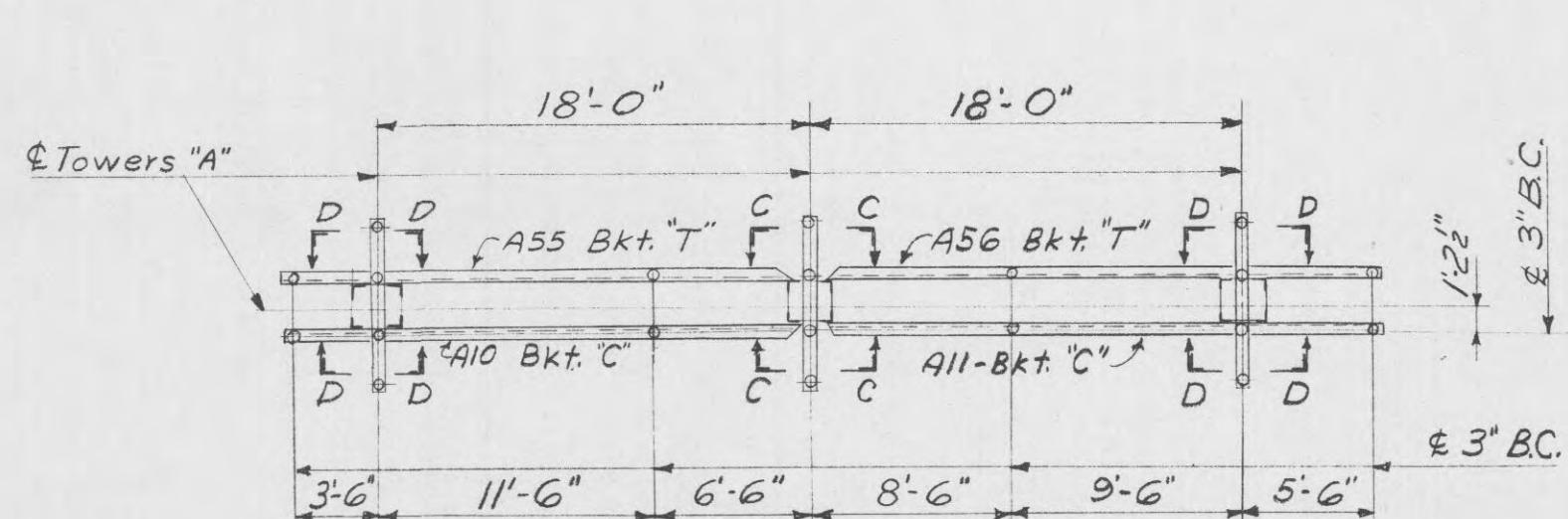
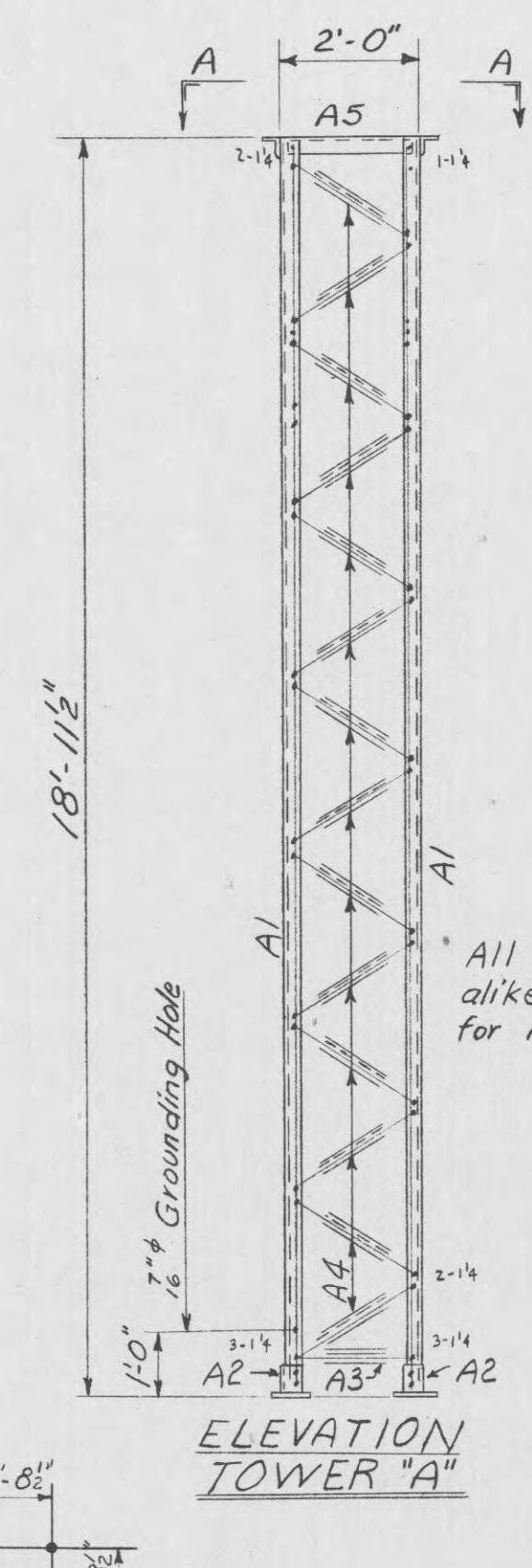


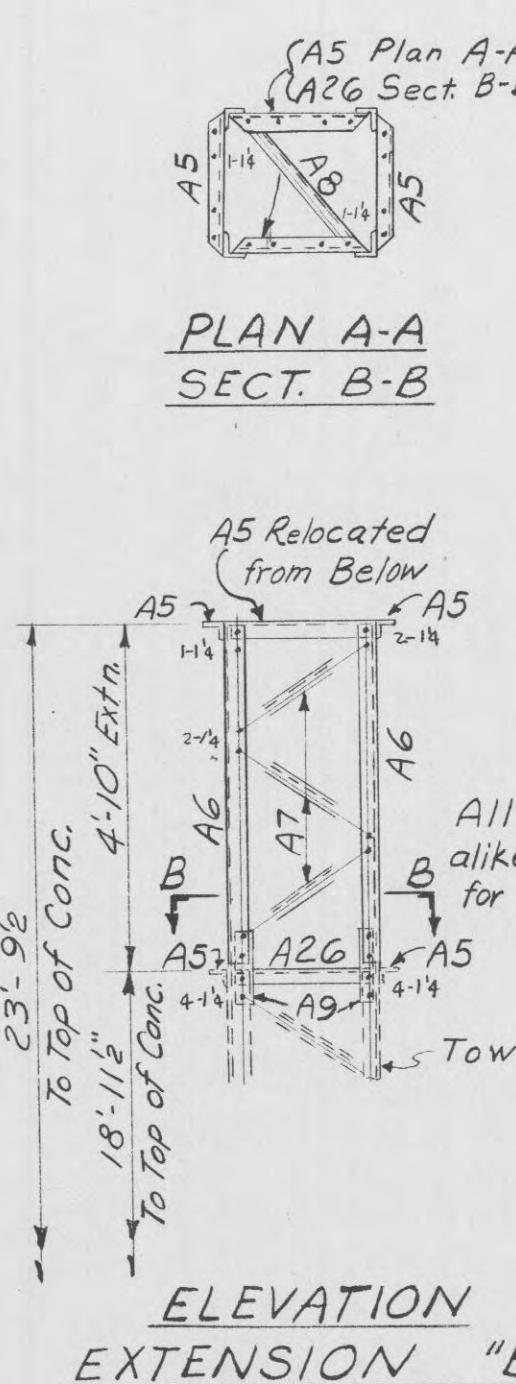
00138700



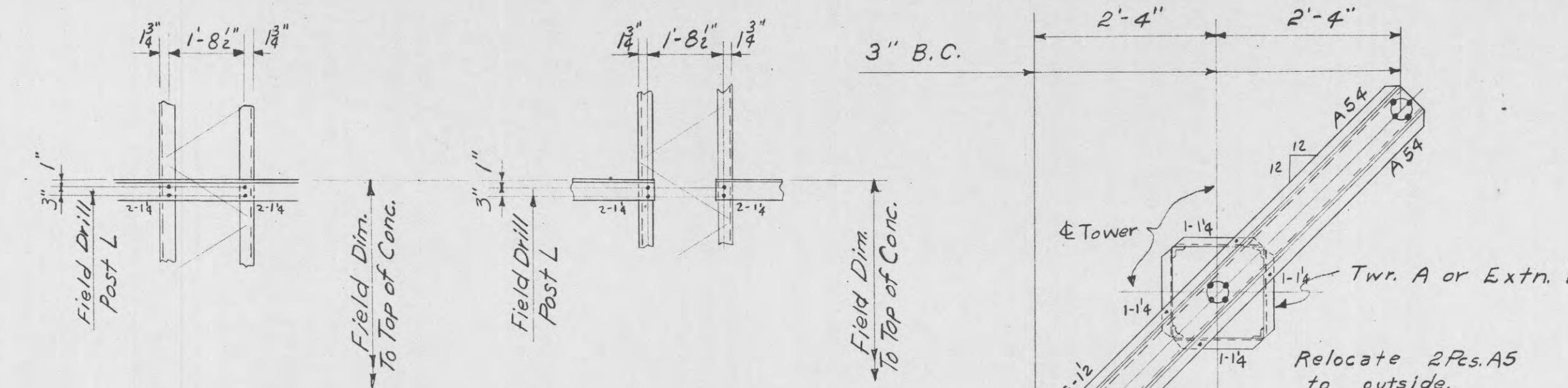
PLAN



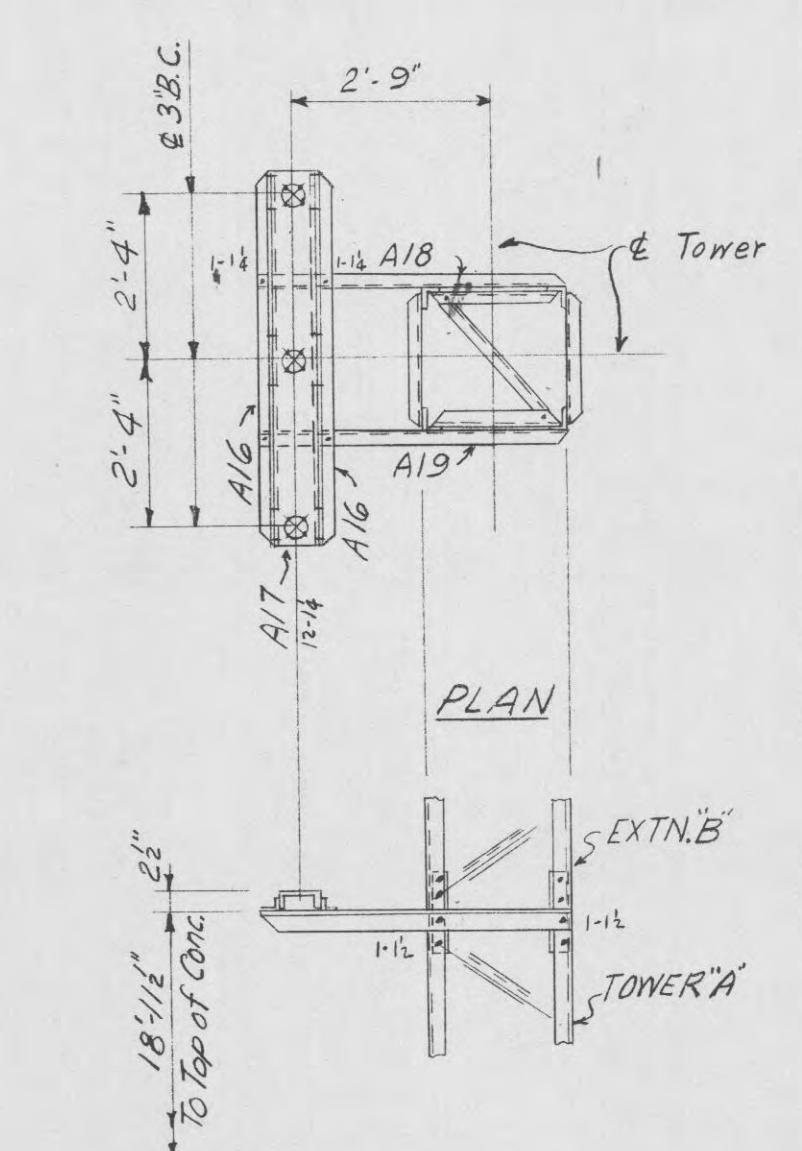
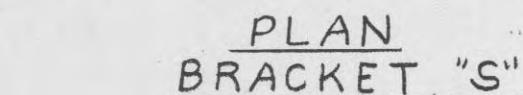
BRACKET "C"
BRACKET "T"



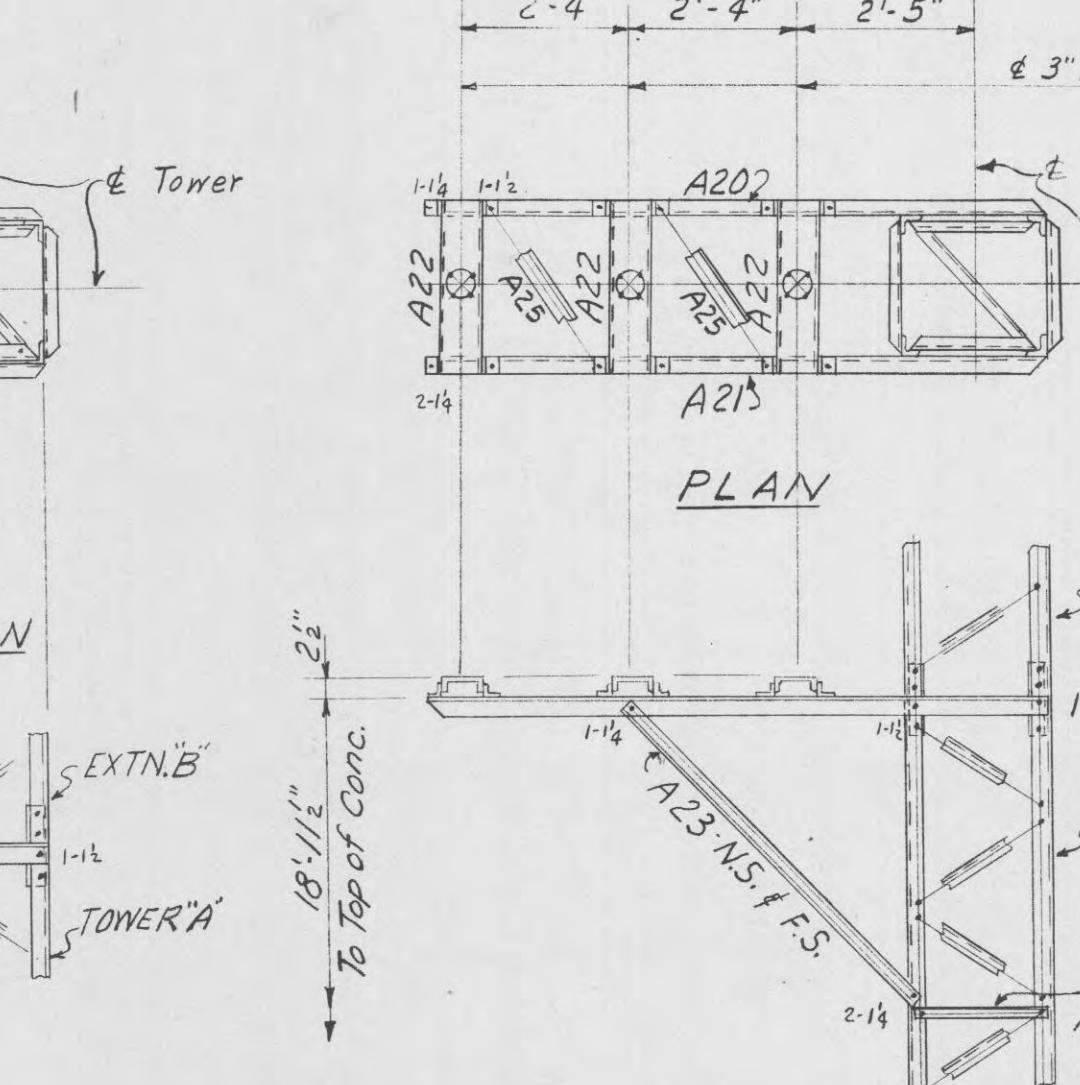
ELEVATION
EXTENSION "B"



