Transcend Wireless

10 Industrial Avenue,
Suite 3
Mahwah, NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

June 25, 2019

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

Notice of Exempt Modification:

123 Palmer Road, Chaplin, CT
Latitude: 41.7843333333333
Longitude: -72.1361944444445
T-Mobile Site#: CT11508F / L600

Dear Ms. Bachman:

T-Mobile currently maintains six (6) antennas at the 118-foot level of the existing 146-foot monopole tower at 123 Palmer Road, Chaplin, CT. The 146-foot monopole tower is owned by American Tower and the property is owned by Janet Bessette. T-Mobile now intends to replace three (3) of its existing antennas with three (3) new 600/700 MHz antennas. The new antennas would be installed at the 118-foot level of the tower.

Planned Modifications:

Remove and Replace:
Antennas:
(3) Commscope LNX-6515DS-VTM (REMOVE) - (3) RFS APXVAARR24 - 600 MHz / 700 MHz antenna (REPLACE)
.
Install New:
RRUs
(3) Ericsson 4449 B71 B12
TMAs
(3) Ericsson KRY 112 144/1
Coax Cables:
(1) 1-5/8" hybrid cable

Existing to Remain:
Antennas:
(3) RFS APXV18-206517 - 1900 MHz / 1900 MHz
(3) TMAs Ericsson KRY 112 489/2
Coax Cables:
(12) 1-5/8" coax cables

This facility was approved by Docket 211 by the Siting Council February 14, 2002, with no record of conditions that would restrict exempt modifications. Therefore, this modification complies with the aforementioned approval.

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 William Rose, IV, First Selectman and James Gigliotto, Zoning Officer
.

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,

Elizabeth Jamieson

Elizabeth Jamieson
Transcend Wireless
10 Industrial Ave., Suite 3
Mahwah, New Jersey 07430
860-605-7808
EJamieson@TranscendWireless.com

cc:
William Rose, IV, First Selectman
James Gigliotto, Zoning Officer
American Tower, Tower Owner
Janet Bessette, property owner

Exhibit A

Original Facility Approval

Filing Guides
Meetings & Minutes
Public Participation
Audio Link to New Britain Hearing Rooms
Programs & Services
Telecommunications Database
Publications
Other Resources
Statutes & Regulations
Electric Transmission Upgrade Projects
Frequently Asked Questions

Melanie Bachman,
Executive Director

DOCKET NO. 211 - Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a cellular telecommunications facility at 31 Ridge Road (Lot 57) or at Lot 54 Palmer Road, Chaplin, Connecticut.	}	Connecticut Siting Council February 14, 2002

Decision and Order

Pursuant to the foregoing Findings of Fact and Opinion, the Connecticut Siting Council (Council) finds that the effects associated with the construction, operation, and maintenance of a telecommunications facility at proposed site number two in Chaplin, Connecticut, including effects on the natural environment; ecological integrity and balance; public health and safety; scenic, historic, and recreational values; forests and parks; air and water purity; and fish and wildlife are not disproportionate either alone or cumulatively with other effects when compared to need, are not in conflict with the policies of the State concerning such effects, and are not sufficient reason to deny the application and therefore directs that a Certificate of Environmental Compatibility and Public Need, as provided by General Statutes § 16-50k, be issued to Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless for the construction, maintenance and operation of a cellular telecommunications facility at proposed site number two located at Lot 54, Palmer Road, Chaplin, Connecticut. We deny certification of the proposed number one site located at 31 Ridge Road, Chaplin, Connecticut.

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

1. The tower shall be constructed as a monopole, no taller than necessary to provide the proposed telecommunications services, sufficient to accommodate the antennas of Cellco, Sprint PCS, and other entities, both public and private, but such tower shall not exceed a height of 150 feet above ground level.

2. The Certificate Holder shall prepare a Development and Management (D&M) Plan for this site in compliance with Sections 16-50j-75 through 16-50j-77 of the Regulations of Connecticut State Agencies. The D&M Plan shall be submitted to and approved by the Council prior to the commencement of facility construction and shall include: a final site plan(s) for site development to include the location and specifications for the tower, tower foundation, antennas, equipment building, security fence, access road, utility line, and landscaping plan. The D&M Plan shall also include construction plans to be submitted prior to construction for site clearing, water drainage, and erosion and sedimentation control consistent with the Connecticut Guidelines for Soil Erosion and Sediment Control, as amended.

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

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

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

6. If the facility does not initially provide, or permanently ceases to provide wireless services following completion of construction, this Decision and Order shall be void, and the Certificate Holder shall dismantle the tower and remove all associated equipment or reapply for any continued or new use to the Council before any such use is made.

7. Any antenna that becomes obsolete and ceases to function shall be removed within 60 days after such antennas become obsolete and ceases to function.

8. Unless otherwise approved by the Council, this Decision and Order shall be void if all construction authorized herein is not completed within three years of the effective date of this Decision and Order or within three years after all appeals to this Decision and Order have been resolved.

Pursuant to General Statutes § 16-50p, we hereby direct that a copy of the Findings of Fact, Opinion, and Decision and Order be served on each person listed below, and notice of issuance shall be published in The Hartford Courant, and the Willimantic Chronicle.

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

The parties and intervenors to this proceeding are:

Applicant	**Its Representative**
Crown Atlantic Company LLC and Cellco Partnership d/b/a Verizon Wireless	Robert Stanford Crown Atlantic Company LLC 703 Hebron Avenue Glastonbury, CT 06033 Kenneth C. Baldwin, Esq. Joey Lee Miranda, Esq. Robinson & Cole LLP 280 Trumbull Street Hartford, CT 06103-3597
Intervenor	**Its Representative**
Sprint Spectrum L.P. d/b/a Sprint PCS	Thomas J. Regan, Esq. Brown, Rudnick, Freed & Gesmer CityPlace I, 185 Asylum Street Hartford, CT 06103-3402

Content Last Modified on 8/12/2002 10:26:10 AM

Exhibit B

Property card

Property Location: 123 PALMER RD REAR | MAP ID: 55/ 54/ CELL/ / | Bldg Name: | State Use: 202

Vision ID: 1460 | Account # 622CELL | Bldg #: 1 of 1 | Sec #: 1 of 1 | Card 1 of 1 | Print Date: 01/15/2019 15:39

CURRENT OWNER	TOPO.	UTILITIES	STRT./ROAD	LOCATION
CELLCO C/O DUFF & PHELPS PO BOX 2549 ADDISON, TX 75001 Additional Owners:				

SUPPLEMENTAL DATA

Other ID:	622CELL
Census Tr.	
Survey #	
DV Map #	
GIS ID:	
DV Lot #	
Call Back	
ASSOC PID#	

CURRENT ASSESSMENT

Description	Code	Appraised Value	Assessed Value
COM OUTBL	2-5	859,000	601,300
VAC CM LN	5-2	180,000	126,000
		Total	1,039,000	727,300

6024
CHAPLIN, CT

VISION

RECORD OF OWNERSHIP

	BK-VOL/PAGE	SALE DATE	q/u	v/i	SALE PRICE	V.C.
CELLCO	0000/0000	02/09/2016	U	V	0	03
VERIZON WIRELESS	000/ 000	10/01/2008	U	V	0	03

PREVIOUS ASSESSMENTS (HISTORY)

Yr.	Code	Assessed Value	Yr.	Code	Assessed Value	Yr.	Code	Assessed Value
2017	2-5	715,200	2012	2-5	104,900			
2017	5-2	226,800	2012	5-2	226,800			
	Total:	942,000		Total:	331,700		Total:	0

EXEMPTIONS

Year	Type	Description	Amount
		Total:	

OTHER ASSESSMENTS

Code	Description	Number	Amount	Comm. Int.

This signature acknowledges a visit by a Data Collector or Assessor

APPRAISED VALUE SUMMARY

Appraised Bldg. Value (Card)	0
Appraised XF (B) Value (Bldg)	0
Appraised OB (L) Value (Bldg)	859,000
Appraised Land Value (Bldg)	180,000
Special Land Value	0
Total Appraised Parcel Value	1,039,000
Valuation Method:	C
Adjustment:	0
Net Total Appraised Parcel Value	**1,039,000**

ASSESSING NEIGHBORHOOD

NBHD/ SUB	NBHD Name	Street Index Name	Tracing	Batch
0001/A				

NOTES

PARCEL CREATED FOR REVAL

4 CELL SITES@2500/MONTH=10,000

10,000 X 12= 120,000-(20% EXP)=

96,000/.11 CAP= 872,700

2017-OWNER & ADDRESS CHANGE PER

AMERICAN TOWNER CORRESPONDENCE

SITE: CT CHAPLIN SOUTH CT

SITE # 411216, MONO POLE W/4 RINGS

FCC# 1240431,VERIZON, T-MOBILE,SPRINT

CINGULAR, AT+T

BUILDING PERMIT RECORD

Permit ID	Issue Date	Type	Description	Amount	Insp. Date	% Comp.	Date Comp.	Comments
	07/07/2015	OT	Other	15,000		100		MODIFICATIONS TO F

VISIT/ CHANGE HISTORY

Date	Type	IS	ID	Cd.	Purpose/Result
03/19/2018			RH	00	Complete
05/22/2013			JW	09	Review
05/22/2013			JW	09	Review
10/01/2008			JL	09	Review
10/01/2008			JL	09	Review

LAND LINE VALUATION SECTION

B #	Use Code	Use Description	Zone	D	Front	Depth	Units		Unit Price	I. Factor	S.A.	Acre Disc	C. Factor	ST. Idx	Adj.	Notes- Adj	Special Pricing: Spec Use	Special Pricing: Spec Calc	S Adj Fact	Adj. Unit Price	Land Value
1	202	Commercial Land & OB					1.00	AC	0.00	1.0000	0	1.0000	1.00		0.00	SITE			.00		0
1	202	Commercial Land & OB					1.00	BL	180,000.00	1.0000	0	1.0000	1.00		0.00				1.00		180,000

Total Card Land Units: 1.00 AC | Parcel Total Land Area: 1 AC | Total Land Value: 180,000

CONSTRUCTION DETAIL

Element	Cd.	Ch.	Description
Model	00		Vacant

CONSTRUCTION DETAIL (CONTINUED)

Element	Cd.	Ch.	Description

MIXED USE

Code	Description	Percentage
202	Commercial Land & OB	100

COST/MARKET VALUATION

Adj. Base Rate:	0.00
AYB	
Dep Code	
Remodel Rating	
Year Remodeled	
Dep %	
Functional Obslnc	
External Obslnc	
Cost Trend Factor	
Condition	
% Complete	
Overall % Cond	
Apprais Val	
Dep % Ovr	0
Dep Ovr Comment	
Misc Imp Ovr	0
Misc Imp Ovr Comment	
Cost to Cure Ovr	0
Cost to Cure Ovr Comment	

OB-OUTBUILDING & YARD ITEMS(L) / XF-BUILDING EXTRA FEATURES(B)

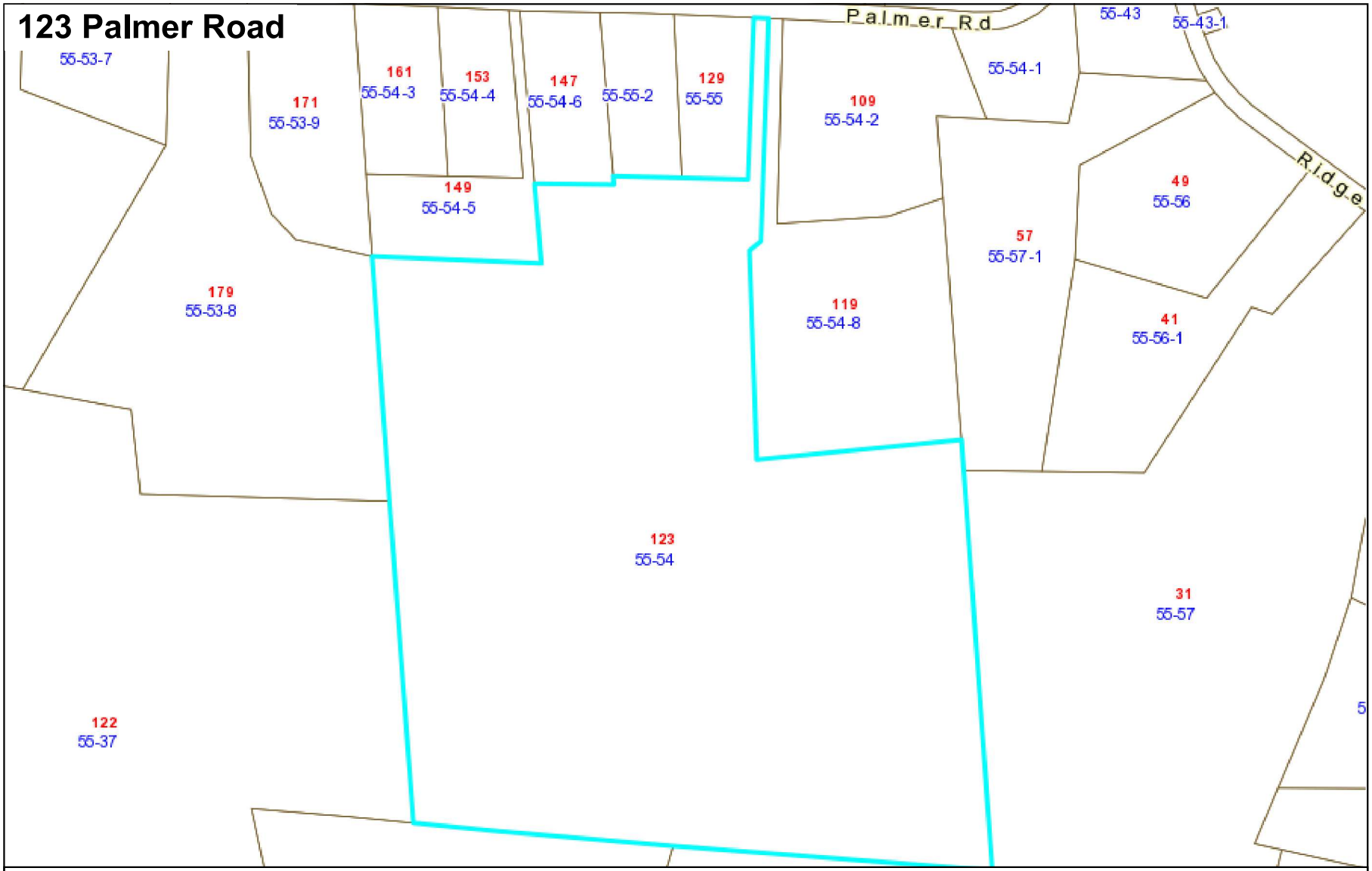
Code	Description	Sub	Sub Descript	L/B	Units	Unit Price	Yr	Gde	Dp Rt	Cnd	%Cnd	Apr Value
SHD5	PreCast Shed			L	360	350.00	2007		0		70	88,200
SHD5	PreCast Shed			L	200	350.00	2007		0		70	49,000
FN6	Fence 6'			L	280	13.00	2007		0		50	1,800
	TOWER			L	4	180,000.00	2007		0		100	720,000

BUILDING SUB-AREA SUMMARY SECTION

Code	Description	Living Area	Gross Area	Eff. Area	Unit Cost	Undeprec. Value
	Ttl. Gross Liv/Lease Area:	0	0			

No Photo On Record

123 Palmer Road



Town of Chaplin, Connecticut

Selected Parcel: 123 PALMER RD ID: 55-54

Printed 6/24/2019 from http://www.mainstreetmaps.com/ct/chaplin/public.asp

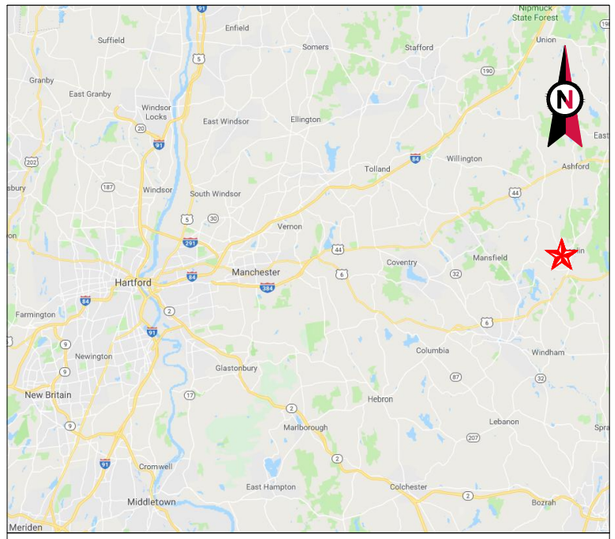
100 m
200 ft

N

MainStreetGIS
MainStreetGIS, LLC
www.mainstreetgis.com

Exhibit C

Construction Drawings

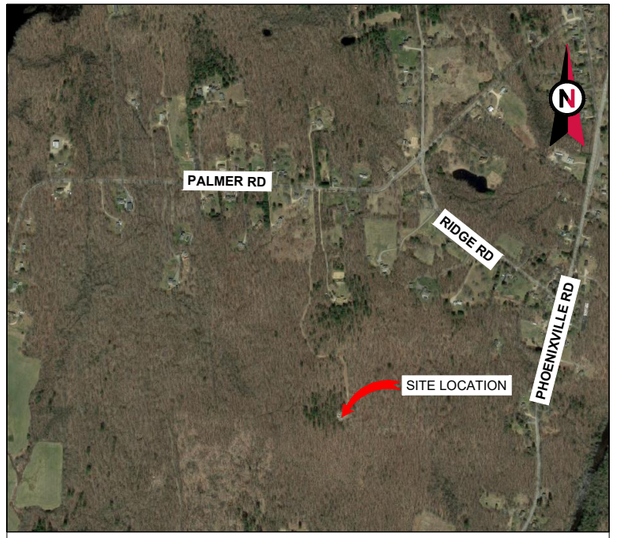


VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: CT CHAPLIN SOUTH CT
ATC SITE NUMBER: 411216
T-MOBILE SITE ID: CT11508F
SITE ADDRESS: 123 PALMER ROAD
CHAPLIN, CT 06235

T-MOBILE L600 ANTENNA AMENDMENT
67D94AR V2 CONFIGURATION



LOCATION MAP

BIRD WATCH SITE:
PLEASE CONTACT BIRD.WATCH@AMERICANTOWER.COM OR AMERICAN TOWER NOC AT 877-518-6937 FOR ASSISTANCE

COMPLIANCE CODE

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

1. INTERNATIONAL BUILDING CODE (IBC)
2. NATIONAL ELECTRIC CODE (NEC)
3. LOCAL BUILDING CODE
4. CITY/COUNTY ORDINANCES

UTILITY COMPANIES

POWER COMPANY: NORTHEAST UTILITY SERVICES
PHONE: (800) 592-2000

TELEPHONE COMPANY: UNKNOWN
PHONE: (000) 000-0000

811 Know what's below. Call before you dig.

PROJECT SUMMARY

SITE ADDRESS:

123 PALMER ROAD
CHAPLIN, CT 06235
COUNTY: WINDHAM

1A CERTIFICATE SUMMARY:

LATITUDE: 41° 47' 4.3" N
LONGITUDE: 72° 8' 8.5" W
GROUND ELEVATION: 505' AMSL
TOWER HEIGHT: 146' AGL
HIGHEST APPURTENANCE: 150' AGL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

ENGINEER:

ATC TOWER SERVICES, LLC
3500 REGENCY PKWY STE 100
CARY, NC 27518

PROPERTY OWNER:

JANET L BESSETTE
5 VICTORY LN
WILLIMANTIC, CT 06226

PROJECT DESCRIPTION

THE PROPOSED PROJECT INCLUDES MODIFYING GROUND BASED AND TOWER MOUNTED EQUIPMENT AS INDICATED PER BELOW:

TOWER WORK:
REMOVE (3) PANELS

INSTALL (3) NEW PANELS, (3) TTAs, (3) RRUs, AND (1) 1-5/8" HYBRID CABLE

EXISTING (3) PANELS, (3) TTAs, AND (12) 1-5/8" COAX CABLES TO REMAIN

PROJECT NOTES

1. THE FACILITY IS UNMANNED.
2. A TECHNICIAN WILL VISIT THE SITE APPROXIMATELY ONCE A MONTH FOR ROUTINE INSPECTION AND MAINTENANCE.
3. THE PROJECT WILL NOT RESULT IN ANY SIGNIFICANT LAND DISTURBANCE OR EFFECT OF STORM WATER DRAINAGE.
4. NO SANITARY SEWER, POTABLE WATER OR TRASH DISPOSAL IS REQUIRED.
5. HANDICAP ACCESS IS NOT REQUIRED.

PROJECT LOCATION DIRECTIONS

FROM 91N-WILBUR, CT:

CROSS HIGHWAY CT-15 VIA EXIT 29 TOWARDS I-84/EAST HARTFORD/BOSTON. CT -15N/WILBUR CROSS HWY BECOMES US-6E/I-84/WILBUR CROSS HWY 1.6 MILES/MERGE ONTO I-384 E VIA EXIT 59 TOWARD PROVIDENCE 8.5 MILES/TURN SLIGHT LEFT ONTO US-6/CT-66. CONTINUE TO FOLLOW US-6 E9.2 MILES. TURNLEFT ONTO PHOENIXVILLE RD/CT-198 1.2 MILES/TURN LEFT ON RIDGE RD. TURN LEFT ON PALMER RD. SITE IS THE SECOND DRIVEWAY ON THE LEFT AFTER WHITE HOUSE MAILBOX #119. GATE COMBO 4667. T1'S MOUNTED IN OUTDOOR HOFFMAN BOX

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	0	05/29/19	LR
G-002	GENERAL NOTES	0	05/29/19	LR
C-101	DETAILED SITE PLAN & TOWER ELEVATION	0	05/29/19	LR
C-102	DETAILED SITE PLAN & TOWER ELEVATION	0	05/29/19	LR
C-501	ANTENNA INFORMATION & SCHEDULE	0	05/29/19	LR
E-501	GROUNDING DETAILS	0	05/29/19	LR
R-601	SUPPLEMENTAL			
R-602	SUPPLEMENTAL			

AMERICAN TOWER®
A.T. ENGINEERING SERVICE, PLLC
3500 REGENCY PARKWAY
SUITE 100
CARY, NC 27518
PHONE: (919) 468-0112
COA: PEC.0001553

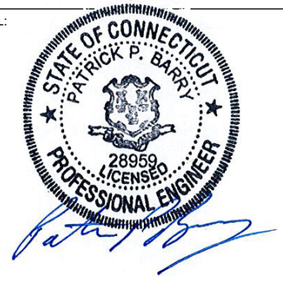
REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	LR	05/29/19

ATC SITE NUMBER:
411216

ATC SITE NAME:
CT CHAPLIN SOUTH CT

SITE ADDRESS:
123 PALMER ROAD
CHAPLIN, CT 06235

SEAL:



Authorized by "EOR"
May 30 2019 12:02 PM

T··Mobile· cosign

DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951816

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	0

GENERAL CONSTRUCTION NOTES:

1. ALL WORK SHALL CONFORM TO ALL CURRENT APPLICABLE FEDERAL, STATE, AND LOCAL CODES, INCLUDING ANSI/EIA/TIA-222, AND COMPLY WITH ATC MASTER SPECIFICATIONS.
2. CONTRACTOR SHALL CONTACT LOCAL 811 FOR IDENTIFICATION OF UNDERGROUND UTILITIES PRIOR TO START OF CONSTRUCTION.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL REQUIRED INSPECTIONS.
4. ALL DIMENSIONS TO, OF, AND ON EXISTING BUILDINGS, DRAINAGE STRUCTURES, AND SITE IMPROVEMENTS SHALL BE VERIFIED IN FIELD BY CONTRACTOR WITH ALL DISCREPANCIES REPORTED TO THE ENGINEER.
5. DO NOT CHANGE SIZE OR SPACING OF STRUCTURAL ELEMENTS.
6. DETAILS SHOWN ARE TYPICAL; SIMILAR DETAILS APPLY TO SIMILAR CONDITIONS UNLESS OTHERWISE NOTED.
7. THESE DRAWINGS DO NOT INCLUDE NECESSARY COMPONENTS FOR CONSTRUCTION SAFETY WHICH SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
8. CONTRACTOR SHALL BRACE STRUCTURES UNTIL ALL STRUCTURAL ELEMENTS NEEDED FOR STABILITY ARE INSTALLED. THESE ELEMENTS ARE AS FOLLOWS: LATERAL BRACING, ANCHOR BOLTS, ETC.
9. CONTRACTOR SHALL DETERMINE EXACT LOCATION OF EXISTING UTILITIES, GROUNDS DRAINS, DRAIN PIPES, VENTS, ETC. BEFORE COMMENCING WORK.
10. INCORRECTLY FABRICATED, DAMAGED, OR OTHERWISE MISFITTING OR NONCONFORMING MATERIALS OR CONDITIONS SHALL BE REPORTED TO THE T-MOBILE WIRELESS REP PRIOR TO REMEDIAL OR CORRECTIVE ACTION. ANY SUCH REMEDIAL ACTION SHALL REQUIRE WRITTEN APPROVAL BY THE T-MOBILE WIRELESS REP PRIOR TO PROCEEDING.
11. EACH CONTRACTOR SHALL COOPERATE WITH THE T-MOBILE WIRELESS REP, AND COORDINATE HIS WORK WITH THE WORK OF OTHERS.
12. CONTRACTOR SHALL REPAIR ANY DAMAGE CAUSED BY CONSTRUCTION OF THIS PROJECT TO MATCH EXISTING PRE-CONSTRUCTION CONDITIONS TO THE SATISFACTION OF THE T-MOBILE WIRELESS CONSTRUCTION MANAGER.
13. ALL CABLE/CONDUIT ENTRY/EXIT PORTS SHALL BE WEATHERPROOFED DURING INSTALLATION USING A SILICONE SEALANT.
14. WHERE EXISTING CONDITIONS DO NOT MATCH THOSE SHOWN IN THIS PLAN SET, CONTRACTOR SHALL NOTIFY THE T-MOBILE WIRELESS REP IMMEDIATELY.
15. CONTRACTOR SHALL ENSURE ALL SUBCONTRACTORS ARE PROVIDED WITH A COMPLETE AND CURRENT SET OF DRAWINGS AND SPECIFICATIONS FOR THIS PROJECT.
16. CONTRACTOR SHALL REMOVE ALL RUBBISH AND DEBRIS FROM THE SITE AT THE END OF EACH DAY.
17. CONTRACTOR SHALL COORDINATE WORK SCHEDULE WITH LANDLORD AND TAKE PRECAUTIONS TO MINIMIZE IMPACT AND DISRUPTION OF OTHER OCCUPANTS OF THE FACILITY.
18. CONTRACTOR SHALL FURNISH T-MOBILE WIRELESS WITH A PDF MARKED UP AS-BUILT SET OF DRAWINGS UPON COMPLETION OF WORK.
19. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE WHAT, IF ANY, ITEMS WILL BE PROVIDED. ALL ITEMS NOT PROVIDED SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR. CONTRACTOR WILL INSTALL ALL ITEMS PROVIDED.
20. PRIOR TO SUBMISSION OF BID, CONTRACTOR SHALL COORDINATE WITH T-MOBILE WIRELESS REP TO DETERMINE IF ANY PERMITS WILL BE OBTAINED BY CONTRACTOR. ALL REQUIRED PERMITS NOT OBTAINED BY T-MOBILE WIRELESS MUST BE OBTAINED, AND PAID FOR, BY THE CONTRACTOR.
21. CONTRACTOR SHALL INSTALL ALL SITE SIGNAGE IN ACCORDANCE WITH T-MOBILE WIRELESS SPECIFICATIONS AND REQUIREMENTS.
22. CONTRACTOR SHALL SUBMIT ALL SHOP DRAWINGS TO T-MOBILE WIRELESS FOR REVIEW AND APPROVAL PRIOR TO FABRICATION.
23. ALL EQUIPMENT SHALL BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS AND LOCATED ACCORDING TO T-MOBILE WIRELESS SPECIFICATIONS, AND AS SHOWN IN THESE PLANS.
24. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE PROJECT DESCRIBED HEREIN. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ALL THE CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES AND PROCEDURES AND FOR COORDINATING ALL PORTIONS OF THE WORK UNDER THE CONTRACT.
25. CONTRACTOR SHALL NOTIFY T-MOBILE WIRELESS REP A MINIMUM OF 48 HOURS IN ADVANCE OF POURING CONCRETE OR BACKFILLING ANY UNDERGROUND UTILITIES, FOUNDATIONS OR SEALING ANY WALL, FLOOR OR ROOF PENETRATIONS FOR ENGINEERING REVIEW AND APPROVAL.
26. CONTRACTOR SHALL BE RESPONSIBLE FOR SITE SAFETY INCLUDING COMPLIANCE WITH ALL APPLICABLE OSHA STANDARDS AND RECOMMENDATIONS AND SHALL PROVIDE ALL NECESSARY SAFETY DEVICES INCLUDING PPE AND PPM AND CONSTRUCTION DEVICES SUCH AS WELDING AND FIRE PREVENTION, TEMPORARY SHORING, SCAFFOLDING, TRENCH BOXES/SLOPING, BARRIERS, ETC.
27. THE CONTRACTOR SHALL PROTECT AT HIS OWN EXPENSE, ALL EXISTING FACILITIES AND SUCH OF HIS NEW WORK LIABLE TO INJURY DURING THE CONSTRUCTION PERIOD. ANY DAMAGE CAUSED BY NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, OR BY THE ELEMENTS DUE TO NEGLECT ON THE PART OF THIS CONTRACTOR OR HIS REPRESENTATIVES, EITHER TO THE EXISTING WORK, OR TO HIS WORK OR THE WORK OF ANY OTHER CONTRACTOR, SHALL BE REPAIRED AT HIS EXPENSE TO THE OWNER'S SATISFACTION.
28. ALL WORK SHALL BE INSTALLED IN A FIRST CLASS, NEAT AND WORKMANLIKE MANNER BY MECHANICS SKILLED IN THE TRADE INVOLVED. THE QUALITY OF WORKMANSHIP SHALL BE SUBJECT TO THE APPROVAL OF THE T-MOBILE WIRELESS REP. ANY WORK FOUND BY THE T-MOBILE WIRELESS REP TO BE OF INFERIOR QUALITY AND/OR WORKMANSHIP SHALL BE REPLACED AND/OR REWORKED AT CONTRACTOR EXPENSE UNTIL APPROVAL IS OBTAINED.
29. IN ORDER TO ESTABLISH STANDARDS OF QUALITY AND PERFORMANCE, ALL TYPES OF MATERIALS LISTED HEREINAFTER BY MANUFACTURER'S NAMES AND/OR MANUFACTURER'S CATALOG NUMBER SHALL BE PROVIDED BY THESE MANUFACTURERS AS SPECIFIED.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL SHALL CONFORM TO THE LATEST EDITION OF THE AISC "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2. STRUCTURAL STEEL ROLLED SHAPES, PLATES AND BARS SHALL CONFORM TO THE FOLLOWING ASTM DESIGNATIONS:
   A. ASTM A-572, GRADE 50 - ALL W SHAPES, UNLESS NOTED OR A992 OTHERWISE
   B. ASTM A-36 - ALL OTHER ROLLED SHAPES, PLATES AND BARS UNLESS NOTED OTHERWISE.
   C. ASTM A-500, GRADE B - HSS SECTION (SQUARE, RECTANGULAR, AND ROUND)
   D. ASTM A-325, TYPE SC OR N - ALL BOLTS FOR CONNECTING STRUCTURAL MEMBERS
   E. ASTM F-1554 07 - ALL ANCHOR BOLTS, UNLESS NOTED OTHERWISE
3. ALL EXPOSED STRUCTURAL STEEL MEMBERS SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION PER ASTM A123. EXPOSED STEEL HARDWARE AND ANCHOR BOLTS SHALL BE GALVANIZED PER ASTM A153 OR B695.
4. ALL FIELD CUT SURFACES, FIELD DRILLED HOLES AND GROUND SURFACES WHERE EXISTING PAINT OR GALVANIZATION REMOVAL WAS REQUIRED SHALL BE REPAIRED WITH (2) BRUSHED COATS OF ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURER'S RECOMMENDATIONS.
5. DO NOT DRILL HOLES THROUGH STRUCTURAL STEEL MEMBERS EXCEPT AS SHOWN AND DETAILED ON STRUCTURAL DRAWINGS.
6. CONNECTIONS:
   A. ALL WELDING TO BE PERFORMED BY AWS CERTIFIED WELDERS AND CONDUCTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AWS WELDING CODE D1.1.
   B. ALL WELDS SHALL BE INSPECTED VISUALLY. 25% OF WELDS SHALL BE INSPECTED WITH DYE PENETRANT OR MAGNETIC PARTICLE TO MEET THE ACCEPTANCE CRITERIA OF AWS D1.1. REPAIR ALL WELDS AS NECESSARY.
   C. INSPECTION SHALL BE PERFORMED BY AN AWS CERTIFIED WELD INSPECTOR.
   D. IT IS THE CONTRACTORS RESPONSIBILITY TO PROVIDE BURNING/WELDING PERMITS AS REQUIRED BY LOCAL GOVERNING AUTHORITY AND IF REQUIRED SHALL HAVE FIRE DEPARTMENT DETAIL FOR ANY WELDING ACTIVITY.
   E. ALL ELECTRODES TO BE LOW HYDROGEN, MATCHING FILLER METAL, PER AWS D1.1, UNLESS NOTED OTHERWISE.
   F. MINIMUM WELD SIZE TO BE 0.1875 INCH FILLET WELDS, UNLESS NOTED OTHERWISE.
   G. PRIOR TO FIELD WELDING GALVANIZING MATERIAL, CONTRACTOR SHALL GRIND OFF GALVANIZING ½" BEYOND ALL FIELD WELD SURFACES. AFTER WELD AND WELD INSPECTION IS COMPLETE, REPAIR ALL GROUND AND WELDED SURFACES WITH ZRC GALVILITE COLD GALVANIZING COMPOUND PER ASTM A780 AND MANUFACTURERS RECOMMENDATIONS.

