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

December 23, 2020

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

RE: Notice of Exempt Modification
540 Cherry Brook Rd., (Rt. 179), Canton, CT
Latitude: 41.894052
Longitude: -72.893850
T-Mobile Site #: CTHA530A_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 129-foot level of the existing 150-foot Monopole Tower at 540 Cherry Brook Rd. Canton, CT. The 150-foot tower is owned by SBA Towers, LLC. The property is owned by the Town of Canton / North Canton Volunteer Fire Association. T-Mobile now intends to remove three (3) L2100 MHz antennas and replace with three (3) L1900/L2100 MHz antennas and install three (3) additional new L600/L700MHz antennas for a total of (9) antennas.

The new antennas would support 5G services and would be installed at the 129-foot level of the tower.

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

Planned Modifications:

TOWER

Remove:

- N/A

Remove and Replace:

- (3) Ericsson AIR21 B2P/B4A antenna (Remove) – (3) RFS APXVAARR24_43-U-Na20 ANTENNA (replace)

Install New:

- (3) Ericsson AIR 32 KRD901146-1_B66A-B2A antenna
- (3) Ericsson Radio 4449 B71 + B12 RRUs
- Support Rail Pipe (MS-P-TARM) w/T-Arms
- (3) 1-5/8" fiber

Existing Equipment to Remain:

- (3) Ericsson AIR 21 B4A/B2P antenna
- (3) T-Arms
- (1) 1-5/8" fiber
- (3) 1-5/8" coax

Entitlements:

- (3) 1-5/8 coax

GROUND

Install New:

- Equipment within existing RBS6102 Equipment cabinet

Existing Equipment to Remain:

- (1) ½" coax (GPS antennas on ground)

This facility was approved upon Motion for Judgment by the Superior Court, Judicial District of Hartford, on October 23, 2000. Stipulation for Judgment was ordered October 19, 2000. Special Exception and Site Plan Approval through the Town of Canton's Zoning Commission was given for a 150-foot monopole with fenced-in compound. This was a replacement tower. Landscaping was to be provided. The Fire Association's emergency communications system would be housed at the site. If more than five carriers were to be installed, the applicant was to submit a site plan modification. Inspections were to be held every five years and the removal bond renewed concurrently. Approval was for a five year period renewable upon submission of the re-inspection report and removal bond renewals. 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 Canton's First Selectman, Robert Bessel and Zoning Enforcement Officer, Emily Kyle, as well as to the property owner. (Separate notice is not being sent to tower owner, as it belongs to SBA.)

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S.A. §16.50j-72(b)(2).

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

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

Sincerely,

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

Attachments
cc: Robert Bessel, First Selectman / with attachments
Town of Canton, 4 Market Street, Collinsville, CT 06022
Emily Kyle, Zoning Enforcement Officer / with attachments
Town of Canton, 4 Market Street, Collinsville, CT 06022
North Canton Volunteer Fire Association / with attachments
Attn: Chief Administrative Officer Robert Skinner 4 Market Street Canton CT 06019 (SBA overnight address on file)

EXHIBIT LIST

Exhibit 1	Check Copy	
Exhibit 2	Notification Receipts	
Exhibit 3	Property Card	X
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	Motion for Judgment October 23, 2000 Stipulation for Judgment October 19, 2000
Exhibit 6	Construction Drawings	Chappell Engineering 12/22/20
Exhibit 7	Modification Drawings	TES 8/28/19
Exhibit 8	Structural Analysis	TES 8/1/19
Exhibit 9	Post-Mod Mount Analysis	TES 8/29/19
Exhibit 10	EME Report	Transcom Engineering 6/17/19

EXHIBIT 1

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

EXHIBIT 2

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

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

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EXHIBIT 3

s

The Assessor's office is responsible for the maintenance of records on the ownership of properties. Assessments are computed at 70% of the estimated market value of real property at the time of the last revaluation which was 2018.

TOWN OF CANTON CT

Information on the Property Records for the Municipality of Canton was last updated on 6/17/2019.

Parcel Information

Location:	540 CHERRY BROOK ROAD	Property Use:	Automotive	Primary Use:	Serv Sta w/o Bays
Unique ID:	1850540	Map Block Lot:	7/185/0540	Acres:	5.77
490 Acres:	0.00	Zone:	AR-3	Volume / Page:	438/ 33
Developers Map / Lot:		Census:			

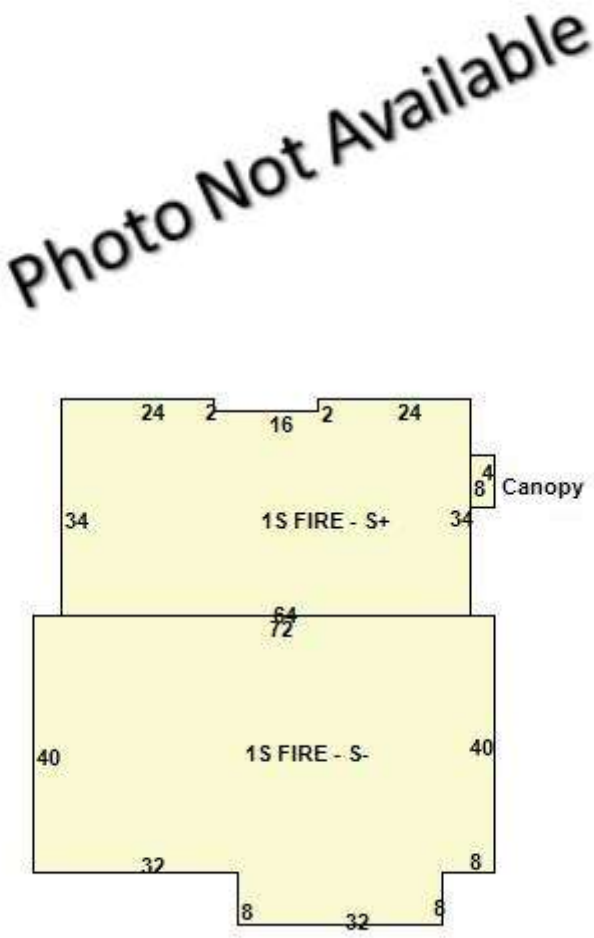
Value Information

	Appraised Value	Assessed Value
Land	171,310	119,910
Buildings	591,394	413,980
Detached Outbuildings	4,800	3,360
Total	767,504	537,250

Owner's Information

Owner's Data
CANTON TOWN OF PO BOX 168 COLLINSVILLE, CT 06022

Building 1



Category:	Public Use	Use:	Fire Station - Staffed	GLA:	5,280
Stories:	1.00	Construction:	Metal	Year Built:	2006
Heating:	FHA	Fuel:	Oil	Cooling Percent:	0
Siding:	Metal	Roof Material:	Asphalt	Beds/Units:	0

Special Features

Attached Components

Type:	Year Built:	Area:
Canopy	2006	32

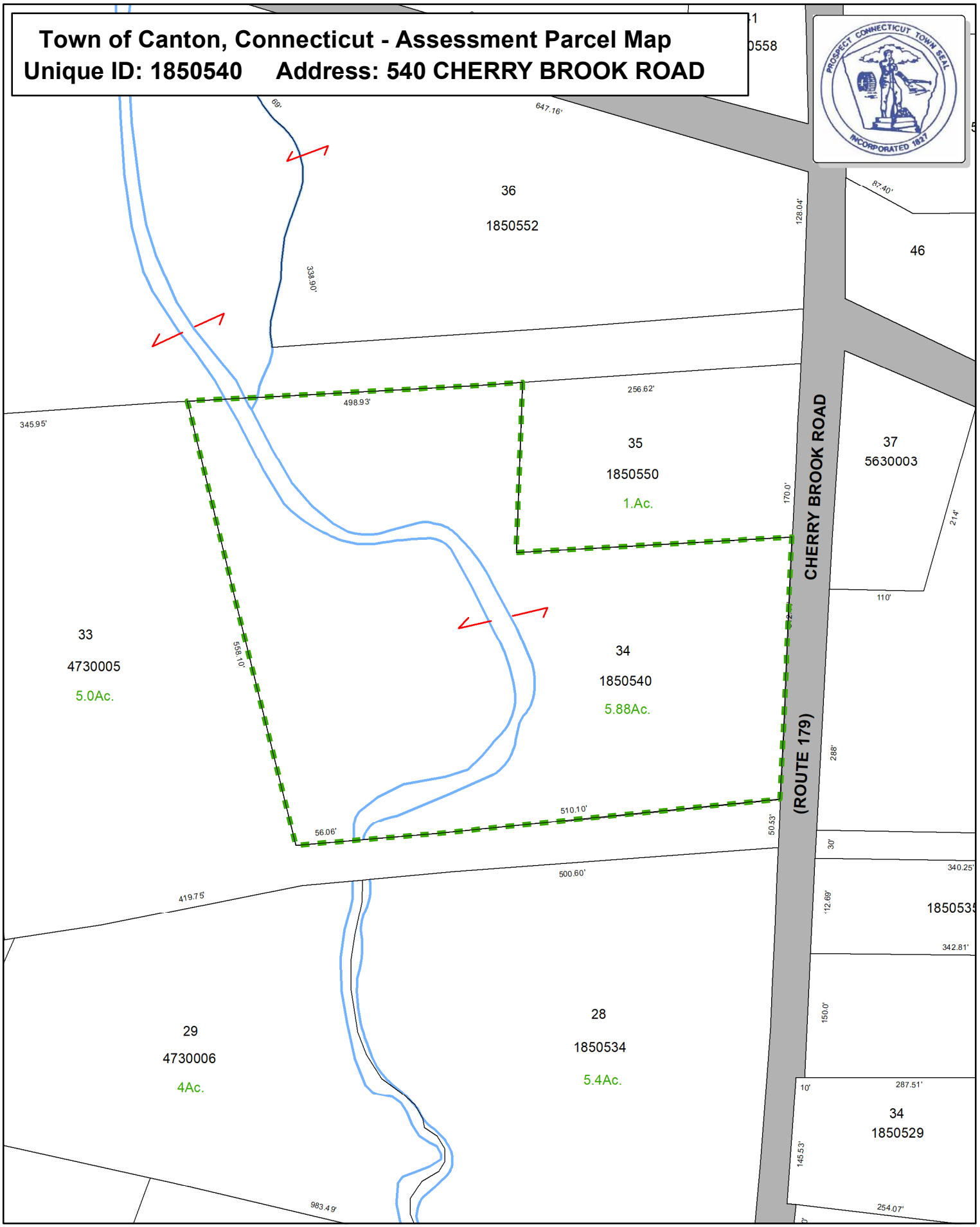
Detached Outbuildings

Type:	Year Built:	Length:	Width:	Area:
Paving	2006	0.00	0.00	6,000

Owner History - Sales

Owner Name	Volume	Page	Sale Date	Deed Type	Valid Sale	Sale Price
CANTON TOWN OF	0438	0033	01/25/2018	Warranty Deed	No	$0
NORTH CANTON FIRE DEPT	0057	344-			No	$0

EXHIBIT 4



N
W E
S

Approximate Scale:

1 inch = 150 feet

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

Map Produced
June 2019

Sublot
Easement
4850007 Parcel ID
89' Dimension

EXHIBIT 5

NO. CV 00 0595406S	:	SUPERIOR COURT
SBA COMMUNICATIONS, INC.	:	JUDICIAL DISTRICT OF HARTFORD
v.	:	
ZONING COMMISSION OF THE TOWN OF CANTON	:	OCTOBER 23, 2000

MOTION FOR JUDGMENT

Defendant Zoning Commission of the Town of Canton hereby move for judgment in accordance with the attached Stipulation of Judgment. John Knuff, counsel for plaintiff SBA Communications, Inc. has been contacted regarding this Motion and has no objection.

DEFENDANT,
ZONING COMMISSION OF THE TOWN OF CANTON

By _____
John T. Harris
Matthew Ranelli
For Shipman & Goodwin LLP
Its Attorneys

ORAL ARGUMENT REQUESTED
TESTIMONY NOT REQUIRED

ORDER

The foregoing Motion having been heard, it is hereby ORDERED: GRANTED/DENIED.

BY THE COURT,

DATE _____ _____
Judge/Assistant Clerk

CERTIFICATION OF SERVICE

I hereby certify that a copy of the foregoing Motion for Judgment was mailed, postage prepaid, this 23rd day of October, 2000, to:

John W. Knuff, Esq.
Margaret E. Haering, Esq.
Hurwitz & Sagarin, LLC
147 North Broad Street
Milford, Connecticut 06460

Matthew Ranelli

276153

NO. CV 00 0595406S	:	SUPERIOR COURT
	:	
SBA COMMUNICATIONS, INC.	:	JUDICIAL DISTRICT
	:	OF HARTFORD
v.	:	
	:	
ZONING COMMISSION OF THE TOWN OF CANTON	:	
	:	OCTOBER 19, 2000

STIPULATION FOR JUDGMENT

The parties hereby stipulate to the following facts:

1. Plaintiff SBA Communications, Inc. ("SBA") is a Florida corporation in the business of providing services to licensed personal wireless telecommunications carriers.

2. The Zoning Commission of the Town of Canton (the "Commission") is the duly authorized Zoning Commission of the Town of Canton.

3. On September 2, 1999, SBA submitted to the Commission an application for a special exception and site plan approval for a facility consisting of a 195 foot monopole with a fenced-in compound area to be located on property owned by the North Canton Volunteer Fire Association, Inc. (the "Fire Association"). The plan included provisions to tear down the existing communications tower also located on the Fire Association's property and to erect a 195 foot monopole and

relocate the Fire Association's emergency radio service antennas to the new pole.

4. The location of the proposed tower is zoned AR-3.

5. Telecommunication towers are a permitted use in all districts, including AR-3, in Canton subject to approval of a special exception. The regulations limit tower height to 70 feet and impose front and side yard setback requirements.

6. On August 9, 1999, SBA obtained a variance from the Canton Zoning Board of Appeals of the tower height limitation.

7. After holding duly-noticed public hearings on November 17, 1999 and December 15, 1999, the Commission denied SBA's application for special exception for the reasons stated in its denial letter to SBA dated April 10, 2000.

8. On January 4, 2000, SBA appealed the Commission's decision to the Connecticut Superior Court and filed an action in the United States District Court for the District of Connecticut (SBA Communications, Inc. v. Zoning Commission of the Town of Canton, Civil Action No. 3:00 CV 007 (RNC)) setting forth claims under the federal Telecommunications Act of 1996, 47 U.S.C. § 332.

9. While these state and federal court claims were pending, the parties made cooperative settlement efforts resulting in this Stipulation for Judgment.

10. The parties agree that this Stipulation is subject to Superior Court approval.

11. The defendant Commission hereby agrees to issue a special exception and site plan approval for a 150 foot monopole at the Fire Association site in settlement of the state and federal court actions as approved at its October 18, 2000 meeting. The monopole would house the Fire Association's emergency communications system and be subject to the following conditions:

a. The facility is approved and will be constructed in accordance with the revised site plan dated December 13, 1999 except that the tower height shall be a maximum of 150 feet rather than 195 feet and that the diameter of the tower at the base and top shall be the lesser of the dimensions shown on the reference plan or as prescribed by the ANSI standard;

b. If more than five carriers are to be installed, the applicant must submit a site plan modification;

c. Additional landscaping shall be provided to satisfactorily screen the fencing and auxiliary structures according to the requirements of the Town Planner;

d. Any auxiliary equipment deviations from the drawings dated December 13, 1999 must be submitted for site plan review;

e. A removal bond must be posted in the initial amount of $50,000 and adjusted upon renewal dates to reflect the true cost of removal;

f. The tower shall be inspected for structural integrity every five years and the removal bond shall be renewed concurrently;

g. Approval is for a five year period and is renewable for an additional five years subject to a successful submission of a re-inspection report and renewals of a removal bond; and

h. Approval of the special exception is subject to approval of the settlement by the Superior Court.

12. The defendant Commission will issue the special exception permit to plaintiff SBA promptly after the Court's approval and entry of this Stipulation for Judgment. Within five days after issuance of the special exception by the

defendant Commission in accordance with this Stipulation, the parties will file a Stipulation of Dismissal of the pending action in the United States District Court for the District of Connecticut.

13. Plaintiff SBA agrees to provide counsel for defendant with an executed Stipulation of Dismissal to be held in escrow, pending issuance of the special exception permit and site plan.

THE PLAINTIFFS

By: _____

Elias A. Alexiades
John W. Knuff
Hurwitz & Sagarin, LLC
147 North Broad Street
Milford, Connecticut 06460
Juris No. 26616
Telephone: (203) 877-8000

THE DEFENDANTS

By: _____

John T. Harris
Matthew Ranelli
Shipman & Goodwin, LLP
One American Row
Hartford, Connecticut 06101
Juris No.
Telephone: 860-251-5602

EXHIBIT 6

SBA CANTON CHERRYBROOK RD MONOPOLE

10 SHAGBARK LANE
CANTON, CT 06019
HARTFORD COUNTY

SITE NO.: CTHA530A

SITE TYPE: 150'± MONOPOLE

RF DESIGN GUIDELINE: 67D95ADB

APPROVALS

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

T-MOBILE TECHNICIAN SITE SAFETY NOTES

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

SITE NOTES

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

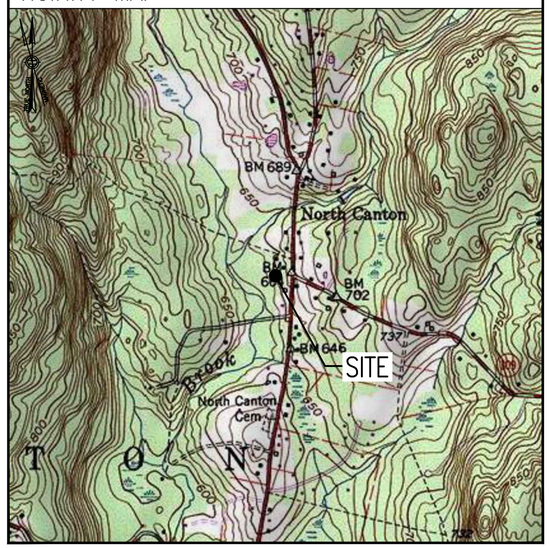
GENERAL NOTES

1. THE CONTRACTOR SHALL GIVE ALL NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY, MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS, AND LOCAL AND STATE JURISDICTIONAL CODES BEARING ON THE PERFORMANCE OF THE WORK. THE WORK PERFORMED ON THE PROJECT AND THE MATERIALS INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES.
2. THE ARCHITECT/ENGINEER HAVE MADE EVERY EFFORT TO SET FORTH IN THE CONSTRUCTION AND CONTRACT DOCUMENTS THE COMPLETE SCOPE OF WORK. THE CONTRACTOR BIDDING THE JOB IS NEVERTHELESS CAUTIONED THAT MINOR OMISSIONS OR ERRORS IN THE DRAWINGS AND OR SPECIFICATIONS SHALL NOT EXCUSE SAID CONTRACTOR FROM COMPLETING THE PROJECT AND IMPROVEMENTS IN ACCORDANCE WITH THE INTENT OF THESE DOCUMENTS.
3. THE CONTRACTOR OR BIDDER SHALL BEAR THE RESPONSIBILITY OF NOTIFYING (IN WRITING) THE OMNIPOINT REPRESENTATIVE OF ANY CONFLICTS, ERRORS, OR OMISSIONS PRIOR TO THE SUBMISSION OF CONTRACTOR'S PROPOSAL OR PERFORMANCE OF WORK. IN THE EVENT OF DISCREPANCIES THE CONTRACTOR SHALL PRICE THE MORE COSTLY OR EXTENSIVE WORK, UNLESS DIRECTED IN WRITING OTHERWISE.
4. THE SCOPE OF WORK SHALL INCLUDE FURNISHING ALL MATERIALS, EQUIPMENT, LABOR AND ALL OTHER MATERIALS AND LABOR DEEMED NECESSARY TO COMPLETE THE WORK/PROJECT AS DESCRIBED HEREIN.
5. THE CONTRACTOR SHALL VISIT THE JOB SITE PRIOR TO THE SUBMISSION OF BIDS OR PERFORMING WORK TO FAMILIARIZE HIMSELF WITH THE FIELD CONDITIONS AND TO VERIFY THAT THE PROJECT CAN BE CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS.
6. THE CONTRACTOR SHALL OBTAIN AUTHORIZATION TO PROCEED WITH CONSTRUCTION PRIOR TO STARTING WORK ON ANY ITEM NOT CLEARLY DEFINED BY THE CONSTRUCTION DRAWINGS/CONTRACT DOCUMENTS.
7. THE CONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIALS ACCORDING TO THE MANUFACTURER'S/VENDOR'S SPECIFICATIONS UNLESS NOTED OTHERWISE OR WHERE LOCAL CODES OR ORDINANCES TAKE PRECEDENCE.
8. THE CONTRACTOR SHALL PROVIDE A FULL SET OF CONSTRUCTION DOCUMENTS AT THE SITE UPDATED WITH THE LATEST REVISIONS AND ADDENDUMS OR CLARIFICATIONS AVAILABLE FOR THE USE BY ALL PERSONNEL INVOLVED WITH THE PROJECT.
9. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
10. THE CONTRACTOR IS RESPONSIBLE FOR PROVIDING ALL NECESSARY CONSTRUCTION CONTROL SURVEYS, ESTABLISHING AND MAINTAINING ALL LINES AND GRADES REQUIRED TO CONSTRUCT ALL IMPROVEMENTS AS SHOWN HEREIN.
11. THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS WHICH MAY BE REQUIRED FOR THE WORK BY THE ARCHITECT/ENGINEER, THE STATE, COUNTY OR LOCAL GOVERNMENT AUTHORITY.
12. THE CONTRACTOR SHALL MAKE NECESSARY PROVISIONS TO PROTECT EXISTING IMPROVEMENTS, EASEMENTS, PAVING, CURBING, ETC. DURING CONSTRUCTION. UPON COMPLETION OF WORK, THE CONTRACTOR SHALL REPAIR ANY DAMAGE THAT MAY HAVE OCCURRED DUE TO CONSTRUCTION ON OR ABOUT THE PROPERTY.
13. THE CONTRACTOR SHALL KEEP THE GENERAL WORK AREA CLEAN AND HAZARD FREE DURING CONSTRUCTION AND DISPOSE OF ALL DIRT, DEBRIS, RUBBISH AND REMOVE EQUIPMENT NOT SPECIFIED AS REMAINING ON THE PROPERTY. PREMISES SHALL BE LEFT IN CLEAN CONDITION AND FREE FROM PAINT SPOTS, DUST, OR SMUDGES OF ANY NATURE.
14. THE CONTRACTOR SHALL COMPLY WITH ALL OSHA REQUIREMENTS AS THEY APPLY TO THIS PROJECT.
15. THE CONTRACTOR SHALL NOTIFY THE PROJECT OWNER'S REPRESENTATIVE WHERE A CONFLICT OCCURS ON ANY OF THE CONTRACT DOCUMENTS. THE CONTRACTOR IS NOT TO ORDER MATERIAL OR CONSTRUCT ANY PORTION OF THE WORK THAT IS IN CONFLICT UNTIL CONFLICT IS RESOLVED BY THE LESSEE/LICENSEE REPRESENTATIVE.
16. THE CONTRACTOR SHALL VERIFY ALL DIMENSIONS, ELEVATIONS, PROPERTY LINES, ETC. ON THE JOB.
17. ALL UNDERGROUND UTILITY INFORMATION WAS DETERMINED FROM SURFACE INVESTIGATIONS AND EXISTING PLANS OF RECORD. THE CONTRACTOR SHALL LOCATE ALL UNDERGROUND UTILITIES IN THE FIELD PRIOR TO ANY SITE WORK.

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

VICINITY MAP

SCALE: 1" = 1000'-0"



DO NOT SCALE DRAWINGS

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

SHEET INDEX

SHEET NO.	DESCRIPTION	REV. NO.
T-1	TITLE SHEET	1
GN-1	GENERAL NOTES	1
A-1	COMPOUND & EQUIPMENT PLANS	1
A-2	TOWER ELEVATION & ANTENNA PLANS	1
A-3	SITE DETAILS	1
A-4	ANTENNA & FEEDLINE CHARTS	1
E-1	ELECTRIC & GROUNDING DETAILS	1

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

PROJECT SUMMARY

SITE NUMBER:	CTHA530A
SBA SITE NUMBER:	CT01500-S
SBA SITE NAME:	CANTON 2 CT
SITE ADDRESS:	10 SHAGBARK LANE CANTON, CT 06019
PROPERTY OWNER:	TOWN OF CANTON PO BOX 168 COLLINSVILLE, CT 06022
TOWER OWNER:	SBA TOWERS, LLC 8501 CONGRESS AVENUE BOCA RATON, FL 33487 PHONE: 561-226-9523
COUNTY:	HARTFORD
ZONING DISTRICT:	AR-3 (AGRICULTURAL)
STRUCTURE TYPE:	MONOPOLE
STRUCTURE HEIGHT:	150'±
APPLICANT:	T-MOBILE NORTHEAST LLC 15 COMMERCE WAY, SUITE B NORTON, MA 02766
SBA RSM:	STEPHEN ROTH PHONE: 860-539-4920 EMAIL: SRoth@sbasite.com
ARCHITECT:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
STRUCTURAL ENGINEER:	CHAPPELL ENGINEERING ASSOCIATES, LLC. 201 BOSTON POST ROAD WEST, SUITE 101 MARLBOROUGH, MA 01752
SITE CONTROL POINT:	LATITUDE: N.41.894200° N41°53'39.12" LONGITUDE W.72.893300° W72°53'35.88"

T-MOBILE NORTHEAST LLC
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STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25997
LICENSED
PROFESSIONAL CIVIL ENGINEER
12/22/20

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/21/20	ISSUED FOR CONSTRUCTION	CMC
0	06/19/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTHA530A

SITE ADDRESS:
10 SHAGBARK LAND
CANTON, CT 06019

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

1815.114

GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SITE WORK GENERAL NOTES:

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

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

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

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

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

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

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

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

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

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

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

CONCRETE AND REINFORCING STEEL NOTES:

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

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

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

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

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

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

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

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

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

STRUCTURAL STEEL NOTES:

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

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

3. BOLTED CONNECTIONS SHALL USE BEARING TYPE ASTM A325 BOLTS (¾"ø) AND SHALL HAVE MINIMUM OF TWO BOLTS UNLESS NOTED OTHERWISE. ALL BOLTS SHALL BE GALVANIZED OR STAINLESS STEEL.

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

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

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

SOIL COMPACTION NOTES FOR SLAB ON GRADE:

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

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

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

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

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

COMPACTION EQUIPMENT:

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

CONSTRUCTION NOTES:

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

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

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

ELECTRICAL INSTALLATION NOTES:

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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JAMES M. FITZGERALD
No. 25937
LICENSED
PROFESSIONAL CIVIL ENGINEER

12/20/20

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/21/20	ISSUED FOR CONSTRUCTION	CMC
0	06/19/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTHA530A

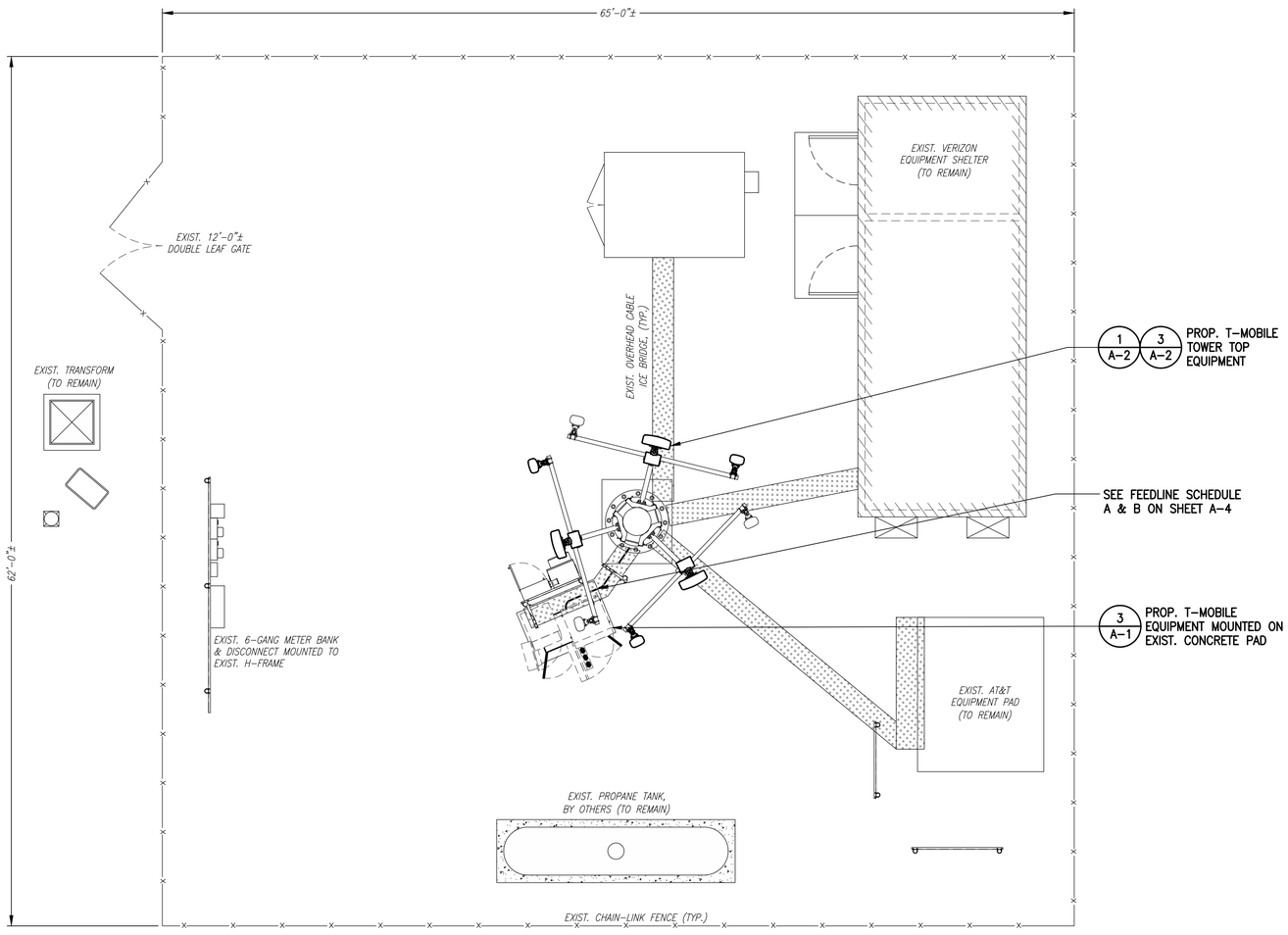
SITE ADDRESS:
10 SHAGBARK LAND
CANTON, CT 06019

SHEET TITLE
GENERAL NOTES

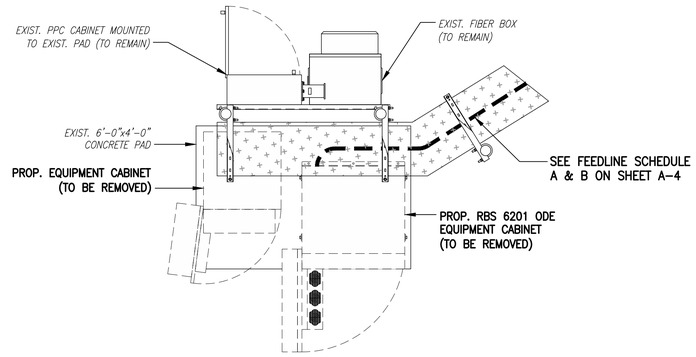
SHEET NUMBER
GN-1

1815.114

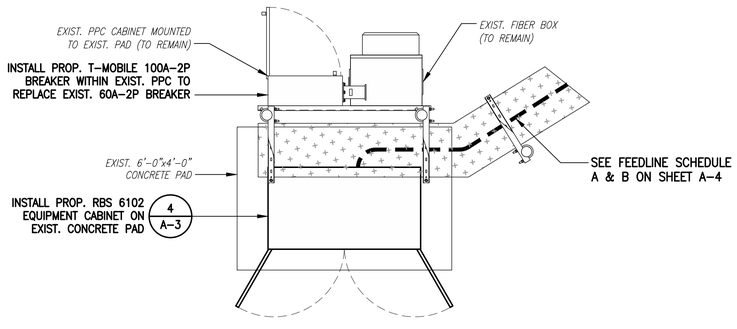
SPECIAL PRE-CONSTRUCTION WORK NOTE (SBA-PROVIDED TOWER STRUCTURAL ANALYSIS SPECIAL EQUIPMENT INSTALLATION REQUIREMENTS):
GENERAL CONTRACTOR SHALL FURNISH AND INSTALL ALL SPECIAL OR SUPPLEMENTAL ADDITIONAL TOWER-MOUNTED EQUIPMENT PER RECOMMENDATIONS FROM SBA-PROVIDED TOWER STRUCTURAL ANALYSIS FOR ANY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



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



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



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

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201 BOSTON POST ROAD WEST, SUITE 101
MARLBOROUGH, MA 01752
(508) 481-7400
www.chappellengineering.com

STATE OF CONNECTICUT
JAMES M. FITZGERALD
No. 25997
LICENSED PROFESSIONAL CIVIL ENGINEER

CHECKED BY: JMT

APPROVED BY: JMT

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
1	12/21/20	ISSUED FOR CONSTRUCTION	CMC
0	06/19/19	ISSUED FOR REVIEW	JRV

