NORTHEAST SITE SOLUTIONS
Turnkey Wireless Development

Northeast Site Solutions
Denise Sabo
199 Brickyard Rd Farmington, CT 06032
860-209-4690
denise@northeastsitesolutions.com

October 31, 2017

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

RE: Exempt Modification Application
10 Redwood Lane, Avon CT 06001
Latitude: 41.772499
Longitude: -72.879999
T-Mobile Site#: CT11380C-MWAAV

Dear Ms. Bachman:

T-Mobile is requesting to file an exempt modification for an existing 105-foot monopole tower located at 10 Redwood Lane, Avon CT 06001. T-Mobile currently has approval for nine (9) antennas at the 110-foot level of the existing 105-foot tower. The property is owned by Avon Water Company and tower is owned by SBA Communications. T-Mobile now intends to install one (1) IBR1300 Dish. The new dish would be installed at the 110-foot and level of the tower.

Planned Modifications:
Remove:
NONE

Remove and Replace:
NONE

Install New:
(1)IBR1300 Dish
(1)Fiber line
(2)CAT6 Cables

Existing to Remain:
(12) 1-5/8" Coax
(1) Hybrid line
(3) RRU
(3) TMA
(3) LNX6515 Antenna – 700 Mhz
(6) Air21 Antenna – 1900/2100 Mhz

This facility was approved by the Town of Avon PZC. The PZ approval to replace existing 80-ft tower with 110-ft wireless telecommunications facility.– Please see attached.

NORTHEAST SITE SOLUTIONS

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Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies§ 16- SOj-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.SA. § 16-SOj-73, a copy of this letter is being sent to Town Manager, Brandon Robertson, Elected Official and Brandon Robertson, Director of Planning for the Town of Avon, as well as the property owner and the tower owner.

The planned modifications to the facility fall squarely within those activities explicitly provided for in R.C.S;A. § 16-50j-72(b)(2).

1. The proposed modifications will not result in an increase in the height of the existing structure.

2. The proposed modifications will not require the extension of the site boundary.

3. The proposed modifications will not increase noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.

4. The operation of the replacement antennas will not increase radio frequency emissions at the facility to a level at or above the Federal Communications Commission safety standard.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site. ·

6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

Denise Sabo
Mobile: 860-209-4690
Fax: 413-521-0558
Office: 199 Brickyard Rd, Farmington, CT 06032
Email: denise@northeastsitesolutions.com

Attachments
cc: Brandon Robertson- as elected official
Hiram Peck III, AICP, Director of Planning
Avon Water Company - as property owner
SBA Communications – as tower owner

Exhibit A

July 27, 2000

Mr. Thomas F. Flynn III
SBA Inc.
80 Eastern Boulevard
Glastonbury, CT 06033

Dear Mr. Flynn:

At a meeting held on Tuesday, July 25, 2000, the Planning and Zoning Commission of the Town of Avon voted as follows:

App. #3624 - The Avon Water Company, owner, SBA Inc., applicant, request for Special Exception under Section IV.A.4.a. of Avon Zoning Regulations to remove existing 80-foot tower and replace with a 110-foot wireless telecommunications facility, 10 Redwood Lane in Farmington Woods, Assessor's Map 17, Parcel 7, in a R-30 Zone. APPROVED WITH CONDITIONS.

App. #3626 - The Avon Water Company, owner, SBA Inc., applicant, request for Site Plan Approval to remove existing tower and replace with 110-foot wireless telecommunications facility, 10 Redwood Lane in Farmington Woods, Assessor's Map 17, Parcel 7, in a R-30 Zone. APPROVED WITH CONDITIONS.

The Commission approved App. #3624 subject to the following conditions:

1. The color of the tower shall be matte gray.

2. The applicant shall post a bond in the amount of $50,000 to provide for removal of the tower if the tower is inactive for a period of one year or if the Town Engineer determines that it is a hazard.

3. Approval is for 5 antenna clusters on the tower and ancillary cabinets and sheds. Any modest changes in antenna appearance or structure or in structures on the ground may be approved by the Town Planner. If the Town Planner so chooses, such changes may be brought to the Commission for approval.

The Commission approved App. #3626 subject to the following condition:

1. Approval is for 5 antenna clusters on the tower and ancillary cabinets and sheds. Any modest changes in antenna appearance or structure or in structures on the ground may be approved by the Town Planner. If the Town Planner so chooses, such changes may be brought to the Commission for approval.

In addition, please note that the Commission has adopted a standard condition of approval relating to inspections of the property as may be necessary, which is as follows: Until the final permanent certificate of occupancy is issued, Town staff members, officials, and consultants as designated by the Town Planner or the Chairman shall be authorized and permitted to conduct inspections upon the property.

Please note that prior to your Special Exception becoming effective, a certified copy must be filed with the Town Clerk. The fee is $13 per page. Please return the enclosed Grant of Special Exception to this office for the Chairman's signature along with the recording fee (check should be payable to Town of Avon). No building permit shall be issued until this certification has been returned and the 15-day appeal period has expired.

Upon compliance with the foregoing conditions, the Chairman of the Planning and Zoning Commission has been authorized to sign the mylar maps for filing. This letter of approval shall be reproduced on the mylars. Please submit 1 set of fixed-line photo mylars and 4 copies. Please include a signature block for the Chairman's signature (sample enclosed).

Please note that this approval is valid for one year from the date of approval unless construction is in progress or unless an extension of time has been granted by the Commission. It is the applicant's responsibility to apply for renewal.

Sincerely yours,

Jean Frey, Clerk
Planning and Zoning Commission

Enclosures

CERTIFIED MAIL 7099 3400 0010 2712 1020

cc: Building Official
Town Engineer
Assessor
The Avon Water Company

Exhibit B

Copy and paste the following string into an email to link to the current map view:

Tighe&Bond

10m
40ft

Close

Print Map

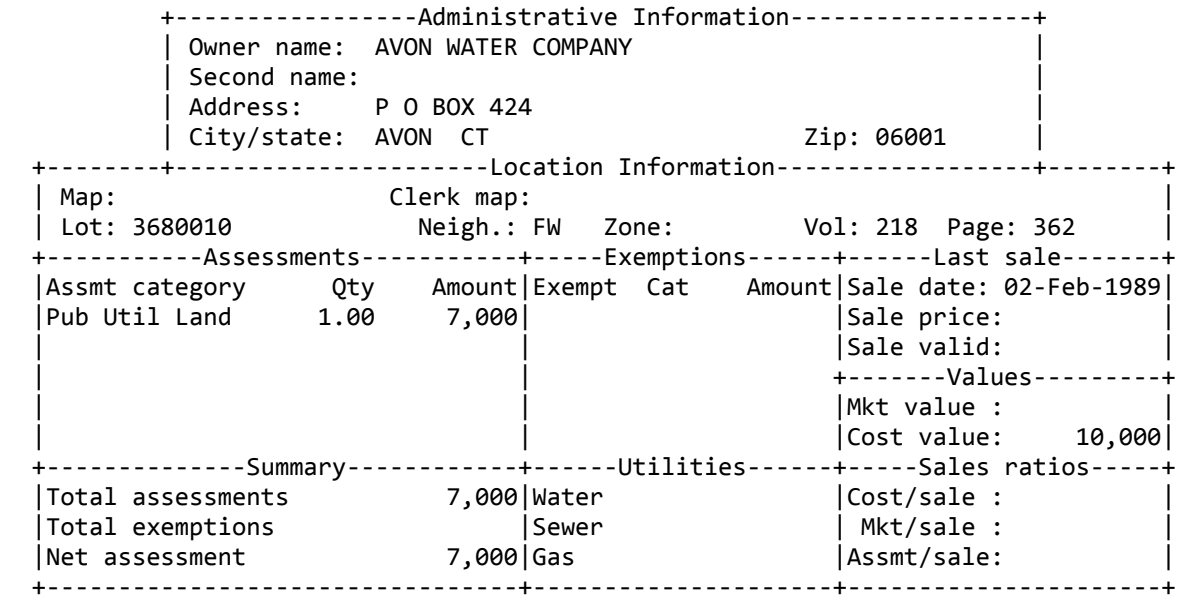
Size:

Scale: 1" = ft. Title:

Close Print

Tighe&Bond

Property at 00010 REDWOOD LANE Prop ID 3680010



Card 01 Street Card Sales History Home Page

Exhibit C

SITE NAME: SBA AVON/RT. 177

10 REDWOOD LANE
AVON, CT 06001
HARTFORD COUNTY

SITE NUMBER: CT11380C

NOTE:
THESE PLANS ARE BASED ON INFORMATION OBTAINED JUNE 29, 2015. THEY HAVE NOT BEEN FIELD VERIFIED. THE T-MOBILE CONTRACTOR IS RESPONSIBLE TO VERIFYING ALL ITEMS AND NOTIFYING THE ENGINEER OF RECORD AND DISCREPANCIES.

RF DESIGN GUIDELINE: 702Cu

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

GENERAL NOTES

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.

STRUCTURAL DESIGNS AND DETAILS FOR ANTENNA MOUNTS COMPLETED BY HUDSON DESIGN ON BEHALF OF T-MOBILE ARE INCLUSIVE OF THE ENTIRE ANTENNA SUPPORT STRUCTURE (GLOBAL STRUCTURAL STABILITY ANALYSIS BY OTHERS), EXISTING TOWER PLATFORM, EXISTING ANTENNA MOUNTS AND ALL OTHER ASPECTS OF THE STRUCTURE THAT WILL SUPPORT THE T-MOBILE MODERNIZATION EQUIPMENT DEPLOYMENT AS DEPICTED HEREIN.

HUDSON DESIGN ASSUMES THAT THE TOWER IS PROPERLY CONSTRUCTED AND MAINTAINED. ALL STRUCTURAL MEMBERS AND THEIR CONNECTION ARE ASSUMED TO BE IN GOOD CONDITION AND ARE FREE FROM DEFECTS WITH NO DETERIORATION TO ITS MEMBER CAPACITIES

PROJECT SUMMARY

SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY T-MOBILE EQUIPMENT MODERNIZATION
ZONING JURISDICTION: (TOWN OF AVON)	BASED ON INFORMATION PROVIDED BY T-MOBILE, THIS TELECOMMUNICATIONS EQUIPMENT DEPLOYMENT IS AN ELIGIBLE FACILITY UNDER THE TAX RELIEF ACT OF 2012, 47 USC 1455(A), AND IS SUBJECT TO AN EXPEDITED ELIGIBLE FACILITIES REQUEST/REVIEW AND ZONING PRE-EMPTION FOR LOCAL DISCRETIONARY PERMITS (VARIANCE, SPECIAL PERMIT, SITE PLAN REVIEW).
SITE ADDRESS:	10 REDWOOD LANE AVON, CT 06001
LATITUDE:	41° 46' 19.7754" N
LONGITUDE:	72° 52' 47.8554" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
TOWER OWNER	SBA TOWERS, LLC
SBA SITE ID:	CT01498-S
SBA SITE NAME:	AVON
SBA REGIONAL SITE MANAGER:	STEPHEN ROTH PHONE: 860-539-4920 SRoth@sbasite.com

APPROVALS

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

CALL
BEFORE YOU DIG
CALL TOLL FREE 888-DIG-SAFE
OR CALL 811

UNDERGROUND SERVICE ALERT

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	2
GN-1	GENERAL NOTES	2
A-1	COMPOUND & ELEVATION PLAN	2
A-2	EXISTING & PROPOSED ANTENNA PLANS	2
A-3	EQUIPMENT DETAILS	2
E-1	ONE-LINE DIAGRAM AND GROUNDING DETAILS	2

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
OFFICE: (508) 286-2700
FAX: (508) 286-2893

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720
FAX: (508) 251-1755

Hudson Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 23551
LICENSED
PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
3	09/27/17	FINAL - MW ADD	DJM
2	09/26/17	REVISED - MW ADD	DJM
1	07/22/15	ISSUED FOR CONSTRUCTION	JA
0	07/17/15	ISSUED FOR CONSTRUCTION	VP

SITE NUMBER:
CT11380C
SITE NAME:
SBA AVON/RT. 177
SITE ADDRESS:
10 REDWOOD LANE
AVON, CT 06001
HARTFORD COUNTY

SHEET TITLE
TITLE SHEET

SHEET NUMBER
T-1

GROUNDING NOTES

1. THE SUBCONTRACTOR SHALL REVIEW AND INSPECT THE EXISTING FACILITY GROUNDING SYSTEM AND LIGHTNING PROTECTION SYSTEM (AS DESIGNED AND INSTALLED) FOR STRICT COMPLIANCE WITH THE NEC (AS ADOPTED BY THE AHJ), THE SITE-SPECIFIC (UL, LPI, OR NFPA) LIGHTING PROTECTION CODE, AND GENERAL COMPLIANCE WITH TELCORDIA AND TIA GROUNDING STANDARDS. THE SUBCONTRACTOR SHALL REPORT ANY VIOLATIONS OR ADVERSE FINDINGS TO THE CONTRACTOR FOR RESOLUTION.

2. ALL GROUND ELECTRODE SYSTEMS (INCLUDING TELECOMMUNICATION, RADIO, LIGHTNING PROTECTION, AND AC POWER GES'S) SHALL BE BONDED TOGETHER, AT OR BELOW GRADE, BY TWO OR MORE COPPER BONDING CONDUCTORS IN ACCORDANCE WITH THE NEC.

3. THE SUBCONTRACTOR SHALL PERFORM IEEE FALL-OF-POTENTIAL RESISTANCE TO EARTH TESTING (PER IEEE 1100 AND 81) FOR NEW GROUND ELECTRODE SYSTEMS. THE SUBCONTRACTOR SHALL FURNISH AND INSTALL SUPPLEMENTAL GROUND ELECTRODES AS NEEDED TO ACHIEVE A TEST RESULT OF 5 OHMS OR LESS.

4. METAL RACEWAY SHALL NOT BE USED AS THE NEC REQUIRED EQUIPMENT GROUND CONDUCTOR. STRANDED COPPER CONDUCTORS WITH GREEN INSULATION, SIZED IN ACCORDANCE WITH THE NEC, SHALL BE FURNISHED AND INSTALLED WITH THE POWER 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 BTS 2 AWG STRANDED COPPER FOR OUTDOOR BTS.

6. EXOTHERMIC WELDS SHALL BE USED FOR ALL GROUNDING CONNECTIONS BELOW GRADE.

7. APPROVED ANTIOXIDANT COATINGS (I.E., CONDUCTIVE GEL OR PASTE) SHALL BE USED ON ALL COMPRESSION AND BOLTED GROUND CONNECTIONS.

8. ICE BRIDGE BONDING CONDUCTORS SHALL BE EXOTHERMICALLY BONDED OR BOLTED TO THE BRIDGE AND THE TOWER GROUND BAR.

9. ALUMINUM CONDUCTOR OR COPPER CLAD STEEL CONDUCTOR SHALL NOT BE USED FOR GROUNDING CONNECTIONS.

10. MISCELLANEOUS 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 BONDING FITTINGS OR BY BONDING ACROSS THE DISCONTINUITY WITH 6 AWS COPPER WIRE UL APPROVED GROUNDING TYPE CONDUIT CLAMPS.

12. ALL NEW STRUCTURES WITH A FOUNDATION AND/OR FOOTING HAVING 20 FT. OR MORE OF 1/2 IN. OR GREATER ELECTRICALLY CONDUCTIVE REINFORCING STEEL MUST HAVE IT BONDED TO THE GROUND RING USING AN EXOTHERMIC WELD CONNECTION USING #2 AWG SOLID BARE TINNED COPPER GROUND WIRE, PER NEC 250.50

GENERAL NOTES

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

   CONTRACTOR – SBA COMMUNICATIONS CORP.
   SUBCONTRACTOR – GENERAL CONTRACTOR (CONSTRUCTION)
   OWNER – T-MOBILE

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

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

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

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

6. "KITTING LIST" SUPPLIED WITH THE BID PACKAGE IDENTIFIES ITEMS THAT WILL BE SUPPLIED BY CONTRACTOR. ITEMS NOT INCLUDED IN THE BILL OF MATERIALS AND KITTING LIST SHALL BE SUPPLIED BY THE SUBCONTRACTOR.

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

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

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

10. THE SUBCONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, 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 OTHERWISE NOTED. PIPES SHALL BE ASTM A53 TYPE E (Fy = 36 ksi). ALL STEEL EXPOSED TO WEATHER SHALL BE HOT DIPPED GALVANIZED. TOUCHUP ALL SCRATCHES AND OTHER MARKS IN THE FIELD AFTER STEEL IS ERECTED USING A COMPATIBLE ZINC RICH PAINT.

16. CONSTRUCTION SHALL COMPLY WITH UMTS SPECIFICATIONS AND "GENERAL CONSTRUCTION SERVICES FOR CONSTRUCTION OF T-MOBILE SITES."

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

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

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

20. APPLICABLE BUILDING CODES:
    SUBCONTRACTOR'S WORK SHALL COMPLY WITH ALL APPLICABLE NATIONAL, STATE, AND LOCAL CODES AS ADOPTED BY THE LOCAL AUTHORITY HAVING JURISDICTION (AHJ) FOR THE LOCATION. THE EDITION OF THE AHJ ADOPTED CODES AND STANDARDS IN EFFECT ON THE DATE OF CONTRACT AWARD SHALL GOVERN THE DESIGN.
    BUILDING CODE: IBC 2012 W/ 2016 CT STATE BUILDING CODE AMENDMENTS
    ELECTRICAL CODE: REFER TO ELECTRICAL DRAWINGS
    LIGHTENING CODE: REFER TO ELECTRICAL DRAWINGS

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, METHODS OF CONSTRUCTION, OR OTHER REQUIREMENTS, THE MOST RESTRICTIVE REQUIREMENT SHALL GOVERN. WHERE THERE IS CONFLICT BETWEEN A GENERAL REQUIREMENT AND A SPECIFIC REQUIREMENT, THE SPECIFIC REQUIREMENT SHALL GOVERN.

ABBREVIATIONS

AGL	ABOVE GRADE LEVEL	EQ	EQUAL	REQ	REQUIRED
AWG	AMERICAN WIRE GAUGE	GC	GENERAL CONTRACTOR	RF	RADIO FREQUENCY
BBU	BATTERY BACKUP UNIT	GRC	GALVANIZED RIGID CONDUIT	TBD	TO BE DETERMINED
BTCW	BARE TINNED SOLID COPPER WIRE	MGB	MASTER GROUND BAR	TBR	TO BE REMOVED
BGR	BURIED GROUND RING	MIN	MINIMUM	TBRR	TO BE REMOVED AND REPLACED
BTS	BASE TRANSCEIVER STATION	P	PROPOSED	TYP	TYPICAL
E	EXISTING	NTS	NOT TO SCALE	UG	UNDER GROUND
EGB	EQUIPMENT GROUND BAR	RAD	RADIATION CENTER LINE (ANTENNA)	VIF	VERIFY IN FIELD
EGR	EQUIPMENT GROUND RING	REF	REFERENCE		

T-MOBILE NORTHEAST LLC
15 COMMERCE WAY, SUITE B
NORTON, MA 02766
OFFICE: (508) 286-2700
FAX: (508) 286-2893

SBA COMMUNICATIONS CORP.
134 FLANDERS ROAD, SUITE 125
WESTBOROUGH, MA 01581
TEL: (508) 251-0720
FAX: (508) 251-1755

Hudson Design Group LLC
45 BEECHWOOD DRIVE
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

STATE OF CONNECTICUT
DEREK J. CREASER
No. 23551
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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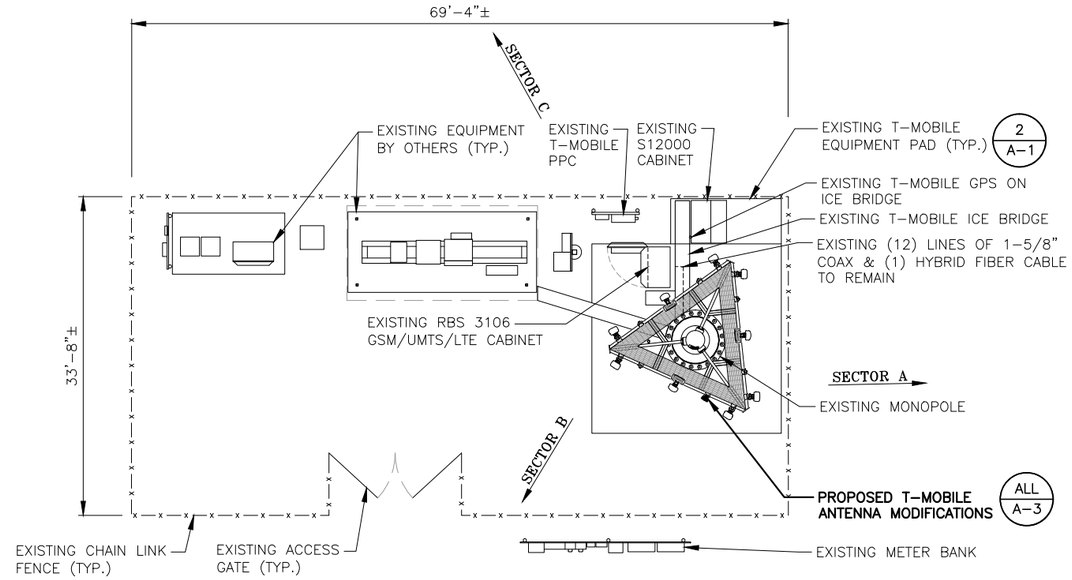
SITE NUMBER:
CT11380C

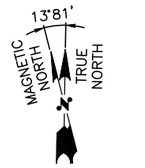
SITE NAME:
SBA AVON/RT. 177

SITE ADDRESS:
10 REDWOOD LANE
AVON, CT 06001
HARTFORD COUNTY

SHEET TITLE
GENERAL NOTES

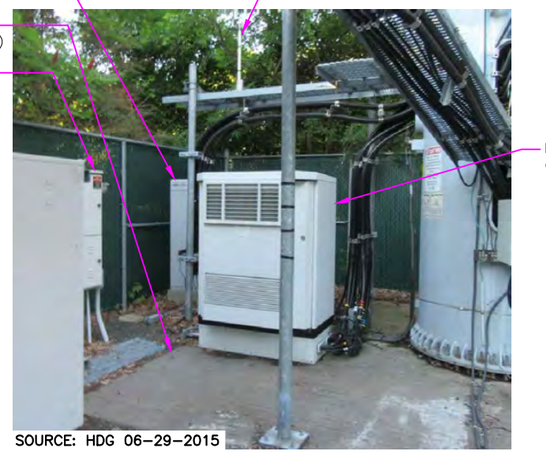
SHEET NUMBER
GN-1





COMPOUND PLAN 1 A-1
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"

0 4'-0" 8'-0" 16'-0" 24'-0"



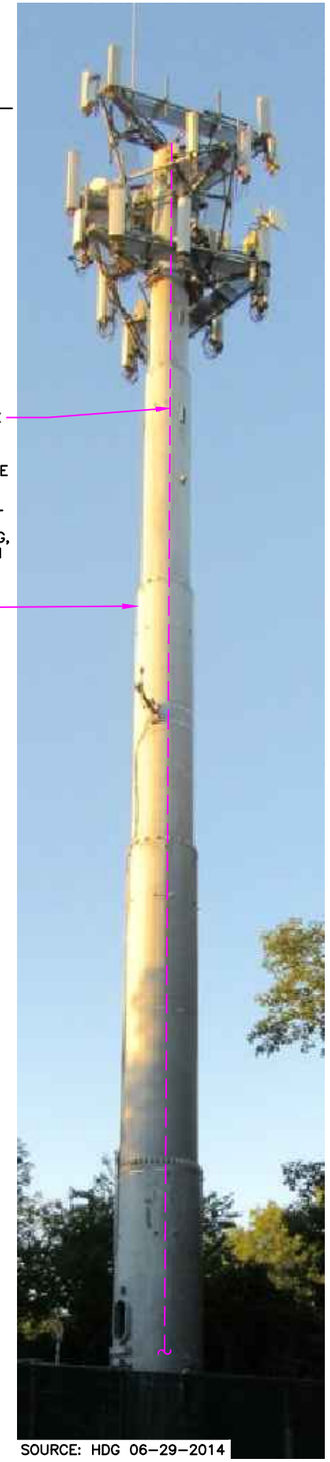
SOURCE: HDG 06-29-2015

EQUIPMENT PHOTO DETAIL 2 A-1
SCALE: N.T.S

2 A-2 ALL A-3 T-MOBILE PLATFORM
ELEV. = 110.0'± A.G.L (SBA*)

EXISTING (12) LINES OF 1-5/8" COAX AND (1) HYBRID FIBER CABLE TO REMAIN **PROPOSE (2) CAT6 CABLES (BELDEN OSP6U) AND (1) FIBER CABLE (CORNING FREEDM ONE RISER CABLE) (REFER TO SBA PROVIDED STRUCTURAL ANALYSIS FOR SPECIAL CABLE INSTALLATION REQUIREMENTS, BUNDLING, SHIELDING, MOUNTING AND RELOCATION OF EXISTING CABLES)**

EXISTING MONOPOLE



SOURCE: HDG 06-29-2014

ELEVATION PHOTO DETAIL 3 A-1
SCALE: N.T.S

STRUCTURAL NOTES:
PRIOR TO COMMENCING CONSTRUCTION, GC SHALL REFER TO TOWER STRUCTURAL ANALYSIS PROVIDED BY SBA TO DETERMINE IF THERE ANY SUPPLEMENTAL OR SPECIAL INSTALLATION REQUIREMENTS FOR TOWER TOP EQUIPMENT AND FOR CABLE BUNDLING, SHIELDING, MOUNTING, OR RELOCATION ARRANGEMENTS.