PARTIAL ELEVATION D-D



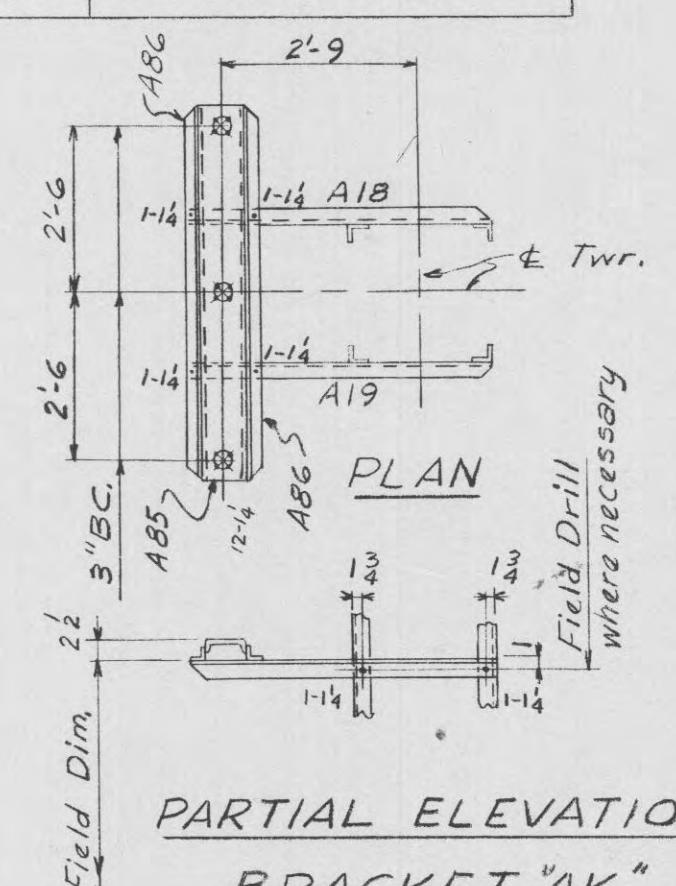
ELEVATION
KET "E"



PARTIAL ELEVATION
BRACKET "G"

BILL OF MATERIAL

NO. REQUIRED FOR ONE										MARK	DESCRIPTION	LENGTH		WT. EACH	
BRKT. "AK"	BRKT. "T"	BRKT. "S"	BRKT. "G"	BRKT. "F"	BRKT. "E"	BRKT. "D"	BRKT. "C"	EXTN. "B"	TWR. "A"			FT.	IN.		
										4	A1	L 2 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x $\frac{3}{16}$	18	10 $\frac{1}{2}$	60
										4	A2	{ 1-L 5 x $\frac{1}{2}$ } Welded 1-L 3 x 3 x $\frac{3}{16}$	0	5 $\frac{1}{2}$	6
1										4	A3	L 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{3}{16}$	1	10 $\frac{1}{4}$	3
										56	A4	do.	2	2	4
										2	A5	L 2 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x $\frac{3}{16}$	1	10 $\frac{1}{4}$	6
										4	A6	L 2 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x $\frac{3}{16}$	4	9 $\frac{1}{2}$	15
										12	A7	L 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{3}{16}$	2	2 $\frac{7}{8}$	4
										1	A8	do.	2	5 $\frac{7}{8}$	5
										4	A9	L 2 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x $\frac{3}{16}$	0	11	3
										1	A10	L 5 x 5 x $\frac{5}{16}$	20	11 $\frac{3}{4}$	223
										1	A11	do.	22	11 $\frac{3}{4}$	244
										2	A12	L 3 x 2 x $\frac{1}{4}$	7	6	32
										1	A13	7" L @ 9.8#	7	6	76
										2	A14	L 3 x 2 x $\frac{1}{4}$	8	6	36
										1	A15	7" L @ 9.8#	8	6	86
										2	A16	L 2 x 2 x $\frac{3}{16}$	5	2	13
										1	A17	7" L @ 9.8#	5	2	52
1										1	A18	L 3 x 2 x $\frac{1}{4}$	4	2	18
1										1	A19	do	4	2	18
										1	A20	do	8	6	36
										1	A21	do	8	6	36
		3								1	A22	{ 1-7" L @ 9.8# } Welded 4-L 2 x 2 x $\frac{3}{16}$	2	4 $\frac{1}{2}$	26
										2	A23	L 2 x 2 x $\frac{3}{16}$	5	8 $\frac{1}{8}$	14
										4	A24	7" Anchor bolt 2 Hex Nuts	4	0	9
										2	A25	L 1 $\frac{1}{2}$ x 1 $\frac{1}{2}$ x $\frac{3}{16}$	2	9 $\frac{3}{4}$	5
										2	A26	L 2 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x $\frac{3}{16}$	1	10 $\frac{1}{4}$	6
		1								1	A53	7" L @ 9.8#	7	1 $\frac{1}{4}$	72
		2								1	A54	L 3 $\frac{1}{2}$ x 2 $\frac{1}{2}$ x $\frac{1}{4}$	7	1 $\frac{1}{4}$	36
		1								1	A55	L 5 x 5 x $\frac{5}{16}$	20	11 $\frac{3}{4}$	223
		1								1	A56	do.	22	11 $\frac{3}{4}$	244
		1								1	A85	7" L @ 9.8#	5	6	56
		2								2	A86	L 2 x 2 x $\frac{3}{16}$	5	6	14
22	13	5	13	18	5	5	13	55	156		5" Bolts	0	1 $\frac{1}{4}$	0.31	
		18	9	5	22	18					do.	0	1 $\frac{1}{2}$	0.33	



PARTIAL ELEVATION
BRACKET "A"

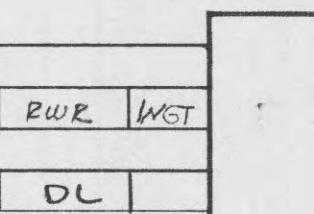
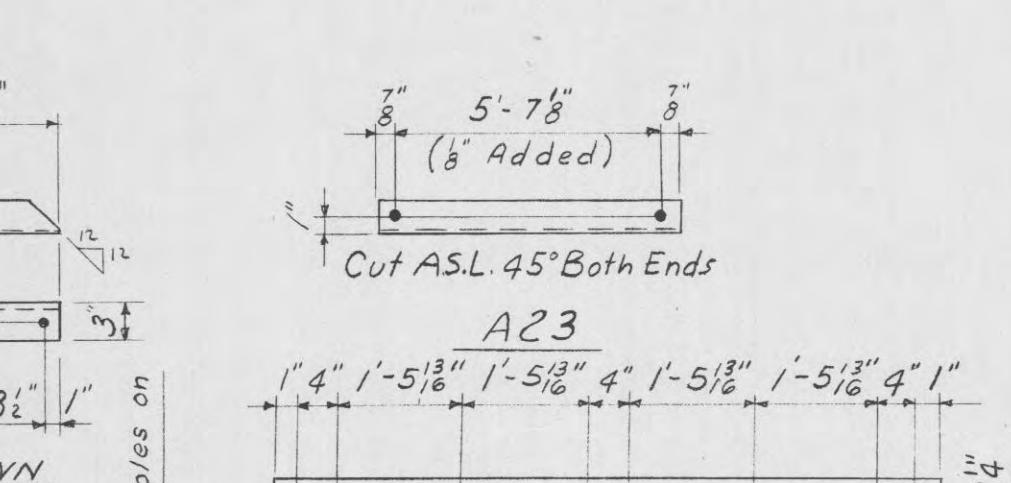
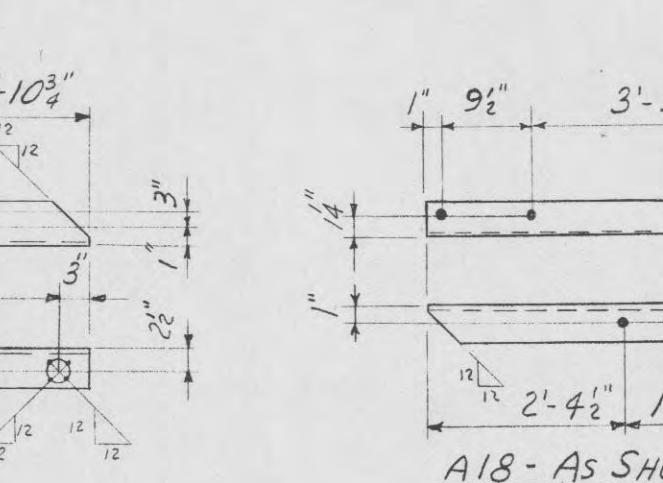
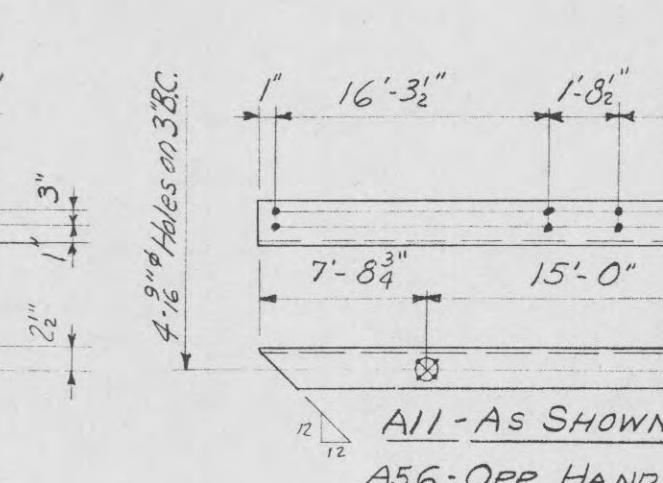
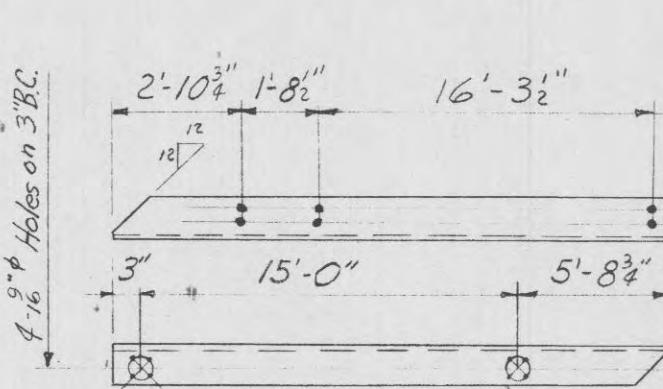
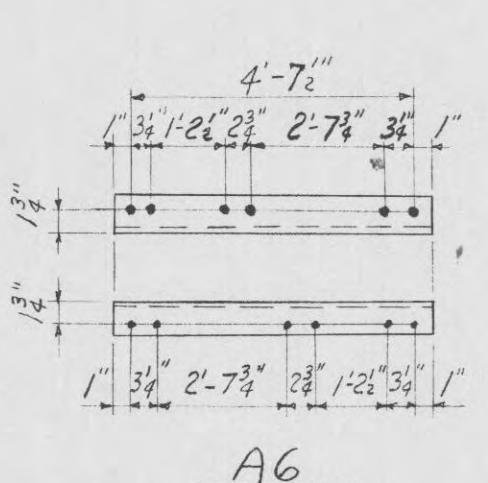
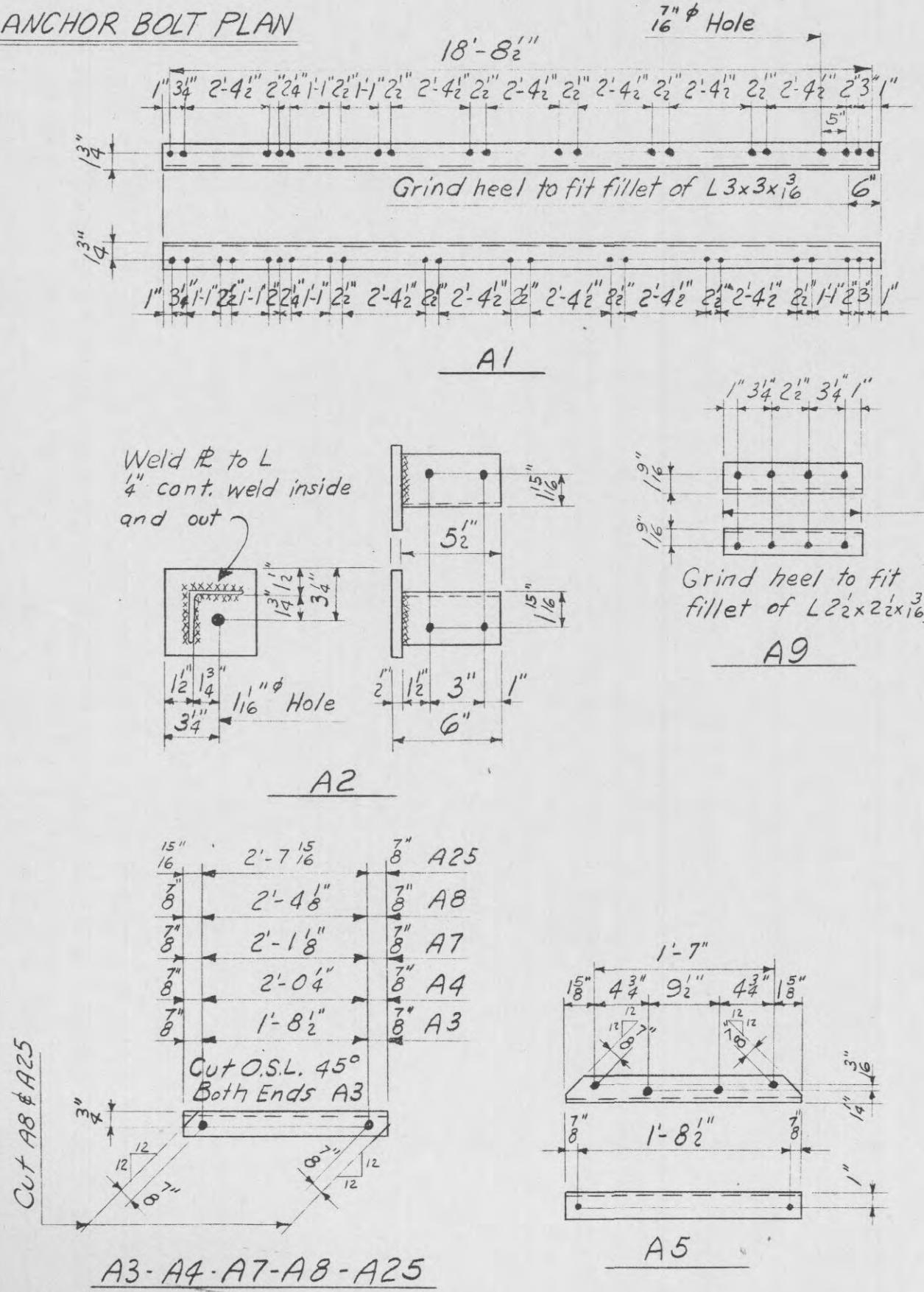
NOTES:

1" ϕ Holes unless otherwise noted.
6 $\frac{5}{8}$ " ϕ Bolts, sq. hd. hex. nut, std. thd.
3/M includes 10% excess bolts.

Piece marks to be die stamped before galvanizing.
Material to be hot dip galvanized after fabrication.

