



Filed by:

G. Scott Shepherd, Sr. Property Specialist - SBA Communications
134 Flanders Rd., Suite 125, Westborough, MA 01581
508.251.0720 x 3807 - GShepherd@sbsite.com

January 8, 2021

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

RE: Notice of Exempt Modification (Re-Filing)
157 Chestnut Hill Road, Stafford Springs, CT 06076
Latitude: 41.977416
Longitude: -72.383305
T-Mobile Site #: CT11530B_L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 175-foot and 177' levels of the existing 180-foot Monopole Tower at 157 Chestnut Hill Rd, Stafford Springs, CT. The 180-foot tower is owned by SBA Towers V, LLC. The property is owned by Troiano Realty Corp. T-Mobile now intends to replace three (3) existing antennas with three (3) new 600/700 MHz antennas at the 175-foot level of the tower.

The new antennas support 5G services and would be installed at the 175-foot and 177-foot levels of the tower. Also, please note that this is re-file of the CSC filing that was submitted on August 2, 2019 and later approved by the CSC on August 26, 2019. There has been no changes to the equipment during this time and there are no new proposed changes. The need for the refiling is simply due to the expiration of the original filing before any work has been conducted at the site.

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:

- (3) 1-5/8" Coax

Remove and Replace:

- (3) LNX-6515DS-VTM Antenna (Remove) – (3) APXVAARR24_43-U-NA20 Antenna 600/700 MHz (Replace) at the 175-foot level
- (3) TMAAs RFS ATMAA1412D-1A20 (Remove) – (3) TMAAs Ericsson KRY 112 489/2 (Replace) at the 177-foot level

Install New:

- (3) Ericsson Radio 4449 B71+B12 at the 175-foot level
- (3) 1-5/8" Fiber

Existing Equipment to Remain:

- (3) RFS - APXV18-206516S-C-A20 (Dual) 1900 MHz at the 177-foot level
- (6) 1-5/8" Coax
- (3) T-Arms – Commscope SF-HPM3-96

Entitlements Only:

- (3) 1-5/8" Coax
- (3) Kathrein 78211056 Bias Ts at the 177-foot level

GROUND

Install New:

- Equipment inside existing 6201 cabinet

This facility was originally approved by the Town of Stafford's Planning and Zoning Commission on September 11, 2001 and by Council under Petition 573. Approval was given for a 180' telecommunication tower within a fenced compound for ground equipment. Utilities were to be placed underground. 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 Stafford's First Selectman, Mary Mitta, and Zoning Office Manager, David Perkins, 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
Sr. Property Specialist
SBA COMMUNICATIONS CORPORATION
134 Flanders Rd., Suite 125
Westborough, MA 01581
508.251.0720 x3808 + T / 508.366.2610 + F
508.868.6000 + C
GShepherd@sbsite.com
Attachments

cc: Mary Mitta, First Selectman / with attachments
Town of Stafford, Warren Memorial Town Hall, 1 Main Street, Stafford, CT 06076
David Perkins, Zoning Office Manager / with attachments
Town of Stafford, Warren Memorial Town Hall, 1 Main Street, Stafford, CT 06076
Troiano Realty Corp. / with attachments
777 Enfield Street, Enfield, CT 06082

EXHIBIT LIST

Exhibit 1	Check Copy	x
Exhibit 2	Notification Receipts	x
Exhibit 3	Property Card	x
Exhibit 4	Property Map	x
Exhibit 5	Original Zoning Approval	Town of Stafford P&Z 9/11/01
Exhibit 6	Construction Drawings	B & T GRP 8/1/19
Exhibit 7	Structural Analysis	TES 7/5/19
Exhibit 8	Mount Analysis	TES 7/26/19
Exhibit 9	EME Report	Transcom Engineering Inc., 6/13/19

EXHIBIT 1

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

EXHIBIT 2

ORIGIN ID:BFBA (508) 614-0389
RICK WOODS
SBA COMMUNICATIONS CORPORATION
134 FLANDERS RD
SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 08JAN21
ACTWGT: 1.00 LB
CAD: 105843304/NET4280

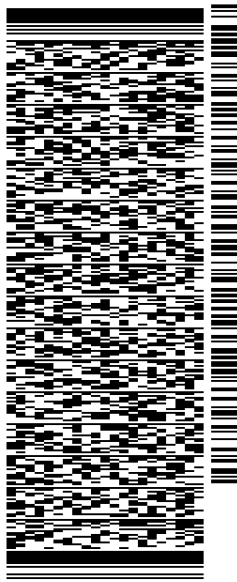
BILL SENDER

TO MELANIE A. BACHMAN EXEC. DIR
CONNECTICUT SITING COUNCIL
TEN FRANKLIN SQUARE

NEW BRITAIN CT 06051

(508) 251-0720 X.3807 REF: 105692009-6089
INV. PO. DEPT:

56B.J1/1136/B766



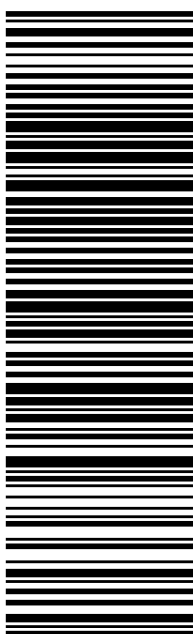
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TRK# 7725 7939 6570
0201

MON - 11 JAN 10:30A
PRIORITY OVERNIGHT

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CT:US



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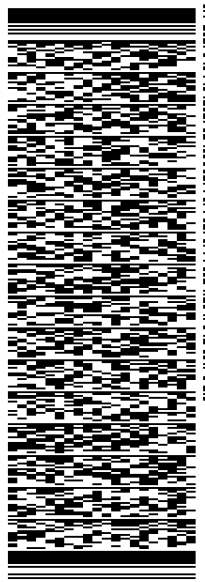
Use of this system constitutes your agreement to the service conditions in the current FedEx Service Guide, available on fedex.com. FedEx will not be responsible for any claim in excess of \$100 per package, whether the result of loss, damage, delay, non-delivery, misdelivery, or misinformation, unless 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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SUITE 125
WESTBOROUGH, MA 01581
UNITED STATES US

SHIP DATE: 08JAN21
ACTWGT: 1.00 LB
CAD: 105843304/NET4280
BILL SENDER

TO MARY MITTA
TOWN OF STAFFORD
FIRST SELECTMAN
1 MAIN ST
WEST STAFFORD CT 06076
REF: 105692009-6089
DEPT:

56B.J1/1136/B766



TRK# 7725 7942 4850
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06076
CT:US BDL

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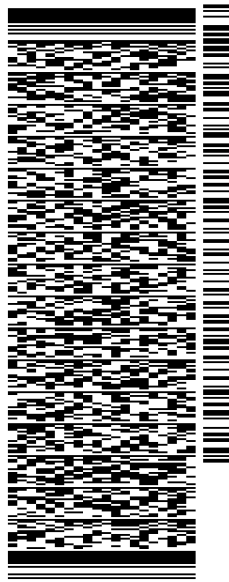
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ACTWGT: 1.00 LB
CAD: 105843304/NET4280
BILL SENDER

TO DAVID PERKINS
TOWN OF STAFFORD
ZONING OFFICE MGR.
1 MAIN ST
WEST STAFFORD CT 06076

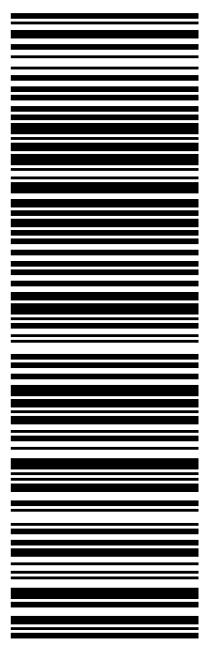
(508) 251-3720 X 3807 REF: 105692009-6089
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PO:

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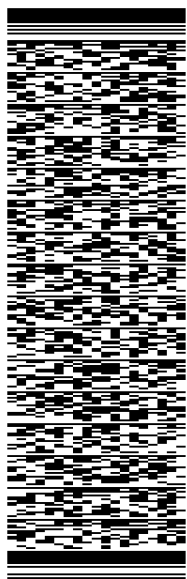
TO

TROIANO REALTY CORP.
777 ENFIELD STREET

ENFIELD CT 06082

(508) 250-0720 X 3807 REF: 1056920096089
INV# PO: DEPT:

56B.J1/1136/B766



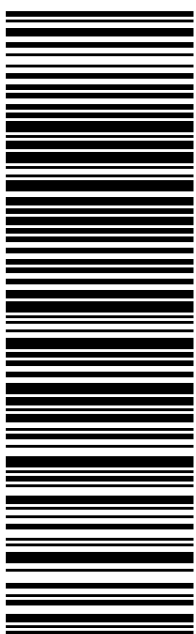
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EXHIBIT 3

Details

Property	
Address	157 CHESTNUT HILL, STAFFORD
ID	34/32

Ownership	
Owner	TROIANO REALTY CORP
Address	777 ENFIELD ST ENFIELD CT 06082

Valuation	
Total Assessment	\$331
Land Value	\$0
Building Value	\$0
Last Sale	\$0 on
Book/Page	/

Land	
Area	0.00

EXHIBIT 4



Property Information

Property ID 09013134-34/32
 Location 157 CHESTNUT HILL
 Owner TROIANO REALTY CORP



**MAP FOR REFERENCE ONLY
 NOT A LEGAL DOCUMENT**

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

EXHIBIT 5



STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square
New Britain, Connecticut 06051
Phone: (860) 827-2935
Fax: (860) 827-2950

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

August 5, 2002

Julie M. Donaldson, Esq.
Hurwitz & Sagarin LLC
147 North Broad Street
P.O. Box 112
Milford, CT 06460-0112

RE: PETITION NO. 573 - Tower Ventures, Inc. petition for a declaratory ruling that no certificate of environmental compatibility and public need is required for proposed modifications to an existing telecommunications facility located at 157 Chestnut Mountain Road (a/k/a Chestnut Hill Road, a/k/a Route 190); Stafford, Connecticut.

Dear Attorney Donaldson:

At a public meeting held on August 1, 2002, the Connecticut Siting Council (Council) considered and ruled that the existing telecommunications facility owned by Tower Ventures, Inc. located at 157 Chestnut Mountain Road, (a/k/a Chestnut Hill Road, a/k/a Route 190), Stafford, Connecticut would not require a Certificate of Environmental Compatibility and Public Need, pursuant to General Statutes § 16-50k. The Council also ruled that the proposed shared use of this existing facility by Voicestream Wireless is technically, legally, environmentally, and economically feasible and meets public safety concerns. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council and is not applicable to any other modification or construction. All work is to be implemented as specified in the petition, dated July 15, 2002.

Enclosed for your information is a copy of the staff report on this project.

Very truly yours,

Mortimer A. Gelston
Chairman

MAG/FOC

Enclosure: Staff Report dated August 1, 2002

c: Honorable Gordon Frasinelli, Jr., First Selectman, Town of Stafford
Wendell Avery, Zoning Enforcement Officer, Town of Stafford



Town of Stafford

The Stafford Planning & Zoning Commission

Warren Memorial Town Hall
1 Main Street • Stafford Springs, CT 06076

(860) 684-7444
FAX 864-9845

TOWN OF STAFFORD LEGAL NOTICE

Notice is hereby given that the Stafford Planning & Zoning Commission at a regularly scheduled meeting held on September 11, 2001, at 7:00 p.m. in the Veterans Meeting Room, Warren Memorial Town Hall, Stafford, CT rendered the following:

1. Approved, with condition, Special Use Permit Application of Tower Ventures, Inc. to construct 180 foot telecommunication tower within a 75' x 75' fenced compound for ground equipment. Location: 157 Chestnut Hill, Assessor's Map #34, Lot #32, AAA Zone.

John Mocko
Chairman

Journal Inquirer
September 14, 2001



Town of Stafford
The Stafford Planning & Zoning Commission

Warren Memorial Town Hall
1 Main Street • Stafford Springs, CT 06076

Telephone: (860) 684-1775
Fax: (860) 684-1768

AGENDA
STAFFORD PLANNING & ZONING COMMISSION

Meeting Date: September 11, 2001
7:00 p.m.

Veterans Meeting Room
Warren Memorial Town Hall
Stafford Springs, CT

COPY

PUBLIC HEARING

1. Special Use Permit Application of Tower Ventures, Inc., to construct 180 foot telecommunication tower within a 75' x 75' fenced compound for ground equipment. Location: 157 Chestnut Hill, Assessor's Map #34, Lot #32, AAA Zone.

AGENDA

1. Review of minutes of August 28, 2001 regular meeting.
2. Discussion - Special Use Permit application of Tower Ventures, for telecommunication tower. Location: 157 Chestnut Hill, Assessor's Map #34, Lot #32, AAA Zone.
3. Adjournment.

Wendell Avery
Zoning Enforcement Officer

Agenda Closed: 9/7/01

COPY

Town of Stafford
Planning & Zoning Commission
Regular Meeting
September 11, 2001
7:00 p.m. - Veterans Meeting Room

Members Present: Jack Mocko, Chairman
Roger Pelizari
Nancy Ravetto
Peter Roesi

Also Present: Wendell Avery, Zoning Enforcement Officer

Meeting Agenda:

1. Review minutes of August 28, 2001 regular meeting.
2. Discussion - Special Use Permit application for Tower Ventures, Inc. to construct 180-foot telecommunication tower. Location 157 Chestnut Hill, Assessor's Map #34, Lot #32, AAA Zone.
3. Adjournment.

A Public hearing was held prior to the regular meeting re Item #3, Tower Ventures, Inc., tape-recorded and filed in the office of the Town Clerk.

Chairman Mocko called the regular meeting to order at 8:20 p.m. following the public hearing.

1. **Review minutes of August 28, 2001 regular meeting.**
Peter Rossi made a motion to accept the minutes of the August 28, 2001 meeting as presented. Second by Nancy Ravetto. Motion for approval passed unanimously.
2. **Discussion - Special Use Permit application for Tower Ventures, Inc. to construct 180-foot telecommunication tower. Location 157 Chestnut Hill.**
Attorney Chris Smith of Pullman & Comley and David Vivian of Tower Ventures, Inc. made their presentation for the proposed cell tower to be located at 157 Chestnut Hill Road. The Board was in agreement that the Town regulations for cell towers were adhered to and took the following action on the Special Use Permit for Tower Ventures, Inc. Nancy Ravetto made a motion to approve the Special Use Permit Application of Tower Ventures Inc., to construct a 180 foot telecommunication tower within a 75' x 75' fenced compound for ground equipment with condition that utilities be placed underground. Location: 157 Chestnut Hill, Assessor's Map #34, Lot #32, AAA Zone. Second by Roger Pelizari. Motion for approval passed 3-0.
3. **Adjournment.**
There being no further business to come before the Board, Roger Pelizari made a motion for adjournment, seconded by Nancy Ravetto. Regular meeting adjourned at 8:30 p.m.

Respectfully submitted,


 Mary Jane LaMorte
 Recording Secretary

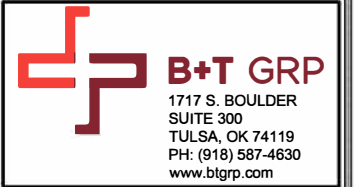
EXHIBIT 6

SITE NAME: TOWER VENTURES - STAFFORD

157 CHESTNUT HILL ROAD
STAFFORD SPRINGS, CT 06076

SITE NUMBER: CT11530B

SITE CONFIG: 67D04G



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



SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581

CT11530B

TOWER VENTURES - STAFFORD

157 CHESTNUT HILL ROAD
STAFFORD SPRINGS, CT 06076

PROJECT NO: 136019.002.01

CHECKED BY: FWP

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	6/21/19	STH	FOR REVIEW
1	7/29/19	JCO	CONSTRUCTION
2	7/31/19	JJD	CONSTRUCTION
3	8/1/19	JJD	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER: T-1 REVISION: 3

CODE COMPLIANCE

ALL WORK SHALL BE PERFORMED AND MATERIALS INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES. NOTHING IN THESE PLANS IS TO BE CONSTRUED TO PERMIT WORK NOT CONFORMING TO THESE CODES:

CODE TYPE	CODE
BUILDING/DWELLING	IBC 2015
CT STATE BUILDING CODE	2018

PROJECT NOTES

GENERAL NOTES:

THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF T-MOBILE. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.

THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC, ROUTINE MAINTENANCE AND THEREFORE, DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.

CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE T-MOBILE NORTHEAST LLC REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

SPECIAL STRUCTURAL NOTES:

TOWER OWNER SHALL PROVIDE GLOBAL STRUCTURAL STABILITY ANALYSIS OF EXISTING ANTENNA SUPPORT STRUCTURE. GENERAL CONTRACTOR SCOPE OF WORK SHALL INCLUDE ALL REQUIRED STRUCTURAL MODIFICATIONS, RE-BUNDLING OF COAXIAL CABLES OR OTHER SPECIAL MODIFICATIONS AS OUTLINED THEREIN.

ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND HAS DETERMINED THAT THE EXISTING ANTENNA MOUNT SHALL BE REPLACED OR MODIFIED TO ACCOMMODATE ANY ADDITIONAL EQUIPMENT LOAD. STRUCTURAL DESIGNS AND DETAILS AS SHOWN HEREIN FOR STRUCTURAL MODIFICATIONS OF THE EXISTING ANTENNA MOUNT ARE PRELIMINARY ONLY AND FINAL CONSTRUCTION DETAILS ARE SUBJECT TO CHANGE PENDING THE COMPLETION OF AN ANTENNA MOUNT STRUCTURAL ASSESSMENT.

B+T GROUP ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTIONS ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES.

T-MOBILE TECHNICIAN SITE SAFETY NOTES

LOCATION	SPECIAL RESTRICTIONS	LOCATION	SPECIAL RESTRICTIONS
SECTOR A:	ACCESS NOT PERMITTED	DIPLEXERS:	UNRESTRICTED
SECTOR B:	ACCESS NOT PERMITTED	RADIO CABINETS:	UNRESTRICTED
SECTOR C:	ACCESS NOT PERMITTED	PPC DISCONNECT:	UNRESTRICTED
RRH:	ACCESS NOT PERMITTED	MAIN CIRCUIT D/C:	UNRESTRICTED
TMA:	ACCESS NOT PERMITTED	NIU/T DEMARC:	UNRESTRICTED
GPS/LMU:	CAUTION: OSHA APPROVED PORTABLE 6' STEP-LADDER REQUIRED	OTHER/SPECIAL:	NONE

LOCATION MAP



NO SCALE

PROJECT INFORMATION

SCOPE OF WORK: UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION

ZONING JURISDICTION: (TOWN OF STAFFORD) BASED ON INFORMATION PROVIDED BY T-MOBILE, REGULATORY COMPLIANCE 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 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).

SITE ADDRESS: 157 CHESTNUT HILL ROAD STAFFORD SPRINGS, CT 06076

LATITUDE: 41.9773° N
LONGITUDE: 72.3830° W

JURISDICTION: NATIONAL, STATE & LOCAL CODES & ORDINANCES

CURRENT USE: TELECOMMUNICATIONS FACILITY

PROPOSED USE: TELECOMMUNICATIONS FACILITY

TOWER OWNER: SBA TOWERS V, LLC

SBA SITE ID: CT13617-A

SBA SITE NAME: TROIANO REALTY

SBA REGIONAL SITE MANAGER: STEPHEN ROTH (860) 539-4920 STEPHENROTH@SBASITE.COM

APPROVALS

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

ACCEPTANCE DOES NOT CONSTITUTE APPROVAL OF DESIGN, CALCULATIONS, ANALYSIS, TEST METHODS OF MATERIALS DEVELOPED OR SELECTED BY THE SUBCONTRACTOR AND DOES NOT RELIEVE SUBCONTRACTOR FROM FULL COMPLIANCE WITH CONTRACTUAL OBLIGATIONS.

DRAWING INDEX

SHEET #	SHEET DESCRIPTION	REV. #
T-1	TITLE SHEET	3
GN-1	GENERAL NOTES	3
C-1	COMPOUND AND ELEVATION PLAN	3
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C-3	DETAILS	3
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E-1	GROUNDING DETAILS AND NOTES	3



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GROUNDING NOTES:

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

GENERAL NOTES:

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
 CONTRACTOR: SBA COMMUNICATIONS CORP.
 SUBCONTRACTOR: GENERAL CONTRACTOR (CONSTRUCTION)
 OWNER: T-MOBILE
2. PRIOR TO THE SUBMISSION OF BIDS, THE BIDDING SUBCONTRACTOR SHALL VISIT THE CELL SITE TO FAMILIARIZE WITH THE EXISTING CONDITIONS AND TO CONFIRM THAT THE WORK CAN BE ACCOMPLISHED AS SHOWN ON THE CONSTRUCTION DRAWINGS. ANY DISCREPANCY FOUND SHALL BE BROUGHT TO THE ATTENTION OF CONTRACTOR.
3. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS AND ORDINANCES. SUBCONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF THE WORK. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES AND APPLICABLE REGULATIONS.
4. DRAWINGS PROVIDED HERE ARE NOT TO BE SCALED AND ARE INTENDED TO SHOW OUTLINE ONLY.
5. UNLESS NOTED OTHERWISE, THE WORK SHALL INCLUDE FURNISHING MATERIALS, EQUIPMENT, APPURTENANCES AND LABOR NECESSARY TO COMPLETE ALL INSTALLATIONS AS INDICATED ON THE DRAWINGS.
6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.
7. THE SUBCONTRACTOR SHALL INSTALL ALL EQUIPMENT AND MATERIAL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS, UNLESS SPECIFICALLY STATED OTHERWISE.
8. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALL AS SHOWN ON THESE DRAWINGS, THE SUBCONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE CONTRACTOR.
9. SUBCONTRACTOR SHALL DETERMINE ACTUAL ROUTING OF CONDUIT, POWER AND T1 CABLES AND GROUNDING CABLES AS SHOWN ON THE POWER, GROUNDING AND TELCO PLAN DRAWINGS. SUBCONTRACTOR SHALL UTILIZE EXISTING TRAYS AND/OR SHALL ADD NEW TRAYS AS NECESSARY, SUBCONTRACTOR SHALL CONFIRM THE ACTUAL ROUTING WITH THE CONTRACTOR.
10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT SUBCONTRACTOR'S EXPENSE TO THE SATISFACTION OF OWNER.
11. SUBCONTRACTOR SHALL LEGALLY AND PROPERLY DISPOSE OF ALL SCRAP MATERIALS SUCH AS COAXIAL CABLES AND OTHER ITEMS REMOVED FROM THE EXISTING FACILITY. ANTENNAS REMOVED SHALL BE RETURNED TO THE OWNER'S DESIGNATED LOCATION.
12. SUBCONTRACTOR SHALL LEAVE PREMISES IN CLEAN CONDITION.
13. ALL CONCRETE REPAIR WORK SHALL BE DONE IN ACCORDANCE WITH AMERICAN CONCRETE INSTITUTE (ACI) 301.

