



Maser Consulting Connecticut
2000 Midlantic Drive, Suite 100
Mt. Laurel, NJ 08054
(856) 797-0412
peter.albano@colliersengineering.com

Post-Mod Antenna Mount Analysis Report and PMI Requirements

Mount Fix

SMART Tool Project #: 10061736
Maser Consulting Connecticut Project #: 21777051A

May 6, 2021

Site Information

Site ID: 469074-VZW / BRANFORD SW CT
Site Name: BRANFORD SW CT
Carrier Name: Verizon Wireless
Address: 850 West Main Street
Branford, Connecticut 06405
New Haven County
Latitude: 41.277792°
Longitude: -72.836878°

Structure Information

Tower Type: Monopole
Mount Type: 14.00-Ft Platform

FUZE ID # 16227607

Analysis Results

Platform: 78.7% Pass

***Contractor PMI Requirements:

Included at the end of this MA report

Available & Submitted via portal at <https://pmi.vzwsmart.com>

Contractor - Please Review Specific Site PMI Requirements Upon Award

Requirements also Noted on Mount Modification Drawings

Requirements may also be Noted on A & E drawings

Report Prepared By: Selene Chen



Executive Summary:

The objective of this report is to summarize the analysis results of the antenna support mount including the proposed modifications at the subject facility for the final wireless telecommunications configuration, per the applicable codes and standards.

This analysis is inclusive of the mount structure only and does not address the structural capacity of the supporting structure. This mounting frame was not analyzed as an anchor attachment point for fall protection. All climbing activities are required to have a fall protection plan completed by a competent person.

Sources of Information:

Document Type	Remarks
Radio Frequency Data Sheet (RFDS)	Verizon RFDS, Site ID: 674849, dated September 8, 2020
Mount Mapping Report	Level-Up Towers, Site ID: 469074, dated February 18, 2021
Mount Analysis Report	Maser Consulting Connecticut, Project #: 21777051A, dated April 2, 2021
Mount Modification Drawings	Maser Consulting Connecticut, Project #: 21777051A, dated May 6, 2021

Analysis Criteria:

Codes and Standards:	ANSI/TIA-222-H
Wind Parameters:	Basic Wind Speed (Ultimate 3-sec. Gust), V_{ULT} : 121 mph Ice Wind Speed (3-sec. Gust): 50 mph Design Ice Thickness: 1.00 in Risk Category: II Exposure Category: C Topographic Category: 1 Topographic Feature Considered: N/A Topographic Method: N/A Ground Elevation Factor, K_e : 0.998
Seismic Parameters:	S_s : 0.200 S_1 : 0.053
Maintenance Parameters:	Wind Speed (3-sec. Gust): 30 mph Maintenance Live Load, L_v : 250 lbs. Maintenance Live Load, L_m : 500 lbs.
Analysis Software:	RISA-3D (V17)

Final Loading Configuration:

The following equipment has been considered for the analysis of the mount:

Mount Elevation (ft)	Equipment Elevation (ft)	Quantity	Manufacturer	Model	Status
108.50	110.00	3	Samsung	MT6407-77A	Added
		1	Raycap	RVZDC-6627-PF-48	
		6	Commscope	JAHH-65B-R3B	Retained
		6	RFS	APL868013 (42327)	
		3	RFS	FDJ85020Q4-S1	
		3	Samsung	B2/B66A RRH-BRO49	
		3	Samsung	B5/B13 RRH-BRO4C	

Standard Conditions:

1. All engineering services are performed on the basis that the information provided to Maser Consulting Connecticut and used in this analysis is current and correct. The existing equipment loading has been applied at locations determined from the supplied documentation. Any deviation from the loading locations specified in this report shall be communicated to Maser Consulting Connecticut to verify deviation will not adversely impact the analysis.
2. Mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.

Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping and reported in the Mount Mapping Report are assumed to be corrected and documented as part of the PMI process and are not considered in the mount analysis.

The mount analysis and the mount mapping are not a condition assessment of the mount. Proper maintenance and condition assessments are still required post analysis.

3. For mount analyses completed from other data sources (including new replacement mounts) and not specifically mapped by Maser Consulting Connecticut, the mounts are assumed to have been properly fabricated, installed and maintained in good condition, twist free and plumb in accordance with its original design and manufacturer's specifications.
4. All member connections are assumed to have been designed to meet or exceed the load carrying capacity of the connected member unless otherwise specified in this report.
5. The mount was checked up to, and including, the bolts that fasten it to the mount collar/attachment and threaded rod connections in collar members if applicable. Local deformation and interaction between the mount collar/attachment and the supporting tower structure are outside the scope of this analysis.
6. All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. Maser Consulting Connecticut is not responsible for the conclusion, opinions, and recommendations made by others based on the information supplied.

7. Structural Steel Grades have been assumed as follows, if applicable, unless otherwise noted in this analysis:
- Channel, Solid Round, Angle, Plate ASTM A36 (Gr. 36)
 - HSS (Rectangular) ASTM 500 (Gr. B-46)
 - Pipe ASTM A53 (Gr. B-35)
 - Threaded Rod F1554 (Gr. 36)
 - Bolts ASTM A325
8. Any mount modifications listed under Sources of Information are assumed to have been installed per the design specifications.

Discrepancies between in-field conditions and the assumptions listed above may render this analysis invalid unless explicitly approved by Maser Consulting Connecticut.

Analysis Results:

Component	Utilization %	Pass/Fail
Connection	60.0%	Pass
Back Standoff HSS	38.6%	Pass
Front Standoff HSS	22.4%	Pass
Standoff Bracing Angle	33.3%	Pass
Corner Angle	14.4%	Pass
Face Angle	78.7%	Pass
Mount Pipe	35.6%	Pass
Support Rail	13.1%	Pass
Support Rail Corner	21.2%	Pass

Structure Rating – (Controlling Utilization of all Components)	78.7%
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Recommendation:

The existing mount will be **SUFFICIENT** for the final loading after the proposed modifications are successfully completed.