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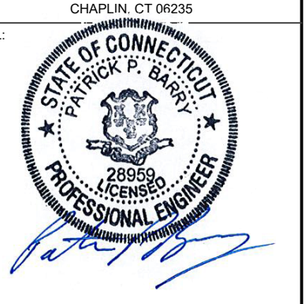
REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	LR	05/29/19

ATC SITE NUMBER:
411216

ATC SITE NAME:
CT CHAPLIN SOUTH CT

SITE ADDRESS:
123 PALMER ROAD
CHAPLIN, CT 06235

SEAL:



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DRAWN BY:	LR
APPROVED BY:	PPB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951816

GENERAL NOTES

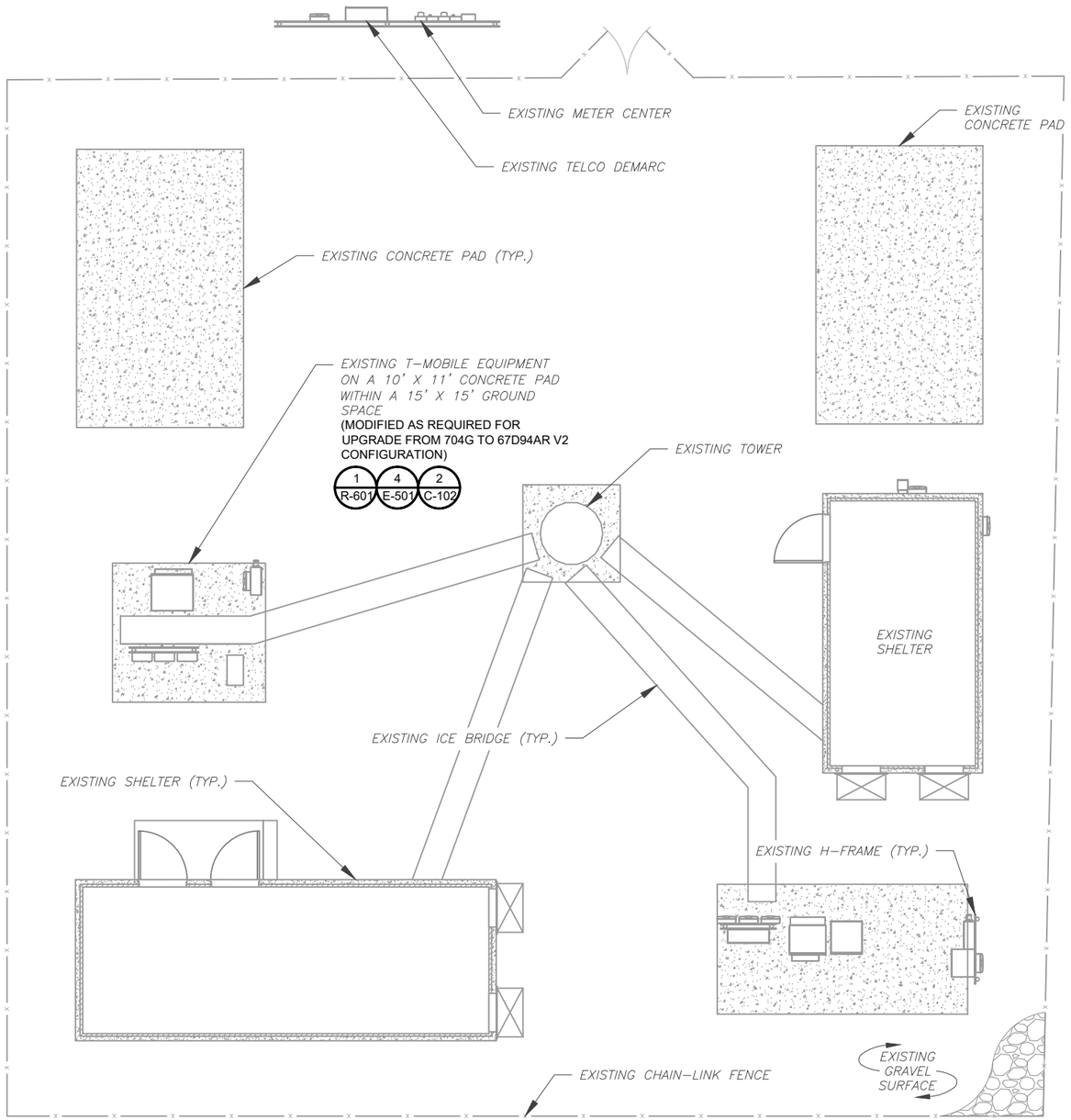
SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

1. THIS SITE PLAN REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.

2. ICE BRIDGE, CABLE LADDER, COAX PORT, AND COAX CABLE ARE SHOWN FOR REFERENCE ONLY. CONTRACTOR SHALL CONFIRM THE EXACT LOCATION OF ALL PROPOSED AND EXISTING EQUIPMENT AND STRUCTURES DEPICTED ON THIS PLAN. BEFORE UTILIZING EXISTING CABLE SUPPORTS, COAX PORTS, INSTALLING NEW PORTS OR ANY OTHER EQUIPMENT, CONTRACTOR SHALL VERIFY ALL ASPECTS OF THE COMPONENTS MEET THE ATC SPECIFICATIONS.

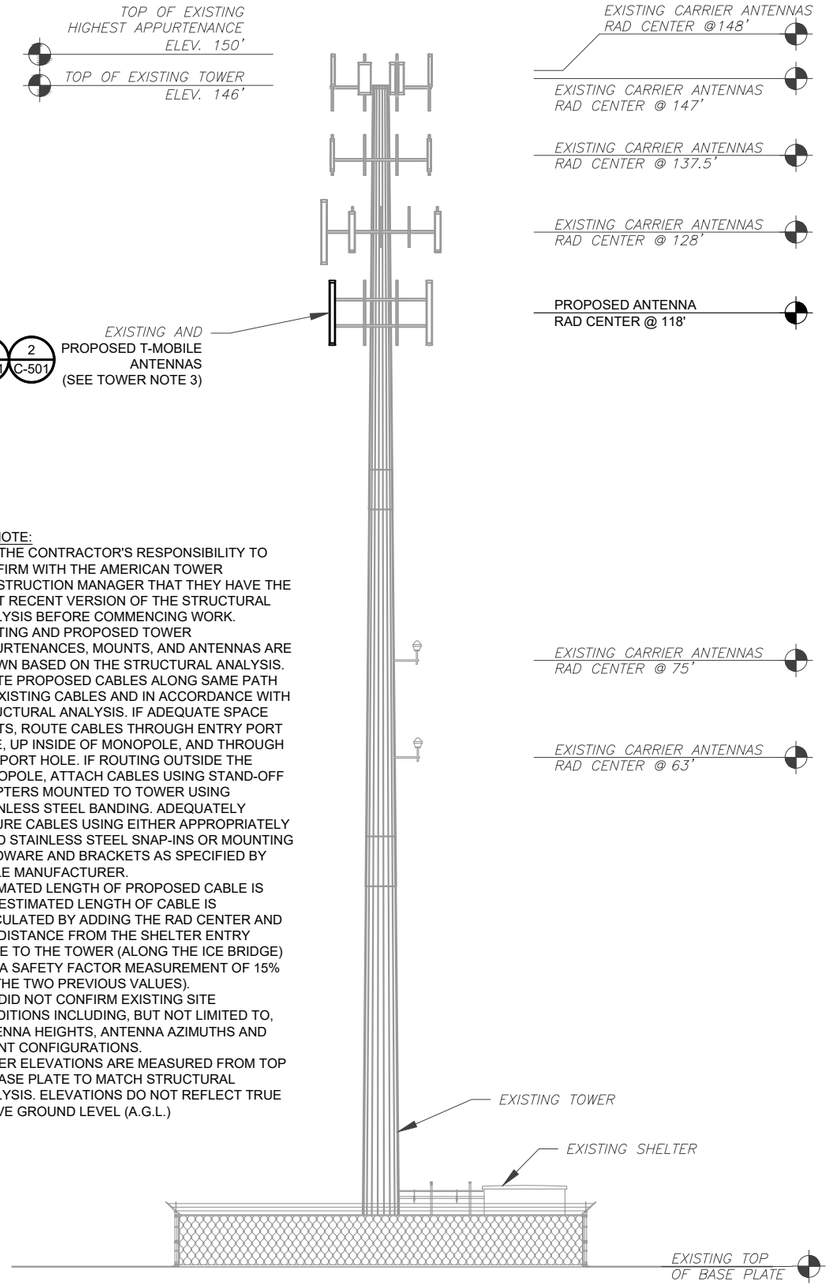
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.



1 DETAILED SITE PLAN

0 10' 20'

SCALE: 1"=10' (11X17)
1"=5' (22X34)



TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE AMERICAN TOWER CONSTRUCTION MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. ROUTE PROPOSED CABLES ALONG SAME PATH AS EXISTING CABLES AND IN ACCORDANCE WITH STRUCTURAL ANALYSIS. IF ADEQUATE SPACE EXISTS, ROUTE CABLES THROUGH ENTRY PORT HOLE, UP INSIDE OF MONOPOLE, AND THROUGH EXIT PORT HOLE. IF ROUTING OUTSIDE THE MONOPOLE, ATTACH CABLES USING STAND-OFF ADAPTERS MOUNTED TO TOWER USING STAINLESS STEEL BANDING. ADEQUATELY SECURE CABLES USING EITHER APPROPRIATELY SIZED STAINLESS STEEL SNAP-INS OR MOUNTING HARDWARE AND BRACKETS AS SPECIFIED BY CABLE MANUFACTURER.
3. ESTIMATED LENGTH OF PROPOSED CABLE IS 165'. ESTIMATED LENGTH OF CABLE IS CALCULATED BY ADDING THE RAD CENTER AND THE DISTANCE FROM THE SHELTER ENTRY PLATE TO THE TOWER (ALONG THE ICE BRIDGE) AND A SAFETY FACTOR MEASUREMENT OF 15% (OF THE TWO PREVIOUS VALUES).
4. ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS AND MOUNT CONFIGURATIONS.
5. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

2 TOWER ELEVATION

SCALE: NOT TO SCALE

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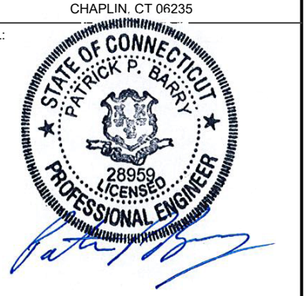
411216

ATC SITE NAME:
CT CHAPLIN SOUTH CT

SITE ADDRESS:
123 PALMER ROAD
CHAPLIN, CT 06235

SEAL:



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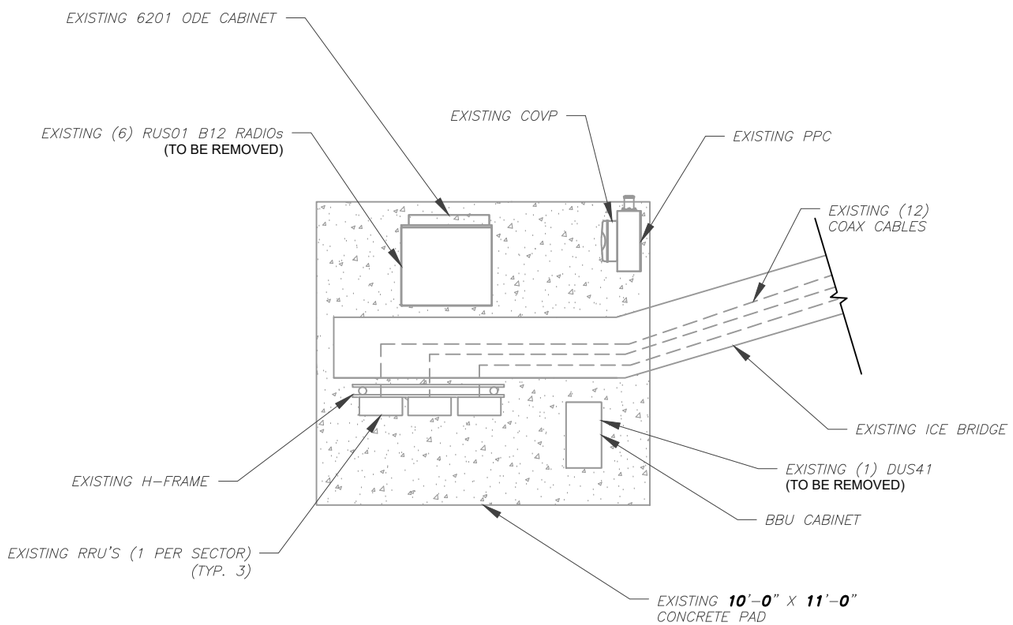
APPROVED BY:	PPB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951816

DETAILED SITE PLAN & TOWER ELEVATION

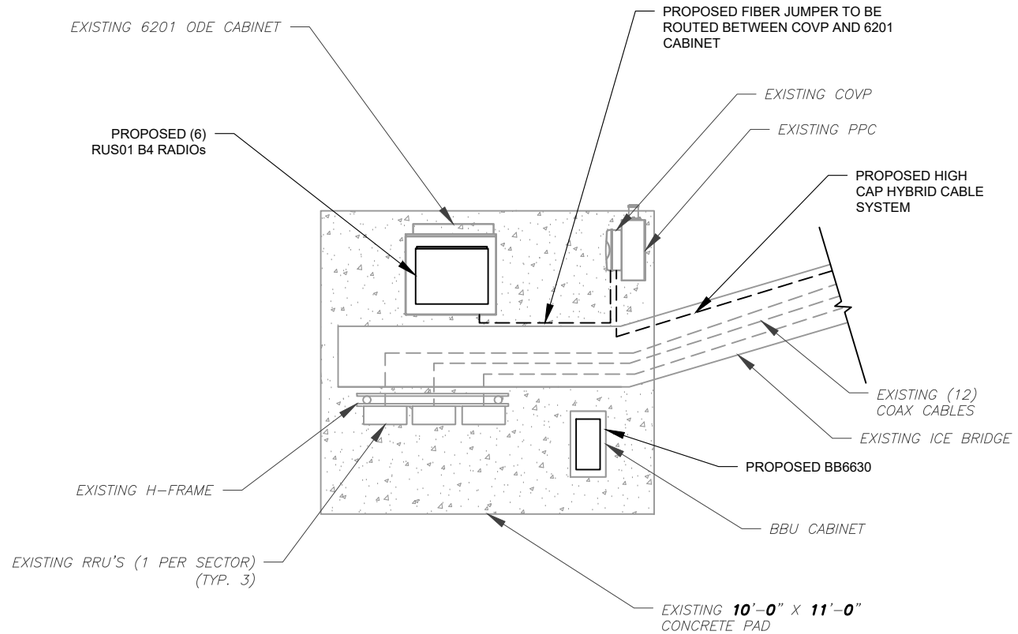
SHEET NUMBER:	REVISION:
C-101	0



1 EXISTING GROUND EQUIPMENT LAYOUT

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)



2 PROPOSED GROUND EQUIPMENT LAYOUT

0 5' 10'

SCALE: 1"=5' (11X17)
1"=2.5' (22X34)

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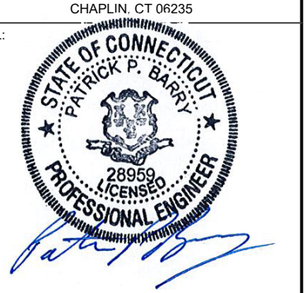

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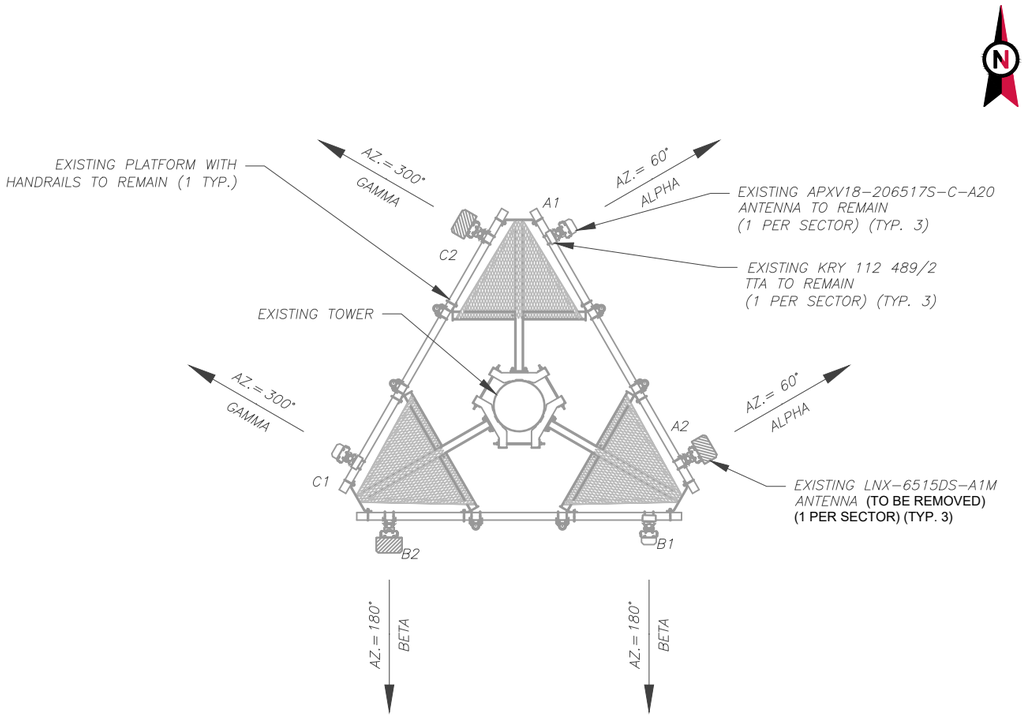
DATE DRAWN:	05/29/19
ATC JOB NO:	12951816

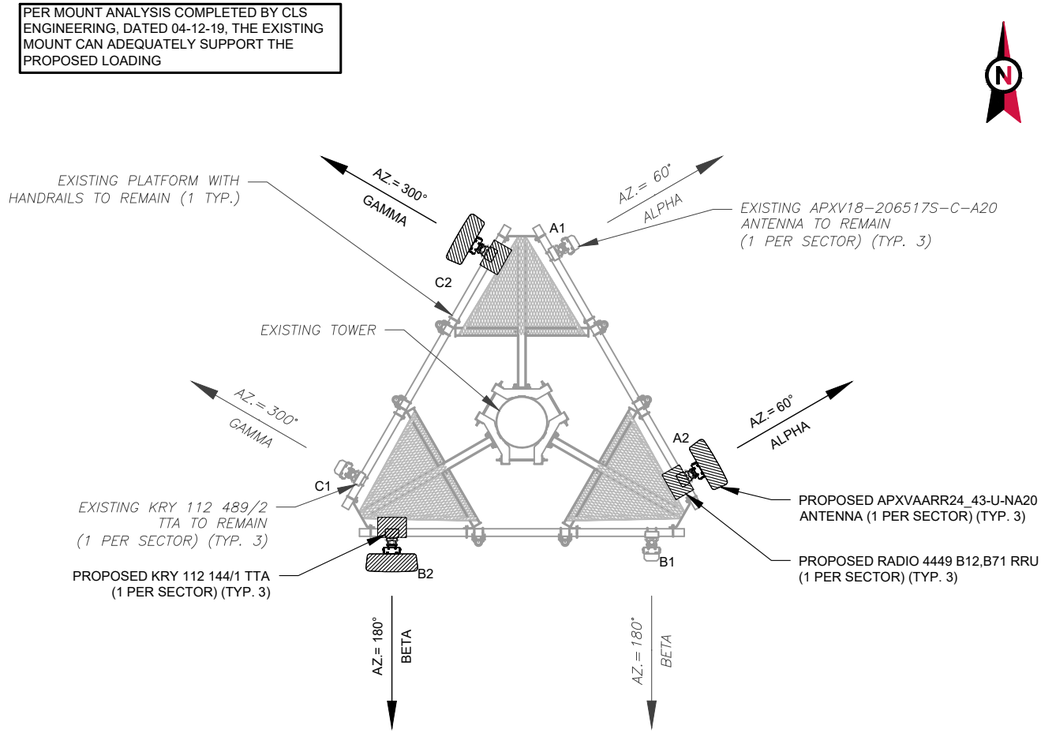
DETAILED SITE PLAN & TOWER ELEVATION

SHEET NUMBER:	REVISION:
C-102	0



1 EXISTING ANTENNA PLAN

PER MOUNT ANALYSIS COMPLETED BY CLS ENGINEERING, DATED 04-12-19, THE EXISTING MOUNT CAN ADEQUATELY SUPPORT THE PROPOSED LOADING



2 FINAL ANTENNA PLAN

EXISTING ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	APXV18-206517S-C-A20	118'-0"	60°	0°	2°	KRY 112 489/2
ALPHA	A2	LNX-6515DS-A1M	118'-0"	60°	0°	2°	–
BETA	B1	APXV18-206517S-C-A20	118'-0"	180°	0°	2°	KRY 112 489/2
BETA	B2	LNX-6515DS-A1M	118'-0"	180°	0°	2°	–
GAMMA	C1	APXV18-206517S-C-A20	118'-0"	300°	0°	2°	KRY 112 489/2
GAMMA	C2	LNX-6515DS-A1M	118'-0"	300°	0°	2°	–

NOTES

1. BASED ON APPROVED ATC APPLICATION 12927166, DATED 04/10/19. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS FOR NSN CONFIGURATION (CONFIG). GC TO CAP ALL UNUSED PORTS.
2. ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIG OR MOUNT CONFIG. CONTRACTOR TO VERIFY MOUNT CONFIG HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (EQUIP) (I.E. CLEARANCES, MOUNT PIPE, SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.
3. ALL PROPOSED EQUIP INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH ATC'S CM.
4. CONFIRM SPACING OF PROPOSED EQUIP DOES NOT CAUSE TOWER CONFLICTS NOR IMPEDE TOWER CLIMBING PEGS.
5. POSITIONS START WITH FIRST PIPE ON THE LEFT SIDE (AS VIEWED FROM BEHIND THE MOUNT).

FINAL ANTENNA / EQUIPMENT SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT
ALPHA	A1	APXV18-206517S-C-A20	118'-0"	60°	0°	2°	KRY 112 489/2
ALPHA	A2	APXVAARR24_43-U-NA20	118'-0"	60°	0°	2°	KRY 112 144/1 RADIO 4449 B12,B71
BETA	B1	APXV18-206517S-C-A20	118'-0"	180°	0°	2°	KRY 112 489/2
BETA	B2	APXVAARR24_43-U-NA20	118'-0"	180°	0°	2°	KRY 112 144/1 RADIO 4449 B12,B71
GAMMA	C1	APXV18-206517S-C-A20	118'-0"	300°	0°	2°	KRY 112 489/2
GAMMA	C2	APXVAARR24_43-U-NA20	118'-0"	300°	0°	2°	KRY 112 144/1 RADIO 4449 B12,B71

CURRENT FIBER DISTRIBUTION/OVP BOX		CURRENT CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
–	–	(12) 1-5/8"	–	RMN
–	–	–	–	–

STATUS ABBREVIATIONS
RMV: TO BE REMOVED
RMN: TO REMAIN
REL: TO BE RELOCATED
DSC: TO BE DISCONNECTED & REMAIN
ADD: TO BE ADDED

3 ANTENNA SCHEDULE

CABLE LENGTHS FOR JUMPERS
FIBER DISTRIBUTION/OVP TO RRU: 15'
RRU TO COMBINER: 10'
COMBINER TO ANTENNA: 10'

PROPOSED FIBER DISTRIBUTION/OVP BOX		PROPOSED CABLING SUMMARY		
MODEL NUMBER	STATUS	COAX	HYBRID	STATUS
-	-	(12) 1-5/8"	–	RMN
-	-	-	(1) 1-5/8"	ADD

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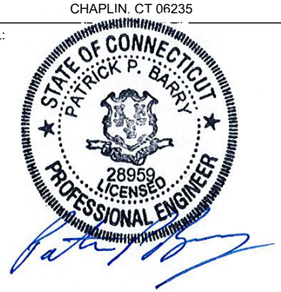
REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	LR	05/29/19

ATC SITE NUMBER:
411216

ATC SITE NAME:
CT CHAPLIN SOUTH CT

SITE ADDRESS:
123 PALMER ROAD
CHAPLIN, CT 06235

SEAL:



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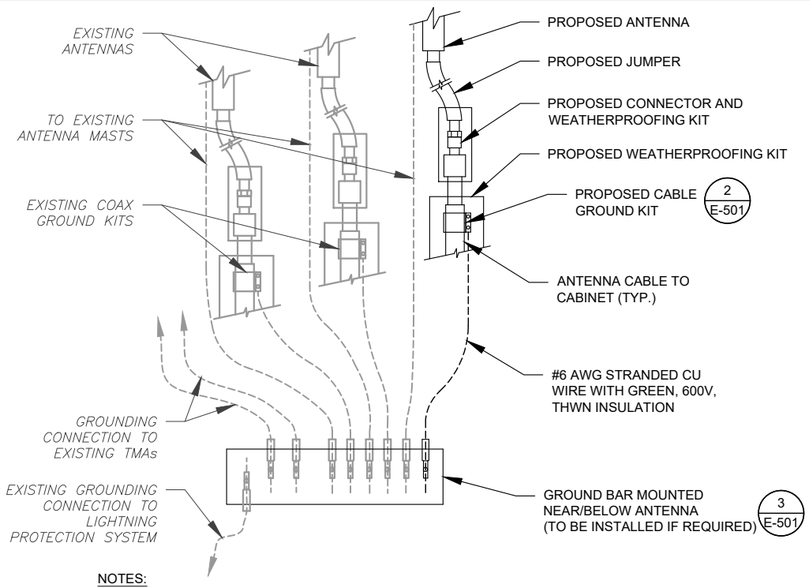
DATE DRAWN:	05/29/19
ATC JOB NO:	12951816

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER:	REVISION:
C-501	0

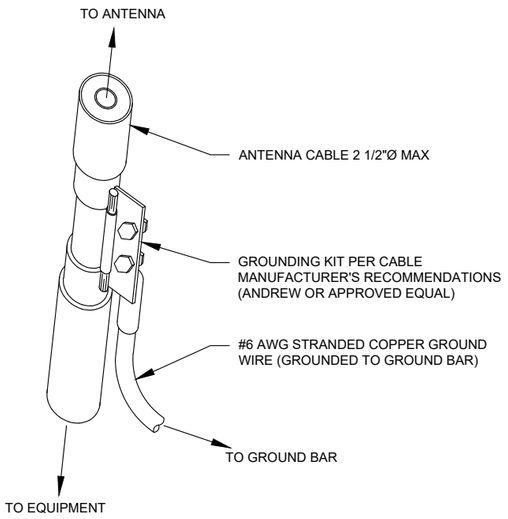


NOTES:

1. THIS DETAIL IS INTENDED TO SHOW THE GENERAL GROUNDING REQUIREMENTS. SLIGHT ADJUSTMENTS MAY BE REQUIRED BASED ON EXISTING SITE CONDITIONS. THE CONTRACTOR SHALL MAKE FIELD ADJUSTMENTS AS NEEDED AND INFORM THE CONSTRUCTION MANAGER OF ANY CONFLICTS.
2. SITE GROUNDING SHALL COMPLY WITH T-MOBILE GROUNDING STANDARDS, LATEST EDITION, AND COMPLY WITH T-MOBILE GROUNDING CHECKLIST, LATEST VERSION. WHEN NATIONAL AND LOCAL GROUNDING CODES ARE MORE STRINGENT THEY SHALL GOVERN.

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: NOT TO SCALE

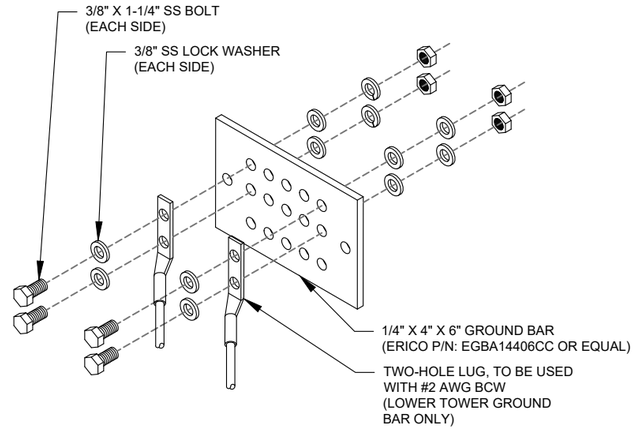


GROUND KIT NOTES:

1. DO NOT INSTALL CABLE GROUND KIT AT A BEND AND ALWAYS DIRECT GROUND WIRE DOWN TO GROUND BAR.
2. CONTRACTOR SHALL PROVIDE WEATHERPROOFING KIT (ANDREW PART NUMBER 221213) AND INSTALL/TAPE PER MANUFACTURER'S SPECIFICATIONS.

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: NOT TO SCALE



GROUND BAR NOTES:

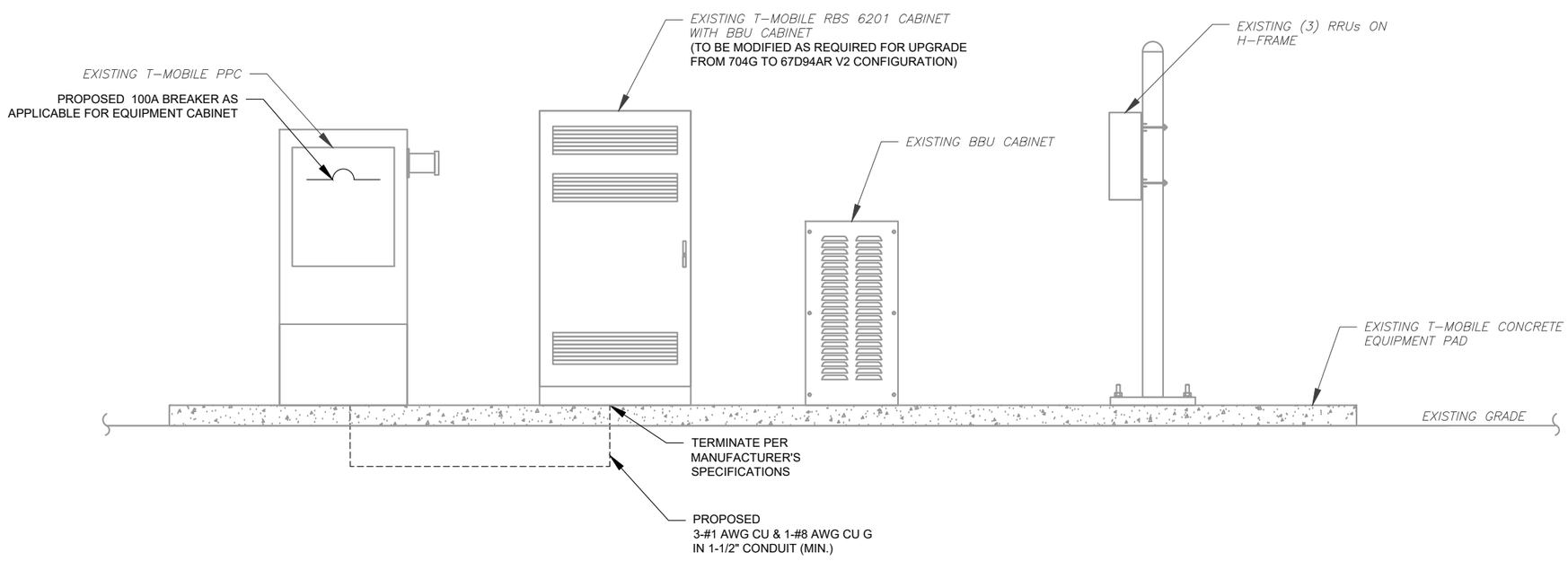
1. GROUND BAR KITS COME WITH ALL HARDWARE, NUTS, BOLTS, WASHERS, ETC. EXCEPT THE STRUCTURAL MOUNTING MEMBER(S).
2. GROUND BAR TO BE BONDED DIRECTLY TO TOWER.

3 TOWER GROUND BAR DETAIL

SCALE: NOT TO SCALE

ELECTRICAL NOTES:

1. THIS DIAGRAM REPRESENTS THE BEST PRESENT KNOWLEDGE AVAILABLE TO THE ENGINEER AT THE TIME OF THIS DESIGN. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO CONSTRUCTION AND VERIFY ALL EXISTING CONDITIONS RELATED TO THE SCOPE OF WORK FOR THIS PROJECT.
2. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH LATEST EDITION OF THE STATE AND NATIONAL CODES, ORDINANCES AND REGULATIONS APPLICABLE TO THIS PROJECT.
3. ATC HAS NOT YET VERIFIED ANY EXISTING T-MOBILE GROUND EQUIPMENT OR ELECTRICAL LOADING. PROPOSED WORK BASED ON INSTALLATION CONFIGURATION PROVIDED BY T-MOBILE. CONTRACTOR TO VERIFY EXISTING T-MOBILE PANEL HAS SUFFICIENT SPACE FOR PROPOSED BREAKER.



4 ELECTRICAL UPGRADE DIAGRAM

SCALE: NOT TO SCALE

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0	FOR CONSTRUCTION	LR	05/29/19

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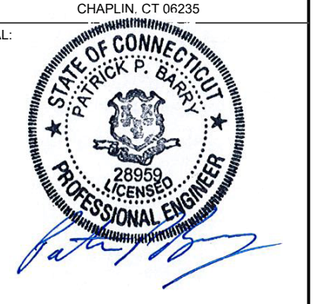
SEAL:



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APPROVED BY:	PPB
DATE DRAWN:	05/29/19
ATC JOB NO:	12951816

GROUNDING DETAILS

SHEET NUMBER: E-501

REVISION: 0

RAN Template:	A&L Template:	Power System Template:
67D94AR V2 Outdoor	67D94AR V2_2QP+1OP	Custom

CT11508F_L600_3.1_draft

Section 5 - RAN Equipment

Existing RAN Equipment

Template: 704G

Enclosure	1
Enclosure Type	RBS 6201 ODE
Baseband	DUG20 (G1900); DUS41 (L1900, L700)
Radio	RUS01 B12 (x 6) (L700); RUS02 B2 (x 6) (L1900, G1900)

Proposed RAN Equipment

Template: 67D94AR V2 Outdoor

Enclosure	1
Enclosure Type	RBS 6102
Baseband	DUG20 (G1900); BB 6630 (L2100, L1900, L700, L600); BB 6630 (N600 (DARK))
Hybrid Cable System	Ericsson 6x12 HCS "Select Length & AWG"
Radio	RUS01 B4 (x 6) (L2100); RUS02 B2 (x 6) (L1900, G1900)

RAN Scope of Work:

Replace existing RBS6201 ODE cabinet with (1) full RBS6102 cabinet.
Replace DUS41 with (1) BB6630 for L2100, L1900, L700, and L600.
Add (1) BB6630 for future 5G N600.
Remove (6) RUS01 B12 Radios.
Add (6) RUS01 B4 for L2100.

