

SCHEDULE FOR TYPICAL PIER DETAIL						
PIER NO.	TOTAL REQ'D	PIER		ANCHOR BOLT PLAN	CU YDS CONCRETE	
		DIAMETER	LENGTH		PER FDN	TOTAL
1	6	3'-0"	8'-0"	A	2.09	12.54
2	5	3'-0"	9'-0"	B	2.36	11.80
3	2	2'-6"	8'-0"	C	1.46	2.92
4	2	3'-0"	10'-0"	D	2.62	5.24
5	3	4'-0"	12'-0"	E	5.59	16.77

SCHEDULE FOR TYPICAL PAD DETAIL						
PAD NO.	TOTAL REQ'D	PAD SIZE		ANCHOR BOLT PLAN	CU YDS CONCRETE	
		LENGTH x WIDTH	DEPTH		PER FDN	TOTAL
4	1	61'-4" x 31'-4"	4'-6"	-	167.23	167.23
5	2	9'-6" x 5'-6"	1'-6"	E	2.90	5.81
6	1	19'-6" x 9'-6"	1'-6"	F	10.29	10.29

BILL OF MATERIAL			
ITEM	TOTAL QUANTITIES (THIS SHEET ONLY)	SUPPLIED BY:	DESCRIPTION
REBAR	25,801.54	CONTRACTOR	LBS. OF REBAR
CONCRETE	239.46	CONTRACTOR	CUBIC YARDS OF CONCRETE
AB-1	32	STEEL MANUF.	φ 3/4" x 2'-9" ANCHOR BOLT W/ 2-FW, 2-HHN
AB-2	28	STEEL MANUF.	φ 1" x 2'-10" ANCHOR BOLT W/ 2-FW, 2-HHN
AB-3	12	STEEL MANUF.	φ 1" x 2'-9" ANCHOR BOLT W/ 2-FW, 2-HHN
AB-4	8	STEEL MANUF.	φ 1" x 1'-6" ANCHOR BOLT W/ 2-FW, 2-HHN
AB-5	24	STEEL MANUF.	φ 3/4" x 2'-0" ANCHOR BOLT W/ 2-FW, 2-HHN

*QUANTITIES PROVIDED ARE ESTIMATES FOR STRUCTURE & EQUIPMENT FOUNDATIONS ONLY & DOES NOT INCLUDE ENCASEMENT FOR CIRCUIT EXITS WHEN REQUIRED.

- ### NOTES
- THE FOUNDATION CONTRACTOR SHALL AT ALL TIMES FULLY COMPLY WITH ALL OSHA STANDARDS AS WELL AS THE OWNER'S SAFETY STANDARDS, AS A MINIMUM, ESPECIALLY WITH REGARD TO SHORING OF ALL EXCAVATIONS. THE ENGINEER OR OWNER WILL IMMEDIATELY HALT CONSTRUCTION ACTIVITIES IF THE CONTRACTOR DOES NOT COMPLY WITH THESE STANDARDS. FAILURE TO COMPLY AT ALL TIMES WITH THESE STANDARDS WILL RESULT IN DISMISSAL FROM THE PROJECT.
 - THE FOUNDATION CONTRACTOR IS RESPONSIBLE FOR OBTAINING COPIES OF OSHA STANDARDS AS WELL AS THE OWNER'S SAFETY STANDARDS. COPIES SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING CONSTRUCTION.
 - ALL FOUNDATIONS TO BE CARRIED TO FIRM UNDISTURBED EARTH OR COMPACTED FILL.
 - WASHED STONE AND STRUCTURAL FILL SHALL BE COMPACTED AS SPECIFIED IN THE FOUNDATION SPECIFICATIONS.
 - REINFORCING STEEL SHALL BE GRADE 60 ASTM A-615 OR A-617.
 - FOR QUANTITY, LENGTH & SHAPE OF RODS SEE REBAR SUMMARY & BENDING LEGEND.
 - CONCRETE SHALL BE 4500 P.S.I. @ 28 DAYS. CONCRETE SHALL BE AIR ENTRAINED WITH AN AIR CONTENT BETWEEN FIVE AND SEVEN PERCENT (5%-7%).
 - CONCRETE SLUMP SHALL MEET REQUIREMENTS OF CONCRETE SPECIFICATIONS. THE CONTRACTOR SHALL MAKE OR HAVE MADE A MINIMUM OF ONE (1) SLUMP TEST IN ACCORDANCE WITH ASTM C 143 FOR EACH TRUCKLOAD OF CONCRETE DELIVERED.
 - CONCRETE COVER OVER REINFORCING STEEL SHALL BE THREE INCHES (3") MINIMUM UNLESS OTHERWISE NOTED.
 - ALL CONCRETE TO BE THOROUGHLY VIBRATED DURING PLACEMENT INTO FORMS TO ENSURE ALL VOIDS ARE FILLED.
 - ALL FOUNDATIONS SHALL BE CHAMFERED ONE INCH (1") AROUND ALL TOP EDGES, UNLESS OTHERWISE SHOWN.
 - TO DETERMINE ANCHOR BOLT SPACING, SEE ANCHOR BOLT PATTERN INDICATED. SEE FOUNDATION ANCHOR BOLT SUMMARY FOR DIAMETER, EMBEDMENT LENGTH, THREAD & HOOK REQUIREMENTS.
 - CAREFUL EXAMINATION OF ANCHOR BOLT ORIENTATION MUST BE MADE IN THAT AN X-AXIS & Y-AXIS SYSTEM HAS BEEN INDICATED ON BOTH FOUNDATION PLAN & DETAIL DRAWINGS TO ENSURE PROPER ORIENTATION.
 - ANCHOR BOLT SPACING & EQUIPMENT BASE PLATES SHALL BE VERIFIED TO BE CORRECT PRIOR TO POURING CONCRETE.
 - AFTER FABRICATION ALL BOLTS ARE TO BE HOT DIP GALVANIZED A MINIMUM OF TWO INCHES (2") PAST NOTED THREAD LENGTH.
 - SUBGRADE WILL BE TOPPED WITH THREE INCHES (3") OF CRUSHER RUN & THREE INCHES (3") OF WASHED STONE TO ACHIEVE FINAL SUBSTATION GRADE.
 - SEE DRAWING FP1 FOR TOP OF FOUNDATION ELEVATIONS.
 - CONTRACTOR IS RESPONSIBLE TO COORDINATE INSTALLATION OF ANY CONDUITS LOCATED UNDERNEATH OR PROTRUDING THROUGH FOUNDATIONS. SEE CONDUIT PLAN AND DETAILS FOR CONDUIT LOCATIONS.
 - ALL CONDUITS, WHEN REQUIRED, ARE TO BE PLUGGED OR CAPPED DURING INITIAL CONSTRUCTION TO PREVENT CONTAMINATION.
 - A CONCRETE BONDING AGENT CONFORMING TO ASTM C1059 SHALL BE APPLIED TO ALL ROUGHENED SURFACES PRIOR TO PLACING FRESH CONCRETE.
 - THE CONTRACTOR SHALL PREPARE, OR HAVE PREPARED, IN ACCORDANCE WITH ASTM C-31, FIVE (5) TEST CYLINDERS FROM EACH TRUCKLOAD OF CONCRETE DELIVERED TO THE SITE. WITHIN 20-24 HOURS AFTER BEING PREPARED, THE CYLINDERS SHALL BE DELIVERED TO A QUALIFIED TESTING LABORATORY AND TESTED IN ACCORDANCE WITH THE CONCRETE SPECIFICATIONS AND ASTM C-39. TEST RESULTS ARE TO BE PROVIDED TO THE ENGINEER FOR EVALUATION AND DIRECTION OF CORRECTIVE ACTION IF NEEDED.
 - THE CONTRACTOR SHALL MEET OR EXCEED ALL REQUIREMENTS OF THE CONCRETE SPECIFICATIONS.

REFERENCES

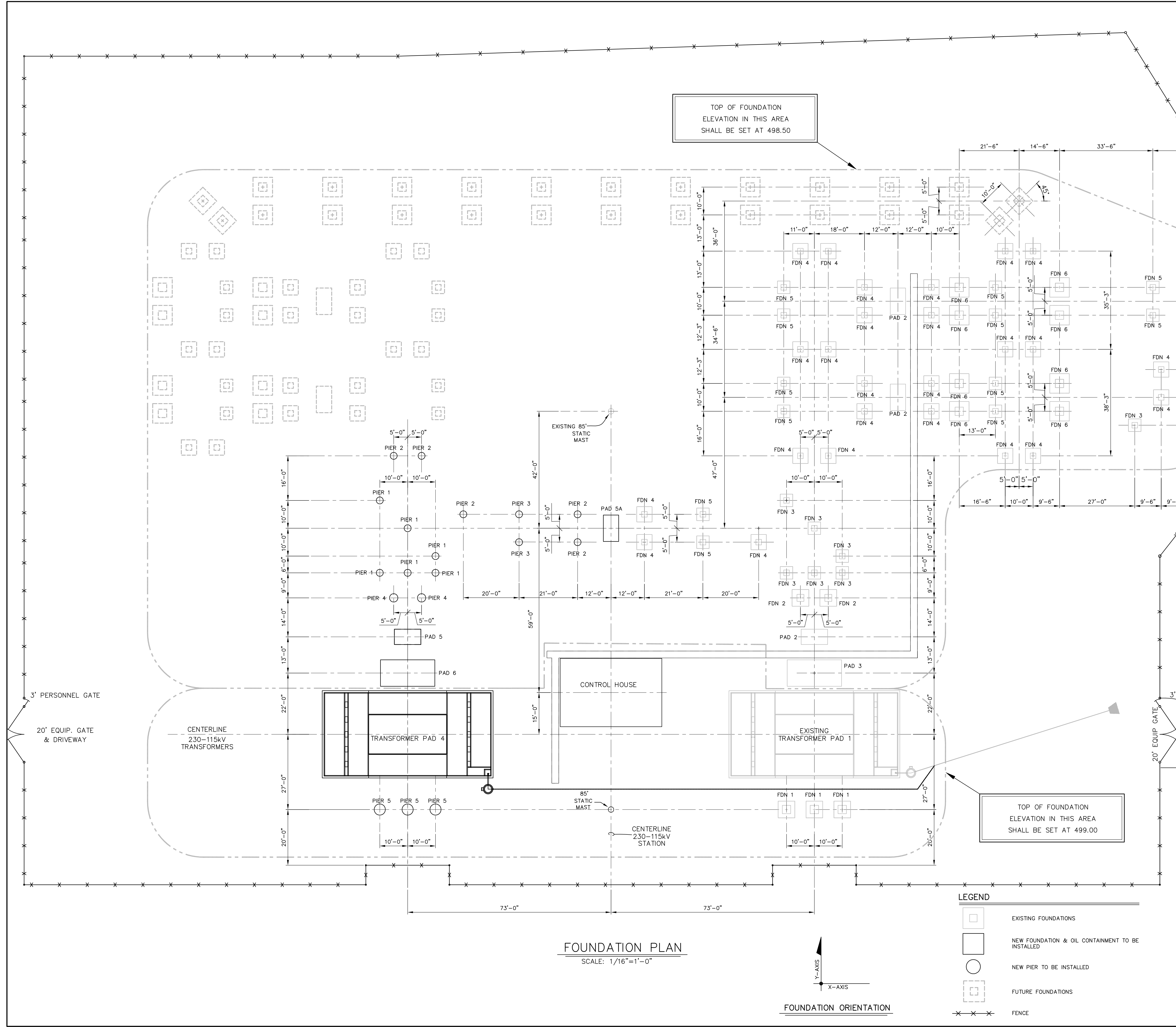
SITE PLAN	140-5238	S1
PLAN VIEW	140-5238	S2
SECTIONS	140-5238	S3-S5
FOUNDATION DETAILS	14020	FD1-FD5
GROUNDING PLAN & DETAILS	140-5238	GP
CONDUIT PLAN & DETAILS	140-5238	CP1
CONDUIT SCHEDULE	140-5238	CI, C2

GREENVILLE UTILITIES
GREENVILLE, NORTH CAROLINA

GREENVILLE POD #2
230kV TO 115kV SUBSTATION
FOUNDATION PLAN

Booth & Associates, LLC
1111 GREENVILLE AVENUE • SUITE 100 • GREENVILLE, NC 27602 • 800.451.8888

DWN, NBS	DATE: 01/05/17	DWG. NO.
CKD, CAJ	APPD, EMR	FP2
SCALE: AS NOTED	PLOT:	14020FP2



TOP OF FOUNDATION ELEVATION IN THIS AREA SHALL BE SET AT 498.50

TOP OF FOUNDATION ELEVATION IN THIS AREA SHALL BE SET AT 499.00

- ### LEGEND
- EXISTING FOUNDATIONS
 - NEW FOUNDATION & OIL CONTAINMENT TO BE INSTALLED
 - NEW PIER TO BE INSTALLED
 - FUTURE FOUNDATIONS
 - FENCE

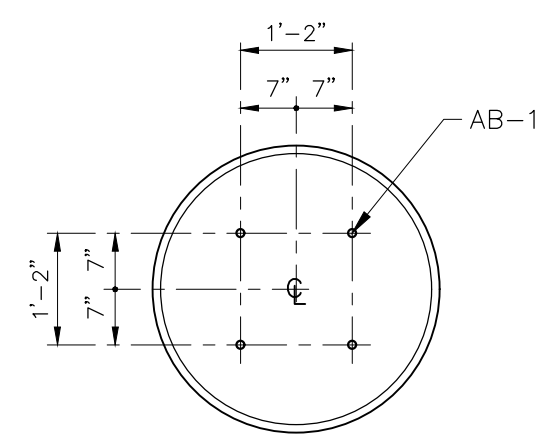
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SCHEDULE FOR TYPICAL PIER DETAIL

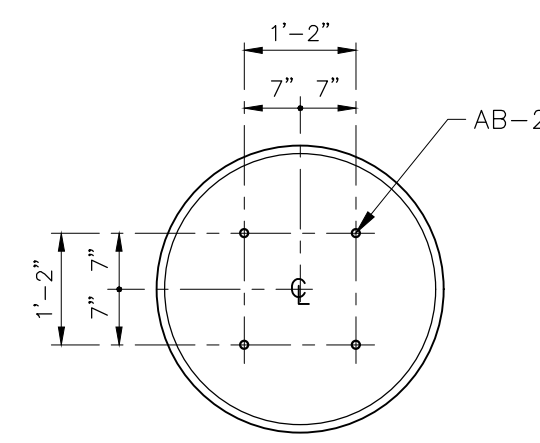
PIER No.	TOTAL REQ'D	PIER		ANCHOR BOLT PLAN	CU YDS CONCRETE	
		DIAMETER	LENGTH		PER FDN	TOTAL
1	6	3'-0"	8'-0"	A	2.09	12.54
2	5	3'-0"	9'-0"	B	2.36	11.80
3	2	2'-6"	8'-0"	C	1.46	2.92
4	2	3'-0"	10'-0"	D	2.62	5.24
5	3	4'-0"	12'-0"	E	5.59	16.77

BILL OF MATERIAL

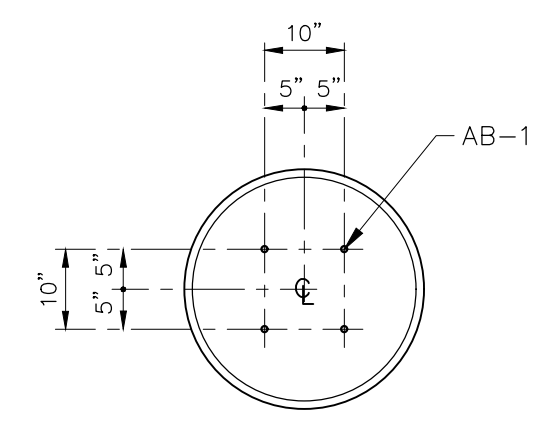
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REBAR	5,113.31	CONTRACTOR	LBS. OF REBAR
CONCRETE	49.27	CONTRACTOR	CUBIC YARDS OF CONCRETE
AB-1	32	STEEL MANUFACTURER	Ø 3/4" x 2'-9" ANCHOR BOLT W/ 2-FW, 2-HHN
AB-2	12	STEEL MANUFACTURER	Ø 1" x 2'-10" ANCHOR BOLT W/ 2-FW, 2-HHN



