STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: siting.council@ct.gov

www.ct.gov/csc

VIA ELECTRONIC MAIL

April 5, 2019

Kyle Richers
Transcend Wireless
10 Industrial Avenue, Suite 3
Mahwah, NJ 07430

RE: **EM-T-MOBILE-156-190226** – T-Mobile notice of intent to modify an existing telecommunications facility located at 668 Jones Hill Road, West Haven, Connecticut.

Dear Mr. Richers:

The Connecticut Siting Council (Council) is in receipt of your correspondence of April 2, 2019 submitted in response to the Council's March 8, 2019 notification of an incomplete request for exempt modification with regard to the above-referenced matter.

The submission renders the request for exempt modification complete and the Council will process the request in accordance with the Federal Communications Commission 60-day timeframe.

Thank you for your attention and cooperation.

Sincerely,

Melanie A. Bachman
Executive Director

MAB/IN/emr

Robidoux, Evan

From: Kyle Richers <krichers@transcendwireless.com>
Sent: Tuesday, April 02, 2019 3:36 PM
To: Robidoux, Evan
Cc: CSC-DL Siting Council; 'Dan Reid'
Subject: RE: Council Incomplete Letter for EM-T-MOBILE-156-190226-JonesHillRd-WestHaven CT11821E
Attachments: 18058.41 - CT11821E - Mount Analysis Rev 1 19.03.08.pdf; STAMPED PDF. T-Mobile @ 243036 WEST HAVEN & RT 162 CT, CT (12605172_C3_02). Structural Analysis (87%).pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Evan,

Please see attached structural analysis and mount analysis updated to the current building code. Let me know if you need anything else.

Thanks

From: Robidoux, Evan <Evan.Robidoux@ct.gov>
Sent: Friday, March 8, 2019 10:25 AM
To: 'krichers@transcendwireless.com' <krichers@transcendwireless.com>
Cc: CSC-DL Siting Council <Siting.Council@ct.gov>
Subject: Council Incomplete Letter for EM-T-MOBILE-156-190226-JonesHillRd-WestHaven

Please see the attached correspondence.

Evan Robidoux
Clerk Typist
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

CENTEK engineering

Centered on Solutions℠

Structural Analysis Report

Antenna Mount Analysis

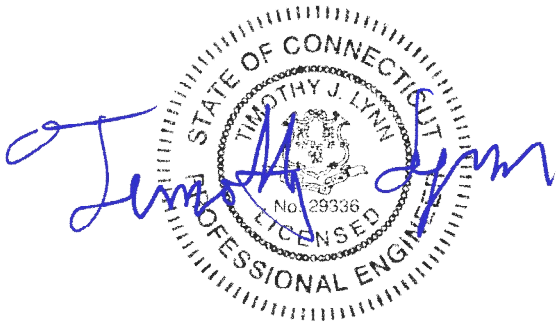
T-Mobile Site #: CT11821E

668 Jones Hill Road
West Haven, CT 06516

Centek Project No. 18058.41

~~Date: June 4, 2018~~
Rev 1: March 8, 2019

Max Stress Ratio = 63.3%



Prepared for:

T-Mobile USA
35 Griffin Road
Bloomfield, CT 06002

63-2 North Branford Road, Branford, CT 06405 203.488.0580 Fax 203.488.8587 www.CentekEng.com

Table of Contents

CENTEK engineering

Centered on Solutions℠

March 8, 2019

Mr. Dan Reid
Transcend Wireless
10 Industrial Ave
Mahwah, NJ 07430

Re: Structural Letter ~ Antenna Mount
T-Mobile – Site Ref: CT11821E
668 Jones Hill Road
West Haven, CT 06516

Centek Project No. 18058.41

Dear Mr. Reid,

Centek Engineering, Inc. has reviewed the T-Mobile antenna installation at the above referenced site. The purpose of the review is to determine the structural adequacy of the existing mount, consisting of one (1) 12-ft platform to support the equipment configuration. The review considered the effects of wind load, dead load and ice load in accordance with the 2015 International Building Code as modified by the 2018 Connecticut State Building Code (CTBC) including ASCE 7-10 and ANSI/TIA-222-G *Structural Standards for Steel Antenna Towers and Supporting Structures*.

The loads considered in this analysis consist of the following:

- T-Mobile:
  Platform: Three (3) Ericsson AIR32 panel antennas, three (3) RFS APX16DWV-16DWVS-E-A20 panel antennas, three (3) RFS APXVAARR24-43-NA20 panel antennas, six (6) KRY112 TMAs and three (3) Ericsson 4449 B71_B12 remote radio units mounted on one (1) proposed low profile platform with a RAD center elevation of 143-ft +/- AGL.

The antenna mount was analyzed per the requirements of the 2015 International Building Code as modified by the 2018 Connecticut State Building Code considering a nominal design wind speed of 97 mph for West Haven as required in Appendix N of the 2018 Connecticut State Building Code.

A structural analysis of tower and foundation needs to be completed prior to any work.

Based on our review of the installation, it is our opinion that the existing antenna platform is structurally inadequate to support the proposed antenna configuration. Installation of one (1) SItePro handrail (p/n HRK12) is required. If there are any questions regarding this matter, please feel free to call.

Respectfully Submitted by:

Timothy J. Lynn, PE
Structural Engineer

Section 2 - Calculations

CENTEK engineering
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63-2 North Branford Road P: (203) 488-0580
Branford, CT 06405 F: (203) 488-8587

Subject: TIA-222-G Loads

Location: West Haven, CT

Rev. 0: 6/4/18

Prepared by: T.J.L. Checked by: C.F.C.
Job No. 18058.41

Development of Design Heights, Exposure Coefficients, and Velocity Pressures Per TIA-222-G

Wind Speeds

Basic Wind Speed $V := 97$ mph (User Input - 2016 CSBC Appendix N)

Basic Wind Speed with Ice $V_i := 50$ mph (User Input per Annex B of TIA-222-G)

Input

Structure Type = Structure_Type := Pole (User Input)

Structure Category = $SC := II$ (User Input)

Exposure Category = $Exp := C$ (User Input)

Structure Height = $h := 149$ ft (User Input)

Height to Center of Antennas = $z_{AT\&T} := 143$ ft (User Input)

Radial Ice Thickness = $t_i := 0.75$ in (User Input per Annex B of TIA-222-G)

Radial Ice Density = $Id := 56.00$ pcf (User Input)

Topograpic Factor = $K_{zt} := 1.0$ (User Input)

$K_a := 1.0$ (User Input)

Gust Response Factor = $G_H = 1.1$ (User Input)

Output

Wind Direction Probability Factor =

$$K_d := \begin{cases} 0.95 & \text{if Structure\_Type = Pole} \\ 0.85 & \text{if Structure\_Type = Lattice} \end{cases} = 0.95$$

(Per Table 2-2 of TIA-222-G)

Importance Factors =

$$I_{Wind} := \begin{cases} 0.87 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.15 & \text{if } SC = 3 \end{cases} = 1$$

(Per Table 2-3 of TIA-222-G)

$$I_{Wind\_w\_Ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.00 & \text{if } SC = 3 \end{cases} = 1$$

$$I_{ice} := \begin{cases} 0 & \text{if } SC = 1 \\ 1.00 & \text{if } SC = 2 \\ 1.25 & \text{if } SC = 3 \end{cases} = 1$$

$$K_{iz} := \left(\frac{z_{AT\&T}}{33}\right)^{0.1} = 1.158$$

$$t_{iz} := 2.0 \cdot t_i \cdot I_{ice} \cdot K_{iz} \cdot K_{zt}^{0.35} = 1.737$$

Velocity Pressure Coefficient Antennas =

$$Kz_{AT\&T} := 2.01\left(\left(\frac{z_{AT\&T}}{zg}\right)\right)^{\frac{2}{\alpha}} = 1.365$$

Velocity Pressure w/o Ice Antennas =

$$qz_{AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V^2 \cdot I_{Wind} = 31.226$$

Velocity Pressure with Ice Antennas =

$$qz_{ice.AT\&T} := 0.00256 \cdot K_d \cdot Kz_{AT\&T} \cdot V_i^2 \cdot I_{Wind} = 8.297$$

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Subject:	TIA-222-G Loads
Location:	West Haven, CT
Rev. 0: 6/4/18	Prepared by: T.J.L. Checked by: C.F.C. Job No. 18058.41

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	Ericsson AIR32		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 56.6$	in	(User Input)
Antenna Width =	$W_{ant} := 12.9$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 133$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.4$		
Antenna Force Coefficient =	$Ca_{ant} = 1.28$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5.1$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 224$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 3.4$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 151$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.8$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 80$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 5.1$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 60$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 133$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 6352$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 5622$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 182$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 182$	lbs

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Subject:	TIA-222-G Loads
Location:	West Haven, CT
Rev. 0: 6/4/18	Prepared by: T.J.L. Checked by: C.F.C. Job No. 18058.41

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFS APXV16DWV-16DWVS-E-A20		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 55.9$	in	(User Input)
Antenna Width =	$W_{ant} := 13$	in	(User Input)
Antenna Thickness =	$T_{ant} := 3.15$	in	(User Input)
Antenna Weight =	$WT_{ant} := 41$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.3$		
Antenna Force Coefficient =	$Ca_{ant} = 1.28$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 5$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 222$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 1.2$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 54$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 6.8$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 79$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 2.7$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 32$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 41$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2289$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 4190$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 136$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 136$	lbs

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Subject:	TIA-222-G Loads
Location:	West Haven, CT
Rev. 0: 6/4/18	Prepared by: T.J.L. Checked by: C.F.C. Job No. 18058.41

Development of Wind & Ice Load on Antennas

Antenna Data:

Antenna Model =	RFSAPXVAARR24-43		
Antenna Shape =	Flat		(User Input)
Antenna Height =	$L_{ant} := 95.9$	in	(User Input)
Antenna Width =	$W_{ant} := 24$	in	(User Input)
Antenna Thickness =	$T_{ant} := 8.7$	in	(User Input)
Antenna Weight =	$WT_{ant} := 153$	lbs	(User Input)
Number of Antennas =	$N_{ant} := 1$		(User Input)
Antenna Aspect Ratio =	$Ar_{ant} := \frac{L_{ant}}{W_{ant}} = 4.0$		
Antenna Force Coefficient =	$Ca_{ant} = 1.27$		

Wind Load (without ice)

Surface Area for One Antenna =	$SA_{antF} := \frac{L_{ant} \cdot W_{ant}}{144} = 16$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antF} = 695$	lbs
Surface Area for One Antenna =	$SA_{antS} := \frac{L_{ant} \cdot T_{ant}}{144} = 5.8$	sf
Total Antenna Wind Force =	$F_{ant} := qz_{AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{antS} = 252$	lbs

Wind Load (with ice)

Surface Area for One Antenna w/ Ice =	$SA_{ICEantF} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (W_{ant} + 2 \cdot t_{iz})}{144} = 19$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantF} = 219$	lbs
Surface Area for One Antenna w/ Ice =	$SA_{ICEantS} := \frac{(L_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz})}{144} = 8.4$	sf
Total Antenna Wind Force w/ Ice =	$Fi_{ant} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{ant} \cdot K_a \cdot SA_{ICEantS} = 97$	lbs

Gravity Load (without ice)

Weight of All Antennas =	$WT_{ant} \cdot N_{ant} = 153$	lbs

Gravity Loads (ice only)

Volume of Each Antenna =	$V_{ant} := L_{ant} \cdot W_{ant} \cdot T_{ant} = 2 \times 10^4$	cu in
Volume of Ice on Each Antenna =	$V_{ice} := (L_{ant} + 2 \cdot t_{iz})(W_{ant} + 2 \cdot t_{iz}) \cdot (T_{ant} + 2 \cdot t_{iz}) - V_{ant} = 1 \times 10^4$	cu in
Weight of Ice on Each Antenna =	$W_{ICEant} := \frac{V_{ice}}{1728} \cdot Id = 428$	lbs
Weight of Ice on All Antennas =	$W_{ICEant} \cdot N_{ant} = 428$	lbs

Development of Wind & Ice Load on TMA's

TMA Data:

TMA Model = Ericsson KRY112 TMA

TMA Shape = Flat (User Input)

TMA Height = $L_{TMA} := 7.7$ in (User Input)

TMA Width = $W_{TMA} := 7.5$ in (User Input)

TMA Thickness = $T_{TMA} := 3.4$ in (User Input)

TMA Weight = $WT_{TMA} := 11$ lbs (User Input)

Number of TMA's = $N_{TMA} := 1$ (User Input)

TMA Aspect Ratio = $Ar_{TMA} := \frac{L_{TMA}}{W_{TMA}} = 1$

TMA Force Coefficient = $Ca_{TMA} = 1.2$

Wind Load (without ice)

Surface Area for One TMA = $SA_{TMAF} := \frac{L_{TMA} \cdot W_{TMA}}{144} = 0.4$ sf

Total TMA Wind Force = $F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAF} = 17$ lbs

Surface Area for One TMA = $SA_{TMAS} := \frac{L_{TMA} \cdot T_{TMA}}{144} = 0.2$ sf

Total TMA Wind Force = $F_{TMA} := qz_{AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{TMAS} = 7$ lbs

Wind Load (with ice)

Surface Area for One TMA w/ Ice = $SA_{ICETMAF} := \frac{\left(L_{TMA} + 2 \cdot t_{iz}\right) \cdot \left(W_{TMA} + 2 \cdot t_{iz}\right)}{144} = 0.9$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAF} = 9$ lbs

Surface Area for One TMA w/ Ice = $SA_{ICETMAS} := \frac{\left(L_{TMA} + 2 \cdot t_{iz}\right) \cdot \left(T_{TMA} + 2 \cdot t_{iz}\right)}{144} = 0.5$ sf

Total TMA Wind Force w/ Ice = $Fi_{TMA} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{TMA} \cdot K_a \cdot SA_{ICETMAS} = 6$ lbs

Gravity Load (without ice)

Weight of All TMAs = $WT_{TMA} \cdot N_{TMA} = 11$ lbs

Gravity Loads (ice only)

Volume of Each TMA = $V_{TMA} := L_{TMA} \cdot W_{TMA} \cdot T_{TMA} = 196$ cu in

Volume of Ice on Each TMA = $V_{ice} := \left(L_{TMA} + 2 \cdot t_{iz}\right)\left(W_{TMA} + 2 \cdot t_{iz}\right) \cdot \left(T_{TMA} + 2 \cdot t_{iz}\right) - V_{TMA} = 647$ cu in

Weight of Ice on Each TMA = $W_{ICETMA} := \frac{V_{ice}}{1728} \cdot Id = 21$ lbs

Weight of Ice on All TMAs = $W_{ICETMA} \cdot N_{TMA} = 21$ lbs

Development of Wind & Ice Load on RRUS's

RRUS Data:

RRUS Model = Ericsson 4449 B71B12

RRUS Shape = Flat (User Input)

RRUS Height = $L_{RRUS} := 14.9$ in (User Input)

RRUS Width = $W_{RRUS} := 13.2$ in (User Input)

RRUS Thickness = $T_{RRUS} := 10.4$ in (User Input)

RRUS Weight = $WT_{RRUS} := 74$ lbs (User Input)

Number of RRUS's = $N_{RRUS} := 1$ (User Input)

RRUS Aspect Ratio = $Ar_{RRUS} := \frac{L_{RRUS}}{W_{RRUS}} = 1.1$

RRUS Force Coefficient = $Ca_{RRUS} = 1.2$

Wind Load (without ice)

Surface Area for One RRUS = $SA_{RRUSF} := \frac{L_{RRUS} \cdot W_{RRUS}}{144} = 1.4$ sf

Total RRUS Wind Force = $F_{RRUS} := qz_{AT\&T} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSF} = 56$ lbs

Surface Area for One RRUS = $SA_{RRUSS} := \frac{L_{RRUS} \cdot T_{RRUS}}{144} = 1.1$ sf

Total RRUS Wind Force = $F_{RRUS} := qz_{AT\&T} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{RRUSS} = 44$ lbs

Wind Load (with ice)

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSF} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (W_{RRUS} + 2 \cdot t_{iz})}{144} = 2.1$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSF} = 23$ lbs

Surface Area for One RRUS w/ Ice = $SA_{ICERRUSS} := \frac{(L_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz})}{144} = 1.8$ sf

Total RRUS Wind Force w/ Ice = $Fi_{RRUS} := qz_{ice.AT\&T} \cdot G_H \cdot Ca_{RRUS} \cdot K_a \cdot SA_{ICERRUSS} = 19$ lbs

Gravity Load (without ice)

Weight of All RRUSs = $WT_{RRUS} \cdot N_{RRUS} = 74$ lbs

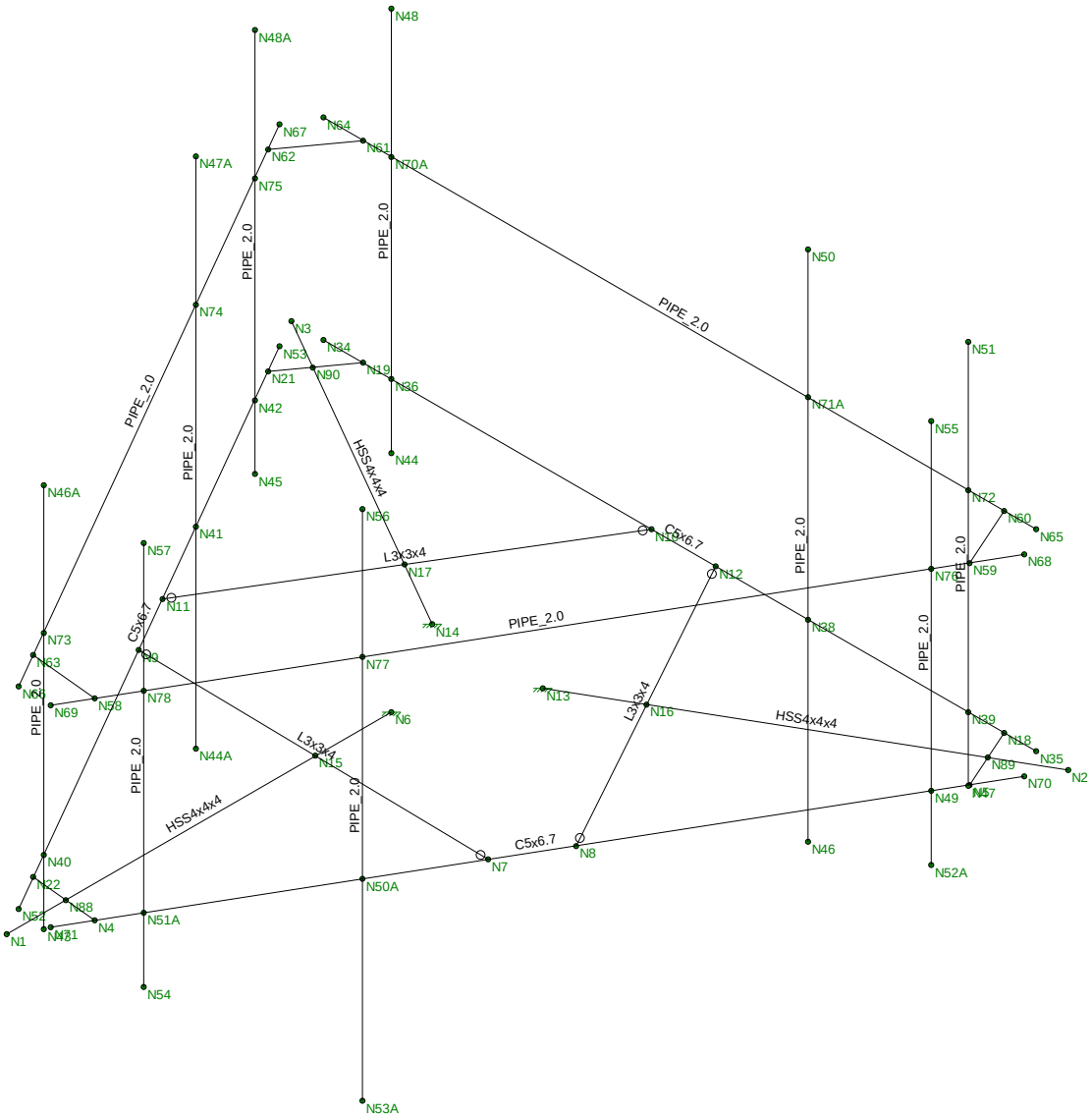
Gravity Loads (ice only)

Volume of Each RRUS = $V_{RRUS} := L_{RRUS} \cdot W_{RRUS} \cdot T_{RRUS} = 2045$ cu in

Volume of Ice on Each RRUS = $V_{ice} := (L_{RRUS} + 2 \cdot t_{iz})(W_{RRUS} + 2 \cdot t_{iz}) \cdot (T_{RRUS} + 2 \cdot t_{iz}) - V_{RRUS} = 2205$ cu in

Weight of Ice on Each RRUS = $W_{ICERRUS} := \frac{V_{ice}}{1728} \cdot Id = 71$ lbs

Weight of Ice on All RRUSs = $W_{ICERRUS} \cdot N_{RRUS} = 71$ lbs



Envelope Only Solution

Centek		
TJL	CT11821E - Mount	June 4, 2018 at 2:19 PM
18058.41	Member Framing	Mount.r3d

(Global) Model Settings

Display Sections for Member Calcs	5
Max Internal Sections for Member Calcs	97
Include Shear Deformation?	Yes
Increase Nailing Capacity for Wind?	Yes
Include Warping?	Yes
Trans Load Btwn Intersecting Wood Wall?	Yes
Area Load Mesh (in^2)	144
Merge Tolerance (in)	.12
P-Delta Analysis Tolerance	0.50%
Include P-Delta for Walls?	Yes
Automatically Iterate Stiffness for Walls?	Yes
Max Iterations for Wall Stiffness	3
Gravity Acceleration (ft/sec^2)	32.2
Wall Mesh Size (in)	12
Eigensolution Convergence Tol. (1.E-)	4
Vertical Axis	Y
Global Member Orientation Plane	XZ
Static Solver	Sparse Accelerated
Dynamic Solver	Accelerated Solver

Hot Rolled Steel Code	AISC 14th(360-10): LRFD
Adjust Stiffness?	Yes(Iterative)
RISAConnection Code	AISC 14th(360-10): ASD
Cold Formed Steel Code	AISI S100-10: ASD
Wood Code	AWC NDS-12: ASD
Wood Temperature	< 100F
Concrete Code	ACI 318-11
Masonry Code	ACI 530-11: ASD
Aluminum Code	AA ADM1-10: ASD - Building
	AISC 14th(360-10): ASD

Number of Shear Regions	4
Region Spacing Increment (in)	4
Biaxial Column Method	Exact Integration
Parme Beta Factor (PCA)	.65
Concrete Stress Block	Rectangular
Use Cracked Sections?	Yes
Use Cracked Sections Slab?	No
Bad Framing Warnings?	No
Unused Force Warnings?	Yes
Min 1 Bar Diam. Spacing?	No
Concrete Rebar Set	REBAR_SET_ASTMA615
Min % Steel for Column	1
Max % Steel for Column	8

(Global) Model Settings, Continued

Seismic Code	ASCE 7-10
Seismic Base Elevation (ft)	Not Entered
Add Base Weight?	Yes
Ct X	.02
Ct Z	.02
T X (sec)	Not Entered
T Z (sec)	Not Entered
R X	3
R Z	3
Ct Exp. X	.75
Ct Exp. Z	.75
SD1	1
SDS	1
S1	1
TL (sec)	5
Risk Cat	I or II
Drift Cat	Other
Om Z	1
Om X	1
Cd Z	4
Cd X	4
Rho Z	1
Rho X	1
Footing Overturning Safety Factor	1
Optimize for OTM/Sliding	No
Check Concrete Bearing	No
Footing Concrete Weight (k/ft^3)	150.001
Footing Concrete f'c (ksi)	4
Footing Concrete Ec (ksi)	3644
Lambda	1
Footing Steel fy (ksi)	60
Minimum Steel	0.0018
Maximum Steel	0.0075
Footing Top Bar	#3
Footing Top Bar Cover (in)	2
Footing Bottom Bar	#3
Footing Bottom Bar Cover (in)	3.5
Pedestal Bar	#3
Pedestal Bar Cover (in)	1.5
Pedestal Ties	#3

