



10 INDUSTRIAL AVE,  
SUITE 3  
MAHWAH NJ 07430

PHONE: 201.684.0055  
FAX: 201.684.0066

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August 1, 2016

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

Notice of Exempt Modification  
1069 Connecticut Avenue, Bridgeport, CT 06607  
Latitude- 41.18362900  
Longitude- -73.15806000

Dear Ms. Bachman,

T-Mobile currently maintains (9) existing antennas at the 119' level of the existing 128' monopole at 1069 Connecticut Avenue in Bridgeport, CT. The tower is owned by American Tower. The property is owned by WR CT Avenue LLC. T-Mobile now intends to replace (3) of its existing antennas with (3) new 1900 MHz antennas. These antennas would be installed at the same 119' level of the existing tower. T-Mobile also intends on installing (1) new fiber cable.

This facility was approved by the Council in Petition No. 552 on April 3, 2002. This approval did not come with conditions that would be violated by this modification. This modification complies with the approval.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. 16-50j-72(b)(2). In accordance with R.C.S.A. 16-50j-73, a copy of this letter is being sent to the Honorable Joseph P. Ganim, Mayor of the City of Bridgeport, as well as the property owner and tower owner.

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

1. The proposed modification 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 modification will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The existing structure and its foundation can support the proposed loading.

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

Sincerely,

*Kyle Richers*

Kyle Richers  
Transcend Wireless  
10 Industrial Ave., Suite 3  
Mahwah, New Jersey 07430  
908-447-4716  
[krichers@transcendwireless.com](mailto:krichers@transcendwireless.com)

Attachments:

CC Joseph P. Ganim- as elected official  
American Tower- as tower owner  
WR CT Avenue LLC- as property owner



T-MOBILE USA, INC.  
 12920 SE 38TH STREET  
 BELLEVUE, WA 98006  
 (425) 378-4000

3322583  
 5/10/2016  
 2000011160

Invoice Number	Inv. Date	Description	Deductions	Voucher	Amount Paid
CT11452A-1	5/5/2016	Exempt Mod Filing Fees	0.00	1100852010	625.00

DO NOT ACCEPT THIS CHECK UNLESS THE FACE FADES FROM BLACK TO RED WITH LOGO IN BACKGROUND. THE BACK OF THIS DOCUMENT HAS HEAT-SENSITIVE INK THAT CHANGES FROM ORANGE TO YELLOW.



T-MOBILE USA, INC.  
 12920 SE 38th Street  
 Bellevue, WA 98006  
 (425) 378-4000

The Bank of New York Mellon  
 Pittsburgh, PA  
 60-1601433

3322583  
 5/10/2016  
 VID 2000011160

PAY \$625.00  
SIX TWO FIVE DOLLARS AND NO CENTS

\*\$625.00

\*\*\*Six Hundred Twenty Five Dollars Only\*\*\*\*\*

To  
 The  
 Order  
 Of

**CONNECTICUT SITING COUNCIL**  
 10 FRANKLIN SQ  
 NEW BRITAIN, CT 06051

VOID AFTER 180 DAYS  
 THIS CHECK CLEARS THROUGH POSITIVE PAY

*David [Signature]*

⑈0003322583⑈ ⑆043301601⑆ 013⑈8430⑈

THE ORIGINAL DOCUMENT HAS A REFLECTIVE WATERMARK ON THE BACK.

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4293101



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DEPOSITORY BANK ENDORSEMENT

# 1069 CONNECTICUT AV

**Location** 1069 CONNECTICUT AV

**Mblu** 44/ 723/ 3/A /

**Acct#** R--0004050

**Owner** WR CT AVENUE LLC

**Assessment** \$1,902,240

**Appraisal** \$2,717,490

**PID** 4911

**Building Count** 3

## Current Value

Appraisal			
Valuation Year	Improvements	Land	Total
2015	\$1,808,490	\$909,000	\$2,717,490

Assessment			
Valuation Year	Improvements	Land	Total
2015	\$1,265,940	\$636,300	\$1,902,240

## Owner of Record

**Owner** WR CT AVENUE LLC  
**Co-Owner** C/O WESTROCK DEVELOPMENT LLC  
**Address** 440 MAMARONECK AVENUE  
SUITE N-503  
HARRISON, NY 10528

**Sale Price** \$0  
**Certificate**  
**Book & Page** 7844/ 40  
**Sale Date** 06/27/2008  
**Instrument** 14

## Ownership History

Ownership History					
Owner	Sale Price	Certificate	Book & Page	Instrument	Sale Date
WR CT AVENUE LLC	\$0		7844/ 40	14	06/27/2008
WR CT AVENUE LLC	\$0		7844/ 34	14	06/27/2008
BRIDGEPORT CITY OF	\$0		7370/ 268	14	02/09/2007
AMERICAN FABRICS CO	\$0		2195/ 149		11/25/1986

## Building Information

### Building 1 : Section 1

**Year Built:** 1939  
**Living Area:** 106,726  
**Replacement Cost:** \$5,015,157  
**Building Percent** 20  
**Good:**

**Replacement Cost  
Less Depreciation:** \$1,003,030

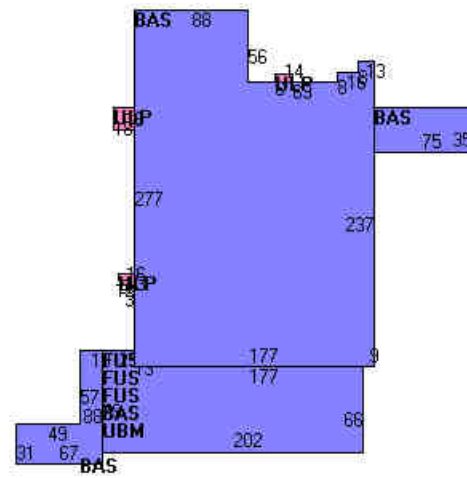
Building Attributes	
Field	Description
STYLE	Mill Building
MODEL	Ind/Comm
Grade:	Average
Stories:	4
Occupancy:	1
Exterior Wall 1:	Brick
Exterior Wall 2:	
Roof Struct:	Irregular
Roof Cover:	T+G/Rubber
Interior Wall 1:	Minim/Masonry
Interior Wall 2:	
Interior Floor 1:	Hardwood
Interior Floor 2:	Carpet
Heating Fuel:	Oil
Heating Type:	Hot Water
AC Type:	None
Bldg Use:	Mill Building
Ttl Rooms:	
Ttl Bedrms:	00
Ttl Baths:	0
Ttl Half Baths:	0
Ttl Xtra Fix:	0
1st Floor Use:	
Heat/AC:	None
Frame Type:	Masonry
Baths/Plumbing:	Average
Ceiling/Wall:	Ceiling Only
Rooms/Prtns:	Average
Wall Height:	16
% Comn Wall:	

**Building Photo**



(http://images.vgsi.com/photos/BridgeportCTPhotos//\00\00\50

**Building Layout**



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	65,755	65,755
FUS	Finished Upper Story	40,971	40,971
UBM	Unfin Basement	13,657	0
ULP	Uncovered Loading Platform	502	0
		120,885	106,726

**Building 2 : Section 1**

**Year Built:** 1967  
**Living Area:** 28,945  
**Replacement Cost:** \$1,058,496  
**Building Percent Good:** 23  
**Replacement Cost Less Depreciation:** \$243,450

### Building Attributes : Bldg 2 of 3

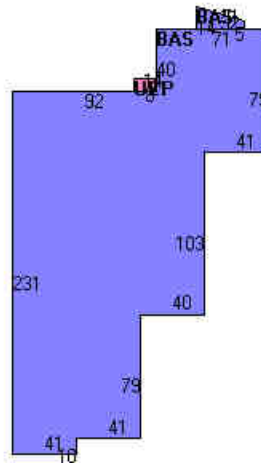
Field	Description
STYLE	Industrial
MODEL	Ind/Comm
Grade:	Average
Stories:	1
Occupancy:	1
Exterior Wall 1:	Concr/CinderBl
Exterior Wall 2:	
Roof Struct:	Flat
Roof Cover:	T+G/Rubber
Interior Wall 1:	Minim/Masonry
Interior Wall 2:	
Interior Floor 1:	Concr-Finished
Interior Floor 2:	
Heating Fuel:	Oil
Heating Type:	Hot Air-No Duc
AC Type:	None
Bldg Use:	Industrial Mdl 96
Ttl Rooms:	
Ttl Bedrms:	00
Ttl Baths:	0
Ttl Half Baths:	0
Ttl Xtra Fix:	10
1st Floor Use:	
Heat/AC:	None
Frame Type:	Masonry
Baths/Plumbing:	Average
Ceiling/Wall:	None
Rooms/Prtns:	Average
Wall Height:	14
% Comn Wall:	

### Building Photo



(<http://images.vgsi.com/photos/BridgeportCTPhotos//default.jp>)

### Building Layout



Building Sub-Areas (sq ft)			Legend
Code	Description	Gross Area	Living Area
BAS	First Floor	28,945	28,945
UEP	Utility Enclosed Porch	112	0
		29,057	28,945

### Building 3 : Section 1

**Year Built:** 1955  
**Living Area:** 16,539  
**Replacement Cost:** \$713,174  
**Building Percent Good:** 20  
**Replacement Cost Less Depreciation:** \$142,630

### Building Attributes : Bldg 3 of 3

Field	Description
-------	-------------

STYLE	Mill Building
MODEL	Ind/Comm
Grade:	D+
Stories:	4
Occupancy:	1
Exterior Wall 1:	Brick
Exterior Wall 2:	
Roof Struct:	Flat
Roof Cover:	Tar + Gravel
Interior Wall 1:	Minim/Masonry
Interior Wall 2:	
Interior Floor 1:	Concr-Finished
Interior Floor 2:	
Heating Fuel:	None
Heating Type:	None
AC Type:	None
Bldg Use:	Industrial Mdl 96
Ttl Rooms:	
Ttl Bedrms:	00
Ttl Baths:	0
Ttl Half Baths:	0
Ttl Xtra Fix:	10
1st Floor Use:	
Heat/AC:	None
Frame Type:	Masonry
Baths/Plumbing:	Average
Ceiling/Wall:	None
Rooms/Prtns:	Average
Wall Height:	15
% Comn Wall:	

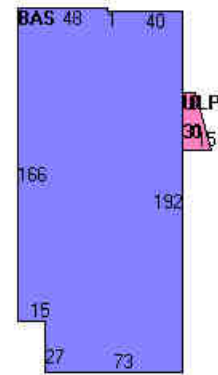
### Building Photo



(<http://images.vgsi.com/photos/BridgeportCTPhotos//\00\09\91>)

### Building Layout

UBM[7600]



Building Sub-Areas (sq ft)		Legend	
Code	Description	Gross Area	Living Area
BAS	First Floor	16,539	16,539
UBM	Unfin Basement	7,600	0
ULP	Uncovered Loading Platform	315	0
		24,454	16,539

### Extra Features

Extra Features				Legend
Code	Description	Size	Value	Bldg #
SPR1	Sprinklers-Wet	106726 SF	\$57,630	1
SPR1	Sprinklers-Wet	28651 SF	\$17,790	2
SPR1	Sprinklers-Wet	81037 SF	\$43,760	3
LDL1	Load Levler	2 UNITS	\$1,610	2
ELV1	Freight	5 STOPS	\$16,500	1
ELV1	Freight	5 STOPS	\$16,500	1



## Land

### Land Use

**Use Code** 342  
**Description** Mill Building  
**Zone** LI  
**Neighborhood** CTA  
**Alt Land Appr** No  
**Category**

### Land Line Valuation

**Size (Acres)** 6.06  
**Frontage** 0  
**Depth** 0  
**Assessed Value** \$636,300  
**Appraised Value** \$909,000

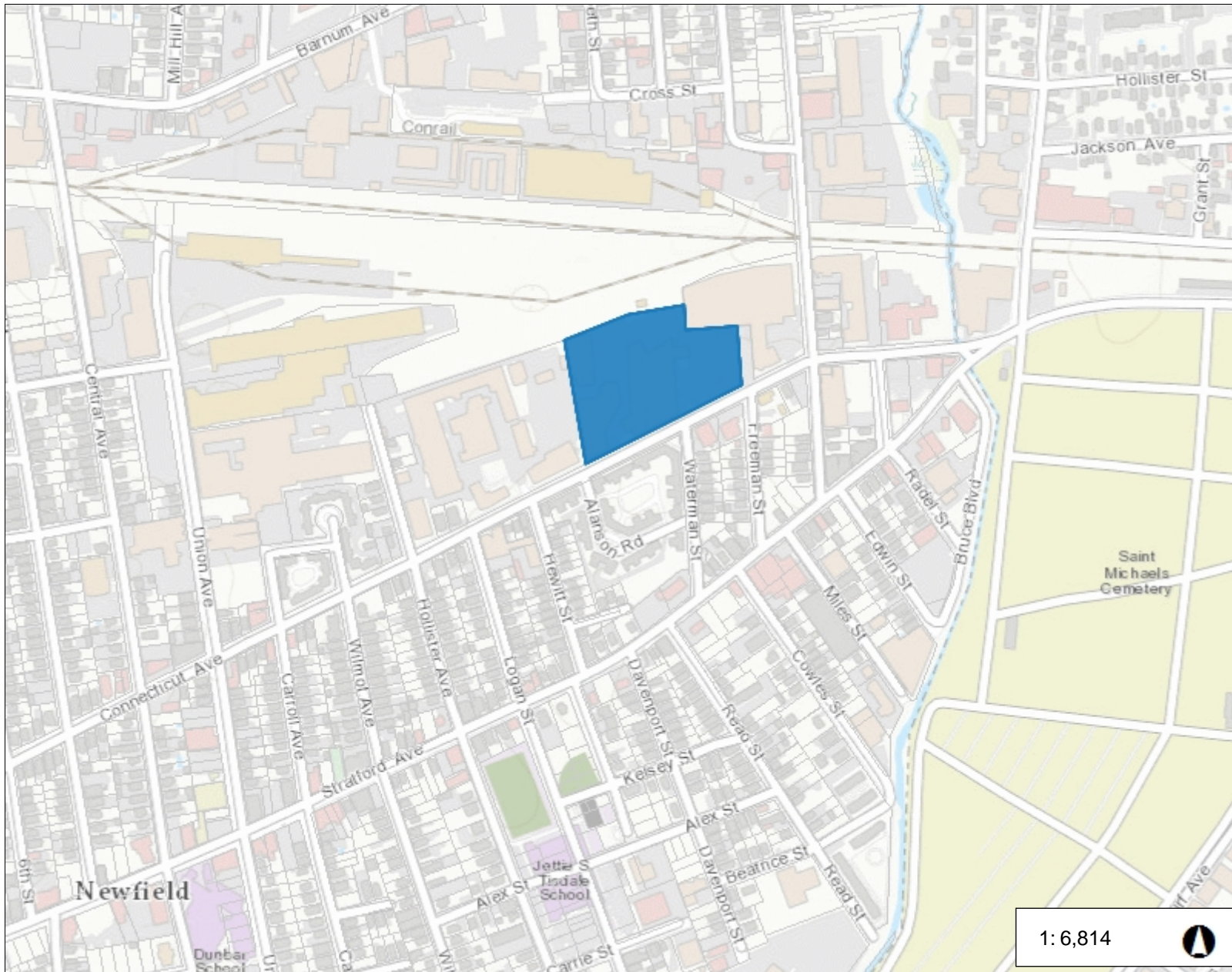
## Outbuildings

Outbuildings						<u>Legend</u>
Code	Description	Sub Code	Sub Description	Size	Value	Bldg #
SHD1	Shed	MT	Metal	336 SF	\$1,210	1
PAV1	Paving Asph			110000 SF	\$231,000	1
FN1	Fence, Chain	4	4 ft	668 LF	\$2,200	1
SHD3	Shed w/ Lt	CM	Comm	240 SF	\$4,320	1
TWR	Tower			130 LF	\$26,000	1
PAV2	Paving Conc			240 SF	\$860	1



## Valuation History

Appraisal			
Valuation Year	Improvements	Land	Total
2014	\$1,953,750	\$1,060,500	\$3,014,250
2013	\$1,953,750	\$1,060,500	\$3,014,250
2012	\$1,953,750	\$1,060,500	\$3,014,250

Assessment			
Valuation Year	Improvements	Land	Total
2014	\$1,367,630	\$742,350	\$2,109,980
2013	\$1,367,630	\$742,350	\$2,109,980
2012	\$1,367,630	\$742,350	\$2,109,980



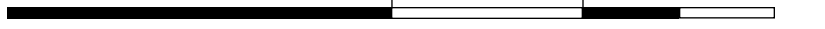
### Legend

-  Parcel Label
-  Parcels

1:6,814



1,135.6      0      567.79      1,135.6 Feet



WGS\_1984\_Web\_Mercator\_Auxiliary\_Sphere  
 Created by Greater Bridgeport Regional Council

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.

