Transcend Wireless

10 Industrial Avenue,
Suite 3
Mahwah, NJ 07430

Phone: 201.684.0055
Fax: 201.684.0066

February 15, 2019

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

Notice of Exempt Modification
53 Dayton Road, Waterford, CT
Latitude: 41.37784167
Longitude: -72.13936111

Dear Ms. Bachman,

T-Mobile currently maintains (9) existing antennas at the 166' level of the existing 184' Self-supporting Lattice Tower 53 Dayton Road in Waterford, Connecticut. The tower is owned by American Tower and the property is owned by Cohanzie Fire Company No. 5 Inc. T-Mobile now intends to replace (3) of its existing antennas with (3) new antennas, and swap (3) RRUs. These antennas and RRUs would be installed at the same 166' level of the tower. There will be one (1) 1-58/" hybrid removed and two (2) 1-1/4" hybrid cables installed.

Please accept this letter as notification pursuant to Regulations of Connecticut State Agencies 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. 16-50j-72(b)(2). In accordance with R.C.S.A. 16-50j-73, a copy of this letter is being sent to Daniel M. Steward, First Selectman of the Town of Waterford, as well as the tower and property owner.

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

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

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

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

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

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

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

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

Sincerely,

Elizabeth Jamieson

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

cc:
Daniel Steward, First Selectman, Town of Waterford, as elected official
Abby Piersall, AICP, Town of Waterford, as P&Z Official
Cohanzie Fire Co. No. 5 Inc, as land owner
American Tower, tower owner

53 DAYTON ROAD

Location	53 DAYTON ROAD	**Mblu**	92/ / 1844/ /
Acct#	00158300	**Owner**	COHANZIE FIRE COMPANY NO 5 INC
Assessment	$1,335,410	**Appraisal**	$1,907,740
PID	1844	**Building Count**	2

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$981,150	$926,590	$1,907,740
Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2017	$686,800	$648,610	$1,335,410

Parcel Addreses

Additional Addresses		
Address	**City, State Zip**	**Type**
53 DAYTON ROAD		Primary
53 DAYTON ROAD		Secondary

Owner of Record

Owner COHANZIE FIRE COMPANY NO 5 INC
Co-Owner

Sale Price $0
Certificate
Book & Page 95/ 157
Sale Date 11/12/1952
Instrument 00

Ownership History

Ownership History					
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Instrument**	**Sale Date**
COHANZIE FIRE COMPANY NO 5 INC	$0		95/ 157	00	11/12/1952

Building Information

Building 1 : Section 1

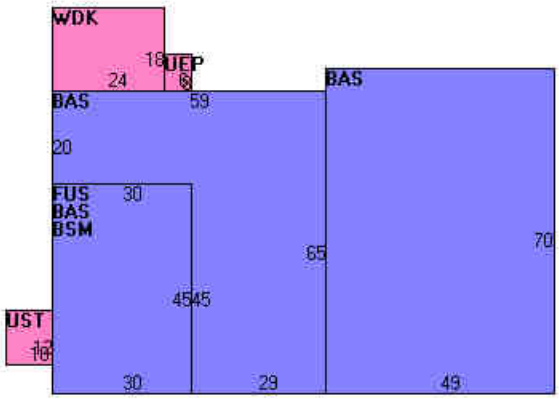
Year Built: 1950
Living Area: 8,615
Replacement Cost: $803,074
Building Percent Good: 68

Building Attributes	
Field	**Description**
STYLE	Fire Station
MODEL	Comm/Ind
Grade	Above Ave
Stories:	1.00
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	Brick Veneer
Roof Structure	Gambrel
Roof Cover	Asphalt
Interior Wall 1	Plaster
Interior Wall 2	Drywall
Interior Floor 1	Concrete
Interior Floor 2	Comp Tile
Heating Fuel	Oil
Heating Type	Hot Water
% Central Air	0
Foundation	Poured Conc
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	22
% Wet Sprinkler	100
% Dry Sprinkler	
1st Floor Use	
Heat/AC	Typical
Frame Type	MASONRY
Baths/Plumbing	AVERAGE
% Finished	60
Class	C
Wall Height	11

Building Photo

(http://images.vgsi.com/photos/WaterfordCTPhotos//\00\00\88/

Building Layout



(http://images.vgsi.com/photos/WaterfordCTPhotos//Sketches/1

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
BAS	First Floor	7,265	7,265
FUS	Finished Upper Story	1,350	1,350
BSM	Basement	1,350	0
UEP	Unfin. Enclosed Porch	48	0
UST	Unfinished Utility Area	120	0
WDK	Deck	432	0
		10,565	8,615

Building 2 : Section 1

Year Built: 1950
Living Area: 3,360
Replacement Cost: $368,762

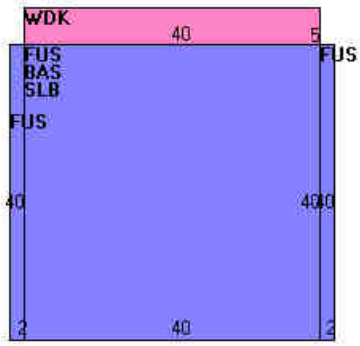
Building Percent Good: 62

Building Attributes : Bldg 2 of 2	
Field	**Description**
STYLE	Fire Station
MODEL	Comm/Ind
Grade	Above Ave
Stories:	2.00
Occupancy	1
Exterior Wall 1	Vinyl Siding
Exterior Wall 2	Brick Veneer
Roof Structure	Gambrel
Roof Cover	Asphalt
Interior Wall 1	Plaster
Interior Wall 2	Drywall
Interior Floor 1	Concrete
Interior Floor 2	Comp Tile
Heating Fuel	Oil
Heating Type	Forced Hot Air
% Central Air	0
Foundation	Poured Conc
Bldg Use	Exempt Comm
Total Rooms	0
Total Bedrms	0
Total Fixtures	0
% Wet Sprinkler	
% Dry Sprinkler	
1st Floor Use	
Heat/AC	Typical
Frame Type	MASONRY
Baths/Plumbing	LIGHT
% Finished	0
Class	C
Wall Height	11

Building Photo

(http://images.vgsi.com/photos/WaterfordCTPhotos//default.jpg)

Building Layout



(http://images.vgsi.com/photos/WaterfordCTPhotos//Sketches/18

Building Sub-Areas (sq ft)			Legend
Code	**Description**	**Gross Area**	**Living Area**
FUS	Finished Upper Story	1,760	1,760
BAS	First Floor	1,600	1,600
SLB	Slab	1,600	0
WDK	Deck	200	0
		5,160	3,360

Extra Features

Extra Features				Legend
Code	**Description**	**Size**	**Value**	**Bldg #**
FBM	Finished Bsmt	475 S.F.	$3,230	1

Land

Land Use

Use Code	920
Description	Exempt Comm
Zone	R-40
Neighborhood	200
Alt Land Appr	No
Category	

Land Line Valuation

Size (Acres)	9.91
Frontage	0
Depth	0
Assessed Value	$648,610
Appraised Value	$926,590

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
FN1	Fence			928 L.F.	$7,660	2
FGR1	Garage	MS	Masonry	220 S.F.	$3,300	1
LSUM	Lump Sum			120000 UNITS	$90,000	2
PAV1	Paving	AS	Asphalt	39900 S.F.	$62,340	1
SHD1	Shed	FR	Frame	800 S.F.	$6,000	1
FN1	Fence			1408 L.F.	$7,740	1
FOP	Porch			1600 S.F.	$24,000	1
LSUM	Lump Sum			4320 UNITS	$2,160	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$923,090	$926,590	$1,849,680
2013	$923,090	$926,590	$1,849,680
2010	$0	$0	$3,234,857

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2016	$646,170	$648,610	$1,294,780
2013	$646,170	$648,610	$1,294,780
2010	$0	$0	$2,264,400


200 ft
205 ft
DAVIS RD
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

EBI Consulting
environmental | engineering | due diligence

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

T-Mobile Existing Facility

Site ID: CT11041D

Waterford/ I-95/ X82
53 Dayton Road
Waterford, CT 06385

August 21, 2018

EBI Project Number: 6218005757

Site Compliance Summary	
Compliance Status:	COMPLIANT
Site total MPE% of FCC general population allowable limit:	10.25 %

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

EBI Consulting
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August 21, 2018

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

Emissions Analysis for Site: **CT11041D – Waterford/ I-95/ X82**

EBI Consulting was directed to analyze the proposed T-Mobile facility located at **53 Dayton Road, Waterford, CT**, for the purpose of determining whether the emissions from the Proposed T-Mobile Antenna Installation located on this property are within specified federal limits.

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

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

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

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

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

Additional details can be found in FCC OET 65.

CALCULATIONS

Calculations were done for the proposed T-Mobile Wireless antenna facility located at **53 Dayton Road, Waterford, CT**, using the equipment information listed below. All calculations were performed per the specifications under FCC OET 65. Since T-Mobile is proposing highly focused directional panel antennas, which project most of the emitted energy out toward the horizon, all calculations were performed assuming a lobe representing the maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was focused at the base of the tower. For this report the sample point is the top of a 6-foot person standing at the base of the tower.

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

1) 1 GSM channels (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 15 Watts per Channel.

2) 1 UMTS channel (PCS Band - 1900 MHz) was considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

3) 2 LTE channels (PCS Band - 1900 MHz) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

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

5) 2 LTE channels (600 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 40 Watts per Channel.

6) 2 LTE channels (700 MHz Band) were considered for each sector of the proposed installation. These Channels have a transmit power of 20 Watts per Channel.

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

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

9) The antennas used in this modeling are the **Ericsson AIR32 B66Aa/B2A** & **Ericsson AIR21 B2A/B4P** for 1900 MHz (PCS) and 2100 MHz (AWS) channels and the **RFS APXVAARR24_43-U-NA20** for 600 MHz and 700 MHz channels. This is based on feedback from the carrier with regard to anticipated antenna selection. All Antenna gain values and associated transmit power levels are shown in the Site Inventory and Power Data table below. The maximum gain of the antenna per the antenna manufactures supplied specifications, minus 10 dB for directional panel antennas, was used for all calculations. This value is a very conservative estimate as gain reductions for these particular antennas are typically much higher in this direction.

10) The antenna mounting height centerline of the proposed antennas is **163 feet** above ground level (AGL).

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

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

T-Mobile Site Inventory and Power Data

Sector:	A	Sector:	B	Sector:	C
Antenna #:	**1**	Antenna #:	**1**	Antenna #:	**1**
Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A	Make / Model:	Ericsson AIR32 B66Aa/B2A
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	163 feet	Height (AGL):	163 feet	Height (AGL):	163 feet
Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)	Frequency Bands	1900 MHz (PCS) / 2100 MHz (AWS)
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	200	Total TX Power(W):	200	Total TX Power(W):	200
ERP (W):	7,780.90	ERP (W):	7,780.90	ERP (W):	7,780.90
Antenna A1 MPE%	**1.13**	Antenna B1 MPE%	**1.13**	Antenna C1 MPE%	**1.13**
Antenna #:	**2**	Antenna #:	**2**	Antenna #:	**2**
Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P	Make / Model:	Ericsson AIR21 B2A/B4P
Gain:	15.9 dBd	Gain:	15.9 dBd	Gain:	15.9 dBd
Height (AGL):	163 feet	Height (AGL):	163 feet	Height (AGL):	163 feet
Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)	Frequency Bands	1900 MHz (PCS)
Channel Count	2	Channel Count	2	Channel Count	2
Total TX Power(W):	55	Total TX Power(W):	55	Total TX Power(W):	55
ERP (W):	2,139.75	ERP (W):	2,139.75	ERP (W):	2,139.75
Antenna A2 MPE%	**0.31**	Antenna B2 MPE%	**0.31**	Antenna C2 MPE%	**0.31**
Antenna #:	**3**	Antenna #:	**3**	Antenna #:	**3**
Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20	Make / Model:	RFS APXVAARR24_43-U-NA20
Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd	Gain:	12.95 / 13.35 dBd
Height (AGL):	163 feet	Height (AGL):	163 feet	Height (AGL):	163 feet
Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz	Frequency Bands	600 MHz / 700 MHz
Channel Count	4	Channel Count	4	Channel Count	4
Total TX Power(W):	120	Total TX Power(W):	120	Total TX Power(W):	120
ERP (W):	2,443.03	ERP (W):	2,443.03	ERP (W):	2,443.03
Antenna A3 MPE%	**0.85**	Antenna B3 MPE%	**0.85**	Antenna C3 MPE%	**0.85**

Site Composite MPE%	
Carrier	**MPE%**
T-Mobile (Per Sector Max)	**2.29 %**
AT&T	**3.43 %**
Verizon Wireless	**3.76 %**
MetroPCS	**0.55 %**
Public Safety	**0.22 %**
Site Total MPE %:	**10.25 %**

T-Mobile Sector A Total:	2.29 %
T-Mobile Sector B Total:	2.29 %
T-Mobile Sector C Total:	2.29 %
Site Total:	10.25 %

T-Mobile Maximum MPE Power Values (Per Sector)

T-Mobile _Frequency Band / Technology (Per Sector)	# Channels	Watts ERP (Per Channel)	Height (feet)	Total Power Density ($\mu W/cm^2$)	Frequency (MHz)	Allowable MPE ($\mu W/cm^2$)	Calculated % MPE
T-Mobile PCS - 1900 MHz LTE	2	1,556.18	163	4.54	PCS - 1900 MHz	1000.00	0.45%
T-Mobile AWS - 2100 MHz LTE	2	2,334.27	163	6.81	AWS - 2100 MHz	1000.00	0.68%
T-Mobile PCS - 1900 MHz GSM	1	583.57	163	0.85	PCS - 1900 MHz	1000.00	0.08%
T-Mobile PCS - 1900 MHz UMTS	1	1,556.18	163	2.27	PCS - 1900 MHz	1000.00	0.23%
T-Mobile 600 MHz LTE	2	788.97	163	2.30	600 MHz	400.00	0.58%
T-Mobile 700 MHz LTE	2	432.54	163	1.26	700 MHz	467.00	0.27%
						Total:	**2.29%**

Summary

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

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

T-Mobile Sector	Power Density Value (%)
Sector A:	2.29 %
Sector B:	2.29 %
Sector C:	2.29 %
T-Mobile Maximum MPE % (Per Sector):	2.29 %
Site Total:	10.25 %
Site Compliance Status:	**COMPLIANT**

The anticipated composite MPE value for this site assuming all carriers present is **10.25%** of the allowable FCC established general population limit sampled at the ground level. This is based upon values listed in the Connecticut Siting Council database for existing carrier emissions.

