

1 INDUSTRIAL AVE,
SUITE 3
MORRISTOWN NJ 07430
PHONE: 201.684.0055
FAX: 201.684.0066



December 10, 2021

Members of the Siting Council
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
2627 Day Hill Road, Bloomfield, CT 06002
Latitude: 41.876500
Longitude: -72.7418333
T-Mobile Site#: CTHA068A - Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 100' level of the 109' monopole located at 2627 Day Hill Road, Bloomfield, CT. The monopole is owned by American Tower and the property is owned by River Bend Development Inc. T-Mobile now intends to remove six (6) of its existing antennas with three (3) L2500/N2500 antennas. The new antennas would be installed at the same 100' level of the tower. The new antennas support 5G services.

Planned Modifications:

Tower:

Install New:

- (3) Ericsson AIR6449 B41 Antennas
- (3) Radio 4449 B71 B85
- (3) Radio 4460 B2 B25
- (3) 1.99" Hybrid Cables

To Be Removed:

- (3) Ericsson AIR21 Antennas
- (3) Ericsson AIR32 Antennas
- (3) Radio 4449 B12 B71
- (3) 1 1/4" Hybrid Cable

To Remain:

(3) RFS APXVAARR24 Antennas

Ground Work:

Install (1) 6160 Equipment Cabinet and (1) Battery Cabinet B160

This facility was approved by the Connecticut Siting Council in Do. 416 on November 3, 2011. This modification complies with the conditions of the aforementioned approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Mayor Danielle Wong, Elected Official, and Joseph Giner, Director of Planning and Zoning, as well as the property and tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.
2. The proposed modifications will not require the extension of the site boundary.
3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.
5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

For the foregoing reasons, T-Mobile respectfully submits that the proposed modifications to the above referenced telecommunications facility constitute an exempt modification under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Eric Breun

Transcend Wireless

Cell: 201-658-7728

Email: ebreun@transcendwireless.com

Attachments

cc: Danielle Wong - Mayor of Bloomfield

Joseph Giner - Director of Planning and Zoning

Rived Bend Development Inc. - Property Owner

American Towers - Tower Owner

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
DANIELLE WONG
800 BLOOMFIELD AVENUE
BLOOMFIELD CT 06002



CT 060 9-02



UPS GROUND

TRACKING #: 1Z V25 742 03 9730 6848



BILLING: P/P

Reference #1: CTHA068A

XOL 21.11.24 NV45 50.0A 12/2021*



TM

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
JOSEPH GINER
800 BLOOMFIELD AVENUE
BLOOMFIELD CT 06002



CT 060 9-02



UPS GROUND

TRACKING #: 1Z V25 742 03 9861 6832



BILLING: P/P

Reference #1: CTHA068A

XOL 21.11.24 NV45 50.0A 12/2021*



TM

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN MA 01801



MA 018 9-04



UPS GROUND

TRACKING #: 1Z V25 742 03 9974 6860



BILLING: P/P

Reference #1: CTHA068A

XOL 21.11.24 NV45 50.0A 12/2021*



TM

ERIC BREUN
2016587728
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
RIVER BEND DEVELOPMENT
204 WEST NEWBERRY ROAD
BLOOMFIELD CT 06002



CT 060 9-02



UPS GROUND

TRACKING #: 1Z V25 742 03 9601 6850



BILLING: P/P

Reference #1: CTHA068A

XOL 21.11.24 NV45 50.0A 12/2021*



TM

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

Delivery Time: 10:31 AM

Left At: FRONT DESK

Signed by: DESK

TRANSCEND WIRELESS

Tracking Number: [1ZV257420398616832](#)

Ship To: JOSEPH GINER
800 BLOOMFIELD AVENUE
BLOOMFIELD, CT 06002
US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: CTHA068A

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

Delivery Time: 10:31 AM

Left At: FRONT DESK

Signed by: DESK

TRANSCEND WIRELESS

Tracking Number: [1ZV257420397306848](#)

Ship To: DANIELLE WONG
800 BLOOMFIELD AVENUE
BLOOMFIELD, CT 06002
US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: CTHA068A

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

Delivery Time: 11:37 AM

Left At: FRONT DESK

Signed by: NICOLE

TRANSCEND WIRELESS

Tracking Number: [1ZV257420396016850](#)

Ship To: RIVER BEND DEVELOPMENT
204 WEST NEWBERRY ROAD
BLOOMFIELD, CT 06002
US

Number of Packages: 1

UPS Service: UPS Ground

Package Weight: 1.0 LBS

Reference Number: **CTHA068A**

Hello, your package has been delivered.

Delivery Date: Thursday, 12/09/2021

Delivery Time: 11:49 AM

Left At: FRONT DESK

Signed by: ANCRI

TRANSCEND WIRELESS

Tracking Number: [1ZV257420399746860](#)

Ship To: AMERICAN TOWER CORPORATION
10 PRESIDENTIAL WAY
WOBURN, MA 01801
US

Number of Packages: 1

UPS Service: UPS Ground

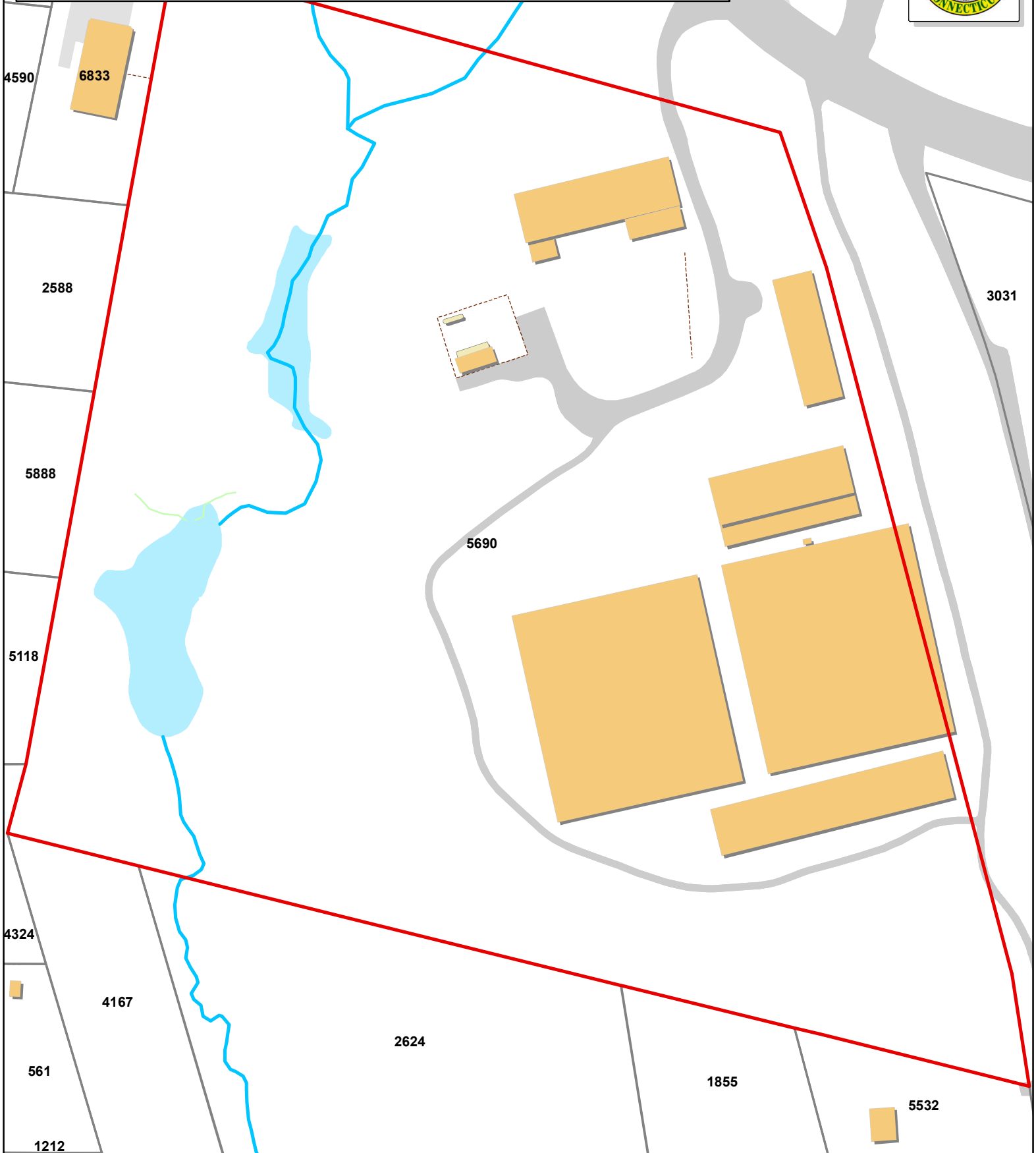
Package Weight: 1.0 LBS

Reference Number: **CTHA068A**

Town of Bloomfield, Connecticut - Assessment Parcel Map

MBL: 453-62

Address: 4838



Approximate Scale:
1 inch = 100 feet

Disclaimer:
This map is for informational purposes only.
All information is subject to verification by any user.
The Town of Bloomfield and its mapping contractors
assume no legal responsibility for the information contained herein.

Map Produced November 2021

Parcels labeled by Unique ID



Town of Bloomfield, CT

Property Listing Report

Map Block Lot

453-62CELL

Building # **1**

PID **101559**

Account

45362C

Property Information

Property Location	2627 DAY HILL RD
Owner	AMERICAN TOWER CORP
Co-Owner	
Mailing Address	PO BOX 723597 ATLANTA GA 31139-0000
Land Use	230 Com Cell Site
Land Class	C
Zoning Code	
Census Tract	

Site Index	
Acreage	0
Utilities	
Lot Setting/Desc	
Fire District	C
Book / Page	0/0

Primary Construction Details

Year Built	0
Building Desc.	Com Cell Site
Building Style	UNKNOWN
Building Grade	
Stories	
Occupancy	
Exterior Walls	
Exterior Walls 2	NA
Roof Style	
Roof Cover	
Interior Walls	
Interior Walls 2	NA
Interior Floors 1	
Interior Floors 2	

Heating Fuel	
Heating Type	
AC Type	
Bedrooms	0
Full Bathrooms	0
Half Bathrooms	0
Extra Fixtures	0
Total Rooms	0
Bath Style	NA
Kitchen Style	NA
Bsmt Fin Area	0
Rec Rm Area	0
Bsmt Gar	0
Fireplaces	0

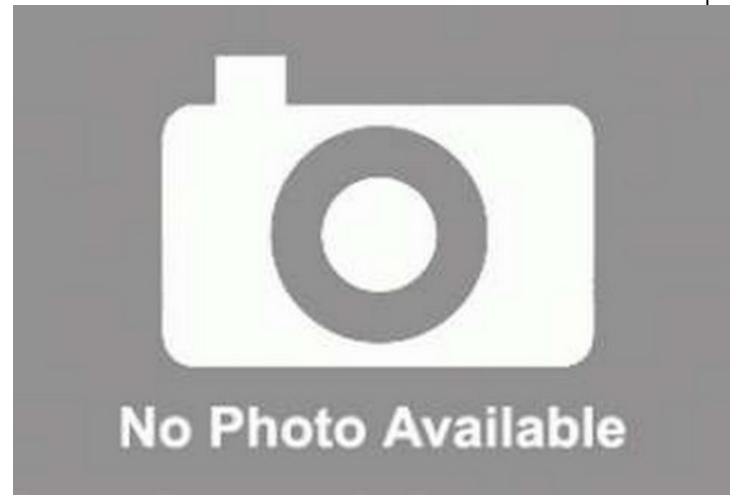
(*Industrial / Commercial Details)

Building Use	Vacant
Building Condition	
Sprinkler %	NA
Heat / AC	NA
Frame Type	NA
Baths / Plumbing	NA
Ceiling / Wall	NA
Rooms / Prtns	NA
Wall Height	NA
First Floor Use	NA
Foundation	NA

Photo



Sketch



<p>DOCKET NO. 416 - Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located off of Day Hill Road, Bloomfield, Connecticut.</p>	<p>} } }</p>	<p>Connecticut Siting Council</p>
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November 3, 2011

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, maintenance, and operation of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Cellco Partnership d/b/a Verizon Wireless, hereinafter referred to as the Certificate Holder, for a telecommunications facility at the alternate site, located off of Day Hall Road on property now or formerly owned by River Bend Associates, Inc. in Bloomfield, Connecticut. The Council denies certification of the site proposed in the original application, which is located on the same property in Bloomfield, Connecticut.

Unless otherwise approved by the Council, the facility shall be constructed, operated, and maintained substantially as specified in the Council’s record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of the Certificate Holder and other entities, both public and private, but such tower shall not exceed a height of 110 feet above ground level. The height at the top of the Certificate Holder’s antennas shall not exceed 113 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Bloomfield for comment, and all parties and intervenors as listed in the service list, and submitted to and approved by the Council prior to the commencement of facility construction and shall include:
 - a) a final site plan(s) of site development to include specifications for the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line, and landscaping; and
 - b) construction plans for site clearing, grading, landscaping, water drainage, and erosion and sedimentation controls consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

3. Prior to the commencement of operation, the Certificate Holder shall provide the Council worst-case modeling of the electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of the electromagnetic radio frequency power density be submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.
4. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.
5. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.
6. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Bloomfield and/or Windsor public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.
7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed with at least one fully operational wireless telecommunications carrier providing wireless service within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline. Authority to monitor and modify this schedule, as necessary, is delegated to the Executive Director. The Certificate Holder shall provide written notice to the Executive Director of any schedule changes as soon as is practicable.
8. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Bloomfield. Any proposed modifications to this Decision and Order shall likewise be so served.
9. If the facility ceases to provide wireless services for a period of one year, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.
10. Any nonfunctioning antenna, and associated antenna mounting equipment, on this facility shall be removed within 60 days of the date the antenna ceased to function.

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction, and the commencement of site operation.
12. The Certificate Holder shall remit timely payments associated with annual assessments and invoices submitted by the Council for expenses attributable to the facility under Conn. Gen. Stat. §16-50v.
13. This Certificate may be transferred in accordance with Conn. Gen. Stat. §16-50k(b), provided both the Certificate Holder/transferor and the transferee are current with payments to the Council for their respective annual assessments and invoices under Conn. Gen. Stat. §16-50v. In addition, both the Certificate Holder/transferor and the transferee shall provide the Council a written agreement as to the entity responsible for any quarterly assessment charges under Conn. Gen. Stat. §16-50v(b)(2) that may be associated with this facility.
14. The Certificate Holder shall maintain the facility and associated equipment, including but not limited to, the tower, tower foundation, antennas, equipment compound, radio equipment, access road, utility line and landscaping in a reasonable physical and operational condition that is consistent with this Decision and Order and a Development and Management Plan to be approved by the Council.
15. If the Certificate Holder is a wholly-owned subsidiary of a corporation or other entity and is sold/transferred to another corporation or other entity, the Council shall be notified of such sale and/or transfer and of any change in contact information for the individual or representative responsible for management and operations of the Certificate Holder within 30 days of the sale and/or transfer.

Pursuant to General Statutes § 16-50p, the Council hereby directs that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant.

By this Decision and Order, the Council disposes of the legal rights, duties, and privileges of each party named or admitted to the proceeding in accordance with Section 16-50j-17 of the Regulations of Connecticut State Agencies.

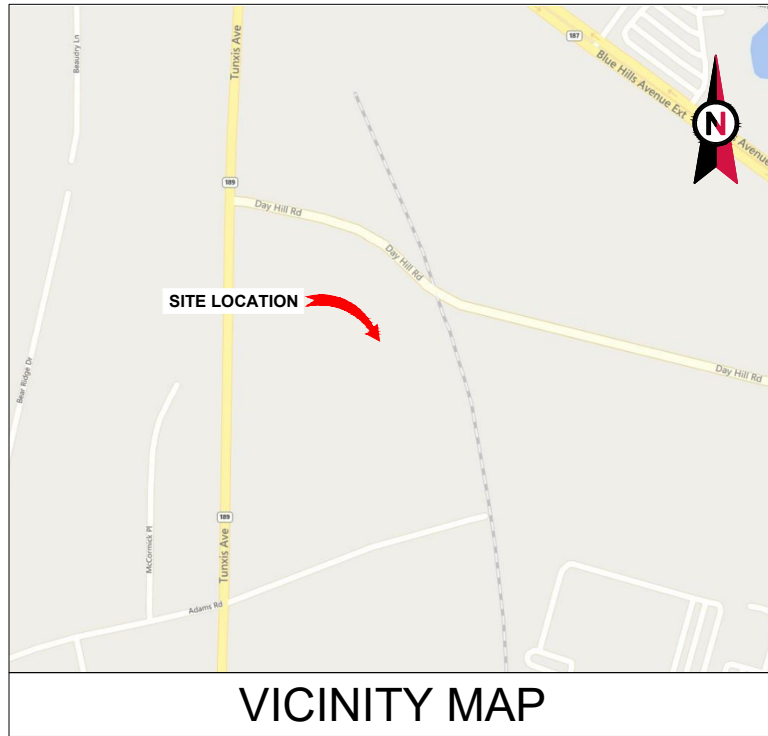
The parties and intervenors to this proceeding are:

Applicant

Cellco Partnership d/b/a
Verizon Wireless

Its Representative

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

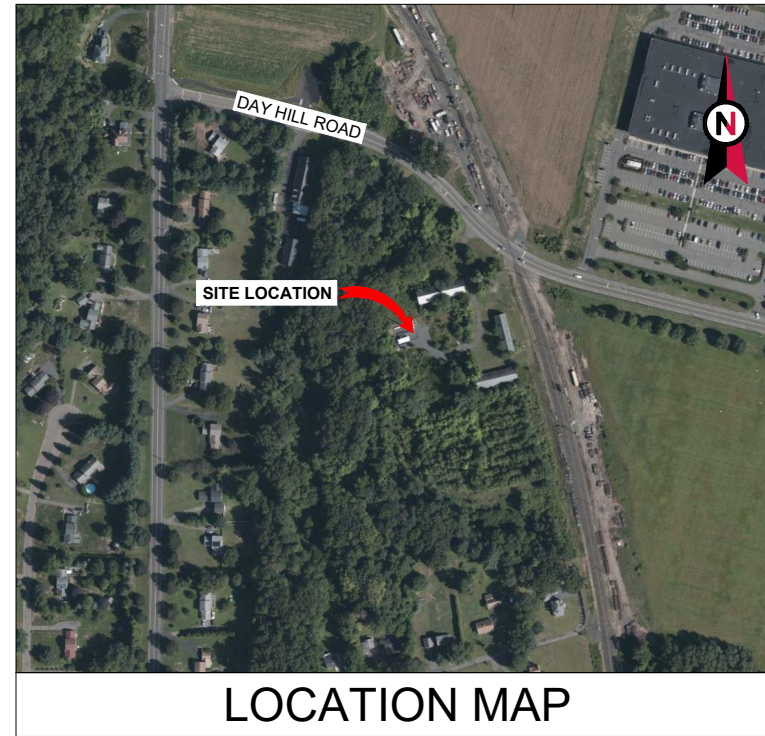


VICINITY MAP




AMERICAN TOWER®

ATC SITE NAME: NORTH BLOOMFIELD CT
 ATC SITE NUMBER: 283562
 T-MOBILE SITE NAME: CTHA068A REPLACEMENT FOR CTHA500A
 T-MOBILE SITE NUMBER: CTHA068A
 SITE ADDRESS: 1627 DAY HILL ROAD
 BLOOMFIELD, CT 06002



LOCATION MAP

**T-MOBILE ANCHOR ANTENNA AMENDMENT PLAN
 67D5A998E OUTDOOR CONFIGURATION**

COMPLIANCE CODE	PROJECT SUMMARY	PROJECT DESCRIPTION	SHEET INDEX				
ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNMENT AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES. 1. CT STATE BUILDING CODE, INCORPORATING THE 2018 INTERNATIONAL BUILDING CODE 2. 2017 NATIONAL ELECTRIC CODE (NEC) 3. LOCAL BUILDING CODE 4. CITY/COUNTY ORDINANCES	<u>SITE ADDRESS:</u> 1627 DAY HILL ROAD BLOOMFIELD, CT 06002 COUNTY: HARTFORD <u>GEOGRAPHIC COORDINATES:</u> LATITUDE: 41.87650777 LONGITUDE: -72.7418397 GROUND ELEVATION: 179' AMSL	THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW: <u>TOWER WORK:</u> REMOVE (6) ANTENNA(S), (3) RRH(S) AND (3) HYBRID CABLE(S) INSTALL (3) ANTENNA(S), (6) RRH(S) AND (3) HYBRID CABLE(S) EXISTING (3) ANTENNA(S) TO REMAIN <u>GROUND WORK:</u> INSTALL (1) ENCLOSURE 6160 AND (1) BATTERY CABINET B160 EXISTING (1) RBS 6131 AND (1) BATTERY CABINET TO REMAIN	SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
	<u>PROJECT TEAM</u> <u>TOWER OWNER:</u> AMERICAN TOWER 10 PRESIDENTIAL WAY WOBURN, MA 01801 <u>ENGINEER:</u> COLLIERS ENGINEERING & DESIGN CT, P.C. 135 NEW ROAD MADISON, CT 06443 PROJECT#: 21904530A <u>PROPERTY OWNER:</u> RIVER BEND DEVELOPMENT INC 1627 DAY HILL ROAD BLOOMFIELD, CT 06002	<u>PROJECT NOTES</u> 1. THE FACILITY IS UNMANNED. 2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE. 3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE. 4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED. 5. HANDICAP ACCESS IS NOT REQUIRED. 6. THE PROJECT DEPICTED IN THESE PLANS QUALIFIES AS AN ELIGIBLE FACILITIES REQUEST ENTITLED TO EXPEDITED REVIEW UNDER 47 U.S.C. § 1455(A) AS A MODIFICATION OF AN EXISTING WIRELESS TOWER THAT INVOLVES THE COLLOCATION, REMOVAL, AND/OR REPLACEMENT OF TRANSMISSION EQUIPMENT THAT IS NOT A SUBSTANTIAL CHANGE UNDER CFR § 1.61000 (B)(7).	G-001	TITLE SHEET	0	10/22/21	JLK
<u>UTILITY COMPANIES</u> POWER COMPANY: CONNECTICUT LIGHT & POWER PHONE: (888) 783-6617 TELEPHONE COMPANY: FRONTIER COMMUNICATIONS PHONE: (800) 921-8102	<u>PROJECT TEAM</u> <u>APPLICANT:</u> T-MOBILE	<u>PROJECT LOCATION DIRECTIONS</u> FROM HARTFORD CT TAKE I-91 NORTH TOWARD SPRINGFIELD MA. TAKE EXIT 36 CT-178 TOWARD BLOOMFIELD. TURN LEFT ONTO CT-178. TURN RIGHT ONTO BLUE HILLS AVE CT-187. TURN LEFT ONT DAY HILL ROAD. SITE IS ON LEFT JUST PAST RR TRACKS	G-002	GENERAL NOTES	0	10/22/21	JLK
			C-101	DETAILED SITE PLAN	0	10/22/21	JLK
			C-102	DETAILED GROUND PLAN	0	10/22/21	JLK
			C-201	TOWER ELEVATION	0	10/22/21	JLK
			C-401	ANTENNA INFORMATION & SCHEDULE	0	10/22/21	JLK
			C-501	CONSTRUCTION DETAILS	0	10/22/21	JLK
			E-501	GROUNDING DETAILS	0	10/22/21	JLK
			E-501	ELECTRICAL DETAILS	0	10/22/21	JLK
			R-601	SUPPLEMENTAL			
			R-602	SUPPLEMENTAL			
			R-603	SUPPLEMENTAL			
R-604	SUPPLEMENTAL						
R-605	SUPPLEMENTAL						
R-606	SUPPLEMENTAL						



Colliers Engineering & Design
 www.colliersengineering.com
 Doing Business as **MASER**
 MADISON
 135 New Road
 Madison, CT 06443
 Phone: 860.395.0055
 COLLIERS ENGINEERING & DESIGN CT, P.C.
 DOING BUSINESS AS MASER CONSULTING

REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/30/21
0	FOR CONSTRUCTION	RMD	10/22/21

ATC SITE NUMBER:
283562

 ATC SITE NAME:
NORTH BLOOMFIELD CT

 T-MOBILE SITE NAME:
CTHA068A REPLACEMENT FOR CTHA500A
 SITE ADDRESS:
1627 DAY HILL ROAD
BLOOMFIELD, CT 06002



DATE DRAWN:	09/30/21
ATC JOB NO:	13732456_G3
CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

TITLE SHEET	
SHEET NUMBER: G-001	REVISION: 0

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GENERAL CONSTRUCTION NOTES:

1. OWNER FURNISHED MATERIALS, T-MOBILE "THE COMPANY" WILL PROVIDE AND THE CONTRACTOR WILL INSTALL
 - A. BTS EQUIPMENT FRAME (PLATFORM) AND ICEBRIDGE SHELTER (GROUND BUILD/CO-LOCATE ONLY)
 - B. AC/TELCO INTERFACE BOX (PPC)
 - C. ICE BRIDGE (CABLE TRAY WITH COVER) (GROUND BUILD/CO-LOCATE ONLY, GC TO FURNISH AND INSTALL FOR ROOFTOP INSTALLATION)
 - D. TOWERS, MONOPOLES
 - E. TOWER LIGHTING
 - F. GENERATORS & LIQUID PROPANE TANK
 - G. ANTENNA STANDARD BRACKETS, FRAMES AND PIPES FOR MOUNTING
 - H. ANTENNAS (INSTALLED BY OTHERS)
 - I. TRANSMISSION LINE
 - J. TRANSMISSION LINE JUMPERS
 - K. TRANSMISSION LINE CONNECTORS WITH WEATHERPROOFING KITS
 - L. TRANSMISSION LINE GROUND KITS
 - M. HANGERS
 - N. HOISTING GRIPS
 - O. BTS EQUIPMENT
2. THE CONTRACTOR IS RESPONSIBLE TO PROVIDE ALL OTHER MATERIALS FOR THE COMPLETE INSTALLATION OF THE SITE INCLUDING, BUT NOT LIMITED TO, SUCH MATERIALS AS FENCING, STRUCTURAL STEEL SUPPORTING SUB-FRAME FOR PLATFORM, ROOFING LABOR AND MATERIALS, GROUNDING RINGS, GROUNDING WIRES, COPPER-CLAD OR XIT CHEMICAL GROUND ROD(S), BUSS BARS, TRANSFORMERS AND DISCONNECT SWITCHES WHERE APPLICABLE, TEMPORARY ELECTRICAL POWER, CONDUIT, LANDSCAPING COMPOUND STONE, CRANES, CORE DRILLING, SLEEPERS AND RUBBER MATTING, REBAR, CONCRETE CAISSONS, PADS AND/OR AUGER MOUNTS, MISCELLANEOUS FASTENERS, CABLE TRAYS, NON-STANDARD ANTENNA FRAMES AND ALL OTHER MATERIAL AND LABOR REQUIRED TO COMPLETE THE JOB ACCORDING TO THE DRAWINGS AND SPECIFICATIONS. IT IS THE POSITION OF T-MOBILE TO APPLY FOR PERMITTING AND CONTRACTOR RESPONSIBLE FOR PICKUP AND PAYMENT OF REQUIRED PERMITS.
3. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSIEIA/TIA-222, AND COMPLY WITH ATC CONSTRUCTION SPECIFICATIONS.
4. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
6. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
7. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
8. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
9. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
10. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
11. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
12. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE REP PRIOR TO PROCEEDING.
13. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
14. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE CONSTRUCTION MANAGER.
15. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
16. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE REP AND ENGINEER OF RECORD IMMEDIATELY.
17. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
18. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
19. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH AMERICAN TOWER CORPORATION (ATC) AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
20. CONTRACTOR SHALL FURNISH T-MOBILE AND AMERICAN TOWER CORPORATION (ATC) WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
21. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.

22. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
23. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE SPECIFICATIONS AND REQUIREMENTS.
24. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
25. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
26. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
27. CONTRACTOR SHALL NOTIFY T-MOBILE REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
28. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
29. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLIGENCE ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
30. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE REP. ANY WORK FOUND BY THE T-MOBILE REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
31. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.
32. T-MOBILE FURNISHED EQUIPMENT SHALL BE PICKED-UP AT THE T-MOBILE WAREHOUSE, NO LATER THAN 48HR AFTER BEING NOTIFIED INSURED, STORED, UNCRATE, PROTECTED AND INSTALLED BY THE CONTRACTOR WITH ALL APPURTENANCES REQUIRED TO PLACE THE EQUIPMENT IN OPERATION, READY FOR USE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE EQUIPMENT AFTER PICKING IT UP.
33. T-MOBILE OR HIS ARCHITECT/ENGINEER RESERVES THE RIGHT TO REJECT ANY EQUIPMENT OR MATERIALS WHICH, IN HIS OWN OPINION ARE NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, EITHER BEFORE OR AFTER INSTALLATION AND THE EQUIPMENT SHALL BE REPLACED WITH EQUIPMENT CONFORMING TO THE REQUIREMENTS OF THE CONTRACT DOCUMENTS BY THE CONTRACTOR AT NO COST TO T-MOBILE OR THEIR ARCHITECT/ENGINEER.

SPECIAL CONSTRUCTION

ANTENNA INSTALLATION NOTES:

1. WORK INCLUDED:
 - A. ANTENNA AND COAXIAL CABLES ARE FURNISHED BY T-MOBILE UNDER A SEPARATE CONTRACT. THE CONTRACTOR SHALL ASSIST ANTENNA INSTALLATION CONTRACTOR IN TERMS OF COORDINATION AND SITE ACCESS. ERECTION SUBCONTRACTOR SHALL BE RESPONSIBLE FOR THE PROTECTION OF PERSONNEL AND
 - B. INSTALL ANTENNA AS INDICATE ON DRAWINGS AND T-MOBILE SPECIFICATIONS.
 - C. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS
 - D. INSTALL FURNISHED GALVANIZED STEEL OR ALUMINUM WAVEGUIDE AND PROVIDE PRINTOUT OF THAT TEST.
 - E. CONTRACTOR SHALL PROVIDE FOUR (4) SETS OF SWEEP TESTS USING ANRITZU-PACKARD 8713B RF SCALAR NETWORK ANALYZER. SUBMIT FREQUENCY DOMAIN REFLECTOMETER(FDR) TESTS RESULTS TO THE PROJECT MANAGER. SWEEP TESTS SHALL BE AS PER ATTACHED RFS "MINIMUM FIELD TESTING RECOMMENDED FOR ANTENNA AND HELIAX COAXIAL CABLE SYSTEMS" DATED 10/5/93. TESTING SHALL BE PERFORMED BY AN INDEPENDENT TESTING SERVICE AND BE BOUND AND SUBMITTED WITHIN ONE WEEK OF WORK COMPLETION.
 - F. INSTALL COAXIAL CABLES AND TERMINATING BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTIONS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS. TERMINATE ALL COAXIAL CABLE THREE (3) FEET IN EXCESS OF ENTRY PORT LOCATION UNLESS OTHERWISE STATED.
 - G. ANTENNA AND COAXIAL CABLE GROUNDING:

2. ALL EXTERIOR #6 GREED GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH RFS CONNECTORS/SPLICE WEATHERPROOFING KIT #221213 OR EQUAL.

3. ALL COAXIAL CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL CABLE (NOT WITHIN BENDS)

ELECTRICAL NOTES:

1. ELECTRICAL DESIGN SHALL BE PERFORMED BY ELECTRICAL CONTRACTOR. STRUCTURAL DESIGN SHALL BE PERFORMED BY GENERAL CONTRACTOR. ELECTRICAL CONTRACTOR SHALL ENSURE THAT ALL WORK COMPLIES WITH ALL APPLICABLE LOCAL AND STATE CODES AND NATIONAL ELECTRICAL CODE.
2. ALL SUGGESTED ELECTRICAL ELEMENTS (SUCH AS BREAKER SIZES, WIRE SIZES, CONDUITS SIZES ARE FOR ZONING PURPOSES ONLY. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR TO CONFIRM COMPLIANCE WITH LOCAL ELECTRICAL CODES AND PASS ALL APPLICABLE AND NECESSARY INSPECTIONS. IN SOME EVENTS, IT MAY BE NECESSARY TO PERFORM AN ELECTRICAL LOAD STUDY TO VERIFY THE CAPACITY OF THE EXISTING SERVICE. THIS IS NOT THE RESPONSIBILITY OF CONCORDIA. IT IS THE RESPONSIBILITY OF THE ELECTRICAL CONTRACTOR.
3. CONTRACTOR SHALL FIELD LOCATE ALL BELOW GRADE GROUND LINES AND UTILITY LINES PRIOR TO CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR RELOCATION OF ALL UTILITIES AND GROUND LINES THAT MAY BECOME DISTURBED OR CONFLICTING IN THE COURSE OF CONSTRUCTION.

ALL DISCREPANCIES FROM WHAT IS SHOWN ON THESE CONSTRUCTION DRAWINGS SHALL BE COMMUNICATED TO ATC ENGINEERING IMMEDIATELY FOR CORRECTION OR RE-DESIGN. FAILURE TO COMMUNICATE DIRECTLY WITH ATC ENGINEERING OR ANY CHANGES FROM THE DESIGN CONDUCTED WITHOUT PRIOR APPROVAL FROM ATC ENGINEERING SHALL BE THE SOLE RESPONSIBILITY OF THE GENERAL CONTRACTOR.



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REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/30/21
0	FOR CONSTRUCTION	RMD	10/22/21

ATC SITE NUMBER:
283562

ATC SITE NAME:
NORTH BLOOMFIELD CT

T-MOBILE SITE NAME:
CTHA068A REPLACEMENT FOR CTHA500A

SITE ADDRESS:
1627 DAY HILL ROAD
BLOOMFIELD, CT 06002

SEAL:

Digitally signed by Justin Peter Linette
Date: 2021.10.22 16:28:29-04'00'



DATE DRAWN:	09/30/21
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CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

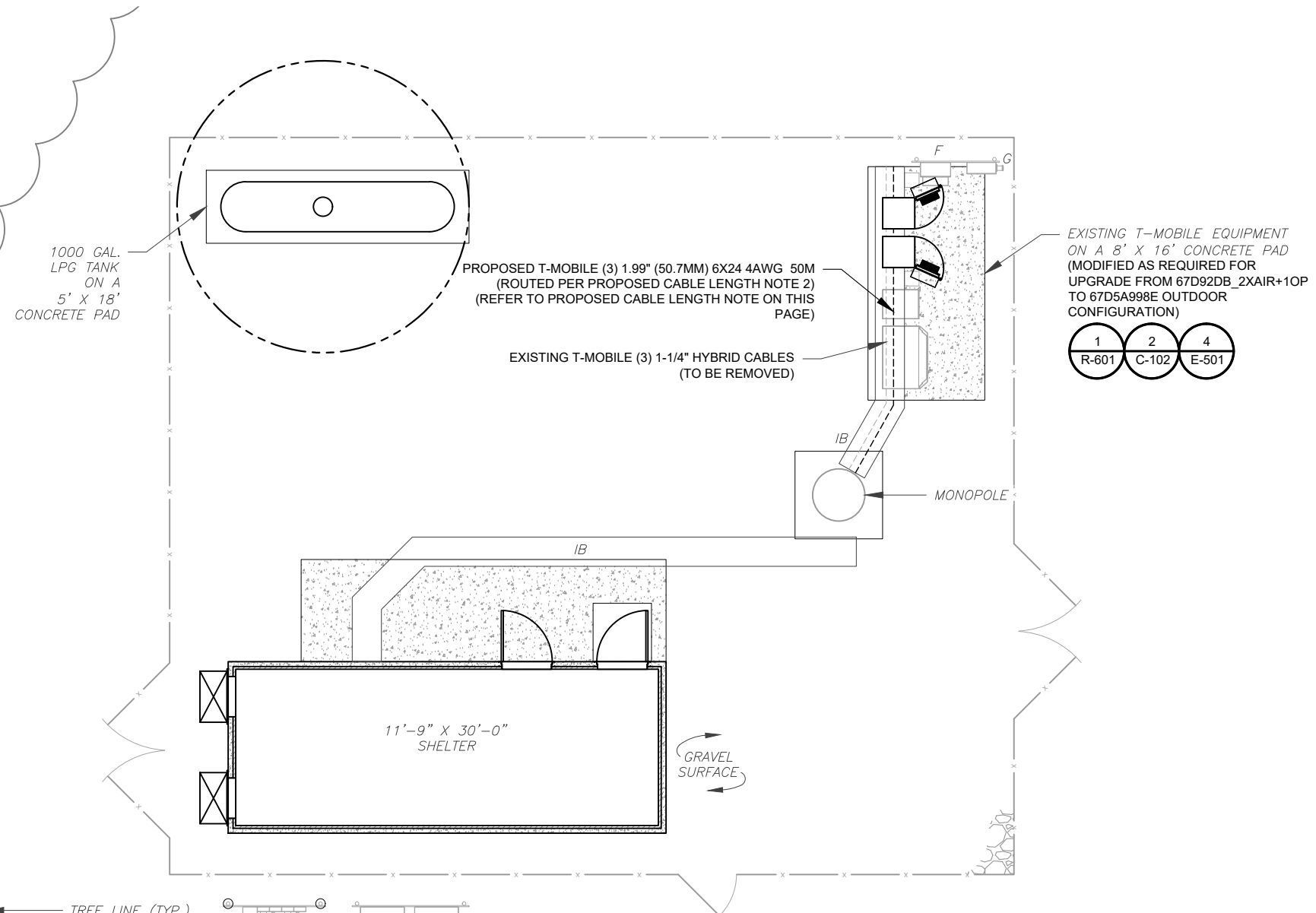
GENERAL NOTES	
SHEET NUMBER: G-002	REVISION: 0

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SITE PLAN NOTES:

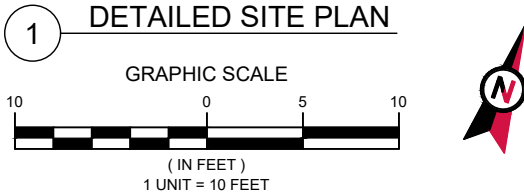
- THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
- ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.
- IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.

