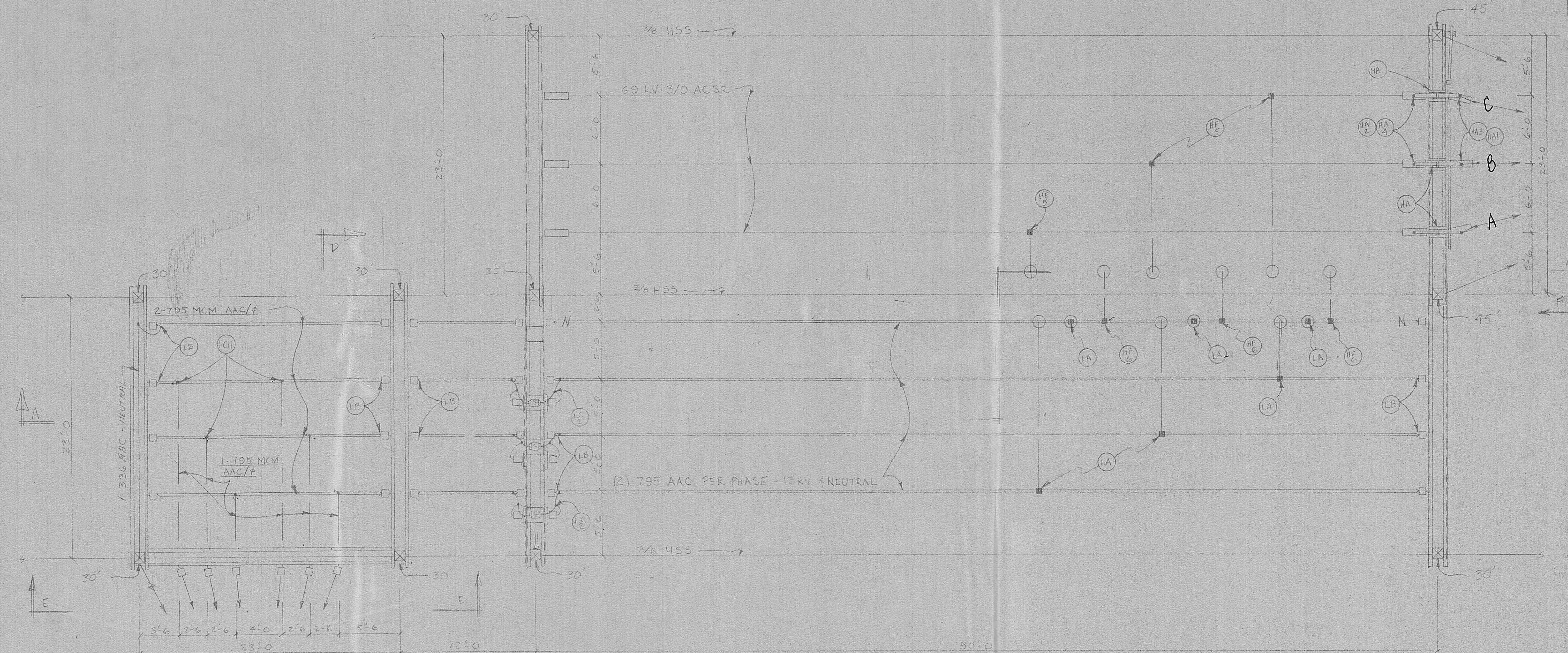
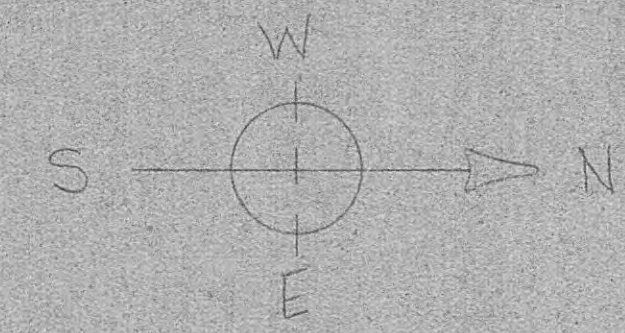
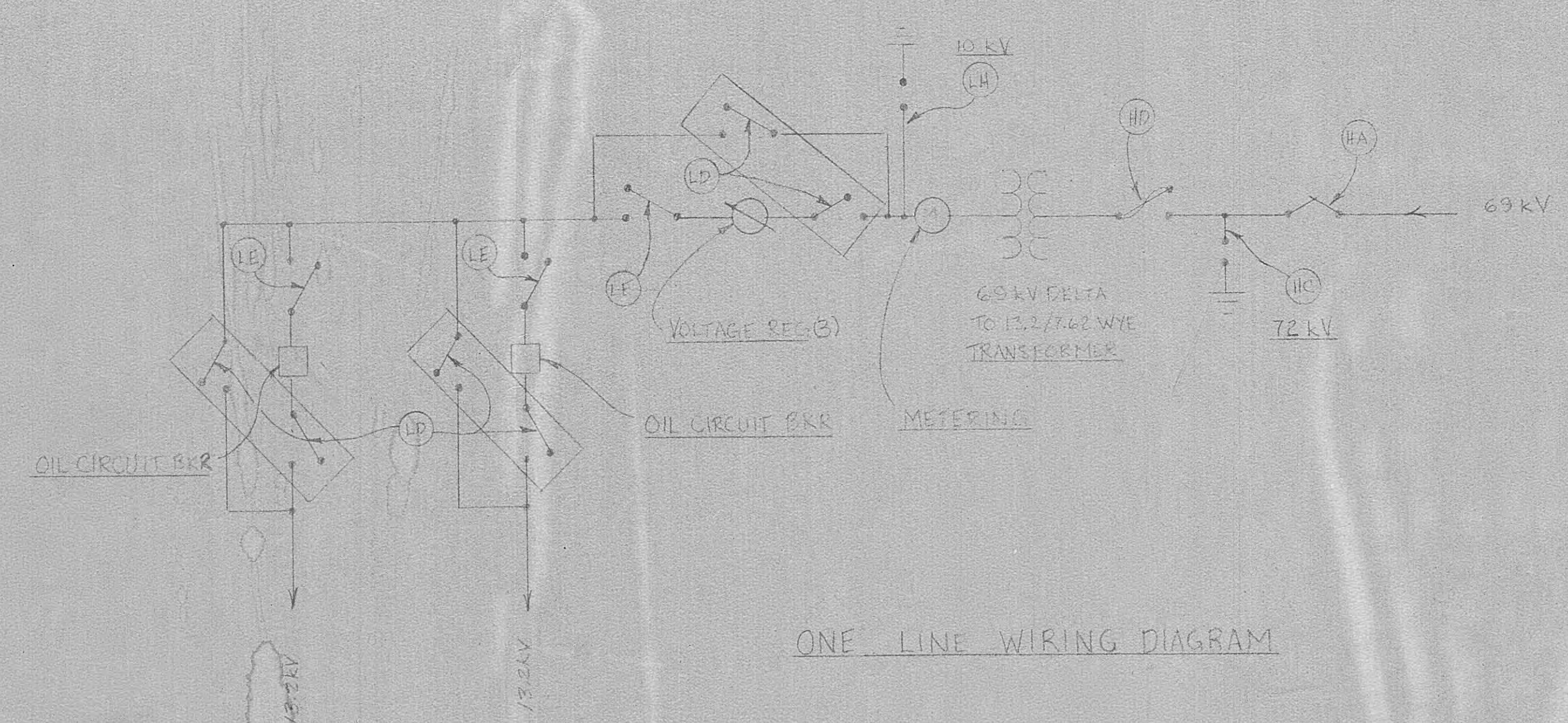


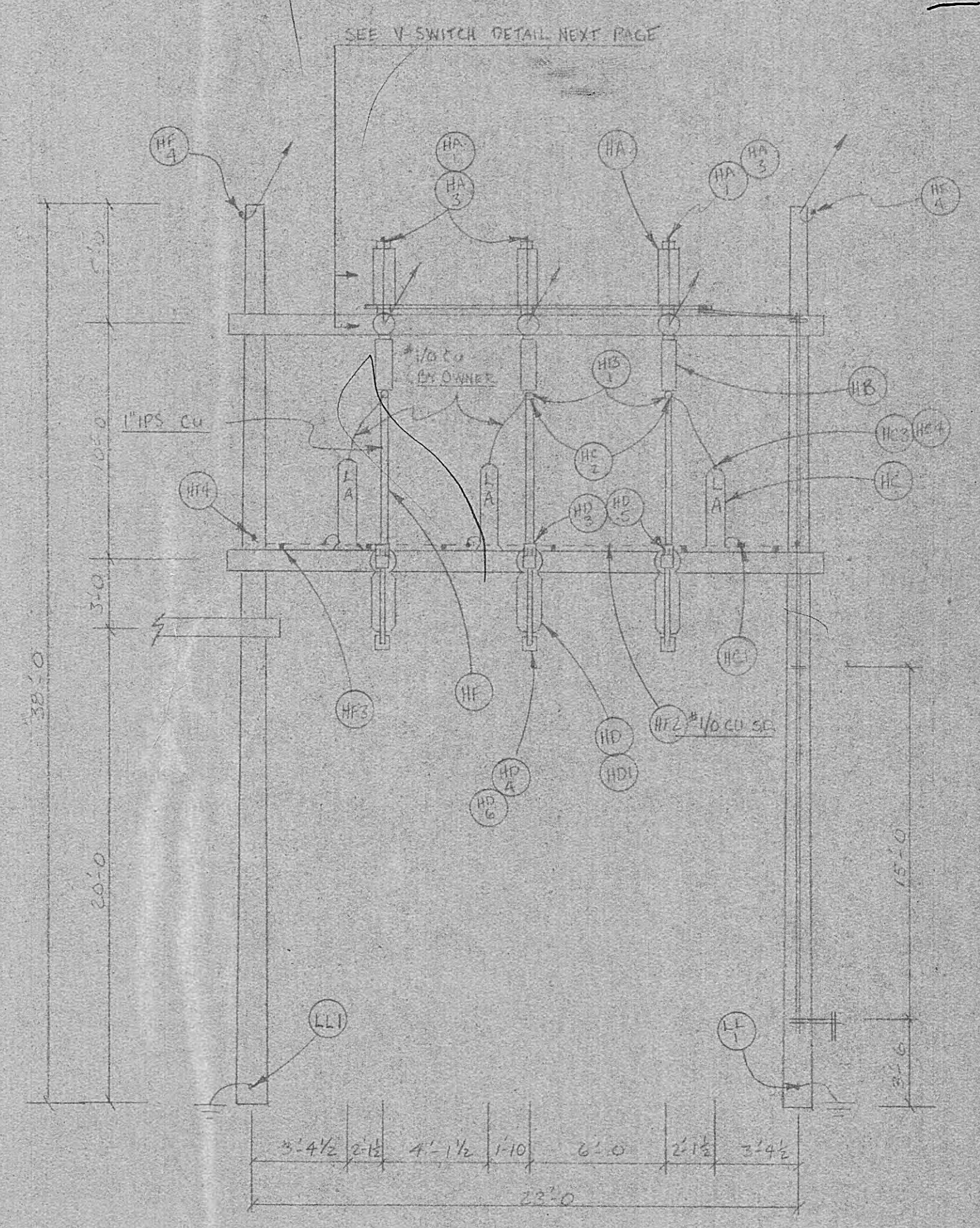
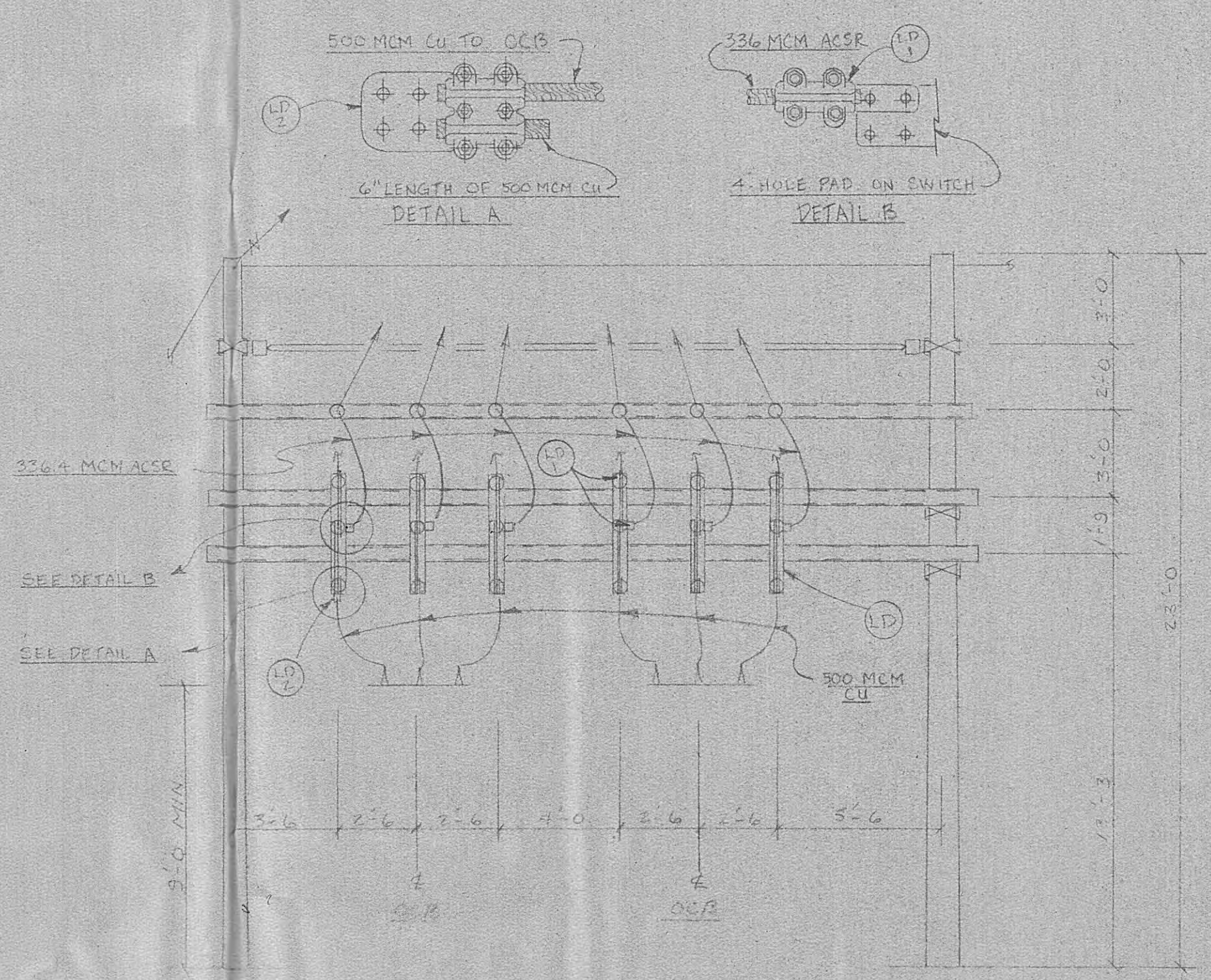


OUTGOING CIRCUITS ARE
336.4 MCM ACSR (ONE
PER PHASE AND NEUTRAL)