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

AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure	:	**180 ft Self Supported Tower**
ATC Site Name	:	**Waterford CT, CT**
ATC Site Number	:	**411183**
Engineering Number	:	**12605190_C3_01**
Proposed Carrier	:	**T-Mobile**
Carrier Site Name	:	**CT11041D**
Carrier Site Number	:	**CT11041D**
Site Location	:	**53 Dayton Rd.** **Waterford, CT 06385-4274** **41.377800, -72.141400**
County	:	**New London**
Date	:	**November 5, 2018**
Max Usage	:	**42%**
Result	:	**Pass**

Prepared By:
Alexander Cartledge
Structural Engineer I

Reviewed By:

STATE OF CONNECTICUT
SCOTT A. WIRGAU
30575
LICENSED
PROFESSIONAL ENGINEER

Authorized by "EOR"
Nov 20 2018 4:32 PM cosign

COA: PEC.0001553

AMERICAN TOWER®
CORPORATION

Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 180 ft self supported tower to reflect the change in loading by T-Mobile.

Supporting Documents

Tower Drawings	Rohn Drawing #A982166, dated August 20, 1998
Foundation Drawing	Rohn Drawing #A982167-1, dated August 20, 1998
Geotechnical Report	Clarence Welti Site Name Cohenzie Fire Station; Waterford, CT, dated March 24, 1997

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:	105 mph (3-Second Gust, Vasd) / 135 mph (3-Second Gust, Vult)
Basic Wind Speed w/ Ice:	50 mph (3-Second Gust) w/ 3/4" radial ice concurrent
Code:	ANSI/TIA-222-G / 2012 IBC / 2016 Connecticut State Building Code
Structure Class:	II
Exposure Category:	B
Topographic Category:	1
Crest Height:	0 ft
Spectral Response:	Ss = 0.16, 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					
180.0	187.0	4	15' Omni	Side Arms	(7) 7/8" Coax	Town Of Waterford Police Dept
	184.0	2	8' Omni			
	182.0	1	5' Omni			
	181.0	1	dbSpectra ATS4TMA4-4			
	174.0	1	13' Omni			
166.0	166.0	3	Ericsson AIR 21	Sector Frames	(12) 1 5/8" Coax (1) 1 5/8" Hybriflex	T-Mobile
159.0	159.0	3	CCI TPA-65R-LCUUUU-H8	Sector Frames	(3) 0.39" Fiber Trunk (6) 0.78" 8 AWG 6 (12) 1 5/8" Coax (1) 3" Conduit	AT&T Mobility
		3	CCI HPA-65R-BUU-H8			
		3	Powerwave 7770.00			
		3	Ericsson RRUS-32 (77 lbs)			
		3	Ericsson RRUS 11 w/ RRUS A2			
		3	Ericsson RRUS 32 B2			
		3	Ericsson RRUS-11 (50 lbs.)			
		3	Raycap DC6-48-60-0-8F			
		6	Powerwave LGP21401			
		6	Powerwave LGP13519			
		3	Kathrein 782 10253			
156.0	163.0	1	15' Omni	Side Arm	(1) 1 5/8" Coax	Town Of Waterford Police Dept
132.0	132.0	1	VZW Unused Reserve: 17,576 sq in	Sector Frames	(18) 1 5/8" Coax (3) 1 1/4" Hybriflex	Verizon
		2	Swedcom SLCP 2x6015			
		1	Antel BXA-70063-6CF-EDIN-2			
		2	Antel LPA-80063-4CF-EDIN-X			
		1	Swedcom SACP 2x5516			
		6	48" x 12" x 7" Panel			
		3	Antel BXA-171063-8CF-EDIN-X			
		3	Alcatel-Lucent B25 RRH4x30			
		6	Alcatel-Lucent B66A RRH 4x45			
		3	Raycap RRFDC-1064-PF-48			
125.0	125.0	6	Kathrein 800 10504	Sector Frames	-	Metro PCS
		1	MicroPulse GPS-QBW-26N			
50.0	50.0	1	GPS	Stand-Off	(1) 1/2" Coax	Verizon

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
164.0	164.0	3	Ericsson AIR 32 B4A-B2P	-	(1) 1 5/8" Hybriflex	T-Mobile
		3	Andrew LNX-6515DS-VTM			
		3	Ericsson RRUS 11 B12			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
166.0	166.0	3	RFS APXVAARR24_43-U-NA20	Sector Frames	(2) 1 1/4" Hybriflex	T-Mobile
		3	Ericsson AIR32 B66Aa/B2a			
		3	Ericsson Radio 4449 B12,B71			

[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 stacked on top of existing T-Mobile coax.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Legs	40%	Pass
Diagonals	42%	Pass
Horizontals	40%	Pass
Anchor Bolts	20%	Pass
Leg Bolts	27%	Pass

Foundations

Reaction Component	Original Design Reactions	Factored Design Reactions*	Analysis Reactions	% of Design
Uplift (Kips)	621.3	838.8	233.0	28%
Axial (Kips)	732.9	989.4	320.1	32%
Shear (Kips)	141.8	191.4	34.8	18%

*** 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, Twist, and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Twist (°)	Sway (Rotation) (°)
166.0	Ericsson Radio 4449 B12,B71	T-Mobile	0.122	0.005	0.092
	Ericsson AIR32 B66Aa/B2a				
	RFS APXVAARR24_43-U-NA20				

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

AMERICAN TOWER®
CORPORATION

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:

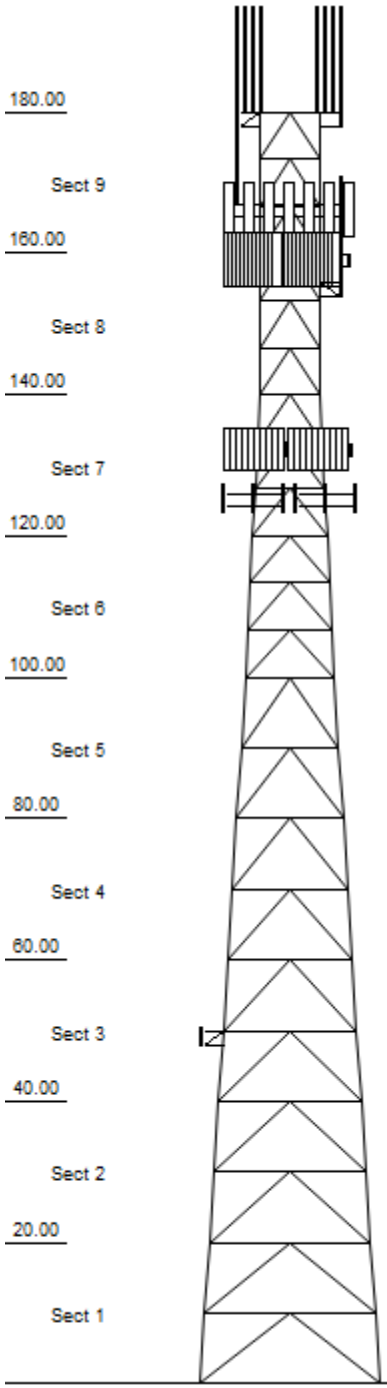
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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.



Loads: 105 mph no ice
50 mph w/ 3/4" radial ice
Site Class: D Ss: 0.16 S1: 0.06
60 mph Serviceability

Job Information

Tower : 411183	Location : WATERFORD CT,	Base Width : 25.55 ft
Client : T-Mobile		Top Width : 8.50 ft
Code : ANSI/TIA-222-G		Tower Ht : 180.00 ft
		Shape : Triangle

Sections Properties

Section	Leg Members		Diagonal Members	Horizontal Members
1 - 2	PX 50 ksi	12" DIA PIPE	PST 50 ksi 3-1/2" DIA PIPE	PST 50 ksi 3" DIA PIPE
3 - 4	PX 50 ksi	10" DIA PIPE	PX 50 ksi 3" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE
5	PX 50 ksi	8" DIA PIPE	PX 50 ksi 3" DIA PIPE	PX 50 ksi 2" DIA PIPE
6	PX 50 ksi	6" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2" DIA PIPE
7	PX 50 ksi	5" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 1-1/2" DIA PIPE
8	PST 50 ksi	4" DIA PIPE	PST 50 ksi 2-1/2" DIA PIPE	PST 50 ksi 2" DIA PIPE
9	PST 50 ksi	3" DIA PIPE	PST 50 ksi 2" DIA PIPE	PST 50 ksi 1-1/2" DIA PIPE

Discrete Appurtenance

Elev (ft)	Type	Qty	Description
180.00	Mounting Frame	1	Round Sector Frame
180.00	Straight Arm	2	Round Side Arm
180.00	Whip	2	15' Omni
180.00	Whip	1	15' Omni
180.00	Whip	1	15' Omni
180.00	Whip	1	13' Omni
180.00		1	dbSpectra ATS4TMA4-4
180.00	Whip	2	8' Omni
180.00	Whip	1	5' Omni
166.00	Panel	3	RFS APXVAARR24_43-U-NA20
166.00	Mounting Frame	3	Round Sector Frame
166.00	Panel	3	Ericsson AIR32 B66Aa/B2a
166.00	Panel	3	Ericsson AIR 21
166.00	Panel	3	Ericsson Radio 4449 B12,B71
159.00	Mounting Frame	3	Round Sector Frame
159.00	Panel	3	CCI TPA-65R-LCUUUU-H8
159.00	Panel	3	CCI HPA-65R-BUU-H8
159.00	Panel	3	Powerwave Allgon 7770.00
159.00	Panel	3	Ericsson RRUS-32 (77 lbs)
159.00	Panel	3	Ericsson RRUS 11 w/ RRUS A2
159.00	Panel	3	Ericsson RRUS 32 B2
159.00	Panel	3	Ericsson RRUS-11 (50 lbs.)
159.00	Panel	3	Raycap DC6-48-60-0-8F
159.00	Panel	6	Powerwave Allgon LGP21401
159.00	Panel	6	Powerwave Allgon LGP13519
159.00	Panel	3	Kathrein Scala 782 10253
156.00	Straight Arm	1	Round Side Arm
156.00	Whip	1	15' Omni
132.00	Panel	1	VZW Unused Reserve: 17,576 sq
132.00	Mounting Frame	3	Round Sector Frame
132.00	Panel	2	Swedcom SLCP 2x6015
132.00	Panel	1	Amphenol Antel BXA-70063-6CF-E
132.00	Panel	2	Amphenol Antel LPA-80063-4CF-E
132.00	Panel	1	Swedcom SACP 2x5516
132.00	Panel	6	48" x 12" x 7" Panel
132.00	Panel	3	Amphenol Antel BXA-171063-8CF-
132.00	Panel	3	Alcatel-Lucent B25 RRH4x30
132.00	Panel	6	Alcatel-Lucent B66A RRH 4x45
132.00	Panel	3	Raycap RRFDC-1064-PF-48
125.00	Mounting Frame	3	Flat Light Sector Frame
125.00	Panel	6	Kathrein Scala 800 10504
125.00	Panel	1	MicroPulse GPS-QBW-26N
50.00	Straight Arm	1	Stand-Off
50.00	Whip	1	GPS

Job Information

Tower : 411183	Location : WATERFORD CT,	Base Width : 25.55 ft
Client : T-Mobile		Top Width : 8.50 ft
Code : ANSI/TIA-222-G		Tower Ht : 180.00 ft
		Shape : Triangle

Linear Appurtenance

Elev (ft) From	To	Qty	Description
30.00	180.00	1	Waveguide
30.00	180.00	7	7/8" Coax
0.00	180.00	1	Waveguide
30.00	166.00	1	1 5/8" Hybriflex
30.00	166.00	12	1 5/8" Coax
30.00	166.00	2	1 1/4" Hybriflex Cab
0.00	166.00	1	Waveguide
30.00	159.00	1	Waveguide
30.00	159.00	1	3" Conduit
30.00	159.00	12	1 5/8" Coax
30.00	159.00	6	0.78" 8 AWG 6
30.00	159.00	3	0.39" Fiber Trunk
30.00	156.00	1	1 5/8" Coax
30.00	132.00	18	1 5/8" Coax
30.00	132.00	3	1 1/4" Hybriflex Cab
30.00	50.00	1	1/2" Coax

Global Base Foundation Design Loads

Load Case	Moment (k-ft)	Vertical (kip)	Horizontal (kip)
DL + WL	5,985.86	148.85	53.07
DL + WL + IL	1,434.87	234.13	12.56

Individual Base Foundation Design Loads

Vertical (kip)	Uplift (kip)	Horizontal (kip)
320.14	232.96	34.75

Site Number:	411183	Code:	ANSI/TIA-222-G	
Site Name:	WATERFORD CT, CT	Engineering Number:	12605190_C3_01	11/5/2018 3:56:08 PM
Customer:	T-Mobile			

Analysis Parameters

Location:	NEW LONDON County, CT	Height (ft):	180
Code:	ANSI/TIA-222-G	Base Elevation (ft):	0.00
Shape:	Triangle	Bottom Face Width (ft):	25.55
Tower Manufacturer:	Rohn	Top Face Width (ft):	8.50
Tower Type:	Self Support	Anchor Bolt Detail Type	c
Kd:			
Ke:			

