

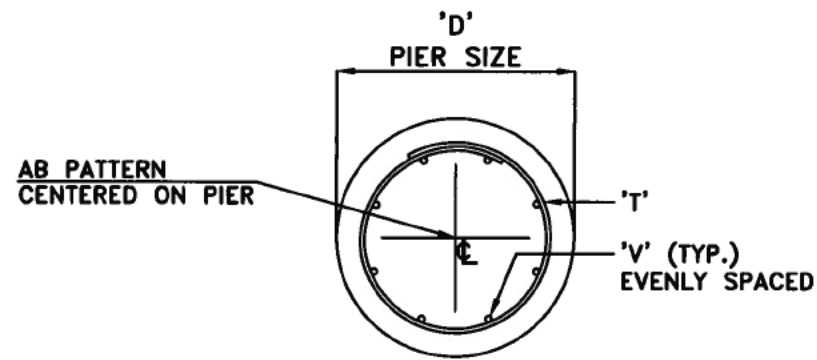
REVISIONS	NO.
SUGG PARKWAY SUBSTATION PRELIMINARY DESIGN J.P. 10/28/20	1-A



CONSTRUCTION NOTE:  
 REMOVE OLD WIRE LABELS WITH ORANGE TEXT,  
 INSTALL NEW WIRE LABELS WITH GREEN TEXT

**PRELIMINARY**

GREENVILLE UTILITIES Greenville, North Carolina		
SUGG PARKWAY SUBSTATION 115 TO 15 kV FOUNDATION PLAN ANCHOR BOLT PLAN		
DWN.	DATE	DWG. NO.
CKD.	APPD.	
SCALE: DRAWN 1:1, PRINT 1/8" = 1'		
SUGG_xx_SITER_FP1_R1		



STR.	QTY.	"A"	"C"	"D"	"S"	"V" VERT. BARS	"T" TIE'S	CU. YDS. OF CONCRETE/PIER
P1	14	12'-9"	12-4 1/2"	2'-6"	11 1/8"	(6) #7 BARS	(15) #4 TIES	2.32
P2	2	11'-9"	11-4 1/2"	2'-6"	11 1/8"	(6) #7 BARS	(14) #4 TIES	2.14
P3	14	10'-3"	9-10 1/2"	2'-6"	11 1/8"	(6) #7 BARS	(13) #4 TIES	1.86
P4	2	13'-6"	13-1 1/2"	2'-6"	11 1/8"	(6) #7 BARS	(16) #4 TIES	2.45
P5	14	17'-6"	17-1 1/2"	2'-6"	11 1/8"	(6) #8 BARS	(20) #4 TIES	3.18
P6	4	14'-9"	14-4 1/2"	2'-0"	11 1/8"	(6) #6 BARS	(17) #4 TIES	2.68
P7	2	14'-6"	14'-1 1/2"	3'-6"	11 1/8"	(8) #9 BARS	(17) #4 TIES	5.17

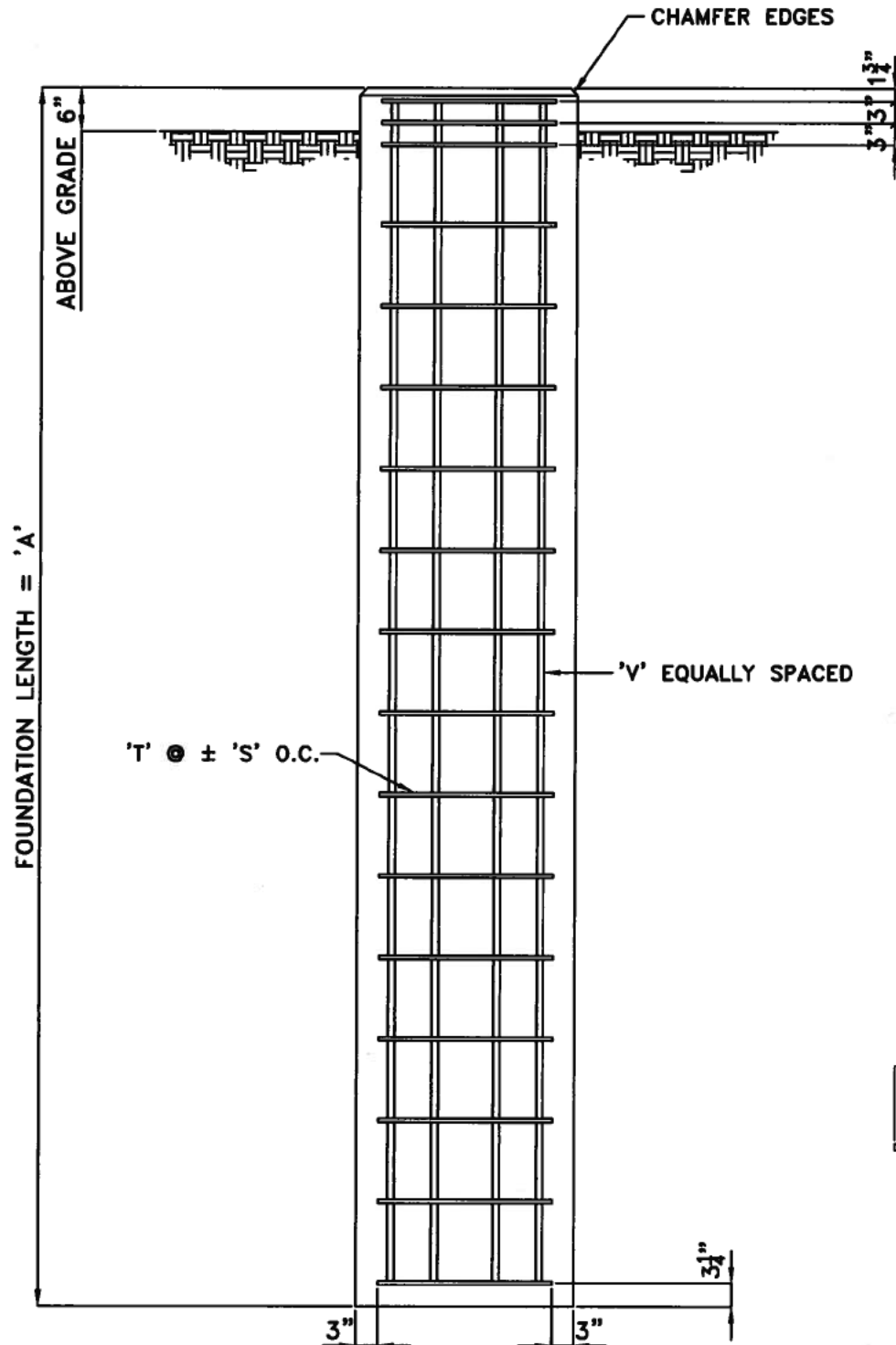
*Kurtiss C. Edwards*  
8/29/20

**TOTAL REBAR REQUIREMENTS**

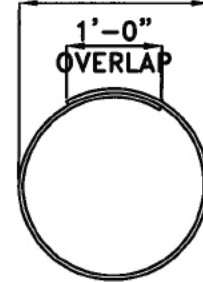
STR.	"C"	"V" TOTAL VERT. BARS	TIE LENGTH	"T" TOTAL TIE'S
P1	12-4 1/2"	(84) #7 BARS	7'-3 3/8"	(210) #4 TIES
P2	11-4 1/2"	(12) #7 BARS	7'-3 3/8"	(28) #4 TIES
P3	9-10 1/2"	(84) #7 BARS	7'-3 3/8"	(182) #4 TIES
P4	13-1 1/2"	(12) #7 BARS	7'-3 3/8"	(32) #4 TIES
P5	17-1 1/2"	(84) #8 BARS	7'-3 3/8"	(280) #4 TIES
P6	14-4 1/2"	(24) #6 BARS	7'-3 3/8"	(68) #4 TIES
P7	14-1 1/2"	(16) #9 BARS	11'-11 1/8"	(34) #4 TIES

**NOTES:**

- PIER DESIGN BASED ON ASSUMED VALUES FOR ALLOWABLE END BEARING PRESSURE OF 720 PSF, SKIN FRICTION OF 92 PSF, AND LATERAL ALLOWABLE BEARING PRESSURE OF 200 PSF/FT OF DEPTH. NEGLECT TOP 3 FT OF SOIL. BASED ON SOIL REPORT INCLUDING BORING LOGS FROM TERRACON REPORT NO. 72195082 DATED OCTOBER 15, 2019.
- CONCRETE TO DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4000 PSI IN 28 DAYS FROM INITIAL PLACEMENT.
- CONCRETE TO BE PLACED PER ACI 318-14.
- ALL REBAR TO BE 60 KSI.
- DO NOT TACK WELD STEEL REINFORCEMENT.
- MINIMUM OF 3" OF CONCRETE COVER OVER STEEL REINFORCEMENT UNLESS NOTED OTHERWISE.
- STEEL REINFORCEMENT TO BE PLACED PER ACI-318-14.
- FORMWORK TO BE CONSTRUCTED PER ACI 318-14.
- TOP EDGES OF EXPOSED CONCRETE SHOULD BE CHAMFERED.
- DEPENDING ON SITE CONDITIONS, CASING OF THE DRILLED PIERS MAY BE REQUIRED.