**THIS MAP IS NOT TO BE USED FOR NAVIGATION**



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

T-Mobile Existing Facility

Site ID: CT11452A

Bridgeport/Connecticut Av  
1069 Connecticut Avenue  
Bridgeport, CT 06607

**May 19, 2016**

**EBI Project Number: 6216002457**

Site Compliance Summary	
Compliance Status:	<b>COMPLIANT</b>
Site total MPE% of FCC general public allowable limit:	<b>13.86 %</b>

May 19, 2016

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

Emissions Analysis for Site: **CT11452A – Bridgeport/Connecticut Av**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **1069 Connecticut Avenue, Bridgeport, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

General population/uncontrolled exposure limits apply to situations in which the general public 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 public 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 ( $\mu\text{W}/\text{cm}^2$ ). The general population exposure limit for the 700 MHz Band is approximately 467  $\mu\text{W}/\text{cm}^2$ , and the general population exposure limit for the PCS and AWS bands is 1000  $\mu\text{W}/\text{cm}^2$ . Because each carrier will be using different frequency bands, and each frequency band has different exposure limits, it is necessary to report percent of MPE rather than power density.

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 **1069 Connecticut Avenue, Bridgeport, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was focused at the base of the tower. For this report the sample point is the top of a 6 foot person standing at the base of the tower.

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

- 1) 2 GSM channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 2) 2 UMTS channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 30 Watts per Channel.
- 3) 2 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.
- 4) 2 LTE channels (AWS Band – 2100 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 60 Watts per Channel.
- 5) 1 LTE channel (700 MHz Band) was considered for each sector of the proposed installation. This channel has a transmit power of 30 Watts.

- 6) Since some radios are ground mounted there are additional cabling losses accounted for these radio paths. For each passive RF path the following losses were calculated. 1.04 dB of additional cable loss for all ground mounted passive 700 MHz Channels and 1.92 dB of additional cable loss for all ground mounted passive 1900 MHz channels. This is based on manufacturers Specifications for 186 feet of 1-5/8" coax cable on each passive ground mounted path.
- 7) All radios at the proposed installation were considered to be running at full power and were uncombined in their RF transmissions paths per carrier prescribed configuration. Per FCC OET Bulletin No. 65 - Edition 97-01 recommendations to achieve the maximum anticipated value at each sample point, all power levels emitting from the proposed antenna installation are increased by a factor of 2.56 to account for possible in-phase reflections from the surrounding environment. This is rarely the case, and if so, is never continuous.
- 8) For the following calculations the sample point was the top of a six-foot person standing at the base of the tower. The maximum gain of the antenna per the antenna manufactures supplied specifications minus 10 dB was used in this direction. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 9) The antennas used in this modeling are the **Ericsson AIR32 B2A/B66A & RFS APX16DWV-16DWVS-E-A20** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **Commscope LNX-6515DS-VTM** for 700 MHz channels. This is based on feedback from the carrier with regards to anticipated antenna selection. The **Ericsson AIR32 B2A/B66A** has a maximum gain of **15.9 dBd** at their main lobe at 1900 MHz and 2100 MHz. The **RFS APX16DWV-16DWVS-E-A20** has a maximum gain of **16.3 dBd** at its main lobe at 1900 MHz and 2100 MHz. The **Commscope LNX-6515DS-VTM** has a maximum gain of **14.6 dBd** at its main lobe. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.
- 10) The antenna mounting height centerline of the proposed antennas is **116 feet** above ground level (AGL).
- 11) Emissions values for additional carriers were taken from the Connecticut Siting Council active database. Values in this database are provided by the individual carriers themselves.

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

### T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	1	Antenna #:	1	Antenna #:	1
Make / Model:	Ericsson AIR32 B2A/B66A	Make / Model:	Ericsson AIR32 B2A/B66A	Make / Model:	Ericsson AIR32 B2A/B66A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	116	Height (AGL):	116	Height (AGL):	116
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	240	Total TX Power(W):	240	Total TX Power(W):	240
ERP (W):	9,337.08	ERP (W):	9,337.08	ERP (W):	9,337.08
Antenna A1 MPE%	2.77	Antenna B1 MPE%	2.77	Antenna C1 MPE%	2.77
Antenna #:	2	Antenna #:	2	Antenna #:	2
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	116	Height (AGL):	116	Height (AGL):	116
Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz(PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	3,289.89	ERP (W):	3,289.89	ERP (W):	3,289.89
Antenna A2 MPE%	0.98	Antenna B2 MPE%	0.98	Antenna C2 MPE%	0.98
Antenna #:	3	Antenna #:	3	Antenna #:	3
Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM	Make / Model:	Commscope LNX-6515DS-VTM
Gain:	14.6 dBd	Gain:	14.6 dBd	Gain:	14.6 dBd
Height (AGL):	116	Height (AGL):	116	Height (AGL):	116
Frequency Bands	700 MHz	Frequency Bands	700 MHz	Frequency Bands	700 MHz
Channel Count	1	Channel Count	1	Channel Count	1
Total TX Power(W):	30	Total TX Power(W):	30	Total TX Power(W):	30
ERP (W):	680.96	ERP (W):	680.96	ERP (W):	680.96
Antenna A3 MPE%	0.43	Antenna B3 MPE%	0.43	Antenna C3 MPE%	0.43

Site Composite MPE%	
Carrier	MPE%
T-Mobile (Per Sector Max)	4.19 %
Clearwire	0.08 %
Clearwire MW	0.11 %
Sprint	0.96 %
AT&T	6.34 %
MetroPCS	2.18 %
<b>Site Total MPE %:</b>	<b>13.86 %</b>

T-Mobile Sector 1 Total:	4.19 %
T-Mobile Sector 2 Total:	4.19 %
T-Mobile Sector 3 Total:	4.19 %
<b>Site Total:</b>	<b>13.86 %</b>

T-Mobile_per sector	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ( $\mu\text{W}/\text{cm}^2$ )	Frequency (MHz)	Allowable MPE ( $\mu\text{W}/\text{cm}^2$ )	Calculated % MPE
T-Mobile 1900 MHz (PCS) LTE	2	2334.27	116	13.87	1900	1000	1.39 %
T-Mobile 2100 MHz (AWS) LTE	2	2334.27	116	13.87	2100	1000	1.39 %
T-Mobile 1900 MHz (PCS) GSM	2	822.47	116	4.89	1900	1000	0.49 %
T-Mobile 1900 MHz (PCS) UMTS	2	822.47	116	4.89	1900	1000	0.49 %
T-Mobile 700 MHz LTE	1	680.96	116	2.02	700	467	0.43 %
						<b>Total:</b>	<b>4.19 %</b>

## Summary

All calculations performed for this analysis yielded results that were **within** the allowable limits for general public 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 public exposure to RF Emissions are shown here:

T-Mobile Sector	Power Density Value (%)
Sector 1:	4.18 %
Sector 2:	4.18 %
Sector 3:	4.18 %
T-Mobile Per Sector Maximum:	4.18 %
Site Total:	13.85 %
Site Compliance Status:	<b>COMPLIANT</b>

The anticipated composite MPE value for this site assuming all carriers present is **13.85%** of the allowable FCC established general public 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.





**AMERICAN TOWER®**  
CORPORATION

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## Structural Analysis Report

**Structure** : 126 ft Monopole  
**ATC Site Name** : Bridgeport CT 2, CT  
**ATC Site Number** : 302469  
**Engineering Number** : OAA663340\_C3\_09  
**Proposed Carrier** : T-Mobile  
**Carrier Site Name** : N/A  
**Carrier Site Number** : CT11452A  
**Site Location** : 1069 Connecticut Avenue  
Bridgeport, CT 06607-1226  
41.183617,-73.158383  
**County** : Fairfield  
**Date** : July 21, 2016  
**Max Usage** : 81%  
**Result** : Pass

Reviewed by:  
William Garrett, PE  
Chief Engineer



Prepared By:  
Chris MacKay  
Structural Engineer IV

Jul 22 2016 10:01 AM

cosign

COA: PEC.0001553



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## Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 126 ft monopole to reflect the change in loading by T-Mobile.

## Supporting Documents

<b>Tower Drawings</b>	EI Project #5543, dated October 14, 1999
<b>Foundation Drawing</b>	EI Project #5543, dated October 14, 1999
<b>Geotechnical Report</b>	Applied Earth Technologies Project #9903A, dated November 23, 1999
<b>Modifications</b>	ATC Project #41045932, dated November 2, 2007

## 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.

<b>Basic Wind Speed:</b>	110 mph (3-Second Gust)
<b>Basic Wind Speed w/ Ice:</b>	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
<b>Code:</b>	ANSI/TIA-222-G / 2003 IBC w/ 2005 CT Supplement & 2009 CT Amendment
<b>Structure Class:</b>	II
<b>Exposure Category:</b>	B
<b>Topographic Category:</b>	1
<b>Crest Height:</b>	0 ft
<b>Spectral Response:</b>	$S_s = 0.20, S_1 = 0.06$
<b>Site Class:</b>	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](mailto: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**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
126.0	129.0	12	Decibel DB844H90E-XY	Platform w/ Handrails	(12) 1 1/4" Coax	Sprint Nextel
123.0	123.0	2	DragonWave Horizon Compact	Side Arms	(6) 5/16" Coax (3) 1/2" Coax (2) 2" Conduit	Clearwire
		1	Dragonwave A-ANT-23G-1-C			
		3	NextNet BTS-2500			
		3	Argus LLPX310R			
		1	Dragonwave A-ANT-18G-2-C			
116.0	116.0	3	Kathrein Smart Bias Tee	Low Profile Platform	(18) 1 5/8" Coax	T-Mobile
		3	RFS APX16DWV-16DWVS-E-A20			
		3	Andrew LNX-6515DS-VTM			
106.0	106.0	6	Powerwave LGP21901	Platform w/ Handrails	(4) 1.24" 4 AWG 6 (12) 1 5/8" Coax (3) 0.51" Hybrid	AT&T Mobility
		12	Powerwave LGP2140X			
		2	Raycap DC6-48-60-18-8F			
		3	Ericsson RRUS A2 B2			
		3	Ericsson RRUS-11			
		3	Ericsson RRUS 12			
		3	Ericsson RRUS E2 B29			
		3	Ericsson RRUS-32			
		3	Powerwave 7770.00			
		6	CCI OPA-65R-LCUU-H4			
98.0	98.0	3	RCU	Flush	(6) 1 5/8" Coax (1) 3/8" Coax	Metro PCS
		3	Kathrein 800 10504			
85.5	85.5	1	Antel BCD-87010 ___	Side Arm	(1) 7/8" Coax	Spok Holdings

**Equipment to be Removed**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
116.0	116.0	3	RFS APX16PV-16PVL-A	-	-	T-Mobile
		3	Andrew ETW200VS12UB			
		6	Ericsson KRY 112 71			

**Proposed Equipment**

Elevation <sup>1</sup> (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
116.0	116.0	6	Ericsson KRY 112 489/1	Low Profile Platform	(1) 7/8" Fiber	T-Mobile
		3	Ericsson AIR-32 B2A/B66Aa			

<sup>1</sup>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	74%	Pass
Shaft	78%	Pass
Base Plate	41%	Pass

**Foundations**

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	2,572.7	79%
Axial (Kips)	59.4	5%
Shear (Kips)	27.0	81%

The structure base reactions resulting from this analysis were found to be acceptable through analysis based on geotechnical and foundation information, therefore no modification or reinforcement of the foundation will be required.

**Deflection and Sway\***

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
123.0	Dragonwave A-ANT-23G-1-C	Clearwire Corporatio	1.460	1.300
	Dragonwave A-ANT-18G-2-C			
116.0	Ericsson KRY 112 489/1	T-Mobile	1.302	1.278
	Ericsson AIR-32 B2A/B66Aa			

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



## **Standard Conditions**

All engineering services are performed on the basis that the information used is current and correct. This information may consist of, but is not necessary limited, to:

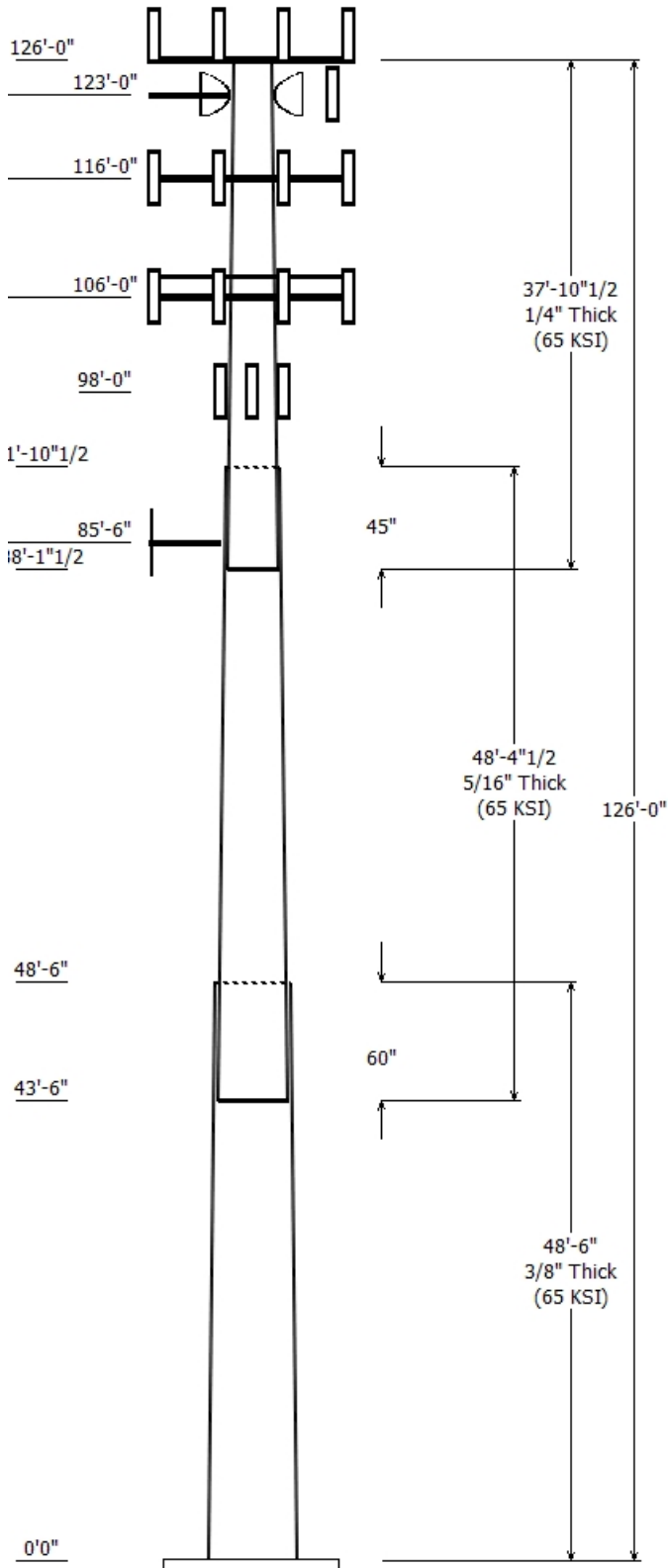
- Information supplied by the client regarding the structure itself, antenna, mounts and feed line loading on the structure and its components, or other relevant information.
- Information from drawings in the possession of American Tower Corporation, or generated by field inspections or measurements of the structure.

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. In the absence of information to the contrary, we assume that all structures were constructed in accordance with the drawings and specifications and that their capacity has not significantly changed from the "as new" condition.

Unless explicitly agreed by both the client and American Tower Corporation, all services will be performed in accordance with the current revision of ANSI/TIA -222. The design basic wind speed will be determined based on the minimum basic wind speed as prescribed in ANSI/TIA-222. Although every effort is taken to ensure that the loading considered is adequate to meet the requirements of all applicable regulatory entities, we can provide no assurance to meet any other local and state codes or requirements. If wind and ice loads or other relevant parameters are to be different from the minimum values recommended by the codes, the client shall specify the exact requirement.

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 we supply.

