

ANSI/TIA-222-H Maintenance Inspection Report



TX189B0-A
Ennis Street

Houston, TX

920-ft Guyed Tower
(1003-ft Overall Height w/ Top Appurtenance)



Tower Engineering Professionals Project Number
341446.973739

August 5, 2024

Critical Deficiencies	Standard Deficiencies
☒	☒



TOWER INFORMATION

Tower Type	Guyed Tower	
Location	Houston, TX	
FCC Number	1052552	
FCC Posted	Yes	
Site Sign Posted	Yes	
Tower AGL	920.0-ft (laser to ground)	
Total AGL	1003.0-ft (includes top appurtenance)	
Lighting Elevation	340-ft, 639-ft, 1000-ft	165-ft, 486-ft, 763-ft
Lighting Manuf	Hughey & Phillips	TWR, Inc.
Lighting Type	L-864 Flash Head	L-810 Obstruction Light
Lighting Model No	Unknown	Unknown
Lighting Sys Serial	Unknown	
Latitude	29.7575°	
Longitude	-95.338889°	
Tower Painted	No	
Tower Galvanized	Yes	
SBA Meter Number	Unknown	
Other Site Tenants	Unknown	

OTHER INFORMATION

Tower Manufacturer	Unknown
Tower Model No	Unknown
Tower Height	Unknown (manufacturer design from tower tag)
Leg A Azimuth	40°
Safety System	3/8" Cable on Leg A
Date of Inspection	July 30, 2024
Site Conditions	90° F, Partly Cloudy, Wind S 8mph
Report by	Jackson Sweat
Reviewed by	Weston Ford, EI, CWI
Inspectors	Matthew Leusink Ronald Prado



EXECUTIVE SUMMARY

At the request of SBA Communications Corporation, Tower Engineering Professionals has carried out a maintenance field review of this tower site in accordance with the following:

- ANSI/TIA-222-H Standard: Structural Standards for Steel Antenna Towers and Antenna Supporting Structures (Annex J.1: Maintenance and Condition Assessment)

Our work included the following:

- Visual inspection of structural members and connections.
- Visual inspection of above grade portions of grounding and foundations.
- Visual inspection of site compound general condition.
- Measurement of tower alignment, verticality and tensions.

It is important to note that this report does not comment on the structural adequacy of the tower, only its physical condition that can be reasonably ascertained by visual inspection. Our terms of reference do not include analytical review of this structure for conformance with the strength requirements of ANSI/TIA-222-H or other pertinent Standards.

A summarized list of deficiencies and categorized recommendations is located on the following pages.

RECOMMENDATION RATING SYSTEM

The work was carried out in a manner outlined in the aforementioned standards. The items in this section require corrective action as noted. A description of the associated Priority Ratings used in this section is given below.

Deficiencies are assigned a priority rating of **Critical or Standard**. These ratings are related to safety, structural integrity, system performance, and proper maintenance of the tower and attachments.

Priorities are assigned based on generally accepted tower safety standards as well as the experience and knowledge of our engineering staff. In all cases, safety is of paramount importance.

Critical Imminent: Safety issues which endanger the structure and anyone in the surrounding area, or structurally concerning items that should be evaluated and or addressed in the next 6-month window.

Standard Monitor / regular maintenance: the condition of the equipment / installation warrants monitoring and/or repair as part of a regular maintenance program.

DEFICIENCIES & RECOMMENDATIONS SUMMARY

Summary of outstanding deficiencies and items requiring further attention as noted in this report:

Priority Rating	Item No.	Summary of Deficiencies & Recommendations
Critical	1	Deficiency: Severe corrosion and pitting was observed on the bandings at the 750-ft guy level. Section loss was observed on the banding on the CA face.
		Recommendation: Replace the guy banding members.
Standard	2	Deficiency: The guy anchors are not grounded; however, insulators are installed on the guy wires.
		Recommendation: If required, install new grounding conductors at each guy anchor per the Motorola R56 standard and ensure they are properly bonded to the grounding electrode system.
Standard	3	Deficiency: Excessive vegetative growth observed at anchor AA.
		Recommendation: Remove the vegetation and spray to prevent future growth.
Standard	4	Deficiency: Corrosion was observed in multiple locations. See deficiency list for additional information.
		Recommendation: Thoroughly clean all areas of corrosion and apply two coats of a brush-on cold galvanizing compound containing at least 95% zinc.
Standard	5	Deficiency: Loose nuts were observed on the vari-grips in several locations. See deficiency list for details.
		Recommendation: Tighten the loose nuts to a snug tight condition.
Standard	6	Deficiency: Corrosion was observed on the guy anchor hardware at anchor BB.
		Recommendation: Thoroughly clean all areas of corrosion and apply two brush coats of a cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the hardware with one of equal size and grade.
Standard	7	Deficiency: Overgrown vegetation was observed in the tower compound.
		Recommendation: Remove the vegetation and spray to prevent future growth.
Standard	8	Deficiency: Insufficient serving was observed on the bottom safety cable termination.
		Recommendation: Install galvanized wire serving on the bottom safety cable termination to prevent unraveling.

Priority Rating	Item No.	Summary of Deficiencies & Recommendations
Critical	9	Deficiency: Significant corrosion and swelling was observed on the GL1, GL2, GL3, and GL4 guy wires.
		Recommendation: Replace the guy wires.
Standard	10	Deficiency: Corrosion was observed on the detuner cable & hardware throughout the tower.
		Recommendation: Replace the corroded cable clamps. Monitor the cable corrosion during the next inspection cycle. If conditions worsen and/or pitting and section loss is observed, the detuner cable(s) should be replaced. Thoroughly clean all other areas of corrosion and apply two brush coats of a cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the hardware with one of equal size and grade.
Standard	11	Deficiency: Unsecured feedlines were observed in several locations. See deficiency list for details.
		Recommendation: Properly secure the feedlines to the tower per the manufacturer's specifications.
Standard	12	Deficiency: Corrosion was observed on the guy wire hardware at GL2, GL3, and GL4.
		Recommendation: Monitor the corrosion during the next inspection cycle. If conditions worsen and/or pitting and section loss is observed, the hardware should be replaced.
Standard	13	Deficiency: Unused hardware was observed at 225-ft on the BC face and at 659-ft on the A-leg.
		Recommendation: Remove the unused hardware from the tower.
Standard	14	Deficiency: Corrosion was observed on the mount at 230-ft on the A-leg.
		Recommendation: Notify the equipment owner. All areas of corrosion should be thoroughly cleaned and treated with two coats of a brush-on cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, the appurtenance or hardware should be replaced with one of equal size and grade.
Standard	15	Deficiency: Corrosion was observed on the reinforcement welds at 430-ft on the A-leg and C-leg, possibly failing visual inspection per AWS D1.1.
		Recommendation: A licensed CWI should inspect the welds to determine if they pass visual inspection per AWS D1.1 and determine the appropriate course of action. If the welds pass visual inspection, they should be thoroughly cleaned and treated with two coats of a brush-on cold galvanizing compound containing at least 95% zinc.

Priority Rating	Item No.	Summary of Deficiencies & Recommendations
Standard	16	Deficiency: An abandoned mount was observed at 613-ft on BC face.
		Recommendation: Confirm there are no future plans for the mount and remove from tower to eliminate unnecessary loading.
Standard	17	Deficiency: An abandoned rope was observed on the AB face at 652-ft.
		Recommendation: Remove the rope from the tower.
Standard	18	Deficiency: Gaps ranging in size from 1/8" to 1/4" were observed between the flanges on the all legs at 640-ft.
		Recommendation: Monitor the flange gaps during the next inspection cycle. If the conditions worsen and gaps exceeding 1/4" are observed, consult with a structural engineer licensed in the State of Texas to determine the appropriate course of action.
Standard	19	Deficiency: Corrosion was observed on the 7/8"Ø x 3-1/2" flange bolts from 640-ft to 730-ft and from 820-ft to 880-ft.
		Recommendation: Thoroughly clean all areas of corrosion and apply two coats of a brush-on cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the entire A325 bolt assembly.
Standard	20	Deficiency: Corrosion was observed on hardware at the top safety cable assembly.
		Recommendation: Thoroughly clean all areas of corrosion and apply two brush coats of a cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the hardware with one of equal size and grade.
Standard	21	Deficiency: The rubber grommet for the top safety climb housing was observed to be damaged.
		Recommendation: Replace the grommet per the manufacturer's specifications.
Standard	22	Deficiency: The grounding conductor straps at the base of the tower are not routed efficiently in a downward-flowing path.
		Recommendation: Install new grounding conductors with exothermic connections to the tower legs, utilizing the shortest and straightest downward-flowing path toward the earth and the grounding electrode system per Motorola R56 standards.
Standard	23	Deficiency: TEP could not properly measure the guy wire tensions via standard tension measurement methods due to the large wire sizes and insulators installed on the guy wires.
		Recommendation: A return visit should be coordinated with the appropriate hydraulic tools and equipment to perform guy tension measurements. If necessary, re-tension the guy wires to within recommended limits while ensuring twist & plumb are also within recommended limits.