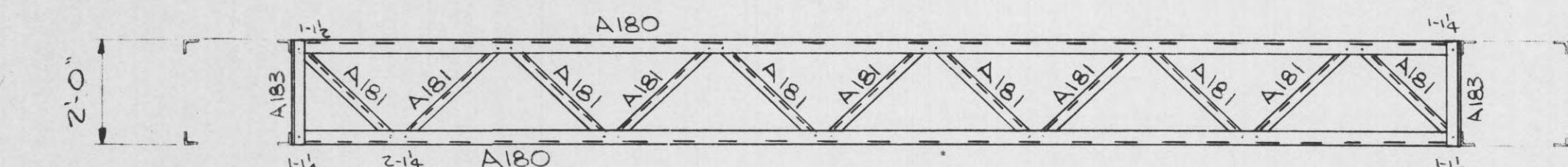
REFERENCE:

SC-38701

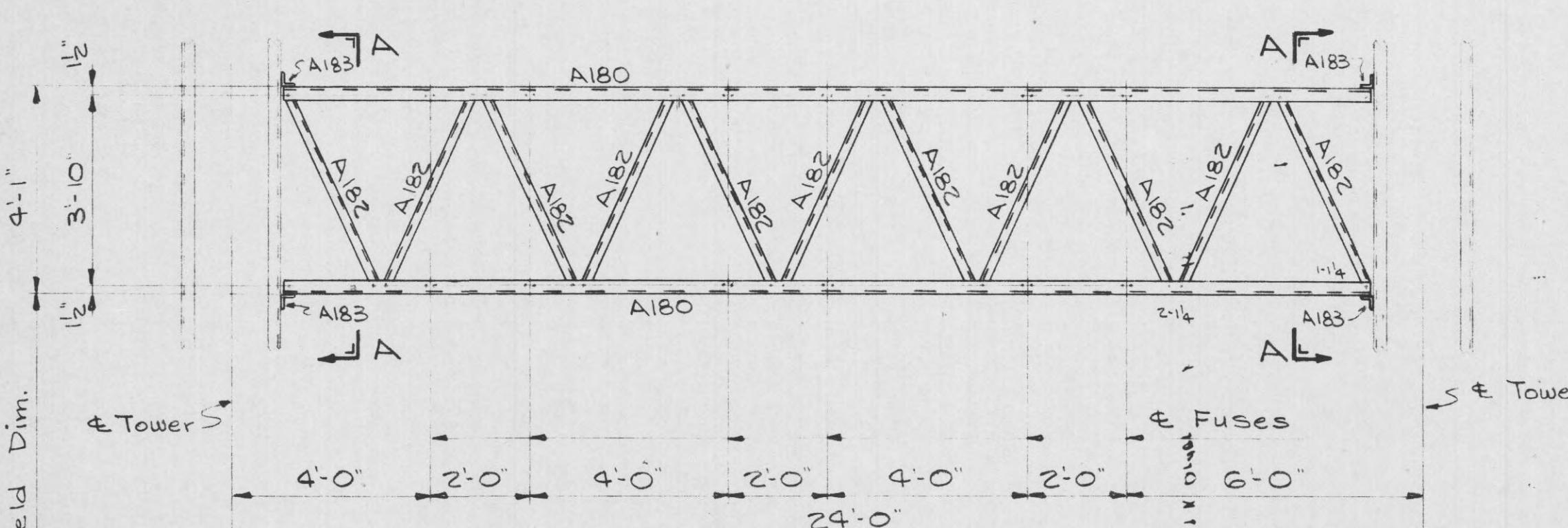


SUBSTATIONS GENERAL
5 KV BUS SUPPORT TOWER
EXTENSION & BRACKETS

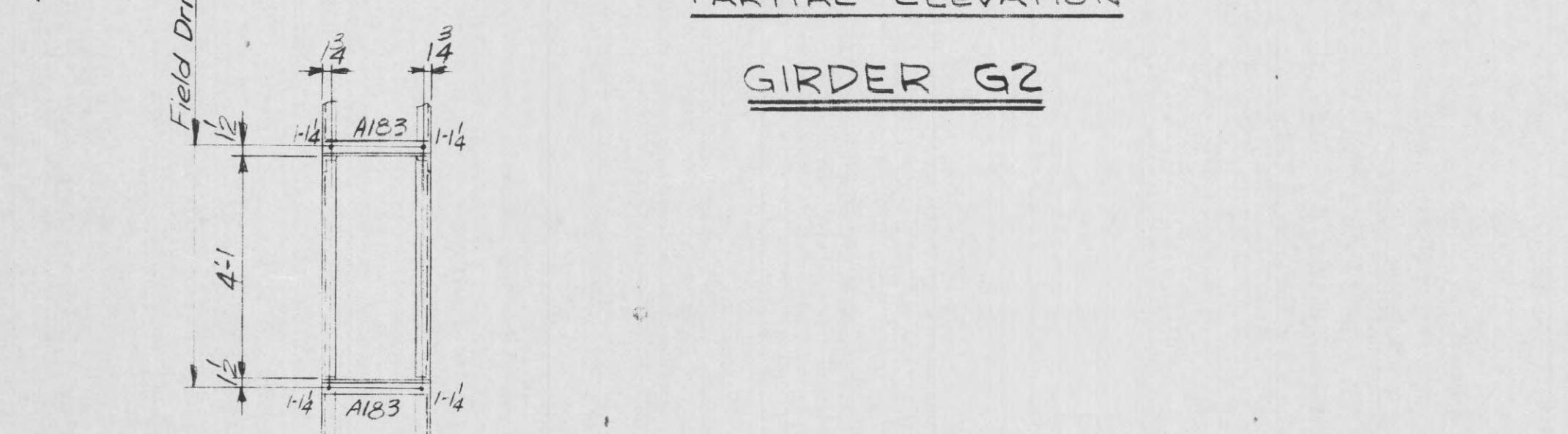
11	Added Sheet 9						DSGN RWR	SUPV W.G.T.	W.O.	DATE 2-19-60	SUBMITTED 9-1-66 R.H. Connally	APPROVED A. Reeves	SHEET 1 OF 9 SHEETS
	9-2-69		DTA	JBR	RWR	WGT	DRWN RWR	PROJ. ENGR. GMW	CLASS. CODE	SCALE None	SO21P	LC-38700	R-11
REV. NO.	DATE	WORK ORDER	DSGH	DRUN	CHKD	SUPV	APPD	CHKD					



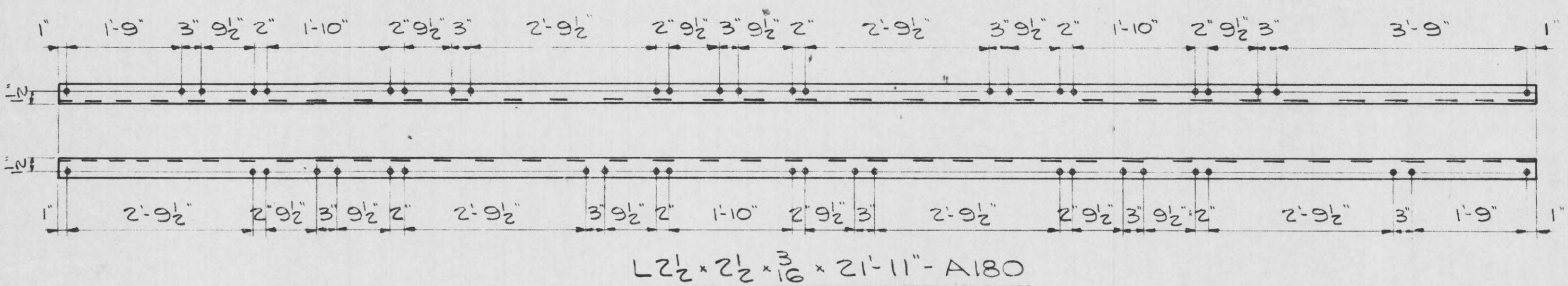
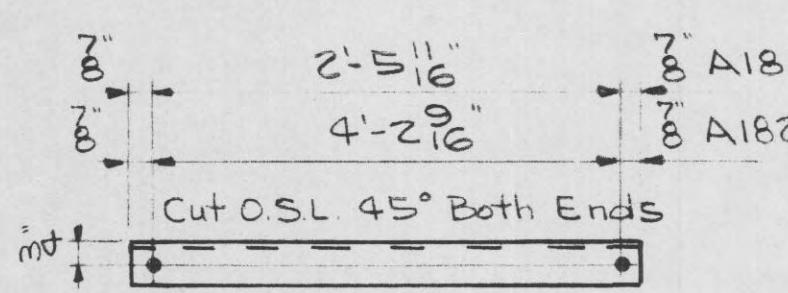
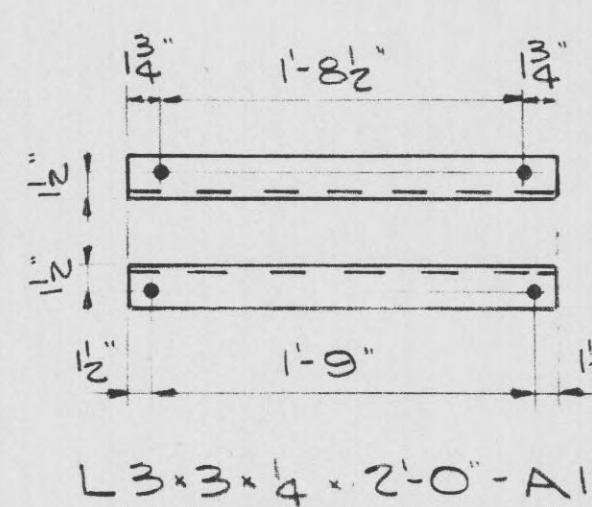
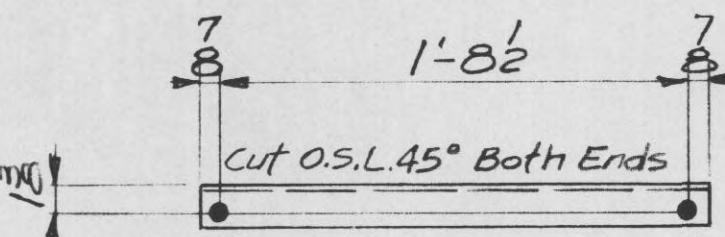
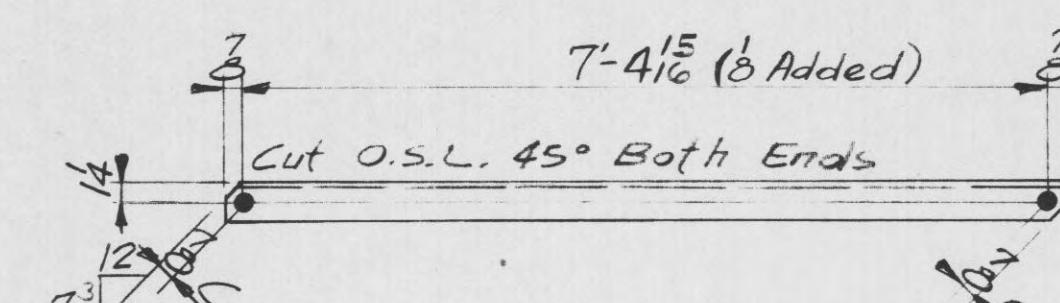
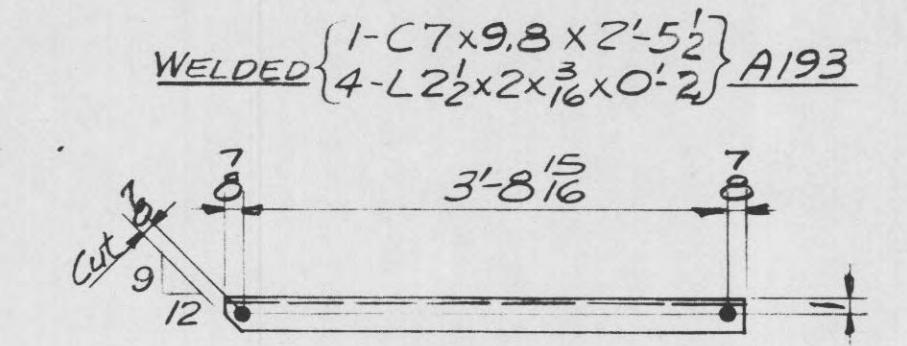
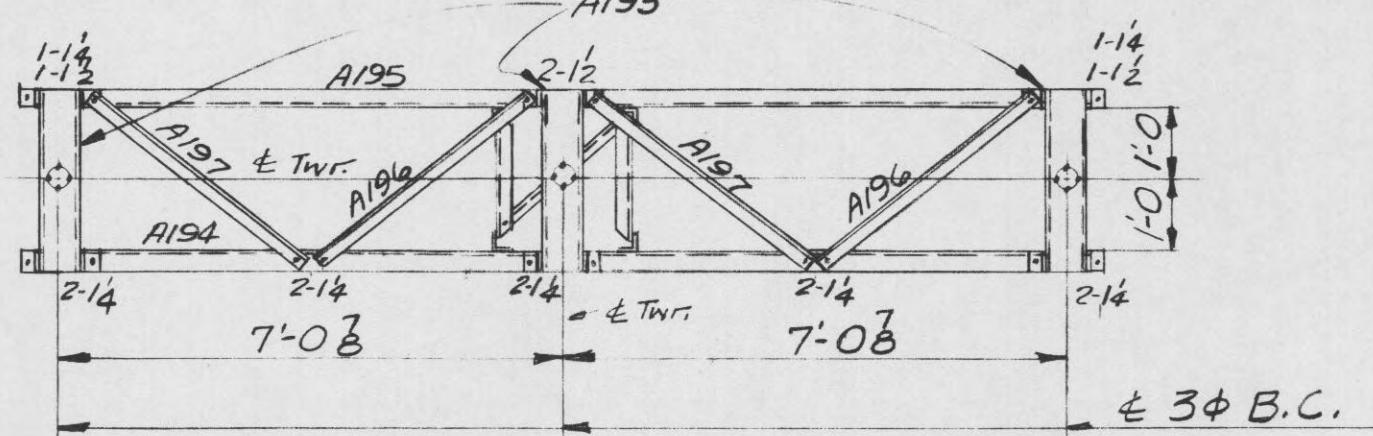
PLAN