SITE NUMBER:
CTHA530A

SITE ADDRESS:
10 SHAGBARK LAND
CANTON, CT 06019

SHEET TITLE
COMPOUND & EQUIPMENT PLAN

SHEET NUMBER
A-1

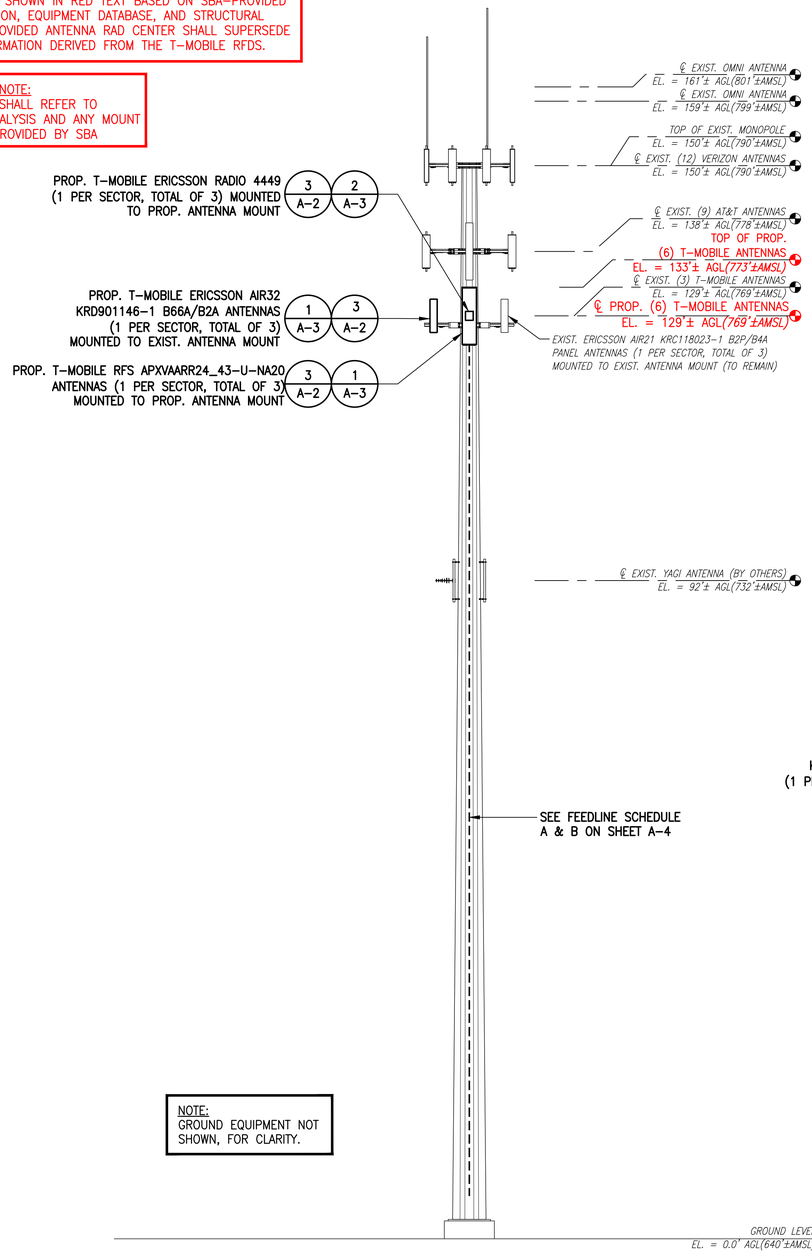
1815.114

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

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

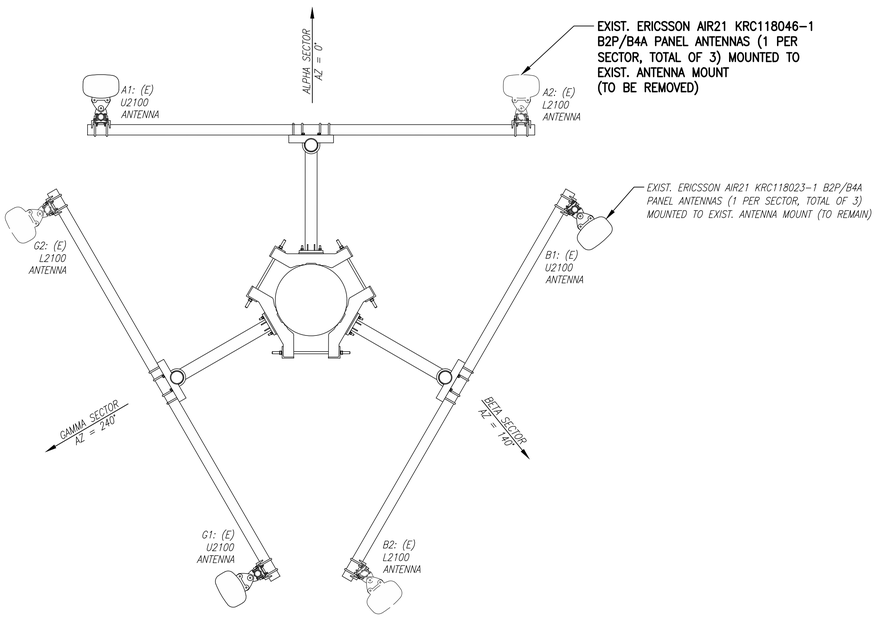
RAD CENTER NOTE:
T-MOBILE RAD CENTER SHOWN IN RED TEXT BASED ON SBA-PROVIDED CO-LOCATION APPLICATION, EQUIPMENT DATABASE, AND STRUCTURAL ANALYSIS. THE SBA-PROVIDED ANTENNA RAD CENTER SHALL SUPERSEDE ANY CONFLICTING INFORMATION DERIVED FROM THE T-MOBILE RFDS.

GENERAL CONTRACTOR NOTE:
GENERAL CONTRACTOR SHALL REFER TO MOUNT STRUCTURAL ANALYSIS AND ANY MOUNT MODIFICATION DESIGN PROVIDED BY SBA

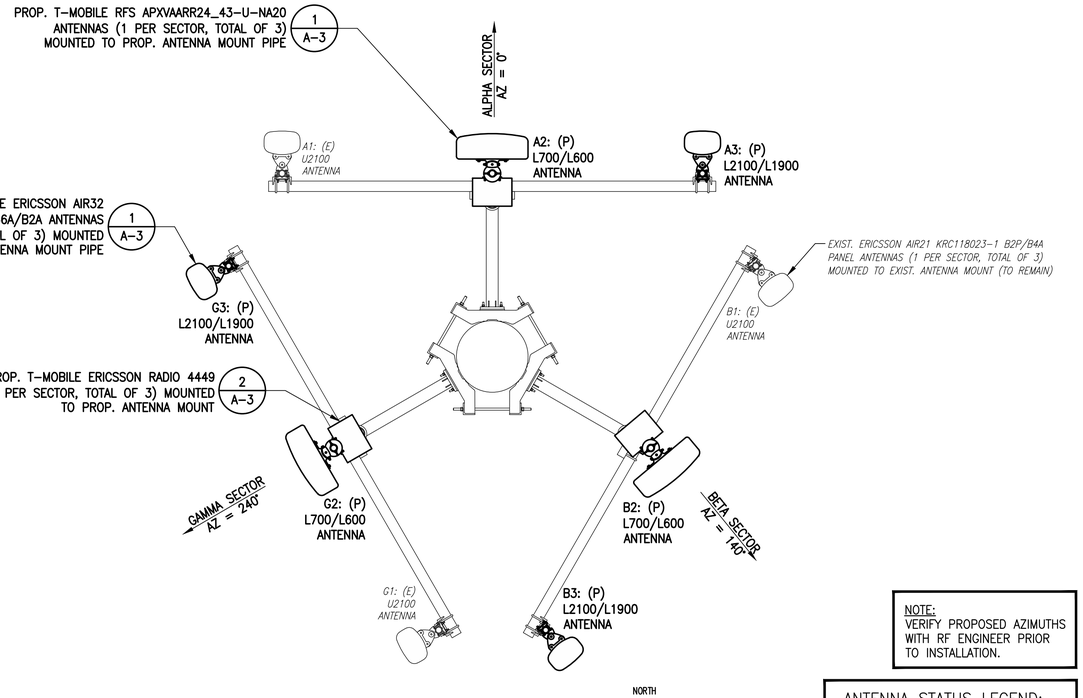


NOTE:
GROUND EQUIPMENT NOT SHOWN, FOR CLARITY.

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



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



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

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

ANTENNA STATUS LEGEND:

EMPTY – EMPTY PIPE

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

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

SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
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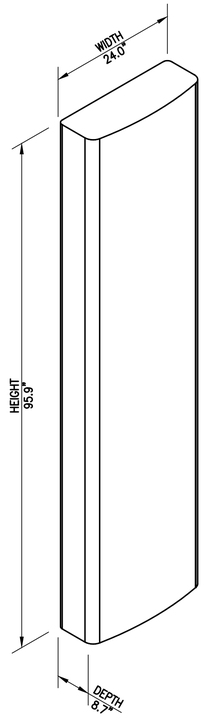
SITE ADDRESS:
10 SHAGBARK LAND
CANTON, CT 06019

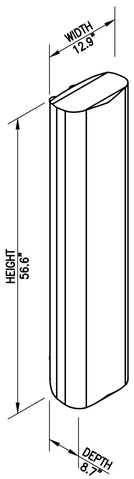
SHEET TITLE
TOWER ELEVATIONS & ANTENNA PLAN

SHEET NUMBER
A-2

1815.114



RFS APXVAARR24_43-NA20 PANEL ANTENNA
DIMENSIONS: 95.9"H x 24.0"W x 8.7"D
WEIGHT: 128.0 LBS
1 PER SECTOR, TOTAL OF 3



ERICSSON AIR32 KRD901146-1 B66A/B2A ANTENNA
DIMENSIONS: 56.6"H x 12.9"W x 8.7"D
WEIGHT: 132.2 LBS
1 PER SECTOR, TOTAL OF 3

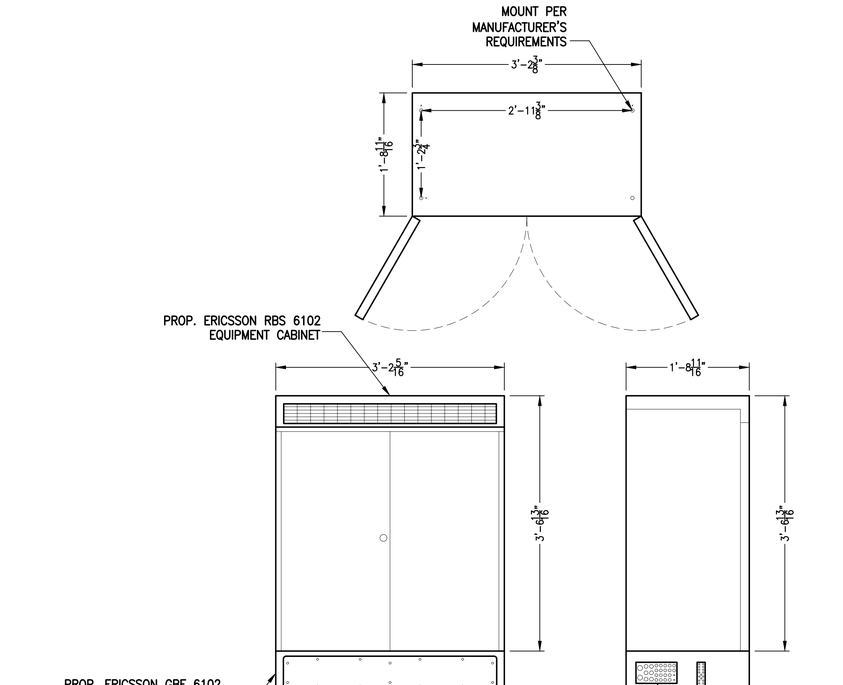
ANTENNA DETAILS
SCALE: N.T.S.

1 A-3

ERICSSON RADIO 4449 B12+B71
DIMENSIONS: 14.9"H x 13.2"W x 9.3"D
WEIGHT: 74.0 LBS
1 PER SECTOR, TOTAL OF 3

RRUS DETAILS
SCALE: N.T.S.

2 A-3



ERICSSON RBS 6102 CABINET
DIMENSIONS:
4'-9 1/8"Hx4'-3 3/16"Wx2'-3 5/8"D

RBS6102 DETAILS
SCALE: N.T.S.

4 A-3

T-MOBILE
NORTHEAST LLC

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

SBA COMMUNICATIONS CORP.
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WESTBOROUGH, MA 01581
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SHEET TITLE
SITE DETAILS

SHEET NUMBER
A-3

1815.114

FINAL ANTENNA CONFIGURATION

SECTOR	ANTENNA	RAD CENTER	AZIMUTH (TRUE NORTH)	MECHANICAL DOWNTILT	ELECTRICAL DOWNTILT	BAND	TMA/RADIOS	CABLES
ALPHA	A1 *ERICSSON AIR21 KRC118023-1 B2P/B4A*	*129'± AGL*	*0°*	*0°*	*2°*	*U2100*	–	*EXIST. (1) 1-¼" (9x18) HCS FIBER CABLES* **PROP. (3) 1-⅝" (6x12) HCS FIBER CABLES**
	A2 **RFS APXVAARR24_43-U-NA20**	**129'± AGL**	**0°**	**0°**	**2°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	
	A3 **ERICSSON AIR32 KRD901146-1 B66A/B2A**	**129'± AGL**	**0°**	**0°**	**2°**	**L2100/L1900**	**–**	
BETA	B1 *ERICSSON AIR21 KRC118023-1 B2P/B4A*	*129'± AGL*	*140°*	*0°*	*2°*	*U2100*	–	
	B2 **RFS APXVAARR24_43-U-NA20**	**129'± AGL**	**140°**	**0°**	**2°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	
	B3 **ERICSSON AIR32 KRD901146-1 B66A/B2A**	**129'± AGL**	**140°**	**0°**	**2°**	**L2100/L1900**	**–**	
GAMMA	C1 *ERICSSON AIR21 KRC118023-1 B2P/B4A*	*129'± AGL*	*240°*	*0°*	*2°*	*U2100*	–	
	C2 **RFS APXVAARR24_43-U-NA20**	**129'± AGL**	**240°**	**0°**	**2°**	**L600/L700**	**ERICSSON RADIO 4449 B71+B12**	
	C3 **ERICSSON AIR32 KRD901146-1 B66A/B2A**	**129'± AGL**	**240°**	**0°**	**2°**	**L2100/L1900**	**–**	

CABLE NOTE: EXISTING (3) 1-⅝" COAX CABLES TO BE REMOVED. EXISTING (3) 1-⅝" COAX CABLES TO REMAIN DISCONNECTED. SEE FEEDLINE SCHEDULE A & B BELOW.

NOTE: RFDS REV3.1 – 04/12/19

FEEDLINE SCHEDULE

SCHEDULE	FEEDLINES		LOCATION
A	*EXISTING TO REMAIN:*	*(3) 1-⅝" COAX CABLES (CAPPED & WRAPPED)* *(1) 1-¼" (9x18) HCS FIBER CABLE* *(1) ½" COAX FOR GPS ANTENNA*	**ROUTED PER STRUCTURAL ANALYSIS**
	EXISTING TO BE REMOVED:	*(3) 1-⅝" COAX CABLES*	
B	**PROPOSED:**	**(3) 1-⅝" (6x12) HCS FIBER CABLES**	

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

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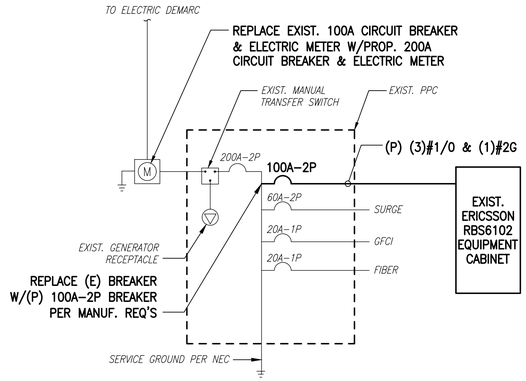
SITE ADDRESS:
10 SHAGBARK LAND
CANTON, CT 06019

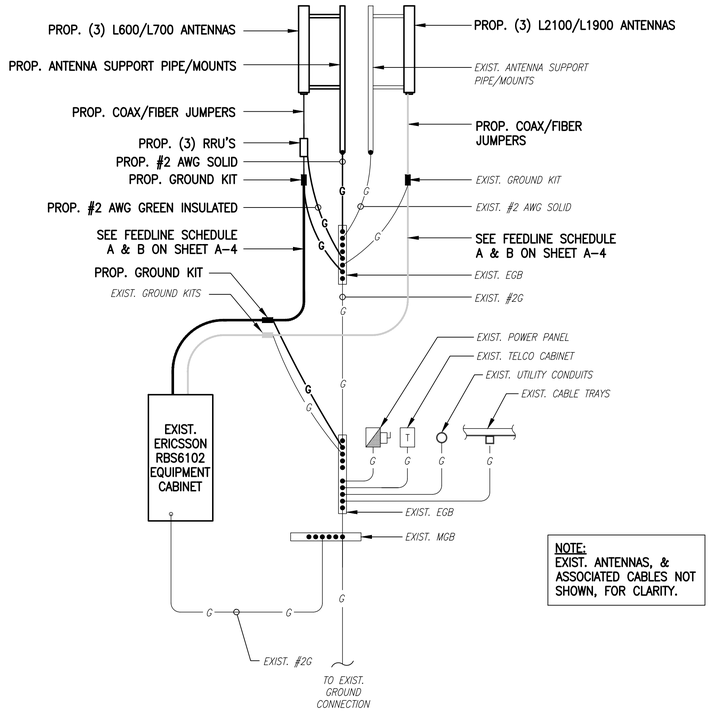
SHEET TITLE
ANTENNA & FEEDLINE CHARTS

SHEET NUMBER
A-4

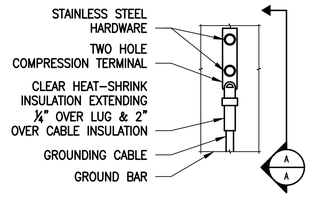
1815.114



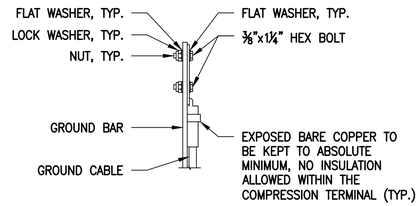
ONE LINE DIAGRAM (1 / E-1)
SCALE: NOT TO SCALE



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



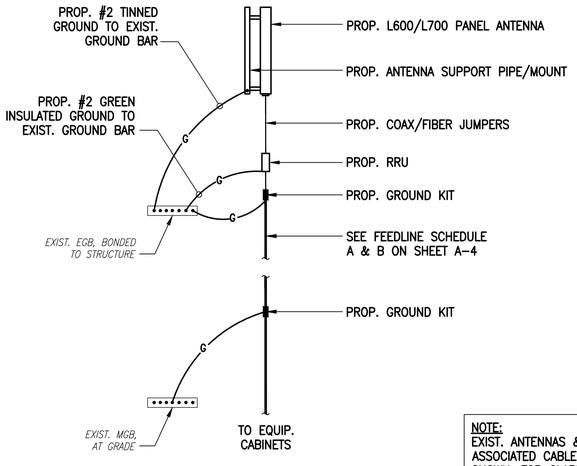
ELEVATION



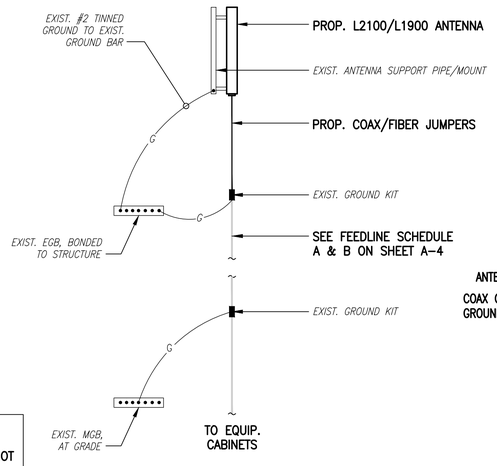
SECTION A-A

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

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



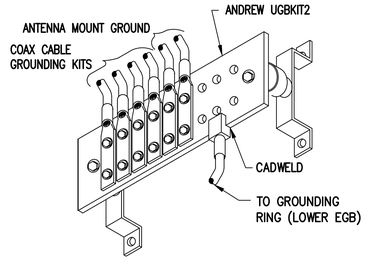
L600/L700



L2100/L1900

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

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



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

ELECTRICAL AND GROUNDING NOTES

1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. BURIED CONDUIT SHALL BE SCHEDULE 40 PVC.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THININSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE PPC AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROJECT OWNER CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON THIS DRAWING PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. WHERE CONDUIT BETWEEN BTS AND PROJECT OWNER CELL SITE PPC AND BETWEEN BTS AND PROJECT OWNER CELL SITE TELCO SERVICE CABINET ARE UNDERGROUND USE PVC, SCHEDULE 40 CONDUIT. ABOVE THE GROUND PORTION OF THESE CONDUITS SHALL BE PVC CONDUIT.
11. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
12. PPC SUPPLIED BY PROJECT OWNER.
13. GROUNDING SHALL COMPLY WITH NEC ART. 250. ADDITIONALLY, GROUNDING, BONDING AND LIGHTNING PROTECTION SHALL BE DONE IN ACCORDANCE WITH "T-MOBILE BTS SITE GROUNDING STANDARDS".
14. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.
15. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
16. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
17. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 6 FEET OF PROJECT OWNER EQUIPMENT OR CABINET TO MASTER GROUND BAR OR GROUNDING RING.
18. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
19. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
20. CONTRACTOR SHALL PROVIDE AND INSTALL OMNI DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALLS OVER EACH GROUND ROD AND BONDING POINT BETWEEN EXIST. TOWER/ MONOPOLE GROUNDING RING AND EQUIPMENT GROUNDING RING.
21. CONTRACTOR SHALL TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION. 5 OHMNS MINIMUM RESISTANCE REQUIRED.
22. CONTRACTOR SHALL CONDUCT ANTENNA, COAX, AND LNA RETURN-LOSS AND DISTANCE- TO-FAULT MEASUREMENTS (SWEEP TESTS) AND RECORD RESULTS FOR PROJECT CLOSE OUT.

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ELECTRIC & GROUNDING DETAILS

SHEET NUMBER
E-1

1815.114

EXHIBIT 7

MODIFICATION AND DESIGN
DRAWINGS FOR EXISTING ANTENNA MOUNTS
EXISTING MONOPOLE TOWER

PROPOSED CARRIER: T-MOBILE

TOWER OWNER: SBA / TOWER OWNER SITE #: CT01500-S

CARRIER SITE #/NAME: CTHA530A / CANTON

COORDINATES (LATITUDE: 41.894052°, LONGITUDE: -72.893850°)

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 DTAILS	0
MS-H1436	METROSITE HEAVY COLLAR MOUNT PLATE ASSEMBLY	
MPHW-1	METROSITE HEAVY COLLAR MOUNT PLATE WELDMENT DETAIL	
MS-HR35-2375	METROSITE SUPPORT RAIL KIT	
MS-TAW-350RO	METROSITE ROTATABLE T-ARM KIT	

NOTE:

1. THE MODIFICATION DRAWINGS ARE BASED ON THE **TES** PROJECT NO. 80219, DATED 07/18/19.

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

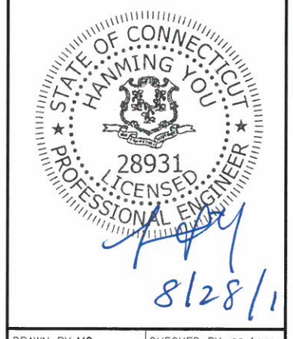
SBA
5900 BROKEN SOUND PARKWAY, NW
BOCA RATON, FL 33487
(800)-487-SITE

TES JOB NO: 83034

CUSTOMER SITE NO: CT01500-S-SBA

CUSTOMER SITE NAME: CANTON 2 CT

540 CHERRY BROOK RD., (RT. 179)
CANTON, CT 06019



8/28/19

DRAWN BY: MG | CHECKED BY: SD/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MG	08/28/19

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-HR35-2375	METROSITE SUPPORT RAIL KIT	A-1, MS-HR35-2375	430.0	430.0	Galvanized
1	1	MS-H1436	METROSITE HEAVY COLLAR MOUNT ASSEMBLY	A-1, MS-H1436	138.0	138.0	Galvanized
			FOLLOWING ITEMS ARE "CUSTOM" PARTS				
3	3	PST2375-8	2" PST (2.375" O.D. X 0.154" THICKNESS) X 8'-0" A53 GR-B 35KSI	A-1	30.00	90.0	GALVANIZED
1	1	MS-TAW-350RO	METROSITE ROTATABLE T-ARM KIT	A-1	284.00	284.0	GALVANIZED
			TOTAL WEIGHT (LBS) =			**942.0**	

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.

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:
83034

CUSTOMER SITE NO:
CT01500-S-SBA
CUSTOMER SITE NAME:
CANTON 2 CT
540 CHERRY BROOK RD., (RT. 179)
CANTON, CT 06019

DRAWN BY: MG | CHECKED BY: SD/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MG	08/28/19

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 ZINGA 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 ZINGA 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.

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

SBA
5900 BROKEN SOUND PARKWAY, NW
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(800)-487-SITE

TES JOB NO:
83034

CUSTOMER SITE NO:
CT01500-S-SBA
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CANTON 2 CT
540 CHERRY BROOK RD., (RT. 179)
CANTON, CT 06019

DRAWN BY: MG | CHECKED BY: SD/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MG	08/28/19

SHEET TITLE:
GENERAL NOTES

SHEET NUMBER: GN-1
REV #: 0

SCOPE OF WORK

1. INSTALL NEW SUPPORT RAIL KIT. SEE SHEET MS-HR35-2375 FOR DETAILS.
2. INSTALL NEW 2" PST ANTENNA MOUNT PIPE (8'-0" LONG). (1) PER SECTOR AS SHOWN.
3. INSTALL NEW HEAVY COLLAR MOUNT (NOT SHOWN FOR CLARITY). SEE SHEET MS-H1436 FOR DETAILS.
4. INSTALL NEW ROTATABLE T-ARM KIT. SEE SHEET MS-TAW-350RO FOR DETAILS.
5. 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.

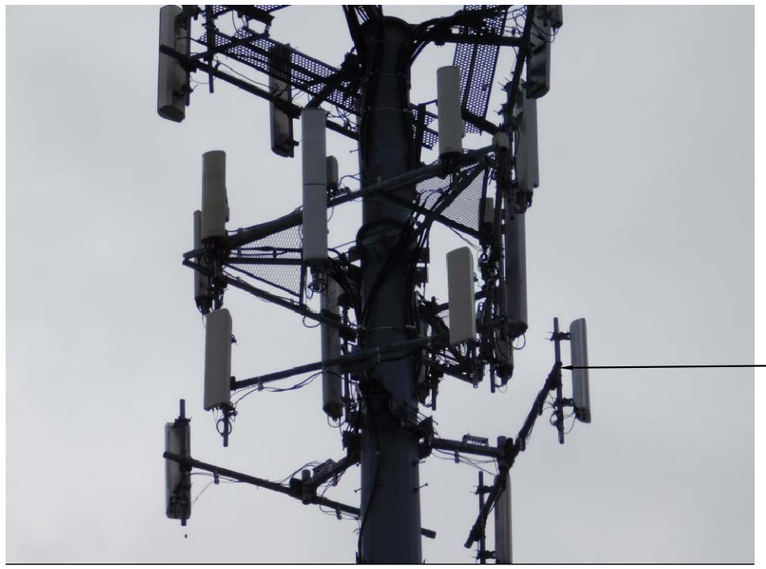
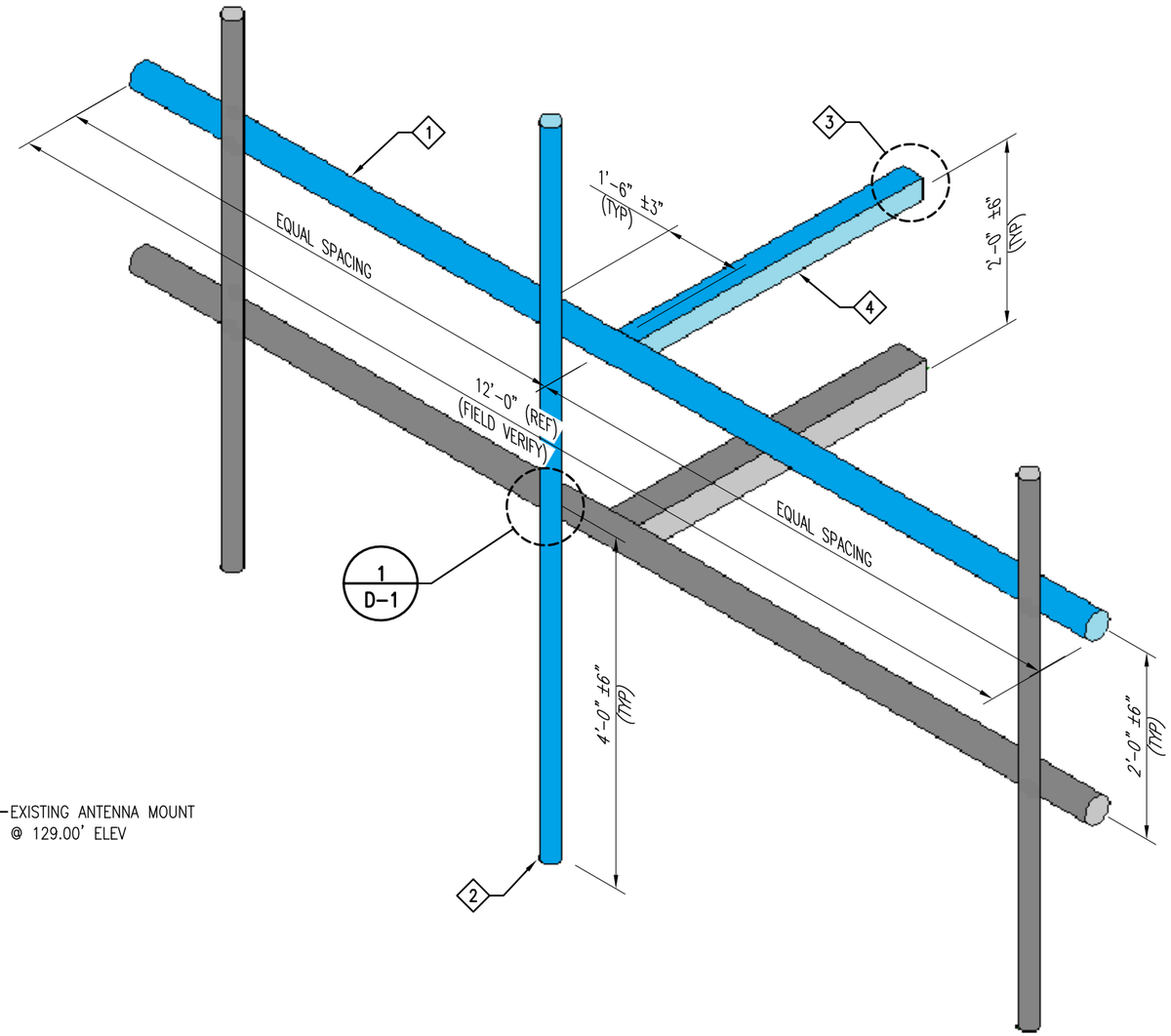


PHOTO 1



ISOMETRIC VIEW
EXISTING ANTENNA MOUNT @ 129.00' 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-HR35-2375	METROSITE SUPPORT RAIL KIT
2	3	PST2375-8	2" PST (2.375" O.D. X 0.154" THICKNESS) X 8'-0" A53 GR-
3	1	MS-H1436	METROSITE HEAVY COLLAR MOUNT ASSEMBLY
4	1	MS-TAW-350RO	METROSITE ROTATABLE T-ARM KIT

TES
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540 CHERRY BROOK RD., (RT. 179)
CANTON, CT 06019

DRAWN BY: MG | CHECKED BY: SD/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MG	08/28/19

SHEET TITLE:

ANTENNA MOUNT MODIFICATION DETAILS

SHEET NUMBER: A-1

REV #: 0

PHOTO 1

PHOTO 2

PHOTO 3

PHOTO 4

TES
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SBA
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CT01500-S-SBA

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540 CHERRY BROOK RD., (RT. 179)
CANTON, CT 06019

DRAWN BY: MG | CHECKED BY: SD/HMA

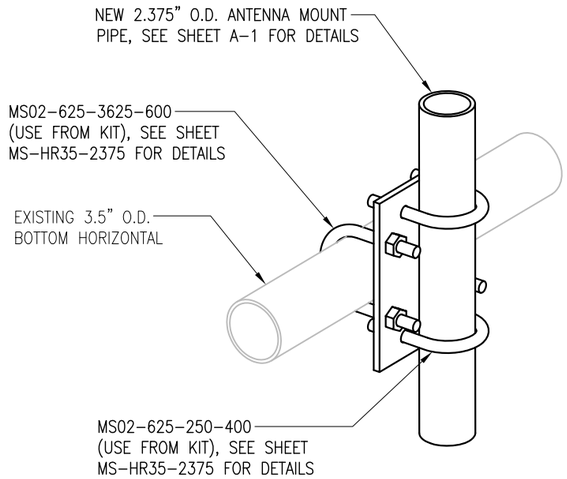
REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MG	08/28/19

SHEET TITLE:

ANTENNA MOUNT PHOTOS

SHEET NUMBER: A-2

REV #: 0



1 / D-1 DETAIL

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

SBA
5900 BROKEN SOUND PARKWAY, NW
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(800)-487-SITE

TES JOB NO:
83034

CUSTOMER SITE NO:
CT01500-S-SBA

CUSTOMER SITE NAME:
CANTON 2 CT

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DRAWN BY: MG | CHECKED BY: SD/HMA

REV.	DESCRIPTION	BY	DATE
0	FIRST ISSUE	MG	08/28/19

SHEET TITLE:

STANDARD DETAILS

SHEET NUMBER: D-1

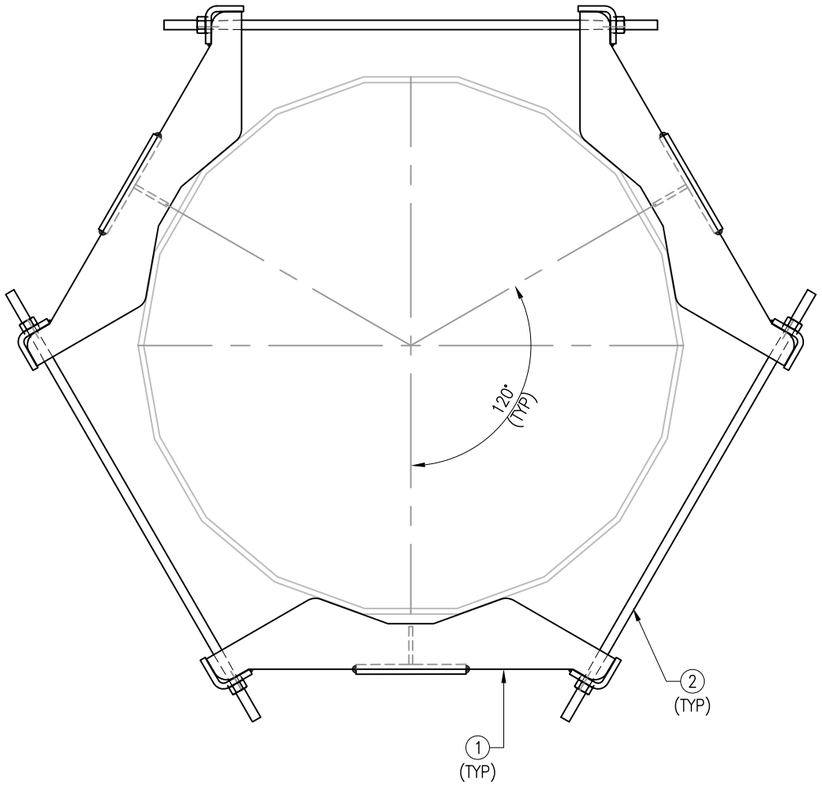
REV #: 0

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

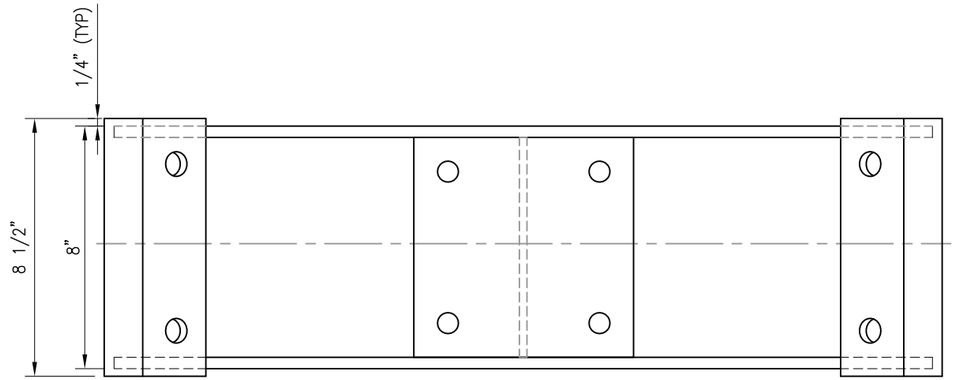
NOTE:
1) FITS 12" DIA TO 32" DIA.

