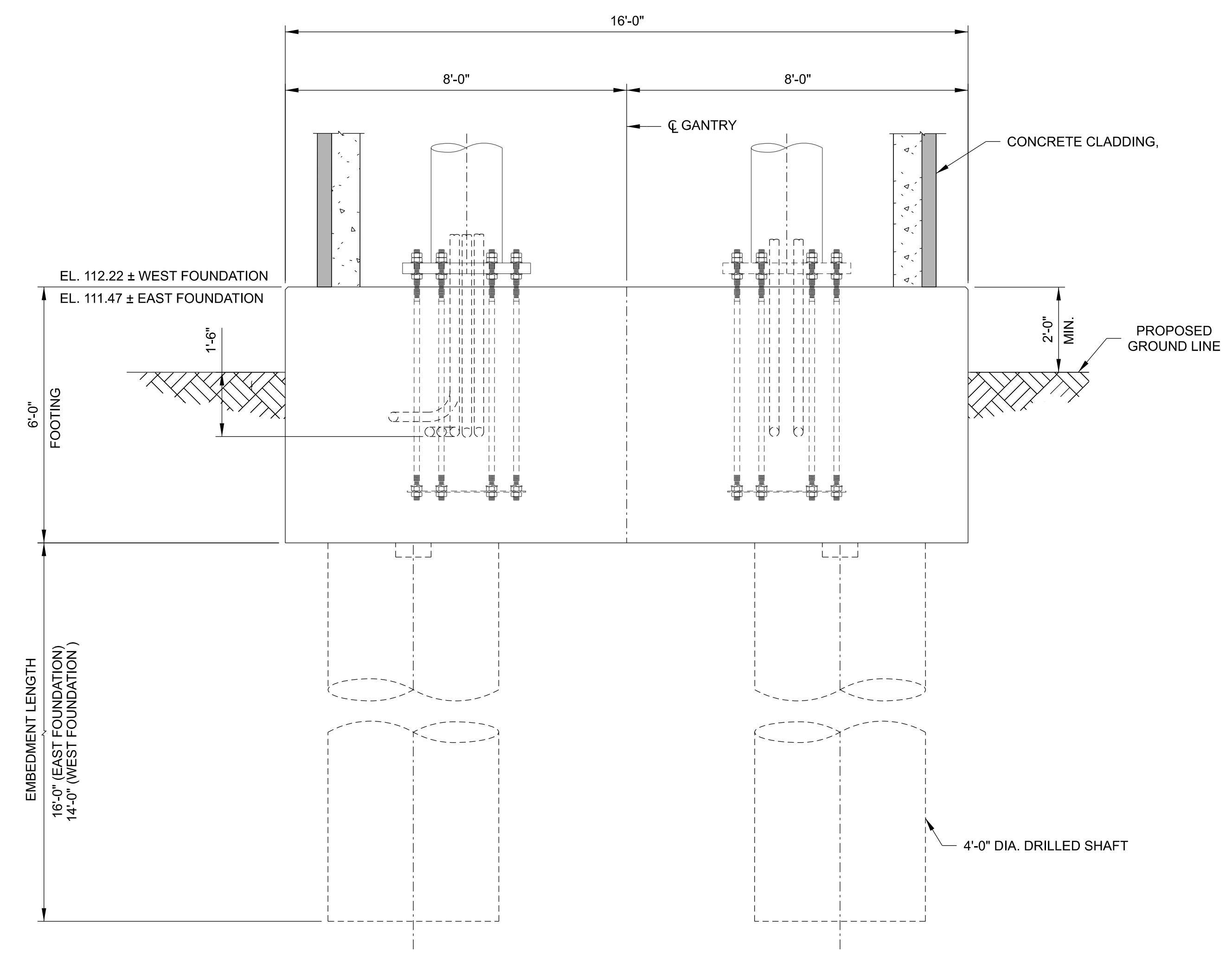
PLAN



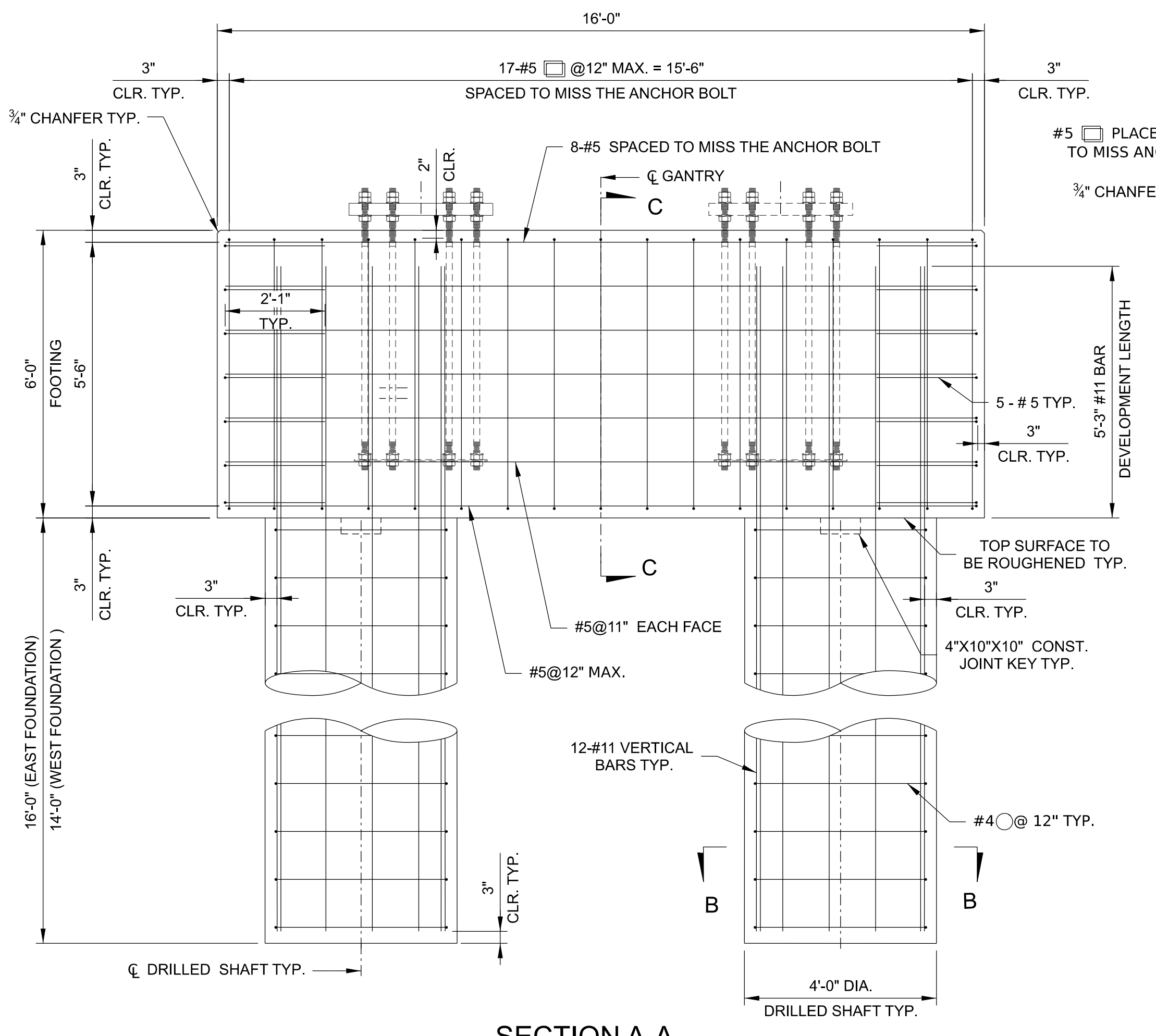
PLAN



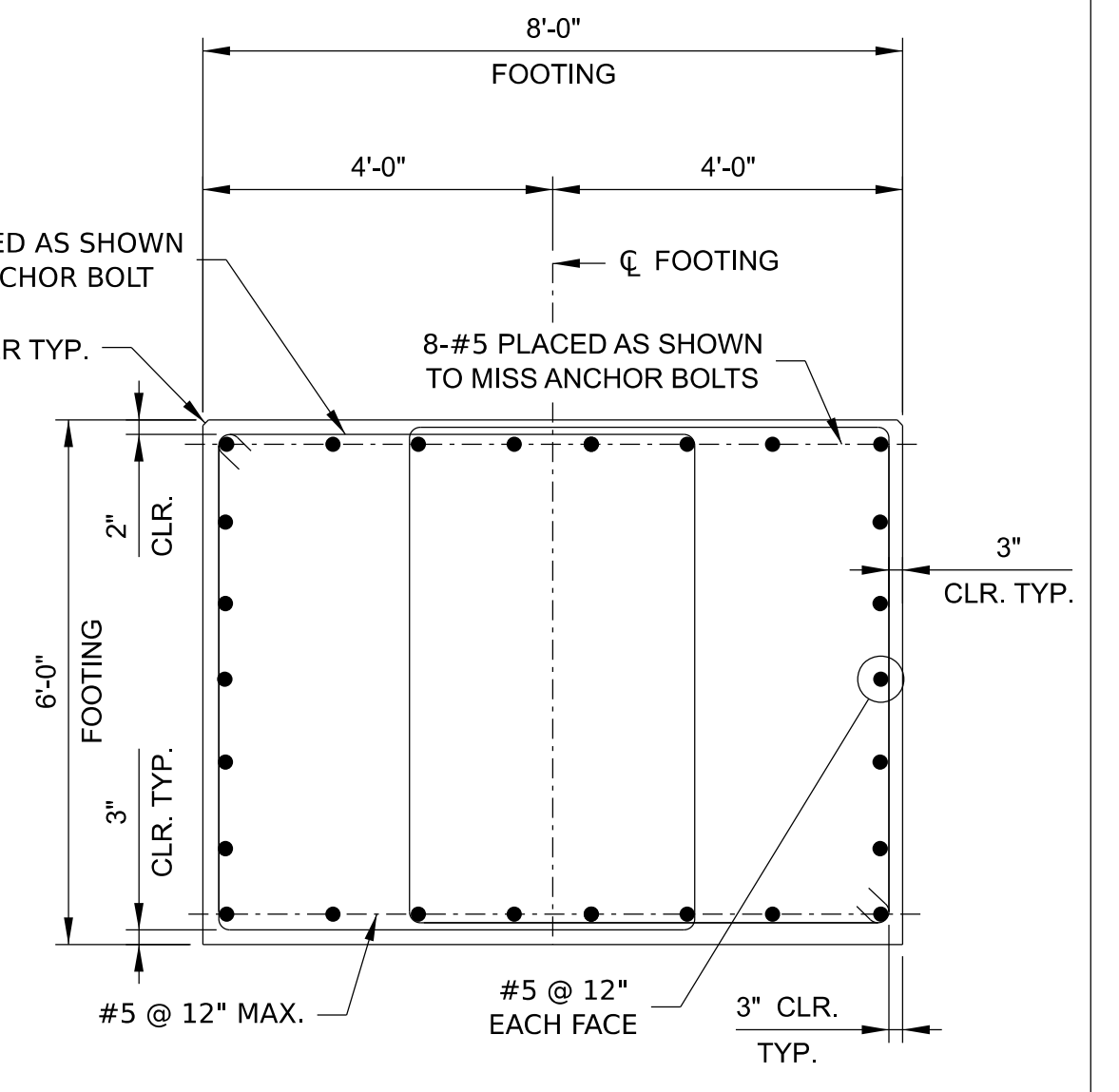
SECTION B-B



ELEVATION
CONDUITS IN PILE CAP



SECTION A-A



SECTION C-C

- NOTES:
- FOR FOUNDATION LOCATIONS, SEE DRAWING S-2.
 - CONTRACTOR SHALL PLACE REINFORCING AS REQUIRED TO MISS ANCHOR BOLTS AND CONDUITS.
 - FOR CONDUITS EXTENDING INTO THE PILE CAP, SEE ELECTRICAL DRAWINGS FOR DETAILS.
 - THE GEOTECHNICAL ENGINEER SHALL DETERMINE THE FINAL BOTTOM ELEVATION OF DRILLED SHAFTS. ALL HOLES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER LICENSED IN THE STATE OF VIRGINIA.
 - ALL CONCRETE FOR DRILLED SHAFTS SHALL BE CLASS A3 (3500 PSI).



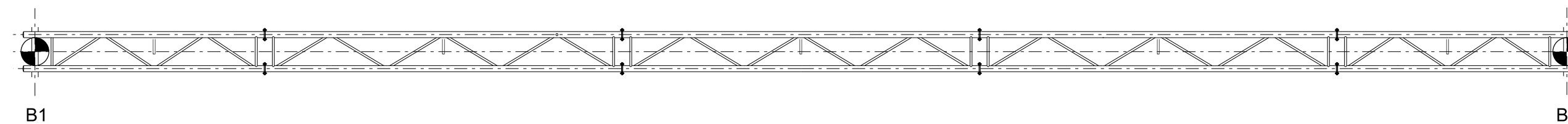
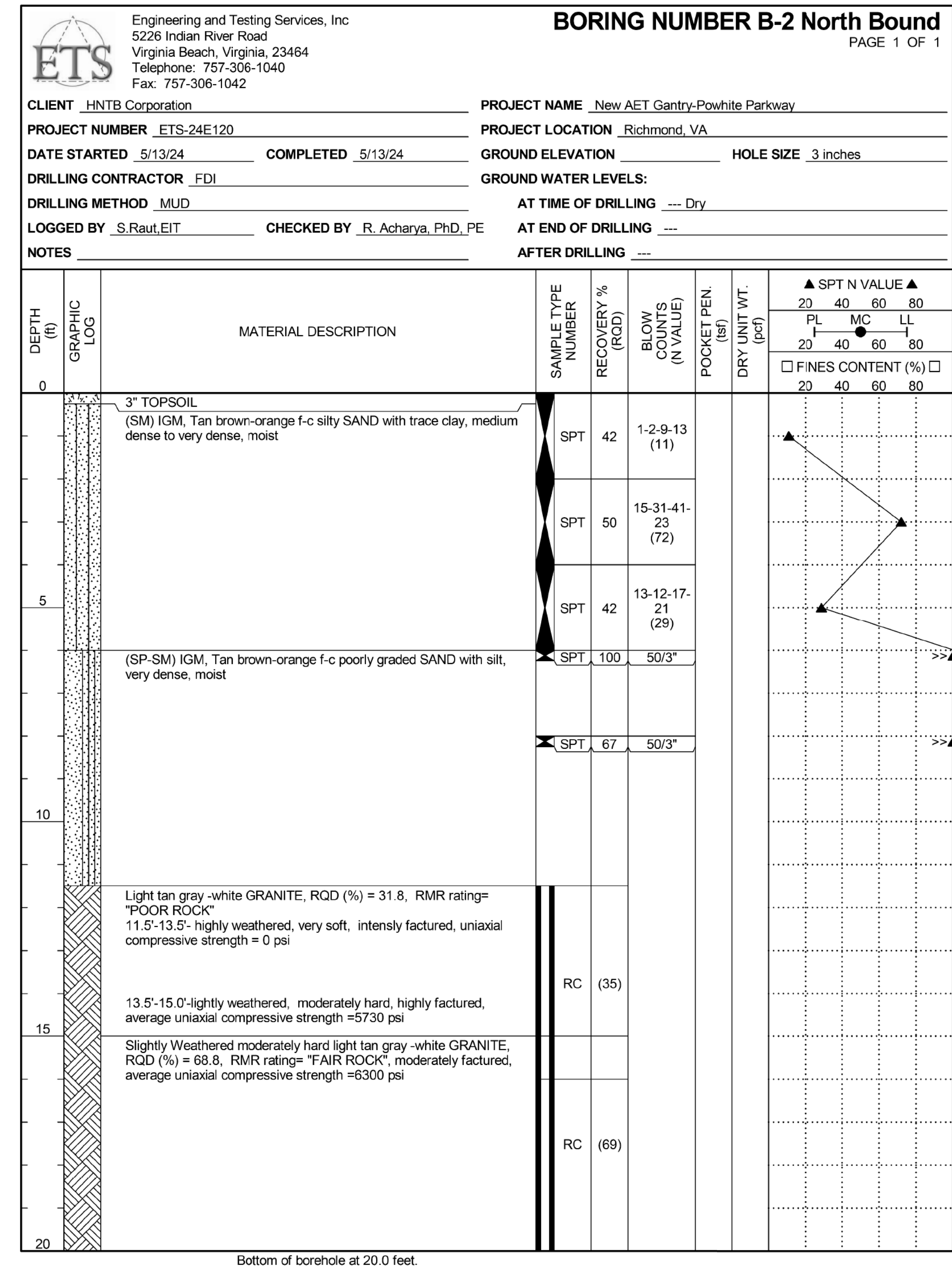
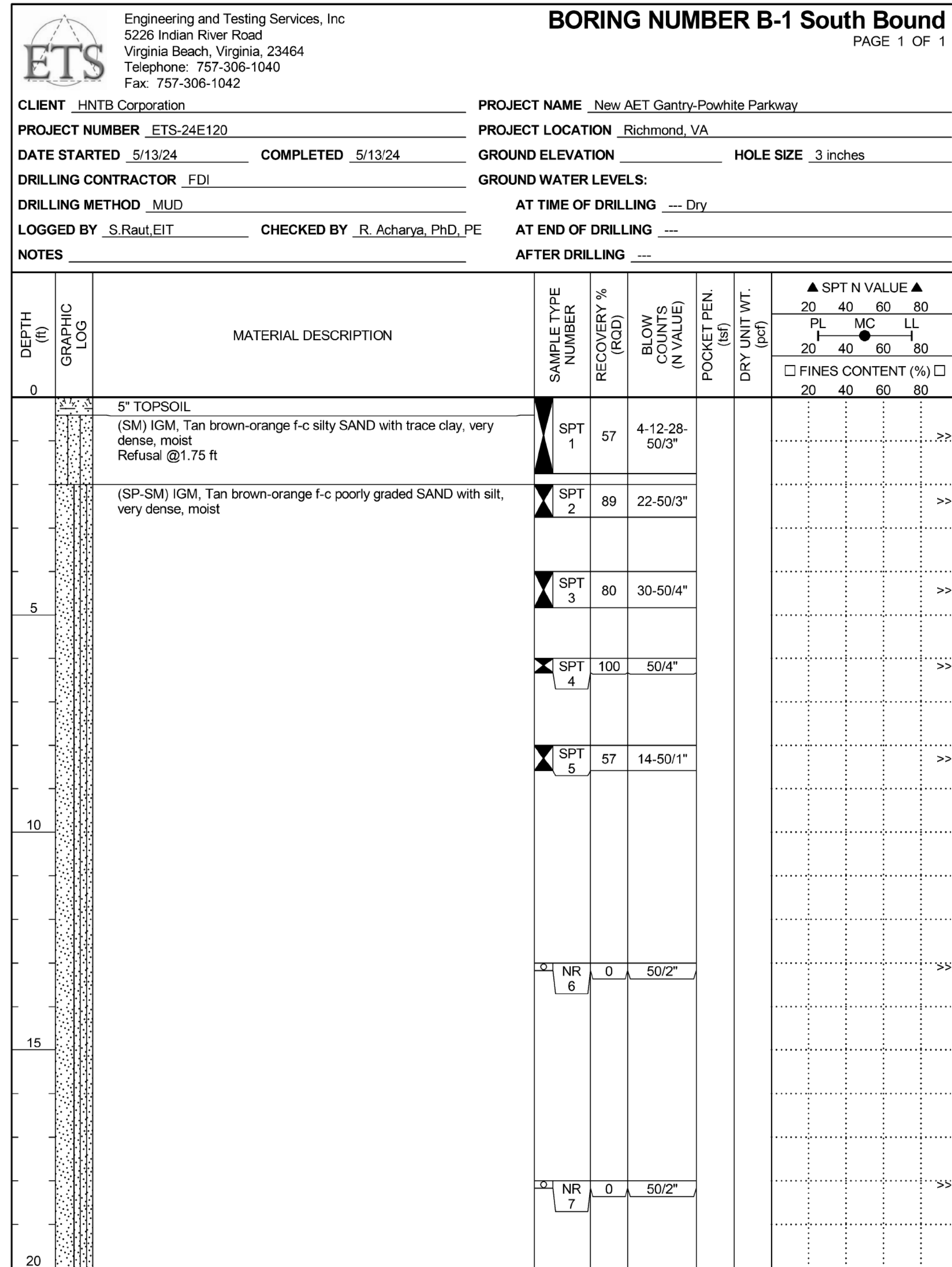
ED	DATE	BY	DESCRIPTION

PROJECT	RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA
DRAWN BY	G.Garayburu
CHECKED BY	L.Sun
APPROVED BY	R.LaGatta

SCALE	As Shown
TITLE	GANTRY FOOTING DETAILS

DATE	10/16/2024
SHEET	S-7

PROJECT	RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA
DATE	10/16/2024
SHEET	S-7



BORING LOG LOCATION
SCALE: 1/4" = 1'-0"



ED	DATE	BY	DESCRIPTION

**RICHMOND METROPOLITAN
TRANSPORTATION AUTHORITY
RMTA**

DRAWN BY: G.Garayburu
 CHECKED BY: L.Sun
 APPROVED: R.LaGatta

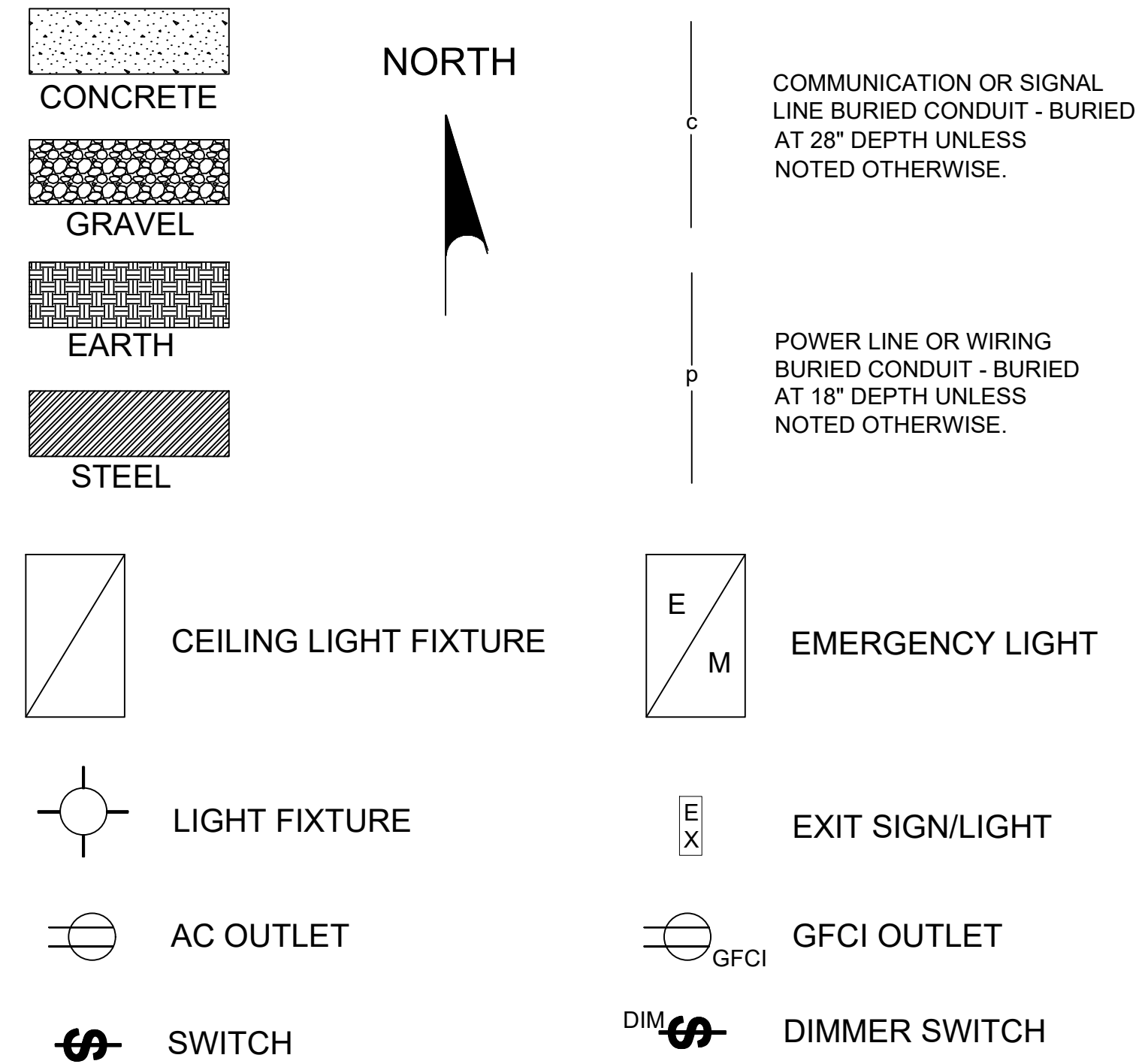
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TITLE:

BORING LOGS

DOC NO:	DATE: <u>10/16/2024</u>
REV NO:	SHEET: <u>S-8</u>

LEGEND



GENERAL NOTES

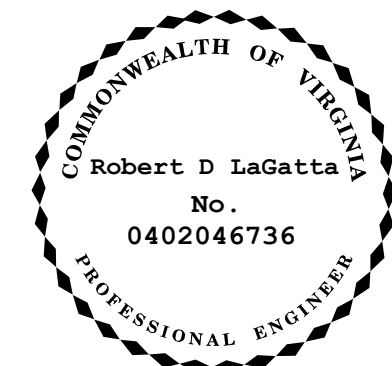
- THE FIELD LOCATION OF ANY ITEM TO BE INSTALLED AS PART OF THIS PROJECT SHALL BE APPROVED BY THE ENGINEER PRIOR TO INSTALLATION.
- VERIFY DIMENSIONS IN THE FIELD. DO NOT SCALE DRAWINGS, WRITTEN DIMENSIONS SHALL GOVERN. IN GENERAL, LARGE SCALE DRAWINGS GOVERN OVER SMALL SCALE DRAWINGS, WRITTEN NOTES GOVERN OVER GRAPHIC REPRESENTATION AND SPECIFICATIONS GOVERN OVER DRAWINGS. ANY DISCREPANCIES SHALL BE REPORTED TO THE ENGINEER FOR CLARIFICATION. THE STANDARD DRAWINGS AND THE DETAILS PROVIDED IN THIS PLAN SET SHALL APPLY TO ALL WORK REQUIRED IN THIS PROJECT, WHETHER A PARTICULAR DETAIL IS SPECIFICALLY REFERENCED TO A WORK ITEM OR NOT.
- ANY OF THE CONTRACTOR'S WORK ACTIVITIES WHICH IMPACT ANY UTILITY PROPERTY SHALL BE COORDINATED WITH THE UTILITY OWNER. THE CONTRACTOR SHALL FOLLOW ANY AND ALL WORK PROCEDURES THE UTILITY OWNER MAY REQUIRE.
- ALL WORK SHOWN ON THESE PLANS SHALL BE PERFORMED BY THE CONTRACTOR UNLESS SPECIFICALLY NOTED OTHERWISE. AET SHELTER ELECTRONICS, ON GANTRY ELECTRONICS, ROADSIDE CABINET ELECTRONICS, LOOPS, LOOP LEAD-IN, LEAD-IN INNERDUCT, ROADWAY SAW CUTS, SEALING CUTS, AND OTHER AET WORK TO BE DONE BY A-TO-B.
- ELECTRICAL SERVICE WIRES ARE SHOWN SCHEMATICALLY TO THE AET SHELTER AND ROADSIDE CABINETS. INSTALL SERVICE WIRES FROM THE METER & DISCONNECT DIRECTLY TO THE AUTOMATIC TRANSFER SWITCH AND LOAD CENTER AS SHOWN ON THE PLANS. THE 50KW GENERATOR SHALL BE CONNECTED TO A DISCONNECT AND THEN THE ATS AS SHOWN ON THE PLANS.
- ALL HVAC UNITS SHOWN ON THE PLANS WHETHER ON THE AET SHELTER OR ROADSIDE CABINETS SHALL HAVE AN EXTERIOR DISCONNECT SWITCH INSTALLED.
- OVERSIZED JUNCTION BOXES SHALL BE INSTALLED IN THE ROADSIDE CABINET FOUNDATIONS AS SHOWN ON THE PLANS. ALL HANDHOLES OR JUNCTION BOXES SHALL HAVE THE LIDS AT THE SAME LEVEL AS THE SURFACE WHERE INSTALLED.
- CONDUIT RUNS ARE SHOWN IN APPROXIMATE LOCATIONS. CONTRACTOR SHALL LOCATE CONDUIT IN A MANNER THAT AVOIDS CONFLICT WITH ALL EXISTING AND PROPOSED FEATURES AS FIELD CONDITIONS DICTATE.
- SEE STRUCTURAL PLANS FOR ADDITIONAL DETAILS ON AET GANTRY.
- SEE SIGNING PLANS FOR ADDITIONAL DETAILS ON SIGN AND LUMINAIRE LOCATIONS.
- BEFORE SUBMITTING A PROPOSAL, EACH CONTRACTOR SHALL INSPECT THE BUILD SITE AND FULLY UNDERSTAND THE EXISTING CONDITIONS THAT MAY AFFECT THEIR WORK UNDER THIS CONTRACT. REQUESTS FOR ADDITIONAL WORK DUE TO THE CONTRACTOR'S FAILURE TO THOROUGHLY EXAMINE THE SITE AND REPORT DEVIATIONS FROM THE CONTRACT DOCUMENTS BEFORE STARTING WORK WILL NOT BE CONSIDERED. THE RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY (RMTA) DOES NOT PROVIDE ANY GUARANTEES BEYOND WHAT IS STATED IN THE CONTRACT DOCUMENTS.