Ice & Wind Parameters

Structure Class:	II	Design Windspeed Without Ice:	105 mph
Exposure Category:	B	Design Windspeed With Ice:	50 mph
Topographic Category:	1	Operational Windspeed:	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):	0.81				
T_L (sec):	6	p:	1.3	C_S:	0.039
S_S:	0.163	S_1:	0.059	C_S, Max:	0.039
F_a:	1.600	F_V:	2.400	C_S, Min:	0.030
S_{ds}:	0.174	S_{d1}:	0.094		

Load Cases

1.2D + 1.6W Normal	105 mph Normal with No Ice
1.2D + 1.6W 60 deg	105 mph 60 degree with No Ice
1.2D + 1.6W 90 deg	105 mph 90 degree with No Ice
1.2D + 1.6W 120 deg	105 mph 120 degree with No Ice
1.2D + 1.6W 180 deg	105 mph 180 degree with No Ice
1.2D + 1.6W 210 deg	105 mph 210 degree with No Ice
1.2D + 1.6W 240 deg	105 mph 240 degree with No Ice
1.2D + 1.6W 300 deg	105 mph 300 degree with No Ice
1.2D + 1.6W 330 deg	105 mph 330 degree with No Ice
0.9D + 1.6W Normal	105 mph Normal with No Ice (Reduced DL)
0.9D + 1.6W 60 deg	105 mph 60 deg with No Ice (Reduced DL)
0.9D + 1.6W 90 deg	105 mph 90 deg with No Ice (Reduced DL)
0.9D + 1.6W 120 deg	105 mph 120 deg with No Ice (Reduced DL)
0.9D + 1.6W 180 deg	105 mph 180 deg with No Ice (Reduced DL)
0.9D + 1.6W 210 deg	105 mph 210 deg with No Ice (Reduced DL)
0.9D + 1.6W 240 deg	105 mph 240 deg with No Ice (Reduced DL)
0.9D + 1.6W 300 deg	105 mph 300 deg with No Ice (Reduced DL)
0.9D + 1.6W 330 deg	105 mph 330 deg with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi Normal	50 mph Normal with 0.75 in Radial Ice

Analysis Parameters

1.2D + 1.0Di + 1.0Wi 60 deg	50 mph 60 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 90 deg	50 mph 90 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 120 deg	50 mph 120 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 180 deg	50 mph 180 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 210 deg	50 mph 210 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 240 deg	50 mph 240 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 300 deg	50 mph 300 deg with 0.75 in Radial Ice
1.2D + 1.0Di + 1.0Wi 330 deg	50 mph 330 deg with 0.75 in Radial Ice
(1.2 + 0.2Sds) * DL + E Normal	Seismic Normal
(1.2 + 0.2Sds) * DL + E 60 deg	Seismic 60 deg
(1.2 + 0.2Sds) * DL + E 90 deg	Seismic 90 deg
(1.2 + 0.2Sds) * DL + E 120 deg	Seismic 120 deg
(1.2 + 0.2Sds) * DL + E 180 deg	Seismic 180 deg
(1.2 + 0.2Sds) * DL + E 210 deg	Seismic 210 deg
(1.2 + 0.2Sds) * DL + E 240 deg	Seismic 240 deg
(1.2 + 0.2Sds) * DL + E 300 deg	Seismic 300 deg
(1.2 + 0.2Sds) * DL + E 330 deg	Seismic 330 deg
(0.9 - 0.2Sds) * DL + E Normal	Seismic (Reduced DL) Normal
(0.9 - 0.2Sds) * DL + E 60 deg	Seismic (Reduced DL) 60 deg
(0.9 - 0.2Sds) * DL + E 90 deg	Seismic (Reduced DL) 90 deg
(0.9 - 0.2Sds) * DL + E 120 deg	Seismic (Reduced DL) 120 deg
(0.9 - 0.2Sds) * DL + E 180 deg	Seismic (Reduced DL) 180 deg
(0.9 - 0.2Sds) * DL + E 210 deg	Seismic (Reduced DL) 210 deg
(0.9 - 0.2Sds) * DL + E 240 deg	Seismic (Reduced DL) 240 deg
(0.9 - 0.2Sds) * DL + E 300 deg	Seismic (Reduced DL) 300 deg
(0.9 - 0.2Sds) * DL + E 330 deg	Seismic (Reduced DL) 330 deg
1.0D + 1.0W Service Normal	Serviceability - 60 mph Wind Normal
1.0D + 1.0W Service 60 deg	Serviceability - 60 mph Wind 60 deg
1.0D + 1.0W Service 90 deg	Serviceability - 60 mph Wind 90 deg
1.0D + 1.0W Service 120 deg	Serviceability - 60 mph Wind 120 deg
1.0D + 1.0W Service 180 deg	Serviceability - 60 mph Wind 180 deg
1.0D + 1.0W Service 210 deg	Serviceability - 60 mph Wind 210 deg
1.0D + 1.0W Service 240 deg	Serviceability - 60 mph Wind 240 deg
1.0D + 1.0W Service 300 deg	Serviceability - 60 mph Wind 300 deg
1.0D + 1.0W Service 330 deg	Serviceability - 60 mph Wind 330 deg

Tower Loading

Discrete Appurtenance Properties 1.2D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
180.0	5' Omni	1	10	1.0	5.0	2.0	2.0	1.00	1.00	2.0	76.5	28.13	38	12
180.0	8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	736.9	28.22	184	60
180.0	dbSpectra	1	50	3.5	2.6	13.3	11.5	1.00	0.67	1.0	88.8	28.09	89	60
180.0	13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	-6.0	883.9	27.77	147	48
180.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1214.5	28.35	174	48
180.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1214.5	28.35	174	48
180.0	15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	2429.1	28.35	347	96
180.0	Round Side Arm	2	150	5.2	0.0	0.0	0.0	0.90	0.90	0.0	0.0	28.04	321	360
180.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.0	28.04	549	360
166.0	Ericsson Radio 4449	3	74	1.6	1.2	13.2	9.3	0.80	0.50	0.0	0.0	27.40	73	266
166.0	Ericsson AIR 21	3	91	6.1	4.7	12.0	7.9	0.80	0.70	0.0	0.0	27.40	379	328
166.0	Ericsson AIR32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	27.40	413	476
166.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	27.40	809	1080
166.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	27.40	1140	460
159.0	Kathrein Scala 782	3	3	0.1	0.2	4.2	1.8	0.80	0.50	0.0	0.0	27.07	5	10
159.0	Powerwave Allgon	6	5	0.3	0.4	7.9	2.7	0.80	0.50	0.0	0.0	27.07	30	38
159.0	Powerwave Allgon	6	14	1.1	1.2	9.2	2.6	0.80	0.50	0.0	0.0	27.07	97	102
159.0	Raycap DC6-48-60-0-	3	33	1.2	1.9	11.0	11.0	0.80	1.00	0.0	0.0	27.07	105	118
159.0	Ericsson RRUS-11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	27.07	152	180
159.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.67	0.0	0.0	27.07	162	191
159.0	Ericsson RRUS 11 w/	3	72	2.8	1.6	17.0	10.6	0.80	0.67	0.0	0.0	27.07	165	259
159.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.67	0.0	0.0	27.07	196	277
159.0	Powerwave Allgon	3	35	5.5	4.6	11.0	5.0	0.80	0.65	0.0	0.0	27.07	316	126
159.0	CCI HPA-65R-BUU-H8	3	68	13.0	7.7	14.8	7.4	0.80	0.67	0.0	0.0	27.07	768	245
159.0	CCI TPA-65R-	3	82	13.3	8.0	14.4	8.6	0.80	0.69	0.0	0.0	27.07	811	294
159.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	27.07	799	1080
156.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1167.8	27.26	167	48
156.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	26.92	190	180
132.0	Raycap RRFDC-1064-	3	14	1.2	1.1	10.2	8.2	0.80	0.50	0.0	0.0	25.67	49	50
132.0	Alcatel-Lucent B25	3	53	2.1	1.8	12.0	7.2	0.80	0.67	0.0	0.0	25.67	119	191
132.0	Alcatel-Lucent B66A	6	67	2.6	2.2	12.0	7.3	0.80	0.67	0.0	0.0	25.67	290	482
132.0	Amphenol Antel BXA-	3	11	2.9	4.0	6.1	4.1	0.80	0.71	0.0	0.0	25.67	175	38
132.0	48" x 12" x 7" Panel	6	35	5.1	4.0	12.0	7.0	0.80	0.68	0.0	0.0	25.67	578	252
132.0	Swedcom SACP	1	16	5.1	4.7	9.7	6.5	0.80	1.00	0.0	0.0	25.67	142	19
132.0	Amphenol Antel LPA-	2	20	6.1	4.0	15.2	13.1	0.80	0.82	0.0	0.0	25.67	281	48
132.0	Amphenol Antel BXA-	1	17	7.6	5.9	11.2	5.2	0.80	1.00	0.0	0.0	25.67	211	20
132.0	Swedcom SLCP	2	30	10.0	6.4	14.0	11.0	0.80	0.80	0.0	0.0	25.67	446	72
132.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	25.67	758	1080
132.0	VZW Unused	1	1513	122.2	2.2	26.0	26.0	1.00	1.00	0.0	0.0	25.67	4264	1815
125.0	MicroPulse GPS-	1	1	0.1	0.4	3.2	3.2	0.80	1.00	0.0	0.0	25.27	2	1
125.0	Kathrein Scala 800	6	18	3.3	4.5	6.1	2.7	0.80	0.67	0.0	0.0	25.27	370	127
125.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	25.27	1038	1440
50.00	GPS	1	10	1.0	1.0	9.0	6.0	1.00	1.00	0.0	0.0	19.45	26	12
50.00	Stand-Off	1	40	1.6	0.0	0.0	0.0	1.00	1.00	0.0	0.0	19.45	43	48
	Totals	114	10455	748.9									17595	12546

Discrete Appurtenance Properties 0.9D + 1.6W

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
180.0	5' Omni	1	10	1.0	5.0	2.0	2.0	1.00	1.00	2.0	76.5	28.13	38	9
180.0	8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	736.9	28.22	184	45

Tower Loading

180.0	dbSpectra	1	50	3.5	2.6	13.3	11.5	1.00	0.67	1.0	88.8	28.09	89	45
180.0	13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	-6.0	883.9	27.77	147	36
180.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1214.5	28.35	174	36
180.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1214.5	28.35	174	36
180.0	15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	2429.1	28.35	347	72
180.0	Round Side Arm	2	150	5.2	0.0	0.0	0.0	0.90	0.90	0.0	0.0	28.04	321	270
180.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.0	28.04	549	270
166.0	Ericsson Radio 4449	3	74	1.6	1.2	13.2	9.3	0.80	0.50	0.0	0.0	27.40	73	200
166.0	Ericsson AIR 21	3	91	6.1	4.7	12.0	7.9	0.80	0.70	0.0	0.0	27.40	379	246
166.0	Ericsson AIR32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	27.40	413	357
166.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	27.40	809	810
166.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	27.40	1140	345
159.0	Kathrein Scala 782	3	3	0.1	0.2	4.2	1.8	0.80	0.50	0.0	0.0	27.07	5	8
159.0	Powerwave Allgon	6	5	0.3	0.4	7.9	2.7	0.80	0.50	0.0	0.0	27.07	30	29
159.0	Powerwave Allgon	6	14	1.1	1.2	9.2	2.6	0.80	0.50	0.0	0.0	27.07	97	76
159.0	Raycap DC6-48-60-0-	3	33	1.2	1.9	11.0	11.0	0.80	1.00	0.0	0.0	27.07	105	89
159.0	Ericsson RRUS-11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	27.07	152	135
159.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.67	0.0	0.0	27.07	162	143
159.0	Ericsson RRUS 11 w/	3	72	2.8	1.6	17.0	10.6	0.80	0.67	0.0	0.0	27.07	165	194
159.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.67	0.0	0.0	27.07	196	208
159.0	Powerwave Allgon	3	35	5.5	4.6	11.0	5.0	0.80	0.65	0.0	0.0	27.07	316	95
159.0	CCI HPA-65R-BUU-H8	3	68	13.0	7.7	14.8	7.4	0.80	0.67	0.0	0.0	27.07	768	184
159.0	CCI TPA-65R-	3	82	13.3	8.0	14.4	8.6	0.80	0.69	0.0	0.0	27.07	811	220
159.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	27.07	799	810
156.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	1167.8	27.26	167	36
156.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	26.92	190	135
132.0	Raycap RRFDC-1064-	3	14	1.2	1.1	10.2	8.2	0.80	0.50	0.0	0.0	25.67	49	38
132.0	Alcatel-Lucent B25	3	53	2.1	1.8	12.0	7.2	0.80	0.67	0.0	0.0	25.67	119	143
132.0	Alcatel-Lucent B66A	6	67	2.6	2.2	12.0	7.3	0.80	0.67	0.0	0.0	25.67	290	362
132.0	Amphenol Antel BXA-	3	11	2.9	4.0	6.1	4.1	0.80	0.71	0.0	0.0	25.67	175	28
132.0	48" x 12" x 7" Panel	6	35	5.1	4.0	12.0	7.0	0.80	0.68	0.0	0.0	25.67	578	189
132.0	Swedcom SACP	1	16	5.1	4.7	9.7	6.5	0.80	1.00	0.0	0.0	25.67	142	14
132.0	Amphenol Antel LPA-	2	20	6.1	4.0	15.2	13.1	0.80	0.82	0.0	0.0	25.67	281	36
132.0	Amphenol Antel BXA-	1	17	7.6	5.9	11.2	5.2	0.80	1.00	0.0	0.0	25.67	211	15
132.0	Swedcom SLCP	2	30	10.0	6.4	14.0	11.0	0.80	0.80	0.0	0.0	25.67	446	54
132.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	25.67	758	810
132.0	VZW Unused	1	1513	122.2	2.2	26.0	26.0	1.00	1.00	0.0	0.0	25.67	4264	1361
125.0	MicroPulse GPS-	1	1	0.1	0.4	3.2	3.2	0.80	1.00	0.0	0.0	25.27	2	1
125.0	Kathrein Scala 800	6	18	3.3	4.5	6.1	2.7	0.80	0.67	0.0	0.0	25.27	370	95
125.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	25.27	1038	1080
50.00	GPS	1	10	1.0	1.0	9.0	6.0	1.00	1.00	0.0	0.0	19.45	26	9
50.00	Stand-Off	1	40	1.6	0.0	0.0	0.0	1.00	1.00	0.0	0.0	19.45	43	36
	Totals	114	10455	748.9									17595	9409

