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

May 21, 2020

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

RE: Notice of Exempt Modification
39 Rich Road, North Grosvenordale (Thompson) CT 06255
Latitude: 42 0 41.58
Longitude: -71 51 6.87
T-Mobile Site #: CTNL191D_ L600

Dear Ms. Bachman:

T-Mobile currently maintains nine (9) antennas at the 148-foot level of the existing 149-foot Monopole Tower at 39 Rich Rd, North Grosvenordale, CT. The 149-foot tower is owned by SBA Infrastructure, LLC. The property is owned by the Town of Thompson. T-Mobile now intends to replace three (3) L600/700 MHz antennas with three (3) new L600/700MHz antennas. The new antennas would be installed at the 148-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:
- (1) 1-5/8" Coax

Remove and Replace:
- (3) LNX-6515DS antenna – (Remove) – (3) RFS APXVAARR24_43-U-NA20 – (Replace)
- (3) Ericsson RRUS 11 B12 RRU – (Remove) – (3) Ericsson Radio 4449 B71+B12 RRU – (Replace)

Install New:

- (1) 1-5/8" Fiber
- (1) Metrosite Heavy Collar Mount Assembly: MSH1436
- (1) Metrosite Support rail kit: MS-HR35-2375 (3) V-braces: L2.5"x2.5"x1/4"

Existing Equipment to Remain:

- (3) Air 21 B2A/B4P Panel
- (3) Air B4A/B2P Panel
- (3) KRY 112 144/1 TMA
- (3) T-Frames
- (6) 1-5/8" Coax
- (1) 1-5/8" Fiber

Entitlements:

- (5) 1-5/8" Coax

GROUND

Install New:

- Equipment inside existing 6131 cabinet

This facility was approved by Council on January 10, 2008 under Docket No. 344. Approval was given for a monopole tower no taller than 150' above ground level. Panel antennas were to be flush-mounted or attached using T-arm mounts. A recalculated RF Report was to be provided when operations caused a change in power density. Upon the establishment of any applicable new state or federal radio frequency standards the facility was to be brought into compliance with same. The Certificate Holder was to permit public or private entities shared space on the tower for fair consideration or to provide legal, technical, environmental, or economic reasons precluding such sharing. The Certificate Holder was to provide reasonable space on the tower for no compensation for any Town of Thompson public safety services provided compatible with the structural integrity of the tower. And any non-functioning antennas or associated mounting equipment was to be removed within sixty days. 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 Thompson's First Selectman, Ken Beausoleil, and Zoning Enforcement Officer, Cynthia Dunne. (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,

G. Scott Shepherd
Site Development Specialist II
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581

508.251.0720 x3807 + T
508.366.2610 + F
508.868.6000 + C
gshepherd@sbasite.com

Attachments
cc: Ken Beausoleil, First Selectman / with attachments
Town of Thompson, 815 Riverside Drive, North Grosvenordale, CT 06255
Cynthia Dunne, Zoning Enforcement Officer / with attachments
Town of Thompson, 815 Riverside Drive, North Grosvenordale, CT 06255

EXHIBIT LIST

Exhibit 1	Check Copy	N/A
Exhibit 2	Notification Receipts	N/A
Exhibit 3	Property Card	X
Exhibit 4	Property Map	X
Exhibit 5	Original Zoning Approval	CSC 1/10/08
Exhibit 6	Construction Drawings	Infinigy 9/23/19
Exhibit 7	Modification Drawings	TES 7/30/19
Exhibit 8	Structural Analysis	TES 8/2/19
Exhibit 9	Post Mod Mount Analysis	TES 7/31/19
Exhibit 10	EME Report	Transcom Engineering 5/22/19

EXHIBIT 1

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

EXHIBIT 2

Normally, Exhibit 2 would contain the FedEx labels of the recipients of the enclosed filing.

EXHIBIT 3

38 RICH RD

Location	38 RICH RD	**Mblu**	97/ 28/ 7/2 /
Acct#	005976	**Owner**	THOMPSON TOWN OF
Assessment	$95,800	**Appraisal**	$136,900
PID	105141	**Building Count**	1

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$136,900	$0	$136,900

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$95,800	$0	$95,800

Owner of Record

Owner	THOMPSON TOWN OF
Co-Owner	C/O SBA INFRASTRUCTURE LLC
Address	TAX DEPT CT11559-A 8051 CONGRESS AVE BOCA RATON, FL 33487
Sale Price	$0
Certificate	
Book & Page	0789/0277
Sale Date	09/19/2012
Instrument	25

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
THOMPSON TOWN OF	$0		0789/0277	25	09/19/2012
THOMPSON TOWN OF	$0		0686/0268		11/29/2007

Building Information

Building 1 : Section 1

Year Built:	
Living Area:	0
Replacement Cost:	$0
Building Percent Good:	
Replacement Cost Less Depreciation:	$0

Building Attributes

Field	Description
Style	Outbuildings
Model	
Grade:	
Stories:	
Occupancy	
Exterior Wall 1	
Exterior Wall 2	
Roof Structure:	
Roof Cover	
Interior Wall 1	
Interior Wall 2	
Interior Flr 1	
Interior Flr 2	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Xtra Fixtrs:	
Total Rooms:	
Bath Style:	
Kitchen Style:	

Building Photo

(http://images.vgsi.com/photos/ThompsonCTPhotos//default.jpg)

Building Layout

Building Layout
(http://images.vgsi.com/photos/ThompsonCTPhotos//Sketches/1

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	3030
Description	COMM LAND
Zone	
Neighborhood	
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	0
Frontage	
Depth	
Assessed Value	$0
Appraised Value	$0

Outbuildings

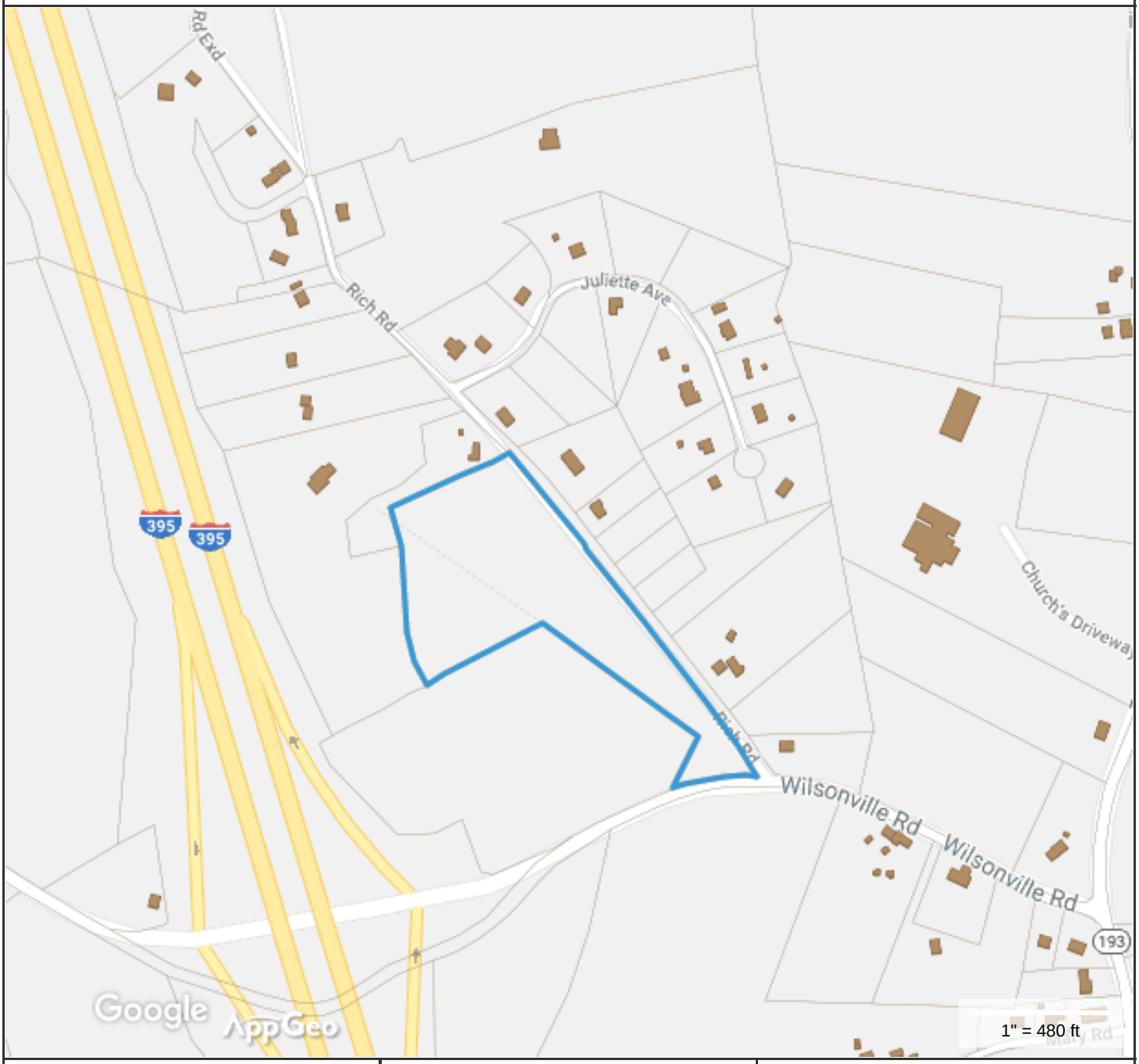
Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
TWR2	MONOPOLE			150 HEIGHT	$128,300	1
FN3	FENCE-6' CHAIN			400 L.F.	$8,600	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$136,900	$0	$136,900
2017	$136,900	$0	$136,900
2016	$246,700	$0	$246,700

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2018	$95,800	$0	$95,800
2017	$95,800	$0	$95,800
2016	$172,600	$0	$172,600

EXHIBIT 4



Property Information

Property ID	104423
Location	38 RICH RD
Owner	TOWN OF THOMPSON

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Town of Thompson, CT makes no claims and no warranties, expressed or implied, concerning the validity or accuracy of the GIS data presented on this map.

Geometry updated April 1, 2018
Data updated April 1, 2018

EXHIBIT 5

DOCKET NO. 344 - MCF Communications bg, Inc. and Omnipoint Communications, Inc. application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance and operation of a telecommunications facility located at Rich Road, Thompson, Connecticut.	}	Connecticut
	}	Siting
	}	Council
		January 10, 2008

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 MCF Communications bg, Inc. for the construction, maintenance and operation of a wireless telecommunications facility to be located on Rich Road in Thompson, 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 designed and constructed as a monopole no taller than 150 feet above ground level to provide telecommunications services to both public and private entities. Panel antennas to be installed on the tower shall be flush-mounted or attached to the tower using T-arm mounts.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be served on the Town of Thompson 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, antenna mountings, equipment building, access road, and utility line;

   b) construction plans for site clearing, water drainage, and erosion and sedimentation control consistent with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

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

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

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

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

7. Unless otherwise approved by the Council, if the facility authorized herein is not fully constructed 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.

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

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

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

11. In accordance with Section 16-50j-77 of the Regulations of Connecticut State Agencies, the Certificate Holder shall provide the Council with written notice two weeks prior to the commencement of 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, we hereby direct 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 Norwich Bulletin and The Thompson Villager.

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 in this proceeding are:

Status Granted	Status Holder (name, address & phone number)	Representative (name, address & phone number)
Applicant	MCF Communications bg, Inc. and Omnipoint Communications, Inc.	Julie Kohler, Esq. Carrie Larson, Esq. Cohen and Wolf, P.C 1115 Broad Street Bridgeport, CT 06604 Tel: 203-368-0211 Fax: 203-394-9901 JKohler@cohenandwolf.com Clarson@cohenandwolf.com
Intervenor Approved 08/29/07	Cellco Partnership d/b/a Verizon Wireless	Kenneth C. Baldwin, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597 (860) 275-8200

EXHIBIT 6

SITE NAME: NL191/MCF_TOWN LOT_FT

38 RICH ROAD
THOMPSON, CT 06255

SITE NUMBER: CTNL191D
PROJECT: T-MOBILE L600

CONFIGURATION: 67D02C

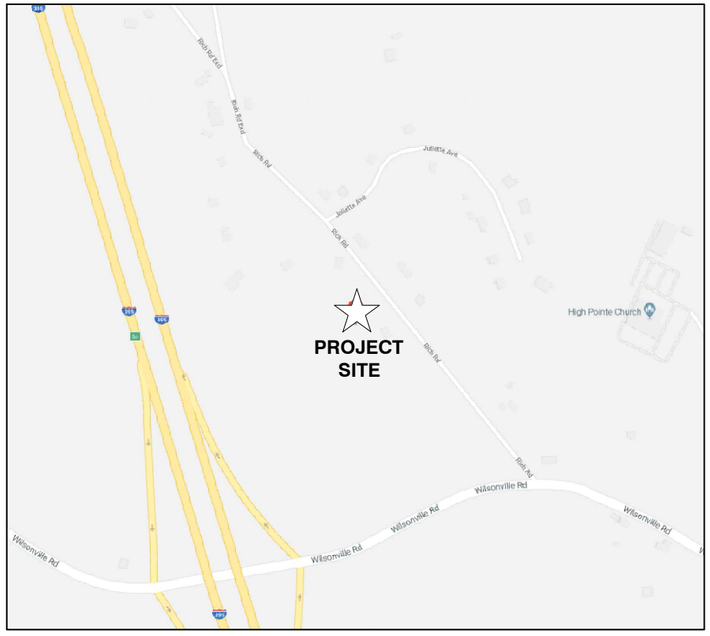
T-MOBILE TECHNICIAN SITE SAFETY NOTES	
LOCATION	SPECIAL RESTRICTIONS
ANTENNA/TMA/RRU	
SECTOR A:	ACCESS NOT PERMITTED
SECTOR B:	ACCESS NOT PERMITTED
SECTOR C:	ACCESS NOT PERMITTED
SECTOR D:	ACCESS NOT PERMITTED
GPS/LMU:	UNRESTRICTED*
	(*CAUTION: OSHA-APPROVED PORTABLE 8' STEP-LADDER REQUIRED)
RADIO CABINETS:	UNRESTRICTED
PPC DISCONNECT:	UNRESTRICTED
MAIN CIRCUIT D/C:	UNRESTRICTED
NIU/T DEMARC:	UNRESTRICTED
OTHER/SPECIAL:	NONE

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE NORTHEAST, LLC. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST. LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL CONSTRUCTION NOTES

1. TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.
2. TOWER IS ASSUMED TO BE PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES.
3. T-MOBILE WORK IS CONTINGENT ON THE FOLLOWING:
   * COMPLETION OF A GLOBAL STRUCTURAL STABILITY ANALYSIS.
   * COMPLETION OF AN MOUNT STRUCTURAL ANALYSIS OR ASSESSMENT.
   * GC SHALL FURNISH, INSTALL AND COMPLETE ALL REQUIRED STRUCTURAL MODIFICATIONS AS INDICATED IN BEFORE-MENTIONED GLOBAL AND MOUNT ANALYSIS/ASSESSMENT.



PROJECT INFORMATION

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE COLLOCATION
SBA BUSINESS ADDRESS:	38 RICH ROAD THOMPSON, CT 06255
LATITUDE:	42° 00' 42.00" N
LONGITUDE:	71° 51' 09.00" W
GROUND ELEVATION:	621' AMSL
ZONING JURISDICTION:	BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMITS, SITE PLAN REVIEW)
CODE COMPLIANCE:	1. BUILDING CODE IBC 2015 2. TIA-EIA-222-G 3. NFPA 70 2014 – NATIONAL ELECTRIC CODE
TOWER OWNER:	SBA PROPERTIES, LLC 8501 CONGRESS AVE BOCA RATON FL 33487
SBA SITE ID:	CT11559-A
SBA SITE NAME:	THOMPSON 1,CT
SBA REGIONAL SITE MANAGER:	STEPHEN ROTH (860) 539-4920 SROTH@SBASITE.COM.COM

APPROVALS

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

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(800) 922-4455
CALL 3 WORKING DAYS
BEFORE YOU DIG!

811
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www.call811.com

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	0
G-1	GENERAL NOTES	0
A-1	SITE PLAN	0
A-2	TOWER ELEVATION	0
A-3	ANTENNA LAYOUT & MOUNTING DETAILS	0
A-4	EQUIPMENT & MOUNTING DETAILS	0
A-5	ANTENNA SCHEDULE	0
A-6	RFDS	0
E-1	ELECTRICAL & GROUNDING DETAILS	0
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	ANTENNA MOUNT MODIFICATION DETAILS	0
A-2	ANTENNA MOUNT PHOTOS	0
D-1	STANDARD DETAILS	0

PLANS PREPARED FOR:

T-Mobile

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766

PROJECT MANAGER:

SBA

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

PLANS PREPARED BY:

INFINIGY

INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 656-003

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER

09/23/2019

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	09/23/19	MAP	0

SITE NUMBER:
CTNL191D

SITE ADDRESS:
38 RICH ROAD
THOMPSON, CT 06255

SHEET DESCRIPTION:
TITLE SHEET

SHEET NUMBER:
T-1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTNING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.
2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.
3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.
4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER SURCUITS TO BTS EQUIPMENT.
5. EACH BTS CABINET FRAME SHALL BE DIRECTLY CONNECTED TO THE MASTER GROUND BAR WITH GREEN INSULATED SUPPLEMENTAL EQUIPMENT GROUND WIRES, 6 AWG STRANDED COPPER OR LARGER FOR INDOOR BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.
6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.
7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.
8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.
9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.
10. MISCELLANEOUS ELECTRICL AND NON-ELECTRICAL METAL BOXES, FRAMES AND SUPPORTS SHALL BE BONDED TO THE GROUND RING, IN ACCORDANCE WITH THE NEC.
11. METAL CONDUIT SHALL BE MADE ELECTRICALLY CONTINUOUS WITH LISTED BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.
12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

1. FOR THE PURPOSE OF CONSTRUCTION DRAWING, THE FOLLOWING DEFINITIONS SHALL APPLY:

   CONTRACTOR – SBA COMMUNICATIONS CORP.
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE
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. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES, AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
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 SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES, 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.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CUR\BS, 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. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.
14. ANY NEW CONCRETE NEEDED FOR CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (FY = 36 KSI) UNLESS OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE B (FY = 35 KSI). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. 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.
18. THE EXISTING CELL SITE IS 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.
19. SINCE THE 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 ADVISED TO BE WORN TO ALERT OF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.

    SUBCONTRACTOR'S WORK SHALL COMPLY WITH THE LATEST EDITION OF THE FOLLOWING STANDARDS:

    AMERICAN CONCRETE INSTITUTE (ACI) 318; BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE;

    AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC), STEEL CONSTRUCTION MANUAL, 13TH EDITION;

    TELECOMMUNICATIONS INDUSTRY ASSOCIATION (TIA) 222-G, STRUCTURAL STANDARDS FOR STEEL

    ANTENNA TOWER AND ANTENNA SUPPORTING STRUCTURES; REFER TO ELECTRICAL DRAWINGS FOR SPECIFIC ELECTRICAL STANDARDS.

FOR ANY CONFLICTS BETWEEN SECTIONS OF LISTED CODES AND STANDARDS REGARDING MATERIAL, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	G.C.	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BTCW	BARE TINNED SOLID COPPER WIRE	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
		MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	PROPOSED	NEW OR (P)	TYP	TYPICAL
EXISTING	EXISTING OR (E)	N.T.S.	NOT TO SCALE	VIF	VERIFY IN FIELD
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTERLINE (ANTENNA)		
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

PLANS PREPARED FOR:

T-Mobile

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766

PROJECT MANAGER:

SBA

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

PLANS PREPARED BY:

INFINIGY

INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 656-003

ENGINEERING LICENSE:

STATE OF CONNECTICUT
JOHN S. STEVENS
24705
LICENSED PROFESSIONAL ENGINEER

09/23/2019

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	09/23/19	MAP	0

SITE NUMBER:

CTNL191D

SITE ADDRESS:

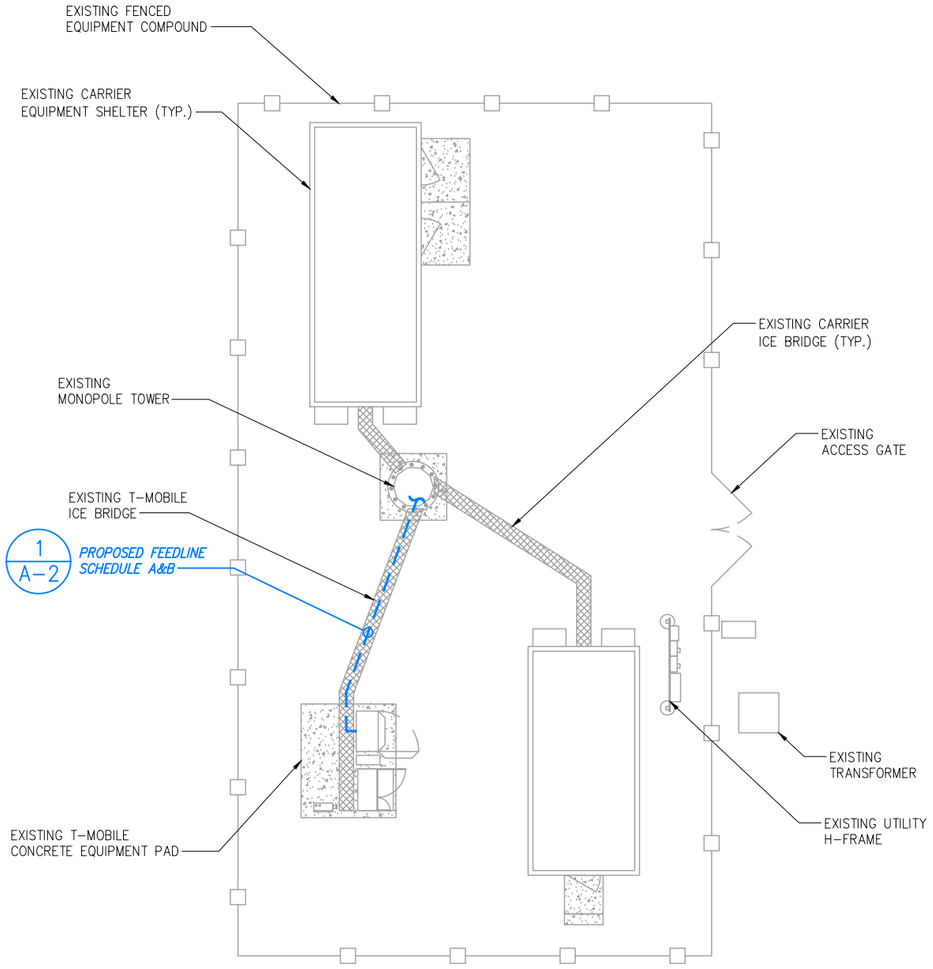
38 RICH ROAD
THOMPSON, CT 06255

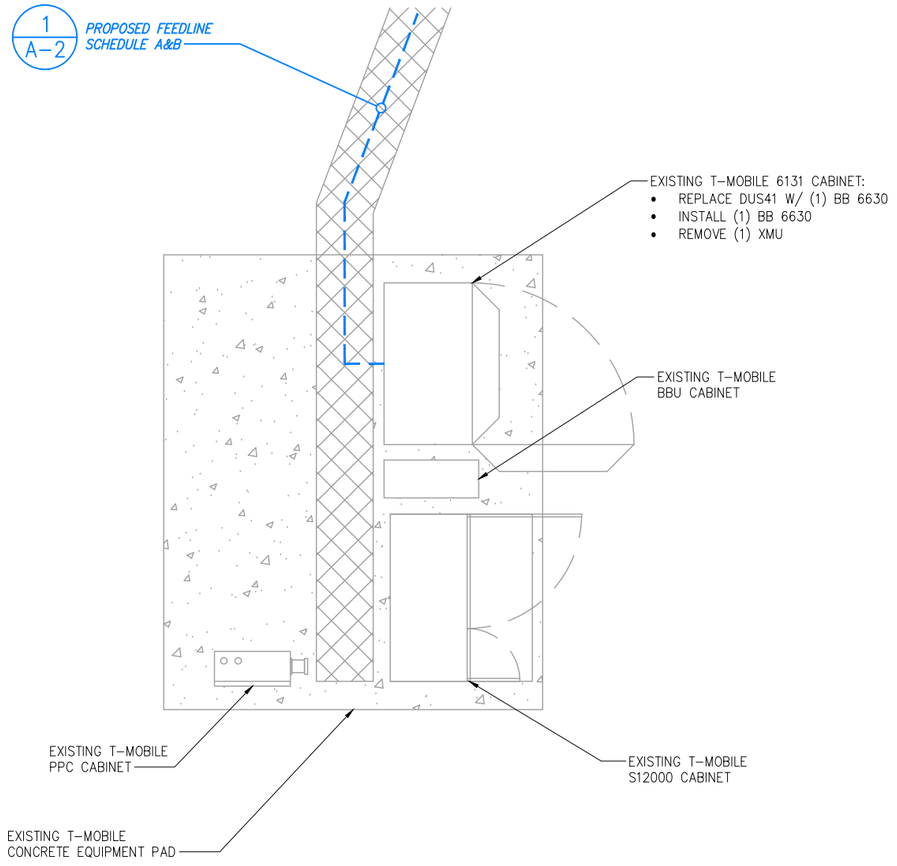
SHEET DESCRIPTION:

GENERAL NOTES

SHEET NUMBER:

G-1





GRAPHIC SCALE:
16' 8' 0 8' 16'
SCALE (11x17): 1" = 16'-0"
SCALE (22x34): 1" = 8'-0"

GRAPHIC SCALE:
4' 2' 0 2' 4'
SCALE (11x17): 1" = 4'-0"
SCALE (22x34): 1" = 2'-0"

INFORMATION CONTAINED WITHIN DRAWINGS ARE BASED ON PROVIDED INFORMATION AND ARE NOT THE RESULT OF A FIELD SURVEY.

SITE PLAN | SCALE: AS NOTED | 1

EQUIPMENT SITE PLAN | NO SCALE | 2

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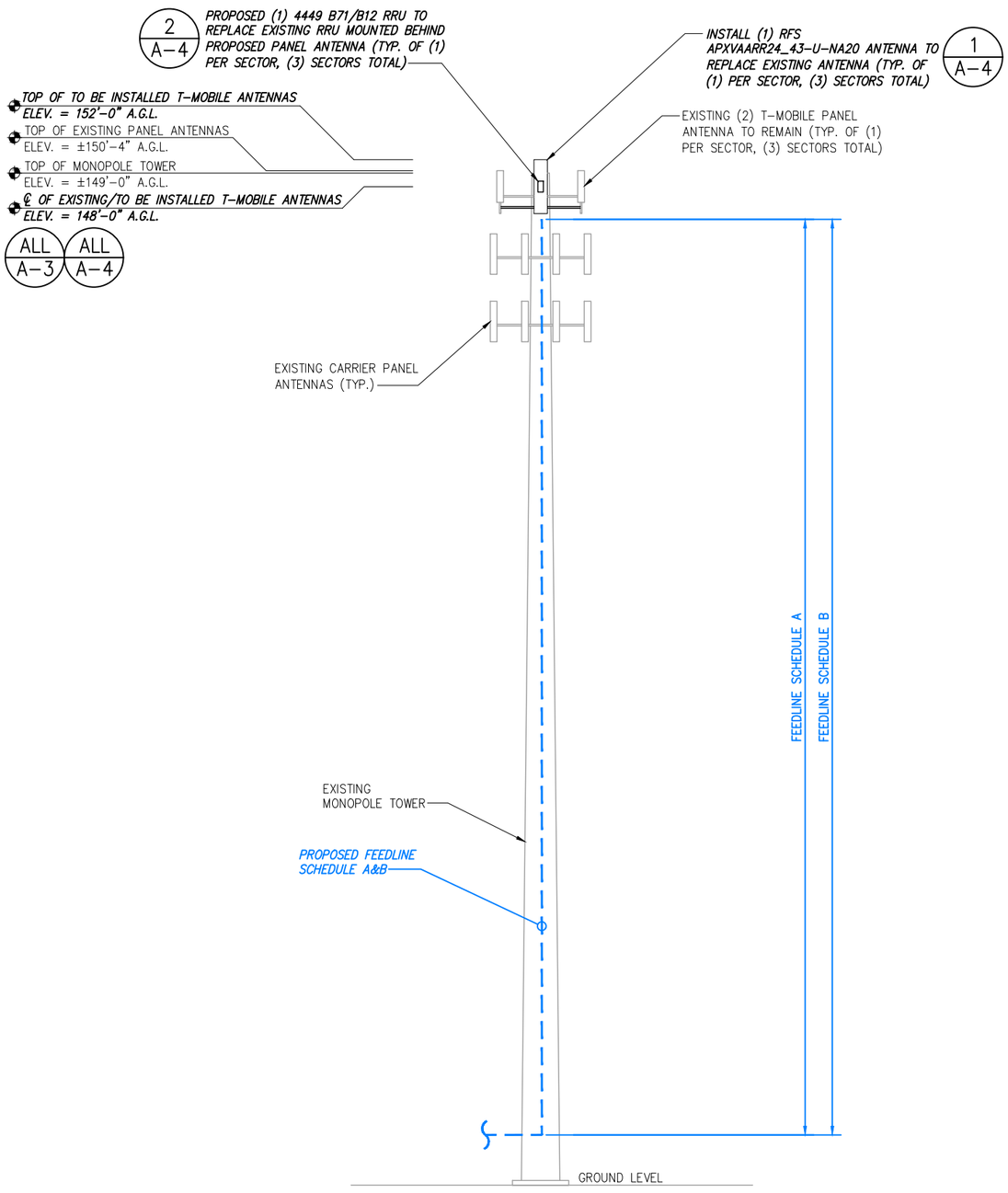
SHEET DESCRIPTION:

SITE PLAN

SHEET NUMBER:

A-1

THESE PLANS HAVE BEEN DEVELOPED FOR
THE MODIFICATION OF AN EXISTING UNMANNED TELECOMMUNICATIONS FACILITY OWNED OR LEASED BY T-MOBILE IN ACCORDANCE WITH THE SCOPE OF WORK PROVIDED BY T-MOBILE. INFINIGY HAS INCORPORATED THIS SCOPE OF WORK IN THE PLANS. THESE PLANS ARE NOT FOR CONSTRUCTION UNLESS ACCOMPANIED BY A PASSING STRUCTURAL STABILITY ANALYSIS PREPARED BY A LICENSED STRUCTURAL ENGINEER. STRUCTURAL ANALYSIS MUST INCLUDE BOTH TOWER AND MOUNT.



FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO REMAIN: (6) 1-5/8" COAX (1) 9X18 FIBER	FROM CABINET TO RAD
B	PROPOSED: (1) 6X12 FIBER	FROM CABINET TO RAD

NOTE:
EXISTING T-MOBILE EQUIPMENT FEEDLINE INVENTORY BASED ON COLOCATION APPLICATION AND SBA RECORD, NOT FIELD OBSERVATIONS. RFDS AND FEEDLINE LEASING ENTITLEMENTS MAY DIFFER.

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION

TOWER ELEVATION | NO SCALE | 1

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SITE ADDRESS:

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THOMPSON, CT 06255

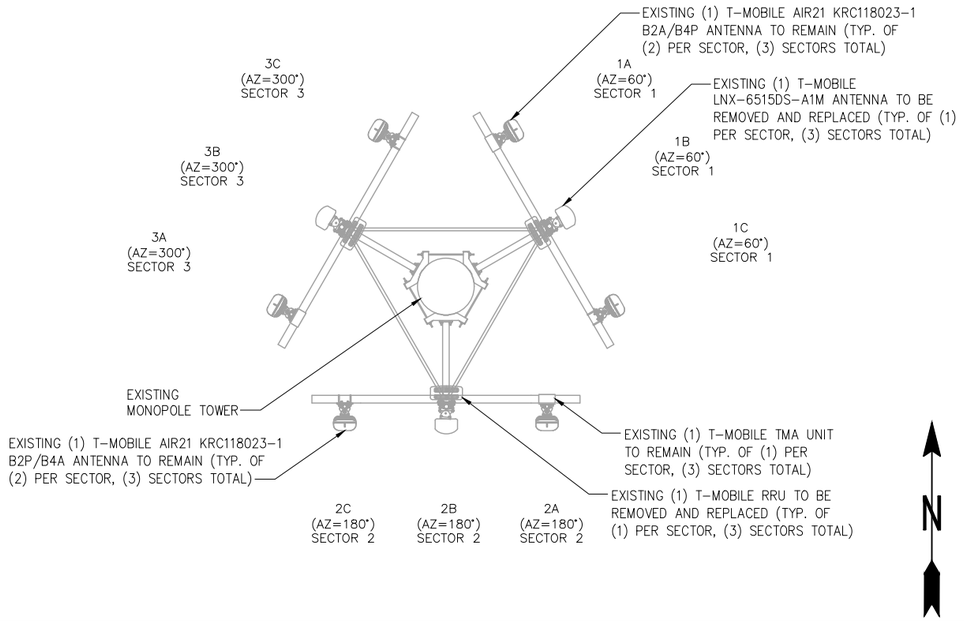
SHEET DESCRIPTION:

TOWER ELEVATION

SHEET NUMBER:

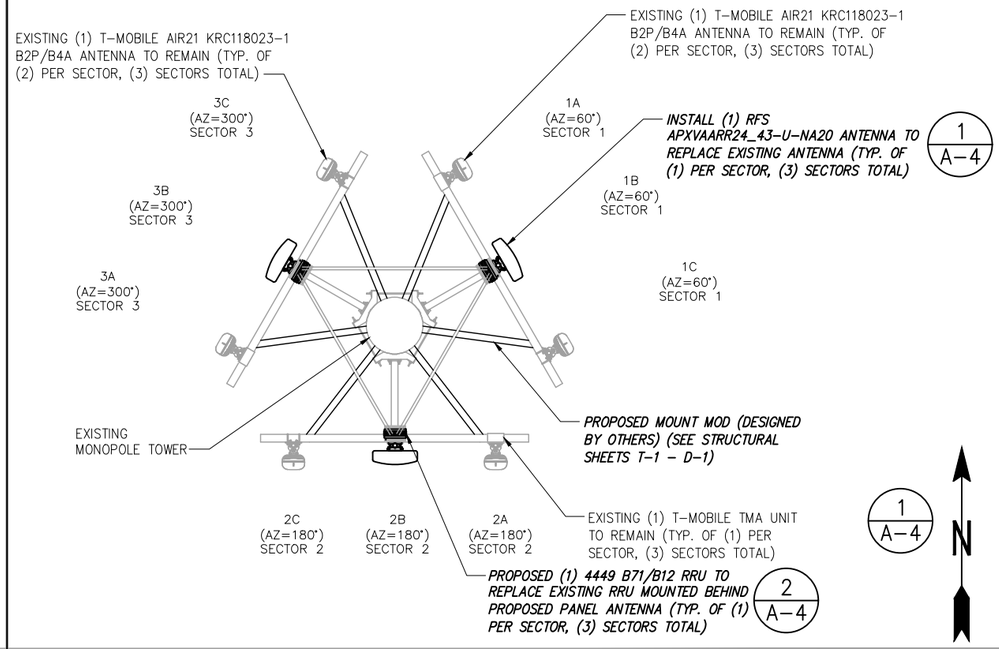
A-2

SPECIAL CONSTRUCTION NOTE:
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL ANTENNA MOUNT STRUCTURAL AUGMENTS (STRUCTURAL MODIFICATIONS) AT T-MOBILE'S RAD/VERTICAL EQUIPMENT SPACE PER RECOMMENDATIONS FROM SBA-PROVIDED ANTENNA MOUNT STRUCTURAL ANALYSIS AND ANY SUPPLEMENTAL CONSTRUCTION DRAWINGS (PROVIDED BY OTHERS).