GENERAL NOTES (CONTINUED)

- THE CONTRACTOR SHALL CHECK, COORDINATE AND FIELD VERIFY ALL DIMENSIONS, ELEVATIONS AND CONSTRUCTION DETAILS BEFORE STARTING WORK, REPORT ANY DISCREPANCIES OR OMISSIONS TO THE ENGINEER TO COORDINATE CORRECTION PRIOR TO FABRICATION OR CONSTRUCTION.
- WORKMANSHIP TO COMPLY WITH INDUSTRY STANDARDS AND APPROVED METHODOLOGIES SET DOWN IN APPLICABLE TRADE HANDBOOKS AND MANUALS, SPECIFICATIONS AND DIRECTIONS OF THE ENGINEER.
- ALL MATERIALS TO BE INSTALLED IN STRICT ACCORANCE WITH MANUFACTURER'S AND FABRICATORS SPECIFICATIONS, RECOMMENDATIONS AND PRINTED WARNINGS FOR THE HANDLING AND INSTALLATION OF ALL PRE-MANUFACTURED PRODUCTS, THE CONTRACT DOCUMENTS AND DIRECTIONS OF THE ENGINEER.
- PROTECT NEWLY INSTALLED MATERIALS FROM DAMAGE DURING THE CONSTRUCTION OPERATION.
- CONTRACTOR SHALL POLICE AND KEEP JOB SITE NEAT AND ORDERLY AT ALL TIME. DEBRIS SHALL BE REMOVED FROM THE SITE DAILY.
- MINOR DETAILS NOT USUALLY SHOWN OR SPECIFIED BUT NECESSARY FOR THE PROPER INSTALLATION AND OPERATION SHALL BE INCLUDED IN THE WORK AND IN THE CONTRACTOR'S ESTIMATE THE SAME AS IF HEREIN SPECIFIED OR SHOWN.
- THE CONTRACTOR SHALL PROVIDE SUFFICIENTLY STRONG LADDERS, AND TEMPORARY HOISTS WITH GUARD RAILS AS REQUIRED TO ACCOMPLISH WORK. CONSTRUCTION SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
- THE LOCATION OF UTILITIES SHOWN ON THE PLANS ARE FOR INFORMATION AND GUIDANCE ONLY AND NO GUARANTEE IS MADE OF THE ACCURACY OF SAID LOCATION(S).
- DAMAGE TO EXISTING FACILITIES AND EQUIPMENT SHALL BE REPAIRED OR REPLACED BY THE CONTRACTOR AT NO ADDITIONAL EXPENSE TO THE RMTA.
- SUBMIT FULL SIZE AS-BUILT MARKUP DRAWINGS WITHIN 30 DAYS OF COMPLETION OF WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE TO PROPERLY PLACARD AND STENCIL TANK CAPACITY IN GALLONS ON A VISIBLE SECTION OF THE GENERATOR BASE TANK. THE CONTRACTOR SHALL ALSO PLACE A PLACARD IN VISIBLE SECTION OF FUEL TANK TO IDENTIFY THE MATERIAL IN THE TANK IN ACCORDANCE WITH NFPA 704.

ABBREVIATIONS

- | | |
|---|--|
| A - AMPERE | LED - LIGHT EMITTING DIODE |
| AC - ALTERNATING CURRENT | LI - LEAD IN CABLE |
| AFF - ABOVE FINISHED FLOOR | LPS - LIGHTNING PROTECTION SYSTEM |
| ATS - AUTOMATIC TRANSFER SWITCH | MLO - MAIN LUGS ONLY |
| AET - ALL ELECTRONIC TOLLING | NEC - NATIONAL ELECTRIC CODE |
| AVI - AUTOMATIC VEHICLE IDENTIFICATION | NEMA - NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION |
| CCTV - CLOSED CIRCUIT TELEVISION | NFPA - NATIONAL FIRE PROTECTION ASSOCIATION |
| CB - CIRCUIT BREAKER | NTS - NOT TO SCALE |
| C/L - CENTER LINE | OH - OVERHEAD |
| DC - DIRECT CURRENT | PNL - PANEL |
| DWG - DRAWING (AUTOCAD) | PH - PHASE |
| ELEC - ELECTRIC | R/W - RIGHT OF WAY |
| EMT - ELECTRICAL METALLIC TUBING | RGS - RIGID GALVANIZED STEEL |
| EOP - EDGE OF PAVEMENT | S/N - SOLID NEUTRAL |
| FO - FIBER OPTIC | SOW - SCOPE OF WORK |
| GEN - GENERATOR | SPD - SURGE PROTECTION DEVICE |
| GFCI - GROUND FAULT CIRCUIT INTERRUPTER | TMC - TRAFFIC MANAGEMENT CENTER |
| GND - GROUND | TYP - TYPCIAL |
| IP - INTERNET PROTOCOL | UG - UNDERGROUND |
| ITS - INTELLIGENT TRANSPORTATION SYSTEM | UL - UNDERWRITERS LABORATORIES |
| KW - KILOWATT | UPS - UNINTERRUPTABLE POWER SUPPLY |
| | KW - KILOWATT |

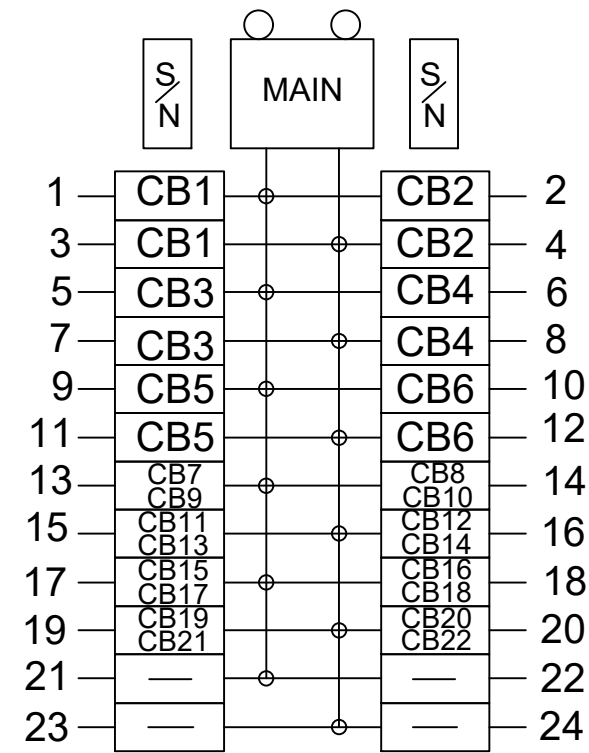


Digitally signed by Robert D LaGatta
 Date: 2025.01.17 12:49:46-05'00'

ELECTRICAL GENERAL NOTES

- ALL WORK SHALL BE PERFORMED BY A QUALIFIED ELECTRICAL CONTACTOR LICENSED IN THE COMMONWEALTH OF VIRGINIA THAT HAS PREVIOUSLY PERFORMED WORK OF THIS TYPE AND SIZE.
- PROVIDE ELECTRICAL SERVICE AND CONNECTION FOR EVERY FIXTURE, APPLIANCE, OR EQUIPMENT REQUIRING SAME, WHICH IS SHOWN ON ANY CONTRACT DRAWINGS OR SPECIFIED IN THE CONSTRUCTION SPECIFICATIONS.
- COORDINATE ELECTRICAL CHARACTERISTICS AND CIRCUIT PROTECTION REQUIREMENTS OF EQUIPMENT SUPPLIED, REGARDLESS OF TRADE. PRIOR TO ROUGH-IN, VERIFY HORSE-POWER AND NAMEPLATE RATINGS OF EQUIPMENT AND COORDINATE CIRCUIT CHARACTERISTICS TO PROVIDE CODE CONFORMANCE.
- WIRE SIZES ARE FOR 75 DEG "C" THHN/THWN COPPER EXCEPT UNDERGROUND CONDUCTORS THAT SHALL BE XHHW/XHHW-2 COPPER. MINIMUM WIRE SIZE SHALL BE #12AWG. ALUMINUM SHALL NOT BE USED. CONDUCTORS SHALL BE SOLID UP THROUGH #10AWG. PANELBOARD FEEDERS THHN/THWN WITHIN CONDUITS. EQUIPMENT CONNECTIONS SHALL BE MAXIMUM OF 6'-0" OF FLEXIBLE METALLIC RACEWAY INDOORS OR FLEXIBLE LIQUIDTIGHT RACEWAY OUTDOORS OR IN DAMP LOCATIONS.
- ALL EQUIPMENT AND/OR MATERIALS SHALL (A) BE NEW AND FOR ANY GIVEN SYSTEM SHALL BE A PRODUCT OF THE SAME MANUFACTURER. ITEMS SUCH AS LAMPS, CONDUIT FITTINGS, WIRE, WIRING DEVICES, FUSES, CIRCUIT BREAKERS, ETC. SHALL BE THE SAME THROUGHOUT THE CONTRACT (B) HAVE DATA SHEETS AND PRODUCT SPECIFICATIONS THAT SHALL BE FOR THE EQUIPMENT OR MATERIAL, WHICH SHALL BE SUBMITTED FOR ACCEPTANCE PRIOR TO ORDERING.
- ALL EXPOSED EXTERIOR CONDUIT SHALL BE RIGID GALVANIZED STEEL UNLESS NOTED OTHERWISE. EMT CONDUIT MAY BE USED FOR INTERIOR WORK IN THE AET SHELTER ONLY. UNDERGROUND CONDUIT SHALL BE SCHEDULE 80 PVC UNLESS NOTED OTHERWISE.
- PANELBOARD DIRECTORIES SHALL BE ACCURATE AND TYPED.
- THE CONTRATOR SHALL USE EXTREME CAUTION WHEN EXCAVATING NEAR EXISTING (TO REMAIN UNDERGROUND UTILITIES (CABLE, WATER PIPES, DRAINAGE PIPES, ETC) SO AS NOT TO DAMAGE THEM. HAND EXCAVATION SHALL BE CONSIDERED IN SUCH CASES. IF ANY EXISTING UTILITY IS DAMAGED AS A RESULT OF WORK DONE BY THE CONTRACTOR, THE EXISTING UTILITY SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
- NOTIFY VA811 OR VIRGINIA MISS UTILITY TO MARK UNDERGROUND UTILITIES PRIOR TO DIGGING OR TRENCHING AT THE AET GANTRY SITE AND GRAVEL PARKING AREA.

SEE PANEL LABELING CHART BELOW



COMM CONDUIT STUB-UPS
 1-3", 1-4", 2-2"
 3" & 4" SPARES

RACO 259 BOX - RUN FLEXIBLE
 METALLIC CONDUIT INSIDE
 CABINETS TO THE 70 AMP
 CIRCUIT TERMINATION POINT
 FOR UPS UNITS.

EXIT AND EMERGENCY LIGHTS TO BE WIRED
 BEFORE THE WALL SWITCH TO CEILING LIGHTS.

ELECTRIC CONDUIT STUB-UPS, 4-3"

LIGHTS - CEILING MOUNT PLT SOLUTIONS PLT80033 LED
 (6 EACH). EXTERIOR LED SPOTLIGHTS, PLT-13142 80W
 COLOR SELECT (3 EACH). EXIT SIGN PLT-50289.
 EMERGENCY LIGHTING, 90 MINUTE @ 20WATTS WITH
 218851 LED BACKUP DRIVER OR APPROVED EQUAL
 (FIXTURES WITH "EM" TO HAVE BACKUP DRIVERS INSTALLED).

LIGHT SWITCH FOR CEILING LIGHTING
 SHALL BE LEVITON ILLUMATECH
 DIMMER SWITCH IP710-040-DOZ OR
 APPROVED EQUAL.

CABLE RUNWAYS ARE CHATSWORTH
 PRODUCTS 11252-712 (BLACK)
 OR APPROVED EQUAL

MAIN GROUND BUSS BAR CHATSWORTH
 PRODUCTS 40158-020 4" x 20" x 1/4"
 OR APPROVED EQUAL

LOAD CENTER SCHNEIDER ELECTRIC
 QO124M200P 24/36 CKT OR APPROVED EQUAL

RACO 232 - 4 SQUARE, DEEP BOX WITH
 RACO 811C COVER FOR L5-20R OUTLET &
 LEVITON 2310 - L5-20R OUTLET (3 EA)

RACK 232 - 4 SQUARE, DEEP BOX WITH
 RACO 902C DUAL GANG COVER (4 EA)

RACO 232 - 4 SQUARE, DEEP BOX WITH
 RACO RS BLANK COVER (1 EA)

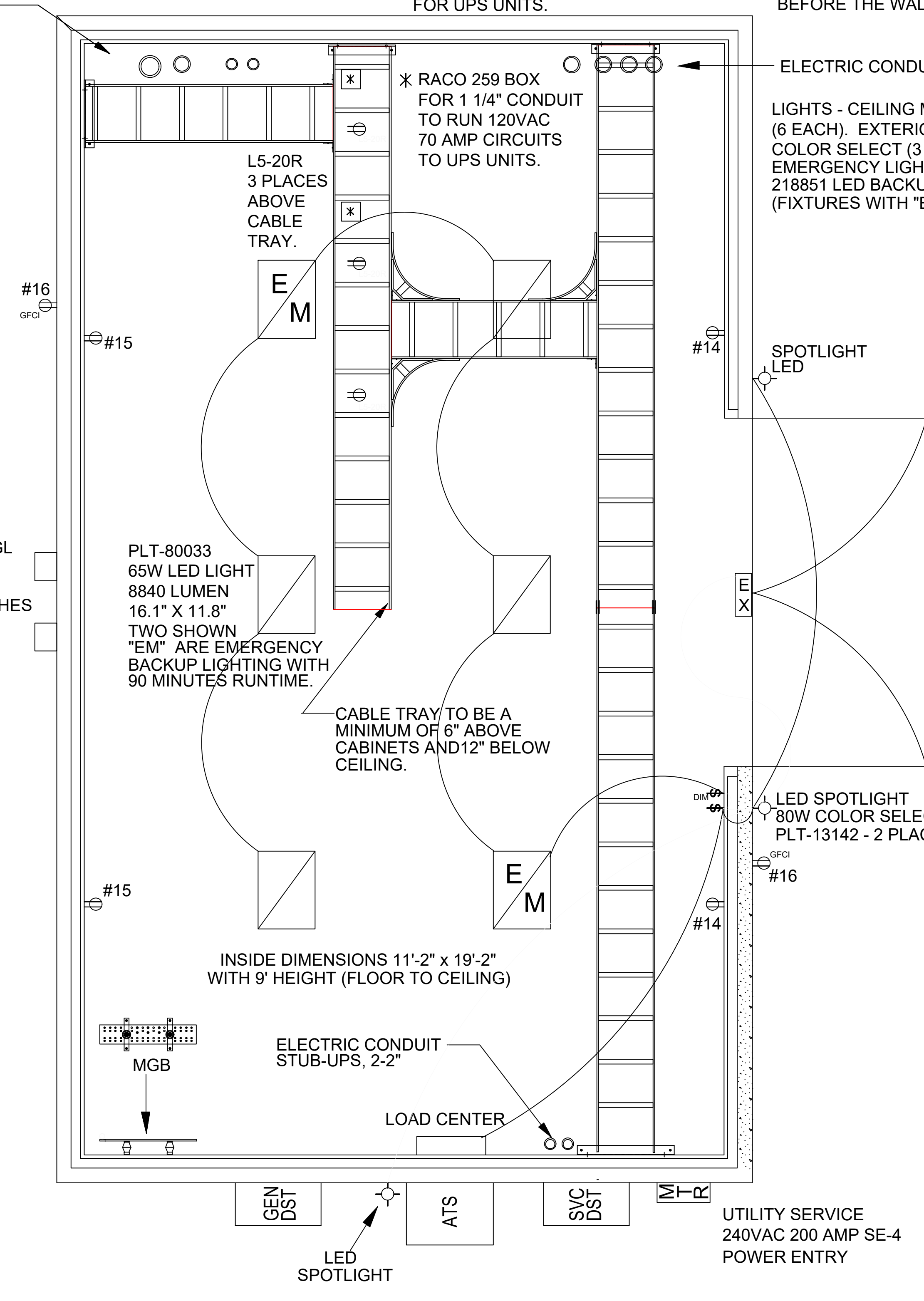
RACO 5320 SINGLE GANG WEATHERPROOF BOX WITH
 RACO 5180 DUAL GANG COVER AND
 LEVITON GFCI - (2 EACH)

RACO 2913 - 3/4" EMT COMPRESSION FITTINGS
 RACK 1826 - 1 1/2" EMT COMPRESSION FITTINGS
 RACO 857 - DUAL SWITCH PLATE (1 EA) AND
 RACO 232 - 4 SQUARE, DEEP BOX (1 EA)

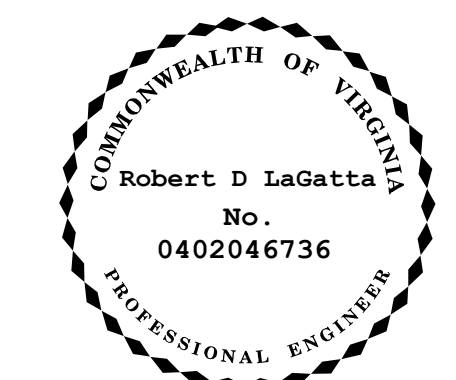
RACO 233 - 4 SQUARE, DEEP BOX WITH
 8 EA 1"KO (5 EACH)

ALL ABOVE RACO AND LEVITON OR APPROVED EQUAL.

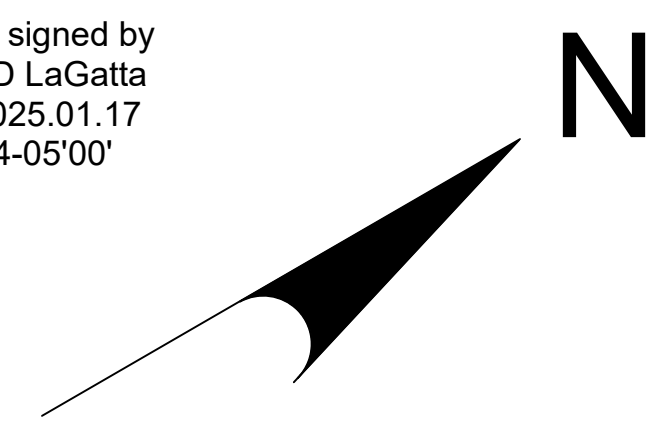
2 EACH - VH221NSDGL
 30 AMP DUAL POLE
 FUSED 240 VAC
 DISCONNECT SWITCHES
 FOR HVAC UNITS.

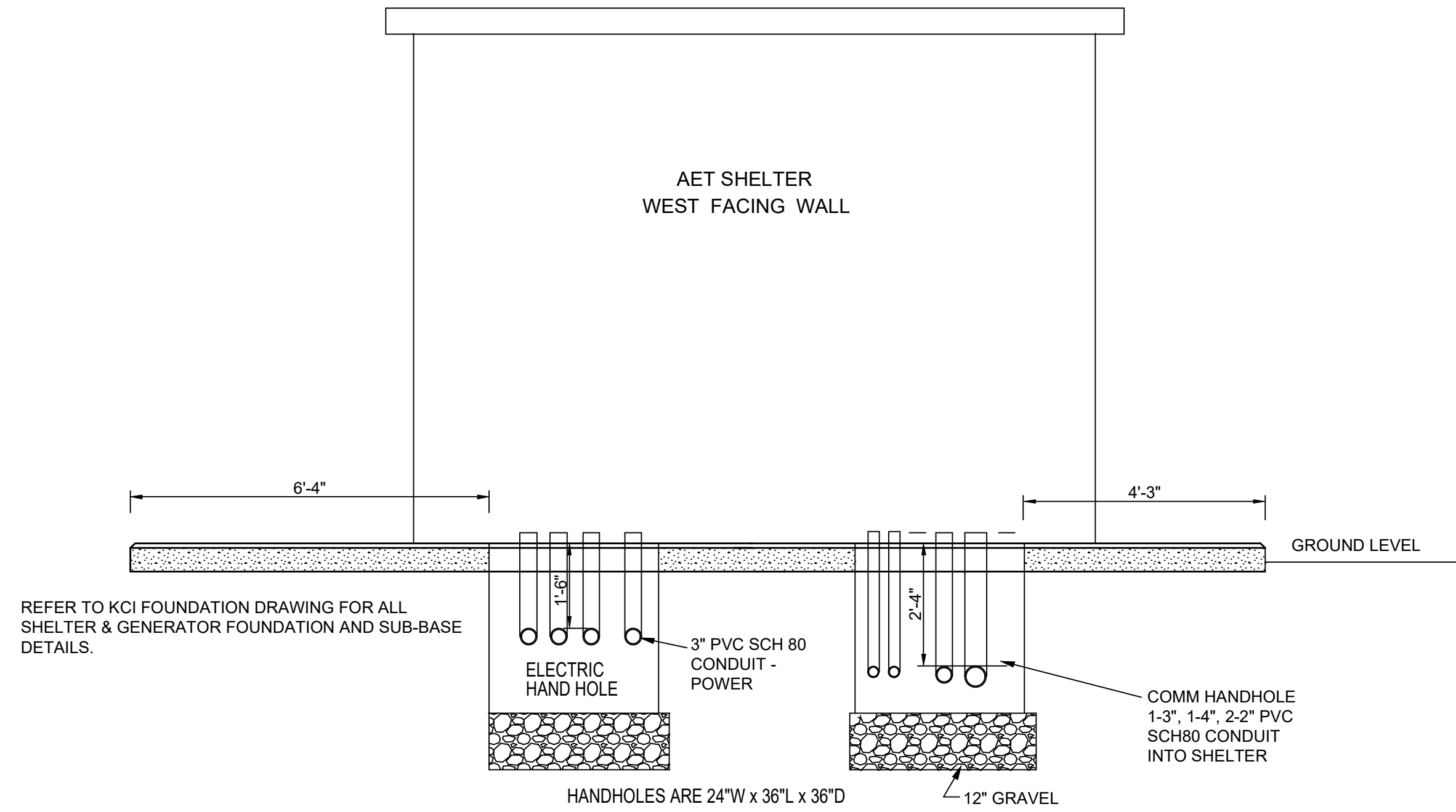


Square-D QO124M200P POWHITE AET SHELTER PANEL															
POLES: 24/36		SECTION 1 OF 1		AIC: 22kA		VOLTAGE: 240/120 VOLTS		BUS: 200		MOUNTING: SURFACE-FLUSH		LOCATION: AET GANTRY SHELTER			
MAIN C.B. MLO		WIRE: 3 WIRE (A,B,N,EG)		PHASE: 1		FED FROM: 200A DISCONNECT & ATS									
CKT #	BREAKER TRIP	POLES	DESCRIPTION	WIRE NO.	GROUND NO.	CON SIZE	PHASE	KVA	WIRE NO.	GROUND NO.	CON SIZE	DESCRIPTION	BREAKER TRIP	POLES	CKT #
1	30	2	SHELTER HVAC #1	#10	#10				#10	#10		SHELTER HVAC #2	30	2	2
3	30	2	RS CAB NB HVAC	#6	#10				#2	#8		RS CAB SB HVAC	30	2	4
5	20	2	NB GANTRY CAP LIGHT	#4	#8				#4	#8		GENSET BLK HEATER	30	2	6
7	70	1	UPS #1 CAB #1 NB	#4	#12				#4	#8		UPS #2 CAB #2 SB	70	1	8
9	20	1	Cab #1 L5-20R	#12	#12				#12	#12		CAB #2 L5-20R	20	1	10
11	15	1	LIGHTING CKT	#12	#12				#12	#12		CAB #3 L5-20R	20	1	12
13	15	1	LIGHTING CKT #2	#12	#12				#12	#12		RECPTACLES CKT #1	15	1	14
15	15	1	RECETACLES CKT #2	#12	#12				#12	#12		SHELTER EXT GFCI	15	1	16
17	20	1	GENSET BATTERY CHGR	#12	#12				#10	#10		GENSET JKT HEATER	30	1	18
19	15	1	SPARE									SPARE	15	1	20
21	15	1	SPARE									SPARE	15	1	22
23			BLANK									BLANK			24

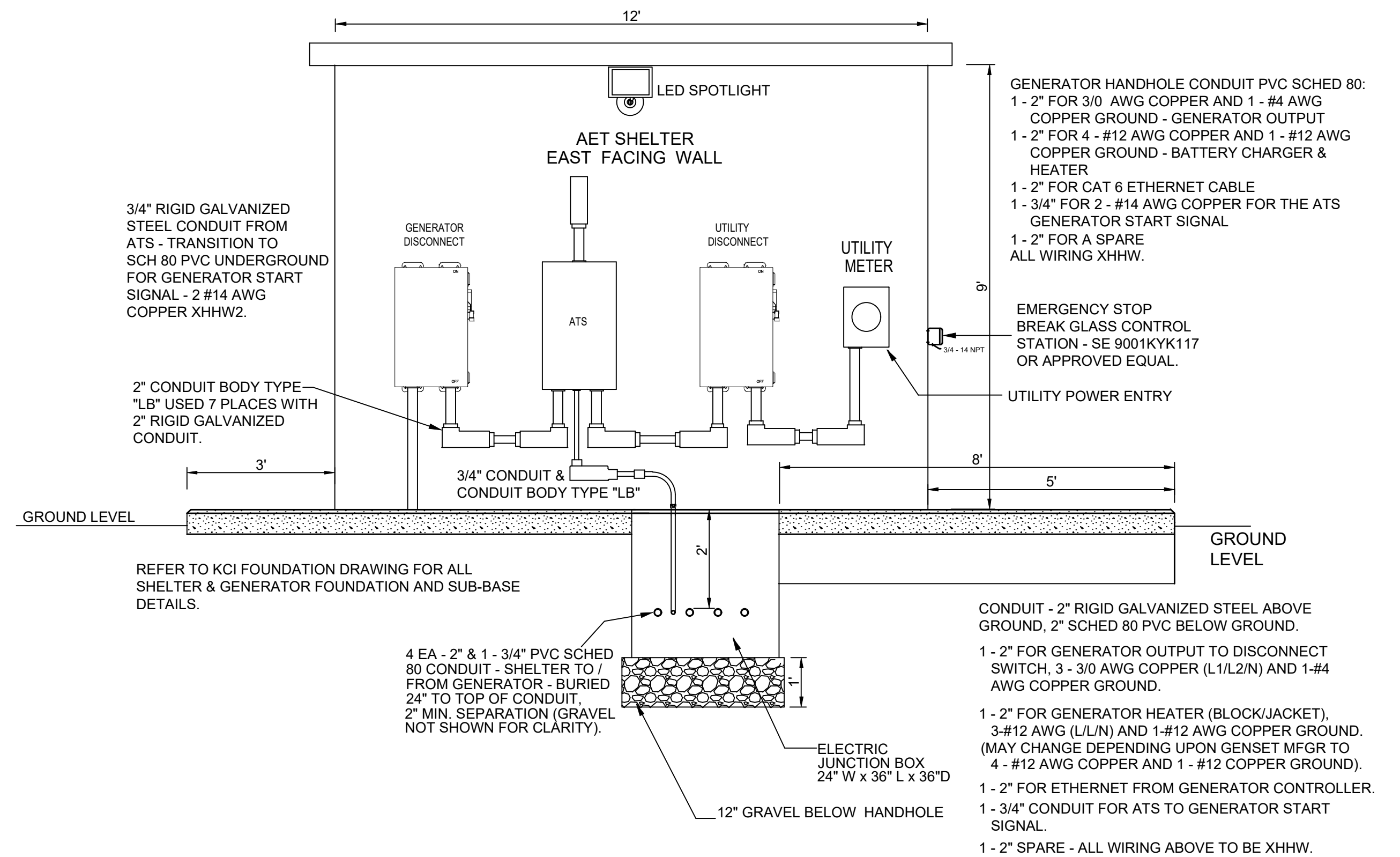


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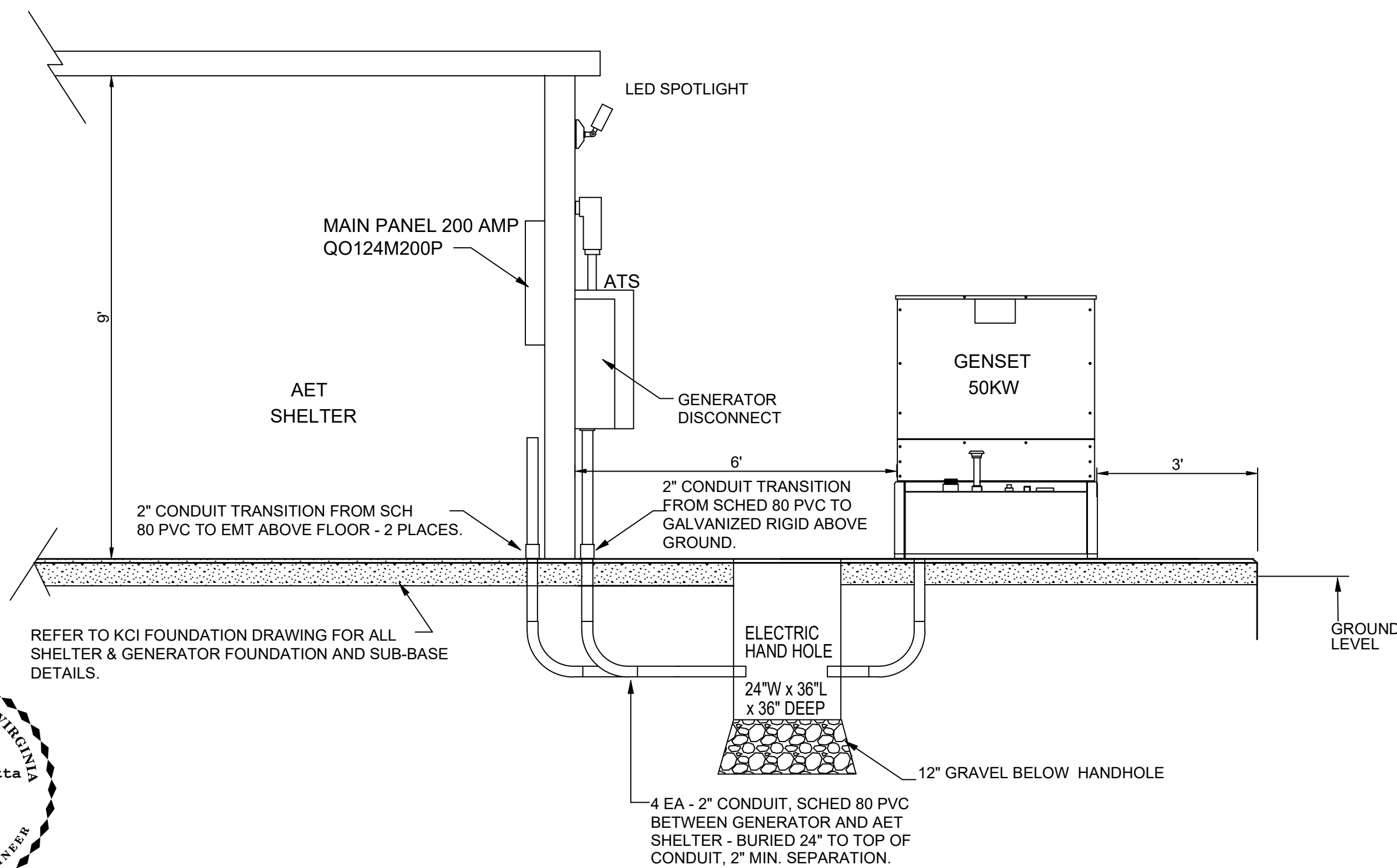