LEGEND	
⊗	GROUNDING TEST WELL
ATS	AUTOMATIC TRANSFER SWITCH
B	BOLLARD
CSC	CELL SITE CABINET
D	DISCONNECT
E	ELECTRICAL
F	FIBER
GEN	GENERATOR
G	GENERATOR RECEPTACLE
HH, V	HAND HOLE, VAULT
IB	ICE BRIDGE
K	KENTROX BOX
LC	LIGHTING CONTROL
M	METER
PB	PULL BOX
PP	POWER POLE
T	TELCO
TRN	TRANSFORMER
— x —	CHAINLINK FENCE



PROPOSED CABLE LENGTH:

- ESTIMATED LENGTH OF PROPOSED CABLE IS **145'**. ESTIMATED LENGTH OF CABLE WAS PROVIDED BY CUSTOMER OR CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES). CDS DEFER TO GREATEST CABLE LENGTH.
- ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.



AMERICAN TOWER®

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T-MOBILE SITE NAME:
CTHA068A REPLACEMENT FOR CTHA500A

SITE ADDRESS:
**1627 DAY HILL ROAD
BLOOMFIELD, CT 06002**

SEAL:

Digitally signed by Justin Peter Linette
Date: 2021.10.22 16:28:29-04'00'



DATE DRAWN:	09/30/21
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CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

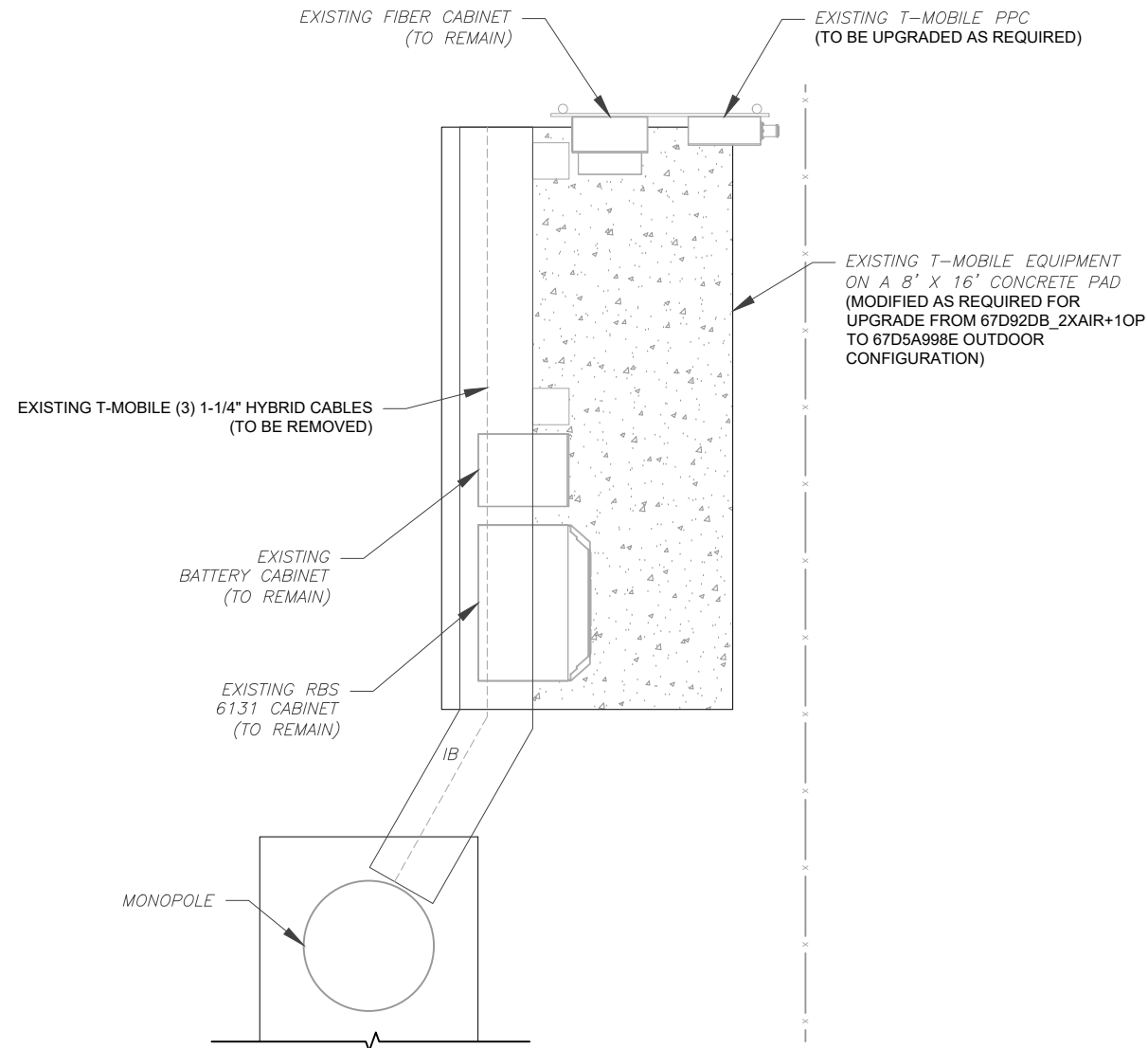
DETAILED SITE PLAN	
SHEET NUMBER: C-101	REVISION: 0

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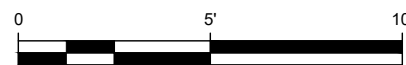
SITE PLAN NOTES:

1. CONTRACTOR TO VERIFY THERE IS NO LIVE AAV FIBER RUNNING THROUGH EXISTING DEAD EQUIPMENT. IF SO, THIS WILL NEED TO BE RERUN THROUGH CONDUIT PRIOR TO REMOVING DEAD 2G (6201 CABS) EQUIPMENT.
2. REMOVE EXISTING 2G CABINETS, AND POWER / TELCO WHIPS ASSOCIATED WITH THE DEAD EQUIPMENT IF APPLICABLE.
3. ALL OPEN PORTS NEED TO BE SEALED / WEATHERPROOFED PROPERLY
4. ALL UNNEEDED / EXCESS EQUIPMENT AND GARBAGE TO BE REMOVED FROM EQUIPMENT AREA. DISPOSE OF MATERIALS PROPERLY OFF SITE.

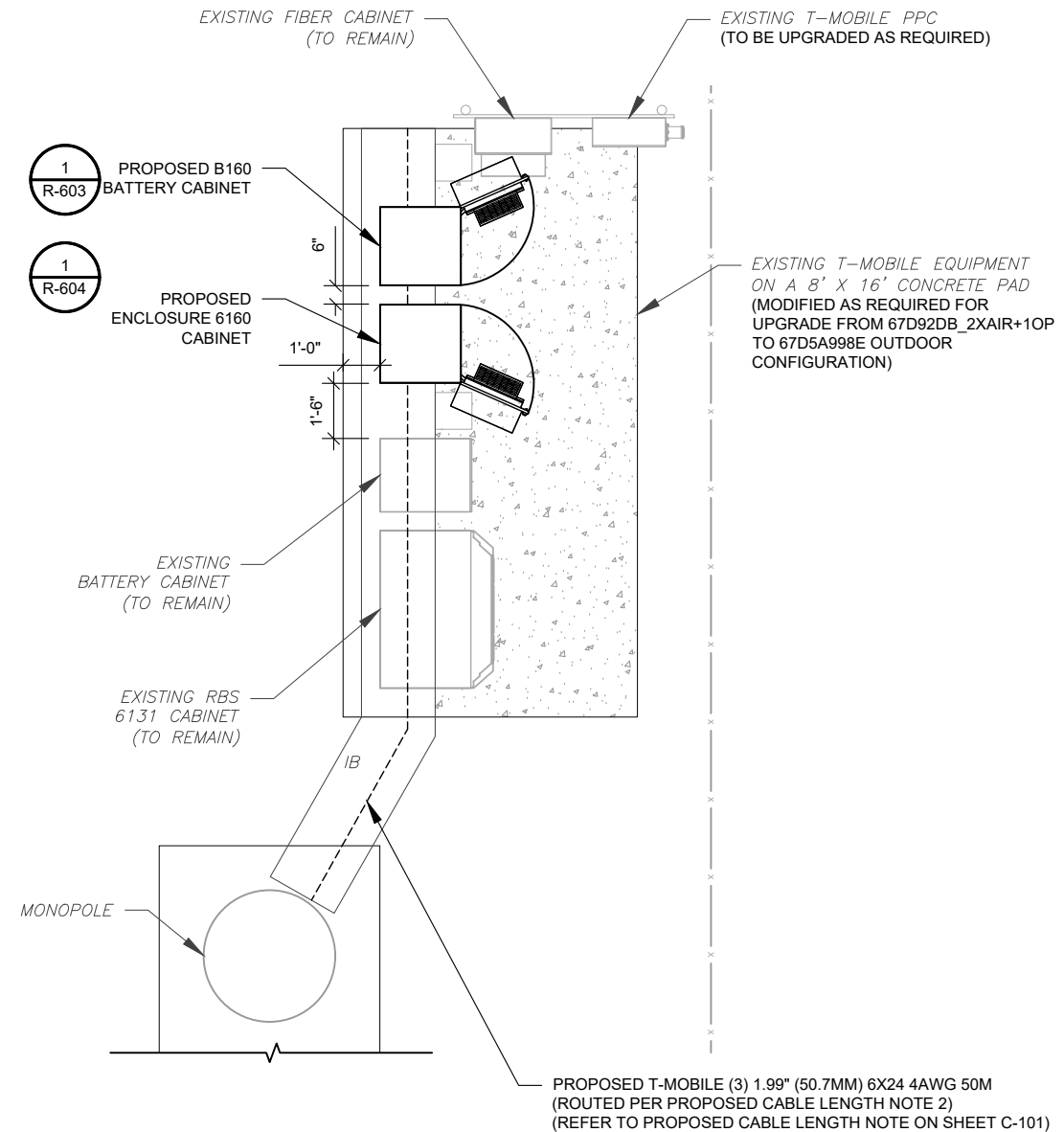
T-MOBILE CM APPROVAL REQUIRED BEFORE INSTALLING CABINETS



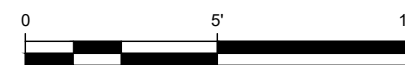
1 EXISTING GROUND EQUIPMENT LAYOUT



SCALE: 1"=5' (11X17)
1"=2.5' (22X34)



2 PROPOSED GROUND EQUIPMENT LAYOUT



SCALE: 1"=5' (11X17)
1"=2.5' (22X34)



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T-MOBILE SITE NAME:
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SITE ADDRESS:
1627 DAY HILL ROAD
BLOOMFIELD, CT 06002

SEAL:

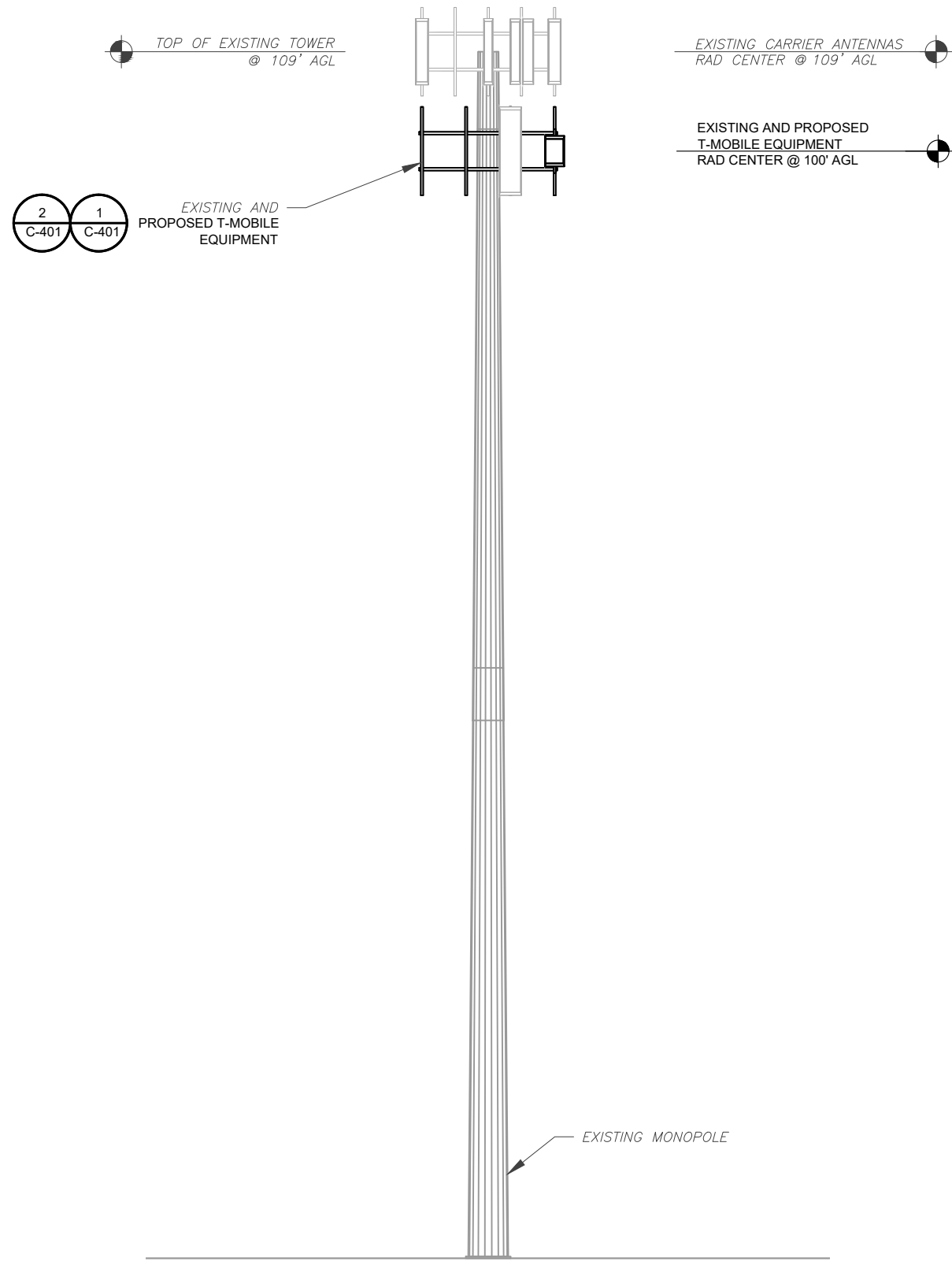
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Date: 2021.10.22 16:28:29-04'00'



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ATC JOB NO:	13732456_G3
CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

DETAILED GROUND PLAN

SHEET NUMBER:	REVISION:
C-102	0



PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING PLLC, DATED 09/29/21, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT REPLACEMENT PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.

TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE PROJECT MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. WHERE APPLICABLE, ALL NEW ANTENNAS, EQUIPMENT, MOUNTS, CABLING, ETC. SHALL BE PAINTED/SOCKED TO MATCH EXISTING EQUIPMENT IN ACCORDANCE WITH FAA, JURISDICTION, AND/OR OTHER LOCAL REQUIREMENTS.
3. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
4. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

1 TOWER ELEVATION
SCALE: N.T.S.



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BLOOMFIELD, CT 06002**

SEAL:

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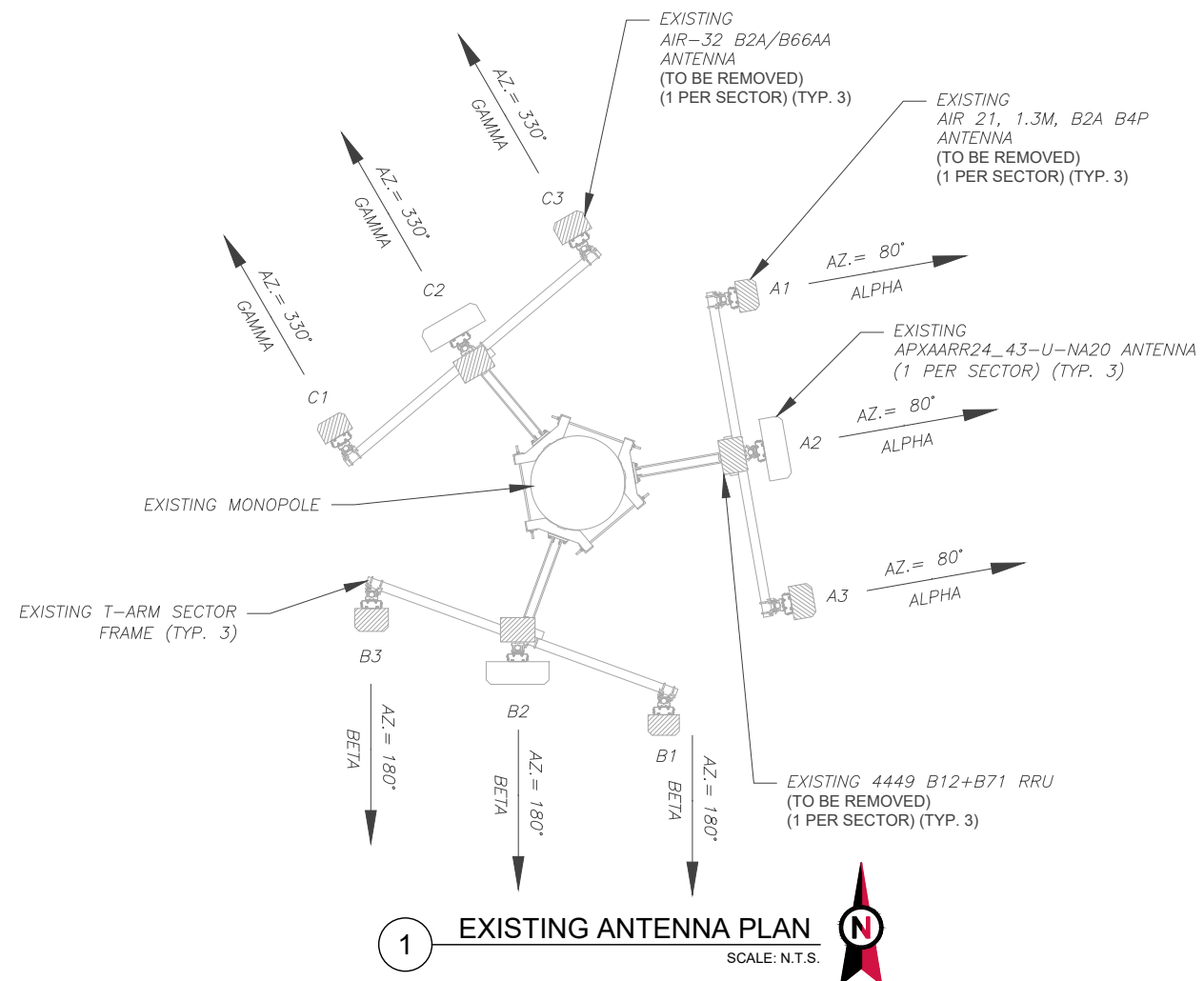


DATE DRAWN:	09/30/21
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CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

TOWER ELEVATION

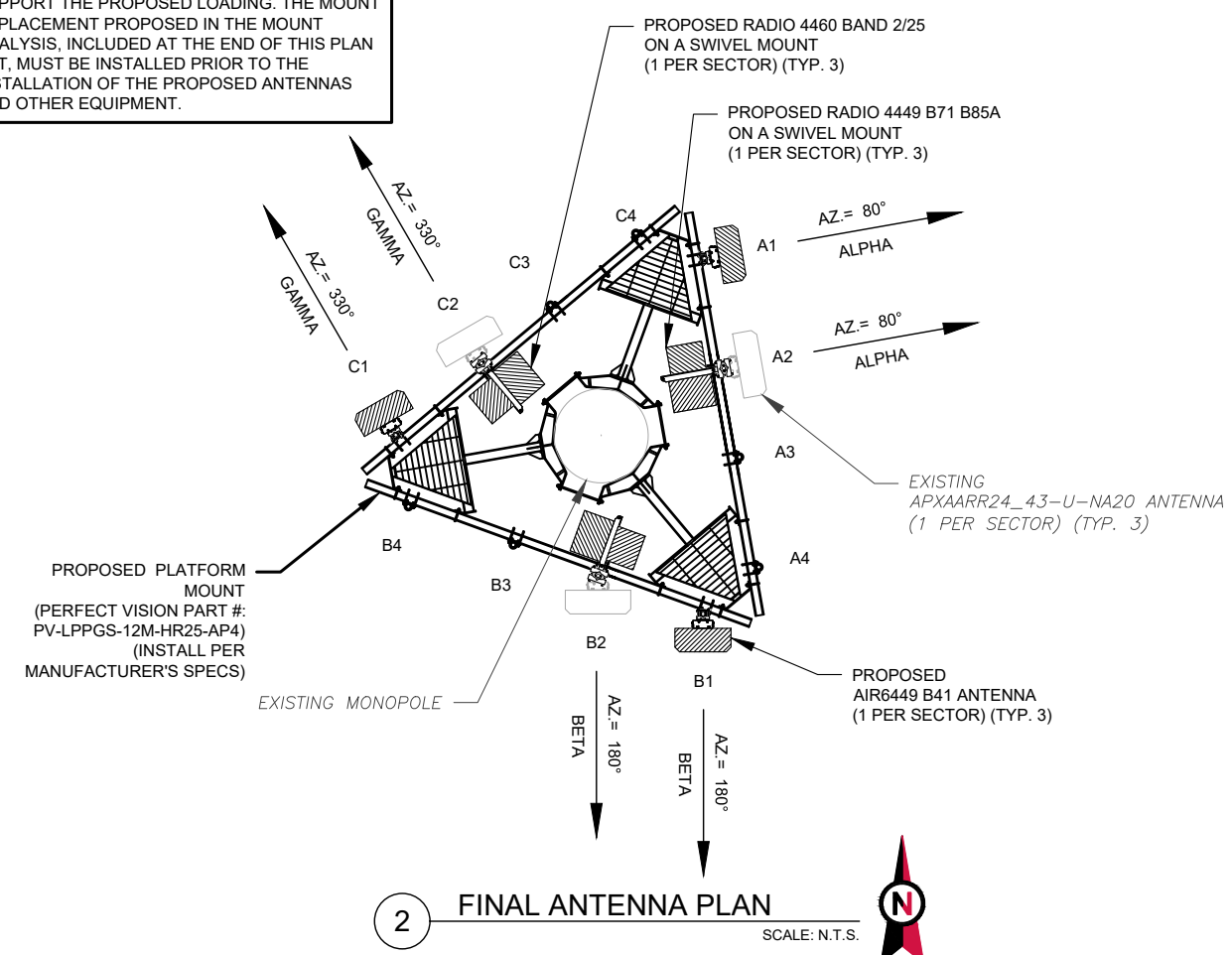
SHEET NUMBER:	REVISION:
C-201	0

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1 EXISTING ANTENNA PLAN
SCALE: N.T.S.

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING PLLC, DATED 09/29/21, THE EXISTING MOUNT CAN NOT ADEQUATELY SUPPORT THE PROPOSED LOADING. THE MOUNT REPLACEMENT PROPOSED IN THE MOUNT ANALYSIS, INCLUDED AT THE END OF THIS PLAN SET, MUST BE INSTALLED PRIOR TO THE INSTALLATION OF THE PROPOSED ANTENNAS AND OTHER EQUIPMENT.



2 FINAL ANTENNA PLAN
SCALE: N.T.S.

EXISTING ANTENNA SCHEDULE									
LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	100'	80°	A1	AIR 21, 1.3M, B2A B4P	G1900	0/2	RMV	-	-
			A2	APXVAARR24_43-U-NA20	L700/L600/N600	0/2/2	RMN	RADIO 4449 B12,B71	RMV
			A3	AIR-32 B2A/B66AA	L2100/L1900	0/2/2/2/2	RMV	-	-
BETA	100'	180°	B1	AIR 21, 1.3M, B2A B4P	G1900	0/2	RMV	-	-
			B2	APXVAARR24_43-U-NA20	L700/L600/N600	0/2/2	RMN	RADIO 4449 B12,B71	RMV
			B3	AIR-32 B2A/B66AA	L2100/L1900	0/2/2/2/2	RMV	-	-
GAMMA	100'	330°	C1	AIR 21, 1.3M, B2A B4P	G1900	0/2	RMV	-	-
			C2	APXVAARR24_43-U-NA20	L700/L600/N600	0/2/2	RMN	RADIO 4449 B12,B71	RMV
			C3	AIR-32 B2A/B66AA	L2100/L1900	0/2/2/2/2	RMV	-	-

NOTES

- CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
- CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.

STATUS ABBREVIATIONS

RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
ADD: TO BE ADDED

CABLE LENGTHS FOR JUMPERS

JUNCTION BOX TO RRU: 15'
RRU TO ANTENNA: 10'

FINAL ANTENNA SCHEDULE									
LOCATION			ANTENNA SUMMARY				NON ANTENNA SUMMARY		
SECTOR	RAD	AZ	POS	ANTENNA	BAND	MECH/ELEC D-TILT	STATUS	ADDITIONAL TOWER MOUNTED EQUIPMENT	STATUS
ALPHA	100'	80°	A1	AIR6449 B41	L2500/N2500	0/2/2	ADD	-	-
			A2	APXVAARR24_43-U-NA20	L700/L600/N600 L2100/L1900/G1900	0/2/2/2/2	RMN	RADIO 4449 B71 B85A 4460 BAND 2/25	ADD ADD
			A3	-	-	-	-	-	-
			A4	-	-	-	-	-	-
BETA	100'	180°	B1	AIR6449 B41	L2500/N2500	0/2/2	ADD	-	-
			B2	APXVAARR24_43-U-NA20	L700/L600/N600 L2100/L1900/G1900	0/2/2/2/2	RMN	RADIO 4449 B71 B85A 4460 BAND 2/25	ADD ADD
			B3	-	-	-	-	-	-
			B4	-	-	-	-	-	-
GAMMA	100'	330°	C1	AIR6449 B41	L2500/N2500	0/2/2	ADD	-	-
			C2	APXVAARR24_43-U-NA20	L700/L600/N600 L2100/L1900/G1900	0/2/2/2/2	RMN	RADIO 4449 B71 B85A 4460 BAND 2/25	ADD ADD
			C3	-	-	-	-	-	-
			C4	-	-	-	-	-	-

EXISTING FIBER DISTRIBUTION/OVP BOX		EXISTING CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(3) 1-1/4"	RMV

3 EQUIPMENT SCHEDULES

FINAL FIBER DISTRIBUTION / OVP BOX		FINAL CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	-	(3) 1.99" (50.7MM) 6/24 4AWG 50M	ADD



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BLOOMFIELD, CT 06002

SEAL:

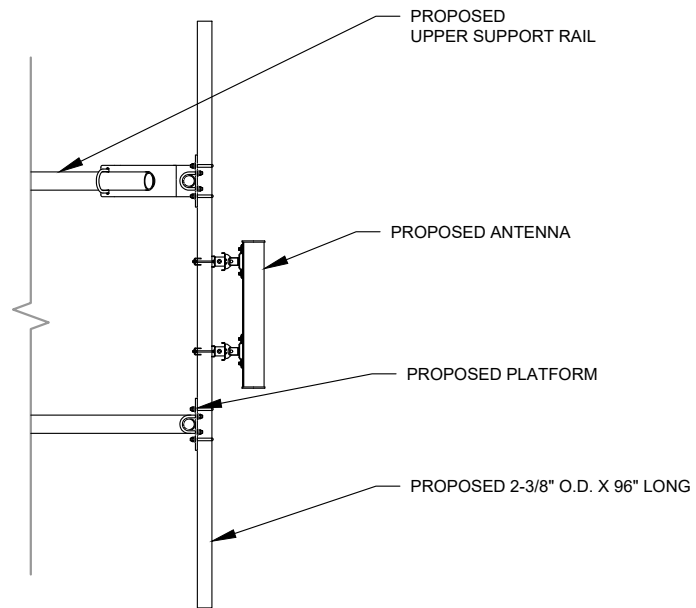


DATE DRAWN:	09/30/21
ATC JOB NO:	13732456_G3
CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

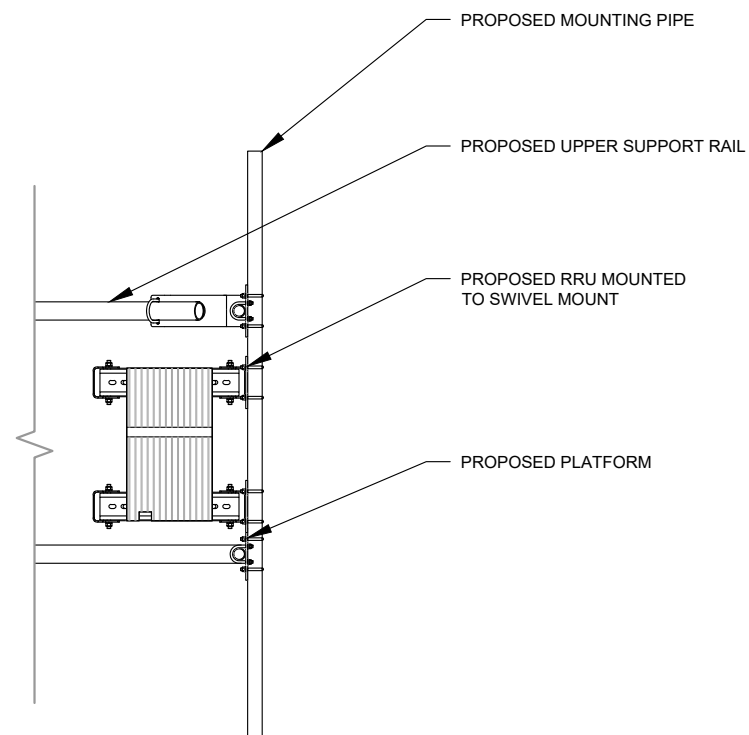
ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	C-401	REVISION:	0
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1 PROPOSED 5G ANTENNA MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.



2 PROPOSED RRU MOUNTING DETAIL - TYPICAL
SCALE: N.T.S.



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 Phone: 860.395.0055
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REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/30/21
0	FOR CONSTRUCTION	RMD	10/22/21

ATC SITE NUMBER:
283562

ATC SITE NAME:
NORTH BLOOMFIELD CT

T-MOBILE SITE NAME:
CTHA068A REPLACEMENT FOR
CTHA500A
SITE ADDRESS:
1627 DAY HILL ROAD
BLOOMFIELD, CT 06002

SEAL:

Digitally signed by Justin Peter Linette
Date: 2021.10.22 16:28:30-04'00'

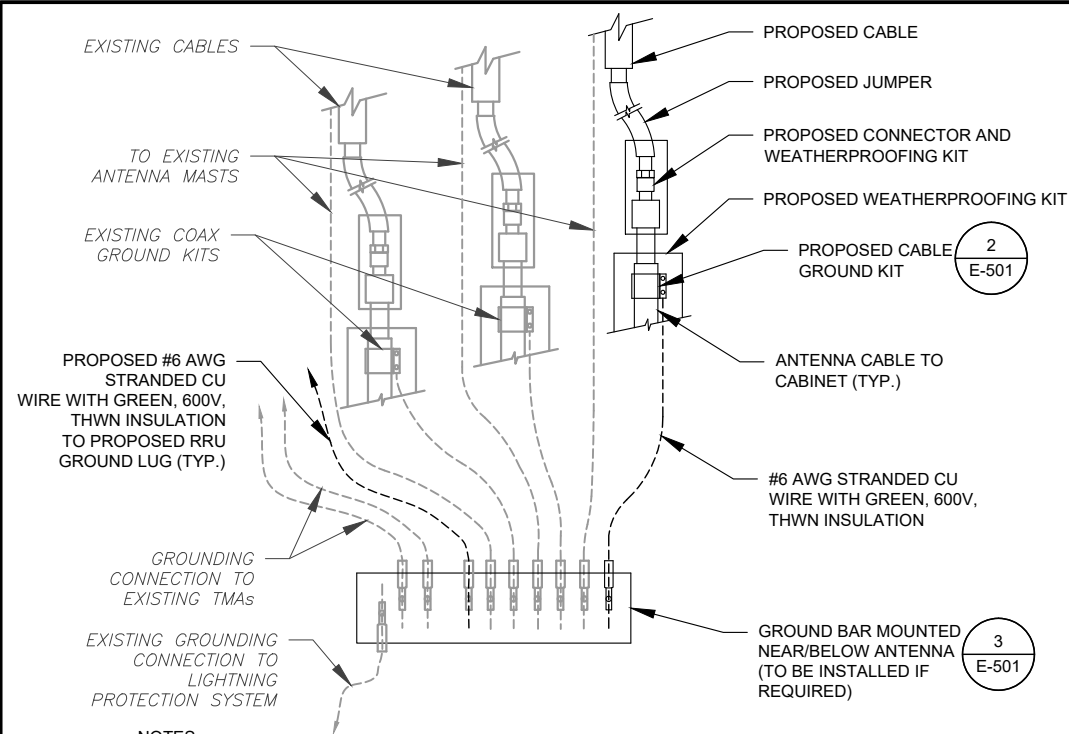


DATE DRAWN:	09/30/21
ATC JOB NO:	13732456_G3
CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

**CONSTRUCTION
DETAILS**

SHEET NUMBER:	REVISION:
C-501	0

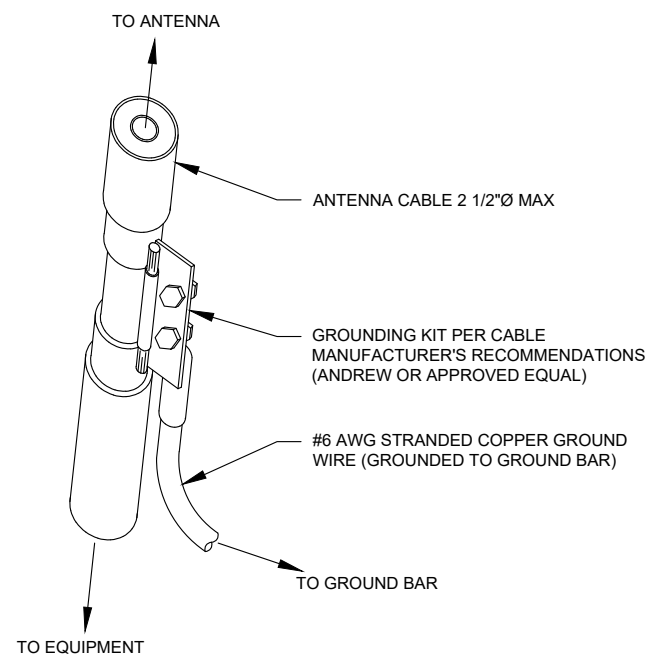
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NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

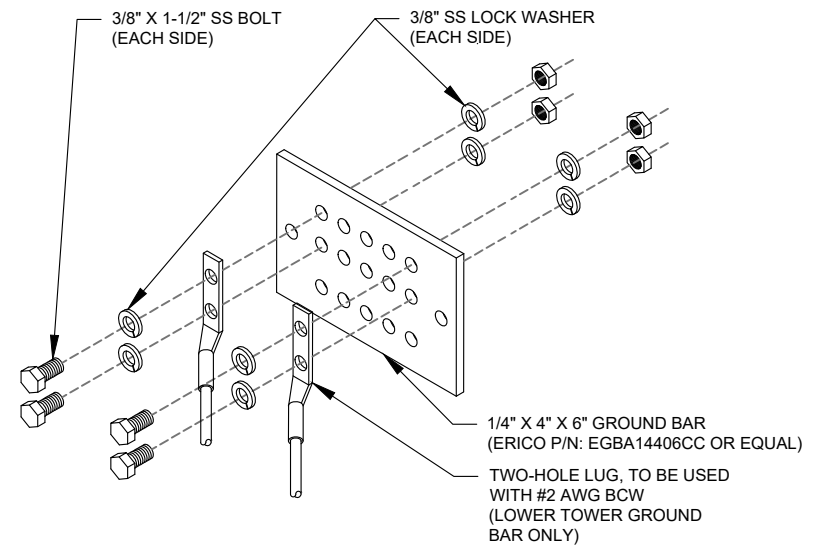
1 TYPICAL ANTENNA GROUNDING DIAGRAM
SCALE: N.T.S.



GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL
SCALE: N.T.S.