14. ANY NEW CONCRETE NEEDED FOR THE CONSTRUCTION SHALL BE AIR-ENTRAINED AND SHALL HAVE 4000 PSI STRENGTH AT 28 DAYS. ALL CONCRETE WORK SHALL BE DONE IN ACCORDANCE WITH ACI 318 CODE REQUIREMENTS.
15. ALL STRUCTURAL STEEL WORK SHALL BE DETAILED, FABRICATED AND ERECTED IN ACCORDANCE WITH AISC SPECIFICATIONS. ALL STRUCTURAL STEEL SHALL BE ASTM A36 (Fy = 36 ksi) UNLESS NOTED OTHERWISE, PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WETHER SHALL BE HOT DIPPED GALVANIZED. TOUCH-UP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.
16. CONSTRUCTION SHALL COMPLY WITH UMS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."
17. SUBCONTRACTOR SHALL VERIFY ALL EXISTING DIMENSIONS AND CONDITIONS PRIOR TO COMMENCING ANY WORK. ALL DIMENSIONS OF EXISTING CONSTRUCTION SHOWN ON THE DRAWINGS MUST BE VERIFIED. SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.
18. THE EXISTING CELL SITE IS IN FULL COMMERCIAL OPERATION. ANY CONSTRUCTION WORK BY SUBCONTRACTOR SHALL NOT DISRUPT THE EXISTING NORMAL OPERATION. ANY WORK ON EXISTING EQUIPMENT MUST BE COORDINATED WITH CONTRACTOR. ALSO, WORK SHOULD BE SCHEDULED FOR AN APPROPRIATE MAINTENANCE WINDOW, USUALLY IN LOW TRAFFIC PERIODS AFTER MIDNIGHT.
19. SINCE THE CELL SITE IS ACTIVE, AL SAFETY PRECAUTIONS MUST BE TAKEN WHEN WORKING AROUND HIGH LEVELS OF ELECTROMAGNETIC RADIATION, EQUIPMENT SHOULD BE SHUTDOWN PRIOR TO PERFORMING ANY WORK THAT COULD EXPOSE THE WORKERS TO DANGER. PERSONAL RF EXPOSURE MONITORS ARE ADVISED TO BE WORN TO ALERT IF ANY DANGEROUS EXPOSURE LEVELS.
20. APPLICABLE BUILDING CODES:
 SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
 BUILDING CODE: IBC 2015
 ELECTRICAL CODE: NEC 2017

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

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

AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC)


MANUAL OF STEEL CONSTRUCTION; ASD, FOURTEENTH EDITION

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

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

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

ABBREVIATIONS					
AGL	ABOVE GRADE LEVEL	GC	GENERAL CONTRACTOR	REF.	REFERENCE
AWG	AMERICAN WIRE GAUGE	MAX.	MAXIMUM	REQ.	REQUIRED
BCW	BARE COPPER WIRE	MGB	MASTER GROUND BAR	RF	RADIO FREQUENCY
BTS	BASE TRANSCEIVER STATION	MIN.	MINIMUM	T.B.D.	TO BE DETERMINED
(E)	EXISTING	(N)	PROPOSED	T.B.R.	TO BE REMOVED
EG	EQUIPMENT GROUND	N.T.S.	NOT TO SCALE	T.B.R.R.	TO BE REMOVED AND REPLACED
EGR	EQUIPMENT GROUND RING	RE:	REFERENCE	(TYP)	TYPICAL



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CT11530B

**TOWER
 VENTURES -
 STAFFORD**

157 CHESTNUT HILL
 ROAD
 STAFFORD SPRINGS, CT
 06076

PROJECT NO: 136019.002.01
 CHECKED BY: FWP

ISSUED FOR:

REV	DATE	DRWN	DESCRIPTION
0	6/21/19	STH	FOR REVIEW
1	7/29/19	JCO	CONSTRUCTION
2	7/31/19	JJD	CONSTRUCTION
3	8/1/19	JJD	CONSTRUCTION

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SHEET NUMBER: **GN-1** REVISION: **3**

136019_CTT11530B_Tower Ventures Stafford.dwg - Sheet: C-1 - Aug 01, 2019 - 4:53pm

SPECIAL PRE-CONSTRUCTION WORK NOTE:
 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.

EXISTING MOUNT IS SUFFICIENT PER MOUNT ANALYSIS BY IES TOWER ENGINEERING SOLUTIONS DATED 7/26/19.
 EXISTING TOWER IS SUFFICIENT PER STRUCTURAL ANALYSIS BY IES TOWER ENGINEERING SOLUTIONS DATED 7/5/19.

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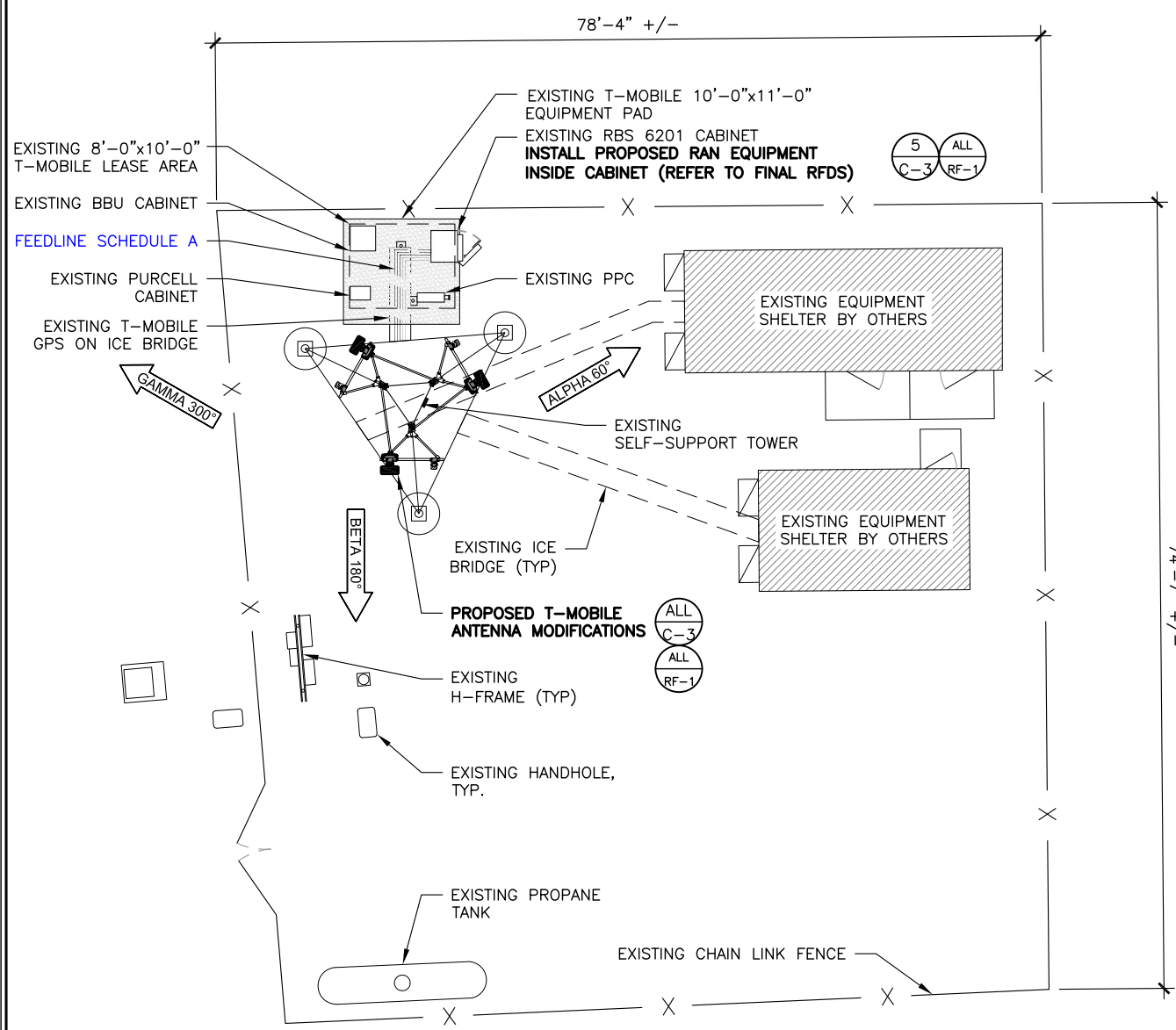
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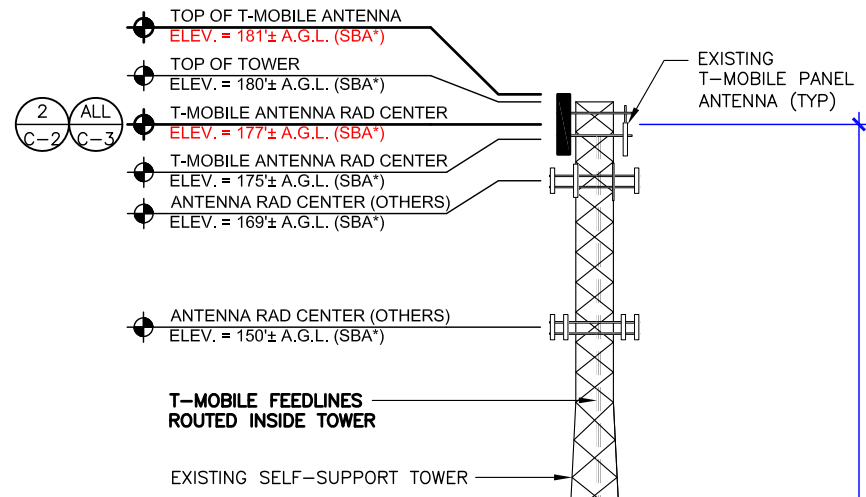
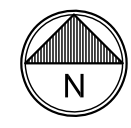
Professional Engineer Seal: STATE OF CONNECTICUT, 31627 LICENSED PROFESSIONAL ENGINEER, 8/1/19

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SHEET NUMBER: C-1	REVISION: 3
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1 OVERALL SITE PLAN
 SCALE: 11x17 SCALE: 1/16"=1'-0"
 22x34 SCALE: 1/8"=1'-0"



FEEDLINE SCHEDULE	FEEDLINE DESCRIPTION	LOCATION
A	EXISTING TO REMAIN: (9) 1 5/8" COAX	INSIDE POLE/FACE OF TOWER
B	EXISTING TO BE REMOVED: (3) 1 5/8" COAX	INSIDE POLE/FACE OF TOWER
C	PROPOSED: (3) 6x12 HCS FIBER	INSIDE POLE/FACE OF TOWER

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

2 ELEVATION DETAIL
 SCALE: N.T.S.

FEEDLINE SCHEDULE A, B & C

CT11530B

**TOWER
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157 CHESTNUT HILL
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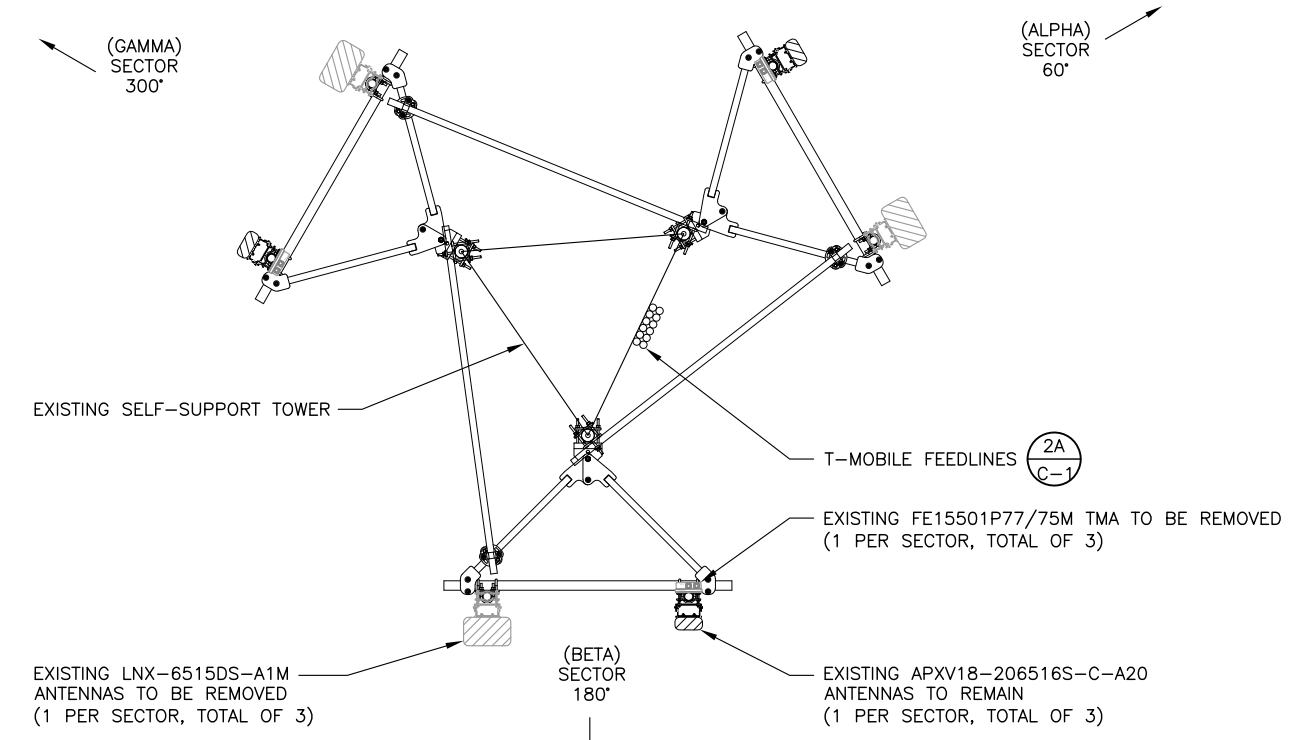
C-2 **3**

NOTE:
 AT TIME OF CONSTRUCTION, CONTRACTOR TO VERIFY
 AZIMUTHS OF EXISTING ANTENNAS. IF DIFFERENT
 FROM RFDS, PLEASE NOTIFY THE RF ENGINEER AND
 CONSTRUCTION MANAGER WITH ACTUAL AZIMUTH TO
 ENSURE T-MOBILE'S DATABASE IS ACCURATE AND
 UP-TO-DATE.

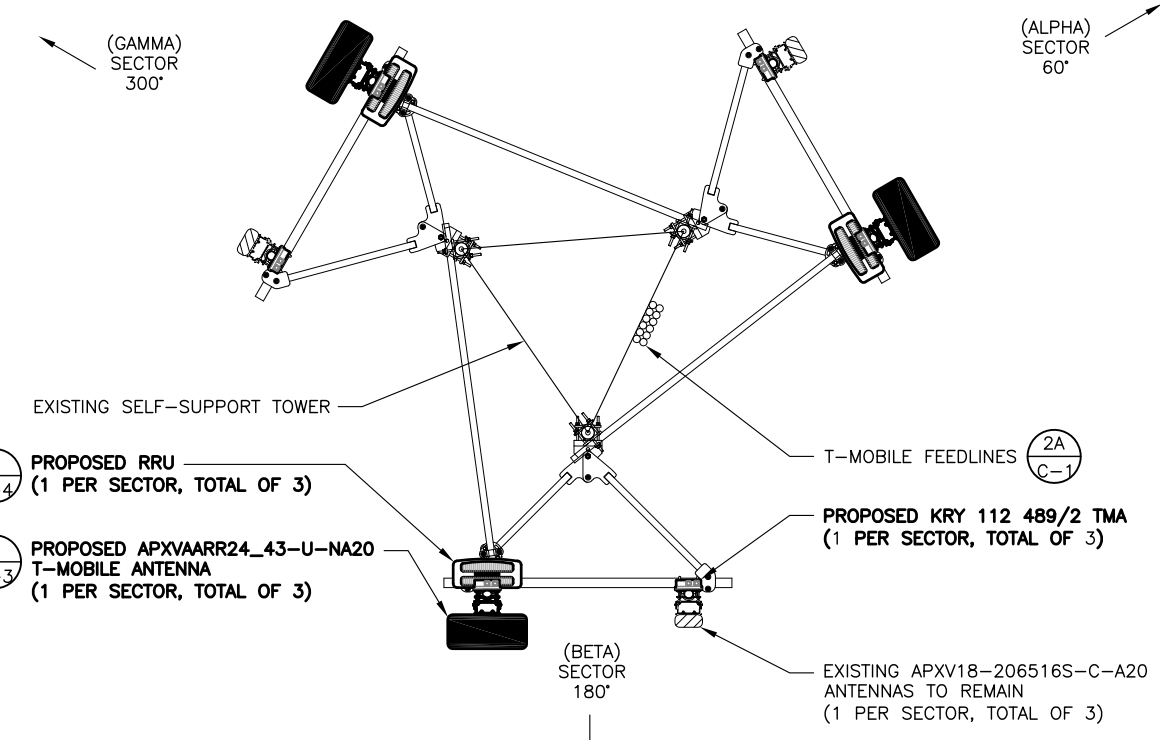
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EXISTING MOUNT IS SUFFICIENT PER MOUNT ANALYSIS BY
 IES TOWER ENGINEERING SOLUTIONS DATED 7/26/19.

EXISTING TOWER IS SUFFICIENT PER STRUCTURAL ANALYSIS
 BY IES TOWER ENGINEERING SOLUTIONS DATED 7/5/19.



1 EXISTING ANTENNA PLAN
 SCALE: 11x17 SCALE: 1/2"=1'-0" 22x34 SCALE: 1"=1'-0"



2 PROPOSED ANTENNA PLAN
 SCALE: 11x17 SCALE: 1/2"=1'-0" 22x34 SCALE: 1"=1'-0"

1A
C-3
PROPOSED ANTENNA TO PIPE CLAMP
(INCLUDED WITH ANTENNA)

2
C-3
PROPOSED APXVAARR24_43-U-NA20 ANTENNA

WORKING POINT

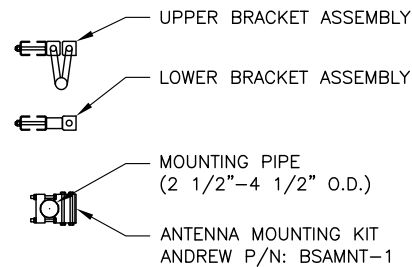
3
C-3
PROPOSED RRU

EXISTING MOUNTING PIPE

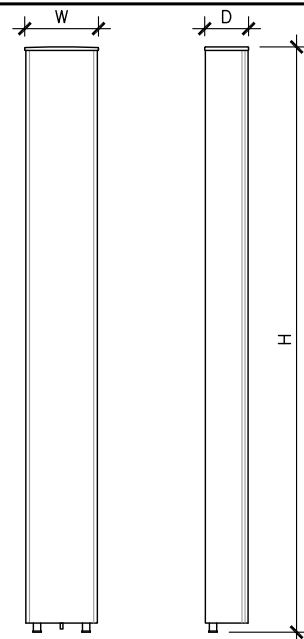
EXISTING PLATFORM MOUNTING RAIL

WORKING POINT

ANTENNA INSTALLATION SPECIAL WORK NOTE:
ANTENNA INSTALLATION WORKING POINT IS THE STRUCTURAL FACE FRAME VERTICAL CENTERLINE OF THE EXISTING ANTENNA SUPPORT ASSEMBLY. UNLESS NOTED OTHERWISE VERTICALLY CENTER ALL PIPE MASTS AND ANTENNAS ON THIS WORKING POINT.



1A
SCALE: N.T.S.
L7/L6 ANTENNA MOUNTING BRACKET

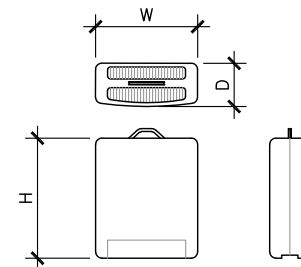


L7/L6 ANTENNA SPECS

MANUFACTURER	RFS
MODEL #	APXVAARR24_43-U-NA20
WIDTH	24"
DEPTH	8.7"
HEIGHT	95.9"
WEIGHT	128 LBS

2
SCALE: N.T.S.
L7/L6 ANTENNA DETAIL

SPECIAL PRE-CONSTRUCTION WORK NOTE:
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RRU SPECIFICATIONS

MANUFACTURER	ERICSSON
MODEL #	4449 B71+B12
WIDTH	13.18"
DEPTH	9.25"
HEIGHT	15"
WEIGHT	74 LBS

3
SCALE: N.T.S.
REMOTE RADIO UNIT (RRU)

1
SCALE: N.T.S.
PROPOSED L7/L6 ANTENNA & RRU MOUNTING DETAIL

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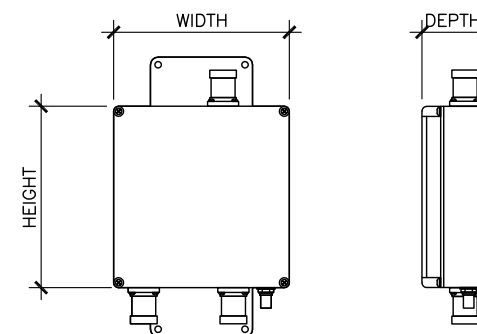
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SHEET NUMBER: **C-3** REVISION: **3**

TMA/DIPLEXER DIMENSION (INCHES)

MODEL	HEIGHT	WIDTH	DEPTH	WEIGHT
KRY 112 489/2	11.02"	6.10"	3.93"	15.4 LBS



5
SCALE: N.T.S.
TMA SPECIFICATIONS

FINAL ANTENNA SCHEDULE

SECTOR	TECH	ANTENNA MODEL	AZIMUTH	RAD CENTER	M-TILT	E-TILT	RADIOS	CABLE TYPE	CABLE LENGTH
ALPHA	L19/G19	APXV18-206516S-C-A20	60°	177'	0°	2'	-	(2) 1 5/8" COAX	190'
	L7/L6	APXVAARR24_43-U-NA20	60°	177'	0°	2'	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	190'
BETA	L19/G19	APXV18-206516S-C-A20	180°	177'	0°	2'	-	(2) 1 5/8" COAX	190'
	L7/L6	APXVAARR24_43-U-NA20	180°	177'	0°	2'	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	190'
GAMMA	L19/G19	APXV18-206516S-C-A20	300°	177'	0°	2'	-	(2) 1 5/8" COAX	190'
	L7/L6	APXVAARR24_43-U-NA20	300°	177'	0°	2'	(1) 4449 B71+B12	(1) 6x12 HCS FIBER	190'

4
SCALE: N.T.S.
FINAL ANTENNA SCHEDULE

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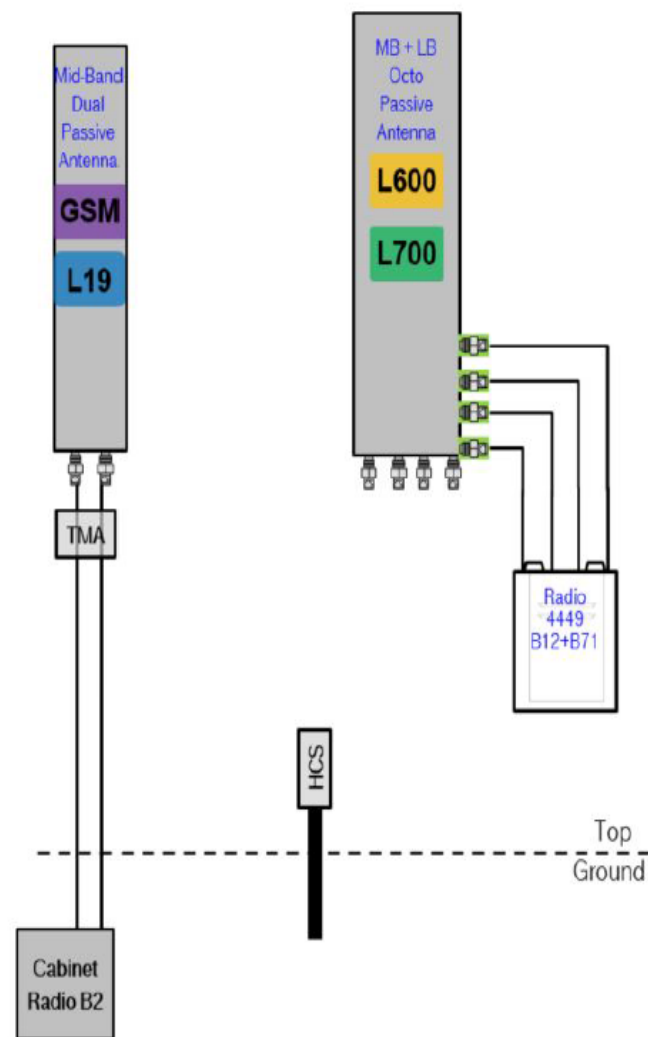
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SHEET NUMBER: **RF-1** REVISION: **3**



RF DESIGN GENERAL NOTE:

- RF DESIGN BASED ON RFDS DATED 4/29/19. GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY THAT THE LATEST RFDS AND RAN WIRING DIAGRAM IS USED FOR EQUIPMENT INSTALLATION.
- PRIOR TO INSTALLATION OF TOWER TOP EQUIPMENT, GENERAL CONTRACTOR/TOWER CREW SHALL VERIFY AZIMUTHS OF EXISTING ANTENNAS. DISCREPANCIES AND ACTUAL AZIMUTHS SHALL BE REPORTED IMMEDIATELY TO RF ENGINEER AND T-MOBILE CONSTRUCTION MANAGER.

RFDS FOOTNOTES:

- INFORMATION IN BOLD RED TEXT IS PROVIDED BY A&E AND HIGHLIGHTS IMPORTANT DISCREPANCIES BETWEEN RFDS AND ACTUAL FIELD MEASUREMENTS OR SBA-PROVIDED RECORD INFORMATION.
- SBA-PROVIDED ANTENNA RAD AGL BASED ON COLOCATION APPLICATION AND STRUCTURAL ANALYSIS AND SHALL SUPERCEDE ANY CONFLICTING RFDS ANTENNA RAD AGL.
- HYBRID TRUNK FEEDLINE LENGTHS AS PROVIDED BY A&E BASED ON SCALED DIMENSIONS FROM RBS TO ANTENNA/RRU CONNECTIONS PLUS 20' FOR (2) 10' COILS EACH AT TOP AND BOTTOM TERMINATIONS. T-MOBILE CONSTRUCTION MANAGER SHALL CONFIRM ALL EQUIPMENT SCHEDULES, PART NUMBERS AND FEEDLINE/JUMPER LENGTHS BEFORE PREPARING A BILL OF MATERIALS.

