Filed by:
G. Scott Shepherd, Site Development Specialist II - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - GShepherd@sbasite.com

December 11, 2020

Melanie A. Bachman
Executive Director
Connecticut Siting Council
Ten Franklin Square
New Britain, CT 06051

RE: Notice of Exempt Modification
17 Cottage Road, Madison, CT 06443
Latitude: 41.275916
Longitude: -72.561444
T-Mobile Site #: CT11443E_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 117-foot level of the existing 130-foot Monopole Tower at 17 Cottage Road, Madison, CT. The 130-foot tower is owned by SBA Towers II, LLC. The property is owned by Paul Stonehart. T-Mobile now intends to install three (3) new 600/700 MHz antennas.

The new antennas support 5G services and would be installed at the 117-foot level of the tower.

Please note: Per the Connecticut Siting Council Website: CSC COVID 19 Guidelines. *In order to prevent the spread of Coronavirus and protect the health and safety of our members and staff, as of March 18, 2020, the Connecticut Siting Council shall convert to full remote operations until March 30, 2020. Please be advised that during this time period, all hard copy filing requirements will be waived in lieu of an electronic filing. Please also be advised that the March 26, 2020 regular meeting shall be held via teleconference. The Council's website is not equipped with an on-line filing fee receipt service. Therefore, filing fees and/or direct cost charges associated with matters received electronically during the above-mentioned time period will be directly invoiced at a later date*

Planned Modifications:

TOWER

Remove:
- N/A

Remove and Replace:
- N/A

Install New:

- (3) RFS APXVAARR24_43-U-NA20 600/700 MHz antennas
- (3) Ericsson Radio 4449 B71+B12 – RRUs
- Platform w/Handrail Kit and Mods
- (3) 1-5/8" Fiber

Existing Equipment to Remain:

- (3) Ericsson Air 21 B2A/B4P - antennas
- (3) Ericsson Air 21 B4P/B2P - antennas
- (3) Ericsson KRY 112 144 – TMAs
- 12.5" Low Profile Platform
- (9) 1-5/8" Coax

Entitlements:

- (3) 1-5/8" Coax
- (1) 1-5/8" Fiber

GROUND

Install New:

- Equipment inside existing RBS6131 Equipment Cabinet

This facility was approved by the Council on September 25, 2007 under Docket 333. The tower was to be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile and other entities, both public and private, but not to exceed a height of 130 feet above ground level. The height at the top of the antennas was also not to exceed 130 feet above ground level. The tower and foundation were to be designed to accommodate a future 20-foot extension for a total tower height of 150 feet above ground level. The Certificate Holder was to provide a recalculated report of electromagnetic radio frequency power density if and when circumstances in operation caused a change in power density above the levels calculated. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of the facility, it was to be brought into compliance with such standards. The Certificate Holder was to permit public or private entities to share space on the proposed tower for fair consideration, or to provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing. The Certificate Holder was to provide reasonable space on the tower for no compensation for any Town of Madison public safety services (police, fire and medical services), provided such use could be accommodated and was compatible with the structural integrity of the tower. And any nonfunctioning antenna, and associated antenna mounting equipment, was to be removed within 60 days of the date the antenna ceased to function. There were no further post construction stipulations set. Please see attached.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16.50j-72(b)(2). In accordance with R.C.S.A. § 16.50j-73, a copy of this letter is being sent to the Town of Madison's First Selectman, Peggy Lyons, and Town Planner, David Anderson, as well as to the property owner. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

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 modification 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 modification 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 telecommunication facility constitute an exempt modifications under R.C.S.A. § 16-50j-72(b)(2).

Sincerely,

Site Development Specialist II
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3804 + T
508.366.2610 + F
508.868.6000 + C
GShepherd@sbasite.com

Attachments
cc: Peggy Lyons, First Selectman / with attachments
Town of Madison, 8 Campus Drive, Madison, CT 06443
David Anderson, Town Planner / with attachments
Town of Madison, 8 Campus Drive, Madison, CT 06443
Paul Stonehart / with attachments
17 Cottage Rd., Madison, CT 06443

EXHIBIT LIST

Exhibit 1	Check Copy	X To Be Invoiced at a later date per Covid 19 Guidelines
Exhibit 2	Notification Receipts	X
Exhibit 3	Property Card	X
Exhibit 4	Property Map	X
Exhibit 5	Original Zoning Approval	CSC 9/25/07
Exhibit 6	Construction Drawings	Chappell dated 12/1/20
Exhibit 7	Modification Drawings	Geo Structural 8/5/19
Exhibit 8	Structural Analysis	TES 10/28/20
Exhibit 9	Mount Analysis	GEO Structural 8/2/19
Exhibit 10	EME Report	Transcom dated 6/17/19

EXHIBIT 1

Normally, Exhibit 1 would contain a copy of the check for the filing fee.

EXHIBIT 2

After printing this label:
1. Use the 'Print' button on this page to print your label to your laser or inkjet printer.
2. Fold the printed page along the horizontal line.
3. Place label in shipping pouch and affix it to your shipment so that the barcode portion of the label can be read and scanned.

Warning: Use only the printed original label for shipping. Using a photocopy of this label for shipping purposes is fraudulent and could result in additional billing charges, along with the cancellation of your FedEx account number.
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com.FedEx will not be responsible for any claim in excess of $100 per package, whether the result of loss, damage, delay, non-delivery,misdelivery,or misinformation, unless you declare a higher value, pay an additional charge, document your actual loss and file a timely claim.Limitations found in the current FedEx Service Guide apply. Your right to recover from FedEx for any loss, including intrinsic value of the package, loss of sales, income interest, profit, attorney's fees, costs, and other forms of damage whether direct, incidental,consequential, or special is limited to the greater of $100 or the authorized declared value. Recovery cannot exceed actual documented loss.Maximum for items of extraordinary value is $1,000, e.g. jewelry, precious metals, negotiable instruments and other items listed in our ServiceGuide. Written claims must be filed within strict time limits, see current FedEx Service Guide.

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EXHIBIT 3

17 COTTAGE RD

Location	17 COTTAGE RD	**MBLU**	30/ 34/ / /
Acct#	00167700	**Owner**	STONEHART PAUL
Assessment	$414,900	**Appraisal**	$592,700
PID	1691	**Building Count**	2

Current Value

Appraisal					
Valuation Year	**Building**	**Extra Features**	**Outbuildings**	**Land**	**Total**
2018	$282,800	$0	$1,800	$308,100	$592,700
Assessment					
Valuation Year	**Building**	**Extra Features**	**Outbuildings**	**Land**	**Total**
2018	$197,900	$0	$1,300	$215,700	$414,900

Parcel Addreses

Additional Addresses		
Address	**City, State Zip**	**Type**
17 COTTAGE RD		Primary

Owner of Record

Owner	STONEHART PAUL	**Sale Price**	$0
Co-Owner		**Book & Page**	239/ 105
Care Of		**Sale Date**	

Ownership History

Ownership History			
Owner	**Sale Price**	**Book & Page**	**Sale Date**
STONEHART PAUL	$0	239/ 105	

Building Information

Building 1 : Section 1

Year Built: 1984
Living Area: 2,221

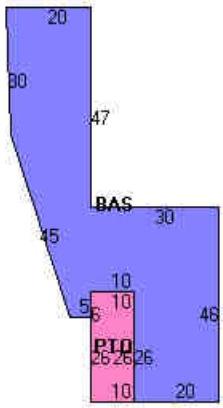
Building Attributes

Field	Description
STYLE	Office Bldg
MODEL	Commercial
Stories:	1
Exterior Wall 1	Wood on Sheath
Exterior Wall 2	
Roof Structure	Gable/Hip
Roof Cover	Asphalt Shngl.
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Carpet
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	Central
Bldg Use	Office Building
Total Rooms	
Total Bedrms	00
Total Baths	0
Fireplace	
Xtra Fireplaces	
Heat/AC	None
Frame Type	Wood Frame
Baths/Plumbing	Average
Ceiling/Wall	Ceil and Wall
Rooms/Prtns	Average
Wall Height	8

Building Photo

(http://images.vgsi.com/photos/MadisonCTPhotos//\01\00\90/70

Building Layout



(http://images.vgsi.com/photos/MadisonCTPhotos//Sketches/169

Building Sub-Areas (sq ft)			
Code	Description	Gross Area	Living Area
BAS	First Floor	2,221	2,221
PTO	Patio	260	0
		2,481	2,221

Building 2 : Section 1

Year Built: 1979
Living Area: 1,038

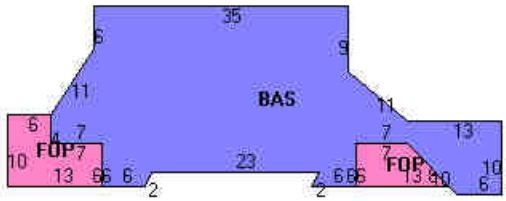
Building Attributes : Bldg 2 of 2	
Field	Description
STYLE	Office Bldg
MODEL	Commercial
Stories:	1
Exterior Wall 1	Wood on Sheath
Exterior Wall 2	

Roof Structure	Shed
Roof Cover	Asphalt Shngl.
Interior Wall 1	Drywall
Interior Wall 2	
Interior Floor 1	Concr-Finished
Interior Floor 2	
Heating Fuel	Oil
Heating Type	Forced Air-Duc
AC Type	None
Bldg Use	Office Building
Total Rooms	
Total Bedrms	00
Total Baths	0
Fireplace	
Xtra Fireplaces	
Heat/AC	None
Frame Type	Wood Frame
Baths/Plumbing	Average
Ceiling/Wall	Ceil and Wall
Rooms/Prtns	LIght
Wall Height	8

Building Photo

(http://images.vgsi.com/photos/MadisonCTPhotos//\01\00\90/71

Building Layout



(http://images.vgsi.com/photos/MadisonCTPhotos//Sketches/169

Building Sub-Areas (sq ft)			
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	1,038	1,038
FOP	Open Porch	162	0
		1,200	1,038

Extra Features

Extra Features
No Data for Extra Features

Land

Land Use

Use Code 3400
Description Office Building

Land Line Valuation

Size (Acres) 1.77

Zone C

Outbuildings

Outbuildings						
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
PAV1	Paving Asphalt			2500 S.F.	$1,800	1

EXHIBIT 4

Google Maps 17 Cottage Rd

Map data ©2019 100 ft

17 Cottage Rd

Madison, CT 06443

Directions Save Nearby Send to your phone Share

EXHIBIT 5

DOCKET NO. 333 – National Grid Wireless, Inc. (now Lightower) application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at 17 Cottage Road, Madison, Connecticut.	} } }	Connecticut Siting Council September 25, 2007

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate, either alone or cumulatively with other effects, when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application, and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Lightower, hereinafter referred to as the Certificate Holder, for a telecommunications facility at 17 Cottage Road, Madison, Connecticut.

The facility shall be constructed, operated, and maintained substantially as specified in the Council's record in this matter, and subject to the following conditions:

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of T-Mobile and other entities, both public and private, but such tower shall not exceed a height of 130 feet above ground level. The height at the top of the antennas shall not exceed 130 feet above ground level. The monopole shall be designed with a yield point to minimize the tower setback radius.

2. The tower and foundation shall be designed to accommodate a future 20-foot extension for a total tower height of 150 feet above ground level.

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

4. The Certificate Holder shall, prior to the commencement of operation, provide the Council worst-case modeling of electromagnetic radio frequency power density of all proposed entities' antennas at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin No. 65, August 1997. The Certificate Holder shall ensure a recalculated report of electromagnetic radio frequency power density is submitted to the Council if and when circumstances in operation cause a change in power density above the levels calculated and provided pursuant to this Decision and Order.

5. Upon the establishment of any new State or federal radio frequency standards applicable to frequencies of this facility, the facility granted herein shall be brought into compliance with such standards.

6. The Certificate Holder shall permit public or private entities to share space on the proposed tower for fair consideration, or shall provide any requesting entity with specific legal, technical, environmental, or economic reasons precluding such tower sharing.

7. The Certificate Holder shall provide reasonable space on the tower for no compensation for any Town of Madison public safety services (police, fire and medical services), provided such use can be accommodated and is compatible with the structural integrity of the tower.

8. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed and providing wireless services within eighteen months from the date of the mailing of the Council's Findings of Fact, Opinion, and Decision and Order (collectively called "Final Decision"), this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made. The time between the filing and resolution of any appeals of the Council's Final Decision shall not be counted in calculating this deadline.

9. Any request for extension of the time period referred to in Condition 7 shall be filed with the Council not later than 60 days prior to the expiration date of this Certificate and shall be served on all parties and intervenors, as listed in the service list, and the Town of Madison. Any proposed modifications to this Decision and Order shall likewise be so served.

10. If the facility ceases to provide wireless services for a period of six consecutive months, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

11. The Certificate Holder shall remove any nonfunctioning antenna, and associated antenna mounting equipment, within 60 days of the date the antenna ceased to function.

12. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of site construction activities. In addition, the Certificate Holder shall provide the Council with written notice of the completion of site construction and the commencement of site operation.

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

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

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
Lightower (formerly National Grid Wireless, Inc.)	Lucia Chiocchio, Esq. Cuddy & Feder, LLP 445 Hamilton Avenue, 14th Floor White Plains, NY 10601
Intervenor	**Its Representative**
Omnipoint Communications, Inc., a subsidiary of T-Mobile USA, Inc.	Julie D. Kohler, Esq. Carrie L. Larson, Esq. Cohen and Wolf, P.C. 1115 Broad Street Bridgeport, CT 06604

EXHIBIT 6

CT443/GRIDCOM-STONEHART

APPROVALS

PROJECT MANAGER:	DATE:	ZONING/SITE ACQ.:	DATE:
CONSTRUCTION:	DATE:	OPERATIONS:	DATE:
RF ENGINEERING:	DATE:	TOWER OWNER:	DATE:

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS BY CERTIFIED CLIMBER
SECTOR B:	ACCESS BY CERTIFIED CLIMBER
SECTOR C:	ACCESS BY CERTIFIED CLIMBER
SECTOR D:	ACCESS BY CERTIFIED CLIMBER
GPS/LMU:	UNRESTRICTED
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

17 COTTAGE ROAD
MADISON, CT 06443
NEW HAVEN COUNTY

SITE NO.: CT11443E

SITE TYPE: 130'± MONOPOLE

RF DESIGN GUIDELINE: 67D02C OUTDOOR

SITE NOTES

1. THIS IS AN UNMANNED AND RESTRICTED ACCESS TELECOMMUNICATION FACILITY, AND IS NOT FOR HUMAN HABITATION. IT WILL BE USED FOR THE TRANSMISSION OF RADIO SIGNAL FOR THE PURPOSE OF PROVIDING PUBLIC CELLULAR SERVICE.
   - ADA COMPLIANCE NOT REQUIRED.
   - POTABLE WATER OR SANITARY SERVICE IS NOT REQUIRED.
   - NO OUTDOOR STORAGE OR ANY SOLID WASTE RECEPTACLES REQUIRED.
2. CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, AND CONDITIONS ON 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 PLACE THE RESPONSIBILITY ON THE CONTRACTOR TO CORRECT THE DISCREPANCIES AT THE CONTRACTOR'S EXPENSE.
3. NEW CONSTRUCTION WILL CONFORM TO ALL APPLICABLE CODES AND ORDINANCES.
   - BUILDING CODE: 2018 CONNECTICUT STATE BUILDING CODE
   - ELECTRICAL CODE: 2017 NATIONAL ELECTRICAL CODE
   - STRUCTURAL CODE: TIA/EIA-222-G STRUCTURAL STANDARDS FOR ANTENNA SUPPORTING STRUCTURES AND ANTENNAS.

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 HAVE 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 OMNIPOINT REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
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 CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. 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.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
15. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE 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 LESSEE/LICENSEE REPRESENTATIVE.
16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK.

AT LEAST 72 HOURS PRIOR TO DIGGING, THE CONTRACTOR IS REQUIRED TO CALL DIG SAFE AT 811

VICINITY MAP

SCALE: 1" = 1000'-0"

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE PROJECT OWNER'S REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SHEET INDEX

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SPECIAL ZONING NOTE:
BASED ON INFORMATION PROVIDED BY T-MOBILE REGULATORY COMPLIANCE PROFESSIONALS AND LEGAL COUNSEL, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS CONSIDERED AN ELIGIBLE FACILITY UNDER THE MIDDLE CLASS TAX RELIEF AND JOB CREATION ACT OF 2012, 47 USC 1455(A), SECTION 6409(A), AND IS SUBJECT TO AN ELIGIBLE FACILITY REQUEST, EXPEDITED REVIEW, AND LIMITED/PARTIAL ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW, OR ADMINISTRATIVE REVIEW).

PROJECT SUMMARY

SITE NUMBER:	CT11443E
SBA SITE NUMBER:	CT13615-A
SBA SITE NAME:	MADISON 7, CT
SITE ADDRESS:	17 COTTAGE ROAD MADISON, CT 06443
PROPERTY OWNER:	STONEHART, PAUL 17 COTTAGE STREET MADISON, CT 06443
TOWER OWNER:	SBA TOWERS II, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	NEW HAVEN COUNTY
ZONING DISTRICT:	C (COMMERCIAL)
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	130'±
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.275831° N41°16'32.99" LONGITUDE W.72.558890° W72°33'32.00"

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
(508) 251-0720

CHAPPELL ENGINEERING ASSOCIATES, LLC
Civil ·Structural ·Land Surveying
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MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT
CLEMENT J. SAMEK
No. 26876
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/01/20	ISSUED FOR CONSTRUCTION	JRV
0	05/31/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11443E

SITE ADDRESS:
17 COTTAGE ROAD
MADISON, CT 06443

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.086

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR – T–MOBILE
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T–MOBILE
   OEM – ORIGINAL EQUIPMENT MANUFACTURER

2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.

3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK.

4. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL, STATE AND FEDERAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.

5. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.

6. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.

7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS UNLESS SPECIFICALLY STATED OTHERWISE.

8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION FOR APPROVAL BY THE CONTRACTOR.

9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER, T1 CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWING. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY. SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR AND/OR LANDLORD PRIOR TO CONSTRUCTION.

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY.

12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION AND RETURN DISTURBED AREAS TO ORIGINAL CONDITIONS.

13. THE SUBCONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE SUBCONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.

14. SUBCONTRACTOR SHALL NOTIFY CHAPPELL ENGINEERING ASSOCIATES, LLC 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING TRENCHES, SEALING ROOF AND WALL PENETRATIONS AND POST DOWNS, FINISHING NEW WALLS OR FINAL ELECTRICAL CONNECTIONS FOR ENGINEERING REVIEW.

15. CONSTRUCTION SHALL COMPLY WITH ALL T–MOBILE STANDARDS AND SPECIFICATIONS.

16. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

17. THE EXISTING CELL SITES ARE IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.

18. IF THE EXISTING CELL SITE IS ACTIVE, ALL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION. EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.

SITE WORK GENERAL NOTES:

1. THE SUBCONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

2. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES WHERE ENCOUNTERED IN THE WORK, SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY ENGINEERS. EXTREME CAUTION SHOULD BE USED BY THE SUBCONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. SUBCONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS WILL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION B) CONFINED SPACE C) ELECTRICAL SAFETY D) TRENCHING AND EXCAVATION.

3. ALL SITE WORK SHALL BE AS INDICATED ON THE DRAWINGS AND PROJECT SPECIFICATIONS.

4. IF NECESSARY, RUBBISH, STUMPS, DEBRIS, STICKS, STONES AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY.

5. THE SITE SHALL BE GRADED TO CAUSE SURFACE WATER TO FLOW AWAY FROM THE BTS EQUIPMENT AND TOWER AREAS.

6. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUND. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

7. THE SUB GRADE SHALL BE COMPACTED AND BROUGHT TO A SMOOTH UNIFORM GRADE PRIOR TO FINISHED SURFACE APPLICATION.

8. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED AND/OR CAPPED, PLUGGED OR OTHERWISE DISCONTINUED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, SUBJECT TO THE APPROVAL OF ENGINEERING, OWNER AND/OR LOCAL UTILITIES.

9. THE AREAS OF THE OWNERS PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE AND STABILIZED TO PREVENT EROSION AS SPECIFIED IN THE PROJECT SPECIFICATIONS.

10. SUBCONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE LOCAL GUIDELINES FOR EROSION AND SEDIMENT CONTROL.

11. THE SUBCONTRACTOR SHALL PROVIDE SITE SIGNAGE IN ACCORDANCE WITH THE T–MOBILE SPECIFICATION FOR SITE SIGNAGE.

CONCRETE AND REINFORCING STEEL NOTES:

1. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 301, ACI 318, ACI 336, ASTM A184, ASTM A185 AND THE DESIGN AND CONSTRUCTION SPECIFICATION FOR CAST–IN–PLACE CONCRETE.

2. ALL CONCRETE SHALL HAVE A MINIMUM COMPRESSIVE STRENGTH OF 3000 PSI AT 28 DAYS, UNLESS NOTED OTHERWISE. A HIGHER STRENGTH (4000PSI) MAY BE USED. ALL CONCRETE WORK SHALL BE IN ACCORDANCE WITH THE ACI 381 CODE REQUIREMENTS

3. REINFORCING STEEL SHALL CONFORM TO ASTM A 615, GRADE 60, DEFORMED UNLESS NOTED OTHERWISE. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A 185 WELDED STEEL WIRE FABRIC UNLESS NOTED OTHERWISE. SPLICES SHALL BE CLASS "B" AND ALL HOOKS SHALL BE STANDARD, UNO.

4. THE FOLLOWING MINIMUM CONCRETE COVER SHALL BE PROVIDED FOR REINFORCING STEEL UNLESS SHOWN OTHERWISE ON DRAWINGS:
   CONCRETE CAST AGAINST EARTH.....3 IN.
   CONCRETE EXPOSED TO EARTH OR WEATHER:
   #6 AND LARGER .....2 IN.
   #5 AND SMALLER & WWF .....1½ IN.
   CONCRETE NOT EXPOSED TO EARTH OR WEATHER
   OR NOT CAST AGAINST THE GROUND:
   SLAB AND WALL .....¾ IN.
   BEAMS AND COLUMNS .....1½ IN.

5. A CHAMFER ¾" SHALL BE PROVIDED AT ALL EXPOSED EDGES OF CONCRETE, UNO, IN ACCORDANCE WITH ACI 301 SECTION 4.2.4.

6. INSTALLATION OF CONCRETE EXPANSION/WEDGE ANCHORS SHALL BE PER MANUFACTURER'S WRITTEN RECOMMENDED PROCEDURE. THE ANCHOR BOLT, DOWEL OR ROD SHALL CONFORM TO THE MANUFACTURERS RECOMMENDATION FOR EMBEDMENT DEPTH OR AS SHOWN ON THE DRAWINGS. NO REBAR SHALL BE CUT WITHOUT PRIOR CONTRACTOR APPROVAL WHEN DRILLING HOLES IN CONCRETE. SPECIAL INSPECTIONS, REQUIRED BY GOVERNING CODES, SHALL BE PERFORMED IN ORDER TO MAINTAIN MANUFACTURER'S MAXIMUM ALLOWABLE LOADS. ALL EXPANSION/WEDGE ANCHORS SHALL BE STAINLESS STEEL OR HOT DIPPED GALVANIZED. EXPANSION BOLTS SHALL BE PROVIDED BY SIMPSON OR APPROVED EQUAL.

7. CONCRETE CYLINDER TIES ARE NOT REQUIRED FOR SLAB ON GRADE WHEN CONCRETE IS LESS THAN 50 CUBIC YARDS (IBC1905.6.2.3) IN THAT EVENT THE FOLLOWING RECORDS SHALL BE PROVIDED BY THE CONCRETE SUPPLIER;
   (A) RESULTS OF CONCRETE CYLINDER TEST PERFORMED AT THE SUPPLIERS PLANT.
   (B) CERTIFICATION OF MINIMUM COMPRESSIVE STRENGTH FOR THE CONCRETE GRADE SUPPLIED.
FOR GREATER THAN 50 CUBIC YARDS THE GC SHALL PERFORM THE CONCRETE CYLINDER TEST.

8. AS AN ALTERNATIVE TO ITEM 7. TEST CYLINDERS SHALL BE TAKEN INITIALLY AND THEREAFTER FOR EVERY 50 YARDS OF CONCRETE FROM EACH DIFFERENT BATCH PLANT.

9. EQUIPMENT SHALL NOT BE PLACED ON NEW PADS FOR SEVEN DAYS AFTER PAD IS POURED, UNLESS IT IS VERIFIED BY CYLINDER TESTS THAT COMPRESSIVE STRENGTH HAS BEEN ATTAINED.

STRUCTURAL STEEL NOTES:

1. ALL STEEL WORK SHALL BE PAINTED OR GALVANIZED IN ACCORDANCE WITH THE DRAWINGS AND T–MOBILE SPECIFICATIONS UNLESS OTHERWISE NOTED. STRUCTURAL STEEL SHALL BE ASTM–A–36 UNLESS OTHERWISE NOTED ON THE SITE SPECIFIC DRAWINGS. STEEL DESIGN, INSTALLATION AND BOLTING SHALL BE IN ACCORDANCE WITH THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) "MANUAL OF STEEL CONSTRUCTION".

2. ALL WELDING SHALL BE PERFORMED USING E70XX ELECTRODES AND WELDING SHALL CONFORM TO AISC AND AWS D1.1. WHERE FILLET WELD SIZES ARE NOT SHOWN, PROVIDE THE MINIMUM SIZE PER TABLE J2.4 IN THE AISC "MANUAL OF STEEL CONSTRUCTION", 9TH EDITION. PAINTED SURFACES SHALL BE TOUCHED UP.

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (⅞"ø) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.

4. NON–STRUCTURAL CONNECTIONS FOR STEEL GRATING MAY USE ⅝" DIA. ASTM A 307 BOLTS (GALV) UNLESS NOTED OTHERWISE.

5. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ENGINEER REVIEW & APPROVAL ON PROJECTS REQUIRING STRUCTURAL STEEL

6. ALL STRUCTURAL STEEL WORK SHALL BE DONE IN ACCORDANCE WITH AISC SPECIFICATIONS.

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

1. EXCAVATE AS REQUIRED TO REMOVE VEGETATION AND TOPSOIL TO EXPOSE NATURAL SUBGRADE AND PLACE CRUSHED STONE AS REQUIRED.

2. COMPACTION CERTIFICATION: AN INSPECTION AND WRITTEN CERTIFICATION BY A QUALIFIED GEOTECHNICAL TECHNICIAN OR ENGINEER IS ACCEPTABLE.

3. AS AN ALTERNATE TO INSPECTION AND WRITTEN CERTIFICATION, THE "UNDISTURBED SOIL" BASE SHALL BE COMPACTED WITH "COMPACTION EQUIPMENT", LISTED BELOW, TO AT LEAST 90% MODIFIED PROCTOR MAXIMUM DENSITY PER ASTM D 1557 METHOD C.

4. COMPACTED SUBBASE SHALL BE UNIFORM AND LEVELED. PROVIDE 6" MINIMUM CRUSHED STONE OR GRAVEL COMPACTED IN 3" LIFTS ABOVE COMPACTED SOIL. GRAVEL SHALL BE NATURAL OR CRUSHED WITH 100% PASSING #1 SIEVE.

5. AS AN ALTERNATE TO ITEMS 2 AND 3, THE SUBGRADE SOILS WITH 5 PASSES OR A MEDIUM SIZED VIBRATORY PLATE COMPACTOR (SUCH AS BOMAG BPR 30/38) OR HAND–OPERATED SINGLE DRUM VIBRATORY ROLLER (SUCH AS BOMAG BW 55E). AND SOFT AREAS THAT ARE ENCOUNTERED SHOULD BE REMOVED AND REPLACED WITH A WELL–GRADED GRANULAR FILL AND COMPACTED AS STATED ABOVE.

COMPACTION EQUIPMENT:

1. HAND OPERATED DOUBLE DRUN, VIBRATORY ROLLER, VIBRATORY PLATE COMPACTOR OR JUMPING JACK COMPACTOR.

CONSTRUCTION NOTES:

1. FIELD VERIFICATION:
SUBCONTRACTOR SHALL FIELD VERIFY SCOPE OF WORK, T–MOBILE ANTENNA PLATFORM LOCATION AND UTILITY TRENCHWORK.

2. COORDINATION OF WORK:
SUBCONTRACTOR SHALL COORDINATE RF WORK AND PROCEDURES WITH CONTRACTOR.

3. CABLE LADDER RACK:
SUBCONTRACTOR SHALL FURNISH AND INSTALL CABLE LADDER RACK, CABLE TRAY AND/OR ICE BRIDGE, AND CONDUIT AS REQUIRED TO SUPPORT CABLES TO THE NEW BTS LOCATION.

ELECTRICAL INSTALLATION NOTES:

1. WIRING, RACEWAY, AND SUPPORT METHODS AND MATERIALS SHALL COMPLY WITH THE REQUIREMENTS OF THE NEC AND TELCORDIA.

2. SUBCONTRACTOR SHALL MODIFY OR INSTALL CABLE TRAY SYSTEM AS REQUIRED TO SUPPORT RF AND TRANSPORT CABLING TO THE NEW BTS EQUIPMENT. SUBCONTRACTOR SHALL SUBMIT MODIFICATIONS TO CONTRACTOR FOR APPROVAL.

3. ALL CIRCUITS SHALL BE SEGREGATED AND MAINTAIN MINIMUM CABLE SEPARATION AS REQUIRED BY THE NEC AND TELCORDIA.

4. CABLES SHALL NOT BE ROUTED THROUGH LADDER–STYLE CABLE TRAY RUNGS.

5. EACH END OF EVERY POWER, GROUNDING, AND T1 CONDUCTOR AND CABLE SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, 1/2 INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). THE IDENTIFICATION METHOD SHALL CONFORM WITH NEC AND OSHA, AND MATCH INSTALLATION REQUIREMENTS.

6. POWER PHASE CONDUCTORS (I.E., HOTS) SHALL BE LABELED WITH COLOR–CODED INSULATION OR ELECTRICAL TAPE (3M BRAND, ½ INCH PLASTIC ELECTRICAL TAPE WITH UV PROTECTION, OR EQUAL). PHASE CONDUCTOR COLOR CODES SHALL CONFORM WITH THE NEC AND OSHA.

7. ALL ELECTRICAL COMPONENTS SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS. ALL EQUIPMENT SHALL BE LABELED WITH THEIR VOLTAGE RATING, PHASE CONFIGURATION, WIRE CONFIGURATION, POWER OR AMPACITY RATING, AND BRANCH CIRCUIT ID NUMBERS (I.E., PANELBOARD AND CIRCUIT ID'S).

8. PANELBOARDS (ID NUMBERS) AND INTERNAL CIRCUIT BREAKERS (CIRCUIT ID NUMBERS) SHALL BE CLEARLY LABELED WITH ENGRAVED LAMACOID PLASTIC LABELS.

9. ALL TIE WRAPS SHALL BE CUT FLUSH WITH APPROVED CUTTING TOOL TO REMOVE SHARP EDGES.

10. POWER, CONTROL, AND EQUIPMENT GROUND WIRING IN TUBING OR CONDUIT SHALL BE SINGLE CONDUCTOR (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

11. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED INDOORS SHALL BE SINGLE CONDUCTOR (#6 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2 GREEN INSULATION, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; LISTED OR LABELED FOR THE LOCATION AND RACEWAY SYSTEM USED, UNLESS OTHERWISE SPECIFIED.

12. SUPPLEMENTAL EQUIPMENT GROUND WIRING LOCATED OUTDOORS, OR BELOW GRADE, SHALL BE SINGLE CONDUCTOR #2 AWG SOLID TINNED COPPER CABLE, UNLESS OTHERWISE SPECIFIED.

13. POWER AND CONTROL WIRING, NOT IN TUBING OR CONDUIT, SHALL BE MULTI–CONDUCTOR, TYPE TC CABLE (#34 AWG OR LARGER), 600 V, OIL RESISTANT THHN OR THWN–2, CLASS B STRANDED COPPER CABLE RATED FOR 90 °C (WET AND DRY) OPERATION; WITH OUTER JACKET; LISTED OR LABELED FOR THE LOCATION USED, UNLESS OTHERWISE SPECIFIED.

14. ALL POWER AND GROUNDING CONNECTIONS SHALL BE CRIMP–STYLE, COMPRESSION WIRE LUGS AND WIRENUTS BY HARGER (OR EQUAL). LUGS AND WIRENUTS SHALL BE RATED FOR OPERATION AT NO LESS THAN 75°C (90°C IF AVAILABLE).

15. RACEWAY AND CABLE TRAY SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

16. NEW RACEWAY OR CABLE TRAY WILL MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

17. ELECTRICAL METALLIC TUBING (EMT) OR RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80 FOR LOCATIONS SUBJECT TO PHYSICAL DAMAGE) SHALL BE USED FOR EXPOSED INDOOR LOCATIONS.

18. ELECTRICAL METALLIC TUBING (EMT), ELECTRICAL NONMETALLIC TUBING (ENT), OR RIGID NONMETALLIC CONDUIT (RIGID PVC, SCHEDULE 40) SHALL BE USED FOR CONCEALED INDOOR LOCATIONS.

19. GALVANIZED STEEL INTERMEDIATE METALLIC CONDUIT (IMC) SHALL BE USED FOR OUTDOOR LOCATIONS ABOVE GRADE.

20. RIGID NONMETALLIC CONDUIT (I.E., RIGID PVC SCHEDULE 40 OR RIGID PVC SCHEDULE 80) SHALL BE USED UNDERGROUND; DIRECT BURIED, IN AREAS OF OCCASIONAL LIGHT VEHICLE TRAFFIC OR ENCASED IN REINFORCED CONCRETE IN AREAS OF HEAVY VEHICLE TRAFFIC.

21. LIQUID–TIGHT FLEXIBLE METALLIC CONDUIT (LIQUID–TITE FLEX) SHALL BE USED INDOORS AND OUTDOORS, WHERE VIBRATION OCCURS OR FLEXIBILITY IS NEEDED.

22. CONDUIT AND TUBING FITTINGS SHALL BE THREADED OR COMPRESSION–TYPE AND APPROVED FOR THE LOCATION USED. SETSCREW FITTINGS ARE NOT ACCEPTABLE.

23. CABINETS, BOXES AND WIREWAYS SHALL BE LISTED OR LABELED FOR ELECTRICAL USE IN ACCORDANCE WITH NEMA, UL, ANSI/IEEE AND NEC.

24. CABINETS, BOXES AND WIREWAYS TO MATCH THE EXISTING INSTALLATION WHERE POSSIBLE.

25. WIREWAYS SHALL BE EPOXY–COATED (GRAY) AND INCLUDE A HINGED COVER, DESIGNED TO SWING OPEN DOWNWARD; SHALL BE PANDUIT TYPE E (OR EQUAL); AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

26. EQUIPMENT CABINETS, TERMINAL BOXES, JUNCTION BOXES, AND PULL BOXES SHALL BE GALVANIZED OR EPOXY–COATED SHEET STEEL, SHALL MEET OR EXCEED UL 50, AND RATED NEMA 1 (OR BETTER) INDOORS, OR NEMA 3R (OR BETTER) OUTDOORS.

27. METAL RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL BE GALVANIZED, EPOXY–COATED, OR NON–CORRODING; SHALL MEET OR EXCEED UL 514A AND NEMA OS 1; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

28. NONMETALLIC RECEPTACLE, SWITCH, AND DEVICE BOXES SHALL MEET OR EXCEED NEMA OS 2; AND RATED NEMA 1 (OR BETTER) INDOORS, OR WEATHER PROTECTED (WP OR BETTER) OUTDOORS.

29. THE SUBCONTRACTOR SHALL NOTIFY AND OBTAIN NECESSARY AUTHORIZATION FROM THE CONTRACTOR BEFORE COMMENCING WORK ON THE AC POWER DISTRIBUTION PANELS.

30. THE SUBCONTRACTOR SHALL PROVIDE NECESSARY TAGGING ON THE BREAKERS, CABLES AND DISTRIBUTION PANELS IN ACCORDANCE WITH THE APPLICABLE CODES AND STANDARDS TO SAFEGUARD AGAINST LIFE AND PROPERTY.

31. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS, NEC AND ALL APPLICABLE LOCAL CODES.

32. CONDUIT ROUTINGS ARE SCHEMATIC. SUBCONTRACTOR SHALL INSTALL CONDUITS SO THAT ACCESS TO EQUIPMENT IS NOT BLOCKED.

T-MOBILE
NORTHEAST LLC

15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286–2700

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
(508) 251–0720

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STATE OF CONNECTICUT
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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/01/20	ISSUED FOR CONSTRUCTION	JRV
0	05/31/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11443E

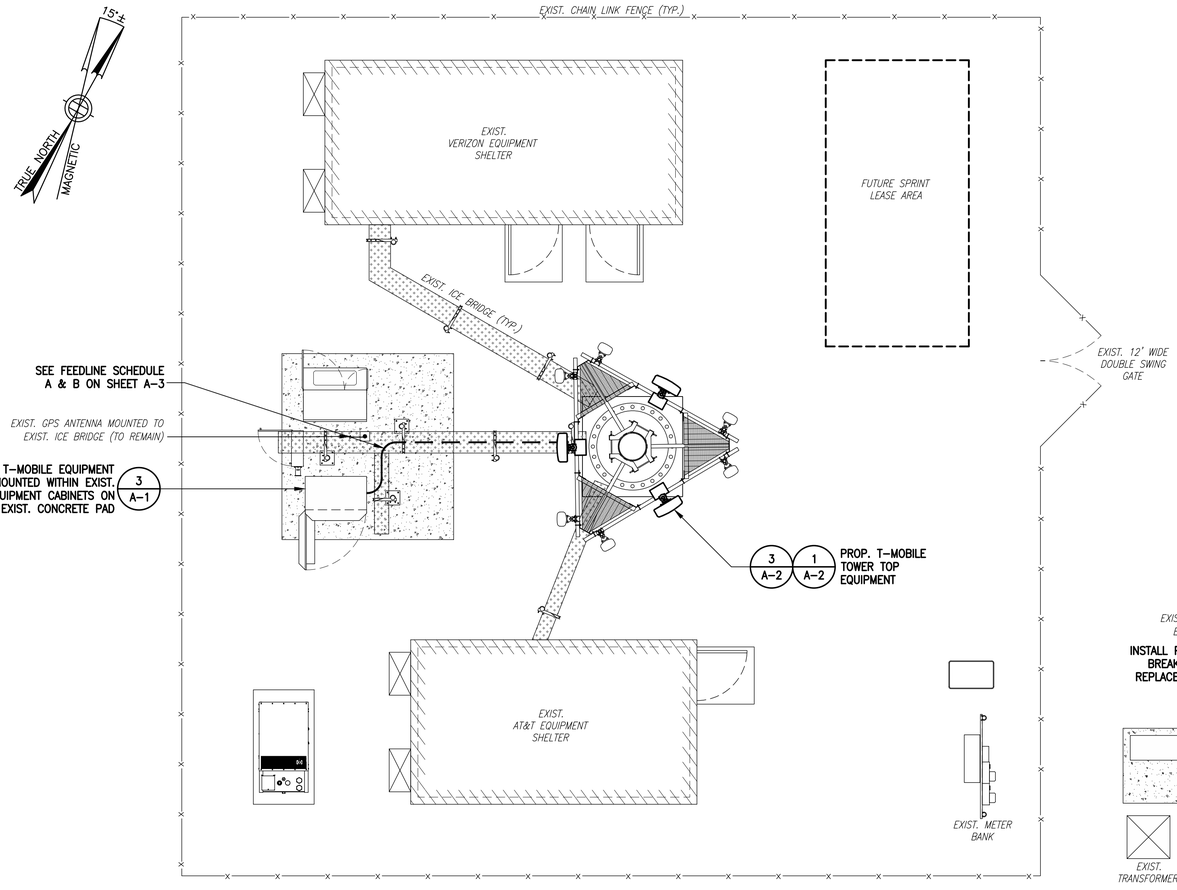
SITE ADDRESS:
17 COTTAGE ROAD
MADISON, CT 06443

SHEET TITLE
GENERAL NOTES

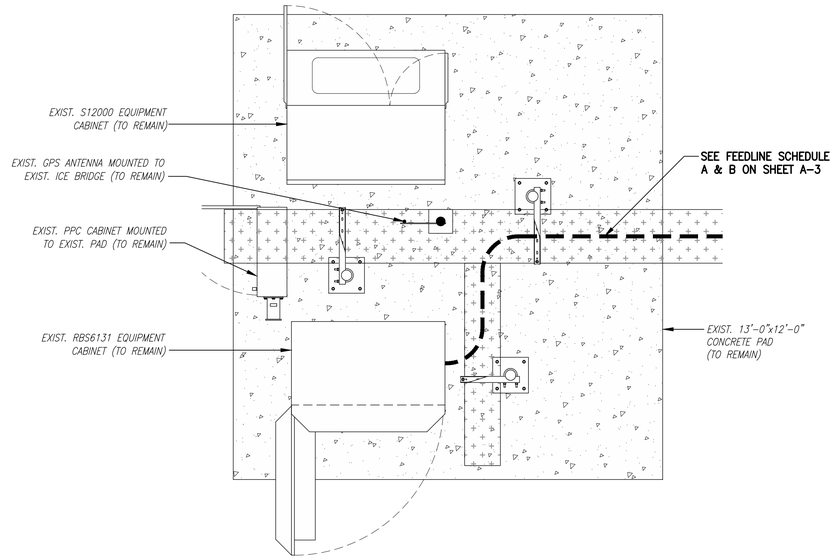
SHEET NUMBER
GN-1

1815.086

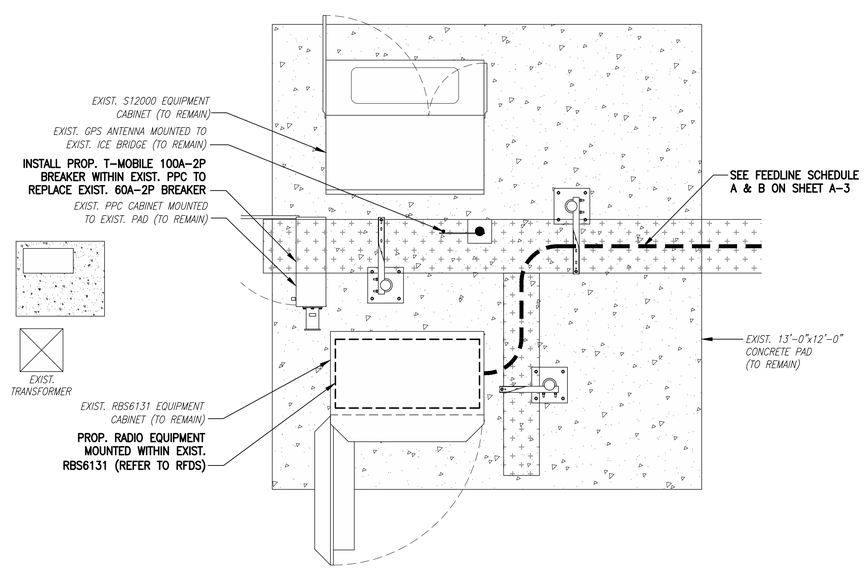
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.