GROUND BAR NOTES:

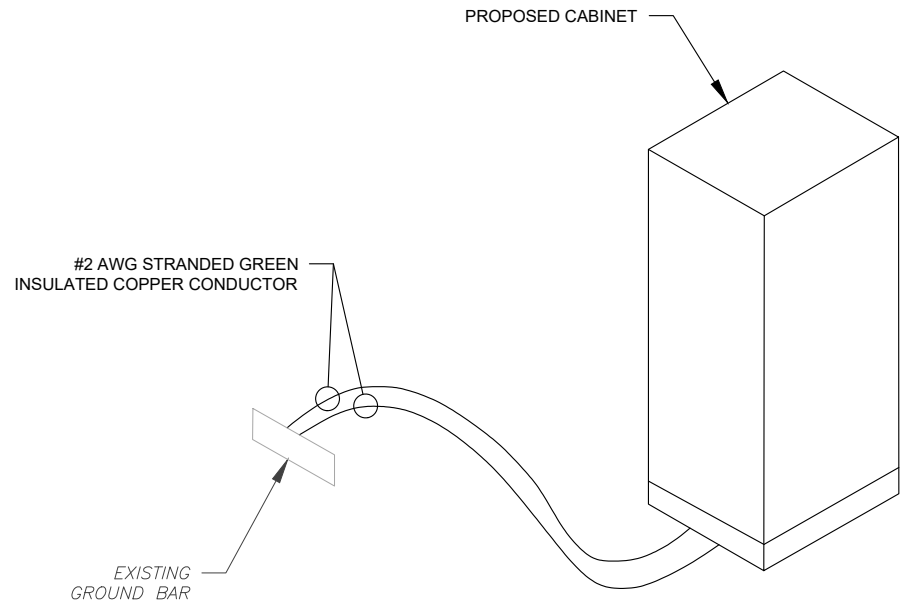
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL
SCALE: N.T.S.

ELECTRICAL NOTES:

1. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
2. ATC HAS NOT VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER. PROPOSED CABLE AND CONDUIT SHALL BE MINIMUM SIZE PER BELOW IN CHART.
3. FOR SPECIFIC CABINET / ANCILLARY EQUIPMENT WIRING REQUIREMENTS, THE T-MOBILE CONTRACTOR SHOULD REFERENCE DESIGN DOCUMENTS PROVIDED BY T-MOBILE FOR THIS CURRENT PROJECT CONFIGURATION, IN ACCORDANCE WITH LOCAL JURISDICTION REQUIREMENTS & NEC STANDARDS & PRACTICES.

OCPD SIZE	WIRE SIZE	GROUND SIZE	CONDUIT SIZE
80A/2P	2#3 AWG	#8 AWG	1-1/4"
100/2P	2#2 AWG	#8 AWG	1-1/4"
125A/2P	2#1 AWG	#8 AWG	1-1/2"
150A/2P	2#1/0 AWG	#8 AWG	1-1/2"



4 CABINET GROUNDING DETAIL
SCALE: N.T.S.



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REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/30/21
0	FOR CONSTRUCTION	RMD	10/22/21

ATC SITE NUMBER:
283562

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T-MOBILE SITE NAME:
CTHA068A REPLACEMENT FOR CTHA500A

SITE ADDRESS:
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BLOOMFIELD, CT 06002

SEAL:

Digitally signed by Justin Peter Linette
Date: 2021.10.22 16:28:30-04'00'



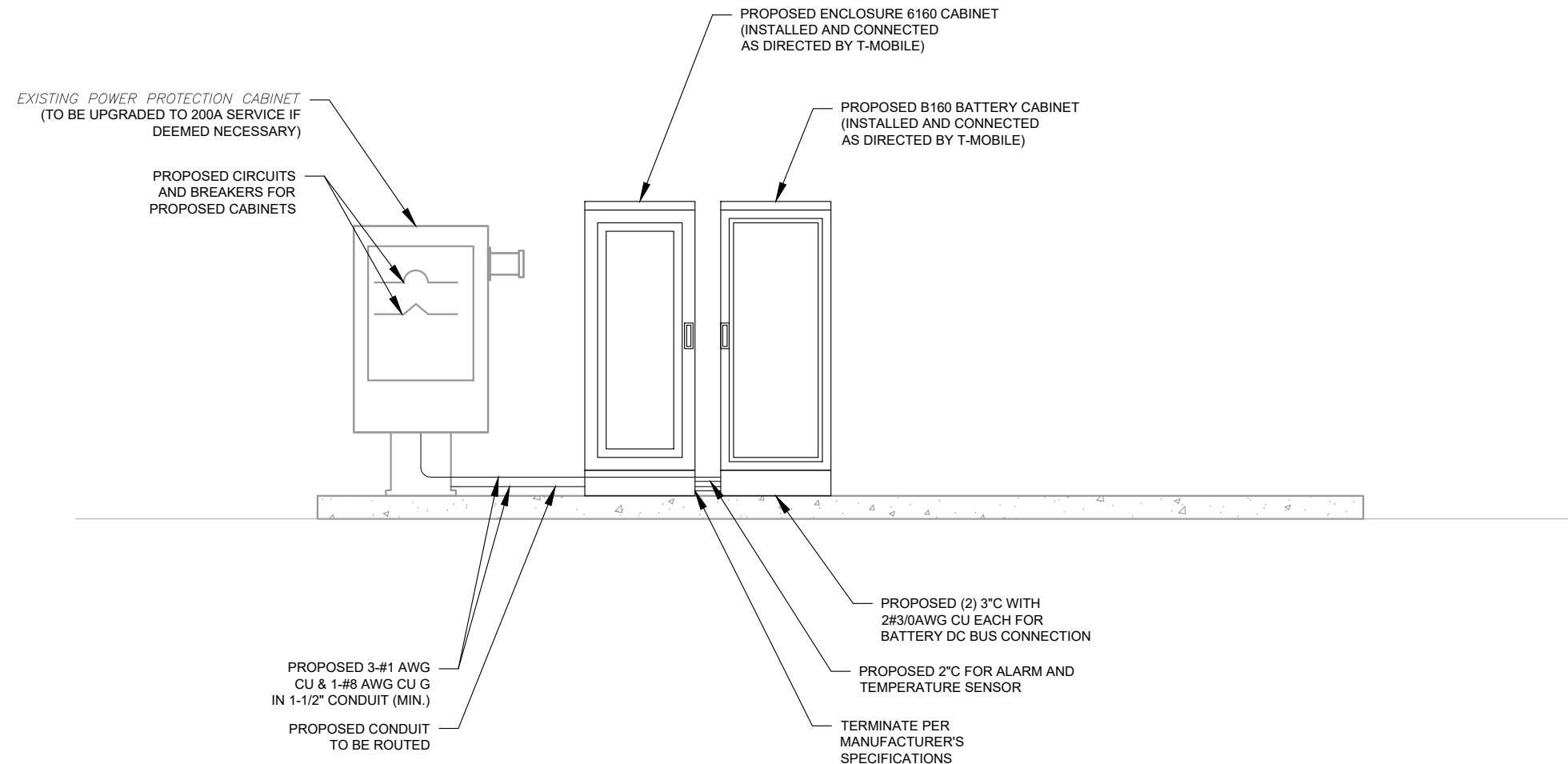
DATE DRAWN:	09/30/21
ATC JOB NO:	13732456_G3
CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

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- NOTES:
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE 2017 EDITION OF NATIONAL ELECTRICAL CODE (NEC), NATIONAL ELECTRICAL SAFETY CODE, NAPA, NETA, OSHA, AND ALL OTHER EXISTING CODES AND REGULATIONS OF AUTHORITIES WHICH WOULD HAVE JURISDICTION.
 2. ALL NEW WIRING SHALL BE WITH THWN-2 OR XHHW-2 INSULATION AND RATED FOR 75 DEG CELSIUS.
 3. ALL UNDERGROUND CONDUIT SHALL BE PVC SCH40. ALL ABOVE GROUND CONDUIT SHALL BE PVC SCH80 OR RMC.



- ELECTRICAL NOTES:
1. THIS DIAGRAM REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
 2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
 3. ATC HAS NOT YET VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER.

1 ELECTRICAL UPGRADE DIAGRAM
SCALE: NOT TO SCALE



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 DOING BUSINESS AS MASER CONSULTING

REV.	DESCRIPTION	BY	DATE
A	PRELIM	JLK	09/30/21
0	FOR CONSTRUCTION	RMD	10/22/21

ATC SITE NUMBER:
283562

ATC SITE NAME:
NORTH BLOOMFIELD CT

T-MOBILE SITE NAME:
CTHA068A REPLACEMENT FOR CTHA500A

SITE ADDRESS:
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BLOOMFIELD, CT 06002

SEAL:

Digitally signed by Justin Peter Linette
Date: 2021.10.22 16:28:30-04'00'



DATE DRAWN:	09/30/21
ATC JOB NO:	13732456_G3
CUSTOMER ID:	CTHA068A REPLACEMENT FOR CTHA500A
CUSTOMER #:	CTHA068A

ELECTRICAL DETAILS

SHEET NUMBER: E-502	REVISION: 0
-------------------------------	-----------------------

Proposed RAN Equipment				
Template: 67D5A998E Outdoor				
Enclosure	1	2	3	4
Enclosure Type	RBS 6131	Enclosure 6160	B160	Battery Cabinet
Baseband	DUG20 G1900 BB 6630 L700 L600 N600 BB 6630 L2100 L1900	BB 6648 L2500 N2500		
Hybrid Cable System	Ericsson 6x12 HCS 6AWG 50m (x 3)	PSU 4813 Ericsson Hybrid Trunk 6/24 4AWG 50m (x 3)		
Transport System		CSR IXRe V2 (Gen2)		

RAN Scope of Work:

*** Keep 6131 and Battery Cabinets ***

Remove and return all cabinet radios from existing base station cabinet.

Add (1) Enclosure 6160.

Add (1) IXRe Router to new Enclosure 6160.

Add (1) BB6648 for L2500 and N2500 (MMBB - Mixed Mode Baseband) to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to new Enclosure 6160.

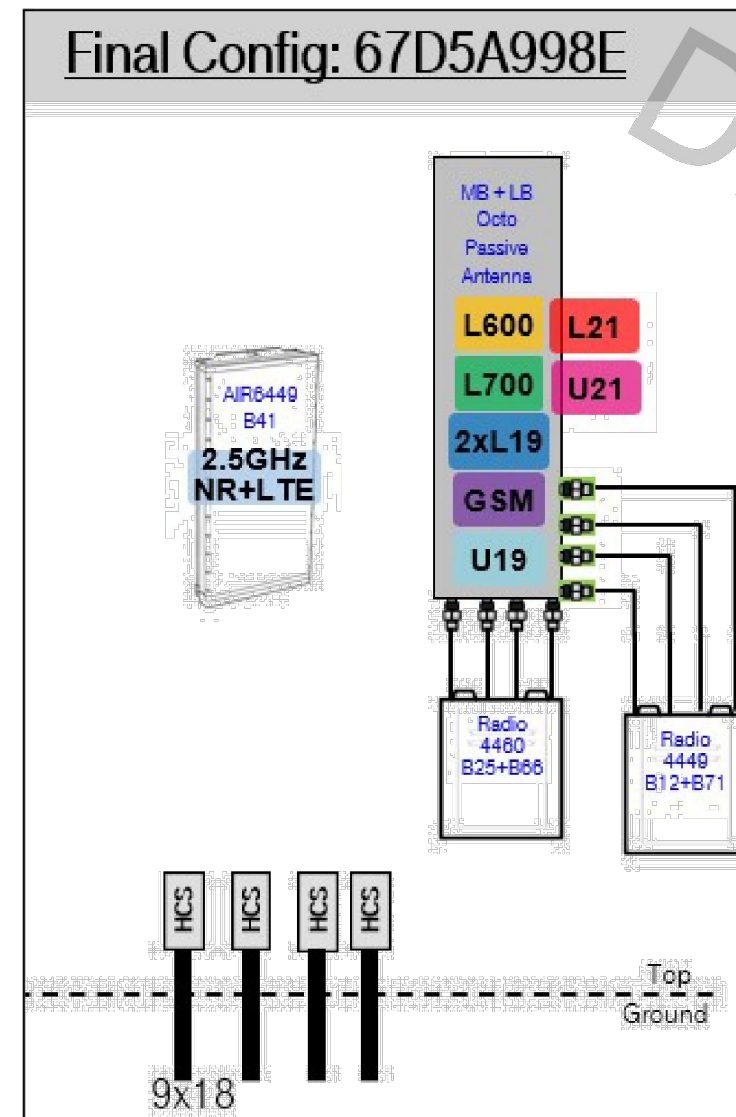
Add (1) Battery Cabinet B160.

Existing : (3) 6X12 *** (No (1) 9x18 on site)

Add (3) 6X24 HCS terminating at the Enclosure 6160. Connect DC for the AIR6449 B41 to the PSU4813 Voltage Booster.

We are going to Full platform with T arms.

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

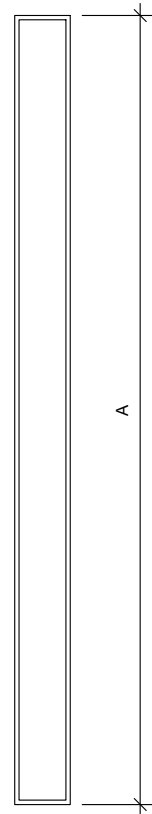


2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

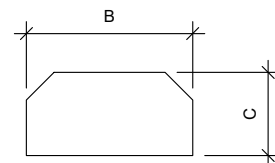
SUPPLEMENTAL

SHEET NUMBER: R-601
REVISION: -

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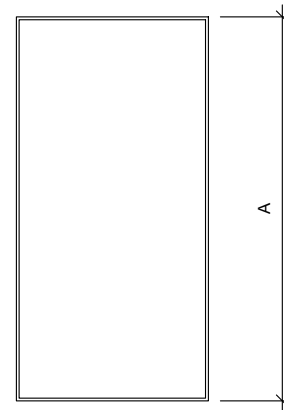
FRONT VIEW



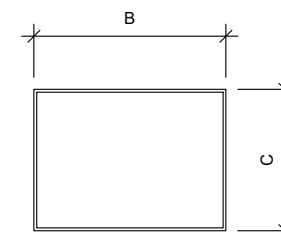
TOP VIEW

1 ANTENNA SPECIFICATIONS
FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

ANTENNA SPECIFICATIONS				
ANTENNA MODEL	A	B	C	WEIGHT (LBS)
AIR6449 B41	33.1"	20.6"	8.6"	104.0



FRONT VIEW



TOP VIEW

2 RRU SPECIFICATIONS
FOR ILLUSTRATIVE PURPOSES ONLY - NOT TO SCALE

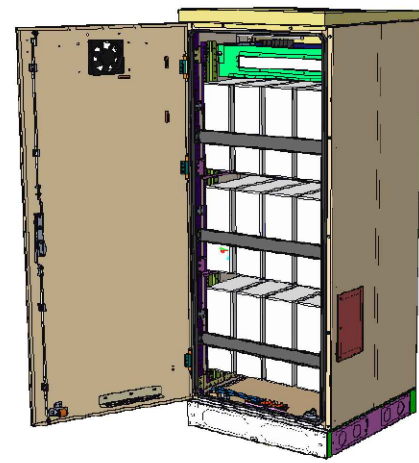
RRU SPECIFICATIONS				
RRU MODEL	A	B	C	WEIGHT (LBS)
RADIO 4449 B71 B85A	15.0"	13.2"	10.5"	75.0
4460 BAND 2/25	19.6"	15.7"	12.1"	109.0

SUPPLEMENTAL

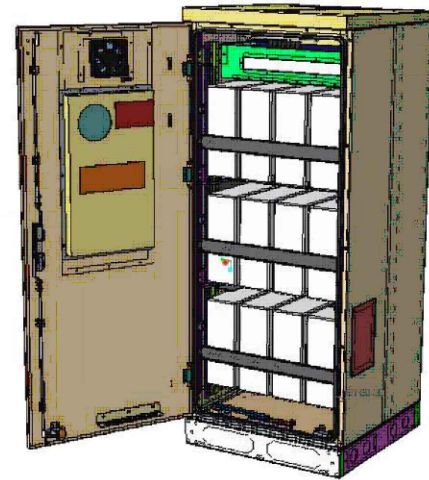
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R-602

REVISION:
-

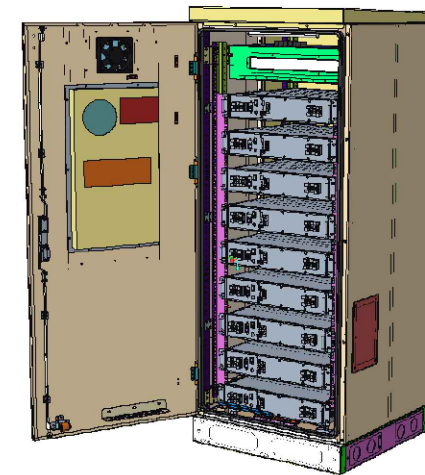
Enclosure B160



Enclosure B160
AirCon + VRLA



Enclosure B160
AirCon + Li-Ion



Enclosure B160
Convection Cooling
+ VRLA

PA1 | 2019-02-03 | Ericsson Confidential | Page 1

Enclosure B160

- Capacity
- VRLA 12V: 100Ah / 150Ah / 170Ah / 190Ah / 210Ah
 - Li-Ion: 24U 19" / 23"
 - Sodium-Nickel: 3x FIAMM
- Electrical specification
- DC Output: -48VDC/200A
 - Battery breakers: 2x 125/2p
 - Alarms: Door open, Climate failure, MCB Connection
- Mechanical specification
- Weight: 134kg
 - Dimensions: 63 x 26 x 26 in. (incl. Base frame)
 - Base frame height: 6 in.
 - Material: Galvanized steel (180g/m²)
 - Color: Powder paint NCS 2002-B
 - Door: Front access
 - Locking type: Pad lock / cylinder

- Environmental specification
- Ingress protection: VRLA/Sodium IP44
Li-Ion IP55
 - Relative humidity: 15-100%
- Climate system
- Air Conditioner
 - Fan type: DC
 - Cooling capacity: 500W @L35/L35
 - Convection cooling
 - Emergency fan

PA1 | 2019-02-03 | Ericsson Confidential | Page 2

SUPPLEMENTAL

SHEET NUMBER: R-603	REVISION: -
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Enclosure 6160 AC

The Enclosure 6160 is a multi-purpose site cabinet designed to support a multitude of equipment such as ERS Baseband, Transport, Li-Ion battery and 3PP vendor equipment. It also provides a highly capable power system and battery back-up - all in a streamlined design and minimized footprint to support cost efficient expansion of mobile broadband.

Being an all-in-one enclosure, the Enclosure 6160 is a very fitting choice for all types of sites where the capacity need is large or room for future expansion is needed. It is ideally used for modernizing existing sites or in greenfield scenarios to match both current and future needs.

With a robust design, IP65 compliance and a sealed Heat Exchanger (HEX) climate system the Enclosure 6160 ensures optimal environmental protection of the active equipment - enabling them for a long-lasting service. The complete system is also integrated and verified for the entire Ericsson Radio System and ensures best-in-class service.

The power system offers 31,5kW of power in total and provides 24kW of -48V DC power for both internal and external consumers.

The equipment space allows 19U of rack space ensuring well enough capacity for existing need and future expansion.

One of the main advantages of the Enclosure 6160 is its default integration with ENM - allowing for advanced remote monitoring and control such a fault management (alarms), inventory management and performance measurements. The cabinet also provides an open O&M interface for integration to 3PP O&M systems.



Preliminary technical specification for Enclosure 6160 AC

CAPACITY

Rack space user equipment	19U (19" rack)
Hardware capabilities	Power and CPRI support for multi-standard remote radios (RRU or AIR) ERS Baseband and Transport units Li-Ion batteries 3PP equipment Additional power feed available as option

MECHANICAL SPECIFICATION

Weight	145 kg (excluding active equipment) 320 lbs (excluding active equipment)
Dimension (H x W x D)	1600 x 650 x 650 mm (incl. Base frame) 63 x 26 x 26 in. (incl. Base frame)
Base frame height	150 mm 6 in.
Mounting position	Ground
Enclosure material	Aluminum
Color	Power paint NCS 2002-B
Door	Front access
Rack type	19" (IEC 60297-3-100)
Locking type	Pad lock or Cylinder

POWER SYSTEM

Input voltage	3P+N+PE: 346/200-415/240 VAC 2P+N+PE: 208/120-220/127 VAC 1P+N+PE: 200-250 VAC
Input power	<33kW
Output load (-48VDC)	24kW
Total capacity (-48VDC)	31.5kW
AC SPD	Class 2/Type 2
DC SPD	Class 2/Type 2
PSU Slots	9x
Service outlet	Optional
Priority load	8x Circuit Breaker
LLVD 1	6x Circuit Breaker
LLVD 2	6x Circuit Breaker
CB ratings	3A / 5A / 10A / 15A / 20A / 25A / 30A / 40A / 50A / 60A / 80A / 100A
Battery Interface	2x Circuit Breaker
Battery Circuit Breaker rating	125A 2pol (200A)
PSU capacity	3500W

SUPPLEMENTAL

SHEET NUMBER:

R-604

REVISION:

-

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This report was prepared for American Tower Corporation by



Antenna Mount Analysis Report

ATC Site Name : North Bloomfield CT
 ATC Asset Number : 283562
 Engineering Number : 13732456_C8_01
 Mount Elevation : 102 ft
 Carrier : T-Mobile
 Carrier Site Name : CTHA068A replacement for CTHA500A
 Carrier Site Number : CTHA068A
 Site Location : 2627 Day Hill Road
 Bloomfield, CT 06002-1177
 41.87650777, -72.7418397
 County : Hartford
 Date : September 29, 2021
 Max Usage : 73%
 Result : Pass (Replacement)

Prepared By:
 Gunjan Donode
 CLS Engineering, PLLC

Reviewed By:
 Tyler M. Barker, P.E.
 CLS Engineering, PLLC



Mount Analysis for American Tower
 283562 - North Bloomfield CT

September 29, 2021
 CLS Engineering, PLLC Project #41124-13732456_C8_01-01-MA

Antenna Loading

Elevation (ft)		Antennas	
Mount	Rad.	#	Name
101.75	100.0	3	RFS Celwave APXVAARR24_43-U-NA20
		3	Ericsson AIR6449 B41
		3	Ericsson 4460 BAND 2/25
		3	Ericsson RADIO 4449 B71/B85A

Structure Usages

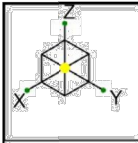
Structural Component	Controlling Usage	Pass/Fail
Tower to Mount Connection Bolts	73%	Pass
Bracing Members	35%	Pass
Stand-Off Horizontals	29%	Pass
Platform Plates	25%	Pass
Mount Pipes	24%	Pass
Platform Base	17%	Pass
Support Rail	16%	Pass

NOTE: THIS SHEET WAS CREATED BY OTHERS AND PROVIDED AT THE REQUEST OF THE CUSTOMER WITHOUT EDIT. PLEASE REFERENCE THE MOUNT ANALYSIS REPORT FOR COMPLETE MOUNT ANALYSIS CALCULATIONS AND DETAILS. SUPPLEMENTAL PAGES INCLUDED IN THE CONSTRUCTION DRAWINGS ARE FOR REFERENCE ONLY. GENERAL CONTRACTOR IS TO VERIFY THEY HAVE THE MOST RECENT MOUNT ANALYSIS PRIOR TO CONSTRUCTION.

SUPPLEMENTAL

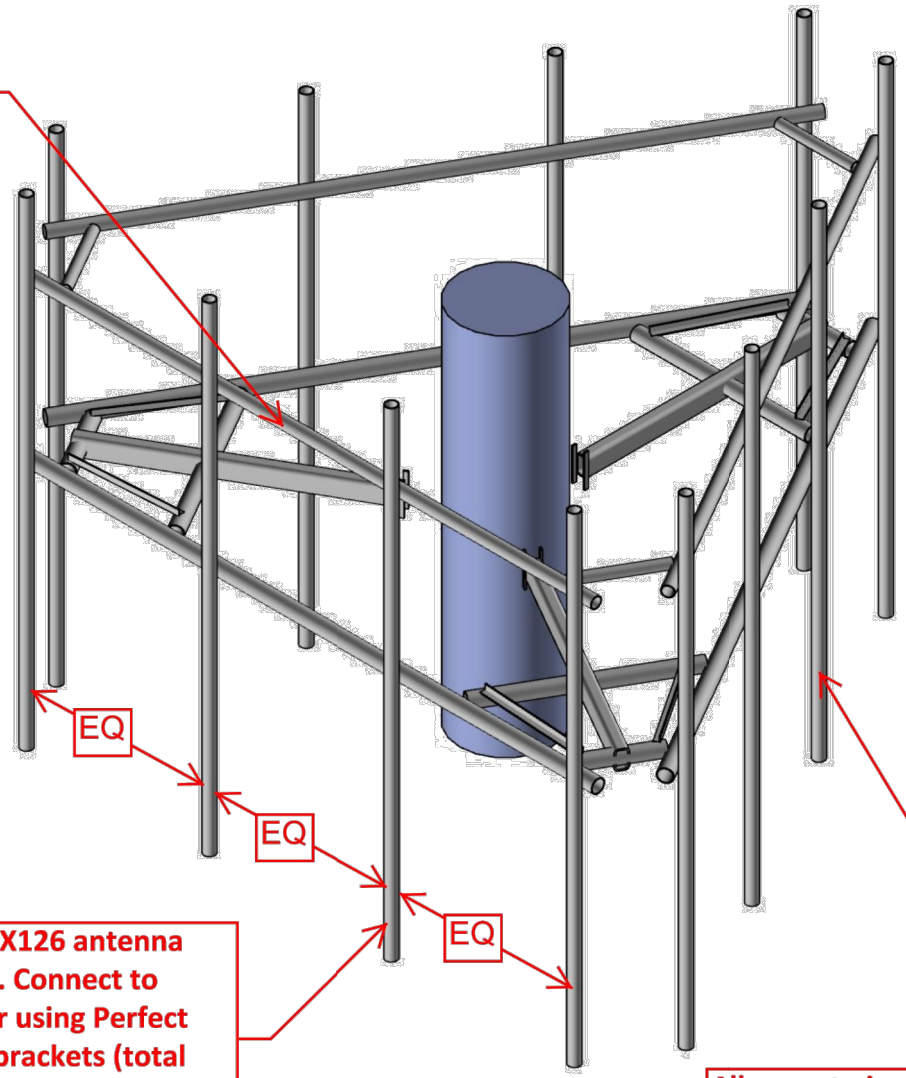
SHEET NUMBER:
R-605

REVISION:
 -



Replace existing T-arms with (1) Perfect Vision PV-LPPGS-12M-HR25-AP4 platform mount.

Install proposed Support Rail kit 4'-0" above the Platform Base. Connect to all mount pipes using PV-XP-DC-2525 crossover brackets (total 12).



Install (4) Perfect Vision PIPE-278X126 antenna mount pipes per sector (total 12). Connect to platform base horizontal member using Perfect Vision PV-XP-DC-2530 crossover brackets (total 12).

All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.

CLS	41124-13732456_C8_01-NORTH BLOOMFIELD CT	IN-1
GD		Sep 28, 2021
41124-13732456_C8_01-01-MA	Proposed Mount - ISO	41124-13732456_C8_01-01-MA - Copy.r3d

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CORPORATION

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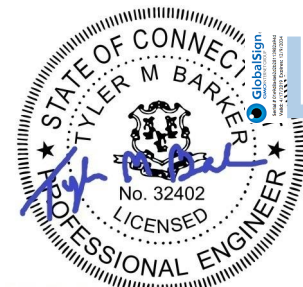
CLSENGINEERING
PLLC

Antenna Mount Analysis Report

ATC Site Name : North Bloomfield CT
ATC Asset Number : 283562
Engineering Number : 13732456_C8_01
Mount Elevation : 102 ft
Carrier : T-Mobile
Carrier Site Name : CTHA068A replacement for CTHA500A
Carrier Site Number : CTHA068A
Site Location : 2627 Day Hill Road
Bloomfield, CT 06002-1177
41.87650777, -72.7418397
County : Hartford
Date : September 29, 2021
Max Usage : 73%
Result : Pass (Replacement)

Prepared By:
Gunjan Donode
CLS Engineering, PLLC

Reviewed By:
Tyler M. Barker, P.E.
CLS Engineering, PLLC



Digitally signed
by Tyler M.
Barker PE
Date: 2021.09.29
16:59:23-04'00'

Tyler M. Barker
CLS Engineering PLLC
PE # 32402 Exp. 1/31/2022
COA # PEC.001833 Exp. 8/14/2022

09/29/2021

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Analysis 2

Conclusion 3

Antenna Loading..... 4

Structure Usages.....4

Equipment Layout Plan View5

Equipment Layout Front Elevation View.....6

Standard Conditions7

Calculations Attached

Introduction

The proposed equipment is to be mounted to the proposed Perfect Vision PV-LPPGS-12M-HR25-AP4 Platform w/ Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

Supporting Documents

Structural Data	Site Photos dated June 02, 2020 Perfect Vision Assembly Drawing, Document #LPPGS-ENG-01-R6, Rev. 6, dated July 27, 2020
Previous Analyses	Structural Analysis by ATC, Eng. #OAA761819_C4_05, dated September 10, 2021
Loading Data	ATC Application, Project #13732456, dated September 20, 2021 T-Mobile RFDS, Site ID #CTHA068A, Version 6.00, dated August 16, 2021

Analysis

Codes	TIA-222-H
Basic Wind Speed	116 mph, V_{ult} (3-Second Gust)
Basic Wind Speed w/ Ice	50 mph (3-Second Gust) w/ 1.5" Radial Ice (Escalating)
Exposure Category	C
Topographic Factor Procedure:	Method 2
Feature:	Flat
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Risk Category	II
Maintenance Live Load	L_M : 500 lb
Spectral Response	S_5 : 0.18; S_1 : 0.05; Site Class: D

Conclusion

Based on the analysis, the antenna mount meets the requirements per the applicable codes listed above. The mounting configuration considered in this analysis will be capable of supporting the referenced loading pursuant to referenced standards once the following scope is executed:

- **Replace existing T-arms with (1) Perfect Vision PV-LPPGS-12M-HR25-AP4 platform mount.**
- **Install proposed Support Rail kit 4'-0" above the Platform Base. Connect to all mount pipes using PV-XP-DC-2525 crossover brackets (total 12).**
- **Install (4) Perfect Vision PIPE-278X126 antenna mount pipes per sector (total 12). Connect to platform base horizontal member using Perfect Vision PV-XP-DC-2530 crossover brackets (total 12).**
- **All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.**
- **Install existing and proposed antennas such that they are vertically centered on the mount. Install existing and proposed RRUS and TMAs behind the antennas.**

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

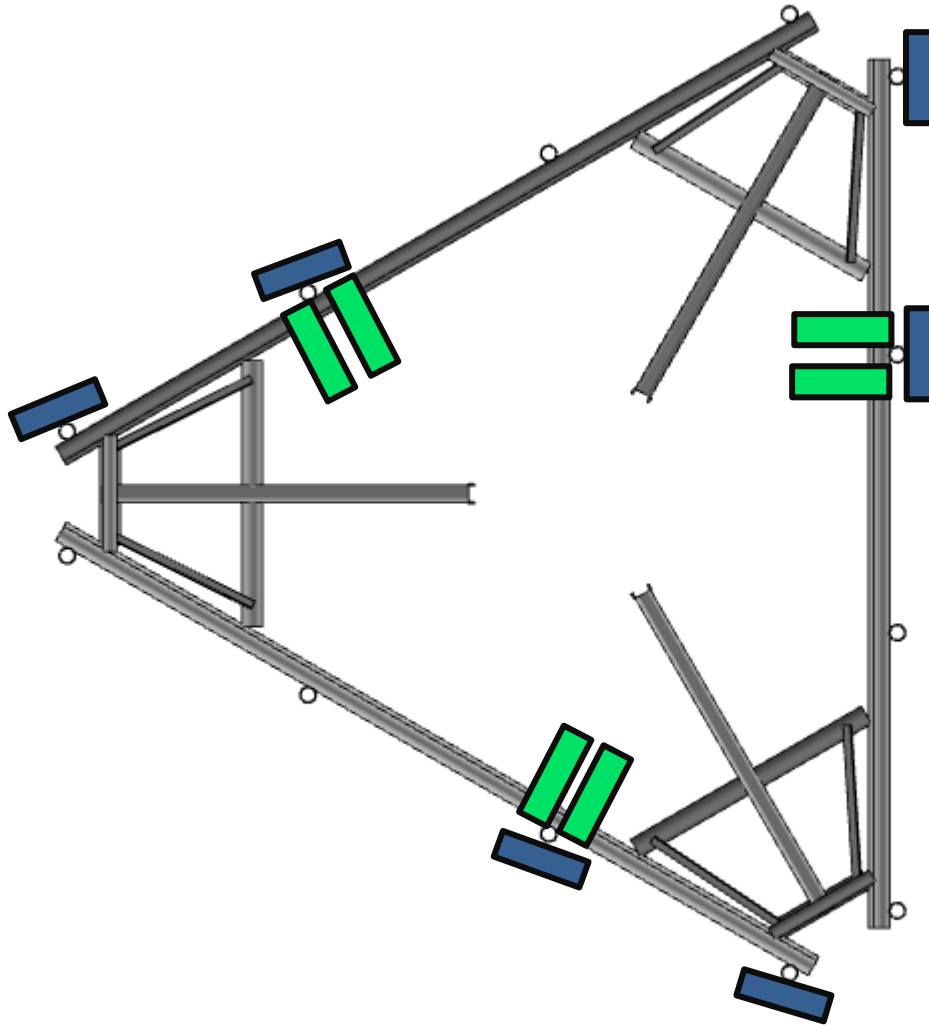
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Elevation (ft)		Antennas	
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		3	Ericsson 4460 BAND 2/25
		3	Ericsson RADIO 4449 B71/B85A

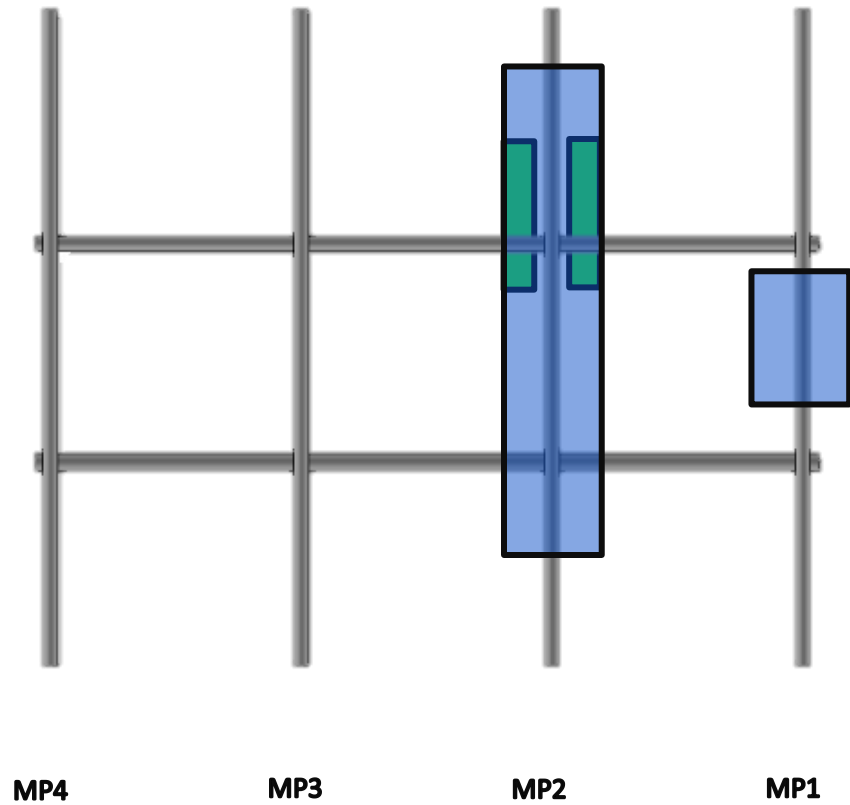
Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Tower to Mount Connection Bolts	73%	Pass
Bracing Members	35%	Pass
Stand-Off Horizontals	29%	Pass
Platform Plates	25%	Pass
Mount Pipes	24%	Pass
Platform Base	17%	Pass
Support Rail	16%	Pass

Equipment Layout Plan View



Equipment Layout Front Elevation View



Standard Conditions

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, CLS Engineering, PLLC should be notified immediately to revise results.

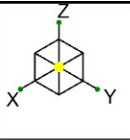
This analysis assumes the following:

1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.
7. Installation of all equipment and steel should be confirmed not to cause tower conflicts nor impede the tower climbing pegs.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from CLS Engineering, PLLC.