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
ENGINEER OF RECORD HAS MADE A VISUAL ASSESSMENT ONLY AND DETERMINED THAT THE EXISTING ANTENNA MOUNT IS ADEQUATE TO ACCOMMODATE ADDITIONAL EQUIPMENT LOADS. 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.

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Hudson Design Groupllc
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STATE OF CONNECTICUT
DEREK J. CREASER
No. 23551
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DPH

SUBMITTALS

REV.	DATE	DESCRIPTION	BY
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2	09/26/17	REVISED - MW ADD	DJM
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0	07/17/15	ISSUED FOR CONSTRUCTION	VP

SITE NUMBER:
CT11380C

SITE NAME:
SBA AVON/RT. 177

SITE ADDRESS:
10 REDWOOD LANE
AVON, CT 06001
HARTFORD COUNTY

SHEET TITLE
COMPOUND & ELEVATION PLAN

SHEET NUMBER
A-1

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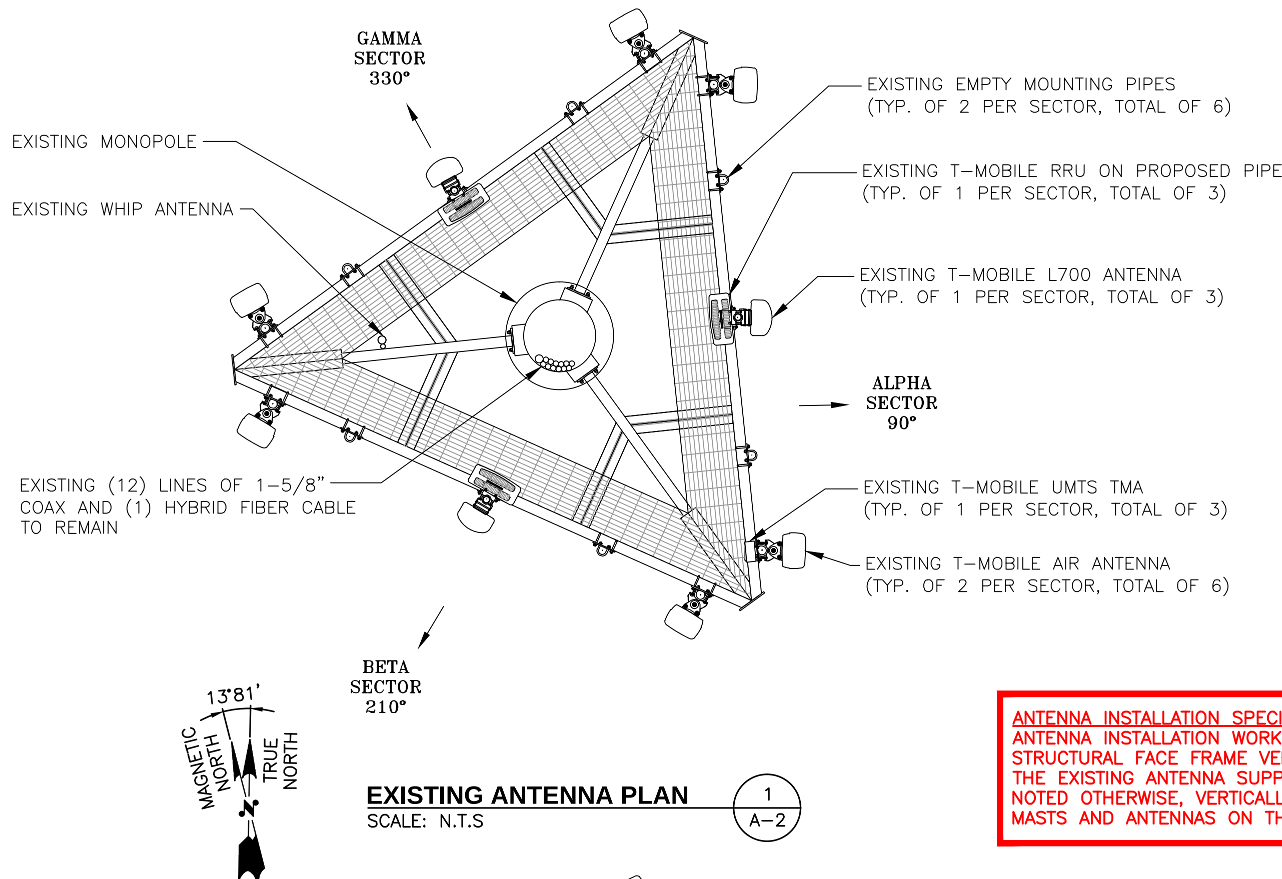
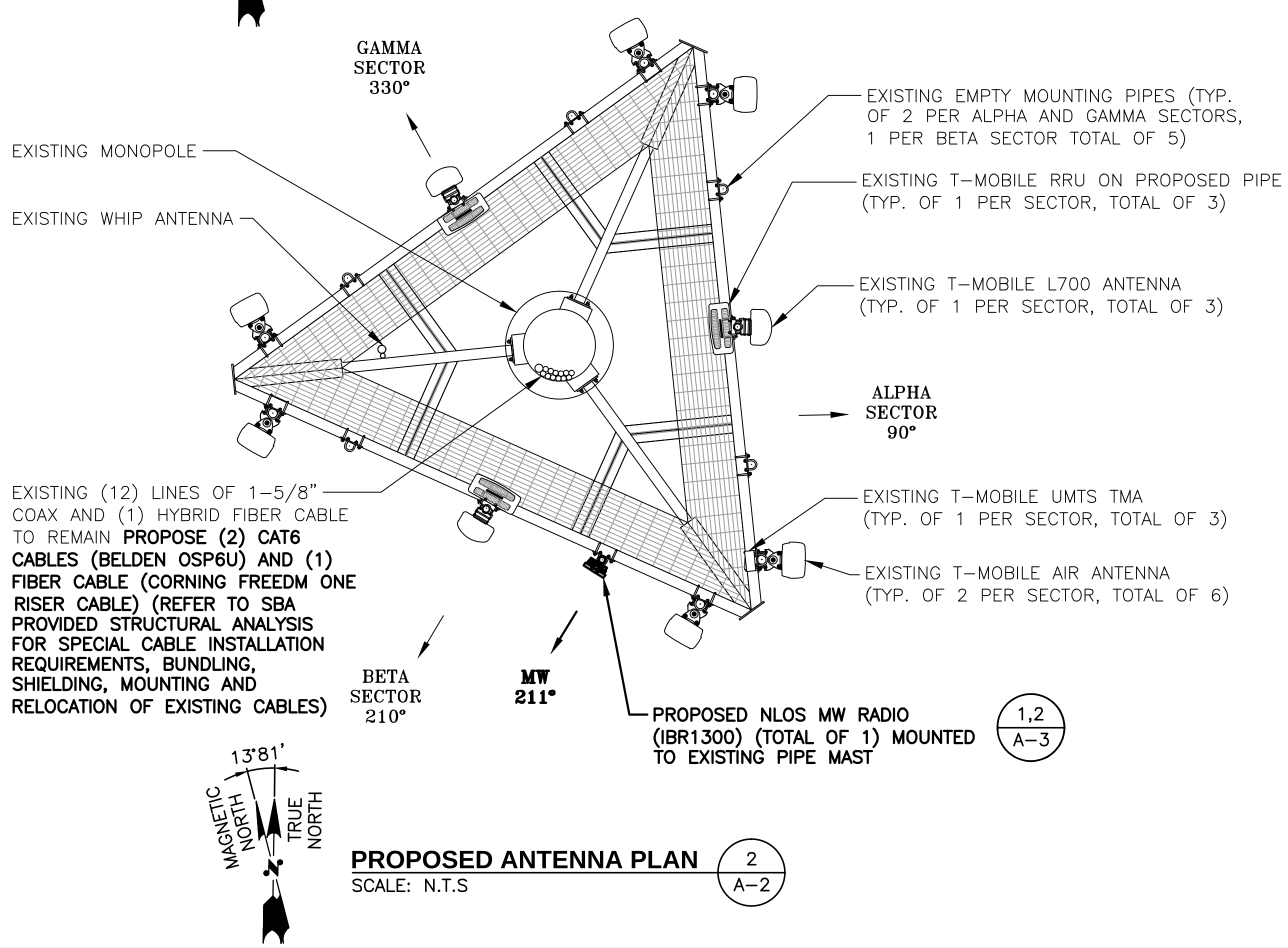
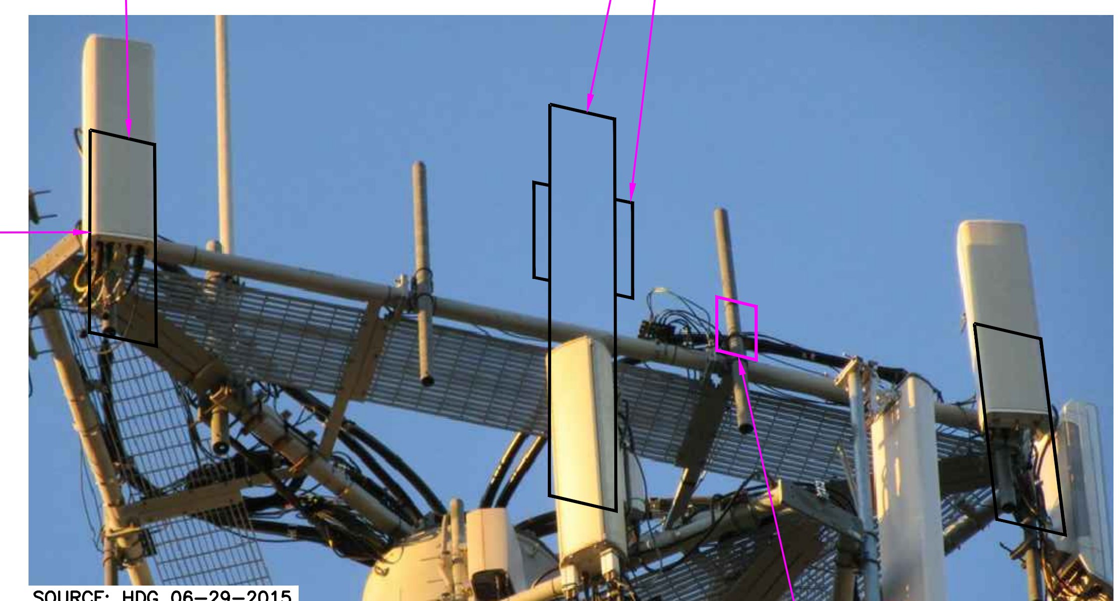


EXISTING ANTENNA PLAN (1 / A-2)
SCALE: N.T.S

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.



PROPOSED ANTENNA PLAN (2 / A-2)
SCALE: N.T.S



SOURCE: HDG 06-29-2015

PROPOSED ANTENNA PHOTO DETAIL (3 / A-2)
SCALE: N.T.S

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AVON, CT 06001
HARTFORD COUNTY

SHEET TITLE
EXISTING & PROPOSED ANTENNA PLANS

SHEET NUMBER
A-2

ANTENNA MOUNT STRUCTURAL ASSESSMENT REQUIREMENT:
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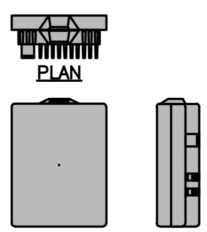
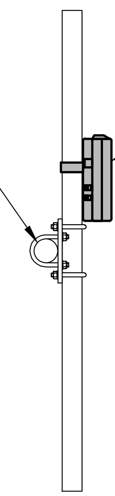
MW RADIO DIMENSIONS	
MODEL #	IBR1300_DS
MANUF.	FASTBACK
WIDTH	7.87"
DEPTH	10.24"
HEIGHT	3.54"
WEIGHT	8.82 LBS



PROPOSED MW RADIO DETAIL (1 / A-3)
SCALE: N.T.S



PROPOSED MW RADIO MOUNTING DETAIL (2 / A-3)
SCALE: N.T.S

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STATE OF CONNECTICUT
DEREK J. CREASER
No. 2?551
LICENSED PROFESSIONAL ENGINEER

CHECKED BY: BB

APPROVED BY: DPH

SUBMITTALS

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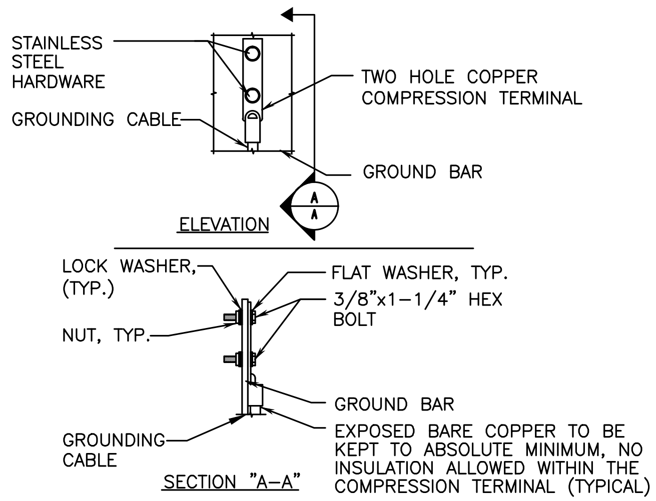
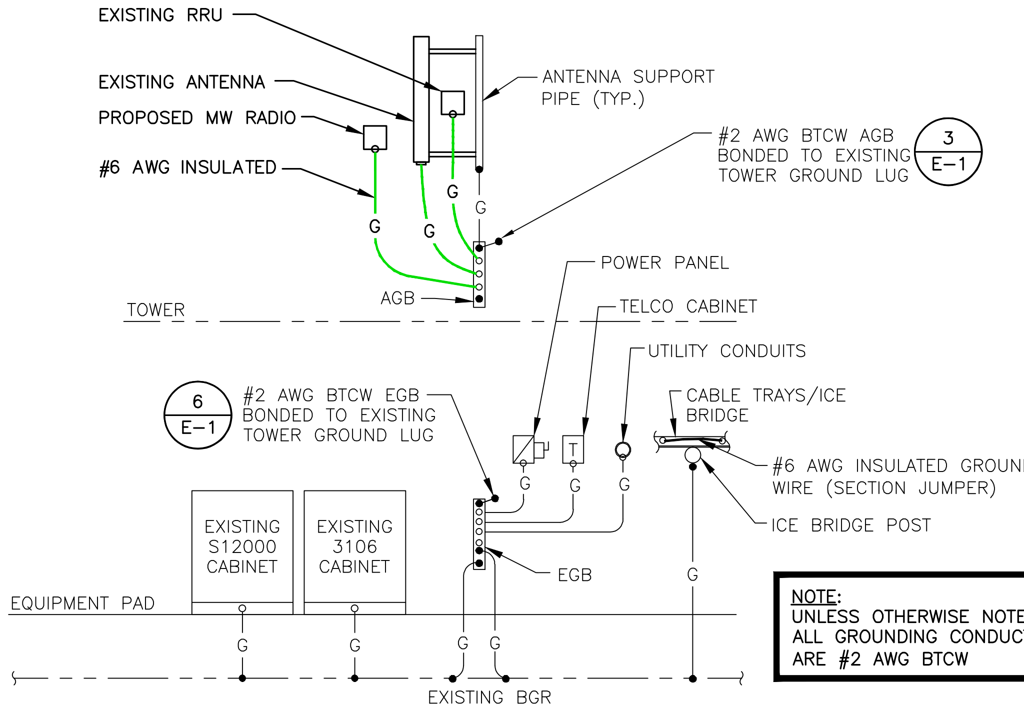
SHEET TITLE
EQUIPMENT DETAILS

SHEET NUMBER
A-3



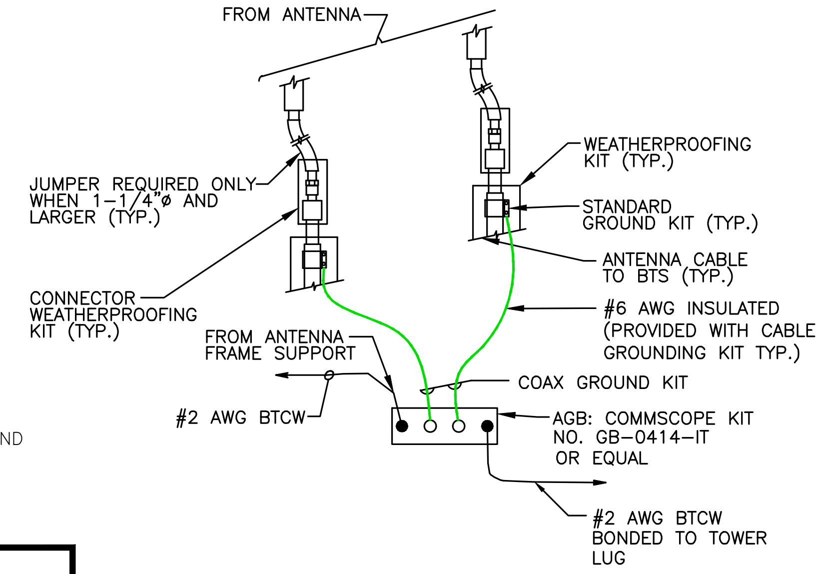
NOTE:
1. "DOUBLING UP" OR "STACKING " OF CONNECTION IS NOT PERMITTED.
2. OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
3. CADWELD DOWNLEADS FROM UPPER AGB/EGB, LOWER EGB, AND MGB.

TYPICAL GROUND BAR CONNECTION DETAIL (1 / E-1)
SCALE: N.T.S



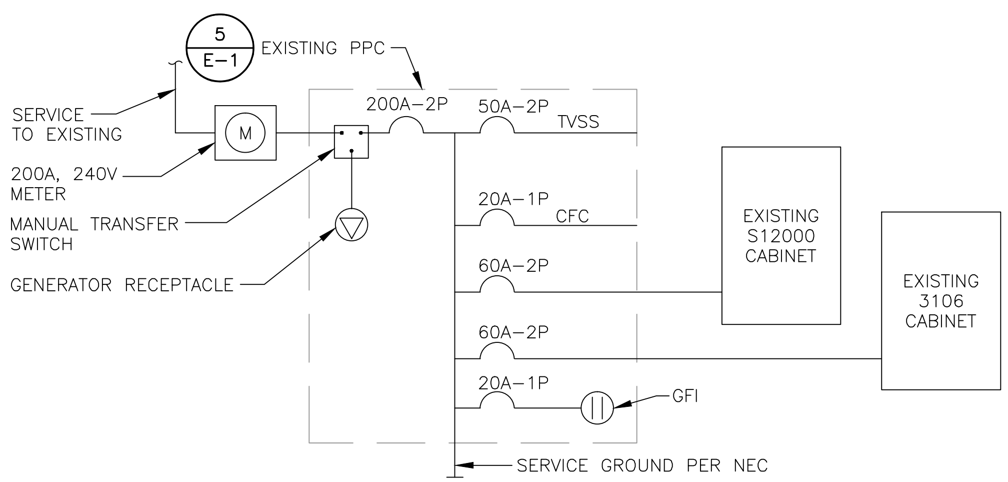
NOTE:
UNLESS OTHERWISE NOTED, ALL GROUNDING CONDUCTORS ARE #2 AWG BTCW

TYPICAL GROUNDING RISER DIAGRAM (2 / E-1)
SCALE: N.T.S

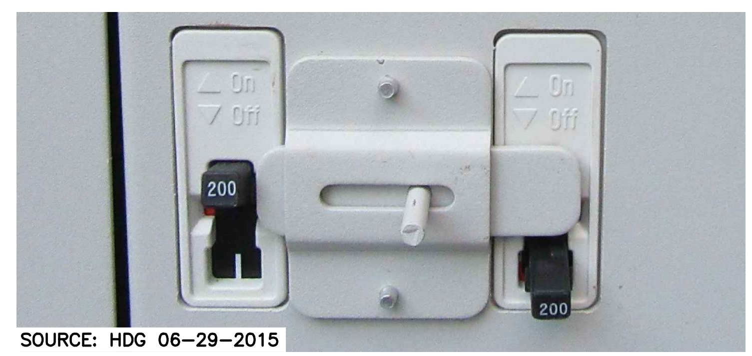


NOTE:
INSTALL CABLE GROUND KIT ABOVE HORIZONTAL BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO AGB/EGB.

