

399 FT. UTC TYPE 480/380  
SR FM  
T.I.A./E.I.A.-RS222-F  
75 MPH, ½" ICE



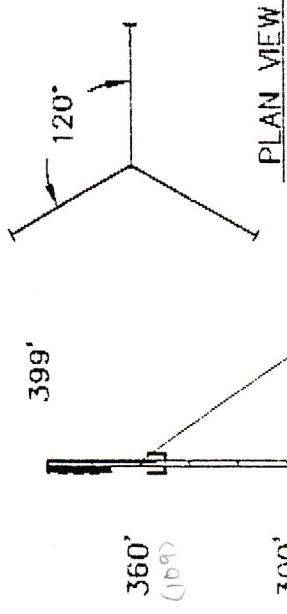
*Utility Tower*

OKLAHOMA CITY, OKLAHOMA

• 30"-24" SINGLE LACED 8-BAY TRANSITION SECTION

\*\* SR 1 3/4"

* 24"-8 BAY	SR-3/4"	HORIZ	TOWER
**	SR-3/4"	DIAG	LEGS
**	SR-1 1/2"		

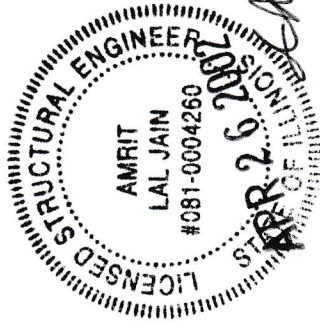


PLAN VIEW

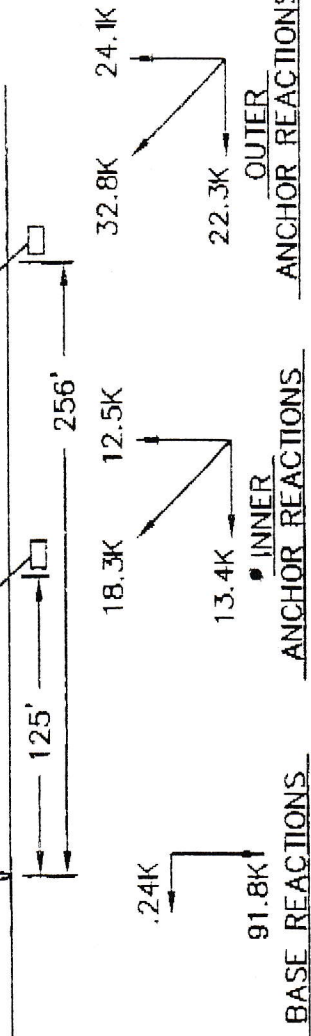
GUYWIRES			ANTENNAS						
ELEV.	QTY.	SIZE	CORD LENGTH	CLR LENGTH	INITIAL TENSION	TYPE ANTENNA	QTY.	ELEV.	LINE
60'	3	3/8"			1.54	3 BAY FM ANTENNA	1	399'	1 5/8"
120'	3	3/8"			1.54	2 WAY FM ANTENNA	4	350'	1 5/8"
180'	3	3/8"			1.54	6" GRID DISH	1	185'	7/8"
240'	3	7/16"			2.08				
300'	3	1/2"			2.69				
360'	3	9/16"			3.50				

GENERAL NOTES:

1. TOWER IS DESIGNED IN ACCORDANCE WITH ANSI/TIA/EIA-222-F FOR 75 MPH WIND AT EL. 33' (WITH 1/2" ICE). WIND IS APPLIED TO TOWER, GUYWIRES, ACCESSORIES, ANTENNAS, AND LINES.
2. TOWER STEEL (MIN. STEEL YIELD) LEGS ARE 50 KSI. MIN. BRACING IS 36 KSI. MIN ALL OTHER STEEL IS 36 KSI. MIN.
3. CONNECTION BOLTS ARE A-325 HIGH STRENGTH BOLTS (HOT DIP GALVANIZED) COMPLETE WITH LOCK WASHERS AND HEAVY HEX NUT. BASE PIN, U-BOLTS, J-BOLTS, ETC. ARE A-36 BOLTS (HOT DIP GALVANIZED) COMPLETE WITH LOCK WASHERS AND HEAVY HEX NUT.
4. TOWER, GUYWIRES, AND ACCESSORIES ARE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A-123 FOR STRUCTURAL STEEL. ASTM A-475 OR ASTM A-586 FOR GUYWIRES, ASTM A-153 OR ASTM B-695 CLASS 65 FOR HARDWARE.



<b>Utility Tower</b>	
OKLAHOMA CITY, OKLAHOMA	
399' - TYPE 480/380 GUYED TOWER	
DEKALB COUNTY, IL	
DRAWN BY TL	DATE 08-22-01
JOB#	
DRAWING NO. DIL0801D2	



BASE REACTIONS	ANCHOR REACTIONS	ANCHOR REACTIONS	OUTER ANCHOR REACTIONS
NO	DATE	REVISION	BY

UTILITY TOWER COMPANY

3E, 4-TW, STL,EIA-F 75 MPH 1/2" ICE W/RED.