PLAN VIEW
1/8" = 1'-0"



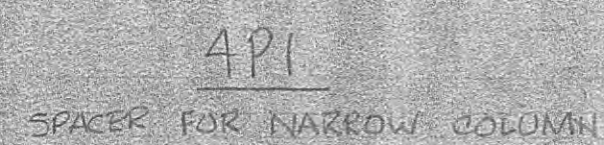
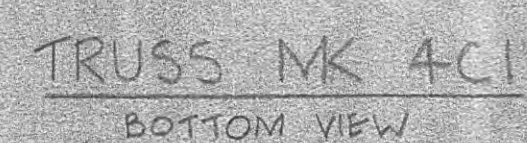
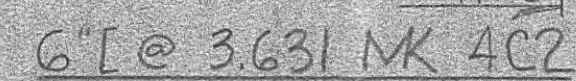
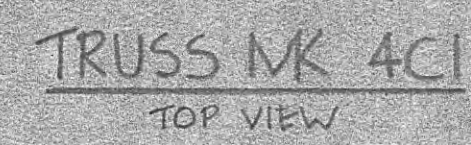
ONE LINE WIRING DIAGRAM



SECTION E-E
1/8" = 1'-0"

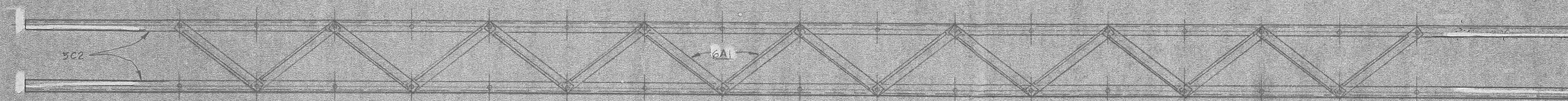
- NOTES:
- (1) PHASING SCHEMATIC SHOWN ONLY. FIELD VERIFY CORRECT PHASING.
 - (2) RUN LINES THRU STRAIN CLAMPS AND ATTACH TO SWITCHES AND BUSES.
 - (3) USE NON-OXIDE PASTE ON ALL ALUMINUM BUS CONNECTIONS.
 - (4) ALUMINUM SURFACES PLACED IN CONTACT WITH CONCRETE SHALL BE GIVEN A HEAVY COAT OF ALKALI RESISTANT BITUMINOUS PAINT (US MIL SPEC. MIL-P-6883A) PER LATEST REVISION OF NEMA STANDARDS PUBLICATION #54-6-1974 (R1979).
 - (5) THE FOLLOWING IS OWNER FURNISHED MATERIAL:
 - (A) ALL 3/0 ACSR AND 795 MCM AAC
 - (B) ALL 3/8 HSS FOR CHSW AND GUY
 - (C) ALL CONNECTORS FOR 3/0 ACSR, 795 MCM AAC AND 3/8 HSS UNLESS NOTED
 - (D) #10 CU TO TC KV. L.A.'S
 - (E) 10' STRAIN DISC ASSEMBLIES
 - (F) DOUBLE ARMING BOLTS
 - (6) LOCATION OF GUYS AND GUY ASSEMBLIES BY OWNER.
 - (7) 69KV V-SWITCH BASE SHALL BE REPAIRED WITH PC-1A3 TO ALLOW MOUNTING ONTO TRUSS.

WE		WHITLOWELECTRIC 223 WILLIAMS STREET ELBERTON, GEORGIA 30635 404/283-5662	
		CUSTOMER P.O.	
CUSTOMER		HARRIMAN UTILITY BOARD	
TITLE		ELECTRICAL ARRANGEMENT	
SUBSTATION		CARDIFF VALLEY 69-13 KV SUBSTATION	
DATE	APPROVED BY	DRAWN BY	DRAWING NUMBER
7-88	REP	I 2-10-83	WE-82-689-1
SCALE	AS SHOWN		
REV. DATE	DESCRIPTION		

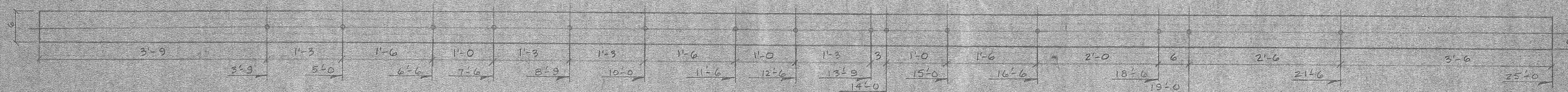


ALL HOLES 1/16 DIA UNLESS NOTED

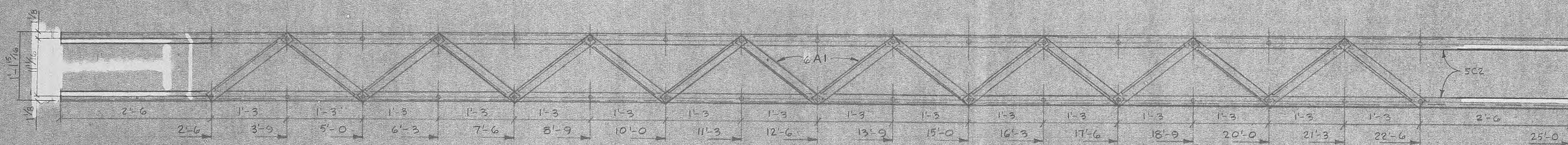
[illegible]



TRUSS MK 5C1
TOP VIEW



6" [@ 3.631 MK 5C2



TRUSS MK 5C1
BOTTOM VIEW

SHOP NOTES:

ALL HOLES 11/16 DIA UNLESS NOTED

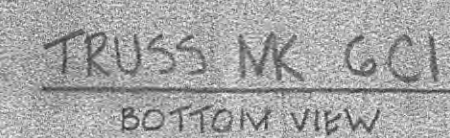
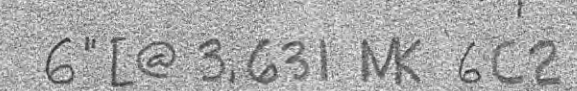
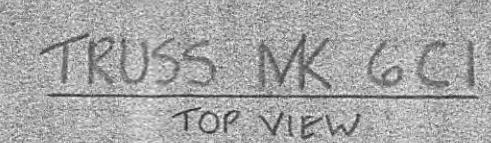
BILL OF MATERIAL

MARK	QUAN	DESCRIPTION	LENGTH
5C1	2	TRUSS COMPOSED OF THE FOLLOWING	
5C2	2	6" @ 3.631	25'-0"
6A1	32	L2x2x1/4	1'-6 1/2"
		EST. WT. 248 LBS.	
		SHOP BOLTS	
34		3/8 BOLT, NUT, LW (AL)	0'-13 1/4"

WE

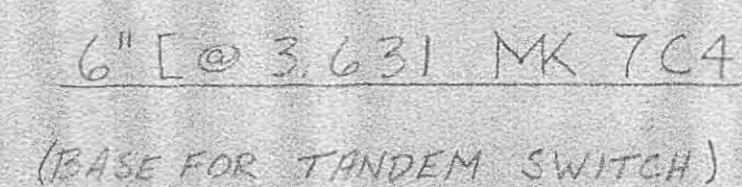
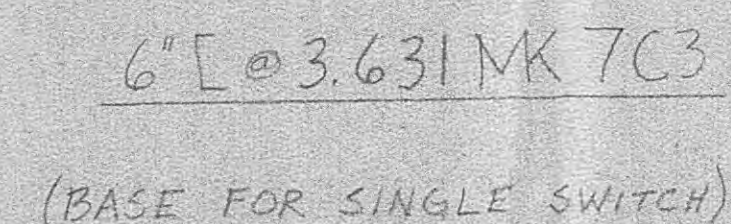
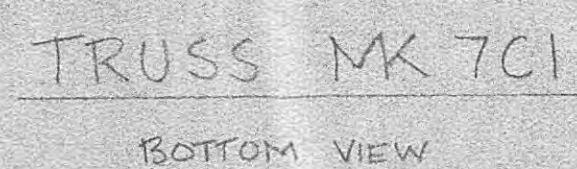
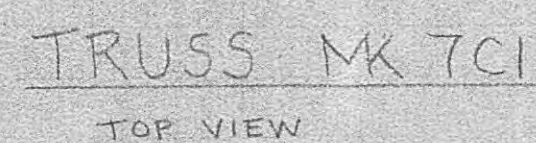
WHITLOWELECTRIC
203 WILLIAMS STREET
ELBERTON, GEORGIA 30636
404/283-5882

CUSTOMER	HARRIMAN UTILITY BOARD
TITLE	ALUMINUM DETAILS
SUBSTATION	CARDIFF VALLEY SUBSTATION
DATE	20 DEC 82
APPROVED BY	[Signature]
DRAWN BY	[Signature]
DRAWING NUMBER	WE-82-689-D5



1. ALL HOLES 11.18 DIA UNLESS NOTED

				WHITE ELECTRIC 200 WILLIAMS STREET ELBERTON, GEORGIA 30636 404/283-5662	
		CUSTOMER		HARRIMAN UTILITY BOARD	
		TITLE		CUSTOMER P.O.	
		ALUMINUM DETAILS		9544	
		SUBSTATION		CARDIFF VALLEY SUBSTATION	
1 7/8" GAGE LINES		DATE 20 DEC 92		APPROVED BY 	
REV. DATE		DESCRIPTION		DRAWING NUMBER WP-81-259-0	

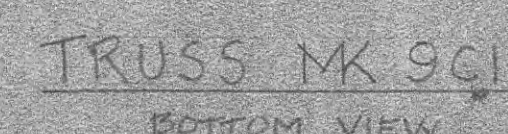


NOTE: ATTACHED TO TOP END OF
7C4 FOR INSULATOR MTG

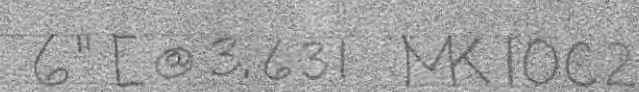
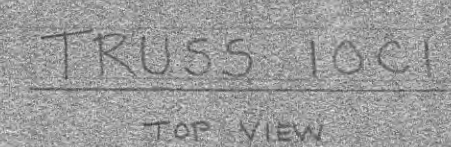
1. ALL HOLES 11/16 DIA. UNLESS NOTED

		WHITLOW ELECTRIC 203 WILLIAMS STREET ELBERTON, GEORGIA 30635 404/283-5662	
CUSTOMER			
HARRIMAN UTILITY BOARD			
TITLE		CUSTOMER P.O.	
ALUMINUM DETAILS		9544	
SUBSTATION			
CARDIFF VALLEY SUBSTATION			
DATE	APPROVED BY	DRAWN BY	DRAWING NUMBER
18 JAN 83	[Signature]	J. 1-3-83	WE82-683-D
SCALE 1" = 10'			

[illegible]