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Job Information	
Pole :	302469
Code :	ANSI/TIA-222-G
Description :	Monopole
Client :	T-MOBILE
Struct Class :	II
Location :	Bridgeport CT 2, CT
Shape :	18 Sides
Exposure :	B
Height :	126.00 (ft)
Topo :	1
Base Elev (ft):	0.00
Taper:	0.235121(in/ft)

Sections Properties								
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap		Steel Grade
		Across Flats Top	Across Flats Bottom			Length (in)	Taper (in/ft)	
1	48.500	34.097	45.500	0.375		0.000	0.235100	65
2	48.375	24.523	35.897	0.313	Slip Joint	60.000	0.235100	65
3	37.875	17.000	25.905	0.250	Slip Joint	45.000	0.235100	65

Discrete Appurtenance				
Attach Elev (ft)	Force Elev (ft)	Qty	Description	
126.000	129.000	12	Decibel DB844H90E-XY	
126.000	126.000	1	Flat Platform w/ Handrails	
123.000	123.000	1	Dragonwave A-ANT-23G-1-C	
123.000	123.000	1	Side Arms	
123.000	123.000	2	DragonWave Horizon Compact	
123.000	123.000	3	Argus LLPX310R	
123.000	123.000	1	Dragonwave A-ANT-18G-2-C	
123.000	123.000	3	NextNet BTS-2500	
116.000	116.000	3	Ericsson AIR-32 B2A/B66Aa	
116.000	116.000	6	Ericsson KRY 112 489/1	
116.000	116.000	3	Andrew LNX-6515DS-VTM	
116.000	116.000	3	Kathrein Smart Bias Tee	
116.000	116.000	3	RFS APX16DWV-16DWVS-E-A20	
116.000	116.000	1	Round Low Profile Platform	
106.000	106.000	1	Round Platform w/ Handrails	
106.000	106.000	6	CCI OPA-65R-LCUU-H4	
106.000	106.000	3	Powerwave 7770.00	
106.000	106.000	3	Ericsson RRUS-32	
106.000	106.000	3	Ericsson RRUS E2 B29	
106.000	106.000	3	Ericsson RRUS 12	
106.000	106.000	3	Ericsson RRUS-11	
106.000	106.000	3	Ericsson RRUS A2 B2	
106.000	106.000	2	Raycap DC6-48-60-18-8F	
106.000	106.000	12	Powerwave LGP2140X	
106.000	106.000	6	Powerwave LGP21901	
98.000	98.000	3	RCU	
98.000	98.000	3	Kathrein 800 10504	
85.500	85.500	1	Antel BCD-87010	
85.500	85.500	1	Flat Side Arm	

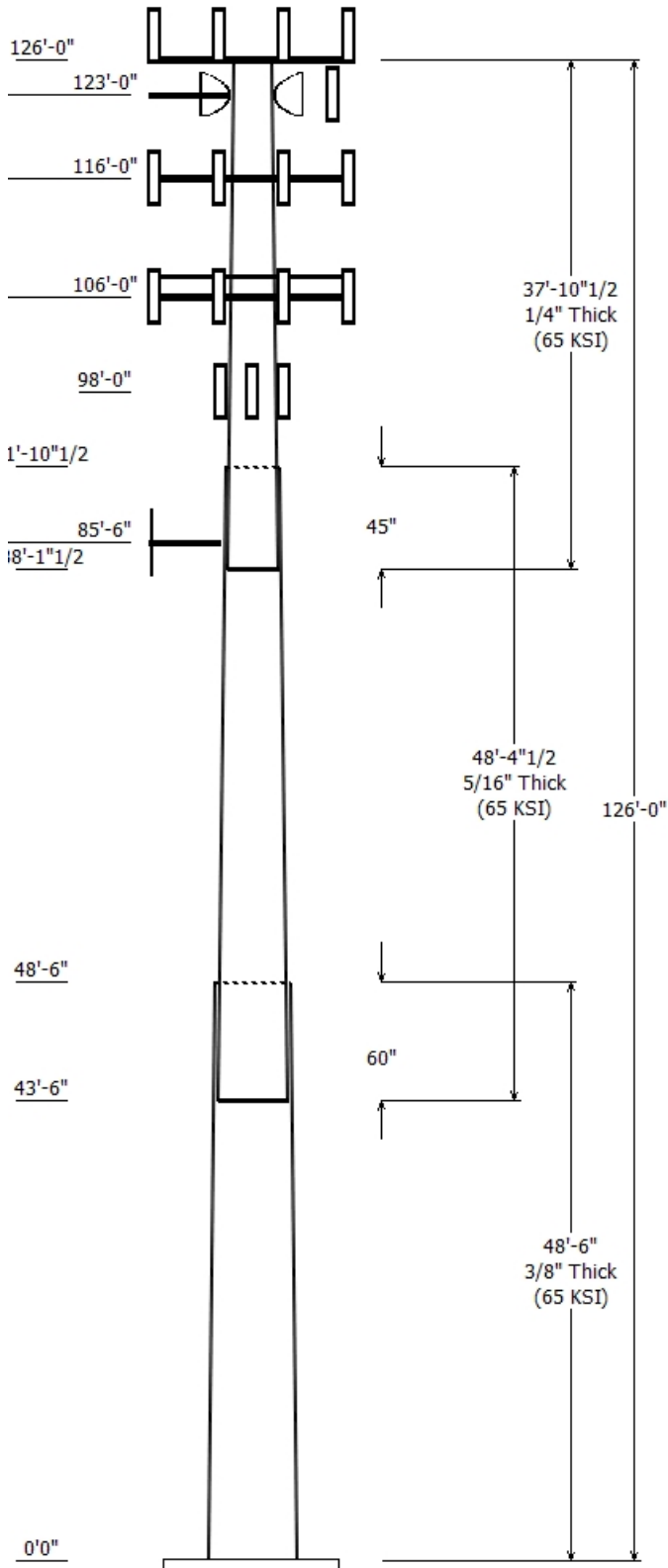
Linear Appurtenance			
Elev (ft) From	To	Description	Exposed To Wind
0.000	85.500	7/8" Coax	No
0.000	98.000	1 5/8" Coax	Yes
0.000	98.000	3/8" Coax	Yes
0.000	106.00	0.51" Hybrid	Yes
0.000	106.00	1 5/8" Coax	Yes
0.000	106.00	1.24" (31.6mm) 4	No
0.000	116.00	1 5/8" Coax	No
0.000	116.00	7/8" Fiber	No

0.000	123.00	1/2" Coax	No
0.000	123.00	2" Conduit	No
0.000	123.00	5/16" Coax	No
0.000	129.00	1 1/4" Coax	No

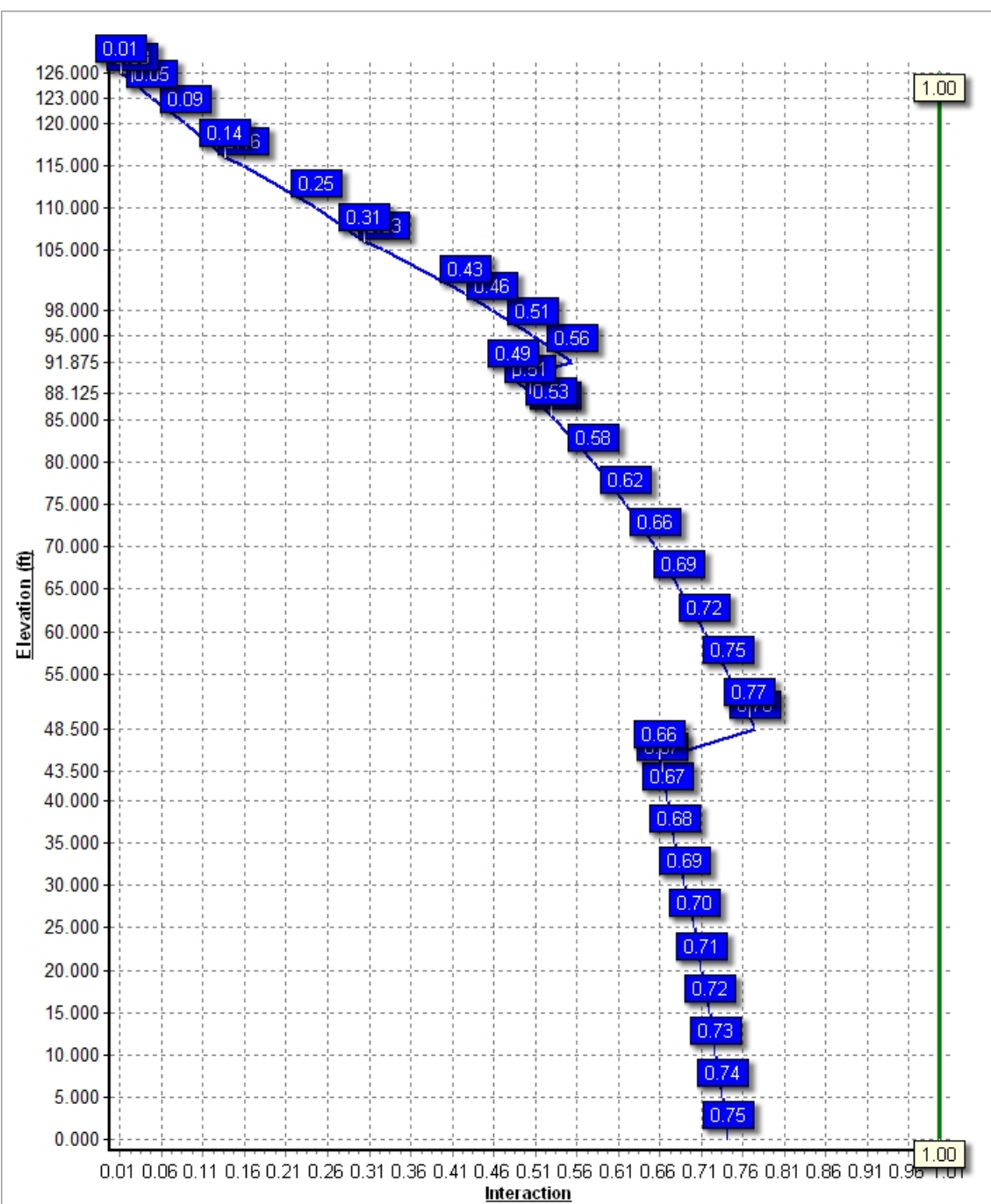
Load Cases	
1.2D + 1.6W	110 mph with No Ice
0.9D + 1.6W	110 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (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	2572.73	26.97	35.54
0.9D + 1.6W	2487.49	25.88	26.64
1.2D + 1.0Di + 1.0Wi	512.14	5.26	59.43
(1.2 + 0.2Sds) * DL + E ELFM	124.65	1.16	35.45
(1.2 + 0.2Sds) * DL + E EMAM	255.03	2.39	35.45
(0.9 - 0.2Sds) * DL + E ELFM	122.61	1.16	24.42
(0.9 - 0.2Sds) * DL + E EMAM	250.57	2.38	24.42
1.0D + 1.0W	466.26	4.82	29.67

Dish Deflections			
Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	123.00	17.518	1.300
1.0D + 1.0W	123.00	17.518	1.300







Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

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Customer: T-MOBILE

**Analysis Parameters**

Location:	Fairfield County, CT	Height (ft):	126
Code:	ANSI/TIA-222-G	Base Diameter (in):	45.50
Shape:	18 Sides	Top Diameter (in):	17.00
Pole Type:	Taper	Taper (in/ft) :	0.235
Pole Manufacturer:	EEL		

**Ice & Wind Parameters**

Structure Class:	II	Design Wind Speed Without Ice:	110 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0.0 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):	2.31		
T <sub>L</sub> (sec):	6	p:	1.3
S <sub>s</sub> :	0.204	S <sub>1</sub> :	0.064
F <sub>a</sub> :	1.600	F <sub>v</sub> :	2.400
S <sub>ds</sub> :	0.218	S <sub>d1</sub> :	0.102
		C <sub>s</sub> :	0.030
		C <sub>s</sub> Max:	0.030
		C <sub>s</sub> Min:	0.030

**Load Cases**

1.2D + 1.6W	110 mph with No Ice
0.9D + 1.6W	110 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: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

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Customer: T-MOBILE

**Shaft Section Properties**

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	Taper (in/ft)
1-18	48.500	0.3750	65		0.00	7,744	45.50	0.00	53.71	13817.4	19.98	121.33	34.097	48.50	40.14	5766.3	14.62	90.92	0.235121
2-18	48.375	0.3125	65	Slip	60.00	4,881	35.89	43.50	35.29	5646.6	18.84	114.87	24.523	91.88	24.01	1778.4	12.43	78.47	0.235121
3-18	37.875	0.2500	65	Slip	45.00	2,168	25.90	88.13	20.36	1692.8	16.86	103.62	17.000	126.00	13.29	471.1	10.58	68.00	0.235121
Shaft Weight						14,793													

**Discrete Appurtenance Properties**

Attach Elev (ft)	Description	Qty	No Ice			Ice			Distance From Face (ft)	Vert Ecc (ft)
			Weight (lb)	EPAA (sf)	Orientation Factor	Weight (lb)	EPAA (sf)	Orientation Factor		
126.00	Decibel DB844H90E-XY	12	14.00	3.610	0.92	122.23	4.490	0.92	0.000	3.000
126.00	Flat Platform w/ Handrails	1	2000.00	42.400	1.00	3,398.91	63.044	1.00	0.000	0.000
123.00	Argus LLPX310R	3	28.60	4.290	0.73	133.67	5.169	0.73	0.000	0.000
123.00	Dragonwave A-ANT-18G-2-C	1	27.10	4.690	1.00	110.86	5.940	1.00	0.000	0.000
123.00	Dragonwave A-ANT-23G-1-C	1	15.00	1.610	1.00	52.15	2.353	1.00	0.000	0.000
123.00	DragonWave Horizon	2	10.60	0.430	0.50	39.98	0.654	0.50	0.000	0.000
123.00	NextNet BTS-2500	3	35.00	1.820	0.50	90.59	2.349	0.50	0.000	0.000
123.00	Side Arms	1	560.00	8.500	1.00	1,019.33	15.472	1.00	0.000	0.000
116.00	Andrew LNX-6515DS-VTM	3	51.30	11.430	0.84	306.72	13.050	0.84	0.000	0.000
116.00	Ericsson AIR-32 B2A/B66Aa	3	132.20	6.510	0.86	310.31	7.624	0.86	0.000	0.000
116.00	Ericsson KRY 112 489/1	6	15.40	0.650	0.67	39.29	0.898	0.67	0.000	0.000
116.00	Kathrein Smart Bias Tee	3	3.31	0.090	0.50	9.79	0.240	0.50	0.000	0.000
116.00	RFS APX16DWW-16DWVS-E-	3	40.70	6.590	0.66	174.68	7.680	0.66	0.000	0.000
116.00	Round Low Profile Platform	1	1500.00	21.700	1.00	2,132.47	40.442	1.00	0.000	0.000
106.00	CCI OPA-65R-LCUU-H4	6	57.00	6.080	0.78	212.40	7.087	0.78	0.000	0.000
106.00	Ericsson RRUS 12	3	50.00	3.150	0.67	117.46	4.273	0.67	0.000	0.000
106.00	Ericsson RRUS A2 B2	3	22.00	2.060	0.67	74.92	2.641	0.67	0.000	0.000
106.00	Ericsson RRUS E2 B29	3	60.00	3.150	0.67	151.39	3.837	0.67	0.000	0.000
106.00	Ericsson RRUS-11	3	51.00	2.790	0.67	137.26	3.444	0.67	0.000	0.000
106.00	Ericsson RRUS-32	3	77.00	3.310	0.67	171.08	4.550	0.67	0.000	0.000
106.00	Powerwave 7770.00	3	35.00	5.510	0.77	164.47	6.526	0.77	0.000	0.000
106.00	Powerwave LGP2140X	12	19.00	1.080	0.50	50.90	1.518	0.50	0.000	0.000
106.00	Powerwave LGP21901	6	5.50	0.230	0.50	17.42	0.419	0.50	0.000	0.000
106.00	Raycap DC6-48-60-18-8F	2	31.80	1.280	1.00	120.84	2.829	1.00	0.000	0.000
106.00	Round Platform w/ Handrails	1	2000.00	27.200	1.00	3,253.54	50.847	1.00	0.000	0.000
98.00	Kathrein 800 10504	3	17.60	3.340	0.78	94.72	4.255	0.78	0.000	0.000
98.00	RCU	3	1.00	0.160	0.50	10.44	0.350	0.50	0.000	0.000
85.50	Antel BCD-87010	1	26.50	2.900	1.00	151.96	6.534	1.00	0.000	0.000
85.50	Flat Side Arm	1	150.00	6.300	1.00	219.27	8.627	1.00	0.000	0.000
Totals		96	9040.93			20,194.86			Number of Loadings :	29

**Linear Appurtenance Properties**

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Projected Width (in)	Exposed To Wind	Carrier
0.00	129.00	12	1 1/4" Coax	1.55	0.63	N	0.00	Sprint Nextel
0.00	123.00	3	1/2" Coax	0.63	0.15	N	0.00	Clearwire Corporation
0.00	123.00	2	2" Conduit	2.38	3.65	N	0.00	Clearwire Corporation
0.00	123.00	6	5/16" Coax	0.31	0.05	N	0.00	Clearwire Corporation
0.00	116.00	18	1 5/8" Coax	1.98	0.82	N	0.00	T-Mobile
0.00	116.00	1	7/8" Fiber	0.88	0.70	N	0.00	T-Mobile
0.00	106.00	3	0.51" Hybrid	0.51	0.14	N	0.00	AT&T Mobility
0.00	106.00	12	1 5/8" Coax	1.98	0.82	N	3.96	AT&T Mobility

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Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

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Customer: T-MOBILE

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0.00	106.00	4	1.24" (31.6mm)	4 AWG 6	1.24	1.17	N	0.00	N	AT&T Mobility
0.00	98.00	6	1 5/8" Coax		1.98	0.82	N	1.98	Y	Metro PCS
0.00	98.00	1	3/8" Coax		0.44	0.08	N	0.00	Y	Metro PCS
0.00	85.50	1	7/8" Coax		1.09	0.33	N	0.00	N	Spok Holdings, Inc.