99' UTC TYPE 480/380 SR FM Dekalb County, IL

\*\*\*\*\*

HEIGHT= 399.FT ANC1= 125.FT ANC2= 256.FT ANC3= 0.FT

EY=50.KSI CANT MOM= 62107.FT LB CANT V= 2906.LBS CANT WT= 2190.LBS

\*\*\*\*\*

SPAN WIDTH WIND LOAD STYLE BAYS GL DL LU

SPAN	WIDTH	WIND LOAD	STYLE	BAYS	GL	DL	LU
1	30.	24.	1	8	28.50	40.31	28.50
2	30.	24.	1	8	28.50	40.31	28.50
3	30.	24.	1	8	28.50	40.31	28.50
4	30.	24.	1	8	28.50	40.31	28.50
5	30.	24.	1	8	28.50	40.31	28.50
6	30.	30.	1	8	28.25	40.13	28.50

LEG SIZES

SPAN DESCRIPTION

1	1.5000 OD SOLID ROD
2	1.5000 OD SOLID ROD
3	1.5000 OD SOLID ROD
4	1.5000 OD SOLID ROD
5	1.5000 OD SOLID ROD
6	1.7500 OD SOLID ROD

\*\*\*\*\*

DIAGONAL SIZES

SPAN DESCRIPTION

1	0.7500 OD SOLID ROD
2	0.7500 OD SOLID ROD
3	0.7500 OD SOLID ROD
4	0.7500 OD SOLID ROD
5	0.7500 OD SOLID ROD
6	0.7500 OD SOLID ROD

\*\*\*\*\*

VERT SIZES

SPAN DESCRIPTION

1	0.7500 OD SOLID ROD
2	0.7500 OD SOLID ROD
3	0.7500 OD SOLID ROD
4	0.7500 OD SOLID ROD
5	0.7500 OD SOLID ROD
6	0.7500 OD SOLID ROD

\*\*\*\*\*

JOINT LOADS

ELEVATION LOAD

185.00	430.
350.00	480.
375.00	330.
385.00	330.
395.00	330.

\*\*\*\*\*

SPAN LENGTH WIND PLF WT PLF FEMB FEMT VB VT

1	60.0	45.5	50.3	0.	-20496.	1366.	-1366.
2	60.0	45.5	50.3	13664.	-13664.	1366.	-1366.
3	60.0	45.5	50.3	13664.	-13664.	1366.	-1366.
4	60.0	43.5	49.3	14871.	-13228.	1728.	-1315.



5	60.0	43.5	49.3	13064.	-13064.	1306.	-1306.
6	60.0	49.1	56.2	15403.	-18070.	1509.	-1918.

\*\*\*\*\*  
 DISTRIBUTION FACTORS

0.00	-0.43	-0.50	-0.50	-0.50	-0.42	-1.00
-1.00	-0.57	-0.50	-0.50	-0.50	-0.58	0.00

\*\*\*\*\*

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
	MOM B	MOM T	VB	VT	LBS
1	0.	-17324.	1078.	-1655.	3099.
2	17324.	-12689.	1444.	-1289.	2635.
3	12689.	-13904.	1346.	-1387.	3085.
4	13904.	-15659.	1699.	-1344.	2845.
5	15659.	-3981.	1501.	-1112.	1652.
6	3981.	-62107.	540.	-2887.	5793.

\*\*\*\*\*

GUY	GUY	ANCHOR	GUY	GUY	INITIAL
LEV	LENGTH	DIST	AREA	WT	TENSION
60.	138.7	125.00	0.07917	0.2694	1540.
120.	173.3	125.00	0.07917	0.2694	1540.
180.	219.1	125.00	0.07917	0.2694	1540.
240.	350.9	256.00	0.11560	0.3934	2080.
300.	394.4	256.00	0.14970	0.5094	2690.
360.	441.7	256.00	0.19430	0.6612	3500.

\*\*\*\*\*

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

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
	MOM B	MOM T	VB	VT	LBS
1	0.	13518.	225.	225.	-610.
2	-13518.	-9583.	-385.	-385.	588.
3	9583.	2571.	203.	203.	-257.
4	-2571.	-699.	-54.	-54.	70.
5	699.	225.	15.	15.	-19.
6	-225.	0.	-4.	-4.	4.

\*\*\*\*\*

1 INCH UNIT DEFLECTION AT THE 120. FT LEVEL

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
	MOM B	MOM T	VB	VT	LBS
1	0.	-9583.	-160.	-160.	588.
2	9583.	16088.	428.	428.	-867.
3	-16088.	-10282.	-440.	-440.	657.
4	10282.	2796.	218.	218.	-280.
5	-2796.	-901.	-62.	-62.	77.
6	901.	0.	15.	15.	-15.

