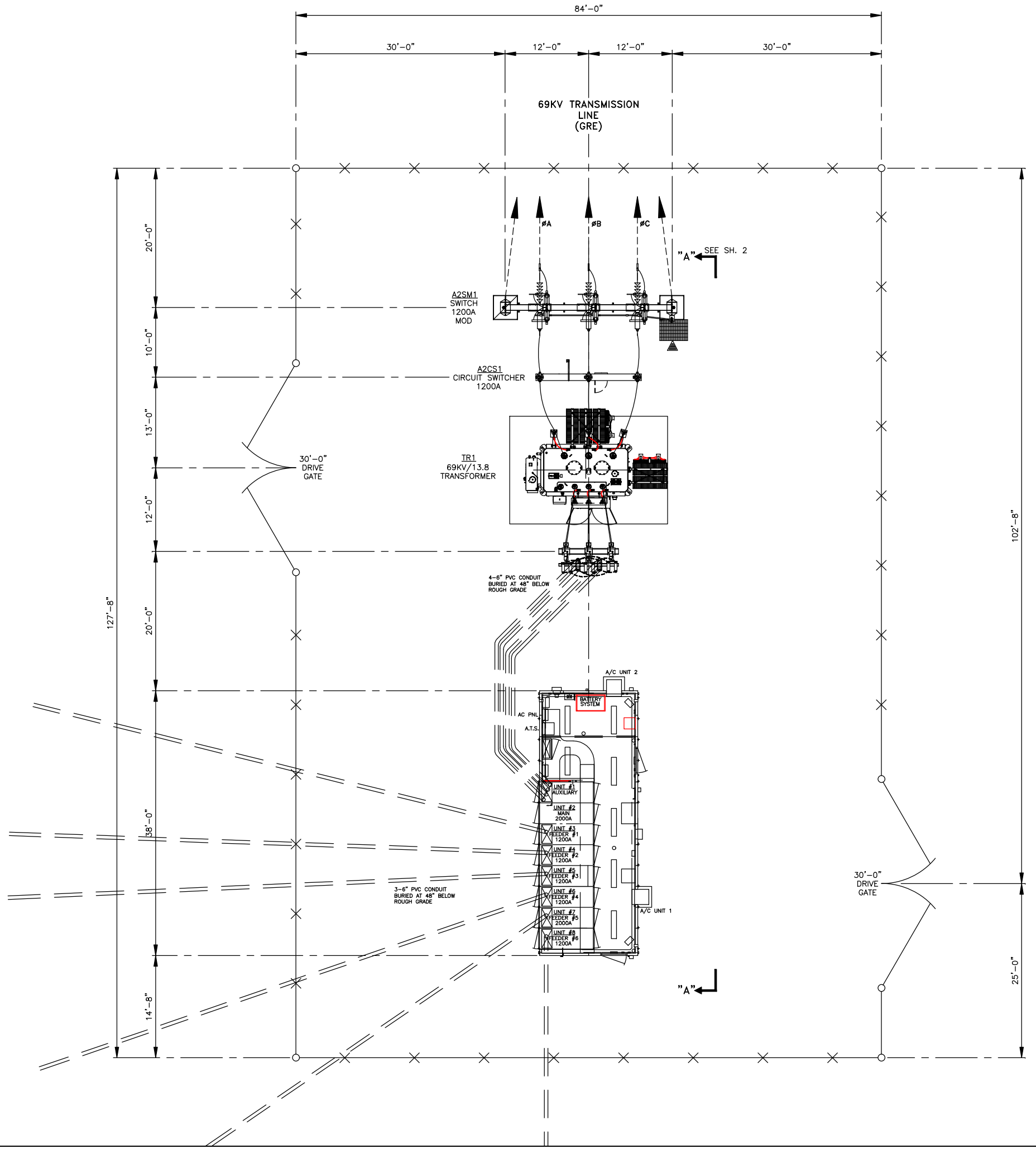


N

LEGEND:

▶ = SWITCH OPER. MECH. LOCATION

(1) INDICATES ITEM NUMBER ON BOM DWG. SA02-03D, SH. 1

REFERENCE DRAWINGS:

ELECTRICAL PLAN B.O.M._____SA02-03D, SH. 1
FENCE & FOUNDATION PLAN_____SA02-05D, SH. 1
CONDUIT PLAN_____SA02-07D, SH. 1
CABLE TRENCH PLAN & DETAILS____SA02-08D, SH. 1
GROUNDING PLAN_____SA02-09D, SH. 1
STRUCTURAL PLAN_____SA02-35D, SH. 1

APPROVED FOR CONSTRUCTION

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 0

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Tyler Porter Dwg. Rev. 0
Date: 05/27/2021 Lic. No. 57767
Electronically signed by GRE user: u8014

NO	DATE	REVISION	BY	APPD BY
6				
5				
4				
3				
2				
1				

CONNEXUS ENERGY

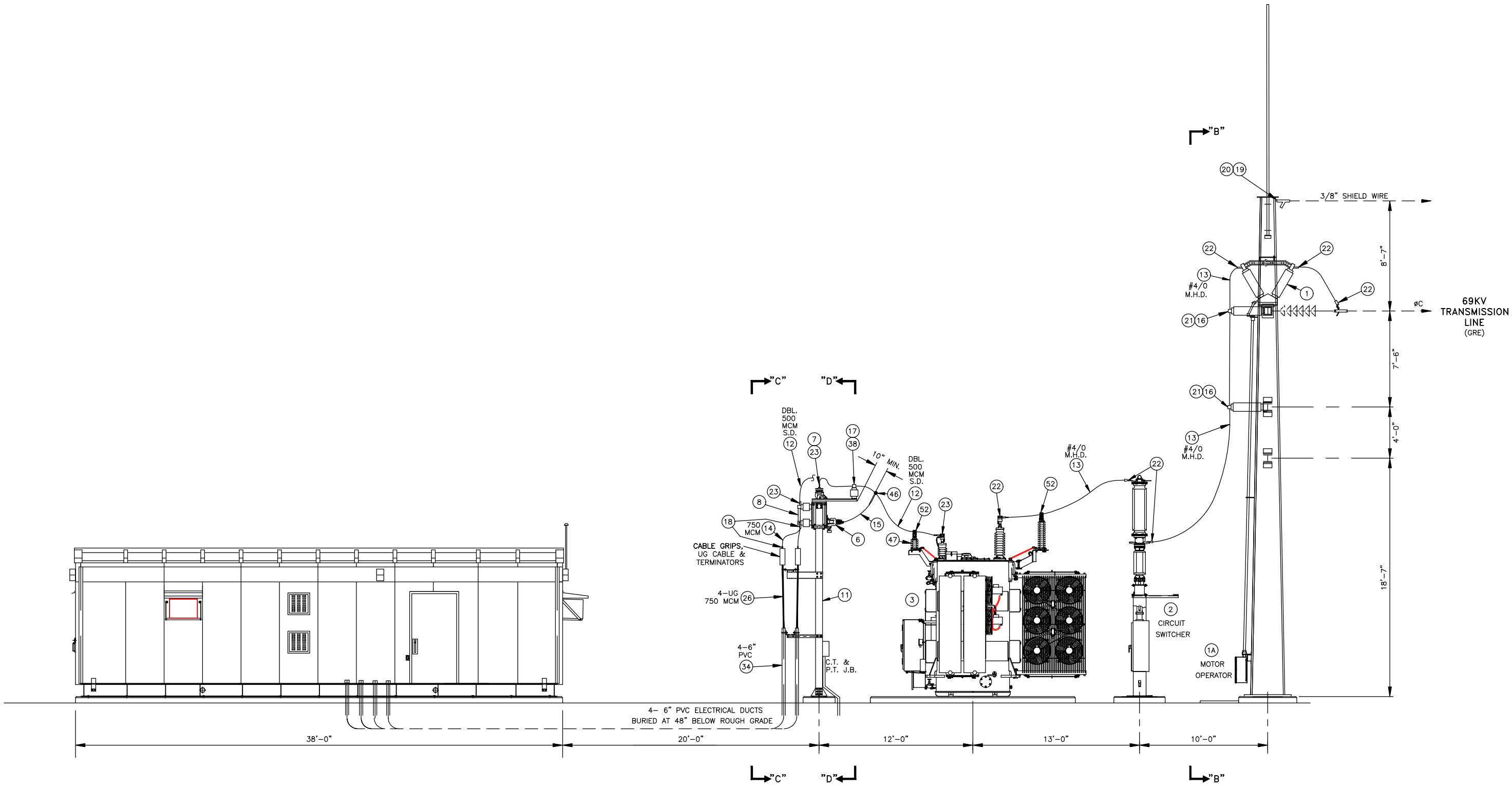
ELECTRICAL PLAN

DAYTONPORT SUBSTATION

SA02

DATE: 10-26-20
SCALE: AS SHOWN
DWN BY: RSB
CKD BY:
CKD BY:
APPD BY: TJP

PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02-04D
SHEET 1



SECTION "A-A"

SCALE: 1/4"=1'-0"

0 2' 4' 6'

APPROVED FOR CONSTRUCTION

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 0
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
Tyler Porter Dwg. Rev. 0
Date: 05/27/2021 Lic. No. 57767
Electronically signed by GRE user: u8014

REV NO	DATE	REVISION	REV BY	APPD BY
6				
5				
4				
3				
2				
1				

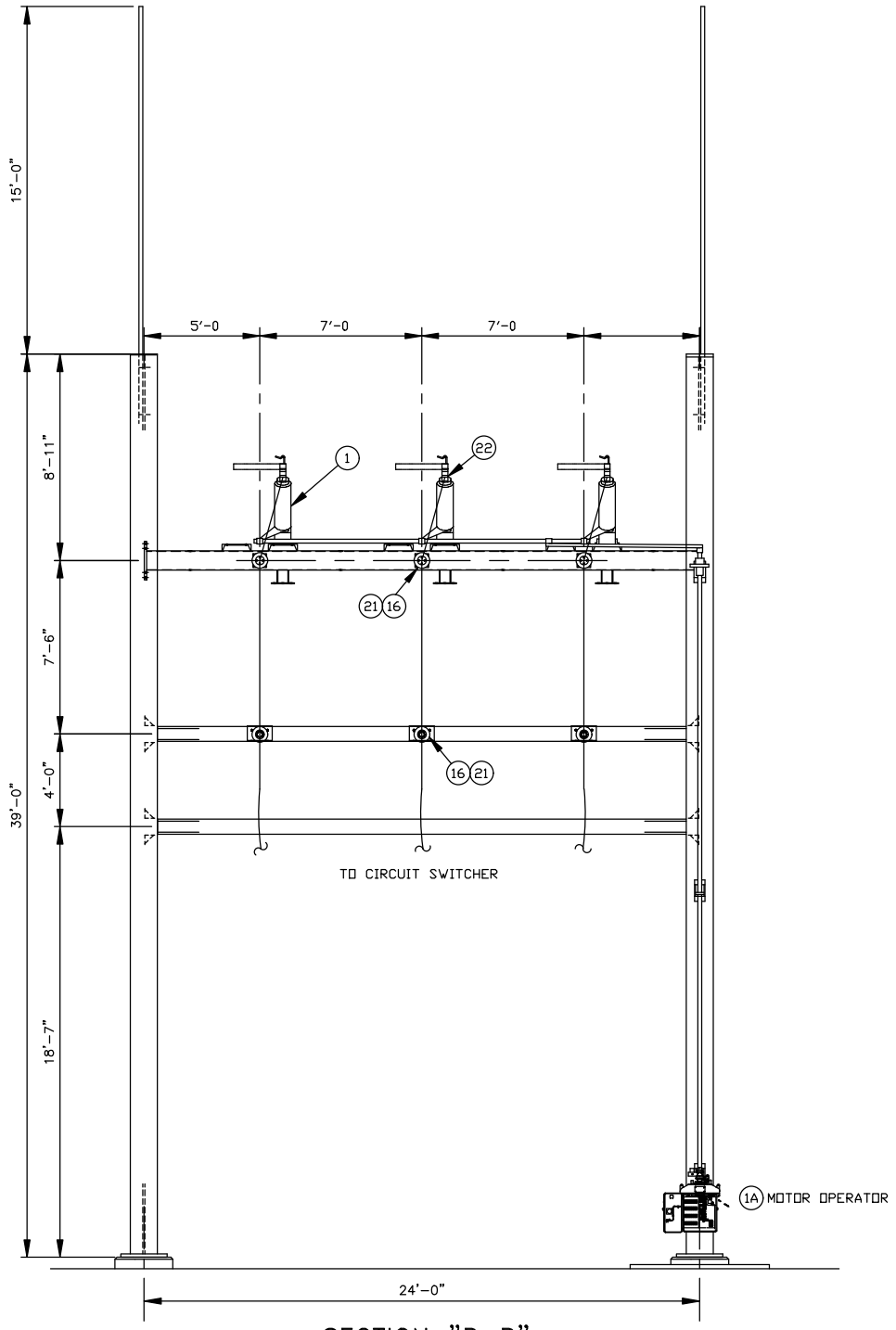
CONNEXUS ENERGY

ELEVATION VIEW
SECTION "A-A"

DAYTONPORT SUBSTATION

SA02

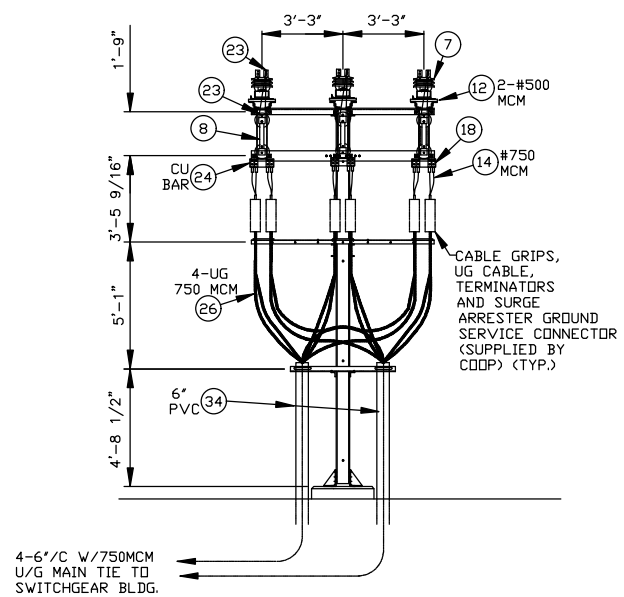
DATE: 1-13-21	PROJECT NO 208250
SCALE: AS SHOWN	REVISION 0
DWN BY: RSB	
CKD BY:	DRAWING NUMBER SA02-04D
CKD BY:	
APPD BY: TJP	SHEET 2



SECTION "B–B"

SCALE: 1/4"=1'-0"

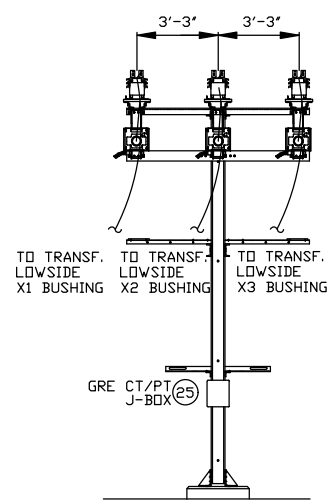
0 2' 4' 6'



SECTION "C–C"

SCALE: 1/4"=1'-0"

0 2' 4' 6'



SECTION "D–D"

SCALE: 1/4"=1'-0"

0 2' 4' 6'

APPROVED FOR CONSTRUCTION

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 0

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Tyler Porter Dwg. Rev. 0

Date: 06/01/2021 Lic. No. 57767

Electronically signed by GRE user: u8014

NO	DATE	REVISION	BY	APPD BY
6				
5				
4				
3				
2				
1				

CONNEXUS ENERGY

ELEVATION VIEW
SECTION "B–B", "C–C", "D–D"

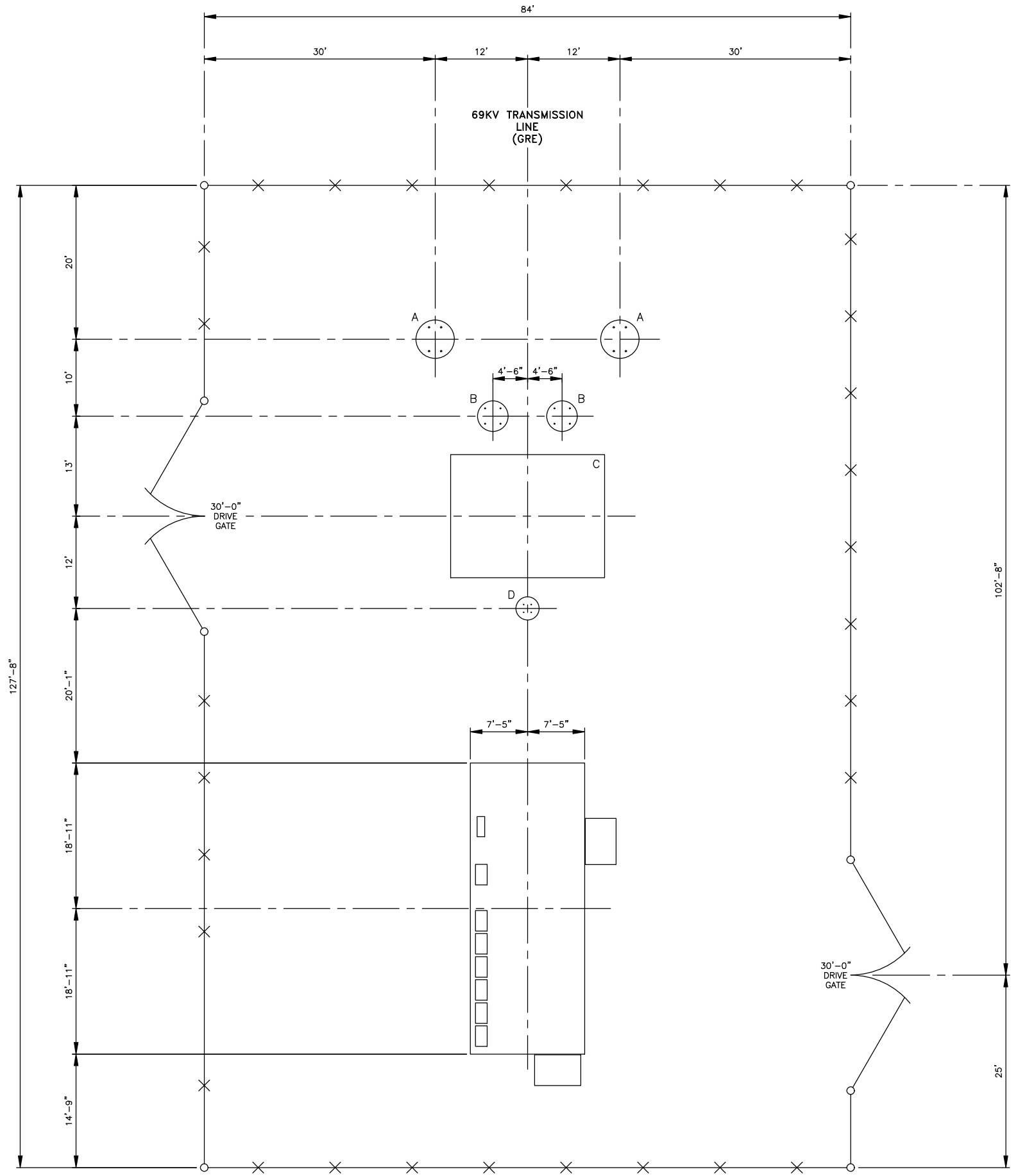
DAYTONPORT SUBSTATION

SA02

DATE: 1-13-21
SCALE: AS SHOWN
DWN BY: RSB
CKD BY:
CKD BY:
APPD BY: TJP

PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02-04D
SHEET 3

APPROVED FOR CONSTRUCTION



PLAN VIEW

69KV & 13.2KV SUBSTATION AREAS

N

SCALE: 1/8"=1'-0"