Add (1) 6X12 HCS. Add 20m to hybrid length due to ice bridge.

Existing: (12) 1-5/8" Coaxial Lines.

Retain Battery Cabinet. Keep existing BBU.

Handrail kit to be installed.

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

Mount Analysis of Existing Platform w/ Support Rails for American Tower on behalf of T-Mobile
411216 - CT Chaplin South CT
Project #: 12927166

T-Mobile Site ID: CT11508F
Program: L600

CLS Engineering PLLC Project #41124-12927166-01-MA
April 12, 2019

MOUNT DESCRIPTION	Existing Platform w/ Support Rails at 114 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 116 ft AGL (Eccentricity of ~2 ft)
SITE DESCRIPTION	146 ft Monopole
SITE ADDRESS	123 Palmer Road, Chaplin, CT 06235-2416, Windham County
GPS COORDINATES	41.784528, -72.135694
ANALYSIS STANDARD	2018 IBC / TIA-222-H
LOADING CRITERIA	120 mph, V_{ult} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

■ ANALYSIS RESULT: **Pass**

MEMBER USAGE	57%	Pass
COLLAR USAGE	84%	Pass

Prepared by:
A.J. Ingalls, E.I.

Reviewed and Approved by:
Tyler M. Barker, P.E.

STATE OF CONNECTICUT · TYLER M. BARKER · No. 32402 · LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 12/1/2020
COA # PEC.0018353 Exp. 8/14/2019

Digitally signed by Tyler M. Barker
Date: 2019.04.12 17:09:44 -04'00'

■ INTRODUCTION

The proposed equipment is to be mounted to the existing Platform w/ Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

■ STRUCTURAL DOCUMENTS PROVIDED

STRUCTURAL DATA	Site Photos, dated November 12, 2018
PREVIOUS ANALYSES	Tower SA by American Tower Corporation, Engineering #0AA719249_C3_03, dated May 30, 2018
LOADING DATA	ATC Application, Project #12927166, dated April 10, 2019

■ ANALYSIS CRITERIA

STANDARD	2018 IBC / TIA-222-H
BASIC WIND SPEED	120 mph, V_{ult} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
EXPOSURE CATEGORY	B
MAX. TOPOGRAPHIC FACTOR, K_{zt}	1.00
RISK CATEGORY	II
MAINTENANCE LIVE LOAD	L_M: 500 lb

■ FINAL EQUIPMENT

ELEVATION (ft)		ANTENNAS	
MOUNT	RAD.	#	NAME
114.0	116.0	3	RFS Celwave APXVAARR24_43-U-NA20
		3	RFS Celwave APXV18-206517
		3	Ericsson RADIO 4449 B12/B71
		3	Ericsson KRY 112 489/2
		3	Ericsson KRY 112 144/1

■ RESULTS SUMMARY

COMPONENT	PEAK USAGE	RESULT
Collar Reactions	84%	Pass
Mount Pipes	57%	Pass
Platform Base	43%	Pass
Bracing Members	42%	Pass
Stand-Off Horizontals	34%	Pass
Support Rail	10%	Pass

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to PASS. The mounting configuration considered in this analysis is capable of supporting the referenced loading pursuant to applicable standards.

1 MOUNT ANALYSIS
SCALE: NOT TO SCALE

NOTE: THIS SHEET CREATED BY OTHERS AND PROVIDED BY REQUEST OF CUSTOMER WITHOUT EDIT.

SUPPLEMENTAL

SHEET NUMBER: R-602
REVISION: 0

Exhibit D

Structural Analysis Report

AMERICAN TOWER®
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Structural Analysis Report

Structure	:	**146 ft Monopole**
ATC Site Name	:	**CT Chaplin South CT, CT**
ATC Site Number	:	**411216**
Engineering Number	:	**12927166_C3_01**
Proposed Carrier	:	**T-Mobile**
Carrier Site Name	:	**CT508//Verizon Chaplin**
Carrier Site Number	:	**CT11508F**
Site Location	:	**123 Palmer Road** **Chaplin, CT 06235-2416** **41.784500,-72.135700**
County	:	**Windham**
Date	:	**April 16, 2019**
Max Usage	:	**85%**
Result	:	**Pass**

Prepared By:
Trevor Ridilla, E.I.
Structural Engineer I

Reviewed By:

STATE OF CONNECTICUT
ESHA KAUSHAL MODI
32599
LICENSED PROFESSIONAL ENGINEER

Karen Wager
Apr 16 2019 4:58 PM cosign

COA: PEC.0001553

AMERICAN TOWER®
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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 146 ft monopole to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	EEI Project #12120 Rev. 2, dated November 21, 2003
Foundation Drawing	EEI Project #12120 Rev. 3, dated December 18, 2003
Geotechnical Report	GEOServices Project #31-151287M, dated September 8, 2015

Analysis

The tower was analyzed using American Tower Corporation's tower analysis software. This program considers an elastic three-dimensional model and second-order effects per ANSI/TIA-222.

Basic Wind Speed:	101 mph (3-Second Gust, Vasd) / 130 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.17, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

Based on the analysis results, the structure meets the requirements per the applicable codes listed above. The tower and foundation can support the equipment as described in this report.

If you have any questions or require additional information, please contact American Tower via email at Engineering@americantower.com. Please include the American Tower site name, site number, and engineering number in the subject line for any questions.

Existing and Reserved Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
148.0	6	Andrew SBNHH-1D65B	Low Profile Platform	(18) 1 5/8" Coax (2) 1 5/8" Hybriflex	VERIZON WIRELESS
	2	Antel LPA-80063/4CF			
	4	Antel LPA-80080/4CF ___			
	3	Amphenol Antel QUAD656C0000X			
147.0	3	Nokia B5 RRH4x40-850			
	3	Alcatel-Lucent RRH2x60 700			
	3	Alcatel-Lucent AWS4 (B66) 4x45 RRH			
	2	Raycap RC3DC-3315-PF-48			
137.5	3	Alcatel-Lucent TD-RRH8x20-25 w/ Solar Shield	Site Pro RMQP-496-HK	(4) 1 1/4" Hybriflex Cable (7) 1 5/8" Coax	SPRINT NEXTEL
	3	Alcatel-Lucent 1900 MHz 4X45 RRH			
	6	Alcatel-Lucent RRH2x50-08			
	3	RFS APXVTM14-ALU-I20			
	3	Commscope NNVV-65B-R4			
128.0	6	Powerwave Allgon LGP21901	Low Profile Platform	(1) 0.40" (10.3mm) Fiber (2) 0.78" (19.7mm) 8 AWG 6 (12) 1 5/8" Coax	AT&T MOBILITY
	3	Generic 6" x 6" Junction Box			
	6	Powerwave Allgon LGP21401			
	1	Raycap DC6-48-60-18-8F			
	6	Ericsson RRUS-11 1900 MHz			
	3	KMW AM-X-CD-17-65-00T-RET (96" Height)			
	6	Allgon 7770.00			
116.0	3	RFS APXV18-206517	Platform with Handrails	(12) 1 5/8" Coax	T-MOBILE
75.0	1	Generic GPS	Stand-Off	-	SPRINT NEXTEL
63.0	1	Generic GPS	Stand-Off	(1) 1/2" Coax	AT&T MOBILITY

Equipment to be Removed

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
118.0	3	Commscope LNX-6515DS-VTM	-	-	T-MOBILE
	3	RFS 1900 PCS			

Proposed Equipment

Elev.[1] (ft)	Qty	Antenna	Mount Type	Lines	Carrier
116.0	3	Ericsson KRY 112 144/1	Platform with Handrails	(1) 1 5/8" (1.63"-41.3mm) Fiber	T-MOBILE
	3	Ericsson KRY 112 489/2			
	3	Ericsson Radio 4449 B12,B71			
	3	RFS APXVAARR24_43-U-NA20			

[1]Mount elevation is defined as height above bottom of steel structure to the bottom of mount, RAD elevation is defined as center of antenna above ground level (AGL).

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	56%	Pass
Shaft	66%	Pass
Base Plate	85%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	3,157.8	4,263.0	3011.4	71%
Shear (Kips)	30.5	41.2	27.1	66%

*** The design reactions are factored by 1.35 per ANSI/TIA-222-G, Sec. 15.5.1**

The structure base reactions resulting from this analysis are acceptable when compared to those shown on the original structure drawings, therefore no modification or reinforcement of the foundation will be required.

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
116.0	Ericsson KRY 112 144/1	T-MOBILE	1.008	1.023
	Ericsson KRY 112 489/2			
	Ericsson Radio 4449 B12,B71			
	RFS APXVAARR24_43-U-NA20			

***Deflection and Sway was evaluated considering a design wind speed of 60 mph (3-Second Gust) per ANSI/TIA-222-G**

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Standard Conditions

All engineering services performed by A.T. Engineering Service, PLLC are prepared on the basis that the information used is current and correct. This information may consist of, but is not limited to the following:

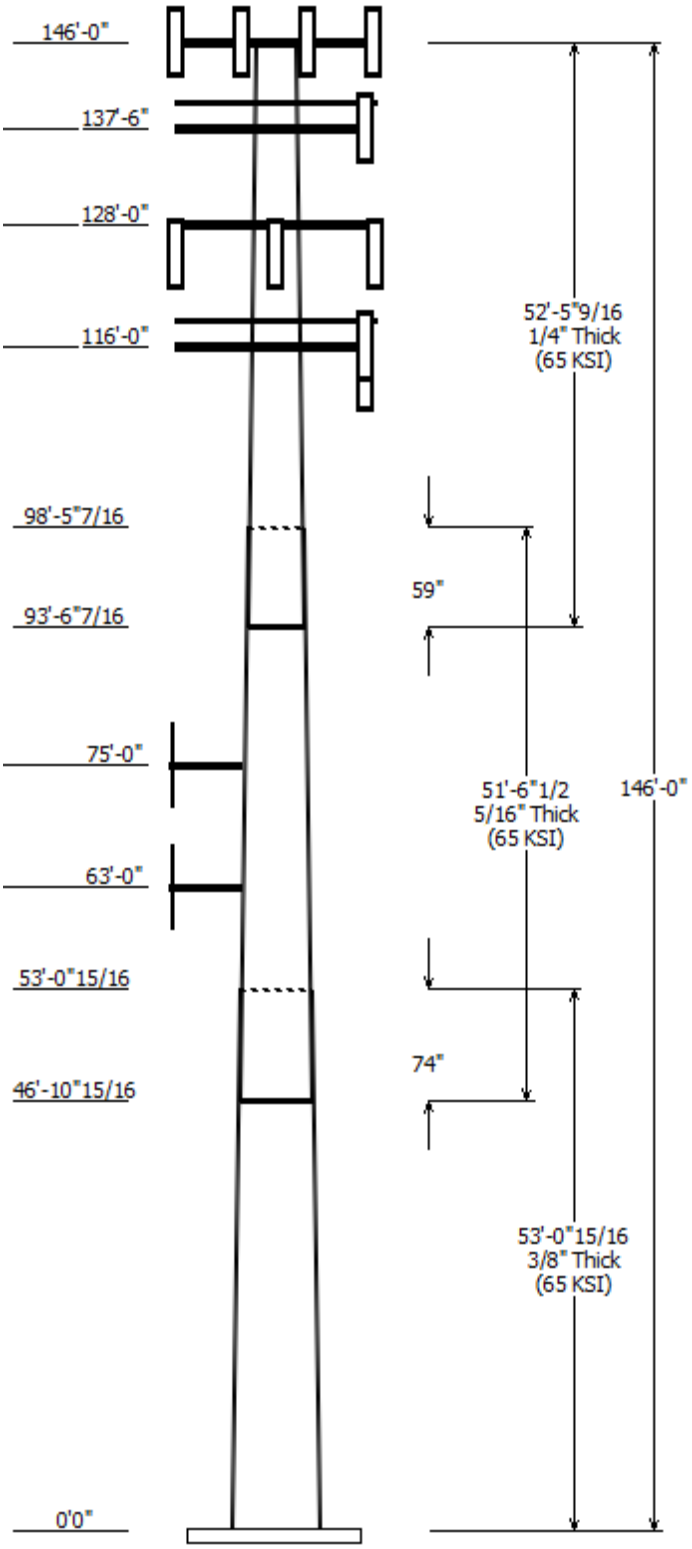
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

All assets of American Tower Corporation, its affiliates and subsidiaries (collectively "American Tower") are inspected at regular intervals. Based upon these inspections and in the absence of information to the contrary, American Tower assumes that all structures were constructed in accordance with the drawings and specifications.

Unless explicitly agreed by both the client and A.T. Engineering Service, PLLC, all services will be performed in accordance with the current revision of ANSI/TIA-222.

All services are performed, results obtained, and recommendations made in accordance with generally accepted engineering principles and practices. A.T. Engineering Service, PLLC is not responsible for the conclusions, opinions and recommendations made by others based on the information supplied herein.



Job Information

Pole :	411216	Code:	ANSI/TIA-222-G
Location :	CT Chaplin South CT, CT		
Description :	146 ft EEI Monopole		
Client :	T-MOBILE	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	146.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.220039 (in/ft)		

Sections Properties

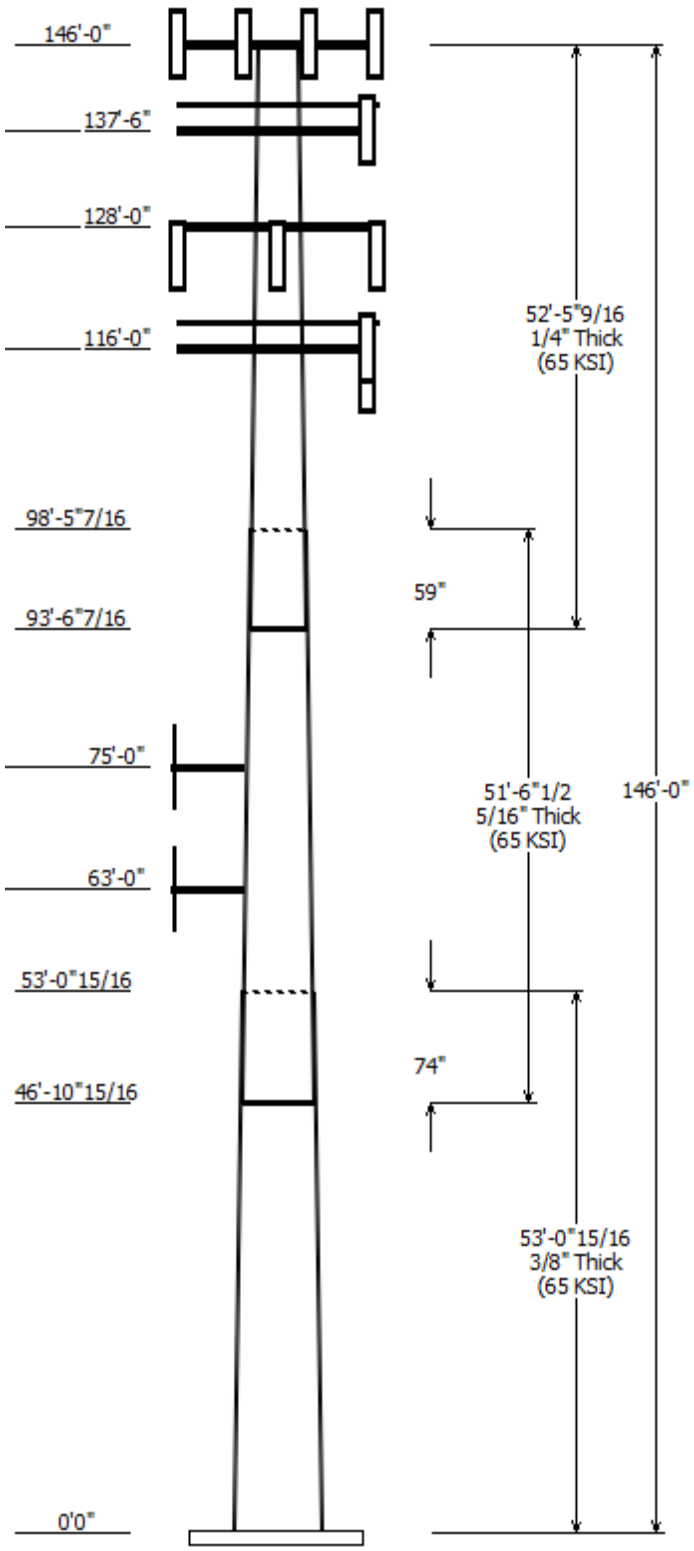
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.080	42.82	54.50	0.375		0.000	18 Sides	65
2	51.540	33.46	44.80	0.313	Slip Joint	74.000	18 Sides	65
3	52.463	23.49	35.04	0.250	Slip Joint	59.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
146.000	146.000	1	Flat Low Profile Platform
146.000	146.000	2	Raycap RC3DC-3315-PF-48
146.000	146.000	3	Alcatel-Lucent AWS4 (B66)
146.000	146.000	3	Alcatel-Lucent RRH2x60 700
146.000	146.000	3	Nokia B5 RRH4x40-850
146.000	146.000	3	Amphenol Antel
146.000	146.000	6	Andrew SBNHH-1D65B
146.000	146.000	2	Antel LPA-80063/4CF
146.000	146.000	4	Antel LPA-80080/4CF ___
137.500	137.500	1	Site Pro RMQP-496-HK
137.500	137.500	3	Commscope NNVV-65B-R4
137.500	137.500	3	RFS APXVTM14-ALU-I20
137.500	137.500	3	Alcatel-Lucent TD-RRH8x20-25
137.500	137.500	3	Alcatel-Lucent 1900 MHz 4X45
137.500	137.500	6	Alcatel-Lucent RRH2x50-08
128.000	128.000	1	Flat Low Profile Platform
128.000	126.000	3	KMW AM-X-CD-17-65-00T-RET
128.000	126.000	6	Allgon 7770.00
128.000	126.000	6	Ericsson RRUS-11 1900 MHz
128.000	126.000	1	Raycap DC6-48-60-18-8F
128.000	126.000	6	Powerwave Allgon LGP21401
128.000	126.000	3	Generic 6" x 6" Junction Box
128.000	126.000	6	Powerwave Allgon LGP21901
116.000	116.000	1	Round Platform w/ Handrails
116.000	116.000	3	RFS APXVAARR24_43-U-NA20
116.000	114.000	3	RFS APXV18-206517
116.000	116.000	3	Ericsson Radio 4449 B12,B71
116.000	116.000	3	Ericsson KRY 112 489/2
116.000	116.000	3	Ericsson KRY 112 144/1
75.000	75.000	1	Stand-Off
75.000	75.000	1	Generic GPS
63.000	63.000	1	Stand-Off
63.000	63.000	1	Generic GPS

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
0.000	63.000	1/2" Coax	Yes
0.000	116.0	1 5/8" (1.63"-	No
0.000	116.0	1 5/8" Coax	No
0.000	128.0	0.40" (10.3mm)	No
0.000	128.0	0.78" (19.7mm) 8	No



0.000	128.0	1 5/8" Coax	No
0.000	137.5	1 1/4" Hybriflex	No
0.000	137.5	1 5/8" Coax	No
0.000	146.0	1 5/8" Coax	No
0.000	146.0	1 5/8" Coax	Yes
0.000	146.0	1 5/8" Hybriflex	Yes

Load Cases

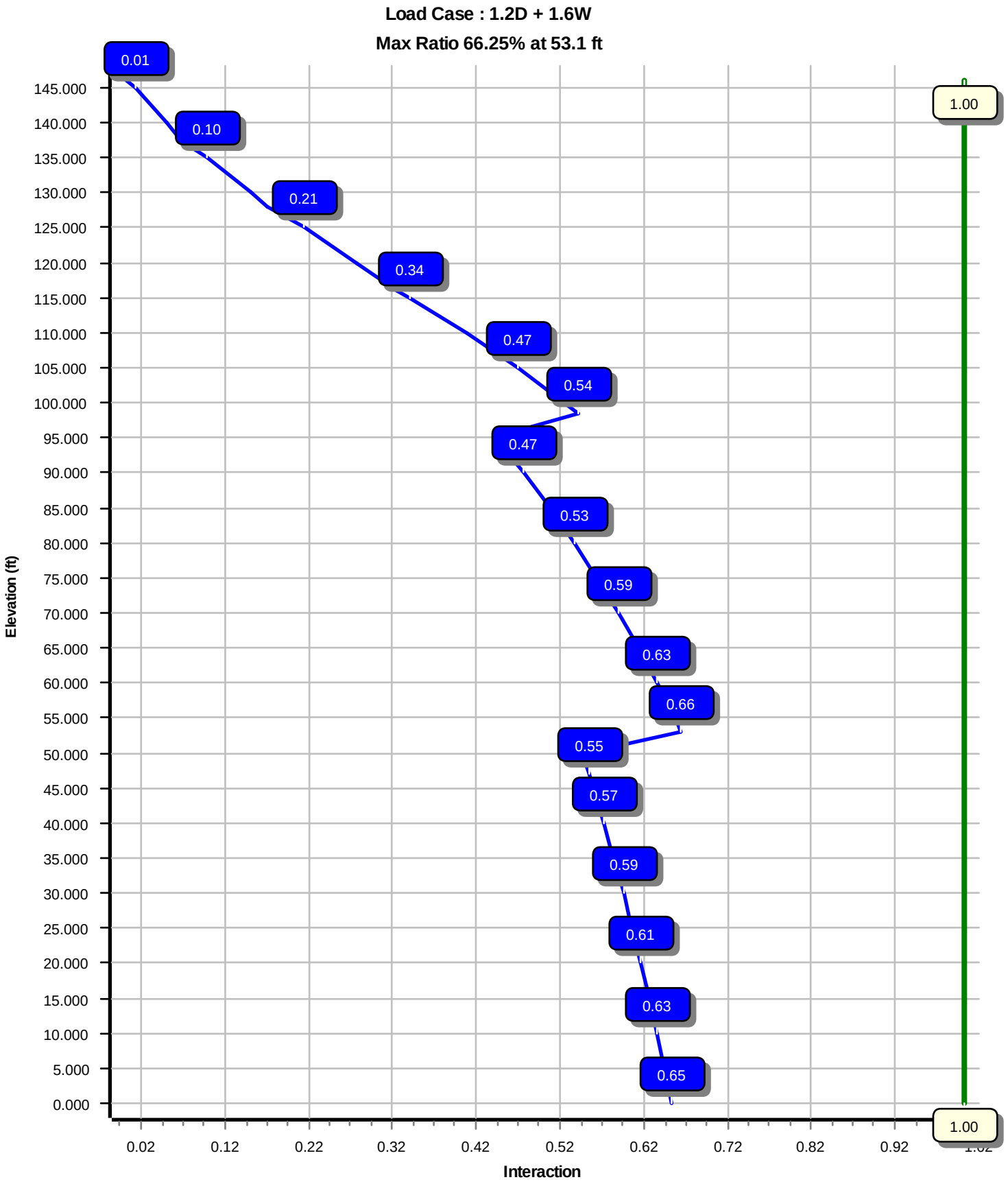
1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3011.41	27.07	47.13
0.9D + 1.6W	2974.25	27.05	35.34
1.2D + 1.0Di + 1.0Wi	866.72	8.10	71.63
(1.2 + 0.2Sds) * DL + E ELFM	190.44	1.54	46.98
(1.2 + 0.2Sds) * DL + E EMAM	324.27	2.64	46.98
(0.9 - 0.2Sds) * DL + E ELFM	187.59	1.54	32.78
(0.9 - 0.2Sds) * DL + E EMAM	319.10	2.64	32.78
1.0D + 1.0W	659.39	5.97	39.31

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
	0.00	0.000	0.000


Load Case : 1.2D + 1.6W
Max Ratio 66.25% at 53.1 ft
0.01
0.10
0.21
0.34
0.47
0.54
0.47
0.53
0.59
0.63
0.66
0.55
0.57
0.59
0.61
0.63
0.65
1.00
1.00
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	411216	Code: ANSI/TIA-222-G	
Site Name:	CT Chaplin South CT, CT	Engineering Number:12927166_C3_01	4/16/2019 4:20:00 PM
Customer:	T-MOBILE		

Analysis Parameters

Location :	Windham County, CT	Height (ft) :	146
Code :	ANSI/TIA-222-G	Base Diameter (in) :	54.50
Shape :	18 Sides	Top Diameter (in) :	23.50
Pole Type :	Taper	Taper (in/ft) :	0.220
Pole Manfacturer :	EEI	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	101 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	2.41				
T_L (sec):	6	p:	1.3	C_s:	0.030
S_s:	0.173	S_1:	0.062	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.185	S_{d1}:	0.099		

Load Cases

1.2D + 1.6W	101 mph with No Ice
0.9D + 1.6W	101 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number:12927166_C3_01 4/16/2019 4:20:00 PM

Customer: T-MOBILE

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	53.080	0.3750	65		0.00	10,380	54.50	0.00	64.42	23843.5	24.22	145.33	42.82	53.08	50.52	11499.1	18.72	114.19	0.220039
2-18	51.540	0.3125	65	Slip	74.00	6,753	44.80	46.91	44.13	11035.0	23.87	143.37	33.46	98.45	32.88	4564.6	17.47	107.08	0.220039
3-18	52.463	0.2500	65	Slip	59.00	4,111	35.04	93.54	27.61	4222.5	23.31	140.17	23.49	146.00	18.45	1259.8	15.16	94.00	0.220039
				Shaft Weight		21,244													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Ka	Vert Ecc (ft)	No Ice Weight (lb)	No Ice EPAa (sf)	No Ice Orientation Factor	Ice Weight (lb)	Ice EPAa (sf)	Ice Orientation Factor
146.00	Nokia B5 RRH4x40-850	3	0.80	0.000	48.50	1.320	0.50	89.71	2.079	0.50
146.00	Alcatel-Lucent RRH2x60 700	3	0.80	0.000	56.70	2.150	0.67	124.69	3.151	0.67
146.00	Alcatel-Lucent AWS4 (B66) 4x45	3	0.80	0.000	64.00	2.660	0.67	134.82	3.808	0.67
146.00	Raycap RC3DC-3315-PF-48	2	0.80	0.000	32.00	3.780	0.77	141.28	5.103	0.77
146.00	Antel LPA-80080/4CF ___	4	0.80	0.000	12.00	5.400	0.62	146.95	3.460	0.62
146.00	Antel LPA-80063/4CF	2	0.80	0.000	20.00	6.140	0.82	225.55	7.179	0.82
146.00	Andrew SBNHH-1D65B	6	0.80	0.000	50.70	8.170	0.69	226.00	10.996	0.69
146.00	Amphenol Antel	3	0.80	0.000	54.00	13.240	0.62	314.67	16.133	0.62
146.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,147.25	45.173	1.00
137.50	Alcatel-Lucent RRH2x50-08	6	0.75	0.000	52.90	1.700	0.50	111.71	2.556	0.50
137.50	Alcatel-Lucent 1900 MHz 4X45	3	0.75	0.000	60.00	2.320	0.67	139.98	3.392	0.67
137.50	Alcatel-Lucent TD-RRH8x20-25	3	0.75	0.000	70.00	4.050	0.61	163.80	5.369	0.61
137.50	RFS APXVTM14-ALU-I20	3	0.75	0.000	56.20	6.340	0.66	192.86	8.501	0.66
137.50	Commscope NNVV-65B-R4	3	0.75	0.000	77.40	12.270	0.64	326.78	15.053	0.64
137.50	Site Pro RMQP-496-HK	1	1.00	0.000	2,448.70	27.200	1.00	4,023.23	51.460	1.00
128.00	Powerwave Allgon LGP21901	6	1.00	-2.000	5.50	0.200	0.50	13.06	0.515	0.50
128.00	Generic 6" x 6" Junction Box	3	1.00	-2.000	10.00	0.300	0.50	19.79	0.672	0.50
128.00	Powerwave Allgon LGP21401	6	1.00	-2.000	14.10	1.100	0.50	38.68	1.801	0.50
128.00	Raycap DC6-48-60-18-8F	1	1.00	-2.000	20.00	1.260	1.00	71.87	1.909	1.00
128.00	Ericsson RRUS-11 1900 MHz	6	1.00	-2.000	44.00	2.520	0.67	110.28	3.544	0.67
128.00	Allgon 7770.00	6	1.00	-2.000	35.00	5.510	0.65	167.38	6.546	0.65
128.00	KMW AM-X-CD-17-65-00T-RET	3	1.00	-2.000	59.50	11.310	0.68	270.16	14.485	0.68
128.00	Flat Low Profile Platform	1	1.00	0.000	1,500.00	26.100	1.00	2,138.25	44.908	1.00
116.00	Ericsson KRY 112 144/1	3	0.75	0.000	11.00	0.350	0.50	21.50	0.745	0.50
116.00	Ericsson KRY 112 489/2	3	0.75	0.000	15.40	0.560	0.50	32.64	1.073	0.50
116.00	Ericsson Radio 4449 B12,B71	3	0.75	0.000	74.00	1.640	0.50	128.65	2.464	0.50
116.00	RFS APXV18-206517	3	0.75	-2.000	26.40	5.050	0.68	115.61	7.358	0.68
116.00	RFS APXVAARR24_43-U-NA20	3	0.75	0.000	127.90	20.240	0.63	511.14	23.860	0.63
116.00	Round Platform w/ Handrails	1	1.00	0.000	2,000.00	27.200	1.00	3,264.94	51.063	1.00
75.00	Generic GPS	1	0.75	0.000	10.00	0.900	1.00	37.26	1.496	1.00
75.00	Stand-Off	1	1.00	0.000	75.00	2.500	1.00	123.68	4.123	1.00
63.00	Generic GPS	1	1.00	0.000	10.00	0.900	1.00	36.82	1.486	1.00
63.00	Stand-Off	1	1.00	0.000	75.00	2.500	1.00	122.89	4.096	1.00
Totals	Num Loadings:33	98			11,436.90			25,050.77		

Linear Appurtenance Properties

Load Case Azimuth (deg) : 45

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Dia (in)	Coax Wt (lb/ft)	Flat	Max Coax / Row	Dist Between Rows (in)	Dist Between Cols (in)	Azimuth (deg)	Dist From Face (in)	Exposed To Wind	Carrier
0.00	146.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	VERIZON WIRELESS
0.00	146.00	6	1 5/8" Coax	1.98	0.82	N	6	0.00	0.00	45	0.00	Y	VERIZON WIRELESS
0.00	146.00	2	1 5/8" Hybriflex	1.98	1.30	N	2	0.00	0.00	55	0.00	Y	VERIZON WIRELESS
0.00	137.50	4	1 1/4" Hybriflex Cable	1.54	1.00	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL
0.00	137.50	7	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	SPRINT NEXTEL

0.00	128.00	1	0.40" (10.3mm) Fiber	0.40	0.09	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	128.00	2	0.78" (19.7mm) 8 AWG	0.78	0.59	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	128.00	12	1 5/8" Coax	1.98	0.82	N	0	0.00	0.00	0	0.00	N	AT&T MOBILITY
0.00	116.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0	0.00	0.00	0	0.00	N	T-MOBILE
0.00	116.00	12	1 5/8" Coax	1.98	0.82	N	12	0.00	0.00	0	0.00	N	T-MOBILE
0.00	63.00	1	1/2" Coax	0.63	0.15	N	1	0.00	0.00	180	0.00	Y	AT&T MOBILITY