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design ...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Outrigger	HSS4x4x4	Beam	Tube	A500 Gr.46	Typical	3.37	7.8	7.8	12.8
2	Horz	C5x6.7	Beam	Pipe	A36 Gr.36	Typical	1.97	.47	7.48	.055
3	Antenna Mast	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25
4	Support	L3x3x4	Beam	Tube	A36 Gr.36	Typical	1.44	1.23	1.23	.031
5	Handrail	PIPE_2.0	Beam	Pipe	A53 Grade B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[ft]	Lbyy[ft]	Lbzz[ft]	Lcomp top[ft]	Lcomp bot[ft]	L-torqu...	Kyy	Kzz	Cb	Function
1	M1	Outrigger	6			Lbyy						Lateral
2	M9	Horz	11.124	5	5	5	5	5				Lateral
3	M10	Horz	11.124	5	5	5	5	5				Lateral
4	M11	Horz	11.124	5	5	5	5	5				Lateral
5	M17A	Support	5.563	Segment	Segment	Segment	Segment	Segme...				Lateral
6	M18A	Outrigger	6			Lbyy						Lateral
7	M19A	Support	5.563	Segment	Segment	Segment	Segment	Segme...				Lateral
8	M20A	Outrigger	6			Lbyy						Lateral
9	M21A	Support	5.563	Segment	Segment	Segment	Segment	Segme...				Lateral
10	M19	Antenna Mast	6			Lbyy						Lateral
11	M21B	Antenna Mast	8			Lbyy						Lateral
12	M22	Antenna Mast	6			Lbyy						Lateral
13	M16A	Antenna Mast	6			Lbyy						Lateral
14	M17B	Antenna Mast	8			Lbyy						Lateral
15	M18B	Antenna Mast	6			Lbyy						Lateral
16	M19B	Antenna Mast	6			Lbyy						Lateral
17	M20	Antenna Mast	8			Lbyy						Lateral
18	M21	Antenna Mast	6			Lbyy						Lateral
19	M25	Handrail	11.124	5	5	5	5	5				Lateral
20	M26	Handrail	11.124	5	5	5	5	5				Lateral
21	M27	Handrail	11.124	5	5	5	5	5				Lateral

Member Primary Data

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
1	M1	N6	N1			Outrigger	Beam	Tube	A500 Gr...	Typical
2	M9	N70	N71		180	Horz	Beam	Pipe	A36 Gr.36	Typical
3	M10	N34	N35		180	Horz	Beam	Pipe	A36 Gr.36	Typical
4	M11	N52	N53		180	Horz	Beam	Pipe	A36 Gr.36	Typical
5	M17A	N7	N9		90	Support	Beam	Tube	A36 Gr.36	Typical
6	M18A	N13	N2			Outrigger	Beam	Tube	A500 Gr...	Typical
7	M19A	N12	N8		90	Support	Beam	Tube	A36 Gr.36	Typical
8	M20A	N14	N3			Outrigger	Beam	Tube	A500 Gr...	Typical
9	M21A	N11	N10		90	Support	Beam	Tube	A36 Gr.36	Typical
10	M16	N22	N4			RIGID	None	None	RIGID	Typical
11	M17	N21	N19			RIGID	None	None	RIGID	Typical
12	M18	N18	N5			RIGID	None	None	RIGID	Typical
13	M19	N44	N48			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
14	M21B	N46	N50			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
15	M22	N47	N51			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
16	M16A	N43	N46A			Antenna Mast	Beam	Pipe	A53 Gra...	Typical

Member Primary Data (Continued)

	Label	I Joint	J Joint	K Joint	Rotate(d...	Section/Shape	Type	Design List	Material	Design Rul...
17	M17B	N44A	N47A			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
18	M18B	N45	N48A			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
19	M19B	N52A	N55			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
20	M20	N53A	N56			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
21	M21	N54	N57			Antenna Mast	Beam	Pipe	A53 Gra...	Typical
22	M25	N68	N69		180	Handrail	Beam	Pipe	A53 Gra...	Typical
23	M26	N64	N65		180	Handrail	Beam	Pipe	A53 Gra...	Typical
24	M27	N66	N67		180	Handrail	Beam	Pipe	A53 Gra...	Typical
25	M28	N63	N58			RIGID	None	None	RIGID	Typical
26	M29	N62	N61			RIGID	None	None	RIGID	Typical
27	M30	N60	N59			RIGID	None	None	RIGID	Typical

Joint Coordinates and Temperatures

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
1	N1	0	0	7	0	
2	N2	6.062178	0	-3.5	0	
3	N3	-6.062178	0	-3.5	0	
4	N4	.5	0	6.133975	0	
5	N5	5.5	0	-2.526279	0	
6	N6	0	0	1	0	
7	N7	2.75	0	2.23686	0	
8	N8	3.25	0	1.370835	0	
9	N9	-2.812178	0	2.129165	0	
10	N10	-0.437822	0	-3.5	0	
11	N11	-3.312178	0	1.26314	0	
12	N12	0.562178	0	-3.5	0	
13	N13	0.866025	0	-.5	0	
14	N14	-0.866025	0	-.5	0	
15	N15	0	0	2.183615	0	
16	N16	1.891066	0	-1.091807	0	
17	N17	-1.891066	0	-1.091807	0	
18	N18	5.062178	0	-3.5	0	
19	N19	-4.937822	0	-3.5	0	
20	N21	-5.562178	0	-2.633975	0	
21	N22	-0.562178	0	6.026279	0	
22	N34	-5.561822	0	-3.5	0	
23	N35	5.562178	0	-3.5	0	
24	N36	-4.5	0	-3.5	0	
25	N38	2	0	-3.5	0	
26	N39	4.5	0	-3.5	0	
27	N44	-4.5	-1	-3.5	0	
28	N46	2	-3	-3.5	0	
29	N47	4.5	-1	-3.5	0	
30	N48	-4.5	5	-3.5	0	
31	N50	2	5	-3.5	0	
32	N51	4.5	5	-3.5	0	
33	N52	-0.250178	0	6.566679	0	
34	N53	-5.812178	0	-3.066987	0	
35	N70	5.812	0	-3.066679	0	
36	N71	.25	0	6.566987	0	

Joint Coordinates and Temperatures (Continued)

	Label	X [ft]	Y [ft]	Z [ft]	Temp [F]	Detach From Dia...
37	N88	0	0	6.083279	0	
38	N89	5.268274	0	-3.04164	0	
39	N90	-5.268274	0	-3.04164	0	
40	N40	-0.781089	0	5.647114	0	
41	N41	-4.031089	0	0.017949	0	
42	N42	-5.281089	0	-2.147114	0	
43	N43	-0.781089	-1	5.647114	0	
44	N44A	-4.031089	-3	0.017949	0	
45	N45	-5.281089	-1	-2.147114	0	
46	N46A	-0.781089	5	5.647114	0	
47	N47A	-4.031089	5	0.017949	0	
48	N48A	-5.281089	5	-2.147114	0	
49	N49	5.281089	0	-2.147114	0	
50	N50A	2.031089	0	3.482051	0	
51	N51A	0.781089	0	5.647114	0	
52	N52A	5.281089	-1	-2.147114	0	
53	N53A	2.031089	-3	3.482051	0	
54	N54	0.781089	-1	5.647114	0	
55	N55	5.281089	5	-2.147114	0	
56	N56	2.031089	5	3.482051	0	
57	N57	0.781089	5	5.647114	0	
58	N58	.5	3	6.133975	0	
59	N59	5.5	3	-2.526279	0	
60	N60	5.062178	3	-3.5	0	
61	N61	-4.937822	3	-3.5	0	
62	N62	-5.562178	3	-2.633975	0	
63	N63	-0.562178	3	6.026279	0	
64	N64	-5.561822	3	-3.5	0	
65	N65	5.562178	3	-3.5	0	
66	N66	-0.250178	3	6.566679	0	
67	N67	-5.812178	3	-3.066987	0	
68	N68	5.812	3	-3.066679	0	
69	N69	.25	3	6.566987	0	
70	N70A	-4.5	3	-3.5	0	
71	N71A	2	3	-3.5	0	
72	N72	4.5	3	-3.5	0	
73	N73	-0.781089	3	5.647114	0	
74	N74	-4.031089	3	0.017949	0	
75	N75	-5.281089	3	-2.147114	0	
76	N76	5.281089	3	-2.147114	0	
77	N77	2.031089	3	3.482051	0	
78	N78	0.781089	3	5.647114	0	

Joint Boundary Conditions

	Joint Label	X [k/in]	Y [k/in]	Z [k/in]	X Rot.[k-ft/rad]	Y Rot.[k-ft/rad]	Z Rot.[k-ft/rad]
1	N6	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
2	N13	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction
3	N14	Reaction	Reaction	Reaction	Reaction	Reaction	Reaction

Member Point Loads (BLC 2 : Equipment Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	Y	-.067	5.5
2	M22	Y	-.067	1.5
3	M18B	Y	-.067	5.5
4	M18B	Y	-.067	1.5
5	M21	Y	-.067	5.5
6	M21	Y	-.067	1.5
7	M22	Y	-.067	5.5
8	M22	Y	-.067	1.5
9	M19	Y	-.021	1.5
10	M19	Y	-.021	5.5
11	M16A	Y	-.021	1.5
12	M19B	Y	-.021	1.5
13	M16A	Y	-.021	5.5
14	M19B	Y	-.021	5.5
15	M21B	Y	-.077	1
16	M17B	Y	-.077	1
17	M20	Y	-.077	1
18	M21B	Y	-.077	7
19	M17B	Y	-.077	7
20	M20	Y	-.077	7
21	M21B	Y	-.074	%50
22	M17B	Y	-.074	%50
23	M20	Y	-.074	%50

Member Point Loads (BLC 3 : Ice Weight)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	Y	-.091	5.5
2	M22	Y	-.091	5.5
3	M22	Y	-.091	1.5
4	M18B	Y	-.091	5.5
5	M18B	Y	-.091	5.5
6	M18B	Y	-.091	1.5
7	M21	Y	-.091	5.5
8	M21	Y	-.091	5.5
9	M21	Y	-.091	1.5
10	M22	Y	-.091	5.5
11	M22	Y	-.091	5.5
12	M22	Y	-.091	1.5
13	M19	Y	-.068	1.5
14	M16A	Y	-.068	1.5
15	M19B	Y	-.068	1.5
16	M19	Y	-.068	5.5
17	M16A	Y	-.068	5.5
18	M19B	Y	-.068	5.5
19	M21B	Y	-.214	1
20	M17B	Y	-.214	1
21	M20	Y	-.214	1
22	M21B	Y	-.214	7
23	M17B	Y	-.214	7
24	M20	Y	-.214	7

Member Point Loads (BLC 3 : Ice Weight) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
25	M21B	Y	-.071	%50
26	M17B	Y	-.071	%50
27	M20	Y	-.071	%50

Member Point Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	X	.03	1.5
2	M22	X	.03	5.5
3	M18B	X	.04	1.5
4	M21	X	.04	1.5
5	M18B	X	.04	5.5
6	M21	X	.04	5.5
7	M19	X	.016	1.5
8	M19	X	.016	5.5
9	M16A	X	.04	1.5
10	M19B	X	.04	1.5
11	M16A	X	.04	5.5
12	M19B	X	.04	5.5
13	M21B	X	.049	1
14	M21B	X	.049	7
15	M17B	X	.11	1
16	M20	X	.11	1
17	M17B	X	.11	7
18	M20	X	.11	7
19	M21B	X	.019	%50

Member Point Loads (BLC 5 : Wind X)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	X	.076	1.5
2	M22	X	.076	5.5
3	M18B	X	.112	1.5
4	M21	X	.112	1.5
5	M18B	X	.112	5.5
6	M21	X	.112	5.5
7	M19	X	.027	1.5
8	M19	X	.027	5.5
9	M16A	X	.111	1.5
10	M19B	X	.111	1.5
11	M16A	X	.111	5.5
12	M19B	X	.111	5.5
13	M21B	X	.126	1
14	M21B	X	.126	7
15	M17B	X	.348	1
16	M20	X	.348	1
17	M17B	X	.348	7
18	M20	X	.348	7
19	M21B	X	.044	%50

Member Point Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]

Member Point Loads (BLC 6 : Wind w/ Ice Z) (Continued)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	Z	.04	1.5
2	M22	Z	.04	5.5
3	M18B	Z	.03	1.5
4	M21	Z	.03	1.5
5	M18B	Z	.03	5.5
6	M21	Z	.03	5.5
7	M19	Z	.04	1.5
8	M19	Z	.04	5.5
9	M16A	Z	.016	1.5
10	M19B	Z	.016	1.5
11	M16A	Z	.016	5.5
12	M19B	Z	.016	5.5
13	M21B	Z	.11	1
14	M21B	Z	.11	7
15	M17B	Z	.049	1
16	M20	Z	.049	1
17	M17B	Z	.049	7
18	M20	Z	.049	7
19	M17B	Z	.019	%50
20	M20	Z	.019	%50

Member Point Loads (BLC 7 : Wind Z)

	Member Label	Direction	Magnitude[k,k-ft]	Location[ft,%]
1	M22	Z	.112	1.5
2	M22	Z	.112	5.5
3	M18B	Z	.076	1.5
4	M21	Z	.076	1.5
5	M18B	Z	.076	5.5
6	M21	Z	.076	5.5
7	M19	Z	.111	1.5
8	M19	Z	.111	5.5
9	M16A	Z	.027	1.5
10	M19B	Z	.027	1.5
11	M16A	Z	.027	5.5
12	M19B	Z	.027	5.5
13	M21B	Z	.348	1
14	M21B	Z	.348	7
15	M17B	Z	.126	1
16	M20	Z	.126	1
17	M17B	Z	.126	7
18	M20	Z	.126	7
19	M17B	Z	.044	%50
20	M20	Z	.044	%50

Member Distributed Loads (BLC 4 : Wind w/ Ice X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.004	.004	0	0
2	M11	X	.004	.004	0	0
3	M25	X	.004	.004	0	0
4	M19	X	.004	.004	0	0

Member Distributed Loads (BLC 4 : Wind w/ Ice X) (Continued)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
5	M21B	X	.004	.004	0	0
6	M22	X	.004	.004	0	0

Member Distributed Loads (BLC 5 : Wind X)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M27	X	.013	.013	0	0
2	M11	X	.013	.013	0	0
3	M25	X	.013	.013	0	0
4	M19	X	.013	.013	0	0
5	M21B	X	.013	.013	0	0
6	M22	X	.013	.013	0	0

Member Distributed Loads (BLC 6 : Wind w/ Ice Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M26	Z	.004	.004	0	0
2	M10	Z	.004	.004	0	0
3	M25	Z	.004	.004	0	0
4	M27	Z	.004	.004	0	0
5	M18B	Z	.004	.004	0	0
6	M17B	Z	.004	.004	0	0
7	M16A	Z	.004	.004	0	0
8	M21	Z	.004	.004	0	0
9	M20	Z	.004	.004	0	0
10	M19B	Z	.004	.004	0	0

Member Distributed Loads (BLC 7 : Wind Z)

	Member Label	Direction	Start Magnitude[k/ft,F,ksf]	End Magnitude[k/...	Start Location[ft,%]	End Location[ft,%]
1	M26	Z	.013	.013	0	0
2	M10	Z	.013	.013	0	0
3	M25	Z	.013	.013	0	0
4	M27	Z	.013	.013	0	0
5	M18B	Z	.013	.013	0	0
6	M17B	Z	.013	.013	0	0
7	M16A	Z	.013	.013	0	0
8	M21	Z	.013	.013	0	0
9	M20	Z	.013	.013	0	0
10	M19B	Z	.013	.013	0	0

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distribut...	Area(Me...	Surface(...
1	Self Weight	DL		-1						
2	Equipment Weight	None					23			
3	Ice Weight	None					27			
4	Wind w/ Ice X	None					19	6		
5	Wind X	None					19	6		
6	Wind w/ Ice Z	None					20	10		
7	Wind Z	None					20	10		

Load Combinations

	Description	So...	PDelta	S...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...	BLC	Fac...
1	1.2D + 1.6W (X-dir...	Yes	Y		1	1.2	2	1.2	5	1.6																
2	0.9D + 1.6W (X-dir...	Yes	Y		1	.9	2	.9	5	1.6																
3	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	4	1														
4	1.2D + 1.6W (Z-dir...	Yes	Y		1	1.2	2	1.2	7	1.6																
5	0.9D + 1.6W (Z-dir...	Yes	Y		1	.9	2	.9	7	1.6																
6	1.2D + 1.0Di + 1.0...	Yes	Y		1	1.2	2	1.2	3	1	6	1														

Envelope Joint Reactions

	Joint		X [k]	LC	Y [k]	LC	Z [k]	LC	MX [k-ft]	LC	MY [k-ft]	LC	MZ [k-ft]	LC
1	N6	max	-.161	6	1.904	6	-.378	3	-1.219	2	-.138	6	1.608	1
2		min	-1.591	2	.629	2	-2.479	4	-5.286	4	-1.778	2	-.043	5
3	N13	max	.93	5	2.397	3	1.527	1	3.166	3	1.265	4	5.37	3
4		min	-1.181	1	.207	5	-2.162	5	-.873	5	-.892	2	.708	5
5	N14	max	.105	6	1.632	6	-.014	3	1.841	3	.66	2	1.781	2
6		min	-2.816	2	-.307	2	-.571	5	-1.315	5	-.518	4	-3.169	6
7	Totals:	max	0	5	5.615	6	0	2						
8		min	-5.568	1	1.964	2	-5.191	5						

Envelope Joint Displacements

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
1	N1	max	.04	1	-.05	2	.002	5	6.048e-03	4	1.371e-05	6	-2.365e-05	5
2		min	.002	6	-.395	4	0	3	2.4e-04	2	-1.691e-04	2	-5.456e-03	1
3	N2	max	-.001	6	.018	5	-.001	6	3.376e-03	5	1.08e-03	4	-1.103e-03	5
4		min	-.014	1	-.422	1	-.027	1	-3.107e-03	3	1.637e-04	3	-6.628e-03	1
5	N3	max	-.002	6	.179	2	.03	1	4.677e-03	5	1.391e-03	1	1.852e-03	6
6		min	-.015	1	-.179	6	.003	6	-8.883e-04	3	-2.374e-04	5	-3.969e-03	2
7	N4	max	.041	1	-.08	2	.002	5	6.046e-03	4	1.371e-05	6	-2.365e-05	5
8		min	.002	6	-.333	4	0	3	2.39e-04	2	-1.691e-04	2	-5.456e-03	1
9	N5	max	.008	4	-.014	5	.002	5	3.377e-03	5	1.08e-03	4	-1.102e-03	5
10		min	-.006	2	-.359	1	-.022	1	-3.106e-03	3	1.637e-04	3	-6.627e-03	1
11	N6	max	0	2	0	2	0	4	0	4	0	2	0	5
12		min	0	6	0	6	0	3	0	2	0	6	0	1
13	N7	max	.011	2	-.114	5	0	5	5.179e-03	4	2.074e-03	2	-1.651e-03	6
14		min	0	6	-.194	3	-.014	1	1.189e-03	3	8.086e-05	6	-7.367e-03	1
15	N8	max	.012	1	-.094	5	.002	5	4.811e-03	4	-1.968e-04	6	-2.212e-03	6
16		min	.002	6	-.203	1	-.013	1	7.492e-04	3	-1.023e-03	1	-7.834e-03	1
17	N9	max	.008	2	.054	2	.018	1	4.432e-03	5	1.145e-05	2	4.016e-03	4
18		min	0	6	-.153	6	.001	6	-3.729e-03	1	-2.521e-04	4	-7.241e-03	2
19	N10	max	-.002	6	.068	5	0	6	7.875e-03	5	3.541e-04	5	-7.899e-04	5
20		min	-.014	1	-.168	3	-.011	2	-1.424e-03	3	-1.073e-03	1	-2.649e-03	1
21	N11	max	.023	1	.06	2	.01	1	4.685e-03	5	8.846e-04	5	4.533e-03	4
22		min	0	6	-.157	6	.002	6	-2.917e-03	1	-3.35e-03	1	-6.271e-03	2
23	N12	max	-.002	6	.059	5	.012	4	6.926e-03	5	-1.913e-04	3	-6.501e-04	5
24		min	-.014	1	-.193	3	0	3	-1.207e-03	3	-3.426e-03	4	-3.185e-03	1
25	N13	max	0	1	0	5	0	5	0	5	0	2	0	5
26		min	0	5	0	3	0	1	0	3	0	4	0	3
27	N14	max	0	2	0	2	0	5	0	5	0	4	0	6
28		min	0	6	0	6	0	3	0	3	0	2	0	2

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
29	N15	max	.009	2	-.007	2	0	4	3.962e-03	4	7.888e-04	2	5.173e-05	5
30		min	0	6	-.032	4	0	3	8.001e-04	2	3.999e-05	6	-1.92e-03	1
31	N16	max	.003	4	0	5	.005	4	1.121e-03	5	4.32e-04	2	-7.087e-04	5
32		min	-.002	2	-.037	3	-.004	2	-2.328e-03	3	-4.066e-04	4	-4.062e-03	1
33	N17	max	.002	2	.011	2	.002	4	1.541e-03	5	2.626e-04	4	2.224e-03	6
34		min	-.001	4	-.021	6	-.002	2	-1.355e-03	3	-6.877e-05	2	-1.611e-03	2
35	N18	max	-.001	6	.032	5	.008	5	3.377e-03	5	1.08e-03	4	-1.102e-03	5
36		min	-.014	1	-.354	3	-.019	1	-3.106e-03	3	1.637e-04	3	-6.627e-03	1
37	N19	max	-.002	6	.126	2	.016	4	4.678e-03	5	1.391e-03	1	1.851e-03	6
38		min	-.015	1	-.154	6	.002	3	-8.876e-04	3	-2.374e-04	5	-3.97e-03	2
39	N21	max	0	3	.155	2	.022	1	4.678e-03	5	1.391e-03	1	1.851e-03	6
40		min	-.009	4	-.169	6	.003	6	-8.876e-04	3	-2.374e-04	5	-3.97e-03	2
41	N22	max	.042	1	-.011	2	.001	4	6.046e-03	4	1.371e-05	6	-2.365e-05	5
42		min	.002	6	-.324	4	0	2	2.39e-04	2	-1.691e-04	2	-5.456e-03	1
43	N34	max	-.002	6	.155	2	.022	1	4.678e-03	5	1.391e-03	1	1.852e-03	6
44		min	-.015	1	-.168	6	.003	6	-8.876e-04	3	-2.263e-04	5	-3.969e-03	2
45	N35	max	-.001	6	.025	5	.001	5	3.377e-03	5	1.074e-03	4	-1.102e-03	5
46		min	-.014	1	-.382	1	-.023	1	-3.106e-03	3	1.637e-04	3	-6.627e-03	1
47	N36	max	-.002	6	.105	2	.02	4	1.324e-02	5	1.75e-03	1	1.403e-03	6
48		min	-.015	1	-.146	6	0	3	-2.849e-03	1	-1.055e-03	4	-3.858e-03	2
49	N38	max	-.001	6	.05	5	.091	4	5.91e-03	5	-2.915e-05	3	-3.407e-04	5
50		min	-.014	1	-.239	3	.003	3	-6.637e-04	3	-2.164e-03	5	-4.289e-03	1
51	N39	max	-.001	6	.039	5	.026	4	1.296e-02	5	3.754e-03	4	-8.399e-04	5
52		min	-.014	1	-.328	3	-.012	2	-3.58e-04	3	2.404e-04	3	-6.238e-03	1
53	N44	max	.015	6	.105	2	.037	1	1.324e-02	5	1.75e-03	1	1.403e-03	6
54		min	-.061	2	-.146	6	-.139	5	-2.849e-03	1	-1.055e-03	4	-3.824e-03	2
55	N46	max	-.018	5	.05	5	.19	4	1.1e-04	2	-2.915e-05	3	8.278e-04	2
56		min	-.069	6	-.24	3	.007	2	-5.137e-03	4	-2.164e-03	5	-1.86e-03	6
57	N47	max	-.015	5	.039	5	.003	3	1.296e-02	5	3.754e-03	4	-8.399e-04	5
58		min	-.089	1	-.328	3	-.13	5	-3.58e-04	3	2.404e-04	3	-6.204e-03	1
59	N48	max	.536	1	.104	2	.728	4	1.16e-02	4	4.737e-03	2	-1.105e-03	6
60		min	.038	5	-.146	6	-.034	1	4.27e-04	3	-6.146e-03	4	-9.116e-03	1
61	N50	max	.509	1	.05	5	1.263	5	2.433e-02	5	3.901e-03	4	-5.385e-04	5
62		min	.012	5	-.24	3	-.039	3	-7.298e-04	3	-1.673e-03	2	-8.013e-03	1
63	N51	max	.543	1	.04	5	.764	5	1.267e-02	5	8.227e-03	5	1.495e-03	5
64		min	-.037	5	-.329	3	-.052	3	-1.309e-03	3	2.788e-04	3	-9.622e-03	1
65	N52	max	.041	1	-.033	2	.002	4	6.047e-03	4	1.371e-05	6	-2.376e-05	5
66		min	.002	6	-.363	4	0	3	2.391e-04	2	-1.595e-04	2	-5.456e-03	1
67	N53	max	-.001	3	.167	2	.026	1	4.678e-03	5	1.386e-03	1	1.851e-03	6
68		min	-.008	4	-.174	6	.003	6	-8.877e-04	3	-2.374e-04	5	-3.97e-03	2
69	N70	max	.001	5	.004	5	0	6	3.377e-03	5	1.08e-03	4	-1.102e-03	5
70		min	-.011	1	-.394	1	-.025	1	-3.106e-03	3	1.637e-04	3	-6.627e-03	1
71	N71	max	.041	1	-.065	2	.002	5	6.046e-03	4	1.371e-05	6	-2.36e-05	5
72		min	.002	6	-.364	4	0	3	2.391e-04	2	-1.691e-04	2	-5.456e-03	1
73	N88	max	.041	1	-.048	2	.002	5	6.046e-03	4	1.371e-05	6	-2.365e-05	5
74		min	.002	6	-.329	4	0	3	2.39e-04	2	-1.691e-04	2	-5.456e-03	1
75	N89	max	.001	5	.01	5	.005	5	3.377e-03	5	1.08e-03	4	-1.102e-03	5
76		min	-.01	1	-.35	1	-.02	1	-3.106e-03	3	1.637e-04	3	-6.627e-03	1
77	N90	max	-.001	3	.141	2	.017	1	4.678e-03	5	1.391e-03	1	1.851e-03	6
78		min	-.008	4	-.162	6	.003	3	-8.876e-04	3	-2.374e-04	5	-3.97e-03	2
79	N40	max	.044	1	.004	2	.001	4	6.054e-03	4	1.019e-04	4	8.602e-04	5
80		min	.002	6	-.297	4	-.002	2	-5.206e-03	2	-8.834e-04	2	-1.441e-02	1