0 2' 4' 6' 8' 10'

LEGEND

FDN MARK	QTY	DESCRIPTION	CONNEXUS ENERGY DRAWING
A	2	69KV DEAD END STRUCTURE	SA02-05D SH. 2
B	2	69KV CIRCUIT SWITCHER STAND	SA02-05D SH. 2
C	1	115KV-69KV TRANSFORMER SLAB	SA02-05D SH. 4
D	1	REG. BYPASS, CT & PT STRUCTURE	SA02-05D SH. 2
E	1	SWITCH GEAR SLAB	SA02-05D SH. 5

REFERENCE DRAWINGS:

ELECTRICAL PLAN_____SA02-04D, SH. 1
CONDUIT PLAN_____SA02-07D, SH. 1
GROUNDING PLAN_____SA02-09D, SH. 1
STRUCTURAL STEEL PLAN_____SA02-35D, SH. 1

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 3

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Dustin J. Kinnischtzke Dwg. Rev. 0

Date: 5-25-2021 Lic. No. 48335

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

REV NO	DATE	REVISION	REV APPD BY
6			
5			
4			
3			
2			
1			

CONNEXUS ENERGY

FOUNDATION PLAN

DAYTONPORT SUBSTATION

SA02

DATE: 5-25-21
SCALE: AS SHOWN
DWN BY: SWL
CKD BY: SJL
CKD BY:
APPD BY: DJK

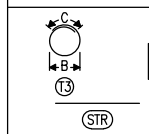
PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02-05D
SHEET 1

APPROVED FOR CONSTRUCTION

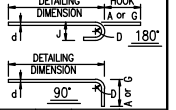
GENERAL NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4,500 P.S.I. AT THE END OF 28 DAYS.
2. SOIL BEARING CAPACITY BENEATH FOOTING OR FOUNDATION SHALL NOT BE LESS THAN 3,000#/SQ. FT.
3. CONCRETE PLACEMENT: NO CONTROL JOINTS PERMITTED UNLESS NOTED.
4. EDGES OF CONCRETE: ALL EXPOSED EDGES ABOVE GROUND ROUNDED OR CHAMFERED 3/4 INCH.
5. REINFORCING STEEL: ASTM A–615 GRADE 60.
6. COVER: TWO INCHES MINIMUM PROTECTIVE CONCRETE COVER OVER REINFORCING STEEL UNLESS NOTED.
7. REFER TO DETAILED SPECIFICATION ON CONCRETE.
8. FINISH: TOP SURFACE OF PIERS TO BE PERFECTLY LEVEL, SCREEDED AND BROOMED. OUTDOOR EQUIPMENT SLABS WOOD FLOATED, LIGHTLY TROWELED AND THEN BROOMED.
9. ANCHOR BOLTS ARE OWNER FURNISHED WITH THE STRUCTURAL STEEL.
10. WHEN BOLTED STEEL FORMS ARE USED TO FORM THE TOP OF THE PIER, THE EXCAVATED PIER DIAMETER BELOW THE FORM IS TO BE INCREASED BY 1'–0" TO A MINIMUM DEPTH OF 4'–0" BELOW FINISHED GRADE.

BAR BENDING DATA



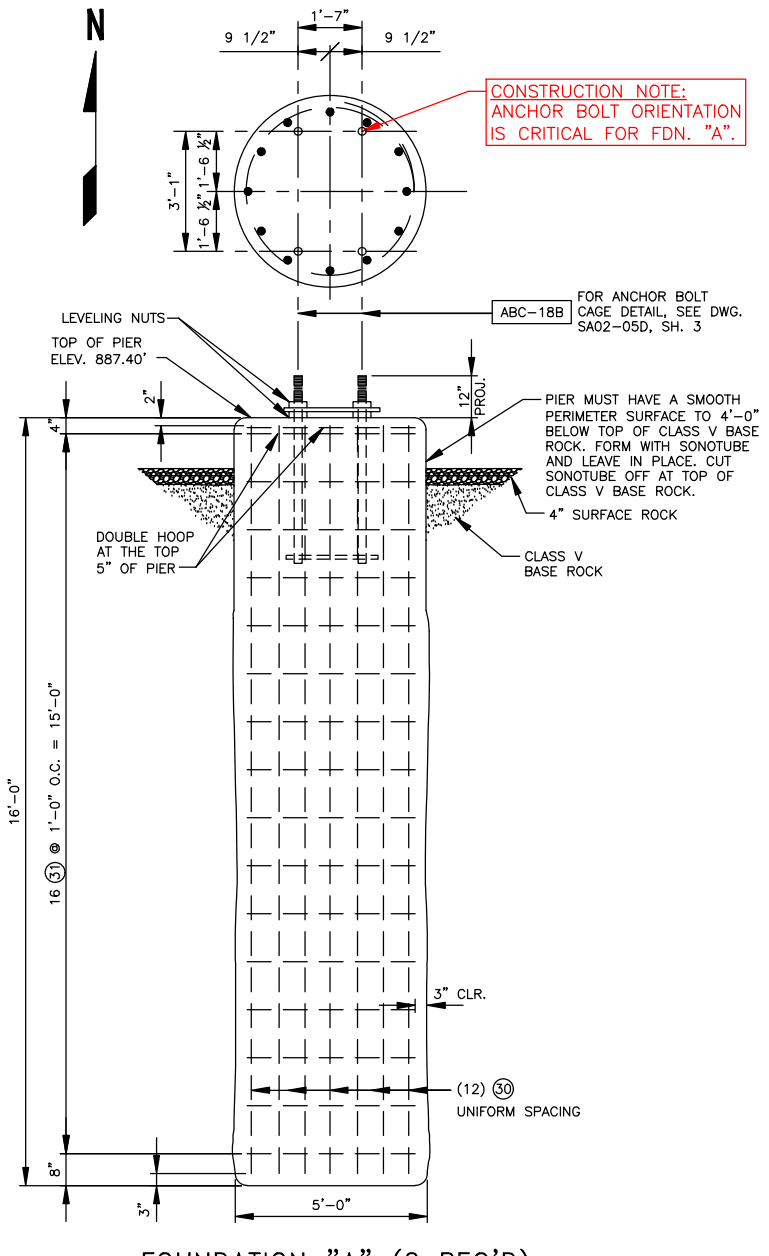
BAR SIZE #	D	END HOOKS 180° HOOK A or G	END HOOKS 180° HOOK J	END HOOKS 90° HOOK A or G	STIRRUP & TIE HOOKS D	STIRRUP & TIE HOOKS 90° HOOKS A or G
3	2⅜	5"	3"	6"	1½	4"
4	3	6"	4"	8"	2	4½"
5	3¾	7"	5"	10"	2½	6"
6	4½	8"	6"	1'–0"		
7	5¼	10"	7"	1'–2"		
8	6	11"	8"	1'–4"		
9	9	1'–3"	11¼"	1'–7"		
10	10	1'–5"	1'–0¾"	1'–10"		



NOTES:
1. DIMENSIONS OMITTED ARE ZERO
2. DIMENSIONS ARE OUT TO OUT OF BAR
3. DEFORMED REINFORCING BARS ARE TO BE GRADE 60 STEEL (ASTM A615)

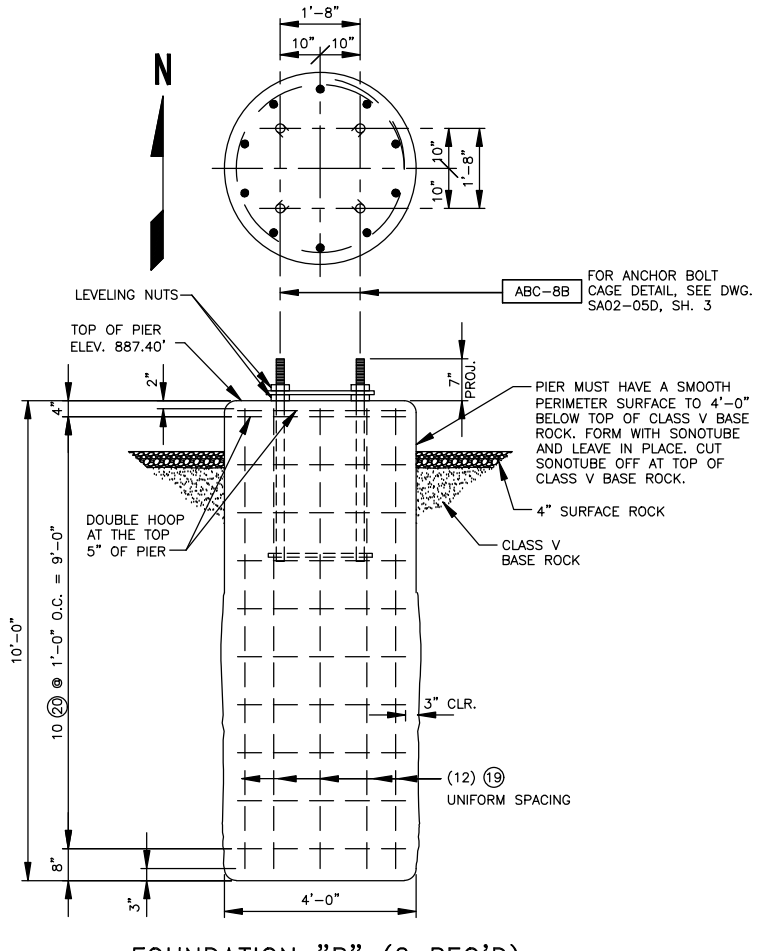
NO. REQ'D	CU. YD. CONC. /FDN.	FDN MARK	BAR MARK	QUAN.	SIZE	NOM. LENGTH	TYPE	A	B	C	D	E	G	J	WT. /BAR	TOTAL WT.
2	11.6	A	30	12	#10	15'–7"	STR								67.1	805.2
			31	17	#6	16'–1"	T3		4'–6"	1'–11"					24.2	411.4
															WT. REBAR PER FDN. =	1216.6
2	4.7	B	19	12	#8	9'–7"	STR								25.6	307.2
			20	11	#4	12'–3"	T3		3'–6"	1'–3"					8.2	90.2
															WT. REBAR PER FDN. =	397.4
1	1.8	D	23	6	#8	9'–7"	STR								25.6	153.6
			22	11	#4	7'–6"	T3		2'–0"	1'–3"					5.0	55.0
															WT. REBAR PER FDN. =	208.6

TOTAL CU. YDS. CONC. = 34.4 CU. YDS.
TOTAL WT. REBAR = 3,436.6 LBS.



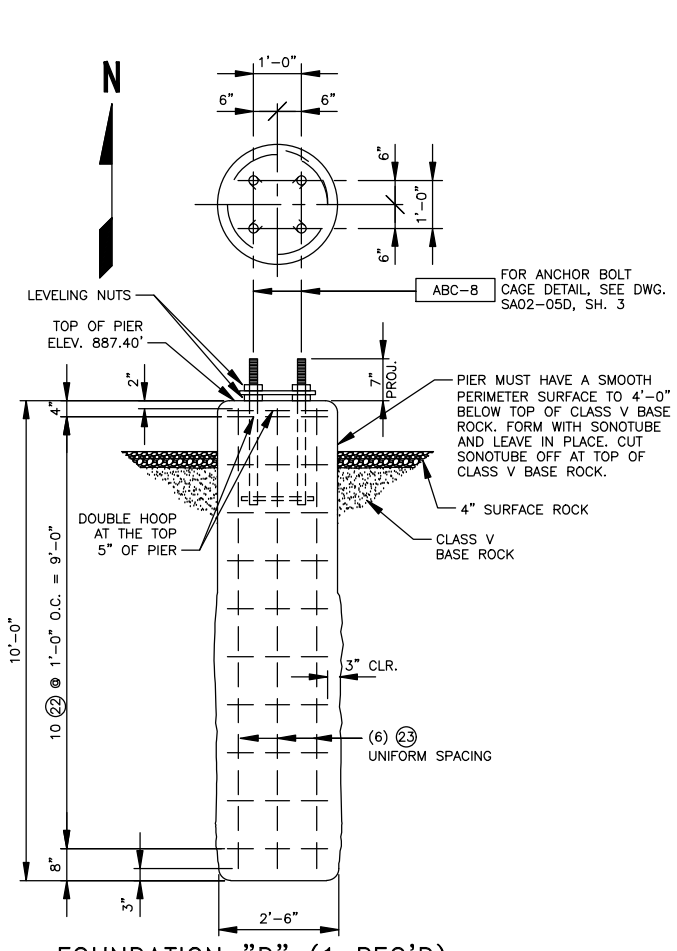
FOUNDATION "A" (2 REQ'D)

69KV SINGLE BAY DEAD END STRUCTURE



FOUNDATION "B" (2 REQ'D)

CIRCUIT SWITCHER STAND



FOUNDATION "D" (1 REQ'D)

REG. BYPASS, CT & PT STRUCTURE

APPROVED FOR CONSTRUCTION

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 3

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Dustin J. Kinnischtzke Dwg. Rev. 0
Date: 5–25–2021 Lic. No. 48335

REFERENCE DRAWINGS:

FOUNDATION PLAN_____SA02–05D, SH. 1

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

REV NO	DATE	REVISION	REV APPD BY
6			
5			
4			
3			
2			
1			

CONNEXUS ENERGY

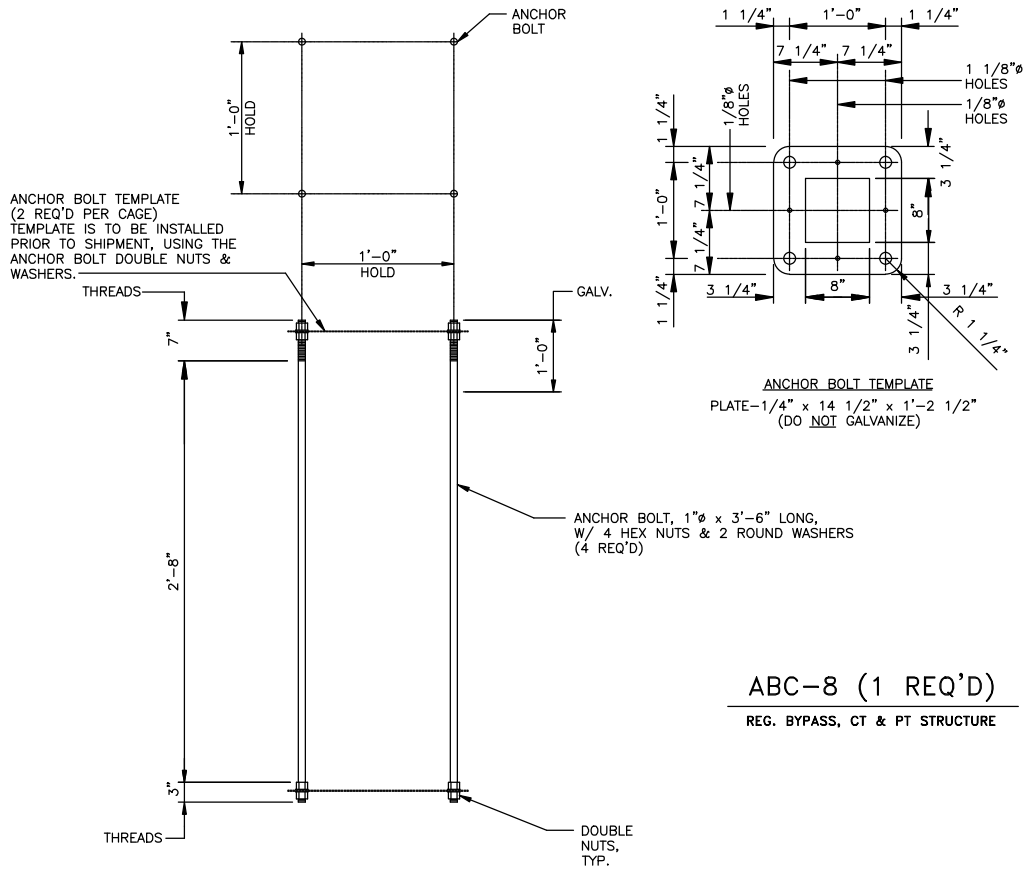
FOUNDATION DETAILS

DAYTONPORT SUBSTATION

SA02

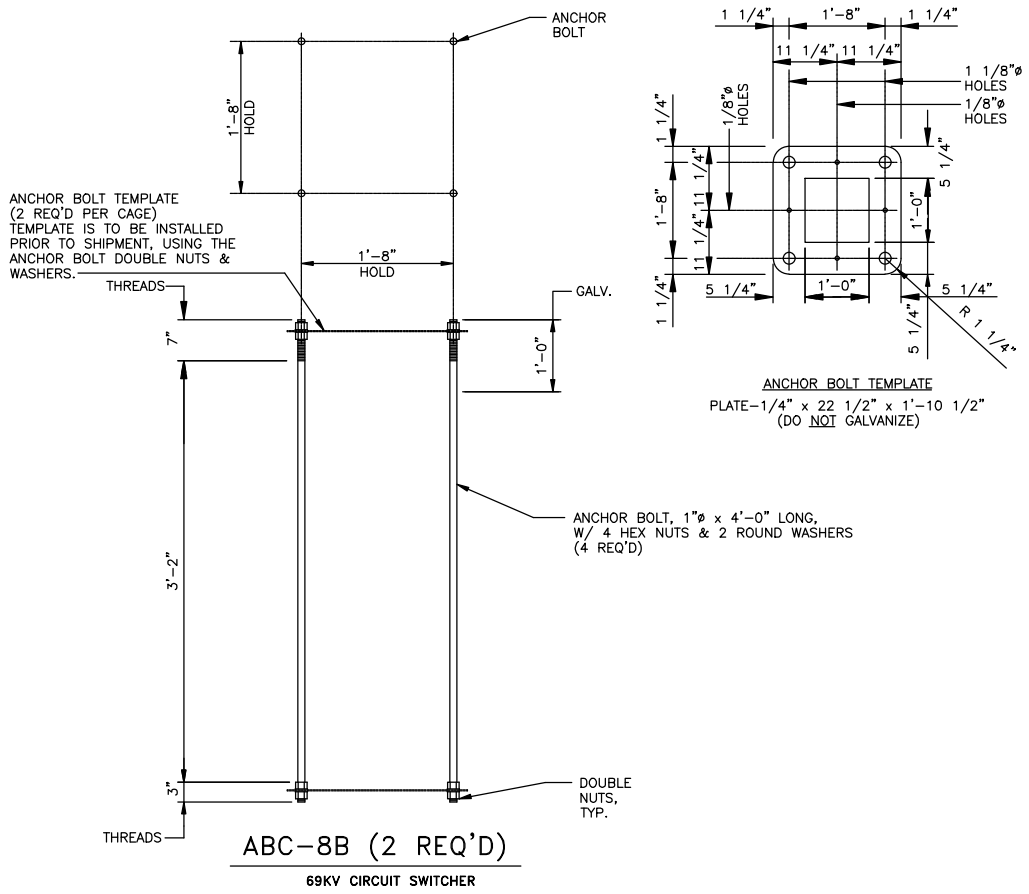
DATE: 5–25–21
SCALE: AS SHOWN
DWN BY: SWL
CKD BY: SJL
CKD BY:
APPD BY: DJK

PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02–05D
SHEET 2



ABC-8 (1 REQ'D)

REG. BYPASS, CT & PT STRUCTURE



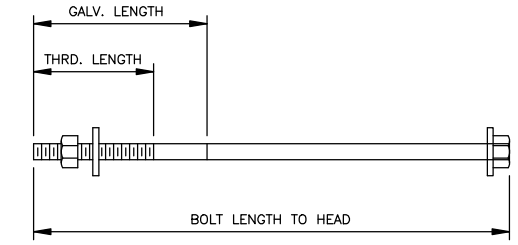
ABC-8B (2 REQ'D)

69KV CIRCUIT SWITCHER

STANDARD NON-LEVELING ANCHOR BOLT

AB_____-_____

BOLT DIA. IN 8THS OF AN INCH — BOLT LENGTH TO HEAD IN INCHES

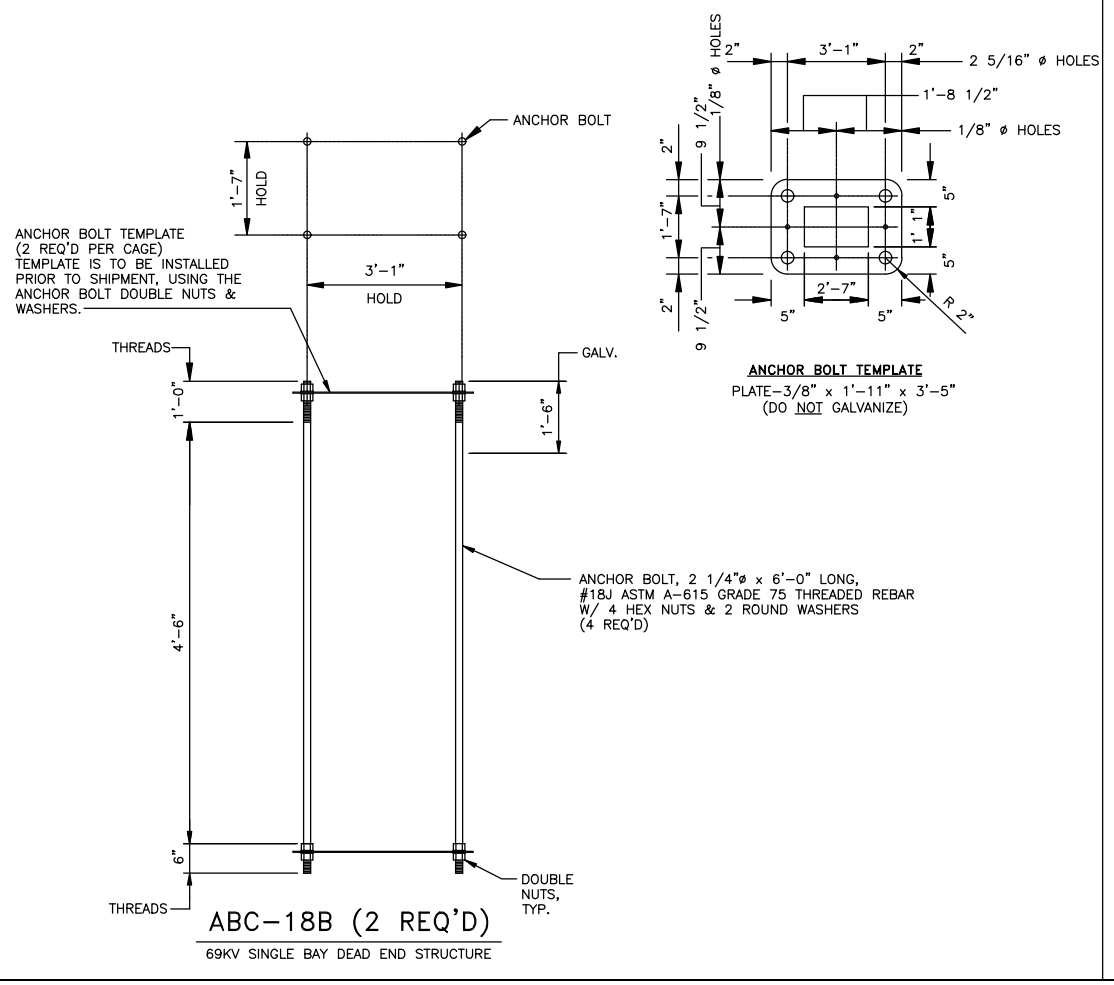


GUIDELINES:
THREAD LENGTH – 6 x DIA. UNLESS OTHERWISE NOTED
GALV. LENGTH – 9 x DIA. UNLESS OTHERWISE NOTED

EXAMPLE:
AB8.24 = NON-LEVELING ANCHOR BOLT, 1"ø x 2'-0"
W/6" OF THREADS, 9" OF GALVANIZING.

MATERIALS:
1 EA. – BOLT – ASTM F-1554 GRADE 55
1 EA. – NUT – ASTM A563 HEX GALVANIZED
2 EA. – WASHER – ROUND GALVANIZED

NOTE:
THREADS SHALL BE RECHECKED AFTER GALVANIZING TO ASSURE THAT THE NUT WILL TURN ON EASILY



ABC-18B (2 REQ'D)

69KV SINGLE BAY DEAD END STRUCTURE

ANCHOR BOLT CAGE & ANCHOR BOLT BILL OF MATERIAL

MARK	QTY.	DESCRIPTION	FDN. DETAIL DWG. NO.	WEIGHT EA.	WEIGHT TOTAL
ABC-8	1	ANCHOR BOLT CAGE (FDN. "A")	SA02-05D, SH. 2	72.1	72.1
		SEE THIS DRAWING FOR FABRICATION DETAILS			
ABC-8B	2	ANCHOR BOLT CAGE (FDN. "B")	SA02-05D, SH. 2	122.6	245.2
		SEE THIS DRAWING FOR FABRICATION DETAILS			
ABC-18B	2	ANCHOR BOLT CAGE (FDN. "C")	SA02-05D, SH. 2	594.0	1188.0
		SEE THIS DRAWING FOR FABRICATION DETAILS			

TOTAL WT. ANCHOR BOLT CAGES & ANCHOR BOLTS = 1,505.3 LBS.

FABRICATION NOTES:

1. ANCHOR BOLT MATERIAL: F-1554 GRADE 55 UNLESS NOTED OTHERWISE.
2. GALV. HEX NUTS: ASTM A563.
3. GALV. ROUND WASHERS.
4. HOT DIP GALVANIZE ENDS OF ANCHOR BOLTS AS SHOWN.
5. THREADS SHALL BE RECHECKED AFTER GALVANIZING TO ASSURE THAT THE NUT WILL TURN ON EASILY.

REFERENCE DRAWINGS:

FENCE & FOUNDATION PLAN_____SA02-05D, SH. 1

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 3

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Dustin J. Kinnischtzke Dwg. Rev. 0

Date: 4-20-2021 Lic. No. 48335

REV NO	DATE	REVISION	REV APPD BY
6			
5			
4			
3			
2			
1			

CONNEXUS ENERGY

FOUNDATION DETAILS
ANCHOR BOLTS

DAYTONPORT SUBSTATION

SA02

DATE: 4-20-21
SCALE: AS SHOWN
DWN BY: CMK
CKD BY: SJL
CKD BY:
APPD BY: DJK

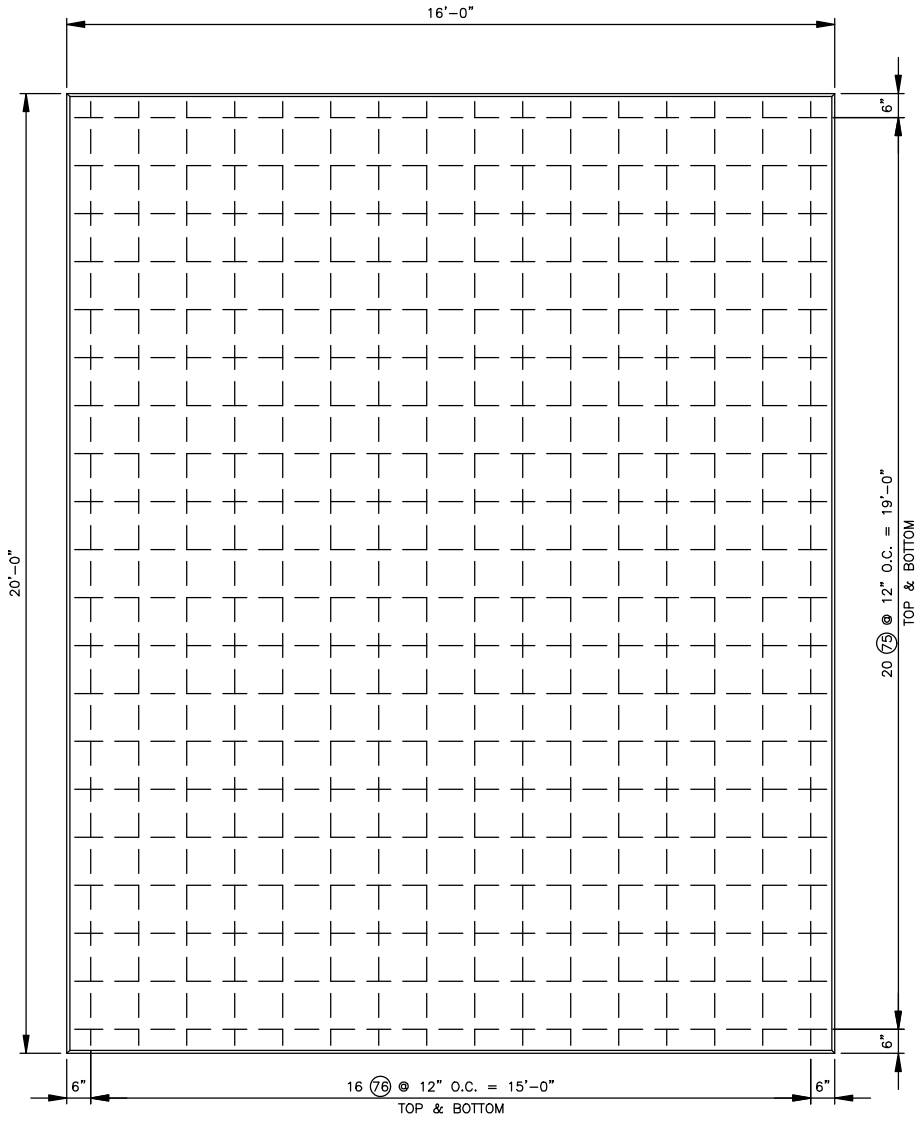
PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02-05D
SHEET 3

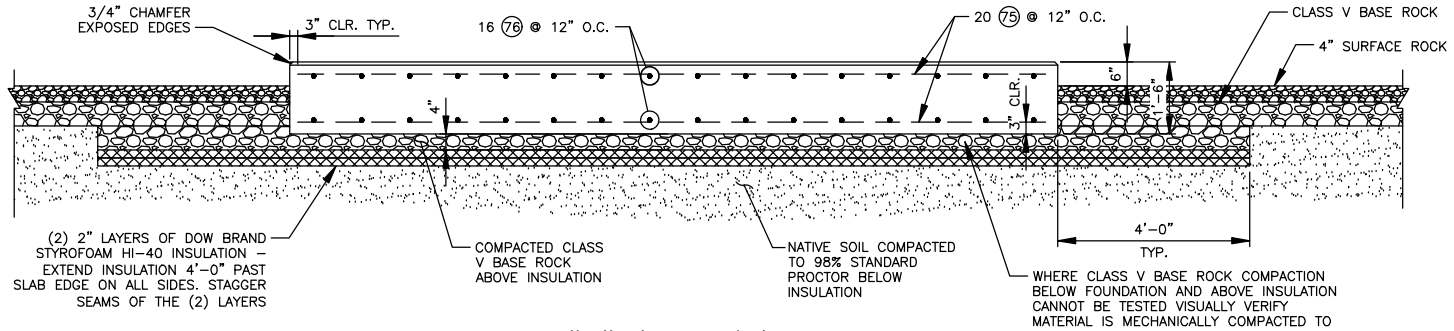
APPROVED FOR CONSTRUCTION

N

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

0 3 6 9 1' 2' 3' 4'





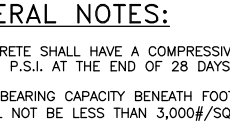
FOUNDATION "C" (1 REQ'D)

69/34.5KV TRANSFORMER

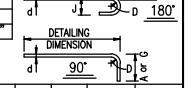
GENERAL NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4,500 P.S.I. AT THE END OF 28 DAYS.
2. SOIL BEARING CAPACITY BENEATH FOOTING OR FOUNDATION SHALL NOT BE LESS THAN 3,000#/SQ. FT.
3. CONCRETE PLACEMENT: NO CONTROL JOINTS PERMITTED UNLESS NOTED.
4. EDGES OF CONCRETE: ALL EXPOSED EDGES ABOVE GROUND ROUNDED OR CHAMFERED 3/4 INCH.
5. REINFORCING STEEL: ASTM A-615 GRADE 60.
6. COVER: TWO INCHES MINIMUM PROTECTIVE CONCRETE COVER OVER REINFORCING STEEL UNLESS NOTED.
7. REFER TO DETAILED SPECIFICATION ON CONCRETE.
8. FINISH: TOP SURFACE OF PIERS TO BE PERFECTLY LEVEL, SCREEDED AND BROOMED. OUTDOOR EQUIPMENT SLABS WOOD FLOATED, LIGHTLY TROWELED AND THEN BROOMED.

BAR BENDING DATA



BAR SIZE #	D	END HOOKS 180° HOOK A or G	END HOOKS 180° HOOK J	END HOOKS 90° HOOKS A or G	STIRRUP & TIE HOOKS D	STIRRUP & TIE HOOKS 90° HOOKS A or G
3	2½	5"	3"	6"	1½	4"
4	3	6"	4"	8"	2	4½"
5	3¾	7"	5"	10"	2½	6"
6	4½	8"	6"	1'-0"		
7	5¼	10"	7"	1'-2"		
8	6	11"	8"	1'-4"		
9	9	1'-3"	11¼"	1'-7"		
10	10	1'-5"	1'-0¾"	1'-10"		



NOTES:
1. DIMENSIONS OMITTED ARE ZERO
2. DIMENSIONS ARE OUT TO OUT OF BAR
3. DEFORMED REINFORCING BARS ARE TO BE GRADE 60 STEEL (ASTM A615)

NO. REQ'D	CU. YD. CONC. /FDN.	FDN MARK	BAR MARK	QUAN.	SIZE	NOM. LENGTH	TYPE	A	B	C	D	E	G	J	WT./BAR	TOTAL WT.
1	17.8	C	75	40	#6	15'-6"	STR								23.3	932.0
			76	32	#6	19'-6"	STR								29.3	937.6
															WT. REBAR PER FDN. =	1,869.6

TOTAL CU. YDS. CONC. = 17.8 CU. YDS.
TOTAL WT. REBAR = 1,869.6 LBS.

REFERENCE DRAWINGS:

FOUNDATION PLAN_____SA02-05D, SH. 1

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 3

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Dustin J. Kinnischtzke Dwg. Rev. 0

Date: 5-25-2021 Lic. No. 48335

REV NO	DATE	REVISION	REV'I APPD BY
6			
5			
4			
3			
2			
1			

CONNEXUS ENERGY

FOUNDATION DETAILS

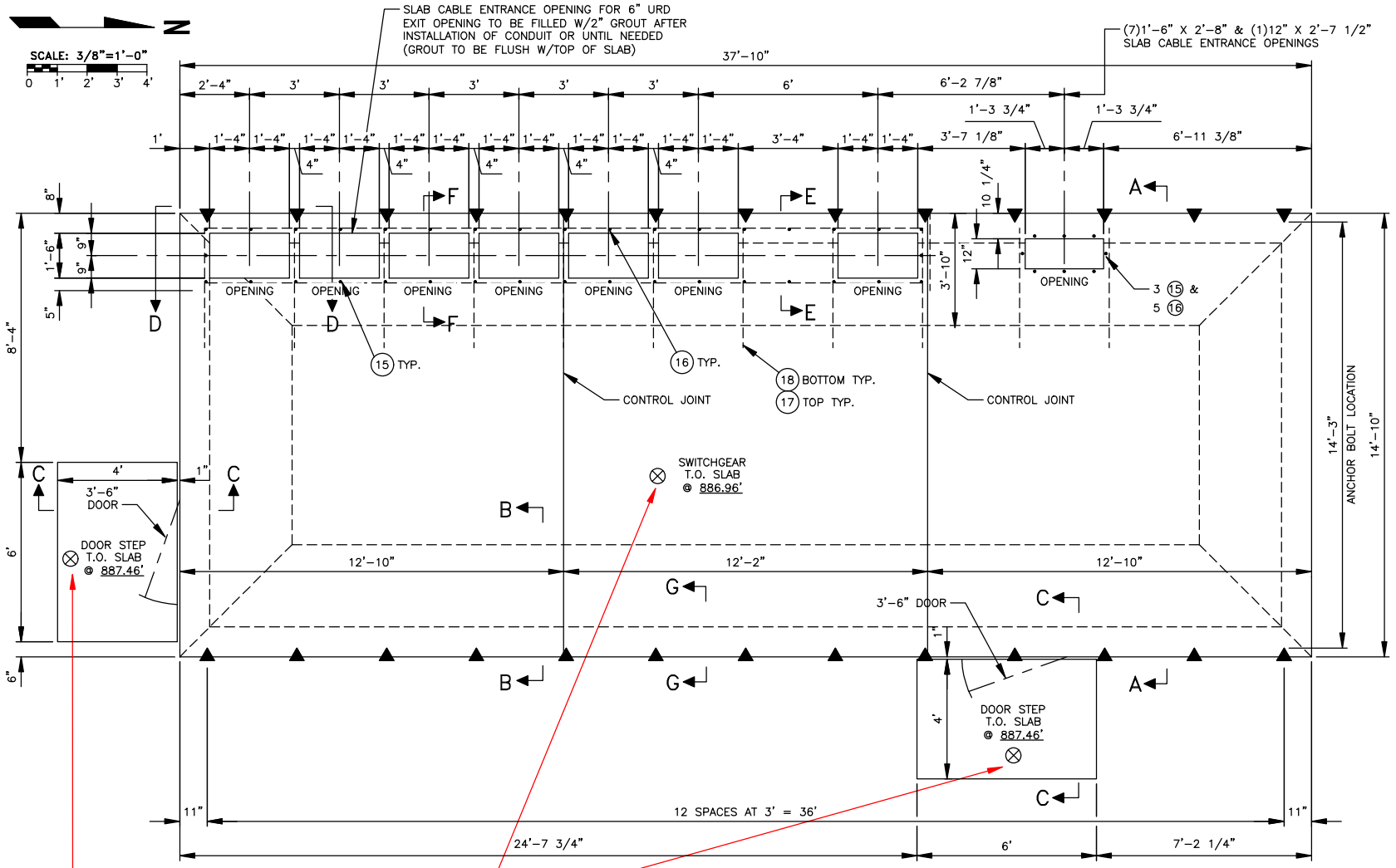
DAYTONPORT SUBSTATION

SA02

DATE: 5-25-21
SCALE: AS SHOWN
DWN BY: SWL
CKD BY: SJL
CKD BY:
APPD BY: DJK

PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02-05D
SHEET 4

APPROVED FOR CONSTRUCTION



CONSTRUCTION NOTE:
VERIFY T.O.C. ELEVATION WILL ALLOW FOR 1" FOUNDATION REVEAL PRIOR TO FORMING SLAB.