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1 INCH UNIT DEFLECTION AT THE 180. FT LEVEL

SPAN	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
	MOM B	MOM T	VB	VT	LBS
1	0.	2571.	43.	43.	-257.
2	-2571.	-10282.	-214.	-214.	657.
3	10282.	16314.	443.	443.	-890.
4	-16314.	-10484.	-447.	-447.	678.
5	10484.	3380.	231.	231.	-287.

6 -3380. 0. -56. -56. 56.  
 \*\*\*\*\*

INCH UNIT DEFLECTION AT THE 240. FT LEVEL

SPAN NO	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
	MOM B	MOM T	VB	VT	LBS
1	0.	-699.	-12.	-12.	70.
2	699.	2796.	58.	58.	-280.
3	-2796.	-10484.	-221.	-221.	678.
4	10484.	16898.	456.	456.	-948.
5	-16898.	-12618.	-492.	-492.	702.
6	12618.	0.	210.	210.	-210.

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INCH UNIT DEFLECTION AT THE 300. FT LEVEL

SPAN NO	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
	MOM B	MOM T	VB	VT	LBS
1	0.	182.	3.	3.	-18.
2	-182.	-729.	-15.	-15.	73.
3	729.	2733.	58.	58.	-273.
4	-2733.	-10204.	-216.	-216.	650.
5	10204.	15838.	434.	434.	-698.
6	-15838.	0.	-264.	-264.	264.

\*\*\*\*\*

1 INCH UNIT DEFLECTION AT THE 360. FT LEVEL

SPAN NO	DISTRIBUTED MOMENTS		SHEARS		REACTIONS
	MOM B	MOM T	VB	VT	LBS
1	0.	-28.	0.	0.	3.
2	28.	113.	2.	2.	-11.
3	-113.	-422.	-9.	-9.	42.
4	422.	1577.	33.	33.	-158.
5	-1577.	-5887.	-124.	-124.	223.
6	5887.	0.	98.	98.	-98.

\*\*\*\*\*

MOMENTS FROM NON-LINEAR DEFLECTIONS

LEV	DEF MOM	RIGID BM MOM	FINAL MOM	DEF	EMOM
0.	0.	0.	0.	0.0000	
60.	830.	-17324.	-16493.	4.3853	3171.
120.	-1046.	-12689.	-13736.	8.6683	6366.
180.	16182.	-13904.	2278.	12.3746	7556.
240.	-11790.	-15659.	-27449.	13.7480	8194.
300.	-22345.	-3981.	-26326.	17.5187	11511.
360.	0.	-62107.	-62107.	27.4078	19643.

\*\*\*\*\*

LEV	SPG	Q	REACTION	DEF
60.	801.	-434.	3079.	4.3853
120.	400.	-350.	3113.	8.6683
180.	190.	-493.	1864.	12.3746
240.	252.	-668.	2799.	13.7480
300.	232.	-705.	3355.	17.5187
360.	222.	-1193.	4889.	27.4078

\*\*\*\*\*

GUY STRESS

LEV	ELEV	CABLE FORCE	BREAK STR	SAFETY FACTOR	
60.		4941.	15400.	3.1169	0.8021
120.		6278.	15400.	2.4528	1.0192

180.	5950.	15400.	2.5881	0.9660
240.	7721.	20800.	2.6941	0.9280
300.	10461.	26900.	2.5715	0.9722
360.	15741.	35000.	2.2235	1.1244

\*\*\*\*\*

ANCHOR REACTIONS

ANCHOR AT 125. FT FROM BASE + 0.00 FROM BASE GRADE  
 HORIZ= 12695. VERT= 11071. RESULT= 16844. RES. ANG= 41.09DEG  
 LATERAL= 0.

-----  
 ANCHOR AT 256. FT FROM BASE + 0.00 FROM BASE GRADE  
 HORIZ= 22506. VERT= 24841. RESULT= 33520. RES. ANG= 47.82DEG  
 LATERAL= 0.

\*\*\*\*\*

LEG STRESS

HEIGHT	FA	FB	ALLOW	% STRESS
0.	15947.	0.	19800.	0.8054
36.	15947.	3418.	19800.	0.9780
60.	15378.	4725.	19800.	1.0153
60.	14746.	3896.	19800.	0.9415
89.	14746.	1413.	19800.	0.8161
120.	14177.	4422.	19800.	0.9393
120.	12950.	2758.	19800.	0.7933
144.	12950.	4064.	19800.	0.8593
180.	12381.	392.	19800.	0.6451
180.	10784.	1583.	19800.	0.6246
221.	10784.	2569.	19800.	0.6744
240.	10227.	8245.	19800.	0.9329
240.	8366.	6103.	19800.	0.7308
270.	8366.	1905.	19800.	0.5187
300.	7808.	8385.	19800.	0.8178
300.	3823.	3950.	21820.	0.3562
342.	3823.	3551.	21820.	0.3379
360.	3356.	13812.	21820.	0.7868