Envelope Joint Displacements (Continued)

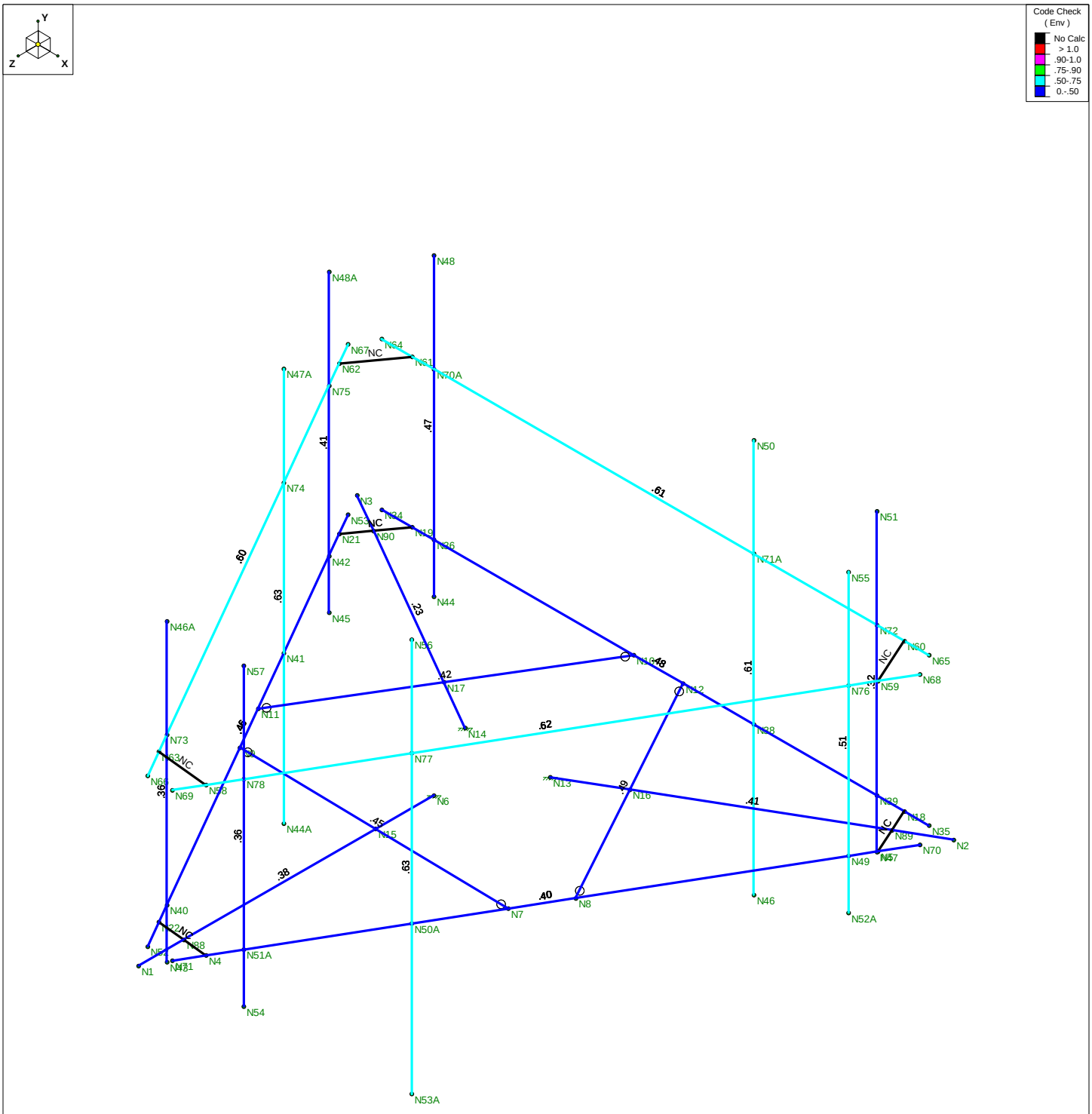
	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
81	N41	max	.08	1	.078	2	.021	4	5.893e-03	5	1.312e-03	5	5.007e-03	4
82		min	-.021	5	-.165	6	-.024	2	-1.473e-03	1	-1.247e-03	2	-5.4e-03	1
83	N42	max	.015	1	.141	2	.017	4	7.685e-03	5	3.744e-03	1	5.289e-03	4
84		min	-.014	5	-.166	6	.002	3	-3.413e-03	1	-1.287e-03	5	-1.008e-02	1
85	N43	max	.019	5	.004	2	.06	2	6.02e-03	4	1.019e-04	4	8.602e-04	5
86		min	-.128	1	-.297	4	-.071	4	-5.206e-03	2	-8.834e-04	2	-1.441e-02	1
87	N44A	max	.198	2	.078	2	.044	3	9.71e-04	5	1.312e-03	5	5.652e-03	2
88		min	.025	3	-.165	6	-.053	5	-1.47e-03	1	-1.247e-03	2	7.187e-04	3
89	N45	max	.049	4	.141	2	.054	1	7.651e-03	5	3.744e-03	1	5.289e-03	4
90		min	-.106	1	-.166	6	-.075	5	-3.413e-03	1	-1.287e-03	5	-1.008e-02	1
91	N46A	max	.82	1	.005	2	.548	5	9.482e-03	5	2.587e-04	4	2.266e-04	5
92		min	.026	5	-.297	4	-.112	1	-1.525e-03	1	-6.774e-03	1	-1.137e-02	1
93	N47A	max	1.134	1	.077	2	.679	5	1.047e-02	5	5.334e-03	1	4.94e-03	5
94		min	-.274	5	-.166	6	-.273	1	-6.34e-03	1	8.933e-05	6	-2.116e-02	1
95	N48A	max	.741	1	.142	2	.608	5	9.083e-03	4	7.738e-03	2	1.107e-03	5
96		min	-.125	5	-.167	6	-.018	3	-1.09e-04	1	-4.71e-03	4	-1.323e-02	1
97	N49	max	.014	4	-.026	5	.006	5	6.821e-03	5	1.565e-03	4	-3.762e-03	6
98		min	-.001	2	-.337	1	-.02	1	-2.337e-03	3	2.797e-04	3	-1.069e-02	1
99	N50A	max	.071	2	-.153	2	.02	2	5.946e-03	4	2.671e-03	2	-9.932e-04	6
100		min	.004	6	-.198	6	.002	6	9.911e-04	3	9.888e-05	6	-7.278e-03	1
101	N51A	max	.05	1	-.098	2	.007	2	6.921e-03	4	-1.155e-04	6	-5.45e-04	6
102		min	.002	6	-.3	4	0	6	1.875e-03	3	-2.338e-03	2	-1.349e-02	2
103	N52A	max	-.042	6	-.026	5	.025	3	6.787e-03	5	1.565e-03	4	-3.762e-03	6
104		min	-.129	1	-.337	1	-.076	5	-2.337e-03	3	2.797e-04	3	-1.069e-02	1
105	N53A	max	.121	2	-.153	2	-.026	6	2.804e-03	1	2.671e-03	2	3.784e-03	2
106		min	-.116	4	-.198	6	-.081	1	4.996e-04	6	9.888e-05	6	-3.745e-03	4
107	N54	max	-.004	6	-.098	2	-.021	3	6.886e-03	4	-1.155e-04	6	-5.45e-04	6
108		min	-.112	2	-.3	4	-.079	4	1.875e-03	3	-2.338e-03	2	-1.349e-02	2
109	N55	max	.681	1	-.028	5	.578	5	7.88e-03	5	6.099e-03	5	2.132e-05	5
110		min	.052	6	-.338	1	-.051	3	-1.097e-03	3	7.622e-04	3	-1.239e-02	1
111	N56	max	1.228	1	-.153	2	.634	5	1.007e-02	5	-1.782e-04	3	-1.53e-03	6
112		min	.09	6	-.199	6	.038	3	1.13e-03	3	-3.334e-03	5	-2.273e-02	1
113	N57	max	.848	1	-.099	2	.589	5	1.056e-02	5	-4.258e-04	6	-1.063e-03	6
114		min	.062	6	-.301	4	.004	3	2.743e-04	3	-7.228e-03	1	-1.248e-02	1
115	N58	max	.515	1	-.084	2	.339	5	8.79e-03	5	-1.598e-04	6	-5.53e-05	5
116		min	.028	5	-.35	4	-.008	3	-4.689e-04	3	-7.93e-03	1	-5.919e-03	1
117	N59	max	.373	1	.002	5	.375	5	5.6e-03	5	7.83e-03	5	2.261e-03	5
118		min	.043	6	-.371	1	-.037	1	-2.418e-03	1	5.52e-04	3	-8.621e-03	1
119	N60	max	.322	1	.056	5	.417	5	5.6e-03	5	7.83e-03	5	2.261e-03	5
120		min	-.001	5	-.354	1	-.024	3	-2.418e-03	1	5.52e-04	3	-8.621e-03	1
121	N61	max	.322	1	.147	2	.428	5	6.38e-03	4	6.728e-03	2	-7.529e-04	6
122		min	-.002	5	-.141	6	-.03	1	1.025e-03	3	-6.313e-03	4	-8.365e-03	1
123	N62	max	.391	1	.184	2	.381	5	6.38e-03	4	6.728e-03	2	-7.529e-04	6
124		min	-.067	5	-.155	6	-.013	3	1.025e-03	3	-6.313e-03	4	-8.365e-03	1
125	N63	max	.525	1	-.01	2	.326	5	8.79e-03	5	-1.598e-04	6	-5.53e-05	5
126		min	.03	5	-.337	4	-.056	1	-4.689e-04	3	-7.93e-03	1	-5.919e-03	1
127	N64	max	.322	1	.209	2	.381	5	6.38e-03	4	6.728e-03	2	-7.512e-04	6
128		min	-.002	5	-.135	6	-.013	3	1.025e-03	3	-6.304e-03	4	-8.364e-03	1
129	N65	max	.322	1	.069	5	.37	5	5.6e-03	5	7.826e-03	5	2.261e-03	5
130		min	-.001	5	-.406	1	-.04	1	-2.418e-03	1	5.52e-04	3	-8.622e-03	1
131	N66	max	.474	1	-.034	2	.33	5	8.791e-03	5	-1.606e-04	6	-5.588e-05	5
132		min	.023	5	-.394	4	-.026	1	-4.675e-04	3	-7.923e-03	1	-5.92e-03	1

Envelope Joint Displacements (Continued)

	Joint		X [in]	LC	Y [in]	LC	Z [in]	LC	X Rotation [...	LC	Y Rotation [...	LC	Z Rotation [...	LC
133	N67	max	.357	1	.221	2	.363	5	6.38e-03	4	6.724e-03	2	-7.525e-04	6
134		min	-.034	5	-.143	6	-.01	3	1.024e-03	3	-6.311e-03	4	-8.365e-03	1
135	N68	max	.345	1	.047	5	.346	5	5.599e-03	5	7.826e-03	5	2.261e-03	5
136		min	.035	6	-.419	1	-.053	1	-2.42e-03	1	5.506e-04	3	-8.622e-03	1
137	N69	max	.474	1	-.068	2	.336	5	8.79e-03	5	-1.594e-04	6	-5.5e-05	5
138		min	.023	5	-.395	4	-.013	3	-4.682e-04	3	-7.927e-03	1	-5.918e-03	1
139	N70A	max	.322	1	.104	2	.461	5	9.618e-03	4	4.737e-03	2	-1.104e-03	6
140		min	-.002	5	-.146	6	-.059	1	4.265e-04	3	-6.146e-03	4	-8.358e-03	1
141	N71A	max	.322	1	.05	5	.689	5	2.156e-02	5	3.901e-03	4	-5.381e-04	5
142		min	-.001	5	-.24	3	-.022	3	-7.276e-04	3	-1.673e-03	2	-6.733e-03	1
143	N72	max	.322	1	.04	5	.472	5	1.066e-02	5	8.227e-03	5	1.494e-03	5
144		min	-.001	5	-.329	3	-.021	3	-1.302e-03	3	2.788e-04	3	-7.978e-03	1
145	N73	max	.558	1	.005	2	.325	5	8.724e-03	5	2.587e-04	4	2.265e-04	5
146		min	.031	5	-.297	4	-.075	1	-1.525e-03	1	-6.774e-03	1	-9.393e-03	1
147	N74	max	.636	1	.077	2	.433	5	9.193e-03	5	5.334e-03	1	4.936e-03	5
148		min	-.156	5	-.166	6	-.121	1	-6.334e-03	1	8.933e-05	6	-1.838e-02	1
149	N75	max	.435	1	.142	2	.4	5	7.448e-03	5	7.738e-03	2	1.107e-03	5
150		min	-.099	5	-.166	6	-.017	3	-1.089e-04	1	-4.71e-03	4	-1.122e-02	1
151	N76	max	.395	1	-.028	5	.394	5	7.122e-03	5	6.099e-03	5	2.131e-05	5
152		min	.049	6	-.337	1	-.025	3	-1.096e-03	3	7.622e-04	3	-1.041e-02	1
153	N77	max	.693	1	-.153	2	.398	5	8.791e-03	5	-1.782e-04	3	-1.525e-03	6
154		min	.053	6	-.199	6	.011	3	1.127e-03	3	-3.334e-03	5	-1.995e-02	1
155	N78	max	.56	1	-.099	2	.345	5	8.929e-03	5	-4.258e-04	6	-1.06e-03	6
156		min	.036	6	-.301	4	-.003	3	2.735e-04	3	-7.228e-03	1	-1.047e-02	1

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

	Member	Shape	Code Check	Loc...	LC	Shea..	Loc.....	L..		phi*Pn..	phi*Pn..	phi*M...	phi*M...	...	Eqn
1	M1	HSS4x4x4	.382	0	4	.159	0	z	1	120.005	139.518	16.181	16.181	2..	H1-1b
2	M9	C5x6.7	.403	10....	1	.267	10....	y	1	28.842	63.828	1.604	8.187	1	H1-1b
3	M10	C5x6.7	.485	10....	4	.285	1.0...	y	5	28.842	63.828	1.604	8.187	1	H1-1b
4	M11	C5x6.7	.464	7.5...	1	.345	1.0...	y	1	28.842	63.828	1.604	8.187	1	H1-1b
5	M17A	L3x3x4	.449	2.7...	3	.032	2.7...	z	3	39.457	46.656	1.688	3.756	1...	H2-1
6	M18A	HSS4x4x4	.406	0	1	.118	0	z	5	120.005	139.518	16.181	16.181	2..	H1-1b
7	M19A	L3x3x4	.488	2.7...	3	.035	2.7...	z	3	39.156	46.656	1.688	3.756	1...	H2-1
8	M20A	HSS4x4x4	.229	0	6	.101	0	z	5	120.005	139.518	16.181	16.181	2..	H1-1b
9	M21A	L3x3x4	.415	2.7...	3	.035	2.7...	z	6	39.156	46.656	1.688	3.756	1...	H2-1
10	M19	PIPE_2.0	.469	1	1	.128	1		4	20.867	32.13	1.872	1.872	2..	H1-1b
11	M21B	PIPE_2.0	.610	3	4	.175	6		4	14.916	32.13	1.872	1.872	1..	H1-1b
12	M22	PIPE_2.0	.316	1	2	.112	1		5	20.867	32.13	1.872	1.872	2..	H1-1b
13	M16A	PIPE_2.0	.363	4	2	.167	1		2	20.867	32.13	1.872	1.872	2..	H1-1b
14	M17B	PIPE_2.0	.631	3	1	.185	6		1	14.916	32.13	1.872	1.872	1..	H1-1b
15	M18B	PIPE_2.0	.410	1	4	.125	1		4	20.867	32.13	1.872	1.872	2..	H1-1b
16	M19B	PIPE_2.0	.510	1	4	.149	1		4	20.867	32.13	1.872	1.872	1..	H1-1b
17	M20	PIPE_2.0	.633	3	1	.137	6		2	14.916	32.13	1.872	1.872	1..	H1-1b
18	M21	PIPE_2.0	.360	1	1	.150	1		1	20.867	32.13	1.872	1.872	1..	H1-1b
19	M25	PIPE_2.0	.616	10....	2	.668	10....		2	23.809	32.13	1.872	1.872	1	H3-6
20	M26	PIPE_2.0	.606	10....	4	.643	10....		4	23.809	32.13	1.872	1.872	1	H3-6
21	M27	PIPE_2.0	.597	1.0...	2	.639	.695		2	23.809	32.13	1.872	1.872	1	H3-6



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

Centek		
TJL	CT11821E - Mount	June 4, 2018 at 2:18 PM
18058.41	Unity Check	Mount.r3d

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Structural Analysis Report

Structure	:	**149 ft Monopole**
ATC Site Name	:	**West Haven & Rt 162 CT, CT**
ATC Site Number	:	**243036**
Engineering Number	:	**12605172_C3_02**
Proposed Carrier	:	**T-Mobile**
Carrier Site Name	:	**CT821/D&B Flower Farm**
Carrier Site Number	:	**CT11821E**
Site Location	:	**668 Jones Hill Road** **West Haven, CT 06516-6311** **41.256400,-72.972400**
County	:	**New Haven**
Date	:	**October 23, 2018**
Max Usage	:	**87%**
Result	:	**Pass**

Prepared By:
Christiana Lancaster
Structural Engineer I

Reviewed By:

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 149 ft monopole to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	Sabre Job #06-08204, dated August 19, 2005
Foundation Drawing	Sabre Job #06-10095, dated October 12, 2005
Geotechnical Report	EBI Project #61051509, dated July 12, 2005

Analysis

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

Basic Wind Speed:	97 mph (3-Second Gust, V_{asd})/ 125 mph (3-second Gust, V_{ult})
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2015 IBC / 2018 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.19, S_1 = 0.06
Site Class:	D - Stiff Soil

Conclusion

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

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

Existing and Reserved Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
149.0	151.0	3	DragonWave Horizon Compact	T-Arms	(3) 1 1/4" Hybriflex (3) 1/2" Coax (1) 1.7" Hybrid	Clearwire
		1	DragonWave A-ANT-23G-1-C			
		6	Alcatel-Lucent RRH2x50-08			
		3	Alcatel-Lucent 1900MHz 4x45 RRH			
		3	Nokia 2.5G MAA - AAHC(64T64R)			
		2	DragonWave A-ANT-11G-2-C			
		3	RFS APXVFRR12X-C-I20			
142.0	143.0	3	Ericsson KRY 112 489/1	-	(12) 1 5/8" Coax	T-Mobile
		3	Ericsson AIR-32 B2A/B66Aa			
136.0	137.0	3	Alcatel-Lucent RRH2x40-AWS	Low Profile Platform	(12) 1 5/8" Coax (1) 1 5/8" Fiber	Verizon
		3	Antel BXA-171063-12BF-EDIN-X			
		3	Antel BXA-185085/12CF ___			
		3	Andrew DB854DG65ESX			
		3	Commscope LNX-6514DS-A1M			
	136.0	6	RFS FD9R6004/2C-3L			
		1	RFS DB-T1-6Z-8AB-0Z			
126.0	126.0	1	Raycap DC6-48-60-0-8F	Platform w/ Handrails	(2) 0.78" 8 AWG 6 (1) 0.39" Fiber Trunk (1) 3" Conduit	AT&T Mobility
		3	Ericsson RRUS-11 800MHz			
		3	Ericsson RRUS 32			
		3	CCI CCI-HPA-65R-BUU-H8			
115.0	115.0	3	RFS APXV18-206517S-C	Flush	(6) 1 5/8" Coax	Metro PCS
106.0	106.0	1	Proxim 5054-R-LR	Side Arm	(1) 0.28" RG-6	Other
		1	3' Dish w/ Radome			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
142.0	143.0	3	Commscope SBNHH-1D65A	Low Profile Platform	(1) 7/8" Fiber	T-Mobile
		3	Ericsson KRY 112 14			
		3	Kathrein Smart Bias Tee			
		3	Ericsson RRUS 11 B12			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
142.0	143.0	3	Ericsson KRY 112 144/2	Platform w/ Handrails	(3) 1 1/4" Hybriflex (3) 1 5/8" Coax	T-Mobile
		3	Ericsson Radio 4449 B12,B71			
		3	RFS APX16DWV-16DWVS-E-A20			
		3	RFS APXVAARR24_43-U-NA20			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	51%	Pass
Shaft	87%	Pass
Base Plate	42%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Moment (Kips-Ft)	2,840.0	3,834.0	2,569.7	67%
Shear (Kips)	26.3	35.5	22.5	63%

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

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
149.0	DragonWave A-ANT-23G-1-C	Clearwire	2.068	1.628
	DragonWave A-ANT-11G-2-C			
142.0	Ericsson KRY 112 144/2	T-Mobile	1.870	1.616
	Ericsson Radio 4449 B12,B71			
	RFS APX16DWV-16DWVS-E-A20			
	RFS APXVAARR24_43-U-NA20			
106.0	3' Dish w/ Radome	Other	0.968	1.154