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

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Customer: T-MOBILE

**Segment Properties** (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in <sup>2</sup> )	Ix (in <sup>4</sup> )	W/t Ratio	D/t Ratio	F'y (ksi)	S (in <sup>3</sup> )	Z (in <sup>3</sup> )	Weight (lb)
0.00		0.3750	45.500	53.708	13,817.4	19.98	121.33	77.9	598.1	0.0	0.0
5.00		0.3750	44.324	52.309	12,765.4	19.43	118.20	78.5	567.2	0.0	901.9
10.00		0.3750	43.149	50.910	11,768.2	18.88	115.06	79.2	537.2	0.0	878.1
15.00		0.3750	41.973	49.510	10,824.3	18.33	111.93	79.8	507.9	0.0	854.3
20.00		0.3750	40.798	48.111	9,932.2	17.77	108.79	80.5	479.5	0.0	830.5
25.00		0.3750	39.622	46.712	9,090.6	17.22	105.66	81.1	451.9	0.0	806.7
30.00		0.3750	38.446	45.313	8,297.9	16.67	102.52	81.8	425.1	0.0	782.9
35.00		0.3750	37.271	43.914	7,552.7	16.11	99.39	82.4	399.1	0.0	759.0
40.00		0.3750	36.095	42.514	6,853.5	15.56	96.25	82.6	374.0	0.0	735.2
43.50	Bot - Section 2	0.3750	35.272	41.535	6,390.7	15.17	94.06	82.6	356.9	0.0	500.5
45.00		0.3750	34.920	41.115	6,198.9	15.01	93.12	82.6	349.6	0.0	390.2
48.50	Top - Section 1	0.3125	34.722	34.128	5,105.2	18.18	111.11	80.0	289.6	0.0	895.2
50.00		0.3125	34.369	33.779	4,949.8	17.98	109.98	80.3	283.7	0.0	173.3
55.00		0.3125	33.193	32.612	4,454.7	17.32	106.22	81.0	264.3	0.0	564.8
60.00		0.3125	32.018	31.446	3,993.8	16.66	102.46	81.8	245.7	0.0	544.9
65.00		0.3125	30.842	30.280	3,565.8	15.99	98.69	82.6	227.7	0.0	525.1
70.00		0.3125	29.667	29.114	3,169.5	15.33	94.93	82.6	210.4	0.0	505.3
75.00		0.3125	28.491	27.948	2,803.8	14.67	91.17	82.6	193.8	0.0	485.4
80.00		0.3125	27.315	26.782	2,467.3	14.00	87.41	82.6	177.9	0.0	465.6
85.00		0.3125	26.140	25.616	2,158.9	13.34	83.65	82.6	162.7	0.0	445.8
85.50		0.3125	26.022	25.500	2,129.5	13.27	83.27	82.6	161.2	0.0	43.5
88.13	Bot - Section 3	0.3125	25.405	24.888	1,979.8	12.92	81.30	82.6	153.5	0.0	225.0
90.00		0.3125	24.964	24.450	1,877.3	12.68	79.89	82.6	148.1	0.0	286.2
91.88	Top - Section 2	0.2500	25.023	19.657	1,524.2	16.24	100.09	82.3	120.0	0.0	281.1
95.00		0.2500	24.288	19.074	1,392.5	15.72	97.15	82.6	112.9	0.0	205.9
98.00		0.2500	23.583	18.514	1,273.5	15.22	94.33	82.6	106.4	0.0	191.9
100.00		0.2500	23.113	18.141	1,198.1	14.89	92.45	82.6	102.1	0.0	124.7
105.00		0.2500	21.937	17.208	1,022.6	14.06	87.75	82.6	91.8	0.0	300.7
106.00		0.2500	21.702	17.022	989.7	13.90	86.81	82.6	89.8	0.0	58.2
110.00		0.2500	20.762	16.275	865.1	13.23	83.05	82.6	82.1	0.0	226.6
115.00		0.2500	19.586	15.343	724.7	12.40	78.34	82.6	72.9	0.0	269.0
116.00		0.2500	19.351	15.156	698.6	12.24	77.40	82.6	71.1	0.0	51.9
120.00		0.2500	18.410	14.410	600.4	11.57	73.64	82.6	64.2	0.0	201.2
123.00		0.2500	17.705	13.850	533.1	11.08	70.82	82.6	59.3	0.0	144.2
125.00		0.2500	17.235	13.477	491.2	10.75	68.94	82.6	56.1	0.0	93.0
126.00		0.2500	17.000	13.290	471.1	10.58	68.00	82.6	54.6	0.0	45.5
14,793.2											

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

7/21/2016 5:15:50 PM

Customer: T-MOBILE

**Load Case:** 1.2D + 1.6W

110 mph with No Ice

25 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		Discrete Forces			Linear Forces		Sum of Forces				
		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		244.2	0.0					0.0	0.0	244.2	0.0	0.0	0.0
5.00		484.3	1,082.3					0.0	307.9	484.3	1,390.1	0.0	0.0
10.00		476.1	1,053.7					0.0	307.9	476.1	1,361.5	0.0	0.0
15.00		467.9	1,025.1					0.0	307.9	467.9	1,333.0	0.0	0.0
20.00		459.7	996.6					0.0	307.9	459.7	1,304.4	0.0	0.0
25.00		451.5	968.0					0.0	307.9	451.5	1,275.8	0.0	0.0
30.00		448.6	939.4					0.0	307.9	448.6	1,247.3	0.0	0.0
35.00		454.7	910.9					0.0	307.9	454.7	1,218.7	0.0	0.0
40.00		393.1	882.3					0.0	307.9	393.1	1,190.1	0.0	0.0
43.50	Bot - Section 2	234.9	600.6					0.0	215.5	234.9	816.1	0.0	0.0
45.00		240.0	468.2					0.0	92.4	240.0	560.6	0.0	0.0
48.50	Top - Section 1	240.3	1,074.2					0.0	215.5	240.3	1,289.7	0.0	0.0
50.00		313.1	208.0					0.0	92.4	313.1	300.3	0.0	0.0
55.00		483.8	677.7					0.0	307.9	483.8	985.6	0.0	0.0
60.00		486.0	653.9					0.0	307.9	486.0	961.8	0.0	0.0
65.00		487.0	630.1					0.0	307.9	487.0	938.0	0.0	0.0
70.00		588.3	606.3					0.0	307.9	588.3	914.2	0.0	0.0
75.00		681.7	582.5					132.1	307.9	813.8	890.4	0.0	0.0
80.00		665.8	558.7					133.8	307.9	799.5	866.6	0.0	0.0
85.00		361.1	534.9					135.4	307.9	496.5	842.8	0.0	0.0
85.50	Appertunance(s)	200.8	52.2	450.3	0.0	0.0	211.8	13.6	30.8	664.7	294.8	0.0	0.0
88.13	Bot - Section 3	289.5	270.0					71.8	160.6	361.3	430.6	0.0	0.0
90.00		240.8	343.4					51.5	114.7	292.3	458.1	0.0	0.0
91.88	Top - Section 2	316.1	337.4					51.7	114.7	367.8	452.1	0.0	0.0
95.00		381.1	247.1					86.7	191.2	467.8	438.3	0.0	0.0
98.00	Appertunance(s)	263.4	230.2	327.9	0.0	0.0	67.0	83.7	183.5	675.1	480.7	0.0	0.0
100.00		273.4	149.7					0.0	110.4	273.4	260.0	0.0	0.0
105.00		233.2	360.9					0.0	275.9	233.2	636.7	0.0	0.0
106.00	Appertunance(s)	160.8	69.9	4,537.1	0.0	0.0	4,261.9	0.0	55.2	4,697.9	4,387.0	0.0	0.0
110.00		269.0	271.9					0.0	149.0	269.0	420.9	0.0	0.0
115.00		175.4	322.8					0.0	186.2	175.4	509.0	0.0	0.0
116.00	Appertunance(s)	140.0	62.3	3,781.6	0.0	0.0	2,729.9	0.0	37.2	3,921.6	2,829.4	0.0	0.0
120.00		192.1	241.5					0.0	74.8	192.1	316.2	0.0	0.0
123.00	Appertunance(s)	132.9	173.1	1,280.6	0.0	0.0	976.9	0.0	56.1	1,413.6	1,206.1	0.0	0.0
125.00		78.0	111.6					0.0	18.1	78.0	129.7	0.0	0.0
126.00	Appertunance(s)	25.7	54.7	3,963.6	0.0	4,936.0	2,601.6	0.0	9.1	3,989.3	2,665.3	0.0	0.0
<b>Totals:</b>										27,135.85	35,602.08	0.00	0.00

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

7/21/2016 5:15:51 PM

Customer: T-MOBILE

**Load Case: 1.2D + 1.6W**

110 mph with No Ice

25 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	-35.54	-26.97	0.00	-2,572.73	0.00	2,572.73	3,765.29	1,882.65	6,978.46	3,494.42	0.00	0.00	0.746
5.00	-34.03	-26.64	0.00	-2,437.87	0.00	2,437.87	3,697.80	1,848.90	6,673.37	3,341.64	0.14	-0.26	0.739
10.00	-32.55	-26.31	0.00	-2,304.66	0.00	2,304.66	3,628.68	1,814.34	6,371.97	3,190.72	0.55	-0.52	0.731
15.00	-31.10	-25.97	0.00	-2,173.13	0.00	2,173.13	3,557.92	1,778.96	6,074.51	3,041.77	1.24	-0.79	0.723
20.00	-29.68	-25.64	0.00	-2,043.26	0.00	2,043.26	3,485.52	1,742.76	5,781.22	2,894.91	2.22	-1.07	0.715
25.00	-28.28	-25.30	0.00	-1,915.07	0.00	1,915.07	3,411.48	1,705.74	5,492.34	2,750.25	3.49	-1.35	0.705
30.00	-26.92	-24.96	0.00	-1,788.57	0.00	1,788.57	3,335.81	1,667.90	5,208.12	2,607.93	5.07	-1.64	0.694
35.00	-25.59	-24.60	0.00	-1,663.78	0.00	1,663.78	3,258.50	1,629.25	4,928.79	2,468.06	6.95	-1.94	0.682
40.00	-24.30	-24.27	0.00	-1,540.78	0.00	1,540.78	3,158.60	1,579.30	4,623.93	2,315.40	9.14	-2.24	0.673
43.50	-23.43	-24.07	0.00	-1,455.83	0.00	1,455.83	3,085.84	1,542.92	4,412.25	2,209.40	10.86	-2.46	0.667
45.00	-22.82	-23.87	0.00	-1,419.72	0.00	1,419.72	3,054.65	1,527.33	4,323.05	2,164.74	11.65	-2.55	0.664
48.50	-21.48	-23.63	0.00	-1,336.18	0.00	1,336.18	2,457.75	1,228.87	3,470.74	1,737.95	13.61	-2.78	0.778
50.00	-21.10	-23.39	0.00	-1,300.74	0.00	1,300.74	2,439.67	1,219.84	3,409.59	1,707.33	14.49	-2.87	0.771
55.00	-20.00	-22.98	0.00	-1,183.82	0.00	1,183.82	2,378.35	1,189.18	3,208.11	1,606.44	17.69	-3.23	0.746
60.00	-18.92	-22.55	0.00	-1,068.94	0.00	1,068.94	2,315.40	1,157.70	3,010.48	1,507.48	21.27	-3.59	0.718
65.00	-17.88	-22.12	0.00	-956.18	0.00	956.18	2,249.69	1,124.84	2,815.52	1,409.85	25.22	-3.95	0.687
70.00	-16.88	-21.57	0.00	-845.60	0.00	845.60	2,163.06	1,081.53	2,601.80	1,302.84	29.55	-4.31	0.657
75.00	-15.92	-20.79	0.00	-737.75	0.00	737.75	2,076.43	1,038.21	2,396.52	1,200.04	34.25	-4.67	0.623
80.00	-15.01	-20.01	0.00	-633.81	0.00	633.81	1,989.80	994.90	2,199.68	1,101.47	39.32	-5.01	0.583
85.00	-14.15	-19.48	0.00	-533.77	0.00	533.77	1,903.17	951.59	2,011.27	1,007.13	44.75	-5.35	0.538
85.50	-13.89	-18.82	0.00	-524.03	0.00	524.03	1,894.51	947.25	1,992.89	997.93	45.31	-5.38	0.533
88.13	-13.45	-18.45	0.00	-474.63	0.00	474.63	1,849.03	924.51	1,897.79	950.31	48.32	-5.56	0.507
90.00	-12.98	-18.14	0.00	-440.03	0.00	440.03	1,816.54	908.27	1,831.29	917.01	50.52	-5.68	0.487
91.88	-12.52	-17.77	0.00	-406.01	0.00	406.01	1,456.00	728.00	1,478.84	740.52	52.77	-5.80	0.557
95.00	-12.07	-17.30	0.00	-350.49	0.00	350.49	1,417.09	708.55	1,396.21	699.14	56.63	-5.99	0.510
98.00	-11.62	-16.61	0.00	-298.59	0.00	298.59	1,375.51	687.75	1,315.06	658.51	60.45	-6.19	0.462
100.00	-11.33	-16.35	0.00	-265.38	0.00	265.38	1,347.79	673.89	1,262.31	632.09	63.07	-6.32	0.429
105.00	-10.68	-16.07	0.00	-183.63	0.00	183.63	1,278.48	639.24	1,135.17	568.43	69.82	-6.58	0.332
106.00	-6.85	-10.92	0.00	-167.56	0.00	167.56	1,264.62	632.31	1,110.55	556.10	71.21	-6.63	0.307
110.00	-6.43	-10.62	0.00	-123.90	0.00	123.90	1,209.18	604.59	1,014.77	508.14	76.83	-6.80	0.249
115.00	-5.93	-10.39	0.00	-70.81	0.00	70.81	1,139.88	569.94	901.12	451.23	84.02	-6.96	0.162
116.00	-3.59	-6.16	0.00	-60.42	0.00	60.42	1,126.02	563.01	879.21	440.26	85.48	-6.99	0.141
120.00	-3.29	-5.93	0.00	-35.79	0.00	35.79	1,070.57	535.29	794.22	397.70	91.36	-7.06	0.093
123.00	-2.27	-4.38	0.00	-17.99	0.00	17.99	1,028.99	514.50	733.32	367.21	95.80	-7.10	0.051
125.00	-2.15	-4.29	0.00	-9.22	0.00	9.22	1,001.27	500.64	694.07	347.55	98.77	-7.12	0.029
126.00	0.00	-3.99	0.00	-4.94	0.00	4.94	987.41	493.71	674.85	337.93	100.26	-7.12	0.015

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

7/21/2016 5:15:52 PM

Customer: T-MOBILE

<b>Load Case:</b> 0.9D + 1.6W	110 mph with No Ice (Reduced DL)	25 Iterations
Gust Response Factor 1.10		Wind Importance Factor : 1.00
Dead Load Factor : 0.90		
Wind Load Factor : 1.60		

**Applied Segment Forces Summary**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		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		223.9	0.0					0.0	0.0	223.9	0.0	0.0	0.0
5.00		441.9	811.7					0.0	230.9	441.9	1,042.6	0.0	0.0
10.00		430.2	790.3					0.0	230.9	430.2	1,021.2	0.0	0.0
15.00		418.5	768.8					0.0	230.9	418.5	999.7	0.0	0.0
20.00		406.8	747.4					0.0	230.9	406.8	978.3	0.0	0.0
25.00		395.0	726.0					0.0	230.9	395.0	956.9	0.0	0.0
30.00		387.9	704.6					0.0	230.9	387.9	935.5	0.0	0.0
35.00		388.3	683.1					0.0	230.9	388.3	914.0	0.0	0.0
40.00		332.0	661.7					0.0	230.9	332.0	892.6	0.0	0.0
43.50	Bot - Section 2	196.7	450.5					0.0	161.6	196.7	612.1	0.0	0.0
45.00		199.0	351.2					0.0	69.3	199.0	420.4	0.0	0.0
48.50	Top - Section 1	198.9	805.6					0.0	161.6	198.9	967.3	0.0	0.0
50.00		257.3	156.0					0.0	69.3	257.3	225.2	0.0	0.0
55.00		393.7	508.3					0.0	230.9	393.7	739.2	0.0	0.0
60.00		389.3	490.5					0.0	230.9	389.3	721.3	0.0	0.0
65.00		383.7	472.6					0.0	230.9	383.7	703.5	0.0	0.0
70.00		535.0	454.7					0.0	230.9	535.0	685.6	0.0	0.0
75.00		681.7	436.9					132.1	230.9	813.8	667.8	0.0	0.0
80.00		665.8	419.0					133.8	230.9	799.5	649.9	0.0	0.0
85.00		361.1	401.2					135.4	230.9	496.5	632.1	0.0	0.0
85.50	Appertunance(s)	200.8	39.1	450.3	0.0	0.0	158.8	13.6	23.1	664.7	221.1	0.0	0.0
88.13	Bot - Section 3	289.5	202.5					71.8	120.4	361.3	323.0	0.0	0.0
90.00		240.8	257.5					51.5	86.0	292.3	343.6	0.0	0.0
91.88	Top - Section 2	316.1	253.0					51.7	86.0	367.8	339.0	0.0	0.0
95.00		381.1	185.3					86.7	143.4	467.8	328.7	0.0	0.0
98.00	Appertunance(s)	250.2	172.7	327.9	0.0	0.0	50.2	83.7	137.6	661.9	360.5	0.0	0.0
100.00		225.2	112.3					0.0	82.8	225.2	195.0	0.0	0.0
105.00		190.8	270.6					0.0	206.9	190.8	477.6	0.0	0.0
106.00	Appertunance(s)	153.4	52.4	4,537.1	0.0	0.0	3,196.4	0.0	41.4	4,690.5	3,290.2	0.0	0.0
110.00		269.0	203.9					0.0	111.7	269.0	315.7	0.0	0.0
115.00		175.4	242.1					0.0	139.7	175.4	381.8	0.0	0.0
116.00	Appertunance(s)	140.0	46.7	3,781.6	0.0	0.0	2,047.4	0.0	27.9	3,921.6	2,122.1	0.0	0.0
120.00		192.1	181.1					0.0	56.1	192.1	237.2	0.0	0.0
123.00	Appertunance(s)	132.9	129.8	1,280.6	0.0	0.0	732.7	0.0	42.1	1,413.6	904.6	0.0	0.0
125.00		78.0	83.7					0.0	13.6	78.0	97.3	0.0	0.0
126.00	Appertunance(s)	25.7	41.0	3,963.6	0.0	4,936.0	1,951.2	0.0	6.8	3,989.3	1,999.0	0.0	0.0
<b>Totals:</b>										26,049.31	26,701.56	0.00	0.00



Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

7/21/2016 5:15:53 PM

Customer: T-MOBILE

**Load Case:** 0.9D + 1.6W

110 mph with No Ice (Reduced DL)

25 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	-26.64	-25.88	0.00	-2,487.49	0.00	2,487.49	3,765.29	1,882.65	6,978.46	3,494.42	0.00	0.00	0.719
5.00	-25.49	-25.55	0.00	-2,358.07	0.00	2,358.07	3,697.80	1,848.90	6,673.37	3,341.64	0.13	-0.25	0.713
10.00	-24.36	-25.23	0.00	-2,230.30	0.00	2,230.30	3,628.68	1,814.34	6,371.97	3,190.72	0.53	-0.51	0.706
15.00	-23.25	-24.90	0.00	-2,104.18	0.00	2,104.18	3,557.92	1,778.96	6,074.51	3,041.77	1.20	-0.77	0.698
20.00	-22.16	-24.59	0.00	-1,979.66	0.00	1,979.66	3,485.52	1,742.76	5,781.22	2,894.91	2.15	-1.04	0.690
25.00	-21.09	-24.28	0.00	-1,856.72	0.00	1,856.72	3,411.48	1,705.74	5,492.34	2,750.25	3.38	-1.31	0.681
30.00	-20.05	-23.96	0.00	-1,735.34	0.00	1,735.34	3,335.81	1,667.90	5,208.12	2,607.93	4.90	-1.59	0.672
35.00	-19.03	-23.64	0.00	-1,615.52	0.00	1,615.52	3,258.50	1,629.25	4,928.79	2,468.06	6.72	-1.88	0.661
40.00	-18.05	-23.36	0.00	-1,497.30	0.00	1,497.30	3,158.60	1,579.30	4,623.93	2,315.40	8.85	-2.17	0.653
43.50	-17.38	-23.19	0.00	-1,415.54	0.00	1,415.54	3,085.84	1,542.92	4,412.25	2,209.40	10.52	-2.38	0.647
45.00	-16.91	-23.02	0.00	-1,380.76	0.00	1,380.76	3,054.65	1,527.33	4,323.05	2,164.74	11.28	-2.48	0.644
48.50	-15.89	-22.82	0.00	-1,300.21	0.00	1,300.21	2,457.75	1,228.87	3,470.74	1,737.95	13.18	-2.69	0.755
50.00	-15.59	-22.61	0.00	-1,265.98	0.00	1,265.98	2,439.67	1,219.84	3,409.59	1,707.33	14.04	-2.79	0.748
55.00	-14.73	-22.27	0.00	-1,152.94	0.00	1,152.94	2,378.35	1,189.18	3,208.11	1,606.44	17.14	-3.13	0.724
60.00	-13.90	-21.92	0.00	-1,041.60	0.00	1,041.60	2,315.40	1,157.70	3,010.48	1,507.48	20.61	-3.48	0.697
65.00	-13.09	-21.58	0.00	-931.99	0.00	931.99	2,249.69	1,124.84	2,815.52	1,409.85	24.45	-3.84	0.667
70.00	-12.32	-21.07	0.00	-824.11	0.00	824.11	2,163.06	1,081.53	2,601.80	1,302.84	28.65	-4.19	0.639
75.00	-11.59	-20.28	0.00	-718.76	0.00	718.76	2,076.43	1,038.21	2,396.52	1,200.04	33.22	-4.53	0.605
80.00	-10.90	-19.49	0.00	-617.38	0.00	617.38	1,989.80	994.90	2,199.68	1,101.47	38.15	-4.87	0.566
85.00	-10.25	-18.97	0.00	-519.92	0.00	519.92	1,903.17	951.59	2,011.27	1,007.13	43.42	-5.20	0.522
85.50	-10.06	-18.31	0.00	-510.44	0.00	510.44	1,894.51	947.25	1,992.89	997.93	43.97	-5.23	0.517
88.13	-9.73	-17.94	0.00	-462.38	0.00	462.38	1,849.03	924.51	1,897.79	950.31	46.89	-5.40	0.492
90.00	-9.38	-17.64	0.00	-428.73	0.00	428.73	1,816.54	908.27	1,831.29	917.01	49.04	-5.52	0.473
91.88	-9.03	-17.26	0.00	-395.66	0.00	395.66	1,456.00	728.00	1,478.84	740.52	51.23	-5.64	0.541
95.00	-8.69	-16.79	0.00	-341.71	0.00	341.71	1,417.09	708.55	1,396.21	699.14	54.97	-5.83	0.495
98.00	-8.36	-16.12	0.00	-291.33	0.00	291.33	1,375.51	687.75	1,315.06	658.51	58.69	-6.02	0.449
100.00	-8.13	-15.91	0.00	-259.08	0.00	259.08	1,347.79	673.89	1,262.31	632.09	61.24	-6.14	0.416
105.00	-7.64	-15.68	0.00	-179.56	0.00	179.56	1,278.48	639.24	1,135.17	568.43	67.80	-6.40	0.322
106.00	-4.87	-10.66	0.00	-163.87	0.00	163.87	1,264.62	632.31	1,110.55	556.10	69.15	-6.45	0.299
110.00	-4.56	-10.37	0.00	-121.22	0.00	121.22	1,209.18	604.59	1,014.77	508.14	74.62	-6.61	0.243
115.00	-4.19	-10.16	0.00	-69.35	0.00	69.35	1,139.88	569.94	901.12	451.23	81.62	-6.77	0.158
116.00	-2.54	-6.02	0.00	-59.19	0.00	59.19	1,126.02	563.01	879.21	440.26	83.04	-6.80	0.137
120.00	-2.32	-5.80	0.00	-35.12	0.00	35.12	1,070.57	535.29	794.22	397.70	88.75	-6.87	0.091
123.00	-1.59	-4.29	0.00	-17.72	0.00	17.72	1,028.99	514.50	733.32	367.21	93.08	-6.91	0.050
125.00	-1.50	-4.20	0.00	-9.14	0.00	9.14	1,001.27	500.64	694.07	347.55	95.97	-6.93	0.028
126.00	0.00	-3.99	0.00	-4.94	0.00	4.94	987.41	493.71	674.85	337.93	97.41	-6.93	0.015

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

7/21/2016 5:15:53 PM

Customer: T-MOBILE

<b>Load Case:</b> 1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice	24 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**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		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		56.1	0.0					0.0	0.0	56.1	0.0	0.0	0.0
5.00		111.1	1,412.4					0.0	540.0	111.1	1,952.5	0.0	0.0
10.00		108.8	1,413.8					0.0	567.8	108.8	1,981.5	0.0	0.0
15.00		106.2	1,394.6					0.0	582.1	106.2	1,976.7	0.0	0.0
20.00		103.6	1,368.7					0.0	592.0	103.6	1,960.8	0.0	0.0
25.00		101.0	1,339.3					0.0	599.8	101.0	1,939.1	0.0	0.0
30.00		99.5	1,307.7					0.0	606.1	99.5	1,913.8	0.0	0.0
35.00		100.0	1,274.5					0.0	611.6	100.0	1,886.1	0.0	0.0
40.00		85.7	1,240.2					0.0	616.3	85.7	1,856.5	0.0	0.0
43.50	Bot - Section 2	50.9	848.4					0.0	434.0	50.9	1,282.4	0.0	0.0
45.00		51.6	575.9					0.0	186.6	51.6	762.4	0.0	0.0
48.50	Top - Section 1	51.6	1,321.2					0.0	436.7	51.6	1,757.9	0.0	0.0
50.00		66.9	313.4					0.0	187.7	66.9	501.0	0.0	0.0
55.00		102.6	1,019.8					0.0	627.9	102.6	1,647.7	0.0	0.0
60.00		101.9	987.6					0.0	631.1	101.9	1,618.7	0.0	0.0
65.00		100.9	954.9					0.0	634.0	100.9	1,589.0	0.0	0.0
70.00		99.5	921.9					0.0	636.8	99.5	1,558.7	0.0	0.0
75.00		97.9	888.5					37.5	639.4	135.4	1,527.9	0.0	0.0
80.00		96.1	854.8					38.3	641.9	134.5	1,496.7	0.0	0.0
85.00		52.3	820.9					39.1	644.2	91.4	1,465.1	0.0	0.0
85.50	Appertunance(s)	29.2	80.8	95.8	0.0	0.0	369.0	4.0	64.5	129.0	514.3	0.0	0.0
88.13	Bot - Section 3	42.1	417.0					20.9	338.2	63.0	755.2	0.0	0.0
90.00		35.1	448.9					15.1	241.9	50.1	690.8	0.0	0.0
91.88	Top - Section 2	46.2	441.4					15.2	242.2	61.4	683.6	0.0	0.0
95.00		55.9	416.1					25.5	404.3	81.4	820.4	0.0	0.0
98.00	Appertunance(s)	45.0	388.6	55.1	0.0	0.0	326.7	24.8	388.9	124.8	1,104.2	0.0	0.0
100.00		61.5	253.6					0.0	197.9	61.5	451.5	0.0	0.0
105.00		52.2	609.2					0.0	495.5	52.2	1,104.8	0.0	0.0
106.00	Appertunance(s)	42.3	119.2	855.5	0.0	0.0	8,149.7	0.0	99.2	897.8	8,368.2	0.0	0.0
110.00		74.5	461.8					0.0	149.0	74.5	610.8	0.0	0.0
115.00		48.8	548.6					0.0	186.2	48.8	734.9	0.0	0.0
116.00	Appertunance(s)	39.3	107.1	674.6	0.0	0.0	4,852.7	0.0	37.2	713.8	4,997.0	0.0	0.0
120.00		54.1	413.0					0.0	74.8	54.1	487.8	0.0	0.0
123.00	Appertunance(s)	37.7	297.7	242.0	0.0	0.0	1,967.4	0.0	56.1	279.6	2,321.1	0.0	0.0
125.00		22.2	192.8					0.0	18.1	22.2	210.9	0.0	0.0
126.00	Appertunance(s)	7.3	94.8	709.4	0.0	792.9	4,799.3	0.0	9.1	716.7	4,903.2	0.0	0.0
<b>Totals:</b>										5,290.25	59,433.00	0.00	0.00

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

7/21/2016 5:15:55 PM

Customer: T-MOBILE

**Load Case:** 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 24 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	-59.43	-5.26	0.00	-512.14	0.00	512.14	3,765.29	1,882.65	6,978.46	3,494.42	0.00	0.00	0.162
5.00	-57.47	-5.20	0.00	-485.83	0.00	485.83	3,697.80	1,848.90	6,673.37	3,341.64	0.03	-0.05	0.161
10.00	-55.49	-5.14	0.00	-459.83	0.00	459.83	3,628.68	1,814.34	6,371.97	3,190.72	0.11	-0.10	0.159
15.00	-53.51	-5.08	0.00	-434.12	0.00	434.12	3,557.92	1,778.96	6,074.51	3,041.77	0.25	-0.16	0.158
20.00	-51.54	-5.02	0.00	-408.71	0.00	408.71	3,485.52	1,742.76	5,781.22	2,894.91	0.44	-0.21	0.156
25.00	-49.60	-4.96	0.00	-383.60	0.00	383.60	3,411.48	1,705.74	5,492.34	2,750.25	0.70	-0.27	0.154
30.00	-47.68	-4.90	0.00	-358.79	0.00	358.79	3,335.81	1,667.90	5,208.12	2,607.93	1.01	-0.33	0.152
35.00	-45.79	-4.84	0.00	-334.28	0.00	334.28	3,258.50	1,629.25	4,928.79	2,468.06	1.39	-0.39	0.150
40.00	-43.93	-4.78	0.00	-310.09	0.00	310.09	3,158.60	1,579.30	4,623.93	2,315.40	1.83	-0.45	0.148
43.50	-42.64	-4.74	0.00	-293.37	0.00	293.37	3,085.84	1,542.92	4,412.25	2,209.40	2.17	-0.49	0.147
45.00	-41.88	-4.71	0.00	-286.25	0.00	286.25	3,054.65	1,527.33	4,323.05	2,164.74	2.33	-0.51	0.146
48.50	-40.12	-4.66	0.00	-269.78	0.00	269.78	2,457.75	1,228.87	3,470.74	1,737.95	2.72	-0.56	0.172
50.00	-39.62	-4.62	0.00	-262.79	0.00	262.79	2,439.67	1,219.84	3,409.59	1,707.33	2.90	-0.58	0.170
55.00	-37.96	-4.55	0.00	-239.69	0.00	239.69	2,378.35	1,189.18	3,208.11	1,606.44	3.54	-0.65	0.165
60.00	-36.34	-4.47	0.00	-216.94	0.00	216.94	2,315.40	1,157.70	3,010.48	1,507.48	4.26	-0.72	0.160
65.00	-34.75	-4.40	0.00	-194.57	0.00	194.57	2,249.69	1,124.84	2,815.52	1,409.85	5.05	-0.79	0.153
70.00	-33.18	-4.32	0.00	-172.59	0.00	172.59	2,163.06	1,081.53	2,601.80	1,302.84	5.92	-0.87	0.148
75.00	-31.65	-4.20	0.00	-151.01	0.00	151.01	2,076.43	1,038.21	2,396.52	1,200.04	6.87	-0.94	0.141
80.00	-30.15	-4.07	0.00	-130.02	0.00	130.02	1,989.80	994.90	2,199.68	1,101.47	7.90	-1.01	0.133
85.00	-28.69	-3.97	0.00	-109.65	0.00	109.65	1,903.17	951.59	2,011.27	1,007.13	8.99	-1.08	0.124
85.50	-28.18	-3.85	0.00	-107.67	0.00	107.67	1,894.51	947.25	1,992.89	997.93	9.11	-1.09	0.123
88.13	-27.42	-3.78	0.00	-97.57	0.00	97.57	1,849.03	924.51	1,897.79	950.31	9.71	-1.12	0.118
90.00	-26.73	-3.73	0.00	-90.48	0.00	90.48	1,816.54	908.27	1,831.29	917.01	10.16	-1.15	0.113
91.88	-26.04	-3.67	0.00	-83.48	0.00	83.48	1,456.00	728.00	1,478.84	740.52	10.62	-1.17	0.131
95.00	-25.22	-3.59	0.00	-72.01	0.00	72.01	1,417.09	708.55	1,396.21	699.14	11.40	-1.21	0.121
98.00	-24.12	-3.46	0.00	-61.24	0.00	61.24	1,375.51	687.75	1,315.06	658.51	12.17	-1.25	0.111
100.00	-23.67	-3.40	0.00	-54.33	0.00	54.33	1,347.79	673.89	1,262.31	632.09	12.71	-1.28	0.104
105.00	-22.56	-3.34	0.00	-37.32	0.00	37.32	1,278.48	639.24	1,135.17	568.43	14.08	-1.33	0.083
106.00	-14.22	-2.25	0.00	-33.99	0.00	33.99	1,264.62	632.31	1,110.55	556.10	14.36	-1.34	0.072
110.00	-13.61	-2.17	0.00	-25.00	0.00	25.00	1,209.18	604.59	1,014.77	508.14	15.50	-1.38	0.060
115.00	-12.87	-2.10	0.00	-14.16	0.00	14.16	1,139.88	569.94	901.12	451.23	16.96	-1.41	0.043
116.00	-7.89	-1.27	0.00	-12.06	0.00	12.06	1,126.02	563.01	879.21	440.26	17.25	-1.41	0.034
120.00	-7.41	-1.20	0.00	-6.98	0.00	6.98	1,070.57	535.29	794.22	397.70	18.45	-1.43	0.024
123.00	-5.09	-0.87	0.00	-3.37	0.00	3.37	1,028.99	514.50	733.32	367.21	19.35	-1.44	0.014
125.00	-4.88	-0.84	0.00	-1.63	0.00	1.63	1,001.27	500.64	694.07	347.55	19.95	-1.44	0.010
126.00	0.00	-0.72	0.00	-0.79	0.00	0.79	987.41	493.71	674.85	337.93	20.25	-1.44	0.002