\*\*\*\*\*

BASE LOAD= 84539.4 LBS

DIAGONAL STRESS

SPAN	FORCE	FA	ALLOW	% STRESS
1	1547.	3503.	6140.	0.5705
2	1332.	3014.	6140.	0.4909
3	1540.	3486.	6140.	0.5677
4	1707.	3863.	6140.	0.6293
5	1249.	2828.	6140.	0.4606
6	2381.	5390.	6139.	0.8780

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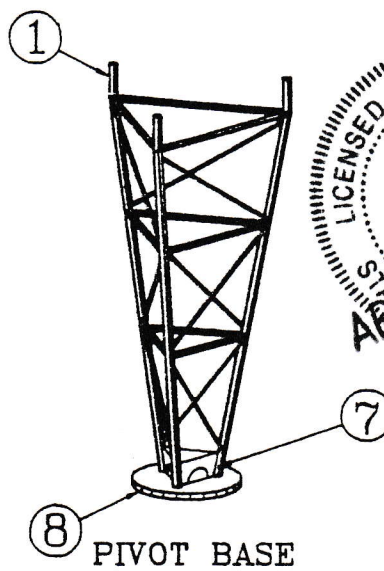
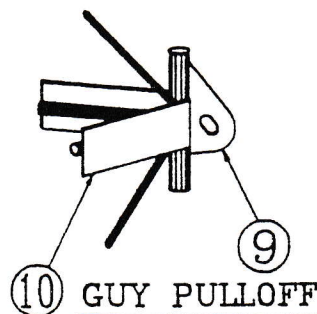
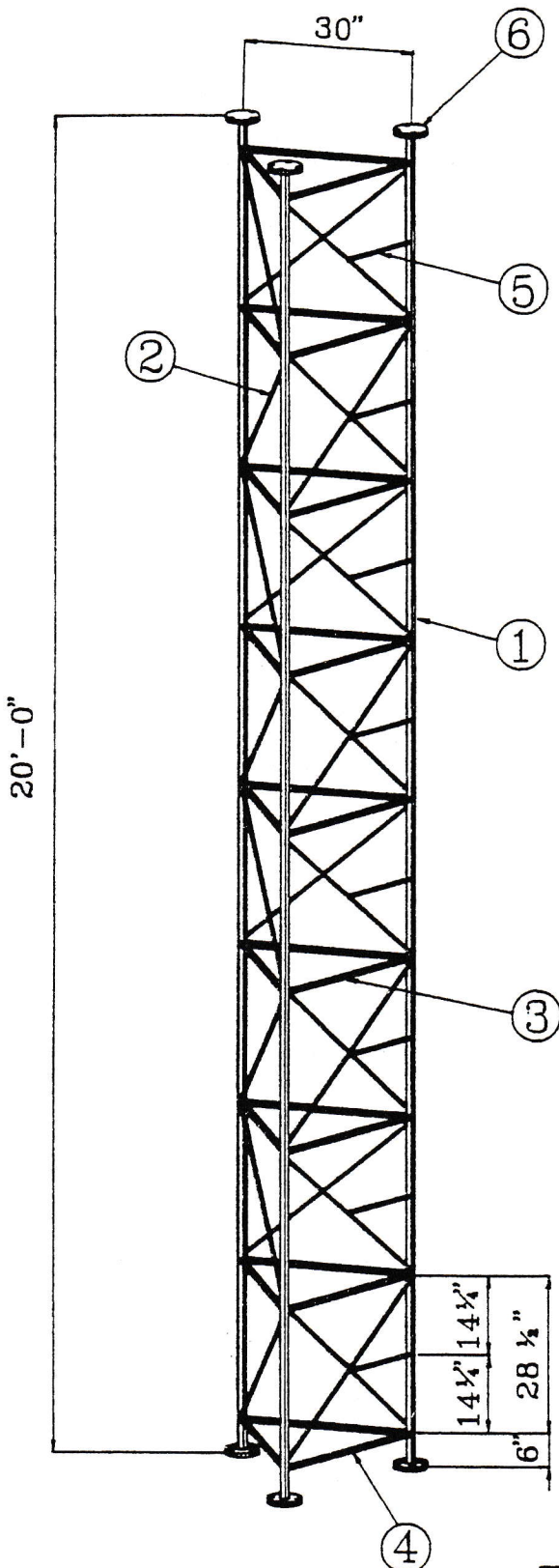
GIRT STRESS

SPAN	FORCE	FA	ALLOW	% STRESS
1	1094.	2477.	7677.	0.3226
2	942.	2131.	7677.	0.2776
3	1089.	2465.	7677.	0.3210
4	1207.	2732.	7677.	0.3558
5	883.	2000.	7677.	0.2605
6	1676.	3794.	7752.	0.4894