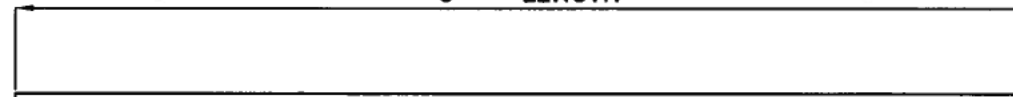
HOOP DIAMETER



FOR APPROVAL ONLY  
DATE: 08/24/20 BY: ACE

REBAR MK 'T'

'C' = LENGTH



REBAR MK 'V'

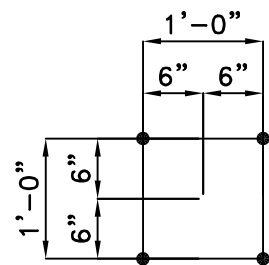
FOUNDATION DETAIL  
SEE TABLE FOR DIMENSIONS

REV	DATE	DESCRIPTION

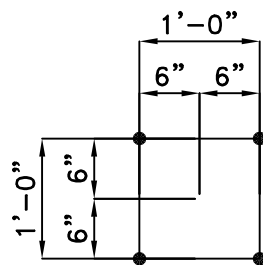
**Substation Enterprises, Inc.**  
145 Commercial Court, P.O. Box 2010  
Alabaster, AL 35007  
Phone: (205)685-2755, Fax: (205)685-2753

GREENVILLE UTILITIES COMMISSION  
SUGG PARKWAY (115/15kV) SUBSTATION  
FOUNDATION DETAILS

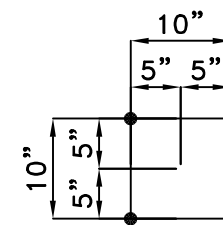
DATE: 08-13-20 DRAWN BY: ACE CHECKED BY: ACE DRAWING NUMBER:  
SCALE: NONE APPROVED BY: FK-5685-FD1



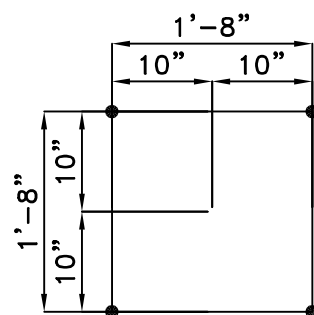
AB-1 ~ (32) PATTERNS REQ'D  
(128) 1"∅ A.B.



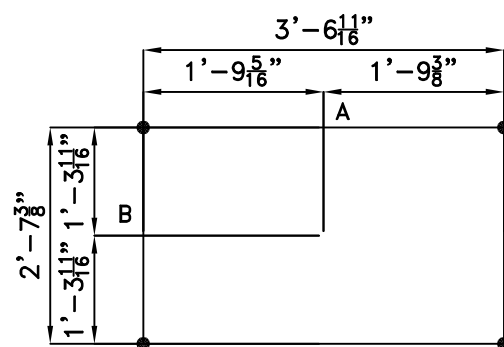
AB-2 ~ (14) PATTERNS REQ'D  
(56) 3/4"∅ A.B.



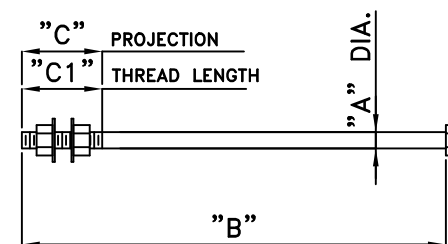
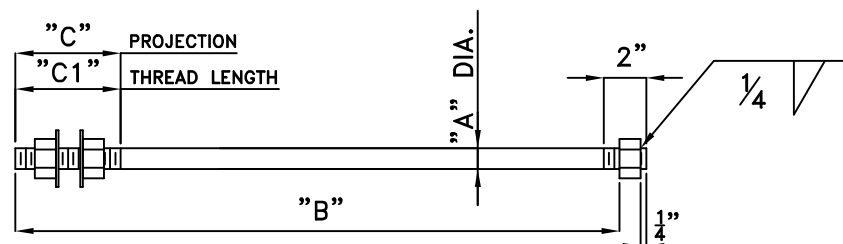
AB-3 ~ (4) PATTERNS REQ'D  
(16) 1"∅ A.B.



AB-4 ~ (2) PATTERNS REQ'D  
(8) 1"∅ A.B. BY OWNER



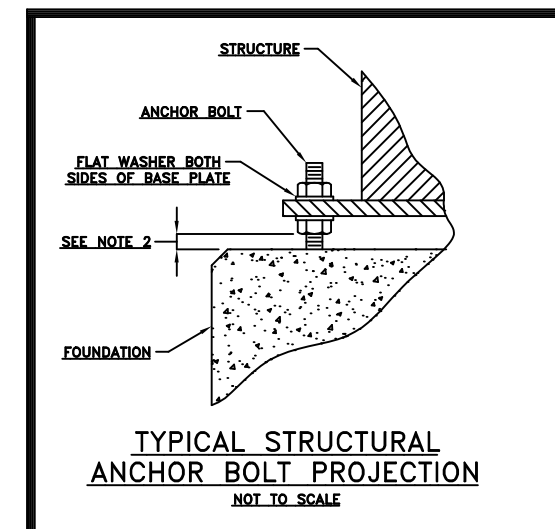
AB-5 ~ (3) PATTERNS REQ'D  
(12) 3/4"∅ G.M.B.



ITEM #	QTY.	"A"	"B"	"C"	"C1"
AB-5	(12)	3/4"	1'-0"	3"	5"

ITEM #	QTY.	"A"	"B"	"C"	"C1"	"L"
AB-1	(128)	1"	2'-4 3/4"	4 1/2"	5"	2'-6"
AB-2	(56)	3/4"	1'-11"	3 1/2"	5"	2'-0"
AB-3	(16)	1"	2'-4 3/4"	4 1/2"	5"	2'-6"

PLEASE NOTE TOTAL LENGTH OF ANCHOR BOLT IS LONGER THAN "B" DIMENSION, SEE "L"



**Substation Enterprises, Inc.**  
 145 Commercial Court, P.O. Box 2010  
 Alabaster, AL 35007  
 Phone: (205)685-2755, Fax: (205)685-2753

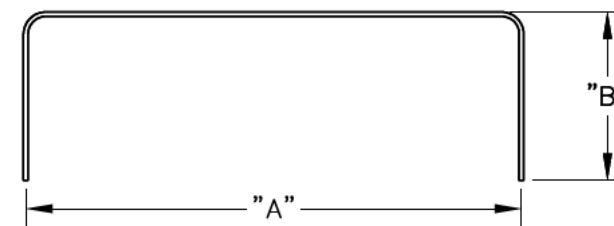
GREENVILLE UTILITIES COMMISSION  
 SUGG PARKWAY (115/15kV) SUBSTATION  
 ANCHOR BOLT DETAILS

DATE: 08-11-20	DRAWN BY: ACE	CHECKED BY: ACE	DRAWING NUMBER: FK-5685-AB2
SCALE: NONE	APPROVED BY:		

REV	DATE	DESCRIPTION
1	09/03/20	RECEIVED BREAKER ANCHOR BOLT PATTERN

**NOTES:**

1. CONCRETE TO BE 4000 psi. (MIN.) ASTM C150 TYPE I.
2. REINFORCING STEEL TO BE ASTM A615 GRADE 60.
3. EXTEND 2/0 AWG Cu 6' OUTSIDE PAD PERIMETER AT 4 LOCATIONS. COIL ADJACENT TO PAD FOR FUTURE CONNECTION BY OTHERS.
4. POUR PAD AGAINST UNDISTURBED EARTH. EXCAVATION SHOULD SHOW UNIFORM STIFF FINE SANDY CLAY. COLOR MAY VARY ORANGE-BROWN AND GRAY. IF OTHER CONDITIONS ARE FOUND IMMEDIATELY NOTIFY ENGINEER. FILL ANY OVER-EXCAVATION WITH COMPACTED CRUSHER RUN (ABC) STONE.
5. VERTICAL REBARS MUST MAINTAIN MINIMUM CLEARANCE OF 3" FROM FORMS.
6. MAKE 3 SAMPLE CYLINDERS FROM EACH TRUCK AFTER ANY SITE MIX ADJUSTMENTS. SITE MIX ADJUSTMENTS NOT RECOMMENDED. RECORD CYLINDER NUMBERS, DATE, TIME AND TRUCK IDENTIFICATION.
7. REBARS FORMED FOR 4" CLEARANCE ON EACH END. MINIMUM ALLOWABLE CLEARANCE TO FORM IS 3" AFTER CONCRETE PLACEMENT AND VIBRATION.
8. ADD REBAR ITEM #5 IN PAD @ 24" CENTERS TO FACILITATE CONSTRUCTION.
9. SITE OIL CONTAINMENT PROVISIONS NOT SHOWN. SEE OIL CONTAINMENT DETAILS.