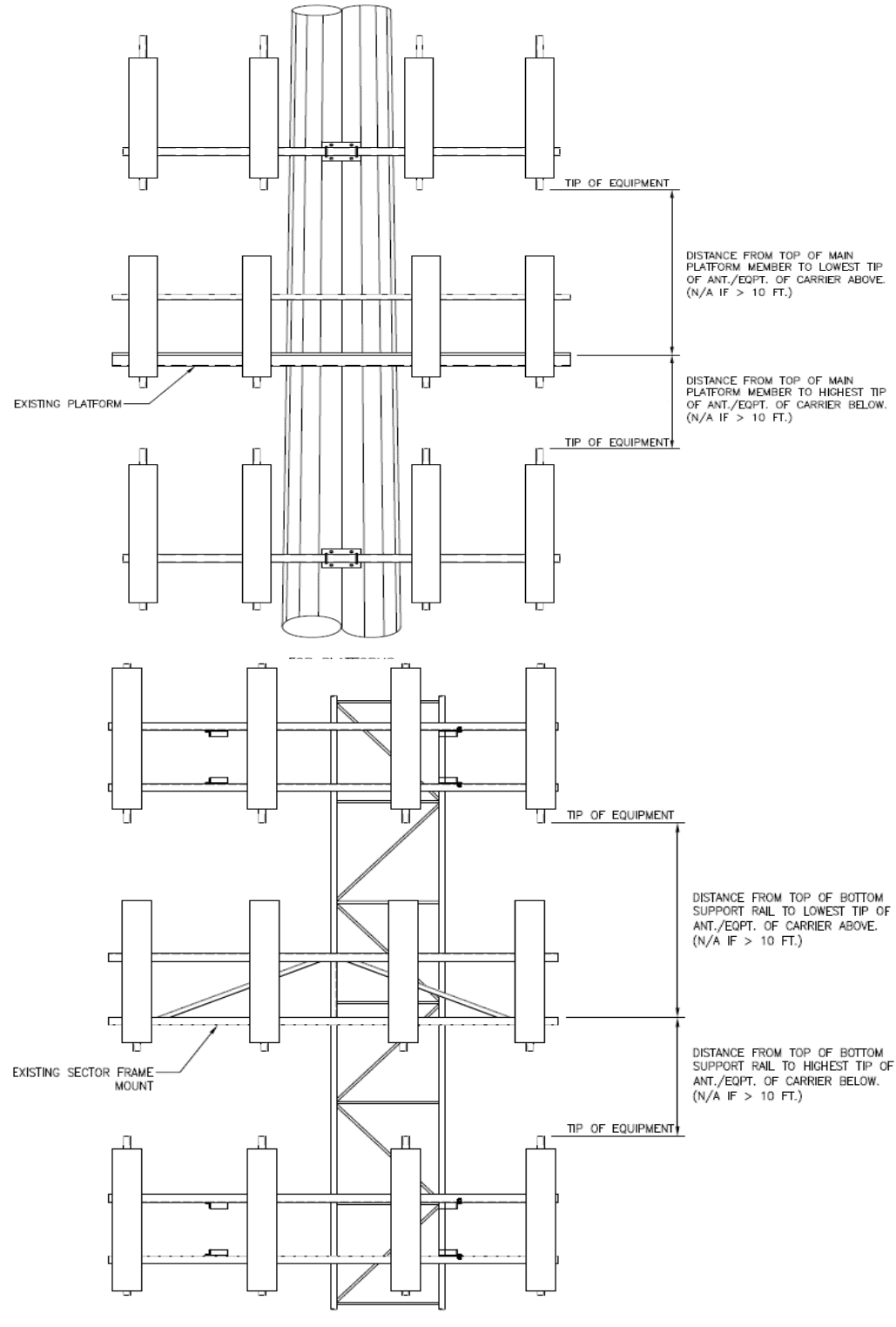
ANSI/ASSP rigging plan review services compliant with the requirements of ANSI/TIA 322 are available for a Construction Class IV site or other, if required. Separate review fees will apply.

Attachments:

1. Mount Photos
2. Mount Mapping Report (for reference only)
3. Analysis Calculations
- 4. Contractor Required PMI Report Deliverables**
5. Antenna Placement Diagrams
6. TIA Adoption and Wind Speed Usage Letter



Mount Azimuth (Degree) for Each Sector			Tower Leg Azimuth (Degree) for Each Sector			Sector B										
Sector A:	20.00	Deg	Leg A:		Deg	Ant _{1a}	844H90EXYBAM	7.00	9.00	48.00	1 1-5/8"	115.667	24.00	9.00	140.00	96
Sector B:	140.00	Deg	Leg B:		Deg	Ant _{1b}										
Sector C:	260.00	Deg	Leg C:		Deg	Ant _{1c}										
Sector D:		Deg	Leg D:		Deg	Ant _{2a}	Samsung RFV01U-D2	16.00	10.00	16.00		116.833	32.00	8.00	140.00	103
Climbing Facility Information						Ant _{2b}	ShareLite FDJ85020Q	6.00	6.00	7.00		116.167	40.00	5.00	140.00	106
Location:	180.00	Deg	Sector B			Ant _{2c}	ShareLite FDJ85020Q	6.00	6.00	7.00		116.167	40.00	5.00	140.00	106
Climbing Facility	Corrosion Type:		Good condition.			Ant _{3a}										
	Access:		Climbing path was unobstructed.			Ant _{3b}										
	Condition:		Good condition.			Ant _{3c}										



Ant _{4a}	Commscope JAHH-65	13.00	9.00	72.00		116.417	37.00	14.00	120.00	111
Ant _{4b}	Commscope JAHH-65	13.00	9.00	72.00		116.417	37.00	14.00	120.00	112
Ant _{4c}	Samsung RFV01U-D1	16.00	10.00	16.00		116.833	32.00	-8.00	120.00	119
Ant _{5a}	844H90EXYBAM	7.00	9.00	48.00	1 1-5/8"	115.667	24.00	9.00	140.00	121
Ant _{5b}	GPS Antenna	2.50	2.50	4.00		116.667	12.00	-8.00	140.00	126
Ant _{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Sector C										
Ant _{1a}	844H90EXYBAM	7.00	9.00	48.00	1 1-5/8"	115.667	24.00	9.00	260.00	127
Ant _{1b}										
Ant _{1c}										
Ant _{2a}	Samsung RFV01U-D2	16.00	10.00	16.00		116.833	32.00	8.00	260.00	130
Ant _{2b}	ShareLite FDJ85020Q	6.00	6.00	7.00		116.167	40.00	5.00	260.00	133
Ant _{2c}	ShareLite FDJ85020Q	6.00	6.00	7.00		116.167	40.00	5.00	260.00	133
Ant _{3a}										
Ant _{3b}										
Ant _{3c}										
Ant _{4a}	Commscope JAHH-65	13.00	9.00	72.00		116.417	37.00	14.00	260.00	135
Ant _{4b}	Commscope JAHH-65	13.00	9.00	72.00		116.417	37.00	14.00	260.00	135
Ant _{4c}	Samsung RFV01U-D1	16.00	10.00	16.00		116.833	32.00	-8.00	260.00	140
Ant _{5a}	844H90EXYBAM	7.00	9.00	48.00	1 1-5/8"	115.667	24.00	9.00	260.00	149
Ant _{5b}										
Ant _{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Sector D										
Ant _{1a}										
Ant _{1b}										
Ant _{1c}										
Ant _{2a}										
Ant _{2b}										
Ant _{2c}										
Ant _{3a}										
Ant _{3b}										
Ant _{3c}										
Ant _{4a}										
Ant _{4b}										
Ant _{4c}										
Ant _{5a}										
Ant _{5b}										
Ant _{5c}										
Ant on Standoff										
Ant on Standoff										
Ant on Tower										
Ant on Tower										