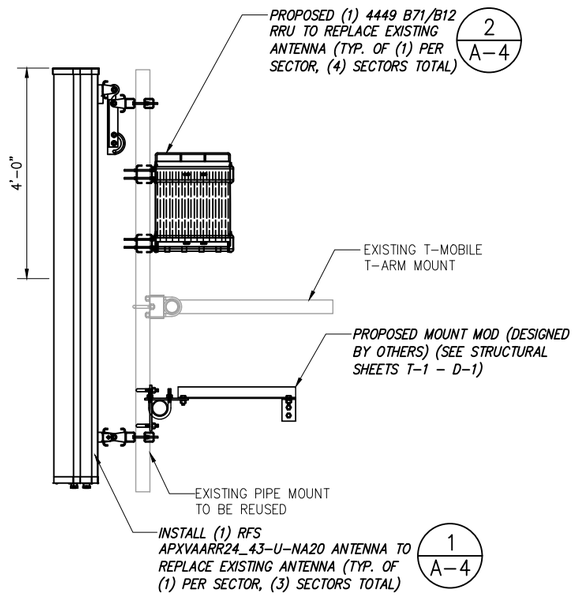


EXISTING ANTENNA & RRH LAYOUT | NO SCALE | 1

NOTE:
VERIFY PROPOSED AZIMUTHS WITH RF ENGINEER PRIOR TO INSTALLATION



FINAL ANTENNA & RRH LAYOUT | NO SCALE | 2



ANTENNA ATTACHMENT DETAIL | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

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09/23/2019

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APPROVED BY:

REVISIONS:

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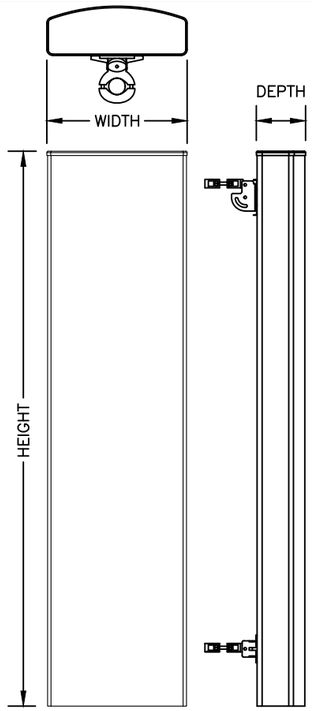
SITE NUMBER:
CTNL191D

SITE ADDRESS:
38 RICH ROAD
THOMPSON, CT 06255

SHEET DESCRIPTION:
ANTENNA LAYOUT & MOUNTING DETAILS

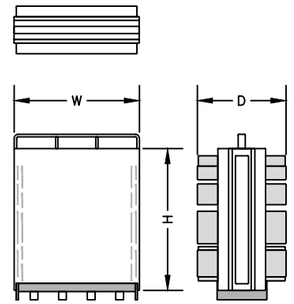
SHEET NUMBER:
A-3

RFS ANTENNA SPECIFICATIONS	
MANUF.	RFS
MODEL #	APXVAARR24_43-U-NA20
HEIGHT	95.9"
WIDTH	24.0"
DEPTH	8.7"
WEIGHT	128± LBS.



ANTENNA DETAIL | NO SCALE | 1

RRU SPECIFICATIONS	
MANUF.	ERICSSON
MODEL #	4449 B71+B12
HEIGHT	13.1"
WIDTH	14.9"
DEPTH	9.2"
WEIGHT	74± LBS.



RRU DETAIL | NO SCALE | 2

DETAIL NOT USED | NO SCALE | 3

DETAIL NOT USED | NO SCALE | 4

PLANS PREPARED FOR:

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APPROVED BY:

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SITE NUMBER:

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38 RICH ROAD
THOMPSON, CT 06255

SHEET DESCRIPTION:

EQUIPMENT &
MOUNTING DETAILS

SHEET NUMBER:

A-4

FINAL ANTENNA CONFIGURATION

SECTOR	BAND	ANTENNA MODEL	ANTENNA RAD	AZIMUTH	ELECTRICAL TILT	MECHANICAL TILT	RADIOS	TMAS	CABLE FEED LINES	CABLE LENGTH
A	G1900/U1900/U2100	AIR21 KRC118023-1_B2A_B4P	149'-0"	60°	2°/2°	0°	--	TWIN STYLE 1B-AWS	(E) (6) 1-5/8" COAX (E) (1) SHARED 9x18 HYBRID CABLE TRUNK (P) (1) SHARED 6x12 HYBRID CABLE TRUNK	±175'*
	L600/L700	APXVAARR24_43-U-NA20	149'-0"	60°	2°/2°	0°	RADIO 4449 B71+B12	--		
	L2100	AIR21 KRC118023-1_B2P_B4A	149'-0"	60°	2°	0°	--	--		
B	G1900/U1900/U2100	AIR21 KRC118023-1_B2A_B4P	149'-0"	180°	2°/2°	0°	--	TWIN STYLE 1B-AWS		
	L600/L700	APXVAARR24_43-U-NA20	149'-0"	180°	2°/2°	0°	RADIO 4449 B71+B12	--		
	L2100	AIR21 KRC118023-1_B2P_B4A	149'-0"	180°	2°	0°	--	--		
C	G1900/U1900/U2100	AIR21 KRC118023-1_B2A_B4P	149'-0"	300°	2°/2°	0°	--	TWIN STYLE 1B-AWS		
	L600/L700	APXVAARR24_43-U-NA20	149'-0"	300°	2°/2°	0°	RADIO 4449 B71+B12	--		
	L2100	AIR21 KRC118023-1_B2P_B4A	149'-0"	300°	2°	0°	--	--		

* PROPOSED CABLE LENGTH WAS DETERMINED USING THE SUM OF THE RAD CENTER OF ANTENNAS, AND DISTANCE FROM EXISTING EQUIPMENT AREA TO TOWER BASE WITH AN ADDITIONAL 20% BUFFER. LENGTH TO BE VERIFIED IN FIELD PRIOR TO ORDERING MATERIALS.

PLANS PREPARED FOR:
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09/23/2019

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	09/23/19	MAP	0

SITE NUMBER:
CTNL191D

SITE ADDRESS:
38 RICH ROAD
THOMPSON, CT 06255

SHEET DESCRIPTION:
ANTENNA SCHEDULE

SHEET NUMBER:
A-5

Sector 1 (Proposed) view from behind								
Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	60		60				60	
M. Tilt	0		0				0	
Height	149		149				149	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	U1900 G1900	U2100	L700 L600	L700 L600			L2100	
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2			2	
Cables	Fiber Jumper - 15 ft. (x2)	1-5/8" Coax - 175 ft. (x2)	Fiber Jumper - 15 ft.				Fiber Jumper - 15 ft. (x2)	
TMAs		Generic Twin Style 1B - AWS (AtAntenna)						
Diplexers / Combiners								
Radio			Radio 4449 B71+B1 2 (At Antenna)	SHARED Radio 4449 B71+B1 2 (At Antenna)				
Sector Equipment								

SECTOR 1

Sector 2 (Proposed) view from behind								
Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	180		180				180	
M. Tilt	0		0				0	
Height	149		149				149	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	U1900 G1900	U2100	L700 L600	L700 L600			L2100	
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2			2	
Cables	Fiber Jumper - 15 ft. (x2)	1-5/8" Coax - 175 ft. (x2)	Fiber Jumper - 15 ft.				Fiber Jumper - 15 ft. (x2)	
TMAs		Generic Twin Style 1B - AWS (AtAntenna)						
Diplexers / Combiners								
Radio			Radio 4449 B71+B1 2 (At Antenna)	SHARED Radio 4449 B71+B1 2 (At Antenna)				
Sector Equipment								

SECTOR 2

Sector 3 (Proposed) view from behind								
Coverage Type	A - Outdoor Macro							
Antenna	1		2				3	
Antenna Model	Ericsson - AIR21 KRC118023-1_B2A_B4P (Quad)		RFS - APXVAARR24_43-U-NA20 (Octo)				Ericsson - AIR21 KRC118023-1_B2P_B4A (Quad)	
Azimuth	300		300				300	
M. Tilt	0		0				0	
Height	149		149				149	
Ports	P1	P2	P3	P4	P5	P6	P7	P8
Active Tech.	U1900 G1900	U2100	L700 L600	L700 L600			L2100	
Dark Tech.								
Restricted Tech.								
Decomm. Tech.								
E. Tilt	2	2	2	2			2	
Cables	Fiber Jumper - 15 ft. (x2)	1-5/8" Coax - 175 ft. (x2)	Fiber Jumper - 15 ft.				Fiber Jumper - 15 ft. (x2)	
TMAs		Generic Twin Style 1B - AWS (AtAntenna)						
Diplexers / Combiners								
Radio			Radio 4449 B71+B1 2 (At Antenna)	SHARED Radio 4449 B71+B1 2 (At Antenna)				
Sector Equipment								

SECTOR 3

RFDS

NO SCALE

1

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SITE ADDRESS:

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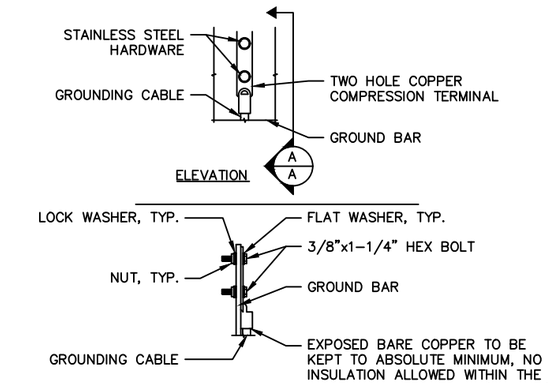
THOMPSON, CT 06255

SHEET DESCRIPTION:

RFDS

SHEET NUMBER:

A-6

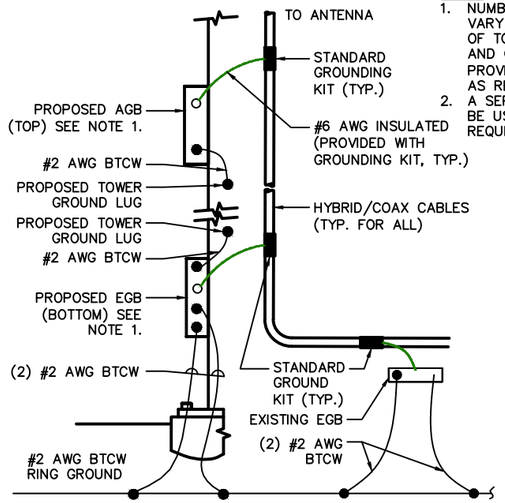


NOTES:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL

1 / E-1

SCALE: N.T.S.

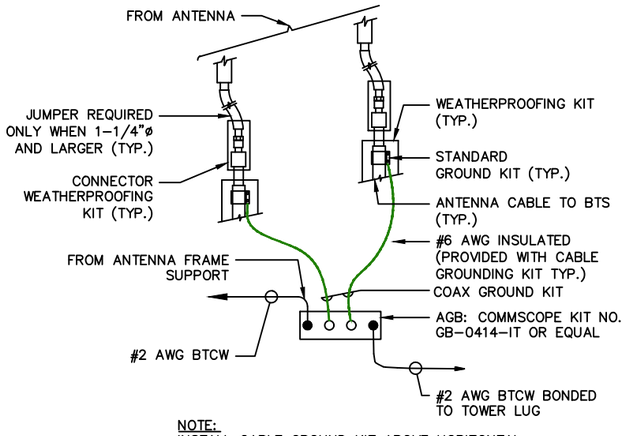


NOTE:
1. NUMBER OF GROUND BARS MAY VARY DEPENDING ON THE TYPE OF TOWER, ANTENNA LOCATION, AND CONNECTION ORIENTATION. PROVIDE ADDITIONAL AGB/EGB AS REQUIRED.
2. A SEPARATE GROUND BAR TO BE USED FOR GPS ANTENNA IF REQUIRED

TOWER BOTTOM CABLE GROUNDING DETAIL

2 / E-1

SCALE: N.T.S.

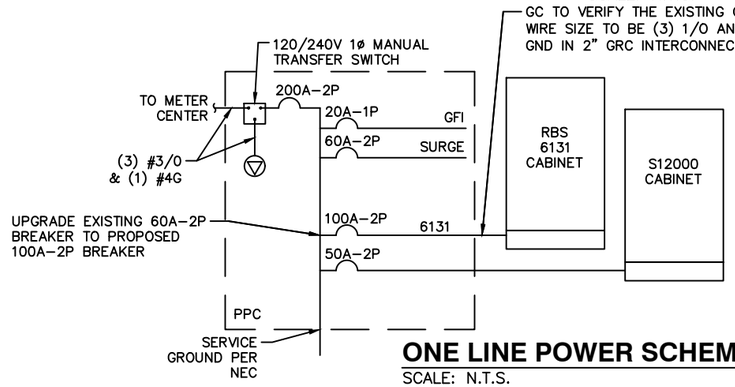


NOTE:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

TOWER TOP CABLE GROUNDING DETAIL

3 / E-1

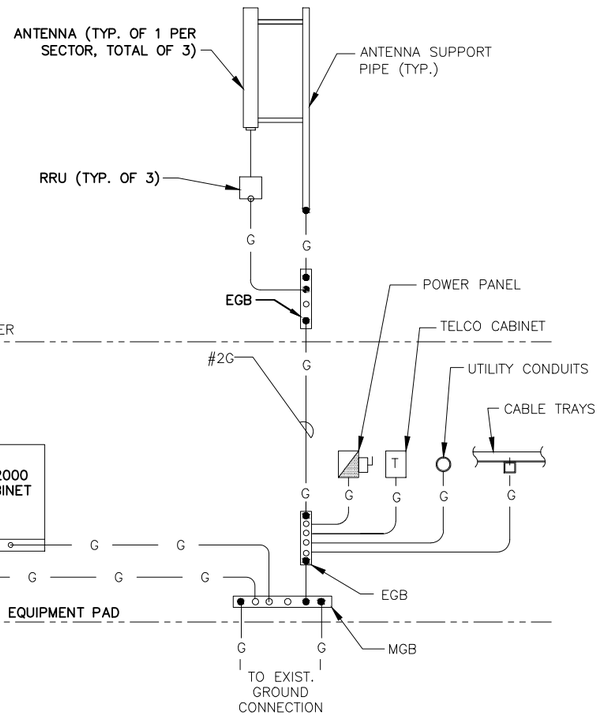
SCALE: N.T.S.



ONE LINE POWER SCHEMATIC

4 / E-1

SCALE: N.T.S.



GROUNDING RISER DIAGRAM

5 / E-1

SCALE: NONE

ELECTRICAL & GROUNDING NOTES:

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) 2014 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 SPECIFICATIONS 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. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THHN INSULATION AS REQUIRED BY NEC.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
13. 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.
14. 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.
15. 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 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LYGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOMD ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN/GROUND RING.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

SYMBOL LEGEND

- (X) SPECIAL WORK NOTE
- ■ EXOTHERMIC CONNECTION
- ● MECHANICAL CONNECTION
- □ CABLE GROUNDING KIT

ELECTRICAL & GROUNDING PLAN | NO SCALE | 1

PLANS PREPARED FOR:

T-Mobile

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766

PROJECT MANAGER:

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

PLANS PREPARED BY:

INFINIGY

INFINIGY ENGINEERING, PLLC
1033 Watervliet Shaker Rd
Albany, NY 12205
Office # (518) 690-0790
Fax # (518) 690-0793
JOB NUMBER 656-003

ENGINEERING LICENSE:

STATE OF CONNECTICUT · JOSHUA S. STEVENS · 24705 · LICENSED PROFESSIONAL ENGINEER

09/23/2019

CHECKED BY:

APPROVED BY:

REVISIONS:

DESCRIPTION	DATE	BY	REV.
ISSUED FOR CONSTRUCTION	09/23/19	MAP	0

SITE NUMBER:

CTNL191D

SITE ADDRESS:

38 RICH ROAD
THOMPSON, CT 06255

SHEET DESCRIPTION:

ELECTRICAL & GROUNDING DETAILS

SHEET NUMBER:

E-1

EXHIBIT 7

MODIFICATION AND DESIGN DRAWINGS FOR EXISTING ANTENNA MOUNTS EXISTING MONOPOLE TOWER

PROPOSED CARRIER: T-MOBILE

TOWER OWNER: SBA / TOWER OWNER SITE #: CT11559-A

CARRIER SITE #/NAME: CTNL191D / THOMPSON CT

COORDINATES (LATITUDE: 42.011550°, LONGITUDE: -71.851908°)

PLEASE NOTE THIS SET OF DRAWINGS ARE FOR INSTALLATION AND ASSEMBLY ONLY. FABRICATION DETAIL DRAWINGS ARE NOT PROVIDED AND MUST BE COMPLETED BY THE STEEL FABRICATOR SELECTED. TES CAN PROVIDE THE FABRICATION DETAIL DRAWINGS FOR AN ADDITIONAL FEE.

SHEET	SHEET TITLE	REV
T-1	TITLE SHEET	0
BOM	BILL OF MATERIALS	0
GN-1	GENERAL NOTES	0
A-1	ANTENNA MOUNT MODIFICATION DETAILS	0
A-2	ANTENNA MOUNT PHOTOS	0
D-1	STANDARD DETAILS	0
MS-HR35-2875	METROSITE SUPPORT RAIL KIT	
MS-1436	METROSITE LIGHT COLLAR MOUNT PLATE ASSEMBLY	
MPW-1	METROSITE LIGHT COLLAR MOUNT PLATE WELDMENT	

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE **TES** PROJECT NO. 79245, DATED 07/01/2019.

TES
Tower Engineering Solutions
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IRVING, TX 75038
PH: (972) 483-0607

SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
81814

CUSTOMER SITE NO:
CT11559-A-SBA

CUSTOMER SITE NAME:
THOMPSON 1, CT
39 RICH ROAD
NORTH GROSVENORDALE, CT 06255

STATE OF CONNECTICUT
JAIME A. [illegible]
No. 17534
LICENSED PROFESSIONAL ENGINEER
7/30/19

DRAWN BY: GA | CHECKED BY: AL/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	GA	07/30/19

SHEET TITLE:
TITLE SHEET

SHEET NUMBER: T-1

REV #: 0

BILL OF MATERIALS

QUANTITY COUNTED	QUANTITY PROVIDED	PART NUMBER	DESCRIPTIONS	SHEET LIST	PIECE WEIGHT (LBS)	WEIGHT (LB)	NOTES
			MATERIAL & HARDWARE				
1	1	MS-1436	METROSITE LIGHT COLLAR MOUNT ASSEMBLY	A-1, MS-1436	87.0	87.0	Galvanized
			FOLLOWING ITEMS ARE "CUSTOM" PARTS				
1	1	MS-HR35-2875	METROSITE SUPPORT RAIL KIT	A-1	523.00	523.0	GALVANIZED
6	6	L252525-10	L 2 1/2" X 2 1/2" X 1/4" X 10'-0 A36	D-1	33.50	201.0	GALVANIZED (FINAL CUT LENGTH TO BE DETERMINED IN FIELD)
6	6	PL375-42595	PL 3/8" X 4 1/4" X 9 1/2" A36	D-1	4.40	26.4	GALVANIZED
6	6	AL-533	L 5" X 3" X 1/4" X 3" A36	D-1	1.70	10.2	GALVANIZED
3	3	BRKW-6S	WELDMENT BRACKET	D-1	7.50	22.5	GALVANIZED
12	13	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV)	D-1	1.45	19.8	(2) HHN & LKW-EA GALVANIZED
6	7	---	BOLT 5/8" X 2 1/4" A325	D-1	0.00	0.0	(1) HHN & LKW-EA GALVANIZED
6	7	---	BOLT 5/8" X 1 /3/4" A325	D-1	0.00	0.0	(1) HHN & LKW-EA GALVANIZED
18	19	---	BOLT 5/8" X 2" A325	D-1	0.00	0.0	(1) HHN & LKW-EA GALVANIZED

ALL METROSITE PARTS ARE AVAILABLE FROM METROSITE, LLC.

180 IND PARK BLVD COMMERCE, GA 30529
OFFICE: (706) 335-7045
FAX: (706) 335-7056

NOTE: ALL MATERIALS, WHICH WEREN'T LISTED IN THIS SHEET, ARE ASSUMED TO BE PROVIDED BY THE CONTRACTOR.

TOTAL WEIGHT (LBS) = **889.9**

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BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
81814

CUSTOMER SITE NO:
CT11559-A-SBA
CUSTOMER SITE NAME:
THOMPSON 1, CT
39 RICH ROAD
NORTH GROSVENORDALE, CT 06255

DRAWN BY: GA | CHECKED BY: AL/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	GA	07/30/19

SHEET TITLE:
BILL OF MATERIALS

SHEET NUMBER: BOM
REV #: 0

GENERAL NOTES

1. ALL WORK SHALL COMPLY WITH THE ANSI/TIA-222-G, ANSI/ASSP A10.48, 2018 CONNECTICUT STATE BUILDING CODE AND ANY OTHER GOVERNING BUILDING CODES AND OSHA SAFETY REGULATIONS.
2. ALL WORK INDICATED ON THE DRAWINGS SHALL BE PERFORMED BY QUALIFIED CONTRACTORS EXPERIENCED IN TELECOMMUNICATIONS TOWER, POLE AND FOUNDATION CONSTRUCTION.
3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE DESIGN AND FABRICATION OF ALL MISCELLANEOUS PARTS (SUCH AS SHIMS), TEMPORARY SUPPORTS, AND GUYINGS, ETC., PER ANSI/ASSP A10.48, TO COMPLETE THE ASSEMBLY AS SHOWN IN THE DRAWINGS.
4. CONTRACTOR SHALL PROCEED WITH THE INSTALLATION WORK CAREFULLY SO THE WORK WILL NOT DAMAGE ANY EXISTING CABLE, EQUIPMENT OR THE STRUCTURE.
5. THE USE OF GAS TORCH OR WELDER, ARE NOT ALLOWED ON ANY TOWER STRUCTURE WITHOUT THE CONSENT OF THE TOWER OWNER.
6. GENERALLY THE CONTRACTOR IS RESPONSIBLE TO CONDUCT AN ONSITE VISIT SURVEY OF THE JOB SITE AFTER AWARD, AND REPORT ANY ISSUES WITH THE SITE TO **TES** BEFORE PROCEEDING CONSTRUCTION.
7. IT IS THE RESPONSIBILITY OF THE GC TO VERIFY THAT THERE IS NO INTERFERENCES (WITH SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.
8. PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESCONSTRUCTION@TESTOWER.US

FABRICATION

1. ALL STEEL SHALL MEET OR EXCEED THE MINIMUM STRENGTH AS SPECIFIED IN THE DRAWINGS. IF YIELD STRENGTH WAS NOT NOTED IN THE DRAWINGS, CONTRACTORS SHALL CONTACT TES FOR DIRECTION.
2. ALL FIELD CUT EDGES SHALL BE GROUND SMOOTH. ALL FIELD CUT AND DRILLED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

WELDING

1. ALL WELDING SHALL BE PERFORMED BY AWS CERTIFIED WELDERS AND IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNO. (E70XX UNLESS NOTED OTHERWISE).
2. PRIOR TO FIELD WELDING GALVANIZED MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING APPROX. 0.5" BEYOND THE PROPOSED FIELD WELD SURFACES.
3. ALL WELDS SHALL BE INSPECTED VISUALLY. A MINIMUM OF 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. 100% OF WELDS SHALL BE INSPECTED IF DEFECTS ARE FOUND.
4. WELD INSPECTIONS SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
5. AFTER INSPECTION, ALL FIELD WELDED SURFACES SHALL BE REPAIRED WITH A MINIMUM OF TWO COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.

BOLTED ASSEMBLIES AND TIGHTENING OF CONNECTIONS

1. ALL HIGH STRENGTH BOLTS SHALL CONFORM TO THE PROVISIONS OF THE SPECIFICATIONS FOR STRUCTURAL JOINTS USING A325 OR A490 BOLTS AS APPROVED BY THE RCSC.
2. FLANGE BOLTS SHALL BE TIGHTENED BY THE AISC "TURN-OF-THE-NUT" METHOD. THE FOLLOWING TABLE SHOULD BE USED FOR THE "TURN-OF-THE-NUT" TIGHTENING.
3. SPLICE BOLTS AND ALL OTHER BOLTS IN BEARING TYPE CONNECTIONS SHALL BE TIGHTENED TO A SNUG-TIGHT CONDITION.
4. THE SNUG-TIGHT CONDITION IS DEFINED AS THE TIGHTNESS ATTAINED BY EITHER A FEW IMPACTS OF AN IMPACT WRENCH OR THE FULL EFFORT OF AN IRONWORKER WITH AN ORDINARY SPUD WRENCH TO BRING THE CONNECTED PLIES INTO FIRM CONTACT.
5. HB HOLLO-BOLT SHALL BE INSTALLED PER ICC ESR-3330 INSTRUCTIONS.

VERIFICATION AND INSPECTION

1. IF APPLICABLE, VERIFICATION INSPECTION TO BE PERFORMED SHALL BE IN ACCORDANCE TO IBC-2015 SECTION 1705 FOR STEEL CONSTRUCTION AND TABLE 1705.3 FOR CONCRETE CONSTRUCTION.

TABLE 8.2 NUT ROTATION FROM SNUG-TIGHT CONDITION FOR TURN-OF-NUT PRETENSIONING [a,b]

BOLT LENGTH [c]	DISPOSITION OF OUTER FACE OF BOLTED PARTS		
	BOTH FACES NORMAL TO BOLT AXIS	ONE FACE NORMAL TO BOLT AXIS, OTHER SLOPED NOT MORE THAN 1:20 [d]	BOTH FACES SLOPED NOT MORE THAN 1:20 FROM NORMAL TO BOLT AXIS [d]
NOT MORE THAN $4d_b$	1/3 TURN	1/2 TURN	2/3 TURN
MORE THAN $4d_b$ BUT NOT MORE THAN $8d_b$	1/2 TURN	2/3 TURN	5/6 TURN
MORE THAN $8d_b$ BUT NOT MORE THAN $12d_b$	2/3 TURN	5/6 TURN	1 TURN

[a] NUT ROTATION IS RELATIVE TO BOLT REGARDLESS OF THE ELEMENT (NUT OR BOLT) BEING TURNED. FOR REQUIRED NUT ROTATIONS OF 1/2 TURN AND LESS, THE TOLERANCE IS PLUS OR MINUS 30 DEGREES; FOR REQUIRED NUT ROTATIONS OF 2/3 TURN AND MORE, THE TOLERANCE IS PLUS OR MINUS 45 DEGREES.

[b] APPLICABLE ONLY TO JOINTS IN WHICH ALL MATERIAL WITHIN THE GRIP IS STEEL.

[c] WHEN THE BOLT LENGTH EXCEEDS $12d_b$, THE REQUIRED NUT ROTATION SHALL BE DETERMINED BY ACTUAL TESTING IN A SUITABLE TENSION CALIBRATOR THAT SIMULATES THE CONDITIONS OF SOLIDLY FITTING STEEL.

[d] BEVELED WASHER NOT USED.

SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS, JUNE 30, 2004 RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS

INSTALLATION TORQUE REQUIRED FOR HOLLO BOLTS AND AJAX BOLTS:

1. HB12 HOLLO BOLT: 59 FT-LBS
2. HB16 HOLLO BOLT: 140 FT-LBS
3. HB20 HOLLO BOLT: 221 FT-LBS
4. M20 AJAX BOLT: 280 FT-LBS.

FIELD HOT WORK PLAN NOTES:

FOLLOWING GUIDELINES SHALL BE COMPLIED WITH:

1. CONTRACTOR'S RESPONSIBILITY TO COMPLETE A HOT WORK PLAN IF AWARDED PER CUSTOMER SPECIFICATIONS GUIDELINES FOR WELDING, CUTTING & SPARK PRODUCING WORK.
2. HAVE A FIRE PLAN APPROVED BY THE CUSTOMER AND THEIR SAFETY MANAGEMENT DEPT.
3. CONTRACTOR MUST OBTAIN THE CONTACT INFO OF THE LOCAL FIRE DEPARTMENT AND THE 911 ADDRESS OF THE TOWER SITE BEFORE CONSTRUCTION.
4. CONTRACTOR SHALL MAKE SURE THAT CELL PHONE COVERAGE IS AVAILABLE IN THE TOWER SITE. IF CELL COVERAGE IS NOT AVAILABLE, AN IMMEDIATE AVAILABLE MEANS OF DIRECT COMMUNICATION WITH THE FIRE DEPARTMENT SHALL BE DETERMINED PRIOR TO CONSTRUCTION START.
5. ALL CONSTRUCTION SHALL BE PERFORMED UNDER WIND SPEED LESS THAN 10 MPH ON THE GROUND LEVEL. IF WIND SPEED INCREASE, CONTRACTOR MUST DETERMINE IF CONSTRUCTION SHALL BE DISCONTINUED.
6. FIRE SUPPRESSION EQUIPMENT MUST BE MADE AVAILABLE ON SITE AND READY TO USE.
7. CONTRACTOR SHALL ASSIGN A FIRE WATCHER TO PERFORM FIRE-FIGHTING DUTIES.
8. ALL WELDERS SHALL BE AWS OR STATE CERTIFIED. THEY MUST ALSO BE EXPERIENCED IN WELDING ON GALVANIZED MATERIALS.
9. IF IT IS POSSIBLE, ALL EXISTING COAX NEAR WELDING AREA SHALL BE TEMPORARILY MOVED AWAY FROM THE WELDING AREA BEFORE WELDING THE PLATES.
10. PLEASE REPORT ANY FIELD ISSUE TO TES @ 972-483-0607.

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(800)-487-SITE

TES JOB NO:
81814

CUSTOMER SITE NO:
CT11559-A-SBA
CUSTOMER SITE NAME:
THOMPSON 1, CT
39 RICH ROAD
NORTH GROSVENORDALE, CT 06255

DRAWN BY: GA | CHECKED BY: AL/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	GA	07/30/19

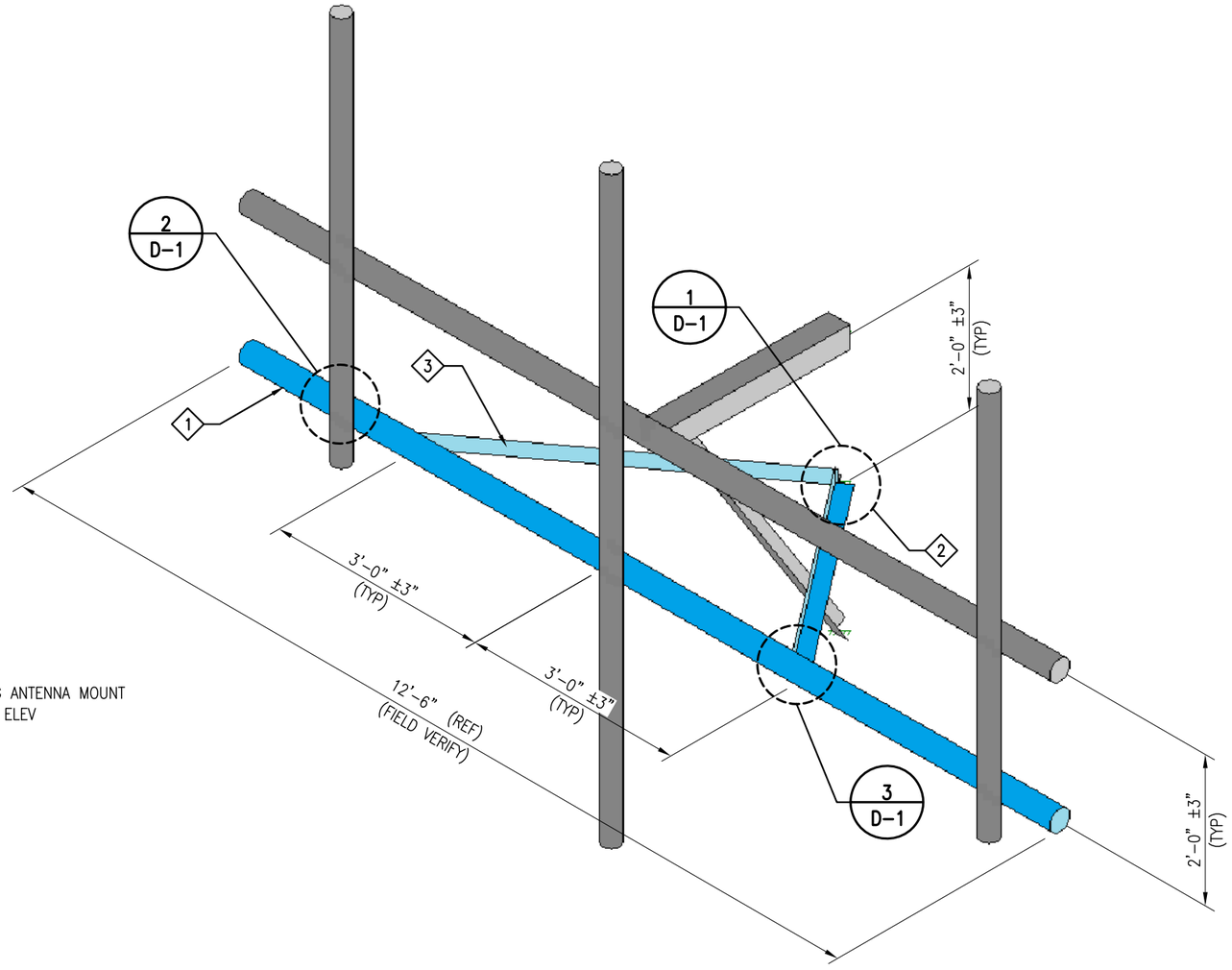
SHEET TITLE:
GENERAL NOTES

SHEET NUMBER: GN-1
REV #: 0

SCOPE OF WORK

1. INSTALL NEW SUPPORT RAIL KIT. SE SHEET MS-HR35-2875 & D-1 FOR DETAILS.
2. INSTALL NEW LIGHT COLLAR MOUNT (NOT SHOWN FOR CLARITY). SEE SHEET D-1 & MS-1436 FOR DETAILS.
3. INSTALL NEW V-BRACING. SEE SHEET D-1 FOR DETAILS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE CLEAN-UP, REMOVAL AND DISPOSAL OF EXCESS MATERIALS USED AND REMOVED FROM THE STRUCTURE AT THE COMPLETION OF THE PROJECT.