COMPOUND PLAN 1 A-1
SCALE: 1" = 5'-0"
0 5'-0" 10'-0" 15'-0"



EXISTING EQUIPMENT PLAN 2 A-1
SCALE: 1/2" = 1'-0"
0 2'-0" 4'-0" 6'-0"



PROPOSED EQUIPMENT PLAN 3 A-1
SCALE: 1/2" = 1'-0"
0 2'-0" 4'-0" 6'-0"

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
(508) 251-0720

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Civil ·Structural ·Land Surveying
R.K. EXECUTIVE CENTRE
201 BOSTON POST ROAD WEST, SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT
CLEMENT J. SAMEK
No. 26876
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/01/20	ISSUED FOR CONSTRUCTION	JRV
0	05/31/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11443E

SITE ADDRESS:
17 COTTAGE ROAD
MADISON, CT 06443

SHEET TITLE
COMPOUND & EQUIPMENT PLAN

SHEET NUMBER
A-1

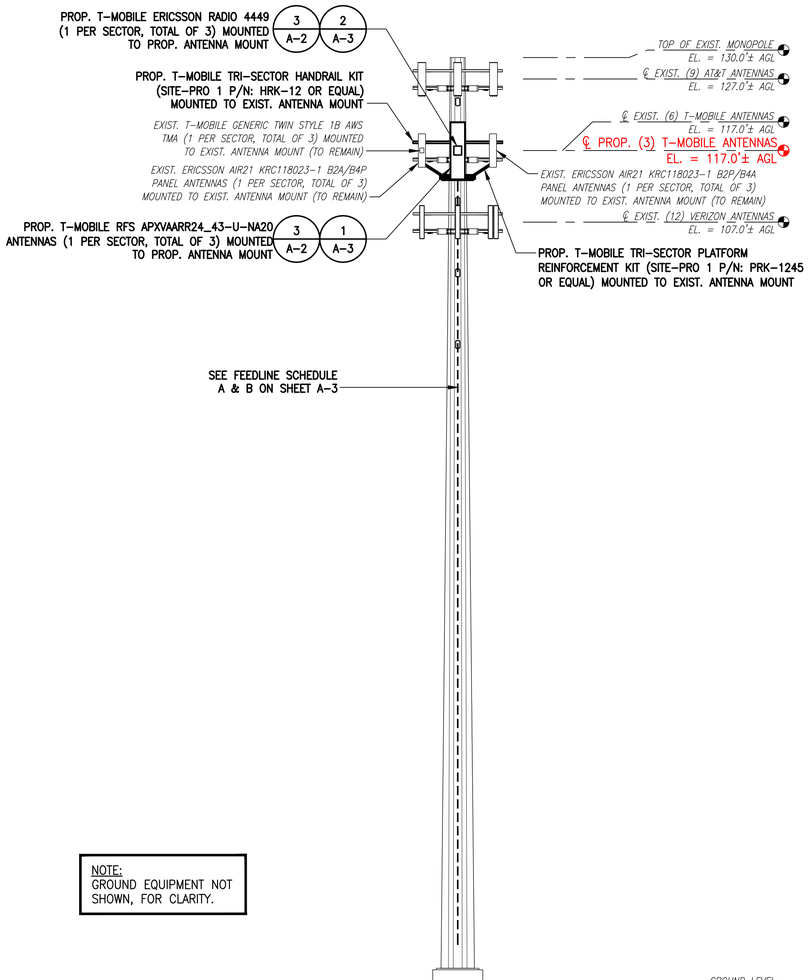
1815.086

SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY SPECIAL SHIELDING OF TOWER TOP EQUIPMENT AND FOR ANY SPECIAL FEEDLINE BUNDLING OR RELOCATION.

SPECIAL TOWER TOP EQUIPMENT INSTALLATION WORK NOTE (SAFETY-CLIMB ALIGNMENT REQUIREMENTS):
GENERAL CONTRACTOR SHALL ORIENT PROPOSED PLATFORM REINFORCEMENT KIT RING-MOUNTS SO THAT EXISTING SAFETY CLIMB CABLE IS NOT OBSTRUCTED/RE-ROUTED FROM VERTICAL ALIGNMENT AND IS NOT IN PHYSICAL CONTACT WITH EXISTING OR PROPOOSED RING-MOUNT HARDWARE. GENERAL CONTRACTOR SHALL INSTALL NEW OR ADDITIONAL SAFETY-CLIMB CABLE GUIDES IF ADDITIONAL CLEARANCE IS REQUIRED. ADDITIONAL CABLE GUIDES SHALL BE ATTACHED SECURELY TO THE POLE USING MECHANICAL FASTENERS OR FIELD WELDED BY A CERTIFIED WELDING TECHNICIAN.

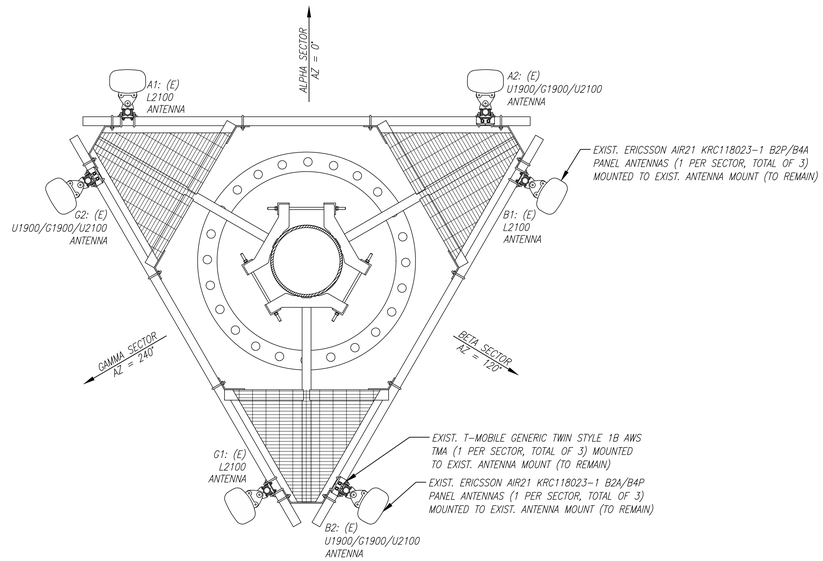
SPECIAL CONSTRUCTION NOTE (SBA-PROVIDED ANTENNA MOUNT STRUCTURAL MOD SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS:)
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT THE T-MOBILE RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SPA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHES)

RAD CENTER NOTE:
T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.

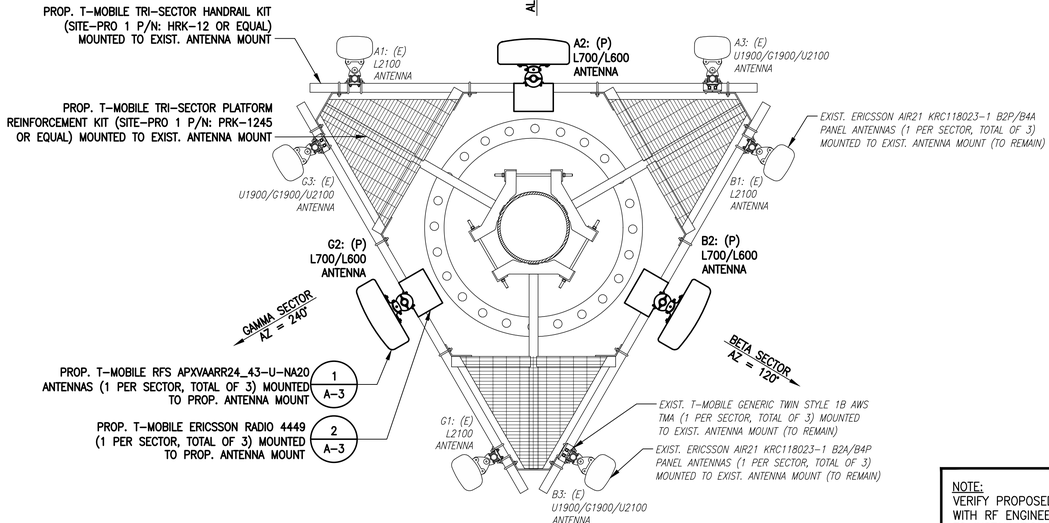


TOWER ELEVATION (1 / A-2)
SCALE: 1" = 10'
0 5' 10' 20' 30'

NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.



EXISTING ANTENNA PLAN (2 / A-2)
SCALE: 1/2" = 1'-0"



PROPOSED ANTENNA PLAN (3 / A-2)
SCALE: 1/2" = 1'-0"

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION.

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

(E) – EXISTING
(P) – INSTALL
(F) – FUTURE

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NORTON, MA 02766
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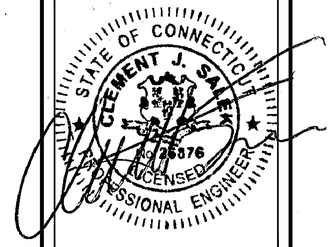

CHECKED BY: JMT

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SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/01/20	ISSUED FOR CONSTRUCTION	JRV
0	05/31/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CT11443E

SITE ADDRESS:
17 COTTAGE ROAD
MADISON, CT 06443

SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLAN

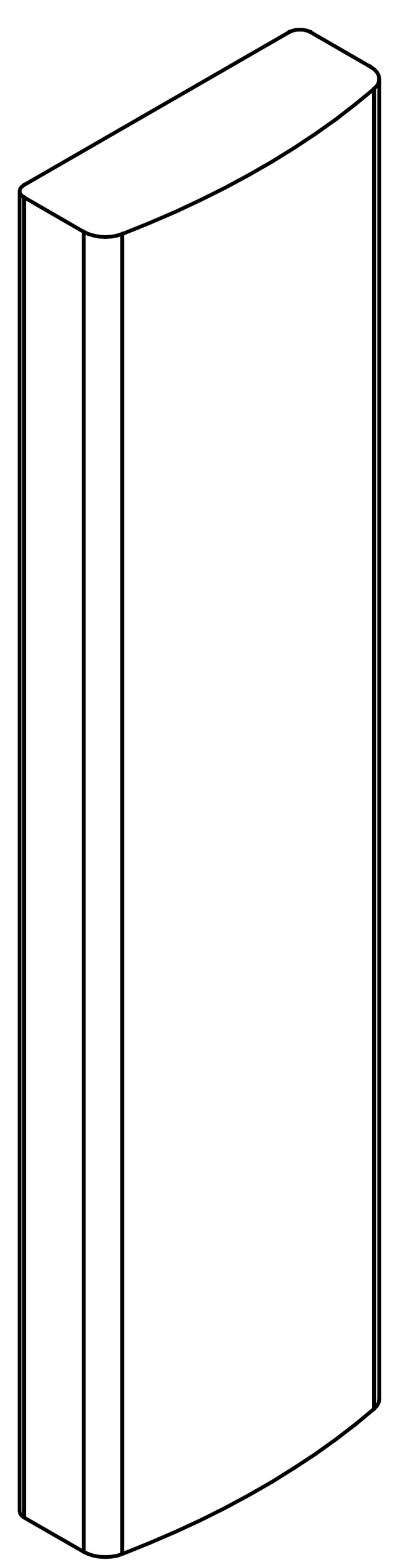
SHEET NUMBER
A-2

1815.086

FINAL ANTENNA CONFIGURATION									
SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	RADIOS/TMAS	CABLES
ALPHA	A1 ERICSSON AIR21 KRC118023-1 B2P/B4A	117'± AGL	0°	0°	2°	L2100	–	(9) 1-5/8" COAX CABLES (1) 1-1/4" (9x18) HCS FIBER CABLES (3) 1-5/8" (6x12) HCS FIBER CABLES
	A2 RFS APXVAARR24_43-U-NA20	117'± AGL	0°	0°	2°	L600/L700	RADIO 4449 B71+B12	
	A3 ERICSSON AIR21 KRC118023-1 B2A/B4P	117'± AGL	0°	0°	2°	U2100	GENERIC TWIN STYLE 1B AWS TMA	
						U1900/G1900	–	
BETA	B1 ERICSSON AIR21 KRC118023-1 B2P/B4A	117'± AGL	120°	0°	2°	L2100	–	
	B2 RFS APXVAARR24_43-U-NA20	117'± AGL	120°	0°	2°	L600/L700	RADIO 4449 B71+B12	
	B3 ERICSSON AIR21 KRC118023-1 B2A/B4P	117'± AGL	120°	0°	2°	U2100	GENERIC TWIN STYLE 1B AWS TMA	
						U1900/G1900	–	
GAMMA	C1 ERICSSON AIR21 KRC118023-1 B2P/B4A	117'± AGL	240°	0°	2°	L2100	–	
	C2 RFS APXVAARR24_43-U-NA20	117'± AGL	240°	0°	2°	L600/L700	RADIO 4449 B71+B12	
	C3 ERICSSON AIR21 KRC118023-1 B2A/B4P	117'± AGL	240°	0°	2°	U2100	GENERIC TWIN STYLE 1B AWS TMA	
						U1900/G1900	–	

CABLE NOTE: (E)(3) 1-5/8" COAX CABLES TO BE REMOVED. SEE FEEDLINE SCHEDULE A & B BELOW.

NOTE: RFDS REV8 – 09/13/20



RFS APXVAARR24_43-U-NA20 ANTENNA

DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

ANTENNA DETAILS (1 / A-3)
SCALE: N.T.S.

ERICSSON RADIO 4449 B71+B85

DIMENSIONS: 14.9"H x 13.2"W x 9.3"D
WEIGHT: 74.0 lbs
QUANTITY: 1 PER SECTOR, TOTAL OF 3

RADIO DETAILS (2 / A-3)
SCALE: N.T.S.

FEEDLINE SCHEDULE			
SCHEDULE	FEEDLINES		LOCATION
A	EXISTING TO REMAIN:	(1) 1/2" COAX CABLE FOR GPS ANTENNA (1) 1-1/4" (9x18) HCS FIBER CABLES (9) 1-5/8" COAX CABLES	ROUTED PER STRUCTURAL ANALYSIS
	EXISTING TO BE REMOVED:	(3) 1-5/8" COAX CABLES	
B	PROPOSED:	(3) 1-5/8" (6x12) HCS FIBER CABLES	

NOTE:
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON OBSERVED FIELD CONDITIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.

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15 COMMERCE WAY, SUITE B
NORTON, MA 02766
(508) 286-2700

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STATE OF CONNECTICUT
CLEMENT J. SALEK
No. 25376
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS			
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0	05/31/19	ISSUED FOR REVIEW	JRV

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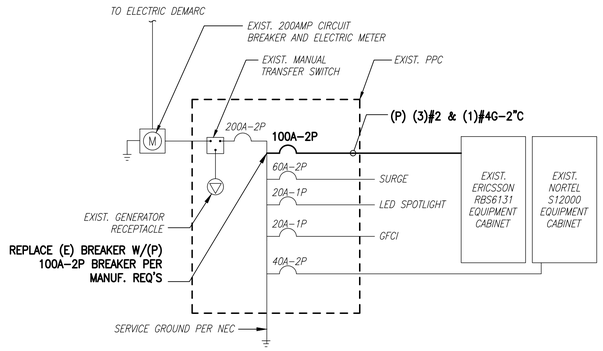
CT11443E

SITE ADDRESS:
17 COTTAGE ROAD
MADISON, CT 06443

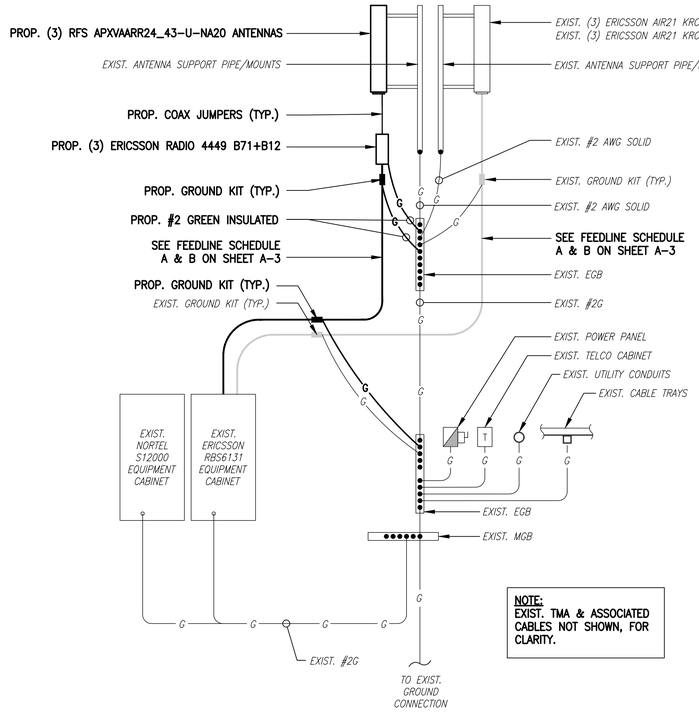
SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

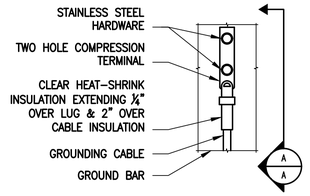
1815.086



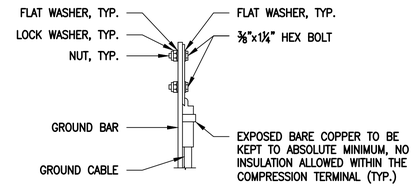
ONE LINE DIAGRAM (1 / E-1)
SCALE: NOT TO SCALE



GROUNDING RISER DIAGRAM (2 / E-1)
SCALE: NOT TO SCALE



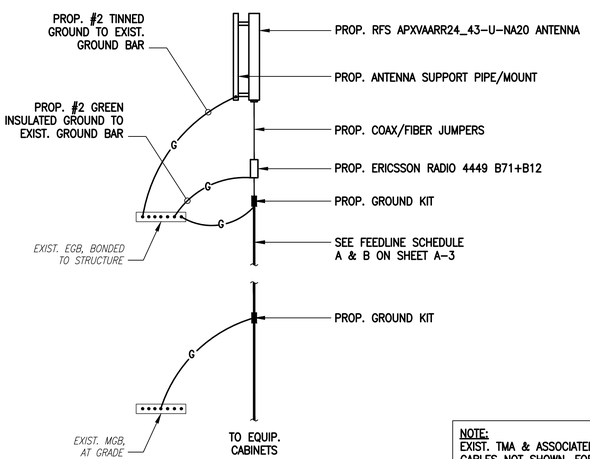
ELEVATION

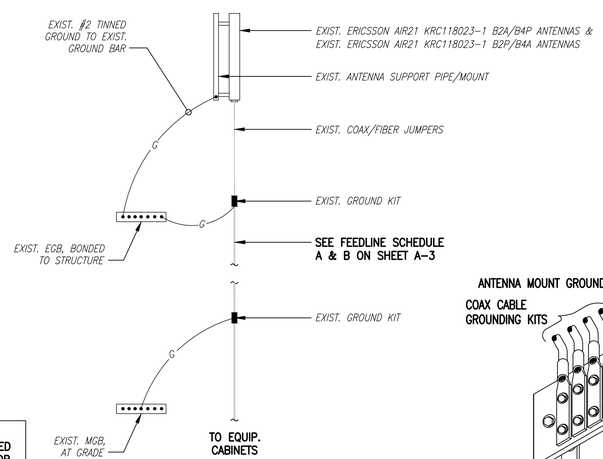


SECTION A-A

NOTES:
1. "DOUBLING UP" OR "STACKING" OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELL DOWNLEADS FROM UPPER EGB, LOWER EGB AND MGB.

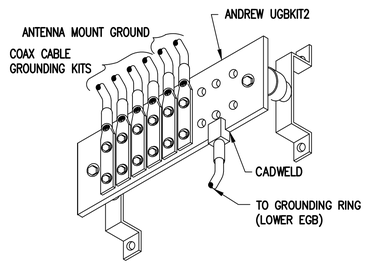
TYPICAL GROUND BAR CONNECTIONS DETAIL (3 / E-1)
SCALE: NOT TO SCALE





NOTE: EXIST. TMA & ASSOCIATED CABLES NOT SHOWN, FOR CLARITY.

COAX CABLE CONNECTION AND GROUNDING DETAIL (4 / E-1)
SCALE: NOT TO SCALE



GROUND BAR (EGB) (5 / E-1)
SCALE: NOT TO SCALE

ELECTRICAL AND 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 PROCURED 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 IS 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) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHNINSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC 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 PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 8" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXIST. TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
21. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMNS MINIMUM RESISTANCE REQUIRED.
22. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

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STATE OF CONNECTICUT — CLEMENT J. SAM — No. 26876 — LICENSED PROFESSIONAL ENGINEER

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SUBMITTALS

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SHEET TITLE
ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.086

T-MOBILE: CT11443E
SBA: CT13615-A MADISON 7, CT

MOUNT AUGMENTATION @ 117'

MONOPOLE TOWER

MADISON, CT
NEW HAVEN COUNTY

SITE INFORMATION

STRUCTURE TYPE:	MONOPOLE
MOUNT TYPE:	PLATFORM
LATITUDE:	41.275831 (NAD 83)
LONGITUDE:	-72.558890 (NAD 83)
CITY / STATE:	MADISON, CT
COUNTY:	NEW HAVEN

COORDINATES ARE FOR NAVIGATIONAL PURPOSES ONLY, NOT TO 1A ACCURACY.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE LABOR & MATERIALS FOR THE DISCREPANCIES.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE AND DESIGN STANDARD: 2015 IBC / TIA-222 / 2018 CT BUILDING CODE

A&E INFORMATION

GEOSTRUCTURAL

DON GEORGE, SE

PO BOX 2621, BOISE, ID 83701
530.539.4787
CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

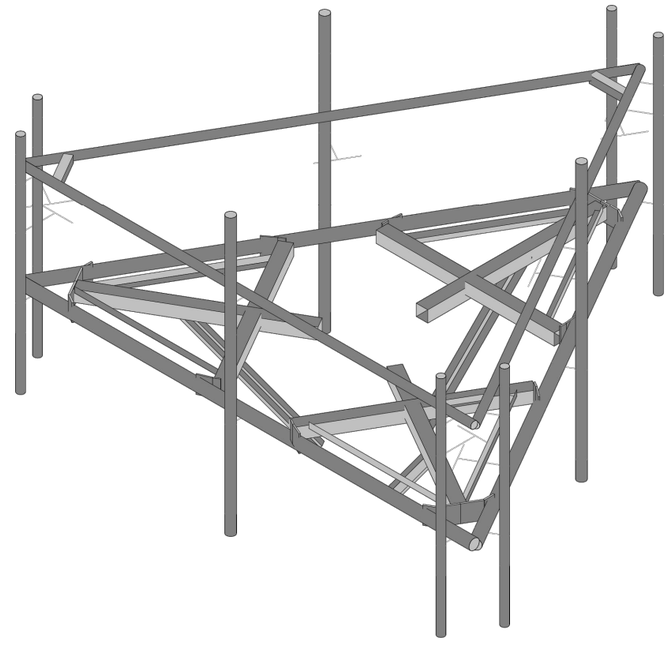
GENERAL DESIGN NOTES

1. THIS PLAN HAS BEEN DESIGNED UTILIZING THE CORRESPONDING MOUNT STRUCTURAL ANALYSIS.
2. THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE-MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
3. ALL STRUCTURE INFORMATION OBTAINED IN THE FORM OF INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED DOCUMENTS. CONTRACTOR SHALL ISSUE A REQUEST FOR INFORMATION (RFI) IN THE EVENT ANY DISCREPANCIES ARE DISCOVERED BETWEEN THESE DOCUMENTS AND THE AS-BUILT CONDITIONS IN THE FIELD IN A SITE VISIT THAT SHALL BE PERFORMED PRIOR TO STARTING FABRICATION OR CONSTRUCTION.
4. ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
5. ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
6. PROVIDE STRUCTURAL STEEL SHOP DRAWING(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION (ONLY IF SPECIFICALLY REQUESTED BY ENGINEER).
7. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
8. ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE STRUCTURE OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR OR SUBCONTRACTOR AS APPROVED BY THE ENGINEER OF RECORD AND LAND OWNER. DAMAGE TO EQUIPMENT OR PROPERTY OF ANY KIND BELONGING TO OTHER COMPANIES (BESIDES THE INDICATED CUSTOMER) SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

SHEET INDEX

SHEET	DESCRIPTION
S-1	TITLE SHEET
S-2	NOTES AND SPECIFICATIONS
S-3	INSPECTION NOTES
S-4	AUGMENTATIONS, SECTIONS & DETAILS

MOUNT AUGMENTATION CONFIGURATION



AUGMENTATION SCOPE

MODIFY ALL SECTORS OF CARRIER'S EXISTING MOUNT INSTALLATION AS REQUIRED (UNLESS NOTED OTHERWISE)

T-Mobile

SBA

GEOSTRUCTURAL

PO BOX 2621, BOISE, ID 83701
530.539.4787
CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

REVISIONS:

0	08/05/19	ISSUE FOR CONSTRUCTION	RWR

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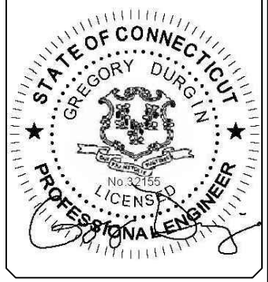

SITE INFORMATION:
MOUNT AUGMENTATION

T-MOBILE: CT11443E
SBA: CT13615-A
MADISON 7

MADISON, CT

LATITUDE: 41.275831
LONGITUDE: -72.558890

SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

S-1

GENERAL PROJECT NOTES

1. CONTRACTOR IS RESPONSIBLE FOR ERECTING TEMPORARY BARRICADES AND/OR FENCING TO PROTECT THE SAFETY OF THE PUBLIC DURING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY BARRIERS AND REPAIR ALL DAMAGE TO PROPERTY ON THE SITE CAUSED BY THIS CONSTRUCTION. THE COST OF REPAIR IS THE CONTRACTOR'S RESPONSIBILITY.
2. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE PRIOR TO ORDERING ANY MATERIALS OR CONDUCTING ANY WORK.
4. THESE PLANS DO NOT ADDRESS THE SAFETY AND STABILITY OF THE STRUCTURE DURING ASSEMBLY AND ERECTION, WHICH ARE THE RESPONSIBILITY OF THE ERECTOR, BASED ON THE MEANS AND METHODS CHOSEN BY THE ERECTOR.

CONTRACTOR NOTES

1. PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE/TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED AUGMENTATION INSPECTOR PRIOR TO BEGINNING CONSTRUCTION. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "AUGMENTATION INSPECTION NOTES" SHEET.
4. THE CONTRACTOR SHALL NOTIFY THE TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF THE COMPLETION OF THE SCHEDULE OR SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED AUGMENTATION INSPECTIONS & TESTING (WHEN APPLICABLE).
5. IT IS ASSUMED THAT ANY STRUCTURAL AUGMENTATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO TOWER CLIMBER AND RESCUE CLIMBER CERTIFICATIONS, ET CETERA.
6. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
7. CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS

1. THE STRUCTURAL DRAWINGS ILLUSTRATE THE COMPLETED STRUCTURE WITH ALL ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED AND BRACED.
2. THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS REQUIRED DURING CONSTRUCTION TO ENSURE STABILITY. DESIGN AND SEQUENCING OF CONSTRUCTION SHORING AND BRACING IS OUTSIDE THE SCOPE OF THIS WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, GUYING, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC STEEL CONSTRUCTION MANUAL AND SECTION 4 OF THE TIA CODE.
2. PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM GRADES UNLESS OTHERWISE NOTED:
   - CHANNELS & ANGLES ..... ASTM A36, (Fy = 36 KSI)
   - PLATES ..... ASTM A36, (Fy = 36 KSI)
   - PIPES ..... ASTM A53 GR.B, (Fy = 35 KSI)
   - HSS ROUND ..... ASTM A500 GR.B, (Fy = 42 KSI)
   - HSS RECTANGULAR ..... ASTM A500 GR.B, (Fy = 46 KSI)
   - W-FLANGE ..... ASTM A992 (Fy = 50 KSI)
   - STRUCTURAL BOLTS ..... ASTM A325
   - U-BOLTS ..... ASTM A307 GR.A
   - NUTS FOR BOLTS ..... ASTM A563 (THREADING TO MATCH BOLT)
   - WASHERS FOR BOLTS ..... ASTM F436
   - SEE TABLE 5-1 OF THE TIA CODE FOR ADDITIONAL SHAPES AND STANDARDS THAT ARE NOT LISTED ABOVE.
3. NON PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS PER THE TIA CODE:
   - THE CARBON EQUIVALENT OF STEEL SHALL NOT EXCEED 0.65 PER SECTION 5.4.2 OF THE TIA CODE
   - ELONGATION OF STEEL SHALL NOT BE LESS THAN 18%
   - TEST REPORTS SHALL BE IN ACCORDANCE WITH ASTM A6 OR A568
   - TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A6
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH AND COLD GALVANIZED.
5. ALL WELDING WORK SHALL CONFORM TO THE AWS D1.1 STRUCTURAL WELDING CODE. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY. WELDING ELECTRODES SHALL BE E70XX.
6. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC SPECS AND CODES, LATEST EDITION.
7. UPON REQUEST, THE CONTRACTOR SHALL SUBMIT DETAILED, ENGINEERED, COORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL TO THE ENGINEER OF RECORD TO REVIEW FOR COMPLIANCE WITH DESIGN INTENT PRIOR TO THE START OF FABRICATION AND/OR ERECTION. GEOSTRUCTURAL IS ABSOLVED OF ALL LIABILITY ASSOCIATED WIT THE MISINTERPRETATION OF THE CONSTRUCTION DOCUMENTS IF CONTRACTOR CHOOSES NOT TO SUBMIT SHOP DRAWINGS.
8. TORCH-CUTTING OF ANY KIND SHALL NOT BE PERMITTED.
9. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED. WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (3/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OR HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED, OTHERWISE BOLTS SHALL BE HEX HEAD CAP SCREWS.
10. ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN ½" SHALL CONFORM TO FE/ZN 3 AT PER ASTM F1941 WHERE HOT-DIP GALVANIZED BOLTS ARE NOT AVAILABLE). ALL STEEL MEMBERS, INCLUDING WELDMENTS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZINC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
11. MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

STRUCTURAL BOLTS

1. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED GALVANIZED HIGH STRENGTH ASTM A325 OR A490 BOLTS WITH THREADS EXCLUDED FROM SHEAR PLANE.
2. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES, WITH BOLT HEADS FACING DOWN WHERE APPLICABLE.
3. ALL BOLTS AT EVERY CONNECTION SHALL BE INSTALLED SNUG-TIGHT UNTIL THE SECTION IS FULLY COMPACTED AND ALL PLIES ARE JOINED, AND THEN TIGHTENED FURTHER BY AISC - "TURN OF THE NUT" METHOD. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
4. BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS SHALL BE TENSIONED 1/3 TURN BEYOND SNUG-TIGHT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE 1½ TURNS BEYOND SNUG-TIGHT.
5. ALL BOLTED CONNECTIONS SHALL USE LOCK WASHERS.
6. MINIMUM EDGE DISTANCE FOR BOLTS SHALL BE 1½" CENTER TO EDGE UNLESS OTHERWISE NOTED.

NOMINAL HOLE DIMENSIONS:

BOLT Ø	STANDARD HOLE Ø
1/2"Ø	9/16"Ø
5/8"Ø	11/16"Ø
3/4"Ø	13/16"Ø
7/8"Ø	15/16"Ø
1"Ø	1 1/16"Ø

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GEOSTRUCTURAL
PO BOX 2621, BOISE, ID 83701
530.539.4787
CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

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STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

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MADISON 7

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NOTES AND SPECIFICATIONS

SHEET NUMBER:

S-2

PRE-CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	AUGMENTATION INSPECTION CHECKLIST
√	APPROVED SHOP DRAWINGS (LATEST REVISION)
√	FABRICATION INSPECTION
	FABRICATOR'S CERTIFIED WELD INSPECTOR (CWI)
	FABRICATOR'S QUALIFIED PERSONNEL FOR WELDING
√	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
	FABRICATOR'S NON-DESTRUCTIVE TESTING (NDT) TECHNICIAN
√	PACKING SLIPS FOR STRUCTURAL MATERIALS

CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	CONSTRUCTION INSPECTIONS
	FOUNDATION INSPECTIONS
	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTING RESULTS/CERTIFICATES
	ADHESIVE ANCHOR ROD(S) INSTALLATION INSPECTION
	BASE PLATE GROUT INSPECTION
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
	SOIL EXCAVATION — DENSITY TESTING, COMPACTION INSPECTION/VERIFICATION, USE OF SUITABLE FILL
√	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION, & PAINT APPLICATION
	GUY WIRE (RE-)TENSION REPORT AND INSPECTION
√	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)

POST-CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	AUGMENTATION INSPECTOR'S ISSUE LIST (INCLUDING CORRECTIVE ACTIONS TAKEN) AND/OR REDLINED RECORD DRAWINGS
	POST-INSTALLED ADHESIVE ANCHOR ROD PULL-OUT TESTING
√	PHOTOGRAPHS OF AUGMENTATIONS (INCLUDE PHOTOS OF BOTH SIDES OF WELDED OR BOLTED CONNECTIONS, OF OVERALL AND DETAIL VIEWS OF INSTALLED AUGMENTATIONS, AND BEFORE/AFTER PHOTOS OF ANY ISSUES IDENTIFIED BY THE INSPECTOR)

GENERAL NOTES

1. THE POST-AUGMENTATION INSPECTION IS A VISUAL EXAMINATION OF STRUCTURE AUGMENTATIONS AND A REVIEW OF ANY REQUIRED CONSTRUCTION INSPECTIONS, TESTING, AND OTHER DATA TO VERIFY THAT THE AUGMENTATIONS ARE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AS DESIGNED BY THE ENGINEER OF RECORD. THE CONTRACT DOCUMENTS INCLUDE THESE AUGMENTATION DRAWINGS, ANY PROJECT SPECIFICATIONS REFERENCED TO IN THE PROJECT NOTES OR OTHERWISE PROVIDED WITH THE DRAWINGS, AND OTHER DOCUMENTS OR DRAWINGS PROVIDED WITH THE AUGMENTATION DRAWINGS WITH THE INTENT THAT THEY BE USED AS A DESIGN AID OR GUIDELINE FOR CONSTRUCTION.
2. THE POST-AUGMENTATION INSPECTION SHALL CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A QUALITATIVE REVIEW OF THE ENGINEERING ASPECTS OF THE DESIGN OR THE DESIGN DRAWINGS. THE AUGMENTATION INSPECTOR IS NOT TAKING OWNERSHIP OF THE AUGMENTATION DESIGN IN THE PERFORMANCE OF THEIR DUTIES. OWNERSHIP OF THE AUGMENTATION DESIGN'S EFFECTIVENESS AND INTENT, LIES WITH THE ENGINEER OF RECORD.
3. TO ENSURE THAT THE REQUIREMENTS OF THE POST-AUGMENTATION INSPECTION ARE MET, IT IS ESSENTIAL THAT COORDINATION BETWEEN THE PRIME CONTRACTOR AND THE AUGMENTATION INSPECTOR BEGIN AS SOON AS THE PROJECT IS FUNDED AND WORK ENTERS THE PLANNING STAGE. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BE PROACTIVE IN IDENTIFYING CONSTRUCTION ISSUES AND COMMUNICATING THESE ISSUES TO EACH OTHER AND TO THE ENGINEER OF RECORD AND STRUCTURE OWNER AND/OR CUSTOMER, AS REQUIRED.

INSPECTION AND REPORT RECOMMENDATIONS

1. THE FOLLOWING ARE PROVIDED IN THE INTENT OF ENHANCING THE EFFECTIVENESS OF THE AUGMENTATION INSPECTION AND IMPROVING THE EFFICIENCY OF THE PROCESS OF COLLECTING AND COMPILING THE INFORMATION INTO A USABLE REPORT:

1.1. IT IS RECOMMENDED THAT THE PRIME CONTRACTOR PROVIDE THE AUGMENTATION INSPECTOR AT LEAST 5 BUSINESS DAYS NOTICE FOR WHEN THE SITE WILL BE READY FOR THE AUGMENTATION INSPECTION.

1.2. THE PRIME CONTRACTOR AND THE AUGMENTATION INSPECTOR SHALL COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.

1.3. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BOTH BE PRESENT DURING THE INITIAL INSPECTION IN ORDER TO ALLOW FOR THE REMEDIATION OF DEFICIENCIES DURING THE INSPECTION, AS PRACTICABLE. IT MAY BE PREFERABLE TO KEEP WORK CREWS AND THEIR EQUIPMENT ON SITE TO REMEDIATE DEFICIENCIES DURING INSPECTIONS.

INSPECTION RESCHEDULING AND CANCELLATION

1. IF THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR HAVE AGREED UPON A TIME AND DATE FOR A GIVEN INSPECTION AND EITHER PARTY RESCHEDULES OR CANCELS THE INSPECTION, THE STRUCTURE OWNER SHALL NOT BE RESPONSIBLE FOR COSTS, FEES, LOST DEPOSITS, OR OTHER EXPENSES INCURRED BY THE PRIME CONTRACTOR, THEIR SUBCONTRACTOR(S), OR THE AUGMENTATION INSPECTOR DUE TO THESE SCHEDULING CHANGES. EXCEPTIONS MAY BE MADE IN THE EVENT OF UNCONTROLLABLE SITUATIONS SUCH AS NATURAL DISASTERS, SEVERE WEATHER, OR OTHER CONDITIONS THAT COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

REMEDIATION OF FAILING INSPECTION

1. IN THE EVENT THAT ANY PORTION OF THE AUGMENTATION WORK IS DETERMINED TO BE UNSATISFACTORY BY THE MODIFICATION INSPECTOR, THE PRIME CONTRACTOR SHALL WORK WITH THE AUGMENTATION INSPECTOR TO CREATE A PLAN OF ACTION THAT WILL EITHER:

1.1. REPAIR THE DEFICIENT WORK TO SATISFACTORY CONDITION AND INCLUDE A SUBSEQUENT RE-INSPECTION OF THE WORK TO VERIFY THAT IT IS SATISFACTORY.

1.2. OR, WITH THE PERMISSION OF THE STRUCTURE OWNER AND/OR CUSTOMER, THE PRIME CONTRACTOR MAY WORK WITH THE ENGINEER OF RECORD TO REVIEW THE AS-BUILT CONDITION OF THE AUGMENTATION TO DETERMINE IF IT IS STRUCTURALLY ACCEPTABLE. IF THIS ACTION IS NOT ACCEPTABLE TO ANY PARTY, THE PRIME CONTRACTOR SHALL PROCEED TO REPAIR THE DEFICIENT WORK TO A SATISFACTORY CONDITION.

AUGMENTATION INSPECTOR'S RESPONSIBILITIES

1. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION.
2. THE AUGMENTATION INSPECTOR SHALL CONTACT THE PRIME CONTRACTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THIS INSPECTION. THE AUGMENTATION INSPECTOR SHALL REVIEW THE REQUIREMENTS OF THE INSPECTION CHECKLIST, SHALL WORK WITH THE PRIME CONTRACTOR TO DEVELOP A SCHEDULE OF NECESSARY ON-SITE INSPECTIONS, AND SHALL DISCUSS ANY SITE-SPECIFIC INSPECTION REQUIREMENTS OR OTHER CONCERNS.
3. THE AUGMENTATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL PRIME CONTRACTOR INSPECTION AND TEST REPORTS (INCLUDING THOSE OF ASSIGNED SUB-CONTRACTORS), SHALL REVIEW THE REPORTS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND SHALL CONDUCT THE NECESSARY ON-SITE INSPECTIONS.

