521 FT. UTC TYPE 540/POLE

E.I.A.-RS222-C, 50 PSF NO ICE

BURNHAM, ILLINOIS

APRIL 25, 1994

Utility Tower COMPANY

OKLAHOMA CITY, OKLAHOMA

Utility Tower COMPANY

ENGINEERING

SHEET NO. ___ OF ___
JOB NO. ___
QUOTE NO. ___
BY J.M.J.

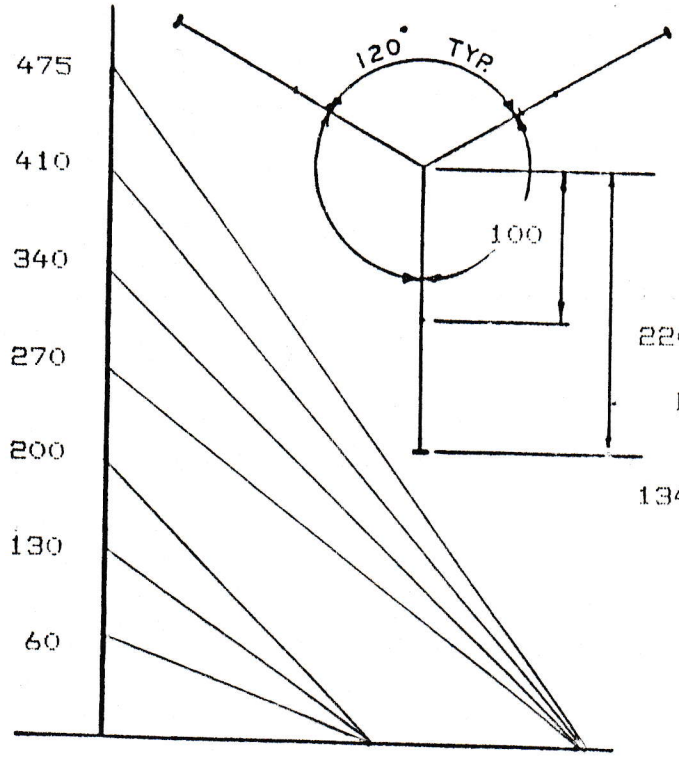
DATA

521 FT, UTC TYPE 540/POLE FM
EIA-RS222-C 50 PSF, NO ICE
BURNHAM, ILLINOIS

W.L. 50 PSF
ICE 0
EIA RS-222-C X
UBC ___

LAYOUT

CNM 67418
CNV 2593
CNW 3014
AWL 36, 34, 4x31, 20
AWT 4x8, 22, 6
FL 3-BAY, 7-BAY
2-DB408, DB-420, 2-DB230



REACTIONS

BASE	INSIDE ANC	OUTSIDE ANC
134131#	18472# V	49953# V
	R 24434#	R 58839#
1446#	49.1	58.1
	H 15994#	H 31092#

SUMMARY

BAYS PER SEC 6 FYL 50 FYD 50 FYG 50 LEG CONN. BOLTS 3/4 STYLE 2

SPAN	WT/FT	LEGS	DIAGS	GIRTS	GUYS	TNBLES	IN TEN
-0-60	55.9	2" SR	5/8" X-BR	7/8 SR	7/16 EHS	3/4x12	2080
60-130	"	"	"	"	1/2 EHS	"	2690
130-200	"	"	"	"	7/16 EHS	"	2080
200-270	"	"	"	"	1/2 EHS	"	2690
270-340	"	"	"	"	9/16 EHS	7/8x12	3500
340-410	62.4	1-3/4 SR	"	"	5/8 BS	1x12	4800
410-475	46.4	"	"	"	"	"	"
CANT.	"	"	"	"			

ANCHORS	NO	BEAM	STD FOUNDATION NO. SPECIAL
IN 100	SPC.	3"x 5.7# x 13'LONG	
MID			
OUT 220	SPC.	8"x 20# x 13'LONG	

ENG NUMBER 94-86-119

UTILITY TOWER COMPANY
3-BAY, 7-BAY, 1-STL, 4-DB408, 2-DB230,
475' 540 SR + 45' POLE 50 PSF NO ICE BURNHAM, ILL.

****

HEIGHT= 475.FT ANC1= 100.FT ANC2= 220.FT ANC3= 0.FT
FY=50.KSI CANT MOM= 67418.FT LB CANT V= 2593.LBS CANT WT= 3014.LBS

****

SPAN	WIDTH	WIND LOAD	STYLE	BAYS	GL	DL	LU
1	42.	50.	2	6	40.00	55.17	38.00
2	42.	50.	2	6	40.00	55.17	38.00
3	42.	50.	2	6	40.00	55.17	38.00
4	42.	50.	2	6	40.00	55.17	38.00
5	42.	50.	2	6	40.00	55.17	38.00
6	42.	50.	2	6	40.25	55.35	38.00
7	42.	50.	2	6	40.25	55.35	38.00

LEG SIZES

SPAN	DESCRIPTION
1	2.0000 OD SOLID ROD
2	2.0000 OD SOLID ROD
3	2.0000 OD SOLID ROD
4	2.0000 OD SOLID ROD
5	2.0000 OD SOLID ROD
6	1.7500 OD SOLID ROD
7	1.7500 OD SOLID ROD

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DIAGONAL SIZES

SPAN	DESCRIPTION
1	0.6250 OD SOLID ROD
2	0.6250 OD SOLID ROD
3	0.6250 OD SOLID ROD
4	0.6250 OD SOLID ROD
5	0.6250 OD SOLID ROD
6	0.6250 OD SOLID ROD
7	0.6250 OD SOLID ROD

****

GIRT SIZES

SPAN	DESCRIPTION
1	0.8750 OD SOLID ROD
2	0.8750 OD SOLID ROD
3	0.8750 OD SOLID ROD
4	0.8750 OD SOLID ROD
5	0.8750 OD SOLID ROD
6	0.8750 OD SOLID ROD
7	0.8750 OD SOLID ROD

****

POINT LOADS

ELEVATION	LOAD
50.00	304.
100.00	182.
372.00	165.
382.00	165.
392.00	165.
402.00	165.
412.00	165.
422.00	165.
432.00	165.

448.00 520.
462.00 190.

SPAN	LENGTH	WIND PLF	WT PLF	FEMB	FEMT	VB	VT
1	60.0	64.1	55.9	0.	-31169.	1935.	-2215.
2	70.0	62.1	55.9	26696.	-27142.	2245.	-2284.
3	70.0	59.1	55.9	24134.	-24134.	2069.	-2069.
4	70.0	59.1	55.9	24134.	-24134.	2069.	-2069.
5	70.0	59.1	55.9	24134.	-24134.	2069.	-2069.
6	70.0	57.1	62.4	26670.	-28952.	2182.	-2473.
7	65.0	46.1	46.4	23241.	-23721.	2148.	-2052.