PHOTO 1



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 148' ELEV.
(MODIFICATION IS TYPICAL FOR ALL (3) SECTORS)

GC NOTE:
1. **IT IS THE RESPONSIBILITY OF THE GC TO VERIFY THAT THERE IS NO INTERFERENCES WITH (PORT HOLES, SAFETY CLIMB BRACKETS, TRANSMISSION LINES, ETC.) PRIOR TO MOBILIZATION AND INSTALLATION OF THESE MODIFICATIONS.**
2. **PLEASE NOTIFY TES IMMEDIATELY IF ANY INSTALLATION ISSUES OCCUR RELATED TO THIS DRAWING @ 972-483-0607 OR EMAIL-TESCONSTRUCTION@TESTOWER.US**

NOTES:
1. TEMPORARILY RELOCATE ANY EXISTING COAX ATTACHED TO THE LEGS AND/OR ANY OTHER MEMBERS WHERE OBSTRUCTION WITH THE PROPOSED MODIFICATION MAY OCCUR.
2. WHEN FIELD CUTTING AND DRILLING ANGLES, USE SAME GAGE LINES AND EDGE DISTANCES AS INDICATED ON SHOP CUT AND DRILLED ENDS.
3. APPLY (2) COATS OF ZINC RICH GALVANIZING COMPOUND AS PER THE MANUFACTURER'S SPECIFICATIONS TO ALL FIELD CUT AND DRILLED AREAS.
4. **MEMBERS IN BLUE COLOR ARE NEW REINFORCEMENTS.**

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	1	MS-HR35-2875	METROSITE SUPPORT RAIL KIT

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TES JOB NO:
81814

CUSTOMER SITE NO:
CT11559-A-SBA
CUSTOMER SITE NAME:
THOMPSON 1, CT
39 RICH ROAD
NORTH GROSVENORDALE, CT 06255

DRAWN BY: GA | CHECKED BY: AL/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	GA	07/30/19

SHEET TITLE:
ANTENNA MOUNT MODIFICATION DETAILS

SHEET NUMBER: A-1
REV #: 0

PHOTO 1

PHOTO 2

PHOTO 3

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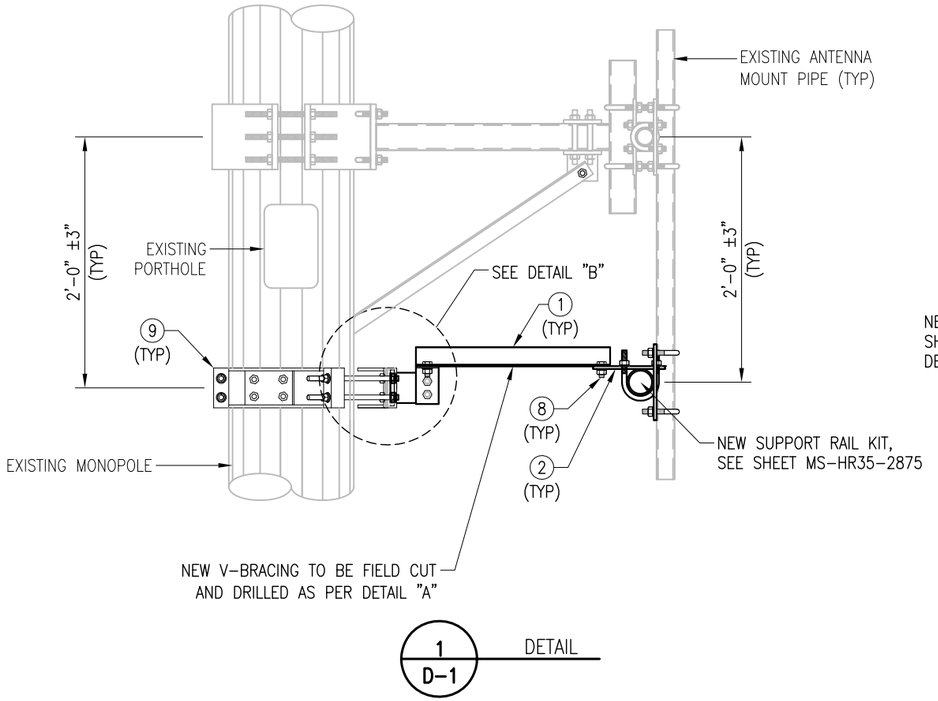
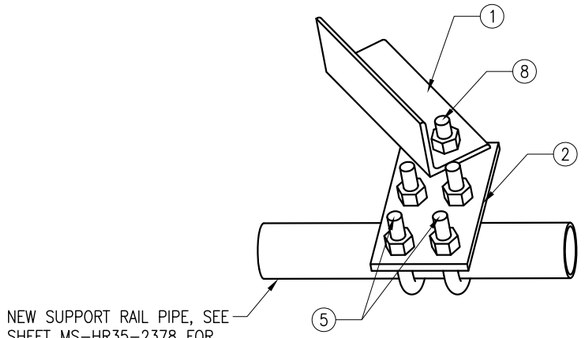
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	GA	07/30/19

SHEET TITLE:
ANTENNA MOUNT PHOTOS

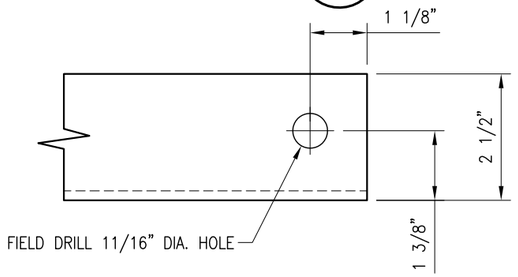
SHEET NUMBER: A-2
REV #: 0



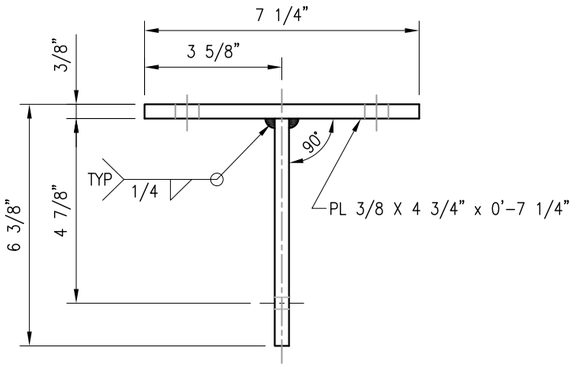
1 / D-1 DETAIL



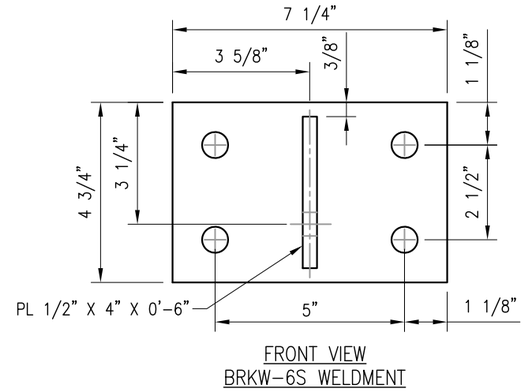
3 / D-1 DETAIL



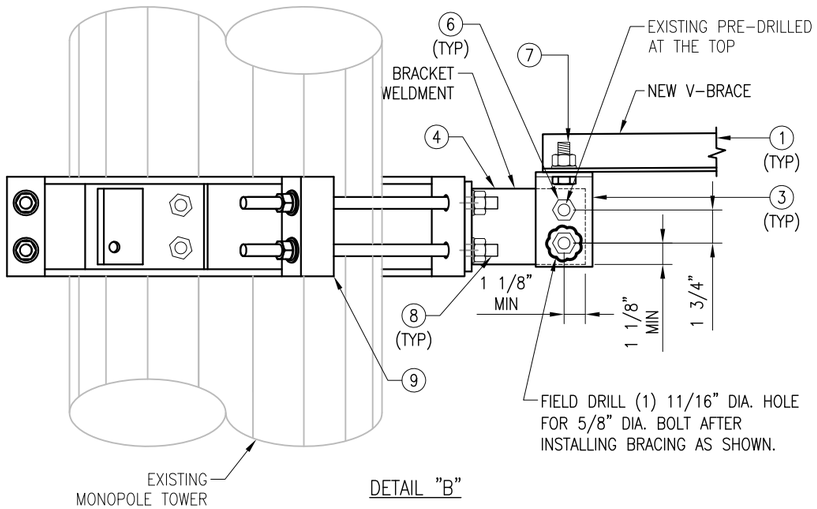
DETAIL "A"



TOP VIEW
BRKW-6S WELDMENT



FRONT VIEW
BRKW-6S WELDMENT



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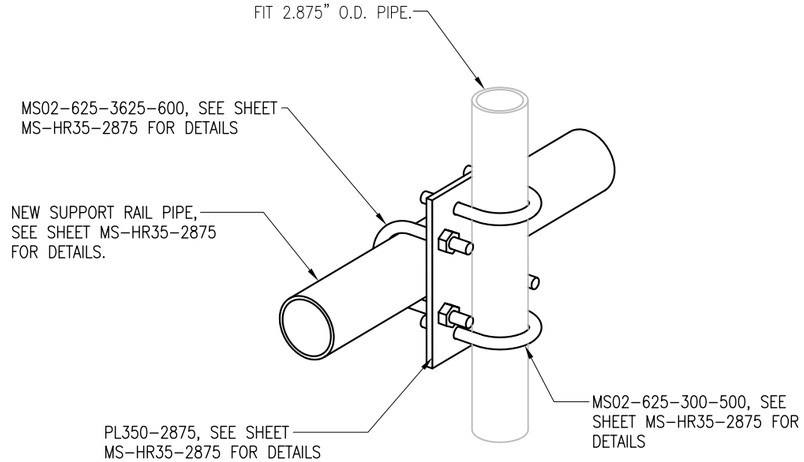


2 / D-1 DETAIL

ITEM NO.	QTY.	PART NO.	DESCRIPTIONS
1	6	L252525-10	L 2 1/2" X 2 1/2" X 1/4" X 10'-0 A36
2	6	PL375-42595	PL 3/8" X 4 1/4" X 9 1/2" A36
3	6	AL-533	L 5" X 3" X 1/4" X 3" A36
4	3	BRKW-6S	WELDMENT BRACKET
5	12	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV)
6	6	---	BOLT 5/8" X 2 1/4" A325
7	6	---	BOLT 5/8" X 1 /3/4" A325
8	18	---	BOLT 5/8" X 2" A325
9	1	MS-1436	METROSITE LIGHT COLLAR MOUNT ASSEMBLY

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.
2. ALL HOLES ARE 11/16" DIA. U.N.O

TES
Tower Engineering Solutions
1320 GREENWAY DRIVE, SUITE 600
IRVING, TX 75038
PH: (972) 483-0607

SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO:
81814

CUSTOMER SITE NO:
CT11559-A-SBA
CUSTOMER SITE NAME:
THOMPSON 1, CT
39 RICH ROAD
NORTH GROSVENORDALE, CT 06255

DRAWN BY: GA | CHECKED BY: AL/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	GA	07/30/19

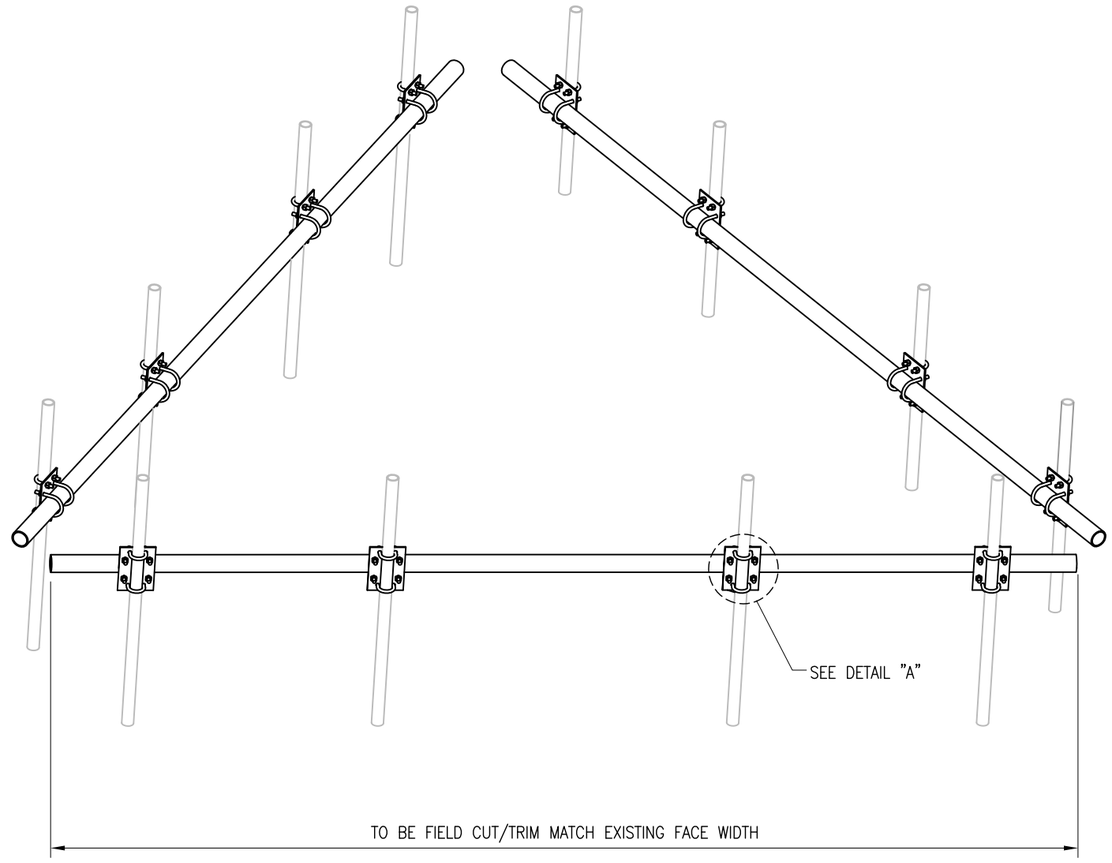
SHEET TITLE:
STANDARD DETAILS

SHEET NUMBER: D-1
REV #: 0

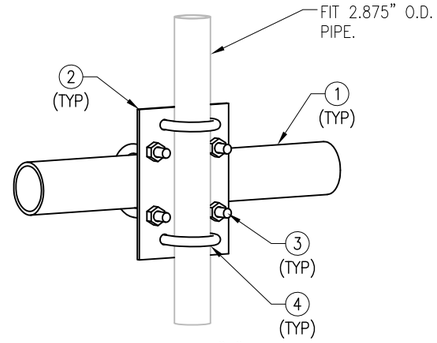
THE FOLLOWING DRAWINGS ARE INCLUDED FOR REFERENCE ONLY
PLEASE REFER TO THE INSTALLATION DRAWINGS FOR ACTUAL INSTALLATION DETAILS

MS-HR35-2875

ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	3PST-216	3" PST (3.50" O.D X .216" THICK) X 18'-0"	A53 GR-B	HR35-18	430.2
2	12	PL350-2875	PL 3/8" X 7 1/8" X 10"	A36	TAF-2	92.4
3	24	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
4	24	MS02-625-300-500	RU-BOLT 5/8" X 3" I.W. X 5" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
				GALVANIZED WT		523



ELEVATION VIEW



DETAIL "A"

NOTES:
1. ALL HOLES ARE 11/16" DIA. U.N.O
2. HOT-DIPPED GALVANIZED PER ASTM A123.

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH

STANDARD SHEET TOLERANCES

DECIMALS	ANGLES
.X ± 0.1	± 1°
.XX ± 0.02	FRACTIONS
.XXX ± 0.005	± 1/32

APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE
MS-HR35-2875
SUPPORT RAIL KIT

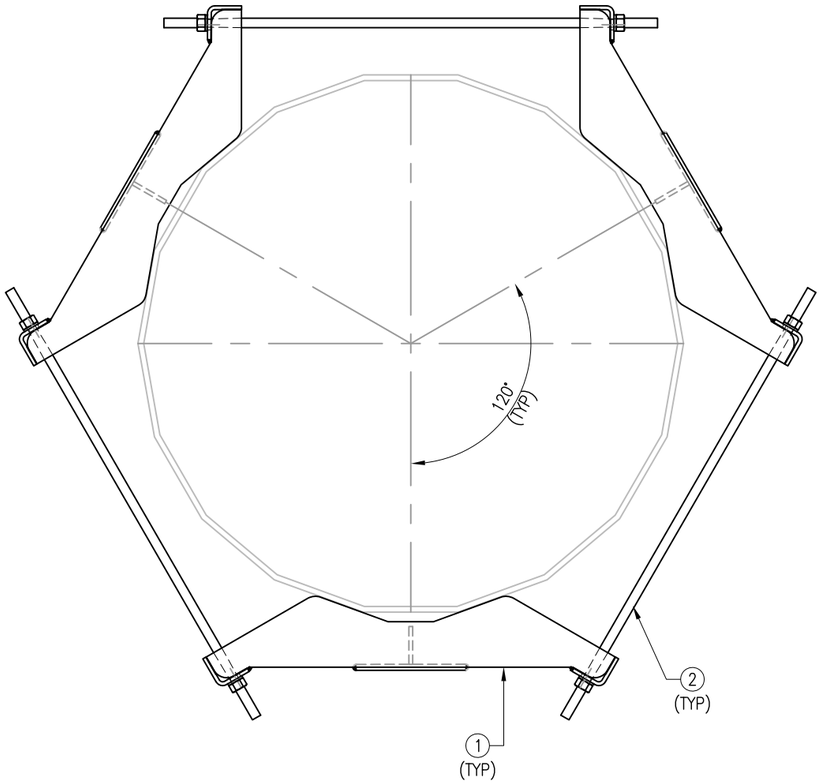
SIZE	DWG NO	REV
B	MS-HR35-2875	0

SCALE - SHEET 1 OF 1

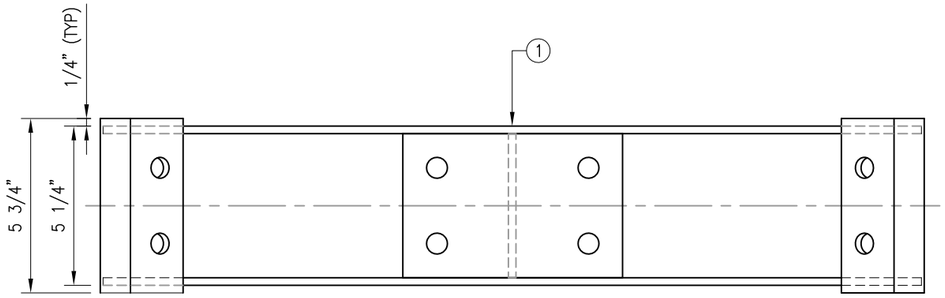
NOTE:
1) FITS 12" DIA TO 32" DIA.

ITEM NO.	QTY.	PART NO.	DESCRIPTION
2	6	---	THREADED ROD 5/8" X 2'-4 3/4" W/ 2 HHN & LK EA A36
1	3	MPW-1	MOUNT PLATE WELDMENT A36

GALVANIZED WEIGHT: 65.6 LBS



TOP VIEW



FRONT VIEW

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH
STANDARD SHEET TOLERANCES
DECIMALS: .X ± 0.1, .XX ± 0.02, .XXX ± 0.005
ANGLES ± 1°
FRACTIONS ± 1/32

APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

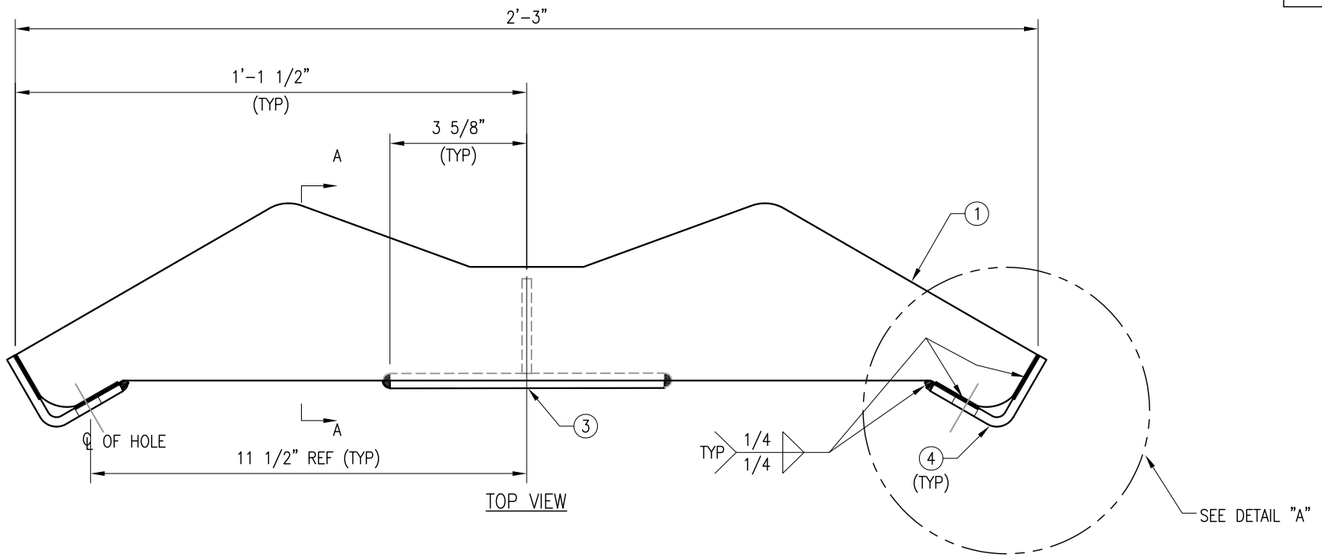
TITLE
LIGHT COLLAR MOUNT PLATE
ASSEMBLY DETAIL MS-1436

SIZE	DWG NO	REV
B	MS-1436	1

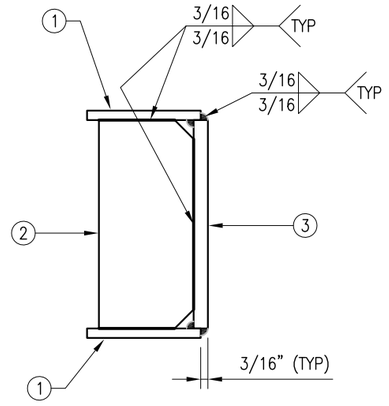
SCALE -
SHEET 1 OF 1

NOTES:
1. HOT-DIPPED GALVANIZED PER ASTM A123.
2. WELD TYPE: E70XX.

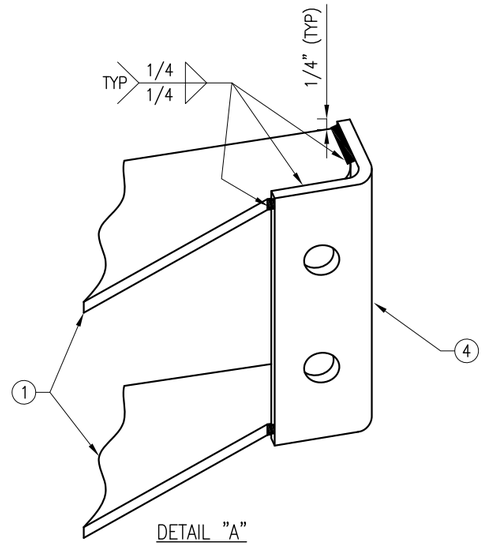
MPW-1 WELDMENT						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	2	PL-1	PL 1/4" X 5 3/8" X 2'-3"	A36	F-2	12.6
2	1	PL-2	PL 1/4" X 2 1/2" X 0'-4 3/4"	A36	F-2	.83
3	1	PL-3	PL 3/8" X 4 3/4" X 0'-7 1/4"	A36	F-2	3.7
4	2	PL-8	PL 1/4" x 4 1/8" x 5 3/4"	A36	F-2	3.2
					BLACK WT	20.3
					GALVANIZED WT	21



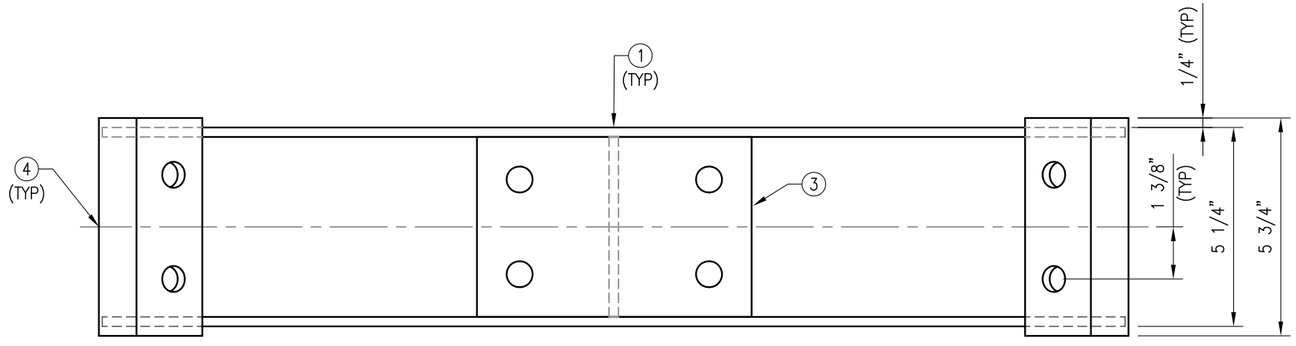
TOP VIEW



SECTION "A-A"



DETAIL "A"



FRONT VIEW

MPW-1 WELDMENT

THIRD ANGLE PROJECTION

METROSITE FABRICATORS LLC
180 INDUSTRIAL PARK BLVD.
COMMERCE GA 30529

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES AND INCLUDE FINISH

STANDARD SHEET TOLERANCES

DECIMALS	ANGLES
.X ± 0.1	± 1°
.XX ± 0.02	FRACTIONS
.XXX ± 0.005	± 1/32

APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	05/12/17
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE
LIGHT COLLAR MOUNT
PLATE WELDMENT DETAIL

SIZE	DWG NO	REV
B	MPW-1	0

SCALE - SHEET 1 OF 1

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 149 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT11559-A

Customer Site Name: Thompson 1, CT

Carrier Name: T-Mobile (App#: 116928, V2)

Carrier Site ID / Name: CTNL191D / Thompson CT

Site Location: 39 Rich Road

North Grosvenordale, Connecticut

Windham County

Latitude: 42.011550

Longitude: -71.851908

8/2/19

Analysis Result:

Max Structural Usage: 58.1% [Pass]

Max Foundation Usage: 38.0% [Pass]

Additional Usage Caused by Mount Modification: +1.7%

Report Prepared By : Dipika Dhungana

Introduction

The purpose of this report is to summarize the analysis results on the 149 ft Nudd Corporation 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	Fred A. Nudd Corporation (Project No. 308-13019) original design drawings dated April 25, 2008.
Foundation Drawing	Fred A. Nudd Corporation (Project No. 308-13019) original design drawings dated April 25, 2008.
Geotechnical Report	N/A
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G**.** 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 Vult = 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 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 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 = 0.063

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
-	148.0	3	Ericsson - AIR21 B2A B4P - Panel	(3) T-Arms	(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
-		3	Ericsson - AIR21 B2A B4P - Panel			
-		3	Commscope - LNX-6515DS-VTM - Panel			
-		3	Ericsson KRY112 144/1 TMA			
-		3	Ericsson RRUS11-B12 RRU			
6	137.0	3	Antel/BXA-70063-6CF - Panel	(3) T-Arms	(12) 1 5/8" (1) 1 5/8" Fiber	Verizon
7		3	Antel/BXA-171085-12BF - Panel			
8		4	Antel/LPA-80080-6CF - Panel			
9		2	Antel/LPA-4019 - Panel			
10		3	ALU/RRH 2x40 AWS			
11		1	RFS DB-T1-6Z-8AB-0Z Distribution			
12	127.0	9	Powerwave - 7770.00 - Panel	(3) T-Arms	(12) 1 5/8" (1) 1/2" RET [(2) 3/4" DC (1) 7/16" inside (1) 3" flex Conduit]	AT&T
13		3	KMW - AM-X-CD-17-65-00T-RET - Panel			
14		12	Powerwave LGP21401 TMAs			
15		12	Kathrein 860 10025 RET			
16		3	Ericsson RRUS-11 RRUs			
17		3	Ericsson RRUS 12 RRUs			
18		6	Powerwave LGP13519 Diplexer			
19		1	Raycap DC6-48-60-18-8F DC Surge Suppression System			
20		3	Powerwave 1001983 Bias T			

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
1	148.0	3	Ericsson Air 21 B2A/B4P	(3)T-Arms w/ (1) Metrosite Heavy Collar Mount Assembly: MS-H1436 (1) Metrosite Support rail kit: MS-HR35-2375 (3) V-braces: L2.5"x2.5"x1/4"	(11) 1 5/8" (2) 1 5/8" Fiber	T-Mobile
2		3	Ericsson Air 21 B4A/B2P			
3		3	RFS APXVAARR24_43-U-NA20			
4		3	Ericsson KRY 112 144/1			
5		3	Ericsson Radio 4449 B71+B12			

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:	**58.1%**	**55.0%**	**35.0%**
Pass/Fail	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Analysis Reactions	3443.6	32.5	76.3

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 0.9582 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 58.15% at 25.0ft

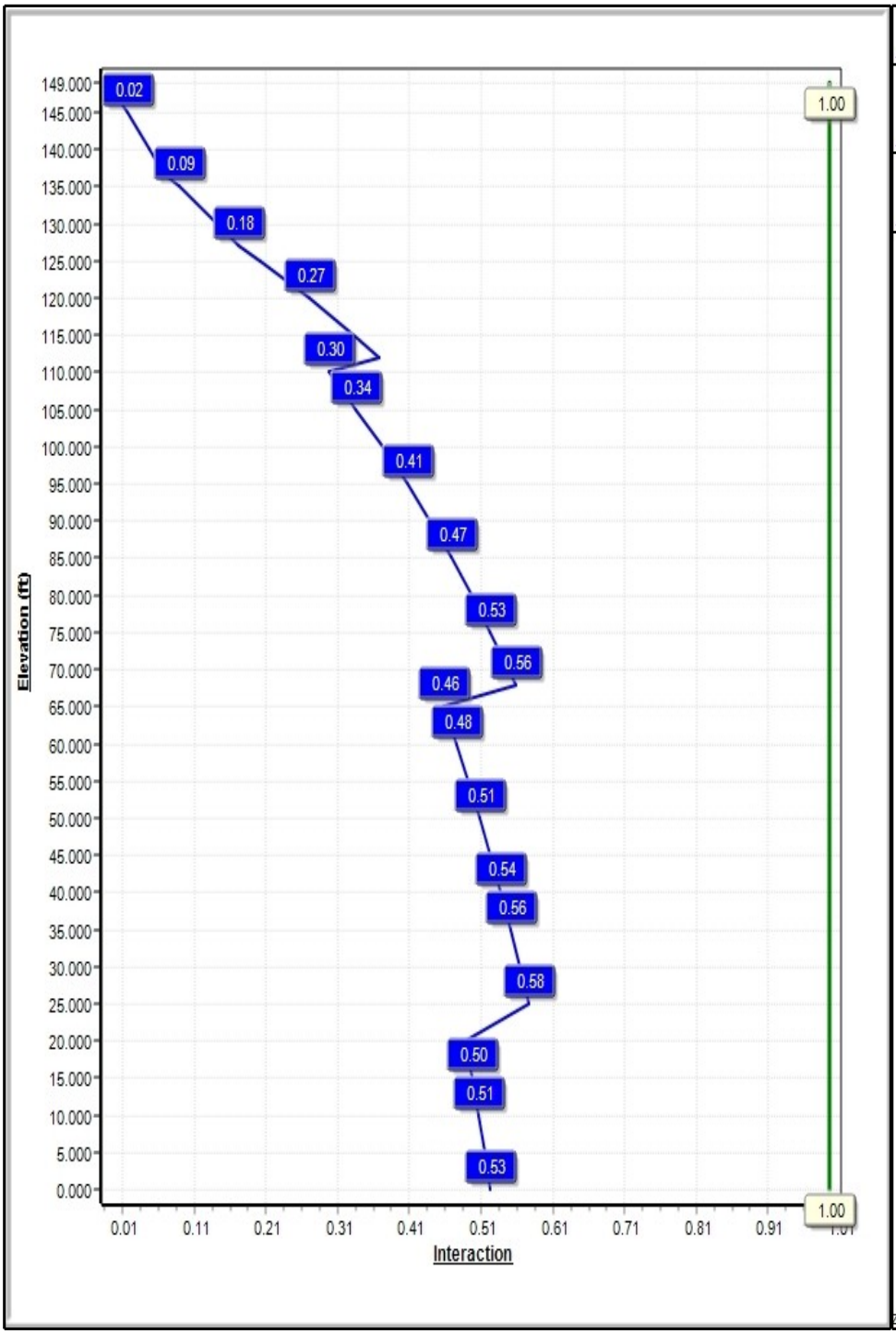
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT	**Exposure:**	C	
Height:	149.00 (ft)	**Gh:**	1.1	
Base Elev:	0.000 (ft)			Page: 1

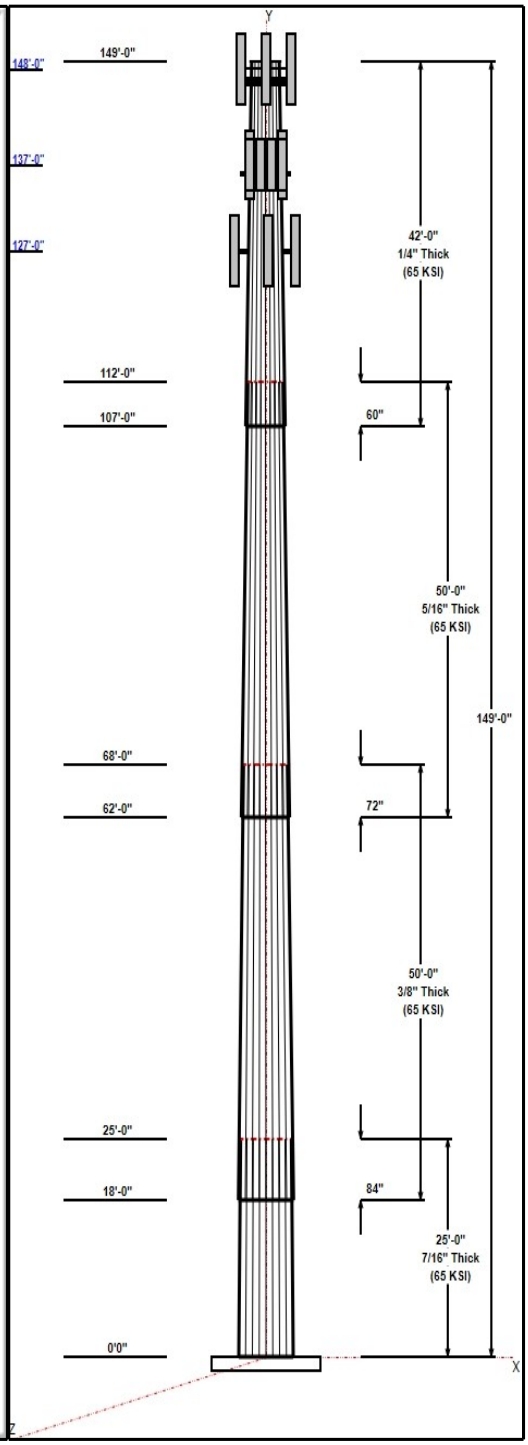
Tower Engineering Solutions

Dead Load Factor:	1.20
Wind Load Factor:	1.60

Load Case : 1.2D + 1.6W 101 mph Wind

Iterations: 22





Structure: CT11559-A-SBA

Type: Tapered
Site Name: Thompson 1, CT
Height: 149.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.23532

7/15/2019

Tower Engineering Solutions

Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	25.00	53.18	59.06	0.438		0.23532	65
2	50.00	43.81	55.58	0.375	Slip	0.23532	65
3	50.00	34.08	45.85	0.313	Slip	0.23532	65
4	42.00	25.88	35.76	0.250	Slip	0.23532	65