PRIME CONTRACTOR'S RESPONSIBILITIES

1. THE PRIME CONTRACTOR SHALL CONTACT THE AUGMENTATION INSPECTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THE AUGMENTATION INSTALLATION OR PROJECT. THE PRIME CONTRACTOR SHALL REVIEW THE REQUIREMENTS OF THE AUGMENTATION INSPECTION CHECKLIST, SHALL WORK WITH THE AUGMENTATION INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, AND SHALL DISCUSS SPECIFIC INSPECTION AND TESTING REQUIREMENTS WITH THE AUGMENTATION INSPECTOR IN DETAIL TO OBTAIN A FULL UNDERSTANDING OF THE REQUIRED INSPECTIONS AND TESTING.
2. THE PRIME CONTRACTOR SHALL PERFORM AND RECORD THE TESTING AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUGMENTATION INSPECTION CHECKLIST.

PHOTOGRAPHY REQUIREMENTS

1. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BETWEEN THE EFFORTS OF BOTH PARTIES AND THEIR EMPLOYED PERSONNEL PROVIDE PHOTOGRAPHS WITH THE INSPECTION REPORT TO INCLUDE THE FOLLOWING:

a. GENERAL SITE PHOTOGRAPHS PRE-CONSTRUCTION

b. AUGMENTATION INSTALLATION PHOTOGRAPHS DURING CONSTRUCTION/ERECTION OPERATIONS AND INSPECTIONS

b.1. RAW MATERIALS

b.2. PHOTOS OF DETAILED WORK REQUIRED ON THE DRAWINGS (CONNECTIONS, WELDMENTS, FIELD-FABRICATED MEMBERS, ETC)

b.3. BOLT INSTALLATION AND TORQUE/PRETENSION.

b.4. FINAL INSTALLED CONDITION (AFTER DEFICIENT CONDITIONS, IF ANY, ARE REMEDIATED).

b.5. REPAIR OF SURFACE COATINGS (INCLUDING GALVANIZING AND/OR PAINT COATING)

c. POST-AUGMENTATION PHOTOGRAPHS OF THE SITE & WORK.

d. PHOTOGRAPHS OF THE FINAL STATE OF THE SITE AT CONCLUSION OF THE WORK BY THE PRIME CONTRACTOR, ASSOCIATED SUBCONTRACTORS, AND THE AUGMENTATION INSPECTOR.

e. OTHER PHOTOS MAY BE INCLUDED AT PRIME CONTRACTOR & AUGMENTATION INSPECTOR'S DISCRETION.

NOTE: PHOTOS OF AUGMENTATIONS INSTALLED ON THE STRUCTURE ABOVE AN ELEVATION OF 20 FT SHALL REQUIRE PHOTOS TAKEN FROM THE STRUCTURE AS WELL AS OVERALL PHOTOGRAPHS OF THE AUGMENTATIONS TAKEN FROM THE GROUND.

OWNER INSPECTIONS

1. THE STRUCTURE OWNER MAY CONDUCT INSPECTIONS TO VERIFY THE QUALITY AND COMPLETENESS OF THE PREVIOUSLY COMPLETED AUGMENTATION INSPECTION REPORTS FOR THE AUGMENTATION INSTALLATION WORK.
2. INSPECTIONS MAY BE COMPLETED BY A 3RD-PARTY FIRM OF THE STRUCTURE OWNER'S CHOOSING AFTER A AUGMENTATION PROJECT IS COMPLETED AND A PASSING AUGMENTATION INSPECTION REPORT IS ISSUED.

T-Mobile

SBA

GEOSTRUCTURAL
PO BOX 2621, BOISE, ID 83701
530.539.4787
CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

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SBA: CT13615-A
MADISON 7

MADISON, CT

LATITUDE: 41.275831
LONGITUDE: -72.558890

SHEET TITLE:

INSPECTION NOTES

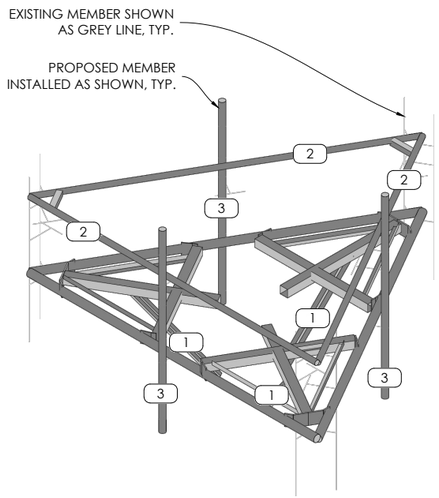
SHEET NUMBER:

S-3

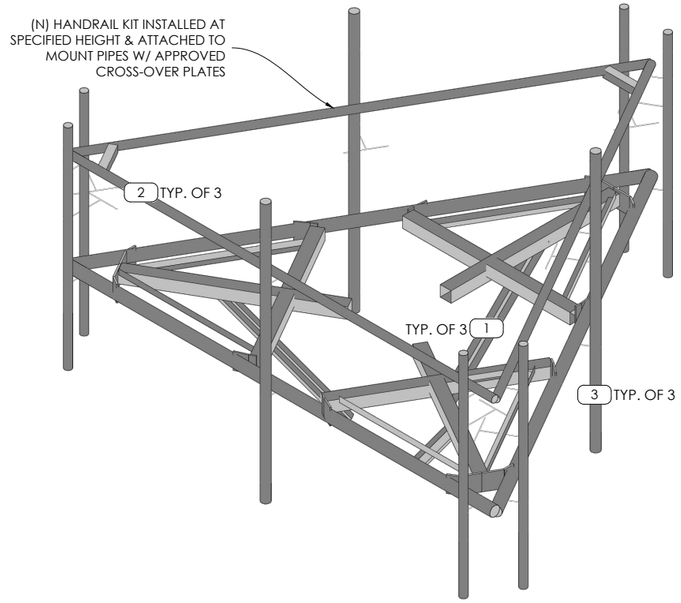
NEW MOUNT AUGMENTATIONS	
1	INSTALL PLATFORM REINFORCEMENT KIT; LOCATED 3.0' BELOW THE EXISTING STANDOFF CENTERLINE TO MONOPOLE SHAFT AND ATTACHING TO THE EXISTING STANDOFF MEMBER APPROXIMATELY 3.0' OUT FROM THE COLLAR ATTACHMENT. - SITEPRO1 PRK-1245L, (1) TOTAL.
2	INSTALL HANDRAIL KIT; LOCATED 3.0' ABOVE THE EXISTING PLATFORM RAIL AND ATTACHING TO THE MOUNT PIPES. - SITEPRO1 HRK12-U OR 14-U, (1) TOTAL. VERIFY REQUIRED SIZE IN FIELD. ATTACH ALL MOUNT PIPES TO NEW HANDRAIL WITH KIT-PROVIDED CROSS-OVER PLATES.
3	INSTALL (3) PIPE2.5STD x 8'-0" MOUNT PIPES AT POSITION 2 MOUNT PIPE LOCATION (SUPPORTING RFS APXVAARR24_43-U-NA20 AND 4449 RRH). ATTACH NEW PIPE2.5STD MOUNT PIPE TO EXISTING BOTTOM CHANNEL RAIL W/ SITEPRO1 SCX-K CROSSOVER ASSEMBLIES AND TO NEW TOP HANDRAIL PIPE W/ KIT-PROVIDED CROSS-OVER PLATE ASSEMBLIES.
AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.	

EXISTING MOUNT

PLATFORM @ 117' AUGMENTATION



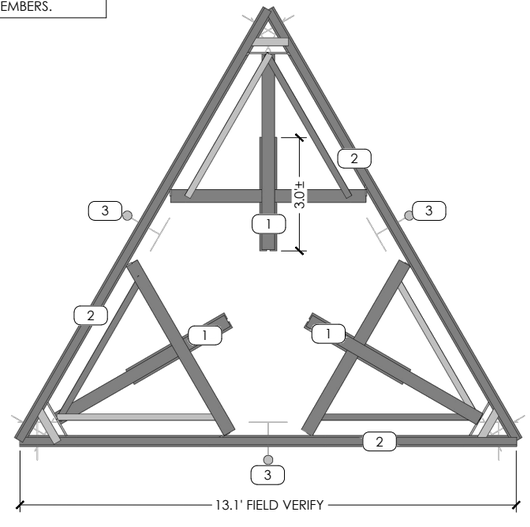
MOUNT AUGMENTATION ISOLATION
SCALE: N.T.S.



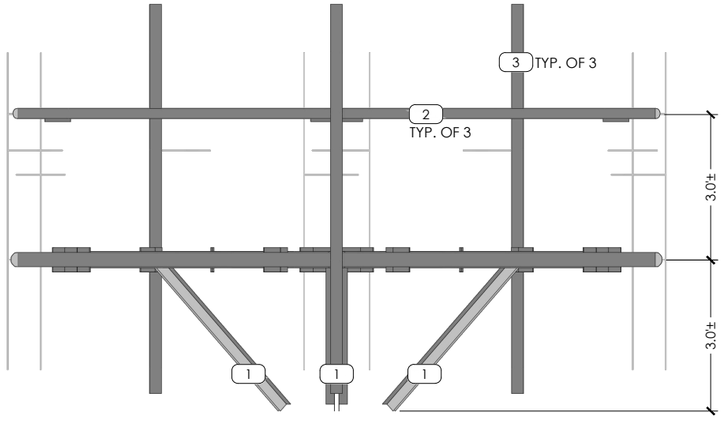
AUGMENTED MOUNT ISOMETRIC
SCALE: N.T.S.

CONSTRUCTION NOTES
1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
3. CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF ELEMENTS (E.G. COAX, CLIPS, TMAs, ETC.) CONNECTED TO, OR IN THE DIRECT PATH, OF NEW AUGMENTATION MEMBERS.

INSTALLATION NOTES
1. AUGMENTATION MEMBER(S) MAY NEED TO BE FIELD-CUT TO LENGTH TO ACCOMMODATE THIS INSTALLATION. CONTRACTOR TO CUT AND DRILL TO SUIT AS REQUIRED AND APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS.
2. CONTRACTOR TO CHECK ALL EXISTING MEMBER CONNECTION BOLTS, PARTICULARLY STANDOFF TO TOWER BOLTS, FOR PROPER INSTALLATION AND TIGHTNESS.
3. COORDINATE PLACEMENT OF NEW AUGMENTATION MEMBERS WITH EXISTING TOWER AND CLIMBING FACILITY ELEMENTS (E.G. STEP PEGS, COAX PORTS, ETC.)
4. REFER TO CONSTRUCTION DRAWINGS (BY OTHERS) AND MOUNT STRUCTURAL ANALYSIS FOR APPROVED INSTALLATION LOCATIONS AND QUANTITIES OF APPURTENANCES.



AUGMENTED MOUNT PLAN
SCALE: N.T.S.



AUGMENTED MOUNT FRONT ELEVATION
SCALE: N.T.S.

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PO BOX 2621, BOISE, ID 83701
530.539.4787
CONTACT@GEOSTRUCTURAL.COM
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REVISIONS:

0	08/05/19	ISSUE FOR CONSTRUCTION	RWR

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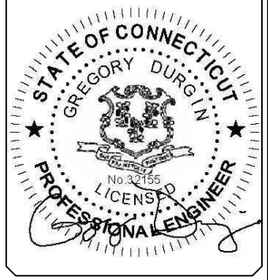

SITE INFORMATION:
MOUNT AUGMENTATION

T-MOBILE: CT11443E
SBA: CT13615-A
MADISON 7

MADISON, CT

LATITUDE: 41.275831
LONGITUDE: -72.558890

SHEET TITLE:
AUGMENTATIONS SECTIONS & DETAILS

SHEET NUMBER:
S-4

EXHIBIT 7

T-MOBILE: CT11443E
SBA: CT13615-A MADISON 7, CT

MOUNT AUGMENTATION @ 117'

MONOPOLE TOWER

MADISON, CT
NEW HAVEN COUNTY

SITE INFORMATION

STRUCTURE TYPE:	MONOPOLE
MOUNT TYPE:	PLATFORM
LATITUDE:	41.275831 (NAD 83)
LONGITUDE:	-72.558890 (NAD 83)
CITY / STATE:	MADISON, CT
COUNTY:	NEW HAVEN

COORDINATES ARE FOR NAVIGATIONAL PURPOSES ONLY, NOT TO 1A ACCURACY.

DO NOT SCALE DRAWINGS

CONTRACTOR SHALL VERIFY ALL PLANS, EXISTING DIMENSIONS, CONDITIONS ON THE JOB SITE & SHALL IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR THE LABOR & MATERIALS FOR THE DISCREPANCIES.

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE AND DESIGN STANDARD: 2015 IBC / TIA-222 / 2018 CT BUILDING CODE

A&E INFORMATION

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DON GEORGE, SE

PO BOX 2621, BOISE, ID 83701
530.539.4787
CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

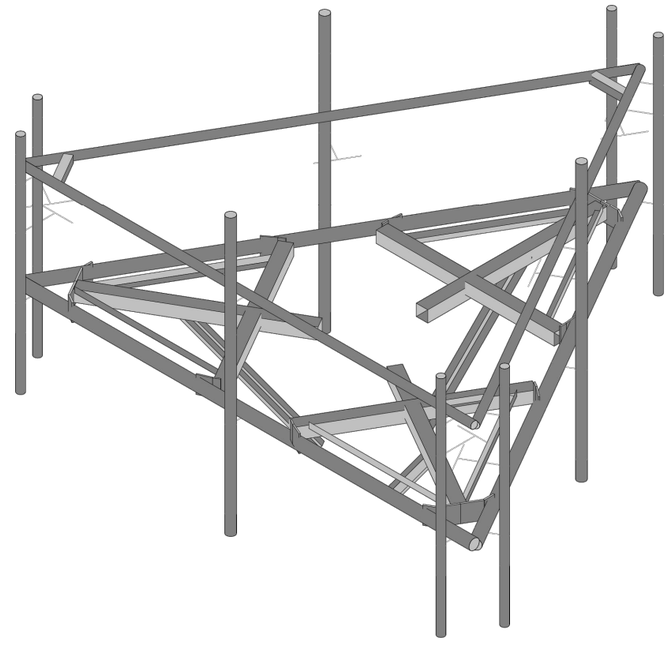
GENERAL DESIGN NOTES

1. THIS PLAN HAS BEEN DESIGNED UTILIZING THE CORRESPONDING MOUNT STRUCTURAL ANALYSIS.
2. THESE PLANS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222, ASCE 7, AWS, ACI, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE-MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.
3. ALL STRUCTURE INFORMATION OBTAINED IN THE FORM OF INFORMATION PROVIDED BY THE CLIENT. CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED DOCUMENTS. CONTRACTOR SHALL ISSUE A REQUEST FOR INFORMATION (RFI) IN THE EVENT ANY DISCREPANCIES ARE DISCOVERED BETWEEN THESE DOCUMENTS AND THE AS-BUILT CONDITIONS IN THE FIELD IN A SITE VISIT THAT SHALL BE PERFORMED PRIOR TO STARTING FABRICATION OR CONSTRUCTION.
4. ALL MATERIALS UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS.
5. ALL PRODUCT OR MATERIAL SUBSTITUTIONS PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER SUITABLE TO DETERMINE IF SUBSTITUTE IS ACCEPTABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.
6. PROVIDE STRUCTURAL STEEL SHOP DRAWING(S) TO THE ENGINEER OF RECORD FOR APPROVAL PRIOR TO FABRICATION (ONLY IF SPECIFICALLY REQUESTED BY ENGINEER).
7. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS AND REINFORCING SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.
8. ANY CONTRACTOR-CAUSED DAMAGE TO PROPERTY OF THE LAND OWNER, PROPERTY OF THE STRUCTURE OWNER, PROPERTY OF THE CUSTOMER, SITE FENCING OR GATES, ANY AND ALL UTILITY AND/OR SERVICE LINES, SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE REPAIRED OR REPLACED AT THE SOLE COST OF THE CONTRACTOR AND SHALL BE ACCOMPLISHED BY THE CONTRACTOR OR SUBCONTRACTOR AS APPROVED BY THE ENGINEER OF RECORD AND LAND OWNER. DAMAGE TO EQUIPMENT OR PROPERTY OF ANY KIND BELONGING TO OTHER COMPANIES (BESIDES THE INDICATED CUSTOMER) SHALL BE ADDRESSED BY THE CONTRACTOR WITH THE COMPANIES THAT OWN THE DAMAGED ITEMS.

SHEET INDEX

SHEET	DESCRIPTION
S-1	TITLE SHEET
S-2	NOTES AND SPECIFICATIONS
S-3	INSPECTION NOTES
S-4	AUGMENTATIONS, SECTIONS & DETAILS

MOUNT AUGMENTATION CONFIGURATION



AUGMENTATION SCOPE

MODIFY ALL SECTORS OF CARRIER'S EXISTING MOUNT INSTALLATION AS REQUIRED (UNLESS NOTED OTHERWISE)

T-Mobile

SBA

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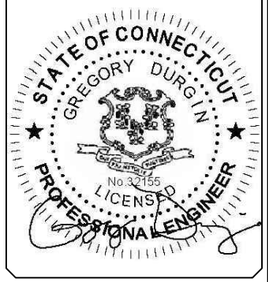

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MADISON 7

MADISON, CT

LATITUDE: 41.275831
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SHEET TITLE:

TITLE SHEET

SHEET NUMBER:

S-1

GENERAL PROJECT NOTES

1. CONTRACTOR IS RESPONSIBLE FOR ERECTING TEMPORARY BARRICADES AND/OR FENCING TO PROTECT THE SAFETY OF THE PUBLIC DURING CONSTRUCTION. THE CONTRACTOR SHALL REMOVE ALL TEMPORARY BARRIERS AND REPAIR ALL DAMAGE TO PROPERTY ON THE SITE CAUSED BY THIS CONSTRUCTION. THE COST OF REPAIR IS THE CONTRACTOR'S RESPONSIBILITY.
2. ALL WORK SHALL BE IN ACCORDANCE WITH APPLICABLE LOCAL, STATE, AND FEDERAL REQUIREMENTS.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL MEASUREMENTS AT THE SITE PRIOR TO ORDERING ANY MATERIALS OR CONDUCTING ANY WORK.
4. THESE PLANS DO NOT ADDRESS THE SAFETY AND STABILITY OF THE STRUCTURE DURING ASSEMBLY AND ERECTION, WHICH ARE THE RESPONSIBILITY OF THE ERECTOR, BASED ON THE MEANS AND METHODS CHOSEN BY THE ERECTOR.

CONTRACTOR NOTES

1. PRIOR TO BEGINNING CONSTRUCTION, ALL CONTRACTORS AND SUBCONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW STRUCTURE OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND STRUCTURE/TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR STRUCTURE OWNER ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM ANY SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO THE STRUCTURE OWNER.
2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, THE ENGINEER OF RECORD SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.
3. THE CONTRACTOR SHALL SOLICIT AND HIRE THE SERVICES OF A QUALIFIED AUGMENTATION INSPECTOR PRIOR TO BEGINNING CONSTRUCTION. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION AS REQUIRED ON THE "AUGMENTATION INSPECTION NOTES" SHEET.
4. THE CONTRACTOR SHALL NOTIFY THE TOWER OWNER OF THE PLANNED CONSTRUCTION & INSPECTION SCHEDULE, AS WELL AS ANY CHANGES TO THE SCHEDULE, WITHIN TWO BUSINESS DAYS OF THE COMPLETION OF THE SCHEDULE OR SCHEDULE REVISION BOTH PRIOR TO BEGINNING CONSTRUCTION AND DURING CONSTRUCTION AS THE SCHEDULE CHANGES. THE STRUCTURE OWNER WHEN THE WORK HAS BEEN COMPLETED WITHIN 2 BUSINESS DAYS OF THE COMPLETION OF THE WORK AND ASSOCIATED AUGMENTATION INSPECTIONS & TESTING (WHEN APPLICABLE).
5. IT IS ASSUMED THAT ANY STRUCTURAL AUGMENTATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE STRUCTURE OWNER AND ENGINEER INCLUDING BUT NOT LIMITED TO TOWER CLIMBER AND RESCUE CLIMBER CERTIFICATIONS, ET CETERA.
6. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES AND PROCEDURES.
7. CONTRACTOR SHALL WORK WITHIN THE LIMITS OF THE STRUCTURE OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

STRUCTURAL ERECTION AND BRACING REQUIREMENTS

1. THE STRUCTURAL DRAWINGS ILLUSTRATE THE COMPLETED STRUCTURE WITH ALL ELEMENTS IN THEIR FINAL POSITIONS, PROPERLY SUPPORTED AND BRACED.
2. THE CONTRACTOR SHALL PROVIDE SHORING AND BRACING AS REQUIRED DURING CONSTRUCTION TO ENSURE STABILITY. DESIGN AND SEQUENCING OF CONSTRUCTION SHORING AND BRACING IS OUTSIDE THE SCOPE OF THIS WORK.
3. THE CONTRACTOR IS RESPONSIBLE FOR THE DESIGN AND EXECUTION OF ALL MISCELLANEOUS SHORING, BRACING, TEMPORARY SUPPORTS, GUYING, ETC. NECESSARY TO PROVIDE A COMPLETE AND STABLE STRUCTURE AS SHOWN ON THESE DRAWINGS.

STRUCTURAL STEEL

1. STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE CURRENT EDITION OF THE AISC STEEL CONSTRUCTION MANUAL AND SECTION 4 OF THE TIA CODE.
2. PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING MINIMUM GRADES UNLESS OTHERWISE NOTED:
   - CHANNELS & ANGLES ..... ASTM A36, (Fy = 36 KSI)
   - PLATES ..... ASTM A36, (Fy = 36 KSI)
   - PIPES ..... ASTM A53 GR.B, (Fy = 35 KSI)
   - HSS ROUND ..... ASTM A500 GR.B, (Fy = 42 KSI)
   - HSS RECTANGULAR ..... ASTM A500 GR.B, (Fy = 46 KSI)
   - W-FLANGE ..... ASTM A992 (Fy = 50 KSI)
   - STRUCTURAL BOLTS ..... ASTM A325
   - U-BOLTS ..... ASTM A307 GR.A
   - NUTS FOR BOLTS ..... ASTM A563 (THREADING TO MATCH BOLT)
   - WASHERS FOR BOLTS ..... ASTM F436
   - SEE TABLE 5-1 OF THE TIA CODE FOR ADDITIONAL SHAPES AND STANDARDS THAT ARE NOT LISTED ABOVE.
3. NON PRE-QUALIFIED STRUCTURAL STEEL SHALL CONFORM TO THE FOLLOWING STANDARDS PER THE TIA CODE:
   - THE CARBON EQUIVALENT OF STEEL SHALL NOT EXCEED 0.65 PER SECTION 5.4.2 OF THE TIA CODE
   - ELONGATION OF STEEL SHALL NOT BE LESS THAN 18%
   - TEST REPORTS SHALL BE IN ACCORDANCE WITH ASTM A6 OR A568
   - TOLERANCES SHALL BE IN ACCORDANCE WITH ASTM A6
4. FIELD CUT EDGES, EXCEPT DRILLED HOLES, SHALL BE GROUND SMOOTH AND COLD GALVANIZED.
5. ALL WELDING WORK SHALL CONFORM TO THE AWS D1.1 STRUCTURAL WELDING CODE. ALL WELDING SHALL BE PERFORMED BY CERTIFIED WELDERS ONLY. WELDING ELECTRODES SHALL BE E70XX.
6. ALL DETAILING, FABRICATION AND ERECTION OF STRUCTURAL STEEL SHALL CONFORM TO AISC SPECS AND CODES, LATEST EDITION.
7. UPON REQUEST, THE CONTRACTOR SHALL SUBMIT DETAILED, ENGINEERED, COORDINATED AND CHECKED SHOP DRAWINGS FOR ALL STRUCTURAL STEEL TO THE ENGINEER OF RECORD TO REVIEW FOR COMPLIANCE WITH DESIGN INTENT PRIOR TO THE START OF FABRICATION AND/OR ERECTION. GEOSTRUCTURAL IS ABSOLVED OF ALL LIABILITY ASSOCIATED WIT THE MISINTERPRETATION OF THE CONSTRUCTION DOCUMENTS IF CONTRACTOR CHOOSES NOT TO SUBMIT SHOP DRAWINGS.
8. TORCH-CUTTING OF ANY KIND SHALL NOT BE PERMITTED.
9. ALL BOLT HOLES SHALL BE STANDARD SIZE BOLT HOLES PER AISC 360, UNLESS OTHERWISE NOTED. ALL HOLES SHALL BE SHOP DRILLED OR SUB-PUNCHED AND REAMED. BURNING OF HOLES IS NOT PERMITTED. WHERE SLOTTED OR OVERSIZE HOLES ARE SPECIFIED ON THE DRAWINGS, EXTRA-THICK ASTM F436 PLATE WASHERS SHALL BE USED (3/16" MINIMUM THICKNESS) WITH A DIAMETER SUITABLE TO COVER THE EXTENTS OF THE SLOT OR HOLE. BOLTS SHALL BE HEAVY-HEX WHERE AVAILABLE IN THE SIZE AND GRADE SPECIFIED, OTHERWISE BOLTS SHALL BE HEX HEAD CAP SCREWS.
10. ALL STEEL HARDWARE, INCLUDING ADHESIVE OR EMBEDDED ANCHOR BOLTS AND THEIR ACCESSORIES, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A153 (EXCEPT BOLTS SMALLER THAN ½" SHALL CONFORM TO FE/ZN 3 AT PER ASTM F1941 WHERE HOT-DIP GALVANIZED BOLTS ARE NOT AVAILABLE). ALL STEEL MEMBERS, INCLUDING WELDMENTS, SHALL BE HOT-DIP GALVANIZED IN ACCORDANCE WITH ASTM A123. REPAIR DAMAGE TO GALVANIZED COATINGS USING ASTM A780 PROCEDURES WITH A ZINC RICH PAINT (SUCH AS ZINC GALVILITE) FOR GALVANIZING DAMAGED BY HANDLING, TRANSPORTING, CUTTING, WELDING, OR BOLTING. DO NOT HEAT SURFACES TO WHICH REPAIR PAINT HAS BEEN APPLIED. CALL OUT HOLES REQUIRED FOR HOT-DIP GALVANIZING ON SHOP DRAWINGS.
11. MEMBERS SHALL BE SHOP-FABRICATED AND WELDED TO THE EXTENT PRACTICABLE IN ORDER TO REDUCE FIELD INSTALLATION COSTS.

STRUCTURAL BOLTS

1. ALL CONNECTIONS OF STRUCTURAL STEEL MEMBERS SHALL BE MADE USING SPECIFIED GALVANIZED HIGH STRENGTH ASTM A325 OR A490 BOLTS WITH THREADS EXCLUDED FROM SHEAR PLANE.
2. FASTENERS SHALL BE INSTALLED IN PROPERLY ALIGNED HOLES, WITH BOLT HEADS FACING DOWN WHERE APPLICABLE.
3. ALL BOLTS AT EVERY CONNECTION SHALL BE INSTALLED SNUG-TIGHT UNTIL THE SECTION IS FULLY COMPACTED AND ALL PLIES ARE JOINED, AND THEN TIGHTENED FURTHER BY AISC - "TURN OF THE NUT" METHOD. TIGHTENING SHALL PROGRESS SYSTEMATICALLY.
4. BOLT LENGTHS UP TO AND INCLUDING 4 DIAMETERS SHALL BE TENSIONED 1/3 TURN BEYOND SNUG-TIGHT. BOLT LENGTHS OVER 4 DIAMETERS SHALL BE 1½ TURNS BEYOND SNUG-TIGHT.
5. ALL BOLTED CONNECTIONS SHALL USE LOCK WASHERS.
6. MINIMUM EDGE DISTANCE FOR BOLTS SHALL BE 1½" CENTER TO EDGE UNLESS OTHERWISE NOTED.

NOMINAL HOLE DIMENSIONS:

BOLT Ø	STANDARD HOLE Ø
1/2"Ø	9/16"Ø
5/8"Ø	11/16"Ø
3/4"Ø	13/16"Ø
7/8"Ø	15/16"Ø
1"Ø	1 1/16"Ø

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STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

SITE INFORMATION:

MOUNT AUGMENTATION

T-MOBILE: CT11443E
SBA: CT13615-A
MADISON 7

MADISON, CT

LATITUDE: 41.275831
LONGITUDE: -72.558890

SHEET TITLE:

NOTES AND SPECIFICATIONS

SHEET NUMBER:

S-2

PRE-CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	AUGMENTATION INSPECTION CHECKLIST
√	APPROVED SHOP DRAWINGS (LATEST REVISION)
√	FABRICATION INSPECTION
	FABRICATOR'S CERTIFIED WELD INSPECTOR (CWI)
	FABRICATOR'S QUALIFIED PERSONNEL FOR WELDING
√	MATERIAL TEST REPORT(S) / MILL CERTIFICATE(S)
	FABRICATOR'S NON-DESTRUCTIVE TESTING (NDT) TECHNICIAN
√	PACKING SLIPS FOR STRUCTURAL MATERIALS

CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	CONSTRUCTION INSPECTIONS
	FOUNDATION INSPECTIONS
	CONCRETE COMPRESSIVE STRENGTH AND SLUMP TESTING RESULTS/CERTIFICATES
	ADHESIVE ANCHOR ROD(S) INSTALLATION INSPECTION
	BASE PLATE GROUT INSPECTION
	THIRD-PARTY CERTIFIED WELD INSPECTION (INCLUDING IBC SPECIAL INSPECTIONS)
	SOIL EXCAVATION — DENSITY TESTING, COMPACTION INSPECTION/VERIFICATION, USE OF SUITABLE FILL
√	GALVANIZING REPAIR MATERIAL PREPARATION, INSPECTION, & PAINT APPLICATION
	GUY WIRE (RE-)TENSION REPORT AND INSPECTION
√	PRIME CONTRACTOR'S AS-BUILT DOCUMENTS (SIGNED & DATED)

POST-CONSTRUCTION INSPECTION CHECKLIST

CONSTRUCTION AND/OR INSTALLATION INSPECTIONS REQUIRED FOR REPORT? (CHECK=YES, BLANK=NO)	INSPECTION REPORT ITEM
√	AUGMENTATION INSPECTOR'S ISSUE LIST (INCLUDING CORRECTIVE ACTIONS TAKEN) AND/OR REDLINED RECORD DRAWINGS
	POST-INSTALLED ADHESIVE ANCHOR ROD PULL-OUT TESTING
√	PHOTOGRAPHS OF AUGMENTATIONS (INCLUDE PHOTOS OF BOTH SIDES OF WELDED OR BOLTED CONNECTIONS, OF OVERALL AND DETAIL VIEWS OF INSTALLED AUGMENTATIONS, AND BEFORE/AFTER PHOTOS OF ANY ISSUES IDENTIFIED BY THE INSPECTOR)

GENERAL NOTES

1. THE POST-AUGMENTATION INSPECTION IS A VISUAL EXAMINATION OF STRUCTURE AUGMENTATIONS AND A REVIEW OF ANY REQUIRED CONSTRUCTION INSPECTIONS, TESTING, AND OTHER DATA TO VERIFY THAT THE AUGMENTATIONS ARE INSTALLED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS AS DESIGNED BY THE ENGINEER OF RECORD. THE CONTRACT DOCUMENTS INCLUDE THESE AUGMENTATION DRAWINGS, ANY PROJECT SPECIFICATIONS REFERENCED TO IN THE PROJECT NOTES OR OTHERWISE PROVIDED WITH THE DRAWINGS, AND OTHER DOCUMENTS OR DRAWINGS PROVIDED WITH THE AUGMENTATION DRAWINGS WITH THE INTENT THAT THEY BE USED AS A DESIGN AID OR GUIDELINE FOR CONSTRUCTION.
2. THE POST-AUGMENTATION INSPECTION SHALL CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A QUALITATIVE REVIEW OF THE ENGINEERING ASPECTS OF THE DESIGN OR THE DESIGN DRAWINGS. THE AUGMENTATION INSPECTOR IS NOT TAKING OWNERSHIP OF THE AUGMENTATION DESIGN IN THE PERFORMANCE OF THEIR DUTIES. OWNERSHIP OF THE AUGMENTATION DESIGN'S EFFECTIVENESS AND INTENT, LIES WITH THE ENGINEER OF RECORD.
3. TO ENSURE THAT THE REQUIREMENTS OF THE POST-AUGMENTATION INSPECTION ARE MET, IT IS ESSENTIAL THAT COORDINATION BETWEEN THE PRIME CONTRACTOR AND THE AUGMENTATION INSPECTOR BEGIN AS SOON AS THE PROJECT IS FUNDED AND WORK ENTERS THE PLANNING STAGE. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BE PROACTIVE IN IDENTIFYING CONSTRUCTION ISSUES AND COMMUNICATING THESE ISSUES TO EACH OTHER AND TO THE ENGINEER OF RECORD AND STRUCTURE OWNER AND/OR CUSTOMER, AS REQUIRED.

INSPECTION AND REPORT RECOMMENDATIONS

1. THE FOLLOWING ARE PROVIDED IN THE INTENT OF ENHANCING THE EFFECTIVENESS OF THE AUGMENTATION INSPECTION AND IMPROVING THE EFFICIENCY OF THE PROCESS OF COLLECTING AND COMPILING THE INFORMATION INTO A USABLE REPORT:

1.1. IT IS RECOMMENDED THAT THE PRIME CONTRACTOR PROVIDE THE AUGMENTATION INSPECTOR AT LEAST 5 BUSINESS DAYS NOTICE FOR WHEN THE SITE WILL BE READY FOR THE AUGMENTATION INSPECTION.

1.2. THE PRIME CONTRACTOR AND THE AUGMENTATION INSPECTOR SHALL COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.

1.3. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BOTH BE PRESENT DURING THE INITIAL INSPECTION IN ORDER TO ALLOW FOR THE REMEDIATION OF DEFICIENCIES DURING THE INSPECTION, AS PRACTICABLE. IT MAY BE PREFERABLE TO KEEP WORK CREWS AND THEIR EQUIPMENT ON SITE TO REMEDIATE DEFICIENCIES DURING INSPECTIONS.

INSPECTION RESCHEDULING AND CANCELLATION

1. IF THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR HAVE AGREED UPON A TIME AND DATE FOR A GIVEN INSPECTION AND EITHER PARTY RESCHEDULES OR CANCELS THE INSPECTION, THE STRUCTURE OWNER SHALL NOT BE RESPONSIBLE FOR COSTS, FEES, LOST DEPOSITS, OR OTHER EXPENSES INCURRED BY THE PRIME CONTRACTOR, THEIR SUBCONTRACTOR(S), OR THE AUGMENTATION INSPECTOR DUE TO THESE SCHEDULING CHANGES. EXCEPTIONS MAY BE MADE IN THE EVENT OF UNCONTROLLABLE SITUATIONS SUCH AS NATURAL DISASTERS, SEVERE WEATHER, OR OTHER CONDITIONS THAT COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

REMEDIATION OF FAILING INSPECTION

1. IN THE EVENT THAT ANY PORTION OF THE AUGMENTATION WORK IS DETERMINED TO BE UNSATISFACTORY BY THE MODIFICATION INSPECTOR, THE PRIME CONTRACTOR SHALL WORK WITH THE AUGMENTATION INSPECTOR TO CREATE A PLAN OF ACTION THAT WILL EITHER:

1.1. REPAIR THE DEFICIENT WORK TO SATISFACTORY CONDITION AND INCLUDE A SUBSEQUENT RE-INSPECTION OF THE WORK TO VERIFY THAT IT IS SATISFACTORY.

1.2. OR, WITH THE PERMISSION OF THE STRUCTURE OWNER AND/OR CUSTOMER, THE PRIME CONTRACTOR MAY WORK WITH THE ENGINEER OF RECORD TO REVIEW THE AS-BUILT CONDITION OF THE AUGMENTATION TO DETERMINE IF IT IS STRUCTURALLY ACCEPTABLE. IF THIS ACTION IS NOT ACCEPTABLE TO ANY PARTY, THE PRIME CONTRACTOR SHALL PROCEED TO REPAIR THE DEFICIENT WORK TO A SATISFACTORY CONDITION.

AUGMENTATION INSPECTOR'S RESPONSIBILITIES

1. THE AUGMENTATION INSPECTOR MAY BE AN EMPLOYEE OF THE CONTRACTOR'S FIRM, HOWEVER THE INSPECTOR'S ONLY DUTIES SHALL BE INSPECTION, TESTING, AND REPORT CREATION.
2. THE AUGMENTATION INSPECTOR SHALL CONTACT THE PRIME CONTRACTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THIS INSPECTION. THE AUGMENTATION INSPECTOR SHALL REVIEW THE REQUIREMENTS OF THE INSPECTION CHECKLIST, SHALL WORK WITH THE PRIME CONTRACTOR TO DEVELOP A SCHEDULE OF NECESSARY ON-SITE INSPECTIONS, AND SHALL DISCUSS ANY SITE-SPECIFIC INSPECTION REQUIREMENTS OR OTHER CONCERNS.
3. THE AUGMENTATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL PRIME CONTRACTOR INSPECTION AND TEST REPORTS (INCLUDING THOSE OF ASSIGNED SUB-CONTRACTORS), SHALL REVIEW THE REPORTS FOR COMPLIANCE WITH THE CONTRACT DOCUMENTS AND SHALL CONDUCT THE NECESSARY ON-SITE INSPECTIONS.

PRIME CONTRACTOR'S RESPONSIBILITIES

1. THE PRIME CONTRACTOR SHALL CONTACT THE AUGMENTATION INSPECTOR AS SOON AS THEY HAVE RECEIVED A PURCHASE ORDER OR PAYMENT FOR THE AUGMENTATION INSTALLATION OR PROJECT. THE PRIME CONTRACTOR SHALL REVIEW THE REQUIREMENTS OF THE AUGMENTATION INSPECTION CHECKLIST, SHALL WORK WITH THE AUGMENTATION INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, AND SHALL DISCUSS SPECIFIC INSPECTION AND TESTING REQUIREMENTS WITH THE AUGMENTATION INSPECTOR IN DETAIL TO OBTAIN A FULL UNDERSTANDING OF THE REQUIRED INSPECTIONS AND TESTING.
2. THE PRIME CONTRACTOR SHALL PERFORM AND RECORD THE TESTING AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUGMENTATION INSPECTION CHECKLIST.

PHOTOGRAPHY REQUIREMENTS

1. THE PRIME CONTRACTOR AND AUGMENTATION INSPECTOR SHALL BETWEEN THE EFFORTS OF BOTH PARTIES AND THEIR EMPLOYED PERSONNEL PROVIDE PHOTOGRAPHS WITH THE INSPECTION REPORT TO INCLUDE THE FOLLOWING:

a. GENERAL SITE PHOTOGRAPHS PRE-CONSTRUCTION

b. AUGMENTATION INSTALLATION PHOTOGRAPHS DURING CONSTRUCTION/ERECTION OPERATIONS AND INSPECTIONS

b.1. RAW MATERIALS

b.2. PHOTOS OF DETAILED WORK REQUIRED ON THE DRAWINGS (CONNECTIONS, WELDMENTS, FIELD-FABRICATED MEMBERS, ETC)

b.3. BOLT INSTALLATION AND TORQUE/PRETENSION.

b.4. FINAL INSTALLED CONDITION (AFTER DEFICIENT CONDITIONS, IF ANY, ARE REMEDIATED).

b.5. REPAIR OF SURFACE COATINGS (INCLUDING GALVANIZING AND/OR PAINT COATING)

c. POST-AUGMENTATION PHOTOGRAPHS OF THE SITE & WORK.

d. PHOTOGRAPHS OF THE FINAL STATE OF THE SITE AT CONCLUSION OF THE WORK BY THE PRIME CONTRACTOR, ASSOCIATED SUBCONTRACTORS, AND THE AUGMENTATION INSPECTOR.

e. OTHER PHOTOS MAY BE INCLUDED AT PRIME CONTRACTOR & AUGMENTATION INSPECTOR'S DISCRETION.

NOTE: PHOTOS OF AUGMENTATIONS INSTALLED ON THE STRUCTURE ABOVE AN ELEVATION OF 20 FT SHALL REQUIRE PHOTOS TAKEN FROM THE STRUCTURE AS WELL AS OVERALL PHOTOGRAPHS OF THE AUGMENTATIONS TAKEN FROM THE GROUND.

OWNER INSPECTIONS

1. THE STRUCTURE OWNER MAY CONDUCT INSPECTIONS TO VERIFY THE QUALITY AND COMPLETENESS OF THE PREVIOUSLY COMPLETED AUGMENTATION INSPECTION REPORTS FOR THE AUGMENTATION INSTALLATION WORK.
2. INSPECTIONS MAY BE COMPLETED BY A 3RD-PARTY FIRM OF THE STRUCTURE OWNER'S CHOOSING AFTER A AUGMENTATION PROJECT IS COMPLETED AND A PASSING AUGMENTATION INSPECTION REPORT IS ISSUED.