5/8/2019 CT11530B_L600_2.1_draft_2019-05-08
 RAN Template: 67D04G A&L Template: 67D04G_1DP+1OP Power System Template: Custom
 CT11530B_L600_2.1_draft

Section 5 - RAN Equipment

Existing RAN Equipment	
Template: 704G	
Enclosure	1
Enclosure Type	RBS 6201 ODE
Baseband	DUG20 (G1900) DUS31
Radio	RUS01 B2 (x6) RUS01 B12 (x6)

Proposed RAN Equipment	
Template: 67D04G	
Enclosure	1
Enclosure Type	RBS 6201 ODE
Baseband	DUG20 (G1900) BB 6630 (L1900) BB 6630 (N600 (DARK)) (L700) (L600)
Hybrid Cable System	Ericsson 6x12 HCS "Select Length & AWG" (x3)
Radio	RUS01 B2 (x3) (L1900) (G1900) RUS01 B2 (x3) (L1900)

RAN Scope of Work:
 *** Existing RBS6201 ODE ***
 Replace (1) DUS31 with (1) BB6630 for LTE.
 Add (1) BB6630 for future 5G N600.
 Remove all (6) RUS01 B12 from cabinet.
 Add (3) 6x12 HCS
 Existing: (12) Coaxial Lines
 Remove (3) Coaxial Lines

5/8/2019 CT11530B_L600_2.1_draft_2019-05-08
 RAN Template: 67D04G A&L Template: 67D04G_1DP+1OP Power System Template: Custom
 CT11530B_L600_2.1_draft

Sector 1 (Proposed) view from behind

Coverage Type	1		2	
Antenna	1		2	
Antenna Model	RFS - APXV18-206516S-C-A20 (Dual)		RFS - APXVAARR24_43-U-NA20 (Octo)	
Azimuth	90		90	
M. Tilt	0		0	
Height	177		175	
Ports	P1	P2	P3	P4
Active Tech.	L1900 G1900	L700 L600	L700 L600	
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2	2		
Cables	1-5/8" Coax - 190 ft. (x2)			
TMA's	Generic Twin Style 1A - PCS (AtAntenna)			
Diplexers / Combiners				
Radio		Radio 4449 B71+B12 (At Antenna)	Radio 4449 B71+B12 (At Antenna)	

Unconnected Equipment:
 Cable: 1-5/8" Coax - 190 ft. Cable: 1-5/8" Coax - 190 ft.

Scope of Work:
 Replace LB Dual in Position 2 with (1) LB/MB Octo.
 Add (1) Radio 4449 B71+B12 for L600 and L700 to Position 2 at antenna.

Sector 2 (Proposed) view from behind

Coverage Type	1		2	
Antenna	1		2	
Antenna Model	RFS - APXV18-206516S-C-A20 (Dual)		RFS - APXVAARR24_43-U-NA20 (Octo)	
Azimuth	180		180	
M. Tilt	0		0	
Height	177		175	
Ports	P1	P2	P3	P4
Active Tech.	L1900 G1900	L700 L600	L700 L600	
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2	2		
Cables	1-5/8" Coax - 190 ft. (x2)			
TMA's	Generic Twin Style 1A - PCS (AtAntenna)			
Diplexers / Combiners				
Radio		Radio 4449 B71+B12 (At Antenna)	Radio 4449 B71+B12 (At Antenna)	

Unconnected Equipment:
 Cable: 1-5/8" Coax - 190 ft. Cable: 1-5/8" Coax - 190 ft.

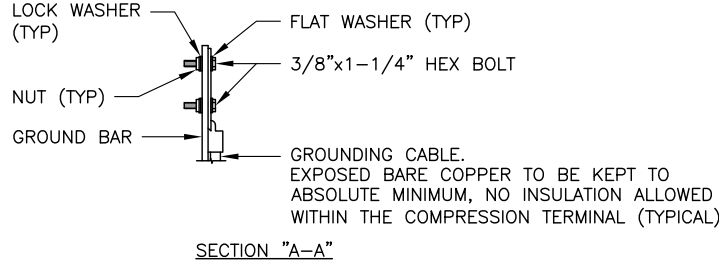
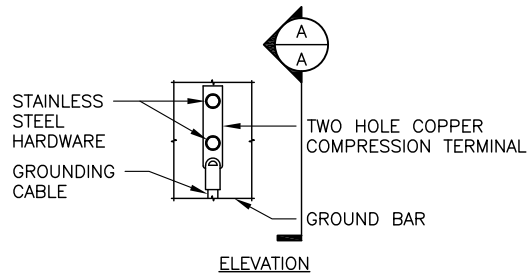
Scope of Work:
 Replace LB Dual in Position 2 with (1) LB/MB Octo.
 Add (1) Radio 4449 B71+B12 for L600 and L700 to Position 2 at antenna.

Sector 3 (Proposed) view from behind

Coverage Type	1		2	
Antenna	1		2	
Antenna Model	RFS - APXV18-206516S-C-A20 (Dual)		RFS - APXVAARR24_43-U-NA20 (Octo)	
Azimuth	300		300	
M. Tilt	0		0	
Height	177		175	
Ports	P1	P2	P3	P4
Active Tech.	L1900 G1900	L700 L600	L700 L600	
Dark Tech.				
Restricted Tech.				
Decomm. Tech.				
E. Tilt	2	2		
Cables	1-5/8" Coax - 190 ft. (x2)			
TMA's	Generic Twin Style 1A - PCS (AtAntenna)			
Diplexers / Combiners				
Radio		Radio 4449 B71+B12 (At Antenna)	Radio 4449 B71+B12 (At Antenna)	

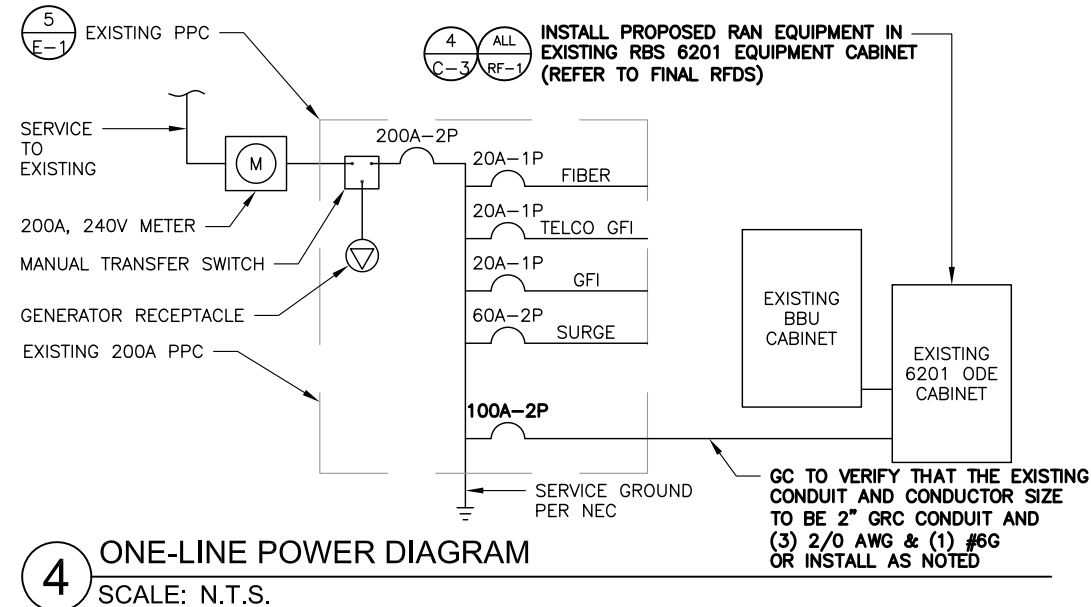
Unconnected Equipment:
 Cable: 1-5/8" Coax - 190 ft. Cable: 1-5/8" Coax - 190 ft.

Scope of Work:
 Replace LB Dual in Position 2 with (1) LB/MB Octo.
 Add (1) Radio 4449 B71+B12 for L600 and L700 to Position 2 at antenna.



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

1 TYPICAL GROUND BAR CONNECTION DETAIL
SCALE: N.T.S.

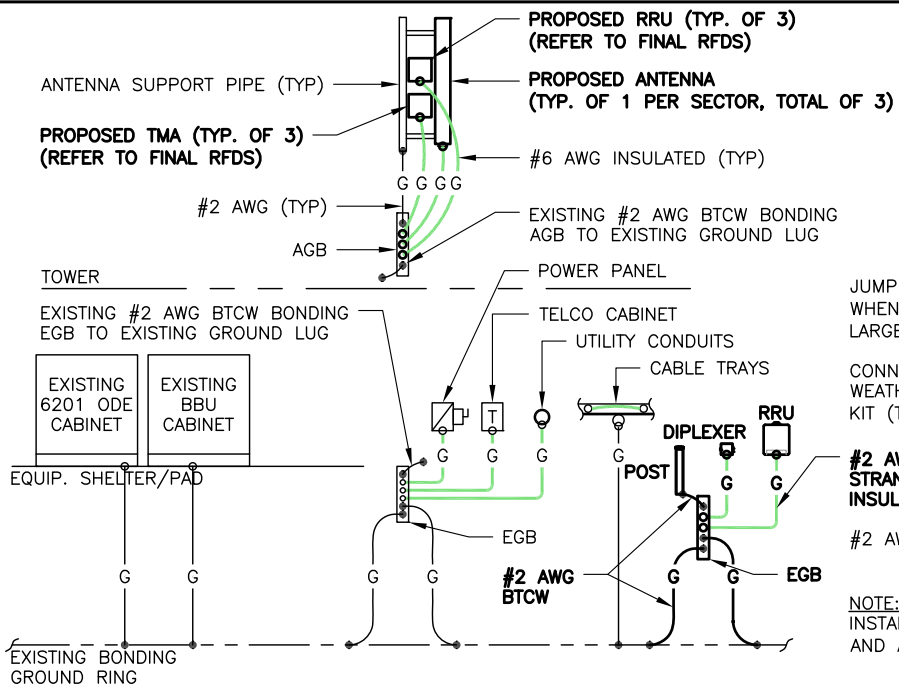


4 ONE-LINE POWER DIAGRAM
SCALE: N.T.S.

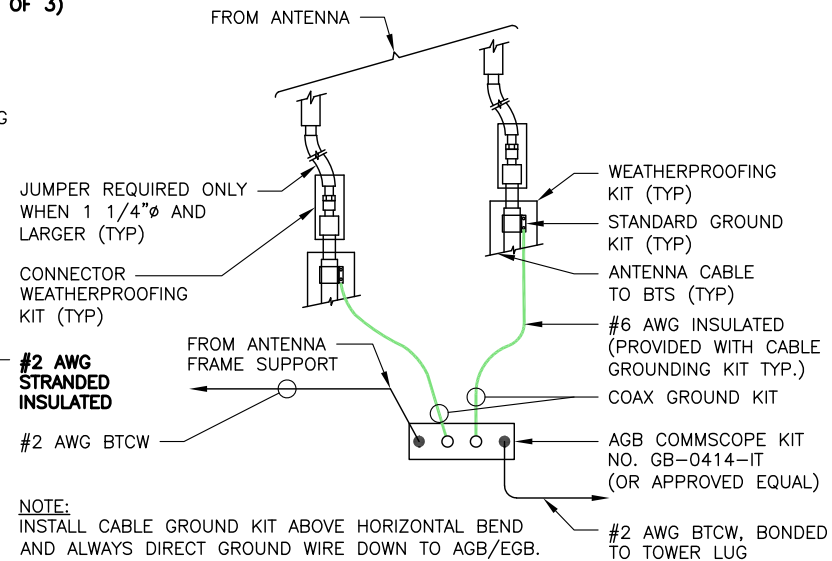
ELECTRICAL LEGEND	
A	AMPERE
BTW	BARE TINNED (SOLID) COPPER WIRE
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
KWH	KILOWATT - HOUR
PPC	POWER PROTECTION CABINET
V	VOLT
	5/8"x8" COPPER CLAD STAINLESS STEEL GROUND ROD
	EXOTHERMIC CONNECTION (CAD WELD)
	MECHANICAL CONNECTION
	ANTENNA GROUND BAR/EQUIPMENT GROUND BAR
	MASTER GROUND BAR
	GROUND COPPER WIRE, SIZED AS NOTED
	EXPOSED WIRING, SIZE AS NOTED
	INSULATED WIRING, SIZE AS NOTED
	OMN-DIRECTIONAL ELECTRONIC MARKER SYSTEM (EMS) BALL

ELECTRICAL & GROUNDING NOTES

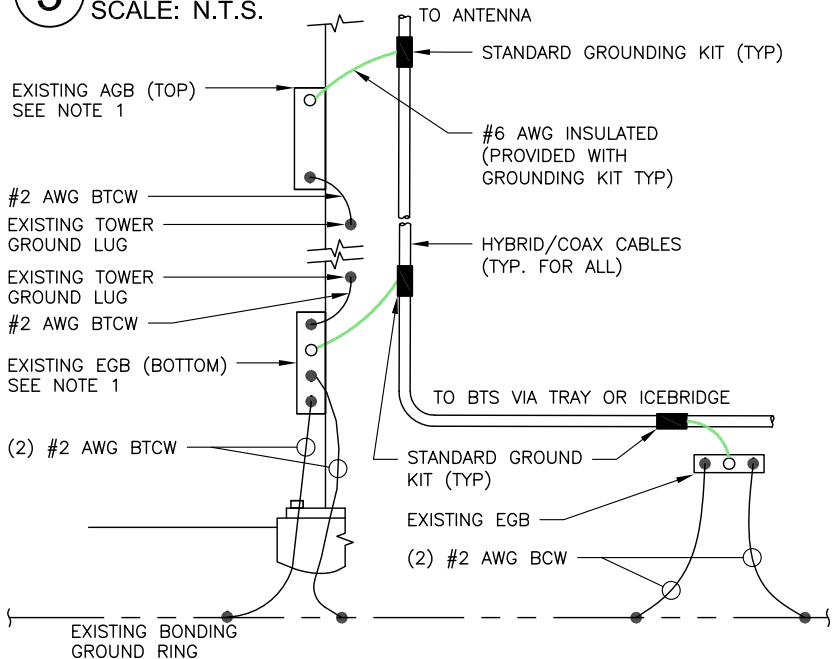
1. ALL ELECTRICAL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE NATIONAL ELECTRICAL CODE (NEC) AS WELL AS APPLICABLE STATE AND LOCAL CODES.
2. ALL ELECTRICAL ITEMS SHALL BE U.L. APPROVED OR LISTED AND PROCURED PER SPECIFICATION REQUIREMENTS.
3. THE ELECTRICAL WORK INCLUDES ALL LABOR AND MATERIAL DESCRIBED BY DRAWINGS AND SPECIFICATIONS INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. RIGID STEEL CONDUITS SHALL BE GROUNDED AT BOTH ENDS.
7. ELECTRICAL WIRING SHALL BE COPPER WITH TYPE XHHW, THWN, OR THIN INSULATION.
8. RUN ELECTRICAL CONDUIT OR CABLE BETWEEN ELECTRICAL ROOM AND PROPOSED CELL SITE POWER PEDESTAL AS INDICATED ON THIS DRAWING. PROVIDE FULL LENGTH PULL ROPE. COORDINATE INSTALLATION WITH UTILITY COMPANY.
9. RUN TELCO CONDUIT OR CABLE BETWEEN TELEPHONE UTILITY DEMARCATION POINT AND PROPOSED CELL SITE TELCO CABINET AND BTS CABINET AS INDICATED ON DRAWING A-1. PROVIDE FULL LENGTH PULL ROPE IN INSTALLED TELCO CONDUIT. PROVIDE GREENLEE CONDUIT MEASURING TAPE AT EACH END.
10. ALL EQUIPMENT LOCATED OUTSIDE SHALL HAVE NEMA 3R ENCLOSURE.
11. GROUNDING SHALL COMPLY WITH NEC ART. 250.
12. GROUND COAXIAL CABLE SHIELDS MINIMUM AT BOTH ENDS USING MANUFACTURERS COAX CABLE GROUNDING KITS SUPPLIED BY PROJECT OWNER.



2 TYPICAL GROUNDING RISER DIAGRAM
SCALE: N.T.S.



3 TOWER TOP CABLE GROUNDING DETAIL
SCALE: N.T.S.



5 TOWER BOTTOM CABLE GROUNDING DETAIL
SCALE: N.T.S.

13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE GROUND CONNECTORS. APPLY OXIDE INHIBITING COMPOUND TO ALL LOCATIONS.
18. APPLY OXIDE INHIBITING COMPOUND TO ALL COMPRESSION TYPE GROUND CONNECTIONS.
19. BOND ANTENNA MOUNTING BRACKETS, COAXIAL CABLE GROUND KITS, AND ALNA TO EGB PLACED NEAR THE ANTENNA LOCATION.
20. BOND ANTENNA EGB'S AND MGB TO WATER MAIN.
21. TEST COMPLETED GROUND SYSTEM AND RECORD RESULTS FOR PROJECT CLOSE-OUT DOCUMENTATION.
22. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
23. VERIFY PROPOSED SERVICE UPGRADE WITH LOCAL UTILITY COMPANY PRIOR TO CONSTRUCTION.

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SBA
SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581

CT11530B
TOWER VENTURES - STAFFORD
157 CHESTNUT HILL ROAD
STAFFORD SPRINGS, CT 06076

PROJECT NO: 136019.002.01
CHECKED BY: FWP

ISSUED FOR:			
REV	DATE	DRWN	DESCRIPTION
0	6/21/19	STH	FOR REVIEW
1	7/29/19	JCO	CONSTRUCTION
2	7/31/19	JJD	CONSTRUCTION
3	8/1/19	JJD	CONSTRUCTION

B&T ENGINEERING, INC.
PEC.0001564
Expires 2/10/20



IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS THEY ARE ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

SHEET NUMBER:	REVISION:
E-1	3

136019_CT11530B_Tower Ventures_Stafford.dwg - Sheet: E-1 - User: ghoyas - Aug 01, 2019 - 4:53pm

EXHIBIT 7



Tower Engineering Solutions

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

Structural Analysis Report

Existing 180 ft Rohn Self Supporting Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT13617-A

Customer Site Name: Troiano Realty

Carrier Name: T-Mobile (App#: 116898, v1)

Carrier Site ID / Name: CT11530B / Troiano Realty

Site Location: 157 Chestnut Hill Road

Stafford Springs, Connecticut

Tolland County

Latitude: 41.977416

Longitude: -72.383305



Analysis Result:

Max Structural Usage: 83.5% [Pass] 07/05/2019

Max Foundation Usage: 58.0% [Pass]

Additional Usage Caused by New Mount/Mount Modification: N/A

Report Prepared by: Matthew Baker

Introduction

The purpose of this report is to summarize the analysis results on the 180 ft Rohn Self Supporting Tower 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	Rohn Eng. File # 49944AE, Dwg. # C011522, dated 12/17/2001
Foundation Drawing	Rohn Eng. File # 49944AE, Dwg. # A012939, dated 12/17/2001
Geotechnical Report	Jaworski Geotech Project # 01659G, dated 10/19/2001
Modification Drawings	N/A

Analysis Criteria

The rigorous analysis was performed in accordance with the requirements and stipulations of the ANSI/TIA/EIA 222-G. In accordance with this standard, the structure was analyzed using **TESTowers**, 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 $V_{ult} = 125.0$ mph (3-Sec. Gust)/ Nominal Design Wind Speed $V_{asd} = 97.0$ 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:	$S_S = 0.173$, $S_1 = 0.064$

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
-	177.0	3	RFS - APXV18-206516S-C-A20 - Panel	(3) T-Arms (Commscope SF-HPM3-96)	(12) 1 5/8"	T-Mobile
-	175.0	3	Commscope - LNX-6515DS-VTM - Panel			
-		3	Allen Telecom - FE15501P77/75M - TMA			
-		3	RFS - ATMAA1412D-1A20 - TMA			
-		3	Kathrein - 782 11056 - Bias T			
6	169.52	9	Powerwave - P65-17-XLH - Panel	(3) T-Frames	(12) 1 5/8" (1) 3/8" RET (1) 3" Flex Conduit (2) DC Cables	AT&T
7		3	KMW - AM-X-CD-16-6500T - Panel			
8		12	ADC - ClearGain - TMA			
9		6	Ericsson - RRUS11 - RRU			
10		1	Raycap - DC-48-60-18-8F - SP			
11	150.0	6	Commscope - SBNHH-1D65B - Panel	(3) Sector Frames (Site Pro VFA12-HD)	(13) 1 5/8" (2) 1 5/8" Fiber	Verizon
12		4	Antel - LPA-80080-4CF-EDIN-2 - Panel			
13		2	Antel - LPA-80063-4CF-EDIN-5 - Panel			
14		3	Alcatel Lucent - RRH2x60-700U - RRU			
15		3	Alcatel Lucent - RRH2x60-PCS - RRU			
16		3	Alcatel Lucent - RRH2x60-AWS - RRU			
17		6	RFS - FD9R6004/2C-3L - Diplexer			
18		1	Alcatel Lucent - KS24019-L112A - GPS			
19		1	RFS - DB-T1-6Z-8AB-OZ - SP			

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

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	177.0	3	RFS - APXV18-206516S-C-A20 - Panel	(3) T-Arms (Commscope SF-HPM3-96)	(9) 1 5/8" (3) 1 5/8" Fiber	T-Mobile
2		3	Ericsson - KRY 112 489/2 - TMA			
3		3	Ericsson - Radio 4449 B71+B12 - RRU			
4		3	Kathrein - 782 11056 - Bias T			
5	175.0	3	RFS - APXVAARR24_43-U-NA20 - Panel			

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:

Tower Component	Legs	Diagonals	Horizontals
Max. Usage:	83.5%	82.3%	6.3%
Pass/Fail	Pass	Pass	Pass

Foundations

	Compression (Kips)	Uplift (Kips)	Shear (Kips)
Analysis Reactions	279.4	244.8	26.1

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

Operational Condition (Rigidity):

Operational characteristics of the tower are found to be within the limits prescribed by ANSI/TIA/EIA 222-G for the installed antennas. The maximum twist/sway at the elevation of the proposed equipment is 0.3875 degrees under the operational wind speed as specified in the Analysis Criteria.

Conclusions

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

Standard Conditions

1. This analysis was performed based on the information supplied to **(TES) Tower Engineering Solutions, LLC**. Verification of the information provided was not included in the Scope of Work for **TES**. The accuracy of the analysis is dependent on the accuracy of the information provided.
2. The structural analysis was performance based upon the evidence available at the time of this report. All information provided by the client is considered to be accurate.
3. The analyses will be performed based on the codes as specified by the client or based on the best knowledge of the engineering staff of **TES**. In the absence of information to the contrary, all work will be performed in accordance with the latest relevant revision of ANSI/TIA-222. If wind speed and/or ice loads are different from the minimum values recommended by the EIA/TIA-222 standard or other codes, **TES** should be notified in writing and the applicable minimum values provided by the client.
4. The configuration of the existing mounts, antennas, coax and other appurtenances were supplied by the customer for the current structural analysis. **TES** has not visited the tower site to verify the adequacy of the information provided. If there is any discrepancy found in the report regarding the existing conditions, **TES** should be notified immediately to evaluate the effect of the discrepancy on the analysis results.
5. The client will assume responsibility for rework associated with the differences in initially provided information, including tower and foundation information, existing and/or proposed equipment and transmission lines.
6. If a feasibility analysis was performed, final acceptance of changed conditions shall be based upon a rigorous structural analysis.