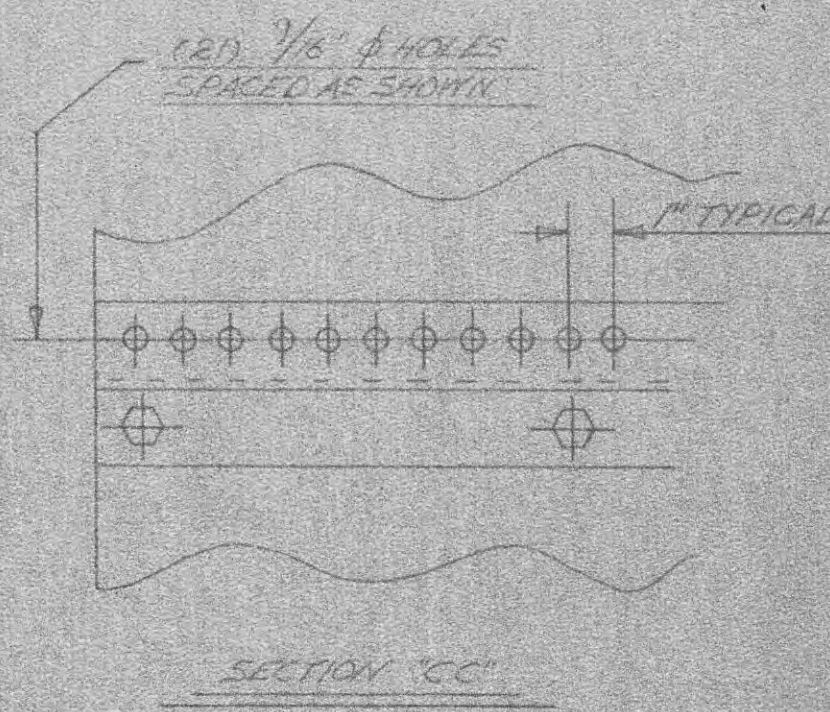
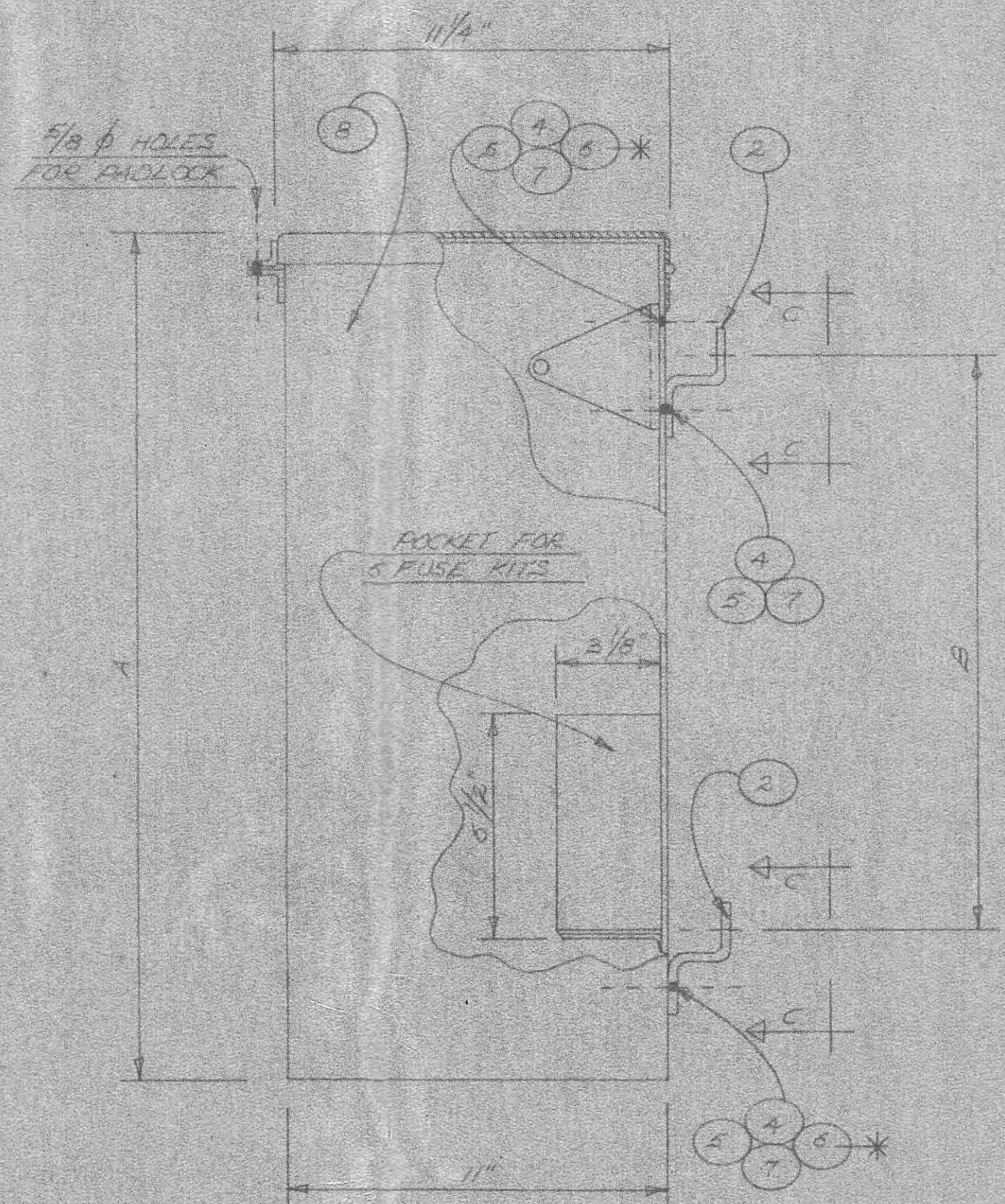
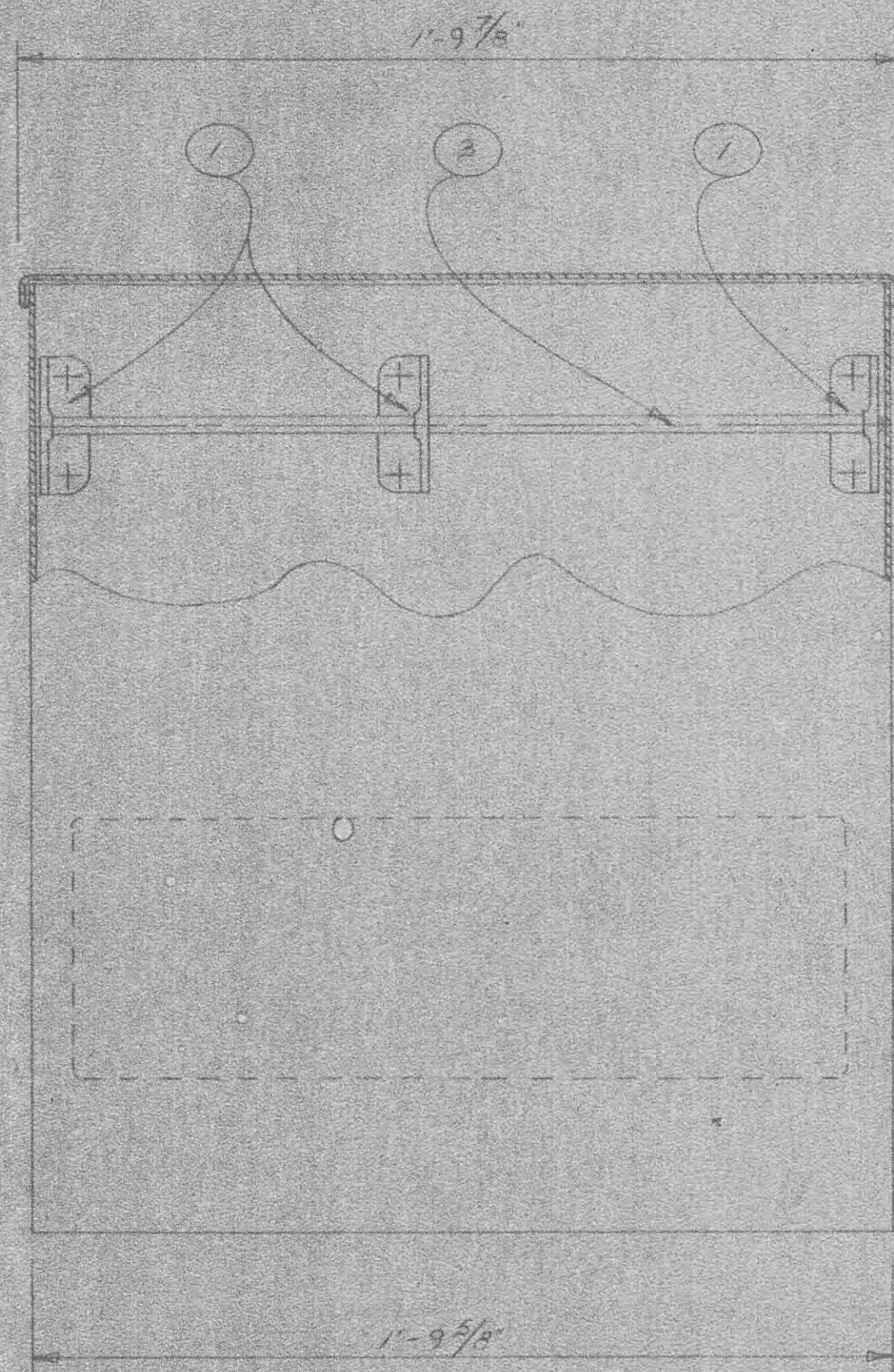
		WHITEFLOW ELECTRIC 10 WILKINS STREET ELLENSTON, BRISBANE 4001 407/2815357	
		CUSTOMER HARRIMAN UTILITY BOARD	
TITLE ALUMINUM DETAILS		CUSTOMER P.O. 3544	
SUBSTATION CARDIFF VALLEY SUBSTATION		APPROVED BY 15 JAN 83	
DATE 15 JAN 83		DRAWING NO. 15-353	
REV. 0318 DESCRIPTION		WE 36-663-D	

[illegible]

BILL OF MATERIAL

MARK	QUAN.	DESCRIPTION	LENGTH
1		FUSE SUPPORT BRACKET	
2		HANGER BRACKET	
3		3/8" Ø ALUMINUM ROD	
4		3/8" X 1" GALV. HEX BOLT	
5		3/8" GALV. HEX NUT	
6		3/8" GALV. FLAT WASHER	
7		3/8" GALV. SPR. LIFT	
8		CONTAINER BODY	

TYPE	A	B
WE-1	24 1/16	17
WE-2	36 1/16	28
WE-3	48 1/16	34
WE-4	55 1/16	45



* ITEM NO. 6 TO BE LOCATED AGAINST CONTAINER WALL.

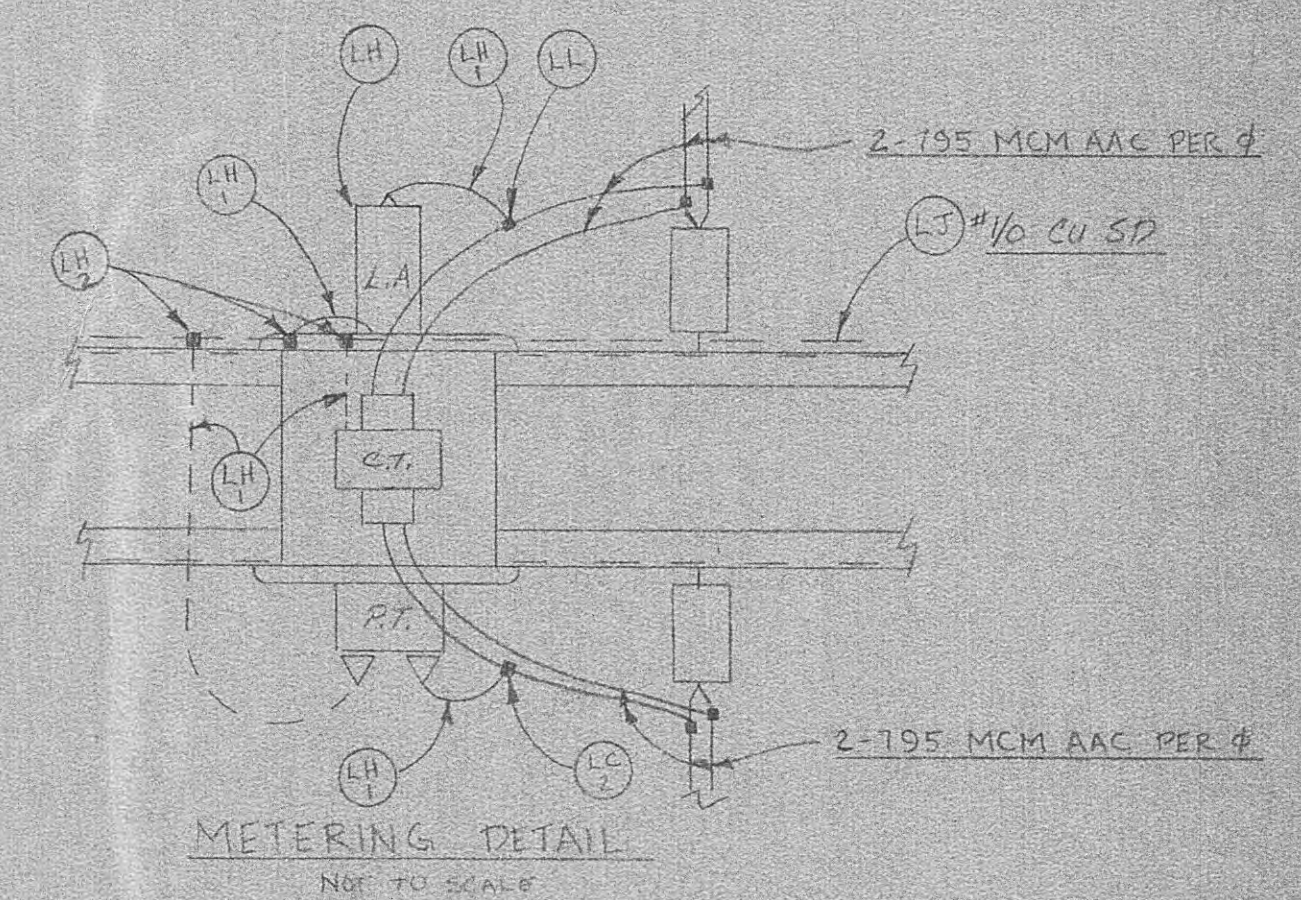
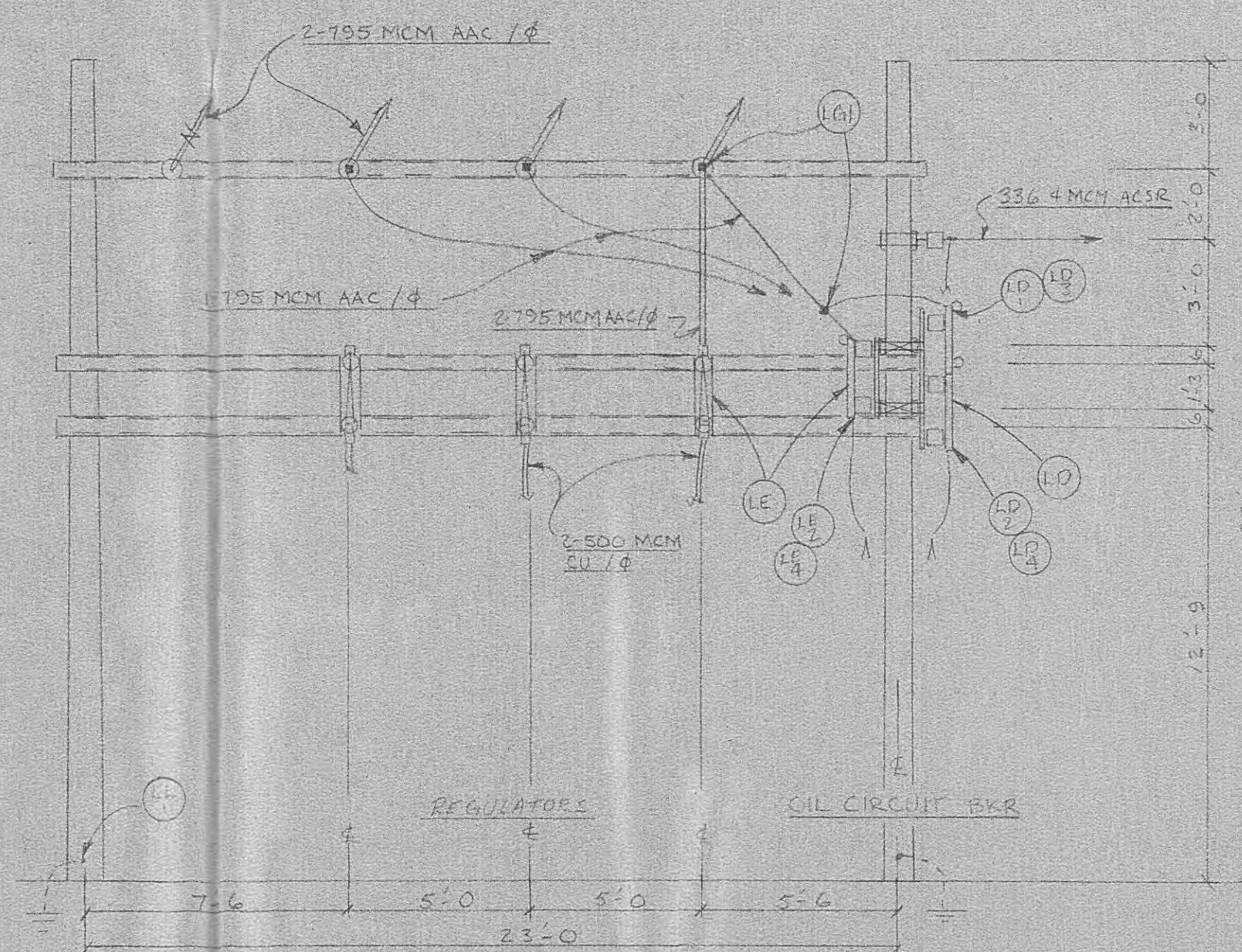
FUSE HOLDER CONTAINER

SHOP NOTES:

1. ALL HOLES 11/16 DIA. UNLESS NOTED.

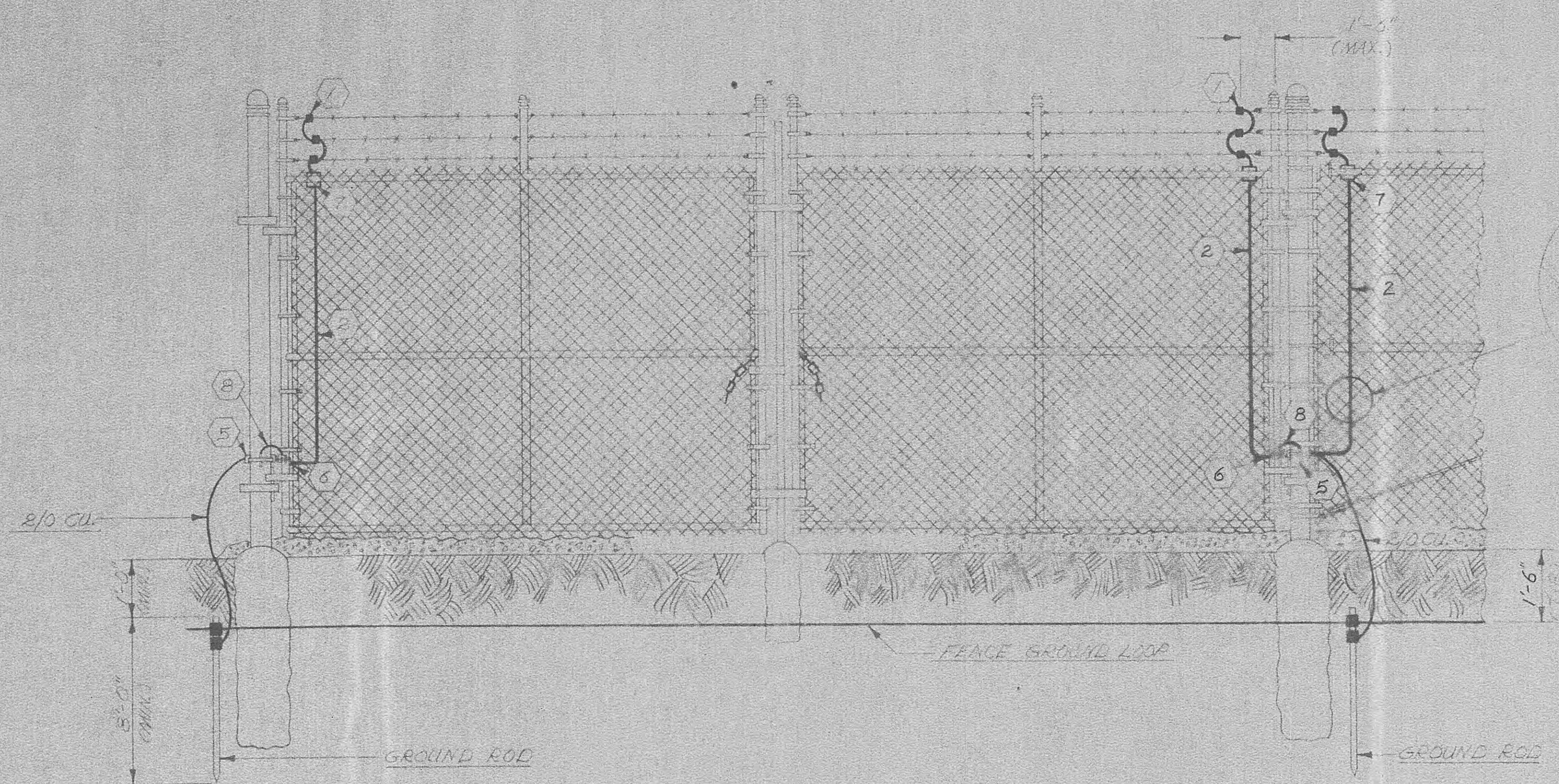
WE		WHITLOWELECTRIC 203 WILLIAMS STREET ELBERTON, GEORGIA 30635 404/283-5062	
CUSTOMER HARRIMAN UTILITY BOARD			
TITLE FUSE BOX HOLDER DETAILS		CUSTOMER P.O. 9544	
SUBSTATION CARDIFF VALLEY SUBSTATION			
DATE 19 FEB 83	APPROVED BY	DRAWN BY JED	DRAWING NUMBER WE 82-083-012
SCALE N.T.S.	REV. DATE	DESCRIPTION	

SECTION "AA"
3/16 = 1-0

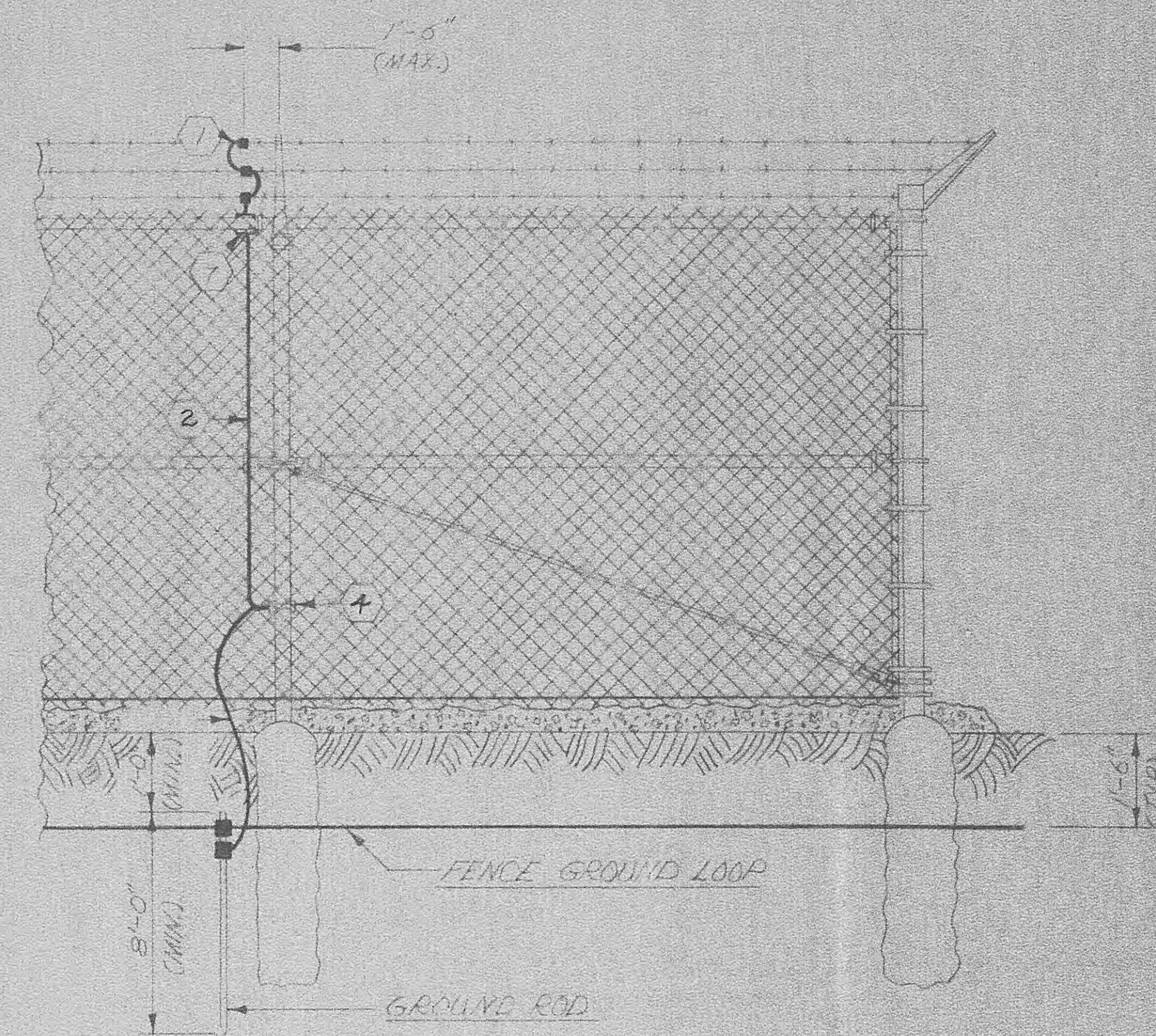


METERING DETAIL
NOT TO SCALE

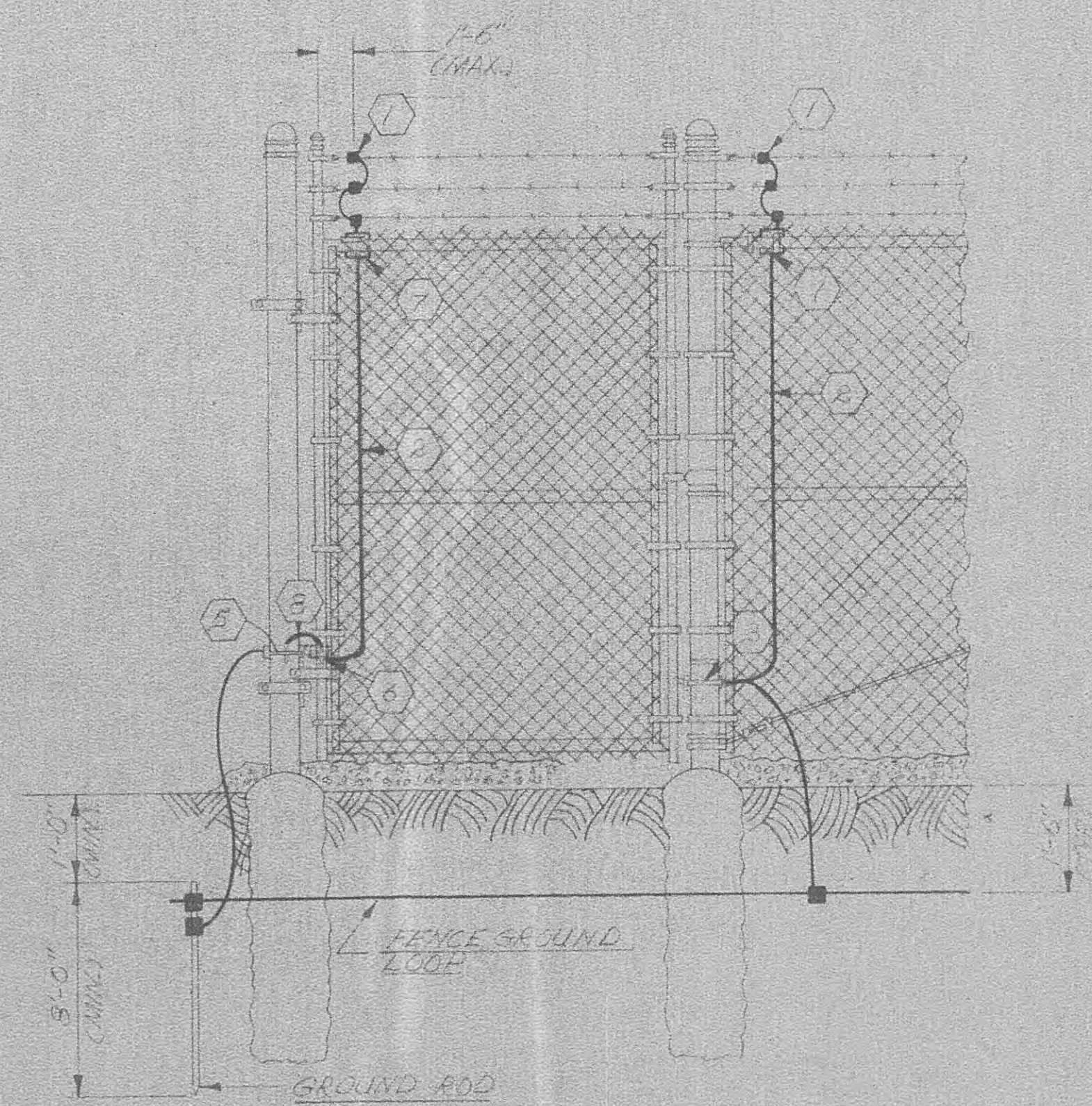
		 WHITLOW ELECTRIC 203 WILLIAMS STREET ELBERTON, GEORGIA 30635 404/283-5662	
		CUSTOMER	
		HARRIMAN UTILITY BOARD	
		TITLE	CUSTOMER P.O.
		ELECTRICAL SECTIONS	9544
		SUBSTATION	
		CARDIFF VALLEY 69-13 KV SUBSTATION	
		DATE	DRAWING NUMBER
		11-83	2-10-83
		SCALE	WF-82-689-2
		AS SHOWN	
REV.	DATE	DESCRIPTION	