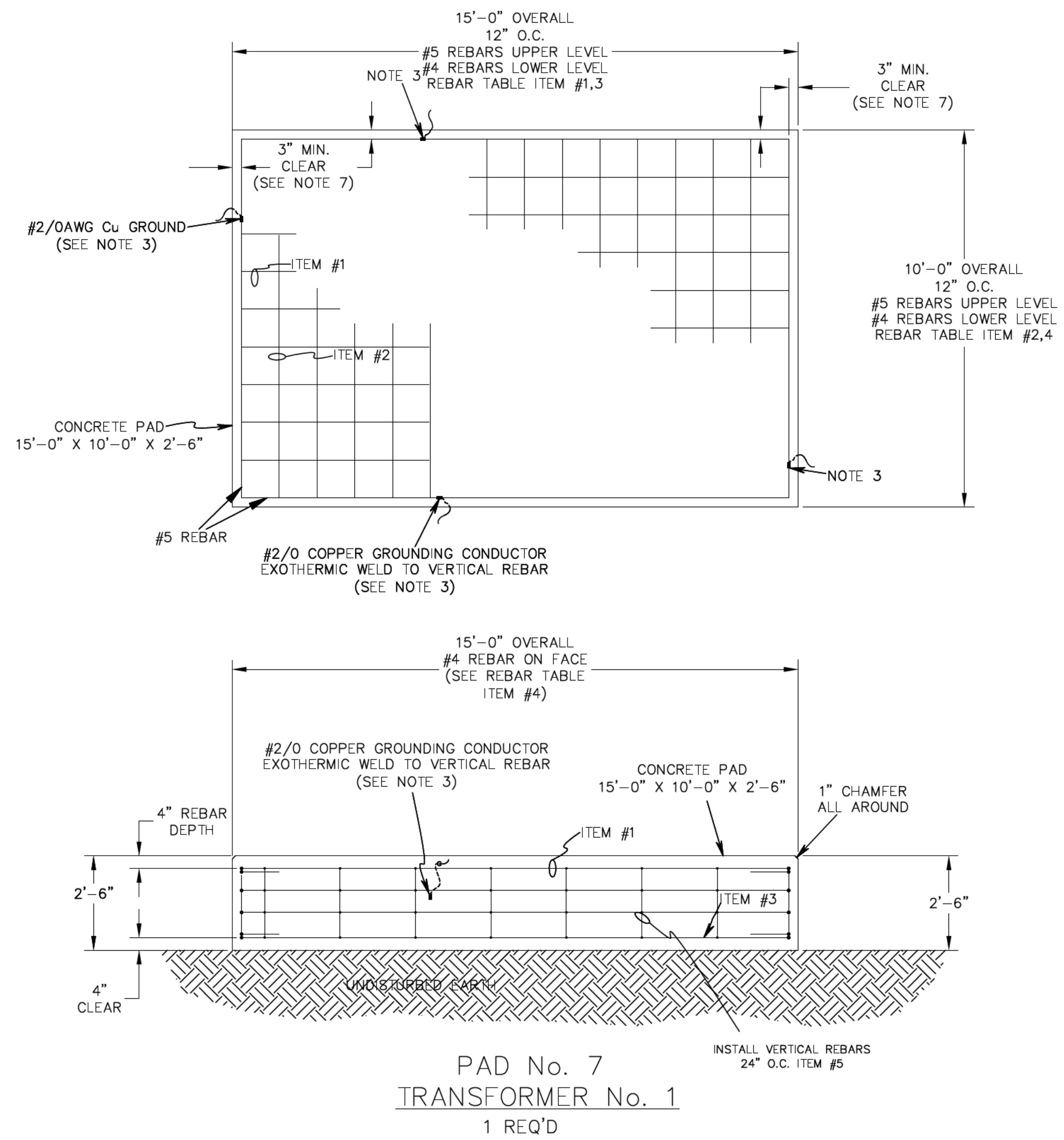


REBAR TABLE

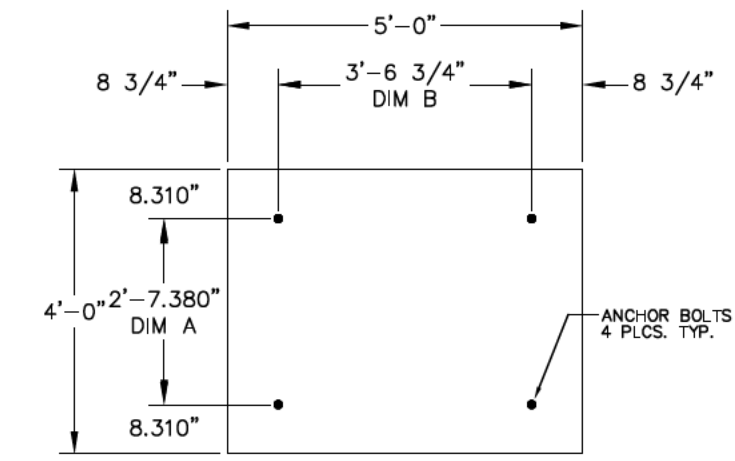
PAD No. "7"		TOTAL No. REQ'D - 1	
ITEM NO.	SIZE OF REBAR	LENGTH	WEIGHT - LBS.
1	#5	14'-4"	14.95
2	#5	9'-4"	9.73
3	#4	14'-4"	9.57
4	#4	9'-4"	6.23
5	#3	1'-10"	1.57
TOTAL WEIGHT OF REBAR PER FDN =			597.97
TIMES TOTAL No. OF FDN'S REQ'D =			597.97