Observed Safety and Structural Issues During the Mount Mapping		
Issue #	Description of Issue	Photo #

1		
2		
3		
4		
5		
6		
7		
8		

Mapping Notes

1. Please report any visible structural or safety issues observed on the antenna mounts (Damaged members, loose connections, tilting mounts, safety climb issues, etc.)
2. If the thickness of the existing pipes or tubing can't be obtained from a general tool (such as Caliper), please use an ultrasonic measurement tool (thickness gauge) to measure the thickness.
3. Please create all required detail sketches of the mounts and insert them into the "Sketches" tab.
4. Please measure and enter the bolt sizes and types under the Members Box in the spreadsheet of the mount type.
5. Take and label the photos of the tower, mounts, connections, antennas and all measurements. Minimum 50 photos are required.
6. Please measure and report the size and length of all existing antenna mounting pipes.
7. Please measure and report the antenna information for all sectors.
8. Don't delete or rearrange any sheet or contents of any sheet from this mapping form.

Standard Conditions

1. Obvious safety and structural issues/deficiencies noticed at the time of the mount mapping are to be reported in this mapping. However, this mount mapping is not a condition assessment of the mount.



Antenna Mount Mapping Form (PATENT PENDING)

FCC #

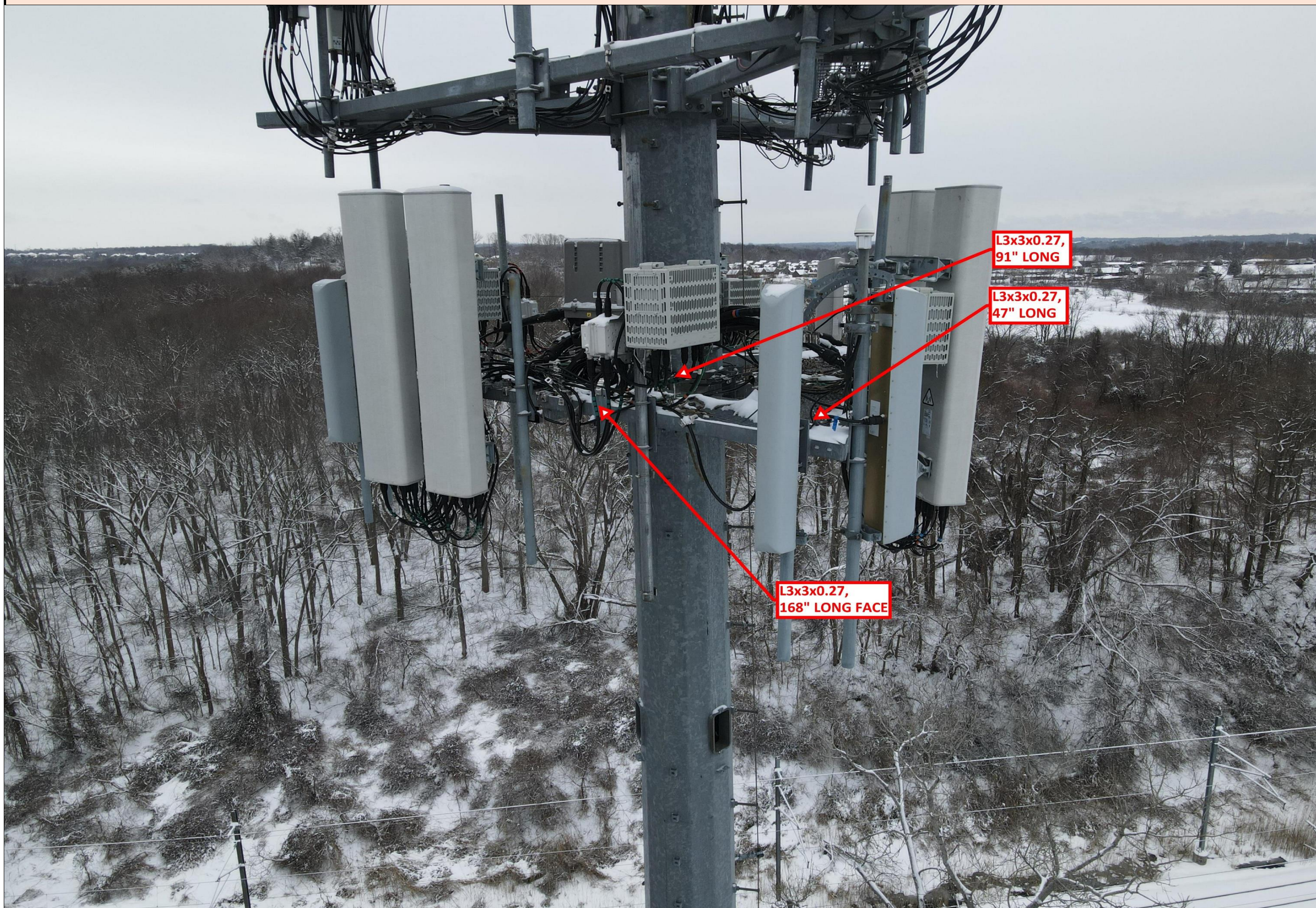
Tower Owner:	Crown Castle	Mapping Date:	2/18/2021
Site Name:	BRANFORD SW CT	Tower Type:	Monopole
Site Number or ID:	469074	Tower Height (Ft.):	
Mapping Contractor:	Level-Up Towers	Mount Elevation (Ft.):	115