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

7/21/2016 5:15:55 PM

Customer: T-MOBILE

**Load Case:** 1.0D + 1.0W

Serviceability 60 mph

23 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**

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		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		41.6	0.0					0.0	0.0	41.6	0.0	0.0	0.0
5.00		82.2	901.9					0.0	256.6	82.2	1,158.4	0.0	0.0
10.00		80.0	878.1					0.0	256.6	80.0	1,134.6	0.0	0.0
15.00		77.8	854.3					0.0	256.6	77.8	1,110.8	0.0	0.0
20.00		75.6	830.5					0.0	256.6	75.6	1,087.0	0.0	0.0
25.00		73.5	806.7					0.0	256.6	73.5	1,063.2	0.0	0.0
30.00		72.1	782.9					0.0	256.6	72.1	1,039.4	0.0	0.0
35.00		72.2	759.0					0.0	256.6	72.2	1,015.6	0.0	0.0
40.00		61.7	735.2					0.0	256.6	61.7	991.8	0.0	0.0
43.50	Bot - Section 2	36.6	500.5					0.0	179.6	36.6	680.1	0.0	0.0
45.00		37.0	390.2					0.0	77.0	37.0	467.2	0.0	0.0
48.50	Top - Section 1	37.0	895.2					0.0	179.6	37.0	1,074.7	0.0	0.0
50.00		47.9	173.3					0.0	77.0	47.9	250.3	0.0	0.0
55.00		73.2	564.8					0.0	256.6	73.2	821.3	0.0	0.0
60.00		72.4	544.9					0.0	256.6	72.4	801.5	0.0	0.0
65.00		71.4	525.1					0.0	256.6	71.4	781.7	0.0	0.0
70.00		99.5	505.3					0.0	256.6	99.5	761.8	0.0	0.0
75.00		126.8	485.4					25.8	256.6	152.6	742.0	0.0	0.0
80.00		123.8	465.6					26.3	256.6	150.1	722.1	0.0	0.0
85.00		67.1	445.8					26.8	256.6	93.9	702.3	0.0	0.0
85.50	Appertunance(s)	37.3	43.5	83.7	0.0	0.0	176.5	2.7	25.7	123.8	245.6	0.0	0.0
88.13	Bot - Section 3	53.8	225.0					14.3	133.8	68.1	358.9	0.0	0.0
90.00		44.8	286.2					10.3	95.6	55.0	381.7	0.0	0.0
91.88	Top - Section 2	58.8	281.1					10.3	95.6	69.1	376.7	0.0	0.0
95.00		70.9	205.9					17.3	159.3	88.2	365.2	0.0	0.0
98.00	Appertunance(s)	46.5	191.9	61.0	0.0	0.0	55.8	16.8	152.9	124.3	400.6	0.0	0.0
100.00		41.9	124.7					0.0	92.0	41.9	216.7	0.0	0.0
105.00		35.5	300.7					0.0	229.9	35.5	530.6	0.0	0.0
106.00	Appertunance(s)	28.5	58.2	843.7	0.0	0.0	3,551.6	0.0	46.0	872.2	3,655.8	0.0	0.0
110.00		50.0	226.6					0.0	124.2	50.0	350.8	0.0	0.0
115.00		32.6	269.0					0.0	155.2	32.6	424.2	0.0	0.0
116.00	Appertunance(s)	26.0	51.9	703.2	0.0	0.0	2,274.9	0.0	31.0	729.2	2,357.9	0.0	0.0
120.00		35.7	201.2					0.0	62.3	35.7	263.5	0.0	0.0
123.00	Appertunance(s)	24.7	144.2	238.1	0.0	0.0	814.1	0.0	46.7	262.9	1,005.1	0.0	0.0
125.00		14.5	93.0					0.0	15.1	14.5	108.1	0.0	0.0
126.00	Appertunance(s)	4.8	45.5	737.0	0.0	917.9	2,168.0	0.0	7.6	741.8	2,221.1	0.0	0.0
<b>Totals:</b>										4,852.96	29,668.40	0.00	0.00

Site Number: 302469

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Site Name: Bridgeport CT 2, CT

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Customer: T-MOBILE

**Load Case:** 1.0D + 1.0W

Serviceability 60 mph

23 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	-29.67	-4.82	0.00	-466.26	0.00	466.26	3,765.29	1,882.65	6,978.46	3,494.42	0.00	0.00	0.141
5.00	-28.50	-4.76	0.00	-442.15	0.00	442.15	3,697.80	1,848.90	6,673.37	3,341.64	0.03	-0.05	0.140
10.00	-27.37	-4.71	0.00	-418.33	0.00	418.33	3,628.68	1,814.34	6,371.97	3,190.72	0.10	-0.09	0.139
15.00	-26.25	-4.65	0.00	-394.80	0.00	394.80	3,557.92	1,778.96	6,074.51	3,041.77	0.23	-0.14	0.137
20.00	-25.16	-4.59	0.00	-371.56	0.00	371.56	3,485.52	1,742.76	5,781.22	2,894.91	0.40	-0.19	0.136
25.00	-24.09	-4.54	0.00	-348.61	0.00	348.61	3,411.48	1,705.74	5,492.34	2,750.25	0.63	-0.25	0.134
30.00	-23.05	-4.48	0.00	-325.93	0.00	325.93	3,335.81	1,667.90	5,208.12	2,607.93	0.92	-0.30	0.132
35.00	-22.03	-4.42	0.00	-303.52	0.00	303.52	3,258.50	1,629.25	4,928.79	2,468.06	1.26	-0.35	0.130
40.00	-21.04	-4.37	0.00	-281.41	0.00	281.41	3,158.60	1,579.30	4,623.93	2,315.40	1.66	-0.41	0.128
43.50	-20.35	-4.34	0.00	-266.10	0.00	266.10	3,085.84	1,542.92	4,412.25	2,209.40	1.97	-0.45	0.127
45.00	-19.88	-4.31	0.00	-259.59	0.00	259.59	3,054.65	1,527.33	4,323.05	2,164.74	2.12	-0.46	0.126
48.50	-18.81	-4.27	0.00	-244.50	0.00	244.50	2,457.75	1,228.87	3,470.74	1,737.95	2.47	-0.51	0.148
50.00	-18.55	-4.24	0.00	-238.09	0.00	238.09	2,439.67	1,219.84	3,409.59	1,707.33	2.64	-0.52	0.147
55.00	-17.73	-4.18	0.00	-216.91	0.00	216.91	2,378.35	1,189.18	3,208.11	1,606.44	3.22	-0.59	0.142
60.00	-16.92	-4.12	0.00	-196.02	0.00	196.02	2,315.40	1,157.70	3,010.48	1,507.48	3.87	-0.65	0.137
65.00	-16.14	-4.05	0.00	-175.45	0.00	175.45	2,249.69	1,124.84	2,815.52	1,409.85	4.59	-0.72	0.132
70.00	-15.37	-3.96	0.00	-155.18	0.00	155.18	2,163.06	1,081.53	2,601.80	1,302.84	5.38	-0.79	0.126
75.00	-14.63	-3.81	0.00	-135.38	0.00	135.38	2,076.43	1,038.21	2,396.52	1,200.04	6.24	-0.85	0.120
80.00	-13.91	-3.67	0.00	-116.31	0.00	116.31	1,989.80	994.90	2,199.68	1,101.47	7.17	-0.92	0.113
85.00	-13.20	-3.57	0.00	-97.97	0.00	97.97	1,903.17	951.59	2,011.27	1,007.13	8.16	-0.98	0.104
85.50	-12.96	-3.45	0.00	-96.18	0.00	96.18	1,894.51	947.25	1,992.89	997.93	8.26	-0.98	0.103
88.13	-12.60	-3.38	0.00	-87.13	0.00	87.13	1,849.03	924.51	1,897.79	950.31	8.81	-1.02	0.099
90.00	-12.22	-3.32	0.00	-80.80	0.00	80.80	1,816.54	908.27	1,831.29	917.01	9.22	-1.04	0.095
91.88	-11.84	-3.25	0.00	-74.57	0.00	74.57	1,456.00	728.00	1,478.84	740.52	9.63	-1.06	0.109
95.00	-11.47	-3.16	0.00	-64.41	0.00	64.41	1,417.09	708.55	1,396.21	699.14	10.34	-1.10	0.100
98.00	-11.08	-3.04	0.00	-54.91	0.00	54.91	1,375.51	687.75	1,315.06	658.51	11.04	-1.13	0.091
100.00	-10.86	-3.00	0.00	-48.84	0.00	48.84	1,347.79	673.89	1,262.31	632.09	11.52	-1.16	0.085
105.00	-10.33	-2.96	0.00	-33.85	0.00	33.85	1,278.48	639.24	1,135.17	568.43	12.75	-1.20	0.068
106.00	-6.69	-2.01	0.00	-30.89	0.00	30.89	1,264.62	632.31	1,110.55	556.10	13.01	-1.21	0.061
110.00	-6.34	-1.96	0.00	-22.85	0.00	22.85	1,209.18	604.59	1,014.77	508.14	14.04	-1.24	0.050
115.00	-5.91	-1.92	0.00	-13.07	0.00	13.07	1,139.88	569.94	901.12	451.23	15.36	-1.27	0.034
116.00	-3.57	-1.14	0.00	-11.15	0.00	11.15	1,126.02	563.01	879.21	440.26	15.62	-1.28	0.029
120.00	-3.31	-1.09	0.00	-6.61	0.00	6.61	1,070.57	535.29	794.22	397.70	16.70	-1.29	0.020
123.00	-2.31	-0.81	0.00	-3.33	0.00	3.33	1,028.99	514.50	733.32	367.21	17.52	-1.30	0.011
125.00	-2.20	-0.79	0.00	-1.71	0.00	1.71	1,001.27	500.64	694.07	347.55	18.06	-1.30	0.007
126.00	0.00	-0.74	0.00	-0.92	0.00	0.92	987.41	493.71	674.85	337.93	18.34	-1.30	0.003

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Customer: T-MOBILE

### Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.20
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 Coefficient $F_v$ :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period ( $S_{ds}$ ):	0.22
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):	2.31
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.90
Total Unfactored Dead Load:	29.67 k
Seismic Base Shear (E):	1.16 k

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Site Name: Bridgeport CT 2, CT

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Customer: T-MOBILE

### Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period ( $S_s$ ):	0.20
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 ( $S_{ds}$ ):	0.22
Design Spectral Response Acceleration at 1.0 Second Period ( $S_{d1}$ ):	0.10
Period Based on Rayleigh Method (sec):	2.31
Redundancy Factor ( $\rho$ ):	1.30

#### Load Case (1.2 + 0.2Sds) \* DL + E ELFM

#### Seismic Equivalent Lateral Forces Method

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
35	125.50	53	1.875	1.902	1.112	0.401	18	45
34	124.00	108	1.830	1.681	1.031	0.369	35	93
33	121.50	191	1.757	1.352	0.906	0.319	53	164
32	118.00	264	1.658	0.968	0.751	0.253	58	226
31	115.50	83	1.588	0.742	0.654	0.211	15	71
30	112.50	424	1.507	0.518	0.551	0.164	60	363
29	108.00	351	1.389	0.263	0.420	0.103	31	300
28	105.50	104	1.325	0.157	0.359	0.073	7	89
27	102.50	531	1.251	0.058	0.294	0.041	19	454
26	99.00	217	1.167	-0.024	0.231	0.010	2	186
25	96.50	345	1.109	-0.065	0.192	-0.009	-3	295
24	93.44	365	1.039	-0.098	0.152	-0.027	-9	313
23	90.94	377	0.984	-0.113	0.124	-0.039	-13	323
22	89.06	382	0.944	-0.120	0.105	-0.046	-15	327
21	86.81	359	0.897	-0.122	0.086	-0.051	-16	307
20	85.25	69	0.865	-0.120	0.075	-0.054	-3	59
19	82.50	702	0.810	-0.114	0.057	-0.056	-34	602
18	77.50	722	0.715	-0.091	0.033	-0.049	-31	619
17	72.50	742	0.626	-0.062	0.018	-0.032	-21	635
16	67.50	762	0.542	-0.032	0.009	-0.009	-6	652
15	62.50	782	0.465	-0.004	0.006	0.016	11	669
14	57.50	801	0.394	0.020	0.007	0.036	25	686
13	52.50	821	0.328	0.039	0.010	0.050	36	703
12	49.25	250	0.289	0.048	0.013	0.056	12	214
11	46.75	1,075	0.260	0.053	0.016	0.058	54	920
10	44.25	467	0.233	0.058	0.019	0.060	24	400
9	41.75	680	0.208	0.062	0.022	0.061	36	582
8	37.50	992	0.167	0.066	0.028	0.061	52	849
7	32.50	1,016	0.126	0.070	0.034	0.059	52	870
6	27.50	1,039	0.090	0.071	0.038	0.058	52	890
5	22.50	1,063	0.060	0.072	0.041	0.056	52	911
4	17.50	1,087	0.036	0.070	0.041	0.054	51	931
3	12.50	1,111	0.019	0.063	0.037	0.050	48	951
2	7.50	1,135	0.007	0.049	0.028	0.041	40	972

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1	2.50	1,158	0.001	0.021	0.011	0.020	20	992
Decibel DB844H90E-XY	126.00	168	1.890	1.980	1.140	0.412	60	144
Flat Platform w/ Han	126.00	2,000	1.890	1.980	1.140	0.412	714	1,713
DragonWave Horizon C	123.00	21	1.801	1.543	0.979	0.349	6	18
Dragonwave A-ANT-23G	123.00	15	1.801	1.543	0.979	0.349	5	13
NextNet BTS-2500	123.00	105	1.801	1.543	0.979	0.349	32	90
Argus LLPX310R	123.00	86	1.801	1.543	0.979	0.349	26	73
Dragonwave A-ANT-18G	123.00	27	1.801	1.543	0.979	0.349	8	23
Side Arms	123.00	560	1.801	1.543	0.979	0.349	169	480
Kathrein Smart Bias	116.00	10	1.602	0.784	0.673	0.219	2	9
Ericsson KRY 112 489	116.00	92	1.602	0.784	0.673	0.219	18	79
Ericsson AIR-32 B2A/	116.00	397	1.602	0.784	0.673	0.219	75	340
RFS APX16DWV-	116.00	122	1.602	0.784	0.673	0.219	23	105
Andrew LNX-6515DS-VT	116.00	154	1.602	0.784	0.673	0.219	29	132
Round Low Profile PI	116.00	1,500	1.602	0.784	0.673	0.219	285	1,285
Powerwave LGP21901	106.00	33	1.338	0.176	0.370	0.079	2	28
Powerwave LGP2140X	106.00	228	1.338	0.176	0.370	0.079	16	195
Raycap DC6-48-60-18-	106.00	64	1.338	0.176	0.370	0.079	4	54
Ericsson RRUS A2 B2	106.00	66	1.338	0.176	0.370	0.079	4	57
Ericsson RRUS-11	106.00	153	1.338	0.176	0.370	0.079	10	131
Ericsson RRUS 12	106.00	150	1.338	0.176	0.370	0.079	10	128
Ericsson RRUS E2 B29	106.00	180	1.338	0.176	0.370	0.079	12	154
Ericsson RRUS-32	106.00	231	1.338	0.176	0.370	0.079	16	198
Powerwave 7770.00	106.00	105	1.338	0.176	0.370	0.079	7	90
CCI OPA-65R-LCUU-H4	106.00	342	1.338	0.176	0.370	0.079	23	293
Round Platform w/ Ha	106.00	2,000	1.338	0.176	0.370	0.079	136	1,713
RCU	98.00	3	1.143	-0.042	0.215	0.002	0	3
Kathrein 800 10504	98.00	53	1.143	-0.042	0.215	0.002	0	45
Antel BCD-87010	85.50	26	0.870	-0.121	0.076	-0.054	-1	23
Flat Side Arm	85.50	150	0.870	-0.121	0.076	-0.054	-7	128
		29,668	69.500	26.973	24.357	7.298	2,398	25,410

**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)
35	125.50	53	1.875	1.902	1.112	0.401	18	45
34	124.00	108	1.830	1.681	1.031	0.369	35	93
33	121.50	191	1.757	1.352	0.906	0.319	53	164
32	118.00	264	1.658	0.968	0.751	0.253	58	226
31	115.50	83	1.588	0.742	0.654	0.211	15	71
30	112.50	424	1.507	0.518	0.551	0.164	60	363
29	108.00	351	1.389	0.263	0.420	0.103	31	300
28	105.50	104	1.325	0.157	0.359	0.073	7	89
27	102.50	531	1.251	0.058	0.294	0.041	19	454
26	99.00	217	1.167	-0.024	0.231	0.010	2	186
25	96.50	345	1.109	-0.065	0.192	-0.009	-3	295
24	93.44	365	1.039	-0.098	0.152	-0.027	-9	313
23	90.94	377	0.984	-0.113	0.124	-0.039	-13	323
22	89.06	382	0.944	-0.120	0.105	-0.046	-15	327
21	86.81	359	0.897	-0.122	0.086	-0.051	-16	307
20	85.25	69	0.865	-0.120	0.075	-0.054	-3	59
19	82.50	702	0.810	-0.114	0.057	-0.056	-34	602
18	77.50	722	0.715	-0.091	0.033	-0.049	-31	619
17	72.50	742	0.626	-0.062	0.018	-0.032	-21	635
16	67.50	762	0.542	-0.032	0.009	-0.009	-6	652
15	62.50	782	0.465	-0.004	0.006	0.016	11	669
14	57.50	801	0.394	0.020	0.007	0.036	25	686
13	52.50	821	0.328	0.039	0.010	0.050	36	703