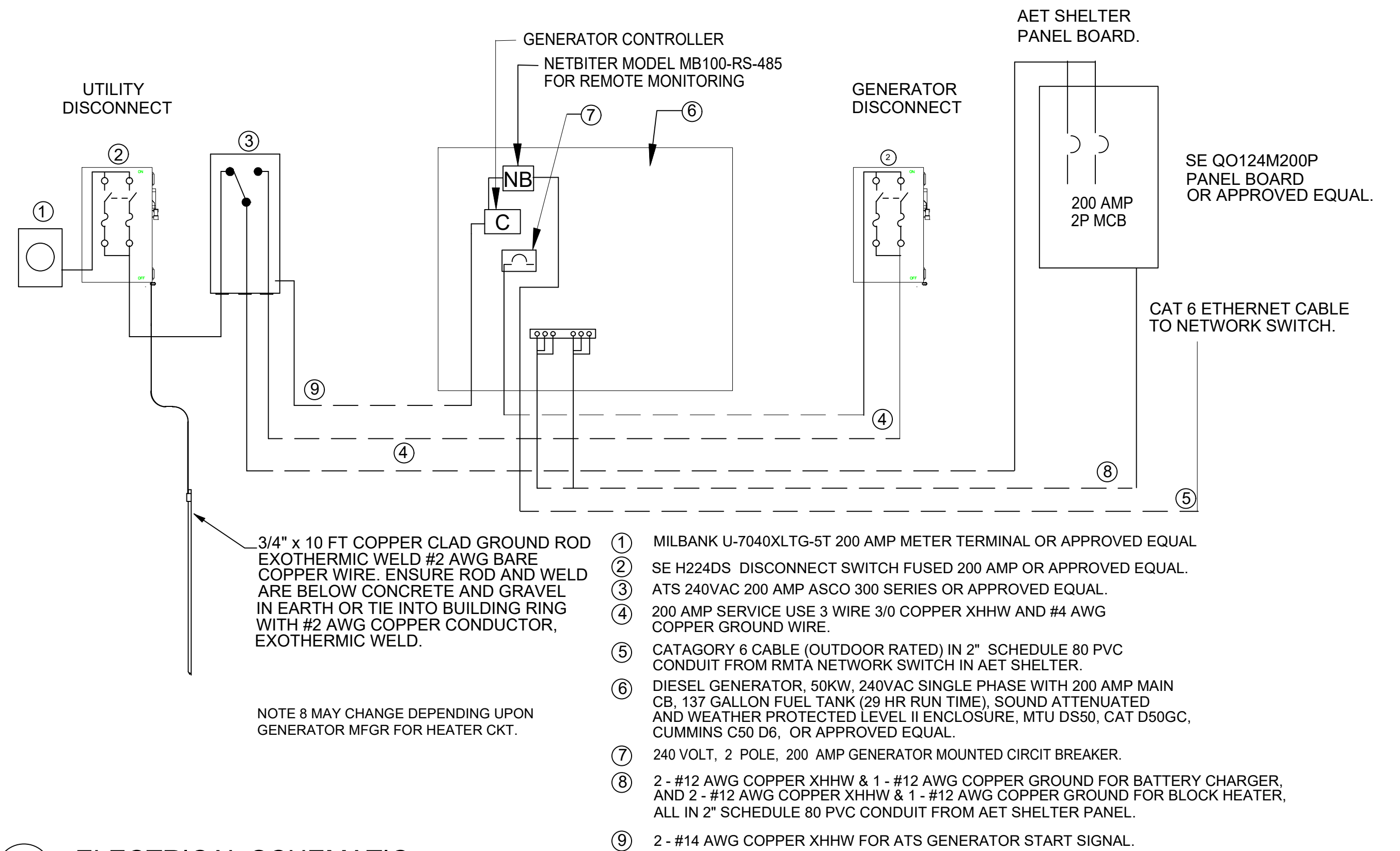
1 WEST END VIEW SHELTER & PAD
N.T.S



2 EAST END VIEW SHELTER & PAD
N.T.S

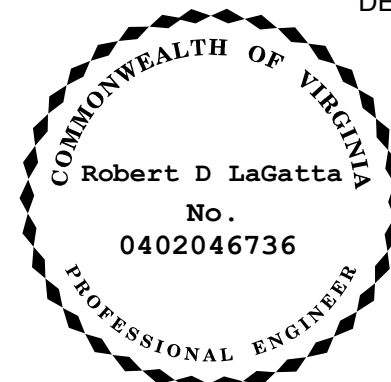


3 PARTIAL SIDE VIEW SHELTER & PAD
N.T.S



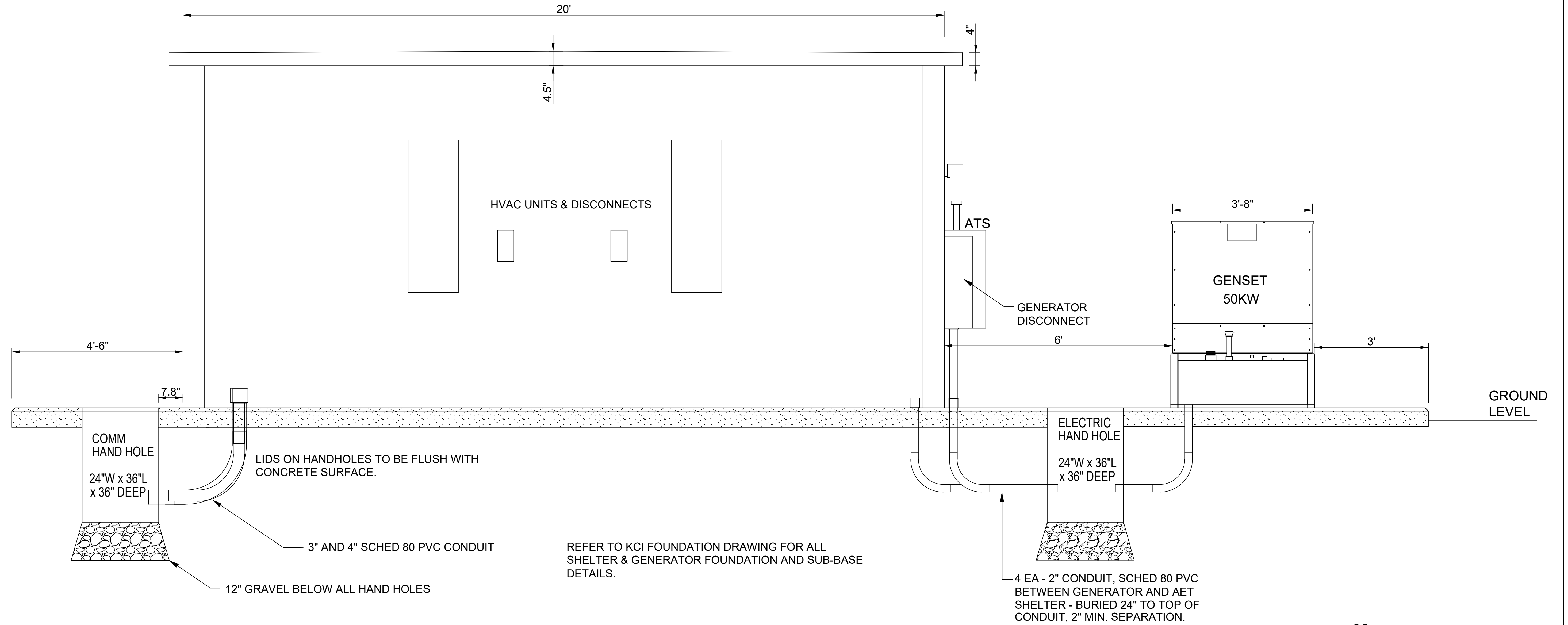
4 ELECTRICAL SCHEMATIC
N.T.S

- 1 MILBANK U-7040XLTG-5T 200 AMP METER TERMINAL OR APPROVED EQUAL
- 2 SE H224DS DISCONNECT SWITCH FUSED 200 AMP OR APPROVED EQUAL.
- 3 ATS 240VAC 200 AMP ASCO 300 SERIES OR APPROVED EQUAL.
- 4 200 AMP SERVICE USE 3 WIRE 3/0 COPPER XHHW AND #4 AWG COPPER GROUND WIRE.
- 5 CATEGORY 6 CABLE (OUTDOOR RATED) IN 2" SCHEDULE 80 PVC CONDUIT FROM RMTA NETWORK SWITCH IN AET SHELTER.
- 6 DIESEL GENERATOR, 50KW, 240VAC SINGLE PHASE WITH 200 AMP MAIN CB, 137 GALLON FUEL TANK (29 HR RUN TIME), SOUND ATTENUATED AND WEATHER PROTECTED LEVEL II ENCLOSURE, MTU DS50, CAT D50GC, CUMMINS C50 D6, OR APPROVED EQUAL.
- 7 240 VOLT, 2 POLE, 200 AMP GENERATOR MOUNTED CIRCUIT BREAKER.
- 8 2 - #12 AWG COPPER XHHW & 1 - #12 AWG COPPER GROUND FOR BATTERY CHARGER, AND 2 - #12 AWG COPPER XHHW & 1 - #12 AWG COPPER GROUND FOR BLOCK HEATER, ALL IN 2" SCHEDULE 80 PVC CONDUIT FROM AET SHELTER PANEL.
- 9 2 - #14 AWG COPPER XHHW FOR ATS GENERATOR START SIGNAL.



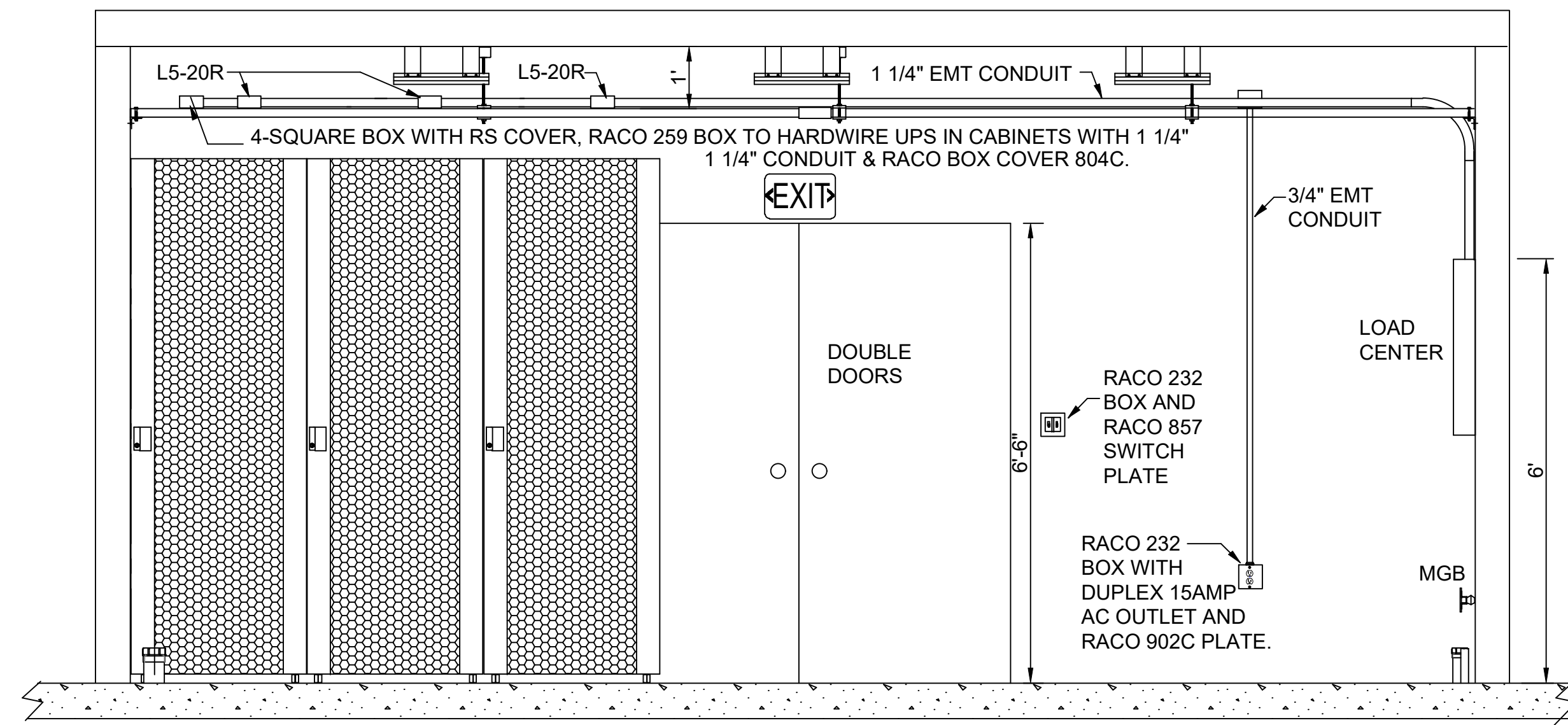
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DATE & TIME



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 Date: 2025.01.17
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ALL EMT CONDUIT TO USE COMPRESSION FITTINGS - FITTINGS MAY NOT BE SHOWN - 3/4" RACO 2913, 1 1/4" RACO 2925.
 L5-20R SHOWN ARE INSTALLED IN RACO 232 4-SQUARE DEEP BOX WITH 811C COVER AND LEVITON L5-20R RECEPTACLE.



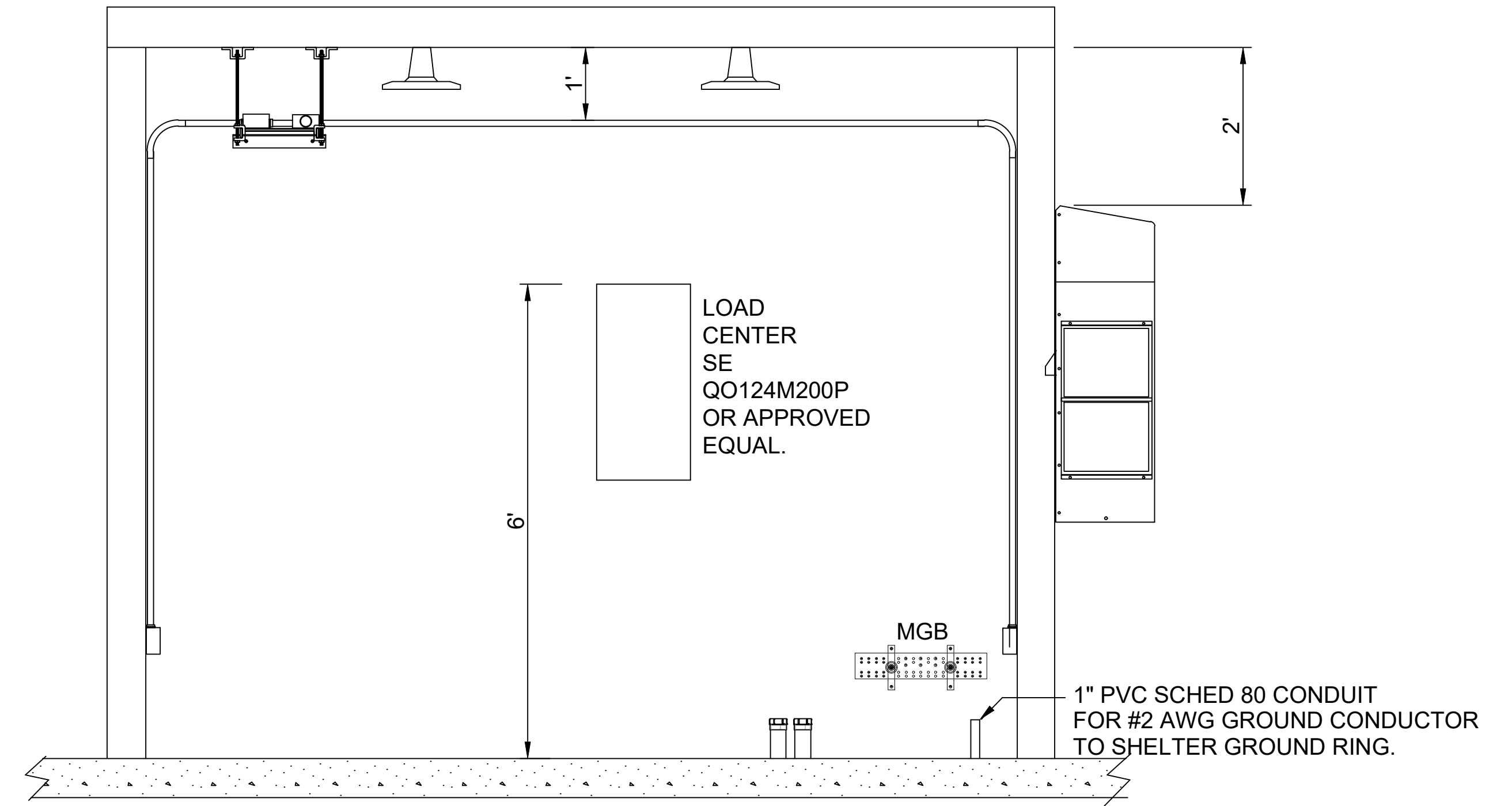
L5-20R FOR EACH CABINET & TRIPPLITE PDUV20 OUTLET STRIP.

INSTALLER SHALL VERIFY WITH OWNER TO ENSURE THAT THE INTERIOR SIDES OF CABINETS ARE TO REMAIN OR BE REMOVED FOR CABLING OR AIR FLOW.

REFER TO KCI FOUNDATION DRAWING FOR ALL SHELTER & GENERATOR FOUNDATION AND SUB-BASE DETAILS.

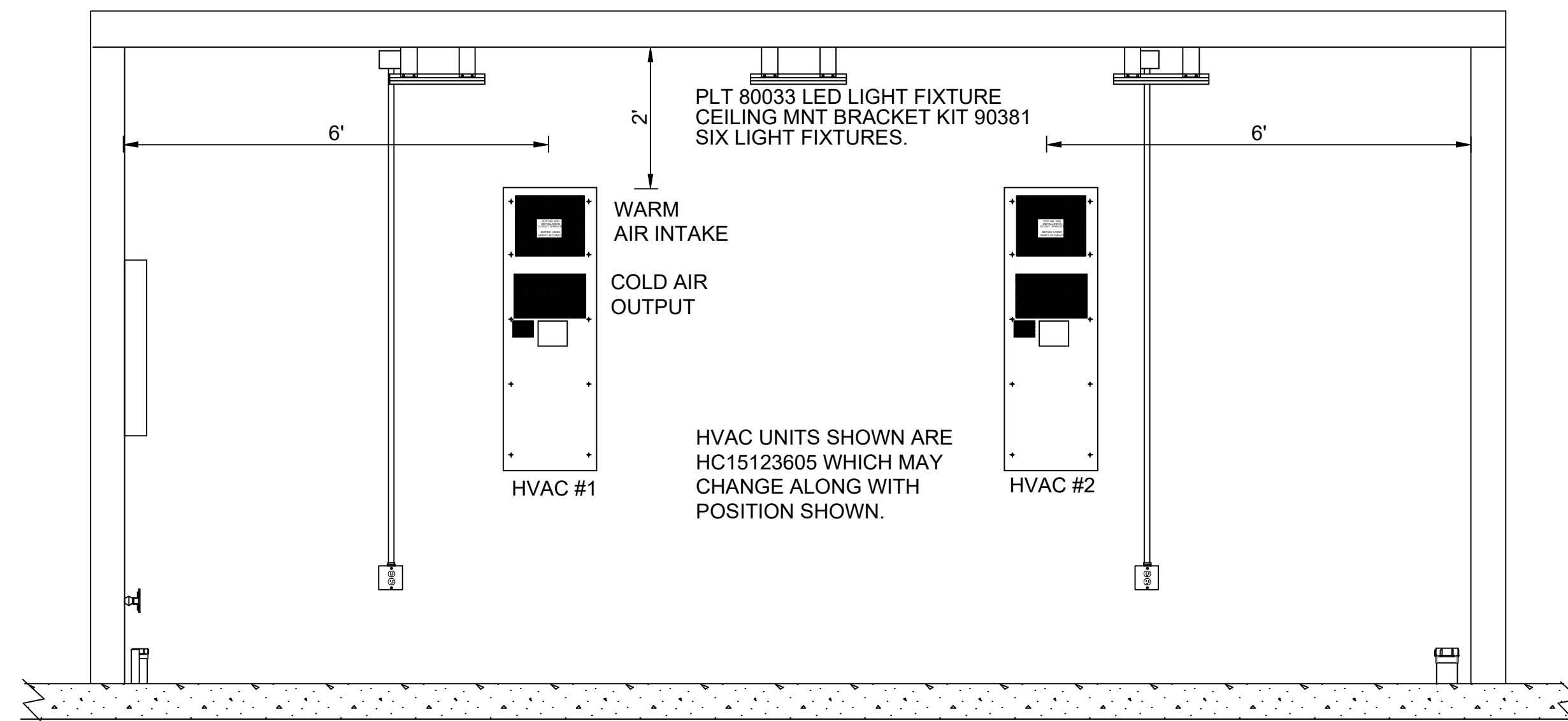
LOOKING TO NORTH WALL OF SHELTER

REFER TO DRAWING "AET SHELTER_LAYOUT_INTERNAL_EXTERNAL_WITH_COMPONENTS_20250103.DWG" FOR TOP DOWN VIEW OF FLOOR PLAN AND INTERIOR LAYOUT OF SHELTER.



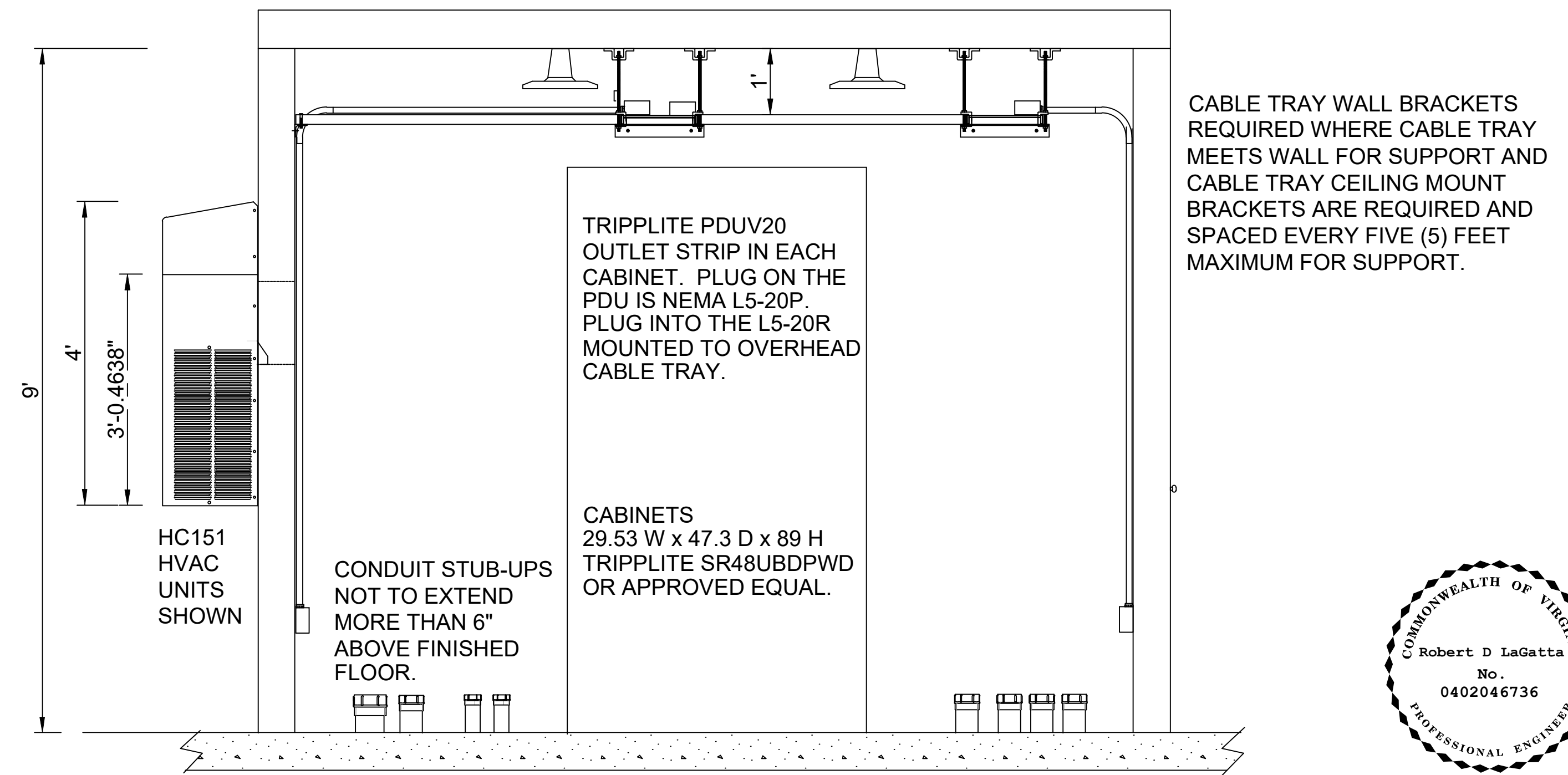
REFER TO KCI FOUNDATION DRAWING FOR ALL SHELTER & GENERATOR FOUNDATION AND SUB-BASE DETAILS.

LOOKING TO EAST WALL OF SHELTER



REFER TO KCI FOUNDATION DRAWING FOR ALL SHELTER & GENERATOR FOUNDATION AND SUB-BASE DETAILS.

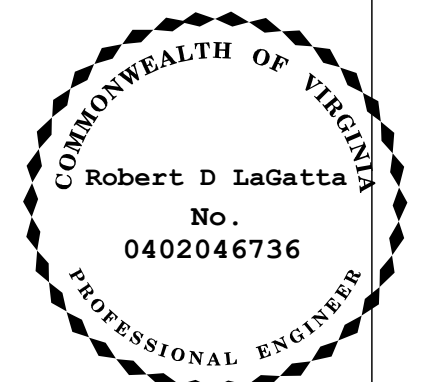
LOOKING TO SOUTH WALL OF SHELTER



REFER TO KCI FOUNDATION DRAWING FOR ALL SHELTER & GENERATOR FOUNDATION AND SUB-BASE DETAILS.