T-Mobile

SBA

GEOSTRUCTURAL
PO BOX 2621, BOISE, ID 83701
530.539.4787
CONTACT@GEOSTRUCTURAL.COM
WWW.GEOSTRUCTURAL.COM

REVISIONS:

0	08/05/19	ISSUE FOR CONSTRUCTION	RWR

CHECKED BY: DWG

SITE INFORMATION:

MOUNT AUGMENTATION

T-MOBILE: CT11443E
SBA: CT13615-A
MADISON 7

MADISON, CT

LATITUDE: 41.275831
LONGITUDE: -72.558890

SHEET TITLE:

INSPECTION NOTES

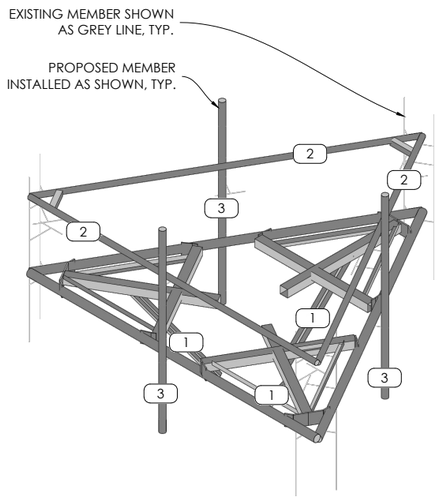
SHEET NUMBER:

S-3

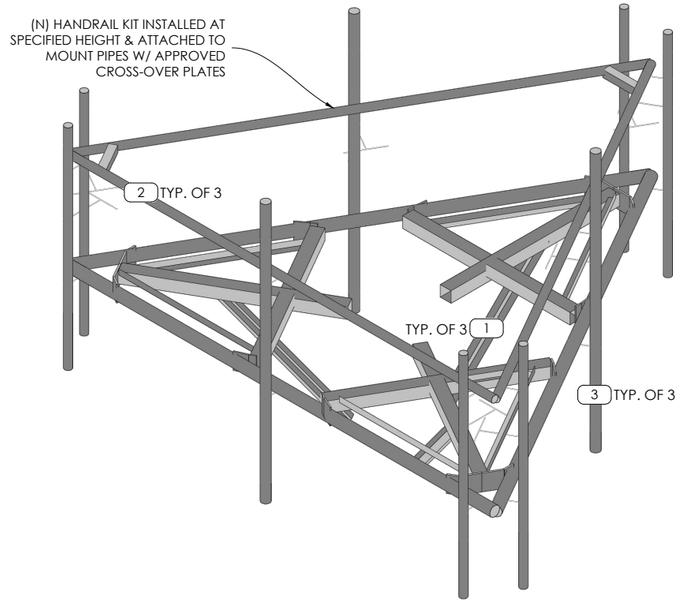
NEW MOUNT AUGMENTATIONS	
1	INSTALL PLATFORM REINFORCEMENT KIT; LOCATED 3.0' BELOW THE EXISTING STANDOFF CENTERLINE TO MONOPOLE SHAFT AND ATTACHING TO THE EXISTING STANDOFF MEMBER APPROXIMATELY 3.0' OUT FROM THE COLLAR ATTACHMENT. - SITEPRO1 PRK-1245L, (1) TOTAL.
2	INSTALL HANDRAIL KIT; LOCATED 3.0' ABOVE THE EXISTING PLATFORM RAIL AND ATTACHING TO THE MOUNT PIPES. - SITEPRO1 HRK12-U OR 14-U, (1) TOTAL. VERIFY REQUIRED SIZE IN FIELD. ATTACH ALL MOUNT PIPES TO NEW HANDRAIL WITH KIT-PROVIDED CROSS-OVER PLATES.
3	INSTALL (3) PIPE2.5STD x 8'-0" MOUNT PIPES AT POSITION 2 MOUNT PIPE LOCATION (SUPPORTING RFS APXVAARR24_43-U-NA20 AND 4449 RRH). ATTACH NEW PIPE2.5STD MOUNT PIPE TO EXISTING BOTTOM CHANNEL RAIL W/ SITEPRO1 SCX-K CROSSOVER ASSEMBLIES AND TO NEW TOP HANDRAIL PIPE W/ KIT-PROVIDED CROSS-OVER PLATE ASSEMBLIES.
AUGMENTATIONS SHALL BE COMPLETED PRIOR TO THE INSTALLATION OF ANY NEW EQUIPMENT.	

EXISTING MOUNT

PLATFORM @ 117' AUGMENTATION



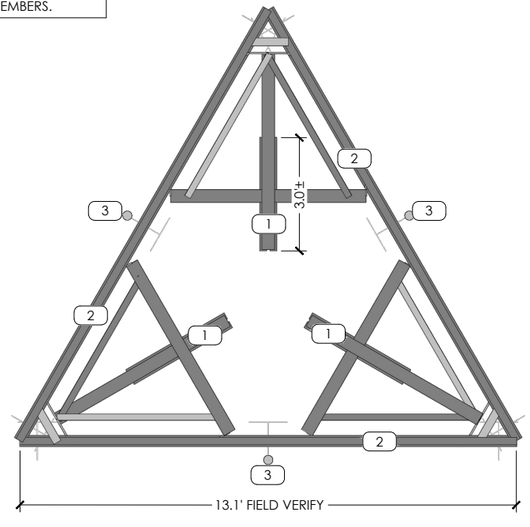
MOUNT AUGMENTATION ISOLATION
SCALE: N.T.S.



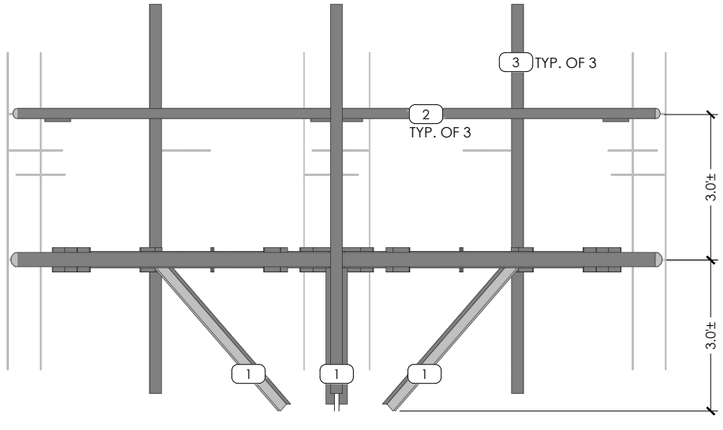
AUGMENTED MOUNT ISOMETRIC
SCALE: N.T.S.

CONSTRUCTION NOTES
1. SCOPE OF WORK MUST BE COMPLETED AT WIND SPEEDS < 20 MPH.
2. ALL DIMENSIONS ARE APPROXIMATE. CONTRACTOR SHOULD FIELD-VERIFY ALL DIMENSIONS BEFORE FABRICATION OF STEEL AND COMMENCEMENT OF WORK. FIELD CUT MEMBERS AS REQUIRED.
3. CONTRACTOR TO COORDINATE THE TEMPORARY REMOVAL/RELOCATION/REPLACEMENT OF ELEMENTS (E.G. COAX, CLIPS, TMAs, ETC.) CONNECTED TO, OR IN THE DIRECT PATH, OF NEW AUGMENTATION MEMBERS.

INSTALLATION NOTES
1. AUGMENTATION MEMBER(S) MAY NEED TO BE FIELD-CUT TO LENGTH TO ACCOMMODATE THIS INSTALLATION. CONTRACTOR TO CUT AND DRILL TO SUIT AS REQUIRED AND APPLY (2) COATS OF COLD-GALV. COMPOUND TO CUT MEMBER ENDS.
2. CONTRACTOR TO CHECK ALL EXISTING MEMBER CONNECTION BOLTS, PARTICULARLY STANDOFF TO TOWER BOLTS, FOR PROPER INSTALLATION AND TIGHTNESS.
3. COORDINATE PLACEMENT OF NEW AUGMENTATION MEMBERS WITH EXISTING TOWER AND CLIMBING FACILITY ELEMENTS (E.G. STEP PEGS, COAX PORTS, ETC.)
4. REFER TO CONSTRUCTION DRAWINGS (BY OTHERS) AND MOUNT STRUCTURAL ANALYSIS FOR APPROVED INSTALLATION LOCATIONS AND QUANTITIES OF APPURTENANCES.



AUGMENTED MOUNT PLAN
SCALE: N.T.S.



AUGMENTED MOUNT FRONT ELEVATION
SCALE: N.T.S.

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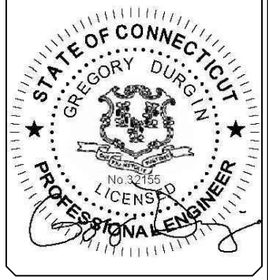
REVISIONS:

0	08/05/19	ISSUE FOR CONSTRUCTION	RWR

CHECKED BY: DWG



SITE INFORMATION:
MOUNT AUGMENTATION

T-MOBILE: CT11443E
SBA: CT13615-A
MADISON 7

MADISON, CT

LATITUDE: 41.275831
LONGITUDE: -72.558890

SHEET TITLE:
AUGMENTATIONS SECTIONS & DETAILS

SHEET NUMBER:
S-4

EXHIBIT 8

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
1320 Greenway Drive, Suite 600, Irving, Texas 75038

Structural Analysis Report

Existing 130 ft Rohn Monopole
Customer Name: SBA Communications Corp
Customer Site Number: CT13615-A
Customer Site Name: Madison 7, CT
Carrier Name: T-Mobile (App#: 117021, V2)
Carrier Site ID / Name: CT11443E / Madison
Site Location: 17 Cottage Road
Madison, Connecticut
New Haven County
Latitude: 41.275916
Longitude: -72.561444

Analysis Result:

Max Structural Usage: 71.4% [Pass]
Max Foundation Usage: 60.0% [Pass]
Additional Usage Caused by Mount Modification: +3.1%

Report Prepared By: Morteza Shakeri

Introduction

The purpose of this report is to summarize the analysis results on the 130 ft Rohn Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Radian Communication Services, Drawing No. A070592 1-3 dated 10/1/2007.
Foundation Drawing	Radian Communication Services, Drawing No. A070593 1-3 dated 10/1/2007.
Geotechnical Report	JGI, Project No. J2075395 dated 9/10/2007.
Modification Drawings	N/A
Mount Analysis	SBA Project # L600/L700

Analysis Criteria

The feasibility/rigorous analysis was performed in accordance with the requirements and stipulations of the TIA-222-G-2**.** In accordance with this standard, the structure was analyzed using **TESPoles,** a proprietary analysis software. The program considers the structure as an elastic 3-D model with second-order effects and temperature effects incorporated in the analysis. The analysis was performed using multiple wind directions.

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 130.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 101.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 3/4" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	TIA-222-G-2 / 2015 IBC / 2018 Connecticut State Building Code
Exposure Category:	C
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.173, S_1 = 0.06

This structural analysis is based upon the tower being classified as a Structure Class II; however, if a different classification is required subsequent to the date hereof, the tower classification will be changed to meet such requirement and a new structural analysis will be run.

Existing Antennas, Mounts and Transmission Lines

The table below summarizes the antennas, mounts and transmission lines that were considered in the analysis as existing on the tower.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	127.0	3	Powerwave P90-15-XLH-RR - Panel	Platform (Valmont LWRM) w/ Hand Rail and Mods	(12) 1 5/8" (1) 1/2" (2) 1/2" Fiber (2) 3" Flex Conduit* (6) 3/4" DC Power	AT&T
2		3	Kathrein 800-10964 - Panel			
3		3	Quintel QS46512-2 - Panel			
4		6	Powerwave TT19-08BP111-001 - TMA			
5		6	Kaelus DBC0061F1V51-2 - Diplexer			
6		3	Ericsson RRUS 8843 B2 B66A - RRU			
7		3	Ericsson RRUS 32 - RRU			
8		3	Ericsson 4449 B5/B12 - RRU			
9		3	Raycap DC6-48-60-18-8F			
-	117.0	3	Ericsson Air 21 B2A B4P - Panel	12.5' Low Profile Platform	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson Air 21 B4A B2P - Panel			
-		3	Ericsson KRY 112 144 - TMA			
15	107.0	9	Commscope SBNHH-1D65B - Panel	Low Profile Platform	(10) 1 5/8" (2) 1 5/8" Fiber	Verizon
16		3	Antel BXA-70063-6CF-2 - Panel			
17		3	Alcatel Lucent RRH2x60-700 - RRU			
18		3	Alcatel Lucent RRH2X60-PCS - RRU			
19		3	Alcatel Lucent RRH4x45AWS - RRU			
20		2	RFS DB-T1-6Z-8AB-0Z - ODU			

* (2) 3" flex conduit housing (2) 3/4" and (1) 1/2" cables

Proposed Carrier's Final Configuration of Antennas, Mounts and Transmission Lines

Information pertaining to the proposed carrier's final configuration of antennas and transmission lines was provided by SBA Communications Corp. The proposed antennas and lines are listed below.

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
10	117.0	3	Ericsson Air 21 B2A/B4P - Panel	12.5' Low Profile Platform w/ Hand Rail and Mods	(9) 1 5/8" (4) 1 5/8" Fiber	T-Mobile
11		3	RFS APXVAARR24_43-U-NA20 - Panel			
12		3	Ericsson Air 21 B4A/B2P - Panel			
13		3	Ericsson KRY 112 144/1 - TMA			
14		3	Ericsson Radio 4449 B71+B12 - RRU			

See the attached coax layout for the line placement considered in the analysis.

Analysis Results

The results of the structural analysis, performed for the wind and ice loading and antenna equipment as defined above, are summarized as the following:

	Pole shafts	Anchor Bolts	Base Plate
Max. Usage:	**48.5%**	**67.4%**	**71.4%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3067.7	32.2	47.3

The foundation has been investigated using the supplied documents and soils report and was found **adequate**. Therefore, no modification to the foundation will be required.

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.6356 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

Based on the analysis results, the existing structure and its foundation were found to be **adequate** to safely support the existing and proposed equipment and meet the minimum requirements per the ANSI/TIA/EIA 222-G Standard under the design basic wind speed as specified in the Analysis Criteria.

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC.** Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.

2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.

3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.

4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.

5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.

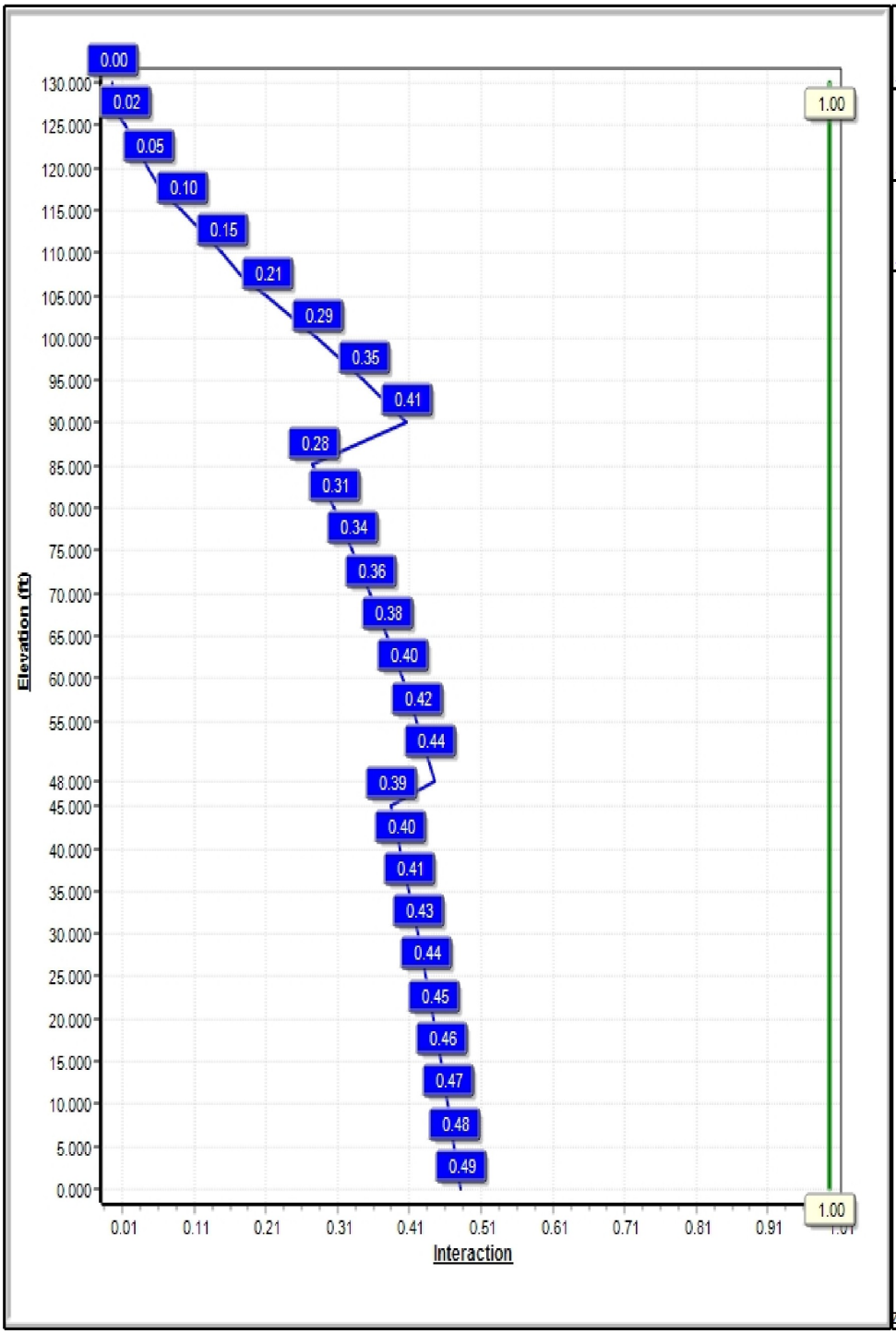
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

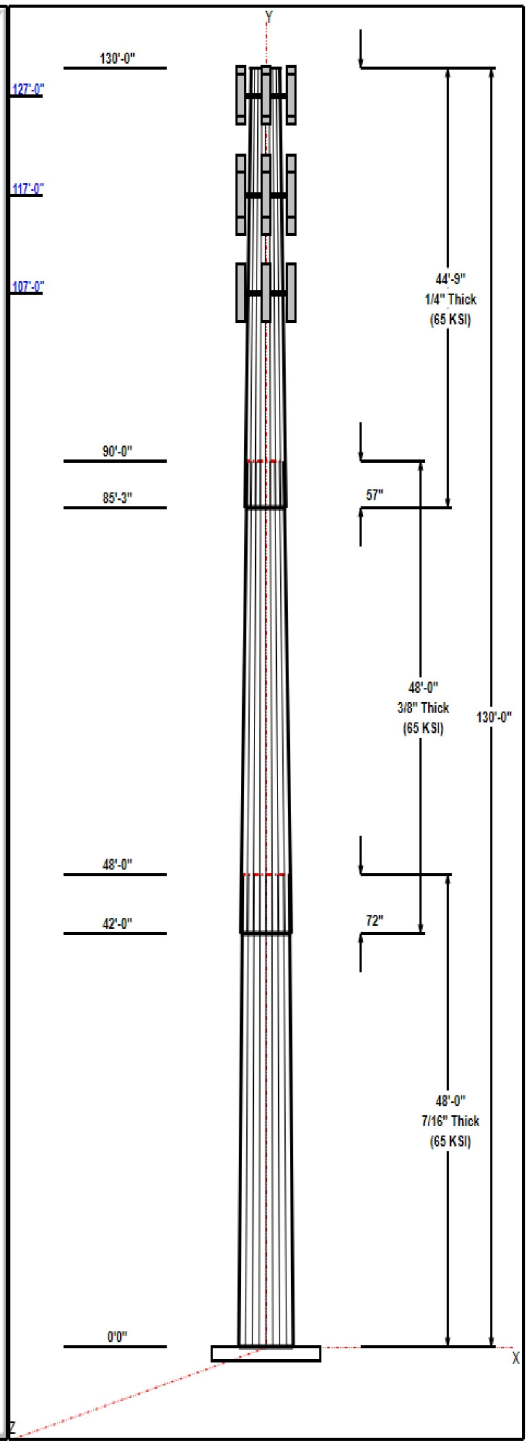
Usage Diagram - Max Ratio 48.52% at 0.0ft

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Dead Load Factor:	1.20	**Iterations:**	20
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 101 mph Wind





Structure: CT13615-A-SBA

Type: Tapered
Site Name: Madison 7, CT
Height: 130.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.24800

10/28/2020

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	48.00	46.10	58.00	0.438		0.24800	65
2	48.00	36.43	48.33	0.375	Slip	0.24800	65
3	44.75	27.01	38.11	0.250	Slip	0.24800	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
127.00	127.00	3	Powerwave	AT&T
127.00	127.00	6	Powerwave	AT&T
127.00	127.00	3	Raycap DC6-48-60-18-8F	AT&T
127.00	127.00	3	Quintel QS46512-2	AT&T
127.00	127.00	3	Ericsson RRUS 32	AT&T
127.00	127.00	1	HRK14	AT&T
127.00	127.00	3	800-10964	AT&T
127.00	127.00	1	Platform w/ Hand Rail	AT&T
127.00	127.00	6	DBC0061F1V51-2	AT&T
127.00	127.00	3	RRUS 8843 B2 B66A	AT&T
127.00	127.00	3	4449 B5/B12	AT&T
117.00	117.00	3	Ericsson Air 21 B2A/B4P	T-Mobile
117.00	117.00	3	APXVAARR24_43-U-NA20	T-Mobile
117.00	117.00	3	Ericsson Air 21 B4A/B2P	T-Mobile
117.00	117.00	1	Sitepro PRK-1245	T-Mobile
117.00	117.00	1	Sitepro HRK12-U	T-Mobile
117.00	117.00	3	Ericsson KRY 112 144/1	T-Mobile
117.00	117.00	3	Ericsson Radio 4449	T-Mobile
117.00	117.00	1	12.5' Low Profile Platform	T-Mobile
107.00	107.00	1	Low Profile Platform	Verizon
107.00	107.00	3	BXA-70063-6CF-2	Verizon
107.00	107.00	9	SBNHH-1D65B	Verizon
107.00	107.00	3	RRH2x60-700	Verizon
107.00	107.00	3	RRH2X60-PCS	Verizon
107.00	107.00	3	RRH4x45AWS	Verizon
107.00	107.00	2	DB-T1-6Z-8AB-0Z	Verizon

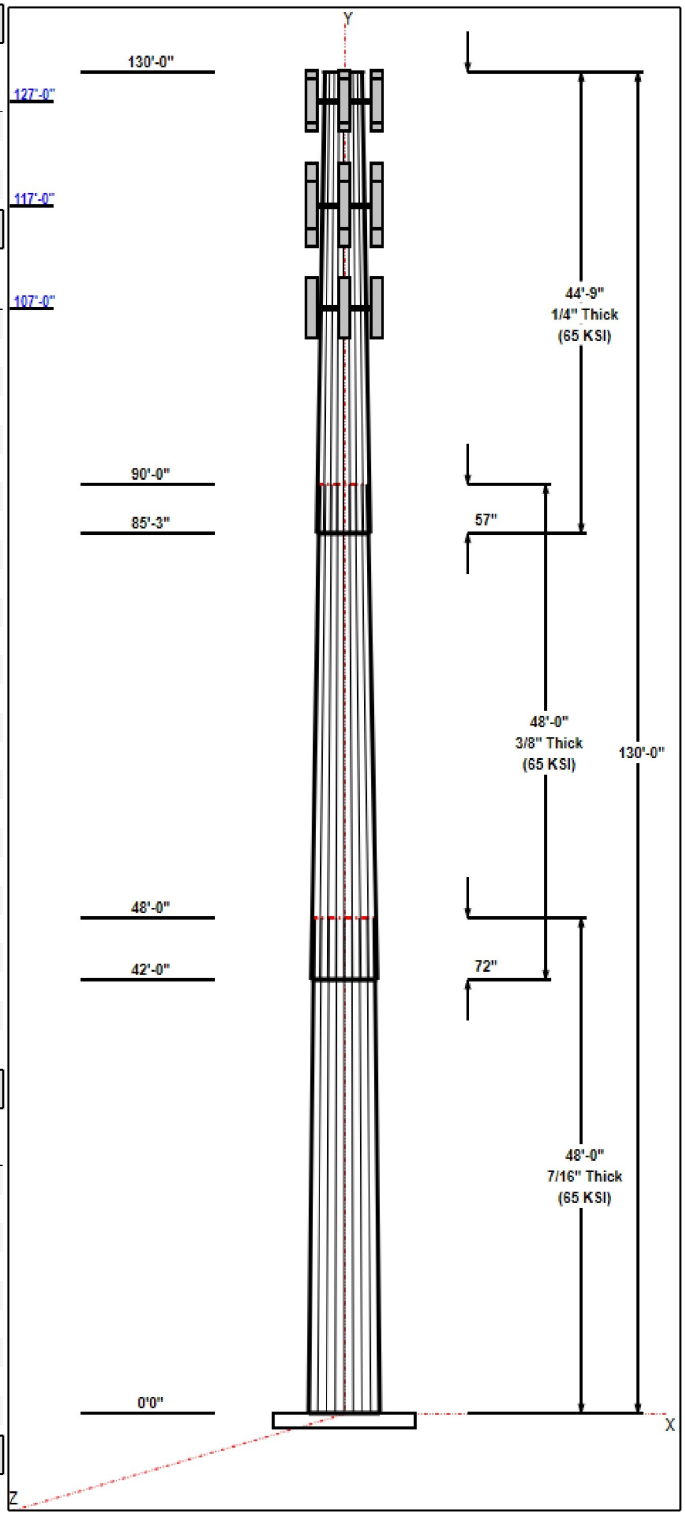
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	127.00	Inside	1 5/8"	AT&T
0.00	127.00	Inside	1/2" Coax	AT&T
0.00	127.00	Inside	1/2" Fiber	AT&T
0.00	127.00	Inside	3" Flex Conduit	AT&T
0.00	127.00	Inside	3/4" DC Power	AT&T
0.00	117.00	Inside	1 5/8" Coax	T-Mobile
0.00	117.00	Inside	1 5/8" Fiber	T-Mobile
0.00	107.00	Inside	1 5/8" Coax	Verizon
0.00	107.00	Inside	1 5/8" Fiber	Verizon

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
26	1.5" F1554 105	105.0	Radial

Base Plate



Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.7500	67.0	50.0	Round

Reactions

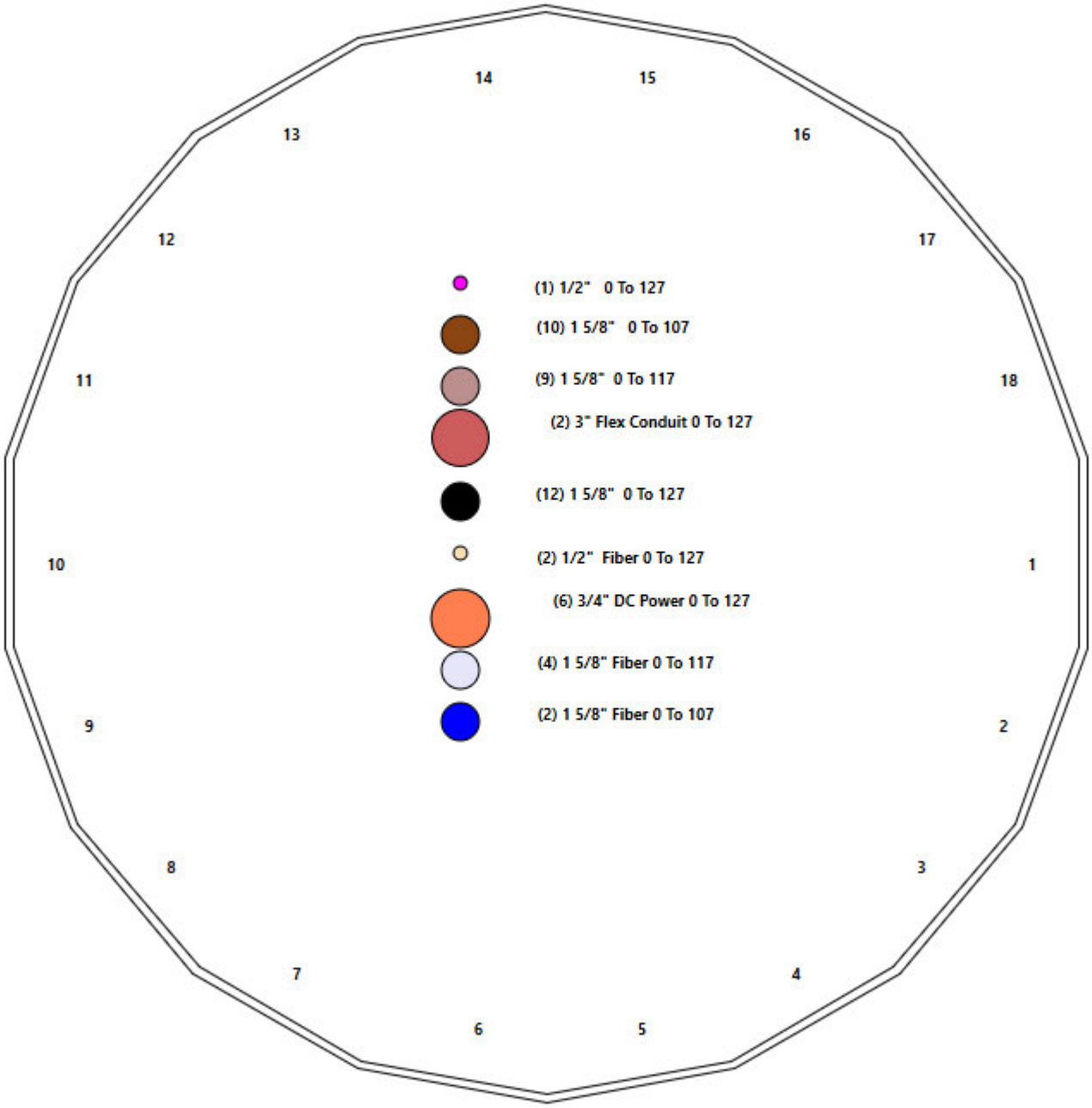
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	3067.7	32.2	47.3
0.9D + 1.6W 101 mph Wind	3049.6	32.2	35.5
1.2D + 1.0Di + 1.0Wi 50 mph Wind	763.7	8.2	70.0
1.2D + 1.0E	115.1	1.1	47.4
0.9D + 1.0E	114.4	1.1	35.5
1.0D + 1.0W 60 mph Wind	674.2	7.1	39.5

Structure: CT13615-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Madison 7, CT
Height: 130.00 (ft)

10/28/2020

Tower Engineering Solutions



Shaft Properties

Structure:	CT13615-A-SBA		**Code:**	EIA/TIA-222-G	10/28/2020
Site Name:	Madison 7, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	48.000	0.4375	65		0.00	11,705
2	18	48.000	0.3750	65	Slip	72.00	8,166
3	18	44.750	0.2500	65	Slip	57.00	3,904
					Total Shaft Weight:		**23,775**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	58.00	0.00	79.93	33461.19	21.97	132.57	46.10	48.00	63.40	16698.8	17.17	105.3	0.248000
2	48.33	42.00	57.08	16587.69	21.32	128.89	36.43	90.00	42.91	7048.10	15.72	97.15	0.248000
3	38.11	85.25	30.04	5439.48	25.47	152.43	27.01	130.00	21.23	1921.07	17.64	108.0	0.248000

Load Summary

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

Tower Engineering Solutions

Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	127.00	Powerwave P90-15-XLH-RR	3	53.00	8.16	0.75	215.33	10.916	0.75	0.00	0.00
2	127.00	Powerwave TT19-08BP111-001 TMA	6	16.00	0.64	0.67	35.90	1.223	0.67	0.00	0.00
3	127.00	Raycap DC6-48-60-18-8F	3	32.80	1.47	0.67	93.60	2.158	0.67	0.00	0.00
4	127.00	Quintel QS46512-2	3	75.00	5.55	0.96	232.82	6.552	0.96	0.00	0.00
5	127.00	Ericsson RRUS 32	3	53.00	2.74	0.67	139.21	3.456	0.67	0.00	0.00
6	127.00	HRK14	1	302.36	8.13	1.00	655.26	15.944	1.00	0.00	0.00
7	127.00	800-10964	3	83.80	10.00	0.72	309.83	11.276	0.72	0.00	0.00
8	127.00	Platform w/ Hand Rail	1	1600.00	32.00	1.00	3665.18	59.462	1.00	0.00	0.00
9	127.00	DBC0061F1V51-2	6	26.00	0.43	0.67	40.64	0.711	0.67	0.00	0.00
10	127.00	RRUS 8843 B2 B66A	3	72.00	1.64	0.67	118.07	2.129	0.67	0.00	0.00
11	127.00	4449 B5/B12	3	73.00	1.97	0.67	126.98	2.508	0.67	0.00	0.00
12	117.00	Ericsson Air 21 B2A/B4P	3	91.50	6.09	0.86	255.46	7.159	0.86	0.00	0.00
13	117.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	546.65	22.092	0.70	0.00	0.00
14	117.00	Ericsson Air 21 B4A/B2P	3	91.00	6.09	0.86	254.96	7.159	0.86	0.00	0.00
15	117.00	Sitepro PRK-1245	1	228.00	9.50	1.00	383.26	19.204	1.00	0.00	0.00
16	117.00	Sitepro HRK12-U	1	418.00	9.85	1.00	816.49	21.923	1.00	0.00	0.00
17	117.00	Ericsson KRY 112 144/1	3	11.00	0.41	0.67	21.52	0.874	0.67	0.00	0.00
18	117.00	Ericsson Radio 4449 B71+B12	3	74.00	1.65	0.67	140.15	2.173	0.67	0.00	0.00
19	117.00	12.5' Low Profile Platform	1	1600.00	25.55	1.00	3302.39	31.576	1.00	0.00	0.00
20	107.00	Low Profile Platform	1	1200.00	25.00	1.00	2212.35	45.247	1.00	0.00	0.00
21	107.00	BXA-70063-6CF-2	3	17.00	7.57	0.73	160.37	10.242	0.73	0.00	0.00
22	107.00	SBNHH-1D65B	9	40.60	8.08	0.83	234.27	9.326	0.83	0.00	0.00
23	107.00	RRH2x60-700	3	60.00	3.50	0.67	144.39	4.263	0.67	0.00	0.00
24	107.00	RRH2X60-PCS	3	55.00	2.20	0.67	136.08	2.813	0.67	0.00	0.00
25	107.00	RRH4x45AWS	3	60.00	2.71	0.67	138.07	3.932	0.67	0.00	0.00
26	107.00	DB-T1-6Z-8AB-0Z	2	18.90	4.80	1.00	157.03	5.643	1.00	0.00	0.00
		Totals:	**77**	**9,093.86**			**23,017.15**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	127.00	(12) 1 5/8"	0.00	Inside
0.00	127.00	(1) 1/2" Coax	0.00	Inside
0.00	127.00	(2) 1/2" Fiber	0.00	Inside
0.00	127.00	(2) 3" Flex Conduit	0.00	Inside
0.00	127.00	(6) 3/4" DC Power	0.00	Inside
0.00	117.00	(9) 1 5/8" Coax	0.00	Inside
0.00	117.00	(4) 1 5/8" Fiber	0.00	Inside
0.00	107.00	(10) 1 5/8" Coax	0.00	Inside
0.00	107.00	(2) 1 5/8" Fiber	0.00	Inside

Shaft Section Properties

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

Tower Engineering Solutions

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.4375	58.000	79.930	33461.2	21.97	132.57	75.6	1136.	0.0
5.00		0.4375	56.760	78.208	31345.0	21.47	129.74	76.2	1087.	1345.3
10.00		0.4375	55.520	76.486	29320.0	20.97	126.90	76.7	1040.	1316.0
15.00		0.4375	54.280	74.764	27384.1	20.47	124.07	77.3	993.7	1286.7
20.00		0.4375	53.040	73.043	25535.3	19.97	121.23	77.9	948.2	1257.4
25.00		0.4375	51.800	71.321	23771.7	19.47	118.40	78.5	903.9	1228.1
30.00		0.4375	50.560	69.599	22091.3	18.97	115.57	79.1	860.6	1198.8
35.00		0.4375	49.320	67.877	20491.9	18.47	112.73	79.7	818.4	1169.5
40.00		0.4375	48.080	66.155	18971.7	17.97	109.90	80.3	777.2	1140.2
42.00	Bot - Section 2	0.4375	47.584	65.466	18385.3	17.77	108.76	80.5	761.0	447.9
45.00		0.4375	46.840	64.433	17528.6	17.47	107.06	80.9	737.1	1241.2
48.00	Top - Section 1	0.3750	46.846	55.310	15091.1	20.62	124.92	0.0	0.0	1221.6
50.00		0.3750	46.350	54.720	14613.0	20.38	123.60	77.4	621.0	374.4
55.00		0.3750	45.110	53.244	13462.3	19.80	120.29	78.1	587.8	918.4
60.00		0.3750	43.870	51.768	12373.5	19.22	116.99	78.8	555.5	893.3
65.00		0.3750	42.630	50.292	11345.1	18.63	113.68	79.5	524.2	868.2
70.00		0.3750	41.390	48.816	10375.4	18.05	110.37	80.2	493.7	843.1
75.00		0.3750	40.150	47.340	9462.5	17.47	107.07	80.9	464.2	818.0
80.00		0.3750	38.910	45.865	8604.8	16.89	103.76	81.5	435.6	792.9
85.00		0.3750	37.670	44.389	7800.6	16.30	100.45	82.2	407.9	767.8
85.25	Bot - Section 3	0.3750	37.608	44.315	7761.8	16.27	100.29	82.3	406.5	37.7
90.00	Top - Section 2	0.2500	36.930	29.105	4947.3	24.64	147.72	0.0	0.0	1182.9
95.00		0.2500	35.690	28.121	4462.4	23.76	142.76	73.5	246.3	486.8
100.00		0.2500	34.450	27.137	4010.2	22.89	137.80	74.5	229.3	470.1
105.00		0.2500	33.210	26.153	3589.6	22.01	132.84	75.5	212.9	453.3
107.00		0.2500	32.714	25.759	3430.0	21.66	130.86	75.9	206.5	176.6
110.00		0.2500	31.970	25.169	3199.5	21.14	127.88	76.5	197.1	259.9
115.00		0.2500	30.730	24.185	2838.8	20.26	122.92	77.6	181.9	419.9
117.00		0.2500	30.234	23.791	2702.4	19.91	120.94	78.0	176.1	163.3
120.00		0.2500	29.490	23.201	2506.2	19.39	117.96	78.6	167.4	239.9
125.00		0.2500	28.250	22.217	2200.7	18.51	113.00	79.6	153.4	386.4
127.00		0.2500	27.754	21.824	2085.8	18.16	111.02	80.0	148.0	149.9
130.00		0.2500	27.010	21.233	1921.1	17.64	108.04	80.7	140.1	219.8
										23775.2

Wind Loading - Shaft

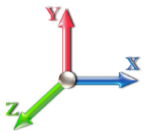
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	457.01	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	447.24	0.650	0.000	5.00	24.277	15.78	585.7	0.0	1614.3
10.00		1.00	0.85	21.088	23.20	437.47	0.650	0.000	5.00	23.753	15.44	573.0	0.0	1579.2
15.00		1.00	0.85	21.088	23.20	427.70	0.650	0.000	5.00	23.228	15.10	560.4	0.0	1544.0
20.00		1.00	0.90	22.375	24.61	430.49	0.650	0.000	5.00	22.703	14.76	581.1	0.0	1508.9
25.00		1.00	0.95	23.451	25.80	430.42	0.650	0.000	5.00	22.179	14.42	595.0	0.0	1473.7
30.00		1.00	0.98	24.369	26.81	428.26	0.650	0.000	5.00	21.654	14.08	603.7	0.0	1438.6
35.00		1.00	1.01	25.172	27.69	424.59	0.650	0.000	5.00	21.129	13.73	608.5	0.0	1403.4
40.00		1.00	1.04	25.890	28.48	419.77	0.650	0.000	5.00	20.605	13.39	610.3	0.0	1368.2
42.00	Bot - Section 2	1.00	1.05	26.157	28.77	417.58	0.650	0.000	2.00	8.095	5.26	242.2	0.0	537.5
45.00		1.00	1.07	26.540	29.19	414.05	0.650	0.000	3.00	12.175	7.91	369.7	0.0	1489.5
48.00	Top - Section 1	1.00	1.08	26.903	29.59	410.25	0.650	0.000	3.00	11.987	7.79	368.9	0.0	1466.0
50.00		1.00	1.09	27.135	29.85	414.29	0.650	0.000	2.00	7.886	5.13	244.8	0.0	449.3
55.00		1.00	1.12	27.685	30.45	407.27	0.650	0.000	5.00	19.348	12.58	612.8	0.0	1102.1
60.00		1.00	1.14	28.197	31.02	399.72	0.650	0.000	5.00	18.823	12.24	607.2	0.0	1072.0
65.00		1.00	1.16	28.676	31.54	391.71	0.650	0.000	5.00	18.299	11.89	600.3	0.0	1041.9
70.00		1.00	1.17	29.127	32.04	383.29	0.650	0.000	5.00	17.774	11.55	592.3	0.0	1011.7
75.00		1.00	1.19	29.553	32.51	374.52	0.650	0.000	5.00	17.250	11.21	583.2	0.0	981.6
80.00		1.00	1.21	29.958	32.95	365.43	0.650	0.000	5.00	16.725	10.87	573.2	0.0	951.5
85.00		1.00	1.22	30.342	33.38	356.05	0.650	0.000	5.00	16.200	10.53	562.3	0.0	921.3
85.25	Bot - Section 3	1.00	1.22	30.361	33.40	355.57	0.650	0.000	0.25	0.796	0.52	27.7	0.0	45.3
90.00	Top - Section 2	1.00	1.24	30.710	33.78	346.40	0.650	0.000	4.75	15.080	9.80	529.8	0.0	1419.5
95.00		1.00	1.25	31.061	34.17	341.30	0.650	0.000	5.00	15.363	9.99	545.9	0.0	584.2
100.00		1.00	1.27	31.399	34.54	331.23	0.650	0.000	5.00	14.838	9.64	533.0	0.0	564.1
105.00		1.00	1.28	31.723	34.89	320.95	0.650	0.000	5.00	14.313	9.30	519.4	0.0	544.0
107.00	Appurtenance(s)	1.00	1.28	31.849	35.03	316.79	0.650	0.000	2.00	5.578	3.63	203.3	0.0	212.0
110.00		1.00	1.29	32.035	35.24	310.48	0.650	0.000	3.00	8.210	5.34	300.9	0.0	311.9
115.00		1.00	1.30	32.336	35.57	299.84	0.650	0.000	5.00	13.264	8.62	490.7	0.0	503.8
117.00	Appurtenance(s)	1.00	1.31	32.454	35.70	295.54	0.650	0.000	2.00	5.159	3.35	191.5	0.0	195.9
120.00		1.00	1.32	32.627	35.89	289.03	0.650	0.000	3.00	7.581	4.93	283.0	0.0	287.8
125.00		1.00	1.33	32.909	36.20	278.07	0.650	0.000	5.00	12.215	7.94	459.9	0.0	463.6
127.00	Appurtenance(s)	1.00	1.33	33.019	36.32	273.65	0.650	0.000	2.00	4.739	3.08	179.0	0.0	179.8
130.00		1.00	1.34	33.182	36.50	266.97	0.650	0.000	3.00	6.951	4.52	263.9	0.0	263.7
								Totals:	**130.00**			**14,602.2**		**28,530.3**