TOWER TOP CABLE GROUNDING DETAIL (3 / E-1)
SCALE: N.T.S



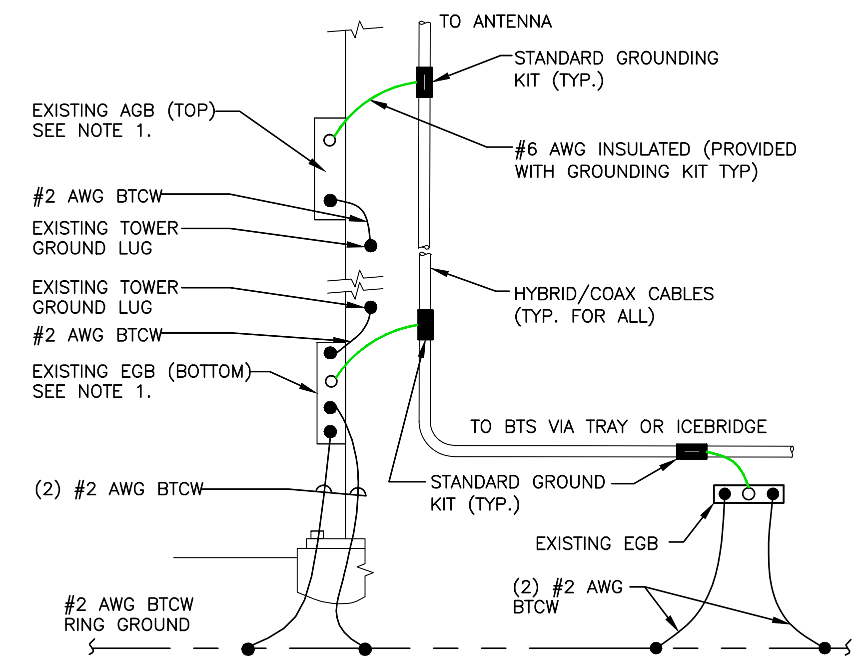
ONE LINE POWER DIAGRAM (4 / E-1)
SCALE: N.T.S



SOURCE: HDG 06-29-2015

SOURCE: HDG 06-29-2015

PHOTO DETAIL: PPC PANEL (5 / E-1)
SCALE: N.T.S



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

TOWER BOTTOM CABLE GROUNDING DETAIL (6 / E-1)
SCALE: N.T.S

ELECTRICAL LEGEND

A	AMPERE
V	VOLT
KWH	KILOWATT – HOUR
C	CONDUIT
GRC	GALVANIZED RIGID CONDUIT
BTCW	BARE TINNED (SOLID) COPPER WIRE (#2 AWG, UNLESS NOTES OTHERWISE)
G	GROUND
(ground symbol)	GROUND
MGB	MASTER GROUND BAR (○ MECHANICAL CONNECTION; ● CADWELD CONNECTION)
AGB/EGB	EQUIPMENT GROUND BAR/ANTENNA GROUND BAR
—G—	GROUND COPPER WIRE, SIZE AS NOTED
(thin line)	EXPOSED WIRING
(heavy line)	INSULATED GROUNDING CONDUCTOR(#6 AWG STRANDED, UNLESS NOTED OTHERWISE)
⊙	5/8"x8' COPPER CLAD STAINLESS STEEL GROUND ROD
—○—●—	● EXOTHERMIC (CAD WELD) OR ○ MECHANICAL (COMPRESSION TYPE) CONNECTION
PPC	POWER PROTECTION CABINET
⊗	OMNI-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 SPECIFICATION INCLUDING INCIDENTAL WORK TO PROVIDE COMPLETE OPERATING AND APPROVED ELECTRICAL SYSTEM.
4. GENERAL CONTRACTOR SHALL PAY FEES FOR PERMITS, AND IS RESPONSIBLE FOR OBTAINING SAID PERMITS AND COORDINATION OF INSPECTIONS.
5. ELECTRICAL AND TELCO WIRING OUTSIDE A BUILDING AND EXPOSED TO WEATHER SHALL BE IN WATER TIGHT GALVANIZED RIGID STEEL CONDUITS OR SCHEDULE 80 PVC (AS PERMITTED BY CODE) AND WHERE REQUIRED IN LIQUID TIGHT FLEXIBLE METAL OR NONMETALLIC CONDUITS.
6. 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.
13. USE #6 COPPER STRANDED WIRE WITH GREEN COLOR INSULATION FOR ABOVE GRADE GROUNDING (UNLESS OTHERWISE SPECIFIED) AND #2 SOLID TINNED BARE COPPER WIRE FOR BELOW GRADE GROUNDING AS INDICATED ON THE DRAWING.
14. ALL GROUND CONNECTIONS TO BE BURNDY HYGROUND COMPRESSION TYPE CONNECTORS OR CADWELD EXOTHERMIC WELD. DO NOT ALLOW BARE COPPER WIRE TO BE IN CONTACT WITH GALVANIZED STEEL.
15. ROUTE GROUNDING CONDUCTORS ALONG THE SHORTEST AND STRAIGHTEST PATH POSSIBLE, EXCEPT AS OTHERWISE INDICATED. GROUNDING LEADS SHOULD NEVER BE BENT AT RIGHT ANGLE. ALWAYS MAKE AT LEAST 12" RADIUS BENDS. #6 WIRE CAN BE BENT AT 6" RADIUS WHEN NECESSARY. BOND ANY METAL OBJECTS WITHIN 7 FEET OF PROPOSED EQUIPMENT OR CABINET TO MASTER GROUND BAR.
16. CONNECTIONS TO MGB SHALL BE ARRANGED IN THREE MAIN GROUPS: SURGE PRODUCERS (COAXIAL CABLE GROUND KITS, TELCO AND POWER PANEL GROUND); (GROUNDING ELECTRODE RING OR BUILDING STEEL); NON-SURGING OBJECTS (EGB GROUND IN BTS UNIT).
17. CONNECTIONS TO GROUND BARS SHALL BE MADE WITH TWO HOLE COMPRESSION TYPE COPPER LUGS. 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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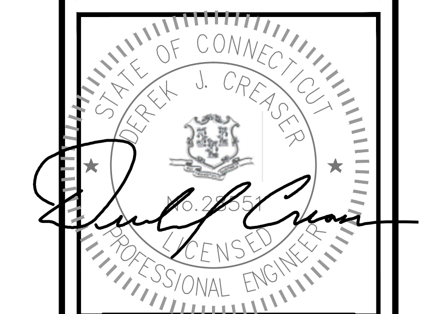

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SITE NAME:
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SITE ADDRESS:
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HARTFORD COUNTY

SHEET TITLE
ONE-LINE DIAGRAM AND GROUNDING DETAILS

SHEET NUMBER
E-1

Exhibit D

Tower Engineering Solutions
Phone (972) 483-0607, Fax (972) 975-9615
8445 Freeport Parkway, Suite 375, Irving, Texas 75063

Structural Analysis Report

Existing 105 ft PIROD Monopole

Customer Name: SBA Communications Corp

Customer Site Number: CT01498-S

Customer Site Name: Avon

Carrier Name: T-Mobile

Carrier Site ID / Name: CT11380C

Site Location: 10 Redwood Lane

Avon, Connecticut

Hartford County

Latitude: 41.772499

Longitude: -72.879999

Analysis Result:

Max Structural Usage: 53.4% [Pass]

Max Foundation Usage: 40.0% [Pass]

Report Prepared By : Fabiyaye Arinyedokiari

10/26/17

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Report Prepared By : Fabiyaye Arinyedokiari

Introduction

The purpose of this report is to summarize the analysis results on the 105 ft PIROD Monopole to support the proposed antennas and transmission lines in addition to those currently installed. Any modification listed under Sources of Information was assumed completed and was included in this analysis.

Sources of Information

Tower Drawings	Pirod, Inc., Eng. File #A-117586 dated September 26, 2000
Foundation Drawing	Pirod, Inc., Eng. File #A-117586 dated September 26, 2000
Geotechnical Report	Jaworski Geotech, Inc., Project #00301G dated August 31, 2000
Modification Drawings	N/A

Analysis Criteria

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

Wind Speed Used in the Analysis:	Ultimate Design Wind Speed V_{ult} = 120.0 mph (3-Sec. Gust)/ Nominal Design Wind Speed V_{asd} = 93.0 mph (3-Sec. Gust)
Wind Speed with Ice:	50 mph (3-Sec. Gust) with 1" radial ice concurrent
Operational Wind Speed:	60 mph + 0" Radial ice
Standard/Codes:	ANSI/TIA/EIA 222-G / 2012 IBC / 2016 Connecticut State Building Code
Exposure Category:	B
Structure Class:	II
Topographic Category:	1
Crest Height:	0 ft
Seismic Parameters:	S_S = 0.182, S_1 = 0.064

Existing Antennas, Mounts and Transmission Lines

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

Items	Elevation (ft)	Qty.	Antenna Descriptions	Mount Type & Qty.	Transmission Lines	Owner
1	116.0	1	20' Omni	Low Profile Platform	(1) 7/8"	Farmington Woods
2	110.0	3	Ericsson AIR B2A B4P - Panel		(12) 1 5/8" (1) 1 5/8" Fiber	T-Mobile
3		3	Ericsson AIR B4A B2P - Panel			
4		3	Ericsson S11B12 – RRU			
5		3	Ericsson KRY 112 144 - TMA			
6		3	Commscope LNX-6515DS - Panel			
7	98.0	1	Raycap DC2-48-60-18-8F – Surge Arrestor	(3) Standoffs	(12) 1 5/8" (1) 10 mm Fiber (1) 3" (2) DC Power	AT&T
8		6	Ericsson RRUS-11 - RRU			
9	97.0	6	Kathrein 782-10250 - Diplexers	Low Profile Platform		
10		3	Kathrein Scala - 800-10121 - Panel			
11		6	Kathrein 860-10035 – RET			
12		9	KMW - AM-X-CD-16-65-00T-RET - Panel			
13		6	Powerwave LGP21401 - TMA			
14	91.0	3	Horizon DUO Radios	Low Profile Platform	(3) 1/2" (6) 5/16"	Clearwire
15		3	Samsung RRU Radios			
16		3	Andrew Microwaves - VHLP2.5 - Dish			
17	87.0	3	Alcatel Lucent 800MHz Filter		(4) 1-1/4" Hybrid	Sprint
18		4	RFS ACU-A20-N – RET			
19		3	RFS APXVSPP18-C-A20 - Panel			
20		3	RFS APXVTM14-C-120 - Panel			
21		3	Alcatel Lucent 1900 MHz – RRH			
22		3	Alcatel Lucent 800 MHz – RRH			
23		3	Alcatel Lucent TD-RRH8x20-25 - RRH			
24	75.0	1	GPS	(1) Standoff	(1) ½"*	

*Lines installed outside of tower.

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
25	110.0	1	Fastback Networks IBR 1300 - Dish	Low Profile Platform	(1) 5/16" Fiber (2) 5/16" Cat 6	T-Mobile

The proposed transmission lines can be installed inside or outside of the pole shafts. If installed outside, the lines shall be strapped tightly to the face of the pole shafts.

Analysis Results

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

	Pole shafts	Anchor Bolts	Base Plate	Anchor Bolts	Base Plate
Max. Usage:	**42.4%**	**48.4%**	**53.4%**	**36.1%**	**39.9%**
Pass/Fail	**Pass**	**Pass**	**Pass**	**Pass**	**Pass**

Foundations

	Moment (Kip-Ft)	Shear (Kips)
Original Design Reactions	2555.3	31.1
Analysis Reactions	1454.8	18.1
Factored Reactions*	3449.7	42.0
% of Design Reactions	42.2%	43.2%

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

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

Operational Condition (Rigidity):

The maximum twist and sway of the microwave dishes under the operational wind speed as specified in the Analysis Criteria are listed in the table below:

Elevation (ft)	Antenna / Dish	Carrier	Twist (deg)	Sway (deg)
110.0	IBR 1300	T-Mobile	0.000	0.234
91.0	VHLP2.5 - Dish	Clearwire	0.000	0.227

It is recommended that the carriers review the twist and sway values of the microwave dishes.

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 analysis is based on the presumption that the tower 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.

4. An initial tension of 10% of the break strength on all the existing guy wires was assumed in all the structural analyses of guyed towers unless different values were provided by the client. **TES** cannot take responsibility for the deviations in the analysis results because of differences in the initial tension forces of the existing guy wires.

5. Secondary component or connection secondary components, welds and bolts are assumed to be able to carry their intended original design loads. **TES** cannot take responsibility for verification of the adequacy on the connections, bolts and welds present in the structure.

6. 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.

7. 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.

8. 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.

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

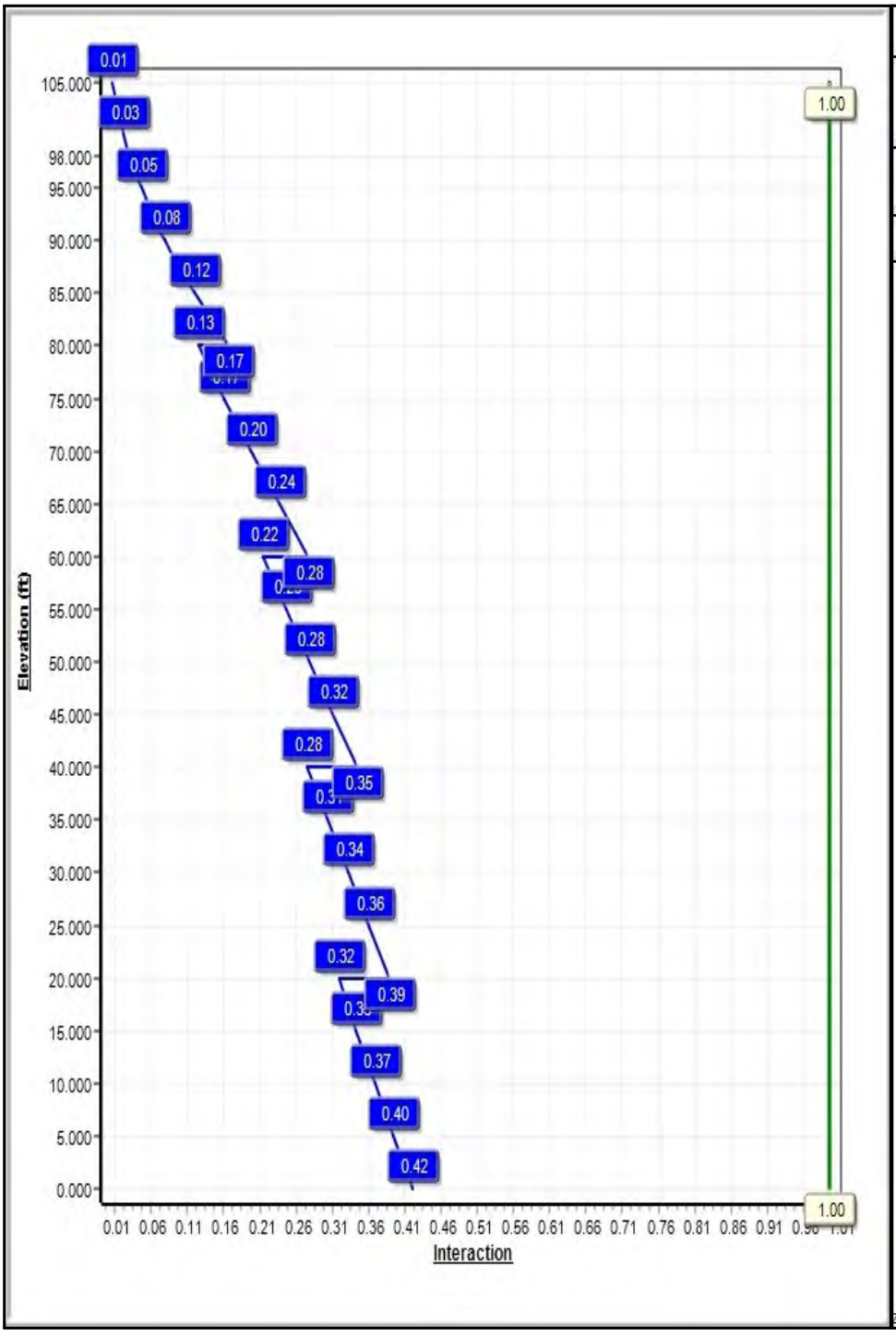
Usage Diagram - Max Ratio 42.44% at 0.0ft

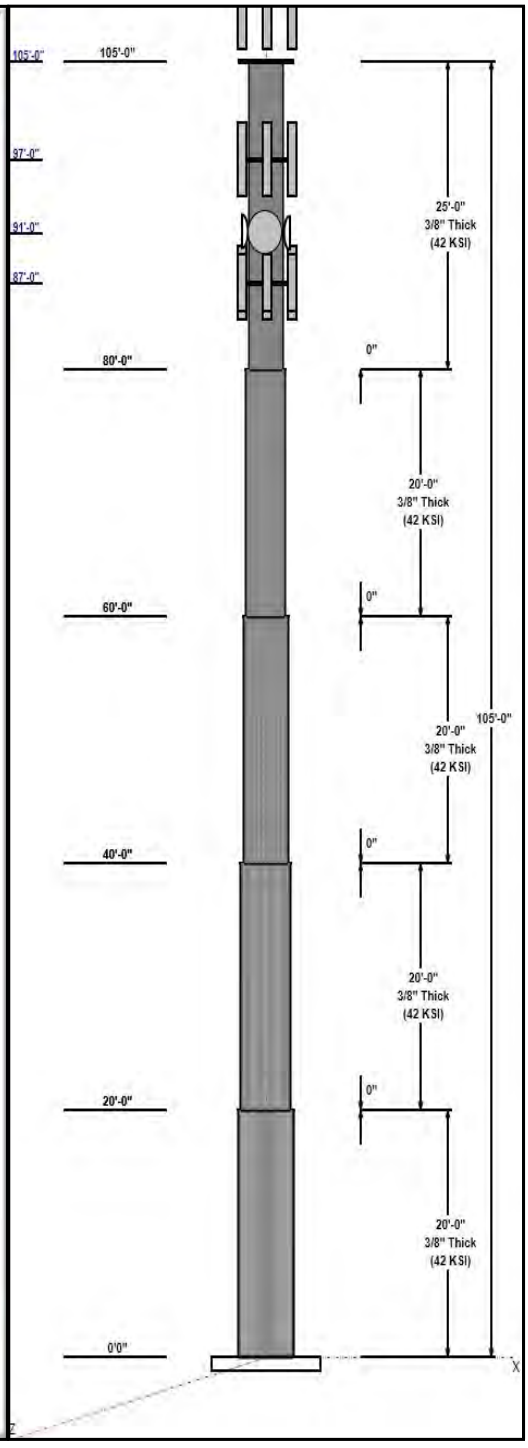
Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Gh:**	1.1		
Base Elev:	0.000 (ft)			Page: 1	

Tower Engineering Solutions

Dead Load Factor:	1.20	**Iterations:**	16
Wind Load Factor:	1.60		

Load Case : 1.2D + 1.6W 93 mph Wind





Structure: CT01498-S-SBA

Type: Stepped
Site Name: Avon
Height: 105.00 (ft)
Base Elev: 0.00 (ft)

Base Shape: Round
Taper: 0.00000

10/26/2017

Tower Engineering Solutions

Shaft Properties

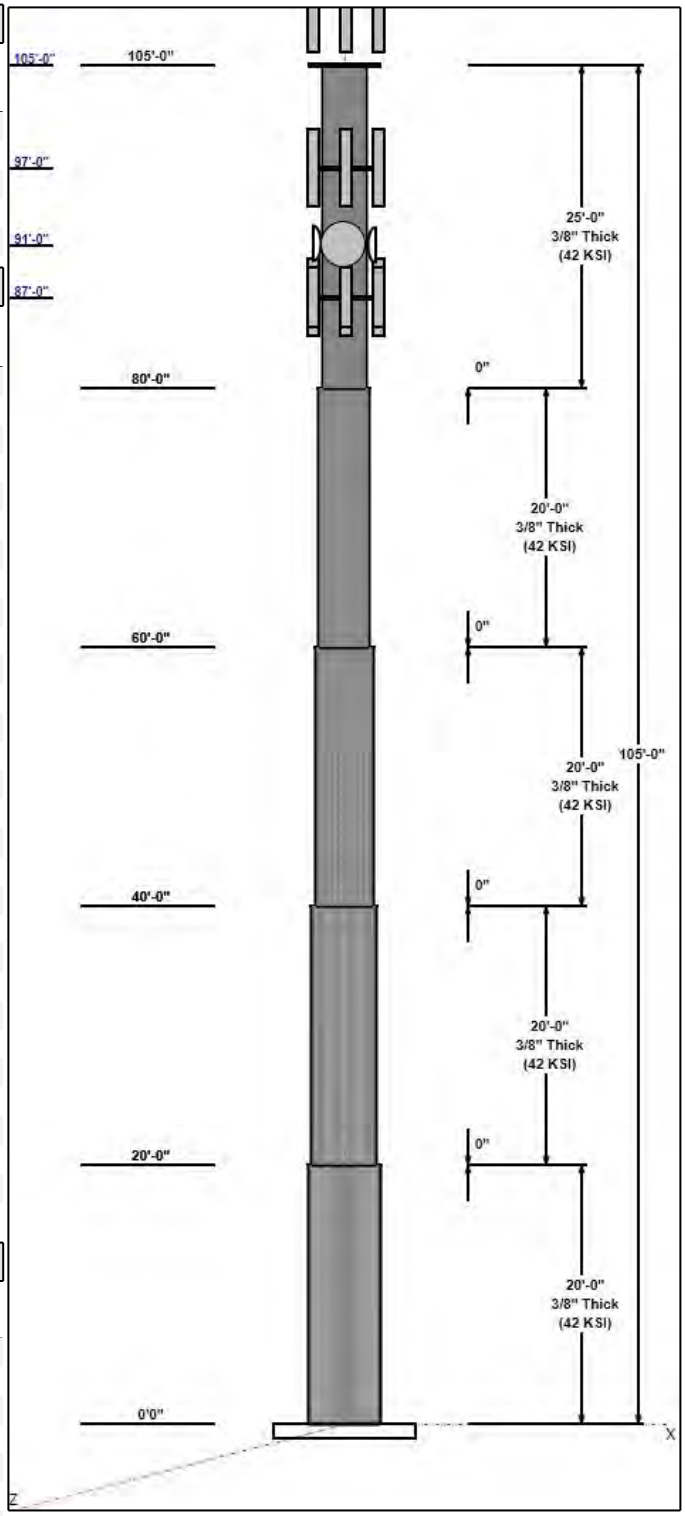
Seq	Length (ft)	Top (in)	Bottom (in)	Thick (in)	Joint Type	Taper	Grade (ksi)
1	20.00	60.00	60.00	0.375		0.00000	42
2	20.00	54.00	54.00	0.375		0.00000	42
3	20.00	48.00	48.00	0.375		0.00000	42
4	20.00	42.00	42.00	0.375		0.00000	42
5	25.00	36.00	36.00	0.375		0.00000	42

Discrete Appurtenances

Attach Elev (ft)	Force Elev (ft)	Qty	Description	Carrier
105.00	110.00	3	AIR 21, 1.3M, B2A B4P	T-Mobile
105.00	110.00	3	AIR 21, 1.3M, B4A B2P	T-Mobile
105.00	110.00	3	KRY 112 144/1	T-Mobile
105.00	110.00	3	LNX-6515DS	T-Mobile
105.00	110.00	3	Ericsson S11B12	T-Mobile
105.00	105.00	1	Low Profile	T-Mobile
105.00	116.00	1	20' Omni	Farmington Woods
105.00	110.00	1	IBR 1300	T-Mobile
98.00	98.00	1	Flush Mount	AT&T
98.00	98.00	1	DC2-48-60-8-18F-02	AT&T
98.00	98.00	6	RRUS-11	AT&T
97.00	97.00	1	Low Profile	AT&T
97.00	97.00	9	AM-X-CD-16-65-00T-RET	AT&T
97.00	97.00	3	800-10121	AT&T
97.00	97.00	6	LGP21401	AT&T
97.00	97.00	6	860 10035	AT&T
97.00	97.00	6	782 10250	AT&T
91.00	91.00	3	VHLP2.5	Clearwire
91.00	91.00	3	Horizon DUO Radios	Clearwire
91.00	91.00	3	RRU	Clearwire
87.00	87.00	3	RRUS-11 1900 MHz	Sprint
87.00	87.00	3	RRUS-11 800 MHz	Sprint
87.00	87.00	3	APXVSPP18-C-A20	Sprint
87.00	87.00	3	APXVTM14-C-120	Sprint
87.00	87.00	3	800MHz Filter	Sprint
87.00	87.00	3	TD-RRH8x20-25	Sprint
87.00	87.00	4	ACU-A20-N	Sprint
87.00	87.00	1	Low Profile	Sprint
75.00	75.00	1	Standoff Mount	
75.00	75.00	1	GPS	