**FD-7**

SCHEDULE FOR TYPICAL PAD DETAIL	
PAD No.	TOTAL REQ'D
4	1



PAD No. 7  
TRANSFORMER No. 1  
1 REQ'D



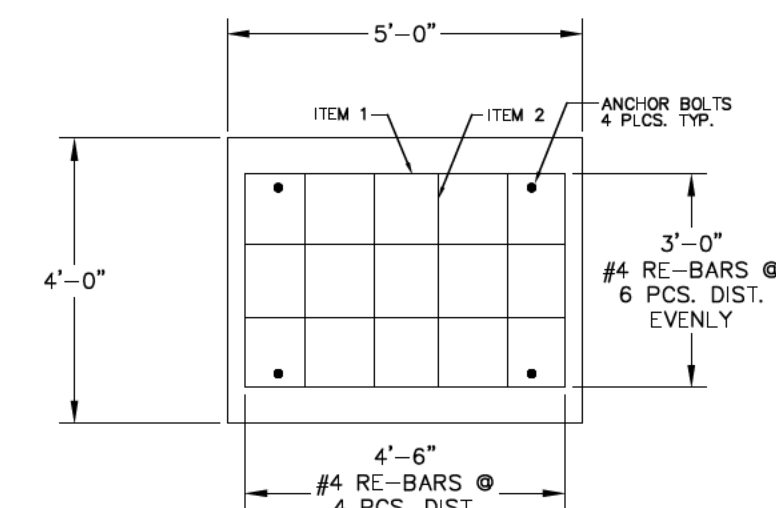
PLAN VIEW  
(ANCHOR BOLTS)  
AB-5

REBAR TABLE

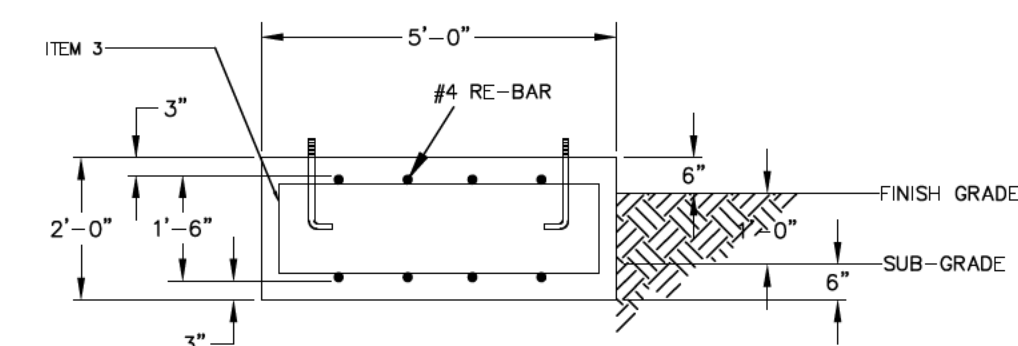
PAD No. "1"		TOTAL No. REQ'D - 3	
ITEM NO.	SIZE OF REBAR	LENGTH	WEIGHT - LBS.
1	#4	4'-6"	3.00
2	#4	3'-0"	2.00
3	#3	1'-6"	1.67
TOTAL WEIGHT OF REBAR PER FDN =			74.72
TIMES TOTAL No. OF FDN'S REQ'D =			224.16

**FD-1**

SCHEDULE FOR TYPICAL FOUNDATION DETAIL	
PAD No.	TOTAL REQ'D
1	3



PLAN VIEW  
(REBAR)



SECTION  
PAD No. 1  
BREAKERS  
3 REQ'D

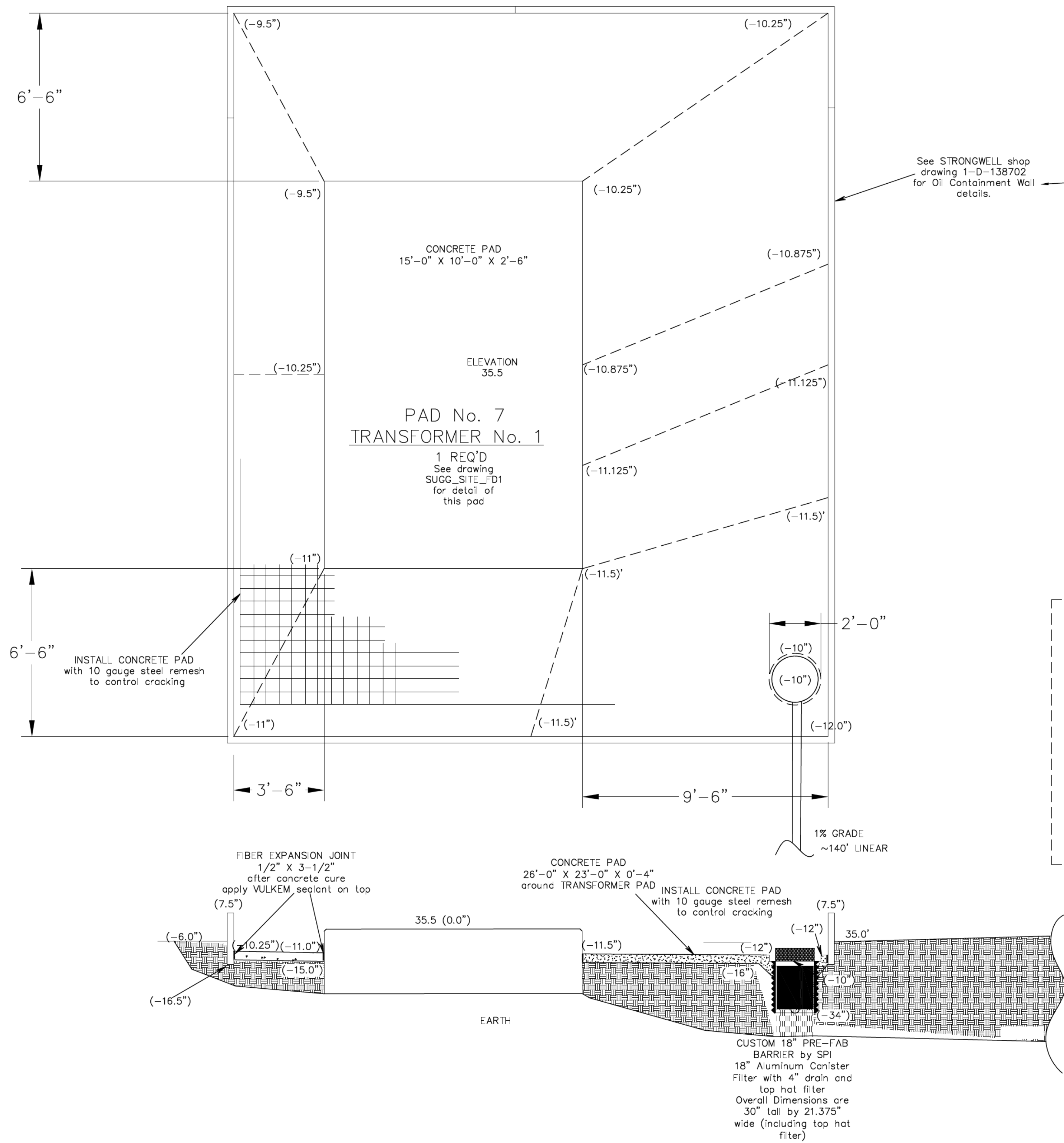
ASTM STANDARD REBAR WEIGHTS	
#3	0.376 LBS PER FOOT
#4	0.668 LBS PER FOOT
#5	1.043 LBS PER FOOT
#6	1.502 LBS PER FOOT
#7	2.044 LBS PER FOOT
#8	2.670 LBS PER FOOT

NO.	REVISIONS
1.A	SUBC. PARKWAY SUBSTATION NEW CONSTRUCTION PRELIMINARY DESIGN PAD DETAILS ARE FROM DAVE#1/FRG.#2 JLP 11-19-2019

**PRELIMINARY**

GREENVILLE UTILITIES  
Greenville, North Carolina  
SUGG PARKWAY SUBSTATION  
115 TO 15 kV  
TRANSFORMER No. 1  
FOUNDATION DETAIL

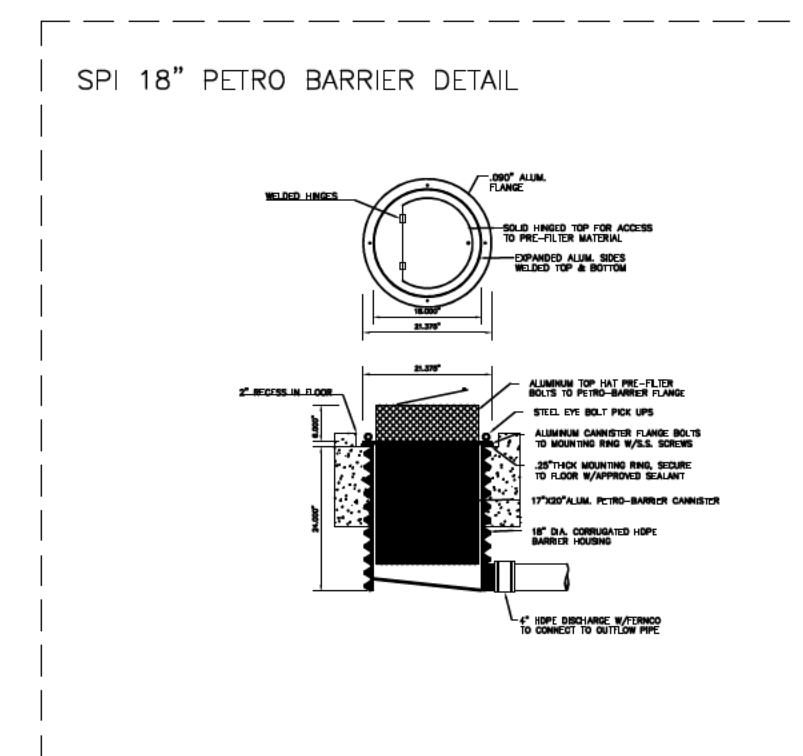
DWN.	DATE	DWG. NO.
CKD.	APPD.	
SCALE: Drawn @ 1/8" = 1' Print @ 3/8" = 1'		



CONSTRUCTION NOTE:

GREENVILLE UTILITIES WILL  
PROVIDE STRONGWELL OIL CONTAINMENT WALLS,  
AND SPI 18" PETRO-BARRIER.