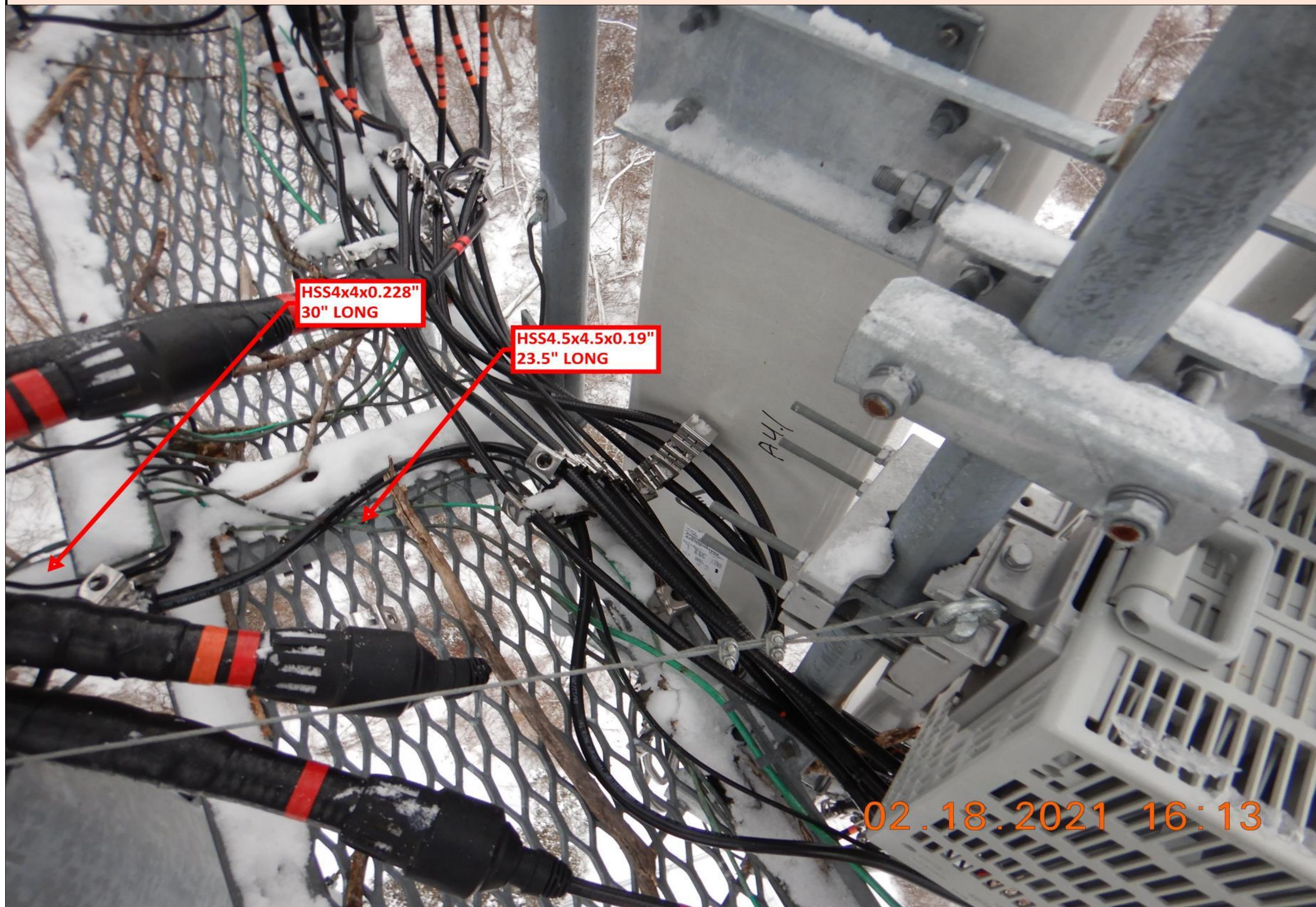
This antenna mapping form is the property of TES and under **PATENT PENDING**. The formation contained herein is considered confidential in nature and is to be used only for the specific customer it was intended for. Reproduction, transmission, publication, modification or disclosure by any method is prohibited except by express written permission of TES. All means and methods are the responsibility of the contractor and the work shall be compliant with ANSI/ASSE A 10.48, OSHA, FCC, FAA and other safety requirements that may apply. TES is not warranting the usability of the safety climb as it must be assessed prior to each use in compliance with OSHA requirements.

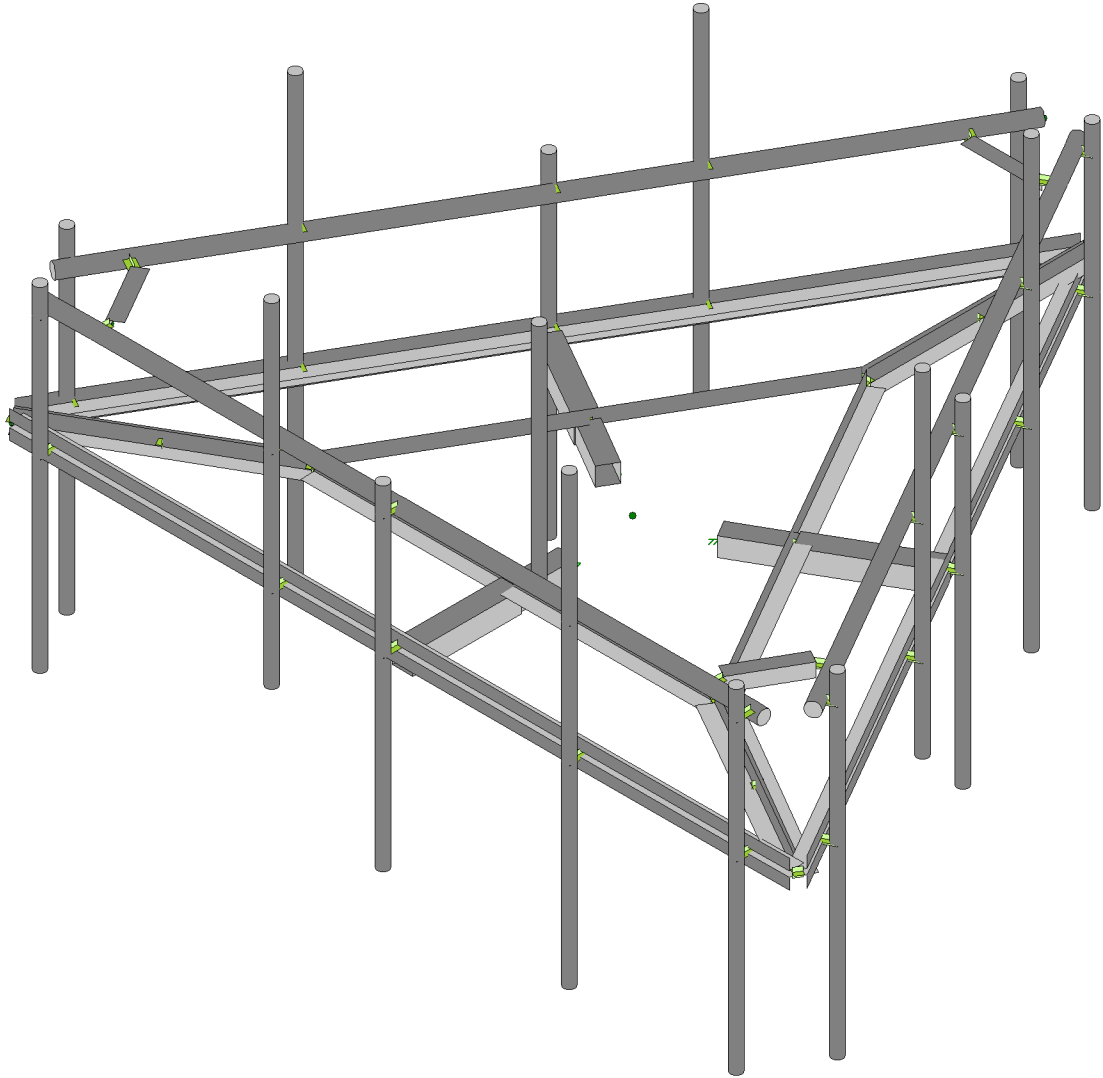
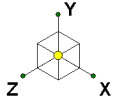
Please Insert Sketches of the Antenna Mount