DISTRIBUTION FACTORS

0.00 -0.47 -0.50 -0.50 -0.50 -0.57 -0.48 -1.00
-1.00 -0.53 -0.50 -0.50 -0.50 -0.43 -0.52 0.00

SPAN NO	DISTRIBUTED MOMENTS MOM B	MOM T	SHEARS VB	VT	REACTIONS LBS
1	0.	-29356.	1446.	-2704.	5013.
2	29356.	-24930.	2309.	-2221.	4298.
3	24930.	-24305.	2078.	-2060.	4152.
4	24305.	-22654.	2092.	-2045.	4010.
5	22654.	-29885.	1965.	-2172.	4568.
6	29885.	-14849.	2397.	-2258.	3597.
7	14849.	-67418.	1339.	-2861.	5454.

GUY ELEV	GUY LENGTH	ANCHOR DIST	GUY AREA	GUY WT	INITIAL TENSION
60.	116.6	100.00	0.11560	0.3934	2080.
130.	164.0	100.00	0.14970	0.5094	2690.
200.	223.6	100.00	0.11560	0.3934	2080.
270.	348.3	220.00	0.14970	0.5094	2690.
340.	405.0	220.00	0.19430	0.6612	3500.
410.	465.3	220.00	0.23560	0.8017	4800.
475.	523.5	220.00	0.23560	0.8017	4800.

TOWER ANALYZED AS A CONTINUOUS BEAM ON YIELDING SUPPORTS
1 INCH UNIT DEFLECTION AT THE 60. FT LEVEL

SPAN NO	DISTRIBUTED MOMENTS MOM B	MOM T	SHEARS VB	VT	REACTIONS LBS
1	0.	40227.	670.	670.	-1617.
2	-40227.	-26036.	-947.	-947.	1418.
3	26036.	6972.	472.	472.	-598.
4	-6972.	-1853.	-126.	-126.	159.
5	1853.	438.	33.	33.	-41.
6	-438.	-129.	-8.	-8.	10.
7	129.	0.	2.	2.	-2.

1 INCH UNIT DEFLECTION AT THE 130. FT LEVEL

SPAN NO	DISTRIBUTED MOMENTS MOM B	MOM T	SHEARS VB	VT	REACTIONS LBS
1	0.	-26563.	-443.	-443.	1418.
2	26563.	41718.	975.	975.	-1949.
3	-41718.	-26421.	-973.	-973.	1451.
4	26421.	7020.	478.	478.	-602.

5	-7020.	-1661.	-124.	-124.	155.
6	1661.	489.	31.	31.	-38.
7	-489.	0.	-8.	-8.	8.

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1 INCH UNIT DEFLECTION AT THE 200. FT LEVEL

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
NO	MOM B	MOM T	VB	VT	LBS
1	0.	7113.	119.	119.	-598.
2	-7113.	-26421.	-479.	-479.	1451.
3	26421.	41625.	972.	972.	-1941.
4	-41625.	-26191.	-969.	-969.	1431.
5	26191.	6196.	463.	463.	-577.
6	-6196.	-1826.	-115.	-115.	143.
7	1826.	0.	28.	28.	-28.

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1 INCH UNIT DEFLECTION AT THE 270. FT LEVEL

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
NO	MOM B	MOM T	VB	VT	LBS
1	0.	-1890.	-32.	-32.	159.
2	1890.	7020.	127.	127.	-602.
3	-7020.	-26191.	-474.	-474.	1431.
4	26191.	40801.	957.	957.	-1870.
5	-40801.	-23123.	-913.	-913.	1341.
6	23123.	6815.	428.	428.	-533.
7	-6815.	0.	-105.	-105.	105.

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1 INCH UNIT DEFLECTION AT THE 340. FT LEVEL

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
NO	MOM B	MOM T	VB	VT	LBS
1	0.	486.	8.	8.	-41.
2	-486.	-1805.	-33.	-33.	155.
3	1805.	6735.	122.	122.	-577.
4	-6735.	-25134.	-455.	-455.	1341.
5	25134.	36858.	886.	886.	-1751.
6	-36858.	-23713.	-865.	-865.	1230.
7	23713.	0.	365.	365.	-365.

****

1 INCH UNIT DEFLECTION AT THE 410. FT LEVEL

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
NO	MOM B	MOM T	VB	VT	LBS
1	0.	-114.	-2.	-2.	10.
2	114.	424.	8.	8.	-36.
3	-424.	-1583.	-29.	-29.	136.
4	1583.	5907.	107.	107.	-506.
5	-5907.	-22045.	-399.	-399.	1139.
6	22045.	29726.	740.	740.	-1197.
7	-29726.	0.	-457.	-457.	457.

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1 INCH UNIT DEFLECTION AT THE 475. FT LEVEL

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
NO	MOM B	MOM T	VB	VT	LBS
1	0.	18.	0.	0.	-1.
2	-18.	-66.	-1.	-1.	6.
3	66.	246.	4.	4.	-21.
4	-246.	-917.	-17.	-17.	79.
5	917.	3424.	62.	62.	-274.

6	-3424.	-11388.	-212.	-212.	387.
7	11388.	0.	175.	175.	-175.

****

MOMENTS FROM NON-LINEAR DEFLECTIONS

GUY LEVEL	DEF MOM	RIGID BM MOM	FINAL MOM	DEF	EMOM
0.	0.	0.	0.	0.0000	
60.	-3856.	-29356.	-33212.	3.7731	7141.
130.	-11403.	-24930.	-36334.	8.6268	17127.
200.	26420.	-24305.	2115.	13.8853	13973.
270.	-10087.	-22654.	-32741.	17.6653	16876.
340.	-29681.	-29885.	-59566.	22.2111	23082.
410.	-15010.	-14849.	-29859.	29.6824	30790.
475.	0.	-67418.	-67418.	41.2216	34930.

****

ELEV	SPG	Q	REACTION	DEF
60.	1409.	-276.	5042.	3.7731
130.	652.	-270.	5355.	8.6268
200.	192.	-392.	2279.	13.8853
270.	291.	-585.	4556.	17.6653
340.	242.	-798.	4579.	22.2111
410.	200.	-1037.	4895.	29.6824
475.	140.	-1222.	4542.	41.2216

****

GUY STRESS

GUY ELEV	CABLE FORCE	BREAK STR	SAFETY FACTOR	1
60.	6875.	20800.	3.0254	0.8263
130.	10571.	26900.	2.5448	0.9824
200.	7589.	20800.	2.7407	0.9122
270.	10605.	26900.	2.5365	0.9856
340.	13230.	35000.	2.6455	0.9450
410.	17168.	48000.	2.7958	0.8942
475.	18441.	48000.	2.6029	0.9605

****

ANCHOR REACTIONS

ANCHOR AT 100. FT FROM BASE + 0.00 FROM BASE GRADE

HORIZ= 15994. VERT= 18472. RESULT= 24434. RES. ANG= 49.11DEG

LATERAL= 0.