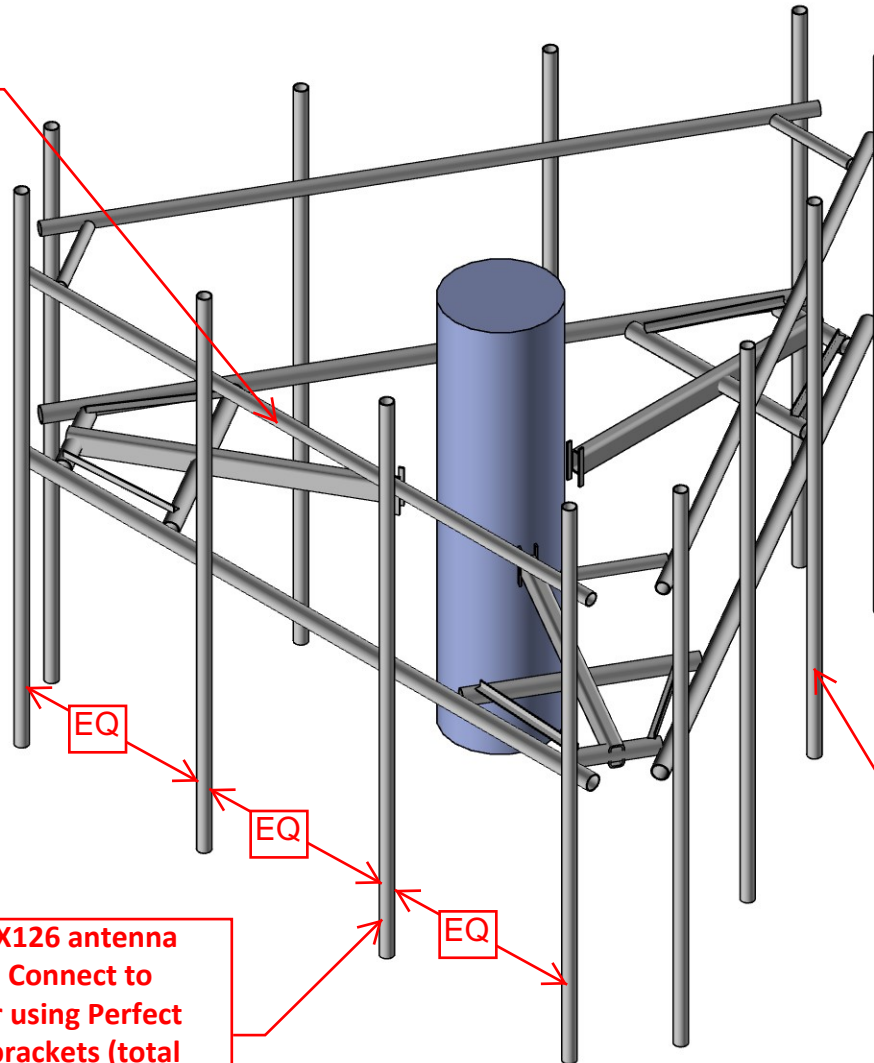
All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. CLS Engineering, PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by CLS Engineering, PLLC verifies the adequacy of the primary members of the structure. CLS Engineering, PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.



Replace existing T-arms with (1) Perfect Vision PV-LPPGS-12M-HR25-AP4 platform mount.

Install proposed Support Rail kit 4'-0" above the Platform Base. Connect to all mount pipes using PV-XP-DC-2525 crossover brackets (total 12).



Install (4) Perfect Vision PIPE-278X126 antenna mount pipes per sector (total 12). Connect to platform base horizontal member using Perfect Vision PV-XP-DC-2530 crossover brackets (total 12).

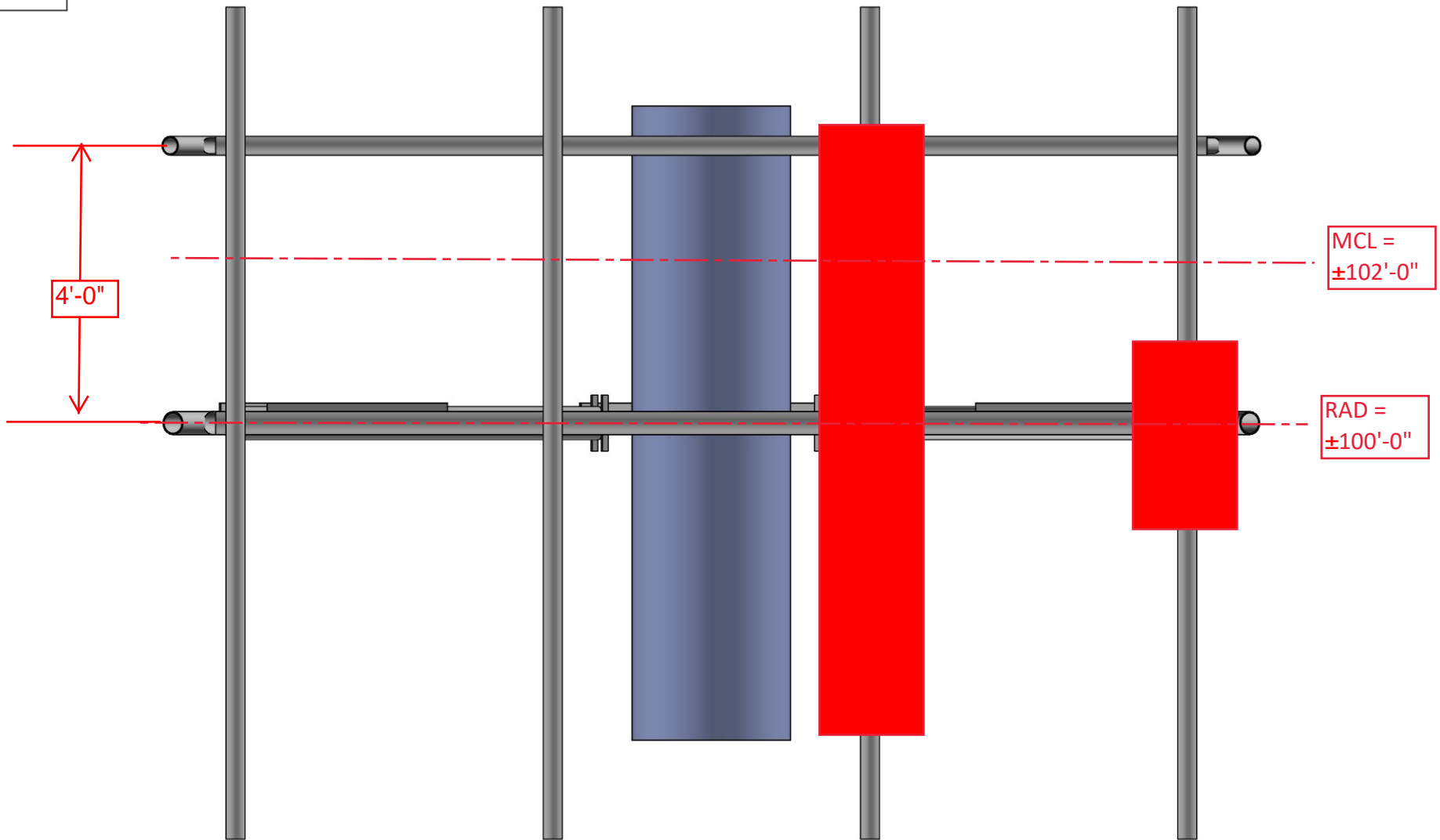
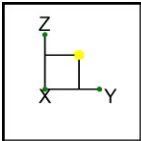
All mount pipes are to be installed equidistant from each other as shown in the assembly drawings.

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41124-13732456_C8_01-NORTH BLOOMFIELD CT

Proposed Mount - ISO

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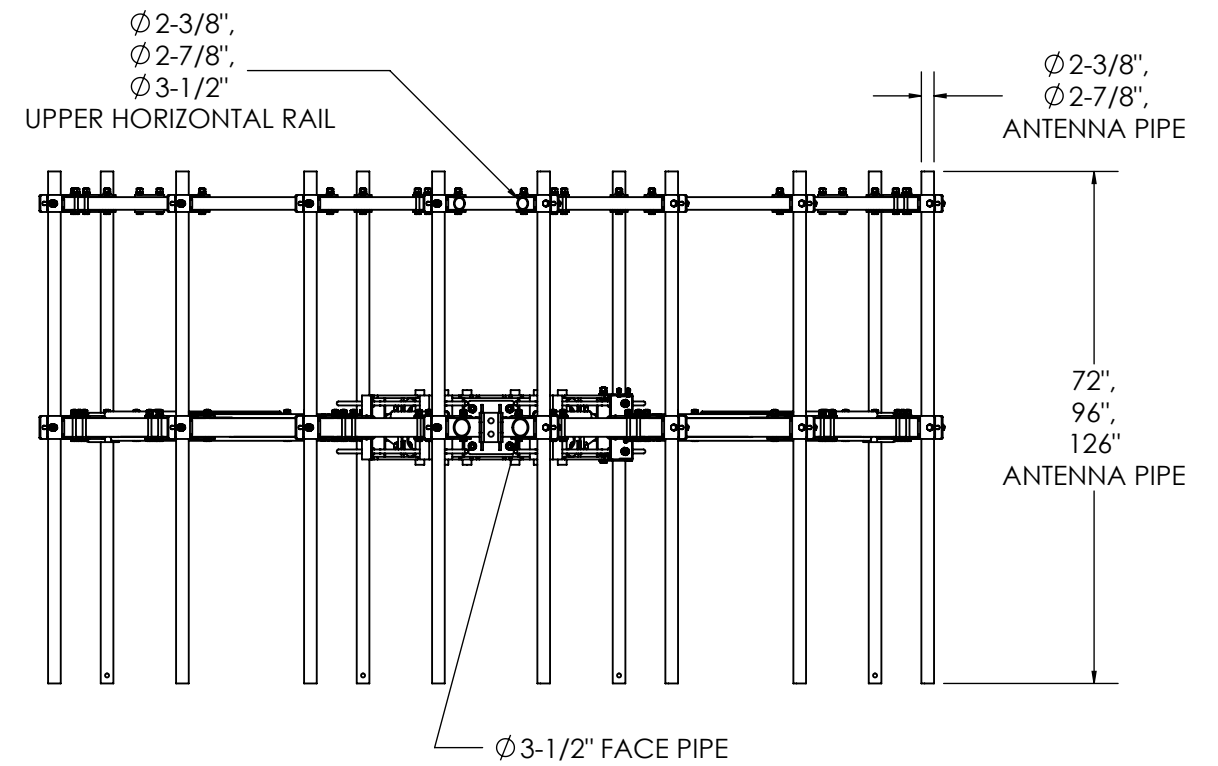
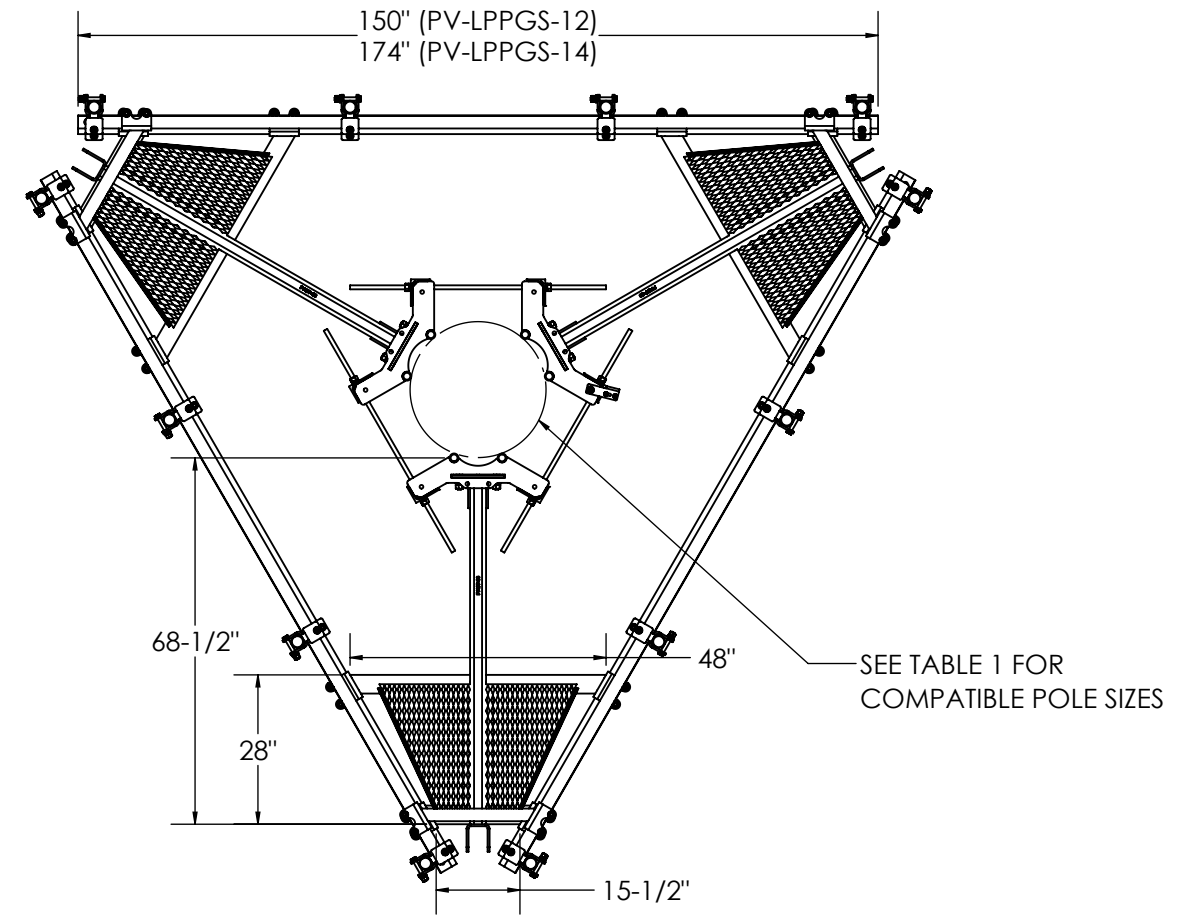
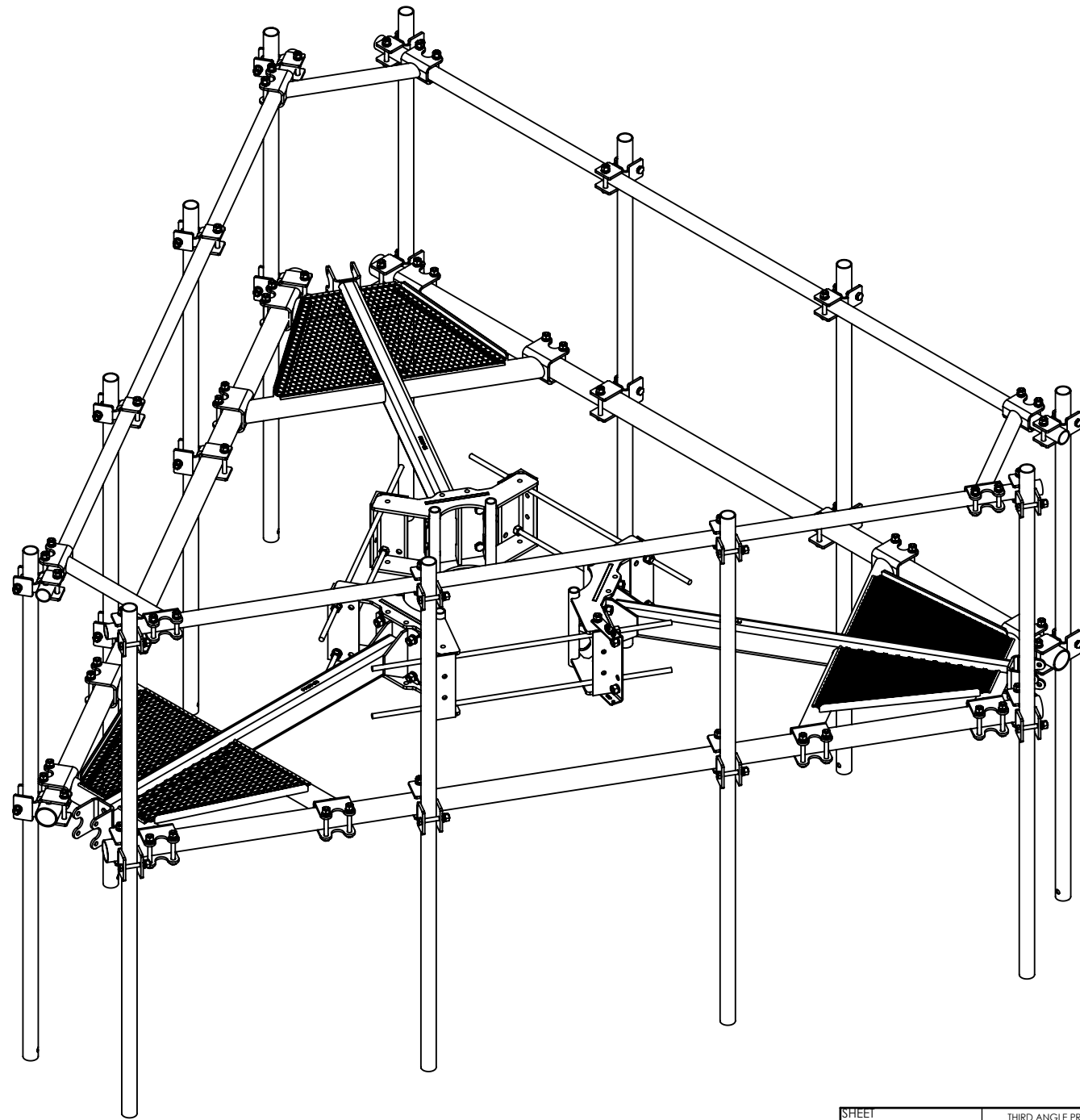
41124-13732456_C8_01-NORTH BLOOMFIELD CT

Proposed Mount - Front View

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PV-LPPGS MONOPOLE GUARDIAN MOUNT

SEE SHEET 2 - TABLE 1 FOR FULL CONFIGURATION DETAILS

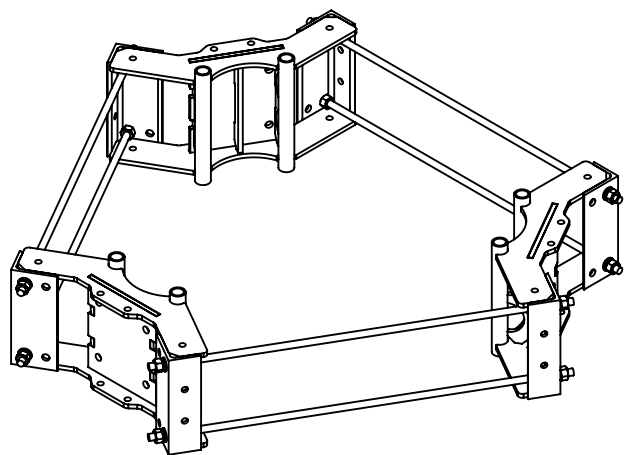


SHEET 1 OF 13	THIRD ANGLE PROJECTION 	CATEGORY	02_Monopole	5	ADDED PKBK VIEWS, ORGANIZED ACC	11/1/19	PERFECT VISION [®]
		SERIES	01_Triangular	4	ACC UPDATE	8/27/19	
7/27/2020	SCALE 1:36	TYPE	PV-LPPGS_GUARDIAN MOUNT	3	MASTER PART # UPDATE	8/22/19	MONOPOLE GUARDIAN MOUNT DOCUMENT NUMBER LPPGS-ENG-01-R6
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE ±1/4°, BEND ±2° ALL OTHERS: ±1/16"		BY	DJN	2	FULL RELEASE	8/14/19	
		CHECKED	SJS	1			
		STATUS	APPROVED	REV	DESCRIPTION	DATE	

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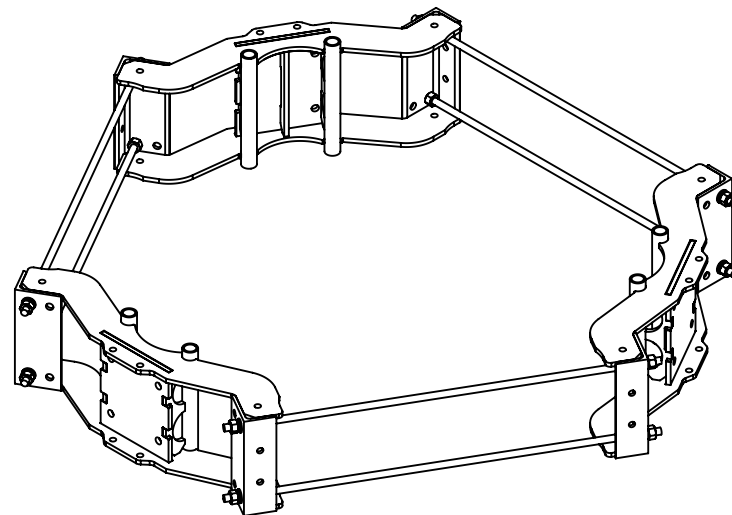
STANDARD POLE

PV-RM1045-GS

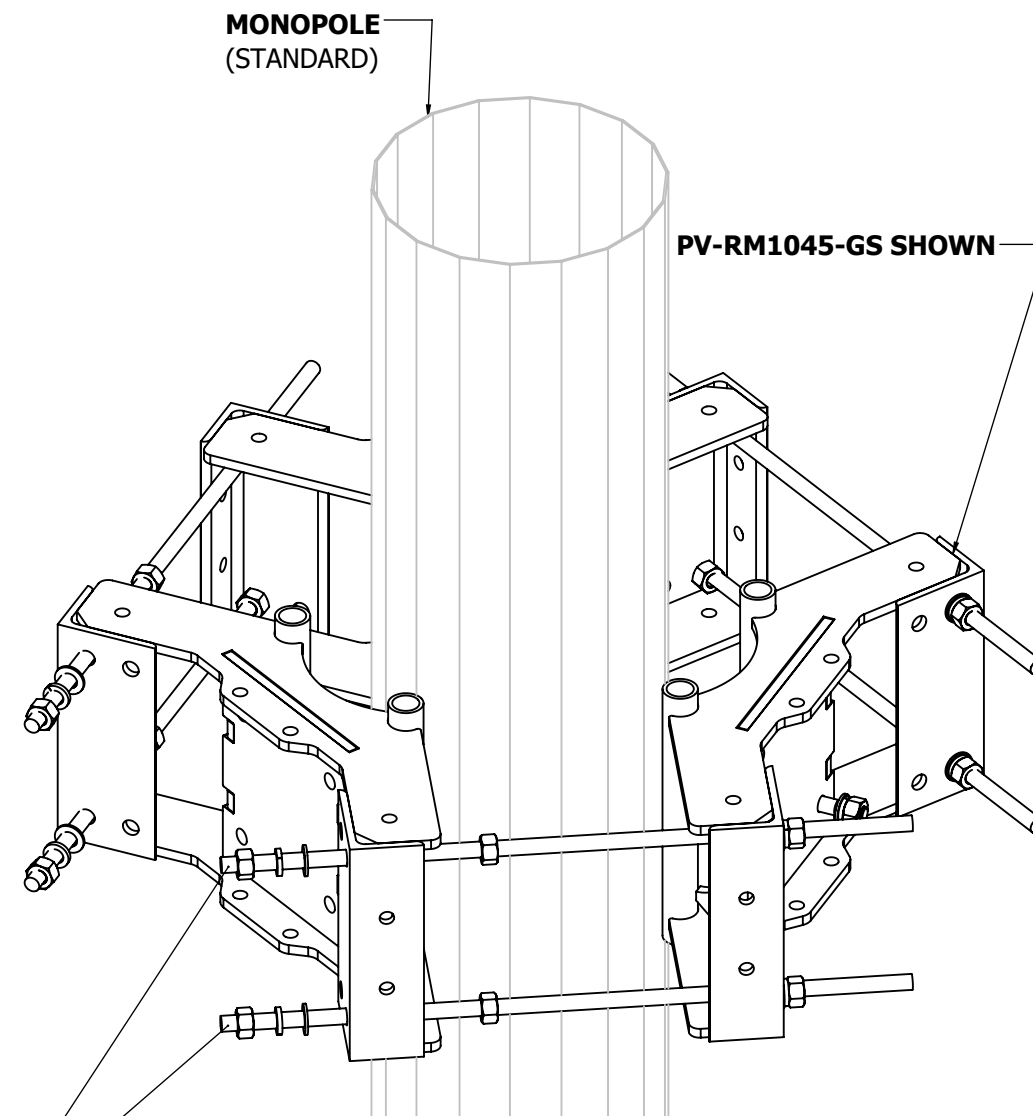


LARGE POLE

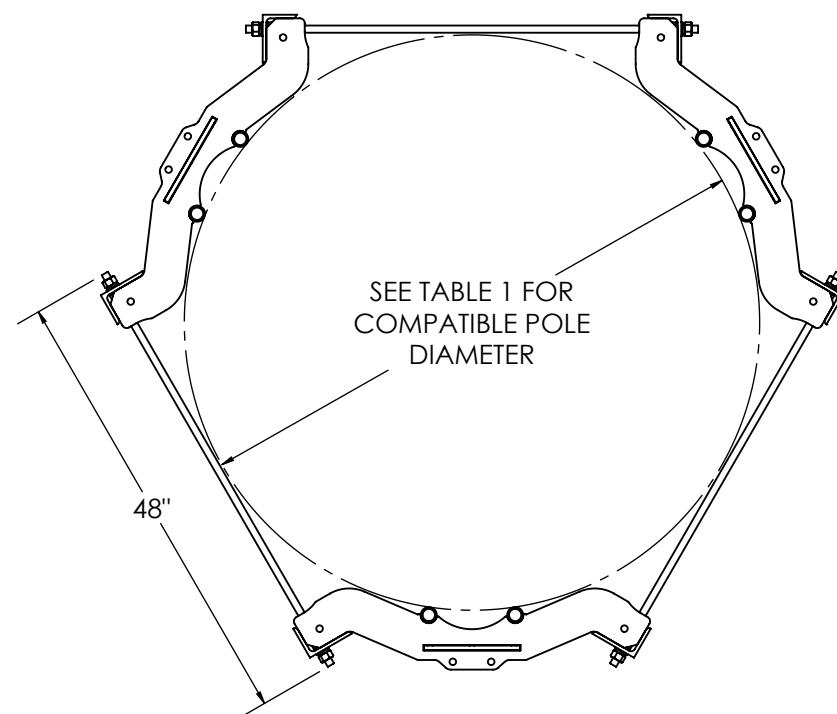
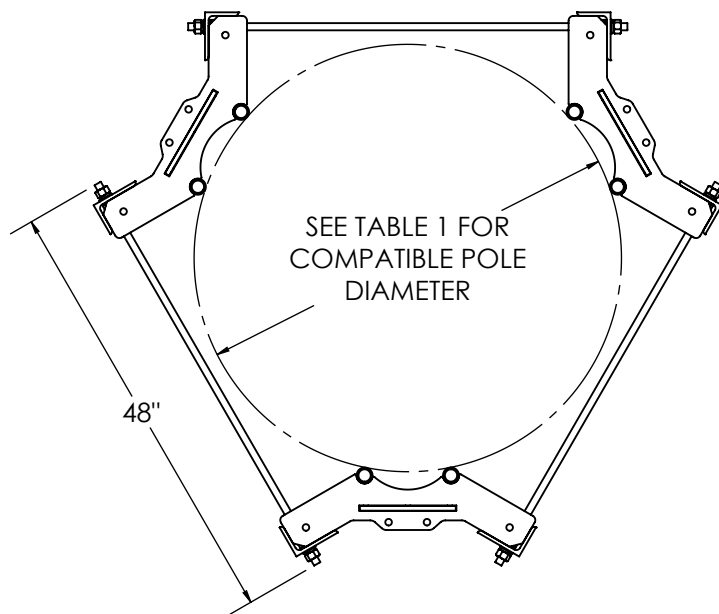
PV-RM3060-GS



COLLAR MOUNT INSTALLATION



WHEN INSTALLED ADJACENT TO CLIMB PATH REMOVE EXCESS ALL-THREAD TO PROMOTE CLIMBER SAFETY AND PREVENT CONTACT WITH SAFETY CLIMB WIRE ROPE.
MINIMUM 1" REQUIRED BEYOND HEX NUT



ROD CUT LENGTH

Pole OD (in)	PV-RM1045-GS	PV-RM3060-GS
10	14	-
15	19.5	-
20	24.5	-
25	29	-
30	33.5	24
35	38	26.5
40	42.5	31
45	48	35.5
50	-	40
55	-	44
60	-	48

SHEET 5 OF 13	THIRD ANGLE PROJECTION 	CATEGORY 02_Monopole	6	ADDED ALL THREAD NOTE TO COLLARS	7/27/20
7/27/2020	SCALE 1:20	SERIES 01_Triangular	5	ADDED HR2-AP3 CONFIGS	1/20/20
DIMENSIONS ARE IN INCHES TOLERANCES U.N.O. HOLES: +1/16", -1/32" ANGULAR: PROFILE ±1/4°, BEND ±2° ALL OTHERS: ±1/16"		TYPE PV-LPPGS_GUARDIAN MOUNT	4	ADDED PKBK VIEWS. ORGANIZED ACC	11/1/19
		BY DJN	3	ACC UPDATE	8/27/19
		CHECKED SJS	2	MASTER PART # UPDATE	8/22/19
		STATUS APPROVED	REV	DESCRIPTION	DATE

MONOPOLE GUARDIAN MOUNT
DOCUMENT NUMBER
LPPGS-ENG-01-R6
REV
6

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Wind & Ice Loading			
Nominal Mount Elevation (AGL), z_{mount}	102 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	100 ft	K_d	0.95
Elevation AMSL (ft)	177 ft	K_b	0.99
TIA Standard	H	K_z	1.27
Basic Wind Speed, V_{ult} (bare)	116 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 1/2 in	t_{iz}	1.68 in
Exposure Category	C	G_h	1.00
Risk Category	II	q_z (bare)	41.3 psf
Seismic Response Coeff., C_s	0.09	q_z (ice)	7.7 psf

Live Loading	
At Mount Pipes, L_M	500 lb
Joint Labels Considered	1_M1
	1_M2
	1_M3
	1_M4

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Collar Conn. PL	PL8.5x3/8	52.69	8.20	15.04
Grating Angle	L1.5x1.5x1/4	9.30	3.79	7.80
Grating Pipe	PIPE_3.0	13.02	4.74	10.63
Offset Tube	HSS5x3x3/8"	30.99	2.75	13.89
Platform Horizontal Pipe	PIPE_3.0	13.02	4.74	10.63
SR Conn Pipe	PIPE_2.0	8.83	3.96	8.32
Support Rail	PIPE_2.5	10.69	4.31	9.34
MOUNT_PIPE_2.5	PIPE_2.5	10.69	4.31	9.34

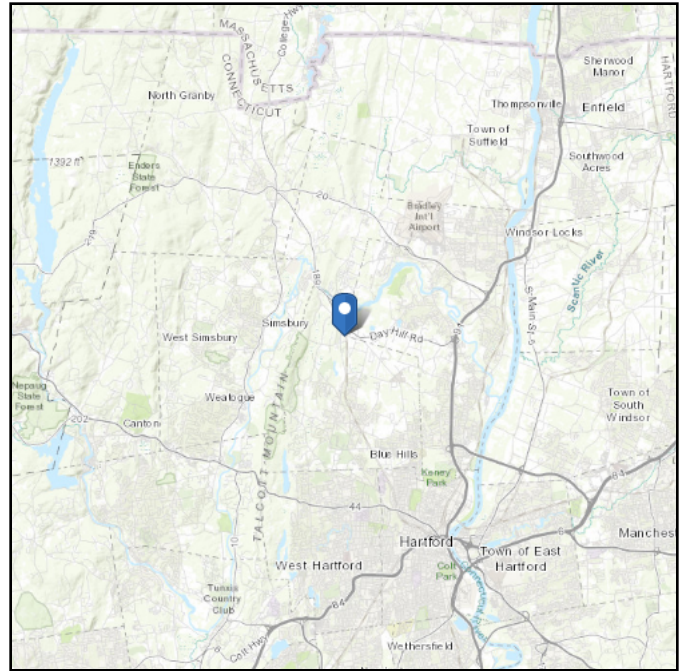
Appurtenances																														
Appurtenance Model	Status	Azimuth Offset ($^\circ$, \cup)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		100° Joints		250° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA _A (Bare) (ft ²)		EPA _A (Ice) (ft ²)		F _A (Bare) (lb)		F _A (Ice) (lb)	
					Front	Side	0°	100°	250°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
APXVAARR24_43-U-NA20				<input type="checkbox"/>			1	1	1		1_A2T	1_A2B	2_A2T	2_A2B	3_A2T	3_A2B	95.9	24	8.7	153.3	Generic	377.37	14.67	5.32	17.22	7.57	543.34	197.04	118.48	52.06
AIR6449 B41				<input type="checkbox"/>			1	1	1		1_A1T	1_A1B	2_A1T	2_A1B	3_A1T	3_A1B	33.1	20.6	8.6	104	Flat	131.10	5.68	2.49	7.28	3.70	210.46	92.25	50.07	25.49
RADIO 4449 B71/B85A				<input checked="" type="checkbox"/>	0.5	0.5	1	1	1		1_R2TT		2_R2TT		3_R2TT		14.96	13.19	10.51	74.95	Flat	57.88	0.66	0.82	1.06	1.26	24.26	30.45	7.28	8.68
4460 BAND 2/25				<input checked="" type="checkbox"/>	0.5	0.5	1	1	1		1_R2TT		2_R2TT		3_R2TT		17	15.1	11.9	109	Flat	86.61	0.84	1.07	1.29	1.56	31.22	39.62	8.90	10.77

ASCE 7 Hazards Report

Address:
No Address at This Location

Standard: ASCE/SEI 7-16
Risk Category: II
Soil Class: D - Default (see Section 11.4.3)

Elevation: 176.79 ft (NAVD 88)
Latitude: 41.876508
Longitude: -72.74184



Wind

Results:

Wind Speed:	116 Vmph
10-year MRI	75 Vmph
25-year MRI	83 Vmph
50-year MRI	90 Vmph
100-year MRI	96 Vmph

Data Source: ASCE/SEI 7-16, Fig. 26.5-1B and Figs. CC.2-1–CC.2-4, and Section 26.5.2
Date Accessed: Tue Sep 28 2021

Value provided is 3-second gust wind speeds at 33 ft above ground for Exposure C Category, based on linear interpolation between contours. Wind speeds are interpolated in accordance with the 7-16 Standard. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (annual exceedance probability = 0.00143, MRI = 700 years).

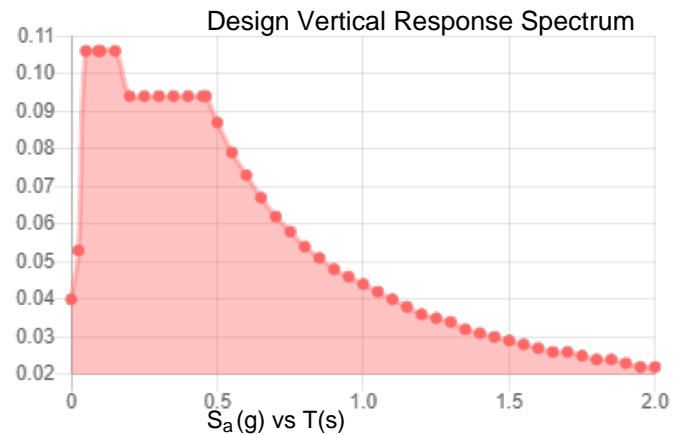
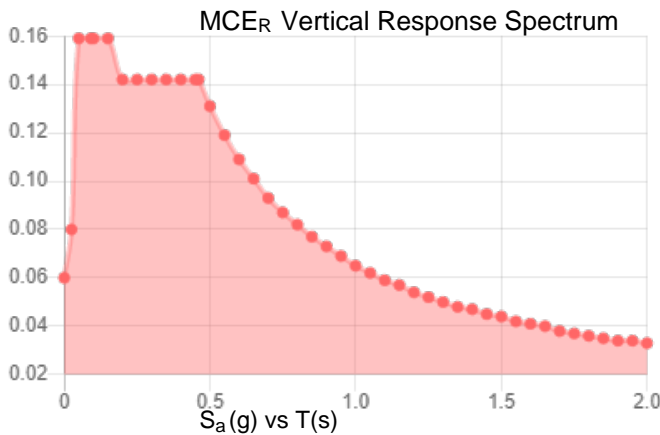
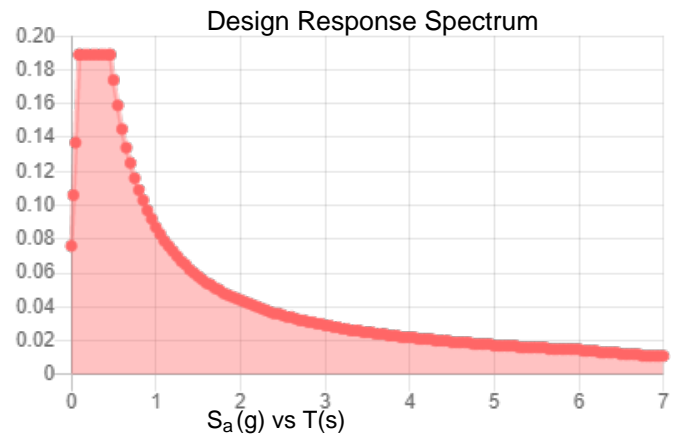
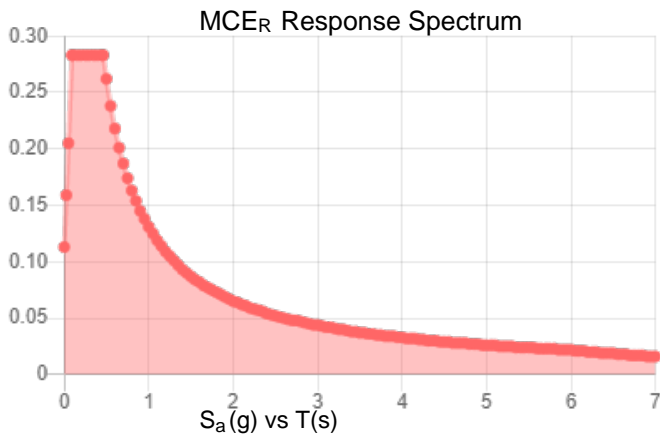
Site is in a hurricane-prone region as defined in ASCE/SEI 7-16 Section 26.2. Glazed openings need not be protected against wind-borne debris.