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

GALVANIZED WEIGHT: 136.7 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	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
HEAVY COLLAR MOUNT PLATE
ASSEMBLY DETAIL MS-H1436

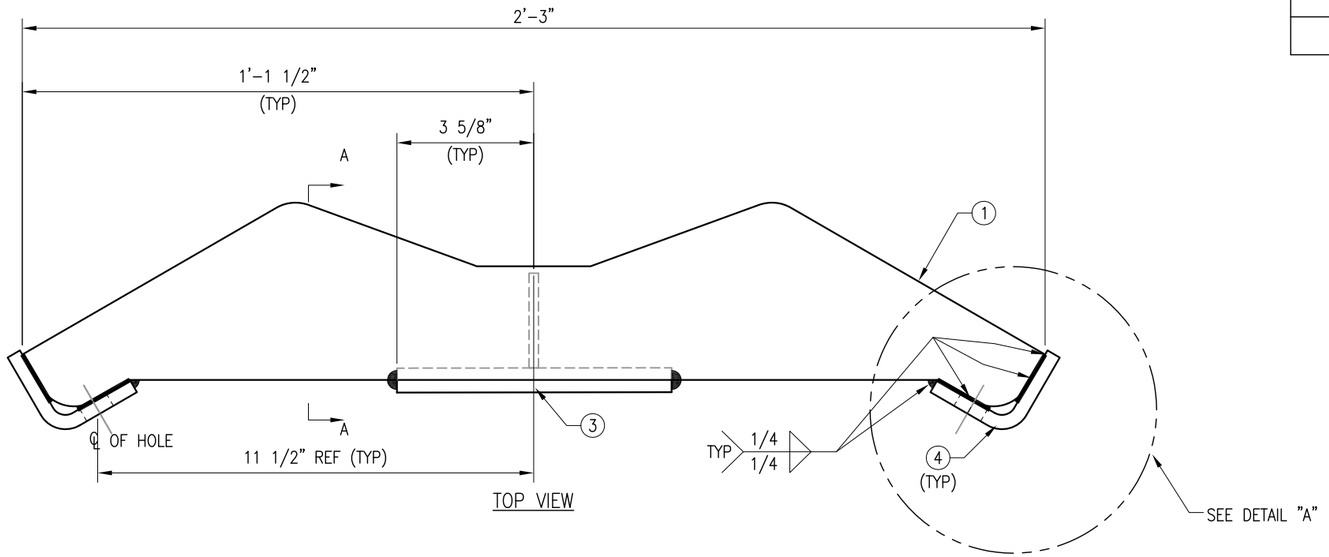
SIZE	DWG NO	REV
B	MS-H1436	1

SCALE -

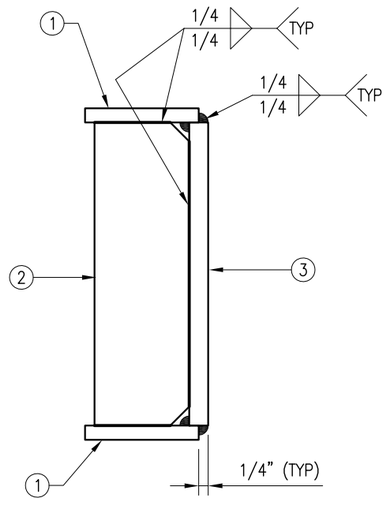
SHEET 1 OF 1

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

MPHW-1 WELDMENT						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	2	PL-4	PL 3/8" X 5 3/8" X 2'-3"	A36	F-2	18.8
2	1	PL-5	PL 3/8" X 2 1/2" X 0'-7 1/4"	A36	F-2	1.9
3	1	PL-6	PL 1/2" X 7 1/4" X 0'-7 1/4"	A36	F-2	7.5
4	2	PL-7	PL 3/8" x 4 3/8" x 8 1/2"	A36	F-2	7.8
					BLACK WT	36
					GALVANIZED WT	38



TOP VIEW



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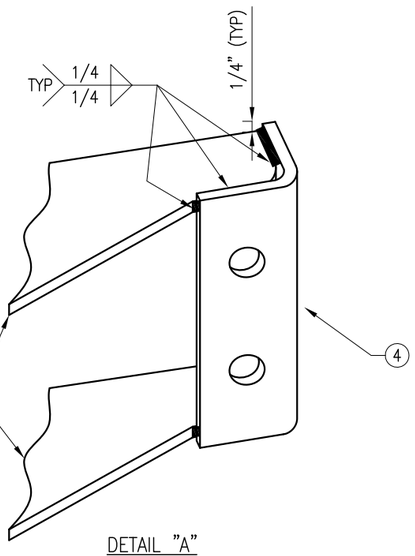

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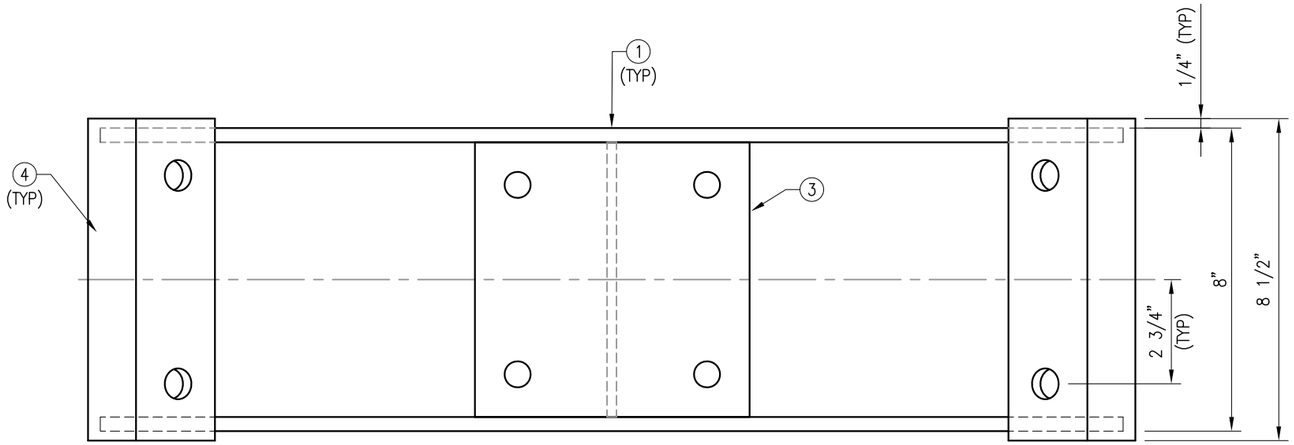


FRONT VIEW

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

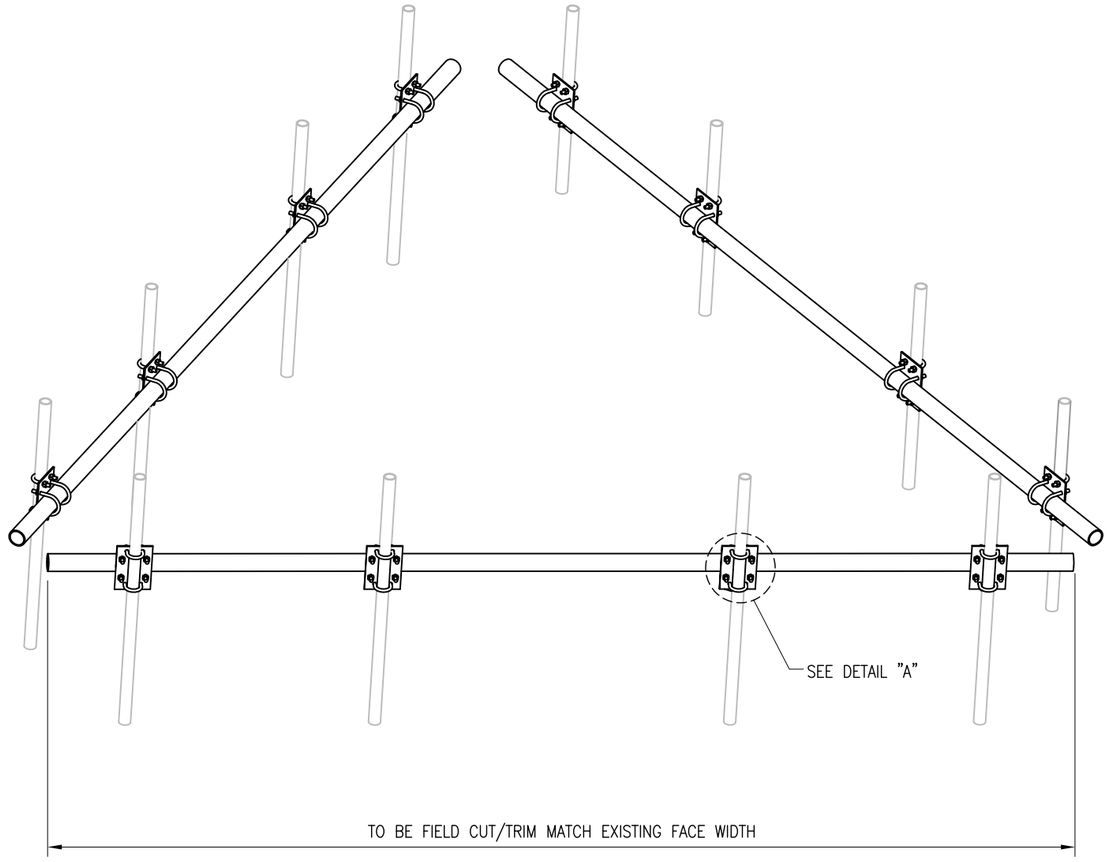
DECIMALS	ANGLES
.X ± 0.1	± 1°
.XX ± 0.02	FRACTIONS
.XXX ± 0.005	± 1/32

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

TITLE
HEAVY COLLAR MOUNT PLATE WELDMENT DETAIL

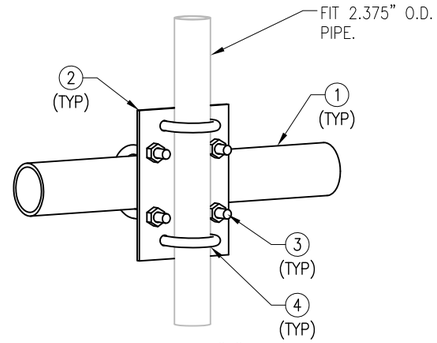
SIZE	DWG NO	REV
B	MPHW-1	0

SCALE - SHEET 1 OF 1



ELEVATION VIEW

MS-HR35-2375						
ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	3PST-140	3" PST (3.50" O.D X .216" THICK) X 14'-0"	A53 GR-B	TAF-1	337.2
2	12	PL375-10	PL 3/8" X 7 1/8" X 10"	A36	TAF-1	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	MS02-625-250-400	RU-BOLT 5/8" X 2 1/2" I.W. X 4" I.L. A36 (OR EQUIV.)	A36	RBC-1	--
				GALVANIZED WT		430



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

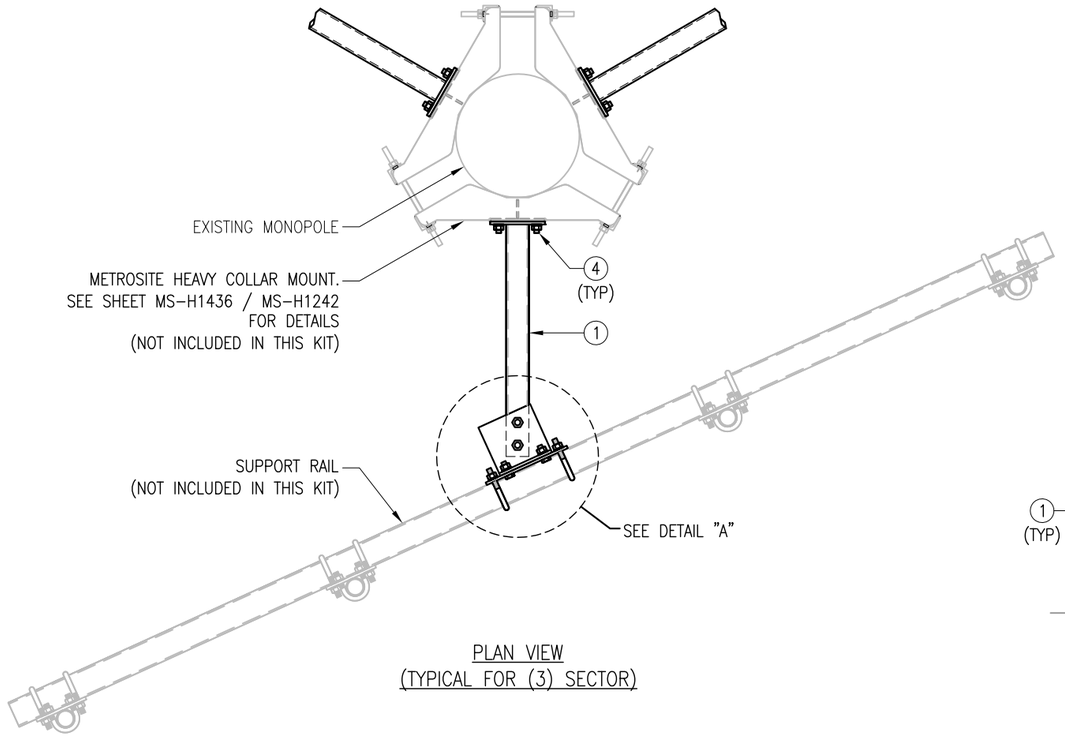
DECIMALS	ANGLES
.X ± 0.1	± 1°
.XX ± 0.02	FRACTIONS
.XXX ± 0.005	± 1/32

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

TITLE
MS-HR35-2375
SUPPORT RAIL KIT

SIZE	DWG NO	REV
B	MS-HR35-2375	1

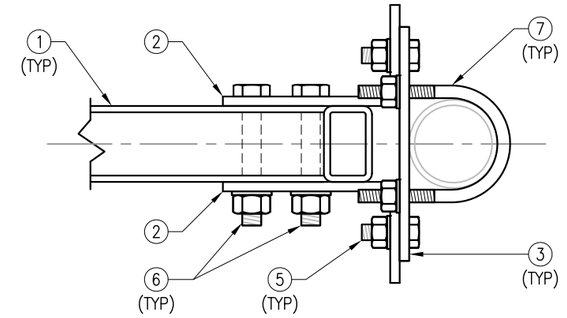
SCALE - SHEET 1 OF 1



PLAN VIEW
(TYPICAL FOR (3) SECTOR)

MS-TAW-350RO

ITEM NO.	QTY.	PART NO.	DESCRIPTION	GRADE	SHEET #	WT
1	3	TAW-6	T-ARM WELDMENT	A36	TAW-6	192
2	6	TARM-CPL-750	PL 3/8" X 7 1/2" X 9 7/16" A36 BENT PLATE	A36	BK-5	47.4
3	3	TARM-CPL-1175	PL 3/8" X 9 1/4" X 11 3/4"	A36	BK-5	36.3
4	12	---	BOLT 5/8" X 2 1/4" A325 W/ HHN & LKW EA.	A325	---	--
5	12	---	BOLT 5/8" X 2" A325 W/ HHN & LKW EA.	A325	---	--
6	6	---	BOLT 3/4" X 5" A325 W/ HHN & LKW EA.	A325	---	--
7	6	MS02-625-3625-600	RU-BOLT 5/8" X 3 5/8" I.W. X 6" I.L. A36 (OR EQUIV.)	---	RBC-1	8.7
					GALVANIZED WT	284



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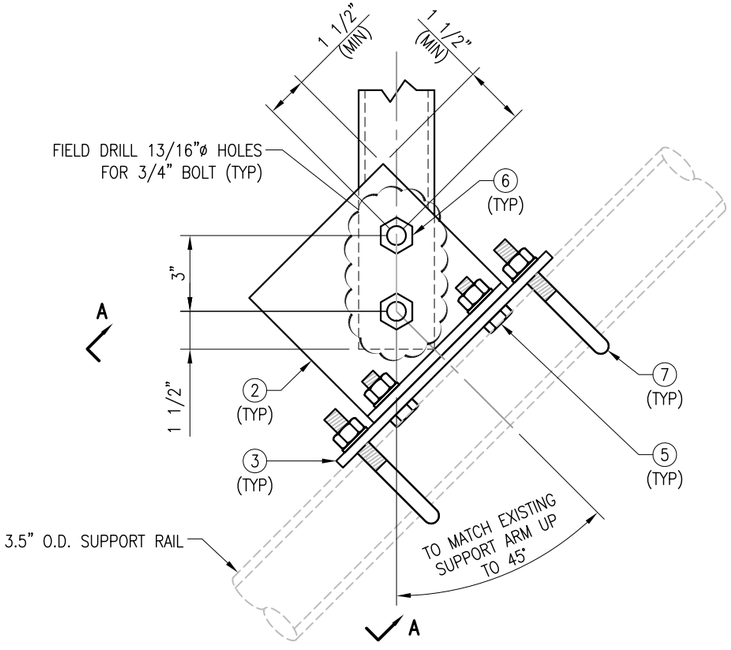

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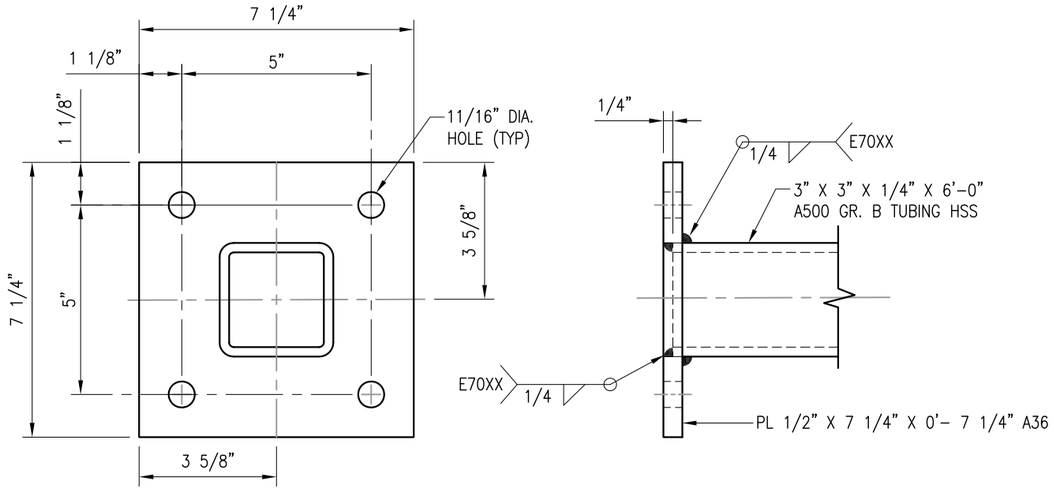

FRONT VIEW

TAW-6 WELDMENT

SIDE VIEW

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

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

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APPROVAL / SIGNATURES		DATE
DRAWN BY	XXX	11/19/18
REVIEWED	XXX	-
APPROVED	XXX	-

TITLE

ROTATABLE T-ARM KIT

SIZE	DWG NO	REV
B	MS-TAW-350RO	1

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 150 ft Nudd Corporation Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01500-S

Customer Site Name: Canton 2 CT

Carrier Name: T-Mobile (App#: 117041, v1)

Carrier Site ID / Name: CTHA530A / Canton

Site Location: 540 Cherry Brook Rd., (Rt. 179)

Canton, Connecticut

Hartford County

Latitude: 41.894052

Longitude: -72.893850

8/1/19

Analysis Result:

Max Structural Usage: 68.1% [Pass]

Max Foundation Usage: 27.8% [Pass]

Additional Usage Caused by Mount Modification: +0.7%

Report Prepared By: Walter Velez

Introduction

The purpose of this report is to summarize the analysis results on the 150 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	Original structural design report prepared by Fred. A. Nudd Corporation. Dated 11-02-2000. Drawing No 00-7221-1. Project No 4275-011. Previous structural report prepared by Tower Engineering Solutions. Dated 05-22-2018. TES Project No 52547.
Foundation Drawing	Original foundation report prepared by Fred. A. Nudd Corporation. Dated 11-02-2000. Drawing No 00-7221-1. Project No 4275-011.
Geotechnical Report	Geotechnical report prepared by Jaworski Geotech, Inc. Dated 11-29-1999. Project No 99503G.
Modification Drawings	Previous modifications by Vertical Structures, Inc. Dated 10-07-2008. Job No 2008-007-029. / Post rework report prepared by Vertical Structures, Inc. Dated 01-13-2009. Job No 2009-012-001.

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 V_{ult} = 120.0 mph (3-Sec. Gust)
(Based on IBC 2015)	Nominal Design Wind Speed V_{asd} = 93.0 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:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft.
Seismic Parameters:	S_S = 0.178, S_1 = 0.065

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

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft.)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	161.0	2	Cellwave PD220 20' Omni	(3) T-Arms w/ Working Platforms	(1) 1 5/8"	North Canton Volunteer
2	159.0	1	Cellwave TD1142 14' Omni		(1) 1 5/8"	
3	150.0	3	Antel BXA-70063/6CF - Panel		(18) 1 5/8"; (1) 1/2"	Verizon
4		2	Antel BXA-171085-12BF - Panel			
5		2	Antel LPA-80063/6CF - Panel			
6		1	Antel BXA-171063/12BF-2 - Panel			
7		4	Antel LPA-80080/6CF - Panel			
8		1	ADC DD1900			
9	138.0	6	Powerwave 7770.00 - Panel	Low Profile Platform	(12) 1 5/8"; (3) 1/2"; [(2) 3/4" DC Power & (1) 7/16" Fiber within (1) 3" Innerduct]	AT&T
10		3	Powerwave P65-17-XLH-RR - Panel			
11		3	Decibel 978QNB120E-M - Panel			
12		6	Ericsson RRUS-11			
13		6	Powerwave LGP 21401			
14		6	Powerwave 21903			
15		1	Commscope ABT-DF-DM-ADBH			
16		1	Raycap DC6-48-60-18-8F			
17	129.0	3	Ericsson AIR21 B2A/B4P - Panel	(3) T-Arms	(6) 1 5/8"; (1) 1 5/8" Fiber	T-Mobile / Metro PC
18		3	Ericsson AIR21 B4A B2P - Panel			
19	92.0	1	MYA 4505 4' Yagi	(1) Standoff	(2) 1/2"	North Canton Volunteer

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
20	129.0	3	RFS APXVAARR24_43-U-NA20 - Panel	(3) T-Arms w/ Support Rail Pipe (MS-P-TARM) w/ T-Arms	(4) 1 5/8" Fiber; (3) 1 5/8" Coax	T-Mobile
21		3	Ericsson Air 21 B4A/B2P - Panel			
22		3	Ericsson Air 32 KRD901146-1_B66A_B2A - Panel			
23		3	Ericsson Radio 4449 B71+B12 RRU's			

All transmission lines are considered running inside of the pole shafts. Please 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 w/ Stiffeners	Flange Connection
Max. Usage:	**57.5%**	**46.2%**	**68.1%**	**52.6%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)	Axial (Kips)
Original Design Reactions	3544.0	32.0	-
Analysis Reactions	2535.9	22.3	41.6
Factored Reactions*	4784.4	43.2	-

* Per section 15.5.1 of the TIA-222-G standard, factored reactions were obtained by multiplying a 1.35 factor to the original design reactions.

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 1.1894 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-222-G standards, the 2015 IBC and the 2018 Connecticut State Building Code under the design basic wind speed 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 57.47% at 50.0ft

Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

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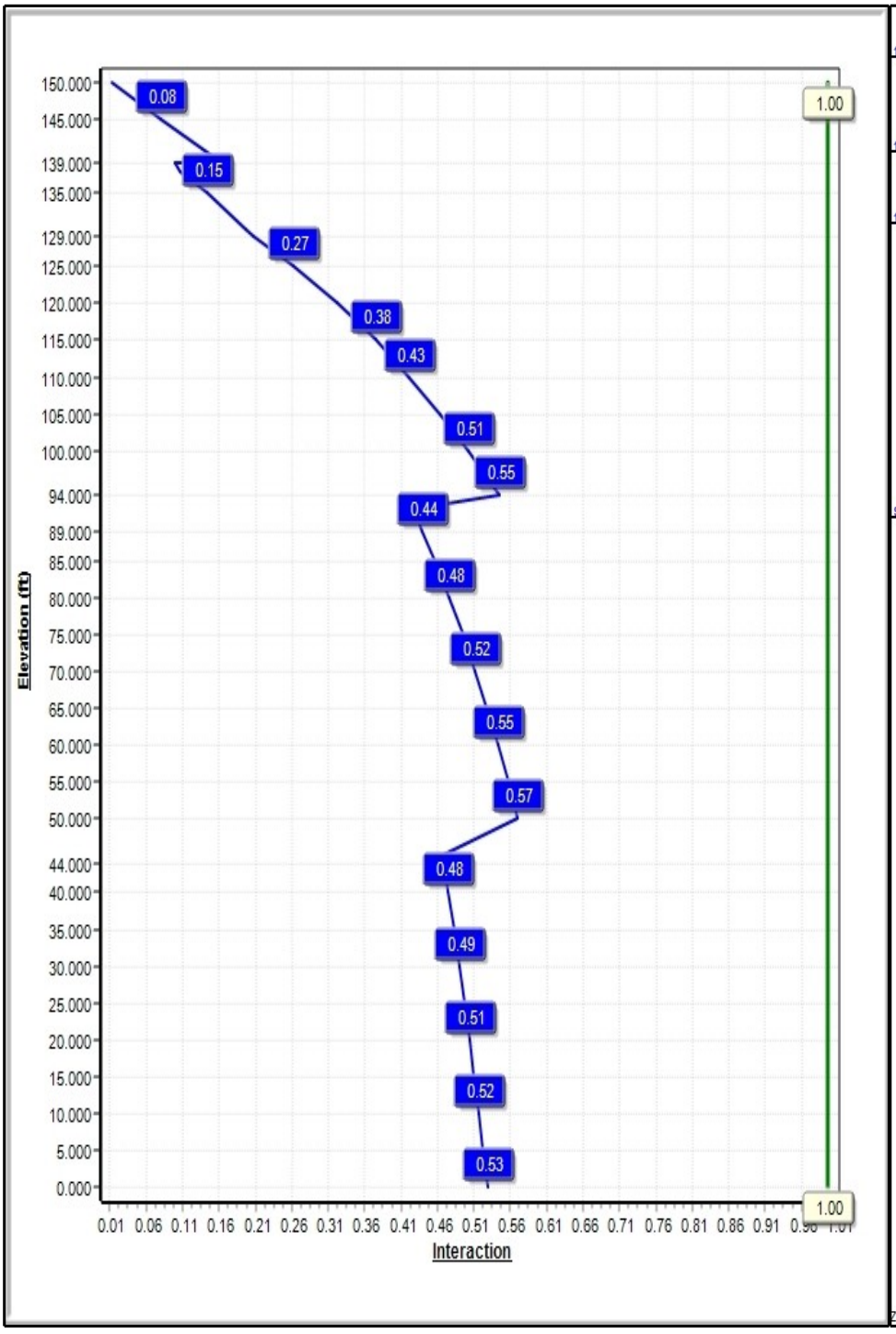
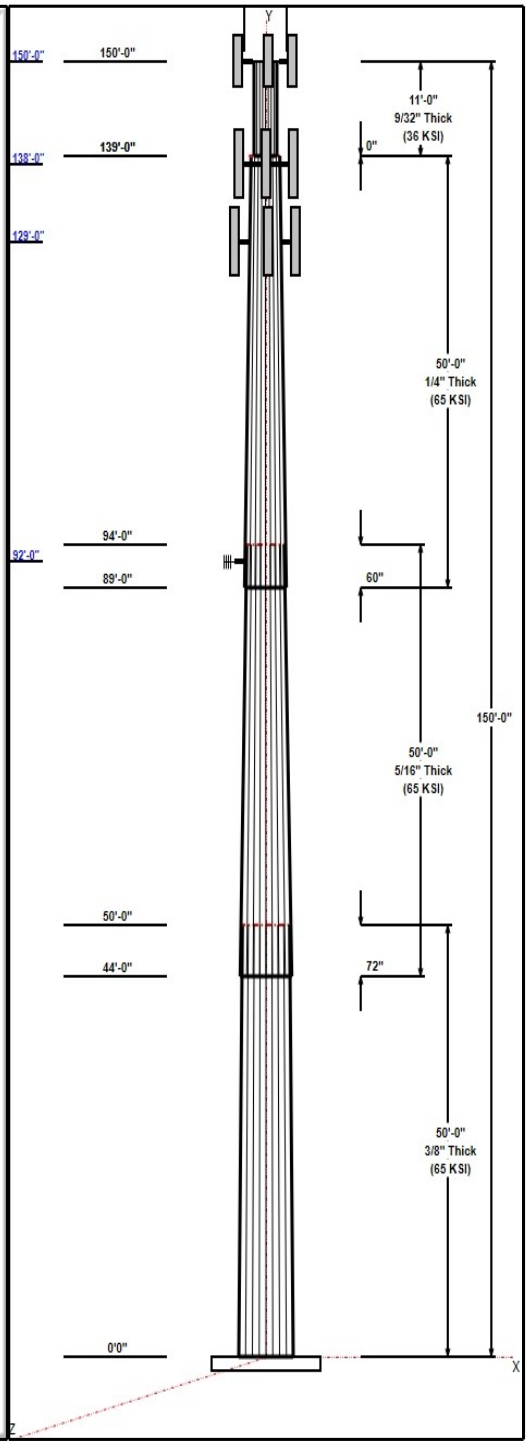
Dead Load Factor:	1.20	**Iterations:**	24
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 93 mph Wind





Structure: CT01500-S-SBA

Type: Custom
Site Name: Canton 2 CT
Height: 150.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: 18 Sided
Taper: 0.00000

