



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Victoria Masse
420 Main Street, Sturbridge MA 01566
860-306-2326
victoria@northeastsitesolutions.com

April 22, 2021

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

RE: Notice of Exempt Modification
419 Broad Street, Windsor CT 06095
Latitude: 41.84588889
Longitude: 72.64611111
T-Mobile Site#: CTHA130A_Anchor

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 94-foot level of the existing 100-foot monopole tower located at 419 Broad Street, Windsor CT. The 100-foot tower and property are owned by Frontier Communications. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 2500 MHz antenna.

Planned Modifications:

Remove:

(1) Hybrid Line

Remove and Replace:

(3) AIR21 Antenna (Remove) - (3) AIR6449 B41 2500 MHz Antenna (Replace)

Install New:

(3) Commscope SDX192

(1) Hybrid Line

(3) Radio 4415 B25

Existing to Remain:

(3) AIR32 (OCTO) Antenna 1900/2100 MHz

(3) RFS APXVAALL24_43-U-NA20- 600/700/1900/2100 MHz 5G Antenna

(3) RRUS 4449

(3) TMA

(16) 7/8" Coax

(2) Hybrid Lines

Ground Work:

(1) BBU

(1) 6160 Radio Cabinet



This facility was approved by the CT Siting Council TS- T-MOBILE-164-051223–on January 6, 2006 T-Mobile tower share was approved to install nine (9) antenna on the existing tower. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies § 16- SOj-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-SOj-73, a copy of this letter is being sent to Mayor Donald S. Trinks, Elected Official, Peter Souza, Town Manager and Eric Barz, Town Planner for the Town of Windsor, as well as the property owner and the 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,

Victoria Masse
Mobile: 860-306-2326
Fax: 413-521-0558
Office: 420 Main Street, Unit 2, Sturbridge MA 01566
Email: victoria@northeastsitesolutions.com



NSS **NORTHEAST**
SITE SOLUTIONS
Turnkey Wireless Development

Attachments:

cc: Mayor Donald S. Trinks, Elected Official (*via email only to townmanager@townofwindsorct.com*)

Town of Windsor

275 Broad Street

Windsor CT 06095

C/o Town Manager – Peter Souza

Eric Barz, - Town Planner (*via email only to: planning@townofwindsorct.com*)

Town of Windsor

275 Broad Street

Windsor CT 06095

Frontier Communications - as tower owner (*via email only to michael.culbert@everestinfrastructure.com*)

EIP Communications

108 Myrtle Street, #2

Waltham, MA 02453

Exhibit A



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@po.state.ct.us

www.ct.gov/csc

January 26, 2006

Karina Fournier
Zoning Department
T-Mobile
100 Filley Street
Bloomfield, CT 06002

RE: **TS-T-MOBILE-164-051223** - Omnipoint Communications, Inc. (T-Mobile) request for an order to approve tower sharing at an existing telecommunications facility located at 419 Broad Street, Windsor, Connecticut.

Dear Ms. Fournier:

At a public meeting held January 25, 2006, the Connecticut Siting Council (Council) ruled that the shared use of this existing tower site is technically, legally, environmentally, and economically feasible and meets public safety concerns, and therefore, in compliance with General Statutes § 16-50aa, the Council has ordered the shared use of this facility to avoid the unnecessary proliferation of tower structures. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Any additional change to this facility may require an explicit request to this agency pursuant to General Statutes § 16-50aa or notice pursuant to Regulations of Connecticut State Agencies Section 16-50j-73, as applicable. Such request or notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Any deviation from this format may result in the Council implementing enforcement proceedings pursuant to General Statutes § 16-50u including, without limitation, imposition of expenses resulting from such failure and of civil penalties in an amount not less than one thousand dollars per day for each day of construction or operation in material violation.

This decision applies only to this request for tower sharing and is not applicable to any other request or construction. Please be advised that the validity of this action shall expire one year from the date of this letter.

The proposed shared use is to be implemented as specified in your letter dated December 22, 2005 and additional information dated January 4, 2006, including the placement of all necessary equipment and shelters within the tower compound.

Thank you for your attention and cooperation.

Very truly yours,

Pamela B. Katz, P.E.
Chairman

PBK/laf

- c: The Honorable Donald Trinks, Mayor, Town of Windsor
- Mario Zavarella, Town Planner, Town of Windsor
- Michele G. Briggs, New Cingular Wireless PCS, LLC
- Christopher B. Fisher, Esq., Cuddy & Feder LLP
- Christine Farrell, T-Mobile



T-Mobile

Omnipoint Holdings, Inc.

100 Filley Street, Bloomfield, CT. 06002

Telephone: (860) 692-7100 Fax: (860) 692-7159

RECEIVED

JAN - 4 2006

Recipient (s)	Phone Number (s):	Fax Number (s):
CONNECTICUT SITING COUNCIL Mike Patton		860-827-2950
Re: IS-T-Mobile - 164-051223		

Date: 1/4/06

Pages: 2 (including cover sheet)

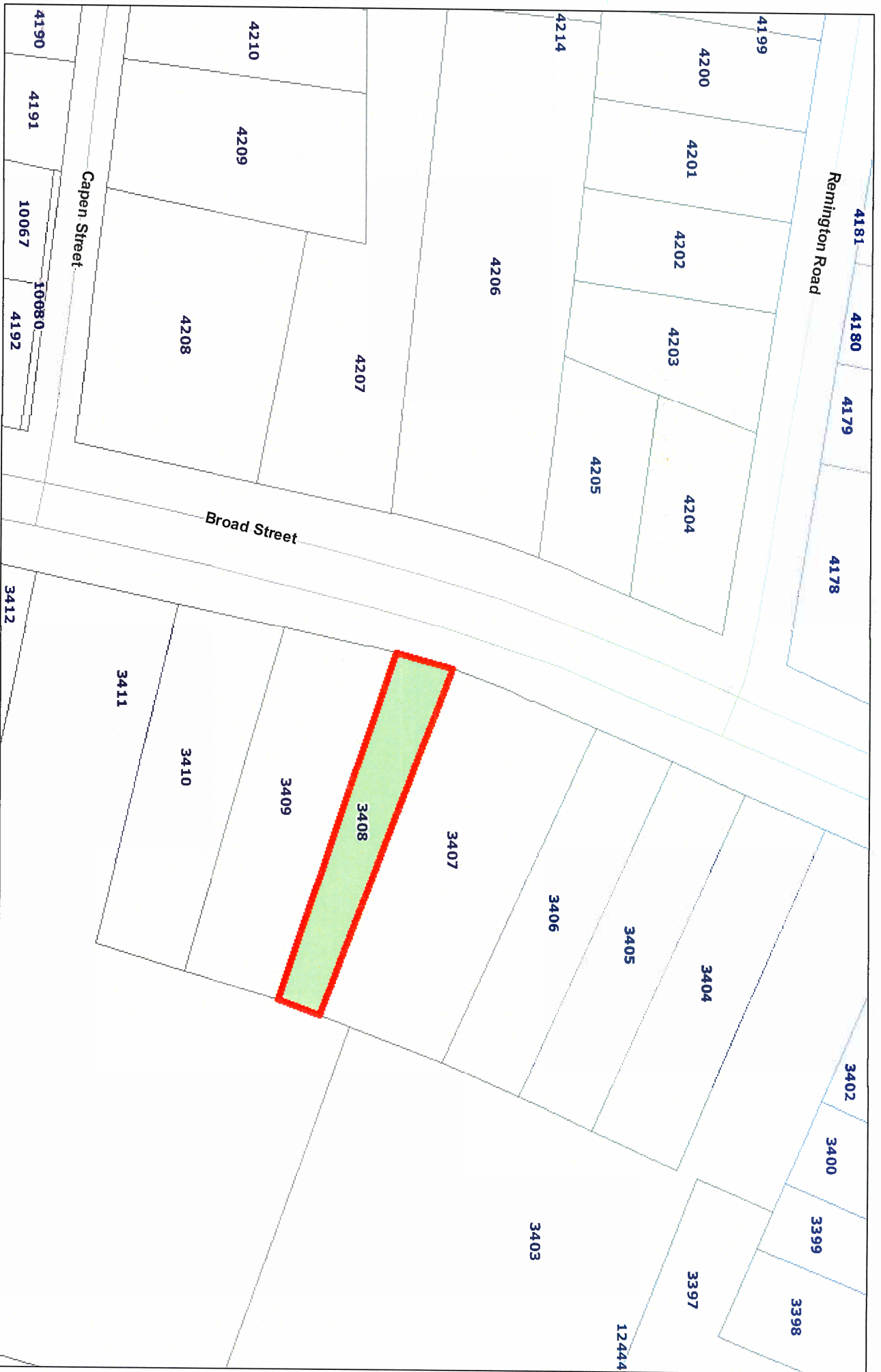
Please See attached revised page two of our application. Just to clarify T-Mobile is proposing to install nine antennas at the 419 Broad Street, Windsor tower.

Sender: Karina Fournier

Sender's Direct Dial: _____

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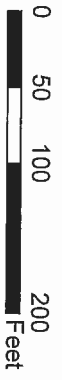
Exhibit B



Hartford County, Connecticut

Horizontal Datum is Connecticut State Plane Feet, NAD83

1 inch = 123 feet



Property Boundaries not legally binding for title or zoning purposes.

The Town of Windsor makes no warranty as to the accuracy, reliability, or completeness of the information and is not responsible for any error or omissions for results obtained from the use of the information.

Property Cards

Address Search : [Clear Search](#)

419 Broad St

Property Owner:
Southern New England

Property Co-Owner
C/O Frontier Communications Tax Dept

Mailing Address:
406 Merritt 7
Norwalk, CT
06851

File Code
3407

Map:
77

Block:
65

Lot:
19

Census Tract:
4734.00

Property Type:
Tel X Station

Land Area (Acres):
0.47

Zone:
R11



Construction Details

Year Built: 1955	Total Rooms:
Building Style: Telephone Bldg	Bedrooms:
Stories: 1	Bathrooms:
Living Area: 0 Sq/Ft	Half Baths:
Building ID 10739	Heating Type Forced Air
Grade Average	Heating Fuel Oil
Exterior Wall Brick Veneer	AC Type Central

Valuation	
Assessed Land Value:	\$100,450
Assessed Building Value:	\$179,900
Total Assessed Value:	\$280,350
Appraised Land Value:	\$143,500
Appraised Building Value:	\$257,000
Total Appraised Value:	\$400,500

Last Sale	
Last Sale Date:	Friday, June 30th, 1944
Last Sale Price:	\$0
Qualified Sale:	
Book/Page:	124/0030

Prior Owners			
Sale Date	Owner Name	Sale Price	Book / Page

Parcel Sketch

Sub Area Detail

Code	Gross Area (Sq Ft)	Living Area (Sq Ft)
BAS	8253	8253
PTO	184	0
UBM	4598	0

Outbuildings & Extra Features

Code	Description	Appraised Value	Assessed Value
PAV1	PAVING-ASPHALT	\$6900.00	\$4830.00

AOF Office Area **APT** Apartment **BAS** First Floor
CAN Canopy **CDN** Canopy (Det) **CLP** Loading Platform (Finished)
EAF Attic (Expan)(Finished) **EAU** Attic (Expan)(Unfinished) **FAT** Attic (Finished)
FBM Basement (Finished) **FCB** Cabana (Encl)(Finished) **FCP** Carport (Framed)
FDC Carport (Det)(Framed) **FDS** Porch (Scrn)(Det)(Finished) **FDU** Utility (Det)(Finished)
FEP Porch (Encl)(Finished) **FGR** Garage (Framed) **FHS** Half-Story (Finished)

FLL Lower-Level (Finished)	FOP Porch (Open)(Finished)	FSP Porch (Screen)(Finished)
FST Utility (Finished)	FUS Upper-Story (Finished)	PTO Patio
SDA Store Display Area	SFB Base (Semi-Finished)	SPA Service Prod Area
TQS Three-Qtr Story	UAT Attic (Unfinished)	UBM Basement (Unfinished)
UCB Cabana (Encl)(Unfinished)	UDS Porch (Scrn)(Dedt)(Unfinished)	UDU Utility (Det)(Unfinished)
UEP Porch (Encl)(Unfinished)	UHS Half-Story (Unfinished)	ULP Loading Platform (Unfinished)
UOP Porch (Open)(Unfinished)	USP Porch (Scrn)(Unfinished)	UST Utility (Strg)(Unfinished)
UUS Upper-Story (Unfinished)	WDK Wood Deck	

Exhibit C

MODIFICATION OF EXISTING WIRELESS FACILITY



T-MOBILE NORTHEAST LLC

PROJECT: ANCHOR

SITE NUMBER: CTHA130A

SITE NAME: CTHA130/SNET TOWER_MP

SITE ADDRESS: 419 BROAD STREET

WINDSOR, CT 06095

(RF CONFIGURATION 67D5997DB_2xAIR+10P)

APPLICANT:

T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

PROJECT MANAGER:

NORTHEAST SITE SOLUTIONS
Turkey Wireless Development
 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 203-275-6669

CONSULTANT:

FORESITE LLC
 Architects . Engineers . Surveyors
 462 WALNUT STREET
 NEWTON, MA 02460
 617-212-3123



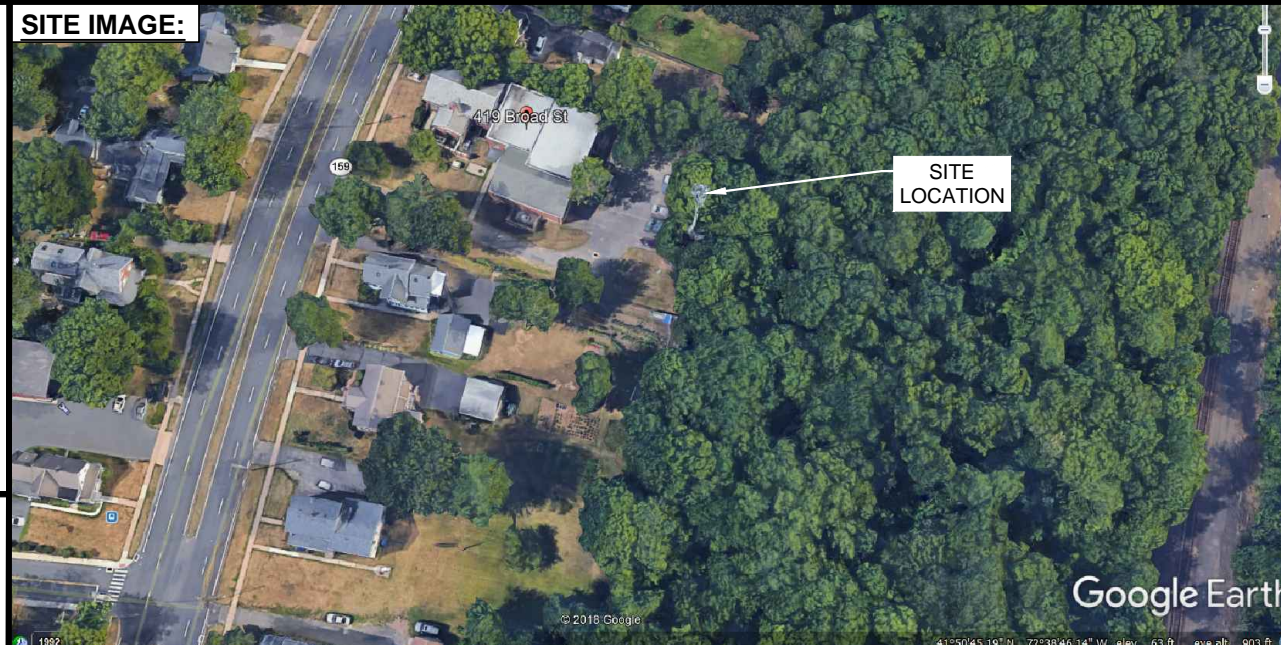
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REV	DESCRIPTION	DATE
A	PRELIMINARY	02/17/21
0	FINAL ISSUED	02/18/21
1	REVISED PER COMMENTS	03/30/21
2	CORRECTED COAX COUNTS	04/15/21

SITE NUMBER: CTHA130A
 SITE NAME: CTHA130/SNET TOWER_MP
 SITE ADDRESS: 419 BROAD STREET
 WINDSOR, CT 06095

SHEET TITLE:
 T-1: TITLE SHEET

SITE IMAGE:



VICINITY MAP:



PROJECT NOTES:

- THIS IS AN UNMANNED TELECOMMUNICATION FACILITY AND NOT FOR HUMAN HABITATION. HANDICAPPED ACCESS IS NOT REQUIRED. POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED. NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
- CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON THE JOB SITE. CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK. FAILURE TO NOTIFY THE ARCHITECT/ENGINEER PLACES THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
- DEVELOPMENT AND USE OF THE SITE WILL CONFORM TO ALL APPLICABLE CODES, ORDINANCES AND SPECIFICATIONS.
- PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO TOWER STRUCTURAL ANALYSIS REPORT - REVISION 1, SITE NUMBER: CTHA130A, DATED FEBRUARY 1, 2021, PREPARED BY TOWER ENGINEERING PROFESSIONALS, STRUCTURAL MODIFICATION DESIGN BY MALOUF ENGINEERING INTERNATIONAL, INC. REVISION 1, DATED APRIL 26, 2019 AND "ANTENNA MOUNT ANALYSIS" DATED August 31, 2020, ALSO BY MALOUF ENGINEERING INTL., INC. TO DETERMINE IF THERE IS ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIRED FOR TOWER EQUIPMENT AND FOR MOUNTING, OR RELOCATION ARRANGEMENTS.

CODE COMPLIANCE:

ALL WORK SHALL COMPLY WITH THE CURRENT NATIONAL AND CONNECTICUT STATE BUILDING AND LIFE SAFETY CODES, SUPPLEMENTS AND AMENDMENTS INCLUDING BUT NOT LIMITED TO THE LATEST EDITION OF: CONNECTICUT STATE BUILDING CODE (CSBC), ANS/I/A-222-G STRUCTURAL STANDARD FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS. NATIONAL ELECTRICAL CODE (NEC) FOR POWER AND GROUNDING REQUIREMENTS. OCCUPATIONAL SAFETY AND HEALTH ACT (OSHA). NFPA - NATIONAL FIRE PROTECTION ASSOCIATION.

811 Connecticut - Call Before You Dig
 811 or 1-800-922-4455
Advance Notice:
 Minimum of 2 working days in advance, no more than 30 days in advance

APPROVALS:

APPROVAL	DATE
FSA CM	DATE
RF ENGINEER	DATE
FOPS	DATE
T-MOBILE ENGINEERING AND DEVELOPMENT	DATE
	DATE
	DATE

PROJECT SCOPE:

UPGRADE OF EXISTING WIRELESS FACILITY AS FOLLOWS:
 REMOVE (E) NORTEL S8000 CABINET.
 UPGRADE EXISTING RBS 6131 CABINET INTERNALLY.
 ADD (1) ENCLOSURE 6160 ON EXISTING CONCRETE PAD.
 ADD (1) BATTERY CABINET B160 ON EXISTING CONCRETE PAD.
 REPLACE (3) OF (9) EXISTING ANTENNAS.
 ADD (3) RADIO REMOTE UNITS AND (3) DIPLEXERS AT ANTENNA.
 REMOVE (1) 9X18 HCS, ADD (1) 6X12 HCS LINES, FOR FINAL COUNT OF (16) 7/8" COAX CABLES AND (3) 6X12 HCS LINES.

PROJECT INFORMATION:

ADDRESS: 419 BROAD STREET
 WINDSOR, CT 06095
 STRUCTURE TYPE: MONOPOLE
 PARCEL ID: 77-65-19
 ZONING DISTRICT: R11
 COORDINATES: 41°50'45.14"N, 72°38'46.12"W
 AVERAGE GROUND ELEV: 49± (AMSL)

PROJECT TEAM:

APPLICANT: T-MOBILE NORTHEAST, LLC.
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100
 LANDLORD: AT&T CORP
 12 OMEGA DRIVE
 STAMFORD, CT 06907
 PROJECT MANAGER: NORTHEAST SITE SOLUTIONS
 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 SHELDON FREINCLE
 SHELDON@NORTHEASTSITE SOLUTIONS.COM
 TEL: (201) 776-8521
 CONSULTANTS: FORESITE LLC
 462 WALNUT ST
 NEWTON, MA 02460
 SAEED MOSSAVAT
 SMOSSAVAT@FORESITELLC.COM
 TEL: (617) 212-3123
 TOWER OWNER: EIP COMMUNICATIONS I, LLC
 TWO ALLEGHENY CENTER
 NOVA TOWER 2, SUITE 703
 PITTSBURGH PA 15212
 TEL: (844) 547-0547

SHEET INDEX:

- T-1: TITLE SHEET
- N-1: GENERAL NOTES
- A-1: COMPOUND PLAN
- A-3: ELEVATION AND ANTENNAS PLAN
- A-4: EQUIPMENT AND ANTENNA SPECIFICATIONS
- E-1: GROUNDING DETAILS

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GENERAL NOTES:

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAS MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE CLIENT'S REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONSTRUCTION DOCUMENTS.
6. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S / VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
7. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS DURING CONSTRUCTION.
8. THE CONTRACTOR SHALL COMPLY WITH ALL PERTINENT SECTIONS OF THE BASIC STATE BUILDING CODE, LATEST EDITION, AND ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJEC
9. THE CONTRACTOR SHALL NOTIFY THE CLIENT'S REPRESENTATIVE IN WRITING WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE CLIENT'S REPRESENTATIVE.
10. THE WORK SHALL CONFORM TO THE CODES AND STANDARDS OF THE FOLLOWING AGENCIES AS FURTHER CITED HEREIN:
 - A. ASTM: AMERICAN SOCIETY FOR TESTING AND MATERIALS, AS PUBLISHED IN "COMPILATION OF ASTM STANDARDS BUILDING CODES" OR LATEST EDITION.
 - B. AWS: AMERICAN WELDING SOCIETY INC. AS PUBLISHED IN "STANDARD D1.1-08, STRUCTURAL WELDING CODE" OR LATEST EDITION.
 - C. AISC: AMERICAN INSTITUTE FOR STEEL CONSTRUCTION AS PUBLISHED IN "CODE FOR STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"; "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS" (LATEST EDITION).
11. BOLTING:
 - A. BOLTS SHALL BE CONFORMING TO ASTM A325 HIGH STRENGTH, HOT DIP GALVANIZED WITH ASTM A153 HEAVY HEX TYPE NUTS.
 - B. BOLTS SHALL BE 3/4"Ø MINIMUM (UNLESS OTHERWISE NOTED)
 - C. ALL CONNECTIONS SHALL BE 2 BOLTS MINIMUM.
12. FABRICATION:
 - A. FABRICATION OF STEEL SHALL CONFORM TO THE AISC AND AWS STANDARDS AND CODES (LATEST EDITION).
 - B. ALL STRUCTURAL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 (LATEST EDITION), UNLESS OTHERWISE NOTED.
13. ERECTION OF STEEL:
 - A. PROVIDE ALL ERECTION EQUIPMENT, BRACING, PLANKING, FIELD BOLTS, NUTS, WASHERS, DRIFT PINS, AND SIMILAR MATERIALS WHICH DO NOT FORM A PART OF THE COMPLETED CONSTRUCTION BUT ARE NECESSARY FOR ITS PROPER ERECTION.
 - B. ERECT AND ANCHOR ALL STRUCTURAL STEEL IN ACCORDANCE WITH AISC REFERENCE STANDARDS. ALL WORK SHALL BE ACCURATELY SET TO ESTABLISHED LINES AND ELEVATIONS AND RIGIDLY FASTENED IN PLACE WITH SUITABLE ATTACHMENTS TO THE CONSTRUCTION OF THE BUILDING.
 - C. TEMPORARY BRACING, GUYING AND SUPPORT SHALL BE PROVIDED TO KEEP THE STRUCTURE SAFE AND ALIGNED AT ALL TIMES DURING CONSTRUCTION, AND TO PREVENT DANGER TO PERSONS AND PROPERTY. CHECK ALL TEMPORARY LOADS AND STAY WITHIN SAFE CAPACITY OF ALL BUILDING COMPONENTS.
14. ANTENNA INSTALLATION:
 - A. INSTALL ANTENNAS AS INDICATED ON DRAWINGS AND CLIENT'S REPRESENTATIVE SPECIFICATIONS.
 - B. INSTALL GALVANIZED STEEL ANTENNA MOUNTS AS INDICATED ON DRAWINGS.


- C. INSTALL COAXIAL / FIBER CABLES AND TERMINATIONS BETWEEN ANTENNAS AND EQUIPMENT PER MANUFACTURER'S RECOMMENDATIONS. WEATHERPROOF ALL CONNECTORS BETWEEN THE ANTENNA AND EQUIPMENT PER MANUFACTURER'S REQUIREMENTS.
15. ANTENNA AND COAXIAL / FIBER CABLE GROUNDING:
 - A. ALL EXTERIOR #6 GREEN GROUND WIRE "DAISY CHAIN" CONNECTIONS ARE TO BE WEATHER SEALED WITH ANDREWS CONNECTOR/SPLICE WEATHERPROOFING KIT TYPE #221213 OR EQUAL.
 - B. ALL COAXIAL / FIBER CABLE GROUNDING KITS ARE TO BE INSTALLED ON STRAIGHT RUNS OF COAXIAL / FIBER CABLE (NOT WITHIN BENDS).
16. RELATED WORK, FURNISH THE FOLLOWING WORK AS SPECIFIED UNDER CONSTRUCTION DOCUMENTS, BUT COORDINATE WITH OTHER TRADES PRIOR TO BID:
 - A. FLASHING OF OPENING INTO OUTSIDE WALLS
 - B. SEALING AND CAULKING ALL OPENINGS
 - C. PAINTING
 - D. CUTTING AND PATCHING
17. REQUIREMENTS OF REGULATORY AGENCIES:
 - A. FURNISH U.L. LISTED EQUIPMENT WHERE SUCH LABEL IS AVAILABLE. INSTALL IN CONFORMANCE WITH U.L. STANDARDS WHERE APPLICABLE.
 - B. INSTALL ANTENNA, ANTENNA CABLES, GROUNDING SYSTEM IN ACCORDANCE WITH DRAWINGS AND SPECIFICATION IN EFFECT AT PROJECT LOCATION AND RECOMMENDATIONS OF STATE AND LOCAL BUILDING CODES, AND SPECIAL CODES HAVING JURISDICTION OVER SPECIFIC PORTIONS OF WORK. THIS WORK INCLUDES BUT IS NOT LIMITED TO THE FOLLOWING:
 - C. TIA-EIA - 222 (LATEST EDITION). STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES.
 - D. FAA - FEDERAL AVIATION ADMINISTRATION ADVISORY CIRCULAR AC 70/7460-IH, OBSTRUCTION MARKING AND LIGHTING.
 - E. FCC - FEDERAL COMMUNICATIONS COMMISSION RULES AND REGULATIONS FORM 715, OBSTRUCTION MARKING AND LIGHTING SPECIFICATION FOR ANTENNA STRUCTURES AND FORM 715A, HIGH INTENSITY OBSTRUCTION LIGHTING SPECIFICATIONS FOR ANTENNA STRUCTURES.
 - F. AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 BOLTS (LATEST EDITION).
 - G. NEC - NATIONAL ELECTRICAL CODE - ON TOWER LIGHTING KITS.
 - H. UL - UNDERWRITER'S LABORATORIES APPROVED ELECTRICAL PRODUCTS.
 - I. IN ALL CASES, PART 77 OF THE FAA RULES AND PARTS 17 AND 22 OF THE FCC RULES ARE APPLICABLE AND IN THE EVENT OF CONFLICT, SUPERSEDE ANY OTHER STANDARDS OR SPECIFICATIONS.
 - J. 2018 LIFE SAFETY CODE NFPA - 101.


APPLICANT:

T-MOBILE NORTHEAST LLC
 35 GRIFFIN ROAD SOUTH
 BLOOMFIELD, CT 06002
 860-692-7100

PROJECT MANAGER

 420 MAIN STREET, BLDG 4
 STURBRIDGE, MA 01566
 203-275-6669

CONSULTANT:

 Architects . Engineers . Surveyors
 462 WALNUT STREET
 NEWTON, MA 02460
 617-212-3123



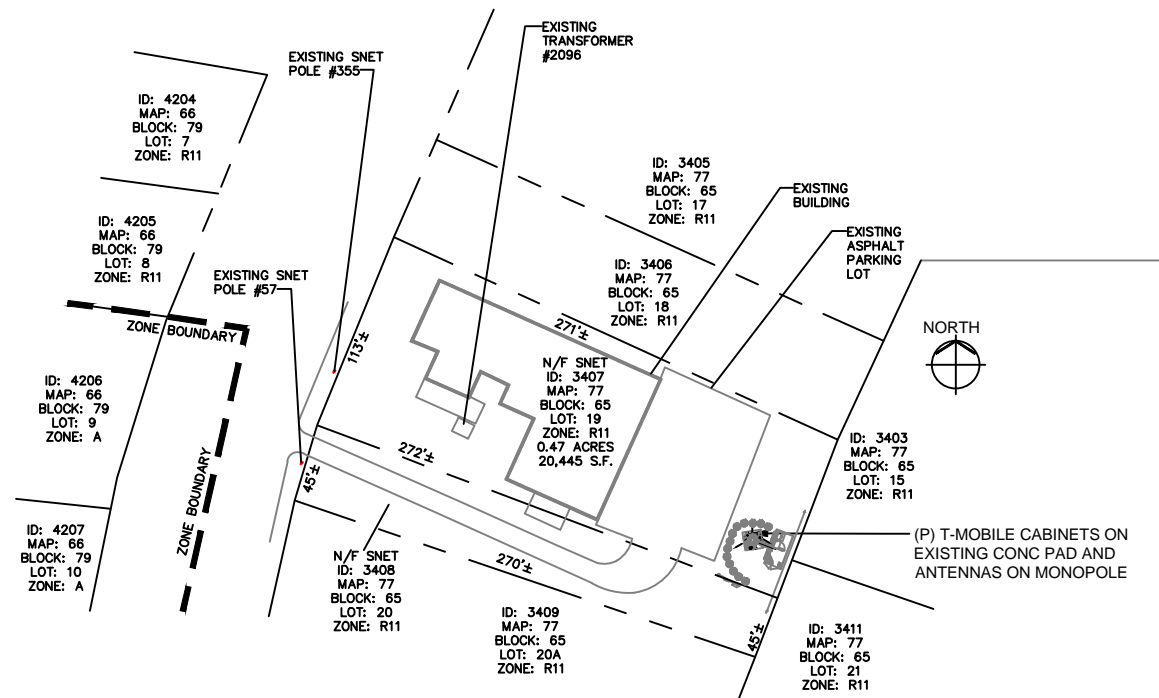
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REV	DESCRIPTION	DATE
A	PRELIMINARY	02/17/21
0	FINAL ISSUED	02/18/21
1	REVISED PER COMMENTS	03/30/21
2	CORRECTED COAX COUNTS	04/15/21

SITE NUMBER: CTHA130A
 SITE NAME: CTHA130/SNET TOWER_MP
 SITE ADDRESS: 419 BROAD STREET
 WINDSOR, CT 06095

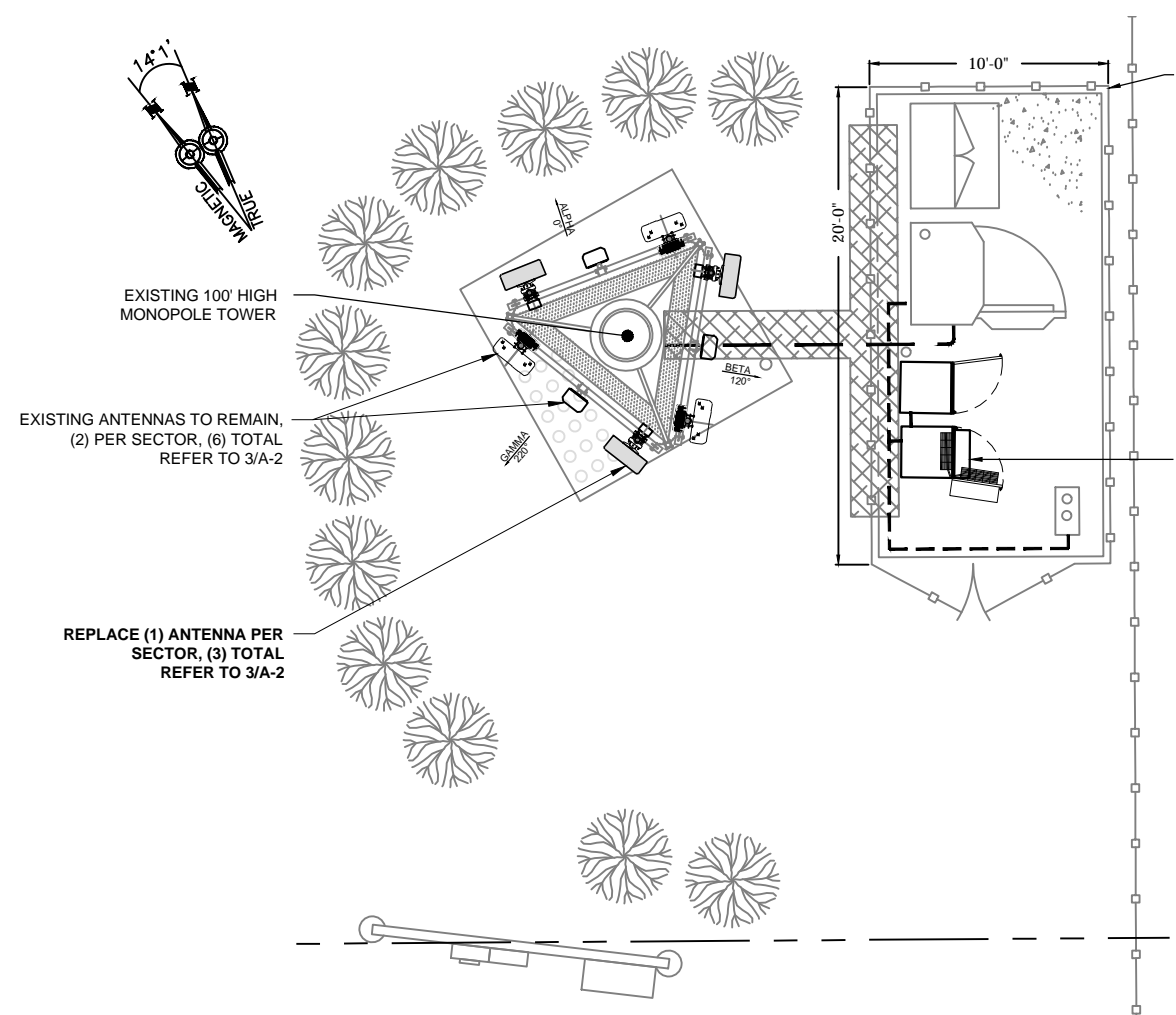
SHEET TITLE:
 N-1: NOTES AND DISCLAIMERS

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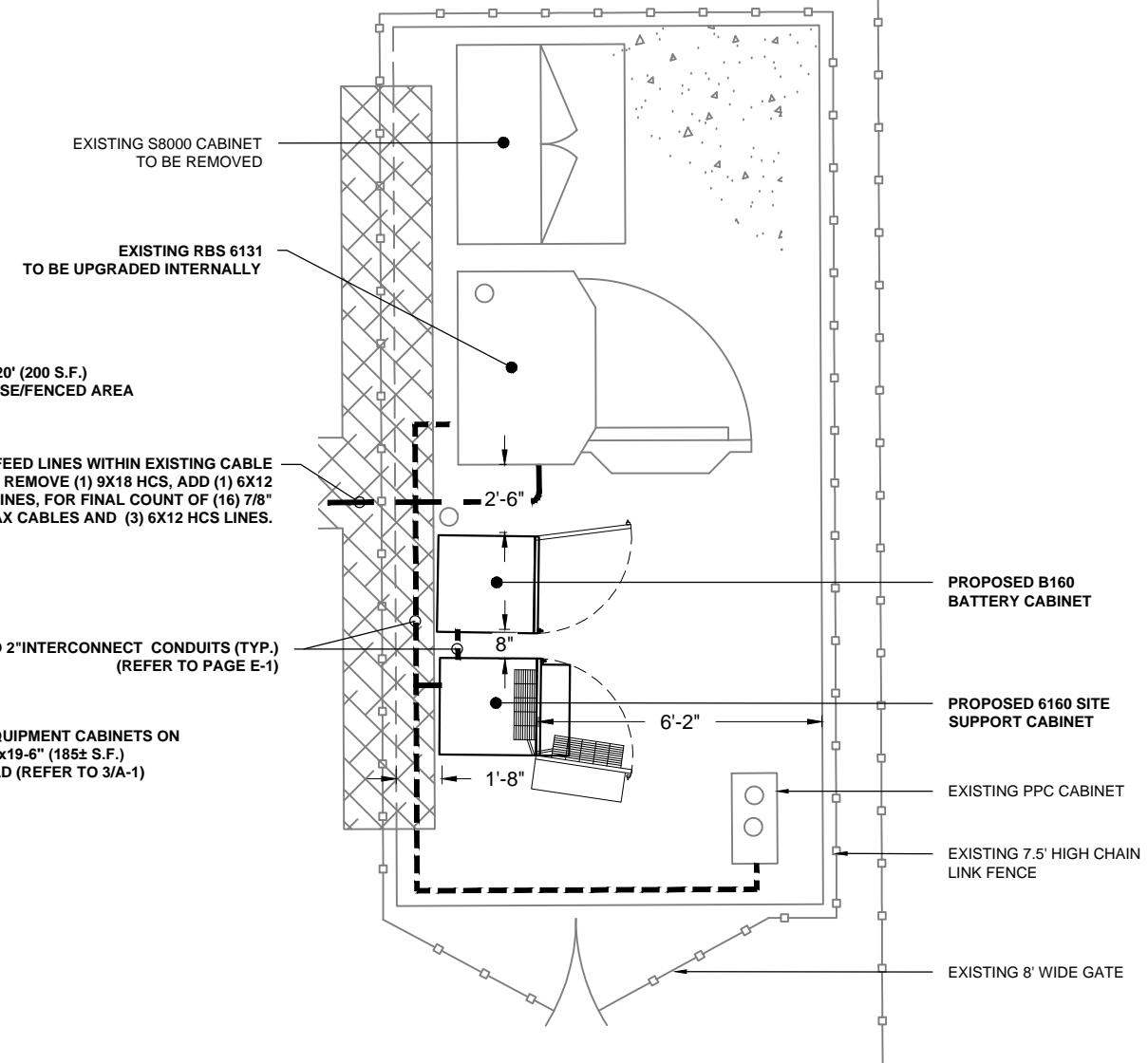
SITE PLAN
SCALE: N.T.S.