Site Soil Class: D - Default (see Section 11.4.3)

Results:

S_s :	0.177	S_{D1} :	0.087
S_1 :	0.054	T_L :	6
F_a :	1.6	PGA :	0.094
F_v :	2.4	PGA _M :	0.15
S_{MS} :	0.283	F_{PGA} :	1.6
S_{M1} :	0.131	I_e :	1
S_{DS} :	0.189	C_v :	0.7

Seismic Design Category B



Data Accessed: Tue Sep 28 2021
Date Source: USGS Seismic Design Maps based on ASCE/SEI 7-16 and ASCE/SEI 7-16 Table 1.5-2. Additional data for site-specific ground motion procedures in accordance with ASCE/SEI 7-16 Ch. 21 are available from USGS.

Ice

Results:

Ice Thickness: 1.50 in.

Concurrent Temperature: 5 F

Gust Speed: 50 mph

Data Source: Standard ASCE/SEI 7-16, Figs. 10-2 through 10-8

Date Accessed: Tue Sep 28 2021

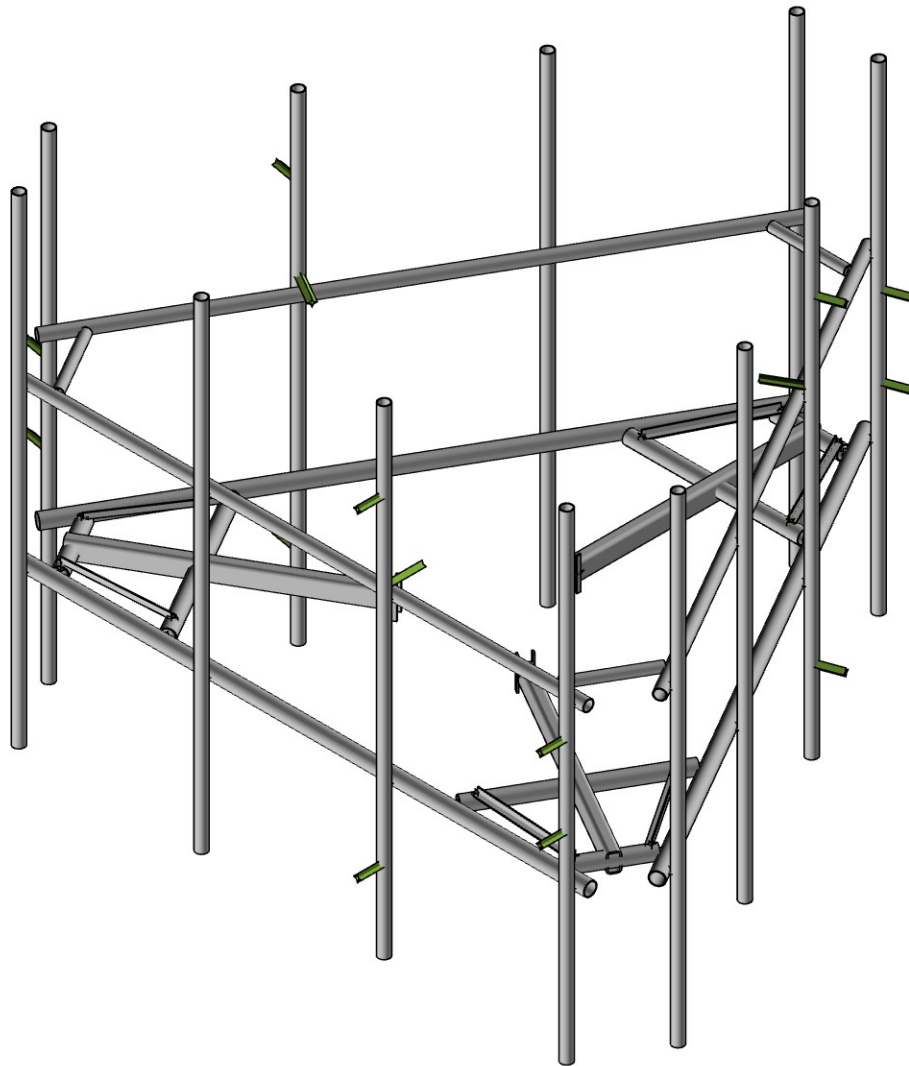
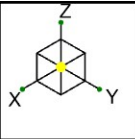
Ice thicknesses on structures in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

Values provided are equivalent radial ice thicknesses due to freezing rain with concurrent 3-second gust speeds, for a 500-year mean recurrence interval, and temperatures concurrent with ice thicknesses due to freezing rain. Thicknesses for ice accretions caused by other sources shall be obtained from local meteorological studies. Ice thicknesses in exposed locations at elevations higher than the surrounding terrain and in valleys and gorges may exceed the mapped values.

The ASCE 7 Hazard Tool is provided for your convenience, for informational purposes only, and is provided “as is” and without warranties of any kind. The location data included herein has been obtained from information developed, produced, and maintained by third party providers; or has been extrapolated from maps incorporated in the ASCE 7 standard. While ASCE has made every effort to use data obtained from reliable sources or methodologies, ASCE does not make any representations or warranties as to the accuracy, completeness, reliability, currency, or quality of any data provided herein. Any third-party links provided by this Tool should not be construed as an endorsement, affiliation, relationship, or sponsorship of such third-party content by or from ASCE.

ASCE does not intend, nor should anyone interpret, the results provided by this Tool to replace the sound judgment of a competent professional, having knowledge and experience in the appropriate field(s) of practice, nor to substitute for the standard of care required of such professionals in interpreting and applying the contents of this Tool or the ASCE 7 standard.

In using this Tool, you expressly assume all risks associated with your use. Under no circumstances shall ASCE or its officers, directors, employees, members, affiliates, or agents be liable to you or any other person for any direct, indirect, special, incidental, or consequential damages arising from or related to your use of, or reliance on, the Tool or any information obtained therein. To the fullest extent permitted by law, you agree to release and hold harmless ASCE from any and all liability of any nature arising out of or resulting from any use of data provided by the ASCE 7 Hazard Tool.



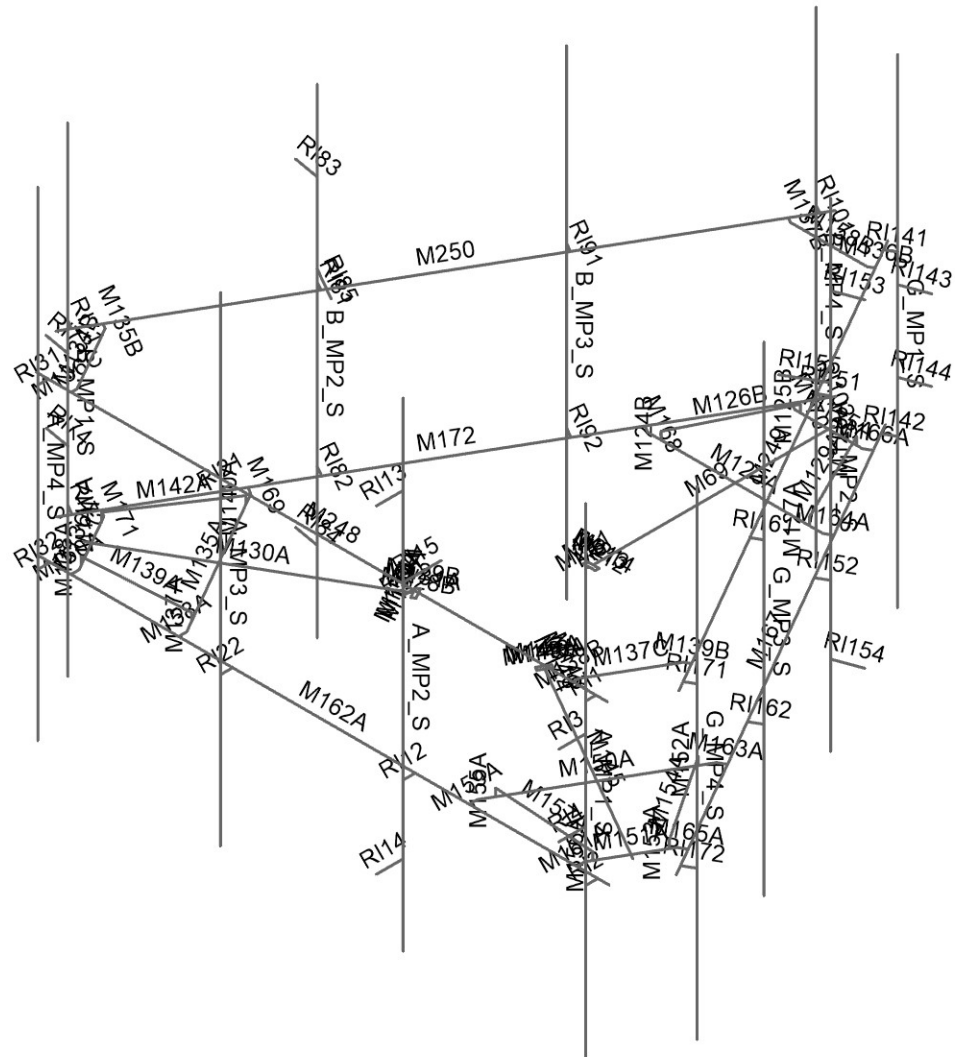
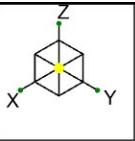
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41124-13732456_C8_01-NORTH BLOOMFIELD CT

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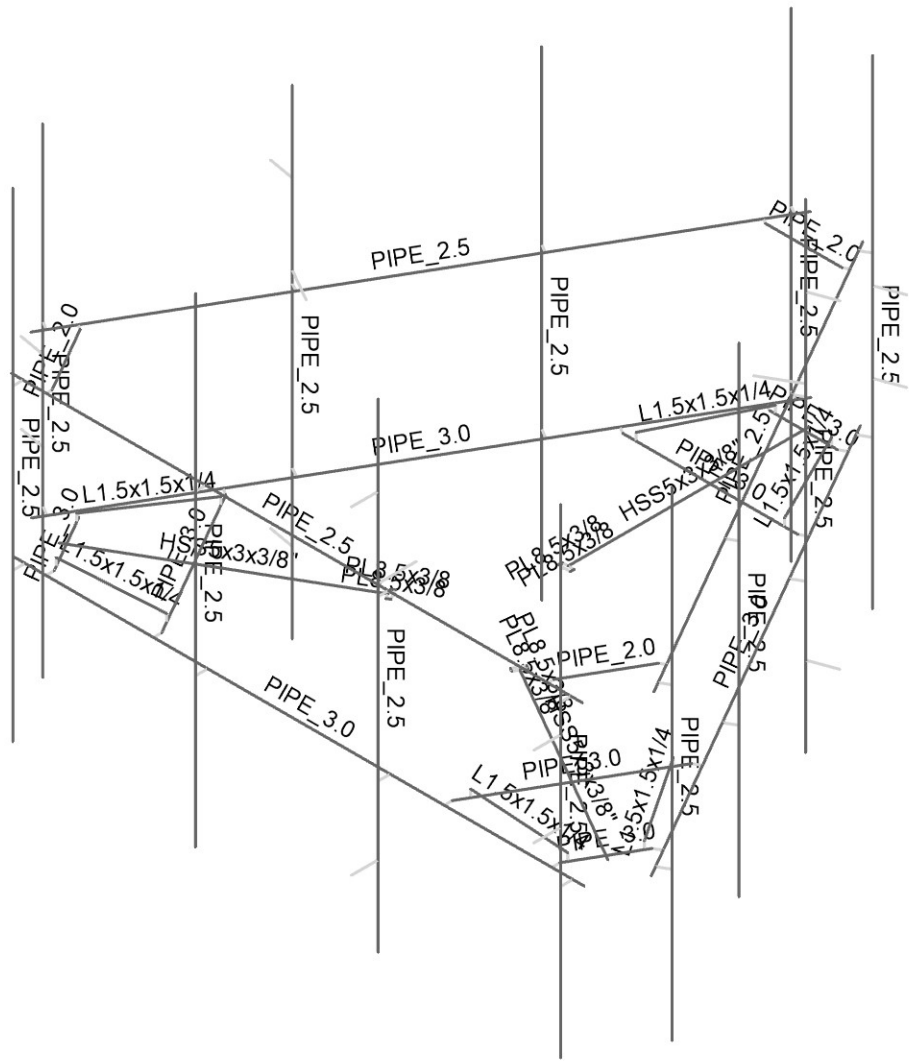
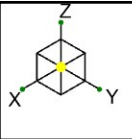


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41124-13732456_C8_01-NORTH BLOOMFIELD CT
Member Labels

SK-3
Sep 28, 2021
41124-13732456_C8_01-01-MA.r3d

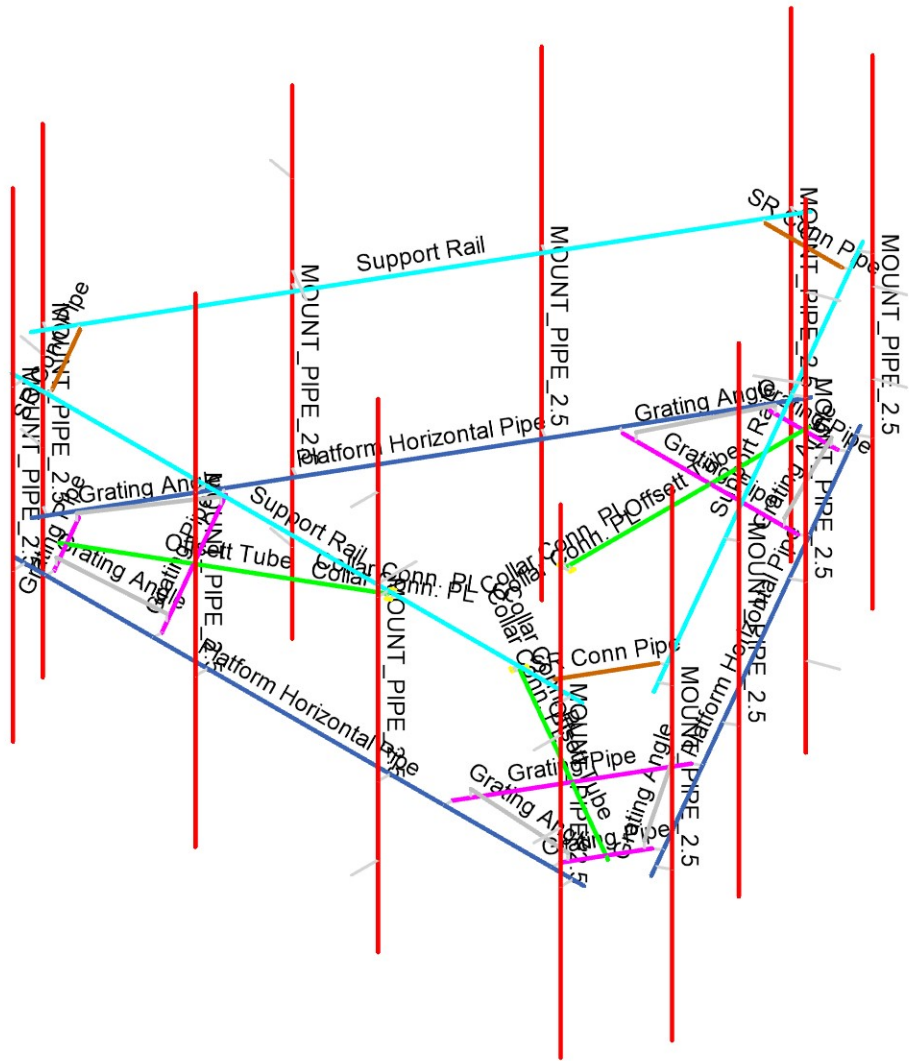
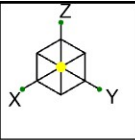


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41124-13732456_C8_01-01-MA

41124-13732456_C8_01-NORTH BLOOMFIELD CT
Member Shapes

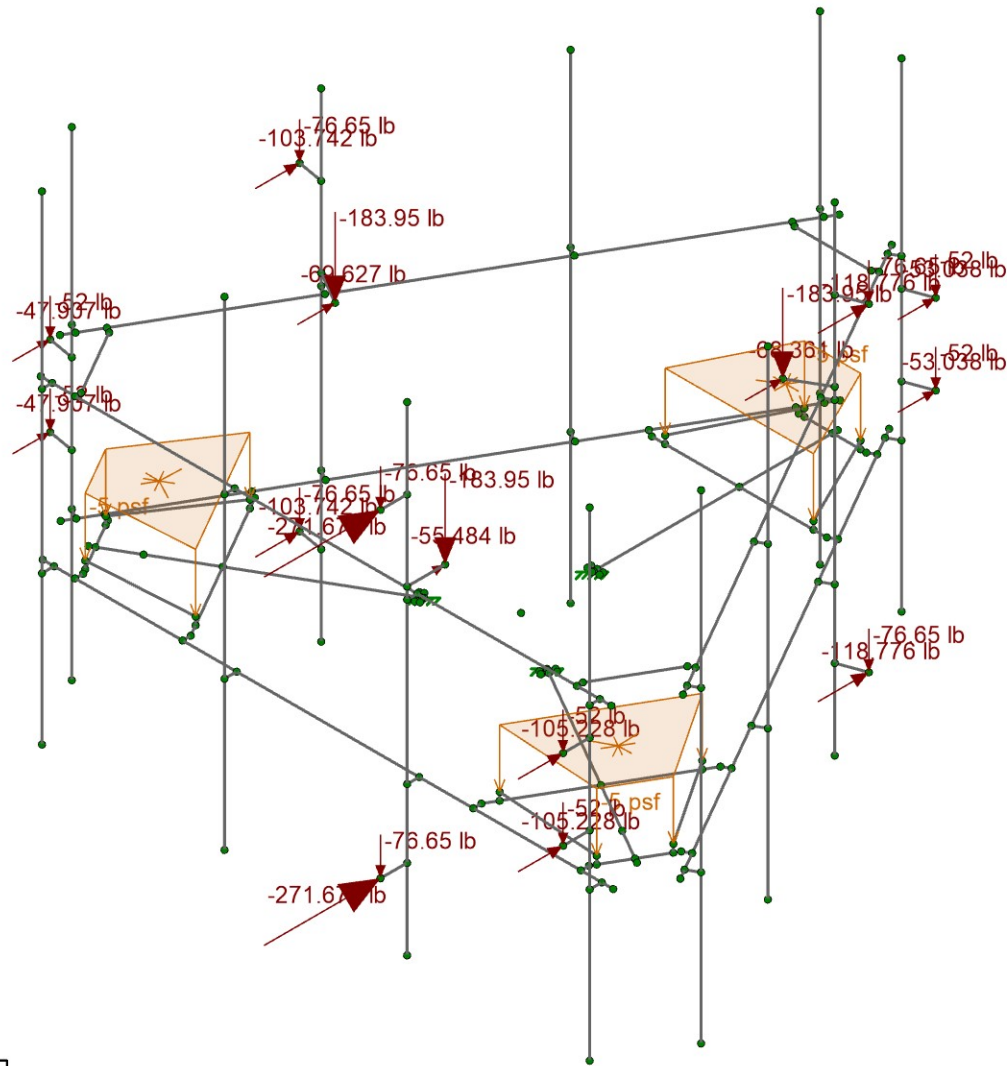
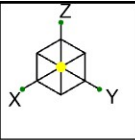
SK-3.1
Sep 28, 2021
41124-13732456_C8_01-01-MA.r3d



Section Sets	
█	Platform Horizontal Pipe
█	Offset Tube
█	MOUNT_PIPE_2.5
█	Grating Angle
█	Grating Pipe
█	Support Rail
█	SR Conn Pipe
█	Collar Conn. PL
█	RIGID

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CLS	41124-13732456_C8_01-NORTH BLOOMFIELD CT	SK-4
GD		Sep 28, 2021
41124-13732456_C8_01-01-MA	Section Sets	41124-13732456_C8_01-01-MA.r3d

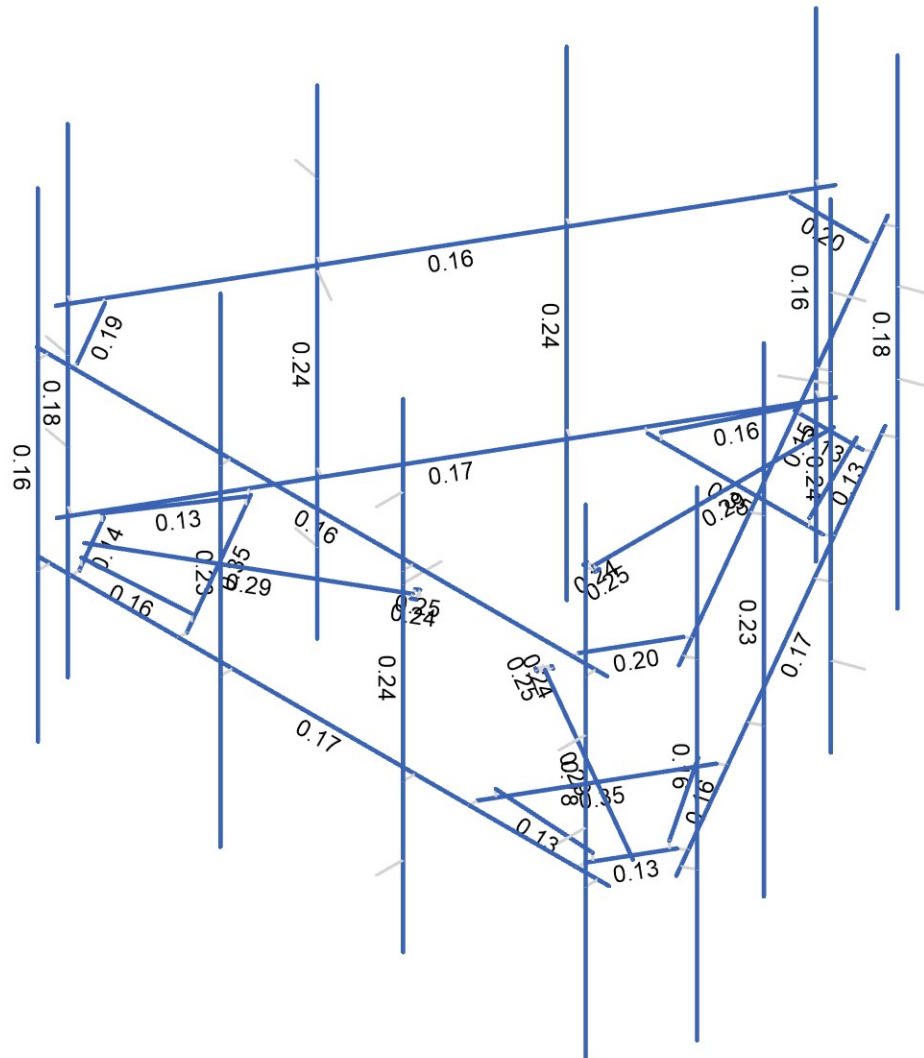
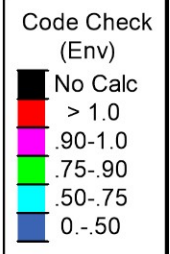
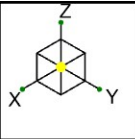


Loads: LC 1, DISPLAY (1.0D + 1.0W_0)
Envelope Only Solution

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41124-13732456_C8_01-01-MA

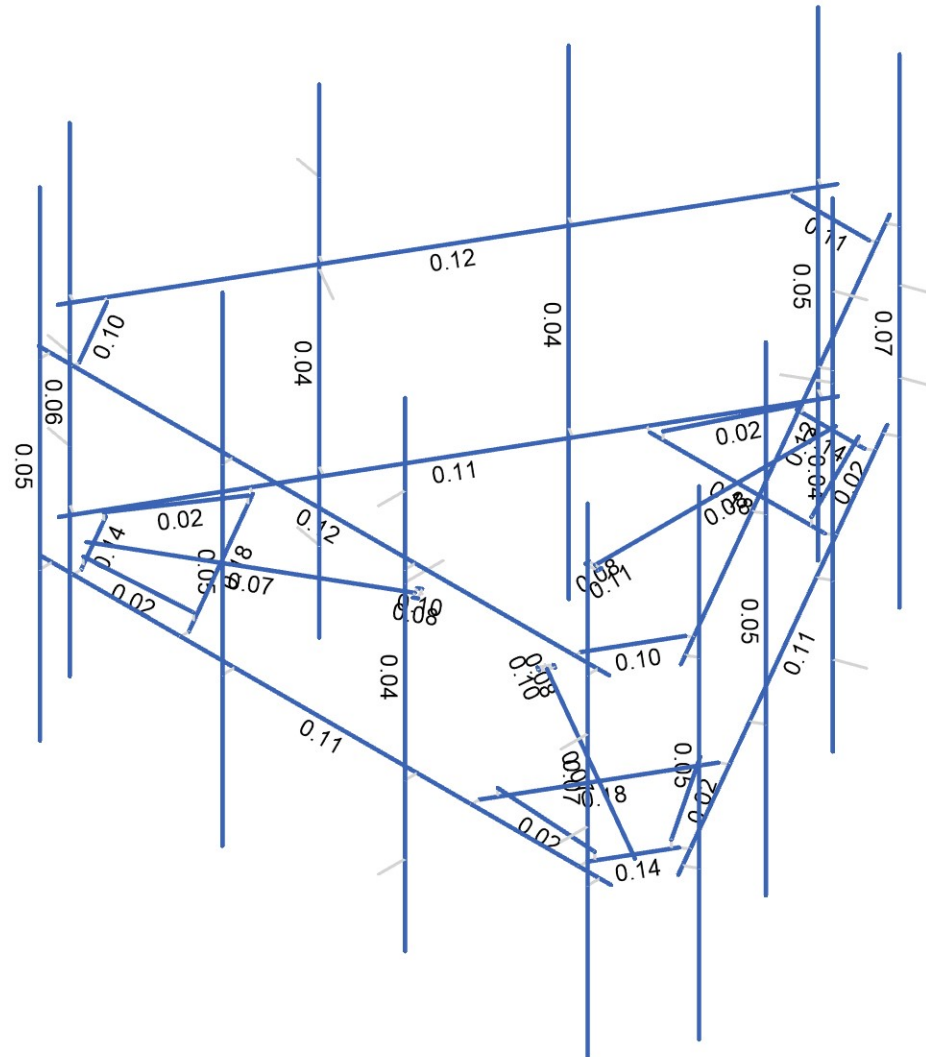
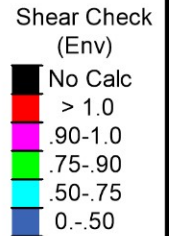
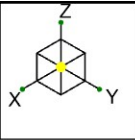
41124-13732456_C8_01-NORTH BLOOMFIELD CT
Joint Loads - Dead and Normal Wind

SK-5
Sep 28, 2021
41124-13732456_C8_01-01-MA.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-13732456_C8_01-NORTH BLOOMFIELD CT	SK-8
GD		Sep 29, 2021
41124-13732456_C8_01-01-MA	Envelope Member Unity Check Results - Bending	41124-13732456_C8_01-01-MA.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-13732456_C8_01-NORTH BLOOMFIELD CT	SK-9
GD		Sep 29, 2021
41124-13732456_C8_01-01-MA	Envelope Member Unity Check Results - Shear	41124-13732456_C8_01-01-MA.r3d

Basic Load Cases

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
1	Dead	DL	-1	18		3
2	Ice Dead	RL		18	42	3
3	BLC 1 Transient Area Loads	None			9	
4	BLC 2 Transient Area Loads	None			9	
5	Structure Wind 0°	None			39	
6	Structure Wind 30°	None			74	
7	Structure Wind 45°	None			84	
8	Structure Wind 60°	None			78	
9	Structure Wind 90°	None			37	
10	Structure Wind 120°	None			78	
11	Structure Wind 135°	None			84	
12	Structure Wind 150°	None			74	
13	Structure Wind 180°	None			39	
14	Structure Wind 210°	None			74	
15	Structure Wind 225°	None			84	
16	Structure Wind 240°	None			78	
17	Structure Wind 270°	None			37	
18	Structure Wind 300°	None			78	
19	Structure Wind 315°	None			84	
20	Structure Wind 330°	None			74	
21	Structure Wind w/ Ice 0°	None			39	
22	Structure Wind w/ Ice 30°	None			74	
23	Structure Wind w/ Ice 45°	None			84	
24	Structure Wind w/ Ice 60°	None			78	
25	Structure Wind w/ Ice 90°	None			37	
26	Structure Wind w/ Ice 120°	None			78	
27	Structure Wind w/ Ice 135°	None			84	
28	Structure Wind w/ Ice 150°	None			74	
29	Structure Wind w/ Ice 180°	None			39	
30	Structure Wind w/ Ice 210°	None			74	
31	Structure Wind w/ Ice 225°	None			84	
32	Structure Wind w/ Ice 240°	None			78	
33	Structure Wind w/ Ice 270°	None			37	
34	Structure Wind w/ Ice 300°	None			78	
35	Structure Wind w/ Ice 315°	None			84	
36	Structure Wind w/ Ice 330°	None			74	
37	Antenna Wind 0°	None		18		
38	Antenna Wind 30°	None		36		
39	Antenna Wind 45°	None		36		
40	Antenna Wind 60°	None		36		
41	Antenna Wind 90°	None		18		
42	Antenna Wind 120°	None		36		
43	Antenna Wind 135°	None		36		
44	Antenna Wind 150°	None		36		
45	Antenna Wind 180°	None		18		
46	Antenna Wind 210°	None		36		
47	Antenna Wind 225°	None		36		
48	Antenna Wind 240°	None		36		
49	Antenna Wind 270°	None		18		
50	Antenna Wind 300°	None		36		
51	Antenna Wind 315°	None		36		
52	Antenna Wind 330°	None		36		
53	Antenna Wind w/ Ice 0°	None		18		
54	Antenna Wind w/ Ice 30°	None		36		
55	Antenna Wind w/ Ice 45°	None		36		
56	Antenna Wind w/ Ice 60°	None		36		
57	Antenna Wind w/ Ice 90°	None		18		
58	Antenna Wind w/ Ice 120°	None		36		

Basic Load Cases (Continued)

	BLC Description	Category	Z Gravity	Nodal	Distributed	Area(Member)
59	Antenna Wind w/ Ice 135°	None		36		
60	Antenna Wind w/ Ice 150°	None		36		
61	Antenna Wind w/ Ice 180°	None		18		
62	Antenna Wind w/ Ice 210°	None		36		
63	Antenna Wind w/ Ice 225°	None		36		
64	Antenna Wind w/ Ice 240°	None		36		
65	Antenna Wind w/ Ice 270°	None		18		
66	Antenna Wind w/ Ice 300°	None		36		
67	Antenna Wind w/ Ice 315°	None		36		
68	Antenna Wind w/ Ice 330°	None		36		
69	Seismic X	ELX		18	42	
70	Seismic Y	ELY		18	42	
71	Seismic Z	ELZ		18	42	
72	Maintenance Live 500 (1)	OL1		1		
73	Maintenance Live 500 (2)	OL2		1		
74	Maintenance Live 500 (3)	OL3		1		
75	Maintenance Live 500 (4)	OL4		1		

Load Combinations

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
1	DISPLAY (1.0D + 1.0W 0°)	Yes	Y	DL	1	37	1				
2	1.4D	Yes	Y	DL	1.4						
3	1.2D + 1.0W 0°	Yes	Y	DL	1.2	5	1	37	1		
4	1.2D + 1.0W 30°	Yes	Y	DL	1.2	6	1	38	1		
5	1.2D + 1.0W 45°	Yes	Y	DL	1.2	7	1	39	1		
6	1.2D + 1.0W 60°	Yes	Y	DL	1.2	8	1	40	1		
7	1.2D + 1.0W 90°	Yes	Y	DL	1.2	9	1	41	1		
8	1.2D + 1.0W 120°	Yes	Y	DL	1.2	10	1	42	1		
9	1.2D + 1.0W 135°	Yes	Y	DL	1.2	11	1	43	1		
10	1.2D + 1.0W 150°	Yes	Y	DL	1.2	12	1	44	1		
11	1.2D + 1.0W 180°	Yes	Y	DL	1.2	13	-1	45	-1		
12	1.2D + 1.0W 210°	Yes	Y	DL	1.2	14	-1	46	-1		
13	1.2D + 1.0W 225°	Yes	Y	DL	1.2	15	-1	47	-1		
14	1.2D + 1.0W 240°	Yes	Y	DL	1.2	16	-1	48	-1		
15	1.2D + 1.0W 270°	Yes	Y	DL	1.2	17	-1	49	-1		
16	1.2D + 1.0W 300°	Yes	Y	DL	1.2	18	-1	50	-1		
17	1.2D + 1.0W 315°	Yes	Y	DL	1.2	19	-1	51	-1		
18	1.2D + 1.0W 330°	Yes	Y	DL	1.2	20	-1	52	-1		
19	1.2D + 1.0Di + 1.0Wi 0°	Yes	Y	DL	1.2	21	1	53	1	RL	1
20	1.2D + 1.0Di + 1.0Wi 30°	Yes	Y	DL	1.2	22	1	54	1	RL	1
21	1.2D + 1.0Di + 1.0Wi 45°	Yes	Y	DL	1.2	23	1	55	1	RL	1
22	1.2D + 1.0Di + 1.0Wi 60°	Yes	Y	DL	1.2	24	1	56	1	RL	1
23	1.2D + 1.0Di + 1.0Wi 90°	Yes	Y	DL	1.2	25	1	57	1	RL	1
24	1.2D + 1.0Di + 1.0Wi 120°	Yes	Y	DL	1.2	26	1	58	1	RL	1
25	1.2D + 1.0Di + 1.0Wi 135°	Yes	Y	DL	1.2	27	1	59	1	RL	1
26	1.2D + 1.0Di + 1.0Wi 150°	Yes	Y	DL	1.2	28	1	60	1	RL	1
27	1.2D + 1.0Di + 1.0Wi 180°	Yes	Y	DL	1.2	29	-1	61	-1	RL	1
28	1.2D + 1.0Di + 1.0Wi 210°	Yes	Y	DL	1.2	30	-1	62	-1	RL	1
29	1.2D + 1.0Di + 1.0Wi 225°	Yes	Y	DL	1.2	31	-1	63	-1	RL	1
30	1.2D + 1.0Di + 1.0Wi 240°	Yes	Y	DL	1.2	32	-1	64	-1	RL	1
31	1.2D + 1.0Di + 1.0Wi 270°	Yes	Y	DL	1.2	33	-1	65	-1	RL	1
32	1.2D + 1.0Di + 1.0Wi 300°	Yes	Y	DL	1.2	34	-1	66	-1	RL	1
33	1.2D + 1.0Di + 1.0Wi 315°	Yes	Y	DL	1.2	35	-1	67	-1	RL	1
34	1.2D + 1.0Di + 1.0Wi 330°	Yes	Y	DL	1.2	36	-1	68	-1	RL	1
35	1.2D + 1.0Ev + 1.0Eh 0°	Yes	Y	DL	1.238	ELX	-1	ELY			
36	1.2D + 1.0Ev + 1.0Eh 30°	Yes	Y	DL	1.238	ELX	-0.866	ELY	0.5		
37	1.2D + 1.0Ev + 1.0Eh 45°	Yes	Y	DL	1.238	ELX	-0.707	ELY	0.707		
38	1.2D + 1.0Ev + 1.0Eh 60°	Yes	Y	DL	1.238	ELX	-0.5	ELY	0.866		