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	54.500	64.420	23,843.5	24.22	145.33	72.9	861.7	0.0	0.0
5.00		0.3750	53.400	63.110	22,418.8	23.70	142.40	73.5	826.9	0.0	1,084.9
10.00		0.3750	52.300	61.801	21,052.1	23.18	139.47	74.1	792.8	0.0	1,062.6
15.00		0.3750	51.199	60.492	19,742.1	22.66	136.53	74.7	759.5	0.0	1,040.3
20.00		0.3750	50.099	59.182	18,487.6	22.15	133.60	75.4	726.8	0.0	1,018.1
25.00		0.3750	48.999	57.873	17,287.3	21.63	130.66	76.0	694.9	0.0	995.8
30.00		0.3750	47.899	56.563	16,140.2	21.11	127.73	76.6	663.7	0.0	973.5
35.00		0.3750	46.799	55.254	15,045.0	20.59	124.80	77.2	633.2	0.0	951.2
40.00		0.3750	45.698	53.944	14,000.5	20.08	121.86	77.8	603.4	0.0	928.9
45.00		0.3750	44.598	52.635	13,005.5	19.56	118.93	78.4	574.4	0.0	906.7
46.91	Bot - Section 2	0.3750	44.177	52.134	12,637.6	19.36	117.81	78.6	563.4	0.0	341.1
50.00		0.3750	43.498	51.325	12,058.8	19.04	115.99	79.0	546.0	0.0	1,003.3
53.08	Top - Section 1	0.3125	43.445	42.781	10,055.8	23.10	139.03	74.2	455.9	0.0	985.6
55.00		0.3125	43.023	42.362	9,763.2	22.86	137.67	74.5	447.0	0.0	278.1
60.00		0.3125	41.923	41.271	9,028.0	22.24	134.15	75.2	424.2	0.0	711.5
63.00		0.3125	41.263	40.616	8,605.1	21.87	132.04	75.7	410.8	0.0	418.0
65.00		0.3125	40.822	40.179	8,330.7	21.62	130.63	76.0	401.9	0.0	274.9
70.00		0.3125	39.722	39.088	7,670.2	21.00	127.11	76.7	380.3	0.0	674.3
75.00		0.3125	38.622	37.997	7,045.6	20.38	123.59	77.4	359.3	0.0	655.8
80.00		0.3125	37.522	36.906	6,455.8	19.76	120.07	78.2	338.9	0.0	637.2
85.00		0.3125	36.422	35.815	5,899.9	19.14	116.55	78.9	319.1	0.0	618.6
90.00		0.3125	35.321	34.723	5,376.9	18.52	113.03	79.6	299.8	0.0	600.1
93.54	Bot - Section 3	0.3125	34.543	33.951	5,026.3	18.08	110.54	80.1	286.6	0.0	413.2
95.00		0.3125	34.221	33.632	4,885.8	17.90	109.51	80.3	281.2	0.0	305.1
98.45	Top - Section 2	0.2500	33.961	26.749	3,840.7	22.54	135.85	74.9	222.7	0.0	708.6
100.0		0.2500	33.621	26.479	3,725.6	22.30	134.48	75.2	218.3	0.0	140.1
105.0		0.2500	32.521	25.606	3,369.1	21.53	130.08	76.1	204.0	0.0	443.1
110.0		0.2500	31.421	24.733	3,036.2	20.75	125.68	77.0	190.3	0.0	428.2
115.0		0.2500	30.321	23.860	2,725.9	19.97	121.28	77.9	177.1	0.0	413.4
116.0		0.2500	30.100	23.685	2,666.5	19.82	120.40	78.1	174.5	0.0	80.9
120.0		0.2500	29.220	22.987	2,437.5	19.20	116.88	78.8	164.3	0.0	317.6
125.0		0.2500	28.120	22.114	2,170.2	18.42	112.48	79.7	152.0	0.0	383.7
128.0		0.2500	27.460	21.590	2,019.6	17.96	109.84	80.3	144.9	0.0	223.1
130.0		0.2500	27.020	21.241	1,923.2	17.65	108.08	80.6	140.2	0.0	145.7
135.0		0.2500	25.920	20.368	1,695.7	16.87	103.68	81.6	128.9	0.0	354.0
137.5		0.2500	25.370	19.932	1,589.0	16.48	101.48	82.0	123.4	0.0	171.4
140.0		0.2500	24.820	19.495	1,486.9	16.09	99.28	82.5	118.0	0.0	167.7
145.0		0.2500	23.719	18.622	1,295.9	15.32	94.88	82.6	107.6	0.0	324.3
146.0		0.2500	23.499	18.448	1,259.8	15.16	94.00	82.6	105.6	0.0	63.1
											21,243.5

Load Case: 1.2D + 1.6W — 101 mph with No Ice — 24 Iterations

Gust Response Factor :1.10 — Wind Importance Factor 1.00
Dead Load Factor :1.20
Wind Load Factor :1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		226.7	0.0					0.0	0.0	226.7	0.0	0.0	0.0
5.00		448.9	1,301.9					0.0	298.9	448.9	1,600.7	0.0	0.0
10.00		439.6	1,275.1					0.0	298.9	439.6	1,574.0	0.0	0.0
15.00		430.4	1,248.4					0.0	298.9	430.4	1,547.3	0.0	0.0
20.00		421.1	1,221.7					0.0	298.9	421.1	1,520.5	0.0	0.0
25.00		411.9	1,194.9					0.0	298.9	411.9	1,493.8	0.0	0.0
30.00		407.4	1,168.2					0.0	298.9	407.4	1,467.1	0.0	0.0
35.00		411.1	1,141.5					0.0	298.9	411.1	1,440.3	0.0	0.0
40.00		417.1	1,114.7					0.0	298.9	417.1	1,413.6	0.0	0.0
45.00		290.5	1,088.0					0.0	298.9	290.5	1,386.9	0.0	0.0
46.91	Bot - Section 2	213.1	409.3					0.0	114.4	213.1	523.6	0.0	0.0
50.00		264.8	1,203.9					0.0	184.5	264.8	1,388.4	0.0	0.0
53.08	Top - Section 1	215.0	1,182.7					0.0	184.1	215.0	1,366.8	0.0	0.0
55.00		297.8	333.8					0.0	114.8	297.8	448.5	0.0	0.0
60.00		344.0	853.7					0.0	298.9	344.0	1,152.6	0.0	0.0
63.00	Appurtenance(s)	214.6	501.6	128.6	0.0	0.0	102.0	0.0	179.3	343.2	782.9	0.0	0.0
65.00		299.3	329.9					0.0	119.2	299.3	449.1	0.0	0.0
70.00		425.6	809.2					0.0	298.0	425.6	1,107.1	0.0	0.0
75.00	Appurtenance(s)	422.0	786.9	126.2	0.0	0.0	102.0	0.0	298.0	548.2	1,186.9	0.0	0.0
80.00		417.7	764.6					0.0	298.0	417.7	1,062.6	0.0	0.0
85.00		412.5	742.4					0.0	298.0	412.5	1,040.3	0.0	0.0
90.00		347.9	720.1					0.0	298.0	347.9	1,018.0	0.0	0.0
93.54	Bot - Section 3	202.6	495.9					0.0	210.8	202.6	706.6	0.0	0.0
95.00		199.0	366.1					0.0	87.2	199.0	453.3	0.0	0.0
98.45	Top - Section 2	201.3	850.4					0.0	205.8	201.3	1,056.2	0.0	0.0
100.00		259.5	168.1					0.0	92.2	259.5	260.3	0.0	0.0
105.00		391.3	531.7					0.0	298.0	391.3	829.7	0.0	0.0
110.00		383.1	513.9					0.0	298.0	383.1	811.8	0.0	0.0
115.00		226.8	496.1					0.0	298.0	226.8	794.0	0.0	0.0
116.00	Appurtenance(s)	185.0	97.1	2,991.4	0.0	-692.2	3,316.9	0.0	59.6	3,176.3	3,473.6	0.0	0.0
120.00		327.9	381.2					0.0	183.4	327.9	564.6	0.0	0.0
125.00		286.1	460.4					0.0	229.3	286.1	689.7	0.0	0.0
128.00	Appurtenance(s)	175.3	267.7	3,988.1	0.0	-5,559.2	2,784.1	0.0	137.6	4,163.5	3,189.4	0.0	0.0
130.00		239.7	174.9					0.0	65.0	239.7	239.9	0.0	0.0
135.00		253.3	424.8					0.0	162.6	253.3	587.4	0.0	0.0
137.50	Appurtenance(s)	164.9	205.7	3,174.2	0.0	0.0	4,268.3	0.0	81.3	3,339.1	4,555.3	0.0	0.0
140.00		241.1	201.2					0.0	52.1	241.1	253.3	0.0	0.0
145.00		190.5	389.1					0.0	104.2	190.5	493.3	0.0	0.0
146.00	Appurtenance(s)	31.2	75.7	5,077.1	0.0	0.0	3,151.0	0.0	20.8	5,108.3	3,247.5	0.0	0.0
								Totals:		27,223.0	47,176.7	0.00	0.00

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number: 12927166_C3_01 4/16/2019 4:20:04 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.6W 101 mph with No Ice 24 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

Calculated Forces

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 (deg)	Ratio
0.00	-47.13	-27.07	0.00	-3,011.41	0.00	3,011.41	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.650
5.00	-45.45	-26.76	0.00	-2,876.06	0.00	2,876.06	4,176.31	2,088.16	9,106.46	4,560.00	0.09	-0.18	0.642
10.00	-43.80	-26.45	0.00	-2,742.27	0.00	2,742.27	4,123.50	2,061.75	8,803.44	4,408.26	0.37	-0.35	0.633
15.00	-42.17	-26.14	0.00	-2,610.02	0.00	2,610.02	4,069.26	2,034.63	8,502.24	4,257.44	0.84	-0.53	0.624
20.00	-40.57	-25.83	0.00	-2,479.32	0.00	2,479.32	4,013.58	2,006.79	8,203.04	4,107.62	1.50	-0.72	0.614
25.00	-39.00	-25.53	0.00	-2,350.15	0.00	2,350.15	3,956.46	1,978.23	7,906.06	3,958.90	2.35	-0.90	0.604
30.00	-37.46	-25.22	0.00	-2,222.51	0.00	2,222.51	3,897.92	1,948.96	7,611.48	3,811.39	3.40	-1.09	0.593
35.00	-35.94	-24.90	0.00	-2,096.41	0.00	2,096.41	3,837.94	1,918.97	7,319.49	3,665.19	4.65	-1.28	0.582
40.00	-34.46	-24.56	0.00	-1,971.92	0.00	1,971.92	3,776.52	1,888.26	7,030.31	3,520.38	6.09	-1.47	0.569
45.00	-33.02	-24.31	0.00	-1,849.10	0.00	1,849.10	3,713.67	1,856.84	6,744.12	3,377.07	7.74	-1.67	0.557
46.91	-32.46	-24.14	0.00	-1,802.58	0.00	1,802.58	3,689.24	1,844.62	6,635.43	3,322.65	8.43	-1.75	0.551
50.00	-31.03	-23.90	0.00	-1,728.06	0.00	1,728.06	3,649.39	1,824.69	6,461.11	3,235.36	9.59	-1.87	0.543
53.08	-29.63	-23.69	0.00	-1,654.45	0.00	1,654.45	2,857.95	1,428.97	5,068.34	2,537.94	10.84	-1.99	0.663
55.00	-29.13	-23.45	0.00	-1,608.97	0.00	1,608.97	2,840.65	1,420.32	4,987.96	2,497.68	11.66	-2.07	0.655
60.00	-27.92	-23.16	0.00	-1,491.70	0.00	1,491.70	2,794.59	1,397.30	4,779.77	2,393.44	13.94	-2.29	0.634
63.00	-27.11	-22.83	0.00	-1,422.23	0.00	1,422.23	2,766.27	1,383.14	4,655.71	2,331.31	15.43	-2.43	0.620
65.00	-26.61	-22.59	0.00	-1,376.56	0.00	1,376.56	2,747.10	1,373.55	4,573.39	2,290.09	16.47	-2.52	0.611
70.00	-25.43	-22.21	0.00	-1,263.61	0.00	1,263.61	2,698.18	1,349.09	4,369.01	2,187.75	19.23	-2.75	0.587
75.00	-24.19	-21.70	0.00	-1,152.54	0.00	1,152.54	2,647.83	1,323.91	4,166.84	2,086.52	22.23	-2.97	0.562
80.00	-23.07	-21.32	0.00	-1,044.03	0.00	1,044.03	2,596.04	1,298.02	3,967.06	1,986.48	25.47	-3.20	0.535
85.00	-21.98	-20.93	0.00	-937.45	0.00	937.45	2,542.81	1,271.41	3,769.88	1,887.74	28.93	-3.41	0.506
90.00	-20.92	-20.58	0.00	-832.82	0.00	832.82	2,488.15	1,244.08	3,575.49	1,790.40	32.62	-3.63	0.474
93.54	-20.19	-20.37	0.00	-760.02	0.00	760.02	2,448.63	1,224.31	3,439.78	1,722.45	35.36	-3.78	0.450
95.00	-19.72	-20.18	0.00	-730.21	0.00	730.21	2,432.06	1,216.03	3,384.08	1,694.56	36.53	-3.84	0.439
98.45	-18.64	-19.94	0.00	-660.52	0.00	660.52	1,802.83	901.41	2,498.39	1,251.05	39.35	-3.98	0.539
100.00	-18.35	-19.71	0.00	-629.69	0.00	629.69	1,791.36	895.68	2,457.25	1,230.45	40.65	-4.04	0.522
105.00	-17.48	-19.32	0.00	-531.15	0.00	531.15	1,753.33	876.67	2,325.21	1,164.33	45.00	-4.26	0.467
110.00	-16.63	-18.94	0.00	-434.53	0.00	434.53	1,713.87	856.94	2,194.79	1,099.03	49.57	-4.47	0.406
115.00	-15.83	-18.68	0.00	-339.86	0.00	339.86	1,672.98	836.49	2,066.21	1,034.64	54.35	-4.65	0.338
116.00	-12.60	-15.24	0.00	-321.18	0.00	321.18	1,664.63	832.31	2,040.72	1,021.88	55.32	-4.68	0.322
120.00	-12.03	-14.90	0.00	-260.20	0.00	260.20	1,630.65	815.32	1,939.64	971.26	59.30	-4.81	0.276
125.00	-11.35	-14.57	0.00	-185.71	0.00	185.71	1,586.89	793.44	1,815.29	908.99	64.40	-4.94	0.212
128.00	-8.52	-10.16	0.00	-141.99	0.00	141.99	1,559.94	779.97	1,741.82	872.20	67.52	-5.00	0.168
130.00	-8.29	-9.91	0.00	-121.68	0.00	121.68	1,541.69	770.85	1,693.35	847.93	69.62	-5.04	0.149
135.00	-7.72	-9.61	0.00	-72.16	0.00	72.16	1,495.06	747.53	1,574.02	788.18	74.93	-5.11	0.097
137.50	-3.48	-5.88	0.00	-48.14	0.00	48.14	1,471.21	735.60	1,515.39	758.82	77.61	-5.13	0.066
140.00	-3.25	-5.61	0.00	-33.45	0.00	33.45	1,447.00	723.50	1,457.49	729.83	80.30	-5.15	0.048
145.00	-2.77	-5.38	0.00	-5.38	0.00	5.38	1,383.54	691.77	1,330.54	666.26	85.70	-5.17	0.010
146.00	0.00	-5.11	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	86.78	-5.17	0.000

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number: 12927166_C3_01 4/16/2019 4:20:04 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W 101 mph with No Ice (Reduced DL) 24 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		226.7	0.0					0.0	0.0	226.7	0.0	0.0	0.0
5.00		448.9	976.4					0.0	224.1	448.9	1,200.6	0.0	0.0
10.00		439.6	956.4					0.0	224.1	439.6	1,180.5	0.0	0.0
15.00		430.4	936.3					0.0	224.1	430.4	1,160.4	0.0	0.0
20.00		421.1	916.3					0.0	224.1	421.1	1,140.4	0.0	0.0
25.00		411.9	896.2					0.0	224.1	411.9	1,120.3	0.0	0.0
30.00		407.4	876.1					0.0	224.1	407.4	1,100.3	0.0	0.0
35.00		411.1	856.1					0.0	224.1	411.1	1,080.2	0.0	0.0
40.00		417.1	836.0					0.0	224.1	417.1	1,060.2	0.0	0.0
45.00		290.5	816.0					0.0	224.1	290.5	1,040.1	0.0	0.0
46.91	Bot - Section 2	213.1	307.0					0.0	85.8	213.1	392.7	0.0	0.0
50.00		264.8	902.9					0.0	138.4	264.8	1,041.3	0.0	0.0
53.08	Top - Section 1	215.0	887.0					0.0	138.1	215.0	1,025.1	0.0	0.0
55.00		297.8	250.3					0.0	86.1	297.8	336.4	0.0	0.0
60.00		344.0	640.3					0.0	224.1	344.0	864.5	0.0	0.0
63.00	Appurtenance(s)	214.6	376.2	128.6	0.0	0.0	76.5	0.0	134.5	343.2	587.2	0.0	0.0
65.00		299.3	247.4					0.0	89.4	299.3	336.8	0.0	0.0
70.00		425.6	606.9					0.0	223.5	425.6	830.4	0.0	0.0
75.00	Appurtenance(s)	422.0	590.2	126.2	0.0	0.0	76.5	0.0	223.5	548.2	890.2	0.0	0.0
80.00		417.7	573.5					0.0	223.5	417.7	796.9	0.0	0.0
85.00		412.5	556.8					0.0	223.5	412.5	780.2	0.0	0.0
90.00		347.9	540.1					0.0	223.5	347.9	763.5	0.0	0.0
93.54	Bot - Section 3	202.6	371.9					0.0	158.1	202.6	530.0	0.0	0.0
95.00		199.0	274.6					0.0	65.4	199.0	340.0	0.0	0.0
98.45	Top - Section 2	201.3	637.8					0.0	154.3	201.3	792.1	0.0	0.0
100.00		259.5	126.1					0.0	69.1	259.5	195.2	0.0	0.0
105.00		391.3	398.8					0.0	223.5	391.3	622.2	0.0	0.0
110.00		383.1	385.4					0.0	223.5	383.1	608.9	0.0	0.0
115.00		226.8	372.0					0.0	223.5	226.8	595.5	0.0	0.0
116.00	Appurtenance(s)	185.0	72.8	2,991.4	0.0	-692.2	2,487.7	0.0	44.7	3,176.3	2,605.2	0.0	0.0
120.00		327.9	285.9					0.0	137.6	327.9	423.4	0.0	0.0
125.00		286.1	345.3					0.0	171.9	286.1	517.3	0.0	0.0
128.00	Appurtenance(s)	175.3	200.8	3,988.1	0.0	-5,559.2	2,088.1	0.0	103.2	4,163.5	2,392.0	0.0	0.0
130.00		239.7	131.2					0.0	48.8	239.7	180.0	0.0	0.0
135.00		253.3	318.6					0.0	121.9	253.3	440.5	0.0	0.0
137.50	Appurtenance(s)	164.9	154.3	3,174.2	0.0	0.0	3,201.2	0.0	61.0	3,339.1	3,416.5	0.0	0.0
140.00		241.1	150.9					0.0	39.1	241.1	190.0	0.0	0.0
145.00		190.5	291.8					0.0	78.1	190.5	370.0	0.0	0.0
146.00	Appurtenance(s)	31.2	56.8	5,077.1	0.0	0.0	2,363.2	0.0	15.6	5,108.3	2,435.6	0.0	0.0
									Totals:	27,223.0	35,382.5	0.00	0.00

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number: 12927166_C3_01 4/16/2019 4:20:08 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W 101 mph with No Ice (Reduced DL) 24 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Calculated Forces

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 (deg)	Ratio
0.00	-35.34	-27.05	0.00	-2,974.25	0.00	2,974.25	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.640
5.00	-34.06	-26.70	0.00	-2,839.00	0.00	2,839.00	4,176.31	2,088.16	9,106.46	4,560.00	0.09	-0.17	0.631
10.00	-32.80	-26.36	0.00	-2,705.48	0.00	2,705.48	4,123.50	2,061.75	8,803.44	4,408.26	0.37	-0.35	0.622
15.00	-31.56	-26.02	0.00	-2,573.68	0.00	2,573.68	4,069.26	2,034.63	8,502.24	4,257.44	0.83	-0.53	0.612
20.00	-30.34	-25.68	0.00	-2,443.58	0.00	2,443.58	4,013.58	2,006.79	8,203.04	4,107.62	1.48	-0.71	0.603
25.00	-29.15	-25.35	0.00	-2,315.16	0.00	2,315.16	3,956.46	1,978.23	7,906.06	3,958.90	2.32	-0.89	0.592
30.00	-27.97	-25.01	0.00	-2,188.41	0.00	2,188.41	3,897.92	1,948.96	7,611.48	3,811.39	3.35	-1.08	0.582
35.00	-26.82	-24.67	0.00	-2,063.34	0.00	2,063.34	3,837.94	1,918.97	7,319.49	3,665.19	4.58	-1.26	0.570
40.00	-25.69	-24.31	0.00	-1,940.00	0.00	1,940.00	3,776.52	1,888.26	7,030.31	3,520.38	6.01	-1.45	0.558
45.00	-24.60	-24.05	0.00	-1,818.43	0.00	1,818.43	3,713.67	1,856.84	6,744.12	3,377.07	7.63	-1.64	0.545
46.91	-24.18	-23.87	0.00	-1,772.41	0.00	1,772.41	3,689.24	1,844.62	6,635.43	3,322.65	8.31	-1.72	0.540
50.00	-23.09	-23.62	0.00	-1,698.74	0.00	1,698.74	3,649.39	1,824.69	6,461.11	3,235.36	9.46	-1.84	0.532
53.08	-22.04	-23.41	0.00	-1,625.99	0.00	1,625.99	2,857.95	1,428.97	5,068.34	2,537.94	10.69	-1.96	0.649
55.00	-21.65	-23.16	0.00	-1,581.05	0.00	1,581.05	2,840.65	1,420.32	4,987.96	2,497.68	11.49	-2.04	0.641
60.00	-20.73	-22.84	0.00	-1,465.27	0.00	1,465.27	2,794.59	1,397.30	4,779.77	2,393.44	13.74	-2.26	0.620
63.00	-20.11	-22.52	0.00	-1,396.74	0.00	1,396.74	2,766.27	1,383.14	4,655.71	2,331.31	15.21	-2.39	0.607
65.00	-19.73	-22.26	0.00	-1,351.70	0.00	1,351.70	2,747.10	1,373.55	4,573.39	2,290.09	16.23	-2.49	0.598
70.00	-18.83	-21.87	0.00	-1,240.41	0.00	1,240.41	2,698.18	1,349.09	4,369.01	2,187.75	18.95	-2.71	0.574
75.00	-17.89	-21.35	0.00	-1,131.07	0.00	1,131.07	2,647.83	1,323.91	4,166.84	2,086.52	21.90	-2.93	0.549
80.00	-17.04	-20.95	0.00	-1,024.35	0.00	1,024.35	2,596.04	1,298.02	3,967.06	1,986.48	25.08	-3.14	0.522
85.00	-16.20	-20.55	0.00	-919.60	0.00	919.60	2,542.81	1,271.41	3,769.88	1,887.74	28.49	-3.36	0.494
90.00	-15.40	-20.21	0.00	-816.83	0.00	816.83	2,488.15	1,244.08	3,575.49	1,790.40	32.12	-3.57	0.463
93.54	-14.85	-20.00	0.00	-745.36	0.00	745.36	2,448.63	1,224.31	3,439.78	1,722.45	34.82	-3.71	0.439
95.00	-14.49	-19.80	0.00	-716.09	0.00	716.09	2,432.06	1,216.03	3,384.08	1,694.56	35.96	-3.77	0.429
98.45	-13.68	-19.57	0.00	-647.70	0.00	647.70	1,802.83	901.41	2,498.39	1,251.05	38.74	-3.91	0.526
100.00	-13.45	-19.33	0.00	-617.43	0.00	617.43	1,791.36	895.68	2,457.25	1,230.45	40.02	-3.97	0.510
105.00	-12.79	-18.95	0.00	-520.76	0.00	520.76	1,753.33	876.67	2,325.21	1,164.33	44.30	-4.19	0.455
110.00	-12.15	-18.56	0.00	-426.03	0.00	426.03	1,713.87	856.94	2,194.79	1,099.03	48.79	-4.39	0.395
115.00	-11.54	-18.31	0.00	-333.23	0.00	333.23	1,672.98	836.49	2,066.21	1,034.64	53.48	-4.57	0.329
116.00	-9.18	-14.95	0.00	-314.93	0.00	314.93	1,664.63	832.31	2,040.72	1,021.88	54.44	-4.60	0.314
120.00	-8.75	-14.60	0.00	-255.14	0.00	255.14	1,630.65	815.32	1,939.64	971.26	58.35	-4.72	0.268
125.00	-8.24	-14.29	0.00	-182.13	0.00	182.13	1,586.89	793.44	1,815.29	908.99	63.36	-4.85	0.206
128.00	-6.20	-9.94	0.00	-139.26	0.00	139.26	1,559.94	779.97	1,741.82	872.20	66.43	-4.91	0.164
130.00	-6.03	-9.69	0.00	-119.38	0.00	119.38	1,541.69	770.85	1,693.35	847.93	68.49	-4.95	0.145
135.00	-5.61	-9.41	0.00	-70.91	0.00	70.91	1,495.06	747.53	1,574.02	788.18	73.71	-5.02	0.094
137.50	-2.50	-5.78	0.00	-47.39	0.00	47.39	1,471.21	735.60	1,515.39	758.82	76.34	-5.05	0.064
140.00	-2.33	-5.53	0.00	-32.94	0.00	32.94	1,447.00	723.50	1,457.49	729.83	78.99	-5.06	0.047
145.00	-1.97	-5.30	0.00	-5.30	0.00	5.30	1,383.54	691.77	1,330.54	666.26	84.30	-5.08	0.009
146.00	0.00	-5.11	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	85.36	-5.08	0.000

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number: 12927166_C3_01 4/16/2019 4:20:08 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 23 Iterations

Gust Response Factor : 1.10 Ice Dead Load Factor : 1.00 Wind Importance Factor : 1.00

Dead Load Factor : 1.20 Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		66.8	0.0					0.0	0.0	66.8	0.0	0.0	0.0
5.00		132.7	1,698.0					24.1	380.2	156.8	2,078.2	0.0	0.0
10.00		130.5	1,709.4					25.7	389.8	156.2	2,099.1	0.0	0.0
15.00		128.2	1,696.6					26.5	394.7	154.7	2,091.3	0.0	0.0
20.00		125.8	1,675.9					27.1	398.1	152.8	2,074.0	0.0	0.0
25.00		123.3	1,651.1					27.5	400.8	150.8	2,051.9	0.0	0.0
30.00		122.2	1,623.7					27.9	403.0	150.1	2,026.7	0.0	0.0
35.00		123.6	1,594.5					28.9	404.9	152.5	1,999.4	0.0	0.0
40.00		125.7	1,564.1					30.4	406.5	156.1	1,970.6	0.0	0.0
45.00		87.7	1,532.6					31.8	408.0	119.5	1,940.6	0.0	0.0
46.91	Bot - Section 2	64.4	579.2					12.5	156.5	76.9	735.7	0.0	0.0
50.00		80.1	1,479.2					20.5	252.8	100.7	1,732.1	0.0	0.0
53.08	Top - Section 1	65.1	1,455.1					21.0	252.8	86.1	1,707.8	0.0	0.0
55.00		90.4	502.8					13.3	157.8	103.6	660.6	0.0	0.0
60.00		104.5	1,285.8					35.4	411.7	139.9	1,697.5	0.0	0.0
63.00	Appurtenance(s)	65.3	758.7	32.3	0.0	0.0	153.2	21.7	247.5	119.4	1,159.4	0.0	0.0
65.00		91.3	500.3					14.7	162.0	106.0	662.3	0.0	0.0
70.00		130.0	1,226.3					37.5	405.7	167.5	1,632.0	0.0	0.0
75.00	Appurtenance(s)	129.3	1,195.9	31.9	0.0	0.0	154.5	38.5	406.5	199.6	1,756.9	0.0	0.0
80.00		128.3	1,165.2					39.4	407.3	167.7	1,572.5	0.0	0.0
85.00		127.0	1,134.2					40.3	408.0	167.3	1,542.3	0.0	0.0
90.00		107.4	1,103.0					41.2	408.7	148.6	1,511.7	0.0	0.0
93.54	Bot - Section 3	62.7	762.3					29.6	289.5	92.3	1,051.8	0.0	0.0
95.00		61.6	477.2					12.4	119.9	74.0	597.1	0.0	0.0
98.45	Top - Section 2	62.4	1,107.8					29.5	283.1	91.9	1,390.9	0.0	0.0
100.00		80.7	282.6					13.3	126.9	94.0	409.5	0.0	0.0
105.00		121.9	891.5					43.6	410.6	165.5	1,302.1	0.0	0.0
110.00		119.8	863.8					44.4	411.2	164.2	1,275.0	0.0	0.0
115.00		71.1	836.0					45.1	411.8	116.2	1,247.8	0.0	0.0
116.00	Appurtenance(s)	58.2	164.8	695.8	0.0	-154.5	5,357.4	9.1	82.4	763.1	5,604.6	0.0	0.0
120.00		103.4	645.1					36.7	274.9	140.2	920.0	0.0	0.0
125.00		90.5	779.8					46.6	344.1	137.1	1,123.9	0.0	0.0
128.00	Appurtenance(s)	55.7	455.7	877.6	0.0	-1,118.2	4,836.3	28.3	206.7	961.5	5,498.7	0.0	0.0
130.00		76.4	298.6					19.0	111.2	95.4	409.9	0.0	0.0
135.00		80.9	723.1					47.9	278.4	128.9	1,001.5	0.0	0.0
137.50	Appurtenance(s)	52.9	352.3	752.8	0.0	0.0	6,797.5	24.2	139.4	829.9	7,289.2	0.0	0.0
140.00		77.7	345.2					24.4	110.3	102.0	455.4	0.0	0.0
145.00		61.5	665.8					49.2	220.9	110.8	886.7	0.0	0.0
146.00	Appurtenance(s)	10.1	130.7	1,044.6	0.0	0.0	6,295.7	9.9	44.2	1,064.6	6,470.6	0.0	0.0
									Totals:	8,131.15	71,637.4	0.00	0.00

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number: 12927166_C3_01 4/16/2019 4:20:11 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 23 Iterations

Gust Response Factor : 1.10 Ice Dead Load Factor : 1.00 Wind Importance Factor : 1.00

Dead Load Factor : 1.20 Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

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 (deg)	Ratio
0.00	-71.63	-8.10	0.00	-866.72	0.00	866.72	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.201
5.00	-69.55	-8.00	0.00	-826.24	0.00	826.24	4,176.31	2,088.16	9,106.46	4,560.00	0.03	-0.05	0.198
10.00	-67.44	-7.90	0.00	-786.24	0.00	786.24	4,123.50	2,061.75	8,803.44	4,408.26	0.11	-0.10	0.195
15.00	-65.34	-7.80	0.00	-746.73	0.00	746.73	4,069.26	2,034.63	8,502.24	4,257.44	0.24	-0.15	0.191
20.00	-63.26	-7.70	0.00	-707.72	0.00	707.72	4,013.58	2,006.79	8,203.04	4,107.62	0.43	-0.21	0.188
25.00	-61.21	-7.60	0.00	-669.22	0.00	669.22	3,956.46	1,978.23	7,906.06	3,958.90	0.67	-0.26	0.185
30.00	-59.17	-7.49	0.00	-631.23	0.00	631.23	3,897.92	1,948.96	7,611.48	3,811.39	0.97	-0.31	0.181
35.00	-57.17	-7.38	0.00	-593.76	0.00	593.76	3,837.94	1,918.97	7,319.49	3,665.19	1.33	-0.37	0.177
40.00	-55.19	-7.27	0.00	-556.85	0.00	556.85	3,776.52	1,888.26	7,030.31	3,520.38	1.74	-0.42	0.173
45.00	-53.25	-7.17	0.00	-520.52	0.00	520.52	3,713.67	1,856.84	6,744.12	3,377.07	2.21	-0.48	0.168
46.91	-52.51	-7.11	0.00	-506.80	0.00	506.80	3,689.24	1,844.62	6,635.43	3,322.65	2.41	-0.50	0.167
50.00	-50.77	-7.02	0.00	-484.86	0.00	484.86	3,649.39	1,824.69	6,461.11	3,235.36	2.74	-0.53	0.164
53.08	-49.06	-6.95	0.00	-463.23	0.00	463.23	2,857.95	1,428.97	5,068.34	2,537.94	3.10	-0.57	0.200
55.00	-48.40	-6.87	0.00	-449.89	0.00	449.89	2,840.65	1,420.32	4,987.96	2,497.68	3.33	-0.59	0.197
60.00	-46.70	-6.75	0.00	-415.54	0.00	415.54	2,794.59	1,397.30	4,779.77	2,393.44	3.98	-0.65	0.190
63.00	-45.53	-6.65	0.00	-395.28	0.00	395.28	2,766.27	1,383.14	4,655.71	2,331.31	4.40	-0.69	0.186
65.00	-44.87	-6.57	0.00	-381.99	0.00	381.99	2,747.10	1,373.55	4,573.39	2,290.09	4.69	-0.71	0.183
70.00	-43.23	-6.43	0.00	-349.15	0.00	349.15	2,698.18	1,349.09	4,369.01	2,187.75	5.48	-0.78	0.176
75.00	-41.47	-6.25	0.00	-317.03	0.00	317.03	2,647.83	1,323.91	4,166.84	2,086.52	6.32	-0.84	0.168
80.00	-39.90	-6.10	0.00	-285.80	0.00	285.80	2,596.04	1,298.02	3,967.06	1,986.48	7.23	-0.90	0.159
85.00	-38.35	-5.94	0.00	-255.32	0.00	255.32	2,542.81	1,271.41	3,769.88	1,887.74	8.21	-0.96	0.150
90.00	-36.84	-5.80	0.00	-225.61	0.00	225.61	2,488.15	1,244.08	3,575.49	1,790.40	9.24	-1.02	0.141
93.54	-35.78	-5.71	0.00	-205.10	0.00	205.10	2,448.63	1,224.31	3,439.78	1,722.45	10.01	-1.06	0.134
95.00	-35.18	-5.64	0.00	-196.75	0.00	196.75	2,432.06	1,216.03	3,384.08	1,694.56	10.34	-1.07	0.131
98.45	-33.79	-5.54	0.00	-177.28	0.00	177.28	1,802.83	901.41	2,498.39	1,251.05	11.13	-1.11	0.160
100.00	-33.38	-5.46	0.00	-168.72	0.00	168.72	1,791.36	895.68	2,457.25	1,230.45	11.49	-1.13	0.156
105.00	-32.08	-5.30	0.00	-141.44	0.00	141.44	1,753.33	876.67	2,325.21	1,164.33	12.71	-1.19	0.140
110.00	-30.80	-5.13	0.00	-114.97	0.00	114.97	1,713.87	856.94	2,194.79	1,099.03	13.98	-1.24	0.123
115.00	-29.56	-5.00	0.00	-89.31	0.00	89.31	1,672.98	836.49	2,066.21	1,034.64	15.31	-1.29	0.104
116.00	-23.97	-4.12	0.00	-84.31	0.00	84.31	1,664.63	832.31	2,040.72	1,021.88	15.58	-1.30	0.097
120.00	-23.05	-3.97	0.00	-67.82	0.00	67.82	1,630.65	815.32	1,939.64	971.26	16.68	-1.33	0.084
125.00	-21.93	-3.82	0.00	-47.95	0.00	47.95	1,586.89	793.44	1,815.29	908.99	18.10	-1.36	0.067
128.00	-16.45	-2.73	0.00	-36.49	0.00	36.49	1,559.94	779.97	1,741.82	872.20	18.96	-1.38	0.052
130.00	-16.04	-2.63	0.00	-31.03	0.00	31.03	1,541.69	770.85	1,693.35	847.93	19.54	-1.39	0.047
135.00	-15.05	-2.48	0.00	-17.89	0.00	17.89	1,495.06	747.53	1,574.02	788.18	21.01	-1.41	0.033
137.50	-7.78	-1.47	0.00	-11.69	0.00	11.69	1,471.21	735.60	1,515.39	758.82	21.75	-1.42	0.021
140.00	-7.33	-1.36	0.00	-8.01	0.00	8.01	1,447.00	723.50	1,457.49	729.83	22.49	-1.42	0.016
145.00	-6.44	-1.23	0.00	-1.23	0.00	1.23	1,383.54	691.77	1,330.54	666.26	23.98	-1.42	0.006
146.00	0.00	-1.06	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	24.28	-1.42	0.000