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

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Standard Conditions

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

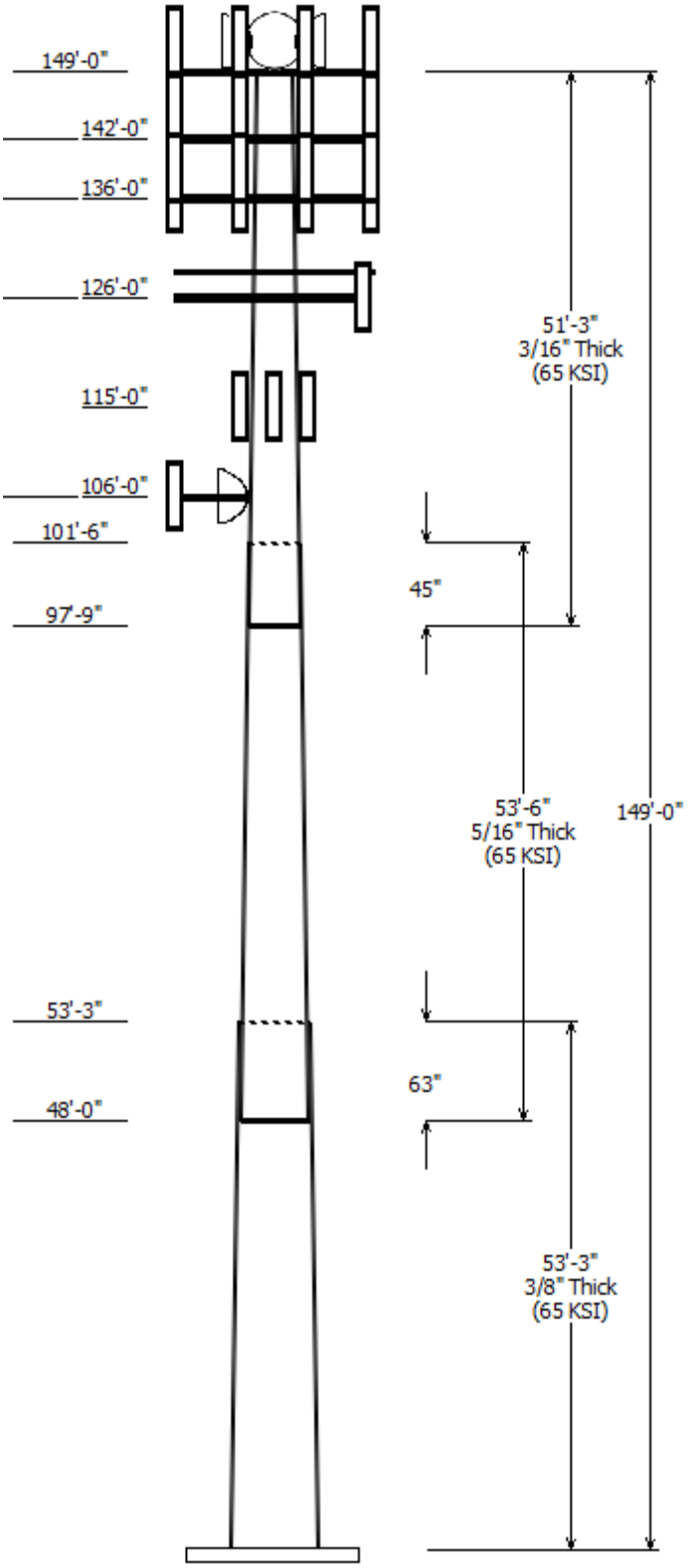
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Pole :	243036	Code:	ANSI/TIA-222-G
Location :	WEST HAVEN & RT 162 CT, CT		
Description :	Tower Model Verified: 12/13/2012		
Client :	T-MOBILE	Struct Class :	II
Shape :	18 Sides	Exposure :	B
Height :	149.00 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.234964 (in/ft)		

Sections Properties

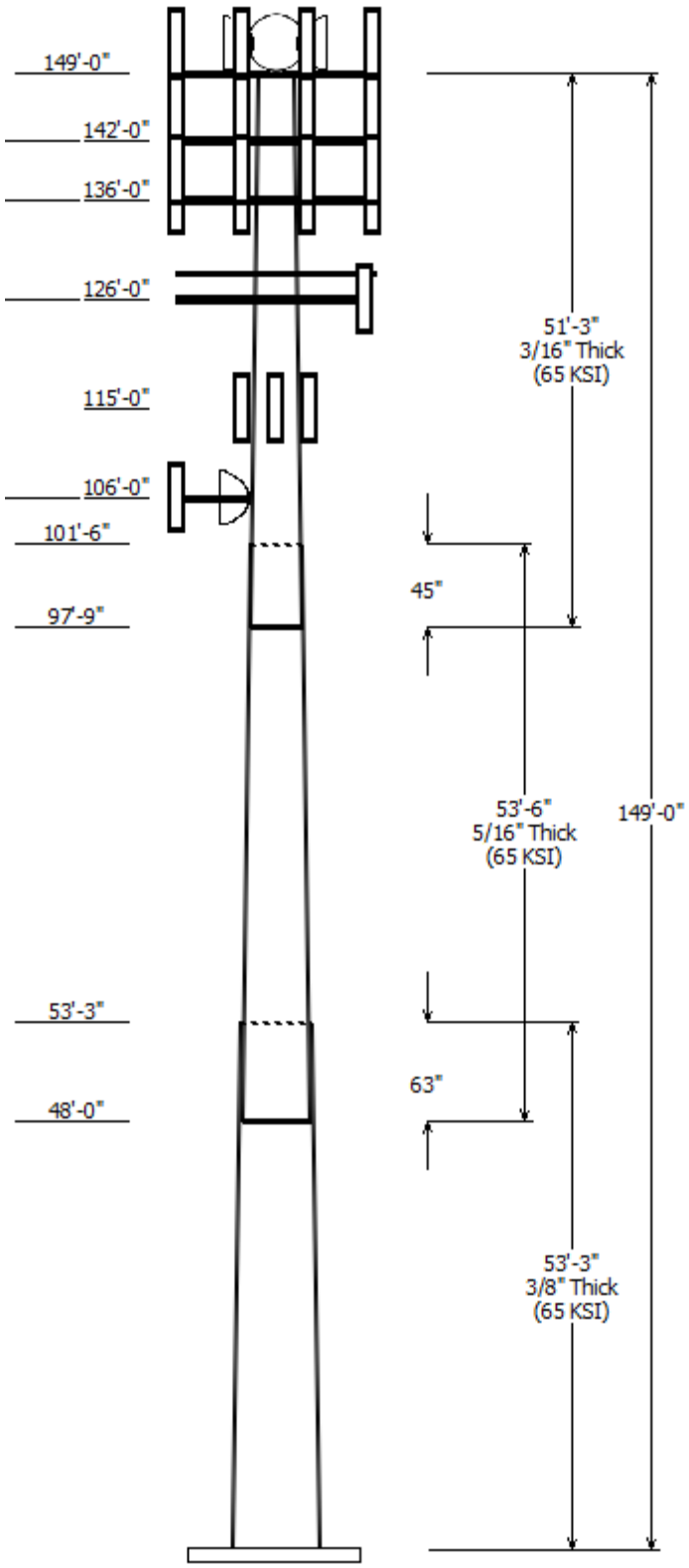
Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	53.250	39.49	52.01	0.375		0.000	18 Sides	65
2	53.500	28.78	41.35	0.313	Slip Joint	63.000	18 Sides	65
3	51.250	18.00	30.04	0.188	Slip Joint	45.000	18 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
149.000	151.000	3	RFS APXVFRR12X-C-I20
149.000	149.000	3	Flat T-Arm
149.000	151.000	3	Nokia 2.5G MAA -
149.000	151.000	3	Alcatel-Lucent 1900 MHz 4x45
149.000	151.000	6	Alcatel-Lucent RRH2x50-08
149.000	151.000	1	DragonWave A-ANT-23G-1-C
149.000	151.000	3	DragonWave Horizon Compact
149.000	151.000	2	DragonWave A-ANT-11G-2-C
142.000	142.000	1	Flat Platform w/ Handrails
142.000	143.000	3	RFS APXVAARR24_43-U-NA20
142.000	143.000	3	RFS APX16DWV-16DWVS-E-A20
142.000	143.000	3	Ericsson AIR-32 B2A/B66Aa
142.000	143.000	3	Ericsson Radio 4449 B12,B71
142.000	143.000	3	Ericsson KRY 112 489/1
142.000	143.000	3	Ericsson KRY 112 144/2
136.000	136.000	1	Round Low Profile Platform
136.000	137.000	3	Commscope LNX-6514DS-A1M
136.000	137.000	3	Andrew DB854DG65ESX
136.000	136.000	1	RFS DB-T1-6Z-8AB-0Z
136.000	137.000	3	Antel BXA-185085/12CF ___
136.000	137.000	3	Amphenol Antel BXA-171063-
136.000	137.000	3	Alcatel-Lucent RRH2x40-AWS
136.000	136.000	6	RFS FD9R6004/2C-3L
126.000	126.000	1	Round Platform w/ Handrails
126.000	126.000	3	CCI CCI-HPA-65R-BUU-H8
126.000	126.000	3	Ericsson RRUS 32
126.000	126.000	3	Ericsson RRUS-11 800 MHz
126.000	126.000	1	Raycap DC6-48-60-0-8F
115.000	115.000	3	RFS APXV18-206517S-C
106.000	106.000	1	Flat Side Arm
106.000	106.000	1	Proxim 5054-R-LR
106.000	106.000	1	3' Dish w/ Radome

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
4.000	106.0	0.28" RG-6	No
4.000	115.0	1 5/8" Coax	No
4.000	126.0	0.39" Fiber Trunk	No
4.000	126.0	0.78" 8 AWG 6	No
4.000	126.0	3" Conduit	No
4.000	136.0	1 5/8" (1.63"-	No



4.000	136.0	1 5/8" Coax	No
4.000	142.0	1 1/4" Hybriflex	Yes
4.000	142.0	1 5/8" Coax	No
4.000	142.0	1 5/8" Coax	No
4.000	149.0	1 1/4" Hybriflex	No
4.000	149.0	1.7" (43.2mm)	No
4.000	149.0	1/2" Coax	No

Load Cases

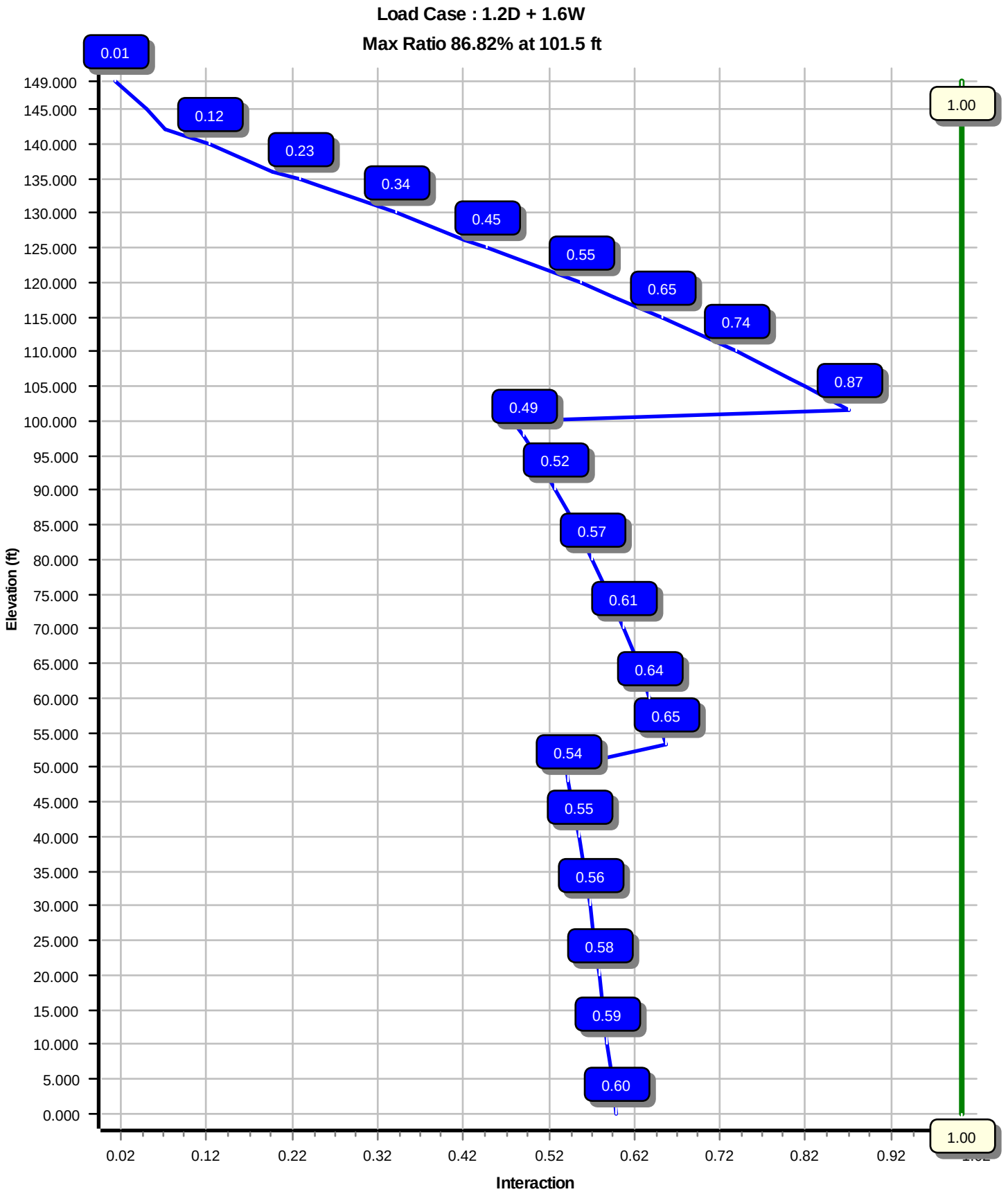
1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	50 mph with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) 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	2569.75	22.52	41.21
0.9D + 1.6W	2532.77	22.50	30.90
1.2D + 1.0Di + 1.0Wi	749.88	6.48	64.89
(1.2 + 0.2Sds) * DL + E ELFM	172.61	1.34	41.29
(1.2 + 0.2Sds) * DL + E EMAM	317.11	2.56	41.29
(0.9 - 0.2Sds) * DL + E ELFM	169.52	1.34	28.63
(0.9 - 0.2Sds) * DL + E EMAM	311.07	2.55	28.63
1.0D + 1.0W	609.53	5.38	34.37

Dish Deflections

Load Case	Attach Elev (ft)	Deflection (in)	Rotation (deg)
1.0D + 1.0W	106.00	11.619	1.154
1.0D + 1.0W	149.00	24.821	1.628
1.0D + 1.0W	149.00	24.821	1.628


Load Case : 1.2D + 1.6W
Max Ratio 86.82% at 101.5 ft
0.01
0.12
0.23
0.34
0.45
0.55
0.65
0.74
0.87
0.49
0.52
0.57
0.61
0.64
0.65
0.54
0.55
0.56
0.58
0.59
0.60
1.00
1.00
149.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
15.000
10.000
5.000
0.000
Elevation (ft)
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:12605172_C3_02 10/23/2018 5:37:05 PM

Customer: T-MOBILE

Analysis Parameters

Location :	NEW HAVEN County, CT	Height (ft) :	149
Code :	ANSI/TIA-222-G	Base Diameter (in) :	52.01
Shape :	18 Sides	Top Diameter (in) :	18.00
Pole Type :	Taper	Taper (in/ft) :	0.235
Pole Manfacturer :	Sabre	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	97 mph
Exposure Category:	B	Design Wind Speed With Ice:	50 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	0.75 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	2.63				
T_L (sec):	6	p:	1.3	C_s:	0.030
S_s:	0.188	S_1:	0.062	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.201	S_{d1}:	0.099		

Load Cases

1.2D + 1.6W	97 mph with No Ice
0.9D + 1.6W	97 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: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:12605172_C3_02 10/23/2018 5:37:05 PM

Customer: T-MOBILE

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-18	53.250	0.3750	65		0.00	9,787	52.01	0.00	61.46	20701.4	22.69	138.69	39.49	53.25	46.56	9004.7	16.81	105.33	0.234964
2-18	53.500	0.3125	65	Slip	63.00	6,276	41.35	48.00	40.71	8664.4	21.57	132.34	28.78	101.50	28.24	2892.7	14.48	92.11	0.234964
3-18	51.250	0.1875	65	Slip	45.00	2,473	30.04	97.75	17.77	2000.7	26.49	160.22	18.00	149.00	10.60	424.9	15.16	96.00	0.234964
				Shaft Weight		18,536													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
149.00	Alcatel-Lucent 1900 MHz 4x45 R	3	0.000	2.000	60.00	2.320	0.50
149.00	Alcatel-Lucent RRH2x50-08	6	0.000	2.000	52.90	1.700	0.50
149.00	DragonWave A-ANT-11G-2-C	2	0.000	2.000	27.00	4.690	1.00
149.00	DragonWave A-ANT-23G-1-C	1	0.000	2.000	15.00	1.610	1.00
149.00	DragonWave Horizon Compact	3	0.000	2.000	10.60	0.840	0.50
149.00	Flat T-Arm	3	0.000	0.000	250.00	12.900	0.67
149.00	Nokia 2.5G MAA - AAHC(64T64R)	3	0.000	2.000	103.60	4.200	0.64
149.00	RFS APXVFRR12X-C-I20	3	0.000	2.000	46.00	4.990	0.71
142.00	Ericsson AIR-32 B2A/B66Aa	3	0.000	1.000	132.20	6.510	0.71
142.00	Ericsson KRY 112 144/2	3	0.000	1.000	9.70	0.560	0.50
142.00	Ericsson KRY 112 489/1	3	0.000	1.000	15.40	0.650	0.50
142.00	Ericsson Radio 4449 B12,B71	3	0.000	1.000	74.00	1.640	0.50
142.00	Flat Platform w/ Handrails	1	0.000	0.000	2000.00	42.400	1.00
142.00	RFS APX16DWV-16DWVS-E-A20	3	0.000	1.000	40.70	6.590	0.60
142.00	RFS APXVAARR24_43-U-NA20	3	0.000	1.000	127.90	20.240	0.63
136.00	Alcatel-Lucent RRH2x40-AWS	3	0.000	1.000	44.00	2.160	0.50
136.00	Amphenol Antel BXA-171063-	3	0.000	1.000	15.00	4.730	0.72
136.00	Andrew DB854DG65ESX	3	0.000	1.000	18.50	5.250	0.65
136.00	Antel BXA-185085/12CF___	3	0.000	1.000	13.00	4.790	0.72
136.00	Commscope LNX-6514DS-A1M	3	0.000	1.000	38.80	8.170	0.69
136.00	RFS DB-T1-6Z-8AB-0Z	1	0.000	0.000	44.00	4.800	0.50
136.00	RFS FD9R6004/2C-3L	6	0.000	0.000	2.60	0.370	0.50
136.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	1.00
126.00	CCI CCI-HPA-65R-BUU-H8	3	0.000	0.000	68.00	12.980	0.67
126.00	Ericsson RRUS 32	3	0.000	0.000	50.80	2.690	0.50
126.00	Ericsson RRUS-11 800 MHz	3	0.000	0.000	54.00	2.520	0.50
126.00	Raycap DC6-48-60-0-8F	1	0.000	0.000	32.80	1.280	1.00
126.00	Round Platform w/ Handrails	1	0.000	0.000	2000.00	27.200	1.00
115.00	RFS APXV18-206517S-C	3	0.000	0.000	26.40	5.160	0.68
106.00	3' Dish w/ Radome	1	0.000	0.000	100.00	6.100	1.00
106.00	Flat Side Arm	1	0.000	0.000	150.00	6.300	1.00
106.00	Proxim 5054-R-LR	1	0.000	0.000	6.00	1.320	1.00
Totals	Num Loadings:32	83			9830.60		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
4.00	149.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	0.00	N	Clearwire
4.00	149.00	1	1.7" (43.2mm) Hybrid	1.70	1.78	N	0.00	N	Clearwire
4.00	149.00	3	1/2" Coax	0.63	0.15	N	0.00	N	Clearwire
4.00	142.00	3	1 1/4" Hybriflex Cable	1.54	1.00	N	1.54	Y	T-Mobile
4.00	142.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile

4.00	142.00	3	1 5/8" Coax	1.98	0.82	N	0.00	N	T-Mobile
4.00	136.00	1	1 5/8" (1.63"-41.3mm)	1.63	1.61	N	0.00	N	Verizon
4.00	136.00	12	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
4.00	126.00	1	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
4.00	126.00	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
4.00	126.00	1	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
4.00	115.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	Metro PCS
4.00	106.00	1	0.28" RG-6	0.28	0.03	N	0.00	N	-

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)
0.00		0.3750	52.010	61.456	20,701.4	22.69	138.69	74.7	784.0	0.0	0.0
5.00		0.3750	50.835	60.058	19,320.3	22.14	135.56	75.4	748.6	0.0	1,033.7
10.00		0.3750	49.660	58.659	18,002.0	21.59	132.43	76.0	714.0	0.0	1,009.9
15.00		0.3750	48.485	57.261	16,745.1	21.03	129.29	76.7	680.2	0.0	986.1
20.00		0.3750	47.310	55.863	15,548.1	20.48	126.16	77.3	647.3	0.0	962.3
25.00		0.3750	46.136	54.465	14,409.6	19.93	123.03	78.0	615.2	0.0	938.5
30.00		0.3750	44.961	53.066	13,328.0	19.38	119.90	78.6	583.9	0.0	914.8
35.00		0.3750	43.786	51.668	12,301.9	18.83	116.76	79.3	553.4	0.0	891.0
40.00		0.3750	42.611	50.270	11,329.9	18.27	113.63	79.9	523.7	0.0	867.2
45.00		0.3750	41.436	48.871	10,410.6	17.72	110.50	80.6	494.9	0.0	843.4
48.00	Bot - Section 2	0.3750	40.731	48.032	9,883.6	17.39	108.62	80.9	477.9	0.0	494.6
50.00		0.3750	40.261	47.473	9,542.3	17.17	107.36	81.2	466.8	0.0	600.4
53.25	Top - Section 1	0.3125	40.123	39.485	7,906.5	20.88	128.39	76.8	388.1	0.0	960.8
55.00		0.3125	39.712	39.078	7,664.0	20.64	127.08	77.1	380.1	0.0	233.9
60.00		0.3125	38.537	37.912	6,998.6	19.98	123.32	77.9	357.7	0.0	654.9
65.00		0.3125	37.362	36.747	6,373.0	19.32	119.56	78.7	336.0	0.0	635.1
70.00		0.3125	36.187	35.582	5,785.7	18.66	115.80	79.5	314.9	0.0	615.3
75.00		0.3125	35.012	34.417	5,235.7	17.99	112.04	80.2	294.5	0.0	595.5
80.00		0.3125	33.838	33.251	4,721.7	17.33	108.28	81.0	274.8	0.0	575.6
85.00		0.3125	32.663	32.086	4,242.5	16.67	104.52	81.8	255.8	0.0	555.8
90.00		0.3125	31.488	30.921	3,796.9	16.00	100.76	82.6	237.5	0.0	536.0
95.00		0.3125	30.313	29.756	3,383.6	15.34	97.00	82.6	219.9	0.0	516.2
97.75	Bot - Section 3	0.3125	29.667	29.115	3,169.7	14.98	94.93	82.6	210.4	0.0	275.4
100.0		0.3125	29.138	28.591	3,001.5	14.68	93.24	82.6	202.9	0.0	355.7
101.5	Top - Section 2	0.1875	29.161	17.242	1,828.7	25.66	155.52	71.2	123.5	0.0	233.6
105.0		0.1875	28.338	16.753	1,677.4	24.89	151.14	72.1	116.6	0.0	202.4
106.0		0.1875	28.103	16.613	1,635.7	24.67	149.89	72.4	114.6	0.0	56.8
110.0		0.1875	27.164	16.054	1,476.0	23.78	144.87	73.4	107.0	0.0	222.3
115.0		0.1875	25.989	15.354	1,291.4	22.68	138.61	74.7	97.9	0.0	267.2
117.9		0.1875	25.299	14.944	1,190.5	22.03	134.93	75.5	92.7	0.0	151.4
120.0		0.1875	24.814	14.655	1,122.9	21.57	132.34	76.0	89.1	0.0	103.9
125.0		0.1875	23.639	13.956	969.8	20.47	126.08	77.3	80.8	0.0	243.4
126.0		0.1875	23.404	13.816	940.9	20.25	124.82	77.6	79.2	0.0	47.3
130.0		0.1875	22.464	13.257	831.2	19.36	119.81	78.6	72.9	0.0	184.2
135.0		0.1875	21.290	12.558	706.5	18.26	113.54	79.9	65.4	0.0	219.6
136.0		0.1875	21.055	12.418	683.2	18.04	112.29	80.2	63.9	0.0	42.5
140.0		0.1875	20.115	11.859	595.0	17.15	107.28	81.2	58.3	0.0	165.2
142.0		0.1875	19.645	11.579	553.8	16.71	104.77	81.7	55.5	0.0	79.8
145.0		0.1875	18.940	11.160	495.8	16.05	101.01	82.5	51.6	0.0	116.1
149.0		0.1875	18.000	10.600	424.9	15.16	96.00	82.6	46.5	0.0	148.1
											18,536.1