Discrete Appurtenance Properties 1.2D + 1.0Di + 1.0Wi

Elevation (ft)	Description	Qty	Ice Wt (lb)	Ice EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
180.0	5' Omni	1	65	2.2	5.0	2.0	2.0	1.00	1.00	2.0	23.8	6.38	12	67
180.0	8' Omni	2	135	4.4	8.0	3.0	3.0	1.00	1.00	4.0	193.2	6.40	48	279
180.0	dbSpectra	1	85	5.9	2.6	13.3	11.5	1.00	0.67	1.0	21.5	6.37	21	95
180.0	13' Omni	1	162	9.2	13.0	3.0	3.0	1.00	1.00	-6.0	296.2	6.30	49	170
180.0	15' Omni	1	241	10.0	15.0	3.0	3.0	1.00	1.00	7.0	382.3	6.43	55	249
180.0	15' Omni	1	241	10.0	15.0	3.0	3.0	1.00	1.00	7.0	382.3	6.43	55	249
180.0	15' Omni	2	241	10.0	15.0	3.0	3.0	1.00	1.00	7.0	764.6	6.43	109	499
180.0	Round Side Arm	2	224	8.0	0.0	0.0	0.0	0.90	0.90	0.0	0.0	6.36	70	508

Tower Loading

180.0	Round Sector Frame	1	673	31.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.36	169	733
166.0	Ericsson Radio 4449	3	143	2.2	1.2	13.2	9.3	0.80	0.50	0.0	0.0	6.21	14	473
166.0	Ericsson AIR 21	3	262	7.2	4.7	12.0	7.9	0.80	0.70	0.0	0.0	6.21	64	840
166.0	Ericsson AIR32	3	318	7.7	4.7	12.9	8.7	0.80	0.71	0.0	0.0	6.21	69	1034
166.0	Round Sector Frame	3	673	31.2	0.0	0.0	0.0	0.75	0.67	0.0	0.0	6.21	248	2200
166.0	RFS	3	564	22.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	6.21	177	1770
159.0	Kathrein Scala 782	3	11	0.3	0.2	4.2	1.8	0.80	0.50	0.0	0.0	6.14	2	34
159.0	Powerwave Allgon	6	9	0.6	0.4	7.9	2.7	0.80	0.50	0.0	0.0	6.14	7	60
159.0	Powerwave Allgon	6	24	1.9	1.2	9.2	2.6	0.80	0.50	0.0	0.0	6.14	23	161
159.0	Raycap DC6-48-60-0-	3	121	2.7	1.9	11.0	11.0	0.80	1.00	0.0	0.0	6.14	33	382
159.0	Ericsson RRUS-11	3	131	3.2	1.5	17.3	7.2	0.80	0.67	0.0	0.0	6.14	27	424
159.0	Ericsson RRUS 32 B2	3	141	3.5	2.3	12.1	7.0	0.80	0.67	0.0	0.0	6.14	29	455
159.0	Ericsson RRUS 11 w/	3	174	3.5	1.6	17.0	10.6	0.80	0.67	0.0	0.0	6.14	29	565
159.0	Ericsson RRUS-32	3	174	4.6	2.5	13.3	9.5	0.80	0.67	0.0	0.0	6.14	39	570
159.0	Powerwave Allgon	3	170	6.6	4.6	11.0	5.0	0.80	0.65	0.0	0.0	6.14	53	532
159.0	CCI HPA-65R-BUU-H8	3	359	14.6	7.7	14.8	7.4	0.80	0.67	0.0	0.0	6.14	122	1118
159.0	CCI TPA-65R-	3	394	14.9	8.0	14.4	8.6	0.80	0.69	0.0	0.0	6.14	129	1230
159.0	Round Sector Frame	3	669	31.0	0.0	0.0	0.0	0.75	0.67	0.0	0.0	6.14	244	2186
156.0	15' Omni	1	238	9.9	15.0	3.0	3.0	1.00	1.00	7.0	365.0	6.18	52	246
156.0	Round Side Arm	1	223	7.9	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.10	41	253
132.0	Raycap RRFDC-1064-	3	65	1.6	1.1	10.2	8.2	0.80	0.50	0.0	0.0	5.82	10	203
132.0	Alcatel-Lucent B25	3	125	2.7	1.8	12.0	7.2	0.80	0.67	0.0	0.0	5.82	22	407
132.0	Alcatel-Lucent B66A	6	151	3.3	2.2	12.0	7.3	0.80	0.67	0.0	0.0	5.82	52	986
132.0	Amphenol Antel BXA-	3	92	3.8	4.0	6.1	4.1	0.80	0.71	0.0	0.0	5.82	32	283
132.0	48" x 12" x 7" Panel	6	173	6.0	4.0	12.0	7.0	0.80	0.68	0.0	0.0	5.82	97	1081
132.0	Swedcom SACP	1	153	6.1	4.7	9.7	6.5	0.80	1.00	0.0	0.0	5.82	24	157
132.0	Amphenol Antel LPA-	2	222	7.2	4.0	15.2	13.1	0.80	0.82	0.0	0.0	5.82	47	452
132.0	Amphenol Antel BXA-	1	188	8.8	5.9	11.2	5.2	0.80	1.00	0.0	0.0	5.82	35	192
132.0	Swedcom SLCP	2	302	11.4	6.4	14.0	11.0	0.80	0.80	0.0	0.0	5.82	72	617
132.0	Round Sector Frame	3	663	30.8	0.0	0.0	0.0	0.75	0.67	0.0	0.0	5.82	229	2170
132.0	VZW Unused	1	2553	206.2	2.2	26.0	26.0	1.00	1.00	0.0	0.0	5.82	1020	2856
125.0	MicroPulse GPS-	1	11	0.3	0.4	3.2	3.2	0.80	1.00	0.0	0.0	5.73	1	11
125.0	Kathrein Scala 800	6	98	4.3	4.5	6.1	2.7	0.80	0.67	0.0	0.0	5.73	67	608
125.0	Flat Light Sector	3	697	32.8	0.0	0.0	0.0	0.75	0.75	0.0	0.0	5.73	270	2332
50.00	GPS	1	43	0.9	1.0	9.0	6.0	1.00	1.00	0.0	0.0	4.41	3	45
50.00	Stand-Off	1	82	2.6	0.0	0.0	0.0	1.00	1.00	0.0	0.0	4.41	10	90
	Totals	114	27781	1170.0									3982	29872

Discrete Appurtenance Properties 1.0D + 1.0W Service

Elevation (ft)	Description	Qty	Wt. (lb)	EPA (sf)	Length (ft)	Width (in)	Depth (in)	K_a	Orient. Factor	Vert. Ecc.(ft)	M_u (lb-ft)	Q_z (psf)	F_a (WL) (lb)	P_a (DL) (lb)
180.0	5' Omni	1	10	1.0	5.0	2.0	2.0	1.00	1.00	2.0	15.6	9.19	8	10
180.0	8' Omni	2	25	2.4	8.0	3.0	3.0	1.00	1.00	4.0	150.4	9.21	38	50
180.0	dbSpectra	1	50	3.5	2.6	13.3	11.5	1.00	0.67	1.0	18.1	9.17	18	50
180.0	13' Omni	1	40	3.9	13.0	3.0	3.0	1.00	1.00	-6.0	180.4	9.07	30	40
180.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	247.9	9.26	35	40
180.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	247.9	9.26	35	40
180.0	15' Omni	2	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	495.7	9.26	71	80
180.0	Round Side Arm	2	150	5.2	0.0	0.0	0.0	0.90	0.90	0.0	0.0	9.16	66	300
180.0	Round Sector Frame	1	300	14.4	0.0	0.0	0.0	1.00	1.00	0.0	0.0	9.16	112	300
166.0	Ericsson Radio 4449	3	74	1.6	1.2	13.2	9.3	0.80	0.50	0.0	0.0	8.95	15	222
166.0	Ericsson AIR 21	3	91	6.1	4.7	12.0	7.9	0.80	0.70	0.0	0.0	8.95	77	273
166.0	Ericsson AIR32	3	132	6.5	4.7	12.9	8.7	0.80	0.71	0.0	0.0	8.95	84	397
166.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	8.95	165	900
166.0	RFS	3	128	20.2	8.0	24.0	8.7	0.80	0.63	0.0	0.0	8.95	233	384

Site Number: 411183 Code: ANSI/TIA-222-G

Site Name: WATERFORD CT, CT Engineering Number: 12605190_C3_01 11/5/2018 3:56:08 PM

Customer: T-Mobile

Tower Loading

159.0	Kathrein Scala 782	3	3	0.1	0.2	4.2	1.8	0.80	0.50	0.0	0.0	8.84	1	9
159.0	Powerwave Allgon	6	5	0.3	0.4	7.9	2.7	0.80	0.50	0.0	0.0	8.84	6	32
159.0	Powerwave Allgon	6	14	1.1	1.2	9.2	2.6	0.80	0.50	0.0	0.0	8.84	20	85
159.0	Raycap DC6-48-60-0-	3	33	1.2	1.9	11.0	11.0	0.80	1.00	0.0	0.0	8.84	21	98
159.0	Ericsson RRUS-11	3	50	2.6	1.5	17.3	7.2	0.80	0.67	0.0	0.0	8.84	31	150
159.0	Ericsson RRUS 32 B2	3	53	2.7	2.3	12.1	7.0	0.80	0.67	0.0	0.0	8.84	33	159
159.0	Ericsson RRUS 11 w/	3	72	2.8	1.6	17.0	10.6	0.80	0.67	0.0	0.0	8.84	34	216
159.0	Ericsson RRUS-32	3	77	3.3	2.5	13.3	9.5	0.80	0.67	0.0	0.0	8.84	40	231
159.0	Powerwave Allgon	3	35	5.5	4.6	11.0	5.0	0.80	0.65	0.0	0.0	8.84	65	105
159.0	CCI HPA-65R-BUU-H8	3	68	13.0	7.7	14.8	7.4	0.80	0.67	0.0	0.0	8.84	157	204
159.0	CCI TPA-65R-	3	82	13.3	8.0	14.4	8.6	0.80	0.69	0.0	0.0	8.84	165	245
159.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	8.84	163	900
156.0	15' Omni	1	40	4.5	15.0	3.0	3.0	1.00	1.00	7.0	238.3	8.90	34	40
156.0	Round Side Arm	1	150	5.2	0.0	0.0	0.0	1.00	1.00	0.0	0.0	8.79	39	150
132.0	Raycap RRFDC-1064-	3	14	1.2	1.1	10.2	8.2	0.80	0.50	0.0	0.0	8.38	10	42
132.0	Alcatel-Lucent B25	3	53	2.1	1.8	12.0	7.2	0.80	0.67	0.0	0.0	8.38	24	159
132.0	Alcatel-Lucent B66A	6	67	2.6	2.2	12.0	7.3	0.80	0.67	0.0	0.0	8.38	59	402
132.0	Amphenol Antel BXA-	3	11	2.9	4.0	6.1	4.1	0.80	0.71	0.0	0.0	8.38	36	32
132.0	48" x 12" x 7" Panel	6	35	5.1	4.0	12.0	7.0	0.80	0.68	0.0	0.0	8.38	118	210
132.0	Swedcom SACP	1	16	5.1	4.7	9.7	6.5	0.80	1.00	0.0	0.0	8.38	29	16
132.0	Amphenol Antel LPA-	2	20	6.1	4.0	15.2	13.1	0.80	0.82	0.0	0.0	8.38	57	40
132.0	Amphenol Antel BXA-	1	17	7.6	5.9	11.2	5.2	0.80	1.00	0.0	0.0	8.38	43	17
132.0	Swedcom SLCP	2	30	10.0	6.4	14.0	11.0	0.80	0.80	0.0	0.0	8.38	91	60
132.0	Round Sector Frame	3	300	14.4	0.0	0.0	0.0	0.75	0.67	0.0	0.0	8.38	155	900
132.0	VZW Unused	1	1513	122.2	2.2	26.0	26.0	1.00	1.00	0.0	0.0	8.38	870	1513
125.0	MicroPulse GPS-	1	1	0.1	0.4	3.2	3.2	0.80	1.00	0.0	0.0	8.25	1	1
125.0	Kathrein Scala 800	6	18	3.3	4.5	6.1	2.7	0.80	0.67	0.0	0.0	8.25	76	106
125.0	Flat Light Sector	3	400	17.9	0.0	0.0	0.0	0.75	0.75	0.0	0.0	8.25	212	1200
50.00	GPS	1	10	1.0	1.0	9.0	6.0	1.00	1.00	0.0	0.0	6.35	5	10
50.00	Stand-Off	1	40	1.6	0.0	0.0	0.0	1.00	1.00	0.0	0.0	6.35	9	40
	Totals	114	10455	748.9									3591	10455