Discrete Appurtenance Forces

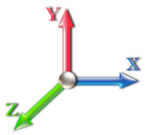
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	127.00	Ericsson RRUS 32	3	33.019	36.321	0.50	0.75	4.13	190.80	0.000	0.000	240.04	0.00	0.00
2	127.00	Powerwave	3	33.019	36.321	0.56	0.75	13.77	190.80	0.000	0.000	800.22	0.00	0.00
3	127.00	Powerwave	6	33.019	36.321	0.50	0.75	1.93	115.20	0.000	0.000	112.14	0.00	0.00
4	127.00	Raycap DC6-48-60-18-8F	3	33.019	36.321	0.50	0.75	2.22	118.08	0.000	0.000	128.78	0.00	0.00
5	127.00	Quintel QS46512-2	3	33.019	36.321	0.72	0.75	11.99	270.00	0.000	0.000	696.66	0.00	0.00
6	127.00	4449 B5/B12	3	33.019	36.321	0.50	0.75	2.97	262.80	0.000	0.000	172.58	0.00	0.00
7	127.00	HRK14	1	33.019	36.321	1.00	1.00	8.13	362.83	0.000	0.000	472.46	0.00	0.00
8	127.00	800-10964	3	33.019	36.321	0.54	0.75	16.20	301.68	0.000	0.000	941.43	0.00	0.00
9	127.00	Platform w/ Hand Rail	1	33.019	36.321	1.00	1.00	32.00	1920.00	0.000	0.000	1859.62	0.00	0.00
10	127.00	DBC0061F1V51-2	6	33.019	36.321	0.50	0.75	1.30	187.20	0.000	0.000	75.34	0.00	0.00
11	127.00	RRUS 8843 B2 B66A	3	33.019	36.321	0.50	0.75	2.47	259.20	0.000	0.000	143.67	0.00	0.00
12	117.00	12.5' Low Profile Platform	1	32.454	35.699	1.00	1.00	25.55	1920.00	0.000	0.000	1459.38	0.00	0.00
13	117.00	Ericsson Radio 4449	3	32.454	35.699	0.50	0.75	2.49	266.40	0.000	0.000	142.08	0.00	0.00
14	117.00	Ericsson KRY 112 144/1	3	32.454	35.699	0.50	0.75	0.62	39.60	0.000	0.000	35.30	0.00	0.00
15	117.00	Sitepro PRK-1245	1	32.454	35.699	1.00	1.00	9.50	273.60	0.000	0.000	542.63	0.00	0.00
16	117.00	Ericsson Air 21 B4A/B2P	3	32.454	35.699	0.65	0.75	11.78	327.60	0.000	0.000	673.09	0.00	0.00
17	117.00	APXVAARR24_43-U-NA2	3	32.454	35.699	0.52	0.75	31.88	460.80	0.000	0.000	1820.82	0.00	0.00
18	117.00	Ericsson Air 21 B2A/B4P	3	32.454	35.699	0.65	0.75	11.78	329.40	0.000	0.000	673.09	0.00	0.00
19	117.00	Sitepro HRK12-U	1	32.454	35.699	1.00	1.00	9.85	501.60	0.000	0.000	562.62	0.00	0.00
20	107.00	SBNHH-1D65B	9	31.849	35.034	0.66	0.80	48.29	438.48	0.000	0.000	2706.64	0.00	0.00
21	107.00	Low Profile Platform	1	31.849	35.034	1.00	1.00	25.00	1440.00	0.000	0.000	1401.35	0.00	0.00
22	107.00	BXA-70063-6CF-2	3	31.849	35.034	0.58	0.80	13.26	61.20	0.000	0.000	743.43	0.00	0.00
23	107.00	DB-T1-6Z-8AB-0Z	2	31.849	35.034	0.80	0.80	7.68	45.36	0.000	0.000	430.50	0.00	0.00
24	107.00	RRH2x60-700	3	31.849	35.034	0.54	0.80	5.63	216.00	0.000	0.000	315.47	0.00	0.00
25	107.00	RRH2X60-PCS	3	31.849	35.034	0.54	0.80	3.54	198.00	0.000	0.000	198.30	0.00	0.00
26	107.00	RRH4x45AWS	3	31.849	35.034	0.54	0.80	4.36	216.00	0.000	0.000	244.27	0.00	0.00
							Totals:		**10,912.63**			**17,591.91**		

Total Applied Force Summary

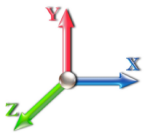
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		585.66	1944.32	0.00	0.00
10.00		573.01	1909.17	0.00	0.00
15.00		560.35	1874.02	0.00	0.00
20.00		581.13	1838.86	0.00	0.00
25.00		595.00	1803.71	0.00	0.00
30.00		603.66	1768.55	0.00	0.00
35.00		608.46	1733.40	0.00	0.00
40.00		610.27	1698.25	0.00	0.00
42.00		242.23	669.46	0.00	0.00
45.00		369.67	1687.46	0.00	0.00
48.00		368.91	1663.95	0.00	0.00
50.00		244.81	581.29	0.00	0.00
55.00		612.79	1432.13	0.00	0.00
60.00		607.20	1402.00	0.00	0.00
65.00		600.31	1371.87	0.00	0.00
70.00		592.26	1341.73	0.00	0.00
75.00		583.19	1311.60	0.00	0.00
80.00		573.19	1281.47	0.00	0.00
85.00		562.34	1251.34	0.00	0.00
85.25		27.66	61.78	0.00	0.00
90.00		529.80	1733.00	0.00	0.00
95.00		545.89	914.17	0.00	0.00
100.00		532.98	894.09	0.00	0.00
105.00		519.44	874.00	0.00	0.00
107.00	(24) attachments	6243.20	2959.01	0.00	0.00
110.00		300.89	464.58	0.00	0.00
115.00		490.67	758.22	0.00	0.00
117.00	(18) attachments	6100.54	4416.66	0.00	0.00
120.00		282.95	390.93	0.00	0.00
125.00		459.86	635.49	0.00	0.00
127.00	(35) attachments	5821.96	4427.16	0.00	0.00
130.00		263.86	263.72	0.00	0.00
	Totals:	**32,194.15**	**47,357.37**	**0.00**	**0.00**

Calculated Forces

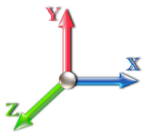
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 20

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.32	-32.25	0.00	-3067.6	0.00	3067.68	5435.95	2717.97	12860.7	6439.91	0.00	0.000	0.000	0.485
5.00	-45.31	-31.76	0.00	-2906.4	0.00	2906.44	5360.22	2680.11	12406.3	6212.37	0.07	-0.127	0.000	0.476
10.00	-43.33	-31.28	0.00	-2747.6	0.00	2747.64	5282.67	2641.34	11955.5	5986.66	0.27	-0.255	0.000	0.467
15.00	-41.39	-30.80	0.00	-2591.2	0.00	2591.25	5203.30	2601.65	11508.7	5762.93	0.61	-0.385	0.000	0.458
20.00	-39.48	-30.30	0.00	-2437.2	0.00	2437.24	5122.11	2561.06	11066.1	5541.30	1.08	-0.515	0.000	0.448
25.00	-37.62	-29.77	0.00	-2285.7	0.00	2285.75	5039.10	2519.55	10628.0	5321.92	1.69	-0.647	0.000	0.437
30.00	-35.79	-29.23	0.00	-2136.9	0.00	2136.90	4954.26	2477.13	10194.7	5104.94	2.44	-0.779	0.000	0.426
35.00	-34.00	-28.67	0.00	-1990.7	0.00	1990.76	4867.60	2433.80	9766.46	4890.49	3.33	-0.912	0.000	0.414
40.00	-32.27	-28.09	0.00	-1847.4	0.00	1847.40	4779.12	2389.56	9343.53	4678.71	4.36	-1.045	0.000	0.402
42.00	-31.57	-27.87	0.00	-1791.2	0.00	1791.23	4743.22	2371.61	9175.92	4594.78	4.81	-1.100	0.000	0.397
45.00	-29.85	-27.51	0.00	-1707.6	0.00	1707.62	4688.82	2344.41	8926.23	4469.75	5.53	-1.181	0.000	0.389
48.00	-28.16	-27.14	0.00	-1625.1	0.00	1625.10	3840.55	1920.27	7332.01	3671.45	6.30	-1.262	0.000	0.450
50.00	-27.54	-26.93	0.00	-1570.8	0.00	1570.83	3813.07	1906.53	7201.22	3605.96	6.84	-1.317	0.000	0.443
55.00	-26.05	-26.35	0.00	-1436.1	0.00	1436.19	3743.08	1871.54	6876.85	3443.54	8.29	-1.463	0.000	0.424
60.00	-24.61	-25.76	0.00	-1304.4	0.00	1304.45	3671.28	1835.64	6556.42	3283.08	9.91	-1.608	0.000	0.404
65.00	-23.19	-25.18	0.00	-1175.6	0.00	1175.64	3597.66	1798.83	6240.20	3124.74	11.67	-1.750	0.000	0.383
70.00	-21.81	-24.60	0.00	-1049.7	0.00	1049.73	3522.21	1761.10	5928.48	2968.65	13.58	-1.890	0.000	0.360
75.00	-20.46	-24.02	0.00	-926.74	0.00	926.74	3444.94	1722.47	5621.53	2814.94	15.63	-2.025	0.000	0.335
80.00	-19.15	-23.44	0.00	-806.65	0.00	806.65	3365.85	1682.92	5319.64	2663.77	17.82	-2.156	0.000	0.309
85.00	-17.90	-22.85	0.00	-689.44	0.00	689.44	3284.94	1642.47	5023.09	2515.28	20.15	-2.279	0.000	0.280
85.25	-17.81	-22.84	0.00	-683.73	0.00	683.73	3280.84	1640.42	5008.41	2507.93	20.27	-2.286	0.000	0.278
90.00	-16.06	-22.27	0.00	-575.24	0.00	575.24	1897.08	948.54	2862.22	1433.24	22.60	-2.395	0.000	0.410
95.00	-15.12	-21.72	0.00	-463.90	0.00	463.90	1858.98	929.49	2709.28	1356.65	25.17	-2.500	0.000	0.351
100.00	-14.21	-21.17	0.00	-355.32	0.00	355.32	1819.06	909.53	2557.69	1280.75	27.86	-2.631	0.000	0.286
105.00	-13.34	-20.63	0.00	-249.45	0.00	249.45	1777.32	888.66	2407.73	1205.66	30.67	-2.738	0.000	0.215
107.00	-10.67	-14.26	0.00	-208.19	0.00	208.19	1760.11	880.05	2348.27	1175.88	31.83	-2.774	0.000	0.183
110.00	-10.21	-13.95	0.00	-165.41	0.00	165.41	1733.75	866.88	2259.69	1131.52	33.59	-2.821	0.000	0.152
115.00	-9.47	-13.42	0.00	-95.69	0.00	95.69	1688.37	844.18	2113.84	1058.49	36.58	-2.879	0.000	0.096
117.00	-5.36	-7.11	0.00	-68.84	0.00	68.84	1669.70	834.85	2056.18	1029.62	37.79	-2.895	0.000	0.070
120.00	-4.99	-6.81	0.00	-47.51	0.00	47.51	1641.16	820.58	1970.46	986.70	39.61	-2.914	0.000	0.051
125.00	-4.37	-6.32	0.00	-13.47	0.00	13.47	1592.13	796.06	1829.84	916.28	42.67	-2.931	0.000	0.018
127.00	-0.25	-0.28	0.00	-0.83	0.00	0.83	1572.01	786.00	1774.43	888.53	43.90	-2.933	0.000	0.001
130.00	0.00	-0.26	0.00	0.00	0.00	0.00	1541.28	770.64	1692.26	847.39	45.74	-2.933	0.000	0.000

Wind Loading - Shaft

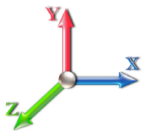
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	21.088	23.20	457.01	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	21.088	23.20	447.24	0.650	0.000	5.00	24.277	15.78	585.7	0.0	1210.7
10.00		1.00	0.85	21.088	23.20	437.47	0.650	0.000	5.00	23.753	15.44	573.0	0.0	1184.4
15.00		1.00	0.85	21.088	23.20	427.70	0.650	0.000	5.00	23.228	15.10	560.4	0.0	1158.0
20.00		1.00	0.90	22.375	24.61	430.49	0.650	0.000	5.00	22.703	14.76	581.1	0.0	1131.6
25.00		1.00	0.95	23.451	25.80	430.42	0.650	0.000	5.00	22.179	14.42	595.0	0.0	1105.3
30.00		1.00	0.98	24.369	26.81	428.26	0.650	0.000	5.00	21.654	14.08	603.7	0.0	1078.9
35.00		1.00	1.01	25.172	27.69	424.59	0.650	0.000	5.00	21.129	13.73	608.5	0.0	1052.5
40.00		1.00	1.04	25.890	28.48	419.77	0.650	0.000	5.00	20.605	13.39	610.3	0.0	1026.2
42.00	Bot - Section 2	1.00	1.05	26.157	28.77	417.58	0.650	0.000	2.00	8.095	5.26	242.2	0.0	403.1
45.00		1.00	1.07	26.540	29.19	414.05	0.650	0.000	3.00	12.175	7.91	369.7	0.0	1117.1
48.00	Top - Section 1	1.00	1.08	26.903	29.59	410.25	0.650	0.000	3.00	11.987	7.79	368.9	0.0	1099.5
50.00		1.00	1.09	27.135	29.85	414.29	0.650	0.000	2.00	7.886	5.13	244.8	0.0	337.0
55.00		1.00	1.12	27.685	30.45	407.27	0.650	0.000	5.00	19.348	12.58	612.8	0.0	826.6
60.00		1.00	1.14	28.197	31.02	399.72	0.650	0.000	5.00	18.823	12.24	607.2	0.0	804.0
65.00		1.00	1.16	28.676	31.54	391.71	0.650	0.000	5.00	18.299	11.89	600.3	0.0	781.4
70.00		1.00	1.17	29.127	32.04	383.29	0.650	0.000	5.00	17.774	11.55	592.3	0.0	758.8
75.00		1.00	1.19	29.553	32.51	374.52	0.650	0.000	5.00	17.250	11.21	583.2	0.0	736.2
80.00		1.00	1.21	29.958	32.95	365.43	0.650	0.000	5.00	16.725	10.87	573.2	0.0	713.6
85.00		1.00	1.22	30.342	33.38	356.05	0.650	0.000	5.00	16.200	10.53	562.3	0.0	691.0
85.25	Bot - Section 3	1.00	1.22	30.361	33.40	355.57	0.650	0.000	0.25	0.796	0.52	27.7	0.0	34.0
90.00	Top - Section 2	1.00	1.24	30.710	33.78	346.40	0.650	0.000	4.75	15.080	9.80	529.8	0.0	1064.6
95.00		1.00	1.25	31.061	34.17	341.30	0.650	0.000	5.00	15.363	9.99	545.9	0.0	438.1
100.00		1.00	1.27	31.399	34.54	331.23	0.650	0.000	5.00	14.838	9.64	533.0	0.0	423.1
105.00		1.00	1.28	31.723	34.89	320.95	0.650	0.000	5.00	14.313	9.30	519.4	0.0	408.0
107.00	Appurtenance(s)	1.00	1.28	31.849	35.03	316.79	0.650	0.000	2.00	5.578	3.63	203.3	0.0	159.0
110.00		1.00	1.29	32.035	35.24	310.48	0.650	0.000	3.00	8.210	5.34	300.9	0.0	234.0
115.00		1.00	1.30	32.336	35.57	299.84	0.650	0.000	5.00	13.264	8.62	490.7	0.0	377.9
117.00	Appurtenance(s)	1.00	1.31	32.454	35.70	295.54	0.650	0.000	2.00	5.159	3.35	191.5	0.0	146.9
120.00		1.00	1.32	32.627	35.89	289.03	0.650	0.000	3.00	7.581	4.93	283.0	0.0	215.9
125.00		1.00	1.33	32.909	36.20	278.07	0.650	0.000	5.00	12.215	7.94	459.9	0.0	347.7
127.00	Appurtenance(s)	1.00	1.33	33.019	36.32	273.65	0.650	0.000	2.00	4.739	3.08	179.0	0.0	134.9
130.00		1.00	1.34	33.182	36.50	266.97	0.650	0.000	3.00	6.951	4.52	263.9	0.0	197.8
								Totals:	**130.00**			**14,602.2**		**21,397.7**

Discrete Appurtenance Forces

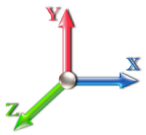
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	127.00	Ericsson RRUS 32	3	33.019	36.321	0.50	0.75	4.13	143.10	0.000	0.000	240.04	0.00	0.00
2	127.00	Powerwave	3	33.019	36.321	0.56	0.75	13.77	143.10	0.000	0.000	800.22	0.00	0.00
3	127.00	Powerwave	6	33.019	36.321	0.50	0.75	1.93	86.40	0.000	0.000	112.14	0.00	0.00
4	127.00	Raycap DC6-48-60-18-8F	3	33.019	36.321	0.50	0.75	2.22	88.56	0.000	0.000	128.78	0.00	0.00
5	127.00	Quintel QS46512-2	3	33.019	36.321	0.72	0.75	11.99	202.50	0.000	0.000	696.66	0.00	0.00
6	127.00	4449 B5/B12	3	33.019	36.321	0.50	0.75	2.97	197.10	0.000	0.000	172.58	0.00	0.00
7	127.00	HRK14	1	33.019	36.321	1.00	1.00	8.13	272.12	0.000	0.000	472.46	0.00	0.00
8	127.00	800-10964	3	33.019	36.321	0.54	0.75	16.20	226.26	0.000	0.000	941.43	0.00	0.00
9	127.00	Platform w/ Hand Rail	1	33.019	36.321	1.00	1.00	32.00	1440.00	0.000	0.000	1859.62	0.00	0.00
10	127.00	DBC0061F1V51-2	6	33.019	36.321	0.50	0.75	1.30	140.40	0.000	0.000	75.34	0.00	0.00
11	127.00	RRUS 8843 B2 B66A	3	33.019	36.321	0.50	0.75	2.47	194.40	0.000	0.000	143.67	0.00	0.00
12	117.00	12.5' Low Profile Platform	1	32.454	35.699	1.00	1.00	25.55	1440.00	0.000	0.000	1459.38	0.00	0.00
13	117.00	Ericsson Radio 4449	3	32.454	35.699	0.50	0.75	2.49	199.80	0.000	0.000	142.08	0.00	0.00
14	117.00	Ericsson KRY 112 144/1	3	32.454	35.699	0.50	0.75	0.62	29.70	0.000	0.000	35.30	0.00	0.00
15	117.00	Sitepro PRK-1245	1	32.454	35.699	1.00	1.00	9.50	205.20	0.000	0.000	542.63	0.00	0.00
16	117.00	Ericsson Air 21 B4A/B2P	3	32.454	35.699	0.65	0.75	11.78	245.70	0.000	0.000	673.09	0.00	0.00
17	117.00	APXVAARR24_43-U-NA2	3	32.454	35.699	0.52	0.75	31.88	345.60	0.000	0.000	1820.82	0.00	0.00
18	117.00	Ericsson Air 21 B2A/B4P	3	32.454	35.699	0.65	0.75	11.78	247.05	0.000	0.000	673.09	0.00	0.00
19	117.00	Sitepro HRK12-U	1	32.454	35.699	1.00	1.00	9.85	376.20	0.000	0.000	562.62	0.00	0.00
20	107.00	SBNHH-1D65B	9	31.849	35.034	0.66	0.80	48.29	328.86	0.000	0.000	2706.64	0.00	0.00
21	107.00	Low Profile Platform	1	31.849	35.034	1.00	1.00	25.00	1080.00	0.000	0.000	1401.35	0.00	0.00
22	107.00	BXA-70063-6CF-2	3	31.849	35.034	0.58	0.80	13.26	45.90	0.000	0.000	743.43	0.00	0.00
23	107.00	DB-T1-6Z-8AB-0Z	2	31.849	35.034	0.80	0.80	7.68	34.02	0.000	0.000	430.50	0.00	0.00
24	107.00	RRH2x60-700	3	31.849	35.034	0.54	0.80	5.63	162.00	0.000	0.000	315.47	0.00	0.00
25	107.00	RRH2X60-PCS	3	31.849	35.034	0.54	0.80	3.54	148.50	0.000	0.000	198.30	0.00	0.00
26	107.00	RRH4x45AWS	3	31.849	35.034	0.54	0.80	4.36	162.00	0.000	0.000	244.27	0.00	0.00
							Totals:		**8,184.47**			**17,591.91**		

Total Applied Force Summary

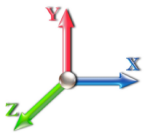
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		585.66	1458.24	0.00	0.00
10.00		573.01	1431.88	0.00	0.00
15.00		560.35	1405.51	0.00	0.00
20.00		581.13	1379.15	0.00	0.00
25.00		595.00	1352.78	0.00	0.00
30.00		603.66	1326.42	0.00	0.00
35.00		608.46	1300.05	0.00	0.00
40.00		610.27	1273.68	0.00	0.00
42.00		242.23	502.09	0.00	0.00
45.00		369.67	1265.59	0.00	0.00
48.00		368.91	1247.97	0.00	0.00
50.00		244.81	435.97	0.00	0.00
55.00		612.79	1074.10	0.00	0.00
60.00		607.20	1051.50	0.00	0.00
65.00		600.31	1028.90	0.00	0.00
70.00		592.26	1006.30	0.00	0.00
75.00		583.19	983.70	0.00	0.00
80.00		573.19	961.10	0.00	0.00
85.00		562.34	938.50	0.00	0.00
85.25		27.66	46.33	0.00	0.00
90.00		529.80	1299.75	0.00	0.00
95.00		545.89	685.63	0.00	0.00
100.00		532.98	670.56	0.00	0.00
105.00		519.44	655.50	0.00	0.00
107.00	(24) attachments	6243.20	2219.26	0.00	0.00
110.00		300.89	348.43	0.00	0.00
115.00		490.67	568.67	0.00	0.00
117.00	(18) attachments	6100.54	3312.50	0.00	0.00
120.00		282.95	293.20	0.00	0.00
125.00		459.86	476.61	0.00	0.00
127.00	(35) attachments	5821.96	3320.37	0.00	0.00
130.00		263.86	197.79	0.00	0.00
	Totals:	**32,194.15**	**35,518.03**	**0.00**	**0.00**

Calculated Forces

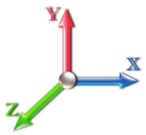
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 20

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.48	-32.23	0.00	-3049.6	0.00	3049.64	5435.95	2717.97	12860.7	6439.91	0.00	0.000	0.000	0.480
5.00	-33.95	-31.72	0.00	-2888.4	0.00	2888.47	5360.22	2680.11	12406.3	6212.37	0.07	-0.126	0.000	0.471
10.00	-32.45	-31.22	0.00	-2729.8	0.00	2729.87	5282.67	2641.34	11955.5	5986.66	0.27	-0.254	0.000	0.462
15.00	-30.98	-30.72	0.00	-2573.7	0.00	2573.78	5203.30	2601.65	11508.7	5762.93	0.60	-0.382	0.000	0.453
20.00	-29.54	-30.19	0.00	-2420.1	0.00	2420.19	5122.11	2561.06	11066.1	5541.30	1.08	-0.512	0.000	0.443
25.00	-28.12	-29.65	0.00	-2269.2	0.00	2269.22	5039.10	2519.55	10628.0	5321.92	1.68	-0.643	0.000	0.432
30.00	-26.74	-29.09	0.00	-2120.9	0.00	2120.97	4954.26	2477.13	10194.7	5104.94	2.43	-0.774	0.000	0.421
35.00	-25.38	-28.52	0.00	-1975.5	0.00	1975.52	4867.60	2433.80	9766.46	4890.49	3.31	-0.906	0.000	0.409
40.00	-24.07	-27.93	0.00	-1832.9	0.00	1832.91	4779.12	2389.56	9343.53	4678.71	4.33	-1.038	0.000	0.397
42.00	-23.54	-27.71	0.00	-1777.0	0.00	1777.05	4743.22	2371.61	9175.92	4594.78	4.78	-1.092	0.000	0.392
45.00	-22.25	-27.34	0.00	-1693.9	0.00	1693.93	4688.82	2344.41	8926.23	4469.75	5.49	-1.173	0.000	0.384
48.00	-20.98	-26.97	0.00	-1611.9	0.00	1611.91	3840.55	1920.27	7332.01	3671.45	6.25	-1.253	0.000	0.445
50.00	-20.50	-26.75	0.00	-1557.9	0.00	1557.97	3813.07	1906.53	7201.22	3605.96	6.79	-1.307	0.000	0.438
55.00	-19.37	-26.16	0.00	-1424.2	0.00	1424.20	3743.08	1871.54	6876.85	3443.54	8.24	-1.452	0.000	0.419
60.00	-18.28	-25.57	0.00	-1293.3	0.00	1293.38	3671.28	1835.64	6556.42	3283.08	9.84	-1.596	0.000	0.399
65.00	-17.20	-24.99	0.00	-1165.5	0.00	1165.52	3597.66	1798.83	6240.20	3124.74	11.59	-1.737	0.000	0.378
70.00	-16.16	-24.40	0.00	-1040.5	0.00	1040.59	3522.21	1761.10	5928.48	2968.65	13.48	-1.876	0.000	0.355
75.00	-15.14	-23.82	0.00	-918.58	0.00	918.58	3444.94	1722.47	5621.53	2814.94	15.52	-2.010	0.000	0.331
80.00	-14.15	-23.24	0.00	-799.48	0.00	799.48	3365.85	1682.92	5319.64	2663.77	17.69	-2.139	0.000	0.305
85.00	-13.21	-22.66	0.00	-683.27	0.00	683.27	3284.94	1642.47	5023.09	2515.28	20.00	-2.262	0.000	0.276
85.25	-13.14	-22.64	0.00	-677.60	0.00	677.60	3280.84	1640.42	5008.41	2507.93	20.12	-2.268	0.000	0.274
90.00	-11.82	-22.08	0.00	-570.05	0.00	570.05	1897.08	948.54	2862.22	1433.24	22.43	-2.377	0.000	0.405
95.00	-11.12	-21.53	0.00	-459.63	0.00	459.63	1858.98	929.49	2709.28	1356.65	24.98	-2.480	0.000	0.345
100.00	-10.43	-20.99	0.00	-351.97	0.00	351.97	1819.06	909.53	2557.69	1280.75	27.65	-2.610	0.000	0.281
105.00	-9.77	-20.45	0.00	-247.01	0.00	247.01	1777.32	888.66	2407.73	1205.66	30.44	-2.716	0.000	0.211
107.00	-7.84	-14.12	0.00	-206.11	0.00	206.11	1760.11	880.05	2348.27	1175.88	31.59	-2.752	0.000	0.180
110.00	-7.50	-13.81	0.00	-163.76	0.00	163.76	1733.75	866.88	2259.69	1131.52	33.33	-2.798	0.000	0.149
115.00	-6.94	-13.29	0.00	-94.72	0.00	94.72	1688.37	844.18	2113.84	1058.49	36.30	-2.855	0.000	0.094
117.00	-3.94	-7.04	0.00	-68.14	0.00	68.14	1669.70	834.85	2056.18	1029.62	37.50	-2.872	0.000	0.069
120.00	-3.66	-6.74	0.00	-47.03	0.00	47.03	1641.16	820.58	1970.46	986.70	39.31	-2.890	0.000	0.050
125.00	-3.20	-6.26	0.00	-13.33	0.00	13.33	1592.13	796.06	1829.84	916.28	42.35	-2.907	0.000	0.017
127.00	-0.18	-0.27	0.00	-0.82	0.00	0.82	1572.01	786.00	1774.43	888.53	43.56	-2.909	0.000	0.001
130.00	0.00	-0.26	0.00	0.00	0.00	0.00	1541.28	770.64	1692.26	847.39	45.39	-2.909	0.000	0.000

Wind Loading - Shaft

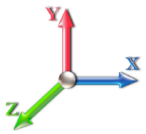
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	5.168	5.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	5.168	5.68	0.00	1.200	1.242	5.00	25.312	30.37	172.7	451.3	2065.6
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.331	5.00	24.862	29.83	169.6	474.1	2053.3
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.386	5.00	24.383	29.26	166.3	483.4	2027.4
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.427	5.00	23.892	28.67	172.9	486.8	1995.6
25.00		1.00	0.95	5.747	6.32	0.00	1.200	1.459	5.00	23.394	28.07	177.5	486.7	1960.4
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.486	5.00	22.892	27.47	180.5	484.4	1922.9
35.00		1.00	1.01	6.169	6.79	0.00	1.200	1.509	5.00	22.387	26.86	182.3	480.4	1883.8
40.00		1.00	1.04	6.345	6.98	0.00	1.200	1.529	5.00	21.879	26.25	183.2	475.2	1843.4
42.00	Bot - Section 2	1.00	1.05	6.410	7.05	0.00	1.200	1.537	2.00	8.607	10.33	72.8	189.1	726.6
45.00		1.00	1.07	6.504	7.15	0.00	1.200	1.547	3.00	12.949	15.54	111.2	285.7	1775.2
48.00	Top - Section 1	1.00	1.08	6.593	7.25	0.00	1.200	1.557	3.00	12.765	15.32	111.1	283.3	1749.2
50.00		1.00	1.09	6.650	7.32	0.00	1.200	1.564	2.00	8.407	10.09	73.8	187.7	637.0
55.00		1.00	1.12	6.785	7.46	0.00	1.200	1.579	5.00	20.664	24.80	185.1	461.6	1563.8
60.00		1.00	1.14	6.910	7.60	0.00	1.200	1.592	5.00	20.150	24.18	183.8	453.4	1525.4
65.00		1.00	1.16	7.028	7.73	0.00	1.200	1.605	5.00	19.637	23.56	182.2	444.7	1486.6
70.00		1.00	1.17	7.138	7.85	0.00	1.200	1.617	5.00	19.122	22.95	180.2	435.6	1447.3
75.00		1.00	1.19	7.243	7.97	0.00	1.200	1.628	5.00	18.607	22.33	177.9	426.1	1407.7
80.00		1.00	1.21	7.342	8.08	0.00	1.200	1.639	5.00	18.091	21.71	175.3	416.2	1367.7
85.00		1.00	1.22	7.436	8.18	0.00	1.200	1.649	5.00	17.574	21.09	172.5	406.0	1327.4
85.25	Bot - Section 3	1.00	1.22	7.441	8.18	0.00	1.200	1.649	0.25	0.865	1.04	8.5	20.3	65.6
90.00	Top - Section 2	1.00	1.24	7.526	8.28	0.00	1.200	1.658	4.75	16.393	19.67	162.9	380.7	1800.2
95.00		1.00	1.25	7.612	8.37	0.00	1.200	1.667	5.00	16.752	20.10	168.3	390.1	974.2
100.00		1.00	1.27	7.695	8.46	0.00	1.200	1.676	5.00	16.234	19.48	164.9	379.1	943.2
105.00		1.00	1.28	7.774	8.55	0.00	1.200	1.684	5.00	15.717	18.86	161.3	368.0	912.0
107.00	Appurtenance(s)	1.00	1.28	7.805	8.59	0.00	1.200	1.687	2.00	6.141	7.37	63.3	145.4	357.4
110.00		1.00	1.29	7.851	8.64	0.00	1.200	1.692	3.00	9.056	10.87	93.9	214.0	525.9
115.00		1.00	1.30	7.925	8.72	0.00	1.200	1.699	5.00	14.680	17.62	153.6	345.1	848.9
117.00	Appurtenance(s)	1.00	1.31	7.954	8.75	0.00	1.200	1.702	2.00	5.726	6.87	60.1	136.2	332.1
120.00		1.00	1.32	7.996	8.80	0.00	1.200	1.707	3.00	8.434	10.12	89.0	200.0	487.9
125.00		1.00	1.33	8.065	8.87	0.00	1.200	1.714	5.00	13.643	16.37	145.2	321.5	785.1
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	1.716	2.00	5.311	6.37	56.7	126.7	306.5
130.00		1.00	1.34	8.132	8.95	0.00	1.200	1.720	3.00	7.811	9.37	83.8	185.7	449.4
								Totals:	**130.00**			**4,442.4**		**39,554.7**

Discrete Appurtenance Forces

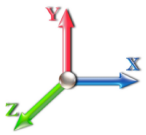
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	127.00	Ericsson RRUS 32	3	8.092	8.901	0.50	0.75	5.21	449.43	0.000	0.000	46.37	0.00	0.00
2	127.00	Powerwave	3	8.092	8.901	0.56	0.75	18.42	536.18	0.000	0.000	163.97	0.00	0.00
3	127.00	Powerwave	6	8.092	8.901	0.50	0.75	3.69	199.83	0.000	0.000	32.82	0.00	0.00
4	127.00	Raycap DC6-48-60-18-8F	3	8.092	8.901	0.50	0.75	3.25	247.39	0.000	0.000	28.96	0.00	0.00
5	127.00	Quintel QS46512-2	3	8.092	8.901	0.72	0.75	14.15	624.07	0.000	0.000	125.98	0.00	0.00
6	127.00	4449 B5/B12	3	8.092	8.901	0.50	0.75	3.78	389.93	0.000	0.000	33.66	0.00	0.00
7	127.00	HRK14	1	8.092	8.901	1.00	1.00	15.94	1018.09	0.000	0.000	141.93	0.00	0.00
8	127.00	800-10964	3	8.092	8.901	0.54	0.75	18.27	979.77	0.000	0.000	162.60	0.00	0.00
9	127.00	Platform w/ Hand Rail	1	8.092	8.901	1.00	1.00	59.46	3385.18	0.000	0.000	529.29	0.00	0.00
10	127.00	DBC0061F1V51-2	6	8.092	8.901	0.50	0.75	2.14	257.63	0.000	0.000	19.07	0.00	0.00
11	127.00	RRUS 8843 B2 B66A	3	8.092	8.901	0.50	0.75	3.21	361.41	0.000	0.000	28.56	0.00	0.00
12	117.00	12.5' Low Profile Platform	1	7.954	8.749	1.00	1.00	31.58	3122.39	0.000	0.000	276.26	0.00	0.00
13	117.00	Ericsson Radio 4449	3	7.954	8.749	0.50	0.75	3.28	464.86	0.000	0.000	28.66	0.00	0.00
14	117.00	Ericsson KRY 112 144/1	3	7.954	8.749	0.50	0.75	1.32	61.85	0.000	0.000	11.52	0.00	0.00
15	117.00	Sitepro PRK-1245	1	7.954	8.749	1.00	1.00	19.20	96.86	0.000	0.000	168.01	0.00	0.00
16	117.00	Ericsson Air 21 B4A/B2P	3	7.954	8.749	0.65	0.75	13.85	819.48	0.000	0.000	121.19	0.00	0.00
17	117.00	APXVAARR24_43-U-NA2	3	7.954	8.749	0.52	0.75	34.79	1716.75	0.000	0.000	304.41	0.00	0.00
18	117.00	Ericsson Air 21 B2A/B4P	3	7.954	8.749	0.65	0.75	13.85	821.28	0.000	0.000	121.19	0.00	0.00
19	117.00	Sitepro HRK12-U	1	7.954	8.749	1.00	1.00	21.92	718.09	0.000	0.000	191.81	0.00	0.00
20	107.00	SBNHH-1D65B	9	7.805	8.586	0.66	0.80	55.73	2181.50	0.000	0.000	478.52	0.00	0.00
21	107.00	Low Profile Platform	1	7.805	8.586	1.00	1.00	45.25	2152.35	0.000	0.000	388.49	0.00	0.00
22	107.00	BXA-70063-6CF-2	3	7.805	8.586	0.58	0.80	17.94	363.81	0.000	0.000	154.06	0.00	0.00
23	107.00	DB-T1-6Z-8AB-0Z	2	7.805	8.586	0.80	0.80	9.03	321.62	0.000	0.000	77.52	0.00	0.00
24	107.00	RRH2x60-700	3	7.805	8.586	0.54	0.80	6.85	408.87	0.000	0.000	58.86	0.00	0.00
25	107.00	RRH2X60-PCS	3	7.805	8.586	0.54	0.80	4.52	441.25	0.000	0.000	38.84	0.00	0.00
26	107.00	RRH4x45AWS	3	7.805	8.586	0.54	0.80	6.32	380.92	0.000	0.000	54.28	0.00	0.00
							Totals:		**22,520.78**			**3,786.82**		

Total Applied Force Summary

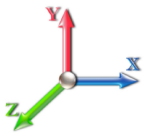
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		172.67	2395.63	0.00	0.00
10.00		169.60	2383.26	0.00	0.00
15.00		166.34	2357.42	0.00	0.00
20.00		172.94	2325.65	0.00	0.00
25.00		177.48	2290.43	0.00	0.00
30.00		180.46	2252.93	0.00	0.00
35.00		182.30	2213.79	0.00	0.00
40.00		183.24	2173.40	0.00	0.00
42.00		72.83	858.57	0.00	0.00
45.00		111.18	1973.18	0.00	0.00
48.00		111.10	1947.23	0.00	0.00
50.00		73.80	768.99	0.00	0.00
55.00		185.07	1893.76	0.00	0.00
60.00		183.81	1855.43	0.00	0.00
65.00		182.16	1816.59	0.00	0.00
70.00		180.18	1777.32	0.00	0.00
75.00		177.89	1737.67	0.00	0.00
80.00		175.32	1697.66	0.00	0.00
85.00		172.50	1657.35	0.00	0.00
85.25		8.50	82.05	0.00	0.00
90.00		162.86	2113.71	0.00	0.00
95.00		168.33	1304.23	0.00	0.00
100.00		164.90	1273.21	0.00	0.00
105.00		161.29	1241.98	0.00	0.00
107.00	(24) attachments	1313.83	6739.68	0.00	0.00
110.00		93.85	678.55	0.00	0.00
115.00		153.56	1103.32	0.00	0.00
117.00	(18) attachments	1283.17	8255.39	0.00	0.00
120.00		89.02	590.96	0.00	0.00
125.00		145.24	956.99	0.00	0.00
127.00	(35) attachments	1369.95	8824.17	0.00	0.00
130.00		83.85	449.40	0.00	0.00
	Totals:	**8,229.19**	**69,989.93**	**0.00**	**0.00**

Calculated Forces

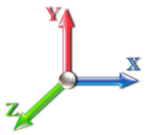
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