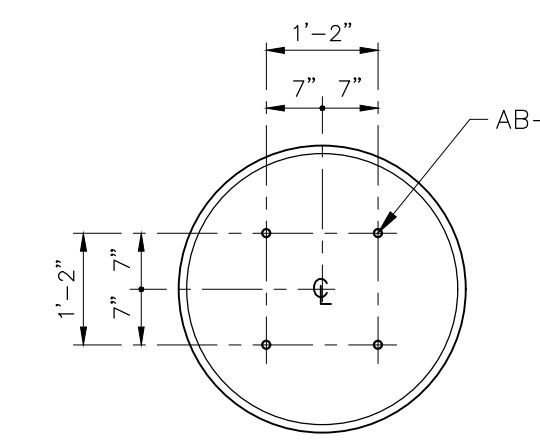
ANCHOR BOLT PLAN A



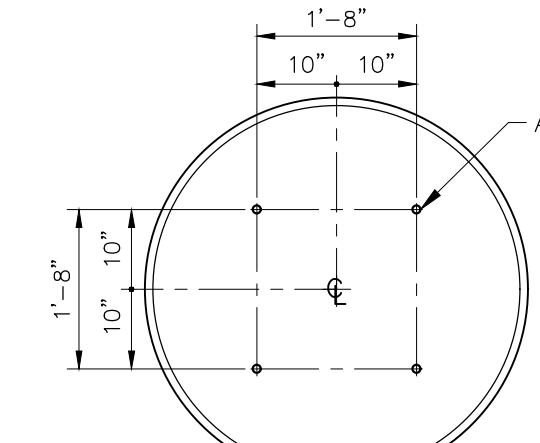
ANCHOR BOLT PLAN B



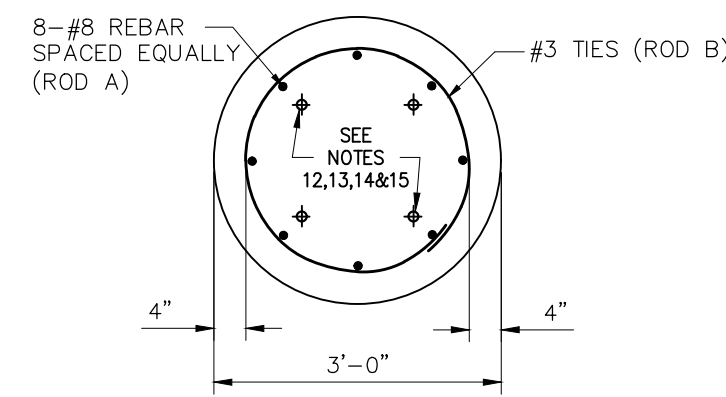
ANCHOR BOLT PLAN C



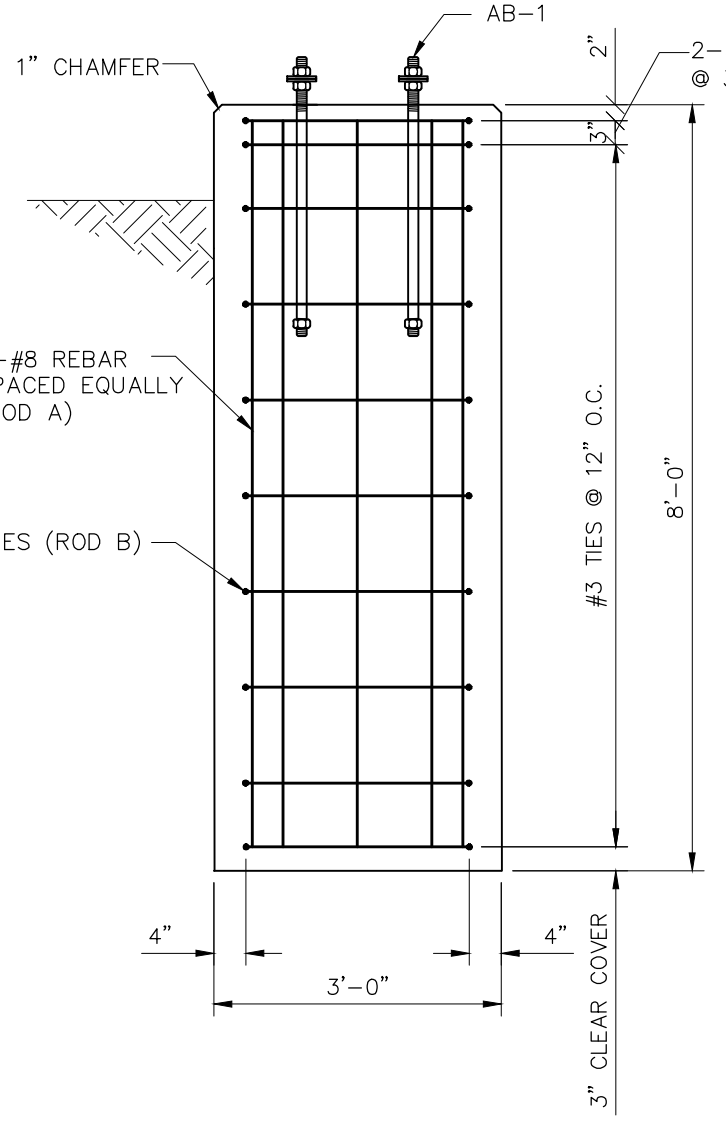
ANCHOR BOLT PLAN D



ANCHOR BOLT PLAN E

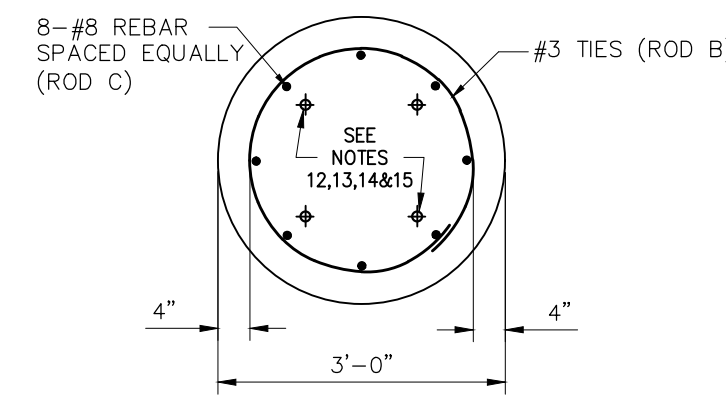


PLAN

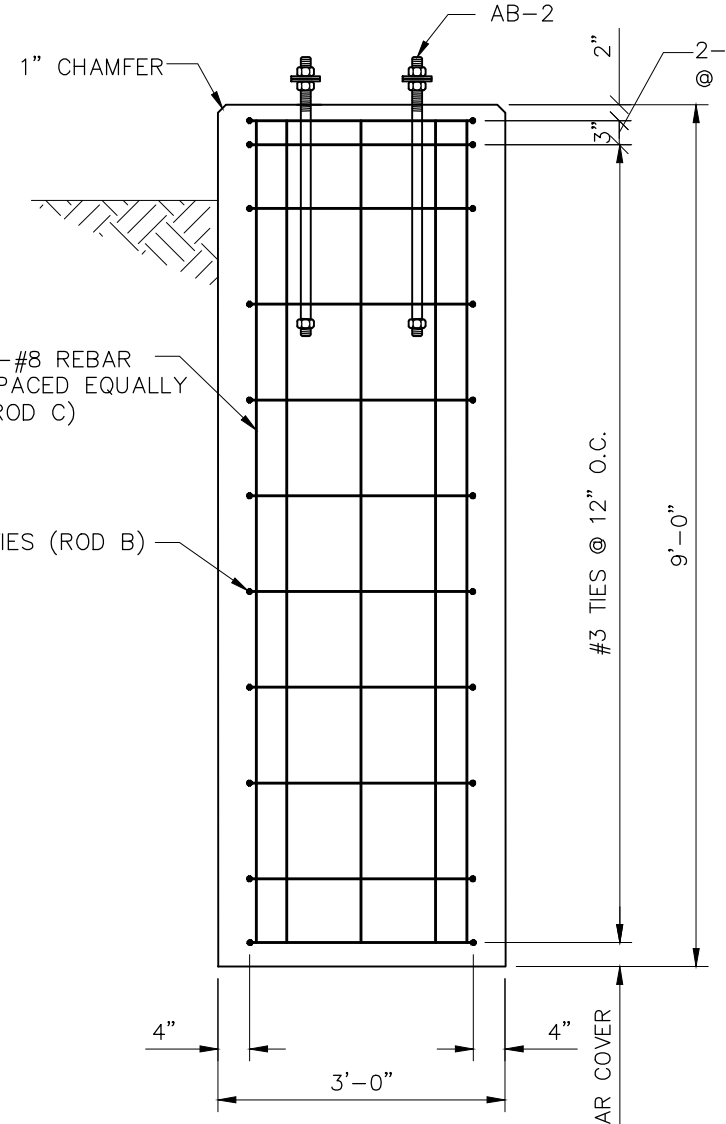


SECTION

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

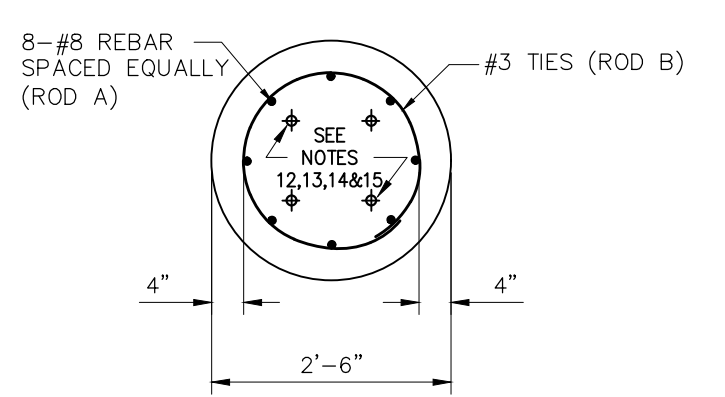


PLAN

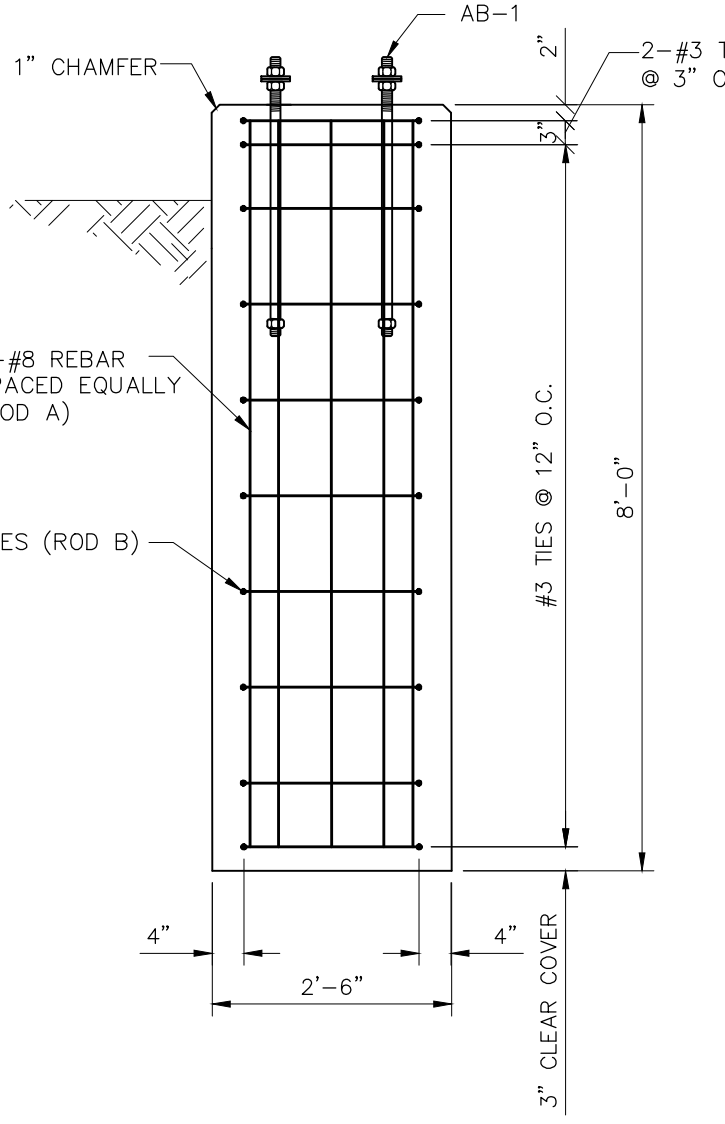


SECTION

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

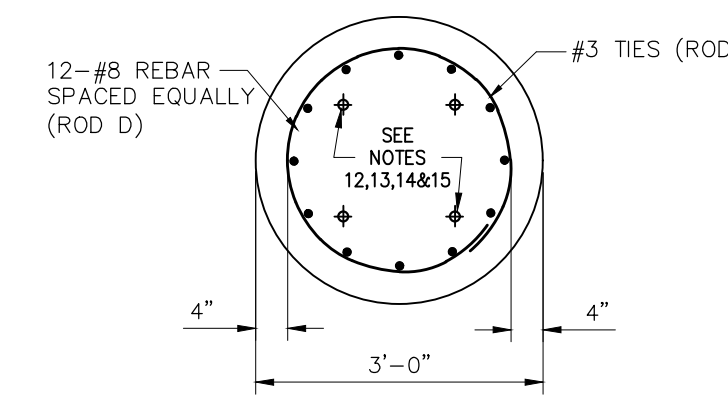


PLAN

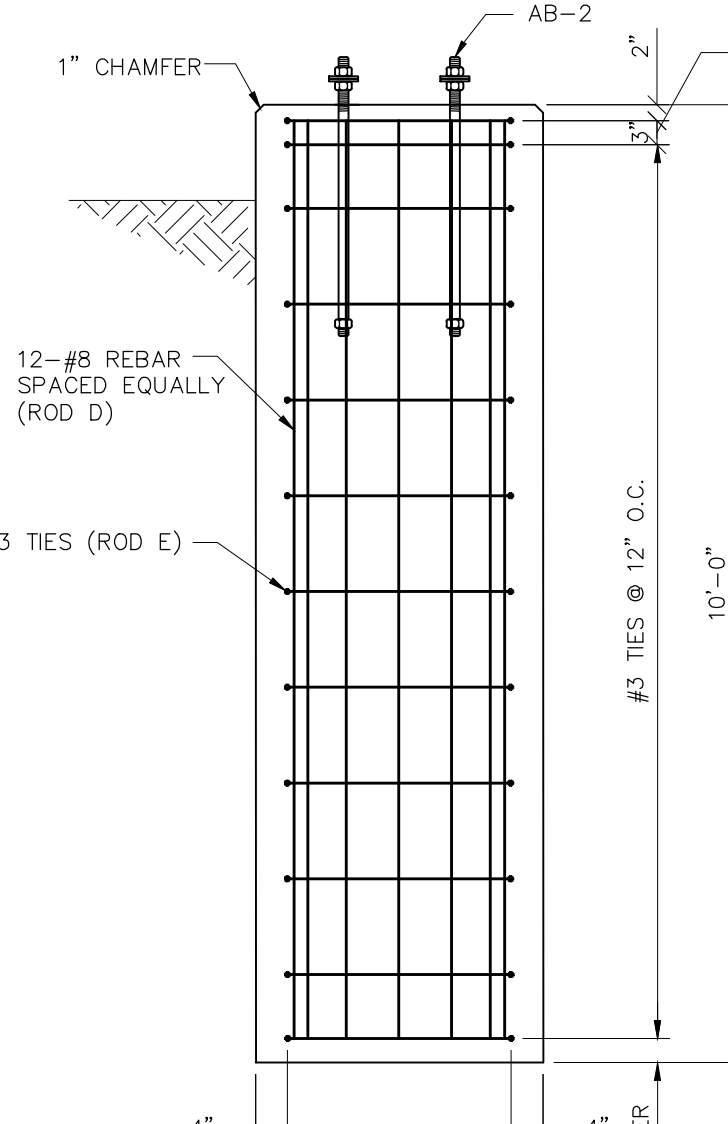


SECTION

PIER 3
SCALE: 1/2"=1'-0"

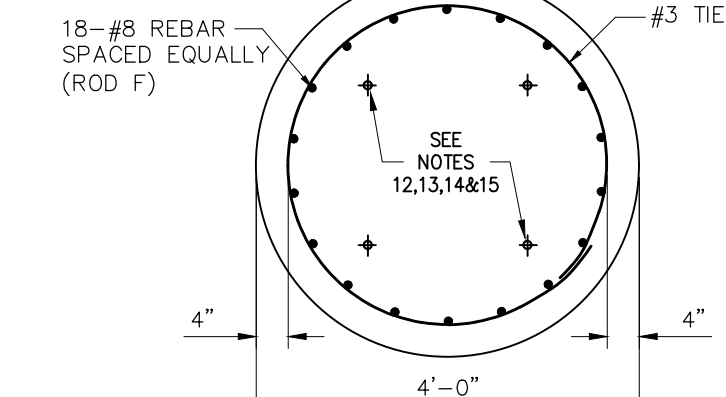


PLAN

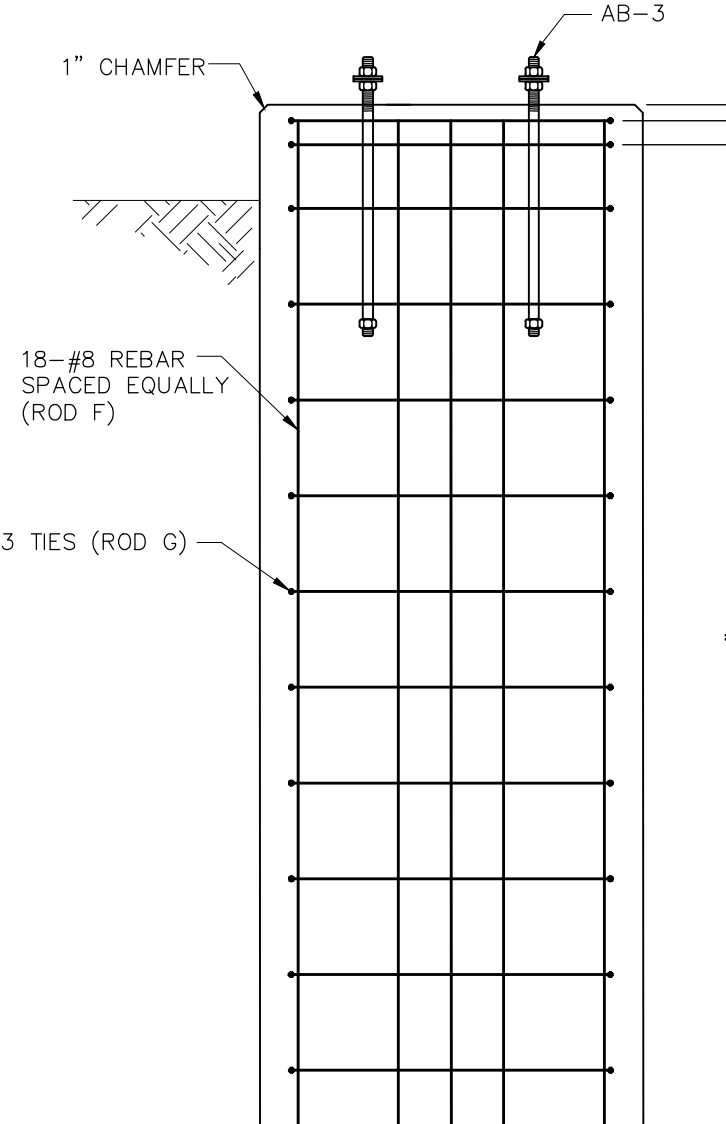


SECTION

PIER 4
SCALE: 1/2"=1'-0"

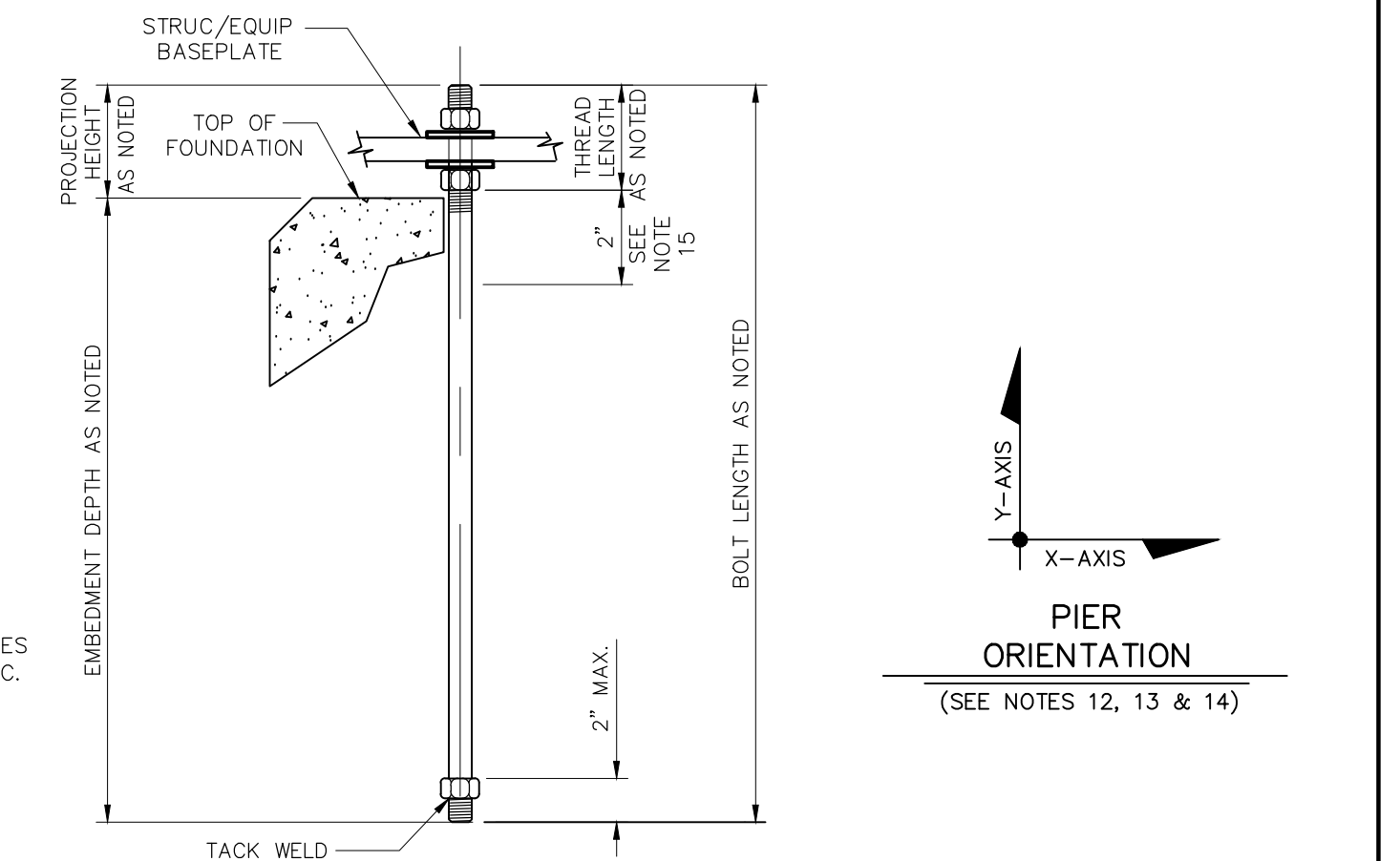


PLAN



SECTION

PIER 5
SCALE: 1/2"=1'-0"