1
A-1



COMPOUND PLAN
SCALE: 1/8" = 1'-0"

2
A-1



EQUIPMENT LAYOUT PLAN
SCALE: 1/4" = 1'-0"

3
A-1

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER
NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
203-275-6669

CONSULTANT:
FORESITE LLC
Architects . Engineers . Surveyors
462 WALNUT STREET
NEWTON, MA 02460
617-212-3123



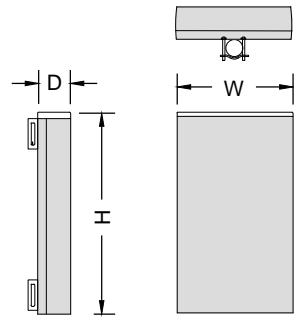
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REV	DESCRIPTION	DATE
A	PRELIMINARY	02/17/21
0	FINAL ISSUED	02/18/21
1	REVISED PER COMMENTS	03/30/21
2	CORRECTED COAX COUNTS	04/15/21

SITE NUMBER: CTHA130A
SITE NAME: CTHA130/SNET TOWER_MP
SITE ADDRESS: 419 BROAD STREET
WINDSOR, CT 06095

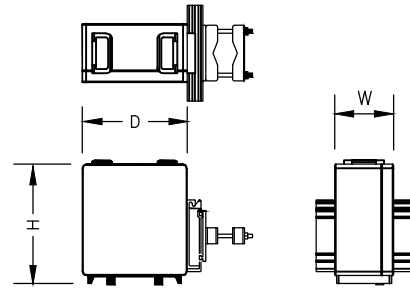
SHEET TITLE:
A-1: COMPOUND PLAN

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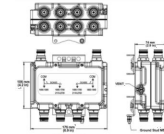
ERICSSON ANTENNA SPECIFICATIONS	
MODEL #	AIR6449 B41
MANUF.	ERICSSON
HEIGHT	33.1"
WIDTH	20.5"
DEPTH	8.3"
WEIGHT	103 LB

ERICSSON ANTENNA ①
N.T.S. A-3



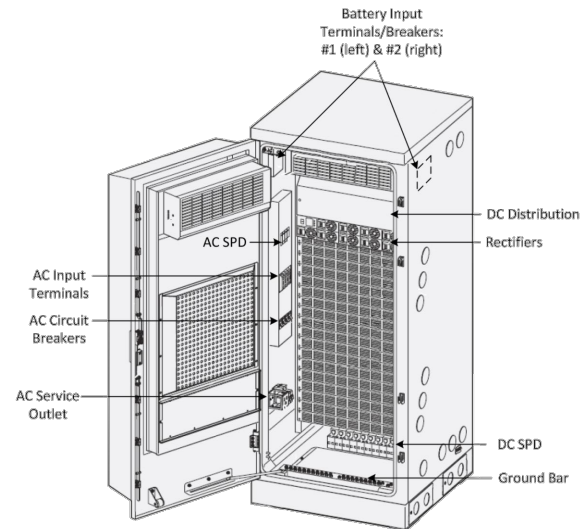
REMOTE RADIO UNIT SPECIFICATIONS	
MODEL #	RADIO 4415 B25
MANUF.	ERICSSON
HEIGHT	14.9"
WIDTH	13.2"
DEPTH	5.4"
WEIGHT	46.3 LB

REMOTE RADIO UNIT ②
N.T.S. A-3



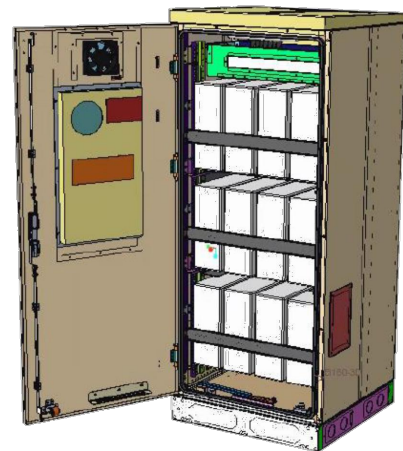
DIPLEXER	
MODEL #	SDX1926Q-43
MANUF.	COMMSCOPE
HEIGHT	4.173"
WIDTH	6.929"
DEPTH	2.913"
WEIGHT	0.441 LB

DIPLEXER ③
N.T.S. A-3



SITE SUPPORT CABINET SPECIFICATIONS	
MODEL #	6160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	25.6"
DEPTH	33.5"
WEIGHT	605 lbs

SITE SUPPORT CABINET ④
N.T.S. A-3



BATTERY CABINET SPECIFICATIONS	
MODEL #	B160
MANUF.	ERICSSON
HEIGHT	63"
WIDTH	26"
DEPTH	26"
WEIGHT	1883 lbs

BATTERY CABINET ⑤
N.T.S. A-3

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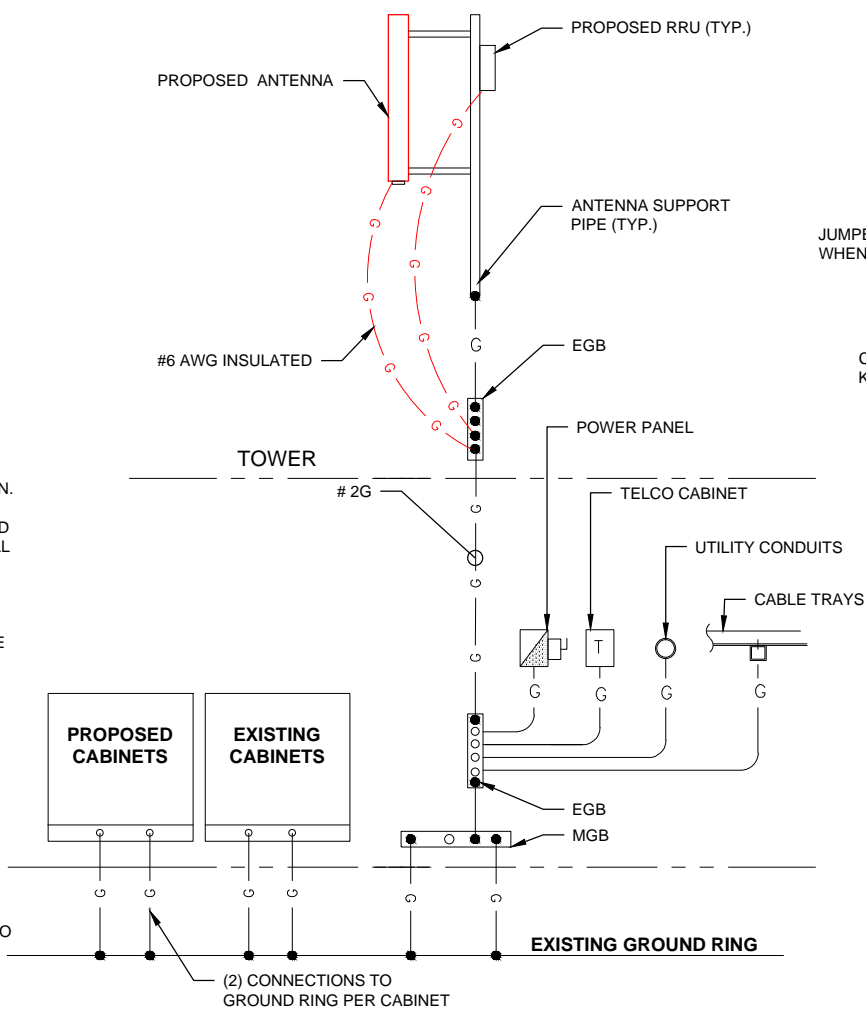
SITE NUMBER: CTHA130A
SITE NAME: CTHA130/SNET TOWER_MP
SITE ADDRESS: 419 BROAD STREET
WINDSOR, CT 06095

SHEET TITLE:
A-3: ANTENNA AND
EQUIPMENT DETAILS

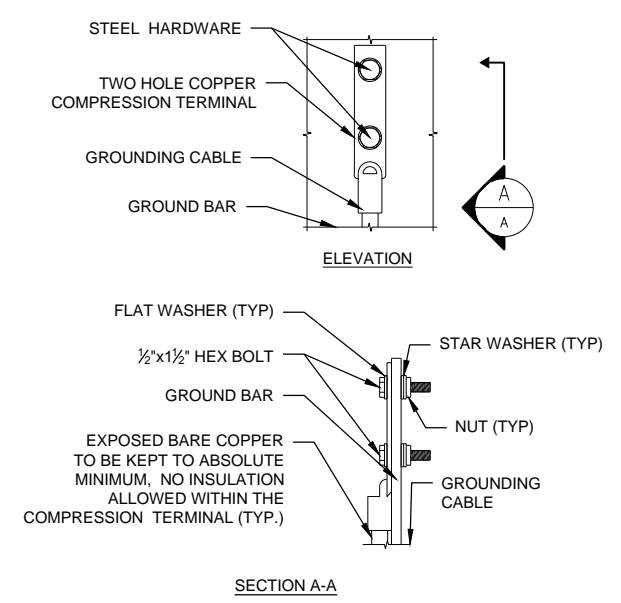
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ELECTRICAL & GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PRODUCED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) ND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLING BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE ARE PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCOM CABINET AND RBS CABINET AS INDICATED ON DRAWING A -1. PROVIDE FULL LENGTH PULL ROPE INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NAME 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUNDING COAX CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURES COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSTALLATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE GROUND.
14. ALL GROUND CONNECTION TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AS RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY BOND ANY METER OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PROCEDURES (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN RBS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTION.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

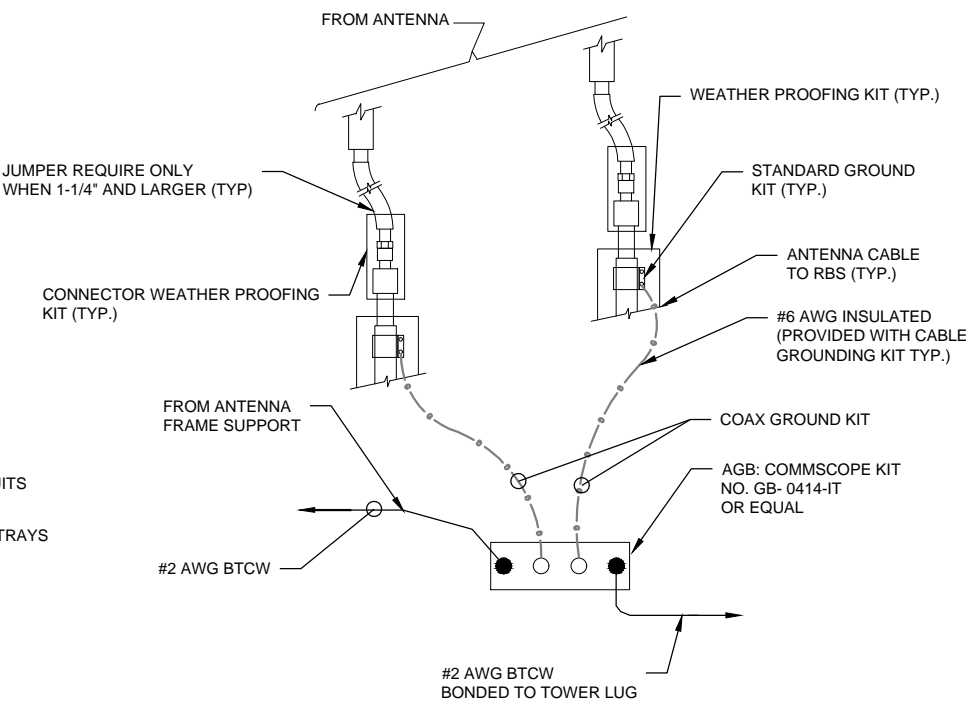


GROUNDING RISER DIAGRAM
N.T.S. 1
E-1



- NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.

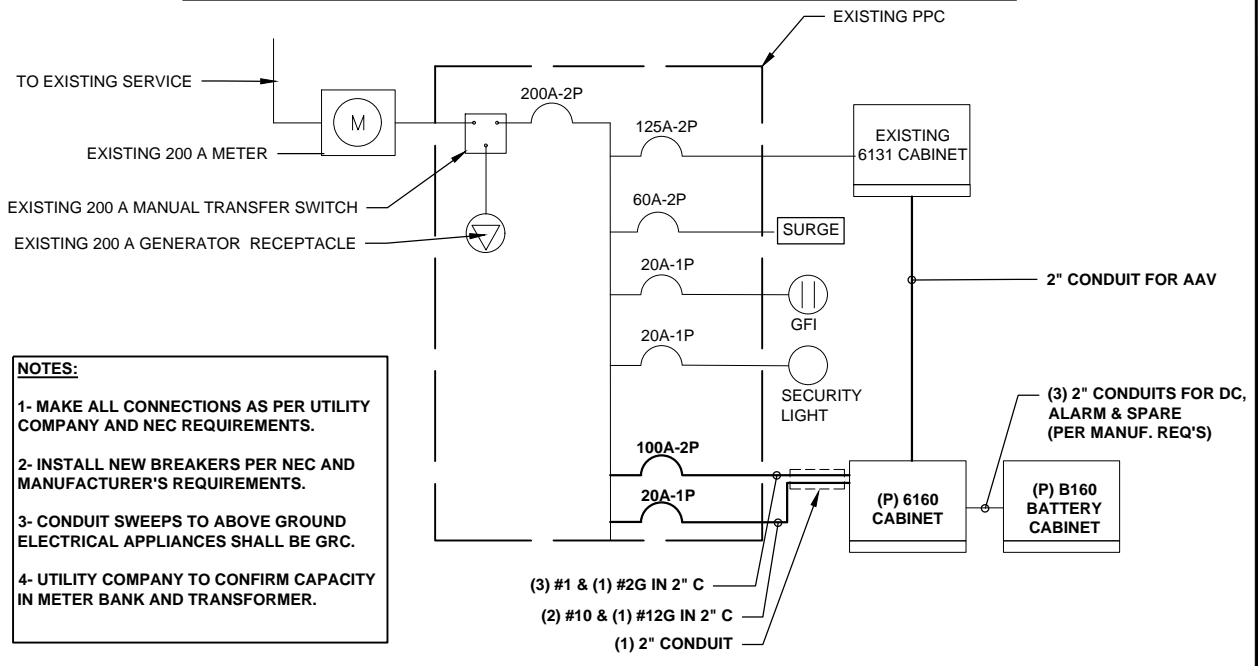
TYPICAL GROUND BAR CONNECTIONS DETAIL
N.T.S. 3
E-1



- NOTES:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB

TOWER TOP CABLE GROUNDING DETAIL
N.T.S. 2
E-1

- SPECIAL CONTRACTOR'S NOTES:
CONTRACTOR TO VERIFY THE POWER FEED & PHASE OF METER BANK AND THAT THE EXISTING AND PROPOSED CONDUITS AND WIRE SIZES ARE ADEQUATE FOR THE PROPOSED LOADING IN ACCORDANCE WITH NEC AND INCLUDE ELECTRICAL UPGRADES IN THE SCOPE OF WORK AS REQUIRED.



- NOTES:
1- MAKE ALL CONNECTIONS AS PER UTILITY COMPANY AND NEC REQUIREMENTS.
2- INSTALL NEW BREAKERS PER NEC AND MANUFACTURER'S REQUIREMENTS.
3- CONDUIT SWEEPS TO ABOVE GROUND ELECTRICAL APPLIANCES SHALL BE GRC.
4- UTILITY COMPANY TO CONFIRM CAPACITY IN METER BANK AND TRANSFORMER.

TYPICAL ONE LINE DIAGRAM
N.T.S. 4
E-1

APPLICANT:
T-Mobile
T-MOBILE NORTHEAST LLC
35 GRIFFIN ROAD SOUTH
BLOOMFIELD, CT 06002
860-692-7100

PROJECT MANAGER
NORTHEAST SITE SOLUTIONS
420 MAIN STREET, BLDG 4
STURBRIDGE, MA 01566
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SITE NUMBER: CTHA130A
SITE NAME: CTHA130/SNET TOWER_MP
SITE ADDRESS: 419 BROAD STREET
WINDSOR, CT 06095

SHEET TITLE:
E-1: GROUNDING AND ELECTRICAL DETAILS

Exhibit D

February 1, 2021

Thomas L. Rigg Jr.
Everest
Two Allegheny Center, Nova Tower 2, Suite 703
Pittsburgh, PA 15212
(603) 498-7462



Tower Engineering Professionals
326 Tryon Road
Raleigh, NC 27603
(919) 661-6351
Structures@tepgroup.net

Subject: Structural Analysis Report – Revision 1

Carrier Designation: *T-Mobile Reconfiguration*
Site Number: CTHA130A
Site Name: CTHA130/SNET Tower_MP

Client Designation: **Site Number:** 701776
Site Name: Windsor CO

Engineering Firm Designation: **TEP Project Number:** 260307.487571

Site Data: **419 Broad Street, Windsor, Hartford County, CT 06095**
Latitude 41° 50' 45.20", Longitude -72° 38' 46.10"
100± Foot - Monopole

Dear Thomas L. Rigg Jr.,

Tower Engineering Professionals is pleased to submit this “**Structural Analysis Report**” to determine the structural integrity of the above-mentioned tower.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the stress level for the structure and foundation, under the following load case, to be:

LC1: Existing + Proposed + Reserved Loading
Note: See Table 1 for the existing, proposed, and reserved loading

Sufficient Capacity

Structure Capacity	Foundation Capacity
91.0%	72.8%

The analysis has been performed in accordance with the ANSI/TIA-222-G-2-2009 Structural Standard for Antenna Supporting Structures and Antennas – Addendum 2 and the 2018 Connecticut State Building Code.

All modifications and equipment proposed in this report shall be installed in accordance with the appurtenances listed in Table 1 for the determined available structural capacity to be effective.

We at *Tower Engineering Professionals* appreciate the opportunity of providing our continuing professional services to you and *Everest*. If you have any questions or need further assistance on this or any other projects please give us a call.

Structural analysis prepared by: Nicholas P. Danyluk / SEB

Respectfully submitted by:

Aaron T. Rucker, P.E.



02/01/2021

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2) ANALYSIS CRITERIA

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3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

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4) ANALYSIS RESULTS

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Table 4 - Tower Component Stresses vs. Capacity

4.1) Recommendations

5) APPENDIX A

tnxTower Output

6) APPENDIX B

Additional Calculations

1) INTRODUCTION

The tower is a 100± Foot Monopole designed by Engineered Endeavors. The tower was originally designed for a 3-second gust wind speed of 70 mph with 0.5 inch radial ice thickness per TIA/EIA-222-F. The tower has been modified multiple times in the past to accommodate additional loading. All information provided to TEP was assumed to be accurate and complete.

2) ANALYSIS CRITERIA

TIA-222 Revision:	ANSI/TIA-222-G-2-2009
Type of Analysis:	Rigorous
Structure Class:	II
Wind Speed:	97 mph (Nominal)
Exposure Category:	C
Topographic Category:	1 (Kzt = 1.0)
Ice Thickness:	1.0 in
Wind Speed with Ice:	50 mph
Seismic Design Category:	B
Seismic Ss:	0.179
Seismic S1:	0.064
Service Wind Speed:	60 mph

Table 1 - Existing, Proposed, and Reserved Antenna and Cable Information

Existing/ Proposed/ Reserved	Mount Level (ft)	Ant CL (ft)	Qty	Antenna Model	Mount Type	Qty Coax	Coax Size	Coax Location	Owner/ Tenant
Existing ¹	103.0		3	Quintel QS66512-2	Low Profile Platform	12	1-1/4 3/4 5/8	Inside Pole	AT&T
			3	Powerwave 7770.00					
			3	CCI HPA-65R-BUU-H6					
	100.0		3	Ericsson RRUS-32					
			3	Ericsson RRUS-32 B2					
			3	Ericsson RRUS-11					
			6	Kaelus DBC0061F1V51-2					
			3	Powerwave TT19-08BP111-001					
			2	Raycap COVP					
			Proposed	94.0					
3	Ericsson RRUS 4415 B25								
3	Commscope SDX192								
Existing	94.0	94.0	3	Ericsson AIR32 B66A B2A	Low Profile Platform	2	1-1/4 Hybrid 7/8	Outside Pole Inside Pole	T-Mobile
			3	RFS APXVAARR24_43-U-NA20					
			3	Ericsson RRUS 4449					
			3	Ericsson KRY 112 71					
To Be Removed	94.0	94.0	3	Ericsson AIR21 B2A B4P	-	1	1-5/8 Hybrid	Outside Pole	T-Mobile
Existing ¹	10.5	10.5	1	GPS	Pipe Mount	1	½	Outside Pole	AT&T

Notes:

1) AT&T Loading assumed from Previous Modification Design by Malouf Engineering International.

3) ANALYSIS PROCEDURE

Table 2 - Documents Provided

Document	Remarks	Source
Geotechnical Report	WEI Geotechnical Engineering, dated March 12, 2009 Project No. 2009-758	Everest
Previous Modification Design	GDP Associates, dated May 12, 2009 Project No. 2009262.22	Everest
Previous Modification Design	Malouf Engineering International, Inc., dated October 4, 2018 Project No. CT00873M-18V3	Everest
Correspondence	Correspondence in reference to the existing, proposed, and reserved loading.	Everest

3.1) Analysis Method

tnxTower (version 8.0.7.5), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

For analysis of monopole shaft reinforcements, the plates are modeled as linear appurtenances along the exterior of the pole. The loads calculated from tnxTower are then exported to a proprietary calculation sheet created by Tower Engineering Professionals, Inc. that analyzes each reinforcing element along each critical axis and presents percent capacities for each element and the pole shaft along each critical axis. The actual percent capacity of the tower structure including the reinforcing elements is reported in Table 3 - Section Capacity (Summary).

3.2) Analysis Assumptions

- 1) The tower and foundation were built and maintained in accordance with the manufacturer's specification.
- 2) The configuration of existing antennas, transmission cables, mounts and other appurtenances are as specified in the tower mapping report by TEP.
- 3) Unless specified by the client or tower mapping, the location of the existing and proposed coax is assumed by TEP and listed in Table 1.
- 4) All tower components are in sufficient condition to carry their full design capacity.
- 5) Serviceability with respect to antenna twist, tilt, roll, or lateral translation, is not checked and is left to the carrier or tower owner to ensure conformance.
- 6) All antenna mounts and mounting hardware are structurally sufficient to carry the full design capacity requirements of appurtenance wind area and weight as provided by the original manufacturer specifications. It is the carrier's responsibility to ensure compliance to the structural limitations of the existing and/or proposed antenna mounts. TEP did not perform a site visit to verify the size, condition or capacity of the antenna mounts and did not analyze antennas supporting mounts as part of this structural analysis report.
- 7) TEP assumed the tower and foundation geometry provided in the Previous Modification Design by GDP Associates and Malouf Engineering International listed in Table 2 was accurate.

This analysis may be affected if any assumptions are not valid or have been made in error. Tower Engineering Professionals should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 3 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (lb)	ϕP_{allow} (lb)	% Capacity	Pass / Fail
L1	100.00-86.73	Pole	TP16.34x14.50x0.1875	1	Note 1	Note 1	48.1	Pass
L2	89.27-45.40	Pole	TP21.72x15.62x0.2500	2	Note 1	Note 1	74.2	Pass
L3	48.61-0.00	Pole	TP27.50x20.77x0.3125	3	Note 1	Note 1	69.5	Pass
M1b	15.50-0.50	Mod (Ex)	(Aero) MP306	1	Note 1	Note 1	87.3	Pass
M2	45.33-0.50	Mod (Ex)	(Aero) MP306	2	Note 1	Note 1	90.2	Pass
M3	45.33-12.00	Mod (Ex)	(Aero) MP306	3	Note 1	Note 1	81.2	Pass
M4	80.00-45.33	Mod (Ex)	(Aero) MP305	4	Note 1	Note 1	91.0	Pass
M5	25.50-15.50	Mod (Ex)	(Aero) MP306	5	Note 1	Note 1	66.1	Pass
							Summary	
						Pole (L2)	74.2	Pass
						Mod (M4)	91.0	Pass
						RATING =	91.0	Pass

Table 4 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	-	67.2	Pass
2	Base Plate	-	-	Pass
1,3	Base Foundation Reaction Comparison	-	72.8	Pass

Structure Rating (max from all components) =	91.0%
---	--------------

Notes:

- 1) See additional documentation in "Appendix B - Additional Calculations" for calculations supporting the % capacity listed.
- 2) See additional documentation in "Appendix B - Additional Calculations" for FEA analysis of stiffened Base Plate.
- 3) Capacities calculated are based on comparisons to design reactions and do not represent an actual analysis of the foundation. Design reactions include a 1.35 factor as allowed by ANSI/TIA-222-G-2-2009 Section 15.5.1.

4.1) Recommendations

- 1) If the load differs from that described in Table 1 of this report or the provisions of this analysis are found to be invalid, another structural analysis should be performed.
- 2) The tower and its foundation have sufficient capacity to carry the proposed load configuration. No modifications are required at this time.

APPENDIX A
TNX TOWER OUTPUT

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
1" dia x 4' lightning rod	100	Platform Mount [LP 303-1_KCKR]	94
EEL Platform	100	AIR 32 B66Aa/B2a w/ Mount Pipe	94
7770.00 w/ Mount Pipe	100	AIR 32 B66Aa/B2a w/ Mount Pipe	94
7770.00 w/ Mount Pipe	100	AIR 32 B66Aa/B2a w/ Mount Pipe	94
7770.00 w/ Mount Pipe	100	APXVAARR24_43-U-NA20 w/ Mount Pipe	94
HPA-65R-BUU-H6 w/ Mount Pipe	100	APXVAARR24_43-U-NA20 w/ Mount Pipe	94
HPA-65R-BUU-H6 w/ Mount Pipe	100	APXVAARR24_43-U-NA20 w/ Mount Pipe	94
HPA-65R-BUU-H6 w/ Mount Pipe	100	APXVAARR24_43-U-NA20 w/ Mount Pipe	94
QS66512-2 w/ Mount Pipe	100	APXVAARR24_43-U-NA20 w/ Mount Pipe	94
QS66512-2 w/ Mount Pipe	100	AIR6449 B41 w/ Mount Pipe	94
QS66512-2 w/ Mount Pipe	100	AIR6449 B41 w/ Mount Pipe	94
RRUS 32	100	AIR6449 B41 w/ Mount Pipe	94
RRUS 32	100	KRY 112 71	94
RRUS 32	100	KRY 112 71	94
RRUS 11	100	KRY 112 71	94
RRUS 11	100	RADIO 4449	94
RRUS 11	100	RADIO 4449	94
RRUS 32 B2	100	RADIO 4449	94
RRUS 32 B2	100	RRUS 4415 B25	94
RRUS 32 B2	100	RRUS 4415 B25	94
(2) DBC0061F1V51-2	100	RRUS 4415 B25	94
(2) DBC0061F1V51-2	100	RRUS 4415 B25	94
(2) DBC0061F1V51-2	100	SDX1926Q-43	94
TT19-08BP111-001	100	SDX1926Q-43	94
TT19-08BP111-001	100	SDX1926Q-43	94
TT19-08BP111-001	100	Side Arm Mount [SO 901-1]	10.5
DC6-48-60-0-8F	100	GPS_A	10.5
DC6-48-60-0-8F	100		

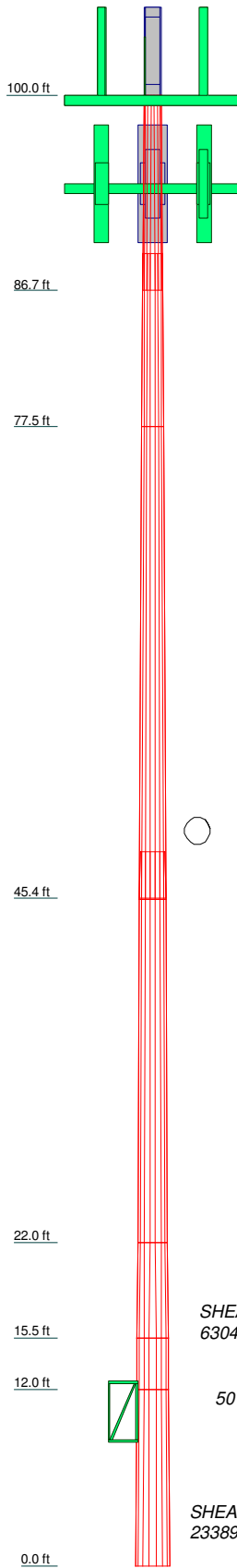
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
MPRF-Fy=65ksi Density=100%	65 ksi	80 ksi	MPRF-Fy=65ksi Density=50%	65 ksi	80 ksi

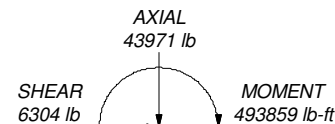
TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.00 ft

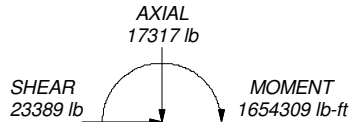
Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	13.27	18	0.1875	2.54	14.5000	16.3438	MPRF-Fy=65ksi, Density=100%	409.4
2	11.77	18	0.2500	15.6153	17.2531	17.2531	MPRF-Fy=65ksi, Density=100%	514.5
3	32.10	18	0.5065	3.21	17.2531	21.7188	MPRF-Fy=65ksi, Density=50%	1665.4
4	3.28	18	0.5751	20.7717	21.2260	21.2260	MPRF-Fy=65ksi, Density=100%	229.1
5	23.33	18	0.6565	21.2260	24.4550	24.4550	MPRF-Fy=65ksi, Density=50%	1772.1
6	6.50	18	0.7732	24.4550	25.3547	25.3547	MPRF-Fy=65ksi, Density=50%	539.3
7	3.50	18	0.7608	25.3547	25.8391	25.8391	MPRF-Fy=65ksi, Density=50%	298.6
8	12.00	18	0.7372	25.8391	27.5000	27.5000	MPRF-Fy=65ksi, Density=50%	1067.0
								6495.4



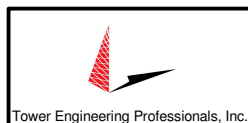
ALL REACTIONS ARE FACTORED



TORQUE 266 lb-ft
50 mph WIND - 1.0000 in ICE



TORQUE 663 lb-ft
REACTIONS - 97 mph WIND



Tower Engineering Professionals, Inc.

326 Tryon Road
Raleigh, NC 27603
Phone: (919) 661-6351
FAX: (919) 661-6350

Job: **701776 - Windsor CO**

Project: **TEP No. 260307.487571**

Client: Everest	Drawn by: Nicholas P. Danyluk	App'd:
Code: TIA-222-G	Date: 01/28/21	Scale: NTS
Path:		Dwg No. E-1

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	Client	Everest	Designed by	Nicholas P. Danyluk

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	Client	Everest	Designed by	Nicholas P. Danyluk

Tower Input Data

The tower is a monopole.