8/1/2019

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Shaft Properties

Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	50.00	43.76	55.50	0.375		0.23471	65
2	50.00	34.06	45.80	0.313	Slip	0.23471	65
3	50.00	24.00	35.74	0.250	Slip	0.23471	65
4	11.00	24.00	24.00	0.281	Butt	0.00000	36

Discrete Appurtenances

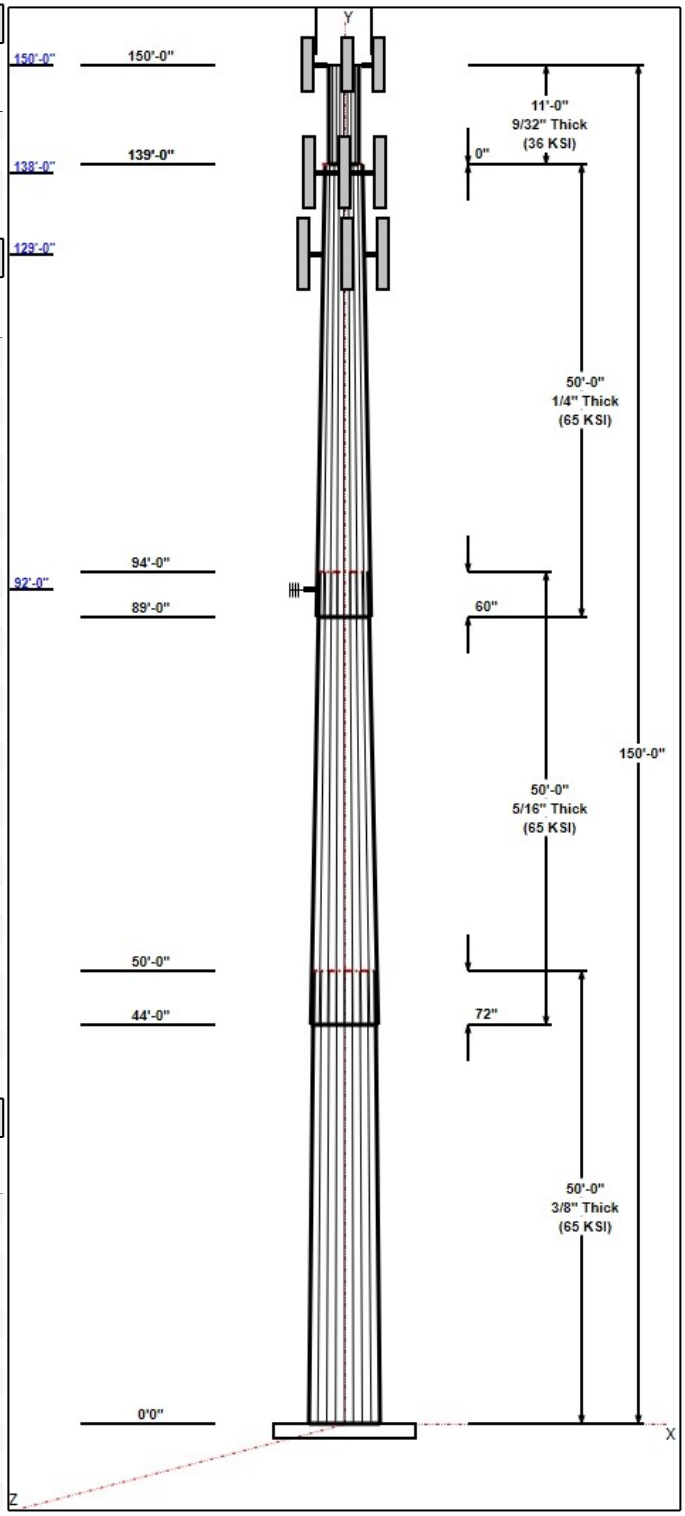
Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
150.00	161.00	2	Cellwave PD220 20' Omni	North Canton
150.00	159.00	1	Cellwave TD1142 14' Omni	North Canton
150.00	150.00	3	Antel BXA-70063/6CF	Verizon
150.00	150.00	2	Antel BXA-171085-12BF	Verizon
150.00	150.00	2	Antel LPA-80063/6CF	Verizon
150.00	150.00	1	Antel BXA-171063/12BF-2	Verizon
150.00	150.00	4	Antel LPA-80080/6CF	Verizon
150.00	150.00	1	ADC DD1900	Verizon
150.00	150.00	3	T-Arms w/ Working	Verizon
138.00	138.00	6	Powerwave 7770.00	AT&T
138.00	138.00	3	Powerwave	AT&T
138.00	138.00	3	Decibel 978QNB120E-M	AT&T
138.00	138.00	6	Ericsson RRUS-11	AT&T
138.00	138.00	6	Powerwave LGP 21401	AT&T
138.00	138.00	6	Powerwave 21903	AT&T
138.00	138.00	1	Commscope	AT&T
138.00	138.00	1	Raycap DC6-48-60-18-8F	AT&T
138.00	138.00	1	Low Profile Platform	AT&T
129.00	129.00	3	T-Arms	T-Mobile
129.00	129.00	3	RFS	T-Mobile
129.00	129.00	3	Ericsson Air 21 B4A/B2P	T-Mobile
129.00	129.00	3	Ericsson Air 32	T-Mobile
129.00	129.00	3	Ericsson Radio 4449	T-Mobile
129.00	129.00	1	Support Rail Pipe	T-Mobile
92.00	92.00	1	MYA 4505 4' Yagi	North Canton
92.00	92.00	1	Standoff	North Canton

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
3.00	150.00	Inside	1 5/8" Coax	North Canton
3.00	150.00	Inside	1 5/8" Coax	Verizon
3.00	150.00	Inside	1/2" Coax	Verizon
3.00	138.00	Inside	1 5/8" Coax	AT&T
3.00	138.00	Inside	1/2" Coax	AT&T
3.00	138.00	Inside	3" Innerduct	AT&T
3.00	138.00	Inside	3/4" DC Power	AT&T
3.00	138.00	Inside	7/16" Fiber	AT&T
3.00	129.00	Inside	1 5/8" Coax	T-Mobile
3.00	129.00	Inside	1 5/8" Fiber	T-Mobile
3.00	119.00	Inside	1.619" Hybrid	Sprint Nextel
3.00	92.00	Inside	1/2" Coax	North Canton

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement



18	2.00" F1554 105	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.5000	68.0	50.0	Round

Reactions

Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	2535.9	22.3	41.6
0.9D + 1.6W 93 mph Wind	2509.8	22.3	31.2
1.2D + 1.0Di + 1.0Wi 50 mph Wind	861.0	7.4	72.6
1.2D + 1.0E	145.4	1.2	41.6
0.9D + 1.0E	143.8	1.2	31.2
1.0D + 1.0W 60 mph Wind	655.6	5.8	34.7

Structure: CT01500-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Canton 2 CT
Height: 150.00 (ft)

8/1/2019

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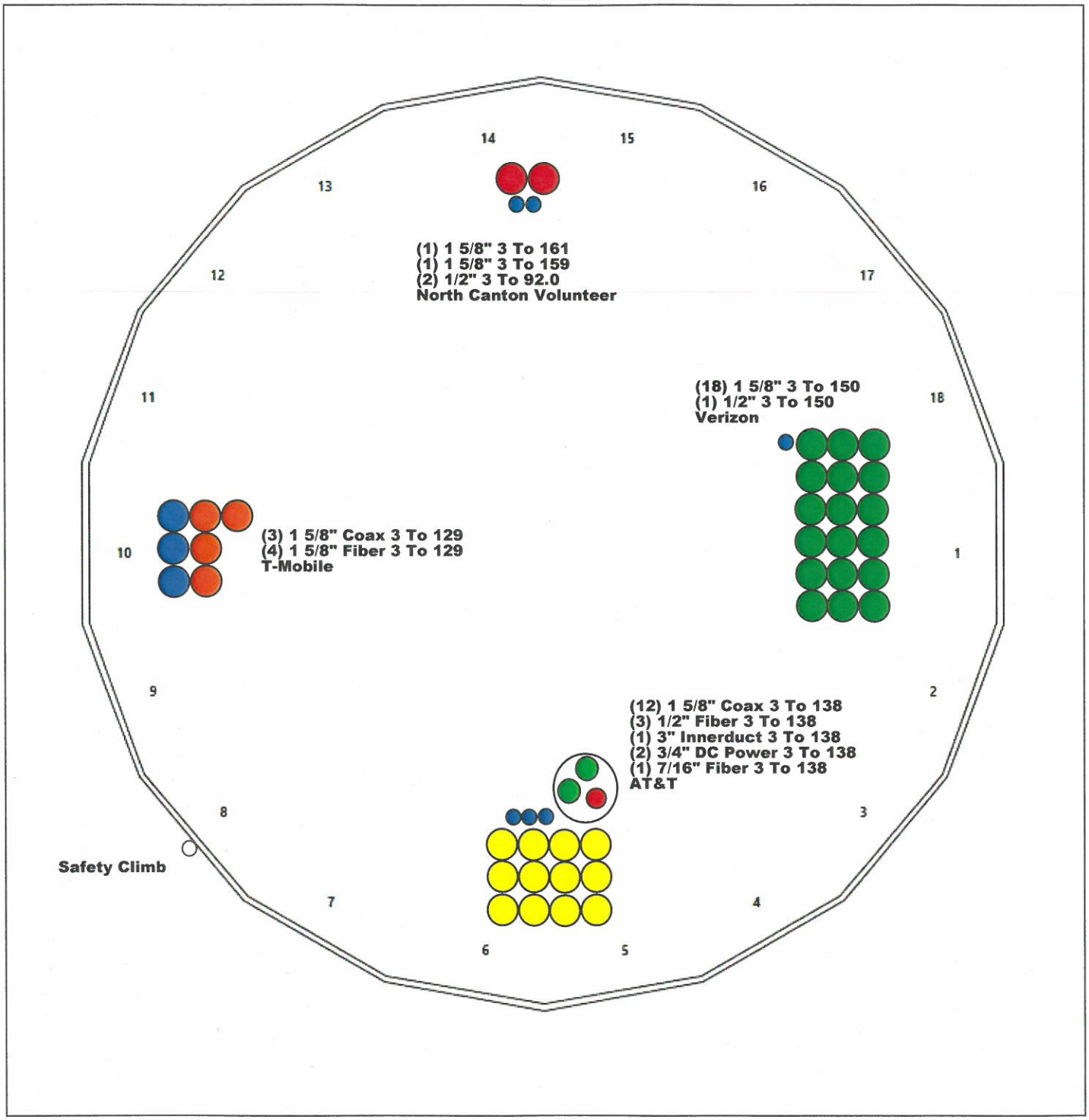

Shaft Properties

Structure:	CT01500-S-SBA		**Code:**	EIA/TIA-222-G	8/1/2019
Site Name:	Canton 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

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Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	18	50.000	0.3750	65		0.00	9,975
2	18	50.000	0.3125	65	Slip	72.00	6,685
3	18	50.000	0.2500	65	Slip	60.00	3,998
4	18	11.000	0.2813	36	Flange	0.00	793
					Total Shaft Weight:		**21,451**

	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	55.50	0.00	65.61	25189.61	24.69	148.00	43.76	50.00	51.64	12283.6	19.17	116.7	0.234712
2	45.80	44.00	45.11	11792.44	24.43	146.55	34.06	94.00	33.47	4817.24	17.81	109.0	0.234712
3	35.74	89.00	28.16	4479.62	23.79	142.94	24.00	139.00	18.84	1343.00	15.52	96.00	0.234712
4	24.00	139.0	21.17	1504.92	13.64	85.33	24.00	150.00	21.17	1504.92	13.64	85.33	0.000000

Load Summary

Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

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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	150.00	Cellwave PD220 20' Omni	2	55.00	6.00	1.00	255.88	15.460	1.00	0.00	11.00
2	150.00	Cellwave TD1142 14' Omni	1	40.00	4.20	1.00	181.18	10.869	1.00	0.00	9.00
3	150.00	Antel BXA-70063/6CF	3	14.90	7.57	0.78	210.38	11.255	0.78	0.00	0.00
4	150.00	Antel BXA-171085-12BF	2	15.00	4.73	0.88	141.58	7.856	0.88	0.00	0.00
5	150.00	Antel LPA-80063/6CF	2	27.00	9.59	0.95	429.87	11.440	0.95	0.00	0.00
6	150.00	Antel BXA-171063/12BF-2	1	5.00	4.73	0.88	48.16	9.383	0.88	0.00	0.00
7	150.00	Antel LPA-80080/6CF	4	21.00	8.62	0.75	297.98	10.407	0.75	0.00	0.00
8	150.00	ADC DD1900	1	10.40	1.10	0.60	32.13	2.492	0.60	0.00	0.00
9	150.00	T-Arms w/ Working Platforms	3	500.00	18.20	0.75	1430.78	43.610	0.75	0.00	0.00
10	138.00	Powerwave 7770.00	6	35.00	5.51	0.77	227.04	6.938	0.77	0.00	0.00
11	138.00	Powerwave P65-17-XLH-RR	3	59.00	11.44	0.80	345.41	15.717	0.80	0.00	0.00
12	138.00	Decibel 978QNB120E-M	3	35.00	7.59	0.69	231.23	10.455	0.69	0.00	0.00
13	138.00	Ericsson RRUS-11	6	50.70	2.52	0.67	165.61	3.406	0.67	0.00	0.00
14	138.00	Powerwave LGP 21401	6	17.50	1.05	0.60	66.56	1.670	0.60	0.00	0.00
15	138.00	Powerwave 21903	6	5.50	0.20	0.60	16.64	0.590	0.60	0.00	0.00
16	138.00	Commscope ABT-DF-DM-ADBH	1	1.10	0.04	0.60	4.05	0.244	0.60	0.00	0.00
17	138.00	Raycap DC6-48-60-18-8F	1	16.00	2.20	0.67	93.00	3.485	0.67	0.00	0.00
18	138.00	Low Profile Platform	1	1500.00	22.00	1.00	3230.72	45.353	1.00	0.00	0.00
19	129.00	T-Arms	3	350.00	8.00	0.75	670.90	17.169	0.75	0.00	0.00
20	129.00	RFS APXVAARR24_43-U-NA20	3	128.00	20.24	0.72	698.97	22.765	0.72	0.00	0.00
21	129.00	Ericsson Air 21 B4A/B2P	3	90.30	6.04	0.85	323.32	7.502	0.85	0.00	0.00
22	129.00	Ericsson Air 32	3	132.20	6.51	0.86	386.88	8.013	0.86	0.00	0.00
23	129.00	Ericsson Radio 4449 B71+B12	3	74.00	1.63	0.67	169.73	2.353	0.67	0.00	0.00
24	129.00	Support Rail Pipe (MS-P-TARM)	1	261.72	6.75	1.00	669.65	15.414	1.00	0.00	0.00
25	92.00	MYA 4505 4' Yagi	1	15.00	2.50	1.00	199.12	10.903	1.00	0.00	0.00
26	92.00	Standoff	1	40.00	2.63	1.00	141.93	10.209	1.00	0.00	0.00
		Totals:	**70**	**6,969.62**			**23,704.43**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
3.00	150.00	(2) 1 5/8" Coax	0.00	Inside
3.00	150.00	(18) 1 5/8" Coax	0.00	Inside
3.00	150.00	(1) 1/2" Coax	0.00	Inside
3.00	138.00	(12) 1 5/8" Coax	0.00	Inside
3.00	138.00	(3) 1/2" Coax	0.00	Inside
3.00	138.00	(1) 3" Innerduct	0.00	Inside
3.00	138.00	(2) 3/4" DC Power	0.00	Inside
3.00	138.00	(1) 7/16" Fiber	0.00	Inside
3.00	129.00	(3) 1 5/8" Coax	0.00	Inside
3.00	129.00	(4) 1 5/8" Fiber	0.00	Inside
3.00	119.00	(3) 1.619" Hybrid	0.00	Inside
3.00	92.00	(2) 1/2" Coax	0.00	Inside

Shaft Section Properties

Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 7	

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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		0.3750	55.500	65.610	25189.6	24.69	148.00	72.4	893.9	0.0
5.00		0.3750	54.326	64.213	23614.8	24.13	144.87	73.0	856.2	1104.4
10.00		0.3750	53.153	62.817	22107.1	23.58	141.74	73.7	819.2	1080.6
15.00		0.3750	51.979	61.420	20664.9	23.03	138.61	74.3	783.0	1056.9
20.00		0.3750	50.806	60.023	19286.9	22.48	135.48	75.0	747.7	1033.1
25.00		0.3750	49.632	58.626	17971.5	21.93	132.35	75.6	713.2	1009.3
30.00		0.3750	48.459	57.229	16717.4	21.37	129.22	76.3	679.5	985.6
35.00		0.3750	47.285	55.833	15522.9	20.82	126.09	76.9	646.6	961.8
40.00		0.3750	46.112	54.436	14386.8	20.27	122.96	77.6	614.5	938.0
44.00	Bot - Section 2	0.3750	45.173	53.318	13518.9	19.83	120.46	78.1	589.5	733.3
45.00		0.3750	44.938	53.039	13307.5	19.72	119.83	78.2	583.3	334.1
50.00	Top - Section 1	0.3125	44.389	43.717	10730.7	23.64	142.05	0.0	0.0	1644.2
55.00		0.3125	43.216	42.553	9896.2	22.97	138.29	74.4	451.0	733.9
60.00		0.3125	42.042	41.389	9106.1	22.31	134.54	75.2	426.6	714.1
65.00		0.3125	40.869	40.225	8359.2	21.65	130.78	75.9	402.9	694.3
70.00		0.3125	39.695	39.061	7654.4	20.99	127.02	76.7	379.8	674.5
75.00		0.3125	38.522	37.897	6990.3	20.33	123.27	77.5	357.4	654.7
80.00		0.3125	37.348	36.733	6365.8	19.66	119.51	78.3	335.7	634.9
85.00		0.3125	36.174	35.569	5779.6	19.00	115.76	79.1	314.7	615.1
89.00	Bot - Section 3	0.3125	35.236	34.638	5337.4	18.47	112.75	79.7	298.4	477.8
90.00		0.3125	35.001	34.405	5230.5	18.34	112.00	79.8	294.3	213.0
92.00		0.3125	34.531	33.940	5021.1	18.07	110.50	80.1	286.4	421.7
94.00	Top - Section 2	0.2500	34.562	27.226	4049.7	22.97	138.25	0.0	0.0	415.9
95.00		0.2500	34.327	27.039	3967.2	22.80	137.31	74.6	227.6	92.3
100.00		0.2500	33.154	26.108	3571.3	21.97	132.62	75.6	212.2	452.1
105.00		0.2500	31.980	25.177	3202.6	21.15	127.92	76.5	197.2	436.3
110.00		0.2500	30.807	24.246	2860.2	20.32	123.23	77.5	182.9	420.4
115.00		0.2500	29.633	23.315	2543.2	19.49	118.53	78.5	169.0	404.6
120.00		0.2500	28.460	22.383	2250.5	18.66	113.84	79.5	155.7	388.8
125.00		0.2500	27.286	21.452	1981.1	17.83	109.14	80.4	143.0	372.9
129.00		0.2500	26.347	20.707	1781.8	17.17	105.39	81.2	133.2	286.9
130.00		0.2500	26.112	20.521	1734.2	17.01	104.45	81.4	130.8	70.1
135.00		0.2500	24.939	19.590	1508.6	16.18	99.76	82.4	119.1	341.2
138.00		0.2500	24.235	19.031	1383.2	15.68	96.94	82.5	112.4	197.1
139.00	Top - Section 3	0.2500	24.000	18.845	1343.0	15.52	96.00	82.5	110.2	64.4
139.00	Bot - Section 4	0.2813	24.000	21.173	1504.9	13.79	85.33	45.7	123.5	
140.00		0.2813	24.000	21.173	1504.9	13.64	85.33	45.7	123.5	72.0
145.00		0.2813	24.000	21.173	1504.9	13.64	85.33	45.7	123.5	360.2
150.00		0.2813	24.000	21.173	1504.9	13.64	85.33	45.7	123.5	360.2
										21451.0

Wind Loading - Shaft

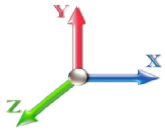
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

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	0.70	14.724	16.20	365.42	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	14.724	16.20	357.69	0.650	0.000	5.00	23.233	15.10	391.4	0.0	1325.3
10.00		1.00	0.70	14.724	16.20	349.97	0.650	0.000	5.00	22.737	14.78	383.0	0.0	1296.8
15.00		1.00	0.70	14.724	16.20	342.24	0.650	0.000	5.00	22.240	14.46	374.6	0.0	1268.2
20.00		1.00	0.70	14.724	16.20	334.51	0.650	0.000	5.00	21.744	14.13	366.3	0.0	1239.7
25.00		1.00	0.70	14.724	16.20	326.79	0.650	0.000	5.00	21.247	13.81	357.9	0.0	1211.2
30.00		1.00	0.70	14.736	16.21	319.19	0.650	0.000	5.00	20.751	13.49	349.8	0.0	1182.7
35.00		1.00	0.73	15.400	16.94	318.40	0.650	0.000	5.00	20.254	13.17	356.8	0.0	1154.2
40.00		1.00	0.76	15.999	17.60	316.48	0.650	0.000	5.00	19.758	12.84	361.6	0.0	1125.7
44.00	Bot - Section 2	1.00	0.78	16.441	18.08	314.28	0.650	0.000	4.00	15.449	10.04	290.6	0.0	880.0
45.00		1.00	0.79	16.546	18.20	313.65	0.650	0.000	1.00	3.865	2.51	73.2	0.0	400.9
50.00	Top - Section 1	1.00	0.81	17.052	18.76	310.10	0.650	0.000	5.00	19.029	12.37	371.2	0.0	1973.1
55.00		1.00	0.83	17.523	19.28	310.41	0.650	0.000	5.00	18.533	12.05	371.5	0.0	880.7
60.00		1.00	0.85	17.964	19.76	305.75	0.650	0.000	5.00	18.036	11.72	370.7	0.0	856.9
65.00		1.00	0.87	18.380	20.22	300.64	0.650	0.000	5.00	17.540	11.40	368.8	0.0	833.1
70.00		1.00	0.89	18.773	20.65	295.11	0.650	0.000	5.00	17.043	11.08	366.0	0.0	809.4
75.00		1.00	0.91	19.147	21.06	289.22	0.650	0.000	5.00	16.547	10.76	362.4	0.0	785.6
80.00		1.00	0.93	19.503	21.45	283.01	0.650	0.000	5.00	16.050	10.43	358.1	0.0	761.9
85.00		1.00	0.94	19.844	21.83	276.50	0.650	0.000	5.00	15.553	10.11	353.1	0.0	738.1
89.00	Bot - Section 3	1.00	0.96	20.106	22.12	271.10	0.650	0.000	4.00	12.085	7.86	278.0	0.0	573.4
90.00		1.00	0.96	20.170	22.19	269.73	0.650	0.000	1.00	3.014	1.96	69.5	0.0	255.6
92.00	Appurtenance(s)	1.00	0.96	20.297	22.33	266.94	0.650	0.000	2.00	5.968	3.88	138.6	0.0	506.0
94.00	Top - Section 2	1.00	0.97	20.423	22.46	264.13	0.650	0.000	2.00	5.889	3.83	137.6	0.0	499.1
95.00		1.00	0.97	20.484	22.53	266.59	0.650	0.000	1.00	2.915	1.89	68.3	0.0	110.8
100.00		1.00	0.99	20.787	22.87	259.37	0.650	0.000	5.00	14.275	9.28	339.5	0.0	542.5
105.00		1.00	1.00	21.079	23.19	251.93	0.650	0.000	5.00	13.779	8.96	332.3	0.0	523.5
110.00		1.00	1.02	21.361	23.50	244.31	0.650	0.000	5.00	13.282	8.63	324.6	0.0	504.5
115.00		1.00	1.03	21.634	23.80	236.50	0.650	0.000	5.00	12.786	8.31	316.4	0.0	485.5
120.00		1.00	1.04	21.898	24.09	228.52	0.650	0.000	5.00	12.289	7.99	307.9	0.0	466.5
125.00		1.00	1.05	22.155	24.37	220.38	0.650	0.000	5.00	11.793	7.67	298.9	0.0	447.5
129.00	Appurtenance(s)	1.00	1.06	22.356	24.59	213.75	0.650	0.000	4.00	9.077	5.90	232.1	0.0	344.3
130.00		1.00	1.07	22.405	24.65	212.08	0.650	0.000	1.00	2.220	1.44	56.9	0.0	84.2
135.00		1.00	1.08	22.648	24.91	203.65	0.650	0.000	5.00	10.800	7.02	279.8	0.0	409.5
138.00	Appurtenance(s)	1.00	1.08	22.790	25.07	198.52	0.650	0.000	3.00	6.242	4.06	162.7	0.0	236.6
139.00	Top - Section 3	1.00	1.09	22.838	25.12	196.80	0.650	0.000	1.00	2.041	1.33	53.3	0.0	77.3
140.00		1.00	1.09	22.884	25.17	197.00	0.650	0.000	1.00	2.031	1.32	53.2	0.0	86.5
145.00		1.00	1.10	23.115	25.43	197.99	0.650	0.000	5.00	10.154	6.60	268.5	0.0	432.3
150.00	Appurtenance(s)	1.00	1.11	23.340	25.67	198.95	0.650	0.000	5.00	10.154	6.60	271.1	0.0	432.3
								Totals:	**150.00**			**10,216.1**		**25,741.2**

Discrete Appurtenance Forces

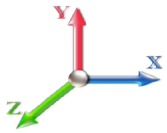
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

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	150.00	Antel BXA-171085-12BF	2	23.340	25.674	0.88	1.00	8.32	36.00	0.000	0.000	341.97	0.00	0.00
2	150.00	Cellwave PD220 20' Omni	2	23.817	26.198	1.00	1.00	12.00	132.00	0.000	11.000	503.01	0.00	5533.09
3	150.00	Cellwave TD1142 14'	1	23.732	26.105	1.00	1.00	4.20	48.00	0.000	9.000	175.43	0.00	1578.83
4	150.00	Antel BXA-70063/6CF	3	23.340	25.674	0.78	1.00	17.71	53.64	0.000	0.000	727.65	0.00	0.00
5	150.00	T-Arms w/ Working	3	23.340	25.674	0.56	0.75	30.71	1800.00	0.000	0.000	1261.62	0.00	0.00
6	150.00	Antel LPA-80063/6CF	2	23.340	25.674	0.95	1.00	18.22	64.80	0.000	0.000	748.49	0.00	0.00
7	150.00	Antel BXA-171063/12BF-2	1	23.340	25.674	0.88	1.00	4.16	6.00	0.000	0.000	170.98	0.00	0.00
8	150.00	Antel LPA-80080/6CF	4	23.340	25.674	0.75	1.00	25.86	100.80	0.000	0.000	1062.28	0.00	0.00
9	150.00	ADC DD1900	1	23.340	25.674	0.60	1.00	0.66	12.48	0.000	0.000	27.11	0.00	0.00
10	138.00	Low Profile Platform	1	22.790	25.070	1.00	1.00	22.00	1800.00	0.000	0.000	882.45	0.00	0.00
11	138.00	Raycap DC6-48-60-18-8F	1	22.790	25.070	0.54	0.80	1.18	19.20	0.000	0.000	47.30	0.00	0.00
12	138.00	Commscope	1	22.790	25.070	0.48	0.80	0.02	1.32	0.000	0.000	0.77	0.00	0.00
13	138.00	Powerwave 21903	6	22.790	25.070	0.48	0.80	0.58	39.60	0.000	0.000	23.10	0.00	0.00
14	138.00	Powerwave LGP 21401	6	22.790	25.070	0.48	0.80	3.02	126.00	0.000	0.000	121.30	0.00	0.00
15	138.00	Decibel 978QNB120E-M	3	22.790	25.070	0.55	0.80	12.57	126.00	0.000	0.000	504.16	0.00	0.00
16	138.00	Powerwave	3	22.790	25.070	0.64	0.80	21.96	212.40	0.000	0.000	881.04	0.00	0.00
17	138.00	Powerwave 7770.00	6	22.790	25.070	0.62	0.80	20.36	252.00	0.000	0.000	816.86	0.00	0.00
18	138.00	Ericsson RRUS-11	6	22.790	25.070	0.54	0.80	8.10	365.04	0.000	0.000	325.07	0.00	0.00
19	129.00	Ericsson Air 21 B4A/B2P	3	22.356	24.591	0.68	0.80	12.32	325.08	0.000	0.000	484.80	0.00	0.00
20	129.00	T-Arms	3	22.356	24.591	0.56	0.75	13.50	1260.00	0.000	0.000	531.17	0.00	0.00
21	129.00	RFS	3	22.356	24.591	0.58	0.80	34.97	460.80	0.000	0.000	1376.11	0.00	0.00
22	129.00	Ericsson Radio 4449	3	22.356	24.591	0.54	0.80	2.62	266.40	0.000	0.000	103.13	0.00	0.00
23	129.00	Ericsson Air 32	3	22.356	24.591	0.69	0.80	13.44	475.92	0.000	0.000	528.67	0.00	0.00
24	129.00	Support Rail Pipe	1	22.356	24.591	0.75	0.75	5.06	314.06	0.000	0.000	199.19	0.00	0.00
25	92.00	Standoff	1	20.297	22.327	1.00	1.00	2.63	48.00	0.000	0.000	93.95	0.00	0.00
26	92.00	MYA 4505 4' Yagi	1	20.297	22.327	1.00	1.00	2.50	18.00	0.000	0.000	89.31	0.00	0.00
							Totals:		**8,363.54**			**12,026.92**		

Total Applied Force Summary

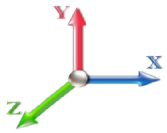
Structure:	CT01500-S-SBA		**Code:**	EIA/TIA-222-G	8/1/2019
Site Name:	Canton 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 10

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

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		391.35	1434.84	0.00	0.00
10.00		382.99	1570.66	0.00	0.00
15.00		374.62	1542.15	0.00	0.00
20.00		366.26	1513.63	0.00	0.00
25.00		357.90	1485.11	0.00	0.00
30.00		349.83	1456.59	0.00	0.00
35.00		356.83	1428.08	0.00	0.00
40.00		361.62	1399.56	0.00	0.00
44.00		290.56	1099.11	0.00	0.00
45.00		73.17	455.67	0.00	0.00
50.00		371.21	2246.97	0.00	0.00
55.00		371.51	1154.58	0.00	0.00
60.00		370.66	1130.81	0.00	0.00
65.00		368.79	1107.05	0.00	0.00
70.00		366.02	1083.28	0.00	0.00
75.00		362.43	1059.52	0.00	0.00
80.00		358.10	1035.75	0.00	0.00
85.00		353.08	1011.99	0.00	0.00
89.00		277.98	792.48	0.00	0.00
90.00		69.55	310.34	0.00	0.00
92.00	(2) attachments	321.85	681.54	0.00	0.00
94.00		137.59	607.93	0.00	0.00
95.00		68.30	165.19	0.00	0.00
100.00		339.47	814.53	0.00	0.00
105.00		332.26	795.52	0.00	0.00
110.00		324.58	776.50	0.00	0.00
115.00		316.44	757.49	0.00	0.00
120.00		307.87	734.88	0.00	0.00
125.00		298.90	701.47	0.00	0.00
129.00	(16) attachments	3455.20	3649.75	0.00	0.00
130.00		56.89	126.23	0.00	0.00
135.00		279.81	619.77	0.00	0.00
138.00	(33) attachments	3764.78	3304.29	0.00	0.00
139.00		53.32	102.48	0.00	0.00
140.00		53.17	111.61	0.00	0.00
145.00		268.51	558.04	0.00	0.00
150.00	(19) attachments	5289.67	2811.76	0.00	7111.92
	Totals:	**22,243.06**	**41,637.15**	**0.00**	**7,111.92**

Calculated Forces

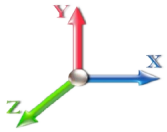
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 11	