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number: 12927166_C3_01 4/16/2019 4:20:12 PM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		50.0	0.0					0.0	0.0	50.0	0.0	0.0	0.0
5.00		99.0	1,084.9					0.0	249.1	99.0	1,333.9	0.0	0.0
10.00		97.0	1,062.6					0.0	249.1	97.0	1,311.7	0.0	0.0
15.00		94.9	1,040.3					0.0	249.1	94.9	1,289.4	0.0	0.0
20.00		92.9	1,018.1					0.0	249.1	92.9	1,267.1	0.0	0.0
25.00		90.8	995.8					0.0	249.1	90.8	1,244.8	0.0	0.0
30.00		89.9	973.5					0.0	249.1	89.9	1,222.5	0.0	0.0
35.00		90.7	951.2					0.0	249.1	90.7	1,200.3	0.0	0.0
40.00		92.0	928.9					0.0	249.1	92.0	1,178.0	0.0	0.0
45.00		64.1	906.7					0.0	249.1	64.1	1,155.7	0.0	0.0
46.91	Bot - Section 2	47.0	341.1					0.0	95.3	47.0	436.4	0.0	0.0
50.00		58.4	1,003.3					0.0	153.7	58.4	1,157.0	0.0	0.0
53.08	Top - Section 1	47.4	985.6					0.0	153.4	47.4	1,139.0	0.0	0.0
55.00		65.7	278.1					0.0	95.6	65.7	373.8	0.0	0.0
60.00		75.9	711.5					0.0	249.1	75.9	960.5	0.0	0.0
63.00	Appurtenance(s)	47.3	418.0	28.4	0.0	0.0	85.0	0.0	149.4	75.7	652.4	0.0	0.0
65.00		66.0	274.9					0.0	99.3	66.0	374.2	0.0	0.0
70.00		93.9	674.3					0.0	248.3	93.9	922.6	0.0	0.0
75.00	Appurtenance(s)	93.1	655.8	27.8	0.0	0.0	85.0	0.0	248.3	120.9	989.1	0.0	0.0
80.00		92.1	637.2					0.0	248.3	92.1	885.5	0.0	0.0
85.00		91.0	618.6					0.0	248.3	91.0	866.9	0.0	0.0
90.00		76.7	600.1					0.0	248.3	76.7	848.4	0.0	0.0
93.54	Bot - Section 3	44.7	413.2					0.0	175.6	44.7	588.9	0.0	0.0
95.00		43.9	305.1					0.0	72.7	43.9	377.8	0.0	0.0
98.45	Top - Section 2	44.4	708.6					0.0	171.5	44.4	880.1	0.0	0.0
100.00		57.2	140.1					0.0	76.8	57.2	216.9	0.0	0.0
105.00		86.3	443.1					0.0	248.3	86.3	691.4	0.0	0.0
110.00		84.5	428.2					0.0	248.3	84.5	676.5	0.0	0.0
115.00		50.0	413.4					0.0	248.3	50.0	661.7	0.0	0.0
116.00	Appurtenance(s)	40.8	80.9	659.8	0.0	-152.7	2,764.1	0.0	49.7	700.6	2,894.7	0.0	0.0
120.00		72.3	317.6					0.0	152.8	72.3	470.5	0.0	0.0
125.00		63.1	383.7					0.0	191.1	63.1	574.7	0.0	0.0
128.00	Appurtenance(s)	38.7	223.1	879.6	0.0	-1,226.2	2,320.1	0.0	114.6	918.3	2,657.8	0.0	0.0
130.00		52.9	145.7					0.0	54.2	52.9	199.9	0.0	0.0
135.00		55.9	354.0					0.0	135.5	55.9	489.5	0.0	0.0
137.50	Appurtenance(s)	36.4	171.4	700.1	0.0	0.0	3,556.9	0.0	67.8	736.5	3,796.1	0.0	0.0
140.00		53.2	167.7					0.0	43.4	53.2	211.1	0.0	0.0
145.00		42.0	324.3					0.0	86.8	42.0	411.1	0.0	0.0
146.00	Appurtenance(s)	6.9	63.1	1,119.8	0.0	0.0	2,625.8	0.0	17.4	1,126.7	2,706.2	0.0	0.0
								Totals:		6,004.50	39,313.9	0.00	0.00

Site Number: 411216 Code: ANSI/TIA-222-G

Site Name: CT Chaplin South CT, CT Engineering Number: 12927166_C3_01 4/16/2019 4:20:15 PM

Customer: T-MOBILE

Load Case: 1.0D + 1.0W Serviceability 60 mph 22 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

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 (deg)	Ratio
0.00	-39.31	-5.97	0.00	-659.39	0.00	659.39	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.149
5.00	-37.97	-5.89	0.00	-629.55	0.00	629.55	4,176.31	2,088.16	9,106.46	4,560.00	0.02	-0.04	0.147
10.00	-36.66	-5.82	0.00	-600.09	0.00	600.09	4,123.50	2,061.75	8,803.44	4,408.26	0.08	-0.08	0.145
15.00	-35.37	-5.75	0.00	-570.99	0.00	570.99	4,069.26	2,034.63	8,502.24	4,257.44	0.18	-0.12	0.143
20.00	-34.09	-5.68	0.00	-542.25	0.00	542.25	4,013.58	2,006.79	8,203.04	4,107.62	0.33	-0.16	0.141
25.00	-32.85	-5.60	0.00	-513.88	0.00	513.88	3,956.46	1,978.23	7,906.06	3,958.90	0.51	-0.20	0.138
30.00	-31.62	-5.53	0.00	-485.86	0.00	485.86	3,897.92	1,948.96	7,611.48	3,811.39	0.74	-0.24	0.136
35.00	-30.42	-5.46	0.00	-458.19	0.00	458.19	3,837.94	1,918.97	7,319.49	3,665.19	1.02	-0.28	0.133
40.00	-29.23	-5.38	0.00	-430.90	0.00	430.90	3,776.52	1,888.26	7,030.31	3,520.38	1.33	-0.32	0.130
45.00	-28.08	-5.33	0.00	-403.99	0.00	403.99	3,713.67	1,856.84	6,744.12	3,377.07	1.69	-0.36	0.127
46.91	-27.64	-5.29	0.00	-393.80	0.00	393.80	3,689.24	1,844.62	6,635.43	3,322.65	1.84	-0.38	0.126
50.00	-26.48	-5.23	0.00	-377.49	0.00	377.49	3,649.39	1,824.69	6,461.11	3,235.36	2.10	-0.41	0.124
53.08	-25.34	-5.19	0.00	-361.37	0.00	361.37	2,857.95	1,428.97	5,068.34	2,537.94	2.37	-0.44	0.151
55.00	-24.96	-5.13	0.00	-351.42	0.00	351.42	2,840.65	1,420.32	4,987.96	2,497.68	2.55	-0.45	0.149
60.00	-24.00	-5.06	0.00	-325.76	0.00	325.76	2,794.59	1,397.30	4,779.77	2,393.44	3.05	-0.50	0.145
63.00	-23.35	-4.99	0.00	-310.57	0.00	310.57	2,766.27	1,383.14	4,655.71	2,331.31	3.38	-0.53	0.142
65.00	-22.97	-4.94	0.00	-300.58	0.00	300.58	2,747.10	1,373.55	4,573.39	2,290.09	3.60	-0.55	0.140
70.00	-22.04	-4.85	0.00	-275.89	0.00	275.89	2,698.18	1,349.09	4,369.01	2,187.75	4.21	-0.60	0.134
75.00	-21.05	-4.74	0.00	-251.62	0.00	251.62	2,647.83	1,323.91	4,166.84	2,086.52	4.86	-0.65	0.129
80.00	-20.16	-4.65	0.00	-227.93	0.00	227.93	2,596.04	1,298.02	3,967.06	1,986.48	5.57	-0.70	0.123
85.00	-19.29	-4.57	0.00	-204.66	0.00	204.66	2,542.81	1,271.41	3,769.88	1,887.74	6.33	-0.75	0.116
90.00	-18.44	-4.49	0.00	-181.82	0.00	181.82	2,488.15	1,244.08	3,575.49	1,790.40	7.13	-0.79	0.109
93.54	-17.85	-4.45	0.00	-165.93	0.00	165.93	2,448.63	1,224.31	3,439.78	1,722.45	7.73	-0.83	0.104
95.00	-17.47	-4.40	0.00	-159.42	0.00	159.42	2,432.06	1,216.03	3,384.08	1,694.56	7.99	-0.84	0.101
98.45	-16.59	-4.35	0.00	-144.21	0.00	144.21	1,802.83	901.41	2,498.39	1,251.05	8.61	-0.87	0.125
100.00	-16.37	-4.30	0.00	-137.48	0.00	137.48	1,791.36	895.68	2,457.25	1,230.45	8.89	-0.88	0.121
105.00	-15.68	-4.22	0.00	-115.97	0.00	115.97	1,753.33	876.67	2,325.21	1,164.33	9.84	-0.93	0.109
110.00	-15.00	-4.13	0.00	-94.89	0.00	94.89	1,713.87	856.94	2,194.79	1,099.03	10.84	-0.98	0.095
115.00	-14.34	-4.08	0.00	-74.23	0.00	74.23	1,672.98	836.49	2,066.21	1,034.64	11.89	-1.02	0.080
116.00	-11.46	-3.33	0.00	-70.15	0.00	70.15	1,664.63	832.31	2,040.72	1,021.88	12.10	-1.02	0.076
120.00	-10.99	-3.25	0.00	-56.84	0.00	56.84	1,630.65	815.32	1,939.64	971.26	12.97	-1.05	0.065
125.00	-10.41	-3.18	0.00	-40.57	0.00	40.57	1,586.89	793.44	1,815.29	908.99	14.08	-1.08	0.051
128.00	-7.77	-2.22	0.00	-31.02	0.00	31.02	1,559.94	779.97	1,741.82	872.20	14.77	-1.09	0.041
130.00	-7.57	-2.16	0.00	-26.59	0.00	26.59	1,541.69	770.85	1,693.35	847.93	15.23	-1.10	0.036
135.00	-7.08	-2.10	0.00	-15.79	0.00	15.79	1,495.06	747.53	1,574.02	788.18	16.39	-1.12	0.025
137.50	-3.30	-1.29	0.00	-10.55	0.00	10.55	1,471.21	735.60	1,515.39	758.82	16.97	-1.12	0.016
140.00	-3.09	-1.23	0.00	-7.33	0.00	7.33	1,447.00	723.50	1,457.49	729.83	17.56	-1.13	0.012
145.00	-2.68	-1.18	0.00	-1.18	0.00	1.18	1,383.54	691.77	1,330.54	666.26	18.74	-1.13	0.004
146.00	0.00	-1.13	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	18.98	-1.13	0.000

Equivalent Lateral Forces Method Analysis

(Based on ASCE7-10 Chapters 11, 12, 15)

Spectral Response Acceleration for Short Period (S_s):	0.17	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.18	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	2.41	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	1.96	
Total Unfactored Dead Load:	39.31	k
Seismic Base Shear (E):	1.53	k

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
38	145.50	80	1,365	0.005	8	99
37	142.50	411	6,696	0.024	37	508
36	138.75	211	3,264	0.012	18	261
35	136.25	239	3,569	0.013	20	296
34	132.50	489	6,916	0.025	38	605
33	129.00	200	2,681	0.010	15	247
32	126.50	338	4,358	0.016	24	418
31	122.50	575	6,965	0.025	38	711
30	118.00	470	5,299	0.019	29	582
29	115.50	131	1,410	0.005	8	161
28	112.50	662	6,789	0.024	38	818
27	107.50	677	6,351	0.023	35	837
26	102.50	691	5,913	0.021	33	855
25	99.23	217	1,741	0.006	10	268
24	96.73	880	6,720	0.024	37	1,089
23	94.27	378	2,743	0.010	15	467
22	91.77	589	4,057	0.015	22	728
21	87.50	848	5,325	0.019	29	1,049
20	82.50	867	4,850	0.017	27	1,072
19	77.50	885	4,383	0.016	24	1,095
18	72.50	904	3,928	0.014	22	1,118
17	67.50	923	3,486	0.013	19	1,141
16	64.00	374	1,274	0.005	7	463

15	61.50	567	1,787	0.006	10	702
14	57.50	961	2,652	0.010	15	1,188
13	54.04	374	914	0.003	5	462
12	51.54	1,139	2,539	0.009	14	1,409
11	48.46	1,157	2,286	0.008	13	1,431
10	45.96	436	777	0.003	4	540
9	42.50	1,156	1,767	0.006	10	1,430
8	37.50	1,178	1,410	0.005	8	1,457
7	32.50	1,200	1,086	0.004	6	1,485
6	27.50	1,223	798	0.003	4	1,512
5	22.50	1,245	549	0.002	3	1,540
4	17.50	1,267	342	0.001	2	1,567
3	12.50	1,289	180	0.001	1	1,595
2	7.50	1,312	67	0.000	0	1,622
1	2.50	1,334	8	0.000	0	1,650
Nokia B5 RRH4x40-850	146.00	146	2,485	0.009	14	180
Alcatel-Lucent RRH2x	146.00	170	2,905	0.010	16	210
Alcatel-Lucent AWS4	146.00	192	3,279	0.012	18	237
Raycap RC3DC-3315-PF	146.00	64	1,093	0.004	6	79
Antel LPA-80080/4CF	146.00	48	820	0.003	5	59
Antel LPA-80063/4CF	146.00	40	683	0.002	4	49
Andrew SBNHH-1D65B	146.00	304	5,196	0.019	29	376
Amphenol Antel QUAD6	146.00	162	2,767	0.010	15	200
Flat Low Profile Pla	146.00	1,500	25,621	0.092	142	1,855
Alcatel-Lucent RRH2x	137.50	317	4,821	0.017	27	393
Alcatel-Lucent 1900	137.50	180	2,734	0.010	15	223
Alcatel-Lucent TD-RR	137.50	210	3,190	0.011	18	260
RFS APXVTM14-ALU-I20	137.50	169	2,561	0.009	14	209
Commscope NNVV-65B-R	137.50	232	3,527	0.013	19	287
Site Pro RMQP-496-HK	137.50	2,449	37,196	0.134	205	3,029
Powerwave Allgon LGP	128.00	33	436	0.002	2	41
Generic 6" x 6" Junc	128.00	30	396	0.001	2	37
Powerwave Allgon LGP	128.00	85	1,117	0.004	6	105
Raycap DC6-48-60-18-	128.00	20	264	0.001	1	25
Ericsson RRUS-11 190	128.00	264	3,486	0.013	19	327
Allgon 7770.00	128.00	210	2,773	0.010	15	260
KMW AM-X-CD-17-65-00	128.00	178	2,357	0.008	13	221
Flat Low Profile Pla	128.00	1,500	19,808	0.071	109	1,855
Ericsson KRY 112 144	116.00	33	359	0.001	2	41
Ericsson KRY 112 489	116.00	46	503	0.002	3	57
Ericsson Radio 4449	116.00	222	2,418	0.009	13	275
RFS APXV18-206517	116.00	79	863	0.003	5	98
RFS APXVAARR24_43-U-	116.00	384	4,180	0.015	23	475
Round Platform w/ Ha	116.00	2,000	21,786	0.078	120	2,474
Generic GPS	75.00	10	46	0.000	0	12
Stand-Off	75.00	75	348	0.001	2	93
Generic GPS	63.00	10	33	0.000	0	12
Stand-Off	63.00	75	248	0.001	1	93
		39,314	277,548	1.000	1,533	48,628

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
38	145.50	80	1,365	0.005	8	69
37	142.50	411	6,696	0.024	37	355
36	138.75	211	3,264	0.012	18	182
35	136.25	239	3,569	0.013	20	206
34	132.50	489	6,916	0.025	38	422
33	129.00	200	2,681	0.010	15	173

32	126.50	338	4,358	0.016	24	291
31	122.50	575	6,965	0.025	38	496
30	118.00	470	5,299	0.019	29	406
29	115.50	131	1,410	0.005	8	113
28	112.50	662	6,789	0.024	38	571
27	107.50	677	6,351	0.023	35	584
26	102.50	691	5,913	0.021	33	597
25	99.23	217	1,741	0.006	10	187
24	96.73	880	6,720	0.024	37	760
23	94.27	378	2,743	0.010	15	326
22	91.77	589	4,057	0.015	22	508
21	87.50	848	5,325	0.019	29	732
20	82.50	867	4,850	0.017	27	748
19	77.50	885	4,383	0.016	24	764
18	72.50	904	3,928	0.014	22	780
17	67.50	923	3,486	0.013	19	796
16	64.00	374	1,274	0.005	7	323
15	61.50	567	1,787	0.006	10	490
14	57.50	961	2,652	0.010	15	829
13	54.04	374	914	0.003	5	323
12	51.54	1,139	2,539	0.009	14	983
11	48.46	1,157	2,286	0.008	13	999
10	45.96	436	777	0.003	4	377
9	42.50	1,156	1,767	0.006	10	997
8	37.50	1,178	1,410	0.005	8	1,017
7	32.50	1,200	1,086	0.004	6	1,036
6	27.50	1,223	798	0.003	4	1,055
5	22.50	1,245	549	0.002	3	1,074
4	17.50	1,267	342	0.001	2	1,094
3	12.50	1,289	180	0.001	1	1,113
2	7.50	1,312	67	0.000	0	1,132
1	2.50	1,334	8	0.000	0	1,151
Nokia B5 RRH4x40-850	146.00	146	2,485	0.009	14	126
Alcatel-Lucent RRH2x	146.00	170	2,905	0.010	16	147
Alcatel-Lucent AWS4	146.00	192	3,279	0.012	18	166
Raycap RC3DC-3315-PF	146.00	64	1,093	0.004	6	55
Antel LPA-80080/4CF	146.00	48	820	0.003	5	41
Antel LPA-80063/4CF	146.00	40	683	0.002	4	35
Andrew SBNHH-1D65B	146.00	304	5,196	0.019	29	263
Amphenol Antel QUAD6	146.00	162	2,767	0.010	15	140
Flat Low Profile Pla	146.00	1,500	25,621	0.092	142	1,295
Alcatel-Lucent RRH2x	137.50	317	4,821	0.017	27	274
Alcatel-Lucent 1900	137.50	180	2,734	0.010	15	155
Alcatel-Lucent TD-RR	137.50	210	3,190	0.011	18	181
RFS APXVTM14-ALU-I20	137.50	169	2,561	0.009	14	146
Commscope NNVV-65B-R	137.50	232	3,527	0.013	19	200
Site Pro RMQP-496-HK	137.50	2,449	37,196	0.134	205	2,113
Powerwave Allgon LGP	128.00	33	436	0.002	2	28
Generic 6" x 6" Junc	128.00	30	396	0.001	2	26
Powerwave Allgon LGP	128.00	85	1,117	0.004	6	73
Raycap DC6-48-60-18-	128.00	20	264	0.001	1	17
Ericsson RRUS-11 190	128.00	264	3,486	0.013	19	228
Allgon 7770.00	128.00	210	2,773	0.010	15	181
KMW AM-X-CD-17-65-00	128.00	178	2,357	0.008	13	154
Flat Low Profile Pla	128.00	1,500	19,808	0.071	109	1,295
Ericsson KRY 112 144	116.00	33	359	0.001	2	28
Ericsson KRY 112 489	116.00	46	503	0.002	3	40
Ericsson Radio 4449	116.00	222	2,418	0.009	13	192
RFS APXV18-206517	116.00	79	863	0.003	5	68
RFS APXVAARR24_43-U-	116.00	384	4,180	0.015	23	331
Round Platform w/ Ha	116.00	2,000	21,786	0.078	120	1,726
Generic GPS	75.00	10	46	0.000	0	9
Stand-Off	75.00	75	348	0.001	2	65
Generic GPS	63.00	10	33	0.000	0	9

Stand-Off		63.00	75	248	0.001	1	65
			39,314	277,548	1.000	1,533	33,932

Load Case (1.2 + 0.2Sds) * DL + E ELFM Seismic Equivalent Lateral Forces Method

Calculated Forces

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 (deg)	Ratio
0.00	-46.98	-1.54	0.00	-190.44	0.00	190.44	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.052
5.00	-45.35	-1.55	0.00	-182.76	0.00	182.76	4,176.31	2,088.16	9,106.46	4,560.00	0.01	-0.01	0.051
10.00	-43.76	-1.55	0.00	-175.03	0.00	175.03	4,123.50	2,061.75	8,803.44	4,408.26	0.02	-0.02	0.050
15.00	-42.19	-1.56	0.00	-167.27	0.00	167.27	4,069.26	2,034.63	8,502.24	4,257.44	0.05	-0.03	0.050
20.00	-40.65	-1.56	0.00	-159.48	0.00	159.48	4,013.58	2,006.79	8,203.04	4,107.62	0.10	-0.05	0.049
25.00	-39.14	-1.57	0.00	-151.67	0.00	151.67	3,956.46	1,978.23	7,906.06	3,958.90	0.15	-0.06	0.048
30.00	-37.65	-1.57	0.00	-143.84	0.00	143.84	3,897.92	1,948.96	7,611.48	3,811.39	0.22	-0.07	0.047
35.00	-36.20	-1.56	0.00	-136.02	0.00	136.02	3,837.94	1,918.97	7,319.49	3,665.19	0.30	-0.08	0.047
40.00	-34.77	-1.56	0.00	-128.20	0.00	128.20	3,776.52	1,888.26	7,030.31	3,520.38	0.39	-0.09	0.046
45.00	-34.23	-1.56	0.00	-120.40	0.00	120.40	3,713.67	1,856.84	6,744.12	3,377.07	0.50	-0.11	0.045
46.91	-32.80	-1.55	0.00	-117.42	0.00	117.42	3,689.24	1,844.62	6,635.43	3,322.65	0.54	-0.11	0.044
50.00	-31.39	-1.54	0.00	-112.64	0.00	112.64	3,649.39	1,824.69	6,461.11	3,235.36	0.62	-0.12	0.043
53.08	-30.92	-1.53	0.00	-107.91	0.00	107.91	2,857.95	1,428.97	5,068.34	2,537.94	0.70	-0.13	0.053
55.00	-29.74	-1.52	0.00	-104.97	0.00	104.97	2,840.65	1,420.32	4,987.96	2,497.68	0.75	-0.13	0.052
60.00	-29.03	-1.51	0.00	-97.37	0.00	97.37	2,794.59	1,397.30	4,779.77	2,393.44	0.90	-0.15	0.051
63.00	-28.47	-1.51	0.00	-92.83	0.00	92.83	2,766.27	1,383.14	4,655.71	2,331.31	0.99	-0.16	0.050
65.00	-27.32	-1.49	0.00	-89.81	0.00	89.81	2,747.10	1,373.55	4,573.39	2,290.09	1.06	-0.16	0.049
70.00	-26.21	-1.47	0.00	-82.35	0.00	82.35	2,698.18	1,349.09	4,369.01	2,187.75	1.24	-0.18	0.047
75.00	-25.01	-1.45	0.00	-74.99	0.00	74.99	2,647.83	1,323.91	4,166.84	2,086.52	1.43	-0.19	0.045
80.00	-23.93	-1.42	0.00	-67.75	0.00	67.75	2,596.04	1,298.02	3,967.06	1,986.48	1.64	-0.21	0.043
85.00	-22.88	-1.40	0.00	-60.63	0.00	60.63	2,542.81	1,271.41	3,769.88	1,887.74	1.87	-0.22	0.041
90.00	-22.15	-1.38	0.00	-53.65	0.00	53.65	2,488.15	1,244.08	3,575.49	1,790.40	2.10	-0.23	0.039
93.54	-21.69	-1.36	0.00	-48.78	0.00	48.78	2,448.63	1,224.31	3,439.78	1,722.45	2.28	-0.24	0.037
95.00	-20.60	-1.32	0.00	-46.79	0.00	46.79	2,432.06	1,216.03	3,384.08	1,694.56	2.36	-0.25	0.036
98.45	-20.33	-1.31	0.00	-42.22	0.00	42.22	1,802.83	901.41	2,498.39	1,251.05	2.54	-0.26	0.045
100.00	-19.48	-1.28	0.00	-40.19	0.00	40.19	1,791.36	895.68	2,457.25	1,230.45	2.63	-0.26	0.044
105.00	-18.64	-1.25	0.00	-33.79	0.00	33.79	1,753.33	876.67	2,325.21	1,164.33	2.91	-0.28	0.040
110.00	-17.82	-1.21	0.00	-27.57	0.00	27.57	1,713.87	856.94	2,194.79	1,099.03	3.20	-0.29	0.035
115.00	-17.66	-1.20	0.00	-21.53	0.00	21.53	1,672.98	836.49	2,066.21	1,034.64	3.51	-0.30	0.031
116.00	-13.66	-0.99	0.00	-20.33	0.00	20.33	1,664.63	832.31	2,040.72	1,021.88	3.57	-0.30	0.028
120.00	-12.95	-0.95	0.00	-16.39	0.00	16.39	1,630.65	815.32	1,939.64	971.26	3.83	-0.31	0.025
125.00	-12.53	-0.92	0.00	-11.66	0.00	11.66	1,586.89	793.44	1,815.29	908.99	4.16	-0.32	0.021
128.00	-9.41	-0.72	0.00	-8.90	0.00	8.90	1,559.94	779.97	1,741.82	872.20	4.36	-0.32	0.016
130.00	-8.81	-0.68	0.00	-7.46	0.00	7.46	1,541.69	770.85	1,693.35	847.93	4.50	-0.32	0.015
135.00	-8.51	-0.66	0.00	-4.07	0.00	4.07	1,495.06	747.53	1,574.02	788.18	4.84	-0.33	0.011
137.50	-3.85	-0.31	0.00	-2.42	0.00	2.42	1,471.21	735.60	1,515.39	758.82	5.01	-0.33	0.006
140.00	-3.35	-0.27	0.00	-1.64	0.00	1.64	1,447.00	723.50	1,457.49	729.83	5.18	-0.33	0.005
145.00	-3.25	-0.27	0.00	-0.27	0.00	0.27	1,383.54	691.77	1,330.54	666.26	5.53	-0.33	0.003
146.00	0.00	-0.25	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	5.60	-0.33	0.000

Load Case (0.9 - 0.2Sds) * DL + E ELFM Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

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 (deg)	Ratio
0.00	-32.78	-1.54	0.00	-187.59	0.00	187.59	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.048
5.00	-31.65	-1.54	0.00	-179.91	0.00	179.91	4,176.31	2,088.16	9,106.46	4,560.00	0.01	-0.01	0.047
10.00	-30.53	-1.55	0.00	-172.21	0.00	172.21	4,123.50	2,061.75	8,803.44	4,408.26	0.02	-0.02	0.046
15.00	-29.44	-1.55	0.00	-164.48	0.00	164.48	4,069.26	2,034.63	8,502.24	4,257.44	0.05	-0.03	0.046
20.00	-28.37	-1.55	0.00	-156.73	0.00	156.73	4,013.58	2,006.79	8,203.04	4,107.62	0.09	-0.05	0.045
25.00	-27.31	-1.55	0.00	-148.98	0.00	148.98	3,956.46	1,978.23	7,906.06	3,958.90	0.15	-0.06	0.045
30.00	-26.27	-1.55	0.00	-141.22	0.00	141.22	3,897.92	1,948.96	7,611.48	3,811.39	0.21	-0.07	0.044
35.00	-25.26	-1.55	0.00	-133.47	0.00	133.47	3,837.94	1,918.97	7,319.49	3,665.19	0.29	-0.08	0.043
40.00	-24.26	-1.54	0.00	-125.74	0.00	125.74	3,776.52	1,888.26	7,030.31	3,520.38	0.38	-0.09	0.042
45.00	-23.88	-1.54	0.00	-118.04	0.00	118.04	3,713.67	1,856.84	6,744.12	3,377.07	0.49	-0.11	0.041
46.91	-22.88	-1.53	0.00	-115.10	0.00	115.10	3,689.24	1,844.62	6,635.43	3,322.65	0.53	-0.11	0.041
50.00	-21.90	-1.51	0.00	-110.38	0.00	110.38	3,649.39	1,824.69	6,461.11	3,235.36	0.60	-0.12	0.040
53.08	-21.58	-1.51	0.00	-105.72	0.00	105.72	2,857.95	1,428.97	5,068.34	2,537.94	0.68	-0.13	0.049
55.00	-20.75	-1.50	0.00	-102.82	0.00	102.82	2,840.65	1,420.32	4,987.96	2,497.68	0.74	-0.13	0.048
60.00	-20.26	-1.49	0.00	-95.34	0.00	95.34	2,794.59	1,397.30	4,779.77	2,393.44	0.88	-0.15	0.047
63.00	-19.86	-1.48	0.00	-90.86	0.00	90.86	2,766.27	1,383.14	4,655.71	2,331.31	0.97	-0.15	0.046
65.00	-19.07	-1.47	0.00	-87.90	0.00	87.90	2,747.10	1,373.55	4,573.39	2,290.09	1.04	-0.16	0.045
70.00	-18.28	-1.45	0.00	-80.57	0.00	80.57	2,698.18	1,349.09	4,369.01	2,187.75	1.22	-0.17	0.044
75.00	-17.45	-1.42	0.00	-73.34	0.00	73.34	2,647.83	1,323.91	4,166.84	2,086.52	1.41	-0.19	0.042
80.00	-16.70	-1.40	0.00	-66.23	0.00	66.23	2,596.04	1,298.02	3,967.06	1,986.48	1.61	-0.20	0.040
85.00	-15.97	-1.37	0.00	-59.26	0.00	59.26	2,542.81	1,271.41	3,769.88	1,887.74	1.83	-0.22	0.038
90.00	-15.46	-1.35	0.00	-52.42	0.00	52.42	2,488.15	1,244.08	3,575.49	1,790.40	2.07	-0.23	0.035
93.54	-15.13	-1.33	0.00	-47.65	0.00	47.65	2,448.63	1,224.31	3,439.78	1,722.45	2.24	-0.24	0.034
95.00	-14.37	-1.29	0.00	-45.71	0.00	45.71	2,432.06	1,216.03	3,384.08	1,694.56	2.31	-0.24	0.033
98.45	-14.18	-1.28	0.00	-41.24	0.00	41.24	1,802.83	901.41	2,498.39	1,251.05	2.49	-0.25	0.041
100.00	-13.59	-1.25	0.00	-39.25	0.00	39.25	1,791.36	895.68	2,457.25	1,230.45	2.58	-0.26	0.039
105.00	-13.00	-1.22	0.00	-33.00	0.00	33.00	1,753.33	876.67	2,325.21	1,164.33	2.85	-0.27	0.036
110.00	-12.43	-1.18	0.00	-26.92	0.00	26.92	1,713.87	856.94	2,194.79	1,099.03	3.14	-0.28	0.032
115.00	-12.32	-1.17	0.00	-21.02	0.00	21.02	1,672.98	836.49	2,066.21	1,034.64	3.44	-0.29	0.028
116.00	-9.53	-0.96	0.00	-19.85	0.00	19.85	1,664.63	832.31	2,040.72	1,021.88	3.51	-0.30	0.025
120.00	-9.03	-0.92	0.00	-16.00	0.00	16.00	1,630.65	815.32	1,939.64	971.26	3.76	-0.30	0.022
125.00	-8.74	-0.90	0.00	-11.39	0.00	11.39	1,586.89	793.44	1,815.29	908.99	4.08	-0.31	0.018
128.00	-6.57	-0.70	0.00	-8.69	0.00	8.69	1,559.94	779.97	1,741.82	872.20	4.28	-0.32	0.014
130.00	-6.15	-0.66	0.00	-7.29	0.00	7.29	1,541.69	770.85	1,693.35	847.93	4.41	-0.32	0.013
135.00	-5.94	-0.64	0.00	-3.98	0.00	3.98	1,495.06	747.53	1,574.02	788.18	4.74	-0.32	0.009
137.50	-2.69	-0.31	0.00	-2.37	0.00	2.37	1,471.21	735.60	1,515.39	758.82	4.91	-0.32	0.005
140.00	-2.33	-0.27	0.00	-1.60	0.00	1.60	1,447.00	723.50	1,457.49	729.83	5.08	-0.32	0.004
145.00	-2.26	-0.26	0.00	-0.26	0.00	0.26	1,383.54	691.77	1,330.54	666.26	5.42	-0.33	0.002
146.00	0.00	-0.25	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	5.49	-0.33	0.000

Equivalent Modal Analysis Method

(Based on ASCE7-10 Chapters 11, 12 & 15 and ANSI/TIA-G, section 2.7)

Spectral Response Acceleration for Short Period (S_s):	0.17
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.18
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.41
Redundancy Factor (p):	1.30