CONSTRUCTION NOTE:
TOP REBAR ALONG EDGE WILL BE CLOSE TO WEDGE ANCHOR LOCATIONS.

FOUNDATION LAYOUT

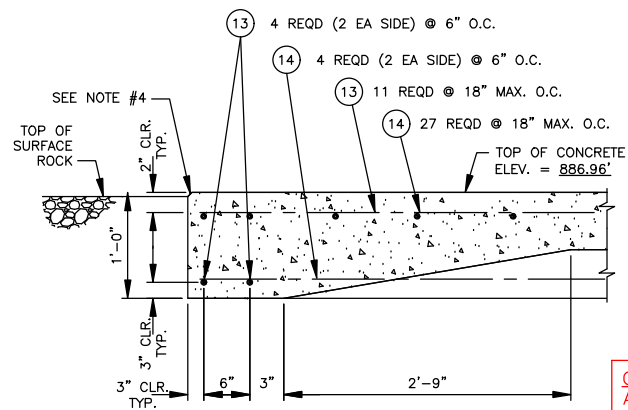
BAR BENDING DATA

BAR SIZE #	D	END HOOKS 180° HOOKS A or G	J	END HOOKS 90° HOOKS A or G	D	STIRRUP & TIE HOOKS 90° HOOKS A or G
3	2¼	5"	3"	6"	1½	4"
4	3	6"	4"	8"	2	4½"
5	3¾	7"	5"	10"	2½	6"
6	4½	8"	6"	1'-0"		
7	5¼	10"	7"	1'-2"		
8	6	11"	8"	1'-4"		
9	9	1'-3"	11¼"	1'-7"		
10	10	1'-5"	1'-0¾"	1'-10"		

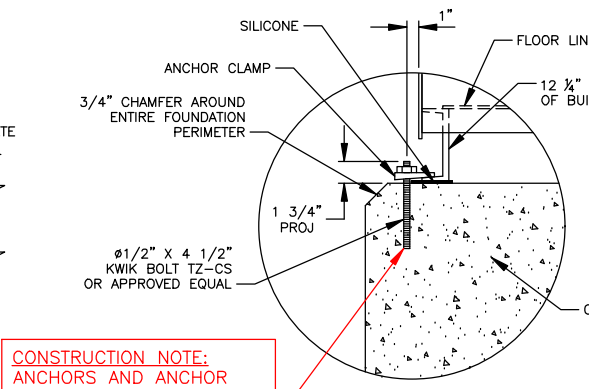
NOTES:
1. DIMENSIONS OMITTED ARE ZERO
2. DIMENSIONS ARE OUT TO OUT OF BAR
3. DEFORMED REINFORCING BARS ARE TO BE GRADE 60 STEEL (ASTM A615)

NO. REQ'D	CU.YD. CONC. /FDN.	FDN. MARK	BAR MARK	QUAN.	SIZE	NOM. LENGTH	TYPE	A	B	C	D	E	G	J	WT./BAR	TOTAL WT.
2	0.6	DOOR STEP	11	4	#4	5'-6	STR								3.7	14.8
			12	6	#4	3'-6	STR								2.4	14.4
															WT. REBAR PER FDN. =	29.2
1	14.5	SWITCH GEAR	13	16	#4	37'-4	STR								24.9	398.4
			14	31	#4	14'-4	STR								9.6	297.6
			15	20	#4	0'-5	STR		0'-5	1'-6					0.3	6.0
			16	22	#4	0'-7	STR		0'-7	0'-6					0.4	8.8
			17	11	#4	4'-0"	STR		0'-7	0'-6					2.7	29.7
			18	11	#4	0'-10"	STR		0'-7	0'-6					0.6	6.6
															WT. REBAR PER FDN. =	747.1

TOTAL CU. YDS. CONC. = 15.7 CU. YDS.
TOTAL WT. REBAR = 805.5#

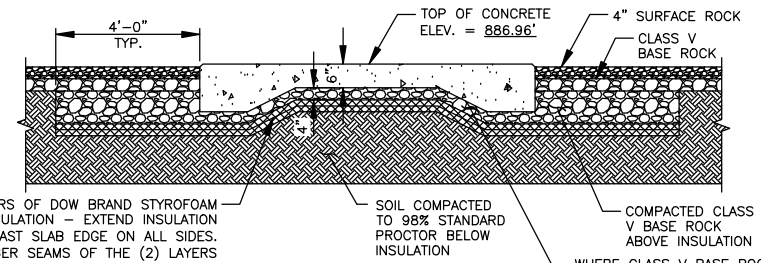


SECTION B–B
SCALE: NONE

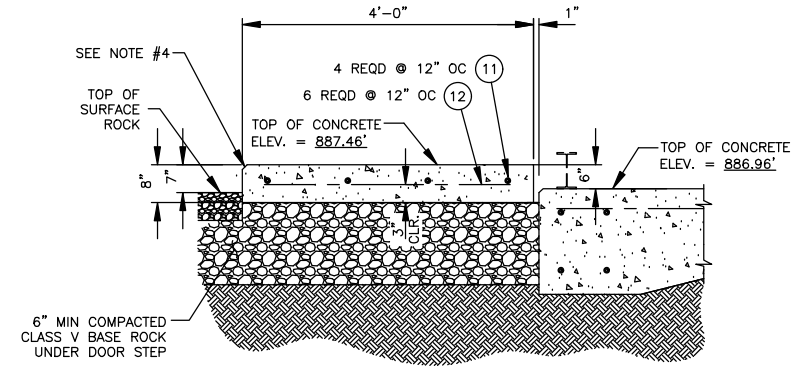


CONSTRUCTION NOTE:
ANCHORS AND ANCHOR CLIPS ARE NOT INCLUDED WITH SWITCHGEAR BUILDING AND MUST BE PROCURED

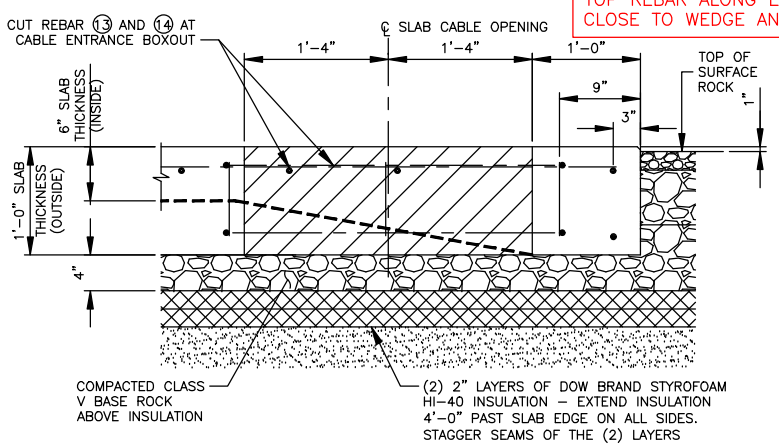
SECTION G–G
TYPICAL BUILDING ANCHOR DETAIL
▲ DENOTES ANCHOR LOCATION



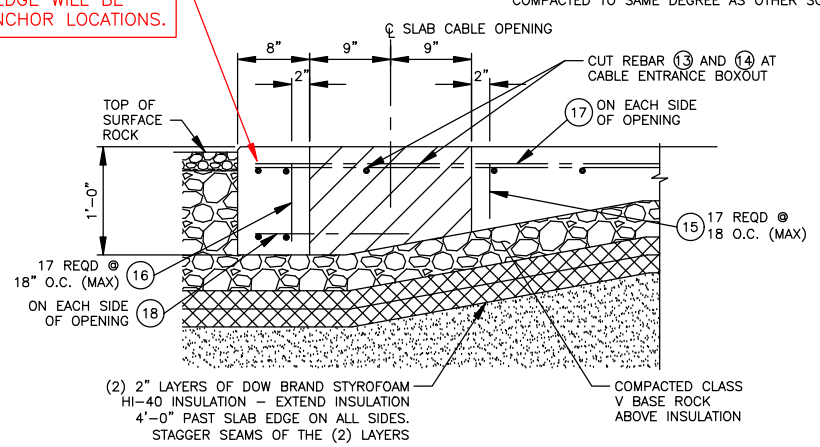
SECTION A–A
SCALE: NONE



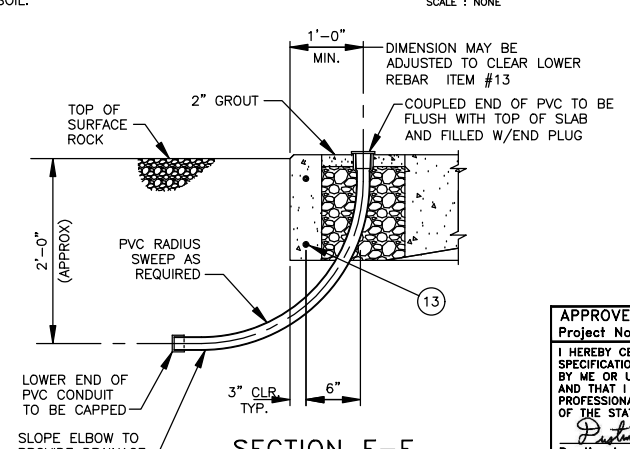
SECTION C–C
DOOR STEP DETAIL
SCALE : NONE



SECTION D–D
CABLE ENTRANCE SLAB OPENING DETAIL
SCALE: NONE



SECTION E–E
CABLE ENTRANCE SLAB OPENING DETAIL
SCALE: NONE



SECTION F–F
TYPICAL CONDUIT ENTRANCE DETAIL
CONDUIT SLAB ENTRANCE DETAIL
SCALE: NONE

REFERENCE DRAWINGS:

BUILDING PLAN VIEW _ _ _ _ _ _ _ _ _ _ _ _ POWERCON D–16368 SHT 1

GENERAL NOTES:

1. CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 4500 P.S.I. AT THE END OF 28 DAYS.
2. SOIL BEARING CAPACITY BENEATH FOOTING OR FOUNDATIONS SHALL BE NOT LESS THAN 3,000#/SQ. FT.
3. CONCRETE PLACEMENT: CONTROL JOINTS SHALL BE SAW CUT TO 1 1/4".
4. EDGES OF CONCRETE: ALL EXPOSED EDGES ABOVE GROUND ROUNDED OR CHAMFERED 3/4 INCH.
5. REINFORCING STEEL: ASTM A–615 GRADE 60.
6. COVER: TWO INCHES MINIMUM PROTECTIVE CONCRETE COVER OVER REINFORCING STEEL UNLESS NOTED.
7. REFER TO DETAILED SPECIFICATION ON CONCRETE.
8. FINISH: TOP SURFACE OF PIERS TO BE PERFECTLY LEVEL, SCREEDED AND BROOMED. OUTDOOR EQUIPMENT SLABS WOOD FLOATED, LIGHTLY TROWELLED.

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 3

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Dustin J. Kinnischtzke Dwg. Rev. 0
Date: 5-25-2021 Lic. No. 48335

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

REV NO	DATE	REVISION	REV APPD BY
6			
5			
4			
3			
2			
1			

CONNEXUS ENERGY

14'-8 x 37'-10 SWITCH GEAR BLDG. FOUNDATION LAYOUT

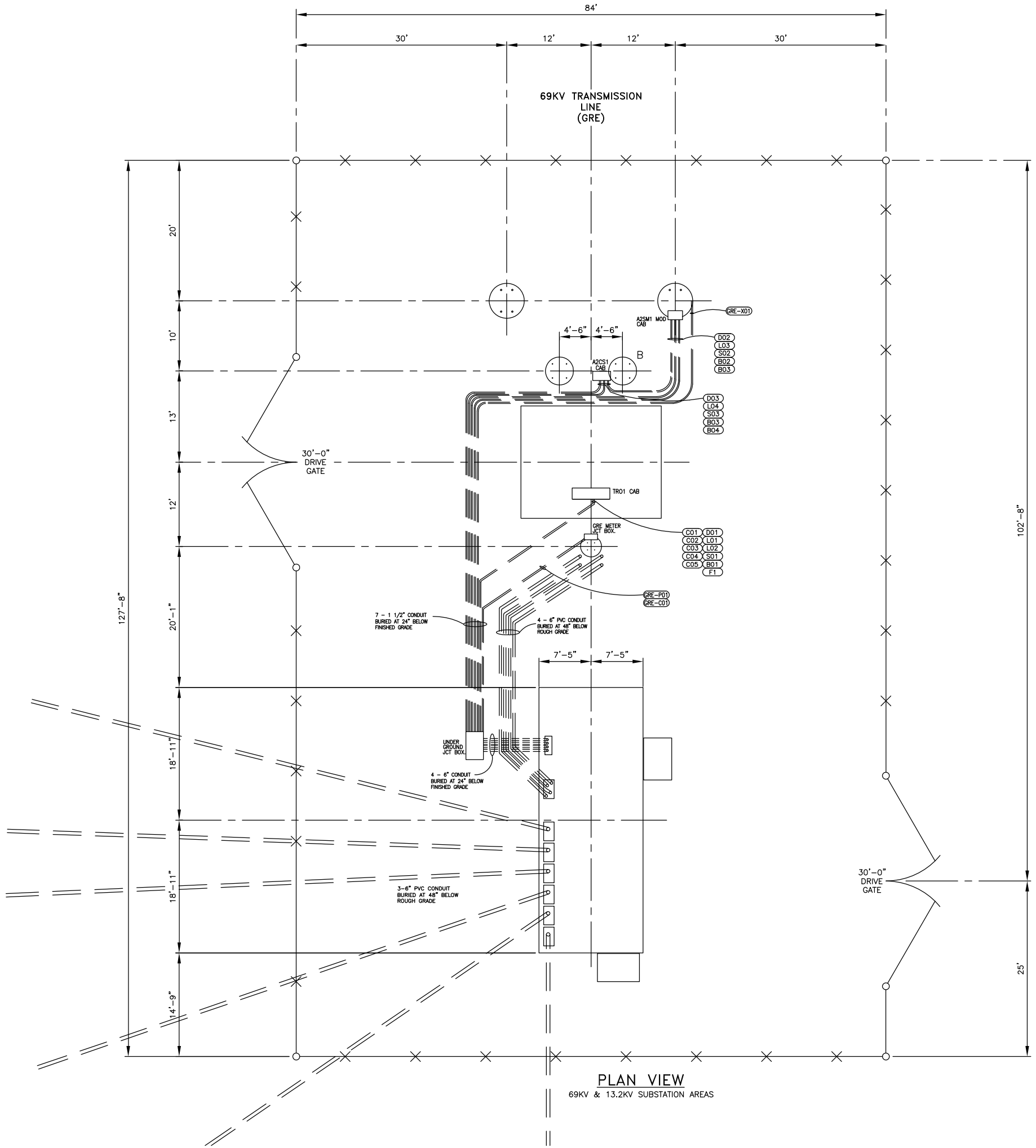
DAYTONPORT SUBSTATION

SA02

DATE: 5-25-21
SCALE: AS SHOWN
DWN BY: SWL
CKD BY: SJL
CKD BY:
APPD BY: DJK

PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02–05D
SHEET 5

APPROVED FOR CONSTRUCTION



PLAN VIEW

69KV & 13.2KV SUBSTATION AREAS

N

SCALE: 1/8"=1'-0"

0 2' 4' 6' 8' 10'

REFERENCE DRAWINGS:

ELECTRICAL PLAN_____SA02-04D, SH. 1
CONDUIT PLAN_____SA02-07D, SH. 1
GROUNDING PLAN_____SA02-09D, SH. 1
STRUCTURAL STEEL PLAN_____SA02-35D, SH. 1

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

REV NO	DATE	REVISION	REV BY	APPD BY
1				
2				
3				
4				
5				
6				

CONNEXUS ENERGY

CABLE AND CONDUIT PLAN

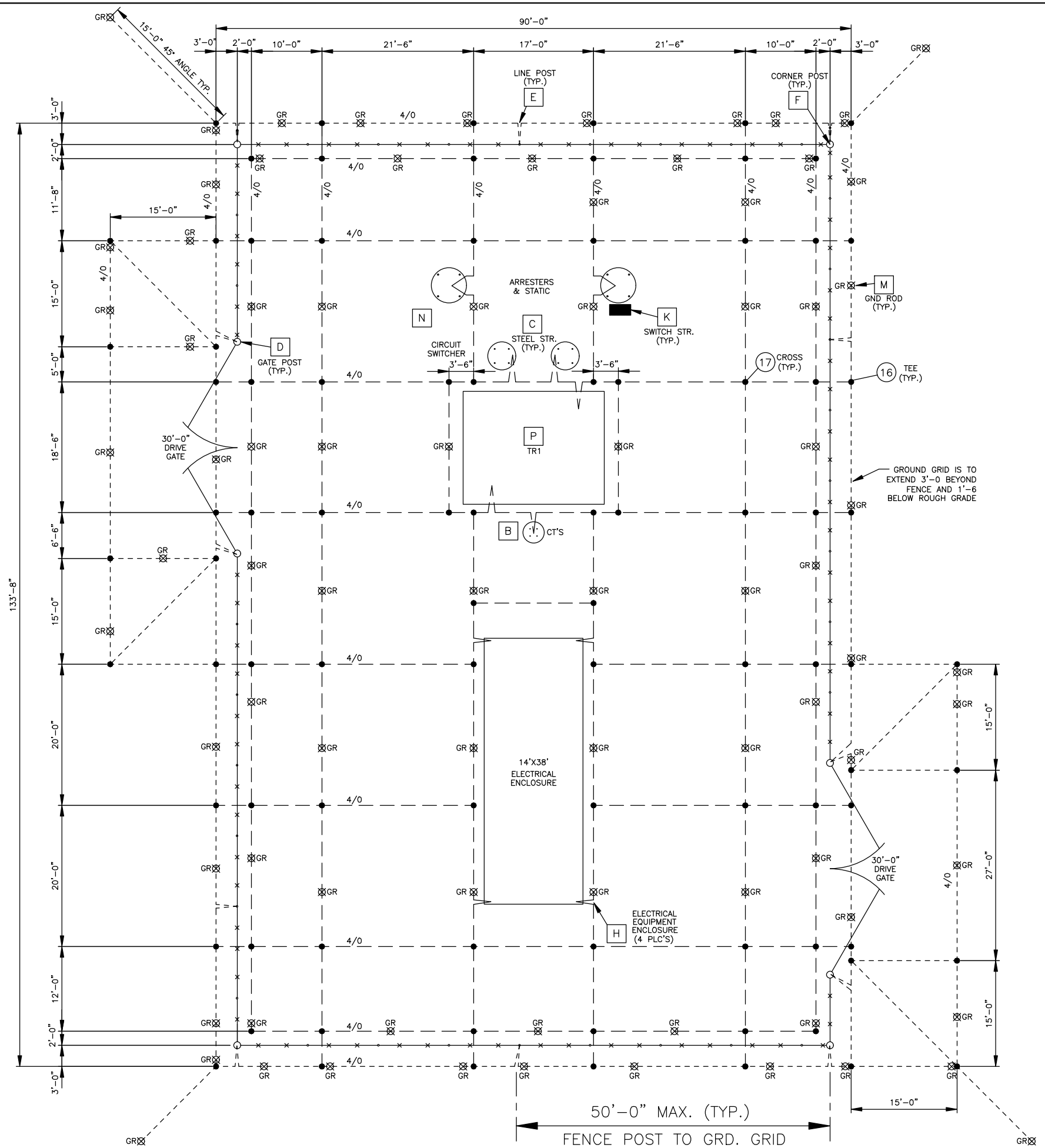
DAYTONPORT SUBSTATION

SA02

DATE: 6-21
SCALE: AS SHOWN
DWN BY: MTB
CKD BY: TJP
CKD BY:
APPD BY: TJP

PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02-07D
SHEET 1

PRELIMINARY



N

SCALE: 1/8"=1'-0"
0 2' 4' 6' 8' 10'