Tower Engineering Solutions

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 24

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	-41.61	-22.29	0.00	-2535.8	0.00	2535.87	4273.14	2136.57	9689.25	4851.82	0.00	0.000	0.000	0.533
5.00	-40.12	-22.00	0.00	-2424.3	0.00	2424.39	4219.68	2109.84	9362.95	4688.43	0.08	-0.140	0.000	0.527
10.00	-38.50	-21.71	0.00	-2314.3	0.00	2314.39	4164.59	2082.29	9038.31	4525.87	0.30	-0.283	0.000	0.521
15.00	-36.90	-21.42	0.00	-2205.8	0.00	2205.85	4107.86	2053.93	8715.56	4364.26	0.67	-0.428	0.000	0.515
20.00	-35.34	-21.13	0.00	-2098.7	0.00	2098.76	4049.50	2024.75	8394.94	4203.71	1.20	-0.576	0.000	0.508
25.00	-33.80	-20.85	0.00	-1993.1	0.00	1993.10	3989.51	1994.75	8076.69	4044.35	1.89	-0.727	0.000	0.501
30.00	-32.29	-20.56	0.00	-1888.8	0.00	1888.86	3927.89	1963.94	7761.05	3886.29	2.73	-0.881	0.000	0.494
35.00	-30.82	-20.27	0.00	-1786.0	0.00	1786.04	3864.63	1932.32	7448.26	3729.66	3.74	-1.037	0.000	0.487
40.00	-29.37	-19.95	0.00	-1684.7	0.00	1684.70	3799.75	1899.87	7138.54	3574.58	4.91	-1.196	0.000	0.479
44.00	-28.25	-19.68	0.00	-1604.8	0.00	1604.89	3746.66	1873.33	6893.15	3451.70	5.97	-1.326	0.000	0.473
45.00	-27.77	-19.64	0.00	-1585.2	0.00	1585.21	3733.23	1866.62	6832.15	3421.15	6.25	-1.360	0.000	0.471
50.00	-25.47	-19.29	0.00	-1487.0	0.00	1487.00	2895.85	1447.93	5248.77	2628.28	7.76	-1.524	0.000	0.575
55.00	-24.27	-18.96	0.00	-1390.5	0.00	1390.55	2848.58	1424.29	5024.64	2516.06	9.45	-1.691	0.000	0.561
60.00	-23.09	-18.63	0.00	-1295.7	0.00	1295.74	2799.67	1399.83	4802.32	2404.73	11.32	-1.884	0.000	0.547
65.00	-21.93	-18.30	0.00	-1202.5	0.00	1202.57	2749.13	1374.56	4582.02	2294.42	13.40	-2.079	0.000	0.532
70.00	-20.80	-17.97	0.00	-1111.0	0.00	1111.06	2696.96	1348.48	4364.00	2185.24	15.68	-2.276	0.000	0.516
75.00	-19.70	-17.63	0.00	-1021.2	0.00	1021.22	2643.16	1321.58	4148.49	2077.33	18.17	-2.474	0.000	0.499
80.00	-18.62	-17.29	0.00	-933.07	0.00	933.07	2587.72	1293.86	3935.73	1970.79	20.87	-2.673	0.000	0.481
85.00	-17.57	-16.94	0.00	-846.62	0.00	846.62	2530.65	1265.33	3725.95	1865.74	23.77	-2.872	0.000	0.461
89.00	-16.77	-16.65	0.00	-778.84	0.00	778.84	2483.83	1241.91	3560.44	1782.87	26.25	-3.032	0.000	0.444
90.00	-16.44	-16.59	0.00	-762.19	0.00	762.19	2471.96	1235.98	3519.40	1762.31	26.89	-3.073	0.000	0.439
92.00	-15.76	-16.25	0.00	-729.01	0.00	729.01	2448.02	1224.01	3437.73	1721.42	28.19	-3.154	0.000	0.430
94.00	-15.14	-16.09	0.00	-696.51	0.00	696.51	1822.74	911.37	2571.33	1287.57	29.53	-3.235	0.000	0.550
95.00	-14.94	-16.05	0.00	-680.42	0.00	680.42	1815.01	907.51	2542.78	1273.28	30.21	-3.275	0.000	0.543
100.00	-14.08	-15.72	0.00	-600.15	0.00	600.15	1775.38	887.69	2400.98	1202.27	33.76	-3.505	0.000	0.507
105.00	-13.25	-15.39	0.00	-521.54	0.00	521.54	1734.12	867.06	2260.90	1132.13	37.55	-3.728	0.000	0.469
110.00	-12.45	-15.06	0.00	-444.59	0.00	444.59	1691.22	845.61	2122.79	1062.97	41.57	-3.943	0.000	0.426
115.00	-11.66	-14.73	0.00	-369.29	0.00	369.29	1646.70	823.35	1986.87	994.91	45.81	-4.145	0.000	0.379
120.00	-10.91	-14.40	0.00	-295.63	0.00	295.63	1600.54	800.27	1853.40	928.08	50.25	-4.331	0.000	0.326
125.00	-10.20	-14.08	0.00	-223.62	0.00	223.62	1552.75	776.38	1722.60	862.58	54.87	-4.495	0.000	0.266
129.00	-6.82	-10.35	0.00	-167.31	0.00	167.31	1513.35	756.67	1620.05	811.23	58.69	-4.608	0.000	0.211
130.00	-6.69	-10.29	0.00	-156.96	0.00	156.96	1503.33	751.67	1594.72	798.54	59.65	-4.634	0.000	0.201
135.00	-6.08	-9.97	0.00	-105.51	0.00	105.51	1452.28	726.14	1469.99	736.09	64.56	-4.741	0.000	0.148
138.00	-3.10	-5.94	0.00	-75.60	0.00	75.60	1413.92	706.96	1389.94	696.00	67.56	-4.792	0.000	0.111
139.00	-3.00	-5.88	0.00	-69.66	0.00	69.66	1400.09	700.04	1362.73	682.38	68.56	-4.807	0.000	0.104
139.00	-3.00	-5.88	0.00	-69.66	0.00	69.66	871.21	435.61	845.74	423.50	68.56	-4.807	0.000	0.168
140.00	-2.89	-5.82	0.00	-63.78	0.00	63.78	871.21	435.61	845.74	423.50	69.57	-4.821	0.000	0.154
145.00	-2.35	-5.51	0.00	-34.66	0.00	34.66	871.21	435.61	845.74	423.50	74.64	-4.868	0.000	0.085
150.00	0.00	-5.29	0.00	-7.11	0.00	7.11	871.21	435.61	845.74	423.50	79.75	-4.888	0.000	0.017

Wind Loading - Shaft

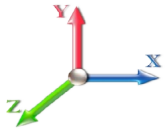
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

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	0.70	14.724	16.20	365.42	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	14.724	16.20	357.69	0.650	0.000	5.00	23.233	15.10	391.4	0.0	994.0
10.00		1.00	0.70	14.724	16.20	349.97	0.650	0.000	5.00	22.737	14.78	383.0	0.0	972.6
15.00		1.00	0.70	14.724	16.20	342.24	0.650	0.000	5.00	22.240	14.46	374.6	0.0	951.2
20.00		1.00	0.70	14.724	16.20	334.51	0.650	0.000	5.00	21.744	14.13	366.3	0.0	929.8
25.00		1.00	0.70	14.724	16.20	326.79	0.650	0.000	5.00	21.247	13.81	357.9	0.0	908.4
30.00		1.00	0.70	14.736	16.21	319.19	0.650	0.000	5.00	20.751	13.49	349.8	0.0	887.0
35.00		1.00	0.73	15.400	16.94	318.40	0.650	0.000	5.00	20.254	13.17	356.8	0.0	865.6
40.00		1.00	0.76	15.999	17.60	316.48	0.650	0.000	5.00	19.758	12.84	361.6	0.0	844.2
44.00	Bot - Section 2	1.00	0.78	16.441	18.08	314.28	0.650	0.000	4.00	15.449	10.04	290.6	0.0	660.0
45.00		1.00	0.79	16.546	18.20	313.65	0.650	0.000	1.00	3.865	2.51	73.2	0.0	300.7
50.00	Top - Section 1	1.00	0.81	17.052	18.76	310.10	0.650	0.000	5.00	19.029	12.37	371.2	0.0	1479.8
55.00		1.00	0.83	17.523	19.28	310.41	0.650	0.000	5.00	18.533	12.05	371.5	0.0	660.5
60.00		1.00	0.85	17.964	19.76	305.75	0.650	0.000	5.00	18.036	11.72	370.7	0.0	642.7
65.00		1.00	0.87	18.380	20.22	300.64	0.650	0.000	5.00	17.540	11.40	368.8	0.0	624.9
70.00		1.00	0.89	18.773	20.65	295.11	0.650	0.000	5.00	17.043	11.08	366.0	0.0	607.0
75.00		1.00	0.91	19.147	21.06	289.22	0.650	0.000	5.00	16.547	10.76	362.4	0.0	589.2
80.00		1.00	0.93	19.503	21.45	283.01	0.650	0.000	5.00	16.050	10.43	358.1	0.0	571.4
85.00		1.00	0.94	19.844	21.83	276.50	0.650	0.000	5.00	15.553	10.11	353.1	0.0	553.6
89.00	Bot - Section 3	1.00	0.96	20.106	22.12	271.10	0.650	0.000	4.00	12.085	7.86	278.0	0.0	430.0
90.00		1.00	0.96	20.170	22.19	269.73	0.650	0.000	1.00	3.014	1.96	69.5	0.0	191.7
92.00	Appurtenance(s)	1.00	0.96	20.297	22.33	266.94	0.650	0.000	2.00	5.968	3.88	138.6	0.0	379.5
94.00	Top - Section 2	1.00	0.97	20.423	22.46	264.13	0.650	0.000	2.00	5.889	3.83	137.6	0.0	374.4
95.00		1.00	0.97	20.484	22.53	266.59	0.650	0.000	1.00	2.915	1.89	68.3	0.0	83.1
100.00		1.00	0.99	20.787	22.87	259.37	0.650	0.000	5.00	14.275	9.28	339.5	0.0	406.9
105.00		1.00	1.00	21.079	23.19	251.93	0.650	0.000	5.00	13.779	8.96	332.3	0.0	392.7
110.00		1.00	1.02	21.361	23.50	244.31	0.650	0.000	5.00	13.282	8.63	324.6	0.0	378.4
115.00		1.00	1.03	21.634	23.80	236.50	0.650	0.000	5.00	12.786	8.31	316.4	0.0	364.1
120.00		1.00	1.04	21.898	24.09	228.52	0.650	0.000	5.00	12.289	7.99	307.9	0.0	349.9
125.00		1.00	1.05	22.155	24.37	220.38	0.650	0.000	5.00	11.793	7.67	298.9	0.0	335.6
129.00	Appurtenance(s)	1.00	1.06	22.356	24.59	213.75	0.650	0.000	4.00	9.077	5.90	232.1	0.0	258.2
130.00		1.00	1.07	22.405	24.65	212.08	0.650	0.000	1.00	2.220	1.44	56.9	0.0	63.1
135.00		1.00	1.08	22.648	24.91	203.65	0.650	0.000	5.00	10.800	7.02	279.8	0.0	307.1
138.00	Appurtenance(s)	1.00	1.08	22.790	25.07	198.52	0.650	0.000	3.00	6.242	4.06	162.7	0.0	177.4
139.00	Top - Section 3	1.00	1.09	22.838	25.12	196.80	0.650	0.000	1.00	2.041	1.33	53.3	0.0	58.0
140.00		1.00	1.09	22.884	25.17	197.00	0.650	0.000	1.00	2.031	1.32	53.2	0.0	64.8
145.00		1.00	1.10	23.115	25.43	197.99	0.650	0.000	5.00	10.154	6.60	268.5	0.0	324.2
150.00	Appurtenance(s)	1.00	1.11	23.340	25.67	198.95	0.650	0.000	5.00	10.154	6.60	271.1	0.0	324.2
								Totals:	**150.00**			**10,216.1**		**19,305.9**

Discrete Appurtenance Forces

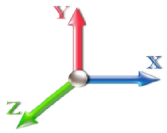
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

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	150.00	Antel BXA-171085-12BF	2	23.340	25.674	0.88	1.00	8.32	27.00	0.000	0.000	341.97	0.00	0.00
2	150.00	Cellwave PD220 20' Omni	2	23.817	26.198	1.00	1.00	12.00	99.00	0.000	11.000	503.01	0.00	5533.09
3	150.00	Cellwave TD1142 14'	1	23.732	26.105	1.00	1.00	4.20	36.00	0.000	9.000	175.43	0.00	1578.83
4	150.00	Antel BXA-70063/6CF	3	23.340	25.674	0.78	1.00	17.71	40.23	0.000	0.000	727.65	0.00	0.00
5	150.00	T-Arms w/ Working	3	23.340	25.674	0.56	0.75	30.71	1350.00	0.000	0.000	1261.62	0.00	0.00
6	150.00	Antel LPA-80063/6CF	2	23.340	25.674	0.95	1.00	18.22	48.60	0.000	0.000	748.49	0.00	0.00
7	150.00	Antel BXA-171063/12BF-2	1	23.340	25.674	0.88	1.00	4.16	4.50	0.000	0.000	170.98	0.00	0.00
8	150.00	Antel LPA-80080/6CF	4	23.340	25.674	0.75	1.00	25.86	75.60	0.000	0.000	1062.28	0.00	0.00
9	150.00	ADC DD1900	1	23.340	25.674	0.60	1.00	0.66	9.36	0.000	0.000	27.11	0.00	0.00
10	138.00	Low Profile Platform	1	22.790	25.070	1.00	1.00	22.00	1350.00	0.000	0.000	882.45	0.00	0.00
11	138.00	Raycap DC6-48-60-18-8F	1	22.790	25.070	0.54	0.80	1.18	14.40	0.000	0.000	47.30	0.00	0.00
12	138.00	Commscope	1	22.790	25.070	0.48	0.80	0.02	0.99	0.000	0.000	0.77	0.00	0.00
13	138.00	Powerwave 21903	6	22.790	25.070	0.48	0.80	0.58	29.70	0.000	0.000	23.10	0.00	0.00
14	138.00	Powerwave LGP 21401	6	22.790	25.070	0.48	0.80	3.02	94.50	0.000	0.000	121.30	0.00	0.00
15	138.00	Decibel 978QNB120E-M	3	22.790	25.070	0.55	0.80	12.57	94.50	0.000	0.000	504.16	0.00	0.00
16	138.00	Powerwave	3	22.790	25.070	0.64	0.80	21.96	159.30	0.000	0.000	881.04	0.00	0.00
17	138.00	Powerwave 7770.00	6	22.790	25.070	0.62	0.80	20.36	189.00	0.000	0.000	816.86	0.00	0.00
18	138.00	Ericsson RRUS-11	6	22.790	25.070	0.54	0.80	8.10	273.78	0.000	0.000	325.07	0.00	0.00
19	129.00	Ericsson Air 21 B4A/B2P	3	22.356	24.591	0.68	0.80	12.32	243.81	0.000	0.000	484.80	0.00	0.00
20	129.00	T-Arms	3	22.356	24.591	0.56	0.75	13.50	945.00	0.000	0.000	531.17	0.00	0.00
21	129.00	RFS	3	22.356	24.591	0.58	0.80	34.97	345.60	0.000	0.000	1376.11	0.00	0.00
22	129.00	Ericsson Radio 4449	3	22.356	24.591	0.54	0.80	2.62	199.80	0.000	0.000	103.13	0.00	0.00
23	129.00	Ericsson Air 32	3	22.356	24.591	0.69	0.80	13.44	356.94	0.000	0.000	528.67	0.00	0.00
24	129.00	Support Rail Pipe	1	22.356	24.591	0.75	0.75	5.06	235.55	0.000	0.000	199.19	0.00	0.00
25	92.00	Standoff	1	20.297	22.327	1.00	1.00	2.63	36.00	0.000	0.000	93.95	0.00	0.00
26	92.00	MYA 4505 4' Yagi	1	20.297	22.327	1.00	1.00	2.50	13.50	0.000	0.000	89.31	0.00	0.00
							Totals:		**6,272.66**			**12,026.92**		

Total Applied Force Summary

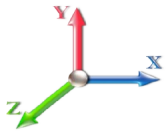
Structure:	CT01500-S-SBA		**Code:**	EIA/TIA-222-G	8/1/2019
Site Name:	Canton 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 14

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

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		391.35	1076.13	0.00	0.00
10.00		382.99	1178.00	0.00	0.00
15.00		374.62	1156.61	0.00	0.00
20.00		366.26	1135.22	0.00	0.00
25.00		357.90	1113.83	0.00	0.00
30.00		349.83	1092.45	0.00	0.00
35.00		356.83	1071.06	0.00	0.00
40.00		361.62	1049.67	0.00	0.00
44.00		290.56	824.34	0.00	0.00
45.00		73.17	341.75	0.00	0.00
50.00		371.21	1685.22	0.00	0.00
55.00		371.51	865.93	0.00	0.00
60.00		370.66	848.11	0.00	0.00
65.00		368.79	830.29	0.00	0.00
70.00		366.02	812.46	0.00	0.00
75.00		362.43	794.64	0.00	0.00
80.00		358.10	776.82	0.00	0.00
85.00		353.08	758.99	0.00	0.00
89.00		277.98	594.36	0.00	0.00
90.00		69.55	232.75	0.00	0.00
92.00	(2) attachments	321.85	511.16	0.00	0.00
94.00		137.59	455.95	0.00	0.00
95.00		68.30	123.89	0.00	0.00
100.00		339.47	610.90	0.00	0.00
105.00		332.26	596.64	0.00	0.00
110.00		324.58	582.38	0.00	0.00
115.00		316.44	568.12	0.00	0.00
120.00		307.87	551.16	0.00	0.00
125.00		298.90	526.10	0.00	0.00
129.00	(16) attachments	3455.20	2737.31	0.00	0.00
130.00		56.89	94.68	0.00	0.00
135.00		279.81	464.82	0.00	0.00
138.00	(33) attachments	3764.78	2478.22	0.00	0.00
139.00		53.32	76.86	0.00	0.00
140.00		53.17	83.71	0.00	0.00
145.00		268.51	418.53	0.00	0.00
150.00	(19) attachments	5289.67	2108.82	0.00	7111.92
	Totals:	**22,243.06**	**31,227.86**	**0.00**	**7,111.92**

Calculated Forces

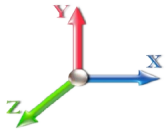
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 24

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	-31.20	-22.28	0.00	-2509.8	0.00	2509.83	4273.14	2136.57	9689.25	4851.82	0.00	0.000	0.000	0.525
5.00	-30.07	-21.96	0.00	-2398.4	0.00	2398.42	4219.68	2109.84	9362.95	4688.43	0.07	-0.139	0.000	0.519
10.00	-28.84	-21.65	0.00	-2288.6	0.00	2288.61	4164.59	2082.29	9038.31	4525.87	0.30	-0.280	0.000	0.513
15.00	-27.63	-21.34	0.00	-2180.3	0.00	2180.38	4107.86	2053.93	8715.56	4364.26	0.67	-0.424	0.000	0.506
20.00	-26.45	-21.03	0.00	-2073.7	0.00	2073.71	4049.50	2024.75	8394.94	4203.71	1.19	-0.570	0.000	0.500
25.00	-25.28	-20.72	0.00	-1968.5	0.00	1968.57	3989.51	1994.75	8076.69	4044.35	1.87	-0.719	0.000	0.493
30.00	-24.14	-20.42	0.00	-1864.9	0.00	1864.96	3927.89	1963.94	7761.05	3886.29	2.70	-0.871	0.000	0.486
35.00	-23.02	-20.11	0.00	-1762.8	0.00	1762.85	3864.63	1932.32	7448.26	3729.66	3.69	-1.025	0.000	0.479
40.00	-21.93	-19.78	0.00	-1662.2	0.00	1662.29	3799.75	1899.87	7138.54	3574.58	4.85	-1.182	0.000	0.471
44.00	-21.08	-19.50	0.00	-1583.1	0.00	1583.16	3746.66	1873.33	6893.15	3451.70	5.90	-1.310	0.000	0.464
45.00	-20.71	-19.46	0.00	-1563.6	0.00	1563.66	3733.23	1866.62	6832.15	3421.15	6.18	-1.344	0.000	0.463
50.00	-18.98	-19.10	0.00	-1466.3	0.00	1466.36	2895.85	1447.93	5248.77	2628.28	7.67	-1.505	0.000	0.565
55.00	-18.07	-18.76	0.00	-1370.8	0.00	1370.86	2848.58	1424.29	5024.64	2516.06	9.33	-1.670	0.000	0.551
60.00	-17.17	-18.42	0.00	-1277.0	0.00	1277.06	2799.67	1399.83	4802.32	2404.73	11.19	-1.860	0.000	0.537
65.00	-16.29	-18.08	0.00	-1184.9	0.00	1184.95	2749.13	1374.56	4582.02	2294.42	13.24	-2.052	0.000	0.523
70.00	-15.43	-17.74	0.00	-1094.5	0.00	1094.55	2696.96	1348.48	4364.00	2185.24	15.49	-2.246	0.000	0.507
75.00	-14.59	-17.39	0.00	-1005.8	0.00	1005.87	2643.16	1321.58	4148.49	2077.33	17.95	-2.441	0.000	0.490
80.00	-13.78	-17.05	0.00	-918.91	0.00	918.91	2587.72	1293.86	3935.73	1970.79	20.61	-2.637	0.000	0.472
85.00	-12.98	-16.70	0.00	-833.68	0.00	833.68	2530.65	1265.33	3725.95	1865.74	23.48	-2.833	0.000	0.452
89.00	-12.38	-16.41	0.00	-766.89	0.00	766.89	2483.83	1241.91	3560.44	1782.87	25.92	-2.991	0.000	0.435
90.00	-12.13	-16.34	0.00	-750.48	0.00	750.48	2471.96	1235.98	3519.40	1762.31	26.55	-3.031	0.000	0.431
92.00	-11.62	-16.01	0.00	-717.80	0.00	717.80	2448.02	1224.01	3437.73	1721.42	27.83	-3.111	0.000	0.422
94.00	-11.15	-15.86	0.00	-685.78	0.00	685.78	1822.74	911.37	2571.33	1287.57	29.15	-3.191	0.000	0.539
95.00	-10.99	-15.81	0.00	-669.92	0.00	669.92	1815.01	907.51	2542.78	1273.28	29.83	-3.231	0.000	0.532
100.00	-10.34	-15.48	0.00	-590.87	0.00	590.87	1775.38	887.69	2400.98	1202.27	33.33	-3.457	0.000	0.498
105.00	-9.71	-15.14	0.00	-513.50	0.00	513.50	1734.12	867.06	2260.90	1132.13	37.07	-3.677	0.000	0.459
110.00	-9.10	-14.81	0.00	-437.78	0.00	437.78	1691.22	845.61	2122.79	1062.97	41.03	-3.888	0.000	0.418
115.00	-8.51	-14.49	0.00	-363.71	0.00	363.71	1646.70	823.35	1986.87	994.91	45.21	-4.087	0.000	0.371
120.00	-7.94	-14.16	0.00	-291.28	0.00	291.28	1600.54	800.27	1853.40	928.08	49.59	-4.270	0.000	0.319
125.00	-7.40	-13.84	0.00	-220.46	0.00	220.46	1552.75	776.38	1722.60	862.58	54.15	-4.432	0.000	0.261
129.00	-4.93	-10.19	0.00	-165.08	0.00	165.08	1513.35	756.67	1620.05	811.23	57.91	-4.543	0.000	0.207
130.00	-4.83	-10.13	0.00	-154.89	0.00	154.89	1503.33	751.67	1594.72	798.54	58.86	-4.568	0.000	0.197
135.00	-4.38	-9.82	0.00	-104.24	0.00	104.24	1452.28	726.14	1469.99	736.09	63.70	-4.675	0.000	0.145
138.00	-2.21	-5.87	0.00	-74.77	0.00	74.77	1413.92	706.96	1389.94	696.00	66.65	-4.725	0.000	0.109
139.00	-2.14	-5.81	0.00	-68.91	0.00	68.91	1400.09	700.04	1362.73	682.38	67.64	-4.740	0.000	0.103
139.00	-2.14	-5.81	0.00	-68.91	0.00	68.91	871.21	435.61	845.74	423.50	67.64	-4.740	0.000	0.165
140.00	-2.06	-5.75	0.00	-63.10	0.00	63.10	871.21	435.61	845.74	423.50	68.64	-4.754	0.000	0.152
145.00	-1.66	-5.45	0.00	-34.35	0.00	34.35	871.21	435.61	845.74	423.50	73.64	-4.800	0.000	0.083
150.00	0.00	-5.29	0.00	-7.11	0.00	7.11	871.21	435.61	845.74	423.50	78.67	-4.820	0.000	0.017

Wind Loading - Shaft

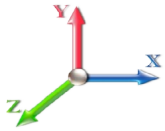
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 16	

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 23

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	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.656	5.00	24.614	29.54	138.3	580.7	1906.0
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.775	5.00	24.216	29.06	136.0	610.7	1907.4
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.848	5.00	23.781	28.54	133.6	623.2	1891.4
20.00		1.00	0.70	4.256	4.68	0.00	1.200	1.902	5.00	23.329	27.99	131.1	628.0	1867.7
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.945	5.00	22.868	27.44	128.5	628.4	1839.6
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.981	5.00	22.402	26.88	126.0	625.8	1808.5
35.00		1.00	0.73	4.451	4.90	0.00	1.200	2.012	5.00	21.931	26.32	128.9	621.1	1775.3
40.00		1.00	0.76	4.625	5.09	0.00	1.200	2.039	5.00	21.457	25.75	131.0	614.8	1740.5
44.00	Bot - Section 2	1.00	0.78	4.752	5.23	0.00	1.200	2.058	4.00	16.821	20.19	105.5	487.1	1367.1
45.00		1.00	0.79	4.783	5.26	0.00	1.200	2.063	1.00	4.209	5.05	26.6	123.1	523.9
50.00	Top - Section 1	1.00	0.81	4.929	5.42	0.00	1.200	2.085	5.00	20.767	24.92	135.1	606.8	2579.8
55.00		1.00	0.83	5.065	5.57	0.00	1.200	2.105	5.00	20.287	24.34	135.6	597.4	1478.0
60.00		1.00	0.85	5.193	5.71	0.00	1.200	2.123	5.00	19.805	23.77	135.7	587.2	1444.1
65.00		1.00	0.87	5.313	5.84	0.00	1.200	2.140	5.00	19.323	23.19	135.5	576.4	1409.6
70.00		1.00	0.89	5.426	5.97	0.00	1.200	2.156	5.00	18.840	22.61	134.9	565.1	1374.4
75.00		1.00	0.91	5.534	6.09	0.00	1.200	2.171	5.00	18.356	22.03	134.1	553.2	1338.8
80.00		1.00	0.93	5.637	6.20	0.00	1.200	2.185	5.00	17.871	21.45	133.0	540.9	1302.8
85.00		1.00	0.94	5.736	6.31	0.00	1.200	2.198	5.00	17.386	20.86	131.6	528.2	1266.3
89.00	Bot - Section 3	1.00	0.96	5.812	6.39	0.00	1.200	2.209	4.00	13.558	16.27	104.0	414.2	987.6
90.00		1.00	0.96	5.830	6.41	0.00	1.200	2.211	1.00	3.382	4.06	26.0	104.4	360.0
92.00	Appurtenance(s)	1.00	0.96	5.867	6.45	0.00	1.200	2.216	2.00	6.707	8.05	51.9	206.7	712.7
94.00	Top - Section 2	1.00	0.97	5.903	6.49	0.00	1.200	2.221	2.00	6.629	7.95	51.7	204.6	703.7
95.00		1.00	0.97	5.921	6.51	0.00	1.200	2.223	1.00	3.285	3.94	25.7	101.7	212.5
100.00		1.00	0.99	6.008	6.61	0.00	1.200	2.234	5.00	16.138	19.37	128.0	495.1	1037.6
105.00		1.00	1.00	6.093	6.70	0.00	1.200	2.245	5.00	15.650	18.78	125.9	481.1	1004.7
110.00		1.00	1.02	6.174	6.79	0.00	1.200	2.256	5.00	15.162	18.19	123.6	466.9	971.4
115.00		1.00	1.03	6.253	6.88	0.00	1.200	2.266	5.00	14.674	17.61	121.1	452.5	938.0
120.00		1.00	1.04	6.330	6.96	0.00	1.200	2.276	5.00	14.186	17.02	118.5	437.8	904.3
125.00		1.00	1.05	6.404	7.04	0.00	1.200	2.285	5.00	13.697	16.44	115.8	422.9	870.4
129.00	Appurtenance(s)	1.00	1.06	6.462	7.11	0.00	1.200	2.292	4.00	10.605	12.73	90.5	328.7	673.0
130.00		1.00	1.07	6.476	7.12	0.00	1.200	2.294	1.00	2.602	3.12	22.2	81.6	165.7
135.00		1.00	1.08	6.546	7.20	0.00	1.200	2.303	5.00	12.719	15.26	109.9	392.6	802.0
138.00	Appurtenance(s)	1.00	1.08	6.588	7.25	0.00	1.200	2.308	3.00	7.395	8.87	64.3	230.0	466.5
139.00	Top - Section 3	1.00	1.09	6.601	7.26	0.00	1.200	2.309	1.00	2.426	2.91	21.1	76.0	153.4
140.00		1.00	1.09	6.615	7.28	0.00	1.200	2.311	1.00	2.416	2.90	21.1	76.1	162.6
145.00		1.00	1.10	6.681	7.35	0.00	1.200	2.319	5.00	12.087	14.50	106.6	382.0	814.3
150.00	Appurtenance(s)	1.00	1.11	6.746	7.42	0.00	1.200	2.327	5.00	12.093	14.51	107.7	383.4	815.7
								Totals:	**150.00**			**3,796.6**		**41,577.4**

Discrete Appurtenance Forces

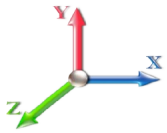
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

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 23

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	150.00	Antel BXA-171085-12BF	2	6.746	7.421	0.88	1.00	13.83	234.75	0.000	0.000	102.61	0.00	0.00
2	150.00	Cellwave PD220 20' Omni	2	6.884	7.573	1.00	1.00	30.92	447.56	0.000	11.000	234.15	0.00	2575.69
3	150.00	Cellwave TD1142 14'	1	6.860	7.546	1.00	1.00	10.87	158.88	0.000	9.000	82.02	0.00	738.14
4	150.00	Antel BXA-70063/6CF	3	6.746	7.421	0.78	1.00	26.34	514.08	0.000	0.000	195.45	0.00	0.00
5	150.00	T-Arms w/ Working	3	6.746	7.421	0.56	0.75	73.59	3932.34	0.000	0.000	546.13	0.00	0.00
6	150.00	Antel LPA-80063/6CF	2	6.746	7.421	0.95	1.00	21.74	870.54	0.000	0.000	161.30	0.00	0.00
7	150.00	Antel BXA-171063/12BF-2	1	6.746	7.421	0.88	1.00	8.26	39.86	0.000	0.000	61.28	0.00	0.00
8	150.00	Antel LPA-80080/6CF	4	6.746	7.421	0.75	1.00	31.22	1208.70	0.000	0.000	231.69	0.00	0.00
9	150.00	ADC DD1900	1	6.746	7.421	0.60	1.00	1.50	29.51	0.000	0.000	11.10	0.00	0.00
10	138.00	Low Profile Platform	1	6.588	7.246	1.00	1.00	45.35	3230.72	0.000	0.000	328.65	0.00	0.00
11	138.00	Raycap DC6-48-60-18-8F	1	6.588	7.246	0.54	0.80	1.87	79.60	0.000	0.000	13.54	0.00	0.00
12	138.00	Commscope	1	6.588	7.246	0.48	0.80	0.12	3.57	0.000	0.000	0.85	0.00	0.00
13	138.00	Powerwave 21903	6	6.588	7.246	0.48	0.80	1.70	92.06	0.000	0.000	12.30	0.00	0.00
14	138.00	Powerwave LGP 21401	6	6.588	7.246	0.48	0.80	4.81	420.36	0.000	0.000	34.84	0.00	0.00
15	138.00	Decibel 978QNB120E-M	3	6.588	7.246	0.55	0.80	17.31	587.20	0.000	0.000	125.47	0.00	0.00
16	138.00	Powerwave	3	6.588	7.246	0.64	0.80	30.18	885.62	0.000	0.000	218.67	0.00	0.00
17	138.00	Powerwave 7770.00	6	6.588	7.246	0.62	0.80	25.64	1404.26	0.000	0.000	185.82	0.00	0.00
18	138.00	Ericsson RRUS-11	6	6.588	7.246	0.54	0.80	10.95	1054.52	0.000	0.000	79.37	0.00	0.00
19	129.00	Ericsson Air 21 B4A/B2P	3	6.462	7.108	0.68	0.80	15.30	1024.13	0.000	0.000	108.78	0.00	0.00
20	129.00	T-Arms	3	6.462	7.108	0.56	0.75	28.97	2012.69	0.000	0.000	205.93	0.00	0.00
21	129.00	RFS	3	6.462	7.108	0.58	0.80	39.34	2173.70	0.000	0.000	279.61	0.00	0.00
22	129.00	Ericsson Radio 4449	3	6.462	7.108	0.54	0.80	3.78	553.58	0.000	0.000	26.89	0.00	0.00
23	129.00	Ericsson Air 32	3	6.462	7.108	0.69	0.80	16.54	1239.96	0.000	0.000	117.56	0.00	0.00
24	129.00	Support Rail Pipe	1	6.462	7.108	0.75	0.75	11.56	983.71	0.000	0.000	82.17	0.00	0.00
25	92.00	Standoff	1	5.867	6.454	1.00	1.00	10.21	126.93	0.000	0.000	65.88	0.00	0.00
26	92.00	MYA 4505 4' Yagi	1	5.867	6.454	1.00	1.00	10.90	160.62	0.000	0.000	70.36	0.00	0.00
							Totals:		**23,469.48**			**3,582.43**		

Total Applied Force Summary

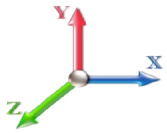
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Tower Engineering Solutions

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 23

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		138.28	2015.56	0.00	0.00
10.00		136.04	2181.32	0.00	0.00
15.00		133.60	2165.31	0.00	0.00
20.00		131.06	2141.62	0.00	0.00
25.00		128.47	2113.49	0.00	0.00
30.00		125.96	2082.40	0.00	0.00
35.00		128.86	2049.19	0.00	0.00
40.00		130.98	2014.37	0.00	0.00
44.00		105.52	1586.18	0.00	0.00
45.00		26.57	578.73	0.00	0.00
50.00		135.11	2853.74	0.00	0.00
55.00		135.63	1751.94	0.00	0.00
60.00		135.75	1718.02	0.00	0.00
65.00		135.51	1683.46	0.00	0.00
70.00		134.94	1648.34	0.00	0.00
75.00		134.10	1612.72	0.00	0.00
80.00		132.98	1576.66	0.00	0.00
85.00		131.63	1540.19	0.00	0.00
89.00		104.01	1206.71	0.00	0.00
90.00		26.03	414.75	0.00	0.00
92.00	(2) attachments	188.19	1109.80	0.00	0.00
94.00		51.66	812.49	0.00	0.00
95.00		25.68	266.93	0.00	0.00
100.00		127.99	1309.59	0.00	0.00
105.00		125.87	1276.63	0.00	0.00
110.00		123.57	1243.42	0.00	0.00
115.00		121.12	1209.97	0.00	0.00
120.00		118.52	1172.68	0.00	0.00
125.00		115.78	1124.39	0.00	0.00
129.00	(16) attachments	911.40	8863.95	0.00	0.00
130.00		22.24	207.80	0.00	0.00
135.00		109.90	1012.34	0.00	0.00
138.00	(33) attachments	1063.81	8350.65	0.00	0.00
139.00		21.14	178.53	0.00	0.00
140.00		21.10	187.71	0.00	0.00
145.00		106.60	940.01	0.00	0.00
150.00	(19) attachments	1733.42	8377.66	0.00	3313.83
	Totals:	**7,379.03**	**72,579.27**	**0.00**	**3,313.83**