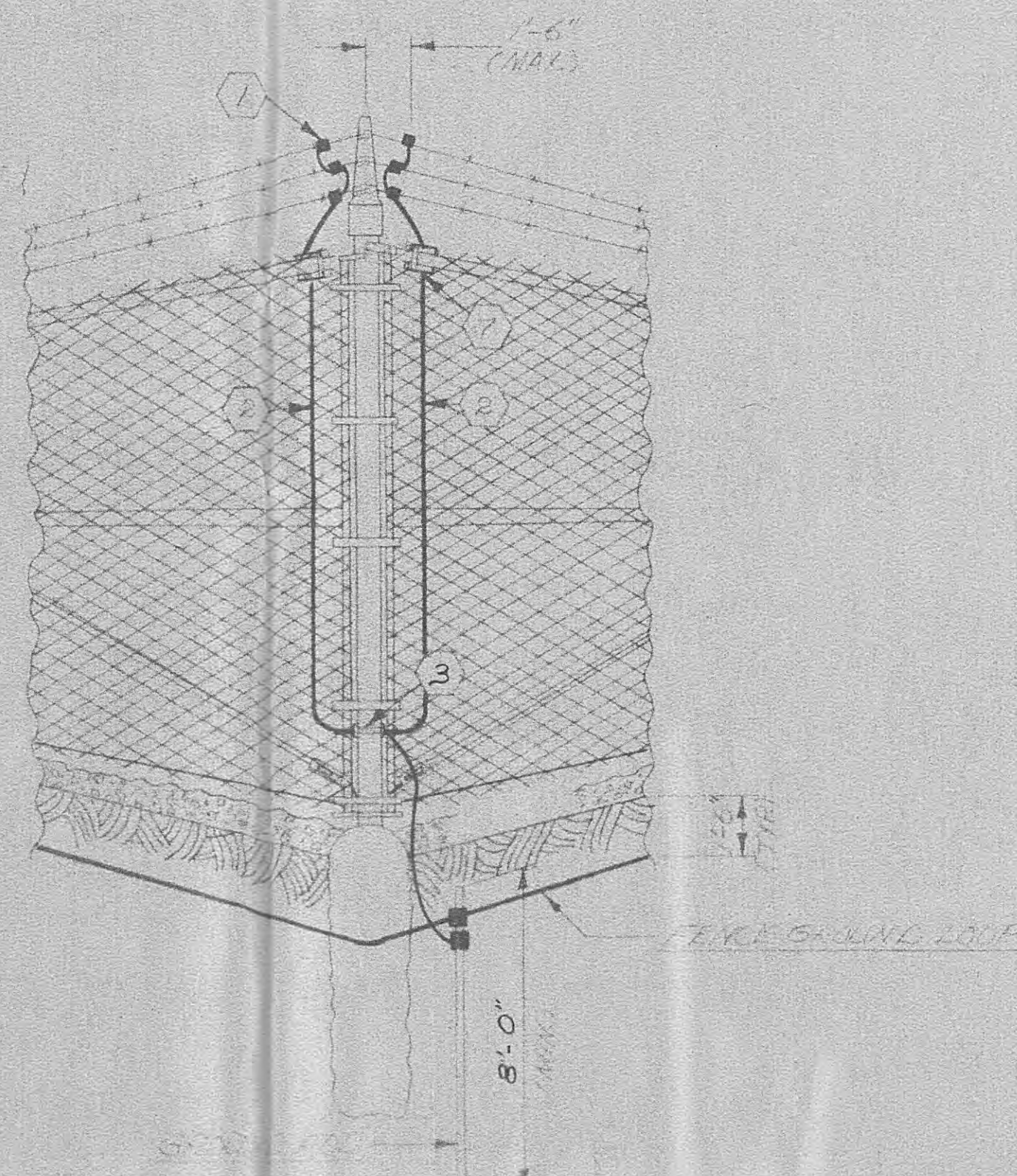
TYPICAL DOUBLE GATE



LINE POST



PEDESTRIAN GATE



DRIVE POST

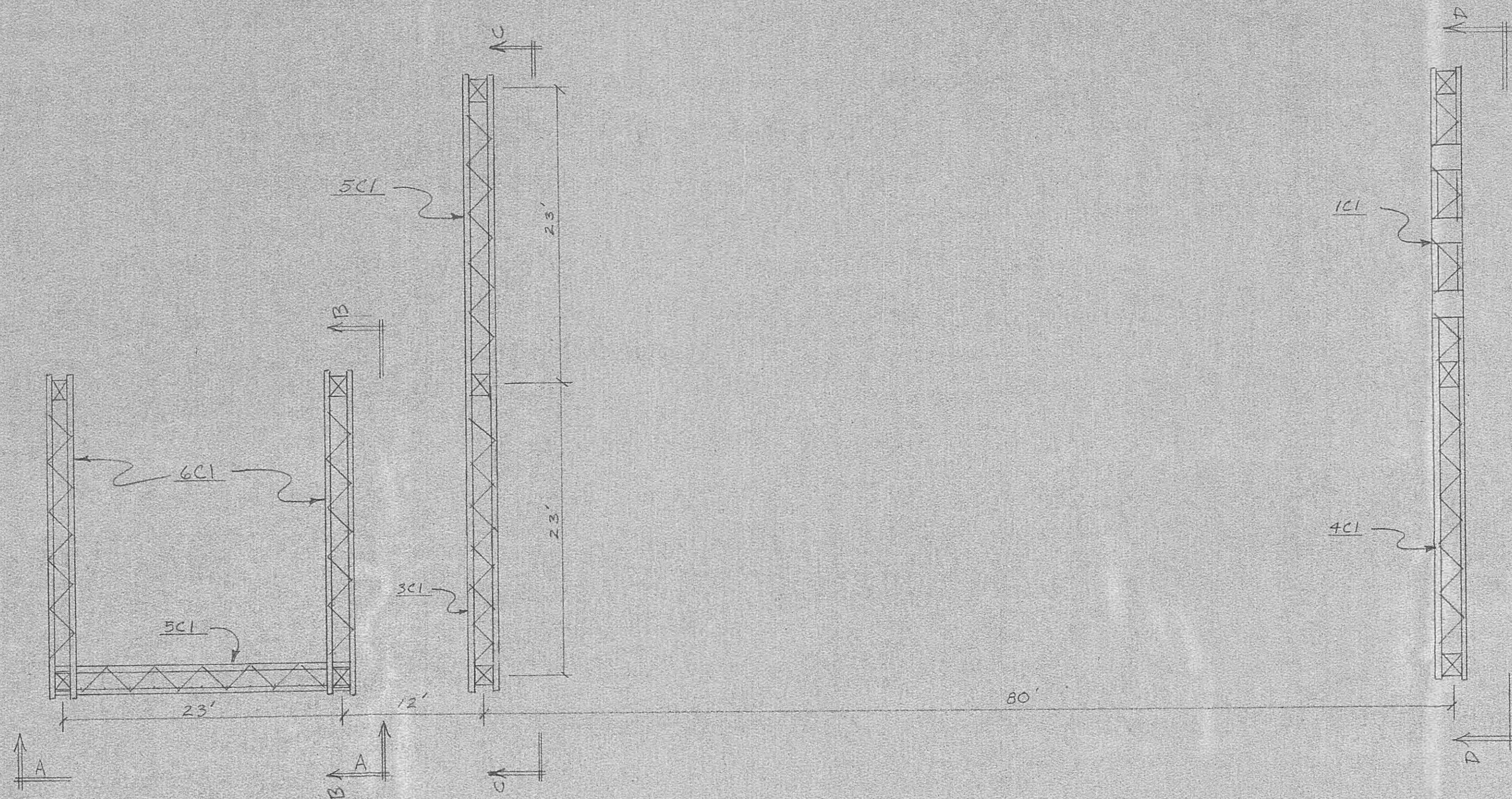
ITEM	MATERIAL LIST DESCRIPTION	B/M ITEM NO.
1	SPLIT BOLT CONNECTOR FOR #2 SOL. CU. MAIN TO #1/2 SOL. STEEL TAP. ANDERSON TYPE "CRS-2" OR EQUIV. (TINNED)	
2	#2 SOL. SOFT DRAWN COPPER WIRE (TINNED)	
3	GROUND CONNECTOR FOR 2/0 CU. TO #2 SOL. CU. WIRE TO 2 1/2" STD. WT. IRON PIPE. ANDERSON TYPE "GC-115-8B" OR EQUIV.	LK4
4	GROUND CONNECTOR FOR 2/0 CU. TO #2 SOL. CU. WIRE TO #2 STD. WT. IRON PIPE. ANDERSON TYPE "GC-115-7B" OR EQUIV.	LK5
5	GROUND CONNECTOR FOR 2/0 CU. TO #2 SOL. CU. WIRE TO #2 STD. WT. IRON PIPE. ANDERSON TYPE "GC-115" OR EQUIV.	LK4
6	GROUND CONNECTOR FOR #2 CU. WIRE TO 1/2" STD. WT. IRON PIPE. ANDERSON TYPE "GC-111-6B" (W/ LINGER BOLTS) OR EQUIV.	LK7
7	GROUND CONNECTOR FOR #2 SOL. CU. WIRE TO 1/4" STD. WT. IRON PIPE. ANDERSON TYPE "GC-111-5B" OR EQUIV.	
8	FLEXIBLE BRAIL, 1/4" x 1/2" (MIN. MINIMUM), ANDERSON TYPE "GR-200-5A" OR EQUIV.	LK6

* FOR GATES UP TO 12' USE 2 1/2", OVER 12' USE 3 1/2".

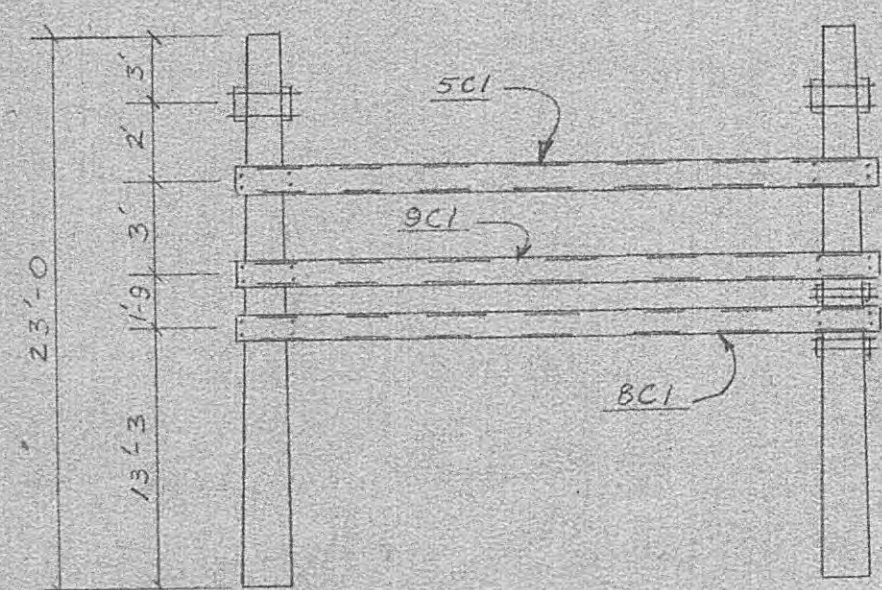
NOTES:

- (1) ALL NUTS TO BE INSTALLED ON INSIDE OF FENCED ENCLOSURE.
(2) CABLE ENDS TO BE CUT OFF 1" PAST GROUND CLAMP.

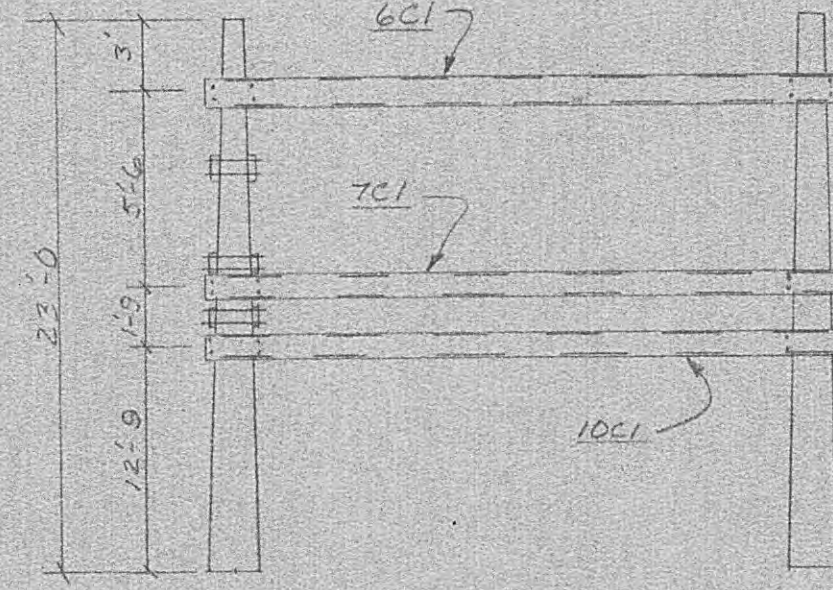
		WHITLOWELECTRIC 203 WILLIAMS STREET ELBERTON, GEORGIA 30635 804/283-5662	
		CUSTOMER HARRIMAN UTILITY BOARD	
TITLE FENCE GROUNDING DETAILS		CUSTOMER P.O. 9544	
SUBSTATION CARDIFF VALLEY		DATE 10 JAN 83	
SCALE N.T.S.		DRAWN BY D.C.T.	
REV. DATE DESCRIPTION		DRAWING NUMBER WE-82-688-A	