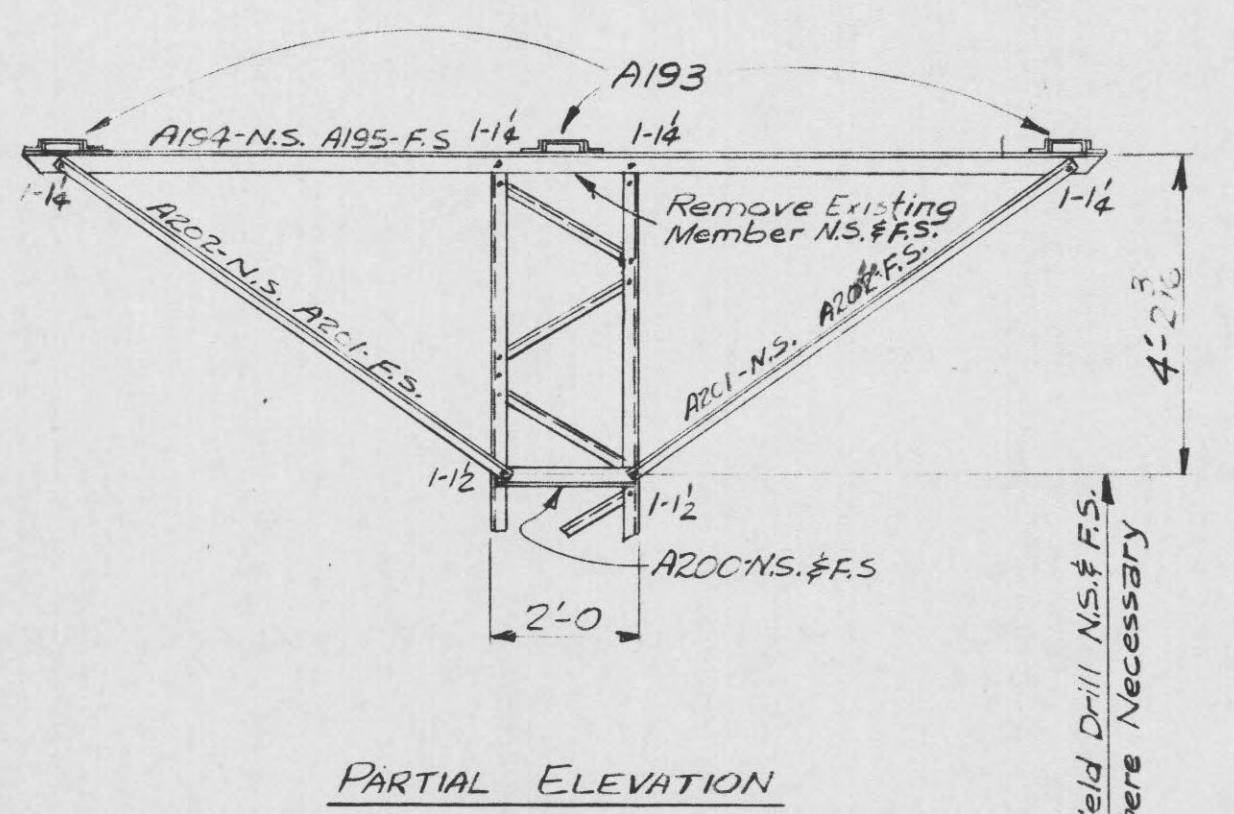
PARTIAL ELEVATION

GIRDER G2

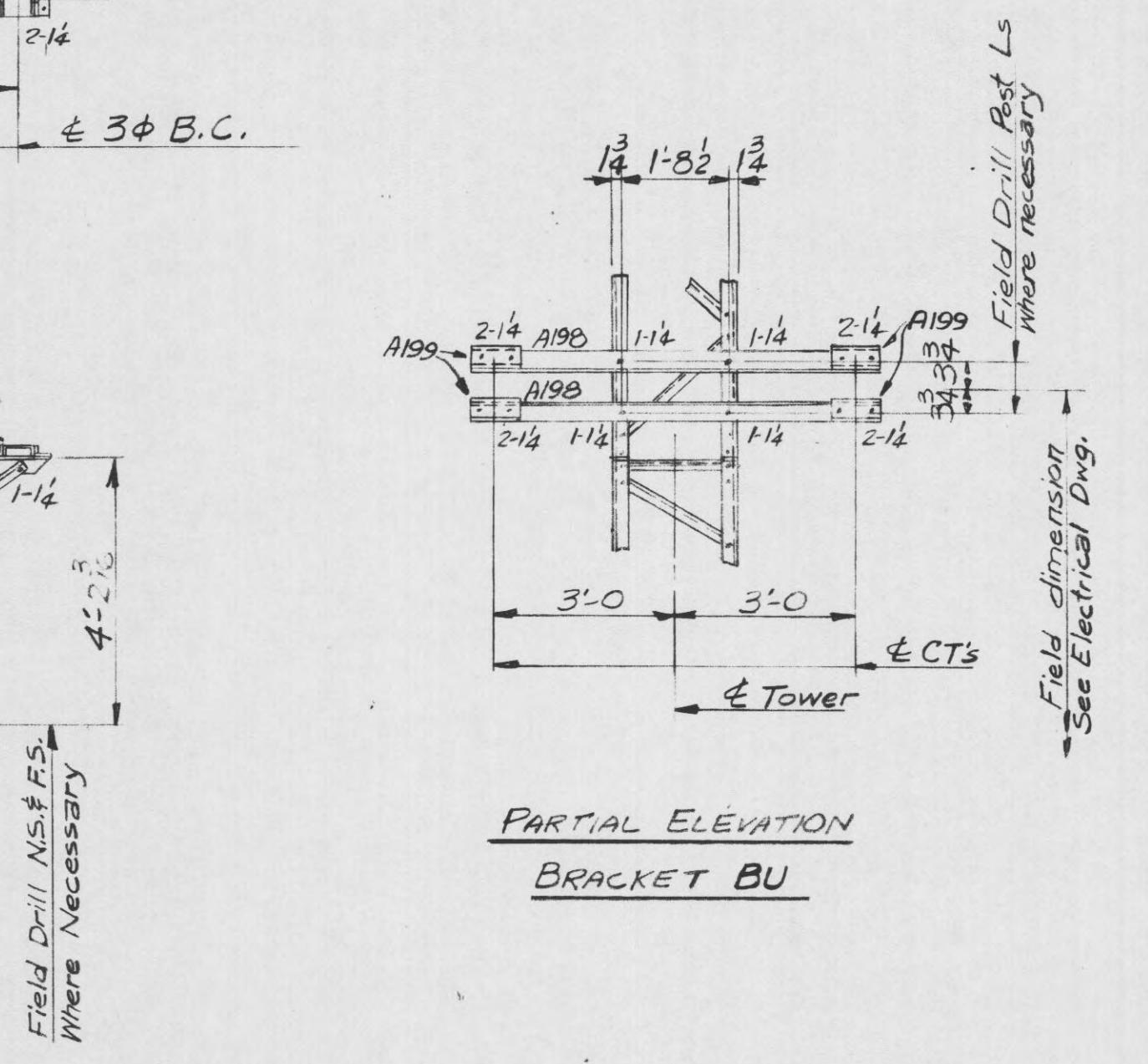
SECTION A-A

L22x22x3/16x11'-12"-A180L1/2x1/2x3/16x2'-7 1/2"-A181
Do. x 4 - 4 1/16 - A182L3x3x4x2'-0-A183L22x22x3/16x1'-10 1/4-A200L22x22x3/16x7'-6 1/2"-A201-AS SHOWN
A202-OFF HANDL2x2x3/16x3'-10 1/2"-A196-AS SHOWN
A197-OFF HAND

PLAN



PARTIAL ELEVATION

PARTIAL ELEVATION
BRACKET BUL22x22x3/16x0'-10-A199

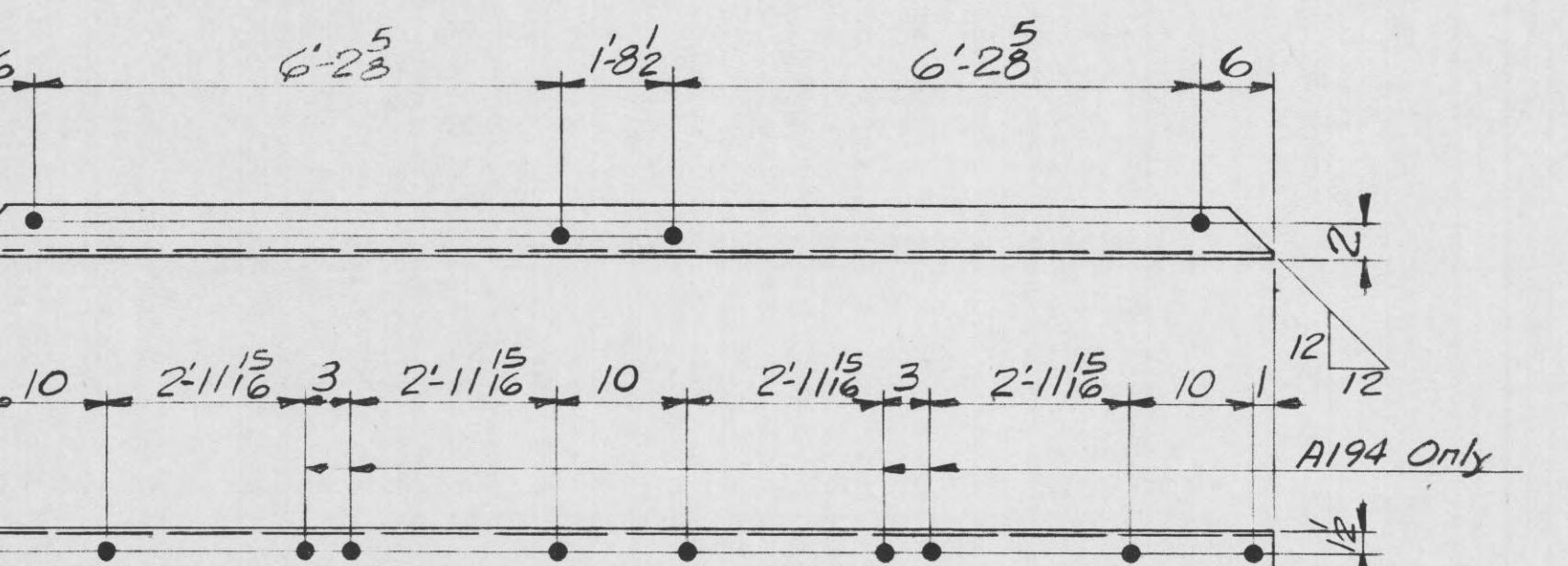
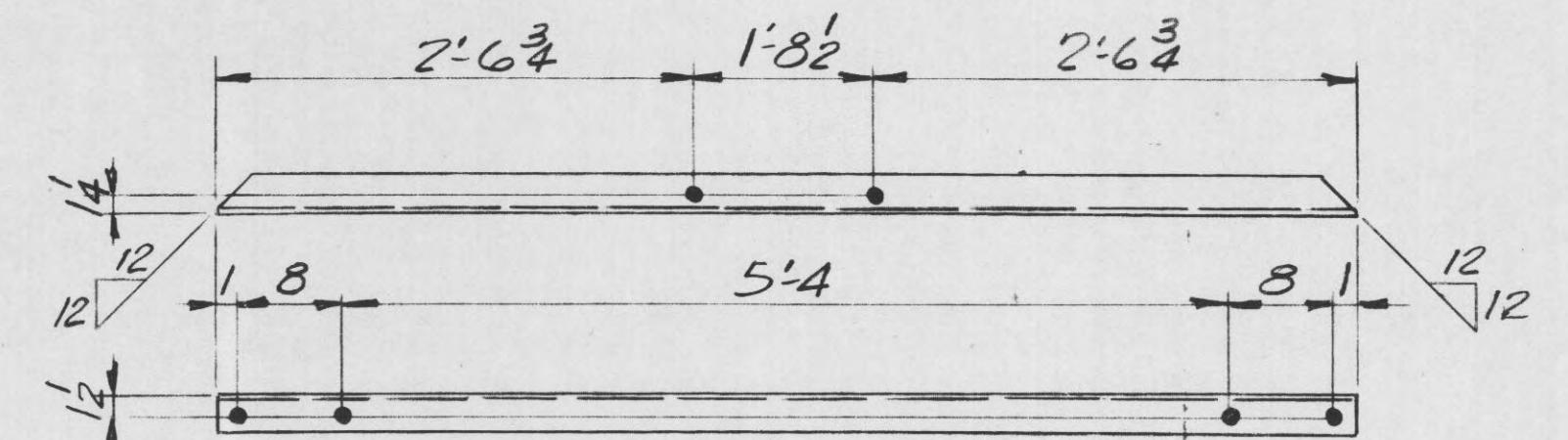
BILL OF MATERIAL

NO. REQUIRED	BKT BU	BKT BT	GIRD G2	MARK	DESCRIPTION		LENGTH FT.	WT. IN. EACH			
					REV. NO.	DATE	WORK ORDER	DSGN. DRWN	CHKD.	SUPV.	PRVR.
4	A180				L22x22x3/16		21	11	70		
22	A181				L1 1/2x1 1/2x3/16		2	7 1/2	5		
22	A182				Do		4	4 1/2	8		
4	A183				L3x3x3/16		2	0	10		
3	A193				Welded I-C7x9.8		2	5 1/2	27		
1	A194				L3x3x3/16		15	1 1/4	58		
1	A195				Do		15	1 1/4	58		
2	A196				L2x2x3/16		3	10 1/4	10		
2	A197				Do		3	10 1/4	10		
2	A198				L22x22x3/16		6	10	22		
4	A199				Do		0	10	3		
2	A200				Do		1	10 1/4	.6		
2	A201				Do		7	6 1/4	24		
2	A202				Do		7	6 1/4	24		
13	22	106			80" + Bolts		0	1/4	0.27		
9	5				Do		0	1/2	0.285		
ONE BRACKET BU											
TOTAL WT. = 60 #											
ONE BRACKET BT											
TOTAL WT. = 353 #											
ONE GIRDER G2											
TOTAL WT. = 636 #											

ONE BRACKET BU
TOTAL WT. = 60 #
ONE BRACKET BT
TOTAL WT. = 353 #
ONE GIRDER G2
TOTAL WT. = 636 #

NOTES:

Holes $1/8"$ unless noted
Piece marks to be die stamped before galvanizing.
Material to be hot dip galvanized after fabrication.

L3x3x3/16x15'-1 3/4-A194
A195L22x22x3/16x6'-10-A198

1	Added Brackets BT & BU	4-3-75	JTE	RHW	USC	RPR	
REV. NO.	DATE	WORK ORDER	DSGN.	DRWN	CHKD.	SUPV.	APPR.
DSGN.	SUPV.	RPR	W.O.				
DRWN	RPR	W.O.	PROJ. ENGR. WSI				
CHKD.	JBR	W.O.	NTS				