ANCHOR AT 220. FT FROM BASE + 0.00 FROM BASE GRADE

HORIZ= 31092. VERT= 49953. RESULT= 58839. RES. ANG= 58.10DEG

LATERAL= 0.

****

LEG STRESS

HEIGHT	FA	FB	ALLOW	% STRESS
0.	14232.	0.	19800.	0.7188
39.	14232.	1536.	19800.	0.7964
60.	13876.	3863.	19800.	0.8959
60.	13409.	3113.	19800.	0.8344
96.	13409.	345.	19800.	0.6946
130.	12994.	4715.	19800.	0.8944
130.	11861.	2916.	19800.	0.7463
156.	11861.	2273.	19800.	0.7138
200.	11446.	512.	19800.	0.6039
200.	10379.	956.	19800.	0.5725
243.	10379.	2414.	19800.	0.6461
270.	9964.	4324.	19800.	0.7216
270.	8665.	2552.	19800.	0.5665

311.	8665.	915.	19800.	0.4838
340.	8250.	7467.	19800.	0.7938
340.	8379.	6587.	17606.	0.8500
368.	8379.	1122.	17606.	0.5396
410.	7773.	6207.	17606.	0.7940
410.	4508.	1984.	17606.	0.3687
455.	4508.	2837.	17606.	0.4171
475.	4089.	11642.	17606.	0.8935

****

BASE LOAD=134131.9 LBS

DIAGONAL STRESS

SPAN	FORCE	FA	ALLOW	% STRESS
1	2546.	8298.	30000.	0.2766 X BR
2	2141.	6979.	30000.	0.2326 X BR
3	2407.	7847.	30000.	0.2616 X BR
4	2360.	7693.	30000.	0.2564 X BR
5	2255.	7349.	30000.	0.2450 X BR
6	2389.	7788.	30000.	0.2596 X BR
7	2411.	7859.	30000.	0.2620 X BR

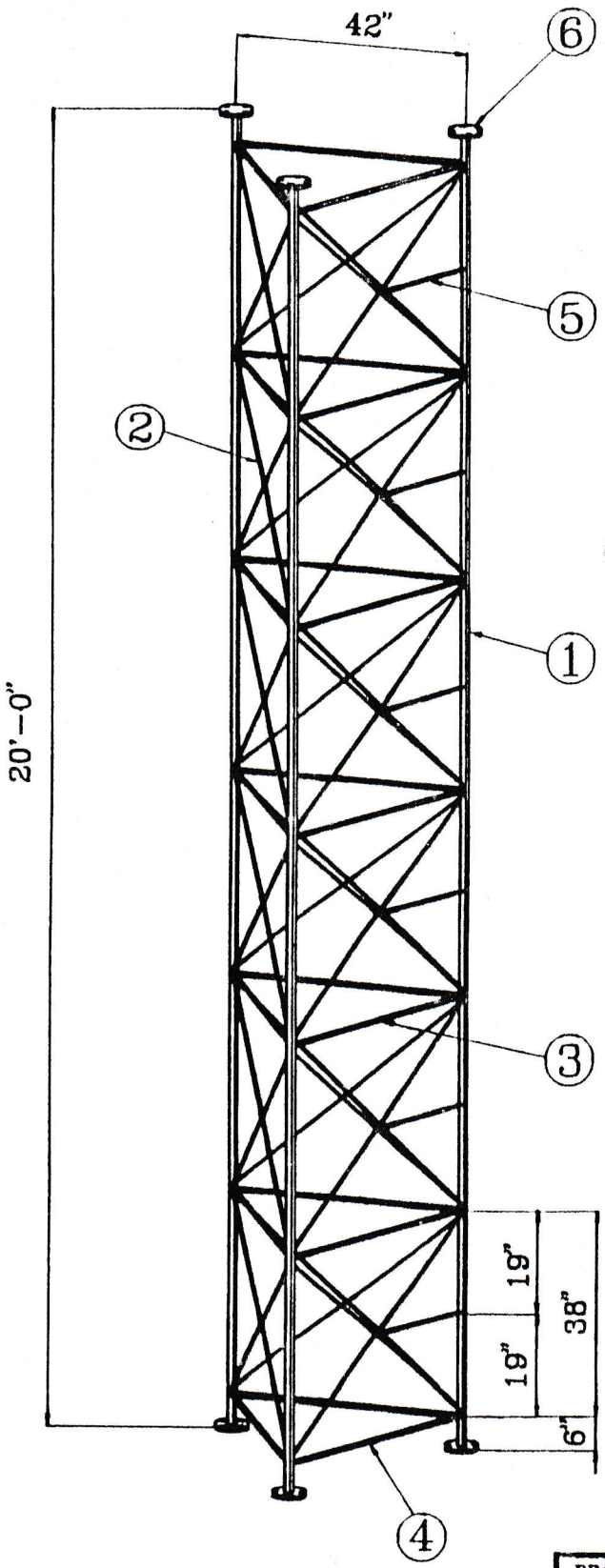
****

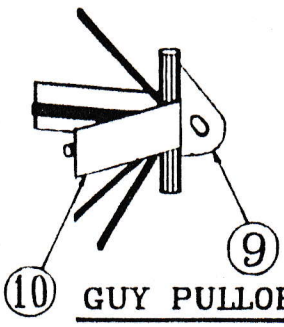
GIRT STRESS

SPAN	FORCE	FA	ALLOW	% STRESS
1	1846.	3070.	6499.	0.4723
2	1552.	2582.	6499.	0.3973
3	1745.	2902.	6499.	0.4466
4	1711.	2846.	6499.	0.4379
5	1635.	2718.	6499.	0.4183
6	1737.	2889.	6472.	0.4464
7	1753.	2916.	6472.	0.4505