TYPICAL ANCHOR BOLT - DETAIL

(SEE NOTES 12, 13, 14, & 15)
SCALE: NONE

NOTES

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- THE FOUNDATION CONTRACTOR IS RESPONSIBLE FOR OBTAINING COPIES OF OSHA STANDARDS AS WELL AS THE OWNER'S SAFETY STANDARDS. COPIES SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING CONSTRUCTION.
- ALL FOUNDATIONS TO BE CARRIED TO FIRM UNDISTURBED EARTH OR COMPACTED FILL, WITH A MINIMUM BEARING CAPACITY OF 1,500 PSF, UNLESS OTHERWISE NOTED.
- WASHED STONE AND STRUCTURAL FILL SHALL BE COMPACTED AS SPECIFIED IN THE FOUNDATION SPECIFICATIONS.
- REINFORCING STEEL SHALL BE GRADE 60 ASTM A-615 OR A-617.
- FOR QUANTITY, LENGTH & SHAPE OF RODS SEE REBAR SUMMARY & BENDING LEGEND.
- CONCRETE SHALL BE 4500 P.S.I. @ 28 DAYS. CONCRETE SHALL BE AIR ENTRAINED WITH AN AIR CONTENT BETWEEN FIVE AND SEVEN PERCENT (5%-7%).
- CONCRETE SLUMP SHALL MEET REQUIREMENTS OF CONCRETE SPECIFICATIONS. THE CONTRACTOR SHALL MAKE OR HAVE MADE A MINIMUM OF ONE (1) SLUMP TEST IN ACCORDANCE WITH ASTM C 143 FOR EACH TRUCKLOAD OF CONCRETE DELIVERED.
- CONCRETE COVER OVER REINFORCING STEEL SHALL BE THREE INCHES (3") MINIMUM UNLESS OTHERWISE NOTED.
- ALL CONCRETE TO BE THOROUGHLY VIBRATED DURING PLACEMENT INTO FORMS TO ENSURE ALL VOIDS ARE FILLED.
- ALL FOUNDATIONS SHALL BE CHAMFERED ONE INCH (1") AROUND ALL TOP EDGES. UNLESS OTHERWISE SHOWN.
- TO DETERMINE ANCHOR BOLT SPACING, SEE ANCHOR BOLT PATTERN INDICATED. SEE FOUNDATION ANCHOR BOLT SUMMARY FOR DIAMETER, EMBEDMENT LENGTH, THREAD & HOOK REQUIREMENTS.
- CAREFUL EXAMINATION OF ANCHOR BOLT ORIENTATION MUST BE MADE IN THAT AN X-AXIS & Y-AXIS SYSTEM HAS BEEN INDICATED ON BOTH FOUNDATION PLAN & DETAIL DRAWINGS TO ENSURE PROPER ORIENTATION.
- ANCHOR BOLT SPACING & EQUIPMENT BASE PLATES SHALL BE VERIFIED TO BE CORRECT PRIOR TO POURING CONCRETE.
- AFTER FABRICATION ALL BOLTS ARE TO BE HOT DIP GALVANIZED A MINIMUM OF TWO INCHES (2") PAST NOTED THREAD LENGTH.
- SUBGRADE WILL BE TOPPED WITH THREE INCHES (3") OF CRUSHER RUN & THREE INCHES (3") OF WASHED STONE TO ACHIEVE FINAL SUBSTATION GRADE.
- SEE DRAWING FP1 FOR TOP OF FOUNDATION ELEVATIONS.
- CONTRACTOR IS RESPONSIBLE TO COORDINATE INSTALLATION OF ANY CONDUITS LOCATED UNDERNEATH OR PROTRUDING THROUGH FOUNDATIONS. SEE CONDUIT PLAN AND DETAILS FOR CONDUIT LOCATIONS.
- ALL CONDUITS, WHEN REQUIRED, ARE TO BE PLUGGED OR CAPPED DURING INITIAL CONSTRUCTION TO PREVENT CONTAMINATION.
- A CONCRETE BONDING AGENT CONFORMING TO ASTM C1059 SHALL BE APPLIED TO ALL ROUGHENED SURFACES PRIOR TO PLACING FRESH CONCRETE.
- THE CONTRACTOR SHALL PREPARE, OR HAVE PREPARED, IN ACCORDANCE WITH ASTM C-31, FIVE (5) TEST CYLINDERS FROM EACH TRUCKLOAD OF CONCRETE DELIVERED TO THE SITE. WITHIN 20-24 HOURS AFTER BEING PREPARED, THE CYLINDERS SHALL BE DELIVERED TO A QUALIFIED TESTING LABORATORY AND TESTED IN ACCORDANCE WITH THE CONCRETE SPECIFICATIONS AND ASTM C-39. TEST RESULTS ARE TO BE PROVIDED TO THE ENGINEER FOR EVALUATION AND DIRECTION OF CORRECTIVE ACTION IF NEEDED.
- THE CONTRACTOR SHALL MEET OR EXCEED ALL REQUIREMENTS OF THE CONCRETE SPECIFICATIONS.

PIER No. "1"		TOTAL No. REQ'D.- 6			
ROD TYPE	SIZE OF REBAR	NO. REQ'D PER FDN	LENGTH	WEIGHT LBS.	
			DIM A	DIM B	TOTAL REBAR PER ROD
A	#8	8	7'-7"	-	20.25
B	#3	10	5'-10"	1'-2"	26.30
TOTAL WEIGHT OF REBAR PER FDN =					188.30
TIMES TOTAL No. OF FDN's REQ'D =					1,129.80

PIER No. "2"		TOTAL No. REQ'D.- 5			
ROD TYPE	SIZE OF REBAR	NO. REQ'D PER FDN	LENGTH	WEIGHT LBS.	
			DIM A	DIM B	TOTAL REBAR PER ROD
C	#8	8	8'-7"	-	22.92
B	#3	11	5'-10"	1'-2"	28.93
TOTAL WEIGHT OF REBAR PER FDN =					212.27
TIMES TOTAL No. OF FDN's REQ'D =					1,061.35

PIER No. "3"		TOTAL No. REQ'D.- 2			
ROD TYPE	SIZE OF REBAR	NO. REQ'D PER FDN	LENGTH	WEIGHT LBS.	
			DIM A	DIM B	TOTAL REBAR PER ROD
A	#8	8	7'-7"	-	20.25
B	#3	10	5'-10"	1'-2"	26.3
TOTAL WEIGHT OF REBAR PER FDN =					188.30
TIMES TOTAL No. OF FDN's REQ'D =					376.60

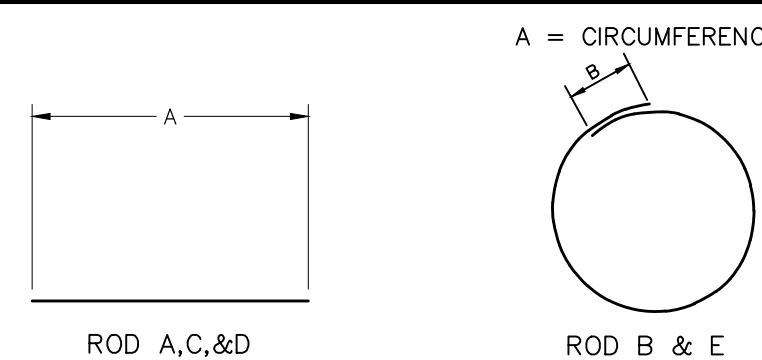
PIER No. "4"		TOTAL No. REQ'D.- 2			
ROD TYPE	SIZE OF REBAR	NO. REQ'D PER FDN	LENGTH	WEIGHT LBS.	
			DIM A	DIM B	TOTAL REBAR PER ROD
D	#8	12	9'-7"	-	25.59
E	#3	12	7'-4"	1'-2"	38.40
TOTAL WEIGHT OF REBAR PER FDN =					345.48
TIMES TOTAL No. OF FDN's REQ'D =					690.96

PIER No. "5"		TOTAL No. REQ'D.- 3			
ROD TYPE	SIZE OF REBAR	NO. REQ'D PER FDN	LENGTH	WEIGHT LBS.	
			DIM A	DIM B	TOTAL REBAR PER ROD
F	#8	18	11'-7"	-	30.93
G	#3	14	10'-6"	1'-2"	61.46
TOTAL WEIGHT OF REBAR PER FDN =					618.20
TIMES TOTAL No. OF FDN's REQ'D =					1,854.60

FOUNDATION ANCHOR BOLT SUMMARY

FDN. DESIGNATION	SERVICE	No. OF REQ'D. STRUCT.'s	No. OF FDN REQ'D. PER STRUCT.	ANCHOR BOLTS										NOTES
				ITEM No.	QTY. FDN.	TOTAL QTY. REQ'D.	DIA.	LENGTH				WASHER QTY.-DESC.	NUT QTY.-DESC.	
								EMBED	THREAD MIN.	PROJECTION ABOVE PAD	HOOK	TOTAL		
PIER 1	115 kv 1Ø BUS SUPPORT (12'-6")	3	1	AB-1	4	12	3/4"	2'-6"	5"	3"	-	2'-9"	2-FW	2-HHN
PIER 1	115 kv VT STAND	1	3	AB-1	4	12	3/4"	2'-6"	5"	3"	-	2'-9"	2-FW	2-HHN
PIER 2	115 kv 2Ø BUS SUPPORT (12'-0")	1	1	AB-2	4	4	1"	2'-6"	5"	4"	-	2'-10"	2-FW	2-HHN
PIER 3	115 kv 3Ø BUS SUPPORT (12'-0")	1	2	AB-1	4	8	3/4"	2'-6"	5"	3"	-	2'-9"	2-FW	2-HHN
PIER 4	115 kv GOABS	1	2	AB-2	4	8	1"	2'-6"	5"	4"	-	2'-10"	2-FW	2-HHN
PIER 5	230 kv CIRCUIT SWITCHER	1	3	AB-3	4	12	1"	2'-5"	4"	4"	-	2'-9"	2-FW	2-HHN

ROD BENDING LEGEND (NOT TO SCALE)



REFERENCES:

FOUNDATION PLAN 14020FP2

"PRELIMINARY- DO NOT USE FOR CONSTRUCTION"

GREENVILLE UTILITIES GREENVILLE, NORTH CAROLINA			
GREENVILLE POD #2 230KV TO 115KV SUBSTATION FOUNDATION DETAILS			
Booth & Associates, LLC <small>1111 Commerce Avenue Raleigh, NC 27615 CONSULTING ENGINEERS</small>			
DWN. NBS	DATE: 01/05/17	DWG. NO.	
CKD. CAJ	APPD. EMR	FD1	
NO.	REVISIONS	DATE	SCALE: AS NOTED
			14020FD

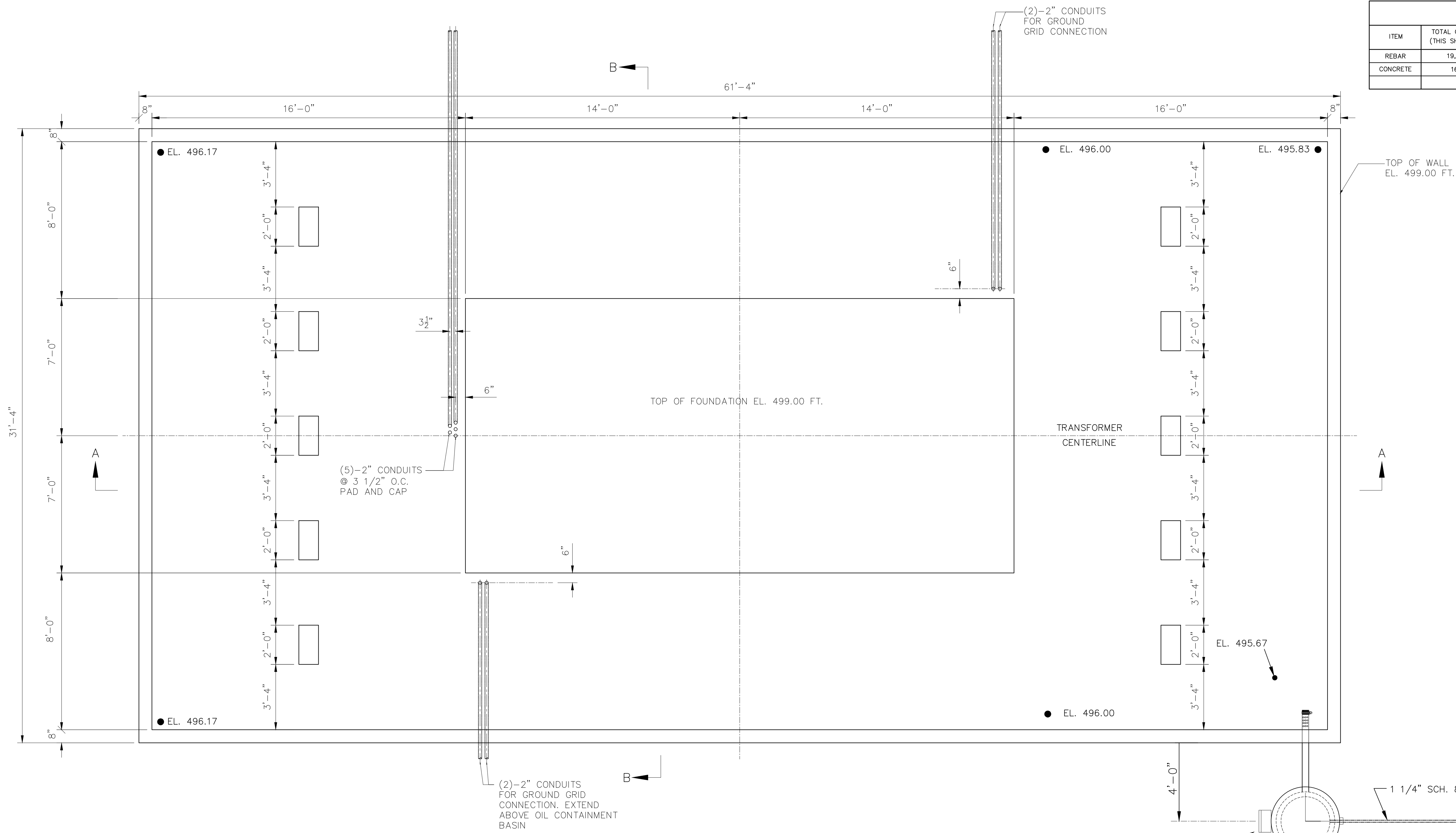
SCHEDULE FOR TYPICAL PAD DETAIL

PAD No.	TOTAL REQ'D	PAD SIZE		ANCHOR BOLT PLAN	CU YDS CONCRETE	
		LENGTH x WIDTH	DEPTH		PER FDN	TOTAL
4	1	61'-4"	4'-6"	-	167.23	167.23

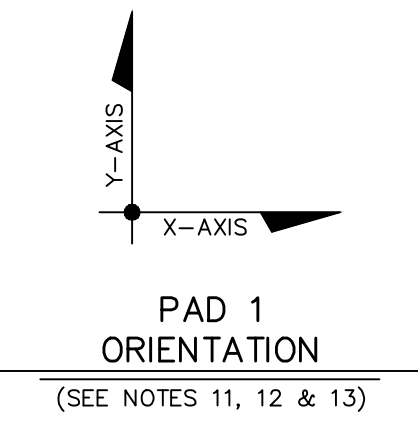
BILL OF MATERIAL

ITEM	TOTAL QUANTITIES (THIS SHEET ONLY)	SUPPLIED BY:	DESCRIPTION
REBAR	19,729.71	CONTRACTOR	LBS. OF REBAR
CONCRETE	167.23	CONTRACTOR	CUBIC YARDS OF CONCRETE

PAD No. "4"				TOTAL No. REQ'D. - 1			
ROD NO.	SIZE OF REBAR	NO. REQ'D. PER FDN	LENGTH	WEIGHT - LBS.	PER ROD	PER FDN	
H	#8	35	60'-8"	161.98	5,569.30		
I	#8	68	30'-8"	81.88	5,567.84		
J	#6	28	18'-4"	27.54	771.03		
K	#6	18	60'-8"	91.12	1,640.18		
L	#6	17	27'-6"	41.31	702.19		
M	#6	54	10'-4"	15.52	838.12		
N	#6	34	30'-8"	46.06	1,566.09		
O	#6	35	13'-6"	20.28	709.70		
P	#6	8	13'-6"	23.28	186.25		
Q	#6	8	27'-6"	44.31	354.47		
R	#4	84	4'-1"	3.73	313.29		
S	#4	8	60'-8"	40.53	324.20		
T	#4	8	30'-8"	20.49	163.88		
U	#4	184	4'-1"	3.40	624.80		
V	#4	60	3'-10"	2.89	173.68		
W	#4	40	1'-6"	3.12	124.69		
				TOTAL WEIGHT OF REBAR PER FDN =	19,729.71		
				TIMES TOTAL No. OF FDN'S REQ'D =	19,729.71		



REFERENCES:
FOUNDATION PLAN:14020FP2

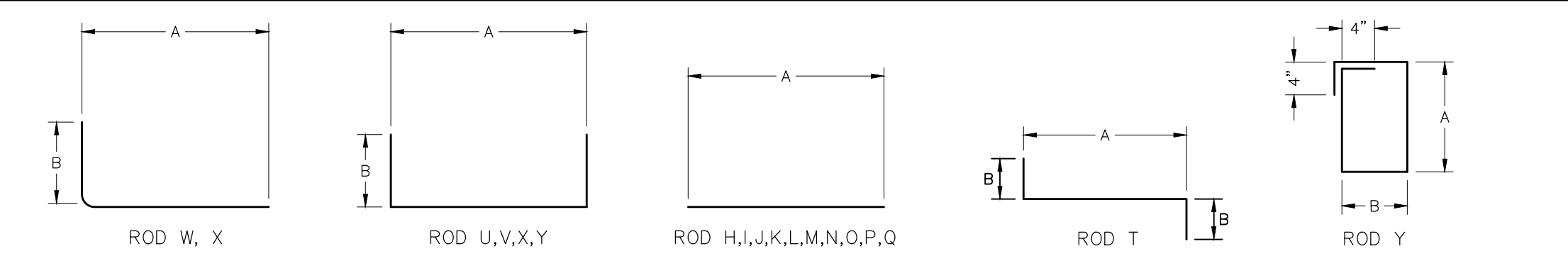


PAD 4
SCALE: 3/8"=1'-0"

FOUNDATION ANCHOR BOLT SUMMARY

FDN. DESIGNATION	SERVICE	No. OF REQ'D. STRUCT.'S	No. OF FDN. REQ'D. PER STRUCT.	ITEM No.	QTY./FDN.	TOTAL QTY. REQ'D.	DIA.	ANCHOR BOLTS					WASHER QTY.-DESC.	NUT QTY.-DESC.	NOTES
								LENGTH							
								EMBED	THREAD MIN.	PROJECTION ABOVE PAD	HOOK	TOTAL			

ROD BENDING LEGEND (NOT TO SCALE)