Load Case: 1.2D + 1.6W — 97 mph with No Ice — 26 Iterations

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

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		199.3	0.0					0.0	0.0	199.3	0.0	0.0	0.0
5.00		394.1	1,240.5					0.0	54.9	394.1	1,295.4	0.0	0.0
10.00		385.0	1,211.9					0.0	274.5	385.0	1,486.4	0.0	0.0
15.00		375.9	1,183.4					0.0	274.5	375.9	1,457.9	0.0	0.0
20.00		366.8	1,154.8					0.0	274.5	366.8	1,429.3	0.0	0.0
25.00		357.7	1,126.3					0.0	274.5	357.7	1,400.8	0.0	0.0
30.00		352.7	1,097.7					0.0	274.5	352.7	1,372.2	0.0	0.0
35.00		354.8	1,069.2					0.0	274.5	354.8	1,343.7	0.0	0.0
40.00		358.7	1,040.6					0.0	274.5	358.7	1,315.1	0.0	0.0
45.00		288.5	1,012.1					0.0	274.5	288.5	1,286.6	0.0	0.0
48.00	Bot - Section 2	181.8	593.5					0.0	164.7	181.8	758.2	0.0	0.0
50.00		192.7	720.5					0.0	109.8	192.7	830.3	0.0	0.0
53.25	Top - Section 1	183.4	1,153.0					0.0	178.4	183.4	1,331.4	0.0	0.0
55.00		247.0	280.7					0.0	96.1	247.0	376.8	0.0	0.0
60.00		364.4	785.9					0.0	274.5	364.4	1,060.4	0.0	0.0
65.00		361.5	762.1					0.0	274.5	361.5	1,036.6	0.0	0.0
70.00		357.6	738.4					0.0	274.5	357.6	1,012.9	0.0	0.0
75.00		352.9	714.6					0.0	274.5	352.9	989.1	0.0	0.0
80.00		347.4	690.8					0.0	274.5	347.4	965.3	0.0	0.0
85.00		341.2	667.0					0.0	274.5	341.2	941.5	0.0	0.0
90.00		334.3	643.2					0.0	274.5	334.3	917.7	0.0	0.0
95.00		254.7	619.4					0.0	274.5	254.7	893.9	0.0	0.0
97.75	Bot - Section 3	162.4	330.5					0.0	151.0	162.4	481.5	0.0	0.0
100.00		121.4	426.9					0.0	123.5	121.4	550.4	0.0	0.0
101.50	Top - Section 2	159.4	280.3					0.0	82.4	159.4	362.6	0.0	0.0
105.00		142.5	242.9					0.0	192.2	142.5	435.1	0.0	0.0
106.00	Appurtenance(s)	155.0	68.1	555.2	0.0	0.0	307.2	0.0	54.9	710.3	430.2	0.0	0.0
110.00		274.1	266.8					0.0	219.5	274.1	486.2	0.0	0.0
115.00	Appurtenance(s)	236.5	320.6	436.0	0.0	0.0	95.0	0.0	274.3	672.6	690.0	0.0	0.0
117.94		145.6	181.7					0.0	143.8	145.6	325.5	0.0	0.0
120.00		199.9	124.6					0.0	101.0	199.9	225.6	0.0	0.0
125.00		168.0	292.1					0.0	244.8	168.0	536.9	0.0	0.0
126.00	Appurtenance(s)	135.2	56.7	2,281.1	0.0	0.0	3,061.4	0.0	49.0	2,416.3	3,167.1	0.0	0.0
130.00		237.5	221.1					0.0	153.5	237.5	374.6	0.0	0.0
135.00		155.0	263.5					0.0	191.9	155.0	455.4	0.0	0.0
136.00	Appurtenance(s)	124.1	51.0	2,840.0	0.0	1,775.0	2,337.0	0.0	38.4	2,964.1	2,426.4	0.0	0.0
140.00		146.8	198.3					0.0	98.5	146.8	296.8	0.0	0.0
142.00	Appurtenance(s)	118.2	95.7	4,272.4	0.0	2,407.1	3,839.6	0.0	49.3	4,390.7	3,984.6	0.0	0.0
145.00		160.5	139.3					0.0	18.8	160.5	158.1	0.0	0.0
149.00	Appurtenance(s)	90.3	177.7	2,381.4	0.0	3,028.1	2,156.4	0.0	25.1	2,471.7	2,359.2	0.0	0.0
								Totals:		22,651.1	41,247.7	0.00	0.00

Load Case: 1.2D + 1.6W 97 mph with No Ice 26 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	-41.21	-22.52	0.00	-2,569.75	0.00	2,569.75	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.595
5.00	-39.85	-22.24	0.00	-2,457.18	0.00	2,457.18	4,073.39	2,036.69	8,449.37	4,230.97	0.09	-0.17	0.591
10.00	-38.30	-21.97	0.00	-2,345.97	0.00	2,345.97	4,012.85	2,006.43	8,128.58	4,070.33	0.37	-0.35	0.586
15.00	-36.77	-21.70	0.00	-2,236.13	0.00	2,236.13	3,950.68	1,975.34	7,810.43	3,911.02	0.83	-0.53	0.581
20.00	-35.28	-21.43	0.00	-2,127.64	0.00	2,127.64	3,886.87	1,943.43	7,495.19	3,753.17	1.49	-0.72	0.576
25.00	-33.81	-21.17	0.00	-2,020.48	0.00	2,020.48	3,821.43	1,910.71	7,183.08	3,596.88	2.34	-0.91	0.571
30.00	-32.37	-20.90	0.00	-1,914.64	0.00	1,914.64	3,754.35	1,877.17	6,874.35	3,442.28	3.39	-1.10	0.565
35.00	-30.97	-20.63	0.00	-1,810.13	0.00	1,810.13	3,685.64	1,842.82	6,569.23	3,289.50	4.65	-1.30	0.559
40.00	-29.59	-20.34	0.00	-1,706.99	0.00	1,706.99	3,615.29	1,807.64	6,267.96	3,138.64	6.12	-1.50	0.552
45.00	-28.25	-20.10	0.00	-1,605.27	0.00	1,605.27	3,543.30	1,771.65	5,970.78	2,989.83	7.80	-1.71	0.545
48.00	-27.46	-19.95	0.00	-1,544.96	0.00	1,544.96	3,499.33	1,749.66	5,794.53	2,901.57	8.92	-1.84	0.540
50.00	-26.60	-19.78	0.00	-1,505.06	0.00	1,505.06	3,469.68	1,734.84	5,677.92	2,843.18	9.71	-1.93	0.537
53.25	-25.24	-19.60	0.00	-1,440.77	0.00	1,440.77	2,730.90	1,365.45	4,467.29	2,236.97	11.07	-2.07	0.654
55.00	-24.81	-19.41	0.00	-1,406.47	0.00	1,406.47	2,712.29	1,356.15	4,390.67	2,198.60	11.84	-2.15	0.649
60.00	-23.68	-19.11	0.00	-1,309.40	0.00	1,309.40	2,658.02	1,329.01	4,173.50	2,089.85	14.23	-2.40	0.636
65.00	-22.58	-18.81	0.00	-1,213.84	0.00	1,213.84	2,602.11	1,301.05	3,959.12	1,982.50	16.88	-2.66	0.621
70.00	-21.50	-18.50	0.00	-1,119.80	0.00	1,119.80	2,544.56	1,272.28	3,747.77	1,876.67	19.80	-2.92	0.605
75.00	-20.45	-18.19	0.00	-1,027.30	0.00	1,027.30	2,485.39	1,242.69	3,539.70	1,772.48	23.00	-3.18	0.588
80.00	-19.42	-17.88	0.00	-936.35	0.00	936.35	2,424.57	1,212.29	3,335.13	1,670.04	26.47	-3.45	0.569
85.00	-18.42	-17.57	0.00	-846.96	0.00	846.96	2,362.12	1,181.06	3,134.31	1,569.49	30.22	-3.72	0.548
90.00	-17.44	-17.25	0.00	-759.14	0.00	759.14	2,297.27	1,148.64	2,936.51	1,470.44	34.26	-3.99	0.524
95.00	-16.51	-16.99	0.00	-672.87	0.00	672.87	2,210.70	1,105.35	2,718.30	1,361.17	38.57	-4.25	0.502
97.75	-16.00	-16.83	0.00	-626.14	0.00	626.14	2,163.09	1,081.54	2,601.88	1,302.87	41.07	-4.40	0.488
100.00	-15.43	-16.70	0.00	-588.27	0.00	588.27	2,124.13	1,062.07	2,508.52	1,256.12	43.17	-4.53	0.476
101.50	-15.05	-16.54	0.00	-563.22	0.00	563.22	1,105.19	552.59	1,317.56	659.76	44.60	-4.61	0.868
105.00	-14.59	-16.40	0.00	-505.31	0.00	505.31	1,087.53	543.77	1,259.48	630.68	48.05	-4.79	0.816
106.00	-14.16	-15.71	0.00	-488.91	0.00	488.91	1,082.34	541.17	1,242.93	622.39	49.06	-4.88	0.799
110.00	-13.61	-15.48	0.00	-426.08	0.00	426.08	1,060.92	530.46	1,177.04	589.40	53.28	-5.20	0.737
115.00	-12.91	-14.81	0.00	-348.71	0.00	348.71	1,032.68	516.34	1,095.47	548.55	58.92	-5.57	0.649
117.94	-12.55	-14.67	0.00	-305.22	0.00	305.22	1,015.32	507.66	1,048.03	524.80	62.41	-5.78	0.595
120.00	-12.29	-14.50	0.00	-274.96	0.00	274.96	1,002.79	501.40	1,014.98	508.24	64.93	-5.92	0.554
125.00	-11.73	-14.31	0.00	-202.49	0.00	202.49	971.28	485.64	935.83	468.61	71.29	-6.23	0.445
126.00	-8.82	-11.58	0.00	-188.18	0.00	188.18	964.78	482.39	920.18	460.77	72.60	-6.28	0.418
130.00	-8.44	-11.33	0.00	-141.87	0.00	141.87	938.12	469.06	858.24	429.76	77.94	-6.48	0.340
135.00	-7.98	-11.14	0.00	-85.21	0.00	85.21	903.33	451.67	782.47	391.82	84.83	-6.68	0.227
136.00	-5.91	-7.92	0.00	-72.29	0.00	72.29	896.18	448.09	767.56	384.35	86.23	-6.71	0.195
140.00	-5.62	-7.75	0.00	-40.61	0.00	40.61	866.91	433.46	708.75	354.90	91.88	-6.80	0.121
142.00	-2.19	-2.91	0.00	-22.71	0.00	22.71	851.88	425.94	679.88	340.45	94.73	-6.83	0.069
145.00	-2.05	-2.74	0.00	-13.97	0.00	13.97	828.85	414.43	637.31	319.13	99.03	-6.86	0.046
149.00	0.00	-2.47	0.00	-3.03	0.00	3.03	787.55	393.77	574.90	287.88	104.77	-6.88	0.011

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:12605172_C3_02 10/23/2018 5:37:11 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W — 97 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

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		199.3	0.0					0.0	0.0	199.3	0.0	0.0	0.0
5.00		394.1	930.3					0.0	41.2	394.1	971.5	0.0	0.0
10.00		385.0	908.9					0.0	205.9	385.0	1,114.8	0.0	0.0
15.00		375.9	887.5					0.0	205.9	375.9	1,093.4	0.0	0.0
20.00		366.8	866.1					0.0	205.9	366.8	1,072.0	0.0	0.0
25.00		357.7	844.7					0.0	205.9	357.7	1,050.6	0.0	0.0
30.00		352.7	823.3					0.0	205.9	352.7	1,029.2	0.0	0.0
35.00		354.8	801.9					0.0	205.9	354.8	1,007.7	0.0	0.0
40.00		358.7	780.5					0.0	205.9	358.7	986.3	0.0	0.0
45.00		288.5	759.0					0.0	205.9	288.5	964.9	0.0	0.0
48.00	Bot - Section 2	181.8	445.2					0.0	123.5	181.8	568.7	0.0	0.0
50.00		192.7	540.4					0.0	82.3	192.7	622.8	0.0	0.0
53.25	Top - Section 1	183.4	864.8					0.0	133.8	183.4	998.6	0.0	0.0
55.00		247.0	210.5					0.0	72.1	247.0	282.6	0.0	0.0
60.00		364.4	589.5					0.0	205.9	364.4	795.3	0.0	0.0
65.00		361.5	571.6					0.0	205.9	361.5	777.5	0.0	0.0
70.00		357.6	553.8					0.0	205.9	357.6	759.6	0.0	0.0
75.00		352.9	535.9					0.0	205.9	352.9	741.8	0.0	0.0
80.00		347.4	518.1					0.0	205.9	347.4	724.0	0.0	0.0
85.00		341.2	500.2					0.0	205.9	341.2	706.1	0.0	0.0
90.00		334.3	482.4					0.0	205.9	334.3	688.3	0.0	0.0
95.00		254.7	464.6					0.0	205.9	254.7	670.4	0.0	0.0
97.75	Bot - Section 3	162.4	247.9					0.0	113.2	162.4	361.1	0.0	0.0
100.00		121.4	320.2					0.0	92.6	121.4	412.8	0.0	0.0
101.50	Top - Section 2	159.4	210.2					0.0	61.8	159.4	272.0	0.0	0.0
105.00		142.5	182.2					0.0	144.1	142.5	326.3	0.0	0.0
106.00	Appurtenance(s)	155.0	51.1	555.2	0.0	0.0	230.4	0.0	41.2	710.3	322.7	0.0	0.0
110.00		274.1	200.1					0.0	164.6	274.1	364.7	0.0	0.0
115.00	Appurtenance(s)	236.5	240.5	436.0	0.0	0.0	71.3	0.0	205.7	672.6	517.5	0.0	0.0
117.94		145.6	136.3					0.0	107.9	145.6	244.1	0.0	0.0
120.00		199.9	93.5					0.0	75.7	199.9	169.2	0.0	0.0
125.00		168.0	219.1					0.0	183.6	168.0	402.7	0.0	0.0
126.00	Appurtenance(s)	135.2	42.5	2,281.1	0.0	0.0	2,296.1	0.0	36.7	2,416.3	2,375.3	0.0	0.0
130.00		237.5	165.8					0.0	115.1	237.5	281.0	0.0	0.0
135.00		155.0	197.6					0.0	143.9	155.0	341.6	0.0	0.0
136.00	Appurtenance(s)	124.1	38.2	2,840.0	0.0	1,775.0	1,752.7	0.0	28.8	2,964.1	1,819.8	0.0	0.0
140.00		146.8	148.7					0.0	73.9	146.8	222.6	0.0	0.0
142.00	Appurtenance(s)	118.2	71.8	4,272.4	0.0	2,407.1	2,879.7	0.0	37.0	4,390.7	2,988.5	0.0	0.0
145.00		160.5	104.5					0.0	14.1	160.5	118.6	0.0	0.0
149.00	Appurtenance(s)	90.3	133.3	2,381.4	0.0	3,028.1	1,617.3	0.0	18.8	2,471.7	1,769.4	0.0	0.0
								Totals:		22,651.1	30,935.7	0.00	0.00

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:12605172_C3_02 10/23/2018 5:37:16 PM

Customer: T-MOBILE

Load Case: 0.9D + 1.6W 97 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	-30.90	-22.50	0.00	-2,532.77	0.00	2,532.77	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.584
5.00	-29.86	-22.19	0.00	-2,420.29	0.00	2,420.29	4,073.39	2,036.69	8,449.37	4,230.97	0.09	-0.17	0.579
10.00	-28.68	-21.89	0.00	-2,309.33	0.00	2,309.33	4,012.85	2,006.43	8,128.58	4,070.33	0.36	-0.34	0.575
15.00	-27.53	-21.59	0.00	-2,199.88	0.00	2,199.88	3,950.68	1,975.34	7,810.43	3,911.02	0.82	-0.52	0.570
20.00	-26.39	-21.30	0.00	-2,091.92	0.00	2,091.92	3,886.87	1,943.43	7,495.19	3,753.17	1.46	-0.70	0.564
25.00	-25.27	-21.01	0.00	-1,985.42	0.00	1,985.42	3,821.43	1,910.71	7,183.08	3,596.88	2.30	-0.89	0.559
30.00	-24.18	-20.72	0.00	-1,880.37	0.00	1,880.37	3,754.35	1,877.17	6,874.35	3,442.28	3.34	-1.08	0.553
35.00	-23.11	-20.43	0.00	-1,776.77	0.00	1,776.77	3,685.64	1,842.82	6,569.23	3,289.50	4.58	-1.28	0.547
40.00	-22.06	-20.12	0.00	-1,674.64	0.00	1,674.64	3,615.29	1,807.64	6,267.96	3,138.64	6.02	-1.48	0.540
45.00	-21.05	-19.87	0.00	-1,574.03	0.00	1,574.03	3,543.30	1,771.65	5,970.78	2,989.83	7.68	-1.68	0.533
48.00	-20.45	-19.71	0.00	-1,514.43	0.00	1,514.43	3,499.33	1,749.66	5,794.53	2,901.57	8.77	-1.81	0.528
50.00	-19.80	-19.53	0.00	-1,475.02	0.00	1,475.02	3,469.68	1,734.84	5,677.92	2,843.18	9.55	-1.89	0.525
53.25	-18.77	-19.35	0.00	-1,411.54	0.00	1,411.54	2,730.90	1,365.45	4,467.29	2,236.97	10.89	-2.03	0.638
55.00	-18.44	-19.15	0.00	-1,377.68	0.00	1,377.68	2,712.29	1,356.15	4,390.67	2,198.60	11.65	-2.11	0.634
60.00	-17.58	-18.83	0.00	-1,281.95	0.00	1,281.95	2,658.02	1,329.01	4,173.50	2,089.85	13.99	-2.36	0.620
65.00	-16.73	-18.51	0.00	-1,187.82	0.00	1,187.82	2,602.11	1,301.05	3,959.12	1,982.50	16.59	-2.61	0.606
70.00	-15.91	-18.18	0.00	-1,095.29	0.00	1,095.29	2,544.56	1,272.28	3,747.77	1,876.67	19.46	-2.86	0.590
75.00	-15.11	-17.86	0.00	-1,004.36	0.00	1,004.36	2,485.39	1,242.69	3,539.70	1,772.48	22.59	-3.12	0.573
80.00	-14.33	-17.54	0.00	-915.06	0.00	915.06	2,424.57	1,212.29	3,335.13	1,670.04	26.00	-3.38	0.554
85.00	-13.56	-17.22	0.00	-827.36	0.00	827.36	2,362.12	1,181.06	3,134.31	1,569.49	29.68	-3.64	0.533
90.00	-12.82	-16.90	0.00	-741.27	0.00	741.27	2,297.27	1,148.64	2,936.51	1,470.44	33.64	-3.91	0.510
95.00	-12.11	-16.64	0.00	-656.78	0.00	656.78	2,210.70	1,105.35	2,718.30	1,361.17	37.87	-4.17	0.488
97.75	-11.72	-16.48	0.00	-611.02	0.00	611.02	2,163.09	1,081.54	2,601.88	1,302.87	40.31	-4.32	0.475
100.00	-11.29	-16.35	0.00	-573.94	0.00	573.94	2,124.13	1,062.07	2,508.52	1,256.12	42.37	-4.44	0.462
101.50	-11.00	-16.19	0.00	-549.42	0.00	549.42	1,105.19	552.59	1,317.56	659.76	43.78	-4.52	0.844
105.00	-10.65	-16.05	0.00	-492.76	0.00	492.76	1,087.53	543.77	1,259.48	630.68	47.15	-4.69	0.792
106.00	-10.33	-15.35	0.00	-476.71	0.00	476.71	1,082.34	541.17	1,242.93	622.39	48.14	-4.78	0.776
110.00	-9.90	-15.10	0.00	-415.32	0.00	415.32	1,060.92	530.46	1,177.04	589.40	52.28	-5.09	0.715
115.00	-9.38	-14.43	0.00	-339.81	0.00	339.81	1,032.68	516.34	1,095.47	548.55	57.80	-5.45	0.629
117.94	-9.11	-14.29	0.00	-297.41	0.00	297.41	1,015.32	507.66	1,048.03	524.80	61.21	-5.66	0.576
120.00	-8.90	-14.11	0.00	-267.94	0.00	267.94	1,002.79	501.40	1,014.98	508.24	63.68	-5.80	0.537
125.00	-8.48	-13.93	0.00	-197.39	0.00	197.39	971.28	485.64	935.83	468.61	69.91	-6.09	0.431
126.00	-6.35	-11.28	0.00	-183.46	0.00	183.46	964.78	482.39	920.18	460.77	71.19	-6.15	0.405
130.00	-6.06	-11.04	0.00	-138.33	0.00	138.33	938.12	469.06	858.24	429.76	76.42	-6.34	0.329
135.00	-5.72	-10.86	0.00	-83.14	0.00	83.14	903.33	451.67	782.47	391.82	83.15	-6.53	0.219
136.00	-4.24	-7.71	0.00	-70.50	0.00	70.50	896.18	448.09	767.56	384.35	84.52	-6.56	0.188
140.00	-4.03	-7.54	0.00	-39.67	0.00	39.67	866.91	433.46	708.75	354.90	90.05	-6.65	0.117
142.00	-1.57	-2.83	0.00	-22.18	0.00	22.18	851.88	425.94	679.88	340.45	92.84	-6.69	0.067
145.00	-1.47	-2.66	0.00	-13.68	0.00	13.68	828.85	414.43	637.31	319.13	97.04	-6.71	0.045
149.00	0.00	-2.47	0.00	-3.03	0.00	3.03	787.55	393.77	574.90	287.88	102.66	-6.73	0.011