GROUND GRID DESIGN DATA

DESIGN IS BASED ON IEEE STD. 80-2013 USING CDEGS SOFTWARE (VERSION 16.1.61732) AND THE FOLLOWING DATA:

1. TOP RESISTIVITY DATA:
   - SOIL RESISTIVITY TEST DATE ---------- 12/2020
   - SOIL RESISTIVITY TESTING ENGINEER ------- CONNEXUS ENERGY

   SOIL MODEL:
   - SURFACE ROCK RESISTIVITY ---------- 3000 OHM-METER (EST)
   - SURFACE ROCK DEPTH ---------- 0.333 FEET
   - SOIL LAYER 1 RESISTIVITY ---------- 329.113 OHM-METER (CALC)
   - SOIL LAYER 1 DEPTH ---------- 1.054 FEET
   - SOIL LAYER 2 RESISTIVITY ---------- 1296.365 OHM-METER (CALC)
   - SOIL LAYER 2 DEPTH ---------- 24.168 FEET
   - SOIL LAYER 3 RESISTIVITY ---------- 82.144 OHM-METER (CALC)
   - SOIL LAYER 3 DEPTH ---------- INFINITE

2. DESIGN CRITERIA
   - MAXIMUM CALCULATED FAULT CURRENT ----- 8,867 AMPS
   - FAULT LOCATION ---------- ON LOW SIDE OF MPT
   - DESIGNED FAULT CURRENT ---------- 10,640 AMPS (120%)
   - DESIGNED FAULT DURATION ---------- 30 CYCLES (0.5 SEC.)
   - SPILT FACTOR
     - # OF TRANSMISSION LINES CONNECTED ----- 1
     - # OF FEEDERS CONNECTED ---------- 5 (4 USED IN CALCULATION)
     - % FAULT CURRENT THRU GRID ----- 53.64%

3. SAFETY DATA:
   - IEEE BODY WEIGHT ---------- 50 KG
   - IEEE BODY RESISTANCE ---------- 1,000 OHMS

   STEP POTENTIAL OVER NATIVE SOIL:
   - CALCULATED ALLOWABLE ---------- 476.831 VOLTS
   - CALCULATED GRID MAXIMUM ---------- 475.616 VOLTS

   STEP POTENTIAL:
   - CALCULATED ALLOWABLE ---------- 2,290.484 VOLTS
   - CALCULATED GRID MAXIMUM ---------- 257.831 VOLTS

   TOUCH POTENTIAL
   - CALCULATED ALLOWABLE ---------- 689.608 VOLTS
   - CALCULATED GRID MAXIMUM ---------- 670.532 VOLTS

   GROUND POTENTIAL RISE AT FAULT LOCATION:
   - CALCULATED ALLOWABLE ---------- 6,680.70 VOLTS

   GROUND GRID RESISTANCE:
   - CALCULATED ---------- 1.1706 OHMS

4. FIELD DATA:
   - FIELD MEASURED GRID RESISTANCE --------- _____ OHMS*
   - FIELD MEASURED DATE ---------- _____ *

   *FIELD TO UPDATE AND INCLUDE IN FIELD REVISIONS.

GROUNDING NOTES:

1. GROUND GRID TO BE BURIED AT 1'-0" OR 1'-6" BELOW FINISHED GRADE. SEE LEGEND FOR DETAILS.
2. CONNECT GROUND WIRES AT ALL INTERSECTIONS.

LEGEND:

- GR ⊠ 5/8" CU CLAD GROUND ROD, 30' LENGTH (3x 10'-0" RODS W/COULPER)
- ● CADWELD CONNECTION
- ■ SWITCH OPERATOR'S PLATFORM
- — — 4/0 S.D. 7 STR. CU. GROUND GRID CONDUCTOR (DIRECT BURIED) 12" DEPTH.
- - - - 4/0 S.D. 7 STR. CU. GROUND GRID CONDUCTOR (DIRECT BURIED) 18" DEPTH.
- -×-×- FENCE
- ○ FENCE POST
- (1) INDICATES ITEM NUMBER ON BILL OF MATERIAL, SEE DWG. #SA02-09D, SH. 4
- [A] INDICATES GROUNDING DETAIL LETTER, SEE DWG'S #SA02-09D, SH. 2-3

REFERENCE DRAWINGS:

ELECTRICAL PLAN	SA02-04D, SH. 1
FENCE & FOUNDATION PLAN	SA02-05D, SH. 1
CABLE & CONDUIT PLAN	SA02-07D, SH. 1
GROUNDING DETAILS & B.O.M.	SA02-09D, SH. 2-4
PLOT PLAN	SA02-10D, SH. 1
STRUCTURAL PLAN	SA02-35D, SH. 1

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 2

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Patrick Deibel
Date: 5-19-2021 Dwg. Rev. 0 Lic. No. 49037

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

REV NO	DATE	REVISION	REV APPD BY
6			
5			
4			
3			
2			
1			

CONNEXUS ENERGY

GROUNDING PLAN

DAYTONPORT SUBSTATION

SA02

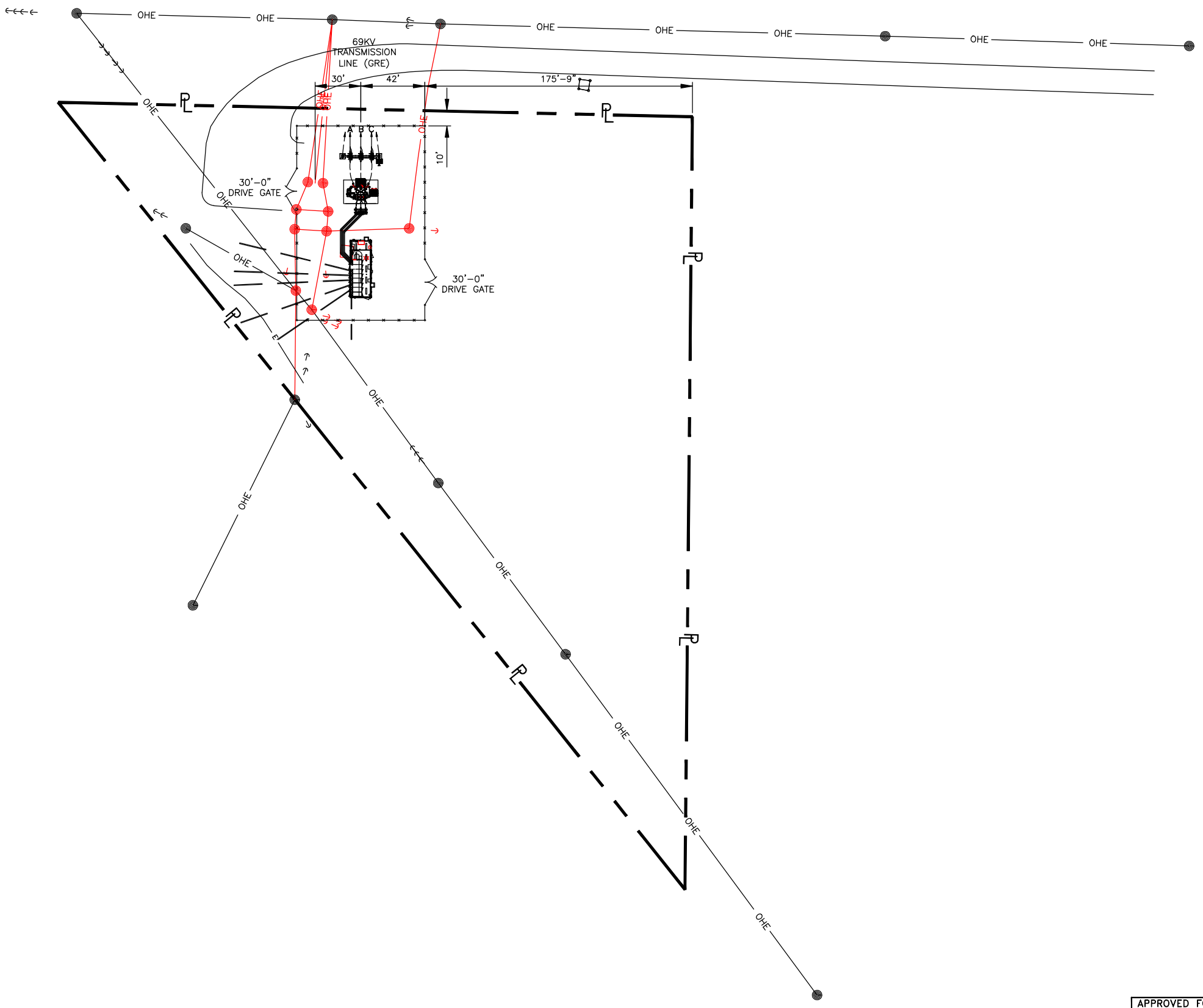
DATE: 05-19-21	PROJECT NO 208250
SCALE: AS SHOWN	REVISION 0
DWN BY: DKH	
CKD BY: TJS	DRAWING NUMBER SA02-09D
CKD BY:	
APPD BY: PDD	SHEET 1

APPROVED FOR CONSTRUCTION

N

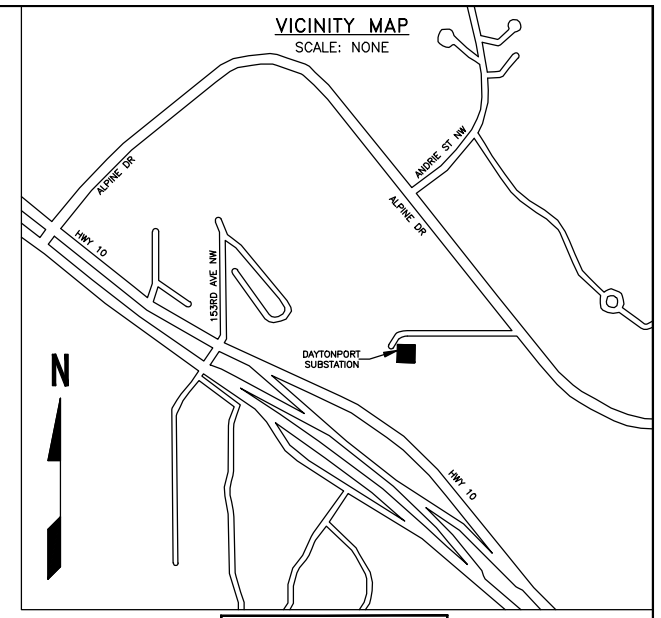
SCALE: 1"=40'-0"

0 10' 20' 30' 40' 50'



VICINITY MAP

SCALE: NONE



Street Address:
9180 ALPINE DRIVE
RAMSEY, MN 55303

LEGEND

- PROPERTY LINE
- ROAD RIGHT-OF-WAY
- GAS LINE EASEMENT
- TRANSMISSION LINE EASEMENT
- E — UNDERGROUND ELEC. UTILITY
- OHE — OVERHEAD TRANSMISSION LINE
- OHE — EXISTING SUB LAYOUT-LOCATION
- PP — POWER POLE
- EDGE GRAVEL
- SUBSTATION FENCE

REFERENCE DRAWINGS:

ELECTRICAL PLAN_____SA02-04D, SH. 1
FENCE & FOUNDATION PLAN_____SA02-05D, SH. 1
CONDUIT PLAN_____SA02-07D, SH. 1
GROUNDING PLAN_____SA02-09D, SH. 1
STRUCTURAL PLAN_____SA02-35D, SH. 1
GRADING PLAN_____SA02-40D, SH. 1

*COOPERATIVE DRAWING MAINTAINED & HOUSED BY GREAT RIVER ENERGY

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 0

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Tyler Porter Dwg. Rev. 0
Date: 05/27/2021 Lic. No. 57767

Electronically signed by GRE user: u8014

NO	DATE	REVISION	APPD BY
6			
5			
4			
3			
2			
1			

CONNEXUS ENERGY

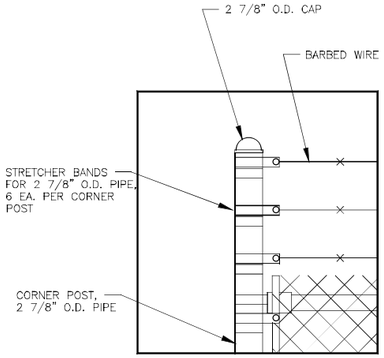
PLOT PLAN

DAYTONPORT SUBSTATION

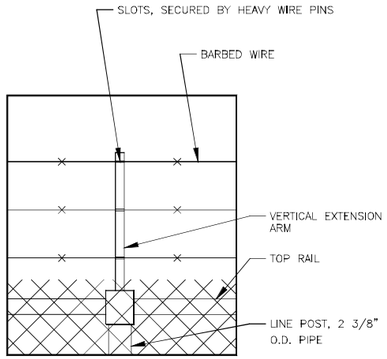
SA02

DATE: 11-10-20		PROJECT NO 208250	REVISION 0
SCALE: AS SHOWN			
DWN BY: RSB		DRAWING NUMBER SA02-10D	
CKD BY:			
CKD BY:			
APPD BY: TJP		SHEET 1	

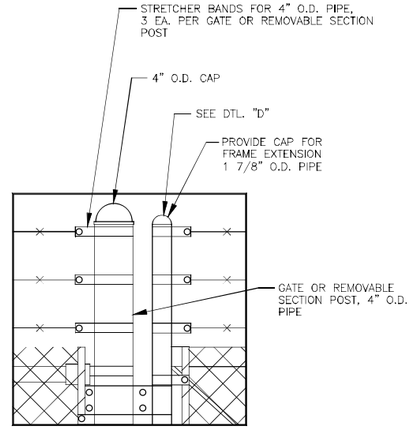
APPROVED FOR CONSTRUCTION



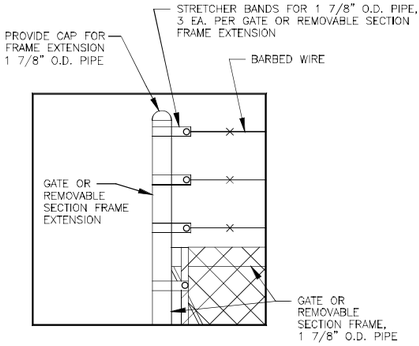
DETAIL "A"
CORNER POST – TOP ASSEMBLY
SCALE: 1/2"=1'–0"
0 3 6 9 1' 2' 3' 4'



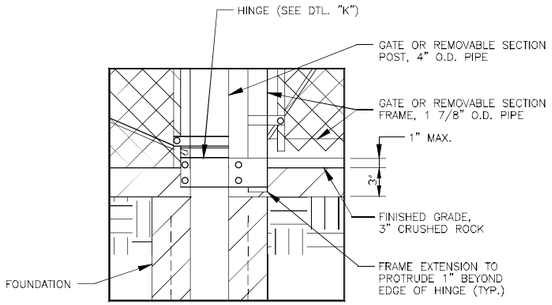
DETAIL "B"
LINE POST – TOP ASSEMBLY
SCALE: 1/2"=1'–0"
0 3 6 9 1' 2' 3' 4'



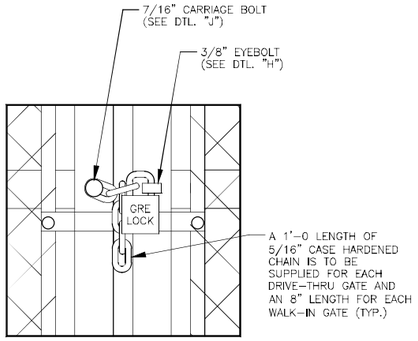
DETAIL "C"
GATE AND REMOVABLE SECTION POST – TOP ASSEMBLY
SCALE: 1/2"=1'–0"
0 3 6 9 1' 2' 3' 4'



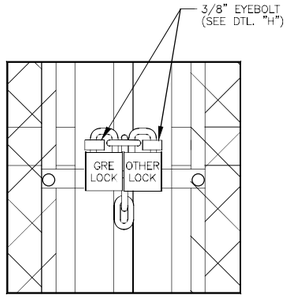
DETAIL "D"
GATE AND REMOVABLE SECTION FRAME EXTENSION – TOP ASSEMBLY
SCALE: 1/2"=1'–0"
0 3 6 9 1' 2' 3' 4'



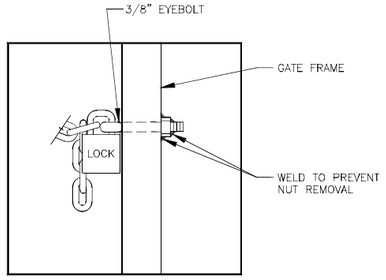
DETAIL "E"
LOWER HINGE AND FRAME DETAIL FOR GATE AND REMOVABLE SECTION
SCALE: 1/2"=1'–0"
0 3 6 9 1' 2' 3' 4'



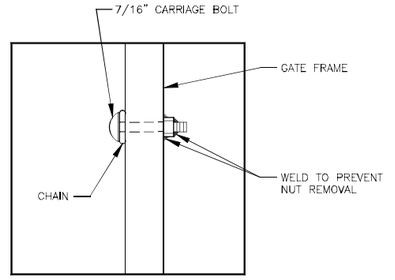
DETAIL "F"
ONE LOCK SYSTEM
TYPICAL
SCALE: 3" = 1'–0"
0 3" 6" 9" 12"



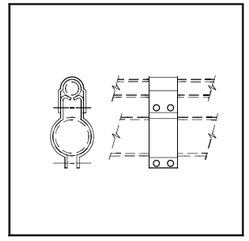
DETAIL "G"
TWO LOCK SYSTEM
TO BE FURNISHED ONLY WHEN SPECIFIED BY GRE
SCALE: 3" = 1'–0"
0 3" 6" 9" 12"



DETAIL "H"
EYEBOLT DETAIL
NOT TO SCALE



DETAIL "J"
CARRIAGE BOLT DETAIL
NOT TO SCALE



DETAIL "K"
GATE AND REMOVABLE SECTION HINGE
HINGE DETAIL FOR 4" O.D. POST TO 1 7/8" O.D. FRAME
(CYCLONE FENCE PART #H82)
SCALE: 1/2"=1'–0"
0 3 6 9 1' 2' 3' 4'

GATE CHAIN–LOCK NOTES:

1. CHAIN, 5/16" CASE HARDENED, GALV. FINISH 2. CARRIAGE BOLTS, 7/16" DIA., GALV. STEEL 3. EYEBOLTS, 3/8" DIA., DROP–FORGED, GALV. STEEL, WITH NUT, SHOULDER PATTERN, 2 1/2" LONG UNC CLASS II THREADS, EYE I.D. 3/4", SHANK LENGTH 4 1/2"

REFERENCE DRAWINGS AND SPECIFICATIONS:

TYPICAL FENCE DTLS_____DWG. #SXXX–61D, SH. 1
TYPICAL FENCE SPEC'S_____GRE SPEC. #SP–9.1

NO	DATE	REVISION	BY	CHK'D BY	APP'D BY
6					
5	10–19	UPDATE DETAIL "H" WITH TOP CAP AND NEW HARDWARE, UPDATE TITLE	ZLM	GDS	JAT
4	6–19	BLOCK	MW2	AJW	DPH
3	4–13	UPDATED TO CAD STANDARDS	MW2	AJW	DPH
2	10–97	ADDED DETAIL "K"	GDS	GDS	JAT
1		ORIGINAL DRAWING			

GREAT RIVER ENERGY.