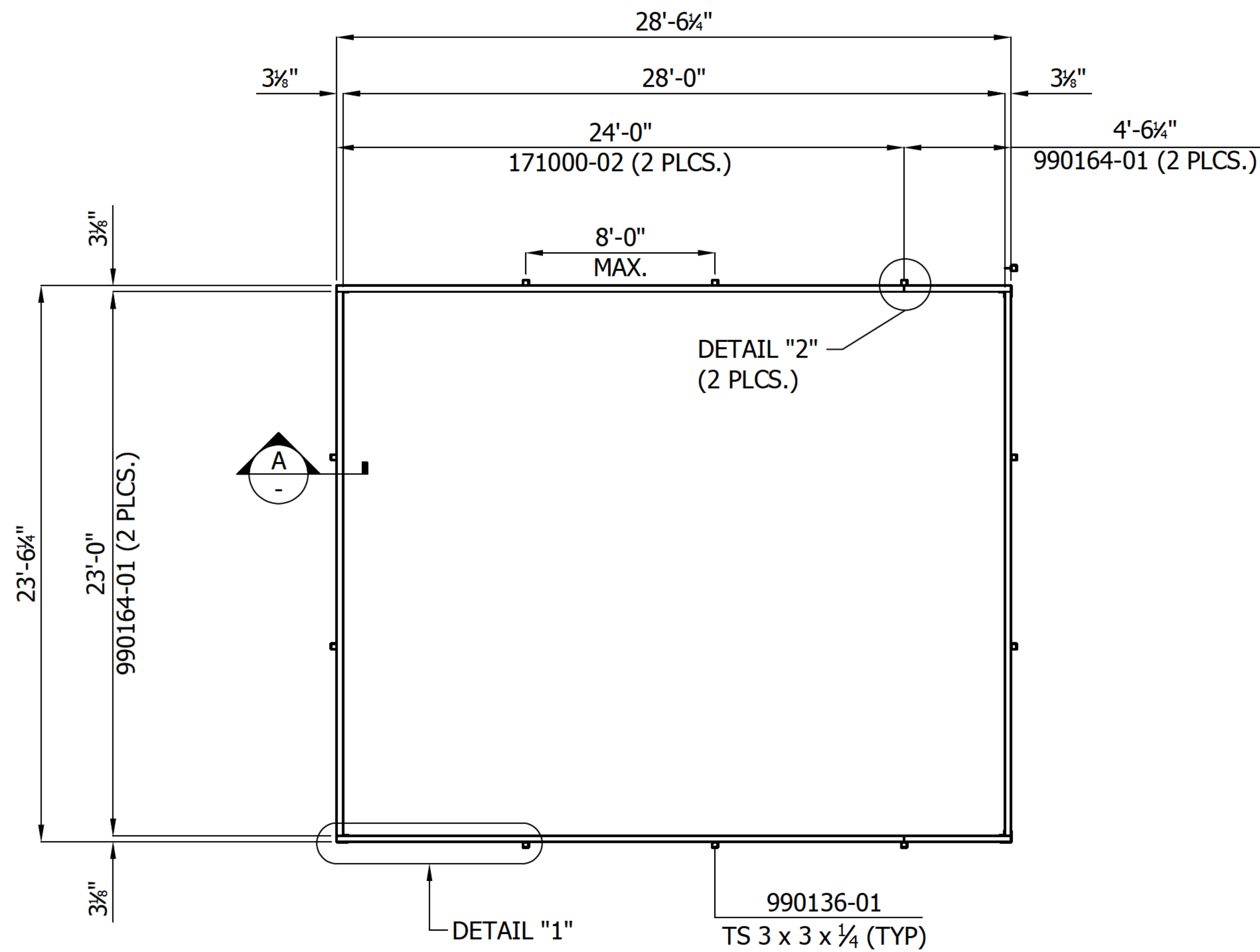
See STRONGWELL shop  
drawing 1-D-138702  
for Oil Containment Wall  
details.



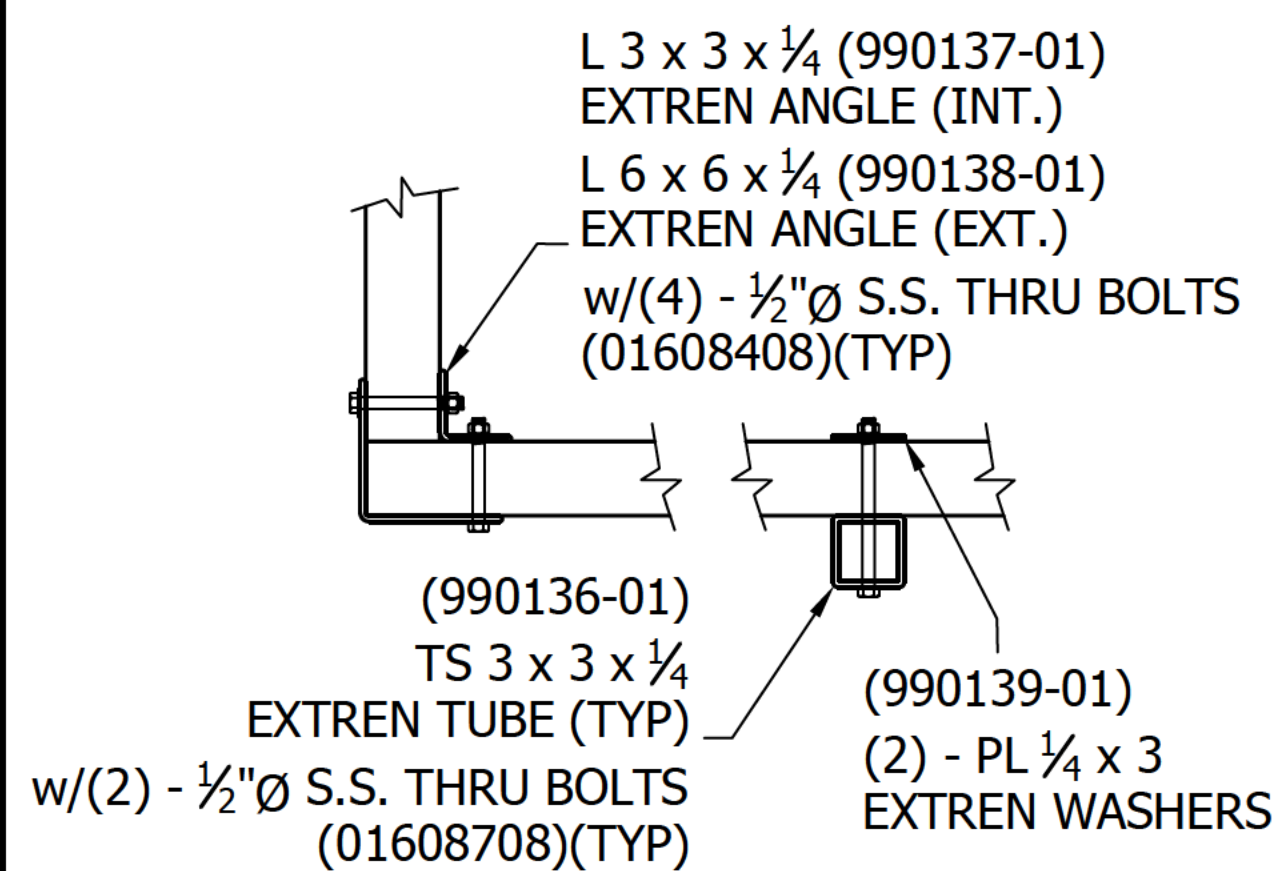
NO.	1.A
REVISIONS	SUGG PARKWAY SUBSTATION NEW CONSTRUCTION PRELIMINARY DESIGN DETAILS ARE FROM FRG#2 J.P. 11-19-2019