Tower Loading

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Description	Qty	Width (in)	Weight (lb/ft)	Pct In Block	Spread On Faces	Bundling Arrangement	Cluster Dia (in)	Out Of Zone	Spacing (in)	Orientation Factor	Ka Override
0.00	180.0	Waveguide	1	2.00	6.00	0	3	Individual	0.00	N	1.00	1.00	0.00
30.00	180.0	7/8" Coax	7	1.09	0.33	0	1	Cluster	3.22	N	0.00	1.00	0.00
30.00	180.0	Waveguide	1	2.00	6.00	0	1	Individual	0.00	N	1.00	1.00	0.00
0.00	166.0	Waveguide	1	2.00	6.00	0	1	Individual	0.00	N	1.00	1.00	0.00
30.00	166.0	1 1/4" Hybriflex	2	1.54	1.00	0	Lin App	Individual	0.00	N	1.00	1.00	0.01
30.00	166.0	1 5/8" Coax	12	1.98	14.7	50	1	Block	0.00	N	0.50	1.00	0.00
30.00	166.0	1 5/8" Hybriflex	1	1.98	1.30	0	Lin App	Individual	0.00	N	1.00	1.00	0.00
30.00	159.0	0.39" Fiber Trunk	3	0.39	0.06	0	2	Individual	0.00	N	1.00	1.00	0.01
30.00	159.0	0.78" 8 AWG 6	6	0.78	1.18	0	2	Individual	0.00	N	1.00	1.00	0.01
30.00	159.0	1 5/8" Coax	12	1.98	9.84	50	2	Block	0.00	N	0.50	1.00	0.00
30.00	159.0	3" Conduit	1	3.50	7.58	0	2	Individual	0.00	N	1.00	1.00	0.01
30.00	159.0	Waveguide	1	2.00	6.00	0	2	Individual	0.00	N	1.00	1.00	0.00
30.00	156.0	1 5/8" Coax	1	1.98	0.82	0	1	Individual	0.00	N	1.00	1.00	0.01
30.00	132.0	1 1/4" Hybriflex	3	1.54	3.00	0	1	Individual	0.00	N	1.00	1.00	0.01
30.00	132.0	1 5/8" Coax	18	1.98	14.7	33	1	Block	0.00	N	0.50	1.00	0.00
30.00	50.00	1/2" Coax	1	0.63	0.15	0	1	Individual	0.00	N	1.00	1.00	0.01

Equivalent Lateral Force Method

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

Spectral Response Acceleration for Short Period (S_s):	0.16
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Long-Period Transition Period (T_L - Seconds):	6
Importance Factor (I_e):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v:	2.40
Response Modification Coefficient (R):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.17
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.09
Seismic Response Coefficient (C_s):	0.04
Upper Limit C_s:	0.04
Lower Limit C_s:	0.03
Period based on Rayleigh Method (sec):	0.81
Redundancy Factor (p):	1.30
Seismic Force Distribution Exponent (k):	1.15
Total Unfactored Dead Load:	124.04 k
Seismic Base Shear (E):	6.26 k

LoadCase (1.2 + 0.2Sds) * DL + E Seismic

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
9	170.00	2,695	1,015,46	0.046	287	3,327
8	150.00	8,569	2,794,42	0.126	789	10,580
7	130.00	12,570	3,474,70	0.157	981	15,521
6	110.00	15,526	3,538,86	0.159	999	19,171
5	90.00	17,048	3,081,83	0.139	870	21,050
4	70.00	18,053	2,441,28	0.110	689	22,291
3	50.00	18,292	1,677,15	0.076	474	22,587
2	30.00	13,293	675,592	0.030	191	16,414
1	10.00	7,543	107,776	0.005	30	9,313
5' Omni	180.00	10	4,026	0.000	1	12
8' Omni	180.00	50	20,128	0.001	6	62
dbSpectra ATS4TMA4-4	180.00	50	20,128	0.001	6	62
13' Omni	180.00	40	16,102	0.001	5	49
15' Omni	180.00	40	16,102	0.001	5	49
15' Omni	180.00	40	16,102	0.001	5	49
15' Omni	180.00	80	32,205	0.001	9	99
Round Side Arm	180.00	300	120,768	0.005	34	370
Round Sector Frame	180.00	300	120,768	0.005	34	370
Ericsson Radio 4449 B12,B71	166.00	222	81,390	0.004	23	274
Ericsson AIR 21	166.00	273	100,087	0.005	28	337
Ericsson AIR32 B66Aa/B2a	166.00	397	145,401	0.007	41	490
Round Sector Frame	166.00	900	329,958	0.015	93	1,111
RFS APXVAARR24_43-U-NA20	166.00	384	140,672	0.006	40	474

Equivalent Lateral Force Method

Kathrein Scala 782 10253	159.00	9	3,035	0.000	1	11
Powerwave Allgon LGP13519	159.00	32	11,093	0.000	3	39
Powerwave Allgon LGP21401	159.00	85	29,510	0.001	8	104
Raycap DC6-48-60-0-8F	159.00	98	34,324	0.002	10	122
Ericsson RRUS-11 (50 lbs.)	159.00	150	52,323	0.002	15	185
Ericsson RRUS 32 B2	159.00	159	55,463	0.002	16	196
Ericsson RRUS 11 w/ RRUS A2	159.00	216	75,346	0.003	21	267
Ericsson RRUS-32 (77 lbs)	159.00	231	80,578	0.004	23	285
Powerwave Allgon 7770.00	159.00	105	36,626	0.002	10	130
CCI HPA-65R-BUU-H8	159.00	204	71,160	0.003	20	252
CCI TPA-65R-LCUUUU-H8	159.00	245	85,392	0.004	24	302
Round Sector Frame	159.00	900	313,941	0.014	89	1,111
15' Omni	156.00	40	13,649	0.001	4	49
Round Side Arm	156.00	150	51,185	0.002	14	185
Raycap RRFDC-1064-PF-48	132.00	42	11,817	0.001	3	52
Alcatel-Lucent B25 RRH4x30	132.00	159	44,735	0.002	13	196
Alcatel-Lucent B66A RRH 4x45	132.00	402	113,105	0.005	32	496
Amphenol Antel BXA-171063-8CF-EDIN-X	132.00	32	8,863	0.000	3	39
48" x 12" x 7" Panel	132.00	210	59,085	0.003	17	259
Swedcom SACP 2x5516	132.00	16	4,502	0.000	1	20
Amphenol Antel LPA-80063-4CF-EDIN-X	132.00	40	11,254	0.001	3	49
Amphenol Antel BXA-70063-6CF-EDIN-2	132.00	17	4,783	0.000	1	21
Swedcom SLCP 2x6015	132.00	60	16,881	0.001	5	74
Round Sector Frame	132.00	900	253,219	0.011	71	1,111
VZW Unused Reserve: 17,576 sq in	132.00	1,513	425,549	0.019	120	1,868
MicroPulse GPS-QBW-26N	125.00	1	159	0.000	0	1
Kathrein Scala 800 10504	125.00	106	27,899	0.001	8	130
Flat Light Sector Frame	125.00	1,200	317,033	0.014	90	1,482
GPS	50.00	10	917	0.000	0	12
Stand-Off	50.00	40	3,667	0.000	1	49
		124,042	22,188,032	1.000	6,264	153,164

LoadCase (0.9 - 0.2Sds) * DL + E Seismic (Reduced DL)

Section	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
9	170.00	2,695	1,015,46	0.046	287	2,331
8	150.00	8,569	2,794,42	0.126	789	7,414
7	130.00	12,570	3,474,70	0.157	981	10,876
6	110.00	15,526	3,538,86	0.159	999	13,434
5	90.00	17,048	3,081,83	0.139	870	14,750
4	70.00	18,053	2,441,28	0.110	689	15,620
3	50.00	18,292	1,677,15	0.076	474	15,827
2	30.00	13,293	675,592	0.030	191	11,501
1	10.00	7,543	107,776	0.005	30	6,526
5' Omni	180.00	10	4,026	0.000	1	9
8' Omni	180.00	50	20,128	0.001	6	43
dbSpectra ATS4TMA4-4	180.00	50	20,128	0.001	6	43
13' Omni	180.00	40	16,102	0.001	5	35
15' Omni	180.00	40	16,102	0.001	5	35
15' Omni	180.00	40	16,102	0.001	5	35
15' Omni	180.00	80	32,205	0.001	9	69
Round Side Arm	180.00	300	120,768	0.005	34	260
Round Sector Frame	180.00	300	120,768	0.005	34	260

Equivalent Lateral Force Method

Ericsson Radio 4449 B12,B71	166.00	222	81,390	0.004	23	192
Ericsson AIR 21	166.00	273	100,087	0.005	28	236
Ericsson AIR32 B66Aa/B2a	166.00	397	145,401	0.007	41	343
Round Sector Frame	166.00	900	329,958	0.015	93	779
RFS APXVAARR24_43-U-NA20	166.00	384	140,672	0.006	40	332
Kathrein Scala 782 10253	159.00	9	3,035	0.000	1	8
Powerwave Allgon LGP13519	159.00	32	11,093	0.000	3	28
Powerwave Allgon LGP21401	159.00	85	29,510	0.001	8	73
Raycap DC6-48-60-0-8F	159.00	98	34,324	0.002	10	85
Ericsson RRUS-11 (50 lbs.)	159.00	150	52,323	0.002	15	130
Ericsson RRUS 32 B2	159.00	159	55,463	0.002	16	138
Ericsson RRUS 11 w/ RRUS A2	159.00	216	75,346	0.003	21	187
Ericsson RRUS-32 (77 lbs)	159.00	231	80,578	0.004	23	200
Powerwave Allgon 7770.00	159.00	105	36,626	0.002	10	91
CCI HPA-65R-BUU-H8	159.00	204	71,160	0.003	20	177
CCI TPA-65R-LCUUUU-H8	159.00	245	85,392	0.004	24	212
Round Sector Frame	159.00	900	313,941	0.014	89	779
15' Omni	156.00	40	13,649	0.001	4	35
Round Side Arm	156.00	150	51,185	0.002	14	130
Raycap RRFDC-1064-PF-48	132.00	42	11,817	0.001	3	36
Alcatel-Lucent B25 RRH4x30	132.00	159	44,735	0.002	13	138
Alcatel-Lucent B66A RRH 4x45	132.00	402	113,105	0.005	32	348
Amphenol Antel BXA-171063-8CF-EDIN-X	132.00	32	8,863	0.000	3	27
48" x 12" x 7" Panel	132.00	210	59,085	0.003	17	182
Swedcom SACP 2x5516	132.00	16	4,502	0.000	1	14
Amphenol Antel LPA-80063-4CF-EDIN-X	132.00	40	11,254	0.001	3	35
Amphenol Antel BXA-70063-6CF-EDIN-2	132.00	17	4,783	0.000	1	15
Swedcom SLCP 2x6015	132.00	60	16,881	0.001	5	52
Round Sector Frame	132.00	900	253,219	0.011	71	779
VZW Unused Reserve: 17,576 sq in	132.00	1,513	425,549	0.019	120	1,309
MicroPulse GPS-QBW-26N	125.00	1	159	0.000	0	1
Kathrein Scala 800 10504	125.00	106	27,899	0.001	8	91
Flat Light Sector Frame	125.00	1,200	317,033	0.014	90	1,038
GPS	50.00	10	917	0.000	0	9
Stand-Off	50.00	40	3,667	0.000	1	35
		124,042	22,188,032	1.000	6,264	107,324

Equivalent Modal Analysis Method

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

Spectral Response Acceleration for Short Period (S_s):	0.16
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):	3.00
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.17
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.09
Period Based on Rayleigh Method (sec):	0.81
Redundancy Factor (p):	1.30

LoadCase (1.2 + 0.2Sds) * DL + E Seismic

Section	Height Above Base (ft)	Weight (lb)	a	b	c	S_{az}	Horizontal Force (lb)	Vertical Force (lb)
9	170.00	2,695	1.686	1.069	0.793	0.285	333	3,327
8	150.00	8,569	1.312	0.138	0.347	0.142	527	10,580
7	130.00	12,570	0.986	-0.113	0.124	0.076	412	15,521
6	110.00	15,526	0.706	-0.089	0.031	0.057	386	19,171
5	90.00	17,048	0.472	-0.006	0.006	0.053	392	21,050
4	70.00	18,053	0.286	0.048	0.013	0.045	353	22,291
3	50.00	18,292	0.146	0.068	0.031	0.034	266	22,587
2	30.00	13,293	0.053	0.071	0.042	0.024	136	16,414
1	10.00	7,543	0.006	0.047	0.027	0.012	41	9,313
5' Omni	180.00	10	1.890	1.980	1.140	0.390	2	12
8' Omni	180.00	50	1.890	1.980	1.140	0.390	8	62
dbSpectra ATS4TMA4-4	180.00	50	1.890	1.980	1.140	0.390	8	62
13' Omni	180.00	40	1.890	1.980	1.140	0.390	7	49
15' Omni	180.00	40	1.890	1.980	1.140	0.390	7	49
15' Omni	180.00	40	1.890	1.980	1.140	0.390	7	49
15' Omni	180.00	80	1.890	1.980	1.140	0.390	14	99
Round Side Arm	180.00	300	1.890	1.980	1.140	0.390	51	370
Round Sector Frame	180.00	300	1.890	1.980	1.140	0.390	51	370
Ericsson Radio 4449 B12,B71	166.00	222	1.607	0.802	0.680	0.249	24	274
Ericsson AIR 21	166.00	273	1.607	0.802	0.680	0.249	29	337
Ericsson AIR32 B66Aa/B2a	166.00	397	1.607	0.802	0.680	0.249	43	490
Round Sector Frame	166.00	900	1.607	0.802	0.680	0.249	97	1,111
RFS APXVAARR24_43-U-NA20	166.00	384	1.607	0.802	0.680	0.249	41	474
Kathrein Scala 782 10253	159.00	9	1.475	0.441	0.513	0.196	1	11
Powerwave Allgon LGP13519	159.00	32	1.475	0.441	0.513	0.196	3	39
Powerwave Allgon LGP21401	159.00	85	1.475	0.441	0.513	0.196	7	104
Raycap DC6-48-60-0-8F	159.00	98	1.475	0.441	0.513	0.196	8	122
Ericsson RRUS-11 (50 lbs.)	159.00	150	1.475	0.441	0.513	0.196	13	185
Ericsson RRUS 32 B2	159.00	159	1.475	0.441	0.513	0.196	13	196
Ericsson RRUS 11 w/ RRUS A2	159.00	216	1.475	0.441	0.513	0.196	18	267
Ericsson RRUS-32 (77 lbs)	159.00	231	1.475	0.441	0.513	0.196	20	285
Powerwave Allgon 7770.00	159.00	105	1.475	0.441	0.513	0.196	9	130
CCI HPA-65R-BUU-H8	159.00	204	1.475	0.441	0.513	0.196	17	252
CCI TPA-65R-LCUUUU-H8	159.00	245	1.475	0.441	0.513	0.196	21	302
Round Sector Frame	159.00	900	1.475	0.441	0.513	0.196	76	1,111
15' Omni	156.00	40	1.420	0.322	0.452	0.176	3	49
Round Side Arm	156.00	150	1.420	0.322	0.452	0.176	11	185
Raycap RRFDC-1064-PF-48	132.00	42	1.016	-0.105	0.140	0.080	1	52