LOOKING TO WEST WALL OF SHELTER

CABLE TRAY WALL BRACKETS REQUIRED WHERE CABLE TRAY MEETS WALL FOR SUPPORT AND CABLE TRAY CEILING MOUNT BRACKETS ARE REQUIRED AND SPACED EVERY FIVE (5) FEET MAXIMUM FOR SUPPORT.

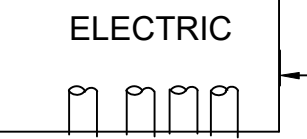
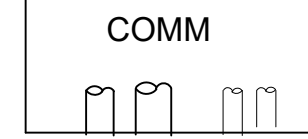


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CONDUIT ARRANGEMENT IN HANDHOLES UP TO INSTALLER, SHOWN FOR ILLUSTRATION ONLY.

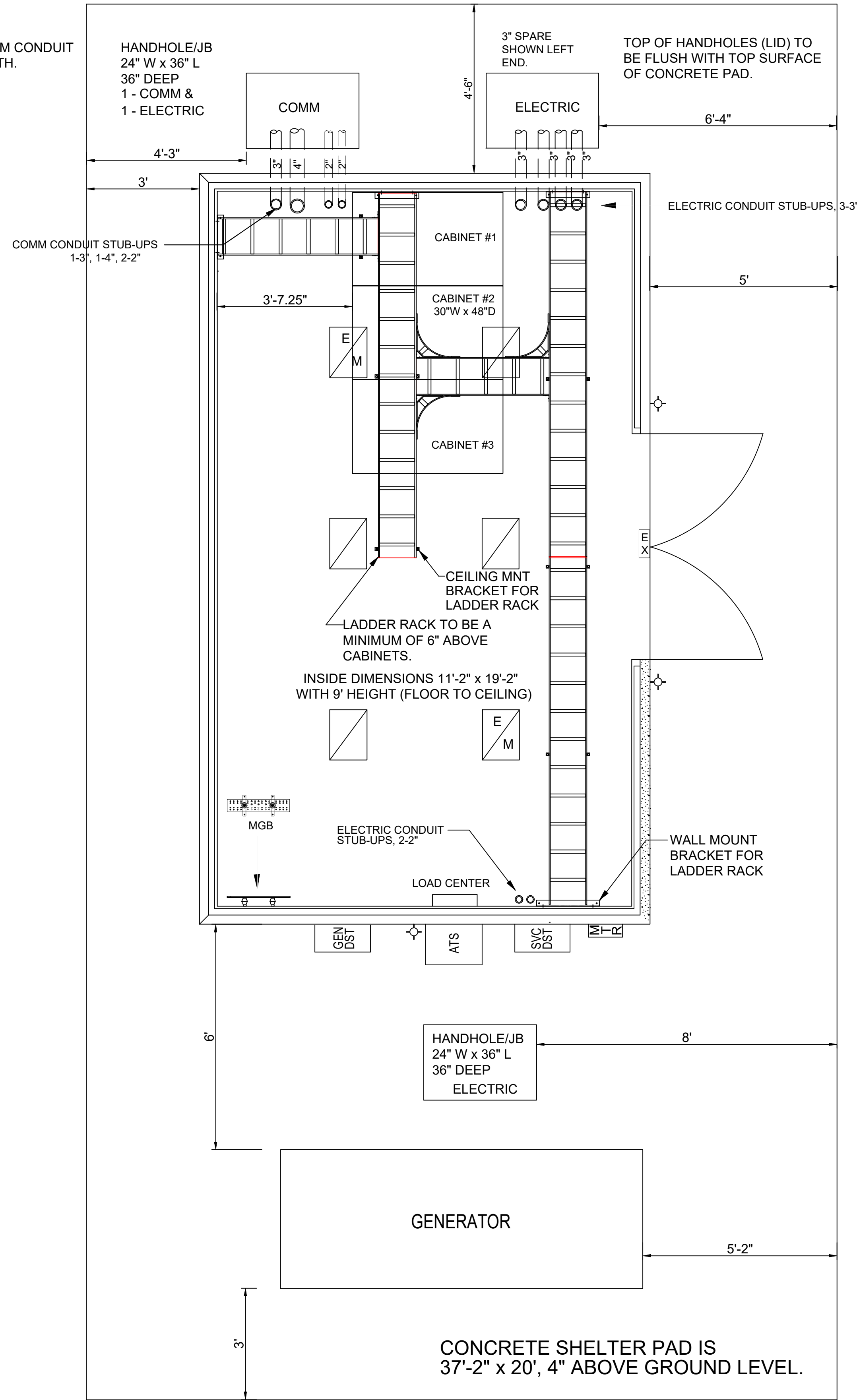
HANDHOLE (JB) - ALL COMM CONDUIT TO BE BURIED AT 28" DEPTH.

HANDHOLE/JB
 24" W x 36" L
 36" DEEP
 1 - COMM &
 1 - ELECTRIC



TOP OF HANDHOLES (LID) TO BE FLUSH WITH TOP SURFACE OF CONCRETE PAD.

HANDHOLE (JB) - ALL ELECTRIC CONDUIT TO BE BURIED AT 18" DEPTH INCLUDES SPARE.



CABINETS ARE TRIPPLITE SR48UBDPWD OR APPROVED EQUAL WITH SCRCABLERINGVRT CABLE MANAGEMENT

CABLE RUNWAYS ARE CHATWORTH PRODUCTS 11252-712 (BLACK) OR APPROVED EQUAL

MAIN GROUND BUSS BAR CHATWORTH PRODUCTS 40158-020 4"x20"x1/4" OR APPROVED EQUAL

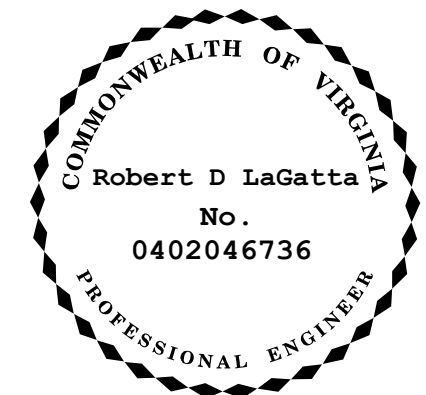
LOAD CENTER SCHNEIDER ELECTRIC QO124M200P 24/36 CKT OR APPROVED EQUAL

AET SHELTER EASI-SET 12' x 20' WITH R13 INSULATED WALLS OR APPROVED EQUAL

WALLS ARE 5"+ THICK AND COMPOSED OF 3" CONCRETE, 2" INSULATION, WITH PLYWOOD COVERING.

WALL MOUNT LADDER RACK BRACKETS - 4 EACH
 CEILING MOUNT LADDER RACK BRACKETS - 6 SETS

HAND HOLES ARE QUAZITE POLYMER CONCRETE, PG2436BA36 OR APPROVED EQUAL WITH SINGLE PIECE LID.



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DATE & TIME

STAMP



RICHMOND METROPOLITAN TRANSPORTATION AUTHORITY RMTA

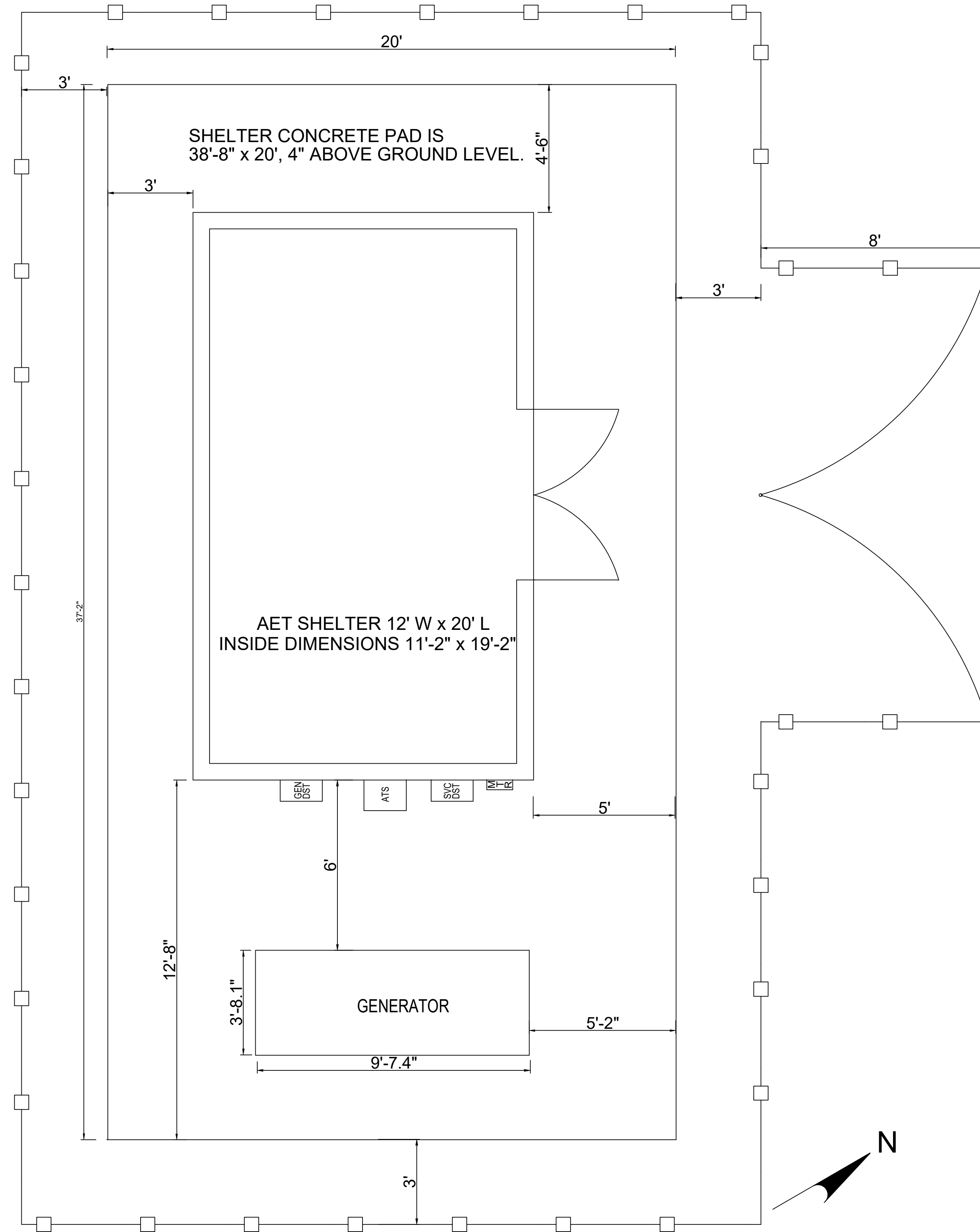
SCALE N.T.S.

TITLE AET SHELTER INTERNAL / EXTERNAL LAYOUT WITH COMPONENTS & GENERATOR ON PAD

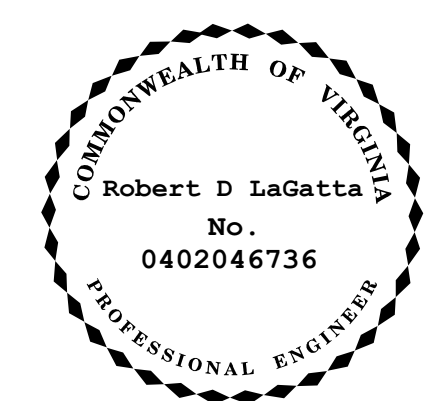
PROJECT POWHITE PARKWAY AET GANTRY

SHEET NO. 1 OF 1

FENCE IS 3 FEET FROM EDGE OF SHELTER PAD ALL SIDES.
 GATE IS DOUBLE - 8 FEET PER GATE.

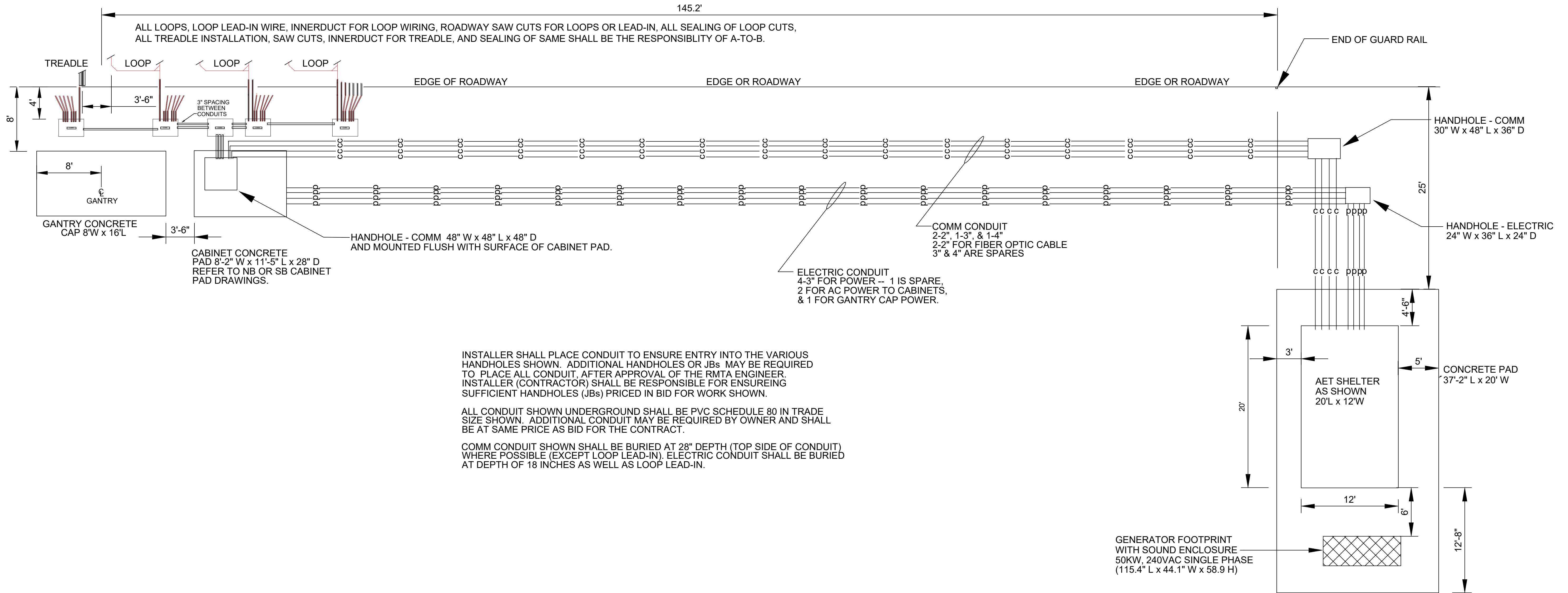


HAND HOLES, SHELTER INTERNAL AND OTHER DETAILS NOT SHOWN THIS DRAWING.



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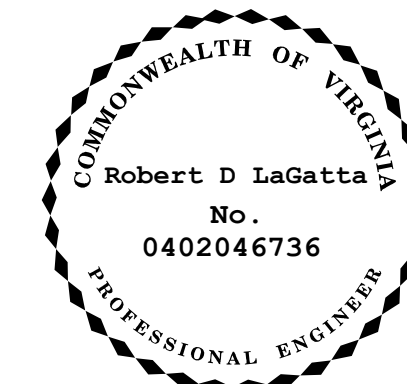
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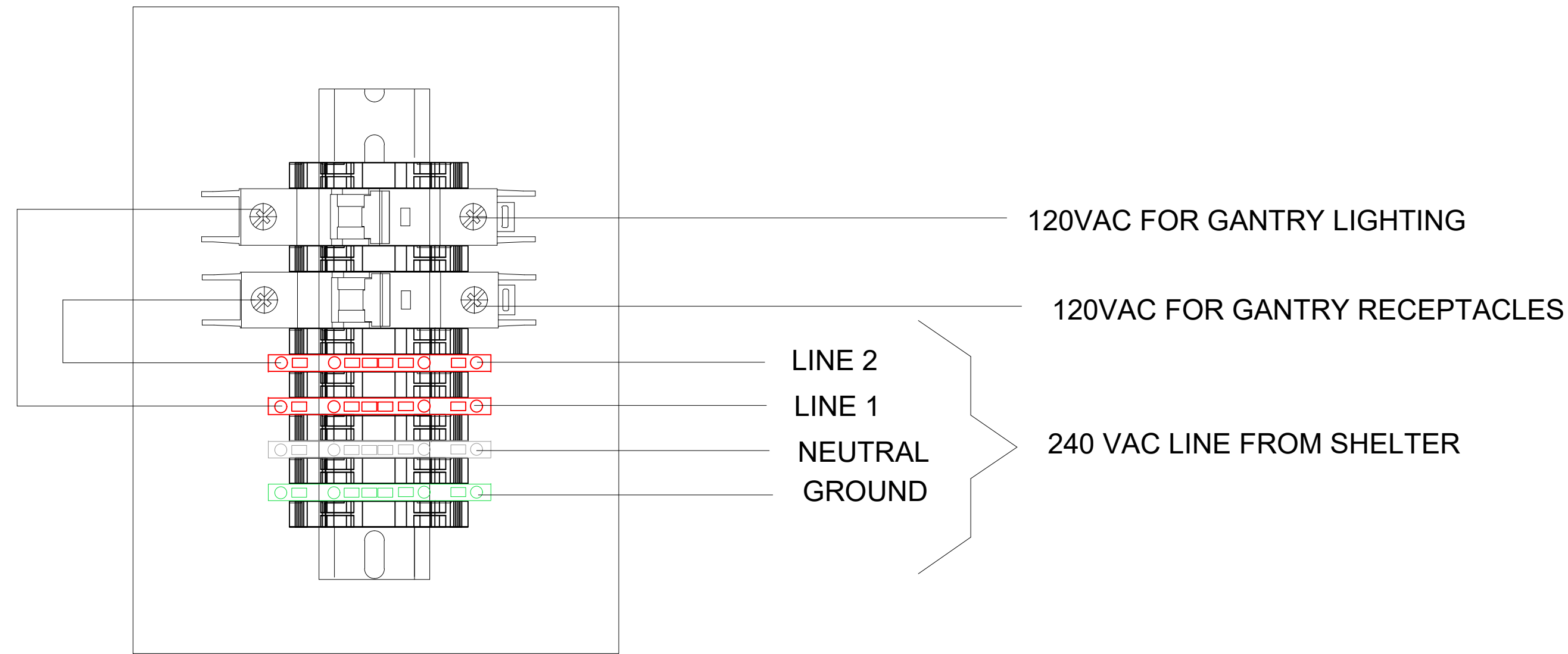
INSTALLER SHALL PLACE CONDUIT TO ENSURE ENTRY INTO THE VARIOUS HANDHOLES SHOWN. ADDITIONAL HANDHOLES OR JBS MAY BE REQUIRED TO PLACE ALL CONDUIT. AFTER APPROVAL OF THE RMTA ENGINEER. INSTALLER (CONTRACTOR) SHALL BE RESPONSIBLE FOR ENSUREING SUFFICIENT HANDHOLES (JBS) PRICED IN BID FOR WORK SHOWN.

ALL CONDUIT SHOWN UNDERGROUND SHALL BE PVC SCHEDULE 80 IN TRADE SIZE SHOWN. ADDITIONAL CONDUIT MAY BE REQUIRED BY OWNER AND SHALL BE AT SAME PRICE AS BID FOR THE CONTRACT.

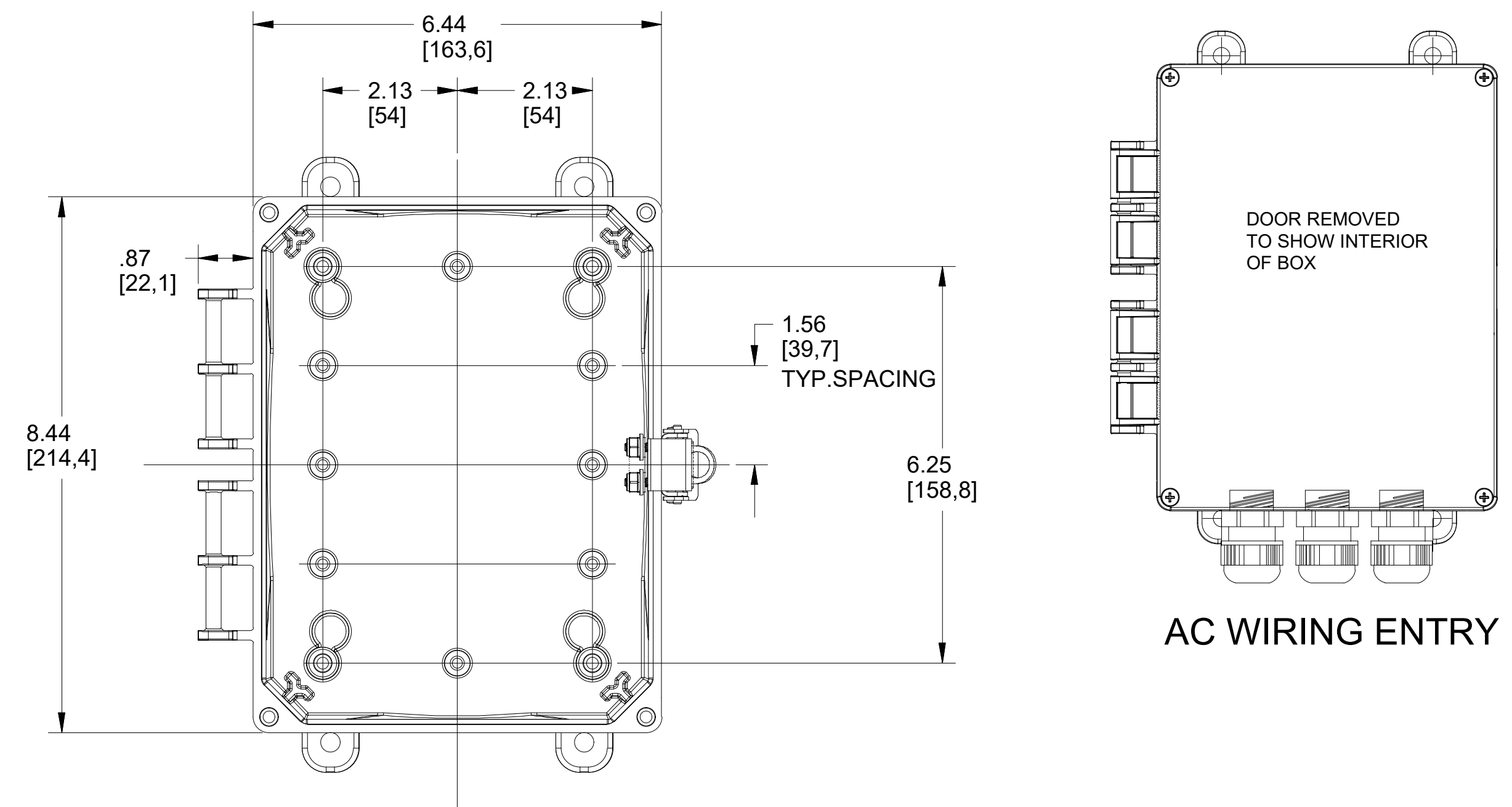
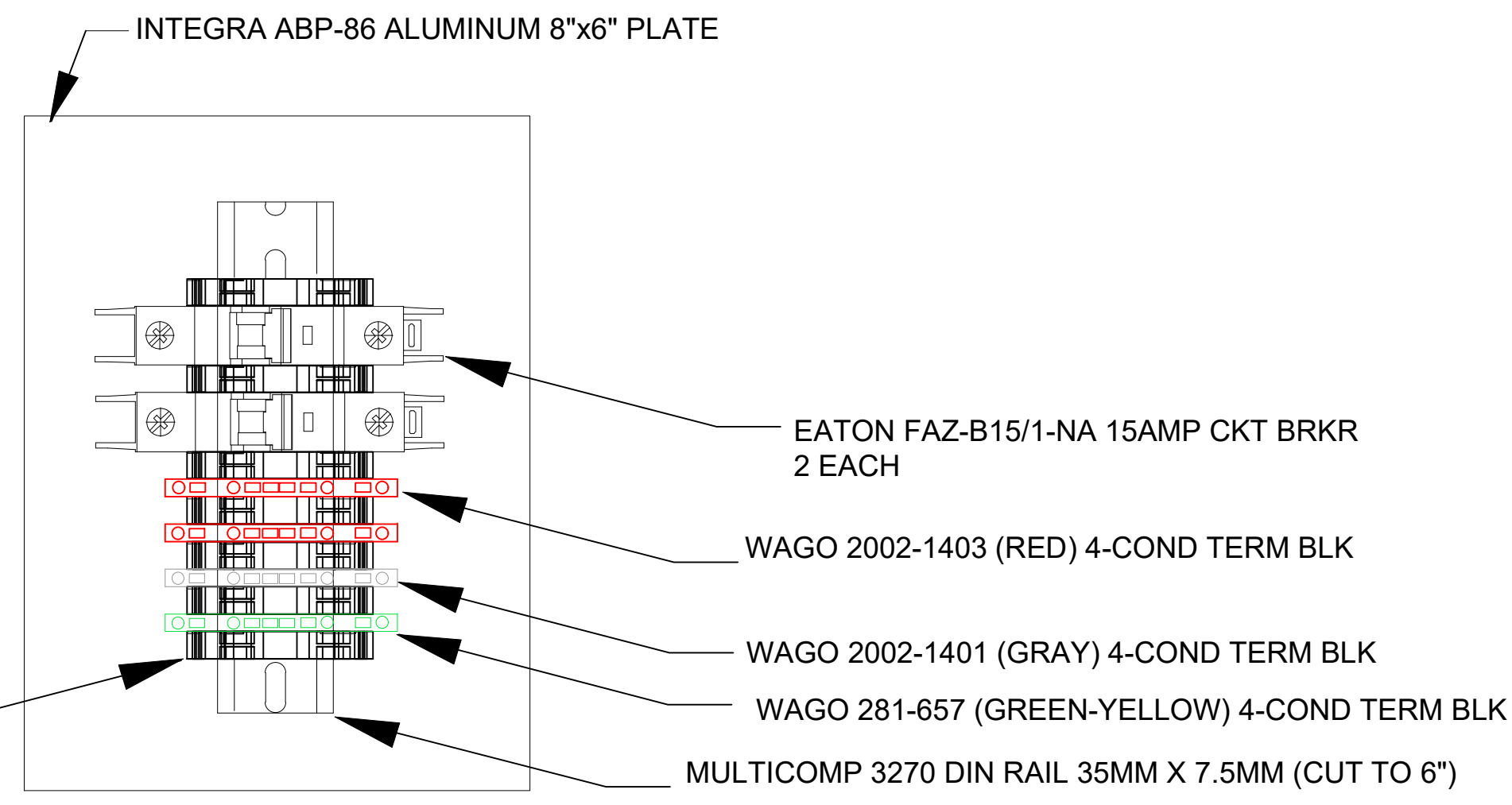
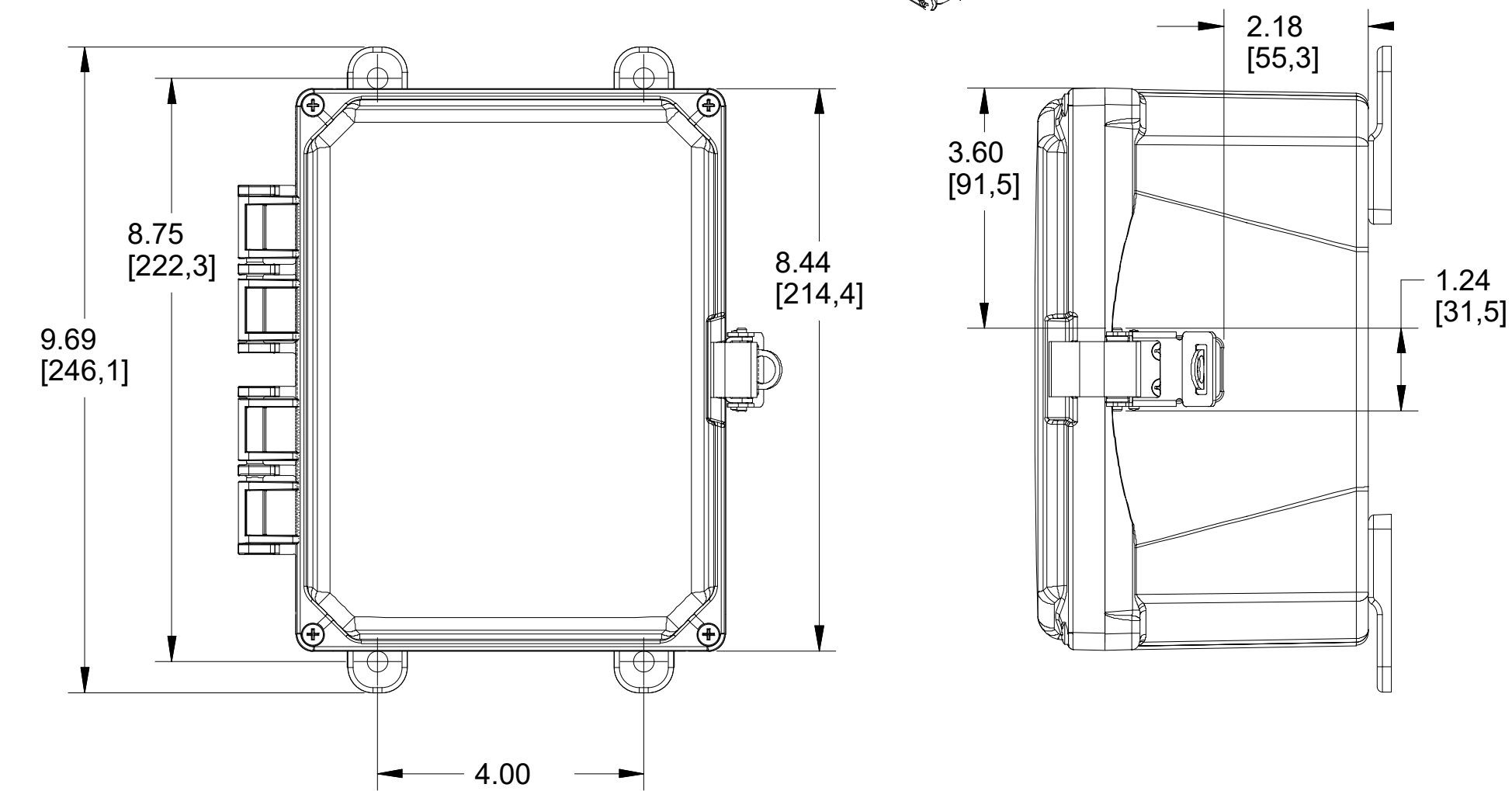
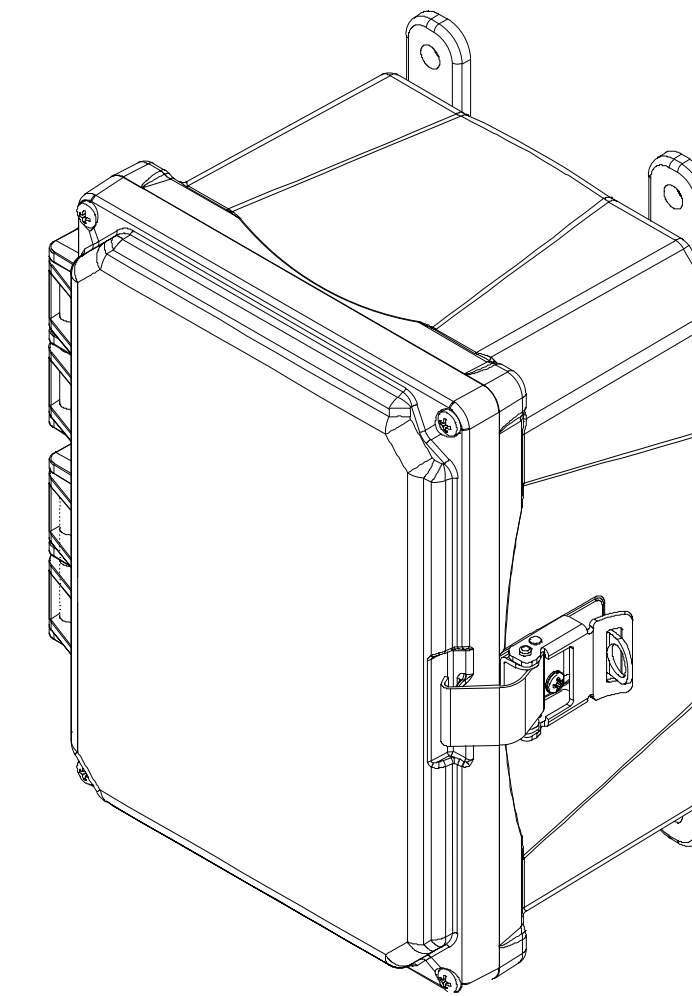
COMM CONDUIT SHOWN SHALL BE BURIED AT 28" DEPTH (TOP SIDE OF CONDUIT) WHERE POSSIBLE (EXCEPT LOOP LEAD-IN). ELECTRIC CONDUIT SHALL BE BURIED AT DEPTH OF 18 INCHES AS WELL AS LOOP LEAD-IN.