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NOTE:

ALL TOWERS FABRICATED  
WITH SOLID STEEL MEMBERS



## MATERIAL

ITEM	DESCRIPTION	MINIMUM SIZE
1	LEG	1-1/2" O.D. S.R.
2	DIAGONAL	3/4" O.D. S.R.
3	GIRT	3/4" 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 1/2"
10	GUY STRAP	BAR 4 X 3/8"

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

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DATE 01-14-01  
DRAWING NO. 91009

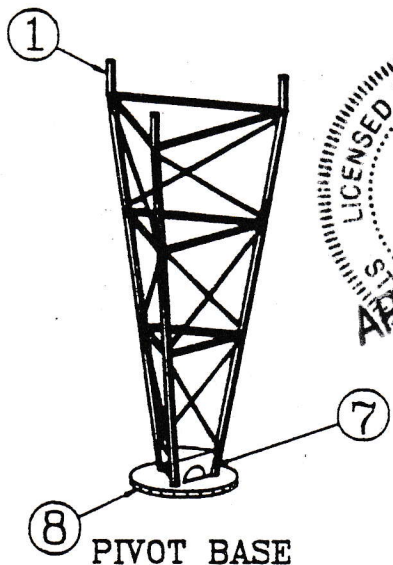
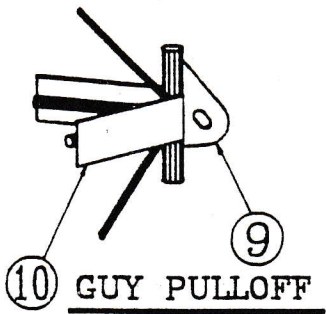
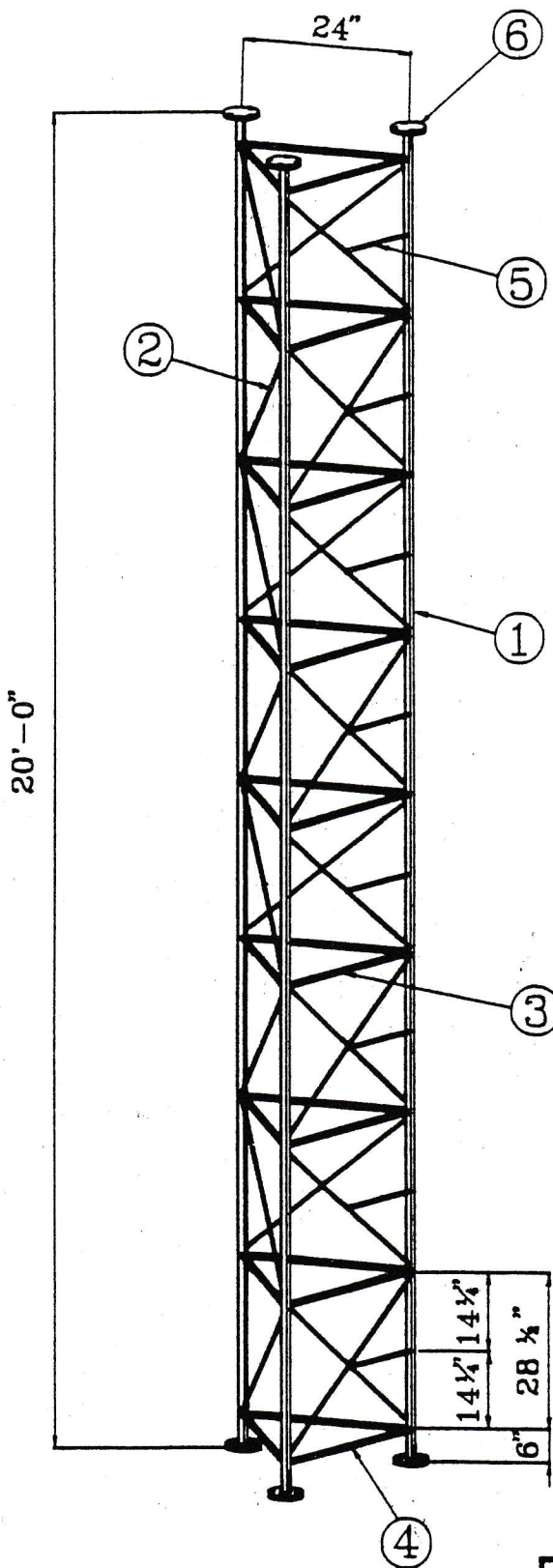
TYPE 480 DETAILS