This tower is designed using the TIA-222-G standard.

The following design criteria apply:

Tower is located in Hartford County, Connecticut.

Basic wind speed of 97 mph.

Structure Class II.

Exposure Category C.

Topographic Category 1.

Crest Height 0.00 ft.

Nominal ice thickness of 1.0000 in.

Ice thickness is considered to increase with height.

Ice density of 56 pcf.

A wind speed of 50 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 60 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.

Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|--|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) SR Members Have Cut Ends SR Members Are Concentric | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retention Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas Add IBC .6D+W Combination √ Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Treat Feed Line Bundles As Cylinder Ignore KL/ry For 60 Deg. Angle Legs | <ul style="list-style-type: none"> Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feed Line Torque Include Angle Block Shear Check Use TIA-222-G Bracing Resist. Exemption Use TIA-222-G Tension Splice Exemption <li style="background-color: #e0e0e0;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets Pole Without Linear Attachments Pole With Shroud Or No Appurtenances Outside and Inside Corner Radii Are Known |
|--|---|--|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	100.00-86.73	13.27	2.54	18	14.5000	16.3438	0.1875	0.7500	MPRF-Fy=65ks

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
									i, Density=100% (65 ksi) MPRF-Fy=65ks
L2	86.73-77.50	11.77	0.00	18	15.6153	17.2531	0.2500	1.0000	i, Density=100% (65 ksi) MPRF-Fy=65ks
L3	77.50-45.40	32.10	3.21	18	17.2531	21.7188	0.5065	2.0261	i, Density=100% (65 ksi) MPRF-Fy=65ks i, Density=50% (65 ksi)
L4	45.40-45.33	3.28	0.00	18	20.7717	21.2260	0.5751	2.3004	MPRF-Fy=65ks
L5	45.33-22.00	23.33	0.00	18	21.2260	24.4550	0.6565	2.6260	i, Density=100% (65 ksi) MPRF-Fy=65ks i, Density=50% (65 ksi)
L6	22.00-15.50	6.50	0.00	18	24.4550	25.3547	0.7732	3.0927	MPRF-Fy=65ks i, Density=50% (65 ksi)
L7	15.50-12.00	3.50	0.00	18	25.3547	25.8391	0.7608	3.0432	MPRF-Fy=65ks i, Density=50% (65 ksi)
L8	12.00-0.00	12.00		18	25.8391	27.5000	0.7372	2.9487	MPRF-Fy=65ks i, Density=50% (65 ksi)

Tapered Pole Properties

Section	Tip Dia.	Area	I	r	C	I/C	J	I/Q	w	w/t
	in	in ²	in ⁴	in	in	in ³	in ⁴	in ²	in	
L1	14.6948	8.5177	220.4409	5.0809	7.3660	29.9268	441.1718	4.2597	2.2220	11.851
	16.5670	9.6150	317.0818	5.7355	8.3027	38.1904	634.5809	4.8084	2.5465	13.581
L2	16.1770	12.1924	363.6733	5.4547	7.9326	45.8454	727.8251	6.0974	2.3083	9.233
	17.4807	13.4920	492.7988	6.0361	8.7646	56.2262	986.2461	6.7473	2.5965	10.386
L3	17.4411	26.9232	953.9303	5.9450	8.7646	108.8392	1909.1157	13.4641	2.1451	4.235
	21.9757	34.1026	1938.6493	7.5304	11.0332	175.7113	3879.8495	17.0545	2.9310	5.787
L4	21.4551	36.8670	1899.9009	7.1698	10.5520	180.0509	3802.3016	18.4370	2.6436	4.597
	21.4647	37.6962	2031.0083	7.3311	10.7828	188.3564	4064.6891	18.8517	2.7236	4.736
L5	21.4521	42.8612	2291.1230	7.3022	10.7828	212.4795	4585.2608	21.4347	2.5803	3.93
	24.7310	49.5897	3548.3709	8.4485	12.4232	285.6256	7101.4108	24.7995	3.1486	4.796
L6	24.7130	58.1162	4117.8127	8.4071	12.4232	331.4627	8241.0438	29.0636	2.9433	3.807
	25.6265	60.3240	4605.1613	8.7264	12.8802	357.5387	9216.3822	30.1677	3.1016	4.012
L7	25.6285	59.3886	4538.3190	8.7308	12.8802	352.3491	9082.6097	29.7000	3.1234	4.105
	26.1204	60.5584	4811.8105	8.9028	13.1263	366.5788	9629.9525	30.2850	3.2087	4.218
L8	26.1240	58.7325	4675.5288	8.9112	13.1263	356.1964	9357.2098	29.3718	3.2503	4.409
	27.8105	62.6186	5666.3723	9.5008	13.9700	405.6100	11340.2005	31.3153	3.5426	4.806

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A _f	Adjust. Factor A _r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L1 100.00-86.73				1	1	1			

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	Client	Everest	Designed by	Nicholas P. Danyluk

Tower Elevation	Gusset Area (per face)	Gusset Thickness	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals	Double Angle Stitch Bolt Spacing Horizontals	Double Angle Stitch Bolt Spacing Redundants
ft	ft ²	in					in	in	in
L2 86.73-77.50				1	1	1			
L3 77.50-45.40				1	1	0.999331			
L4 45.40-45.33				1	1	0.550282			
L5 45.33-22.00				1	1	0.965781			
L6 22.00-15.50				1	1	0.82351			
L7 15.50-12.00				1	1	0.836191			
L8 12.00-0.00				1	1	0.861297			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Sector	Exclude From Torque Calculation	Component Type	Placement	Total Number	Number Per Row	Start/End Position	Width or Diameter	Perimeter	Weight
				ft				in	in	plf
T-Mobile MLE Hybrid 3Power/6Fiber RL 2(1-1/4") 1/2" dia. coax	C	No	Surface Ar (CaAa)	94.00 - 0.00	3	3	0.250 0.250	1.2500		0.68
Modifications (Area) Aero MP3-06	A	No	Surface Af (CaAa)	15.00 - 0.50	1	1	0.000 0.000	2.6100	15.2000	0.00
(Area) Aero MP3-06	C	No	Surface Af (CaAa)	15.00 - 0.50	1	1	0.000 0.000	2.6100	15.2000	0.00
(Area) Aero MP3-06	A	No	Surface Af (CaAa)	45.33 - 12.00	1	1	0.250 0.250	2.6100	15.2000	0.00
(Area) Aero MP3-06	B	No	Surface Af (CaAa)	45.33 - 0.50	1	1	0.000 0.000	2.6100	15.2000	0.00
(Area) Aero MP3-06	C	No	Surface Af (CaAa)	45.33 - 0.50	1	1	0.250 0.250	2.6100	15.2000	0.00
(Area) Aero MP3-05	A	No	Surface Af (CaAa)	80.00 - 45.33	1	1	0.000 0.000	2.0900	11.7100	0.00
(Area) Aero MP3-05	B	No	Surface Af (CaAa)	80.00 - 45.33	1	1	0.000 0.000	2.0900	11.7100	0.00
(Area) Aero MP3-05	C	No	Surface Af (CaAa)	80.00 - 45.33	1	1	0.000 0.000	2.0900	11.7100	0.00

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement	Total Number	$C_s A_s$	Weight
					ft		ft ² /ft	plf
LDF5-50A (7/8 FOAM)	C	No	No	Inside Pole	94.00 - 0.00	16	No Ice 1/2" Ice 1" Ice	0.00 0.33 0.33
AT&T LDF6-50A (1-1/4 FOAM)	C	No	No	Inside Pole	100.00 - 0.00	12	No Ice 1/2" Ice 1" Ice	0.00 0.66 0.66
3/4" DC	C	No	No	Inside Pole	100.00 - 0.00	2	No Ice	0.00 1.24

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Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement	Total Number	$C_s A_s$	Weight
					ft		ft ² /ft	plf
5/8" dia. coax	C	No	No	Inside Pole	100.00 - 0.00	1	1/2" Ice	0.00
							1" Ice	0.00
							No Ice	0.00
							1/2" Ice	0.00
							1" Ice	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation	Face	A_R	A_F	$C_s A_s$ In Face	$C_s A_s$ Out Face	Weight
	ft		ft ²	ft ²	ft ²	ft ²	lb
L1	100.00-86.73	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	2.727	0.000	193.23
L2	86.73-77.50	A	0.000	0.000	0.871	0.000	0.00
		B	0.000	0.000	0.871	0.000	0.00
		C	0.000	0.000	4.332	0.000	164.93
L3	77.50-45.40	A	0.000	0.000	11.182	0.000	0.00
		B	0.000	0.000	11.182	0.000	0.00
		C	0.000	0.000	23.220	0.000	573.66
L4	45.40-45.33	A	0.000	0.000	0.024	0.000	0.00
		B	0.000	0.000	0.024	0.000	0.00
		C	0.000	0.000	0.050	0.000	1.22
L5	45.33-22.00	A	0.000	0.000	10.149	0.000	0.00
		B	0.000	0.000	10.149	0.000	0.00
		C	0.000	0.000	18.897	0.000	416.91
L6	22.00-15.50	A	0.000	0.000	2.828	0.000	0.00
		B	0.000	0.000	2.828	0.000	0.00
		C	0.000	0.000	5.265	0.000	116.16
L7	15.50-12.00	A	0.000	0.000	2.828	0.000	0.00
		B	0.000	0.000	1.523	0.000	0.00
		C	0.000	0.000	4.140	0.000	62.55
L8	12.00-0.00	A	0.000	0.000	5.527	0.000	1.58
		B	0.000	0.000	5.003	0.000	0.00
		C	0.000	0.000	14.505	0.000	214.44

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation	Face or Leg	Ice Thickness	A_R	A_F	$C_s A_s$ In Face	$C_s A_s$ Out Face	Weight
	ft		in	ft ²	ft ²	ft ²	ft ²	lb
L1	100.00-86.73	A	2.219	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	7.441	0.000	294.87
L2	86.73-77.50	A	2.191	0.000	0.000	1.980	0.000	43.38
		B		0.000	0.000	1.980	0.000	43.38
		C		0.000	0.000	11.426	0.000	337.32
L3	77.50-45.40	A	2.127	0.000	0.000	24.838	0.000	524.71
		B		0.000	0.000	24.838	0.000	524.71
		C		0.000	0.000	56.955	0.000	1521.20
L4	45.40-45.33	A	2.065	0.000	0.000	0.053	0.000	1.12

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Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft ²	A_F ft ²	$C_i A_i$ In Face ft ²	$C_o A_o$ Out Face ft ²	Weight lb
L5	45.33-22.00	B	0.000	0.000	0.000	0.053	0.000	1.12
		C	0.000	0.000	0.121	0.000	0.000	3.24
		A	2.002	0.000	0.000	19.492	0.000	413.84
L6	22.00-15.50	B	0.000	0.000	19.492	0.000	0.000	413.84
		C	0.000	0.000	42.106	0.000	0.000	1113.28
		A	1.890	0.000	0.000	5.284	0.000	106.79
L7	15.50-12.00	B	0.000	0.000	5.284	0.000	0.000	106.79
		C	0.000	0.000	11.402	0.000	0.000	295.65
		A	1.832	0.000	0.000	5.021	0.000	102.52
L8	12.00-0.00	B	0.000	0.000	2.805	0.000	0.000	55.21
		C	0.000	0.000	8.265	0.000	0.000	202.60
		A	1.685	0.000	0.000	12.342	0.000	211.37
		B	0.000	0.000	8.877	0.000	162.58	
		C	0.000	0.000	27.835	0.000	654.53	

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_o No Ice	K_o Ice
L4	12	(Area) Aero MP3-06	45.33 - 45.33	1.0000	1.0000
L4	13	(Area) Aero MP3-06	45.33 - 45.33	1.0000	1.0000
L4	14	(Area) Aero MP3-06	45.33 - 45.33	1.0000	1.0000
L4	15	(Area) Aero MP3-05	45.33 - 45.40	1.0000	1.0000
L4	16	(Area) Aero MP3-05	45.33 - 45.40	1.0000	1.0000
L4	17	(Area) Aero MP3-05	45.33 - 45.40	1.0000	1.0000
L5	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	22.00 - 45.33	1.0000	1.0000
L5	12	(Area) Aero MP3-06	22.00 - 45.33	1.0000	1.0000
L5	13	(Area) Aero MP3-06	22.00 - 45.33	1.0000	1.0000
L5	14	(Area) Aero MP3-06	22.00 - 45.33	1.0000	1.0000
L6	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	15.50 - 22.00	1.0000	1.0000
L6	12	(Area) Aero MP3-06	15.50 - 22.00	1.0000	1.0000
L6	13	(Area) Aero MP3-06	15.50 - 22.00	1.0000	1.0000
L6	14	(Area) Aero MP3-06	15.50 - 22.00	1.0000	1.0000
L7	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	12.00 - 15.50	1.0000	1.0000
L7	10	(Area) Aero MP3-06	12.00 - 15.00	1.0000	1.0000
L7	11	(Area) Aero MP3-06	12.00 - 15.00	1.0000	1.0000
L7	12	(Area) Aero MP3-06	12.00 - 15.50	1.0000	1.0000
L7	13	(Area) Aero MP3-06	12.00 - 15.50	1.0000	1.0000
L7	14	(Area) Aero MP3-06	12.00 - 15.50	1.0000	1.0000
L8	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	0.00 - 12.00	1.0000	1.0000
L8	8	1/2" dia. coax	0.00 - 10.50	1.0000	1.0000
L8	10	(Area) Aero MP3-06	0.50 - 12.00	1.0000	1.0000
L8	11	(Area) Aero MP3-06	0.50 - 12.00	1.0000	1.0000
L8	13	(Area) Aero MP3-06	0.50 - 12.00	1.0000	1.0000
L8	14	(Area) Aero MP3-06	0.50 - 12.00	1.0000	1.0000

Feed Line Center of Pressure

Section	Elevation ft	CP_x in	CP_z in	CP_x Ice in	CP_z Ice in
L1	100.00-86.73	-0.8343	1.4450	-0.8101	1.4031
L2	86.73-77.50	-1.0668	1.8478	-1.0158	1.7594
L3	77.50-45.40	-0.5733	0.9930	-0.8096	1.4024
L4	45.40-45.33	-0.5983	0.9565	-0.8643	1.4112
L5	45.33-22.00	-0.9905	-0.5159	-1.0809	-0.0690
L6	22.00-15.50	-1.0457	-0.5389	-1.1273	-0.0692
L7	15.50-12.00	-1.6660	0.2202	-1.9910	0.5344
L8	12.00-0.00	-1.8470	1.7889	-2.5512	2.0423

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz: Lateral Vert ft ft	Azimuth Adjustment °	Placement ft	$C_i A_i$ Front ft ²	$C_o A_o$ Side ft ²	Weight lb
1" dia x 4' lightning rod	C	From Leg	0.00	0.0000	100.00	No Ice	0.40	4.52
			0.00			1/2" Ice	0.81	8.29
			2.00			1" Ice	1.06	14.75

EEl Platform	C	None	0.0000	0.0000	100.00	No Ice	19.43	1241.80
						1/2" Ice	22.72	1738.50
						1" Ice	26.01	2235.20
7770.00 w/ Mount Pipe	A	From Centroid-Lc	4.00	0.0000	100.00	No Ice	5.84	4.35
			0.00			1/2" Ice	6.32	105.42
			3.00			1" Ice	6.77	160.42
7770.00 w/ Mount Pipe	B	From Centroid-Lc	4.00	0.0000	100.00	No Ice	5.84	4.35
			0.00			1/2" Ice	6.32	105.42
			3.00			1" Ice	6.77	160.42
7770.00 w/ Mount Pipe	C	From Centroid-Lc	4.00	0.0000	100.00	No Ice	5.84	4.35
			0.00			1/2" Ice	6.32	105.42

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_o No Ice	K_o Ice
L1	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	86.73 - 94.00	1.0000	1.0000
L2	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	77.50 - 86.73	1.0000	1.0000
L2	15	(Area) Aero MP3-05	77.50 - 80.00	1.0000	1.0000
L2	16	(Area) Aero MP3-05	77.50 - 80.00	1.0000	1.0000
L2	17	(Area) Aero MP3-05	77.50 - 80.00	1.0000	1.0000
L3	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	45.40 - 77.50	1.0000	1.0000
L3	15	(Area) Aero MP3-05	45.40 - 77.50	1.0000	1.0000
L3	16	(Area) Aero MP3-05	45.40 - 77.50	1.0000	1.0000
L3	17	(Area) Aero MP3-05	45.40 - 77.50	1.0000	1.0000
L4	2	MLE Hybrid 3Power/6Fiber RL 2(1 -1/4")	45.33 - 45.40	1.0000	1.0000

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	Client	Everest	Designed by	Nicholas P. Danyluk

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement	C _{FA} Front	C _{SA} Side	Weight
			Vert ft	°	ft	ft ²	ft ²	lb
HPA-65R-BUU-H6 w/ Mount Pipe	A	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 6.77	5.92	160.42
			4.00			No Ice 9.90	8.11	76.55
			0.00			1/2" Ice 10.47	9.30	158.03
HPA-65R-BUU-H6 w/ Mount Pipe	B	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 11.01	10.21	247.79
			4.00			No Ice 9.90	8.11	76.55
			0.00			1/2" Ice 10.47	9.30	158.03
HPA-65R-BUU-H6 w/ Mount Pipe	C	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 11.01	10.21	247.79
			4.00			No Ice 9.90	8.11	76.55
			0.00			1/2" Ice 10.47	9.30	158.03
QS66512-2 w/ Mount Pipe	A	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 11.01	10.21	247.79
			4.00			No Ice 8.37	8.46	136.55
			0.00			1/2" Ice 8.93	9.66	212.24
QS66512-2 w/ Mount Pipe	B	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 9.46	10.55	296.07
			4.00			No Ice 8.37	8.46	136.55
			0.00			1/2" Ice 8.93	9.66	212.24
QS66512-2 w/ Mount Pipe	C	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 9.46	10.55	296.07
			4.00			No Ice 8.37	8.46	136.55
			0.00			1/2" Ice 8.93	9.66	212.24
RRUS 32	A	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 9.46	10.55	296.07
			4.00			No Ice 2.86	1.78	55.12
			0.00			1/2" Ice 3.08	1.97	77.39
RRUS 32	B	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.32	2.17	102.93
			4.00			No Ice 2.86	1.78	55.12
			0.00			1/2" Ice 3.08	1.97	77.39
RRUS 32	C	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.32	2.17	102.93
			4.00			No Ice 2.86	1.78	55.12
			0.00			1/2" Ice 3.08	1.97	77.39
RRUS 11	A	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.32	2.17	102.93
			4.00			No Ice 2.79	1.19	50.70
			0.00			1/2" Ice 3.00	1.34	71.57
RRUS 11	B	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.21	1.50	95.48
			4.00			No Ice 2.79	1.19	50.70
			0.00			1/2" Ice 3.00	1.34	71.57
RRUS 11	C	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.21	1.50	95.48
			4.00			No Ice 2.79	1.19	50.70
			0.00			1/2" Ice 3.00	1.34	71.57
RRUS 32 B2	A	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.21	1.50	95.48
			4.00			No Ice 2.73	1.67	52.90
			0.00			1/2" Ice 2.95	1.86	73.96
RRUS 32 B2	B	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.18	2.05	98.21
			4.00			No Ice 2.73	1.67	52.90
			0.00			1/2" Ice 2.95	1.86	73.96
RRUS 32 B2	C	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.18	2.05	98.21
			4.00			No Ice 2.73	1.67	52.90
			0.00			1/2" Ice 2.95	1.86	73.96
(2) DBC0061F1V51-2	A	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 3.18	2.05	98.21
			4.00			No Ice 0.43	0.41	25.50
			0.00			1/2" Ice 0.51	0.50	30.78
(2) DBC0061F1V51-2	B	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 0.61	0.59	37.59
			4.00			No Ice 0.43	0.41	25.50
			0.00			1/2" Ice 0.51	0.50	30.78
(2) DBC0061F1V51-2	C	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 0.61	0.59	37.59
			4.00			No Ice 0.43	0.41	25.50
			0.00			1/2" Ice 0.51	0.50	30.78
TT19-08BP111-001	A	g From Centroid-Lc	3.00	0.0000	100.00	1" Ice 0.61	0.59	37.59
			4.00			No Ice 0.55	0.44	16.00
			0.00			1/2" Ice 0.64	0.53	21.74

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	Client	Everest	Designed by	Nicholas P. Danyluk

Description	Face or Leg	Offset Type	Offsets: Horz Lateral	Azimuth Adjustment	Placement	C _{FA} Front	C _{SA} Side	Weight
			Vert ft	°	ft	ft ²	ft ²	lb
TT19-08BP111-001	B	g From Centroid-Lc	0.00	0.0000	100.00	1" Ice 0.74	0.63	29.10
			4.00			No Ice 0.55	0.44	16.00
			0.00			1/2" Ice 0.64	0.53	21.74
TT19-08BP111-001	C	g From Centroid-Lc	0.00	0.0000	100.00	1" Ice 0.74	0.63	29.10
			4.00			No Ice 0.55	0.44	16.00
			0.00			1/2" Ice 0.64	0.53	21.74
DC6-48-60-0-8F	A	g From Centroid-Lc	0.00	0.0000	100.00	1" Ice 0.74	0.63	29.10
			4.00			No Ice 0.92	0.92	32.80
			0.00			1/2" Ice 1.46	1.46	50.52
DC6-48-60-0-8F	B	g From Centroid-Lc	0.00	0.0000	100.00	1" Ice 1.64	1.64	70.72
			4.00			No Ice 0.92	0.92	32.80
			0.00			1/2" Ice 1.46	1.46	50.52
**** Platform Mount [LP 303-1_KCKR]	A	None	0.00	0.0000	94.00	No Ice 25.91	25.91	1525.00
			1/2" Ice 32.23			32.23	1985.62	
			1" Ice 38.73			38.73	2539.62	
AIR 32 B66Aa/B2a w/ Mount Pipe	A	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 6.81	6.14	155.10
			0.00			1/2" Ice 7.30	6.99	216.81
			0.00			1" Ice 7.76	7.73	285.46
AIR 32 B66Aa/B2a w/ Mount Pipe	B	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 6.81	6.14	155.10
			0.00			1/2" Ice 7.30	6.99	216.81
			0.00			1" Ice 7.76	7.73	285.46
AIR 32 B66Aa/B2a w/ Mount Pipe	C	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 6.81	6.14	155.10
			0.00			1/2" Ice 7.30	6.99	216.81
			0.00			1" Ice 7.76	7.73	285.46
APXVAARR24_43-U-NA20 w/ Mount Pipe	A	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 20.48	11.02	160.82
			0.00			1/2" Ice 21.23	12.55	297.10
			0.00			1" Ice 21.99	14.10	444.18
APXVAARR24_43-U-NA20 w/ Mount Pipe	B	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 20.48	11.02	160.82
			0.00			1/2" Ice 21.23	12.55	297.10
			0.00			1" Ice 21.99	14.10	444.18
APXVAARR24_43-U-NA20 w/ Mount Pipe	C	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 20.48	11.02	160.82
			0.00			1/2" Ice 21.23	12.55	297.10
			0.00			1" Ice 21.99	14.10	444.18
AIR6449 B41 w/ Mount Pipe	A	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 5.89	3.28	117.72
			0.00			1/2" Ice 6.26	3.74	166.88
			0.00			1" Ice 6.63	4.22	221.50
AIR6449 B41 w/ Mount Pipe	B	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 5.89	3.28	117.72
			0.00			1/2" Ice 6.26	3.74	166.88
			0.00			1" Ice 6.63	4.22	221.50
AIR6449 B41 w/ Mount Pipe	C	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 5.89	3.28	117.72
			0.00			1/2" Ice 6.26	3.74	166.88
			0.00			1" Ice 6.63	4.22	221.50
KRY 112 71	A	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 0.63	0.61	18.07
			0.00			1/2" Ice 0.75	0.79	26.97
			0.00			1" Ice 0.89	0.99	38.22
KRY 112 71	B	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 0.63	0.61	18.07
			0.00			1/2" Ice 0.75	0.79	26.97
			0.00			1" Ice 0.89	0.99	38.22
KRY 112 71	C	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 0.63	0.61	18.07
			0.00			1/2" Ice 0.75	0.79	26.97
			0.00			1" Ice 0.89	0.99	38.22
RADIO 4449	A	g From Centroid-Lc	4.00	0.0000	94.00	No Ice 3.50	2.36	85.00
			0.00			1/2" Ice 3.74	2.57	114.30
			0.00			1" Ice 3.99	2.78	147.22
RADIO 4449	B	g From	4.00	0.0000	94.00	No Ice 3.50	2.36	85.00

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	Client	Everest	Designed by	Nicholas P. Danyluk

Description	Face or Leg	Offset Type	Offsets: Horiz Lateral	Vertical	Azimuth Adjustment	Placement	C _{FA} Front	C _{SA} Side	Weight
			ft	ft	°	ft	ft ²	ft ²	lb
RADIO 4449	C	Centroid-Lc	0.00				3.74	2.57	114.30
		g	0.00				3.99	2.78	147.22
		From	4.00	0.0000	94.00	No Ice	3.50	2.36	85.00
RRUS 4415 B25	A	Centroid-Lc	0.00				3.74	2.57	114.30
		g	0.00				3.99	2.78	147.22
		From	4.00	0.0000	94.00	No Ice	1.64	0.68	44.00
RRUS 4415 B25	B	Centroid-Lc	0.00				1.80	0.79	56.43
		g	0.00				1.97	0.91	71.23
		From	4.00	0.0000	94.00	No Ice	1.64	0.68	44.00
RRUS 4415 B25	C	Centroid-Lc	0.00				1.80	0.79	56.43
		g	0.00				1.97	0.91	71.23
		From	4.00	0.0000	94.00	No Ice	1.64	0.68	44.00
SDX1926Q-43	A	Centroid-Lc	0.00				0.24	0.10	6.17
		g	0.00				0.31	0.14	8.64
		From	4.00	0.0000	94.00	No Ice	0.24	0.10	6.17
SDX1926Q-43	B	Centroid-Lc	0.00				0.38	0.19	12.22
		g	0.00				0.38	0.19	12.22
		From	4.00	0.0000	94.00	No Ice	0.24	0.10	6.17
SDX1926Q-43	C	Centroid-Lc	0.00				0.31	0.14	8.64
		g	0.00				0.38	0.19	12.22
		From	4.00	0.0000	94.00	No Ice	0.24	0.10	6.17

Side Arm Mount [SO 901-1]	C	From Leg	1.25	0.0000	10.50	No Ice	0.33	0.62	105.33
			0.00			1/2" Ice	0.46	0.78	112.92
			0.00			1" Ice	0.62	0.97	123.16
GPS_A	C	From Leg	2.25	0.0000	10.50	No Ice	0.13	0.13	0.87
			0.00			1/2" Ice	0.21	0.21	3.85
			0.00			1" Ice	0.28	0.28	7.85

Comb. No.	Description
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice+1.0 Temp
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice+1.0 Temp
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice+1.0 Temp
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice+1.0 Temp
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice+1.0 Temp
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice+1.0 Temp
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice+1.0 Temp
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice+1.0 Temp
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice+1.0 Temp
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice+1.0 Temp
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 deg - Service

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice

Maximum Tower Deflections - Service Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	100 - 86.7292	19.864	43	1.8702	0.0014
L2	89.2732 - 77.5	15.765	43	1.7465	0.0008
L3	77.5 - 45.3982	11.745	43	1.4706	0.0004
L4	48.6122 - 45.33	4.522	43	0.8873	0.0002
L5	45.33 - 22	3.924	43	0.8500	0.0002
L6	22 - 15.5	0.898	43	0.3868	0.0001
L7	15.5 - 12	0.447	43	0.2748	0.0001
L8	12 - 0	0.268	43	0.2138	0.0001

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
100.00	1" dia x 4' lightning rod	43	19.864	1.8702	0.0014	6130

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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
94.00	Platform Mount [LP 303-1_KCKR]	43	17.540	1.8131	0.0010	5108
10.50	Side Arm Mount [SO 901-1]	43	0.209	0.1872	0.0001	2806

Section No.	Elevation	Size	L	L _n	Kl/r	A	P _n	φP _n	Ratio P _n / φP _n
	ft		ft	ft		in ²	lb	lb	

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	100 - 86.7292	93.024	10	8.7850	0.0063
L2	89.2732 - 77.5	73.886	10	8.2073	0.0035
L3	77.5 - 45.3982	55.088	10	6.9123	0.0019
L4	48.6122 - 45.33	21.230	10	4.1701	0.0011
L5	45.33 - 22	18.426	10	3.9945	0.0011
L6	22 - 15.5	4.215	10	1.8172	0.0005
L7	15.5 - 12	2.100	10	1.2908	0.0004
L8	12 - 0	1.259	10	1.0040	0.0004

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
100.00	1" dia x 4' lightning rod	10	93.024	8.7850	0.0063	1367
94.00	Platform Mount [LP 303-1_KCKR]	10	82.177	8.5187	0.0046	1139
10.50	Side Arm Mount [SO 901-1]	10	0.981	0.8793	0.0004	598

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _n	Kl/r	A	P _n	φP _n	Ratio P _n / φP _n
	ft		ft	ft		in ²	lb	lb	
L1	100 - 86.7292	TP16.3438x14.5x0.1875	13.27	0.00	0.0	9.4047	-6168.99	698720.00	0.009
L2	86.7292 - 77.5	TP17.2531x15.6153x0.25	11.77	0.00	0.0	13.4920	-7321.58	1002390.00	0.007
L3	77.5 - 45.3982	TP21.7188x17.2531x0.5065	32.10	0.00	0.0	33.3838	-10032.40	2480250.00	0.004
L4	45.3982 - 45.33 (4)	TP21.226x20.7717x0.5751	3.28	0.00	0.0	37.6962	-10638.00	2800640.00	0.004
L5	45.33 - 22 (5)	TP24.455x21.226x0.6565	23.33	0.00	0.0	49.5897	-13771.00	3684270.00	0.004
L6	22 - 15.5 (6)	TP25.3547x24.455x0.7732	6.50	0.00	0.0	60.3240	-14726.10	4481770.00	0.003
L7	15.5 - 12 (7)	TP25.8391x25.3547x0.7608	3.50	0.00	0.0	60.5584	-15254.00	4499190.00	0.003
L8	12 - 0 (8)	TP27.5x25.8391x0.7372	12.00	0.00	0.0	62.6186	-17300.20	4652250.00	0.004

Pole Bending Design Data

Section No.	Elevation	Size	M _{ax}	φM _{ax}	Ratio M _{ax} / φM _{ax}	M _{cy}	φM _{cy}	Ratio M _{cy} / φM _{cy}
	ft		lb-ft	lb-ft		lb-ft	lb-ft	
L1	100 - 86.7292	TP16.3438x14.5x0.1875	106609.17	226155.83	0.471	0.00	226155.83	0.000
L2	86.7292 - 77.5	TP17.2531x15.6153x0.25	255550.00	348110.00	0.734	0.00	348110.00	0.000
L3	77.5 - 45.3982	TP21.7188x17.2531x0.5065	681549.17	1041975.00	0.654	0.00	1041975.00	0.000
L4	45.3982 - 45.33 (4)	TP21.226x20.7717x0.5751	736844.17	1166158.33	0.632	0.00	1166158.33	0.000
L5	45.33 - 22 (5)	TP24.455x21.226x0.6565	1173425.00	1768383.33	0.664	0.00	1768383.33	0.000
L6	22 - 15.5 (6)	TP25.3547x24.455x0.7732	1308666.67	2213608.33	0.591	0.00	2213608.33	0.000
L7	15.5 - 12 (7)	TP25.8391x25.3547x0.7608	1383808.33	2269583.33	0.610	0.00	2269583.33	0.000
L8	12 - 0 (8)	TP27.5x25.8391x0.7372	1654308.33	2511233.33	0.659	0.00	2511233.33	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V _n	φV _n	Ratio V _n / φV _n	Actual T _n	φT _n	Ratio T _n / φT _n
	ft		lb	lb		lb-ft	lb-ft	
L1	100 - 86.7292	TP16.3438x14.5x0.1875	12365.40	349360.00	0.035	169.18	453673.33	0.000
L2	86.7292 - 77.5	TP17.2531x15.6153x0.25	12929.40	501193.00	0.026	168.91	698610.00	0.000
L3	77.5 - 45.3982	TP21.7188x17.2531x0.5065	16618.80	1240120.00	0.013	124.79	2094075.00	0.000
L4	45.3982 - 45.33 (4)	TP21.226x20.7717x0.5751	17088.40	1400320.00	0.012	160.61	2344825.00	0.000
L5	45.33 - 22 (5)	TP24.455x21.226x0.6565	20402.30	1842130.00	0.011	170.57	355583.33	0.000
L6	22 - 15.5 (6)	TP25.3547x24.455x0.7732	21236.20	2240890.00	0.009	173.57	4453266.67	0.000
L7	15.5 - 12 (7)	TP25.8391x25.3547x0.7608	21721.10	2249590.00	0.010	215.79	4565133.33	0.000
L8	12 - 0 (8)	TP27.5x25.8391x0.7372	23402.10	2326120.00	0.010	656.84	5049175.00	0.000

Pole Interaction Design Data

Section No.	Elevation	Ratio P _n / φP _n	Ratio M _{ax} / φM _{ax}	Ratio M _{cy} / φM _{cy}	Ratio V _n / φV _n	Ratio T _n / φT _n	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	100 - 86.7292	0.009	0.471	0.000	0.035	0.000	0.482	1.000	4.8.2
L2	86.7292 - 77.5	0.007	0.734	0.000	0.026	0.000	0.742	1.000	4.8.2
L3	77.5 - 45.3982	0.004	0.654	0.000	0.013	0.000	0.658	1.000	4.8.2

tnxTower Tower Engineering Professionals, Inc. 326 Tryon Road Raleigh, NC 27603 Phone: (919) 661-6351 FAX: (919) 661-6350	Job	701776 - Windsor CO	Page	13 of 13
	Project	TEP No. 260307.487571	Date	13:19:49 01/28/21
	Client	Everest	Designed by	Nicholas P. Danyluk