Please Insert Sketches of the Antenna Mount, cont'd







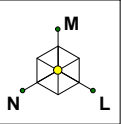
Maser Consulting

469074-VZW_MT_LO_H

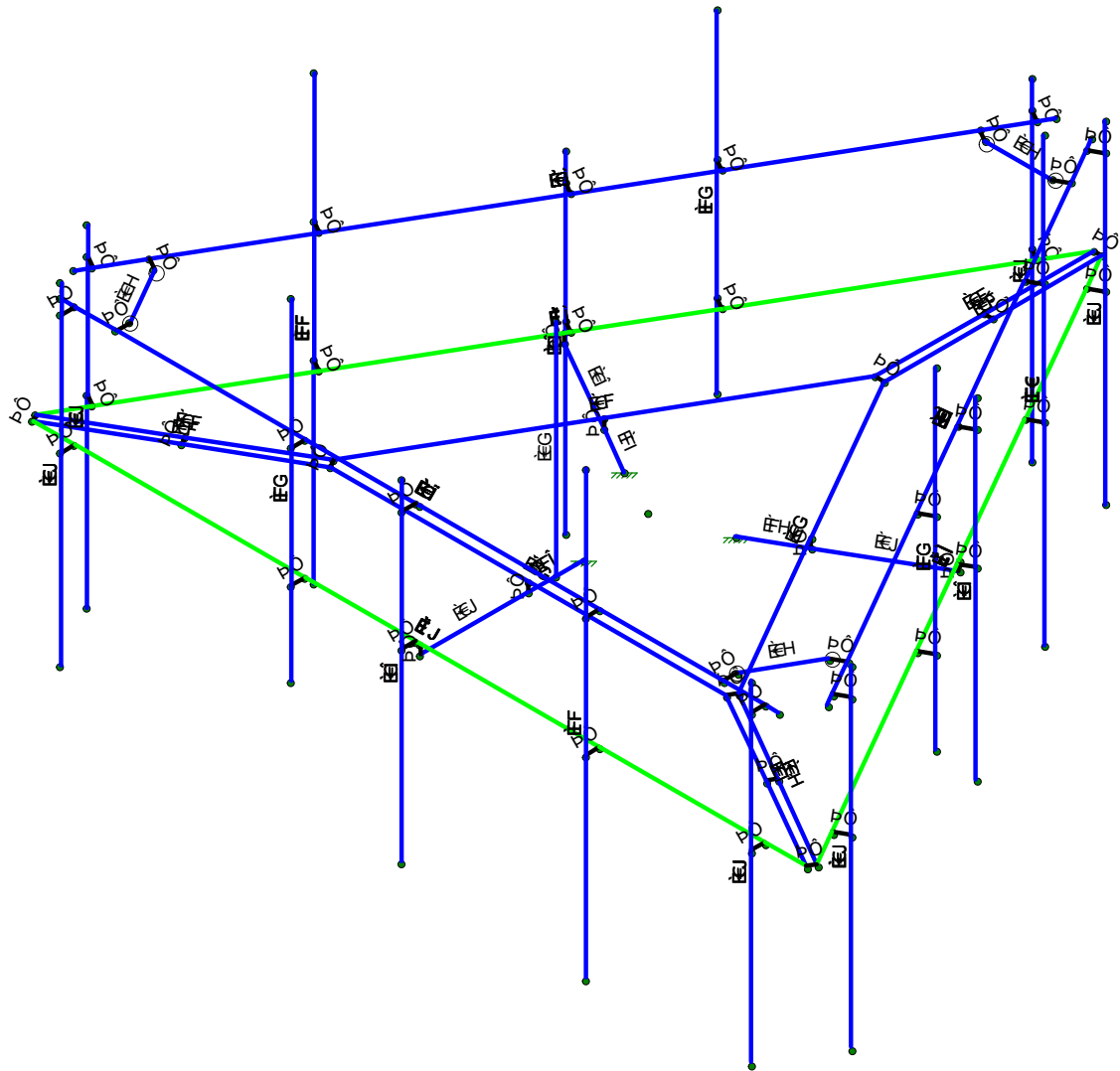
SK - 1

May 4, 2021 at 10:30 AM

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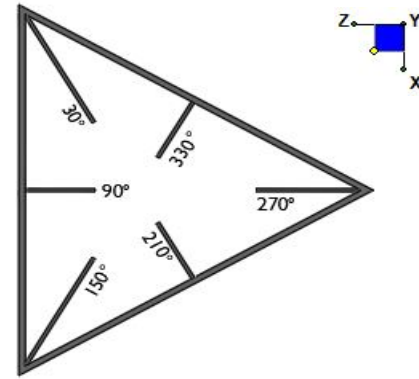
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TUÖ Š \grave{a} \grave{a} IÎJĖĬĚZY 'TV' ŠĤ



I. Mount-to-Tower Connection Check

RISA Model Data

Nodes (labeled per RISA)	Orientation (per graphic of typical platform)
N7	90
N71	330
N39A	210



TYPICAL PLATFORM

Tower Connection Plate and Weld Check

Connecting Standoff Member Shape:

W1 (in):

W2 (in):

Fy (ksi, plate):

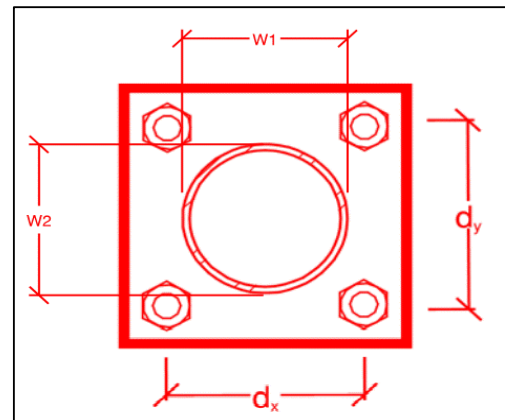
Weld Size (1/16 in):

Phi*Rn (kip/in):

Required Weld Strength (kip/in):

Weld Capacity:

Rect
4
4
36
4
5.57
3.34
60.0%



Mount Desktop – Post Modification Inspection (PMI) Report Requirements

Documents & Photos Required from Contractor – Mount Modification

Purpose – to provide Maser Consulting Connecticut the proper documentation in order to complete the required Mount Desktop review of the Post Modification Inspection Report.

- Contractor is responsible for making certain the photos provided as noted below provide confirmation that the modification was completed in accordance with the modification drawings.
- Contractor shall relay any data that can impact the performance of the mount or the mount modification, this includes safety issues.

Base Requirements:

- Any special photos outside of the standard requirements will be indicated on the drawings
- Provide “as built drawings” showing contractor’s name, preparer’s signature, and date. Any deviations from the drawings (proposed modification) must be shown.
- Notation that all hardware was properly installed, and the existing hardware was inspected for any issues.
- Verification that loading is as communicated in the modification drawings. NOTE If loading is different than what is conveyed in the modification drawing contact Maser Consulting Connecticut immediately.
- Each photo should be time and date stamped
- Photos should be high resolution and submitted in a Zip File and should be organized in the file structure as depicted in Schedule A attached.
- Contractor shall ensure that the safety climb wire rope is supported and not adversely impacted by the install of the modification components. This may involve the install of wire rope guides, or other items to protect the wire rope.
- The photos in the file structure should be uploaded to <https://pmi.vzwsmart.com> as depicted on the drawings

Photo Requirements:

- Base and “During Installation Photos”
 - Base pictures include
 - Photo of Gate Signs showing the tower owner, site name, and number
 - Photo of carrier shelter showing the carrier site name and number if available
 - Photos of the galvanizing compound and/or paint used (if applicable), clearly showing the label and name
 - “During Installation Photos if provided - must be placed only in this folder
- Photos taken at ground level
 - Overall tower structure before and after installation of the modifications
 - Photos of the appropriate mount before and after installation of the modifications; if the mounts are at different rad elevations, pictures must be provided for all elevations that the modifications were installed

- Photos taken at Mount Elevation
 - Photos showing each individual sector before and also after installation of modifications. Each entire sector must be in one photo to show in the inter-connection of members.
 - These photos should also certify that the placement and geometry of the equipment on the mount is as depicted on the sketch and table in the mount analysis
 - Close-up photos of each installed modification per the modification drawings; pictures should also include connection hardware (U-bolts, bolts, nuts, all-threaded rods, etc.)
 - Photos showing the measurements of the installed modification member sizes (i.e. lengths, widths, depths, diameters, thicknesses)
 - Photos showing the elevation or distances of the installed modifications from the appropriate reference locations shown in the modification drawings
 - Photos showing the installed modifications onto the tower with tape drop measurements (if applicable) (i.e. ring/collar mounts, tie-backs, V-bracing kits, etc.); if the existing mount elevation needs to be changed according to the modification drawings, a tape drop measurement shall be provided before the elevation change
 - Photos showing the safety climb wire rope above and below the mount prior to modification.
 - Photos showing the climbing facility and safety climb if present.

Material Certification:

- Materials utilized must be as per specification on the drawings or the equivalent as validated by Maser Consulting Connecticut.
 - If the drawings are as specified on the drawings
 - The contractor should provide the packing list or the materials utilized to perform the mount modification
 - If an equivalent is utilized
 - It is required that the Maser Consulting Connecticut certification of such is included in the contractor submission package. There may be an additional charge for this certification if the equivalent submission doesn't meet specifications as prescribed in the drawings.
- The contractor must certify that the materials meet these specifications by one of these methods.


















The Material utilized was as specified on the Maser Consulting Connecticut Mount Modification Drawings and included in the Material certification folder is a packing list or invoice for these materials

The material utilized was an "equivalent" and included as part of the contractor submission is the Maser Consulting Connecticut certification, invoices, or specifications validating accepted status