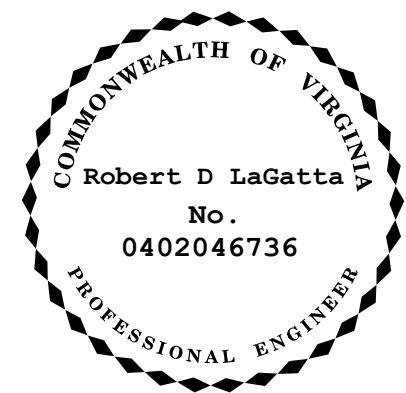
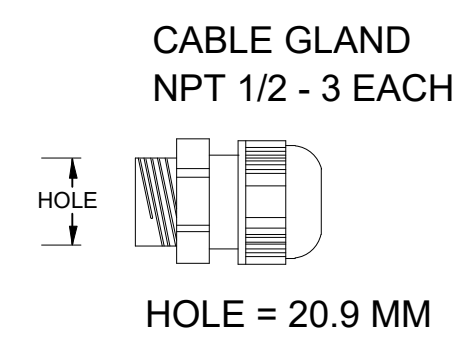
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INTEGRA
 ENCLOSURES
 H8064HLL
 WITH
 ABP-86
 ALUMINUM
 PLATE

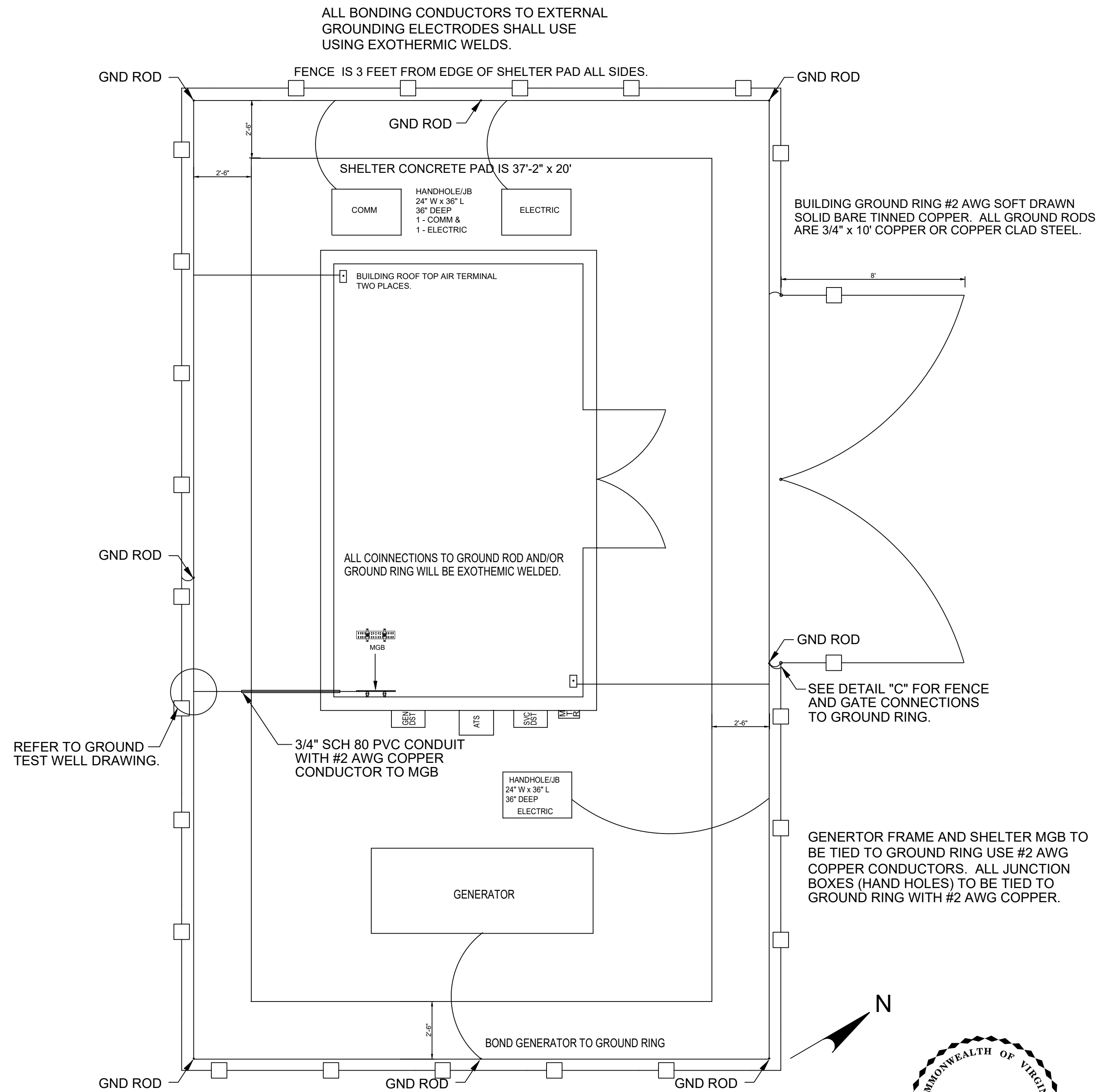


AC WIRING TO ENTER / EXIT BOX VIA
 CABLE GLANDS ON BOTTOM OF UNIT.

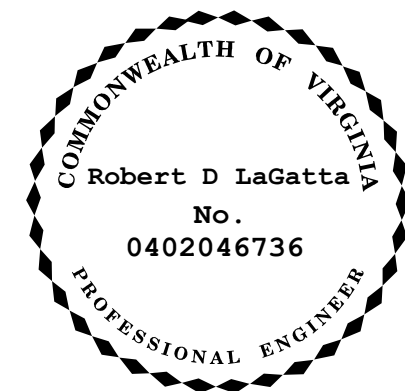


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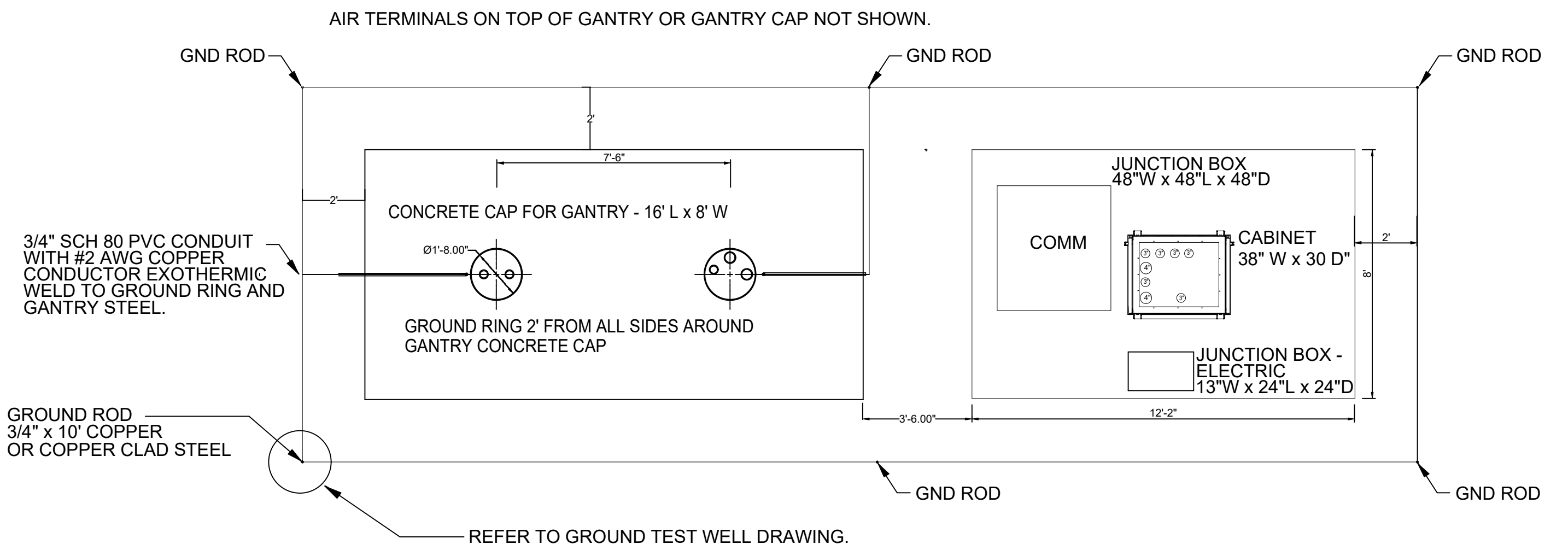
DATE & TIME



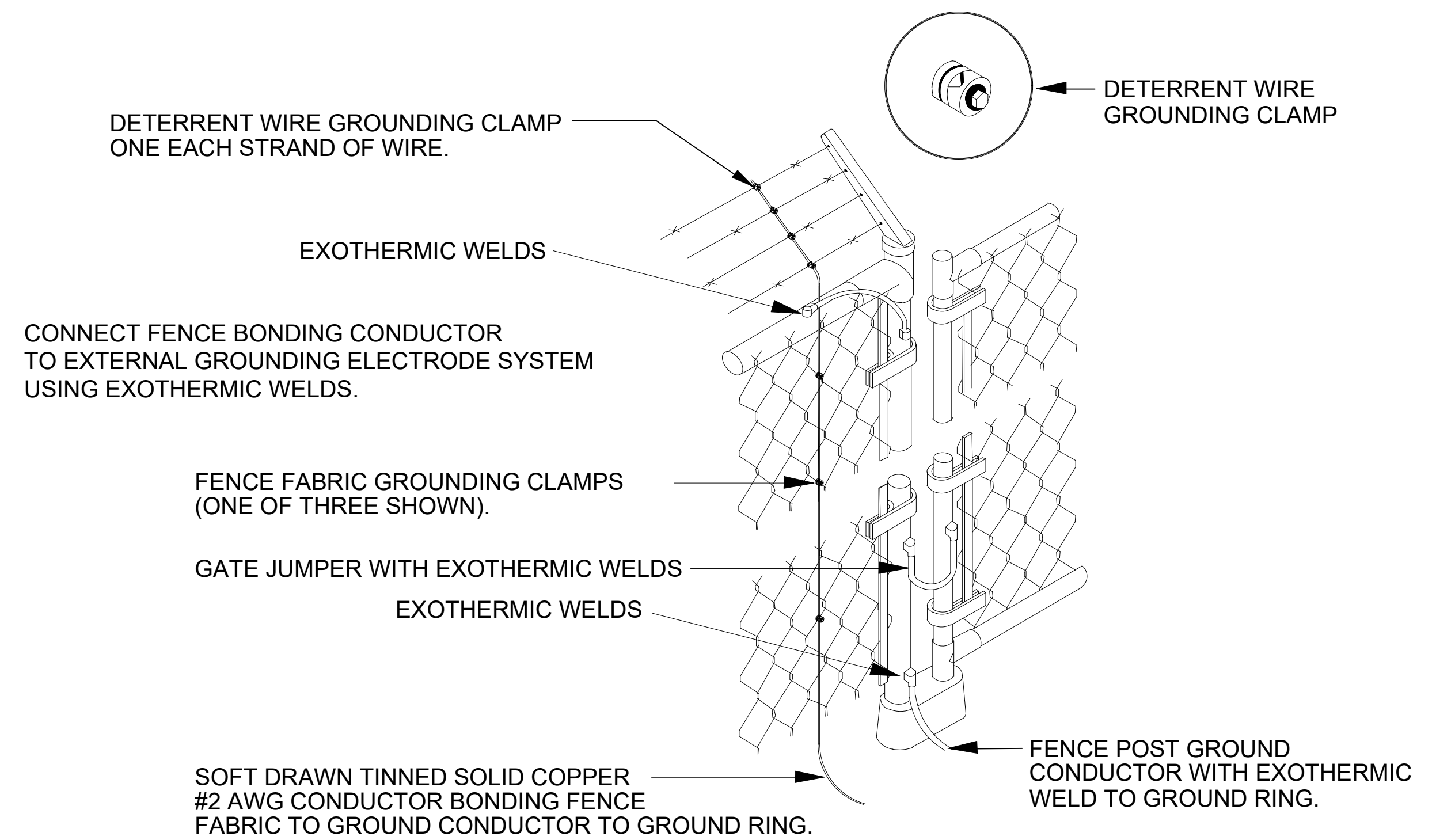
DETAIL "A" - AET SHELTER BUILDING GROUND RING
 N.T.S.



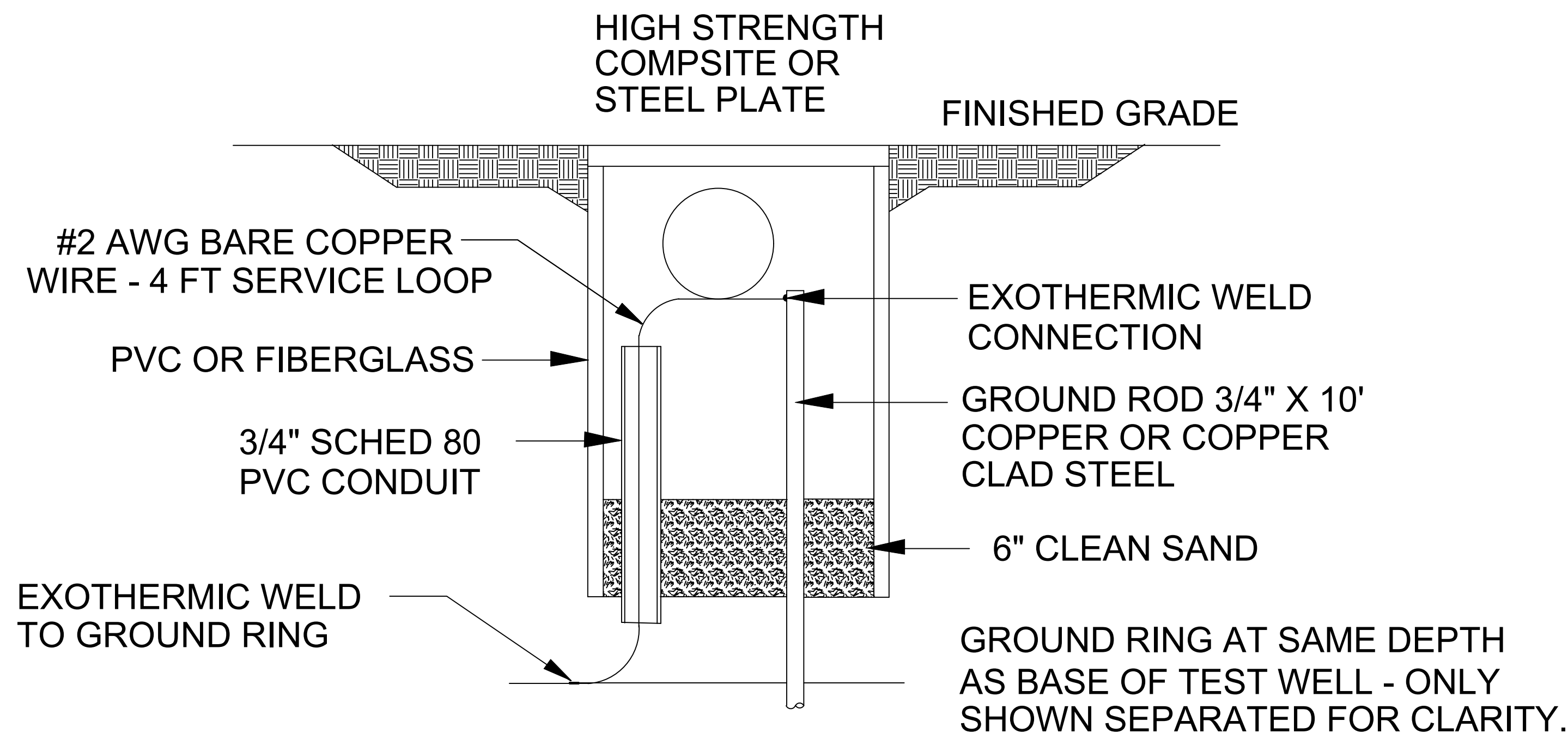
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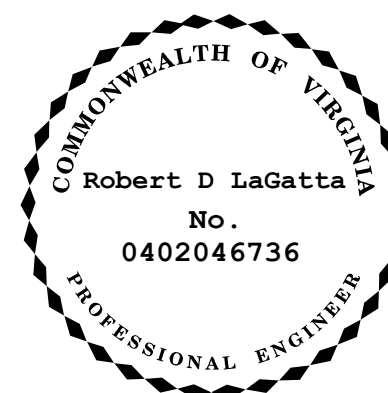
DETAIL "B" - NB & SB GANTRY & ORT CABINET GROUND RING
 N.T.S.



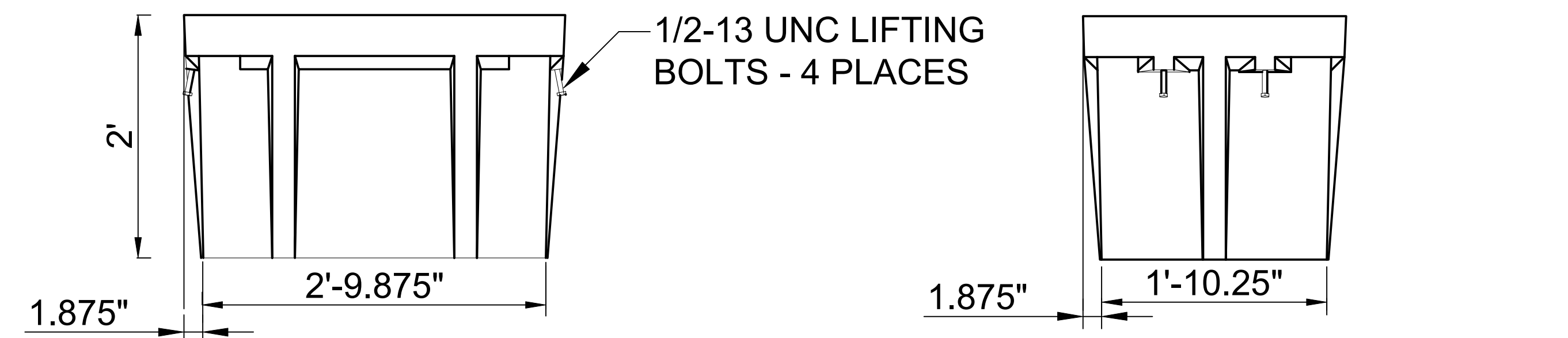
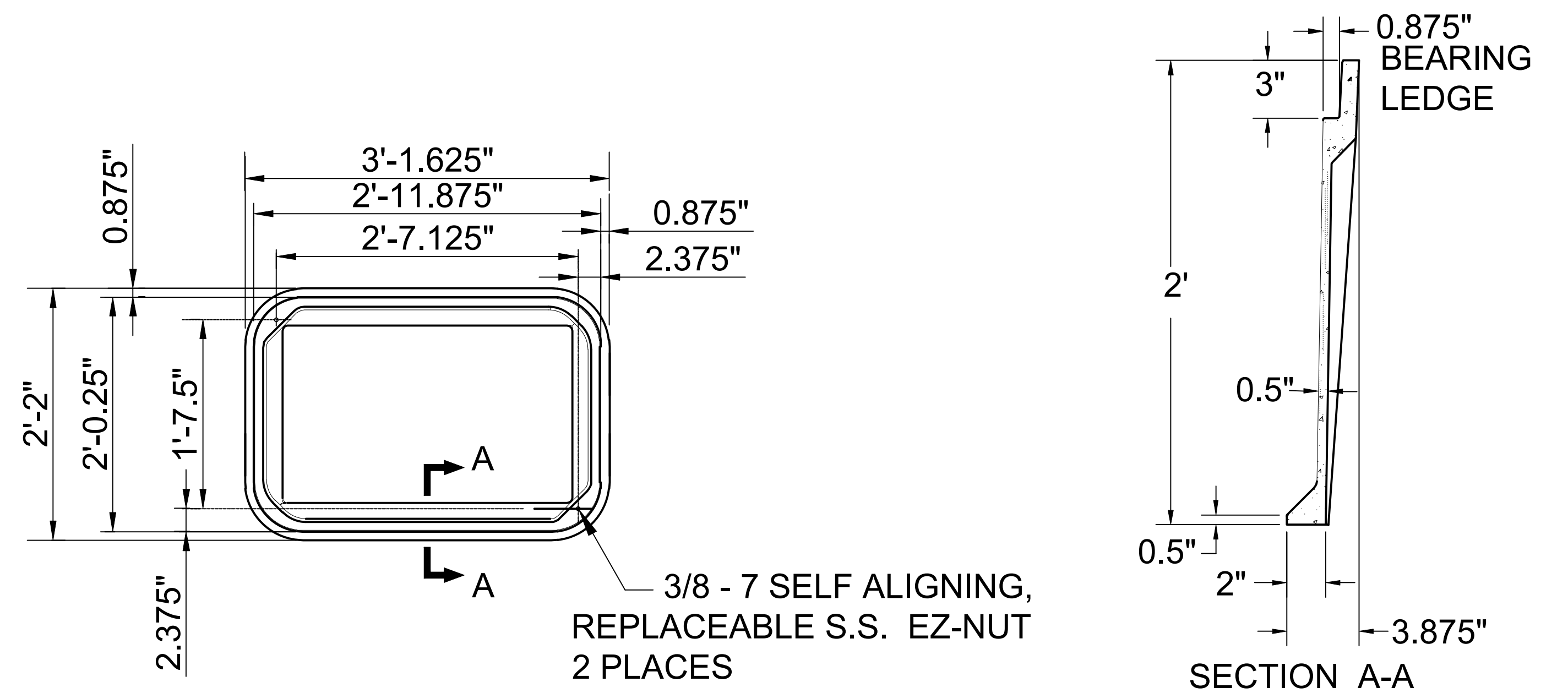
DETAIL "C" - SECURITY CHAIN LINK FENCE GROUNDING DETAIL
 N.T.S.



DETAIL A - 24" W x 36" D GROUND TEST WELL
 N.T.S.