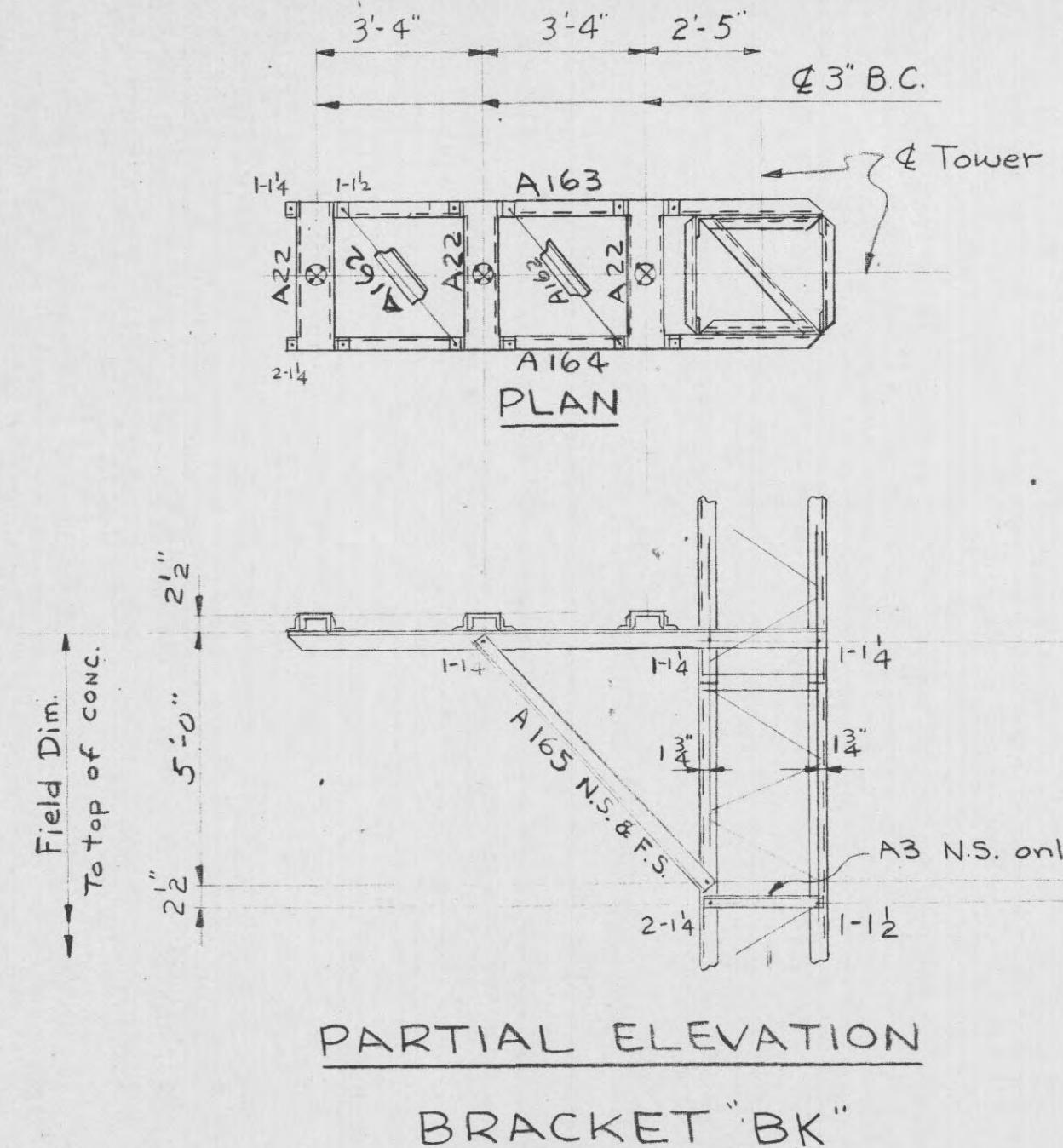
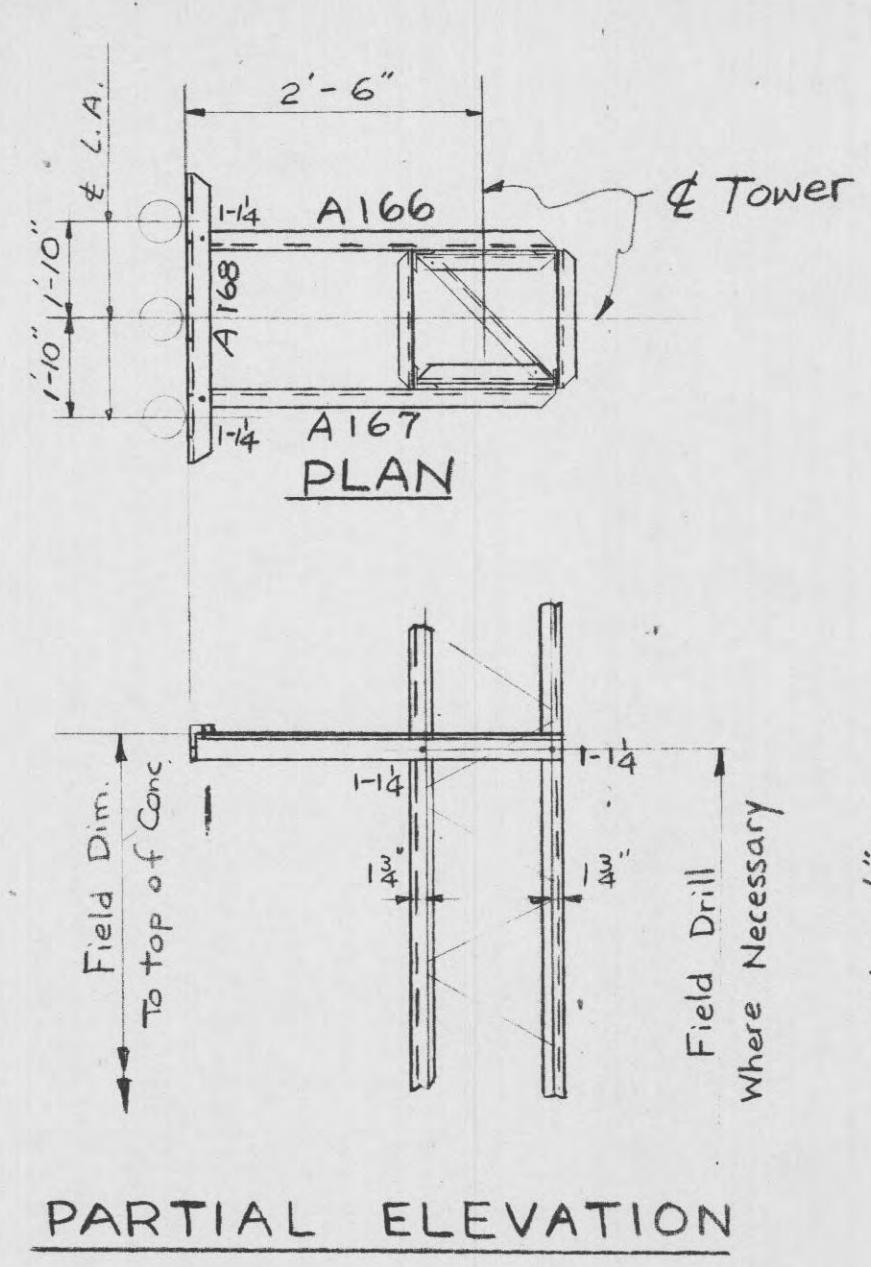
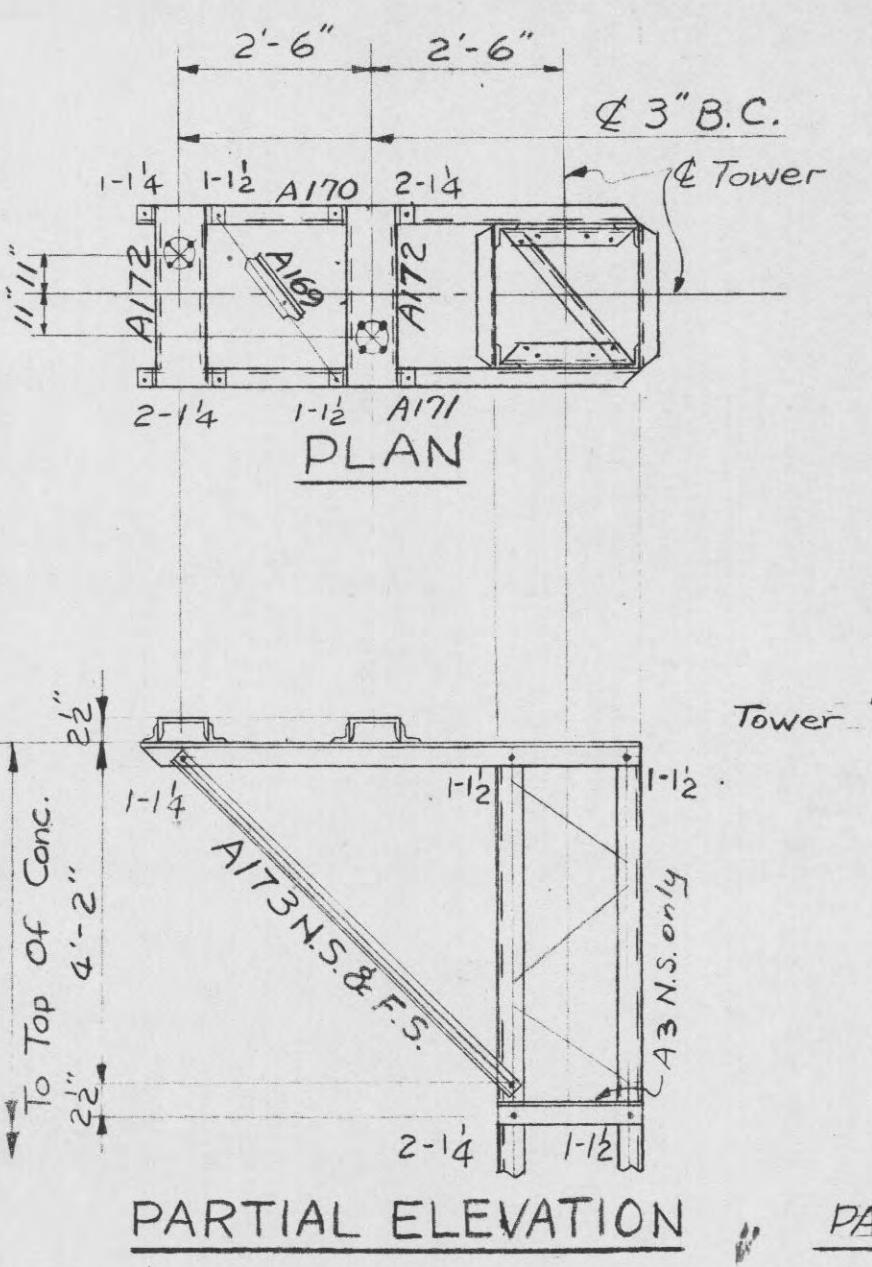
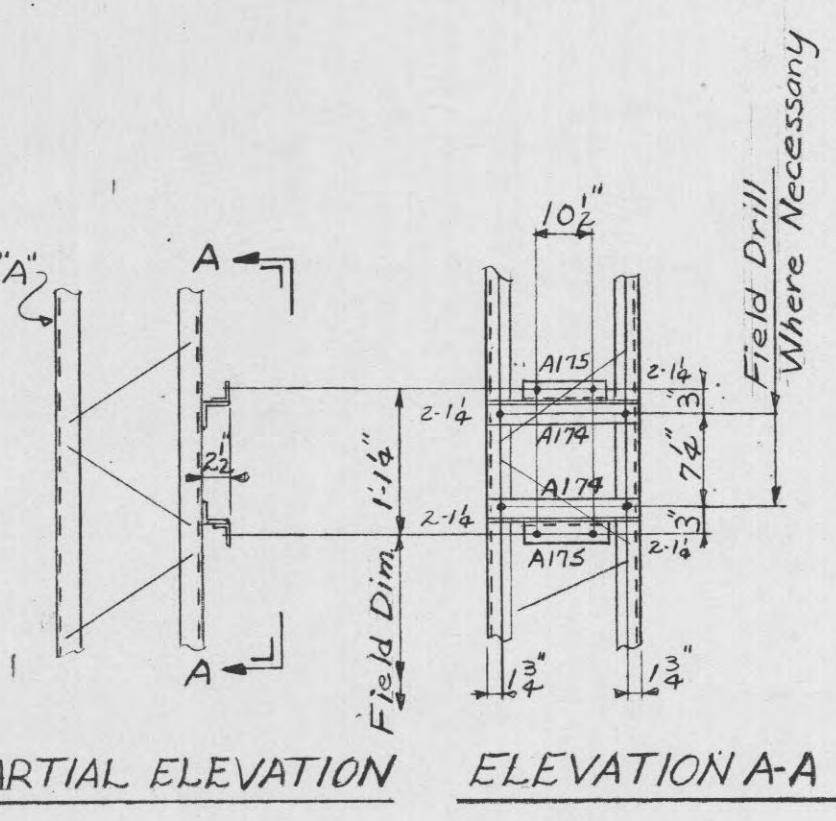
TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING

SUBSTATIONS GENERAL
15KV BUS SUPPORT TOWER
EXTENSION & BRACKETS

DATE 9-18-69 SUBMITTED 9-12-69 APPROVED J. F. Brown
SCALE CLASS CODE NTS SHEET 9 OF SHEETS
LC-38700 R-1

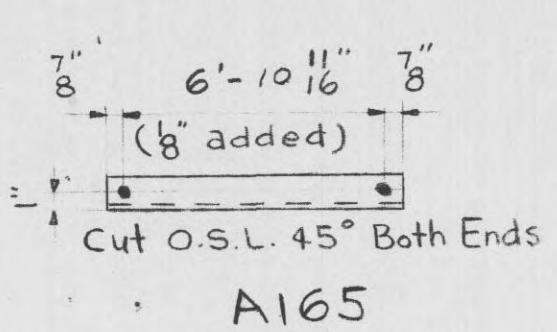
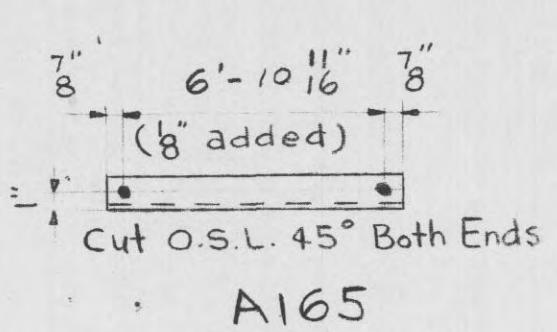
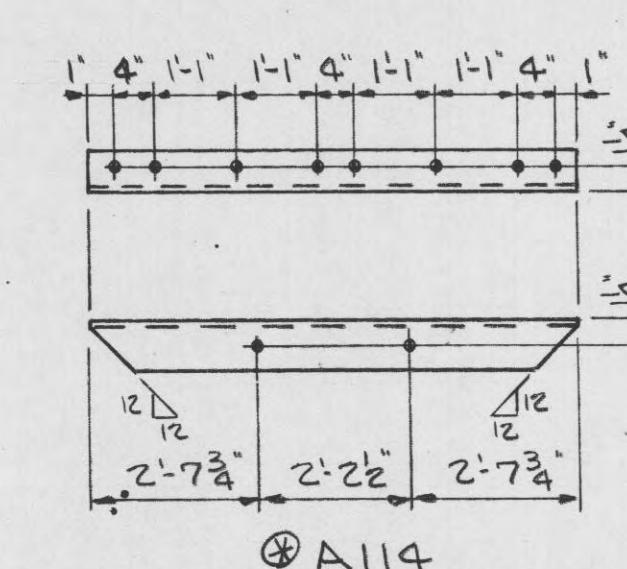
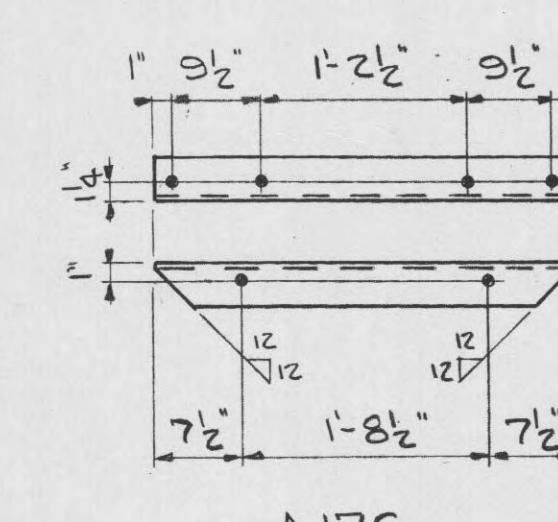
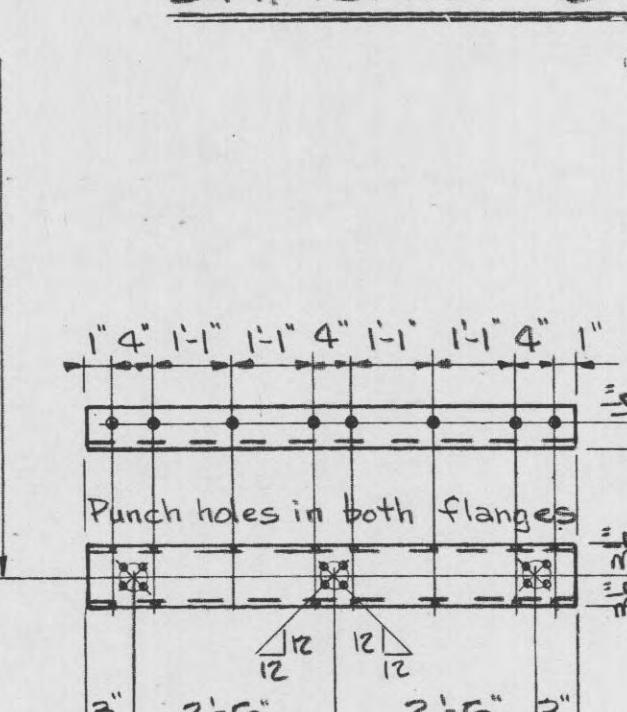
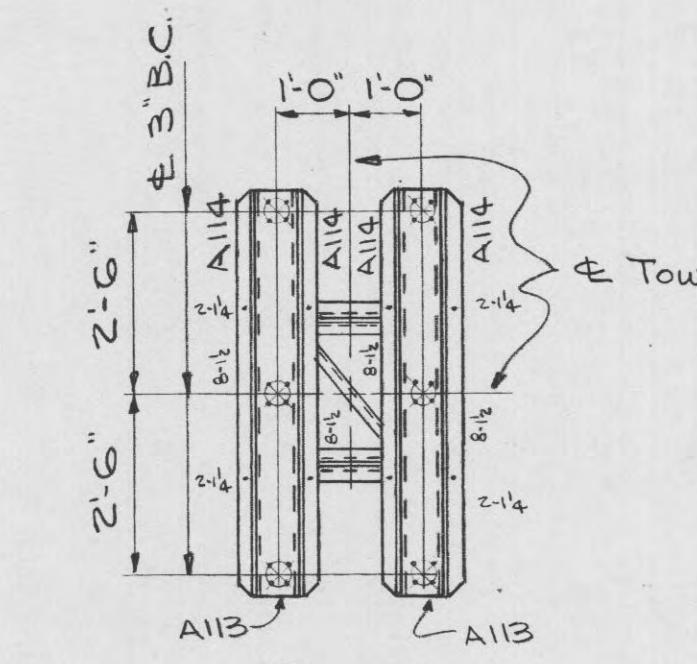
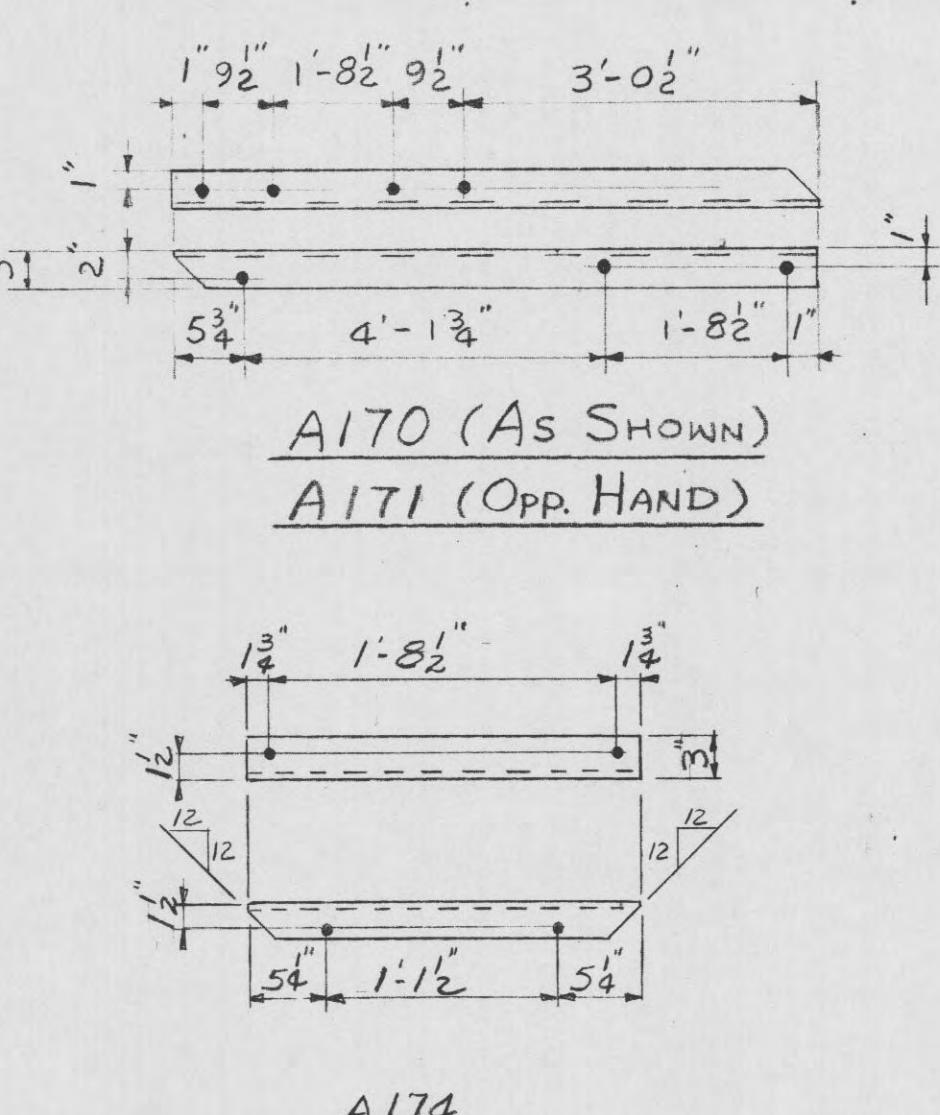
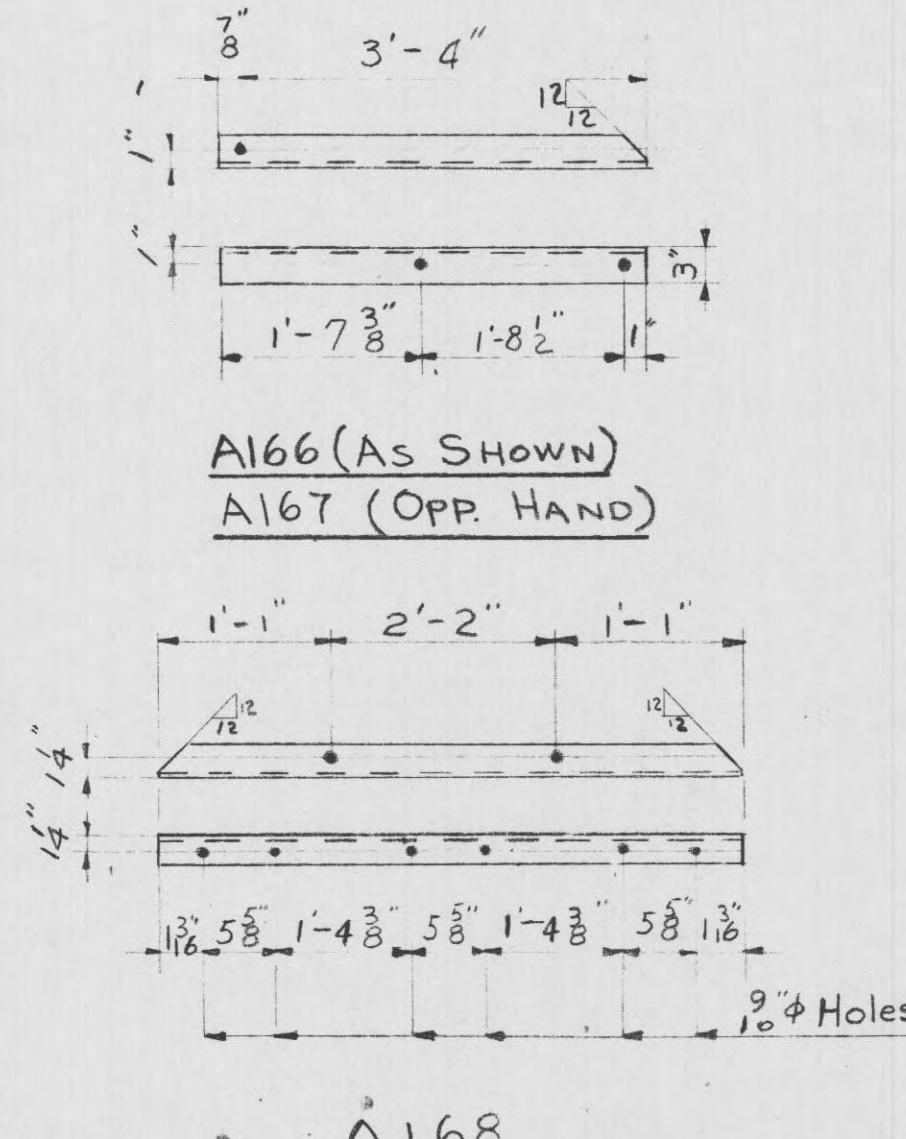
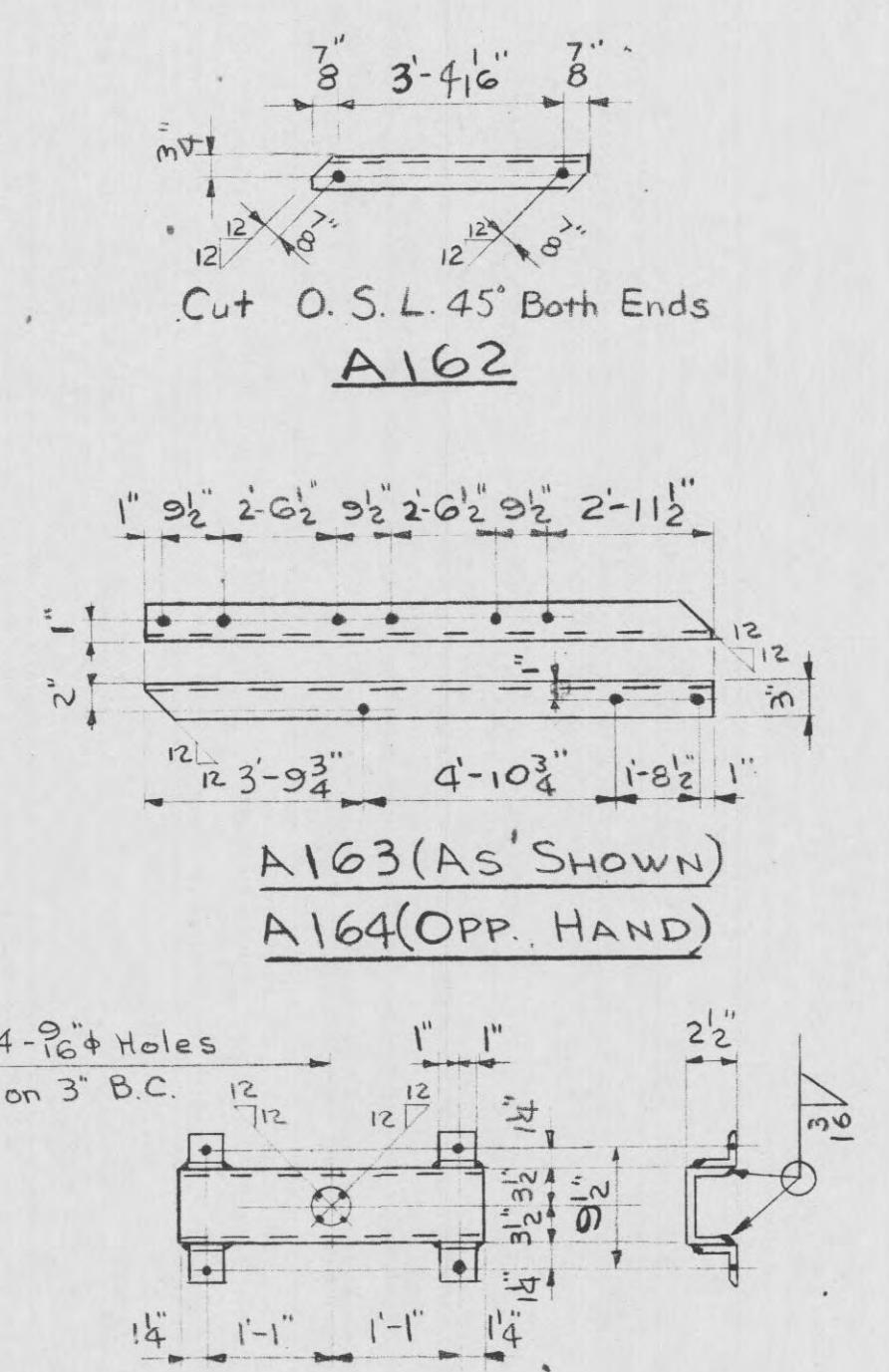
0028E-27