Calculated Forces

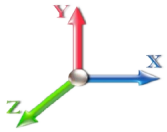
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

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 23

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	-72.58	-7.41	0.00	-860.97	0.00	860.97	4273.14	2136.57	9689.25	4851.82	0.00	0.000	0.000	0.194
5.00	-70.55	-7.33	0.00	-823.93	0.00	823.93	4219.68	2109.84	9362.95	4688.43	0.03	-0.048	0.000	0.192
10.00	-68.37	-7.25	0.00	-787.29	0.00	787.29	4164.59	2082.29	9038.31	4525.87	0.10	-0.096	0.000	0.190
15.00	-66.20	-7.17	0.00	-751.04	0.00	751.04	4107.86	2053.93	8715.56	4364.26	0.23	-0.146	0.000	0.188
20.00	-64.05	-7.09	0.00	-715.20	0.00	715.20	4049.50	2024.75	8394.94	4203.71	0.41	-0.196	0.000	0.186
25.00	-61.93	-7.01	0.00	-679.76	0.00	679.76	3989.51	1994.75	8076.69	4044.35	0.64	-0.248	0.000	0.184
30.00	-59.84	-6.93	0.00	-644.73	0.00	644.73	3927.89	1963.94	7761.05	3886.29	0.93	-0.300	0.000	0.181
35.00	-57.79	-6.84	0.00	-610.09	0.00	610.09	3864.63	1932.32	7448.26	3729.66	1.27	-0.353	0.000	0.179
40.00	-55.77	-6.74	0.00	-575.89	0.00	575.89	3799.75	1899.87	7138.54	3574.58	1.67	-0.408	0.000	0.176
44.00	-54.18	-6.65	0.00	-548.92	0.00	548.92	3746.66	1873.33	6893.15	3451.70	2.03	-0.452	0.000	0.174
45.00	-53.60	-6.65	0.00	-542.26	0.00	542.26	3733.23	1866.62	6832.15	3421.15	2.13	-0.464	0.000	0.173
50.00	-50.74	-6.54	0.00	-509.00	0.00	509.00	2895.85	1447.93	5248.77	2628.28	2.64	-0.520	0.000	0.211
55.00	-48.98	-6.44	0.00	-476.28	0.00	476.28	2848.58	1424.29	5024.64	2516.06	3.22	-0.577	0.000	0.207
60.00	-47.26	-6.35	0.00	-444.05	0.00	444.05	2799.67	1399.83	4802.32	2404.73	3.86	-0.643	0.000	0.202
65.00	-45.57	-6.24	0.00	-412.33	0.00	412.33	2749.13	1374.56	4582.02	2294.42	4.57	-0.710	0.000	0.196
70.00	-43.91	-6.14	0.00	-381.11	0.00	381.11	2696.96	1348.48	4364.00	2185.24	5.35	-0.777	0.000	0.191
75.00	-42.30	-6.03	0.00	-350.41	0.00	350.41	2643.16	1321.58	4148.49	2077.33	6.20	-0.845	0.000	0.185
80.00	-40.71	-5.92	0.00	-320.25	0.00	320.25	2587.72	1293.86	3935.73	1970.79	7.12	-0.914	0.000	0.178
85.00	-39.17	-5.81	0.00	-290.63	0.00	290.63	2530.65	1265.33	3725.95	1865.74	8.11	-0.982	0.000	0.171
89.00	-37.96	-5.71	0.00	-267.40	0.00	267.40	2483.83	1241.91	3560.44	1782.87	8.96	-1.037	0.000	0.165
90.00	-37.55	-5.69	0.00	-261.69	0.00	261.69	2471.96	1235.98	3519.40	1762.31	9.18	-1.051	0.000	0.164
92.00	-36.44	-5.50	0.00	-250.32	0.00	250.32	2448.02	1224.01	3437.73	1721.42	9.62	-1.079	0.000	0.160
94.00	-35.62	-5.44	0.00	-239.33	0.00	239.33	1822.74	911.37	2571.33	1287.57	10.08	-1.107	0.000	0.205
95.00	-35.35	-5.44	0.00	-233.89	0.00	233.89	1815.01	907.51	2542.78	1273.28	10.32	-1.120	0.000	0.203
100.00	-34.04	-5.33	0.00	-206.69	0.00	206.69	1775.38	887.69	2400.98	1202.27	11.53	-1.199	0.000	0.191
105.00	-32.76	-5.22	0.00	-180.04	0.00	180.04	1734.12	867.06	2260.90	1132.13	12.83	-1.276	0.000	0.178
110.00	-31.51	-5.11	0.00	-153.93	0.00	153.93	1691.22	845.61	2122.79	1062.97	14.21	-1.351	0.000	0.163
115.00	-30.30	-4.99	0.00	-128.39	0.00	128.39	1646.70	823.35	1986.87	994.91	15.66	-1.421	0.000	0.147
120.00	-29.12	-4.88	0.00	-103.41	0.00	103.41	1600.54	800.27	1853.40	928.08	17.18	-1.486	0.000	0.130
125.00	-28.00	-4.76	0.00	-79.03	0.00	79.03	1552.75	776.38	1722.60	862.58	18.77	-1.543	0.000	0.110
129.00	-19.16	-3.61	0.00	-60.01	0.00	60.01	1513.35	756.67	1620.05	811.23	20.08	-1.583	0.000	0.087
130.00	-18.95	-3.59	0.00	-56.40	0.00	56.40	1503.33	751.67	1594.72	798.54	20.42	-1.593	0.000	0.083
135.00	-17.94	-3.46	0.00	-38.44	0.00	38.44	1452.28	726.14	1469.99	736.09	22.11	-1.631	0.000	0.065
138.00	-9.63	-2.16	0.00	-28.06	0.00	28.06	1413.92	706.96	1389.94	696.00	23.14	-1.650	0.000	0.047
139.00	-9.45	-2.14	0.00	-25.90	0.00	25.90	1400.09	700.04	1362.73	682.38	23.48	-1.656	0.000	0.045
139.00	-9.45	-2.14	0.00	-25.90	0.00	25.90	871.21	435.61	845.74	423.50	23.48	-1.656	0.000	0.072
140.00	-9.26	-2.11	0.00	-23.76	0.00	23.76	871.21	435.61	845.74	423.50	23.83	-1.661	0.000	0.067
145.00	-8.32	-1.98	0.00	-13.21	0.00	13.21	871.21	435.61	845.74	423.50	25.58	-1.679	0.000	0.041
150.00	0.00	-1.73	0.00	-3.31	0.00	3.31	871.21	435.61	845.74	423.50	27.34	-1.686	0.000	0.008

Seismic Segment Forces (Factored)

Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

Tower Engineering Solutions

Load Case:	1.2D + 1.0E					**Iterations**	21
Gust Response Factor	1.10			**Sds**	0.14	**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.07	**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.40	**SA**	0.03	**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		1104.4	0.00	0.03	0.02	13.84	
10.00		1080.6	0.01	0.05	0.03	19.96	
15.00		1056.8	0.02	0.06	0.04	22.69	
20.00		1033.1	0.03	0.07	0.04	23.81	
25.00		1009.3	0.05	0.07	0.04	24.19	
30.00		985.58	0.08	0.07	0.04	24.29	
35.00		961.81	0.10	0.07	0.04	24.30	
40.00		938.05	0.13	0.07	0.03	24.25	
44.00	Bot - Section 2	733.33	0.16	0.07	0.03	19.22	
45.00		334.07	0.17	0.07	0.03	8.77	
50.00	Top - Section 1	1644.2	0.21	0.06	0.02	43.16	
55.00		733.90	0.25	0.05	0.02	18.66	
60.00		714.09	0.30	0.04	0.01	16.67	
65.00		694.29	0.35	0.03	0.01	13.57	
70.00		674.49	0.41	0.01	0.01	9.27	
75.00		654.68	0.47	-0.01	0.01	3.96	
80.00		634.88	0.54	-0.03	0.01	-1.77	
85.00		615.07	0.61	-0.06	0.02	-7.05	
89.00	Bot - Section 3	477.80	0.67	-0.08	0.02	-8.26	
90.00		212.96	0.68	-0.08	0.03	-3.94	
92.00	Appurtenance(s)	476.65	0.71	-0.09	0.03	-9.80	
94.00	Top - Section 2	415.95	0.74	-0.10	0.04	-9.21	
95.00		92.33	0.76	-0.10	0.04	-2.10	
100.00		452.12	0.84	-0.12	0.07	-10.61	
105.00		436.28	0.93	-0.12	0.10	-8.93	
110.00		420.44	1.02	-0.11	0.14	-5.74	
115.00		404.59	1.11	-0.06	0.19	-1.23	
120.00		388.75	1.21	0.01	0.26	4.42	
125.00		372.91	1.31	0.14	0.35	11.04	
129.00	Appurtenance(s)	2872.1	1.40	0.28	0.43	134.91	
130.00		70.15	1.42	0.32	0.45	3.63	
135.00		341.22	1.53	0.58	0.58	26.51	
138.00	Appurtenance(s)	2648.4	1.60	0.78	0.67	252.14	
139.00	Top - Section 3	64.44	1.62	0.85	0.70	6.53	
140.00		72.05	1.65	0.93	0.73	7.76	
145.00		360.23	1.77	1.39	0.92	51.05	
150.00	Appurtenance(s)	2238.3	1.89	1.98	1.14	402.75	
	Totals:	**28,420.6**				**1,142.7**	**Total Wind:** **22,243.1**

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

Calculated Forces

Structure:	CT01500-S-SBA		**Code:**	EIA/TIA-222-G	8/1/2019
Site Name:	Canton 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

Tower Engineering Solutions

Load Case:	1.2D + 1.0E							**Iterations**	21
Gust Response Factor	1.10			**Sds**	0.14			**Ss**	0.18
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.07			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.40	**SA**	0.03	**Seismic Importance Factor**			1.00

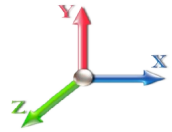
Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-41.64	-1.21	0.00	-145.37	0.00	145.37	4273.14	2136.57	9689.25	4851.82		0.00	0.00	0.040
5.00	-40.20	-1.21	0.00	-139.31	0.00	139.31	4219.68	2109.84	9362.95	4688.43		0.00	-0.01	0.039
10.00	-38.63	-1.19	0.00	-133.28	0.00	133.28	4164.59	2082.29	9038.31	4525.87		0.02	-0.02	0.039
15.00	-37.09	-1.17	0.00	-127.33	0.00	127.33	4107.86	2053.93	8715.56	4364.26		0.04	-0.02	0.038
20.00	-35.58	-1.15	0.00	-121.47	0.00	121.47	4049.50	2024.75	8394.94	4203.71		0.07	-0.03	0.038
25.00	-34.09	-1.13	0.00	-115.70	0.00	115.70	3989.51	1994.75	8076.69	4044.35		0.11	-0.04	0.037
30.00	-32.63	-1.11	0.00	-110.03	0.00	110.03	3927.89	1963.94	7761.05	3886.29		0.16	-0.05	0.037
35.00	-31.20	-1.09	0.00	-104.47	0.00	104.47	3864.63	1932.32	7448.26	3729.66		0.22	-0.06	0.036
40.00	-29.81	-1.07	0.00	-99.01	0.00	99.01	3799.75	1899.87	7138.54	3574.58		0.28	-0.07	0.036
44.00	-28.71	-1.05	0.00	-94.72	0.00	94.72	3746.66	1873.33	6893.15	3451.70		0.34	-0.08	0.035
45.00	-28.25	-1.05	0.00	-93.67	0.00	93.67	3733.23	1866.62	6832.15	3421.15		0.36	-0.08	0.035
50.00	-26.00	-1.00	0.00	-88.44	0.00	88.44	2895.85	1447.93	5248.77	2628.28		0.45	-0.09	0.043
55.00	-24.85	-0.99	0.00	-83.42	0.00	83.42	2848.58	1424.29	5024.64	2516.06		0.55	-0.10	0.042
60.00	-23.72	-0.97	0.00	-78.47	0.00	78.47	2799.67	1399.83	4802.32	2404.73		0.66	-0.11	0.041
65.00	-22.61	-0.96	0.00	-73.60	0.00	73.60	2749.13	1374.56	4582.02	2294.42		0.78	-0.12	0.040
70.00	-21.53	-0.96	0.00	-68.78	0.00	68.78	2696.96	1348.48	4364.00	2185.24		0.91	-0.13	0.039
75.00	-20.47	-0.95	0.00	-64.00	0.00	64.00	2643.16	1321.58	4148.49	2077.33		1.06	-0.15	0.039
80.00	-19.43	-0.96	0.00	-59.23	0.00	59.23	2587.72	1293.86	3935.73	1970.79		1.22	-0.16	0.038
85.00	-18.42	-0.96	0.00	-54.45	0.00	54.45	2530.65	1265.33	3725.95	1865.74		1.39	-0.17	0.036
89.00	-17.63	-0.96	0.00	-50.62	0.00	50.62	2483.83	1241.91	3560.44	1782.87		1.54	-0.18	0.035
90.00	-17.32	-0.96	0.00	-49.67	0.00	49.67	2471.96	1235.98	3519.40	1762.31		1.58	-0.18	0.035
92.00	-16.63	-0.96	0.00	-47.75	0.00	47.75	2448.02	1224.01	3437.73	1721.42		1.66	-0.19	0.035
94.00	-16.03	-0.96	0.00	-45.84	0.00	45.84	1822.74	911.37	2571.33	1287.57		1.74	-0.20	0.044
95.00	-15.86	-0.96	0.00	-44.89	0.00	44.89	1815.01	907.51	2542.78	1273.28		1.78	-0.20	0.044
100.00	-15.05	-0.96	0.00	-40.10	0.00	40.10	1775.38	887.69	2400.98	1202.27		2.00	-0.21	0.042
105.00	-14.25	-0.96	0.00	-35.31	0.00	35.31	1734.12	867.06	2260.90	1132.13		2.23	-0.23	0.039
110.00	-13.47	-0.96	0.00	-30.52	0.00	30.52	1691.22	845.61	2122.79	1062.97		2.48	-0.24	0.037
115.00	-12.72	-0.96	0.00	-25.72	0.00	25.72	1646.70	823.35	1986.87	994.91		2.74	-0.26	0.034
120.00	-11.98	-0.95	0.00	-20.93	0.00	20.93	1600.54	800.27	1853.40	928.08		3.01	-0.27	0.030
125.00	-11.28	-0.94	0.00	-16.16	0.00	16.16	1552.75	776.38	1722.60	862.58		3.30	-0.28	0.026
129.00	-7.63	-0.79	0.00	-12.40	0.00	12.40	1513.35	756.67	1620.05	811.23		3.54	-0.29	0.020
130.00	-7.50	-0.79	0.00	-11.61	0.00	11.61	1503.33	751.67	1594.72	798.54		3.61	-0.29	0.020
135.00	-6.88	-0.76	0.00	-7.68	0.00	7.68	1452.28	726.14	1469.99	736.09		3.92	-0.30	0.015
138.00	-3.58	-0.49	0.00	-5.41	0.00	5.41	1413.92	706.96	1389.94	696.00		4.10	-0.30	0.010
139.00	-3.48	-0.48	0.00	-4.93	0.00	4.93	1400.09	700.04	1362.73	682.38		4.17	-0.30	0.010
139.00	-3.48	-0.48	0.00	-4.93	0.00	4.93	871.21	435.61	845.74	423.50		4.17	-0.30	0.016
140.00	-3.37	-0.47	0.00	-4.45	0.00	4.45	871.21	435.61	845.74	423.50		4.23	-0.31	0.014
145.00	-2.81	-0.42	0.00	-2.09	0.00	2.09	871.21	435.61	845.74	423.50		4.55	-0.31	0.008
150.00	0.00	-0.40	0.00	0.00	0.00	0.00	871.21	435.61	845.74	423.50		4.88	-0.31	0.000

Seismic Segment Forces (Factored)

Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E					**Iterations**	21
Gust Response Factor	1.10			**Sds**	0.14	**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.07	**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.40	**SA**	0.03	**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		1104.4	0.00	0.03	0.02	13.84	
10.00		1080.6	0.01	0.05	0.03	19.96	
15.00		1056.8	0.02	0.06	0.04	22.69	
20.00		1033.1	0.03	0.07	0.04	23.81	
25.00		1009.3	0.05	0.07	0.04	24.19	
30.00		985.58	0.08	0.07	0.04	24.29	
35.00		961.81	0.10	0.07	0.04	24.30	
40.00		938.05	0.13	0.07	0.03	24.25	
44.00	Bot - Section 2	733.33	0.16	0.07	0.03	19.22	
45.00		334.07	0.17	0.07	0.03	8.77	
50.00	Top - Section 1	1644.2	0.21	0.06	0.02	43.16	
55.00		733.90	0.25	0.05	0.02	18.66	
60.00		714.09	0.30	0.04	0.01	16.67	
65.00		694.29	0.35	0.03	0.01	13.57	
70.00		674.49	0.41	0.01	0.01	9.27	
75.00		654.68	0.47	-0.01	0.01	3.96	
80.00		634.88	0.54	-0.03	0.01	-1.77	
85.00		615.07	0.61	-0.06	0.02	-7.05	
89.00	Bot - Section 3	477.80	0.67	-0.08	0.02	-8.26	
90.00		212.96	0.68	-0.08	0.03	-3.94	
92.00	Appurtenance(s)	476.65	0.71	-0.09	0.03	-9.80	
94.00	Top - Section 2	415.95	0.74	-0.10	0.04	-9.21	
95.00		92.33	0.76	-0.10	0.04	-2.10	
100.00		452.12	0.84	-0.12	0.07	-10.61	
105.00		436.28	0.93	-0.12	0.10	-8.93	
110.00		420.44	1.02	-0.11	0.14	-5.74	
115.00		404.59	1.11	-0.06	0.19	-1.23	
120.00		388.75	1.21	0.01	0.26	4.42	
125.00		372.91	1.31	0.14	0.35	11.04	
129.00	Appurtenance(s)	2872.1	1.40	0.28	0.43	134.91	
130.00		70.15	1.42	0.32	0.45	3.63	
135.00		341.22	1.53	0.58	0.58	26.51	
138.00	Appurtenance(s)	2648.4	1.60	0.78	0.67	252.14	
139.00	Top - Section 3	64.44	1.62	0.85	0.70	6.53	
140.00		72.05	1.65	0.93	0.73	7.76	
145.00		360.23	1.77	1.39	0.92	51.05	
150.00	Appurtenance(s)	2238.3	1.89	1.98	1.14	402.75	
	Totals:	**28,420.6**				**1,142.7**	**Total Wind:** **22,243.1**

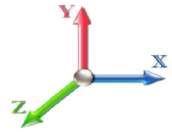
Seismic Base Shear is Less Than 50% of Wind Force - An Analysis is NOT Required

Calculated Forces

Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

Tower Engineering Solutions

Load Case:	0.9D + 1.0E							**Iterations**	21
Gust Response Factor	1.10			**Sds**	0.14			**Ss**	0.18
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.07			**S1**	0.07
Wind Load Factor	0.00	**Structure Frequency (f1)**	0.40	**SA**	0.03	**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	-31.23	-1.21	0.00	-143.81	0.00	143.81	4273.14	2136.57	9689.25	4851.82		0.00	0.00	0.037
5.00	-30.15	-1.20	0.00	-137.75	0.00	137.75	4219.68	2109.84	9362.95	4688.43		0.00	-0.01	0.037
10.00	-28.97	-1.19	0.00	-131.73	0.00	131.73	4164.59	2082.29	9038.31	4525.87		0.02	-0.02	0.036
15.00	-27.82	-1.17	0.00	-125.80	0.00	125.80	4107.86	2053.93	8715.56	4364.26		0.04	-0.02	0.036
20.00	-26.68	-1.15	0.00	-119.96	0.00	119.96	4049.50	2024.75	8394.94	4203.71		0.07	-0.03	0.035
25.00	-25.57	-1.13	0.00	-114.22	0.00	114.22	3989.51	1994.75	8076.69	4044.35		0.11	-0.04	0.035
30.00	-24.47	-1.11	0.00	-108.59	0.00	108.59	3927.89	1963.94	7761.05	3886.29		0.16	-0.05	0.034
35.00	-23.40	-1.08	0.00	-103.07	0.00	103.07	3864.63	1932.32	7448.26	3729.66		0.21	-0.06	0.034
40.00	-22.35	-1.06	0.00	-97.65	0.00	97.65	3799.75	1899.87	7138.54	3574.58		0.28	-0.07	0.033
44.00	-21.53	-1.04	0.00	-93.41	0.00	93.41	3746.66	1873.33	6893.15	3451.70		0.34	-0.08	0.033
45.00	-21.19	-1.04	0.00	-92.36	0.00	92.36	3733.23	1866.62	6832.15	3421.15		0.36	-0.08	0.033
50.00	-19.50	-0.99	0.00	-87.19	0.00	87.19	2895.85	1447.93	5248.77	2628.28		0.44	-0.09	0.040
55.00	-18.64	-0.98	0.00	-82.22	0.00	82.22	2848.58	1424.29	5024.64	2516.06		0.54	-0.10	0.039
60.00	-17.79	-0.96	0.00	-77.33	0.00	77.33	2799.67	1399.83	4802.32	2404.73		0.65	-0.11	0.039
65.00	-16.96	-0.95	0.00	-72.52	0.00	72.52	2749.13	1374.56	4582.02	2294.42		0.77	-0.12	0.038
70.00	-16.14	-0.94	0.00	-67.77	0.00	67.77	2696.96	1348.48	4364.00	2185.24		0.90	-0.13	0.037
75.00	-15.35	-0.94	0.00	-63.06	0.00	63.06	2643.16	1321.58	4148.49	2077.33		1.05	-0.14	0.036
80.00	-14.57	-0.94	0.00	-58.36	0.00	58.36	2587.72	1293.86	3935.73	1970.79		1.20	-0.16	0.035
85.00	-13.81	-0.94	0.00	-53.65	0.00	53.65	2530.65	1265.33	3725.95	1865.74		1.38	-0.17	0.034
89.00	-13.22	-0.94	0.00	-49.88	0.00	49.88	2483.83	1241.91	3560.44	1782.87		1.52	-0.18	0.033
90.00	-12.99	-0.94	0.00	-48.94	0.00	48.94	2471.96	1235.98	3519.40	1762.31		1.56	-0.18	0.033
92.00	-12.48	-0.94	0.00	-47.06	0.00	47.06	2448.02	1224.01	3437.73	1721.42		1.64	-0.19	0.032
94.00	-12.02	-0.94	0.00	-45.17	0.00	45.17	1822.74	911.37	2571.33	1287.57		1.72	-0.19	0.042
95.00	-11.89	-0.94	0.00	-44.23	0.00	44.23	1815.01	907.51	2542.78	1273.28		1.76	-0.20	0.041
100.00	-11.28	-0.94	0.00	-39.52	0.00	39.52	1775.38	887.69	2400.98	1202.27		1.97	-0.21	0.039
105.00	-10.69	-0.94	0.00	-34.81	0.00	34.81	1734.12	867.06	2260.90	1132.13		2.20	-0.23	0.037
110.00	-10.10	-0.94	0.00	-30.09	0.00	30.09	1691.22	845.61	2122.79	1062.97		2.44	-0.24	0.034
115.00	-9.54	-0.94	0.00	-25.37	0.00	25.37	1646.70	823.35	1986.87	994.91		2.70	-0.25	0.031
120.00	-8.98	-0.94	0.00	-20.65	0.00	20.65	1600.54	800.27	1853.40	928.08		2.97	-0.27	0.028
125.00	-8.46	-0.93	0.00	-15.96	0.00	15.96	1552.75	776.38	1722.60	862.58		3.26	-0.28	0.024
129.00	-5.72	-0.78	0.00	-12.26	0.00	12.26	1513.35	756.67	1620.05	811.23		3.50	-0.29	0.019
130.00	-5.63	-0.78	0.00	-11.48	0.00	11.48	1503.33	751.67	1594.72	798.54		3.56	-0.29	0.018
135.00	-5.16	-0.75	0.00	-7.60	0.00	7.60	1452.28	726.14	1469.99	736.09		3.86	-0.30	0.014
138.00	-2.69	-0.48	0.00	-5.36	0.00	5.36	1413.92	706.96	1389.94	696.00		4.05	-0.30	0.010
139.00	-2.61	-0.48	0.00	-4.88	0.00	4.88	1400.09	700.04	1362.73	682.38		4.11	-0.30	0.009
139.00	-2.61	-0.48	0.00	-4.88	0.00	4.88	871.21	435.61	845.74	423.50		4.11	-0.30	0.015
140.00	-2.52	-0.47	0.00	-4.40	0.00	4.40	871.21	435.61	845.74	423.50		4.18	-0.30	0.013
145.00	-2.11	-0.41	0.00	-2.07	0.00	2.07	871.21	435.61	845.74	423.50		4.49	-0.30	0.007
150.00	0.00	-0.40	0.00	0.00	0.00	0.00	871.21	435.61	845.74	423.50		4.81	-0.31	0.000

Wind Loading - Shaft

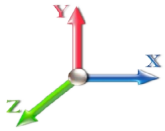
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 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	0.70	6.129	6.74	235.75	0.650	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	230.77	0.650	0.000	5.00	23.233	15.10	101.8	0.0	1104.4
10.00		1.00	0.70	6.129	6.74	225.78	0.650	0.000	5.00	22.737	14.78	99.6	0.0	1080.6
15.00		1.00	0.70	6.129	6.74	220.80	0.650	0.000	5.00	22.240	14.46	97.5	0.0	1056.9
20.00		1.00	0.70	6.129	6.74	215.81	0.650	0.000	5.00	21.744	14.13	95.3	0.0	1033.1
25.00		1.00	0.70	6.129	6.74	210.83	0.650	0.000	5.00	21.247	13.81	93.1	0.0	1009.3
30.00		1.00	0.70	6.134	6.75	205.93	0.650	0.000	5.00	20.751	13.49	91.0	0.0	985.6
35.00		1.00	0.73	6.410	7.05	205.42	0.650	0.000	5.00	20.254	13.17	92.8	0.0	961.8
40.00		1.00	0.76	6.659	7.33	204.18	0.650	0.000	5.00	19.758	12.84	94.1	0.0	938.0
44.00	Bot - Section 2	1.00	0.78	6.843	7.53	202.76	0.650	0.000	4.00	15.449	10.04	75.6	0.0	733.3
45.00		1.00	0.79	6.887	7.58	202.36	0.650	0.000	1.00	3.865	2.51	19.0	0.0	334.1
50.00	Top - Section 1	1.00	0.81	7.098	7.81	200.06	0.650	0.000	5.00	19.029	12.37	96.6	0.0	1644.2
55.00		1.00	0.83	7.294	8.02	200.26	0.650	0.000	5.00	18.533	12.05	96.6	0.0	733.9
60.00		1.00	0.85	7.477	8.22	197.26	0.650	0.000	5.00	18.036	11.72	96.4	0.0	714.1
65.00		1.00	0.87	7.650	8.42	193.96	0.650	0.000	5.00	17.540	11.40	95.9	0.0	694.3
70.00		1.00	0.89	7.814	8.60	190.40	0.650	0.000	5.00	17.043	11.08	95.2	0.0	674.5
75.00		1.00	0.91	7.969	8.77	186.60	0.650	0.000	5.00	16.547	10.76	94.3	0.0	654.7
80.00		1.00	0.93	8.118	8.93	182.59	0.650	0.000	5.00	16.050	10.43	93.2	0.0	634.9
85.00		1.00	0.94	8.260	9.09	178.39	0.650	0.000	5.00	15.553	10.11	91.9	0.0	615.1
89.00	Bot - Section 3	1.00	0.96	8.369	9.21	174.90	0.650	0.000	4.00	12.085	7.86	72.3	0.0	477.8
90.00		1.00	0.96	8.396	9.24	174.02	0.650	0.000	1.00	3.014	1.96	18.1	0.0	213.0
92.00	Appurtenance(s)	1.00	0.96	8.448	9.29	172.22	0.650	0.000	2.00	5.968	3.88	36.1	0.0	421.7
94.00	Top - Section 2	1.00	0.97	8.501	9.35	170.40	0.650	0.000	2.00	5.889	3.83	35.8	0.0	415.9
95.00		1.00	0.97	8.526	9.38	171.99	0.650	0.000	1.00	2.915	1.89	17.8	0.0	92.3
100.00		1.00	0.99	8.652	9.52	167.33	0.650	0.000	5.00	14.275	9.28	88.3	0.0	452.1
105.00		1.00	1.00	8.774	9.65	162.54	0.650	0.000	5.00	13.779	8.96	86.4	0.0	436.3
110.00		1.00	1.02	8.891	9.78	157.62	0.650	0.000	5.00	13.282	8.63	84.4	0.0	420.4
115.00		1.00	1.03	9.005	9.91	152.58	0.650	0.000	5.00	12.786	8.31	82.3	0.0	404.6
120.00		1.00	1.04	9.115	10.03	147.43	0.650	0.000	5.00	12.289	7.99	80.1	0.0	388.8
125.00		1.00	1.05	9.222	10.14	142.18	0.650	0.000	5.00	11.793	7.67	77.8	0.0	372.9
129.00	Appurtenance(s)	1.00	1.06	9.305	10.24	137.90	0.650	0.000	4.00	9.077	5.90	60.4	0.0	286.9
130.00		1.00	1.07	9.326	10.26	136.83	0.650	0.000	1.00	2.220	1.44	14.8	0.0	70.1
135.00		1.00	1.08	9.427	10.37	131.38	0.650	0.000	5.00	10.800	7.02	72.8	0.0	341.2
138.00	Appurtenance(s)	1.00	1.08	9.486	10.43	128.08	0.650	0.000	3.00	6.242	4.06	42.3	0.0	197.1
139.00	Top - Section 3	1.00	1.09	9.506	10.46	126.97	0.650	0.000	1.00	2.041	1.33	13.9	0.0	64.4
140.00		1.00	1.09	9.525	10.48	127.10	0.650	0.000	1.00	2.031	1.32	13.8	0.0	72.0
145.00		1.00	1.10	9.621	10.58	127.74	0.650	0.000	5.00	10.154	6.60	69.9	0.0	360.2
150.00	Appurtenance(s)	1.00	1.11	9.715	10.69	128.36	0.650	0.000	5.00	10.154	6.60	70.5	0.0	360.2
								Totals:	**150.00**			**2,657.7**		**21,451.0**

Discrete Appurtenance Forces

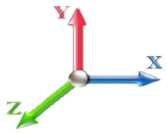
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 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	150.00	Antel BXA-171085-12BF	2	9.715	10.686	0.88	1.00	8.32	30.00	0.000	0.000	88.96	0.00	0.00
2	150.00	Cellwave PD220 20' Omni	2	9.913	10.905	1.00	1.00	12.00	110.00	0.000	11.000	130.86	0.00	1439.41
3	150.00	Cellwave TD1142 14'	1	9.878	10.866	1.00	1.00	4.20	40.00	0.000	9.000	45.64	0.00	410.73
4	150.00	Antel BXA-70063/6CF	3	9.715	10.686	0.78	1.00	17.71	44.70	0.000	0.000	189.30	0.00	0.00
5	150.00	T-Arms w/ Working	3	9.715	10.686	0.56	0.75	30.71	1500.00	0.000	0.000	328.20	0.00	0.00
6	150.00	Antel LPA-80063/6CF	2	9.715	10.686	0.95	1.00	18.22	54.00	0.000	0.000	194.72	0.00	0.00
7	150.00	Antel BXA-171063/12BF-2	1	9.715	10.686	0.88	1.00	4.16	5.00	0.000	0.000	44.48	0.00	0.00
8	150.00	Antel LPA-80080/6CF	4	9.715	10.686	0.75	1.00	25.86	84.00	0.000	0.000	276.35	0.00	0.00
9	150.00	ADC DD1900	1	9.715	10.686	0.60	1.00	0.66	10.40	0.000	0.000	7.05	0.00	0.00
10	138.00	Low Profile Platform	1	9.486	10.435	1.00	1.00	22.00	1500.00	0.000	0.000	229.56	0.00	0.00
11	138.00	Raycap DC6-48-60-18-8F	1	9.486	10.435	0.54	0.80	1.18	16.00	0.000	0.000	12.30	0.00	0.00
12	138.00	Commscope	1	9.486	10.435	0.48	0.80	0.02	1.10	0.000	0.000	0.20	0.00	0.00
13	138.00	Powerwave 21903	6	9.486	10.435	0.48	0.80	0.58	33.00	0.000	0.000	6.01	0.00	0.00
14	138.00	Powerwave LGP 21401	6	9.486	10.435	0.48	0.80	3.02	105.00	0.000	0.000	31.55	0.00	0.00
15	138.00	Decibel 978QNB120E-M	3	9.486	10.435	0.55	0.80	12.57	105.00	0.000	0.000	131.16	0.00	0.00
16	138.00	Powerwave	3	9.486	10.435	0.64	0.80	21.96	177.00	0.000	0.000	229.20	0.00	0.00
17	138.00	Powerwave 7770.00	6	9.486	10.435	0.62	0.80	20.36	210.00	0.000	0.000	212.50	0.00	0.00
18	138.00	Ericsson RRUS-11	6	9.486	10.435	0.54	0.80	8.10	304.20	0.000	0.000	84.57	0.00	0.00
19	129.00	Ericsson Air 21 B4A/B2P	3	9.305	10.236	0.68	0.80	12.32	270.90	0.000	0.000	126.12	0.00	0.00
20	129.00	T-Arms	3	9.305	10.236	0.56	0.75	13.50	1050.00	0.000	0.000	138.18	0.00	0.00
21	129.00	RFS	3	9.305	10.236	0.58	0.80	34.97	384.00	0.000	0.000	357.99	0.00	0.00
22	129.00	Ericsson Radio 4449	3	9.305	10.236	0.54	0.80	2.62	222.00	0.000	0.000	26.83	0.00	0.00
23	129.00	Ericsson Air 32	3	9.305	10.236	0.69	0.80	13.44	396.60	0.000	0.000	137.53	0.00	0.00
24	129.00	Support Rail Pipe	1	9.305	10.236	0.75	0.75	5.06	261.72	0.000	0.000	51.82	0.00	0.00
25	92.00	Standoff	1	8.448	9.293	1.00	1.00	2.63	40.00	0.000	0.000	24.44	0.00	0.00
26	92.00	MYA 4505 4' Yagi	1	8.448	9.293	1.00	1.00	2.50	15.00	0.000	0.000	23.23	0.00	0.00
							Totals:		**6,969.62**			**3,128.75**		