DEFICIENCY LIST



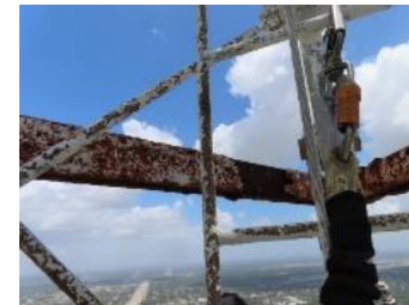
Priority Rating	Item No.
Critical	1
Deficiency: Severe corrosion and pitting was observed on the bandings at the 750-ft guy level. Section loss was observed on the banding on the CA face.	
Recommendation: Replace the guy banding members.	



Priority Rating	Item No.
Standard	2
Deficiency: The guy anchors are not grounded; however, insulators are installed on the guy wires.	
Recommendation: If required, install new grounding conductors at each guy anchor per the Motorola R56 standard and ensure they are properly bonded to the grounding electrode system.	



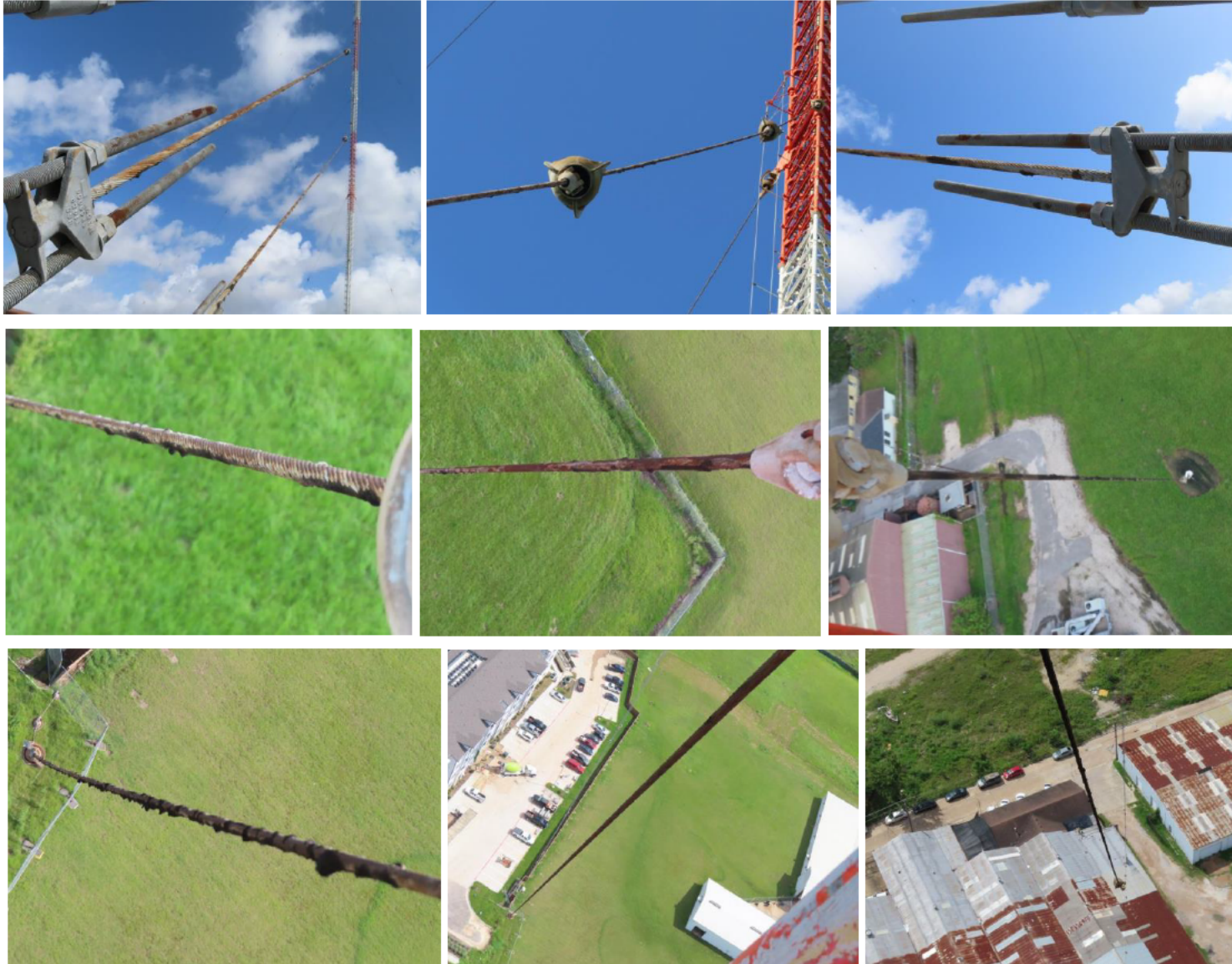
Priority Rating	Item No.
Standard	3
Deficiency: Excessive vegetative growth observed at anchor AA.	
Recommendation: Remove the vegetation and spray to prevent future growth.	



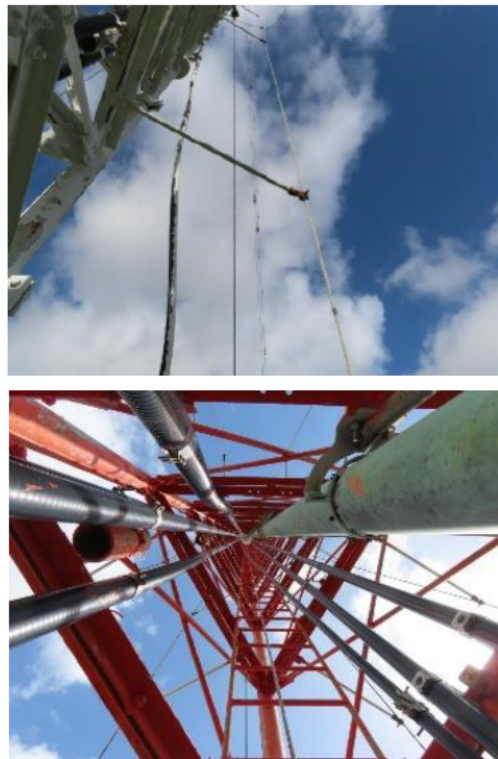
Priority Rating	Item No.
Standard	4
Deficiency: Corrosion was observed in the following locations: • A, B and C anchors. • A-leg at 55-ft. • C-leg at 101-ft. • A and B-legs at 163-ft. • Side light hardware at 486-ft and 763-ft. • CA face diagonal at 655-ft • Guy wire banding at 750-ft and 900-ft	
Recommendation: Thoroughly clean all areas of corrosion and apply two coats of a brush-on cold galvanizing compound containing at least 95% zinc.	

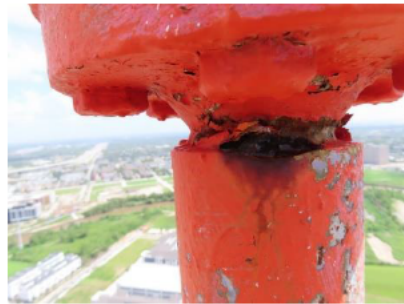
	<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>5</td></tr></table>	Priority Rating	Item No.	Standard	5		<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>6</td></tr></table>	Priority Rating	Item No.	Standard	6
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Standard	6										
	Deficiency: Loose nuts were observed on the vari-grips in the following locations: • Anchor BB; GL4 • Anchor CC; GL3 & GL4		Deficiency: Corrosion was observed on the guy anchor hardware at anchor BB.								
	Recommendation: Tighten the loose nuts to a snug tight condition.		Recommendation: Thoroughly clean all areas of corrosion and apply two brush coats of a cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the hardware with one of equal size and grade.								

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Standard	7										
Priority Rating	Item No.										
Standard	8										
	Deficiency: Overgrown vegetation was observed in the tower compound.		Deficiency: Insufficient serving was observed on the bottom safety cable termination.								
	Recommendation: Remove the vegetation and spray to prevent future growth.		Recommendation: Install galvanized wire serving on the bottom safety cable termination to prevent unraveling.								



Priority Rating	Item No.
Critical	9
Deficiency: Significant corrosion and swelling was observed on the GL1, GL2, GL3, and GL4 guy wires.	
Recommendation: Replace the guy wires.	