BILL OF MATERIAL

PARTIAL ELEVATION
BRACKET "BK"PARTIAL ELEVATION
BRACKET "BL"PARTIAL ELEVATION
BRACKET "BM"PARTIAL ELEVATION
ELEVATION AA
BRACKET "BN"

No. REQUIRED	MARK				DESCRIPTION	WT. FT. IN EACH
	BKT-BK	BKT-BN	BKT-BM	BKT-BL		
1	1				*A3 L 1 1/2 x 1 1/2 x 3/8	1 10 3
3	3	*A22 L 1 7/8" [@ 9.8"] Welded (4-L 2 x 2 x 3/8)			2 4 2 26	
2	2	A162 L 1 1/2 x 1 1/2 x 3/8			0 0 0 7	
1	1	A163 L 3 x 2 x 4			3 5 1/2 6 44	
1	1	A164 Do			10 6 44	
2	2	A165 L 2 x 2 x 3/8			7 0 0 18	
	1	A166 L 3 x 2 x 4			3 4 8 15	
	1	A167 Do			3 4 8 15	
	1	A168 L 2 1/2 x 2 1/2 x 3/8			4 4 4 14	
	1	A169 L 1 1/2 x 1 1/2 x 3/8			2 10 8 5	
	1	A170 L 3 x 2 x 4			6 5 27	
	2	A171 Do			6 5 27	
	2	A172 L 1 7/8" [@ 9.8"] Welded (4-L 2 x 2 x 3/8)			2 4 2 26	
	2	A173 L 2 x 2 x 3/8			0 0 2 5	
	2	A174 L 3 x 2 x 4			2 0 0 9	
	2	A175 L 2 1/2 x 2 1/2 x 3/8			1 3 2 4	
	2	A176 L 2 1/2 x 2 1/2 x 3/8			2 11 2 9	
	2	⑧ A113 7" C @ 9.8"			5 6 15	
	2	⑧ A114 L 2 x 2 x 3/8			5 6 14	
	13	9	11	7	19	5-B Bolts
	35	9	9	6	6	Do
	199	28	150	46	226	TOTAL WEIGHT

* This member is also detailed on sheet 1
⑧ This member is also detailed on sheet 5



NOTES:

Holes 11/16" unless noted.
Piece marks to be die stamped before galvanizing.
Material to be hot dip galvanized after fabrication.

SPECIFICATION:

Structural Steel - ASTM A36

TENNESSEE VALLEY AUTHORITY

DIVISION OF POWER PLANNING AND ENGINEERING

SUBSTATIONS GENERAL
15KV BUS SUPPORT TOWER
EXTENSION & BRACKETS

3	Added Bracket "BO"	6-25-69	DTA	DL	RWR	WGT
2	Added Bracket "BN"	4/25/69	HHH	JBR	RWR	WGT
1	Added Bracket "BM"	3/20/69	PF	RWR	RWR	WGT
Rev. No.	Date	WORK ORDER	DSGN	DRWN	CHKD	SUPV
DSGN.	DATE	PF	DRWN	W.O.	APPD	
DRWN.	PROJ. ENGR.	DRWN	CHKD	PROJ. ENGR.	APPD	
CHKD	CLASS. CODE			W.G.		
	SCALE	N.T.S.				

DATE 1-29-69
SUBMITTED R.P. Connally APPROVED J. Lees
CLASS. CODE SOT/P
SCALE N.T.S.
SHEET 8 OF SHEETS
LC-38700 R-3

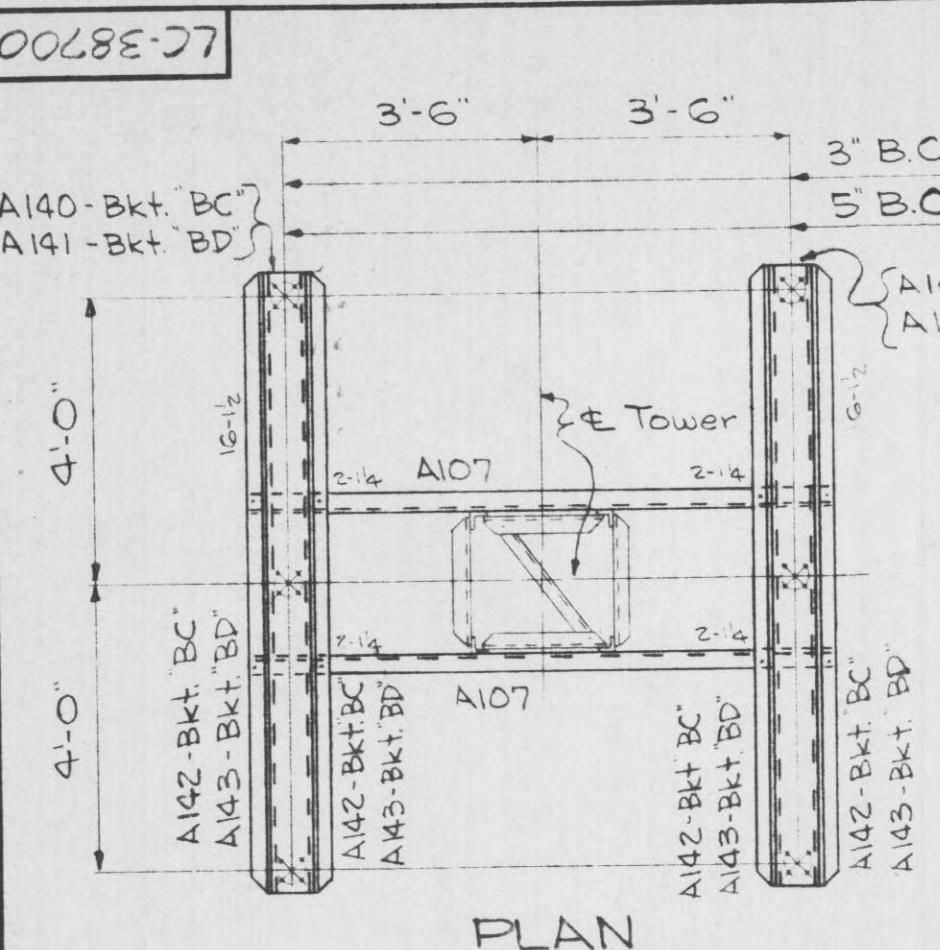
BILL OF MATERIAL

NO. REQUIRED	DESCRIPTION	LENGTH FT. IN.		WT EACH
		BKT BG	BKT BF	
2	*A3	L1 $\frac{1}{2}$	L2 $\frac{1}{2}$	1 10 $\frac{1}{2}$ 3
2	A107	L3x2x4		8 1 34
2	A140	7 $\frac{1}{2}$ @9.8*		8 6 86
A141	Do.			8 8 82
4	A142	L3x2x4		8 6 36
4	A143	Do.		8 8 37
4	A144	L2 $\frac{1}{2}$ x2 $\frac{1}{2}$ x $\frac{3}{16}$		4 0 30
A145	B $\frac{1}{2}$ C@11.5*			11 11 $\frac{1}{2}$ 143
4	A146	L3x2x4		11 11 $\frac{1}{4}$ 51
2	A147	L6x4x $\frac{3}{8}$		10 44 132
4	A148	L4x3x4		10 24 62
4	A149	L2x2 $\frac{3}{8}$		5 10 $\frac{1}{2}$ 15
A150	L3x2x4			8 11 38
A151	Do.			8 11 38
A152	L2x2 $\frac{3}{8}$			6 0 $\frac{1}{2}$ 15
A153	L3x3x4			2 5 $\frac{1}{2}$ 12
A154	Do.			2 5 $\frac{1}{2}$ 12
3	A22 {1-7 L $\frac{1}{2}$ @9.8*} Welded (4-12x2 $\frac{3}{8}$)	2 4 $\frac{1}{2}$	26	0 2 2
2	*A25 L1 $\frac{1}{2}$ x1 $\frac{1}{2}$ x $\frac{3}{16}$	2 3 $\frac{3}{4}$	5	
A155	L3x3x4			6 3 $\frac{1}{2}$ 31
A156	Do.			6 1 $\frac{3}{4}$ 31
A157	7 $\frac{1}{2}$ @9.8*			15 4 54
A158	L3x2x4			15 4 23
A159	L1 $\frac{1}{2}$ x1 $\frac{1}{2}$ x $\frac{3}{16}$	2 4 $\frac{1}{2}$	4	
A160	L2x2 $\frac{3}{8}$	1 10 $\frac{1}{2}$	5	
23	13 38	22 22		5 $\frac{1}{2}$ Bolts
24	9 77	40 40		Do.
258	204	1093	470	462 TOTAL WEIGHT

