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DATE: MAY 12, 2021

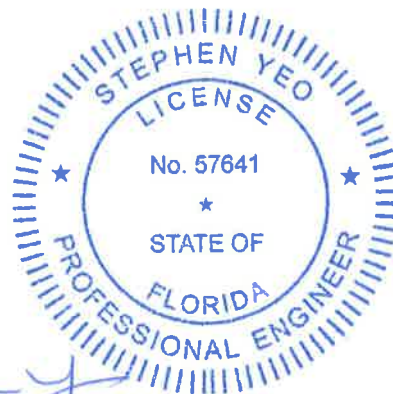
PURCHASER: TOWERCOM VIII B

PROJECT: 250 FT RT SELF SUPPORT TOWER
HIGH SPRINGS WEST, FLORIDA

FILE NUMBER: 237508

DRAWINGS: 237508-01-D1 , 237508-01-F1

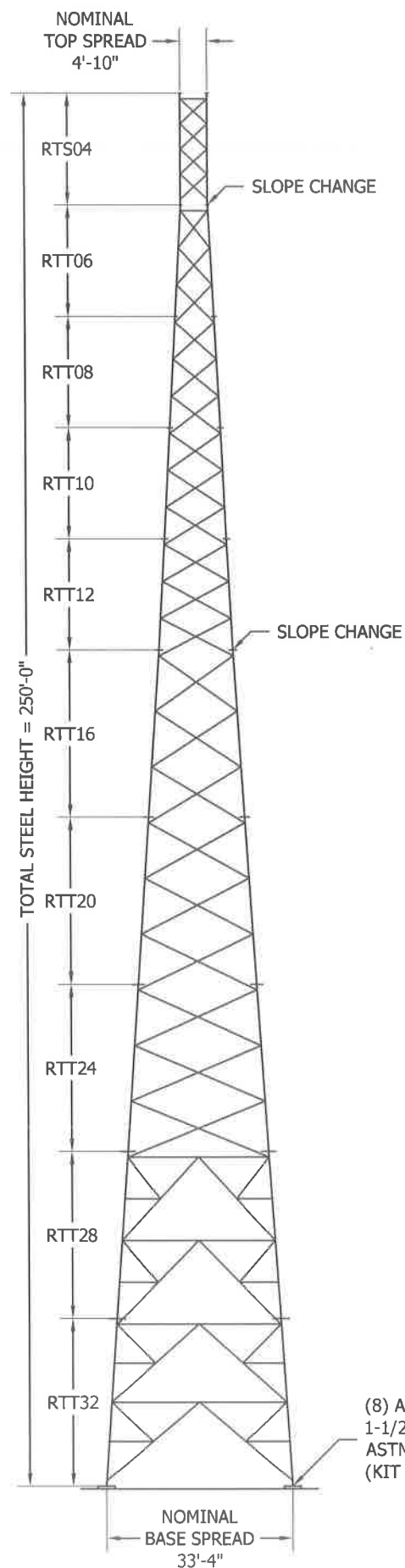
I CERTIFY THAT THE REFERENCED DRAWINGS WERE PREPARED UNDER MY SUPERVISION IN ACCORDANCE WITH THE DESIGN AND LOADING CRITERIA SPECIFIED BY THE PURCHASER AND THAT I AM A REGISTERED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF FLORIDA.



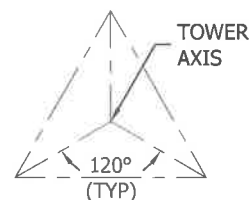
CERTIFIED BY: Stephen Yeo

DATE: 5/12/2021

1. ROHN PRODUCTS, LLC TOWER DESIGNS CONFORM TO ANSI/TIA-222-H UNLESS OTHERWISE SPECIFIED UNDER TOWER DESIGN LOADING.
2. THE DESIGN LOADING CRITERIA INDICATED HAS BEEN PROVIDED TO ROHN. THE DESIGN LOADING CRITERIA HAS BEEN ASSUMED TO BE BASED ON SITE-SPECIFIC DATA IN ACCORDANCE WITH ANSI/TIA-222-H AND MUST BE VERIFIED BY OTHERS PRIOR TO INSTALLATION.
3. ANTENNAS AND LINES LISTED IN TOWER DESIGN LOADING TABLE ARE PROVIDED BY OTHERS UNLESS OTHERWISE SPECIFIED.
4. STEP BOLTS WITH SAFETY CLIMB SYSTEM ARE PROVIDED AS A CLIMBING FACILITY FOR THE INSTALLATION OF THE STRUCTURE.
5. TOWER MEMBER DESIGN DOES NOT INCLUDE STRESSES DUE TO ERECTION SINCE ERECTION EQUIPMENT AND CONDITIONS ARE UNKNOWN. DESIGN ASSUMES COMPETENT AND QUALIFIED PERSONNEL WILL ERECT THE TOWER.
6. WORK SHALL BE IN ACCORDANCE WITH ANSI/TIA-222-H, "STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES".
7. THE MINIMUM YIELD STRENGTH OF STRUCTURAL STEEL MEMBERS SHALL BE 50 KSI.
8. FIELD CONNECTIONS SHALL BE BOLTED. NO FIELD WELDS SHALL BE ALLOWED.
9. STRUCTURAL BOLTS SHALL CONFORM TO GRADE A325 PER ASTM F3125, EXCEPT WHERE NOTED.
10. PAL NUTS ARE PROVIDED FOR ALL TOWER BOLTS.
11. STRUCTURAL STEEL AND CONNECTION BOLTS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION, IN ACCORDANCE WITH ANSI/TIA-222-H.
12. ALL HIGH STRENGTH BOLTS, UNLESS OTHERWISE NOTED FOR DOUBLE ANGLE MEMBERS, ARE TO BE TIGHTENED TO A "SNUG TIGHT" CONDITION AS DEFINED IN THE RCSC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS". NO OTHER MINIMUM BOLT TENSION OR TORQUE VALUES ARE REQUIRED.
13. PURCHASER SHALL VERIFY THE INSTALLATION IS IN CONFORMANCE WITH LOCAL, STATE, AND FEDERAL REQUIREMENTS FOR OBSTRUCTION MARKING AND LIGHTING.
14. TOLERANCE ON TOWER STEEL HEIGHT IS EQUAL TO PLUS 1% OR MINUS 1/2%.
15. DESIGN ASSUMES THAT, AS A MINIMUM, MAINTENANCE AND INSPECTION WILL BE PERFORMED OVER THE LIFE OF THE STRUCTURE IN ACCORDANCE WITH ANSI/TIA-222-H.
16. DESIGN ASSUMES LEVEL GRADE AT TOWER SITE.
17. DESIGN ASSUMES ALL ANTENNAS ARE MOUNTED SYMMETRICALLY TO MINIMIZE TORQUE, IF APPLICABLE.
18. FOUNDATIONS SHALL BE DESIGNED TO SUPPORT THE REACTIONS SHOWN FOR THE CONDITIONS EXISTING AT THE SITE.



MAXIMUM FACTORED REACTIONS		
COMPRESSION PER LEG	=	581.0 KIPS
TENSION PER LEG	=	502.8 KIPS
SHEAR PER LEG	=	65.3 KIPS
TOTAL SHEAR	=	106.0 KIPS
TOTAL O.T.M	=	15,775.9 FT-KIPS



TOWER CONFIGURATION
N.T.S.

DESIGN WIND LOAD PER ANSI/TIA-222-H USING THE FOLLOWING DESIGN CRITERIA:

BASIC WIND SPEED (NO ICE): 121 MPH PER ASCE 7-16
BASIC WIND SPEED (W/ICE): 30 MPH PER ASCE 7-16
DESIGN ICE THICKNESS: 0.25 INCHES PER ASCE 7-16

THIS STRUCTURE HAS BEEN DESIGNED TO SUPPORT THE FOLLOWING LOADS:

ELEVATION (FT)	ANTENNA LOADING	LINE SIZE (NOM)
TOP	BEACON & LIGHTNING ROD	(1) 0-3/4" CONDUIT
245	41,472 SQ-IN MAX EPA	(18) 1-5/8"
235	30,000 SQ-IN MAX EPA	(12) 1-5/8"
225	20,000 SQ-IN MAX EPA	(12) 1-5/8"
215	15,000 SQ-IN MAX EPA	(12) 1-5/8"
170	(1) 4FT HP DISH [AZ. 0 DEG][6 GHZ]	(1) 1-5/8"



SECTION MAIN MEMBER SCHEDULE			
SECTION	LEGS	DIAGONALS	HORIZONTALS
RTS04	PIPE 3.500x0.216	L2x2x1/4 (4)	L1 3/4x1 3/4x3/16 (1)
RTT06	PIPE 4.500x0.337	L2x2x1/4 (3)	L1 3/4x1 3/4x3/16 (1)
RTT08	PIPE 5.563x0.375	L2x2x1/4 (3)	N/A
RTT10	PIPE 6.625x0.432	L2 1/2x2 1/2x3/16 (3)	N/A
RTT12	PIPE 6.625x0.432	L2 1/2x2 1/2x1/4 (3)	N/A
RTT16	PIPE 8.625x0.375	L3x3x3/16 (3)	N/A
RTT20	PIPE 8.625x0.500	L3x3x1/4 (3)	N/A
RTT24	PIPE 8.625x0.500	L3 1/2x3 1/2x1/4 (3)	N/A
RTT28	PIPE 8.625x0.500	L4x4x5/16 (2)	L3 1/2x3 1/2x1/4 (2)
RTT32	PIPE 10.750x0.500	L4x4x3/8 (2)	L4x4x1/4 (2)

TOP TO BOTTOM.