TYPICAL FENCE DETAILS FOR TRANSMISSION SUBSTATIONS

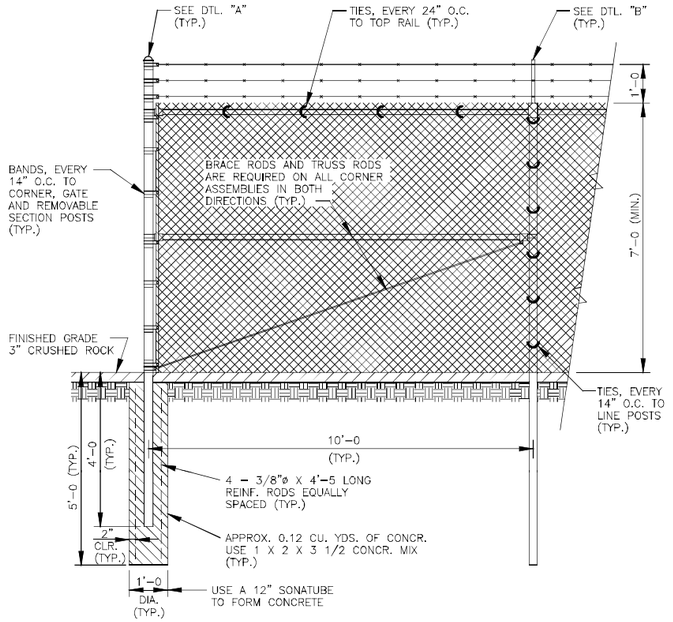
MASTER DWG SUBSTATION

SXXX

DATE: 10–23–19
SCALE: AS SHOWN
DWN BY: M. KLEMZ
CKD BY:
CKD BY:
APPD BY: ZLM

PROJECT NO: STANDARD
REVISION: 4
DRAWING NUMBER: SXXX–61D
SHEET 2 OF 2

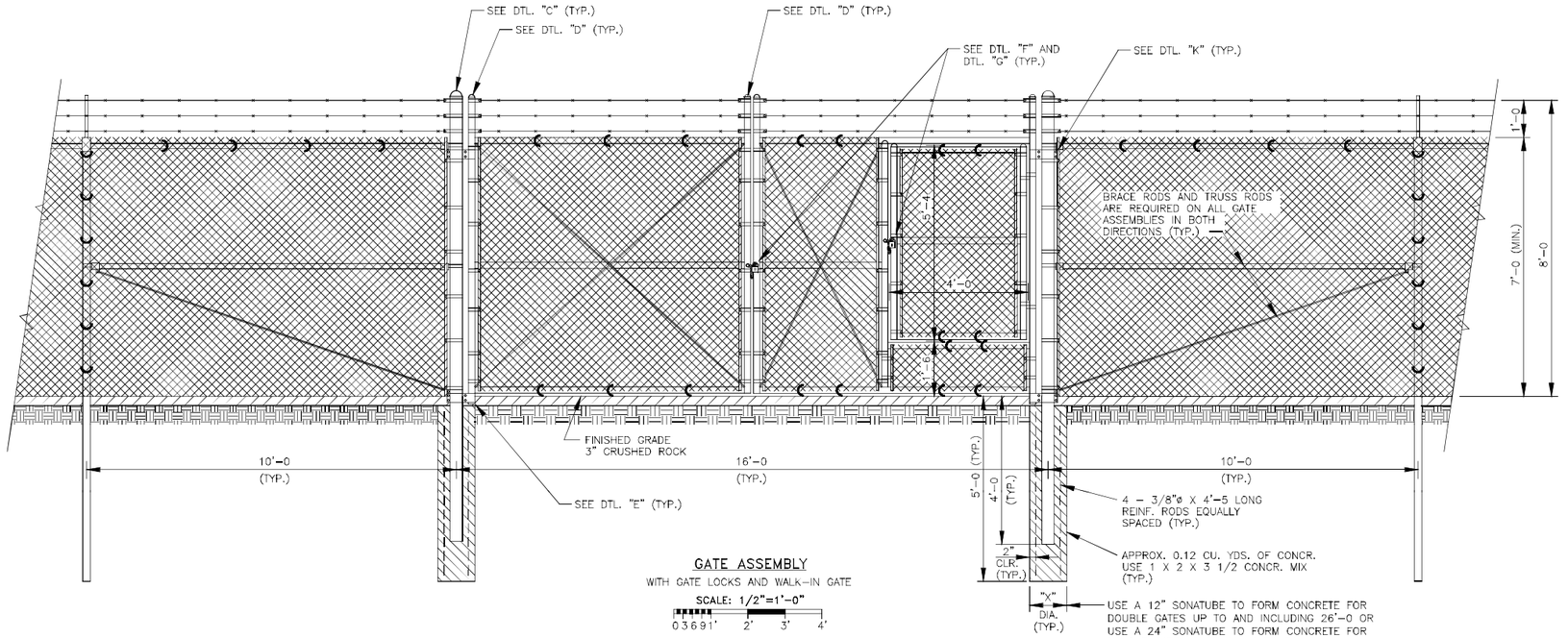
ACTIVE



CORNER & END ASSEMBLY

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

0 3 6 9 1' 2' 3' 4'

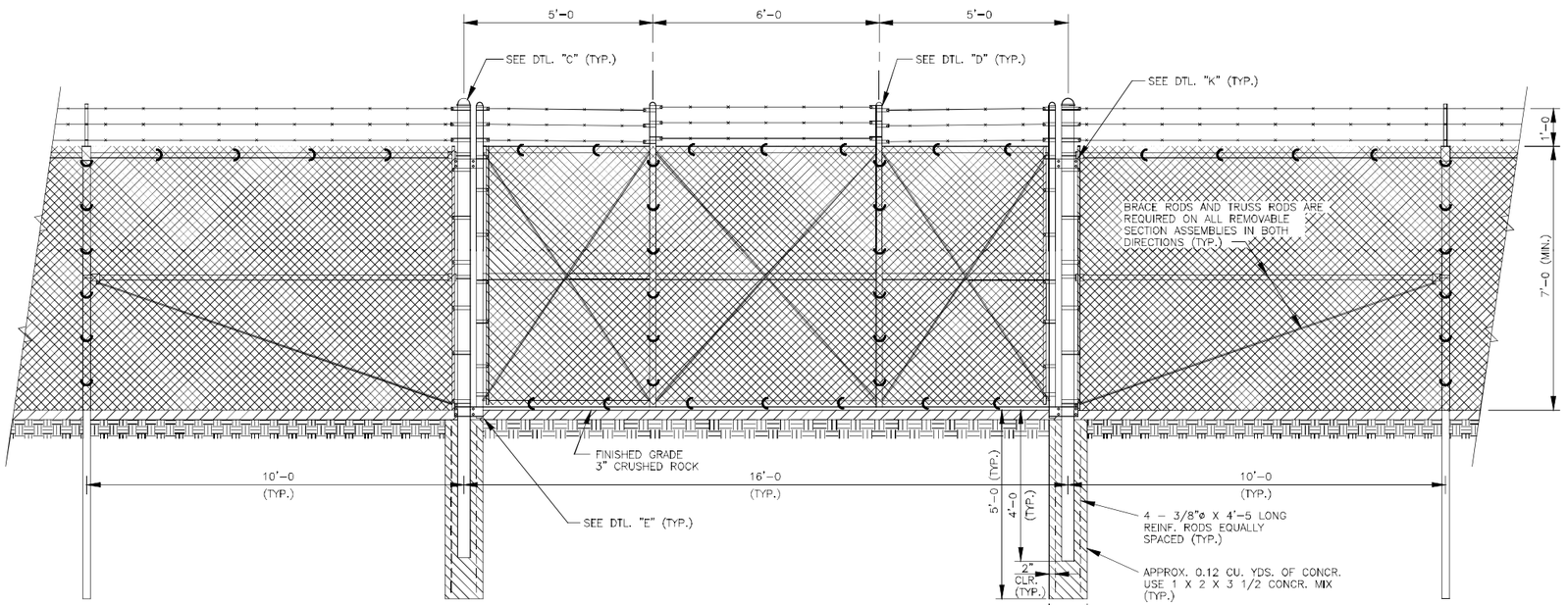


GATE ASSEMBLY

WITH GATE LOCKS AND WALK-IN GATE

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

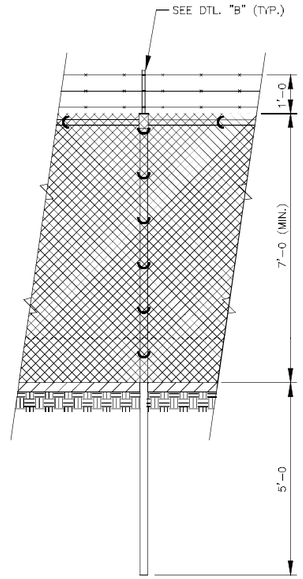
0 3 6 9 1' 2' 3' 4'



REMOVABLE SECTION ASSEMBLY

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

0 3 6 9 1' 2' 3' 4'



LINE POST ASSEMBLY

DIRECT DRIVE

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

0 3 6 9 1' 2' 3' 4'

FOUNDATION NOTES:

1. FULL LENGTH FORMS ARE TO BE USED ON ALL CORNER, GATE AND REMOVABLE SECTION POST FOOTINGS.
2. TOPS OF FOOTINGS ARE TO BE CROWNED AND FINISHED TO A SMOOTH DENSE SURFACE WITH NO PROJECTIONS OR OVERHANGS.
3. ALL MATERIALS TO BE FURNISHED BY CONTRACTOR UNLESS OTHERWISE NOTED.
4. SEE "SPECIFICATIONS FOR REINFORCED CONCRETE", GRE SPEC. SP-3.3.

REFERENCE DRAWINGS AND SPECIFICATIONS:

TYPICAL FENCE DTLS.____DWG. SXXX-61D, SH. 2
TYPICAL FENCE SPEC'S____GRE SPEC. SP-9.1

NO.	DATE	REVISION	REV / APP'D BY
6			
5			
4			
3	10-19	UPDATE END ASS'Y, DTL. D, TOP CAP & BRACE NOTES, ADD NOTE 4 AND UPDATED TIE AND FENCE NOTES	MKJ ZLM
2	6-15	ADDED NOTE FOR LENGTHS IN FDN. DETAILS	MKJ GDS
1	4-13		JLW GDS

GREAT RIVER ENERGY

TYPICAL FENCE DETAILS FOR TRANSMISSION SUBSTATIONS

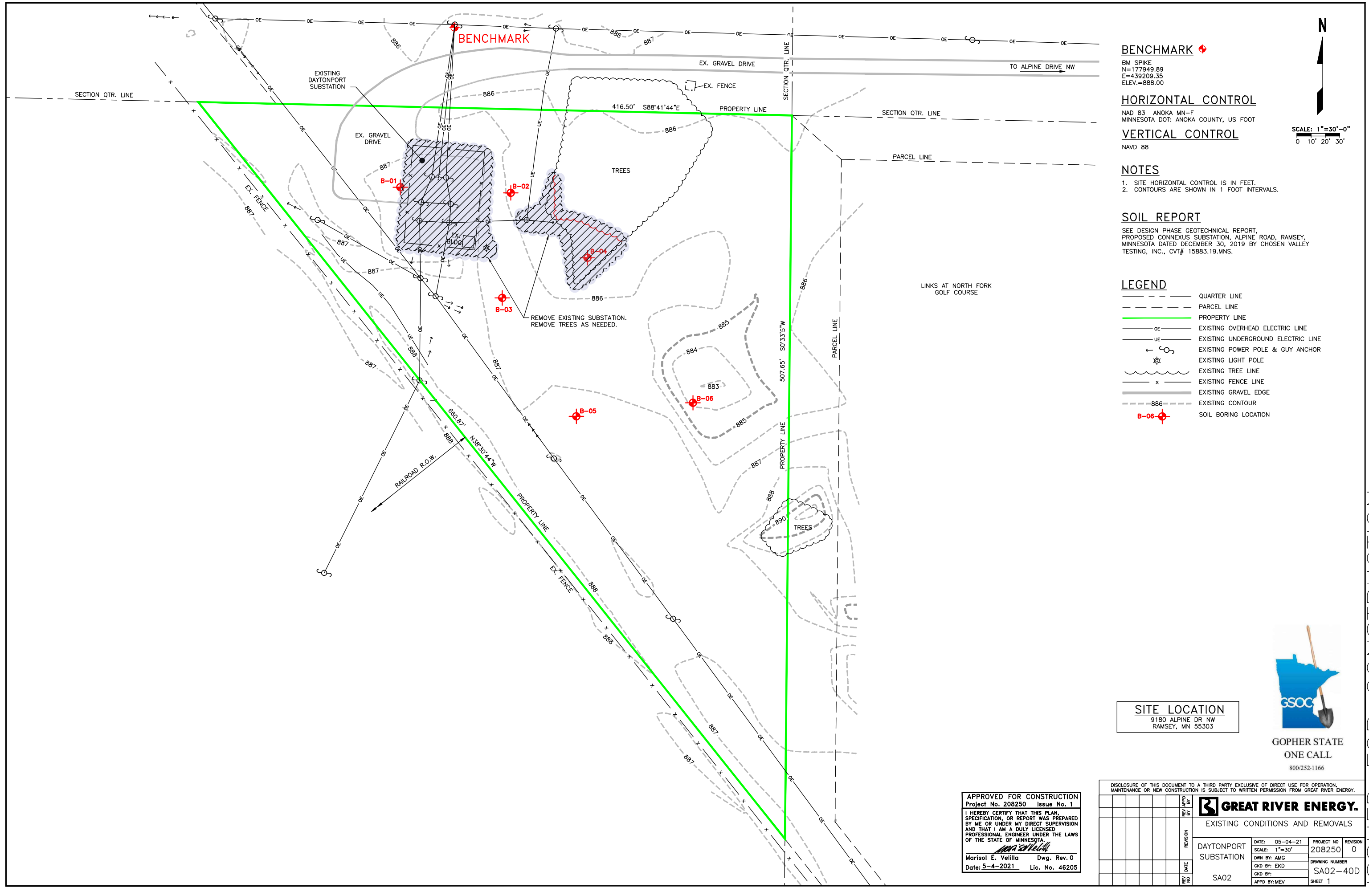
MASTER DWG SUBSTATION

SXXX

DATE: 10-23-19
SCALE: AS SHOWN
DWN BY: M. KLEMZ
CKD BY:
CKD BY:
APPD BY: ZLM

PROJECT NO: STANDARD
REVISION: 3
DRAWING NUMBER: SXXX-61D
SHEET 1 OF 2

ACTIVE



N

SCALE: 1"=30'-0"
0 10' 20' 30'

BENCHMARK

BM SPIKE
N=177949.89
E=439209.35
ELEV.=888.00

HORIZONTAL CONTROL

NAD 83 ANOKA MN-F
MINNESOTA DOT: ANOKA COUNTY, US FOOT

VERTICAL CONTROL

NAVD 88

NOTES

1. SITE HORIZONTAL CONTROL IS IN FEET.
2. CONTOURS ARE SHOWN IN 1 FOOT INTERVALS.

SOIL REPORT

SEE DESIGN PHASE GEOTECHNICAL REPORT, PROPOSED CONNEXUS SUBSTATION, ALPINE ROAD, RAMSEY, MINNESOTA DATED DECEMBER 30, 2019 BY CHOSEN VALLEY TESTING, INC., CVT# 15883.19.MNS.

LEGEND

- QUARTER LINE
- PARCEL LINE
- PROPERTY LINE
- OE — EXISTING OVERHEAD ELECTRIC LINE
- UE — EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING POWER POLE & GUY ANCHOR
- EXISTING LIGHT POLE
- EXISTING TREE LINE
- EXISTING FENCE LINE
- EXISTING GRAVEL EDGE
- 886 EXISTING CONTOUR
- B-06 SOIL BORING LOCATION

SITE LOCATION

9180 ALPINE DR NW
RAMSEY, MN 55303

GOPHER STATE ONE CALL
800/252-1166

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 1

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Marisol E. Velilla Dwg. Rev. 0
Date: 5-4-2021 Lic. No. 46205

GREAT RIVER ENERGY.

EXISTING CONDITIONS AND REMOVALS

DAYTONPORT SUBSTATION

SA02

DATE:	05-04-21
SCALE:	1"=30'
DWN BY:	AMG
CKD BY:	EKD
CKD BY:	
APPD BY:	MEV

PROJECT NO 208250 | REVISION 0
DRAWING NUMBER SA02-40D
SHEET 1

REV NO | DATE | REVISION | REV APPD BY

ISSUED FOR CONSTRUCTION

EX. GRAVEL DRIVE

94.00'

GRADE EX. GRAVEL DRIVE TO MATCH PROPOSED SUBSTATION CORNER

SECTION QTR. LINE

B SH. 3

BIO ROLL

886

PROPERTY LINE 416.50' S88°41'44"E

TREES

CLASS V ROCK MATCH EX. EL. EL 886.7± N=177870.08 E=439166.21

CLASS V ROCK F.G. EL. 886.94 N=177887.08 E=439181.21

CLASS V ROCK F.G. EL. 886.94 N=177870.08 E=439181.21

CLASS V ROCK F.G. EL. 886.00 N=177887.08 E=439275.21

17.00'

80.00'

63.00'

1.0%

EX. GRAVEL DRIVE

887

B-01

30' GATE

B-02

A

SH. 3

LIMITS OF WORK

NEW EDGE OF TREES

138.00'

CLASS V ROCK F.G. EL. 886.00 N=177810.08 E=439275.21

15.00'

CLASS V ROCK F.G. EL. 886.94 N=177807.08 E=439181.21

CLASS V ROCK F.G. EL. 885.85 N=177810.08 E=439290.21

CLASS V ROCK F.G. EL. 88X.XX N=177807.08 E=439166.21

660.87' N35°30'44"W PROPERTY LINE

EX. FENCE

RAILROAD R.O.W.