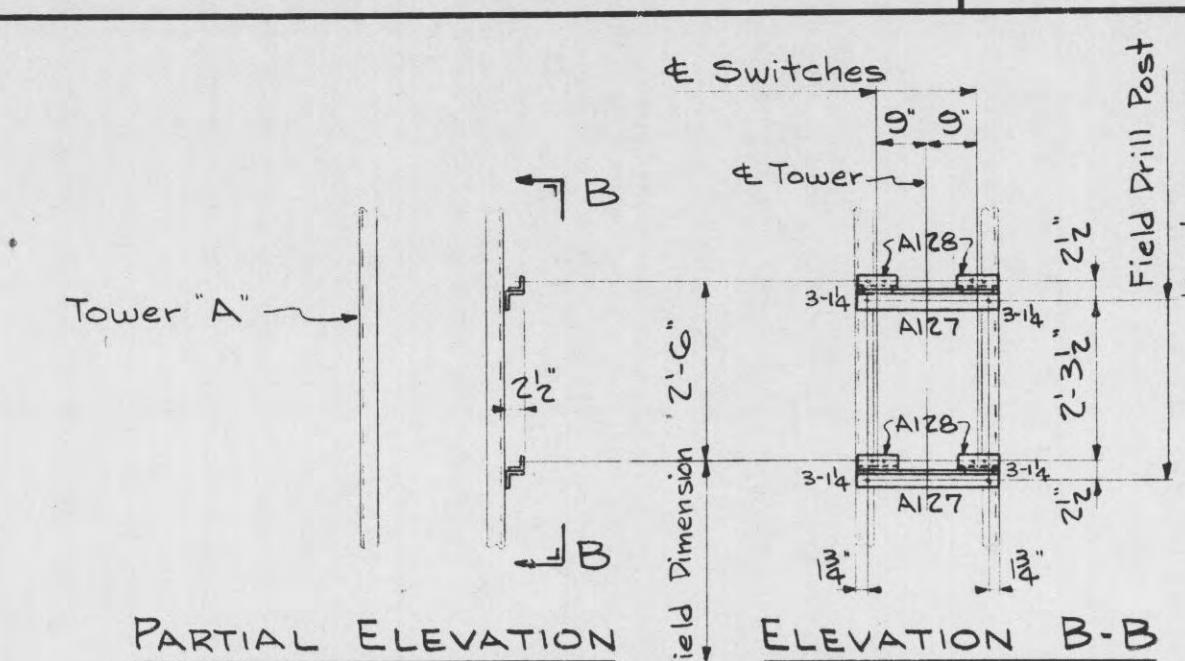
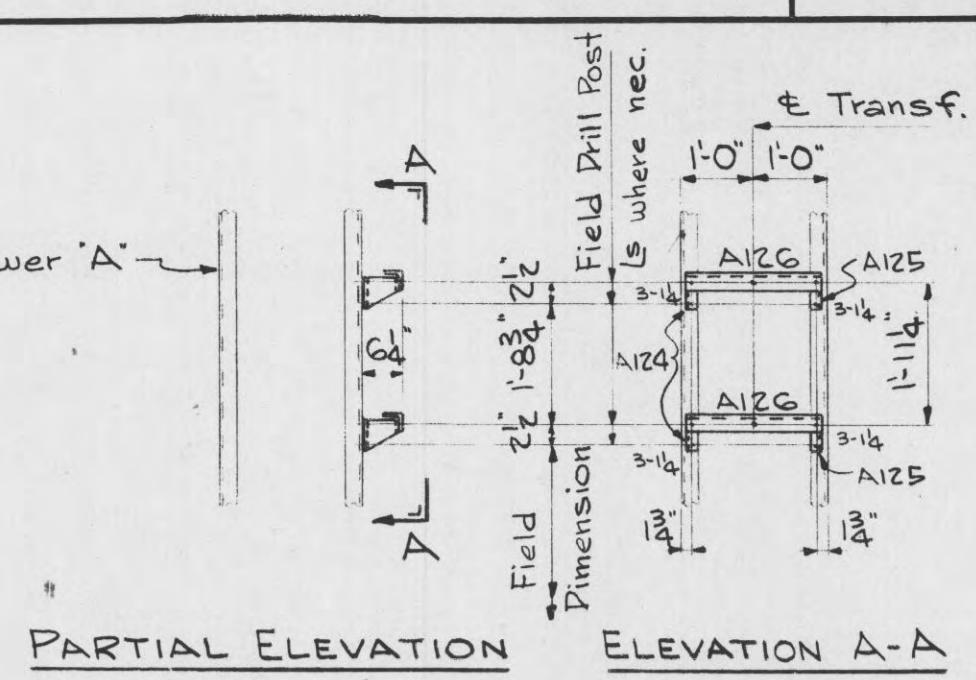
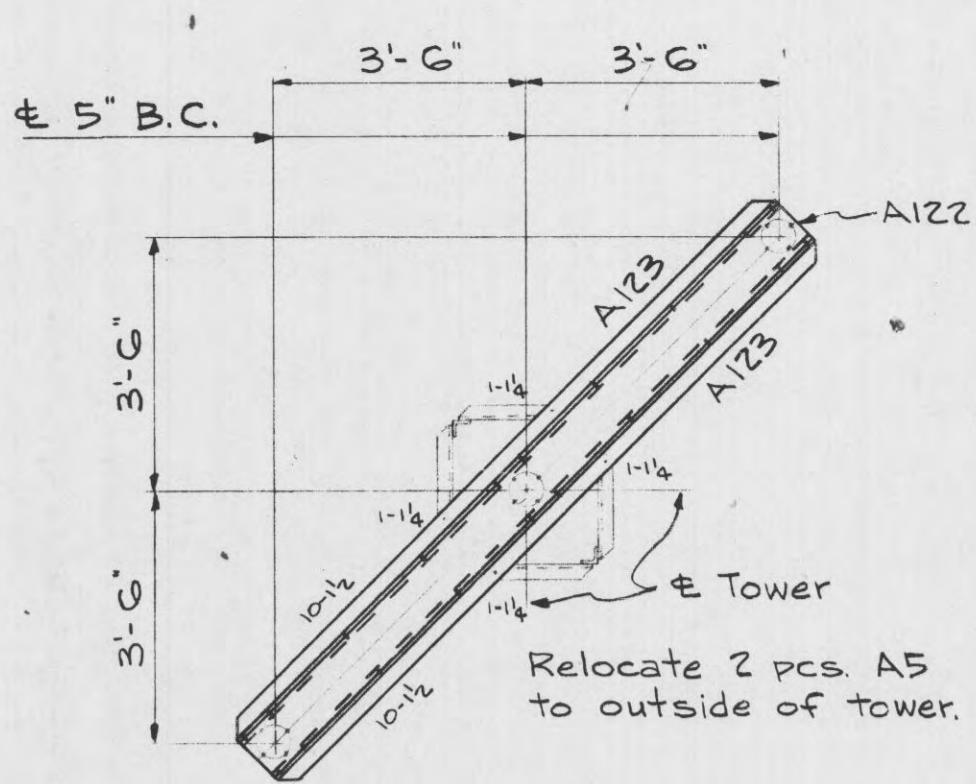
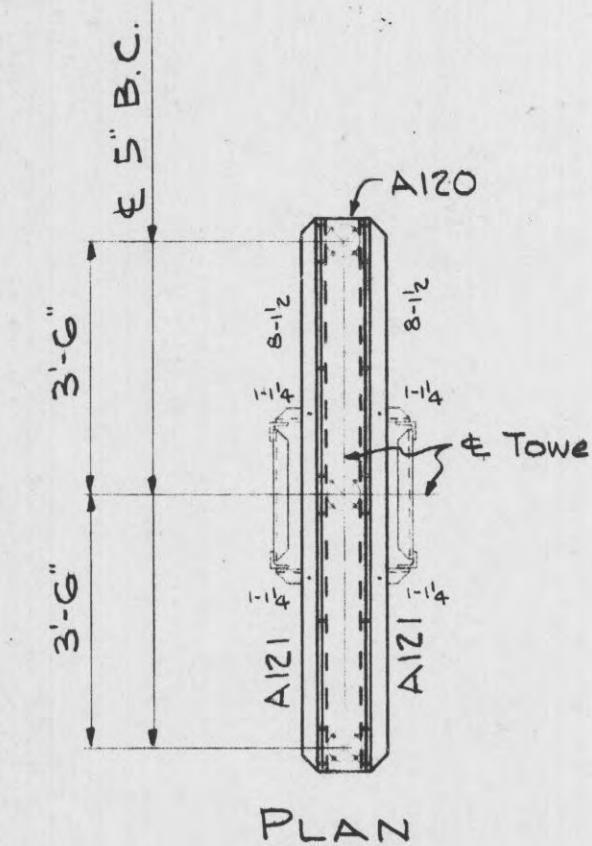
* This member is also detailed on sheets 1 & 5
 @ This member is also detailed on sheet 5
 # This member is also detailed on sheet 1

NOTES:

Holes $\frac{1}{8}$ " unless noted.
 Piece marks to be die stamped before galvanizing.
 Material to be hot dip galvanized after fabrication.

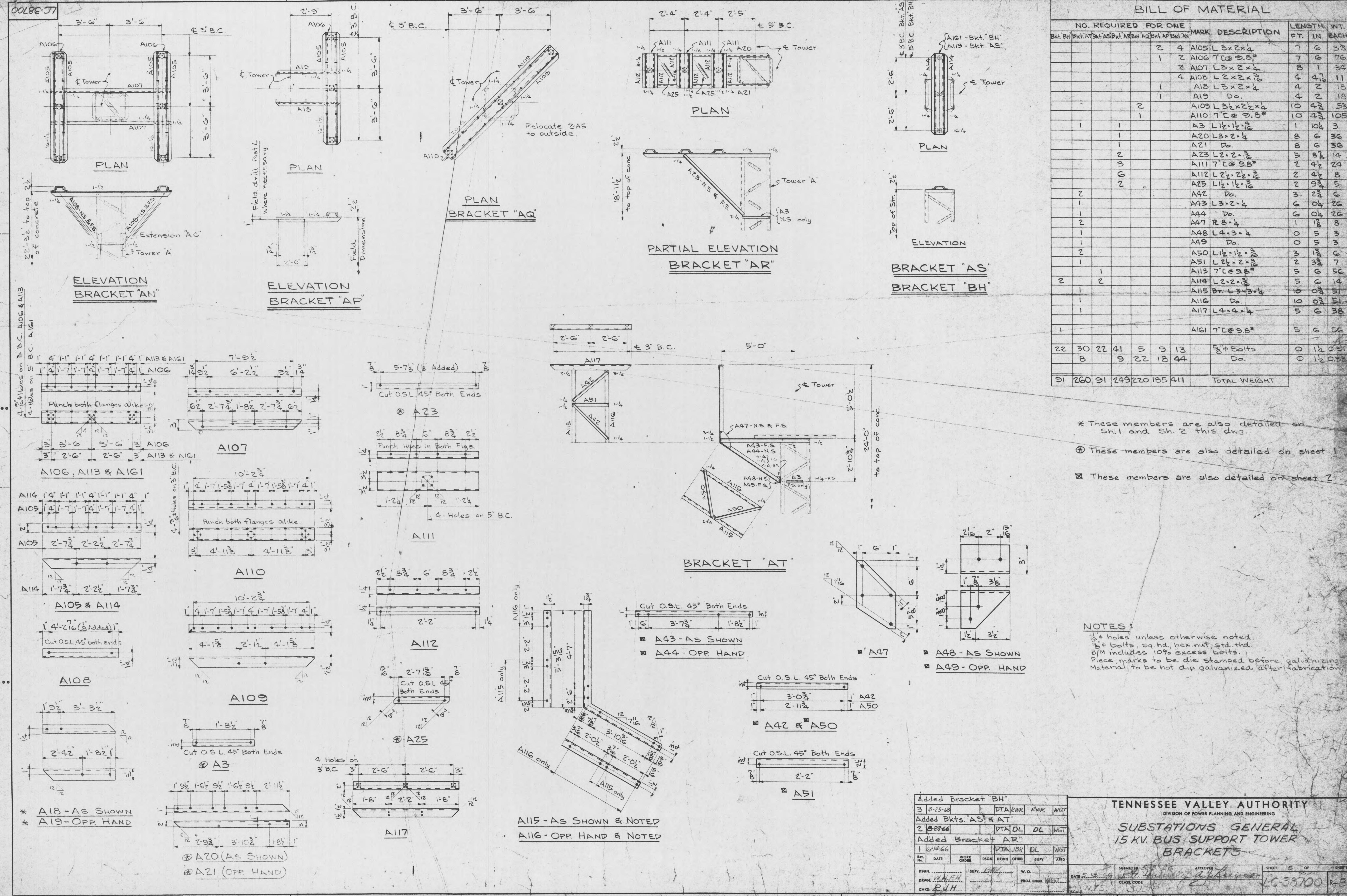


0008-E7



BRACKET "AX"

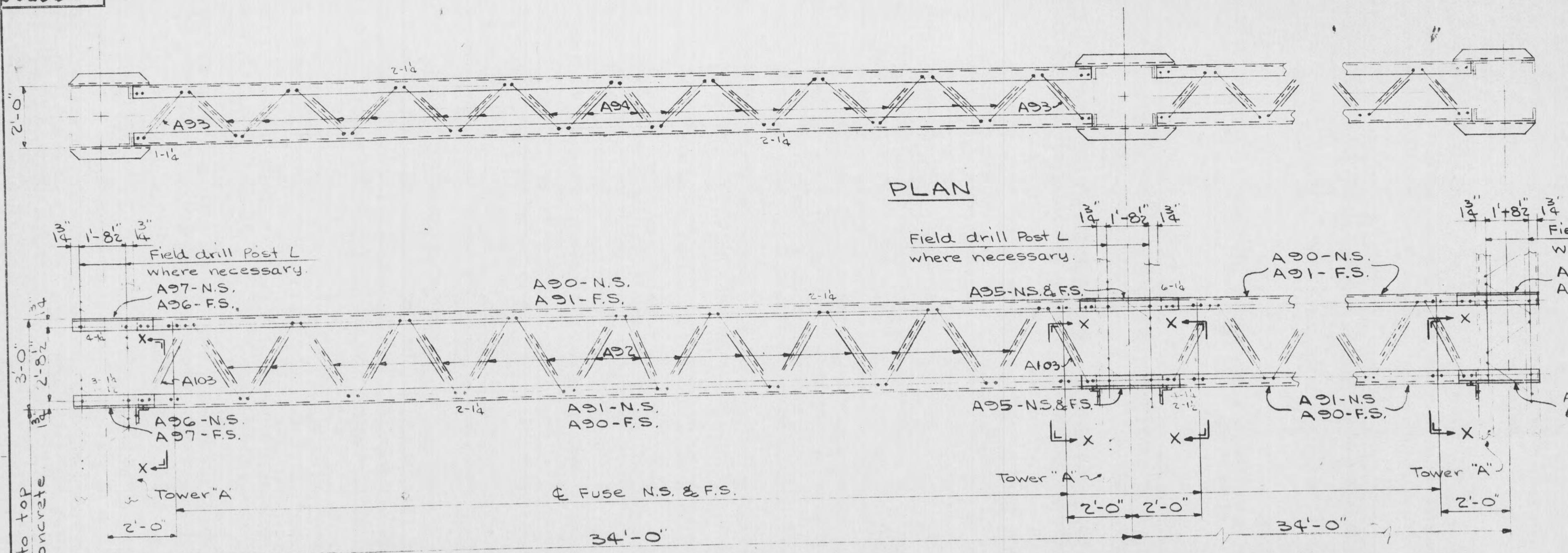
(Station Service Switch Supports)



BILL OF MATERIAL

NO. REQUIRED FOR ONE	MARK	DESCRIPTION	LENGTH FT.	WT. IN. EACH
Girder "GIA"				
2	A90	L-4x3x4	31 1/2	192
2	A91	Do.	31 1/2	192
32	A92	L-1/2x12x16	3 3/8	6
4	A93	Do.	2 3/16	4
32	A94	Do.	2 5/8	5
4	A95	L-4x3x4	2 7/8	16
4	A96	Do.	2 3	14
2	A97	Do.	2 3	14
2	A98	L-2 1/2x2 1/2x3/16	1 10/16	6
1	A99	7" C @ 3.8"	1	102
2	A100	L-3x2x4	2 10/16	12
1	A101	7" C @ 3.8"	1	102
2	A102	L-3x2x4	1 10/16	8
4	A103	L-1/2x12x16	3 1/8	6

0068E-57

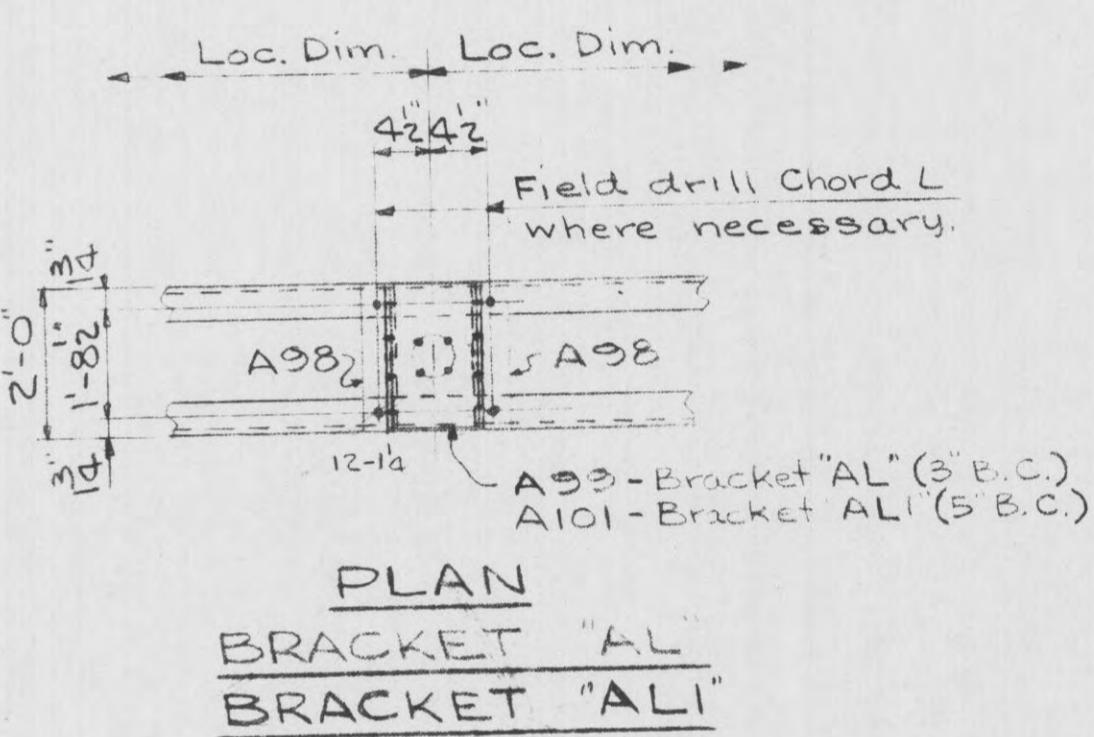


NOTE: When one girder is required for an installation use Girder "GIA". When two girders are required use Girder "GI".