237508

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP
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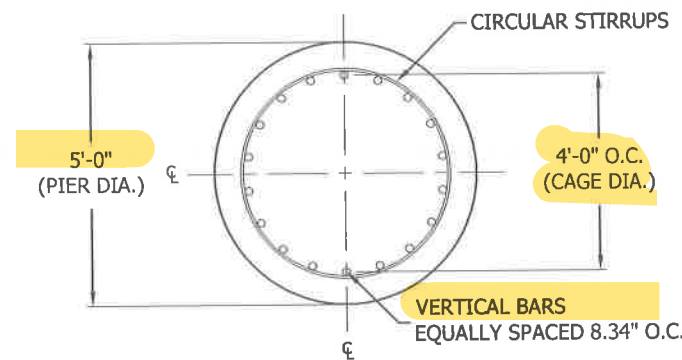
TOWERCOM VIII B
DESIGN PROFILE
250 FT RT TOWER
HIGH SPRINGS WEST, FL

DWN:	CHK'D:	DATE:
SWG	HA	05/10/2021

ENG'R:	SHEET #:
HA	1 OF 1

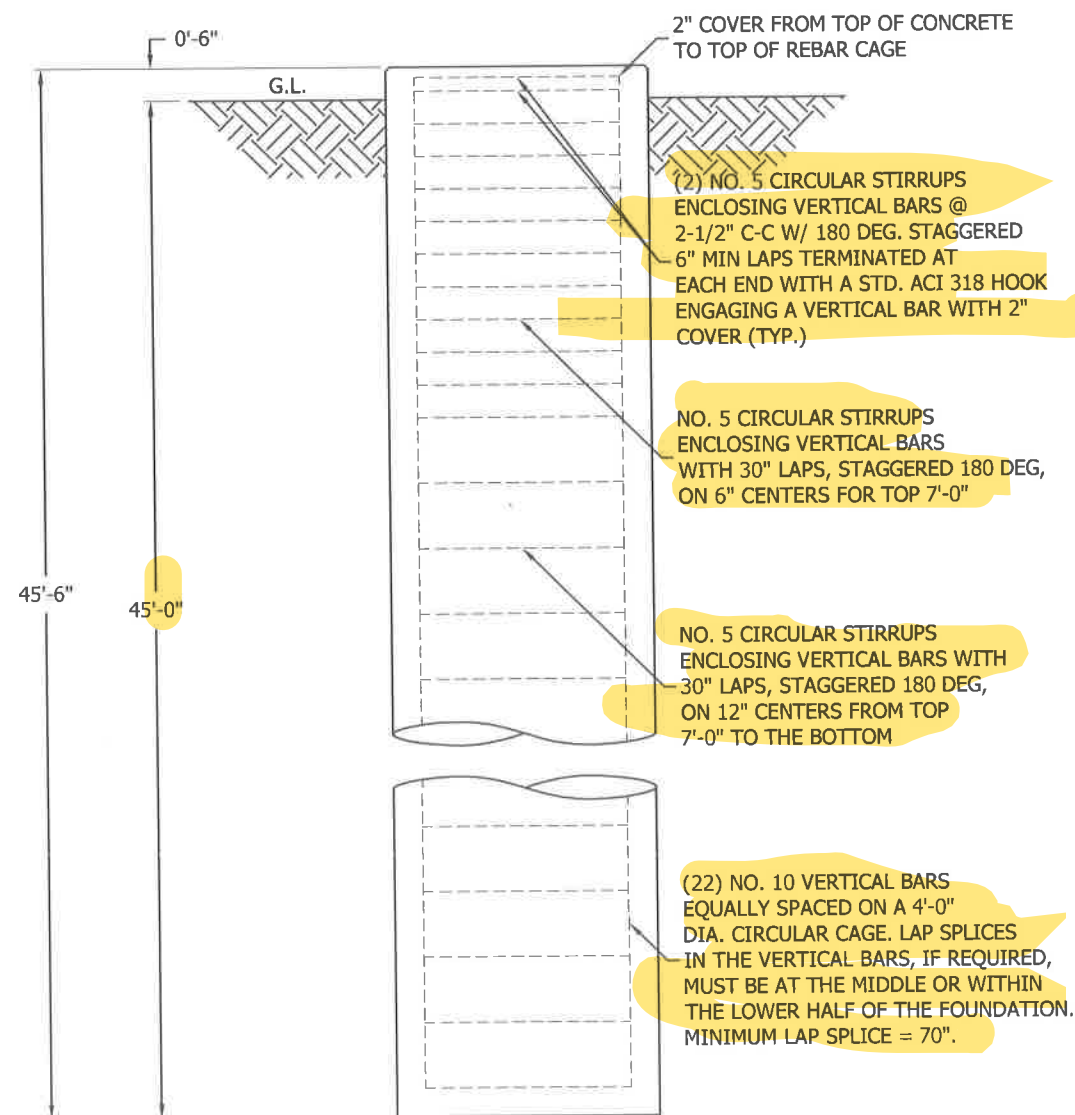
PRJ. ENG'R: SWG	PRJ. MANG'R:
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DRAWING NO:	REV:
237508-01-D1	0



PLAN VIEW

N.T.S.



ELEVATION VIEW

N.T.S.

FACTORED REACTIONS/LEG

DOWNLOAD = 581 KIPS
UPLIFT = 502.8 KIPS
SHEAR = 65.3 KIPS

VOLUME OF CONCRETE

(1) FOUNDATION 33.1 CU. YDS
(3) FOUNDATIONS 99.3 CU. YDS

GENERAL NOTES:

- FOUNDATION DESIGN HAS BEEN DEVELOPED IN ACCORDANCE WITH GENERALLY ACCEPTED PROFESSIONAL ENGINEERING PRINCIPLES AND PRACTICES WITHIN THE LIMITS OF THE SUBSURFACE DATA PROVIDED. FOUNDATION DESIGN MODIFICATIONS MAY BE REQUIRED IN THE EVENT THE FOLLOWING DESIGN PARAMETERS ARE NOT APPLICABLE FOR THE SUBSURFACE CONDITIONS ENCOUNTERED.
 - DEPTH NEGLECTED FOR SKIN FRICTION = TOP 6.0 FT
 - AVERAGE ULTIMATE SKIN SHEAR FOR UPLIFT: 6.0 FT TO 13.0 FT DEPTH = 340 PSF; 13.0 FT TO 23.0 FT DEPTH = 703 PSF; 23.0 FT TO 28.0 FT DEPTH = 500 PSF; 28.0 FT TO 33.0 FT DEPTH = 206 PSF; 33.0 FT TO 45.0 FT DEPTH = 2534 PSF.
 - AVERAGE ULTIMATE SKIN SHEAR FOR DOWNLOAD: 6.0 FT TO 13.0 FT DEPTH = 340 PSF; 13.0 FT TO 23.0 FT DEPTH = 703 PSF; 23.0 FT TO 28.0 FT DEPTH = 500 PSF; 28.0 FT TO 33.0 FT DEPTH = 206 PSF; 33.0 FT TO 45.0 FT DEPTH = 2534 PSF.
 - ULTIMATE NET END BEARING AT 45.0 FT = 30.00 KSF.
 - GROUNDWATER TABLE AT 6.0 FT BELOW GROUND.
- WORK SHALL BE IN ACCORDANCE WITH LOCAL CODES, SAFETY REGULATIONS AND UNLESS OTHERWISE NOTED, THE LATEST REVISION OF ACI 318, "BUILDING CODE REQUIREMENTS FOR REINFORCED CONCRETE". PROCEDURES FOR THE PROTECTION OF EXCAVATIONS, EXISTING CONSTRUCTION AND UTILITIES SHALL BE ESTABLISHED PRIOR TO FOUNDATION INSTALLATION.
- CONCRETE MATERIALS SHALL CONFORM TO THE APPROPRIATE STATE REQUIREMENTS FOR EXPOSED STRUCTURAL CONCRETE.
- PROPORTIONS OF CONCRETE MATERIALS SHALL BE SUITABLE FOR THE INSTALLATION METHOD UTILIZED AND SHALL RESULT IN DURABLE CONCRETE FOR RESISTANCE TO LOCAL ANTICIPATED AGGRESSIVE ACTIONS. THE DURABILITY REQUIREMENTS OF ACI 318 CHAPTER 4 SHALL BE SATISFIED BASED ON THE CONDITIONS EXPECTED AT THE SITE. AS A MINIMUM, CONCRETE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 4,500 PSI (31.0 MPA) IN 28 DAYS.
- MAXIMUM SIZE OF AGGREGATE SHALL NOT EXCEED SIZE SUITABLE FOR INSTALLATION METHOD UTILIZED OR 1/3 CLEAR DISTANCE BEHIND OR BETWEEN REINFORCING. MAXIMUM SIZE MAY BE INCREASED TO 2/3 CLEAR DISTANCE PROVIDED WORKABILITY AND METHODS OF CONSOLIDATION SUCH AS VIBRATING WILL PREVENT HONEYCOMBS OR VOIDS.
- REINFORCEMENT SHALL BE DEFORMED AND CONFORM TO THE REQUIREMENTS OF ASTM A615 GRADE 60 UNLESS OTHERWISE NOTED. SPLICES IN REINFORCEMENT SHALL NOT BE ALLOWED UNLESS OTHERWISE INDICATED.
- REINFORCING CAGES SHALL BE BRACED TO RETAIN PROPER DIMENSIONS DURING HANDLING AND THROUGHOUT PLACEMENT OF CONCRETE. WHEN TEMPORARY CASING IS UTILIZED, BRACING SHALL BE ADEQUATE TO RESIST FORCES OCCURRING FROM FLOWING CONCRETE DURING CASING EXTRACTION.
- WELDING IS PROHIBITED ON REINFORCING STEEL AND EMBEDMENTS.
- MINIMUM CONCRETE COVER FOR REINFORCEMENT SHALL BE 3 INCHES (76 MM) UNLESS OTHERWISE NOTED. APPROVED SPACERS SHALL BE USED TO INSURE A 3 INCH (76 MM) MINIMUM COVER ON REINFORCEMENT.
- SPACERS SHALL BE ATTACHED INTERMITTENTLY THROUGHOUT THE ENTIRE LENGTH OF VERTICAL REINFORCING CAGES TO INSURE CONCENTRIC PLACEMENT OF CAGES IN EXCAVATIONS.
- FOUNDATION DESIGN HAS BEEN BASED ON GEOTECHNICAL REPORT NO. **BJR 20-165** DATED **4/14/2020** BY **BJ ROCK, LLC**.
- FOUNDATION DEPTH INDICATED IS BASED ON THE GRADE LINE DESCRIBED IN THE REFERENCED GEOTECHNICAL REPORT. FOUNDATION MODIFICATION MAY BE REQUIRED IN THE EVENT CUT OR FILL OPERATIONS HAVE TAKEN PLACE SUBSEQUENT TO THE GEOTECHNICAL INVESTIGATION.
- FOUNDATION DESIGN ASSUMES THE RECOMMENDATIONS IN THE REFERENCED GEOTECHNICAL REPORT CONCERNING VERIFICATION OF SUBSURFACE CONDITIONS ARE IMPLEMENTED PRIOR TO PLACEMENT OF CONCRETE.
- FOUNDATION INSTALLATION SHALL BE SUPERVISED BY PERSONNEL KNOWLEDGEABLE AND EXPERIENCED WITH THE PROPOSED FOUNDATION TYPE. CONSTRUCTION SHALL BE IN ACCORDANCE WITH GENERALLY ACCEPTED INSTALLATION PRACTICES.
- FOUNDATION DESIGN ASSUMES INSTALLATION PROCEDURES WILL INCORPORATE THE PROCEDURES RECOMMENDED IN THE REFERENCED GEOTECHNICAL REPORT.
- FOUNDATION DESIGN ASSUMES FIELD INSPECTIONS WILL BE PERFORMED TO VERIFY THAT CONSTRUCTION MATERIALS, INSTALLATION METHODS AND ASSUMED DESIGN PARAMETERS ARE ACCEPTABLE BASED ON CONDITIONS EXISTING AT THE SITE.
- FOR FOUNDATION INSTALLATION TOLERANCES SEE STRUCTURE ASSEMBLY DRAWING.
- LOOSE MATERIAL SHALL BE REMOVED FROM BOTTOM OF EXCAVATION PRIOR TO CONCRETE PLACEMENT. SIDES OF EXCAVATION SHALL BE ROUGH AND FREE OF LOOSE CUTTINGS.
- CONCRETE SHALL BE PLACED IN A MANNER THAT WILL PREVENT SEGREGATION OF CONCRETE MATERIALS, INFILTRATION OF WATER OR SOIL AND OTHER OCCURRENCES WHICH MAY DECREASE THE STRENGTH OR DURABILITY OF THE FOUNDATION.
- FREE FALL CONCRETE MAY BE USED PROVIDED FALL IS VERTICAL DOWN WITHOUT HITTING SIDES OF EXCAVATION, FORMWORK, REINFORCING BARS, FORM TIES, CAGE BRACING OR OTHER OBSTRUCTIONS. UNDER NO CIRCUMSTANCES SHALL CONCRETE FALL THROUGH WATER.
- CONSTRUCTION JOINTS, IF REQUIRED AT THE BASE OF THE PIERS, MUST BE INTENTIONALLY ROUGHENED TO A FULL AMPLITUDE OF 1/4 INCH (6 MM). FOUNDATION DESIGN ASSUMES NO OTHER CONSTRUCTION JOINTS.
- TOP OF FOUNDATION OUTSIDE LIMITS OF ANCHOR BOLTS SHALL BE SLOPED TO DRAIN WITH A FLOATED FINISH. AREA INSIDE LIMITS OF ANCHOR BOLTS SHALL BE LEVEL WITH A SCRATCHED FINISH.
- EXPOSED EDGES OF CONCRETE SHALL BE CHAMFERED 3/4" X 3/4" (19MM X 19MM) MINIMUM.
- FOUNDATION DESIGN ASSUMES CASING, IF USED, WILL NOT BE LEFT IN PLACE. EQUIPMENT, PROCEDURES, AND PROPORTIONS OF CONCRETE MATERIALS SHALL INSURE CONCRETE WILL NOT BE ADVERSELY DISTURBED UPON CASING REMOVAL.
- DRILLING FLUID, IF USED, SHALL BE FULLY DISPLACED BY CONCRETE AND SHALL NOT BE DETRIMENTAL TO CONCRETE OR SURROUNDING SOIL. CONTAMINATED CONCRETE SHALL BE REMOVED FROM TOP OF FOUNDATION AND REPLACED WITH FRESH CONCRETE.

NOTE: SEE STRUCTURE ASSEMBLY DRAWING FOR FOUNDATION LAYOUT AND ANCHORAGE EMBEDMENT DRAWING NUMBER.

FILE NO.

237508

REVISIONS

REV.	DESCRIPTION	DWN	CHK	APP
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TOWERCOM VIII B
DRILLED PIER
FOUNDATION DETAILS
HIGH SPRINGS WEST, FL

DWN: SWG CHK'D: HA DATE: 05/12/2021

ENG'R: HA SHEET #: 1 OF 1

PRJ. ENG'R: SWG PRJ. MANG'R:

DRAWING NO: 237508-01-F1 REV: 0



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Contract: 237508

Project: 250 FT RT TOWER

Date and Time: 5/10/2021 2:54:51 PM

Revision: 0

Site: HIGH SPRINGS WEST- FL

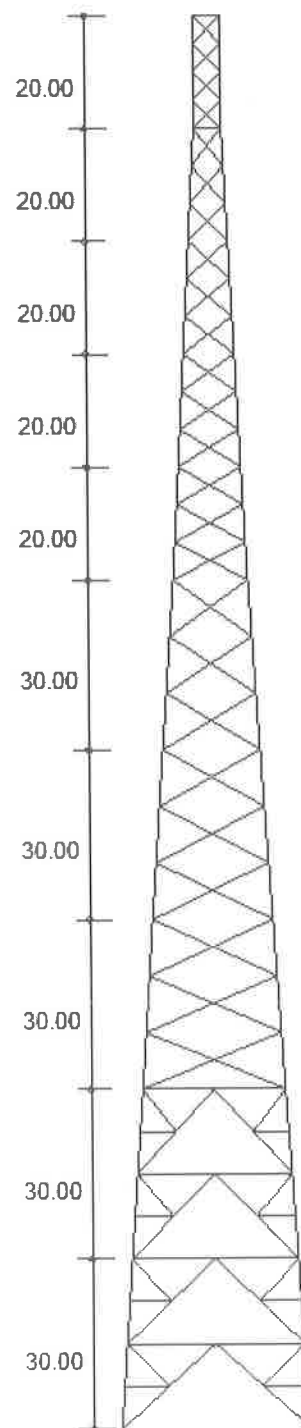
Engineer: SWG ✓ HK

DESIGN SPECIFICATION

Sct.	Length (ft)	Top W. (in)	Bot Width (in)
1	30.00	351.81	399.81
2	30.00	301.97	351.81
3	30.00	253.97	301.97
4	30.00	205.97	253.97
5	30.00	157.97	205.97
6	20.00	132.24	157.97
7	20.00	108.24	132.24
8	20.00	83.32	108.24
9	20.00	58.40	83.32
10	20.00	57.53	58.40

MAXIMUM BASE REACTIONS

Download (Kips) 581.0
Uplift (Kips) 502.8
Shear (Kips) 65.3





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Contract: 237508

Project: 250 FT RT TOWER

Date and Time: 5/10/2021 2:54:51 PM

Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

Section A: PROJECT DATA

Project Title: 250 FT RT TOWER
Customer Name: TOWERCOM VIII B
Site: HIGH SPRINGS WEST- FL
Contract No.: 237508
Revision: 0
Engineer: SWG
Date: May 10 2021
Time: 01:09:43 PM

Design Standard: ANSI/TIA-222-H-2017

GENERAL DESIGN CONDITIONS

Start wind direction: 0.00 (Deg)
End wind direction: 330.00 (Deg)
Increment wind direction: 30.00 (Deg)
Elevation above ground: 0.00 (ft)
Mean elevation of base of structure above sea level Zs: 60.00 (ft)
Rooftop wind speed-up factor Ks: 1.00
Gust Response Factor Gh: 0.85
Risk category: II
Exposure category: C
Topographic category: 1
Material Density: 490.1 (lbs/ft³)
Young's Modulus: 29000.0 (ksi)
Poisson Ratio: 0.30
Weight Multiplier: 1.25
Minimum Bracing Resistance as per 4.4.1

WIND ONLY CONDITIONS:

Basic Wind Speed (No Ice): 121.00 (mph)
Directionality Factor Kd: 0.85
Importance Factor I: 1.00
Wind Load Factor: 1.00
Dead Load Factor: 1.20
Dead Load Factor for Uplift: 0.90

WIND AND ICE CONDITIONS:

Basic Wind Speed (With Ice): 30.00 (mph)
Directionality Factor Kd: 0.85
Wind Load Importance Factor Iw: 1.00
Ice Thickness Importance Factor Ii: 1.00
Ice Thickness: 0.25 (in)
Ice Density: 56.19 (lbs/ft³)
Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Load Factor: 1.00

WIND ONLY SERVICEABILITY CONDITIONS:

Serviceability Wind Speed: 60.00 (mph)
Directionality Factor Kd: 0.85
Importance Factor I: 1.00
Wind Load Factor: 1.00
Dead Load Factor: 1.00

EARTHQUAKE CONDITIONS:

Site class definition: D
Spectral response acceleration Ss: 0.078
Spectral response acceleration Sl: 0.047
Long-period transition period TL: 8.000



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Contract: 237508
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Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Acceleration-based site coefficient Fa: 1.600
Velocity-based site coefficient Fv: 2.400
Design spectral response acceleration Sds: 0.083
Design spectral response acceleration Sd1: 0.075
Seismic analysis method: 1
Fundamental frequency of structure f1: 0.864
Total seismic shear Vs (Kips) : 2.57

Analysis performed using: TowerSoft Finite Element Analysis Program



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Contract: 237508

Project: 250 FT RT TOWER

Date and Time: 5/10/2021 2:54:51 PM

Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

Section B: STRUCTURE GEOMETRY

TOWER GEOMETRY

Cross-Section	Height (ft)	Tot Height 'ft)	# of Section	Bot Width (in)	Top Width (in)
Triangular	250.00	250.00	10	399.81	57.53

SECTION GEOMETRY

Sec #	Sec. Name	Elevation		Widths		Legs (lbs)	Brcg. (lbs)	Masses		Sect. (lbs)	Database (lbs)	Brcg. Clear. (in)
		Bottom (ft)	Top (ft)	Bottom (in)	Top (in)			Sec.Brc (lbs)	Int.Brc (lbs)			
10	RTS04	230.00	250.00	58	58	569	705	0	0	1274	0	0.787
9	RTT06	210.00	230.00	83	58	1127	680	0	0	1808	0	0.787
8	RTT08	190.00	210.00	108	83	1562	749	0	0	2311	0	0.787
7	RTT10	170.00	190.00	132	108	2150	830	0	0	2980	0	0.787
6	RTT12	150.00	170.00	158	132	2151	1259	0	0	3410	0	0.787
5	RTT16*	120.00	150.00	206	158	3727	1517	0	0	5244	0	0.787
4	RTT20*	90.00	120.00	254	206	4899	2384	0	0	7283	0	0.787
3	RTT24*	60.00	90.00	302	254	4899	3266	0	0	8166	0	0.787
2	RTT28*	30.00	60.00	352	302	4901	3656	1380	565	10502	0	0.787
1	RTT32*	0.00	30.00	400	352	6182	4721	1809	751	13464	0	0.787
Total Mass:						32168	19768	3189	1316	56441	0	

PANEL GEOMETRY

Sec#	Pnl#	Type	SecBrcg	Mid. Horiz Continuous	Horiz Height (ft)	Bottom Width (in)	Top Width (in)	Plan Bracing	Hip Bracing	Gusset Plate Area (ft^2)	Gusset Plate Weight (lbs)
10	4	X	(None)	Yes	5.0	57.7	57.5	(None)	(None)	0.300	0.00
10	3	X	(None)	None	5.0	58.0	57.7	(None)	(None)	0.300	0.00
10	2	X	(None)	None	5.0	58.2	58.0	(None)	(None)	0.300	0.00
10	1	X	(None)	None	5.0	58.4	58.2	(None)	(None)	0.300	0.00
9	3	X	(None)	Yes	6.7	66.7	58.4	(None)	(None)	0.300	0.00
9	2	X	(None)	None	6.7	75.0	66.7	(None)	(None)	0.300	0.00
9	1	X	(None)	None	6.7	83.3	75.0	(None)	(None)	0.300	0.00
8	3	X	(None)	None	6.7	91.6	83.3	(None)	(None)	0.300	0.00
8	2	X	(None)	None	6.7	99.9	91.6	(None)	(None)	0.300	0.00
8	1	X	(None)	None	6.7	108.2	99.9	(None)	(None)	0.300	0.00
7	3	X	(None)	None	6.7	116.2	108.2	(None)	(None)	0.300	0.00
7	2	X	(None)	None	6.7	124.2	116.2	(None)	(None)	0.300	0.00
7	1	X	(None)	None	6.7	132.2	124.2	(None)	(None)	0.300	0.00
6	3	X	(None)	None	6.7	140.8	132.2	(None)	(None)	0.300	0.00
6	2	X	(None)	None	6.7	149.4	140.8	(None)	(None)	0.300	0.00
6	1	X	(None)	None	6.7	158.0	149.4	(None)	(None)	0.300	0.00
5	3	X	(None)	None	10.0	174.0	158.0	(None)	(None)	0.300	0.00
5	2	X	(None)	None	10.0	190.0	174.0	(None)	(None)	0.300	0.00
5	1	X	(None)	None	10.0	206.0	190.0	(None)	(None)	0.300	0.00
4	3	X	(None)	None	10.0	222.0	206.0	(None)	(None)	0.300	0.00
4	2	X	(None)	None	10.0	238.0	222.0	(None)	(None)	0.300	0.00
4	1	X	(None)	None	10.0	254.0	238.0	(None)	(None)	0.300	0.00
3	3	X	(None)	None	10.0	270.0	254.0	(None)	(None)	0.300	0.00
3	2	X	(None)	None	10.0	286.0	270.0	(None)	(None)	0.300	0.00
3	1	X	(None)	None	10.0	302.0	286.0	(None)	(None)	0.300	0.00
2	2	K	2-Subdiv.	Yes	15.0	326.9	302.0	2-Subdiv.	(None)	0.300	0.00
2	1	K	2-Subdiv.	Yes	15.0	351.8	326.9	2-Subdiv.	(None)	0.300	0.00
1	2	K	2-Subdiv.	Yes	15.0	375.8	351.8	2-Subdiv.	(None)	0.300	0.00
1	1	K	2-Subdiv.	Yes	15.0	399.8	375.8	2-Subdiv.	(None)	0.300	0.00

MEMBER PROPERTIES

Sec/ Member	Type	Description	Steel	Conn.	Bolt	Bolt	End	Edge	Gusset	Gusset	Bolt	Dble
----------------	------	-------------	-------	-------	------	------	-----	------	--------	--------	------	------



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Contract: 237508

Project: 250 FT RT TOWER

Date and Time: 5/10/2021 2:54:51 PM

Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

Pnl	Grade	Type	#-Size	Grade	Dist.	Dist.	Thick.	Grade	Space	Mem.
Spacing										
Stitch										
Bolt			(in)		(in)	(in)	(in)		(in)	(in)
(ft)										
10/4 Leg	PIPE 3.500x0.216	A500 gr.CSTension	5-0.875	A325X						
10/4 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
10/4 Horiz	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	0.875	0.250	A572 gr.50	2.000	
10/3 Leg	PIPE 3.500x0.216	A500 gr.CSTension	5-0.875	A325X						
10/3 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
10/2 Leg	PIPE 3.500x0.216	A500 gr.CSTension	5-0.875	A325X						
10/2 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
10/1 Leg	PIPE 3.500x0.216	A500 gr.CSTension	5-0.875	A325X						
10/1 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
9/3 Leg	PIPE 4.500x0.337	A500 gr.CSTension	5-1.000	A325X						
9/3 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
9/3 Horiz	L1 3/4x1 3/4x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	0.875	0.250	A572 gr.50	2.000	
9/2 Leg	PIPE 4.500x0.337	A500 gr.CSTension	5-1.000	A325X						
9/2 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
9/1 Leg	PIPE 4.500x0.337	A500 gr.CSTension	5-1.000	A325X						
9/1 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
8/3 Leg	PIPE 5.563x0.375	A500 gr.CSTension	5-1.000	A325X						
8/3 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
8/2 Leg	PIPE 5.563x0.375	A500 gr.CSTension	5-1.000	A325X						
8/2 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
8/1 Leg	PIPE 5.563x0.375	A500 gr.CSTension	5-1.000	A325X						
8/1 Diag	L2x2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.000	0.250	A572 gr.50	2.000	
7/3 Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.000	A325X						
7/3 Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50	2.000	
7/2 Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.000	A325X						
7/2 Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50	2.000	
7/1 Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.000	A325X						
7/1 Diag	L2 1/2x2 1/2x3/16	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50	2.000	
6/3 Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.500	A325X						
6/3 Diag	L2 1/2x2 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50	2.000	
6/2 Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.500	A325X						
6/2 Diag	L2 1/2x2 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50	2.000	
6/1 Leg	PIPE 6.625x0.432	A500 gr.CSTension	6-1.500	A325X						
6/1 Diag	L2 1/2x2 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.250	0.250	A572 gr.50	2.000	
5/3 Leg	PIPE 8.625x0.375	A500 gr.CSTension	6-1.500	A325X						
5/3 Diag	L3x3x3/16	A529 gr.50Bolted	2-0.625	A325X	1.125	1.620	0.375	A572 gr.50	2.000	