Structure: CT13617-A-SBA

Site Name: Troiano Realty

Code: EIA/TIA-222-G

7/5/2019

Type: Self Support

Base Shape: Triangle

Basic WS: 97.00

Height: 180.00 (ft)

Base Width: 18.99

Basic Ice WS: 50.00

Base Elev: 0.00 (ft)

Top Width: 4.64

Operational WS: 60.00

Page: 1



Section Properties

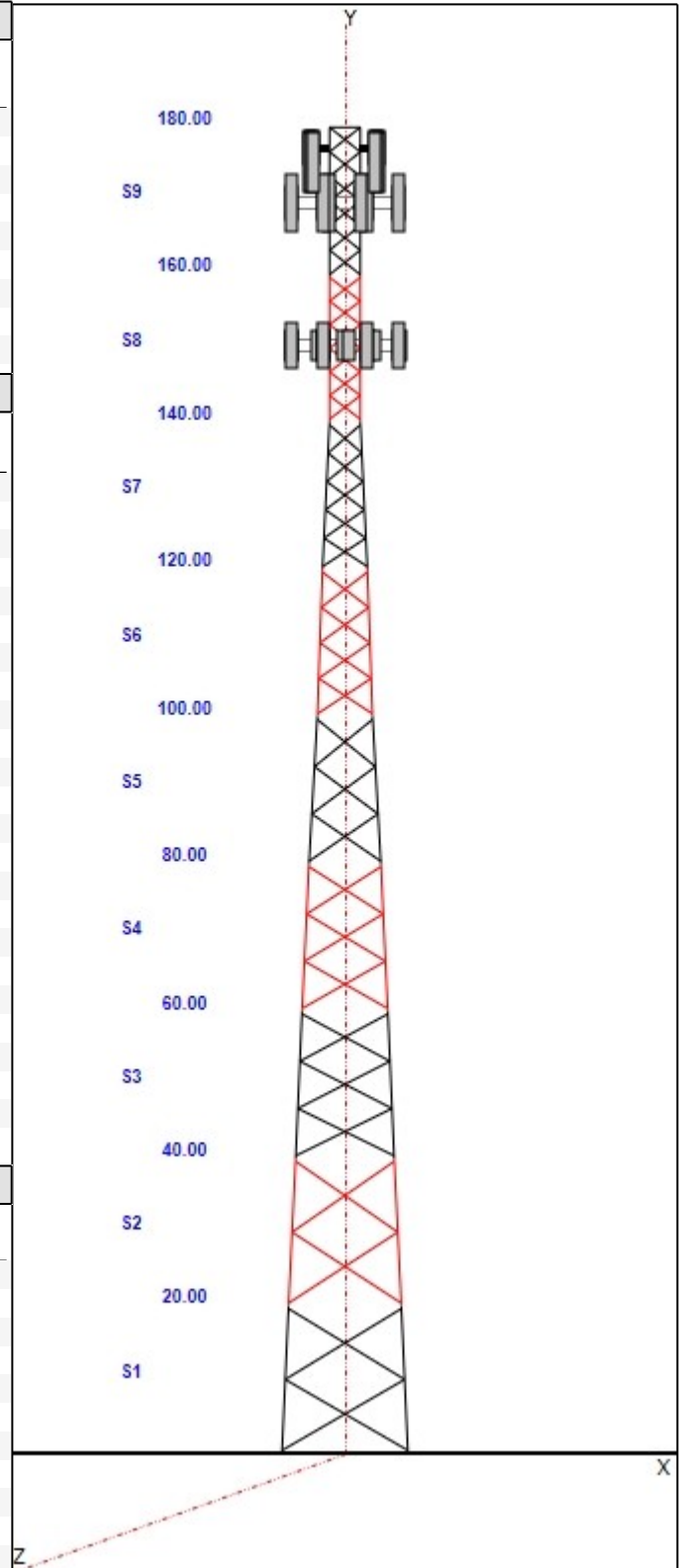
Sect	Leg Members	Diagonal Members	Horizontal Members
1	PX 8" DIA PIPE	SAE 3.5X3.5X0.25	
2	PSP ROHN 8 EHS	SAE 3X3X0.25	
3	PX 6" DIA PIPE	SAE 2.5X2.5X0.25	
4	PSP ROHN 6 EHS	SAE 2.5X2.5X0.1875	
5	PX 5" DIA PIPE	SAE 2.5X2.5X0.1875	
6	PX 4" DIA PIPE	SAE 2X2X0.1875	
7	PX 4" DIA PIPE	SAE 2X2X0.1875	
8	PST 3" DIA PIPE	SAE 2X2X0.25	
9	PST 2-1/2" DIA PIPE	SAE 1.75X1.75X0.1875	SAE 1.75X1.75X0.125

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description
180.00	180.00	1	Lightning Rod
180.00	180.00	1	Beacon
177.00	177.00	1	MC-K12M-12-96
177.00	177.00	3	APXV18-206516S-C-A20
177.00	177.00	3	KRY 112 89/4
177.00	177.00	3	4449
177.00	177.00	3	782 10254
177.00	175.00	3	APXVAARR24_43-U-NA20
169.52	169.52	3	T-Arm (Flat)
169.52	169.52	9	P65-17-XLH-RR
169.52	169.52	3	AM-X-CD-16-65-00T-RET (54")
169.52	169.52	12	ClearGain DD1900 (12.1 lb)
169.52	169.52	6	RRUS-11
169.52	169.52	1	DC6-48-60-18-8F
150.00	150.00	1	(3) VFA12-HD
150.00	150.00	6	SBNHH-1D65B
150.00	150.00	4	LPA-80080-4CF-EDIN-0
150.00	150.00	2	LPA-80063-4CF-EDIN-X
150.00	150.00	3	RRH2x60-850
150.00	150.00	3	RRH2X60-PCS
150.00	150.00	3	RRH2X60-AWS
150.00	150.00	6	FD9R6004/2C-3L 3.1#
150.00	150.00	1	KS-24019 L112D
150.00	150.00	1	DB-T1-6Z-8AB-0Z

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Qty	Description
0.00	177.00	9	1 5/8" Coax
0.00	177.00	3	1 5/8" Fiber
0.00	175.00	1	W/G Ladder
0.00	169.52	12	1 5/8" Coax
0.00	169.52	1	3" Flex Conduit
0.00	169.52	1	3/8" RET
0.00	169.52	2	DC Cables
0.00	169.52	1	W/G Ladder
0.00	150.00	9	1 5/8" Coax
0.00	150.00	4	1 5/8" Coax
0.00	150.00	2	1 5/8" Fiber
0.00	150.00	1	W/G Ladder



Structure: CT13617-A-SBA

Site Name: Troiano Realty

Code: EIA/TIA-222-G

7/5/2019

Type: Self Support

Base Shape: Triangle

Basic WS: 97.00

Height: 180.00 (ft)

Base Width: 18.99

Basic Ice WS: 50.00

Base Elev: 0.00 (ft)

Top Width: 4.64

Operational WS: 60.00

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Base Reactions

Leg	Overturning
Max Uplift: -244.82 (kips)	Moment: 4357.91 (ft-kips)
Max Down: 279.42 (kips)	Total Down: 43.29 (kips)
Max Shear: 26.13 (kips)	Total Shear: 41.54 (kips)

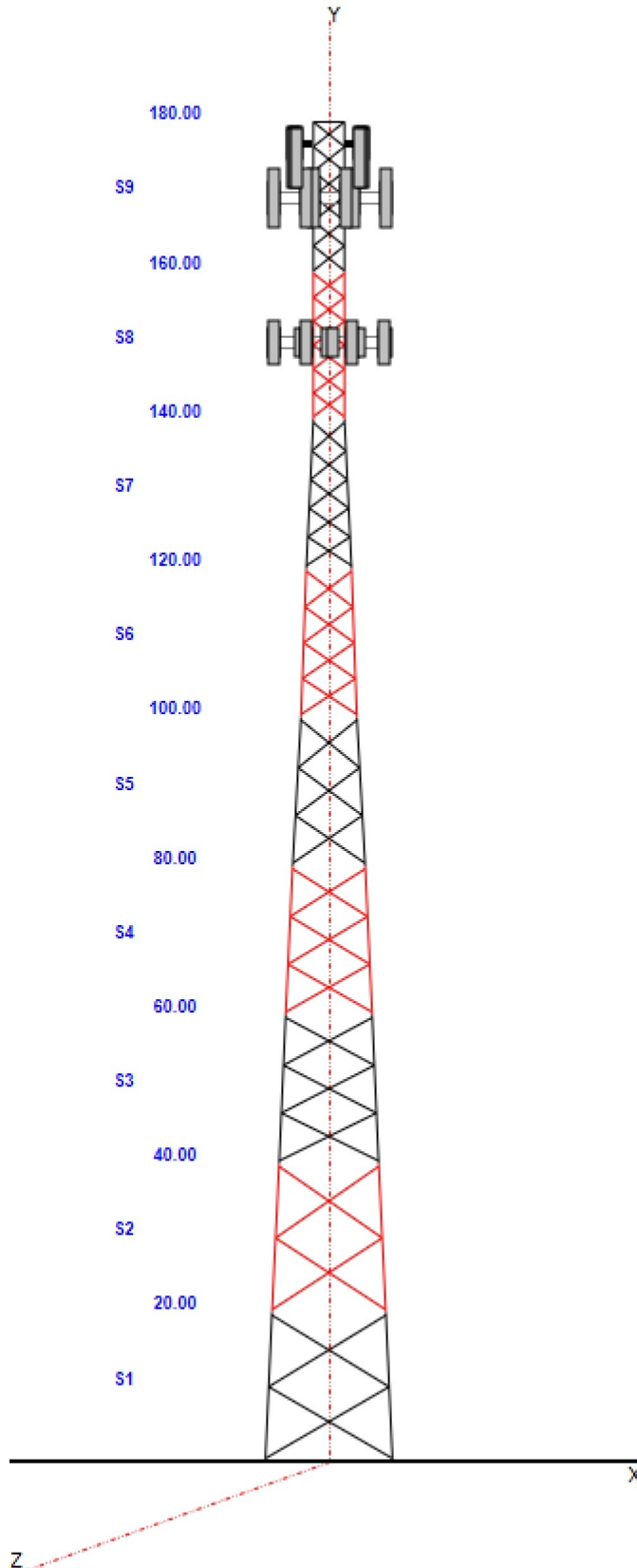
Structure: CT13617-A-SBA

Site Name: Troiano Realty
Type: Self Support
Height: 180.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: Triangle
Base Width: 18.99
Top Width: 4.64

Code: EIA/TIA-222-G
Basic WS: 97.00
Basic Ice WS: 50.00
Operational WS: 60.00

7/5/2019
Page: 3

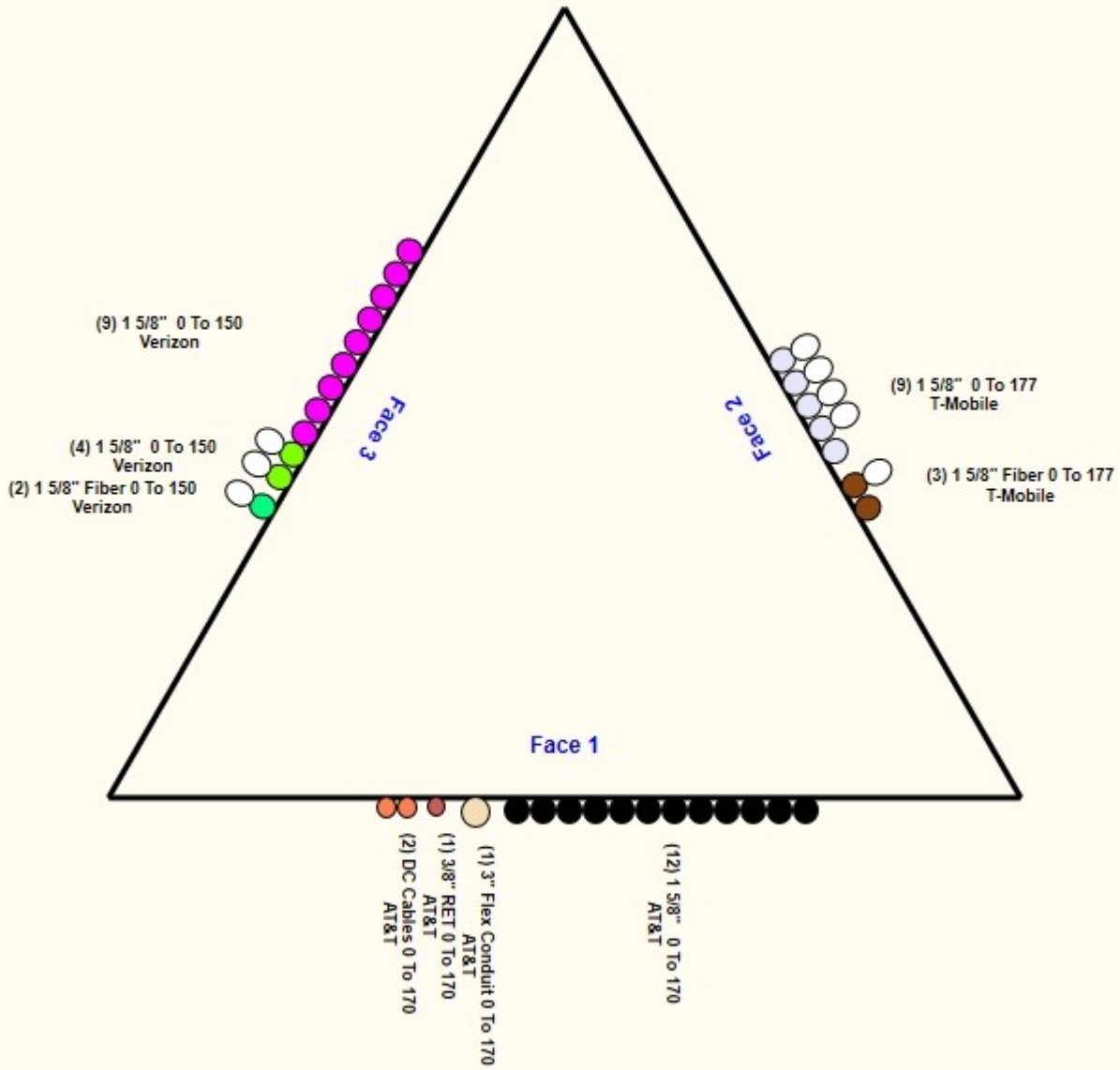


Structure: CT13617-A-SBA - Coax Line Placement

Type: Self Support
Site Name: Troiano Realty
Height: 180.00 (ft)

7/5/2019

Page: 4



Loading Summary

Structure: CT13617-A-SBA	Code: EIA/TIA-222-G	7/5/2019
Site Name: Troiano Realty	Exposure: B	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Discrete Appurtenances Properties

Attach Elev (ft)	Description	Qty	No Ice		Ice		Len (in)	Width (in)	Depth (in)	Ka	Orientation Factor	Vert Ecc (ft)
			Weight (lb)	CaAa (sf)	Weight (lb)	CaAa (sf)						
180.00	Lightning Rod	1	5.00	0.500	33.28	2.856	72.000	1.000	1.000	1.00	1.00	0.000
180.00	Beacon	1	36.00	2.720	215.83	4.002	28.000	17.500	17.500	1.00	1.00	0.000
177.00	MC-K12M-12-96	1	550.00	15.550	1275.73	41.931	0.000	0.000	0.000	0.75	0.75	0.000
177.00	APXV18-206516S-C-A20	3	18.70	3.610	113.31	6.118	53.100	6.900	3.200	0.80	0.78	0.000
177.00	KRY 112 89/4	3	15.40	0.650	39.19	1.476	11.000	6.100	3.900	0.80	0.50	0.000
177.00	4449	3	70.00	1.650	201.95	2.428	15.000	13.200	9.300	0.80	0.67	0.000
177.00	782 10254	3	2.90	0.130	8.29	0.524	4.300	3.000	1.700	0.80	0.50	0.000
177.00	APXVAARR24_43-U-NA20	3	128.00	20.240	762.93	22.834	95.900	24.000	7.800	0.80	0.70	-2.000
169.52	T-Arm (Flat)	3	400.00	10.000	777.00	21.781	0.000	0.000	0.000	0.75	0.75	0.000
169.52	P65-17-XLH-RR	9	59.00	11.440	351.44	15.807	96.000	12.000	6.000	0.80	0.80	0.000
169.52	AM-X-CD-16-65-00T-RET (54")	3	33.00	6.050	228.48	8.884	54.000	12.600	7.900	0.80	0.84	0.000
169.52	ClearGain DD1900 (12.1 lb)	12	12.10	1.280	45.97	2.375	11.700	11.300	2.800	0.80	0.50	0.000
169.52	RRUS-11	6	51.00	2.520	148.58	3.375	17.000	17.800	7.200	0.80	0.67	0.000
169.52	DC6-48-60-18-8F	1	31.80	0.920	115.27	1.511	24.000	11.000	11.000	0.80	1.00	0.000
150.00	(3) VFA12-HD	1	2322.0	50.700	5347.78	135.64	0.000	0.000	0.000	0.75	1.00	0.000
150.00	SBNHH-1D65B	6	40.60	8.080	317.83	9.847	72.000	11.900	7.100	0.80	0.83	0.000
150.00	LPA-80080-4CF-EDIN-0	4	12.00	2.610	166.16	3.808	47.200	5.500	13.200	0.80	1.53	0.000
150.00	LPA-80063-4CF-EDIN-X	2	20.00	6.150	263.92	8.674	47.400	15.200	13.100	0.80	0.94	0.000
150.00	RRH2x60-850	3	48.00	1.730	116.04	2.458	18.500	11.200	8.900	0.80	0.67	0.000
150.00	RRH2X60-PCS	3	55.00	2.200	146.94	3.224	22.000	12.000	9.400	0.80	0.67	0.000
150.00	RRH2X60-AWS	3	55.00	3.500	161.69	4.552	37.000	11.000	6.000	0.80	0.67	0.000
150.00	FD9R6004/2C-3L 3.1#	6	3.10	0.360	13.80	0.951	5.800	6.500	1.500	0.80	0.50	0.000
150.00	KS-24019 L112D	1	0.50	0.120	9.37	0.394	6.000	3.600	3.600	0.80	0.50	0.000
150.00	DB-T1-6Z-8AB-OZ	1	18.90	4.800	180.34	7.034	24.000	24.000	10.000	0.80	0.50	0.000
Totals:		82	6,774.60		22,633.41					Number of Appurtenances :		24

Loading Summary

Structure: CT13617-A-SBA	Code: EIA/TIA-222-G	7/5/2019
Site Name: Troiano Realty	Exposure: B	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Linear Appurtenances Properties

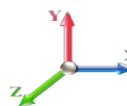
Elev. From (ft)	Elev. To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	177.00	1 5/8" Coax	9	1.98	1.04	50.00	2	Block		N	0.50	0.63	
0.00	177.00	1 5/8" Fiber	3	2.00	1.10	50.00	2	Block		N	0.50	0.96	
0.00	175.00	W/G Ladder	1	1.00	6.00	100.00	2	Individual NR		N	0.50	1.00	
0.00	169.52	1 5/8" Coax	12	1.98	1.04	100.00	1	Individual IR		N	0.50	1.00	
0.00	169.52	3" Flex Conduit	1	3.02	1.78	100.00	1	Individual NR		N	0.50	1.00	
0.00	169.52	3/8" RET	1	0.38	0.06	100.00	1	Individual NR		N	0.50	1.00	
0.00	169.52	DC Cables	2	0.75	0.40	100.00	1	Individual IR		N	0.50	1.00	
0.00	169.52	W/G Ladder	1	0.50	6.00	100.00	1	Individual NR		N	0.50	1.00	
0.00	150.00	1 5/8" Coax	9	1.98	1.04	100.00	3	Individual IR		N	0.50	0.43	
0.00	150.00	1 5/8" Coax	4	1.98	1.04	50.00	3	Block		N	0.50	0.96	
0.00	150.00	1 5/8" Fiber	2	2.00	1.10	50.00	3	Block		N	0.50	1.00	
0.00	150.00	W/G Ladder	1	0.50	6.00	100.00	3	Individual NR		N	0.50	1.00	

Section Forces

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

7/5/2019

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Load Case: 1.2D + 1.6W Normal Wind

1.2D + 1.6W 97 mph Wind at Normal To Face

Wind Load Factor: 1.60	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	Ice Importance Factor: 1.00
Ice Dead Load Factor: 0.00	

Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)					
1 1	10.0	14.33	22.969	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	119.29	0.00	6,329.8	0.0	1955.48	1699.75	3,655.23
1 2	30.0	14.34	17.891	28.80	0.00	0.14	2.81	1.00	1.00	0.00	30.59	119.29	0.00	5,192.6	0.0	1675.20	1701.19	3,376.39
1 3	50.0	16.60	18.433	22.12	0.00	0.14	2.81	1.00	1.00	0.00	29.25	119.29	0.00	4,908.4	0.0	1853.59	1968.51	3,822.10
1 4	70.0	18.27	16.186	22.12	0.00	0.15	2.76	1.00	1.00	0.00	26.86	119.29	0.00	4,036.0	0.0	1839.85	2167.15	4,006.99
1 5	90.0	19.63	13.845	18.59	0.00	0.16	2.73	1.00	1.00	0.00	23.41	119.29	0.00	3,758.6	0.0	1706.46	2328.48	4,034.93
1 6	110.0	20.79	11.319	18.56	0.00	0.19	2.64	1.00	1.00	0.00	20.91	119.29	0.00	3,620.1	0.0	1561.50	2465.88	4,027.38
1 7	130.0	21.81	10.857	15.03	0.00	0.21	2.55	1.00	1.00	0.00	19.20	119.29	0.00	3,179.0	0.0	1454.31	2586.43	4,040.74
1 8	150.0	22.72	10.707	11.67	0.00	0.23	2.51	1.00	1.00	0.00	17.47	98.64	0.00	2,556.4	0.0	1354.54	2203.02	3,557.56
1 9	170.0	23.55	10.221	9.58	0.00	0.20	2.59	1.00	1.00	0.00	15.73	47.80	0.00	1,580.3	0.0	1303.11	1074.24	2,377.35
														35,161.2	0.0			32,898.67

Load Case: 1.2D + 1.6W 60° Wind

1.2D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	Ice Importance Factor: 1.00
Ice Dead Load Factor: 0.00	

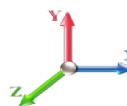
Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)					
1 1	10.0	14.33	22.969	28.80	0.00	0.14	2.81	0.80	1.00	0.00	31.05	119.29	0.00	6,329.8	0.0	1703.45	1699.75	3,403.20
1 2	30.0	14.34	17.891	28.80	0.00	0.14	2.81	0.80	1.00	0.00	27.01	119.29	0.00	5,192.6	0.0	1479.23	1701.19	3,180.42
1 3	50.0	16.60	18.433	22.12	0.00	0.14	2.81	0.80	1.00	0.00	25.57	119.29	0.00	4,908.4	0.0	1620.00	1968.51	3,588.51
1 4	70.0	18.27	16.186	22.12	0.00	0.15	2.76	0.80	1.00	0.00	23.62	119.29	0.00	4,036.0	0.0	1618.11	2167.15	3,785.25
1 5	90.0	19.63	13.845	18.59	0.00	0.16	2.73	0.80	1.00	0.00	20.64	119.29	0.00	3,758.6	0.0	1504.63	2328.48	3,833.10
1 6	110.0	20.79	11.319	18.56	0.00	0.19	2.64	0.80	1.00	0.00	18.64	119.29	0.00	3,620.1	0.0	1392.41	2465.88	3,858.30
1 7	130.0	21.81	10.857	15.03	0.00	0.21	2.55	0.80	1.00	0.00	17.03	119.29	0.00	3,179.0	0.0	1289.87	2586.43	3,876.30
1 8	150.0	22.72	10.707	11.67	0.00	0.23	2.51	0.80	1.00	0.00	15.33	98.64	0.00	2,556.4	0.0	1188.50	2203.02	3,391.52
1 9	170.0	23.55	10.221	9.58	0.00	0.20	2.59	0.80	1.00	0.00	13.69	47.80	0.00	1,580.3	0.0	1133.78	1074.24	2,208.02
														35,161.2	0.0			31,124.62