Linear Appurtenances

Elev From (ft)	Elev To (ft)	Placement	Description	Carrier
0.00	105.00	Inside	1 5/8" Coax	T-Mobile
0.00	105.00	Inside	1 5/8" Fiber	T-Mobile
0.00	105.00	Inside	5/16" Cat6	T-Mobile
0.00	105.00	Inside	5/16" Fiber	T-Mobile
0.00	105.00	Inside	7/8" Coax	Farmington Woods
0.00	105.00	Outside	Step bolts (ladder)	
0.00	97.00	Inside	1 5/8" Coax	AT&T
0.00	97.00	Inside	10 mm Fiber	AT&T
0.00	97.00	Inside	3" Coax	AT&T
0.00	97.00	Inside	3/4" DC	AT&T
0.00	91.00	Inside	1/2" Coax	Sprint



0.00	91.00	Inside	5/16" Coax	Clearwire
0.00	87.00	Inside	1-1/4" Hybrid	Sprint
0.00	75.00	Outside	1/2" Coax	Sprint

Anchor Bolts

Qty	Specifications	Grade (ksi)	Arrangement
48	1.00" A687	105.0	Radial

Base Plate

Thickness (in)	Specifications (in)	Grade (ksi)	Geometry
1.2500	66.1	36.0	Round

Reactions

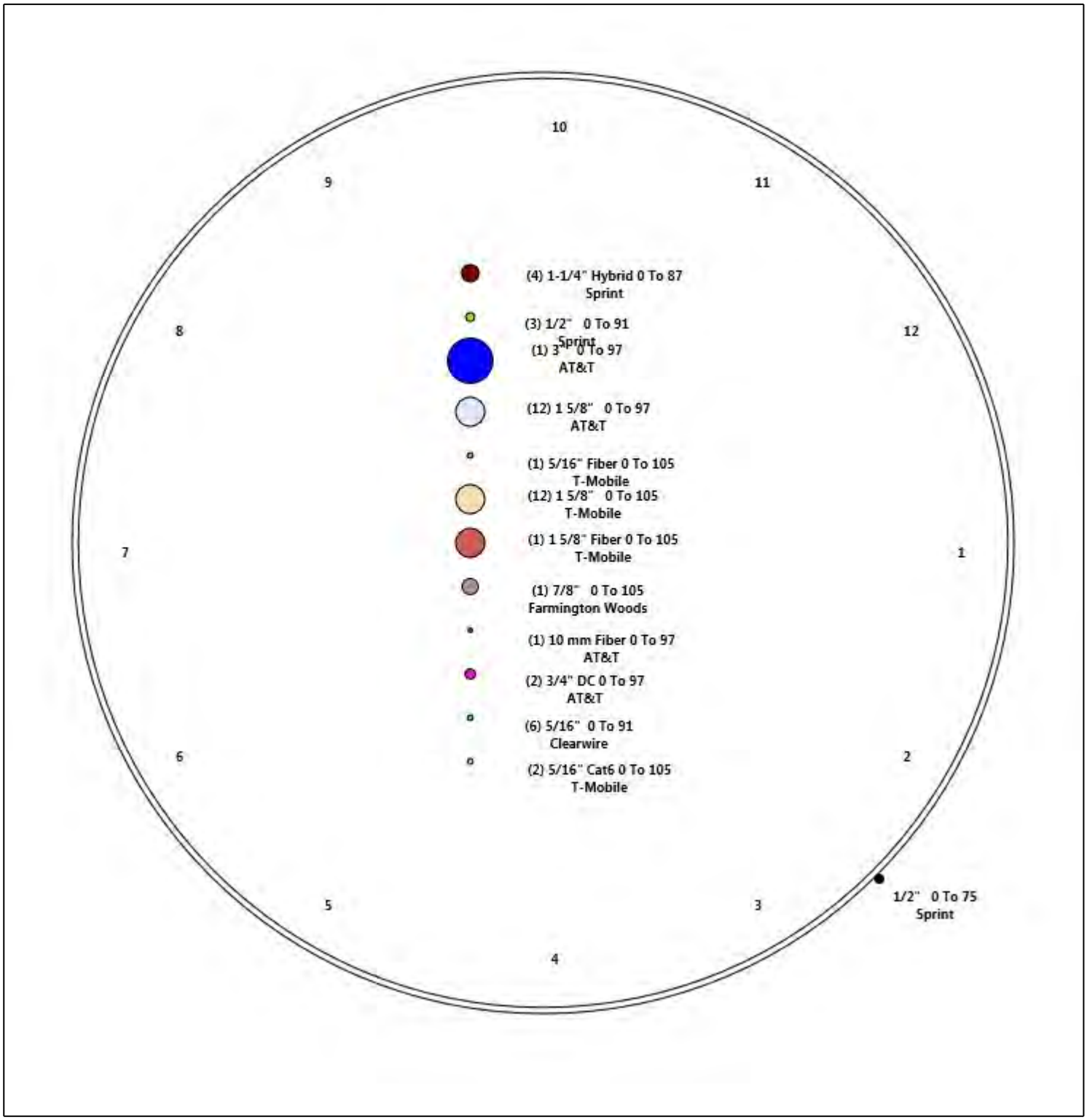
Load Case	Moment (FT-Kips)	Shear (Kips)	Axial (Kips)
1.2D + 1.6W 93 mph Wind	1454.8	18.1	37.6
0.9D + 1.6W 93 mph Wind	1450.5	18.1	28.2
1.2D + 1.0Di + 1.0Wi 50 mph Wind	474.1	6.1	63.9
1.2D + 1.0E	188.6	2.1	37.6
0.9D + 1.0E	188.0	2.1	28.2
1.0D + 1.0W 60 mph Wind	377.7	4.7	31.3

Structure: CT01498-S-SBA - Coax Line Placement

Type: Monopole
Site Name: Avon
Height: 105.00 (ft)

10/26/2017

Tower Engineering Solutions



Shaft Properties

Structure:	CT01498-S-SBA		**Code:**	EIA/TIA-222-G	10/26/2017
Site Name:	Avon		**Exposure:**	B	
Height:	105.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 5

Sec. No.	Shape	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Overlap (in)	Weight (lb)
1	R	20.000	0.3750	42		0.00	4,780
2	R	20.000	0.3750	42		0.00	4,299
3	R	20.000	0.3750	42		0.00	3,818
4	R	20.000	0.3750	42		0.00	3,337
5	R	25.000	0.3750	42		0.00	3,570
					Total Shaft Weight:		**19,806**

	Bottom						Top						
Sec. No.	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Dia (in)**	**Elev (ft)**	**Area (sqin)**	**Ix (in^4)**	**W/t Ratio**	**D/t Ratio**	**Taper**
1	60.00	0.00	70.24	31239.85	0.00	160.00	60.00	20.00	70.24	31239.8	0.00	160.0	0.000000
2	54.00	20.00	63.18	22726.14	0.00	144.00	54.00	40.00	63.18	22726.1	0.00	144.0	0.000000
3	48.00	40.00	56.11	15919.48	0.00	128.00	48.00	60.00	56.11	15919.4	0.00	128.0	0.000000
4	42.00	60.00	49.04	10628.86	0.00	112.00	42.00	80.00	49.04	10628.8	0.00	112.0	0.000000
5	36.00	80.00	41.97	6663.29	0.00	96.00	36.00	105.00	41.97	6663.29	0.00	96.00	0.000000

Load Summary

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 6	

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Discrete Appurtenances

				No Ice			Ice				
No.	Elev (ft)	Description	Qty	Weight (lb)	CaAa (sf)	CaAa Factor	Weight (lb)	CaAa (sf)	CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
1	105.00	AIR 21, 1.3M, B2A B4P	3	91.50	6.09	0.86	321.02	7.529	0.86	0.00	5.00
2	105.00	AIR 21, 1.3M, B4A B2P	3	90.40	6.09	0.86	319.92	7.529	0.86	0.00	5.00
3	105.00	KRY 112 144/1	3	11.00	0.41	0.67	24.87	1.021	0.67	0.00	5.00
4	105.00	LNX-6515DS	3	49.80	11.47	0.80	345.14	15.673	0.80	0.00	5.00
5	105.00	Ericsson S11B12	3	51.00	0.00	0.71	169.87	3.739	0.72	0.00	5.00
6	105.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	3184.06	44.724	1.00	0.00	0.00
7	105.00	20' Omni	1	55.00	6.00	1.00	248.84	15.129	1.00	0.00	11.00
8	105.00	IBR 1300	1	8.90	0.67	1.00	31.91	1.117	1.00	0.00	5.00
9	98.00	Flush Mount	1	350.00	5.00	1.00	724.64	9.460	1.00	0.00	0.00
10	98.00	DC2-48-60-8-18F-02	1	14.50	2.92	0.66	95.30	4.472	0.66	0.00	0.00
11	98.00	RRUS-11	6	44.00	2.94	0.70	130.15	4.493	0.70	0.00	0.00
12	97.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	3170.77	44.544	1.00	0.00	0.00
13	97.00	AM-X-CD-16-65-00T-RET	9	48.50	8.02	0.75	255.64	11.586	0.75	0.00	0.00
14	97.00	800-10121	3	44.10	5.15	0.79	190.72	7.839	0.79	0.00	0.00
15	97.00	LGP21401	6	14.10	1.29	0.67	46.01	2.357	0.67	0.00	0.00
16	97.00	860 10035	6	1.20	0.18	0.92	8.85	0.664	0.92	0.00	0.00
17	97.00	782 10250	6	6.40	0.52	0.76	22.72	1.247	0.76	0.00	0.00
18	91.00	VHLP2.5	3	47.60	8.43	1.00	266.63	10.595	1.00	0.00	0.00
19	91.00	Horizon DUO Radios	3	11.50	0.84	0.76	40.08	1.683	0.76	0.00	0.00
20	91.00	RRU	3	42.00	1.92	0.88	111.54	3.202	0.88	0.00	0.00
21	87.00	RRUS-11 1900 MHz	3	44.00	2.94	0.70	129.13	4.474	0.70	0.00	0.00
22	87.00	RRUS-11 800 MHz	3	54.00	2.94	0.75	149.39	4.474	0.75	0.00	0.00
23	87.00	APXVSPP18-C-A20	3	57.00	8.02	0.83	275.25	11.548	0.83	0.00	0.00
24	87.00	APXVTM14-C-120	3	56.00	6.34	0.79	269.42	7.770	0.79	0.00	0.00
25	87.00	800MHz Filter	3	10.00	0.49	0.70	30.26	1.198	0.70	0.00	0.00
26	87.00	TD-RRH8x20-25	3	70.00	4.05	0.69	217.24	5.098	0.69	0.00	0.00
27	87.00	ACU-A20-N	4	1.00	0.14	0.79	6.42	0.515	0.79	0.00	0.00
28	87.00	Low Profile Platform-Round	1	1500.00	22.00	1.00	3152.69	44.300	1.00	0.00	0.00
29	75.00	Standoff Mount	1	20.00	2.00	1.00	40.84	3.737	1.00	0.00	0.00
30	75.00	GPS	1	10.00	1.00	1.00	46.47	1.886	1.00	0.00	0.00
		Totals:	**91**	**7,982.80**			**22,849.86**				

Linear Appurtenances

Bottom Elev. (ft)	Top Elev. (ft)	Description	Exposed Width	Exposed
0.00	105.00	(12) 1 5/8" Coax	0.00	Inside
0.00	105.00	(1) 1 5/8" Fiber	0.00	Inside
0.00	105.00	(2) 5/16" Cat6	0.00	Inside
0.00	105.00	(1) 5/16" Fiber	0.00	Inside
0.00	105.00	(1) 7/8" Coax	0.00	Inside
0.00	105.00	(1) Step bolts (ladder)	1.00	Outside
0.00	97.00	(12) 1 5/8" Coax	0.00	Inside
0.00	97.00	(1) 10 mm Fiber	0.00	Inside
0.00	97.00	(1) 3" Coax	0.00	Inside
0.00	97.00	(2) 3/4" DC	0.00	Inside
0.00	91.00	(3) 1/2" Coax	0.00	Inside

Discrete Appurtenances

No.	Elev (ft)	Description	Qty	No Ice Weight (lb)	No Ice CaAa (sf)	No Ice CaAa Factor	Ice Weight (lb)	Ice CaAa (sf)	Ice CaAa Factor	Hor. Ecc. (ft)	Vert Ecc (ft)
0.00	91.00	(6) 5/16" Coax			0.00	Inside					
0.00	87.00	(4) 1-1/4" Hybrid			0.00	Inside					
0.00	75.00	(1) 1/2" Coax			1.00	Outside					

Shaft Section Properties

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 8	

Increment Length: **5 (ft)**

Elev (ft)	Description	Thick (in)	Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	Fpy (ksi)	S (in^3)	Weight (lb)
0.00		0.3750	60.000	70.244	31239.9	0.00	160.00	34.9	1041.	0.0
5.00		0.3750	60.000	70.244	31239.9	0.00	160.00	34.9	1041.	1195.1
10.00		0.3750	60.000	70.244	31239.9	0.00	160.00	34.9	1041.	1195.1
15.00		0.3750	60.000	70.244	31239.9	0.00	160.00	34.9	1041.	1195.1
20.00	Top - Section 1	0.3750	60.000	70.244	31239.9	0.00	160.00	34.9	1041.	1195.1
20.00	Bot - Section 2	0.3750	54.000	63.175	22726.1	0.00	160.00	35.6	841.7	
25.00		0.3750	54.000	63.175	22726.1	0.00	144.00	35.6	841.7	1074.9
30.00		0.3750	54.000	63.175	22726.1	0.00	144.00	35.6	841.7	1074.9
35.00		0.3750	54.000	63.175	22726.1	0.00	144.00	35.6	841.7	1074.9
40.00	Top - Section 2	0.3750	54.000	63.175	22726.1	0.00	144.00	35.6	841.7	1074.9
40.00	Bot - Section 3	0.3750	48.000	56.107	15919.5	0.00	144.00	36.6	663.3	
45.00		0.3750	48.000	56.107	15919.5	0.00	128.00	36.6	663.3	954.6
50.00		0.3750	48.000	56.107	15919.5	0.00	128.00	36.6	663.3	954.6
55.00		0.3750	48.000	56.107	15919.5	0.00	128.00	36.6	663.3	954.6
60.00	Top - Section 3	0.3750	48.000	56.107	15919.5	0.00	128.00	36.6	663.3	954.6
60.00	Bot - Section 4	0.3750	42.000	49.038	10628.9	0.00	128.00	37.8	506.1	
65.00		0.3750	42.000	49.038	10628.9	0.00	112.00	37.8	506.1	834.3
70.00		0.3750	42.000	49.038	10628.9	0.00	112.00	37.8	506.1	834.3
75.00		0.3750	42.000	49.038	10628.9	0.00	112.00	37.8	506.1	834.3
80.00	Top - Section 4	0.3750	42.000	49.038	10628.9	0.00	112.00	37.8	506.1	834.3
80.00	Bot - Section 5	0.3750	36.000	41.970	6663.3	0.00	112.00	39.4	370.2	
85.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	714.1
87.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	285.6
90.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	428.4
91.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	142.8
95.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	571.3
97.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	285.6
98.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	142.8
100.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	285.6
105.00		0.3750	36.000	41.970	6663.3	0.00	96.00	39.4	370.2	714.1
										19806.0

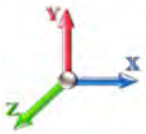
Wind Loading - Shaft

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 9	

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 16

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1434.1
10.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1434.1
15.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1434.1
20.00	Top - Section 1	1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1434.1
25.00		1.00	0.70	14.724	16.20	350.14	0.600	0.000	5.00	22.500	13.50	349.8	0.0	1289.8
30.00		1.00	0.70	14.736	16.21	350.29	0.600	0.000	5.00	22.500	13.50	350.1	0.0	1289.8
35.00		1.00	0.73	15.400	16.94	358.09	0.600	0.000	5.00	22.500	13.50	365.9	0.0	1289.8
40.00	Top - Section 2	1.00	0.76	15.999	17.60	364.99	0.600	0.000	5.00	22.500	13.50	380.1	0.0	1289.8
45.00		1.00	0.79	16.546	18.20	329.94	0.600	0.000	5.00	20.000	12.00	349.5	0.0	1145.5
50.00		1.00	0.81	17.052	18.76	334.94	0.600	0.000	5.00	20.000	12.00	360.1	0.0	1145.5
55.00		1.00	0.83	17.523	19.28	339.53	0.600	0.000	5.00	20.000	12.00	370.1	0.0	1145.5
60.00	Top - Section 3	1.00	0.85	17.964	19.76	343.78	0.600	0.000	5.00	20.000	12.00	379.4	0.0	1145.5
65.00		1.00	0.87	18.380	20.22	304.27	0.600	0.000	5.00	17.500	10.50	339.7	0.0	1001.2
70.00		1.00	0.89	18.773	20.65	307.50	0.600	0.000	5.00	17.500	10.50	346.9	0.0	1001.2
75.00	Appurtenance(s)	1.00	0.91	19.147	21.06	310.55	0.600	0.000	5.00	17.500	10.50	353.8	0.0	1001.2
80.00	Top - Section 4	1.00	0.93	19.503	21.45	313.43	0.600	0.000	5.00	17.500	10.50	360.4	0.0	1001.2
85.00		1.00	0.94	19.844	21.83	270.99	0.600	0.000	5.00	15.000	9.00	314.3	0.0	856.9
87.00	Appurtenance(s)	1.00	0.95	19.976	21.97	271.89	0.600	0.000	2.00	6.000	3.60	126.6	0.0	342.8
90.00		1.00	0.96	20.170	22.19	273.21	0.600	0.000	3.00	9.000	5.40	191.7	0.0	514.1
91.00	Appurtenance(s)	1.00	0.96	20.234	22.26	273.64	0.600	0.000	1.00	3.000	1.80	64.1	0.0	171.4
95.00		1.00	0.97	20.484	22.53	275.33	0.600	0.000	4.00	12.000	7.20	259.6	0.0	685.5
97.00	Appurtenance(s)	1.00	0.98	20.607	22.67	276.15	0.600	0.000	2.00	6.000	3.60	130.6	0.0	342.8
98.00	Appurtenance(s)	1.00	0.98	20.667	22.73	276.55	0.600	0.000	1.00	3.000	1.80	65.5	0.0	171.4
100.00		1.00	0.99	20.787	22.87	277.35	0.600	0.000	2.00	6.000	3.60	131.7	0.0	342.8
105.00	Appurtenance(s)	1.00	1.00	21.079	23.19	279.29	0.600	0.000	5.00	15.000	9.00	333.9	0.0	856.9
								Totals:	**105.00**			**7,478.7**		**23,767.2**

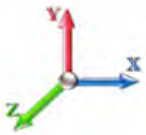
Discrete Appurtenance Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 10	

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 16

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	105.00	LNX-6515DS	3	21.361	23.497	0.80	1.00	27.53	179.28	0.000	5.000	1034.91	0.00	5174.54
2	105.00	AIR 21, 1.3M, B2A B4P	3	21.361	23.497	0.86	1.00	15.71	329.40	0.000	5.000	590.70	0.00	2953.48
3	105.00	AIR 21, 1.3M, B4A B2P	3	21.361	23.497	0.86	1.00	15.71	325.44	0.000	5.000	590.70	0.00	2953.48
4	105.00	KRY 112 144/1	3	21.361	23.497	0.67	1.00	0.82	39.60	0.000	5.000	30.98	0.00	154.91
5	105.00	IBR 1300	1	21.361	23.497	1.00	1.00	0.67	10.68	0.000	5.000	25.19	0.00	125.94
6	105.00	Ericsson S11B12	3	21.361	23.497	0.71	1.00	0.00	183.60	0.000	5.000	0.00	0.00	0.00
7	105.00	Low Profile	1	21.079	23.186	1.00	1.00	22.00	1800.00	0.000	0.000	816.16	0.00	0.00
8	105.00	20' Omni	1	21.687	23.856	1.00	1.00	6.00	66.00	0.000	11.000	229.02	0.00	2519.19
9	98.00	RRUS-11	6	20.667	22.734	0.70	1.00	12.35	316.80	0.000	0.000	449.15	0.00	0.00
10	98.00	DC2-48-60-8-18F-02	1	20.667	22.734	0.66	1.00	1.93	17.40	0.000	0.000	70.10	0.00	0.00
11	98.00	Flush Mount	1	20.667	22.734	1.00	1.00	5.00	420.00	0.000	0.000	181.87	0.00	0.00
12	97.00	782 10250	6	20.607	22.667	0.61	0.80	1.90	46.08	0.000	0.000	68.80	0.00	0.00
13	97.00	860 10035	6	20.607	22.667	0.74	0.80	0.79	8.64	0.000	0.000	28.83	0.00	0.00
14	97.00	LGP21401	6	20.607	22.667	0.54	0.80	4.15	101.52	0.000	0.000	150.46	0.00	0.00
15	97.00	800-10121	3	20.607	22.667	0.63	0.80	9.76	158.76	0.000	0.000	354.13	0.00	0.00
16	97.00	AM-X-CD-16-65-00T-RET	9	20.607	22.667	0.60	0.80	43.31	523.80	0.000	0.000	1570.69	0.00	0.00
17	97.00	Low Profile	1	20.607	22.667	1.00	1.00	22.00	1800.00	0.000	0.000	797.89	0.00	0.00
18	91.00	RRU	3	20.234	22.258	0.88	1.00	5.07	151.20	0.000	0.000	180.51	0.00	0.00
19	91.00	Horizon DUO Radios	3	20.234	22.258	0.76	1.00	1.92	41.40	0.000	0.000	68.20	0.00	0.00
20	91.00	VHLP2.5	3	20.234	22.258	1.00	1.00	25.29	171.36	0.000	0.000	900.63	0.00	0.00
21	87.00	APXVTM14-C-120	3	19.976	21.974	0.63	0.80	12.02	201.60	0.000	0.000	422.62	0.00	0.00
22	87.00	RRUS-11 1900 MHz	3	19.976	21.974	0.56	0.80	4.94	158.40	0.000	0.000	173.65	0.00	0.00
23	87.00	RRUS-11 800 MHz	3	19.976	21.974	0.60	0.80	5.29	194.40	0.000	0.000	186.05	0.00	0.00
24	87.00	APXVSPP18-C-A20	3	19.976	21.974	0.66	0.80	15.98	205.20	0.000	0.000	561.67	0.00	0.00
25	87.00	TD-RRH8x20-25	3	19.976	21.974	0.55	0.80	6.71	252.00	0.000	0.000	235.80	0.00	0.00
26	87.00	800MHz Filter	3	19.976	21.974	0.56	0.80	0.82	36.00	0.000	0.000	28.94	0.00	0.00
27	87.00	ACU-A20-N	4	19.976	21.974	0.63	0.80	0.35	4.80	0.000	0.000	12.44	0.00	0.00
28	87.00	Low Profile	1	19.976	21.974	1.00	1.00	22.00	1800.00	0.000	0.000	773.47	0.00	0.00
29	75.00	GPS	1	19.147	21.061	1.00	1.00	1.00	12.00	0.000	0.000	33.70	0.00	0.00
30	75.00	Standoff Mount	1	19.147	21.061	1.00	1.00	2.00	24.00	0.000	0.000	67.40	0.00	0.00
							Totals:		**9,579.36**			**10,634.66**		