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
39	1.2D + 1.0Ev + 1.0Eh 90°	Yes	Y	DL	1.238	ELX		ELY	1		
40	1.2D + 1.0Ev + 1.0Eh 120°	Yes	Y	DL	1.238	ELX	0.5	ELY	0.866		
41	1.2D + 1.0Ev + 1.0Eh 135°	Yes	Y	DL	1.238	ELX	0.707	ELY	0.707		
42	1.2D + 1.0Ev + 1.0Eh 150°	Yes	Y	DL	1.238	ELX	0.866	ELY	0.5		
43	1.2D + 1.0Ev + 1.0Eh 180°	Yes	Y	DL	1.238	ELX	1	ELY			
44	1.2D + 1.0Ev + 1.0Eh 210°	Yes	Y	DL	1.238	ELX	0.866	ELY	-0.5		
45	1.2D + 1.0Ev + 1.0Eh 225°	Yes	Y	DL	1.238	ELX	0.707	ELY	-0.707		
46	1.2D + 1.0Ev + 1.0Eh 240°	Yes	Y	DL	1.238	ELX	0.5	ELY	-0.866		
47	1.2D + 1.0Ev + 1.0Eh 270°	Yes	Y	DL	1.238	ELX		ELY	-1		
48	1.2D + 1.0Ev + 1.0Eh 300°	Yes	Y	DL	1.238	ELX	-0.5	ELY	-0.866		
49	1.2D + 1.0Ev + 1.0Eh 315°	Yes	Y	DL	1.238	ELX	-0.707	ELY	-0.707		
50	1.2D + 1.0Ev + 1.0Eh 330°	Yes	Y	DL	1.238	ELX	-0.866	ELY	-0.5		
51	0.9D - 1.0Ev + 1.0Eh 0°	Yes	Y	DL	0.862	ELX	-1	ELY			
52	0.9D - 1.0Ev + 1.0Eh 30°	Yes	Y	DL	0.862	ELX	-0.866	ELY	0.5		
53	0.9D - 1.0Ev + 1.0Eh 45°	Yes	Y	DL	0.862	ELX	-0.707	ELY	0.707		
54	0.9D - 1.0Ev + 1.0Eh 60°	Yes	Y	DL	0.862	ELX	-0.5	ELY	0.866		
55	0.9D - 1.0Ev + 1.0Eh 90°	Yes	Y	DL	0.862	ELX		ELY	1		
56	0.9D - 1.0Ev + 1.0Eh 120°	Yes	Y	DL	0.862	ELX	0.5	ELY	0.866		
57	0.9D - 1.0Ev + 1.0Eh 135°	Yes	Y	DL	0.862	ELX	0.707	ELY	0.707		
58	0.9D - 1.0Ev + 1.0Eh 150°	Yes	Y	DL	0.862	ELX	0.866	ELY	0.5		
59	0.9D - 1.0Ev + 1.0Eh 180°	Yes	Y	DL	0.862	ELX	1	ELY			
60	0.9D - 1.0Ev + 1.0Eh 210°	Yes	Y	DL	0.862	ELX	0.866	ELY	-0.5		
61	0.9D - 1.0Ev + 1.0Eh 225°	Yes	Y	DL	0.862	ELX	0.707	ELY	-0.707		
62	0.9D - 1.0Ev + 1.0Eh 240°	Yes	Y	DL	0.862	ELX	0.5	ELY	-0.866		
63	0.9D - 1.0Ev + 1.0Eh 270°	Yes	Y	DL	0.862	ELX		ELY	-1		
64	0.9D - 1.0Ev + 1.0Eh 300°	Yes	Y	DL	0.862	ELX	-0.5	ELY	-0.866		
65	0.9D - 1.0Ev + 1.0Eh 315°	Yes	Y	DL	0.862	ELX	-0.707	ELY	-0.707		
66	0.9D - 1.0Ev + 1.0Eh 330°	Yes	Y	DL	0.862	ELX	-0.866	ELY	-0.5		
67	1.2D + 1.5Lm 1 + 1.0Wm 0°	Yes	Y	DL	1.2	5	0.07	37	0.07	OL1	1.5
68	1.2D + 1.5Lm 1 + 1.0Wm 30°	Yes	Y	DL	1.2	6	0.07	38	0.07	OL1	1.5
69	1.2D + 1.5Lm 1 + 1.0Wm 45°	Yes	Y	DL	1.2	7	0.07	39	0.07	OL1	1.5
70	1.2D + 1.5Lm 1 + 1.0Wm 60°	Yes	Y	DL	1.2	8	0.07	40	0.07	OL1	1.5
71	1.2D + 1.5Lm 1 + 1.0Wm 90°	Yes	Y	DL	1.2	9	0.07	41	0.07	OL1	1.5
72	1.2D + 1.5Lm 1 + 1.0Wm 120°	Yes	Y	DL	1.2	10	0.07	42	0.07	OL1	1.5
73	1.2D + 1.5Lm 1 + 1.0Wm 135°	Yes	Y	DL	1.2	11	0.07	43	0.07	OL1	1.5
74	1.2D + 1.5Lm 1 + 1.0Wm 150°	Yes	Y	DL	1.2	12	0.07	44	0.07	OL1	1.5
75	1.2D + 1.5Lm 1 + 1.0Wm 180°	Yes	Y	DL	1.2	13	-0.07	45	-0.07	OL1	1.5
76	1.2D + 1.5Lm 1 + 1.0Wm 210°	Yes	Y	DL	1.2	14	-0.07	46	-0.07	OL1	1.5
77	1.2D + 1.5Lm 1 + 1.0Wm 225°	Yes	Y	DL	1.2	15	-0.07	47	-0.07	OL1	1.5
78	1.2D + 1.5Lm 1 + 1.0Wm 240°	Yes	Y	DL	1.2	16	-0.07	48	-0.07	OL1	1.5
79	1.2D + 1.5Lm 1 + 1.0Wm 270°	Yes	Y	DL	1.2	17	-0.07	49	-0.07	OL1	1.5
80	1.2D + 1.5Lm 1 + 1.0Wm 300°	Yes	Y	DL	1.2	18	-0.07	50	-0.07	OL1	1.5
81	1.2D + 1.5Lm 1 + 1.0Wm 315°	Yes	Y	DL	1.2	19	-0.07	51	-0.07	OL1	1.5
82	1.2D + 1.5Lm 1 + 1.0Wm 330°	Yes	Y	DL	1.2	20	-0.07	52	-0.07	OL1	1.5
83	1.2D + 1.5Lm 2 + 1.0Wm 0°	Yes	Y	DL	1.2	5	0.07	37	0.07	OL2	1.5
84	1.2D + 1.5Lm 2 + 1.0Wm 30°	Yes	Y	DL	1.2	6	0.07	38	0.07	OL2	1.5
85	1.2D + 1.5Lm 2 + 1.0Wm 45°	Yes	Y	DL	1.2	7	0.07	39	0.07	OL2	1.5
86	1.2D + 1.5Lm 2 + 1.0Wm 60°	Yes	Y	DL	1.2	8	0.07	40	0.07	OL2	1.5
87	1.2D + 1.5Lm 2 + 1.0Wm 90°	Yes	Y	DL	1.2	9	0.07	41	0.07	OL2	1.5
88	1.2D + 1.5Lm 2 + 1.0Wm 120°	Yes	Y	DL	1.2	10	0.07	42	0.07	OL2	1.5
89	1.2D + 1.5Lm 2 + 1.0Wm 135°	Yes	Y	DL	1.2	11	0.07	43	0.07	OL2	1.5
90	1.2D + 1.5Lm 2 + 1.0Wm 150°	Yes	Y	DL	1.2	12	0.07	44	0.07	OL2	1.5
91	1.2D + 1.5Lm 2 + 1.0Wm 180°	Yes	Y	DL	1.2	13	-0.07	45	-0.07	OL2	1.5
92	1.2D + 1.5Lm 2 + 1.0Wm 210°	Yes	Y	DL	1.2	14	-0.07	46	-0.07	OL2	1.5
93	1.2D + 1.5Lm 2 + 1.0Wm 225°	Yes	Y	DL	1.2	15	-0.07	47	-0.07	OL2	1.5
94	1.2D + 1.5Lm 2 + 1.0Wm 240°	Yes	Y	DL	1.2	16	-0.07	48	-0.07	OL2	1.5
95	1.2D + 1.5Lm 2 + 1.0Wm 270°	Yes	Y	DL	1.2	17	-0.07	49	-0.07	OL2	1.5
96	1.2D + 1.5Lm 2 + 1.0Wm 300°	Yes	Y	DL	1.2	18	-0.07	50	-0.07	OL2	1.5

Load Combinations (Continued)

	Description	Solve	PDelta	BLC	Factor	BLC	Factor	BLC	Factor	BLC	Factor
97	1.2D + 1.5Lm 2 + 1.0Wm 315°	Yes	Y	DL	1.2	19	-0.07	51	-0.07	OL2	1.5
98	1.2D + 1.5Lm 2 + 1.0Wm 330°	Yes	Y	DL	1.2	20	-0.07	52	-0.07	OL2	1.5
99	1.2D + 1.5Lm 3 + 1.0Wm 0°	Yes	Y	DL	1.2	5	0.07	37	0.07	OL3	1.5
100	1.2D + 1.5Lm 3 + 1.0Wm 30°	Yes	Y	DL	1.2	6	0.07	38	0.07	OL3	1.5
101	1.2D + 1.5Lm 3 + 1.0Wm 45°	Yes	Y	DL	1.2	7	0.07	39	0.07	OL3	1.5
102	1.2D + 1.5Lm 3 + 1.0Wm 60°	Yes	Y	DL	1.2	8	0.07	40	0.07	OL3	1.5
103	1.2D + 1.5Lm 3 + 1.0Wm 90°	Yes	Y	DL	1.2	9	0.07	41	0.07	OL3	1.5
104	1.2D + 1.5Lm 3 + 1.0Wm 120°	Yes	Y	DL	1.2	10	0.07	42	0.07	OL3	1.5
105	1.2D + 1.5Lm 3 + 1.0Wm 135°	Yes	Y	DL	1.2	11	0.07	43	0.07	OL3	1.5
106	1.2D + 1.5Lm 3 + 1.0Wm 150°	Yes	Y	DL	1.2	12	0.07	44	0.07	OL3	1.5
107	1.2D + 1.5Lm 3 + 1.0Wm 180°	Yes	Y	DL	1.2	13	-0.07	45	-0.07	OL3	1.5
108	1.2D + 1.5Lm 3 + 1.0Wm 210°	Yes	Y	DL	1.2	14	-0.07	46	-0.07	OL3	1.5
109	1.2D + 1.5Lm 3 + 1.0Wm 225°	Yes	Y	DL	1.2	15	-0.07	47	-0.07	OL3	1.5
110	1.2D + 1.5Lm 3 + 1.0Wm 240°	Yes	Y	DL	1.2	16	-0.07	48	-0.07	OL3	1.5
111	1.2D + 1.5Lm 3 + 1.0Wm 270°	Yes	Y	DL	1.2	17	-0.07	49	-0.07	OL3	1.5
112	1.2D + 1.5Lm 3 + 1.0Wm 300°	Yes	Y	DL	1.2	18	-0.07	50	-0.07	OL3	1.5
113	1.2D + 1.5Lm 3 + 1.0Wm 315°	Yes	Y	DL	1.2	19	-0.07	51	-0.07	OL3	1.5
114	1.2D + 1.5Lm 3 + 1.0Wm 330°	Yes	Y	DL	1.2	20	-0.07	52	-0.07	OL3	1.5
115	1.2D + 1.5Lm 4 + 1.0Wm 0°	Yes	Y	DL	1.2	5	0.07	37	0.07	OL4	1.5
116	1.2D + 1.5Lm 4 + 1.0Wm 30°	Yes	Y	DL	1.2	6	0.07	38	0.07	OL4	1.5
117	1.2D + 1.5Lm 4 + 1.0Wm 45°	Yes	Y	DL	1.2	7	0.07	39	0.07	OL4	1.5
118	1.2D + 1.5Lm 4 + 1.0Wm 60°	Yes	Y	DL	1.2	8	0.07	40	0.07	OL4	1.5
119	1.2D + 1.5Lm 4 + 1.0Wm 90°	Yes	Y	DL	1.2	9	0.07	41	0.07	OL4	1.5
120	1.2D + 1.5Lm 4 + 1.0Wm 120°	Yes	Y	DL	1.2	10	0.07	42	0.07	OL4	1.5
121	1.2D + 1.5Lm 4 + 1.0Wm 135°	Yes	Y	DL	1.2	11	0.07	43	0.07	OL4	1.5
122	1.2D + 1.5Lm 4 + 1.0Wm 150°	Yes	Y	DL	1.2	12	0.07	44	0.07	OL4	1.5
123	1.2D + 1.5Lm 4 + 1.0Wm 180°	Yes	Y	DL	1.2	13	-0.07	45	-0.07	OL4	1.5
124	1.2D + 1.5Lm 4 + 1.0Wm 210°	Yes	Y	DL	1.2	14	-0.07	46	-0.07	OL4	1.5
125	1.2D + 1.5Lm 4 + 1.0Wm 225°	Yes	Y	DL	1.2	15	-0.07	47	-0.07	OL4	1.5
126	1.2D + 1.5Lm 4 + 1.0Wm 240°	Yes	Y	DL	1.2	16	-0.07	48	-0.07	OL4	1.5
127	1.2D + 1.5Lm 4 + 1.0Wm 270°	Yes	Y	DL	1.2	17	-0.07	49	-0.07	OL4	1.5
128	1.2D + 1.5Lm 4 + 1.0Wm 300°	Yes	Y	DL	1.2	18	-0.07	50	-0.07	OL4	1.5
129	1.2D + 1.5Lm 4 + 1.0Wm 315°	Yes	Y	DL	1.2	19	-0.07	51	-0.07	OL4	1.5
130	1.2D + 1.5Lm 4 + 1.0Wm 330°	Yes	Y	DL	1.2	20	-0.07	52	-0.07	OL4	1.5

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm. Coeff. [1e ⁵ F ⁻¹]	Density [k/ft ³]	Yield [ksi]	Ry	Fu [ksi]	Rt
1	A36 Gr.36	29000	11154	0.3	0.65	0.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
3	A992	29000	11154	0.3	0.65	0.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	0.3	0.65	0.527	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	0.3	0.65	0.527	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	0.3	0.65	0.49	35	1.6	60	1.2
7	A1085	29000	11154	0.3	0.65	0.49	50	1.4	65	1.3

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rule	Area [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
1	Platform Horizontal Pipe	PIPE 3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offset Tube	HSS5x3x3/8"	Beam	None	A500 Gr.B Rect	Typical	5.438	7.216	16.856	15.248
3	MOUNT PIPE 2.5	PIPE 2.5	None	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	Grating Angle	L1.5x1.5x1/4	Beam	None	A36 Gr.36	Typical	0.688	0.139	0.139	0.013
5	Grating Pipe	PIPE 3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
6	Support Rail	PIPE 2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
7	SR Conn Pipe	PIPE 2.0	Beam	None	A53 Gr.B	Typical	1.02	0.627	0.627	1.25
8	Collar Conn. PL	PL8.5x3/8	Beam	None	A36 Gr.36	Typical	3.188	0.037	19.191	0.145

Hot Rolled Steel Design Parameters

	Label	Shape	Length [in]	Lb z-z [in]	K y-y	K z-z	Function
1	M5	Collar Conn. PL	1		0.65	0.65	Lateral
2	M6	Collar Conn. PL	1		0.65	0.65	Lateral
3	M128B	Collar Conn. PL	1		0.65	0.65	Lateral
4	M129B	Collar Conn. PL	1		0.65	0.65	Lateral
5	M143	Collar Conn. PL	1		0.65	0.65	Lateral
6	M144	Collar Conn. PL	1		0.65	0.65	Lateral
7	M126B	Grating Angle	27.336		0.65	0.65	Lateral
8	M129A	Grating Angle	27.336		0.65	0.65	Lateral
9	M139A	Grating Angle	27.336		0.65	0.65	Lateral
10	M142A	Grating Angle	27.336		0.65	0.65	Lateral
11	M154A	Grating Angle	27.336		0.65	0.65	Lateral
12	M157A	Grating Angle	27.336		0.65	0.65	Lateral
13	M123A	Grating Pipe	46				Lateral
14	M125A	Grating Pipe	17.75				Lateral
15	M135A	Grating Pipe	46				Lateral
16	M136A	Grating Pipe	17.75				Lateral
17	M150A	Grating Pipe	46				Lateral
18	M151A	Grating Pipe	17.75				Lateral
19	M69	Offsett Tube	63.25				Lateral
20	M130A	Offsett Tube	63.25				Lateral
21	M145	Offsett Tube	63.25				Lateral
22	M162A	Platform Horizontal Pipe	150	48			Lateral
23	M167	Platform Horizontal Pipe	150	48			Lateral
24	M172	Platform Horizontal Pipe	150	48			Lateral
25	M158B	SR Conn Pipe	20.125				Lateral
26	M134B	SR Conn Pipe	20.125				Lateral
27	M137C	SR Conn Pipe	20.125				Lateral
28	M248	Support Rail	150	48			Lateral
29	M249	Support Rail	150	48			Lateral
30	M250	Support Rail	150	48			Lateral
31	A_MP1_S	MOUNT_PIPE_2.5	126				Lateral
32	A_MP2_S	MOUNT_PIPE_2.5	126				Lateral
33	A_MP3_S	MOUNT_PIPE_2.5	126				Lateral
34	A_MP4_S	MOUNT_PIPE_2.5	126				Lateral
35	B_MP1_S	MOUNT_PIPE_2.5	126				Lateral
36	B_MP2_S	MOUNT_PIPE_2.5	126				Lateral
37	B_MP3_S	MOUNT_PIPE_2.5	126				Lateral
38	B_MP4_S	MOUNT_PIPE_2.5	126				Lateral
39	G_MP1_S	MOUNT_PIPE_2.5	126				Lateral
40	G_MP2_S	MOUNT_PIPE_2.5	126				Lateral
41	G_MP3_S	MOUNT_PIPE_2.5	126				Lateral
42	G_MP4_S	MOUNT_PIPE_2.5	126				Lateral

Member Advanced Data

	Label	Physical	Deflection Ratio Options	Seismic DR
1	M5	Yes	Default	None
2	M6	Yes		None
3	M128B	Yes	Default	None
4	M129B	Yes		None
5	M143	Yes	Default	None
6	M144	Yes		None
7	M126B	Yes		None
8	M129A	Yes		None
9	M139A	Yes		None
10	M142A	Yes		None
11	M154A	Yes		None
12	M157A	Yes		None
13	M123A	Yes		None

Member Advanced Data (Continued)

	Label	Physical	Deflection Ratio Options	Seismic DR
14	M125A	Yes		None
15	M135A	Yes		None
16	M136A	Yes		None
17	M150A	Yes		None
18	M151A	Yes		None
19	M69	Yes		None
20	M130A	Yes		None
21	M145	Yes		None
22	M162A	Yes		None
23	M167	Yes		None
24	M172	Yes		None
25	M211	Yes	** NA **	None
26	M212	Yes	** NA **	None
27	M213	Yes	** NA **	None
28	M214	Yes	** NA **	None
29	M124B	Yes	** NA **	None
30	M125B	Yes	** NA **	None
31	M127A	Yes	** NA **	None
32	M128A	Yes	** NA **	None
33	M131A	Yes	** NA **	None
34	M132A	Yes	** NA **	None
35	M133A	Yes	** NA **	None
36	M134A	Yes	** NA **	None
37	M137A	Yes	** NA **	None
38	M138A	Yes	** NA **	None
39	M140A	Yes	** NA **	None
40	M141A	Yes	** NA **	None
41	M146	Yes	** NA **	None
42	M147A	Yes	** NA **	None
43	M148A	Yes	** NA **	None
44	M149A	Yes	** NA **	None
45	M152A	Yes	** NA **	None
46	M153A	Yes	** NA **	None
47	M155A	Yes	** NA **	None
48	M156A	Yes	** NA **	None
49	M158A	Yes	** NA **	None
50	M159A	Yes	** NA **	None
51	M160A	Yes	** NA **	None
52	M161A	Yes	** NA **	None
53	M163A	Yes	** NA **	None
54	M164A	Yes	** NA **	None
55	M165A	Yes	** NA **	None
56	M166A	Yes	** NA **	None
57	M168	Yes	** NA **	None
58	M169	Yes	** NA **	None
59	M170	Yes	** NA **	None
60	M171	Yes	** NA **	None
61	M136B	Yes	** NA **	None
62	M137B	Yes	** NA **	None
63	M135B	Yes	** NA **	None
64	M136C	Yes	** NA **	None
65	M138B	Yes	** NA **	None
66	M139B	Yes	** NA **	None
67	M158B	Yes		None
68	M134B	Yes		None
69	M137C	Yes		None
70	M248	Yes		None
71	M249	Yes		None

Member Advanced Data (Continued)

	Label	Physical	Deflection Ratio Options	Seismic DR
72	M250	Yes		None
73	RI2	Yes	** NA **	None
74	RI1	Yes	** NA **	None
75	A MP1 S	Yes	** NA **	None
76	RI3	Yes	** NA **	None
77	RI4	Yes	** NA **	None
78	RI12	Yes	** NA **	None
79	RI11	Yes	** NA **	None
80	A MP2 S	Yes	** NA **	None
81	RI13	Yes	** NA **	None
82	RI14	Yes	** NA **	None
83	RI15	Yes	** NA **	None
84	RI22	Yes	** NA **	None
85	RI21	Yes	** NA **	None
86	A MP3 S	Yes	** NA **	None
87	RI32	Yes	** NA **	None
88	RI31	Yes	** NA **	None
89	A MP4 S	Yes	** NA **	None
90	RI72	Yes	** NA **	None
91	RI71	Yes	** NA **	None
92	B MP1 S	Yes	** NA **	None
93	RI73	Yes	** NA **	None
94	RI74	Yes	** NA **	None
95	RI82	Yes	** NA **	None
96	RI81	Yes	** NA **	None
97	B MP2 S	Yes	** NA **	None
98	RI83	Yes	** NA **	None
99	RI84	Yes	** NA **	None
100	RI85	Yes	** NA **	None
101	RI92	Yes	** NA **	None
102	RI91	Yes	** NA **	None
103	B MP3 S	Yes	** NA **	None
104	RI102	Yes	** NA **	None
105	RI101	Yes	** NA **	None
106	B MP4 S	Yes	** NA **	None
107	RI142	Yes	** NA **	None
108	RI141	Yes	** NA **	None
109	G MP1 S	Yes	** NA **	None
110	RI143	Yes	** NA **	None
111	RI144	Yes	** NA **	None
112	RI152	Yes	** NA **	None
113	RI151	Yes	** NA **	None
114	G MP2 S	Yes	** NA **	None
115	RI153	Yes	** NA **	None
116	RI154	Yes	** NA **	None
117	RI155	Yes	** NA **	None
118	RI162	Yes	** NA **	None
119	RI161	Yes	** NA **	None
120	G MP3 S	Yes	** NA **	None
121	RI172	Yes	** NA **	None
122	RI171	Yes	** NA **	None
123	G MP4 S	Yes	** NA **	None

Node Boundary Conditions

	Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
1	N295						
2	N297	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N298						

Node Boundary Conditions (Continued)

Node Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot [k-ft/rad]	Y Rot [k-ft/rad]	Z Rot [k-ft/rad]
4	N300					
5	N302					
6	N303					
7	N222					
8	N224A	Reaction	Reaction	Reaction	Reaction	Reaction
9	N225					
10	N226A					
11	N227					
12	N228A					
13	N244					
14	N246A	Reaction	Reaction	Reaction	Reaction	Reaction
15	N247					
16	N248A					
17	N249					
18	N250					

Envelope Node Reactions

Node Label	X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC		
1	N297	max	1539.765	3	1088.767	15	2947.306	19	865.181	7	8813.119	19	2042.572	7
2		min	-1968.97	11	-1089.518	7	489.92	11	-650.745	15	469.764	11	-2040.888	15
3	N224A	max	1009.109	6	1511.816	14	3002.015	30	-274.058	6	-20.528	5	1727.74	17
4		min	-794.651	14	-1883.893	6	448.545	6	-794.151	30	-4322.829	29	-1728.616	9
5	N246A	max	1370.757	3	1751.588	16	2992.956	24	7649.913	24	-180.237	17	1891.339	12
6		min	-1156.488	11	-1379.302	8	470.273	16	284.548	16	-4743.054	25	-1889.59	4
7	Totals:	max	3832.612	3	4150.23	15	8180.233	27						
8		min	-3832.602	11	-4150.218	7	2616.054	51						

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn	
1	M150A	PIPE 3.0	0.351	22.758	25	0.18	42.611	27	60272.456	65205	5748.75	5748.75	1.379	H1-1b	
2	M135A	PIPE 3.0	0.35	22.758	30	0.179	42.611	32	60272.456	65205	5748.75	5748.75	1.376	H1-1b	
3	M123A	PIPE 3.0	0.346	22.758	19	0.177	42.611	22	60272.456	65205	5748.75	5748.75	1.377	H1-1b	
4	M145	HSS5x3x3/8"	0.295	0	27	0.073	0	z	12	183793.38	225112.5	20255.274	29634.962	2.673	H1-1b
5	M130A	HSS5x3x3/8"	0.294	0	32	0.069	0	z	17	183793.38	225112.5	20255.274	29634.962	2.67	H1-1b
6	M69	HSS5x3x3/8"	0.291	0	22	0.077	0	z	7	183793.38	225112.5	20255.274	29634.962	2.677	H1-1b
7	M144	PL8.5x3/8	0.248	0	27	0.104	0	y	12	103079.172	103275	806.836	18288.283	1.025	H1-1b
8	M129B	PL8.5x3/8	0.248	0	32	0.103	0	y	17	103079.172	103275	806.836	18288.283	1.025	H1-1b
9	M6	PL8.5x3/8	0.245	0	22	0.108	0	y	7	103079.172	103275	806.836	18288.283	1.025	H1-1b
10	M128B	PL8.5x3/8	0.243	0	30	0.078	0	y	10	103079.172	103275	806.836	18288.283	1.004	H1-1b
11	M143	PL8.5x3/8	0.242	0	24	0.08	0	y	4	103079.172	103275	806.836	18288.283	1.004	H1-1b
12	G_MP2_S	PIPE 2.5	0.24	86.211	15	0.042	41.116	3	20573.263	50715	3596.25	3596.25	2.038	H1-1b	
13	B_MP2_S	PIPE 2.5	0.238	86.211	7	0.043	41.116	14	20573.263	50715	3596.25	3596.25	2.056	H1-1b	
14	B_MP3_S	PIPE 2.5	0.238	86.211	6	0.044	86.211	17	20573.263	50715	3596.25	3596.25	3	H1-1b	
15	A_MP2_S	PIPE 2.5	0.238	86.211	3	0.041	41.116	8	20573.263	50715	3596.25	3596.25	3	H1-1b	
16	M5	PL8.5x3/8	0.237	0	21	0.085	0	y	15	103079.172	103275	806.836	18288.283	1.001	H1-1b
17	A_MP3_S	PIPE 2.5	0.229	86.211	16	0.048	86.211	12	20573.263	50715	3596.25	3596.25	3	H1-1b	
18	G_MP3_S	PIPE 2.5	0.226	86.211	11	0.052	86.211	7	20573.263	50715	3596.25	3596.25	2.407	H1-1b	
19	M137C	PIPE 2.0	0.2	20.125	11	0.104	20.125	4	31064.555	32130	1871.625	1871.625	2.248	H1-1b	
20	M158B	PIPE 2.0	0.196	20.125	6	0.111	20.125	15	31064.555	32130	1871.625	1871.625	2.25	H1-1b	
21	M134B	PIPE 2.0	0.194	20.125	16	0.1	20.125	9	31064.555	32130	1871.625	1871.625	2.249	H1-1b	
22	B_MP1_S	PIPE 2.5	0.178	86.211	23	0.063	39.789	16	20573.263	50715	3596.25	3596.25	3	H1-1b	
23	A_MP1_S	PIPE 2.5	0.177	86.211	33	0.066	86.211	3	20573.263	50715	3596.25	3596.25	3	H1-1b	
24	G_MP1_S	PIPE 2.5	0.177	86.211	28	0.069	86.211	14	20573.263	50715	3596.25	3596.25	2.873	H1-1b	
25	M162A	PIPE 3.0	0.172	37.895	30	0.112	142.105	68	28250.554	65205	5748.75	5748.75	1.933	H1-1b	
26	M167	PIPE 3.0	0.171	37.895	24	0.109	37.895	13	28250.554	65205	5748.75	5748.75	1.931	H1-1b	
27	M172	PIPE 3.0	0.17	37.895	19	0.113	37.895	7	28250.554	65205	5748.75	5748.75	1.941	H1-1b	
28	B_MP4_S	PIPE 2.5	0.158	86.211	27	0.055	86.211	15	20573.263	50715	3596.25	3596.25	2.62	H1-1b	

Envelope AISC 15TH (360-16): LRFD Member Steel Code Checks (Continued)

Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-y [lb-ft]	phi*Mn z-z [lb-ft]	Cb	Eqn	
29	A_MP4_S	PIPE 2.5	0.158	86.211	22	0.05	86.211	10	20573.263	50715	3596.25	3596.25	3	H1-1b	
30	M139A	L1.5x1.5x1/4	0.157	0	31	0.018	0	y	32	18330.114	22275	360.338	834.027	1.5	H2-1
31	M154A	L1.5x1.5x1/4	0.157	0	26	0.018	0	y	27	18330.114	22275	360.338	834.027	1.5	H2-1
32	G_MP4_S	PIPE 2.5	0.157	86.211	32	0.051	86.211	4	20573.263	50715	3596.25	3596.25	3	H1-1b	
33	M248	PIPE 2.5	0.157	52.105	15	0.12	140.526	3	14558.792	50715	3596.25	3596.25	3	H1-1b	
34	M250	PIPE 2.5	0.156	52.105	5	0.116	140.526	8	14558.792	50715	3596.25	3596.25	3	H1-1b	
35	M126B	L1.5x1.5x1/4	0.155	0	20	0.018	0	y	22	18330.114	22275	360.338	834.027	1.5	H2-1
36	M249	PIPE 2.5	0.151	52.105	10	0.119	140.526	14	14558.792	50715	3596.25	3596.25	3	H1-1b	
37	M136A	PIPE 3.0	0.139	8.782	15	0.144	8.782	24	64445.758	65205	5748.75	5748.75	1.235	H1-1b	
38	M125A	PIPE 3.0	0.134	8.782	4	0.144	8.782	30	64445.758	65205	5748.75	5748.75	1.229	H1-1b	
39	M151A	PIPE 3.0	0.133	8.782	9	0.143	8.968	30	64445.758	65205	5748.75	5748.75	1.184	H1-1b	
40	M157A	L1.5x1.5x1/4	0.128	0	23	0.015	0	y	23	18330.114	22275	360.338	834.027	1.5	H2-1
41	M142A	L1.5x1.5x1/4	0.128	0	29	0.015	0	y	29	18330.114	22275	360.338	834.027	1.5	H2-1
42	M129A	L1.5x1.5x1/4	0.127	0	34	0.015	0	y	19	18330.114	22275	360.338	834.027	1.5	H2-1

TOWER-MOUNT CONNECTION ANALYSIS

v.1.0.0

SITE INFORMATION	
Site ID	283562
Site Name	NORTH BLOOMFIELD CT
Project ID	41124-13732456_C8_01-01-MA

ANALYSIS PARAMETERS	
TIA Revision	H

APPLIED FORCES FROM R3D		
Member Label	M130A-LC30	
Member End Label	I	
Force-X	Fx, lbs	-152.2
Force-Y	Fy, lbs	2996.8
Force-Z	Fz, lbs	-14.8
Moment X-X	Mx, lbs-ft	-247.5
Moment Y-Y	My, lbs-ft	12.1
Moment Z-Z	Mz, lbs-ft	8683.4

STANDOFF MEMBER PROPERTIES	
Standoff Member Type	Square/Rect. HSS
Standoff Member Shape	HSS5X3X3/8
Standoff Member Grade	A500-46 Gr.B Rect.
Member to Plate Weld Size, in	5/16

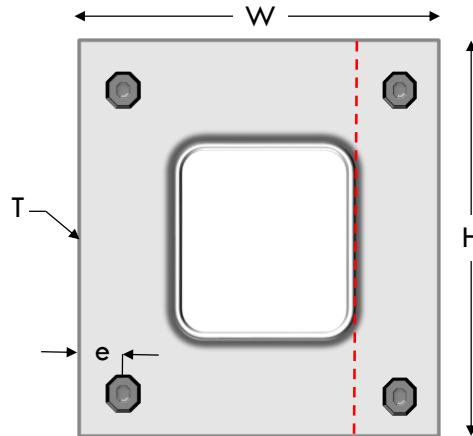
BOLT & PLATE PROPERTIES	
Bolt Quantity	4
Bolt Edge Distance (e), in	1.50
Nominal Bolt Diameter (ØDb), in	0.75
Bolt Grade	A36
Plate Height (H), in	10.00
Plate Width (W), in	10.00
Plate Thickness (T), in	0.75
Plate Grade	A36

BOLT ANALYSIS	
Shear Demand (Vu), k	0.79
Shear Capacity (ΦRnv), k	9.61
Tension Demand (Tu), k	10.56
Tension Capacity (ΦRnt), k	14.55
Shear Utilization	8.2%
Tension Utilization	72.6%
Interaction Utilization	53.4%

PASS



319 Chapanoke Road, Suite 118
Raleigh, NC 27603
Office: (405) 348-5460
Fax: (405) 341-6334



MATERIAL PROPERTIES	
Standoff Member - Yield Strength (Fy), ksi	46
Standoff Member - Ultimate Strength (Fu), ksi	58
Bolt - Yield Strength (Fy), ksi	36
Bolt - Tensile Strength (Fu), ksi	58
Plate - Yield Strength (Fy), ksi	36
Plate - Ultimate Strength (Fu), ksi	58



AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 109 ft Monopole
ATC Site Name : NORTH BLOOMFIELD CT,CT
ATC Site Number : 283562
Engineering Number : 13732456_C3_04
Proposed Carrier : T-MOBILE
Carrier Site Name : CTHA068A replacement for CTHA500A
Carrier Site Number : CTHA068A
Site Location : 2627 Day Hill Road
Bloomfield, CT 06002-1177
41.8765, -72.7418
County : Hartford
Date : November 12, 2021
Max Usage : 85%
Result : Pass

Prepared By:

Tanner Putman
Structural Engineer

Reviewed By:



Authorized by "EOR"
12 Nov 2021 04:13:54

COA : PEC.0001553



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Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 109 ft Monopole to reflect the change in loading by T-MOBILE.

Supporting Documents

Tower Drawings	Sabre Job #67167, dated October 15, 2012
Foundation Drawing	Sabre Job #67167, dated September 19, 2012
Geotechnical Report	DET Job #2011-20, dated January 28, 2012

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	116 mph (3-second gust)
Basic Wind Speed w/ Ice:	50 mph (3-second gust) w/ 1.50" radial ice concurrent
Code:	ANSI/TIA-222-H / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Risk Category:	II
Topographic Factor Procedure:	Method 1
Topographic Category:	1
Crest Height (H):	0 ft
Crest Length (L):	0 ft
Spectral Response:	$S_s = 0.18, S_i = 0.05$
Site Class:	D - Stiff Soil - Default

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
110.0	6	Commscope CBC78T-DS-43-2X	T-Arm with Reinforcement	(6) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	3	Samsung B5/B13 RRH-BR04C			
	3	Samsung B2/B66A RRH-BR049			
	2	Raycap RC3DC-3315-PF-48			
	3	Samsung MT6407-77A			
	6	Commscope JAHH-65B-R3B			
	6	Antel LPA-80063/6CF			
100.0	3	RFS APXVAARR24_43-U-NA20	-	(3) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE

Equipment to be Removed

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
100.0	3	Ericsson Radio 4449 B12,B71	T-Arm	-	T-MOBILE
	3	Ericsson AIR-32 B2A/B66Aa			
	3	Ericsson AIR 21, 1.3M, B2A B4P (91.5 lbs)			

Proposed Equipment

Elev. ¹ (ft)	Qty	Equipment	Mount Type	Lines	Carrier
100.0	3	Ericsson Radio 4449 B71 B85A	Perfect Vision PV-LPPGS-12M-HR25-AP4	(3) 1.99" (50.7mm) Hybrid	T-MOBILE
	3	Ericsson 4460 BAND 2/25			
	3	Ericsson Air6449 B41	Triangular Platform with Handrails		

¹ Contracted elevations are shown for appurtenances within contracted installation tolerances. Appurtenances outside of contract limits are shown at installed elevations.

Install proposed lines inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	69%	Pass
Shaft	75%	Pass
Base Plate	85%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	1339.2	76%
Shear (Kips)	16.1	70%
Axial (Kips)	21.7	65%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
100.0	Ericsson Radio 4449 B71 B85A	T-MOBILE	0.961	0.990
	Ericsson Air6449 B41			
	Ericsson 4460 BAND 2/25			

*Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-H

Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates, and subsidiaries (collectively “American Tower”) are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

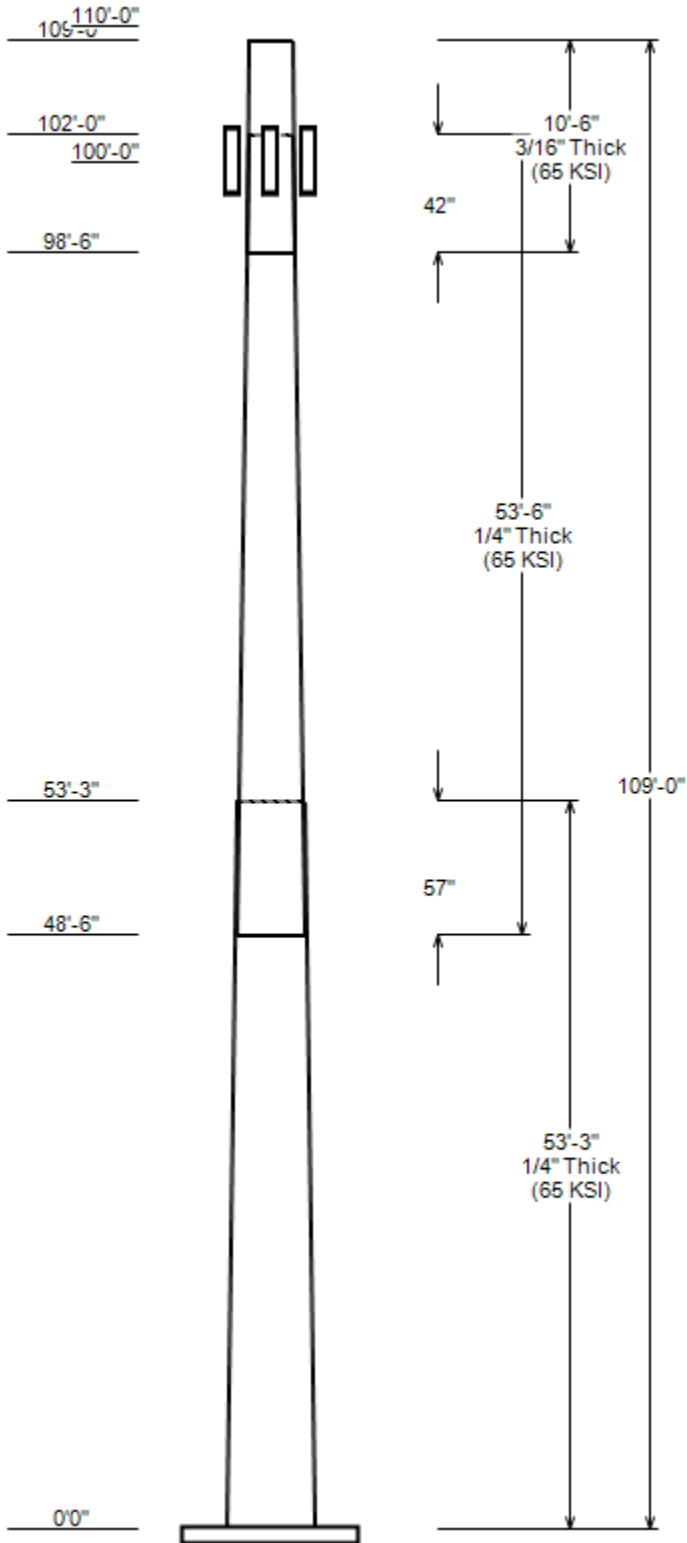
Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.