Section Forces

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

7/5/2019

 Page: 8



Load Case: 1.2D + 1.6W 90° Wind	1.2D + 1.6W 97 mph Wind at 90° From Face
Wind Load Factor: 1.60	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1 1	10.0	14.33	22.969	28.80	0.00	0.14	2.81	0.85	1.00	0.00	32.20	119.29	0.00	6,329.8	0.0	1766.46	1699.75	3,466.21
1 2	30.0	14.34	17.891	28.80	0.00	0.14	2.81	0.85	1.00	0.00	27.90	119.29	0.00	5,192.6	0.0	1528.22	1701.19	3,229.41
1 3	50.0	16.60	18.433	22.12	0.00	0.14	2.81	0.85	1.00	0.00	26.49	119.29	0.00	4,908.4	0.0	1678.40	1968.51	3,646.91
1 4	70.0	18.27	16.186	22.12	0.00	0.15	2.76	0.85	1.00	0.00	24.43	119.29	0.00	4,036.0	0.0	1673.54	2167.15	3,840.69
1 5	90.0	19.63	13.845	18.59	0.00	0.16	2.73	0.85	1.00	0.00	21.34	119.29	0.00	3,758.6	0.0	1555.08	2328.48	3,883.56
1 6	110.0	20.79	11.319	18.56	0.00	0.19	2.64	0.85	1.00	0.00	19.21	119.29	0.00	3,620.1	0.0	1434.69	2465.88	3,900.57
1 7	130.0	21.81	10.857	15.03	0.00	0.21	2.55	0.85	1.00	0.00	17.58	119.29	0.00	3,179.0	0.0	1330.98	2586.43	3,917.41
1 8	150.0	22.72	10.707	11.67	0.00	0.23	2.51	0.85	1.00	0.00	15.86	98.64	0.00	2,556.4	0.0	1230.01	2203.02	3,433.03
1 9	170.0	23.55	10.221	9.58	0.00	0.20	2.59	0.85	1.00	0.00	14.20	47.80	0.00	1,580.3	0.0	1176.11	1074.24	2,250.35
35,161.2														0.0	31,568.13			

Load Case: 0.9D + 1.6W Normal Wind	0.9D + 1.6W 97 mph Wind at Normal To Face
Wind Load Factor: 1.60	Wind Importance Factor: 1.00
Dead Load Factor: 0.90	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

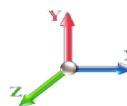
Sect Seq	Wind Height (ft)	qz (psf)	Total		Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)								Linear Area (sqft)	Linear Area (sqft)					
1 1	10.0	14.33	22.969	28.80	0.00	0.14	2.81	1.00	1.00	0.00	35.64	119.29	0.00	4,747.3	0.0	1955.48	1699.75	3,655.23
1 2	30.0	14.34	17.891	28.80	0.00	0.14	2.81	1.00	1.00	0.00	30.59	119.29	0.00	3,894.5	0.0	1675.20	1701.19	3,376.39
1 3	50.0	16.60	18.433	22.12	0.00	0.14	2.81	1.00	1.00	0.00	29.25	119.29	0.00	3,681.3	0.0	1853.59	1968.51	3,822.10
1 4	70.0	18.27	16.186	22.12	0.00	0.15	2.76	1.00	1.00	0.00	26.86	119.29	0.00	3,027.0	0.0	1839.85	2167.15	4,006.99
1 5	90.0	19.63	13.845	18.59	0.00	0.16	2.73	1.00	1.00	0.00	23.41	119.29	0.00	2,818.9	0.0	1706.46	2328.48	4,034.93
1 6	110.0	20.79	11.319	18.56	0.00	0.19	2.64	1.00	1.00	0.00	20.91	119.29	0.00	2,715.1	0.0	1561.50	2465.88	4,027.38
1 7	130.0	21.81	10.857	15.03	0.00	0.21	2.55	1.00	1.00	0.00	19.20	119.29	0.00	2,384.2	0.0	1454.31	2586.43	4,040.74
1 8	150.0	22.72	10.707	11.67	0.00	0.23	2.51	1.00	1.00	0.00	17.47	98.64	0.00	1,917.3	0.0	1354.54	2203.02	3,557.56
1 9	170.0	23.55	10.221	9.58	0.00	0.20	2.59	1.00	1.00	0.00	15.73	47.80	0.00	1,185.3	0.0	1303.11	1074.24	2,377.35
26,370.9														0.0	32,898.67			

Section Forces

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

7/5/2019

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Load Case: 0.9D + 1.6W 60° Wind

0.9D + 1.6W 97 mph Wind at 60° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1 1	10.0	14.33	22.969	28.80	0.00	0.14	2.81	0.80	1.00	0.00	31.05	119.29	0.00	4,747.3	0.0	1703.45	1699.75	3,403.20
1 2	30.0	14.34	17.891	28.80	0.00	0.14	2.81	0.80	1.00	0.00	27.01	119.29	0.00	3,894.5	0.0	1479.23	1701.19	3,180.42
1 3	50.0	16.60	18.433	22.12	0.00	0.14	2.81	0.80	1.00	0.00	25.57	119.29	0.00	3,681.3	0.0	1620.00	1968.51	3,588.51
1 4	70.0	18.27	16.186	22.12	0.00	0.15	2.76	0.80	1.00	0.00	23.62	119.29	0.00	3,027.0	0.0	1618.11	2167.15	3,785.25
1 5	90.0	19.63	13.845	18.59	0.00	0.16	2.73	0.80	1.00	0.00	20.64	119.29	0.00	2,818.9	0.0	1504.63	2328.48	3,833.10
1 6	110.0	20.79	11.319	18.56	0.00	0.19	2.64	0.80	1.00	0.00	18.64	119.29	0.00	2,715.1	0.0	1392.41	2465.88	3,858.30
1 7	130.0	21.81	10.857	15.03	0.00	0.21	2.55	0.80	1.00	0.00	17.03	119.29	0.00	2,384.2	0.0	1289.87	2586.43	3,876.30
1 8	150.0	22.72	10.707	11.67	0.00	0.23	2.51	0.80	1.00	0.00	15.33	98.64	0.00	1,917.3	0.0	1188.50	2203.02	3,391.52
1 9	170.0	23.55	10.221	9.58	0.00	0.20	2.59	0.80	1.00	0.00	13.69	47.80	0.00	1,185.3	0.0	1133.78	1074.24	2,208.02
														26,370.9	0.0			31,124.62

Load Case: 0.9D + 1.6W 90° Wind

0.9D + 1.6W 97 mph Wind at 90° From Face

Wind Load Factor: 1.60
Dead Load Factor: 0.90
Ice Dead Load Factor: 0.00

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

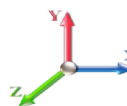
Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear Area (sqft)	Linear Area (sqft)	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
1 1	10.0	14.33	22.969	28.80	0.00	0.14	2.81	0.85	1.00	0.00	32.20	119.29	0.00	4,747.3	0.0	1766.46	1699.75	3,466.21
1 2	30.0	14.34	17.891	28.80	0.00	0.14	2.81	0.85	1.00	0.00	27.90	119.29	0.00	3,894.5	0.0	1528.22	1701.19	3,229.41
1 3	50.0	16.60	18.433	22.12	0.00	0.14	2.81	0.85	1.00	0.00	26.49	119.29	0.00	3,681.3	0.0	1678.40	1968.51	3,646.91
1 4	70.0	18.27	16.186	22.12	0.00	0.15	2.76	0.85	1.00	0.00	24.43	119.29	0.00	3,027.0	0.0	1673.54	2167.15	3,840.69
1 5	90.0	19.63	13.845	18.59	0.00	0.16	2.73	0.85	1.00	0.00	21.34	119.29	0.00	2,818.9	0.0	1555.08	2328.48	3,883.56
1 6	110.0	20.79	11.319	18.56	0.00	0.19	2.64	0.85	1.00	0.00	19.21	119.29	0.00	2,715.1	0.0	1434.69	2465.88	3,900.57
1 7	130.0	21.81	10.857	15.03	0.00	0.21	2.55	0.85	1.00	0.00	17.58	119.29	0.00	2,384.2	0.0	1330.98	2586.43	3,917.41
1 8	150.0	22.72	10.707	11.67	0.00	0.23	2.51	0.85	1.00	0.00	15.86	98.64	0.00	1,917.3	0.0	1230.01	2203.02	3,433.03
1 9	170.0	23.55	10.221	9.58	0.00	0.20	2.59	0.85	1.00	0.00	14.20	47.80	0.00	1,185.3	0.0	1176.11	1074.24	2,250.35
														26,370.9	0.0			31,568.13

Section Forces

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

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Load Case: 1.2D + 1.0Di + 1.0Wi Normal Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1 1	10.0	3.81	22.969	64.80	36.00	0.23	2.50	1.00	1.00	1.77	60.59	195.12	11.83	14,830.	8500.5	489.50	523.57	1,013.07
1 2	30.0	3.81	17.891	66.61	37.81	0.25	2.44	1.00	1.00	1.98	56.84	201.99	13.21	14,248.	9056.1	449.42	546.79	996.21
1 3	50.0	4.41	18.433	67.93	45.82	0.29	2.32	1.00	1.00	2.08	58.96	205.45	13.90	14,479.	9570.8	512.11	642.91	1,155.02
1 4	70.0	4.86	16.186	65.64	43.51	0.32	2.24	1.00	1.00	2.16	55.92	207.83	14.37	13,632.	9596.3	517.92	715.50	1,233.42
1 5	90.0	5.22	13.845	58.89	40.29	0.35	2.17	1.00	1.00	2.21	50.11	209.66	14.74	13,055.	9296.5	482.85	774.20	1,257.04
1 6	110.0	5.52	11.319	60.55	41.98	0.43	2.01	1.00	1.00	2.26	50.62	211.15	15.04	12,868.	9248.7	477.79	782.27	1,260.07
1 7	130.0	5.79	10.857	56.69	41.66	0.52	1.87	1.00	1.00	2.29	50.40	212.42	15.29	12,358.	9179.9	464.73	690.36	1,155.08
1 8	150.0	6.04	10.707	53.45	41.79	0.60	1.80	1.00	1.00	2.33	50.55	174.03	15.51	10,583.	8027.3	467.47	517.16	984.63
1 9	170.0	6.26	10.221	54.06	44.48	0.61	1.80	1.00	1.00	2.36	50.74	83.02	7.48	7,029.3	5448.9	485.30	258.83	744.12
														113,086.2	77925.1			9,798.66

Load Case: 1.2D + 1.0Di + 1.0Wi 60° Wind

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face

Wind Load Factor: 1.00
Dead Load Factor: 1.20
Ice Dead Load Factor: 1.00

Wind Importance Factor: 1.00
Ice Importance Factor: 1.00

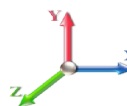
Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1 1	10.0	3.81	22.969	64.80	36.00	0.23	2.50	0.80	1.00	1.77	55.99	195.12	11.83	14,830.	8500.5	452.38	523.57	975.95
1 2	30.0	3.81	17.891	66.61	37.81	0.25	2.44	0.80	1.00	1.98	53.26	201.99	13.21	14,248.	9056.1	421.13	546.79	967.92
1 3	50.0	4.41	18.433	67.93	45.82	0.29	2.32	0.80	1.00	2.08	55.27	205.45	13.90	14,479.	9570.8	480.09	642.91	1,123.00
1 4	70.0	4.86	16.186	65.64	43.51	0.32	2.24	0.80	1.00	2.16	52.68	207.83	14.37	13,632.	9596.3	487.94	715.50	1,203.44
1 5	90.0	5.22	13.845	58.89	40.29	0.35	2.17	0.80	1.00	2.21	47.34	209.66	14.74	13,055.	9296.5	456.16	774.20	1,230.36
1 6	110.0	5.52	11.319	60.55	41.98	0.43	2.01	0.80	1.00	2.26	48.35	211.15	15.04	12,868.	9248.7	456.43	782.27	1,238.70
1 7	130.0	5.79	10.857	56.69	41.66	0.52	1.87	0.80	1.00	2.29	48.23	212.42	15.29	12,358.	9179.9	444.70	690.36	1,135.06
1 8	150.0	6.04	10.707	53.45	41.79	0.60	1.80	0.80	1.00	2.33	48.41	174.03	15.51	10,583.	8027.3	447.67	517.16	964.83
1 9	170.0	6.26	10.221	54.06	44.48	0.61	1.80	0.80	1.00	2.36	48.69	83.02	7.48	7,029.3	5448.9	465.74	258.83	724.57
														113,086.2	77925.1			9,563.82

Section Forces

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

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Load Case: 1.2D + 1.0Di + 1.0Wi 90° Wind	1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.20	
Ice Dead Load Factor: 1.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1 1	10.0	3.81	22.969	64.80	36.00	0.23	2.50	0.85	1.00	1.77	57.14	195.12	11.83	14,830.	8500.5	461.66	523.57	985.23
1 2	30.0	3.81	17.891	66.61	37.81	0.25	2.44	0.85	1.00	1.98	54.16	201.99	13.21	14,248.	9056.1	428.21	546.79	974.99
1 3	50.0	4.41	18.433	67.93	45.82	0.29	2.32	0.85	1.00	2.08	56.19	205.45	13.90	14,479.	9570.8	488.10	642.91	1,131.00
1 4	70.0	4.86	16.186	65.64	43.51	0.32	2.24	0.85	1.00	2.16	53.49	207.83	14.37	13,632.	9596.3	495.44	715.50	1,210.93
1 5	90.0	5.22	13.845	58.89	40.29	0.35	2.17	0.85	1.00	2.21	48.03	209.66	14.74	13,055.	9296.5	462.83	774.20	1,237.03
1 6	110.0	5.52	11.319	60.55	41.98	0.43	2.01	0.85	1.00	2.26	48.92	211.15	15.04	12,868.	9248.7	461.77	782.27	1,244.04
1 7	130.0	5.79	10.857	56.69	41.66	0.52	1.87	0.85	1.00	2.29	48.77	212.42	15.29	12,358.	9179.9	449.71	690.36	1,140.07
1 8	150.0	6.04	10.707	53.45	41.79	0.60	1.80	0.85	1.00	2.33	48.94	174.03	15.51	10,583.	8027.3	452.62	517.16	969.78
1 9	170.0	6.26	10.221	54.06	44.48	0.61	1.80	0.85	1.00	2.36	49.20	83.02	7.48	7,029.3	5448.9	470.63	258.83	729.46
														113,086.2	77925.1			9,622.53

Load Case: 1.0D + 1.0W Normal Wind	1.0D + 1.0W 60 mph Wind at Normal To Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

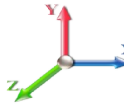
Sect Seq	Wind Height (ft)	qz (psf)	Total Flat Area (sqft)	Total Round Area (sqft)	Ice Round Area (sqft)	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Ice		Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
												Linear Area (sqft)	Linear Area (sqft)					
1 1	10.0	5.48	22.969	28.80	0.00	0.14	2.81	1.00	1.00	0.00	38.72	119.29	0.00	5,274.8	0.0	507.97	406.47	914.43
1 2	30.0	5.49	17.891	28.80	0.00	0.14	2.81	1.00	1.00	0.00	33.65	119.29	0.00	4,327.2	0.0	440.69	406.81	847.50
1 3	50.0	6.35	18.433	22.12	0.00	0.14	2.81	1.00	1.00	0.00	30.97	119.29	0.00	4,090.3	0.0	469.20	470.73	939.93
1 4	70.0	6.99	16.186	22.12	0.00	0.15	2.76	1.00	1.00	0.00	28.75	119.29	0.00	3,363.4	0.0	470.95	518.24	989.18
1 5	90.0	7.51	13.845	18.59	0.00	0.16	2.73	1.00	1.00	0.00	24.42	119.29	0.00	3,132.1	0.0	425.64	556.82	982.46
1 6	110.0	7.96	11.319	18.56	0.00	0.19	2.64	1.00	1.00	0.00	21.94	119.29	0.00	3,016.7	0.0	391.90	589.67	981.58
1 7	130.0	8.34	10.857	15.03	0.00	0.21	2.55	1.00	1.00	0.00	19.53	119.29	0.00	2,649.2	0.0	353.60	618.50	972.10
1 8	150.0	8.69	10.707	11.67	0.00	0.23	2.51	1.00	1.00	0.00	17.47	98.64	0.00	2,130.3	0.0	323.91	526.81	850.73
1 9	170.0	9.01	10.221	9.58	0.00	0.20	2.59	1.00	1.00	0.00	15.73	47.80	0.00	1,316.9	0.0	311.62	256.89	568.50
														29,301.0	0.0			8,046.41

Section Forces

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

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Load Case: 1.0D + 1.0W 60° Wind	1.0D + 1.0W 60 mph Wind at 60° From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)					
1 1	10.0	5.48	22.969	28.80	0.00	0.14	2.81	0.80	1.00	0.00	34.12	119.29	0.00	5,274.8	0.0	447.70	406.47	854.17
1 2	30.0	5.49	17.891	28.80	0.00	0.14	2.81	0.80	1.00	0.00	30.07	119.29	0.00	4,327.2	0.0	393.83	406.81	800.64
1 3	50.0	6.35	18.433	22.12	0.00	0.14	2.81	0.80	1.00	0.00	27.28	119.29	0.00	4,090.3	0.0	413.34	470.73	884.07
1 4	70.0	6.99	16.186	22.12	0.00	0.15	2.76	0.80	1.00	0.00	25.51	119.29	0.00	3,363.4	0.0	417.92	518.24	936.16
1 5	90.0	7.51	13.845	18.59	0.00	0.16	2.73	0.80	1.00	0.00	21.65	119.29	0.00	3,132.1	0.0	377.38	556.82	934.19
1 6	110.0	7.96	11.319	18.56	0.00	0.19	2.64	0.80	1.00	0.00	19.68	119.29	0.00	3,016.7	0.0	351.47	589.67	941.14
1 7	130.0	8.34	10.857	15.03	0.00	0.21	2.55	0.80	1.00	0.00	17.35	119.29	0.00	2,649.2	0.0	314.28	618.50	932.78
1 8	150.0	8.69	10.707	11.67	0.00	0.23	2.51	0.80	1.00	0.00	15.33	98.64	0.00	2,130.3	0.0	284.21	526.81	811.02
1 9	170.0	9.01	10.221	9.58	0.00	0.20	2.59	0.80	1.00	0.00	13.69	47.80	0.00	1,316.9	0.0	271.12	256.89	528.01
														29,301.0	0.0			7,622.17

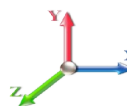
Load Case: 1.0D + 1.0W 90° Wind	1.0D + 1.0W 60 mph Wind at 90° From Face
Wind Load Factor: 1.00	Wind Importance Factor: 1.00
Dead Load Factor: 1.00	
Ice Dead Load Factor: 0.00	Ice Importance Factor: 1.00

Sect Seq	Wind Height (ft)	qz (psf)	Total	Total	Ice	Sol Ratio	Cf	Df	Dr	Ice Thick (in)	Eff Area (sqft)	Linear	Linear	Total Weight (lb)	Weight Ice (lb)	Struct Force (lb)	Linear Force (lb)	Total Force (lb)
			Flat Area (sqft)	Round Area (sqft)	Round Area (sqft)							Area (sqft)	Area (sqft)					
1 1	10.0	5.48	22.969	28.80	0.00	0.14	2.81	0.85	1.00	0.00	35.27	119.29	0.00	5,274.8	0.0	462.77	406.47	869.23
1 2	30.0	5.49	17.891	28.80	0.00	0.14	2.81	0.85	1.00	0.00	30.97	119.29	0.00	4,327.2	0.0	405.54	406.81	812.35
1 3	50.0	6.35	18.433	22.12	0.00	0.14	2.81	0.85	1.00	0.00	28.20	119.29	0.00	4,090.3	0.0	427.30	470.73	898.04
1 4	70.0	6.99	16.186	22.12	0.00	0.15	2.76	0.85	1.00	0.00	26.32	119.29	0.00	3,363.4	0.0	431.18	518.24	949.42
1 5	90.0	7.51	13.845	18.59	0.00	0.16	2.73	0.85	1.00	0.00	22.34	119.29	0.00	3,132.1	0.0	389.44	556.82	946.26
1 6	110.0	7.96	11.319	18.56	0.00	0.19	2.64	0.85	1.00	0.00	20.24	119.29	0.00	3,016.7	0.0	361.58	589.67	951.25
1 7	130.0	8.34	10.857	15.03	0.00	0.21	2.55	0.85	1.00	0.00	17.90	119.29	0.00	2,649.2	0.0	324.11	618.50	942.61
1 8	150.0	8.69	10.707	11.67	0.00	0.23	2.51	0.85	1.00	0.00	15.86	98.64	0.00	2,130.3	0.0	294.14	526.81	820.95
1 9	170.0	9.01	10.221	9.58	0.00	0.20	2.59	0.85	1.00	0.00	14.20	47.80	0.00	1,316.9	0.0	281.25	256.89	538.13
														29,301.0	0.0			7,728.23

Force/Stress Compression Summary

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II
Topography: 1

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LEG MEMBERS

Sect	Top Elev	Member	Force		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls	
			(kips)				X	Y	Z					KL/R
1	20	PX - 8" DIA PIPE	-273.33	1.2D + 1.6W	Normal Wind	9.64	100	100	100	40.20	50.00	510.21	53.6	Member X
2	40	PSP - ROHN 8 EHS	-249.77	1.2D + 1.6W	Normal Wind	9.64	100	100	100	39.63	50.00	389.94	64.1	Member X
3	60	PX - 6" DIA PIPE	-226.95	1.2D + 1.6W	Normal Wind	6.43	100	100	100	35.21	50.00	345.23	65.7	Member X
4	80	PSP - ROHN 6 EHS	-199.57	1.2D + 1.6W	Normal Wind	6.43	100	100	100	34.67	50.00	276.67	72.1	Member X
5	100	PX - 5" DIA PIPE	-174.45	1.2D + 1.6W	Normal Wind	6.43	100	100	100	41.96	50.00	241.74	72.2	Member X
6	120	PX - 5" DIA PIPE	-152.12	1.2D + 1.6W	Normal Wind	4.82	100	100	100	31.42	50.00	255.81	59.5	Member X
7	140	PX - 4" DIA PIPE	-115.76	1.2D + 1.6W	Normal Wind	3.86	100	100	100	31.27	50.00	184.75	62.7	Member X
8	160	PST - 3" DIA PIPE	-83.75	1.2D + 1.6W	Normal Wind	0.38	100	100	100	3.88	50.00	100.24	83.5	Member X
9	180	PST - 2-1/2" DIA PIPE	-21.79	1.2D + 1.6W	Normal Wind	3.33	100	100	100	42.24	50.00	67.30	32.4	Member X

Splices

Sect	Top Elev	Load Case	Top Splice				Num Bolts	Load Case	Bottom Splice				Num Bolts
			Force (kips)	Cap (kips)	Use %	Bolt Type			Force (kips)	Cap (kips)	Use %	Bolt Type	
1	20	1.2D + 1.6W Normal Wind	256.52	0.00	0.0		1.2D + 1.6W Normal Wind	280.02	0.00				
2	40	1.2D + 1.6W Normal Wind	232.54	0.00	0.0		1.2D + 1.6W Normal Wind	256.52	0.00		1 A325	8	
3	60	1.2D + 1.6W Normal Wind	204.71	0.00	0.0		1.2D + 1.6W Normal Wind	232.54	0.00		1 A325	8	
4	80	1.2D + 1.6W Normal Wind	178.41	0.00	0.0		1.2D + 1.6W Normal Wind	204.71	0.00		1 A325	6	
5	100	1.2D + 1.6W Normal Wind	157.92	0.00	0.0		1.2D + 1.6W Normal Wind	178.41	0.00		1 A325	6	
6	120	1.2D + 1.6W Normal Wind	119.28	0.00	0.0		1.2D + 1.6W Normal Wind	157.92	0.00		1 A325	4	
7	140	1.2D + 1.6W Normal Wind	84.26	0.00	0.0		1.2D + 1.6W Normal Wind	119.28	0.00		1 A325	4	
8	160	1.2D + 1.6W Normal Wind	25.36	0.00	0.0		1.2D + 1.6W Normal Wind	84.26	0.00		7/8 A325	4	
9	180	1.2D + 1.0Di + 1.0Wi 60° Wind	0.57	0.00	0.0		1.2D + 1.6W Normal Wind	25.36	0.00		3/4 A325	4	

HORIZONTAL MEMBERS

Sect	Top Elev	Member	Force		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Shear Bear		Use %	Controls	
			(kips)				X	Y	Z				KL/R	Num Holes (kips)			Cap (kips)
1	20									0.00	0	0					
2	40									0.00	0	0					
3	60									0.00	0	0					
4	80									0.00	0	0					
5	100									0.00	0	0					
6	120									0.00	0	0					
7	140									0.00	0	0					
8	160									0.00	0	0					
9	180	SAE - 1.75X1.75X0.125	-0.23	1.2D + 1.6W	Normal Wind	4.64	100	100	100	160.63	36.00	3.68	1	1	12.43	5.22	6 Member Z