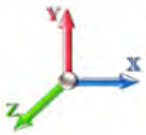
Total Applied Force Summary

Structure:	CT01498-S-SBA		**Code:**	EIA/TIA-222-G	10/26/2017
Site Name:	Avon		**Exposure:**	B	
Height:	105.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 11

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 16

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		388.72	1646.77	0.00	0.00
10.00		388.72	1646.77	0.00	0.00
15.00		388.72	1646.77	0.00	0.00
20.00		388.72	1646.77	0.00	0.00
25.00		349.84	1502.45	0.00	0.00
30.00		350.14	1502.45	0.00	0.00
35.00		365.90	1502.45	0.00	0.00
40.00		380.13	1502.45	0.00	0.00
45.00		349.46	1358.13	0.00	0.00
50.00		360.14	1358.13	0.00	0.00
55.00		370.08	1358.13	0.00	0.00
60.00		379.40	1358.13	0.00	0.00
65.00		339.65	1213.81	0.00	0.00
70.00		346.92	1213.81	0.00	0.00
75.00	(2) attachments	454.92	1249.81	0.00	0.00
80.00		360.41	1212.85	0.00	0.00
85.00		314.32	1068.54	0.00	0.00
87.00	(23) attachments	2521.22	3279.82	0.00	0.00
90.00		191.70	627.39	0.00	0.00
91.00	(9) attachments	1213.45	573.09	0.00	0.00
95.00		259.58	831.91	0.00	0.00
97.00	(31) attachments	3101.36	3054.75	0.00	0.00
98.00	(8) attachments	766.59	944.03	0.00	0.00
100.00		131.71	379.66	0.00	0.00
105.00	(18) attachments	3651.54	3883.16	0.00	13881.55
	Totals:	**18,113.35**	**37,562.02**	**0.00**	**13,881.55**

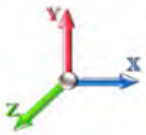
Linear Appurtenance Segment Forces (Factored)

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 12	

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 16

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	6.24
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.96
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	6.24
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.96
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	6.24
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.96
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	6.24
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.96
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	14.724	0.00	6.24
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	14.724	0.00	0.96
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	14.736	0.00	6.24
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	14.736	0.00	0.96
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	15.400	0.00	6.24
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	15.400	0.00	0.96
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	15.999	0.00	6.24
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	15.999	0.00	0.96
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	16.546	0.00	6.24
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	16.546	0.00	0.96
50.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	17.052	0.00	6.24
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	17.052	0.00	0.96
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	17.523	0.00	6.24
55.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	17.523	0.00	0.96
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	17.964	0.00	6.24
60.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	17.964	0.00	0.96
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	18.380	0.00	6.24
65.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	18.380	0.00	0.96
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	18.773	0.00	6.24
70.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	18.773	0.00	0.96
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	19.147	0.00	6.24
75.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	19.147	0.00	0.96
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.015	0.000	19.503	0.00	6.24
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.017	0.000	19.844	0.00	6.24
87.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	19.976	0.00	2.50
90.00	Step bolts (ladder)	Yes	3.00	0.000	0.63	0.16	0.00	0.018	0.000	20.170	0.00	3.74
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.05	0.00	0.018	0.000	20.234	0.00	1.25
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.63	0.21	0.00	0.018	0.000	20.484	0.00	4.99
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	20.607	0.00	2.50
98.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.05	0.00	0.018	0.000	20.667	0.00	1.25
100.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	20.787	0.00	2.50
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.017	0.000	21.079	0.00	6.24
									Totals:		**0.0**	**145.4**

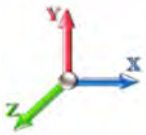
Calculated Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 13	

Load Case: 1.2D + 1.6W 93 mph Wind

Dead Load Factor 1.20

Wind Load Factor 1.60



Iterations 16

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-37.55	-18.13	0.00	-1454.8	0.00	1454.81	2204.43	1102.21	5439.15	3573.20	0.00	0.000	0.000	0.424
5.00	-35.89	-17.78	0.00	-1364.1	0.00	1364.14	2204.43	1102.21	5439.15	3573.20	0.04	-0.064	0.000	0.398
10.00	-34.22	-17.43	0.00	-1275.2	0.00	1275.22	2204.43	1102.21	5439.15	3573.20	0.14	-0.124	0.000	0.373
15.00	-32.56	-17.06	0.00	-1188.0	0.00	1188.08	2204.43	1102.21	5439.15	3573.20	0.30	-0.180	0.000	0.348
20.00	-30.90	-16.70	0.00	-1102.7	0.00	1102.76	2204.43	1102.21	5439.15	3573.20	0.51	-0.233	0.000	0.323
20.00	-30.90	-16.70	0.00	-1102.7	0.00	1102.76	2026.00	1013.00	4492.72	2914.55	0.51	-0.233	0.000	0.394
25.00	-29.38	-16.37	0.00	-1019.2	0.00	1019.27	2026.00	1013.00	4492.72	2914.55	0.78	-0.281	0.000	0.364
30.00	-27.87	-16.04	0.00	-937.43	0.00	937.43	2026.00	1013.00	4492.72	2914.55	1.11	-0.342	0.000	0.336
35.00	-26.35	-15.69	0.00	-857.24	0.00	857.24	2026.00	1013.00	4492.72	2914.55	1.50	-0.398	0.000	0.307
40.00	-24.84	-15.32	0.00	-778.80	0.00	778.80	2026.00	1013.00	4492.72	2914.55	1.95	-0.449	0.000	0.280
40.00	-24.84	-15.32	0.00	-778.80	0.00	778.80	1847.49	923.75	3635.30	2322.74	1.95	-0.449	0.000	0.349
45.00	-23.47	-14.98	0.00	-702.21	0.00	702.21	1847.49	923.75	3635.30	2322.74	2.44	-0.496	0.000	0.315
50.00	-22.10	-14.63	0.00	-627.31	0.00	627.31	1847.49	923.75	3635.30	2322.74	2.99	-0.555	0.000	0.282
55.00	-20.73	-14.26	0.00	-554.17	0.00	554.17	1847.49	923.75	3635.30	2322.74	3.60	-0.608	0.000	0.250
60.00	-19.37	-13.88	0.00	-482.86	0.00	482.86	1847.49	923.75	3635.30	2322.74	4.27	-0.654	0.000	0.219
60.00	-19.37	-13.88	0.00	-482.86	0.00	482.86	1668.87	834.44	2866.90	1797.79	4.27	-0.654	0.000	0.280
65.00	-18.15	-13.54	0.00	-413.45	0.00	413.45	1668.87	834.44	2866.90	1797.79	4.97	-0.694	0.000	0.241
70.00	-16.93	-13.19	0.00	-345.74	0.00	345.74	1668.87	834.44	2866.90	1797.79	5.73	-0.745	0.000	0.203
75.00	-15.68	-12.73	0.00	-279.76	0.00	279.76	1668.87	834.44	2866.90	1797.79	6.53	-0.787	0.000	0.165
80.00	-14.46	-12.36	0.00	-216.10	0.00	216.10	1668.87	834.44	2866.90	1797.79	7.38	-0.820	0.000	0.129
80.00	-14.46	-12.36	0.00	-216.10	0.00	216.10	1490.10	745.05	2187.51	1339.68	7.38	-0.820	0.000	0.171
85.00	-13.40	-12.04	0.00	-154.28	0.00	154.28	1490.10	745.05	2187.51	1339.68	8.25	-0.845	0.000	0.124
87.00	-10.15	-9.47	0.00	-130.21	0.00	130.21	1490.10	745.05	2187.51	1339.68	8.61	-0.857	0.000	0.104
90.00	-9.53	-9.27	0.00	-101.80	0.00	101.80	1490.10	745.05	2187.51	1339.68	9.15	-0.872	0.000	0.083
91.00	-8.97	-8.05	0.00	-92.53	0.00	92.53	1490.10	745.05	2187.51	1339.68	9.34	-0.876	0.000	0.075
95.00	-8.14	-7.78	0.00	-60.33	0.00	60.33	1490.10	745.05	2187.51	1339.68	10.08	-0.889	0.000	0.051
97.00	-5.14	-4.63	0.00	-44.77	0.00	44.77	1490.10	745.05	2187.51	1339.68	10.45	-0.894	0.000	0.037
98.00	-4.20	-3.85	0.00	-40.14	0.00	40.14	1490.10	745.05	2187.51	1339.68	10.64	-0.895	0.000	0.033
100.00	-3.83	-3.71	0.00	-32.44	0.00	32.44	1490.10	745.05	2187.51	1339.68	11.01	-0.899	0.000	0.027
105.00	0.00	-3.65	0.00	-13.88	0.00	13.88	1490.10	745.05	2187.51	1339.68	11.96	-0.904	0.000	0.010

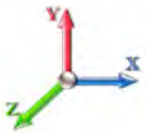
Wind Loading - Shaft

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 14	

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 16

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1075.6
10.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1075.6
15.00		1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1075.6
20.00	Top - Section 1	1.00	0.70	14.724	16.20	389.05	0.600	0.000	5.00	25.000	15.00	388.7	0.0	1075.6
25.00		1.00	0.70	14.724	16.20	350.14	0.600	0.000	5.00	22.500	13.50	349.8	0.0	967.4
30.00		1.00	0.70	14.736	16.21	350.29	0.600	0.000	5.00	22.500	13.50	350.1	0.0	967.4
35.00		1.00	0.73	15.400	16.94	358.09	0.600	0.000	5.00	22.500	13.50	365.9	0.0	967.4
40.00	Top - Section 2	1.00	0.76	15.999	17.60	364.99	0.600	0.000	5.00	22.500	13.50	380.1	0.0	967.4
45.00		1.00	0.79	16.546	18.20	329.94	0.600	0.000	5.00	20.000	12.00	349.5	0.0	859.1
50.00		1.00	0.81	17.052	18.76	334.94	0.600	0.000	5.00	20.000	12.00	360.1	0.0	859.1
55.00		1.00	0.83	17.523	19.28	339.53	0.600	0.000	5.00	20.000	12.00	370.1	0.0	859.1
60.00	Top - Section 3	1.00	0.85	17.964	19.76	343.78	0.600	0.000	5.00	20.000	12.00	379.4	0.0	859.1
65.00		1.00	0.87	18.380	20.22	304.27	0.600	0.000	5.00	17.500	10.50	339.7	0.0	750.9
70.00		1.00	0.89	18.773	20.65	307.50	0.600	0.000	5.00	17.500	10.50	346.9	0.0	750.9
75.00	Appurtenance(s)	1.00	0.91	19.147	21.06	310.55	0.600	0.000	5.00	17.500	10.50	353.8	0.0	750.9
80.00	Top - Section 4	1.00	0.93	19.503	21.45	313.43	0.600	0.000	5.00	17.500	10.50	360.4	0.0	750.9
85.00		1.00	0.94	19.844	21.83	270.99	0.600	0.000	5.00	15.000	9.00	314.3	0.0	642.7
87.00	Appurtenance(s)	1.00	0.95	19.976	21.97	271.89	0.600	0.000	2.00	6.000	3.60	126.6	0.0	257.1
90.00		1.00	0.96	20.170	22.19	273.21	0.600	0.000	3.00	9.000	5.40	191.7	0.0	385.6
91.00	Appurtenance(s)	1.00	0.96	20.234	22.26	273.64	0.600	0.000	1.00	3.000	1.80	64.1	0.0	128.5
95.00		1.00	0.97	20.484	22.53	275.33	0.600	0.000	4.00	12.000	7.20	259.6	0.0	514.1
97.00	Appurtenance(s)	1.00	0.98	20.607	22.67	276.15	0.600	0.000	2.00	6.000	3.60	130.6	0.0	257.1
98.00	Appurtenance(s)	1.00	0.98	20.667	22.73	276.55	0.600	0.000	1.00	3.000	1.80	65.5	0.0	128.5
100.00		1.00	0.99	20.787	22.87	277.35	0.600	0.000	2.00	6.000	3.60	131.7	0.0	257.1
105.00	Appurtenance(s)	1.00	1.00	21.079	23.19	279.29	0.600	0.000	5.00	15.000	9.00	333.9	0.0	642.7
								Totals:	**105.00**			**7,478.7**		**17,825.4**

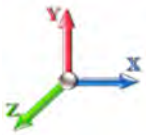
Discrete Appurtenance Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 15	

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 16

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	105.00	LNX-6515DS	3	21.361	23.497	0.80	1.00	27.53	134.46	0.000	5.000	1034.91	0.00	5174.54
2	105.00	AIR 21, 1.3M, B2A B4P	3	21.361	23.497	0.86	1.00	15.71	247.05	0.000	5.000	590.70	0.00	2953.48
3	105.00	AIR 21, 1.3M, B4A B2P	3	21.361	23.497	0.86	1.00	15.71	244.08	0.000	5.000	590.70	0.00	2953.48
4	105.00	KRY 112 144/1	3	21.361	23.497	0.67	1.00	0.82	29.70	0.000	5.000	30.98	0.00	154.91
5	105.00	IBR 1300	1	21.361	23.497	1.00	1.00	0.67	8.01	0.000	5.000	25.19	0.00	125.94
6	105.00	Ericsson S11B12	3	21.361	23.497	0.71	1.00	0.00	137.70	0.000	5.000	0.00	0.00	0.00
7	105.00	Low Profile	1	21.079	23.186	1.00	1.00	22.00	1350.00	0.000	0.000	816.16	0.00	0.00
8	105.00	20' Omni	1	21.687	23.856	1.00	1.00	6.00	49.50	0.000	11.000	229.02	0.00	2519.19
9	98.00	RRUS-11	6	20.667	22.734	0.70	1.00	12.35	237.60	0.000	0.000	449.15	0.00	0.00
10	98.00	DC2-48-60-8-18F-02	1	20.667	22.734	0.66	1.00	1.93	13.05	0.000	0.000	70.10	0.00	0.00
11	98.00	Flush Mount	1	20.667	22.734	1.00	1.00	5.00	315.00	0.000	0.000	181.87	0.00	0.00
12	97.00	782 10250	6	20.607	22.667	0.61	0.80	1.90	34.56	0.000	0.000	68.80	0.00	0.00
13	97.00	860 10035	6	20.607	22.667	0.74	0.80	0.79	6.48	0.000	0.000	28.83	0.00	0.00
14	97.00	LGP21401	6	20.607	22.667	0.54	0.80	4.15	76.14	0.000	0.000	150.46	0.00	0.00
15	97.00	800-10121	3	20.607	22.667	0.63	0.80	9.76	119.07	0.000	0.000	354.13	0.00	0.00
16	97.00	AM-X-CD-16-65-00T-RET	9	20.607	22.667	0.60	0.80	43.31	392.85	0.000	0.000	1570.69	0.00	0.00
17	97.00	Low Profile	1	20.607	22.667	1.00	1.00	22.00	1350.00	0.000	0.000	797.89	0.00	0.00
18	91.00	RRU	3	20.234	22.258	0.88	1.00	5.07	113.40	0.000	0.000	180.51	0.00	0.00
19	91.00	Horizon DUO Radios	3	20.234	22.258	0.76	1.00	1.92	31.05	0.000	0.000	68.20	0.00	0.00
20	91.00	VHLP2.5	3	20.234	22.258	1.00	1.00	25.29	128.52	0.000	0.000	900.63	0.00	0.00
21	87.00	APXVTM14-C-120	3	19.976	21.974	0.63	0.80	12.02	151.20	0.000	0.000	422.62	0.00	0.00
22	87.00	RRUS-11 1900 MHz	3	19.976	21.974	0.56	0.80	4.94	118.80	0.000	0.000	173.65	0.00	0.00
23	87.00	RRUS-11 800 MHz	3	19.976	21.974	0.60	0.80	5.29	145.80	0.000	0.000	186.05	0.00	0.00
24	87.00	APXVSPP18-C-A20	3	19.976	21.974	0.66	0.80	15.98	153.90	0.000	0.000	561.67	0.00	0.00
25	87.00	TD-RRH8x20-25	3	19.976	21.974	0.55	0.80	6.71	189.00	0.000	0.000	235.80	0.00	0.00
26	87.00	800MHz Filter	3	19.976	21.974	0.56	0.80	0.82	27.00	0.000	0.000	28.94	0.00	0.00
27	87.00	ACU-A20-N	4	19.976	21.974	0.63	0.80	0.35	3.60	0.000	0.000	12.44	0.00	0.00
28	87.00	Low Profile	1	19.976	21.974	1.00	1.00	22.00	1350.00	0.000	0.000	773.47	0.00	0.00
29	75.00	GPS	1	19.147	21.061	1.00	1.00	1.00	9.00	0.000	0.000	33.70	0.00	0.00
30	75.00	Standoff Mount	1	19.147	21.061	1.00	1.00	2.00	18.00	0.000	0.000	67.40	0.00	0.00
							Totals:		**7,184.52**			**10,634.66**		

Total Applied Force Summary

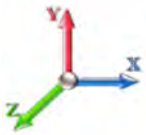
Structure:	CT01498-S-SBA		**Code:**	EIA/TIA-222-G	10/26/2017
Site Name:	Avon		**Exposure:**	B	
Height:	105.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 16

Tower Engineering Solutions

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 16

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		388.72	1235.07	0.00	0.00
10.00		388.72	1235.07	0.00	0.00
15.00		388.72	1235.07	0.00	0.00
20.00		388.72	1235.07	0.00	0.00
25.00		349.84	1126.84	0.00	0.00
30.00		350.14	1126.84	0.00	0.00
35.00		365.90	1126.84	0.00	0.00
40.00		380.13	1126.84	0.00	0.00
45.00		349.46	1018.60	0.00	0.00
50.00		360.14	1018.60	0.00	0.00
55.00		370.08	1018.60	0.00	0.00
60.00		379.40	1018.60	0.00	0.00
65.00		339.65	910.36	0.00	0.00
70.00		346.92	910.36	0.00	0.00
75.00	(2) attachments	454.92	937.36	0.00	0.00
80.00		360.41	909.64	0.00	0.00
85.00		314.32	801.40	0.00	0.00
87.00	(23) attachments	2521.22	2459.86	0.00	0.00
90.00		191.70	470.54	0.00	0.00
91.00	(9) attachments	1213.45	429.82	0.00	0.00
95.00		259.58	623.93	0.00	0.00
97.00	(31) attachments	3101.36	2291.06	0.00	0.00
98.00	(8) attachments	766.59	708.02	0.00	0.00
100.00		131.71	284.75	0.00	0.00
105.00	(18) attachments	3651.54	2912.37	0.00	13881.55
	Totals:	**18,113.35**	**28,171.52**	**0.00**	**13,881.55**

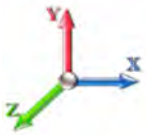
Linear Appurtenance Segment Forces (Factored)

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 17	

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 16

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	4.68
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.72
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	4.68
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.72
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	4.68
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.72
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	14.724	0.00	4.68
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	14.724	0.00	0.72
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	14.724	0.00	4.68
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	14.724	0.00	0.72
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	14.736	0.00	4.68
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	14.736	0.00	0.72
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	15.400	0.00	4.68
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	15.400	0.00	0.72
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	15.999	0.00	4.68
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	15.999	0.00	0.72
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	16.546	0.00	4.68
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	16.546	0.00	0.72
50.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	17.052	0.00	4.68
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	17.052	0.00	0.72
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	17.523	0.00	4.68
55.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	17.523	0.00	0.72
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	17.964	0.00	4.68
60.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	17.964	0.00	0.72
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	18.380	0.00	4.68
65.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	18.380	0.00	0.72
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	18.773	0.00	4.68
70.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	18.773	0.00	0.72
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	19.147	0.00	4.68
75.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	19.147	0.00	0.72
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.015	0.000	19.503	0.00	4.68
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.017	0.000	19.844	0.00	4.68
87.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	19.976	0.00	1.87
90.00	Step bolts (ladder)	Yes	3.00	0.000	0.63	0.16	0.00	0.018	0.000	20.170	0.00	2.81
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.05	0.00	0.018	0.000	20.234	0.00	0.94
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.63	0.21	0.00	0.018	0.000	20.484	0.00	3.74
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	20.607	0.00	1.87
98.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.05	0.00	0.018	0.000	20.667	0.00	0.94
100.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	20.787	0.00	1.87
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.017	0.000	21.079	0.00	4.68
									Totals:		**0.0**	**109.1**

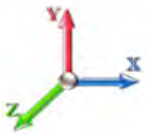
Calculated Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 18	

Load Case: 0.9D + 1.6W 93 mph Wind

Dead Load Factor 0.90

Wind Load Factor 1.60



Iterations 16

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.16	-18.13	0.00	-1450.4	0.00	1450.46	2204.43	1102.21	5439.15	3573.20	0.00	0.000	0.000	0.419
5.00	-26.91	-17.77	0.00	-1359.8	0.00	1359.81	2204.43	1102.21	5439.15	3573.20	0.03	-0.064	0.000	0.393
10.00	-25.65	-17.40	0.00	-1270.9	0.00	1270.97	2204.43	1102.21	5439.15	3573.20	0.13	-0.124	0.000	0.368
15.00	-24.40	-17.04	0.00	-1183.9	0.00	1183.95	2204.43	1102.21	5439.15	3573.20	0.30	-0.180	0.000	0.343
20.00	-23.16	-16.66	0.00	-1098.7	0.00	1098.78	2204.43	1102.21	5439.15	3573.20	0.51	-0.232	0.000	0.318
20.00	-23.16	-16.66	0.00	-1098.7	0.00	1098.78	2026.00	1013.00	4492.72	2914.55	0.51	-0.232	0.000	0.389
25.00	-22.02	-16.33	0.00	-1015.4	0.00	1015.47	2026.00	1013.00	4492.72	2914.55	0.78	-0.280	0.000	0.360
30.00	-20.87	-15.99	0.00	-933.83	0.00	933.83	2026.00	1013.00	4492.72	2914.55	1.11	-0.341	0.000	0.331
35.00	-19.74	-15.64	0.00	-853.86	0.00	853.86	2026.00	1013.00	4492.72	2914.55	1.50	-0.397	0.000	0.303
40.00	-18.60	-15.27	0.00	-775.67	0.00	775.67	2026.00	1013.00	4492.72	2914.55	1.94	-0.448	0.000	0.276
40.00	-18.60	-15.27	0.00	-775.67	0.00	775.67	1847.49	923.75	3635.30	2322.74	1.94	-0.448	0.000	0.344
45.00	-17.57	-14.92	0.00	-699.34	0.00	699.34	1847.49	923.75	3635.30	2322.74	2.43	-0.494	0.000	0.311
50.00	-16.54	-14.57	0.00	-624.72	0.00	624.72	1847.49	923.75	3635.30	2322.74	2.98	-0.553	0.000	0.278
55.00	-15.51	-14.20	0.00	-551.86	0.00	551.86	1847.49	923.75	3635.30	2322.74	3.59	-0.606	0.000	0.246
60.00	-14.49	-13.82	0.00	-480.84	0.00	480.84	1847.49	923.75	3635.30	2322.74	4.25	-0.652	0.000	0.215
60.00	-14.49	-13.82	0.00	-480.84	0.00	480.84	1668.87	834.44	2866.90	1797.79	4.25	-0.652	0.000	0.276
65.00	-13.57	-13.48	0.00	-411.72	0.00	411.72	1668.87	834.44	2866.90	1797.79	4.96	-0.692	0.000	0.237
70.00	-12.65	-13.14	0.00	-344.30	0.00	344.30	1668.87	834.44	2866.90	1797.79	5.71	-0.742	0.000	0.199
75.00	-11.72	-12.68	0.00	-278.62	0.00	278.62	1668.87	834.44	2866.90	1797.79	6.51	-0.784	0.000	0.162
80.00	-10.80	-12.31	0.00	-215.23	0.00	215.23	1668.87	834.44	2866.90	1797.79	7.35	-0.817	0.000	0.126
80.00	-10.80	-12.31	0.00	-215.23	0.00	215.23	1490.10	745.05	2187.51	1339.68	7.35	-0.817	0.000	0.168
85.00	-10.00	-11.99	0.00	-153.69	0.00	153.69	1490.10	745.05	2187.51	1339.68	8.22	-0.842	0.000	0.122
87.00	-7.58	-9.43	0.00	-129.72	0.00	129.72	1490.10	745.05	2187.51	1339.68	8.58	-0.854	0.000	0.102
90.00	-7.11	-9.23	0.00	-101.42	0.00	101.42	1490.10	745.05	2187.51	1339.68	9.12	-0.869	0.000	0.081
91.00	-6.70	-8.01	0.00	-92.19	0.00	92.19	1490.10	745.05	2187.51	1339.68	9.30	-0.873	0.000	0.073
95.00	-6.08	-7.75	0.00	-60.13	0.00	60.13	1490.10	745.05	2187.51	1339.68	10.04	-0.886	0.000	0.049
97.00	-3.83	-4.61	0.00	-44.64	0.00	44.64	1490.10	745.05	2187.51	1339.68	10.41	-0.890	0.000	0.036
98.00	-3.14	-3.83	0.00	-40.03	0.00	40.03	1490.10	745.05	2187.51	1339.68	10.60	-0.892	0.000	0.032
100.00	-2.85	-3.70	0.00	-32.37	0.00	32.37	1490.10	745.05	2187.51	1339.68	10.97	-0.895	0.000	0.026
105.00	0.00	-3.65	0.00	-13.88	0.00	13.88	1490.10	745.05	2187.51	1339.68	11.91	-0.900	0.000	0.010