JOB INFORMATION

Asset : 283562, NORTH BLOOMFIELD CT
 Client : T-MOBILE
 Code : ANSI/TIA-222-H

Height : 109 ft
 Base Width : 42.92
 Shape : 18 Sides



SITE PARAMETERS

Base Elev (ft): 0.00 Structure Class: II
 Taper : 0.20000 (In/ft) Exposure : C
 Topographic Category : 1 Topographic Feature:
 Topo Method : Method 1

SECTION PROPERTIES

Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Overlap Length (in)	Steel Grade (ksi)
		Across Flats Top	Across Flats Bottom			
1	53.250	32.27	42.92	0.250	0.000	18 Sides 65
2	53.500	23.02	33.72	0.250	57.000	18 Sides 65
3	10.500	22.00	24.10	0.188	42.000	18 Sides 65

DISCRETE APPURTENANCE

Attach Elev (ft)	Force Elev (ft)	Qty	Description
110.0	110.0	6	Commscope CBC78T-DS-43-2X
110.0	110.0	3	Samsung B5/B13 RRH-BR04C
110.0	110.0	3	Samsung B2/B66A RRH-BR049
110.0	112.0	2	Raycap RC3DC-3315-PF-48
110.0	110.0	3	Samsung MT6407-77A
110.0	112.0	6	Commscope JAHH-65B-R3B
110.0	112.0	6	Antel LPA-80063/6CF
110.0	110.0	3	Generic Round T-Arm
109.0	109.0	1	Generic Mount Reinforcement
100.0	100.0	3	Ericsson Radio 4449 B71 B85A
100.0	100.0	3	Ericsson 4460 BAND 2/25
100.0	100.0	3	Ericsson Air6449 B41
100.0	100.0	3	RFS APXVAARR24_43-U-NA20
100.0	100.0	1	Perfect Vision PV-LPPGS-12M-HR

LINEAR APPURTENANCE

Elev From (ft)	Elev To (ft)	Description	Exp To Wind
0.0	110.0	1 5/8" Hybriflex	No
0.0	110.0	1 5/8" Coax	No
0.0	100.0	1.99" (50.7mm) Hybrid	No
0.0	100.0	1 5/8" (1.63"-41.3mm) Fiber	No

LOAD CASES

1.2D + 1.0W Normal	116 mph wind with no ice
0.9D + 1.0W Normal	116 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Nor	50 mph wind with 1.5" radial ice
1.2D + 1.0Ev + 1.0Eh Nor	Seismic
0.9D - 1.0Ev + 1.0Eh Nor	Seismic (Reduced DL)
1.0D + 1.0W Service Norm	60 mph Wind with No Ice

REACTIONS

Load Case	Moment (kip-ft)	Shear (Kip)	Axial (Kip)
1.2D + 1.0W Normal	1339.15	16.06	21.68
0.9D + 1.0W Normal	1325.29	16.05	16.25
1.2D + 1.0Di + 1.0Wi Normal	395.83	4.78	36.03
1.2D + 1.0Ev + 1.0Eh Normal	52.10	0.54	21.58
0.9D - 1.0Ev + 1.0Eh Normal	51.37	0.54	15.04
1.0D + 1.0W Service Normal	318.59	3.84	18.10

DISH DEFLECTIONS

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
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ASSET: 283562, NORTH BLOOMFIELD CT
CUSTOMER: T-MOBILE

CODE: ANSI/TIA-222-H
ENG NO: 13732456_C3_04

ANALYSIS PARAMETERS

Location:	Hartford County,CT	Height:	109 ft
Type and Shape:	Custom, 18 Sides	Base Diameter:	42.92 in
Manufacturer:	Sabre	Top Diameter:	22.00 in
K_d (non-service):	0.95	Taper:	0.2000 in/ft
K_e:	0.99	Rotation:	0.000°

ICE & WIND PARAMETERS

Exposure Category:	C	Design Wind Speed w/o Ice:	116 mph
Risk Category:	II	Design Wind Speed w/Ice:	50 mph
Topo Factor Procedure:	Method 1	Operational Wind Speed:	60 mph
Topographic Category:	1	Design Ice Thickness:	1.50 in
Crest Height:	0 ft	HMSL:	179.00 ft

SEISMIC PARAMETERS

Analysis Method:	Equivalent Lateral Force Method		
Site Class:	D - Stiff Soil	Period Based on Rayleigh Method (sec):	1.98
T_L (sec):	6	P:	1
S_s:	0.177	S₁:	0.054
F_a:	1.600	F_v:	2.400
S_{ds}:	0.189	S_{dt}:	0.086
		C_s:	0.030
		C_s Max:	0.030
		C_s Min:	0.030

LOAD CASES

1.2D + 1.0W Normal	116 mph wind with no ice
0.9D + 1.0W Normal	116 mph wind with no ice
1.2D + 1.0Di + 1.0Wi Normal	50 mph wind with 1.5" radial ice
1.2D + 1.0Ev + 1.0Eh Normal	Seismic
0.9D - 1.0Ev + 1.0Eh Normal	Seismic (Reduced DL)
1.0D + 1.0W Service Normal	60 mph Wind with No Ice

SHAFT SECTION PROPERTIES

Sect Info	Bottom										Top								
	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint len (in)	Weight (lb)	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	53.25	0.2500	65		0.00	5,369	2	0.000	33.86	7,788.5	28.51	171.68	32.27	53.25	25.41	3,291.2	21.00	129.08	0.2000
2-18	53.50	0.2500	65	Slip	0	4,062	2	48.500	26.56	3,758.8	22.02	134.88	23.02	102.00	18.07	1,183.5	14.47	92.08	0.2000
3-18	10.50	0.1875	65	Slip	0	486	0	98.500	14.23	1,027.4	20.90	128.51	22.00	109.00	12.98	779.8	18.92	117.31	0.2000
Shaft Weight						9,917													

DISCRETE APPURTENANCE PROPERTIES

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice			Ice		
					Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor
110.00	Commscope CBC78T-DS-43-2X	6	0.80	0.000	20.70	0.552	0.50	42.10	1.044	0.50
110.00	Antel LPA-80063/6CF	6	0.80	2.000	27.00	9.593	0.76	304.14	10.905	0.76
110.00	Commscope JAHH-65B-R3B	6	0.80	2.000	60.60	9.113	0.69	256.59	11.801	0.69
110.00	Samsung MT6407-77A	3	0.80	0.000	81.60	4.709	0.61	180.34	6.180	0.61
110.00	Raycap RC3DC-3315-PF-48	2	0.80	2.000	32.00	3.781	0.67	137.98	5.065	0.67
110.00	Samsung B2/B66A RRH-BR049	3	0.80	0.000	84.40	1.875	0.50	146.20	2.749	0.50
110.00	Generic Round T-Arm	3	0.75	0.000	312.50	9.700	0.67	565.59	17.687	0.67
110.00	Samsung B5/B13 RRH-BR04C	3	0.80	0.000	70.30	1.875	0.50	125.72	2.749	0.50
109.00	Generic Mount Reinforcement	1	1.00	0.000	200.00	7.500	1.00	387.49	14.753	1.00
100.00	Perfect Vision PV-LPPGS-12M-HR	1	1.00	0.000	2500.00	27.200	1.00	4174.61	45.420	1.00
100.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.243	0.63	505.37	23.809	0.63
100.00	Ericsson Air6449 B41	3	0.75	0.000	104.00	5.682	0.63	235.04	7.208	0.63
100.00	Ericsson 4460 BAND 2/25	3	0.75	0.000	109.00	2.564	0.67	193.99	3.577	0.67
100.00	Ericsson Radio 4449 B71 B85A	3	0.75	0.000	75.00	1.650	0.50	132.82	2.467	0.50
Totals	Num Loadings: 14	46			6,307.90			14,710.25		

LINEAR APPURTENANCE PROPERTIES

Load Case Azimuth (deg) : _

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Max Flat	Coax/Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	110.00	6	1 5/8" Coax	1.98	0.82	N	0	0	0	0	0	N	VERIZON WIREL
0.00	110.00	2	1 5/8" Hybriflex	1.98	1.3	N	0	0	0	0	0	N	VERIZON WIREL
0.00	100.00	3	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0	0	0	0	N	T-MOBILE
0.00	100.00	3	1.99" (50.7mm) Hybrid	1.99	1.9	N	0	0	0	0	0	N	T-MOBILE

SEGMENT PROPERTIES

(Max Len: 5.ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Fy (ksi)	S (in ³)	Z (in ³)	Weight (lb)
0.00		0.2500	42.920	33.857	7,788.50	28.51	171.68	67.9	357.4	0.0	0.0
5.00		0.2500	41.920	33.064	7,253.60	27.80	167.68	68.7	340.8	0.0	569.3
10.00		0.2500	40.920	32.270	6,743.80	27.10	163.68	69.5	324.6	0.0	555.8
15.00		0.2500	39.920	31.477	6,258.50	26.39	159.68	70.4	308.8	0.0	542.3
20.00		0.2500	38.920	30.684	5,797.00	25.69	155.68	71.2	293.4	0.0	528.8
25.00		0.2500	37.920	29.890	5,358.80	24.98	151.68	72	278.3	0.0	515.3
30.00		0.2500	36.920	29.097	4,943.30	24.28	147.68	72.8	263.7	0.0	501.8
35.00		0.2500	35.920	28.303	4,549.80	23.57	143.68	73.7	249.5	0.0	488.3
40.00		0.2500	34.920	27.510	4,177.80	22.87	139.68	74.5	235.6	0.0	474.8
45.00		0.2500	33.920	26.716	3,826.60	22.16	135.68	75.3	222.2	0.0	461.3
48.50	Bot - Section 2	0.2500	33.220	26.161	3,592.90	21.67	132.88	75.9	213.0	0.0	314.9
50.00		0.2500	32.920	25.923	3,495.70	21.46	131.68	76.2	209.1	0.0	267.9
53.25	Top - Section 1	0.2500	32.770	25.804	3,447.80	21.35	131.08	76.3	207.2	0.0	572.0
55.00		0.2500	32.420	25.526	3,337.60	21.10	129.68	76.6	202.8	0.0	152.8
60.00		0.2500	31.420	24.733	3,036.00	20.40	125.68	77.4	190.3	0.0	427.5
65.00		0.2500	30.420	23.939	2,753.00	19.69	121.68	78.2	178.3	0.0	414.0
70.00		0.2500	29.420	23.146	2,488.20	18.99	117.68	79.1	166.6	0.0	400.5
75.00		0.2500	28.420	22.352	2,241.00	18.28	113.68	79.9	155.3	0.0	387.0
80.00		0.2500	27.420	21.559	2,010.70	17.58	109.68	80.7	144.4	0.0	373.5
85.00		0.2500	26.420	20.765	1,796.80	16.87	105.68	81.6	134.0	0.0	360.0
90.00		0.2500	25.420	19.972	1,598.60	16.17	101.68	82.4	123.9	0.0	346.5
95.00		0.2500	24.420	19.178	1,415.50	15.46	97.68	82.6	114.2	0.0	333.0
98.50	Bot - Section 3	0.2500	23.720	18.623	1,296.10	14.97	94.88	82.6	107.6	0.0	225.1
100.00		0.2500	23.420	18.385	1,247.00	14.76	93.68	82.6	104.9	0.0	166.6
102.00	Top - Section 2	0.1875	23.395	13.811	939.80	20.24	124.77	77.6	79.1	0.0	218.8
105.00		0.1875	22.795	13.454	868.80	19.67	121.57	78.3	75.1	0.0	139.2
109.00		0.1875	21.995	12.978	779.80	18.92	117.31	79.1	69.8	0.0	179.9

Totals: 9,916.9

Load Case: 1.2D + 1.0W Normal	116 mph wind with no ice	22 Iterations
Gust Response Factor:	1.10	
Dead load Factor:	1.20	
Wind Load Factor:	1.00	

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-21.68	-16.06	0.00	-1,339.2	0.00	1,339.15	2,068.11	594.20	2,289.94	1,819.33	0	0	0.747
5.00	-20.83	-15.75	0.00	-1,258.8	0.00	1,258.85	2,044.32	580.27	2,183.87	1,756.02	0.13	-0.24	0.728
10.00	-19.99	-15.45	0.00	-1,180.1	0.00	1,180.09	2,019.36	566.35	2,080.32	1,692.70	0.5	-0.48	0.708
15.00	-19.17	-15.14	0.00	-1,102.9	0.00	1,102.86	1,993.20	552.42	1,979.29	1,629.44	1.13	-0.72	0.687
20.00	-18.37	-14.82	0.00	-1,027.2	0.00	1,027.17	1,965.87	538.50	1,880.77	1,566.33	2.01	-0.96	0.666
25.00	-17.59	-14.48	0.00	-953.1	0.00	953.07	1,937.35	524.57	1,784.76	1,503.43	3.15	-1.2	0.644
30.00	-16.83	-14.14	0.00	-880.6	0.00	880.65	1,907.64	510.65	1,691.27	1,440.82	4.54	-1.45	0.621
35.00	-16.09	-13.79	0.00	-810.0	0.00	809.95	1,876.75	496.72	1,600.29	1,378.57	6.18	-1.69	0.597
40.00	-15.37	-13.43	0.00	-741.0	0.00	741.02	1,844.67	482.79	1,511.83	1,316.76	8.08	-1.93	0.572
45.00	-14.67	-13.12	0.00	-673.9	0.00	673.88	1,811.41	468.87	1,425.89	1,255.46	10.24	-2.17	0.546
48.50	-14.20	-12.93	0.00	-628.0	0.00	627.97	1,787.43	459.12	1,367.22	1,212.88	11.89	-2.34	0.526
50.00	-13.83	-12.75	0.00	-608.6	0.00	608.58	1,776.97	454.94	1,342.46	1,194.73	12.64	-2.42	0.518
53.25	-13.05	-12.54	0.00	-567.2	0.00	567.15	1,771.70	452.85	1,330.16	1,185.68	14.34	-2.57	0.486
55.00	-12.81	-12.30	0.00	-545.2	0.00	545.20	1,759.30	447.98	1,301.68	1,164.62	15.29	-2.65	0.476
60.00	-12.17	-11.92	0.00	-483.7	0.00	483.70	1,723.08	434.06	1,222.03	1,104.91	18.19	-2.87	0.446
65.00	-11.54	-11.54	0.00	-424.1	0.00	424.10	1,685.67	420.13	1,144.88	1,045.97	21.32	-3.09	0.413
70.00	-10.93	-11.17	0.00	-366.4	0.00	366.38	1,647.08	406.20	1,070.25	987.87	24.66	-3.29	0.378
75.00	-10.35	-10.80	0.00	-310.5	0.00	310.54	1,607.30	392.28	998.14	930.68	28.21	-3.48	0.341
80.00	-9.79	-10.42	0.00	-256.6	0.00	256.56	1,566.34	378.35	928.54	874.48	31.95	-3.66	0.300
85.00	-9.24	-10.06	0.00	-204.4	0.00	204.44	1,524.19	364.43	861.46	819.35	35.88	-3.83	0.256
90.00	-8.72	-9.70	0.00	-154.2	0.00	154.15	1,480.86	350.50	796.89	765.35	39.96	-3.97	0.208
95.00	-8.22	-9.38	0.00	-105.7	0.00	105.67	1,424.84	336.58	734.84	706.85	44.18	-4.08	0.156
98.50	-7.88	-9.20	0.00	-72.8	0.00	72.83	1,383.58	326.83	692.90	666.30	47.2	-4.15	0.116
100.00	-3.40	-5.60	0.00	-59.0	0.00	59.03	1,365.89	322.65	675.30	649.29	48.51	-4.17	0.094
102.00	-3.13	-5.41	0.00	-47.8	0.00	47.84	964.52	242.38	508.07	460.47	50.26	-4.19	0.108
105.00	-2.95	-5.18	0.00	-31.6	0.00	31.60	947.62	236.11	482.14	440.61	52.9	-4.22	0.075
109.00	0.00	-4.94	0.00	-10.9	0.00	10.89	924.42	227.76	448.63	414.49	56.45	-4.25	0.027

Load Case: 0.9D + 1.0W Normal	116 mph wind with no ice	22 Iterations
Gust Response Factor: 1.10		
Dead load Factor: 0.90		
Wind Load Factor: 1.00		

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-16.25	-16.05	0.00	-1,325.3	0.00	1,325.29	2,068.11	594.20	2,289.94	1,819.33	0	0	0.737
5.00	-15.60	-15.72	0.00	-1,245.0	0.00	1,245.04	2,044.32	580.27	2,183.87	1,756.02	0.13	-0.23	0.717
10.00	-14.95	-15.39	0.00	-1,166.5	0.00	1,166.46	2,019.36	566.35	2,080.32	1,692.70	0.5	-0.47	0.697
15.00	-14.33	-15.07	0.00	-1,089.5	0.00	1,089.50	1,993.20	552.42	1,979.29	1,629.44	1.12	-0.71	0.677
20.00	-13.71	-14.73	0.00	-1,014.2	0.00	1,014.17	1,965.87	538.50	1,880.77	1,566.33	1.99	-0.95	0.655
25.00	-13.12	-14.38	0.00	-940.5	0.00	940.53	1,937.35	524.57	1,784.76	1,503.43	3.11	-1.19	0.633
30.00	-12.53	-14.02	0.00	-868.6	0.00	868.64	1,907.64	510.65	1,691.27	1,440.82	4.49	-1.43	0.610
35.00	-11.97	-13.65	0.00	-798.6	0.00	798.56	1,876.75	496.72	1,600.29	1,378.57	6.11	-1.67	0.586
40.00	-11.42	-13.28	0.00	-730.3	0.00	730.30	1,844.67	482.79	1,511.83	1,316.76	7.99	-1.91	0.562
45.00	-10.89	-12.96	0.00	-663.9	0.00	663.90	1,811.41	468.87	1,425.89	1,255.46	10.11	-2.14	0.536
48.50	-10.53	-12.77	0.00	-618.5	0.00	618.53	1,787.43	459.12	1,367.22	1,212.88	11.75	-2.31	0.517
50.00	-10.25	-12.59	0.00	-599.4	0.00	599.38	1,776.97	454.94	1,342.46	1,194.73	12.48	-2.38	0.508
53.25	-9.66	-12.38	0.00	-558.5	0.00	558.47	1,771.70	452.85	1,330.16	1,185.68	14.16	-2.54	0.477
55.00	-9.48	-12.13	0.00	-536.8	0.00	536.80	1,759.30	447.98	1,301.68	1,164.62	15.11	-2.62	0.467
60.00	-8.99	-11.75	0.00	-476.2	0.00	476.15	1,723.08	434.06	1,222.03	1,104.91	17.97	-2.84	0.437
65.00	-8.51	-11.37	0.00	-417.4	0.00	417.40	1,685.67	420.13	1,144.88	1,045.97	21.05	-3.04	0.405
70.00	-8.05	-10.99	0.00	-360.6	0.00	360.56	1,647.08	406.20	1,070.25	987.87	24.34	-3.25	0.371
75.00	-7.61	-10.62	0.00	-305.6	0.00	305.61	1,607.30	392.28	998.14	930.68	27.84	-3.44	0.334
80.00	-7.19	-10.25	0.00	-252.5	0.00	252.53	1,566.34	378.35	928.54	874.48	31.54	-3.61	0.294
85.00	-6.78	-9.88	0.00	-201.3	0.00	201.29	1,524.19	364.43	861.46	819.35	35.41	-3.77	0.251
90.00	-6.39	-9.52	0.00	-151.9	0.00	151.88	1,480.86	350.50	796.89	765.35	39.44	-3.91	0.203
95.00	-6.02	-9.22	0.00	-104.3	0.00	104.26	1,424.84	336.58	734.84	706.85	43.6	-4.03	0.152
98.50	-5.76	-9.04	0.00	-72.0	0.00	71.99	1,383.58	326.83	692.90	666.30	46.57	-4.09	0.113
100.00	-2.46	-5.52	0.00	-58.4	0.00	58.43	1,365.89	322.65	675.30	649.29	47.86	-4.11	0.092
102.00	-2.26	-5.35	0.00	-47.4	0.00	47.38	964.52	242.38	508.07	460.47	49.59	-4.14	0.106
105.00	-2.13	-5.11	0.00	-31.3	0.00	31.34	947.62	236.11	482.14	440.61	52.19	-4.16	0.074
109.00	0.00	-4.94	0.00	-10.9	0.00	10.89	924.42	227.76	448.63	414.49	55.69	-4.19	0.027

Load Case: 1.2D + 1.0Di + 1.0Wi Normal		50 mph wind with 1.5" radial ice		22 Iterations
Gust Response Factor:	1.10	Ice Dead Load Factor	1.00	
Dead load Factor:	1.20			Ice Importance Factor 1.00
Wind Load Factor:	1.00			

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-36.03	-4.78	0.00	-395.8	0.00	395.83	2,068.11	594.20	2,289.94	1,819.33	0	0	0.235
5.00	-34.92	-4.69	0.00	-371.9	0.00	371.94	2,044.32	580.27	2,183.87	1,756.02	0.04	-0.07	0.229
10.00	-33.80	-4.61	0.00	-348.5	0.00	348.48	2,019.36	566.35	2,080.32	1,692.70	0.15	-0.14	0.223
15.00	-32.68	-4.52	0.00	-325.4	0.00	325.44	1,993.20	552.42	1,979.29	1,629.44	0.33	-0.21	0.216
20.00	-31.58	-4.43	0.00	-302.8	0.00	302.84	1,965.87	538.50	1,880.77	1,566.33	0.59	-0.28	0.209
25.00	-30.49	-4.33	0.00	-280.7	0.00	280.70	1,937.35	524.57	1,784.76	1,503.43	0.93	-0.35	0.203
30.00	-29.42	-4.23	0.00	-259.0	0.00	259.05	1,907.64	510.65	1,691.27	1,440.82	1.34	-0.43	0.195
35.00	-28.37	-4.12	0.00	-237.9	0.00	237.91	1,876.75	496.72	1,600.29	1,378.57	1.83	-0.5	0.188
40.00	-27.35	-4.01	0.00	-217.3	0.00	217.30	1,844.67	482.79	1,511.83	1,316.76	2.39	-0.57	0.180
45.00	-26.34	-3.92	0.00	-197.2	0.00	197.24	1,811.41	468.87	1,425.89	1,255.46	3.02	-0.64	0.172
48.50	-25.65	-3.86	0.00	-183.5	0.00	183.53	1,787.43	459.12	1,367.22	1,212.88	3.51	-0.69	0.166
50.00	-25.19	-3.80	0.00	-177.8	0.00	177.75	1,776.97	454.94	1,342.46	1,194.73	3.73	-0.71	0.163
53.25	-24.21	-3.74	0.00	-165.4	0.00	165.39	1,771.70	452.85	1,330.16	1,185.68	4.23	-0.76	0.153
55.00	-23.87	-3.66	0.00	-158.8	0.00	158.85	1,759.30	447.98	1,301.68	1,164.62	4.51	-0.78	0.150
60.00	-22.92	-3.54	0.00	-140.5	0.00	140.54	1,723.08	434.06	1,222.03	1,104.91	5.36	-0.84	0.141
65.00	-21.99	-3.42	0.00	-122.8	0.00	122.84	1,685.67	420.13	1,144.88	1,045.97	6.28	-0.91	0.131
70.00	-21.09	-3.30	0.00	-105.7	0.00	105.74	1,647.08	406.20	1,070.25	987.87	7.26	-0.97	0.120
75.00	-20.21	-3.17	0.00	-89.3	0.00	89.26	1,607.30	392.28	998.14	930.68	8.3	-1.02	0.109
80.00	-19.36	-3.05	0.00	-73.4	0.00	73.40	1,566.34	378.35	928.54	874.48	9.4	-1.07	0.096
85.00	-18.53	-2.92	0.00	-58.2	0.00	58.15	1,524.19	364.43	861.46	819.35	10.55	-1.12	0.083
90.00	-17.73	-2.80	0.00	-43.5	0.00	43.53	1,480.86	350.50	796.89	765.35	11.74	-1.16	0.069
95.00	-16.95	-2.69	0.00	-29.5	0.00	29.53	1,424.84	336.58	734.84	706.85	12.97	-1.19	0.054
98.50	-16.42	-2.63	0.00	-20.1	0.00	20.10	1,383.58	326.83	692.90	666.30	13.86	-1.21	0.042
100.00	-8.54	-1.60	0.00	-16.2	0.00	16.17	1,365.89	322.65	675.30	649.29	14.24	-1.22	0.031
102.00	-8.15	-1.53	0.00	-13.0	0.00	12.97	964.52	242.38	508.07	460.47	14.75	-1.22	0.037
105.00	-7.81	-1.45	0.00	-8.4	0.00	8.36	947.62	236.11	482.14	440.61	15.52	-1.23	0.027
109.00	0.00	-1.28	0.00	-2.6	0.00	2.56	924.42	227.76	448.63	414.49	16.55	-1.24	0.006

Load Case: 1.0D + 1.0W Service Normal	60 mph Wind with No Ice	21 Iterations
Gust Response Factor: 1.10		
Dead load Factor: 1.00		
Wind Load Factor: 1.00		

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (ft-kips)	Phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-18.10	-3.84	0.00	-318.6	0.00	318.59	2,068.11	594.20	2,289.94	1,819.33	0	0	0.184
5.00	-17.43	-3.76	0.00	-299.4	0.00	299.38	2,044.32	580.27	2,183.87	1,756.02	0.03	-0.06	0.179
10.00	-16.78	-3.69	0.00	-280.6	0.00	280.56	2,019.36	566.35	2,080.32	1,692.70	0.12	-0.11	0.174
15.00	-16.15	-3.61	0.00	-262.1	0.00	262.12	1,993.20	552.42	1,979.29	1,629.44	0.27	-0.17	0.169
20.00	-15.52	-3.53	0.00	-244.1	0.00	244.06	1,965.87	538.50	1,880.77	1,566.33	0.48	-0.23	0.164
25.00	-14.92	-3.45	0.00	-226.4	0.00	226.39	1,937.35	524.57	1,784.76	1,503.43	0.75	-0.29	0.158
30.00	-14.32	-3.37	0.00	-209.1	0.00	209.14	1,907.64	510.65	1,691.27	1,440.82	1.08	-0.34	0.153
35.00	-13.74	-3.28	0.00	-192.3	0.00	192.31	1,876.75	496.72	1,600.29	1,378.57	1.47	-0.4	0.147
40.00	-13.17	-3.19	0.00	-175.9	0.00	175.91	1,844.67	482.79	1,511.83	1,316.76	1.92	-0.46	0.141
45.00	-12.62	-3.12	0.00	-160.0	0.00	159.95	1,811.41	468.87	1,425.89	1,255.46	2.43	-0.52	0.134
48.50	-12.24	-3.07	0.00	-149.0	0.00	149.04	1,787.43	459.12	1,367.22	1,212.88	2.83	-0.56	0.130
50.00	-11.94	-3.03	0.00	-144.4	0.00	144.43	1,776.97	454.94	1,342.46	1,194.73	3	-0.57	0.128
53.25	-11.31	-2.98	0.00	-134.6	0.00	134.59	1,771.70	452.85	1,330.16	1,185.68	3.41	-0.61	0.120
55.00	-11.13	-2.92	0.00	-129.4	0.00	129.38	1,759.30	447.98	1,301.68	1,164.62	3.64	-0.63	0.117
60.00	-10.61	-2.83	0.00	-114.8	0.00	114.78	1,723.08	434.06	1,222.03	1,104.91	4.32	-0.68	0.110
65.00	-10.10	-2.74	0.00	-100.6	0.00	100.63	1,685.67	420.13	1,144.88	1,045.97	5.07	-0.73	0.102
70.00	-9.61	-2.65	0.00	-86.9	0.00	86.94	1,647.08	406.20	1,070.25	987.87	5.86	-0.78	0.094
75.00	-9.13	-2.56	0.00	-73.7	0.00	73.69	1,607.30	392.28	998.14	930.68	6.7	-0.83	0.085
80.00	-8.67	-2.47	0.00	-60.9	0.00	60.89	1,566.34	378.35	928.54	874.48	7.59	-0.87	0.075
85.00	-8.22	-2.38	0.00	-48.5	0.00	48.54	1,524.19	364.43	861.46	819.35	8.53	-0.91	0.065
90.00	-7.78	-2.30	0.00	-36.6	0.00	36.61	1,480.86	350.50	796.89	765.35	9.5	-0.94	0.053
95.00	-7.36	-2.23	0.00	-25.1	0.00	25.12	1,424.84	336.58	734.84	706.85	10.5	-0.97	0.041
98.50	-7.07	-2.18	0.00	-17.3	0.00	17.33	1,383.58	326.83	692.90	666.30	11.22	-0.98	0.031
100.00	-3.14	-1.33	0.00	-14.1	0.00	14.06	1,365.89	322.65	675.30	649.29	11.53	-0.99	0.024
102.00	-2.91	-1.29	0.00	-11.4	0.00	11.40	964.52	242.38	508.07	460.47	11.94	-1	0.028
105.00	-2.75	-1.23	0.00	-7.5	0.00	7.54	947.62	236.11	482.14	440.61	12.57	-1	0.020
109.00	0.00	-1.18	0.00	-2.6	0.00	2.61	924.42	227.76	448.63	414.49	13.42	-1.01	0.006

EQUIVALENT LATERAL FORCES METHOD ANALYSIS

(Based on ASCE7-16 Chapters 11, 12 and 15)

Spectral Response Acceleration for Short Period (S_S):	0.177
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.054
Long-Period Transition Period (T_L – Seconds):	6
Importance Factor (I_e):	1.000
Site Coefficient F_a :	1.600
Site Coefficient F_v :	2.400
Response Modification Coefficient (R):	1.500
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.189
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.086
Seismic Response Coefficient (C_s):	0.030
Upper Limit C_s :	0.030
Lower Limit C_s :	0.030
Period based on Rayleigh Method (sec):	1.980
Redundancy Factor (ρ):	1.000
Seismic Force Distribution Exponent (k):	1.740
Total Unfactored Dead Load:	18.100 k
Seismic Base Shear (E):	0.540 k

1.2D + 1.0Ev + 1.0Eh Normal Seismic

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
26	107	210	712	0.021	12	260
25	103.5	162	518	0.016	8	200
24	101	234	718	0.022	12	289
23	99.25	194	577	0.017	9	240
22	96.75	288	821	0.025	13	357
21	92.5	423	1,115	0.034	18	524
20	87.5	437	1,044	0.031	17	541
19	82.5	450	972	0.029	16	557
18	77.5	464	898	0.027	15	574
17	72.5	477	823	0.025	13	591
16	67.5	491	747	0.022	12	607
15	62.5	504	671	0.020	11	624
14	57.5	518	596	0.018	10	641
13	54.125	184	191	0.006	3	228
12	51.625	631	602	0.018	10	781
11	49.25	295	259	0.008	4	365
10	46.75	378	304	0.009	5	468
9	42.5	552	375	0.011	6	683
8	37.5	565	309	0.009	5	699
7	32.5	579	247	0.007	4	716
6	27.5	592	189	0.006	3	733
5	22.5	606	136	0.004	2	750
4	17.5	619	90	0.003	1	766
3	12.5	633	51	0.002	1	783
2	7.5	646	22	0.001	0	800
1	2.5	660	3	0.000	0	816
Commscope CBC78T-DS-43-2X	109	124	435	0.013	7	154
Samsung B5/B13 RRH-BR04C	109	211	739	0.022	12	261
Samsung B2/B66A RRH-BR049	109	253	887	0.027	14	313
Raycap RC3DC-3315-PF-48	109	64	224	0.007	4	79
Samsung MT6407-77A	109	245	858	0.026	14	303
Commscope JAHH-65B-R3B	109	364	1,274	0.038	21	450
Antel LPA-80063/6CF	109	162	568	0.017	9	201
Generic Round T-Arm	109	938	3,285	0.099	54	1,160

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
Generic Mount Reinforcement	109	200	701	0.021	11	248
Ericsson Radio 4449 B71 B85A	100	225	679	0.020	11	278
Ericsson 4460 BAND 2/25	100	327	986	0.030	16	405
Ericsson Air6449 B41	100	312	941	0.028	15	386
RFS APXVAARR24_43-U-NA20	100	384	1,157	0.035	19	475
Perfect Vision PV-LPPGS-12M-HR25-AP4	100	2,500	7,539	0.227	123	3,094
Triangular Platform w/ HandrailsRails						
		18,098	33,262	1.000	543	22,401

0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)

Segment	Height Above Base (ft)	Weight (lb)	W _z (lb-ft)	C _{vx}	Horizontal Force (lb)	Vertical Force (lb)
26	107	210	712	0.021	12	181
25	103.5	162	518	0.016	8	139
24	101	234	718	0.022	12	202
23	99.25	194	577	0.017	9	167
22	96.75	288	821	0.025	13	249
21	92.5	423	1,115	0.034	18	365
20	87.5	437	1,044	0.031	17	377
19	82.5	450	972	0.029	16	388
18	77.5	464	898	0.027	15	400
17	72.5	477	823	0.025	13	412
16	67.5	491	747	0.022	12	423
15	62.5	504	671	0.020	11	435
14	57.5	518	596	0.018	10	446
13	54.125	184	191	0.006	3	159
12	51.625	631	602	0.018	10	544
11	49.25	295	259	0.008	4	254
10	46.75	378	304	0.009	5	326
9	42.5	552	375	0.011	6	476
8	37.5	565	309	0.009	5	487
7	32.5	579	247	0.007	4	499
6	27.5	592	189	0.006	3	510
5	22.5	606	136	0.004	2	522
4	17.5	619	90	0.003	1	534
3	12.5	633	51	0.002	1	545
2	7.5	646	22	0.001	0	557
1	2.5	660	3	0.000	0	569
Commscope CBC78T-DS-43-2X	109	124	435	0.013	7	107
Samsung B5/B13 RRH-BR04C	109	211	739	0.022	12	182
Samsung B2/B66A RRH-BR049	109	253	887	0.027	14	218
Raycap RC3DC-3315-PF-48	109	64	224	0.007	4	55
Samsung MT6407-77A	109	245	858	0.026	14	211
Commscope JAHH-65B-R3B	109	364	1,274	0.038	21	314
Antel LPA-80063/6CF	109	162	568	0.017	9	140
Generic Round T-Arm	109	938	3,285	0.099	54	808
Generic Mount Reinforcement	109	200	701	0.021	11	172
Ericsson Radio 4449 B71 B85A	100	225	679	0.020	11	194
Ericsson 4460 BAND 2/25	100	327	986	0.030	16	282
Ericsson Air6449 B41	100	312	941	0.028	15	269
RFS APXVAARR24_43-U-NA20	100	384	1,157	0.035	19	331
Perfect Vision PV-LPPGS-12M-HR25-AP4	100	2,500	7,539	0.227	123	2,156
Triangular Platform w/ HandrailsRails						
		18,098	33,262	1.000	543	15,605

1.2D + 1.0Ev + 1.0Eh Normal Seismic

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-21.58	-0.54	0.00	-52.10	0.00	52.10	2,068.11	594.20	2,290	1,819.33	0.00	0.00	0.04
5.00	-20.78	-0.55	0.00	-49.37	0.00	49.37	2,044.32	580.27	2,184	1,756.02	0.00	-0.01	0.04
10.00	-20.00	-0.55	0.00	-46.64	0.00	46.64	2,019.36	566.35	2,080	1,692.70	0.02	-0.02	0.04
15.00	-19.24	-0.55	0.00	-43.89	0.00	43.89	1,993.20	552.42	1,979	1,629.44	0.04	-0.03	0.04
20.00	-18.49	-0.55	0.00	-41.14	0.00	41.14	1,965.87	538.50	1,881	1,566.33	0.08	-0.04	0.04
25.00	-17.75	-0.55	0.00	-38.38	0.00	38.38	1,937.35	524.57	1,785	1,503.43	0.12	-0.05	0.04
30.00	-17.04	-0.55	0.00	-35.62	0.00	35.62	1,907.64	510.65	1,691	1,440.82	0.18	-0.06	0.03
35.00	-16.34	-0.55	0.00	-32.88	0.00	32.88	1,876.75	496.72	1,600	1,378.57	0.24	-0.07	0.03
40.00	-15.65	-0.54	0.00	-30.15	0.00	30.15	1,844.67	482.79	1,512	1,316.76	0.32	-0.08	0.03
45.00	-15.19	-0.54	0.00	-27.44	0.00	27.44	1,811.41	468.87	1,426	1,255.46	0.41	-0.09	0.03
48.50	-14.82	-0.53	0.00	-25.55	0.00	25.55	1,787.43	459.12	1,367	1,212.88	0.47	-0.09	0.03
50.00	-14.04	-0.52	0.00	-24.75	0.00	24.75	1,776.97	454.94	1,342	1,194.73	0.50	-0.10	0.03
53.25	-13.81	-0.52	0.00	-23.05	0.00	23.05	1,771.70	452.85	1,330	1,185.68	0.57	-0.10	0.03
55.00	-13.17	-0.51	0.00	-22.13	0.00	22.13	1,759.30	447.98	1,302	1,164.62	0.61	-0.11	0.03
60.00	-12.55	-0.50	0.00	-19.57	0.00	19.57	1,723.08	434.06	1,222	1,104.91	0.73	-0.12	0.03
65.00	-11.94	-0.49	0.00	-17.05	0.00	17.05	1,685.67	420.13	1,145	1,045.97	0.85	-0.12	0.02
70.00	-11.35	-0.48	0.00	-14.60	0.00	14.60	1,647.08	406.20	1,070	987.87	0.99	-0.13	0.02
75.00	-10.77	-0.46	0.00	-12.21	0.00	12.21	1,607.30	392.28	998	930.68	1.13	-0.14	0.02
80.00	-10.22	-0.45	0.00	-9.89	0.00	9.89	1,566.34	378.35	929	874.48	1.28	-0.15	0.02
85.00	-9.68	-0.43	0.00	-7.65	0.00	7.65	1,524.19	364.43	861	819.35	1.44	-0.15	0.02
90.00	-9.15	-0.41	0.00	-5.50	0.00	5.50	1,480.86	350.50	797	765.35	1.60	-0.16	0.01
95.00	-8.80	-0.40	0.00	-3.45	0.00	3.45	1,424.84	336.58	735	706.85	1.77	-0.16	0.01
98.50	-8.56	-0.39	0.00	-2.06	0.00	2.06	1,383.58	326.83	693	666.30	1.89	-0.16	0.01
100.00	-3.63	-0.18	0.00	-1.48	0.00	1.48	1,365.89	322.65	675	649.29	1.94	-0.16	0.01
102.00	-3.43	-0.17	0.00	-1.13	0.00	1.13	964.52	242.38	508	460.47	2.01	-0.17	0.01
105.00	-3.17	-0.16	0.00	-0.62	0.00	0.62	947.62	236.11	482	440.61	2.11	-0.17	0.01
109.00	0.00	-0.15	0.00	0.00	0.00	0.00	924.42	227.76	449	414.49	2.25	-0.17	0.00