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 25 Iterations

Gust Response Factor :1.10 Ice Dead Load Factor :1.00 Wind Importance Factor :1.00
Dead Load Factor :1.20 Ice Importance Factor :1.00
Wind Load Factor :1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		63.8	0.0					0.0	0.0	63.8	0.0	0.0	0.0
5.00		126.6	1,617.9					0.0	61.3	126.6	1,679.2	0.0	0.0
10.00		124.3	1,624.7					0.0	310.9	124.3	1,935.7	0.0	0.0
15.00		121.7	1,608.4					0.0	313.2	121.7	1,921.6	0.0	0.0
20.00		119.1	1,584.4					0.0	314.9	119.1	1,899.3	0.0	0.0
25.00		116.5	1,556.5					0.0	316.1	116.5	1,872.6	0.0	0.0
30.00		115.2	1,526.1					0.0	317.2	115.2	1,843.3	0.0	0.0
35.00		116.2	1,494.0					0.0	318.1	116.2	1,812.0	0.0	0.0
40.00		117.8	1,460.6					0.0	318.9	117.8	1,779.4	0.0	0.0
45.00		94.9	1,426.2					0.0	319.6	94.9	1,745.7	0.0	0.0
48.00	Bot - Section 2	59.9	840.2					0.0	192.0	59.9	1,032.2	0.0	0.0
50.00		63.6	886.5					0.0	128.2	63.6	1,014.6	0.0	0.0
53.25	Top - Section 1	60.6	1,419.2					0.0	208.4	60.6	1,627.7	0.0	0.0
55.00		81.7	423.3					0.0	112.3	81.7	535.7	0.0	0.0
60.00		120.8	1,184.4					0.0	321.3	120.8	1,505.7	0.0	0.0
65.00		120.2	1,152.3					0.0	321.8	120.2	1,474.1	0.0	0.0
70.00		119.3	1,119.8					0.0	322.3	119.3	1,442.1	0.0	0.0
75.00		118.1	1,086.9					0.0	322.7	118.1	1,409.6	0.0	0.0
80.00		116.7	1,053.7					0.0	323.1	116.7	1,376.8	0.0	0.0
85.00		115.0	1,020.2					0.0	323.5	115.0	1,343.7	0.0	0.0
90.00		113.1	986.4					0.0	323.9	113.1	1,310.3	0.0	0.0
95.00		86.5	952.4					0.0	324.2	86.5	1,276.6	0.0	0.0
97.75	Bot - Section 3	55.3	510.7					0.0	178.5	55.3	689.2	0.0	0.0
100.00		41.4	574.0					0.0	146.1	41.4	720.1	0.0	0.0
101.50	Top - Section 2	54.5	377.4					0.0	97.4	54.5	474.9	0.0	0.0
105.00		48.7	464.1					0.0	227.5	48.7	691.6	0.0	0.0
106.00	Appurtenance(s)	53.2	131.0	119.1	0.0	0.0	460.5	0.0	65.0	172.4	656.5	0.0	0.0
110.00		94.4	510.8					0.0	260.0	94.4	770.9	0.0	0.0
115.00	Appurtenance(s)	81.8	614.5	89.4	0.0	0.0	435.1	0.0	325.3	171.2	1,375.0	0.0	0.0
117.94		50.5	350.7					0.0	173.9	50.5	524.6	0.0	0.0
120.00		69.7	241.4					0.0	122.2	69.7	363.6	0.0	0.0
125.00		58.7	563.5					0.0	296.4	58.7	859.8	0.0	0.0
126.00	Appurtenance(s)	47.5	110.6	587.7	0.0	0.0	5,172.5	0.0	59.3	635.2	5,342.4	0.0	0.0
130.00		83.9	429.1					0.0	195.0	83.9	624.1	0.0	0.0
135.00		54.9	511.8					0.0	244.0	54.9	755.8	0.0	0.0
136.00	Appurtenance(s)	44.3	100.3	695.3	0.0	375.0	4,693.1	0.0	48.8	739.6	4,842.2	0.0	0.0
140.00		52.6	387.6					0.0	140.4	52.6	528.0	0.0	0.0
142.00	Appurtenance(s)	42.6	188.5	917.8	0.0	455.5	7,383.8	0.0	70.3	960.4	7,642.6	0.0	0.0
145.00		58.2	274.2					0.0	18.8	58.2	293.0	0.0	0.0
149.00	Appurtenance(s)	32.8	349.9	784.8	0.0	1,098.9	5,527.7	0.0	25.1	817.6	5,902.7	0.0	0.0
								Totals:		6,510.52	64,894.8	0.00	0.00

Site Number: 243036 Code: ANSI/TIA-222-G

Site Name: WEST HAVEN & RT 162 CT, CT Engineering Number:12605172_C3_02 10/23/2018 5:37:21 PM

Customer: T-MOBILE

Load Case: 1.2D + 1.0Di + 1.0Wi 50 mph with 0.75 in Radial Ice 25 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	-64.89	-6.48	0.00	-749.88	0.00	749.88	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.186
5.00	-63.21	-6.40	0.00	-717.50	0.00	717.50	4,073.39	2,036.69	8,449.37	4,230.97	0.03	-0.05	0.185
10.00	-61.27	-6.33	0.00	-685.48	0.00	685.48	4,012.85	2,006.43	8,128.58	4,070.33	0.11	-0.10	0.184
15.00	-59.34	-6.26	0.00	-653.81	0.00	653.81	3,950.68	1,975.34	7,810.43	3,911.02	0.24	-0.15	0.182
20.00	-57.43	-6.19	0.00	-622.50	0.00	622.50	3,886.87	1,943.43	7,495.19	3,753.17	0.43	-0.21	0.181
25.00	-55.56	-6.12	0.00	-591.54	0.00	591.54	3,821.43	1,910.71	7,183.08	3,596.88	0.68	-0.26	0.179
30.00	-53.71	-6.05	0.00	-560.92	0.00	560.92	3,754.35	1,877.17	6,874.35	3,442.28	0.99	-0.32	0.177
35.00	-51.89	-5.98	0.00	-530.66	0.00	530.66	3,685.64	1,842.82	6,569.23	3,289.50	1.36	-0.38	0.175
40.00	-50.10	-5.90	0.00	-500.77	0.00	500.77	3,615.29	1,807.64	6,267.96	3,138.64	1.79	-0.44	0.173
45.00	-48.35	-5.83	0.00	-471.27	0.00	471.27	3,543.30	1,771.65	5,970.78	2,989.83	2.28	-0.50	0.171
48.00	-47.32	-5.79	0.00	-453.77	0.00	453.77	3,499.33	1,749.66	5,794.53	2,901.57	2.61	-0.54	0.170
50.00	-46.30	-5.74	0.00	-442.19	0.00	442.19	3,469.68	1,734.84	5,677.92	2,843.18	2.84	-0.56	0.169
53.25	-44.67	-5.69	0.00	-423.52	0.00	423.52	2,730.90	1,365.45	4,467.29	2,236.97	3.24	-0.61	0.206
55.00	-44.13	-5.64	0.00	-413.56	0.00	413.56	2,712.29	1,356.15	4,390.67	2,198.60	3.46	-0.63	0.204
60.00	-42.62	-5.56	0.00	-385.35	0.00	385.35	2,658.02	1,329.01	4,173.50	2,089.85	4.16	-0.70	0.200
65.00	-41.14	-5.48	0.00	-357.55	0.00	357.55	2,602.11	1,301.05	3,959.12	1,982.50	4.94	-0.78	0.196
70.00	-39.69	-5.39	0.00	-330.17	0.00	330.17	2,544.56	1,272.28	3,747.77	1,876.67	5.80	-0.86	0.192
75.00	-38.28	-5.30	0.00	-303.23	0.00	303.23	2,485.39	1,242.69	3,539.70	1,772.48	6.74	-0.93	0.186
80.00	-36.90	-5.21	0.00	-276.72	0.00	276.72	2,424.57	1,212.29	3,335.13	1,670.04	7.76	-1.01	0.181
85.00	-35.55	-5.12	0.00	-250.66	0.00	250.66	2,362.12	1,181.06	3,134.31	1,569.49	8.86	-1.09	0.175
90.00	-34.23	-5.03	0.00	-225.05	0.00	225.05	2,297.27	1,148.64	2,936.51	1,470.44	10.05	-1.17	0.168
95.00	-32.95	-4.95	0.00	-199.90	0.00	199.90	2,210.70	1,105.35	2,718.30	1,361.17	11.32	-1.25	0.162
97.75	-32.26	-4.91	0.00	-186.28	0.00	186.28	2,163.09	1,081.54	2,601.88	1,302.87	12.05	-1.30	0.158
100.00	-31.54	-4.86	0.00	-175.24	0.00	175.24	2,124.13	1,062.07	2,508.52	1,256.12	12.67	-1.33	0.154
101.50	-31.07	-4.82	0.00	-167.95	0.00	167.95	1,105.19	552.59	1,317.56	659.76	13.09	-1.36	0.283
105.00	-30.37	-4.78	0.00	-151.08	0.00	151.08	1,087.53	543.77	1,259.48	630.68	14.11	-1.41	0.268
106.00	-29.71	-4.62	0.00	-146.30	0.00	146.30	1,082.34	541.17	1,242.93	622.39	14.41	-1.44	0.263
110.00	-28.94	-4.56	0.00	-127.83	0.00	127.83	1,060.92	530.46	1,177.04	589.40	15.65	-1.53	0.244
115.00	-27.56	-4.39	0.00	-105.04	0.00	105.04	1,032.68	516.34	1,095.47	548.55	17.32	-1.64	0.218
117.94	-27.04	-4.35	0.00	-92.14	0.00	92.14	1,015.32	507.66	1,048.03	524.80	18.35	-1.71	0.202
120.00	-26.67	-4.30	0.00	-83.17	0.00	83.17	1,002.79	501.40	1,014.98	508.24	19.10	-1.75	0.190
125.00	-25.81	-4.24	0.00	-61.67	0.00	61.67	971.28	485.64	935.83	468.61	20.98	-1.84	0.158
126.00	-20.49	-3.45	0.00	-57.43	0.00	57.43	964.78	482.39	920.18	460.77	21.37	-1.86	0.146
130.00	-19.86	-3.36	0.00	-43.65	0.00	43.65	938.12	469.06	858.24	429.76	22.96	-1.92	0.123
135.00	-19.11	-3.29	0.00	-26.84	0.00	26.84	903.33	451.67	782.47	391.82	25.00	-1.98	0.090
136.00	-14.29	-2.39	0.00	-23.17	0.00	23.17	896.18	448.09	767.56	384.35	25.42	-1.99	0.076
140.00	-13.76	-2.33	0.00	-13.60	0.00	13.60	866.91	433.46	708.75	354.90	27.10	-2.02	0.054
142.00	-6.16	-1.10	0.00	-8.50	0.00	8.50	851.88	425.94	679.88	340.45	27.95	-2.03	0.032
145.00	-5.87	-1.03	0.00	-5.21	0.00	5.21	828.85	414.43	637.31	319.13	29.23	-2.04	0.023
149.00	0.00	-0.82	0.00	-1.10	0.00	1.10	787.55	393.77	574.90	287.88	30.95	-2.05	0.004

Load Case: 1.0D + 1.0W Serviceability 60 mph 24 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 Wind FX (lb)	Shaft Forces Dead Load (lb)	Discrete Forces Wind FX (lb)	Discrete Forces Torsion MY (lb-ft)	Discrete Forces Moment MZ (lb-ft)	Discrete Forces Dead Load (lb)	Linear Forces Wind FX (lb)	Linear Forces Dead Load (lb)	Sum of Forces Wind FX (lb)	Sum of Forces Dead Load (lb)	Sum of Forces Torsion MY (lb-ft)	Sum of Forces Moment MZ (lb)
0.00		47.7	0.0					0.0	0.0	47.7	0.0	0.0	0.0
5.00		94.2	1,033.7					0.0	45.8	94.2	1,079.5	0.0	0.0
10.00		92.1	1,009.9					0.0	228.8	92.1	1,238.7	0.0	0.0
15.00		89.9	986.1					0.0	228.8	89.9	1,214.9	0.0	0.0
20.00		87.7	962.3					0.0	228.8	87.7	1,191.1	0.0	0.0
25.00		85.5	938.5					0.0	228.8	85.5	1,167.3	0.0	0.0
30.00		84.3	914.8					0.0	228.8	84.3	1,143.5	0.0	0.0
35.00		84.8	891.0					0.0	228.8	84.8	1,119.7	0.0	0.0
40.00		85.8	867.2					0.0	228.8	85.8	1,095.9	0.0	0.0
45.00		69.0	843.4					0.0	228.8	69.0	1,072.1	0.0	0.0
48.00	Bot - Section 2	43.5	494.6					0.0	137.3	43.5	631.9	0.0	0.0
50.00		46.1	600.4					0.0	91.5	46.1	691.9	0.0	0.0
53.25	Top - Section 1	43.9	960.8					0.0	148.7	43.9	1,109.5	0.0	0.0
55.00		59.1	233.9					0.0	80.1	59.1	314.0	0.0	0.0
60.00		87.1	654.9					0.0	228.8	87.1	883.7	0.0	0.0
65.00		86.4	635.1					0.0	228.8	86.4	863.9	0.0	0.0
70.00		85.5	615.3					0.0	228.8	85.5	844.0	0.0	0.0
75.00		84.4	595.5					0.0	228.8	84.4	824.2	0.0	0.0
80.00		83.1	575.6					0.0	228.8	83.1	804.4	0.0	0.0
85.00		81.6	555.8					0.0	228.8	81.6	784.6	0.0	0.0
90.00		80.0	536.0					0.0	228.8	80.0	764.7	0.0	0.0
95.00		60.9	516.2					0.0	228.8	60.9	744.9	0.0	0.0
97.75	Bot - Section 3	38.8	275.4					0.0	125.8	38.8	401.3	0.0	0.0
100.00		29.0	355.7					0.0	102.9	29.0	458.7	0.0	0.0
101.50	Top - Section 2	38.1	233.6					0.0	68.6	38.1	302.2	0.0	0.0
105.00		34.1	202.4					0.0	160.1	34.1	362.6	0.0	0.0
106.00	Appurtenance(s)	37.1	56.8	132.8	0.0	0.0	256.0	0.0	45.8	169.8	358.5	0.0	0.0
110.00		65.5	222.3					0.0	182.9	65.5	405.2	0.0	0.0
115.00	Appurtenance(s)	56.6	267.2	104.3	0.0	0.0	79.2	0.0	228.6	160.8	575.0	0.0	0.0
117.94		34.8	151.4					0.0	119.9	34.8	271.3	0.0	0.0
120.00		47.8	103.9					0.0	84.1	47.8	188.0	0.0	0.0
125.00		40.2	243.4					0.0	204.0	40.2	447.4	0.0	0.0
126.00	Appurtenance(s)	32.3	47.3	545.5	0.0	0.0	2,551.2	0.0	40.8	577.8	2,639.3	0.0	0.0
130.00		56.8	184.2					0.0	127.9	56.8	312.2	0.0	0.0
135.00		37.1	219.6					0.0	159.9	37.1	379.5	0.0	0.0
136.00	Appurtenance(s)	29.7	42.5	679.1	0.0	424.5	1,947.5	0.0	32.0	708.8	2,022.0	0.0	0.0
140.00		35.1	165.2					0.0	82.1	35.1	247.3	0.0	0.0
142.00	Appurtenance(s)	28.3	79.8	1,021.7	0.0	575.6	3,199.7	0.0	41.1	1,050.0	3,320.5	0.0	0.0
145.00		38.4	116.1					0.0	15.7	38.4	131.8	0.0	0.0
149.00	Appurtenance(s)	21.6	148.1	569.5	0.0	724.1	1,797.0	0.0	20.9	591.1	1,966.0	0.0	0.0
								Totals:		5,416.64	34,373.0	0.00	0.00

Load Case: 1.0D + 1.0W Serviceability 60 mph 24 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	-34.37	-5.38	0.00	-609.53	0.00	609.53	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.147
5.00	-33.29	-5.31	0.00	-582.62	0.00	582.62	4,073.39	2,036.69	8,449.37	4,230.97	0.02	-0.04	0.146
10.00	-32.05	-5.24	0.00	-556.07	0.00	556.07	4,012.85	2,006.43	8,128.58	4,070.33	0.09	-0.08	0.145
15.00	-30.83	-5.17	0.00	-529.87	0.00	529.87	3,950.68	1,975.34	7,810.43	3,911.02	0.20	-0.13	0.143
20.00	-29.63	-5.10	0.00	-504.02	0.00	504.02	3,886.87	1,943.43	7,495.19	3,753.17	0.35	-0.17	0.142
25.00	-28.46	-5.04	0.00	-478.50	0.00	478.50	3,821.43	1,910.71	7,183.08	3,596.88	0.55	-0.21	0.140
30.00	-27.31	-4.97	0.00	-453.31	0.00	453.31	3,754.35	1,877.17	6,874.35	3,442.28	0.80	-0.26	0.139
35.00	-26.19	-4.90	0.00	-428.46	0.00	428.46	3,685.64	1,842.82	6,569.23	3,289.50	1.10	-0.31	0.137
40.00	-25.09	-4.83	0.00	-403.96	0.00	403.96	3,615.29	1,807.64	6,267.96	3,138.64	1.45	-0.36	0.136
45.00	-24.02	-4.77	0.00	-379.80	0.00	379.80	3,543.30	1,771.65	5,970.78	2,989.83	1.85	-0.41	0.134
48.00	-23.38	-4.73	0.00	-365.49	0.00	365.49	3,499.33	1,749.66	5,794.53	2,901.57	2.11	-0.44	0.133
50.00	-22.69	-4.69	0.00	-356.02	0.00	356.02	3,469.68	1,734.84	5,677.92	2,843.18	2.30	-0.46	0.132
53.25	-21.58	-4.65	0.00	-340.77	0.00	340.77	2,730.90	1,365.45	4,467.29	2,236.97	2.62	-0.49	0.160
55.00	-21.26	-4.60	0.00	-332.64	0.00	332.64	2,712.29	1,356.15	4,390.67	2,198.60	2.81	-0.51	0.159
60.00	-20.37	-4.53	0.00	-309.62	0.00	309.62	2,658.02	1,329.01	4,173.50	2,089.85	3.37	-0.57	0.156
65.00	-19.51	-4.45	0.00	-286.98	0.00	286.98	2,602.11	1,301.05	3,959.12	1,982.50	4.00	-0.63	0.152
70.00	-18.66	-4.38	0.00	-264.71	0.00	264.71	2,544.56	1,272.28	3,747.77	1,876.67	4.69	-0.69	0.148
75.00	-17.83	-4.30	0.00	-242.82	0.00	242.82	2,485.39	1,242.69	3,539.70	1,772.48	5.45	-0.75	0.144
80.00	-17.02	-4.23	0.00	-221.30	0.00	221.30	2,424.57	1,212.29	3,335.13	1,670.04	6.27	-0.82	0.140
85.00	-16.23	-4.15	0.00	-200.16	0.00	200.16	2,362.12	1,181.06	3,134.31	1,569.49	7.16	-0.88	0.134
90.00	-15.47	-4.08	0.00	-179.40	0.00	179.40	2,297.27	1,148.64	2,936.51	1,470.44	8.11	-0.94	0.129
95.00	-14.72	-4.02	0.00	-159.01	0.00	159.01	2,210.70	1,105.35	2,718.30	1,361.17	9.14	-1.01	0.123
97.75	-14.32	-3.98	0.00	-147.96	0.00	147.96	2,163.09	1,081.54	2,601.88	1,302.87	9.73	-1.04	0.120
100.00	-13.86	-3.95	0.00	-139.01	0.00	139.01	2,124.13	1,062.07	2,508.52	1,256.12	10.22	-1.07	0.117
101.50	-13.55	-3.91	0.00	-133.09	0.00	133.09	1,105.19	552.59	1,317.56	659.76	10.56	-1.09	0.214
105.00	-13.19	-3.88	0.00	-119.40	0.00	119.40	1,087.53	543.77	1,259.48	630.68	11.38	-1.13	0.201
106.00	-12.83	-3.71	0.00	-115.52	0.00	115.52	1,082.34	541.17	1,242.93	622.39	11.62	-1.15	0.198
110.00	-12.42	-3.66	0.00	-100.67	0.00	100.67	1,060.92	530.46	1,177.04	589.40	12.62	-1.23	0.183
115.00	-11.85	-3.50	0.00	-82.40	0.00	82.40	1,032.68	516.34	1,095.47	548.55	13.95	-1.32	0.162
117.94	-11.57	-3.46	0.00	-72.13	0.00	72.13	1,015.32	507.66	1,048.03	524.80	14.78	-1.37	0.149
120.00	-11.38	-3.42	0.00	-64.98	0.00	64.98	1,002.79	501.40	1,014.98	508.24	15.38	-1.40	0.139
125.00	-10.93	-3.38	0.00	-47.88	0.00	47.88	971.28	485.64	935.83	468.61	16.89	-1.47	0.113
126.00	-8.31	-2.74	0.00	-44.50	0.00	44.50	964.78	482.39	920.18	460.77	17.20	-1.49	0.105
130.00	-8.00	-2.68	0.00	-33.55	0.00	33.55	938.12	469.06	858.24	429.76	18.46	-1.53	0.087
135.00	-7.62	-2.63	0.00	-20.16	0.00	20.16	903.33	451.67	782.47	391.82	20.09	-1.58	0.060
136.00	-5.62	-1.87	0.00	-17.10	0.00	17.10	896.18	448.09	767.56	384.35	20.43	-1.59	0.051
140.00	-5.37	-1.83	0.00	-9.61	0.00	9.61	866.91	433.46	708.75	354.90	21.77	-1.61	0.033
142.00	-2.08	-0.69	0.00	-5.38	0.00	5.38	851.88	425.94	679.88	340.45	22.44	-1.62	0.018
145.00	-1.95	-0.65	0.00	-3.31	0.00	3.31	828.85	414.43	637.31	319.13	23.46	-1.62	0.013
149.00	0.00	-0.59	0.00	-0.72	0.00	0.72	787.55	393.77	574.90	287.88	24.82	-1.63	0.003

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.19	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.20	
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):	2.63	
Redundancy Factor (p):	1.30	
Seismic Force Distribution Exponent (k):	2.00	
Total Unfactored Dead Load:	34.37	k
Seismic Base Shear (E):	1.34	k

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	147.00	169	3,652	0.012	16	210
38	143.50	132	2,713	0.009	12	163
37	141.00	121	2,402	0.008	11	150
36	138.00	247	4,710	0.016	21	307
35	135.50	74	1,367	0.005	6	92
34	132.50	380	6,663	0.022	29	471
33	128.00	312	5,115	0.017	23	387
32	125.50	88	1,387	0.005	6	109
31	122.50	447	6,714	0.022	30	555
30	118.97	188	2,661	0.009	12	233
29	116.47	271	3,680	0.012	16	336
28	112.50	496	6,275	0.021	28	615
27	108.00	405	4,726	0.016	21	502
26	105.50	103	1,141	0.004	5	127
25	103.25	363	3,865	0.013	17	450
24	100.75	302	3,068	0.010	14	375
23	98.88	459	4,484	0.015	20	569
22	96.38	401	3,727	0.012	16	498
21	92.50	745	6,374	0.021	28	924
20	87.50	765	5,855	0.019	26	948
19	82.50	785	5,340	0.018	24	973
18	77.50	804	4,831	0.016	21	998
17	72.50	824	4,332	0.014	19	1,022