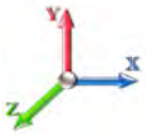
Wind Loading - Shaft

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 19	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 15

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	4.256	4.68	0.00	1.200	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	4.256	4.68	0.00	1.200	1.656	5.00	26.380	31.66	148.2	623.7	2057.9
10.00		1.00	0.70	4.256	4.68	0.00	1.200	1.775	5.00	26.479	31.77	148.8	669.8	2103.9
15.00		1.00	0.70	4.256	4.68	0.00	1.200	1.848	5.00	26.540	31.85	149.1	698.3	2132.5
20.00	Top - Section 1	1.00	0.70	4.256	4.68	0.00	1.200	1.902	5.00	26.585	31.90	149.4	719.3	2153.5
25.00		1.00	0.70	4.256	4.68	0.00	1.200	1.945	5.00	24.121	28.95	135.5	664.8	1954.6
30.00		1.00	0.70	4.260	4.69	0.00	1.200	1.981	5.00	24.151	28.98	135.8	677.4	1967.3
35.00		1.00	0.73	4.451	4.90	0.00	1.200	2.012	5.00	24.177	29.01	142.1	688.4	1978.2
40.00	Top - Section 2	1.00	0.76	4.625	5.09	0.00	1.200	2.039	5.00	24.199	29.04	147.7	697.9	1987.8
45.00		1.00	0.79	4.783	5.26	0.00	1.200	2.063	5.00	21.719	26.06	137.1	630.9	1776.4
50.00		1.00	0.81	4.929	5.42	0.00	1.200	2.085	5.00	21.737	26.08	141.4	637.9	1783.4
55.00		1.00	0.83	5.065	5.57	0.00	1.200	2.105	5.00	21.754	26.10	145.4	644.2	1789.7
60.00	Top - Section 3	1.00	0.85	5.193	5.71	0.00	1.200	2.123	5.00	21.769	26.12	149.2	650.1	1795.6
65.00		1.00	0.87	5.313	5.84	0.00	1.200	2.140	5.00	19.284	23.14	135.2	577.1	1578.3
70.00		1.00	0.89	5.426	5.97	0.00	1.200	2.156	5.00	19.297	23.16	138.2	581.6	1582.8
75.00	Appurtenance(s)	1.00	0.91	5.534	6.09	0.00	1.200	2.171	5.00	19.309	23.17	141.1	585.8	1587.0
80.00	Top - Section 4	1.00	0.93	5.637	6.20	0.00	1.200	2.185	5.00	19.321	23.19	143.8	589.8	1591.0
85.00		1.00	0.94	5.736	6.31	0.00	1.200	2.198	5.00	16.832	20.20	127.4	513.0	1369.9
87.00	Appurtenance(s)	1.00	0.95	5.774	6.35	0.00	1.200	2.204	2.00	6.735	8.08	51.3	205.7	548.5
90.00		1.00	0.96	5.830	6.41	0.00	1.200	2.211	3.00	10.106	12.13	77.8	309.7	823.8
91.00	Appurtenance(s)	1.00	0.96	5.849	6.43	0.00	1.200	2.214	1.00	3.369	4.04	26.0	103.3	274.7
95.00		1.00	0.97	5.921	6.51	0.00	1.200	2.223	4.00	13.482	16.18	105.4	415.3	1100.8
97.00	Appurtenance(s)	1.00	0.98	5.956	6.55	0.00	1.200	2.228	2.00	6.743	8.09	53.0	208.1	550.8
98.00	Appurtenance(s)	1.00	0.98	5.974	6.57	0.00	1.200	2.230	1.00	3.372	4.05	26.6	104.2	275.5
100.00		1.00	0.99	6.008	6.61	0.00	1.200	2.234	2.00	6.745	8.09	53.5	208.8	551.5
105.00	Appurtenance(s)	1.00	1.00	6.093	6.70	0.00	1.200	2.245	5.00	16.871	20.25	135.7	524.6	1381.5
								Totals:	**105.00**			**2,944.7**		**36,696.9**

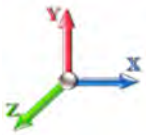
Discrete Appurtenance Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 20	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 15

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	105.00	LNX-6515DS	3	6.174	6.792	0.80	1.00	37.62	867.91	0.000	5.000	255.48	0.00	1277.38
2	105.00	AIR 21, 1.3M, B2A B4P	3	6.174	6.792	0.86	1.00	19.42	1017.96	0.000	5.000	131.92	0.00	659.61
3	105.00	AIR 21, 1.3M, B4A B2P	3	6.174	6.792	0.86	1.00	19.42	1014.00	0.000	5.000	131.92	0.00	659.61
4	105.00	KRY 112 144/1	3	6.174	6.792	0.67	1.00	2.05	71.91	0.000	5.000	13.94	0.00	69.71
5	105.00	IBR 1300	1	6.174	6.792	1.00	1.00	1.12	29.59	0.000	5.000	7.58	0.00	37.92
6	105.00	Ericsson S11B12	3	6.174	6.792	0.72	1.00	8.08	540.21	0.000	5.000	54.85	0.00	274.27
7	105.00	Low Profile	1	6.093	6.702	1.00	1.00	44.72	3184.06	0.000	0.000	299.74	0.00	0.00
8	105.00	20' Omni	1	6.269	6.896	1.00	1.00	15.13	216.74	0.000	11.000	104.32	0.00	1147.56
9	98.00	RRUS-11	6	5.974	6.571	0.70	1.00	18.87	717.89	0.000	0.000	123.99	0.00	0.00
10	98.00	DC2-48-60-8-18F-02	1	5.974	6.571	0.66	1.00	2.95	80.10	0.000	0.000	19.40	0.00	0.00
11	98.00	Flush Mount	1	5.974	6.571	1.00	1.00	9.46	694.64	0.000	0.000	62.16	0.00	0.00
12	97.00	782 10250	6	5.956	6.552	0.61	0.80	4.55	122.41	0.000	0.000	29.79	0.00	0.00
13	97.00	860 10035	6	5.956	6.552	0.74	0.80	2.93	44.96	0.000	0.000	19.20	0.00	0.00
14	97.00	LGP21401	6	5.956	6.552	0.54	0.80	7.58	250.40	0.000	0.000	49.66	0.00	0.00
15	97.00	800-10121	3	5.956	6.552	0.63	0.80	14.86	499.91	0.000	0.000	97.38	0.00	0.00
16	97.00	AM-X-CD-16-65-00T-RET	9	5.956	6.552	0.60	0.80	62.56	1969.56	0.000	0.000	409.93	0.00	0.00
17	97.00	Low Profile	1	5.956	6.552	1.00	1.00	44.54	3170.77	0.000	0.000	291.86	0.00	0.00
18	91.00	RRU	3	5.849	6.434	0.88	1.00	8.45	312.72	0.000	0.000	54.38	0.00	0.00
19	91.00	Horizon DUO Radios	3	5.849	6.434	0.76	1.00	3.84	107.94	0.000	0.000	24.68	0.00	0.00
20	91.00	VHLP2.5	3	5.849	6.434	1.00	1.00	31.78	680.25	0.000	0.000	204.48	0.00	0.00
21	87.00	APXVTM14-C-120	3	5.774	6.351	0.63	0.80	14.73	841.87	0.000	0.000	93.56	0.00	0.00
22	87.00	RRUS-11 1900 MHz	3	5.774	6.351	0.56	0.80	7.52	355.89	0.000	0.000	47.74	0.00	0.00
23	87.00	RRUS-11 800 MHz	3	5.774	6.351	0.60	0.80	8.05	415.76	0.000	0.000	51.15	0.00	0.00
24	87.00	APXVSPP18-C-A20	3	5.774	6.351	0.66	0.80	23.00	711.45	0.000	0.000	146.10	0.00	0.00
25	87.00	TD-RRH8x20-25	3	5.774	6.351	0.55	0.80	8.44	693.72	0.000	0.000	53.62	0.00	0.00
26	87.00	800MHz Filter	3	5.774	6.351	0.56	0.80	2.01	82.99	0.000	0.000	12.79	0.00	0.00
27	87.00	ACU-A20-N	4	5.774	6.351	0.63	0.80	1.30	21.30	0.000	0.000	8.26	0.00	0.00
28	87.00	Low Profile	1	5.774	6.351	1.00	1.00	44.30	3152.69	0.000	0.000	281.37	0.00	0.00
29	75.00	GPS	1	5.534	6.088	1.00	1.00	1.89	40.47	0.000	0.000	11.48	0.00	0.00
30	75.00	Standoff Mount	1	5.534	6.088	1.00	1.00	3.74	4.84	0.000	0.000	22.75	0.00	0.00
							Totals:		**21,914.92**			**3,115.50**		

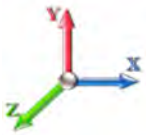
Total Applied Force Summary

Structure:	CT01498-S-SBA		**Code:**	EIA/TIA-222-G	10/26/2017
Site Name:	Avon		**Exposure:**	B	
Height:	105.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 21

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 15

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		148.20	2312.55	0.00	0.00
10.00		148.76	2364.18	0.00	0.00
15.00		149.10	2396.34	0.00	0.00
20.00		149.35	2420.09	0.00	0.00
25.00		135.51	2223.45	0.00	0.00
30.00		135.79	2238.01	0.00	0.00
35.00		142.06	2250.56	0.00	0.00
40.00		147.72	2261.62	0.00	0.00
45.00		137.12	2051.60	0.00	0.00
50.00		141.43	2059.78	0.00	0.00
55.00		145.44	2067.26	0.00	0.00
60.00		149.21	2074.17	0.00	0.00
65.00		135.23	1857.83	0.00	0.00
70.00		138.22	1863.25	0.00	0.00
75.00	(2) attachments	175.29	1913.65	0.00	0.00
80.00		143.77	1837.30	0.00	0.00
85.00		127.44	1616.56	0.00	0.00
87.00	(23) attachments	745.92	6922.85	0.00	0.00
90.00		77.77	958.29	0.00	0.00
91.00	(9) attachments	309.55	1420.48	0.00	0.00
95.00		105.37	1275.76	0.00	0.00
97.00	(31) attachments	950.83	6696.41	0.00	0.00
98.00	(8) attachments	232.14	1793.81	0.00	0.00
100.00		53.49	602.86	0.00	0.00
105.00	(18) attachments	1135.45	8452.56	0.00	4126.06
	Totals:	**6,060.18**	**63,931.22**	**0.00**	**4,126.06**

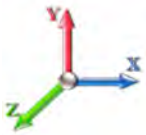
Linear Appurtenance Segment Forces (Factored)

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 22	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



Iterations 15

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.64	0.00	0.021	0.000	4.256	0.00	27.18
5.00	1/2" Coax	Yes	5.00	0.000	0.65	1.65	0.00	0.021	0.000	4.256	0.00	22.08
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.74	0.00	0.021	0.000	4.256	0.00	29.96
10.00	1/2" Coax	Yes	5.00	0.000	0.65	1.75	0.00	0.021	0.000	4.256	0.00	24.87
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.80	0.00	0.021	0.000	4.256	0.00	31.77
15.00	1/2" Coax	Yes	5.00	0.000	0.65	1.81	0.00	0.021	0.000	4.256	0.00	26.68
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.85	0.00	0.021	0.000	4.256	0.00	33.13
20.00	1/2" Coax	Yes	5.00	0.000	0.65	1.86	0.00	0.021	0.000	4.256	0.00	28.05
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.88	0.00	0.024	0.000	4.256	0.00	34.25
25.00	1/2" Coax	Yes	5.00	0.000	0.65	1.89	0.00	0.024	0.000	4.256	0.00	29.17
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.91	0.00	0.024	0.000	4.260	0.00	35.19
30.00	1/2" Coax	Yes	5.00	0.000	0.65	1.92	0.00	0.024	0.000	4.260	0.00	30.12
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.94	0.00	0.024	0.000	4.451	0.00	36.02
35.00	1/2" Coax	Yes	5.00	0.000	0.65	1.95	0.00	0.024	0.000	4.451	0.00	30.95
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.96	0.00	0.024	0.000	4.625	0.00	36.75
40.00	1/2" Coax	Yes	5.00	0.000	0.65	1.97	0.00	0.024	0.000	4.625	0.00	31.68
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	1.98	0.00	0.027	0.000	4.783	0.00	37.42
45.00	1/2" Coax	Yes	5.00	0.000	0.65	1.99	0.00	0.027	0.000	4.783	0.00	32.35
50.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.00	0.00	0.027	0.000	4.929	0.00	38.02
50.00	1/2" Coax	Yes	5.00	0.000	0.65	2.01	0.00	0.027	0.000	4.929	0.00	32.96
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.02	0.00	0.027	0.000	5.065	0.00	38.58
55.00	1/2" Coax	Yes	5.00	0.000	0.65	2.02	0.00	0.027	0.000	5.065	0.00	33.52
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.03	0.00	0.027	0.000	5.193	0.00	39.10
60.00	1/2" Coax	Yes	5.00	0.000	0.65	2.04	0.00	0.027	0.000	5.193	0.00	34.04
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.05	0.00	0.030	0.000	5.313	0.00	39.59
65.00	1/2" Coax	Yes	5.00	0.000	0.65	2.05	0.00	0.030	0.000	5.313	0.00	34.53
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.06	0.00	0.030	0.000	5.426	0.00	40.04
70.00	1/2" Coax	Yes	5.00	0.000	0.65	2.07	0.00	0.030	0.000	5.426	0.00	34.99
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.07	0.00	0.030	0.000	5.534	0.00	40.47
75.00	1/2" Coax	Yes	5.00	0.000	0.65	2.08	0.00	0.030	0.000	5.534	0.00	35.42
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.08	0.00	0.015	0.000	5.637	0.00	40.88
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.09	0.00	0.017	0.000	5.736	0.00	41.27
87.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.84	0.00	0.018	0.000	5.774	0.00	16.57
90.00	Step bolts (ladder)	Yes	3.00	0.000	0.63	1.26	0.00	0.018	0.000	5.830	0.00	24.98
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.42	0.00	0.018	0.000	5.849	0.00	8.34
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.63	1.69	0.00	0.018	0.000	5.921	0.00	33.60
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.85	0.00	0.018	0.000	5.956	0.00	16.85
98.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.42	0.00	0.018	0.000	5.974	0.00	8.44
100.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.85	0.00	0.018	0.000	6.008	0.00	16.93
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	2.13	0.00	0.017	0.000	6.093	0.00	42.66
									Totals:		**0.0**	**1,249.4**

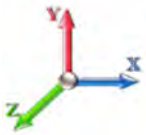
Calculated Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 23	

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

Dead Load Factor 1.20

Wind Load Factor 1.00



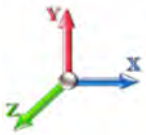
Iterations 15

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-63.93	-6.07	0.00	-474.14	0.00	474.14	2204.43	1102.21	5439.15	3573.20	0.00	0.000	0.000	0.162
5.00	-61.62	-5.94	0.00	-443.78	0.00	443.78	2204.43	1102.21	5439.15	3573.20	0.01	-0.021	0.000	0.152
10.00	-59.25	-5.81	0.00	-414.06	0.00	414.06	2204.43	1102.21	5439.15	3573.20	0.04	-0.040	0.000	0.143
15.00	-56.85	-5.68	0.00	-384.99	0.00	384.99	2204.43	1102.21	5439.15	3573.20	0.10	-0.059	0.000	0.134
20.00	-54.43	-5.54	0.00	-356.59	0.00	356.59	2204.43	1102.21	5439.15	3573.20	0.17	-0.076	0.000	0.125
20.00	-54.43	-5.54	0.00	-356.59	0.00	356.59	2026.00	1013.00	4492.72	2914.55	0.17	-0.076	0.000	0.149
25.00	-52.21	-5.42	0.00	-328.87	0.00	328.87	2026.00	1013.00	4492.72	2914.55	0.25	-0.091	0.000	0.139
30.00	-49.97	-5.30	0.00	-301.77	0.00	301.77	2026.00	1013.00	4492.72	2914.55	0.36	-0.111	0.000	0.128
35.00	-47.71	-5.17	0.00	-275.28	0.00	275.28	2026.00	1013.00	4492.72	2914.55	0.49	-0.129	0.000	0.118
40.00	-45.45	-5.02	0.00	-249.46	0.00	249.46	2026.00	1013.00	4492.72	2914.55	0.63	-0.145	0.000	0.108
40.00	-45.45	-5.02	0.00	-249.46	0.00	249.46	1847.49	923.75	3635.30	2322.74	0.63	-0.145	0.000	0.132
45.00	-43.40	-4.89	0.00	-224.33	0.00	224.33	1847.49	923.75	3635.30	2322.74	0.79	-0.160	0.000	0.120
50.00	-41.34	-4.76	0.00	-199.86	0.00	199.86	1847.49	923.75	3635.30	2322.74	0.97	-0.179	0.000	0.108
55.00	-39.27	-4.62	0.00	-176.06	0.00	176.06	1847.49	923.75	3635.30	2322.74	1.17	-0.196	0.000	0.097
60.00	-37.19	-4.47	0.00	-152.97	0.00	152.97	1847.49	923.75	3635.30	2322.74	1.38	-0.211	0.000	0.086
60.00	-37.19	-4.47	0.00	-152.97	0.00	152.97	1668.87	834.44	2866.90	1797.79	1.38	-0.211	0.000	0.107
65.00	-35.34	-4.34	0.00	-130.62	0.00	130.62	1668.87	834.44	2866.90	1797.79	1.61	-0.223	0.000	0.094
70.00	-33.47	-4.20	0.00	-108.93	0.00	108.93	1668.87	834.44	2866.90	1797.79	1.85	-0.239	0.000	0.081
75.00	-31.56	-4.02	0.00	-87.93	0.00	87.93	1668.87	834.44	2866.90	1797.79	2.11	-0.252	0.000	0.068
80.00	-29.72	-3.88	0.00	-67.81	0.00	67.81	1668.87	834.44	2866.90	1797.79	2.38	-0.263	0.000	0.056
80.00	-29.72	-3.88	0.00	-67.81	0.00	67.81	1490.10	745.05	2187.51	1339.68	2.38	-0.263	0.000	0.071
85.00	-28.11	-3.74	0.00	-48.43	0.00	48.43	1490.10	745.05	2187.51	1339.68	2.66	-0.271	0.000	0.055
87.00	-21.19	-2.97	0.00	-40.94	0.00	40.94	1490.10	745.05	2187.51	1339.68	2.77	-0.274	0.000	0.045
90.00	-20.23	-2.89	0.00	-32.04	0.00	32.04	1490.10	745.05	2187.51	1339.68	2.95	-0.279	0.000	0.038
91.00	-18.81	-2.57	0.00	-29.16	0.00	29.16	1490.10	745.05	2187.51	1339.68	3.01	-0.280	0.000	0.034
95.00	-17.53	-2.46	0.00	-18.88	0.00	18.88	1490.10	745.05	2187.51	1339.68	3.24	-0.285	0.000	0.026
97.00	-10.84	-1.48	0.00	-13.96	0.00	13.96	1490.10	745.05	2187.51	1339.68	3.36	-0.286	0.000	0.018
98.00	-9.05	-1.23	0.00	-12.48	0.00	12.48	1490.10	745.05	2187.51	1339.68	3.42	-0.287	0.000	0.015
100.00	-8.45	-1.18	0.00	-10.02	0.00	10.02	1490.10	745.05	2187.51	1339.68	3.54	-0.288	0.000	0.013
105.00	0.00	-1.14	0.00	-4.13	0.00	4.13	1490.10	745.05	2187.51	1339.68	3.84	-0.289	0.000	0.003

Seismic Segment Forces (Factored)

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 24	

Load Case: 1.2D + 1.0E



Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	15
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency**	0.80	**SA**	0.08	**S1**	0.06
						Seismic Importance Factor	1.00

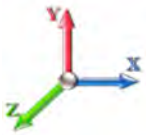
Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1195.1	0.00	0.04	0.02	14.90	
10.00		1195.1	0.02	0.06	0.04	21.87	
15.00		1195.1	0.04	0.07	0.04	25.43	
20.00	Top - Section 1	1195.1	0.07	0.07	0.04	27.82	
25.00		1074.8	0.11	0.07	0.04	27.02	
30.00		1074.8	0.15	0.07	0.03	29.05	
35.00		1074.8	0.21	0.06	0.02	30.78	
40.00	Top - Section 2	1074.8	0.27	0.05	0.01	31.56	
45.00		954.60	0.35	0.03	0.01	27.21	
50.00		954.60	0.43	0.01	0.01	24.42	
55.00		954.60	0.52	-0.02	0.01	19.71	
60.00	Top - Section 3	954.60	0.62	-0.06	0.02	13.96	
65.00		834.33	0.72	-0.09	0.03	7.90	
70.00		834.33	0.84	-0.12	0.07	6.58	
75.00	Appurtenance(s)	864.33	0.96	-0.12	0.11	10.98	
80.00	Top - Section 4	834.33	1.10	-0.07	0.19	21.89	
85.00		714.07	1.24	0.04	0.28	35.73	
87.00	Appurtenance(s)	2662.6	1.30	0.12	0.33	166.83	
90.00		428.44	1.39	0.26	0.42	36.43	
91.00	Appurtenance(s)	446.11	1.42	0.32	0.45	41.67	
95.00		571.25	1.55	0.62	0.60	75.21	
97.00	Appurtenance(s)	2484.6	1.61	0.82	0.69	381.74	
98.00	Appurtenance(s)	771.31	1.65	0.93	0.73	127.54	
100.00		285.63	1.71	1.18	0.84	54.33	
105.00	Appurtenance(s)	3159.0	1.89	1.98	1.14	824.31	
	Totals:	**27,788.8**				**2,084.9**	**Total Wind:** **18,113.3**