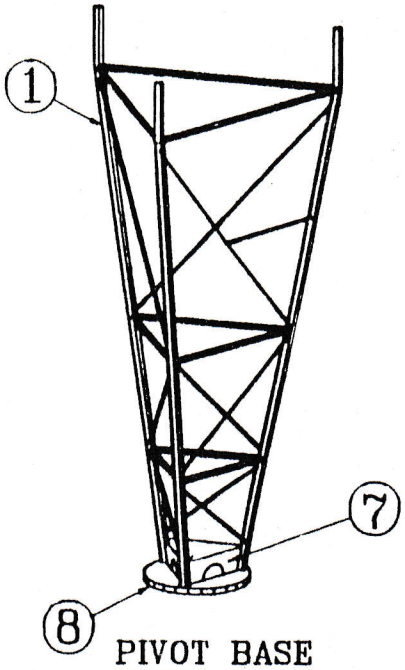
****

NOTE:
ALL TOWERS FABRICATED
WITH SOLID STEEL MEMBERS





GUY PULLOFF



PIVOT BASE

MATERIAL

ITEM	DESCRIPTION	MINIMUM SIZE
1	LEG	1-1/2" O.D. S.R.
2	DIAGONAL	5/8" O.D. S.R. X-BR.
3	GIRT	7/8" O.D. S.R.
4	END GIRT	1" O.D. S.R.
5	STEP	3/4" O.D. S.R.
6	FLANGE	PLATE 3/4" X 6" DIA
7	BASE STRAPS	BAR 4 X 3/8"
8	BASE PLATE	PLATE 1 X 16" DIA.
9	GUY LUG	PLATE 5/8"
10	GUY STRAP	BAR 4 X 3/8"

ACTUAL SIZES MAY VARY, AND WILL BE DETERMINED BY A STRUCTURAL STRESS ANALYSIS

DRAWN BY RLC
DATE 01-09-91
DRAWING NO. 91007

TYPE 540 DETAILS

Utility Tower
OKLAHOMA CITY, OKLAHOMA

Utility Tower COMPANY
"ENGINEERING"

SUBJECT 45' SS. POLE
BURNHAM, ILL

DATE 3/24/86

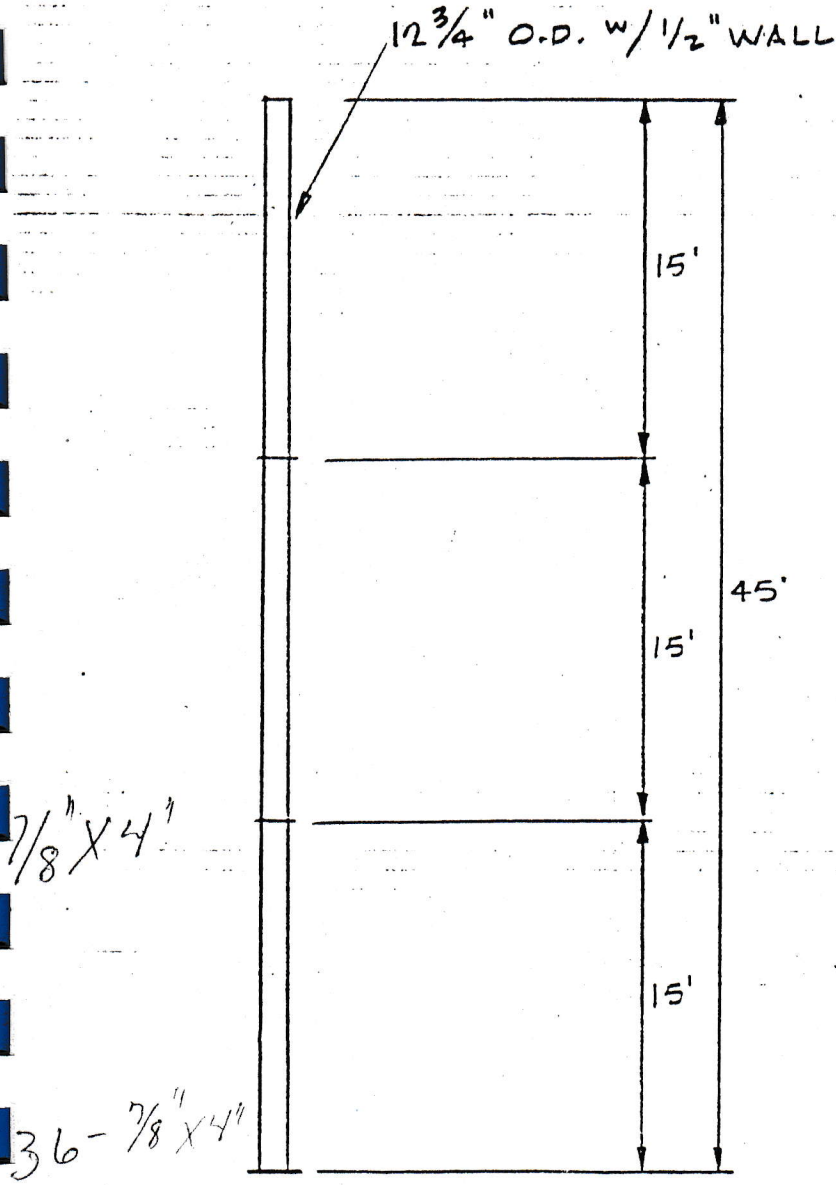
SHEET NO.

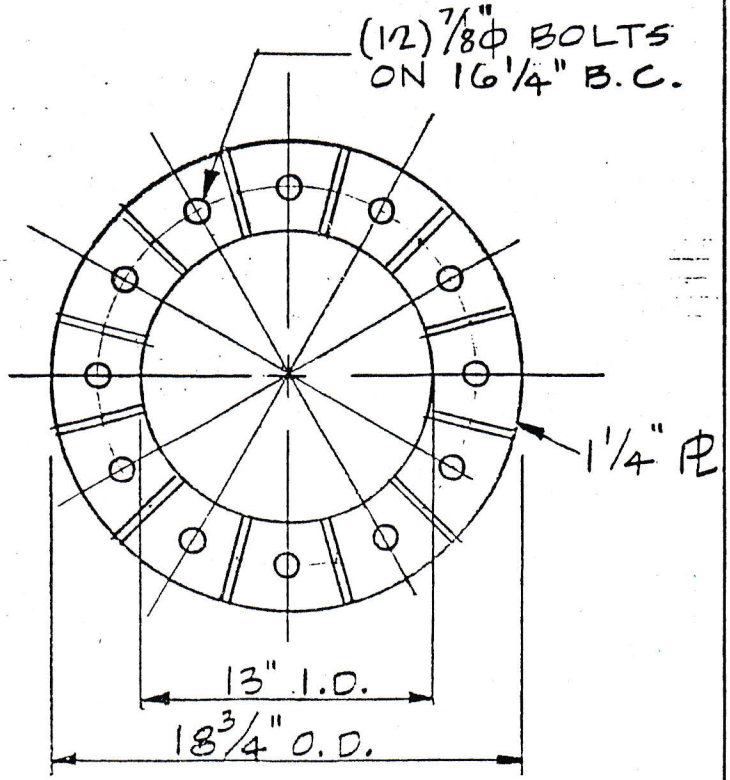
ENG NO.