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force		Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Shear Bear		Use %	Controls	
			(kips)				X	Y	Z				KL/R	Num Holes (kips)			Cap (kips)
1	20	SAE - 3.5X3.5X0.25	-6.91	0.9D + 1.6W	90° Wind	19.98	50	50	25	109.99	36.00	28.96	1	1	17.89	12.6	55 Bolt Bear
2	40	SAE - 3X3X0.25	-5.99	0.9D + 1.6W	90° Wind	19.05	50	50	50	193.07	36.00	8.73	1	1	17.89	12.6	69 Member Z
3	60	SAE - 2.5X2.5X0.25	-5.88	1.2D + 1.6W	90° Wind	15.86	50	50	50	193.85	36.00	7.15	1	1	12.43	10.4	82 Member Z
4	80	SAE - 2.5X2.5X0.1875	-5.06	0.9D + 1.6W	90° Wind	14.09	50	50	50	170.79	36.00	6.99	1	1	12.43	7.84	72 Member Z
5	100	SAE - 2.5X2.5X0.1875	-3.68	1.2D + 1.6W	Normal Wind	10.88	50	50	50	131.83	36.00	11.71	1	1	12.43	7.84	47 Bolt Bear
6	120	SAE - 2X2X0.1875	-5.21	1.2D + 1.6W	90° Wind	8.48	50	50	50	129.10	36.00	9.57	1	1	12.43	7.84	67 Bolt Bear
7	140	SAE - 2X2X0.1875	-4.28	1.2D + 1.6W	Normal Wind	6.22	50	50	50	101.08	36.00	13.43	1	1	12.43	7.84	55 Bolt Bear
8	160	SAE - 2X2X0.25	-6.28	1.2D + 1.6W	90° Wind	5.65	50	50	50	94.97	36.00	18.94	1	1	12.43	10.4	60 Bolt Bear
9	180	SAE - 1.75X1.75X0.1875	-3.33	1.2D + 1.6W	90° Wind	5.72	50	50	50	105.01	36.00	11.24	1	1	12.43	7.84	43 Bolt Bear

Force/Stress Compression Summary

Structure: CT13617-A-SBA	Code: EIA/TIA-222-G	7/5/2019
Site Name: Troiano Realty	Exposure: B	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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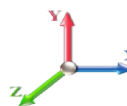
DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Len (ft)	Bracing %			Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	Use %	Controls
						X	Y	Z								

Force/Stress Tension Summary

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II
Topography: 1

7/5/2019

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LEG MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Leg Use %	Controls
1	20	PX - 8" DIA PIPE	246.08	0.9D + 1.6W 60° Wind	50	574.20	42.9	Member
2	40	PSP - ROHN 8 EHS	226.35	0.9D + 1.6W 60° Wind	50	437.40	51.7	Member
3	60	PX - 6" DIA PIPE	206.45	0.9D + 1.6W 60° Wind	50	378.00	54.6	Member
4	80	PSP - ROHN 6 EHS	182.91	0.9D + 1.6W 60° Wind	50	302.09	60.5	Member
5	100	PX - 5" DIA PIPE	160.18	0.9D + 1.6W 60° Wind	50	274.95	58.3	Member
6	120	PX - 5" DIA PIPE	142.62	0.9D + 1.6W 60° Wind	50	274.95	51.9	Member
7	140	PX - 4" DIA PIPE	107.72	0.9D + 1.6W 60° Wind	50	198.45	54.3	Member
8	160	PST - 3" DIA PIPE	75.48	0.9D + 1.6W 60° Wind	50	100.35	75.2	Member
9	180	PST - 2-1/2" DIA PIPE	18.77	0.9D + 1.6W 60° Wind	50	76.68	24.5	Member

Splices

Sect	Top Elev	Load Case	Top Splice				Load Case	Bottom Splice					
			Force (kips)	Cap (kips)	Use %	Bolt Type		Num Bolts	Force (kips)	Cap (kips)	Use %	Bolt Type	Num Bolts
1	20	0.9D + 1.6W 60° Wind	226.02	0.00	0.0		0.9D + 1.6W 60° Wind	246.0	0.00				
2	40	0.9D + 1.6W 60° Wind	206.17	0.00	0.0		0.9D + 1.6W 60° Wind	226.0	424.08	53.3	1 A325	8	
3	60	0.9D + 1.6W 60° Wind	182.66	0.00	0.0		0.9D + 1.6W 60° Wind	206.1	424.08	48.6	1 A325	8	
4	80	0.9D + 1.6W 60° Wind	159.94	0.00	0.0		0.9D + 1.6W 60° Wind	182.6	318.06	57.4	1 A325	6	
5	100	0.9D + 1.6W 60° Wind	142.57	0.00	0.0		0.9D + 1.6W 60° Wind	159.9	318.06	50.3	1 A325	6	
6	120	0.9D + 1.6W 60° Wind	107.51	0.00	0.0		0.9D + 1.6W 60° Wind	142.5	212.04	67.2	1 A325	4	
7	140	0.9D + 1.6W 60° Wind	75.70	0.00	0.0		0.9D + 1.6W 60° Wind	107.5	212.04	50.7	1 A325	4	
8	160	0.9D + 1.6W 60° Wind	22.07	0.00	0.0		0.9D + 1.6W 60° Wind	75.70	166.24	45.5	7/8 A325	4	
9	180		0.00	0.00	0.0		0.9D + 1.6W 60° Wind	22.07	120.40	18.3	3/4 A325	4	

HORIZONTAL MEMBERS

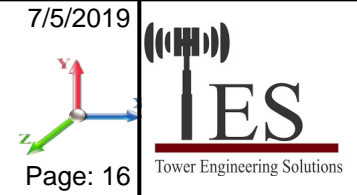
Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	-			36	0.00	0	0					
2	40	-			36	0.00	0	0					
3	60	-			36	0.00	0	0					
4	80	-			36	0.00	0	0					
5	100	-			36	0.00	0	0					
6	120	-			36	0.00	0	0					
7	140	-			36	0.00	0	0					
8	160	-			36	0.00	0	0					
9	180	SAE - 1.75X1.75X0.125	0.23	0.9D + 1.6W 60° Wind	36	10.64	1	1	12.43	5.22	4.56	5.1	Blck Shear

DIAGONAL MEMBERS

Sect	Top Elev	Member	Force (kips)	Load Case	Fy (ksi)	Mem Cap (kips)	Num Bolts	Num Holes	Shear Cap (kips)	Bear Cap (kips)	B.S. Cap (kips)	Use %	Controls
1	20	SAE - 3.5X3.5X0.25	6.75	0.9D + 1.6W 90° Wind	36	48.00	1	1	17.89	12.62	18.76	53.5	Bolt Bear
2	40	SAE - 3X3X0.25	5.85	0.9D + 1.6W 90° Wind	36	39.84	1	1	17.89	12.62	16.04	46.3	Bolt Bear
3	60	SAE - 2.5X2.5X0.25	5.90	0.9D + 1.6W 90° Wind	36	32.71	1	1	12.43	10.45	13.19	56.5	Bolt Bear
4	80	SAE - 2.5X2.5X0.1875	4.97	1.2D + 1.6W 90° Wind	36	24.84	1	1	12.43	7.84	9.89	63.5	Bolt Bear
5	100	SAE - 2.5X2.5X0.1875	3.26	0.9D + 1.6W 60° Wind	36	24.84	1	1	12.43	7.84	9.89	41.6	Bolt Bear
6	120	SAE - 2X2X0.1875	5.13	1.2D + 1.6W 90° Wind	36	18.58	1	1	12.43	7.84	7.85	65.5	Bolt Bear
7	140	SAE - 2X2X0.1875	3.93	0.9D + 1.6W 90° Wind	36	18.58	1	1	12.43	7.84	7.85	50.1	Bolt Bear
8	160	SAE - 2X2X0.25	6.04	1.2D + 1.6W 90° Wind	36	24.55	1	1	12.43	10.45	10.47	57.9	Bolt Bear
9	180	SAE - 1.75X1.75X0.1875	3.30	1.2D + 1.6W 90° Wind	36	15.64	1	1	12.43	7.84	6.83	48.2	Blck Shear

Seismic Section Forces

Structure: CT13617-A-SBA	Code: EIA/TIA-222-G	7/5/2019
Site Name: Troiano Realty	Exposure: B	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II



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Load Case: 1.2D + 1.0E

Dead Load Factor	1.20	Sds 0.184	Ss 0.1730	Fa 1.6000	Ke 0.0000
Seismic Load Factor	1.00	Sd1 0.102	S1 0.0640	Fv 2.4000	Kg 0.0000
Seismic Importance Factor	1.00	SA 0.139	R 3.0000	Vs 2.0082	f1 1.3588

Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	10.00	5274.8	0.01	0.05	0.03	21.12
2	30.00	4327.2	0.05	0.07	0.04	34.48
3	50.00	4090.3	0.15	0.07	0.03	49.15
4	70.00	3363.3	0.29	0.05	0.01	57.22
5	90.00	3132.1	0.47	-0.01	0.01	66.71
6	110.00	3016.7	0.71	-0.09	0.03	74.97
7	130.00	2649.1	0.99	-0.11	0.12	87.61
8	150.00	5295.9	1.31	0.14	0.35	301.21
9	170.00	4925.9	1.69	1.07	0.79	526.82

Load Case: 0.9D + 1.0E

Dead Load Factor	0.90	Sds 0.184	Ss 0.1730	Fa 1.6000	Ke 0.0000
Seismic Load Factor	1.00	Sd1 0.102	S1 0.0640	Fv 2.4000	Kg 0.0000
Seismic Importance Factor	1.00	SA 0.139	R 3.0000	Vs 2.0082	f1 1.3588

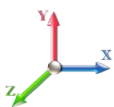
Sect #	Elev (ft)	Wz (lb)	Lateral			Fsz (lb)
			a	b	c	
1	10.00	5274.8	0.01	0.05	0.03	21.12
2	30.00	4327.2	0.05	0.07	0.04	34.48
3	50.00	4090.3	0.15	0.07	0.03	49.15
4	70.00	3363.3	0.29	0.05	0.01	57.22
5	90.00	3132.1	0.47	-0.01	0.01	66.71
6	110.00	3016.7	0.71	-0.09	0.03	74.97
7	130.00	2649.1	0.99	-0.11	0.12	87.61
8	150.00	5295.9	1.31	0.14	0.35	301.21
9	170.00	4925.9	1.69	1.07	0.79	526.82

Support Forces Summary

Structure: CT13617-A-SBA
Site Name: Troiano Realty
Height: 180.00 (ft)
Base Elev: 0.000 (ft)
Gh: 0.85

Topography: 1

Code: EIA/TIA-222-G
Exposure: B
Crest Height: 0.00
Site Class: D - Stiff Soil
Struct Class: II

7/5/2019

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Load Case	Node	FX (kips)	FY (kips)	FZ (kips)	(-) = Uplift (+) = Down
1.2D + 1.6W Normal Wind	1	-0.01	279.42	-26.13	
	1a	9.16	-118.07	-7.70	
	1b	-9.15	-118.06	-7.71	
1.2D + 1.6W 60° Wind	1	-1.91	142.36	-13.01	
	1a	-12.23	142.56	4.85	
	1b	-20.30	-241.63	-11.72	
1.2D + 1.6W 90° Wind	1	-2.27	14.43	-0.89	
	1a	-19.69	238.22	10.08	
	1b	-18.25	-209.36	-9.19	
0.9D + 1.6W Normal Wind	1	-0.01	275.38	-25.89	
	1a	9.35	-121.46	-7.82	
	1b	-9.34	-121.45	-7.83	
0.9D + 1.6W 60° Wind	1	-1.92	138.54	-12.78	
	1a	-12.03	138.75	4.73	
	1b	-20.49	-244.82	-11.84	
0.9D + 1.6W 90° Wind	1	-2.28	10.83	-0.66	
	1a	-19.49	234.24	9.96	
	1b	-18.45	-212.60	-9.30	
1.2D + 1.0Di + 1.0Wi Normal Wind	1	0.00	122.19	-7.54	
	1a	2.81	5.50	-2.30	
	1b	-2.80	5.55	-2.30	
1.2D + 1.0Di + 1.0Wi 60° Wind	1	-0.57	82.76	-3.77	
	1a	-3.55	82.79	1.39	
	1b	-6.20	-32.32	-3.58	
1.2D + 1.0Di + 1.0Wi 90° Wind	1	-0.66	44.40	-0.13	
	1a	-5.76	111.06	2.94	
	1b	-5.54	-22.22	-2.82	
1.2D + 1.0E	1	0.00	24.53	4.27	
	1a	4.71	9.38	-2.72	
	1b	-4.71	9.38	-2.72	
0.9D + 1.0E	1	0.00	20.90	4.51	
	1a	4.91	5.78	-2.84	
	1b	-4.91	5.78	-2.84	
1.0D + 1.0W Normal Wind	1	0.00	75.67	-6.90	
	1a	1.73	-19.80	-1.59	
	1b	-1.73	-19.79	-1.60	
1.0D + 1.0W 60° Wind	1	-0.48	42.82	-3.72	
	1a	-3.46	42.86	1.44	
	1b	-4.44	-49.61	-2.56	
1.0D + 1.0W 90° Wind	1	-0.57	12.02	-0.77	
	1a	-5.27	65.78	2.71	
	1b	-3.93	-41.73	-1.94	

Max Reactions

Leg**Overturning**

Max Uplift: -244.82 (kips)

Moment: 4357.91 (ft-kips)

Max Down: 279.42 (kips)

Total Down: 43.29 (kips)

Max Shear: 26.13 (kips)

Total Shear: 41.54 (kips)

Analysis Summary

Structure: CT13617-A-SBA	Code: EIA/TIA-222-G	7/5/2019
Site Name: Troiano Realty	Exposure: B	
Height: 180.00 (ft)	Crest Height: 0.00	
Base Elev: 0.000 (ft)	Site Class: D - Stiff Soil	
Gh: 0.85	Topography: 1	Struct Class: II
		Page: 19



Max Reactions

	Leg	Overturning
Max Uplift:	-244.82 (kips)	Moment: 4357.91 (ft-kips)
Max Down:	279.42 (kips)	Total Down: 43.29 (kips)
Max Shear:	26.13 (kips)	Total Shear: 41.54 (kips)

Anchor Bolts

Bolt Size (in.): 1.00	Number Bolts: 8
Yield Strength (Ksi): 109.00	Tensile Strength (Ksi): 125.00
Detail Type: C	

Interaction Ratio: 0.60

Max Usages

Max Leg: 83.5% (1.2D + 1.6W Normal Wind - Sect 8)
 Max Diag: 82.3% (1.2D + 1.6W 90° Wind - Sect 3)
 Max Horiz: 6.3% (1.2D + 1.6W Normal Wind - Sect 9)

Max Deflection, Twist and Sway

Load Case	Elevation (ft)	Deflection (ft)	Twist (deg)	Sway (deg)
0.9D + 1.0E - Normal To Face	150.00	0.0605	-0.0011	0.0687
	170.00	0.0870	-0.0009	0.0797
	176.67	0.0963	-0.0009	0.0799
	180.00	0.1009	-0.0009	0.0799
0.9D + 1.6W 97 mph Wind at 60° From Face	150.00	1.2739	-0.0813	1.2762
	170.00	1.7567	-0.1393	1.4462
	176.67	1.9248	-0.1635	1.4906
	180.00	2.0088	-0.1663	1.4290
0.9D + 1.6W 97 mph Wind at 90° From Face	150.00	1.2837	-0.0360	1.2866
	170.00	1.7709	-0.0360	1.4615
	176.67	1.9406	-0.0360	1.5417
	180.00	2.0253	-0.0360	1.4201
0.9D + 1.6W 97 mph Wind at Normal To Face	150.00	1.3078	0.0316	1.3031
	170.00	1.8005	0.0314	1.4643
	176.67	1.9711	0.0314	1.3990
	180.00	2.0559	-0.0300	1.4997
1.0D + 1.0W 60 mph Wind at 60° From Face	150.00	0.3053	-0.0092	0.3053
	170.00	0.4209	-0.0119	0.3460
	176.67	0.4611	-0.0132	0.3562
	180.00	0.4811	-0.0133	0.3419
1.0D + 1.0W 60 mph Wind at 90° From Face	150.00	0.3071	-0.0078	0.3071
	170.00	0.4234	-0.0073	0.3489
	176.67	0.4639	-0.0072	0.3678
	180.00	0.4841	-0.0072	0.3390

1.0D + 1.0W 60 mph Wind at Normal To Face	150.00	0.3131	0.0070	0.3113
	170.00	0.4307	0.0065	0.3498
	176.67	0.4714	0.0065	0.3340
	180.00	0.4917	-0.0062	0.3578

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 60° From Face	150.00	0.3790	-0.0112	0.3760
	170.00	0.5208	-0.0139	0.4246
	176.67	0.5701	-0.0151	0.4320
	180.00	0.5948	-0.0152	0.4214

1.2D + 1.0Di + 1.0Wi 50 mph Wind at 90° From Face	150.00	0.3797	-0.0100	0.3769
	170.00	0.5220	-0.0095	0.4263
	176.67	0.5715	-0.0094	0.4411
	180.00	0.5962	-0.0094	0.4181


1.2D + 1.0Di + 1.0Wi 50 mph Wind at Normal From Face	150.00	0.3826	0.0088	0.3787
	170.00	0.5257	0.0084	0.4258
	176.67	0.5752	0.0084	0.4135
	180.00	0.5998	-0.0081	0.4305

1.2D + 1.0E - Normal To Face	150.00	0.0607	0.0011	0.0691
	170.00	0.0872	0.0009	0.0800
	176.67	0.0965	0.0009	0.0801
	180.00	0.1012	-0.0009	0.0802

1.2D + 1.6W 97 mph Wind at 60° From Face	150.00	1.2774	-0.0816	1.2807
	170.00	1.7619	-0.1398	1.4514
	176.67	1.9306	-0.1641	1.4959
	180.00	2.0150	-0.1669	1.4344

1.2D + 1.6W 97 mph Wind at 90° From Face	150.00	1.2873	-0.0361	1.2912
	170.00	1.7762	-0.0361	1.4669
	176.67	1.9465	-0.0361	1.5471
	180.00	2.0315	-0.0361	1.4255

1.2D + 1.6W 97 mph Wind at Normal To Face	150.00	1.3114	0.0317	1.3078
	170.00	1.8059	0.0315	1.4698
	176.67	1.9771	0.0316	1.4045
	180.00	2.0622	-0.0301	1.5051

	Mat Foundation Design for Self Supporting Tower			Date
				7/5/2019
	Customer Name:	SBA Communications Corp	EIA/TIA Standard:	EIA-222-G
	Site Name:		Structure Height (Ft.):	180
	Site Number:	CT13617-A-SBA	Engineer Name:	M. Baker
Engr. Number:	77947	Engineer Login ID:		

Foundation Info Obtained from:

Analysis or Design?

Number of Tower Legs:

Base Reactions (Factored):

(1). Individual Leg:

Axial Load (Kips):	279.4	Uplift Force (Kips):	244.8
Shear Force (Kips):	26.1		

(2). Tower Base:

Total Vertical Load (Kips):	43.3	Total Shear Force (Kips):	41.5
Moment (Kips-ft):	4357.9		

Foundation Geometries:

Leg distance (Center-to-Center ft.):	19.0	Mods required -Yes/No ?:	No
Diameter of Pier (ft.):	Round 4.0	Pier Height A. G. (ft.):	0.00
Tower center to mat center (ft):	0.00	Depth of Base BG (ft.):	6.0
Length of Pad (ft.):	27	Width of Pad (ft.):	27
Thickness of Pad (ft):	3.00		

Material Properties and Rebar Info:

Concrete Strength (psi):	3000	Steel Elastic Modulus:	29000	ksi
Vertical bar yield (ksi):	60	Tie steel yield (ksi):	60	
Vertical Rebar Size #:	9	Tie / Stirrup Size #:	4	
Qty. of Vertical Rebars:	12	Tie Spacing (in):	3.0	
Pad Rebar Yield (Ksi):	60	Pad Steel Rebar Size (#):	9	
Concrete Cover (in.):	3	Unit Weight of Concrete:	150.0	pcf

Rebar at the bottom of the concrete pad:

Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30
---------------------------	----	---------------------------	----

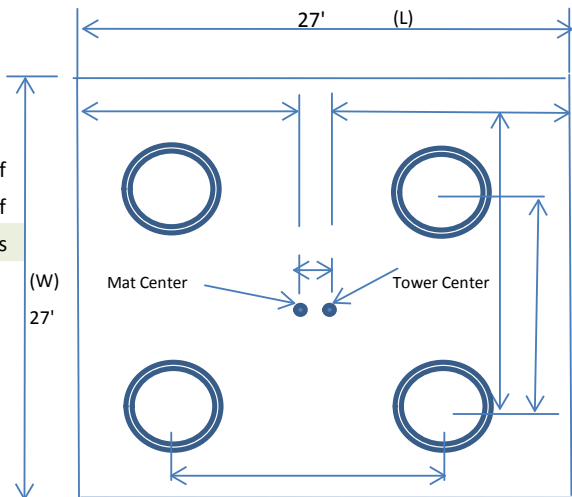
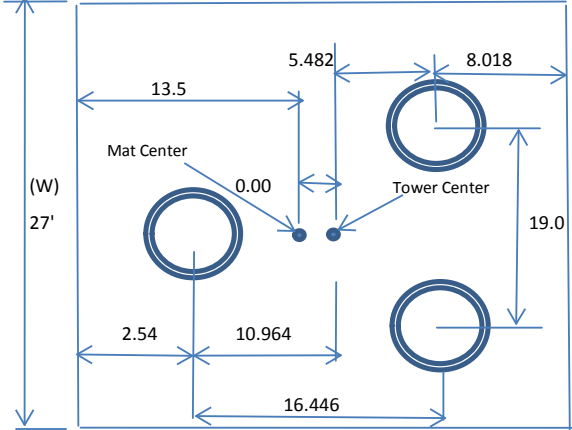
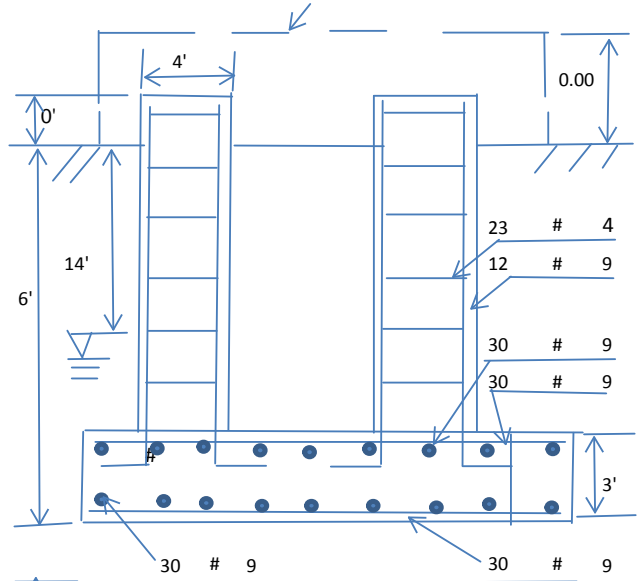
Rebar at the top of the concrete pad:

Qty. of Rebar in Pad (L):	30	Qty. of Rebar in Pad (W):	30
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Soil Design Parameters:

Soil Unit Weight (pcf):	120.0	Soil Buoyant Weight:	50.0	Pcf
Water Table B.G.S. (ft):	14.0	Unit Weight of Water:	62.4	pcf
Ultimate Bearing Pressure (psf):	16000	Consider ties in concrete shear strength:	Yes	

Drawings/Calculations
Analysis
3 Legs



Allowable overstress %: 5.00%
 Apply 1.35 for e/w per G/H: 1

TES Engr. Number: 77947

Page 2/2 Date: 7/5/2019

Foundation Analysis and Design:	Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	2073.90	Total Dry Soil Weight (Kips):	248.87	
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00	
Total Effective Soil Weight (Kips):	248.87	Weight from the Concrete Block at Top (K):	0.00	
Total Dry Concrete Volume (cu. Ft.):	2300.29	Total Dry Concrete Weight (Kips):	345.04	
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00	
Total Effective Concrete Weight (Kips):	345.04	Total Vertical Load on Base (Kips):	637.20	

Check Soil Capacities:

Calculated Maxium Net Soil Pressure under the base (psf):	2540.30	<	Allowable Factored Soil Bearing (psf):	12000	0.21	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	7800.4	>	Design Factored Momont (kips-ft):	4557	0.58	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	1.71					OK!