	<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>10</td></tr></table> Deficiency: Corrosion was observed on the detuner cable & hardware throughout the tower. Recommendation: Replace the corroded cable clamps. Monitor the cable corrosion during the next inspection cycle. If conditions worsen and/or pitting and section loss is observed, the detuner cable(s) should be replaced. Thoroughly clean all other areas of corrosion and apply two brush coats of a cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the hardware with one of equal size and grade.	Priority Rating	Item No.	Standard	10		<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>11</td></tr></table> Deficiency: Unsecured feedlines were observed in the following locations: • (1) FH 1-1/4; CA face; 145-ft to 170-ft • (1) FH 7/8; AB face; 365-ft to 550-ft Recommendation: Properly secure the feedlines to the tower per the manufacturer's specifications.	Priority Rating	Item No.	Standard	11
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Standard	11										
	<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>12</td></tr></table> Deficiency: Corrosion was observed on the guy wire hardware at GL2, GL3, and GL4. Recommendation: Monitor the corrosion during the next inspection cycle. If conditions worsen and/or pitting and section loss is observed, the hardware should be replaced.	Priority Rating	Item No.	Standard	12		<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>13</td></tr></table> Deficiency: Unused hardware was observed at 225-ft on the BC face and at 659-ft on the A-leg. Recommendation: Remove the unused hardware from the tower.	Priority Rating	Item No.	Standard	13
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	<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>14</td></tr></table> Deficiency: Corrosion was observed on the mount at 230-ft on the A-leg. Recommendation: Notify the equipment owner. All areas of corrosion should be thoroughly cleaned and treated with two coats of a brush-on cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, the appurtenance or hardware should be replaced with one of equal size and grade.	Priority Rating	Item No.	Standard	14	 	<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>15</td></tr></table> Deficiency: Corrosion was observed on the reinforcement welds at 430-ft on the A-leg and C-leg, possibly failing visual inspection per AWS D1.1. Recommendation: A licensed CWI should inspect the welds to determine if they pass visual inspection per AWS D1.1 and determine the appropriate course of action. If the welds pass visual inspection, they should be thoroughly cleaned and treated with two coats of a brush-on cold galvanizing compound containing at least 95% zinc.	Priority Rating	Item No.	Standard	15
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	<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>18</td></tr></table> Deficiency: Gaps ranging in size from 1/8" to 1/4" were observed between the flanges on the all legs at 640-ft.	Priority Rating	Item No.	Standard	18		<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>19</td></tr></table> Deficiency: Corrosion was observed on the 7/8"Ø x 3-1/2" flange bolts from 640-ft to 730-ft and from 820-ft to 880-ft.	Priority Rating	Item No.	Standard	19
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Priority Rating	Item No.										
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	Recommendation: Monitor the flange gaps during the next inspection cycle. If the conditions worsen and gaps exceeding 1/4" are observed, consult with a structural engineer licensed in the State of Texas to determine the appropriate course of action.		Recommendation: Thoroughly clean all areas of corrosion and apply two coats of a brush-on cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the entire A325 bolt assembly.								
	<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>20</td></tr></table> Deficiency: Corrosion was observed on hardware at the top safety cable assembly.	Priority Rating	Item No.	Standard	20		<table><tr><th>Priority Rating</th><th>Item No.</th></tr><tr><td>Standard</td><td>21</td></tr></table> Deficiency: The rubber grommet for the top safety climb housing was observed to be damaged.	Priority Rating	Item No.	Standard	21
Priority Rating	Item No.										
Standard	20										
Priority Rating	Item No.										
Standard	21										
	Recommendation: Thoroughly clean all areas of corrosion and apply two brush coats of a cold galvanizing compound containing at least 95% zinc. If during this process any section loss is observed, replace the hardware with one of equal size and grade.		Recommendation: Replace the grommet per the manufacturer's specifications.								



Priority Rating	Item No.
Standard	22

Deficiency:
The grounding conductor straps at the base of the tower are not routed efficiently in a downward-flowing path.

Recommendation:
Install new grounding conductors with exothermic connections to the tower legs, utilizing the shortest and straightest downward-flowing path toward the earth and the grounding electrode system per Motorola R56 standards.



Priority Rating	Item No.
Standard	23

Deficiency:
TEP could not properly measure the guy wire tensions via standard tension measurement methods due to the large wire sizes and insulators installed on the guy wires.

Recommendation:
A return visit should be coordinated with the appropriate hydraulic tools and equipment to perform guy tension measurements. If necessary, re-tension the guy wires to within recommended limits while ensuring twist & plumb are also within recommended limits.

INSPECTION CHECKLISTS

ANSI/TIA-222-H: ANNEX J.1 - MAINTENANCE & CONDITION ASSESSMENT					
A	STRUCTURE CONDITION	Acceptable	Unacceptable	Not Applicable	COMMENTS
A1	Damaged members (legs and bracing)	X			
A2	Loose Members	X			
A3	Missing Members	X			
A4	Loose and/or missing bolts and/or nut locking devices	X			
A5	Visible cracks in welded connections including cracks underneath canister mounts for flag poles and other similar connections	X			
A6	Pole flange and base plate cracks visible in base metal or at ends of plate stiffeners (cracks in base metal may only be visible on the inside surface of a pole)			X	
A7	Record temperature, wind speed and direction, and other environmental conditions.	X			
B	FINISH	Acceptable	Unacceptable	Not Applicable	COMMENTS
B1	Paint and/or galvanizing condition	X			
B2	Rust and/or corrosion condition including mounts and accessories		X		#1, #6, #9, #10, #12, #14, #15, #19, #20
B3	FAA or ICAO color marking conditions			X	
B4	Water collection in members (to be remedied, e.g., unplug drain holes, etc.)	X			
C	LIGHTING	Acceptable	Unacceptable	Not Applicable	COMMENTS
C1	Conduit, junction boxes, and fasteners (weather tight and secure)	X			
C2	Drain and vent openings (unobstructed)	X			
C3	Wiring condition	X			
C4	Light Lenses	X			
C5	Bulb Condition	X			
C6 a	Controllers Functioning – Flasher	X			
C6 b	Controllers Functioning – Photo control	X			
C6 c	Controllers Functioning – Alarms			X	Alarms not in scope of work
C7	Obstructions to the lighting system	X			

D	GROUNDING	Acceptable	Unacceptable	Not Applicable	COMMENTS
D1	Connections		X		See deficiency item #2, item #22
D2	Corrosion	X			
D3	Lightning protection	X			
E	APPURTENANCES (MOUNTS, ANTENNAS, AND LINES)	Acceptable	Unacceptable	Not Applicable	COMMENTS
Antenna and Mount Condition:					
E1 a	Proper tie-back of microwave dishes	X			
E1 b	Damage to supporting structure at connections	X			
E1 c	Defects, deformations, loose, missing members, etc.	X			
E1 d	Loose or missing hardware	X			
E1 e	Condition of antenna covers	X			
Feed Line Condition:					
E2 a	Flanges, seals, dents, jacket damage, grounding, etc.	X			
E2 b	Properly secured/supported on the structure and mount	X			
E2 c	Hanger condition (snap-ins, bolt on, kellum grips, etc.)	X			
E2 d	Secured to structure (waveguide ladder)		X		See deficiency item #11
F	OTHER APPURTENANCES (ICE SHIELDS, WALKWAYS, PLATFORMS, CLIMBING FACILITIES, SENSORS, FLOODLIGHTS, ETC.)	Acceptable	Unacceptable	Not Applicable	COMMENTS
F1	Condition	X			
F2	Obstructions to climbing path or safety climb systems	X			
F3	Defects, deformations, loose or missing members, etc.		X		See deficiency item #8, item #21
F4	Loose or missing hardware	X			
F5	Secured to structure	X			

G	INSULATORS (BASE INSULATOR, AM DETUNING KITS, FIBERGLASS RODS, PORCELAIN INSULATOR, NON-METALLIC GUYS, ETC.)	Acceptable	Unacceptable	Not Applicable	COMMENTS
G1	Cracking and chipping			X	
G2	Cleanliness of insulators			X	
G3	Spark gaps			X	
G4	Isolation transformer			X	
G5	Bolts and connections			X	
G6	Delamination, UV degradation, rod slippage			X	
H	GUYS	Acceptable	Unacceptable	Not Applicable	COMMENTS
H1	Strand condition (corrosion, breaks, nicks, kinks, etc.)	X			
Guy Hardware Conditions:					
H2 a i	Turnbuckles or equivalent – Thread extended past body	X			
H2 a ii	Turnbuckles or equivalent – Secured with safety cable or equivalent	X			
H2 a iii	Turnbuckles or equivalent – Cracks, defects, damage, etc.	X			
H2 b	Cable thimbles	X			
H2 c	Ice clips	X			
H2 d i	Cable connectors (end fittings) – Cable clamps applied properly and bolts tight	X			
H2 d ii	Cable connectors (end fittings) – Wire serving	X			
H2 d iii	Cable connectors (end fittings) – Slippage or damaged strands	X			
H2 d iv	Cable connectors (end fittings) – Deadend grips – fully wrapped, end sleeve/ice clips (on anchor end)		X		See deficiency item #5
H2 d v	Cable connectors (end fittings) – Poured sockets – signs of separation, twisting, etc.	X			
H2 d vi	Cable connectors (end fittings) – Shackles, bolts, pins and cotter pins	X			
H2 e	Inspect tension rods/anchor rods welded to fan plates for fatigue cracks	X			
Guy Tensions:					
H3 a	Measure guy tensions		X		See deficiency item #23
H3 b	Record temperature, wind speed and wind direction	X			