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
38	145.50	80	1.877	1.913	1.116	0.343	24	99
37	142.50	411	1.800	1.541	0.978	0.297	106	508
36	138.75	211	1.707	1.149	0.825	0.243	45	261
35	136.25	239	1.646	0.928	0.734	0.210	44	296
34	132.50	489	1.557	0.650	0.613	0.165	70	605
33	129.00	200	1.475	0.443	0.514	0.127	22	247
32	126.50	338	1.419	0.320	0.451	0.102	30	418
31	122.50	575	1.331	0.165	0.364	0.066	33	711
30	118.00	470	1.235	0.040	0.281	0.032	13	582
29	115.50	131	1.183	-0.011	0.242	0.016	2	161
28	112.50	662	1.122	-0.057	0.201	0.000	0	818
27	107.50	677	1.025	-0.103	0.144	-0.022	-13	837
26	102.50	691	0.932	-0.121	0.100	-0.035	-21	855
25	99.23	217	0.873	-0.121	0.077	-0.040	-8	268
24	96.73	880	0.830	-0.117	0.063	-0.042	-32	1,089
23	94.27	378	0.788	-0.110	0.050	-0.041	-13	467
22	91.77	589	0.747	-0.100	0.040	-0.039	-20	728
21	87.50	848	0.679	-0.080	0.026	-0.031	-23	1,049
20	82.50	867	0.603	-0.054	0.015	-0.018	-13	1,072
19	77.50	885	0.533	-0.028	0.009	-0.001	-1	1,095
18	72.50	904	0.466	-0.004	0.006	0.015	12	1,118
17	67.50	923	0.404	0.017	0.006	0.029	23	1,141
16	64.00	374	0.363	0.029	0.008	0.036	12	463
15	61.50	567	0.335	0.037	0.010	0.040	20	702
14	57.50	961	0.293	0.047	0.013	0.045	38	1,188
13	54.04	374	0.259	0.054	0.016	0.048	16	462
12	51.54	1,139	0.236	0.058	0.019	0.049	48	1,409
11	48.46	1,157	0.208	0.062	0.022	0.050	50	1,431
10	45.96	436	0.187	0.064	0.025	0.050	19	540
9	42.50	1,156	0.160	0.067	0.029	0.049	50	1,430
8	37.50	1,178	0.125	0.070	0.034	0.048	49	1,457
7	32.50	1,200	0.094	0.071	0.038	0.047	49	1,485
6	27.50	1,223	0.067	0.072	0.041	0.046	49	1,512
5	22.50	1,245	0.045	0.071	0.042	0.045	48	1,540

4	17.50	1,267	0.027	0.067	0.040	0.042	46	1,567
3	12.50	1,289	0.014	0.059	0.035	0.038	43	1,595
2	7.50	1,312	0.005	0.045	0.025	0.030	34	1,622
1	2.50	1,334	0.001	0.019	0.010	0.014	16	1,650
Nokia B5 RRH4x40-850	146.00	146	1.890	1.980	1.140	0.351	44	180
Alcatel-Lucent RRH2x	146.00	170	1.890	1.980	1.140	0.351	52	210
Alcatel-Lucent AWS4	146.00	192	1.890	1.980	1.140	0.351	58	237
Raycap RC3DC-3315-PF	146.00	64	1.890	1.980	1.140	0.351	19	79
Antel LPA-80080/4CF	146.00	48	1.890	1.980	1.140	0.351	15	59
Antel LPA-80063/4CF	146.00	40	1.890	1.980	1.140	0.351	12	49
Andrew SBNHH-1D65B	146.00	304	1.890	1.980	1.140	0.351	93	376
Amphenol Antel QUAD6	146.00	162	1.890	1.980	1.140	0.351	49	200
Flat Low Profile Pla	146.00	1,500	1.890	1.980	1.140	0.351	456	1,855
Alcatel-Lucent RRH2x	137.50	317	1.676	1.035	0.779	0.227	62	393
Alcatel-Lucent 1900	137.50	180	1.676	1.035	0.779	0.227	35	223
Alcatel-Lucent TD-RR	137.50	210	1.676	1.035	0.779	0.227	41	260
RFS APXVTM14-ALU-I20	137.50	169	1.676	1.035	0.779	0.227	33	209
Commscope NNVV-	137.50	232	1.676	1.035	0.779	0.227	46	287
Site Pro RMQP-496-HK	137.50	2,449	1.676	1.035	0.779	0.227	481	3,029
Powerwave Allgon LGP	128.00	33	1.453	0.391	0.488	0.117	3	41
Generic 6" x 6" Junc	128.00	30	1.453	0.391	0.488	0.117	3	37
Powerwave Allgon LGP	128.00	85	1.453	0.391	0.488	0.117	9	105
Raycap DC6-48-60-18-	128.00	20	1.453	0.391	0.488	0.117	2	25
Ericsson RRUS-11 190	128.00	264	1.453	0.391	0.488	0.117	27	327
Allgon 7770.00	128.00	210	1.453	0.391	0.488	0.117	21	260
KMW AM-X-CD-17-65-00	128.00	178	1.453	0.391	0.488	0.117	18	221
Flat Low Profile Pla	128.00	1,500	1.453	0.391	0.488	0.117	152	1,855
Ericsson KRY 112 144	116.00	33	1.193	-0.002	0.250	0.019	1	41
Ericsson KRY 112 489	116.00	46	1.193	-0.002	0.250	0.019	1	57
Ericsson Radio 4449	116.00	222	1.193	-0.002	0.250	0.019	4	275
RFS APXV18-206517	116.00	79	1.193	-0.002	0.250	0.019	1	98
RFS APXVAARR24_43-U-	116.00	384	1.193	-0.002	0.250	0.019	6	475
Round Platform w/ Ha	116.00	2,000	1.193	-0.002	0.250	0.019	34	2,474
Generic GPS	75.00	10	0.499	-0.016	0.007	0.007	0	12
Stand-Off	75.00	75	0.499	-0.016	0.007	0.007	0	93
Generic GPS	63.00	10	0.352	0.032	0.009	0.038	0	12
Stand-Off	63.00	75	0.352	0.032	0.009	0.038	2	93
		39,314	74.198	34.331	27.629	7.713	2,647	48,628

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
38	145.50	80	1.877	1.913	1.116	0.343	24	69
37	142.50	411	1.800	1.541	0.978	0.297	106	355
36	138.75	211	1.707	1.149	0.825	0.243	45	182
35	136.25	239	1.646	0.928	0.734	0.210	44	206
34	132.50	489	1.557	0.650	0.613	0.165	70	422
33	129.00	200	1.475	0.443	0.514	0.127	22	173
32	126.50	338	1.419	0.320	0.451	0.102	30	291
31	122.50	575	1.331	0.165	0.364	0.066	33	496
30	118.00	470	1.235	0.040	0.281	0.032	13	406
29	115.50	131	1.183	-0.011	0.242	0.016	2	113
28	112.50	662	1.122	-0.057	0.201	0.000	0	571
27	107.50	677	1.025	-0.103	0.144	-0.022	-13	584
26	102.50	691	0.932	-0.121	0.100	-0.035	-21	597
25	99.23	217	0.873	-0.121	0.077	-0.040	-8	187
24	96.73	880	0.830	-0.117	0.063	-0.042	-32	760
23	94.27	378	0.788	-0.110	0.050	-0.041	-13	326

22	91.77	589	0.747	-0.100	0.040	-0.039	-20	508
21	87.50	848	0.679	-0.080	0.026	-0.031	-23	732
20	82.50	867	0.603	-0.054	0.015	-0.018	-13	748
19	77.50	885	0.533	-0.028	0.009	-0.001	-1	764
18	72.50	904	0.466	-0.004	0.006	0.015	12	780
17	67.50	923	0.404	0.017	0.006	0.029	23	796
16	64.00	374	0.363	0.029	0.008	0.036	12	323
15	61.50	567	0.335	0.037	0.010	0.040	20	490
14	57.50	961	0.293	0.047	0.013	0.045	38	829
13	54.04	374	0.259	0.054	0.016	0.048	16	323
12	51.54	1,139	0.236	0.058	0.019	0.049	48	983
11	48.46	1,157	0.208	0.062	0.022	0.050	50	999
10	45.96	436	0.187	0.064	0.025	0.050	19	377
9	42.50	1,156	0.160	0.067	0.029	0.049	50	997
8	37.50	1,178	0.125	0.070	0.034	0.048	49	1,017
7	32.50	1,200	0.094	0.071	0.038	0.047	49	1,036
6	27.50	1,223	0.067	0.072	0.041	0.046	49	1,055
5	22.50	1,245	0.045	0.071	0.042	0.045	48	1,074
4	17.50	1,267	0.027	0.067	0.040	0.042	46	1,094
3	12.50	1,289	0.014	0.059	0.035	0.038	43	1,113
2	7.50	1,312	0.005	0.045	0.025	0.030	34	1,132
1	2.50	1,334	0.001	0.019	0.010	0.014	16	1,151
Nokia B5 RRH4x40-850	146.00	146	1.890	1.980	1.140	0.351	44	126
Alcatel-Lucent RRH2x	146.00	170	1.890	1.980	1.140	0.351	52	147
Alcatel-Lucent AWS4	146.00	192	1.890	1.980	1.140	0.351	58	166
Raycap RC3DC-3315-PF	146.00	64	1.890	1.980	1.140	0.351	19	55
Antel LPA-80080/4CF	146.00	48	1.890	1.980	1.140	0.351	15	41
Antel LPA-80063/4CF	146.00	40	1.890	1.980	1.140	0.351	12	35
Andrew SBNHH-1D65B	146.00	304	1.890	1.980	1.140	0.351	93	263
Amphenol Antel QUAD6	146.00	162	1.890	1.980	1.140	0.351	49	140
Flat Low Profile Pla	146.00	1,500	1.890	1.980	1.140	0.351	456	1,295
Alcatel-Lucent RRH2x	137.50	317	1.676	1.035	0.779	0.227	62	274
Alcatel-Lucent 1900	137.50	180	1.676	1.035	0.779	0.227	35	155
Alcatel-Lucent TD-RR	137.50	210	1.676	1.035	0.779	0.227	41	181
RFS APXVTM14-ALU-I20	137.50	169	1.676	1.035	0.779	0.227	33	146
Commscope NNVV-	137.50	232	1.676	1.035	0.779	0.227	46	200
Site Pro RMQP-496-HK	137.50	2,449	1.676	1.035	0.779	0.227	481	2,113
Powerwave Allgon LGP	128.00	33	1.453	0.391	0.488	0.117	3	28
Generic 6" x 6" Junc	128.00	30	1.453	0.391	0.488	0.117	3	26
Powerwave Allgon LGP	128.00	85	1.453	0.391	0.488	0.117	9	73
Raycap DC6-48-60-18-	128.00	20	1.453	0.391	0.488	0.117	2	17
Ericsson RRUS-11 190	128.00	264	1.453	0.391	0.488	0.117	27	228
Allgon 7770.00	128.00	210	1.453	0.391	0.488	0.117	21	181
KMW AM-X-CD-17-65-00	128.00	178	1.453	0.391	0.488	0.117	18	154
Flat Low Profile Pla	128.00	1,500	1.453	0.391	0.488	0.117	152	1,295
Ericsson KRY 112 144	116.00	33	1.193	-0.002	0.250	0.019	1	28
Ericsson KRY 112 489	116.00	46	1.193	-0.002	0.250	0.019	1	40
Ericsson Radio 4449	116.00	222	1.193	-0.002	0.250	0.019	4	192
RFS APXV18-206517	116.00	79	1.193	-0.002	0.250	0.019	1	68
RFS APXVAARR24_43-U-	116.00	384	1.193	-0.002	0.250	0.019	6	331
Round Platform w/ Ha	116.00	2,000	1.193	-0.002	0.250	0.019	34	1,726
Generic GPS	75.00	10	0.499	-0.016	0.007	0.007	0	9
Stand-Off	75.00	75	0.499	-0.016	0.007	0.007	0	65
Generic GPS	63.00	10	0.352	0.032	0.009	0.038	0	9
Stand-Off	63.00	75	0.352	0.032	0.009	0.038	2	65
		39,314	74.198	34.331	27.629	7.713	2,647	33,932

Load Case (1.2 + 0.2Sds) * DL + E EMAM Seismic Equivalent Modal Analysis Method

Calculated Forces

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 (deg)	Ratio
0.00	-46.98	-2.64	0.00	-324.27	0.00	324.27	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.080
5.00	-45.35	-2.62	0.00	-311.08	0.00	311.08	4,176.31	2,088.16	9,106.46	4,560.00	0.01	-0.02	0.079
10.00	-43.76	-2.59	0.00	-297.99	0.00	297.99	4,123.50	2,061.75	8,803.44	4,408.26	0.04	-0.04	0.078
15.00	-42.19	-2.56	0.00	-285.04	0.00	285.04	4,069.26	2,034.63	8,502.24	4,257.44	0.09	-0.06	0.077
20.00	-40.65	-2.52	0.00	-272.26	0.00	272.26	4,013.58	2,006.79	8,203.04	4,107.62	0.16	-0.08	0.076
25.00	-39.14	-2.48	0.00	-259.66	0.00	259.66	3,956.46	1,978.23	7,906.06	3,958.90	0.26	-0.10	0.075
30.00	-37.65	-2.45	0.00	-247.24	0.00	247.24	3,897.92	1,948.96	7,611.48	3,811.39	0.37	-0.12	0.075
35.00	-36.19	-2.41	0.00	-235.01	0.00	235.01	3,837.94	1,918.97	7,319.49	3,665.19	0.51	-0.14	0.074
40.00	-34.76	-2.37	0.00	-222.98	0.00	222.98	3,776.52	1,888.26	7,030.31	3,520.38	0.66	-0.16	0.073
45.00	-34.22	-2.36	0.00	-211.15	0.00	211.15	3,713.67	1,856.84	6,744.12	3,377.07	0.85	-0.18	0.072
46.91	-32.79	-2.31	0.00	-206.64	0.00	206.64	3,689.24	1,844.62	6,635.43	3,322.65	0.92	-0.19	0.071
50.00	-31.38	-2.26	0.00	-199.52	0.00	199.52	3,649.39	1,824.69	6,461.11	3,235.36	1.05	-0.21	0.070
53.08	-30.92	-2.25	0.00	-192.55	0.00	192.55	2,857.95	1,428.97	5,068.34	2,537.94	1.19	-0.22	0.087
55.00	-29.73	-2.22	0.00	-188.23	0.00	188.23	2,840.65	1,420.32	4,987.96	2,497.68	1.28	-0.23	0.086
60.00	-29.03	-2.21	0.00	-177.14	0.00	177.14	2,794.59	1,397.30	4,779.77	2,393.44	1.54	-0.26	0.084
63.00	-28.46	-2.20	0.00	-170.52	0.00	170.52	2,766.27	1,383.14	4,655.71	2,331.31	1.70	-0.27	0.083
65.00	-27.32	-2.18	0.00	-166.13	0.00	166.13	2,747.10	1,373.55	4,573.39	2,290.09	1.82	-0.28	0.082
70.00	-26.20	-2.17	0.00	-155.25	0.00	155.25	2,698.18	1,349.09	4,369.01	2,187.75	2.13	-0.31	0.081
75.00	-25.00	-2.18	0.00	-144.40	0.00	144.40	2,647.83	1,323.91	4,166.84	2,086.52	2.48	-0.34	0.079
80.00	-23.92	-2.20	0.00	-133.51	0.00	133.51	2,596.04	1,298.02	3,967.06	1,986.48	2.85	-0.37	0.076
85.00	-22.87	-2.22	0.00	-122.54	0.00	122.54	2,542.81	1,271.41	3,769.88	1,887.74	3.25	-0.40	0.074
90.00	-22.14	-2.25	0.00	-111.42	0.00	111.42	2,488.15	1,244.08	3,575.49	1,790.40	3.68	-0.42	0.071
93.54	-21.68	-2.26	0.00	-103.48	0.00	103.48	2,448.63	1,224.31	3,439.78	1,722.45	4.00	-0.44	0.069
95.00	-20.59	-2.29	0.00	-100.17	0.00	100.17	2,432.06	1,216.03	3,384.08	1,694.56	4.14	-0.45	0.068
98.45	-20.32	-2.30	0.00	-92.26	0.00	92.26	1,802.83	901.41	2,498.39	1,251.05	4.47	-0.47	0.085
100.00	-19.46	-2.32	0.00	-88.70	0.00	88.70	1,791.36	895.68	2,457.25	1,230.45	4.63	-0.48	0.083
105.00	-18.62	-2.34	0.00	-77.10	0.00	77.10	1,753.33	876.67	2,325.21	1,164.33	5.15	-0.51	0.077
110.00	-17.80	-2.34	0.00	-65.41	0.00	65.41	1,713.87	856.94	2,194.79	1,099.03	5.70	-0.54	0.070
115.00	-17.64	-2.34	0.00	-53.72	0.00	53.72	1,672.98	836.49	2,066.21	1,034.64	6.28	-0.57	0.062
116.00	-13.64	-2.24	0.00	-51.38	0.00	51.38	1,664.63	832.31	2,040.72	1,021.88	6.40	-0.58	0.058
120.00	-12.93	-2.21	0.00	-42.40	0.00	42.40	1,630.65	815.32	1,939.64	971.26	6.90	-0.60	0.052
125.00	-12.51	-2.18	0.00	-31.36	0.00	31.36	1,586.89	793.44	1,815.29	908.99	7.53	-0.62	0.042
128.00	-9.40	-1.89	0.00	-24.83	0.00	24.83	1,559.94	779.97	1,741.82	872.20	7.92	-0.63	0.034
130.00	-8.79	-1.81	0.00	-21.05	0.00	21.05	1,541.69	770.85	1,693.35	847.93	8.19	-0.64	0.031
135.00	-8.50	-1.77	0.00	-11.99	0.00	11.99	1,495.06	747.53	1,574.02	788.18	8.86	-0.65	0.021
137.50	-3.84	-0.97	0.00	-7.57	0.00	7.57	1,471.21	735.60	1,515.39	758.82	9.20	-0.65	0.013
140.00	-3.34	-0.86	0.00	-5.14	0.00	5.14	1,447.00	723.50	1,457.49	729.83	9.54	-0.65	0.009
145.00	-3.24	-0.84	0.00	-0.84	0.00	0.84	1,383.54	691.77	1,330.54	666.26	10.23	-0.66	0.004
146.00	0.00	-0.80	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	10.37	-0.66	0.000

Load Case (0.9 - 0.2Sds) * DL + E EMAM Seismic (Reduced DL) Equivalent Modal Analysis Method

Calculated Forces

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 (deg)	Ratio
0.00	-32.78	-2.64	0.00	-319.10	0.00	319.10	4,227.69	2,113.85	9,411.11	4,712.55	0.00	0.00	0.075
5.00	-31.65	-2.61	0.00	-305.92	0.00	305.92	4,176.31	2,088.16	9,106.46	4,560.00	0.01	-0.02	0.075
10.00	-30.53	-2.58	0.00	-292.87	0.00	292.87	4,123.50	2,061.75	8,803.44	4,408.26	0.04	-0.04	0.074
15.00	-29.44	-2.54	0.00	-279.98	0.00	279.98	4,069.26	2,034.63	8,502.24	4,257.44	0.09	-0.06	0.073
20.00	-28.36	-2.50	0.00	-267.28	0.00	267.28	4,013.58	2,006.79	8,203.04	4,107.62	0.16	-0.08	0.072
25.00	-27.31	-2.46	0.00	-254.77	0.00	254.77	3,956.46	1,978.23	7,906.06	3,958.90	0.25	-0.10	0.071
30.00	-26.27	-2.42	0.00	-242.47	0.00	242.47	3,897.92	1,948.96	7,611.48	3,811.39	0.36	-0.12	0.070
35.00	-25.25	-2.38	0.00	-230.37	0.00	230.37	3,837.94	1,918.97	7,319.49	3,665.19	0.50	-0.14	0.069
40.00	-24.26	-2.33	0.00	-218.49	0.00	218.49	3,776.52	1,888.26	7,030.31	3,520.38	0.65	-0.16	0.068
45.00	-23.88	-2.32	0.00	-206.82	0.00	206.82	3,713.67	1,856.84	6,744.12	3,377.07	0.83	-0.18	0.068
46.91	-22.88	-2.27	0.00	-202.39	0.00	202.39	3,689.24	1,844.62	6,635.43	3,322.65	0.91	-0.19	0.067
50.00	-21.90	-2.22	0.00	-195.38	0.00	195.38	3,649.39	1,824.69	6,461.11	3,235.36	1.03	-0.20	0.066
53.08	-21.57	-2.21	0.00	-188.52	0.00	188.52	2,857.95	1,428.97	5,068.34	2,537.94	1.17	-0.22	0.082
55.00	-20.74	-2.18	0.00	-184.27	0.00	184.27	2,840.65	1,420.32	4,987.96	2,497.68	1.26	-0.23	0.081
60.00	-20.25	-2.16	0.00	-173.39	0.00	173.39	2,794.59	1,397.30	4,779.77	2,393.44	1.51	-0.25	0.080
63.00	-19.86	-2.15	0.00	-166.90	0.00	166.90	2,766.27	1,383.14	4,655.71	2,331.31	1.67	-0.27	0.079
65.00	-19.06	-2.13	0.00	-162.59	0.00	162.59	2,747.10	1,373.55	4,573.39	2,290.09	1.79	-0.28	0.078
70.00	-18.28	-2.12	0.00	-151.94	0.00	151.94	2,698.18	1,349.09	4,369.01	2,187.75	2.09	-0.31	0.076
75.00	-17.44	-2.13	0.00	-141.32	0.00	141.32	2,647.83	1,323.91	4,166.84	2,086.52	2.43	-0.33	0.074
80.00	-16.69	-2.14	0.00	-130.67	0.00	130.67	2,596.04	1,298.02	3,967.06	1,986.48	2.79	-0.36	0.072
85.00	-15.96	-2.17	0.00	-119.95	0.00	119.95	2,542.81	1,271.41	3,769.88	1,887.74	3.19	-0.39	0.070
90.00	-15.45	-2.19	0.00	-109.10	0.00	109.10	2,488.15	1,244.08	3,575.49	1,790.40	3.61	-0.42	0.067
93.54	-15.12	-2.21	0.00	-101.34	0.00	101.34	2,448.63	1,224.31	3,439.78	1,722.45	3.92	-0.44	0.065
95.00	-14.36	-2.24	0.00	-98.11	0.00	98.11	2,432.06	1,216.03	3,384.08	1,694.56	4.06	-0.44	0.064
98.45	-14.17	-2.25	0.00	-90.38	0.00	90.38	1,802.83	901.41	2,498.39	1,251.05	4.39	-0.46	0.080
100.00	-13.57	-2.27	0.00	-86.91	0.00	86.91	1,791.36	895.68	2,457.25	1,230.45	4.54	-0.47	0.078
105.00	-12.99	-2.28	0.00	-75.57	0.00	75.57	1,753.33	876.67	2,325.21	1,164.33	5.05	-0.50	0.072
110.00	-12.42	-2.28	0.00	-64.15	0.00	64.15	1,713.87	856.94	2,194.79	1,099.03	5.59	-0.53	0.066
115.00	-12.30	-2.28	0.00	-52.73	0.00	52.73	1,672.98	836.49	2,066.21	1,034.64	6.16	-0.56	0.058
116.00	-9.51	-2.20	0.00	-50.45	0.00	50.45	1,664.63	832.31	2,040.72	1,021.88	6.28	-0.56	0.055
120.00	-9.02	-2.16	0.00	-41.65	0.00	41.65	1,630.65	815.32	1,939.64	971.26	6.76	-0.58	0.048
125.00	-8.72	-2.13	0.00	-30.83	0.00	30.83	1,586.89	793.44	1,815.29	908.99	7.38	-0.61	0.039
128.00	-6.55	-1.86	0.00	-24.43	0.00	24.43	1,559.94	779.97	1,741.82	872.20	7.77	-0.62	0.032
130.00	-6.13	-1.78	0.00	-20.71	0.00	20.71	1,541.69	770.85	1,693.35	847.93	8.03	-0.62	0.028
135.00	-5.92	-1.74	0.00	-11.80	0.00	11.80	1,495.06	747.53	1,574.02	788.18	8.69	-0.63	0.019
137.50	-2.68	-0.96	0.00	-7.46	0.00	7.46	1,471.21	735.60	1,515.39	758.82	9.02	-0.64	0.012
140.00	-2.33	-0.85	0.00	-5.07	0.00	5.07	1,447.00	723.50	1,457.49	729.83	9.36	-0.64	0.009
145.00	-2.26	-0.82	0.00	-0.82	0.00	0.82	1,383.54	691.77	1,330.54	666.26	10.03	-0.64	0.003
146.00	0.00	-0.80	0.00	0.00	0.00	0.00	1,370.57	685.28	1,305.58	653.76	10.17	-0.64	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	27.07	0.00	47.13	0.00	0.00	3011.41	53.08	0.66
0.9D + 1.6W	27.05	0.00	35.34	0.00	0.00	2974.25	53.08	0.65
1.2D + 1.0Di + 1.0Wi	8.10	0.00	71.63	0.00	0.00	866.72	0.00	0.20
(1.2 + 0.2Sds) * DL + E ELFM	1.54	0.00	46.98	0.00	0.00	190.44	53.08	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.64	0.00	46.98	0.00	0.00	324.27	53.08	0.09
(0.9 - 0.2Sds) * DL + E ELFM	1.54	0.00	32.78	0.00	0.00	187.59	53.08	0.05
(0.9 - 0.2Sds) * DL + E EMAM	2.64	0.00	32.78	0.00	0.00	319.10	53.08	0.08
1.0D + 1.0W	5.97	0.00	39.31	0.00	0.00	659.39	53.08	0.15

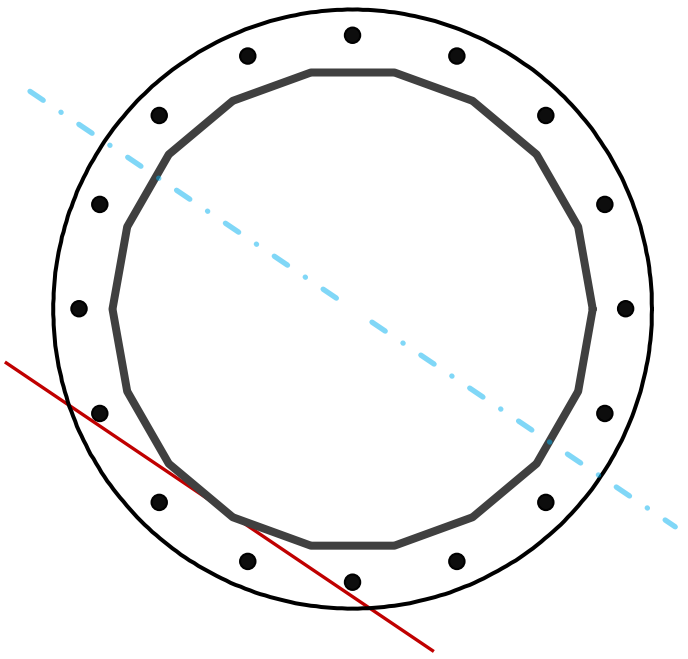
Base Plate & Anchor Rod Analysis

Pole Dimensions		
Number of Sides	18	-
Diameter	54.50	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	3011.4	k-ft
Axial, Pu	47.1	k
Shear, Vu	27.1	k
Neutral Axis	146	°

Report Capacities		
Component	Capacity	Result
Base Plate	85%	Pass
Anchor Rods	56%	Pass
Dwyidag	-	-

Base Plate		
Shape	Round	-
Diameter, ø	69	in
Thickness	1 3/4	in
Grade	A572-60	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	1046.1	k
Bending Stress, ϕMn	1231.5	k



Original Anchor Rods		
Arrangement	Radial	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	63	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	12.4	in
Orientation Offset	0	°
Applied Force, Pu	143.6	k
Anchor Rods, ϕPn	259.8	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	27.1	3011.4	1.00
Anchor Rod Forces	27.1	3011.4	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	63.4413	3.5245	0.1658		23234.51
Bolt	3.9761	3.2477	0.8393	4.5	25793.59
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Round	-
Diameter, D	69	in
Thickness, t	1.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	75	ksi
Base Plate Chord	42.317	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

External Base Plate		
Chord Length AA	36.332	in
Additional AA	3.500	in
Section Modulus, Z	30.496	in^3
Applied Moment, Mu	1046.1	k-ft
Bending Capacity, ϕMn	1646.8	k-ft
Capacity, Mu/ϕMn	0.635	OK
Chord Length AB	35.038	in
Additional AB	3.500	in
Section Modulus, Z	29.506	in^3
Applied Moment, Mu	925.4	k-ft
Bending Capacity, ϕMn	1593.3	k-ft
Capacity, Mu/ϕMn	0.581	OK
Bend Line Length	29.787	in
Additional Bend Line	0.000	in
Section Modulus, Z	22.805	in^3
Applied Moment, Mu	1046.1	k-ft
Bending Capacity, ϕMn	1231.5	k-ft
Capacity, Mu/ϕMn	0.849	OK

Internal Base Plate		
Arc Length	0.000	in
Section Modulus, Z	0.000	in^3
Moment Arm	0.000	in
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	63	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	143.6	k
Applied Shear, Vu	0.5	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.553	OK
Interaction Capacity	0.557	OK

Additional Bolt Group 1		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Compressive Capacity, ϕPn		
Interaction Capacity		

Additional Bolt Group 2		
Bolt Quantity, N	0	-
Bolt Diameter, d	0	in
Bolt Circle, BC	0	in
Yield Strength, Fy	0	ksi
Tensile Strength, Fu	0	ksi
Applied Axial, Pu	0.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Compressive Capacity, ϕPn		
Interaction Capacity		

Dywidag Reinforcement		
Dywidag Quantity, N	0	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	61.38	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	0.0	k
Compressive Capacity, ϕPn	0.0	k
Capacity, Pu/ϕPn		

Base Plate Stiffeners		
Applied Axial Force, Pu	0.0	k
Applied Horizontal Force, Vu	0.00	k

Vertical Weld		
Vert.-to-Stiffener a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Compressive Capacity, ϕPn	#DIV/0!	k
Vert.-to-Plate a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, ϕVn	#DIV/0!	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$		

Horizontal Weld		
Horz.-to-Stiffener a=e_x/l	0.000	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Effective Fillet	0.000	in
Compressive Capacity, ϕPn	#DIV/0!	k
Horz.-to-Pole a=e_x/l	#DIV/0!	-
Spacing Ratio, k	#DIV/0!	-
Weld Coefficient, C	#DIV/0!	-
Shear Capacity, ϕVn	#DIV/0!	k
$P_u/\phi_P P_n + V_u/\phi_V V_n$		

Plate Tension		
Gross Cross Section	0.000	in^2
Net Cross Section	0.000	in^2
Tensile Capacity, ϕTn	0.0	k
Capacity, Tu/ϕTn		

Plate Compression		
Radius of Gyration	#DIV/0!	in^3
kl/r	#DIV/0!	-
4.71 $\sqrt{(E/Fy)}$	0.00	-
Buckling Stress(Fe)	0.0	-
Crit. Buckling Stress(Fcr)	0.0	ksi
Compressive Capacity, ϕPn	0.0	k
Capacity, Pu/ϕPn		

Exhibit E

Mount Analysis

Mount Analysis of Existing Platform w/ Support Rails for American Tower on behalf of T-Mobile
411216 - CT Chaplin South CT
Project #: 12927166

T-Mobile Site ID: CT11508F
Program: L600

CLS Engineering PLLC Project #41124-12927166-01-MA
April 12, 2019

MOUNT DESCRIPTION	Existing Platform w/ Support Rails at 114 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 116 ft AGL (Eccentricity of ~2 ft)
SITE DESCRIPTION	146 ft Monopole
SITE ADDRESS	123 Palmer Road, Chaplin, CT 06235-2416, Windham County
GPS COORDINATES	41.784528, -72.135694
ANALYSIS STANDARD	2018 IBC / TIA-222-H
LOADING CRITERIA	120 mph, V_{ult} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

■ **ANALYSIS RESULT:** **Pass**

MEMBER USAGE	**57%**	**Pass**
COLLAR USAGE	**84%**	**Pass**

Prepared by:
A.J. Ingalls, E.I.

Reviewed and Approved by:
Tyler M. Barker, P.E.

STATE OF CONNECTICUT
TYLER M BARKER
No. 32402
LICENSED PROFESSIONAL ENGINEER

Tyler M. Barker
CLS Engineering, PLLC
Director of Engineering
PE # 32402 Exp. 1/31/2020
COA # PEC.001833 Exp. 8/14/2019

Digitally signed by Tyler M. Barker
Date: 2019.04.12 17:09:44 -04'00'

■ INTRODUCTION

The proposed equipment is to be mounted to the existing Platform w/ Support Rails. This proposed mounting configuration was analyzed using RISA-3D, a commercially available finite element analysis software package. A selection of input and output from our analysis is attached to the end of this report.

■ STRUCTURAL DOCUMENTS PROVIDED

STRUCTURAL DATA	Site Photos, dated November 12, 2018
PREVIOUS ANALYSES	Tower SA by American Tower Corporation, Engineering #OAA719249_C3_03, dated May 30, 2018
LOADING DATA	ATC Application, Project #12927166, dated April 10, 2019

■ ANALYSIS CRITERIA

STANDARD	2018 IBC / TIA-222-H
BASIC WIND SPEED	120 mph, V_{ult} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
EXPOSURE CATEGORY	B
MAX. TOPOGRAPHIC FACTOR, K_{zt}	1.00
RISK CATEGORY	II
MAINTENANCE LIVE LOAD	L_M: 500 lb

■ FINAL EQUIPMENT

ELEVATION (ft)		**ANTENNAS**	
MOUNT	**RAD.**	**#**	**NAME**
114.0	116.0	3	RFS Celwave APXVAARR24_43-U-NA20
		3	RFS Celwave APXV18-206517
		3	Ericsson RADIO 4449 B12/B71
		3	Ericsson KRY 112 489/2
		3	Ericsson KRY 112 144/1

■ RESULTS SUMMARY

COMPONENT	**PEAK USAGE**	**RESULT**
Collar Reactions	84%	Pass
Mount Pipes	57%	Pass
Platform Base	43%	Pass
Bracing Members	42%	Pass
Stand-Off Horizontals	34%	Pass
Support Rail	10%	Pass

■ CONCLUSION AND RECOMMENDATIONS

According to our structural analysis, the mounts have been found to **PASS**. The mounting configuration considered in this analysis is capable of supporting the referenced loading pursuant to applicable standards.

■ ASSUMPTIONS AND CONDITIONS

This analysis is inclusive of the antenna supporting frames/mounts and all recorded connections that will support the equipment listed in this report. It considers only the theoretical capacity of structural components and it is not a condition assessment. The validity of the analysis may be dependent on the accuracy of structural information supplied by others. The client is responsible for verifying this information. If any provided information is revised after completion of this analysis, CLS Engineering PLLC should be notified immediately to revise results.