B-04

61.00'

B-03

CLASS V ROCK F.G. EL. 886.94 N=177749.08 E=439181.21

CLASS V ROCK F.G. EL. 886.00 N=177749.08 E=439275.21

CLASS V ROCK F.G. EL. 885.85 N=177749.08 E=439290.21

BIO ROLL

109.00'

B

888

BENCHMARK

BM SPIKE (SEE SH. 1 FOR LOCATION)
N=177949.89
E=439209.35
ELEV.=888.00

HORIZONTAL CONTROL

NAD 83 ANOKA MN-F
MINNESOTA DOT: ANOKA COUNTY, US FOOT

VERTICAL CONTROL

NAVD 88

N

SCALE: 1"=10'-0"
0 5' 10' 15'

NOTES

1. SITE HORIZONTAL CONTROL IS IN FEET.
2. CONTOURS ARE SHOWN IN 1 FOOT INTERVALS.
3. FINISHED GRADE (F.G.) IS TOP OF CLASS V BASE ROCK. SURFACE GRADE IS 4" HIGHER THAN FINISH GRADE.

SOIL REPORT

SEE DESIGN PHASE GEOTECHNICAL REPORT, PROPOSED CONNEXUS SUBSTATION, ALPINE ROAD, RAMSEY, MINNESOTA DATED DECEMBER 30, 2019 BY CHOSEN VALLEY TESTING, INC., CVT# 15883.19.MNS.

LEGEND

- QUARTER LINE
- PARCEL LINE
- PROPERTY LINE
- OE — EXISTING OVERHEAD ELECTRIC LINE
- UE — EXISTING UNDERGROUND ELECTRIC LINE
- EXISTING POWER POLE & GUY ANCHOR
- EXISTING TREE LINE
- PROPOSED TREE LINE
- x — EXISTING FENCE LINE
- PROPOSED FENCE LINE
- EXISTING GRAVEL EDGE
- PROPOSED GRAVEL EDGE
- 886 — EXISTING CONTOUR
- 886 — PROPOSED CONTOUR
- F.G. — FINISHED GRADE ELEVATION
- FLOW DIRECTION
- LIMITS OF WORK TOTAL DISTURBED AREA = 0.43 ACRES
- BIO ROLL
- B-06 — SOIL BORING LOCATION

SUBSTATION FINISH GRADE
IS TOP OF CLASS V BASE ROCK

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 1

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Marisol E. Velilla Dwg. Rev. 0
Date: 5-4-2021 Lic. No. 46205

GOPHER STATE ONE CALL
800/252-1166

SITE LOCATION
9180 ALPINE DR,
RAMSEY, MN 55303

GREAT RIVER ENERGY.

GRADING AND EROSION CONTROL PLAN

DAYTONPORT SUBSTATION

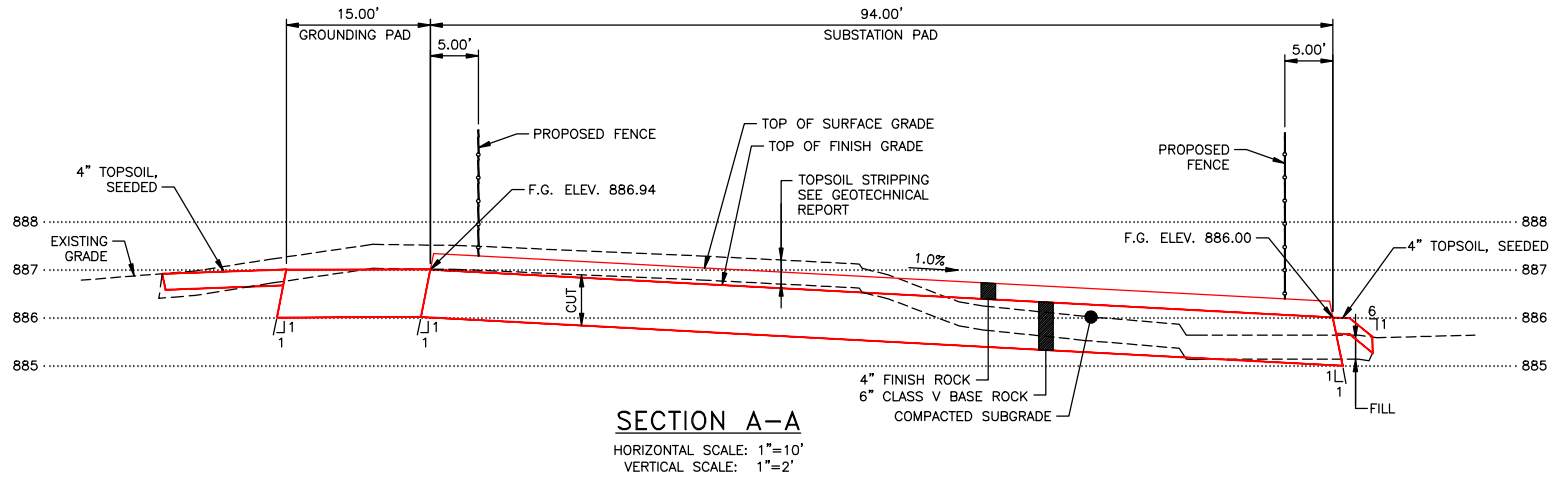
SA02

REV NO	DATE	REVISION	APP'D

DATE: 05-04-21
SCALE: AS SHOWN
DWN BY: AMG
CKD BY: EKD
CKD BY:
APP'D BY: MEV

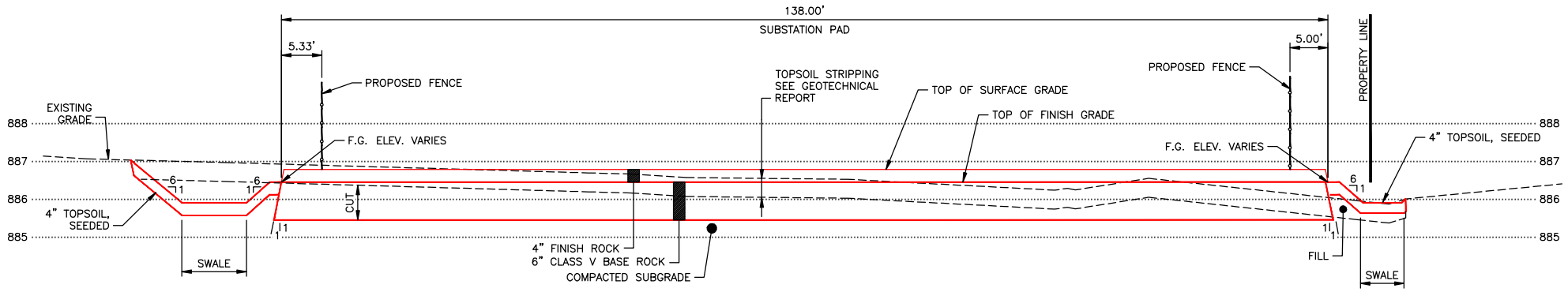
PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02-40D
SHEET 2

ISSUED FOR CONSTRUCTION



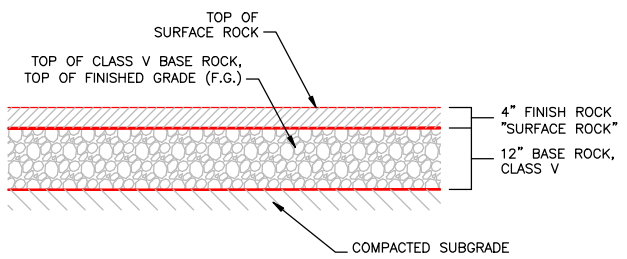
SECTION A–A

HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=2'



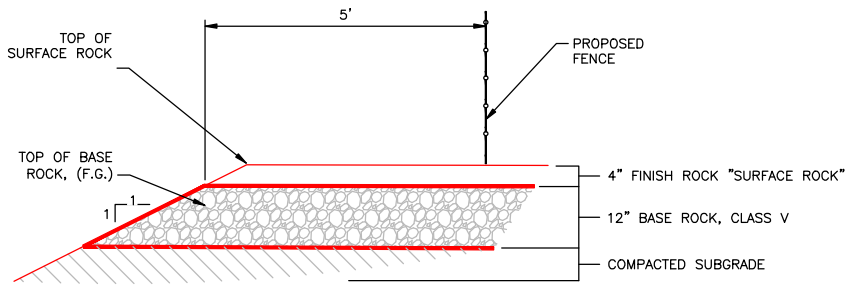
SECTION B–B

HORIZONTAL SCALE: 1"=10'
VERTICAL SCALE: 1"=2'



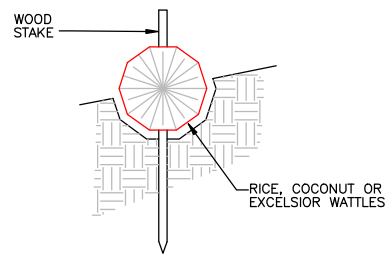
TYPICAL SUBSTATION SURFACING

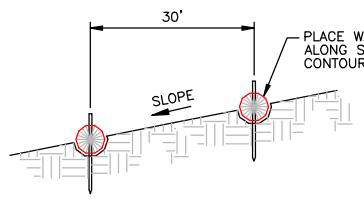
SCALE: NONE

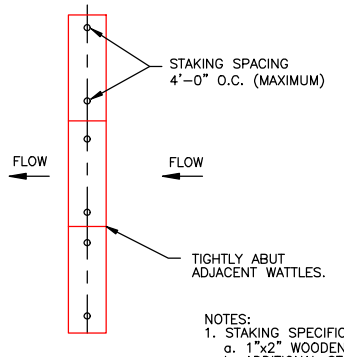


TYPICAL SUBSTATION EDGE

SCALE: NONE



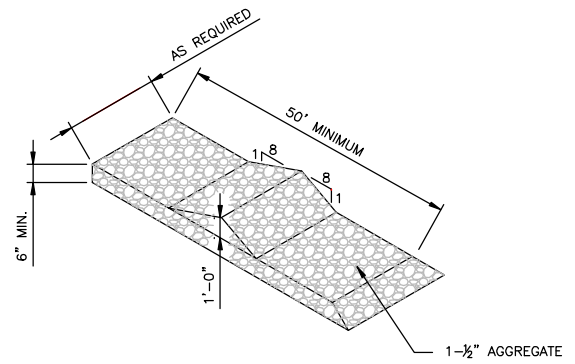




NOTES:
1. STAKING SPECIFICATIONS:
   a. 1"x2" WOODEN STAKES
   b. ADDITIONAL STAKES MAY BE INSTALLED ON DOWNHILL SIDE OF WATTLES, ON STEEP SLOPE OR HIGHLY EROSIVE SOILS.

BIO ROLLS

SCALE: NONE



ROCK CONSTRUCTION ENTRANCE

SCALE: NONE

GRADING AND EROSION CONTROL SCHEDULE

1. INSTALL TEMPORARY ROCK CONSTRUCTION ENTRANCE.
2. COMPLETE CLEARING AND GRUBBING.
3. STRIP TOPSOIL. INSTALL STOCKPILE SILT FENCE.
4. COMPLETE MASS GRADING.
5. SEED AND MULCH WITHIN 14 DAYS OF COMPLETION OF GRADING.
6. INSTALL BIO ROLLS IN SWALES.

AFTER VEGETATION IS ESTABLISHED

1. REMOVAL PRACTICES: REMOVE ALL TEMPORARY BMPS SUCH AS SILT FENCES AND BIOROLLS AS SOON AS ALL DISTURBED AREAS HAVE BEEN STABILIZED.

MAINTENANCE

1. INSPECTION OF ALL EROSION CONTROL FEATURES SHOULD BE EVERY 7 DAYS AND WITHIN 24 HOURS AFTER 1/2" RAIN EVENT.
2. MAINTENANCE OF BMPS SHALL BE COMPLETE WITHIN 24 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
3. THE ROCK CONSTRUCTION ENTRANCE PERFORMANCE SHALL BE MAINTAINED THROUGH SCRAPING OR DRESSING WITH ADDITIONAL AGGREGATE.
4. SEDIMENT CLEANUP. BY THE END OF EACH WORKDAY, CLEAN UP ALL OFF–SITE SEDIMENT DEPOSITS OR TRACKED SOIL THAT ORIGINATED FROM THE CONSTRUCTION SITE. FLUSHING SHALL NOT BE ALLOWED UNLESS RUNOFF IS TREATED BEFORE DISCHARGE FROM THE SITE.

APPROVED FOR CONSTRUCTION
Project No. 208250 Issue No. 1

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

Marisol E. Velilla Dwg. Rev. 0
Date: 5–4–2021 Lic. No. 46205

GENERAL NOTES

1. STRIPPING MATERIAL TO BE USED FOR DRESSING OF SIDE SLOPES.
2. LOCATION AND STAKING OF THE SITE WITHIN THE PROPERTY LINES WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
3. ALL SLOPES 3:1 MAXIMUM UNLESS NOTED.
4. STERIALNT SHALL BE APPLIED TO WEEDS AND VEGETATION WITHIN BASE ROCK AREA PRIOR TO PLACEMENT OF SURFACE ROCK.
5. EXCESS MATERIAL SHALL BE SPREAD EVENLY IN AREAS AS DIRECTED IN THE PLAN DRAWING OR HAULED OFF AND DISPOSED OF OFF SITE.
6. ELEVATIONS INDICATED IN SUBSTATION GRADED AREA ARE FINISHED GRADE. FINISHED GRADE IS TOP OF BASE ROCK.
7. CONTOURS OUTSIDE OF THE SUBSTATION GRADED AREA INDICATE THE TOP OF FINISHED TOPSOIL OR TOP OF DRIVEWAY BASE ROCK.
8. SURFACE GRADE IN SUBSTATION AREA IS 4" HIGHER THAN FINISHED GRADE ELEVATION. SURFACE GRADE CONSISTS OF 4" OF SURFACING ROCK MATERIAL.

CONSTRUCTION NOTES

1. THE SITE TOPSOIL SHALL BE STRIPPED OF VEGETATION TO A DEPTH OF 6 INCHES OR TO SUCH GREATER DEPTH AS MAY BE NECESSARY TO REMOVE ROOTS AND OTHER ORGANIC MATTER. (SEE DESIGN PHASE GEOTECHNICAL EVALUATION, PROPOSED CONNEXUS SUBSTATION, RAMSEY, DATED DECEMBER 30, 2019 BY CHOSEN VALLEY TESTING, INC., CVT NUMBER: 15883.19.MNS.)
2. THE GRADING CONTRACTOR SHALL BE RESPONSIBLE FOR DISPOSAL OF ALL DEBRIS, INCLUDING TREE STUMPS, BRUSH, ROOTS, AND SOD STRIPPING RESULTING FROM SITE PREPARATION OPERATIONS. TREE TOPS ABOVE STUMPS TO BE REMOVED BY OTHERS.
3. PRIOR TO PLACEMENT OF FILL, THE SUBGRADE SHALL BE PROOF–ROLLED WITH A FULLY LOADED TANDEM–AXLE DUMP TRUCK WITH A MINIMUM GROSS WEIGHT OF 25 TONS. UNSUITABLE AREAS OBSERVED SHALL BE IMPROVED BY COMPACTION OR BE REPLACEMENT WITH SUITABLE COMPACTED FILL MATERIAL.
4. AFTER COMPLETION OF STRIPPING, EXCAVATING, AND ALL SUBGRADE SURFACES IN THE AREA, THE CONTRACTOR SHALL OBTAIN APPROVAL OF THE SUBGRADE BY THE OWNER, PRIOR TO FURTHER CONSTRUCTION. ANY UNKNOWN WATER CONDITIONS OR SOIL CONSIDERED TO BE WEAK AND SUBJECT TO SIGNIFICANT DISPLACEMENT UNDER NORMAL EQUIPMENT WHEEL APPLICATION SHALL REQUIRE THE OWNER'S ENGINEER TO BE CONTACTED. UPON DISCOVERY OF ANY UNKNOWN WATER CONDITIONS OR WEAK SUBGRADE MATERIALS, THE ENGINEER MAY ORDER ADDITIONAL SUBCUTS OR GEOTEXTILE TREATMENT. THE CONTRACTOR SHALL PERFORM AND INSTALL THESE CHANGES AS DIRECTED BY THE OWNER. ALL OTHER DEBRIS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF BY THE CONTRACTOR WITHOUT LIABILITY ON THE PART OF THE OWNER.
5. COMMON FILL SHALL CONSIST OF APPROVED MATERIAL WHICH IS FREE OF ORGANIC MATTER AND DEBRIS. SPREAD TEMPORARILY EXCAVATED MATERIAL IF TOO WET FOR PLACING UNTIL MOISTURE CONTENT IS ACCEPTABLE.
6. SELECT FILL SHALL CONSIST OF A GRANULAR MATERIAL WHICH CONTAINS LESS THAN 8% PASSING #200 SIEVE AND LESS THAN 40% PASSING THE #40 SIEVE. MATERIAL OF THIS TYPE IS LOW IN FROST SUSCEPTIBILITY AND IS RELATIVELY FREE DRAINING.
7. FILLS AND EMBANKMENTS SHALL BE CONSTRUCTED IN UNIFORM LIFTS OR LAYERS NOT EXCEEDING 9 INCHES OF LOOSE FILL AND LAID PARALLEL TO THE FINISHED SURFACE.
8. COMPACT FILL MATERIAL IN LIFTS NOT EXCEEDING 9 INCHES UNCOMPACTED THICKNESS TO 98% OF STANDARD PROCTOR DENSITY (ASTM D698). MAINTAIN MOISTURE CONTENT WITHIN PLUS OR MINUS 2% OF THE OPTIMUM DETERMINED FOR MAXIMUM DENSITY. DO NOT PLACE, SPREAD, OR COMPACT FILL MATERIAL DURING WET OR UNFAVORABLE WEATHER CONDITIONS. WET GRANULAR MATERIALS THOROUGHLY DURING OR IMMEDIATELY PRIOR TO COMPACTION.
9. FINISH FILL, EXCAVATED AND OTHER DISTURBED AREAS TO UNIFORM GRADE AND SECTION NORMALLY OBTAINABLE WITH A BLADE GRADER FINISH GRADE TO A NEAT APPEARANCE AND PROVIDE POSITIVE DRAINAGE. ALLOWABLE TEMPLATE TOLERANCE: ± 0.10 FT.
10. THE GRADING CONTRACTOR SHALL INSTALL THE ACCESS DRIVE AS SOON AS GRADING IS COMPLETED. DRIVE SURFACE SHALL BE SLOPED TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE SUBSTATION SITE. ACCESS DRIVE SURFACING SHALL BE COMPACTED WITH VIBRATING ROLLER.

BASE ROCK CLASS V (FINISHED GRADE)

1. MNDOT CLASS V BASE ROCK SHALL BE A MINIMUM OF 12 INCHES DEEP. SEE GRE SPECIFICATION.
2. MNDOT 313S, TABLE 3138–1 (VIRGIN MATERIAL). NO RECYCLED MATERIAL.