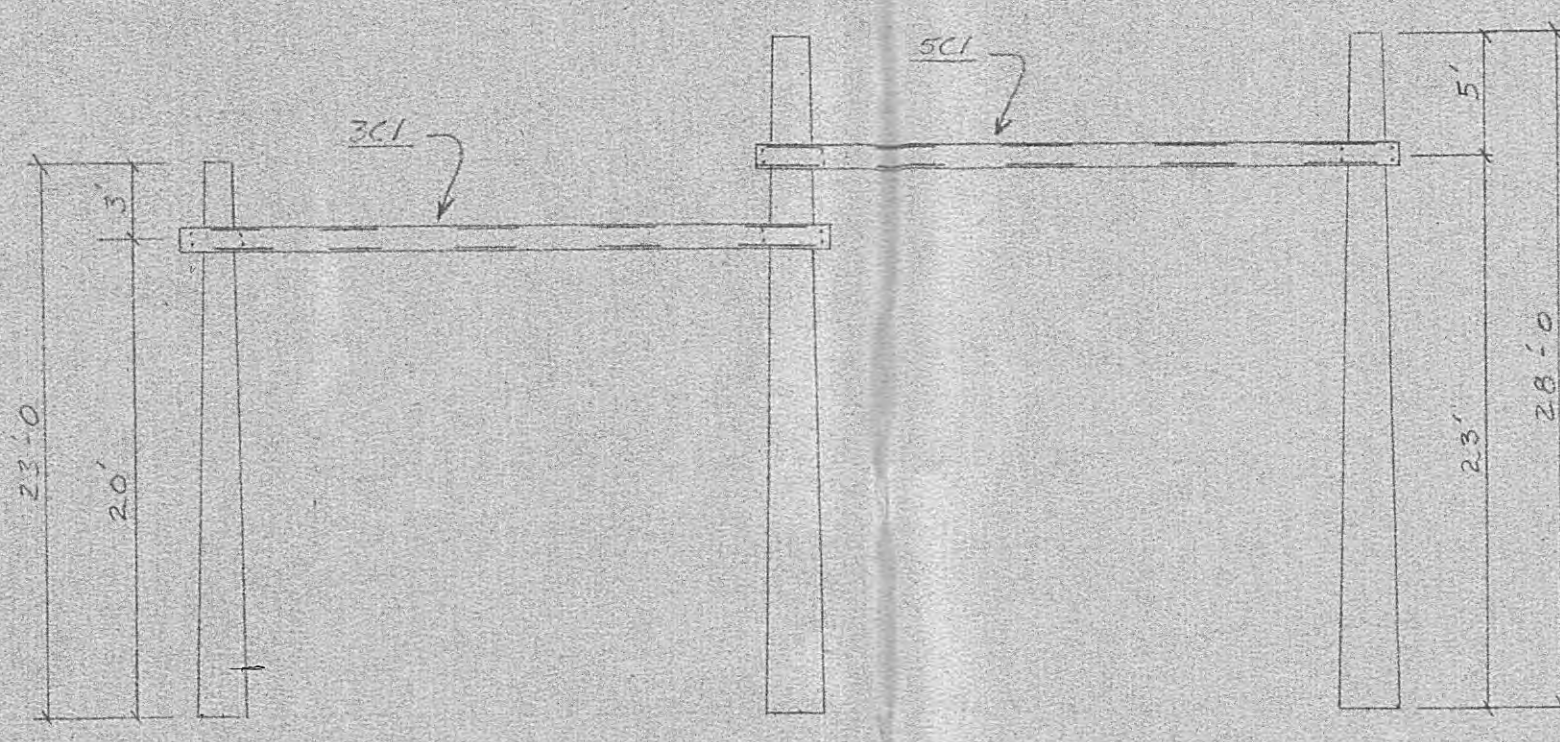
PLAN VIEW



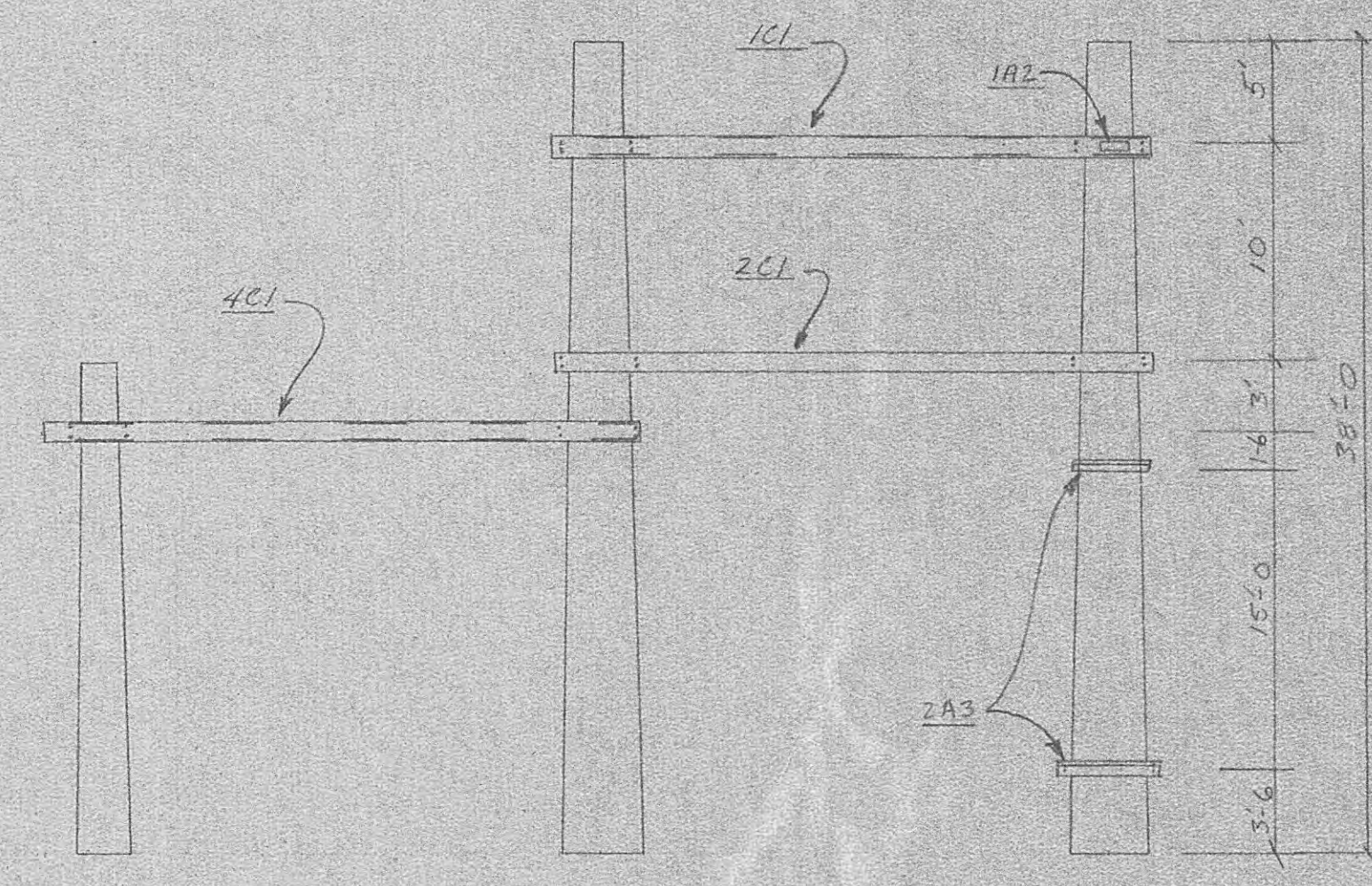
SECTION A-A



SECTION B-B



SECTION C-C



SECTION D-D

NOTE: ALL COLUMNS TAPERED CONCRETE,
TO BE EMBEDDED 7' BELOW GRADE

		WE WHITLOWELECTRIC 203 WILLIAMS STREET ELBERTON, GEORGIA 30635 404/283-5662			
				CUSTOMER	
				HARRIMAN UTILITY BOARD	
				TITLE	
ERECTION DIAGRAM		CUSTOMER P.O.			
SUBSTATION		2044			
CARDIFF VALLEY					
DATE	APPROVED BY	DRAWN BY	DRAWING NUMBER		
18 JAN 83	[Signature]	12-21-82	WE-82-689-E1		
SCALE					
NFS					
REV.	DATE	DESCRIPTION			

VOLTAGES		15 KV			15 KV			25 KV			34.5 KV			46 KV			69 KV			115 KV			138 KV			161 KV			230 KV			345 KV			500 KV			750 KV																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																															
BASIC INSULATION LEVEL		95			110			150			200			250			350			550			650			750			900			1050			1175			1300			1550			1800			2050																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																						
STANDARDS	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	N.E.M.A.	I.E.E.E.	R.E.A.	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PHASE TO PHASE																																																
MINIMUM METAL TO METAL (LIVE PART)	7	7	12	12	12	15	15	18	18	18	21	21	21	21	31	31	33	33	33	63	62	62	72	72	72	89	89		105	105			113	113	118		210		176		420							
VERTICAL BREAK DISCONNECTS & BUS SUPPORTS	10		24	24		24	30		30	36		36	46		46	60		60	84		84	96		96	108	108		108	132		156					174		240		240		540						
ASSUMED WIDTH OF HARDWARE	11		12	12		12	15		15	18		18	27		27	29		29	31		31	33		33	46	36		36	46		51					55												
SINGLE SIDE BREAK DISCONNECT	30			30			36			46			60			72			108			132			156			192		216																		
HORN GAP SWITCHES AND EXPULSION FUSES	36		36	36		36	46		46	60		60	72		72	84		84	120		120	144		144	168	168		168	192		216					240				300								
STRAIN BUS INSIDE SUBSTATION	18		24	24		24	30		30	36		36	46		46	60		60	84		84	96		96	108	108		108	132		156				174				240				240					

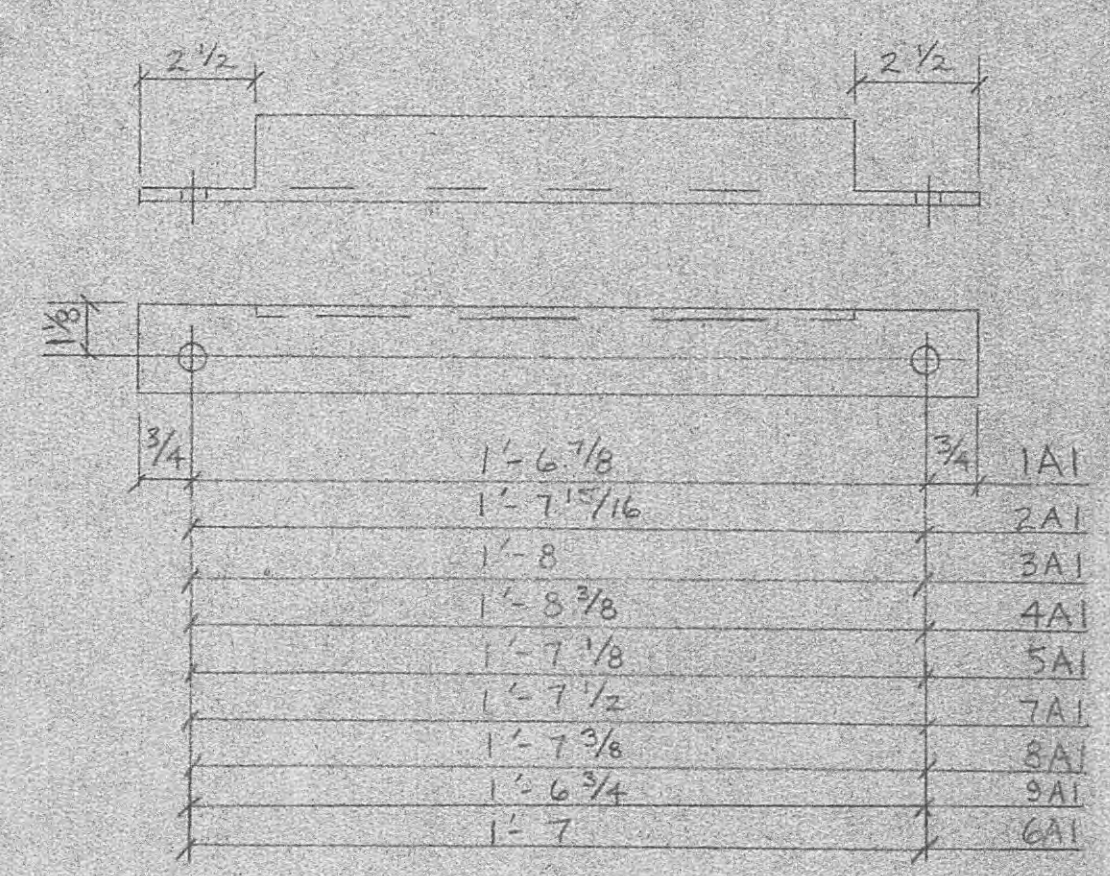
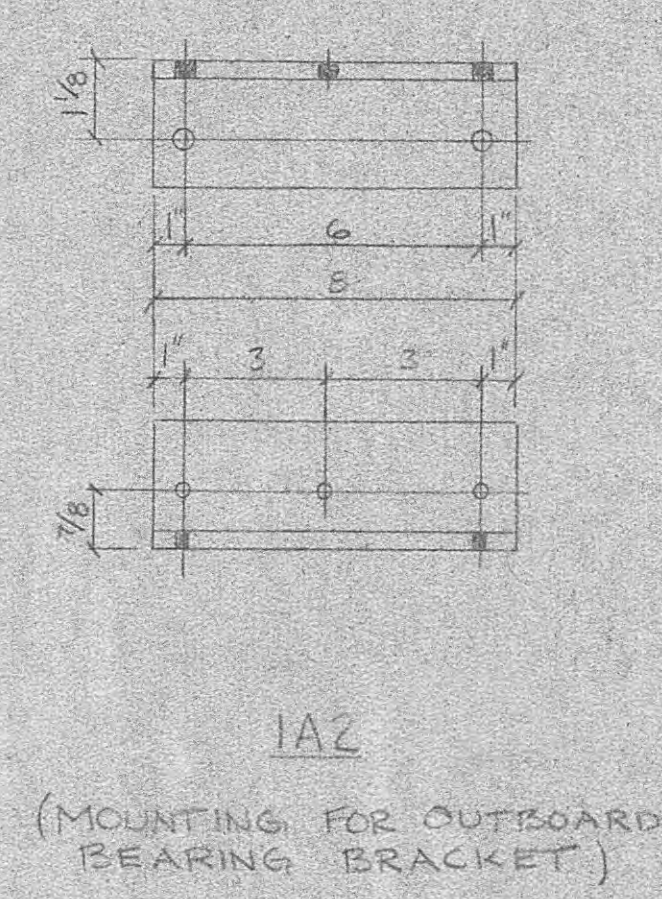
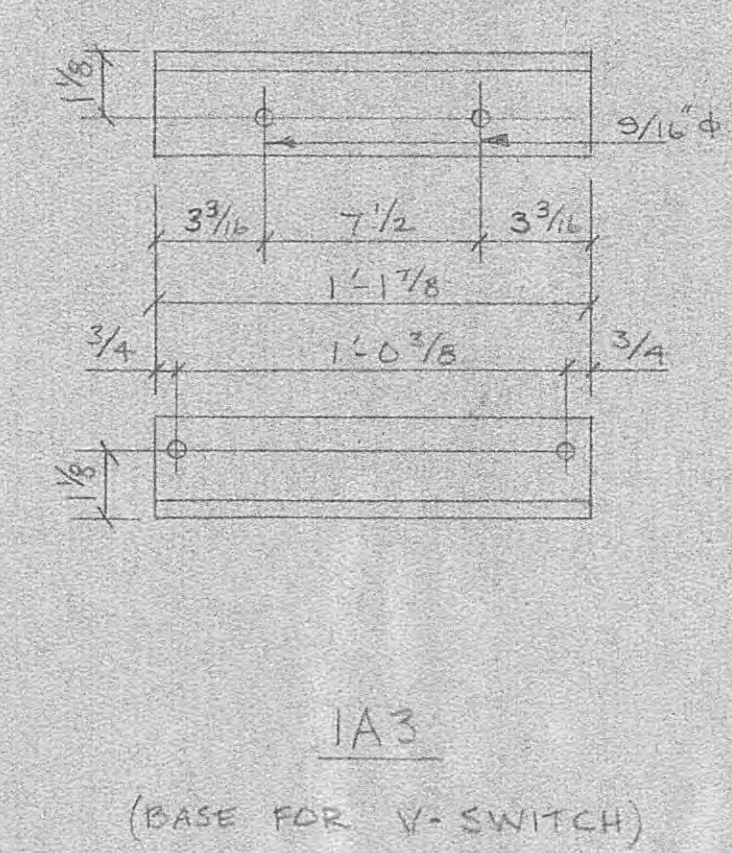
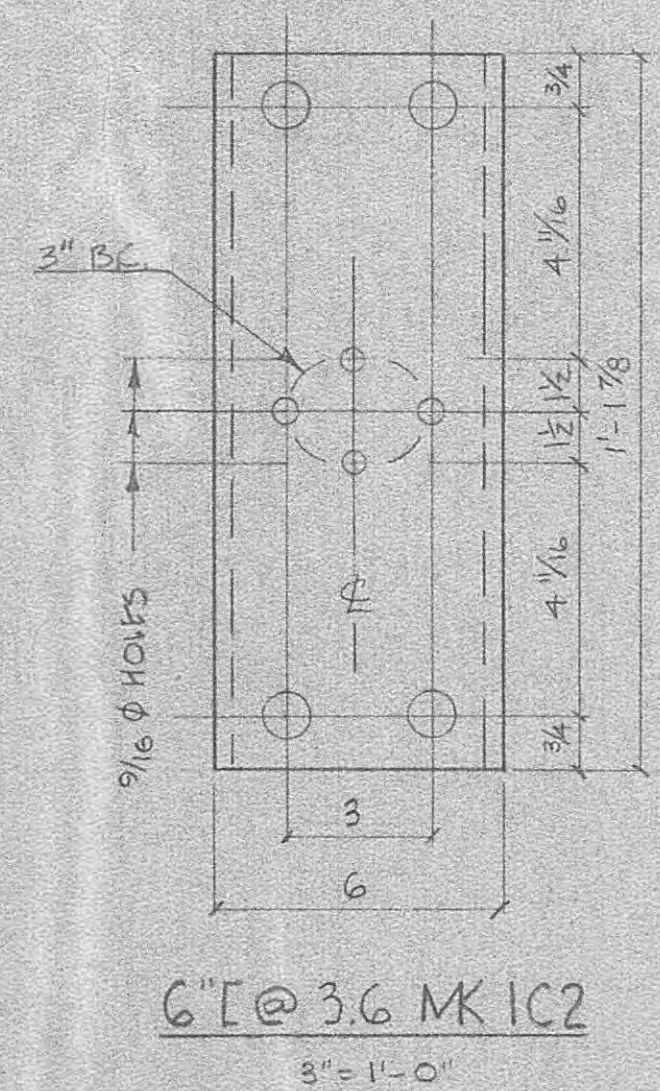
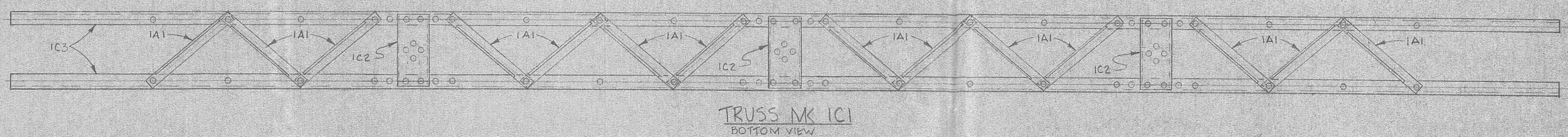
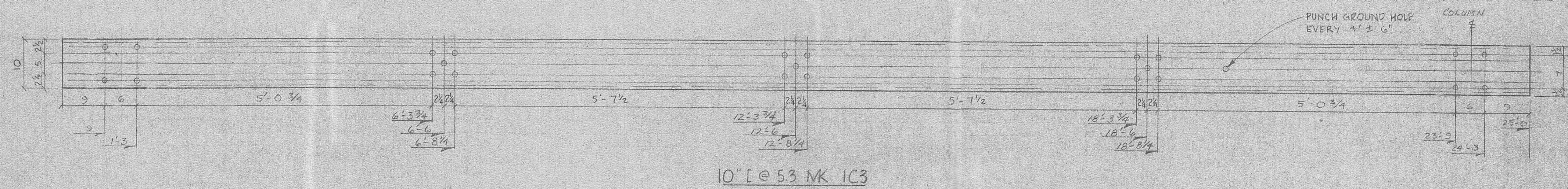
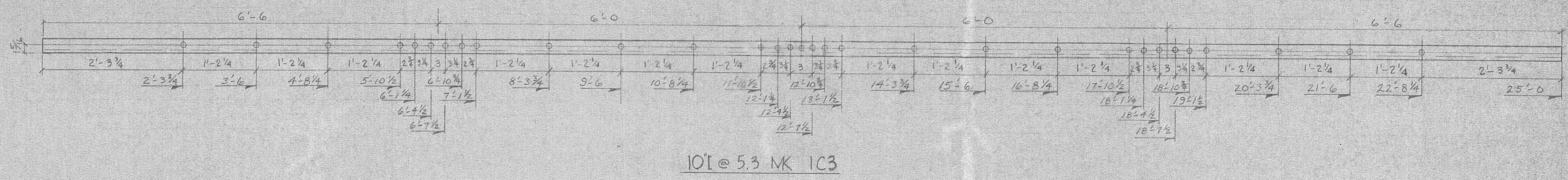
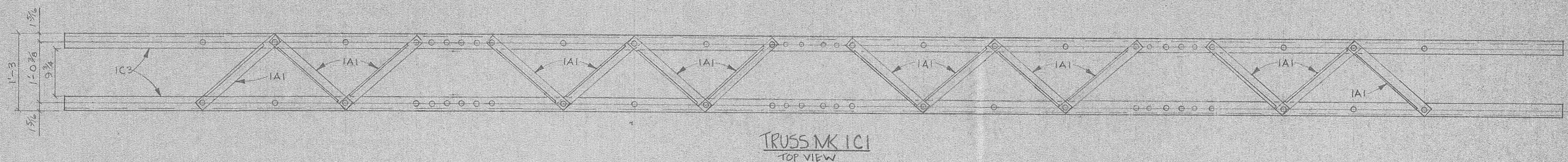
PHASE TO GROUND																																																												
MINIMUM METAL TO METAL (LIVE TO GROUND)	6	6	7	7	7	7	10	10	13	13	13	17	17	17	25	25	25	42	42	42	50	50	50	58	58	58	71	71		83				94		104	104			124			144			180														
RECOMMENDED METAL TO METAL	7.5			10			12			15			18			29			47			57.5			61.5			76			90.5						105							124			144			180										
DRY ARCING DISTANCE (PEDESTAL)	5.25			7.25			9.5			14			17			28			44			47			58			74			88						105												124			144			180					
DRY ARCING DISTANCE (POST)	6			7.25			10.5			14.5			17			26			39			45			51			64			76						90														124			144			180			