Equivalent Modal Analysis Method

Alcatel-Lucent B25 RRH4x30	132.00	159	1.016	-0.105	0.140	0.080	5	196
Alcatel-Lucent B66A RRH 4x45	132.00	402	1.016	-0.105	0.140	0.080	14	496
Amphenol Antel BXA-171063-	132.00	32	1.016	-0.105	0.140	0.080	1	39
48" x 12" x 7" Panel	132.00	210	1.016	-0.105	0.140	0.080	7	259
Swedcom SACP 2x5516	132.00	16	1.016	-0.105	0.140	0.080	1	20
Amphenol Antel LPA-80063-4CF-	132.00	40	1.016	-0.105	0.140	0.080	1	49
Amphenol Antel BXA-70063-6CF-	132.00	17	1.016	-0.105	0.140	0.080	1	21
Swedcom SLCP 2x6015	132.00	60	1.016	-0.105	0.140	0.080	2	74
Round Sector Frame	132.00	900	1.016	-0.105	0.140	0.080	31	1,111
VZW Unused Reserve: 17,576 sq	132.00	1,513	1.016	-0.105	0.140	0.080	52	1,868
MicroPulse GPS-QBW-26N	125.00	1	0.911	-0.122	0.092	0.068	0	1
Kathrein Scala 800 10504	125.00	106	0.911	-0.122	0.092	0.068	3	130
Flat Light Sector Frame	125.00	1,200	0.911	-0.122	0.092	0.068	35	1,482
GPS	50.00	10	0.146	0.068	0.031	0.034	0	12
Stand-Off	50.00	40	0.146	0.068	0.031	0.034	1	49
		124,042	65.442	27.607	24.011	9.330	3,611	153,164

LoadCase (0.9 - 0.2Sds) * DL + E Seismic (Reduced DL)

Section	Height Above Base (ft)	Weight (lb)	a	b	c	S_{az}	Horizontal Force (lb)	Vertical Force (lb)
9	170.00	2,695	1.686	1.069	0.793	0.285	333	2,331
8	150.00	8,569	1.312	0.138	0.347	0.142	527	7,414
7	130.00	12,570	0.986	-0.113	0.124	0.076	412	10,876
6	110.00	15,526	0.706	-0.089	0.031	0.057	386	13,434
5	90.00	17,048	0.472	-0.006	0.006	0.053	392	14,750
4	70.00	18,053	0.286	0.048	0.013	0.045	353	15,620
3	50.00	18,292	0.146	0.068	0.031	0.034	266	15,827
2	30.00	13,293	0.053	0.071	0.042	0.024	136	11,501
1	10.00	7,543	0.006	0.047	0.027	0.012	41	6,526
5' Omni	180.00	10	1.890	1.980	1.140	0.390	2	9
8' Omni	180.00	50	1.890	1.980	1.140	0.390	8	43
dbSpectra ATS4TMA4-4	180.00	50	1.890	1.980	1.140	0.390	8	43
13' Omni	180.00	40	1.890	1.980	1.140	0.390	7	35
15' Omni	180.00	40	1.890	1.980	1.140	0.390	7	35
15' Omni	180.00	40	1.890	1.980	1.140	0.390	7	35
15' Omni	180.00	80	1.890	1.980	1.140	0.390	14	69
Round Side Arm	180.00	300	1.890	1.980	1.140	0.390	51	260
Round Sector Frame	180.00	300	1.890	1.980	1.140	0.390	51	260
Ericsson Radio 4449 B12,B71	166.00	222	1.607	0.802	0.680	0.249	24	192
Ericsson AIR 21	166.00	273	1.607	0.802	0.680	0.249	29	236
Ericsson AIR32 B66Aa/B2a	166.00	397	1.607	0.802	0.680	0.249	43	343
Round Sector Frame	166.00	900	1.607	0.802	0.680	0.249	97	779
RFS APXVAARR24_43-U-NA20	166.00	384	1.607	0.802	0.680	0.249	41	332
Kathrein Scala 782 10253	159.00	9	1.475	0.441	0.513	0.196	1	8
Powerwave Allgon LGP13519	159.00	32	1.475	0.441	0.513	0.196	3	28
Powerwave Allgon LGP21401	159.00	85	1.475	0.441	0.513	0.196	7	73
Raycap DC6-48-60-0-8F	159.00	98	1.475	0.441	0.513	0.196	8	85
Ericsson RRUS-11 (50 lbs.)	159.00	150	1.475	0.441	0.513	0.196	13	130
Ericsson RRUS 32 B2	159.00	159	1.475	0.441	0.513	0.196	13	138
Ericsson RRUS 11 w/ RRUS A2	159.00	216	1.475	0.441	0.513	0.196	18	187
Ericsson RRUS-32 (77 lbs)	159.00	231	1.475	0.441	0.513	0.196	20	200
Powerwave Allgon 7770.00	159.00	105	1.475	0.441	0.513	0.196	9	91
CCI HPA-65R-BUU-H8	159.00	204	1.475	0.441	0.513	0.196	17	177
CCI TPA-65R-LCUUUU-H8	159.00	245	1.475	0.441	0.513	0.196	21	212
Round Sector Frame	159.00	900	1.475	0.441	0.513	0.196	76	779
15' Omni	156.00	40	1.420	0.322	0.452	0.176	3	35
Round Side Arm	156.00	150	1.420	0.322	0.452	0.176	11	130
Raycap RRFDC-1064-PF-48	132.00	42	1.016	-0.105	0.140	0.080	1	36
Alcatel-Lucent B25 RRH4x30	132.00	159	1.016	-0.105	0.140	0.080	5	138
Alcatel-Lucent B66A RRH 4x45	132.00	402	1.016	-0.105	0.140	0.080	14	348
Amphenol Antel BXA-171063-	132.00	32	1.016	-0.105	0.140	0.080	1	27
48" x 12" x 7" Panel	132.00	210	1.016	-0.105	0.140	0.080	7	182

Equivalent Modal Analysis Method

Swedcom SACP 2x5516	132.00	16	1.016	-0.105	0.140	0.080	1	14
Amphenol Antel LPA-80063-4CF-	132.00	40	1.016	-0.105	0.140	0.080	1	35
Amphenol Antel BXA-70063-6CF-	132.00	17	1.016	-0.105	0.140	0.080	1	15
Swedcom SLCP 2x6015	132.00	60	1.016	-0.105	0.140	0.080	2	52
Round Sector Frame	132.00	900	1.016	-0.105	0.140	0.080	31	779
VZW Unused Reserve: 17,576 sq	132.00	1,513	1.016	-0.105	0.140	0.080	52	1,309
MicroPulse GPS-QBW-26N	125.00	1	0.911	-0.122	0.092	0.068	0	1
Kathrein Scala 800 10504	125.00	106	0.911	-0.122	0.092	0.068	3	91
Flat Light Sector Frame	125.00	1,200	0.911	-0.122	0.092	0.068	35	1,038
GPS	50.00	10	0.146	0.068	0.031	0.034	0	9
Stand-Off	50.00	40	0.146	0.068	0.031	0.034	1	35
		124,042	65.442	27.607	24.011	9.330	3,611	107,324

Force/Stress Summary

Section: 1 1 Bot Elev (ft): 0.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	-309.02	1.2D + 1.6W	10.02	100	100	100	27.8	50.0	816.60	0	0	0.00	0.00	37	Member X
HORIZ PST - 3" DIA PIPE	-7.44	1.2D + 1.6W 90	12.17	100	100	100	125.9	50.0	31.77	2	0	0.00	0.00	23	Member X
DIAG PST - 3-1/2" DIA PIP	-11.69	1.2D + 1.6W 90	15.75	100	100	100	141.1	50.0	30.41	3	0	0.00	0.00	38	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	223.33	0.9D + 1.6W 60	50	65	864.00	0	0	0.00	0.00		25	Member
HORIZ PST - 3" DIA PIPE	9.35	1.2D + 1.6W 90	50	65	100.35	2	0	0.00	32.43	0.00	28	Bolt Bear
DIAG PST - 3-1/2" DIA PIP	10.73	1.2D + 1.6W 90	50	65	120.60	3	0	0.00	55.09	0.00	19	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	211.47	0.9D + 1.6W 180	0.00	0	0	
Top Compression	294.43	1.2D + 1.6W	0.00	0		
Bot Tension	234.78	0.9D + 1.6W 180	1453.79	20	24	1" A354-BC
Bot Compression	321.16	1.2D + 1.6W	0.00	0		

Section: 2 1 Bot Elev (ft): 20.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	-282.37	1.2D + 1.6W	10.03	100	100	100	27.8	50.0	816.53	0	0	0.00	0.00	34	Member X
HORIZ PST - 3" DIA PIPE	-6.87	0.9D + 1.6W 90	10.88	100	100	100	112.6	50.0	39.73	2	0	0.00	0.00	17	Member X
DIAG PST - 3-1/2" DIA PIP	-11.03	1.2D + 1.6W 90	15.29	100	100	100	137.0	50.0	32.26	3	0	0.00	0.00	34	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 12" DIA PIPE	202.09	0.9D + 1.6W 60	50	65	864.00	0	0	0.00	0.00		23	Member
HORIZ PST - 3" DIA PIPE	7.88	1.2D + 1.6W 90	50	65	100.35	2	0	0.00	32.43	0.00	24	Bolt Bear
DIAG PST - 3-1/2" DIA PIP	9.00	1.2D + 1.6W 90	50	65	120.60	3	0	0.00	55.09	0.00	16	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	192.07	0.9D + 1.6W 180	0.00	0	0	
Top Compression	267.06	1.2D + 1.6W	0.00	0		
Bot Tension	211.47	0.9D + 1.6W 180	872.27	24	16	1 A325
Bot Compression	294.43	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 3 1 Bot Elev (ft): 40.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	-250.77	1.2D + 1.6W	10.03	100	100	100	33.1	50.0	668.58	0	0	0.00	0.00	37	Member X
HORIZ PST - 2-1/2" DIA PIP	-7.12	1.2D + 1.6W 90	9.570	100	100	100	121.3	50.0	26.18	2	0	0.00	0.00	27	Member X
DIAG PX - 3" DIA PIPE	-12.75	1.2D + 1.6W 90	14.28	100	100	100	150.4	50.0	30.17	3	0	0.00	0.00	42	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	181.23	0.9D + 1.6W 180	50	65	724.50	0	0	0.00	0.00		25	Member
HORIZ PST - 2-1/2" DIA PIP	8.46	1.2D + 1.6W 90	50	65	76.68	2	0	0.00	30.48	0.00	27	Bolt Bear
DIAG PX - 3" DIA PIPE	10.25	1.2D + 1.6W 90	50	65	135.90	3	0	0.00	73.13	0.00	14	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	168.87	0.9D + 1.6W 180	0.00	0	0	
Top Compression	231.78	1.2D + 1.6W	0.00	0		
Bot Tension	192.07	0.9D + 1.6W 180	872.27	22	16	1 A325
Bot Compression	267.06	1.2D + 1.6W	0.00	0		

Section: 4 1 Bot Elev (ft): 60.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	-214.52	1.2D + 1.6W	10.03	100	100	100	33.2	50.0	668.56	0	0	0.00	0.00	32	Member X
HORIZ PST - 2-1/2" DIA PIP	-6.57	1.2D + 1.6W 90	8.297	100	100	100	105.1	50.0	34.17	2	0	0.00	0.00	19	Member X
DIAG PX - 3" DIA PIPE	-12.51	1.2D + 1.6W 90	13.42	100	100	100	141.3	50.0	34.18	3	0	0.00	0.00	36	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 10" DIA PIPE	157.21	0.9D + 1.6W 60	50	65	724.50	0	0	0.00	0.00		21	Member
HORIZ PST - 2-1/2" DIA PIP	7.68	1.2D + 1.6W 90	50	65	76.68	2	0	0.00	30.48	0.00	25	Bolt Bear
DIAG PX - 3" DIA PIPE	10.38	0.9D + 1.6W 90	50	65	135.90	3	0	0.00	73.13	0.00	14	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	144.84	0.9D + 1.6W 180	0.00	0	0	
Top Compression	195.06	1.2D + 1.6W	0.00	0		
Bot Tension	168.87	0.9D + 1.6W 180	654.20	26	12	1 A325
Bot Compression	231.78	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 5 1 Bot Elev (ft): 80.00 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 8" DIA PIPE	-175.63	1.2D + 1.6W	10.03	100	100	100	41.8	50.0	507.01	0	0	0.00	0.00	34	Member X
HORIZ PX - 2" DIA PIPE	-6.66	0.9D + 1.6W 90	7.035	100	100	100	110.2	50.0	27.40	2	0	0.00	0.00	24	Member X
DIAG PX - 3" DIA PIPE	-13.20	1.2D + 1.6W 90	12.59	100	100	100	132.6	50.0	38.81	3	0	0.00	0.00	34	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 8" DIA PIPE	130.77	0.9D + 1.6W 60	50	65	576.00	0	0	0.00	0.00		22	Member
HORIZ PX - 2" DIA PIPE	7.38	1.2D + 1.6W 90	50	65	66.60	2	0	0.00	32.73	0.00	22	Bolt Bear
DIAG PX - 3" DIA PIPE	11.82	0.9D + 1.6W 90	50	65	135.90	3	0	0.00	73.13	0.00	16	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	115.62	0.9D + 1.6W 180	0.00	0	0	
Top Compression	153.67	1.2D + 1.6W	0.00	0		
Bot Tension	144.84	0.9D + 1.6W 180	654.20	22	12	1 A325
Bot Compression	195.06	1.2D + 1.6W	0.00	0		