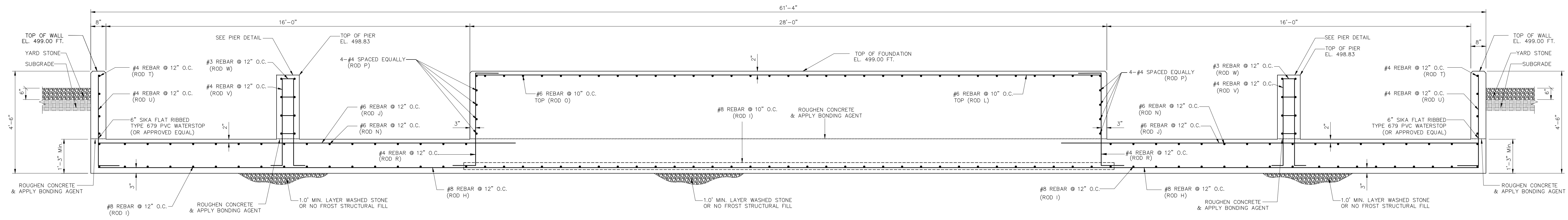
"PRELIMINARY- DO NOT USE FOR CONSTRUCTION"

GREENVILLE UTILITIES
GREENVILLE, NORTH CAROLINA

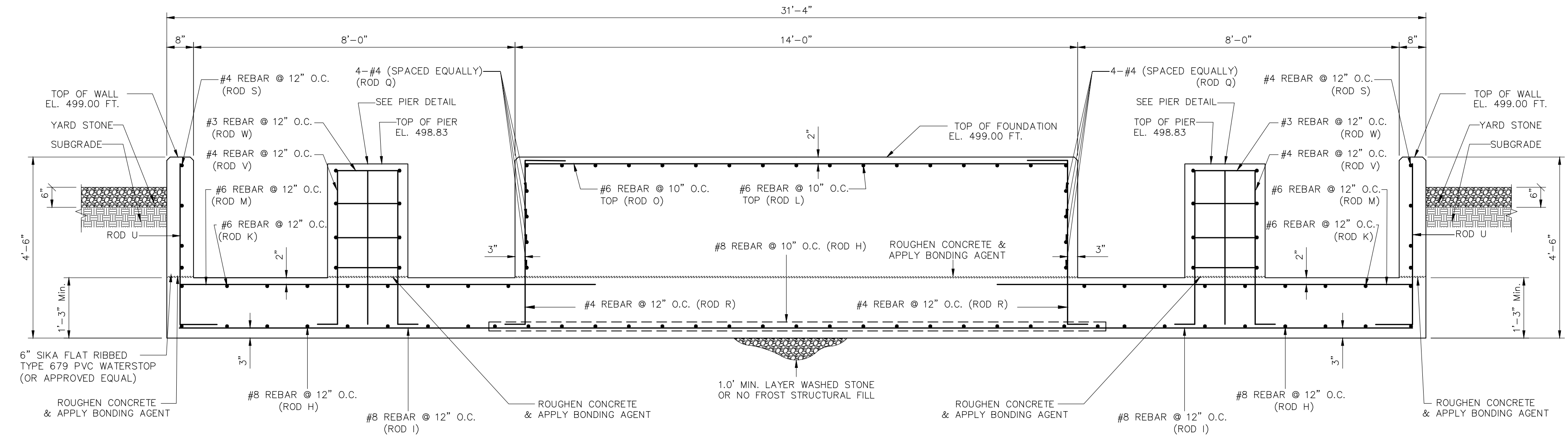
GREENVILLE POD #2
230KV TO 115KV SUBSTATION
FOUNDATION DETAILS

Booth & Associates, LLC
3011 Concord Avenue • Raleigh, NC 27612 • CONSULTING ENGINEERS

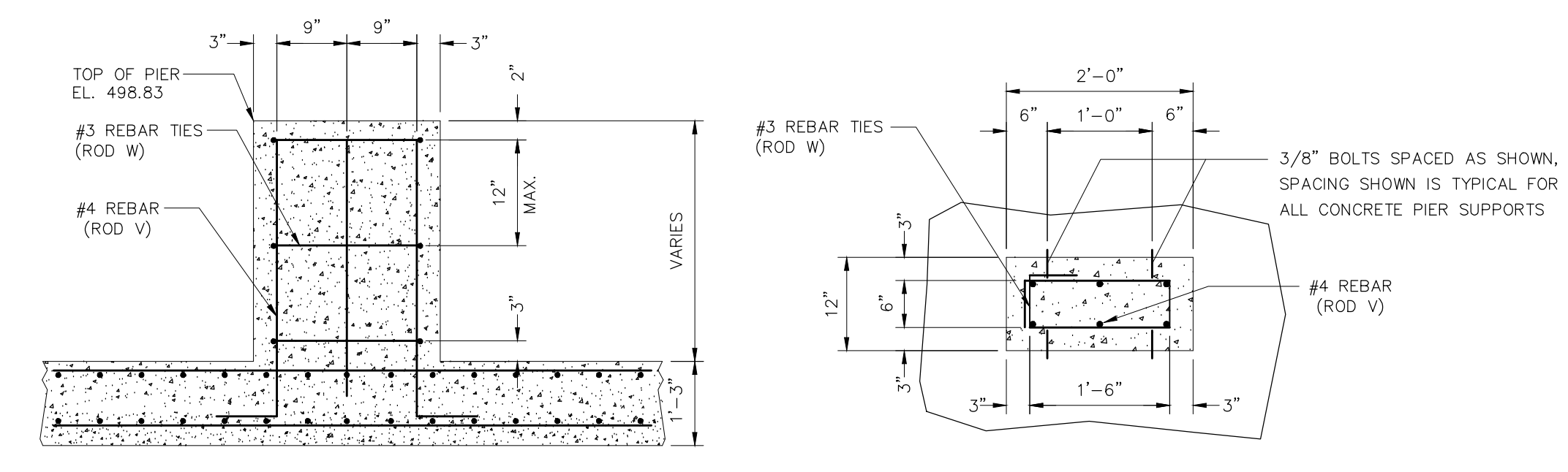
DWN. NBS	DATE: 01/05/17	DWG. NO.
CKD. CAJ	APPD. EMR	FD2
SCALE: AS NOTED		14020FD



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



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

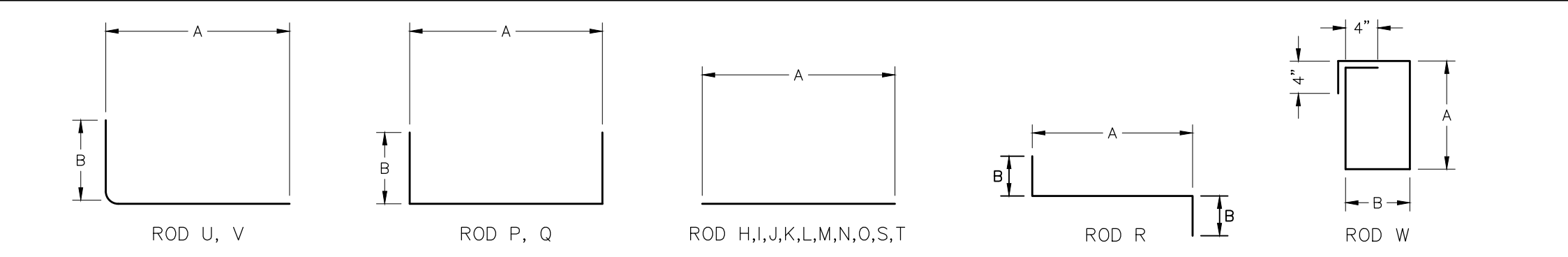


PIER DETAIL
SCALE: 1/4"=1'-0"

FOUNDATION ANCHOR BOLT SUMMARY

FDN. DESIGNATION	SERVICE	No. OF REQ'D. STRUCT.'s	No. OF FDN. REQ'D. PER STRUCT.	ITEM No.	QTY./FDN.	TOTAL QTY. REQ'D.	DIA.	ANCHOR BOLTS				WASHER QTY.-DESC.	NUT QTY.-DESC.	NOTES
								EMBED	THREAD MIN.	PROJECTION ABOVE PAD	HOOK			

ROD BENDING LEGEND (NOT TO SCALE)

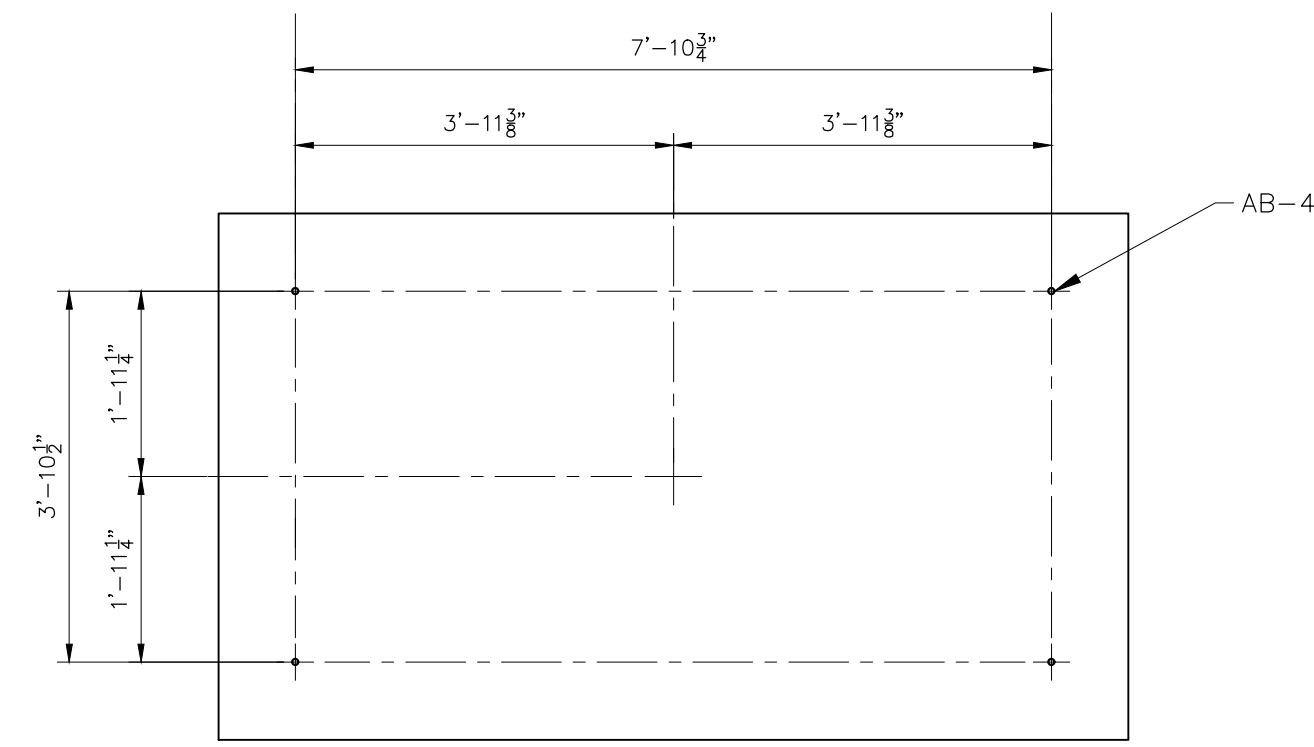


*PRELIMINARY-
 DO NOT USE FOR
 CONSTRUCTION*

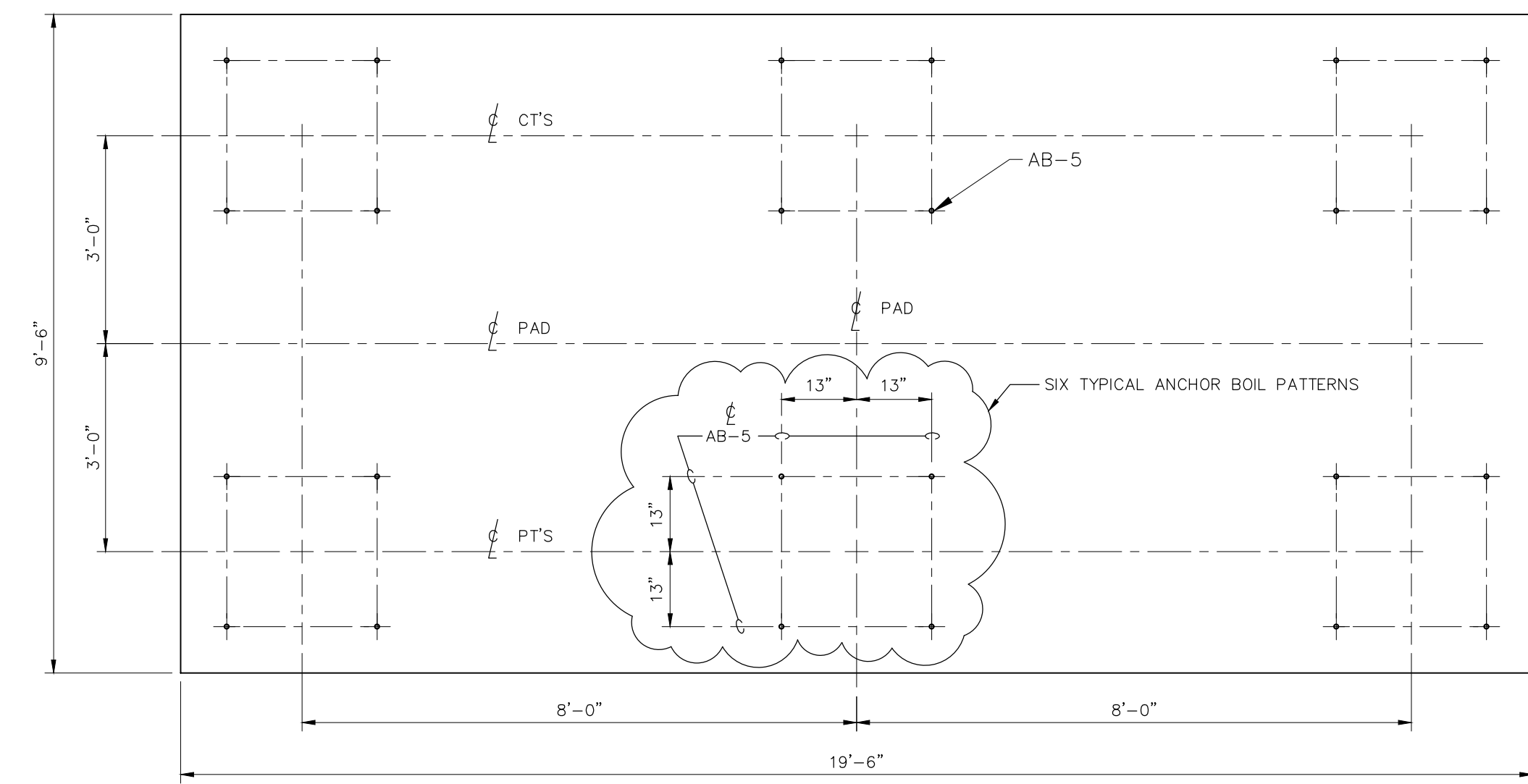
GREENVILLE UTILITIES GREENVILLE, NORTH CAROLINA			
GREENVILLE POD #2 230kV TO 115kV SUBSTATION FOUNDATION DETAILS			
Booth & Associates, LLC <small>3011 Greenwood Avenue • Raleigh, NC 27612 • CONSULTING ENGINEERS</small>			
DWN. NBS	DATE: 01/05/17	DWG. NO.	
CKD. CAJ	APPD. EMR	FD3	
NO.	REVISIONS	DATE	SCALE: AS NOTED
			14020FD

SCHEDULE FOR TYPICAL PAD DETAIL						
PAD No.	TOTAL REQ'D	PIER		ANCHOR BOLT PLAN	CU YDS CONCRETE	
		LENGTH X WIDTH	DEPTH		PER FDN	TOTAL
5	2	9'-6" X 5'-6"	1'-6"		2.90	5.81
6	1	19'-6" X 9'-6"	2'-6"		17.15	17.15

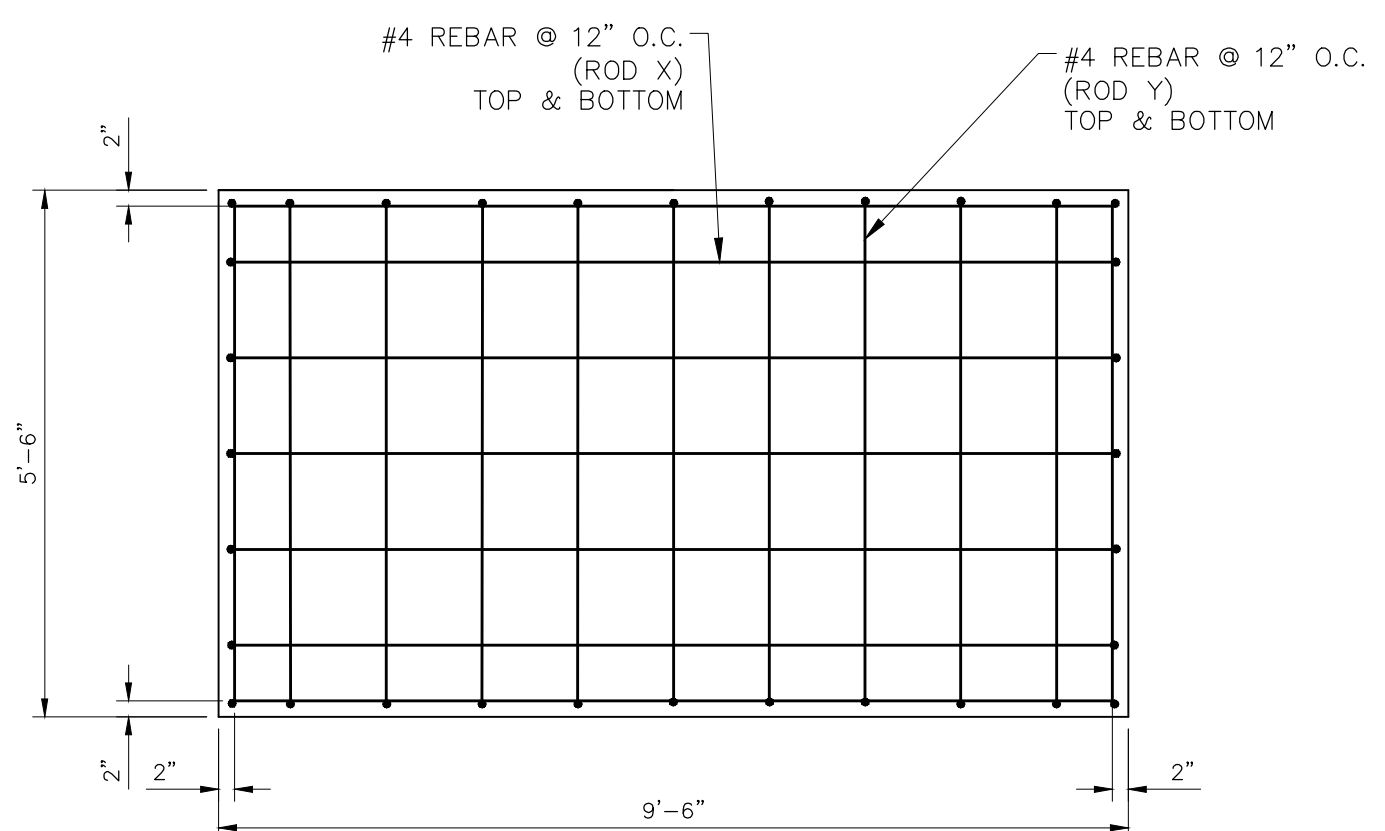
BILL OF MATERIAL			
ITEM	TOTAL QUANTITIES (THIS SHEET ONLY)	SUPPLIED BY:	DESCRIPTION
REBAR	958.52	CONTRACTOR	LBS. OF REBAR
CONCRETE	22.96	CONTRACTOR	CUBIC YARDS OF CONCRETE
AB-4	8.00	STEEL MANUFACTURER	Ø 1" x 1'-6" ANCHOR BOLT W/ 2-FW, 2-HHN
AB-5	24.00	STEEL MANUFACTURER	Ø 3/4" x 2'-0" ANCHOR BOLT W/ 2-FW, 2-HHN