PHASE TO GRADE																																																
FOR PERSONNEL INSIDE SUBSTATION	96	96	108	108	108	108	120	120	120	120	120	120	120	120	120	132	132	132	144	144	144	156	156	156	168	168	168	180	180		192	192			204	216							234		490			
FOR VEHICLES INSIDE SUBSTATION		240	240		240	240		264	264		264	264		264	264		276	276		300	300		300	300		312	312		324			336			348								540					

NOTES: UNLESS OTHERWISE SPECIFIED.

1. ALL RECOMMENDED DIMENSIONS IN INCHES. 3300 FT. ALT. AND BELOW
2. SPACING VARIES ACCORDING TO SPAN. ALLOWANCE MUST BE MADE FOR MOVEMENT. NO VALUES GIVEN.
3. TRANSACTION PAPER - 500 KV AC SUB. DESIGN CRITERIA & VOL. PAC-85, H2.1
4. PAPERS PRESENTED ON JANUARY 28 & 29, 1969 AT THE 1969 WINTER MEETING AMERICAN ELECTRIC POWER.

		WE WHITLOWELECTRIC 213 WILLIAMS STREET ELBERTON, GEORGIA 30636 404/283-5552			
				CUSTOMER	
				HARRIMAN UTILITY BOARD	
				TITLE	
TABLE OF ELECTRICAL CLEARANCES		CUSTOMER ID			
SUBSTATION		554*			
CARDIFF VALLEY SUBSTATION					
DATE	APPROVED BY	DRAWN BY	DRAWING NUMBER		
8-11-85		WPK	WE-82-688-P2		
REV. DATE	DESCRIPTION	SCALE			
		NONE			



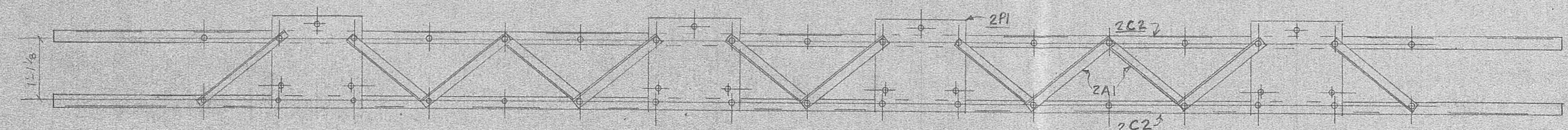
BILL OF MATERIAL

MARK	QUAN	DESCRIPTION	LENGTH
IC1	1	TRUSS COMPOSED OF THE FOLLOWING	
IC3	2	10" I @ 5.3	25'-0"
IC2	3	6" I @ 3.6	1'-17/8"
IA1	28	L 2 x 2 x 1/4	1'-8 3/4"
SHOP BOLTS (ALL ALUMINUM)			
42		3/8 BOLT, NUT, LW	0'-1 3/4"
12		3/8 BOLT, NUT, LW	0'-3"
12*		1/2 CAPSCREW & L.W.	0'-1 1/4"
FIELD BOLTS			
12*		1/2 CAPSCREW & L.W.*	0'-1 1/4"
17*		3/8 BOLT, NUT, & L.W.	0'-1 3/4"
MISC. PIECES			
IA2	1*	L-2 x 2 x 1/4	0'-8"
IA3	6*	L-2 x 2 x 1/4	1'-17/8"
* GALVANIZED STEEL			
EST. ALUMINUM WEIGHT 355#			

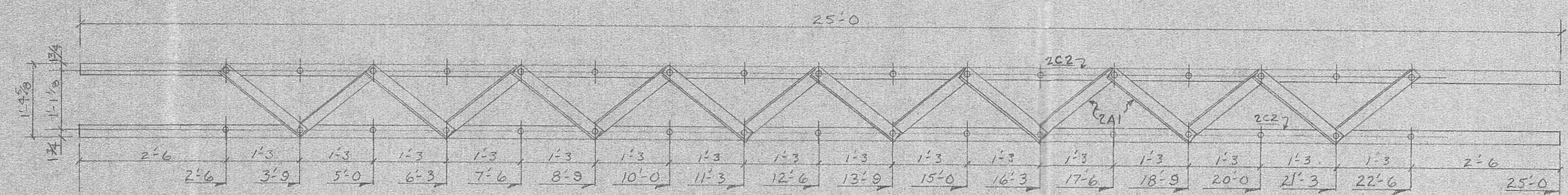
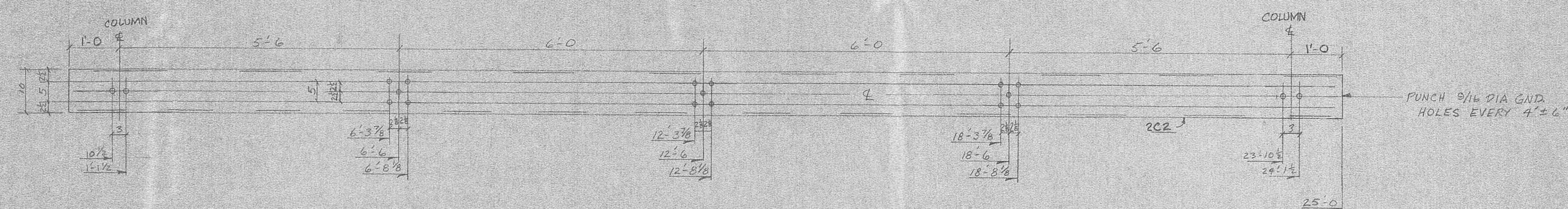
SHOP NOTES:

1. ALL HOLES 11/16 DIA. UNLESS NOTED.

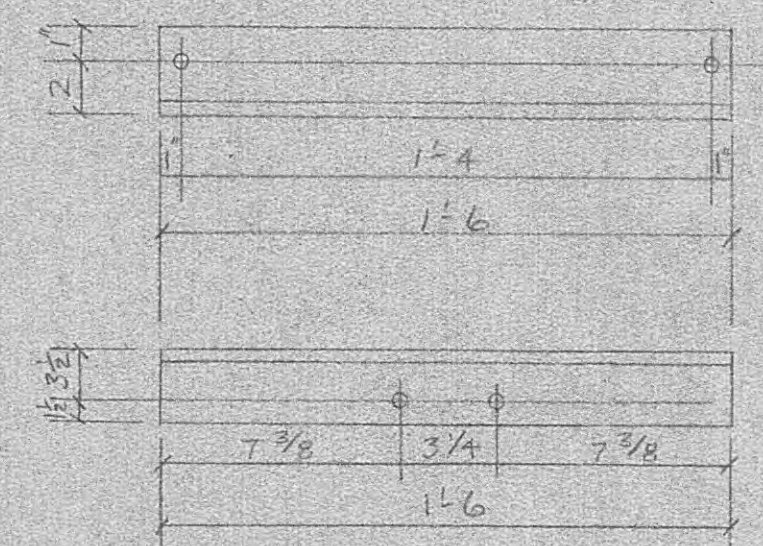
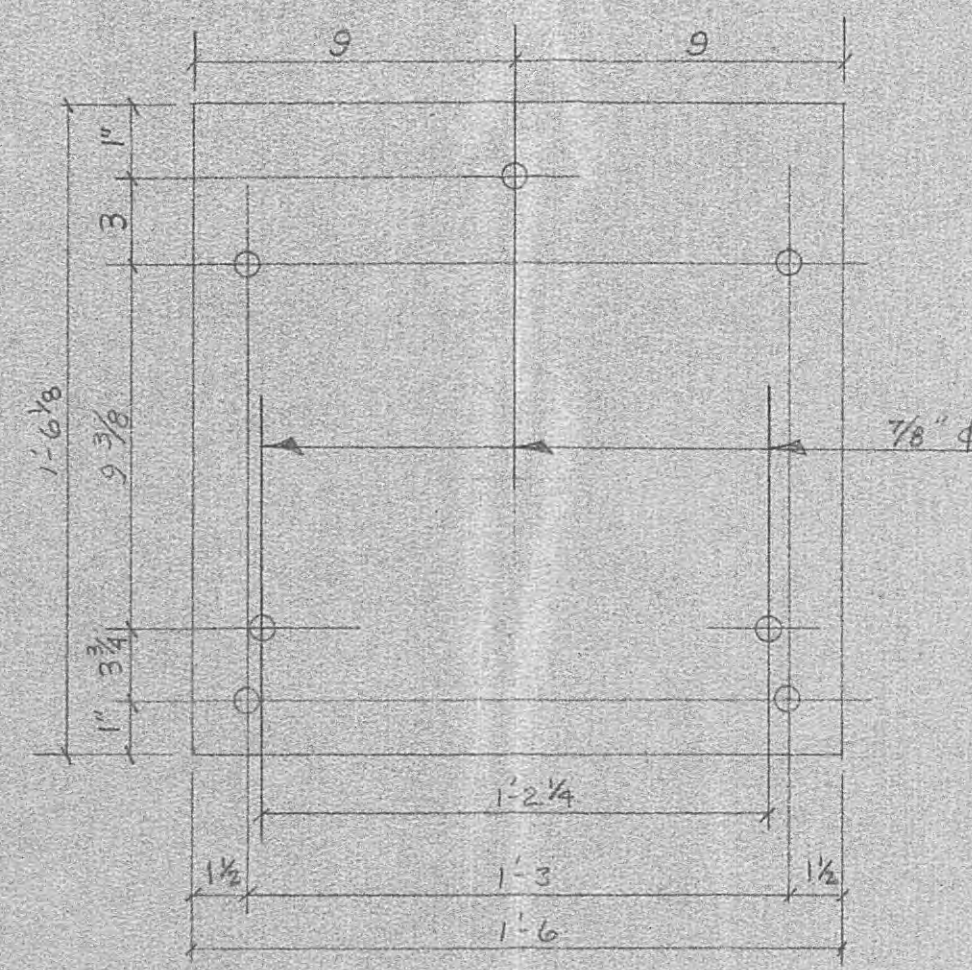
WE WHITLOWELECTRIC 203 WILLIAMS STREET ELBERTON, GEORGIA 30635 404/283-5662	
CUSTOMER HARRIMAN UTILITY BOARD	
TITLE ALUMINUM DETAILS	CUSTOMER P.O. 9544
SUBSTATION CARDIFF VALLEY SUBSTATION	
DATE 1/6 DEC 82	APPROVED BY [Signature]
SCALE NOTED	DRAWN BY [Signature]
REV. DATE 1 7/16	DESCRIPTION LACING ANCHORS TO FIT NEW FRAMES
DRAWING NUMBER WP-82-669-D1	



TOP VIEW



TRUSS "2C1"
BOTTOM VIEW



2A3
CONTROL HANDLE MTE (AT 3'-6" ABOVE GROUND ON COLUMN)

R 1/2" x 1/2" x 1/2" MK 2P1

SHOP NOTES:

1. ALL HOLES 11/16 DIA. UNLESS NOTED

BILL OF MATERIAL

MARK	QUAN	DESCRIPTION	LENGTH
2C1	1	TRUSS COMPOSED OF:	
2C2	2	L-10 x 5.278	25' 0"
2A1	28	L-2 x 2 x 1/4	1' 3 1/8"
2P1	4	R 18 x 1/4 THK	1' 6 1/8"
		EST. WT. LBS.	
		SHOP BOLTS (ALL ALUMINUM)	
	12	5/8 BOLT, NUT, L.W.	0' 1 3/4"
		FIELD BOLTS	
	9	3/4 BOLT, NUT, L.W.	0' 3"
	6	5/8 BOLT, NUT & L.W.	0' 1 3/4"
		MISC. PIECES	
2A3	4	L-5 x 3 x 1/8 (GALV. ST.)	1' 6"
	4	5/8 DIA. THREADED ROD	1' 4"
	8	NUTS + L.W. FOR ABOVE	

WE
WHITLOWELECTRIC
203 WILLIAMS STREET
ELBERTON, GEORGIA 30635
404/283-5662

CUSTOMER
HARRIMAN UTILITY BOARD

TITLE
ALUMINUM DETAILS

SUBSTATION
CARDIFF VALLEY

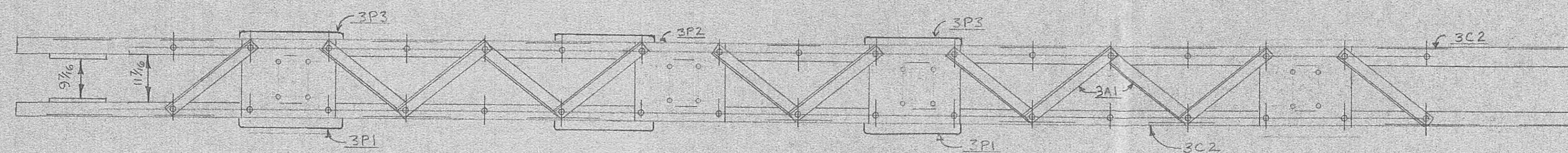
DATE
19 DEC. 82

SCALE
N.T.S.