Total Applied Force Summary

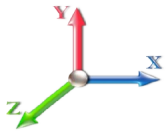
Structure:	CT01500-S-SBA		**Code:**	EIA/TIA-222-G	8/1/2019
Site Name:	Canton 2 CT		**Exposure:**	B	
Height:	150.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	C - Very Dense Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 26

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 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		101.81	1195.70	0.00	0.00
10.00		99.63	1308.89	0.00	0.00
15.00		97.46	1285.12	0.00	0.00
20.00		95.28	1261.36	0.00	0.00
25.00		93.11	1237.59	0.00	0.00
30.00		91.01	1213.83	0.00	0.00
35.00		92.83	1190.06	0.00	0.00
40.00		94.07	1166.30	0.00	0.00
44.00		75.59	915.93	0.00	0.00
45.00		19.03	379.72	0.00	0.00
50.00		96.57	1872.47	0.00	0.00
55.00		96.65	962.15	0.00	0.00
60.00		96.42	942.34	0.00	0.00
65.00		95.94	922.54	0.00	0.00
70.00		95.22	902.74	0.00	0.00
75.00		94.28	882.93	0.00	0.00
80.00		93.16	863.13	0.00	0.00
85.00		91.85	843.32	0.00	0.00
89.00		72.31	660.40	0.00	0.00
90.00		18.09	258.61	0.00	0.00
92.00	(2) attachments	83.73	567.95	0.00	0.00
94.00		35.79	506.61	0.00	0.00
95.00		17.77	137.66	0.00	0.00
100.00		88.31	678.77	0.00	0.00
105.00		86.44	662.93	0.00	0.00
110.00		84.44	647.09	0.00	0.00
115.00		82.32	631.24	0.00	0.00
120.00		80.09	612.40	0.00	0.00
125.00		77.76	584.56	0.00	0.00
129.00	(16) attachments	898.86	3041.46	0.00	0.00
130.00		14.80	105.20	0.00	0.00
135.00		72.79	516.47	0.00	0.00
138.00	(33) attachments	979.39	2753.58	0.00	0.00
139.00		13.87	85.40	0.00	0.00
140.00		13.83	93.01	0.00	0.00
145.00		69.85	465.03	0.00	0.00
150.00	(19) attachments	1376.08	2343.13	0.00	1850.13
	Totals:	**5,786.44**	**34,697.62**	**0.00**	**1,850.13**

Calculated Forces

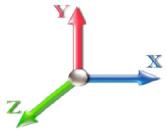
Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Tower Engineering Solutions

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

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	-34.70	-5.80	0.00	-655.63	0.00	655.63	4273.14	2136.57	9689.25	4851.82	0.00	0.000	0.000	0.143
5.00	-33.50	-5.72	0.00	-626.65	0.00	626.65	4219.68	2109.84	9362.95	4688.43	0.02	-0.036	0.000	0.142
10.00	-32.18	-5.64	0.00	-598.08	0.00	598.08	4164.59	2082.29	9038.31	4525.87	0.08	-0.073	0.000	0.140
15.00	-30.90	-5.56	0.00	-569.90	0.00	569.90	4107.86	2053.93	8715.56	4364.26	0.17	-0.111	0.000	0.138
20.00	-29.63	-5.48	0.00	-542.12	0.00	542.12	4049.50	2024.75	8394.94	4203.71	0.31	-0.149	0.000	0.136
25.00	-28.39	-5.40	0.00	-514.73	0.00	514.73	3989.51	1994.75	8076.69	4044.35	0.49	-0.188	0.000	0.134
30.00	-27.17	-5.32	0.00	-487.72	0.00	487.72	3927.89	1963.94	7761.05	3886.29	0.71	-0.228	0.000	0.132
35.00	-25.98	-5.25	0.00	-461.10	0.00	461.10	3864.63	1932.32	7448.26	3729.66	0.97	-0.268	0.000	0.130
40.00	-24.81	-5.16	0.00	-434.88	0.00	434.88	3799.75	1899.87	7138.54	3574.58	1.27	-0.309	0.000	0.128
44.00	-23.89	-5.09	0.00	-414.23	0.00	414.23	3746.66	1873.33	6893.15	3451.70	1.54	-0.343	0.000	0.126
45.00	-23.51	-5.08	0.00	-409.14	0.00	409.14	3733.23	1866.62	6832.15	3421.15	1.61	-0.351	0.000	0.126
50.00	-21.64	-4.99	0.00	-383.75	0.00	383.75	2895.85	1447.93	5248.77	2628.28	2.01	-0.394	0.000	0.153
55.00	-20.67	-4.90	0.00	-358.82	0.00	358.82	2848.58	1424.29	5024.64	2516.06	2.44	-0.437	0.000	0.150
60.00	-19.72	-4.81	0.00	-334.33	0.00	334.33	2799.67	1399.83	4802.32	2404.73	2.92	-0.486	0.000	0.146
65.00	-18.80	-4.72	0.00	-310.27	0.00	310.27	2749.13	1374.56	4582.02	2294.42	3.46	-0.537	0.000	0.142
70.00	-17.89	-4.64	0.00	-286.65	0.00	286.65	2696.96	1348.48	4364.00	2185.24	4.05	-0.588	0.000	0.138
75.00	-17.01	-4.55	0.00	-263.46	0.00	263.46	2643.16	1321.58	4148.49	2077.33	4.69	-0.639	0.000	0.133
80.00	-16.14	-4.46	0.00	-240.72	0.00	240.72	2587.72	1293.86	3935.73	1970.79	5.39	-0.690	0.000	0.128
85.00	-15.29	-4.37	0.00	-218.43	0.00	218.43	2530.65	1265.33	3725.95	1865.74	6.14	-0.741	0.000	0.123
89.00	-14.63	-4.29	0.00	-200.95	0.00	200.95	2483.83	1241.91	3560.44	1782.87	6.78	-0.783	0.000	0.119
90.00	-14.37	-4.28	0.00	-196.66	0.00	196.66	2471.96	1235.98	3519.40	1762.31	6.94	-0.793	0.000	0.117
92.00	-13.81	-4.19	0.00	-188.10	0.00	188.10	2448.02	1224.01	3437.73	1721.42	7.28	-0.814	0.000	0.115
94.00	-13.30	-4.15	0.00	-179.72	0.00	179.72	1822.74	911.37	2571.33	1287.57	7.63	-0.835	0.000	0.147
95.00	-13.16	-4.14	0.00	-175.57	0.00	175.57	1815.01	907.51	2542.78	1273.28	7.80	-0.845	0.000	0.145
100.00	-12.48	-4.05	0.00	-154.87	0.00	154.87	1775.38	887.69	2400.98	1202.27	8.72	-0.905	0.000	0.136
105.00	-11.81	-3.97	0.00	-134.61	0.00	134.61	1734.12	867.06	2260.90	1132.13	9.70	-0.962	0.000	0.126
110.00	-11.16	-3.88	0.00	-114.77	0.00	114.77	1691.22	845.61	2122.79	1062.97	10.74	-1.018	0.000	0.115
115.00	-10.53	-3.80	0.00	-95.35	0.00	95.35	1646.70	823.35	1986.87	994.91	11.83	-1.070	0.000	0.102
120.00	-9.92	-3.71	0.00	-76.36	0.00	76.36	1600.54	800.27	1853.40	928.08	12.98	-1.118	0.000	0.088
125.00	-9.33	-3.63	0.00	-57.79	0.00	57.79	1552.75	776.38	1722.60	862.58	14.17	-1.160	0.000	0.073
129.00	-6.31	-2.67	0.00	-43.26	0.00	43.26	1513.35	756.67	1620.05	811.23	15.16	-1.189	0.000	0.058
130.00	-6.20	-2.66	0.00	-40.59	0.00	40.59	1503.33	751.67	1594.72	798.54	15.41	-1.196	0.000	0.055
135.00	-5.69	-2.58	0.00	-27.31	0.00	27.31	1452.28	726.14	1469.99	736.09	16.68	-1.224	0.000	0.041
138.00	-2.95	-1.54	0.00	-19.58	0.00	19.58	1413.92	706.96	1389.94	696.00	17.45	-1.237	0.000	0.030
139.00	-2.87	-1.52	0.00	-18.04	0.00	18.04	1400.09	700.04	1362.73	682.38	17.71	-1.241	0.000	0.028
139.00	-2.87	-1.52	0.00	-18.04	0.00	18.04	871.21	435.61	845.74	423.50	17.71	-1.241	0.000	0.046
140.00	-2.78	-1.51	0.00	-16.52	0.00	16.52	871.21	435.61	845.74	423.50	17.97	-1.245	0.000	0.042
145.00	-2.31	-1.43	0.00	-8.99	0.00	8.99	871.21	435.61	845.74	423.50	19.28	-1.257	0.000	0.024
150.00	0.00	-1.38	0.00	-1.85	0.00	1.85	871.21	435.61	845.74	423.50	20.60	-1.262	0.000	0.004

Final Analysis Summary

Structure:	CT01500-S-SBA	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 93 mph Wind	22.3	0.00	41.61	0.00	0.00	2535.87
0.9D + 1.6W 93 mph Wind	22.3	0.00	31.20	0.00	0.00	2509.83
1.2D + 1.0Di + 1.0Wi 50 mph Wind	7.4	0.00	72.58	0.00	0.00	860.97
1.2D + 1.0E	1.2	0.00	41.64	0.00	0.00	145.37
0.9D + 1.0E	1.2	0.00	31.23	0.00	0.00	143.81
1.0D + 1.0W 60 mph Wind	5.8	0.00	34.70	0.00	0.00	655.63

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 93 mph Wind	-25.47	-19.29	0.00	-1487.0	0.00	-1487.0	2895.85	1447.9	5248.77	2628.28	50.00	0.575
0.9D + 1.6W 93 mph Wind	-18.98	-19.10	0.00	-1466.3	0.00	-1466.3	2895.85	1447.9	5248.77	2628.28	50.00	0.565
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-50.74	-6.54	0.00	-509.00	0.00	-509.00	2895.85	1447.9	5248.77	2628.28	50.00	0.211
1.2D + 1.0E	-16.03	-0.96	0.00	-45.84	0.00	-45.84	1822.74	911.37	2571.33	1287.57	94.00	0.044
0.9D + 1.0E	-12.02	-0.94	0.00	-45.17	0.00	-45.17	1822.74	911.37	2571.33	1287.57	94.00	0.042
1.0D + 1.0W 60 mph Wind	-21.64	-4.99	0.00	-383.75	0.00	-383.75	2895.85	1447.9	5248.77	2628.28	50.00	0.153

Base Plate Summary

Structure:	CT01500-S-SB	**Code:**	EIA/TIA-222-G	8/1/2019	
Site Name:	Canton 2 CT	**Exposure:**	B		
Height:	150.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	C - Very Dense 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:**	62.00
Moment (kip-ft):	3544.00	**Width (in):**	68.00	**Number Bolts:**	18.00
Axial (kip):	1.00	**Style:**	Round	**Bolt Type:**	2.00" F1554 105
Shear (kip):	32.00	**Polygon Sides:**	0.00	**Bolt Diameter (in):**	2.00
Analysis		**Clip Length (in):**	0.00	**Yield (ksi):**	105.00
Moment (kip-ft):	2535.87	**Effective Len (in):**	12.25	**Ultimate (ksi):**	125.00
Axial (kip):	72.58	**Moment (kip-in):**	367.58	**Arrangement:**	Radial
Shear (kip):	22.29	**Allow Stress (ksi):**	67.50	**Cluster Dist (in):**	0.00
		Applied Stress (ksi):	0.00	**Start Angle (deg):**	0.00
Moment Design %:	71.55	**Stress Ratio:**	1.19	Compression	
				Force (kip):	113.10
				Allowable (kip):	250.00
				Ratio:	0.46
				Tension	
				Force (kip):	105.04
				Allowable (kip):	250.00
				Ratio:	0.43

Monopole Mat Foundation Design

			Date: 8/1/2019
Customer Name:	T-Mobile	**EIA/TIA Standard:**	EIA-222-G
Site Name:	Canton 2 CT	**Structure Height (Ft.):**	150
Site Number:	CT01500-S-SBA	**Engineer Name:**	W. Velez
Engr. Number:	80479	**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

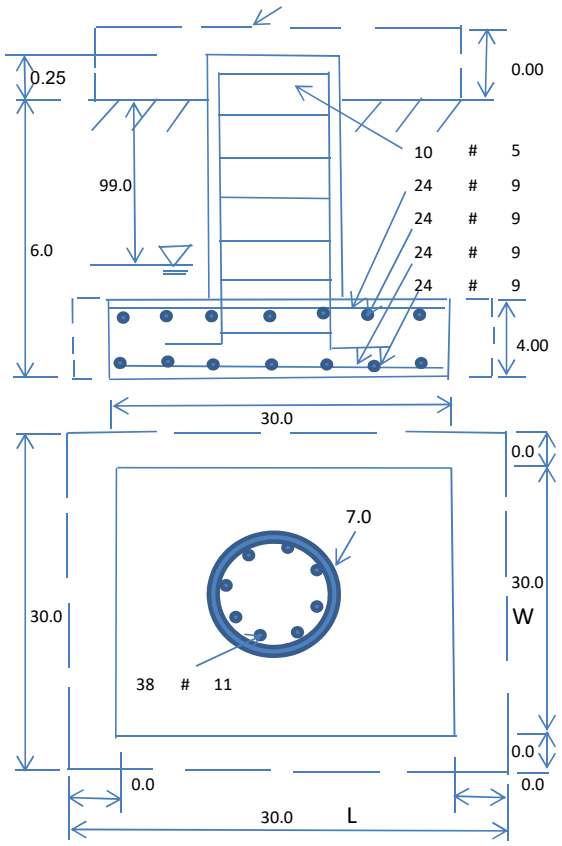
Analysis or Design? Analysis

Base Reactions (Factored):

Axial Load (Kips):	41.6	Shear Force (Kips):	22.3
Uplift Force (Kips):	0.0	Moment (Kips-ft):	2535.9
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	7.0	Depth of Base BG (ft.):	6.0
Pier Height A. G. (ft.):	0.25	Thickness of Pad (ft):	4.00
Length of Pad (ft.):	30	Width of Pad (ft.):	30
Final Length of pad (ft)	30.0	Final width of pad (ft):	30.0



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 #:	11	Tie / Stirrup Size #:	5	
Qty. of Vertical Rebars:	38	Tie Spacing (in):	8.0	
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):	24	Qty. of Rebar in Pad (W):	24	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	24	Qty. of Rebar in Pad (W):	24	
Apply 1.35 factor for e/w Per G:	1.00			

Soil Design Parameters:

Soil Unit Weight (pcf):	140.0	Soil Buoyant Weight:	75.8	Pcf		
Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	30000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	Yes	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.):	1723.03	Total Dry Soil Weight (Kips):	241.22
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	241.22	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	3686.59	Total Dry Concrete Weight (Kips):	552.99
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	552.99	Total Vertical Load on Base (Kips):	835.82

Check Soil Capacities:

					Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	813	<	Allowable Factored Soil Bearing (psf):	22500	0.04	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	11346.0	>	Design Factored Momont (kips-ft):	2421	0.21	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	4.69	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):	1.56		Tie / Stirrup Area (sq. in./each):	0.31		
Calculated Moment Capacity (Mn,Kips-Ft):	9305.3	>	Design Factored Moment (Mu, Kips-F	2586.0	0.28	OK!
Calculated Shear Capacity (Kips):	767.8	>	Design Factored Shear (Kips):	22.3	0.03	OK!
Calculated Tension Capacity (Tn, Kips):	3201.1	>	Design Factored Tension (Tu Kips):	0.0	0.00	OK!
Calculated Compression Capacity (Pn, Kips):	7269.8	>	Design Factored Axial Load (Pu Kips):	41.6	0.01	OK!
Moment & Axial Strength Combination:	0.28	OK!	Check Tie Spacing (Design/Required):		0.6667	OK!
Pier Reinforcement Ratio:	0.011		Reinforcement Ratio is satisfied per ACI			
(2).Concrete Pad:						
One-Way Design Shear Capacity (L-Direction, Kips):	1314.3	>	One-Way Factored Shear (L-D. Kips):	100.2	0.08	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1314.3	>	One-Way Factored Shear (W-D., Kips)	100.2	0.08	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1227.6	>	One-Way Factored Shear (C-C, Kips):	88.2	0.07	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0015	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0015		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	4714.5	>	Moment at Bottom (L-Dir. K-Ft):	671.7	0.14	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	4714.5	>	Moment at Bottom (W-Dir. K-Ft):	671.7	0.14	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	6643.7	>	Moment at Bottom (C-C Dir. K-Ft):	949.9	0.14	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0015	OK!	Upper Steel Reinf. Ratio (W-Dir.):	0.0015		
Upper Steel Pad Moment Capacity (L-Direc. Kips-ft):	4714.5	>	Moment at the top (L-Dir K-Ft):	446.9	0.09	OK!
Upper Steel Pad Moment Capacity (W-Direc. Kips-ft):	4714.5	>	Moment at the top (W-Dir K-Ft):	446.9	0.09	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	6643.7	>	Moment at the top (C-C Dir. K-Ft):	417.4	0.06	OK!
(3).Check Punching Shear Capacity due to Moment in the Pier:						
Moment transferred by punching shear:	1014.3	k-ft.	Max. factored shear stress v_{u_CD}:		1.9	Psi
Max. factored shear stress v_{u_AB}:	5.3	Psi	Factored shear Strength ϕv_n:		164.3	Psi
Max. factored shear stress v_u:	5.3	Psi	Check Usage of Punching Shear Capacity:		0.03	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 150.0-Ft Monopole Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT01500-S-SBA

Customer Site Name: Canton 2 CT

Carrier Name: T-Mobile (Application #: 117041, v1)

Carrier Site ID / Name: CTHA530A / Canton

Site Location: 540 Cherry Brook Rd., (Rt. 179)

Canton, Connecticut

Hartford County

Latitude: 41.894052

Longitude: -72.893850

Analysis Result:

Max Structural Usage: 72.2% [Pass]

Report Prepared By: Saurav Devkota

Introduction

The purpose of this report is to summarize the analysis results on the (3) Sector Frame at 129.00' 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	Full Metal Services, Dated 4/28/2019
Antenna Loading	SBA, Application #: 117041, v1
Existing Modification	N/A
Proposed Modification	TES Project No. 83034

Analysis Criteria

Basic Wind Speed Used in the Analysis: V_{ULT} =120.0 mph (3-Sec. Gust) / Equivalent to
V_{ASD} = 93.0 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/ 2015 / 2018 CBSC
Exposure Category: B
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) Sector Frame at 129.00' elevation.

Proposed Modifications

(1) Metrosite support rail kits: MS-HR35-2375
(1) Metrosite rotable T-arms kits: MS-TAW-350RO
(3) Metrosite 2" PST pipe: PST2375-8
(1) Metrosite Heavy collar mount assembly: MS-H1436

Final Antenna Configuration

3 RFS APXVAARR24_43-U-NA20
3 Ericsson Air 21 B4A/B2P
3 Ericsson Air 32 KRD901146-1_B66A_B2A
3 Ericsson Radio 4449 B71+B12

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 Sector Frame.

In addition to the proposed equipment loading, a 500 lb serviceability load was also considered in this analysis in accordance with TIA requirements.

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 72.2%, which occurs in the vertical mount pipe. 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.


04.28.2019 07:41


04.28.2019 07:32

Structure: CT01500-S-SBA - Canton 2 CT

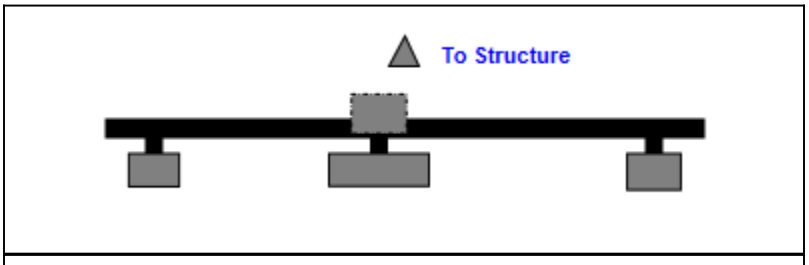
Sector: **A**

Structure Type: Monopole

Mount Elev: 129.00

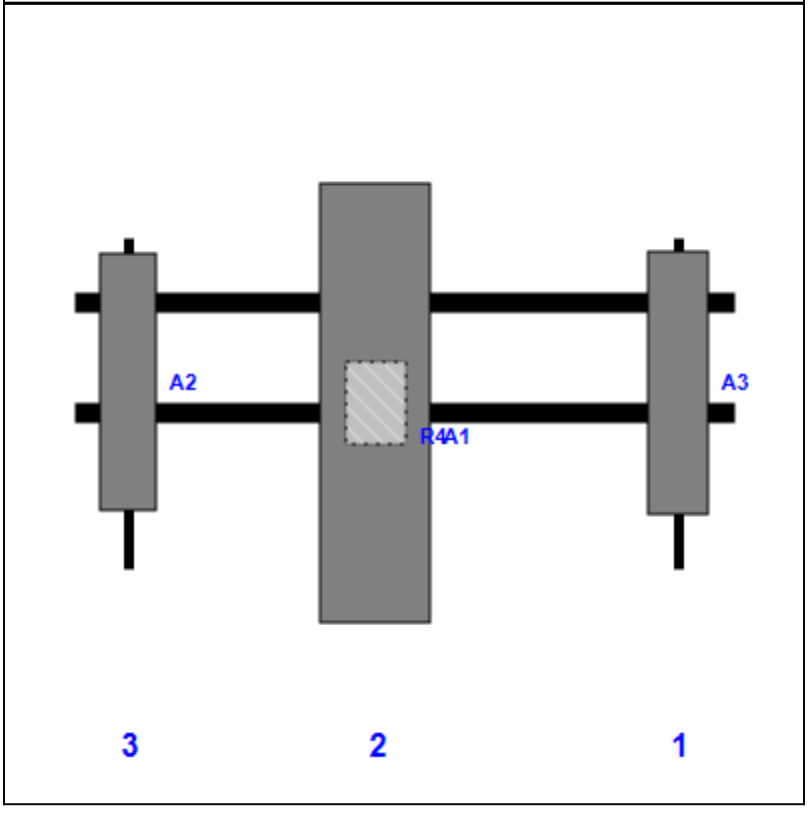
8/28/2019

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
A3	AIR32	57.00	12.90	132.00	1	a	Front	31.50	0.00
A1	APXVAARR24_43-U-NA20	95.90	24.00	66.00	2	a	Front	36.00	0.00
R4	4449 B5/B12	17.90	13.20	66.00	2	a	Behind	36.00	0.00
A2	AIR 21	56.00	12.10	12.00	3	a	Front	31.50	0.00

Structure: CT01500-S-SBA - Canton 2 CT

Sector: B

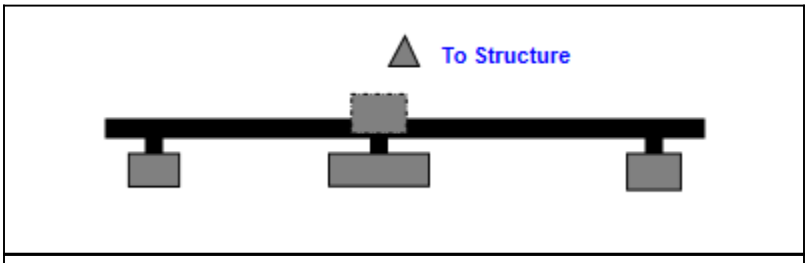
Structure Type: Monopole

Mount Elev: 129.00

8/28/2019

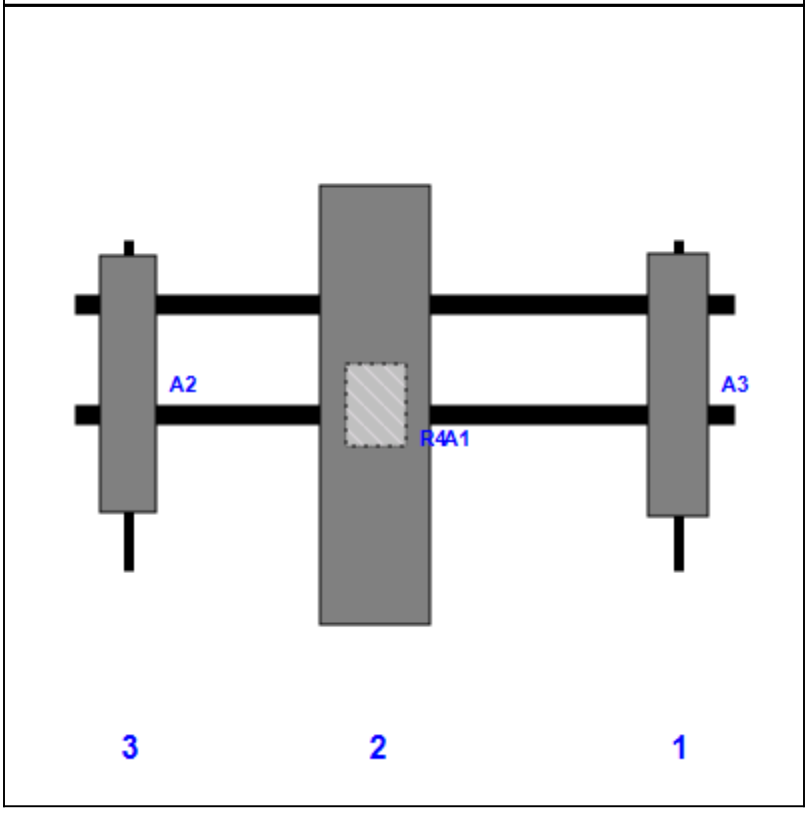
IES Tower Engineering Solutions

Plan View



Front View

Looking Toward Structure



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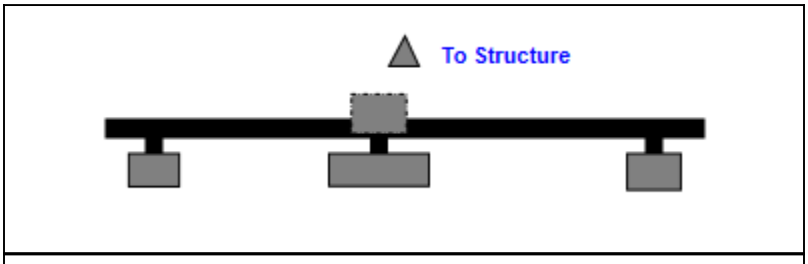
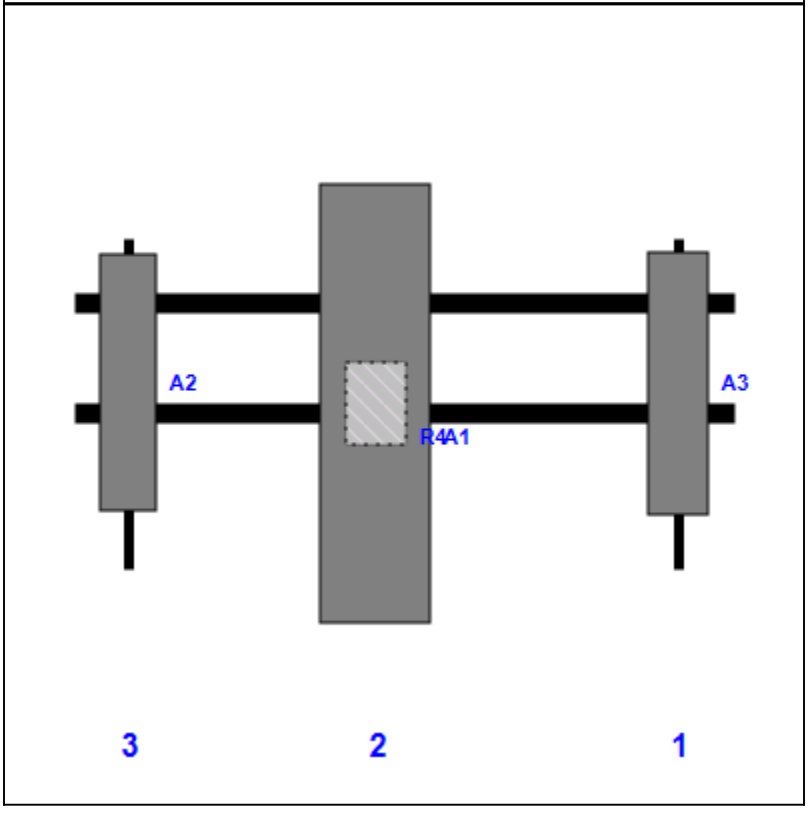
A2	AIR 21	56.00	12.10	12.00	3	a	Front	31.50	0.00

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
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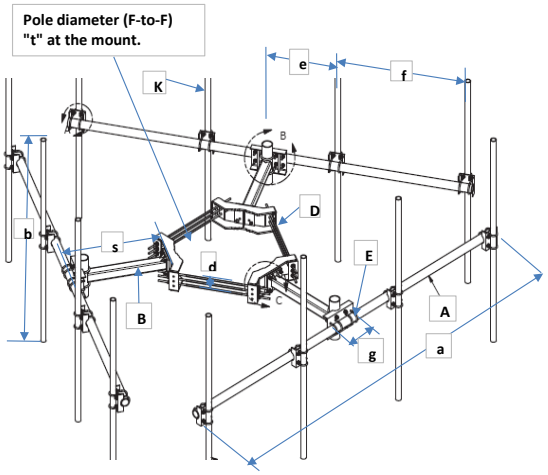
R4	4449 B5/B12	17.90	13.20	66.00	2	a	Behind	36.00	0.00
A2	AIR 21	56.00	12.10	12.00	3	a	Front	31.50	0.00

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

FCC # 1208303

Tower Owner:	SBA Communications	**Mapping Date:**	4/28/19
Site Name:	Canton 2 CT	**Structure Type:**	Monopole
Site Number or ID:	CT01500-S-SBA	**Structure Height (Ft.):**	151
Mapping Contractor:	Full Metal Tower Services	**Mount Height (Ft.):**	129.4



Geometries (Unit: inches)

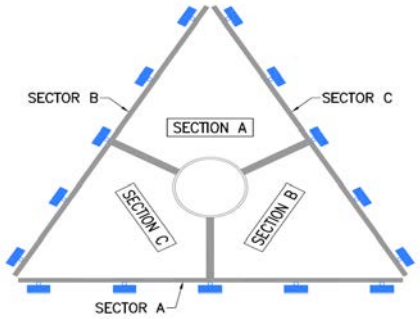
a	144	**e**	60	**j**	N/A	**o**	N/A	**s**	44
b	72	**f**	N/A	**k**	N/A	**p**	N/A	**t**	20
c	N/A	**g**	14	**m**	N/A	**q**	N/A	**u ***	38
d	6	**h**	N/A	**n**	N/A	**r**	N/A	**v ***	72

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

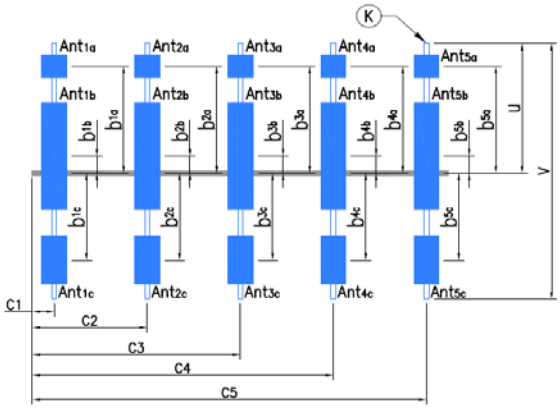
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	3.5 OD x 0.216 Pipe	3.5	3.068	0.216	**F**				
B	Tubing 4x4x1/4	4	4	0.25	**G**				
C					**H**				
D	3/4" Bolt	24			**J**				
E	5/8" Bolt	U-Bolt			**K* (pipe)**	2.375 OD x 0.154 Pipe	2.375	2.067	0.154