Tower Engineering Solutions

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 19

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-69.99	-8.25	0.00	-763.73	0.00	763.73	5435.95	2717.97	12860.7	6439.91	0.00	0.000	0.000	0.131
5.00	-67.59	-8.11	0.00	-722.49	0.00	722.49	5360.22	2680.11	12406.3	6212.37	0.02	-0.032	0.000	0.129
10.00	-65.20	-7.98	0.00	-681.93	0.00	681.93	5282.67	2641.34	11955.5	5986.66	0.07	-0.063	0.000	0.126
15.00	-62.84	-7.84	0.00	-642.04	0.00	642.04	5203.30	2601.65	11508.7	5762.93	0.15	-0.096	0.000	0.123
20.00	-60.51	-7.70	0.00	-602.83	0.00	602.83	5122.11	2561.06	11066.1	5541.30	0.27	-0.128	0.000	0.121
25.00	-58.21	-7.55	0.00	-564.33	0.00	564.33	5039.10	2519.55	10628.0	5321.92	0.42	-0.160	0.000	0.118
30.00	-55.96	-7.39	0.00	-526.58	0.00	526.58	4954.26	2477.13	10194.7	5104.94	0.61	-0.193	0.000	0.114
35.00	-53.74	-7.23	0.00	-489.60	0.00	489.60	4867.60	2433.80	9766.46	4890.49	0.83	-0.226	0.000	0.111
40.00	-51.57	-7.06	0.00	-453.43	0.00	453.43	4779.12	2389.56	9343.53	4678.71	1.08	-0.259	0.000	0.108
42.00	-50.70	-7.00	0.00	-439.31	0.00	439.31	4743.22	2371.61	9175.92	4594.78	1.19	-0.272	0.000	0.106
45.00	-48.73	-6.90	0.00	-418.30	0.00	418.30	4688.82	2344.41	8926.23	4469.75	1.37	-0.292	0.000	0.104
48.00	-46.78	-6.79	0.00	-397.61	0.00	397.61	3840.55	1920.27	7332.01	3671.45	1.56	-0.312	0.000	0.120
50.00	-46.01	-6.73	0.00	-384.04	0.00	384.04	3813.07	1906.53	7201.22	3605.96	1.69	-0.325	0.000	0.119
55.00	-44.11	-6.56	0.00	-350.38	0.00	350.38	3743.08	1871.54	6876.85	3443.54	2.05	-0.361	0.000	0.114
60.00	-42.26	-6.39	0.00	-317.57	0.00	317.57	3671.28	1835.64	6556.42	3283.08	2.45	-0.396	0.000	0.108
65.00	-40.44	-6.22	0.00	-285.62	0.00	285.62	3597.66	1798.83	6240.20	3124.74	2.88	-0.431	0.000	0.103
70.00	-38.66	-6.05	0.00	-254.51	0.00	254.51	3522.21	1761.10	5928.48	2968.65	3.35	-0.465	0.000	0.097
75.00	-36.92	-5.88	0.00	-224.27	0.00	224.27	3444.94	1722.47	5621.53	2814.94	3.86	-0.497	0.000	0.090
80.00	-35.22	-5.71	0.00	-194.88	0.00	194.88	3365.85	1682.92	5319.64	2663.77	4.40	-0.529	0.000	0.084
85.00	-33.56	-5.53	0.00	-166.36	0.00	166.36	3284.94	1642.47	5023.09	2515.28	4.97	-0.559	0.000	0.076
85.25	-33.48	-5.53	0.00	-164.97	0.00	164.97	3280.84	1640.42	5008.41	2507.93	5.00	-0.560	0.000	0.076
90.00	-31.36	-5.36	0.00	-138.73	0.00	138.73	1897.08	948.54	2862.22	1433.24	5.57	-0.587	0.000	0.113
95.00	-30.06	-5.19	0.00	-111.95	0.00	111.95	1858.98	929.49	2709.28	1356.65	6.20	-0.612	0.000	0.099
100.00	-28.78	-5.02	0.00	-86.01	0.00	86.01	1819.06	909.53	2557.69	1280.75	6.85	-0.644	0.000	0.083
105.00	-27.54	-4.86	0.00	-60.89	0.00	60.89	1777.32	888.66	2407.73	1205.66	7.54	-0.670	0.000	0.066
107.00	-20.82	-3.47	0.00	-51.17	0.00	51.17	1760.11	880.05	2348.27	1175.88	7.83	-0.678	0.000	0.055
110.00	-20.14	-3.37	0.00	-40.77	0.00	40.77	1733.75	866.88	2259.69	1131.52	8.26	-0.690	0.000	0.048
115.00	-19.04	-3.21	0.00	-23.92	0.00	23.92	1688.37	844.18	2113.84	1058.49	8.99	-0.704	0.000	0.034
117.00	-10.80	-1.82	0.00	-17.51	0.00	17.51	1669.70	834.85	2056.18	1029.62	9.28	-0.708	0.000	0.023
120.00	-10.21	-1.73	0.00	-12.04	0.00	12.04	1641.16	820.58	1970.46	986.70	9.73	-0.713	0.000	0.018
125.00	-9.25	-1.57	0.00	-3.41	0.00	3.41	1592.13	796.06	1829.84	916.28	10.48	-0.718	0.000	0.010
127.00	-0.45	-0.09	0.00	-0.27	0.00	0.27	1572.01	786.00	1774.43	888.53	10.78	-0.718	0.000	0.001
130.00	0.00	-0.08	0.00	0.00	0.00	0.00	1541.28	770.64	1692.26	847.39	11.23	-0.718	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	17
Gust Response Factor	1.10				**Sds**	0.12		**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.04		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52		**SA**	0.02	**Seismic Importance Factor**		1.00

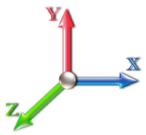
Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1345.2	0.00	0.04	0.02	16.45	
10.00		1315.9	0.01	0.06	0.03	22.55	
15.00		1286.6	0.03	0.07	0.04	24.87	
20.00		1257.3	0.04	0.07	0.04	25.64	
25.00		1228.0	0.07	0.07	0.04	25.87	
30.00		1198.7	0.10	0.07	0.04	25.97	
35.00		1169.5	0.14	0.07	0.03	26.00	
40.00		1140.2	0.18	0.07	0.03	25.77	
42.00	Bot - Section 2	447.88	0.20	0.06	0.02	10.13	
45.00		1241.2	0.23	0.06	0.02	27.78	
48.00	Top - Section 1	1221.6	0.26	0.05	0.02	26.53	
50.00		374.41	0.28	0.05	0.01	7.85	
55.00		918.44	0.34	0.04	0.01	16.21	
60.00		893.33	0.40	0.02	0.01	10.56	
65.00		868.22	0.47	-0.01	0.01	3.06	
70.00		843.11	0.55	-0.03	0.01	-5.10	
75.00		818.00	0.63	-0.06	0.02	-12.07	
80.00		792.89	0.72	-0.09	0.03	-16.34	
85.00		767.78	0.81	-0.11	0.06	-17.33	
85.25	Bot - Section 3	37.73	0.81	-0.11	0.06	-0.85	
90.00	Top - Section 2	1182.9	0.91	-0.12	0.09	-24.10	
95.00		486.81	1.01	-0.11	0.14	-6.84	
100.00		470.07	1.12	-0.06	0.20	-1.73	
105.00		453.33	1.23	0.04	0.28	4.85	
107.00	Appurtenance(s)	2355.8	1.28	0.09	0.32	41.43	
110.00		259.95	1.35	0.20	0.39	7.57	
115.00		419.85	1.48	0.45	0.52	21.69	
117.00	Appurtenance(s)	3595.7	1.53	0.58	0.58	222.36	
120.00		239.86	1.61	0.81	0.68	18.80	
125.00		386.37	1.75	1.31	0.89	42.29	
127.00	Appurtenance(s)	3632.0	1.80	1.56	0.98	447.12	
130.00		219.77	1.89	1.98	1.14	31.85	
	Totals:	**32,869.1**				**1,048.9**	**Total Wind:** **32,194.2**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	17
Gust Response Factor	1.10			**Sds**	0.12			**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.04			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52	**SA**	0.02			**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-47.36	-1.13	0.00	-115.10	0.00	115.10	5435.95	2717.97	12860.7	6439.91		0.00	0.00	0.027
5.00	-45.41	-1.12	0.00	-109.43	0.00	109.43	5360.22	2680.11	12406.3	6212.37		0.00	0.00	0.026
10.00	-43.50	-1.10	0.00	-103.82	0.00	103.82	5282.67	2641.34	11955.5	5986.66		0.01	-0.01	0.026
15.00	-41.63	-1.08	0.00	-98.31	0.00	98.31	5203.30	2601.65	11508.7	5762.93		0.02	-0.01	0.025
20.00	-39.79	-1.06	0.00	-92.91	0.00	92.91	5122.11	2561.06	11066.1	5541.30		0.04	-0.02	0.025
25.00	-37.99	-1.03	0.00	-87.62	0.00	87.62	5039.10	2519.55	10628.0	5321.92		0.06	-0.02	0.024
30.00	-36.22	-1.01	0.00	-82.44	0.00	82.44	4954.26	2477.13	10194.7	5104.94		0.09	-0.03	0.023
35.00	-34.48	-0.99	0.00	-77.38	0.00	77.38	4867.60	2433.80	9766.46	4890.49		0.13	-0.03	0.023
40.00	-32.79	-0.96	0.00	-72.45	0.00	72.45	4779.12	2389.56	9343.53	4678.71		0.17	-0.04	0.022
42.00	-32.12	-0.95	0.00	-70.52	0.00	70.52	4743.22	2371.61	9175.92	4594.78		0.18	-0.04	0.022
45.00	-30.43	-0.93	0.00	-67.66	0.00	67.66	4688.82	2344.41	8926.23	4469.75		0.21	-0.05	0.022
48.00	-28.77	-0.90	0.00	-64.88	0.00	64.88	3840.55	1920.27	7332.01	3671.45		0.24	-0.05	0.025
50.00	-28.18	-0.89	0.00	-63.08	0.00	63.08	3813.07	1906.53	7201.22	3605.96		0.26	-0.05	0.025
55.00	-26.75	-0.88	0.00	-58.62	0.00	58.62	3743.08	1871.54	6876.85	3443.54		0.32	-0.06	0.024
60.00	-25.35	-0.87	0.00	-54.23	0.00	54.23	3671.28	1835.64	6556.42	3283.08		0.38	-0.06	0.023
65.00	-23.98	-0.87	0.00	-49.88	0.00	49.88	3597.66	1798.83	6240.20	3124.74		0.45	-0.07	0.023
70.00	-22.64	-0.87	0.00	-45.54	0.00	45.54	3522.21	1761.10	5928.48	2968.65		0.52	-0.07	0.022
75.00	-21.32	-0.87	0.00	-41.20	0.00	41.20	3444.94	1722.47	5621.53	2814.94		0.60	-0.08	0.021
80.00	-20.04	-0.87	0.00	-36.86	0.00	36.86	3365.85	1682.92	5319.64	2663.77		0.69	-0.09	0.020
85.00	-18.79	-0.87	0.00	-32.52	0.00	32.52	3284.94	1642.47	5023.09	2515.28		0.79	-0.09	0.019
85.25	-18.73	-0.87	0.00	-32.30	0.00	32.30	3280.84	1640.42	5008.41	2507.93		0.79	-0.09	0.019
90.00	-17.00	-0.87	0.00	-28.18	0.00	28.18	1897.08	948.54	2862.22	1433.24		0.88	-0.10	0.029
95.00	-16.08	-0.87	0.00	-23.84	0.00	23.84	1858.98	929.49	2709.28	1356.65		0.99	-0.10	0.026
100.00	-15.19	-0.87	0.00	-19.51	0.00	19.51	1819.06	909.53	2557.69	1280.75		1.10	-0.11	0.024
105.00	-14.31	-0.86	0.00	-15.17	0.00	15.17	1777.32	888.66	2407.73	1205.66		1.22	-0.12	0.021
107.00	-11.36	-0.81	0.00	-13.45	0.00	13.45	1760.11	880.05	2348.27	1175.88		1.27	-0.12	0.018
110.00	-10.89	-0.81	0.00	-11.00	0.00	11.00	1733.75	866.88	2259.69	1131.52		1.34	-0.12	0.016
115.00	-10.13	-0.78	0.00	-6.97	0.00	6.97	1688.37	844.18	2113.84	1058.49		1.47	-0.13	0.013
117.00	-5.72	-0.55	0.00	-5.40	0.00	5.40	1669.70	834.85	2056.18	1029.62		1.53	-0.13	0.009
120.00	-5.33	-0.53	0.00	-3.74	0.00	3.74	1641.16	820.58	1970.46	986.70		1.61	-0.13	0.007
125.00	-4.69	-0.49	0.00	-1.08	0.00	1.08	1592.13	796.06	1829.84	916.28		1.74	-0.13	0.004
127.00	-0.26	-0.03	0.00	-0.10	0.00	0.10	1572.01	786.00	1774.43	888.53		1.80	-0.13	0.000
130.00	0.00	-0.03	0.00	0.00	0.00	0.00	1541.28	770.64	1692.26	847.39		1.88	-0.13	0.000

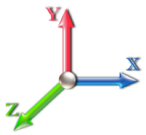
Seismic Segment Forces (Factored)

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case: 0.9D + 1.0E

Gust Response Factor	1.10			**Sds**	0.12	**Iterations**	17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.04	**Ss**	0.17
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52	**SA**	0.02	**S1**	0.06
						Seismic Importance Factor	1.00



Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1345.2	0.00	0.04	0.02	16.45	
10.00		1315.9	0.01	0.06	0.03	22.55	
15.00		1286.6	0.03	0.07	0.04	24.87	
20.00		1257.3	0.04	0.07	0.04	25.64	
25.00		1228.0	0.07	0.07	0.04	25.87	
30.00		1198.7	0.10	0.07	0.04	25.97	
35.00		1169.5	0.14	0.07	0.03	26.00	
40.00		1140.2	0.18	0.07	0.03	25.77	
42.00	Bot - Section 2	447.88	0.20	0.06	0.02	10.13	
45.00		1241.2	0.23	0.06	0.02	27.78	
48.00	Top - Section 1	1221.6	0.26	0.05	0.02	26.53	
50.00		374.41	0.28	0.05	0.01	7.85	
55.00		918.44	0.34	0.04	0.01	16.21	
60.00		893.33	0.40	0.02	0.01	10.56	
65.00		868.22	0.47	-0.01	0.01	3.06	
70.00		843.11	0.55	-0.03	0.01	-5.10	
75.00		818.00	0.63	-0.06	0.02	-12.07	
80.00		792.89	0.72	-0.09	0.03	-16.34	
85.00		767.78	0.81	-0.11	0.06	-17.33	
85.25	Bot - Section 3	37.73	0.81	-0.11	0.06	-0.85	
90.00	Top - Section 2	1182.9	0.91	-0.12	0.09	-24.10	
95.00		486.81	1.01	-0.11	0.14	-6.84	
100.00		470.07	1.12	-0.06	0.20	-1.73	
105.00		453.33	1.23	0.04	0.28	4.85	
107.00	Appurtenance(s)	2355.8	1.28	0.09	0.32	41.43	
110.00		259.95	1.35	0.20	0.39	7.57	
115.00		419.85	1.48	0.45	0.52	21.69	
117.00	Appurtenance(s)	3595.7	1.53	0.58	0.58	222.36	
120.00		239.86	1.61	0.81	0.68	18.80	
125.00		386.37	1.75	1.31	0.89	42.29	
127.00	Appurtenance(s)	3632.0	1.80	1.56	0.98	447.12	
130.00		219.77	1.89	1.98	1.14	31.85	
	Totals:	**32,869.1**				**1,048.9**	**Total Wind:** **32,194.2**

Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 23

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	17
Gust Response Factor	1.10			**Sds**	0.12			**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.04			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.52	**SA**	0.02	**Seismic Importance Factor**			1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-35.52	-1.13	0.00	-114.38	0.00	114.38	5435.95	2717.97	12860.7	6439.91		0.00	0.00	0.024
5.00	-34.06	-1.12	0.00	-108.71	0.00	108.71	5360.22	2680.11	12406.3	6212.37		0.00	0.00	0.024
10.00	-32.63	-1.10	0.00	-103.11	0.00	103.11	5282.67	2641.34	11955.5	5986.66		0.01	-0.01	0.023
15.00	-31.22	-1.08	0.00	-97.61	0.00	97.61	5203.30	2601.65	11508.7	5762.93		0.02	-0.01	0.023
20.00	-29.84	-1.05	0.00	-92.22	0.00	92.22	5122.11	2561.06	11066.1	5541.30		0.04	-0.02	0.022
25.00	-28.49	-1.03	0.00	-86.95	0.00	86.95	5039.10	2519.55	10628.0	5321.92		0.06	-0.02	0.022
30.00	-27.16	-1.01	0.00	-81.80	0.00	81.80	4954.26	2477.13	10194.7	5104.94		0.09	-0.03	0.022
35.00	-25.86	-0.98	0.00	-76.77	0.00	76.77	4867.60	2433.80	9766.46	4890.49		0.13	-0.03	0.021
40.00	-24.59	-0.96	0.00	-71.86	0.00	71.86	4779.12	2389.56	9343.53	4678.71		0.16	-0.04	0.021
42.00	-24.09	-0.95	0.00	-69.95	0.00	69.95	4743.22	2371.61	9175.92	4594.78		0.18	-0.04	0.020
45.00	-22.82	-0.92	0.00	-67.11	0.00	67.11	4688.82	2344.41	8926.23	4469.75		0.21	-0.04	0.020
48.00	-21.57	-0.89	0.00	-64.35	0.00	64.35	3840.55	1920.27	7332.01	3671.45		0.24	-0.05	0.023
50.00	-21.14	-0.89	0.00	-62.56	0.00	62.56	3813.07	1906.53	7201.22	3605.96		0.26	-0.05	0.023
55.00	-20.06	-0.87	0.00	-58.13	0.00	58.13	3743.08	1871.54	6876.85	3443.54		0.31	-0.06	0.022
60.00	-19.01	-0.86	0.00	-53.77	0.00	53.77	3671.28	1835.64	6556.42	3283.08		0.38	-0.06	0.022
65.00	-17.98	-0.86	0.00	-49.46	0.00	49.46	3597.66	1798.83	6240.20	3124.74		0.44	-0.07	0.021
70.00	-16.98	-0.86	0.00	-45.17	0.00	45.17	3522.21	1761.10	5928.48	2968.65		0.52	-0.07	0.020
75.00	-15.99	-0.86	0.00	-40.87	0.00	40.87	3444.94	1722.47	5621.53	2814.94		0.60	-0.08	0.019
80.00	-15.03	-0.86	0.00	-36.56	0.00	36.56	3365.85	1682.92	5319.64	2663.77		0.69	-0.09	0.018
85.00	-14.09	-0.86	0.00	-32.26	0.00	32.26	3284.94	1642.47	5023.09	2515.28		0.78	-0.09	0.017
85.25	-14.05	-0.86	0.00	-32.05	0.00	32.05	3280.84	1640.42	5008.41	2507.93		0.78	-0.09	0.017
90.00	-12.75	-0.86	0.00	-27.96	0.00	27.96	1897.08	948.54	2862.22	1433.24		0.88	-0.10	0.026
95.00	-12.06	-0.86	0.00	-23.66	0.00	23.66	1858.98	929.49	2709.28	1356.65		0.98	-0.10	0.024
100.00	-11.39	-0.86	0.00	-19.36	0.00	19.36	1819.06	909.53	2557.69	1280.75		1.09	-0.11	0.021
105.00	-10.74	-0.85	0.00	-15.07	0.00	15.07	1777.32	888.66	2407.73	1205.66		1.21	-0.12	0.019
107.00	-8.52	-0.81	0.00	-13.36	0.00	13.36	1760.11	880.05	2348.27	1175.88		1.26	-0.12	0.016
110.00	-8.17	-0.80	0.00	-10.93	0.00	10.93	1733.75	866.88	2259.69	1131.52		1.33	-0.12	0.014
115.00	-7.60	-0.78	0.00	-6.92	0.00	6.92	1688.37	844.18	2113.84	1058.49		1.46	-0.12	0.011
117.00	-4.29	-0.55	0.00	-5.37	0.00	5.37	1669.70	834.85	2056.18	1029.62		1.52	-0.13	0.008
120.00	-3.99	-0.53	0.00	-3.72	0.00	3.72	1641.16	820.58	1970.46	986.70		1.59	-0.13	0.006
125.00	-3.52	-0.49	0.00	-1.07	0.00	1.07	1592.13	796.06	1829.84	916.28		1.73	-0.13	0.003
127.00	-0.20	-0.03	0.00	-0.10	0.00	0.10	1572.01	786.00	1774.43	888.53		1.78	-0.13	0.000
130.00	0.00	-0.03	0.00	0.00	0.00	0.00	1541.28	770.64	1692.26	847.39		1.86	-0.13	0.000

Wind Loading - Shaft

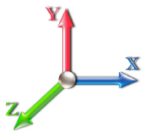
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.85	7.442	8.19	271.49	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.85	7.442	8.19	265.69	0.650	0.000	5.00	24.277	15.78	129.2	0.0	1345.3
10.00		1.00	0.85	7.442	8.19	259.88	0.650	0.000	5.00	23.753	15.44	126.4	0.0	1316.0
15.00		1.00	0.85	7.442	8.19	254.08	0.650	0.000	5.00	23.228	15.10	123.6	0.0	1286.7
20.00		1.00	0.90	7.896	8.69	255.74	0.650	0.000	5.00	22.703	14.76	128.2	0.0	1257.4
25.00		1.00	0.95	8.276	9.10	255.70	0.650	0.000	5.00	22.179	14.42	131.2	0.0	1228.1
30.00		1.00	0.98	8.600	9.46	254.41	0.650	0.000	5.00	21.654	14.08	133.1	0.0	1198.8
35.00		1.00	1.01	8.883	9.77	252.23	0.650	0.000	5.00	21.129	13.73	134.2	0.0	1169.5
40.00		1.00	1.04	9.137	10.05	249.37	0.650	0.000	5.00	20.605	13.39	134.6	0.0	1140.2
42.00	Bot - Section 2	1.00	1.05	9.231	10.15	248.07	0.650	0.000	2.00	8.095	5.26	53.4	0.0	447.9
45.00		1.00	1.07	9.366	10.30	245.97	0.650	0.000	3.00	12.175	7.91	81.5	0.0	1241.2
48.00	Top - Section 1	1.00	1.08	9.494	10.44	243.71	0.650	0.000	3.00	11.987	7.79	81.4	0.0	1221.6
50.00		1.00	1.09	9.576	10.53	246.11	0.650	0.000	2.00	7.886	5.13	54.0	0.0	374.4
55.00		1.00	1.12	9.770	10.75	241.94	0.650	0.000	5.00	19.348	12.58	135.2	0.0	918.4
60.00		1.00	1.14	9.951	10.95	237.46	0.650	0.000	5.00	18.823	12.24	133.9	0.0	893.3
65.00		1.00	1.16	10.120	11.13	232.70	0.650	0.000	5.00	18.299	11.89	132.4	0.0	868.2
70.00		1.00	1.17	10.279	11.31	227.70	0.650	0.000	5.00	17.774	11.55	130.6	0.0	843.1
75.00		1.00	1.19	10.430	11.47	222.49	0.650	0.000	5.00	17.250	11.21	128.6	0.0	818.0
80.00		1.00	1.21	10.572	11.63	217.09	0.650	0.000	5.00	16.725	10.87	126.4	0.0	792.9
85.00		1.00	1.22	10.708	11.78	211.51	0.650	0.000	5.00	16.200	10.53	124.0	0.0	767.8
85.25	Bot - Section 3	1.00	1.22	10.715	11.79	211.23	0.650	0.000	0.25	0.796	0.52	6.1	0.0	37.7
90.00	Top - Section 2	1.00	1.24	10.838	11.92	205.78	0.650	0.000	4.75	15.080	9.80	116.9	0.0	1182.9
95.00		1.00	1.25	10.962	12.06	202.76	0.650	0.000	5.00	15.363	9.99	120.4	0.0	486.8
100.00		1.00	1.27	11.081	12.19	196.77	0.650	0.000	5.00	14.838	9.64	117.6	0.0	470.1
105.00		1.00	1.28	11.195	12.31	190.66	0.650	0.000	5.00	14.313	9.30	114.6	0.0	453.3
107.00	Appurtenance(s)	1.00	1.28	11.240	12.36	188.19	0.650	0.000	2.00	5.578	3.63	44.8	0.0	176.6
110.00		1.00	1.29	11.305	12.44	184.45	0.650	0.000	3.00	8.210	5.34	66.4	0.0	259.9
115.00		1.00	1.30	11.412	12.55	178.12	0.650	0.000	5.00	13.264	8.62	108.2	0.0	419.9
117.00	Appurtenance(s)	1.00	1.31	11.453	12.60	175.57	0.650	0.000	2.00	5.159	3.35	42.2	0.0	163.3
120.00		1.00	1.32	11.514	12.67	171.70	0.650	0.000	3.00	7.581	4.93	62.4	0.0	239.9
125.00		1.00	1.33	11.614	12.78	165.19	0.650	0.000	5.00	12.215	7.94	101.4	0.0	386.4
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	162.56	0.650	0.000	2.00	4.739	3.08	39.5	0.0	149.9
130.00		1.00	1.34	11.710	12.88	158.59	0.650	0.000	3.00	6.951	4.52	58.2	0.0	219.8
								Totals:	**130.00**			**3,220.8**		**23,775.2**

Discrete Appurtenance Forces

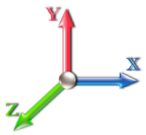
Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	Orient Factor x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	127.00	Ericsson RRUS 32	3	11.653	12.818	0.50	0.75	4.13	159.00	0.000	0.000	52.94	0.00	0.00
2	127.00	Powerwave	3	11.653	12.818	0.56	0.75	13.77	159.00	0.000	0.000	176.50	0.00	0.00
3	127.00	Powerwave	6	11.653	12.818	0.50	0.75	1.93	96.00	0.000	0.000	24.73	0.00	0.00
4	127.00	Raycap DC6-48-60-18-8F	3	11.653	12.818	0.50	0.75	2.22	98.40	0.000	0.000	28.40	0.00	0.00
5	127.00	Quintel QS46512-2	3	11.653	12.818	0.72	0.75	11.99	225.00	0.000	0.000	153.66	0.00	0.00
6	127.00	4449 B5/B12	3	11.653	12.818	0.50	0.75	2.97	219.00	0.000	0.000	38.07	0.00	0.00
7	127.00	HRK14	1	11.653	12.818	1.00	1.00	8.13	302.36	0.000	0.000	104.21	0.00	0.00
8	127.00	800-10964	3	11.653	12.818	0.54	0.75	16.20	251.40	0.000	0.000	207.65	0.00	0.00
9	127.00	Platform w/ Hand Rail	1	11.653	12.818	1.00	1.00	32.00	1600.00	0.000	0.000	410.17	0.00	0.00
10	127.00	DBC0061F1V51-2	6	11.653	12.818	0.50	0.75	1.30	156.00	0.000	0.000	16.62	0.00	0.00
11	127.00	RRUS 8843 B2 B66A	3	11.653	12.818	0.50	0.75	2.47	216.00	0.000	0.000	31.69	0.00	0.00
12	117.00	12.5' Low Profile Platform	1	11.453	12.598	1.00	1.00	25.55	1600.00	0.000	0.000	321.89	0.00	0.00
13	117.00	Ericsson Radio 4449	3	11.453	12.598	0.50	0.75	2.49	222.00	0.000	0.000	31.34	0.00	0.00
14	117.00	Ericsson KRY 112 144/1	3	11.453	12.598	0.50	0.75	0.62	33.00	0.000	0.000	7.79	0.00	0.00
15	117.00	Sitepro PRK-1245	1	11.453	12.598	1.00	1.00	9.50	228.00	0.000	0.000	119.69	0.00	0.00
16	117.00	Ericsson Air 21 B4A/B2P	3	11.453	12.598	0.65	0.75	11.78	273.00	0.000	0.000	148.46	0.00	0.00
17	117.00	APXVAARR24_43-U-NA2	3	11.453	12.598	0.52	0.75	31.88	384.00	0.000	0.000	401.61	0.00	0.00
18	117.00	Ericsson Air 21 B2A/B4P	3	11.453	12.598	0.65	0.75	11.78	274.50	0.000	0.000	148.46	0.00	0.00
19	117.00	Sitepro HRK12-U	1	11.453	12.598	1.00	1.00	9.85	418.00	0.000	0.000	124.09	0.00	0.00
20	107.00	SBNHH-1D65B	9	11.240	12.364	0.66	0.80	48.29	365.40	0.000	0.000	596.99	0.00	0.00
21	107.00	Low Profile Platform	1	11.240	12.364	1.00	1.00	25.00	1200.00	0.000	0.000	309.09	0.00	0.00
22	107.00	BXA-70063-6CF-2	3	11.240	12.364	0.58	0.80	13.26	51.00	0.000	0.000	163.98	0.00	0.00
23	107.00	DB-T1-6Z-8AB-0Z	2	11.240	12.364	0.80	0.80	7.68	37.80	0.000	0.000	94.95	0.00	0.00
24	107.00	RRH2x60-700	3	11.240	12.364	0.54	0.80	5.63	180.00	0.000	0.000	69.58	0.00	0.00
25	107.00	RRH2X60-PCS	3	11.240	12.364	0.54	0.80	3.54	165.00	0.000	0.000	43.74	0.00	0.00
26	107.00	RRH4x45AWS	3	11.240	12.364	0.54	0.80	4.36	180.00	0.000	0.000	53.88	0.00	0.00
							Totals:		**9,093.86**			**3,880.19**		

Total Applied Force Summary

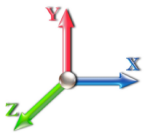
Structure:	CT13615-A-SBA		**Code:**	EIA/TIA-222-G	10/28/2020
Site Name:	Madison 7, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		129.18	1620.27	0.00	0.00
10.00		126.39	1590.97	0.00	0.00
15.00		123.59	1561.68	0.00	0.00
20.00		128.18	1532.38	0.00	0.00
25.00		131.24	1503.09	0.00	0.00
30.00		133.15	1473.79	0.00	0.00
35.00		134.21	1444.50	0.00	0.00
40.00		134.61	1415.20	0.00	0.00
42.00		53.43	557.88	0.00	0.00
45.00		81.54	1406.21	0.00	0.00
48.00		81.37	1386.63	0.00	0.00
50.00		54.00	484.41	0.00	0.00
55.00		135.16	1193.44	0.00	0.00
60.00		133.93	1168.33	0.00	0.00
65.00		132.41	1143.22	0.00	0.00
70.00		130.63	1118.11	0.00	0.00
75.00		128.63	1093.00	0.00	0.00
80.00		126.43	1067.89	0.00	0.00
85.00		124.03	1042.78	0.00	0.00
85.25		6.10	51.48	0.00	0.00
90.00		116.86	1444.17	0.00	0.00
95.00		120.41	761.81	0.00	0.00
100.00		117.56	745.07	0.00	0.00
105.00		114.57	728.33	0.00	0.00
107.00	(24) attachments	1377.04	2465.85	0.00	0.00
110.00		66.37	387.15	0.00	0.00
115.00		108.23	631.85	0.00	0.00
117.00	(18) attachments	1345.57	3680.55	0.00	0.00
120.00		62.41	325.78	0.00	0.00
125.00		101.43	529.57	0.00	0.00
127.00	(35) attachments	1284.13	3689.30	0.00	0.00
130.00		58.20	219.77	0.00	0.00
	Totals:	**7,100.96**	**39,464.48**	**0.00**	**0.00**

Calculated Forces

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

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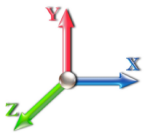
Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 19

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-39.46	-7.11	0.00	-674.22	0.00	674.22	5435.95	2717.97	12860.7	6439.91	0.00	0.000	0.000	0.112
5.00	-37.84	-7.00	0.00	-638.67	0.00	638.67	5360.22	2680.11	12406.3	6212.37	0.02	-0.028	0.000	0.110
10.00	-36.24	-6.89	0.00	-603.67	0.00	603.67	5282.67	2641.34	11955.5	5986.66	0.06	-0.056	0.000	0.108
15.00	-34.68	-6.78	0.00	-569.22	0.00	569.22	5203.30	2601.65	11508.7	5762.93	0.13	-0.085	0.000	0.105
20.00	-33.14	-6.67	0.00	-535.31	0.00	535.31	5122.11	2561.06	11066.1	5541.30	0.24	-0.113	0.000	0.103
25.00	-31.64	-6.55	0.00	-501.98	0.00	501.98	5039.10	2519.55	10628.0	5321.92	0.37	-0.142	0.000	0.101
30.00	-30.16	-6.43	0.00	-469.23	0.00	469.23	4954.26	2477.13	10194.7	5104.94	0.54	-0.171	0.000	0.098
35.00	-28.71	-6.30	0.00	-437.10	0.00	437.10	4867.60	2433.80	9766.46	4890.49	0.73	-0.200	0.000	0.095
40.00	-27.30	-6.17	0.00	-405.58	0.00	405.58	4779.12	2389.56	9343.53	4678.71	0.96	-0.230	0.000	0.092
42.00	-26.74	-6.12	0.00	-393.24	0.00	393.24	4743.22	2371.61	9175.92	4594.78	1.06	-0.242	0.000	0.091
45.00	-25.33	-6.04	0.00	-374.87	0.00	374.87	4688.82	2344.41	8926.23	4469.75	1.21	-0.259	0.000	0.089
48.00	-23.94	-5.96	0.00	-356.73	0.00	356.73	3840.55	1920.27	7332.01	3671.45	1.38	-0.277	0.000	0.103
50.00	-23.46	-5.92	0.00	-344.81	0.00	344.81	3813.07	1906.53	7201.22	3605.96	1.50	-0.289	0.000	0.102
55.00	-22.26	-5.79	0.00	-315.23	0.00	315.23	3743.08	1871.54	6876.85	3443.54	1.82	-0.321	0.000	0.098
60.00	-21.09	-5.66	0.00	-286.30	0.00	286.30	3671.28	1835.64	6556.42	3283.08	2.18	-0.353	0.000	0.093
65.00	-19.94	-5.53	0.00	-258.02	0.00	258.02	3597.66	1798.83	6240.20	3124.74	2.56	-0.384	0.000	0.088
70.00	-18.82	-5.40	0.00	-230.38	0.00	230.38	3522.21	1761.10	5928.48	2968.65	2.98	-0.415	0.000	0.083
75.00	-17.73	-5.27	0.00	-203.38	0.00	203.38	3444.94	1722.47	5621.53	2814.94	3.43	-0.445	0.000	0.077
80.00	-16.66	-5.14	0.00	-177.03	0.00	177.03	3365.85	1682.92	5319.64	2663.77	3.91	-0.473	0.000	0.071
85.00	-15.62	-5.02	0.00	-151.30	0.00	151.30	3284.94	1642.47	5023.09	2515.28	4.43	-0.500	0.000	0.065
85.25	-15.56	-5.01	0.00	-150.05	0.00	150.05	3280.84	1640.42	5008.41	2507.93	4.45	-0.502	0.000	0.065
90.00	-14.12	-4.89	0.00	-126.24	0.00	126.24	1897.08	948.54	2862.22	1433.24	4.96	-0.526	0.000	0.096
95.00	-13.36	-4.77	0.00	-101.80	0.00	101.80	1858.98	929.49	2709.28	1356.65	5.53	-0.549	0.000	0.082
100.00	-12.61	-4.65	0.00	-77.96	0.00	77.96	1819.06	909.53	2557.69	1280.75	6.12	-0.578	0.000	0.068
105.00	-11.88	-4.53	0.00	-54.72	0.00	54.72	1777.32	888.66	2407.73	1205.66	6.74	-0.601	0.000	0.052
107.00	-9.43	-3.13	0.00	-45.66	0.00	45.66	1760.11	880.05	2348.27	1175.88	6.99	-0.609	0.000	0.044
110.00	-9.04	-3.06	0.00	-36.28	0.00	36.28	1733.75	866.88	2259.69	1131.52	7.38	-0.619	0.000	0.037
115.00	-8.41	-2.94	0.00	-20.99	0.00	20.99	1688.37	844.18	2113.84	1058.49	8.03	-0.632	0.000	0.025
117.00	-4.75	-1.56	0.00	-15.10	0.00	15.10	1669.70	834.85	2056.18	1029.62	8.30	-0.636	0.000	0.018
120.00	-4.42	-1.49	0.00	-10.42	0.00	10.42	1641.16	820.58	1970.46	986.70	8.70	-0.640	0.000	0.013
125.00	-3.89	-1.39	0.00	-2.95	0.00	2.95	1592.13	796.06	1829.84	916.28	9.37	-0.643	0.000	0.006
127.00	-0.22	-0.06	0.00	-0.18	0.00	0.18	1572.01	786.00	1774.43	888.53	9.64	-0.644	0.000	0.000
130.00	0.00	-0.06	0.00	0.00	0.00	0.00	1541.28	770.64	1692.26	847.39	10.05	-0.644	0.000	0.000

Final Analysis Summary

Structure:	CT13615-A-SBA	**Code:**	EIA/TIA-222-G	10/28/2020	
Site Name:	Madison 7, CT	**Exposure:**	C		
Height:	130.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	B - Competent Rock		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 101 mph Wind	32.2	0.00	47.32	0.00	0.00	3067.68
0.9D + 1.6W 101 mph Wind	32.2	0.00	35.48	0.00	0.00	3049.64
1.2D + 1.0Di + 1.0Wi 50 mph Wind	8.2	0.00	69.99	0.00	0.00	763.73
1.2D + 1.0E	1.1	0.00	47.36	0.00	0.00	115.10
0.9D + 1.0E	1.1	0.00	35.52	0.00	0.00	114.38
1.0D + 1.0W 60 mph Wind	7.1	0.00	39.46	0.00	0.00	674.22

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 101 mph Wind	-47.32	-32.25	0.00	-3067.6	0.00	-3067.6	5435.95	2717.9	12860.7	6439.91	0.00	0.485
0.9D + 1.6W 101 mph Wind	-35.48	-32.23	0.00	-3049.6	0.00	-3049.6	5435.95	2717.9	12860.7	6439.91	0.00	0.480
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-69.99	-8.25	0.00	-763.73	0.00	-763.73	5435.95	2717.9	12860.7	6439.91	0.00	0.131
1.2D + 1.0E	-17.00	-0.87	0.00	-28.18	0.00	-28.18	1897.08	948.54	2862.22	1433.24	90.00	0.029
0.9D + 1.0E	-12.75	-0.86	0.00	-27.96	0.00	-27.96	1897.08	948.54	2862.22	1433.24	90.00	0.026
1.0D + 1.0W 60 mph Wind	-39.46	-7.11	0.00	-674.22	0.00	-674.22	5435.95	2717.9	12860.7	6439.91	0.00	0.112

Base Plate Summary

Structure:	CT13615-A-SB		**Code:**	EIA/TIA-222-G	10/28/2020
Site Name:	Madison 7, CT		**Exposure:**	C	
Height:	130.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	B - Competent Rock	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

Reactions

Original Design

Moment (kip-ft):	5098.40
Axial (kip):	100.90
Shear (kip):	46.40

Analysis (1.2D + 1.6W)

Moment (kip-ft):	3067.68
Axial (kip):	47.32
Shear (kip):	32.25

Base Plate

Yield (ksi):	50.00
Width (in):	67.00
Style:	Round
Polygon Sides:	0.00
Clip Length (in):	0.00
Effective Len (in):	9.42
Moment (kip-in):	231.47
Allow Stress (ksi):	67.50
Applied Stress (ksi):	47.92
Stress Ratio:	0.71

Anchor Bolts

Bolt Circle:	63.00
Number Bolts:	26.00
Bolt Type:	1.5" F1554 105
Bolt Diameter (in):	1.50
Yield (ksi):	105.00
Ultimate (ksi):	125.00
Arrangement:	Radial
Cluster Dist (in):	0.00
Start Angle (deg):	0.00

Compression

Force (kip):	92.59
Allowable (kip):	141.00
Ratio:	0.67

Tension

Force (kip):	87.20
Allowable (kip):	141.00
Ratio:	0.64

Monopole Mat Foundation Design

			Date: 10/28/2020
Customer Name:	T-Mobile	**EIA/TIA Standard:**	EIA-222-G
Site Name:		**Structure Height (Ft.):**	130
Site Number:	CT13615-A-SBA	**Engineer Name:**	S. Hesselbein
Engr. Number:	99175	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

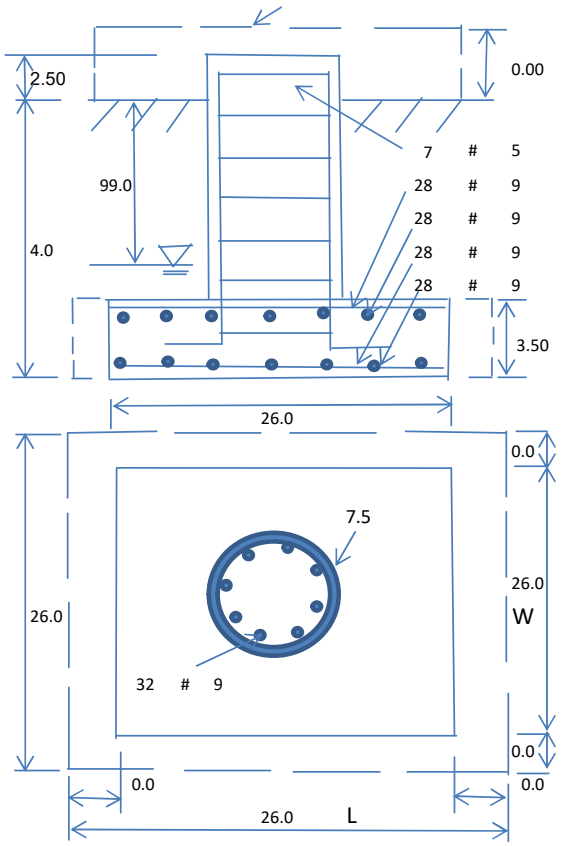
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	47.3	Shear Force (Kips):	32.2
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3067.7
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.5	Depth of Base BG (ft.):	4.0
Pier Height A. G. (ft.):	2.50	Thickness of Pad (ft):	3.50
Length of Pad (ft.):	26	Width of Pad (ft.):	26
Final Length of pad (ft)	26.0	Final width of pad (ft):	26.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi)	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	32	Tie Spacing (in):	12.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28

Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	28	Qty. of Rebar in Pad (W):	28
Apply 1.35 factor for e/w Per G:	1.35		

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	37.6	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	15000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:			1.00	

Foundation Analysis and Design: Uplift Strength Reduction Factor: 0.75 — Compression Strength Reduction Factor: 0.75

Total Dry Soil Volume (cu. Ft.):	315.91	Total Dry Soil Weight (Kips):	37.91
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	37.91	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2498.54	Total Dry Concrete Weight (Kips):	374.78
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	374.78	Total Vertical Load on Base (Kips):	459.99

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2092	<	Allowable Factored Soil Bearing (psf):	11250	0.19	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	5443.4	>	Design Factored Momont (kips-ft):	3277	0.60	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.66	OK!				