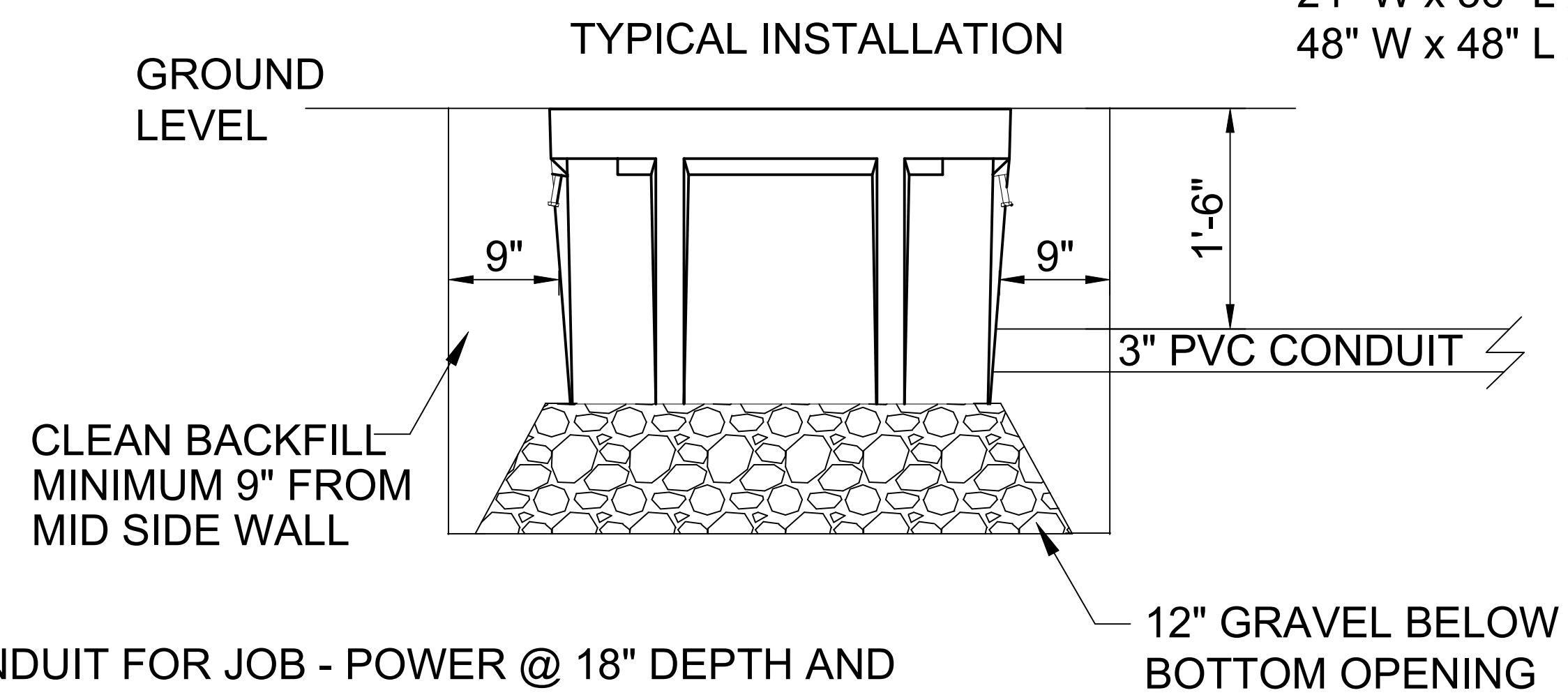


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HAND HOLE - QUAZITE PG2436BA24 SHOWN

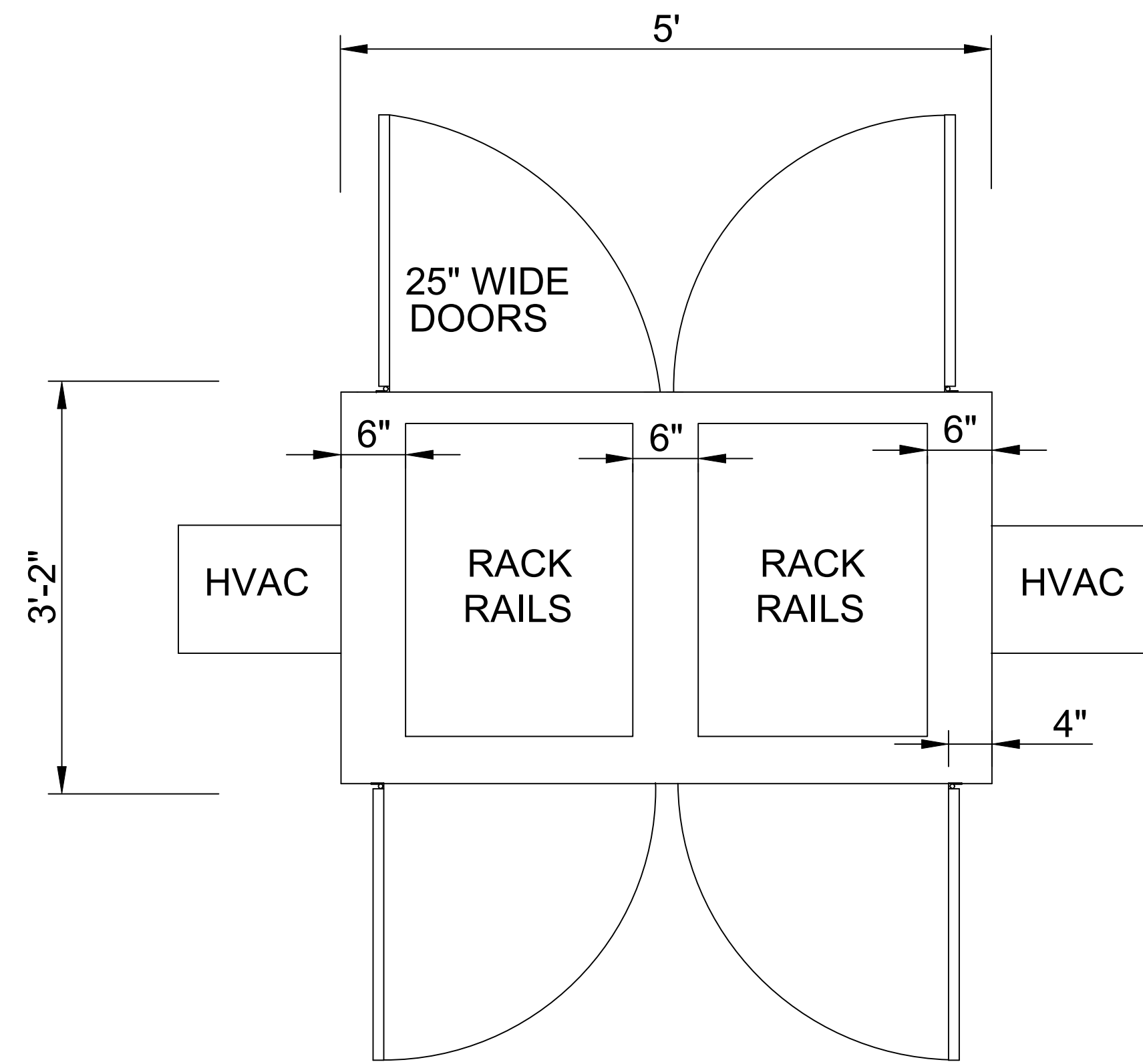
HAND HOLES FOR JOB
 13" W x 24" L x 24" DEEP
 24" W x 36" L x 24" DEEP
 24" W x 36" L x 36" DEEP
 48" W x 48" L x 48" DEEP



ALL CONDUIT FOR JOB - POWER @ 18" DEPTH AND ALL SIGNAL CONDUIT @ 28" DEPTH UNLESS NOTED OTHERWISE.

DETAIL B - HAND HOLE TYPICAL
 N.T.S.

PROJECT MANAGER _____
 REVIEWED BY, DATE _____
 DESIGN BY CCOFFEE _____
 DRAWING NUMBER _____

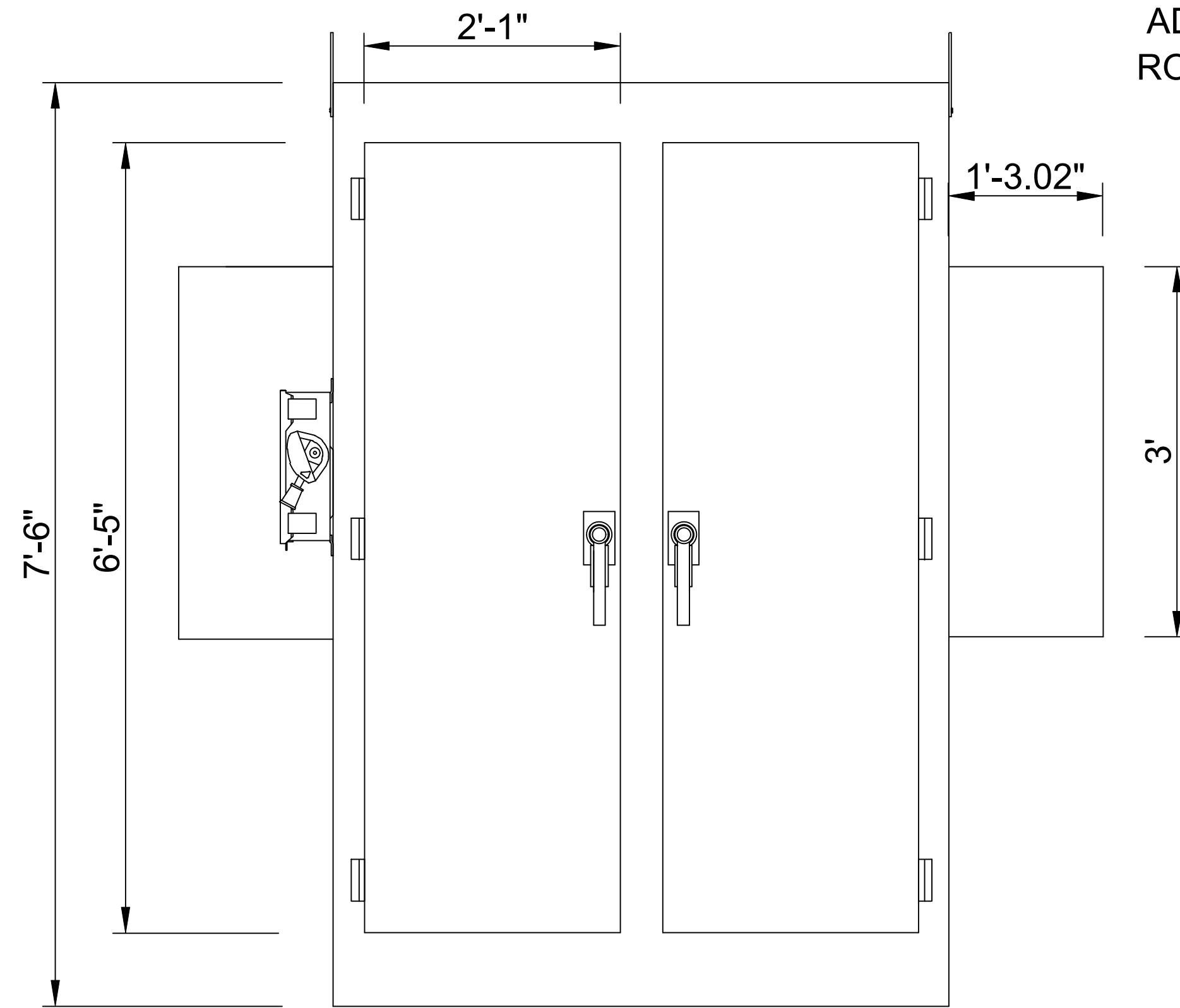


DOOR 25" WIDTH OPENING 24",
 DOOR 77" HIGH OPENING 76".
 DOOR OPENINGS ARE NOT SHOWN.

CABINET DOORS ARE 1" IN DEPTH AND CABINET
 BODY IS 36" DEPTH, EQUALING 38" TOTAL.
 HVAC SHOWN THERMAL EDGE NE08023604, 15.02" W
 x 11.8" D x 36" H.
 42 RU RACK RAILS (EIA-310) INTERNAL.

HVAC UNIT MOUNTED EACH END WILL MAKE USE OF
 CABINET MOUNTED LEAD/LAG CONTROLLER

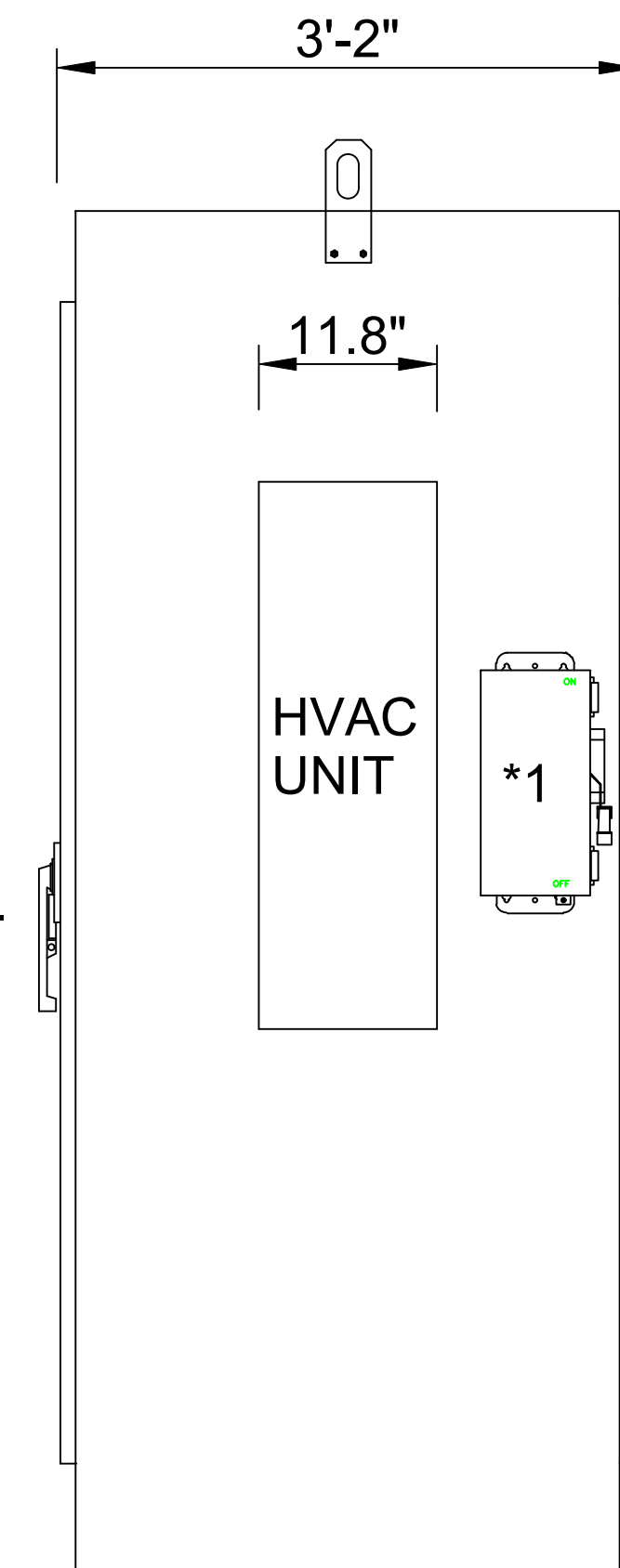
CABINET IS NEMA 4X - 0.125" ALUMINUM POWDER COATED BEIGE
 ADD 1" TO HEIGHT FOR SUN SHIELD
 ROOF TOP SUN SHIELD NOT SHOWN.



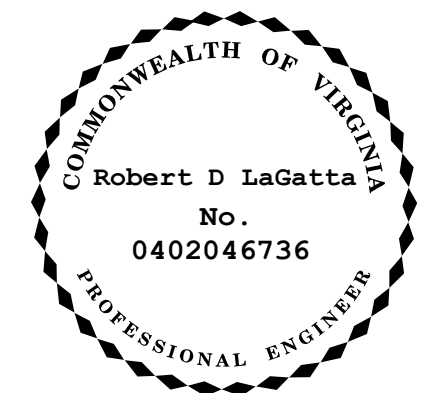
FRONT VIEW - DOOR WIDTH 26"

*1 - SE VH221NDSGL FUSED
 DISCONNECT SWITCH TO
 BE PROVIDED AND INSTALLED
 WITH TWO 30 AMP CLASS H FUSES.

HVAC UNIT MOUNTED
 EACH END.

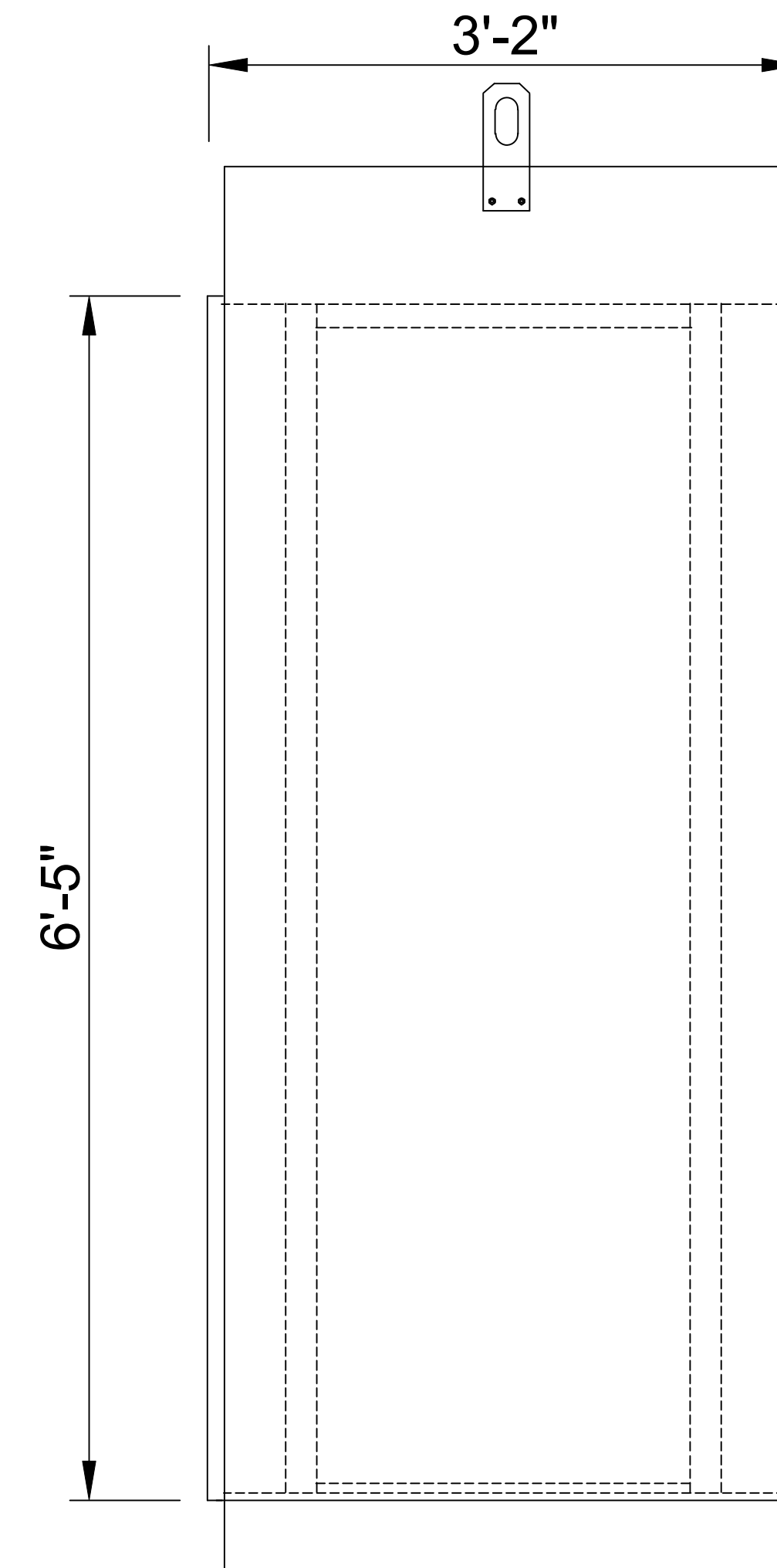
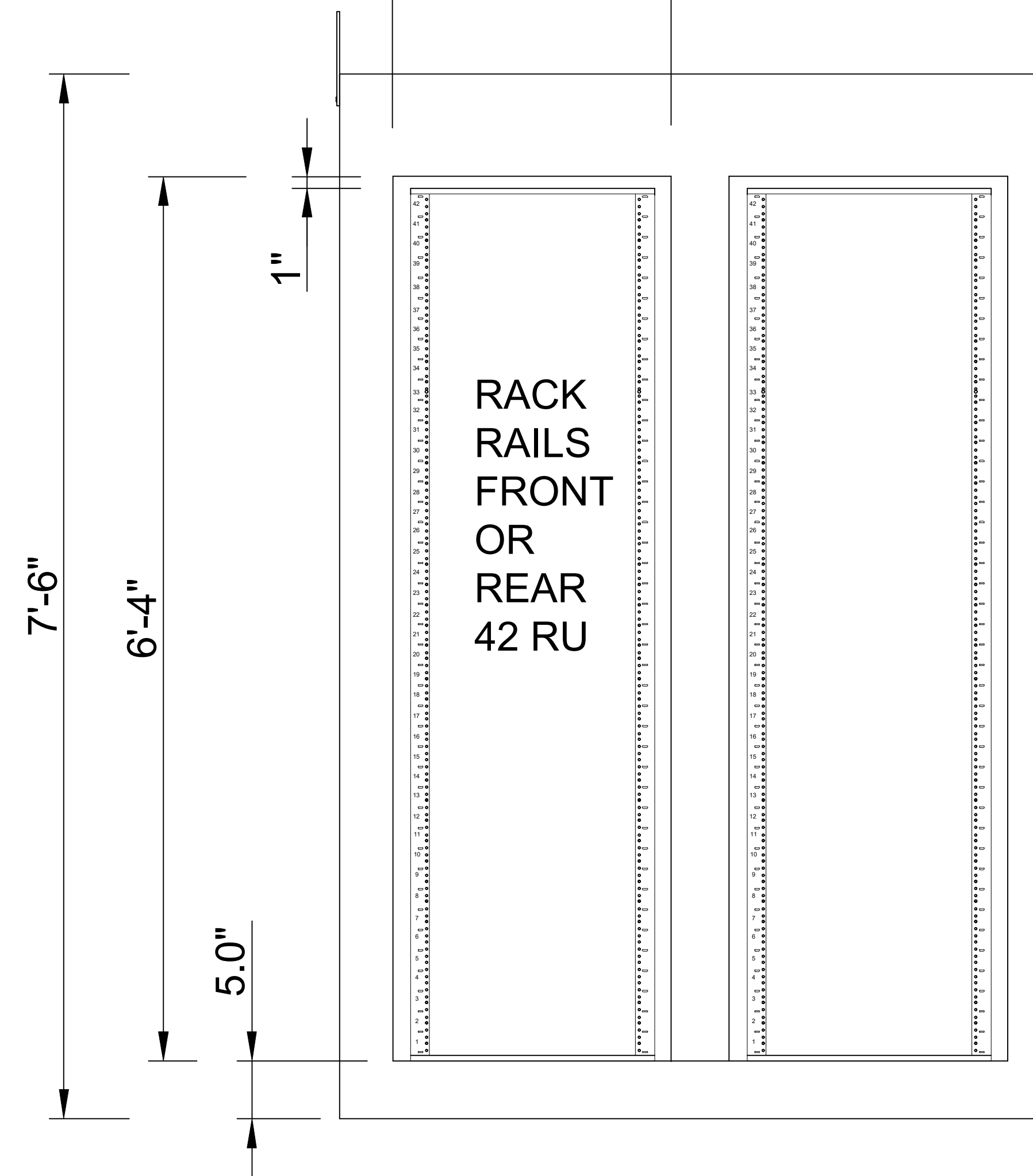
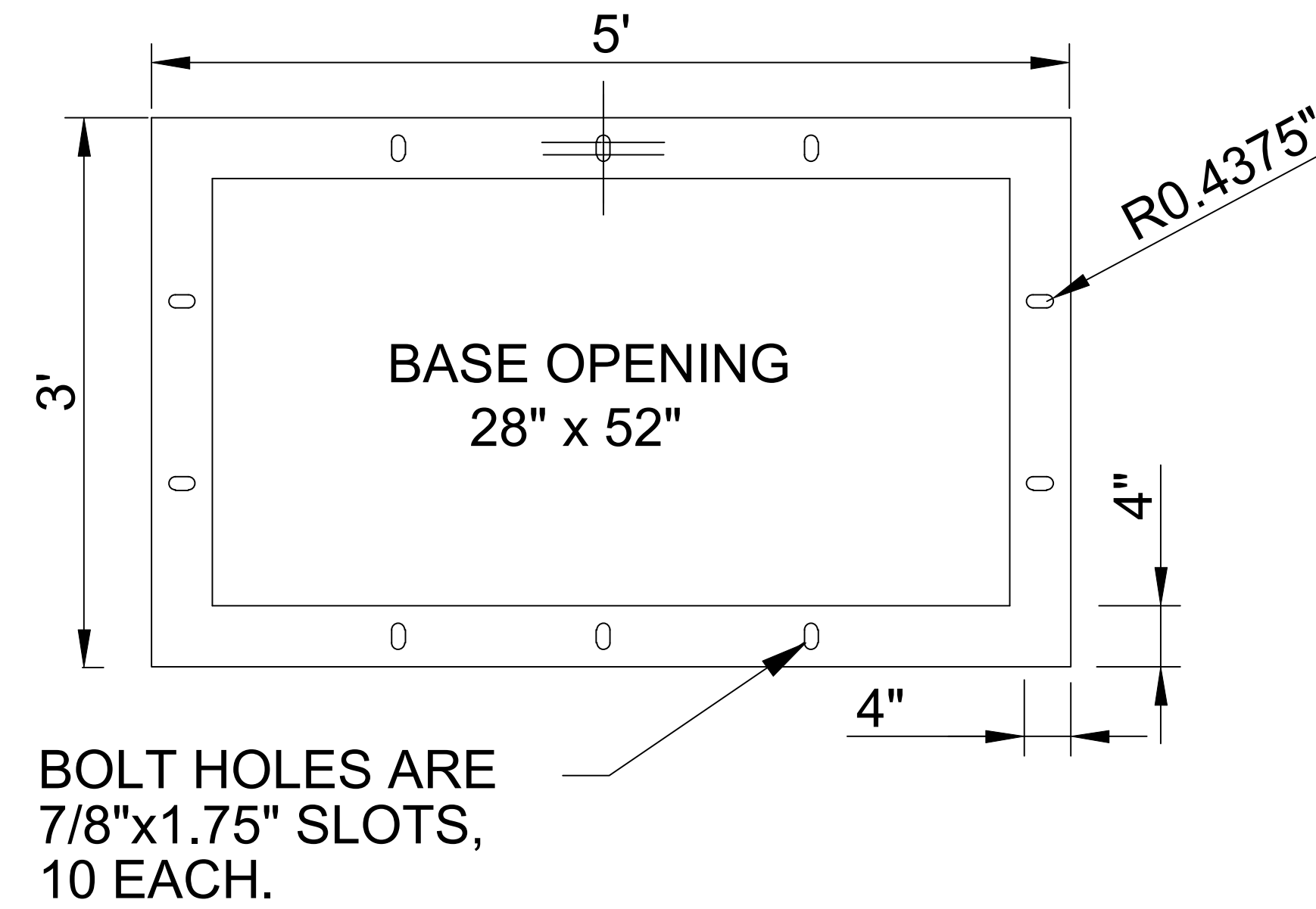
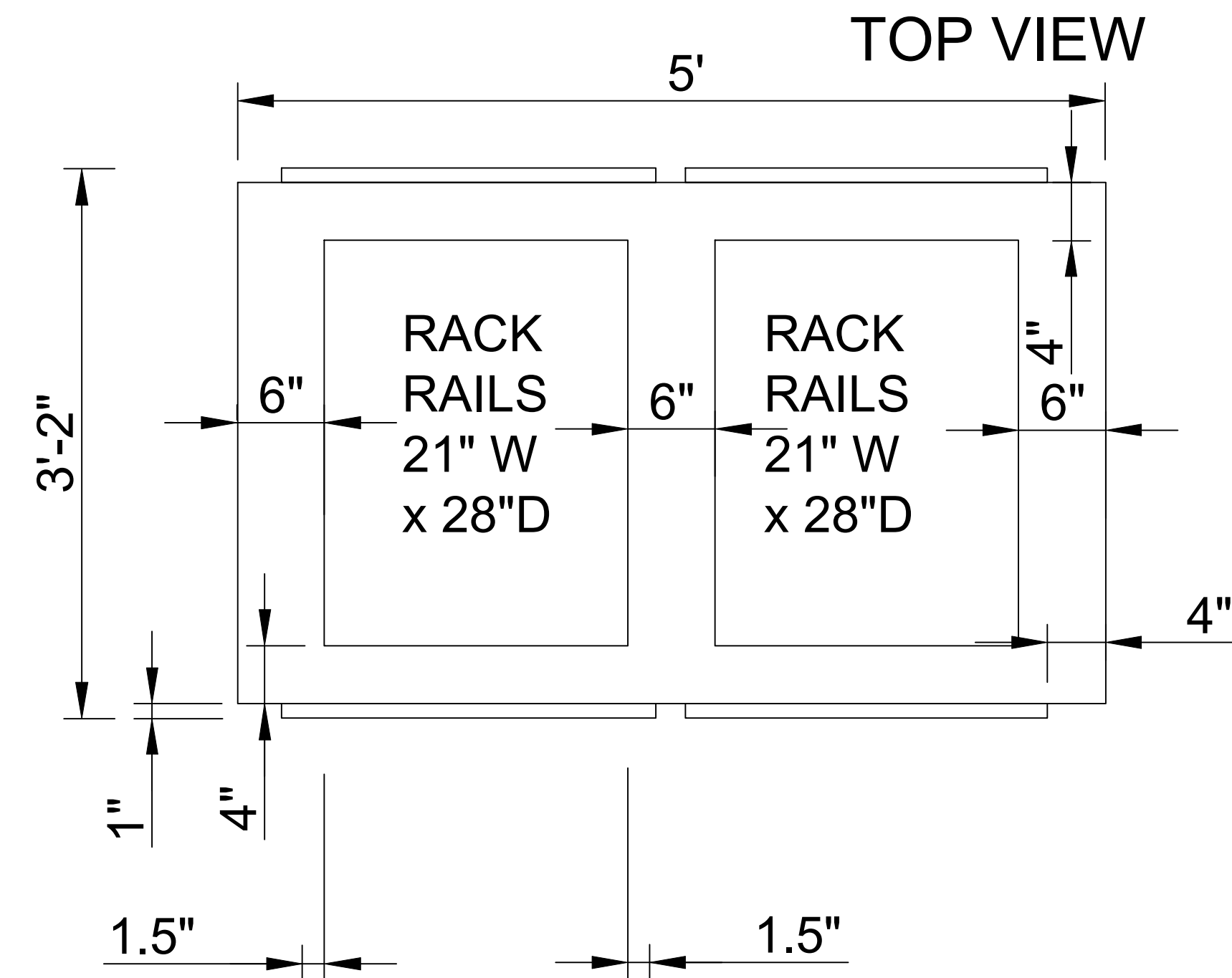


RIGHT END VIEW

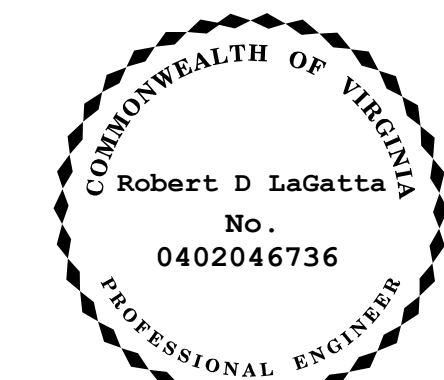


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 Robert D LaGatta
 Date: 2025.01.17
 12:56:24-05'00'

DATE & TIME

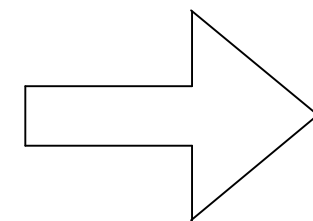


DOOR 25" WIDTH OPENING 24",
 DOOR 77" HIGH OPENING 76".
 DOORS ARE NOT SHOWN.