BY CAP

MANUFACTURE & INSTALLATION OF TV, AM, FM, & MICROWAVE RELAY TOWERS

3200 NORTHWEST 38th, P. O. BOX 12369 OKLAHOMA CITY, OKLAHOMA 73157

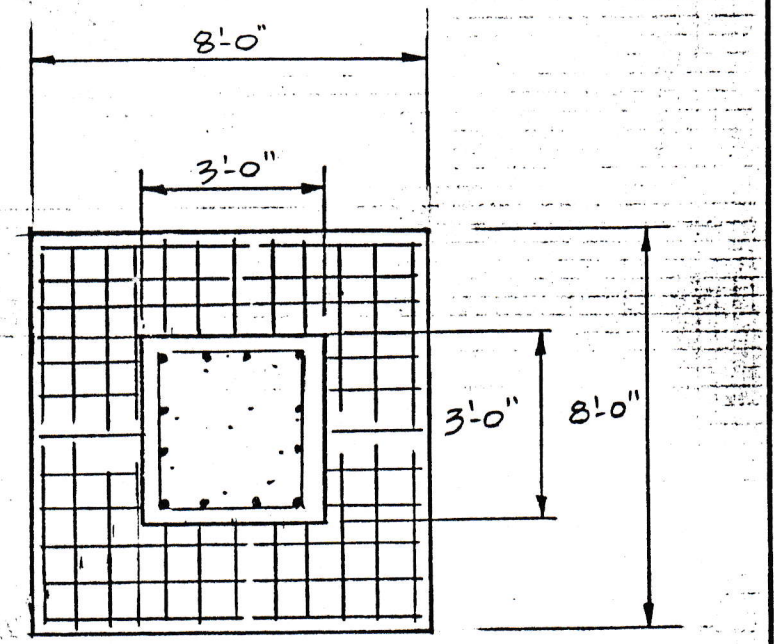




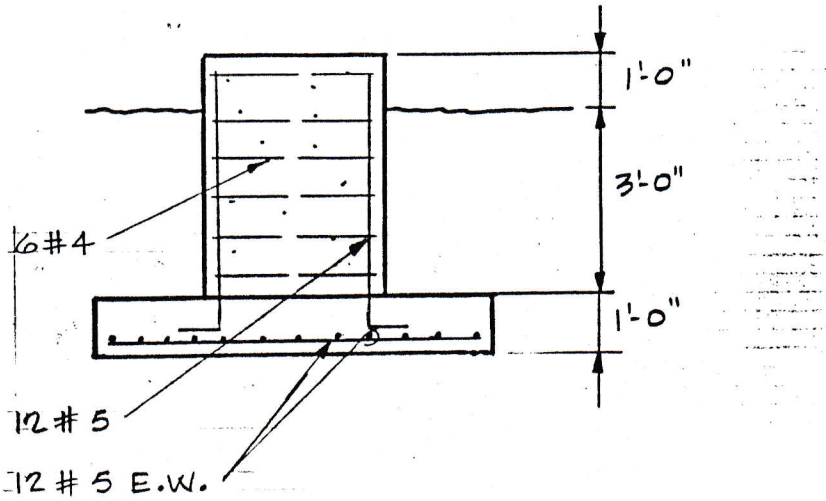
BASE PL

Utility Tower COMPANY
"ENGINEERING"
MANUFACTURE & INSTALLATION OF TV, AM, FM, & MICROWAVE RELAY TOWERS
3200 NORTHWEST 38th, P. O. BOX 12369 OKLAHOMA CITY, OKLAHOMA 73157

SUBJECT BASE
SHEET NO.
ENG NO.
DATE 2/13/86
BY CAP



1. THE SOIL BEARING CAPACITY IS TO BE 4,000 LBS./SQ. FT.
2. ALL CONCRETE SHALL BE POURED ON FIRM, UNDISTURBED SOIL.
3. ALL CONCRETE SHALL DEVELOP A UNIT COMPRESSIVE STRESS OF 3,000 PSI AT THE END OF 28 DAYS.
4. PORTLAND CEMENT SHALL CONFORM TO ASTM C-150.
5. CONCRETE AGGREGATES SHALL CONFORM TO ASTM C-33.3/4" MAX.
6. COMPACT CONCRETE WITH A MECHANICAL VIBRATOR.
7. ALL REINFORCING SHALL BE DEFORMED BARS CONFORMING TO ASTM A615,GRADE 40.
8. REINFORCING SHALL BE PROTECTED FROM GROUND OR WEATHER BY 3" OF CONCRETE.



TWR.	132,600
PAD	9,300
PIER	5,200
SOIL	16,500
TOTAL	163,600

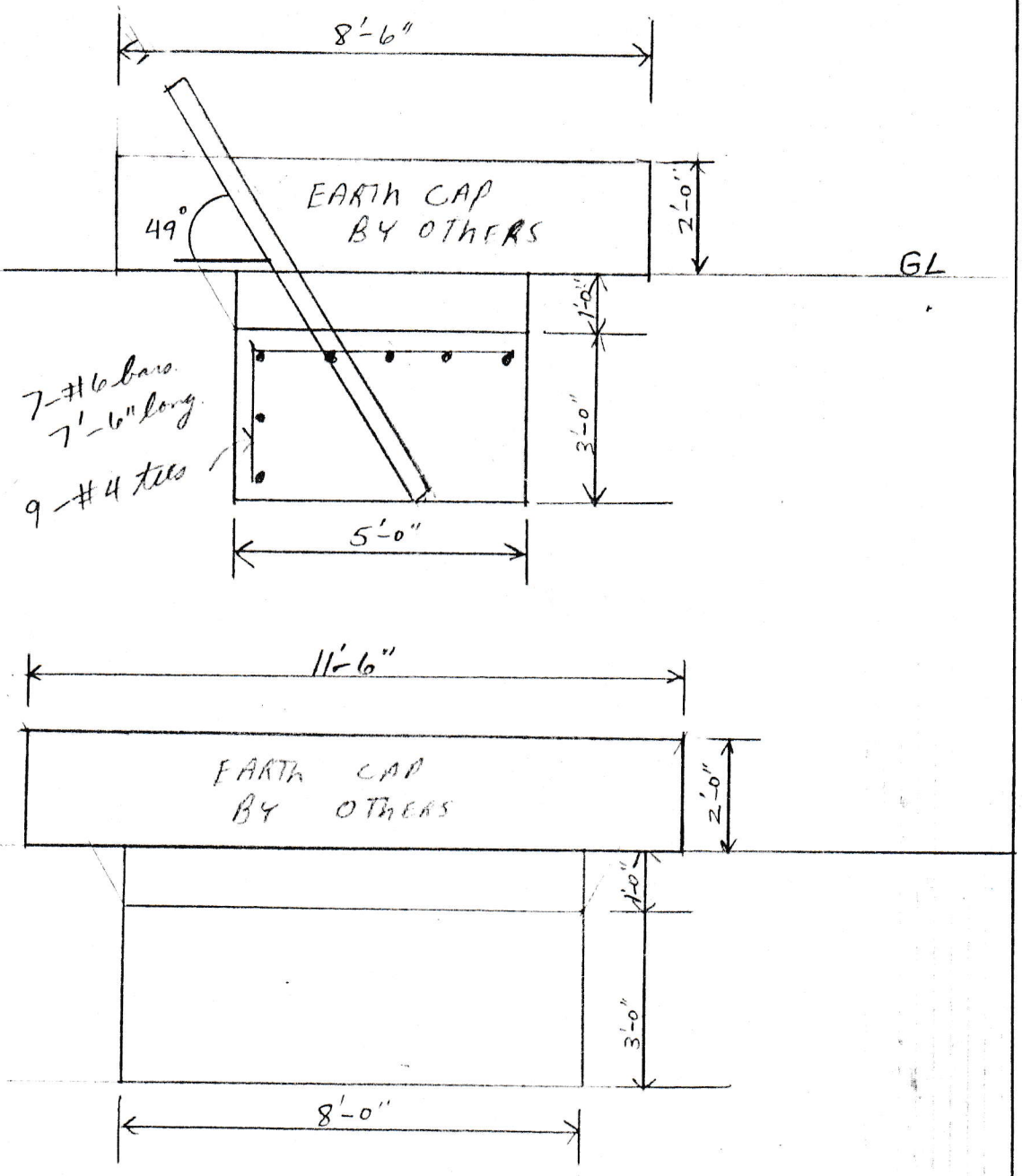
163,600 / 64 = 2,556 P.S.F.