Section No.	Elevation ft	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		$\frac{P_u}{\phi P_n}$	$\frac{M_{ux}}{\phi M_{nx}}$	$\frac{M_{uy}}{\phi M_{ny}}$	$\frac{V_u}{\phi V_n}$	$\frac{T_u}{\phi T_n}$			
	(3)								
L4	45.3982 - 45.33 (4)	0.004	0.632	0.000	0.012	0.000	0.636	1.000	4.8.2
L5	45.33 - 22 (5)	0.004	0.664	0.000	0.011	0.000	0.667	1.000	4.8.2
L6	22 - 15.5 (6)	0.003	0.591	0.000	0.009	0.000	0.595	1.000	4.8.2
L7	15.5 - 12 (7)	0.003	0.610	0.000	0.010	0.000	0.613	1.000	4.8.2
L8	12 - 0 (8)	0.004	0.659	0.000	0.010	0.000	0.663	1.000	4.8.2

APPENDIX B
ADDITIONAL CALCULATIONS



Pole (L2)	74.2%	Pass
Mod (M4)	91.0%	Pass

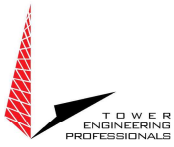
TEP #: 260307.487571
 Analysis: NPD 2/1/2021
 Check: SEB 2/1/2021

Monopole Reinforcement_v1.9.5 - TIA-222-G - Capacities

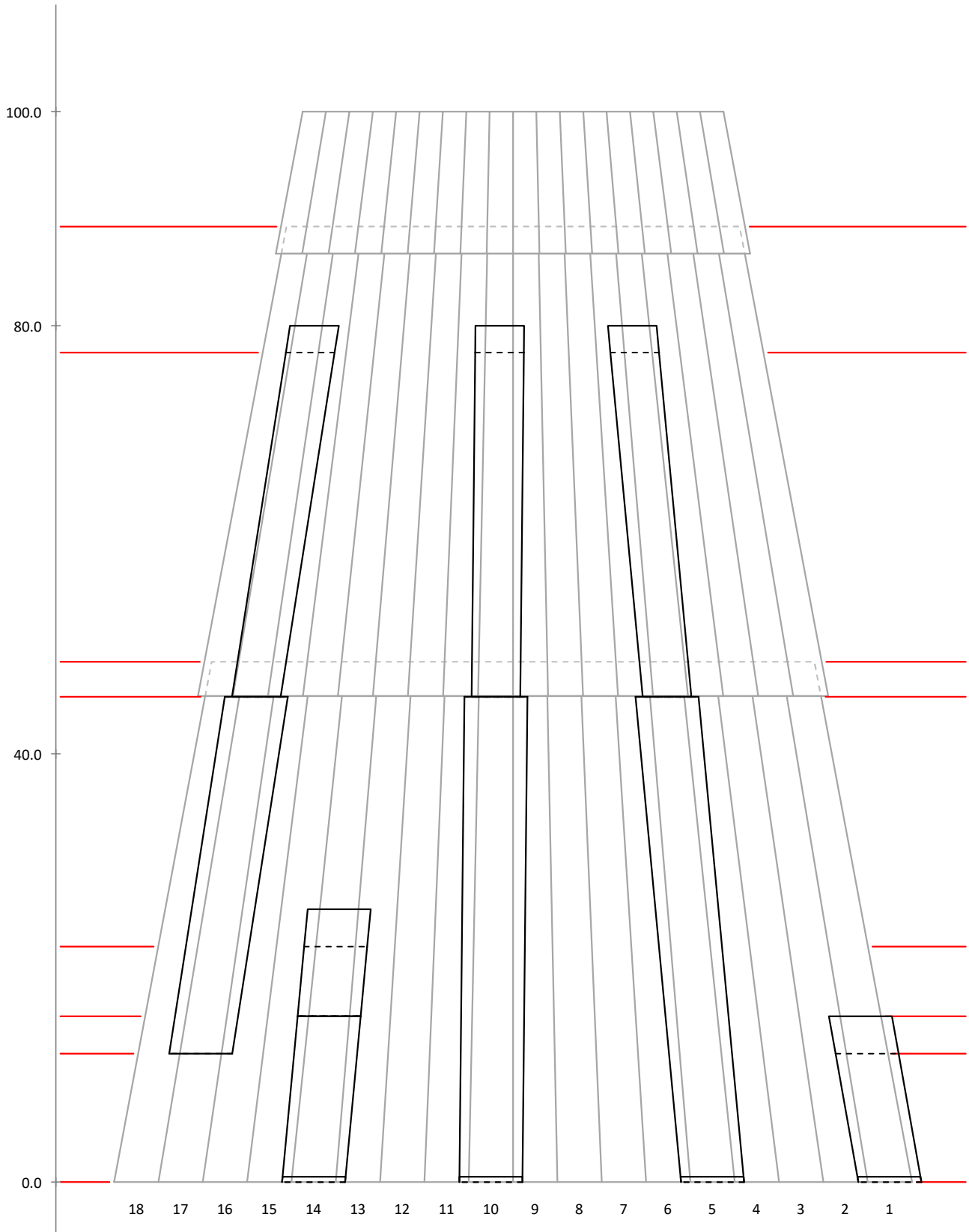
Section No.	Elevation (ft)	Type	Size	Critical Element	Pu (lb)	φPn (lb)	% Capacity	Pass/Fail
L1	100.00-86.73	Pole	TP16.34×14.50×0.1875	1	Note 1	Note 1	48.1	Pass
L2	89.27-45.40	Pole	TP21.72×15.62×0.2500	2	Note 1	Note 1	74.2	Pass
L3	48.61-0.00	Pole	TP27.50×20.77×0.3125	3	Note 1	Note 1	69.5	Pass
M1b	15.50-0.50	Mod (Ex)	(Aero) MP306	1	Note 1	Note 1	87.3	Pass
M2	45.33-0.50	Mod (Ex)	(Aero) MP306	2	Note 1	Note 1	90.2	Pass
M3	45.33-12.00	Mod (Ex)	(Aero) MP306	3	Note 1	Note 1	81.2	Pass
M4	80.00-45.33	Mod (Ex)	(Aero) MP305	4	Note 1	Note 1	91.0	Pass
M5	25.50-15.50	Mod (Ex)	(Aero) MP306	5	Note 1	Note 1	66.1	Pass

Summary		
Pole (L2)	74.2	Pass
Mod (M4)	91.0	Pass
RATING =	91.0	Pass

*Note 1: See additional documentation in following sheets for details



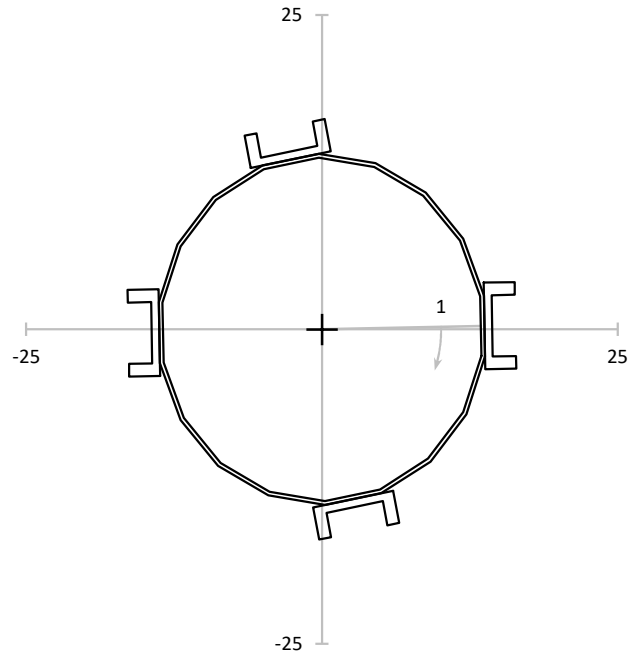
Reinforcement Layout



Elevation: 0.00-ft

Loads	
Axial:	17.3 k
Moment:	1,654.3 k-ft
Shear:	23.4 k
Torsion:	0.7 k-ft
Equivalent Loads to Pole	
Axial:	7.7 k
Moment:	735.2 k-ft
Shear:	10.4 k
Torsion:	0.7 k-ft
Shear Flow	
Controlling Mod:	2
q:	0.464 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	77.58 in
Stitch:	24.00 in
Capacity:	30.9%

Pole Info	
OD:	27.50 in
t:	0.3125 in
Pole A_G :	26.97 in ²
Pole I_G :	2,518.3 in ⁴
Controlling	
Angle:	88.90°
I_{CONT} :	6,153.3 in ⁴
A_G :	60.85 in ²
Minimum	
Angle:	230.00°
I_{MIN} :	5,666.4 in ⁴
t_{EFF} :	0.7372 in



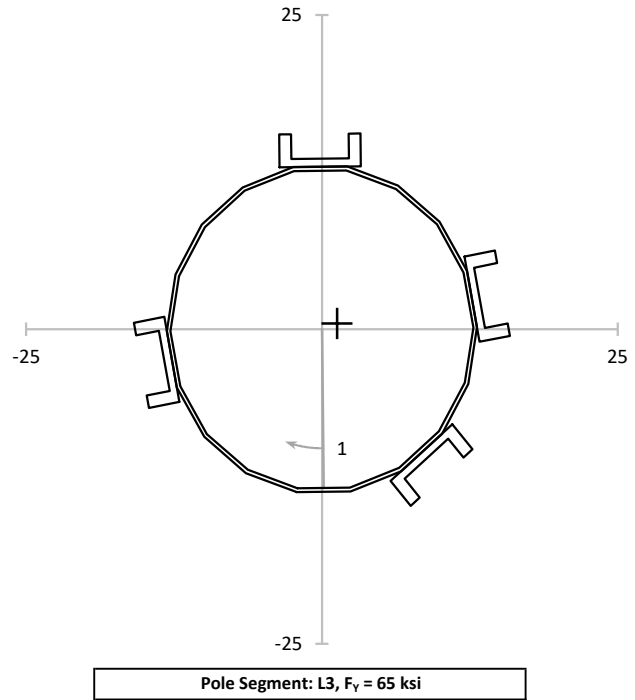
POLE CAPACITY											
Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
230.00	13.97	5666.4	0.284	48.943	0.385	0.022	74.295	74.295	37.148	74.295	66.3%

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1a	1	11.10	14.41	6153.3	0.284	46.474	0.385	55.096	52.899	29.250	87.3%
1b	1	88.90	14.41	6153.3	0.284	46.474	0.385	55.096	52.899	29.250	87.3%
2	1	268.90	14.41	6153.3	0.284	46.474	0.385	55.096	52.899	29.250	87.3%
2	2	191.10	14.41	6153.3	0.284	46.474	0.385	55.096	52.899	29.250	87.3%

Elevation: 12.00-ft

Loads	
Axial:	15.3 k
Moment:	1,383.8 k-ft
Shear:	21.7 k
Torsion:	0.2 k-ft
Equivalent Loads to Pole	
Axial:	6.5 k
Moment:	593.3 k-ft
Shear:	9.3 k
Torsion:	0.2 k-ft
Shear Flow	
Controlling Mod:	3
q:	0.505 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	71.32 in
Stitch:	24.00 in
Capacity:	33.7%

Pole Info	
OD:	25.84 in
t:	0.3125 in
Pole A_G :	25.32 in ²
Pole I_G :	2,084.4 in ⁴
Controlling	
Angle:	179.35°
I_G :	4,873.3 in ⁴
A_G :	59.20 in ²
Minimum	
Angle:	166.05°
I_{MIN} :	4,811.8 in ⁴
t_{EFF} :	0.7608 in



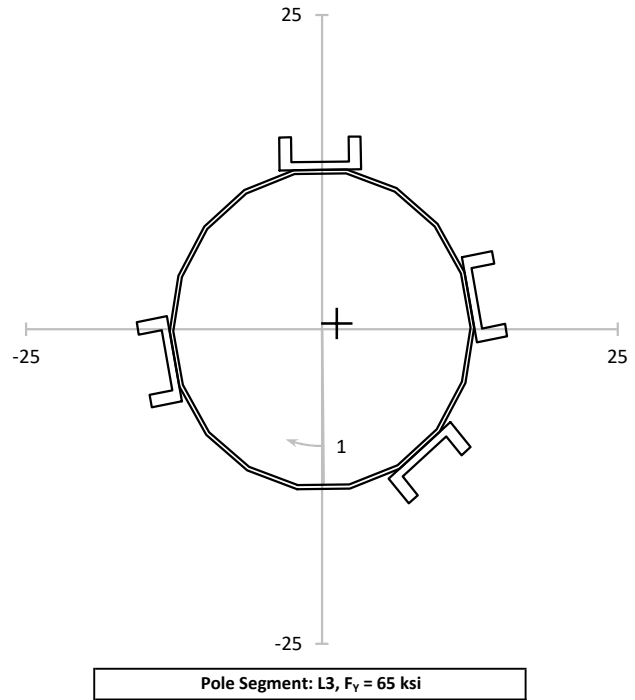
POLE CAPACITY											
Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
332.65	14.11	4874.5	0.258	48.064	0.367	0.008	74.295	74.295	37.148	74.295	65.1%

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
1b	1	109.75	12.29	5618.3	0.258	36.337	0.367	55.096	52.899	29.250	68.2%
2	1	292.15	14.89	5572.6	0.258	44.382	0.367	55.096	52.899	29.250	83.4%
2	2	179.35	13.37	4873.3	0.258	45.561	0.367	55.096	52.899	29.250	85.7%
3	1	22.55	13.15	5223.5	0.258	41.810	0.367	55.096	52.899	29.250	78.6%

Elevation: 15.50-ft

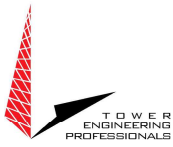
Loads	
Axial:	14.7 k
Moment:	1,308.7 k-ft
Shear:	21.2 k
Torsion:	0.2 k-ft
Equivalent Loads to Pole	
Axial:	6.2 k
Moment:	553.5 k-ft
Shear:	9.0 k
Torsion:	0.2 k-ft
Shear Flow	
Controlling Mod:	3
q:	0.506 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	71.09 in
Stitch:	24.00 in
Capacity:	33.8%

Pole Info	
OD:	25.35 in
t:	0.3125 in
Pole A_G :	24.84 in ²
Pole I_G :	1,967.9 in ⁴
Controlling	
Angle:	179.35°
I_G :	4,664.6 in ⁴
A_G :	58.72 in ²
Minimum	
Angle:	166.05°
I_{MIN} :	4,605.2 in ⁴
t_{EFF} :	0.7732 in



POLE CAPACITY											
Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
152.65	13.85	4665.4	0.251	46.633	0.362	0.007	74.295	74.295	37.148	74.295	63.1%

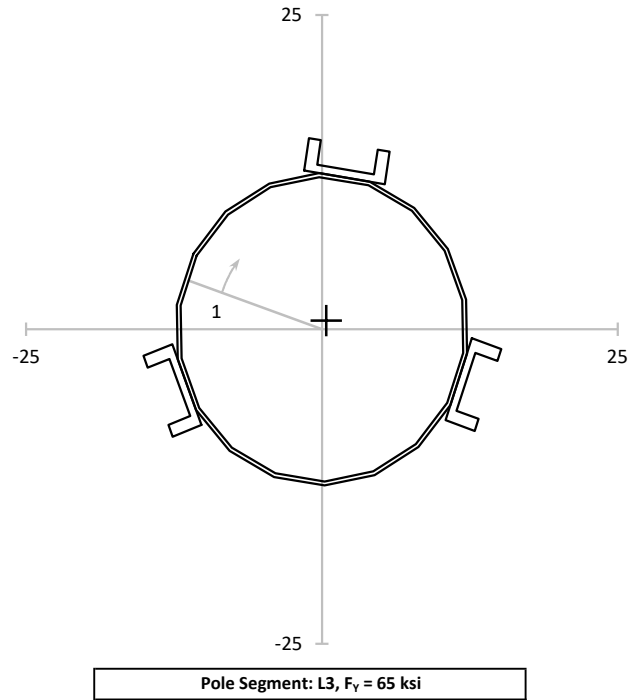
MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
2	1	292.25	14.64	5336.2	0.251	43.082	0.362	55.096	52.899	29.250	81.0%
2	2	179.35	13.13	4664.6	0.251	44.214	0.362	55.096	52.899	29.250	83.1%
3	1	22.40	12.91	4999.6	0.251	40.564	0.362	55.096	52.899	29.250	76.2%
5	1	109.85	12.06	5380.4	0.251	35.212	0.362	55.096	52.899	29.250	66.1%



Elevation: 22.00-ft

Loads	
Axial:	13.8 k
Moment:	1,173.4 k-ft
Shear:	20.4 k
Torsion:	0.2 k-ft
Equivalent Loads to Pole	
Axial:	6.7 k
Moment:	578.2 k-ft
Shear:	9.9 k
Torsion:	0.2 k-ft
Shear Flow	
Controlling Mod:	3
q:	0.589 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	61.17 in
Stitch:	24.00 in
Capacity:	39.2%

Pole Info	
OD:	24.46 in
t:	0.3125 in
Pole A_G :	23.95 in ²
Pole I_G :	1,763.4 in ⁴
Controlling	
Angle:	288.95°
I_G :	3,614.7 in ⁴
A_G :	49.36 in ²
Minimum	
Angle:	304.10°
I_{MIN} :	3,548.4 in ⁴
t_{EFF} :	0.6565 in



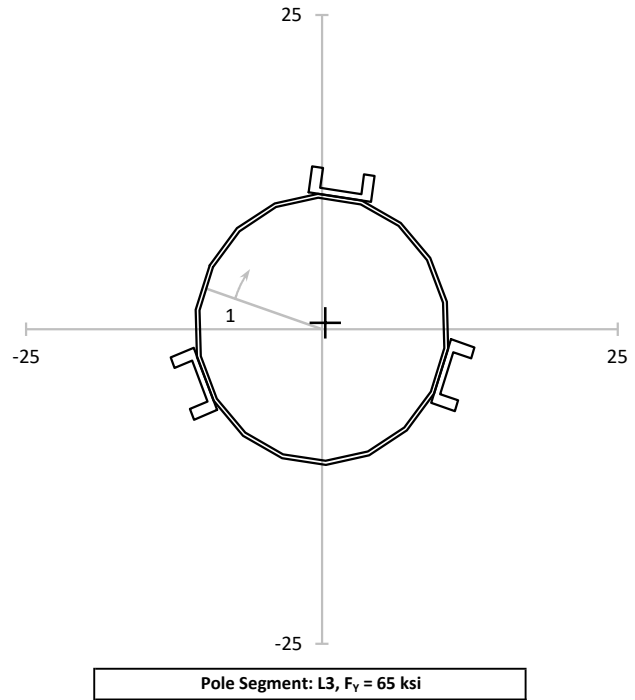
POLE CAPACITY											
Angle (°)	Y_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
113.75	13.05	3579.7	0.279	51.327	0.413	0.007	74.295	74.295	37.148	74.295	69.5%

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
2	1	288.95	12.31	3614.7	0.279	47.958	0.413	55.096	52.899	29.250	90.2%
2	2	163.05	12.68	3932.0	0.279	45.412	0.413	55.096	52.899	29.250	85.3%
3	1	47.80	13.70	4464.9	0.279	43.204	0.413	55.096	52.899	29.250	81.2%

Elevation: 45.33-ft

Loads	
Axial:	10.6 k
Moment:	736.8 k-ft
Shear:	17.1 k
Torsion:	0.2 k-ft
Equivalent Loads to Pole	
Axial:	5.9 k
Moment:	415.8 k-ft
Shear:	9.4 k
Torsion:	0.2 k-ft
Shear Flow	
Controlling Mod:	5
q:	0.502 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	71.65 in
Stitch:	18.00 in
Capacity:	25.1%

Pole Info	
OD:	21.23 in
t:	0.3125 in
Pole A_G :	20.74 in ²
Pole I_G :	1,146.2 in ⁴
Controlling	
Angle:	288.25°
I_G :	2,068.1 in ⁴
A_G :	37.69 in ²
Minimum	
Angle:	124.20°
I_{MIN} :	2,031.0 in ⁴
t_{EFF} :	0.5751 in



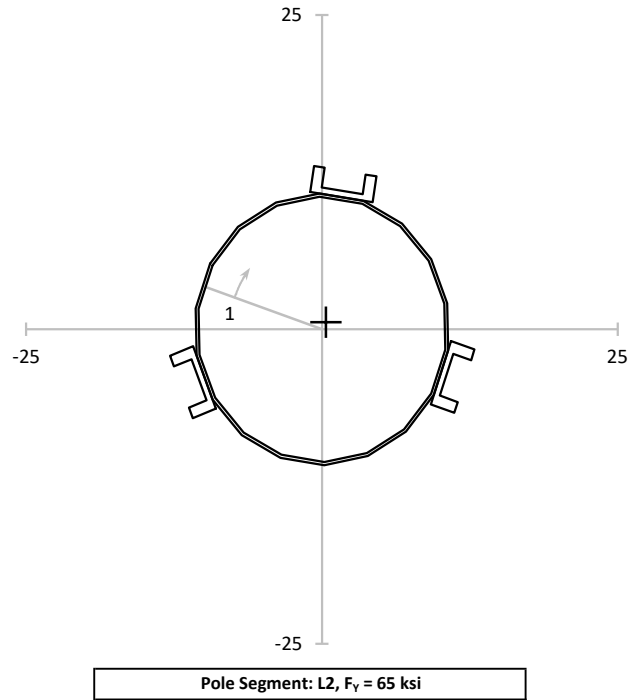
POLE CAPACITY											
Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
126.55	11.17	2031.8	0.282	48.617	0.453	0.009	74.295	74.295	37.148	74.295	65.8%

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
4	1	288.25	10.76	2068.1	0.282	46.013	0.453	55.547	51.640	29.250	88.6%
4	2	164.85	11.06	2238.7	0.282	43.682	0.453	55.547	51.640	29.250	84.1%
4	3	46.50	11.82	2498.8	0.282	41.842	0.453	55.547	51.640	29.250	80.5%

Elevation: 48.61-ft

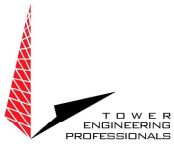
Loads	
Axial:	10.0 k
Moment:	681.5 k-ft
Shear:	16.6 k
Torsion:	0.1 k-ft
Equivalent Loads to Pole	
Axial:	5.0 k
Moment:	348.9 k-ft
Shear:	8.2 k
Torsion:	0.1 k-ft
Shear Flow	
Controlling Mod:	5
q:	0.543 k/in
Bolt/Weld Cap:	36.0 k/bolt
Max Spacing:	66.35 in
Stitch:	18.00 in
Capacity:	27.1%

Pole Info	
OD:	21.27 in
t:	0.2500 in
Pole A_G :	16.68 in ²
Pole I_G :	931.3 in ⁴
Controlling	
Angle:	288.90°
I_G :	1,852.6 in ⁴
A_G :	33.63 in ²
Minimum	
Angle:	124.15°
I_{MIN} :	1,818.6 in ⁴
t_{EFF} :	0.5065 in



POLE CAPACITY											
Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
126.25	11.24	1819.3	0.298	50.544	0.494	0.009	74.295	74.295	37.148	74.295	68.5%

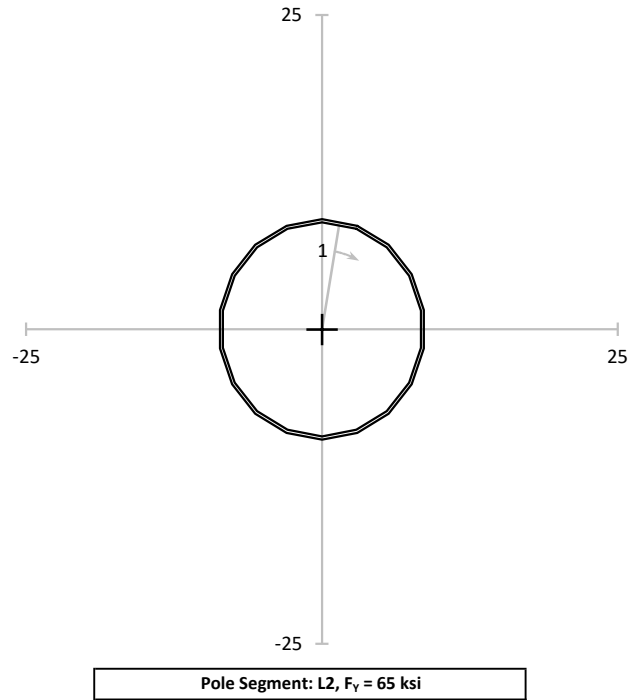
MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity
4	1	288.90	10.70	1852.6	0.298	47.255	0.494	55.547	51.640	29.250	91.0%
4	2	163.25	11.02	2014.5	0.298	44.735	0.494	55.547	51.640	29.250	86.1%
4	3	47.65	11.89	2283.8	0.298	42.569	0.494	55.547	51.640	29.250	81.9%



Elevation: 77.50-ft

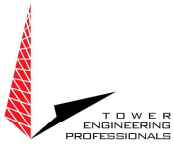
Loads	
Axial:	7.3 k
Moment:	255.6 k-ft
Shear:	12.9 k
Torsion:	0.2 k-ft
Equivalent Loads to Pole	
Axial:	7.3 k
Moment:	255.6 k-ft
Shear:	12.9 k
Torsion:	0.2 k-ft
Shear Flow N/A	

Pole Info	
OD:	17.25 in
t:	0.2500 in
Pole A_G :	13.49 in ²
Pole I_G :	492.8 in ⁴
Controlling	
Angle:	10.00°
I_G :	492.8 in ⁴
A_G :	13.49 in ²
Minimum	
Angle:	0.00°
I_{MIN} :	492.8 in ⁴
t_{EFF} :	0.2500 in



POLE CAPACITY											
Angle (°)	Y_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	8.76	492.8	0.543	54.541	0.958	0.018	74.295	74.295	37.148	74.295	74.2%

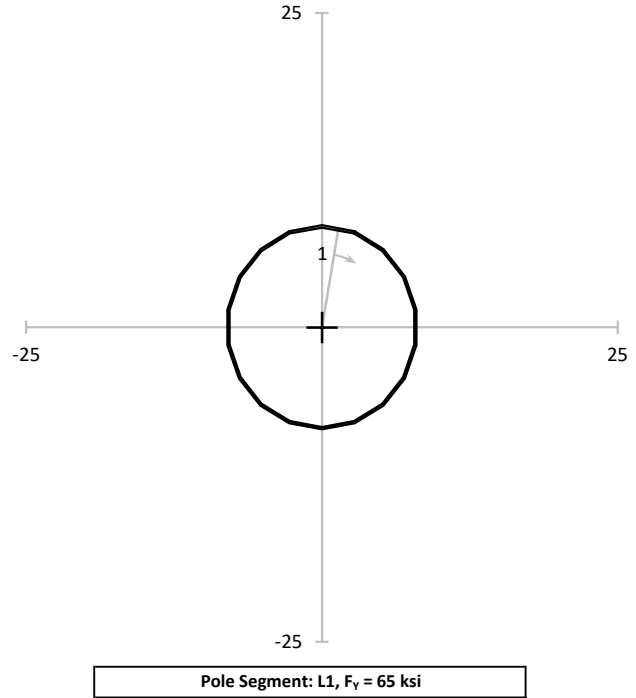
MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity



Elevation: 89.27-ft

Loads	
Axial:	6.2 k
Moment:	106.6 k-ft
Shear:	12.4 k
Torsion:	0.2 k-ft
Equivalent Loads to Pole	
Axial:	6.2 k
Moment:	106.6 k-ft
Shear:	12.4 k
Torsion:	0.2 k-ft
Shear Flow N/A	

Pole Info	
OD:	15.99 in
t:	0.1875 in
Pole A_G :	9.40 in ²
Pole I_G :	296.7 in ⁴
Controlling	
Angle:	10.00°
I_G :	296.7 in ⁴
A_G :	9.40 in ²
Minimum	
Angle:	0.00°
I_{MIN} :	296.7 in ⁴
t_{EFF} :	0.1875 in



POLE CAPACITY											
Angle (°)	Y_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	σ_T (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	ϕF_T (ksi)	Capacity
10.00	8.12	296.7	0.656	35.010	1.315	0.028	74.295	74.295	37.148	74.295	48.1%

MODIFICATION CAPACITIES											
Mod Number	#	Angle (°)	\bar{Y}_{CONT} (in)	I (in ⁴)	σ_A (ksi)	σ_B (ksi)	σ_V (ksi)	ϕF_A (ksi)	ϕF_B (ksi)	ϕF_V (ksi)	Capacity

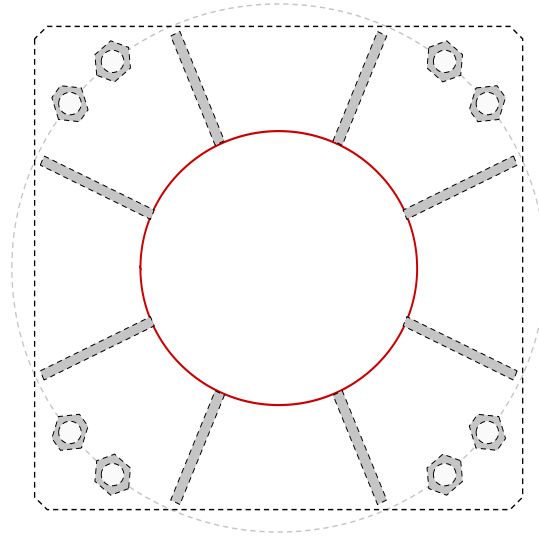
Monopole Base Plate Connection

Site Info	
Site #	701776
Site Name	Windsor CO
TEP #	260307.487571

Analysis Considerations	
TIA-222 Revision	H
Grout Considered:	No
l_{ar} (in)	0

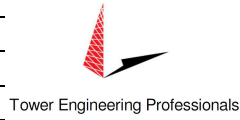
Applied Loads	
Moment (kip-ft)	1654.31
Axial Force (kips)	17.32
Shear Force (kips)	23.39

*TIA-222-H Section 15.5 Applied



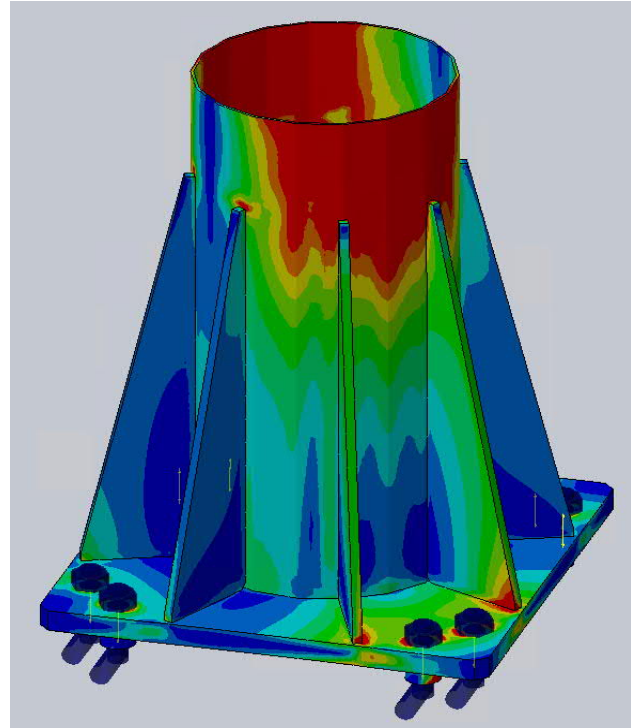
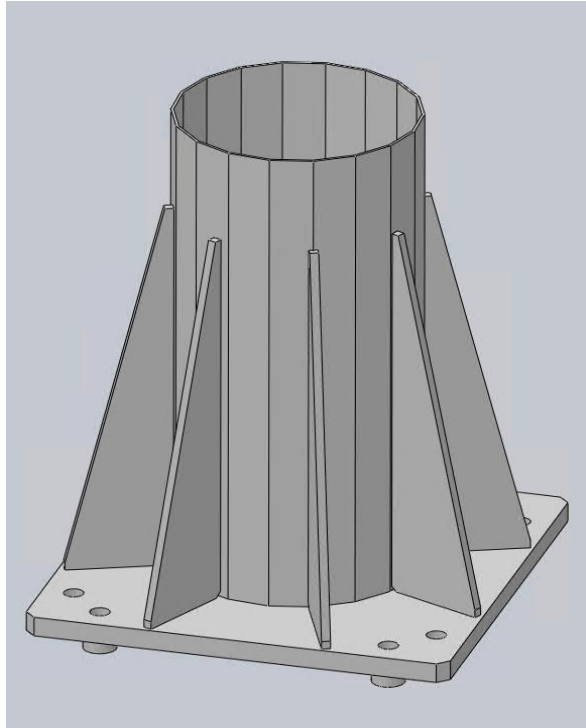
Connection Properties		Analysis Results	
Anchor Rod Data		Anchor Rod Summary <i>(units of kips, kip-in)</i>	
(8) 2-1/4" ϕ bolts (A615-75 N; $F_y=75$ ksi, $F_u=100$ ksi) on 53" BC <i>Anchor Spacing: 6 in</i>		$Pu_c = 189.24$	$\phi Pn_c = 268.39$ Stress Rating
Base Plate Data		$Vu = 2.92$	$\phi Vn = 120.77$ 67.2%
48.5" W x 2.5" Plate (A572-60; $F_y=60$ ksi, $F_u=75$ ksi); Clip: 1.25 in		$Mu = n/a$	$\phi Mn = n/a$ Pass
Stiffener Data		Base Plate Summary	
(8) 48"H x 12"W x 1"T, Notch: 0.75" plate: $F_y=65$ ksi; weld: $F_y=70$ ksi horiz. weld: 0.4375" groove, 45° dbl bevel, 0.1875" fillet vert. weld: 0.25" fillet		Max Stress (ksi):	-
Pole Data		Allowable Stress (ksi):	-
27.5" x 0.737164" 18-sided pole (MPRF- $F_y=65$ ksi, Density=50%; $F_y=65$ ksi, $F_u=80$ ksi)		Stress Rating:	N/A
		Stiffener Summary	
		Horizontal Weld:	N/A
		Vertical Weld:	N/A
		Plate Flexure+Shear:	N/A
		Plate Tension+Shear:	N/A
		Plate Compression:	N/A
		Pole Summary	
		Punching Shear:	N/A

Client Site Name: Windsor CO
 Client Site Number: 701776
 Client Order Number: -
 TEP Project Number: 260307.493578



Engineer: DTS
 Check: -
 Date: 1/29/2021
 Page: 1

Simulation of Stiffened Base Plate



Model Loads

Axial	17.32	k
Shear	23.39	k
Moment	1,654.3	k-ft

Model Part Information

Part	Part Grade
Tower Stub Section	A53-B-35
Stiffeners	A572-65
Base Plate	A572-60

Overall Results

Sufficient

*Note - The tower is modified with channels not shown in this study, thus the tower section is ignored for determination of sufficient capacity.