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
148.00	148.00	3	AIR21 B2A B4P	T-Mobile
148.00	148.00	3	AIR21 B2A B4P	T-Mobile
148.00	148.00	3	APXVAARR24_43-U-NA20	T-Mobile
148.00	148.00	3	Ericsson KRY112 144/1	T-Mobile
148.00	148.00	1	T-Arms	T-Mobile
148.00	148.00	3	4449	T-Mobile
148.00	148.00	1	HRK12 (Handrail Kit)	T-Mobile
148.00	148.00	1	(3) Stabilizer Kit (4' FW)	T-Mobile
137.00	137.00	3	Antel/BXA-70063-6CF	Verizon
137.00	137.00	3	Antel/BXA-171085-12BF	Verizon
137.00	137.00	4	Antel/LPA-80080-6CF	Verizon
137.00	137.00	2	Antel/LPA-4019	Verizon
137.00	137.00	3	ALU/RRH 2x40 AWS	Verizon
137.00	137.00	1	RFS DB-T1-6Z-8AB-0Z	Verizon
136.00	136.00	3	T-Arms	Verizon
127.00	127.00	3	T-Arms	AT&T
127.00	127.00	9	7770.00	AT&T
127.00	127.00	3	AM-X-CD-17-65-00T-RET	AT&T
127.00	127.00	12	Powerwave LGP21401	AT&T
127.00	127.00	12	Kathrein 860 10025 RET	AT&T
127.00	127.00	3	Ericsson RRUS-11 RRUs	AT&T
127.00	127.00	3	Ericsson RRUS 12 RRUs	AT&T
127.00	127.00	6	Powerwave LGP13519	AT&T
127.00	127.00	1	Raycap DC6-48-60-18-8F	AT&T
127.00	127.00	3	Powerwave 1001983 Bias	AT&T

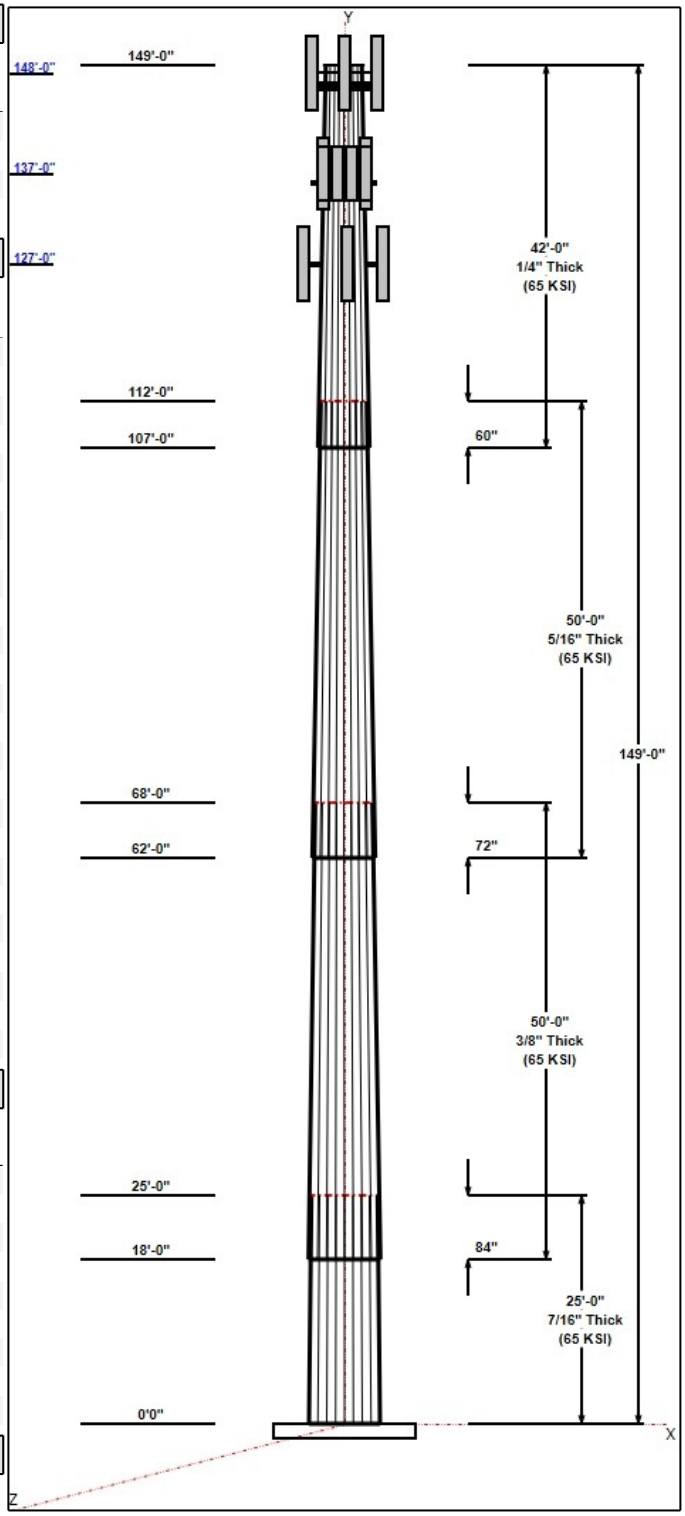
Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	148.00	Inside	1 5/8" Coax	T-Mobile
0.00	148.00	Inside	1 5/8" Fiber	T-Mobile
0.00	137.00	Inside	1 5/8" Coax	Verizon
0.00	137.00	Inside	1 5/8" Fiber	Verizon
0.00	127.00	Inside	1 5/8" Coax	AT&T
0.00	127.00	Inside	1/2" RET	AT&T
0.00	127.00	Inside	3" flex Conduit	AT&T
0.00	127.00	Inside	3/4" DC	AT&T
0.00	127.00	Inside	7/16" Coax	AT&T

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
18	2.00" F1554 105	105.0	Radial

Base Plate



Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
2.7500	72.0	50.0	Round

Reactions

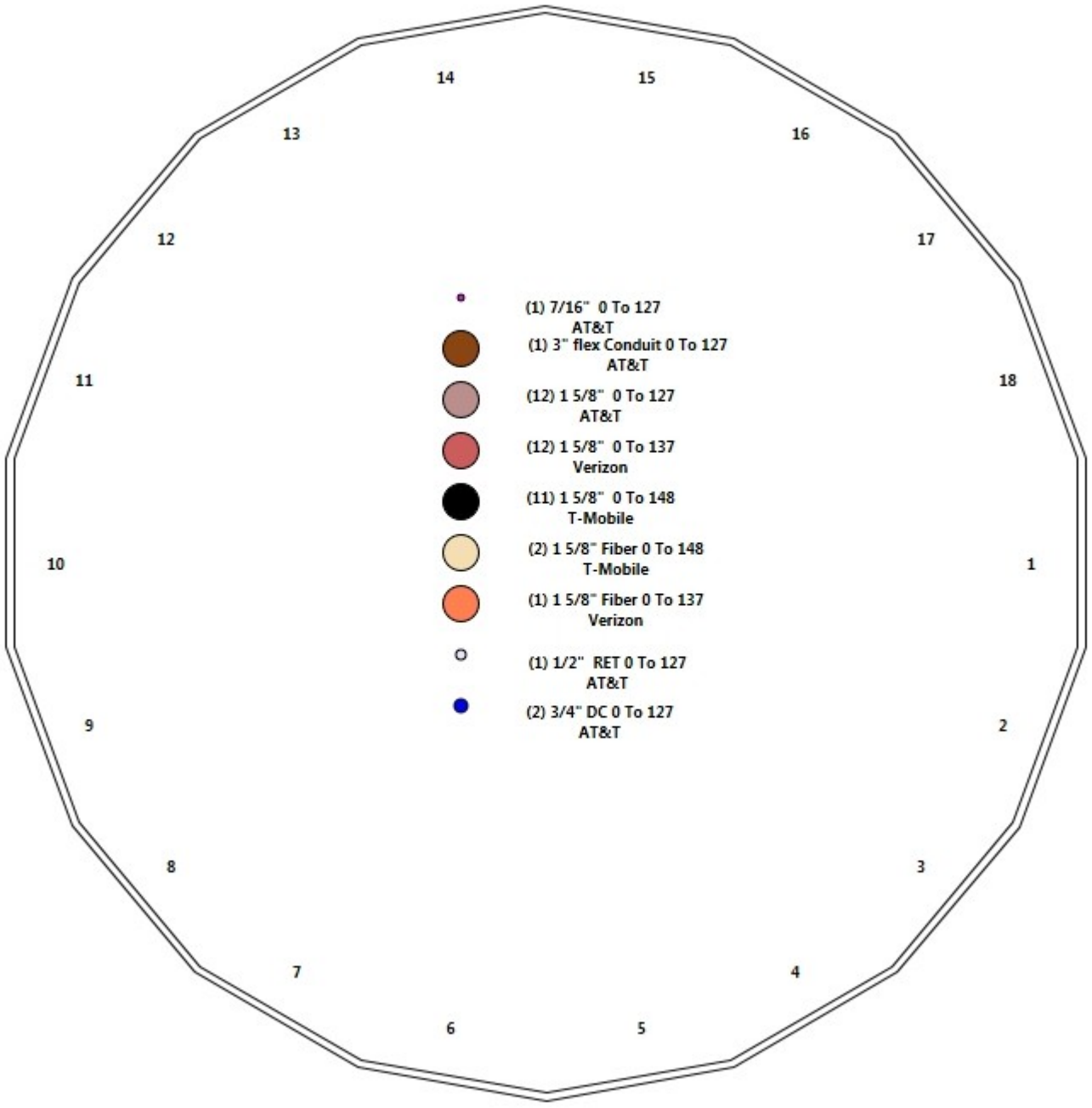
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 101 mph Wind	3443.6	32.6	45.8
0.9D + 1.6W 101 mph Wind	3420.9	32.5	34.3
1.2D + 1.0Di + 1.0Wi 50 mph Wind	1005.9	9.4	76.3
1.2D + 1.0E	172.4	1.5	45.8
0.9D + 1.0E	171.2	1.5	34.4
1.0D + 1.0W 60 mph Wind	756.6	7.2	38.2

Structure: CT11559-A-SBA - Coax Line Placement

Type: Monopole
Site Name: Thompson 1, CT
Height: 149.00 (ft)

7/15/2019

Tower Engineering Solutions



Shaft Properties

Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Tower Engineering Solutions

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	25.000	0.4375	65		0.00	6,578
2	18	50.000	0.3750	65	Slip	84.00	9,987
3	18	50.000	0.3125	65	Slip	72.00	6,691
4	18	42.000	0.2500	65	Slip	60.00	3,466
					Total Shaft Weight:		**26,722**

	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	59.06	0.00	81.41	35348.50	22.39	135.00	53.18	25.00	73.24	25739.0	20.02	121.5	0.235319
2	55.58	18.00	65.70	25294.99	24.72	148.20	43.81	68.00	51.70	12323.0	19.19	116.8	0.235319
3	45.85	62.00	45.16	11831.43	24.46	146.71	34.08	112.00	33.49	4825.70	17.82	109.0	0.235319
4	35.76	107.0	28.17	4488.25	23.81	143.03	25.88	149.00	20.33	1686.85	16.84	103.5	0.235319

Load Summary

Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
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	148.00	AIR21 B2A B4P	3	91.50	6.09	0.86	329.95	7.583	0.86	0.00	0.00
2	148.00	AIR21 B2A B4P	3	90.40	6.09	0.86	329.95	7.583	0.86	0.00	0.00
3	148.00	APXVAARR24_43-U-NA20	3	128.00	20.24	0.70	708.17	22.801	0.70	0.00	0.00
4	148.00	Ericsson KRY112 144/1 TMA	3	11.00	0.41	0.70	25.36	1.043	0.70	0.00	0.00
5	148.00	T-Arms	1	500.00	15.00	0.75	1197.15	41.027	0.75	0.00	0.00
6	148.00	4449	3	70.00	1.65	0.67	168.83	2.392	0.67	0.00	0.00
7	148.00	HRK12 (Handrail Kit)	1	261.72	6.75	1.00	675.29	15.534	1.00	0.00	0.00
8	148.00	(3) Stabilizer Kit (4' FW)	1	140.00	3.70	1.00	374.24	8.859	1.00	0.00	0.00
9	137.00	Antel/BXA-70063-6CF	3	17.00	7.57	0.73	263.16	9.274	0.73	0.00	0.00
10	137.00	Antel/BXA-171085-12BF	3	15.00	4.74	0.84	140.43	7.844	0.84	0.00	0.00
11	137.00	Antel/LPA-80080-6CF	4	21.00	4.33	1.70	243.54	6.147	1.70	0.00	0.00
12	137.00	Antel/LPA-4019	2	41.00	12.74	1.00	598.47	48.511	1.00	0.00	0.00
13	137.00	ALU/RRH 2x40 AWS	3	44.00	2.16	0.85	124.24	3.545	0.85	0.00	0.00
14	137.00	RFS DB-T1-6Z-8AB-0Z Distributi	1	18.90	4.80	0.71	219.89	5.979	0.71	0.00	0.00
15	136.00	T-Arms	3	350.00	8.00	0.75	672.60	17.217	0.75	0.00	0.00
16	127.00	T-Arms	3	350.00	8.00	0.75	670.40	17.154	0.75	0.00	0.00
17	127.00	7770.00	9	35.00	5.50	0.73	225.00	6.925	0.73	0.00	0.00
18	127.00	AM-X-CD-17-65-00T-RET	3	59.50	11.31	0.80	403.84	13.502	0.80	0.00	0.00
19	127.00	Powerwave LGP21401 TMAs	12	14.10	1.29	1.00	46.88	2.386	1.00	0.00	0.00
20	127.00	Kathrein 860 10025 RET	12	1.10	0.14	1.00	7.02	0.561	1.00	0.00	0.00
21	127.00	Ericsson RRUS-11 RRUs	3	51.00	2.52	0.71	145.77	3.350	0.71	0.00	0.00
22	127.00	Ericsson RRUS 12 RRUs	3	60.00	2.70	0.75	157.44	4.111	0.75	0.00	0.00
23	127.00	Powerwave LGP13519 Diplexer	6	5.30	0.34	1.00	17.75	0.935	1.00	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	1	31.80	0.92	1.00	112.87	1.494	1.00	0.00	0.00
25	127.00	Powerwave 1001983 Bias T	3	4.40	0.21	1.00	11.69	0.684	1.00	0.00	0.00
		Totals:	**92**	**5,673.02**			**19,984.34**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	148.00	(11) 1 5/8" Coax	0.00	Inside
0.00	148.00	(2) 1 5/8" Fiber	0.00	Inside
0.00	137.00	(12) 1 5/8" Coax	0.00	Inside
0.00	137.00	(1) 1 5/8" Fiber	0.00	Inside
0.00	127.00	(12) 1 5/8" Coax	0.00	Inside
0.00	127.00	(1) 1/2" RET	0.00	Inside
0.00	127.00	(1) 3" flex Conduit	0.00	Inside
0.00	127.00	(2) 3/4" DC	0.00	Inside
0.00	127.00	(1) 7/16" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

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	59.063	81.405	35348.5	22.39	135.00	75.1	1178.	0.0
5.00		0.4375	57.886	79.771	33262.6	21.92	132.31	75.6	1131.	1371.1
10.00		0.4375	56.709	78.138	31260.4	21.45	129.62	76.2	1085.	1343.3
15.00		0.4375	55.533	76.504	29340.3	20.97	126.93	76.7	1040.	1315.5
18.00	Bot - Section 2	0.4375	54.827	75.524	28226.8	20.69	125.32	77.1	1014.	776.0
20.00		0.4375	54.356	74.870	27500.4	20.50	124.24	77.3	996.5	957.0
25.00	Top - Section 1	0.3750	53.930	63.741	23097.5	23.95	143.81	0.0	0.0	2356.3
30.00		0.3750	52.753	62.341	21608.3	23.39	140.67	73.9	806.8	1072.6
35.00		0.3750	51.576	60.940	20184.6	22.84	137.54	74.5	770.8	1048.7
40.00		0.3750	50.400	59.540	18824.8	22.29	134.40	75.2	735.7	1024.9
45.00		0.3750	49.223	58.139	17527.5	21.73	131.26	75.8	701.3	1001.1
50.00		0.3750	48.047	56.739	16291.2	21.18	128.12	76.5	667.8	977.3
55.00		0.3750	46.870	55.339	15114.5	20.63	124.99	77.1	635.2	953.4
60.00		0.3750	45.693	53.938	13995.8	20.07	121.85	77.8	603.3	929.6
62.00	Bot - Section 3	0.3750	45.223	53.378	13564.3	19.85	120.59	78.0	590.8	365.2
65.00		0.3750	44.517	52.538	12933.8	19.52	118.71	78.4	572.2	998.1
68.00	Top - Section 2	0.3125	44.436	43.763	10764.6	23.66	142.19	0.0	0.0	982.4
70.00		0.3125	43.965	43.296	10423.8	23.40	140.69	73.9	467.0	296.2
75.00		0.3125	42.789	42.129	9603.5	22.73	136.92	74.7	442.1	726.7
80.00		0.3125	41.612	40.962	8827.3	22.07	133.16	75.4	417.8	706.9
85.00		0.3125	40.435	39.795	8094.2	21.40	129.39	76.2	394.3	687.0
90.00		0.3125	39.259	38.628	7402.8	20.74	125.63	77.0	371.4	667.1
95.00		0.3125	38.082	37.461	6751.9	20.08	121.86	77.8	349.2	647.3
100.00		0.3125	36.906	36.294	6140.3	19.41	118.10	78.6	327.7	627.4
105.00		0.3125	35.729	35.128	5566.9	18.75	114.33	79.3	306.9	607.6
107.00	Bot - Section 4	0.3125	35.258	34.661	5347.9	18.48	112.83	79.7	298.7	237.5
110.00		0.3125	34.552	33.961	5030.3	18.09	110.57	80.1	286.7	635.0
112.00	Top - Section 3	0.2500	34.582	27.241	4056.7	22.98	138.33	0.0	0.0	416.2
115.00		0.2500	33.876	26.681	3811.6	22.48	135.50	75.0	221.6	275.2
120.00		0.2500	32.699	25.748	3425.3	21.65	130.80	75.9	206.3	446.0
125.00		0.2500	31.523	24.814	3066.0	20.82	126.09	76.9	191.6	430.1
127.00		0.2500	31.052	24.441	2929.7	20.49	124.21	77.3	185.8	167.6
130.00		0.2500	30.346	23.880	2732.8	19.99	121.38	77.9	177.4	246.6
135.00		0.2500	29.169	22.947	2424.7	19.16	116.68	78.9	163.7	398.4
136.00		0.2500	28.934	22.760	2366.0	19.00	115.74	79.1	161.1	77.8
137.00		0.2500	28.699	22.573	2308.2	18.83	114.80	79.3	158.4	77.1
140.00		0.2500	27.993	22.013	2140.6	18.33	111.97	79.8	150.6	227.6
145.00		0.2500	26.816	21.080	1879.6	17.50	107.27	80.8	138.1	366.6
148.00		0.2500	26.110	20.519	1733.7	17.01	104.44	81.4	130.8	212.3
149.00		0.2500	25.875	20.333	1686.8	16.84	103.50	81.6	128.4	69.5
										26722.3

Wind Loading - Shaft

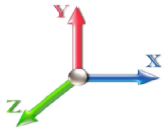
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

TES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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	465.38	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	456.11	0.650	0.000	5.00	24.740	16.08	596.8	0.0	1645.3
10.00		1.00	0.85	21.088	23.20	446.84	0.650	0.000	5.00	24.242	15.76	584.8	0.0	1612.0
15.00		1.00	0.85	21.088	23.20	437.57	0.650	0.000	5.00	23.744	15.43	572.8	0.0	1578.6
18.00	Bot - Section 2	1.00	0.88	21.884	24.07	440.09	0.650	0.000	3.00	14.008	9.11	350.7	0.0	931.2
20.00		1.00	0.90	22.375	24.61	441.18	0.650	0.000	2.00	9.366	6.09	239.7	0.0	1148.4
25.00	Top - Section 1	1.00	0.95	23.451	25.80	441.89	0.650	0.000	5.00	23.066	14.99	618.8	0.0	2827.6
30.00		1.00	0.98	24.369	26.81	446.83	0.650	0.000	5.00	22.568	14.67	629.2	0.0	1287.1
35.00		1.00	1.01	25.172	27.69	444.02	0.650	0.000	5.00	22.071	14.35	635.6	0.0	1258.5
40.00		1.00	1.04	25.890	28.48	440.03	0.650	0.000	5.00	21.573	14.02	638.9	0.0	1229.9
45.00		1.00	1.07	26.540	29.19	435.12	0.650	0.000	5.00	21.075	13.70	639.9	0.0	1201.3
50.00		1.00	1.09	27.135	29.85	429.45	0.650	0.000	5.00	20.577	13.38	638.8	0.0	1172.7
55.00		1.00	1.12	27.685	30.45	423.16	0.650	0.000	5.00	20.079	13.05	636.0	0.0	1144.1
60.00		1.00	1.14	28.197	31.02	416.33	0.650	0.000	5.00	19.582	12.73	631.7	0.0	1115.5
62.00	Bot - Section 3	1.00	1.14	28.392	31.23	413.47	0.650	0.000	2.00	7.693	5.00	249.9	0.0	438.2
65.00		1.00	1.16	28.676	31.54	409.04	0.650	0.000	3.00	11.549	7.51	378.9	0.0	1197.7
68.00	Top - Section 2	1.00	1.17	28.950	31.84	404.47	0.650	0.000	3.00	11.370	7.39	376.6	0.0	1178.8
70.00		1.00	1.17	29.127	32.04	407.14	0.650	0.000	2.00	7.480	4.86	249.3	0.0	355.5
75.00		1.00	1.19	29.553	32.51	399.13	0.650	0.000	5.00	18.353	11.93	620.5	0.0	872.1
80.00		1.00	1.21	29.958	32.95	390.80	0.650	0.000	5.00	17.855	11.61	611.9	0.0	848.2
85.00		1.00	1.22	30.342	33.38	382.18	0.650	0.000	5.00	17.357	11.28	602.5	0.0	824.4
90.00		1.00	1.24	30.710	33.78	373.30	0.650	0.000	5.00	16.859	10.96	592.3	0.0	800.6
95.00		1.00	1.25	31.061	34.17	364.18	0.650	0.000	5.00	16.361	10.63	581.4	0.0	776.8
100.00		1.00	1.27	31.399	34.54	354.84	0.650	0.000	5.00	15.863	10.31	569.8	0.0	752.9
105.00		1.00	1.28	31.723	34.89	345.30	0.650	0.000	5.00	15.366	9.99	557.6	0.0	729.1
107.00	Bot - Section 4	1.00	1.28	31.849	35.03	341.43	0.650	0.000	2.00	6.007	3.90	218.9	0.0	285.0
110.00		1.00	1.29	32.035	35.24	335.56	0.650	0.000	3.00	8.988	5.84	329.4	0.0	762.0
112.00	Top - Section 3	1.00	1.30	32.157	35.37	331.62	0.650	0.000	2.00	5.892	3.83	216.8	0.0	499.4
115.00		1.00	1.30	32.336	35.57	330.54	0.650	0.000	3.00	8.689	5.65	321.4	0.0	330.3
120.00		1.00	1.32	32.627	35.89	320.49	0.650	0.000	5.00	14.084	9.15	525.7	0.0	535.2
125.00		1.00	1.33	32.909	36.20	310.29	0.650	0.000	5.00	13.586	8.83	511.5	0.0	516.1
127.00	Appurtenance(s)	1.00	1.33	33.019	36.32	306.17	0.650	0.000	2.00	5.295	3.44	200.0	0.0	201.1
130.00		1.00	1.34	33.182	36.50	299.94	0.650	0.000	3.00	7.793	5.07	295.8	0.0	296.0
135.00		1.00	1.35	33.446	36.79	289.46	0.650	0.000	5.00	12.590	8.18	481.7	0.0	478.0
136.00	Appurtenance(s)	1.00	1.35	33.498	36.85	287.35	0.650	0.000	1.00	2.458	1.60	94.2	0.0	93.3
137.00	Appurtenance(s)	1.00	1.35	33.550	36.90	285.23	0.650	0.000	1.00	2.438	1.58	93.6	0.0	92.6
140.00		1.00	1.36	33.703	37.07	278.85	0.650	0.000	3.00	7.196	4.68	277.4	0.0	273.1
145.00		1.00	1.37	33.953	37.35	268.12	0.650	0.000	5.00	11.595	7.54	450.4	0.0	439.9
148.00	Appurtenance(s)	1.00	1.37	34.100	37.51	261.62	0.650	0.000	3.00	6.718	4.37	262.1	0.0	254.8
149.00		1.00	1.38	34.148	37.56	259.45	0.650	0.000	1.00	2.199	1.43	85.9	0.0	83.4
								Totals:	**149.00**			**17,169.0**		**32,066.8**

Discrete Appurtenance Forces

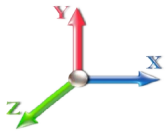
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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	148.00	Ericsson KRY112 144/1	3	34.100	37.510	0.56	0.80	0.69	39.60	0.000	0.000	41.34	0.00	0.00
2	148.00	AIR21 B2A B4P	3	34.100	37.510	0.69	0.80	12.57	329.40	0.000	0.000	754.39	0.00	0.00
3	148.00	AIR21 B2A B4P	3	34.100	37.510	0.69	0.80	12.57	325.44	0.000	0.000	754.39	0.00	0.00
4	148.00	APXVAARR24_43-U-NA2	3	34.100	37.510	0.56	0.80	34.00	460.80	0.000	0.000	2040.73	0.00	0.00
5	148.00	(3) Stabilizer Kit (4' FW)	1	34.100	37.510	1.00	1.00	3.70	168.00	0.000	0.000	222.06	0.00	0.00
6	148.00	T-Arms	1	34.100	37.510	0.56	0.75	8.44	600.00	0.000	0.000	506.38	0.00	0.00
7	148.00	4449	3	34.100	37.510	0.54	0.80	2.65	252.00	0.000	0.000	159.23	0.00	0.00
8	148.00	HRK12 (Handrail Kit)	1	34.100	37.510	1.00	1.00	6.75	314.06	0.000	0.000	405.11	0.00	0.00
9	137.00	RFS DB-T1-6Z-8AB-0Z	1	33.550	36.905	0.57	0.80	2.73	22.68	0.000	0.000	160.99	0.00	0.00
10	137.00	ALU/RRH 2x40 AWS	3	33.550	36.905	0.85	1.00	5.51	158.40	0.000	0.000	325.24	0.00	0.00
11	137.00	Antel/LPA-4019	2	33.550	36.905	0.80	0.80	20.38	98.40	0.000	0.000	1203.63	0.00	0.00
12	137.00	Antel/LPA-80080-6CF	4	33.550	36.905	1.36	0.80	23.56	100.80	0.000	0.000	1390.89	0.00	0.00
13	137.00	Antel/BXA-171085-12BF	3	33.550	36.905	0.67	0.80	9.56	54.00	0.000	0.000	564.25	0.00	0.00
14	137.00	Antel/BXA-70063-6CF	3	33.550	36.905	0.58	0.80	13.26	61.20	0.000	0.000	783.13	0.00	0.00
15	136.00	T-Arms	3	33.498	36.848	0.56	0.75	13.50	1260.00	0.000	0.000	795.92	0.00	0.00
16	127.00	Kathrein 860 10025 RET	12	33.019	36.321	0.80	0.80	1.34	15.84	0.000	0.000	78.10	0.00	0.00
17	127.00	T-Arms	3	33.019	36.321	0.56	0.75	13.50	1260.00	0.000	0.000	784.53	0.00	0.00
18	127.00	7770.00	9	33.019	36.321	0.58	0.80	28.91	378.00	0.000	0.000	1679.94	0.00	0.00
19	127.00	AM-X-CD-17-65-00T-RET	3	33.019	36.321	0.64	0.80	21.72	214.20	0.000	0.000	1261.94	0.00	0.00
20	127.00	Powerwave LGP21401	12	33.019	36.321	0.80	0.80	12.38	203.04	0.000	0.000	719.67	0.00	0.00
21	127.00	Ericsson RRUS 12 RRUs	3	33.019	36.321	0.60	0.80	4.86	216.00	0.000	0.000	282.43	0.00	0.00
22	127.00	Ericsson RRUS-11 RRUs	3	33.019	36.321	0.57	0.80	4.29	183.60	0.000	0.000	249.54	0.00	0.00
23	127.00	Powerwave LGP13519	6	33.019	36.321	0.80	0.80	1.63	38.16	0.000	0.000	94.84	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	1	33.019	36.321	0.80	0.80	0.74	38.16	0.000	0.000	42.77	0.00	0.00
25	127.00	Powerwave 1001983 Bias	3	33.019	36.321	0.80	0.80	0.50	15.84	0.000	0.000	29.29	0.00	0.00
							Totals:		**6,807.62**			**15,330.74**		

Total Applied Force Summary

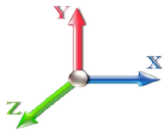
Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

IES Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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		596.83	1899.44	0.00	0.00
10.00		584.82	1866.09	0.00	0.00
15.00		572.81	1832.73	0.00	0.00
18.00		350.69	1083.63	0.00	0.00
20.00		239.73	1250.02	0.00	0.00
25.00		618.82	3081.69	0.00	0.00
30.00		629.15	1541.18	0.00	0.00
35.00		635.57	1512.59	0.00	0.00
40.00		638.95	1484.00	0.00	0.00
45.00		639.87	1455.41	0.00	0.00
50.00		638.77	1426.82	0.00	0.00
55.00		635.95	1398.23	0.00	0.00
60.00		631.65	1369.63	0.00	0.00
62.00		249.88	539.85	0.00	0.00
65.00		378.88	1350.16	0.00	0.00
68.00		376.56	1331.29	0.00	0.00
70.00		249.26	457.13	0.00	0.00
75.00		620.48	1126.16	0.00	0.00
80.00		611.91	1102.33	0.00	0.00
85.00		602.49	1078.50	0.00	0.00
90.00		592.29	1054.68	0.00	0.00
95.00		581.38	1030.85	0.00	0.00
100.00		569.81	1007.03	0.00	0.00
105.00		557.63	983.20	0.00	0.00
107.00		218.86	386.61	0.00	0.00
110.00		329.39	914.48	0.00	0.00
112.00		216.76	601.07	0.00	0.00
115.00		321.44	482.73	0.00	0.00
120.00		525.68	789.31	0.00	0.00
125.00		511.48	770.25	0.00	0.00
127.00	(55) attachments	5423.07	2865.60	0.00	0.00
130.00		295.83	393.96	0.00	0.00
135.00		481.74	641.35	0.00	0.00
136.00	(3) attachments	890.13	1385.98	0.00	0.00
137.00	(16) attachments	4521.72	620.70	0.00	0.00
140.00		277.45	322.20	0.00	0.00
145.00		450.37	521.75	0.00	0.00
148.00	(18) attachments	5145.70	2793.20	0.00	0.00
149.00		85.92	83.41	0.00	0.00
	Totals:	**32,499.73**	**45,835.24**	**0.00**	**0.00**

Calculated Forces

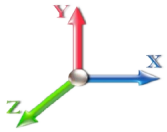
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 101 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 22

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	-45.80	-32.55	0.00	-3443.5	0.00	3443.59	5499.39	2749.69	13252.7	6636.23	0.00	0.000	0.000	0.527
5.00	-43.82	-32.06	0.00	-3280.8	0.00	3280.82	5429.06	2714.53	12818.7	6418.90	0.07	-0.135	0.000	0.519
10.00	-41.88	-31.57	0.00	-3120.5	0.00	3120.53	5357.09	2678.54	12387.8	6203.11	0.29	-0.272	0.000	0.511
15.00	-39.99	-31.06	0.00	-2962.6	0.00	2962.69	5283.48	2641.74	11960.1	5988.97	0.65	-0.411	0.000	0.502
18.00	-38.87	-30.75	0.00	-2869.5	0.00	2869.51	5238.53	2619.26	11705.2	5861.33	0.93	-0.495	0.000	0.497
20.00	-37.57	-30.57	0.00	-2808.0	0.00	2808.01	5208.23	2604.11	11536.0	5776.60	1.15	-0.553	0.000	0.493
25.00	-34.42	-30.00	0.00	-2655.1	0.00	2655.19	4201.23	2100.61	9252.96	4633.35	1.81	-0.694	0.000	0.581
30.00	-32.81	-29.44	0.00	-2505.2	0.00	2505.20	4145.44	2072.72	8928.09	4470.68	2.61	-0.837	0.000	0.568
35.00	-31.23	-28.86	0.00	-2358.0	0.00	2358.02	4088.00	2044.00	8605.21	4309.00	3.58	-0.997	0.000	0.555
40.00	-29.68	-28.28	0.00	-2213.7	0.00	2213.71	4028.93	2014.47	8284.56	4148.44	4.71	-1.158	0.000	0.541
45.00	-28.16	-27.69	0.00	-2072.3	0.00	2072.31	3968.22	1984.11	7966.37	3989.11	6.01	-1.320	0.000	0.527
50.00	-26.67	-27.09	0.00	-1933.8	0.00	1933.87	3905.86	1952.93	7650.88	3831.13	7.48	-1.482	0.000	0.512
55.00	-25.22	-26.49	0.00	-1798.4	0.00	1798.41	3841.87	1920.93	7338.34	3674.63	9.12	-1.645	0.000	0.496
60.00	-23.81	-25.86	0.00	-1665.9	0.00	1665.97	3776.23	1888.12	7028.98	3519.72	10.93	-1.808	0.000	0.480
62.00	-23.25	-25.63	0.00	-1614.2	0.00	1614.24	3749.52	1874.76	6906.19	3458.23	11.70	-1.875	0.000	0.473
65.00	-21.87	-25.24	0.00	-1537.3	0.00	1537.35	3708.96	1854.48	6723.05	3366.52	12.91	-1.974	0.000	0.463
68.00	-20.51	-24.85	0.00	-1461.6	0.00	1461.61	2897.69	1448.84	5257.67	2632.74	14.18	-2.073	0.000	0.563
70.00	-20.01	-24.63	0.00	-1411.9	0.00	1411.91	2878.95	1439.48	5167.56	2587.62	15.07	-2.139	0.000	0.553
75.00	-18.83	-24.03	0.00	-1288.7	0.00	1288.77	2830.96	1415.48	4943.48	2475.42	17.41	-2.324	0.000	0.528
80.00	-17.68	-23.42	0.00	-1168.6	0.00	1168.64	2781.33	1390.66	4721.30	2364.16	19.94	-2.506	0.000	0.501
85.00	-16.56	-22.82	0.00	-1051.5	0.00	1051.53	2730.06	1365.03	4501.25	2253.97	22.66	-2.684	0.000	0.473
90.00	-15.47	-22.23	0.00	-937.41	0.00	937.41	2677.14	1338.57	4283.57	2144.97	25.56	-2.859	0.000	0.443
95.00	-14.41	-21.64	0.00	-826.27	0.00	826.27	2622.59	1311.30	4068.50	2037.27	28.65	-3.029	0.000	0.411
100.00	-13.38	-21.05	0.00	-718.09	0.00	718.09	2566.40	1283.20	3856.28	1931.01	31.91	-3.191	0.000	0.377
105.00	-12.39	-20.46	0.00	-612.84	0.00	612.84	2508.57	1254.28	3647.16	1826.29	35.33	-3.346	0.000	0.341
107.00	-11.99	-20.23	0.00	-571.92	0.00	571.92	2484.97	1242.49	3564.43	1784.86	36.75	-3.406	0.000	0.326
110.00	-11.07	-19.86	0.00	-511.22	0.00	511.22	2449.09	1224.55	3441.37	1723.24	38.92	-3.493	0.000	0.301
112.00	-10.46	-19.62	0.00	-471.49	0.00	471.49	1823.39	911.69	2573.73	1288.78	40.39	-3.548	0.000	0.372
115.00	-9.96	-19.29	0.00	-412.62	0.00	412.62	1799.96	899.98	2488.04	1245.87	42.65	-3.626	0.000	0.337
120.00	-9.17	-18.74	0.00	-316.17	0.00	316.17	1759.59	879.80	2346.51	1175.00	46.52	-3.762	0.000	0.275
125.00	-8.41	-18.18	0.00	-222.49	0.00	222.49	1717.59	858.79	2206.80	1105.04	50.52	-3.874	0.000	0.207
127.00	-5.91	-12.58	0.00	-186.12	0.00	186.12	1700.33	850.16	2151.49	1077.34	52.15	-3.912	0.000	0.176
130.00	-5.53	-12.27	0.00	-148.37	0.00	148.37	1673.94	836.97	2069.17	1036.12	54.62	-3.961	0.000	0.147
135.00	-4.91	-11.75	0.00	-87.03	0.00	87.03	1628.66	814.33	1933.84	968.36	58.81	-4.022	0.000	0.093
136.00	-3.59	-10.76	0.00	-75.29	0.00	75.29	1619.40	809.70	1907.07	954.95	59.65	-4.032	0.000	0.081
137.00	-3.29	-6.21	0.00	-64.53	0.00	64.53	1610.09	805.04	1880.41	941.60	60.49	-4.040	0.000	0.071
140.00	-2.99	-5.91	0.00	-45.90	0.00	45.90	1581.73	790.87	1801.05	901.87	63.04	-4.060	0.000	0.053
145.00	-2.50	-5.42	0.00	-16.36	0.00	16.36	1533.17	766.58	1671.06	836.77	67.30	-4.081	0.000	0.021
148.00	-0.08	-0.09	0.00	-0.09	0.00	0.09	1503.24	751.62	1594.49	798.43	69.86	-4.085	0.000	0.000
149.00	0.00	-0.09	0.00	0.00	0.00	0.00	1493.13	746.57	1569.22	785.78	70.72	-4.085	0.000	0.000