**PRELIMINARY**

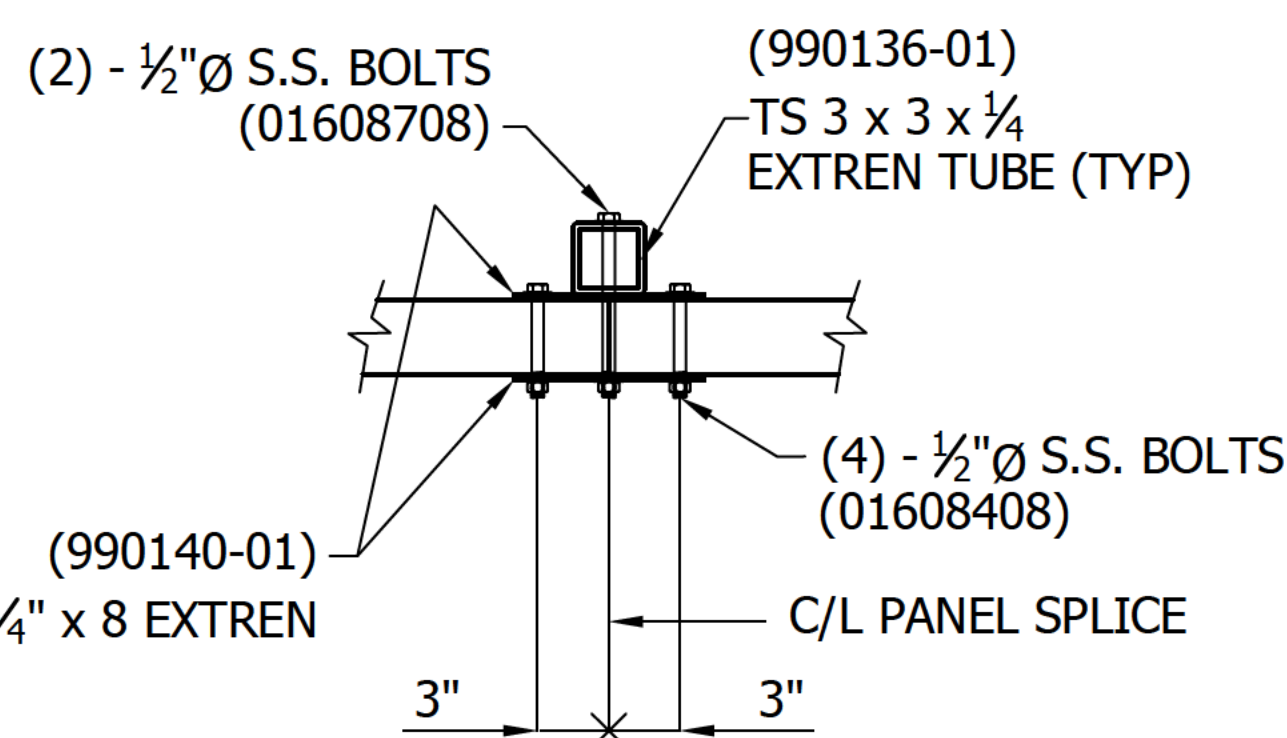
GREENVILLE UTILITIES Greenville, North Carolina		
SUGG PARKWAY SUBSTATION 115 TO 15 kV TRANSFORMER No. 1 OIL CONTAINMENT FOUNDATION		
DWN.	DATE	DWG. NO.
CKD.	APPD.	
SCALE: PRINT @ 3/8"=1'		



**PLAN**  
(ONE-REQ'D)



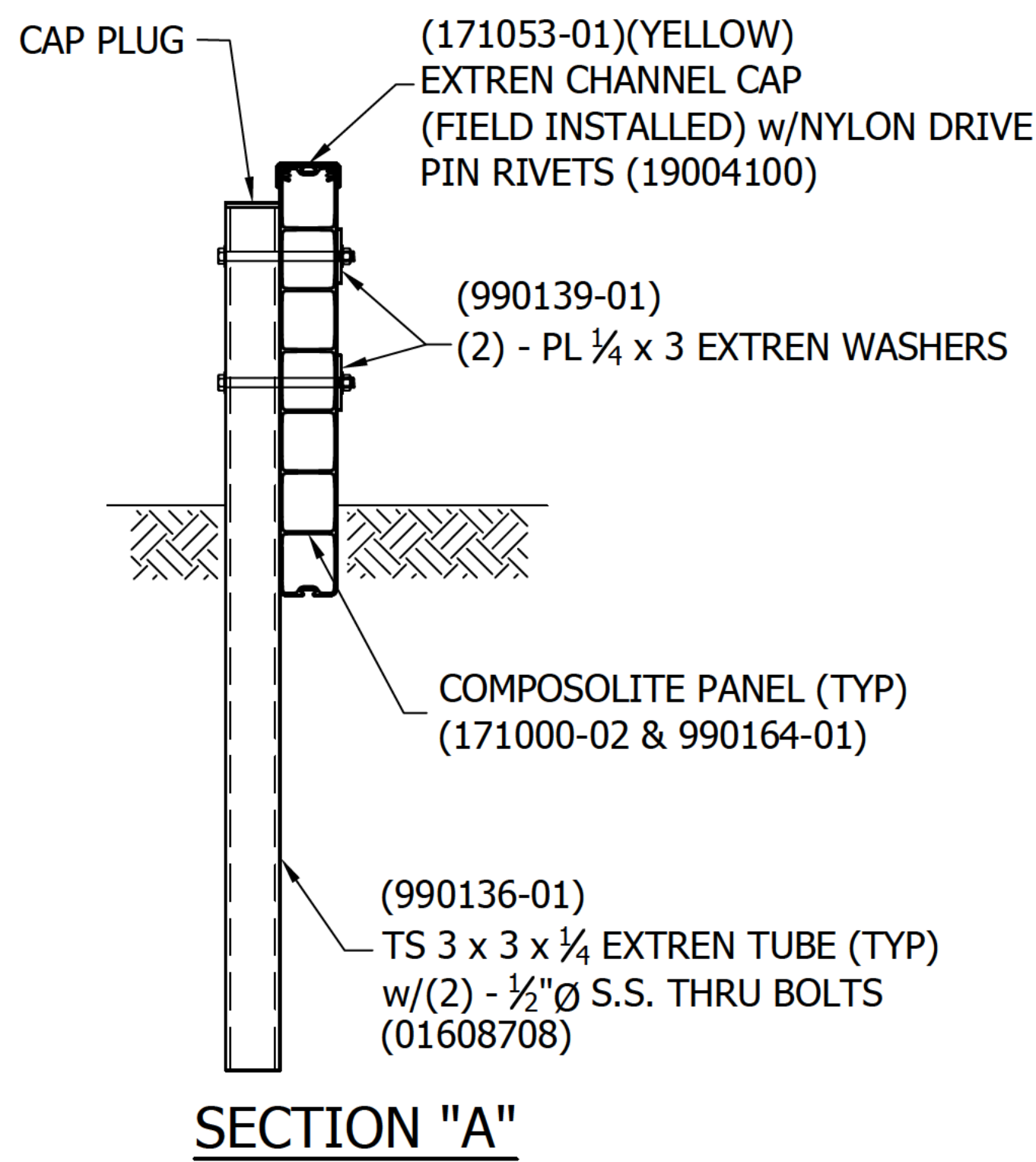
**DETAIL "1"**



**DETAIL "2"**  
(TYP. SPLICE DETAIL)

**FIELD NOTES:**

1. APPLY ADHESIVE BETWEEN EXTREN TUBE, PLATE, ANGLE, THE COMPOSOLITE PANEL & CAULK BETWEEN BOLT WASHERS & FRP COMPONENTS.
2. USING HOLES IN POSTS AS A TEMPLATE, MATCH DRILL 9/16" Ø HOLES IN COMPOSOLITE PANELS.
3. DO NOT OVER TIGHTEN BOLTS
4. FIELD ELEVATIONS DETERMINED BY OTHERS



**SECTION "A"**

**BILL OF MATERIALS**

KITS REQ'D	QTY/KIT	PART #	DESCRIPTION	LENGTH	
				FT.	IN.
8		990159-01	POST KIT		
	8	990136-01	TS 3 x 3 x 1/4 (w/CAP PLUG)	4	0
	16	990139-01	PLATE WASHER 1/4" x 3	0	3
	16	01608708	1/2"Ø 316 S.S. BOLT	0	7 1/2
	16	10608000	1/2"Ø 316 S.S. HEX NUT		
	32	11608000	1/2"Ø 316 S.S. FLAT WASHER		
4		990160-01	CORNER KIT		
	4	990138-01	L 6 x 6 x 1/4	1	10 3/4
	4	990137-01	L 3 x 3 x 1/4	1	10 3/4
	16	01608408	1/2"Ø 316 S.S. BOLT	0	4 1/2
	16	10608000	1/2"Ø 316 S.S. HEX NUT		
	32	11608000	1/2"Ø 316 S.S. FLAT WASHER		
2		990161-01	SPLICE KIT		
	2	990136-01	TS 3 x 3 x 1/4 (w/CAP PLUG)	4	0
	4	990140-01	PL 1/4" x 8	1	10 3/4
	4	01608708	1/2"Ø 316 S.S. BOLT	0	7 1/2
	8	01608408	1/2"Ø 316 S.S. BOLT	0	4 1/2
	12	10608000	1/2"Ø 316 S.S. HEX NUT		
	24	11608000	1/2"Ø 316 S.S. FLAT WASHER		
			CAP CHANNEL		
6		171053-01	C 3.42 x 1.3 x .125 (YELLOW)	20	0
			WALL PANELS		
2		171000-02	COMPOSOLITE PANEL 3 x 24	24	0
2		990164-01	COMPOSOLITE PANEL 3 x 24	23	0
2		990164-01	COMPOSOLITE PANEL 3 x 24	4	6 1/4
			ACCESSORIES		
1		RZ09060003	9/16"Ø FLUTED DRILL BIT		
1		ZW01130405	1/4"Ø DRILL BIT		
1		RZ09060002	ADHESIVE APPLICATOR GUN		
6		RZ09060001	PLIOGRIP 7770/220 100ML x 100ML TUBES		
120		19004100	1/4"Ø NYLON DRIVE RIVETS		