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Contract: 237508

Project: 250 FT RT TOWER

Date and Time: 5/10/2021 2:54:51 PM

Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

5/2	Leg	PIPE 8.625x0.375	A500 gr.CSTension	6-1.500	A325X						
5/2	Diag	L3x3x3/16	A529 gr.50Bolted	2-0.625	A325X	1.125	1.620	0.375	A572 gr.50		
									2.000		
5/1	Leg	PIPE 8.625x0.375	A500 gr.CSTension	6-1.500	A325X						
5/1	Diag	L3x3x3/16	A529 gr.50Bolted	2-0.625	A325X	1.125	1.620	0.375	A572 gr.50		
									2.000		
4/3	Leg	PIPE 8.625x0.500	A500 gr.CSTension	6-1.500	A325X						
4/3	Diag	L3x3x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	1.620	0.375	A572 gr.50		
									2.000		
4/2	Leg	PIPE 8.625x0.500	A500 gr.CSTension	6-1.500	A325X						
4/2	Diag	L3x3x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	1.620	0.375	A572 gr.50		
									2.000		
4/1	Leg	PIPE 8.625x0.500	A500 gr.CSTension	6-1.500	A325X						
4/1	Diag	L3x3x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	1.620	0.375	A572 gr.50		
									2.000		
3/3	Leg	PIPE 8.625x0.500	A500 gr.CSTension	6-1.500	A325X						
3/3	Diag	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	2.000	0.375	A572 gr.50		
									2.000		
3/2	Leg	PIPE 8.625x0.500	A500 gr.CSTension	6-1.500	A325X						
3/2	Diag	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	2.000	0.375	A572 gr.50		
									2.000		
3/1	Leg	PIPE 8.625x0.500	A500 gr.CSTension	6-1.500	A325X						
3/1	Diag	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	2.000	0.375	A572 gr.50		
									2.000		
2/2	Leg	PIPE 8.625x0.500	A500 gr.CSTension	7-1.500	A325X						
2/2	Diag	L4x4x5/16	A529 gr.50Bolted	2-0.625	A325X	1.125	2.500	0.375	A572 gr.50		
									2.000		
2/2	Horiz	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	2.000	0.375	A572 gr.50		
									2.000		
2/2	SecD1	L3x3x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.620	0.250	A572 gr.50		
									2.000		
2/2	SecH1	L3x3x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.620	0.250	A572 gr.50		
									2.000		
2/2	PlanH1	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.000	0.250	A572 gr.50		
									2.000		
2/1	Leg	PIPE 8.625x0.500	A500 gr.CSTension	7-1.500	A325X						
2/1	Diag	L4x4x5/16	A529 gr.50Bolted	2-0.625	A325X	1.125	2.500	0.375	A572 gr.50		
									2.000		
2/1	Horiz	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	2.000	0.375	A572 gr.50		
									2.000		
2/1	SecD1	L3x3x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.620	0.250	A572 gr.50		
									2.000		
2/1	SecH1	L3x3x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	1.620	0.250	A572 gr.50		
									2.000		
2/1	PlanH1	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.000	0.250	A572 gr.50		
									2.000		
1/2	Leg	PIPE 10.750x0.500	A500 gr.CSTension	8-1.500	A325X						
1/2	Diag	L4x4x3/8	A529 gr.50Bolted	2-0.625	A325X	1.125	2.500	0.375	A572 gr.50		
									2.000		
1/2	Horiz	L4x4x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	2.500	0.375	A572 gr.50		
									2.000		
1/2	SecD1	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.000	0.250	A572 gr.50		
									2.000		
1/2	SecH1	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.000	0.250	A572 gr.50		
									2.000		
1/2	PlanH1	L4x4x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.500	0.250	A572 gr.50		
									2.000		
1/1	Leg	PIPE 10.750x0.500	A500 gr.CSTension	8-1.500	A325X						
1/1	Diag	L4x4x3/8	A529 gr.50Bolted	2-0.625	A325X	1.125	2.500	0.375	A572 gr.50		
									2.000		



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Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

1/1	Horiz	L4x4x1/4	A529 gr.50Bolted	2-0.625	A325X	1.125	2.500	0.375	A572 gr.50 2.000
1/1	SecD1	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.000	0.250	A572 gr.50 2.000
1/1	SecH1	L3 1/2x3 1/2x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.000	0.250	A572 gr.50 2.000
1/1	PlanH1	L4x4x1/4	A529 gr.50Bolted	1-0.625	A325X	1.500	2.500	0.250	A572 gr.50 2.000



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Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Section C: ANTENNA DATA

Structure Azimuth from North: 0

ANTENNAS

Ant No.	Elev. (ft)	Antenna (#) Type	Ant. Azim.	Mount. Radius (ft)	Mount Type	Mount Azim.	Tx Line (#) Type	Mounting Pipe Size (in)	Pipe Length (ft)	Ka
1	170.00	(1) HP4	0	6.00		0			Full Shielded	
		Vert. Offset	0.00	(ft)						

ANTENNA AND MOUNT WIND AREAS AND WEIGHTS

Ant No.	Antenna/Mount	Frontal Bare Area (ft) ²	Lateral Bare Area (ft) ²	Frontal Iced Area (ft) ²	Lateral Iced Area (ft) ²	Weight Bare (lbs)	Weight Iced (lbs)	Frequency GHz	Allowable Signal Loss dB	Gh Mount Ka
1	HP4	18.87	1.31	18.87	1.31	169.75	259.19	6.00	10	0.85



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Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Section D: TRANSMISSION LINE DATA

Transmission Lines Position

No.	Bot El (ft)	Top El (ft)	Desc.	Radius (ft)	Az.	Orient.	No.	No. of Rows	Vert.	Antenna	User Ka
1	0.00	250.00	3/8 CABLE	19.00	0.00	0.00	1	1	Yes		
2	0.00	250.00	RC0.75-Cnd	15.68	60.00	5.00	1	1	No		
3	0.00	245.00	TX Ladder	10.39	60.00	30.00	1	1	No		
4	0.00	245.00	LDF7P-50A	10.39	60.00	30.00	18	2	No		
5	0.00	235.00	TX Ladder	10.39	180.00	150.00	1	1	No		
6	170.00	235.00	LDF7P-50A	3.33	180.00	150.00	12	2	No		
7	0.00	225.00	TX Ladder	10.39	300.00	270.00	1	1	No		
8	0.00	225.00	LDF7P-50A	10.39	300.00	270.00	12	2	No		
9	0.00	215.00	TX Ladder	10.39	300.00	330.00	1	1	No		
10	0.00	215.00	LDF7P-50A	10.39	300.00	330.00	12	2	No		
11	0.00	170.00	LDF7P-50A	10.39	180.00	150.00	13	2	No		

Transmission Lines Details

No.	Desc.	Width (in)	Depth (in)	Unit Mass (lb/ft)	Line Spacing (in)	Row Spacing (in)
1	3/8 CABLE	0.38	0.38	1.00	2.750	2.750
2	RC0.75-Cnd	1.05	1.05	1.09	2.750	2.750
3	TX Ladder	4.70	1.50	4.00	2.750	2.750
4	LDF7P-50A	2.01	2.01	0.92	2.250	2.750
5	TX Ladder	4.70	1.50	4.00	2.750	2.750
6	LDF7P-50A	2.01	2.01	0.92	2.250	2.750
7	TX Ladder	4.70	1.50	4.00	2.750	2.750
8	LDF7P-50A	2.01	2.01	0.92	2.250	2.750
9	TX Ladder	4.70	1.50	4.00	2.750	2.750
10	LDF7P-50A	2.01	2.01	0.92	2.250	2.750
11	LDF7P-50A	2.01	2.01	0.92	2.250	2.750



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Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Section F: POINT LOAD DATA

Structure Azimuth from North:0.00

POINT LOADS

No.	Description	Elev. (ft)	Radius (ft)	Azim. (Deg)	Orient. (Deg)	Vertical Offset (ft)	Tx Line	Comments
1	BEACON & LR	250.00	1.00	0.0	0.0	0.00		
2	41,472 SQ-IN MAX EPA	245.00	1.00	0.0	0.0	0.00		
3	30,000 SQ-IN MAX EPA	235.00	1.00	120.0	120.0	0.00		
4	20,000 SQ-IN MAX EPA	225.00	1.00	240.0	240.0	0.00		
5	15,000 SQ-IN MAX EPA	215.00	1.00	0.0	0.0	0.00		

POINT LOADS WIND AREAS AND WEIGHTS

No.	Description	Frontal Bare Area (ft^2)	Lateral Bare Area (ft^2)	Frontal Iced Area (ft^2)	Lateral Iced Area (ft^2)	Weight Bare (Kips)	Weight Iced (Kips)	Gh
1	BEACON & LR	5.00	5.00	10.00	10.00	0.25	0.50	0.85
2	41,472 SQ-IN MAX EPA	288.00	288.00	576.00	576.00	4.00	12.00	0.85
3	30,000 SQ-IN MAX EPA	209.00	209.00	418.00	418.00	3.00	9.00	0.85
4	20,000 SQ-IN MAX EPA	139.00	139.00	278.00	278.00	3.00	9.00	0.85
5	15,000 SQ-IN MAX EPA	105.00	105.00	210.00	210.00	3.00	9.00	0.85