Utility Tower COMPANY
" ENGINEERING "

SUBJECT 520' 540/POLE
INSIDE ANCHOR

SHEET NO.
ENG NO.
DATE
BY

MANUFACTURE & INSTALLATION OF TV, AM, FM, & MICROWAVE RELAY TOWERS
3200 NORTHWEST 38th, P. O. BOX 12369 OKLAHOMA CITY, OKLAHOMA 73157



Utility Tower COMPANY
" ENGINEERING "

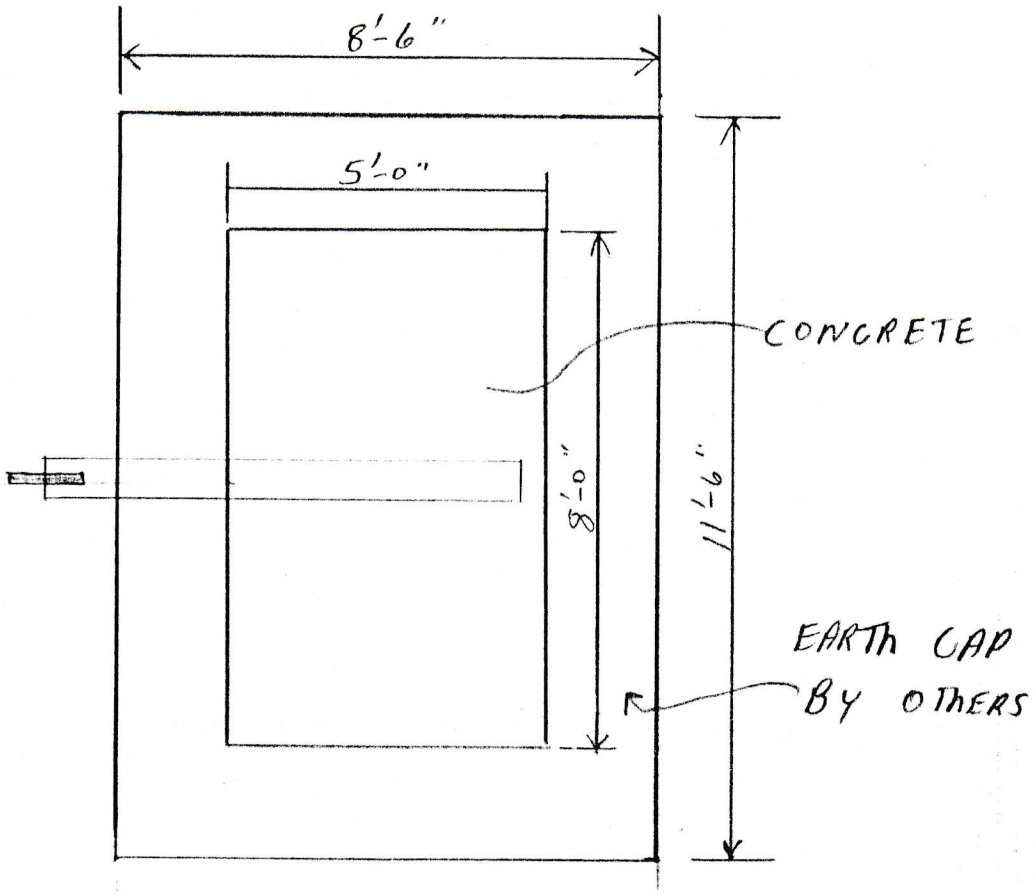
SUBJECT _____ SHEET NO. _____

_____ ENG NO. _____

_____ DATE _____ BY _____

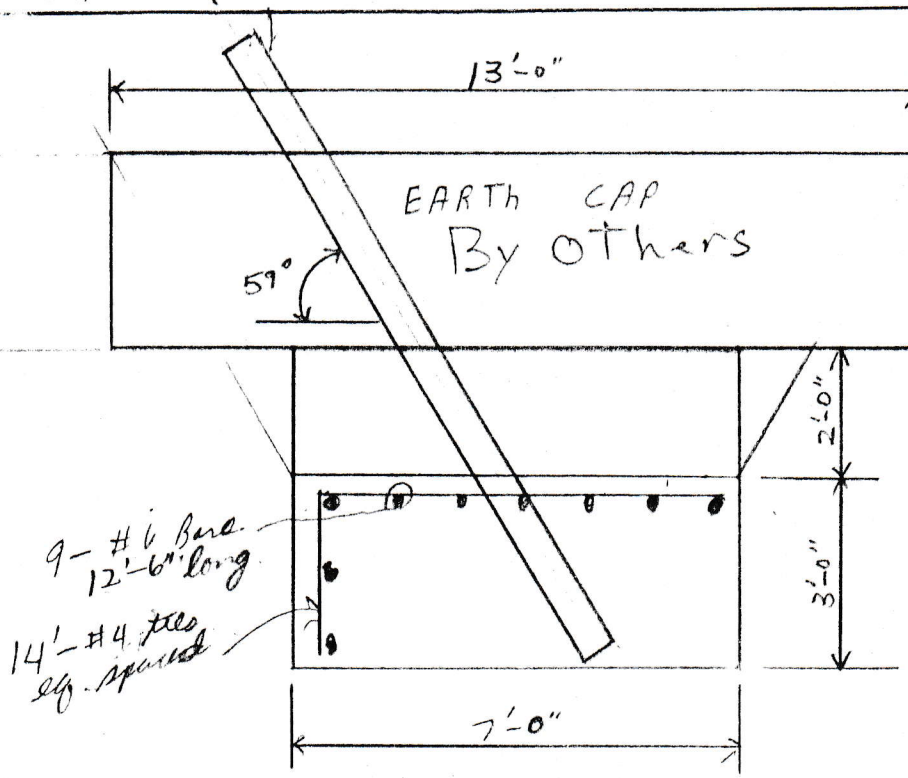
MANUFACTURE & INSTALLATION OF TV, AM, FM, & MICROWAVE RELAY TOWERS