I	CONCRETE FOUNDATIONS	Acceptable	Unacceptable	Not Applicable	COMMENTS
Ground Condition:					
I1 a	Settlement, movement or earth cracks	X			
I1 b	Erosion	X			
I1 c	Site condition (standing water, drainage, trees, etc.)	X			
Anchorage Condition:					
I2 a	Top and bottom base plate nuts tight	X			
I2 b	Nut locking device	X			
I2 c	Grout condition	X			
I2 d	Anchorage	X			
I2 e	Anchor rods	X			
Concrete Condition:					
I3 a	Cracking, spalling, or splitting	X			
I3 b	Chipped or broken concrete	X			
I3 c	Honeycombing	X			
I3 d	Low spots to collect moisture	X			
J	GUYED MAST ANCHORS	Acceptable	Unacceptable	Not Applicable	COMMENTS
J1	Settlement, movement or earth cracks	X			
J2	Grade sloped away from anchors	X			
J3	Anchor shaft condition below grade			X	
J4	Corrosion control measures (galvanizing, coating, concrete encasement, cathodic protection, etc)	X			
J5	Anchor heads above grade, clear of vegetation, obstructions, etc. and turnbuckles free to articulate	X			
K	STRUCTURE ALIGNMENT	Acceptable	Unacceptable	Not Applicable	COMMENTS
K1	Structure plumb and twist	X			See Appendix C

Appendix A: Photos

(More photos are available upon request)



Tower Profile (Leg A)



Tower Profile (Leg B)



Tower Profile (Leg C)



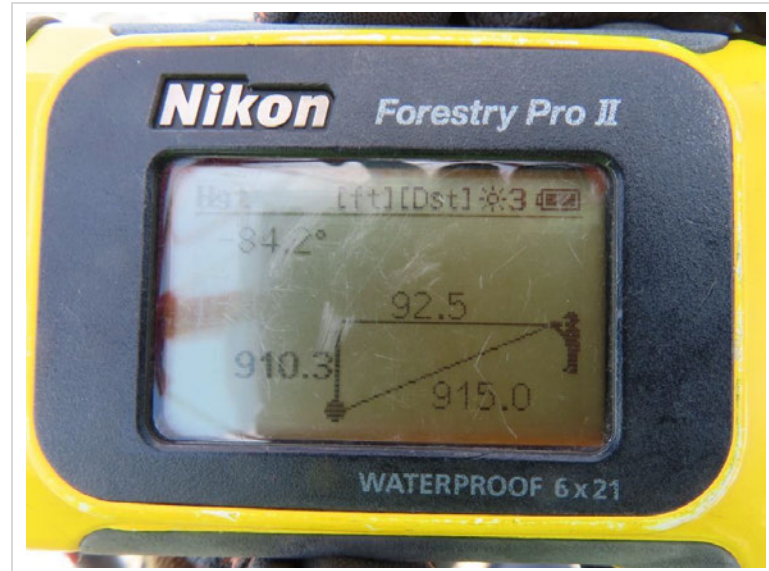
Tower Compound



Site Signage



Aerial View of Tower Compound



Top of Tower Steel (Laser to Ground)



Climbing Facilities on Leg A



Guy Anchor (Typical)



Tower Base Foundation



Guy Anchor Hardware (Typical)



Meter



Top Beacon at 950-ft Elevation



Highest Appurtenance



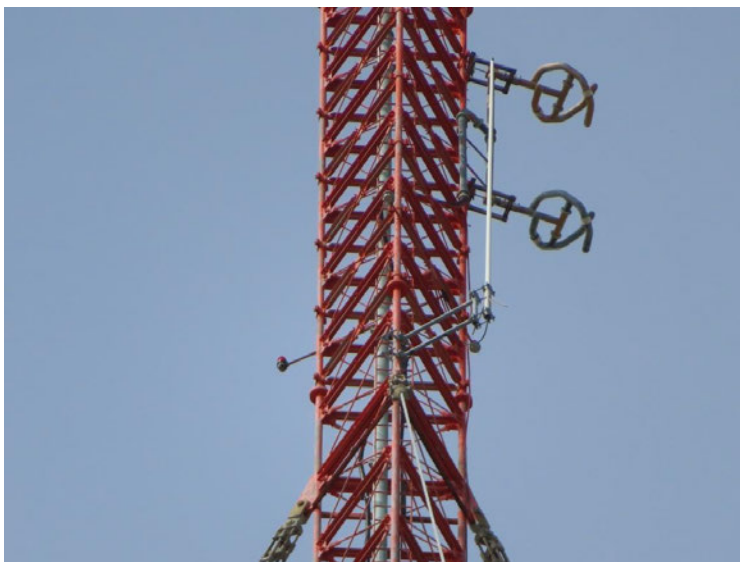
Intermediate Lights at 640-ft Elevation



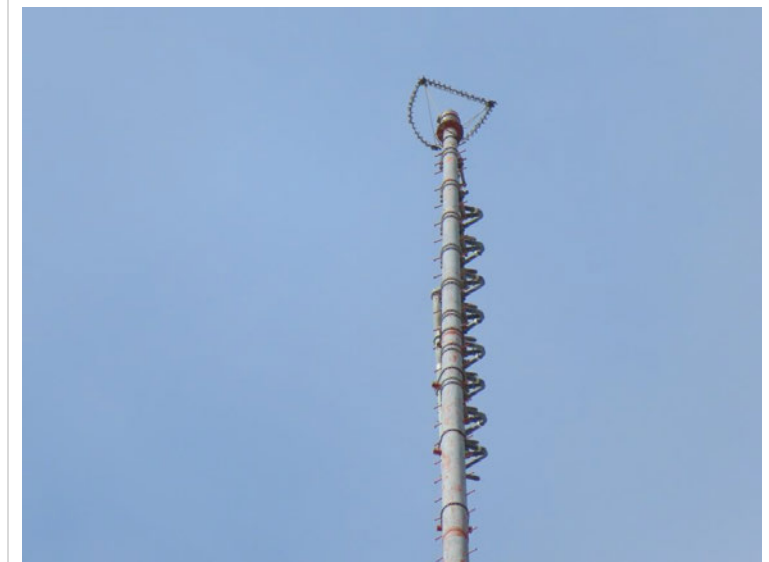
Inside View of Top Safety Bracket



Antennas



Antennas



Antennas



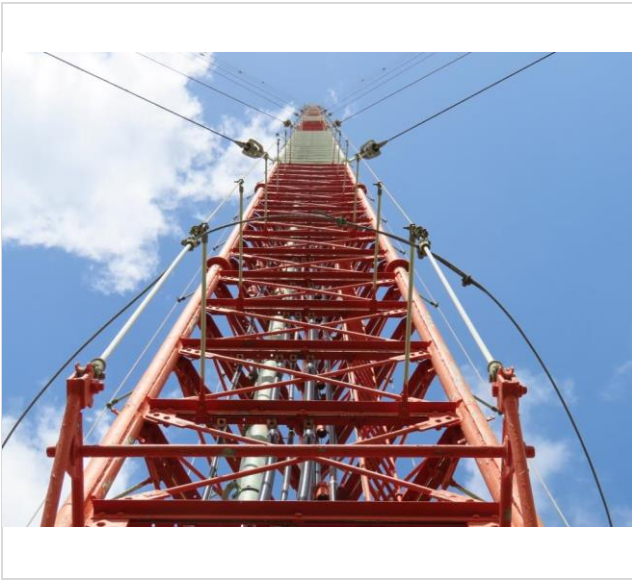
Up Leg A



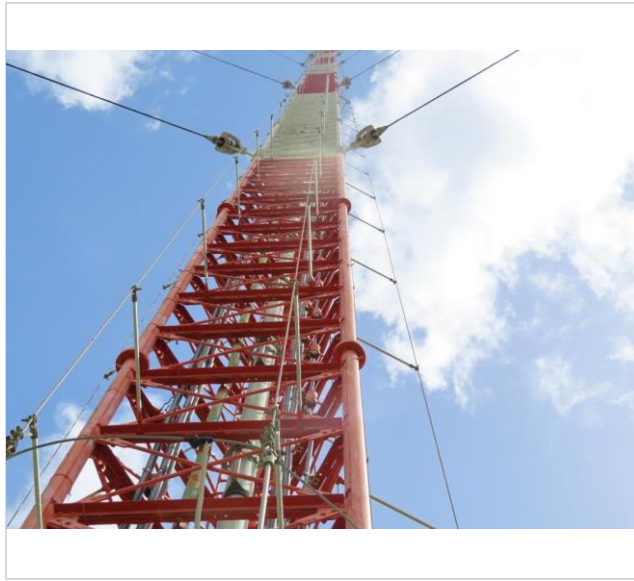
Up Leg B



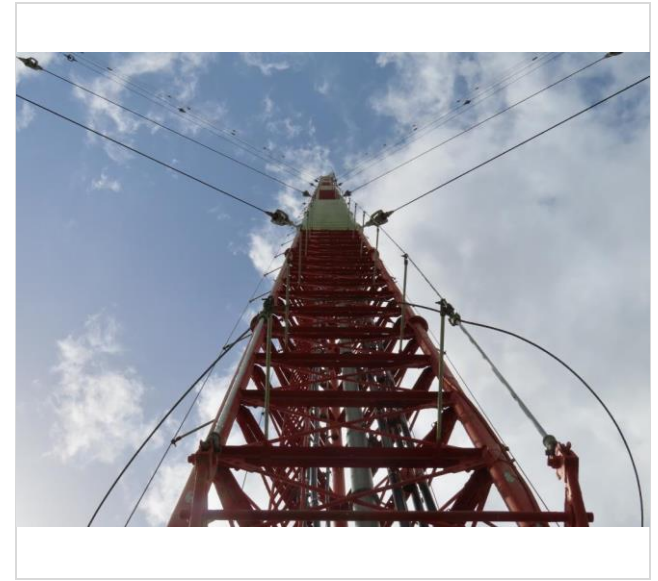
Up Leg C



Up Face AB



Up Face BC



Up Face CA



Panoramic View Facing North



Panoramic View Facing East



Panoramic View Facing South



Panoramic View Facing West

Appendix B: Guy Tension Reading Photos

(Not Applicable – See Deficiency Item #23)