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Contract: 237508

Project: 250 FT RT TOWER

Date and Time: 5/10/2021 2:54:51 PM

Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

Section H: STRUCTURE DISPLACEMENT DATA

Load Combination Wind Only - Serviceability

Wind Direction

Maximum displacements

Node	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert. Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist (Deg)
102	250.0	9.7	9.8	-0.1	0.44	0.44	-0.06
99	245.0	9.3	9.3	-0.1	0.45	0.45	0.07
96	240.0	8.8	8.8	-0.1	0.44	0.44	0.05
93	235.0	8.3	8.4	-0.1	0.43	0.43	0.05
90	230.0	7.9	-7.9	-0.1	0.41	0.41	-0.04
87	223.3	7.3	-7.3	-0.1	0.39	-0.39	0.03
84	216.7	6.8	-6.8	-0.1	0.37	0.37	-0.03
81	210.0	6.2	-6.3	-0.1	0.35	-0.35	0.03
78	203.3	5.7	-5.8	-0.1	0.33	0.33	-0.03
75	196.7	5.3	-5.3	-0.1	0.31	-0.31	0.02
72	190.0	4.9	-4.9	-0.1	0.29	0.29	-0.02
69	183.3	4.4	-4.5	-0.1	0.27	-0.28	0.02
66	176.7	4.1	-4.1	-0.1	0.26	0.26	0.02
63	170.0	3.7	-3.7	-0.1	0.24	-0.24	0.01
60	163.3	3.4	-3.4	-0.1	0.23	0.23	0.01
57	156.7	3.0	-3.1	-0.1	0.21	-0.21	0.01
54	150.0	2.8	-2.8	-0.1	0.19	0.20	-0.01
51	140.0	2.3	-2.4	-0.1	0.17	-0.17	0.01
48	130.0	2.0	-2.0	-0.1	0.15	0.16	0.01
45	120.0	1.7	-1.7	-0.1	0.13	-0.13	0.00
42	110.0	1.4	-1.4	-0.1	0.12	0.12	0.01
39	100.0	1.1	-1.1	-0.1	0.11	-0.11	0.00
36	90.0	0.9	-0.9	-0.1	0.10	0.10	0.00
33	80.0	0.7	-0.7	-0.1	0.09	-0.09	0.00
30	70.0	0.5	-0.5	0.0	0.07	-0.07	0.00
26	60.0	0.4	-0.4	0.0	0.05	-0.05	0.00
20	45.0	0.2	0.2	0.0	0.04	-0.04	0.00
14	30.0	0.1	0.1	0.0	0.02	-0.02	0.00
8	15.0	0.0	0.0	0.0	0.01	0.01	0.00
3	0.0	0.0	0.0	0.0	0.00	0.00	0.00



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Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Section J: ANTENNA DISPLACEMENT DATA

Load Combination Wind Only - Serviceability

Wind Direction

Maximum displacements

Ant.	Elev. (ft)	N-S Disp (in)	W-E Disp (in)	Vert. Disp (in)	N-S Rot (Deg)	W-E Rot (Deg)	Twist Tot (Deg)	Allow. (Deg)
1	170.00	3.7	-3.7	-0.1	0.24	-0.24	0.01	2.21



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Graduate
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Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Section L: STRENGTH ASSESSMENT SORTED DATA

Load Combination Max Envelope
Wind Direction Maximum

Sec	Pnl	Elev.	MType	Desc.	Len	kl/r	Gov. comp. cap.	Gov. tens. cap.	Max Compr.	Max Tens.	Asses. Ratio
		(ft)			(ft)		(Kips)	(Kips)	(Kips)	(Kips)	
10	4	245.00	Leg	PIPE 3.500x0.216	5.00	51.7	82.5	100.4	1.9	1.2	0.02
10	3	240.00	Leg	PIPE 3.500x0.216	5.00	51.7	82.5	100.4	10.5	6.6	0.13
10	2	235.00	Leg	PIPE 3.500x0.216	5.00	51.7	82.5	100.4	28.2	23.5	0.34
10	1	230.00	Leg	PIPE 3.500x0.216	5.00	51.7	82.5	100.4	47.2	41.7	0.57
9	3	223.33	Leg	PIPE 4.500x0.337	6.68	54.2	160.1	198.4	76.7	70.5	0.48
9	2	216.67	Leg	PIPE 4.500x0.337	6.68	54.2	160.1	198.4	108.1	98.0	0.67
9	1	210.00	Leg	PIPE 4.500x0.337	6.68	54.2	160.1	198.4	138.0	125.9	0.86
8	3	203.33	Leg	PIPE 5.563x0.375	6.68	43.6	239.3	275.0	166.8	153.0	0.70
8	2	196.67	Leg	PIPE 5.563x0.375	6.68	43.6	239.3	275.0	192.1	177.1	0.80
8	1	190.00	Leg	PIPE 5.563x0.375	6.68	43.6	239.3	275.0	215.5	199.1	0.90
7	3	183.33	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	237.0	219.3	0.69
7	2	176.67	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	257.6	238.4	0.75
7	1	170.00	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	330.3	277.2	256.5	0.81
6	3	163.33	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	378.5	295.2	273.0	0.86
6	2	156.67	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	378.5	312.8	288.9	0.91
6	1	150.00	Leg	PIPE 6.625x0.432	6.68	36.4	343.5	378.5	328.8	303.4	0.96
5	3	140.00	Leg	PIPE 8.625x0.375	10.03	41.2	386.3	437.4	345.1	317.8	0.89
5	2	130.00	Leg	PIPE 8.625x0.375	10.03	41.2	386.3	437.4	363.7	333.5	0.94
5	1	120.00	Leg	PIPE 8.625x0.375	10.03	41.2	386.3	437.4	379.0	346.7	0.98
4	3	110.00	Leg	PIPE 8.625x0.500	10.03	41.8	505.4	574.2	396.5	361.2	0.78
4	2	100.00	Leg	PIPE 8.625x0.500	10.03	41.8	505.4	574.2	411.9	373.9	0.82
4	1	90.00	Leg	PIPE 8.625x0.500	10.03	41.8	505.4	574.2	428.9	387.7	0.85
3	3	80.00	Leg	PIPE 8.625x0.500	10.03	41.8	505.4	574.2	444.2	400.1	0.88
3	2	70.00	Leg	PIPE 8.625x0.500	10.03	41.8	505.4	574.2	461.0	413.4	0.91
3	1	60.00	Leg	PIPE 8.625x0.500	10.03	41.8	505.4	574.2	476.4	425.7	0.94
2	2	45.00	Leg	PIPE 8.625x0.500	15.05	31.3	534.4	574.2	486.2	431.5	0.91
2	1	30.00	Leg	PIPE 8.625x0.500	15.05	31.3	534.4	574.2	509.4	448.9	0.95
1	2	15.00	Leg	PIPE 10.750x0.500	15.04	24.9	692.5	724.5	532.9	466.0	0.77
1	1	0.00	Leg	PIPE 10.750x0.500	15.04	24.9	692.5	724.5	558.7	484.7	0.81
10	4	245.00	Diag	L2x2x1/4	6.93	98.2	17.2	15.7	2.3	2.6	0.16
10	3	240.00	Diag	L2x2x1/4	6.95	98.4	17.2	15.7	7.9	7.6	0.49
10	2	235.00	Diag	L2x2x1/4	6.96	98.5	17.2	15.7	7.8	8.1	0.52
10	1	230.00	Diag	L2x2x1/4	6.97	98.7	17.2	15.7	13.0	12.7	0.81
9	3	223.33	Diag	L2x2x1/4	8.47	118.4	17.2	15.7	11.7	11.6	0.74
9	2	216.67	Diag	L2x2x1/4	8.91	125.5	17.1	15.7	11.5	11.5	0.73
9	1	210.00	Diag	L2x2x1/4	9.38	133.5	15.1	15.7	12.0	12.0	0.80
8	3	203.33	Diag	L2x2x1/4	9.88	139.7	13.8	15.7	11.6	11.6	0.84
8	2	196.67	Diag	L2x2x1/4	10.40	148.3	12.2	15.7	10.9	10.9	0.89
8	1	190.00	Diag	L2x2x1/4	10.94	157.0	10.9	15.7	10.4	10.4	0.95
7	3	183.33	Diag	L2 1/2x2 1/2x3/16	11.49	129.9	15.3	14.1	10.4	10.3	0.73
7	2	176.67	Diag	L2 1/2x2 1/2x3/16	12.04	136.9	13.7	14.1	10.2	10.2	0.74
7	1	170.00	Diag	L2 1/2x2 1/2x3/16	12.60	144.0	12.4	14.1	10.1	10.1	0.81
6	3	163.33	Diag	L2 1/2x2 1/2x1/4	13.19	151.8	14.8	17.2	9.7	9.7	0.65
6	2	156.67	Diag	L2 1/2x2 1/2x1/4	13.81	159.6	13.4	17.2	9.7	9.7	0.73
6	1	150.00	Diag	L2 1/2x2 1/2x1/4	14.44	167.5	12.1	17.2	9.8	9.8	0.80
5	3	140.00	Diag	L3x3x3/16	17.07	154.4	13.1	22.2	8.7	8.1	0.67
5	2	130.00	Diag	L3x3x3/16	18.17	163.1	11.7	22.2	8.2	8.4	0.70
5	1	120.00	Diag	L3x3x3/16	19.30	172.0	10.5	22.2	9.0	8.5	0.85
4	3	110.00	Diag	L3x3x1/4	20.45	181.1	12.6	29.5	8.8	9.0	0.70
4	2	100.00	Diag	L3x3x1/4	21.62	190.3	11.4	29.5	9.5	9.1	0.83
4	1	90.00	Diag	L3x3x1/4	22.81	199.7	10.3	29.5	9.5	9.6	0.92
3	3	80.00	Diag	L3 1/2x3 1/2x1/4	24.02	182.8	14.5	34.1	10.1	9.9	0.70
3	2	70.00	Diag	L3 1/2x3 1/2x1/4	25.23	190.9	13.3	34.1	10.4	10.5	0.78
3	1	60.00	Diag	L3 1/2x3 1/2x1/4	26.46	199.2	12.2	34.1	11.0	10.8	0.90



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Contract: 237508

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Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