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

Calculated Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 25	

Load Case: 1.2D + 1.0E



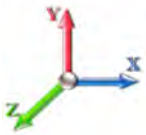
Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	15		
Dead Load Factor	1.20	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18		
Wind Load Factor	0.00	**Structure Frequency**	0.80	**SA**	0.08	**S1**	0.06	**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-37.56	-2.09	0.00	-188.63	0.00	188.63	2204.43	1102.21	5439.15	3573.20		0.00	0.00	0.070
5.00	-35.91	-2.08	0.00	-178.19	0.00	178.19	2204.43	1102.21	5439.15	3573.20		0.00	-0.01	0.066
10.00	-34.27	-2.06	0.00	-167.80	0.00	167.80	2204.43	1102.21	5439.15	3573.20		0.02	-0.02	0.063
15.00	-32.62	-2.04	0.00	-157.50	0.00	157.50	2204.43	1102.21	5439.15	3573.20		0.04	-0.02	0.059
20.00	-30.97	-2.01	0.00	-147.32	0.00	147.32	2204.43	1102.21	5439.15	3573.20		0.07	-0.03	0.055
20.00	-30.97	-2.01	0.00	-147.32	0.00	147.32	2026.00	1013.00	4492.72	2914.55		0.07	-0.03	0.066
25.00	-29.47	-1.99	0.00	-137.25	0.00	137.25	2026.00	1013.00	4492.72	2914.55		0.10	-0.04	0.062
30.00	-27.97	-1.96	0.00	-127.31	0.00	127.31	2026.00	1013.00	4492.72	2914.55		0.15	-0.05	0.057
35.00	-26.47	-1.93	0.00	-117.49	0.00	117.49	2026.00	1013.00	4492.72	2914.55		0.20	-0.05	0.053
40.00	-24.96	-1.90	0.00	-107.83	0.00	107.83	2026.00	1013.00	4492.72	2914.55		0.26	-0.06	0.049
40.00	-24.96	-1.90	0.00	-107.83	0.00	107.83	1847.49	923.75	3635.30	2322.74		0.26	-0.06	0.060
45.00	-23.60	-1.88	0.00	-98.31	0.00	98.31	1847.49	923.75	3635.30	2322.74		0.32	-0.07	0.055
50.00	-22.25	-1.86	0.00	-88.92	0.00	88.92	1847.49	923.75	3635.30	2322.74		0.40	-0.07	0.050
55.00	-20.89	-1.84	0.00	-79.64	0.00	79.64	1847.49	923.75	3635.30	2322.74		0.48	-0.08	0.046
60.00	-19.53	-1.82	0.00	-70.46	0.00	70.46	1847.49	923.75	3635.30	2322.74		0.57	-0.09	0.041
60.00	-19.53	-1.82	0.00	-70.46	0.00	70.46	1668.87	834.44	2866.90	1797.79		0.57	-0.09	0.051
65.00	-18.32	-1.81	0.00	-61.35	0.00	61.35	1668.87	834.44	2866.90	1797.79		0.67	-0.09	0.045
70.00	-17.10	-1.81	0.00	-52.28	0.00	52.28	1668.87	834.44	2866.90	1797.79		0.77	-0.10	0.039
75.00	-15.85	-1.80	0.00	-43.24	0.00	43.24	1668.87	834.44	2866.90	1797.79		0.88	-0.11	0.034
80.00	-14.64	-1.77	0.00	-34.25	0.00	34.25	1668.87	834.44	2866.90	1797.79		1.00	-0.11	0.028
80.00	-14.64	-1.77	0.00	-34.25	0.00	34.25	1490.10	745.05	2187.51	1339.68		1.00	-0.11	0.035
85.00	-13.57	-1.74	0.00	-25.39	0.00	25.39	1490.10	745.05	2187.51	1339.68		1.12	-0.12	0.028
87.00	-10.29	-1.56	0.00	-21.92	0.00	21.92	1490.10	745.05	2187.51	1339.68		1.17	-0.12	0.023
90.00	-9.66	-1.53	0.00	-17.23	0.00	17.23	1490.10	745.05	2187.51	1339.68		1.25	-0.12	0.019
91.00	-9.09	-1.48	0.00	-15.70	0.00	15.70	1490.10	745.05	2187.51	1339.68		1.27	-0.12	0.018
95.00	-8.26	-1.41	0.00	-9.77	0.00	9.77	1490.10	745.05	2187.51	1339.68		1.38	-0.13	0.013
97.00	-5.20	-1.02	0.00	-6.96	0.00	6.96	1490.10	745.05	2187.51	1339.68		1.43	-0.13	0.009
98.00	-4.26	-0.89	0.00	-5.94	0.00	5.94	1490.10	745.05	2187.51	1339.68		1.46	-0.13	0.007
100.00	-3.88	-0.83	0.00	-4.16	0.00	4.16	1490.10	745.05	2187.51	1339.68		1.51	-0.13	0.006
105.00	0.00	-0.82	0.00	0.00	0.00	0.00	1490.10	745.05	2187.51	1339.68		1.64	-0.13	0.000

Seismic Segment Forces (Factored)

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 26	

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	15
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18
Wind Load Factor	0.00	**Structure Frequency**	0.80	**SA**	0.08	**S1**	0.06
						Seismic Importance Factor	1.00

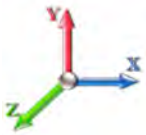
Top Elev (ft)	Description	Wz (lb)	a	b	c	Lateral Fs (lb)	R: 1.50
0.00		0.00	0.00	0.00	0.00	0.00	
5.00		1195.1	0.00	0.04	0.02	14.90	
10.00		1195.1	0.02	0.06	0.04	21.87	
15.00		1195.1	0.04	0.07	0.04	25.43	
20.00	Top - Section 1	1195.1	0.07	0.07	0.04	27.82	
25.00		1074.8	0.11	0.07	0.04	27.02	
30.00		1074.8	0.15	0.07	0.03	29.05	
35.00		1074.8	0.21	0.06	0.02	30.78	
40.00	Top - Section 2	1074.8	0.27	0.05	0.01	31.56	
45.00		954.60	0.35	0.03	0.01	27.21	
50.00		954.60	0.43	0.01	0.01	24.42	
55.00		954.60	0.52	-0.02	0.01	19.71	
60.00	Top - Section 3	954.60	0.62	-0.06	0.02	13.96	
65.00		834.33	0.72	-0.09	0.03	7.90	
70.00		834.33	0.84	-0.12	0.07	6.58	
75.00	Appurtenance(s)	864.33	0.96	-0.12	0.11	10.98	
80.00	Top - Section 4	834.33	1.10	-0.07	0.19	21.89	
85.00		714.07	1.24	0.04	0.28	35.73	
87.00	Appurtenance(s)	2662.6	1.30	0.12	0.33	166.83	
90.00		428.44	1.39	0.26	0.42	36.43	
91.00	Appurtenance(s)	446.11	1.42	0.32	0.45	41.67	
95.00		571.25	1.55	0.62	0.60	75.21	
97.00	Appurtenance(s)	2484.6	1.61	0.82	0.69	381.74	
98.00	Appurtenance(s)	771.31	1.65	0.93	0.73	127.54	
100.00		285.63	1.71	1.18	0.84	54.33	
105.00	Appurtenance(s)	3159.0	1.89	1.98	1.14	824.31	
	Totals:	**27,788.8**				**2,084.9**	**Total Wind:** **18,113.3**

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

Calculated Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 27	

Load Case: 0.9D + 1.0E



Gust Response Factor	1.10			**Sds**	0.19	**Iterations**	15		
Dead Load Factor	0.90	**Seismic Load Factor**	1.00	**Sd1**	0.10	**Ss**	0.18		
Wind Load Factor	0.00	**Structure Frequency**	0.80	**SA**	0.08	**S1**	0.06	**Seismic Importance Factor**	1.00

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-28.17	-2.09	0.00	-188.04	0.00	188.04	2204.43	1102.21	5439.15	3573.20		0.00	0.00	0.065
5.00	-26.94	-2.08	0.00	-177.60	0.00	177.60	2204.43	1102.21	5439.15	3573.20		0.00	-0.01	0.062
10.00	-25.70	-2.06	0.00	-167.23	0.00	167.23	2204.43	1102.21	5439.15	3573.20		0.02	-0.02	0.058
15.00	-24.47	-2.03	0.00	-156.94	0.00	156.94	2204.43	1102.21	5439.15	3573.20		0.04	-0.02	0.055
20.00	-23.23	-2.01	0.00	-146.77	0.00	146.77	2204.43	1102.21	5439.15	3573.20		0.07	-0.03	0.052
20.00	-23.23	-2.01	0.00	-146.77	0.00	146.77	2026.00	1013.00	4492.72	2914.55		0.07	-0.03	0.062
25.00	-22.10	-1.98	0.00	-136.73	0.00	136.73	2026.00	1013.00	4492.72	2914.55		0.10	-0.04	0.058
30.00	-20.98	-1.96	0.00	-126.81	0.00	126.81	2026.00	1013.00	4492.72	2914.55		0.15	-0.05	0.054
35.00	-19.85	-1.93	0.00	-117.03	0.00	117.03	2026.00	1013.00	4492.72	2914.55		0.20	-0.05	0.050
40.00	-18.72	-1.90	0.00	-107.40	0.00	107.40	2026.00	1013.00	4492.72	2914.55		0.26	-0.06	0.046
40.00	-18.72	-1.90	0.00	-107.40	0.00	107.40	1847.49	923.75	3635.30	2322.74		0.26	-0.06	0.056
45.00	-17.70	-1.87	0.00	-97.91	0.00	97.91	1847.49	923.75	3635.30	2322.74		0.32	-0.07	0.052
50.00	-16.68	-1.85	0.00	-88.56	0.00	88.56	1847.49	923.75	3635.30	2322.74		0.40	-0.07	0.047
55.00	-15.67	-1.83	0.00	-79.32	0.00	79.32	1847.49	923.75	3635.30	2322.74		0.48	-0.08	0.043
60.00	-14.65	-1.81	0.00	-70.18	0.00	70.18	1847.49	923.75	3635.30	2322.74		0.57	-0.09	0.038
60.00	-14.65	-1.81	0.00	-70.18	0.00	70.18	1668.87	834.44	2866.90	1797.79		0.57	-0.09	0.048
65.00	-13.74	-1.81	0.00	-61.11	0.00	61.11	1668.87	834.44	2866.90	1797.79		0.66	-0.09	0.042
70.00	-12.83	-1.80	0.00	-52.08	0.00	52.08	1668.87	834.44	2866.90	1797.79		0.77	-0.10	0.037
75.00	-11.89	-1.79	0.00	-43.08	0.00	43.08	1668.87	834.44	2866.90	1797.79		0.88	-0.11	0.031
80.00	-10.98	-1.77	0.00	-34.13	0.00	34.13	1668.87	834.44	2866.90	1797.79		1.00	-0.11	0.026
80.00	-10.98	-1.77	0.00	-34.13	0.00	34.13	1490.10	745.05	2187.51	1339.68		1.00	-0.11	0.033
85.00	-10.18	-1.73	0.00	-25.30	0.00	25.30	1490.10	745.05	2187.51	1339.68		1.12	-0.12	0.026
87.00	-7.72	-1.56	0.00	-21.85	0.00	21.85	1490.10	745.05	2187.51	1339.68		1.17	-0.12	0.021
90.00	-7.25	-1.52	0.00	-17.17	0.00	17.17	1490.10	745.05	2187.51	1339.68		1.24	-0.12	0.018
91.00	-6.82	-1.48	0.00	-15.65	0.00	15.65	1490.10	745.05	2187.51	1339.68		1.27	-0.12	0.016
95.00	-6.19	-1.40	0.00	-9.74	0.00	9.74	1490.10	745.05	2187.51	1339.68		1.37	-0.13	0.011
97.00	-3.90	-1.01	0.00	-6.94	0.00	6.94	1490.10	745.05	2187.51	1339.68		1.42	-0.13	0.008
98.00	-3.20	-0.89	0.00	-5.92	0.00	5.92	1490.10	745.05	2187.51	1339.68		1.45	-0.13	0.007
100.00	-2.91	-0.83	0.00	-4.15	0.00	4.15	1490.10	745.05	2187.51	1339.68		1.50	-0.13	0.005
105.00	0.00	-0.82	0.00	0.00	0.00	0.00	1490.10	745.05	2187.51	1339.68		1.64	-0.13	0.000

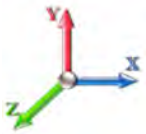
Wind Loading - Shaft

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 28	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 15

Elev (ft)	Description	Kzt	Kz	qz (psf)	qzGh (psf)	C (mph-ft)	Cf	Ice Thick (in)	Tributary (ft)	Aa (sf)	CfAa (sf)	Wind Force X (lb)	Dead Load Ice (lb)	Tot Dead Load (lb)
0.00		1.00	0.70	6.129	6.74	251.00	0.600	0.000	0.00	0.000	0.00	0.0	0.0	0.0
5.00		1.00	0.70	6.129	6.74	251.00	0.600	0.000	5.00	25.000	15.00	101.1	0.0	1195.1
10.00		1.00	0.70	6.129	6.74	251.00	0.600	0.000	5.00	25.000	15.00	101.1	0.0	1195.1
15.00		1.00	0.70	6.129	6.74	251.00	0.600	0.000	5.00	25.000	15.00	101.1	0.0	1195.1
20.00	Top - Section 1	1.00	0.70	6.129	6.74	251.00	0.600	0.000	5.00	25.000	15.00	101.1	0.0	1195.1
25.00		1.00	0.70	6.129	6.74	225.90	0.600	0.000	5.00	22.500	13.50	91.0	0.0	1074.9
30.00		1.00	0.70	6.134	6.75	225.99	0.600	0.000	5.00	22.500	13.50	91.1	0.0	1074.9
35.00		1.00	0.73	6.410	7.05	231.03	0.600	0.000	5.00	22.500	13.50	95.2	0.0	1074.9
40.00	Top - Section 2	1.00	0.76	6.659	7.33	235.47	0.600	0.000	5.00	22.500	13.50	98.9	0.0	1074.9
45.00		1.00	0.79	6.887	7.58	212.86	0.600	0.000	5.00	20.000	12.00	90.9	0.0	954.6
50.00		1.00	0.81	7.098	7.81	216.09	0.600	0.000	5.00	20.000	12.00	93.7	0.0	954.6
55.00		1.00	0.83	7.294	8.02	219.05	0.600	0.000	5.00	20.000	12.00	96.3	0.0	954.6
60.00	Top - Section 3	1.00	0.85	7.477	8.22	221.79	0.600	0.000	5.00	20.000	12.00	98.7	0.0	954.6
65.00		1.00	0.87	7.650	8.42	196.30	0.600	0.000	5.00	17.500	10.50	88.4	0.0	834.3
70.00		1.00	0.89	7.814	8.60	198.39	0.600	0.000	5.00	17.500	10.50	90.3	0.0	834.3
75.00	Appurtenance(s)	1.00	0.91	7.969	8.77	200.35	0.600	0.000	5.00	17.500	10.50	92.0	0.0	834.3
80.00	Top - Section 4	1.00	0.93	8.118	8.93	202.21	0.600	0.000	5.00	17.500	10.50	93.8	0.0	834.3
85.00		1.00	0.94	8.260	9.09	174.83	0.600	0.000	5.00	15.000	9.00	81.8	0.0	714.1
87.00	Appurtenance(s)	1.00	0.95	8.315	9.15	175.41	0.600	0.000	2.00	6.000	3.60	32.9	0.0	285.6
90.00		1.00	0.96	8.396	9.24	176.26	0.600	0.000	3.00	9.000	5.40	49.9	0.0	428.4
91.00	Appurtenance(s)	1.00	0.96	8.422	9.26	176.54	0.600	0.000	1.00	3.000	1.80	16.7	0.0	142.8
95.00		1.00	0.97	8.526	9.38	177.63	0.600	0.000	4.00	12.000	7.20	67.5	0.0	571.3
97.00	Appurtenance(s)	1.00	0.98	8.577	9.43	178.16	0.600	0.000	2.00	6.000	3.60	34.0	0.0	285.6
98.00	Appurtenance(s)	1.00	0.98	8.602	9.46	178.42	0.600	0.000	1.00	3.000	1.80	17.0	0.0	142.8
100.00		1.00	0.99	8.652	9.52	178.94	0.600	0.000	2.00	6.000	3.60	34.3	0.0	285.6
105.00	Appurtenance(s)	1.00	1.00	8.774	9.65	180.19	0.600	0.000	5.00	15.000	9.00	86.9	0.0	714.1
								Totals:	**105.00**			**1,945.5**		**19,806.0**

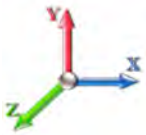
Discrete Appurtenance Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 29	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 15

No.	Elev (ft)	Description	Qty	qz (psf)	qzGh (psf)	CaAa x Ka	Ka	Total CaAa (sf)	Dead Load (lb)	Horiz Ecc (ft)	Vert Ecc (ft)	Wind FX (lb)	Mom Y (lb-ft)	Mom Z (lb-ft)
1	105.00	LNX-6515DS	3	8.891	9.780	0.80	1.00	27.53	149.40	0.000	5.000	269.23	0.00	1346.13
2	105.00	AIR 21, 1.3M, B2A B4P	3	8.891	9.780	0.86	1.00	15.71	274.50	0.000	5.000	153.67	0.00	768.34
3	105.00	AIR 21, 1.3M, B4A B2P	3	8.891	9.780	0.86	1.00	15.71	271.20	0.000	5.000	153.67	0.00	768.34
4	105.00	KRY 112 144/1	3	8.891	9.780	0.67	1.00	0.82	33.00	0.000	5.000	8.06	0.00	40.30
5	105.00	IBR 1300	1	8.891	9.780	1.00	1.00	0.67	8.90	0.000	5.000	6.55	0.00	32.76
6	105.00	Ericsson S11B12	3	8.891	9.780	0.71	1.00	0.00	153.00	0.000	5.000	0.00	0.00	0.00
7	105.00	Low Profile	1	8.774	9.651	1.00	1.00	22.00	1500.00	0.000	0.000	212.32	0.00	0.00
8	105.00	20' Omni	1	9.027	9.930	1.00	1.00	6.00	55.00	0.000	11.000	59.58	0.00	655.36
9	98.00	RRUS-11	6	8.602	9.463	0.70	1.00	12.35	264.00	0.000	0.000	116.84	0.00	0.00
10	98.00	DC2-48-60-8-18F-02	1	8.602	9.463	0.66	1.00	1.93	14.50	0.000	0.000	18.24	0.00	0.00
11	98.00	Flush Mount	1	8.602	9.463	1.00	1.00	5.00	350.00	0.000	0.000	47.31	0.00	0.00
12	97.00	782 10250	6	8.577	9.435	0.61	0.80	1.90	38.40	0.000	0.000	17.90	0.00	0.00
13	97.00	860 10035	6	8.577	9.435	0.74	0.80	0.79	7.20	0.000	0.000	7.50	0.00	0.00
14	97.00	LGP21401	6	8.577	9.435	0.54	0.80	4.15	84.60	0.000	0.000	39.14	0.00	0.00
15	97.00	800-10121	3	8.577	9.435	0.63	0.80	9.76	132.30	0.000	0.000	92.13	0.00	0.00
16	97.00	AM-X-CD-16-65-00T-RET	9	8.577	9.435	0.60	0.80	43.31	436.50	0.000	0.000	408.61	0.00	0.00
17	97.00	Low Profile	1	8.577	9.435	1.00	1.00	22.00	1500.00	0.000	0.000	207.57	0.00	0.00
18	91.00	RRU	3	8.422	9.264	0.88	1.00	5.07	126.00	0.000	0.000	46.96	0.00	0.00
19	91.00	Horizon DUO Radios	3	8.422	9.264	0.76	1.00	1.92	34.50	0.000	0.000	17.74	0.00	0.00
20	91.00	VHLP2.5	3	8.422	9.264	1.00	1.00	25.29	142.80	0.000	0.000	234.30	0.00	0.00
21	87.00	APXVTM14-C-120	3	8.315	9.146	0.63	0.80	12.02	168.00	0.000	0.000	109.94	0.00	0.00
22	87.00	RRUS-11 1900 MHz	3	8.315	9.146	0.56	0.80	4.94	132.00	0.000	0.000	45.17	0.00	0.00
23	87.00	RRUS-11 800 MHz	3	8.315	9.146	0.60	0.80	5.29	162.00	0.000	0.000	48.40	0.00	0.00
24	87.00	APXVSPP18-C-A20	3	8.315	9.146	0.66	0.80	15.98	171.00	0.000	0.000	146.12	0.00	0.00
25	87.00	TD-RRH8x20-25	3	8.315	9.146	0.55	0.80	6.71	210.00	0.000	0.000	61.34	0.00	0.00
26	87.00	800MHz Filter	3	8.315	9.146	0.56	0.80	0.82	30.00	0.000	0.000	7.53	0.00	0.00
27	87.00	ACU-A20-N	4	8.315	9.146	0.63	0.80	0.35	4.00	0.000	0.000	3.24	0.00	0.00
28	87.00	Low Profile	1	8.315	9.146	1.00	1.00	22.00	1500.00	0.000	0.000	201.21	0.00	0.00
29	75.00	GPS	1	7.969	8.766	1.00	1.00	1.00	10.00	0.000	0.000	8.77	0.00	0.00
30	75.00	Standoff Mount	1	7.969	8.766	1.00	1.00	2.00	20.00	0.000	0.000	17.53	0.00	0.00
							Totals:		**7,982.80**			**2,766.56**		

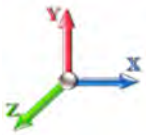
Total Applied Force Summary

Structure:	CT01498-S-SBA		**Code:**	EIA/TIA-222-G	10/26/2017
Site Name:	Avon		**Exposure:**	B	
Height:	105.00 (ft)		**Crest Height:**	0.00	
Base Elev:	0.000 (ft)		**Site Class:**	D - Stiff Soil	
Gh:	1.1	**Topography:** 1	**Struct Class:**	II	Page: 30

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 15

Elev (ft)	Description	Lateral FX (-) (lb)	Axial FY (-) (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)
0.00		0.00	0.00	0.00	0.00
5.00		101.12	1372.30	0.00	0.00
10.00		101.12	1372.30	0.00	0.00
15.00		101.12	1372.30	0.00	0.00
20.00		101.12	1372.30	0.00	0.00
25.00		91.01	1252.04	0.00	0.00
30.00		91.09	1252.04	0.00	0.00
35.00		95.19	1252.04	0.00	0.00
40.00		98.89	1252.04	0.00	0.00
45.00		90.91	1131.78	0.00	0.00
50.00		93.69	1131.78	0.00	0.00
55.00		96.28	1131.78	0.00	0.00
60.00		98.70	1131.78	0.00	0.00
65.00		88.36	1011.51	0.00	0.00
70.00		90.25	1011.51	0.00	0.00
75.00	(2) attachments	118.35	1041.51	0.00	0.00
80.00		93.76	1010.71	0.00	0.00
85.00		81.77	890.45	0.00	0.00
87.00	(23) attachments	655.88	2733.18	0.00	0.00
90.00		49.87	522.82	0.00	0.00
91.00	(9) attachments	315.67	477.57	0.00	0.00
95.00		67.53	693.25	0.00	0.00
97.00	(31) attachments	806.81	2545.63	0.00	0.00
98.00	(8) attachments	199.43	786.69	0.00	0.00
100.00		34.26	316.39	0.00	0.00
105.00	(18) attachments	949.93	3235.97	0.00	3611.22
	Totals:	**4,712.11**	**31,301.68**	**0.00**	**3,611.22**