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12	49.25	250	0.289	0.048	0.013	0.056	12	214
11	46.75	1,075	0.260	0.053	0.016	0.058	54	920
10	44.25	467	0.233	0.058	0.019	0.060	24	400
9	41.75	680	0.208	0.062	0.022	0.061	36	582
8	37.50	992	0.167	0.066	0.028	0.061	52	849
7	32.50	1,016	0.126	0.070	0.034	0.059	52	870
6	27.50	1,039	0.090	0.071	0.038	0.058	52	890
5	22.50	1,063	0.060	0.072	0.041	0.056	52	911
4	17.50	1,087	0.036	0.070	0.041	0.054	51	931
3	12.50	1,111	0.019	0.063	0.037	0.050	48	951
2	7.50	1,135	0.007	0.049	0.028	0.041	40	972
1	2.50	1,158	0.001	0.021	0.011	0.020	20	992
Decibel DB844H90E-XY	126.00	168	1.890	1.980	1.140	0.412	60	144
Flat Platform w/ Han	126.00	2,000	1.890	1.980	1.140	0.412	714	1,713
DragonWave Horizon C	123.00	21	1.801	1.543	0.979	0.349	6	18
Dragonwave A-ANT-23G	123.00	15	1.801	1.543	0.979	0.349	5	13
NextNet BTS-2500	123.00	105	1.801	1.543	0.979	0.349	32	90
Argus LLPX310R	123.00	86	1.801	1.543	0.979	0.349	26	73
Dragonwave A-ANT-18G	123.00	27	1.801	1.543	0.979	0.349	8	23
Side Arms	123.00	560	1.801	1.543	0.979	0.349	169	480
Kathrein Smart Bias	116.00	10	1.602	0.784	0.673	0.219	2	9
Ericsson KRY 112 489	116.00	92	1.602	0.784	0.673	0.219	18	79
Ericsson AIR-32 B2A/	116.00	397	1.602	0.784	0.673	0.219	75	340
RFS APX16DWV-	116.00	122	1.602	0.784	0.673	0.219	23	105
Andrew LNX-6515DS-VT	116.00	154	1.602	0.784	0.673	0.219	29	132
Round Low Profile PI	116.00	1,500	1.602	0.784	0.673	0.219	285	1,285
Powerwave LGP21901	106.00	33	1.338	0.176	0.370	0.079	2	28
Powerwave LGP2140X	106.00	228	1.338	0.176	0.370	0.079	16	195
Raycap DC6-48-60-18-	106.00	64	1.338	0.176	0.370	0.079	4	54
Ericsson RRUS A2 B2	106.00	66	1.338	0.176	0.370	0.079	4	57
Ericsson RRUS-11	106.00	153	1.338	0.176	0.370	0.079	10	131
Ericsson RRUS 12	106.00	150	1.338	0.176	0.370	0.079	10	128
Ericsson RRUS E2 B29	106.00	180	1.338	0.176	0.370	0.079	12	154
Ericsson RRUS-32	106.00	231	1.338	0.176	0.370	0.079	16	198
Powerwave 7770.00	106.00	105	1.338	0.176	0.370	0.079	7	90
CCI OPA-65R-LCUU-H4	106.00	342	1.338	0.176	0.370	0.079	23	293
Round Platform w/ Ha	106.00	2,000	1.338	0.176	0.370	0.079	136	1,713
RCU	98.00	3	1.143	-0.042	0.215	0.002	0	3
Kathrein 800 10504	98.00	53	1.143	-0.042	0.215	0.002	0	45
Antel BCD-87010 ____	85.50	26	0.870	-0.121	0.076	-0.054	-1	23
Flat Side Arm	85.50	150	0.870	-0.121	0.076	-0.054	-7	128
		29,668	69.500	26.973	24.357	7.298	2,398	25,410

**Load Case (0.9 - 0.2Sds) \* DL + E ELFM**

**Seismic (Reduced DL) Equivalent Lateral Forces Method**

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
35	125.50	53	1.875	1.902	1.112	0.401	18	45
34	124.00	108	1.830	1.681	1.031	0.369	35	93
33	121.50	191	1.757	1.352	0.906	0.319	53	164
32	118.00	264	1.658	0.968	0.751	0.253	58	226
31	115.50	83	1.588	0.742	0.654	0.211	15	71
30	112.50	424	1.507	0.518	0.551	0.164	60	363
29	108.00	351	1.389	0.263	0.420	0.103	31	300
28	105.50	104	1.325	0.157	0.359	0.073	7	89
27	102.50	531	1.251	0.058	0.294	0.041	19	454
26	99.00	217	1.167	-0.024	0.231	0.010	2	186
25	96.50	345	1.109	-0.065	0.192	-0.009	-3	295
24	93.44	365	1.039	-0.098	0.152	-0.027	-9	313

Site Number: 302469

Code: ANSI/TIA-222-G

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

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Customer: T-MOBILE

23	90.94	377	0.984	-0.113	0.124	-0.039	-13	323
22	89.06	382	0.944	-0.120	0.105	-0.046	-15	327
21	86.81	359	0.897	-0.122	0.086	-0.051	-16	307
20	85.25	69	0.865	-0.120	0.075	-0.054	-3	59
19	82.50	702	0.810	-0.114	0.057	-0.056	-34	602
18	77.50	722	0.715	-0.091	0.033	-0.049	-31	619
17	72.50	742	0.626	-0.062	0.018	-0.032	-21	635
16	67.50	762	0.542	-0.032	0.009	-0.009	-6	652
15	62.50	782	0.465	-0.004	0.006	0.016	11	669
14	57.50	801	0.394	0.020	0.007	0.036	25	686
13	52.50	821	0.328	0.039	0.010	0.050	36	703
12	49.25	250	0.289	0.048	0.013	0.056	12	214
11	46.75	1,075	0.260	0.053	0.016	0.058	54	920
10	44.25	467	0.233	0.058	0.019	0.060	24	400
9	41.75	680	0.208	0.062	0.022	0.061	36	582
8	37.50	992	0.167	0.066	0.028	0.061	52	849
7	32.50	1,016	0.126	0.070	0.034	0.059	52	870
6	27.50	1,039	0.090	0.071	0.038	0.058	52	890
5	22.50	1,063	0.060	0.072	0.041	0.056	52	911
4	17.50	1,087	0.036	0.070	0.041	0.054	51	931
3	12.50	1,111	0.019	0.063	0.037	0.050	48	951
2	7.50	1,135	0.007	0.049	0.028	0.041	40	972
1	2.50	1,158	0.001	0.021	0.011	0.020	20	992
Decibel DB844H90E-XY	126.00	168	1.890	1.980	1.140	0.412	60	144
Flat Platform w/ Han	126.00	2,000	1.890	1.980	1.140	0.412	714	1,713
DragonWave Horizon C	123.00	21	1.801	1.543	0.979	0.349	6	18
Dragonwave A-ANT-23G	123.00	15	1.801	1.543	0.979	0.349	5	13
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Side Arms	123.00	560	1.801	1.543	0.979	0.349	169	480
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Ericsson RRUS A2 B2	106.00	66	1.338	0.176	0.370	0.079	4	57
Ericsson RRUS-11	106.00	153	1.338	0.176	0.370	0.079	10	131
Ericsson RRUS 12	106.00	150	1.338	0.176	0.370	0.079	10	128
Ericsson RRUS E2 B29	106.00	180	1.338	0.176	0.370	0.079	12	154
Ericsson RRUS-32	106.00	231	1.338	0.176	0.370	0.079	16	198
Powerwave 7770.00	106.00	105	1.338	0.176	0.370	0.079	7	90
CCI OPA-65R-LCUU-H4	106.00	342	1.338	0.176	0.370	0.079	23	293
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RCU	98.00	3	1.143	-0.042	0.215	0.002	0	3
Kathrein 800 10504	98.00	53	1.143	-0.042	0.215	0.002	0	45
Antel BCD-87010	85.50	26	0.870	-0.121	0.076	-0.054	-1	23
Flat Side Arm	85.50	150	0.870	-0.121	0.076	-0.054	-7	128
		29,668	69.500	26.973	24.357	7.298	2,398	25,410

**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)
35	125.50	53	1.875	1.902	1.112	0.401	18	45

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34	124.00	108	1.830	1.681	1.031	0.369	35	93
33	121.50	191	1.757	1.352	0.906	0.319	53	164
32	118.00	264	1.658	0.968	0.751	0.253	58	226
31	115.50	83	1.588	0.742	0.654	0.211	15	71
30	112.50	424	1.507	0.518	0.551	0.164	60	363
29	108.00	351	1.389	0.263	0.420	0.103	31	300
28	105.50	104	1.325	0.157	0.359	0.073	7	89
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25	96.50	345	1.109	-0.065	0.192	-0.009	-3	295
24	93.44	365	1.039	-0.098	0.152	-0.027	-9	313
23	90.94	377	0.984	-0.113	0.124	-0.039	-13	323
22	89.06	382	0.944	-0.120	0.105	-0.046	-15	327
21	86.81	359	0.897	-0.122	0.086	-0.051	-16	307
20	85.25	69	0.865	-0.120	0.075	-0.054	-3	59
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15	62.50	782	0.465	-0.004	0.006	0.016	11	669
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12	49.25	250	0.289	0.048	0.013	0.056	12	214
11	46.75	1,075	0.260	0.053	0.016	0.058	54	920
10	44.25	467	0.233	0.058	0.019	0.060	24	400
9	41.75	680	0.208	0.062	0.022	0.061	36	582
8	37.50	992	0.167	0.066	0.028	0.061	52	849
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6	27.50	1,039	0.090	0.071	0.038	0.058	52	890
5	22.50	1,063	0.060	0.072	0.041	0.056	52	911
4	17.50	1,087	0.036	0.070	0.041	0.054	51	931
3	12.50	1,111	0.019	0.063	0.037	0.050	48	951
2	7.50	1,135	0.007	0.049	0.028	0.041	40	972
1	2.50	1,158	0.001	0.021	0.011	0.020	20	992
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Ericsson RRUS A2 B2	106.00	66	1.338	0.176	0.370	0.079	4	57
Ericsson RRUS-11	106.00	153	1.338	0.176	0.370	0.079	10	131
Ericsson RRUS 12	106.00	150	1.338	0.176	0.370	0.079	10	128
Ericsson RRUS E2 B29	106.00	180	1.338	0.176	0.370	0.079	12	154
Ericsson RRUS-32	106.00	231	1.338	0.176	0.370	0.079	16	198
Powerwave 7770.00	106.00	105	1.338	0.176	0.370	0.079	7	90
CCI OPA-65R-LCUU-H4	106.00	342	1.338	0.176	0.370	0.079	23	293
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RCU	98.00	3	1.143	-0.042	0.215	0.002	0	3
Kathrein 800 10504	98.00	53	1.143	-0.042	0.215	0.002	0	45
Antel BCD-87010	85.50	26	0.870	-0.121	0.076	-0.054	-1	23
Flat Side Arm	85.50	150	0.870	-0.121	0.076	-0.054	-7	128

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Site Number: 302469

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Site Name: Bridgeport CT 2, CT

Engineering Number: OAA663340\_C3\_09

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Customer: T-MOBILE

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### Analysis Summary

Load Case	Reactions						Max Usage	
	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	26.97	0.00	35.54	0.00	0.00	2572.73	48.50	0.78
0.9D + 1.6W	25.88	0.00	26.64	0.00	0.00	2487.49	48.50	0.75
1.2D + 1.0Di + 1.0Wi	5.26	0.00	59.43	0.00	0.00	512.14	48.50	0.17
(1.2 + 0.2Sds) * DL + E ELFM	1.16	0.00	35.45	0.00	0.00	124.65	48.50	0.05
(1.2 + 0.2Sds) * DL + E EMAM	2.39	0.00	35.45	0.00	0.00	255.03	48.50	0.09
(0.9 - 0.2Sds) * DL + E ELFM	1.16	0.00	24.42	0.00	0.00	122.61	48.50	0.04
(0.9 - 0.2Sds) * DL + E EMAM	2.38	0.00	24.42	0.00	0.00	250.57	48.50	0.09
1.0D + 1.0W	4.82	0.00	29.67	0.00	0.00	466.26	48.50	0.15

Base/Flange Plate	Plate Type	<b>Baseplate</b>
	Pole Diameter	45.5 in
	Pole Thickness	0.375 in
	Plate Diameter	60 in
	Plate Thickness	1.75 in
	Plate Fy	60 ksi
	Weld Length	0.3125 in
	$\phi_s$ Resistance	1212.48 k-in
	Applied	495.59 k-in
Stiffeners	#	<b>12</b> Show
	Thickness	0.5 in
	Length	6 in
	Height	12 in
	Chamfer	2 in
	Offset Angle	0°
Fy	50 ksi	
Bolts	#	<b>12</b>
	Bolt Circle (R)adial / (S)quare	54 in R
	Diameter	2.25 in
	Hole Diameter	2.75 in
	Type	A615-75
	Fy	75 ksi
	Fu	100 ksi
	$\phi_s$ Resistance	259.82 k
	Applied	193.40 k
Reinforcement	#	<b>0</b>
Extra Bolts	#	<b>0</b>

Code Rev. **G**

Moment **2572.7 k-ft**

Axial **35.5 k**

Date **7/21/2016**

Engineer **CMM**

Site # **302469**

Carrier **T-Mobile**

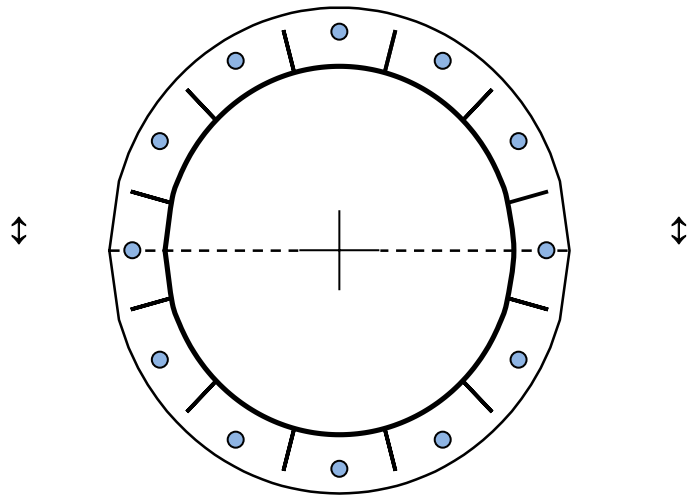
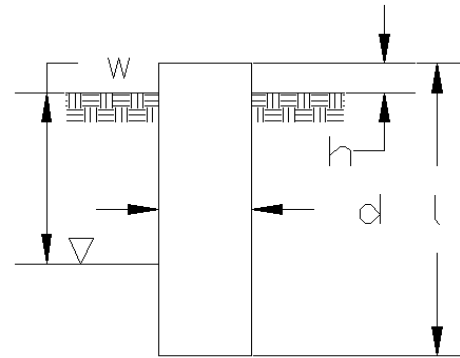


Plate Stress Ratio:  
**0.41** (Pass)

Bolt Stress Ratio:  
**0.74** (Pass)

Site Name: Bridgeport CT 2  
 Site Number: 302469  
 Engineer: CMM  
 Engineering Number: OAA663340\_C3\_09  
 Date: 07/21/16

Program Last Updated: 5/13/2014  
 American Tower Corporation



**Design Base Loads (Factored) - Analysis per TIA-222-G Standards**

Analyze or Design a Foundation? Analyze  
 Foundation Mapped: N  
 Moment (M): 2572.7 k-ft  
 Shear/Leg (V): 27.0 k  
 Axial Load (P): 35.5 k  
 Uplift/Leg (U): 0.0 k  
 Tower Type (GT / SST / MP): MP

Diameter of Caisson (d): 6.0 ft  
 Caisson Embedment (L-h): 18.0 ft  
 Caisson Height Above Ground (h): 1.0 ft  
 Depth Below Ground Surface to Water Table (w): 99.0 ft  
 Unit Weight of Concrete: 150.0 pcf  
 Unit Weight of Water: 62.4 pcf  
 Tension Skin Friction/Compression Skin Friction: 1.00  
 Pullout Angle: 30.0 degrees

Engineer Notes

**Soil Mechanical Properties**

Depth (ft)		$\gamma_{\text{Soil}}$	Cohesion	$\phi$	Ultimate Skin	Ultimate Bearing
Top	Bottom	(pcf)	(psf)	(degree)	Friction (psf)	Pressure (psf)
0.0	5.0	120	0	0	0	0
5.0	19.0	165	0	45	942	22000