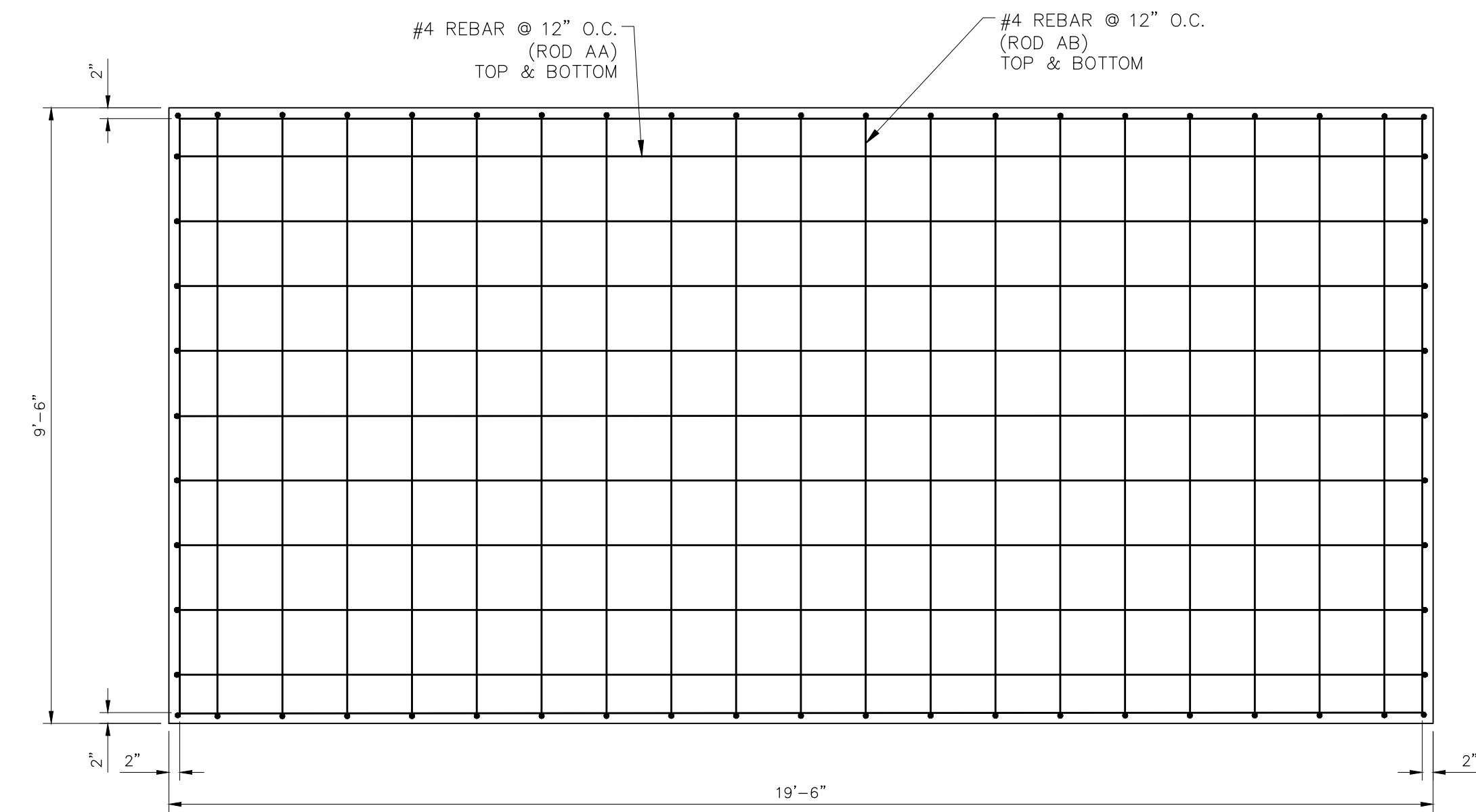
ANCHOR BOLT PLAN E



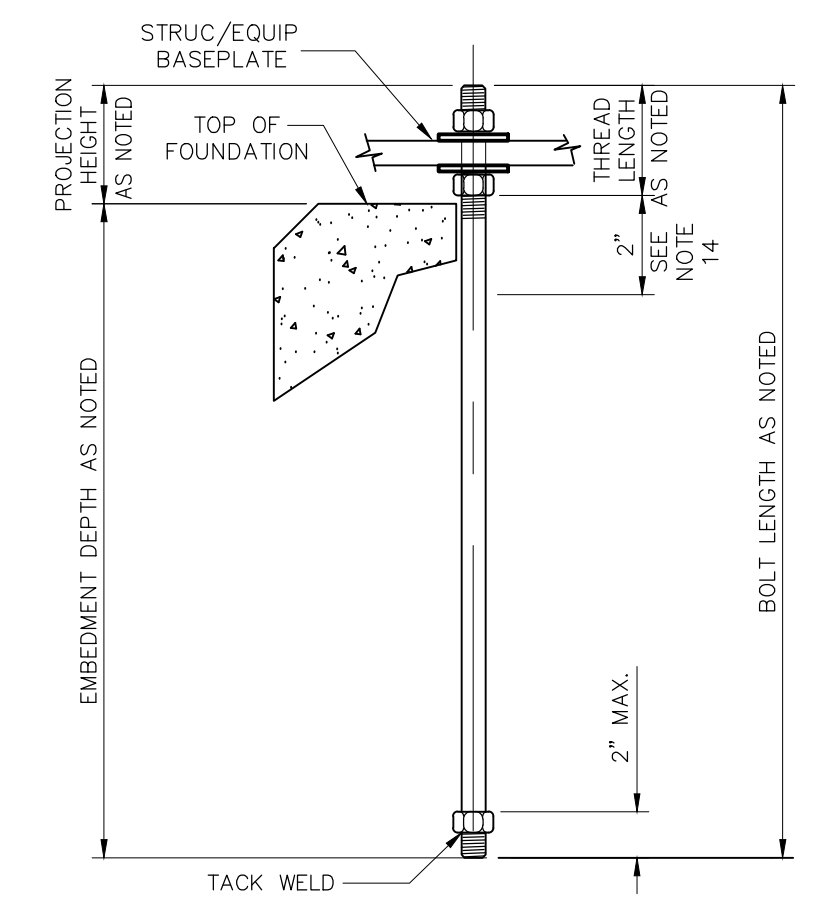
ANCHOR BOLT PLAN F



PLAN



PLAN



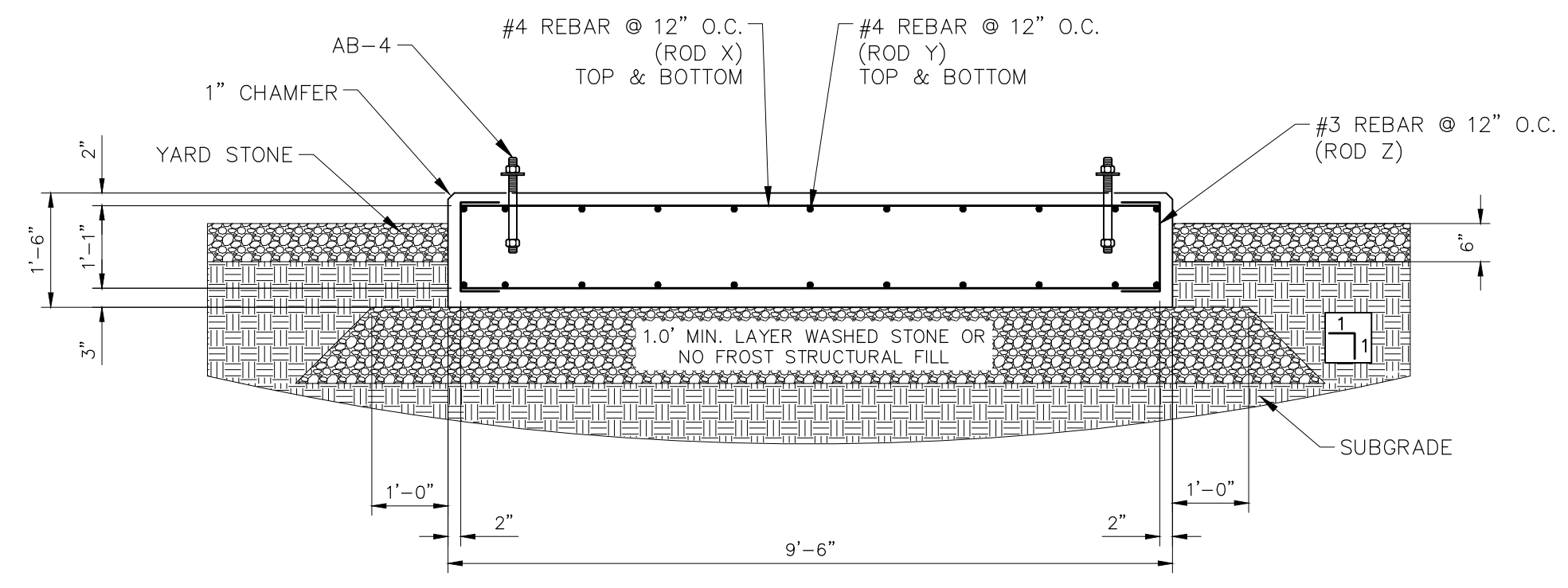
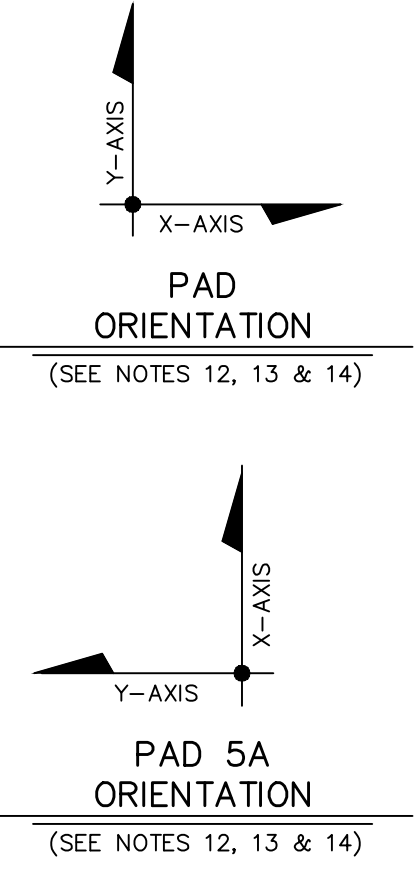
TYPICAL ANCHOR BOLT - DETAIL
(SEE NOTES 12, 13, 14, & 15)
SCALE: NONE

PAD No. "5"							TOTAL No. REQ'D. - 2	
ROD NO.	SIZE OF REBAR	NO. REQ'D PER FDN	LENGTH DIM A	LENGTH DIM B	TOTAL REBAR	WEIGHT PER ROD	PER FDN	
X	#4	14	9'-2"	-	9'-2"	6.12	85.68	
Y	#4	22	5'-2"	-	5'-2"	3.45	75.90	
Z	#3	32	1'-1"	0'-6"	2'-1"	0.78	24.96	
TOTAL WEIGHT OF REBAR PER FDN =							186.54	
TIMES TOTAL No. OF FDN's REQ'D =							373.08	

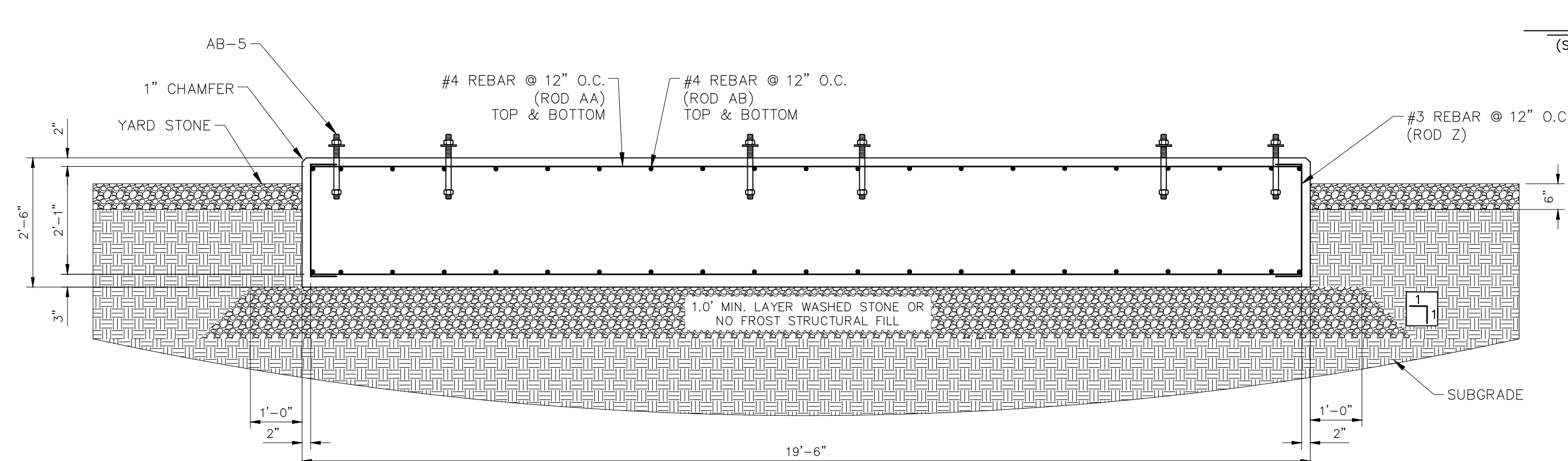
PAD No. "6"							TOTAL No. REQ'D. - 1	
ROD NO.	SIZE OF REBAR	NO. REQ'D PER FDN	LENGTH DIM A	LENGTH DIM B	TOTAL REBAR	WEIGHT PER ROD	PER FDN	
AA	#4	22	19'-2"	-	19'-2"	12.80	281.60	
AB	#4	42	9'-2"	-	9'-2"	6.12	257.04	
Z	#3	60	1'-1"	0'-6"	2'-1"	0.78	46.80	
TOTAL WEIGHT OF REBAR PER FDN =							585.44	
TIMES TOTAL No. OF FDN's REQ'D =							585.44	

NOTES

- THE FOUNDATION CONTRACTOR SHALL AT ALL TIMES FULLY COMPLY WITH ALL OSHA STANDARDS AS WELL AS THE OWNER'S SAFETY STANDARDS, AS A MINIMUM, ESPECIALLY WITH REGARD TO SHORING OF ALL EXCAVATIONS. THE ENGINEER OR OWNER WILL IMMEDIATELY HALT CONSTRUCTION ACTIVITIES IF THE CONTRACTOR DOES NOT COMPLY WITH THESE STANDARDS. FAILURE TO COMPLY AT ALL TIMES WITH THESE STANDARDS WILL RESULT IN DISMISSAL FROM THE PROJECT.
- THE FOUNDATION CONTRACTOR IS RESPONSIBLE FOR OBTAINING COPIES OF OSHA STANDARDS AS WELL AS THE OWNER'S SAFETY STANDARDS. COPIES SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING CONSTRUCTION.
- ALL FOUNDATIONS TO BE CARRIED TO FIRM UNDISTURBED EARTH OR COMPACTED FILL, WITH A MINIMUM BEARING CAPACITY OF 1,500 PSF, UNLESS OTHERWISE NOTED.
- WASHED STONE AND STRUCTURAL FILL SHALL BE COMPACTED AS SPECIFIED IN THE FOUNDATION SPECIFICATIONS.
- REINFORCING STEEL SHALL BE GRADE 60 ASTM A-615 OR A-617.
- FOR QUANTITY, LENGTH & SHAPE OF RODS SEE REBAR SUMMARY & BENDING LEGEND.
- CONCRETE SHALL BE 4500 P.S.I. @ 28 DAYS. CONCRETE SHALL BE AIR ENTRAINED WITH AN AIR CONTENT BETWEEN FIVE AND SEVEN PERCENT (5%-7%).
- CONCRETE SLUMP SHALL MEET REQUIREMENTS OF CONCRETE SPECIFICATIONS. THE CONTRACTOR SHALL MAKE OR HAVE MADE A MINIMUM OF ONE (1) SLUMP TEST IN ACCORDANCE WITH ASTM C 143 FOR EACH TRUCKLOAD OF CONCRETE DELIVERED.
- CONCRETE COVER OVER REINFORCING STEEL SHALL BE THREE INCHES (3") MINIMUM UNLESS OTHERWISE NOTED.
- ALL CONCRETE TO BE THOROUGHLY VIBRATED DURING PLACEMENT INTO FORMS TO ENSURE ALL VOIDS ARE FILLED.
- ALL FOUNDATIONS SHALL BE CHAMFERED ONE INCH (1") AROUND ALL TOP EDGES, UNLESS OTHERWISE SHOWN.
- TO DETERMINE ANCHOR BOLT SPACING, SEE ANCHOR BOLT PATTERN INDICATED. SEE FOUNDATION ANCHOR BOLT SUMMARY FOR DIAMETER, EMBEDMENT LENGTH, THREAD & HOOK REQUIREMENTS.
- CAREFUL EXAMINATION OF ANCHOR BOLT ORIENTATION MUST BE MADE IN THAT AN X-AXIS & Y-AXIS SYSTEM HAS BEEN INDICATED ON BOTH FOUNDATION PLAN & DETAIL DRAWINGS TO ENSURE PROPER ORIENTATION.
- ANCHOR BOLT SPACING & EQUIPMENT BASE PLATES SHALL BE VERIFIED TO BE CORRECT PRIOR TO POURING CONCRETE.
- AFTER FABRICATION ALL BOLTS ARE TO BE HOT DIP GALVANIZED A MINIMUM OF TWO INCHES (2") PAST NOTED THREAD LENGTH.
- SUBGRADE WILL BE TOPPED WITH THREE INCHES (3") OF CRUSHER RUN & THREE INCHES (3") OF WASHED STONE TO ACHIEVE FINAL SUBSTATION GRADE.
- SEE DRAWING FP1 FOR TOP OF FOUNDATION ELEVATIONS.
- CONTRACTOR IS RESPONSIBLE TO COORDINATE INSTALLATION OF ANY CONDUITS LOCATED UNDERNEATH OR PROTRUDING THROUGH FOUNDATIONS. SEE CONDUIT PLAN AND DETAILS FOR CONDUIT LOCATIONS.
- ALL CONDUITS, WHEN REQUIRED, ARE TO BE PLUGGED OR CAPPED DURING INITIAL CONSTRUCTION TO PREVENT CONTAMINATION.
- A CONCRETE BONDING AGENT CONFORMING TO ASTM C1059 SHALL BE APPLIED TO ALL ROUGHENED SURFACES PRIOR TO PLACING FRESH CONCRETE.
- THE CONTRACTOR SHALL PREPARE, OR HAVE PREPARED, IN ACCORDANCE WITH ASTM C-31, FIVE (5) TEST CYLINDERS FROM EACH TRUCKLOAD OF CONCRETE DELIVERED TO THE SITE, WITHIN 20-24 HOURS AFTER BEING PREPARED, THE CYLINDERS SHALL BE DELIVERED TO A QUALIFIED TESTING LABORATORY AND TESTED IN ACCORDANCE WITH THE CONCRETE SPECIFICATIONS AND ASTM C-39. TEST RESULTS ARE TO BE PROVIDED TO THE ENGINEER FOR EVALUATION AND DIRECTION OF CORRECTIVE ACTION IF NEEDED.
- THE CONTRACTOR SHALL MEET OR EXCEED ALL REQUIREMENTS OF THE CONCRETE SPECIFICATIONS.