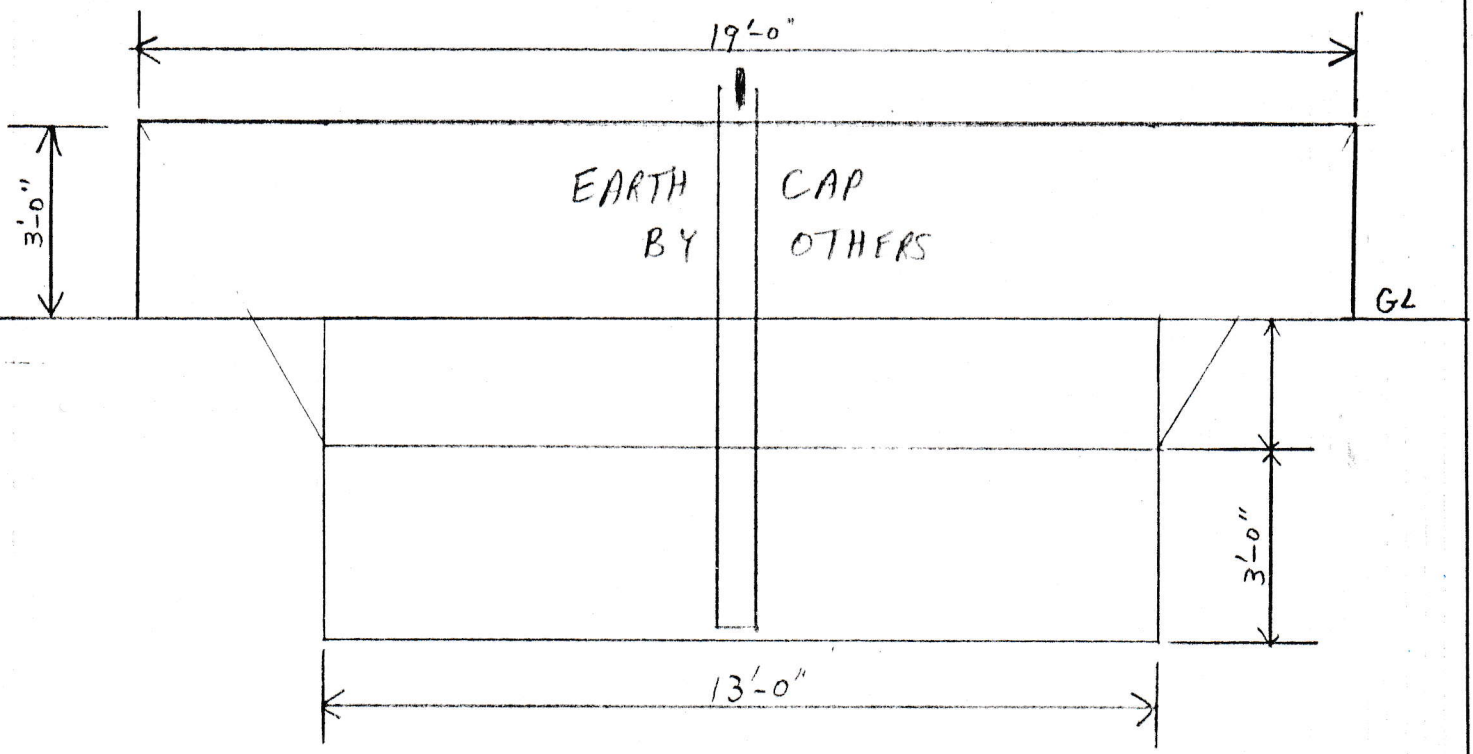
3200 NORTHWEST 38th, P. O. BOX 12369 OKLAHOMA CITY, OKLAHOMA 73157



Utility Tower COMPANY
"ENGINEERING"
MANUFACTURE & INSTALLATION OF TV, AM, FM, & MICROWAVE RELAY TOWERS
3200 NORTHWEST 38th, P. O. BOX 12369 OKLAHOMA CITY, OKLAHOMA 73157

SUBJECT 520' 540 / POLE
OUTSIDE ANCHOR
DATE
SHEET NO. 4
ENG NO.
BY JMJ





Utility Tower COMPANY
"ENGINEERING"

SUBJECT _____ SHEET NO. _____
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DATE _____ BY _____