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00			
					Load/ Capacity Ratio	
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	5835.6	>	Design Factored Moment (Mu, Kips-F	3164.3	0.54	OK!
Calculated Shear Capacity (Kips):	826.7	>	Design Factored Shear (Kips):	32.2	0.04	OK!
Calculated Tension Capacity (Tn, Kips):	1728.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	11191.0	>	Design Factored Axial Load (Pu Kips):	47.3	0.00	OK!
Moment & Axial Strength Combination:	0.54	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.005	Reinforcement Ratio is satisfied per ACI				
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1137.7	>	One-Way Factored Shear (L-D. Kips):	189.5	0.17	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1137.7	>	One-Way Factored Shear (W-D., Kips)	189.5	0.17	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1000.5	>	One-Way Factored Shear (C-C, Kips):	182.5	0.18	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0023	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0023		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	4743.4	>	Moment at Bottom (L-Dir. K-Ft):	1130.8	0.24	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	4743.4	>	Moment at Bottom (W-Dir. K-Ft):	1130.8	0.24	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	6672.0	>	Moment at Bottom (C-C Dir. K-Ft):	1599.1	0.24	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0023	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0023		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	4743.4	>	Moment at the top (L-Dir K-Ft):	470.1	0.10	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	4743.4	>	Moment at the top (W-Dir K-Ft):	470.1	0.10	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	6672.0	>	Moment at the top (C-C Dir. K-Ft):	441.6	0.07	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1227.1	k-ft.	Max. factored shear stress v_{u_CD}:		2.0	Psi
Max. factored shear stress v_{u_AB}:	6.7	Psi	Factored shear Strength ϕv_n:		189.7	Psi
Max. factored shear stress v_u:	6.7	Psi	Check Usage of Punching Shear Capacity:		0.04	OK!

EXHIBIT 9

Antenna Mount Structural Analysis

Source: SBA Date: 4.16.2019

SBA Site:	**CT13615-A Madison 7, CT**
T-Mobile Site Number:	**CT11443E**
Project:	**L600/L700 Project**
Prepared For:	**T-Mobile**
Mount Description:	**(1) Platform** **w/ Handrail and Kicker Augments**
Site Location:	**17 Cottage Road, Madison, CT** **New Haven County** **41.275831°, -72.55889°**
Design Codes:	**ANSI/TIA-222-G** **IBC 2015 w/ 2018 CT Building Code**
Analysis Load Case:	**T-Mobile Final Configuration**
Analysis Result:	**Adequate @ 80% - Once Augmented** **See Conclusion**

STATE OF CONNECTICUT
GREGORY DURGIN
No. 32155
LICENSED
PROFESSIONAL ENGINEER

Revision 0
August 2, 2019

GeoStructural ▪ P.O. Box 2621, Boise, ID 83701 ▪ Office: (530) 539-4787
Professional Engineers | Tower Technicians | Climbers | sUAS Mapping

1.0 Introduction

An antenna mount structural analysis has been performed on T-Mobile's existing mount assembly with augments located at the CT13615-A Madison 7, CT communications site in New Haven County, CT considering the final equipment loading configuration listed in Section 3.0.

2.0 Analysis Criteria

An elastic three-dimensional model of the mount structure has been analyzed pursuant to the following criteria considering wind forces in 30° increments:

- 2018 Connecticut Building Code.
- IBC 2015 – International Building Code.
- ANSI/TIA-222-G – Structural Standard for Antenna Supporting Structures and Antennas.
- AISC – Steel Construction Manual.
- ANSI/AWS D1.1 – Structural Welding Code.

Wind w/o ice = 130 mph (3-sec gust Ultimate Wind Speed) Wind w/o ice = 101 mph (3-sec gust Basic Wind Speed) Wind w/ ice = 50 mph (3-sec gust Basic) with 0.75" Design Ice, Escalated with Height
Topographic Category 1; Exposure Category C; Structure Class (Risk Category) II Gust Effect Factor = 1.0; Directionality Factor = 0.95 Site Class D "Stiff Soil"; F_a = 1.6; F_v = 2.4; S_{DS} = 0.180
Maintenance Loads**: Lm = 500 lb @ Worst Case Mount Pipe (Concurrent with 30 mph Wind Speed) Lv = 250 lb @ Worst Case Member Location (Center Span or Cantilever) ** *The mount face horizontal boom rails of T-Arm mount assemblies are not rated for rigging, hoisting or maintenance loading.*

The following documents were provided:

- Mount and Tower Record Documents
  SBA
- Construction Drawings
  Chappell, Rev-0, 5/31/19.
- Colo Application
  SBA 600 MHz, App # 117021 v1.
- RFDS
  T-Mobile L600 Project, V2.1, CT11443E, 5/14/19.

The results of the analysis are illustrated in Section 4.0. If any of the existing or proposed conditions reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

3.0 Appurtenance Information

Table 3.1 – T-Mobile Final Configuration[1,2,3]

COR	(Quantity) Appurtenance Make/Model	Mount Description
117.0'±	(3) ERICSSON AIR21 B2A B4P	*(1) Platform w/ Handrail and Kicker Augments*
	(3) RFS APXVAARR24_43-U-NA20	
	(3) ERICSSON AIR21 B2P B4A	
	(3) ERICSSON 4449 B71+B12 RRH	
	(3) ERICSSON KRY 112 144/1 TMA	

1. *Refer to antenna installation Construction Drawings (by others, when applicable) for additional information regarding final antenna and equipment orientations.*
2. *Panel antennas to be installed as follows:*
   - 2.1. *AIR21 panels to remain installed on mount pipes in Positions 1 and 3.*
   - 2.2. *AARR panels to be installed on New Pipe2.5STD (2.875"OD Schedule 40) x 8'-0" mount pipe in Position 2 (middle position).*
3. *RRH/TMA units to be installed as follows:*
   - 3.1. *TMAs to remain installed on mount pipe behind panel in Position 3.*
   - 3.2. *4449 RRHs to be installed on mount pipe behind panel in Position 2.*

4.0 Analysis Results

Table 4.1 – Augmented Mount Capacity

Load Case	Governing Mount Component[1]	% Capacity[2]	Result
Final T-Mobile Configuration	New Handrail Kit	36%	**Adequate Once Augmented[3]**
	Bracing	31%	
	Standoff	24%	
	Bottom Rail	18%	
	Pipe2.0STD Mount Pipes	42%	
	New Pipe2.5STD Mount Pipes	69%	
	New PRK Double Angles	49%	
	Connection Plates	80%	

1. *Refer to the Calculations & Software Output portion of this report for mount component and structural information.*
2. *Listed results are expressed as a percentage of available mount member capacity based upon the assumed material strengths listed in Table 4.2. 105% is an acceptable allowable stress percentage for mount components.*
3. *Refer to Section 5.0 for information regarding required mount augments.*

Table 4.2 – Structural Component Material Strengths

Structural Component	Nominal Strength/Material[1]
Pipe	F_y = 35 ksi (A53, Gr. B)
Tube	F_y = 46 ksi (A500, Gr. B)
Structural Shapes (L, C, W, etc.), Plate / Bar	F_y = 36 ksi (A36)
Uni-Strut	F_y = 33 ksi (A570, Gr. 33)
Connection Bolts	A325
Stainless Steel Bolts	18-8 Stainless, Grade 316/304 F_y = 74 ksi (Yield) & F_u = 29 ksi (Tension)
U-Bolts / Threaded Rod	SAE J429 Grade 2 (Substitution: ASTM A449) F_y = 57 ksi (Yield) & F_u = 74 ksi (Tension)
Welds	E70XX Electrodes

1. *Strengths listed were assumed for this analysis and are based upon ASTM, AISC, RCSC, AWS and ACI preferred specification values. Values and materials are consistent with industry standards. Material strengths were taken from original design documents when available.*

5.0 Conclusion & Recommendations

Based on T-Mobile's final equipment loading configuration, the mount assemblies do not have sufficient capacity to support the loading considered in this analysis pursuant to the listed standards. Structural modifications (augments) will be required and are briefly summarized below:

- Install Platform Reinforcement Kit;
  - Sitepro1 PRK-1245, (1) total.
- Install Handrail Kit;
  - Sitepro1 HRK12-U or 14-U, (1) total.

Once the recommended augments are successfully implemented, the augmented mount assembly has sufficient capacity to support the loading considered in this analysis pursuant to the listed standards.

Augmentation Requirements:

- Antennas and equipment shall be installed centered vertically on the mount front face rails (limit vertical installation eccentricity) same as existing. This analysis accounts for vertical eccentricities necessary to install all panel antennas at the same relative top tip elevation.
- Panel antennas to be installed as follows:
  - AIR21 panels to remain installed on mount pipes in Positions 1 and 3.
  - AARR panels to be installed on New Pipe2.5STD (2.875"OD Schedule 40) x 8'-0" mount pipe in Position 2 (middle position).
- RRH/TMA units to be installed as follows:
  - TMAs to remain installed on mount pipe behind panel in Position 3.
  - 4449 RRHs to be installed on mount pipe behind panel in Position 2.
- In order to obtain a mount structure capable of supporting the currently proposed final loading configuration, upgrade augments must be installed in accordance with GeoStructural's *Mount Augment CDs and recommendations*.

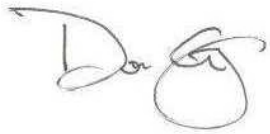
All data required to complete our structural analysis was furnished by our client and provided record data. GeoStructural has not conducted a site visit or independent study, nor have they been provided a mount mapping to verify existing conditions and the results of this analysis are based solely on the information provided.

This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If any of the existing or proposed conditions (appurtenance loading, member sizes, etc.) reported in this analysis are not properly represented, please contact our office immediately to request an amended report.

Prepared by:

Jesse Drennen, PE, MLE
208.761.7986
jesse.drennen@geostructural.com

Reviewed and Approved by:



Don George, PE, SE, MLSE
208.602.6569
don.george@geostructural.com

6.0 Standard Conditions

- All data required to complete our structural analysis was furnished by our client and provided record data. GeoStructural has not conducted a site visit or independent study to verify existing conditions and the results of this analysis are based solely on the information provided. It has been assumed that the tower, antenna support structure and foundation have been constructed according to the provided existing drawings, previous structural analysis reports, mapping documents, etc.

- The default Structure Classification is Class II in accordance with ANSI/TIA-222-G §A.2.2 & §A.15.3 and has been assumed for this analysis. The owner shall verify this classification conforms with original or desired reliability criteria.

- This analysis assumes that the structure has been properly installed and maintained in accordance with ANSI/TIA-222-G §15.5 and that no physical deterioration has occurred in any of the components of the structure. Damaged, missing, or rusted members were not considered.

- This analysis verifies the adequacy of the main components of the structure. Not all connections, welds, bolts, plates, etc. were individually detailed and analyzed. Where not specifically analyzed, the existing connection plates, welds, bolts, etc. were assumed adequate to develop the full capacity of the main structural members.

- No consideration has been made for unusual or extreme wind events, rime/in-cloud ice loadings, harmonic or nodal vibration, vortex shedding or other similar conditions.

- It is the owner's responsibility to determine the appropriate design wind speed and amount of ice accumulation beyond code minimum values that should be considered in the analysis.

- This analysis report does not constitute a maintenance and condition assessment. No certifications regarding maintenance and condition are expressed or implied. If desired, GeoStructural can provide these services under a subsequent contract.

- This analysis only encompasses the antenna mount assembly. The tower, overall mount support structure, foundation, etc. are beyond the scope of this analysis. If desired, GeoStructural can provide these services under a subsequent contract.

7.0 Calculations & Software Output

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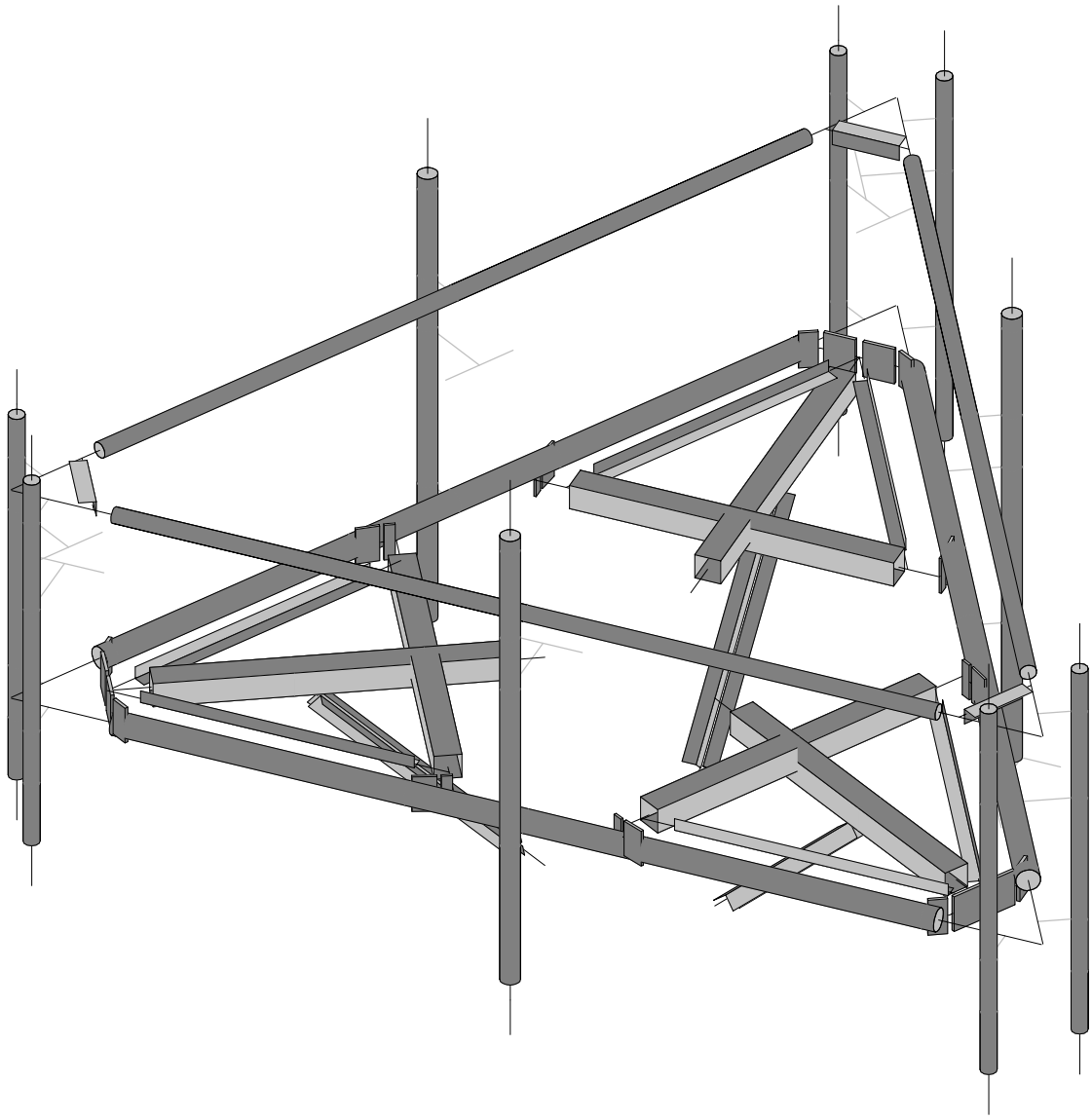

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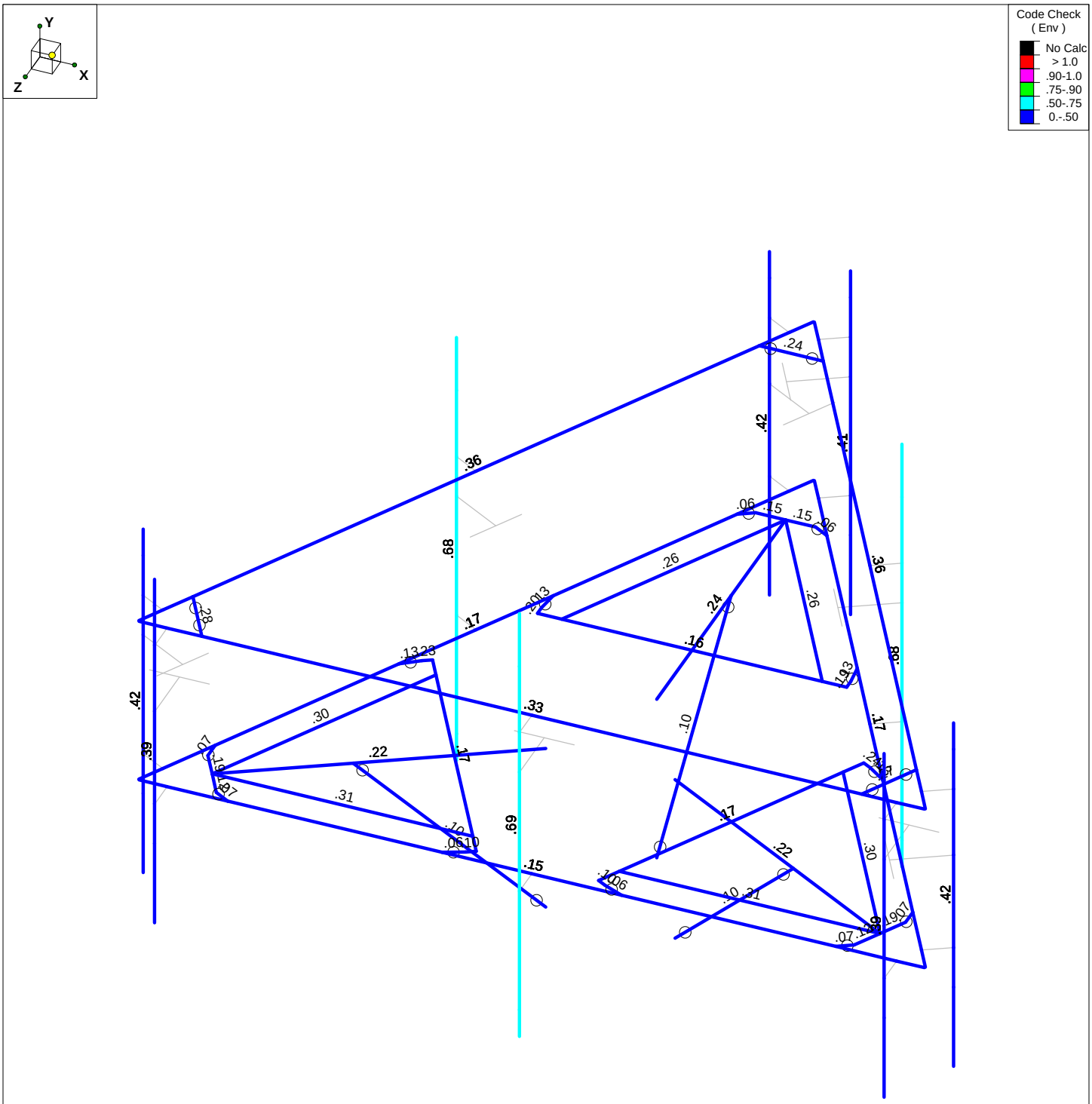

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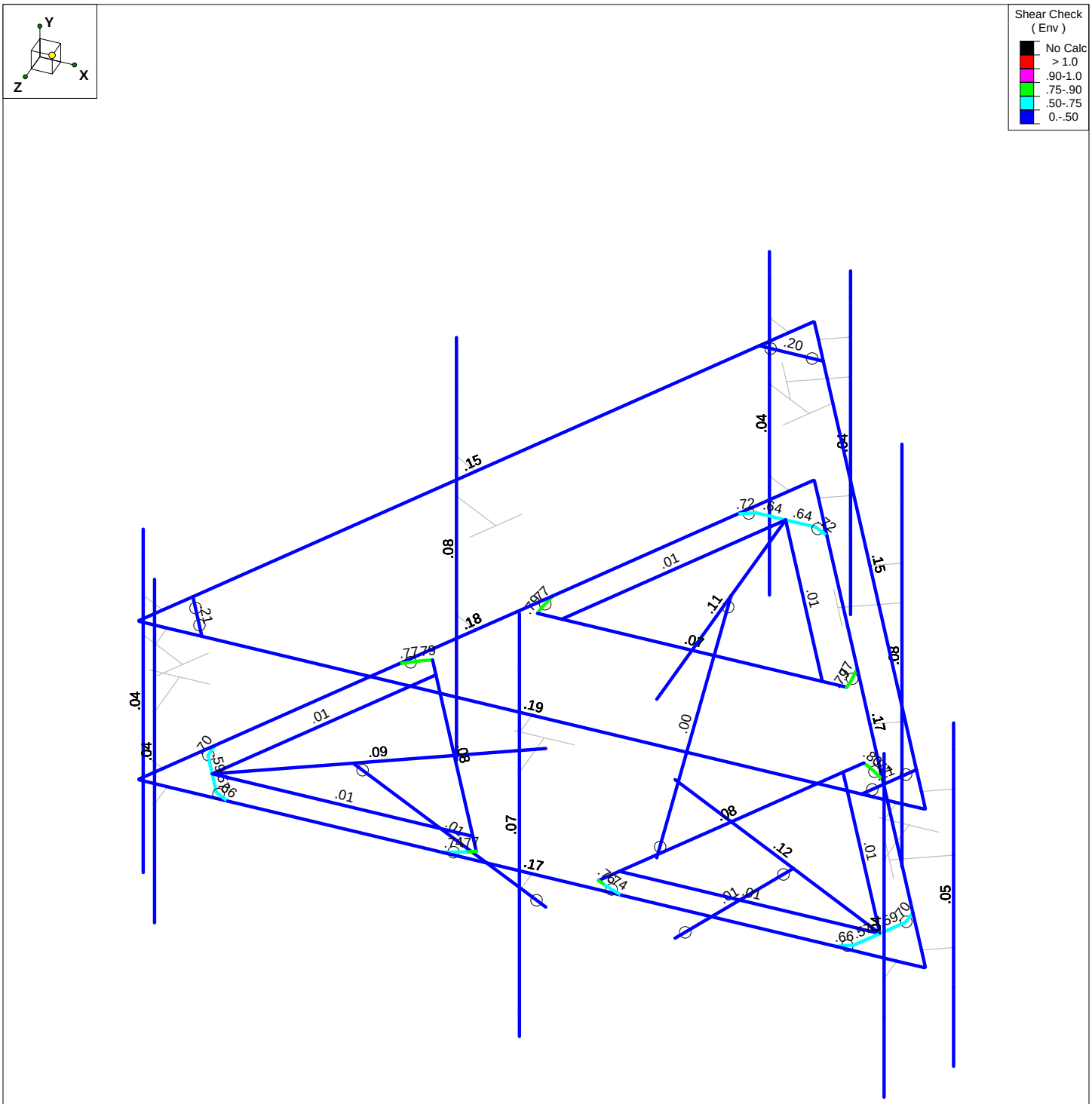

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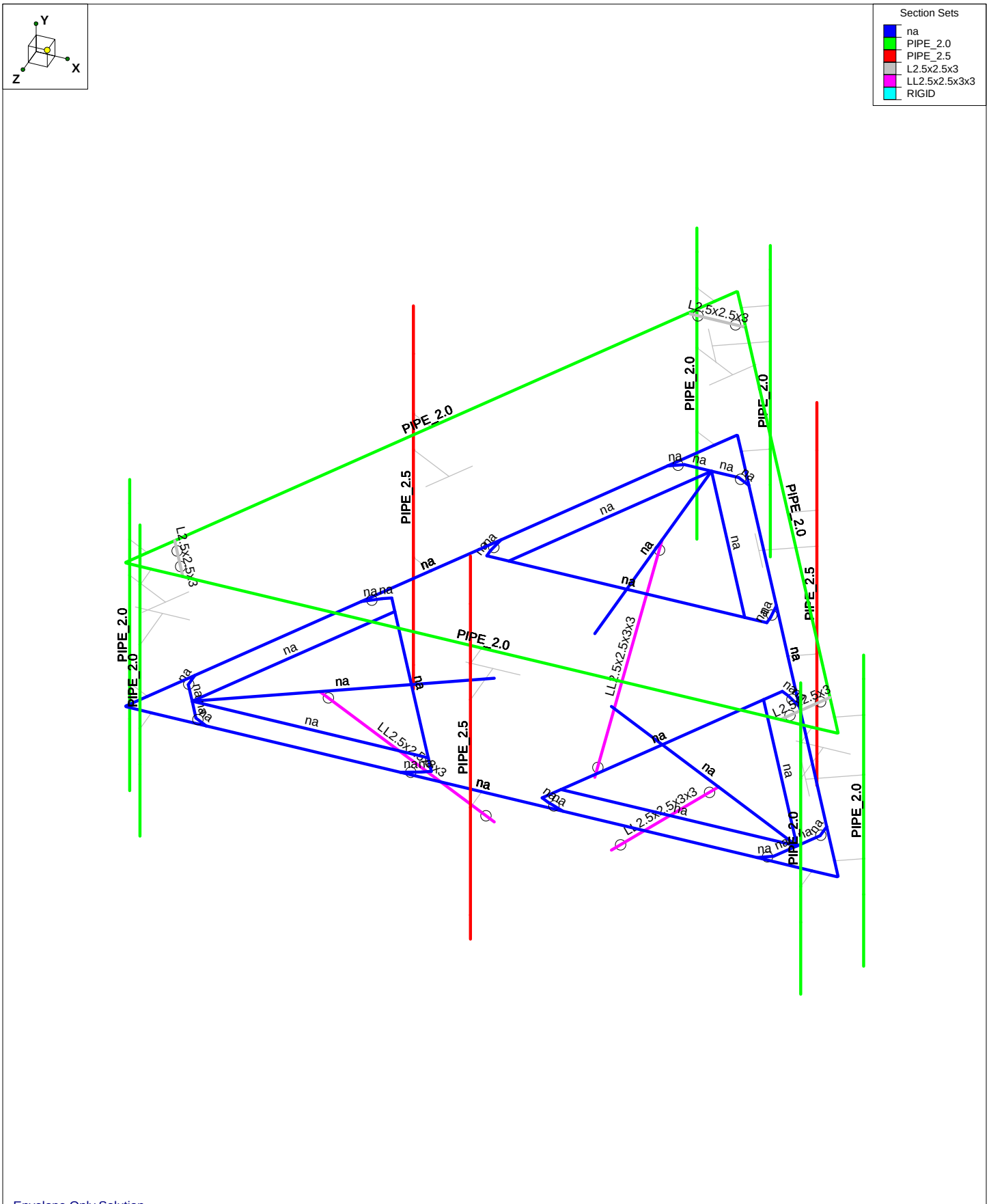

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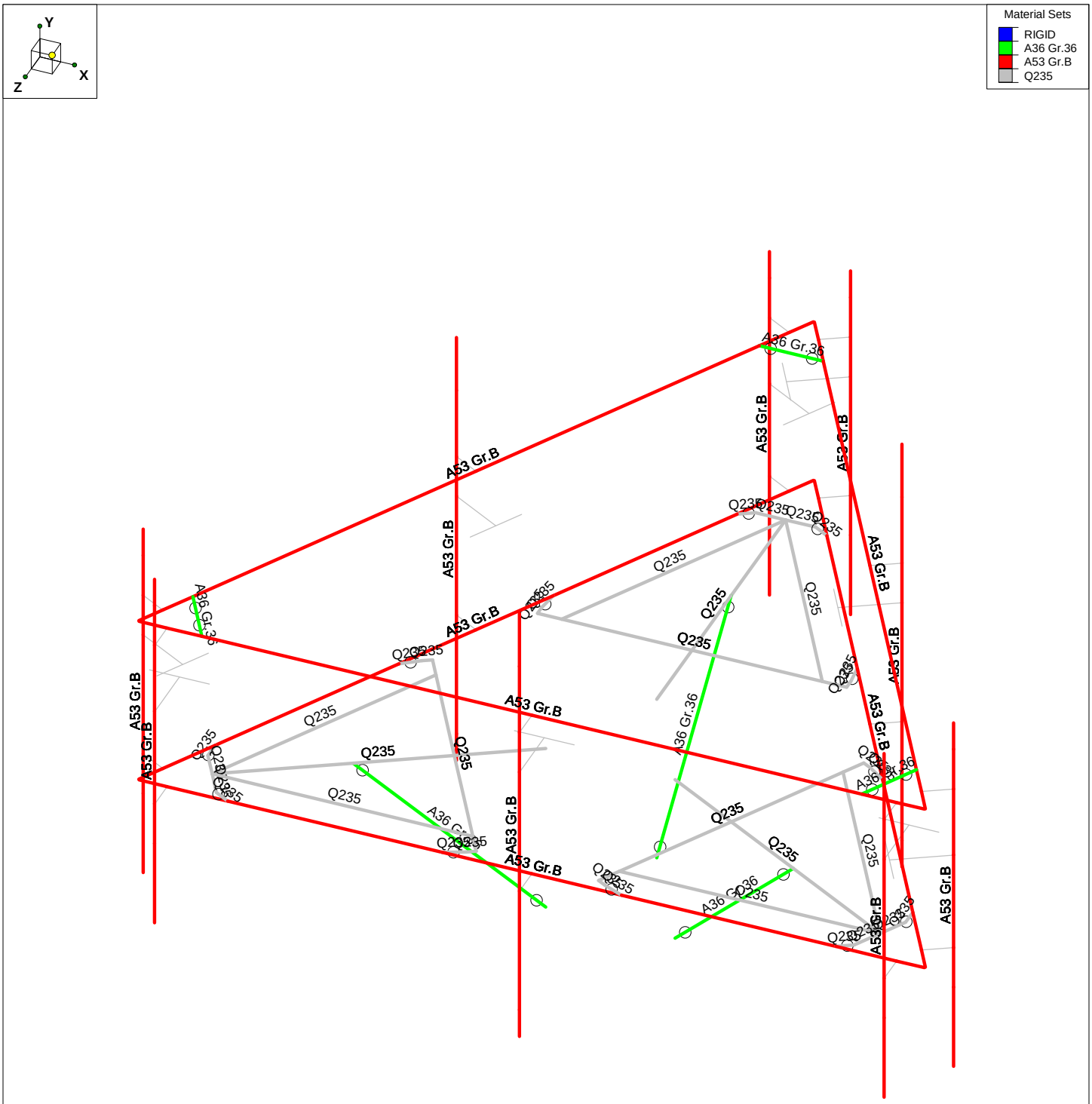

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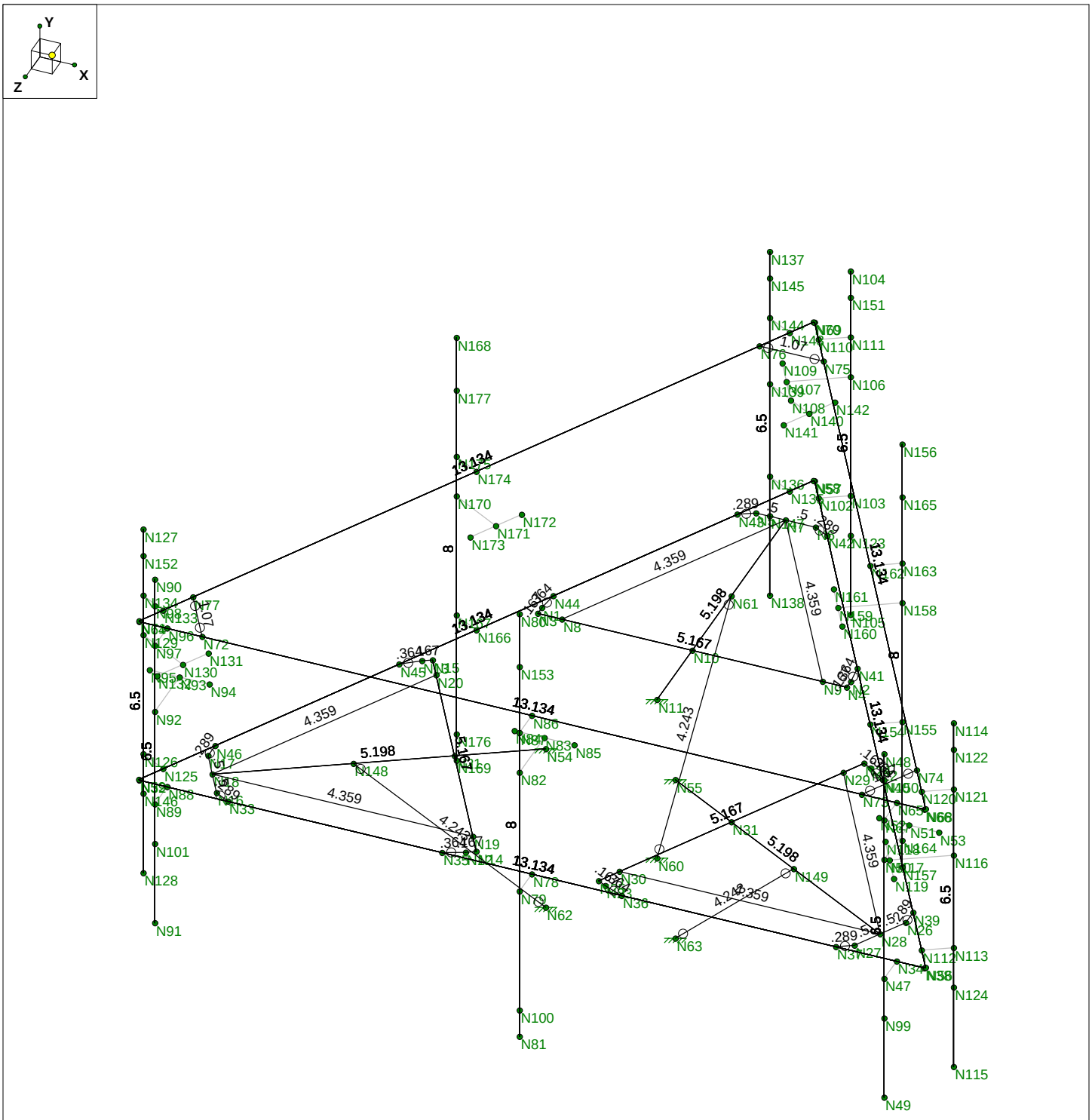

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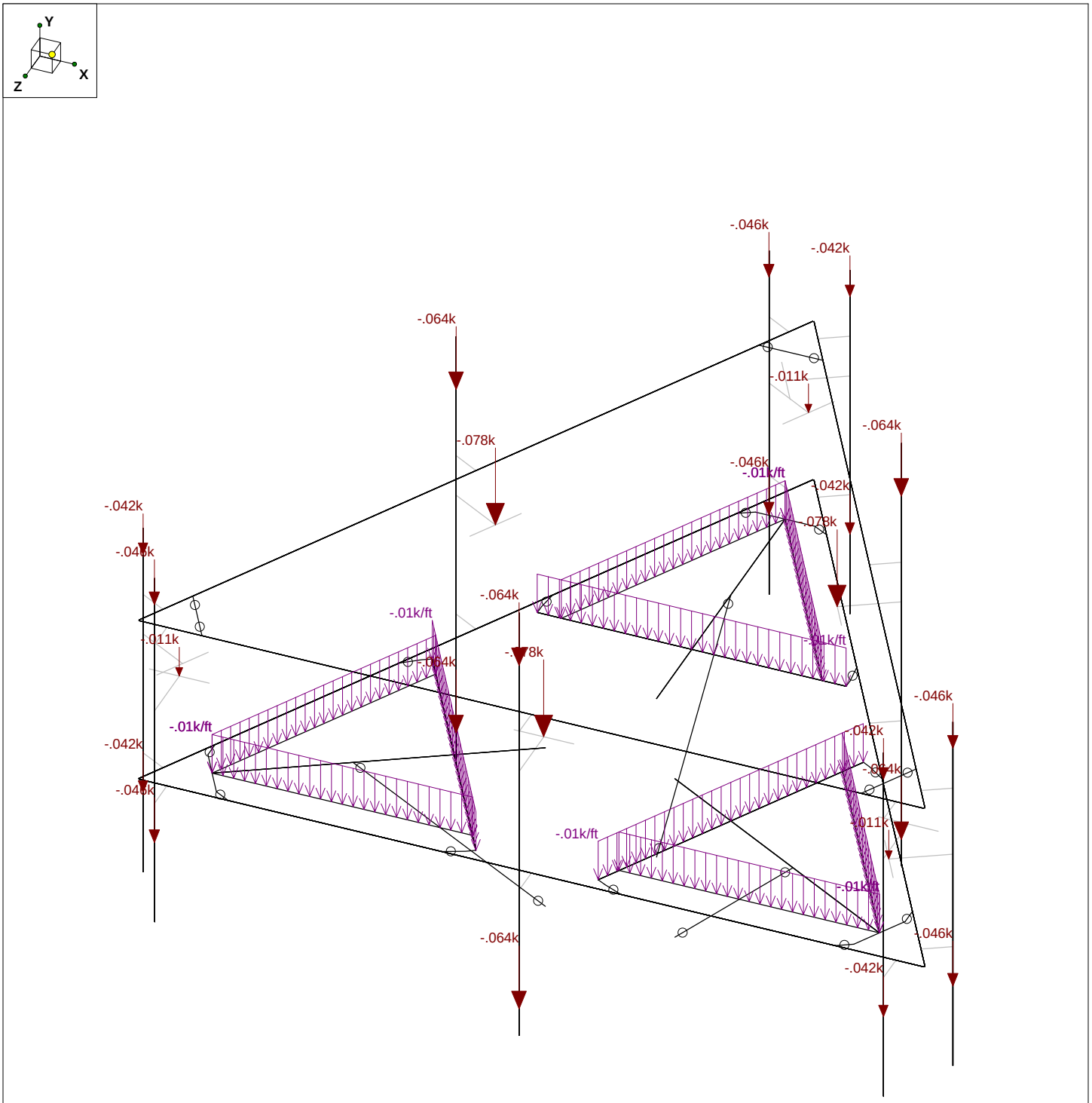

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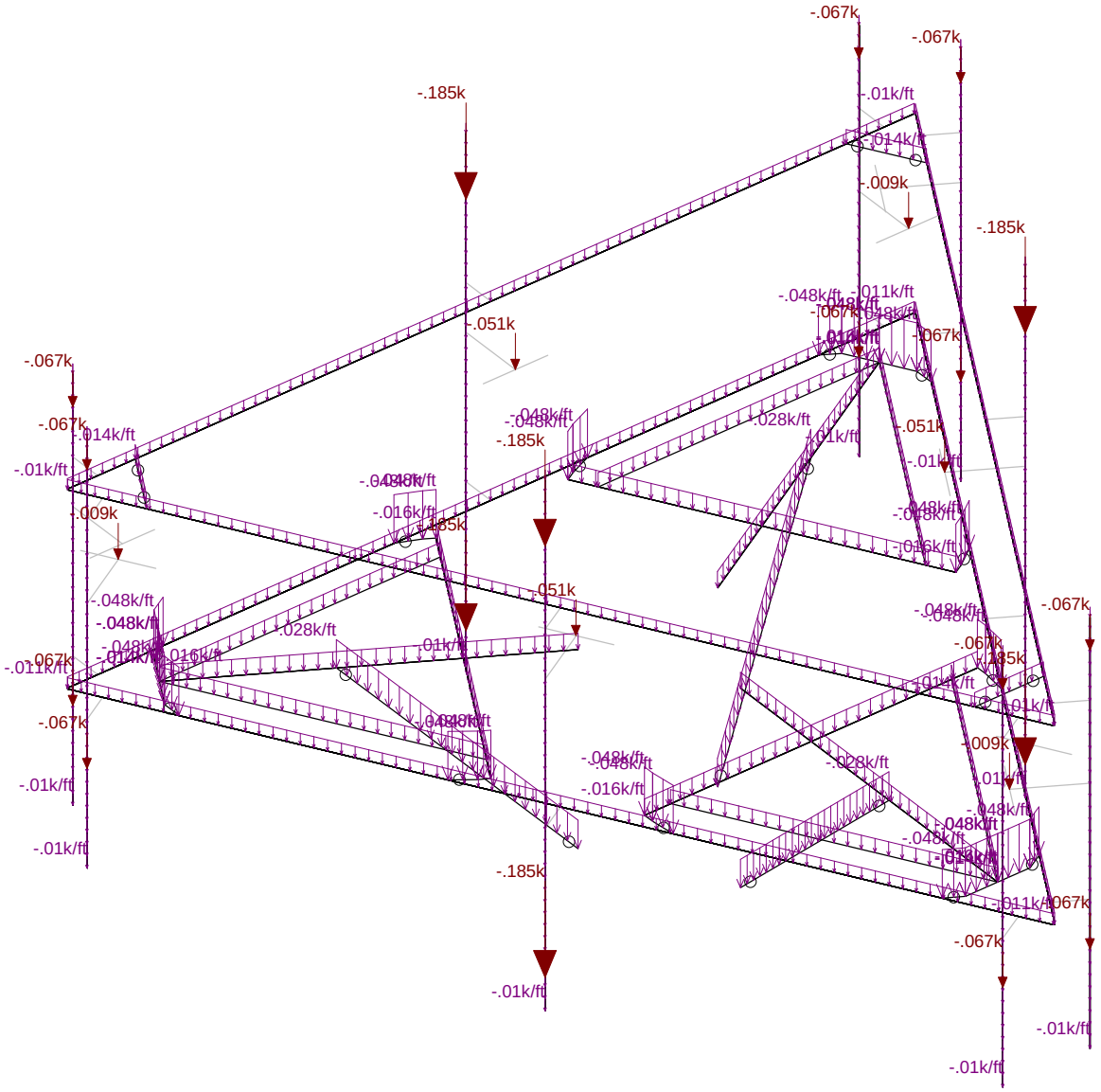