SECTION
PAD 5 & 5A
115kV BREAKER
SCALE: 1/2"=1'-0"



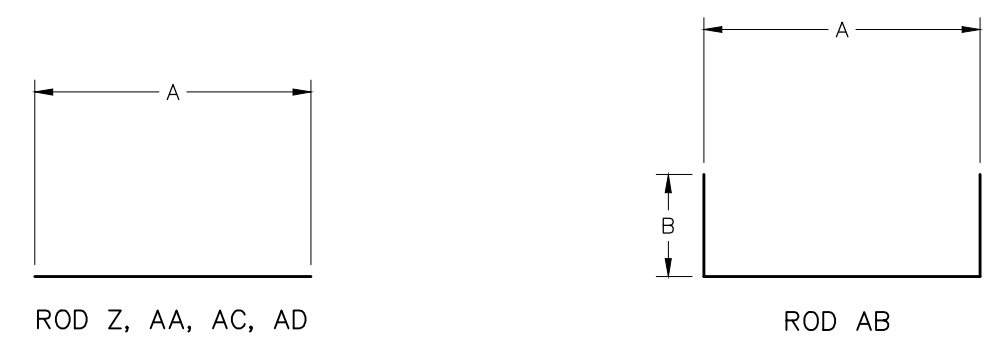
SECTION
PAD 6
SCALE: 1/2"=1'-0"

REFERENCES:
FOUNDATION PLAN 14020FP2

FOUNDATION ANCHOR BOLT SUMMARY

FDN. DESIGNATION	SERVICE	No. OF REQ'D. STRUCT.'S	No. OF FDN. REQ'D. PER STRUCT.	ANCHOR BOLTS										NOTES	
				ITEM No.	QTY./FDN.	TOTAL QTY. REQ'D.	DIA.	LENGTH				WASHER QTY.-DESC.	NUT QTY.-DESC.		
								EMBED	THREAD MIN.	PROJECTION ABOVE PAD	HOOK				TOTAL
PAD 5 & 5A	115 kV BUS BREAKER	2	1	AB-4	4	8	1"	1'-2"	4"	4"	-	1'-6"	2-FW	2-HHN	
PAD 6	CP & L CT & PT STAND	1	1	AB-5	24	24	3/4"	1'-9"	5"	3"	-	2'-0"	2-FW	2-HHN	

ROD BENDING LEGEND (NOT TO SCALE)



"PRELIMINARY- DO NOT USE FOR CONSTRUCTION"

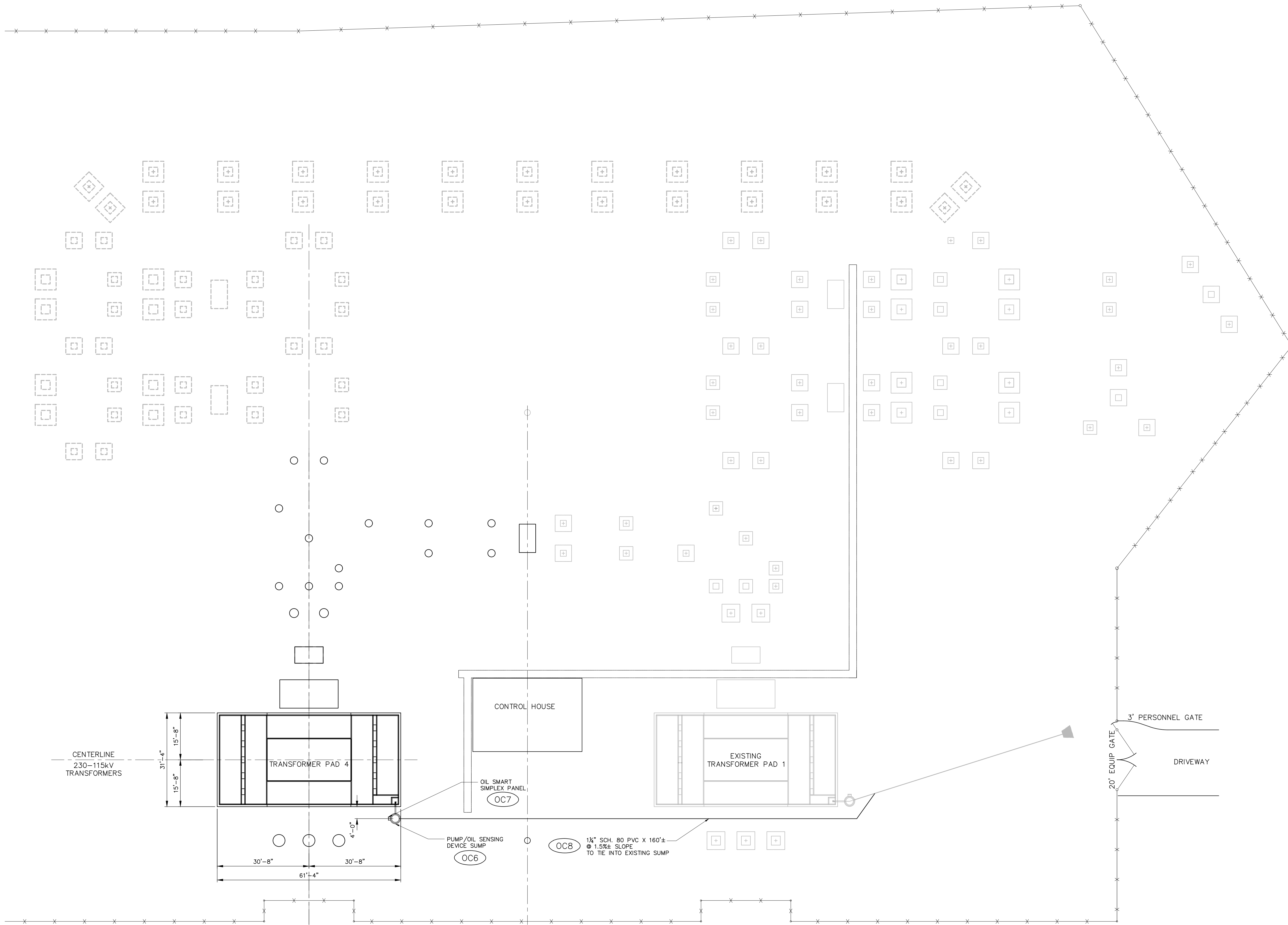
GREENVILLE UTILITIES
GREENVILLE, NORTH CAROLINA

GREENVILLE POD #2
230kV TO 115kV SUBSTATION
FOUNDATION DETAILS

Booth & Associates, LLC
3011 Greenwood Avenue | Raleigh, NC 27612 | CONSULTING ENGINEERS

DWN. NBS DATE: 01/05/17 DWG. NO. FD4 14020FD
CKD. CAJ APPD. EMR

NO. REVISIONS DATE SCALE: AS NOTED



- NOTES:**
1. THE CONTRACTOR SHALL AT ALL TIMES FULLY COMPLY WITH ALL OSHA STANDARDS AS WELL AS THE OWNER'S SAFETY STANDARDS, AS A MINIMUM, ESPECIALLY WITH REGARD TO SHORING OF ALL EXCAVATIONS. THE ENGINEER OR OWNER WILL IMMEDIATELY HALT CONSTRUCTION ACTIVITIES IF THE CONTRACTOR DOES NOT COMPLY WITH THESE STANDARDS. FAILURE TO IMMEDIATELY COMPLY WITH THESE STANDARDS WILL RESULT IN DISMISSAL FROM THE PROJECT.
 2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING COPIES OF OSHA STANDARDS AS WELL AS THE OWNER'S SAFETY STANDARDS. COPIES SHALL BE AVAILABLE ON SITE AT ALL TIMES DURING CONSTRUCTION.
 3. THE OIL CONTAINMENT SYSTEM HAS BEEN DESIGNED TO CONTAIN THE ENTIRE VOLUME OF OIL IN THE SINGLE LARGEST CONTAINER, PLUS RAINFALL BASED ON LOCAL WEATHER RECORDS. HOWEVER, THE OIL CONTAINMENT IS NOT GUARANTEED IN THE EVENT OF AN EXPLOSIVE TYPE FAILURE WHERE OIL IS SPRAYED BEYOND THE PERIMETER OF THE CONTAINMENT BASIN.
 4. ALL STRUCTURAL CONCRETE SHALL BE SUPPORTED ON FIRM UNDISTURBED EARTH OR COMPACTED FILL.
 5. REINFORCING STEEL SHALL BE GRADE 60 ASTM A-615 OR A-617.
 6. TIE RODS SHALL BE LAPPED A MINIMUM OF 12".
 7. CONCRETE SHALL BE 4500 P.S.I. MINIMUM AT 28 DAYS. CONCRETE SHALL BE AIR ENTRAINED WITH AN AIR CONTENT BETWEEN FOUR AND SIX PERCENT (5%-7%).
 8. CONCRETE SLUMP SHALL MEET REQUIREMENTS OF FOUNDATION SPECIFICATIONS. THE CONTRACTOR SHALL MAKE OR HAVE MADE A MINIMUM OF ONE(1) SLUMP TEST, IN ACCORDANCE WITH ASTM C-143, FOR EACH TRUCKLOAD OF CONCRETE DELIVERED.
 9. CONCRETE COVER OVER REINFORCING RODS SHALL BE THREE INCHES (3") MINIMUM, UNLESS OTHERWISE NOTED.
 10. ALL CONCRETE TO BE THOROUGHLY VIBRATED DURING PLACEMENT INTO FORMS TO ENSURE ALL VOIDS ARE FILLED.
 11. ALL WALLS SHALL BE CHAMFERED ONE INCH (1") AROUND ALL TOP EDGES.
 12. AFTER INSTALLATION, THE OIL CONTAINMENT SYSTEM SHOULD BE CHECKED REGULARLY BY THE OWNER TO ENSURE ALL EQUIPMENT IS IN PROPER WORKING ORDER.
 13. THE OIL SENSING DEVICE SHOULD BE TESTED REGULARLY BY THE OWNER ACCORDING TO MANUFACTURER'S INSTRUCTIONS AND REPLACED IF NECESSARY.
 14. SEE DRAWING OC2 FOR TRANSFORMER PAD ELEVATIONS.
 15. ALL LINES SHALL HAVE MINIMUM SLOPES AS INDICATED BY INVERT ELEVATIONS SHOWN ON DRAWING OC2.
 16. OIL CONTAINMENT SYSTEM DESIGN SHOWN IS IN ACCORDANCE WITH RECOMMENDATIONS OF EPA 40 CFR 112.
 17. ESTABLISH POSITIVE DRAIN TO OUTLETS. NOTE ELEVATIONS SHOWN IN PITS. SEE DRAWING OC2.
 18. CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE LOCATIONS AND DEPTHS OF ANY EXISTING UNDERGROUND DUCT BANKS, CABLE TRENCHES, CONDUITS, CABLES ETC. TO ENSURE THAT THE EXISTING LOCATIONS AND DEPTHS DO NOT INTERFERE WITH THE INSTALLATION OF THE OIL CONTAINMENT SYSTEM.
 19. ALL CONTROL/ELECTRICAL CONDUITS ARE TO BE SCHEDULE 40 PVC. SIZE AS SHOWN ON DRAWING.
 20. CONTRACTOR IS RESPONSIBLE TO COORDINATE INSTALLATION OF ANY CONDUITS LOCATED UNDERNEATH OR PROTRUDING THROUGH FOUNDATIONS. SEE CONDUIT PLAN AND DETAILS FOR CONDUIT LOCATIONS.
 21. A CONCRETE BONDING AGENT CONFORMING TO ASTM C1059 SHALL BE APPLIED TO ALL ROUGHENED SURFACES PRIOR TO PLACING FRESH CONCRETE.
 22. THE CONTRACTOR SHALL PREPARE, OR HAVE PREPARED, IN ACCORDANCE WITH ASTM C-31, FIVE (5) TEST CYLINDERS FROM EACH TRUCKLOAD OF CONCRETE DELIVERED TO THE SITE. WITHIN 20-24 HOURS AFTER BEING PREPARED, THE CYLINDERS SHALL BE DELIVERED TO A QUALIFIED TESTING LABORATORY AND TESTED IN ACCORDANCE WITH THE CONCRETE SPECIFICATIONS AND ASTM C-39. TEST RESULTS ARE TO BE PROVIDED TO THE ENGINEER FOR EVALUATION AND DIRECTION OF CORRECTIVE ACTION IF NEEDED.
 23. THE CONTRACTOR SHALL MEET OR EXCEED ALL REQUIREMENTS OF THE CONCRETE SPECIFICATIONS.