2	2	45.00	Diag	L4x4x5/16	20.27	180.3	21.1	34.5	15.5	15.5	0.74
2	1	30.00	Diag	L4x4x5/16	20.98	187.4	19.6	34.5	16.1	16.1	0.82
1	2	15.00	Diag	L4x4x3/8	21.69	194.7	21.6	34.5	17.6	17.6	0.81
1	1	0.00	Diag	L4x4x3/8	22.42	201.9	20.1	34.5	17.9	17.9	0.89
10	4	245.00	Horiz	L1 3/4x1 3/4x3/16	4.79	145.5	8.4	10.7	1.7	1.5	0.20
9	3	223.33	Horiz	L1 3/4x1 3/4x3/16	4.87	145.1	8.4	10.7	1.7	1.7	0.20
2	2	45.00	Horiz	L3 1/2x3 1/2x1/4	12.58	174.3	15.9	34.1	10.5	10.4	0.66
2	1	30.00	Horiz	L3 1/2x3 1/2x1/4	13.62	185.4	14.1	34.1	11.4	11.1	0.81
1	2	15.00	Horiz	L4x4x1/4	14.66	175.1	18.1	34.1	12.8	12.6	0.70
1	1	0.00	Horiz	L4x4x1/4	15.66	184.3	16.4	34.1	13.5	13.2	0.82
2	2	45.00	SecH1	L3x3x1/4	6.29	128.0	17.2	17.2	8.4	8.4	0.49
2	2	45.00	SecD1	L3x3x1/4	9.47	192.6	11.1	17.2	6.9	6.9	0.62
2	2	45.00	PlanH1	L3 1/2x3 1/2x1/4	12.58	218.8	10.1	17.2	0.1	0.1	0.01
2	1	30.00	SecH1	L3x3x1/4	6.81	138.5	17.2	17.2	8.8	8.8	0.51
2	1	30.00	SecD1	L3x3x1/4	9.79	199.2	10.4	17.2	6.8	6.8	0.66
2	1	30.00	PlanH1	L3 1/2x3 1/2x1/4	13.62	236.9	8.6	17.2	0.1	0.1	0.01
1	2	15.00	SecH1	L3 1/2x3 1/2x1/4	7.33	127.5	17.2	17.2	9.2	9.2	0.53
1	2	15.00	SecD1	L3 1/2x3 1/2x1/4	10.15	176.5	15.5	17.2	6.8	6.8	0.44
1	2	15.00	PlanH1	L4x4x1/4	14.66	219.9	11.5	17.2	0.1	0.1	0.01
1	1	0.00	SecH1	L3 1/2x3 1/2x1/4	7.83	136.2	17.2	17.2	9.6	9.6	0.56
1	1	0.00	SecD1	L3 1/2x3 1/2x1/4	10.49	182.4	14.5	17.2	6.9	6.9	0.47
1	1	0.00	PlanH1	L4x4x1/4	15.66	234.9	10.1	17.2	0.1	0.1	0.01



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Contract: 237508

Project: 250 FT RT TOWER

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Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

Section M: SECTION PROPERTIES DATA

Sec	Pan	Memb.	Steel	Conn.	Bolts	Bolt	Bolt	End	Gusset	kl/r	Comp	Tens	Bolt	Bear.	Block
		Type	Grade	Type	Bolts	Size	Grade	Dist.	Thick.		Cap.	Cap.	Cap.	Cap.	Shear
						(in)		(in)	(in)		(Kips)	(Kips)	(Kips)	(Kips)	(Kips)
10	4	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	51.7	82.5	100.4	209.9T	N/A	N/A
10	4	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	98.2	27.2	27.3	17.2S	19.5	15.7
10	4	Horiz	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	145.5	8.4	17.4	17.2S	14.7	10.7
10	3	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	51.7	82.5	100.4	209.9T	N/A	N/A
10	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	98.4	27.1	27.3	17.2S	19.5	15.7
10	2	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	51.7	82.5	100.4	209.9T	N/A	N/A
10	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	98.5	27.1	27.3	17.2S	19.5	15.7
10	1	Leg	A500 gr.CS	Tension	5	0.875	A325X	1.313	N/A	51.7	82.5	100.4	209.9T	N/A	N/A
10	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	98.7	27.0	27.3	17.2S	19.5	15.7
9	3	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	54.2	160.1	198.4	275.3T	N/A	N/A
9	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	118.4	19.2	27.3	17.2S	19.5	15.7
9	3	Horiz	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	145.1	8.4	17.4	17.2S	14.7	10.7
9	2	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	54.2	160.1	198.4	275.3T	N/A	N/A
9	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	125.5	17.1	27.3	17.2S	19.5	15.7
9	1	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	54.2	160.1	198.4	275.3T	N/A	N/A
9	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	133.5	15.1	27.3	17.2S	19.5	15.7
8	3	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	43.6	239.3	275.0	275.3T	N/A	N/A
8	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	139.7	13.8	27.3	17.2S	19.5	15.7
8	2	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	43.6	239.3	275.0	275.3T	N/A	N/A
8	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	148.3	12.2	27.3	17.2S	19.5	15.7
8	1	Leg	A500 gr.CS	Tension	5	1.000	A325X	1.500	N/A	43.6	239.3	275.0	275.3T	N/A	N/A
8	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	157.0	10.9	27.3	17.2S	19.5	15.7
7	3	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
7	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	129.9	15.3	27.7	17.2S	14.7	14.1
7	2	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
7	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	136.9	13.7	27.7	17.2S	14.7	14.1
7	1	Leg	A500 gr.CS	Tension	6	1.000	A325X	1.500	N/A	36.4	343.5	378.5	330.3T	N/A	N/A
7	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	144.0	12.4	27.7	17.2S	14.7	14.1
6	3	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	36.4	343.5	378.5	765.3T	N/A	N/A
6	3	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	151.8	14.8	36.5	17.2S	19.5	18.7
6	2	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	36.4	343.5	378.5	765.3T	N/A	N/A
6	2	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	159.6	13.4	36.5	17.2S	19.5	18.7
6	1	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	36.4	343.5	378.5	765.3T	N/A	N/A
6	1	Diag	A529 gr.50	Bolted	1	0.625	A325X	1.500	0.250	167.5	12.1	36.5	17.2S	19.5	18.7
5	3	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.2	386.3	437.4	765.3T	N/A	N/A
5	3	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	154.4	13.1	34.6	34.5S	25.7	22.2
5	2	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.2	386.3	437.4	765.3T	N/A	N/A
5	2	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	163.1	11.7	34.6	34.5S	25.7	22.2
5	1	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.2	386.3	437.4	765.3T	N/A	N/A
5	1	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	172.0	10.5	34.6	34.5S	25.7	22.2
4	3	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.8	505.4	574.2	765.3T	N/A	N/A
4	3	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	181.1	12.6	45.6	34.5S	34.1	29.5
4	2	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.8	505.4	574.2	765.3T	N/A	N/A
4	2	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	190.3	11.4	45.6	34.5S	34.1	29.5
4	1	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.8	505.4	574.2	765.3T	N/A	N/A
4	1	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	199.7	10.3	45.6	34.5S	34.1	29.5
3	3	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.8	505.4	574.2	765.3T	N/A	N/A
3	3	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	182.8	14.5	54.8	34.5S	34.1	34.2
3	2	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.8	505.4	574.2	765.3T	N/A	N/A
3	2	Diag	A529 gr.50	Bolted	2	0.625	A325X	1.125	0.375	190.9	13.3	54.8	34.5S	34.1	34.2
3	1	Leg	A500 gr.CS	Tension	6	1.500	A325X	2.250	N/A	41.8	505.4	574.2	765.3T	N/A	N/A



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Contract: 237508

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Revision: 0

Site: HIGH SPRINGS WEST- FL

Engineer: SWG

3	1	Diag	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	199.2	12.2	54.8	34.5S	34.1	34.2
2	2	Leg	A500 gr.CS Tension	7	1.500	A325X 2.250	N/A	31.3	534.4	574.2	892.9T	N/A	N/A
2	2	Diag	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	180.3	21.1	79.0	34.5S	42.7	50.4
2	2	Horiz	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	174.3	15.9	54.8	34.5S	34.1	34.2
2	2	SecH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	128.0	25.2	45.6	17.2S	19.5	23.2
2	2	SecD1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	192.6	11.1	45.6	17.2S	19.5	23.2
2	2	PlanH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	218.8	10.1	54.8	17.2S	19.5	27.9
2	1	Leg	A500 gr.CS Tension	7	1.500	A325X 2.250	N/A	31.3	534.4	574.2	892.9T	N/A	N/A
2	1	Diag	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	187.4	19.6	79.0	34.5S	42.7	50.4
2	1	Horiz	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	185.4	14.1	54.8	34.5S	34.1	34.2
2	1	SecH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	138.5	21.5	45.6	17.2S	19.5	23.2
2	1	SecD1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	199.2	10.4	45.6	17.2S	19.5	23.2
2	1	PlanH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	236.9	8.6	54.8	17.2S	19.5	27.9
1	2	Leg	A500 gr.CS Tension	8	1.500	A325X 2.250	N/A	24.9	692.5	724.5	1020.4TN/A	N/A	N/A
1	2	Diag	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	194.7	21.6	94.1	34.5S	51.2	60.3
1	2	Horiz	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	175.1	18.1	63.9	34.5S	34.1	40.2
1	2	SecH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	127.5	29.8	54.8	17.2S	19.5	27.9
1	2	SecD1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	176.5	15.5	54.8	17.2S	19.5	27.9
1	2	PlanH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	219.9	11.5	63.9	17.2S	19.5	34.0
1	1	Leg	A500 gr.CS Tension	8	1.500	A325X 2.250	N/A	24.9	692.5	724.5	1020.4TN/A	N/A	N/A
1	1	Diag	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	201.9	20.1	94.1	34.5S	51.2	60.3
1	1	Horiz	A529 gr.50 Bolted	2	0.625	A325X 1.125	0.375	184.3	16.4	63.9	34.5S	34.1	40.2
1	1	SecH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	136.2	26.1	54.8	17.2S	19.5	27.9
1	1	SecD1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	182.4	14.5	54.8	17.2S	19.5	27.9
1	1	PlanH1	A529 gr.50 Bolted	1	0.625	A325X 1.500	0.250	234.9	10.1	63.9	17.2S	19.5	34.0