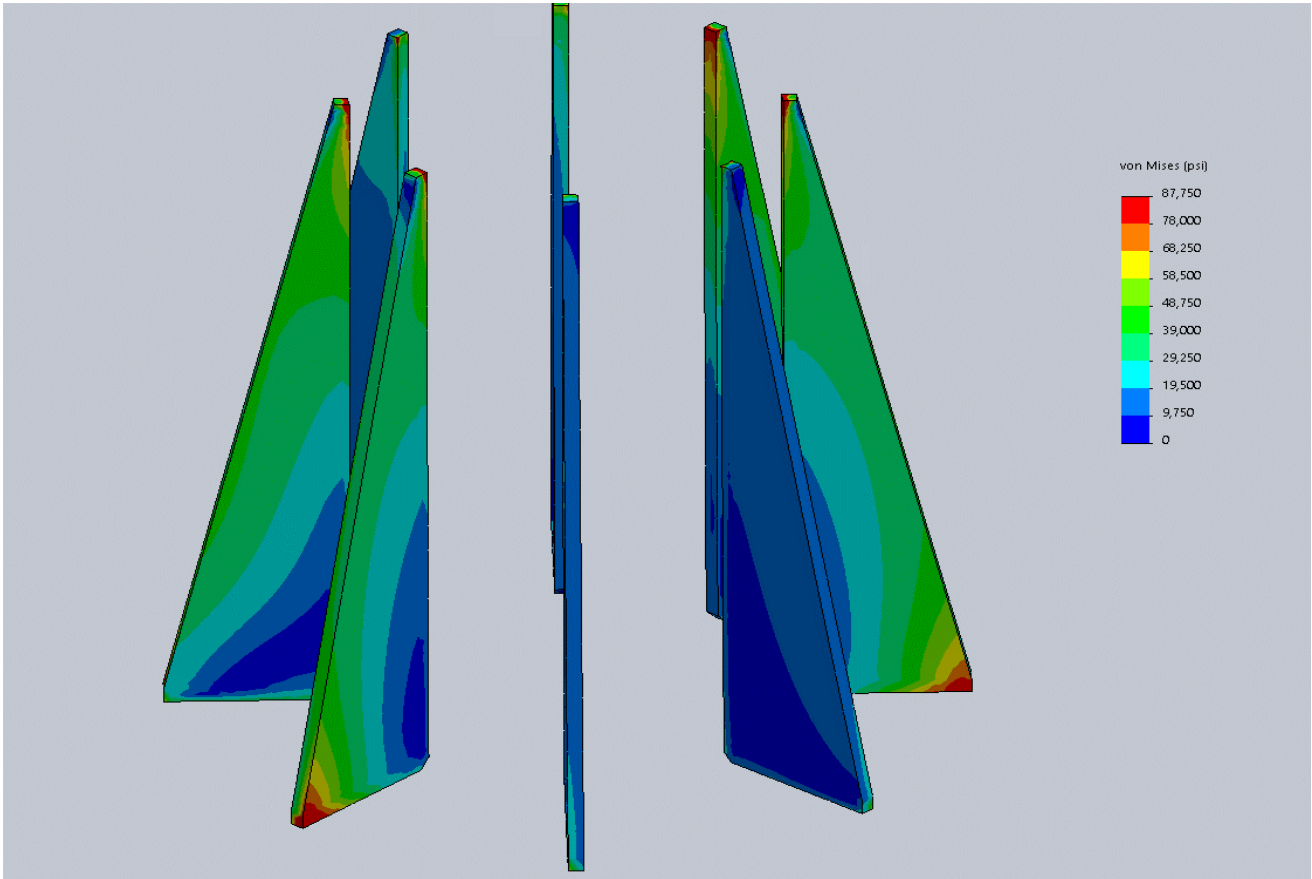
Client Site Name: Windsor CO
Client Site Number: 701776
Client Order Number: -
TEP Project Number: 260307.493578



Engineer: DTS
Check: -
Date: 1/29/2021
Page: 2

Study: 0 Degree

Stiffeners



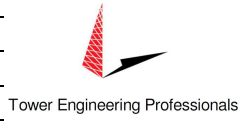
Assumptions

N/A

Results

Sufficient

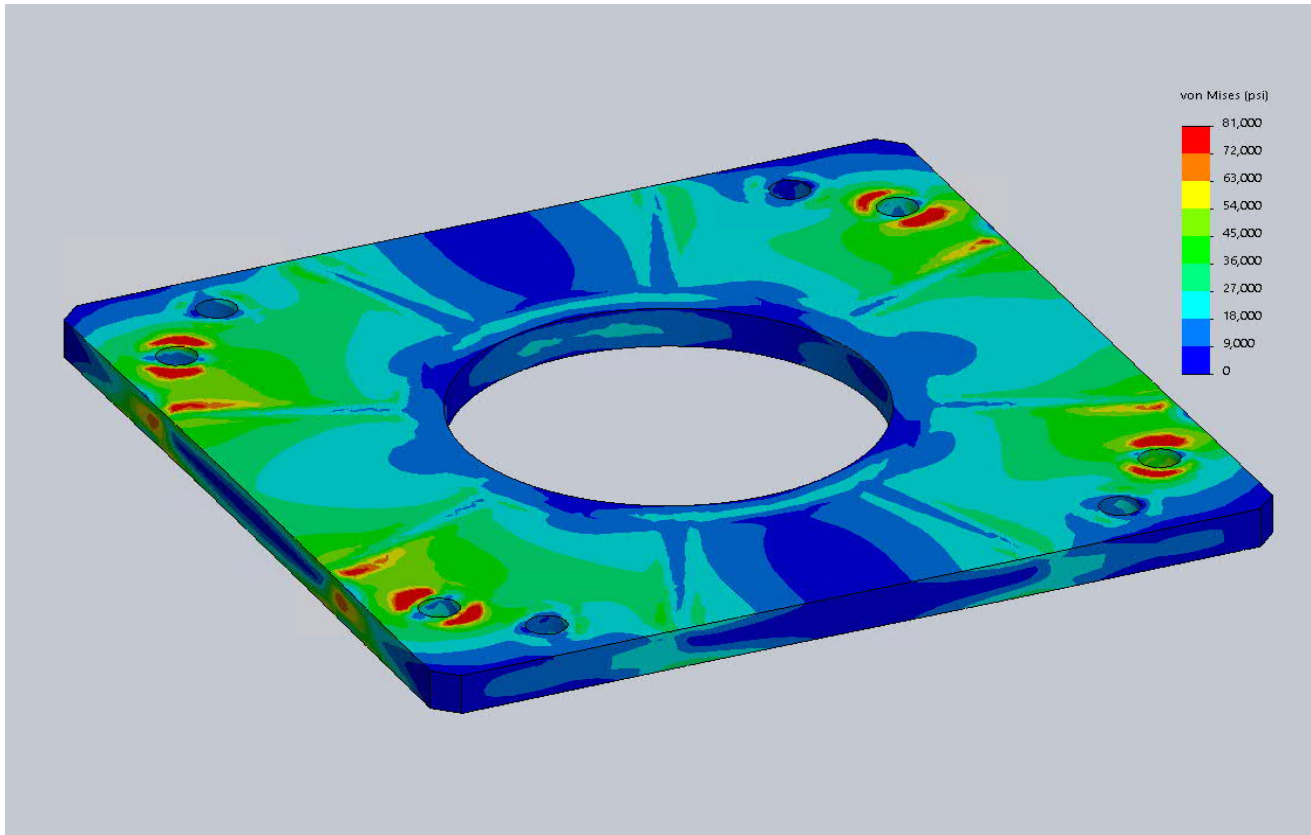
Client Site Name: Windsor CO
Client Site Number: 701776
Client Order Number: -
TEP Project Number: 260307.493578



Engineer: DTS
Check: -
Date: 1/29/2021
Page: 3

Study: 0 Degree

Base Plate



Assumptions
N/A

Results
Sufficient

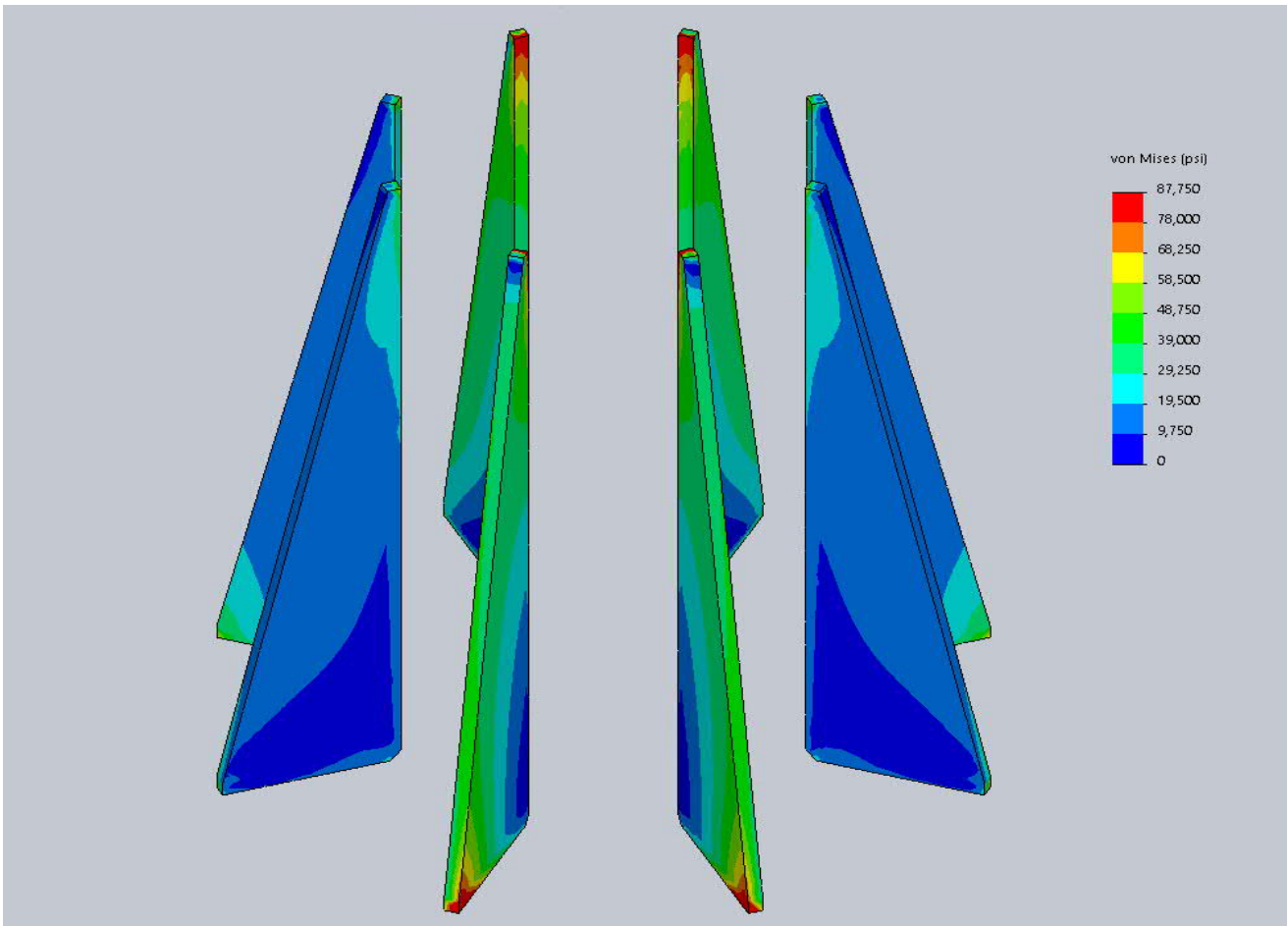
Client Site Name: Windsor CO
Client Site Number: 701776
Client Order Number: -
TEP Project Number: 260307.493578



Engineer: DTS
Check: -
Date: 1/29/2021
Page: 4

Study: 45 Degree

Stiffeners



Assumptions

N/A

Results

Sufficient

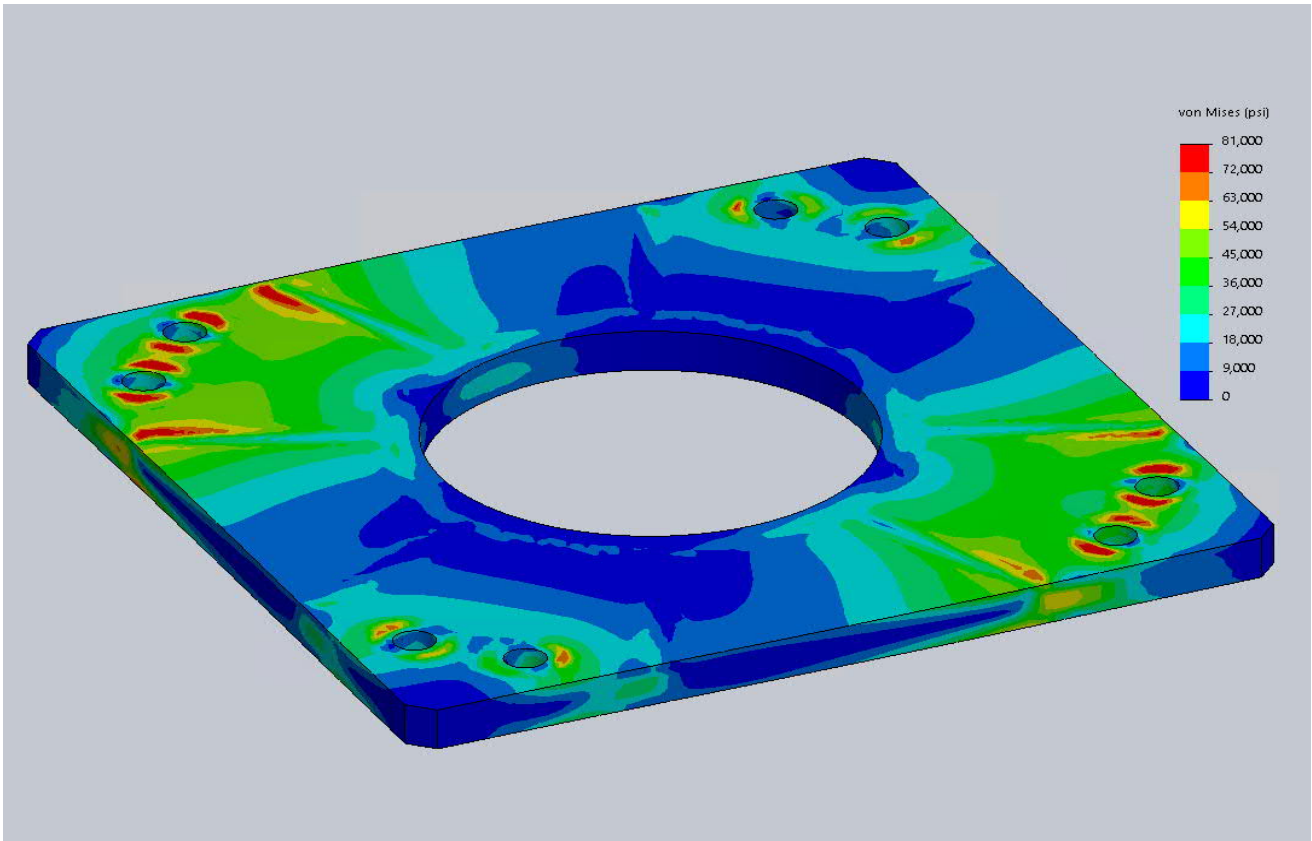
Client Site Name: Windsor CO
Client Site Number: 701776
Client Order Number: -
TEP Project Number: 260307.493578



Engineer: DTS
Check: -
Date: 1/29/2021
Page: 5

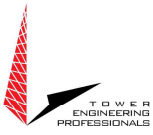
Study: 45 Degree

Base Plate



Assumptions
N/A

Results
Sufficient



701776 - Windsor CO

TEP #: 260307.487571
Analysis: NPD 2/1/2021
Check: SEB 2/1/2021

Design Reaction Comparison Tool

Code Revisions: TIA-222-G

Tower Type: Monopole

Monopole					
Reactions	Design	Design*1.35	Analysis	Capacity	Pass / Fail
Moment (kips.ft)	1682.2	2270.97	1654.309	72.8%	Pass

Note 1: Design loads were multiplied by 1.35 for comparison as allowed by TIA-222-G, Section 15.5.1.

Exhibit E

MOUNT

Structural Mount Analysis Report



L.P. PLATFORM MOUNT W/O RAILS

T-Mobile | TMO Windsor Site | #CTHA130A
TMO Anchor Program
Windsor, Connecticut

August 31, 2020

MEI PROJECT ID: CT00873M-20V0

MALOUF ENGINEERING INTL., INC.



17950 PRESTON ROAD, SUITE 720 ■ DALLAS, TEXAS 75252 ■ TEL. 972-783-2578 FAX 972-783-2583
www.maloufengineering.com





August 31, 2020

Mr. Sheldon Freinckle
Northeast Site Solutions
 Farmington, CT 06032

MOUNT STRUCTURAL ANALYSIS

Mount/Make/Model:	12.5 ft Platform Mount w/o Rails	Not Known	
Client/Site Name/#:	Northeast Site Solutions / T-Mobile	TMO Windsor #CTHA130A TMO Anchor Program	
MEI Project ID:	CT00873M-20V0		
Location:	419 Broad Street Windsor, Connecticut 6095	Hartford County FCC #N/A	
	LAT 41-50-45.2 N	LON 72-38-46.1 W	

EXECUTIVE SUMMARY:

Malouf Engineering Int'l (MEI), as requested, has performed a structural analysis of the referenced mount to assess the impact of the appurtenances configuration as noted in Table 1.

Based on the stress analysis performed, the mount **is in conformance** with the Int'l Building Code (IBC) / ANSI/TIA-**222-G** Standard for the loading considered under the criteria listed and referenced in the report sections **provided the noted recommendations and previously proposed modifications are implemented.**

The subject mount is structurally acceptable to support the appurtenances configuration as noted in Table 1 provided the noted recommendations and previously proposed modifications (MEI Ref. CT00873M-18V3A Rev. 1 Dated 04/29/2019) are implemented. Refer to the Recommendations section and Appendix for schematic sketch for details.

MEI appreciates the opportunity of providing our continuing professional services to you. If you have any questions or need further assistance on this or other projects, please contact us.


Respectfully submitted,

MALOUF ENGINEERING INT'L, INC.

Analysis performed by:

Krishna Manda, PE
 Sr. Project Engineer

Reviewed & Approved by:


 E. Mark Malouf, PE
 Connecticut #17715
 972-783-2578 ext. 106
 mmalouf@maloufengineering.com



8/31/2020

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1. INTRODUCTION & SCOPE

A mount structural analysis was performed by Malouf Engineering Int'l (MEI), as requested and authorized by Mr. Sheldon Freinle, Northeast Site Solutions, on behalf of T-Mobile, to determine whether the subject support mount will be in compliance with the referenced code/standard(s) when supporting the proposed appurtenances configuration loading. The different report sections detail the applicable information used in this analysis, relating to the mount data, the appurtenances configuration and the loading considered.

The different report sections detail the applicable information used in this evaluation, relating to the mount data, the appurtenances configuration and the wind and ice loading considered.

2. SOURCE OF DATA

The following information has been used in this evaluation as source data that accurately represent the mount and the related appurtenances:

	Source	Information	Reference
STRUCTURE			
Mount Information	MEI Records	Previous Structural Analysis	ID CT00873M-18V3A Rev. 1 Dated 04/29/2019
Tower Information	MEI Records	Previous Structural Analysis	ID CT00873M-18V3A Rev. 1 Dated 04/29/2019
Material Grade	Assumed based on typical mount materials used for this type/manufacturer – Refer to Appendix.		
APPURTENANCES CONFIGURATION			
	Frontier Communications Mr. Thomas L. Rigg Jr	T-Mobile Collocation Application	Dated 07/21/2020
PRIOR MOUNT STRUCTURAL MODIFICATIONS		Not Known	

3. ANALYSIS CRITERIA

The structural analysis performed used the following criteria:

CODE / STANDARD	2018 CT Building Code / 2015 IBC / ANSI/TIA-222-G-4 Standard		
LOADING CASES	<i>Full Wind:</i>	122 Mph Ult. Gust [equiv. 94.5 Mph (3-sec gust)] w/No Radial Ice**	
	<i>Iced Case:</i>	50 Mph + 1" Radial Ice	
	<i>Service:</i>	60 Mph	
	<i>Seismic:</i>	$S_s = 0.179 / S_1 = 0.064 /$ Site Class: D – Stiff Soil	
STRUCTURE CRITERIA	<i>Risk Category (Structural Class):</i> Class II		
	<i>Exposure Category:</i> 'C' – <i>Topographic Category:</i> 1		



Appurtenances Configuration

The following appurtenances configuration is denoted by Table 1:

Table 1: Appurtenances Configuration Considered

Elev. (ft) C.L.	Sector	Position	Ant Qty.	Appurtenance Model	Behind Panel / Location
94.00				12.5 ft. L.P. Platform w/o Rails	
94.00	"X"	X1	1	AIR6449 B41 Panel Antenna	
94.00		X1	1	KRY 112 71/2 Box	Yes
94.00		X2	1	AIR32 Panel Antenna	
94.00		X2	1	RRUS 4415 B25 Box	Yes
94.00		X3	1	APXVAARR24_43-U-NA20 Panel Antenna	New Pipe Mnt.
94.00		X3	1	RRUS 4449 Box	Yes
94.00		X3	1	SDX1926Q-43 Box	Yes
94.00	"Y"	Y1	1	AIR6449 B41 Panel Antenna	
94.00		Y1	1	KRY 112 71/2 Box	Yes
94.00		Y2	1	AIR32 Panel Antenna	
94.00		Y2	1	RRUS 4415 B25 Box	Yes
94.00		Y3	1	APXVAARR24_43-U-NA20 Panel Antenna	New Pipe Mnt.
94.00		Y3	1	RRUS 4449 Box	Yes
94.00		Y3	1	SDX1926Q-43 Box	Yes
94.00	"Z"	Z1	1	AIR6449 B41 Panel Antenna	
94.00		Z1	1	KRY 112 71/2 Box	Yes
94.00		Z2	1	AIR32 Panel Antenna	
94.00		Z2	1	RRUS 4415 B25 Box	Yes
94.00		Z3	1	APXVAARR24_43-U-NA20 Panel Antenna	New Pipe Mnt.
94.00		Z3	1	RRUS 4449 Box	Yes
94.00		Z3	1	SDX1926Q-43 Box	Yes

Notes:

1. Pipe Mount Positions above are labeled from right to left when looking from the front of the antennas.
2. Please refer to Appendix 2 for layout details provided.
3. *Replace existing center pipe mount with 2in. EHS Pipe 8ft Long.
4. **As per 2012 IBC for ultimate 3-sec gust wind speed converted to nominal 3-sec gust wind speed as per Sect. 1609.3.1 as required to be used in ANSI/TIA-222-G Standard per exception 5 of Sect. 1609.1.1.
5. All elevations are measured from tower base.
6. The above appurtenances represent MEI's understanding of the appurtenances configuration. If different than above, the analysis is invalid. Please contact MEI if any discrepancies are found.



4. ANALYSIS PROCEDURE

The subject mount is analyzed for feasibility of the installation of the appurtenances configuration previously noted. The data records furnished were reviewed and a computer stress analysis was performed in accordance with the TIA-222 Standard provisions and with the agreed scope of work terms and the results of this analysis are reported.

Analysis Program

The computer program used to model the structure is STAADPro FEA Program (ver. V8i), a commercially available general purpose structural finite element program by Bentley Systems, Carlsbad, CA.

Assumptions

This engineering study is based on the theoretical capacity of the structural members and the available connections data and is not a condition assessment. This analysis is based on information available or obtained, and therefore, its results are based on and as accurate as that data.

- This mount is assumed to have been properly maintained and to be in good condition with no structural defects and with no deterioration to its member capacities.
- The member sizes and configuration are considered accurate as supplied. The material grade is as per data supplied and/or as assumed and as stated.
- The appurtenances configuration is as supplied and/or as stated in the report.
- All welds and connections are assumed to develop at least the member capacity, unless determined otherwise and explicitly stated in this report.
- Ring clamps and localized pole shaft or tower legs, as applicable, are not included in this scope.

If any of the above assumptions are not valid or have been made in error, this analysis results may be invalidated, MEI should be contacted to review any contradictory information to determine its effect.

5. ANALYSIS RESULTS

The results of the structural stress analysis based on data available and with the previous listed criteria, indicated the following:

[Note: The Wind loading controls over the Seismic loading.]

Table 2: Stress Analysis Results– AFTER PROPER INSTALLATION OF RECOMMENDATIONS

Support Description	Member Type	Max. Stress Ratio	Pass/Fail	Comments
SUPPORTING OUTRIGGERS	MAIN	35.0%	Pass	
	BRACING	35.1%	Pass	
	CONNECTION	57.4%	Pass	End Plate
PLATFORM FRAME (FACE)	BASE PERIMETER	12.9%	Pass	
	PIPE SUPPORTS	74.3%	Pass	

Table 3: Mount Service Wind Deflection

	Maximum Value (in)	Comment
MAX. DEFLECTION	2.311	

Notes:

1. The Maximum Stress Ratio is the percentage that the maximum load in the member is relative to the allowable load as determined by Code requirements.
2. Refer to the Appendix 1 for more details on the member loads.
3. A maximum stress ratio between 100% and 105% may be considered as *Acceptable* according to industry standard practice.



6. FINDINGS & RECOMMENDATIONS

- Based on the stress analysis performed, the mount **is in conformance** with the Int'l Building Code / ANSI/TIA **222-G** Standard for the loading considered under the criteria listed and referenced in the report sections.
- ***The subject mount is structurally acceptable to support the appurtenances configuration as noted in Table 1 after proper installation of the recommendations below and the previously proposed mount modifications (MEI Ref. #CT00873M-18V3A Rev. 1 Dated 04/29/2019).***
- **Replace existing corner pipe (position 3) instead of the center pipe as noted in the previous mount modifications with new 8ft long 2in. EHS Pipe (total of 3 required).**
- *We recommend that all existing pipe mounts, brackets and all connections be inspected for any structural deficiencies, (i.e. any loose, bent and damaged members) and any damaged members should be replaced with equal member and/or part or better and any loose bolted connections should be tightened as required.*

Rigging and temporary supports required for the erection/modification shall be determined, documented, furnished and installed by the erector/contractor accounting for the loads imposed on the structure due to the proposed construction method.

7. REPORT DISCLAIMER

The engineering services rendered by Malouf Engineering International, Inc. ('MEI') in connection with this Structural Analysis are limited to a computer analysis of the structural component. MEI does not analyze the fabrication, including welding and connection capacities, except as included in this Report.

The analysis performed, and the conclusions contained herein are based on the assumption listed.

Furthermore, the information and conclusions contained in this Report were determined by application of the current "state-of-the-art" engineering and analysis procedures and formulae. MALOUF ENGINEERING INTERNATIONAL, INC. assumes no obligation to revise any of the information or conclusions contained in this Report in the event that such engineering and analysis procedures and formulae are hereafter modified or revised. In addition, under no circumstances will MALOUF ENGINEERING INTERNATIONAL, INC. have any obligation or responsibility whatsoever for or on account of consequential or incidental damages sustained by any person, firm or organization as a result of any information or conclusions contained in the Report, and the maximum liability of MALOUF ENGINEERING INTERNATIONAL, INC., if any, pursuant to this Report shall be limited to the total funds actually received by MALOUF ENGINEERING INTERNATIONAL, INC. for preparation of this Report.

Customer has requested MALOUF ENGINEERING INTERNATIONAL, INC. to prepare and submit to Customer an engineering analysis with respect to the subject structural component and has further requested MALOUF ENGINEERING INTERNATIONAL, INC. to make appropriate recommendations regarding suggested structural modifications and changes. In making such request of MALOUF ENGINEERING INTERNATIONAL, INC., Customer has informed MALOUF ENGINEERING INTERNATIONAL, INC. that Customer will make a determination as to whether or not to implement any of the changes or modifications which may be suggested by MALOUF ENGINEERING INTERNATIONAL, INC. and that Customer will have any such changes or modifications made by riggers, erectors and other subcontractors of Customer's choice. MALOUF ENGINEERING INTERNATIONAL, INC. shall have the right to rely upon the accuracy of the information supplied by the customer and shall not be held responsible for the Customer's misrepresentation or omission of relevant fact whether intentional or otherwise.

Customer hereby agrees and acknowledges that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability whatsoever to Customer or to others for any work or services performed by any persons other than MALOUF ENGINEERING INTERNATIONAL, INC. in connection with the implementation of services including but not limited to any services rendered for Customer or for others by riggers, erectors or other subcontractors. Customer acknowledges and agrees that any riggers, erectors or subcontractors retained or employed by Customer shall be solely responsible to Customer and to others for the quality of work performed by them and that MALOUF ENGINEERING INTERNATIONAL, INC. shall have no liability or responsibility whatsoever as a result of any negligence or breach of contract by any such rigger, erector or subcontractor and that Customer and rigger, erector, or subcontractor will provide MALOUF ENGINEERING INTERNATIONAL, INC. with a Certificate of Insurance naming MALOUF ENGINEERING INTERNATIONAL, INC. as additional insured.

APPENDIX 1 – RECOMMENDATION SKETCH



Malouf Engineering International Inc.
17950 Preston Rd. Suite 720
Dallas, Texas 75252 / p (972) 783-2575
maloufengineering.com

Job No
CT00873M-20

Sheet No
1

Rev
0

Software licensed to MEI IT
CONNECTED User: Krishna Manda

Part

Job Title Windsor Site #CTHA130A - 12.5ft Platform w/o Rails Modification

Ref 94 ft. Ant. CL

By KM

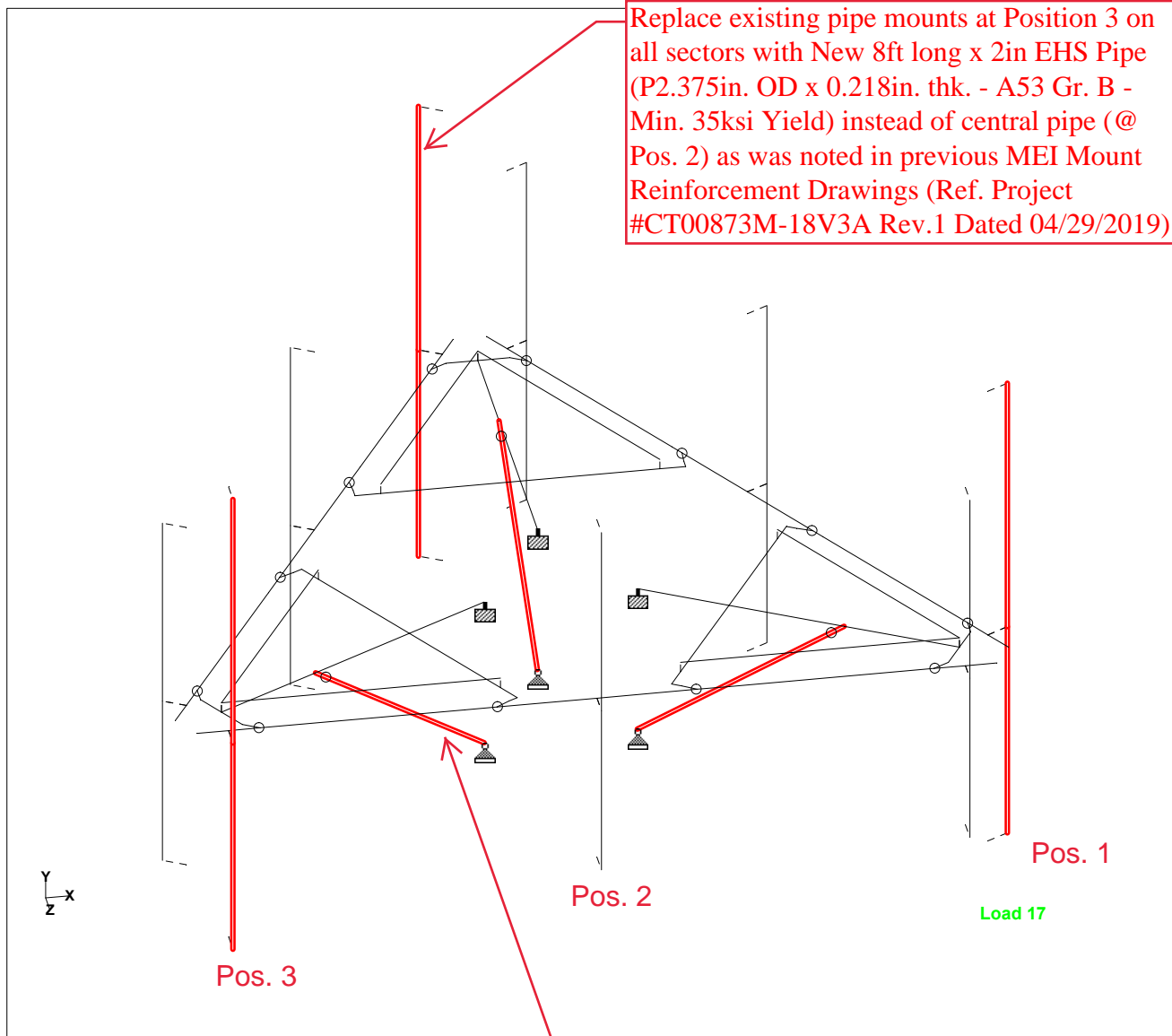
Date 31-Aug-20

Chd MM

Client NSSx / T-Mobile

File CT00873M-20V0_12.5ft_I

Date/Time 31-Aug-2020 16:26



Replace existing pipe mounts at Position 3 on all sectors with New 8ft long x 2in EHS Pipe (P2.375in. OD x 0.218in. thk. - A53 Gr. B - Min. 35ksi Yield) instead of central pipe (@ Pos. 2) as was noted in previous MEI Mount Reinforcement Drawings (Ref. Project #CT00873M-18V3A Rev.1 Dated 04/29/2019)

Whole Structure w/ Reinforcement Highlighted

Install Previous MEI Reinforcements per the drawings provided (Ref. Project #CT00873M-18V3A Rev.1 Dated 04/29/2019)

APPENDIX 2 – FEM ANALYSIS PRINTOUT

MEI project ID # **CT00873M-20V0**

Engineer **KM** Check **LKN** App. **MM** Date **10/4/2018**

Site Details

Structure classification (T2-1,T2-3)	2
Exposure type (T2-4)	C
Topographic Category (T2-5)	1
County Design Ice thickness	1.00 in.
Design wind speed w/o Ice	94.50 Mph
Wind speed w/ Ice	50.00 Mph
Height of Crest above terrain	0.00 ft.

122 Mph Ult.

Windsor Site #CTHA130A

Structure Details

Tower type (1=MNP, 2=SST, 3=GT)	1
Tower shape (0=Other,3=Tri,4=Rect)	0
Tower overall height	100.00 ft.
Wind direction Factor (T2-2)	0.95 Kd per TIA-222-G
Gust Effect Factor	1.00 Gh per TIA-222-G
Topographic Factor	1.00 Kzt

Mount / Platform

Centerline +/-	94.00 ft.
Ice Thickness @ Mount height	2.221 in.