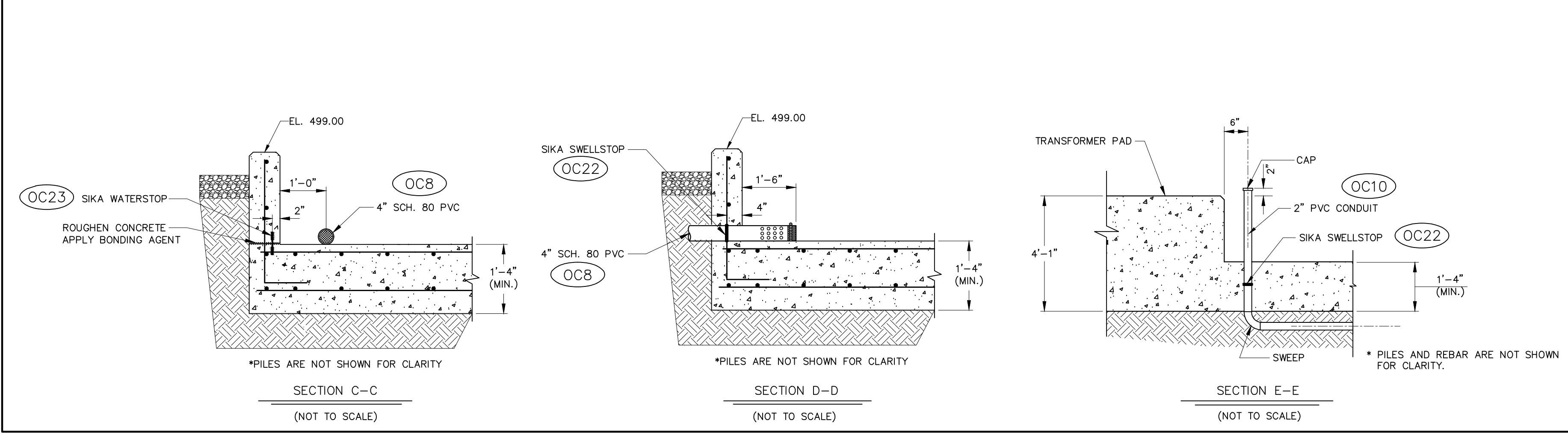
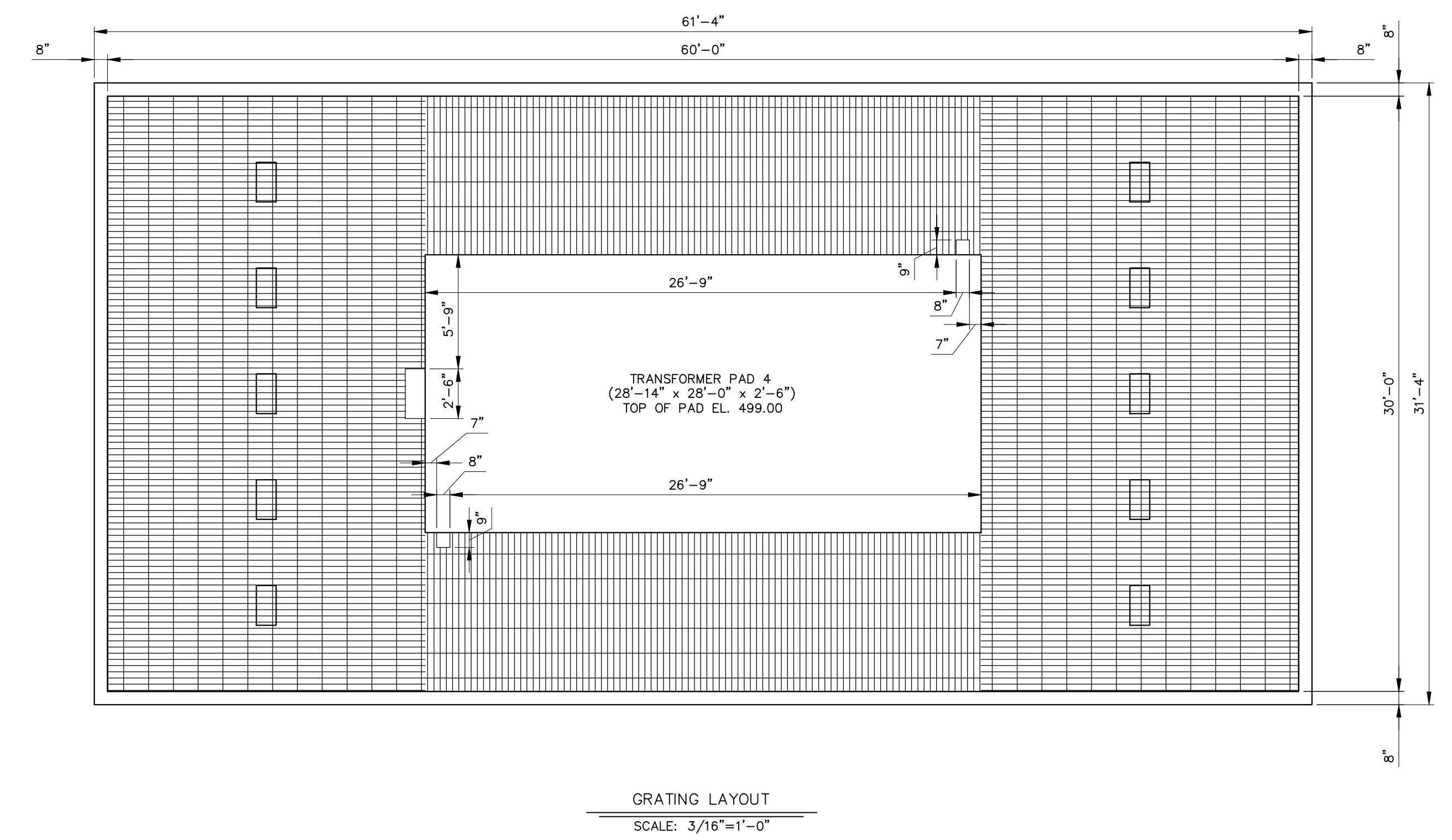
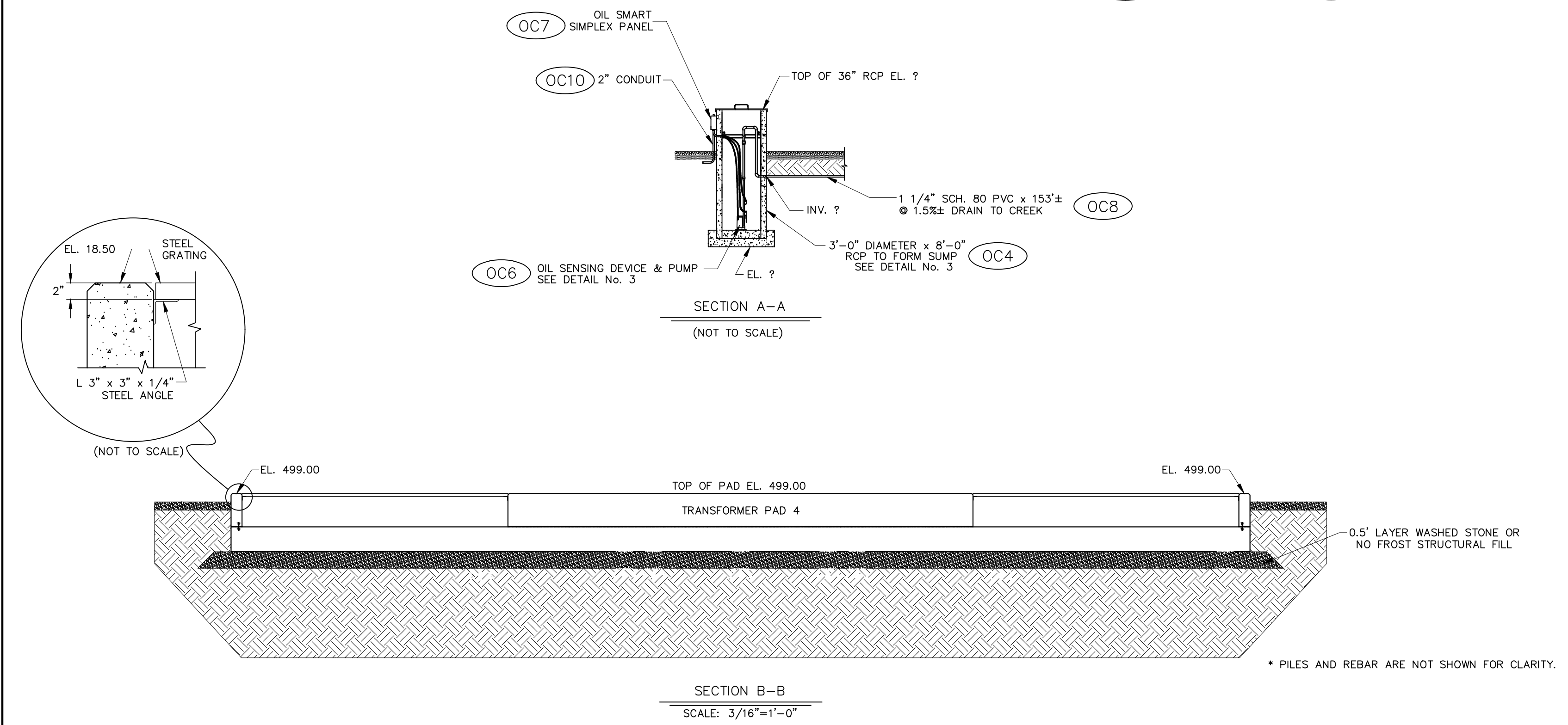
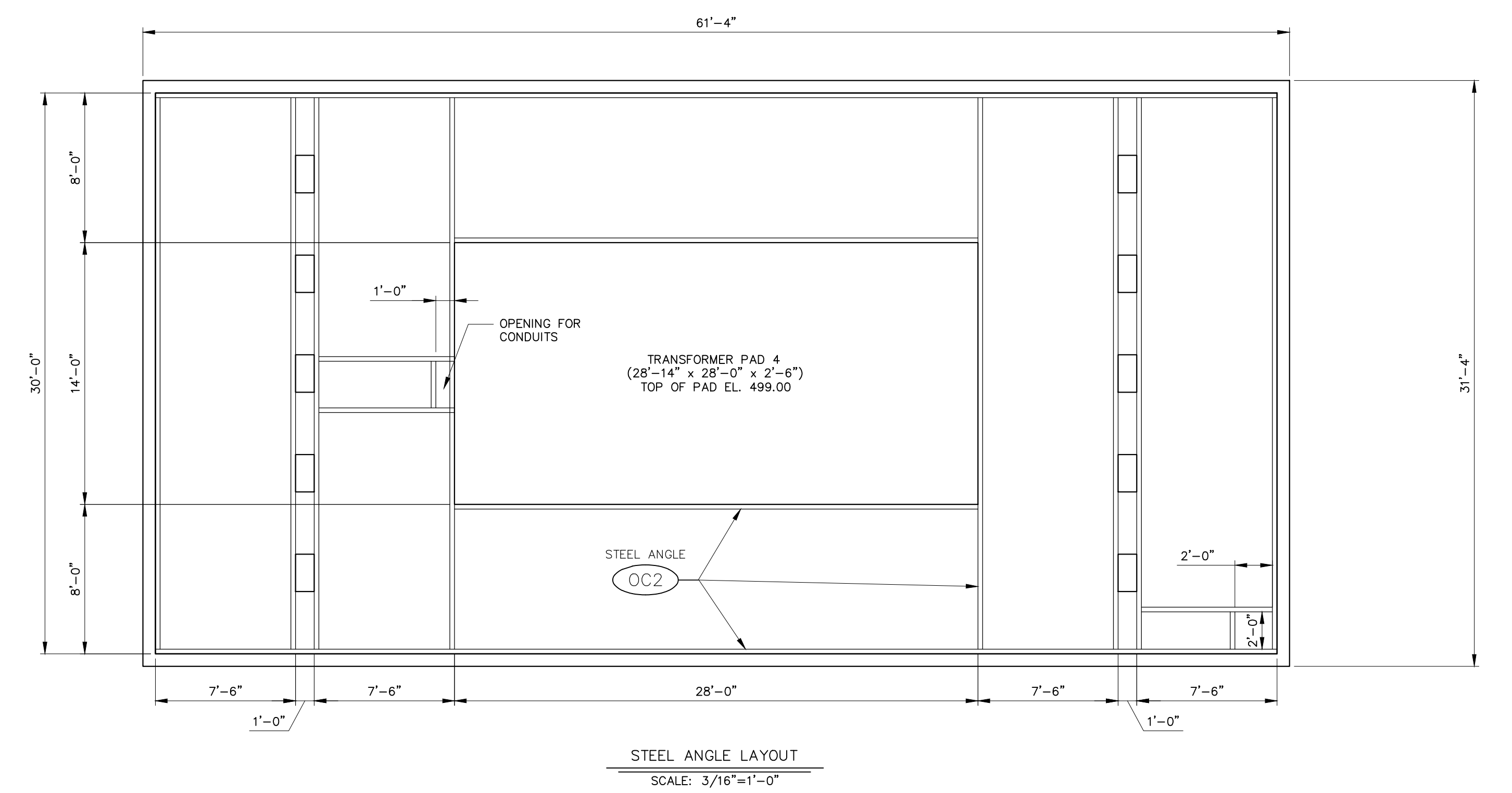
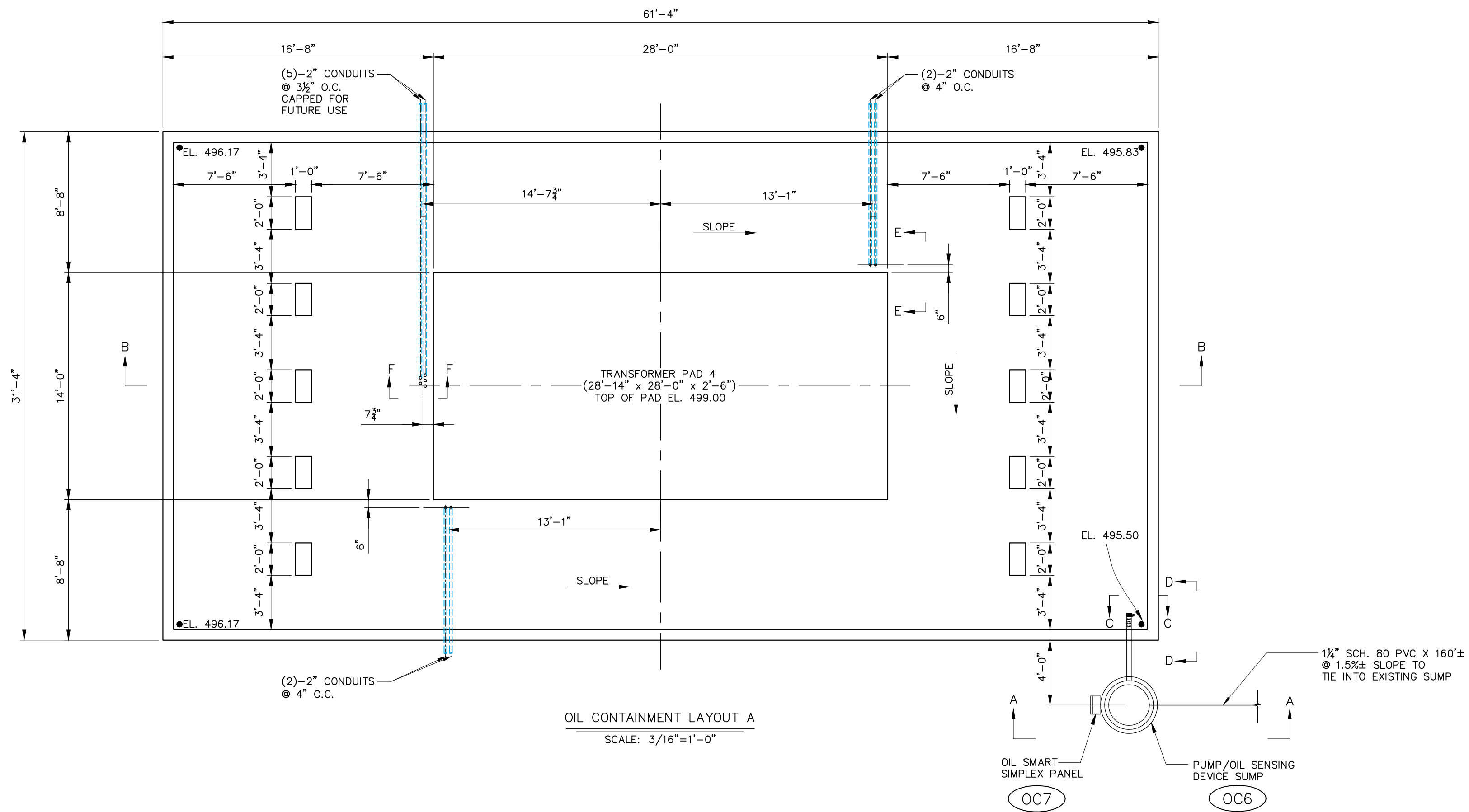
- LEGEND:**
- OIL CONTAINMENT TO BE INSTALLED
 - FUTURE PAD
 - PAD TO BE INSTALLED
 - PIER TO BE INSTALLED
 - EXISTING FOUNDATION
 - × × FENCE

REFERENCES:

FOUNDATION PLAN	14601	FP1 OF 1
OIL CONTAINMENT SYSTEM SECTIONS	14601	OC2 OF 3
OIL CONTAINMENT SYSTEM DETAILS	14601	OC3 OF 3

OIL CONTAINMENT PLAN
SCALE: 1/16"=1'-0"

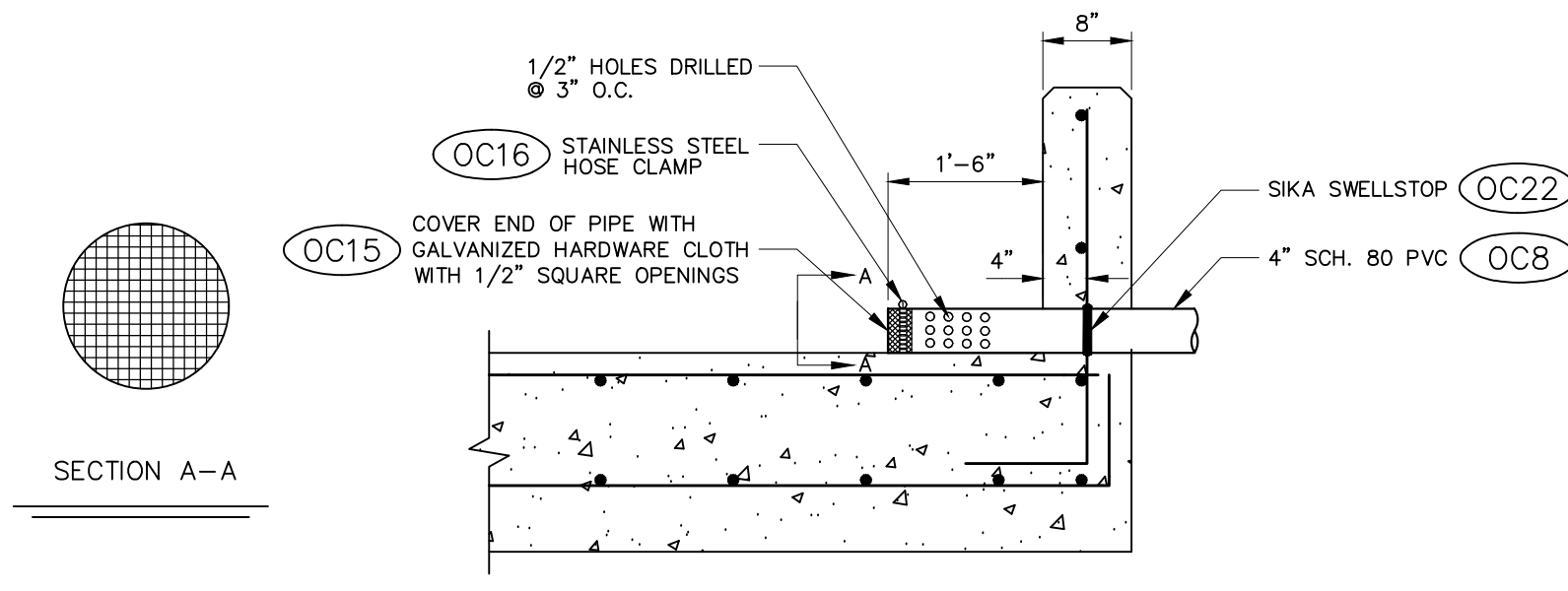
"PRELIMINARY- DO NOT USE FOR CONSTRUCTION"	GREENVILLE UTILITIES GREENVILLE, NORTH CAROLINA	
	GREENVILLE POD #2 230kV TO 115kV SUBSTATION OIL CONTAINMENT PLAN	
	Booth & Associates, LLC <small>901 Cleveland Avenue • Raleigh, NC 27612 • CONSULTING ENGINEERS</small>	
	DWN. AAI CRD. CAJ	DATE: 01/05/17 APPD. EMR
© 01/17	NO. REVISIONS	DATE



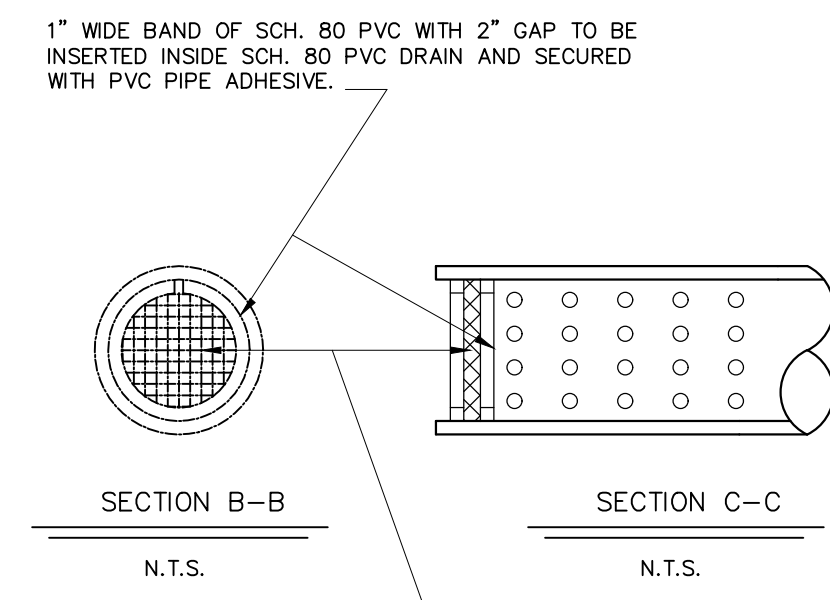
- REFERENCES:**
- FOUNDATION PLAN 14020 FP1 OF 1
 - OIL CONTAINMENT SYSTEM PLAN 14020 OC1 OF 3
 - OIL CONTAINMENT SYSTEM DETAILS 14020 OC3 OF 3

<p>"PRELIMINARY- DO NOT USE FOR CONSTRUCTION"</p>	<p>GREENVILLE UTILITIES GREENVILLE, NORTH CAROLINA</p>	
	<p>GREENVILLE POD #2 230kV TO 115kV SUBSTATION OIL CONTAINMENT SYSTEMS</p>	
	<p>Booth & Associates, LLC <small>3011 Concord Avenue • Raleigh, NC 27612 • CONSULTING ENGINEERS</small></p>	
	<p>DWN. AAI DATE: 01/05/17 DWG. NO.</p> <p>CKD. CAJ APPD. EMR OC2</p> <p>SCALE: AS NOTED PLOT: 14020OC</p>	<p>NO. REVISIONS DATE</p>