Distance from top of main platform member to lowest tip of ant./eqpt. of Carrier above. (N/A if > 10 ft.)	7.5'
Distance from top of main platform member to highest tip of ant./eqpt. of Carrier below. (N/A if > 10 ft.)	N/A

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



Climbing ladder is Located at Section B, at 180° Degree Azimuth

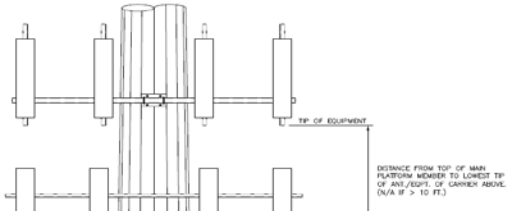


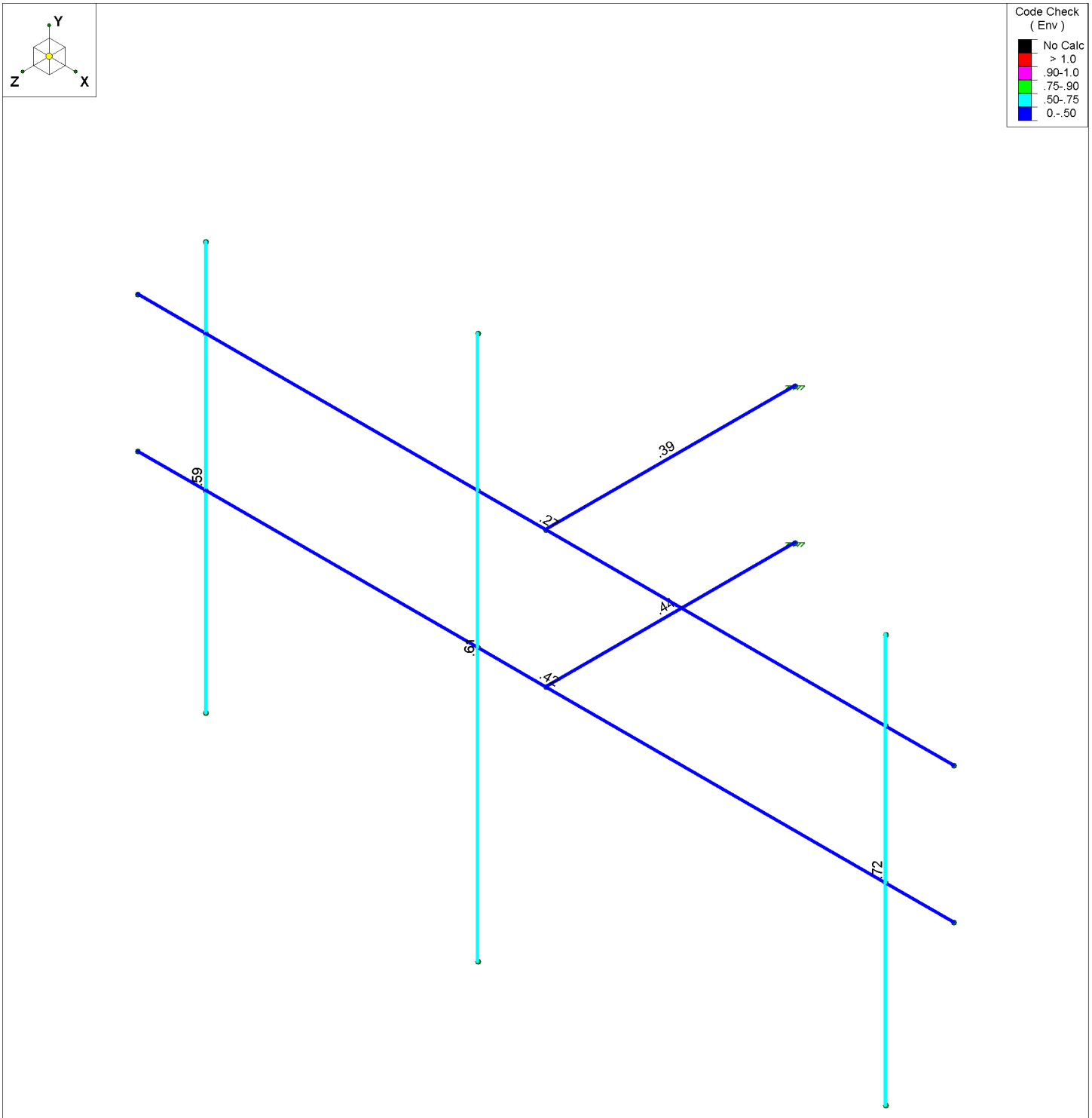
Antenna Layout

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.					Mounting Locations (Unit: inches)			Photos of antennas
	Antenna Models if Known	Width (in.)	Depth (in.)	Height (in.)	Coax Size and Qty	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.)	Photo Numbers
Sector A									
Ant_{1a}								132	
Ant_{1b}	Antenna A	12	8	56	1/2" (1)	+10"	7		
Ant_{1c}									
Ant_{2a}								66	
Ant_{2b}									
Ant_{2c}									
Ant_{3a}	Antenna A	12	8	56	1/2" (1)	+10"	7	12	
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**							
Are Ant same as sector A/B?	Same As A	**Antennas on Sector C are the same as Sector A**							

Azimuth (Degree) of Each Sector and Climbing Information

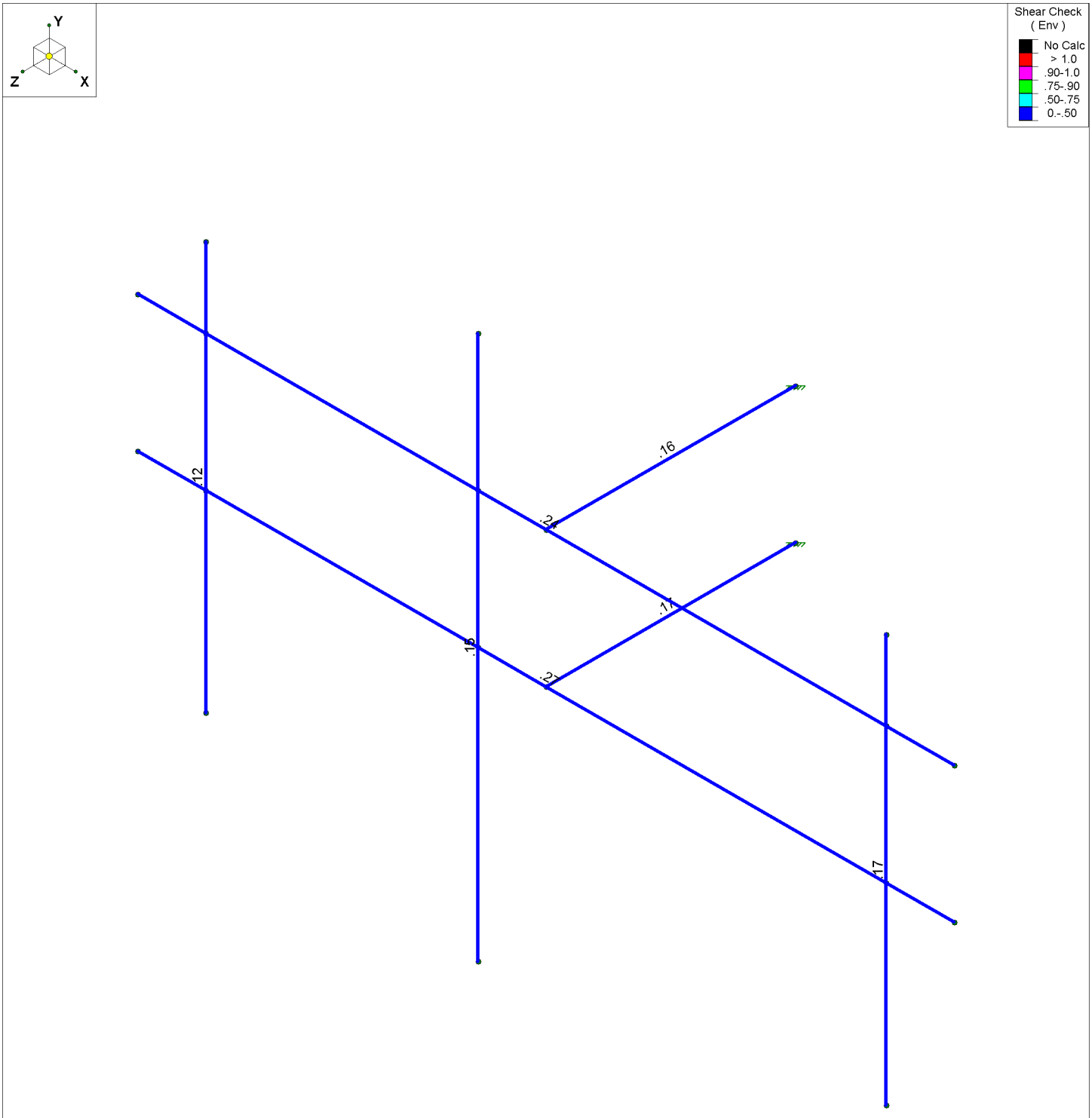
Sector A:	0°	Deg	
Sector B:	150°	Deg	
Sector C:	260°	Deg	
Climbing	180°	Deg	Located at Section B
Climbing Facility	Corrosion Type:		No corrosion observed
	Access:		Climbing path was unobstructed.
	Condition:		N/A





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

Tower Engineering Solutio...	CT01500-S-SBA_MT_LOT_Loads Only_Sector A_G	SK - 1
		Aug 28, 2019 at 3:34 PM
TES Project No. 83034		CT01500-S-SBA_83034_G_RISA_L...



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

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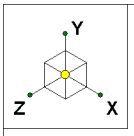

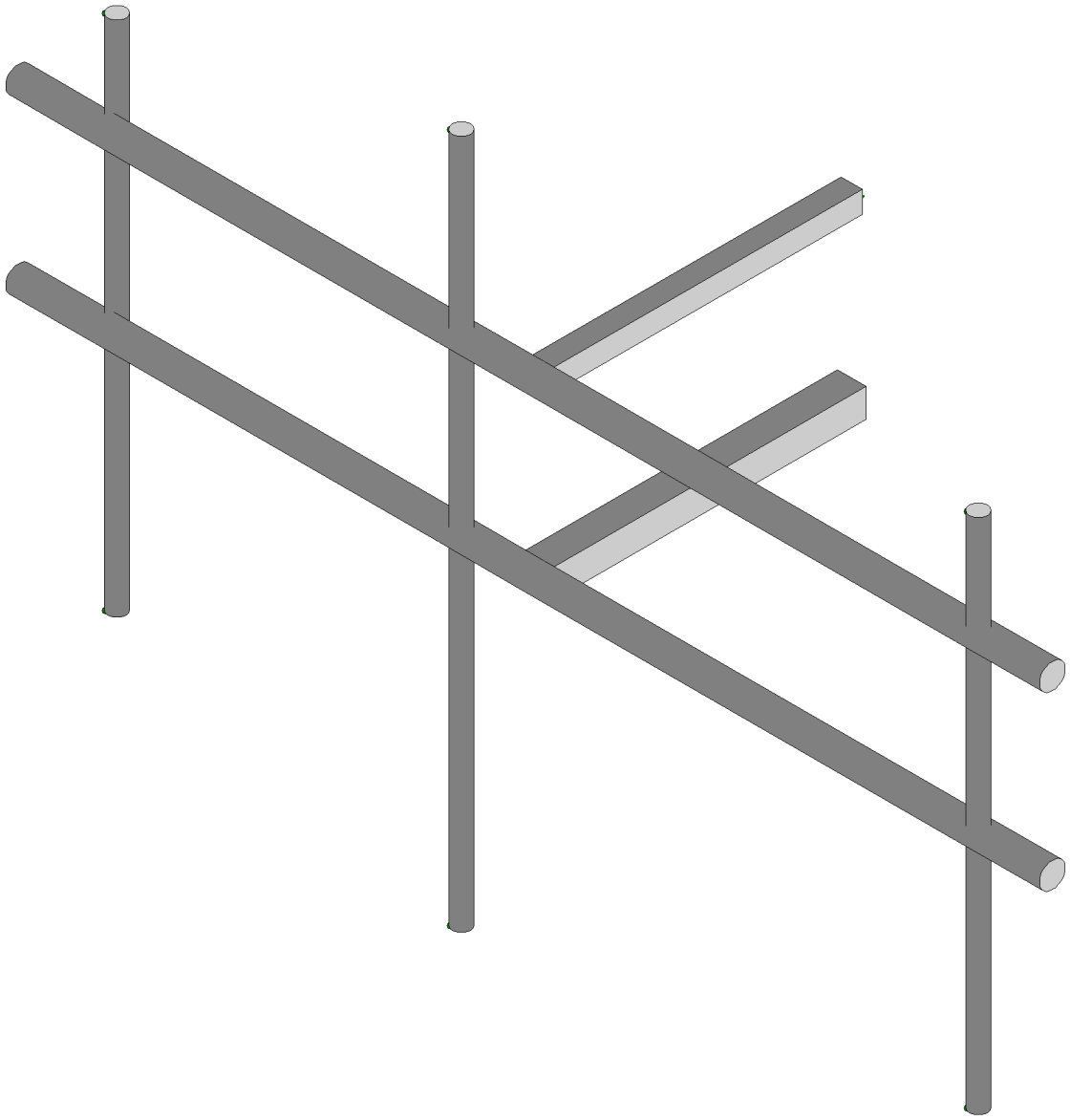

Tower Engineering Solutio...	CT01500-S-SBA_MT_LOT_Loads Only_Sector A_G	SK - 3
		Aug 28, 2019 at 3:34 PM
TES Project No. 83034		CT01500-S-SBA_83034_G_RISA_L...

Basic Load Cases

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

Load Combinations

	Description	So..	P...	S...	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac..	BLC	Fac...
1	1.2D+1.6W (Front)	Yes	Y		1	1.2	9	1.2	3	1.6	11	1.6												
2	1.2D+1.6W (Back)	Yes	Y		1	1.2	9	1.2	3	-1.6	11	-1.6												
3	1.2D+1.6W (Left)	Yes	Y		1	1.2	9	1.2	5	1.6	13	1.6												
4	1.2D+1.6W (Right)	Yes	Y		1	1.2	9	1.2	5	-1.6	13	-1.6												
5	1.2D+1.0Di+1.0Wi (Fr..	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	1	12	1								
6	1.2D+1.0Di+1.0Wi (B...	Yes	Y		1	1.2	9	1.2	2	1	10	1	4	-1	12	-1								
7	1.2D+1.0Di+1.0Wi (L...	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	1	14	1								
8	1.2D+1.0Di+1.0Wi (Ri..	Yes	Y		1	1.2	9	1.2	2	1	10	1	6	-1	14	-1								
9	1.2D+1.5L1+.16W (M...	Yes	Y		1	1.2	9	1.2	7	1.5	3	.16	11	.16										
10	1.2D+1.5L2+.16W (M...	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	3.666667	0	
3	N3	-6	0	3.666667	0	
4	N4	6	0	3.666667	0	
5	NP1	5	3.166667	3.666667	0	
6	NP2	5	-2.833333	3.666667	0	
7	NP3	-1	4	3.666667	0	
8	NP4	-1	-4	3.666667	0	
9	NP5	-5	3.166667	3.666667	0	
10	NP6	-5	-2.833333	3.666667	0	
11	N11	5	0	3.666667	0	
12	N12	-1	0	3.666667	0	
13	N13	-5	0	3.666667	0	
14	N16	-6	2	3.666667	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Diap...
15	N17	6	2	3.666667	0	
16	N18	0	2	3.666667	0	
17	N19	0	2	0	0	
18	N20	5	2	3.666667	0	
19	N21	-1	2	3.666667	0	
20	N22	-5	2	3.666667	0	

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	hr	PIPE_3.0	Beam	Pipe	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	t-arms	HSS3x3x4	Beam	Tube	A500 Gr.B Rect	Typical	2.44	3.02	3.02	5.08

Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design Ru...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	CF	4CU5.25X0375	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...	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
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(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N3	N4			PIPE_3.0	Beam	Pipe	A53 Gr.B	DR1
2	M2	N1	N2			HSS4x4x4	Beam	None	A500 Gr....	DR1
3	MP1A	NP1	NP2			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
4	MP2A	NP3	NP4			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
5	MP3A	NP5	NP6			PIPE_2.0	Beam	Pipe	A53 Gr.B	DR1
6	M6	N16	N17			hr	Beam	Pipe	A53 Gr.B	Typical
7	M7	N18	N19			t-arms	Beam	Tube	A500 Gr....	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						Yes			None
7	M7						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			Lbyy						Gravity
2	M2	HSS4x4x4	3.667			Lbyy						Gravity
3	MP1A	PIPE_2.0	6			Lbyy						Gravity
4	MP2A	PIPE_2.0	8			Lbyy						Gravity
5	MP3A	PIPE_2.0	6			Lbyy						Gravity
6	M6	hr	12			Lbyy						Lateral
7	M7	t-arms	3.667			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	MP2A	Y	-64	0
2	MP2A	Y	-64	6
3	MP3A	Y	-45.5	.5
4	MP3A	Y	-45.5	4.75
5	MP1A	Y	-66.1	.5
6	MP1A	Y	-66.1	4.75
7	MP2A	Y	-71	3

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Y	-285.483	0
2	MP2A	Y	-285.483	6
3	MP3A	Y	-117.737	.5
4	MP3A	Y	-117.737	4.75
5	MP1A	Y	-128.119	.5
6	MP1A	Y	-128.119	4.75
7	MP2A	Y	-109.238	3

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Z	-248.862	0
2	MP2A	Z	-248.862	6
3	MP3A	Z	-74.88	.5
4	MP3A	Z	-74.88	4.75
5	MP1A	Z	-80.044	.5
6	MP1A	Z	-80.044	4.75
7	MP2A	Z	-36.333	3

Member Point Loads (BLC 4 : Antenna Wi Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	Z	-80.907	0
2	MP2A	Z	-80.907	6
3	MP3A	Z	-26.873	.5
4	MP3A	Z	-26.873	4.75
5	MP1A	Z	-28.692	.5
6	MP1A	Z	-28.692	4.75
7	MP2A	Z	-14.736	3

Member Point Loads (BLC 5 : Antenna W Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	100.691	0
2	MP2A	X	100.691	6
3	MP3A	X	52.996	.5
4	MP3A	X	52.996	4.75
5	MP1A	X	58.436	.5
6	MP1A	X	58.436	4.75
7	MP2A	X	34.481	3

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP2A	X	36.636	0
2	MP2A	X	36.636	6
3	MP3A	X	20.073	.5
4	MP3A	X	20.073	4.75
5	MP1A	X	21.793	.5
6	MP1A	X	21.793	4.75
7	MP2A	X	15.017	3

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	%100

Member Distributed Loads (BLC 10 : Structure Di)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitud...	Start Location[ft,%]	End Location[ft,%]
1	M1	Y	-16.22	-16.22	0	%100
2	M2	Y	-22.435	-22.435	0	%100
3	MP1A	Y	-13.07	-13.07	0	%100
4	MP2A	Y	-13.07	-13.07	0	%100
5	MP3A	Y	-13.07	-13.07	0	%100
6	M6	Y	-16.22	-16.22	0	%100
7	M7	Y	-18.869	-18.869	0	%100

Member Distributed Loads (BLC 11 : Structure W Front)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitud...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-8.607	-8.607	0	%100
2	M2	PZ	-16.394	-16.394	0	%100
3	MP1A	PZ	-5.84	-5.84	0	%100
4	MP2A	PZ	-5.84	-5.84	0	%100
5	MP3A	PZ	-5.84	-5.84	0	%100
6	M6	PZ	-8.607	-8.607	0	%100
7	M7	PZ	-12.296	-12.296	0	%100

Member Distributed Loads (BLC 12 : Structure Wi Front)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitud...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-5.746	-5.746	0	%100
2	M2	PZ	-7.997	-7.997	0	%100
3	MP1A	PZ	-4.947	-4.947	0	%100
4	MP2A	PZ	-4.947	-4.947	0	%100
5	MP3A	PZ	-4.947	-4.947	0	%100
6	M6	PZ	-5.746	-5.746	0	%100
7	M7	PZ	-6.813	-6.813	0	%100

Member Distributed Loads (BLC 13 : Structure W Side)

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

Member Distributed Loads (BLC 13 : Structure W Side) (Continued)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitud...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	8.607	8.607	0	%100
2	M2	PX	16.394	16.394	0	%100
3	MP1A	PX	5.84	5.84	0	%100
4	MP2A	PX	5.84	5.84	0	%100
5	MP3A	PX	5.84	5.84	0	%100
6	M6	PX	8.607	8.607	0	%100
7	M7	PX	12.296	12.296	0	%100

Member Distributed Loads (BLC 14 : Structure Wi Side)

	Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitud...	Start Location[ft,%]	End Location[ft,%]
1	M1	PX	5.746	5.746	0	%100
2	M2	PX	7.997	7.997	0	%100
3	MP1A	PX	4.947	4.947	0	%100
4	MP2A	PX	4.947	4.947	0	%100
5	MP3A	PX	4.947	4.947	0	%100
6	M6	PX	5.746	5.746	0	%100
7	M7	PX	6.813	6.813	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	N19	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	785.353	10	1976.437	6	1355.084	1	-1.703	1	2.697	4	1.927	10
2		min	-942.021	9	393.132	1	-735.061	2	-5.884	8	-2.778	3	-1.83	9
3	N19	max	942.017	9	974.363	5	512.56	1	-.418	2	2.105	9	.975	10
4		min	-785.35	10	81.027	2	-1245.827	6	-2.341	5	-1.843	10	-.807	9
5	Totals:	max	1089.168	4	2860.392	5	1867.644	1						
6		min	-1089.168	3	886.357	2	-1867.644	2						

Envelope Member Section Forces

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shea...	LC	Torque...	LC	y-y Mo...	LC	z-z Mo...	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	1014.725	9	-15.131	3	226.147	2	.082	10	.444	2	.438	9
4			min	-19.157	4	-411.478	9	-230.8...	1	-.135	9	-.401	1	-.112	10
5		3	max	1295.877	9	558.227	10	513.697	2	.293	1	1.474	2	2.06	10
6			min	256.61	1	-1380.116	6	-1142....	5	-1.002	6	-1.912	1	.376	1
7		4	max	1192.928	10	532.87	10	254.581	1	.191	10	.384	2	.423	10

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shea...	LC	Torque...	LC	y-y Mo...	LC	z-z Mo...	LC
8			min	42.112	3	89.172	9	-181.1...	2	-.06	1	-.429	1	-.174	9
9		5	max	0	1	750	10	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	1355.084	1	1979.466	6	942.881	9	1.927	10	2.697	4	5.884	8
12			min	-735.061	2	395.115	1	-786.0...	10	-1.83	9	-2.778	3	1.703	1
13		2	max	1355.084	1	1945.334	6	942.881	9	1.927	10	2.041	4	4.15	5
14			min	-735.061	2	381.549	1	-786.0...	10	-1.83	9	-2.059	3	1.182	2
15		3	max	1355.084	1	1911.202	6	942.881	9	1.927	10	1.407	4	2.463	5
16			min	-735.061	2	367.982	1	-786.0...	10	-1.83	9	-1.363	3	.463	2
17		4	max	1355.084	1	1877.07	6	942.881	9	1.927	10	.795	4	.807	5
18			min	-735.061	2	354.416	1	-786.0...	10	-1.83	9	-.688	3	-.243	2
19		5	max	1355.084	1	1842.939	6	942.881	9	1.927	10	1.422	9	.353	1
20			min	-735.061	2	340.849	1	-786.0...	10	-1.83	9	-.947	10	-1.125	6
21	MP1A	1	max	0	1	.32	9	-.028	1	0	10	0	1	0	1
22			min	0	1	-.435	10	-.486	6	0	9	0	1	0	1
23		2	max	51.404	3	1195.893	10	197.625	10	.09	5	.105	1	.615	10
24			min	-355.064	10	177.635	3	-54.183	9	.005	9	-.142	10	.119	3
25		3	max	60.84	7	1195.893	10	199.027	10	.09	5	.179	1	-.137	3
26			min	-348.816	10	163.618	3	-52.782	9	.005	9	-.105	2	-1.179	10
27		4	max	-85.567	9	107.513	3	142.015	2	0	9	.042	1	.034	3
28			min	-233.291	7	-107.441	4	-141.8...	1	0	10	-.042	2	-.034	4
29		5	max	0	9	.602	10	.685	5	0	9	0	1	0	4
30			min	0	10	-.355	9	-.072	2	0	10	0	5	0	3
31	MP2A	1	max	362.283	5	161.318	4	398.612	1	.016	3	.036	7	0	1
32			min	76.8	4	-161.291	3	-398.7...	2	-.016	4	.008	10	0	1
33		2	max	396.752	5	.045	1	911.228	5	.044	9	.824	1	.341	3
34			min	-124.054	1	-380.065	7	-417.4...	2	-.138	10	-.897	6	-.341	4
35		3	max	601.652	6	-.017	2	935.858	5	.044	9	1.028	5	.449	7
36			min	-93.46	1	-404.976	7	-435.1...	1	-.138	10	-.87	2	-.397	4
37		4	max	-8.33	10	18.544	3	18.38	2	0	7	.018	1	.018	3
38			min	-34.47	5	-18.581	4	-18.274	1	0	10	-.018	2	-.018	4
39		5	max	0	10	.34	10	1.173	5	0	7	0	2	0	4
40			min	0	5	-.682	7	-.309	2	0	10	0	5	0	3
41	MP3A	1	max	0	1	.323	9	.01	1	0	10	0	1	0	1
42			min	0	1	-.228	10	-.327	6	0	9	0	1	0	1
43		2	max	56.054	4	-107.659	4	104.361	9	.003	2	.178	1	-.077	4
44			min	-449.303	9	-1018.654	9	-76.861	10	-.041	5	-.17	2	-.577	9
45		3	max	62.302	4	-93.642	4	105.763	9	.003	2	.228	1	.951	9
46			min	-443.055	9	-1018.654	9	-75.459	10	-.041	5	-.213	2	.074	4
47		4	max	-60.847	10	98.775	3	133.759	2	0	9	.04	1	.032	3
48			min	-198.189	5	-98.804	4	-133.6...	1	0	10	-.04	2	-.032	4
49		5	max	0	10	.267	10	.478	5	0	9	0	1	0	4
50			min	0	9	-.413	9	-.065	2	0	10	0	5	0	3
51	M6	1	max	0	1	0	1	0	1	0	1	0	1	0	1
52			min	0	1	0	1	0	1	0	1	0	1	0	1
53		2	max	-110.833	3	-29.962	4	152.13	2	.098	10	.271	2	.118	9
54			min	-1014.725	9	-523.46	9	-147.5...	1	-.067	2	-.314	1	-.003	4
55		3	max	-256.609	1	477.253	10	1071.4...	6	.252	2	1.429	2	1.272	10
56			min	-1295.874	9	-504.575	5	-329.84	1	-.968	5	-.992	1	.212	3
57		4	max	-185.727	4	451.896	10	140.43	1	.173	10	.364	2	-.004	3
58			min	-1192.927	10	59.207	3	-213.6...	2	-.089	9	-.319	1	-.122	10
59		5	max	0	1	0	1	0	1	0	1	0	1	0	1

Envelope Member Section Forces (Continued)

	Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shea...	LC	Torque...	LC	y-y Mo...	LC	z-z Mo...	LC
60			min	0	1	0	1	0	1	0	1	0	1	0	1
61	M7	1	max	512.56	1	-40.31	2	783.98	10	.975	10	1.341	9	.198	2
62			min	-1245.827	6	-862.223	5	-939.7...	9	-.807	9	-1.032	10	-1.019	5
63		2	max	512.56	1	-50.133	2	783.98	10	.975	10	.48	9	.24	2
64			min	-1245.827	6	-889.342	5	-939.7...	9	-.807	9	-.313	10	-.332	1
65		3	max	512.56	1	-59.956	2	783.98	10	.975	10	.479	3	.645	6
66			min	-1245.827	6	-916.462	5	-939.7...	9	-.807	9	-.432	4	.099	1
67		4	max	512.56	1	-69.779	2	783.98	10	.975	10	1.124	10	1.464	5
68			min	-1245.827	6	-943.581	5	-939.7...	9	-.807	9	-1.243	9	.35	2
69		5	max	512.56	1	-79.601	2	783.98	10	.975	10	1.843	10	2.341	5
70			min	-1245.827	6	-970.701	5	-939.7...	9	-.807	9	-2.105	9	.418	2

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

	Member	Shape	Code Check	Loc[ft]	LC	Shear Ch...	Loc[ft]	Dir	...	phi*P...	phi*P...	phi*M...	phi*M.....		Eqn
1	M1	PIPE_3.0	.423	6	9	.275	6		6	30165...	65205	5.749	5.749	...	H1-1b
2	M2	HSS4x4x4	.441	0	7	.169	0	y	10	13188...	139518	16.181	16.181	...	H1-1b
3	MP1A	PIPE_2.0	.722	3.125	10	.173	3.125		10	20866...	32130	1.872	1.872	...	H1-1b
4	MP2A	PIPE_2.0	.608	4	5	.150	4		5	14916...	32130	1.872	1.872	...	H1-1b
5	MP3A	PIPE_2.0	.586	3.125	9	.120	3.125		9	20866...	32130	1.872	1.872	...	H1-1b
6	M6	PIPE_3.0	.273	6	9	.236	6		5	30165...	65205	5.749	5.749	...	H1-1b
7	M7	HSS3x3x4	.392	3.667	9	.161	0	z	10	90927...	101016	8.556	8.556	...	H1-1b

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

Memb...	Shape	Code Check	Loc[.....	She...	Loc.....	...	phi*P...	phi*T...	phi*M...	phi*M...	Cb	Cm...	Cm...	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

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CTHA530A

SBA Canton Cherrybrook Rd Monopole
10 Shagbark Ln
Canton, CT 06019

June 17, 2019

Transcom Engineering Project Number: 737001-0173

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**8.66 %**

June 17, 2019

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

Emissions Analysis for Site: **CTHA530A – SBA Canton Cherrybrook Rd Monopole**

Transcom Engineering, Inc ("Transcom") was directed to analyze the proposed upgrades to the T-MOBILE facility located at **10 Shagbark Ln, Canton, CT**, for the purpose of determining whether the emissions from the Proposed T-MOBILE Antenna Installation located on this property are within specified federal limits.

All information used in this report was analyzed as a percentage of current Maximum Permissible Exposure (% MPE) as listed in the FCC OET Bulletin 65 Edition 97-01and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter (μW/cm2). The number of $\mu W/cm^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **10 Shagbark Ln, Canton, 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)
LTE	1900 MHz (PCS)	4	40
LTE	2100 MHz (AWS)	2	60
UMTS	2100 MHz (AWS)	1	40
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

The following antennas listed in *Table 2* were used in the modeling for transmission in the 600 MHz, 700 MHz, 1900 MHz (PCS) and 2100 MHz (AWS) frequency bands. This is based on feedback from the carrier with regards to anticipated antenna selection. Maximum gain values for all antennas are listed in the Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

Sector	Antenna Number	Antenna Make / Model	Antenna Centerline (ft)
A	1	Ericsson AIR32 B66A / B2A	129
A	2	Ericsson AIR21 B4A/B2P	129
A	3	RFS APXVAARR24_43-U-NA20	129
B	1	Ericsson AIR32 B66A / B2A	129
B	2	Ericsson AIR21 B4A/B2P	129
B	3	RFS APXVAARR24_43-U-NA20	129
C	1	Ericsson AIR32 B66A / B2A	129
C	2	Ericsson AIR21 B4A/B2P	129
C	3	RFS APXVAARR24_43-U-NA20	129

Table 2: Antenna Data

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

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 AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	2.56
Antenna A2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	1	40	1,556.18	0.37
Antenna A3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.38
						Sector A Composite MPE%	**4.31**
Antenna B1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	2.56
Antenna B2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	1	40	1,556.18	0.37
Antenna B3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.38
						Sector B Composite MPE%	**4.31**
Antenna C1	Ericsson AIR32 B66A / B2A	1900 MHz (PCS) / 2100 MHz (AWS)	15.85 / 15.85	6	280	10,768.57	2.56
Antenna C2	Ericsson AIR21 B4A/B2P	2100 MHz (AWS)	15.9	1	40	1,556.18	0.37
Antenna C3	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	1.38
						Sector C Composite MPE%	**4.31**

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	**4.31 %**
Verizon Wireless	1.85 %
AT&T	1.97 %
Town of Canton 1	0.35 %
Town of Canton 2	0.17 %
Town of Canton 3	0.01 %
Site Total MPE %:	**8.66 %**

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	4.31 %
T-MOBILE Sector B Total:	4.31 %
T-MOBILE Sector C Total:	4.31 %
Site Total:	8.66 %

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) LTE	4	1,538.37	129	14.62	1900 MHz (PCS)	1000	1.46%
T-Mobile 2100 MHz (AWS) LTE	2	2,307.55	129	10.97	2100 MHz (AWS)	1000	1.10%
T-Mobile 2100 MHz (AWS) UMTS	1	1,556.18	129	3.70	2100 MHz (AWS)	1000	0.37%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	129	3.75	600 MHz	400	0.94%
T-Mobile 700 MHz LTE	2	432.54	129	2.06	700 MHz	467	0.44%
						Total:	**4.31%**

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:	4.31 %
Sector B:	4.31 %
Sector C:	4.31 %
T-MOBILE Maximum Total (per sector):	4.31 %
Site Total:	8.66 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **8.66 %** 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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EXHIBIT 11

EXHIBIT 12