STRONGWELL AND ITS EMPLOYEE'S DESIGN RESPONSIBILITY IS STRICTLY LIMITED TO THE SHOP DRAWINGS AND THE TECHNICAL SUPERVISION THEREOF OF ITS OWN DESIGN AND HAS NO RESPONSIBILITY WHATSOEVER EITHER DIRECTLY OR INDIRECTLY INVOLVING CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES OR PROCEDURES OR FOR SAFETY PRECAUTIONS OR PROGRAMS IN CONNECTION WITH THIS OR ANY OTHER PROJECT. 1/2000

THIS DRAWING(S), AS WELL AS ALL CONCEPTS, EMBODIMENTS AND OTHER INTELLECTUAL PROPERTY RELATED THERETO, ARE THE SOLE, EXCLUSIVE, CONFIDENTIAL AND PROPRIETARY INFORMATION OF STRONGWELL AND MUST NOT BE USED EXCEPT IN CONNECTION WITH STRONGWELL'S WORK, NOR MAY ANY OF THE FOREGOING BE IN ANY MANNER DISCLOSED TO ANY THIRD PARTY WITHOUT STRONGWELL'S PRIOR WRITTEN CONSENT. ANY RECIPIENT OF THIS DRAWING(S) ACKNOWLEDGES AND AGREES THAT STRONGWELL OWNS ALL INTELLECTUAL PROPERTY AND IMPROVEMENTS CONCEIVED OF, REDUCED TO PRACTICE, OR OTHERWISE CREATED THAT ARE ASSOCIATED WITH THE DRAWING(S) OR RELATED INTELLECTUAL PROPERTY, INCLUDING ANY INTELLECTUAL PROPERTY CREATED BY OR ON BEHALF OF THE RECIPIENT. ALL RIGHTS, INCLUDING ANY RIGHTS OF DESIGN AND INVENTION, ARE RESERVED BY STRONGWELL. 1/2020

DATE	BY	REVISION	NO.
10/6/2020	SCD	FOR FABRICATION	1
10/1/2020	SCD	FOR APPROVAL	A

**STRONGWELL**  
Bristol Division  
400 Commonwealth Ave. / Box 580 / Bristol, VA 24203-0580  
Ph: 276-645-8000 Fax: 276-645-8003

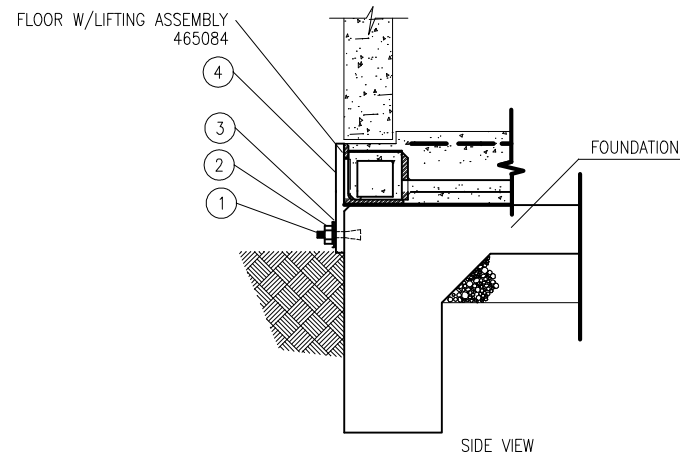
CUSTOMER: GREENVILLE UTILITIES COMMISSION  
GREENVILLE, SC

TITLE: SUGG PARKWAY  
FRP OIL CONTAINMENT - 24"

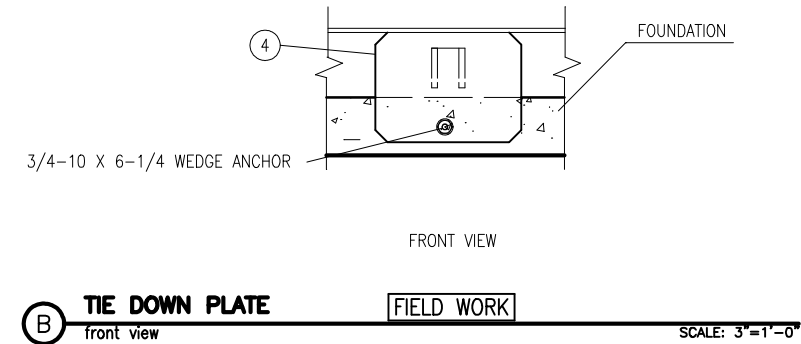
DRAWN	CHECKED	ENGINEER	CUSTOMER P.O.	C/O	DWG. #
SCD 10-1-2020	JT 10/2020		75845	138702	1-D-138702

**NOTES:**

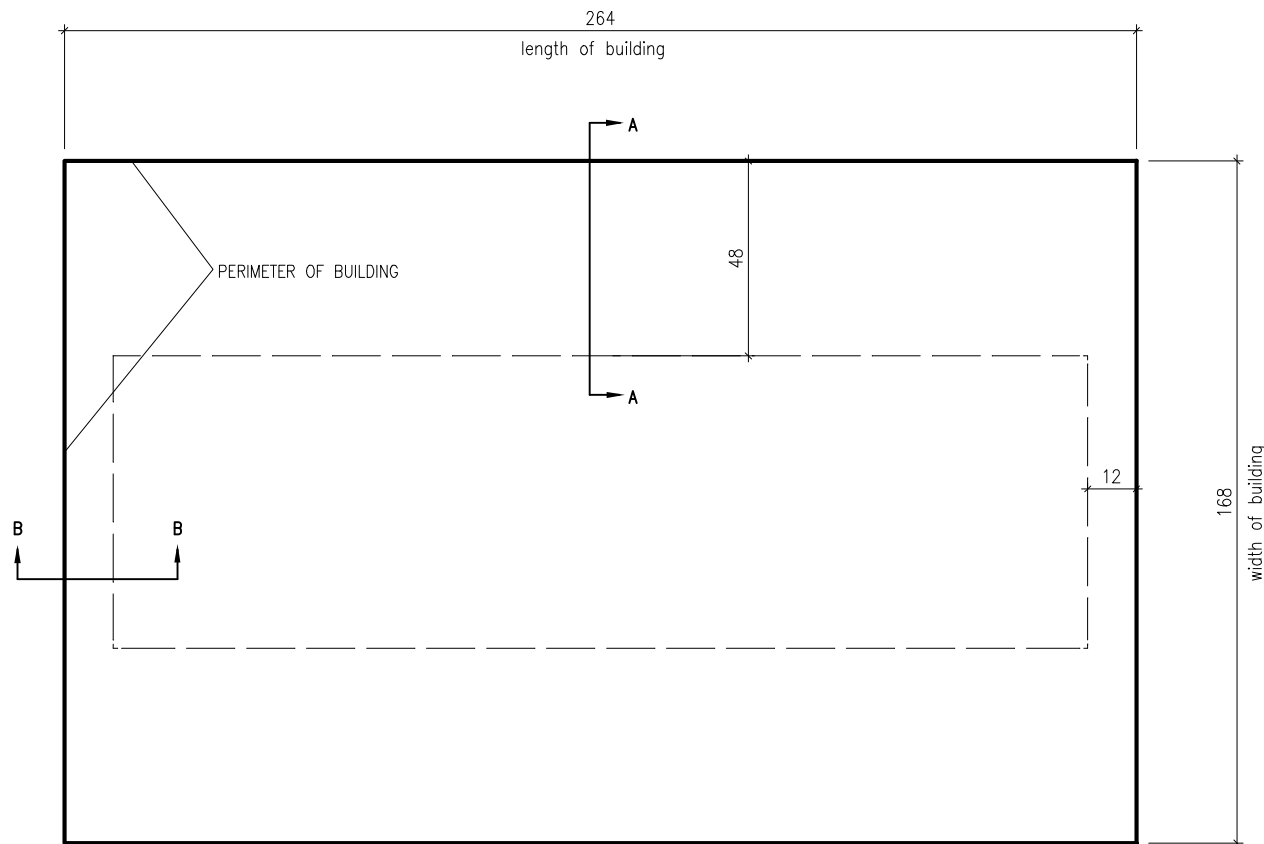
1. GENERAL
  - 1.1 All dimensions are specified in inches unless otherwise noted.
  - 1.2 Foundation is designed for 1000 psf bearing. REF: TERRACON Soils report 72195082 dated 10/15/19.
  - 1.3 Slab type foundation is not recommended for areas with extreme frost conditions or where high water tables are present. These conditions could cause differential settlements in the soil beneath the foundation resulting in structural cracks.
  - 1.4 Perimeter footing must be a minimum foundation depth of 12" or per local frost line on undisturbed soil.
  - 1.5 Locate wedge anchors after shelter is located on slab to correctly align with installed anchor plate. Do not install wedge anchor before setting shelter on foundation.
  - 1.6 Reinforcing bars are to be bonded in accordance with the NEC and Local Codes.
  - 1.7 Reference TERRACON report for site soils preparation.
2. MATERIAL
  - 2.1 Concrete shall have a minimum compressive strength of 3000 psi @ 28 days and shall be installed in accordance with the ACI-318 Building Code requirements for Reinforced Concrete. Concrete shall have 5% air entrainment.
  - 2.2 Reinforcing bars shall conform to ASTM-A65 grade 60 specifications and be detailed in accordance with ACI-318
  - 2.3 Test cylinders shall be molded and laboratory cured in accordance with ASTM C31. Three cylinders shall be taken for each day's concrete placement. Cylinders shall be tested in accordance with ASTM C39.
3. TOLERANCES
  - 3.1 Tops of concrete foundation must be within 0.02" per foot of elevation specified by the customer.