*Utility Tower*

OKLAHOMA CITY, OKLAHOMA

**NOTE:**

ALL TOWERS FABRICATED WITH SOLID STEEL MEMBERS



LICENSED STRUCTURAL ENGINEER  
 AMRIT LAL JAIN  
 #081-0004260  
 APR 26 2002  
 STATE OF ILLINOIS  
*A.L. Jain*

**MATERIAL**

ITEM	DESCRIPTION	MINIMUM SIZE
1	LEG	1-1/2" O.D. S.R.
2	DIAGONAL	3/4" O.D. S.R.
3	GIRT	3/4" 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 18" DIA.
9	GUY LUG	PLATE 1/2"
10	GUY STRAP	BAR 4 X 3/8"

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

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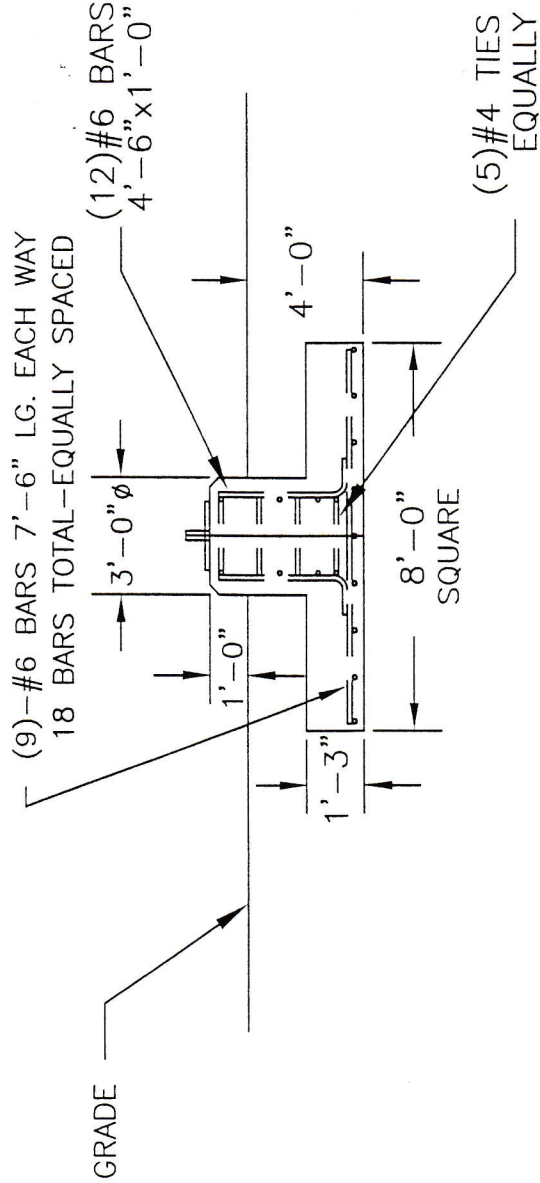
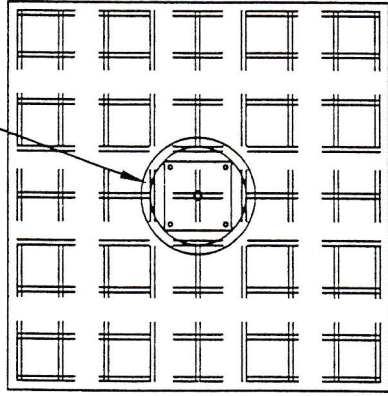
TYPE 380 DETAILS  
**Utility Tower**  
 COMPANY  
 COLUMBIA GUY, GE.

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.24K  
91.8K  
BASE REACTIONS

LOCATE PIER  
IN CENTER OF PAD



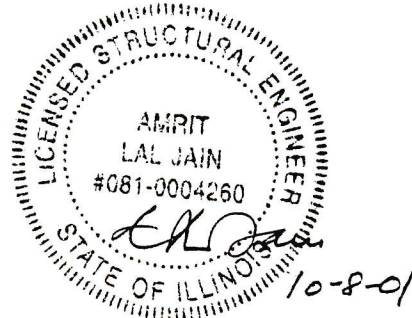
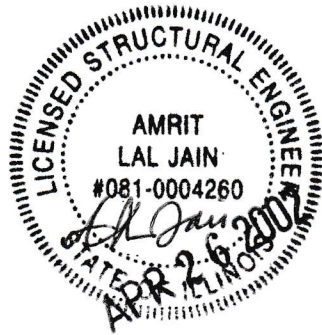
AMRIT  
LAL JAIN  
#081-0004260  
APR 26 2002  
LAL Jain

AMRIT  
LAL JAIN  
#081-0004260  
STATE OF OKLAHOMA  
LAL Jain  
10-8-01

GENERAL NOTES:

1. THE BOTTOM & FRONT SURFACES OF BASE SHOULD BEAR ON UNDISTURBED SOIL.
2. CONCRETE MUST HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI. AT 28 DAYS CURE. CONCRETE TO BE PLACED PER ACI-318 CODE.
3. REINFORCING BARS TO BE GRADE 60 STEEL (TIES MAY BE GRADE 40) WITH ASTM A615 DEFORMATIONS.
4. CONCRETE REQUIRED 3.9 CU YDS.
5. ALL REINFORCING STEEL TO HAVE 3" MIN CONCRETE COVER.
6. DESIGN OF BASE AND ANCHORS PER ANSI/EIA/TIA-222-F-2000 PSF SOIL

<i>Utility Tower</i>	
OKLAHOMA CITY, OKLAHOMA	
FOUNDATION DESIGN	
199'-TYPE 480/380 GUYED TOWER	
DEKALB COUNTY, IL	
DRAWN BY SC	DATE 10-05-01
JOB#	
DRAWING NO. DII 1001FD	



- FOUNDATION DESIGN BASED UPON AN ALLOWABLE SOIL BEARING PRESSURE OF

2000 PSF.

- CONCRETE TO BE

3000 PSI

IN 28 DAYS.

- WEIGHT OF SOIL 100 LBS/C.F.

- WEIGHT OF CONCRETE 150 LBS /C.F.

- ALL REBAR COVERED WITH A MINIMUM OF 3 INCHES OF CONCRETE

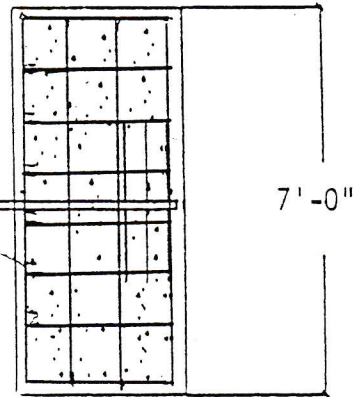
- PORTLAND CEMENT SHALL CONFORM TO ASTM C-150.

- CONCRETE AGREGATES SHALL CONFORM TO ASTM C-33, 3/4' MAX.

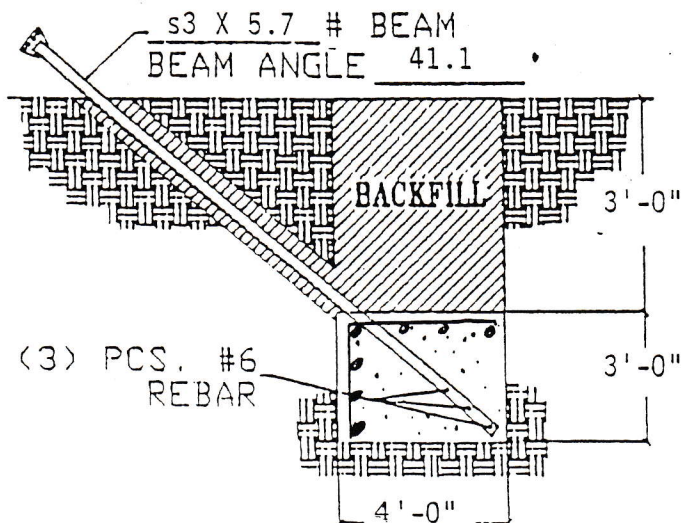
- ALL REINFORCING SHALL BE DEFORMED BARS CONFORMING TO ASTM A615 GRADE 40.

7 PCS.  
#6 REBAR  
EVENLY SPACED  
S3X5.7#

8" #4 TIES  
EVENLY SPACED



- ALL REBAR COVERED WITH A MINIMUM OF 3 INCHES OF CONCRETE



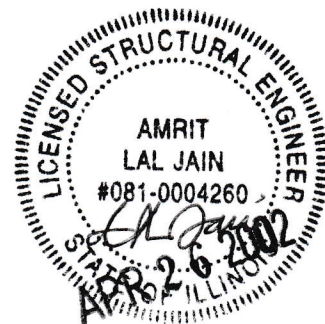
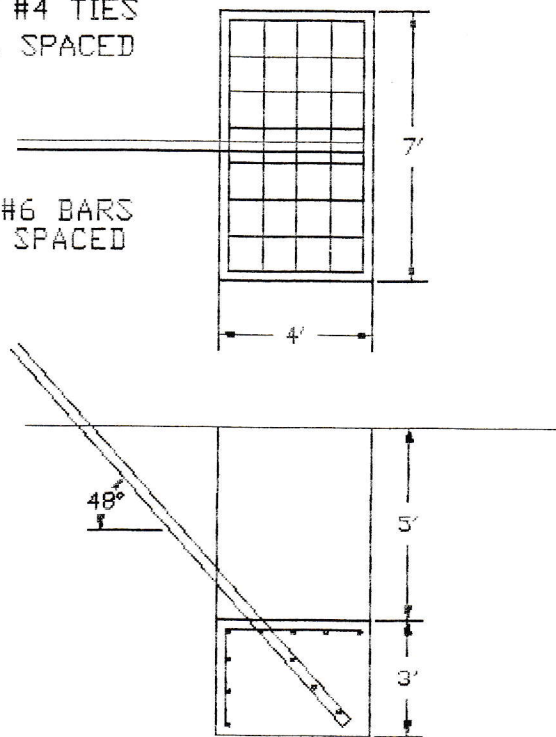
DRAWING NOT TO SCALE