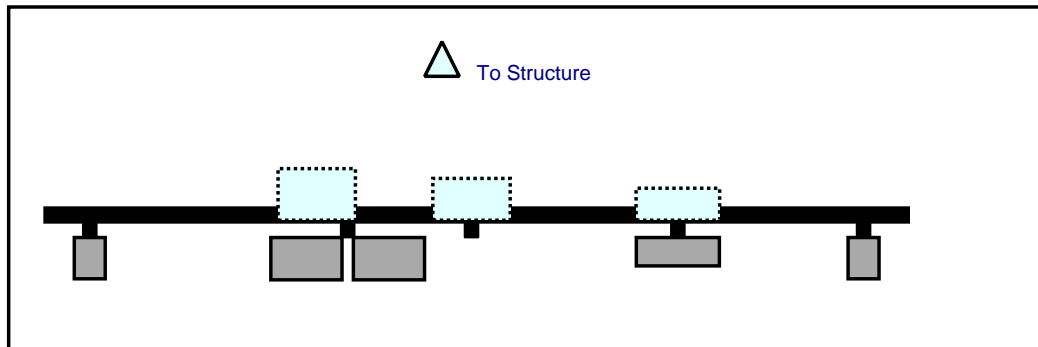
Certifying Individual: Company _____

Name _____

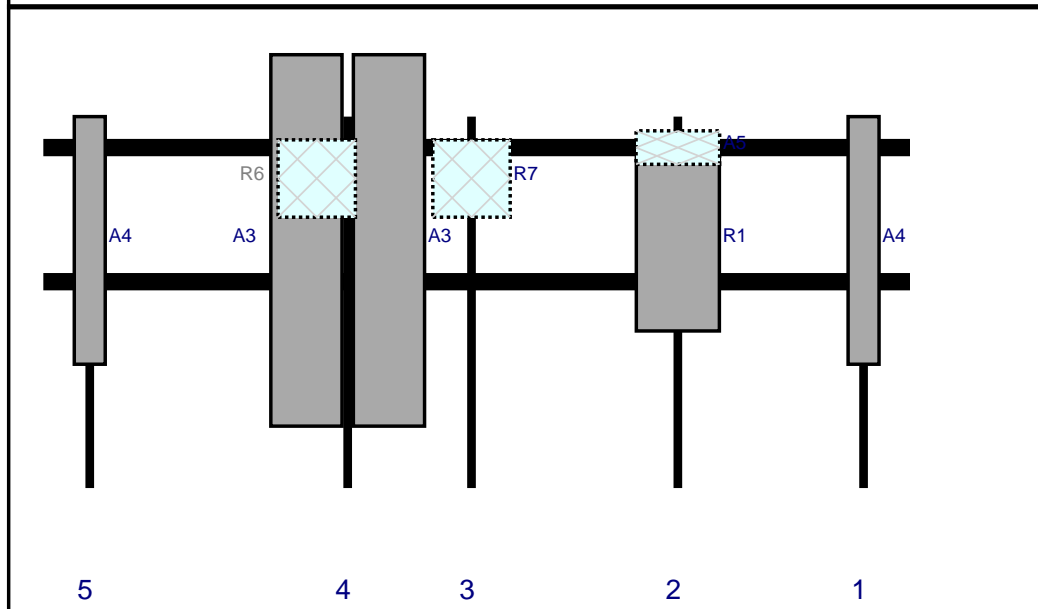
Schedule A – Photo & Document File Structure

-  VzW Site Number / Name
 -  Base & “During Installation” Photos
 -  Pre-Installation Photos
 -  Alpha
 -  Beta
 -  Gamma
 -  Ground Level
 -  Tape Drop
 -  Post-Installation Photos
 -  Alpha
 -  Beta
 -  Gamma
 -  Ground Level
 -  Tape Drop
 -  Photos of climbing facility and safety climb – If Present
-  Certifications – Submission of this document including certifications
-  Specific Required Additional Photos

Plan View

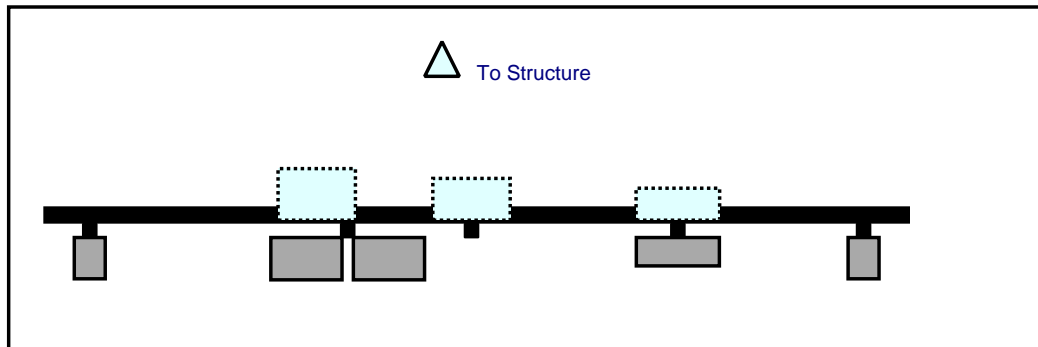


Front View
Looking at Structure

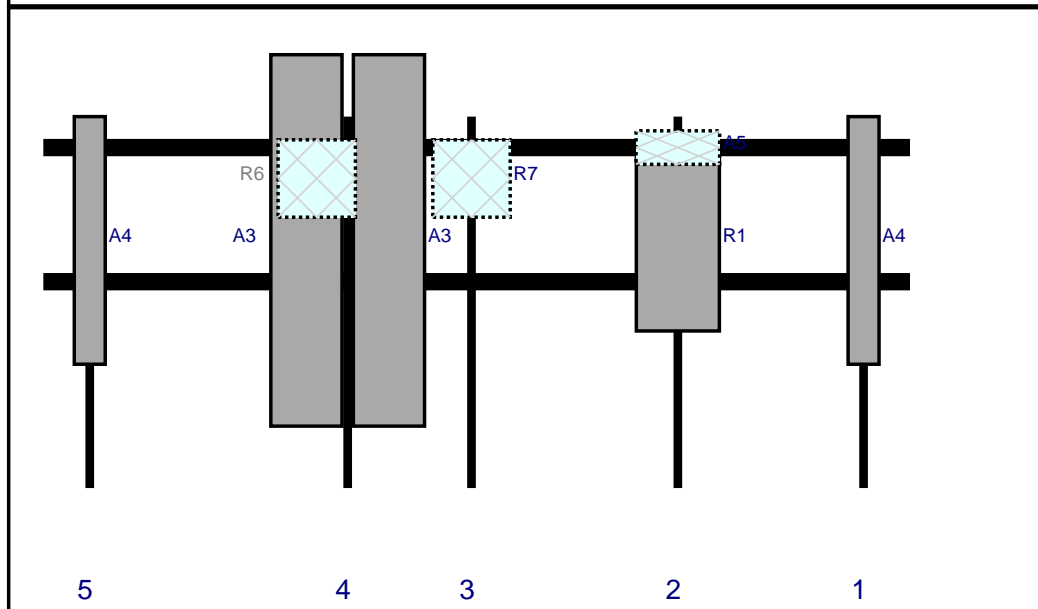


Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A4	APL868013 (42327)	48	6	9	5	a	Front	24	0	Retained	02/18/2021
A4	APL868013 (42327)	48	6	159	1	a	Front	24	0	Retained	02/18/2021
R1	MT6407-77A	35.1	16.1	123	2	a	Front	24	0	Added	
A5	FDJ85020Q4-S1	6.5	16.2	123	2	a	Behind	6	0	Retained	02/18/2021
R7	B5/B13 RRH-BRO4C	15	15	83	3	a	Behind	12	0	Retained	02/18/2021
A3	JAHH-65B-R3B	72	13.8	59	4	a	Front	24	8	Retained	02/18/2021
A3	JAHH-65B-R3B	72	13.8	59	4	b	Front	24	-8	Retained	02/18/2021
R6	B2/B66A RRH-BRO49	15	15	59	4	a	Behind	12	-6	Retained	02/18/2021