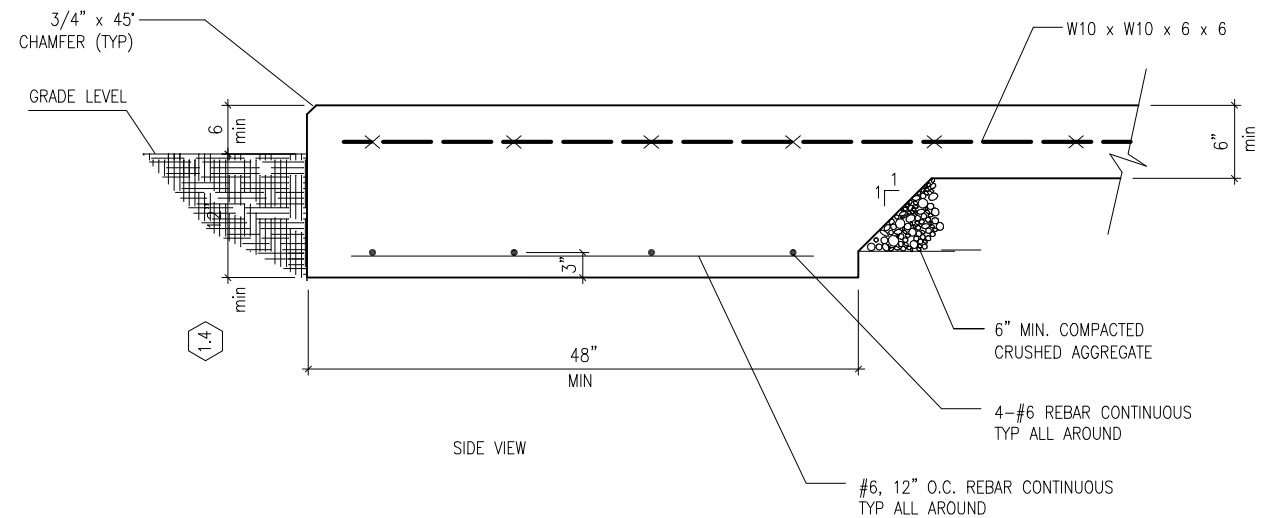
**A BUILDING ATTACHMENT** FIELD WORK  
section view SCALE: 1/2"=1'-0"



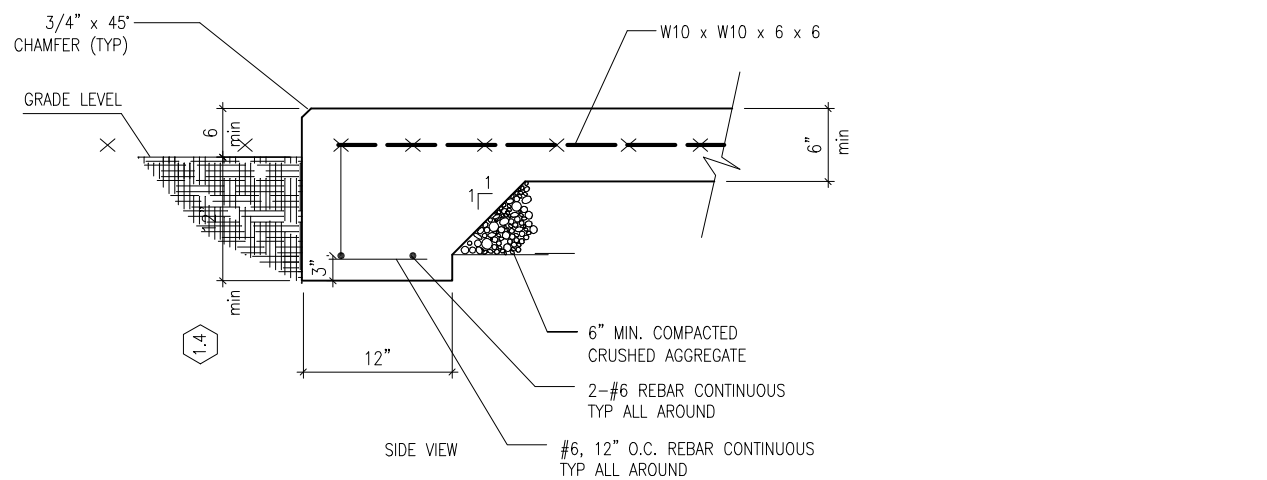
**B TIE DOWN PLATE** FIELD WORK  
front view SCALE: 3/4"=1'-0"



**C FOUNDATION PLAN** FIELD WORK  
foundation plan view



**SIDE VIEW**  
#6, 12" O.C. REBAR CONTINUOUS TYP ALL AROUND



**SIDE VIEW**  
#6, 12" O.C. REBAR CONTINUOUS TYP ALL AROUND

QTY.	UNIT OF MEASURE	PART NO.	DESCRIPTION	ITEM NO.
4	EA	265053-1	PLATE, 10 x 12 x 1/2	4
4	EA	165005-009	FLAT WASHER, 3/4	3
4	EA	165032-002	HEX NUT, 3/4-10	2
4	EA	3A464	WEDGE ANCHOR, 3/4-10 x 6 1/4	1

REVISIONS			
CHG. BY	APPR. BY	DATE	REV

Customer Name:  
**GREENVILLE UTILITIES**  
Substation Name:  
**SUGG PARKWAY SUB**  
P.O. #: 75809  
VFP Job #: 200494-10665

**VFP, INC.**  
CORPORATE OFFICE  
5410 Fallowater Lane  
Roanoke, Virginia 24018-0906  
(540)977-0500 (540)977-5555 fax

MANUFACTURING FACILITY  
540 Industrial Park Road  
Duffield, Virginia 24244  
(276)431-4000 (276)431-1756 fax

Except as may otherwise be provided by contract, these drawings and concepts are the sole property of VFP, Inc., they are issued in strict confidence, and shall not be reproduced in whole or part without the written permission of VFP, Inc.

DRAWN BY <b>M.VALLIA</b>	DATE <b>10/02/20</b>
CHECKED BY	DATE
APPROVED BY	DATE RELEASED
DO NOT SCALE DRAWING	
SIZE <b>B</b>	CAGE NO <b>53223</b>
SCALE 1/4"=1'0"	MODEL <b>6503</b>
TITLE <b>14'0" x 22'0" x 10'0" CONCRETE SHELTER SLAB FOUNDATION</b>	
DRAWING NO. <b>6503FND</b>	
SHEET 1 OF 1	