16	67.50	844	3,846	0.013	17	1,047
15	62.50	864	3,375	0.011	15	1,071
14	57.50	884	2,922	0.010	13	1,096
13	54.13	314	920	0.003	4	389
12	51.63	1,110	2,957	0.010	13	1,376
11	49.00	692	1,661	0.005	7	858
10	46.50	632	1,366	0.004	6	784
9	42.50	1,072	1,937	0.006	9	1,330
8	37.50	1,096	1,541	0.005	7	1,359
7	32.50	1,120	1,183	0.004	5	1,389
6	27.50	1,144	865	0.003	4	1,418
5	22.50	1,167	591	0.002	3	1,448
4	17.50	1,191	365	0.001	2	1,477
3	12.50	1,215	190	0.001	1	1,507
2	7.50	1,239	70	0.000	0	1,536
1	2.50	1,079	7	0.000	0	1,339
DragonWave Horizon C	149.00	32	706	0.002	3	39
DragonWave A-ANT-23G	149.00	15	333	0.001	1	19
Alcatel-Lucent RRH2x	149.00	317	7,047	0.023	31	394
Alcatel-Lucent 1900	149.00	180	3,996	0.013	18	223
Nokia 2.5G MAA - AAH	149.00	311	6,900	0.023	30	385
DragonWave A-ANT-11G	149.00	54	1,199	0.004	5	67
RFS APXVFRR12X-C-I20	149.00	138	3,064	0.010	14	171
Flat T-Arm	149.00	750	16,651	0.055	73	930
Ericsson KRY 112 144	142.00	29	587	0.002	3	36
Ericsson KRY 112 489	142.00	46	932	0.003	4	57
Ericsson Radio 4449	142.00	222	4,476	0.015	20	275
Ericsson AIR-32 B2A/	142.00	397	7,997	0.026	35	492
RFS APX16DWV-16DWVS-	142.00	122	2,462	0.008	11	151
RFS APXVAARR24_43-U-	142.00	384	7,737	0.025	34	476
Flat Platform w/ Han	142.00	2,000	40,328	0.133	178	2,480
RFS FD9R6004/2C-3L	136.00	16	289	0.001	1	19
Alcatel-Lucent RRH2x	136.00	132	2,441	0.008	11	164
Amphenol Antel BXA-	136.00	45	832	0.003	4	56
Antel BXA-185085/12C	136.00	39	721	0.002	3	48
RFS DB-T1-6Z-8AB-0Z	136.00	44	814	0.003	4	55
Andrew DB854DG65ESX	136.00	56	1,027	0.003	5	69
Commscope LNX-6514DS	136.00	116	2,153	0.007	10	144
Round Low Profile Pl	136.00	1,500	27,744	0.091	122	1,860
Raycap DC6-48-60-0-8	126.00	33	521	0.002	2	41
Ericsson RRUS-11 800	126.00	162	2,572	0.008	11	201
Ericsson RRUS 32	126.00	152	2,420	0.008	11	189
CCI CCI-HPA-65R-BUU-	126.00	204	3,239	0.011	14	253
Round Platform w/ Ha	126.00	2,000	31,752	0.105	140	2,480
RFS APXV18-206517S-C	115.00	79	1,047	0.003	5	98
Proxim 5054-R-LR	106.00	6	67	0.000	0	7
3' Dish w/ Radome	106.00	100	1,124	0.004	5	124
Flat Side Arm	106.00	150	1,685	0.006	7	186
		34,373	303,737	1.000	1,341	42,626

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
39	147.00	169	3,652	0.012	16	145
38	143.50	132	2,713	0.009	12	113
37	141.00	121	2,402	0.008	11	104
36	138.00	247	4,710	0.016	21	213
35	135.50	74	1,367	0.005	6	64
34	132.50	380	6,663	0.022	29	326

33	128.00	312	5,115	0.017	23	268
32	125.50	88	1,387	0.005	6	76
31	122.50	447	6,714	0.022	30	385
30	118.97	188	2,661	0.009	12	162
29	116.47	271	3,680	0.012	16	233
28	112.50	496	6,275	0.021	28	426
27	108.00	405	4,726	0.016	21	348
26	105.50	103	1,141	0.004	5	88
25	103.25	363	3,865	0.013	17	312
24	100.75	302	3,068	0.010	14	260
23	98.88	459	4,484	0.015	20	394
22	96.38	401	3,727	0.012	16	345
21	92.50	745	6,374	0.021	28	641
20	87.50	765	5,855	0.019	26	658
19	82.50	785	5,340	0.018	24	675
18	77.50	804	4,831	0.016	21	692
17	72.50	824	4,332	0.014	19	709
16	67.50	844	3,846	0.013	17	726
15	62.50	864	3,375	0.011	15	743
14	57.50	884	2,922	0.010	13	760
13	54.13	314	920	0.003	4	270
12	51.63	1,110	2,957	0.010	13	954
11	49.00	692	1,661	0.005	7	595
10	46.50	632	1,366	0.004	6	543
9	42.50	1,072	1,937	0.006	9	922
8	37.50	1,096	1,541	0.005	7	942
7	32.50	1,120	1,183	0.004	5	963
6	27.50	1,144	865	0.003	4	983
5	22.50	1,167	591	0.002	3	1,004
4	17.50	1,191	365	0.001	2	1,024
3	12.50	1,215	190	0.001	1	1,045
2	7.50	1,239	70	0.000	0	1,065
1	2.50	1,079	7	0.000	0	928
DragonWave Horizon C	149.00	32	706	0.002	3	27
DragonWave A-ANT-23G	149.00	15	333	0.001	1	13
Alcatel-Lucent RRH2x	149.00	317	7,047	0.023	31	273
Alcatel-Lucent 1900	149.00	180	3,996	0.013	18	155
Nokia 2.5G MAA - AAH	149.00	311	6,900	0.023	30	267
DragonWave A-ANT-11G	149.00	54	1,199	0.004	5	46
RFS APXVFRR12X-C-I20	149.00	138	3,064	0.010	14	119
Flat T-Arm	149.00	750	16,651	0.055	73	645
Ericsson KRY 112 144	142.00	29	587	0.002	3	25
Ericsson KRY 112 489	142.00	46	932	0.003	4	40
Ericsson Radio 4449	142.00	222	4,476	0.015	20	191
Ericsson AIR-32 B2A/	142.00	397	7,997	0.026	35	341
RFS APX16DWV-16DWVS-	142.00	122	2,462	0.008	11	105
RFS APXVAARR24_43-U-	142.00	384	7,737	0.025	34	330
Flat Platform w/ Han	142.00	2,000	40,328	0.133	178	1,720
RFS FD9R6004/2C-3L	136.00	16	289	0.001	1	13
Alcatel-Lucent RRH2x	136.00	132	2,441	0.008	11	114
Amphenol Antel BXA-	136.00	45	832	0.003	4	39
Antel BXA-185085/12C	136.00	39	721	0.002	3	34
RFS DB-T1-6Z-8AB-0Z	136.00	44	814	0.003	4	38
Andrew DB854DG65ESX	136.00	56	1,027	0.003	5	48
Commscope LNX-6514DS	136.00	116	2,153	0.007	10	100
Round Low Profile Pl	136.00	1,500	27,744	0.091	122	1,290
Raycap DC6-48-60-0-8	126.00	33	521	0.002	2	28
Ericsson RRUS-11 800	126.00	162	2,572	0.008	11	139
Ericsson RRUS 32	126.00	152	2,420	0.008	11	131
CCI CCI-HPA-65R-BUU-	126.00	204	3,239	0.011	14	175
Round Platform w/ Ha	126.00	2,000	31,752	0.105	140	1,720
RFS APXV18-206517S-C	115.00	79	1,047	0.003	5	68
Proxim 5054-R-LR	106.00	6	67	0.000	0	5
3' Dish w/ Radome	106.00	100	1,124	0.004	5	86

Flat Side Arm	106.00	150	1,685	0.006	7	129	
		34,373	303,737	1.000	1,341	29,557	

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-41.29	-1.34	0.00	-172.61	0.00	172.61	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.049
5.00	-39.75	-1.35	0.00	-165.89	0.00	165.89	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.01	0.049
10.00	-38.24	-1.36	0.00	-159.13	0.00	159.13	4,012.85	2,006.43	8,128.58	4,070.33	0.02	-0.02	0.049
15.00	-36.77	-1.36	0.00	-152.34	0.00	152.34	3,950.68	1,975.34	7,810.43	3,911.02	0.06	-0.04	0.048
20.00	-35.32	-1.37	0.00	-145.52	0.00	145.52	3,886.87	1,943.43	7,495.19	3,753.17	0.10	-0.05	0.048
25.00	-33.90	-1.37	0.00	-138.67	0.00	138.67	3,821.43	1,910.71	7,183.08	3,596.88	0.16	-0.06	0.047
30.00	-32.51	-1.37	0.00	-131.82	0.00	131.82	3,754.35	1,877.17	6,874.35	3,442.28	0.23	-0.07	0.047
35.00	-31.15	-1.37	0.00	-124.96	0.00	124.96	3,685.64	1,842.82	6,569.23	3,289.50	0.32	-0.09	0.046
40.00	-29.82	-1.37	0.00	-118.11	0.00	118.11	3,615.29	1,807.64	6,267.96	3,138.64	0.42	-0.10	0.046
45.00	-29.04	-1.37	0.00	-111.27	0.00	111.27	3,543.30	1,771.65	5,970.78	2,989.83	0.53	-0.12	0.045
48.00	-28.18	-1.36	0.00	-107.18	0.00	107.18	3,499.33	1,749.66	5,794.53	2,901.57	0.61	-0.13	0.045
50.00	-26.80	-1.35	0.00	-104.46	0.00	104.46	3,469.68	1,734.84	5,677.92	2,843.18	0.66	-0.13	0.044
53.25	-26.41	-1.35	0.00	-100.08	0.00	100.08	2,730.90	1,365.45	4,467.29	2,236.97	0.76	-0.14	0.054
55.00	-25.32	-1.34	0.00	-97.72	0.00	97.72	2,712.29	1,356.15	4,390.67	2,198.60	0.81	-0.15	0.054
60.00	-24.25	-1.33	0.00	-91.04	0.00	91.04	2,658.02	1,329.01	4,173.50	2,089.85	0.97	-0.17	0.053
65.00	-23.20	-1.31	0.00	-84.42	0.00	84.42	2,602.11	1,301.05	3,959.12	1,982.50	1.15	-0.18	0.051
70.00	-22.18	-1.30	0.00	-77.85	0.00	77.85	2,544.56	1,272.28	3,747.77	1,876.67	1.36	-0.20	0.050
75.00	-21.18	-1.28	0.00	-71.37	0.00	71.37	2,485.39	1,242.69	3,539.70	1,772.48	1.58	-0.22	0.049
80.00	-20.21	-1.26	0.00	-64.98	0.00	64.98	2,424.57	1,212.29	3,335.13	1,670.04	1.82	-0.24	0.047
85.00	-19.26	-1.23	0.00	-58.69	0.00	58.69	2,362.12	1,181.06	3,134.31	1,569.49	2.07	-0.26	0.046
90.00	-18.33	-1.21	0.00	-52.51	0.00	52.51	2,297.27	1,148.64	2,936.51	1,470.44	2.35	-0.28	0.044
95.00	-17.84	-1.19	0.00	-46.47	0.00	46.47	2,210.70	1,105.35	2,718.30	1,361.17	2.65	-0.29	0.042
97.75	-17.27	-1.17	0.00	-43.19	0.00	43.19	2,163.09	1,081.54	2,601.88	1,302.87	2.82	-0.30	0.041
100.00	-16.89	-1.16	0.00	-40.55	0.00	40.55	2,124.13	1,062.07	2,508.52	1,256.12	2.97	-0.31	0.040
101.50	-16.44	-1.14	0.00	-38.81	0.00	38.81	1,105.19	552.59	1,317.56	659.76	3.07	-0.32	0.074
105.00	-16.32	-1.14	0.00	-34.81	0.00	34.81	1,087.53	543.77	1,259.48	630.68	3.31	-0.33	0.070
106.00	-15.50	-1.11	0.00	-33.67	0.00	33.67	1,082.34	541.17	1,242.93	622.39	3.38	-0.34	0.068
110.00	-14.88	-1.08	0.00	-29.25	0.00	29.25	1,060.92	530.46	1,177.04	589.40	3.67	-0.36	0.064
115.00	-14.45	-1.06	0.00	-23.85	0.00	23.85	1,032.68	516.34	1,095.47	548.55	4.06	-0.38	0.057
117.94	-14.21	-1.05	0.00	-20.73	0.00	20.73	1,015.32	507.66	1,048.03	524.80	4.30	-0.40	0.053
120.00	-13.66	-1.02	0.00	-18.56	0.00	18.56	1,002.79	501.40	1,014.98	508.24	4.47	-0.41	0.050
125.00	-13.55	-1.02	0.00	-13.45	0.00	13.45	971.28	485.64	935.83	468.61	4.91	-0.43	0.043
126.00	-10.00	-0.79	0.00	-12.43	0.00	12.43	964.78	482.39	920.18	460.77	5.00	-0.43	0.037
130.00	-9.53	-0.76	0.00	-9.27	0.00	9.27	938.12	469.06	858.24	429.76	5.37	-0.45	0.032
135.00	-9.44	-0.75	0.00	-5.47	0.00	5.47	903.33	451.67	782.47	391.82	5.84	-0.46	0.024
136.00	-6.71	-0.55	0.00	-4.71	0.00	4.71	896.18	448.09	767.56	384.35	5.94	-0.46	0.020
140.00	-6.57	-0.54	0.00	-2.50	0.00	2.50	866.91	433.46	708.75	354.90	6.33	-0.47	0.015
142.00	-2.44	-0.21	0.00	-1.41	0.00	1.41	851.88	425.94	679.88	340.45	6.52	-0.47	0.007
145.00	-2.23	-0.19	0.00	-0.78	0.00	0.78	828.85	414.43	637.31	319.13	6.82	-0.47	0.005
149.00	0.00	-0.18	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	7.21	-0.47	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-28.63	-1.34	0.00	-169.52	0.00	169.52	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.046
5.00	-27.56	-1.35	0.00	-162.81	0.00	162.81	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.01	0.045
10.00	-26.52	-1.35	0.00	-156.07	0.00	156.07	4,012.85	2,006.43	8,128.58	4,070.33	0.02	-0.02	0.045
15.00	-25.49	-1.36	0.00	-149.31	0.00	149.31	3,950.68	1,975.34	7,810.43	3,911.02	0.06	-0.04	0.045
20.00	-24.49	-1.36	0.00	-142.53	0.00	142.53	3,886.87	1,943.43	7,495.19	3,753.17	0.10	-0.05	0.044
25.00	-23.51	-1.36	0.00	-135.75	0.00	135.75	3,821.43	1,910.71	7,183.08	3,596.88	0.16	-0.06	0.044
30.00	-22.54	-1.36	0.00	-128.96	0.00	128.96	3,754.35	1,877.17	6,874.35	3,442.28	0.23	-0.07	0.043
35.00	-21.60	-1.35	0.00	-122.17	0.00	122.17	3,685.64	1,842.82	6,569.23	3,289.50	0.31	-0.09	0.043
40.00	-20.68	-1.35	0.00	-115.40	0.00	115.40	3,615.29	1,807.64	6,267.96	3,138.64	0.41	-0.10	0.042
45.00	-20.13	-1.35	0.00	-108.66	0.00	108.66	3,543.30	1,771.65	5,970.78	2,989.83	0.52	-0.11	0.042
48.00	-19.54	-1.34	0.00	-104.62	0.00	104.62	3,499.33	1,749.66	5,794.53	2,901.57	0.60	-0.12	0.042
50.00	-18.59	-1.33	0.00	-101.94	0.00	101.94	3,469.68	1,734.84	5,677.92	2,843.18	0.65	-0.13	0.041
53.25	-18.32	-1.32	0.00	-97.63	0.00	97.63	2,730.90	1,365.45	4,467.29	2,236.97	0.74	-0.14	0.050
55.00	-17.56	-1.31	0.00	-95.31	0.00	95.31	2,712.29	1,356.15	4,390.67	2,198.60	0.79	-0.14	0.050
60.00	-16.81	-1.30	0.00	-88.74	0.00	88.74	2,658.02	1,329.01	4,173.50	2,089.85	0.95	-0.16	0.049
65.00	-16.09	-1.29	0.00	-82.23	0.00	82.23	2,602.11	1,301.05	3,959.12	1,982.50	1.13	-0.18	0.048
70.00	-15.38	-1.27	0.00	-75.80	0.00	75.80	2,544.56	1,272.28	3,747.77	1,876.67	1.33	-0.20	0.046
75.00	-14.68	-1.25	0.00	-69.44	0.00	69.44	2,485.39	1,242.69	3,539.70	1,772.48	1.54	-0.21	0.045
80.00	-14.01	-1.23	0.00	-63.18	0.00	63.18	2,424.57	1,212.29	3,335.13	1,670.04	1.78	-0.23	0.044
85.00	-13.35	-1.21	0.00	-57.03	0.00	57.03	2,362.12	1,181.06	3,134.31	1,569.49	2.03	-0.25	0.042
90.00	-12.71	-1.18	0.00	-51.01	0.00	51.01	2,297.27	1,148.64	2,936.51	1,470.44	2.30	-0.27	0.040
95.00	-12.37	-1.16	0.00	-45.11	0.00	45.11	2,210.70	1,105.35	2,718.30	1,361.17	2.59	-0.29	0.039
97.75	-11.97	-1.14	0.00	-41.92	0.00	41.92	2,163.09	1,081.54	2,601.88	1,302.87	2.76	-0.30	0.038
100.00	-11.71	-1.13	0.00	-39.34	0.00	39.34	2,124.13	1,062.07	2,508.52	1,256.12	2.90	-0.30	0.037
101.50	-11.40	-1.11	0.00	-37.65	0.00	37.65	1,105.19	552.59	1,317.56	659.76	3.00	-0.31	0.067
105.00	-11.31	-1.11	0.00	-33.75	0.00	33.75	1,087.53	543.77	1,259.48	630.68	3.23	-0.32	0.064
106.00	-10.74	-1.08	0.00	-32.64	0.00	32.64	1,082.34	541.17	1,242.93	622.39	3.30	-0.33	0.062
110.00	-10.32	-1.05	0.00	-28.34	0.00	28.34	1,060.92	530.46	1,177.04	589.40	3.58	-0.35	0.058
115.00	-10.01	-1.03	0.00	-23.10	0.00	23.10	1,032.68	516.34	1,095.47	548.55	3.96	-0.37	0.052
117.94	-9.85	-1.02	0.00	-20.07	0.00	20.07	1,015.32	507.66	1,048.03	524.80	4.20	-0.39	0.048
120.00	-9.47	-0.99	0.00	-17.97	0.00	17.97	1,002.79	501.40	1,014.98	508.24	4.37	-0.40	0.045
125.00	-9.39	-0.98	0.00	-13.02	0.00	13.02	971.28	485.64	935.83	468.61	4.80	-0.42	0.037
126.00	-6.93	-0.77	0.00	-12.04	0.00	12.04	964.78	482.39	920.18	460.77	4.88	-0.42	0.033
130.00	-6.61	-0.74	0.00	-8.97	0.00	8.97	938.12	469.06	858.24	429.76	5.24	-0.43	0.028
135.00	-6.54	-0.73	0.00	-5.29	0.00	5.29	903.33	451.67	782.47	391.82	5.70	-0.45	0.021
136.00	-4.66	-0.54	0.00	-4.56	0.00	4.56	896.18	448.09	767.56	384.35	5.80	-0.45	0.017
140.00	-4.55	-0.52	0.00	-2.42	0.00	2.42	866.91	433.46	708.75	354.90	6.17	-0.45	0.012
142.00	-1.69	-0.21	0.00	-1.37	0.00	1.37	851.88	425.94	679.88	340.45	6.36	-0.46	0.006
145.00	-1.54	-0.19	0.00	-0.75	0.00	0.75	828.85	414.43	637.31	319.13	6.65	-0.46	0.004
149.00	0.00	-0.18	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	7.03	-0.46	0.000

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):	0.19
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}):	0.20
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	2.63
Redundancy Factor (p):	1.30

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
39	147.00	169	1.840	1.725	1.047	0.345	51	210
38	143.50	132	1.753	1.334	0.899	0.290	33	163
37	141.00	121	1.692	1.094	0.803	0.253	26	150
36	138.00	247	1.621	0.846	0.699	0.211	45	307
35	135.50	74	1.563	0.669	0.621	0.179	12	92
34	132.50	380	1.495	0.488	0.536	0.143	47	471
33	128.00	312	1.395	0.274	0.426	0.095	26	387
32	125.50	88	1.341	0.181	0.373	0.072	5	109
31	122.50	447	1.278	0.091	0.317	0.046	18	555
30	118.97	188	1.205	0.009	0.258	0.019	3	233
29	116.47	271	1.155	-0.034	0.222	0.003	1	336
28	112.50	496	1.077	-0.082	0.173	-0.019	-8	615
27	108.00	405	0.993	-0.112	0.128	-0.038	-13	502
26	105.50	103	0.948	-0.119	0.107	-0.045	-4	127
25	103.25	363	0.908	-0.122	0.090	-0.051	-16	450
24	100.75	302	0.864	-0.120	0.074	-0.054	-14	375
23	98.88	459	0.832	-0.117	0.064	-0.056	-22	569
22	96.38	401	0.791	-0.110	0.051	-0.056	-19	498
21	92.50	745	0.728	-0.095	0.036	-0.052	-34	924
20	87.50	765	0.652	-0.071	0.021	-0.040	-27	948
19	82.50	785	0.579	-0.045	0.012	-0.023	-15	973
18	77.50	804	0.511	-0.020	0.008	-0.002	-1	998
17	72.50	824	0.447	0.002	0.006	0.018	13	1,022
16	67.50	844	0.388	0.022	0.007	0.035	25	1,047
15	62.50	864	0.333	0.037	0.010	0.046	35	1,071
14	57.50	884	0.281	0.049	0.014	0.053	41	1,096
13	54.13	314	0.249	0.055	0.017	0.056	15	389
12	51.63	1,110	0.227	0.059	0.020	0.057	55	1,376
11	49.00	692	0.204	0.062	0.023	0.058	35	858
10	46.50	632	0.184	0.065	0.025	0.058	32	784
9	42.50	1,072	0.154	0.068	0.030	0.057	53	1,330
8	37.50	1,096	0.120	0.070	0.034	0.056	53	1,359
7	32.50	1,120	0.090	0.071	0.038	0.055	53	1,389
6	27.50	1,144	0.064	0.072	0.041	0.054	53	1,418

5	22.50	1,167	0.043	0.071	0.042	0.052	53	1,448
4	17.50	1,191	0.026	0.067	0.040	0.050	51	1,477
3	12.50	1,215	0.013	0.059	0.034	0.045	47	1,507
2	7.50	1,239	0.005	0.044	0.025	0.036	39	1,536
1	2.50	1,079	0.001	0.018	0.010	0.017	16	1,339
DragonWave Horizon C	149.00	32	1.890	1.980	1.140	0.379	10	39
DragonWave A-ANT-23G	149.00	15	1.890	1.980	1.140	0.379	5	19
Alcatel-Lucent RRH2x	149.00	317	1.890	1.980	1.140	0.379	104	394
Alcatel-Lucent 1900	149.00	180	1.890	1.980	1.140	0.379	59	223
Nokia 2.5G MAA - AAH	149.00	311	1.890	1.980	1.140	0.379	102	385
DragonWave A-ANT-11G	149.00	54	1.890	1.980	1.140	0.379	18	67
RFS APXVFRR12X-C-I20	149.00	138	1.890	1.980	1.140	0.379	45	171
Flat T-Arm	149.00	750	1.890	1.980	1.140	0.379	246	930
Ericsson KRY 112 144	142.00	29	1.717	1.186	0.840	0.267	7	36
Ericsson KRY 112 489	142.00	46	1.717	1.186	0.840	0.267	11	57
Ericsson Radio 4449	142.00	222	1.717	1.186	0.840	0.267	51	275
Ericsson AIR-32 B2A/	142.00	397	1.717	1.186	0.840	0.267	92	492
RFS APX16DWV-	142.00	122	1.717	1.186	0.840	0.267	28	151
RFS APXVAARR24_43-U-	142.00	384	1.717	1.186	0.840	0.267	89	476
Flat Platform w/ Han	142.00	2,000	1.717	1.186	0.840	0.267	463	2,480
RFS FD9R6004/2C-3L	136.00	16	1.575	0.702	0.636	0.185	3	19
Alcatel-Lucent RRH2x	136.00	132	1.575	0.702	0.636	0.185	21	164
Amphenol Antel BXA-	136.00	45	1.575	0.702	0.636	0.185	7	56
Antel BXA-185085/12C	136.00	39	1.575	0.702	0.636	0.185	6	48
RFS DB-T1-6Z-8AB-0Z	136.00	44	1.575	0.702	0.636	0.185	7	55
Andrew DB854DG65ESX	136.00	56	1.575	0.702	0.636	0.185	9	69
Commscope LNX-	136.00	116	1.575	0.702	0.636	0.185	19	144
Round Low Profile Pl	136.00	1,500	1.575	0.702	0.636	0.185	241	1,860
Raycap DC6-48-60-0-8	126.00	33	1.352	0.198	0.384	0.076	2	41
Ericsson RRUS-11 800	126.00	162	1.352	0.198	0.384	0.076	11	201
Ericsson RRUS 32	126.00	152	1.352	0.198	0.384	0.076	10	189
CCI CCI-HPA-65R-BUU-	126.00	204	1.352	0.198	0.384	0.076	13	253
Round Platform w/ Ha	126.00	2,000	1.352	0.198	0.384	0.076	132	2,480
RFS APXV18-206517S-C	115.00	79	1.126	-0.054	0.203	-0.006	0	98
Proxim 5054-R-LR	106.00	6	0.957	-0.118	0.111	-0.044	0	7
3' Dish w/ Radome	106.00	100	0.957	-0.118	0.111	-0.044	-4	124
Flat Side Arm	106.00	150	0.957	-0.118	0.111	-0.044	-6	186
		34,373	78.536	36.895	29.926	8.651	2,565	42,626