Section: 6 1 Bot Elev (ft): 100.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 6" DIA PIPE	-138.24	1.2D + 1.6W	6.68	100	100	100	36.5	50.0	342.89	0	0	0.00	0.00	40	Member X
HORIZ PST - 2" DIA PIPE	-6.78	1.2D + 1.6W 90	6.072	100	100	100	92.6	50.0	25.73	2	0	0.00	0.00	26	Member X
DIAG PST - 2-1/2" DIA PIP	-11.41	1.2D + 1.6W 90	9.257	100	100	100	117.3	50.0	27.97	3	0	0.00	0.00	40	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 6" DIA PIPE	104.14	0.9D + 1.6W 60	50	65	378.00	0	0	0.00	0.00		27	Member
HORIZ PST - 2" DIA PIPE	7.50	1.2D + 1.6W 90	50	65	48.15	2	0	0.00	19.22	0.00	39	Bolt Bear
DIAG PST - 2-1/2" DIA PIP	10.70	0.9D + 1.6W 90	50	65	76.68	3	0	0.00	41.17	0.00	26	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	78.70	0.9D + 1.6W 180	0.00	0	0	
Top Compression	104.56	1.2D + 1.6W	0.00	0		
Bot Tension	115.62	0.9D + 1.6W 180	436.14	27	8	1 A325
Bot Compression	153.67	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 7 1 Bot Elev (ft): 120.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PX - 5" DIA PIPE	-87.72	1.2D + 1.6W	6.68	100	100	100	43.6	50.0	239.34	0	0	0.00	0.00	36	Member X
HORIZ PST - 1-1/2" DIA PIP	-6.82	1.2D + 1.6W 90	5.030	100	100	100	96.9	50.0	18.10	2	0	0.00	0.00	37	Member X
DIAG PST - 2-1/2" DIA PIP	-12.17	1.2D + 1.6W 90	8.566	100	100	100	108.5	50.0	32.40	3	0	0.00	0.00	37	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PX - 5" DIA PIPE	64.08	0.9D + 1.6W 60	50	65	274.95	0	0	0.00	0.00		23	Member
HORIZ PST - 1-1/2" DIA PIP	7.27	1.2D + 1.6W 90	50	65	35.96	2	0	0.00	18.10	0.00	40	Bolt Bear
DIAG PST - 2-1/2" DIA PIP	11.20	0.9D + 1.6W 90	50	65	76.68	3	0	0.00	41.17	0.00	27	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	43.18	0.9D + 1.6W 180	0.00	0	0	
Top Compression	56.60	1.2D + 1.6W	0.00	0		
Bot Tension	78.70	0.9D + 1.6W 180	327.10	24	6	1 A325
Bot Compression	104.56	1.2D + 1.6W	0.00	0		

Section: 8 1 Bot Elev (ft): 140.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 4" DIA PIPE	-42.08	1.2D + 1.6W	6.67	100	100	100	53.0	50.0	116.18	0	0	0.00	0.00	36	Member X
HORIZ PST - 2" DIA PIPE	-4.63	1.2D + 1.6W 90	4.325	100	100	100	65.9	50.0	35.03	2	0	0.00	0.00	13	Member X
DIAG PST - 2-1/2" DIA PIP	-9.55	1.2D + 1.6W 90	7.955	100	100	100	100.8	50.0	36.48	3	0	0.00	0.00	26	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PST - 4" DIA PIPE	31.20	0.9D + 1.6W 180	50	65	142.65	0	0	0.00	0.00		21	Member
HORIZ PST - 2" DIA PIPE	4.96	1.2D + 1.6W 90	50	65	48.15	2	0	0.00	19.22	0.00	25	Bolt Bear
DIAG PST - 2-1/2" DIA PIP	8.86	1.2D + 1.6W 90	50	65	76.68	3	0	0.00	41.17	0.00	21	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	9.82	0.9D + 1.6W 180	0.00	0	0	
Top Compression	16.54	1.2D + 1.6W	0.00	0		
Bot Tension	43.18	0.9D + 1.6W 180	218.07	20	4	1 A325
Bot Compression	56.60	1.2D + 1.6W	0.00	0		

Force/Stress Summary

Section: 9 1 Bot Elev (ft): 160.0 Height (ft): 20.000

Max Compression Member	Pu (kip)	Load Case	Len (ft)	Bracing % X	Y	Z	KL/R	F'y (ksi)	Phic Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Use %	Controls
LEG PST - 3" DIA PIPE	-8.43	1.2D + 1.6W	6.67	100	100	100	69.0	50.0	70.87	0	0	0.00	0.00	11	Member X
HORIZ PST - 1-1/2" DIA PIP	-2.23	1.2D + 1.6W	4.280	100	100	100	82.4	50.0	21.87	2	0	0.00	0.00	10	Member X
DIAG PST - 2" DIA PIPE	-4.49	1.2D + 1.6W	7.930	100	100	100	120.9	50.0	16.53	3	0	0.00	0.00	27	Member X

Max Tension Member	Pu (kip)	Load Case	Fy (ksi)	Fu (ksi)	Phit Pn (kip)	Num Bolts	Num Holes	Shear phiRnv (kip)	Bear phiRn (kip)	Blk Shear phit Pn (kip)	Use %	Controls
LEG PST - 3" DIA PIPE	4.20	1.2D + 1.6W 180	50	65	100.35	0	0	0.00	0.00		4	Member
HORIZ PST - 1-1/2" DIA PIP	2.31	1.2D + 1.6W 60	50	65	35.96	2	0	0.00	18.10	0.00	12	Bolt Bear
DIAG PST - 2" DIA PIPE	4.23	1.2D + 1.6W 90	50	65	48.15	3	0	0.00	31.23	0.00	13	Bolt Bear

Max Splice Forces	Pu (kip)	Load Case	phiRnt (kip)	Use %	Num Bolts	Bolt Type
Top Tension	0.00		0.00	0	0	
Top Compression	1.34	1.2D + 1.0Di +	0.00	0		
Bot Tension	9.82	0.9D + 1.6W 180	166.22	6	4	0.875" A325
Bot Compression	16.54	1.2D + 1.6W	0.00	0		

Mount Analysis of Existing Sector Frames for American Tower on behalf of T-Mobile
411183 - Waterford CT
Project #: 12605190

T-Mobile Site ID: CT11041D

Program: L700

CLS Engineering PLLC Project #41124-12605190-01-MA

February 4, 2019

MOUNT DESCRIPTION	Existing Sector Frames at 166 ft AGL
ANTENNA ELEVATION	Nominal Rad. Elevation of 166 ft AGL
SITE DESCRIPTION	180 ft Self-Supporting Tower
SITE ADDRESS	53 Dayton Rd., Waterford, CT 06385, New London County
GPS COORDINATES	41.377778, -72.141389
ANALYSIS STANDARD	2018 IBC / TIA-222-H
LOADING CRITERIA	126 mph, V_{ult} (3-Second Gust) w/o ice & 50 mph (3-Second Gust) w/ 1" Ice

■ **ANALYSIS RESULT:** **Pass**

MEMBER USAGE	**81%**	**Pass**

Prepared by:
Zachary Blackford

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

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

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

Digitally signed by Tyler M. Barker
Date: 2019.02.05 17:00:13 -05'00'

■ INTRODUCTION

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

■ STRUCTURAL DOCUMENTS PROVIDED

STRUCTURAL DATA	Photos dated May 15, 2018
PREVIOUS ANALYSES	Structural Analysis by American Tower, Engineering #OAA741535_C3_01, dated November 9, 2018
LOADING DATA	American Tower Application, Project #12605190, dated October 25, 2018

■ ANALYSIS CRITERIA

STANDARD	2018 IBC / TIA-222-H
BASIC WIND SPEED	126 mph, V_{ult} (3-Second Gust)
BASIC WIND SPEED W/ ICE	50 mph (3-Second Gust) w/ 1" Radial Ice (Escalating)
EXPOSURE CATEGORY	B
MAX. TOPOGRAPHIC FACTOR, K_{zt}	1.00
RISK CATEGORY	II
MAINTENANCE LIVE LOAD	L_M: 500 lb

■ FINAL EQUIPMENT

ELEVATION (ft)		ANTENNAS	
MOUNT	**RAD.**	**#**	**NAME**
166.0	166.0	3	RFS Celwave APXVAARR24_43-U-NA20
		3	Ericsson AIR 32 B2A/B66AA
		3	Ericsson AIR 21
		3	Ericsson RADIO 4449 B12/B71

■ RESULTS SUMMARY

COMPONENT	PEAK USAGE	RESULT
Standoff Vertical	81%	Pass
Standoff Plate	78%	Pass
Mount Pipes	33%	Pass
Stand-Off Horizontals	28%	Pass
Face Horizontals	24%	Pass

■ CONCLUSION AND RECOMMENDATIONS

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

■ ASSUMPTIONS AND CONDITIONS

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

This analysis assumes the following:

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

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

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

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

Wind & Ice Loading

Nominal Mount Elevation (AGL), z_{mount}	166 ft	K_a	0.90
Nominal Rad Elevation (AGL), z_{rad}	166 ft	K_d	0.95
Elevation AMSL (ft)	188 ft	K_e	0.99
Basic Wind Speed, V_{ult} (bare)	H	K_z	1.14
Basic Wind Speed, V_{ult} (bare)	126 mph	K_{zt}	1.00
Basic Wind Speed, V (ice)	50 mph	K_s	1.00
Design Ice Thickness, t_i	1 in	t_{iz}	1.18 in
Exposure Category	B	G_h	1.00
Risk Category	II	q_z (bare)	43.8 psf
Seismic Response Coeff., C_s	-	q_z (ice)	6.9 psf

Live Loading

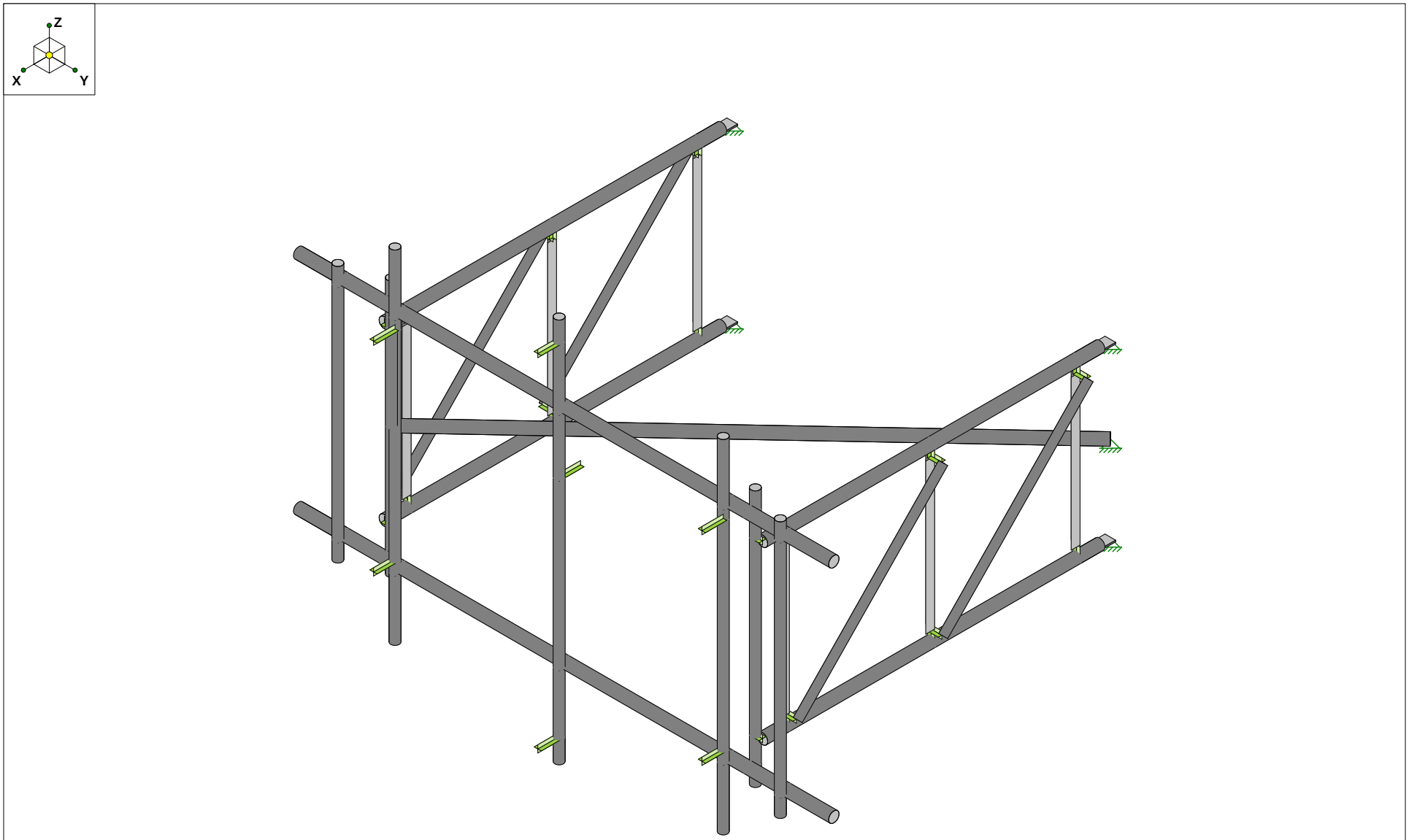
At Mount Pipes, L_M	500 lb
Joint Labels Considered	N75
	N89
	N91
	N83
	N69