This analysis assumes the following:

1. The tower or other superstructure and mounts (if existing) were properly constructed as per the original design and have been properly maintained in accordance with applicable code standards.
2. Member sizes and strengths are accurate as supplied or are assumed as stated in the calculations.
3. In the absence of sufficient design information, all welds and connections are assumed to develop at least the capacity of the connected member, unless otherwise stated in this analysis.
4. All prior structural modifications, if any, are assumed to be correctly installed and fully effective.
5. The loading configuration is complete and accurate as supplied and/or as modeled in the previous analysis. All appurtenances are assumed to be properly installed and supported as per manufacturer requirements.
6. Some conservative assumptions may be used regarding appurtenances and their projected areas based on careful interpretation of data supplied, previous experience and standard industry practice.

All opinions and conclusions are considered accurate to a reasonable degree of engineering certainty based upon the evidence available at the time of the report. All opinions and conclusions contained herein are subject to revision based upon receipt of new or updated information. All services are provided exercising a level of care and diligence equivalent to the standard of our profession. No warranty or guarantee, either expressed or implied, is offered. All services are confidential in nature and this report will not be released to any other party without the client's consent. The use of this analysis is limited to the expressed purpose for which it was commissioned and it may not be reused, copied or disseminated for any other purpose without consent from CLS Engineering PLLC.

All services were performed, results obtained and recommendations made in accordance with generally accepted engineering principles and practices. CLS Engineering PLLC is not responsible for the conclusions, opinions or recommendations made by others based on the information supplied in this analysis.

It is not possible to have the fully detailed information necessary to perform a complete and thorough analysis of every structural sub-component of an existing structure. The structural analysis by CLS Engineering PLLC verifies the adequacy of the primary members of the structure. CLS Engineering PLLC provides a limited scope of service in that we cannot verify the adequacy of every weld, bolt, gusset, etc.

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	114 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	116 ft	K_d	0.95
Elevation AMSL (ft)	504 ft	K_e	0.98
TIA Standard	H	K_z	1.03
Basic Wind Speed, V_{ult} (bare)	120 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.13 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	35.3 psf
Seismic Response Coeff., C_s	-	q_z (ice)	6.1 psf

Live Loading

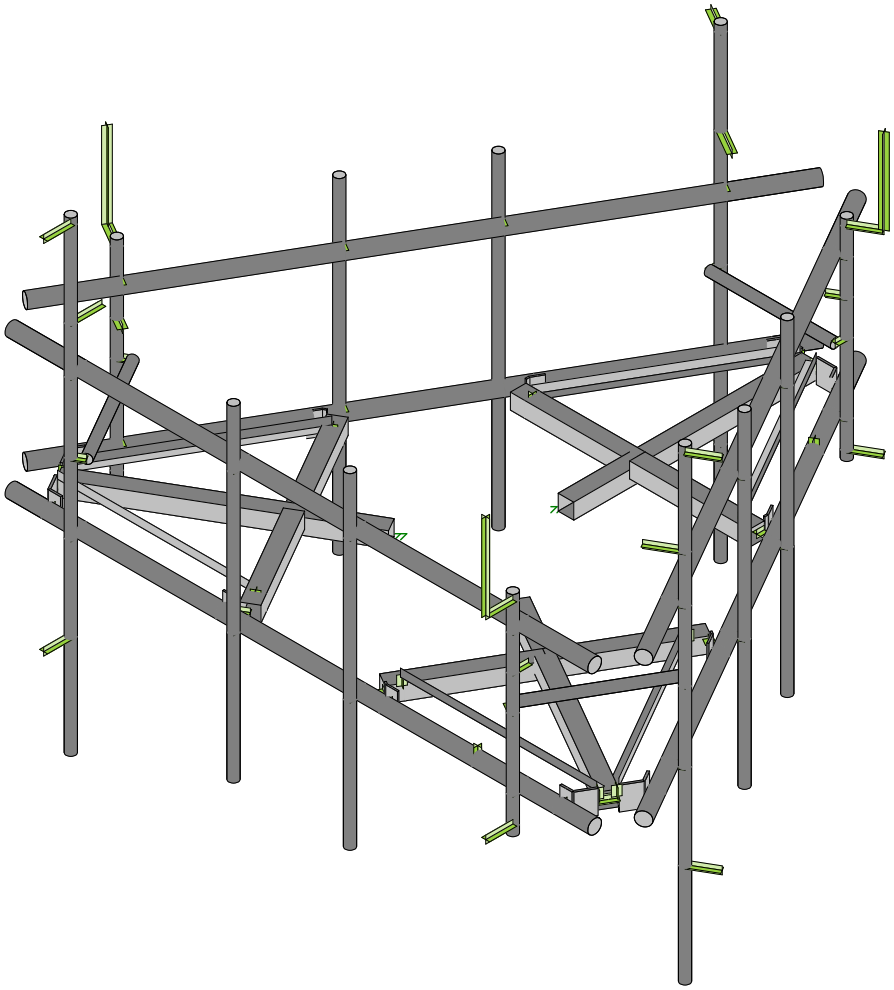
At Mount Pipes, L_M	500 lb
Joint Labels Considered	n110a
	n115a
	n114a
	n112

Member Distributed Loading

Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Offsett Tube	HSS4X4X4	21.17	1.52	8.61
Offset End Plate	0.5 x 6 Plate	31.75	4.57	7.29
Offset Side Plate	0.38 X 6 Plate	31.75	4.56	7.18
Platform Horizontal Pipe	PIPE_3.0	11.11	3.18	6.41
Grating Angle	L2x2x3	10.58	1.39	4.98
Mount Pipe	PIPE_2.0	7.54	2.56	4.85
Bracing Pipe	PIPE_2.0	7.54	2.56	4.85

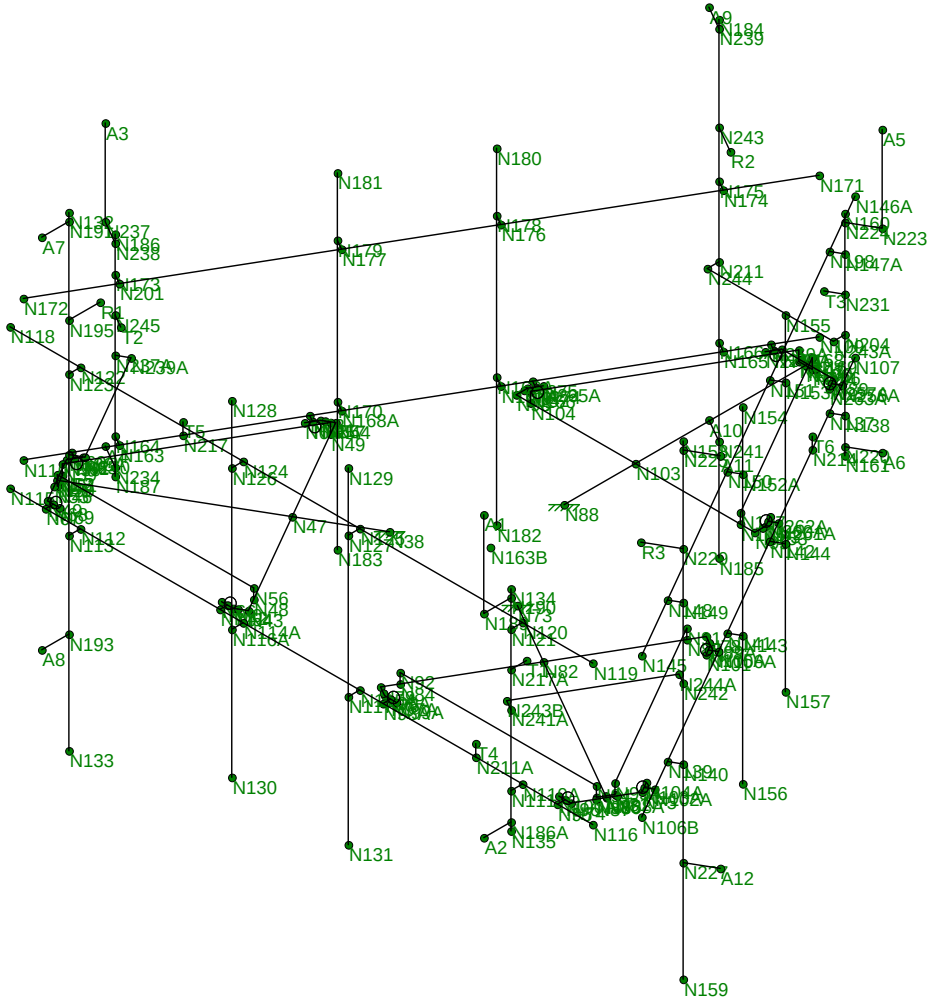
Appurtenances

Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty. per Azimuth			Total Qty. Override	0° Joints		120° Joints		240° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft^2)		EPA_A (Ice) (ft^2)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°	120°	240°		1	2	1	2	1	2							N	T	N	T	N	T	N	T
APXVAARR24_43-U-NA20				☐			1	1	1	3	a7	a8	a9	a10	a11	a12	95.9	24	8.7	128	Flat	255.35	20.24	8.89	22.47	10.95	645.93	283.63	124.50	60.68
APXV18-206517				☐			1	1	1	3	a1	a2	a3	a4	a5	a6	72	6.8	3.15	26.4	Flat	68.27	5.17	3.04	6.73	4.54	164.87	96.92	37.30	25.13
KRY 112 144/1				☐	0.5		1	1	1	3	t1		t2		t3		7	6	3	11	Flat	7.20	0.18	0.18	0.32	0.41	5.58	5.58	1.77	2.25
KRY 112 489/2				☐			1	1	1	3	t4		t5		t6		11	6.1	3.94	15.4	Flat	11.50	0.56	0.37	0.93	0.69	17.84	11.65	5.13	3.80
RADIO 4449 B12/B71				☐	0.5		1	1	1	3	r1		r2		r3		15	13.2	10.4	75	Flat	39.02	0.83	1.30	1.11	1.82	26.33	41.48	6.17	10.10



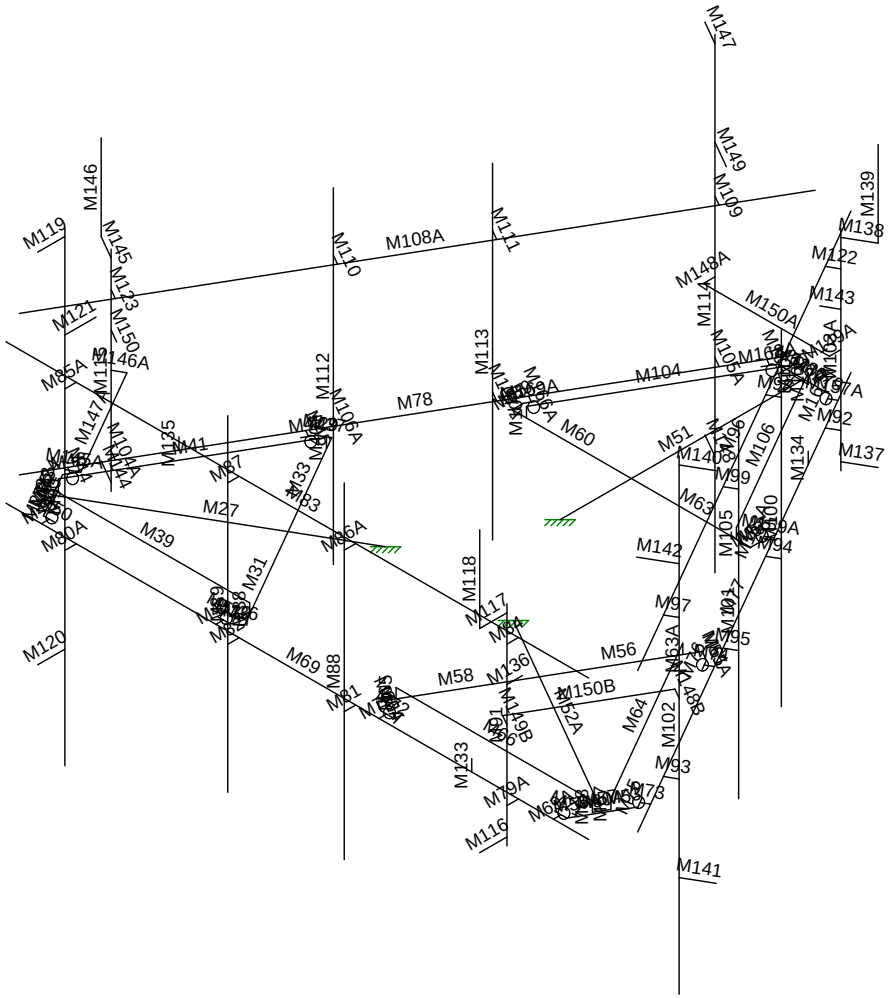
Envelope Only Solution

CLS	41124-12927166-CT Chaplin South Ct	SK - 1
AJI		Apr 12, 2019 at 11:03 AM
41124-12927166-01-MA	Rendered	41124-12927166-01-MA.r3d

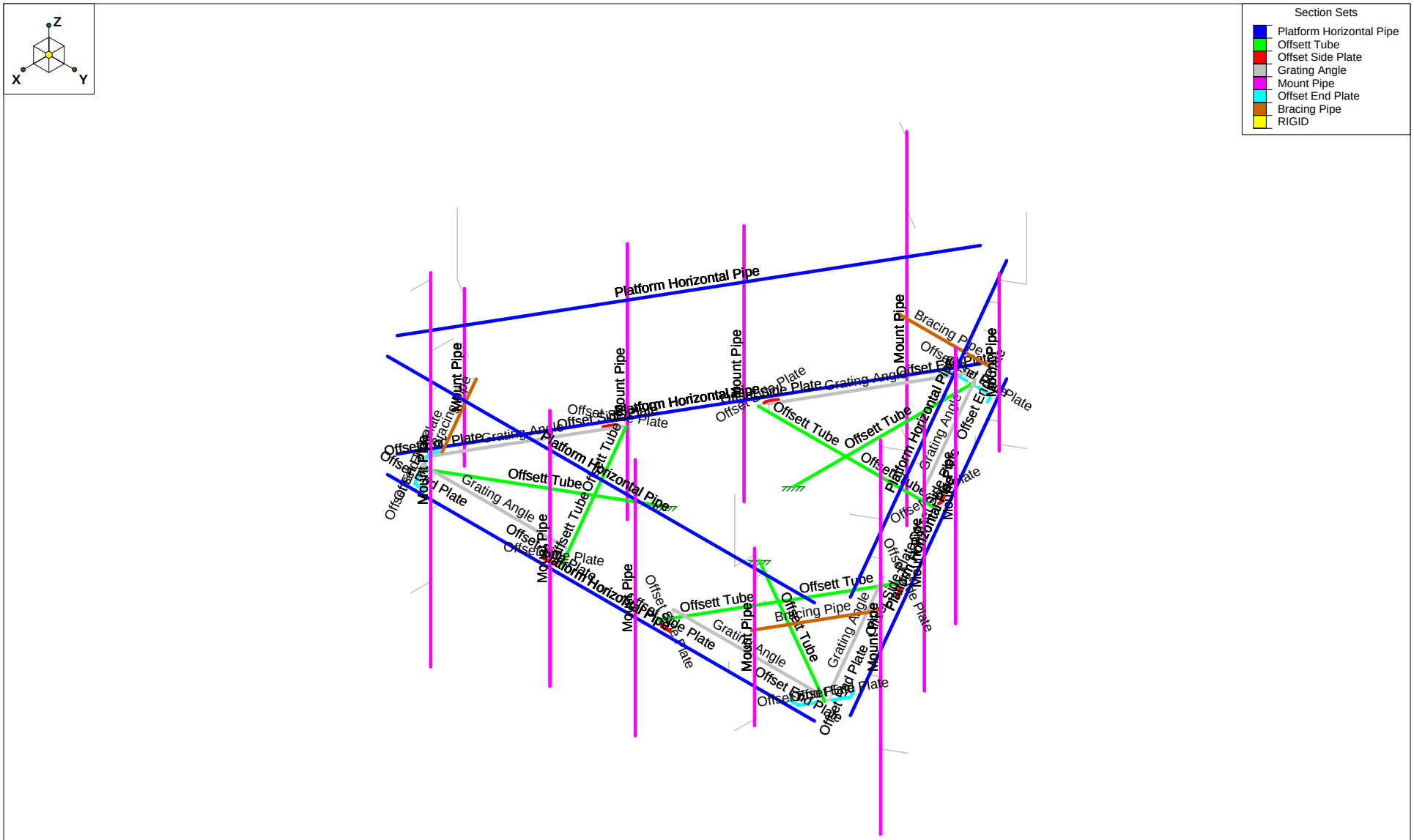


Envelope Only Solution

CLS	41124-12927166-CT Chaplin South Ct	SK - 2
AJI		Apr 12, 2019 at 11:03 AM
41124-12927166-01-MA	Joint Labels	41124-12927166-01-MA.r3d

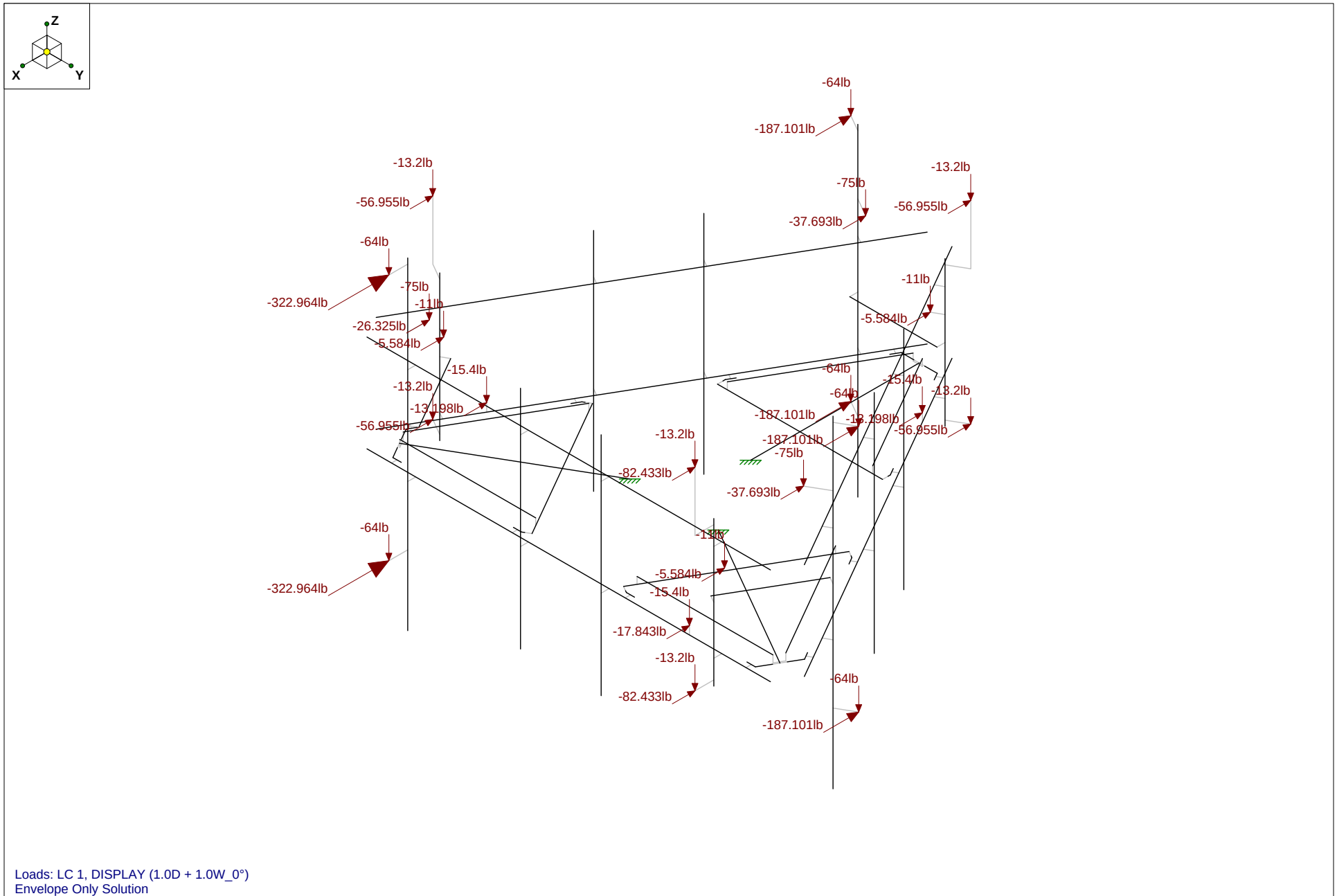


CLS	41124-12927166-CT Chaplin South Ct	SK - 3
AJI		Apr 12, 2019 at 11:04 AM
41124-12927166-01-MA	Member Labels	41124-12927166-01-MA.r3d



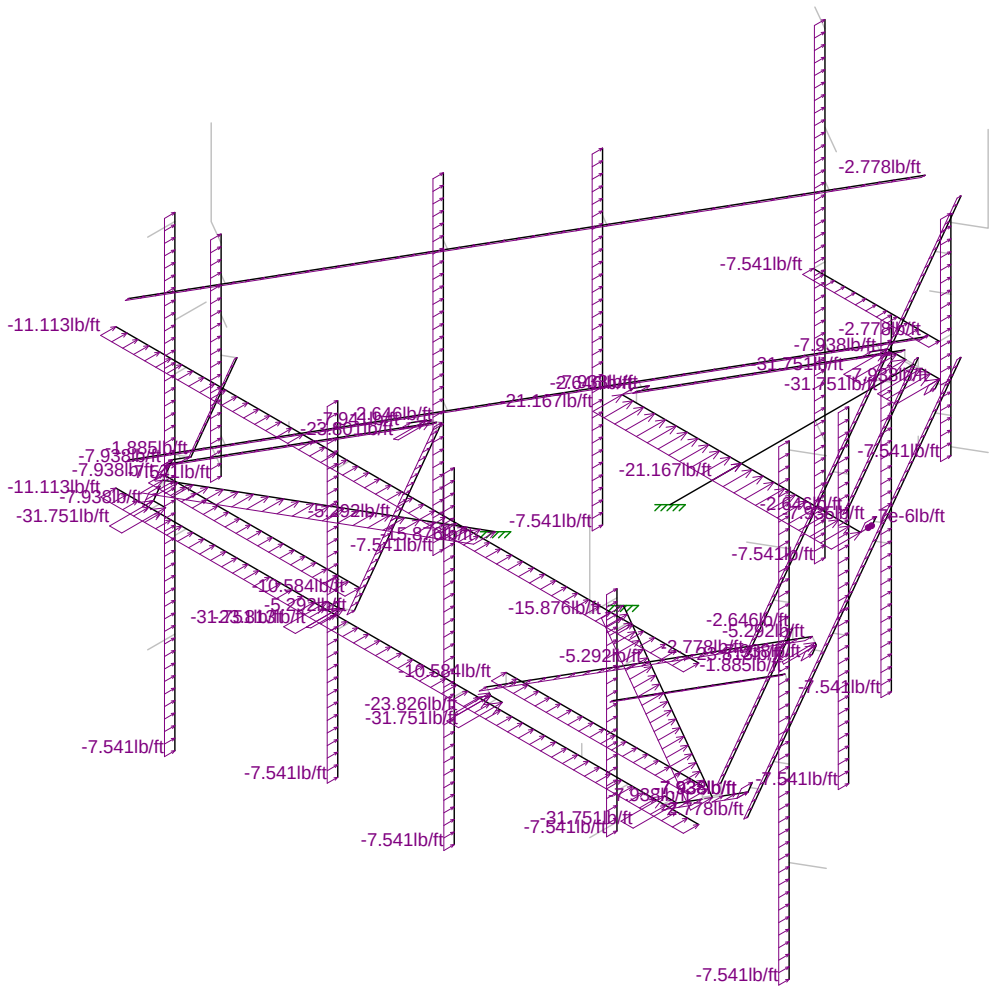
Envelope Only Solution

CLS	41124-12927166-CT Chaplin South Ct	SK - 4
AJI		Apr 12, 2019 at 11:04 AM
41124-12927166-01-MA	Section Sets	41124-12927166-01-MA.r3d



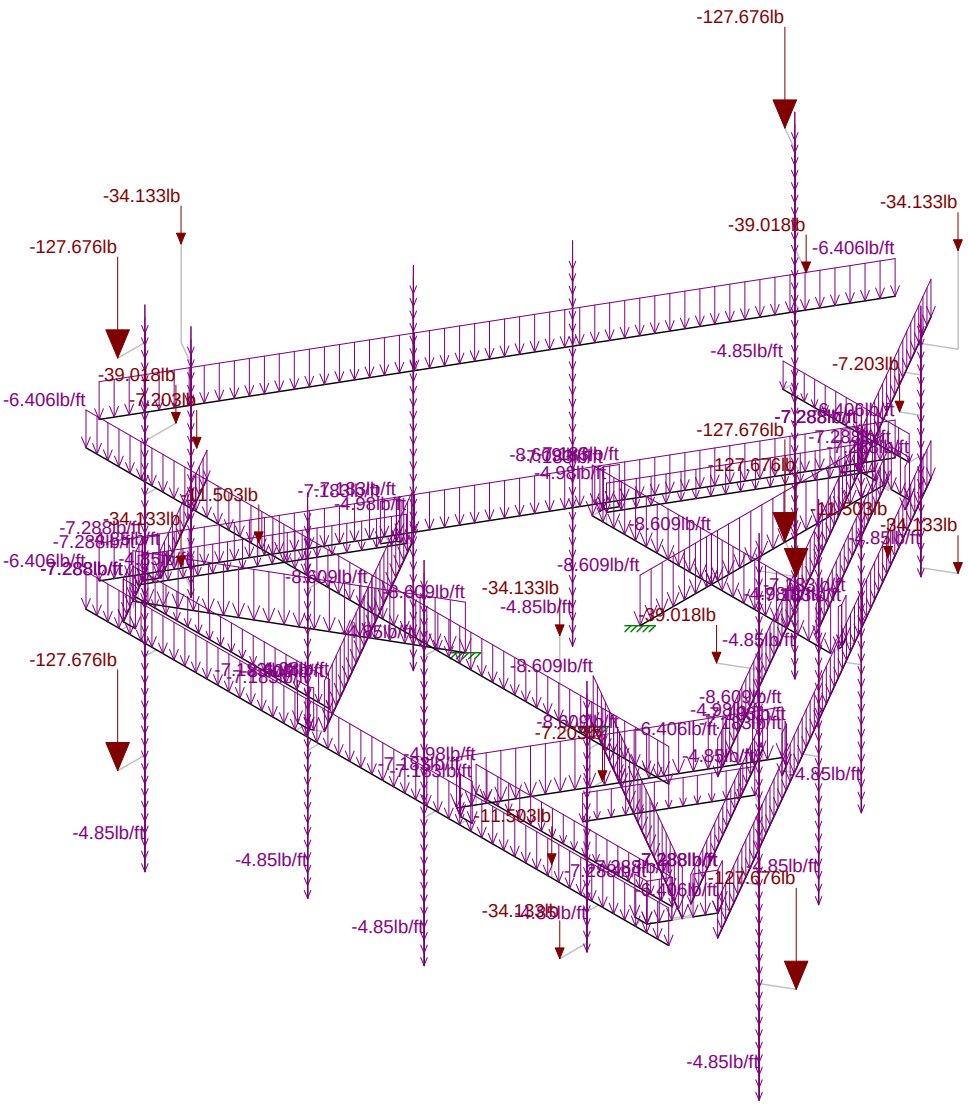
Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)
Envelope Only Solution

CLS		SK - 5
AJI	41124-12927166-CT Chaplin South Ct	Apr 12, 2019 at 11:04 AM
41124-12927166-01-MA	Joint Loads - Dead and Normal Wind	41124-12927166-01-MA.r3d



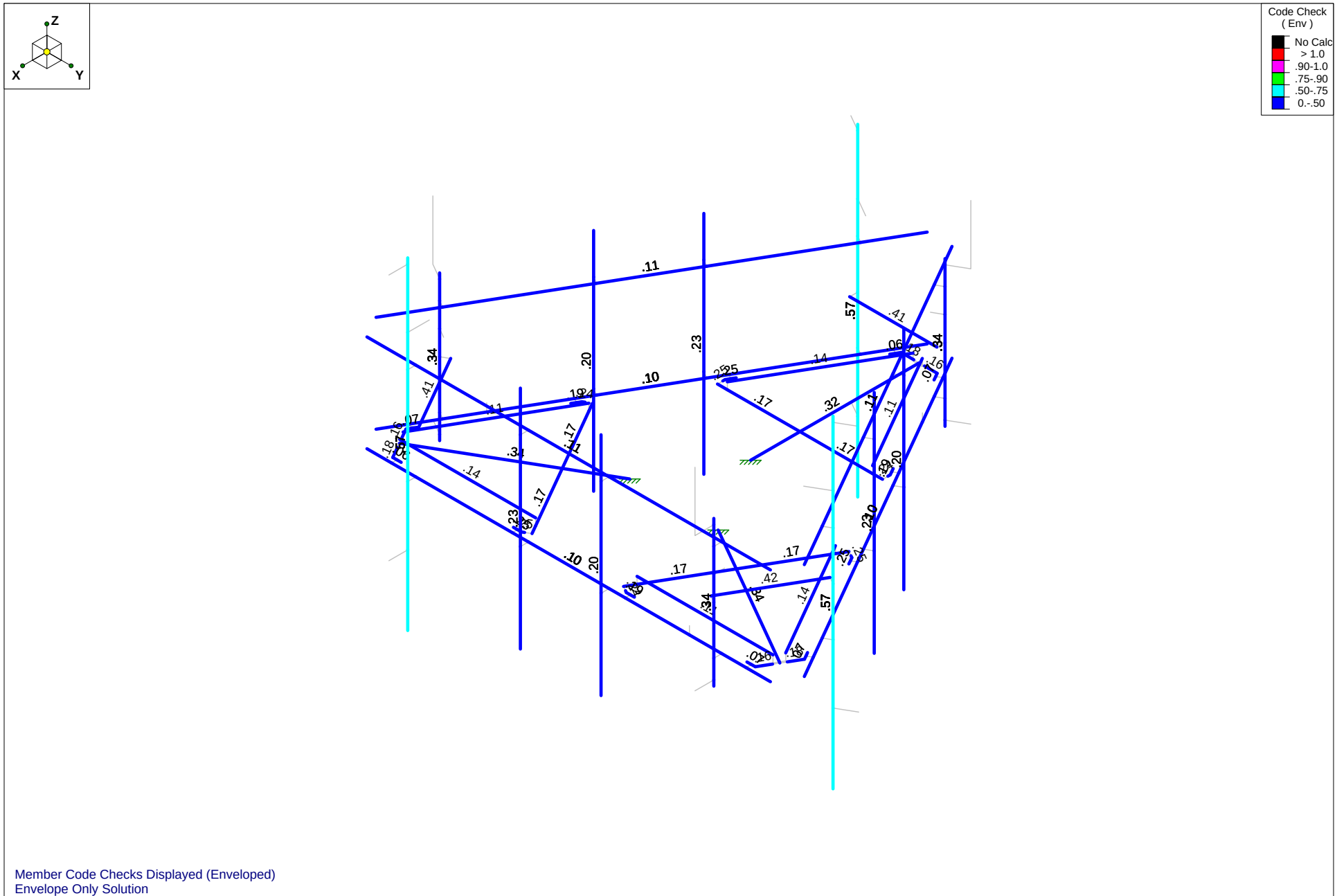
Loads: BLC 4, Structure Wind 0°
Envelope Only Solution

CLS		SK - 6
AJI	41124-12927166-CT Chaplin South Ct	Apr 12, 2019 at 11:04 AM
41124-12927166-01-MA	Distributed Load - Normal Wind	41124-12927166-01-MA.r3d



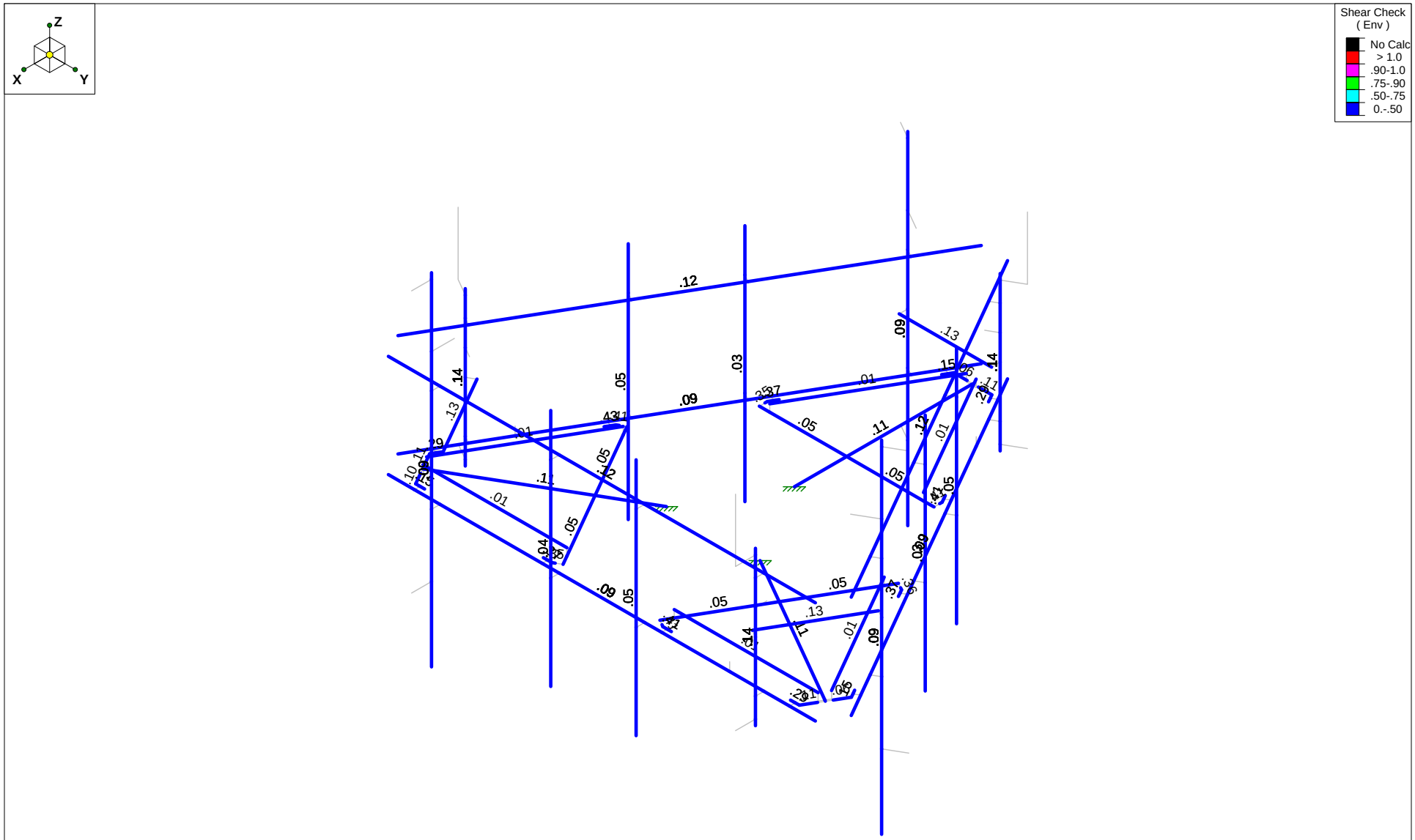
Loads: BLC 2, Ice Dead
Envelope Only Solution