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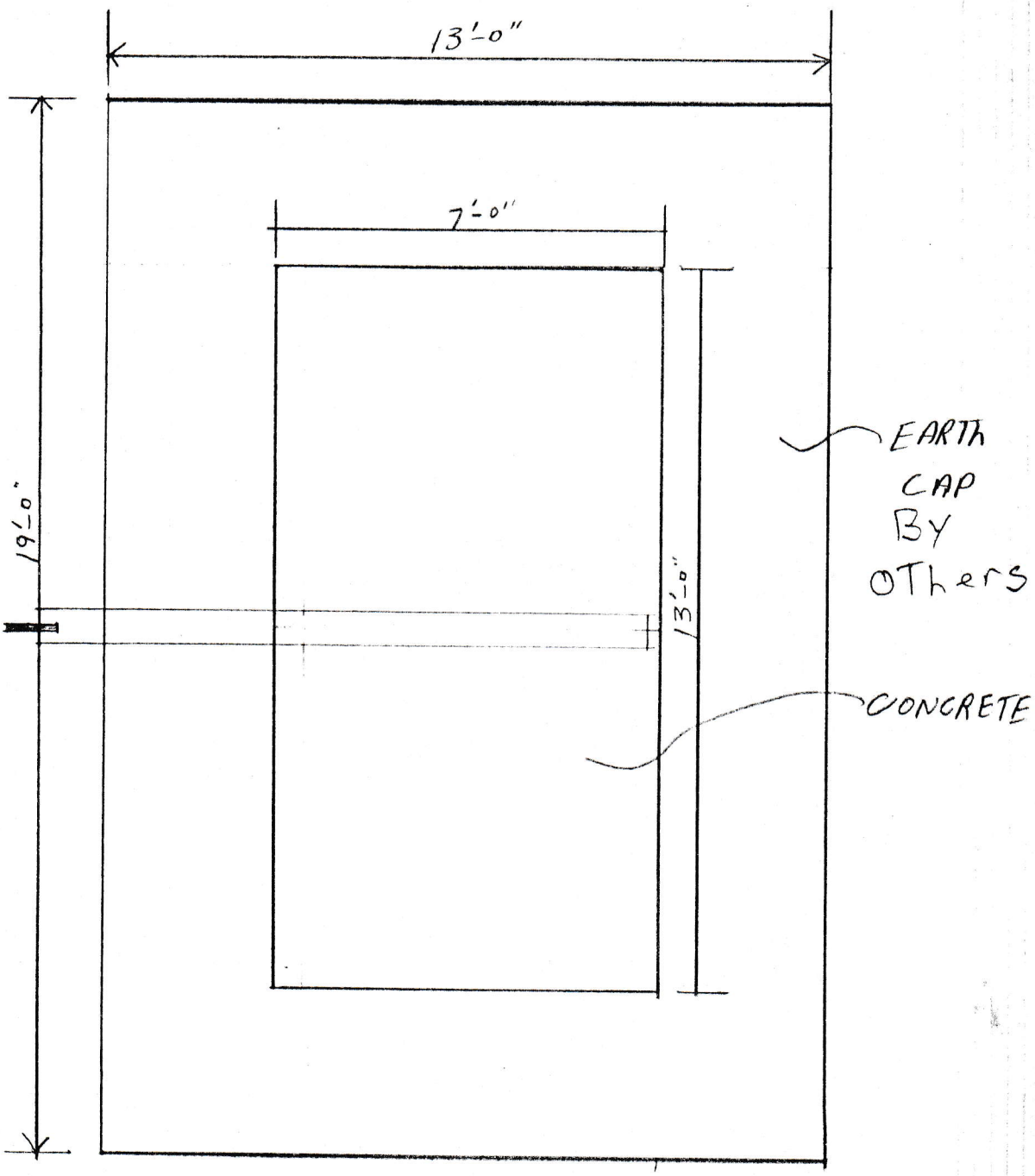


SIZE	GUY AREA	BREAK STRENGTH	GUY DIAMETER	APPROX WT. PER FT.
1/4 HS	.03519	4,75	.2500	.121
1/4 EHS	.03519	6,65	.2500	.121
5/16 HS	.05946	8,00	.3125	.205
5/16 EHS	.05946	11,20	.3125	.205
3/8 HS	.07917	10,80	.3750	.273
3/8 EHS	.07917	15,40	.3750	.273
7/16 HS	.11560	14,50	.4375	.399
7/16 EHS	.11560	20,80	.4373	.399
1/2 HS	.14970	18,80	.5000	.517
1/2 EHS	.14970	26,90	.5000	.517
9/16 HS	.19430	24,50	.5625	.671
9/16 EHS	.19430	35,00	.5625	.671
5/8 HS	.23560	29,60	.6250	.813
5/8 EHS	.23560	42,40	.6250	.813
3/4 HS	.33580	40,80	.7500	1,155
3/4 EHS	.33580	58,30	.7500	1,155
7/8 HS	.46750	55,80	.8750	1,581
7/8 BS	.45900	87,40	.8750	1,610
1- BS	.60000	115,80	1,0000	2,100
1- 1/16 BS	.67700	131,00	1,0625	2,370
1- 1/8 BS	.75900	148,20	1,1250	2,660
1-3/16 BS	.84600	163,40	1,1875	2,960
1- 1/4 BS	.93800	184,40	1,2500	3,280
1-5/16 BS	1,0300	204,00	1,3125	3,620
1-3/8 BS	1,1300	222,00	1,3750	3,970
1-7/16 BS	1,2400	242,00	1,4375	4,340
1- 1/2 BS	1,3500	264,00	1,5000	4,730
1- 9/16 BS	1,4700	288,00	1,5625	5,130
1-5/8 BS	1,5900	310,00	1,6250	5,555
1-11/16 BS	1,7100	338,00	1,6875	5,980
1-3/4 BS	1,8400	360,00	1,7500	6,430
1-13/16 BS	1,9700	388,00	1,8125	6,900
1-7/8 BS	2,1100	414,00	1,8750	7,390
1-15/16 BS	2,2500	442,00	1,9375	7,890
2 BS	2,4000	476,00	2,0000	8,400

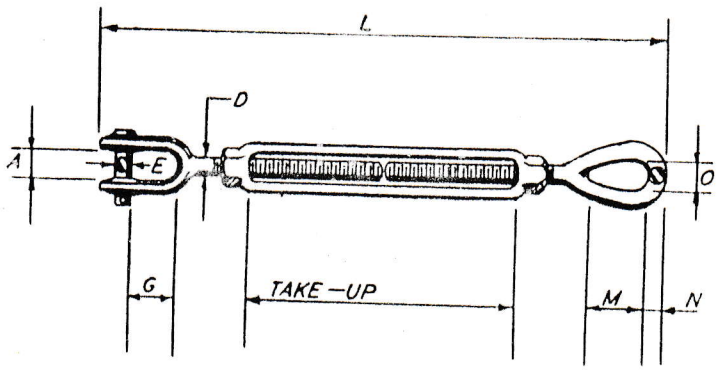
DRAWN BY:
RAY BARKER

DATE:
JUNE 24, 1970

DRAWING NO:
202 - 51

GUY CABLES

Utility Tower COMPANY
3200 NORTHWEST 38th P. O. BOX 12027
OKLAHOMA CITY, OKLAHOMA 73112



SIZE (D)	A	E	G	M	N	O	ALLOWABLE LOAD
1/4	13/32	1/4	21/32	13/16	7/32	11/32	980
5/16	1/2	1/4	27/32	15/16	9/32	7/16	1630
3/8	17/32	5/16	7/8	1 1/8	11/32	17/32	2420
1/2	21/32	7/16	1 1/8	1 7/16	7/16	23/32	4400
5/8	25/32	1/2	1 5/16	1 3/4	1/2	7/8	7000
3/4	1	5/8	1 9/16	2 1/8	5/8	1	10350
7/8	1 3/16	3/4	1 13/16	2 3/8	3/4	1 1/4	14200
1	1 1/4	7/8	2 1/16	3	7/8	1 7/16	18550
1 1/4	1 13/16	1 1/8	2 7/16	3 9/16	1 1/8	1 13/16	29360
1 1/2	2 1/8	1 3/8	2 13/16	4 1/8	1 1/4	2 1/8	42150

NOTE: ALLOWABLE LOADS ARE WITH A 2.5/1 SAFETY FACTOR.

NO. TB-68

STANDARD TURNBUCKLES

Utility Tower COMPANY