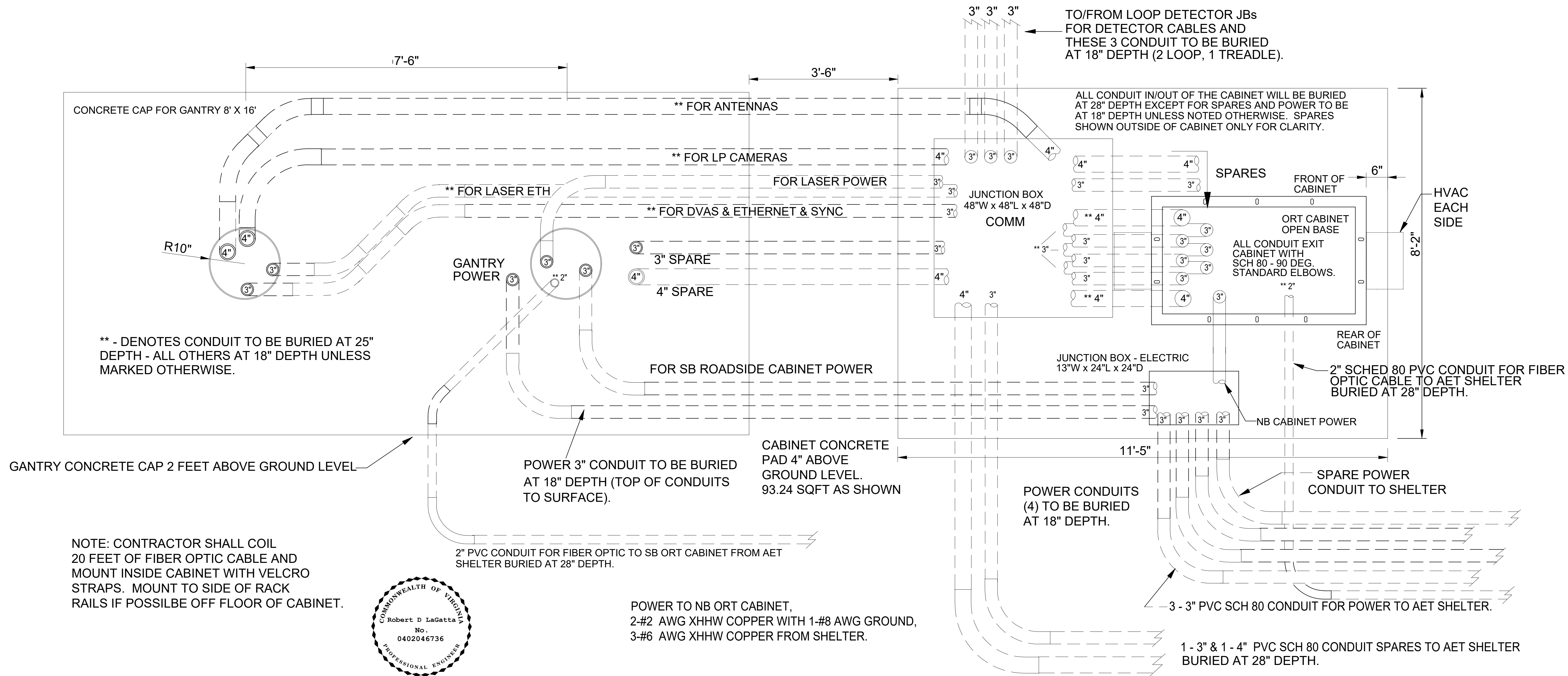
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 12:56:59-05'00'

NORTHBOUND



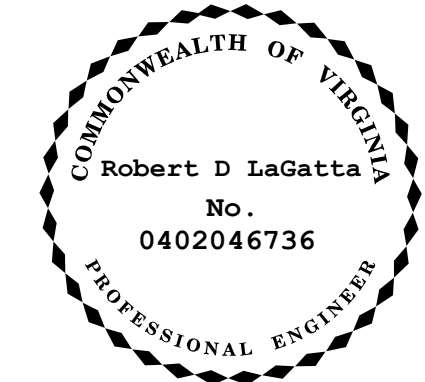
NOTE: CONTRACTOR SHALL COIL 10 FEET OF POWER CONDUCTORS & GROUND CONDUCTOR IN ELECTRIC HANDHOLE FOR GANTRY & SB CABINET WIRING.

ROADWAY IS 8 FEET FROM THIS SIDE OF GANTRY CAP



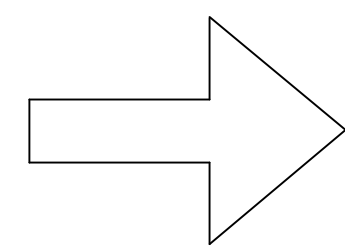
** - DENOTES CONDUIT TO BE BURIED AT 25" DEPTH - ALL OTHERS AT 18" DEPTH UNLESS MARKED OTHERWISE.

NOTE: CONTRACTOR SHALL COIL 20 FEET OF FIBER OPTIC CABLE AND MOUNT INSIDE CABINET WITH VELCRO STRAPS. MOUNT TO SIDE OF RACK RAILS IF POSSILBE OFF FLOOR OF CABINET.



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 Date: 2025.01.17 12:57:36-05'00'

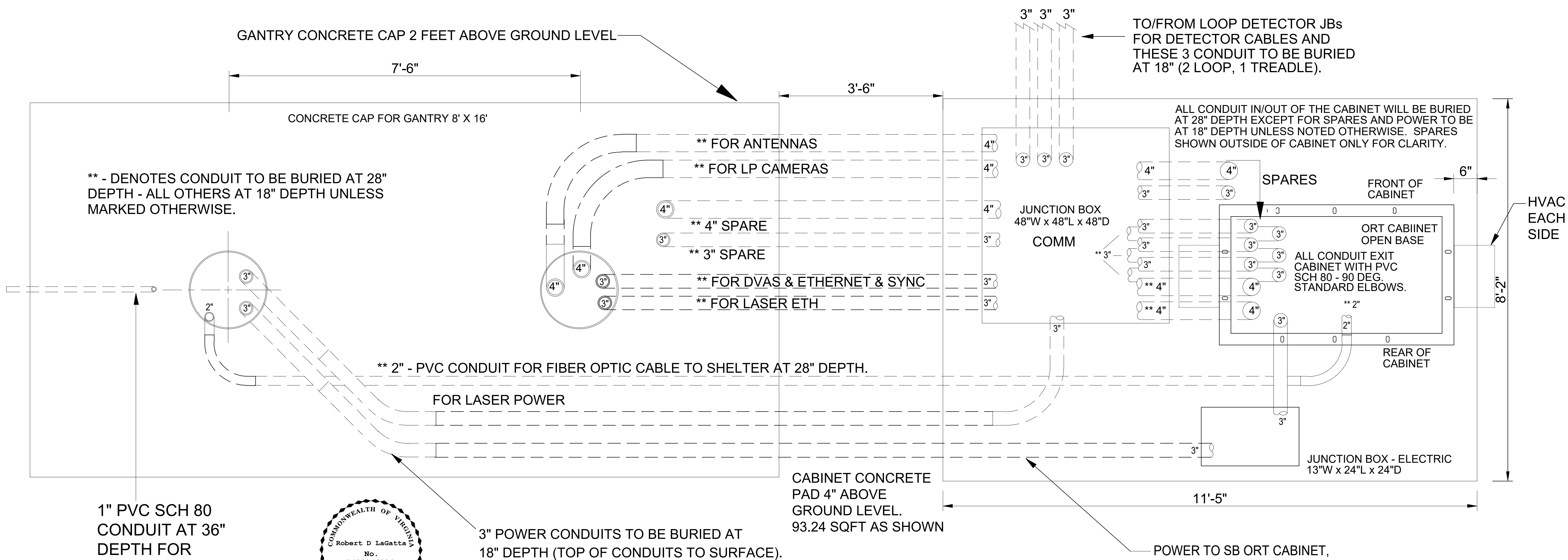
DATE & TIME



SOUTHBOUND

NOTE: CONTRACTOR SHALL COIL 10 FEET OF POWER CONDUCTORS & GROUND CONDUCTOR IN ELECTRIC HANDHOLE FOR GANTRY & SB CABINET WIRING.

ROADWAY IS 8 FEET FROM THIS SIDE OF GANTRY CAP



** - DENOTES CONDUIT TO BE BURIED AT 28\"/>

1\"/>



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 Date: 2025.01.17 12:58:08-05'00'

CABINET CONCRETE PAD 4\"/>

NOTE: CONTRACTOR SHALL COIL 20 FEET OF FIBER OPTIC CABLE AND MOUNT INSIDE CABINET WITH VELCRO STRAPS. MOUNT TO SIDE OF RACK RAILS IF POSSIBLE OFF FLOOR OF CABINET.

TO/FROM LOOP DETECTOR JB's FOR DETECTOR CABLES AND THESE 3 CONDUIT TO BE BURIED AT 18\"/>

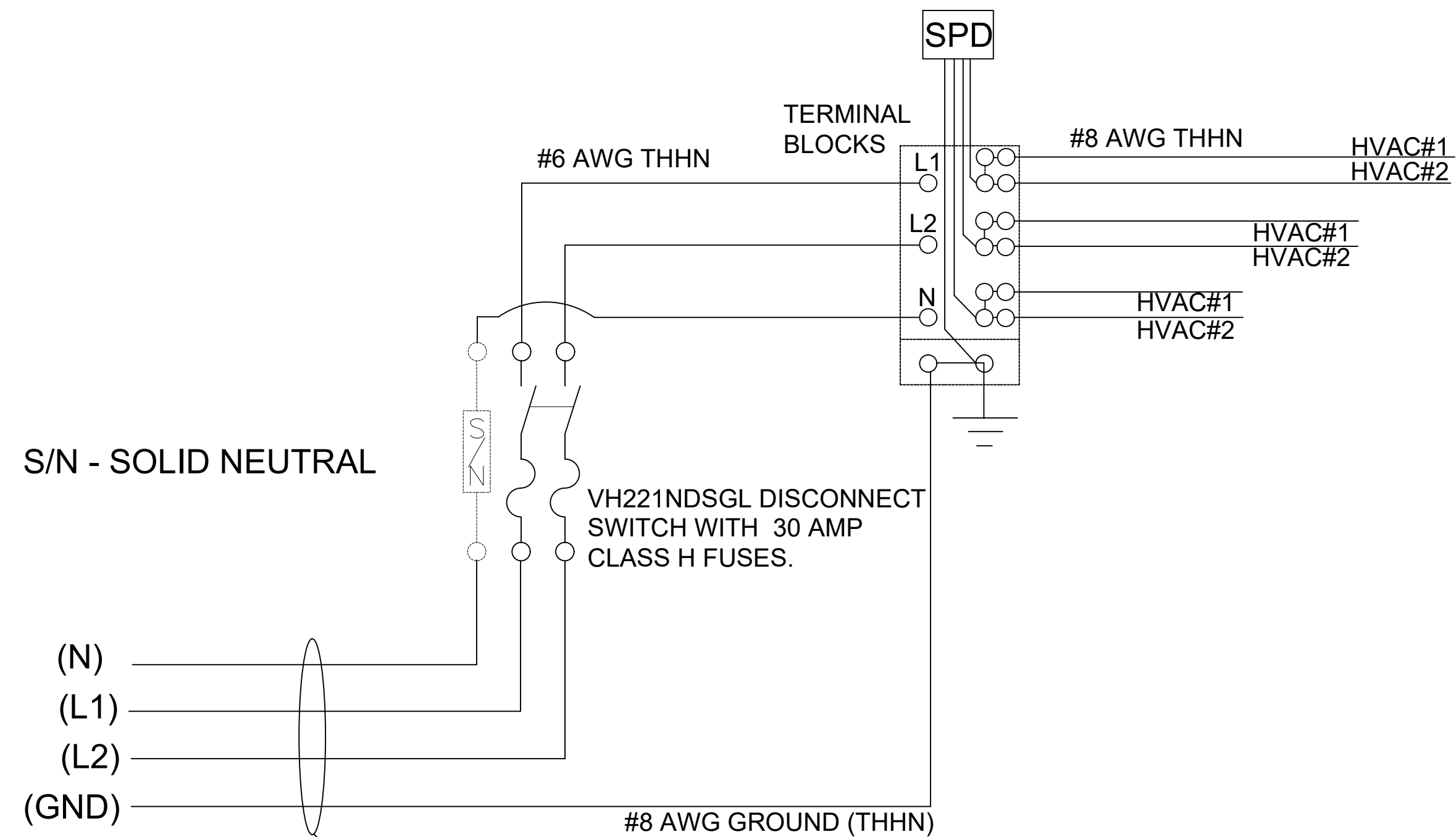
ALL CONDUIT IN/OUT OF THE CABINET WILL BE BURIED AT 28\"/>

SPARES

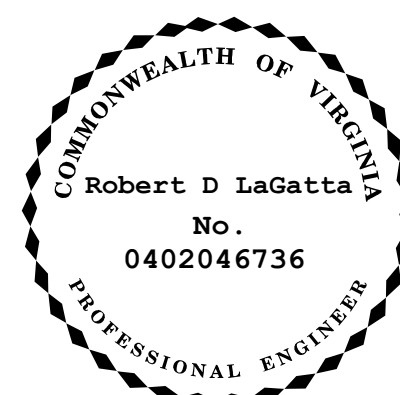
ALL CONDUIT EXIT CABINET WITH PVC SCH 80 - 90 DEG. STANDARD ELBOWS.

POWER TO SB ORT CABINET, 4 - 1/0 AWG XHHW COPPER AND 1 - #6 AWG GROUND, 3 - #2 AWG XHHW COPPER FROM SHELTER.

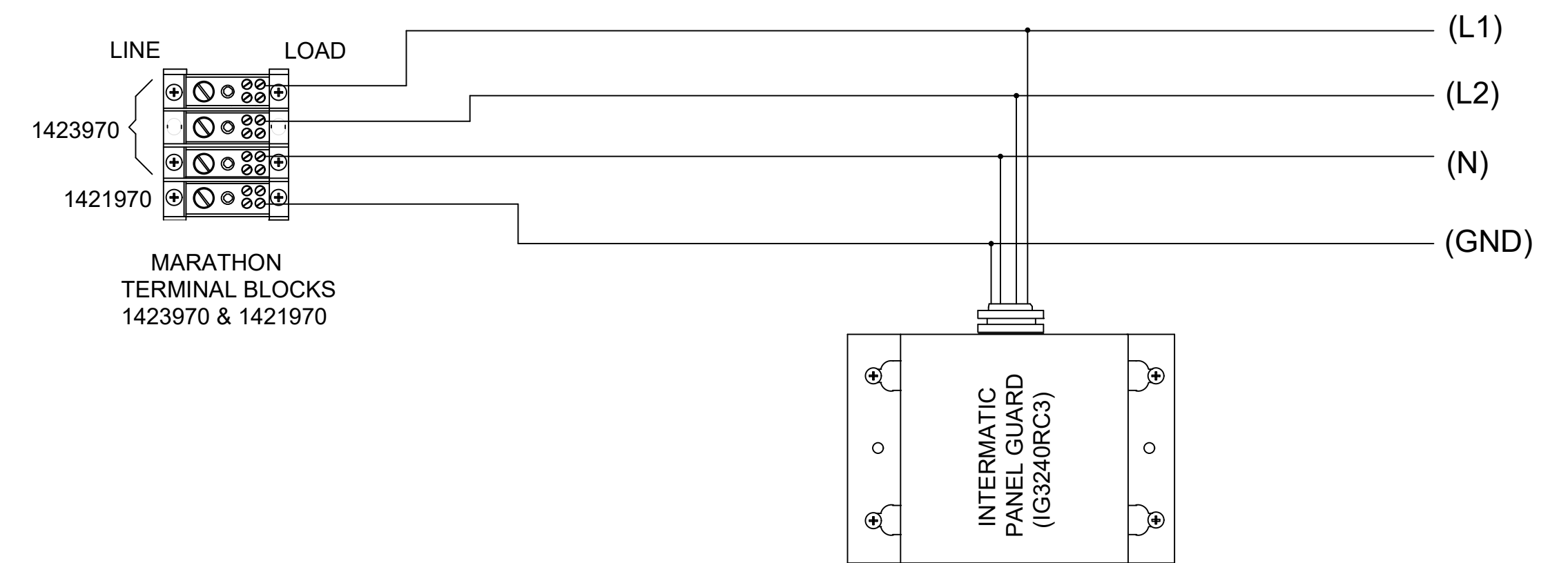
HVAC EACH SIDE



3 - #2 AWG COPPER FROM SHELTER.

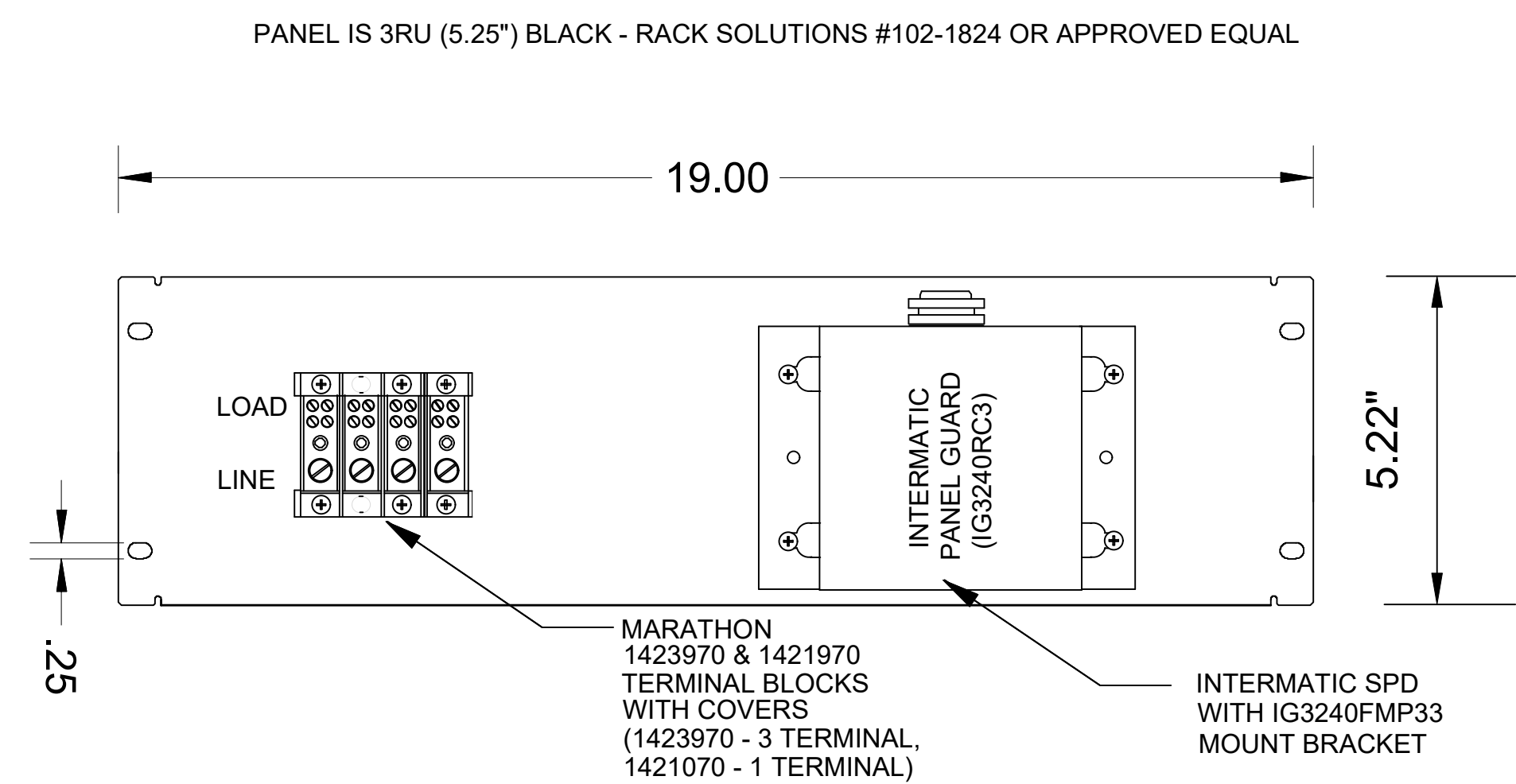


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 Date: 2025.01.17 12:58:33-05'00'



DETAIL A - ELECTRICAL SPD SCHEMATIC
 (SEE DETAIL B FOR MOUNTING)

INSTALLER TO USE PARTS SHOWN OR APPROVED EQUALS.



DETAIL B - PHYSICAL LAYOUT
 (SEE DETAIL A FOR WIRING)

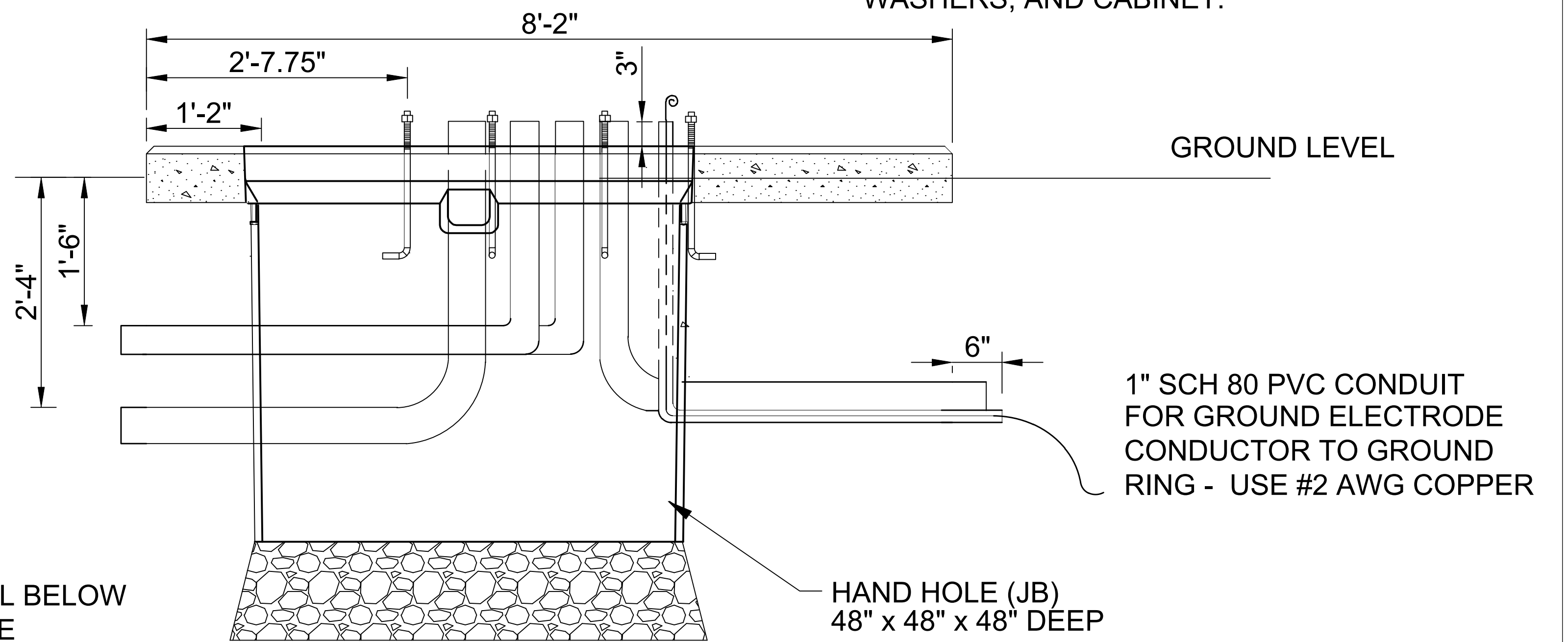
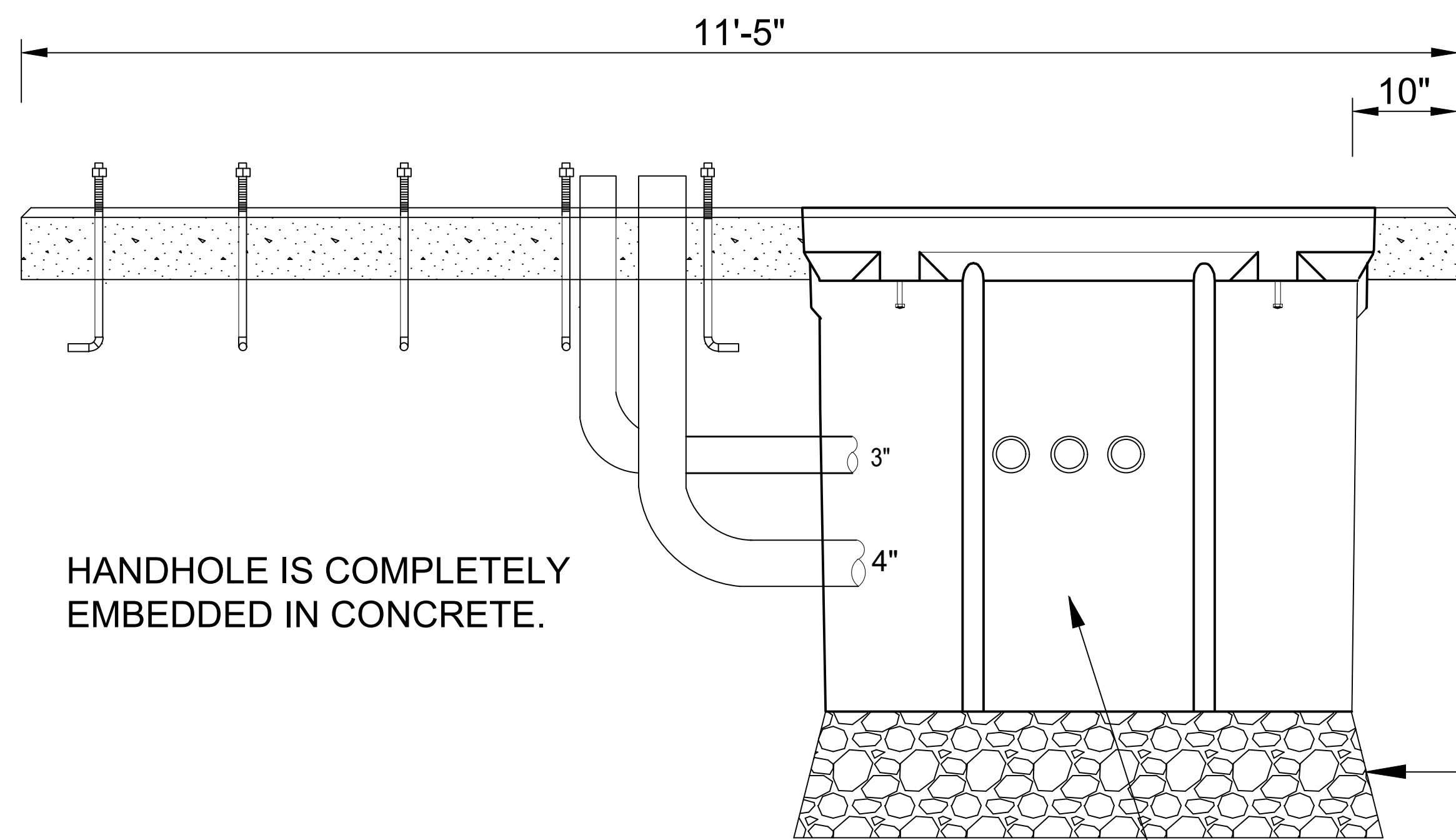
INSTALLER TO USE PARTS SHOWN OR APPROVED EQUALS.

TOP VIEW - REFER TO NB_GANTRY-CAP_ORT-CABINET_CONDUITS_JBs (date).DWG
 OR SB_GANTRY-CAP_ORT-CABINET_CONDUITS_JBs (date).DWG

ANCHOR BOLTS: L HOOK ANCHOR, 0.75 IN. DIA, HOT DIP GAL.,
 18 IN BODY LG, 3/4"-10 THREAD SIZE, STEEL, 3 IN HOOK

THE ANCHOR BOLTS SHALL BE
 EXTENDED 1/4" TO 3/4" ABOVE
 THE TOP OF THE NUT AFTER
 INSTALLATION OF THE NUTS,
 WASHERS, AND CABINET.

NOT ALL CONDUIT SHOWN



HANDHOLE IS COMPLETELY
 EMBEDDED IN CONCRETE.

ANY EMPTY CONDUIT SHALL BE CAPPED BY
 THE CONTRACTOR.

HAND HOLE (JB)
 48" x 48" x 48" DEEP
 ACTUAL SIZE IS
 50.25" x 50.25" x 48" DEEP
 QUAZITE PG4848BA48 OR
 APPROVED EQUAL.