CLS		SK - 7
AJI	41124-12927166-CT Chaplin South Ct	Apr 12, 2019 at 11:05 AM
41124-12927166-01-MA	Ice Dead Loads	41124-12927166-01-MA.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS		SK - 8
AJI	41124-12927166-CT Chaplin South Ct	Apr 12, 2019 at 11:05 AM
41124-12927166-01-MA	Envelope Member Unity Check Results - Bending	41124-12927166-01-MA.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS		SK - 9
AJI	41124-12927166-CT Chaplin South Ct	Apr 12, 2019 at 11:05 AM
41124-12927166-01-MA	Envelope Member Check Results - Shear	41124-12927166-01-MA.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Dead	DL			-1	21				
2	Ice Dead	RL				21		60		
4	Structure Wind 0Á	None						58		
5	Structure Wind 30Á	None						94		
6	Structure Wind 45Á	None						120		
7	Structure Wind 60Á	None						116		
8	Structure Wind 90Á	None						47		
9	Structure Wind 120Á	None						116		
10	Structure Wind 135Á	None						120		
11	Structure Wind 150Á	None						94		
12	Structure Wind w/ Ice 0Á	None						58		
13	Structure Wind w/ Ice 30Á	None						98		
14	Structure Wind w/ Ice 45Á	None						120		
15	Structure Wind w/ Ice 60Á	None						116		
16	Structure Wind w/ Ice 90Á	None						49		
17	Structure Wind w/ Ice 120Á	None						116		
18	Structure Wind w/ Ice 135Á	None						120		
19	Structure Wind w/ Ice 150Á	None						98		
20	Antenna Wind 0Á	None				21				
21	Antenna Wind 30Á	None				42				
22	Antenna Wind 45Á	None				42				
23	Antenna Wind 60Á	None				42				
24	Antenna Wind 90Á	None				21				
25	Antenna Wind 120Á	None				42				
26	Antenna Wind 135Á	None				42				
27	Antenna Wind 150Á	None				42				
28	Antenna Wind w/ Ice 0Á	None				21				
29	Antenna Wind w/ Ice 30Á	None				42				
30	Antenna Wind w/ Ice 45Á	None				42				
31	Antenna Wind w/ Ice 60Á	None				42				
32	Antenna Wind w/ Ice 90Á	None				21				
33	Antenna Wind w/ Ice 120Á	None				42				
34	Antenna Wind w/ Ice 135Á	None				42				
35	Antenna Wind w/ Ice 150Á	None				42				
39	Maintenance Live 500 (1)	OL1				1				
40	Maintenance Live 500 (2)	OL2				1				
41	Maintenance Live 500 (3)	OL3				1				
42	Maintenance Live 500 (4)	OL4				1				

Load Combinations

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
1	DISPLAY (1.0D + 1....	Yes	Y		DL	1	20	1																		
2	1.4D	Yes	Y		DL	1.4																				
3	1.2D + 1.0W_0Á	Yes	Y		DL	1.2	4	1	20	1																
4	1.2D + 1.0W_30Á	Yes	Y		DL	1.2	5	1	21	1																
5	1.2D + 1.0W_45Á	Yes	Y		DL	1.2	6	1	22	1																
6	1.2D + 1.0W_60Á	Yes	Y		DL	1.2	7	1	23	1																
7	1.2D + 1.0W_90Á	Yes	Y		DL	1.2	8	1	24	1																
8	1.2D + 1.0W_120Á	Yes	Y		DL	1.2	9	1	25	1																

Load Combinations (Continued)

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
9	1.2D + 1.0W_135Á	Yes	Y		DL	1.2	10	1	26	1																
10	1.2D + 1.0W_150Á	Yes	Y		DL	1.2	11	1	27	1																
11	1.2D + 1.0W_180Á	Yes	Y		DL	1.2	4	-1	20	-1																
12	1.2D + 1.0W_210Á	Yes	Y		DL	1.2	5	-1	21	-1																
13	1.2D + 1.0W_225Á	Yes	Y		DL	1.2	6	-1	22	-1																
14	1.2D + 1.0W_240Á	Yes	Y		DL	1.2	7	-1	23	-1																
15	1.2D + 1.0W_270Á	Yes	Y		DL	1.2	8	-1	24	-1																
16	1.2D + 1.0W_300Á	Yes	Y		DL	1.2	9	-1	25	-1																
17	1.2D + 1.0W_315Á	Yes	Y		DL	1.2	10	-1	26	-1																
18	1.2D + 1.0W_330Á	Yes	Y		DL	1.2	11	-1	27	-1																
19	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	12	1	28	1	RL	1														
20	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	13	1	29	1	RL	1														
21	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	14	1	30	1	RL	1														
22	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	15	1	31	1	RL	1														
23	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	16	1	32	1	RL	1														
24	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	17	1	33	1	RL	1														
25	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	18	1	34	1	RL	1														
26	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	19	1	35	1	RL	1														
27	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	12	-1	28	-1	RL	1														
28	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	13	-1	29	-1	RL	1														
29	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	14	-1	30	-1	RL	1														
30	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	15	-1	31	-1	RL	1														
31	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	16	-1	32	-1	RL	1														
32	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	17	-1	33	-1	RL	1														
33	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	18	-1	34	-1	RL	1														
34	1.2D + 1.0Di + 1.0...	Yes	Y		DL	1.2	19	-1	35	-1	RL	1														
35	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	4	.066	20	.066	O...	1.5														
36	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	5	.066	21	.066	O...	1.5														
37	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	6	.066	22	.066	O...	1.5														
38	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	7	.066	23	.066	O...	1.5														
39	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	8	.066	24	.066	O...	1.5														
40	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	9	.066	25	.066	O...	1.5														
41	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	10	.066	26	.066	O...	1.5														
42	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	11	.066	27	.066	O...	1.5														
43	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	4	-.0...	20	-.0...	O...	1.5														
44	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	5	-.0...	21	-.0...	O...	1.5														
45	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	6	-.0...	22	-.0...	O...	1.5														
46	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	7	-.0...	23	-.0...	O...	1.5														
47	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	8	-.0...	24	-.0...	O...	1.5														
48	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	9	-.0...	25	-.0...	O...	1.5														
49	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	10	-.0...	26	-.0...	O...	1.5														
50	1.2D + 1.5Lm_1 + 1...	Yes	Y		DL	1.2	11	-.0...	27	-.0...	O...	1.5														
51	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	4	.066	20	.066	O...	1.5														
52	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	5	.066	21	.066	O...	1.5														
53	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	6	.066	22	.066	O...	1.5														
54	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	7	.066	23	.066	O...	1.5														
55	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	8	.066	24	.066	O...	1.5														
56	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	9	.066	25	.066	O...	1.5														
57	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	10	.066	26	.066	O...	1.5														
58	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	11	.066	27	.066	O...	1.5														
59	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	4	-.0...	20	-.0...	O...	1.5														
60	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	5	-.0...	21	-.0...	O...	1.5														

Load Combinations (Continued)

	Description	Solve	PDelta	S...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...	B...	Fa...
61	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	6	-.0...	22	-.0...	O...	1.5														
62	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	7	-.0...	23	-.0...	O...	1.5														
63	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	8	-.0...	24	-.0...	O...	1.5														
64	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	9	-.0...	25	-.0...	O...	1.5														
65	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	10	-.0...	26	-.0...	O...	1.5														
66	1.2D + 1.5Lm_2 + 1...	Yes	Y		DL	1.2	11	-.0...	27	-.0...	O...	1.5														
67	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	4	.066	20	.066	O...	1.5														
68	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	5	.066	21	.066	O...	1.5														
69	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	6	.066	22	.066	O...	1.5														
70	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	7	.066	23	.066	O...	1.5														
71	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	8	.066	24	.066	O...	1.5														
72	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	9	.066	25	.066	O...	1.5														
73	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	10	.066	26	.066	O...	1.5														
74	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	11	.066	27	.066	O...	1.5														
75	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	4	-.0...	20	-.0...	O...	1.5														
76	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	5	-.0...	21	-.0...	O...	1.5														
77	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	6	-.0...	22	-.0...	O...	1.5														
78	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	7	-.0...	23	-.0...	O...	1.5														
79	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	8	-.0...	24	-.0...	O...	1.5														
80	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	9	-.0...	25	-.0...	O...	1.5														
81	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	10	-.0...	26	-.0...	O...	1.5														
82	1.2D + 1.5Lm_3 + 1...	Yes	Y		DL	1.2	11	-.0...	27	-.0...	O...	1.5														
83	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	4	.066	20	.066	O...	1.5														
84	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	5	.066	21	.066	O...	1.5														
85	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	6	.066	22	.066	O...	1.5														
86	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	7	.066	23	.066	O...	1.5														
87	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	8	.066	24	.066	O...	1.5														
88	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	9	.066	25	.066	O...	1.5														
89	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	10	.066	26	.066	O...	1.5														
90	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	11	.066	27	.066	O...	1.5														
91	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	4	-.0...	20	-.0...	O...	1.5														
92	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	5	-.0...	21	-.0...	O...	1.5														
93	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	6	-.0...	22	-.0...	O...	1.5														
94	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	7	-.0...	23	-.0...	O...	1.5														
95	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	8	-.0...	24	-.0...	O...	1.5														
96	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	9	-.0...	25	-.0...	O...	1.5														
97	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	10	-.0...	26	-.0...	O...	1.5														
98	1.2D + 1.5Lm_4 + 1...	Yes	Y		DL	1.2	11	-.0...	27	-.0...	O...	1.5														

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Platform Horizontal P...	PIPE 3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
2	Offsett Tube	HSS4X4X4	Beam	None	A36 Gr.36	Typical	3.37	7.8	7.8	12.8
3	Offset Side Plate	0.38 X 6 Plate	Beam	None	A36 Gr.36	Typical	2.28	.027	6.84	.105
4	Grating Angle	L2x2x3	Beam	None	A36 Gr.36	Typical	.722	.271	.271	.009
5	Mount Pipe	PIPE 2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
6	Offset End Plate	0.5 x 6 Plate	Beam	None	A36 Gr.36	Typical	3	.063	9	.237
7	Support Rail	PIPE 3.0	Beam	None	A53 Gr.B	Typical	2.07	2.85	2.85	5.69
8	Bracing Pipe	PIPE 2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M51	Offsett Tube	62.679									Lateral
2	M52	Offset End ...	4.688			Lbyy						Lateral
3	M55	Offset Side ...	.875			Lbyy						Lateral
4	M59	Offset Side ...	.875			Lbyy						Lateral
5	M60	Offsett Tube	30.688			Lbyy						Lateral
6	M63	Offsett Tube	30.687			Lbyy						Lateral
7	M69	Platform Ho...	150			Lbyy						Lateral
8	M79	Offset End ...	4.688			Lbyy						Lateral
9	M104	Grating Angle	50.542			Lbyy						Lateral
10	M106	Grating Angle	50.542			Lbyy						Lateral
11	M162A	Offset End ...	3.122			Lbyy						Lateral
12	M163A	Offset Side ...	3			Lbyy						Lateral
13	M168A	Offset End ...	3.122			Lbyy						Lateral
14	M169A	Offset Side ...	3			Lbyy						Lateral
15	M27	Offsett Tube	62.679									Lateral
16	M28	Offset End ...	4.688			Lbyy						Lateral
17	M29	Offset Side ...	.875			Lbyy						Lateral
18	M30	Offset Side ...	.875			Lbyy						Lateral
19	M31	Offsett Tube	30.688			Lbyy						Lateral
20	M33	Offsett Tube	30.687			Lbyy						Lateral
21	M34	Offset End ...	4.688			Lbyy						Lateral
22	M39	Grating Angle	50.542			Lbyy						Lateral
23	M41	Grating Angle	50.542			Lbyy						Lateral
24	M46	Offset End ...	3.122			Lbyy						Lateral
25	M47	Offset Side ...	3			Lbyy						Lateral
26	M50	Offset End ...	3.122			Lbyy						Lateral
27	M51A	Offset Side ...	3			Lbyy						Lateral
28	M52A	Offsett Tube	62.679									Lateral
29	M53	Offset End ...	4.688			Lbyy						Lateral
30	M54	Offset Side ...	.875			Lbyy						Lateral
31	M55A	Offset Side ...	.875			Lbyy						Lateral
32	M56	Offsett Tube	30.688			Lbyy						Lateral
33	M58	Offsett Tube	30.687			Lbyy						Lateral
34	M59A	Offset End ...	4.688			Lbyy						Lateral
35	M64	Grating Angle	50.542			Lbyy						Lateral
36	M66	Grating Angle	50.542			Lbyy						Lateral
37	M71	Offset End ...	3.122			Lbyy						Lateral
38	M72	Offset Side ...	3			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
39	M75	Offset End ...	3.122			Lbyy						Lateral
40	M76	Offset Side ...	3			Lbyy						Lateral
41	M77	Platform Ho...	150			Lbyy						Lateral
42	M78	Platform Ho...	150			Lbyy						Lateral
43	M83	Platform Ho...	150			Lbyy						Lateral
44	M88	Mount Pipe	84			Lbyy						Lateral
45	M89	Mount Pipe	84			Lbyy						Lateral
46	M90	Mount Pipe	120			Lbyy						Lateral
47	M91	Mount Pipe	54			Lbyy						Lateral
48	M96	Platform Ho...	150			Lbyy						Lateral
49	M100	Mount Pipe	84			Lbyy						Lateral
50	M101	Mount Pipe	84			Lbyy						Lateral
51	M102	Mount Pipe	120			Lbyy						Lateral
52	M103A	Mount Pipe	54			Lbyy						Lateral
53	M108A	Platform Ho...	150			Lbyy						Lateral
54	M112	Mount Pipe	84			Lbyy						Lateral
55	M113	Mount Pipe	84			Lbyy						Lateral
56	M114	Mount Pipe	120			Lbyy						Lateral
57	M115	Mount Pipe	54			Lbyy						Lateral
58	M150A	Bracing Pipe	32.446			Lbyy						Lateral
59	M147A	Bracing Pipe	32.446			Lbyy						Lateral
60	M150B	Bracing Pipe	32.446			Lbyy						Lateral

Envelope Joint Reactions

	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N88	max	1511.0...	3	959.684	15	1859.2...	19	692.938	7	3948.409	19	1500.448	7
2		min	-1752....	11	-963.06	7	103.853	11	-803.768	15	-30.943	11	-1507.245	15
3	N38	max	1254.6...	3	1285.4...	14	1859.1...	30	20.976	6	260.353	4	1500.626	18
4		min	-1130....	11	-1493....	6	103.898	6	-3454.73	94	-2471.958	92	-1507.426	10
5	N73	max	833.253	16	1557.8...	15	1859.1...	24	3516.323	39	222.389	18	1500.622	12
6		min	-715.487	8	-1346....	7	103.917	16	-53.294	15	-2365.984	42	-1507.418	4
7	Totals:	max	3596.5...	3	3596.2...	15	5025.5...	33						
8		min	-3596....	11	-3596....	7	2093.2...	1						

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
1	M90	PIPE_2.0	.565	66.3...	3	.091	82.105		16	983...	32130	187...	187...	...	H1-...
2	M102	PIPE_2.0	.565	66.3...	14	.091	82.105		11	983...	32130	187...	187...	...	H1-...
3	M114	PIPE_2.0	.565	66.3...	8	.091	82.105		5	983...	32130	187...	187...	...	H1-...
4	M150B	PIPE_2.0	.421	0	13	.130	0		5	294...	32130	187...	187...	...	H1-...
5	M147A	PIPE_2.0	.409	0	3	.128	0		11	294...	32130	187...	187...	...	H1-...
6	M150A	PIPE_2.0	.409	0	8	.128	0		16	294...	32130	187...	187...	...	H1-...
7	M91	PIPE_2.0	.339	27	11	.136	27		7	252...	32130	187...	187...	...	H1-...
8	M103A	PIPE_2.0	.339	27	6	.138	27		17	252...	32130	187...	187...	...	H1-...
9	M115	PIPE_2.0	.339	27	16	.136	27		12	252...	32130	187...	187...	...	H1-...
10	M52A	HSS4X4X4	.336	0	38	.111	0	y	6	998...	109...	12663	12663	...	H1-...
11	M27	HSS4X4X4	.335	0	91	.111	0	y	11	998...	109...	12663	12663	...	H1-...
12	M51	HSS4X4X4	.315	0	32	.111	0	y	16	998...	109...	12663	12663	...	H1-...
13	M59	0.38 X 6 Plate	.252	.875	10	.354	.875	y	7	736...	73872	584....	9234	...	H1-...

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

	Member	Shape	Code Check	Loc[in]	LC	Shear Check	Loc[in]	Dir	LC	phi*...	phi*...	phi*...	phi*...	...	Eqn
14	M30	0.38 X 6 Plate	.252	.875	4	.354	.875	y	18	736...	73872	584....	9234	...	H1-...
15	M55A	0.38 X 6 Plate	.252	.875	15	.361	.875	y	13	736...	73872	584....	9234	...	H1-...
16	M51A	0.38 X 6 Plate	.245	1.5	4	.367	3	y	3	710...	73872	584....	9234	...	H1-...
17	M169A	0.38 X 6 Plate	.245	1.5	10	.367	3	y	8	710...	73872	584....	9234	...	H1-...
18	M76	0.38 X 6 Plate	.245	1.5	15	.374	3	y	13	710...	73872	584....	9234	...	H1-...
19	M55	0.38 X 6 Plate	.241	.875	4	.408	.875	y	15	736...	73872	584....	9234	...	H1-...
20	M54	0.38 X 6 Plate	.241	.875	10	.408	.875	y	4	736...	73872	584....	9234	...	H1-...
21	M29	0.38 X 6 Plate	.241	.875	15	.409	.875	y	9	736...	73872	584....	9234	...	H1-...
22	M113	PIPE_2.0	.235	33.1...	9	.035	33.158		14	178...	32130	187...	187...	...	H1-...
23	M89	PIPE_2.0	.233	33.1...	3	.036	33.158		9	178...	32130	187...	187...	...	H1-...
24	M101	PIPE_2.0	.233	33.1...	14	.035	33.158		3	178...	32130	187...	187...	...	H1-...
25	M112	PIPE_2.0	.202	33.1...	3	.046	33.158		17	178...	32130	187...	187...	...	H1-...
26	M88	PIPE_2.0	.202	33.1...	14	.045	33.158		12	178...	32130	187...	187...	...	H1-...
27	M100	PIPE_2.0	.202	33.1...	8	.045	33.158		7	178...	32130	187...	187...	...	H1-...
28	M72	0.38 X 6 Plate	.194	1.5	18	.414	3	y	4	710...	73872	584....	9234	...	H1-...
29	M163A	0.38 X 6 Plate	.194	1.5	12	.414	3	y	15	710...	73872	584....	9234	...	H1-...
30	M47	0.38 X 6 Plate	.194	1.5	7	.428	3	y	9	710...	73872	584....	9234	...	H1-...
31	M52	0.5 x 6 Plate	.176	4.688	10	.055	0	y	6	919...	97200	101...	12150	...	H1-...
32	M28	0.5 x 6 Plate	.176	4.688	4	.102	4.688	y	96	919...	97200	101...	12150	...	H1-...
33	M53	0.5 x 6 Plate	.176	4.688	15	.055	0	y	11	919...	97200	101...	12150	...	H1-...
34	M31	HSS4X4X4	.171	30.6...	13	.051	30.688	y	30	106...	109...	12663	12663	...	H1-...
35	M60	HSS4X4X4	.168	30.6...	18	.051	30.688	y	19	106...	109...	12663	12663	...	H1-...
36	M56	HSS4X4X4	.168	30.6...	7	.051	30.688	y	25	106...	109...	12663	12663	...	H1-...
37	M58	HSS4X4X4	.167	0	25	.052	0	y	24	106...	109...	12663	12663	...	H1-...
38	M63	HSS4X4X4	.166	0	19	.052	0	y	19	106...	109...	12663	12663	...	H1-...
39	M33	HSS4X4X4	.166	0	30	.052	0	y	30	106...	109...	12663	12663	...	H1-...
40	M79	0.5 x 6 Plate	.156	0	4	.105	0	y	7	919...	97200	101...	12150	...	H1-...
41	M59A	0.5 x 6 Plate	.156	0	10	.105	0	y	12	919...	97200	101...	12150	...	H1-...
42	M34	0.5 x 6 Plate	.156	0	15	.105	0	y	18	919...	97200	101...	12150	...	H1-...
43	M104	L2x2x3	.143	0	17	.006	0	z	8	961...	233...	557...	110...	...	H2-1
44	M39	L2x2x3	.140	0	11	.006	0	z	3	961...	233...	557...	123...	...	H2-1
45	M64	L2x2x3	.140	0	6	.006	0	z	14	961...	233...	557...	123...	...	H2-1
46	M108A	PIPE_3.0	.114	19.7...	14	.121	59.211		16	282...	65205	574...	574...	...	H1-...
47	M83	PIPE_3.0	.114	19.7...	8	.121	59.211		11	282...	65205	574...	574...	...	H1-...
48	M96	PIPE_3.0	.114	19.7...	3	.122	59.211		5	282...	65205	574...	574...	...	H1-...
49	M66	L2x2x3	.111	50.5...	9	.009	50.542	z	21	961...	233...	557...	122...	...	H2-1
50	M106	L2x2x3	.110	0	5	.009	50.542	z	32	961...	233...	557...	116...	...	H2-1
51	M41	L2x2x3	.110	50.5...	14	.009	50.542	z	27	961...	233...	557...	122...	...	H2-1
52	M69	PIPE_3.0	.096	55.2...	28	.091	55.263		3	282...	65205	574...	574...	...	H1-...
53	M77	PIPE_3.0	.096	55.2...	23	.091	55.263		14	282...	65205	574...	574...	...	H1-...
54	M78	PIPE_3.0	.096	55.2...	34	.091	55.263		8	282...	65205	574...	574...	...	H1-...
55	M46	0.5 x 6 Plate	.069	1.479	13	.286	1.479	y	10	948...	97200	101...	12150	...	H1-...
56	M162A	0.5 x 6 Plate	.069	1.479	3	.286	1.479	y	15	948...	97200	101...	12150	...	H1-...
57	M71	0.5 x 6 Plate	.069	1.479	8	.286	1.479	y	4	948...	97200	101...	12150	...	H1-...
58	M75	0.5 x 6 Plate	.066	1.479	9	.146	0	y	4	948...	97200	101...	12150	...	H1-...
59	M168A	0.5 x 6 Plate	.065	1.479	3	.146	0	y	15	948...	97200	101...	12150	...	H1-...
60	M50	0.5 x 6 Plate	.065	1.479	14	.151	0	y	9	948...	97200	101...	12150	...	H1-...

Exhibit F

Power Density/RF Emissions Report

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: CT11508F

CT508/Verizon Chaplin
123 Palmer Road
Chaplin, Connecticut 06235

June 19, 2019

EBI Project Number: 6219001921

Site Compliance Summary	
Compliance Status:	**COMPLIANT**
Site total MPE% of FCC general population allowable limit:	**17.75%**

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

June 19, 2019

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

Emissions Analysis for Site: CT11508F - CT508/Verizon Chaplin

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **123 Palmer Road** in **Chaplin, Connecticut** 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 ($\mu W/cm^2$). 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.

Public exposure to radio frequencies is regulated and enforced in units of microwatts per square centimeter ($\mu W/cm^2$). The general population exposure limits for the 600 MHz and 700 MHz frequency bands are approximately 400 $\mu W/cm^2$ and 467 $\mu W/cm^2$, respectively. The general population exposure limit for the 1900 MHz (PCS), 2100 MHz (AWS) and 11 GHz frequency 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 123 Palmer Road in Chaplin, Connecticut using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

2) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.

3) 4 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. Sector B includes an additional 4 channels at 30 Watts per channel.

4) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel. Sector B includes an additional 2 channels at 60 Watts per channel.

5) 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.

6) 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.

7) 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 manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

8) The antennas used in this modeling are the RFS APXV18-206517S-C-A20 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz channel(s) in Sector A, the RFS APXV18-206517S-C-A20 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz channel(s) in Sector B, the RFS APXV18-206517S-C-A20 for the 1900 MHz / 1900 MHz channel(s), the RFS APXVAARR24_43-U-NA20 for the 600 MHz / 700 MHz / 2100 MHz channel(s) in Sector C. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufacturer's supplied specifications, minus 10 dB for directional panel antennas and 20 dB for highly focused parabolic microwave dishes, 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.

9) The antenna mounting height centerline of the proposed antennas is 118 feet above ground level (AGL).

10) 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.

11) 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:	RFS APXV18-206517S-C-A20	Make / Model:	RFS APXV18-206517S-C-A20	Make / Model:	RFS APXV18-206517S-C-A20
Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz	Frequency Bands:	1900 MHz / 1900 MHz
Gain:	16.7 dBd / 16.7 dBd	Gain:	16.7 dBd / 16.7 dBd	Gain:	16.7 dBd / 16.7 dBd
Height (AGL):	118 feet	Height (AGL):	118 feet	Height (AGL):	118 feet
Channel Count:	6	Channel Count:	6	Channel Count:	6
Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts	Total TX Power (W):	240 Watts
ERP (W):	11,225.64	ERP (W):	11,225.64	ERP (W):	11,225.64
Antenna A1 MPE %:	**2.90%**	Antenna B1 MPE %:	**2.90%**	Antenna C1 MPE %:	**2.90%**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Frequency Bands:	600 MHz / 700 MHz / 2100 MHz	Frequency Bands:	600 MHz / 700 MHz / 1900 MHz / 1900 MHz / 2100 MHz	Frequency Bands:	600 MHz / 700 MHz / 2100 MHz
Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd	Gain:	12.95 dBd / 13.35 dBd / 15.65 dBd / 15.65 dBd / 16.35 dBd	Gain:	12.95 dBd / 13.35 dBd / 16.35 dBd
Height (AGL):	118 feet	Height (AGL):	118 feet	Height (AGL):	118 feet
Channel Count:	6	Channel Count:	12	Channel Count:	6
Total TX Power (W):	240 Watts	Total TX Power (W):	480 Watts	Total TX Power (W):	240 Watts
ERP (W):	7,659.31	ERP (W):	16,474.09	ERP (W):	7,659.31
Antenna A2 MPE %:	**2.82%**	Antenna B2 MPE %:	**5.09%**	Antenna C2 MPE %:	**2.82%**

Site Composite MPE %	
Carrier	**MPE %**
T-Mobile (Max at Sector B):	7.99%
Verizon	4.16%
AT&T	2.39%
Sprint	3.21%
Site Total MPE % :	17.75%

T-Mobile Sector A Total:	5.72%
T-Mobile Sector B Total:	7.99%
T-Mobile Sector C Total:	5.72%
Site Total:	17.75%

T-Mobile Maximum MPE Power Values (Sector B)

T-Mobile Frequency Band / Technology (Sector B)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density (μW/cm²)	Frequency (MHz)	Allowable MPE (μW/cm²)	Calculated % MPE
T-Mobile 1900 MHz GSM	4	1403.21	118.0	14.49	1900 MHz GSM	1000	1.45%
T-Mobile 1900 MHz LTE PCS	2	2806.41	118.0	14.49	1900 MHz LTE PCS	1000	1.45%
T-Mobile 600 MHz LTE	2	591.73	118.0	3.06	600 MHz LTE	400	0.76%
T-Mobile 700 MHz LTE	2	648.82	118.0	3.35	700 MHz LTE	467	0.72%
T-Mobile 1900 MHz GSM	4	1101.85	118.0	11.38	1900 MHz GSM	1000	1.14%
T-Mobile 1900 MHz LTE PCS	2	2203.69	118.0	11.38	1900 MHz LTE PCS	1000	1.14%
T-Mobile 2100 MHz LTE AWS	2	2589.11	118.0	13.37	2100 MHz LTE AWS	1000	1.34%
						Total:	**7.99%**

• NOTE: Totals may vary by approximately 0.01% due to summation of remainders in calculations.

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:	5.72%
Sector B:	7.99%
Sector C:	5.72%
T-Mobile Maximum MPE % (Sector B):	7.99%
Site Total:	17.75%
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **17.75%** 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 G

Mailing Receipts/Proof of Notice

UPS Internet Shipping: View/Print Label

1. **Ensure there are no other shipping or tracking labels attached to your package.** Select the Print button on the print dialog box that appears. Note: If your browser does not support this function select Print from the File menu to print the label.

2. **Fold the printed label at the solid line below.** Place the label in a UPS Shipping Pouch. If you do not have a pouch, affix the folded label using clear plastic shipping tape over the entire label.

3. **GETTING YOUR SHIPMENT TO UPS**
   Customers with a Daily Pickup
   Your driver will pickup your shipment(s) as usual.

   Customers without a Daily Pickup
   Take your package to any location of The UPS Store®, UPS Access Point(TM) location, UPS Drop Box, UPS Customer Center, Staples® or Authorized Shipping Outlet near you. Items sent via UPS Return Services(SM) (including via Ground) are also accepted at Drop Boxes. To find the location nearest you, please visit the 'Find Locations' Quick link at ups.com.
   Schedule a same day or future day Pickup to have a UPS driver pickup all of your Internet Shipping packages.
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SUFFERN ,NY 10901

FOLD HERE

NEIL GUERRIERO
3473040176
TRANSCEND WIRELESS
10 INDUSTRIAL AVE
MAHWAH NJ 07430

1 LBS

1 OF 1

SHIP TO:
WILLIAM ROSE, IV, FIRST SELECTMAN
TOWN OF CHAPLIN
495 PHOENIXVILLE ROAD
CHAPLIN CT 06235-2420

CT 063 0-01

UPS 2ND DAY AIR

TRACKING #: 1Z V25 742 02 9430 9843

2

BILLING: P/P

Reference#1: CT11508F
Reference#2: UPS- 1st Sel

UIS 21.1.23. WNTNV50 12.0A 04/2019

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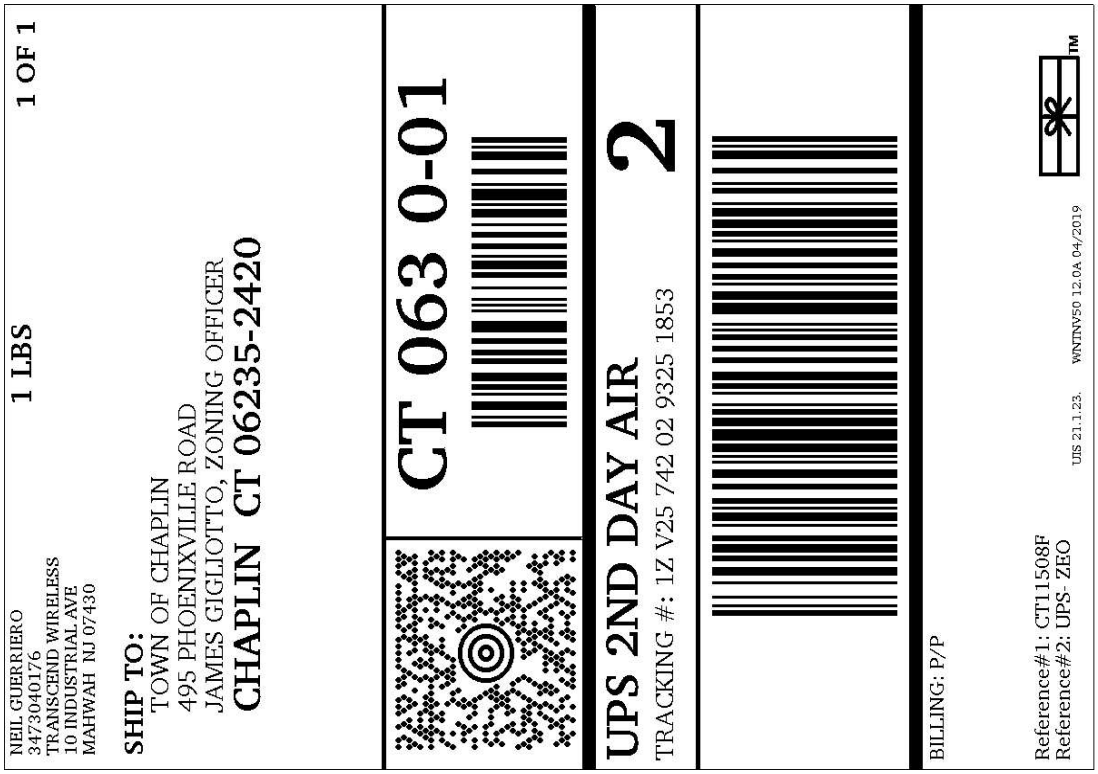

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