FINISH ROCK "SURFACE ROCK" (SURFACE GRADE)

1. FINISH ROCK SURFACING SHALL BE A MINIMUM OF 4 INCHES DEEP. SEE GRE SPECIFICATION.
2. FINISH ROCK SURFACING SHALL BE INSTALLED BY THE CONTRACTOR AFTER INSTALLATION OF FOUNDATIONS, GROUNDING, CONDUIT AND FENCE IS COMPLETE.

SEEDING

1. SEED MIXTURE SHALL BE MNDOT 35–221 AND APPLIED AT A RATE OF 36.5 LBS/ACRE.

GOPHER STATE ONE CALL
800/252-1166

SITE LOCATION

9180 ALPINE DR,
RAMSEY, MN 55303

GREAT RIVER ENERGY.

GRADING SECTIONS AND DETAILS

DAYTONPORT SUBSTATION

SA02

DATE	REVISION	REV NO	APPD BY

DATE: 05–04–21
SCALE: AS SHOWN
DWN BY: AMG
CKD BY: EKD
CKD BY:
APPD BY: MEV

PROJECT NO 208250
REVISION 0
DRAWING NUMBER SA02–40D
SHEET 3

ISSUED FOR CONSTRUCTION

PRIMARY CABLE
ANCE FROM
W WITH ALUMINUM
RS (TYPICAL)

GRI METER
PANEL
#391

GROUND BUS
(CONFIRM
LOCATION
WITH SWGR)

3"

GFCI
REC.
#349

UNIT #3
EEDER #1

UNIT #2
MAIN

UNIT #1
INCOMING
BUS 1
AUXILIARY

BANK #1 AND
SCADA
RACK

4" X 24" CABLE TRAY #517
ON TOP OF SWGR

OKE DETECTOR
90

BATTERY
SWITCH
#379

EXHAUST FAN
W/ RAIN HOOD
#376

8"

8"

LED LIGHT #332
(TYPICAL OF 7)

4 1/2"

SMOKE
DETECTOR
#390

HYDROGEN
DETECTOR
#375

GPS
ANTENNA
#108

C6X10.5#/FT
HORIZONTAL
ROOF SUPPORT

BATTERY
SYSTEM
#371,#371A
#372,#372A

14'-1"

A/C UNIT 2
#381

2' X 3' ALUM.
RAIN CANOPY

A/C REC. #346

REC. #347

7.5KW ELECTRIC
HEATER #385

EXTERIOR
LIGHT
#333

"C"

O.D. LT. SW. #341
LT .SW. #342
REC. #347

FIRE
EXTINGUISHER
#389

DOOR
SWITCH
#345

EXIT
SIGN
#335

SPACE
FOR
EYE WASH

C. #347

36" x 24"
FOLD-UP
TABLE
#520

BKR. TOOL
MTG RACK

FILTERED, MOTORIZED
DAMPER W/ HOOD
#377,377A
(TYPICAL OF 2)

EXTERIOR
LIGHT
#333

GFCI
REC.
#349

O.D.
LT.SW.
#341

23H
#324

23L
#325

42"

99 1/4"

PLAN VIEW

THERMAL INSULATION
(R-21.3), #518

O.D. LT. SW. #341
LT. SW. #342

DOOR
SWITCH
#345

DOOR
CLOSER
#526

42"W X 84"H
DOOR #524

PANIC CROSS BAR
#527

FIRE
EXTINGUISHER
#389

THERMAL INSULATION
(R-40.3), #518, #518A

O.D. REC.
#349

REC.
#347

1"

ANCHOR BOLT
REFER TO DETAIL "Y"

14'-

SE

1"

ANCHOR BOLTS
& CLAMP BARS
(BY OTHERS)

1 3/4"

INSIDE OF FRONT
OR REAR BEAM

1/2" DIA. ANCHOR BOLT
(BY OTHERS)

DETAIL "Y"
NOT TO SCALE

38'-2" ROOF

"A"

"D"

GPS
ANTENNA
#108

EXTERIOR
LIGHT
#333

EXTERIOR
LIGHT
#333

2' X 3' ALUM.
RAIN CANOPY

3/8"

SLOPE DOWN
FOR CONDENSATE
DRAINAGE

A/C UNIT 2, #381
W/ THRU-WALL
SLIDE-OUT
CHASSIS

18 3/8"

42"W X 84"H
DOOR #524

DOOR TRIM
#527 WITH
THUMBLATCH
AND EXTERIOR
LOCK CYLINDER

FILTERED
MOTORIZED
INTAKE DAMPER
W/ RAIN HOOD
#377,377A

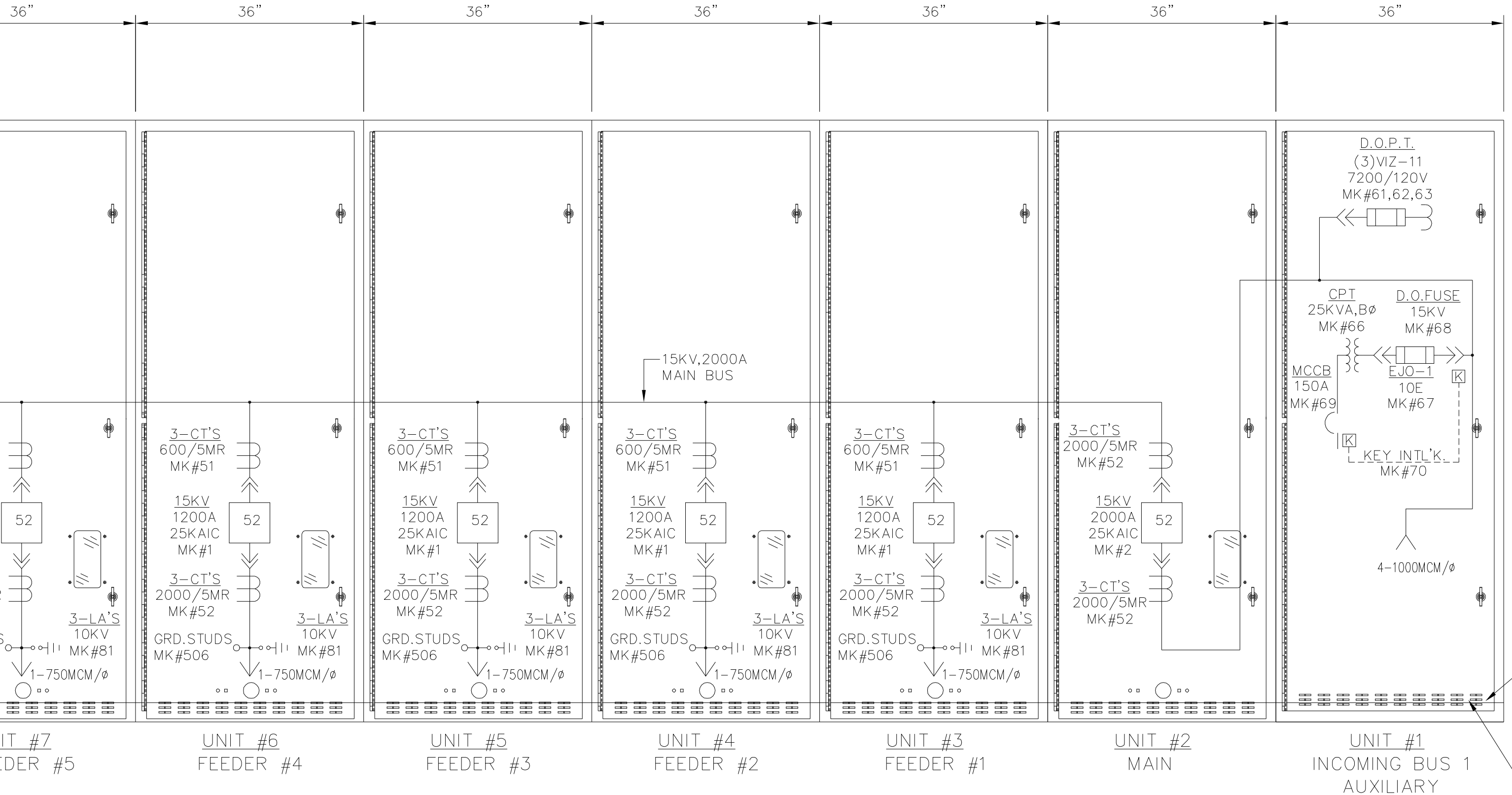
GFCI REC.
#349

24"

11'-7" SHIPPING HEIGHT

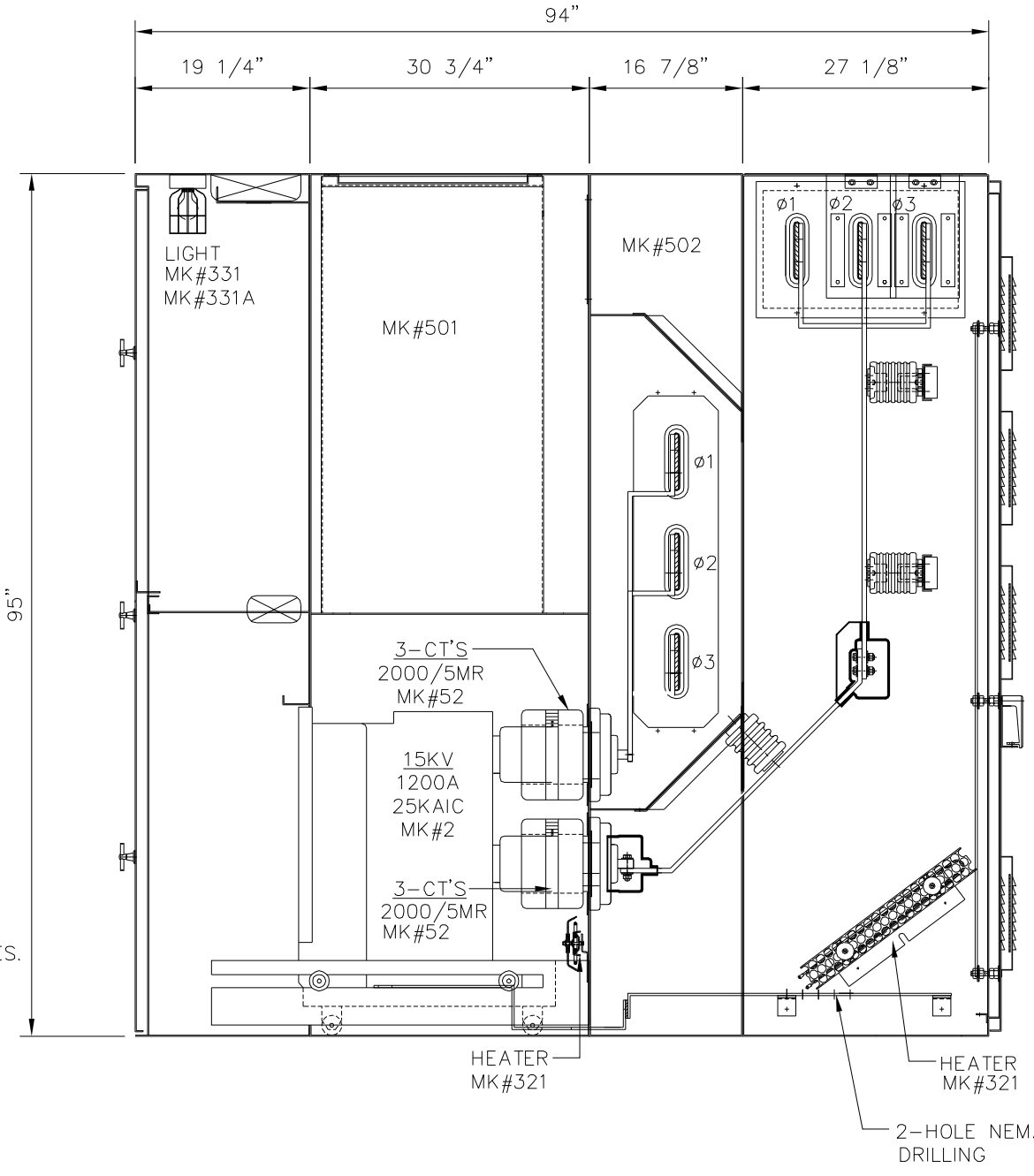
GROUND BUS
(CONFIRM
LOCATION
WITH SWGR)

GPS
ANTENNA
#108

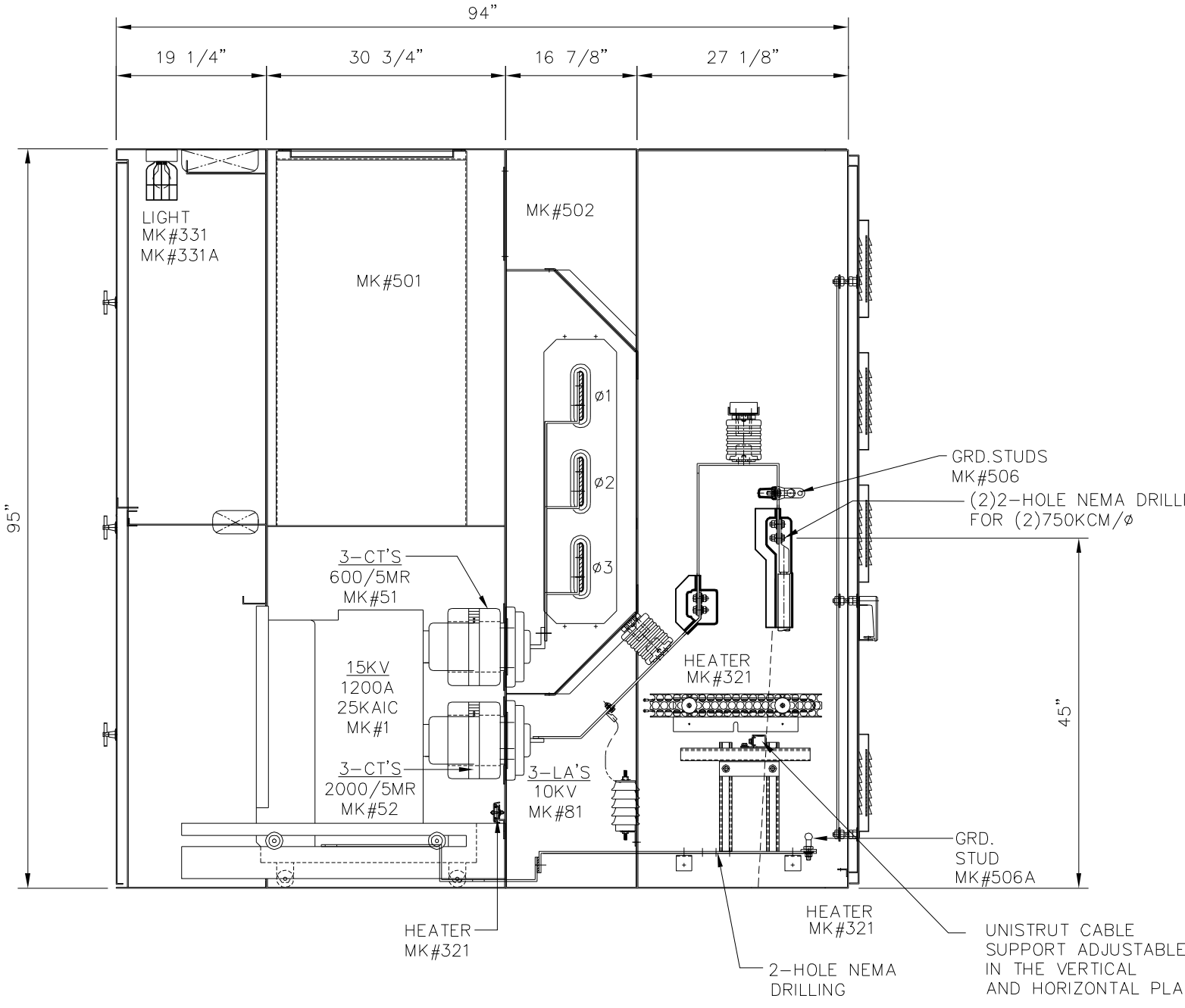


FRONT ELEVATION AND SINGLE LINE DIAGRAM

TYPICAL BUS CONNECTION



SIDE SECTION
UNIT NO. 2



SIDE SECTION
UNIT NO'S 3,4,5,6 & 7

#7GA PIPE STIFFENER CHANNEL

4" IPS SCHED. 40 PIPE

168"

20 3/8" | 23 3/8" | 21 13/16" | 20 3/16" | 21 13/16"

37 1/2" | 33" | 32 1/4" | 32 1/4" | 33" | 33" | 33" | 33" | 34 1/4" | 33"

114" | 218"

446"

APPROXIMATE WEIGHT= 78,000LBS

PLAN VIEW
FLOOR NOT SHOWN

446"

114" | 218"

1/4" THICK FLOOR PLATES

12.3125"

6" | 6" | 6"

12"

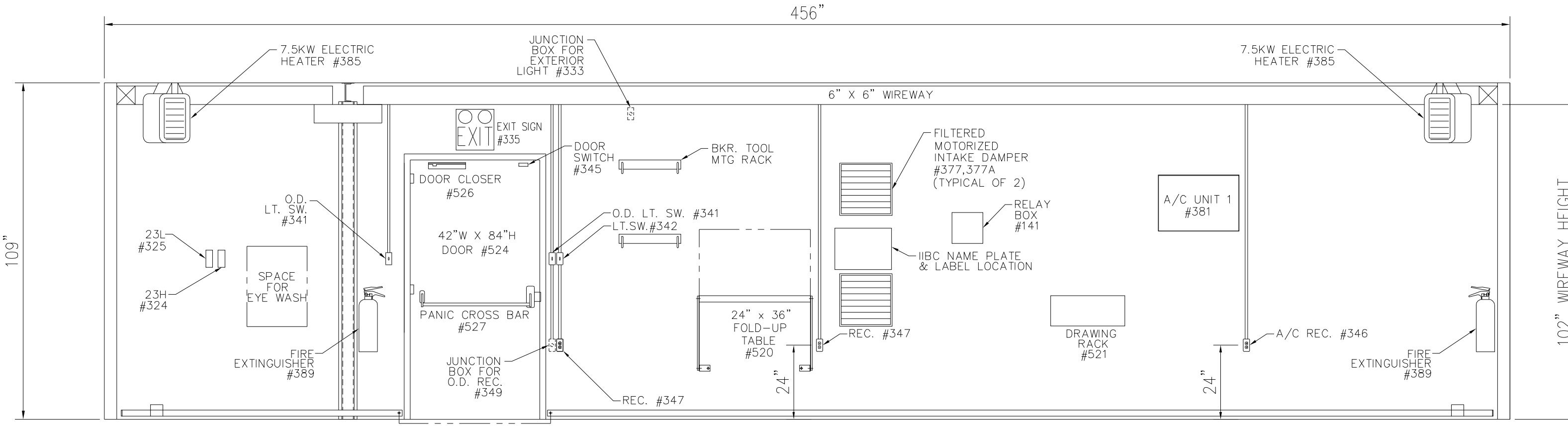
2-HOLE NEMA
2" X 4" X 1/4"
COPPER GROUND PAD
(TYP. EACH CORNER)

#16GA GALV. STEEL FLASHING

4" IPS SCHEDU
PIPE FO

FRONT ELEVATION

SECTION "B–B"



SECTION "C–C"