0.9D - 1.0Ev + 1.0Eh Normal Seismic (Reduced DL)

CALCULATED FORCES

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (fr-kips)	Mu Mx (ft-kips)	Resultant Moment (ft-kips)	Phi Pn (kips)	Phi Vn (kips)	Phi Tn (kips)	Phi Mn (kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-15.04	-0.54	0.00	-51.37	0.00	51.37	2,068.11	594.20	2,290	1,819.33	0.00	0.00	0.04
5.00	-14.48	-0.54	0.00	-48.66	0.00	48.66	2,044.32	580.27	2,184	1,756.02	0.00	-0.01	0.04
10.00	-13.93	-0.55	0.00	-45.93	0.00	45.93	2,019.36	566.35	2,080	1,692.70	0.02	-0.02	0.03
15.00	-13.40	-0.55	0.00	-43.20	0.00	43.20	1,993.20	552.42	1,979	1,629.44	0.04	-0.03	0.03
20.00	-12.88	-0.55	0.00	-40.47	0.00	40.47	1,965.87	538.50	1,881	1,566.33	0.08	-0.04	0.03
25.00	-12.37	-0.55	0.00	-37.74	0.00	37.74	1,937.35	524.57	1,785	1,503.43	0.12	-0.05	0.03
30.00	-11.87	-0.54	0.00	-35.01	0.00	35.01	1,907.64	510.65	1,691	1,440.82	0.18	-0.06	0.03
35.00	-11.38	-0.54	0.00	-32.30	0.00	32.30	1,876.75	496.72	1,600	1,378.57	0.24	-0.07	0.03
40.00	-10.90	-0.53	0.00	-29.60	0.00	29.60	1,844.67	482.79	1,512	1,316.76	0.32	-0.08	0.03
45.00	-10.58	-0.53	0.00	-26.93	0.00	26.93	1,811.41	468.87	1,426	1,255.46	0.40	-0.09	0.03
48.50	-10.32	-0.53	0.00	-25.08	0.00	25.08	1,787.43	459.12	1,367	1,212.88	0.47	-0.09	0.03
50.00	-9.78	-0.52	0.00	-24.29	0.00	24.29	1,776.97	454.94	1,342	1,194.73	0.50	-0.10	0.03
53.25	-9.62	-0.51	0.00	-22.61	0.00	22.61	1,771.70	452.85	1,330	1,185.68	0.56	-0.10	0.03
55.00	-9.17	-0.50	0.00	-21.71	0.00	21.71	1,759.30	447.98	1,302	1,164.62	0.60	-0.10	0.02
60.00	-8.74	-0.49	0.00	-19.19	0.00	19.19	1,723.08	434.06	1,222	1,104.91	0.71	-0.11	0.02
65.00	-8.32	-0.48	0.00	-16.72	0.00	16.72	1,685.67	420.13	1,145	1,045.97	0.84	-0.12	0.02
70.00	-7.91	-0.47	0.00	-14.31	0.00	14.31	1,647.08	406.20	1,070	987.87	0.97	-0.13	0.02
75.00	-7.51	-0.45	0.00	-11.96	0.00	11.96	1,607.30	392.28	998	930.68	1.11	-0.14	0.02
80.00	-7.12	-0.44	0.00	-9.69	0.00	9.69	1,566.34	378.35	929	874.48	1.26	-0.14	0.02
85.00	-6.74	-0.42	0.00	-7.50	0.00	7.50	1,524.19	364.43	861	819.35	1.41	-0.15	0.01
90.00	-6.38	-0.40	0.00	-5.39	0.00	5.39	1,480.86	350.50	797	765.35	1.57	-0.16	0.01
95.00	-6.13	-0.39	0.00	-3.38	0.00	3.38	1,424.84	336.58	735	706.85	1.74	-0.16	0.01
98.50	-5.96	-0.38	0.00	-2.02	0.00	2.02	1,383.58	326.83	693	666.30	1.86	-0.16	0.01
100.00	-2.53	-0.17	0.00	-1.45	0.00	1.45	1,365.89	322.65	675	649.29	1.91	-0.16	0.00
102.00	-2.39	-0.16	0.00	-1.10	0.00	1.10	964.52	242.38	508	460.47	1.97	-0.16	0.01
105.00	-2.21	-0.15	0.00	-0.61	0.00	0.61	947.62	236.11	482	440.61	2.08	-0.16	0.00
109.00	0.00	-0.15	0.00	0.00	0.00	0.00	924.42	227.76	449	414.49	2.21	-0.16	0.00

ANALYSIS SUMMARY

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.0W Normal	16.06	0.00	21.68	0.00	0.00	1339.15	0.00	0.75
0.9D + 1.0W Normal	16.05	0.00	16.25	0.00	0.00	1325.29	0.00	0.74
1.2D + 1.0Di + 1.0Wi Normal	4.78	0.00	36.03	0.00	0.00	395.83	0.00	0.24
1.2D + 1.0Ev + 1.0Eh Normal	0.55	0.00	21.58	0.00	0.00	52.10	0.00	0.04
0.9D - 1.0Ev + 1.0Eh Normal	0.55	0.00	15.04	0.00	0.00	51.37	0.00	0.04
1.0D + 1.0W Service Normal	3.84	0.00	18.10	0.00	0.00	318.59	0.00	0.18

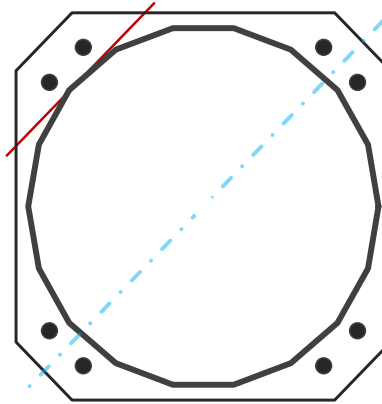
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	42.92	in
Thickness	1/4	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	1,339.2	k-ft
Axial, Pu	21.7	k
Shear, Vu	16.1	k
Neutral Axis	45	°

Report Capacities		
Component	Capacity	Result
Base Plate	85%	Pass
Anchor Rods	69%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	46.75	in
Thickness	2	in
Grade	A572-50	
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	7	in
Orientation Offset	0	°
Anchor Rod Detail	d	$\eta=0.5$
Clear Distance	3	in
Applied Moment, Mu	886.6	k
Bending Stress, ϕMn	1038.1	k



Original Anchor Rods		
Arrangement	Cluster	-
Quantity	8	-
Diameter, ϕ	2 1/4	in
Bolt Circle	48.75	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	166.1	k
Anchor Rods, ϕPn	243.6	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	16.1	1339.2	1.00
Anchor Rod Forces	16.1	1339.2	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in ²	in ²	in ⁴	#	in ⁴
Pole	33.3431	1.8524	0.0387		7589.28
Bolt	3.9761	3.2477	0.8393	4.5	7725.05
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate

Shape	Square	-
Width, W	46.75	in
Thickness, t	2	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	18.532	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods

Anchor Rod Quantity, N	8	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	48.75	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	166.1	k
Applied Shear, Vu	0.4	k
Compressive Capacity, ϕP_n	243.6	k
Tensile Capacity, ϕR_n	0.682	OK
Interaction Capacity	0.686	OK

External Base Plate

Chord Length AA	23.069	in
Additional AA	0.000	in
Section Modulus, Z	23.069	in ³
Applied Moment, Mu	886.6	k-ft
Bending Capacity, ϕM_n	1038.1	k-ft
Capacity, Mu/ ϕM_n	0.854	OK
Chord Length AB	22.405	in
Additional AB	0.000	in
Section Modulus, Z	22.405	in ³
Applied Moment, Mu	776.2	k-ft
Bending Capacity, ϕM_n	1008.2	k-ft
Capacity, Mu/ ϕM_n	0.770	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in ³
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕM_n	0.0	k-ft
Capacity, Mu/ ϕM_n		

Internal Base Plate

Arc Length	0.000	in
Section Modulus, Z	0.000	in ³
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕM_n	0.0	k-ft
Capacity, Mu/ ϕM_n		

Site Name: North Bloomfield CT, CT
Site Number: 283562
Tower Type: MP
Design Loads (Factored) - Analysis per TIA-222-H Standards

Monolithic Mat & Pier Foundation Analysis

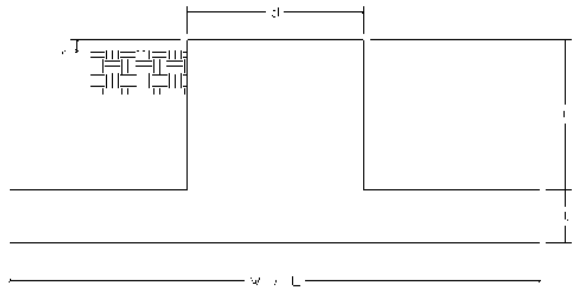
Foundation Analysis Parameters		
Design / Analysis / Mapping:	Analysis	-
Compression/Leg:	21.7	k
Uplift/Leg:	0.0	k
Total Shear:	16.1	k
Moment:	1,339.2	k-ft
Tower + Appurtenance Weight:	21.7	k
Depth to Base of Foundation (l + t - h):	6	ft
Diameter of Pier (d):	6	ft
Length of Pier (l):	5	ft
Height of Pier above Ground (h):	0.5	ft
Width of Pad (W):	17	ft
Length of Pad (L):	17	ft
Thickness of Pad (t):	1.5	ft
Tower Leg Center to Center:	0	ft
Number of Tower Legs:	1	-
Tower Center from Mat Center:	0	ft
Depth Below Ground Surface to Water Table:	9	ft
Unit Weight of Concrete:	150	pcf
Unit Weight of Soil Above Water Table:	111	pcf
Unit Weight of Water:	62.4	pcf
Unit Weight of Soil Below Water Table:	48.6	pcf
Friction Angle of Uplift:	15	°
Coefficient of Shear Friction:	0.30	-
Ultimate Compressive Bearing Pressure:	5,650	psf
Ultimate Passive Pressure on Pad Face:	914	psf
$f_{\text{Soil and Concrete Weight}}$:	0.9	-
f_{Soil} :	0.75	-

Foundation Steel Parameters		
Shear/Leg (Compression):	16.1	k
Shear/Leg (Uplift):	16.1	k
Concrete Strength (f'_c):	4,000	psi
Pad Tension Steel Depth:	14.50	in
Dead Load Factor:	0.9	-
f_{Shear} :	0.75	-
$f_{\text{Flexure / Tension}}$:	0.9	-
$f_{\text{Compression}}$:	0.65	-
b:	0.85	-
Bottom Pad Rebar Size #:	8	-
# of Bottom Pad Rebar:	18	-
Pad Bottom Steel Area:	14.22	in ²
Pad Steel F_y :	60,000	psi
Top Pad Rebar Size #:	8	-
# of Top Pad Rebar:	18	-
Pad Top Steel Area:	14.22	in ²
Pier Rebar Size #:	7	-
Pier Steel Area (Single Bar):	0.60	in ²
# of Pier Rebar:	34	-
Pier Steel F_y :	60,000	psi
Pier Cage Diameter:	63.9	in
Rebar Strain Limit:	0.008	-
Steel Elastic Modulus:	29,000	ksi
Tie Rebar Size #:	5	-
Tie Steel Area (Single Bar):	0.31	in ²
Tie Spacing:	12	in
Tie Steel F_y :	60,000	psi
Clear Cover:	3	in

Overturning Moment Usage		
Design OTM:	1443.5	k-ft
OTM Resistance:	1909.9	k-ft
Design OTM / OTM Resistance:	76%	Pass

Soil Bearing Pressure Usage		
Net Bearing Pressure:	2740	psf
Factored Nominal Bearing Pressure:	4238	psf
Factored Nominal (Net) Bearing Pressure:	65%	Pass
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge	

Sliding Factor of Safety		
Ultimate Friction Resistance:	70.4	k
Ultimate Passive Pressure Resistance:	17.5	k
Total Factored Sliding Resistance:	65.9	k
Sliding Design / Sliding Resistance:	24%	Pass



Pad Strength Capacity			
Factored One Way Shear (V_u):	196.5	k	
One Way Shear Capacity (fV_c):	280.6	k	ACI 318-14 25.5.5.1
V_u / fV_c :	70%	Pass	
Load Direction Controlling Shear Capacity:	Parallel to Pad Edge		
Lower Steel Pad Factored Moment (M_u):	621.2	k-ft	
Lower Steel Pad Moment Capacity (fM_n):	950.3	k-ft	ACI 318-14 22.3.1.1
M_u / fM_n :	65%	Pass	
Load Direction Controlling Flexural Capacity:	Diagonal to Pad Edge		
Upper Steel Pad Factored Moment (M_u):	186.3	k-ft	
Upper Steel Pad Moment Capacity (fM_n):	894.4	k-ft	
M_u / fM_n :	21%	Pass	
Lower Pad Flexural Reinforcement Ratio:	0.0048		OK - ACI 318-14 7.6.1.1 & 8.6.1.1
Upper Pad Flexural Reinforcement Ratio:	0.0048		OK - ACI 318-14 7.6.1.1 & 8.6.1.1
Lower Pad Reinforcement Spacing:	11.6	in	OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3
Upper Pad Reinforcement Spacing:	11.6	in	OK - ACI 318-14 7.7.2.3, 8.7.2.2, & 24.4.3.3
Ultimate Punching Shear Stress, v_u :	69.07	psi	ACI 318-14 R8.4.4.2.3
Nominal Punching Shear Capacity ($f_c v_c$):	189.7	psi	ACI 318-14 22.6.5.2
$v_u / f_c v_c$:	36%	Pass	
Pier Moment Pad Flexure Transfer Ratio, γ_f :	0.60		TIA-222-H 9.4.2
Moment Transfer Effective Flexural Width, B_{eff} :	10.50	ft	TIA-222-H 9.4.2
Moment Transfer Through Pad Flexure:	10220.04	k-in	TIA-222-H 9.4.2
Moment Transfer Flexural Capacity ($fM_{sc,f}$):	7045.83	k-in	
$\gamma_f M_{sc} / fM_{sc,f}$:	0%	Pass	

Pier Strength Capacity			
Factored Moment in Pier (M_u):	1419.5	k-ft	
Pier Moment Capacity (fM_n):	2867.4	k-ft	
M_u / fM_n :	50%	Pass	
Factored Shear in Pier (V_u):	16.1	k	
Pier Shear Capacity (fV_n):	521.2	k	ACI 318-14 22.5.1.1
V_u / fV_c :	3%	Pass	
Pier Shear Reinforcement Ratio:	0.0010		OK - No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0	k	
Pier Tension Capacity (fT_n):	1101.6	k	
T_u / fT_n :	0%	Pass	
Factored Compression in Pier (P_u):	21.7	k	
Pier Compression Capacity (fP_n):	7181.1	k	ACI 318-14 22.4.2.1
P_u / fP_n :	0%	Pass	
Minimum Depth to Develop Vertical Rebar:	22	in	ACI 318-14 25.4.2.3
Minimum Hook Development Length:	17	in	ACI 318-14 25.4.3.1
Minimum Mat Thickness / Edge Distance from Pier:	20.0	in	
Minimum Foundation Depth:	3.77	ft	
$M_u / f_B M_n + T_u / f_T T_n$:	50%	Pass	

RAN Template: 67D5A998E Outdoor	A&L Template: 67D5998E_1xAIR+1OP
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Section 1 - Site Information

Site ID: CTHA068A
Status: Draft
Version: 6
Project Type: Anchor
Approved: Not Approved
Approved By: Not Approved
Last Modified: 8/16/2021 4:17:04 PM
Last Modified By: Hansraj.Rana4@T-Mobile.com

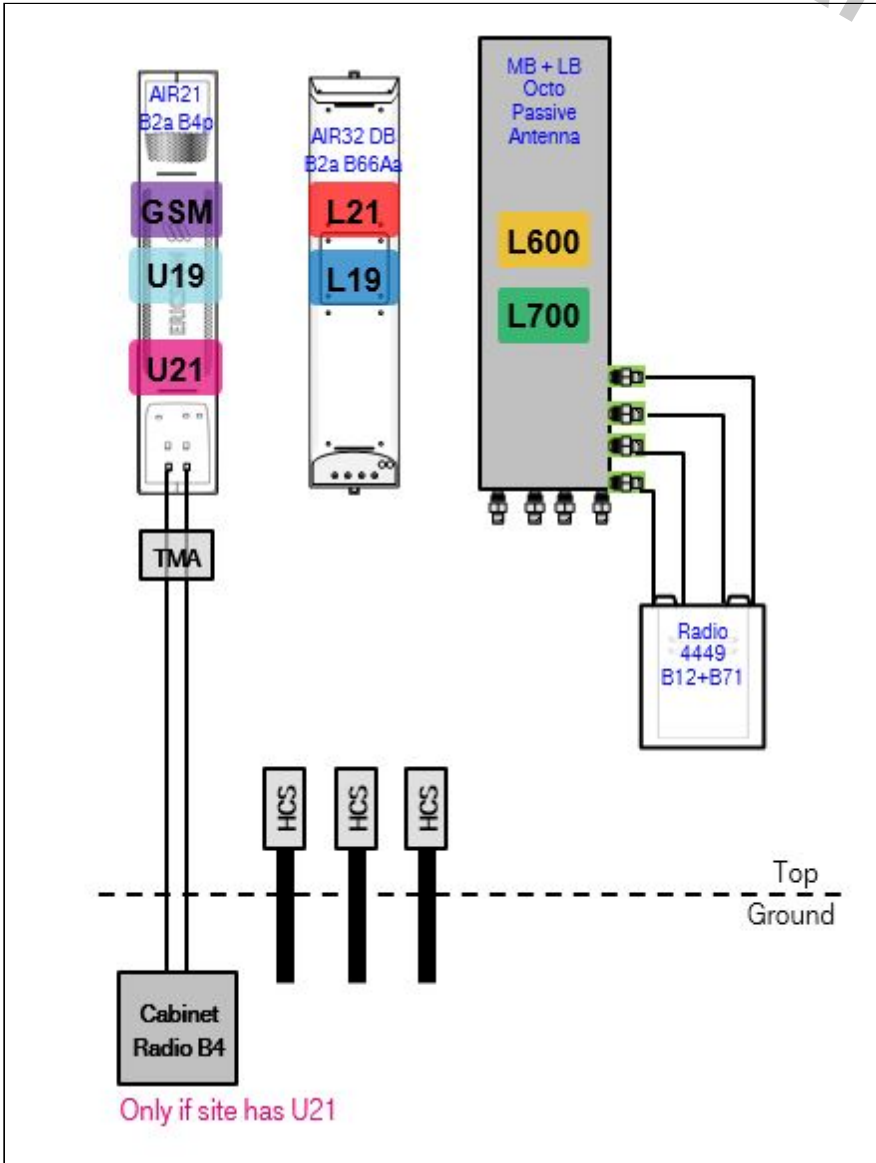
Site Name: CTHA068A replacement for CTHA500A
Site Class: Monopole
Site Type: Structure Non Building
Plan Year: 2021
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: American Tower

Latitude: 41.87650000
Longitude: -72.74183333
Address: 2627 Day Hill Road
City, State: Bloomfield, CT
Region: NORTHEAST

RAN Template: 67D5A998E Outdoor		AL Template: 67D5998E_1xAIR+1OP		
Sector Count: 3	Antenna Count: 6	Coax Line Count: 0	TMA Count: 0	RRU Count: 6

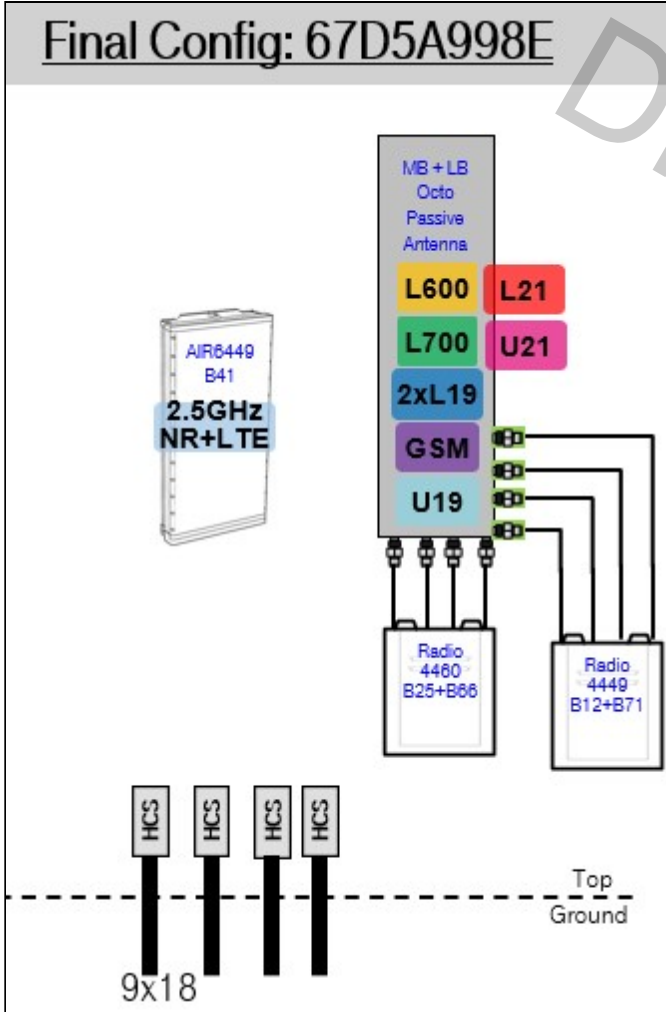
Section 2 - Existing Template Images

67D92DB_2xAIR+1OP.JPG



Notes:

67D5A998E.jpg



Notes:

Section 4 - Siteplan Images

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DRAFT

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 67D92DB Outdoor

Enclosure	1	
Enclosure Type	RBS 6131	
Baseband	DUW30 DUG20 BB 6630 BB 6630 G1900 L1900 L700 L2100 L600 N600	
Hybrid Cable System	Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS 6AWG 50m	

Proposed RAN Equipment

Template: 67D5A998E Outdoor

Enclosure	1	2	3	4
Enclosure Type	RBS 6131	Enclosure 6160	B160	Battery Cabinet
Baseband	DUG20 BB 6630 BB 6630 G1900 L700 L2100 L600 L1900 N600	BB 6648 L2500 N2500		
Hybrid Cable System	Ericsson 6x12 HCS 6AWG 50m (x 3)	PSU 4813 Ericsson Hybrid Trunk 6/24 4AWG 50m (x 3)		
Transport System		CSR IXRe V2 (Gen2)		

RAN Scope of Work:

*** Keep 6131 and Battery Cabinets ***

Remove and return all cabinet radios from existing base station cabinet.

Add (1) Enclosure 6160.

Add (1) iXRe Router to new Enclosure 6160.

Add (1) BB6648 for L2500 and N2500 (MMBB - Mixed Mode Baseband) to new Enclosure 6160.

Add (1) PSU4813 Voltage Booster to new Enclosure 6160.

Add (1) Battery Cabinet B160.

Existing : (3) 6X12 *** (No (1) 9x18 on site)

Add (3) 6X24 HCS terminating at the Enclosure 6160. Connect DC for the AIR6449 B41 to the PSU4813 Voltage Booster.

We are going to Full platform with T arms.

Section 6 - A&L Equipment

Existing Template: 67D92DB_2xAIR+1OP
 Proposed Template: 67D5998E_1xAIR+1OP

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro											
Antenna	1			2			3					
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)					
Azimuth	80			80			80					
M. Tilt												
Height	100			100			100					
Ports	P1		P2		P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	G1900				L700 L600 N600	L700 L600 N600			L2100	L2100	L1900	L1900
Dark Tech.												
Restricted Tech.												
Decomm. Tech.												
E. Tilt	2				2	2			2	2	2	2
Cables	Fiber Jumper - 15 ft. (x2)				Coax Jumper - 6 ft. (x2)	SHARED Coax Jumper - 6 ft. (x2)			Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.	
TMA's												
Diplexers / Combiners												
Radio												
Sector Equipment												

Unconnected Equipment:

Scope of Work:

Replace LB Dual in Position 2 with (1) LB/MB Octo.
 Replace RRUS11 B12 with (1) Radio 4449 B71+B12 for L600 and L700.
 Replace AIR21 B2P/B4A in Position 3 with (1) AIR32 DB for L1900 and L2100.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

Sector 1 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	80			80		
M. Tilt	0			0		
Height	100			100		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	L2500 N2500	L2500 N2500	L700 L600 N600	L700 L600 N600	L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper	Fiber Jumper	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)
TMAs						
Diplexers / Combiners						
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

There will be Two antennae per sector.
 Remove all TMAs.
 Remove all Coaxial Lines.
 Remove AIR21 B2P/B4A from Position 1.
 Install (1) AIR6449 B41 for L2500 and N2500 in Position 1.
 Add (1) Radio 4460 B25+B66 for L2100, L1900, GSM to Position 2 at antenna.
 Remove AIR32-DB from Position 3.
 Ensure RET control is enabled for all technology layers according to the Design Documents

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

Sector 2 (Existing) view from behind												
Coverage Type	A - Outdoor Macro											
Antenna	1			2				3				
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				
Azimuth	180			180				180				
M. Tilt												
Height	100			100				100				
Ports	P1		P2		P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	G1900				L700	L700			L2100	L2100	L1900	L1900
					L600	L600						
					N600	N600						
Dark Tech.												
Restricted Tech.												
Decomm. Tech.												
E. Tilt	2				2	2			2	2	2	2
Cables	Fiber Jumper - 15 ft. (x2)				Coax Jumper - 6 ft. (x2)	SHARED Coax Jumper - 6 ft. (x2)			Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.	
TMA's												
Diplexers / Combiners												
Radio												
					Radio 4449 B71+B8 5 (At Antenna)	SHARED Radio 4449 B71+B8 5 (At Antenna)						
Sector Equipment												

Unconnected Equipment:

Scope of Work:

Replace LB Dual in Position 2 with (1) LB/MB Octo.
 Replace RRUS11 B12 with (1) Radio 4449 B71+B12 for L600 and L700.
 Replace AIR21 B2P/B4A in Position 3 with (1) AIR32 DB for L1900 and L2100.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

Sector 2 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	180			180		
M. Tilt	0			0		
Height	100			100		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	L2500 N2500	L2500 N2500	L700 L600 N600	L700 L600 N600	L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper	Fiber Jumper	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)
TMAs						
Diplexers / Combiners						
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

There will be Two antennae per sector.
 Remove all TMAs.
 Remove all Coaxial Lines.
 Remove AIR21 B2P/B4A from Position 1.
 Install (1) AIR6449 B41 for L2500 and N2500 in Position 1.
 Add (1) Radio 4460 B25+B66 for L2100, L1900, GSM to Position 2 at antenna.
 Remove AIR32-DB from Position 3.
 Ensure RET control is enabled for all technology layers according to the Design Documents

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

Sector 3 (Existing) view from behind												
Coverage Type	A - Outdoor Macro											
Antenna	1			2				3				
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				
Azimuth	330			330				330				
M. Tilt												
Height	100			100				100				
Ports	P1		P2		P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	G1900				L700	L700			L2100	L2100	L1900	L1900
					L600	L600						
					N600	N600						
Dark Tech.												
Restricted Tech.												
Decomm. Tech.												
E. Tilt	2				2	2			2	2	2	2
Cables	Fiber Jumper - 15 ft. (x2)				Coax Jumper - 6 ft. (x2)	SHARED Coax Jumper - 6 ft. (x2)			Fiber Jumper - 15 ft.		Fiber Jumper - 15 ft.	
TMA's												
Diplexers / Combiners												
Radio												
					Radio 4449 B71+B8 5 (At Antenna)	SHARED Radio 4449 B71+B8 5 (At Antenna)						
Sector Equipment												

Unconnected Equipment:

Scope of Work:

Replace LB Dual in Position 2 with (1) LB/MB Octo.
 Replace RRUS11 B12 with (1) Radio 4449 B71+B12 for L600 and L700.
 Replace AIR21 B2P/B4A in Position 3 with (1) AIR32 DB for L1900 and L2100.

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

Sector 3 (Proposed) view from behind						
Coverage Type	A - Outdoor Macro					
Antenna	1			2		
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)			RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	330			330		
M. Tilt	0			0		
Height	100			100		
Ports	P1	P2	P3	P4	P5	P6
Active Tech.	L2500 N2500	L2500 N2500	L700 L600 N600	L700 L600 N600	L2100 L1900 G1900	L2100 L1900 G1900
Dark Tech.						
Restricted Tech.						
Decomm. Tech.						
E. Tilt	2	2	2	2	2	2
Cables	Fiber Jumper	Fiber Jumper	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)	Coax Jumper (x2) Fiber Jumper (x2)
TMAs						
Diplexers / Combiners						
Radio			Radio 4449 B71+B85 (At Antenna)	SHARED Radio 4449 B71+B85 (At Antenna)	Radio 4460 B25+B66 (At Antenna)	SHARED Radio 4460 B25+B66 (At Antenna)
Sector Equipment						

Unconnected Equipment:

Scope of Work:

There will be Two antennae per sector.
 Remove all TMAs.
 Remove all Coaxial Lines.
 Remove AIR21 B2P/B4A from Position 1.
 Install (1) AIR6449 B41 for L2500 and N2500 in Position 1.
 Add (1) Radio 4460 B25+B66 for L2100, L1900, GSM to Position 2 at antenna.
 Remove AIR32-DB from Position 3.
 Ensure RET control is enabled for all technology layers according to the Design Documents

*A dashed border indicates shared equipment. Any connected equipment is denoted with the SHARED keyword.

RAN Template: 67D5A998E Outdoor	A&L Template: 67D5998E_1xAIR+1OP
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Section 7 - Power Systems Equipment

Existing Power Systems Equipment
 ----- This section is intentionally blank. -----

Proposed Power Systems Equipment			
Enclosure	1 2		
Enclosure Type	<table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; border: 1px solid black; border-radius: 5px; padding: 2px;">Enclosure 6160</td> <td style="width: 50%; border: 1px solid black; border-radius: 5px; padding: 2px;">Battery Cabinet</td> </tr> </table>	Enclosure 6160	Battery Cabinet
Enclosure 6160	Battery Cabinet		

RADIO FREQUENCY EMISSIONS ANALYSIS REPORT
EVALUATION OF HUMAN EXPOSURE POTENTIAL
TO NON-IONIZING EMISSIONS

T-Mobile Existing Facility

Site ID: CTHA068A

CTHA068A replacement for CTHA500A
2627 Day Hill Road
Bloomfield, Connecticut 06002

December 8, 2021

EBI Project Number: 6221007674

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	32.44%

December 8, 2021

T-Mobile

Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, Connecticut 06002

Emissions Analysis for Site: CTHA068A - CTHA068A replacement for CTHA500A

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **2627 Day Hill Road in Bloomfield, Connecticut** for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits; therefore, it is necessary to report results and limits in terms of percent MPE rather than power density.

All results were compared to the FCC (Federal Communications Commission) radio frequency exposure rules, 47 CFR 1.1307(b)(1) – (b)(3), to determine compliance with the Maximum Permissible Exposure (MPE) limits for General Population/Uncontrolled environments as defined below.

General population/uncontrolled exposure limits apply to situations in which the general population may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Therefore, members of the general population would always be considered under this category when exposure is not employment related, for example, in the case of a telecommunications tower that exposes persons in a nearby residential area.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately $400 \mu\text{W}/\text{cm}^2$ and $467 \mu\text{W}/\text{cm}^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency bands is $1000 \mu\text{W}/\text{cm}^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

Occupational/controlled exposure limits apply to situations in which persons are exposed as a consequence of their employment and in which those persons who are exposed have been made fully aware of the potential for exposure and can exercise control over their exposure. Occupational/controlled exposure limits also apply where exposure is of a transient nature as a result of incidental passage through a location where exposure levels may be above general population/uncontrolled limits (see below), as long as the exposed person has been made fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at 2627 Day Hill Road in Bloomfield, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was focused at the base of the tower. For this report, the sample point is the top of a 6-foot person standing at the base of the tower. For power density calculations, the broadcast footprint of the AIR6449 antenna has been considered. Due to the beamforming nature of this antenna, the actual beam locations vary depending on demand and are narrow in nature. Using the broadcast footprint accounts for the potential location of beams at any given time.

For all calculations, all equipment was calculated using the following assumptions:

- 1) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 1 NR channel (600 MHz Band) was considered for each sector of the proposed installation. This Channel has a transmit power of 80 Watts.
- 3) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 4) 4 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 5) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.

- 6) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 7) 1 LTE Traffic channel (LTE IC and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 60 Watts.
- 8) 1 LTE Broadcast channel (LTE IC and 2C BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 20 Watts.
- 9) 1 NR Traffic channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 10) 1 NR Broadcast channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 40 Watts.
- 11) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 12) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 13) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied

specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

- 14) The antenna mounting height centerline of the proposed antennas is 100 feet above ground level (AGL).
- 15) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.
- 16) All calculations were done with respect to uncontrolled / general population threshold limits.

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449	Make / Model:	Ericsson AIR 6449
Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz / 2500 MHz
Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd	Gain:	22.65 dBd / 17.3 dBd / 22.65 dBd / 17.3 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Channel Count:	4	Channel Count:	4	Channel Count:	4
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	36,356.09	ERP (W):	36,356.09	ERP (W):	36,356.09
Antenna AI MPE %:	14.79%	Antenna BI MPE %:	14.79%	Antenna CI MPE %:	14.79%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	100 feet	Height (AGL):	100 feet	Height (AGL):	100 feet
Channel Count:	13	Channel Count:	13	Channel Count:	13
Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts	Total TX Power (W):	560 Watts
ERP (W):	18,052.03	ERP (W):	18,052.03	ERP (W):	18,052.03
Antenna A2 MPE %:	9.63%	Antenna B2 MPE %:	9.63%	Antenna C2 MPE %:	9.63%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	24.43%
Verizon	8.01%
Site Total MPE % :	32.44%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	24.43%
T-Mobile Sector B Total:	24.43%
T-Mobile Sector C Total:	24.43%
Site Total MPE % :	32.44%

T-Mobile Maximum MPE Power Values (Sector A)							
T-Mobile Frequency Band / Technology (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 2500 MHz LTE IC & 2C Traffic	1	11044.63	100.0	44.94	2500 MHz LTE IC & 2C Traffic	1000	4.49%
T-Mobile 2500 MHz LTE IC & 2C Broadcast	1	1074.06	100.0	4.37	2500 MHz LTE IC & 2C Broadcast	1000	0.44%
T-Mobile 2500 MHz NR Traffic	1	22089.26	100.0	89.88	2500 MHz NR Traffic	1000	8.99%
T-Mobile 2500 MHz NR Broadcast	1	2148.13	100.0	8.74	2500 MHz NR Broadcast	1000	0.87%
T-Mobile 600 MHz LTE	2	591.73	100.0	4.82	600 MHz LTE	400	1.20%
T-Mobile 600 MHz NR	1	1577.94	100.0	6.42	600 MHz NR	400	1.61%
T-Mobile 700 MHz LTE	2	648.82	100.0	5.28	700 MHz LTE	467	1.13%
T-Mobile 1900 MHz GSM	4	1101.85	100.0	17.93	1900 MHz GSM	1000	1.79%
T-Mobile 1900 MHz LTE	2	2203.69	100.0	17.93	1900 MHz LTE	1000	1.79%
T-Mobile 2100 MHz LTE	2	2589.11	100.0	21.07	2100 MHz LTE	1000	2.11%
						Total:	24.43%

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	24.43%
Sector B:	24.43%
Sector C:	24.43%
T-Mobile Maximum MPE % (Sector A):	24.43%
Site Total:	32.44%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **32.44%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.