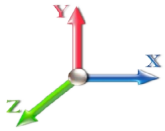
Wind Loading - Shaft

Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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	465.38	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	456.11	0.650	0.000	5.00	24.740	16.08	596.8	0.0	1234.0
10.00		1.00	0.85	21.088	23.20	446.84	0.650	0.000	5.00	24.242	15.76	584.8	0.0	1209.0
15.00		1.00	0.85	21.088	23.20	437.57	0.650	0.000	5.00	23.744	15.43	572.8	0.0	1184.0
18.00	Bot - Section 2	1.00	0.88	21.884	24.07	440.09	0.650	0.000	3.00	14.008	9.11	350.7	0.0	698.4
20.00		1.00	0.90	22.375	24.61	441.18	0.650	0.000	2.00	9.366	6.09	239.7	0.0	861.3
25.00	Top - Section 1	1.00	0.95	23.451	25.80	441.89	0.650	0.000	5.00	23.066	14.99	618.8	0.0	2120.7
30.00		1.00	0.98	24.369	26.81	446.83	0.650	0.000	5.00	22.568	14.67	629.2	0.0	965.3
35.00		1.00	1.01	25.172	27.69	444.02	0.650	0.000	5.00	22.071	14.35	635.6	0.0	943.9
40.00		1.00	1.04	25.890	28.48	440.03	0.650	0.000	5.00	21.573	14.02	638.9	0.0	922.4
45.00		1.00	1.07	26.540	29.19	435.12	0.650	0.000	5.00	21.075	13.70	639.9	0.0	901.0
50.00		1.00	1.09	27.135	29.85	429.45	0.650	0.000	5.00	20.577	13.38	638.8	0.0	879.5
55.00		1.00	1.12	27.685	30.45	423.16	0.650	0.000	5.00	20.079	13.05	636.0	0.0	858.1
60.00		1.00	1.14	28.197	31.02	416.33	0.650	0.000	5.00	19.582	12.73	631.7	0.0	836.7
62.00	Bot - Section 3	1.00	1.14	28.392	31.23	413.47	0.650	0.000	2.00	7.693	5.00	249.9	0.0	328.7
65.00		1.00	1.16	28.676	31.54	409.04	0.650	0.000	3.00	11.549	7.51	378.9	0.0	898.3
68.00	Top - Section 2	1.00	1.17	28.950	31.84	404.47	0.650	0.000	3.00	11.370	7.39	376.6	0.0	884.1
70.00		1.00	1.17	29.127	32.04	407.14	0.650	0.000	2.00	7.480	4.86	249.3	0.0	266.6
75.00		1.00	1.19	29.553	32.51	399.13	0.650	0.000	5.00	18.353	11.93	620.5	0.0	654.0
80.00		1.00	1.21	29.958	32.95	390.80	0.650	0.000	5.00	17.855	11.61	611.9	0.0	636.2
85.00		1.00	1.22	30.342	33.38	382.18	0.650	0.000	5.00	17.357	11.28	602.5	0.0	618.3
90.00		1.00	1.24	30.710	33.78	373.30	0.650	0.000	5.00	16.859	10.96	592.3	0.0	600.4
95.00		1.00	1.25	31.061	34.17	364.18	0.650	0.000	5.00	16.361	10.63	581.4	0.0	582.6
100.00		1.00	1.27	31.399	34.54	354.84	0.650	0.000	5.00	15.863	10.31	569.8	0.0	564.7
105.00		1.00	1.28	31.723	34.89	345.30	0.650	0.000	5.00	15.366	9.99	557.6	0.0	546.8
107.00	Bot - Section 4	1.00	1.28	31.849	35.03	341.43	0.650	0.000	2.00	6.007	3.90	218.9	0.0	213.7
110.00		1.00	1.29	32.035	35.24	335.56	0.650	0.000	3.00	8.988	5.84	329.4	0.0	571.5
112.00	Top - Section 3	1.00	1.30	32.157	35.37	331.62	0.650	0.000	2.00	5.892	3.83	216.8	0.0	374.6
115.00		1.00	1.30	32.336	35.57	330.54	0.650	0.000	3.00	8.689	5.65	321.4	0.0	247.7
120.00		1.00	1.32	32.627	35.89	320.49	0.650	0.000	5.00	14.084	9.15	525.7	0.0	401.4
125.00		1.00	1.33	32.909	36.20	310.29	0.650	0.000	5.00	13.586	8.83	511.5	0.0	387.1
127.00	Appurtenance(s)	1.00	1.33	33.019	36.32	306.17	0.650	0.000	2.00	5.295	3.44	200.0	0.0	150.8
130.00		1.00	1.34	33.182	36.50	299.94	0.650	0.000	3.00	7.793	5.07	295.8	0.0	222.0
135.00		1.00	1.35	33.446	36.79	289.46	0.650	0.000	5.00	12.590	8.18	481.7	0.0	358.5
136.00	Appurtenance(s)	1.00	1.35	33.498	36.85	287.35	0.650	0.000	1.00	2.458	1.60	94.2	0.0	70.0
137.00	Appurtenance(s)	1.00	1.35	33.550	36.90	285.23	0.650	0.000	1.00	2.438	1.58	93.6	0.0	69.4
140.00		1.00	1.36	33.703	37.07	278.85	0.650	0.000	3.00	7.196	4.68	277.4	0.0	204.8
145.00		1.00	1.37	33.953	37.35	268.12	0.650	0.000	5.00	11.595	7.54	450.4	0.0	329.9
148.00	Appurtenance(s)	1.00	1.37	34.100	37.51	261.62	0.650	0.000	3.00	6.718	4.37	262.1	0.0	191.1
149.00		1.00	1.38	34.148	37.56	259.45	0.650	0.000	1.00	2.199	1.43	85.9	0.0	62.6
								Totals:	**149.00**			**17,169.0**		**24,050.1**

Discrete Appurtenance Forces

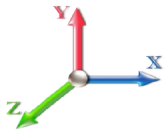
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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	148.00	Ericsson KRY112 144/1	3	34.100	37.510	0.56	0.80	0.69	29.70	0.000	0.000	41.34	0.00	0.00
2	148.00	AIR21 B2A B4P	3	34.100	37.510	0.69	0.80	12.57	247.05	0.000	0.000	754.39	0.00	0.00
3	148.00	AIR21 B2A B4P	3	34.100	37.510	0.69	0.80	12.57	244.08	0.000	0.000	754.39	0.00	0.00
4	148.00	APXVAARR24_43-U-NA2	3	34.100	37.510	0.56	0.80	34.00	345.60	0.000	0.000	2040.73	0.00	0.00
5	148.00	(3) Stabilizer Kit (4' FW)	1	34.100	37.510	1.00	1.00	3.70	126.00	0.000	0.000	222.06	0.00	0.00
6	148.00	T-Arms	1	34.100	37.510	0.56	0.75	8.44	450.00	0.000	0.000	506.38	0.00	0.00
7	148.00	4449	3	34.100	37.510	0.54	0.80	2.65	189.00	0.000	0.000	159.23	0.00	0.00
8	148.00	HRK12 (Handrail Kit)	1	34.100	37.510	1.00	1.00	6.75	235.55	0.000	0.000	405.11	0.00	0.00
9	137.00	RFS DB-T1-6Z-8AB-0Z	1	33.550	36.905	0.57	0.80	2.73	17.01	0.000	0.000	160.99	0.00	0.00
10	137.00	ALU/RRH 2x40 AWS	3	33.550	36.905	0.85	1.00	5.51	118.80	0.000	0.000	325.24	0.00	0.00
11	137.00	Antel/LPA-4019	2	33.550	36.905	0.80	0.80	20.38	73.80	0.000	0.000	1203.63	0.00	0.00
12	137.00	Antel/LPA-80080-6CF	4	33.550	36.905	1.36	0.80	23.56	75.60	0.000	0.000	1390.89	0.00	0.00
13	137.00	Antel/BXA-171085-12BF	3	33.550	36.905	0.67	0.80	9.56	40.50	0.000	0.000	564.25	0.00	0.00
14	137.00	Antel/BXA-70063-6CF	3	33.550	36.905	0.58	0.80	13.26	45.90	0.000	0.000	783.13	0.00	0.00
15	136.00	T-Arms	3	33.498	36.848	0.56	0.75	13.50	945.00	0.000	0.000	795.92	0.00	0.00
16	127.00	Kathrein 860 10025 RET	12	33.019	36.321	0.80	0.80	1.34	11.88	0.000	0.000	78.10	0.00	0.00
17	127.00	T-Arms	3	33.019	36.321	0.56	0.75	13.50	945.00	0.000	0.000	784.53	0.00	0.00
18	127.00	7770.00	9	33.019	36.321	0.58	0.80	28.91	283.50	0.000	0.000	1679.94	0.00	0.00
19	127.00	AM-X-CD-17-65-00T-RET	3	33.019	36.321	0.64	0.80	21.72	160.65	0.000	0.000	1261.94	0.00	0.00
20	127.00	Powerwave LGP21401	12	33.019	36.321	0.80	0.80	12.38	152.28	0.000	0.000	719.67	0.00	0.00
21	127.00	Ericsson RRUS 12 RRUs	3	33.019	36.321	0.60	0.80	4.86	162.00	0.000	0.000	282.43	0.00	0.00
22	127.00	Ericsson RRUS-11 RRUs	3	33.019	36.321	0.57	0.80	4.29	137.70	0.000	0.000	249.54	0.00	0.00
23	127.00	Powerwave LGP13519	6	33.019	36.321	0.80	0.80	1.63	28.62	0.000	0.000	94.84	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	1	33.019	36.321	0.80	0.80	0.74	28.62	0.000	0.000	42.77	0.00	0.00
25	127.00	Powerwave 1001983 Bias	3	33.019	36.321	0.80	0.80	0.50	11.88	0.000	0.000	29.29	0.00	0.00
							Totals:		**5,105.72**			**15,330.74**		

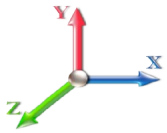
Total Applied Force Summary

Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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		596.83	1424.58	0.00	0.00
10.00		584.82	1399.57	0.00	0.00
15.00		572.81	1374.55	0.00	0.00
18.00		350.69	812.72	0.00	0.00
20.00		239.73	937.52	0.00	0.00
25.00		618.82	2311.27	0.00	0.00
30.00		629.15	1155.89	0.00	0.00
35.00		635.57	1134.44	0.00	0.00
40.00		638.95	1113.00	0.00	0.00
45.00		639.87	1091.56	0.00	0.00
50.00		638.77	1070.11	0.00	0.00
55.00		635.95	1048.67	0.00	0.00
60.00		631.65	1027.23	0.00	0.00
62.00		249.88	404.89	0.00	0.00
65.00		378.88	1012.62	0.00	0.00
68.00		376.56	998.47	0.00	0.00
70.00		249.26	342.85	0.00	0.00
75.00		620.48	844.62	0.00	0.00
80.00		611.91	826.75	0.00	0.00
85.00		602.49	808.88	0.00	0.00
90.00		592.29	791.01	0.00	0.00
95.00		581.38	773.14	0.00	0.00
100.00		569.81	755.27	0.00	0.00
105.00		557.63	737.40	0.00	0.00
107.00		218.86	289.96	0.00	0.00
110.00		329.39	685.86	0.00	0.00
112.00		216.76	450.81	0.00	0.00
115.00		321.44	362.05	0.00	0.00
120.00		525.68	591.98	0.00	0.00
125.00		511.48	577.69	0.00	0.00
127.00	(55) attachments	5423.07	2149.20	0.00	0.00
130.00		295.83	295.47	0.00	0.00
135.00		481.74	481.01	0.00	0.00
136.00	(3) attachments	890.13	1039.49	0.00	0.00
137.00	(16) attachments	4521.72	465.52	0.00	0.00
140.00		277.45	241.65	0.00	0.00
145.00		450.37	391.31	0.00	0.00
148.00	(18) attachments	5145.70	2094.90	0.00	0.00
149.00		85.92	62.55	0.00	0.00
	Totals:	**32,499.73**	**34,376.43**	**0.00**	**0.00**

Calculated Forces

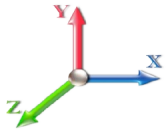
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 101 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 22

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	-34.34	-32.54	0.00	-3420.8	0.00	3420.85	5499.39	2749.69	13252.7	6636.23	0.00	0.000	0.000	0.522
5.00	-32.84	-32.02	0.00	-3258.1	0.00	3258.16	5429.06	2714.53	12818.7	6418.90	0.07	-0.134	0.000	0.514
10.00	-31.37	-31.50	0.00	-3098.0	0.00	3098.06	5357.09	2678.54	12387.8	6203.11	0.29	-0.270	0.000	0.505
15.00	-29.93	-30.98	0.00	-2940.5	0.00	2940.55	5283.48	2641.74	11960.1	5988.97	0.64	-0.408	0.000	0.497
18.00	-29.09	-30.66	0.00	-2847.6	0.00	2847.61	5238.53	2619.26	11705.2	5861.33	0.93	-0.492	0.000	0.492
20.00	-28.10	-30.46	0.00	-2786.2	0.00	2786.29	5208.23	2604.11	11536.0	5776.60	1.15	-0.549	0.000	0.488
25.00	-25.72	-29.88	0.00	-2633.9	0.00	2633.99	4201.23	2100.61	9252.96	4633.35	1.80	-0.689	0.000	0.575
30.00	-24.50	-29.30	0.00	-2484.6	0.00	2484.60	4145.44	2072.72	8928.09	4470.68	2.59	-0.830	0.000	0.562
35.00	-23.29	-28.71	0.00	-2338.1	0.00	2338.10	4088.00	2044.00	8605.21	4309.00	3.55	-0.989	0.000	0.549
40.00	-22.11	-28.11	0.00	-2194.5	0.00	2194.55	4028.93	2014.47	8284.56	4148.44	4.67	-1.149	0.000	0.535
45.00	-20.96	-27.51	0.00	-2053.9	0.00	2053.99	3968.22	1984.11	7966.37	3989.11	5.96	-1.309	0.000	0.520
50.00	-19.83	-26.90	0.00	-1916.4	0.00	1916.45	3905.86	1952.93	7650.88	3831.13	7.42	-1.470	0.000	0.505
55.00	-18.72	-26.29	0.00	-1781.9	0.00	1781.95	3841.87	1920.93	7338.34	3674.63	9.05	-1.632	0.000	0.490
60.00	-17.67	-25.66	0.00	-1650.5	0.00	1650.51	3776.23	1888.12	7028.98	3519.72	10.84	-1.793	0.000	0.474
62.00	-17.23	-25.42	0.00	-1599.1	0.00	1599.19	3749.52	1874.76	6906.19	3458.23	11.61	-1.859	0.000	0.467
65.00	-16.19	-25.04	0.00	-1522.9	0.00	1522.92	3708.96	1854.48	6723.05	3366.52	12.81	-1.958	0.000	0.457
68.00	-15.17	-24.65	0.00	-1447.8	0.00	1447.80	2897.69	1448.84	5257.67	2632.74	14.07	-2.056	0.000	0.555
70.00	-14.78	-24.42	0.00	-1398.5	0.00	1398.51	2878.95	1439.48	5167.56	2587.62	14.95	-2.121	0.000	0.546
75.00	-13.89	-23.81	0.00	-1276.4	0.00	1276.41	2830.96	1415.48	4943.48	2475.42	17.27	-2.304	0.000	0.521
80.00	-13.02	-23.21	0.00	-1157.3	0.00	1157.35	2781.33	1390.66	4721.30	2364.16	19.78	-2.484	0.000	0.494
85.00	-12.17	-22.61	0.00	-1041.3	0.00	1041.32	2730.06	1365.03	4501.25	2253.97	22.47	-2.661	0.000	0.467
90.00	-11.34	-22.01	0.00	-928.29	0.00	928.29	2677.14	1338.57	4283.57	2144.97	25.36	-2.834	0.000	0.437
95.00	-10.53	-21.42	0.00	-818.25	0.00	818.25	2622.59	1311.30	4068.50	2037.27	28.41	-3.002	0.000	0.406
100.00	-9.75	-20.84	0.00	-711.15	0.00	711.15	2566.40	1283.20	3856.28	1931.01	31.65	-3.163	0.000	0.372
105.00	-9.01	-20.26	0.00	-606.96	0.00	606.96	2508.57	1254.28	3647.16	1826.29	35.04	-3.316	0.000	0.336
107.00	-8.71	-20.03	0.00	-566.45	0.00	566.45	2484.97	1242.49	3564.43	1784.86	36.44	-3.376	0.000	0.321
110.00	-8.02	-19.67	0.00	-506.36	0.00	506.36	2449.09	1224.55	3441.37	1723.24	38.59	-3.462	0.000	0.297
112.00	-7.56	-19.44	0.00	-467.01	0.00	467.01	1823.39	911.69	2573.73	1288.78	40.05	-3.517	0.000	0.367
115.00	-7.18	-19.11	0.00	-408.71	0.00	408.71	1799.96	899.98	2488.04	1245.87	42.29	-3.594	0.000	0.332
120.00	-6.59	-18.56	0.00	-313.17	0.00	313.17	1759.59	879.80	2346.51	1175.00	46.12	-3.729	0.000	0.271
125.00	-6.02	-18.02	0.00	-220.38	0.00	220.38	1717.59	858.79	2206.80	1105.04	50.09	-3.840	0.000	0.203
127.00	-4.23	-12.47	0.00	-184.35	0.00	184.35	1700.33	850.16	2151.49	1077.34	51.71	-3.877	0.000	0.174
130.00	-3.95	-12.15	0.00	-146.95	0.00	146.95	1673.94	836.97	2069.17	1036.12	54.16	-3.925	0.000	0.144
135.00	-3.49	-11.64	0.00	-86.18	0.00	86.18	1628.66	814.33	1933.84	968.36	58.30	-3.986	0.000	0.091
136.00	-2.52	-10.68	0.00	-74.54	0.00	74.54	1619.40	809.70	1907.07	954.95	59.14	-3.996	0.000	0.080
137.00	-2.37	-6.14	0.00	-63.86	0.00	63.86	1610.09	805.04	1880.41	941.60	59.98	-4.004	0.000	0.069
140.00	-2.14	-5.85	0.00	-45.44	0.00	45.44	1581.73	790.87	1801.05	901.87	62.50	-4.024	0.000	0.052
145.00	-1.78	-5.37	0.00	-16.20	0.00	16.20	1533.17	766.58	1671.06	836.77	66.72	-4.045	0.000	0.021
148.00	-0.06	-0.09	0.00	-0.09	0.00	0.09	1503.24	751.62	1594.49	798.43	69.26	-4.048	0.000	0.000
149.00	0.00	-0.09	0.00	0.00	0.00	0.00	1493.13	746.57	1569.22	785.78	70.11	-4.048	0.000	0.000

Wind Loading - Shaft

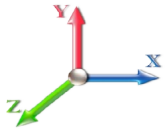
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

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 22

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	1.656	5.00	26.120	31.34	178.2	617.7	2263.0
10.00		1.00	0.85	5.168	5.68	0.00	1.200	1.775	5.00	25.721	30.87	175.5	650.2	2262.2
15.00		1.00	0.85	5.168	5.68	0.00	1.200	1.848	5.00	25.285	30.34	172.5	664.3	2243.0
18.00	Bot - Section 2	1.00	0.88	5.363	5.90	0.00	1.200	1.882	3.00	14.949	17.94	105.8	401.2	1332.3
20.00		1.00	0.90	5.483	6.03	0.00	1.200	1.902	2.00	10.000	12.00	72.4	271.7	1420.1
25.00	Top - Section 1	1.00	0.95	5.747	6.32	0.00	1.200	1.945	5.00	24.687	29.62	187.3	680.8	3508.4
30.00		1.00	0.98	5.972	6.57	0.00	1.200	1.981	5.00	24.219	29.06	190.9	679.1	1966.2
35.00		1.00	1.01	6.169	6.79	0.00	1.200	2.012	5.00	23.747	28.50	193.4	675.2	1933.7
40.00		1.00	1.04	6.345	6.98	0.00	1.200	2.039	5.00	23.272	27.93	194.9	669.6	1899.5
45.00		1.00	1.07	6.504	7.15	0.00	1.200	2.063	5.00	22.794	27.35	195.7	662.6	1863.9
50.00		1.00	1.09	6.650	7.32	0.00	1.200	2.085	5.00	22.315	26.78	195.9	654.6	1827.3
55.00		1.00	1.12	6.785	7.46	0.00	1.200	2.105	5.00	21.833	26.20	195.5	645.6	1789.7
60.00		1.00	1.14	6.910	7.60	0.00	1.200	2.123	5.00	21.351	25.62	194.8	635.8	1751.3
62.00	Bot - Section 3	1.00	1.14	6.958	7.65	0.00	1.200	2.130	2.00	8.403	10.08	77.2	252.7	690.9
65.00		1.00	1.16	7.028	7.73	0.00	1.200	2.140	3.00	12.619	15.14	117.1	380.2	1577.9
68.00	Top - Section 2	1.00	1.17	7.095	7.80	0.00	1.200	2.150	3.00	12.445	14.93	116.5	376.3	1555.2
70.00		1.00	1.17	7.138	7.85	0.00	1.200	2.156	2.00	8.199	9.84	77.3	249.1	604.6
75.00		1.00	1.19	7.243	7.97	0.00	1.200	2.171	5.00	20.162	24.19	192.8	611.3	1483.3
80.00		1.00	1.21	7.342	8.08	0.00	1.200	2.185	5.00	19.676	23.61	190.7	599.3	1447.5
85.00		1.00	1.22	7.436	8.18	0.00	1.200	2.198	5.00	19.189	23.03	188.4	586.9	1411.3
90.00		1.00	1.24	7.526	8.28	0.00	1.200	2.211	5.00	18.702	22.44	185.8	574.1	1374.7
95.00		1.00	1.25	7.612	8.37	0.00	1.200	2.223	5.00	18.214	21.86	183.0	561.0	1337.8
100.00		1.00	1.27	7.695	8.46	0.00	1.200	2.234	5.00	17.726	21.27	180.0	547.6	1300.5
105.00		1.00	1.28	7.774	8.55	0.00	1.200	2.245	5.00	17.237	20.68	176.9	533.9	1263.0
107.00	Bot - Section 4	1.00	1.28	7.805	8.59	0.00	1.200	2.250	2.00	6.757	8.11	69.6	211.3	496.3
110.00		1.00	1.29	7.851	8.64	0.00	1.200	2.256	3.00	10.116	12.14	104.8	316.2	1078.2
112.00	Top - Section 3	1.00	1.30	7.881	8.67	0.00	1.200	2.260	2.00	6.646	7.97	69.1	208.5	707.9
115.00		1.00	1.30	7.925	8.72	0.00	1.200	2.266	3.00	9.822	11.79	102.7	307.6	637.9
120.00		1.00	1.32	7.996	8.80	0.00	1.200	2.276	5.00	15.980	19.18	168.7	498.3	1033.5
125.00		1.00	1.33	8.065	8.87	0.00	1.200	2.285	5.00	15.490	18.59	164.9	483.6	999.7
127.00	Appurtenance(s)	1.00	1.33	8.092	8.90	0.00	1.200	2.289	2.00	6.058	7.27	64.7	191.1	392.2
130.00		1.00	1.34	8.132	8.95	0.00	1.200	2.294	3.00	8.940	10.73	96.0	281.2	577.2
135.00		1.00	1.35	8.197	9.02	0.00	1.200	2.303	5.00	14.509	17.41	157.0	453.6	931.6
136.00	Appurtenance(s)	1.00	1.35	8.210	9.03	0.00	1.200	2.304	1.00	2.842	3.41	30.8	90.1	183.4
137.00	Appurtenance(s)	1.00	1.35	8.222	9.04	0.00	1.200	2.306	1.00	2.823	3.39	30.6	89.5	182.1
140.00		1.00	1.36	8.260	9.09	0.00	1.200	2.311	3.00	8.351	10.02	91.1	263.0	536.1
145.00		1.00	1.37	8.321	9.15	0.00	1.200	2.319	5.00	13.527	16.23	148.6	422.9	862.8
148.00	Appurtenance(s)	1.00	1.37	8.357	9.19	0.00	1.200	2.324	3.00	7.880	9.46	86.9	248.1	502.9
149.00		1.00	1.38	8.369	9.21	0.00	1.200	2.325	1.00	2.587	3.10	28.6	82.1	165.5
								Totals:	**149.00**			**5,352.4**		**49,394.6**

Discrete Appurtenance Forces

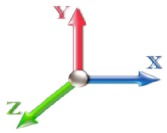
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

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 22

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	148.00	Ericsson KRY112 144/1	3	8.357	9.193	0.56	0.80	1.75	73.37	0.000	0.000	16.10	0.00	0.00
2	148.00	AIR21 B2A B4P	3	8.357	9.193	0.69	0.80	15.65	1048.04	0.000	0.000	143.88	0.00	0.00
3	148.00	AIR21 B2A B4P	3	8.357	9.193	0.69	0.80	15.65	1044.08	0.000	0.000	143.88	0.00	0.00
4	148.00	APXVAARR24_43-U-NA2	3	8.357	9.193	0.56	0.80	38.31	2201.32	0.000	0.000	352.14	0.00	0.00
5	148.00	(3) Stabilizer Kit (4' FW)	1	8.357	9.193	1.00	1.00	8.86	342.24	0.000	0.000	81.44	0.00	0.00
6	148.00	T-Arms	1	8.357	9.193	0.56	0.75	23.08	1147.15	0.000	0.000	212.15	0.00	0.00
7	148.00	4449	3	8.357	9.193	0.54	0.80	3.85	548.48	0.000	0.000	35.36	0.00	0.00
8	148.00	HRK12 (Handrail Kit)	1	8.357	9.193	1.00	1.00	15.53	989.36	0.000	0.000	142.80	0.00	0.00
9	137.00	RFS DB-T1-6Z-8AB-0Z	1	8.222	9.044	0.57	0.80	3.40	223.67	0.000	0.000	30.72	0.00	0.00
10	137.00	ALU/RRH 2x40 AWS	3	8.222	9.044	0.85	1.00	9.04	346.91	0.000	0.000	81.75	0.00	0.00
11	137.00	Antel/LPA-4019	2	8.222	9.044	0.80	0.80	77.62	971.74	0.000	0.000	702.00	0.00	0.00
12	137.00	Antel/LPA-80080-6CF	4	8.222	9.044	1.36	0.80	33.44	797.77	0.000	0.000	302.46	0.00	0.00
13	137.00	Antel/BXA-171085-12BF	3	8.222	9.044	0.67	0.80	15.81	348.70	0.000	0.000	143.03	0.00	0.00
14	137.00	Antel/BXA-70063-6CF	3	8.222	9.044	0.58	0.80	16.25	799.68	0.000	0.000	146.95	0.00	0.00
15	136.00	T-Arms	3	8.210	9.031	0.56	0.75	29.05	2017.79	0.000	0.000	262.37	0.00	0.00
16	127.00	Kathrein 860 10025 RET	12	8.092	8.901	0.80	0.80	5.38	70.03	0.000	0.000	47.93	0.00	0.00
17	127.00	T-Arms	3	8.092	8.901	0.56	0.75	28.95	2011.19	0.000	0.000	257.67	0.00	0.00
18	127.00	7770.00	9	8.092	8.901	0.58	0.80	36.40	2088.01	0.000	0.000	324.00	0.00	0.00
19	127.00	AM-X-CD-17-65-00T-RET	3	8.092	8.901	0.64	0.80	25.92	1247.22	0.000	0.000	230.76	0.00	0.00
20	127.00	Powerwave LGP21401	12	8.092	8.901	0.80	0.80	22.90	511.26	0.000	0.000	203.88	0.00	0.00
21	127.00	Ericsson RRUS 12 RRUs	3	8.092	8.901	0.60	0.80	7.40	444.71	0.000	0.000	65.87	0.00	0.00
22	127.00	Ericsson RRUS-11 RRUs	3	8.092	8.901	0.57	0.80	5.71	419.92	0.000	0.000	50.82	0.00	0.00
23	127.00	Powerwave LGP13519	6	8.092	8.901	0.80	0.80	4.49	96.69	0.000	0.000	39.97	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	1	8.092	8.901	0.80	0.80	1.20	101.53	0.000	0.000	10.64	0.00	0.00
25	127.00	Powerwave 1001983 Bias	3	8.092	8.901	0.80	0.80	1.64	33.22	0.000	0.000	14.61	0.00	0.00
							Totals:		**19,924.07**			**4,043.19**		

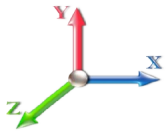
Total Applied Force Summary

Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 18

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 22

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		178.19	2517.11	0.00	0.00
10.00		175.47	2516.30	0.00	0.00
15.00		172.49	2497.05	0.00	0.00
18.00		105.83	1484.80	0.00	0.00
20.00		72.38	1521.73	0.00	0.00
25.00		187.29	3762.45	0.00	0.00
30.00		190.92	2220.30	0.00	0.00
35.00		193.38	2187.81	0.00	0.00
40.00		194.91	2153.60	0.00	0.00
45.00		195.70	2118.04	0.00	0.00
50.00		195.88	2081.37	0.00	0.00
55.00		195.54	2043.79	0.00	0.00
60.00		194.76	2005.43	0.00	0.00
62.00		77.18	792.52	0.00	0.00
65.00		117.07	1730.40	0.00	0.00
68.00		116.55	1707.62	0.00	0.00
70.00		77.26	706.24	0.00	0.00
75.00		192.76	1737.41	0.00	0.00
80.00		190.68	1701.62	0.00	0.00
85.00		188.35	1665.41	0.00	0.00
90.00		185.79	1628.82	0.00	0.00
95.00		183.02	1591.88	0.00	0.00
100.00		180.04	1554.62	0.00	0.00
105.00		176.89	1517.07	0.00	0.00
107.00		69.62	597.93	0.00	0.00
110.00		104.83	1230.64	0.00	0.00
112.00		69.13	809.59	0.00	0.00
115.00		102.75	790.37	0.00	0.00
120.00		168.67	1287.57	0.00	0.00
125.00		164.91	1253.83	0.00	0.00
127.00	(55) attachments	1310.87	7517.60	0.00	0.00
130.00		95.96	675.18	0.00	0.00
135.00		156.99	1094.96	0.00	0.00
136.00	(3) attachments	293.17	2233.89	0.00	0.00
137.00	(16) attachments	1437.55	3703.19	0.00	0.00
140.00		91.05	585.21	0.00	0.00
145.00		148.58	944.65	0.00	0.00
148.00	(18) attachments	1214.68	7946.07	0.00	0.00
149.00		28.58	165.49	0.00	0.00
	Totals:	**9,395.63**	**76,279.54**	**0.00**	**0.00**

Calculated Forces

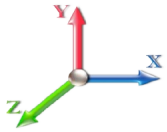
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