Note: Wind Forces have NOT been factored. (i.e. 1.6 factor is applied in FEA)

No.	Elev. ft. (C.L.)	Position	Appurtenance Model	Appurtenance Mechanical Properties					Ca (No Ice)		No Ice		Wind Force (No Ice)		Iced	Ca (Iced)		Wind Force (Iced)	
				Ht (in.)	Wd. (in.)	Depth (in.)	Wt. (lb.)	Iced Wt. (lb)	Front	Side	qz*Gh(psf)	FN	FT	qz*Gh(psf)		Front	Side	FNi	FTi
	94.00		12.5 ft. L.P. Platform w/o Rails																
1	94.00	X1	AIR6449 B41	33.1	20.6	8.6	104	305.8	1.20	1.26	27.13	154.2	67.6	7.60	1.20	1.22	59.5	31.4	
2	94.00	X1	KRY 112 71/2	12.5	5.6	3.7	13.2	47.3	1.20	1.24	27.13	15.8	10.8	7.60	1.20	1.20	10.8	8.7	
3	94.00	X2	AIR32	56.65	12.87	8.66	152	390.9	1.28	1.38	27.13	176.5	127.5	7.60	1.25	1.30	69.5	54.7	
4	94.00	X2	RRUS 4415 B25	16.5	13.4	5.9	56	135.2	1.20	1.21	27.13	50.0	22.3	7.60	1.20	1.20	23.6	13.7	
5	94.00	X3	APXVAARR24_43-U-NA2C	95.9	24	8.7	154	714.9	1.27	1.53	27.13	549.2	241.2	7.60	1.25	1.42	187.5	98.8	
6	94.00	X3	RRUS 4449	18	13.2	9.4	70	169.2	1.20	1.20	27.13	53.7	38.3	7.60	1.20	1.20	25.1	19.7	
7	94.00	X3	SDX1926Q-43	11.8	6.3	4.6	14.8	51.9	1.20	1.20	27.13	16.8	12.3	7.60	1.20	1.20	11.0	9.3	
8	94.00	Y1	AIR6449 B41	33.1	20.6	8.6	104	305.8	1.20	1.26	27.13	89.2	132.5	7.60	1.20	1.22	38.4	52.5	
9	94.00	Y1	KRY 112 71/2	12.5	5.6	3.7	13.2	47.3	1.20	1.24	27.13	12.1	14.6	7.60	1.20	1.20	9.2	10.3	
10	94.00	Y2	AIR32	56.65	12.87	8.66	152	390.9	1.28	1.38	27.13	139.8	164.2	7.60	1.25	1.30	58.4	65.8	
11	94.00	Y2	RRUS 4415 B25	16.5	13.4	5.9	56	135.2	1.20	1.21	27.13	29.2	43.1	7.60	1.20	1.20	16.2	21.2	
12	94.00	Y3	APXVAARR24_43-U-NA2C	95.9	24	8.7	154	714.9	1.27	1.53	27.13	318.2	472.2	7.60	1.25	1.42	121.0	165.3	
13	94.00	Y3	RRUS 4449	18	13.2	9.4	70	169.2	1.20	1.20	27.13	42.1	49.9	7.60	1.20	1.20	21.0	23.7	
14	94.00	Y3	SDX1926Q-43	11.8	6.3	4.6	14.8	51.9	1.20	1.20	27.13	13.4	15.7	7.60	1.20	1.20	9.7	10.6	
15	94.00	Z1	AIR6449 B41	33.1	20.6	8.6	104	305.8	1.20	1.26	27.13	89.2	132.5	7.60	1.20	1.22	38.4	52.5	
16	94.00	Z1	KRY 112 71/2	12.5	5.6	3.7	13.2	47.3	1.20	1.24	27.13	12.1	14.6	7.60	1.20	1.20	9.2	10.3	
17	94.00	Z2	AIR32	56.65	12.87	8.66	152	390.9	1.28	1.38	27.13	139.8	164.2	7.60	1.25	1.30	58.4	65.8	
18	94.00	Z2	RRUS 4415 B25	16.5	13.4	5.9	56	135.2	1.20	1.21	27.13	29.2	43.1	7.60	1.20	1.20	16.2	21.2	
19	94.00	Z3	APXVAARR24_43-U-NA2C	95.9	24	8.7	154	714.9	1.27	1.53	27.13	318.2	472.2	7.60	1.25	1.42	121.0	165.3	
20	94.00	Z3	RRUS 4449	18	13.2	9.4	70	169.2	1.20	1.20	27.13	42.1	49.9	7.60	1.20	1.20	21.0	23.7	
21	94.00	Z3	SDX1926Q-43	11.8	6.3	4.6	14.8	51.9	1.20	1.20	27.13	13.4	15.7	7.60	1.20	1.20	9.7	10.6	
22																			
23																			
24																			
25																			
26																			
27																			
28																			
29																			
30	94.00		12.5 ft. L.P. Platform w/o Rails								27.13			7.60					



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Part

Job Title Windsor Site #CTHA130A - 12.5ft Platform w/o Rails Modification

Ref 94 ft. Ant. CL

By KM

Date 31-Aug-20

Chd MM

Client NSSx / T-Mobile

File CT00873M-20V0_12.5ft_I

Date/Time 31-Aug-2020 16:26

Job Information

	Engineer	Checked	Approved
Name:	KM	MM	MM
Date:	31-Aug-20	31-Aug-20	31-Aug-20

Project ID	
Project Name	

Comments

MEI Previous Modifications Per CT00873M-18V3 dated 10/04/2018 have been included in analysis. To Be Built.
Windsor Site #CTHA130A - 12.5ft Platform w/o Rails Modification
Checked per 2016 CT SBC / 2012 IBC / TIA-222-G
122 Mph Ult. / Exp "C" / Risk 2 / 50 Mph + 1" Ice
(60 Mph Service Wind)

Structure Type	SPACE FRAME
-----------------------	-------------

Number of Nodes	90	Highest Node	140
Number of Elements	102	Highest Beam	3417

Number of Basic Load Cases	-2
Number of Combination Load Cases	55

Included in this printout are data for:

All	The Whole Structure
------------	---------------------

Included in this printout are results for load cases:

Type	L/C	Name
Primary	1	MOUNT DEAD WT.
Primary	2	MOUNT ICED WT.
Primary	3	ANTENNA DEAD LOADS
Primary	4	ANTENNA ICE WEIGHT LOADS
Primary	5	FRONT WIND LOADS
Primary	6	BACK WIND LOADS
Primary	7	SIDE WIND LOADS 1
Primary	8	SIDE WIND LOADS 2
Primary	9	FRONT ICED WIND LOADS
Primary	10	BACK ICED WIND LOADS
Primary	11	SIDE ICED WIND LOADS 1
Primary	12	SIDE ICED WIND LOADS 2
Primary	13	MAN LOAD 1
Primary	14	MAN LOAD 2
Primary	15	MAN LM LOAD 1
Primary	16	MAN LM LOAD 2
Combination	17	GENERATED COMBO 1) 0 DEG(1.2D + 1.
Combination	18	GENERATED COMBO 1) 30 DEG(1.2D + 1.



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Part

Job Title Windsor Site #CTHA130A - 12.5ft Platform w/o Rails Modification

Ref 94 ft. Ant. CL

By KM Date 31-Aug-20 Chd MM

Client NSSx / T-Mobile

File CT00873M-20V0_12.5ft_1 Date/Time 31-Aug-2020 16:26

Job Information Cont...

Type	L/C	Name
Combination	22	GENERATED COMBO 1) 150 DEG(1.2D +
Combination	23	GENERATED COMBO 1) 180 DEG(1.2D +
Combination	24	GENERATED COMBO 1) 210 DEG(1.2D +
Combination	25	GENERATED COMBO 1) 240 DEG(1.2D +
Combination	26	GENERATED COMBO 1) 270 DEG(1.2D +
Combination	27	GENERATED COMBO 1) 300 DEG(1.2D +
Combination	28	GENERATED COMBO 1) 330 DEG(1.2D +
Combination	29	GENERATED COMBO 2) 0 DEG(0.9D + 1.
Combination	30	GENERATED COMBO 2) 30 DEG(0.9D +
Combination	31	GENERATED COMBO 2) 60 DEG(0.9D +
Combination	32	GENERATED COMBO 2) 90 DEG(0.9D +
Combination	33	GENERATED COMBO 2) 120 DEG(0.9D +
Combination	34	GENERATED COMBO 2) 150 DEG(0.9D +
Combination	35	GENERATED COMBO 2) 180 DEG(0.9D +
Combination	36	GENERATED COMBO 2) 210 DEG(0.9D +
Combination	37	GENERATED COMBO 2) 240 DEG(0.9D +
Combination	38	GENERATED COMBO 2) 270 DEG(0.9D +
Combination	39	GENERATED COMBO 2) 300 DEG(0.9D +
Combination	40	GENERATED COMBO 2) 330 DEG(0.9D +
Combination	41	GENERATED COMBO 3) 0 DEG(1.2D + 1.
Combination	42	GENERATED COMBO 3) 30 DEG(1.2D +
Combination	43	GENERATED COMBO 3) 60 DEG(1.2D +
Combination	44	GENERATED COMBO 3) 90 DEG(1.2D +
Combination	45	GENERATED COMBO 3) 120 DEG(1.2D +
Combination	46	GENERATED COMBO 3) 150 DEG(1.2D +
Combination	47	GENERATED COMBO 3) 180 DEG(1.2D +
Combination	48	GENERATED COMBO 3) 210 DEG(1.2D +
Combination	49	GENERATED COMBO 3) 240 DEG(1.2D +
Combination	50	GENERATED COMBO 3) 270 DEG(1.2D +
Combination	51	GENERATED COMBO 3) 300 DEG(1.2D +
Combination	52	GENERATED COMBO 3) 330 DEG(1.2D +
Combination	53	MAINTENANCE DEAD LOAD CASE
Combination	54	MAINTENANCE LOAD LM CASE 1 (0 DE
Combination	55	MAINTENANCE LOAD LM CASE 1 (180 D
Combination	56	MAINTENANCE LOAD LM CASE 2 (0 DE
Combination	57	MAINTENANCE LOAD LM CASE 2 (180 D
Combination	58	GENERATED COMBO 6) 1.0 MAN 1
Combination	59	GENERATED COMBO 6) 1.0 MAN 2
Combination	60	SERVICE COMBO 7) 0 DEG(1.0D + 1.0 W
Combination	61	SERVICE COMBO 7) 30 DEG(1.0D + 1.0 \
Combination	62	SERVICE COMBO 7) 60 DEG(1.0D + 1.0 \
Combination	63	SERVICE COMBO 7) 90 DEG(1.0D + 1.0 \
Combination	64	SERVICE COMBO 7) 120 DEG(1.0D + 1.0
Combination	65	SERVICE COMBO 7) 150 DEG(1.0D + 1.0
Combination	66	SERVICE COMBO 7) 180 DEG(1.0D + 1.0



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Part

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Client NSSx / T-Mobile

File CT00873M-20V0_12.5ft_1

Date/Time 31-Aug-2020 16:26

Job Information Cont...

Type	L/C	Name
Combination	67	SERVICE COMBO 7) 210 DEG(1.0D + 1.0
Combination	68	SERVICE COMBO 7) 240 DEG(1.0D + 1.0
Combination	69	SERVICE COMBO 7) 270 DEG(1.0D + 1.0
Combination	70	SERVICE COMBO 7) 300 DEG(1.0D + 1.0
Combination	71	SERVICE COMBO 7) 330 DEG(1.0D + 1.0

Section Properties

Prop	Section	Area (in ²)	I _{yy} (in ⁴)	I _{zz} (in ⁴)	J (in ⁴)	Material
1	HSST4X4X0.25	3.370	7.800	7.800	12.455	STEEL
2	HSST4X4X0.25	3.370	7.800	7.800	12.455	STEEL
3	L20203	0.722	0.433	0.113	0.009	STEEL
4	FB-6X0.500	3.000	0.063	9.000	0.250	STEEL
5	FB-6X0.375	2.250	0.026	6.750	0.105	STEEL
6	PIPS30	2.070	2.850	2.850	5.689	STEEL
7	PIPS20	1.020	0.627	0.627	1.262	STEEL
8	PIPX20	1.400	0.827	0.827	1.665	STEEL
9	L25253 LD	1.802	2.498	1.096	0.021	STEEL

Materials

Mat	Name	E (kip/in ²)	v	Density (kip/in ³)	α (/°F)
1	STEEL	29E+3	0.300	0.000	6E -6
2	STAINLESSSTEEL	28E+3	0.300	0.000	10E -6
3	ALUMINUM	10E+3	0.330	0.000	13E -6
4	CONCRETE	3.15E+3	0.170	0.000	5E -6



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Job Title Windsor Site #CTHA130A - 12.5ft Platform w/o Rails Modification

Ref 94 ft. Ant. CL

By KM Date 31-Aug-20 Chd MM

Client NSSx / T-Mobile

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Node Displacement Summary

	Node	L/C	X (in)	Y (in)	Z (in)	Resultant (in)	rX (rad)	rY (rad)	rZ (rad)
Max X	119	20:GENERATE	1.748	0.024	-0.535	1.828	-0.010	0.002	-0.037
Min X	112	26:GENERATE	-1.823	0.053	-0.553	1.906	-0.010	0.004	0.038
Max Y	113	35:GENERATE	0.044	0.072	2.245	2.247	0.046	0.005	-0.001
Min Y	75	47:GENERATE	-0.021	-0.148	0.020	0.151	-0.004	-0.001	-0.013
Max Z	113	23:GENERATE	0.034	0.063	2.310	2.311	0.048	0.005	-0.001
Min Z	113	29:GENERATE	-0.094	-0.122	-1.666	1.673	-0.035	-0.005	0.002
Max rX	113	23:GENERATE	0.034	0.063	2.310	2.311	0.048	0.005	-0.001
Min rX	113	29:GENERATE	-0.094	-0.122	-1.666	1.673	-0.035	-0.005	0.002
Max rY	63	26:GENERATE	-0.010	0.006	-0.018	0.022	0.003	0.009	0.001
Min rY	71	32:GENERATE	0.026	-0.051	0.016	0.059	0.005	-0.008	-0.011
Max rZ	112	26:GENERATE	-1.823	0.053	-0.553	1.906	-0.010	0.004	0.038
Min rZ	119	20:GENERATE	1.748	0.024	-0.535	1.828	-0.010	0.002	-0.037
Max Rst	113	23:GENERATE	0.034	0.063	2.310	2.311	0.048	0.005	-0.001

Reaction Summary

	Node	L/C	Horizontal	Vertical	Horizontal	Moment		
			FX (lb)	FY (lb)	FZ (lb)	MX (kip'in)	MY (kip'in)	MZ (kip'in)
Max FX	36	50:GENERATE	4.77E+3	-692.317	-2.64E+3	1.236	0.987	5.796
Min FX	135	50:GENERATE	-4.76E+3	4.15E+3	2.76E+3	0.000	0.000	0.000
Max FY	136	41:GENERATE	-0.000	4.16E+3	-5.51E+3	0.000	0.000	0.000
Min FY	36	50:GENERATE	4.77E+3	-692.317	-2.64E+3	1.236	0.987	5.796
Max FZ	43	41:GENERATE	18.470	-689.090	5.64E+3	-5.651	0.061	-2.493
Min FZ	136	41:GENERATE	-0.000	4.16E+3	-5.51E+3	0.000	0.000	0.000
Max MX	50	41:GENERATE	-3.71E+3	-665.711	-1.88E+3	5.690	-4.483	-2.600
Min MX	36	57:MAINTENAI	1.57E+3	174.561	-1.01E+3	-9.986	-1.854	2.213
Max MY	43	32:GENERATE	-1.24E+3	-139.542	1E+3	-0.895	28.986	4.503
Min MY	43	26:GENERATE	1.39E+3	-97.642	1.64E+3	-0.459	-31.132	-5.753
Max MZ	36	47:GENERATE	4.32E+3	-682.411	-2.88E+3	-0.504	-6.649	6.637
Min MZ	50	55:MAINTENAI	-2.9E+3	-676.789	-1.74E+3	-0.576	1.082	-7.526



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Ref 94 ft. Ant. CL

By KM

Date 31-Aug-20

Chd MM

Client NSSx / T-Mobile

File CT00873M-20V0_12.5ft_I

Date/Time 31-Aug-2020 16:26

Utilization Ratio

Beam	Analysis Property	Design Property	Actual Allowable		Ratio (Act./Allow.)	Clause	L/C	Ax (in ²)	Iz (in ⁴)	Iy (in ⁴)	Ix (in ⁴)
			Ratio	Ratio							
13	PIPS30	PIPS30	0.051	1.000	0.051	LRFD-H1-1B-	47	2.070	2.850	2.850	5.700
14	FB-6X0.500	FB-6X0.500	0.087	1.000	0.087	LRFD-H1-1B-	26	3.000	9.000	0.063	0.250
15	FB-6X0.500	FB-6X0.500	0.240	1.000	0.240	LRFD-H1-1B-	26	3.000	9.000	0.063	0.250
16	PIPS30	PIPS30	0.062	1.000	0.062	LRFD-H1-1B-	47	2.070	2.850	2.850	5.700
17	FB-6X0.500	FB-6X0.500	0.244	1.000	0.244	LRFD-H1-1B-	23	3.000	9.000	0.063	0.250
18	FB-6X0.500	FB-6X0.500	0.195	1.000	0.195	LRFD-H1-1B-	23	3.000	9.000	0.063	0.250
20	PIPS30	PIPS30	0.121	1.000	0.121	LRFD-H1-1B-	17	2.070	2.850	2.850	5.700
21	L20203	L20203	0.285	1.000	0.285	LRFD-H1-1B-	47	0.722	0.109	0.437	0.009
22	PIPS30	PIPS30	0.071	1.000	0.071	LRFD-H1-1B-	47	2.070	2.850	2.850	5.700
23	HSST4X4X0	HSST4X4X0	0.316	1.000	0.316	HSS T+SH+F	50	3.370	7.800	7.800	12.800
24	FB-6X0.375	FB-6X0.375	0.283	1.000	0.283	LRFD-H1-1B-	20	2.250	6.750	0.026	0.105
25	FB-6X0.375	FB-6X0.375	0.434	1.000	0.434	LRFD-H1-1B-	20	2.250	6.750	0.026	0.105
26	HSST4X4X0	HSST4X4X0	0.069	1.000	0.069	HSS FLEX+A	26	3.370	7.800	7.800	12.800
27	L20203	L20203	0.351	1.000	0.351	LRFD-H1-1A-	35	0.722	0.109	0.437	0.009
28	PIPS30	PIPS30	0.101	1.000	0.101	LRFD-H1-1B-	20	2.070	2.850	2.850	5.700
30	HSST4X4X0	HSST4X4X0	0.171	1.000	0.171	HSS FLEX+A	50	3.370	7.800	7.800	12.800
31	FB-6X0.375	FB-6X0.375	0.283	1.000	0.283	LRFD-H1-1B-	23	2.250	6.750	0.026	0.105
32	FB-6X0.375	FB-6X0.375	0.429	1.000	0.429	LRFD-H1-1B-	23	2.250	6.750	0.026	0.105
33	PIPS30	PIPS30	0.100	1.000	0.100	LRFD-H1-1B-	20	2.070	2.850	2.850	5.700
34	HSST4X4X0	HSST4X4X0	0.070	1.000	0.070	HSS T+SH+F	23	3.370	7.800	7.800	12.800
35	HSST4X4X0	HSST4X4X0	0.138	1.000	0.138	HSS FLEX+A	47	3.370	7.800	7.800	12.800
36	HSST4X4X0	HSST4X4X0	0.207	1.000	0.207	HSS T+SH+F	23	3.370	7.800	7.800	12.800
37	PIPS30	PIPS30	0.126	1.000	0.126	LRFD-H1-1B-	17	2.070	2.850	2.850	5.700
38	PIPS30	PIPS30	0.129	1.000	0.129	LRFD-H1-1B-	20	2.070	2.850	2.850	5.700
39	FB-6X0.375	FB-6X0.375	0.333	1.000	0.333	LRFD-H1-1B-	17	2.250	6.750	0.026	0.105
40	HSST4X4X0	HSST4X4X0	0.091	1.000	0.091	HSS FLEX+A	23	3.370	7.800	7.800	12.800
41	FB-6X0.375	FB-6X0.375	0.502	1.000	0.502	LRFD-H1-1B-	17	2.250	6.750	0.026	0.105
42	L20203	L20203	0.172	1.000	0.172	LRFD-H1-1B-	29	0.722	0.109	0.437	0.009
43	HSST4X4X0	HSST4X4X0	0.142	1.000	0.142	HSS FLEX+A	41	3.370	7.800	7.800	12.800
45	FB-6X0.500	FB-6X0.500	0.141	1.000	0.141	LRFD-H1-1B-	20	3.000	9.000	0.063	0.250
46	FB-6X0.500	FB-6X0.500	0.253	1.000	0.253	LRFD-H1-1B-	23	3.000	9.000	0.063	0.250
47	PIPS30	PIPS30	0.127	1.000	0.127	LRFD-H1-1B-	56	2.070	2.850	2.850	5.700
48	HSST4X4X0	HSST4X4X0	0.317	1.000	0.317	HSS T+SH+F	41	3.370	7.800	7.800	12.800
49	HSST4X4X0	HSST4X4X0	0.228	1.000	0.228	HSS T+SH+F	26	3.370	7.800	7.800	12.800
50	FB-6X0.500	FB-6X0.500	0.197	1.000	0.197	LRFD-H1-1B-	17	3.000	9.000	0.063	0.250
51	PIPS30	PIPS30	0.051	1.000	0.051	LRFD-H1-1B-	41	2.070	2.850	2.850	5.700
52	FB-6X0.500	FB-6X0.500	0.054	1.000	0.054	LRFD-H1-1B-	20	3.000	9.000	0.063	0.250
53	PIPS30	PIPS30	0.080	1.000	0.080	LRFD-H1-1B-	26	2.070	2.850	2.850	5.700
54	L20203	L20203	0.282	1.000	0.282	LRFD-H1-1B-	50	0.722	0.109	0.437	0.009
55	HSST4X4X0	HSST4X4X0	0.169	1.000	0.169	HSS FLEX+A	41	3.370	7.800	7.800	12.800
56	FB-6X0.375	FB-6X0.375	0.395	1.000	0.395	LRFD-H1-1B-	17	2.250	6.750	0.026	0.105
57	HSST4X4X0	HSST4X4X0	0.068	1.000	0.068	HSS FLEX+A	23	3.370	7.800	7.800	12.800
58	FB-6X0.375	FB-6X0.375	0.260	1.000	0.260	LRFD-H1-1B-	17	2.250	6.750	0.026	0.105
60	PIPS30	PIPS30	0.073	1.000	0.073	LRFD-H1-1B-	17	2.070	2.850	2.850	5.700
61	HSST4X4X0	HSST4X4X0	0.131	1.000	0.131	HSS T+SH+F	23	3.370	7.800	7.800	12.800



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Job Title Windsor Site #CTHA130A - 12.5ft Platform w/o Rails Modification

Ref 94 ft. Ant. CL

By KM

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Chd MM

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File CT00873M-20V0_12.5ft_1

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Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Allowable		Ratio (Act./Allow.)	Clause	L/C	Ax (in ²)	Iz (in ⁴)	Iy (in ⁴)	Ix (in ⁴)
			Ratio	Ratio							
62	HSST4X4X0	HSST4X4X0	0.164	1.000	0.164	HSS FLEX+A	47	3.370	7.800	7.800	12.800
63	HSST4X4X0	HSST4X4X0	0.053	1.000	0.053	HSS FLEX+A	47	3.370	7.800	7.800	12.800
64	PIPS30	PIPS30	0.084	1.000	0.084	LRFD-H1-1B-	26	2.070	2.850	2.850	5.700
65	FB-6X0.375	FB-6X0.375	0.296	1.000	0.296	LRFD-H1-1B-	23	2.250	6.750	0.026	0.105
66	FB-6X0.375	FB-6X0.375	0.197	1.000	0.197	LRFD-H1-1B-	23	2.250	6.750	0.026	0.105
67	HSST4X4X0	HSST4X4X0	0.140	1.000	0.140	HSS FLEX+A	45	3.370	7.800	7.800	12.800
68	PIPS30	PIPS30	0.067	1.000	0.067	LRFD-H1-1B-	17	2.070	2.850	2.850	5.700
69	PIPS30	PIPS30	0.097	1.000	0.097	LRFD-H1-1B-	26	2.070	2.850	2.850	5.700
70	L20203	L20203	0.281	1.000	0.281	LRFD-H1-1B-	43	0.722	0.109	0.437	0.009
71	HSST4X4X0	HSST4X4X0	0.091	1.000	0.091	HSS T+SH+F	26	3.370	7.800	7.800	12.800
72	FB-6X0.375	FB-6X0.375	0.574	1.000	0.574	LRFD-H1-1B-	26	2.250	6.750	0.026	0.105
73	FB-6X0.375	FB-6X0.375	0.377	1.000	0.377	LRFD-H1-1B-	26	2.250	6.750	0.026	0.105
74	HSST4X4X0	HSST4X4X0	0.316	1.000	0.316	HSS T+SH+F	45	3.370	7.800	7.800	12.800
75	PIPS30	PIPS30	0.097	1.000	0.097	LRFD-H1-1B-	26	2.070	2.850	2.850	5.700
76	L20203	L20203	0.336	1.000	0.336	LRFD-H1-1A-	32	0.722	0.109	0.437	0.009
78	PIPS30	PIPS30	0.113	1.000	0.113	LRFD-H1-1B-	23	2.070	2.850	2.850	5.700
79	FB-6X0.500	FB-6X0.500	0.090	1.000	0.090	LRFD-H1-1B-	23	3.000	9.000	0.063	0.250
80	FB-6X0.500	FB-6X0.500	0.208	1.000	0.208	LRFD-H1-1B-	23	3.000	9.000	0.063	0.250
81	PIPS30	PIPS30	0.079	1.000	0.079	LRFD-H1-1B-	54	2.070	2.850	2.850	5.700
83	FB-6X0.500	FB-6X0.500	0.294	1.000	0.294	LRFD-H1-1B-	20	3.000	9.000	0.063	0.250
84	FB-6X0.500	FB-6X0.500	0.169	1.000	0.169	LRFD-H1-1B-	20	3.000	9.000	0.063	0.250
85	PIPS30	PIPS30	0.000	1.000	0.000	SHEAR-Y	41	2.070	2.850	2.850	5.700
86	PIPS30	PIPS30	0.000	1.000	0.000	SHEAR-Y	41	2.070	2.850	2.850	5.700
87	PIPS30	PIPS30	0.000	1.000	0.000	SHEAR-Y	41	2.070	2.850	2.850	5.700
1100	PIPS20	PIPS20	0.062	1.000	0.062	LRFD-H1-1B-	17	1.020	0.627	0.627	1.254
1101	PIPS20	PIPS20	0.214	1.000	0.214	LRFD-H1-1B-	23	1.020	0.627	0.627	1.254
1200	PIPS20	PIPS20	0.068	1.000	0.068	LRFD-H1-1B-	23	1.020	0.627	0.627	1.254
1201	PIPS20	PIPS20	0.302	1.000	0.302	LRFD-H1-1B-	23	1.020	0.627	0.627	1.254
1300	PIPX20	PIPX20	0.515	1.000	0.515	LRFD-H1-1B-	17	1.400	0.827	0.827	1.654
1301	PIPX20	PIPX20	0.743	1.000	0.743	LRFD-H1-1B-	23	1.400	0.827	0.827	1.654
2100	PIPS20	PIPS20	0.056	1.000	0.056	LRFD-H1-1B-	20	1.020	0.627	0.627	1.254
2101	PIPS20	PIPS20	0.190	1.000	0.190	LRFD-H1-1B-	26	1.020	0.627	0.627	1.254
2200	PIPS20	PIPS20	0.065	1.000	0.065	LRFD-H1-1B-	26	1.020	0.627	0.627	1.254
2201	PIPS20	PIPS20	0.279	1.000	0.279	LRFD-H1-1B-	26	1.020	0.627	0.627	1.254
2300	PIPX20	PIPX20	0.449	1.000	0.449	LRFD-H1-1B-	20	1.400	0.827	0.827	1.654
2301	PIPX20	PIPX20	0.648	1.000	0.648	LRFD-H1-1B-	26	1.400	0.827	0.827	1.654
3100	PIPS20	PIPS20	0.056	1.000	0.056	LRFD-H1-1B-	20	1.020	0.627	0.627	1.254
3101	PIPS20	PIPS20	0.190	1.000	0.190	LRFD-H1-1B-	20	1.020	0.627	0.627	1.254
3200	PIPS20	PIPS20	0.065	1.000	0.065	LRFD-H1-1B-	20	1.020	0.627	0.627	1.254
3201	PIPS20	PIPS20	0.279	1.000	0.279	LRFD-H1-1B-	20	1.020	0.627	0.627	1.254
3300	PIPX20	PIPX20	0.449	1.000	0.449	LRFD-H1-1B-	20	1.400	0.827	0.827	1.654
3301	PIPX20	PIPX20	0.648	1.000	0.648	LRFD-H1-1B-	20	1.400	0.827	0.827	1.654
3403	PIPS30	PIPS30	0.000	1.000	0.000	SHEAR-Y	41	2.070	2.850	2.850	5.700
3404	PIPS30	PIPS30	0.000	1.000	0.000	SHEAR-Y	41	2.070	2.850	2.850	5.700
3405	PIPS30	PIPS30	0.121	1.000	0.121	LRFD-H1-1B-	20	2.070	2.850	2.850	5.700



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Part

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Utilization Ratio Cont...