12" GRAVEL BELOW
 HAND HOLE

HAND HOLE (JB)
 48" x 48" x 48" DEEP

1" SCH 80 PVC CONDUIT
 FOR GROUND ELECTRODE
 CONDUCTOR TO GROUND
 RING - USE #2 AWG COPPER

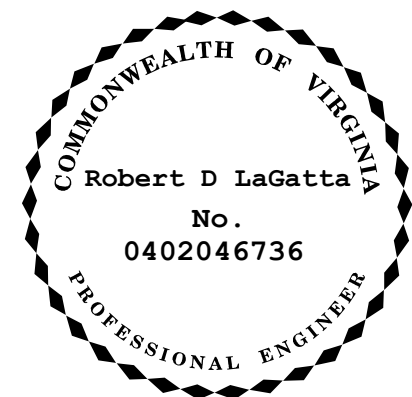
THE CONTRACTOR SHALL BRACE THE HANDHOLES
 PER THE MANUFACTURERS RECOMMENDATIONS
 BEFORE POURING THE CONCRETE FOUNDATION.

CONTACTOR SHALL ENSURE ALL CONDUIT INTO THE
 HANDHOLE HAS SUFFICIENT DUCT SEAL AROUND THE CONDUIT
 TO PREVENT ANY WATER FROM ENTERING.

FRONT VIEW

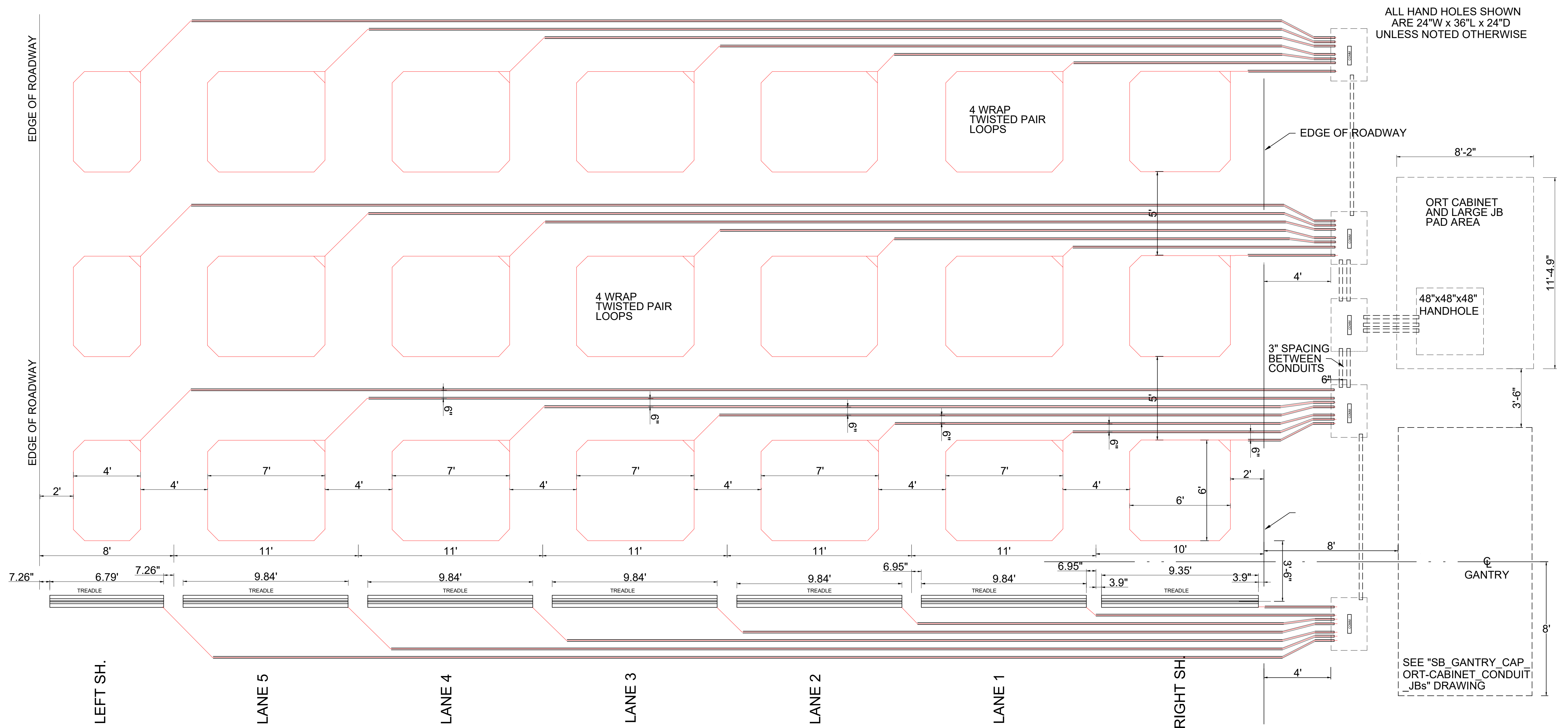
END VIEW

REFER TO KCI FOUNDATION DRAWING FOR ALL
 SHELTER & GENERATOR FOUNDATION AND SUB-BASE
 DETAILS.



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 by Robert D
 Robert D LaGatta LaGatta
 Date: 2025.01.17
 12:59:04-05'00'

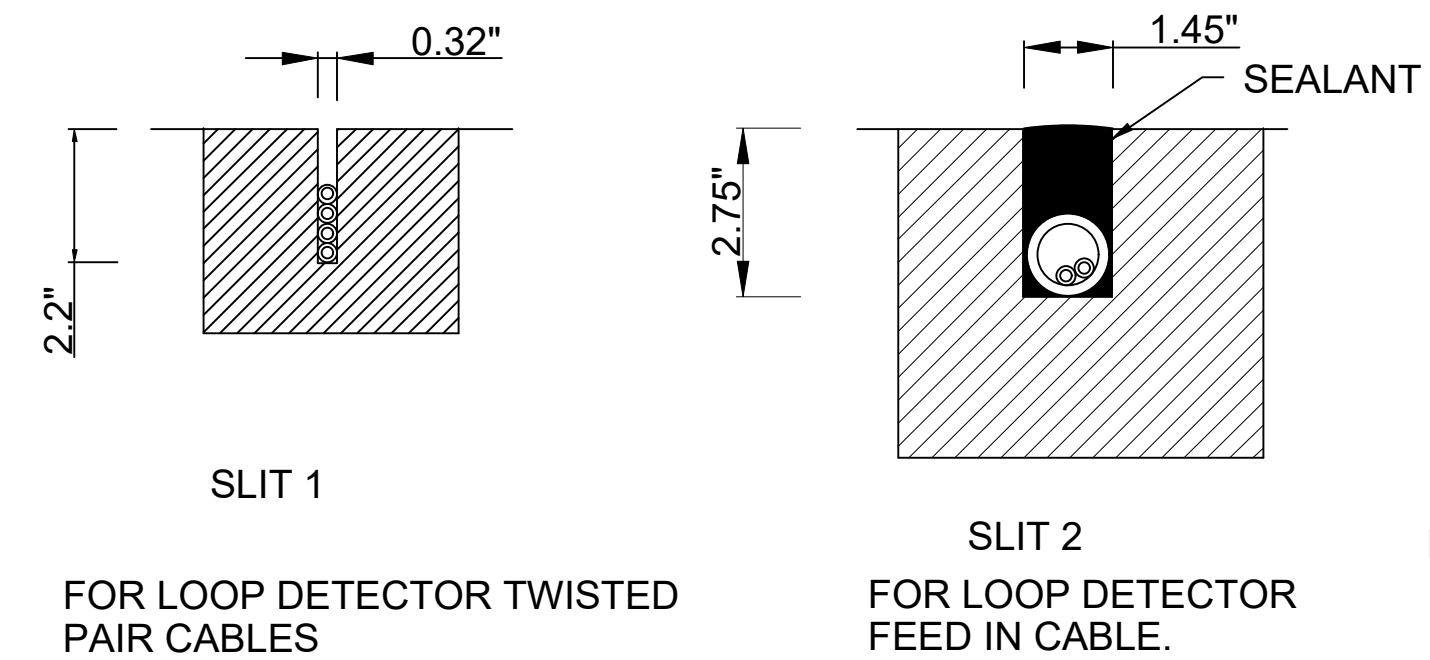
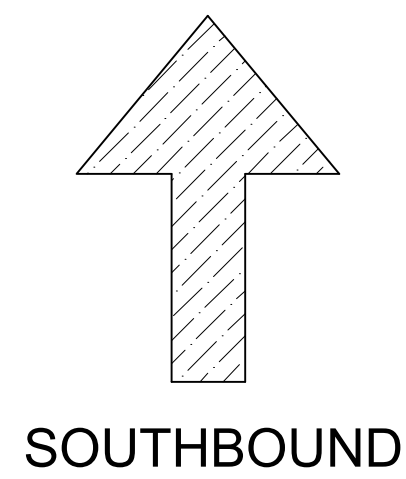
DATE & TIME



ESTIMATE EACH SET OF 7 LOOPS REQUIRES 260 (+/-3') FEET OF INNERDUCT. ESTIMATE 3" SCHEDULE 80 PVC CONDUIT, 25 FEET REQUIRED TO RUN BETWEEN JB'S AS SHOWN. 3" SCHEDULE 80 PVC CONDUIT FROM 3RD JB BACK TO ORT CABINET DISTANCE TO BE DETERMINED. ALL INNERDUCT 1" I.D., 1.35" O.D. AT END OF INNERDUCT RUN PRIOR TO LOOP, BEND AND EXTEND INNERDUCT 4" ABOVE ROADWAY SURFACE.

NOTE: DISTANCE FROM EDGE OF ROADWAY TO JB'S MAY CHANGE TO OTHER THAN 4 FEET AT LATER DATE.

DASHED LINES RMTA RESPONSIBILITY,
 SOLID LINES ARE A-TO-B RESPONSIBILITY.



SLIT 1
 FOR LOOP DETECTOR TWISTED
 PAIR CABLES

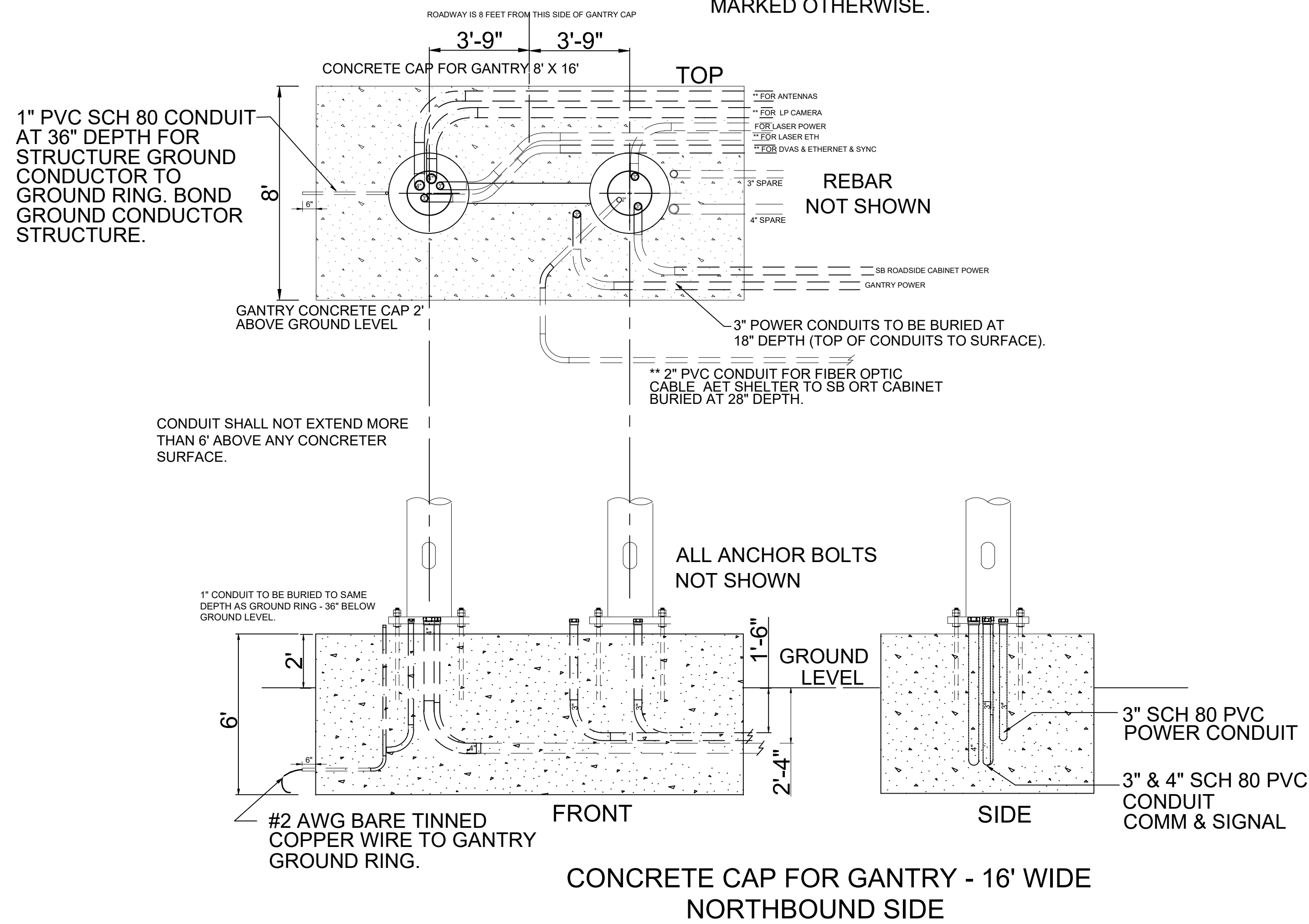
SLIT 2
 FOR LOOP DETECTOR
 FEED IN CABLE.

RESPONSIBILITY OF A-TO-B FOR ALL LOOPS, LOOP LEAD-IN
 ROADWAY SAW CUTS, & LEAD IN WIRE AND INNERDUCT.



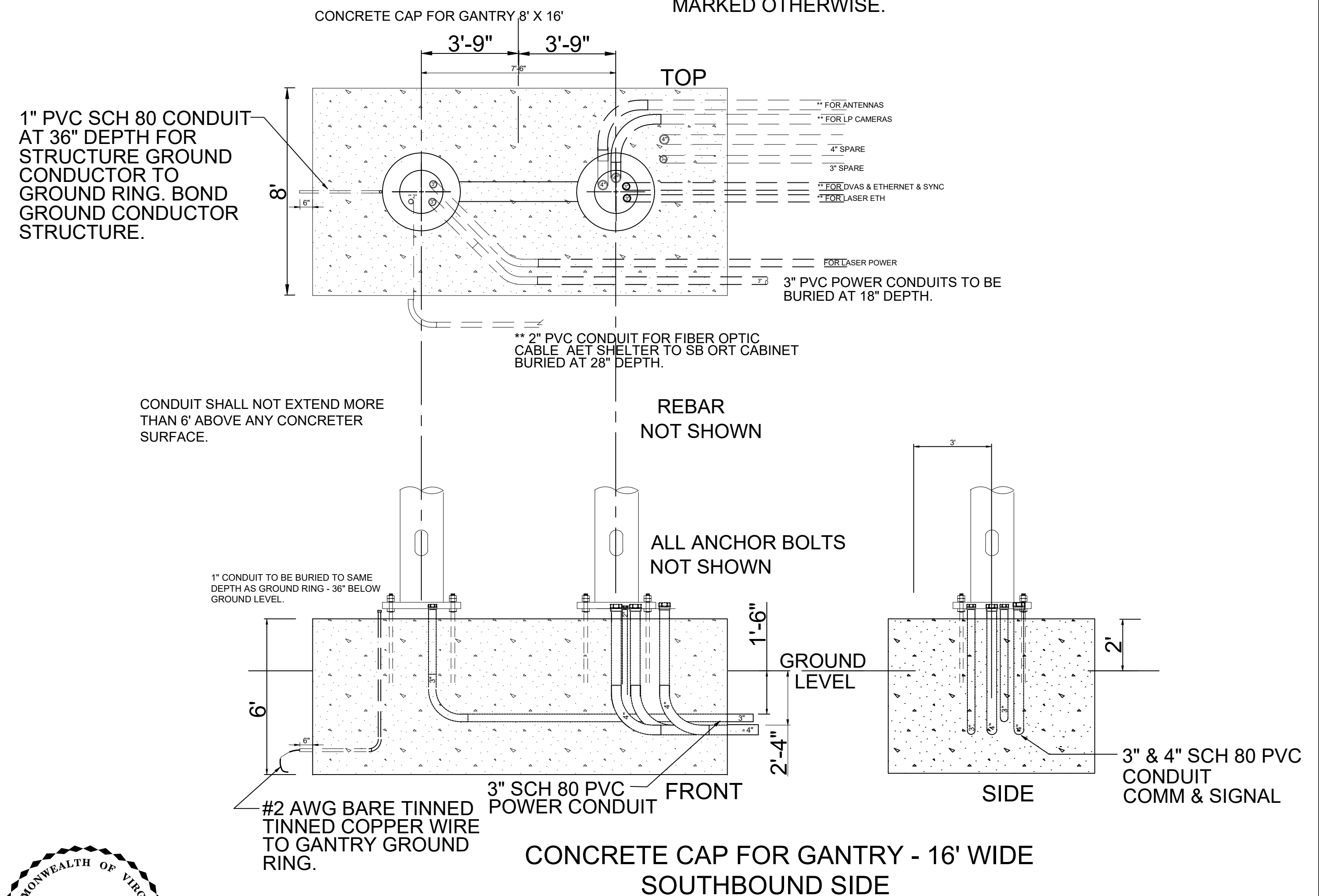
Robert D LaGatta
 Digitally signed by Robert D LaGatta
 Date: 2025.01.17 13:00:01-05'00'

** - DENOTES CONDUIT TO BE BURIED AT 28" DEPTH - ALL OTHERS AT 18" DEPTH UNLESS MARKED OTHERWISE.



CONCRETE CAP FOR GANTRY - 16' WIDE NORTHBOUND SIDE

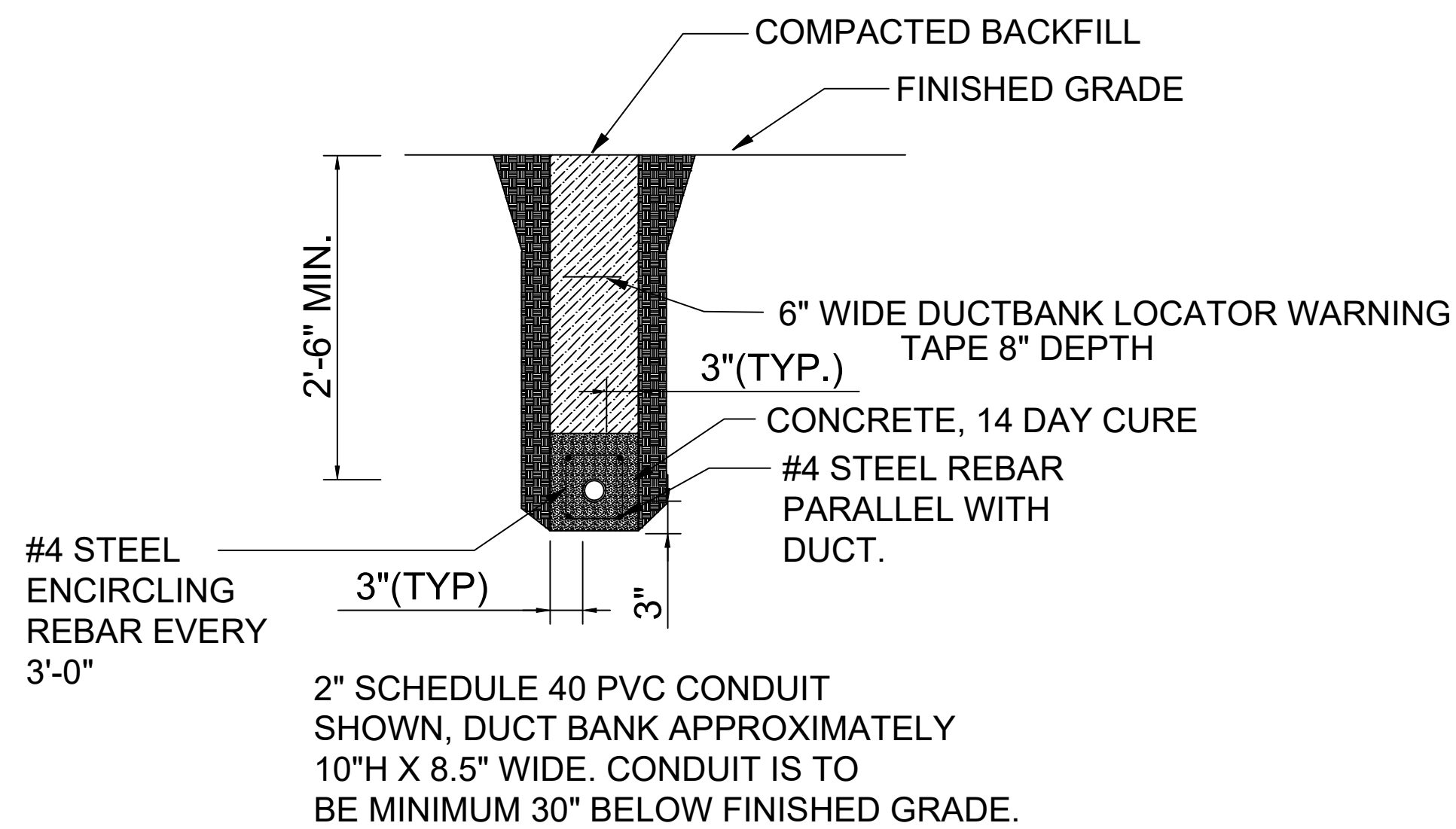
** - DENOTES CONDUIT TO BE BURIED AT 28" DEPTH - ALL OTHERS AT 18" DEPTH UNLESS MARKED OTHERWISE.



CONCRETE CAP FOR GANTRY - 16' WIDE SOUTHBOUND SIDE

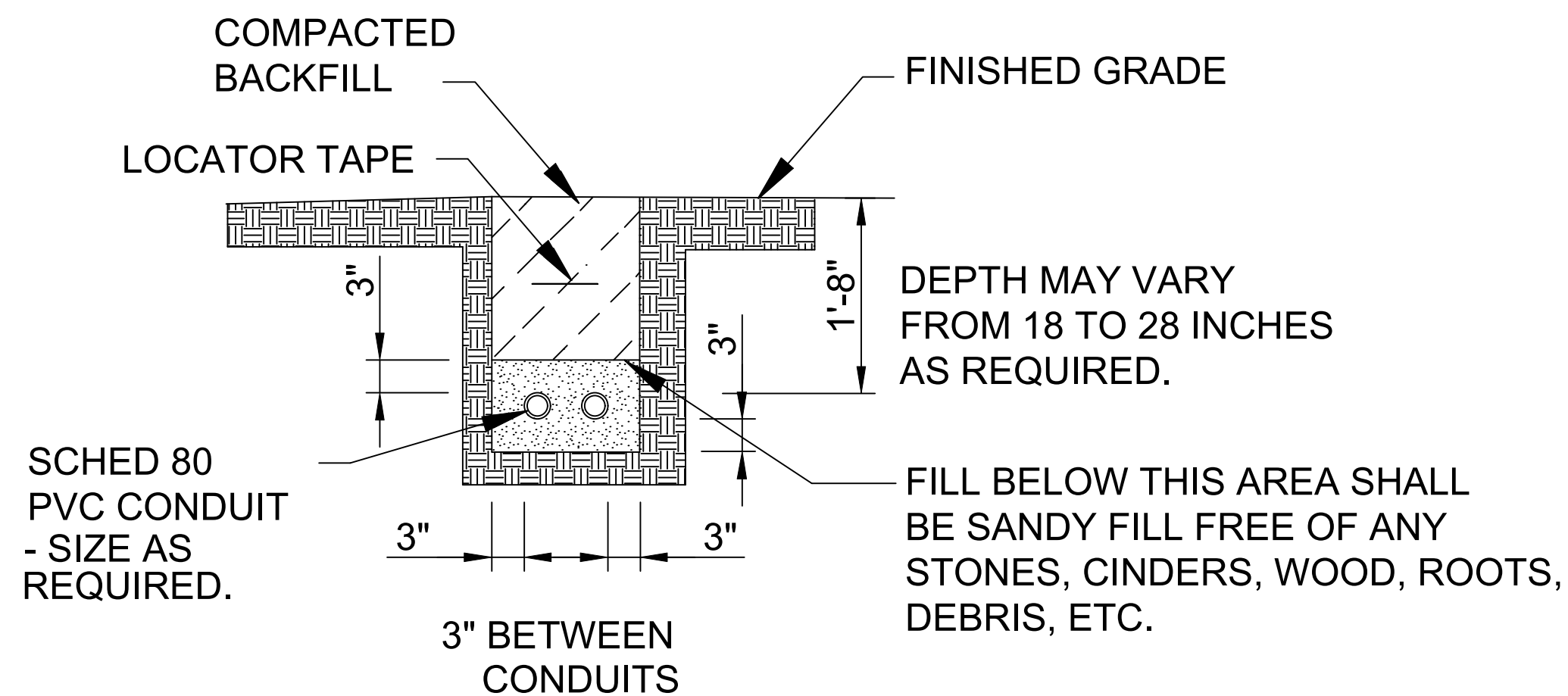
COMMONWEALTH OF VIRGINIA
 Robert D LaGatta
 No. 0402046736
 PROFESSIONAL ENGINEER
 Digitally signed by Robert D LaGatta
 Date: 2025.01.21 09:59:27-05'00'

DATE & TIME

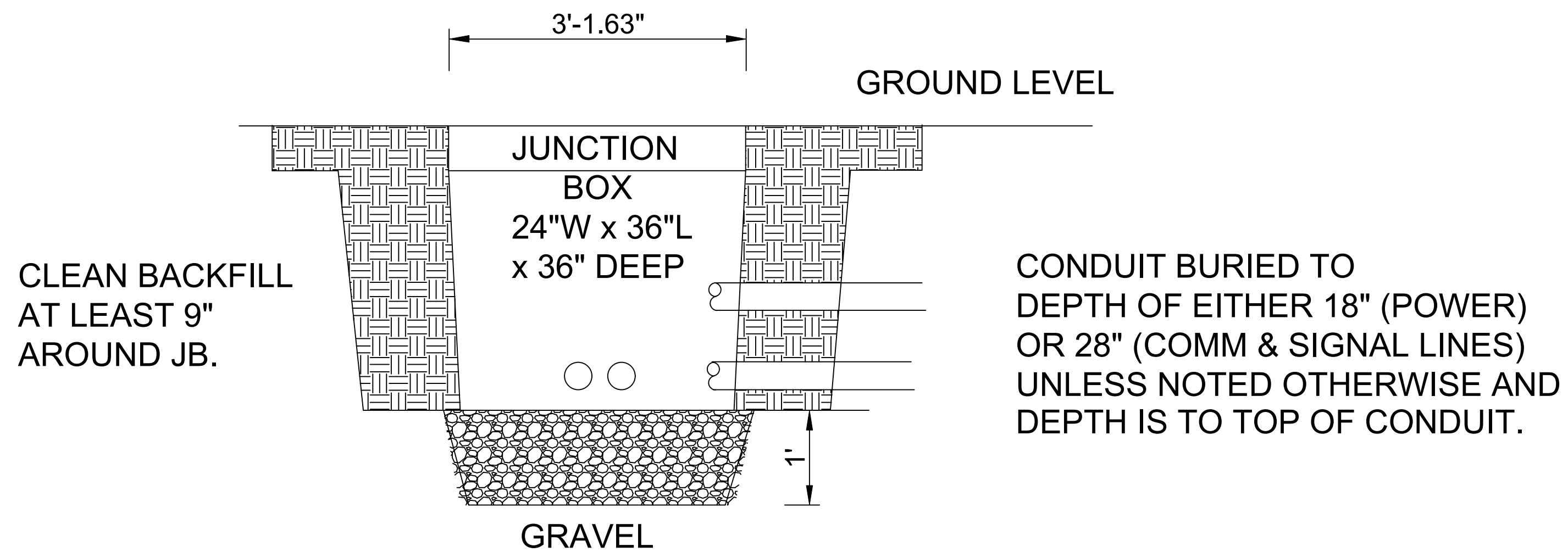


TYPICAL CONCRETE ENCASED COMMUNICATION DUCT BANK - N.T.S.

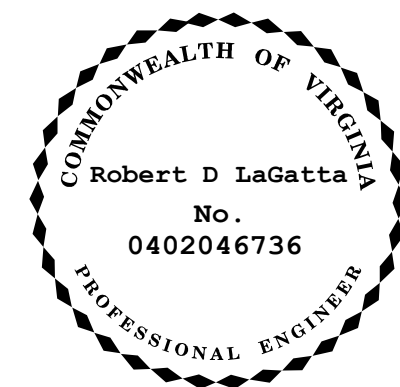
CONTRACTOR SHALL INSTALL 6" MAXIMUM WIDE RED LOCATOR TAPE 6" TO 8" BELOW FINISHED GRADE AND DIRECTLY ABOVE BURIED CONDUIT.



VERTICAL SPACE BETWEEN CONDUIT STACKED ONE ON TOP OF THE OTHER TO BE 3" MINIMUM.



TYPICAL - POLYMER CONCRETE HAND HOLE WITH LID, QUAZITE PG2436BA36 OR APPROVED EQUAL.



Digitally signed by Robert D LaGatta
 Date: 2025.01.21 10:03:41-05'00'