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)
39	147.00	169	1.840	1.725	1.047	0.345	51	145
38	143.50	132	1.753	1.334	0.899	0.290	33	113
37	141.00	121	1.692	1.094	0.803	0.253	26	104
36	138.00	247	1.621	0.846	0.699	0.211	45	213
35	135.50	74	1.563	0.669	0.621	0.179	12	64
34	132.50	380	1.495	0.488	0.536	0.143	47	326
33	128.00	312	1.395	0.274	0.426	0.095	26	268
32	125.50	88	1.341	0.181	0.373	0.072	5	76
31	122.50	447	1.278	0.091	0.317	0.046	18	385
30	118.97	188	1.205	0.009	0.258	0.019	3	162
29	116.47	271	1.155	-0.034	0.222	0.003	1	233
28	112.50	496	1.077	-0.082	0.173	-0.019	-8	426
27	108.00	405	0.993	-0.112	0.128	-0.038	-13	348
26	105.50	103	0.948	-0.119	0.107	-0.045	-4	88
25	103.25	363	0.908	-0.122	0.090	-0.051	-16	312
24	100.75	302	0.864	-0.120	0.074	-0.054	-14	260

23	98.88	459	0.832	-0.117	0.064	-0.056	-22	394
22	96.38	401	0.791	-0.110	0.051	-0.056	-19	345
21	92.50	745	0.728	-0.095	0.036	-0.052	-34	641
20	87.50	765	0.652	-0.071	0.021	-0.040	-27	658
19	82.50	785	0.579	-0.045	0.012	-0.023	-15	675
18	77.50	804	0.511	-0.020	0.008	-0.002	-1	692
17	72.50	824	0.447	0.002	0.006	0.018	13	709
16	67.50	844	0.388	0.022	0.007	0.035	25	726
15	62.50	864	0.333	0.037	0.010	0.046	35	743
14	57.50	884	0.281	0.049	0.014	0.053	41	760
13	54.13	314	0.249	0.055	0.017	0.056	15	270
12	51.63	1,110	0.227	0.059	0.020	0.057	55	954
11	49.00	692	0.204	0.062	0.023	0.058	35	595
10	46.50	632	0.184	0.065	0.025	0.058	32	543
9	42.50	1,072	0.154	0.068	0.030	0.057	53	922
8	37.50	1,096	0.120	0.070	0.034	0.056	53	942
7	32.50	1,120	0.090	0.071	0.038	0.055	53	963
6	27.50	1,144	0.064	0.072	0.041	0.054	53	983
5	22.50	1,167	0.043	0.071	0.042	0.052	53	1,004
4	17.50	1,191	0.026	0.067	0.040	0.050	51	1,024
3	12.50	1,215	0.013	0.059	0.034	0.045	47	1,045
2	7.50	1,239	0.005	0.044	0.025	0.036	39	1,065
1	2.50	1,079	0.001	0.018	0.010	0.017	16	928
DragonWave Horizon C	149.00	32	1.890	1.980	1.140	0.379	10	27
DragonWave A-ANT-23G	149.00	15	1.890	1.980	1.140	0.379	5	13
Alcatel-Lucent RRH2x	149.00	317	1.890	1.980	1.140	0.379	104	273
Alcatel-Lucent 1900	149.00	180	1.890	1.980	1.140	0.379	59	155
Nokia 2.5G MAA - AAH	149.00	311	1.890	1.980	1.140	0.379	102	267
DragonWave A-ANT-11G	149.00	54	1.890	1.980	1.140	0.379	18	46
RFS APXVFRR12X-C-I20	149.00	138	1.890	1.980	1.140	0.379	45	119
Flat T-Arm	149.00	750	1.890	1.980	1.140	0.379	246	645
Ericsson KRY 112 144	142.00	29	1.717	1.186	0.840	0.267	7	25
Ericsson KRY 112 489	142.00	46	1.717	1.186	0.840	0.267	11	40
Ericsson Radio 4449	142.00	222	1.717	1.186	0.840	0.267	51	191
Ericsson AIR-32 B2A/	142.00	397	1.717	1.186	0.840	0.267	92	341
RFS APX16DWV-	142.00	122	1.717	1.186	0.840	0.267	28	105
RFS APXVAARR24_43-U-	142.00	384	1.717	1.186	0.840	0.267	89	330
Flat Platform w/ Han	142.00	2,000	1.717	1.186	0.840	0.267	463	1,720
RFS FD9R6004/2C-3L	136.00	16	1.575	0.702	0.636	0.185	3	13
Alcatel-Lucent RRH2x	136.00	132	1.575	0.702	0.636	0.185	21	114
Amphenol Antel BXA-	136.00	45	1.575	0.702	0.636	0.185	7	39
Antel BXA-185085/12C	136.00	39	1.575	0.702	0.636	0.185	6	34
RFS DB-T1-6Z-8AB-0Z	136.00	44	1.575	0.702	0.636	0.185	7	38
Andrew DB854DG65ESX	136.00	56	1.575	0.702	0.636	0.185	9	48
Commscope LNX-	136.00	116	1.575	0.702	0.636	0.185	19	100
Round Low Profile Pl	136.00	1,500	1.575	0.702	0.636	0.185	241	1,290
Raycap DC6-48-60-0-8	126.00	33	1.352	0.198	0.384	0.076	2	28
Ericsson RRUS-11 800	126.00	162	1.352	0.198	0.384	0.076	11	139
Ericsson RRUS 32	126.00	152	1.352	0.198	0.384	0.076	10	131
CCI CCI-HPA-65R-BUU-	126.00	204	1.352	0.198	0.384	0.076	13	175
Round Platform w/ Ha	126.00	2,000	1.352	0.198	0.384	0.076	132	1,720
RFS APXV18-206517S-C	115.00	79	1.126	-0.054	0.203	-0.006	0	68
Proxim 5054-R-LR	106.00	6	0.957	-0.118	0.111	-0.044	0	5
3' Dish w/ Radome	106.00	100	0.957	-0.118	0.111	-0.044	-4	86
Flat Side Arm	106.00	150	0.957	-0.118	0.111	-0.044	-6	129
		34,373	78.536	36.895	29.926	8.651	2,565	29,557

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-41.29	-2.56	0.00	-317.11	0.00	317.11	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.082
5.00	-39.75	-2.53	0.00	-304.33	0.00	304.33	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.02	0.082
10.00	-38.24	-2.50	0.00	-291.67	0.00	291.67	4,012.85	2,006.43	8,128.58	4,070.33	0.05	-0.04	0.081
15.00	-36.76	-2.46	0.00	-279.18	0.00	279.18	3,950.68	1,975.34	7,810.43	3,911.02	0.10	-0.07	0.081
20.00	-35.32	-2.42	0.00	-266.88	0.00	266.88	3,886.87	1,943.43	7,495.19	3,753.17	0.18	-0.09	0.080
25.00	-33.90	-2.38	0.00	-254.77	0.00	254.77	3,821.43	1,910.71	7,183.08	3,596.88	0.29	-0.11	0.080
30.00	-32.51	-2.34	0.00	-242.88	0.00	242.88	3,754.35	1,877.17	6,874.35	3,442.28	0.42	-0.14	0.079
35.00	-31.15	-2.29	0.00	-231.19	0.00	231.19	3,685.64	1,842.82	6,569.23	3,289.50	0.58	-0.16	0.079
40.00	-29.82	-2.25	0.00	-219.72	0.00	219.72	3,615.29	1,807.64	6,267.96	3,138.64	0.76	-0.19	0.078
45.00	-29.03	-2.23	0.00	-208.47	0.00	208.47	3,543.30	1,771.65	5,970.78	2,989.83	0.98	-0.22	0.078
48.00	-28.17	-2.20	0.00	-201.79	0.00	201.79	3,499.33	1,749.66	5,794.53	2,901.57	1.12	-0.23	0.078
50.00	-26.80	-2.14	0.00	-197.40	0.00	197.40	3,469.68	1,734.84	5,677.92	2,843.18	1.22	-0.24	0.077
53.25	-26.41	-2.13	0.00	-190.44	0.00	190.44	2,730.90	1,365.45	4,467.29	2,236.97	1.39	-0.26	0.095
55.00	-25.31	-2.10	0.00	-186.71	0.00	186.71	2,712.29	1,356.15	4,390.67	2,198.60	1.49	-0.27	0.094
60.00	-24.24	-2.07	0.00	-176.23	0.00	176.23	2,658.02	1,329.01	4,173.50	2,089.85	1.79	-0.31	0.093
65.00	-23.19	-2.05	0.00	-165.88	0.00	165.88	2,602.11	1,301.05	3,959.12	1,982.50	2.13	-0.34	0.093
70.00	-22.17	-2.05	0.00	-155.62	0.00	155.62	2,544.56	1,272.28	3,747.77	1,876.67	2.51	-0.38	0.092
75.00	-21.17	-2.06	0.00	-145.38	0.00	145.38	2,485.39	1,242.69	3,539.70	1,772.48	2.92	-0.41	0.091
80.00	-20.20	-2.08	0.00	-135.10	0.00	135.10	2,424.57	1,212.29	3,335.13	1,670.04	3.38	-0.45	0.089
85.00	-19.25	-2.11	0.00	-124.71	0.00	124.71	2,362.12	1,181.06	3,134.31	1,569.49	3.87	-0.49	0.088
90.00	-18.32	-2.15	0.00	-114.16	0.00	114.16	2,297.27	1,148.64	2,936.51	1,470.44	4.41	-0.53	0.086
95.00	-17.82	-2.17	0.00	-103.42	0.00	103.42	2,210.70	1,105.35	2,718.30	1,361.17	4.99	-0.57	0.084
97.75	-17.25	-2.20	0.00	-97.44	0.00	97.44	2,163.09	1,081.54	2,601.88	1,302.87	5.33	-0.60	0.083
100.00	-16.88	-2.21	0.00	-92.50	0.00	92.50	2,124.13	1,062.07	2,508.52	1,256.12	5.61	-0.62	0.082
101.50	-16.42	-2.23	0.00	-89.19	0.00	89.19	1,105.19	552.59	1,317.56	659.76	5.81	-0.63	0.150
105.00	-16.30	-2.24	0.00	-81.39	0.00	81.39	1,087.53	543.77	1,259.48	630.68	6.28	-0.66	0.144
106.00	-15.48	-2.26	0.00	-79.15	0.00	79.15	1,082.34	541.17	1,242.93	622.39	6.42	-0.67	0.141
110.00	-14.86	-2.27	0.00	-70.12	0.00	70.12	1,060.92	530.46	1,177.04	589.40	7.00	-0.72	0.133
115.00	-14.42	-2.28	0.00	-58.74	0.00	58.74	1,032.68	516.34	1,095.47	548.55	7.79	-0.78	0.121
117.94	-14.19	-2.28	0.00	-52.04	0.00	52.04	1,015.32	507.66	1,048.03	524.80	8.29	-0.82	0.113
120.00	-13.63	-2.27	0.00	-47.34	0.00	47.34	1,002.79	501.40	1,014.98	508.24	8.65	-0.85	0.107
125.00	-13.52	-2.27	0.00	-36.01	0.00	36.01	971.28	485.64	935.83	468.61	9.56	-0.90	0.091
126.00	-9.97	-2.02	0.00	-33.74	0.00	33.74	964.78	482.39	920.18	460.77	9.75	-0.91	0.084
130.00	-9.50	-1.97	0.00	-25.67	0.00	25.67	938.12	469.06	858.24	429.76	10.53	-0.94	0.070
135.00	-9.41	-1.96	0.00	-15.81	0.00	15.81	903.33	451.67	782.47	391.82	11.54	-0.98	0.051
136.00	-6.69	-1.56	0.00	-13.85	0.00	13.85	896.18	448.09	767.56	384.35	11.74	-0.99	0.044
140.00	-6.54	-1.53	0.00	-7.62	0.00	7.62	866.91	433.46	708.75	354.90	12.58	-1.00	0.029
142.00	-2.43	-0.68	0.00	-4.57	0.00	4.57	851.88	425.94	679.88	340.45	13.00	-1.01	0.016
145.00	-2.22	-0.63	0.00	-2.52	0.00	2.52	828.85	414.43	637.31	319.13	13.64	-1.01	0.011
149.00	0.00	-0.59	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	14.49	-1.02	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-28.63	-2.55	0.00	-311.07	0.00	311.07	4,132.29	2,066.14	8,772.59	4,392.82	0.00	0.00	0.078
5.00	-27.56	-2.52	0.00	-298.30	0.00	298.30	4,073.39	2,036.69	8,449.37	4,230.97	0.01	-0.02	0.077
10.00	-26.52	-2.49	0.00	-285.68	0.00	285.68	4,012.85	2,006.43	8,128.58	4,070.33	0.04	-0.04	0.077
15.00	-25.49	-2.44	0.00	-273.24	0.00	273.24	3,950.68	1,975.34	7,810.43	3,911.02	0.10	-0.06	0.076
20.00	-24.49	-2.40	0.00	-261.02	0.00	261.02	3,886.87	1,943.43	7,495.19	3,753.17	0.18	-0.09	0.076
25.00	-23.50	-2.36	0.00	-249.02	0.00	249.02	3,821.43	1,910.71	7,183.08	3,596.88	0.28	-0.11	0.075
30.00	-22.54	-2.31	0.00	-237.24	0.00	237.24	3,754.35	1,877.17	6,874.35	3,442.28	0.41	-0.13	0.075
35.00	-21.60	-2.26	0.00	-225.69	0.00	225.69	3,685.64	1,842.82	6,569.23	3,289.50	0.57	-0.16	0.074
40.00	-20.67	-2.22	0.00	-214.38	0.00	214.38	3,615.29	1,807.64	6,267.96	3,138.64	0.75	-0.18	0.074
45.00	-20.13	-2.19	0.00	-203.30	0.00	203.30	3,543.30	1,771.65	5,970.78	2,989.83	0.95	-0.21	0.074
48.00	-19.53	-2.16	0.00	-196.72	0.00	196.72	3,499.33	1,749.66	5,794.53	2,901.57	1.09	-0.23	0.073
50.00	-18.58	-2.10	0.00	-192.41	0.00	192.41	3,469.68	1,734.84	5,677.92	2,843.18	1.19	-0.24	0.073
53.25	-18.31	-2.09	0.00	-185.57	0.00	185.57	2,730.90	1,365.45	4,467.29	2,236.97	1.36	-0.26	0.090
55.00	-17.55	-2.05	0.00	-181.91	0.00	181.91	2,712.29	1,356.15	4,390.67	2,198.60	1.46	-0.27	0.089
60.00	-16.80	-2.03	0.00	-171.64	0.00	171.64	2,658.02	1,329.01	4,173.50	2,089.85	1.75	-0.30	0.088
65.00	-16.08	-2.01	0.00	-161.51	0.00	161.51	2,602.11	1,301.05	3,959.12	1,982.50	2.08	-0.33	0.088
70.00	-15.37	-2.00	0.00	-151.48	0.00	151.48	2,544.56	1,272.28	3,747.77	1,876.67	2.45	-0.37	0.087
75.00	-14.67	-2.00	0.00	-141.49	0.00	141.49	2,485.39	1,242.69	3,539.70	1,772.48	2.86	-0.40	0.086
80.00	-14.00	-2.02	0.00	-131.47	0.00	131.47	2,424.57	1,212.29	3,335.13	1,670.04	3.30	-0.44	0.084
85.00	-13.34	-2.05	0.00	-121.35	0.00	121.35	2,362.12	1,181.06	3,134.31	1,569.49	3.78	-0.48	0.083
90.00	-12.70	-2.09	0.00	-111.08	0.00	111.08	2,297.27	1,148.64	2,936.51	1,470.44	4.31	-0.52	0.081
95.00	-12.35	-2.11	0.00	-100.62	0.00	100.62	2,210.70	1,105.35	2,718.30	1,361.17	4.87	-0.56	0.080
97.75	-11.96	-2.14	0.00	-94.81	0.00	94.81	2,163.09	1,081.54	2,601.88	1,302.87	5.20	-0.58	0.078
100.00	-11.70	-2.15	0.00	-90.00	0.00	90.00	2,124.13	1,062.07	2,508.52	1,256.12	5.48	-0.60	0.077
101.50	-11.38	-2.17	0.00	-86.78	0.00	86.78	1,105.19	552.59	1,317.56	659.76	5.67	-0.61	0.142
105.00	-11.29	-2.18	0.00	-79.19	0.00	79.19	1,087.53	543.77	1,259.48	630.68	6.13	-0.64	0.136
106.00	-10.72	-2.20	0.00	-77.01	0.00	77.01	1,082.34	541.17	1,242.93	622.39	6.26	-0.65	0.134
110.00	-10.29	-2.21	0.00	-68.22	0.00	68.22	1,060.92	530.46	1,177.04	589.40	6.83	-0.70	0.125
115.00	-9.99	-2.22	0.00	-57.17	0.00	57.17	1,032.68	516.34	1,095.47	548.55	7.61	-0.76	0.114
117.94	-9.83	-2.22	0.00	-50.66	0.00	50.66	1,015.32	507.66	1,048.03	524.80	8.09	-0.80	0.106
120.00	-9.44	-2.20	0.00	-46.09	0.00	46.09	1,002.79	501.40	1,014.98	508.24	8.44	-0.82	0.100
125.00	-9.37	-2.20	0.00	-35.10	0.00	35.10	971.28	485.64	935.83	468.61	9.33	-0.88	0.085
126.00	-6.91	-1.97	0.00	-32.90	0.00	32.90	964.78	482.39	920.18	460.77	9.51	-0.89	0.079
130.00	-6.58	-1.92	0.00	-25.04	0.00	25.04	938.12	469.06	858.24	429.76	10.27	-0.92	0.065
135.00	-6.52	-1.91	0.00	-15.44	0.00	15.44	903.33	451.67	782.47	391.82	11.26	-0.95	0.047
136.00	-4.63	-1.52	0.00	-13.53	0.00	13.53	896.18	448.09	767.56	384.35	11.46	-0.96	0.040
140.00	-4.53	-1.49	0.00	-7.46	0.00	7.46	866.91	433.46	708.75	354.90	12.27	-0.98	0.026
142.00	-1.68	-0.67	0.00	-4.47	0.00	4.47	851.88	425.94	679.88	340.45	12.68	-0.98	0.015
145.00	-1.53	-0.62	0.00	-2.47	0.00	2.47	828.85	414.43	637.31	319.13	13.30	-0.99	0.010
149.00	0.00	-0.59	0.00	0.00	0.00	0.00	787.55	393.77	574.90	287.88	14.13	-0.99	0.000

Analysis Summary

	Reactions						Max Usage	
Load Case	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	22.52	0.00	41.21	0.00	0.00	2569.75	101.50	0.87
0.9D + 1.6W	22.50	0.00	30.90	0.00	0.00	2532.77	101.50	0.84
1.2D + 1.0Di + 1.0Wi	6.48	0.00	64.89	0.00	0.00	749.88	101.50	0.28
(1.2 + 0.2Sds) * DL + E ELFM	1.34	0.00	41.29	0.00	0.00	172.61	101.50	0.07
(1.2 + 0.2Sds) * DL + E EMAM	2.56	0.00	41.29	0.00	0.00	317.11	101.50	0.15
(0.9 - 0.2Sds) * DL + E ELFM	1.34	0.00	28.63	0.00	0.00	169.52	101.50	0.07
(0.9 - 0.2Sds) * DL + E EMAM	2.55	0.00	28.63	0.00	0.00	311.07	101.50	0.14
1.0D + 1.0W	5.38	0.00	34.37	0.00	0.00	609.53	101.50	0.21

Base Plate & Anchor Rod Analysis

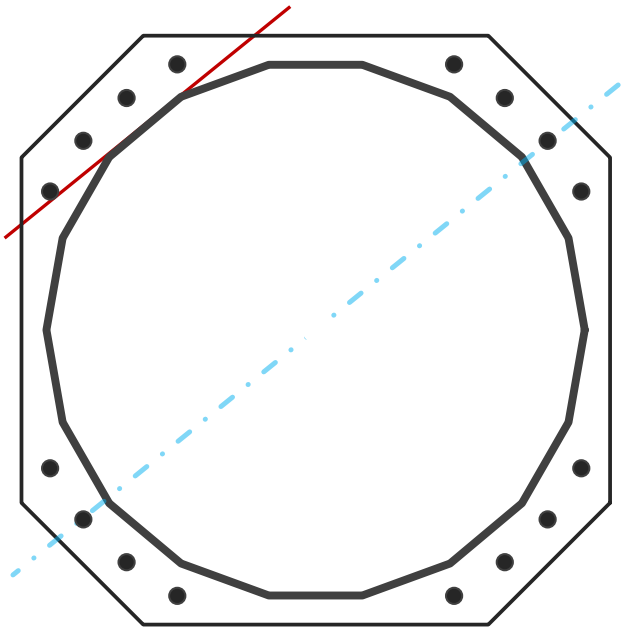
Pole Dimensions		
Number of Sides	18	-
Diameter	52.01	in
Thickness	0.375	in
Orientation Offset	0	°

Base Reactions		
Moment, Mu	2569.8	k-ft
Axial, Pu	41.2	k
Shear, Vu	22.5	k
Neutral Axis	39	°

Report Capacities		
Component	Capacity	Result
Base Plate	42%	Pass
Anchor Rods	51%	Pass
Dwyidag	-	-

Base Plate		
Shape	Square	-
Width	58	in
Thickness	2 3/4	in
Grade	Other	-
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Clip	12	in
Orientation Offset	0	°
Anchor Rod Detail	d	η=0.5
Clear Distance	3	in
Applied Moment, Mu	1282.9	k
Bending Stress, ϕMn	3038.8	k

Original Anchor Rods		
Arrangement	Cluster	-
Quantity	16	-
Diameter, ø	2 1/4	in
Bolt Circle	59	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	6.0	in
Orientation Offset	0	°
Applied Force, Pu	133.2	k
Anchor Rods, ϕPn	259.8	k



Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	22.5	2569.8	1.00
Anchor Rod Forces	22.5	2569.8	1.00
Additional Bolt (Grp1) Forces	0.0	0.0	0.00
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	0.0	0.00
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	60.5227	3.3624	0.1582		20173.34
Bolt	3.9761	3.2477	0.8393	4.5	22623.84
Bolt1	0.0000	0.0000	0.0000	0	0.00
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	0.0000	0.0000	0.0000		0.00
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	Square	-
Width, W	58	in
Thickness, t	2.75	in
Yield Strength, Fy	60	ksi
Tensile Strength, Fu	80	ksi
Base Plate Chord	25.670	in
Detail Type	d	-
Detail Factor	0.50	-
Clear Distance	3	-

Anchor Rods		
Anchor Rod Quantity, N	16	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	59	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	133.2	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.513	OK
Interaction Capacity	0.513	OK

External Base Plate		
Chord Length AA	29.764	in
Additional AA	0.000	in
Section Modulus, Z	56.273	in^3
Applied Moment, Mu	1282.9	k-ft
Bending Capacity, ϕMn	3038.8	k-ft
Capacity, Mu/ϕMn	0.422	OK
Chord Length AB	28.958	in
Additional AB	0.000	in
Section Modulus, Z	54.749	in^3
Applied Moment, Mu	1074.7	k-ft
Bending Capacity, ϕMn	2956.5	k-ft
Capacity, Mu/ϕMn	0.364	OK
Bend Line Length	0.000	in
Additional Bend Line	0.000	in
Section Modulus, Z	0.000	in^3
Applied Moment, Mu	0.0	k-ft
Bending Capacity, ϕMn	0.0	k-ft
Capacity, Mu/ϕMn		

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