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File: W:\Jobs\2021\237508\ENGINEERING\237508.out
Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Section N: LEG REACTION DATA

Load Combination	Max Envelope			
Wind Direction	Maximum			
Force-Y Download (Kips)	Force-Y Uplift (Kips)	Shear-X (Kips)	Shear-Z (Kips)	Max Shear (Kips)
581.02	502.77			65.31



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File: W:\Jobs\2021\237508\ENGINEERING\237508.out
Contract: 237508
Project: 250 FT RT TOWER
Date and Time: 5/10/2021 2:54:51 PM

Revision: 0
Site: HIGH SPRINGS WEST- FL
Engineer: SWG

Section O: TOWER FOUNDATION DATA

Load Combination Max Envelope
Wind Direction Maximum

Axial Load (Kips)	Shear Load-X (Kips)	Shear Load-Z (Kips)	Total Shear (Kips)	Moment-X (Kipsft)	Moment-Y (Kipsft)	Moment-Z (Kipsft)	Total Moment (Kipsft)
77.23	53.32	-91.66	106.04	-13634.45	13.07	-7935.97	15775.86
77.23	53.32	-91.66	106.04	-13634.45	13.07	-7935.97	15775.86

File no : 237508

Customer: **TOWERCOM**

Date 05/12/21

By: SWG

Description: **250 FT RT TOWER**

Page 1

Chk: **HA**

HIGH SPRINGS WEST, FL

Ver. 11/16/01

FACTORED REACTIONS / LEG

COMPRESSION =	581.02 k	(8) - 1.5 " dia A.B. per leg
UPLIFT =	502.77 k	$f'_c = 4,500$ psi
SHEAR =	65.31 k	$f_v = 60,000$ psi

SOIL PARAMETERS

A) Depth neglected for skin friction = Top 6.0 ft

B) Average ultimate skin shear for uplift:

6.0 ft to 13.0 ft depth = 340 psf, and 13.0 ft to 23.0 ft depth = 703 psf, and 23.0 ft to 28.0 ft depth = 500 psf, and 28.0 ft to 33.0 ft depth = 206 psf, and 33.0 ft to 45.0 ft depth = 2534 psf.

C) Average ultimate skin shear for download:

6.0 ft to 13.0 ft depth = 340 psf, and 13.0 ft to 23.0 ft depth = 703 psf, and 23.0 ft to 28.0 ft depth = 500 psf, and 28.0 ft to 33.0 ft depth = 206 psf, and 33.0 ft to 45.0 ft depth = 2534 psf.

D) Ultimate net end bearing at 45.0 ft = 30.00 ksf.

E) Groundwater table at 6.0 ft below ground.

USE 5'- 0" DIAMETER AND 45'- 0" DEEP DRILLED PIER WITH 0'- 6" CAP

Perimeter =	15.71 ft	Area =	19.63 ft ²
Total Download =	581.02 + [1.2 x 0.15 - 0.75 x 0.120] x 45 x 19.63 =		
=	661.4 k		

Tension Capacity = 19.63 x (6.5 x 0.15 + 39.0 x 0.09) x 0.90 +
 15.71 x (0.340 x 7.0 + 0.703 x 10.0 + 0.500 x 5.0 + 0.206 x 5.0 + 2.534 x 12.0) x 0.75 =

79.2	+	510.7	=	589.9 k
		589.9	>=	502.77 OK

Comp. Capacity = 19.63 x 30.00 x 0.75 +
 15.71 x (0.340 x 7.0 + 0.703 x 10.0 + 0.500 x 5.0 + 0.206 x 5.0 + 2.534 x 12.0) x 0.75 =

441.7	+	510.7	=	952.4 k
		952.4	>=	661.4 OK

LATERAL - SEE ATTACHED CALCULATIONS USING WIGGINS METHOD

Max M =	1008.22 ft-k	Max V =	69.66 k
---------	--------------	---------	---------

REINFORCEMENT - SEE ATTACHED SHAFT PROGRAM

USE 22 # 5 - # 10 BARS VERTICAL WITH
 TIES AT 6" IN TOP 7.0 FT AND AT
 12 " IN REST OF PIER

LAP SPLICE LENGTH = 45 IN {48.0 in Cage Diameter}

CONCRETE VOLUME = 19.63 x 45.5 / 27 = 33.1 cu yds / pier

 ** WIGGINS METHOD **

 ** DETERMINE MAXIMUM LATERAL SOIL PRESSURE **
 ** AND MAXIMUM MOMENT IN THE SHAFT FOR **
 ** A DRILLED PIER FOUNDATION **
 ***** Wed May 12 10:17:23 2021 *****
 Ver. 2.3 NT

FILE NO.- 237508
 ENGR.- SWG
 DESCR.- TOWERCOM 250 FT RT TOWER HIGH

FORMULAS USED

$$S1 = \frac{6 \cdot P \cdot (1+N)}{D \cdot L \cdot (1-N) \cdot (1-N)} \quad L = (MA/P) + R + E$$

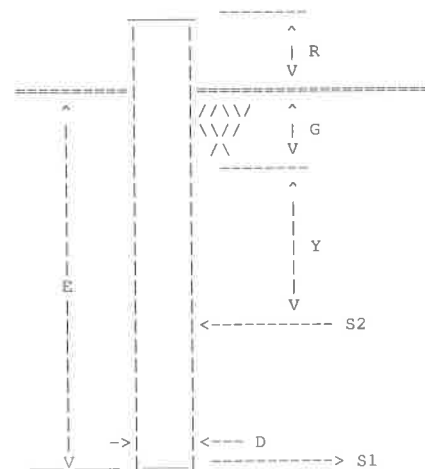
$$S2 = \frac{(N+3) \cdot (N+3) \cdot S1}{8 \cdot (N+1) \cdot (N+2)} \quad NL = (MA/P) + R + G$$

$$K = \frac{1 - (N \cdot N)}{2 \cdot (2+N)} \quad N = NL / L$$

$$Y = \frac{L \cdot (1-K) - NL}{2} \quad SP1 = S1 / E$$

$$M = P \cdot (NL + 5/8 \cdot Y) \quad SP2 = S2 / (Y+G)$$

$$V = S1 \cdot D \cdot K \cdot L / 2. \text{ or } P \text{ whichever is greater}$$



Diameter of Pier = D = 5.00 ft
 Projection Above Grade = R = .50 ft
 Embedment Depth = E = 45.00 ft
 Depth of Soil Ignored = G = 6.00 ft

Equivalent Length of Pier = L = 45.50 ft
 Length for NO Soil Resistance = NL = 6.50 ft
 Applied Moment at Top of Pier = MA = .00 ft-k
 Shear at Top of Pier = P = 65.31 kips

MAXIMUM LATERAL SOIL PRESSURES

K = .2286
 Y = 14.30 ft
 S1 = 2.679 ksf
 S2 = 1.351 ksf
 SP1 = 60 psf/ft
 SP2 = 67 psf/ft

MAXIMUM VALUES IN SHAFT

M = 1008.22 ft-k
 V = 69.66 kips

•&18DNAME: SWG

FILE NO. 237508

PAGE NO. 1

SHAFT REINFORCING PROGRAM VER. 91.7

DESIGNED BY: SWG
ENG. FILE NO.: 237508
DATE: 05/12/21

CUSTOMER: TOWERCOM
DESCRIPTION: 250 FT RT TOWERHIGH SPRINGS WEST, FL

INPUT DATA

C = 581.02 Kips	Vc = 69.66 Kips	Mc = 1008.22 Ft-K
T = 502.77 Kips	Vt = 69.66 Kips	Mt = 1008.22 Ft-K
Fy = 60.00 Ksi	Fyt = 60.00 Ksi	L.F. = 1.00
H = 60.00 In.	Ds = 48.00 In.	F'c = 4.50 Ksi
U = 1.00	Irs = 1	

*** SHAFT CROSS SECTION IS ROUND ***

SUMMARY OF ANALYSIS

Minimum area of steel req'd. = 25.38 sq.in. (Rhomin = 0.0090)
Maximum steel area limit = 226.20 sq.in. (Rhomax = 0.0800)

CIRCULAR TIE DATA

Vu < .85*Vc/2, shear reinforcement is not required.

For No. 4 circular ties, Smax = 10.00 Inches

For No. 5 circular ties, Smax = 15.50 Inches

For No. 6 circular ties, Smax = 17.72 Inches

DLMT = MODIFIER FOR TENSION DEVELOPMENT = 1.000

DLMC = MODIFIER FOR COMPRESSION DEVELOPMENT = .313

REQUIRED Ld = MODIFIER * BASIC Ld * ACI 318 MODIFIERS (12 in. min.)

DLMT = MODIFIER FOR TENSION DEVELOPMENT = 1.000

DLMC = MODIFIER FOR COMPRESSION DEVELOPMENT = .339

REQUIRED Ld = MODIFIER * BASIC Ld * ACI 318 MODIFIERS (12 in. min.)