Beam	Analysis Property	Design Property	Actual Allowable		Ratio (Act./Allow.)	Clause	L/C	Ax (in ²)	Iz (in ⁴)	Iy (in ⁴)	Ix (in ⁴)
			Ratio	Ratio							
3406	PIPS30	PIPS30	0.117	1.000	0.117	LRFD-H1-1B-	47	2.070	2.850	2.850	5.700
3407	PIPS30	PIPS30	0.115	1.000	0.115	LRFD-H1-1B-	50	2.070	2.850	2.850	5.700
3408	PIPS30	PIPS30	0.000	1.000	0.000	SHEAR-Y	41	2.070	2.850	2.850	5.700
3409	PIPS30	PIPS30	0.089	1.000	0.089	LRFD-H1-1B-	47	2.070	2.850	2.850	5.700
3410	PIPS30	PIPS30	0.127	1.000	0.127	LRFD-H1-1B-	56	2.070	2.850	2.850	5.700
3411	PIPS30	PIPS30	0.090	1.000	0.090	LRFD-H1-1B-	50	2.070	2.850	2.850	5.700
3412	HSST4X4X0	HSST4X4X0	0.346	1.000	0.346	HSS T+SH+F	50	3.370	7.800	7.800	12.800
3413	HSST4X4X0	HSST4X4X0	0.350	1.000	0.350	HSS T+SH+F	41	3.370	7.800	7.800	12.800
3414	HSST4X4X0	HSST4X4X0	0.345	1.000	0.345	HSS T+SH+F	45	3.370	7.800	7.800	12.800
3415	L25253 LD	L25253 LD	0.119	1.000	0.119	LRFD-H1-1B-	47	1.802	1.096	2.507	0.021
3416	L25253 LD	L25253 LD	0.117	1.000	0.117	LRFD-H1-1B-	43	1.802	1.096	2.507	0.021
3417	L25253 LD	L25253 LD	0.119	1.000	0.119	LRFD-H1-1B-	47	1.802	1.096	2.507	0.021

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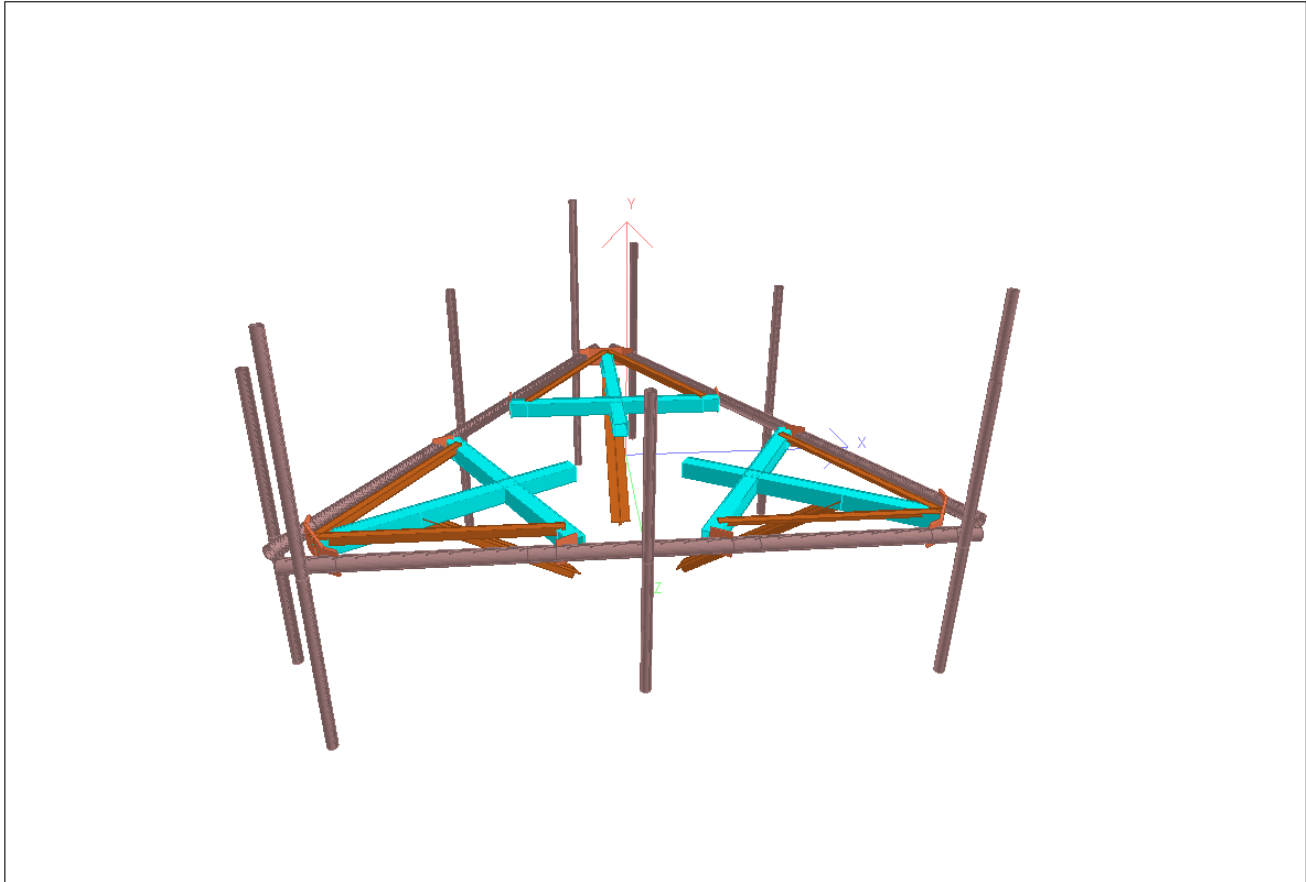
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Ref 94 ft. Ant. CL

By KM Date 31-Aug-20 Chd MM

Client NSSx / T-Mobile

File CT00873M-20V0_12.5ft_1 Date/Time 31-Aug-2020 16:26



3D Rendered View



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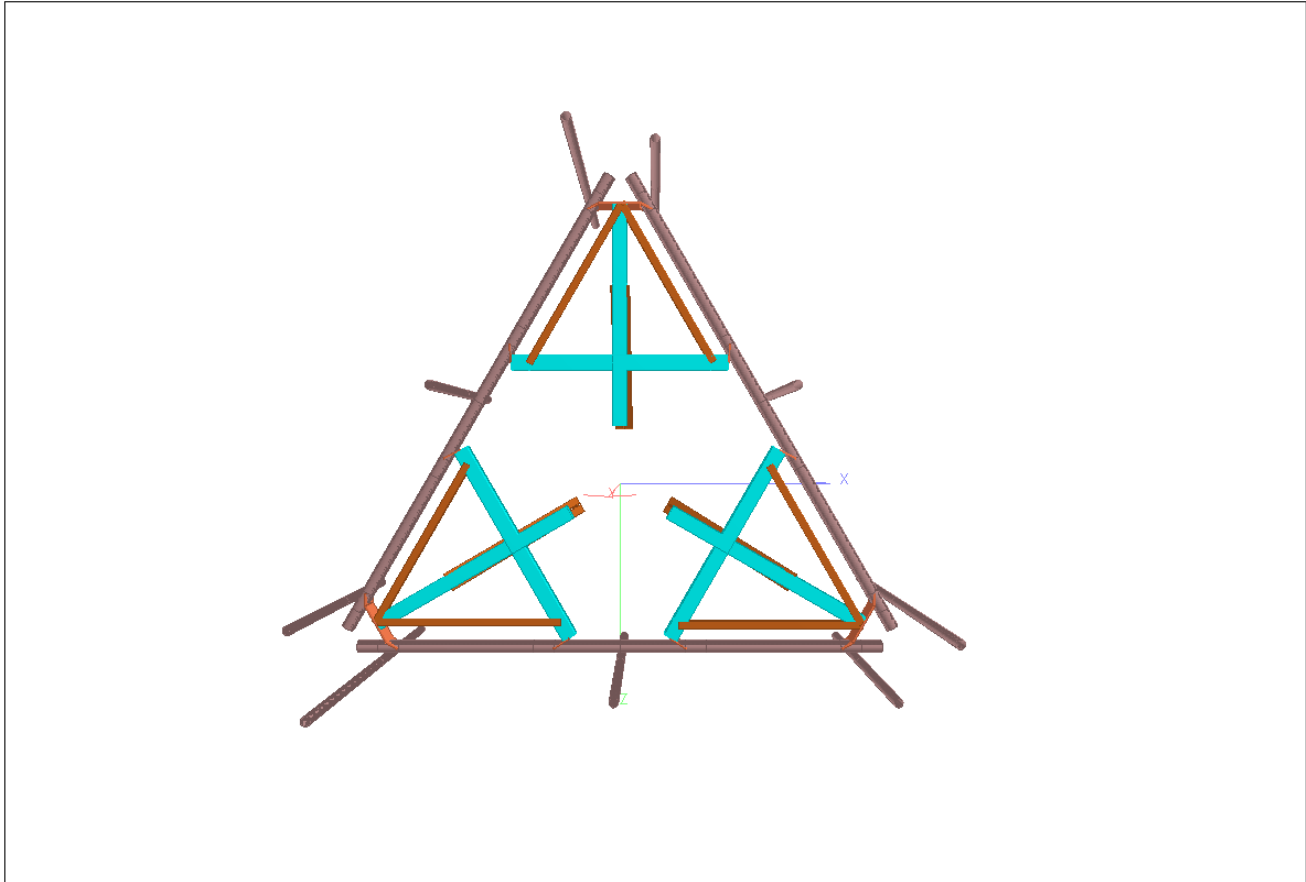
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3D Rendered Plan View



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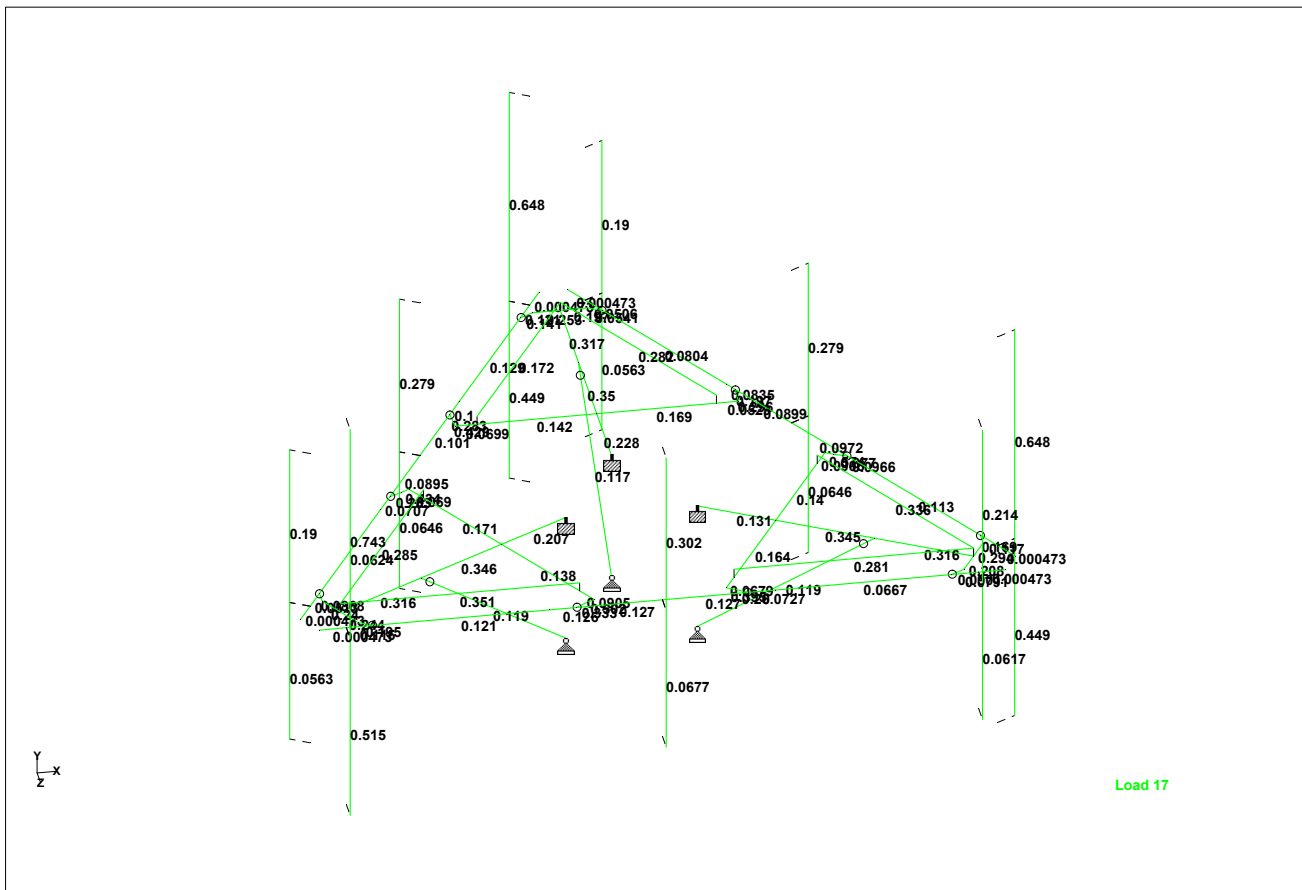
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Combined Stress Ratios (Unity Check < 1.05 OK!)



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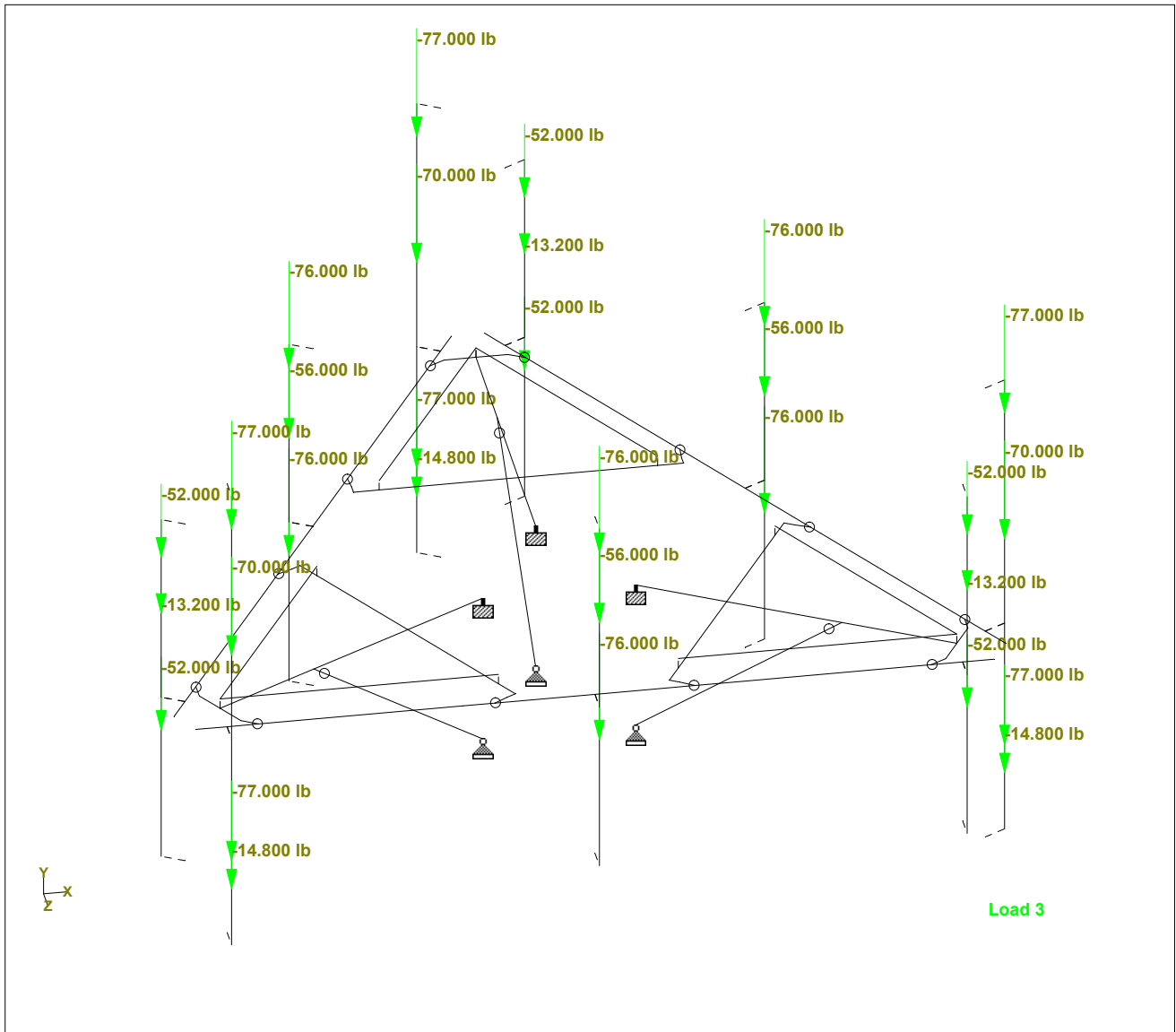
Date 31-Aug-20

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Whole Structure Loads 40.0429lb:1ft 3 ANTENNA DEAD LOADS



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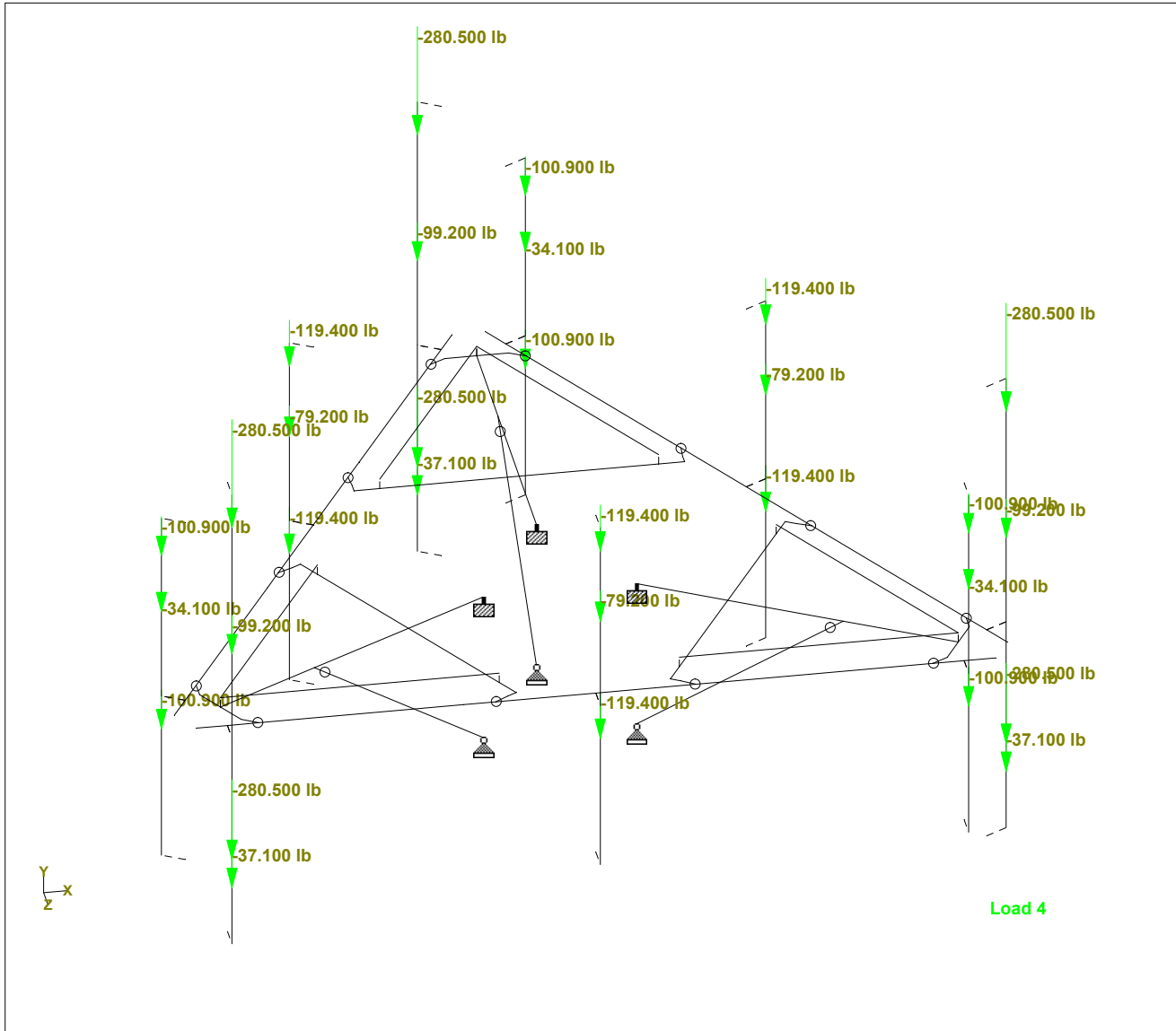
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Whole Structure Loads 145.871lb:1ft 4 ANTENNA ICE WEIGHT LOADS



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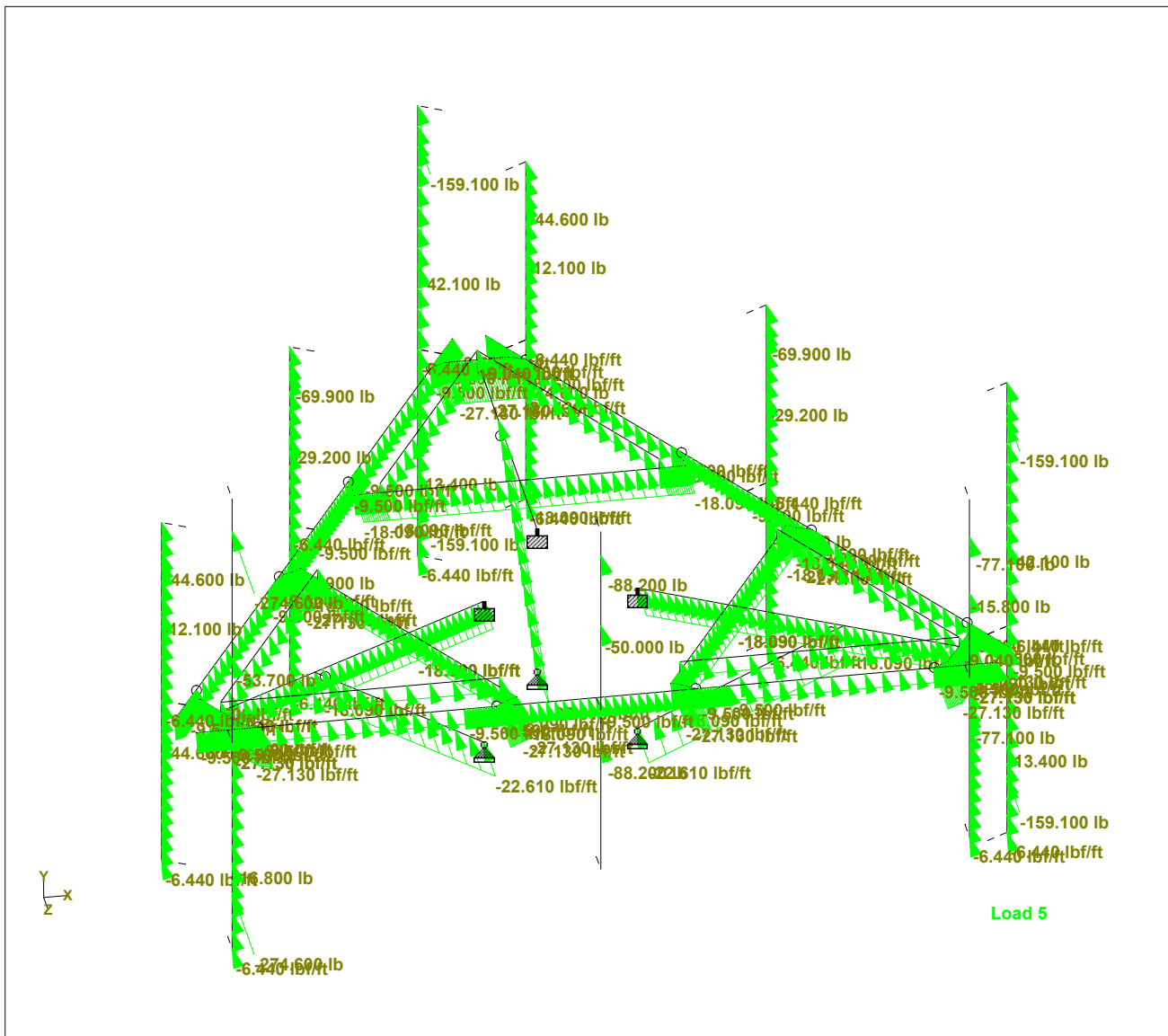
Date 31-Aug-20

Chd MM

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Whole Structure Loads 142.802lb:1ft 5 FRONT WIND LOADS



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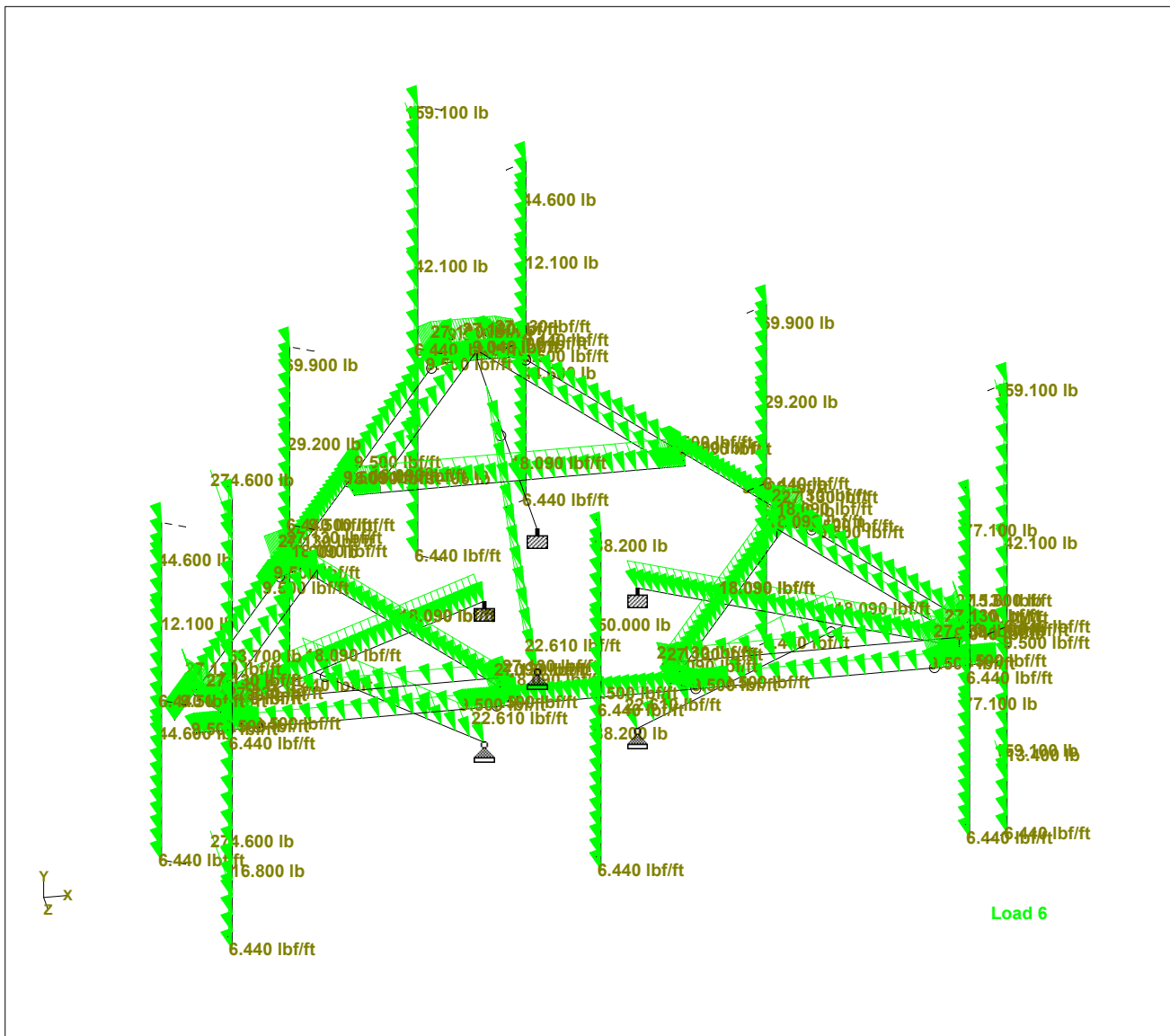
Date 31-Aug-20

Chd MM

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Whole Structure Loads 142.802lb:1ft 6 BACK WIND LOADS



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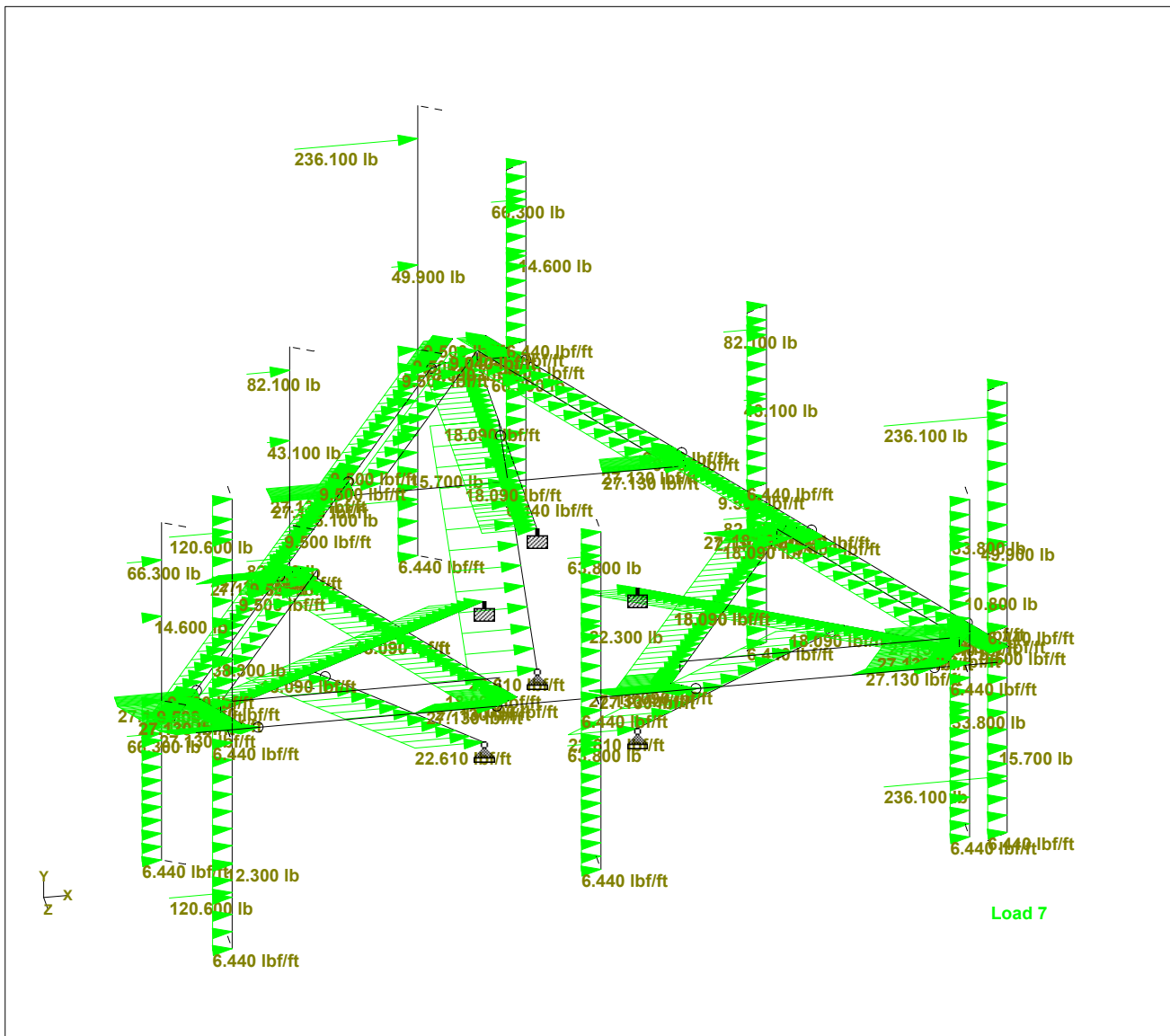
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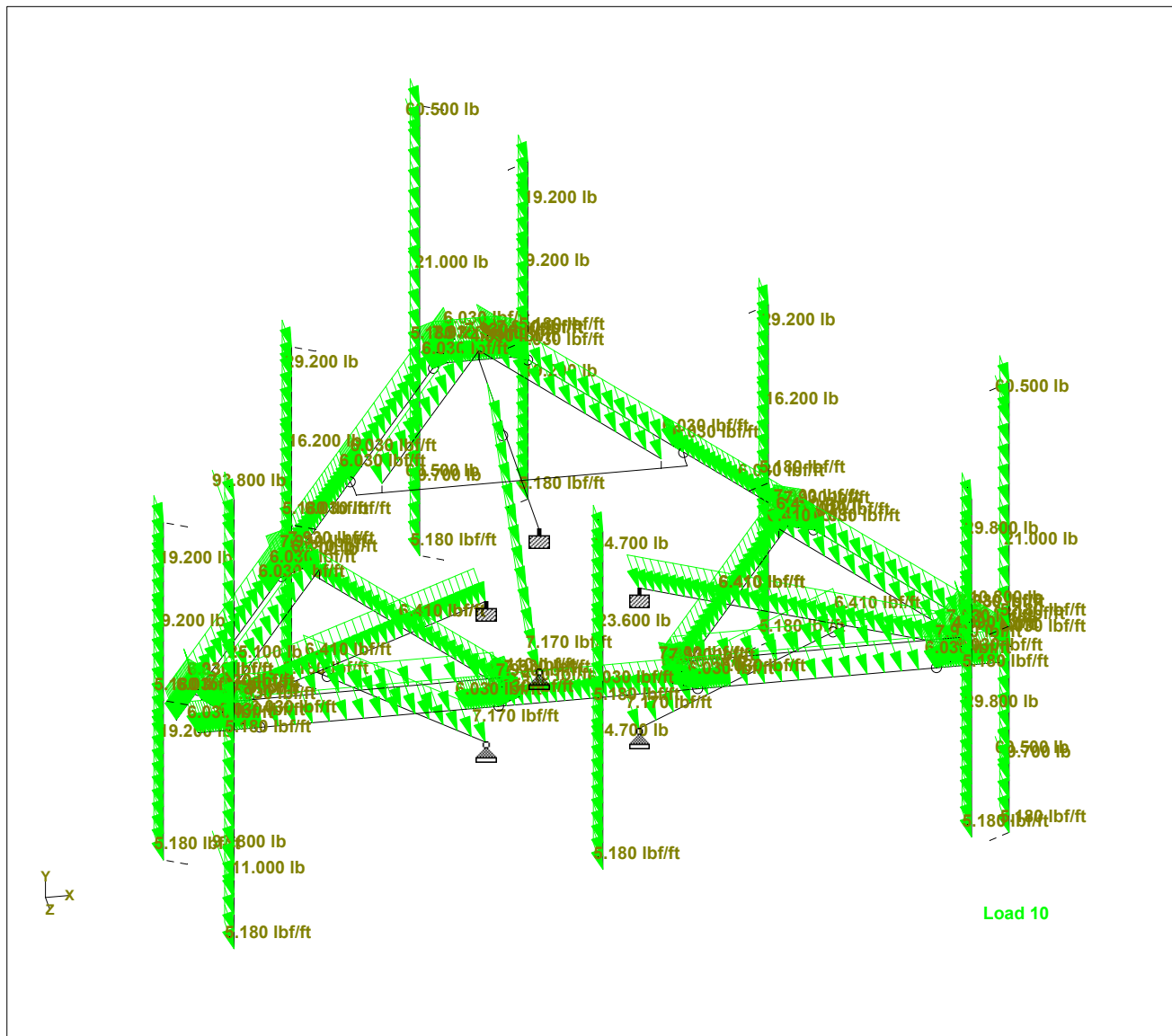
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Whole Structure Loads 48.7795lb:1ft 10 BACK ICED WIND LOADS



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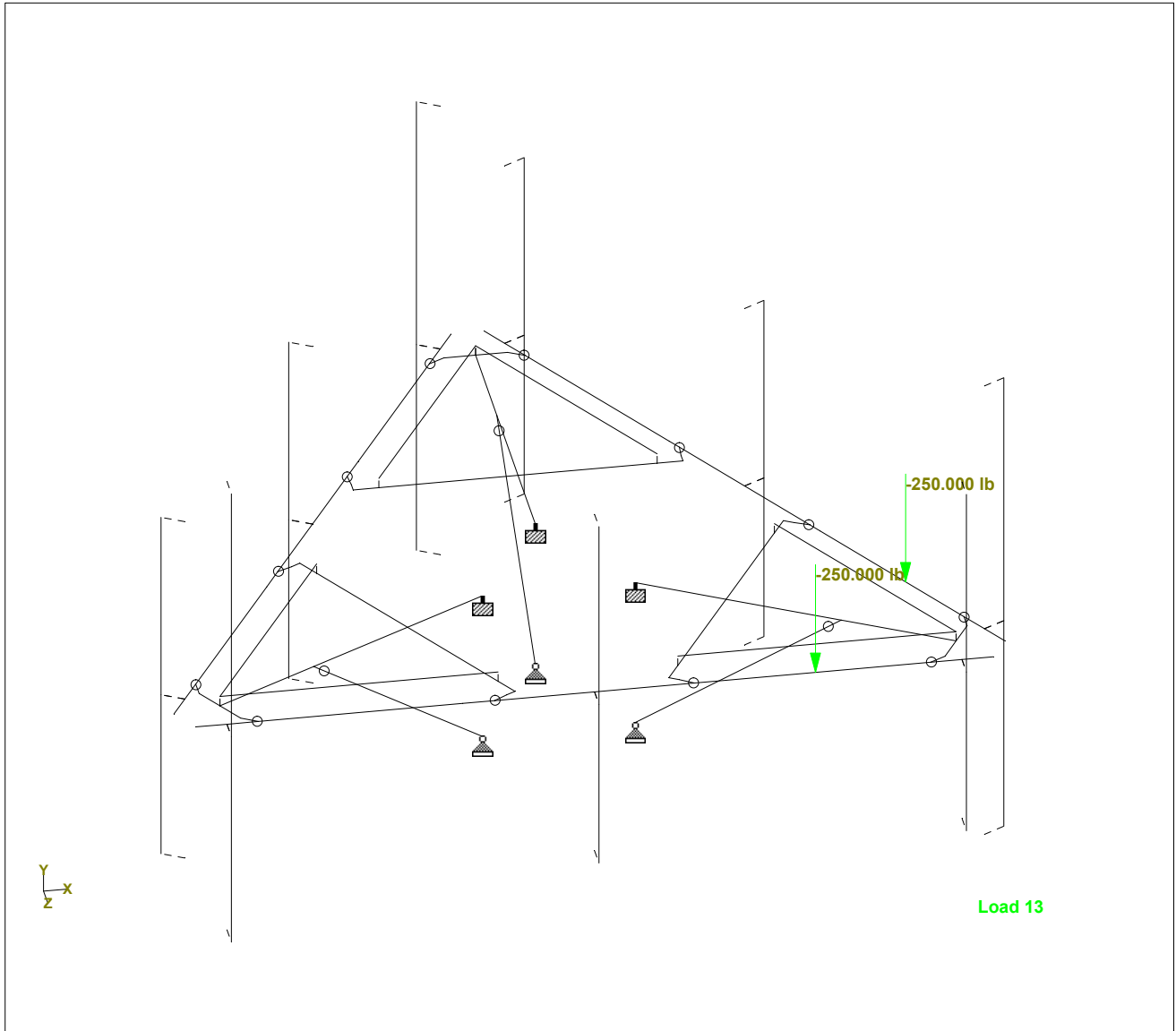
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Whole Structure Loads 130.009lb:1ft 13 MAN LOAD 1