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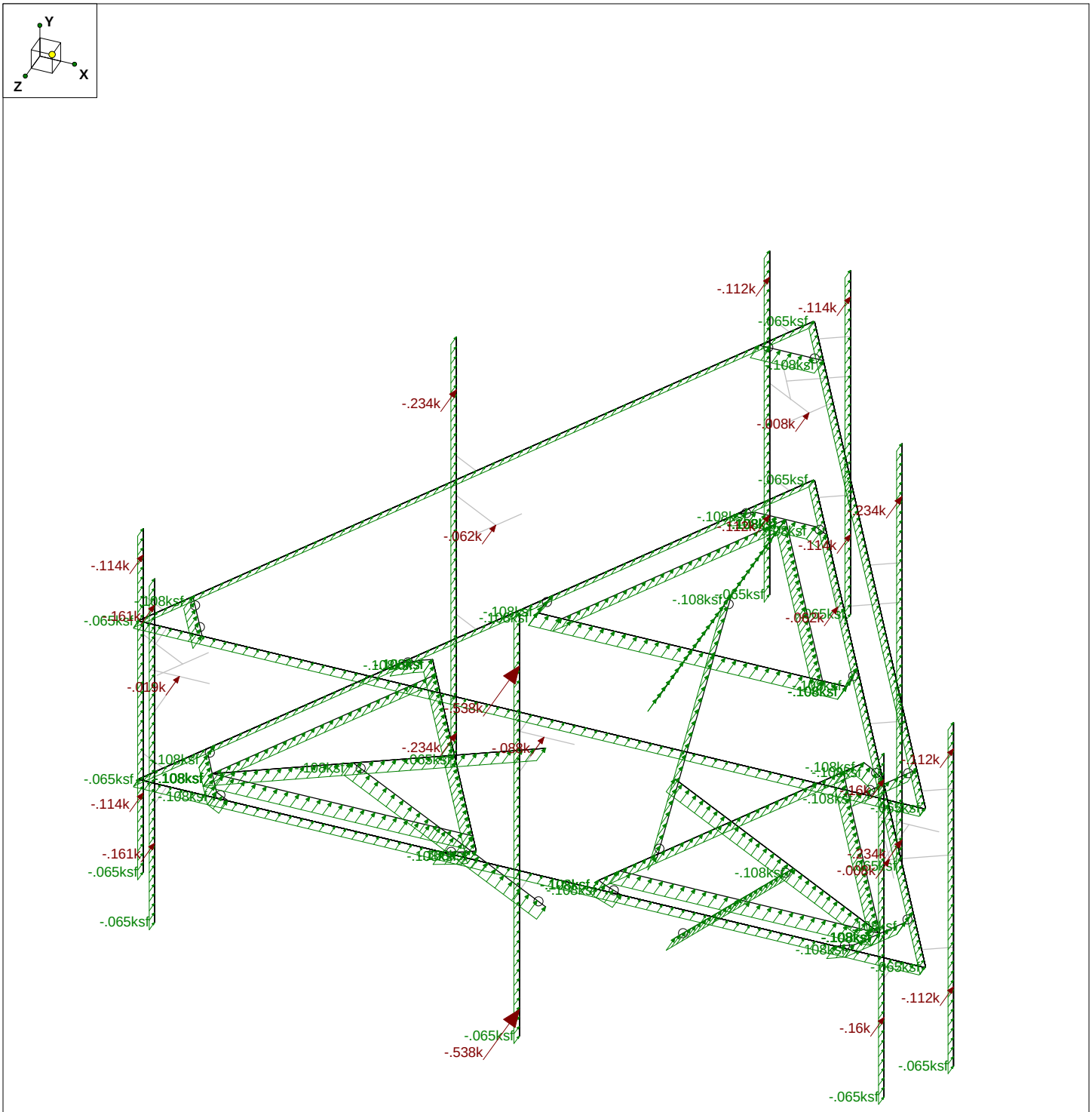

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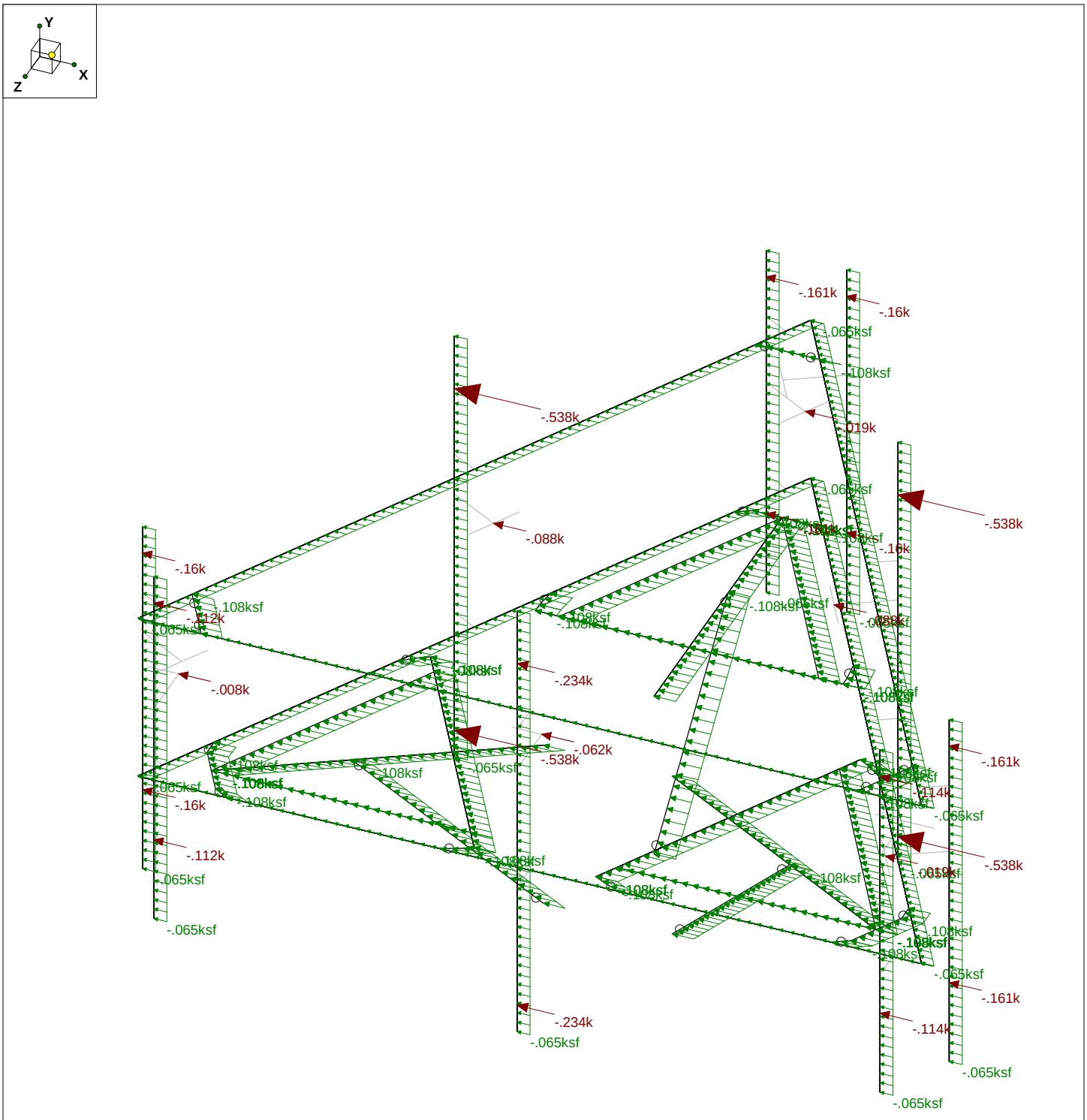

Loads: BLC 6, Wox
Envelope Only Solution

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Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	D	DL		-1		25		9		
2	Di	SL				25		60		
3	Lm [500]	LL				1				
4	Lv [250]	LL				2				
5	Woz	WL				25		57		
6	Wox	WL				25		57		
7	Wiz	WL				25		57		
8	Wix	WL				25		57		
9	Ez	EL				25				
10	Ex	EL				25				

Load Combination Design

	Description	ASIF	CD	Service	Hot Rol...	Cold Form...	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
1	1) 1.4D				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
2	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
3	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
4	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
6	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	2) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
14	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
15	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
16	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
17	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
18	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
19	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
20	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
21	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
22	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
23	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
24	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
25	3) 0.9D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
26	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
27	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
28	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
29	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
30	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
31	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
32	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
33	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
34	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
35	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
36	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
37	4) 1.2D+1.0...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
38	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
39	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
40	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
41	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Load Combination Design (Continued)

	Description	ASIF	CD	Service	Hot Rol...	Cold Form...	Wood	Concrete	Masonry	Aluminum	Stainless	Connection
42	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
43	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
44	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
45	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
46	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
47	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
48	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
49	5) 1.2D+1.5L...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
50	6) 1.2D+1.5Lv				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
51	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
52	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
53	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
54	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
55	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
56	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
57	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
58	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
59	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
60	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
61	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
62	7) (1.2+0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
63	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
64	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
65	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
66	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
67	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
68	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
69	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
70	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
71	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
72	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
73	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
74	8) (0.9-0.2Sd...				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
75	Dead Only				Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Hot Rolled Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (/1...	Density[k/ft^3]	Yield[ksi]	Ry	Fu[ksi]	Rt
1	A36 Gr.36	29000	11154	.3	.65	.49	36	1.5	58	1.2
2	A572 Gr.50	29000	11154	.3	.65	.49	50	1.1	65	1.1
3	A992	29000	11154	.3	.65	.49	50	1.1	65	1.1
4	A500 Gr.B RND	29000	11154	.3	.65	.49	42	1.4	58	1.3
5	A500 Gr.B Rect	29000	11154	.3	.65	.49	46	1.4	58	1.3
6	A53 Gr.B	29000	11154	.3	.65	.49	35	1.6	60	1.2
7	A500 Gr.B RND_1	29000	11154	.3	.65	.527	42	1.4	58	1.3
8	A500 Gr.B Rect_1	29000	11154	.3	.65	.527	46	1.4	58	1.3
9	A1085	29000	11154	.3	.65	.49	50	1.4	65	1.3
10	A500 Gr.42	29000	11154	.3	.65	.49	42	1.3	58	1.1
11	A500 Gr.46	29000	11154	.3	.65	.49	46	1.2	58	1.1
12	Q235	29000	11154	.3	.65	.49	34	1.5	58	1.2

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	PIPE_1.5	PIPE_1.5	Beam	None	A53 Gr.B	Typical	.749	.293	.293	.586
2	PIPE_2.0	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
3	PIPE_2.5	PIPE_2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	PIPE_3.0	PIPE_3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
5	PIPE_3.5	PIPE_3.5	Beam	None	A53 Gr.B	Typical	2.5	4.52	4.52	9.04
6	PIPE_4.0	PIPE_4.0	Beam	None	A53 Gr.B	Typical	2.96	6.82	6.82	13.6
7	PIPE_5.0	PIPE_5.0	Beam	None	A53 Gr.B	Typical	4.01	14.3	14.3	28.6
8	HSS2x2x3	HSS2x2x3	Beam	None	A500 Gr.B Rect	Typical	1.19	.641	.641	1.09
9	HSS3x3x3	HSS3x3x3	Beam	None	A500 Gr.B Rect	Typical	1.89	2.46	2.46	4.03
10	HSS4x4x3	HSS4x4x3	Beam	None	A500 Gr.B Rect	Typical	2.58	6.21	6.21	10
11	HSS4x4x4	HSS4x4x4	Beam	None	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
12	HSS5x5x4	HSS5x5x4	Beam	None	A500 Gr.B Rect	Typical	4.3	16	16	25.8
13	C3x3.5	C3x3.5	Beam	None	A36 Gr.36	Typical	1.09	.169	1.57	.023
14	C4x4.5	C4x4.5	Beam	None	A36 Gr.36	Typical	1.38	.289	3.65	.032
15	C5x6.7	C5x6.7	Beam	None	A36 Gr.36	Typical	1.97	.47	7.48	.055
16	L2.5x2.5x3	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	.901	.535	.535	.011
17	L2.5x2.5x4	L2.5x2.5x4	Beam	None	A36 Gr.36	Typical	1.19	.692	.692	.026
18	L3x3x3	L3x3x3	Beam	None	A36 Gr.36	Typical	1.09	.948	.948	.014
19	L3x3x4	L3x3x4	Beam	None	A36 Gr.36	Typical	1.44	1.23	1.23	.031
20	L3x3x6	L3x3x6	Beam	None	A36 Gr.36	Typical	2.11	1.75	1.75	.101
21	L3.5x3.5x4	L3.5x3.5x4	Beam	None	A36 Gr.36	Typical	1.7	2	2	.039
22	L4x4x4	L4x4x4	Beam	None	A36 Gr.36	Typical	1.93	3	3	.044
23	LL2.5x2.5x3x3	LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical	1.8	2.46	1.07	.023

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N54	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N55	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
4	N60	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
5	N61						
6	N62	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
7	N63	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
8	N148						
9	N149						

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N7	N5		90	1/2 x 6	Beam	None	Q235	Typical_APP
2	M2	N7	N6		90	1/2 x 6	Beam	None	Q235	Typical_APP
3	M3	N3	N1		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
4	M4	N1	N44		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
5	M5	N4	N2		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
6	M6	N2	N41		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
7	M7	N7	N9			L2x2x4	Beam	None	Q235	Typical_APP
8	M8	N7	N8		270	L2x2x4	Beam	None	Q235	Typical_APP
9	M9	N5	N43		90	1/2 x 6	Beam	None	Q235	Typical_APP
10	M10	N6	N42		90	1/2 x 6	Beam	None	Q235	Typical_APP
11	M11	N18	N16		90	1/2 x 6	Beam	None	Q235	Typical_APP
12	M12	N18	N17		90	1/2 x 6	Beam	None	Q235	Typical_APP
13	M13	N14	N12		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
14	M14	N12	N35		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
15	M15	N15	N13		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
16	M16	N13	N45		90	3/8x6_HRA	Beam	None	Q235	Typical_APP

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
17	M17	N18	N20			L2x2x4	Beam	None	Q235	Typical_APP
18	M18	N18	N19		270	L2x2x4	Beam	None	Q235	Typical_APP
19	M19	N15	N14			HSS4x4x4	Beam	None	Q235	Typical_APP
20	M20	N16	N33		90	1/2 x 6	Beam	None	Q235	Typical_APP
21	M21	N17	N46		90	1/2 x 6	Beam	None	Q235	Typical_APP
22	M22	N28	N26		90	1/2 x 6	Beam	None	Q235	Typical_APP
23	M23	N28	N27		90	1/2 x 6	Beam	None	Q235	Typical_APP
24	M24	N24	N22		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
25	M25	N22	N40		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
26	M26	N25	N23		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
27	M27	N23	N36		90	3/8x6_HRA	Beam	None	Q235	Typical_APP
28	M28	N28	N30			L2x2x4	Beam	None	Q235	Typical_APP
29	M29	N28	N29		270	L2x2x4	Beam	None	Q235	Typical_APP
30	M30	N26	N39		90	1/2 x 6	Beam	None	Q235	Typical_APP
31	M31	N27	N37		90	1/2 x 6	Beam	None	Q235	Typical_APP
32	M32	N32	N38			PIPE_3.0	Beam	None	A53 Gr.B	Typical_APP
33	M33	N34	N47			RIGID	None	None	RIGID	Typical
34	M34	N50	N51			RIGID	None	None	RIGID	Typical
35	M35	N52	N53			RIGID	None	None	RIGID	Typical
36	M36	N49	N48			PIPE_2.0	Beam	None	A53 Gr.B	Typical
37	M37	N18	N54			HSS4x4x4	Beam	None	Q235	Typical_APP
38	M38	N56	N57			PIPE_3.0	Beam	None	A53 Gr.B	Typical_APP
39	M39	N58	N59			PIPE_3.0	Beam	None	A53 Gr.B	Typical_APP
40	M40	N25	N24			HSS4x4x4	Beam	None	Q235	Typical_APP
41	M41	N4	N3			HSS4x4x4	Beam	None	Q235	Typical_APP
42	M42	N28	N55			HSS4x4x4	Beam	None	Q235	Typical_APP
43	M43	N7	N11			HSS4x4x4	Beam	None	Q235	Typical_APP
44	M44	N61	N60			LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
45	M45	N64	N66			PIPE_2.0	Beam	None	A53 Gr.B	Typical
46	M46	N65	N67			RIGID	None	None	RIGID	Typical
47	M47	N68	N69			PIPE_2.0	Beam	None	A53 Gr.B	Typical
48	M48	N70	N71			PIPE_2.0	Beam	None	A53 Gr.B	Typical
49	M49	N73	N74		90	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
50	M50	N75	N76		90	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
51	M51	N77	N72		90	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical
52	M52	N78	N79			RIGID	None	None	RIGID	Typical
53	M53	N82	N83			RIGID	None	None	RIGID	Typical
54	M54	N84	N85			RIGID	None	None	RIGID	Typical
55	M55	N81	N80			PIPE_2.5	Beam	None	A53 Gr.B	Typical
56	M56	N86	N87			RIGID	None	None	RIGID	Typical
57	M57	N88	N89			RIGID	None	None	RIGID	Typical
58	M58	N92	N93			RIGID	None	None	RIGID	Typical
59	M59	N94	N95			RIGID	None	None	RIGID	Typical
60	M60	N91	N90			PIPE_2.0	Beam	None	A53 Gr.B	Typical
61	M61	N96	N97			RIGID	None	None	RIGID	Typical
62	M62	N102	N103			RIGID	None	None	RIGID	Typical
63	M63	N106	N107			RIGID	None	None	RIGID	Typical
64	M64	N108	N109			RIGID	None	None	RIGID	Typical
65	M65	N105	N104			PIPE_2.0	Beam	None	A53 Gr.B	Typical
66	M66	N110	N111			RIGID	None	None	RIGID	Typical
67	M67	N112	N113			RIGID	None	None	RIGID	Typical
68	M68	N116	N117			RIGID	None	None	RIGID	Typical
69	M69	N118	N119			RIGID	None	None	RIGID	Typical
70	M70	N115	N114			PIPE_2.0	Beam	None	A53 Gr.B	Typical
71	M71	N120	N121			RIGID	None	None	RIGID	Typical
72	M72	N125	N126			RIGID	None	None	RIGID	Typical
73	M73	N129	N130			RIGID	None	None	RIGID	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
74	M74	N131	N132			RIGID	None	None	RIGID	Typical
75	M75	N128	N127			PIPE_2.0	Beam	None	A53 Gr.B	Typical
76	M76	N133	N134			RIGID	None	None	RIGID	Typical
77	M77	N135	N136			RIGID	None	None	RIGID	Typical
78	M78	N139	N140			RIGID	None	None	RIGID	Typical
79	M79	N141	N142			RIGID	None	None	RIGID	Typical
80	M80	N138	N137			PIPE_2.0	Beam	None	A53 Gr.B	Typical
81	M81	N143	N144			RIGID	None	None	RIGID	Typical
82	M82	N148	N62			LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
83	M83	N149	N63			LL2.5x2.5x3x3	Beam	None	A36 Gr.36	Typical
84	M84	N154	N155			RIGID	None	None	RIGID	Typical
85	M85	N158	N159			RIGID	None	None	RIGID	Typical
86	M86	N160	N161			RIGID	None	None	RIGID	Typical
87	M87	N157	N156			PIPE_2.5	Beam	None	A53 Gr.B	Typical
88	M88	N162	N163			RIGID	None	None	RIGID	Typical
89	M89	N166	N167			RIGID	None	None	RIGID	Typical
90	M90	N170	N171			RIGID	None	None	RIGID	Typical
91	M91	N172	N173			RIGID	None	None	RIGID	Typical
92	M92	N169	N168			PIPE_2.5	Beam	None	A53 Gr.B	Typical
93	M93	N174	N175			RIGID	None	None	RIGID	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
1	M1						Yes				None
2	M2						Yes				None
3	M3						Yes				None
4	M4		BenPIN				Yes				None
5	M5						Yes				None
6	M6		BenPIN				Yes				None
7	M7						Yes				None
8	M8						Yes				None
9	M9		BenPIN				Yes				None
10	M10		BenPIN				Yes				None
11	M11						Yes				None
12	M12						Yes				None
13	M13						Yes				None
14	M14		BenPIN				Yes				None
15	M15						Yes				None
16	M16		BenPIN				Yes				None
17	M17						Yes				None
18	M18						Yes				None
19	M19						Yes				None
20	M20		BenPIN				Yes				None
21	M21		BenPIN				Yes				None
22	M22						Yes				None
23	M23						Yes				None
24	M24						Yes				None
25	M25		BenPIN				Yes				None
26	M26						Yes				None
27	M27		BenPIN				Yes				None
28	M28						Yes				None
29	M29						Yes				None
30	M30		BenPIN				Yes				None
31	M31		BenPIN				Yes				None
32	M32						Yes				None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
33	M33						Yes	** NA **			None
34	M34						Yes	** NA **			None
35	M35						Yes	** NA **			None
36	M36						Yes				None
37	M37						Yes				None
38	M38						Yes				None
39	M39						Yes				None
40	M40						Yes				None
41	M41						Yes				None
42	M42						Yes				None
43	M43						Yes				None
44	M44	BenPIN	BenPIN				Yes				None
45	M45						Yes				None
46	M46		BenPIN				Yes	** NA **			None
47	M47						Yes				None
48	M48						Yes				None
49	M49	OOOOXO	OOOOXO				Yes				None
50	M50	OOOOXO	OOOOXO				Yes				None
51	M51	OOOOXO	OOOOXO				Yes				None
52	M52						Yes	** NA **			None
53	M53						Yes	** NA **			None
54	M54						Yes	** NA **			None
55	M55						Yes				None
56	M56		BenPIN				Yes	** NA **			None
57	M57						Yes	** NA **			None
58	M58						Yes	** NA **			None
59	M59						Yes	** NA **			None
60	M60						Yes				None
61	M61		BenPIN				Yes	** NA **			None
62	M62						Yes	** NA **			None
63	M63						Yes	** NA **			None
64	M64						Yes	** NA **			None
65	M65						Yes				None
66	M66		BenPIN				Yes	** NA **			None
67	M67						Yes	** NA **			None
68	M68						Yes	** NA **			None
69	M69						Yes	** NA **			None
70	M70						Yes				None
71	M71		BenPIN				Yes	** NA **			None
72	M72						Yes	** NA **			None
73	M73						Yes	** NA **			None
74	M74						Yes	** NA **			None
75	M75						Yes				None
76	M76		BenPIN				Yes	** NA **			None
77	M77						Yes	** NA **			None
78	M78						Yes	** NA **			None
79	M79						Yes	** NA **			None
80	M80						Yes				None
81	M81		BenPIN				Yes	** NA **			None
82	M82	BenPIN	BenPIN				Yes				None
83	M83	BenPIN	BenPIN				Yes				None
84	M84						Yes	** NA **			None
85	M85						Yes	** NA **			None
86	M86						Yes	** NA **			None
87	M87						Yes				None
88	M88		BenPIN				Yes	** NA **			None
89	M89						Yes	** NA **			None

Member Advanced Data (Continued)

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Defl Rat...	Analysis ...	Inactive	Seismic...
90	M90						Yes	** NA **			None
91	M91						Yes	** NA **			None
92	M92						Yes				None
93	M93		BenPIN				Yes	** NA **			None

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	1/2 x 6	.5			Lbyy						Lateral
2	M2	1/2 x 6	.5			Lbyy						Lateral
3	M3	3/8x6_HRA	.167			Lbyy						Lateral
4	M4	3/8x6_HRA	.364			Lbyy						Lateral
5	M5	3/8x6_HRA	.167			Lbyy						Lateral
6	M6	3/8x6_HRA	.364			Lbyy						Lateral
7	M7	L2x2x4	4.359			Lbyy						Lateral
8	M8	L2x2x4	4.359			Lbyy						Lateral
9	M9	1/2 x 6	.289			Lbyy						Lateral
10	M10	1/2 x 6	.289			Lbyy						Lateral
11	M11	1/2 x 6	.5			Lbyy						Lateral
12	M12	1/2 x 6	.5			Lbyy						Lateral
13	M13	3/8x6_HRA	.167			Lbyy						Lateral
14	M14	3/8x6_HRA	.364			Lbyy						Lateral
15	M15	3/8x6_HRA	.167			Lbyy						Lateral
16	M16	3/8x6_HRA	.364			Lbyy						Lateral
17	M17	L2x2x4	4.359			Lbyy						Lateral
18	M18	L2x2x4	4.359			Lbyy						Lateral
19	M19	HSS4x4x4	5.167			Lbyy						Lateral
20	M20	1/2 x 6	.289			Lbyy						Lateral
21	M21	1/2 x 6	.289			Lbyy						Lateral
22	M22	1/2 x 6	.5			Lbyy						Lateral
23	M23	1/2 x 6	.5			Lbyy						Lateral
24	M24	3/8x6_HRA	.167			Lbyy						Lateral
25	M25	3/8x6_HRA	.364			Lbyy						Lateral
26	M26	3/8x6_HRA	.167			Lbyy						Lateral
27	M27	3/8x6_HRA	.364			Lbyy						Lateral
28	M28	L2x2x4	4.359			Lbyy						Lateral
29	M29	L2x2x4	4.359			Lbyy						Lateral
30	M30	1/2 x 6	.289			Lbyy						Lateral
31	M31	1/2 x 6	.289			Lbyy						Lateral
32	M32	PIPE_3.0	13.134			Lbyy						Lateral
33	M36	PIPE_2.0	6.5			Lbyy						Lateral
34	M37	HSS4x4x4	5.198			Lbyy						Lateral
35	M38	PIPE_3.0	13.134			Lbyy						Lateral
36	M39	PIPE_3.0	13.134			Lbyy						Lateral
37	M40	HSS4x4x4	5.167			Lbyy						Lateral
38	M41	HSS4x4x4	5.167			Lbyy						Lateral
39	M42	HSS4x4x4	5.198			Lbyy						Lateral
40	M43	HSS4x4x4	5.198			Lbyy						Lateral
41	M44	LL2.5x2.5x3...	4.243			Lbyy						Lateral
42	M45	PIPE_2.0	13.134			Lbyy						Lateral
43	M47	PIPE_2.0	13.134			Lbyy						Lateral
44	M48	PIPE_2.0	13.134			Lbyy						Lateral
45	M49	L2.5x2.5x3	1.07			Lbyy						Lateral
46	M50	L2.5x2.5x3	1.07			Lbyy						Lateral
47	M51	L2.5x2.5x3	1.07			Lbyy						Lateral
48	M55	PIPE_2.5	8			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
49	M60	PIPE_2.0	6.5			Lbyy						Lateral
50	M65	PIPE_2.0	6.5			Lbyy						Lateral
51	M70	PIPE_2.0	6.5			Lbyy						Lateral
52	M75	PIPE_2.0	6.5			Lbyy						Lateral
53	M80	PIPE_2.0	6.5			Lbyy						Lateral
54	M82	LL2.5x2.5x3...	4.243			Lbyy						Lateral
55	M83	LL2.5x2.5x3...	4.243			Lbyy						Lateral
56	M87	PIPE_2.5	8			Lbyy						Lateral
57	M92	PIPE_2.5	8			Lbyy						Lateral

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N11	max	1.763	17	.292	20	5.111	2	.215	8	2.761	23	.433	23
2		min	-1.762	23	-.3	2	-3.197	20	-.105	14	-2.761	17	-.447	5
3	N54	max	5.251	6	.382	24	2.552	25	.335	15	1.382	25	.231	50
4		min	-3.595	24	-.394	6	-3.519	7	-.426	10	-1.348	19	-.314	2
5	N55	max	3.603	16	.383	16	2.534	15	.346	25	1.296	21	.318	2
6		min	-5.261	10	-.687	46	-3.499	9	-.419	6	-1.329	15	-.582	44
7	N60	max	.046	17	3.231	26	.203	20	0	74	0	11	0	17
8		min	-.046	23	-.259	20	-3.147	26	0	1	0	17	0	11
9	N62	max	.292	24	3.254	30	1.585	30	0	16	0	10	0	10
10		min	-2.743	30	-.408	24	-.172	24	0	10	0	16	0	16
11	N63	max	2.743	34	3.254	34	1.585	34	0	12	0	12	0	12
12		min	-.293	16	-.409	16	-.172	16	0	18	0	18	0	18
13	Totals:	max	7.951	17	8.639	37	7.281	2						
14		min	-7.951	11	2.483	68	-7.281	8						

Envelope AISC 14th(360-10): LRFD Steel Code Checks

	Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M24	3/8x6_HRA	.237	0	5	.797	.167	y	6	67.691	68.85	8.606	.538	1....	H1-1b
2	M15	3/8x6_HRA	.233	0	11	.795	.167	y	10	67.691	68.85	8.606	.538	1....	H1-1b
3	M5	3/8x6_HRA	.189	0	3	.789	.167	y	6	67.691	68.85	8.606	.538	1....	H1-1b
4	M3	3/8x6_HRA	.196	0	13	.789	.167	y	10	67.691	68.85	8.606	.538	1....	H1-1b
5	M25	3/8x6_HRA	.129	0	5	.774	.364	y	18	63.501	68.85	8.606	.538	1....	H1-1b
6	M6	3/8x6_HRA	.131	0	4	.773	0	y	18	63.5	68.85	8.606	.538	1....	H1-1b
7	M4	3/8x6_HRA	.134	0	12	.773	0	y	22	63.5	68.85	8.606	.538	1....	H1-1b
8	M16	3/8x6_HRA	.126	0	11	.771	.364	y	22	63.501	68.85	8.606	.538	1....	H1-1b
9	M13	3/8x6_HRA	.100	0	3	.765	.167	y	2	67.691	68.85	8.606	.538	1....	H1-1b
10	M26	3/8x6_HRA	.104	0	13	.764	.167	y	2	67.691	68.85	8.606	.538	1....	H1-1b
11	M14	3/8x6_HRA	.058	0	6	.741	.364	y	14	63.501	68.85	8.606	.538	1....	H1-1b
12	M27	3/8x6_HRA	.062	0	11	.740	.364	y	14	63.501	68.85	8.606	.538	1....	H1-1b
13	M9	1/2 x 6	.062	0	11	.723	0	y	5	89.215	91.8	11.475	.956	1....	H1-1b
14	M10	1/2 x 6	.061	0	5	.721	0	y	11	89.215	91.8	11.475	.956	1....	H1-1b
15	M30	1/2 x 6	.072	0	7	.704	0	y	12	89.215	91.8	11.475	.956	1....	H1-1b
16	M21	1/2 x 6	.070	0	9	.701	0	y	22	89.215	91.8	11.475	.956	1....	H1-1b
17	M20	1/2 x 6	.075	0	3	.663	0	y	14	89.215	91.8	11.475	.956	1....	H1-1b
18	M31	1/2 x 6	.073	0	13	.659	0	y	14	89.215	91.8	11.475	.956	1....	H1-1b
19	M1	1/2 x 6	.153	0	2	.639	0	y	11	84.3	91.8	11.475	.956	1....	H1-1b
20	M2	1/2 x 6	.148	0	2	.637	0	y	5	84.3	91.8	11.475	.956	1....	H1-1b
21	M22	1/2 x 6	.195	0	11	.593	0	y	6	84.3	91.8	11.475	.956	1....	H1-1b
22	M12	1/2 x 6	.191	0	5	.586	0	y	10	84.3	91.8	11.475	.956	1....	H1-1b
23	M11	1/2 x 6	.125	0	7	.569	0	y	3	84.3	91.8	11.475	.956	1.2	H1-1b
24	M23	1/2 x 6	.121	0	9	.566	0	y	13	84.3	91.8	11.475	.956	1....	H1-1b
25	M51	L2.5x2.5x3	.276	1.07	5	.212	1.07	y	3	27.66	29.192	.873	1.972	1....	H2-1

Envelope AISC 14th(360-10): LRFD Steel Code Checks (Continued)

	Member	Shape	Code ...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [k]	phi*Pnt [k]	phi*Mn y...	phi*Mn z...	Cb	Eqn
26	M49	L2.5x2.5x3	.273	0	11	.210	0	y	13	27.66	29.192	.873	1.972	1....	H2-1
27	M50	L2.5x2.5x3	.241	.602	2	.205	0	z	11	27.66	29.192	.873	1.972	1....	H2-1
28	M45	PIPE_2.0	.328	12.04	10	.189	6.567		5	5.702	32.13	1.872	1.872	1....	H1-1b
29	M39	PIPE_3.0	.168	6.567	6	.176	7.935		6	25.897	65.205	5.749	5.749	1....	H1-1b
30	M38	PIPE_3.0	.169	6.567	10	.175	5.199		10	25.897	65.205	5.749	5.749	1....	H1-1b
31	M32	PIPE_3.0	.149	6.567	6	.175	7.935		9	25.897	65.205	5.749	5.749	1....	H1-1b
32	M48	PIPE_2.0	.362	6.567	12	.154	6.567		13	5.702	32.13	1.872	1.872	1....	H1-1b
33	M47	PIPE_2.0	.359	6.567	4	.150	6.567		3	5.702	32.13	1.872	1.872	1....	H1-1b
34	M42	HSS4x4x4	.224	2.22	34	.123	2.22	y	43	94.854	103.122	11.96	11.96	1....	H1-1b
35	M43	HSS4x4x4	.240	5.198	11	.107	5.198	z	5	94.854	103.122	11.96	11.96	1....	H1-1b
36	M37	HSS4x4x4	.223	2.22	30	.086	2.22	y	4	94.854	103.122	11.96	11.96	1....	H1-1b
37	M40	HSS4x4x4	.170	2.583	11	.082	4.79	z	11	94.949	103.122	11.96	11.96	1....	H1-1b
38	M19	HSS4x4x4	.169	2.583	5	.082	.377	z	5	94.949	103.122	11.96	11.96	1....	H1-1b
39	M92	PIPE_2.5	.680	2.75	11	.079	2.75		13	30.038	50.715	3.596	3.596	1....	H1-1b
40	M87	PIPE_2.5	.681	2.75	5	.079	2.75		9	30.038	50.715	3.596	3.596	1....	H1-1b
41	M55	PIPE_2.5	.689	2.75	2	.073	2.75		5	30.038	50.715	3.596	3.596	3....	H1-1b
42	M41	HSS4x4x4	.161	2.583	26	.070	4.79	z	3	94.949	103.122	11.96	11.96	1....	H1-1b
43	M70	PIPE_2.0	.419	2.302	9	.048	2.302		3	19.36	32.13	1.872	1.872	1....	H1-1b
44	M80	PIPE_2.0	.418	2.302	12	.044	2.302		7	19.36	32.13	1.872	1.872	2....	H1-1b
45	M60	PIPE_2.0	.390	2.302	5	.042	2.302		11	19.36	32.13	1.872	1.872	2....	H1-1b
46	M75	PIPE_2.0	.419	2.302	7	.041	2.302		13	19.36	32.13	1.872	1.872	1....	H1-1b
47	M36	PIPE_2.0	.388	2.302	11	.037	2.302		5	19.36	32.13	1.872	1.872	2.1	H1-1b
48	M65	PIPE_2.0	.409	2.302	4	.036	2.302		9	19.36	32.13	1.872	1.872	2....	H1-1b
49	M28	L2x2x4	.311	0	9	.014	4.359	y	42	11.646	28.886	.653	1.489	1....	H2-1
50	M17	L2x2x4	.297	4.359	5	.011	0	y	33	11.646	28.886	.653	1.489	1....	H2-1
51	M29	L2x2x4	.300	4.359	11	.011	0	z	43	11.646	28.886	.653	1.489	1....	H2-1
52	M7	L2x2x4	.261	0	13	.011	0	y	29	11.646	28.886	.653	1.489	1....	H2-1
53	M18	L2x2x4	.308	0	7	.010	4.359	y	14	11.646	28.886	.653	1.489	1....	H2-1
54	M8	L2x2x4	.257	0	3	.010	0	z	35	11.646	28.886	.653	1.489	1....	H2-1
55	M82	LL2.5x2.5x3x3	.103	4.243	30	.008	0	z	10	44.024	58.32	3.954	2.55	1....	H1-1b*
56	M83	LL2.5x2.5x3x3	.103	4.243	34	.008	0	y	11	44.024	58.32	3.954	2.55	1....	H1-1b*
57	M44	LL2.5x2.5x3x3	.102	4.243	26	.003	0	y	26	44.024	58.32	3.954	2.55	1	H1-1b*

Envelope Plate/Shell Principal Stresses

Plate	Surf...	Sigma1 [ksi]	LC	Sigma2 [ksi]	LC	Tau Max [ksi]	LC	Angle [rad]	LC	Von Mises [ksi]	LC
No Data to Print ...											

EXHIBIT 10

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11443E

CT443_Gridcom-Stonehart
17 Cottage Street
Madison, CT 06443

June 17, 2019

Transcom Engineering Project Number: 737001-0165

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**12.15 %**

June 17, 2019

T-MOBILE
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 6009

Emissions Analysis for Site: **CT11443E – CT443_Gridcom-Stonehart**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **17 Cottage Street, Madison, CT**, 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 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ 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.

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz & 700 MHz bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$ respectively. The general population exposure limit for the 1900 MHz (PCS) and 2100 MHz (AWS) bands is 1000 $\mu W/cm^2$. 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 performed for the proposed upgrades to the T-MOBILE antenna facility located at **17 Cottage Street, Madison, CT**, 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 manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

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. All power values expressed and analyzed are maximum power levels expected to be used on all radios.

All emissions values for additional carriers were taken from the Connecticut Siting Council (CSC) active MPE database. Values in this database are provided by the individual carriers themselves

For each sector the following channel counts, frequency bands and power levels were utilized as shown in *Table 1*:

Technology	Frequency Band	Channel Count	Transmit Power per Channel (W)
GSM	1900 MHz (PCS)	1	15
UMTS	1900 MHz (PCS)	1	40
UMTS	2100 MHz (AWS)	1	40
LTE	2100 MHz (AWS)	2	60
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, 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.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Ericsson AIR21 B2A/B4P	117
A	2	Ericsson AIR21 B4A/B2P	117
A	3	RFS APXVAARR24_43-U-NA20	117
B	1	Ericsson AIR21 B2A/B4P	117
B	2	Ericsson AIR21 B4A/B2P	117
B	3	RFS APXVAARR24_43-U-NA20	117
C	1	Ericsson AIR21 B2A/B4P	117
C	2	Ericsson AIR21 B4A/B2P	117
C	3	RFS APXVAARR24_43-U-NA20	117

Table 2: Antenna Data

All calculations were done with respect to uncontrolled / general population threshold limits.

Cable losses were factored in the calculations for this site. Since all **2100 MHz (AWS) UMTS** radios are ground mounted the following cable loss values were used. For each ground mounted **2100 MHz (AWS) UMTS** radio there was **1.48 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **140 feet** of **1-5/8"** coax.

RESULTS

Per the calculations completed for the proposed T-MOBILE configurations *Table 3* shows resulting emissions power levels and percentages of the FCC's allowable general population limit.

Antenna ID	Antenna Make / Model	Frequency Bands	Antenna Gain (dBd)	Channel Count	Total TX Power (W)	ERP (W)	MPE %
Antenna A1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	3	95	3,246.52	0.94
Antenna A2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.36
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.69
						Sector A Composite MPE%	**3.99**
Antenna B1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	3	95	3,246.52	0.94
Antenna B2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.36
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.69
						Sector B Composite MPE%	**3.99**
Antenna C1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9 / 15.9	3	95	3,246.52	0.94
Antenna C2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	1.36
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.69
						Sector C Composite MPE%	**3.99**

Table 3: T-MOBILE Emissions Levels

The Following table (*table 4*) shows all additional carriers on site and their MPE% as recorded in the CSC active MPE database for this facility along with the newly calculated maximum T-MOBILE MPE contributions per this report. FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. For this site, all three sectors have the same configuration yielding the same results on all three sectors. *Table 5* below shows a summary for each T-MOBILE Sector as well as the composite MPE value for the site.

Site Composite MPE%	
Carrier	**MPE%**
T-MOBILE – Max Per Sector Value	**3.99 %**
AT&T	3.31 %
Verizon Wireless	4.85 %
Site Total MPE %:	**12.15 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	3.99 %
T-MOBILE Sector B Total:	3.99 %
T-MOBILE Sector C Total:	3.99 %
Site Total:	12.15 %

Table 5: Site MPE Summary

FCC OET 65 specifies that for carriers utilizing directional antennas that the highest recorded sector value be used for composite site MPE values due to their greatly reduced emissions contributions in the directions of the adjacent sectors. *Table 6* below details a breakdown by frequency band and technology for the MPE power values for the maximum calculated T-MOBILE sector(s). For this site, all three sectors have the same configuration yielding the same results on all three sectors.

T-MOBILE _ Frequency Band / Technology Max Power Values (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) GSM	1	583.57	117	1.70	1900 MHz (PCS)	1000	0.17%
T-Mobile 1900 MHz (PCS) UMTS	1	1,556.18	117	4.54	1900 MHz (PCS)	1000	0.45%
T-Mobile 2100 MHz (AWS) UMTS	1	1,106.78	117	3.23	2100 MHz (AWS)	1000	0.32%
T-Mobile 2100 MHz (AWS) LTE	2	2,334.27	117	13.62	2100 MHz (AWS)	1000	1.36%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	117	4.60	600 MHz	400	1.15%
T-Mobile 700 MHz LTE	2	432.54	117	2.52	700 MHz	467	0.54%
						Total:	**3.99%**

Table 6: T-MOBILE Maximum Sector MPE Power Values

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:	3.99 %
Sector B:	3.99 %
Sector C:	3.99 %
T-MOBILE Maximum Total (per sector):	3.99 %
Site Total:	12.15 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.15 %** 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.

Scott Heffernan
RF Engineering Director
Transcom Engineering, Inc
PO Box 1048
Sterling, MA 01564