Plan View

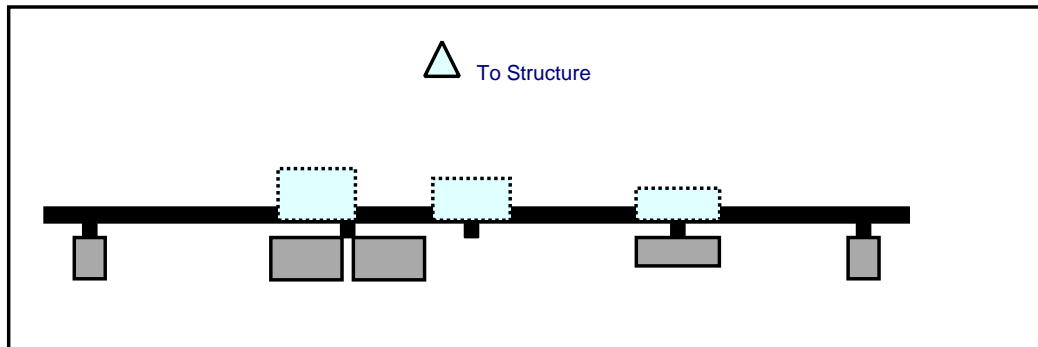


Front View
Looking at Structure

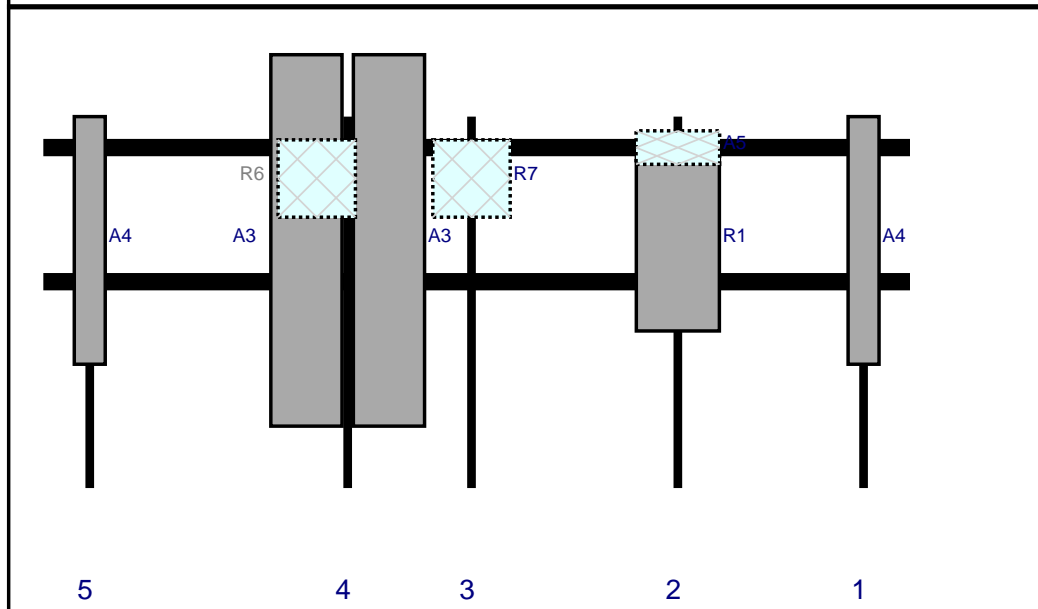


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A4	APL868013 (42327)	48	6	159	1	a	Front	24	0	Retained	02/18/2021
A3	JAHH-65B-R3B	72	13.8	59	4	a	Front	24	8	Retained	02/18/2021
A3	JAHH-65B-R3B	72	13.8	59	4	b	Front	24	-8	Retained	02/18/2021
R6	B2/B66A RRH-BRO49	15	15	59	4	a	Behind	12	-6	Retained	02/18/2021
A4	APL868013 (42327)	48	6	9	5	a	Front	24	0	Retained	02/18/2021

Plan View



Front View
Looking at Structure



Ref#	Model	Height (in)	Width (in)	H Dist Frm L.	Pipe #	Pipe Pos V	Ant Pos	C. Ant Frm T.	Ant H Off	Status	Validation
A4	APL868013 (42327)	48	6	159	1	a	Front	24	0	Retained	02/18/2021
R1	MT6407-77A	35.1	16.1	123	2	a	Front	24	0	Added	
A5	FDJ85020Q4-S1	6.5	16.2	123	2	a	Behind	6	0	Retained	02/18/2021
R7	B5/B13 RRH-BRO4C	15	15	83	3	a	Behind	12	0	Retained	02/18/2021
A3	JAHH-65B-R3B	72	13.8	59	4	a	Front	24	8	Retained	02/18/2021
A3	JAHH-65B-R3B	72	13.8	59	4	b	Front	24	-8	Retained	02/18/2021
R6	B2/B66A RRH-BRO49	15	15	59	4	a	Behind	12	-6	Retained	02/18/2021
A4	APL868013 (42327)	48	6	9	5	a	Front	24	0	Retained	02/18/2021

Maser Consulting Connecticut

Subject

TIA-222-H Usage

Site Information

Site ID: 469074-VZW /
BRANFORD SW CT
Site Name: BRANFORD SW CT
Carrier Name: Verizon Wireless
Address:
850 West Main St
Branford, Connecticut 06405
New Haven County
Latitude: 41.277792°
Longitude: -72.836878°

Structure Information

Tower Type: Monopole
Mount Type: 14.00-Ft Platform

To Whom It May Concern,

We respectfully submit the above referenced Antenna Mount Structural Analysis report in conformance with ANSI/TIA-222-H, Structural Standard for Antenna Supporting Structures and Antennas and Small Wind Turbine Support Structures.

The 2015 International Building Code states that, in Section 3108, telecommunication towers shall be designed and constructed in accordance with the provisions of TIA-222. TIA-222-H is the latest revision of the TIA-222 Standard, effective as of January 01, 2018.

As with all ANSI standards and engineering best practice is to apply the most current revision of the standard. This ensures the engineer is applying all updates. As an example, the TIA-222-H Standard includes updates to bring it in line with the latest AISC and ACI standards and it also incorporates the latest wind speed maps by ASCE 7 based on updated studies of the wind data.

The TIA-222-H standard clarifies these specific requirements for the antenna mount analysis such as modeling methods, seismic analysis, 30-degree increment wind directions and maintenance loading. Therefore, it is our opinion that TIA-222-H is the most appropriate standard for antenna mount structural analysis and is acceptable for use at this site to ensure the engineer is taking into account the most current engineering standard available.

Sincerely,

Justin Linette, PE
Sr. Technical Manager