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 22

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	-76.28	-9.42	0.00	-1005.8	0.00	1005.89	5499.39	2749.69	13252.7	6636.23	0.00	0.000	0.000	0.165
5.00	-73.75	-9.29	0.00	-958.78	0.00	958.78	5429.06	2714.53	12818.7	6418.90	0.02	-0.040	0.000	0.163
10.00	-71.23	-9.17	0.00	-912.31	0.00	912.31	5357.09	2678.54	12387.8	6203.11	0.08	-0.080	0.000	0.160
15.00	-68.73	-9.03	0.00	-866.48	0.00	866.48	5283.48	2641.74	11960.1	5988.97	0.19	-0.120	0.000	0.158
18.00	-67.24	-8.94	0.00	-839.40	0.00	839.40	5238.53	2619.26	11705.2	5861.33	0.27	-0.145	0.000	0.156
20.00	-65.71	-8.90	0.00	-821.51	0.00	821.51	5208.23	2604.11	11536.0	5776.60	0.34	-0.162	0.000	0.155
25.00	-61.95	-8.75	0.00	-777.01	0.00	777.01	4201.23	2100.61	9252.96	4633.35	0.53	-0.203	0.000	0.182
30.00	-59.72	-8.59	0.00	-733.28	0.00	733.28	4145.44	2072.72	8928.09	4470.68	0.76	-0.245	0.000	0.178
35.00	-57.53	-8.44	0.00	-690.32	0.00	690.32	4088.00	2044.00	8605.21	4309.00	1.05	-0.292	0.000	0.174
40.00	-55.37	-8.28	0.00	-648.14	0.00	648.14	4028.93	2014.47	8284.56	4148.44	1.38	-0.339	0.000	0.170
45.00	-53.24	-8.11	0.00	-606.76	0.00	606.76	3968.22	1984.11	7966.37	3989.11	1.76	-0.386	0.000	0.166
50.00	-51.16	-7.94	0.00	-566.21	0.00	566.21	3905.86	1952.93	7650.88	3831.13	2.19	-0.434	0.000	0.161
55.00	-49.11	-7.77	0.00	-526.50	0.00	526.50	3841.87	1920.93	7338.34	3674.63	2.67	-0.481	0.000	0.156
60.00	-47.10	-7.59	0.00	-487.64	0.00	487.64	3776.23	1888.12	7028.98	3519.72	3.20	-0.529	0.000	0.151
62.00	-46.31	-7.52	0.00	-472.47	0.00	472.47	3749.52	1874.76	6906.19	3458.23	3.42	-0.549	0.000	0.149
65.00	-44.57	-7.41	0.00	-449.91	0.00	449.91	3708.96	1854.48	6723.05	3366.52	3.78	-0.578	0.000	0.146
68.00	-42.86	-7.29	0.00	-427.68	0.00	427.68	2897.69	1448.84	5257.67	2632.74	4.15	-0.607	0.000	0.177
70.00	-42.15	-7.24	0.00	-413.09	0.00	413.09	2878.95	1439.48	5167.56	2587.62	4.41	-0.626	0.000	0.174
75.00	-40.41	-7.06	0.00	-376.92	0.00	376.92	2830.96	1415.48	4943.48	2475.42	5.09	-0.680	0.000	0.167
80.00	-38.71	-6.89	0.00	-341.61	0.00	341.61	2781.33	1390.66	4721.30	2364.16	5.83	-0.733	0.000	0.158
85.00	-37.04	-6.71	0.00	-307.19	0.00	307.19	2730.06	1365.03	4501.25	2253.97	6.63	-0.785	0.000	0.150
90.00	-35.41	-6.53	0.00	-273.65	0.00	273.65	2677.14	1338.57	4283.57	2144.97	7.48	-0.836	0.000	0.141
95.00	-33.81	-6.35	0.00	-240.99	0.00	240.99	2622.59	1311.30	4068.50	2037.27	8.38	-0.886	0.000	0.131
100.00	-32.25	-6.17	0.00	-209.23	0.00	209.23	2566.40	1283.20	3856.28	1931.01	9.34	-0.933	0.000	0.121
105.00	-30.74	-5.99	0.00	-178.37	0.00	178.37	2508.57	1254.28	3647.16	1826.29	10.34	-0.978	0.000	0.110
107.00	-30.14	-5.92	0.00	-166.39	0.00	166.39	2484.97	1242.49	3564.43	1784.86	10.75	-0.996	0.000	0.105
110.00	-28.91	-5.80	0.00	-148.64	0.00	148.64	2449.09	1224.55	3441.37	1723.24	11.39	-1.021	0.000	0.098
112.00	-28.10	-5.73	0.00	-137.03	0.00	137.03	1823.39	911.69	2573.73	1288.78	11.82	-1.037	0.000	0.122
115.00	-27.31	-5.63	0.00	-119.84	0.00	119.84	1799.96	899.98	2488.04	1245.87	12.48	-1.060	0.000	0.111
120.00	-26.02	-5.45	0.00	-91.71	0.00	91.71	1759.59	879.80	2346.51	1175.00	13.61	-1.099	0.000	0.093
125.00	-24.77	-5.27	0.00	-64.46	0.00	64.46	1717.59	858.79	2206.80	1105.04	14.78	-1.132	0.000	0.073
127.00	-17.28	-3.81	0.00	-53.92	0.00	53.92	1700.33	850.16	2151.49	1077.34	15.26	-1.143	0.000	0.060
130.00	-16.60	-3.71	0.00	-42.48	0.00	42.48	1673.94	836.97	2069.17	1036.12	15.98	-1.157	0.000	0.051
135.00	-15.51	-3.53	0.00	-23.93	0.00	23.93	1628.66	814.33	1933.84	968.36	17.20	-1.174	0.000	0.034
136.00	-13.28	-3.19	0.00	-20.40	0.00	20.40	1619.40	809.70	1907.07	954.95	17.45	-1.177	0.000	0.030
137.00	-9.61	-1.68	0.00	-17.21	0.00	17.21	1610.09	805.04	1880.41	941.60	17.69	-1.179	0.000	0.024
140.00	-9.03	-1.58	0.00	-12.16	0.00	12.16	1581.73	790.87	1801.05	901.87	18.44	-1.184	0.000	0.019
145.00	-8.08	-1.41	0.00	-4.27	0.00	4.27	1533.17	766.58	1671.06	836.77	19.68	-1.190	0.000	0.010
148.00	-0.16	-0.03	0.00	-0.03	0.00	0.03	1503.24	751.62	1594.49	798.43	20.43	-1.191	0.000	0.000
149.00	0.00	-0.03	0.00	0.00	0.00	0.00	1493.13	746.57	1569.22	785.78	20.68	-1.191	0.000	0.000

Seismic Segment Forces (Factored)

Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 20

IES Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	20
Gust Response Factor	1.10				**Sds**	0.18		**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48		**SA**	0.05	**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		1371.1	0.00	0.03	0.02	18.88	
10.00		1343.3	0.01	0.05	0.03	27.96	
15.00		1315.5	0.02	0.06	0.04	32.28	
18.00	Bot - Section 2	775.97	0.03	0.07	0.04	20.09	
20.00		956.99	0.03	0.07	0.04	25.43	
25.00	Top - Section 1	2356.3	0.05	0.07	0.04	65.53	
30.00		1072.5	0.08	0.07	0.04	30.83	
35.00		1048.7	0.10	0.07	0.04	31.03	
40.00		1024.9	0.14	0.07	0.03	31.13	
45.00		1001.0	0.17	0.07	0.03	30.99	
50.00		977.26	0.21	0.06	0.02	30.34	
55.00		953.44	0.26	0.05	0.02	28.85	
60.00		929.61	0.31	0.04	0.01	26.18	
62.00	Bot - Section 3	365.17	0.33	0.04	0.01	9.81	
65.00		998.08	0.36	0.03	0.01	24.28	
68.00	Top - Section 2	982.36	0.39	0.02	0.01	20.72	
70.00		296.24	0.42	0.01	0.01	5.49	
75.00		726.71	0.48	-0.01	0.01	7.91	
80.00		706.86	0.54	-0.03	0.01	1.42	
85.00		687.00	0.62	-0.06	0.02	-4.76	
90.00		667.15	0.69	-0.08	0.03	-9.68	
95.00		647.29	0.77	-0.11	0.05	-12.49	
100.00		627.44	0.85	-0.12	0.07	-12.70	
105.00		607.58	0.94	-0.12	0.10	-10.12	
107.00	Bot - Section 4	237.47	0.97	-0.12	0.12	-3.29	
110.00		635.01	1.03	-0.10	0.15	-5.19	
112.00	Top - Section 3	416.19	1.07	-0.09	0.17	-1.40	
115.00		275.23	1.13	-0.05	0.20	1.47	
120.00		446.01	1.23	0.03	0.27	10.70	
125.00		430.12	1.33	0.16	0.36	20.56	
127.00	Appurtenance(s)	2303.3	1.37	0.23	0.40	135.41	
130.00		246.64	1.44	0.36	0.47	18.95	
135.00		398.36	1.55	0.64	0.61	44.28	
136.00	Appurtenance(s)	1127.7	1.57	0.70	0.64	133.81	
137.00	Appurtenance(s)	490.03	1.60	0.77	0.67	61.93	
140.00		227.58	1.67	1.01	0.77	34.32	
145.00		366.59	1.79	1.49	0.96	71.83	
148.00	Appurtenance(s)	2286.7	1.86	1.85	1.09	516.08	
149.00		69.51	1.89	1.98	1.14	16.41	
	Totals:	**32,395.3**				**1,475.3**	**Total Wind:** **32,499.7**

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

Calculated Forces

Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 21	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	20
Gust Response Factor	1.10				**Sds**	0.18		**Ss**	0.17
Dead Load Factor	1.20	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48		**SA**	0.05	**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	-45.84	-1.54	0.00	-172.38	0.00	172.38	5499.39	2749.69	13252.7	6636.23		0.00	0.00	0.034
5.00	-43.94	-1.52	0.00	-164.70	0.00	164.70	5429.06	2714.53	12818.7	6418.90		0.00	-0.01	0.034
10.00	-42.07	-1.50	0.00	-157.08	0.00	157.08	5357.09	2678.54	12387.8	6203.11		0.01	-0.01	0.033
15.00	-40.24	-1.47	0.00	-149.58	0.00	149.58	5283.48	2641.74	11960.1	5988.97		0.03	-0.02	0.033
18.00	-39.15	-1.45	0.00	-145.17	0.00	145.17	5238.53	2619.26	11705.2	5861.33		0.05	-0.02	0.032
20.00	-37.90	-1.43	0.00	-142.27	0.00	142.27	5208.23	2604.11	11536.0	5776.60		0.06	-0.03	0.032
25.00	-34.82	-1.37	0.00	-135.12	0.00	135.12	4201.23	2100.61	9252.96	4633.35		0.09	-0.03	0.037
30.00	-33.28	-1.34	0.00	-128.28	0.00	128.28	4145.44	2072.72	8928.09	4470.68		0.13	-0.04	0.037
35.00	-31.77	-1.31	0.00	-121.58	0.00	121.58	4088.00	2044.00	8605.21	4309.00		0.18	-0.05	0.036
40.00	-30.28	-1.28	0.00	-115.02	0.00	115.02	4028.93	2014.47	8284.56	4148.44		0.24	-0.06	0.035
45.00	-28.83	-1.26	0.00	-108.60	0.00	108.60	3968.22	1984.11	7966.37	3989.11		0.30	-0.07	0.034
50.00	-27.40	-1.23	0.00	-102.32	0.00	102.32	3905.86	1952.93	7650.88	3831.13		0.38	-0.08	0.034
55.00	-26.00	-1.20	0.00	-96.18	0.00	96.18	3841.87	1920.93	7338.34	3674.63		0.46	-0.08	0.033
60.00	-24.63	-1.18	0.00	-90.18	0.00	90.18	3776.23	1888.12	7028.98	3519.72		0.56	-0.09	0.032
62.00	-24.09	-1.17	0.00	-87.83	0.00	87.83	3749.52	1874.76	6906.19	3458.23		0.60	-0.10	0.032
65.00	-22.74	-1.14	0.00	-84.33	0.00	84.33	3708.96	1854.48	6723.05	3366.52		0.66	-0.10	0.031
68.00	-21.41	-1.12	0.00	-80.90	0.00	80.90	2897.69	1448.84	5257.67	2632.74		0.72	-0.11	0.038
70.00	-20.95	-1.12	0.00	-78.66	0.00	78.66	2878.95	1439.48	5167.56	2587.62		0.77	-0.11	0.038
75.00	-19.83	-1.11	0.00	-73.08	0.00	73.08	2830.96	1415.48	4943.48	2475.42		0.89	-0.12	0.037
80.00	-18.72	-1.11	0.00	-67.52	0.00	67.52	2781.33	1390.66	4721.30	2364.16		1.03	-0.13	0.035
85.00	-17.65	-1.11	0.00	-61.98	0.00	61.98	2730.06	1365.03	4501.25	2253.97		1.17	-0.14	0.034
90.00	-16.59	-1.11	0.00	-56.42	0.00	56.42	2677.14	1338.57	4283.57	2144.97		1.33	-0.15	0.033
95.00	-15.56	-1.11	0.00	-50.87	0.00	50.87	2622.59	1311.30	4068.50	2037.27		1.49	-0.16	0.031
100.00	-14.55	-1.11	0.00	-45.32	0.00	45.32	2566.40	1283.20	3856.28	1931.01		1.67	-0.17	0.029
105.00	-13.57	-1.11	0.00	-39.76	0.00	39.76	2508.57	1254.28	3647.16	1826.29		1.85	-0.18	0.027
107.00	-13.18	-1.11	0.00	-37.55	0.00	37.55	2484.97	1242.49	3564.43	1784.86		1.93	-0.19	0.026
110.00	-12.27	-1.11	0.00	-34.22	0.00	34.22	2449.09	1224.55	3441.37	1723.24		2.05	-0.19	0.025
112.00	-11.67	-1.11	0.00	-32.01	0.00	32.01	1823.39	911.69	2573.73	1288.78		2.13	-0.20	0.031
115.00	-11.18	-1.10	0.00	-28.69	0.00	28.69	1799.96	899.98	2488.04	1245.87		2.26	-0.20	0.029
120.00	-10.39	-1.09	0.00	-23.17	0.00	23.17	1759.59	879.80	2346.51	1175.00		2.48	-0.21	0.026
125.00	-9.62	-1.07	0.00	-17.71	0.00	17.71	1717.59	858.79	2206.80	1105.04		2.70	-0.22	0.022
127.00	-6.76	-0.92	0.00	-15.57	0.00	15.57	1700.33	850.16	2151.49	1077.34		2.80	-0.22	0.018
130.00	-6.36	-0.90	0.00	-12.80	0.00	12.80	1673.94	836.97	2069.17	1036.12		2.94	-0.23	0.016
135.00	-5.72	-0.86	0.00	-8.28	0.00	8.28	1628.66	814.33	1933.84	968.36		3.18	-0.23	0.012
136.00	-4.34	-0.72	0.00	-7.42	0.00	7.42	1619.40	809.70	1907.07	954.95		3.23	-0.23	0.010
137.00	-3.72	-0.65	0.00	-6.70	0.00	6.70	1610.09	805.04	1880.41	941.60		3.28	-0.23	0.009
140.00	-3.40	-0.62	0.00	-4.74	0.00	4.74	1581.73	790.87	1801.05	901.87		3.43	-0.24	0.007
145.00	-2.87	-0.54	0.00	-1.65	0.00	1.65	1533.17	766.58	1671.06	836.77		3.68	-0.24	0.004
148.00	-0.08	-0.02	0.00	-0.02	0.00	0.02	1503.24	751.62	1594.49	798.43		3.83	-0.24	0.000
149.00	0.00	-0.02	0.00	0.00	0.00	0.00	1493.13	746.57	1569.22	785.78		3.88	-0.24	0.000

Seismic Segment Forces (Factored)

Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 22

IES Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	20
Gust Response Factor	1.10				**Sds**	0.18		**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00		**Sd1**	0.10		**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48		**SA**	0.05	**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		1371.1	0.00	0.03	0.02	18.88	
10.00		1343.3	0.01	0.05	0.03	27.96	
15.00		1315.5	0.02	0.06	0.04	32.28	
18.00	Bot - Section 2	775.97	0.03	0.07	0.04	20.09	
20.00		956.99	0.03	0.07	0.04	25.43	
25.00	Top - Section 1	2356.3	0.05	0.07	0.04	65.53	
30.00		1072.5	0.08	0.07	0.04	30.83	
35.00		1048.7	0.10	0.07	0.04	31.03	
40.00		1024.9	0.14	0.07	0.03	31.13	
45.00		1001.0	0.17	0.07	0.03	30.99	
50.00		977.26	0.21	0.06	0.02	30.34	
55.00		953.44	0.26	0.05	0.02	28.85	
60.00		929.61	0.31	0.04	0.01	26.18	
62.00	Bot - Section 3	365.17	0.33	0.04	0.01	9.81	
65.00		998.08	0.36	0.03	0.01	24.28	
68.00	Top - Section 2	982.36	0.39	0.02	0.01	20.72	
70.00		296.24	0.42	0.01	0.01	5.49	
75.00		726.71	0.48	-0.01	0.01	7.91	
80.00		706.86	0.54	-0.03	0.01	1.42	
85.00		687.00	0.62	-0.06	0.02	-4.76	
90.00		667.15	0.69	-0.08	0.03	-9.68	
95.00		647.29	0.77	-0.11	0.05	-12.49	
100.00		627.44	0.85	-0.12	0.07	-12.70	
105.00		607.58	0.94	-0.12	0.10	-10.12	
107.00	Bot - Section 4	237.47	0.97	-0.12	0.12	-3.29	
110.00		635.01	1.03	-0.10	0.15	-5.19	
112.00	Top - Section 3	416.19	1.07	-0.09	0.17	-1.40	
115.00		275.23	1.13	-0.05	0.20	1.47	
120.00		446.01	1.23	0.03	0.27	10.70	
125.00		430.12	1.33	0.16	0.36	20.56	
127.00	Appurtenance(s)	2303.3	1.37	0.23	0.40	135.41	
130.00		246.64	1.44	0.36	0.47	18.95	
135.00		398.36	1.55	0.64	0.61	44.28	
136.00	Appurtenance(s)	1127.7	1.57	0.70	0.64	133.81	
137.00	Appurtenance(s)	490.03	1.60	0.77	0.67	61.93	
140.00		227.58	1.67	1.01	0.77	34.32	
145.00		366.59	1.79	1.49	0.96	71.83	
148.00	Appurtenance(s)	2286.7	1.86	1.85	1.09	516.08	
149.00		69.51	1.89	1.98	1.14	16.41	
	Totals:	**32,395.3**				**1,475.3**	**Total Wind:** **32,499.7**

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

Calculated Forces

Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	20
Gust Response Factor	1.10			**Sds**	0.18			**Ss**	0.17
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10			**S1**	0.06
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.48	**SA**	0.05	**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	-34.38	-1.54	0.00	-171.17	0.00	171.17	5499.39	2749.69	13252.7	6636.23		0.00	0.00	0.032
5.00	-32.95	-1.52	0.00	-163.49	0.00	163.49	5429.06	2714.53	12818.7	6418.90		0.00	-0.01	0.032
10.00	-31.55	-1.50	0.00	-155.89	0.00	155.89	5357.09	2678.54	12387.8	6203.11		0.01	-0.01	0.031
15.00	-30.18	-1.47	0.00	-148.40	0.00	148.40	5283.48	2641.74	11960.1	5988.97		0.03	-0.02	0.030
18.00	-29.36	-1.45	0.00	-144.00	0.00	144.00	5238.53	2619.26	11705.2	5861.33		0.05	-0.02	0.030
20.00	-28.43	-1.42	0.00	-141.11	0.00	141.11	5208.23	2604.11	11536.0	5776.60		0.06	-0.03	0.030
25.00	-26.12	-1.36	0.00	-133.98	0.00	133.98	4201.23	2100.61	9252.96	4633.35		0.09	-0.03	0.035
30.00	-24.96	-1.33	0.00	-127.18	0.00	127.18	4145.44	2072.72	8928.09	4470.68		0.13	-0.04	0.034
35.00	-23.82	-1.30	0.00	-120.51	0.00	120.51	4088.00	2044.00	8605.21	4309.00		0.18	-0.05	0.034
40.00	-22.71	-1.28	0.00	-113.99	0.00	113.99	4028.93	2014.47	8284.56	4148.44		0.24	-0.06	0.033
45.00	-21.62	-1.25	0.00	-107.61	0.00	107.61	3968.22	1984.11	7966.37	3989.11		0.30	-0.07	0.032
50.00	-20.55	-1.22	0.00	-101.38	0.00	101.38	3905.86	1952.93	7650.88	3831.13		0.38	-0.08	0.032
55.00	-19.50	-1.19	0.00	-95.29	0.00	95.29	3841.87	1920.93	7338.34	3674.63		0.46	-0.08	0.031
60.00	-18.47	-1.16	0.00	-89.34	0.00	89.34	3776.23	1888.12	7028.98	3519.72		0.55	-0.09	0.030
62.00	-18.07	-1.16	0.00	-87.01	0.00	87.01	3749.52	1874.76	6906.19	3458.23		0.59	-0.10	0.030
65.00	-17.06	-1.13	0.00	-83.54	0.00	83.54	3708.96	1854.48	6723.05	3366.52		0.65	-0.10	0.029
68.00	-16.06	-1.11	0.00	-80.15	0.00	80.15	2897.69	1448.84	5257.67	2632.74		0.72	-0.11	0.036
70.00	-15.71	-1.11	0.00	-77.92	0.00	77.92	2878.95	1439.48	5167.56	2587.62		0.76	-0.11	0.036
75.00	-14.87	-1.10	0.00	-72.40	0.00	72.40	2830.96	1415.48	4943.48	2475.42		0.89	-0.12	0.034
80.00	-14.04	-1.10	0.00	-66.90	0.00	66.90	2781.33	1390.66	4721.30	2364.16		1.02	-0.13	0.033
85.00	-13.23	-1.10	0.00	-61.41	0.00	61.41	2730.06	1365.03	4501.25	2253.97		1.16	-0.14	0.032
90.00	-12.44	-1.10	0.00	-55.92	0.00	55.92	2677.14	1338.57	4283.57	2144.97		1.31	-0.15	0.031
95.00	-11.67	-1.10	0.00	-50.42	0.00	50.42	2622.59	1311.30	4068.50	2037.27		1.48	-0.16	0.029
100.00	-10.91	-1.10	0.00	-44.93	0.00	44.93	2566.40	1283.20	3856.28	1931.01		1.65	-0.17	0.028
105.00	-10.18	-1.10	0.00	-39.43	0.00	39.43	2508.57	1254.28	3647.16	1826.29		1.84	-0.18	0.026
107.00	-9.89	-1.10	0.00	-37.24	0.00	37.24	2484.97	1242.49	3564.43	1784.86		1.92	-0.19	0.025
110.00	-9.20	-1.10	0.00	-33.94	0.00	33.94	2449.09	1224.55	3441.37	1723.24		2.03	-0.19	0.023
112.00	-8.75	-1.10	0.00	-31.75	0.00	31.75	1823.39	911.69	2573.73	1288.78		2.12	-0.20	0.029
115.00	-8.39	-1.09	0.00	-28.47	0.00	28.47	1799.96	899.98	2488.04	1245.87		2.24	-0.20	0.028
120.00	-7.79	-1.08	0.00	-23.00	0.00	23.00	1759.59	879.80	2346.51	1175.00		2.46	-0.21	0.024
125.00	-7.22	-1.06	0.00	-17.59	0.00	17.59	1717.59	858.79	2206.80	1105.04		2.68	-0.22	0.020
127.00	-5.07	-0.92	0.00	-15.47	0.00	15.47	1700.33	850.16	2151.49	1077.34		2.77	-0.22	0.017
130.00	-4.77	-0.90	0.00	-12.71	0.00	12.71	1673.94	836.97	2069.17	1036.12		2.91	-0.23	0.015
135.00	-4.29	-0.85	0.00	-8.23	0.00	8.23	1628.66	814.33	1933.84	968.36		3.15	-0.23	0.011
136.00	-3.25	-0.71	0.00	-7.38	0.00	7.38	1619.40	809.70	1907.07	954.95		3.20	-0.23	0.010
137.00	-2.79	-0.65	0.00	-6.66	0.00	6.66	1610.09	805.04	1880.41	941.60		3.25	-0.23	0.009
140.00	-2.55	-0.61	0.00	-4.71	0.00	4.71	1581.73	790.87	1801.05	901.87		3.40	-0.23	0.007
145.00	-2.16	-0.54	0.00	-1.64	0.00	1.64	1533.17	766.58	1671.06	836.77		3.64	-0.24	0.003
148.00	-0.06	-0.02	0.00	-0.02	0.00	0.02	1503.24	751.62	1594.49	798.43		3.79	-0.24	0.000
149.00	0.00	-0.02	0.00	0.00	0.00	0.00	1493.13	746.57	1569.22	785.78		3.84	-0.24	0.000

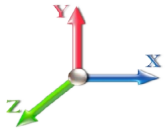
Wind Loading - Shaft

Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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	276.46	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	270.96	0.650	0.000	5.00	24.740	16.08	131.6	0.0	1371.1
10.00		1.00	0.85	7.442	8.19	265.45	0.650	0.000	5.00	24.242	15.76	129.0	0.0	1343.3
15.00		1.00	0.85	7.442	8.19	259.94	0.650	0.000	5.00	23.744	15.43	126.3	0.0	1315.5
18.00	Bot - Section 2	1.00	0.88	7.723	8.50	261.44	0.650	0.000	3.00	14.008	9.11	77.3	0.0	776.0
20.00		1.00	0.90	7.896	8.69	262.09	0.650	0.000	2.00	9.366	6.09	52.9	0.0	957.0
25.00	Top - Section 1	1.00	0.95	8.276	9.10	262.51	0.650	0.000	5.00	23.066	14.99	136.5	0.0	2356.3
30.00		1.00	0.98	8.600	9.46	265.45	0.650	0.000	5.00	22.568	14.67	138.8	0.0	1072.6
35.00		1.00	1.01	8.883	9.77	263.77	0.650	0.000	5.00	22.071	14.35	140.2	0.0	1048.7
40.00		1.00	1.04	9.137	10.05	261.40	0.650	0.000	5.00	21.573	14.02	140.9	0.0	1024.9
45.00		1.00	1.07	9.366	10.30	258.49	0.650	0.000	5.00	21.075	13.70	141.1	0.0	1001.1
50.00		1.00	1.09	9.576	10.53	255.12	0.650	0.000	5.00	20.577	13.38	140.9	0.0	977.3
55.00		1.00	1.12	9.770	10.75	251.38	0.650	0.000	5.00	20.079	13.05	140.3	0.0	953.4
60.00		1.00	1.14	9.951	10.95	247.33	0.650	0.000	5.00	19.582	12.73	139.3	0.0	929.6
62.00	Bot - Section 3	1.00	1.14	10.020	11.02	245.63	0.650	0.000	2.00	7.693	5.00	55.1	0.0	365.2
65.00		1.00	1.16	10.120	11.13	243.00	0.650	0.000	3.00	11.549	7.51	83.6	0.0	998.1
68.00	Top - Section 2	1.00	1.17	10.217	11.24	240.28	0.650	0.000	3.00	11.370	7.39	83.1	0.0	982.4
70.00		1.00	1.17	10.279	11.31	241.87	0.650	0.000	2.00	7.480	4.86	55.0	0.0	296.2
75.00		1.00	1.19	10.430	11.47	237.11	0.650	0.000	5.00	18.353	11.93	136.9	0.0	726.7
80.00		1.00	1.21	10.572	11.63	232.16	0.650	0.000	5.00	17.855	11.61	135.0	0.0	706.9
85.00		1.00	1.22	10.708	11.78	227.04	0.650	0.000	5.00	17.357	11.28	132.9	0.0	687.0
90.00		1.00	1.24	10.838	11.92	221.76	0.650	0.000	5.00	16.859	10.96	130.6	0.0	667.1
95.00		1.00	1.25	10.962	12.06	216.35	0.650	0.000	5.00	16.361	10.63	128.2	0.0	647.3
100.00		1.00	1.27	11.081	12.19	210.80	0.650	0.000	5.00	15.863	10.31	125.7	0.0	627.4
105.00		1.00	1.28	11.195	12.31	205.13	0.650	0.000	5.00	15.366	9.99	123.0	0.0	607.6
107.00	Bot - Section 4	1.00	1.28	11.240	12.36	202.83	0.650	0.000	2.00	6.007	3.90	48.3	0.0	237.5
110.00		1.00	1.29	11.305	12.44	199.35	0.650	0.000	3.00	8.988	5.84	72.7	0.0	635.0
112.00	Top - Section 3	1.00	1.30	11.348	12.48	197.00	0.650	0.000	2.00	5.892	3.83	47.8	0.0	416.2
115.00		1.00	1.30	11.412	12.55	196.36	0.650	0.000	3.00	8.689	5.65	70.9	0.0	275.2
120.00		1.00	1.32	11.514	12.67	190.39	0.650	0.000	5.00	14.084	9.15	115.9	0.0	446.0
125.00		1.00	1.33	11.614	12.78	184.33	0.650	0.000	5.00	13.586	8.83	112.8	0.0	430.1
127.00	Appurtenance(s)	1.00	1.33	11.653	12.82	181.88	0.650	0.000	2.00	5.295	3.44	44.1	0.0	167.6
130.00		1.00	1.34	11.710	12.88	178.18	0.650	0.000	3.00	7.793	5.07	65.2	0.0	246.6
135.00		1.00	1.35	11.803	12.98	171.96	0.650	0.000	5.00	12.590	8.18	106.3	0.0	398.4
136.00	Appurtenance(s)	1.00	1.35	11.822	13.00	170.70	0.650	0.000	1.00	2.458	1.60	20.8	0.0	77.8
137.00	Appurtenance(s)	1.00	1.35	11.840	13.02	169.44	0.650	0.000	1.00	2.438	1.58	20.6	0.0	77.1
140.00		1.00	1.36	11.894	13.08	165.65	0.650	0.000	3.00	7.196	4.68	61.2	0.0	227.6
145.00		1.00	1.37	11.982	13.18	159.28	0.650	0.000	5.00	11.595	7.54	99.3	0.0	366.6
148.00	Appurtenance(s)	1.00	1.37	12.034	13.24	155.42	0.650	0.000	3.00	6.718	4.37	57.8	0.0	212.3
149.00		1.00	1.38	12.051	13.26	154.13	0.650	0.000	1.00	2.199	1.43	19.0	0.0	69.5
								Totals:	**149.00**			**3,786.9**		**26,722.3**

Discrete Appurtenance Forces

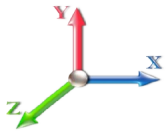
Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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	148.00	Ericsson KRY112 144/1	3	12.034	13.238	0.56	0.80	0.69	33.00	0.000	0.000	9.12	0.00	0.00
2	148.00	AIR21 B2A B4P	3	12.034	13.238	0.69	0.80	12.57	274.50	0.000	0.000	166.39	0.00	0.00
3	148.00	AIR21 B2A B4P	3	12.034	13.238	0.69	0.80	12.57	271.20	0.000	0.000	166.39	0.00	0.00
4	148.00	APXVAARR24_43-U-NA2	3	12.034	13.238	0.56	0.80	34.00	384.00	0.000	0.000	450.12	0.00	0.00
5	148.00	(3) Stabilizer Kit (4' FW)	1	12.034	13.238	1.00	1.00	3.70	140.00	0.000	0.000	48.98	0.00	0.00
6	148.00	T-Arms	1	12.034	13.238	0.56	0.75	8.44	500.00	0.000	0.000	111.69	0.00	0.00
7	148.00	4449	3	12.034	13.238	0.54	0.80	2.65	210.00	0.000	0.000	35.12	0.00	0.00
8	148.00	HRK12 (Handrail Kit)	1	12.034	13.238	1.00	1.00	6.75	261.72	0.000	0.000	89.35	0.00	0.00
9	137.00	RFS DB-T1-6Z-8AB-0Z	1	11.840	13.024	0.57	0.80	2.73	18.90	0.000	0.000	35.51	0.00	0.00
10	137.00	ALU/RRH 2x40 AWS	3	11.840	13.024	0.85	1.00	5.51	132.00	0.000	0.000	71.74	0.00	0.00
11	137.00	Antel/LPA-4019	2	11.840	13.024	0.80	0.80	20.38	82.00	0.000	0.000	265.48	0.00	0.00
12	137.00	Antel/LPA-80080-6CF	4	11.840	13.024	1.36	0.80	23.56	84.00	0.000	0.000	306.78	0.00	0.00
13	137.00	Antel/BXA-171085-12BF	3	11.840	13.024	0.67	0.80	9.56	45.00	0.000	0.000	124.46	0.00	0.00
14	137.00	Antel/BXA-70063-6CF	3	11.840	13.024	0.58	0.80	13.26	51.00	0.000	0.000	172.73	0.00	0.00
15	136.00	T-Arms	3	11.822	13.004	0.56	0.75	13.50	1050.00	0.000	0.000	175.55	0.00	0.00
16	127.00	Kathrein 860 10025 RET	12	11.653	12.818	0.80	0.80	1.34	13.20	0.000	0.000	17.23	0.00	0.00
17	127.00	T-Arms	3	11.653	12.818	0.56	0.75	13.50	1050.00	0.000	0.000	173.04	0.00	0.00
18	127.00	7770.00	9	11.653	12.818	0.58	0.80	28.91	315.00	0.000	0.000	370.54	0.00	0.00
19	127.00	AM-X-CD-17-65-00T-RET	3	11.653	12.818	0.64	0.80	21.72	178.50	0.000	0.000	278.34	0.00	0.00
20	127.00	Powerwave LGP21401	12	11.653	12.818	0.80	0.80	12.38	169.20	0.000	0.000	158.74	0.00	0.00
21	127.00	Ericsson RRUS 12 RRUs	3	11.653	12.818	0.60	0.80	4.86	180.00	0.000	0.000	62.29	0.00	0.00
22	127.00	Ericsson RRUS-11 RRUs	3	11.653	12.818	0.57	0.80	4.29	153.00	0.000	0.000	55.04	0.00	0.00
23	127.00	Powerwave LGP13519	6	11.653	12.818	0.80	0.80	1.63	31.80	0.000	0.000	20.92	0.00	0.00
24	127.00	Raycap DC6-48-60-18-8F	1	11.653	12.818	0.80	0.80	0.74	31.80	0.000	0.000	9.43	0.00	0.00
25	127.00	Powerwave 1001983 Bias	3	11.653	12.818	0.80	0.80	0.50	13.20	0.000	0.000	6.46	0.00	0.00
							Totals:		**5,673.02**			**3,381.45**		

Total Applied Force Summary

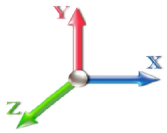
Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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		131.64	1582.87	0.00	0.00
10.00		128.99	1555.07	0.00	0.00
15.00		126.34	1527.28	0.00	0.00
18.00		77.35	903.02	0.00	0.00
20.00		52.88	1041.69	0.00	0.00
25.00		136.49	2568.08	0.00	0.00
30.00		138.77	1284.32	0.00	0.00
35.00		140.19	1260.49	0.00	0.00
40.00		140.93	1236.67	0.00	0.00
45.00		141.13	1212.84	0.00	0.00
50.00		140.89	1189.01	0.00	0.00
55.00		140.27	1165.19	0.00	0.00
60.00		139.32	1141.36	0.00	0.00
62.00		55.12	449.87	0.00	0.00
65.00		83.57	1125.13	0.00	0.00
68.00		83.06	1109.41	0.00	0.00
70.00		54.98	380.94	0.00	0.00
75.00		136.86	938.46	0.00	0.00
80.00		134.97	918.61	0.00	0.00
85.00		132.89	898.75	0.00	0.00
90.00		130.64	878.90	0.00	0.00
95.00		128.23	859.04	0.00	0.00
100.00		125.68	839.19	0.00	0.00
105.00		122.99	819.33	0.00	0.00
107.00		48.27	322.17	0.00	0.00
110.00		72.65	762.06	0.00	0.00
112.00		47.81	500.89	0.00	0.00
115.00		70.90	402.28	0.00	0.00
120.00		115.95	657.76	0.00	0.00
125.00		112.82	641.87	0.00	0.00
127.00	(55) attachments	1196.15	2388.00	0.00	0.00
130.00		65.25	328.30	0.00	0.00
135.00		106.26	534.46	0.00	0.00
136.00	(3) attachments	196.33	1154.99	0.00	0.00
137.00	(16) attachments	997.34	517.25	0.00	0.00
140.00		61.20	268.50	0.00	0.00
145.00		99.34	434.79	0.00	0.00
148.00	(18) attachments	1134.97	2327.67	0.00	0.00
149.00		18.95	69.51	0.00	0.00
	Totals:	**7,168.35**	**38,196.03**	**0.00**	**0.00**

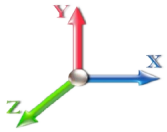
Calculated Forces

Structure:	CT11559-A-SBA	**Code:**	EIA/TIA-222-G	7/15/2019	
Site Name:	Thompson 1, CT	**Exposure:**	C		
Height:	149.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 21