Appendix C: Plumb and Twist Charts

Site Name	Ennis Street		Date of Inspection		30-Jul-24		Temperature		90°F		TWIST	PASS
Site ID	TX189B0-A		Sky/Weather		Sunny		Wind Conditions		S @ 8mph		PLUMB	PASS
Observed Mast Data			Tower Twist Measurements <i>(in Degrees)</i>					Calculated Tower Plumb <i>(in Inches)</i>				
Mast Elev (feet)	Face Width (inches)	Leg Size (inches)	Total Measured Twist	Total Allowable Twist	Relative Twist Between Elevations	Allowable Twist Between Elevations	Within TIA Limits?	Total Measured Deflection	Total Allowable Deflection	Relative Deflection Between Elevations	Allowable Deflection Between Elevations	Within TIA Limits?
1000.0	60.00	2.880	3.57	5.00	0.20	5.00	YES	0.00	30.00	0.24	3.00	YES
900.0	60.00	2.875	3.37	5.00	0.46	7.50	YES	0.24	27.00	0.26	4.50	YES
750.0	60.00	3.250	2.91	5.00	-0.40	7.50	YES	0.27	22.50	0.27	4.50	YES
600.0	60.00	4.000	3.31	5.00	-0.73	7.00	YES	0.00	18.00	0.38	4.20	YES
460.0	60.00	4.500	4.03	5.00	0.17	6.50	YES	0.38	13.80	0.36	3.90	YES
330.0	60.00	4.000	3.86	5.00	1.10	6.00	YES	0.33	9.90	0.33	3.60	YES
210.0	60.00	4.000	2.76	5.00	0.84	5.55	YES	0.67	6.30	0.67	3.33	YES
99.0	60.00	4.625	1.91	4.95	1.91	4.95	YES	0.00	2.97	0.00	2.97	YES
0.0	60.00	4.630	0.00	0.00				0.00	0.00			

1. Clause 13.3.3 of TIA-222-H 2017 stipulates that the horizontal distance between any two elevations shall not exceed 0.25 percent for lattice structures.

2. Clause 13.3.4 of TIA-222-H 2017 stipulates that the twist between any two elevations should not exceed 0.5° in 10ft, with a 5° maximum allowance.

3. Values outside the allowable range are noted in the "Within TIA Limits?" columns.

Site Name	Ennis Street	Date of Inspection	30-Jul-24		Temperature	90°F		HARDWARE		N/A		
Site ID	TX189B0-A	Sky/Weather	Sunny		Wind Conditions	S @ 8mph		TENSIONS		N/A		
Observed Guy Anchor Data			Guy Hardware Information				Guy Tension Measurements <i>(in kips)</i>					
Anchor and Guy Level	Guy Elevation (ft)	Guy Size and Type (Initial Tension %) (in)	Shackle Size (in)	Turnbuckle Size (in)	Measured T/B Gap (in)	Within TIA Limits?	Measured Tensions at Temp (kips)	Converted Tensions to 60°F (kips)	Allowable Range of Tensions based on Specified Tension (kips)			Within TIA Limits?
									Low	At 60°F	High	
A - GL7	900.0	1-1/2" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		24.84	27.60	30.36	N/A
A - GL6	750.0	1-1/4" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		17.28	19.20	21.12	N/A
A - GL5	600.0	1-1/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		14.04	15.60	17.16	N/A
A - GL4	460.0	1-1/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		14.04	15.60	17.16	N/A
A - GL3	330.0	7/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		8.28	9.20	10.12	N/A
A - GL2	210.0	1-1/16" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		12.42	13.80	15.18	N/A
A - GL1	99.0	15/16" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		9.72	10.80	11.88	N/A
B - GL7	900.0	1-1/2" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		24.84	27.60	30.36	N/A
B - GL6	750.0	1-1/4" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		17.28	19.20	21.12	N/A
B - GL5	600.0	1-1/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		14.04	15.60	17.16	N/A
B - GL4	460.0	1-1/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		14.04	15.60	17.16	N/A
B - GL3	330.0	7/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		8.28	9.20	10.12	N/A
B - GL2	210.0	1-1/16" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		12.42	13.80	15.18	N/A
B - GL1	99.0	15/16" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		9.72	10.80	11.88	N/A
C - GL7	900.0	1-1/2" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		24.84	27.60	30.36	N/A
C - GL6	750.0	1-1/4" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		17.28	19.20	21.12	N/A
C - GL5	600.0	1-1/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		14.04	15.60	17.16	N/A
C - GL4	460.0	1-1/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		14.04	15.60	17.16	N/A
C - GL3	330.0	7/8" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		8.28	9.20	10.12	N/A
C - GL2	210.0	1-1/16" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		12.42	13.80	15.18	N/A
C - GL1	99.0	15/16" BS (IT=10.0%)	N/A	N/A	N/A	N/A	Could Not Record		9.72	10.80	11.88	N/A

1. Clause 13.3.2 of TIA-222-H recommends maximum deviation from design initial tensions shall be $\pm 10\%$ for guy sizes $\leq 1"$ and shall be $\pm 5\%$ for guy sizes $> 1"$.
2. Tensions noted are as calculated at guy anchors.
3. Guys to torsion resistors are designated as (L) or (R), as seen from behind the guy anchor.
4. Turnbuckle gaps range per clause 13.3.8 for "Initial Installation" states "6in for guys 1/2" or less and 10" for guys greater than 1/2"; otherwise satisfactory. The owner shall decide the acceptable turnbuckle gap range for their "Existing Structures".
5. Results outside the allowable range are noted in the "Within TIA Limits?" columns.

Appendix D: Tension Meter Calibration Certificate

(Not Applicable – See Deficiency Item #23)

Appendix E: Appurtenance Audit with Photos

APPURTENANCE SCHEDULE

We noted the following appurtenances on the tower during our site visit:

No.	Hgt* (ft)	Appurtenance						Tx Line		Owner
		Qty	Description / Type	Equipment	Loc**	Mount	Az (°)***	Qty	Type	
--	1003	1	Lightning Dissipator	--	Top	Direct	--	1	SM 7/8"Ø	--
--	1000	1	Beacon	--	Top	Direct	--			
--	763	3	Side Lights	--	A/B/C	Direct	--			
--	639	1	Intermediate Beacon	--	C	Direct	--			
--	486	3	Side Lights	--	A/B/C	Direct	--			
--	340	1	Intermediate Beacon	--	BC	Direct	--			
--	165	3	Side Lights	--	A/B/C	Direct	--			
9	960	1	8-Bay FM	--	--	Direct	--	1	SM 6.15"Ø	Univision
8	780	1	2-Bay FM	--	C	Direct	--	1	SM 2-3/4"Ø	
7	755	1	20' Omni	--	A	Standoff	--	1	FH 1-5/8	
6	680	1	20' Omni	--	C	Standoff	--	1	FH 1-5/8	
5	655	1	Anatel VHLP4-11W-BW1	--	C	Pipe	280	2	FH 7/8	
4	650	1	6'Ø Grid Dish	--	B	Direct	160	1	FH 1-1/4	
3	493	1	6'Ø Grid Dish	--	C	Direct	280	1	FH 1-1/4	
2	482	1	4'Ø Grid Dish	--	B	Direct	160	1	FH 1-1/4	
1	230	1	3'Ø Dish	--	A	Pipe	40	1	SM 1/4"Ø	