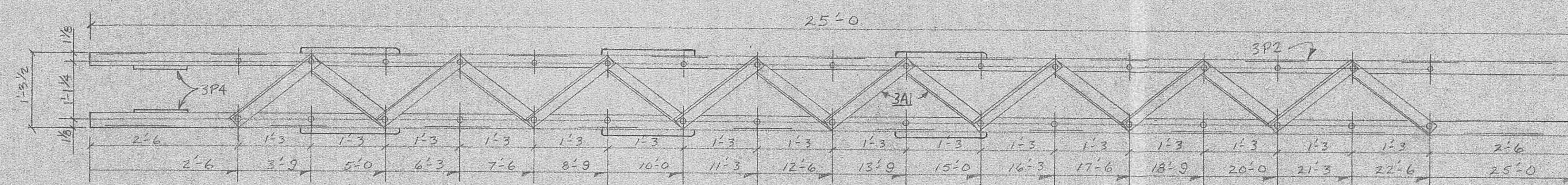
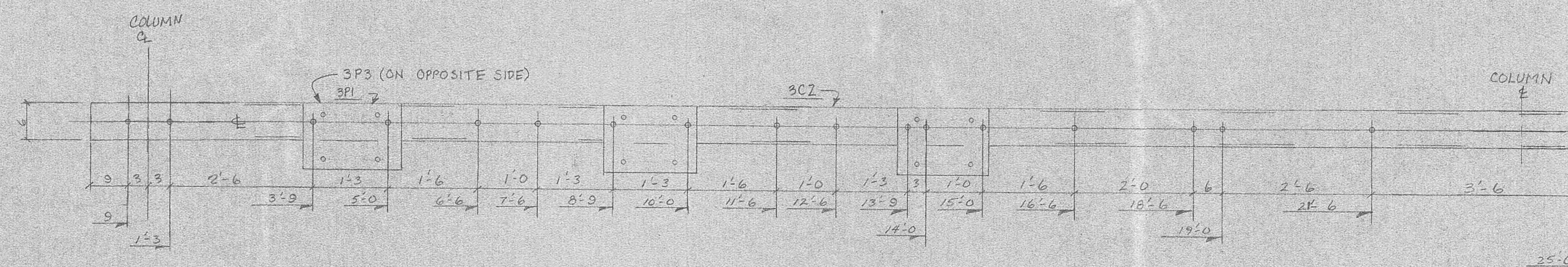
CUSTOMER P.O.
9544

DRAWN BY
12-15-82

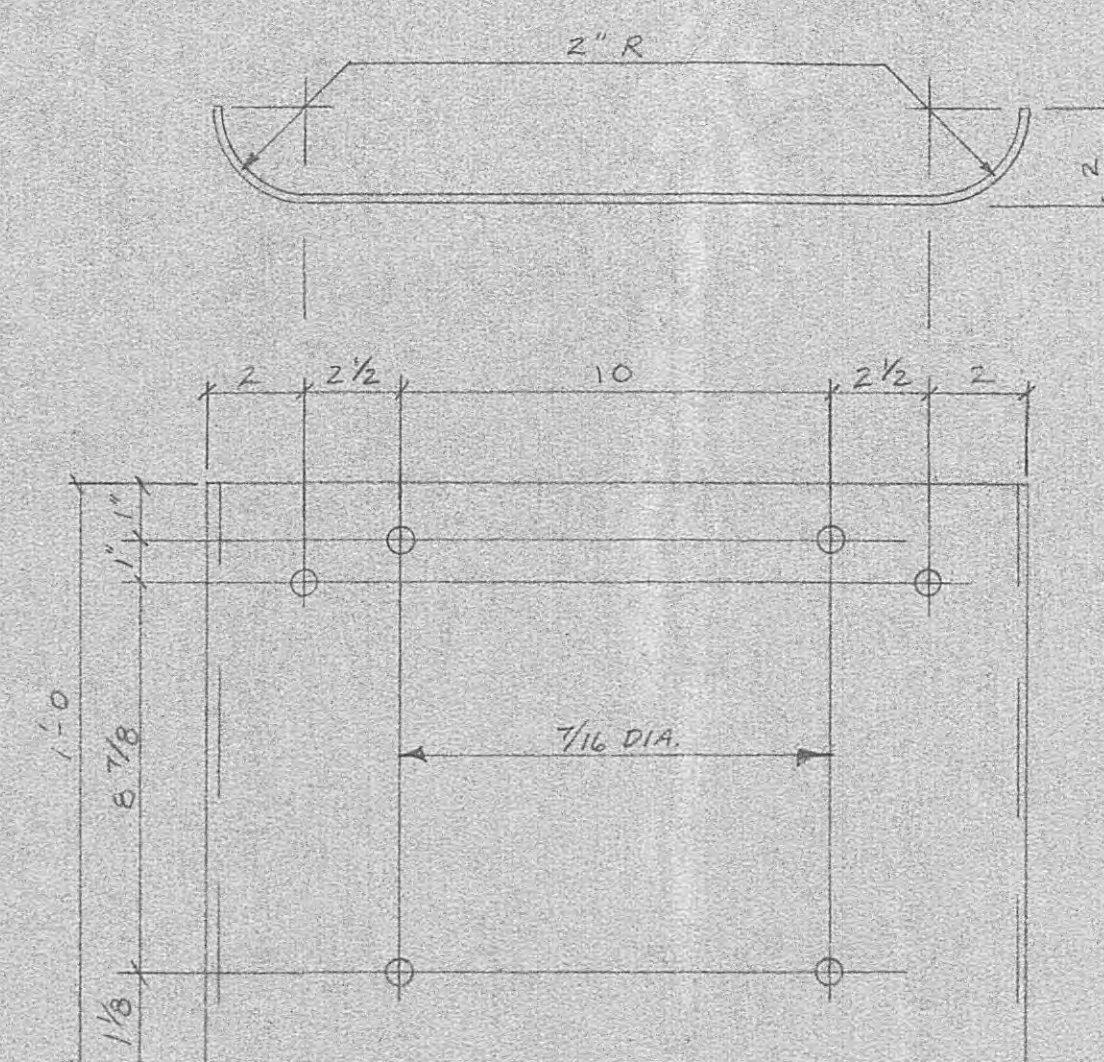
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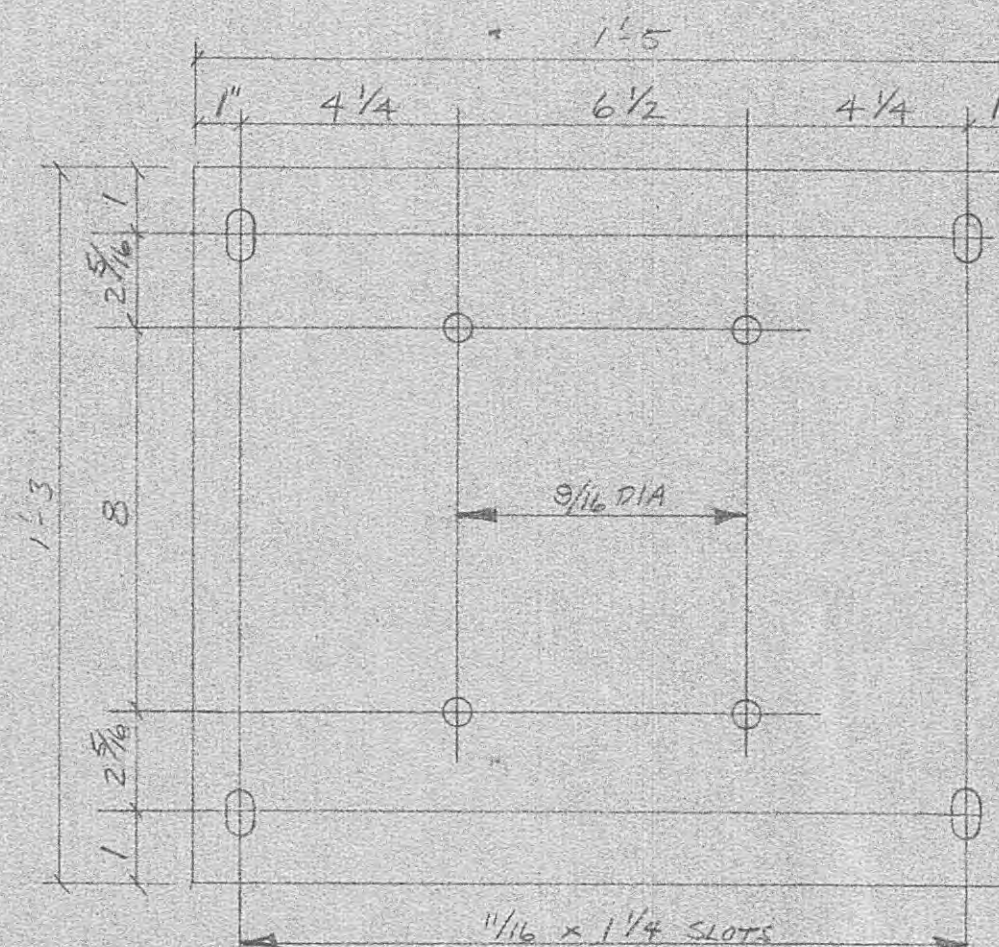
TOP VIEW TRUSS 301



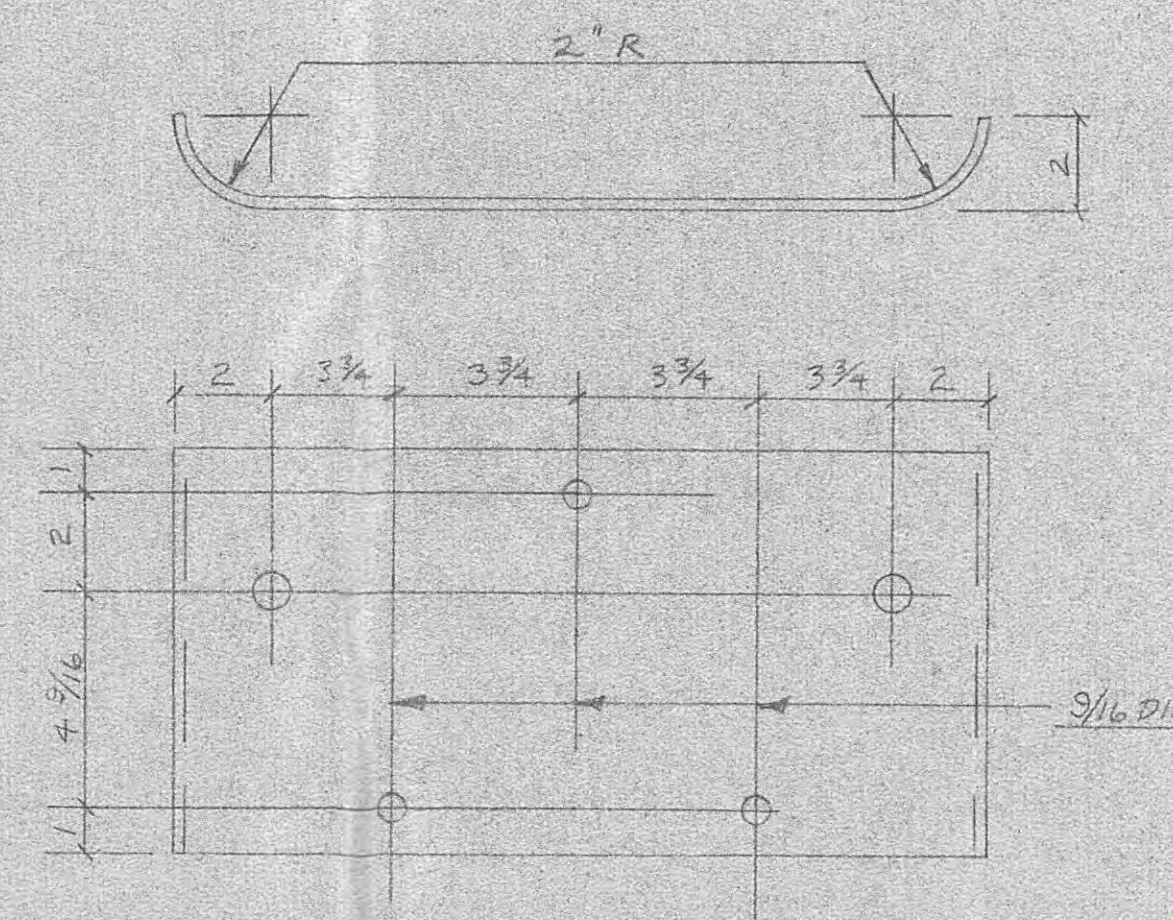
BOTTOM VIEW TRUSS 3C1



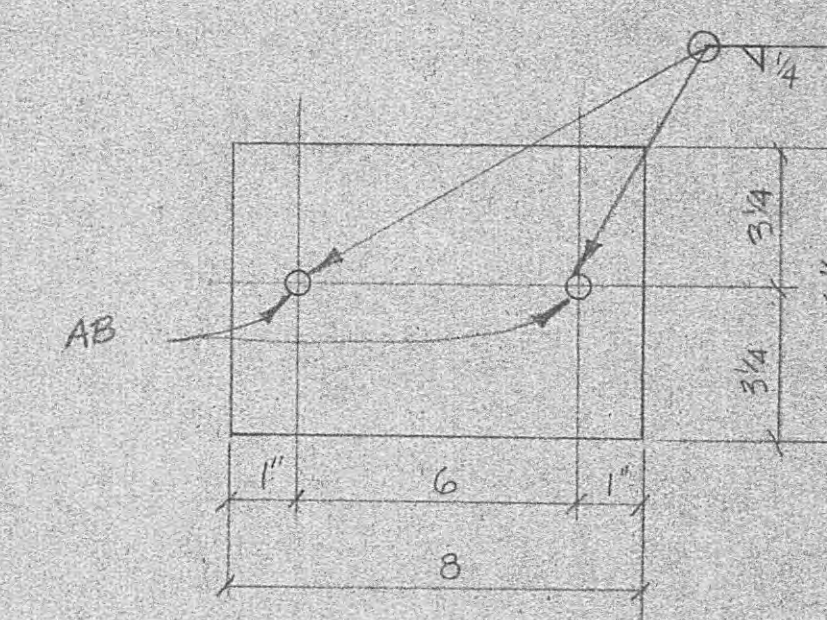
R 1'-0" x 1'-9 1/4" x 1/4" MK 3PI
(P.T. MOUNTING PLATE)



1.3 x 1.5 x 1/4 MK 3P2
(C.T. MOUNTING PLATE)



R 8 9/16 x 1 5/4 x 1/4 MK 3P3
(L.A. MOUNTING PLATE)



3P4
SPACER FOR NARROW COLUMN

SHOP NOTES:

1. ALL HOLES 11/16 DIA. UNLESS NOTED.

BILL OF MATERIAL

[illegible][illegible]