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	-38.19	-7.18	0.00	-756.64	0.00	756.64	5499.39	2749.69	13252.7	6636.23	0.00	0.000	0.000	0.121
5.00	-36.61	-7.06	0.00	-720.75	0.00	720.75	5429.06	2714.53	12818.7	6418.90	0.02	-0.030	0.000	0.119
10.00	-35.05	-6.95	0.00	-685.43	0.00	685.43	5357.09	2678.54	12387.8	6203.11	0.06	-0.060	0.000	0.117
15.00	-33.52	-6.84	0.00	-650.67	0.00	650.67	5283.48	2641.74	11960.1	5988.97	0.14	-0.090	0.000	0.115
18.00	-32.61	-6.77	0.00	-630.15	0.00	630.15	5238.53	2619.26	11705.2	5861.33	0.21	-0.109	0.000	0.114
20.00	-31.57	-6.73	0.00	-616.62	0.00	616.62	5208.23	2604.11	11536.0	5776.60	0.25	-0.121	0.000	0.113
25.00	-29.00	-6.60	0.00	-582.99	0.00	582.99	4201.23	2100.61	9252.96	4633.35	0.40	-0.152	0.000	0.133
30.00	-27.71	-6.47	0.00	-550.00	0.00	550.00	4145.44	2072.72	8928.09	4470.68	0.57	-0.184	0.000	0.130
35.00	-26.45	-6.34	0.00	-517.64	0.00	517.64	4088.00	2044.00	8605.21	4309.00	0.79	-0.219	0.000	0.127
40.00	-25.21	-6.21	0.00	-485.92	0.00	485.92	4028.93	2014.47	8284.56	4148.44	1.03	-0.254	0.000	0.123
45.00	-23.99	-6.08	0.00	-454.85	0.00	454.85	3968.22	1984.11	7966.37	3989.11	1.32	-0.290	0.000	0.120
50.00	-22.80	-5.95	0.00	-424.44	0.00	424.44	3905.86	1952.93	7650.88	3831.13	1.64	-0.325	0.000	0.117
55.00	-21.63	-5.81	0.00	-394.70	0.00	394.70	3841.87	1920.93	7338.34	3674.63	2.00	-0.361	0.000	0.113
60.00	-20.49	-5.68	0.00	-365.62	0.00	365.62	3776.23	1888.12	7028.98	3519.72	2.40	-0.397	0.000	0.109
62.00	-20.04	-5.63	0.00	-354.27	0.00	354.27	3749.52	1874.76	6906.19	3458.23	2.57	-0.412	0.000	0.108
65.00	-18.91	-5.54	0.00	-337.40	0.00	337.40	3708.96	1854.48	6723.05	3366.52	2.84	-0.433	0.000	0.105
68.00	-17.80	-5.45	0.00	-320.78	0.00	320.78	2897.69	1448.84	5257.67	2632.74	3.11	-0.455	0.000	0.128
70.00	-17.42	-5.40	0.00	-309.87	0.00	309.87	2878.95	1439.48	5167.56	2587.62	3.31	-0.470	0.000	0.126
75.00	-16.48	-5.27	0.00	-282.84	0.00	282.84	2830.96	1415.48	4943.48	2475.42	3.82	-0.510	0.000	0.120
80.00	-15.56	-5.14	0.00	-256.49	0.00	256.49	2781.33	1390.66	4721.30	2364.16	4.38	-0.550	0.000	0.114
85.00	-14.65	-5.01	0.00	-230.79	0.00	230.79	2730.06	1365.03	4501.25	2253.97	4.98	-0.589	0.000	0.108
90.00	-13.77	-4.88	0.00	-205.76	0.00	205.76	2677.14	1338.57	4283.57	2144.97	5.61	-0.628	0.000	0.101
95.00	-12.91	-4.75	0.00	-181.38	0.00	181.38	2622.59	1311.30	4068.50	2037.27	6.29	-0.665	0.000	0.094
100.00	-12.07	-4.62	0.00	-157.65	0.00	157.65	2566.40	1283.20	3856.28	1931.01	7.01	-0.701	0.000	0.086
105.00	-11.25	-4.49	0.00	-134.56	0.00	134.56	2508.57	1254.28	3647.16	1826.29	7.76	-0.734	0.000	0.078
107.00	-10.93	-4.44	0.00	-125.58	0.00	125.58	2484.97	1242.49	3564.43	1784.86	8.07	-0.748	0.000	0.075
110.00	-10.17	-4.36	0.00	-112.26	0.00	112.26	2449.09	1224.55	3441.37	1723.24	8.55	-0.767	0.000	0.069
112.00	-9.67	-4.31	0.00	-103.54	0.00	103.54	1823.39	911.69	2573.73	1288.78	8.87	-0.779	0.000	0.086
115.00	-9.26	-4.24	0.00	-90.62	0.00	90.62	1799.96	899.98	2488.04	1245.87	9.37	-0.796	0.000	0.078
120.00	-8.61	-4.11	0.00	-69.44	0.00	69.44	1759.59	879.80	2346.51	1175.00	10.22	-0.826	0.000	0.064
125.00	-7.96	-3.99	0.00	-48.87	0.00	48.87	1717.59	858.79	2206.80	1105.04	11.10	-0.851	0.000	0.049
127.00	-5.59	-2.76	0.00	-40.88	0.00	40.88	1700.33	850.16	2151.49	1077.34	11.45	-0.859	0.000	0.041
130.00	-5.27	-2.69	0.00	-32.59	0.00	32.59	1673.94	836.97	2069.17	1036.12	12.00	-0.870	0.000	0.035
135.00	-4.73	-2.58	0.00	-19.11	0.00	19.11	1628.66	814.33	1933.84	968.36	12.92	-0.883	0.000	0.023
136.00	-3.58	-2.37	0.00	-16.53	0.00	16.53	1619.40	809.70	1907.07	954.95	13.10	-0.885	0.000	0.020
137.00	-3.08	-1.36	0.00	-14.17	0.00	14.17	1610.09	805.04	1880.41	941.60	13.29	-0.887	0.000	0.017
140.00	-2.81	-1.30	0.00	-10.08	0.00	10.08	1581.73	790.87	1801.05	901.87	13.85	-0.891	0.000	0.013
145.00	-2.38	-1.19	0.00	-3.59	0.00	3.59	1533.17	766.58	1671.06	836.77	14.78	-0.896	0.000	0.006
148.00	-0.07	-0.02	0.00	-0.02	0.00	0.02	1503.24	751.62	1594.49	798.43	15.35	-0.897	0.000	0.000
149.00	0.00	-0.02	0.00	0.00	0.00	0.00	1493.13	746.57	1569.22	785.78	15.53	-0.897	0.000	0.000

Final Analysis Summary

Structure:	CT11559-A-SBA		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 28

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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	32.6	0.00	45.80	0.00	0.00	3443.59
0.9D + 1.6W 101 mph Wind	32.5	0.00	34.34	0.00	0.00	3420.85
1.2D + 1.0Di + 1.0Wi 50 mph Wind	9.4	0.00	76.28	0.00	0.00	1005.89
1.2D + 1.0E	1.5	0.00	45.84	0.00	0.00	172.38
0.9D + 1.0E	1.5	0.00	34.38	0.00	0.00	171.17
1.0D + 1.0W 60 mph Wind	7.2	0.00	38.19	0.00	0.00	756.64

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	-34.42	-30.00	0.00	-2655.1	0.00	-2655.1	4201.23	2100.6	9252.96	4633.35	25.00	0.581
0.9D + 1.6W 101 mph Wind	-25.72	-29.88	0.00	-2633.9	0.00	-2633.9	4201.23	2100.6	9252.96	4633.35	25.00	0.575
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-61.95	-8.75	0.00	-777.01	0.00	-777.01	4201.23	2100.6	9252.96	4633.35	25.00	0.182
1.2D + 1.0E	-21.41	-1.12	0.00	-80.90	0.00	-80.90	2897.69	1448.8	5257.67	2632.74	68.00	0.038
0.9D + 1.0E	-16.06	-1.11	0.00	-80.15	0.00	-80.15	2897.69	1448.8	5257.67	2632.74	68.00	0.036
1.0D + 1.0W 60 mph Wind	-29.00	-6.60	0.00	-582.99	0.00	-582.99	4201.23	2100.6	9252.96	4633.35	25.00	0.133

Base Plate Summary

Structure:	CT11559-A-SB		**Code:**	EIA/TIA-222-G	7/15/2019
Site Name:	Thompson 1, CT		**Exposure:**	C	
Height:	149.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 29

Tower Engineering Solutions

Reactions		Base Plate		Anchor Bolts	
Original Design		**Yield (ksi):**	50.00	**Bolt Circle:**	66.00
Moment (kip-ft):	4056.00	**Width (in):**	72.00	**Number Bolts:**	18.00
Axial (kip):	38.00	**Style:**	Round	**Bolt Type:**	2.00" F1554 105
Shear (kip):	36.00	**Polygon Sides:**	0.00	**Bolt Diameter (in):**	2.00
Analysis		**Clip Length (in):**	0.00	**Yield (ksi):**	105.00
Moment (kip-ft):	3443.59	**Effective Len (in):**	16.56	**Ultimate (ksi):**	125.00
Axial (kip):	76.28	**Moment (kip-in):**	497.32	**Arrangement:**	Radial
Shear (kip):	32.55	**Allow Stress (ksi):**	67.50	**Cluster Dist (in):**	0.00
		Applied Stress (ksi):	0.00	**Start Angle (deg):**	0.00
Moment Design %:	84.90	**Stress Ratio:**	0.35	Compression	
				Force (kip):	143.37
				Allowable (kip):	250.00
				Ratio:	0.59
				Tension	
				Force (kip):	134.90
				Allowable (kip):	250.00
				Ratio:	0.55

Monopole Mat Foundation Design

				Date
				7/15/2019
	Customer Name:	T-Mobile	**EIA/TIA Standard:**	EIA-222-G
	Site Name:		**Structure Height (Ft.):**	149
	Site Number:	CT11559-A-SBA	**Engineer Name:**	J. Chen
	Engr. Number:	79362	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

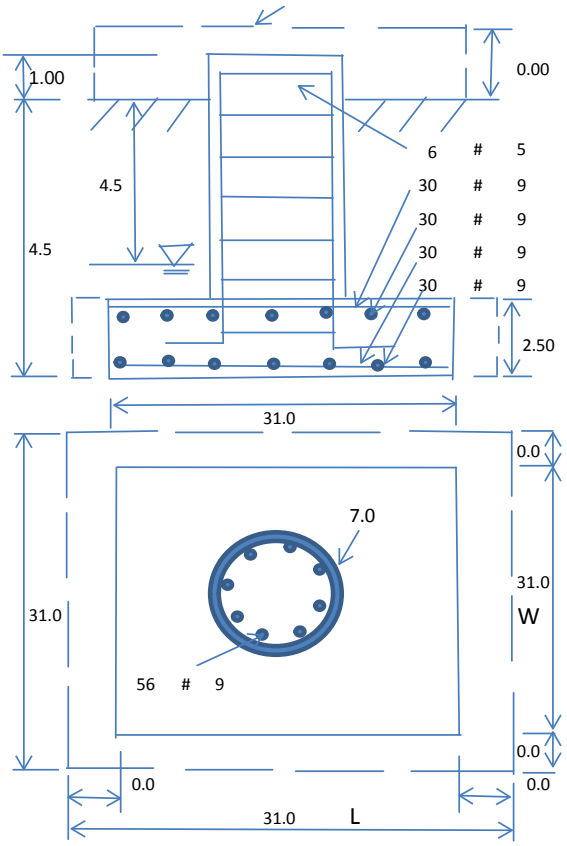
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	76.3	Shear Force (Kips):	32.6
Uplift Force (Kips):	0.0	Moment (Kips-ft):	3443.6
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	4.5
Pier Height A. G. (ft.):	1.00	Thickness of Pad (ft):	2.50
Length of Pad (ft.):	31	Width of Pad (ft.):	31
Final Length of pad (ft)	31.0	Final width of pad (ft):	31.0



Material Properties and Reabr Info:

Concrete Strength (psi):	3000	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:	56	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):	30	Qty. of Rebar in Pad (W):	30	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	50.0	Pcf		
Water Table B.G.S. (ft):	4.5	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	10400	Ultimate Skin Friction:	175	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	Yes		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.):	1845.03	Total Dry Soil Weight (Kips):	221.40
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	221.40	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2517.95	Total Dry Concrete Weight (Kips):	377.69
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	377.69	Total Vertical Load on Base (Kips):	675.40

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	1637	<	Allowable Factored Soil Bearing (psf):	7800	0.21	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	9540.0	>	Design Factored Momont (kips-ft):	3623	0.38	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.63	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):	8863.4	>	Design Factored Moment (Mu, Kips-F	3541.4	0.40	OK!
Calculated Shear Capacity (Kips):	663.6	>	Design Factored Shear (Kips):	32.6	0.05	OK!
Calculated Tension Capacity (Tn, Kips):	3024.0	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7274.1	>	Design Factored Axial Load (Pu Kips):	76.3	0.01	OK!
Moment & Axial Strength Combination:	0.40	OK!	Check Tie Spacing (Design/Required):		1	OK!
Pier Reinforcement Ratio:	0.010		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	808.0	>	One-Way Factored Shear (L-D. Kips):	341.8	0.42	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	808.0	>	One-Way Factored Shear (W-D., Kips)	341.8	0.42	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	845.4	>	One-Way Factored Shear (C-C, Kips):	328.4	0.39	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0031	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0031		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	3441.0	>	Moment at Bottom (L-Dir. K-Ft):	2356.5	0.68	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	3441.0	>	Moment at Bottom (W-Dir. K-Ft):	2356.5	0.68	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	4831.9	>	Moment at Bottom (C-C Dir. K-Ft):	3332.6	0.69	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0031	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0031		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	3441.0	>	Moment at the top (L-Dir K-Ft):	625.5	0.18	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	3441.0	>	Moment at the top (W-Dir K-Ft):	625.5	0.18	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	4831.9	>	Moment at the top (C-C Dir. K-Ft):	583.9	0.12	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1377.4	k-ft.	Max. factored shear stress v_{u_CD}:		1.1	Psi
Max. factored shear stress v_{u_AB}:	14.6	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	14.6	Psi	Check Usage of Punching Shear Capacity:		0.09	OK!

EXHIBIT 9

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

Post-Mod Antenna Mount Analysis Report

Existing 149-Ft Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT11559-A

Customer Site Name: Thompson 1, CT

Carrier Name: T-Mobile (App#: 116928 V2)

Carrier Site ID / Name: CTNL191D / Thompson CT

Site Location: 39 Rich Road

North Grosvenordale, Connecticut

Windham County

Latitude: 42.011550

Longitude: -71.851908

7/31/19

Analysis Result:

Max Structural Usage: 59.2% [Pass]

Report Prepared By : Anita Lama

Introduction

The purpose of this report is to summarize the analysis results on the (3) T-Arm at 148.00' elevation including the proposed modifications to support the proposed antenna configuration. Any existing modification listed under Sources of Information was assumed completed and was included in this analysis.

The proposed modification by **TES** listed under Sources of Information was considered completed and was included in this analysis.

Sources of Information

Mount Drawings	Mount mapping by SkyTower,LLC dated 5/1/2019
Antenna Loading	SBA Application # 116928, v2 dated 6/15/2019
Existing Modification	N/A
Proposed Modification	TES Project No. 81814

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} = 130 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 101 mph (3-Sec. Gust)
Basic Wind Speed with Ice: 50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed: 60 mph +0" Radial ice
Standard/Codes: ANSI/TIA/EIA 222-G/ IBC 2015/2018 Connecticut State
Exposure Category: C
Structure Class: II
Topographic Category: 1
Crest Height (Ft): 0

The site is a Risk Category II structure per table 1604.5 of the IBC. This site does not support emergency communication equipment for first responders such as fire departments, police, hospitals, ambulance services or any of the facilities listed for Risk Categories III and IV. The scope of work detailed in this structural analysis does not include items that are a part of emergency service as the 911 or essential facility service of an emergency response system.

Mount Information

(3) T-Arm at 148.00' elevation

Proposed Modifications

(1) Metrosite Heavy Collar Mount Assembly: MS-H1436
(1) Metrosite Support rail kit: MS-HR35-2375
(3) V-braces: L2.5"x2.5"x1/4"

Final Antenna Configuration

3 Ericsson Air 21 B2A/B4P
3 Ericsson Air 21 B4A/B2P
3 RFS APXVAARR24_43-U-NA20
3 Ericsson KRY 112 144/1
3 Ericsson Radio 4449 B71+B12

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Any proposed antennas not currently installed should be mounted such that the centers of the antennas do not exceed 0.5 ft vertically from the center of the T-Arm .

Analysis Results

Our calculations have determined that under design wind load the existing mounts will be structurally adequate to support the proposed antenna configuration after the proposed modification is successfully completed. The maximum structural usage is 59.2%, which occurs in the front face horizontal. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

1. Mount Photos Before Modification
2. Antenna Placement Diagram
3. Mount Mapping Information
4. Analysis Calculations

Standard Conditions

1. The loading configuration as analyzed in this report is as provided from the customer. Any deviation from this design shall be communicated to TES to verify deviation will not adversely impact the analysis.

2. The analysis is based on the presumption that the antenna mount members and components along with any existing reinforcement items have been correctly and properly designed, manufactured, installed and maintained.

3. All the existing structural members were assumed to be in good condition with no physical damage or deterioration associated with corrosion. The mount analysis is not a condition assessment of the mount.

4. The mount analysis was performed in accordance with the loading provided, and if applicable the modification required to support the additional loading.

5. If the mount is modified, installation must adhere to the configuration communicated in the modification drawings.

6. The modification drawings are not intended to convey means or methods. These are the responsibility of the installing contractor.

7. Rigging plan review is available if the contractor requires for a construction class IV or other if required. Review fee would apply.

8. The mount modification package was created based upon information provided for the mount loading. The underlying tower is assumed to provide support and sufficient rigidity to support the mount loads as a tower analysis was not part of the mount analysis.

9. TES is not responsible for modifications to climbing facilities unless communicated to TES in writing.


05.01.2019


30.04.2019

Structure: CT11559-A-SBA - Thompson 1, CT

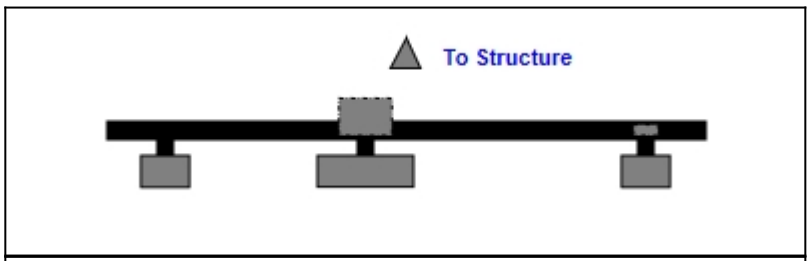
Sector: **A**

Structure Type: Monopole

Mount Elev: 148.00

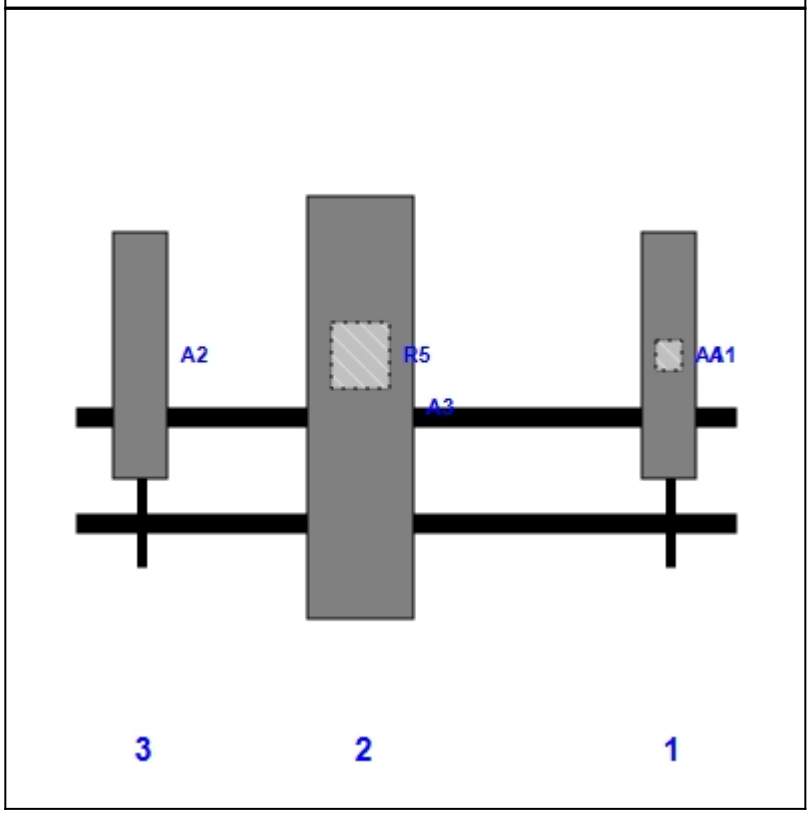
7/23/2019

Plan View



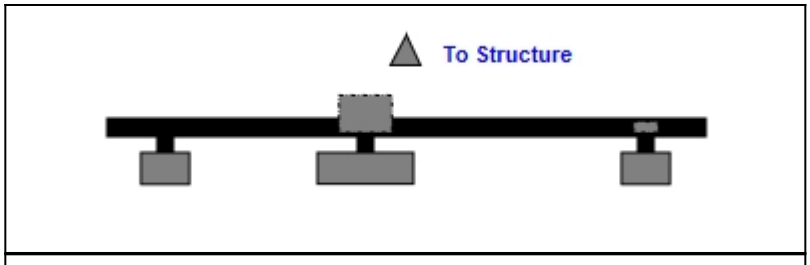
Front View

Looking Toward Structure



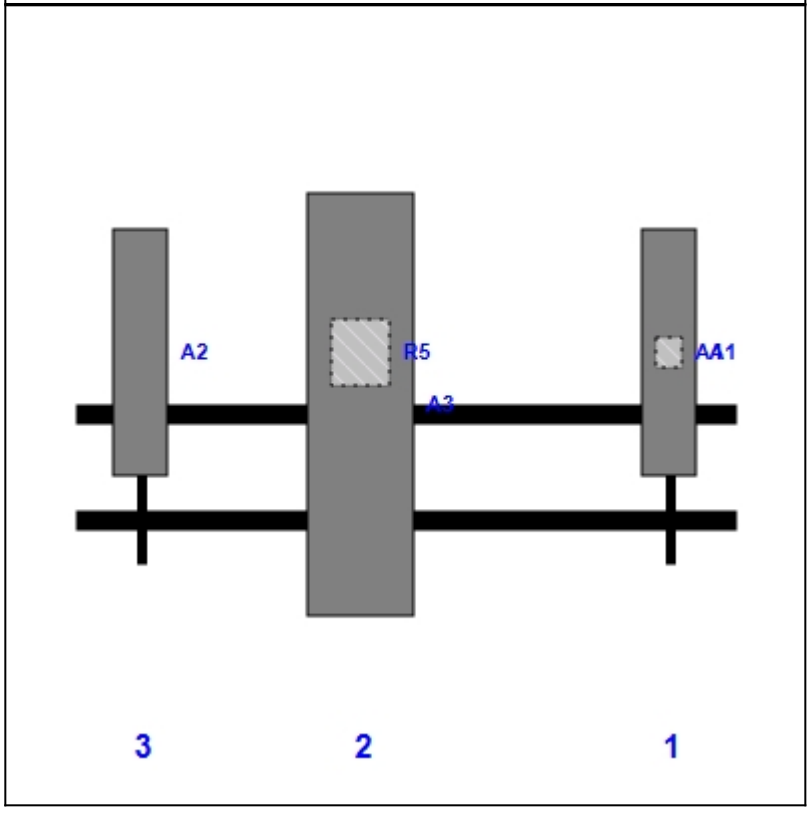
Ref	Model	Height (in)	Width (in)	H Dist From Left	Pipe	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air 21 B2A/B4P	56.00	12.10	135.00	1	a	Front	24.00	0.00
A4	KRY 112 144/1	6.90	6.10	135.00	1	a	Behind	24.00	0.00
A3	APXVAARR24_43-U-NA20	95.90	24.00	65.00	2	a	Front	36.00	0.00
R5	Radio 4449 B71+B12	15.00	13.20	65.00	2	a	Behind	24.00	0.00
A2	Air 21 B4A/B2P	56.00	12.10	15.00	3	a	Front	24.00	0.00

Plan View



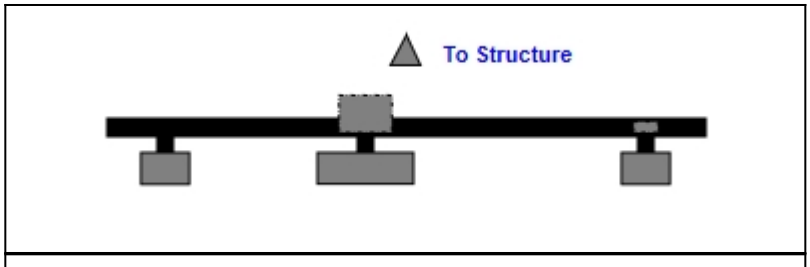
Front View

Looking Toward Structure



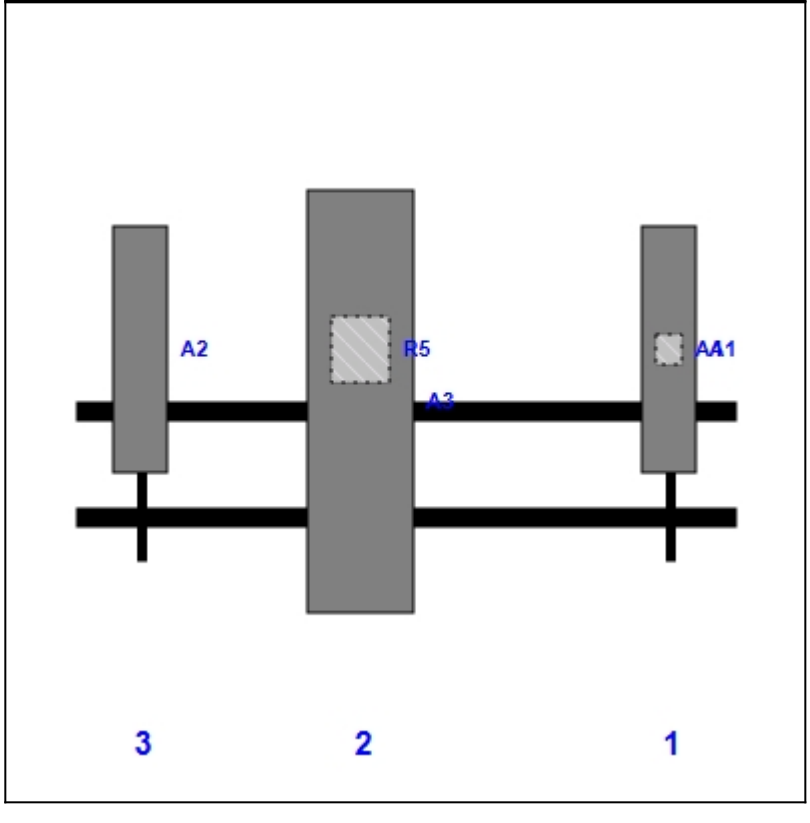
Ref	Model	Height (in)	Width (in)	H Dist From Left	Pipe	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air 21 B2A/B4P	56.00	12.10	135.00	1	a	Front	24.00	0.00
A4	KRY 112 144/1	6.90	6.10	135.00	1	a	Behind	24.00	0.00
A3	APXVAARR24_43-U-NA20	95.90	24.00	65.00	2	a	Front	36.00	0.00
R5	Radio 4449 B71+B12	15.00	13.20	65.00	2	a	Behind	24.00	0.00
A2	Air 21 B4A/B2P	56.00	12.10	15.00	3	a	Front	24.00	0.00

Plan View



Front View

Looking Toward Structure

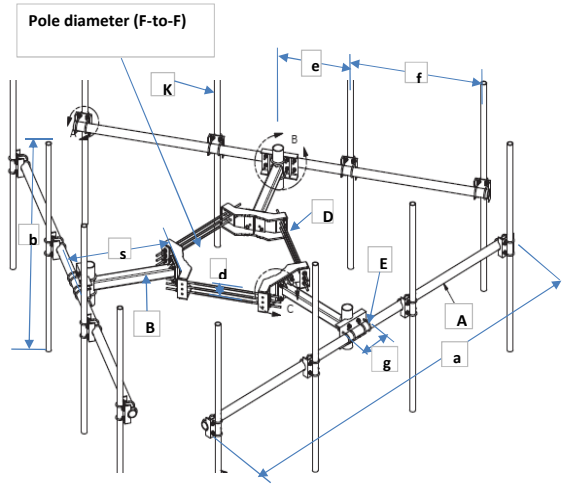


Ref	Model	Height (in)	Width (in)	H Dist From Left	Pipe	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	Air 21 B2A/B4P	56.00	12.10	135.00	1	a	Front	24.00	0.00
A4	KRY 112 144/1	6.90	6.10	135.00	1	a	Behind	24.00	0.00
A3	APXVAARR24_43-U-NA20	95.90	24.00	65.00	2	a	Front	36.00	0.00
R5	Radio 4449 B71+B12	15.00	13.20	65.00	2	a	Behind	24.00	0.00
A2	Air 21 B4A/B2P	56.00	12.10	15.00	3	a	Front	24.00	0.00

Antenna Mount Type "MT-Z" Mapping Form (PATENT PENDING)

FCC # 1261046

Tower Owner:	SBA Corp.	**Mapping Date:**	5/1/19
Site Name:	Thompson 1, CT	**Structure Type:**	Monopole
Site Number or ID:	CT11559	**Structure Height (Ft.):**	150
Mapping Contractor:	SkyTower LLC	**Mount Height (Ft.):**	146



Geometries (Unit: inches)									
a	150	**e**	60	**j**		**o**		**s**	34
b	108	**f**	15	**k**		**p**		**t**	27
c		**g**	15	**m**		**q**		**u ***	38
d	5	**h**		**n**		**r**		**v ***	108

Members/Bolts (Unit: inches) — * - See Ant. Layout for "u", "v" and member "K" (pipe)

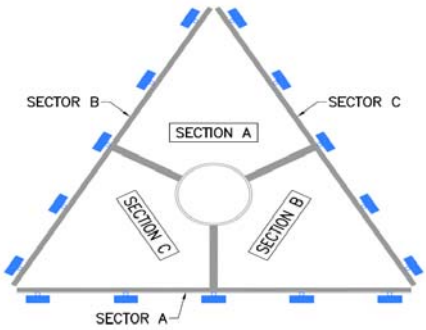
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	3.5 OD x 0.216 Pipe	3.5	3.068	0.216	**F**				
B	Tubing 4x4x1/4	4	4	0.25	**G**				
C					**H**				
D	5/8" Bolt				**J**				
E	1/2" Bolt				**K* (pipe)**	2.875 OD x 0.203 Pipe	2.875	2.469	0.203

Please enter the infomation below if members can't be found from the drop down lists

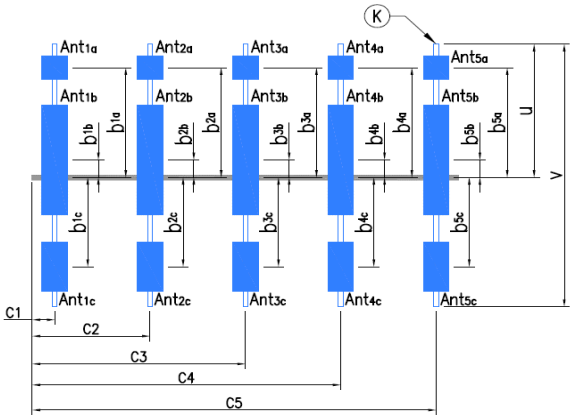
Carrier below is 7" away

Kicker kit installed under mount. Angle iron is 2.5x2.5x53

mounting plate for kicker kit is 8.5x7 connexted using 4 pieces of 1/2" all-thread



Climbing ladder is , at 180 Degree Azimuth



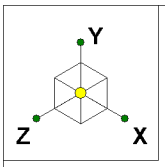
Antenna Layout

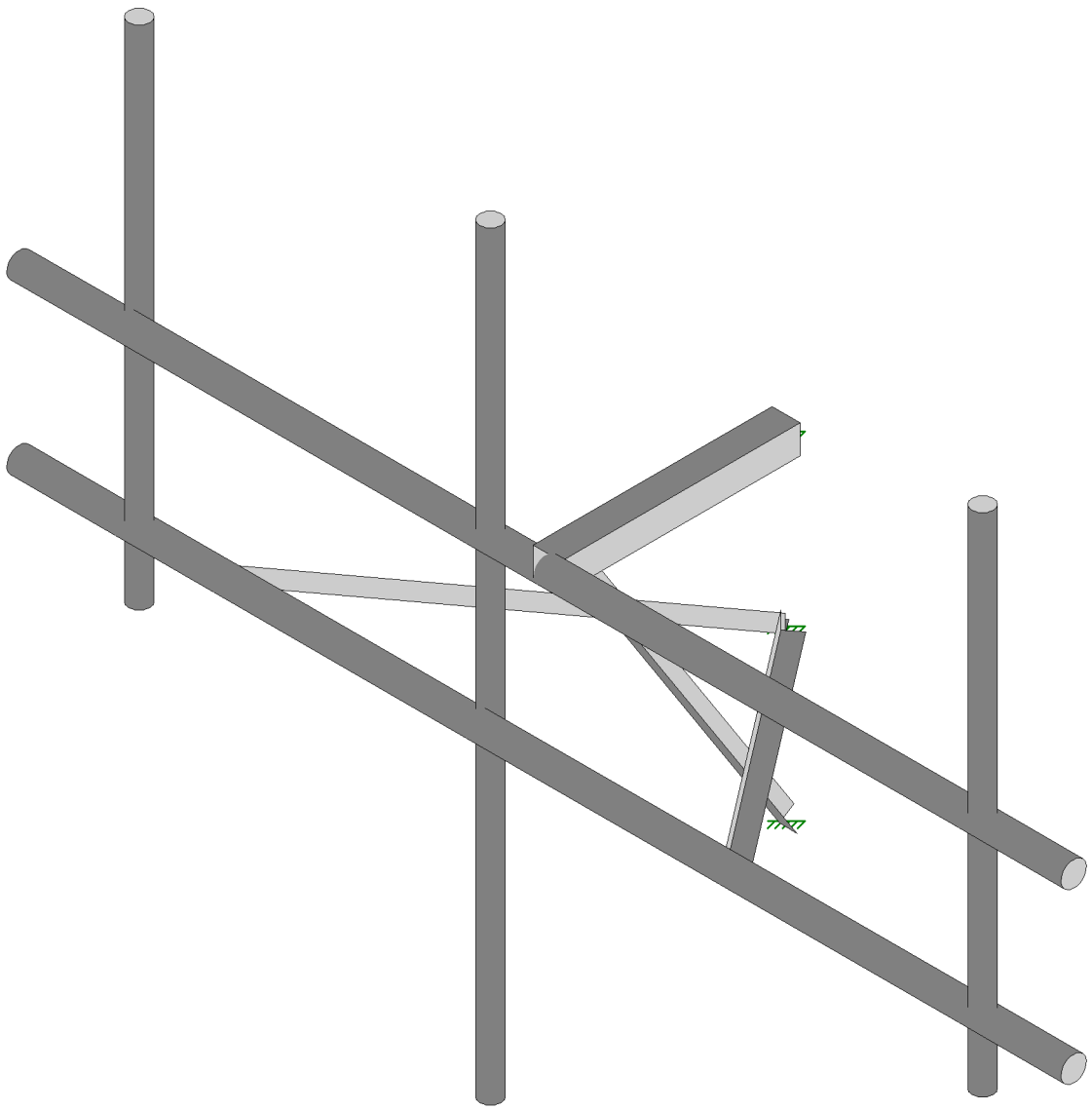
Ants. Items	Enter antenna model. If not labled, enter "Unknown". If no antenna at specified location, enter "N/A". If antennas and the locations are the same on all three sectors, only enter one sector. Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	Mounting Locations (Unit: inches) Vertical Distances"b_{1a}, b_{2a}, b_{3a}, b_{1b}...." (In.)	Horiz. offset (Use "-" if Ant. is inside)	Horiz. offset "C_1, C_2, C_3, C_4, C_5" (in.)	Photos of antennas Photo Numbers
Sector A									
Ant_{1a}	Ericsson AS1180231	11.5	8	55		15	6	15	226-236
Ant_{1b}	TMA	6	3	7		11			
Ant_{1c}									
Ant_{2a}	LNX-6516DS-A1M	12	7.5	96		7	2.5	85	237-241
Ant_{2b}	Ericsson AS1612412	16	7	17			2		
Ant_{2c}									
Ant_{3a}	Kathrein AS1180461	11.5	8	55		14	5	135	242-251
Ant_{3b}									
Ant_{3c}									
Ant_{4a}									
Ant_{4b}									
Ant_{4c}									
Ant_{5a}									
Ant_{5b}									
Ant_{5c}									
Are Ant same as sector A?	Yes	**Antennas on Sector B are the same as Sector A**							