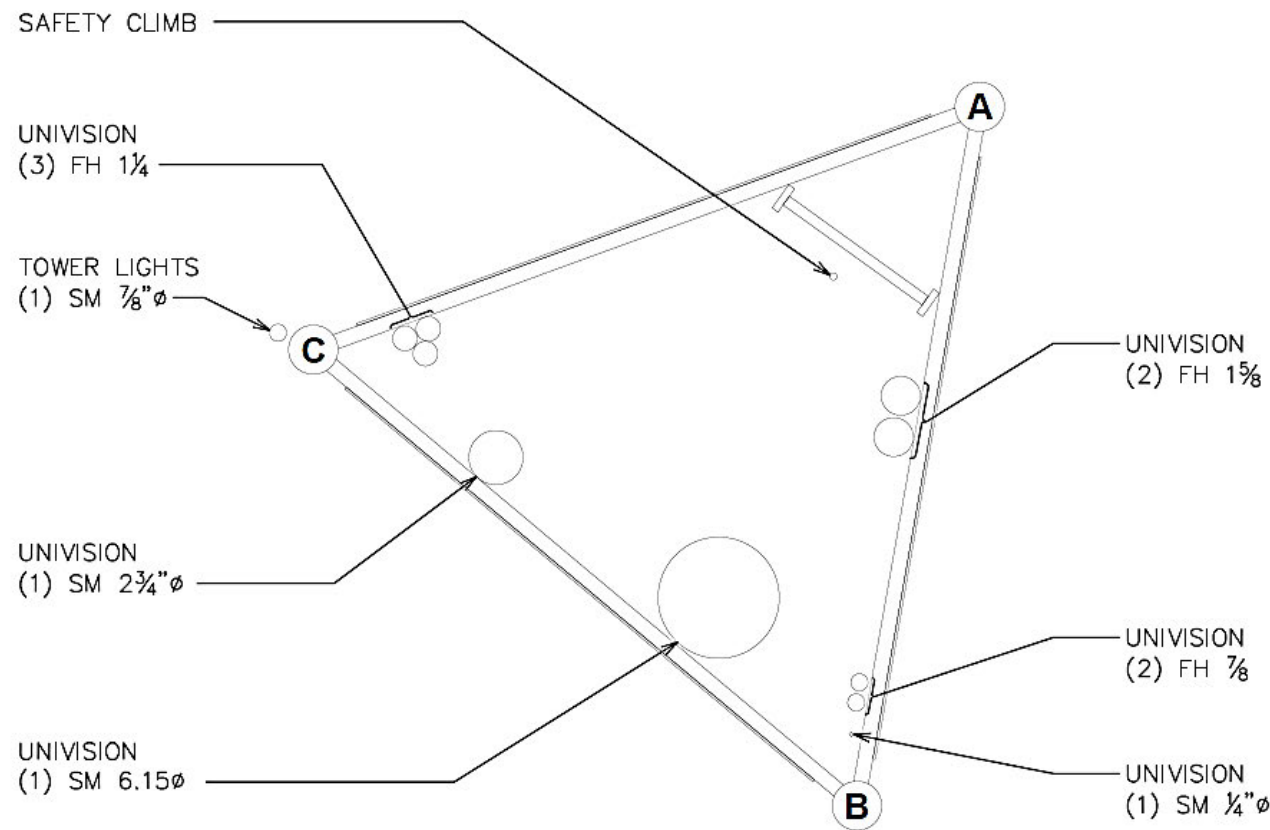
* All elevations are taken at the centerline (ACL or MCL) and are rounded to nearest ½-ft increment.

** Leg A is denoted as the leg closest to Magnetic North in the 301°-60° azimuth sector (which was 40°)

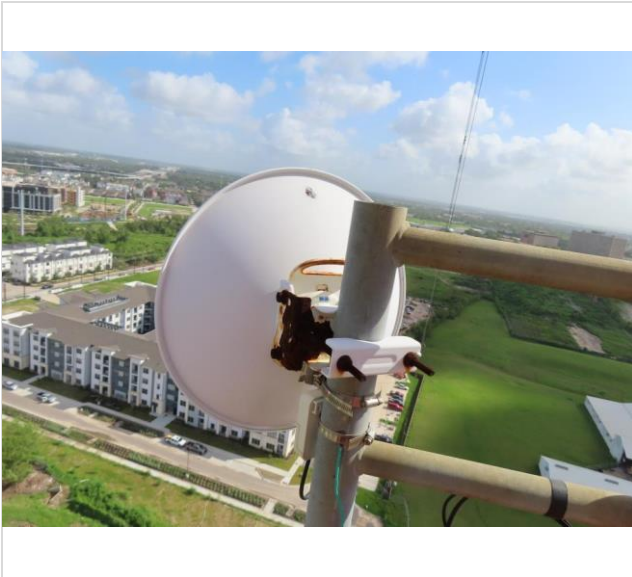
*** The appurtenance azimuths are Magnetic North ±10°.

See following pages for feedline layout and photos of antennas and labels.

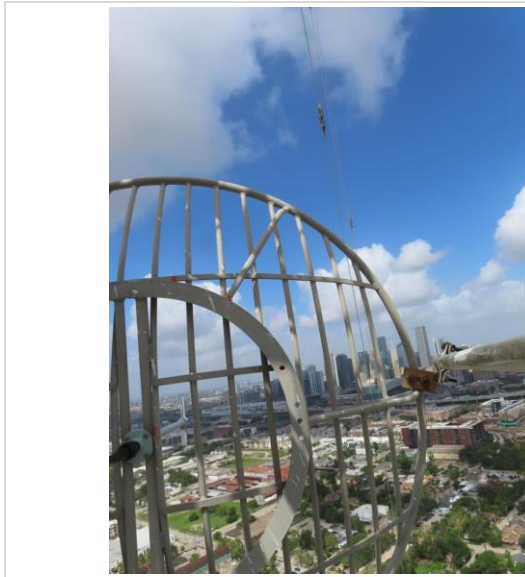
FEEDLINE LAYOUT SKETCH



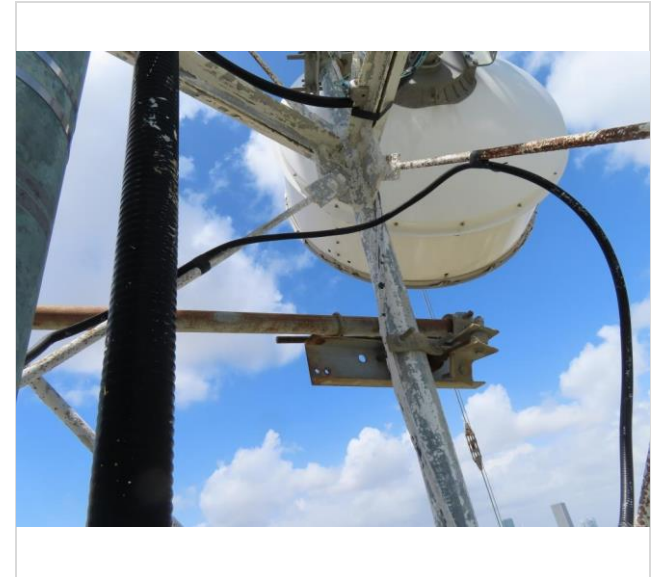
A-LEG: 40°



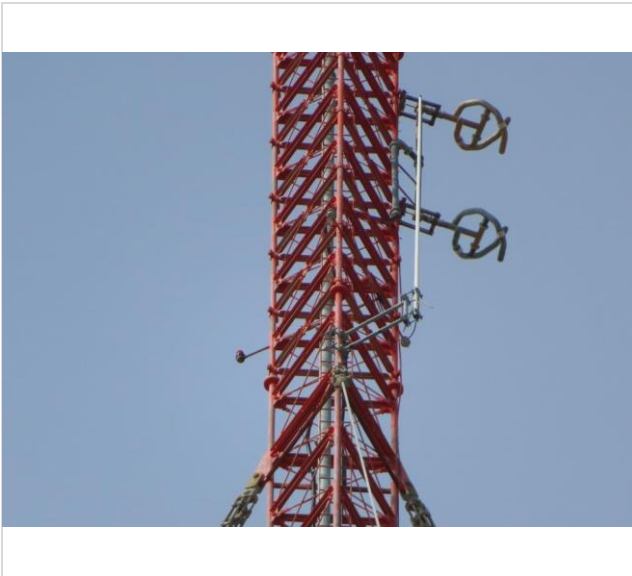
Antenna



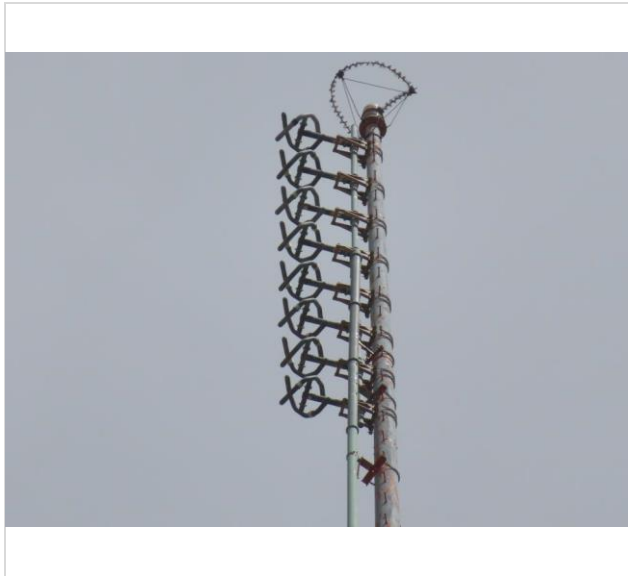
Antenna



Antenna



Antenna



Antenna

Appendix F: Tower Relevant Measurements

Grounding System Validation	
Tower Base – Side 1 / Leg A	Could Not Record (Grounding Strap)
Tower Base – Side 2 / Leg B	Could Not Record (Grounding Strap)
Tower Base – Side 3 / Leg C	Could Not Record (Grounding Strap)
Anchor A – Fan Plate	N/A
Anchor A – Waterfall	N/A
Anchor AA – Fan Plate	N/A
Anchor AA – Waterfall	N/A
Anchor B – Fan Plate	N/A
Anchor B – Waterfall	N/A
Anchor BB – Fan Plate	N/A
Anchor BB – Waterfall	N/A
Anchor C – Fan Plate	N/A
Anchor C – Waterfall	N/A
Anchor CC – Fan Plate	N/A
Anchor CC – Waterfall	N/A