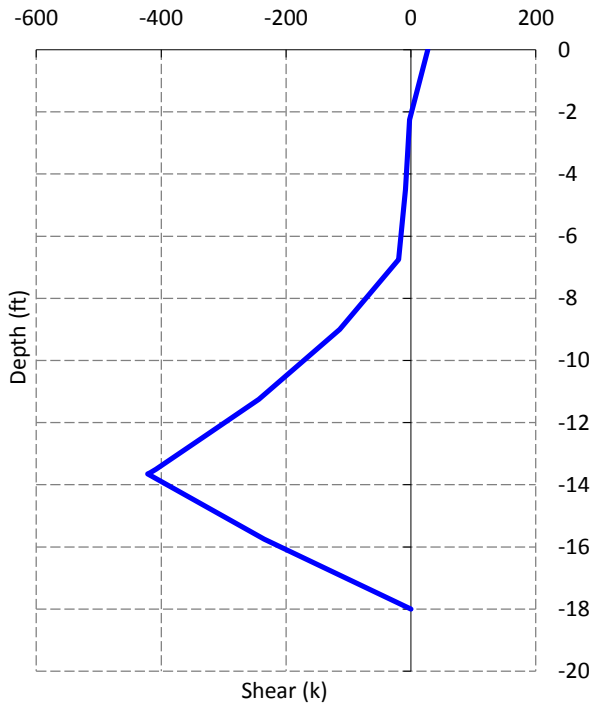
Required Embedment: 17.2 ft - OK, Caisson Embedment Satisfactory  
 Volume of Concrete: 537.2 ft<sup>3</sup> = 19.9 yd<sup>3</sup>  
 Weight of Concrete (Buoyancy Effect Considered): 80.6 k  
 Average Soil Unit Weight: 152.5 pcf  
 Skin Friction Resistance: 230.8 k  
 Compressive Bearing Resistance: 622.0 k  
 Pullout Weight (Minus Concrete Weight): 579.3 k  
 Nominal Uplift Capacity per Leg ( $\phi_s T_n$ ): 233.6 k  
 Nominal Compressive Capacity per Leg ( $\phi_s P_n$ ): 639.7 k  
 $P_u$ : 34.0 k  
 $T_u / \phi_s T_n$ : 0.00 Result: OK  
 $P_u / \phi_s P_n$ : 0.05 Result: OK  
 Total Lateral Resistance: 1792.5 k  
 Inflection Point (Below Ground Surface): 13.6 ft  
 Design Overturning Moment At Inflection Point ( $M_D$ ): 2967.8 k-ft  
 Nominal Moment Capacity ( $\phi_s M_n$ ): 3745.9 k-ft  
 $M_D / \phi_s M_n$ : 0.79 Result: OK  
 $\phi_s$ : 0.75

## Caisson Strength Capacity

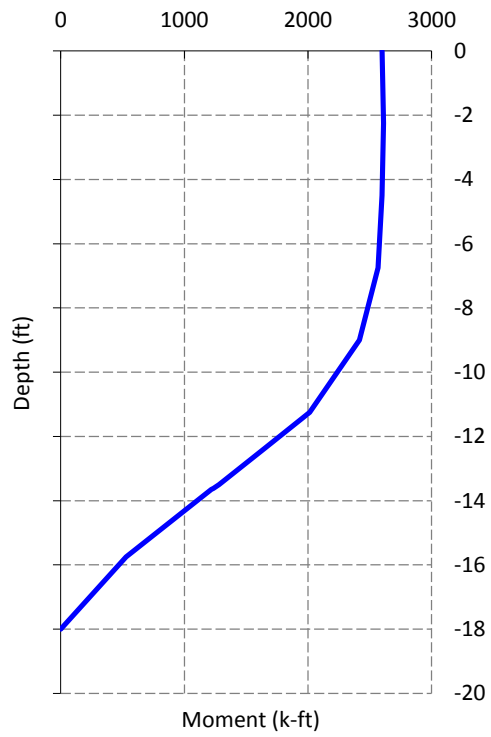
Concrete Compressive Strength ( $f'_c$ ):	4000 psi
Vertical Steel Rebar Size #:	11
Vertical Steel Rebar Area:	1.56 in <sup>2</sup>
# of Vertical Steel Rebars:	16
Vertical Steel Rebar Yield Strength ( $F_y$ ):	60 ksi
Horizontal Tie / Stirrup Size #:	5
Horizontal Tie / Stirrup Area:	0.31 in <sup>2</sup>
Design Horizontal Tie / Stirrup Spacing:	12.0 in
Horizontal Tie / Stirrup Steel Yield Strength ( $F_y$ ):	60 ksi
Rebar Cage Diameter:	64.0 in
Strength Bending/Tension Reduction Factor ( $\phi_B$ ):	0.90 ACI318-05 - 9.3.2.1
Strength Shear Reduction Factor ( $\phi_V$ ):	0.75 ACI318-05 - 9.3.2.3
Strength Compression Reduction Factor ( $\phi_C$ ):	0.65 ACI318-05 - 9.3.2.2
Steel Elastic Modulus:	29000 ksi
Design Moment ( $M_u$ ):	2611.5 k-ft
Nominal Moment Capacity ( $\phi_B M_n$ ):	3528.7 k-ft - ACI318-005 - 10.2
$M_u/\phi_B M_n$ :	0.74 Result: OK
Design Shear ( $V_u$ ):	421.6 k
Nominal Shear Capacity ( $\phi_V V_n$ ):	521.9 k - ACI318-05 - 11.3.1.1 or 11.5.7.2
$V_u/\phi_V V_n$ :	0.81 Result: OK
Design Tension ( $T_u$ ):	0.0 k
Nominal Tension Capacity ( $\phi_T T_n$ ):	1347.8 k - ACI318-05 - 10.2
$T_u/\phi_T T_n$ :	0.00 Result: OK
Design Compression ( $P_u$ ):	34.0 k
Nominal Compression Capacity ( $\phi_P P_n$ ):	7154.3 k - ACI318-05 - 10.3.6.2
$P_u/\phi_P P_n$ :	0.00 Result: OK
Bending Reinforcement Ratio:	0.006 ACI318-05 - 10.8.4 & 10.9.1
$M_u/\phi_B M_n + T_u/\phi_T T_n$ :	0.74 Result: OK



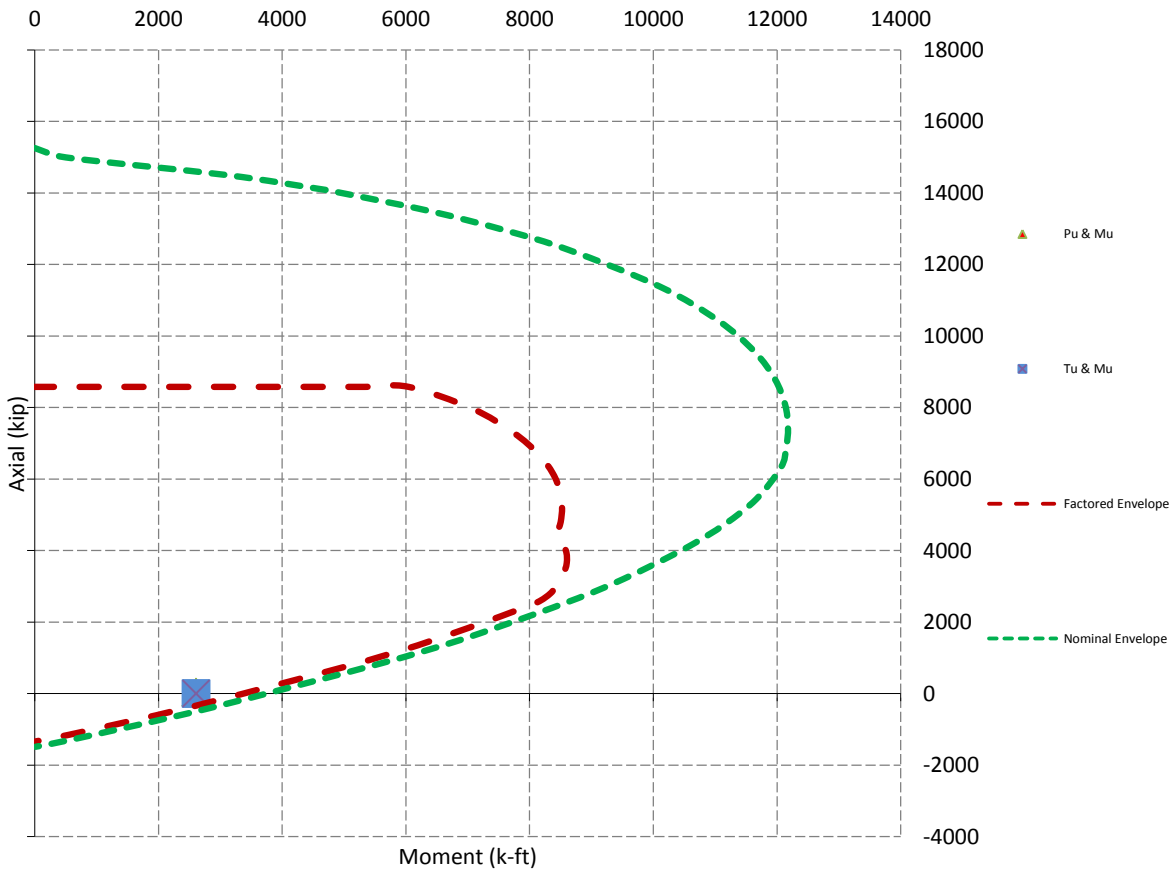
Design Factored Shear / Depth



Design Factored Moment / Depth



Nominal and Factored Moment Capacity and Factored Design Loads







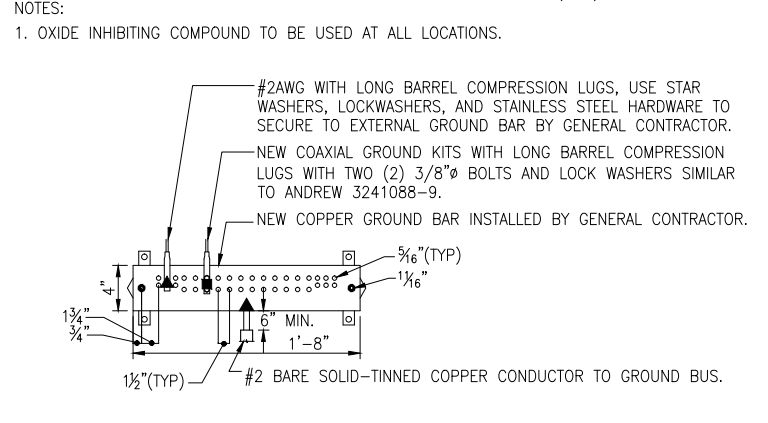
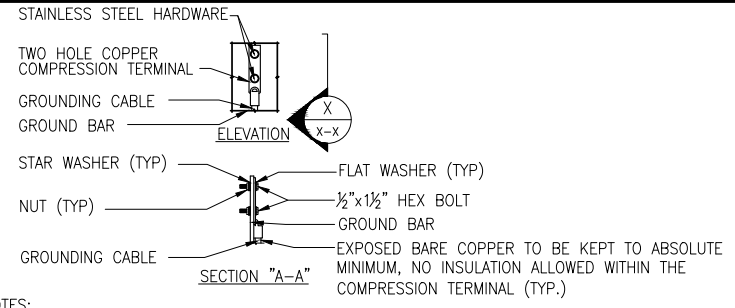
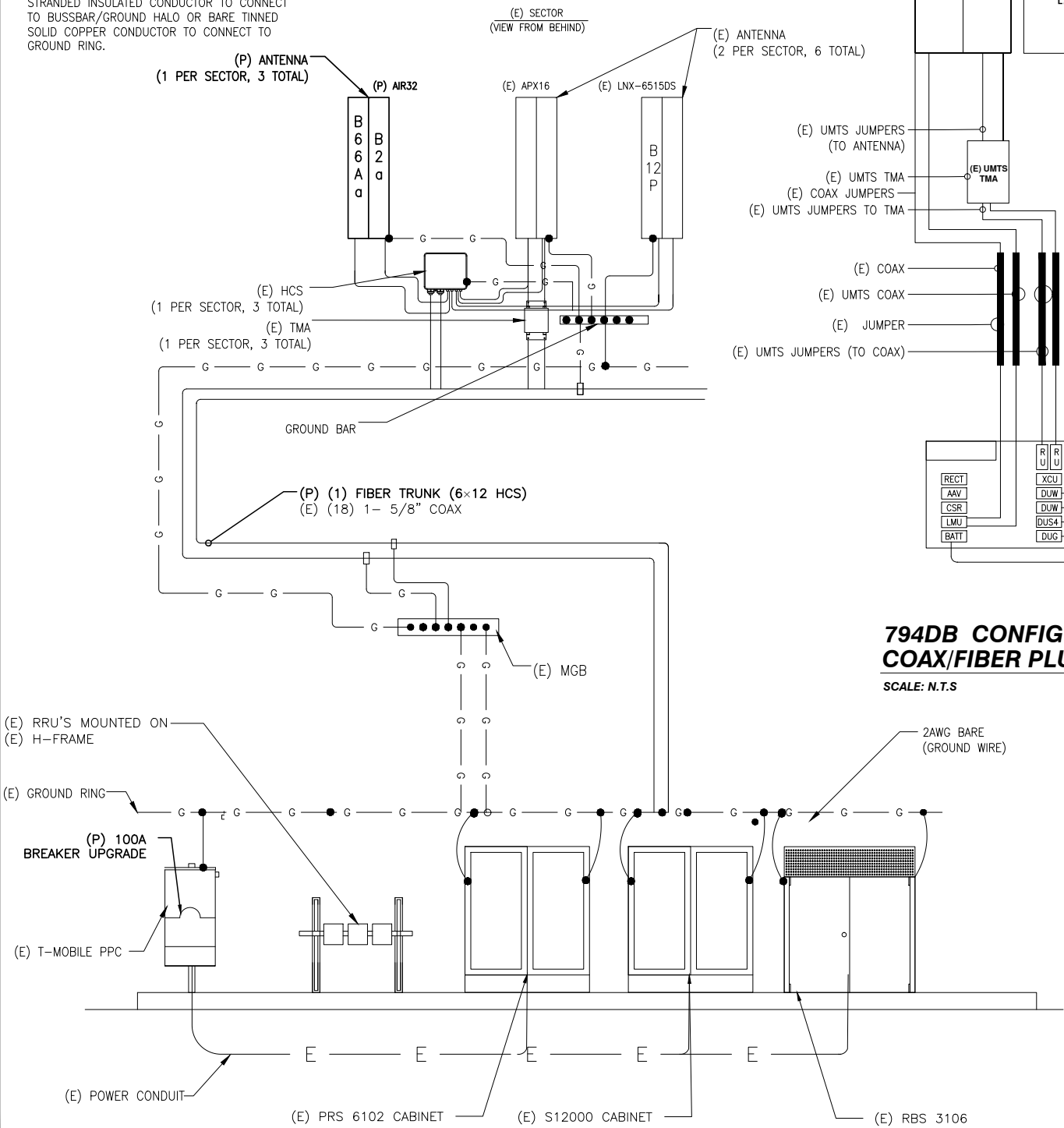






**NOTES:**

- PROVIDE #2AWG GROUNDING CONDUCTOR, U.O.N.
- DO NOT INSTALL GROUND KIT AT BEND. DIRECT GROUND WIRE DOWN TO ANTENNA BUSSBAR.
- PROVIDE GROUNDING ELECTRODES IN QUANTITY, TYPE AND SIZE AS INDICATED ON SITE GROUNDING PLAN.
- ADD COAX GROUND KIT CONNECTION TO BUSSBAR WHEN LENGTH OF COAX RUN (FROM EQUIPMENT TO ANTENNA) IS GREATER THAN 20'-0".
- GROUND HCS BOX W/ #2AWG GROUNDING CONDUCTOR ATTACHED TO GOOD GROUND AS DIRECT AND SHORT AS POSSIBLE. USE GREEN STRANDED INSULATED CONDUCTOR TO CONNECT TO BUSSBAR/GROUND HALO OR BARE TINNED SOLID COPPER CONDUCTOR TO CONNECT TO GROUND RING.



- NOTES:**
- OXIDE INHIBITING COMPOUND TO BE USED AT ALL LOCATIONS.
  - ALL HARDWARE STAINLESS STEEL COAT ALL SURFACES WITH KOPR-SHIELD BEFORE MATING.
  - FOR GROUND BOND TO STEEL ONLY: INSERT A TOOTH WASHER BETWEEN LUG AND STEEL, COAT ALL SURFACES WITH KOPR-SHIELD.
  - ALL HOLES ARE COUNTERSUNK 1/16".

**COAX/FIBER NOTES**  
SCALE: N.T.S.

4  
E-1

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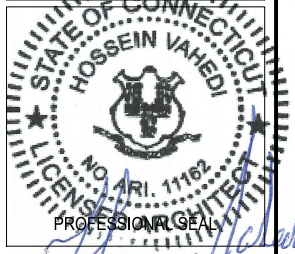
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**SUBMITTALS**

DATE	DESCRIPTION	REVISION
05/05/16	ISSUED FOR REVIEW	A
06/01/16	FINAL CD	0

DEPT.	DATE	APPD.	REVISIONS
RFE			
RF MAN.			
ZONING			
OPS			
CONSTR.			
SITE AC.			

PROJECT NO: CT11452A  
DRAWN BY: MS  
CHECKED BY: SM



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SITE NUMBER  
**CT11452A**  
SITE NAME  
BRIDGEPORT/CONNECTICUT AVE  
SITE ADDRESS  
1069 CONNECTICUT AVE  
BRIDGEPORT, CT

SHEET TITLE  
**GROUNDING AND ONE LINE DIAGRAM COAX/FIBER DIAGRAM**

SHEET NUMBER  
**E-1**