Check the capacities of Reinforcing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75			
Strength reduction factor (Axial compression):	0.65	Wind Load Factor on Concrete Design:	1.00			
				Load/ Capacity Ratio		
(1) Concrete Pier:						
Vertical Steel Rebar Area (sq. in./each):	1.00	Tie / Stirrup Area (sq. in./each):	0.20			
Calculated Moment Capacity (Mn,Kips-Ft):	696.1	>	Design Factored Moment (Mu, Kips-Ft)	78.5	0.11	OK!
Calculated Shear Capacity (Kips):	333.2	>	Design Factored Shear (Kips):	26.1	0.08	OK!
Calculated Tension Capacity (Tn, Kips):	648.0	>	Design Factored Tension (Tu Kips):	244.8	0.38	OK!
Calculated Compression Capacity (Pn, Kips):	2383.6	>	Design Factored Axial Load (Pu Kips):	279.4	0.12	OK!
Moment & Tension Strength Combination:	0.11	OK!	Check Tie Spacing (Design/Req'd):	0.25		OK!
Pier Reinforcement Ratio:	0.007		Reinforcement Ratio is satisfied per ACI			

(2).Concrete Pad:

One-Way Design Shear Capacity (L or W Direction, Kips):	863.5	>	One-Way Factored Shear (L/W-Dir Kips	217.2	0.25	OK!
One-Way Design Shear Capacity (Diagonal Dir., Kips):	649.7	>	One-Way Factored Shear (Dia. Dir, Kips	174.1	0.27	OK!
Lower Steel Pad Reinforcement Ratio (L or W-Direct.):	0.0029		Lower Steel Reinf. Ratio (Dia. Dir.):	0.0027		
Lower Steel Pad Moment Capacity (L or W-Dir. Kips-ft):	4232.0	>	Moment at Bottom (L-Direct. K-Ft):	1072.3	0.25	OK!
Lower Steel Pad Moment Capacity (Dia. Direction,K-ft):	3926.5	>	Moment at Bottom (Dia. Dir. K-Ft):	997.4	0.25	OK!
Upper Steel Pad Reinforcement Ratio (L or W -Direction):	0.0029		Upper Steel Reinf. Ratio (Dia. Dir.):	0.0027		
Upper Steel Pad Moment Capacity (L or W-Dir., Kips-ft):	4232.0	>	Moment at the top (L-Dir Kips-Ft):	501.2	0.12	OK!
Upper Steel Pad Moment Capacity (Dia. Direction, K-ft):	3926.5	>	Moment at the top (Dia. Dir., K-Ft):	329.2	0.08	OK!
Punching Failure Capacity (Kips):	997.9	>	Punch. Failure Factored Shear (K):	279.4	0.28	OK!

EXHIBIT 8



Tower Engineering Solutions

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

Antenna Mount Analysis Report

Existing 180 FT Self Support Tower

Customer Name: SBA Communications Corp

Customer Site Number: CT13617-A-SBA

Customer Site Name: Troiano Realty

Carrier Name: T-Mobile (Application #: 116898, v1)

Carrier Site ID / Name: CT11530B / Troiano Realty

Site Location: 157 Chestnut Hill Road

Stafford Springs, Connecticut

Tolland County

Latitude: 41.977416

Longitude: -72.383305

Analysis Result:

Max Structural Usage: 20.2% [Pass]

Report Prepared By: Saurav Devkota



Introduction

The purpose of this report is to summarize the analysis results on the (3) T-Arm at 177.00' elevation to support the proposed antenna configuration. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Mount Drawings	Sky Tower LLC, Dated 05/01/2019
Antenna Loading	SBA, Application #: 116898, v1
Modification Drawings	N/A

Analysis Criteria

Basic Wind Speed Used in the Analysis: $V_{ULT} = 123.0$ mph (3-Sec. Gust) / Equivalent to
 $V_{ASD} = 95.0$ 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 IBC / 2018 CSBC

Exposure Category: C

Structure Class: II

Topographic Category: 1

Crest Height (Ft): 0

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

Mount Information

(3) T-Arm at 177.00' elevation.

Final Antenna Configuration

- 3 RFS APXV18-206516S-C-A20
- 3 RFS APXVAARR24_43-U-NA20
- 3 Ericsson KRY 112 489/2
- 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 T-Arm.

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. The maximum structural usage is 20.2%, which occurs in the face horizontal. The proposed equipment must be installed as stipulated in the Final Antenna Configuration section of this report. The analysis results are void if the proposed equipment is not installed in accordance with this report.

Attachments

1. Mount Photos
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.



Sector: **A**

6/18/2019

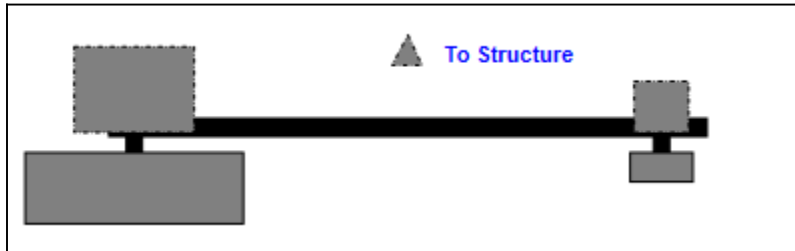
Structure Type: Self Support

Mount Elev: 177.00

Page: 1

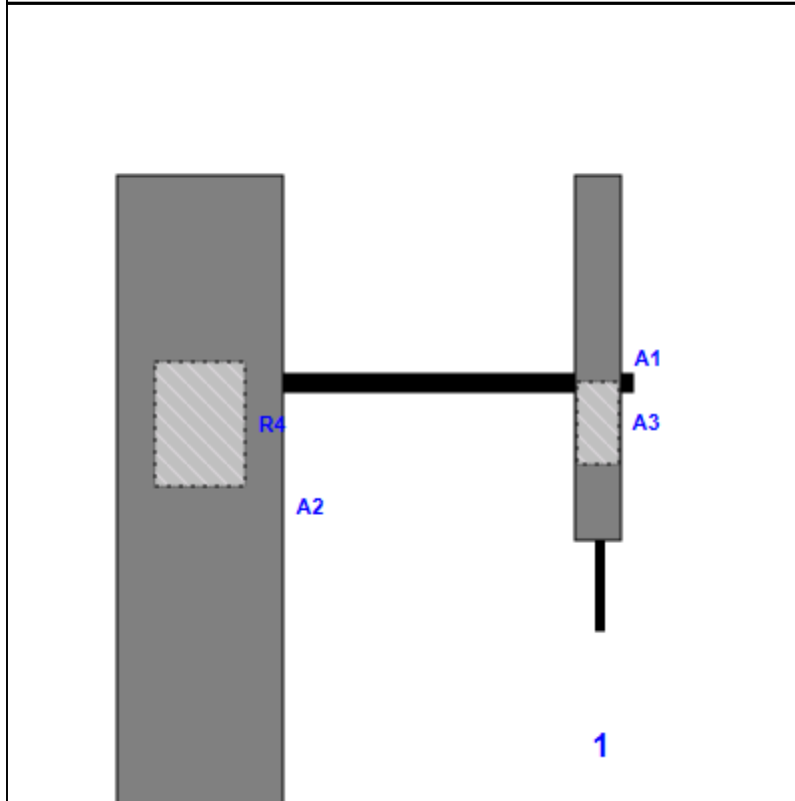


Plan View



Front View

Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	APXV18-206516S-C-A20	53.10	6.90	61.00	1	a	Front	26.40	0.00
A3	KRY 112 89/1	12.00	6.00	61.00	1	a	Behind	36.00	0.00
A2	APXVAARR24_43-U-NA20	95.90	24.00	3.00	2	a	Front	48.00	0.00
R4	4449 B5/B12	17.90	13.20	3.00	2	a	Behind	36.00	0.00

Sector: **B**

6/18/2019

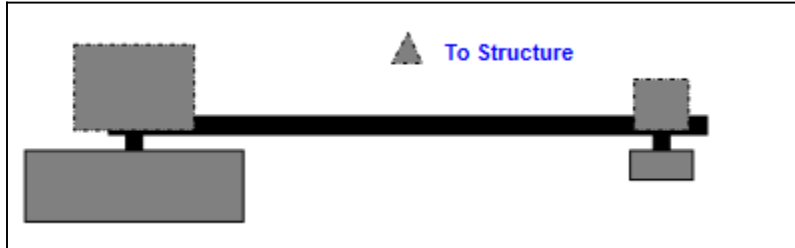
Structure Type: Self Support

Mount Elev: 177.00

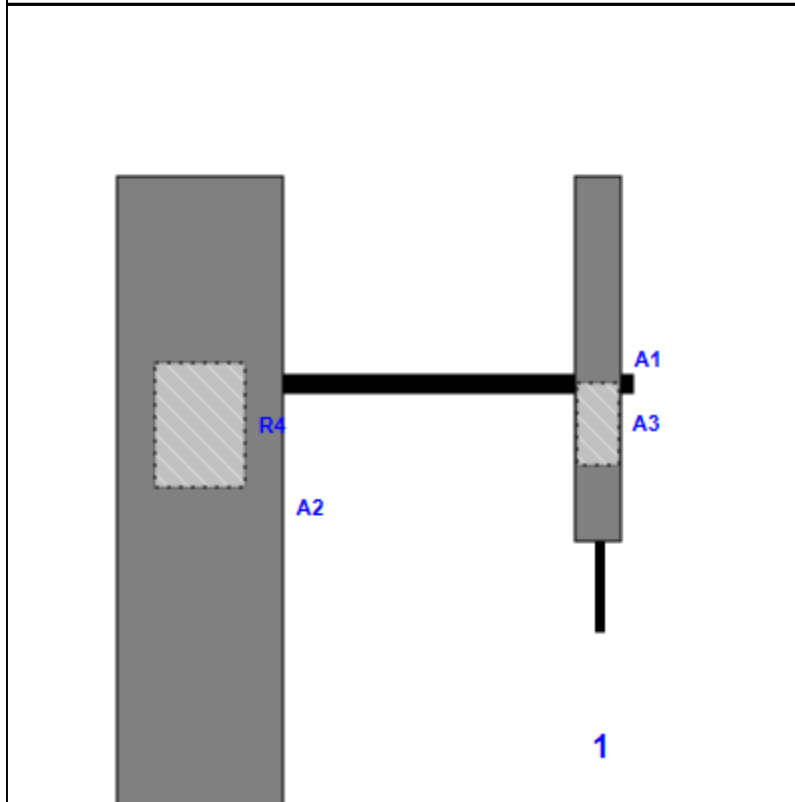
Page: 2



Plan View



Front View
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	APXV18-206516S-C-A20	53.10	6.90	61.00	1	a	Front	26.40	0.00
A3	KRY 112 89/1	12.00	6.00	61.00	1	a	Behind	36.00	0.00
A2	APXVAARR24_43-U-NA20	95.90	24.00	3.00	2	a	Front	48.00	0.00
R4	4449 B5/B12	17.90	13.20	3.00	2	a	Behind	36.00	0.00

Sector: C

6/18/2019

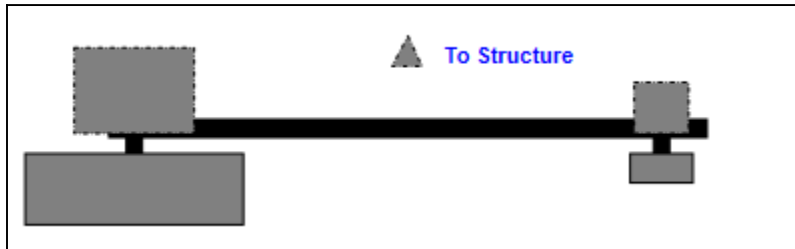
Structure Type: Self Support

Mount Elev: 177.00

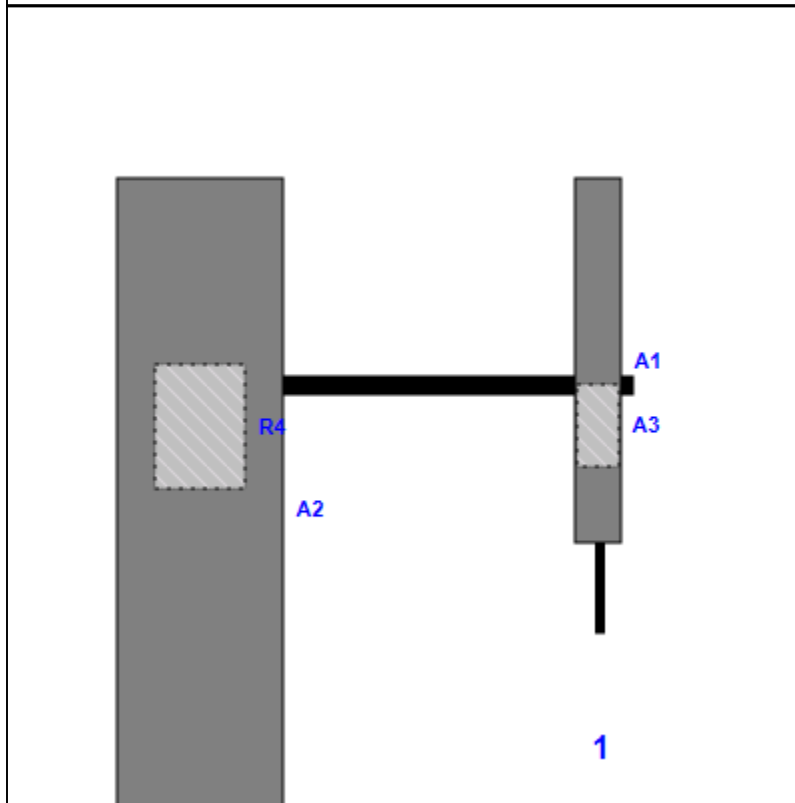
Page: 3



Plan View



Front View
Looking Toward Structure



Ref #	Model	Height (in)	Width (in)	H Dist From Left	Pipe #	Pipe Pos V	Antenna Pos	Center Ant From Top	Antenna H Offset
A1	APXV18-206516S-C-A20	53.10	6.90	61.00	1	a	Front	26.40	0.00
A3	KRY 112 89/1	12.00	6.00	61.00	1	a	Behind	36.00	0.00
A2	APXVAARR24_43-U-NA20	95.90	24.00	3.00	2	a	Front	48.00	0.00
R4	4449 B5/B12	17.90	13.20	3.00	2	a	Behind	36.00	0.00

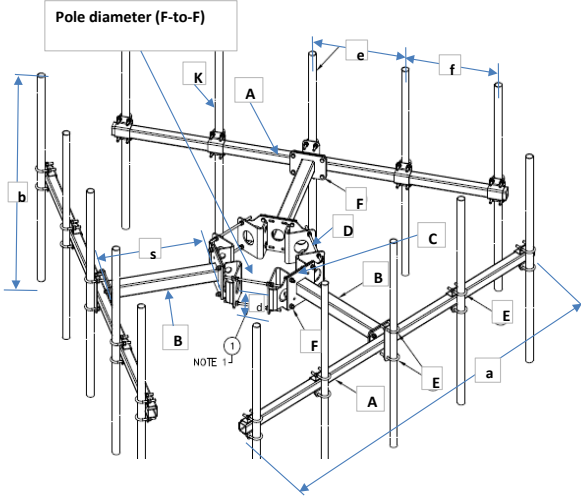


Antenna Mount Type "MT-Y" Mapping Form (PATENT PENDING)

FCC #
1248715

Tower Owner:	SBA Corp.	Mapping Date:	5/1/19
Site Name:	Troiano Realty	Structure Type:	Monopole
Site Number or ID:	CT13617	Structure Height (Ft.):	182
Mapping Contractor:	SkyTower LLC	Mount Height (Ft.):	180

This antenna mapping form is the property of TES and under **PATENT PENDING**. The formation contained herein is considered confidential in nature and is to be used only for the specific customer it was intended for. Reproduction, transmission, publication, modification or disclosure by any method is prohibited except by express written permission of TES. All means and methods are the responsibility of the contractor and the work shall be compliant with ANSI/ASSE A 10.48, OSHA, FCC, FAA and other safety requirements that may apply. TES is not warranting the usability of the safety climb as it must be assessed prior to each use in compliance with OSHA requirements.



Geometries (Unit: inches)									
a	66	e	51	j		o		s	12
b	96	f	NA	k		p		t	54
c		g		m		q		u*	30
d	5.5	h		n		r		v*	66

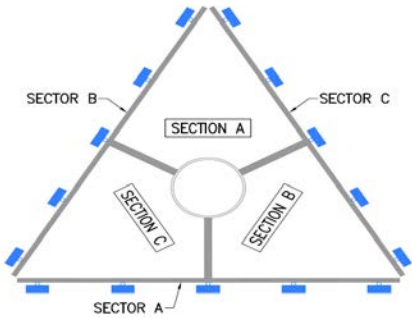
Members/Bolts (Unit: inches) * - See Ant. Layout for "u", "v" and member "K" (pipe)									
Items	Member	Lx (O.D.)	Ly (I.D.)	T	Items	Member	Lx (O.D.)	Ly (I.D.)	T
A	Tubing 4x4x1/4	4	4	0.25	F	5/8" Bolt			
B	Tubing 4x4x3/16	4	4	0.1875	G				
C	1/2" Thick. Plate	0	0	0.5	H				
D	5/8" Bolt				J				
E	1/2" U-Bolt				K* (pipe)	2.875 OD x 0.203 Pipe	2.875	2.469	0.203

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

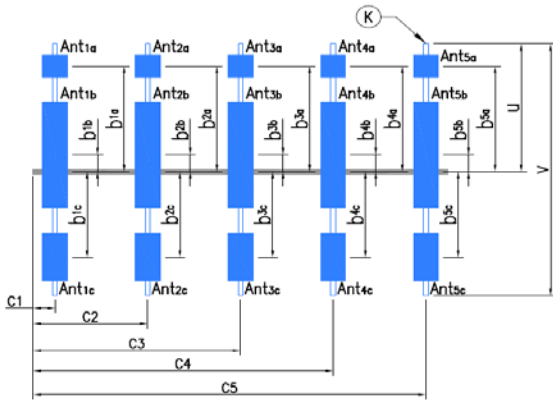
T Measurement is for tower face of self support, Tower leg is 2.87"

Stiff arm attached to mount: OD Pipe 2.37"x .18"x 84" using two 1/2 u-bolts

Carrier above is 32" away



Ants. Items	Enter antenna model. If not labeled, 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}	APXV18-206516S	7	3.5	52		6	4	5	031-040
Ant _{1b}	ericsson TMA1900	6	3.5	11					
Ant _{1c}									
Ant _{2a}	LNX-6515DS-A1M	7.5	12	97		14	2.5	61	041-045
Ant _{2b}									
Ant _{2c}									
Ant _{3a}									
Ant _{3b}									
Ant _{3c}									
Ant _{4a}									
Ant _{4b}									
Ant _{4c}									
Ant _{5a}									
Ant _{5b}									
Ant _{5c}									

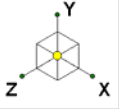


Antenna Layout

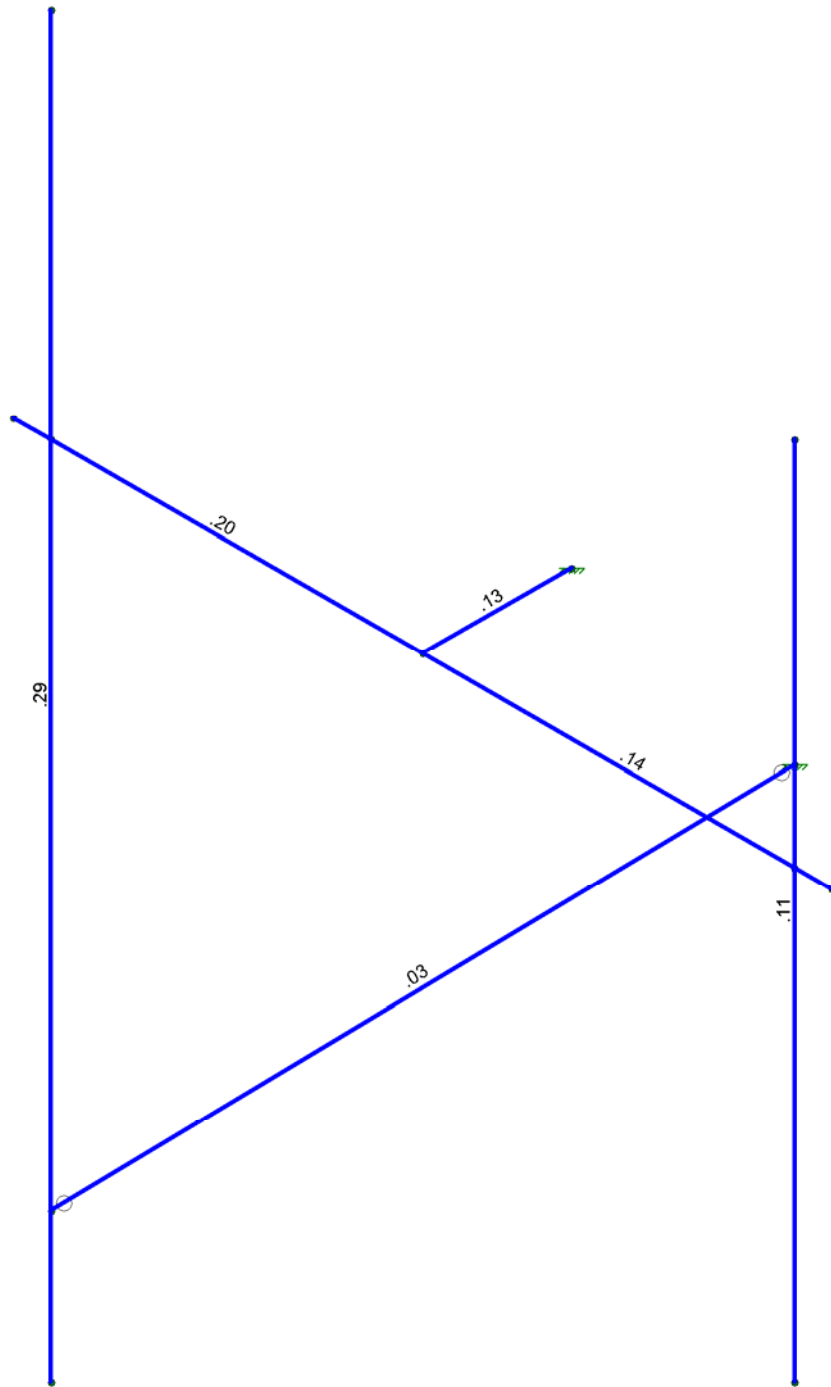
Azimuth (Degree) of Each Sector and Climbing Information

Sector A:	65	↗	Deg
Sector B:	180		Deg
Sector C:	340		Deg
Climbing	325		Deg
Climbing Facility	Corrosion Type:	Good condition	
	Access:	Climbing path was obstructed.	
	Condition:	N/A	

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

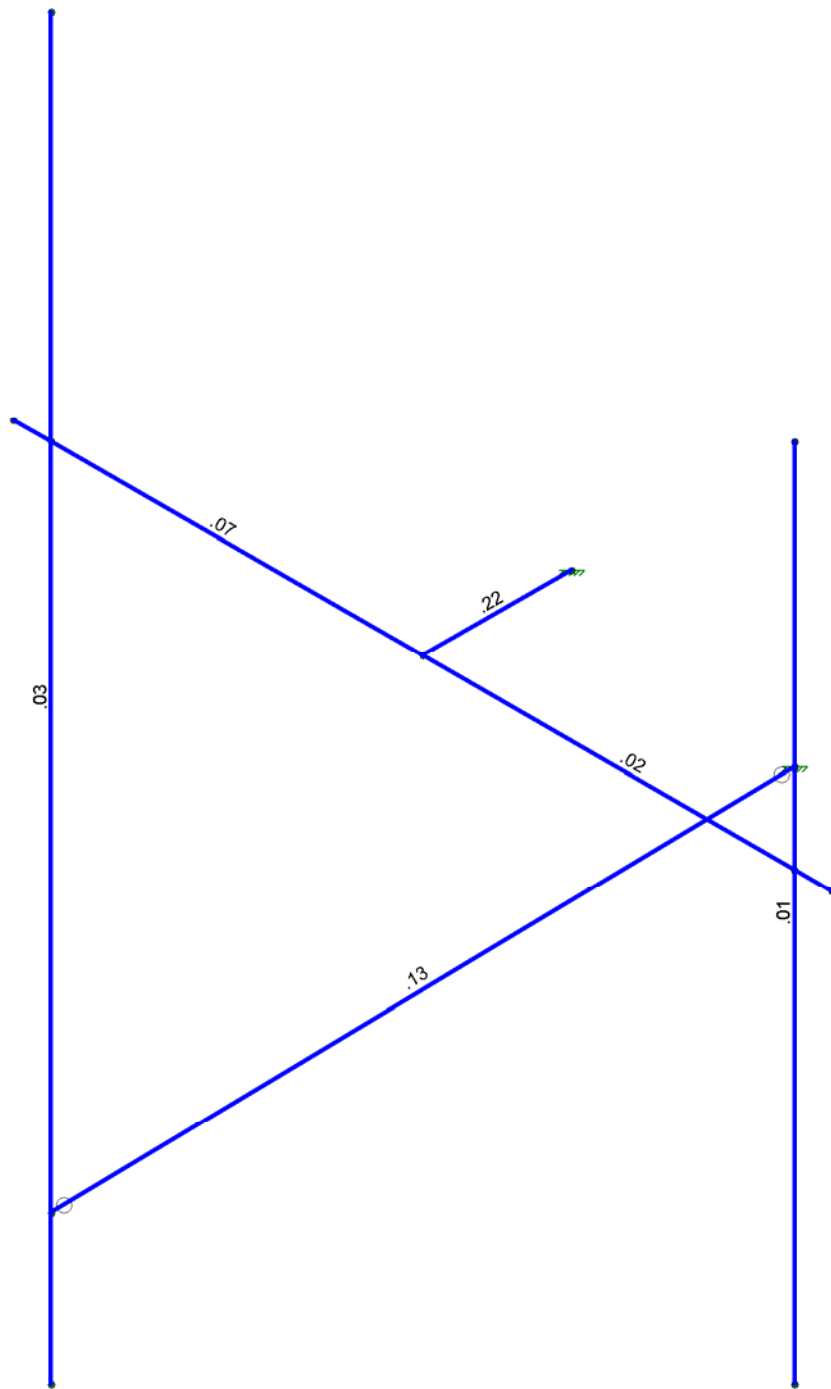
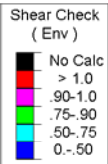
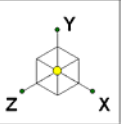


Code Check (Env)	
Black	No Calc
Red	> 1.0
Magenta	.90-1.0
Green	.75-.90
Cyan	.50-.75
Blue	0-.50



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

Tower Engineering Solutio...	CT13617-A-SBA_MT_LOT_Loads Only_Sector A_G	SK - 2
		June 18, 2019 at 10:48 AM
TES Project No. 77901		CT13617-A-SBA_77901_G_RISA_L...