Anchor Locations		
Anchor	Radius (ft)	Elevation (ft)
A	97	-3
B	95	-2
C	94	-5
AA	340	0.5
BB	399	22
CC	353	4

From: [REDACTED]
To: [REDACTED]
Subject: FW: [External] Houston Tower NOTAM
Date: Tuesday, October 29, 2024 9:03:48 AM
Attachments: [REDACTED]

FYI...from the tower company.

From: Ed Roach <[REDACTED]>
Sent: Tuesday, October 29, 2024 9:52 AM
To: Brian Rutt [REDACTED]
Cc: Aaron Sauer [REDACTED]
[REDACTED]
Subject: RE: [External] Houston Tower NOTAM

[CAUTION] This email originated from outside of the organization. Do not click any links or open attachments unless you recognize the sender and know the content is safe.

Good morning, Inspector Rutt,

Attached please find a copy of SBA's incident report for the above referenced tower. SBA took ownership of the tower on 9/6/24 and placed the site on NOTAM while integrating the site into our Network Operations Center (NOC). The incident report shows "ALL Lights Out, Awaiting Delivery to the NOCC". The Network Operations Center uses "ALL Lights Out" when a site is not communicating with our NOC, and we do not have the ability to electronically monitor the lighting.

I'm also attaching a copy of the NOTAM from the FAA NOTAM archive report. The report shows that the previous owner filed a NOTAM on 6/26/24 and we continued the NOTAM after we acquired the site. The NOTAM was scheduled to expire 10/26/24.

If you have any questions, please feel free to contact me.

Regards,
Ed Roach

From: Brian Rutt [REDACTED]
Sent: Monday, October 28, 2024 12:18 PM
To: Ed Roach [REDACTED]
Cc: Aaron Sauer [REDACTED]
Subject: [External] Houston Tower NOTAM

Mr. Roach,

Do you have information on what was submitted for the tower NOTAM, and when it was submitted?

Thank you,



Brian Rutt

Air Safety Investigator

Aurora, Colorado

Office : [REDACTED]

Mobile : [REDACTED]

Email : [b](#) [REDACTED]

Web : [nts.gov](https://www.nts.gov)

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Federal Aviation Administration

IHOU 06/147 HOU OBST TOWER LGT (ASR 1052552) 294527.00N0952020.00W (7.4NM NNW HOU)
1033.8FT (999.0FT AGL) U/S 2406260730-2410262359

-----End of PDF Report.-----

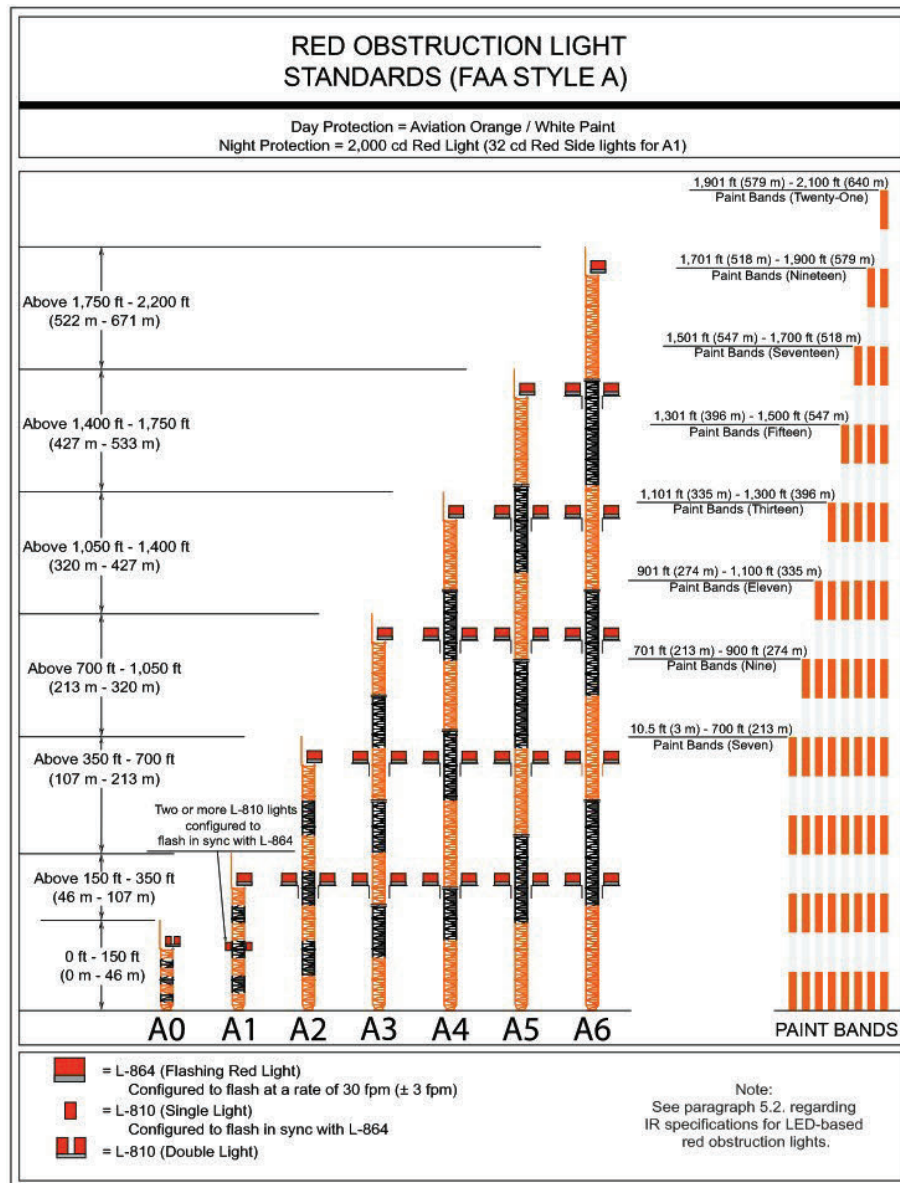


Figure A-6. Red Obstruction Light Standards (FAA Style A)