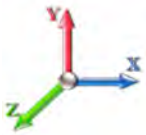
Linear Appurtenance Segment Forces (Factored)

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 31	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 15

Top Elev (ft)	Description	Wind Exposed	Length (ft)	Ca	Exposed Width (in)	Area (sqft)	CaAa (sqft)	Ra	Cf Adjust Factor	qz (psf)	F X (lb)	Dead Load (lb)
5.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	6.129	0.00	5.20
5.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	6.129	0.00	0.80
10.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	6.129	0.00	5.20
10.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	6.129	0.00	0.80
15.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	6.129	0.00	5.20
15.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	6.129	0.00	0.80
20.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.021	0.000	6.129	0.00	5.20
20.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.021	0.000	6.129	0.00	0.80
25.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	6.129	0.00	5.20
25.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	6.129	0.00	0.80
30.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	6.134	0.00	5.20
30.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	6.134	0.00	0.80
35.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	6.410	0.00	5.20
35.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	6.410	0.00	0.80
40.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.024	0.000	6.659	0.00	5.20
40.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.024	0.000	6.659	0.00	0.80
45.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	6.887	0.00	5.20
45.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	6.887	0.00	0.80
50.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	7.098	0.00	5.20
50.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	7.098	0.00	0.80
55.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	7.294	0.00	5.20
55.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	7.294	0.00	0.80
60.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.027	0.000	7.477	0.00	5.20
60.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.027	0.000	7.477	0.00	0.80
65.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	7.650	0.00	5.20
65.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	7.650	0.00	0.80
70.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	7.814	0.00	5.20
70.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	7.814	0.00	0.80
75.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.030	0.000	7.969	0.00	5.20
75.00	1/2" Coax	Yes	5.00	0.000	0.65	0.27	0.00	0.030	0.000	7.969	0.00	0.80
80.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.015	0.000	8.118	0.00	5.20
85.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.017	0.000	8.260	0.00	5.20
87.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	8.315	0.00	2.08
90.00	Step bolts (ladder)	Yes	3.00	0.000	0.63	0.16	0.00	0.018	0.000	8.396	0.00	3.12
91.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.05	0.00	0.018	0.000	8.422	0.00	1.04
95.00	Step bolts (ladder)	Yes	4.00	0.000	0.63	0.21	0.00	0.018	0.000	8.526	0.00	4.16
97.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	8.577	0.00	2.08
98.00	Step bolts (ladder)	Yes	1.00	0.000	0.63	0.05	0.00	0.018	0.000	8.602	0.00	1.04
100.00	Step bolts (ladder)	Yes	2.00	0.000	0.63	0.11	0.00	0.018	0.000	8.652	0.00	2.08
105.00	Step bolts (ladder)	Yes	5.00	0.000	0.63	0.26	0.00	0.017	0.000	8.774	0.00	5.20
									Totals:		**0.0**	**121.2**

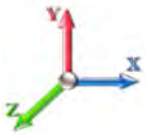
Calculated Forces

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 32	

Load Case: 1.0D + 1.0W 60 mph Wind

Dead Load Factor 1.00

Wind Load Factor 1.00



Iterations 15

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation Sway (deg)	Rotation Twist (deg)	Stress Ratio
0.00	-31.30	-4.72	0.00	-377.68	0.00	377.68	2204.43	1102.21	5439.15	3573.20	0.00	0.000	0.000	0.120
5.00	-29.93	-4.62	0.00	-354.10	0.00	354.10	2204.43	1102.21	5439.15	3573.20	0.01	-0.017	0.000	0.113
10.00	-28.55	-4.53	0.00	-330.98	0.00	330.98	2204.43	1102.21	5439.15	3573.20	0.04	-0.032	0.000	0.106
15.00	-27.18	-4.43	0.00	-308.34	0.00	308.34	2204.43	1102.21	5439.15	3573.20	0.08	-0.047	0.000	0.099
20.00	-25.81	-4.34	0.00	-286.17	0.00	286.17	2204.43	1102.21	5439.15	3573.20	0.13	-0.060	0.000	0.092
20.00	-25.81	-4.34	0.00	-286.17	0.00	286.17	2026.00	1013.00	4492.72	2914.55	0.13	-0.060	0.000	0.111
25.00	-24.55	-4.25	0.00	-264.48	0.00	264.48	2026.00	1013.00	4492.72	2914.55	0.20	-0.073	0.000	0.103
30.00	-23.30	-4.16	0.00	-243.23	0.00	243.23	2026.00	1013.00	4492.72	2914.55	0.29	-0.089	0.000	0.095
35.00	-22.05	-4.07	0.00	-222.41	0.00	222.41	2026.00	1013.00	4492.72	2914.55	0.39	-0.103	0.000	0.087
40.00	-20.80	-3.98	0.00	-202.05	0.00	202.05	2026.00	1013.00	4492.72	2914.55	0.50	-0.117	0.000	0.080
40.00	-20.80	-3.98	0.00	-202.05	0.00	202.05	1847.49	923.75	3635.30	2322.74	0.50	-0.117	0.000	0.098
45.00	-19.66	-3.89	0.00	-182.17	0.00	182.17	1847.49	923.75	3635.30	2322.74	0.63	-0.129	0.000	0.089
50.00	-18.53	-3.80	0.00	-162.74	0.00	162.74	1847.49	923.75	3635.30	2322.74	0.78	-0.144	0.000	0.080
55.00	-17.40	-3.70	0.00	-143.76	0.00	143.76	1847.49	923.75	3635.30	2322.74	0.94	-0.158	0.000	0.071
60.00	-16.27	-3.60	0.00	-125.26	0.00	125.26	1847.49	923.75	3635.30	2322.74	1.11	-0.170	0.000	0.063
60.00	-16.27	-3.60	0.00	-125.26	0.00	125.26	1668.87	834.44	2866.90	1797.79	1.11	-0.170	0.000	0.079
65.00	-15.25	-3.51	0.00	-107.26	0.00	107.26	1668.87	834.44	2866.90	1797.79	1.29	-0.180	0.000	0.069
70.00	-14.24	-3.42	0.00	-89.69	0.00	89.69	1668.87	834.44	2866.90	1797.79	1.49	-0.193	0.000	0.058
75.00	-13.20	-3.30	0.00	-72.58	0.00	72.58	1668.87	834.44	2866.90	1797.79	1.70	-0.204	0.000	0.048
80.00	-12.19	-3.21	0.00	-56.07	0.00	56.07	1668.87	834.44	2866.90	1797.79	1.91	-0.213	0.000	0.039
80.00	-12.19	-3.21	0.00	-56.07	0.00	56.07	1490.10	745.05	2187.51	1339.68	1.91	-0.213	0.000	0.050
85.00	-11.30	-3.12	0.00	-40.03	0.00	40.03	1490.10	745.05	2187.51	1339.68	2.14	-0.219	0.000	0.037
87.00	-8.57	-2.46	0.00	-33.79	0.00	33.79	1490.10	745.05	2187.51	1339.68	2.23	-0.222	0.000	0.031
90.00	-8.05	-2.41	0.00	-26.42	0.00	26.42	1490.10	745.05	2187.51	1339.68	2.38	-0.226	0.000	0.025
91.00	-7.57	-2.09	0.00	-24.01	0.00	24.01	1490.10	745.05	2187.51	1339.68	2.42	-0.227	0.000	0.023
95.00	-6.88	-2.02	0.00	-15.66	0.00	15.66	1490.10	745.05	2187.51	1339.68	2.61	-0.231	0.000	0.016
97.00	-4.33	-1.20	0.00	-11.62	0.00	11.62	1490.10	745.05	2187.51	1339.68	2.71	-0.232	0.000	0.012
98.00	-3.55	-1.00	0.00	-10.42	0.00	10.42	1490.10	745.05	2187.51	1339.68	2.76	-0.232	0.000	0.010
100.00	-3.23	-0.96	0.00	-8.43	0.00	8.43	1490.10	745.05	2187.51	1339.68	2.86	-0.233	0.000	0.008
105.00	0.00	-0.95	0.00	-3.61	0.00	3.61	1490.10	745.05	2187.51	1339.68	3.10	-0.234	0.000	0.003

Final Analysis Summary

Structure:	CT01498-S-SBA	**Code:**	EIA/TIA-222-G	10/26/2017	
Site Name:	Avon	**Exposure:**	B		
Height:	105.00 (ft)	**Crest Height:**	0.00		
Base Elev:	0.000 (ft)	**Site Class:**	D - Stiff Soil		
Gh:	1.1 **Topography:** 1	**Struct Class:**	II	Page: 33	

Tower Engineering Solutions

Reactions

Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)
1.2D + 1.6W 93 mph Wind	18.1	0.00	37.55	0.00	0.00	1454.81
0.9D + 1.6W 93 mph Wind	18.1	0.00	28.16	0.00	0.00	1450.46
1.2D + 1.0Di + 1.0Wi 50 mph Wind	6.1	0.00	63.93	0.00	0.00	474.14
1.2D + 1.0E	2.1	0.00	37.56	0.00	0.00	188.63
0.9D + 1.0E	2.1	0.00	28.17	0.00	0.00	188.04
1.0D + 1.0W 60 mph Wind	4.7	0.00	31.30	0.00	0.00	377.68

Max Stresses

Load Case	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (-) (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Elev (ft)	Stress Ratio
1.2D + 1.6W 93 mph Wind	-37.55	-18.13	0.00	-1454.8	0.00	-1454.8	2204.43	1102.2	5439.15	3573.20	0.00	0.424
0.9D + 1.6W 93 mph Wind	-28.16	-18.13	0.00	-1450.4	0.00	-1450.4	2204.43	1102.2	5439.15	3573.20	0.00	0.419
1.2D + 1.0Di + 1.0Wi 50 mph Wind	-63.93	-6.07	0.00	-474.14	0.00	-474.14	2204.43	1102.2	5439.15	3573.20	0.00	0.162
1.2D + 1.0E	-37.56	-2.09	0.00	-188.63	0.00	-188.63	2204.43	1102.2	5439.15	3573.20	0.00	0.070
0.9D + 1.0E	-28.17	-2.09	0.00	-188.04	0.00	-188.04	2204.43	1102.2	5439.15	3573.20	0.00	0.065
1.0D + 1.0W 60 mph Wind	-31.30	-4.72	0.00	-377.68	0.00	-377.68	2204.43	1102.2	5439.15	3573.20	0.00	0.120

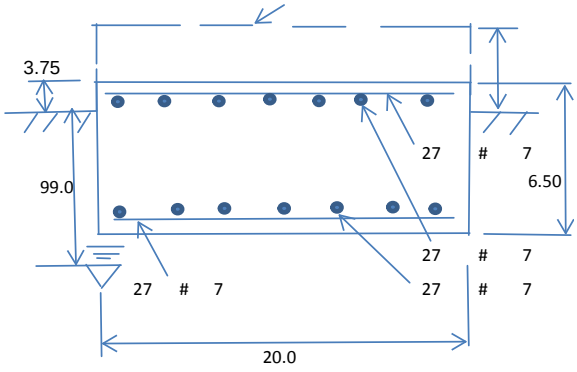
Monopole Mat Foundation Design

			Date: 10/24/2017
Customer Name:	SBA Communcations Corp	**EIA/TIA Standard:**	EIA-222-G
Site Name:	Avon	**Structure Height (Ft.):**	180
Site Number:	CT01498-S-SBA	**Engineer Name:**	F. Arinyedokia
Engr. Number:		**Engineer Login ID:**	

Foundation Info Obtained from: Drawings/Calculations

Structure Type: Monopole

Analysis or Design? Analysis

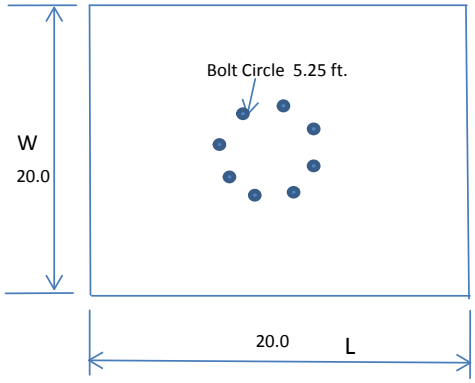


Base Reactions (Factored):

Axial Load (Kips):	37.5	Shear Force (Kips):	18.1
Uplift Force (Kips):	0.0	Moment (Kips-ft):	1454.8
Allowable overstress %:	5.0%		

Foundation Geometries:

		Mods required -Yes/No ?:	No
Anchor Bolt Circle (ft.):	5.25	Depth of Base BG (ft.):	2.75
Thickness of Pad (ft):	6.50		
Length of Pad (ft.):	20	Width of Pad (ft.):	20
Final Length of pad (ft)	20.0	Final width of pad (ft):	20.0



Material Properties and Reabr Info:

Concrete Strength (psi):	4000	Steel Elastic Modulus:	29000	ksi
Pad Rebar Yield (Ksi):	60	Tie Spacing (in):	12.0	
Pad Steel Rebar Size (#):	7			
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):	27	Qty. of Rebar in Pad (W):	27	
Rebar at the top of the concrete pad:				
Qty. of Rebar in Pad (L):	27	Qty. of Rebar in Pad (W):	27	
Apply 1.35 factor for e/w Per G:	1.35			

Soil Design Parameters:

Water Table B.G.S. (ft):	99.0	Unit Weight of Water:	62.4	pcf	Angle from Top of Pad:	30
Ultimate Bearing Pressure (psf):	60000	Ultimate Skin Friction:	0	Psf	Angle from Bottm of Pad:	25
Consider Friction for O.T.M. (Y/N):	No	Consider Friction for bearing (Y/N):	No		Angle from Bottm of Pad:	25
Consider soil hor. resist. for OTM.:	No	Reduction factor on the maximum soil bearing pressure:	1.00			

Foundation Analysis and Design:

Uplift Strength Reduction Factor:	0.75	Compression Strength Reduction Factor:	0.75
Total Dry Soil Volume (cu. Ft.):	0.00	Total Dry Soil Weight (Kips):	0.00
Total Buoyant Soil Volume (cu. Ft.):	0.00	Total Buoyant Soil Weight (Kips):	0.00
Total Effective Soil Weight (Kips):	0.00	Weight from the Concrete Block at Top (K):	0.00
Total Dry Concrete Volume (cu. Ft.):	2600.00	Total Dry Concrete Weight (Kips):	390.00
Total Buoyant Concrete Volume (cu. Ft.):	0.00	Total Buoyant Concrete Weight (Kips):	0.00
Total Effective Concrete Weight (Kips):	390.00	Total Vertical Load on Base (Kips):	427.50

Check Soil Capacities:

				Load/ Capacity Ratio	
Calculated Maxium Net Soil Pressure under the base (psf):	2774	<	Allowable Factored Soil Bearing (psf): 45000	0.06	OK!
Allowable Foundation Overturning Resistance (kips-ft.):	3885.0	>	Design Factored Momont (kips-ft): 1573	0.40	OK!
Factor of Safety Against Overturning (O. R. Moment/Design Moment):	2.47	OK!			

Check the capacities of Reinforceing Concrete:

Strength reduction factor (Flexure and axial tension):	0.90	Strength reduction factor (Shear):	0.75		
Strength reduction factor (Axial compresion):	0.65	Wind Load Factor on Concrete Design:	1.00		

Concrete Pad:

One-Way Design Shear Capacity (L-Direction, Kips):	1697.7	>	One-Way Factored Shear (L-D. Kips):	40.4	0.02	OK!
One-Way Design Shear Capacity (W-Direction, Kips):	1697.7	>	One-Way Factored Shear (W-D., Kips)	40.4	0.02	OK!
One-Way Design Shear Capacity (Corner-Corner. Kips):	1912.8	>	One-Way Factored Shear (C-C, Kips):	339.5	0.18	OK!
Lower Steel Pad Reinforcement Ratio (L-Direct.):	0.0009	OK!	Lower Steel Pad Reinf. Ratio (W-Direc	0.0009		
Lower Steel Pad Moment Capacity (L-Direction. Kips-ft):	5392.2	>	Moment at Bottom (L-Direct. K-Ft):	18.4	0.00	OK!
Lower Steel Pad Moment Capacity (W-Direction. Kips-ft):	5392.2	>	Moment at Bottom (W-Direct. K-Ft):	18.4	0.00	OK!
Lower Steel Pad Moment Capacity (Corner-Corner,K-ft):	7610.0	>	Moment at Bottom (C-C Dir. K-Ft):	26.0	0.00	OK!
Upper Steel Pad Reinforcement Ratio (L-Direct.):	0.0009	OK!	Upper Steel Reinf. Ratio (W-Direct.):	0.0009		
Upper Steel Pad Moment Capacity (L-Direction. Kips-ft):	5392.2	>	Moment at the top (L-Dir Kips-Ft):	30.5	0.01	OK!
Upper Steel Pad Moment Capacity (W-Direction. Kips-ft):	5392.2	>	Moment at the top (W-Dir Kips-Ft):	30.5	0.01	OK!
Upper Steel Pad Moment Capacity (Corner-Corner. K-ft):	7610.0	>	Moment at the top (C-C Direc. K-Ft):	188.3	0.02	OK!

Exhibit E

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11380C

SBA Avon/RT 177
10 Redwood Lane
Avon, CT 06001

September 28, 2017

EBI Project Number: 6217004237

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	12.698%

21 B Street · Burlington, MA 01803 · Tel: (781) 273.2500 · Fax: (781) 273.3311

September 28, 2017

T-Mobile USA
Attn: Jason Overbey, RF Manager
35 Griffin Road South
Bloomfield, CT 06002

Emissions Analysis for Site: **CT11380C – SBA Avon/RT 177**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **10 Redwood Lane, Avon, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

Population exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limit for the 700 MHz Band is approximately 467 $\mu W/cm^2$, and the general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 5 GHz microwave bands is 1000 $\mu W/cm^2$. Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **10 Redwood Lane, Avon, 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 and microwave 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, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

For all calculations, all equipment was calculated using the following assumptions:

1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 2 UMTS channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

4) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel

5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

6) 1 microwave backhaul channel (5 GHz) was considered for the microwave link. The transmit power for this channel is 1 Watt.

7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.

8) For the following calculations, the sample point was the top of a 6-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

9) The antennas used in this modeling are the **Ericsson AIR21 B4A/B2P** & **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels, the **Commscope LNX-6515DS-A1M** for 700 MHz channels and the **Fastback Networks IBR 1300** for 5 GHz microwave backhaul. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR21 B4A/B2P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Ericsson AIR21 B2A/B4P** has a maximum gain of **15.9 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-A1M** has a maximum gain of **14.6 dBd** at its main lobe at 700 MHz. the **Fastback Networks IBR 1300 antenna** has a maximum gain of **10 dBd** at 5 GHz**.** The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, 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.

10) The antenna mounting height centerline of the proposed antennas is **110 feet** above ground level (AGL) for all standard panel antennas and 5 GHz microwave radio / antenna.

11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P	Make / Model:	Ericsson AIR21 B4A/B2P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	110	Height (AGL):	110	Height (AGL):	110
Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)	Frequency Bands	2100 MHz (AWS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	4,668.54	ERP (W):	4,668.54	ERP (W):	4,668.54
Antenna A1 MPE%	1.552	Antenna B1 MPE%	1.552	Antenna C1 MPE%	1.552
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	110	Height (AGL):	110	Height (AGL):	110
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	6	Channel Count	6	Channel Count	6
Total TX Power(W):	180	Total TX Power(W):	180	Total TX Power(W):	180
ERP (W):	7,002.81	ERP (W):	7,002.81	ERP (W):	7,002.81
Antenna A2 MPE%	2.328	Antenna B2 MPE%	2.328	Antenna C2 MPE%	2.328
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M	Make / Model:	Commscope LNX-6515DS-A1M
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	110	Height (AGL):	110	Height (AGL):	110
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	865.21	ERP (W):	865.21	ERP (W):	865.21
Antenna A3 MPE%	0.616	Antenna B3 MPE%	0.616	Antenna C3 MPE%	0.616

Antenna #:	**4 (Microwave)**
Make / Model:	Fastback Networks IBR 1300
Gain:	10.0 dBd
Height (AGL):	110
Frequency Bands	5.0 GHz
Channel Count	1
Total TX Power(W):	1
ERP (W):	10 W
Antenna A4 MPE%	0.013

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**4.508%**
AT&T	4.270 %
MetroPCS	2.410 %
Clearwire	0.260 %
Sprint	0.050%
Farm. Woods	1.200%
Site Total MPE %:	**12.698%**

T-Mobile Sector A Total:	4.508%
T-Mobile Sector B Total:	4.495%
T-Mobile Sector C Total:	4.495%
Site Total:	12.698%

T-Mobile Per Sector Maximum Power Values

T-Mobile _Max Values per sector (Sector A)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	110	15.52	AWS - 2100 MHz	1000	1.552%
T-Mobile AWS - 2100 MHz UMTS	2	1,167.14	110	7.76	AWS - 2100 MHz	1000	0.776%
T-Mobile PCS - 1900 MHz UMTS	2	1,167.14	110	7.76	PCS - 1900 MHz	1000	0.776%
T-Mobile PCS - 1900 MHz GSM	2	1,167.14	110	7.76	PCS - 1900 MHz	1000	0.776%
T-Mobile 700 MHz LTE	1	865.21	110	2.88	700 MHz	467	0.616%
	1	10	110	0.13	5 GHz Microwave	1000	0.013%
						Total*:	**4.508%**

*NOTE: Totals may vary by 0.001% due to summing of remainders

Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general population exposure to RF Emissions.

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

T-Mobile Sector	Power Density Value (%)
Sector A:	4.508%
Sector B:	4.495%
Sector C:	4.495%
T-Mobile Per Sector Maximum:	4.508%
Site Total:	12.698%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **12.698%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

FCC guidelines state that if a site is found to be out of compliance (over allowable thresholds), that carriers over a 5% contribution to the composite value will require measures to bring the site into compliance. For this facility, the composite values calculated were well within the allowable 100% threshold standard per the federal government.

Exhibit F

CT11380C

BLOOMFIELD
40 JEROME AVE
BLOOMFIELD
CT
06002-9998
0804760102

11/01/2017 (800)275-8777 1:34 PM

Product Description	Sale Qty	Final Price
Prepaid Mail (Weight:0 lbs. 12.80 oz.) (Destination:AVON, CT 06001) (Acceptance Date:11/01/2017 13:34:06) (Label #:9405501699320050119588)	1	
Prepaid Mail (Weight:0 lbs. 12.70 oz.) (Destination:AVON, CT 06001) (Acceptance Date:11/01/2017 13:34:18) (Label #:9405501699320050119533)	1	
Prepaid Mail (Weight:0 lbs. 12.70 oz.) (Destination:AVON, CT 06001) (Acceptance Date:11/01/2017 13:34:35) (Label #:9405501699320050119526)	1	
Prepaid Mail (Weight:0 lbs. 12.70 oz.) (Destination:BOCA RATON, FL 33487) (Acceptance Date:11/01/2017 13:34:50) (Label #:9405501699320050119540)	1	
Total		$0.00

****
BRIGHTEN SOMEONE'S MAILBOX. Greeting cards available for purchase at select Post Offices.
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