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

Tower Engineering Solutio...

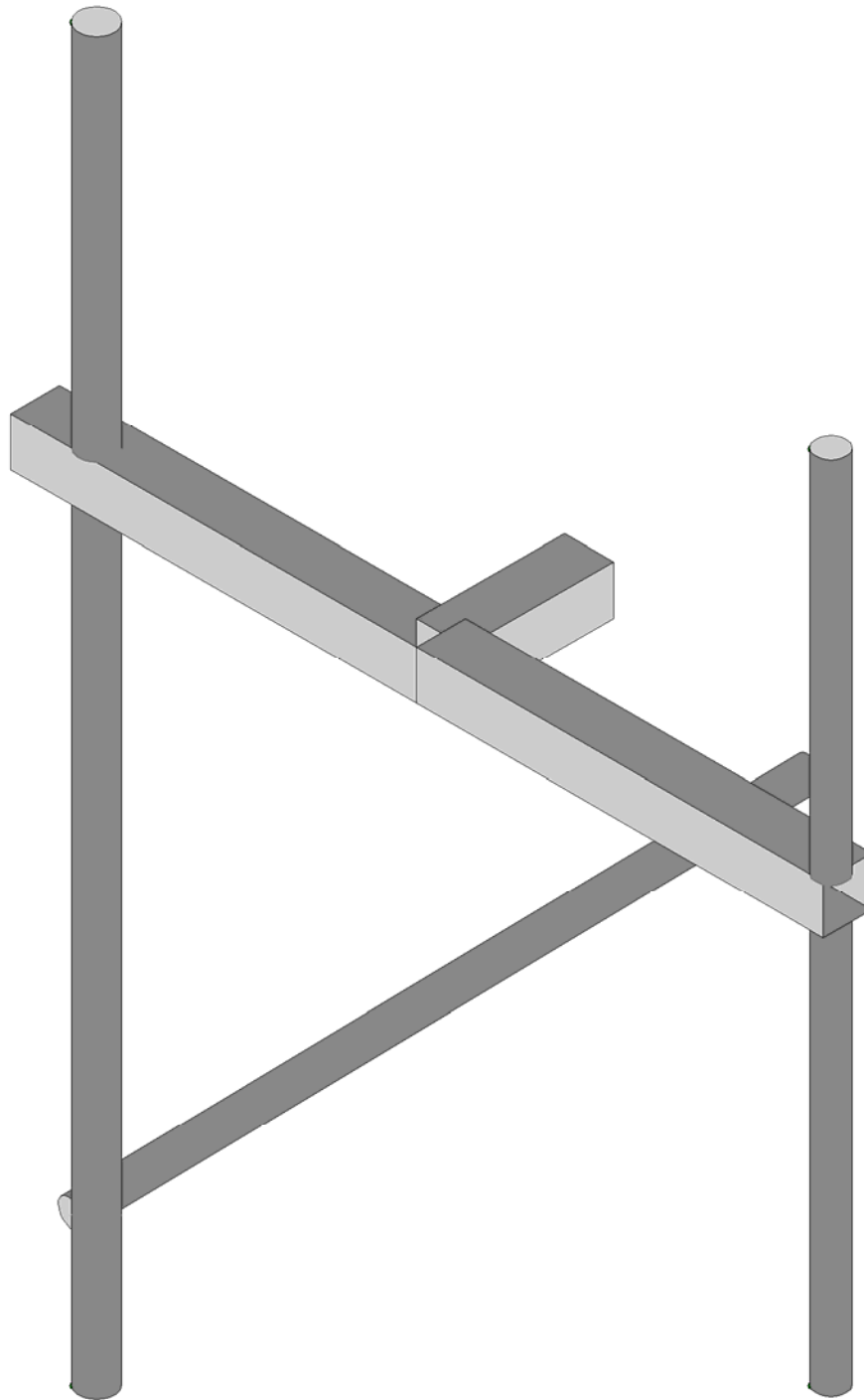
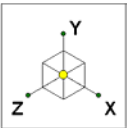
CT13617-A-SBA_MT_LOT_Loads Only_Sector A_G

SK - 3

June 18, 2019 at 10:48 AM

TES Project No. 77901

CT13617-A-SBA_77901_G_RISA_L...



Tower Engineering Solutio...

CT13617-A-SBA_MT_LOT_Loads Only_Sector A_G

SK - 4

June 18, 2019 at 10:48 AM

TES Project No. 77901

CT13617-A-SBA_77901_G_RISA_L...



Company : Tower Engineering Solutions, LLC
 Designer :
 Job Number : TES Project No. 77901
 Model Name : CT13617-A-SBA_MT_LOT_Loads Only_Sector A_G

June 18, 2019
 10:49 AM
 Checked By: _____

Basic Load Cases

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

Load Combinations

Description	So..P...	S...	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..	BLCFac..
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	
2	N2	0	0	1	0
3	N3	-2.75	0	1	0
4	N4	2.75	0	1	0
5	NP1	2.5	2.5	1	0
6	NP2	2.5	-3	1	0
7	NP5	-2.5	2.5	1	0
8	NP6	-2.5	-5.5	1	0
9	N10	2.5	0	1	0
10	N11	-2.5	0	1	0
11	N12A	-2.5	-4.5	1	0
12	N13	-2.1	-4	-3.6	0

Hot Rolled Steel Section Sets

Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]	
1	FH	HSS4x4x4	Beam	Tube	A500 Gr.B Rect	Typical	3.37	7.8	7.8	12.8
2	STABILIZER	PIPE 2.0	Beam	Pipe	A53 Gr.B	Typical	1.02	.627	.627	1.25



Cold Formed Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
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 [in ²]	Iyy [in ⁴]	Izz [in ⁴]	J [in ⁴]
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 Ru...
1	M1	N3	N2			FH	Beam	Tube	A500 Gr...	Typical
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	NP5	NP6			PIPE 2.5	Beam	Pipe	A53 Gr.B	DR1
5	M5	N12A	N13			STABILIZER	Beam	Pipe	A53 Gr.B	Typical
6	M6	N2	N4			FH	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	M5	BenPIN	BenPIN				Yes			None
6	M6						Yes			None



Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torq...	Kyy	Kzz	Cb	Function
1	M1	FH	2.75			Lbyy						Gravity
2	M2	HSS4x4x4	1			Lbyy						Gravity
3	MP1A	PIPE 2.0	5.5			Lbyy						Gravity
4	MP2A	PIPE 2.5	8			Lbyy						Lateral
5	M5	STABILIZER	4.644			Lbyy						Lateral
6	M6	FH	2.75			Lbyy						Gravity

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-torq...	Kyy	Kzz	Cb	Function
No Data to Print ...											

Joint Loads and Enforced Displacements

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

Member Point Loads (BLC 1 : Antenna D)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-9.35	0
2	MP1A	Y	-9.35	4.4
3	MP2A	Y	-64	0
4	MP2A	Y	-64	8
5	MP1A	Y	-16.1	3
6	MP2A	Y	-71	3

Member Point Loads (BLC 2 : Antenna Di)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Y	-67.454	0
2	MP1A	Y	-67.454	4.4
3	MP2A	Y	-296.206	0
4	MP2A	Y	-296.206	8
5	MP1A	Y	-47.052	3
6	MP2A	Y	-113.875	3

Member Point Loads (BLC 3 : Antenna W Front)

	Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
1	MP1A	Z	-43.004	0
2	MP1A	Z	-43.004	4.4
3	MP2A	Z	-241.109	0
4	MP2A	Z	-241.109	8
5	MP1A	Z	-12.508	3
6	MP2A	Z	-35.201	3

Member Point Loads (BLC 4 : Antenna Wi Front)

Member Label	Direction	Magnitude[lb,k-ft]	Location[ft,%]
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Member Point Loads (BLC 4 : Antenna Wi Front) (Continued)

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft.%,]
1	MP1A	Z	-16.296	0
2	MP1A	Z	-16.296	4.4
3	MP2A	Z	-75.402	0
4	MP2A	Z	-75.402	8
5	MP1A	Z	-5.558	3
6	MP2A	Z	-13.826	3

Member Point Loads (BLC 5 : Antenna W Side)

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft.%,]
1	MP1A	X	24.175	0
2	MP1A	X	24.175	4.4
3	MP2A	X	97.554	0
4	MP2A	X	97.554	8
5	MP1A	X	13.342	3
6	MP2A	X	33.407	3

Member Point Loads (BLC 6 : Antenna Wi Side)

	Member Label	Direction	Magnitude[lb.k-ft]	Location[ft.%,]
1	MP1A	X	10.826	0
2	MP1A	X	10.826	4.4
3	MP2A	X	34.261	0
4	MP2A	X	34.261	8
5	MP1A	X	7.086	3
6	MP2A	X	14.116	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	M6	Y	-500	2.75

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	-23.427	-23.427	0	0
2	M2	Y	-23.427	-23.427	0	%100
3	MP1A	Y	-13.703	-13.703	0	%100
4	MP2A	Y	-13.703	-13.703	0	%100
5	M5	Y	-13.703	-13.703	0	%100
6	M6	Y	-23.427	-23.427	0	2.75

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	-15.883	-15.883	0	0
2	M2	PZ	-15.883	-15.883	0	%100
3	MP1A	PZ	-5.658	-5.658	0	%100
4	MP2A	PZ	-5.658	-5.658	0	%100
5	M5	PZ	-5.658	-5.658	0	%100
6	M6	PZ	-15.883	-15.883	0	2.75

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.%,]
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Member Distributed Loads (BLC 12 : Structure Wi Front) (Continued)

Member Label	Direction	Start Magnitude[lb/ft,F,ksf]	End Magnitud...	Start Location[ft,%]	End Location[ft,%]
1	M1	PZ	-7.523	-7.523	0
2	M2	PZ	-7.523	-7.523	0
3	MP1A	PZ	-4.69	-4.69	0
4	MP2A	PZ	-4.69	-4.69	0
5	M5	PZ	-4.69	-4.69	0
6	M6	PZ	-7.523	-7.523	0

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,%]
1	M1	PX	15.883	15.883	0
2	M2	PX	15.883	15.883	0
3	MP1A	PX	5.658	5.658	0
4	MP2A	PX	5.658	5.658	0
5	M5	PX	5.658	5.658	0
6	M6	PX	15.883	15.883	0

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	7.523	7.523	0
2	M2	PX	7.523	7.523	0
3	MP1A	PX	4.69	4.69	0
4	MP2A	PX	4.69	4.69	0
5	M5	PX	4.69	4.69	0
6	M6	PX	7.523	7.523	0

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
2	N13	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	631.934	4	1731.344	5	777.968	1	.312	1	.69	4
2		min	-631.584	3	410.887	2	-784.166	2	-1.889	6	-.71	3
3	N13	max	39.587	2	60.717	2	475.321	1	.018	3	.023	3
4		min	-41.133	1	-41.853	1	-469.124	2	-.015	4	-.019	4
5	Totals:	max	653.857	4	1760.75	7	1253.29	1				
6		min	-653.857	3	471.604	4	-1253.29	2				

Envelope Member Section Forces

Member	Sec	Axial[lb]	LC	y Shear[lb]	LC	z Shea...LC	Torqu...LC	y-y Mo...LC	z-z Mo...LC				
1	M1	1	max	0	1	0	1	0	1	0	1	0	1
2			min	0	1	-750	9	0	1	0	1	0	1
3		2	max	457.67	3	-260.238	2	454.485	2	.813	2	.202	2
4			min	-458.02	4	-1187.125	5	-448.2...	1	-.804	1	-.196	1
5		3	max	457.67	3	-270.413	2	471.956	2	.813	2	.521	2



Envelope Member Section Forces (Continued)

Member	Sec		Axial[lb]	LC	y Shear[lb]	LC	z Shea...	LC Torqu...	LC y-y Mo...	LC z-z Mo...	LC			
6		min	-458.02	4	-1213.406	5	-465.6...	1	-.804	1	-.51	1	-.164	4
7		4 max	457.67	3	-280.588	2	489.428	2	.813	2	.851	2	2.253	7
8		min	-458.02	4	-1239.687	5	-483.1...	1	-.804	1	-.836	1	.059	4
9		5 max	457.67	3	-290.762	2	506.899	2	.813	2	1.194	2	3.107	7
10		min	-458.02	4	-1265.968	5	-500.62	1	-.804	1	-1.174	1	.29	4
11	M2	1 max	777.968	1	1731.428	5	631.58	3	1.463	10	.69	4	1.889	6
12		min	-784.166	2	410.594	2	-631.9...	4	-2.578	9	-.71	3	-.312	1
13		2 max	777.968	1	1721.871	5	625.227	3	1.463	10	.591	1	1.463	6
14		min	-784.166	2	406.894	2	-625.5...	4	-2.578	9	-.609	2	-.44	1
15		3 max	777.968	1	1712.314	5	618.874	3	1.463	10	.58	1	1.039	6
16		min	-784.166	2	403.194	2	-619.2...	4	-2.578	9	-.599	2	-.567	1
17		4 max	777.968	1	1702.757	5	612.52	3	1.463	10	.57	1	.936	2
18		min	-784.166	2	399.494	2	-612.8...	4	-2.578	9	-.589	2	-.693	1
19		5 max	777.968	1	1693.201	5	606.167	3	1.463	10	.56	1	.837	2
20		min	-784.166	2	395.794	2	-606.5...	4	-2.578	9	-.579	2	-.818	1
21	MP1A	1 max	78.674	5	38.691	4	68.834	1	.004	3	.008	8	0	1
22		min	11.22	10	-38.677	3	-68.839	2	-.004	4	.001	10	0	1
23		2 max	103.242	5	51.14	4	81.283	1	.004	3	.104	1	.062	3
24		min	16.947	10	-51.126	3	-81.288	2	-.004	4	-.102	2	-.062	4
25		3 max	-41.994	10	84.889	3	113.71	2	0	7	.153	1	.103	3
26		min	-194.183	7	-84.907	4	-113.7...	1	0	10	-.153	2	-.103	4
27		4 max	-16.947	10	51.093	3	81.248	2	0	7	.027	1	.019	3
28		min	-103.242	7	-51.111	4	-81.241	1	0	10	-.027	2	-.019	4
29		5 max	0	10	.074	10	.083	5	0	7	0	10	0	4
30		min	0	9	-.17	7	-.007	2	0	10	0	9	0	3
31	MP2A	1 max	373.006	6	156.203	4	386.284	1	.019	3	.045	5	0	1
32		min	76.8	9	-156.002	3	-386.3...	2	-.019	4	.009	9	0	1
33		2 max	413.559	6	174.31	4	404.391	1	.019	3	.8	1	.33	3
34		min	89.948	9	-174.109	3	-404.41	2	-.019	4	-.781	2	-.331	4
35		3 max	-61.724	2	210.728	3	47.437	1	.008	9	.189	1	.544	3
36		min	-507.69	5	-211.402	4	-41.293	2	-.001	10	-.226	2	-.58	4
37		4 max	-48.575	2	192.621	3	65.544	1	.008	9	.302	1	.14	3
38		min	-467.136	5	-193.295	4	-59.4	2	-.001	10	-.326	2	-.176	4
39		5 max	-76.8	10	155.255	3	385.528	2	.019	4	-.009	9	0	3
40		min	-373.006	7	-155.389	4	-385.5...	1	-.019	3	-.045	8	0	4
41	M5	1 max	475.172	1	41.412	5	20.867	4	.175	4	0	1	0	1
42		min	-466.766	2	9.305	2	-20.867	3	-.209	3	0	1	0	1
43		2 max	476.086	1	20.706	5	10.433	4	.175	4	.018	4	-.008	2
44		min	-468.722	2	4.652	2	-10.433	3	-.209	3	-.018	3	-.036	5
45		3 max	477.001	1	0	1	0	1	.175	4	.024	4	-.011	2
46		min	-470.678	2	0	1	0	1	-.209	3	-.024	3	-.048	5
47		4 max	477.916	1	-4.652	2	10.433	3	.175	4	.018	4	-.008	2
48		min	-472.634	2	-20.706	5	-10.433	4	-.209	3	-.018	3	-.036	5
49		5 max	478.831	1	-9.305	2	20.867	3	.175	4	0	1	0	1
50		min	-474.59	2	-41.412	5	-20.867	4	-.209	3	0	1	0	1
51	M6	1 max	148.5	4	855.367	10	277.307	1	.014	1	.615	2	2.28	10
52		min	-148.5	3	105.367	2	-277.3...	2	-.025	6	-.615	1	.217	4
53		2 max	148.5	4	845.192	10	259.835	1	.014	1	.43	2	1.695	10
54		min	-148.5	3	95.192	2	-259.8...	2	-.025	6	-.43	1	.149	4
55		3 max	148.5	4	835.017	10	242.364	1	.014	1	.257	2	1.118	10
56		min	-148.5	3	85.017	2	-242.3...	2	-.025	6	-.257	1	.087	4
57		4 max	148.5	4	824.842	10	224.892	1	.014	1	.097	2	.547	10
58		min	-148.5	3	74.842	2	-224.8...	2	-.025	6	-.097	1	.032	4
59		5 max	0	1	750	10	0	1	0	1	0	1	0	1
60		min	0	1	0	1	0	1	0	1	0	1	0	1



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	HSS4x4x4	.202	2.75	6	.073	2.75	z	2	1351...	139518	16.181	16.181	... H1-1b
2	M2	HSS4x4x4	.126	0	6	.220	0	y	9	1389...	139518	16.181	16.181	... H1-1b
3	MP1A	PIPE 2.0	.106	2.464	1	.012	2.521		2	2235...	32130	1.872	1.872	... H1-1b
4	MP2A	PIPE 2.5	.286	2.5	1	.028	2.5		1	3003...	50715	3.596	3.596	... H1-1b
5	M5	PIPE 2.0	.028	2.322	5	.128	0		3	2480...	32130	1.872	1.872	... H1-1b
6	M6	HSS4x4x4	.145	0	10	.023	0	y	10	1351...	139518	16.181	16.181	... H1-1b

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

Memb...	Shape	Code Check	Loc[...]	She...Loc[...]	phi*P...	phi*T...	phi*...	phi*...	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 9

Transcom Engineering, Inc.

Wireless Network Design and Deployment

Radio Frequency Emissions Analysis Report

T-MOBILE Existing Facility

Site ID: CT11530B

Tower Ventures -Stafford
157 Chestnut Road
Stafford, CT 06076

June 13, 2019

Transcom Engineering Project Number: 737001-0098

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	6.05 %

Transcom Engineering, Inc.

Wireless Network Design and Deployment

June 13, 2019

T-MOBILE

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

Emissions Analysis for Site: **CT11530B – Tower Ventures -Stafford**

Transcom Engineering, Inc (“Transcom”) was directed to analyze the proposed upgrades to the T-MOBILE facility located at **157 Chestnut Road, Stafford, 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 97-01 and ANSI/IEEE Std C95.1. The FCC regulates Maximum Permissible Exposure in units of microwatts per square centimeter ($\mu\text{W}/\text{cm}^2$). The number of $\mu\text{W}/\text{cm}^2$ calculated at each sample point is called the power density. The exposure limit for power density varies depending upon the frequencies being utilized. Wireless Carriers and Paging Services use different frequency bands each with different exposure limits, therefore it is necessary to report results and limits in terms of percent MPE rather than power density.

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

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

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

Transcom Engineering, Inc.

Wireless Network Design and Deployment

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.

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CALCULATIONS

Calculations were performed for the proposed upgrades to the T-MOBILE antenna facility located at **157 Chestnut Road, Stafford, 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
GSM	1900 MHz (PCS)	1	15
LTE / 5G NR	600 MHz	2	40
LTE	700 MHz	2	20

Table 1: Channel Data Table

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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	RFS APXV18-206516S-C-A20	177
A	2	RFS APXVAARR24_43-U-NA20	175
B	1	RFS APXV18-206516S-C-A20	177
B	2	RFS APXVAARR24_43-U-NA20	175
C	1	RFS APXV18-206516S-C-A20	177
C	2	RFS APXVAARR24_43-U-NA20	175

Table 2: Antenna Data

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

Cable losses were factored in the calculations for this site. Since all **1900 MHz (PCS)** radios are ground mounted the following cable loss values were used. For each ground mounted **1900 MHz (PCS)** radio there was **1.96 dB** of cable loss calculated into the system gains / losses for this site. These values were calculated based upon the manufacturers specifications for **190 feet** of **1-5/8"** coax.

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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	RFS APXV18-206516S-C-A20	1900 MHz (PCS)	16.3	5	175	4,753.77	0.58
Antenna A2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.73
Sector A Composite MPE%							1.31
Antenna B1	RFS APXV18-206516S-C-A20	1900 MHz (PCS)	16.3	5	175	4,753.77	0.58
Antenna B2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.73
Sector B Composite MPE%							1.31
Antenna C1	RFS APXV18-206516S-C-A20	1900 MHz (PCS)	16.3	5	175	4,753.77	0.58
Antenna C2	RFS APXVAARR24_43-U-NA20	600 MHz / 700 MHz	12.95 / 13.35	4	120	2,443.03	0.73
Sector C Composite MPE%							1.31

Table 3: T-MOBILE Emissions Levels

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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	1.31 %
Verizon Wireless	3.21 %
AT&T	1.53 %
Site Total MPE %:	6.05 %

Table 4: All Carrier MPE Contributions

T-MOBILE Sector A Total:	1.31 %
T-MOBILE Sector B Total:	1.31 %
T-MOBILE Sector C Total:	1.31 %
Site Total:	6.05 %

Table 5: Site MPE Summary

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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 ($\mu\text{W}/\text{cm}^2$)	Frequency (MHz)	Allowable MPE ($\mu\text{W}/\text{cm}^2$)	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	4	1,086.58	177	5.34	1900 MHz (PCS)	1000	0.53%
T-Mobile 1900 MHz (PCS) GSM	1	407.47	177	0.50	1900 MHz (PCS)	1000	0.05%
T-Mobile 600 MHz LTE / 5G NR	2	788.97	175	1.99	600 MHz	400	0.50%
T-Mobile 700 MHz LTE	2	432.54	175	1.09	700 MHz	467	0.23%
						Total:	1.31%

Table 6: T-MOBILE Maximum Sector MPE Power Values

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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:	1.31 %
Sector B:	1.31 %
Sector C:	1.31 %
T-MOBILE Maximum Total (per sector):	1.31 %
Site Total:	6.05 %
Site Compliance Status:	COMPLIANT

The anticipated composite MPE value for this site assuming all carriers present is **6.05 %** 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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