SBA Communications Site Inspection



9/24/24 12:33 PM

TX189B0-A

Ennis Street

sbsite\jmcfarland

Twr #1 - 920' Guyed

Yes

No

N/A

Comment

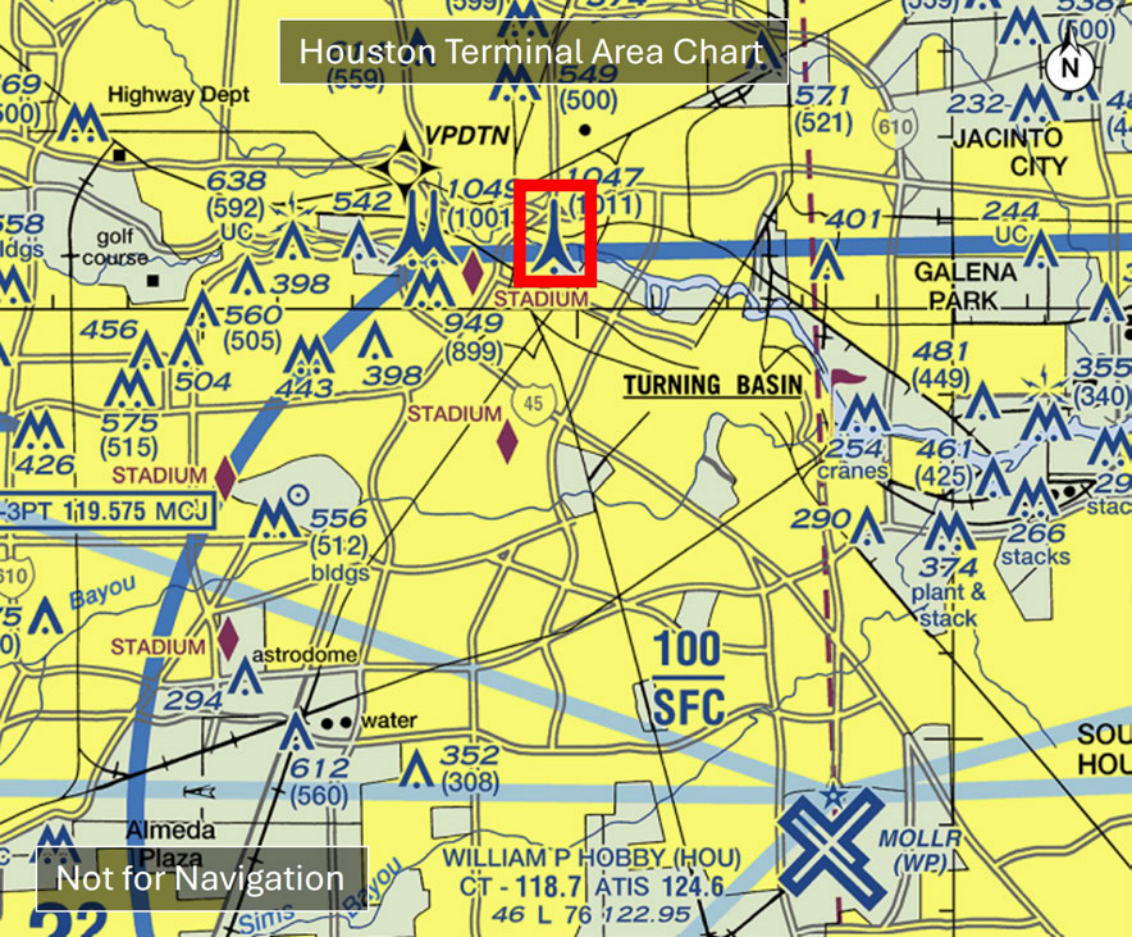
Is the SBA Tower Light Beacon in good working condition? [78]

X

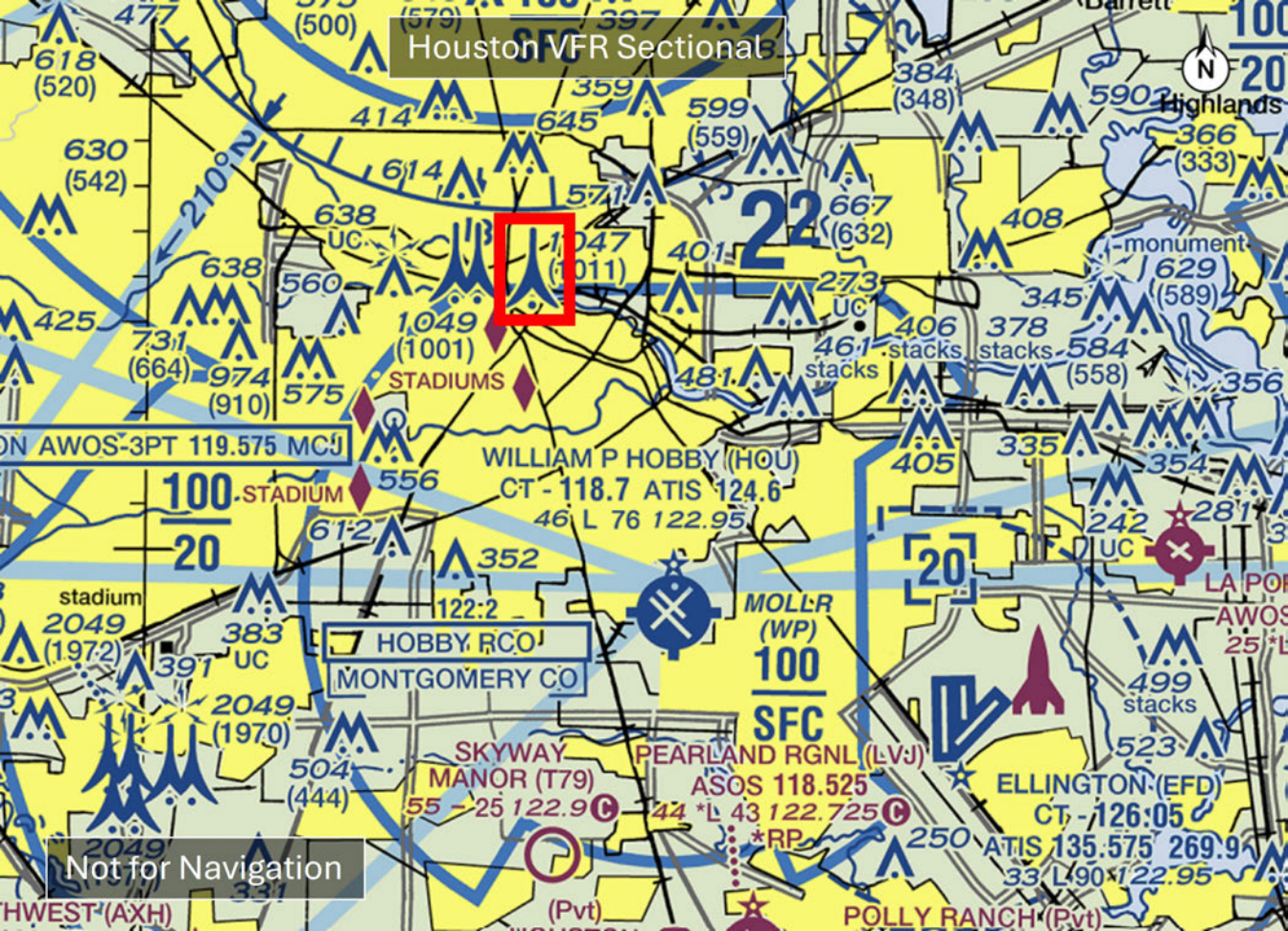
Is the tower light beacon operational? [122]

X

Houston Terminal Area Chart



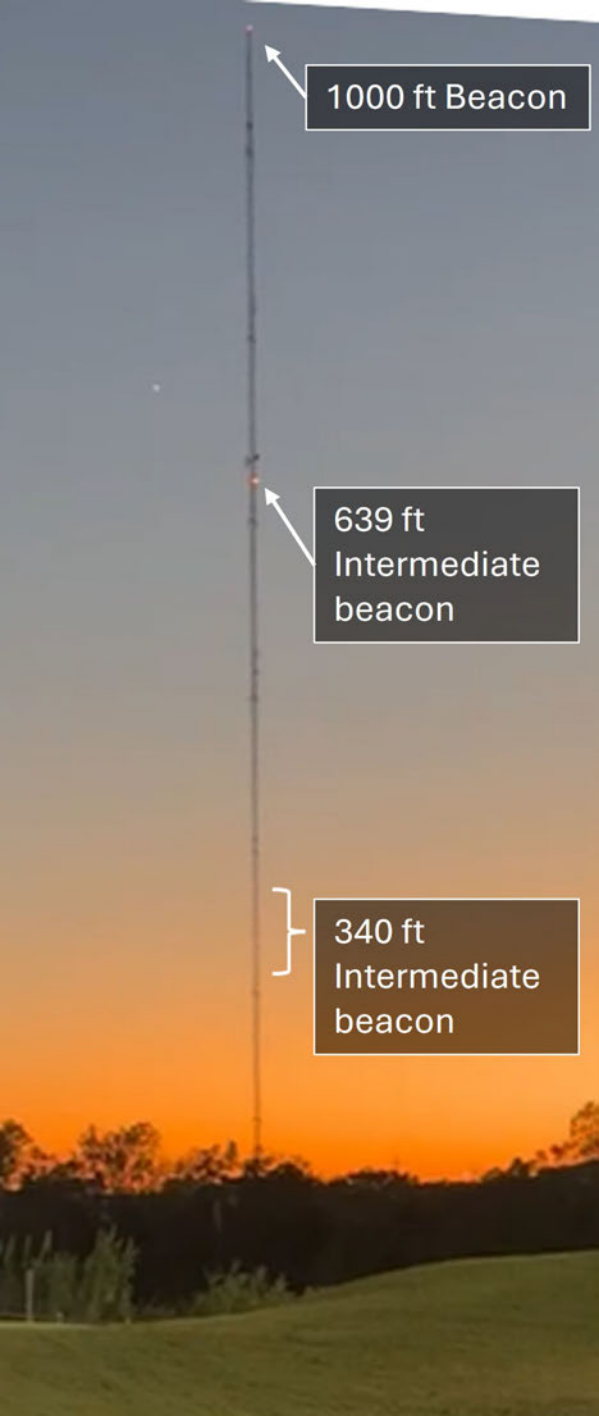
Houston VFR Sectional



ON AWOS-3PT 119.575 MCJ

HOBBY RCO
MONTGOMERY CO

Not for Navigation



1000 ft Beacon

639 ft
Intermediate
beacon

340 ft
Intermediate
beacon