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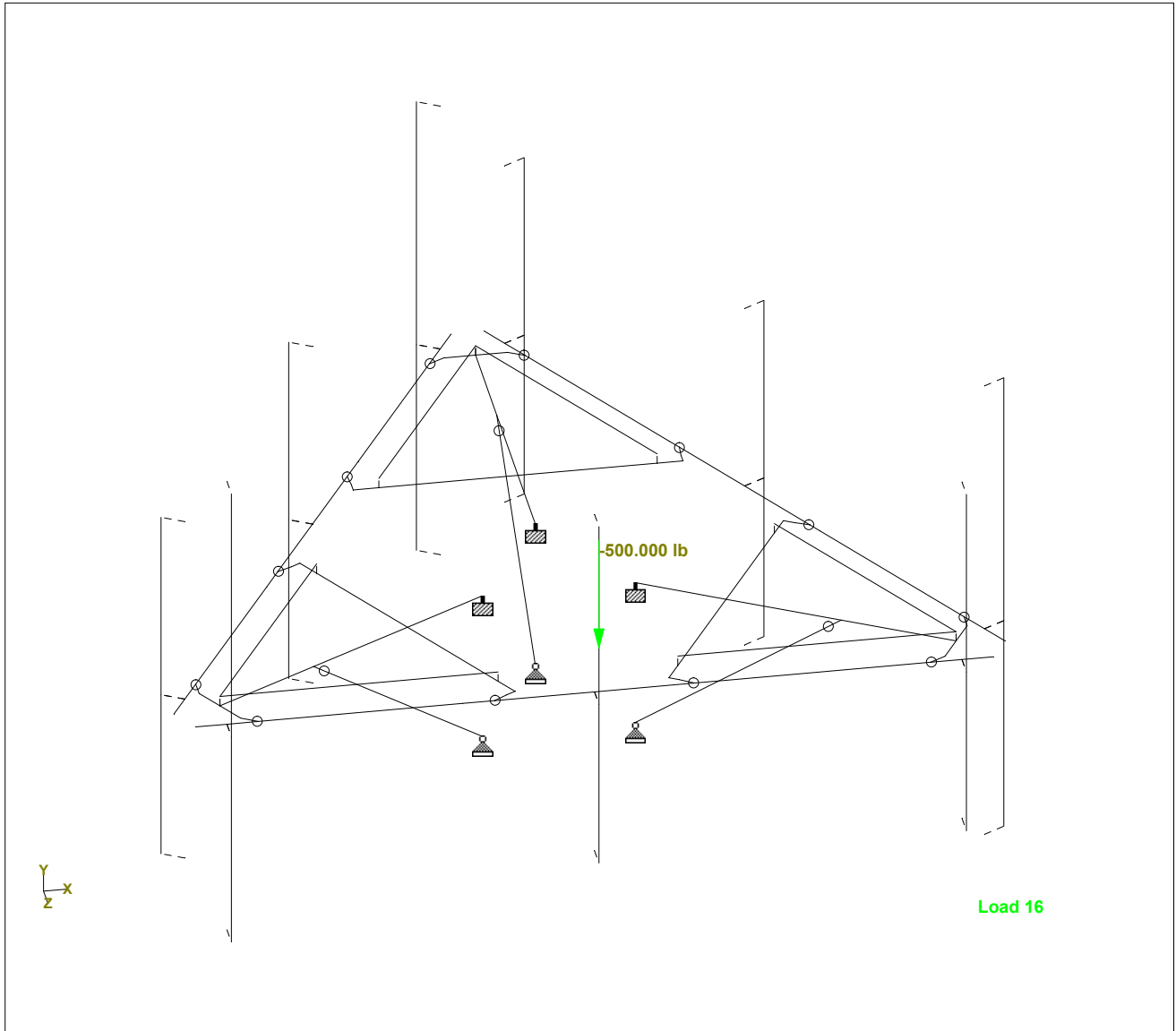
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Whole Structure Loads 260.019lb:1ft 16 MAN LM LOAD 2

APPENDIX 3 – SOURCE / REFERENCE DOCUMENTS

RAN Template: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
--	--

Section 1 - Site Information

Site ID: CTHA130A
Status: Draft
Version: 6
Project Type: Anchor
Approved: Not Approved
Approved By: Not Approved
Last Modified: 7/1/2020 10:40:42 AM
Last Modified By: Hansraj.Rana4@T-Mobile.com

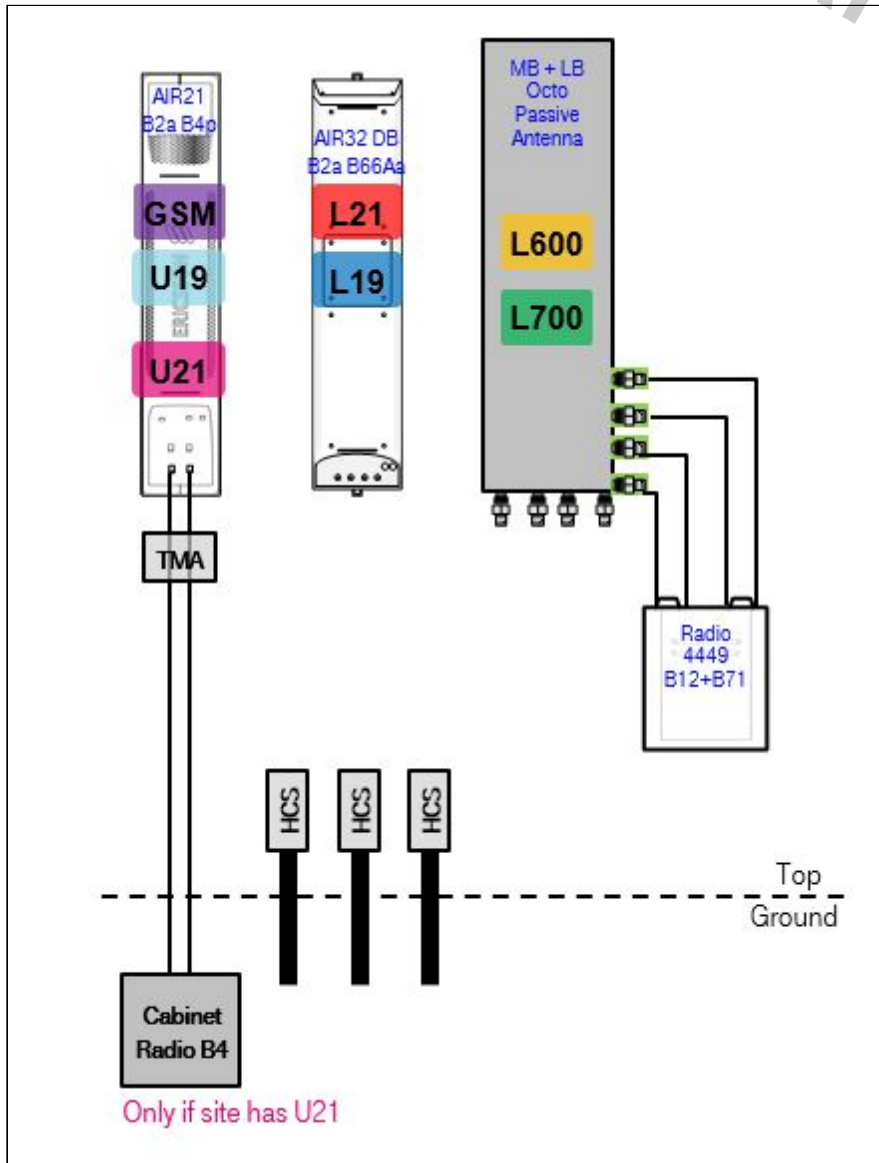
Site Name: CTHA130/SNET Tower_MP
Site Class: Monopole
Site Type: Structure Non Building
Plan Year: 2020
Market: CONNECTICUT CT
Vendor: Ericsson
Landlord: SNET

Latitude: 41.84778000
Longitude: -72.64526100
Address: 419 Broad Street
City, State: Windsor, CT
Region: NORTHEAST

RAN Template: 67D5A997DB Outdoor		AL Template: 67D5997DB_2xAIR+1OP (U21 Market)		
Sector Count: 3	Antenna Count: 9	Coax Line Count: 16	TMA Count: 3	RRU Count: 6

Section 2 - Existing Template Images

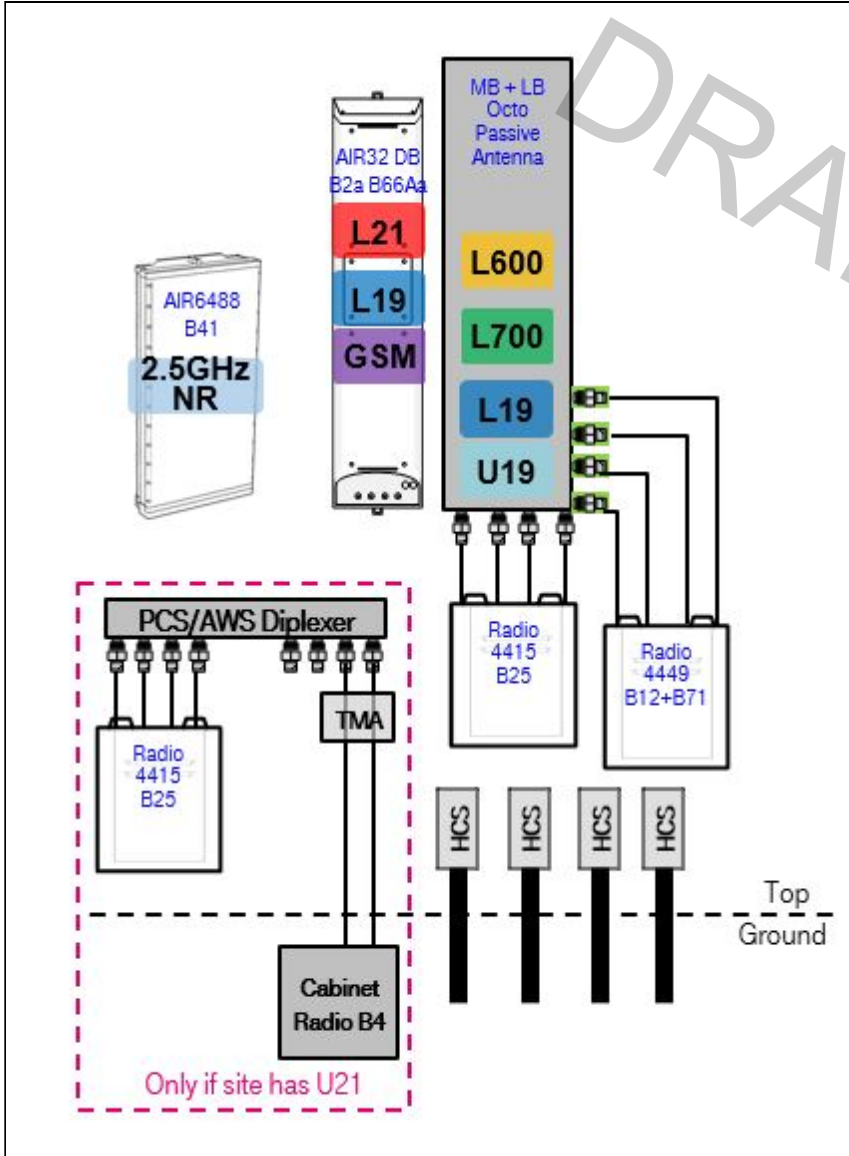
67D92DB_2xAIR+1OP.JPG



Notes:

Section 3 - Proposed Template Images

67D5997DB_2xAIR+1OP.JPG



Notes:

Section 4 - Siteplan Images

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RAN Template: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
--	--

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 6792DB Outdoor

Enclosure	1	2
Enclosure Type	RBS 6131	Ancillary Equipment (Ericsson)
Baseband	DUW30 DUW30 U2100 DUG20 G1900 BB 5216 L2100 L1900 L700 L600 BB 6630 N600	
Hybrid Cable System		Ericsson 9x18 HCS *Select Length* Ericsson 6x12 HCS *Select Length & AWG* Ericsson 6x12 HCS *Select AWG & Length*
Multiplexer	XMU	
Radio	RU22 (x 6) U2100	

Proposed RAN Equipment

Template: 67D5A997DB Outdoor

Enclosure	1	2	3
Enclosure Type	RBS 6131	Enclosure 6160	B160
Baseband	DUW30 U2100 DUG20 G1900 BB 6630 L700 L600 N600 BB 5216 L2100 L1900	BB 6648 N2500 BB 6630 L2500	
Hybrid Cable System	Ericsson 6x12 HCS *Select Length & AWG* Ericsson 6x12 HCS *Select AWG & Length*	Ericsson 6x12 HCS *Select Length & AWG* PSU 4813	
Multiplexer	XMU		
Radio	RU22 (x 6) U2100		

RAN Scope of Work:

- Remove Nortel cabinet.
- Add (1) Enclosure 6160.
- Add (1) Battery Cabinet B160.
- Add (1) iXRe Router to new Enclosure 6160.
- Add (1) BB6630 for L2500 to new Enclosure 6160.
- Add (1) BB6648 for N2500 to new Enclosure 6160.
- Add (1) PSU 4813 Power Booster
- Add handrail kit.
- Existing: (16) 7/8" coax lines & (2) 6x12 & (1) 9x18 HCS
- Existing (6) Coax lines will be used for U2100.
- Remove (1) 9x18 and Add (1) 6X12 HCS. Length of new HCS will match that of existing HCS.
- Keep (10) unconnected coaxial lines.

RAN Template: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
--	--

Section 6 - A&L Equipment

Existing Template: 67D92DB_2xAIR+1OP
Proposed Template: 67D5997DB_2xAIR+1OP (U21 Market)

Sector 1 (Existing) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1			2			3			
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)			RFS - APXVAARR24_43-U-NA20 (Octo)			
Azimuth	0			0			0			
M. Tilt	0			0			0			
Height	94			94			94			
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	G1900	U2100	L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600		
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt										
Cables		Generic Feeder Coax (x2) Coax Jumper (x2)					Coax Jumper (x2)	Coax Jumper (x2)		
TMA's		Generic Twin Style 1B - AWS (AtAntenna)								
Diplexers / Combiners										
Radio							Radio 4449 B71+B8 5 (At Antenna)			
Sector Equipment										

Unconnected Equipment:

Scope of Work:

RAN Template: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
--	--

Sector 1 (Proposed) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1			2				3		
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	0			0				0		
M. Tilt	0			0				0		
Height	94			94				94		
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	L2500 N2500	L2500 N2500	L2100	L2100	L1900 G1900	L1900 G1900	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt										
Cables	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) 7/8" Coax - 100 ft. (x2)
TMA's										Generic Twin Style 1B - AWS (AtAntenna)
Diplexers / Combiners									Commscope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)	SHARED Commscope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)
Radio							Radio 4449 B71+B8 5 (At Antenna)	SHARED Radio 4449 B71+B8 5 (At Antenna)	Radio 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna)
Sector Equipment										

Unconnected Equipment:

- Cable: 7/8" Coax - 100 ft.
- Cable: 7/8" Coax - 100 ft.
- Cable: 7/8" Coax - 100 ft.

Scope of Work:

Swap P1 AIR21-B2A/B4P antenna with (1) AIR6449 B41 for L2500/N2500.
 Move GSM to AIR32-DB antenna with L19-C1 in Mixed mode.
 Add (1) 8x4 diplexer Commscope - SDX1926Q-43 with P3 Octo antenna.
 Add (1) Radio 4415 B25 for L1900 2nd Carrier to P3 Octo antenna, and connect its ports to the four PCS input ports of the diplexer.
 Move U21 to P3 Octo antenna with existing (2) Coax lines and AWS TMA. Connect two coax lines/jumper from AWS TMA to the AWS input ports of the diplexer.
 U21 will be diplexed with L1900 C2 using 8x4 diplexer Commscope - SDX1926Q-43 on Octo antenna as shown in diagram.

Make sure to place metal caps on the unused ports of the diplexer.

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: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
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Sector 2 (Existing) view from behind											
Coverage Type	A - Outdoor Macro										
Antenna	1			2			3				
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)			RFS - APXVAARR24_43-U-NA20 (Octo)				
Azimuth	120			120			120				
M. Tilt	0			0			0				
Height	94			94			94				
Ports	P1	P2		P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	G1900	U2100		L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600		
Dark Tech.											
Restricted Tech.											
Decomm. Tech.											
E. Tilt											
Cables		Generic Feeder Coax (x2) Coax Jumper (x2)						Coax Jumper (x2)	Coax Jumper (x2)		
TMA's		Generic Twin Style 1B - AWS (AtAntenna)									
Diplexers / Combiners											
Radio								Radio 4449 B71+B8 5 (At Antenna)			
Sector Equipment											
Unconnected Equipment:											
Scope of Work:											

RAN Template: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
--	--

Sector 2 (Proposed) view from behind

Coverage Type	A - Outdoor Macro														
Antenna	1			2				3							
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)							
Azimuth	120			120				120							
M. Tilt	0			0				0							
Height	94			94				94							
Ports	P1		P2		P3	P4	P5	P6	P7	P8	P9	P10			
Active Tech.	L2500 N2500		L2500 N2500		L2100	L2100	L1900 G1900	L1900 G1900	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100			
Dark Tech.															
Restricted Tech.															
Decomm. Tech.															
E. Tilt															
Cables	Fiber Jumper		Fiber Jumper		Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) 7/8" Coax - 100 ft. (x2)			
TMA's												Generic Twin Style 1B - AWS (AtAntenna)			
Diplexers / Combiners												Commscope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)	SHARED Commscope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)		
Radio												Radio 4449 B71+B8 5 (At Antenna)	SHARED Radio 4449 B71+B8 5 (At Antenna)	Radio 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna)
Sector Equipment															

Unconnected Equipment:

- Cable: 7/8" Coax - 100 ft.
- Cable: 7/8" Coax - 100 ft.
- Cable: 7/8" Coax - 100 ft.

Scope of Work:

Swap P1 AIR21-B2A/B4P antenna with (1) AIR6449 B41 for L2500/N2500.

Move GSM to AIR32-DB antenna with L19-C1 in Mixed mode.

Add (1) 8x4 diplexer Commscope - SDX1926Q-43 with P3 Octo antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to P3 Octo antenna, and connect its ports to the four PCS input ports of the diplexer.

Move U21 to P3 Octo antenna with existing (2) Coax lines and AWS TMA. Connect two coax lines/jumper from AWS TMA to the AWS input ports of the diplexer.

U21 will be diplexed with L1900 C2 using 8x4 diplexer Commscope - SDX1926Q-43 on Octo antenna as shown in diagram.

Make sure to place metal caps on the unused ports of the diplexer.

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: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
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Sector 3 (Existing) view from behind											
Coverage Type	A - Outdoor Macro										
Antenna	1			2			3				
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)			RFS - APXVAARR24_43-U-NA20 (Octo)				
Azimuth	220			220			220				
M. Tilt	0			0			0				
Height	94			94			94				
Ports	P1	P2		P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	G1900	U2100		L2100	L2100	L1900	L1900	L700 L600 N600	L700 L600 N600		
Dark Tech.											
Restricted Tech.											
Decomm. Tech.											
E. Tilt											
Cables		Generic Feeder Coax (x2) Coax Jumper (x2)						Coax Jumper (x2)	Coax Jumper (x2)		
TMA's		Generic Twin Style 1B - AWS (AtAntenna)									
Diplexers / Combiners											
Radio								Radio 4449 B71+B8 5 (At Antenna)			
Sector Equipment											
Unconnected Equipment:											
Scope of Work:											

RAN Template: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
--	--

Sector 3 (Proposed) view from behind

Coverage Type	A - Outdoor Macro									
Antenna	1			2				3		
Antenna Model	Ericsson - AIR6449 B41 (Active Antenna - Massive MIMO)			Ericsson - AIR32 KRD901146-1_B66A_B2A (Octo)				RFS - APXVAARR24_43-U-NA20 (Octo)		
Azimuth	220			220				220		
M. Tilt	0			0				0		
Height	94			94				94		
Ports	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Active Tech.	L2500 N2500	L2500 N2500	L2100	L2100	L1900 G1900	L1900 G1900	L700 L600 N600	L700 L600 N600	L1900	L1900 U2100
Dark Tech.										
Restricted Tech.										
Decomm. Tech.										
E. Tilt										
Cables	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Fiber Jumper	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2)	Coax Jumper (x2) Fiber Jumper	Coax Jumper (x2) 7/8" Coax - 100 ft. (x2)
TMA's										Generic Twin Style 1B - AWS (AtAntenna)
Diplexers / Combiners									Commscope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)	SHARED Commscope - SDX192 6Q-43 (E14F0 5P86) (AtAntenna)
Radio							Radio 4449 B71+B8 5 (At Antenna)	SHARED Radio 4449 B71+B8 5 (At Antenna)	Radio 4415 B25 (At Antenna)	SHARED Radio 4415 B25 (At Antenna)
Sector Equipment										

Unconnected Equipment:

- Cable: 7/8" Coax - 100 ft.
- Cable: 7/8" Coax - 100 ft.
- Cable: 7/8" Coax - 100 ft.
- Cable: 7/8" Coax - 100 ft.

Scope of Work:

Swap P1 AIR21-B2A/B4P antenna with (1) AIR6449 B41 for L2500/N2500.

Move GSM to AIR32-DB antenna with L19-C1 in Mixed mode.

Add (1) 8x4 diplexer Commscope - SDX1926Q-43 with P3 Octo antenna.

Add (1) Radio 4415 B25 for L1900 2nd Carrier to P3 Octo antenna, and connect its ports to the four PCS input ports of the diplexer.

Move U21 to P3 Octo antenna with existing (2) Coax lines and AWS TMA. Connect two coax lines/jumper from AWS TMA to the AWS input ports of the diplexer.

U21 will be diplexed with L1900 C2 using 8x4 diplexer Commscope - SDX1926Q-43 on Octo antenna as shown in diagram.

Make sure to place metal caps on the unused ports of the diplexer.

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: 67D5A997DB Outdoor	A&L Template: 67D5997DB_2xAIR+1OP (U21 Market)
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Section 7 - Power Systems Equipment

Existing Power Systems Equipment

----- This section is intentionally blank. -----

Proposed Power Systems Equipment

Exhibit F

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

T-Mobile Existing Facility

Site ID: CTHA130A

CTHA130/Snet Tower_MP
419 Broad Street
Windsor, Connecticut 06095

February 22, 2021

EBI Project Number: 6221000629

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	36.15%

February 22, 2021

T-Mobile

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

Emissions Analysis for Site: CTHA130A - CTHA130/Snet Tower_MP

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **419 Broad Street** in **Windsor, 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 419 Broad Street in Windsor, 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 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) 4 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 UMTS channels (AWS Band - 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

- 7) 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.
- 8) 1 LTE channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 9) 1 NR channel (BRS Band - 2500 MHz) was considered for each sector of the proposed installation. This Channel has a transmit power of 120 Watts.
- 10) 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.
- 11) 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.
- 12) The antennas used in this modeling are the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector A, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the Ericsson AIR 6449 for the 2500 MHz / 2500 MHz channel(s), the Ericsson AIR 32 for the 1900 MHz / 1900 MHz / 2100 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 600 MHz / 700 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.

- 13) The antenna mounting height centerline of the proposed antennas is 94 feet above ground level (AGL).
- 14) 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.
- 15) 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	Frequency Bands:	2500 MHz / 2500 MHz	Frequency Bands:	2500 MHz / 2500 MHz
Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd	Gain:	22.05 dBd / 22.05 dBd
Height (AGL):	94 feet	Height (AGL):	94 feet	Height (AGL):	94 feet
Channel Count:	2	Channel Count:	2	Channel Count:	2
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	38,477.89	ERP (W):	38,477.89	ERP (W):	38,477.89
Antenna A1 MPE %:	15.66%	Antenna B1 MPE %:	15.66%	Antenna C1 MPE %:	15.66%
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32	Make / Model:	Ericsson AIR 32
Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	1900 MHz / 1900 MHz / 2100 MHz
Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd	Gain:	15.35 dBd / 15.35 dBd / 15.85 dBd
Height (AGL):	94 feet	Height (AGL):	94 feet	Height (AGL):	94 feet
Channel Count:	8	Channel Count:	8	Channel Count:	8
Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts	Total TX Power (W):	360 Watts
ERP (W):	12,841.53	ERP (W):	12,841.53	ERP (W):	12,841.53
Antenna A2 MPE %:	5.22%	Antenna B2 MPE %:	5.22%	Antenna C2 MPE %:	5.22%
Antenna #:	3	Antenna #:	3	Antenna #:	3
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 / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 600 MHz / 700 MHz / 1900 MHz / 2100 MHz
Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 12.95 dBd / 13.35 dBd / 15.65 dBd / 16.35 dBd
Height (AGL):	94 feet	Height (AGL):	94 feet	Height (AGL):	94 feet
Channel Count:	9	Channel Count:	9	Channel Count:	9
Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts	Total TX Power (W):	380 Watts
ERP (W):	11,055.53	ERP (W):	11,055.53	ERP (W):	11,055.53
Antenna A3 MPE %:	6.79%	Antenna B3 MPE %:	6.79%	Antenna C3 MPE %:	6.79%

Site Composite MPE %	
Carrier	MPE %
T-Mobile (Max at Sector A):	27.67%
AT&T	5.3%
Clearwire	0.55%
Metro PCS	2.63%
Site Total MPE % :	36.15%

T-Mobile MPE % Per Sector	
T-Mobile Sector A Total:	27.67%
T-Mobile Sector B Total:	27.67%
T-Mobile Sector C Total:	27.67%
Site Total MPE % :	36.15%

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	1	19238.94	94.0	78.28	2500 MHz LTE	1000	7.83%
T-Mobile 2500 MHz NR	1	19238.94	94.0	78.28	2500 MHz NR	1000	7.83%
T-Mobile 1900 MHz GSM	4	1028.30	94.0	16.74	1900 MHz GSM	1000	1.67%
T-Mobile 1900 MHz LTE	2	2056.61	94.0	16.74	1900 MHz LTE	1000	1.67%
T-Mobile 2100 MHz LTE	2	2307.55	94.0	18.78	2100 MHz LTE	1000	1.88%
T-Mobile 600 MHz LTE	2	591.73	94.0	4.82	600 MHz LTE	400	1.20%
T-Mobile 600 MHz NR	1	1577.94	94.0	6.42	600 MHz NR	400	1.61%
T-Mobile 700 MHz LTE	2	648.82	94.0	5.28	700 MHz LTE	467	1.13%
T-Mobile 1900 MHz LTE	2	2203.69	94.0	17.93	1900 MHz LTE	1000	1.79%
T-Mobile 2100 MHz UMTS	2	1294.56	94.0	10.53	2100 MHz UMTS	1000	1.05%
						Total:	27.67%

• 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.

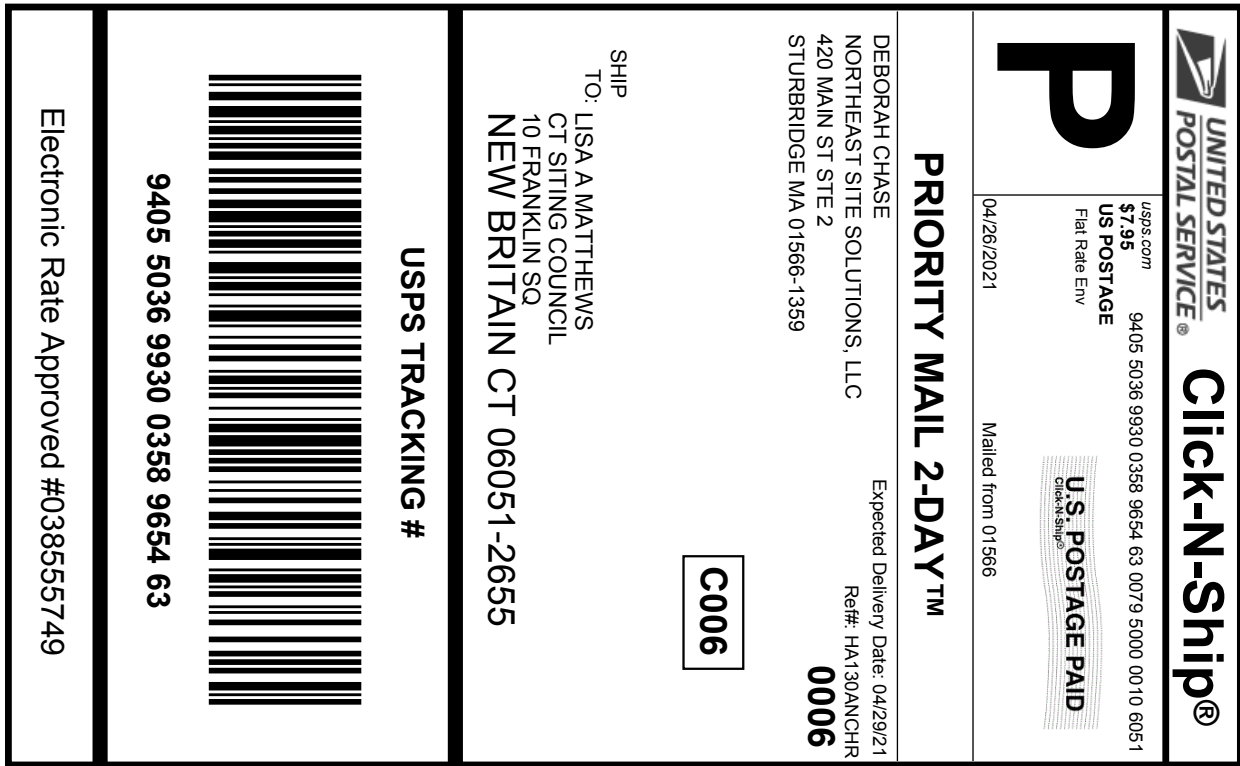
The anticipated maximum composite contributions from the T-Mobile facility as well as the site composite emissions value with regards to compliance with FCC's allowable limits for general population exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector A:	27.67%
Sector B:	27.67%
Sector C:	27.67%
T-Mobile Maximum MPE % (Sector A):	27.67%
Site Total:	36.15%
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **36.15%** 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.

Exhibit G



Cut on dotted line.

Instructions

- Each Click-N-Ship® label is unique. Labels are to be used as printed and used only once. DO NOT PHOTO COPY OR ALTER LABEL.
- Place your label so it does not wrap around the edge of the package.
- Adhere your label to the package. A self-adhesive label is recommended. If tape or glue is used, DO NOT TAPE OVER BARCODE. Be sure all edges are secure.
- To mail your package with PC Postage®, you may schedule a Package Pickup online, hand to your letter carrier, take to a Post Office™, or drop in a USPS collection box.
- Mail your package on the "Ship Date" you selected when creating this label.

Click-N-Ship® Label Record

USPS TRACKING # :	
9405 5036 9930 0358 9654 63	
Trans. #:	531499553
Print Date:	04/23/2021
Ship Date:	04/26/2021
Expected Delivery Date:	04/29/2021
Priority Mail® Postage:	\$7.95
Total:	\$7.95
From:	DEBORAH CHASE NORTHEAST SITE SOLUTIONS, LLC 420 MAIN ST STE 2 STURBRIDGE MA 01566-1359
	Reff#: HA130ANCHR
To:	LISA A MATTHEWS CT SITING COUNCIL 10 FRANKLIN SQ NEW BRITAIN CT 06051-2655
<small>* Retail Pricing Priority Mail rates apply. There is no fee for USPS Tracking® service on Priority Mail service with use of this electronic rate shipping label. Refunds for unused postage paid labels can be requested online 30 days from the print date.</small>	



Thank you for shipping with the United States Postal Service!
Check the status of your shipment on the USPS Tracking® page at usps.com

Deborah Chase

From: Deborah Chase
Sent: Friday, April 23, 2021 5:30 PM
To: 'townmanager@townofwindsorct.com'
Subject: 419 BROAD STREET WINDSOR CT 06095 T-MOBILE EM APPLICATION (CTHA130A_ANCHOR)
Attachments: 419 BROAD STREET WINDSOR CT 06095 T-MOBILE EM APPLICATION (CTHA130A-Anchor).pdf

Dear Mayor Trinks,

Attached please find T-Mobile's exempt modification application that is being submitted to the

Connecticut Siting Council today, April 23,2021

In light of the present circumstances with Covid-19, the Council has advised that electronic notification of this filing is acceptable.

If you could kindly confirm receipt.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



🌱 Save a tree. Refuse. Reduce. Reuse. Recycle.

Deborah Chase

From: Deborah Chase
Sent: Friday, April 23, 2021 5:32 PM
To: 'planning@townofwindsorct.com'
Subject: 419 BROAD STREET WINDSOR CT 06095 T-MOBILE EM APPLICATION (CTHA130A_ANCHOR)
Attachments: 419 BROAD STREET WINDSOR CT 06095 T-MOBILE EM APPLICATION (CTHA130A-Anchor).pdf

Dear Mr. Barz,

Attached please find T-Mobile's exempt modification application that is being submitted to the

Connecticut Siting Council today, April 23,2021

In light of the present circumstances with Covid-19, the Council has advised that electronic notification of this filing is acceptable.

If you could kindly confirm receipt.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



🌱 Save a tree. Refuse. Reduce. Reuse. Recycle.

Deborah Chase

From: Deborah Chase
Sent: Friday, April 23, 2021 5:34 PM
To: 'michael.culbert@everestinfrastructure.com'
Subject: 419 BROAD STREET WINDSOR CT 06095 T-MOBILE EM APPLICATION (CTHA130A_ANCHOR)
Attachments: 419 BROAD STREET WINDSOR CT 06095 T-MOBILE EM APPLICATION (CTHA130A-Anchor).pdf

Dear Ms. Culbert,

Attached please find T-Mobile's exempt modification application that is being submitted to the

Connecticut Siting Council today, April 23,2021

In light of the present circumstances with Covid-19, the Council has advised that electronic notification of this filing is acceptable.

If you could kindly confirm receipt.

Thank you very much

Deborah Chase

Senior Project Coordinator & Analyst

Mobile: 860-490-8839



🌱 Save a tree. Refuse. Reduce. Reuse. Recycle.