Azimuth (Degree) of Each Sector and Climbing Information

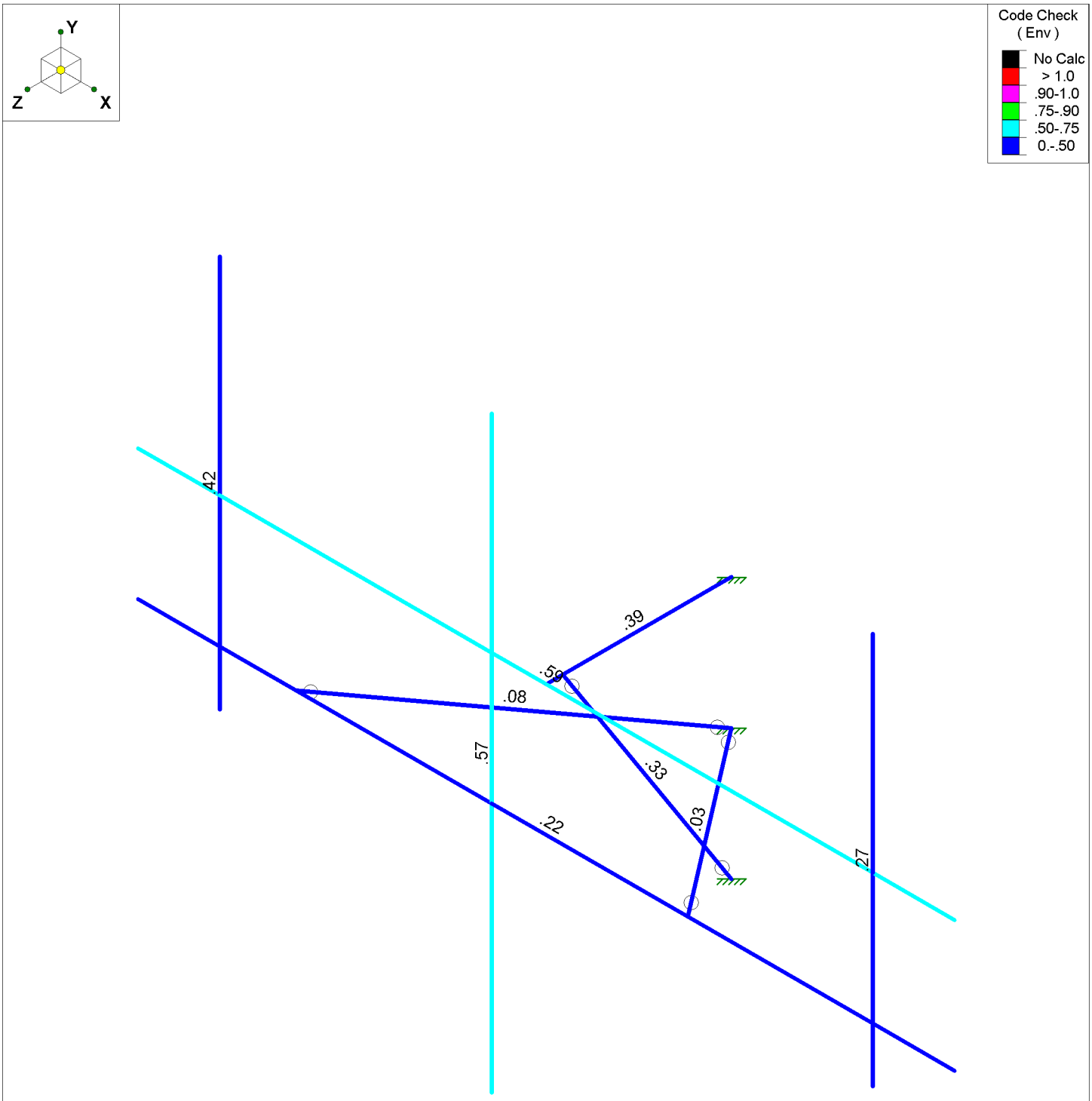
Sector A:	5	Deg	
Sector B:	125	Deg	
Sector C:	245	Deg	
Climbing	180	Deg	
Climbing Facility	Corrosion Type:	Good condition	
	Access:	Climbing path was unobstructed.	
	Condition:	N/A	

Are Ant same as sector A/B?	Same As A	**Antennas on Sector C are the same as Sector A**



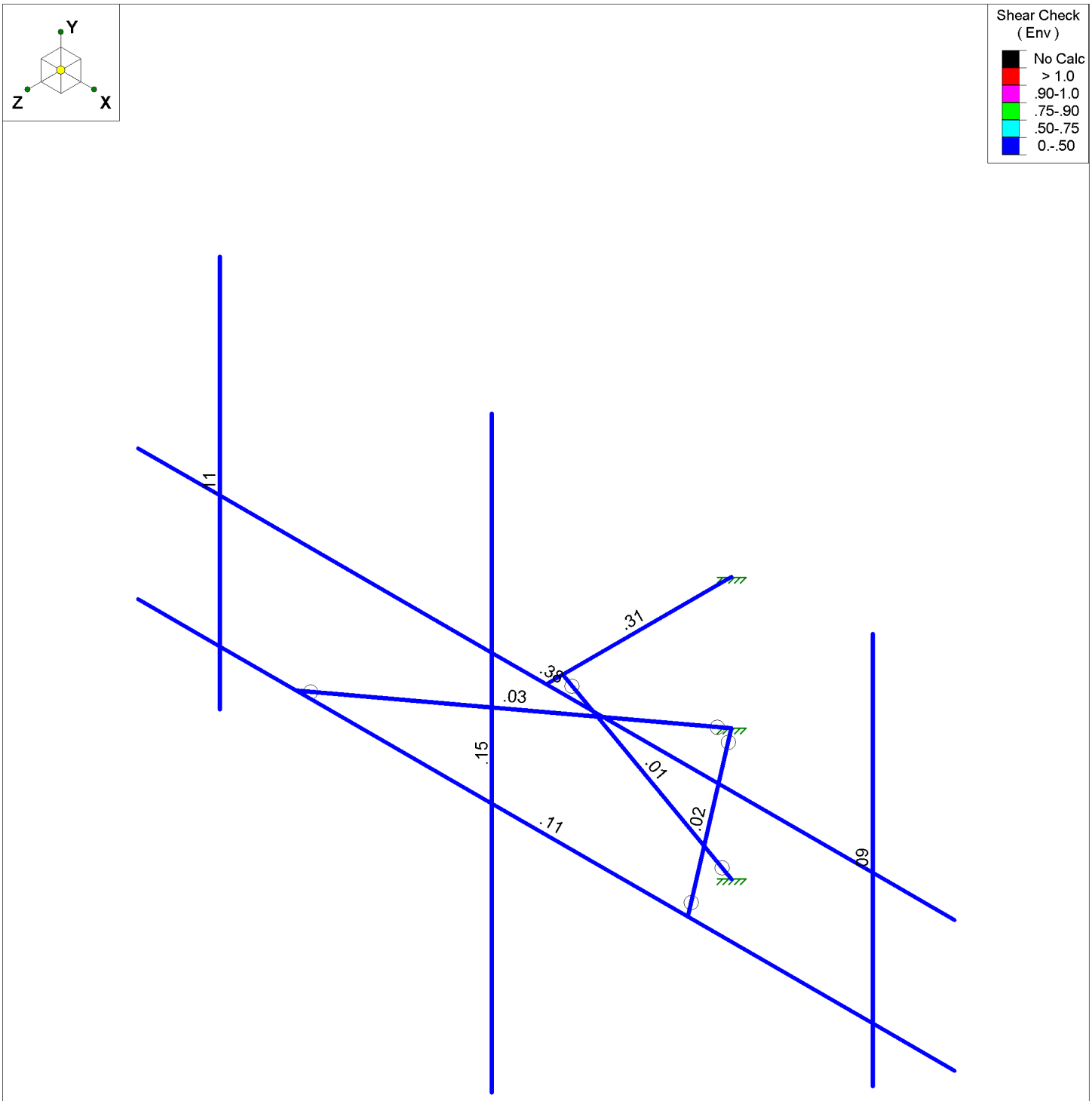


Tower Engineering Solutio...	CT11559-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 1
		July 23, 2019 at 2:28 PM
TES Project No. 81814		CT11559-A-SBA_81814_G_RISA_L...



Member Code Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.6W (Front)

Tower Engineering Solutio...	CT11559-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 2
		July 23, 2019 at 2:28 PM
TES Project No. 81814		CT11559-A-SBA_81814_G_RISA_L...



Member Shear Checks Displayed (Enveloped)
Results for LC 1, 1.2D+1.6W (Front)

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(Me...	Surface(P...
1	Antenna D	None					8			
2	Antenna Di	None					8			
3	Antenna W Front	None					8			
4	Antenna Wi Front	None					8			
5	Antenna W Side	None					8			
6	Antenna Wi Side	None					8			
7	Service Lm1	None					1			
8	Service Lm2	None					1			
9	Structure D	None		-1						
10	Structure Di	None						9		
11	Structure W Front	None						9		
12	Structure Wi Front	None						9		
13	Structure W Side	None						9		
14	Structure Wi Side	None						9		

Load Combinations

	Description	Sol..	PD..	SR..	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...	BLC	Fact...
1	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6														
2	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6														
3	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6														
4	1.2D+1.6...	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6														
5	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12	1										
6	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12	-1										
7	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14	1										
8	1.2D+1.0...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14	-1										
9	1.2D+1.5L...	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16												
10	1.2D+1.5L...	Yes	Y		1	1.2	9	1.2	8	1.5	3	.16	11	.16												
11	1.4D	Yes	Y		1	1.4	9	1.4																		

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
1	N1	0	0	0	0	
2	N2	0	0	2.833333	0	
3	N3	-6.25	0	2.833333	0	
4	N4	6.25	0	2.833333	0	
5	NP1	5	3.166667	2.833333	0	
6	NP2	5	-2.833333	2.833333	0	
7	NP3	-0.833333	3.166667	2.833333	0	
8	NP4	-0.833333	-5.833333	2.833333	0	
9	NP5	-5	3.166667	2.833333	0	
10	NP6	-5	-2.833333	2.833333	0	
11	N11	0	-4	0	0	
12	N12	0	0	2.583333	0	
13	N13	5	0	2.833333	0	
14	N14	-0.833333	0	2.833333	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
15	N15	-5	0	2.833333	0	
16	N16	-6.25	-2	2.833333	0	
17	N17	6.25	-2	2.833333	0	
18	N18	0	-2	0	0	
19	N19	5	-2	2.833333	0	
20	N20	-0.833333	-2	2.833333	0	
21	N21	-5	-2	2.833333	0	
22	N22	2.166667	-2	2.833333	0	
23	N23	-3.833333	-2	2.833333	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rul...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	xxxxx	HSS16x0....	Beam	None	A572 Gr.50	Typical	19.9	606	606	1210

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF	4CU5.25X03...	Beam	CU	A570 Gr.33	Typical	4.854	13.238	12.817	.228

Aluminum Section Sets

	Label	Shape	Type	Design List	Material	Design Rules	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	AL1A	AACS14X13.9	Beam	AA Channel	3003-H14	Typical	11.8	44.7	401	1.19

Hot Rolled Steel Properties

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

Cold Formed Steel Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (\1E5 F)	Density[k/ft^3]	Yield[ksi]	Fu[ksi]
1	A570 Gr.33	29500	11346	.3	.65	.49	33	52
2	A607 C1 Gr.55	29500	11346	.3	.65	.49	55	70

Aluminum Properties

	Label	E [ksi]	G [ksi]	Nu	Therm (...	Density[...	Table B.4	kt	Ftu[ksi]	Fty[ksi]	Fcy[ksi]	Fsu[ksi]	Ct
1	3003-H14	10100	3787.5	.33	1.3	.173	Table B...	1	19	16	13	12	141
2	6061-T6	10100	3787.5	.33	1.3	.173	Table B...	1	38	35	35	24	141
3	6063-T5	10100	3787.5	.33	1.3	.173	Table B...	1	22	16	16	13	141
4	6063-T6	10100	3787.5	.33	1.3	.173	Table B...	1	30	25	25	19	141

Aluminum Properties (Continued)

	Label	E [ksi]	G [ksi]	Nu	Therm (...	Density[...	Table B.4	kt	Ftu[ksi]	Fty[ksi]	Fcy[ksi]	Fsu[ksi]	Ct
5	5052-H34	10200	3787.5	.33	1.3	.173	Table B...	1	34	26	24	20	141
6	6061-T6 W	10100	3787.5	.33	1.3	.173	Table B...	1	24	15	15	15	141

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(deg)	Section/Shape	Type	Design List	Material	Design Rules
1	M1	N3	N4			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
2	M2	N1	N2			HSS4x4x3	Beam	None	A500 Gr.B...	DR1
3	MP1A	NP1	NP2			PIPE_2.5	Beam	Pipe	A53 Gr.B	DR1
4	MP2A	NP3	NP4			PIPE_2.5	Beam	Pipe	A53 Gr.B	DR1
5	MP3A	NP5	NP6			PIPE_2.5	Beam	Pipe	A53 Gr.B	DR1
6	M6	N12	N11			L2.5x2.5x3	Beam	Wide Flange	A36 Gr.36	Typical
7	M7	N16	N17			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
8	M8	N18	N23			L2.5x2.5x4	Beam	Wide Flange	A36 Gr.36	Typical
9	M9	N22	N18			L2.5x2.5x4	Beam	Wide Flange	A36 Gr.36	Typical

Member Advanced Data

	Label	I Release	J Release	I Offset[in]	J Offset[in]	T/C Only	Physical	Analysis ...	Inactive	Seismic Design ...
1	M1						Yes			None
2	M2						Yes			None
3	MP1A						Yes	-z		None
4	MP2A						Yes	-z		None
5	MP3A						Yes	-z		None
6	M6	BenPIN	BenPIN				Yes			None
7	M7						Yes			None
8	M8	BenPIN	BenPIN				Yes			None
9	M9	BenPIN	BenPIN				Yes			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	PIPE_3.0	12.5			Lbyy						Gravity
2	M2	HSS4x4x3	2.833			Lbyy						Gravity
3	MP1A	PIPE_2.5	6			Lbyy						Gravity
4	MP2A	PIPE_2.5	9			Lbyy						Gravity
5	MP3A	PIPE_2.5	6			Lbyy						Gravity
6	M6	L2.5x2.5x3	4.762			Lbyy						Lateral
7	M7	PIPE_3.0	12.5			Lbyy						Gravity
8	M8	L2.5x2.5x4	4.767			Lbyy						Lateral
9	M9	L2.5x2.5x4	3.567			Lbyy						Lateral

Cold Formed Steel Design Parameters

Label	Shape	Lengt...	Lbyy[ft]	Lbzz[ft]	Lcomp t...	Lcomp ...	L-torque...	Kyy	Kzz	Cm-...	Cm-...	Cb	R	a[ft]	y sw...	z sw...
No Data to Print ...																

Aluminum Design Parameters

Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
No Data to Print ...											

Joint Loads and Enforced Displacements

Joint Label	L,D,M	Direction	Magnitude[(lb,k-ft), (in,rad), (lb*s^2...
No Data to Print ...			

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-45.75	0
2	MP1A	Y	-45.75	4
3	MP3A	Y	-45.2	0
4	MP3A	Y	-45.2	4
5	MP2A	Y	-64	0
6	MP2A	Y	-64	6
7	MP1A	Y	-11	2
8	MP2A	Y	-70	2

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-119.773	0
2	MP1A	Y	-119.773	4
3	MP3A	Y	-119.773	0
4	MP3A	Y	-119.773	4
5	MP2A	Y	-290.086	0
6	MP2A	Y	-290.086	6
7	MP1A	Y	-25.87	2
8	MP2A	Y	-98.828	2

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-114.218	0
2	MP1A	Z	-114.218	4
3	MP3A	Z	-114.218	0
4	MP3A	Z	-114.218	4
5	MP2A	Z	-379.601	0
6	MP2A	Z	-379.601	6
7	MP1A	Z	-15.379	2
8	MP2A	Z	-30.946	2

Member Point Loads (BLC 4 : Antenna Wi Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-34.855	0
2	MP1A	Z	-34.855	4
3	MP3A	Z	-34.855	0
4	MP3A	Z	-34.855	4
5	MP2A	Z	-104.803	0

Member Point Loads (BLC 4 : Antenna Wi Front) (Continued)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
6	MP2A	Z	-104.803	6
7	MP1A	Z	-6.89	2
8	MP2A	Z	-10.995	2

Member Point Loads (BLC 5 : Antenna W Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	80.837	0
2	MP1A	X	80.837	4
3	MP3A	X	80.837	0
4	MP3A	X	80.837	4
5	MP2A	X	153.589	0
6	MP2A	X	153.589	6
7	MP1A	X	5.835	2
8	MP2A	X	43.605	2

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	X	26.055	0
2	MP1A	X	26.055	4
3	MP3A	X	26.055	0
4	MP3A	X	26.055	4
5	MP2A	X	47.528	0
6	MP2A	X	47.528	6
7	MP1A	X	4.386	2
8	MP2A	X	16.699	2

Member Point Loads (BLC 7 : Service Lm1)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-500	0

Member Point Loads (BLC 8 : Service Lm2)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	M1	Y	-500	%50

Member Distributed Loads (BLC 10 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-16.534	-16.534	0	%100
2	M2	Y	-22.86	-22.86	0	%100
3	MP1A	Y	-14.76	-14.76	0	%100
4	MP2A	Y	-14.76	-14.76	0	%100
5	MP3A	Y	-14.76	-14.76	0	%100
6	M6	Y	-13.237	-13.237	0	%100
7	M7	Y	-16.534	-16.534	0	%100
8	M8	Y	-13.237	-13.237	0	%100
9	M9	Y	-13.237	-13.237	0	%100

Member Distributed Loads (BLC 11 : Structure W Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]

Member Distributed Loads (BLC 11 : Structure W Front) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-13.128	-13.128	0	%100
2	M2	PZ	-25.007	-25.007	0	%100
3	MP1A	PZ	-10.784	-10.784	0	%100
4	MP2A	PZ	-10.784	-10.784	0	%100
5	MP3A	PZ	-10.784	-10.784	0	%100
6	M6	PZ	-15.629	-15.629	0	%100
7	M7	PZ	-13.128	-13.128	0	%100
8	M8	PZ	-15.629	-15.629	0	%100
9	M9	PZ	-15.629	-15.629	0	%100

Member Distributed Loads (BLC 12 : Structure Wi Front)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-7.49	-7.49	0	%100
2	M2	PZ	-10.401	-10.401	0	%100
3	MP1A	PZ	-6.915	-6.915	0	%100
4	MP2A	PZ	-6.915	-6.915	0	%100
5	MP3A	PZ	-6.915	-6.915	0	%100
6	M6	PZ	-8.103	-8.103	0	%100
7	M7	PZ	-7.49	-7.49	0	%100
8	M8	PZ	-8.103	-8.103	0	%100
9	M9	PZ	-8.103	-8.103	0	%100

Member Distributed Loads (BLC 13 : Structure W Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	13.128	13.128	0	%100
2	M2	PX	25.007	25.007	0	%100
3	MP1A	PX	10.784	10.784	0	%100
4	MP2A	PX	10.784	10.784	0	%100
5	MP3A	PX	10.784	10.784	0	%100
6	M6	PX	15.629	15.629	0	%100
7	M7	PX	13.128	13.128	0	%100
8	M8	PX	15.629	15.629	0	%100
9	M9	PX	15.629	15.629	0	%100

Member Distributed Loads (BLC 14 : Structure Wi Side)

	Member Label	Direction	Start Magnitude[lb/ft,...	End Magnitude[lb/ft,F...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	7.49	7.49	0	%100
2	M2	PX	10.401	10.401	0	%100
3	MP1A	PX	6.915	6.915	0	%100
4	MP2A	PX	6.915	6.915	0	%100
5	MP3A	PX	6.915	6.915	0	%100
6	M6	PX	8.103	8.103	0	%100
7	M7	PX	7.49	7.49	0	%100
8	M8	PX	8.103	8.103	0	%100
9	M9	PX	8.103	8.103	0	%100

Member Area Loads

Joint A	Joint B	Joint C	Joint D	Direction	Distribution	Magnitude[ksf]
No Data to Print ...						

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	N1	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N11	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N18	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N1	max	1943.584	4	999.243	1	2232.49	1	.558	2	4.735	4	.289	1
2		min	-1864.115	3	-1029.458	2	-3473.636	2	-.749	1	-4.74	3	-2.658	9
3	N11	max	57.632	4	3249.639	6	2057.152	6	0	1	0	4	0	4
4		min	-57.545	3	-110.881	1	-27.251	1	0	1	-.001	9	0	9
5	N18	max	162.653	2	75.444	6	952.148	1	.003	1	0	1	.001	1
6		min	-1111.792	9	5.482	9	-866.071	2	-.002	2	0	1	-.007	9
7	Totals:	max	1824.437	4	3053.966	6	3157.387	1						
8		min	-1824.437	3	908.566	1	-3157.387	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
1	M1	1	max	0	1	0	1	0	1	0	1	0	1	0	1
2			min	0	1	-750	9	0	1	0	1	0	1	0	1
3		2	max	331.856	3	32.499	4	332.601	2	.383	2	.434	9	.222	9
4			min	-1297.289	9	-418.778	9	-293.681	1	-.435	1	-.351	1	-.151	5
5		3	max	889.681	3	-611.204	4	1744.239	2	1.434	2	2.502	2	2.425	9
6			min	-1490.461	4	-2308.511	7	-1659.623	1	-1.495	1	-2.302	1	.344	3
7		4	max	278.318	4	447.401	8	377.816	1	.509	1	.493	2	.032	1
8			min	-950.319	7	-2.823	9	-380.013	2	-.499	2	-.525	1	-.266	9
9		5	max	0	1	0	1	0	1	0	1	0	1	0	1
10			min	0	1	0	1	0	1	0	1	0	1	0	1
11	M2	1	max	2232.49	1	999.167	1	1862.016	3	.289	1	4.735	4	.749	1
12			min	-3473.636	2	-1030.39	2	-1941.506	4	-2.658	9	-4.74	3	-.558	2
13		2	max	2232.49	1	991.141	1	1833.676	3	.289	1	3.369	4	.382	6
14			min	-3473.636	2	-1038.416	2	-1913.165	4	-2.658	9	-3.431	3	.044	1
15		3	max	2232.49	1	983.115	1	1805.335	3	.289	1	2.024	4	.913	2
16			min	-3473.636	2	-1046.442	2	-1884.824	4	-2.658	9	-2.142	3	-.655	1
17		4	max	2232.49	1	975.089	1	1776.994	3	.289	1	.699	4	1.657	2
18			min	-3473.636	2	-1054.468	2	-1856.483	4	-2.658	9	-2.264	9	-1.348	1
19		5	max	2105.213	1	2802.683	5	1689.065	3	.289	1	.494	1	1.933	2
20			min	-2191.289	2	833.242	2	-1768.529	4	-2.658	9	-3.053	9	-2.003	1
21	MP1A	1	max	174.673	8	129.48	4	183.445	1	.016	3	.021	5	0	1
22			min	54.9	9	-129.48	3	-183.472	2	-.016	4	.007	9	0	1
23		2	max	206.674	8	155.361	4	209.327	1	.016	3	.301	1	.214	3
24			min	64.761	9	-155.362	3	-209.354	2	-.016	4	-.288	2	-.214	4
25		3	max	277.746	8	190.58	4	259.815	1	.016	3	.659	1	.475	3

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
26			min	87.822	9	-190.58	3	-259.842	2	-.016	4	-.646	2	-.475	4
27		4	max	185.726	9	862.815	7	154.882	1	.162	2	.217	1	-.01	1
28			min	-20.612	4	67.338	4	-253.801	9	-.191	9	-.237	2	-.234	9
29		5	max	0	9	.005	1	.018	6	0	9	0	1	0	9
30			min	0	1	-.031	9	-.016	1	0	1	0	9	0	4
31	MP2A	1	max	366.886	6	246.331	4	608.876	1	.03	3	.044	7	0	1
32			min	76.8	9	-246.118	3	-608.92	2	-.03	4	.009	9	0	1
33		2	max	597.716	6	354.923	4	697.211	1	.03	3	1.435	1	.615	3
34			min	175.592	9	-354.709	3	-697.256	2	-.03	4	-1.417	2	-.615	4
35		3	max	-335.213	3	164.41	3	611.682	2	.434	9	.184	1	.163	9
36			min	-1335.804	8	-416.115	8	-566.753	1	-.154	2	-.25	2	-.1	8
37		4	max	-14.792	9	38.747	3	38.849	2	0	9	.044	1	.044	3
38			min	-48.002	5	-38.786	4	-38.854	1	0	1	-.044	2	-.044	4
39		5	max	0	1	.086	1	.026	2	0	9	0	1	0	9
40			min	0	1	-.663	9	-.09	5	0	1	0	1	0	4
41	MP3A	1	max	174.013	7	129.503	4	183.447	1	.016	3	.021	7	0	1
42			min	54.24	1	-129.416	3	-183.439	2	-.016	4	.007	2	0	1
43		2	max	206.014	7	155.385	4	209.329	1	.016	3	.301	1	.214	3
44			min	64.101	1	-155.298	3	-209.321	2	-.016	4	-.288	2	-.214	4
45		3	max	238.015	7	181.267	4	235.211	1	.016	3	.634	1	.466	3
46			min	73.962	1	-181.18	3	-235.203	2	-.016	4	-.621	2	-.466	4
47		4	max	476.847	9	-4.51	3	344.838	9	.205	1	.353	1	.278	8
48			min	-20.767	3	-1291.791	9	-175.19	2	-.193	2	-.352	2	.027	3
49		5	max	0	1	.004	1	.017	2	0	9	0	9	0	9
50			min	0	9	-.037	9	-.017	1	0	1	0	1	0	4
51	M6	1	max	3795.801	6	46.765	2	59.537	4	0	4	0	1	0	1
52			min	-176.912	1	-37.261	1	-59.537	3	-.001	9	0	1	0	1
53		2	max	3808.321	6	23.383	2	29.768	4	0	4	.041	4	.035	4
54			min	-159.666	1	-18.63	1	-29.768	3	-.001	9	-.035	3	-.041	3
55		3	max	3820.842	6	0	1	0	1	0	4	.054	4	.046	4
56			min	-142.42	1	0	1	0	1	-.001	9	-.046	3	-.054	3
57		4	max	3833.362	6	18.63	1	29.768	3	0	4	.041	4	.035	4
58			min	-125.175	1	-23.383	2	-29.768	4	-.001	9	-.035	3	-.041	3
59		5	max	3845.882	6	37.261	1	59.537	3	0	4	0	1	0	1
60			min	-107.929	1	-46.765	2	-59.537	4	-.001	9	0	1	0	1
61	M7	1	max	0	1	0	1	0	1	0	1	0	1	0	1
62			min	0	1	0	1	0	1	0	1	0	1	0	1
63		2	max	669.065	2	-27.149	3	255.953	9	.476	2	.472	2	.062	8
64			min	-370.81	1	-543.343	9	-47.599	2	-.478	1	-.461	1	-.094	9
65		3	max	918.383	6	369.698	7	163.388	9	.313	1	.637	2	.714	7
66			min	-134.946	1	50.723	4	-107.3	1	-.345	2	-.57	1	.066	4
67		4	max	852.33	7	259.382	7	246.967	1	.314	1	.638	2	-.043	4
68			min	93.226	4	15.674	4	-244.702	2	-.346	2	-.606	1	-.288	7
69		5	max	0	1	0	1	0	1	0	1	0	1	0	1
70			min	0	1	0	1	0	1	0	1	0	1	0	1
71	M8	1	max	1011.921	9	43.131	5	38.544	2	0	2	0	1	0	1
72			min	-639.889	2	11.581	9	-38.544	1	-.005	9	0	1	0	1
73		2	max	1010.496	9	21.565	5	19.272	2	0	2	.035	6	.017	2
74			min	-625.645	2	5.791	9	-19.272	1	-.005	9	-.017	1	-.035	5
75		3	max	1009.072	9	0	1	0	1	0	2	.047	6	.023	2
76			min	-611.4	2	0	1	0	1	-.005	9	-.023	1	-.047	5
77		4	max	1007.647	9	-5.791	3	19.272	1	0	2	.035	6	.017	2

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shear[lb]	LC	Torque[k-...	LC	y-y Mome...	LC	z-z Mome...	LC
78			min	-597.156	2	-21.565	7	-19.272	2	-.005	9	-.017	1	-.035	5
79		5	max	1006.223	9	-11.581	3	38.544	1	0	2	0	1	0	1
80			min	-582.911	2	-43.131	6	-38.544	2	-.005	9	0	1	0	1
81	M9	1	max	539.791	1	32.273	6	28.141	4	.002	1	0	1	0	1
82			min	-516.16	2	8.666	1	-28.141	3	-.005	9	0	1	0	1
83		2	max	550.55	1	16.137	6	14.07	4	.002	1	.02	8	.009	4
84			min	-526.92	2	4.333	1	-14.07	3	-.005	9	-.009	3	-.02	7
85		3	max	561.31	1	0	1	0	1	.002	1	.026	8	.012	4
86			min	-537.679	2	0	1	0	1	-.005	9	-.012	3	-.026	7
87		4	max	572.07	1	-4.333	2	14.07	3	.002	1	.02	8	.009	4
88			min	-548.439	2	-16.137	5	-14.07	4	-.005	9	-.009	3	-.02	7
89		5	max	582.83	1	-8.666	3	28.141	3	.002	1	0	1	0	1
90			min	-559.199	2	-32.273	5	-28.141	4	-.005	9	0	1	0	1

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	phi*Pnc [...	phi*Pnt [lb]	phi*Mn y...	phi*Mn z...	Cb	Eqn
1	M1	PIPE_3.0	.592	6.25	2	.383	6.25		1	28250.554	65205	5.749	5.749	1....	H3-6
2	MP2A	PIPE_2.5	.568	3.094	1	.149	5.156		9	26137.193	50715	3.596	3.596	4....	H1-1b
3	MP3A	PIPE_2.5	.422	3.188	9	.107	5.125		9	37773.818	50715	3.596	3.596	4....	H1-1b
4	M2	HSS4x4x3	.392	2.833	9	.306	2.597	y	9	103416.3...	106812	12.662	12.662	2....	H3-6
5	M6	L2.5x2.5x3	.328	2.43	6	.013	0	z	3	13866.626	29192.4	.873	1.681	1....	H2-1
6	MP1A	PIPE_2.5	.275	3.188	7	.090	3.188		9	37773.818	50715	3.596	3.596	3....	H1-1b
7	M7	PIPE_3.0	.220	5.339	9	.110	2.344		1	28250.554	65205	5.749	5.749	2....	H1-1b
8	M8	L2.5x2.5x4	.078	2.334	1	.025	4.767	y	9	18369.269	38556	1.114	2.324	1....	H2-1
9	M9	L2.5x2.5x4	.033	1.858	1	.024	0	y	9	25456.777	38556	1.114	2.449	1....	H2-1

Envelope AISI S100-10: LRFD Cold Formed Steel Code Checks

Member	Shape	Code...	Loc[ft]	LC	Shea...	Loc[ft]	Dir	LC	phi*Pn...	phi*Tn...	phi*M...	phi*M...	Cb	Cmyy	Cmzz	Eqn
No Data to Print ...																

Envelope AA ADM1-10: ASD - Building Aluminum Code Checks

Member	Shape	Code C...	Loc[ft]	LC	Shear ...	Loc[ft]	Dir	LC	Pnc/O...	Pnt/Om...	Mny/O...	Mnz/O...	Vny/O...	Vnz/O...	Cb	Eqn
No Data to Print ...																

EXHIBIT 10

Transcom Engineering, Inc.
Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CTNL191D

NL191/MCF_Town Lot_FT
38 Rich Road
Thompson, CT 06255

May 22, 2019

Transcom Engineering Project Number: 737001-0060

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**9.33 %**

May 22, 2019

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

Emissions Analysis for Site: **CTNL191D – NL191/MCF_Town Lot_FT**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **38 Rich Road, Thompson, 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 & 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 **38 Rich Road, Thompson, 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)
UMTS	1900 MHz (PCS)	1	40
GSM	1900 MHz (PCS)	1	15
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, 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	148
A	2	Ericsson AIR21 B4A/B2P	148
A	3	RFS APXVAARR24_43-U-NA20	148
B	1	Ericsson AIR21 B2A/B4P	148
B	2	Ericsson AIR21 B4A/B2P	148
B	3	RFS APXVAARR24_43-U-NA20	148
C	1	Ericsson AIR21 B2A/B4P	148
C	2	Ericsson AIR21 B4A/B2P	148
C	3	RFS APXVAARR24_43-U-NA20	148

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 **1.86 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **175 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	3	95	3,153.80	0.55
Antenna A2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	0.82
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.02
						Sector A Composite MPE%	**2.39**
Antenna B1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	3	95	3,153.80	0.55
Antenna B2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	0.82
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.02
						Sector B Composite MPE%	**2.39**
Antenna C1	Ericsson AIR21 B2A/B4P	1900 MHz (PCS) / 2100 MHz (AWS)	15.9	3	95	3,153.80	0.55
Antenna C2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	2	120	4,668.54	0.82
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.02
						Sector C Composite MPE%	**2.39**

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	**2.39 %**
Verizon Wireless	3.09 %
AT&T	3.85 %
Site Total MPE %:	**9.33 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	2.39 %
T-MOBILE Sector B Total:	2.39 %
T-MOBILE Sector C Total:	2.39 %
Site Total:	9.33 %

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) UMTS	1	1,556.18	148	2.74	1900 MHz (PCS)	1000	0.27%
T-Mobile 1900 MHz (PCS) GSM	1	583.57	148	1.03	1900 MHz (PCS)	1000	0.10%
T-Mobile 2100 MHz (AWS) UMTS	1	1,014.05	148	1.78	2100 MHz (AWS)	1000	0.18%
T-Mobile 2100 MHz (AWS) LTE	2	2,334.27	148	8.21	2100 MHz (AWS)	1000	0.82%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	148	2.77	600 MHz	400	0.69%
T-Mobile 700 MHz LTE	2	432.54	148	1.52	700 MHz	467	0.33%
						Total:	**2.39%**

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:	2.39 %
Sector B:	2.39 %
Sector C:	2.39 %
T-MOBILE Maximum Total (per sector):	2.39 %
Site Total:	9.33 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **9.33 %** 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.

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