OUTSIDE ANCHOR  
399 FT. UTC 480/380  
DeKalb, County, Illinois

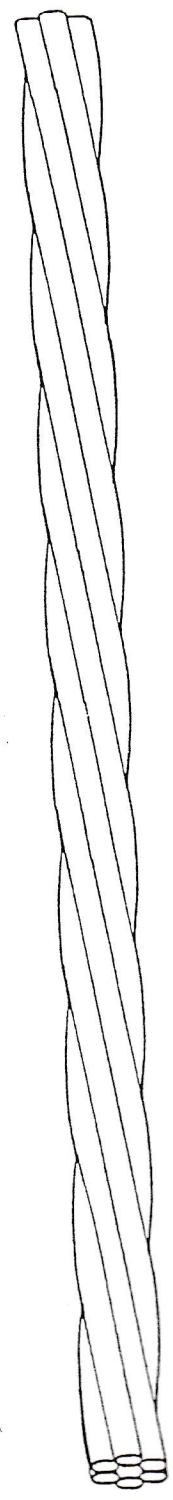
1. FOUNDATION DESIGN BASED ON SOIL REPORT FURNISHED BY TESTING SERVICES CORP.
2. CONCRETE TO DEVELOPE 3000 PSI IN 28-DAYS.
3. ALL REBAR TO BE COVERED WITH A MINIMUM OF 3" OF CONCRTE.
4. REINFORCING BARS TO BE GRADE 60 STEEL (TIES MAY BE GRADE 40) WITH ASTM A615 DEFORMATIONS.
5. CONCRETE REQUIRED IS 3.1 YARDS.

(8) #4 TIES  
EQ. SPACED

(8) #6 BARS  
EQ. SPACED



SIZE	GUY AREA	BREAK STRENGTH	GUY DIAMETER	APPROX WT. PER FT.
1/4 EHS	.03519	6,650	.2500	.121
1/16 EHS	.05946	11,200	.3125	.205
1/8 EHS	.07917	15,400	.3750	.273
1/16 EHS	.11560	20,800	.4373	.399
1/2 EHS	.14970	26,900	.5000	.517
1/16 EHS	.19430	35,000	.5625	.671
1/8 EHS	.23560	42,400	.6250	.813
1/8 BS	.23400	48,000	.6250	.820
1/4 EHS	.33580	58,300	.7500	1.155
3/4 BS	.33800	68,000	.7500	1.180
1/8 EHS	.45900	87,400	.8750	1.610
1/8 BS	.45900	92,000	.8750	1.610
1 BS	.60000	122,000	1.000	2.100
1-1/16 BS	.67700	138,000	1.0625	2.370
1-1/8 BS	.75900	156,000	1.1250	2.660
1-3/16 BS	.84600	172,000	1.18750	2.960
1-1/4 BS	.93800	192,000	1.2500	3.280
1-5/16 BS	1.0300	212,000	1.3125	3.620
1-3/8 BS	1.1300	232,000	1.3750	3.970
1-7/16 BS	1.2400	252,000	1.4275	4.340
1-1/2 BS	1.3500	276,000	1.5000	4.730
1-9/16 BS	1.4700	300,000	1.5625	5.130
1-5/8 BS	1.5900	324,000	1.6250	5.555
1-11/16 BS	1.7100	352,000	1.6875	5.980
1-3/4 BS	1.8400	376,000	1.7500	6.430
1-13/16 BS	1.9700	404,000	1.8125	6.900



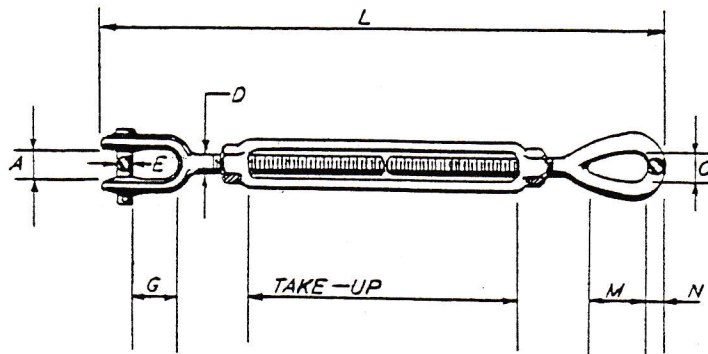
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DRAWN BY RLC  
DATE 02-01-1991  
DRAWING NO.  
91021

GUY CABLES

**Utility Tower**  
COMPANY

OKLAHOMA CITY, OK



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