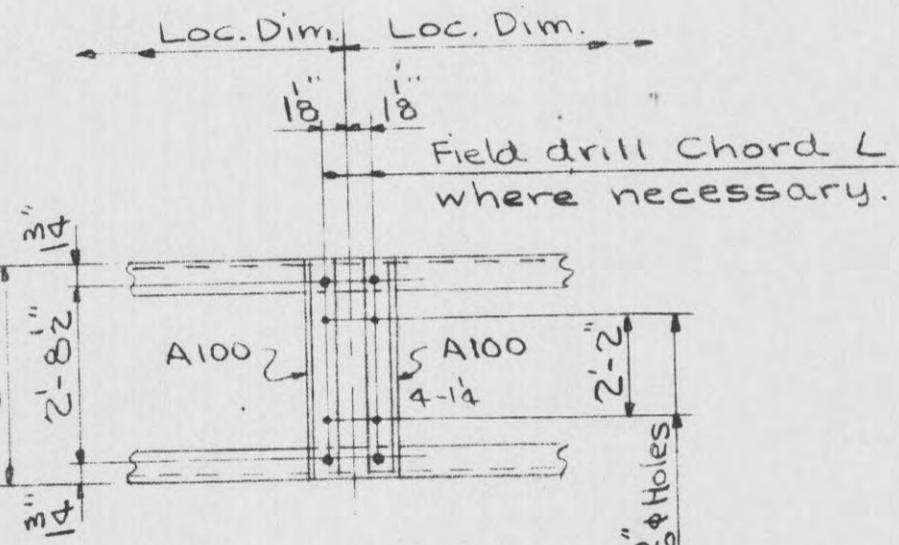
GIRDER "GI" *

GIRDER "GIA" *

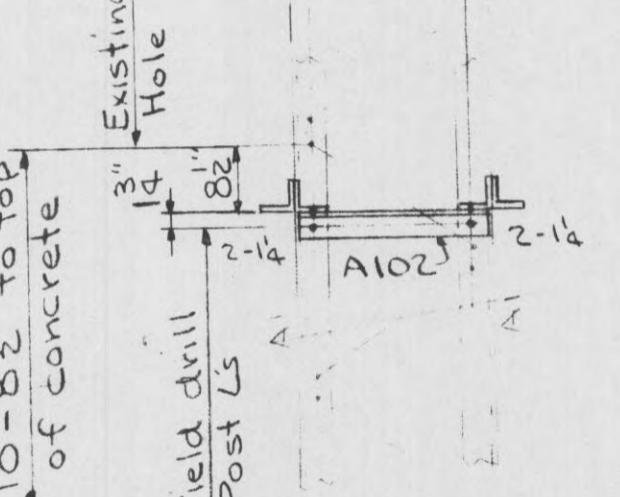
PARTIAL ELEVATION



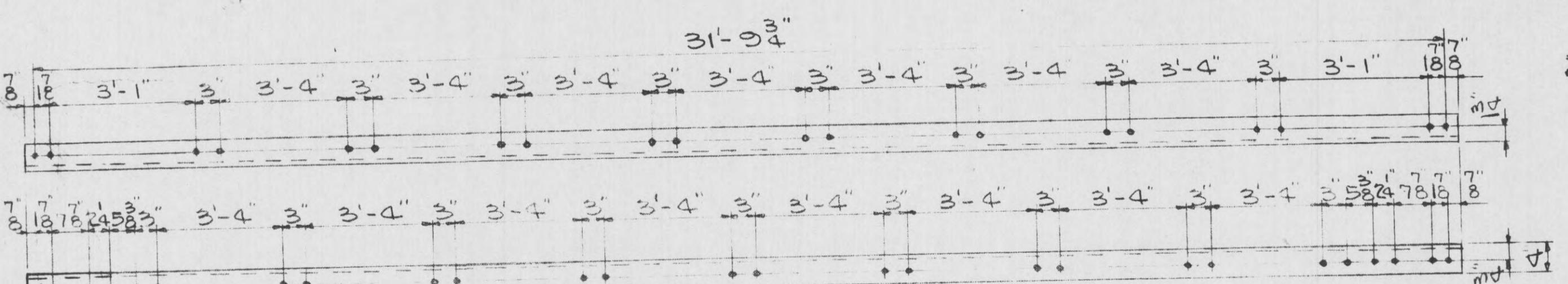
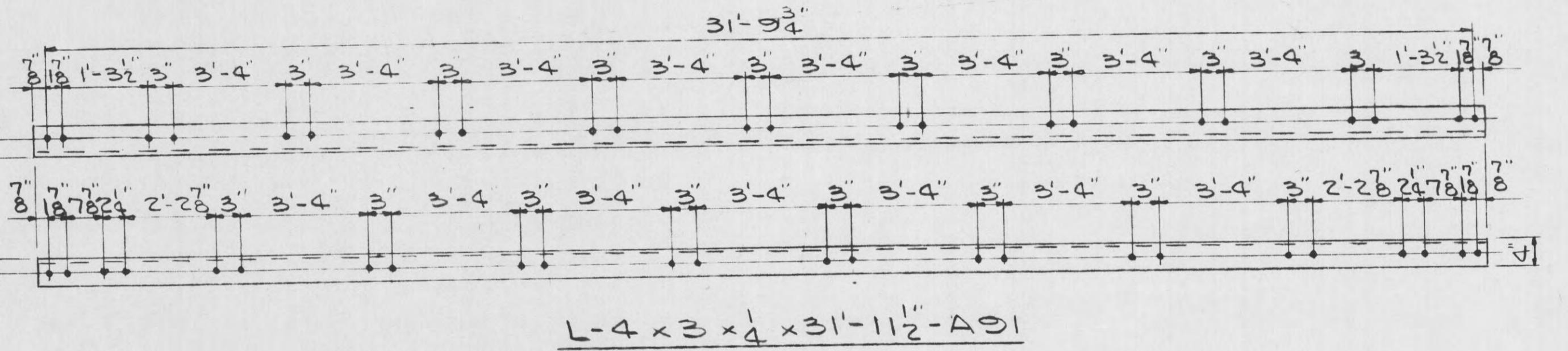
PLAN
BRACKET "AL"
BRACKET "ALI"



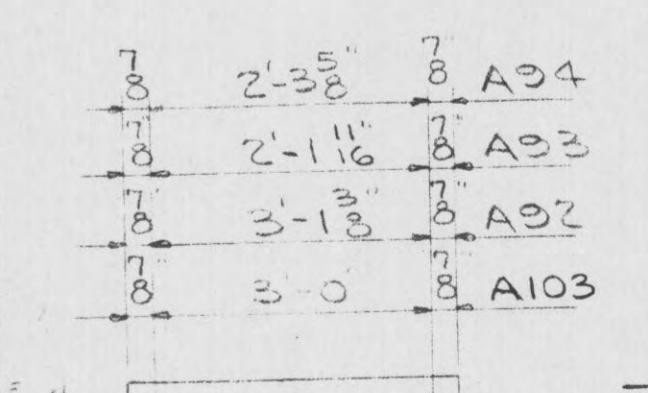
PARTIAL ELEV.
BRACKET "AM"



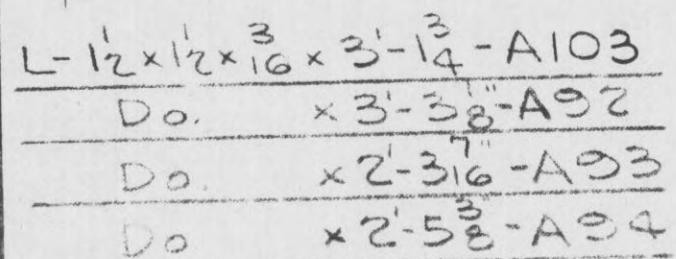
SECTION X-X



L-4x3x4 x 31'-11 1/2"-A30



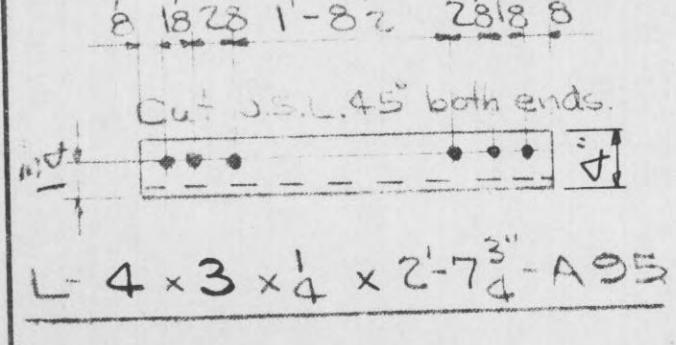
L-4x3x4 x 2'-3-A94
Do. x 2'-3-A95



Do. x 2'-3-A92

Do. x 2'-3 1/2-A93

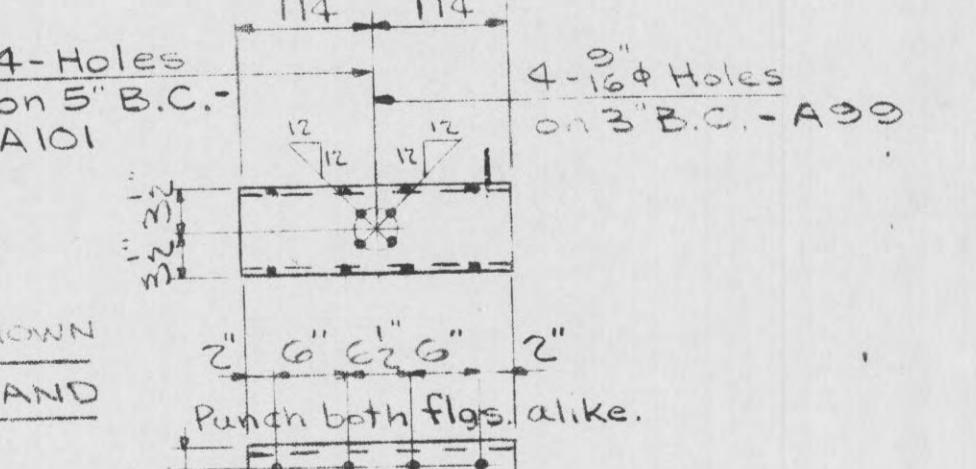
Do. x 2'-5 1/2-A94



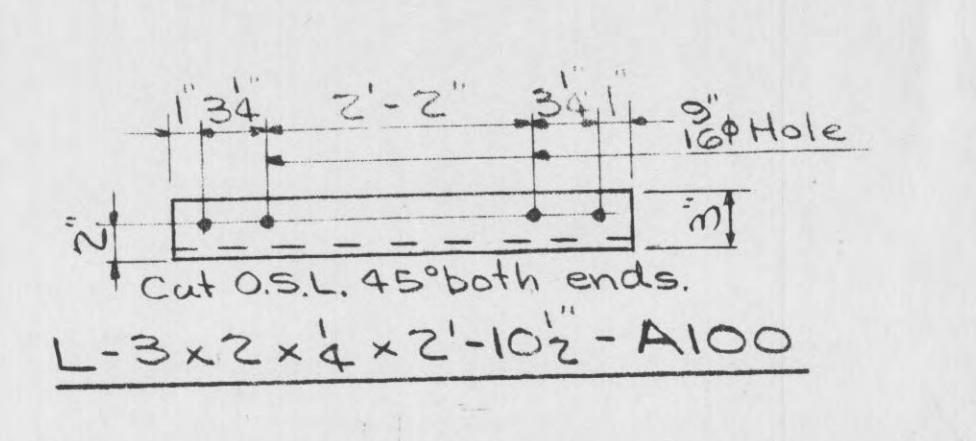
Do. x 2'-3-A93

Do. x 2'-3 1/2-A93

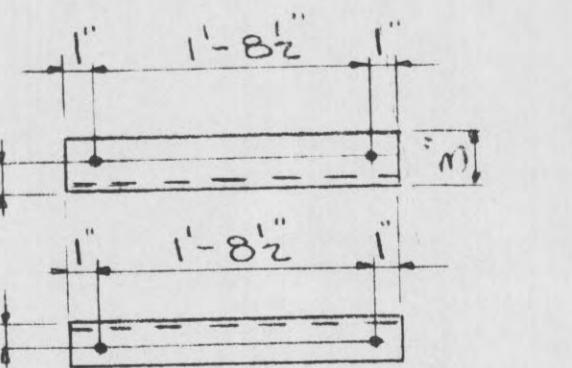
Do. x 2'-5 1/2-A94



Cut O.S.L. 45° both ends.
7" C @ 9.8" x 1'-10 1/2"-A95
Do. x 1'-10 1/2"-A101



Cut O.S.L. 45° both ends.
L-3x2x4 x 2'-7 3/4-A96
Do. x 2'-7 3/4-A97



L-3x2x4 x 2'-10 1/2"-A102



Cut O.S.L. 45° both ends.
L-3x2x4 x 2'-10 1/2"-A100
Do. x 2'-10 1/2"-A102

NOTES:
Holes 1/8" unless otherwise noted
Bolts 5/8" sq. hd., hex. nut, std. thd.
B/M includes 10% excess bolts.
Piece marks to be die stamped before galvanizing
Material to be hot dip galvanized after fabrication.

TENNESSEE VALLEY AUTHORITY
DIVISION OF POWER PLANNING AND ENGINEERING

SUBSTATIONS GENERAL
15 KV. BUS SUPPORT TOWER
EXTENSION & BRACKETS

Added Girder "GIA"					
REV. NO.	DATE	WORK ORDER	DSGN	DRWN	CHKD
			H.H.H.	J.B.R.	R.W.R.
DSGN	SUPV.	DL	W.O.		WT.
DRWN	W.H.E.M.	E.3	PROJ. ENGR.		APP'D
CHKD					

DATE	SUBMITTED	APPROVED	SHEET
2/28/66	R.P. Connally	J. J. Ferguson	4 OF SHEETS
SCALE	6IN	LC-38700 R-1	

SOP1P

BILL OF MATERIAL

ITEM NO.	DESCRIPTION	MARK	LENGTH IN FT. IN. EACH	
			FT.	IN.
A59	T 10 3.8#		8	8
A27	D.O.		8	8
A28	L-3x2x $\frac{3}{4}$		8	37
A18	D.O.		4	2
A31	L-2x2x $\frac{3}{4}$		4	2
A32	T 10 3.8#		5	4
A33	L-3x2x $\frac{3}{4}$		11	1/2
A34	T 10 3.8#		11	1/2
A35	D.O.		11	1/2
A36	L-2x2x $\frac{3}{4}$		10	96
A37	L-12x12x $\frac{3}{8}$		2	12
A5	L-2x2x $\frac{3}{8}$		1	104
A9	D.O.		0	11
A26	D.O.		1	104
A38	D.O.		5	276
A39	T 10 3.8#		5	252
A40	Bent L 3x3x $\frac{3}{4}$		10	03
A41	D.O. opp hand		10	03
A42	L 12x12x $\frac{3}{8}$		3	22
A43	L 3x2x $\frac{3}{4}$		6	04
A44	D.O. opp hand		6	04
A45	L 4x14x $\frac{3}{8}$		8	6
A46	L 12x12x $\frac{3}{8}$		1	104
A47	R 8x14		1	18
A48	L 4x3x $\frac{3}{4}$		0	5
A49	D.O. opp hand		0	5
A50	L 12x12x $\frac{3}{8}$		3	18
A51	L 2x2x $\frac{3}{8}$		2	82
A52	L 12x12x $\frac{3}{8}$		3	9
8# Bolts			0	14
D.O.			0	16
			0.33	
				TOTAL WEIGHT
203	295	91	203	329
203	295	91	203	263
203	295	91	203	123
203	295	91	203	171
				5.0