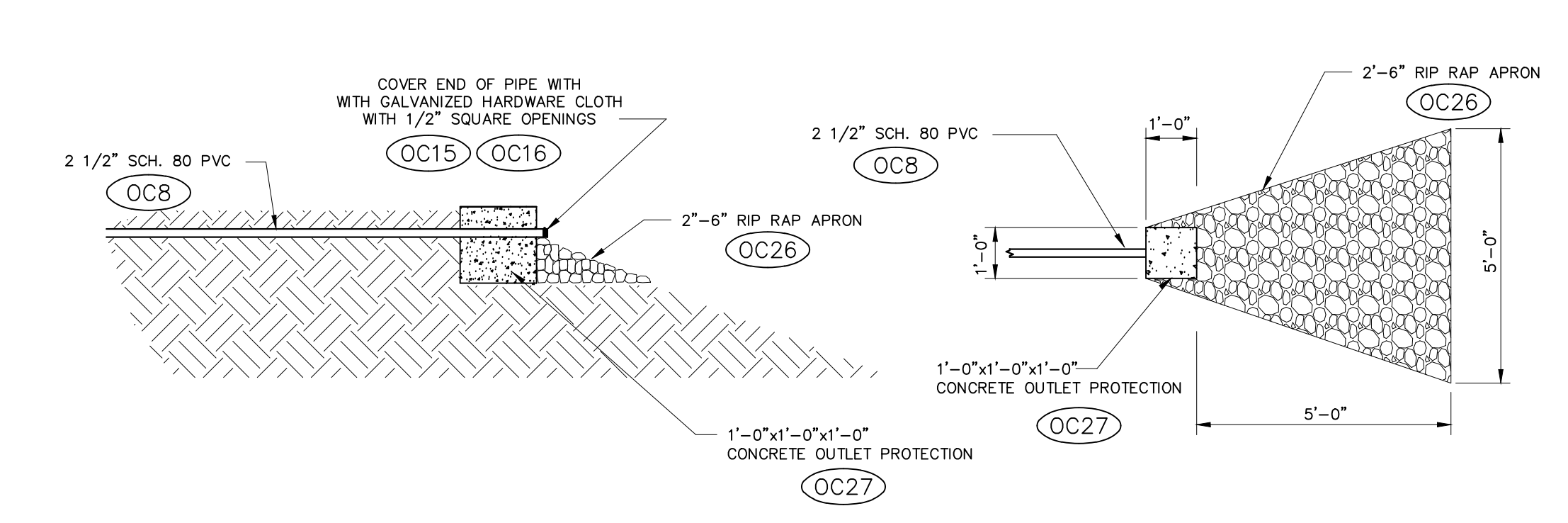
© 01/17



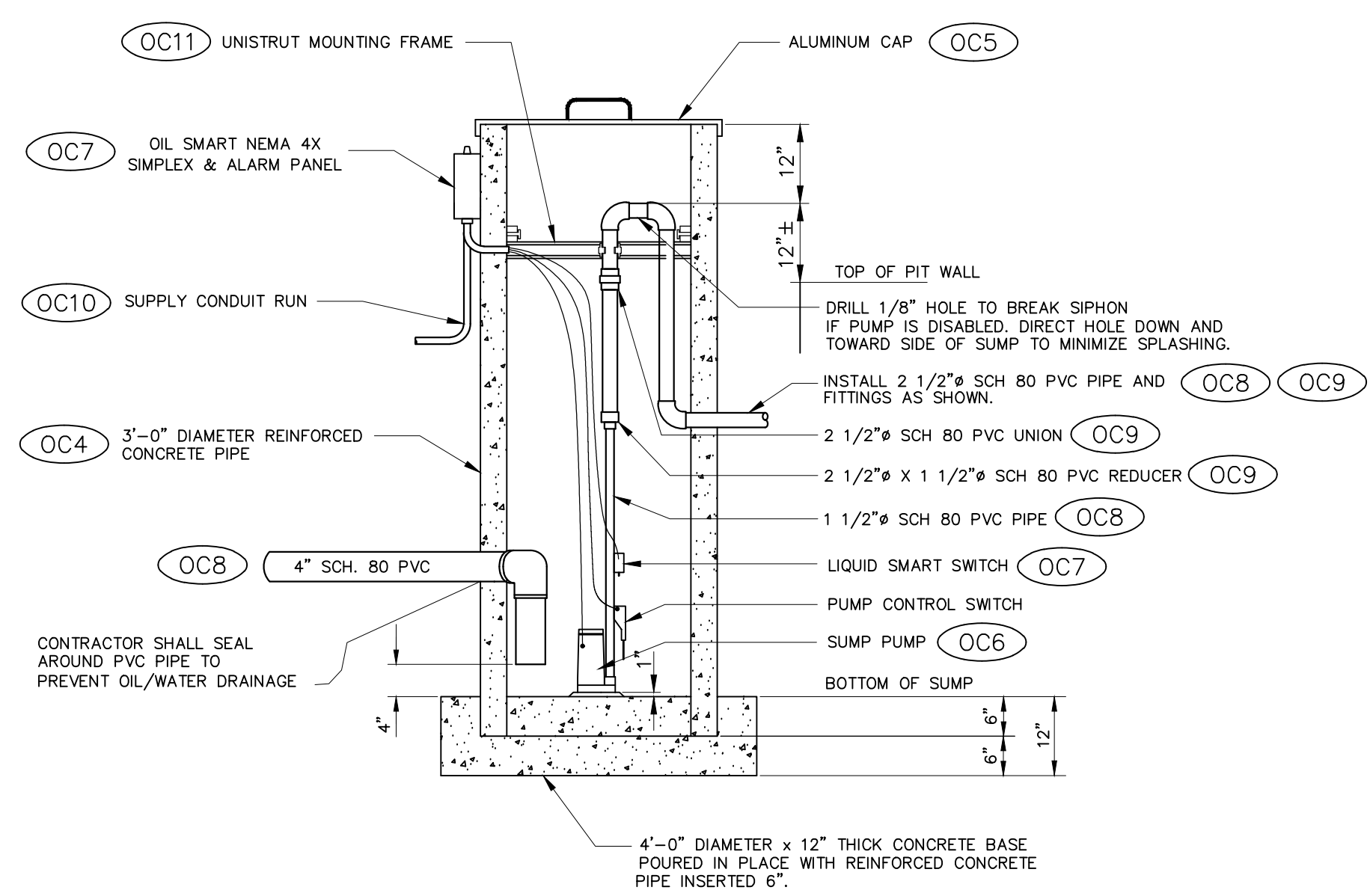
DETAIL No. 1
BASIN OUTLET
N.T.S.



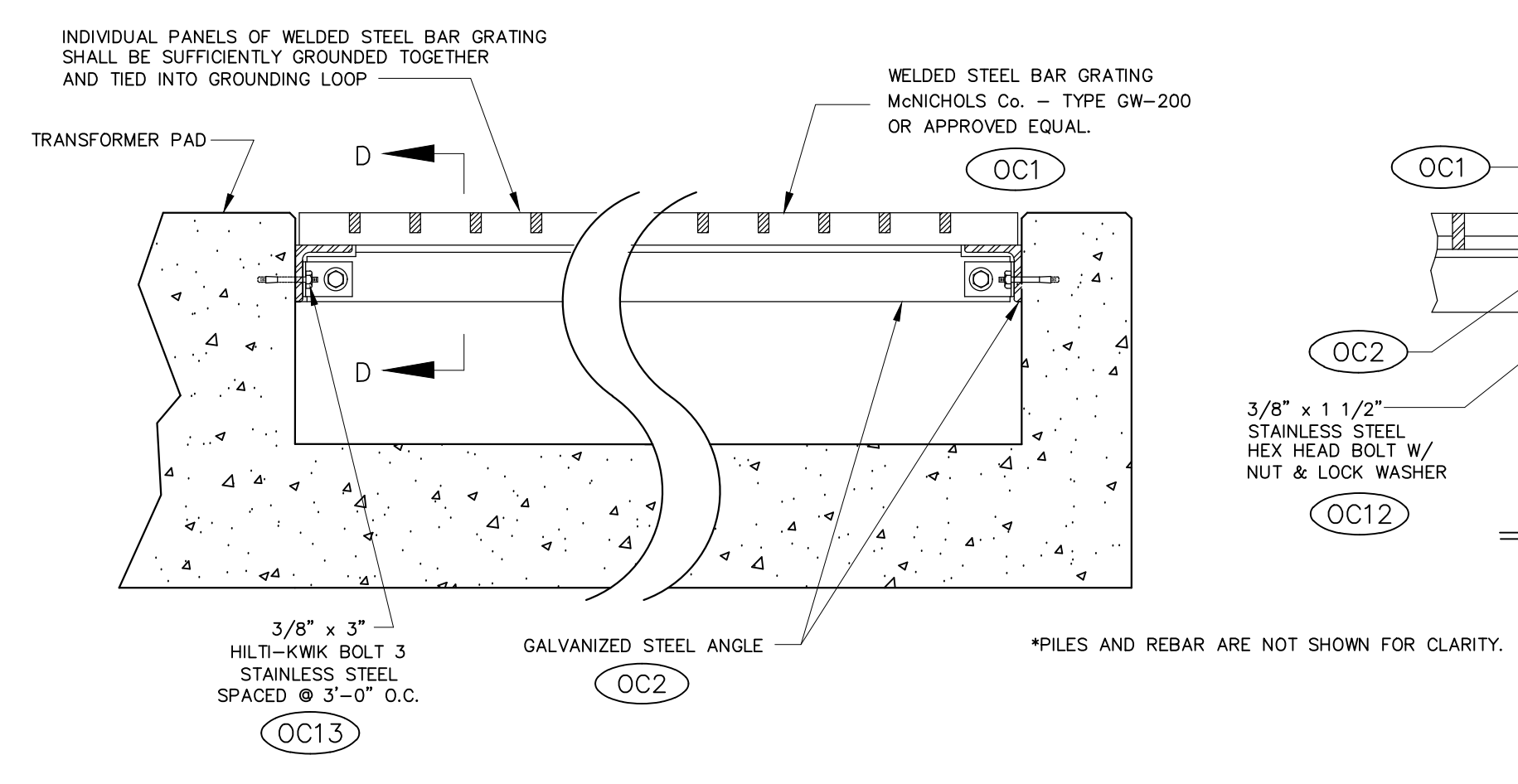
DETAIL No. 1A
BASIN OUTLET-ALTERNATE DESIGN
N.T.S.



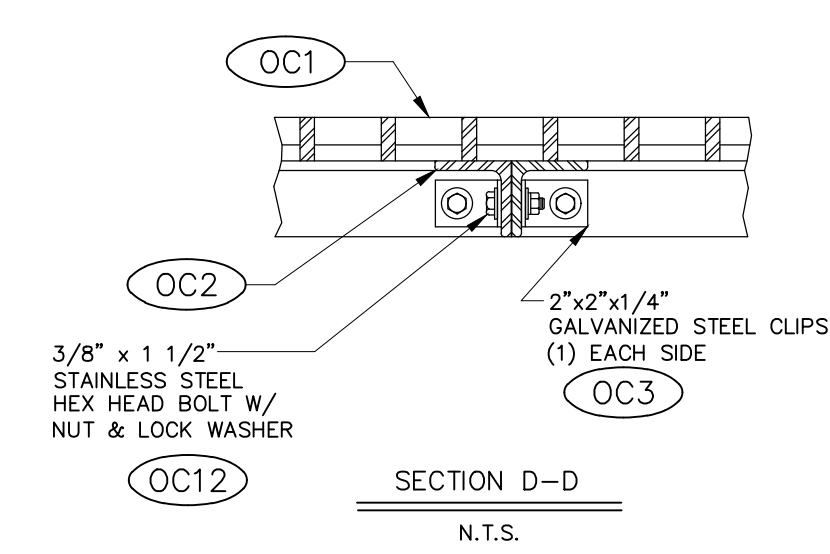
DETAIL No. 2
DRAIN OUTLET
N.T.S.



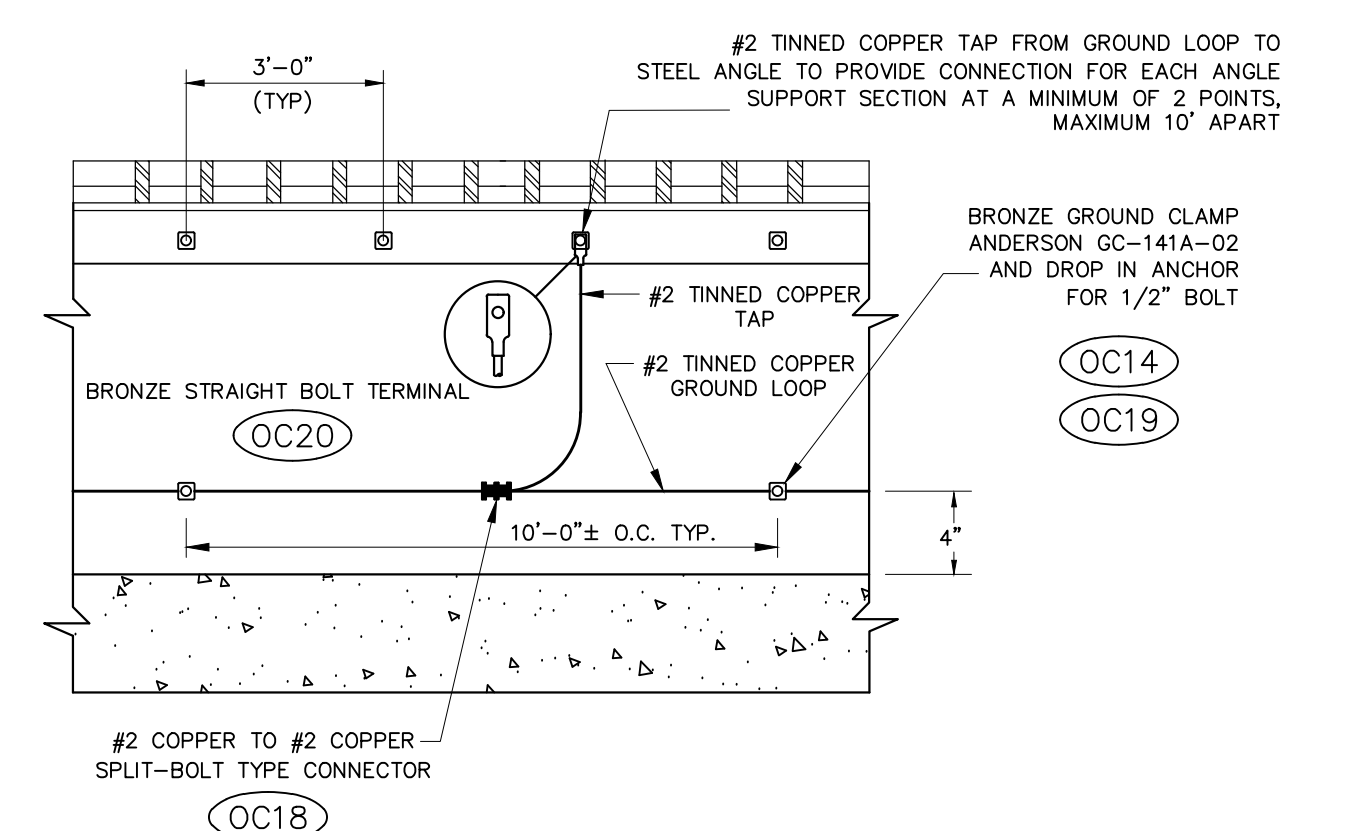
DETAIL No. 3
SUMP PUMP/OIL SENSING DEVICE
N.T.S.



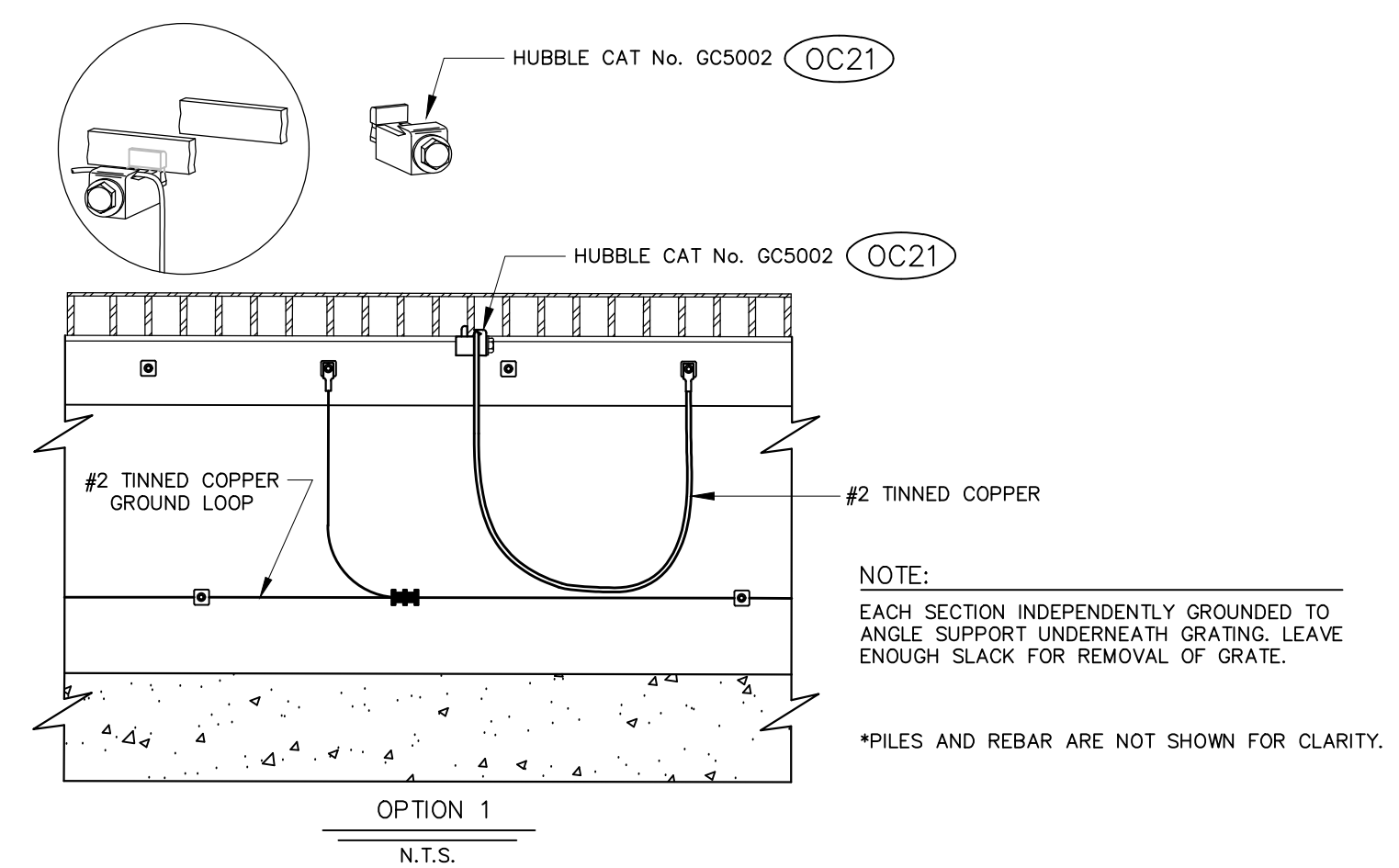
DETAIL No. 4
STEEL BAR GRATING ATTACHMENT TO WALLS & PIERS
N.T.S.



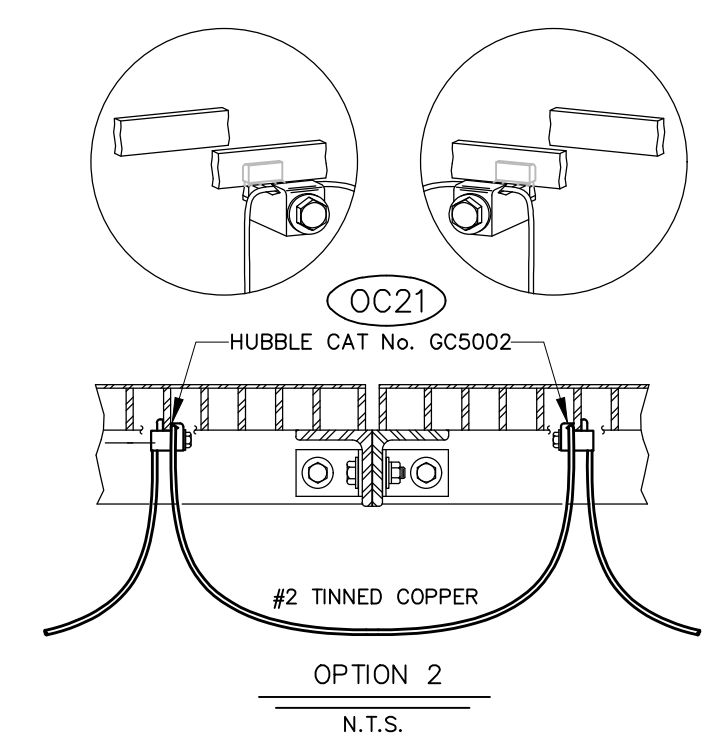
SECTION D-D
N.T.S.



DETAIL No. 5
STEEL ANGLE GROUNDING ATTACHMENT DETAIL
N.T.S.



OPTION 1
N.T.S.



OPTION 2
N.T.S.

DETAIL No. 6
STEEL BAR GRATING GROUNDING ATTACHMENT DETAIL
N.T.S.

NOTE:
EACH SECTION DAISEY CHAINED UNDERNEATH GRATING.
TIE INTO GROUND GRID IN OIL CONTAINMENT PIT.

REFERENCES:

FOUNDATION PLAN	14020 FP1 OF 1
OIL CONTAINMENT SYSTEM PLAN	14020 OC1 OF 3
OIL CONTAINMENT SYSTEM SECTIONS	14020 OC2 OF 3

<p>"PRELIMINARY- DO NOT USE FOR CONSTRUCTION"</p>	<p>GREENVILLE UTILITIES GREENVILLE, NORTH CAROLINA</p>	
	<p>GREENVILLE POD #2 230kV TO 115kV SUBSTATION OIL CONTAINMENT SYSTEM DETAILS</p>	
	<p>Booth & Associates, LLC <small>3001 Concord Avenue • Raleigh, NC 27612 • CONSTRUCTION ENGINEERS</small></p>	
	<p>DWN. AAI CKD. CAJ</p>	<p>DATE: 01/05/17 APPD. EMR</p>
<p>© 01/17</p>	<p>NO. REVISIONS</p>	<p>DATE</p>