Member Distributed Loading

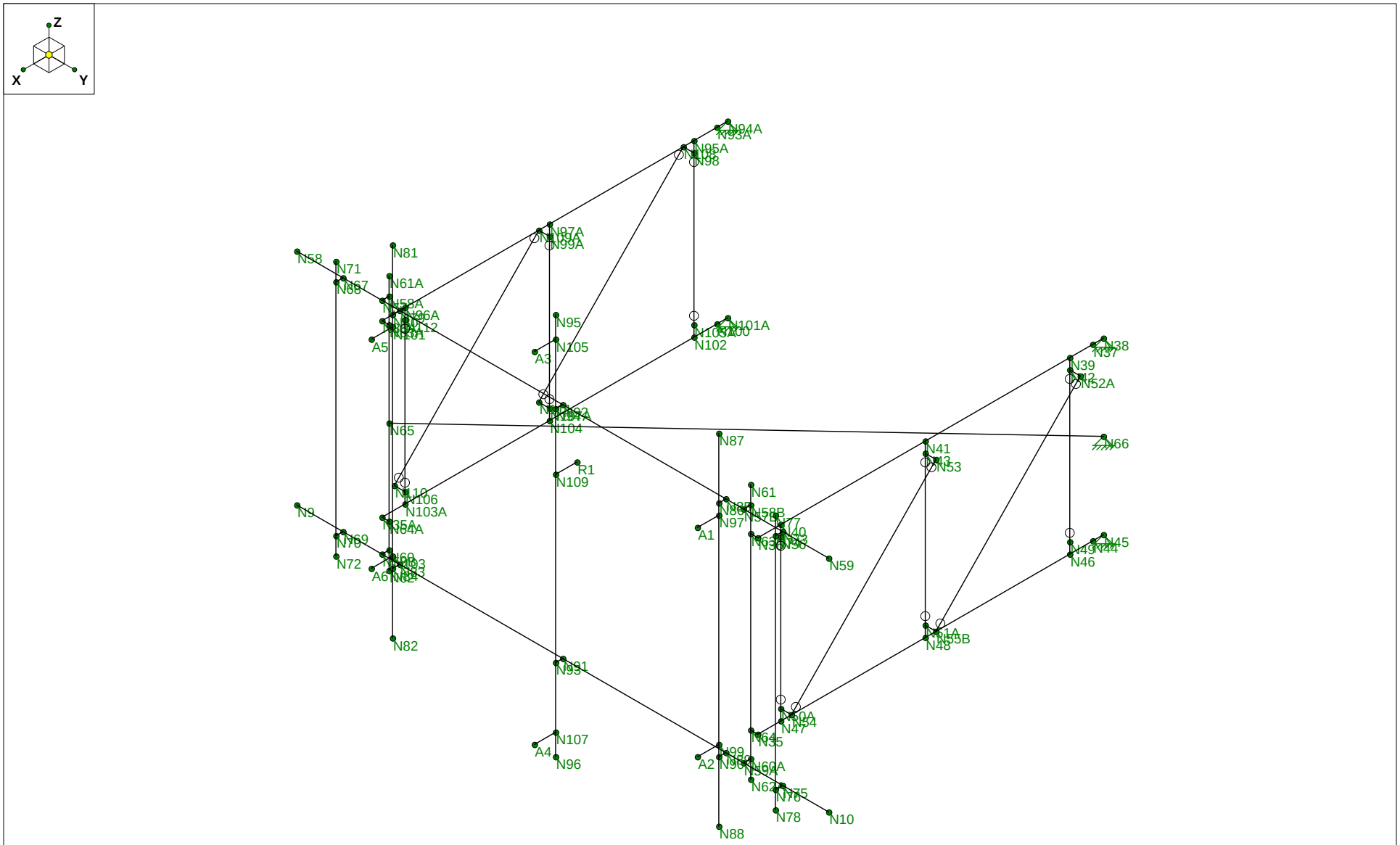
Section Set Label	Shape Label	F_A (lb/ft)		Ice Wt. (lb/ft)
		Bare	Ice	
Face Horizontal	PIPE_2.5	11.33	3.24	5.82
Offset Horizontal	PIPE_2.5	11.33	3.24	5.82
Standoff PL	PL3.5x.375	19.71	3.34	4.77
Bracing Angle	L2.5x2.5x3	16.43	1.65	6.14
Standoff Vertical	PIPE_2.0	9.36	2.93	5.10
Stiff Arm	PIPE_2.5	11.33	3.24	5.82
Mount Pipe	PIPE_2.0	9.36	2.93	5.10

Appurtenances

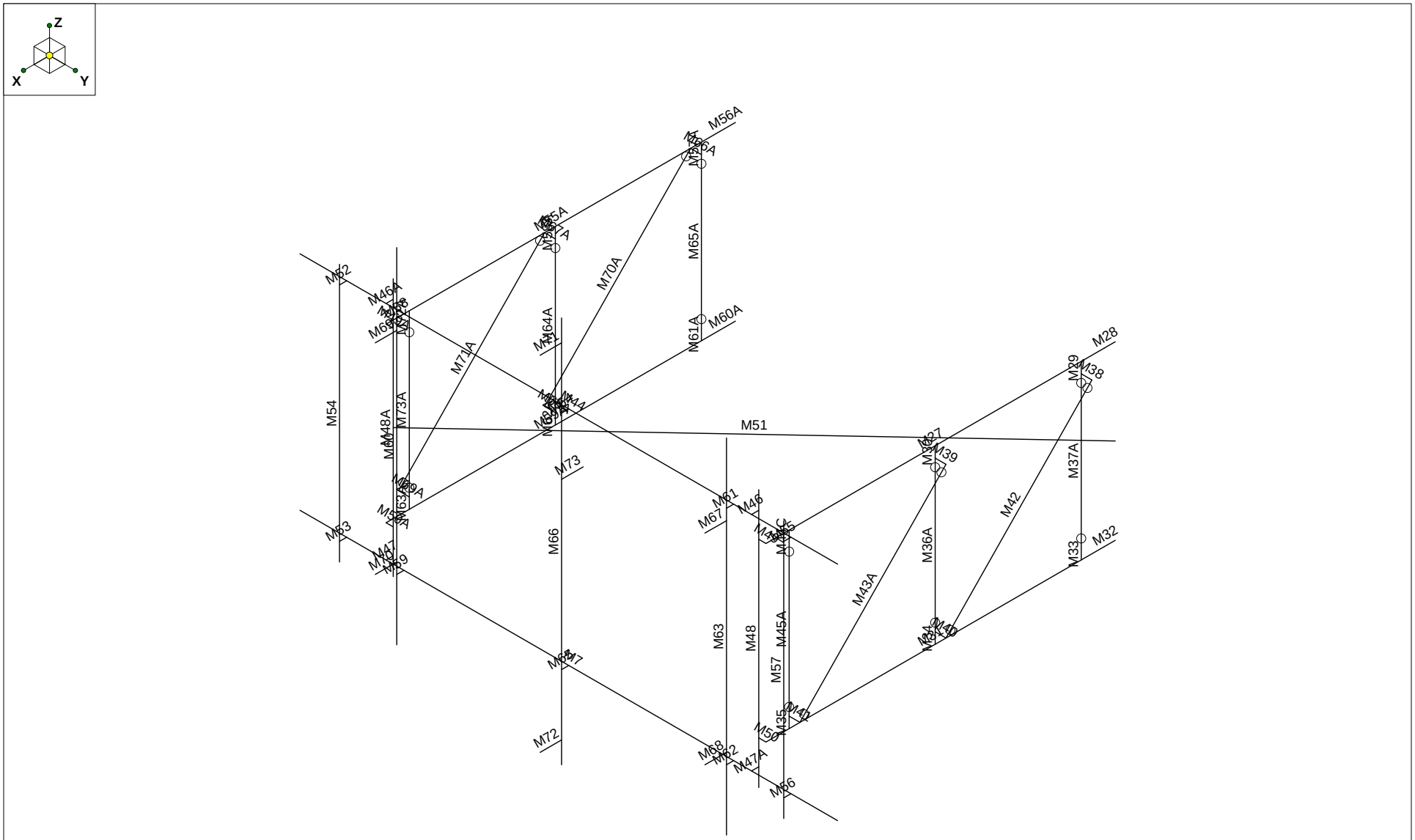
Appurtenance Model	Status	Azimuth Offset (°, ↻)	Rad Elev. Override (ft)	Swap Width & Depth	Area Factor		Qty.	Total Qty. Override	0° Joints		Height (in)	Width (in)	Depth (in)	Weight (Bare) (lb)	Shape	Weight of Ice (lb)	EPA_A (Bare) (ft^2)		EPA_A (Ice) (ft^2)		F_A (Bare) (lb)		F_A (Ice) (lb)	
					Front	Side	0°		1	2							N	T	N	T	N	T	N	T
APXVAARR24_43-U-NA20				☐			1	3	A3	A4	95.9	24	8.7	128	Flat	264.67	20.24	8.89	22.56	11.03	797.99	350.40	140.02	68.48
AIR 21				☐			1	3	A1	A2	56	12	7.9	91	Flat	97.97	6.05	4.31	7.38	5.57	238.47	169.91	45.83	34.60
AIR 32 B2A/B66AA				☐			1	3	A5	A6	56.6	12.9	8.7	132.2	Flat	107.72	6.51	4.71	7.87	6.00	256.63	185.77	48.86	37.24
RADIO 4449 B12/B71				☐	0.25		1	3	R1		15	13.2	10.4	75	Flat	40.44	0.41	1.30	0.56	1.84	16.26	51.25	3.49	11.44



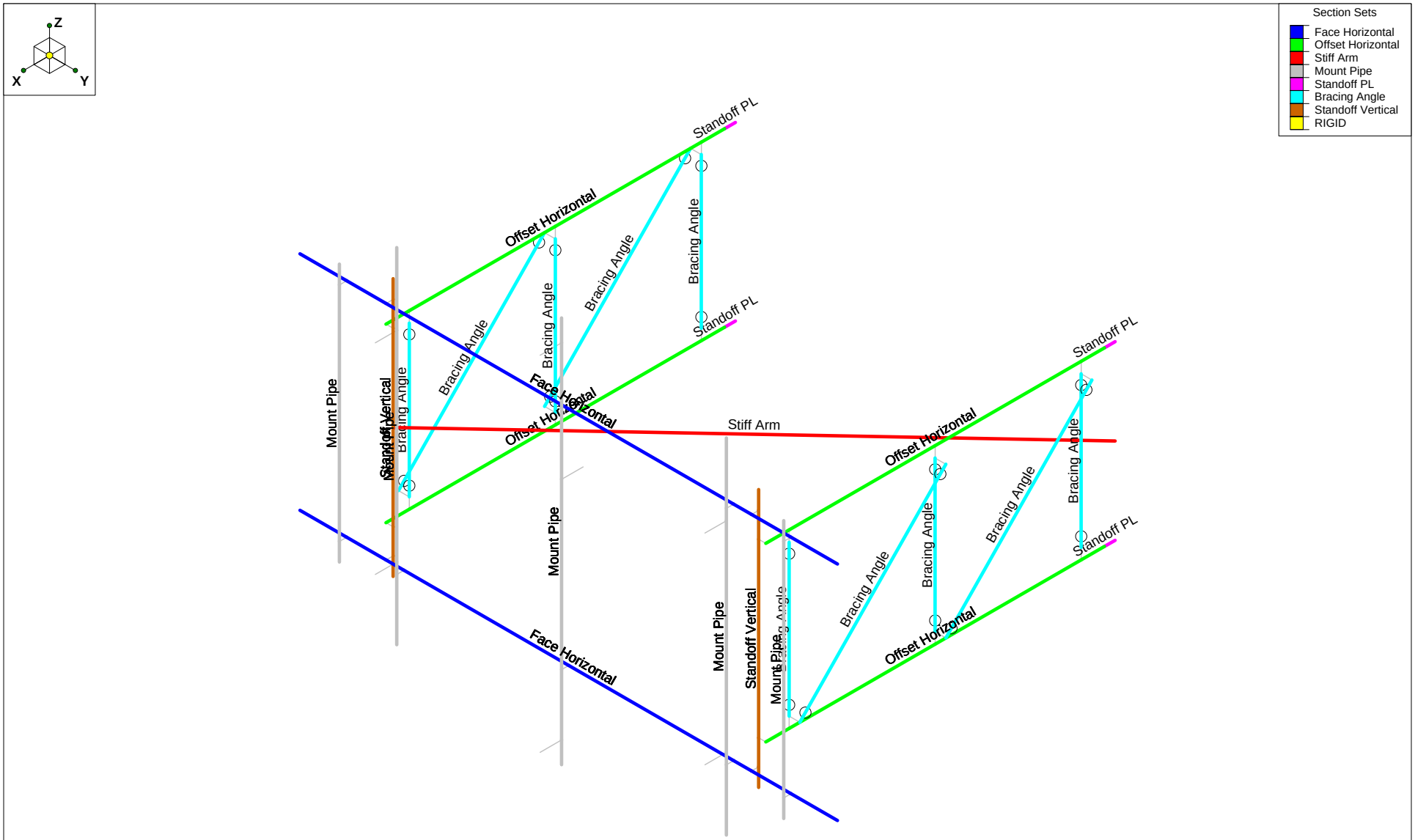
CLS		SK - 1
ZSB	41124-12605190-Waterford CT	Feb 4, 2019 at 12:38 PM
41124-12605190-01-MA	Rendered	41124-12605190-01-MA.r3d



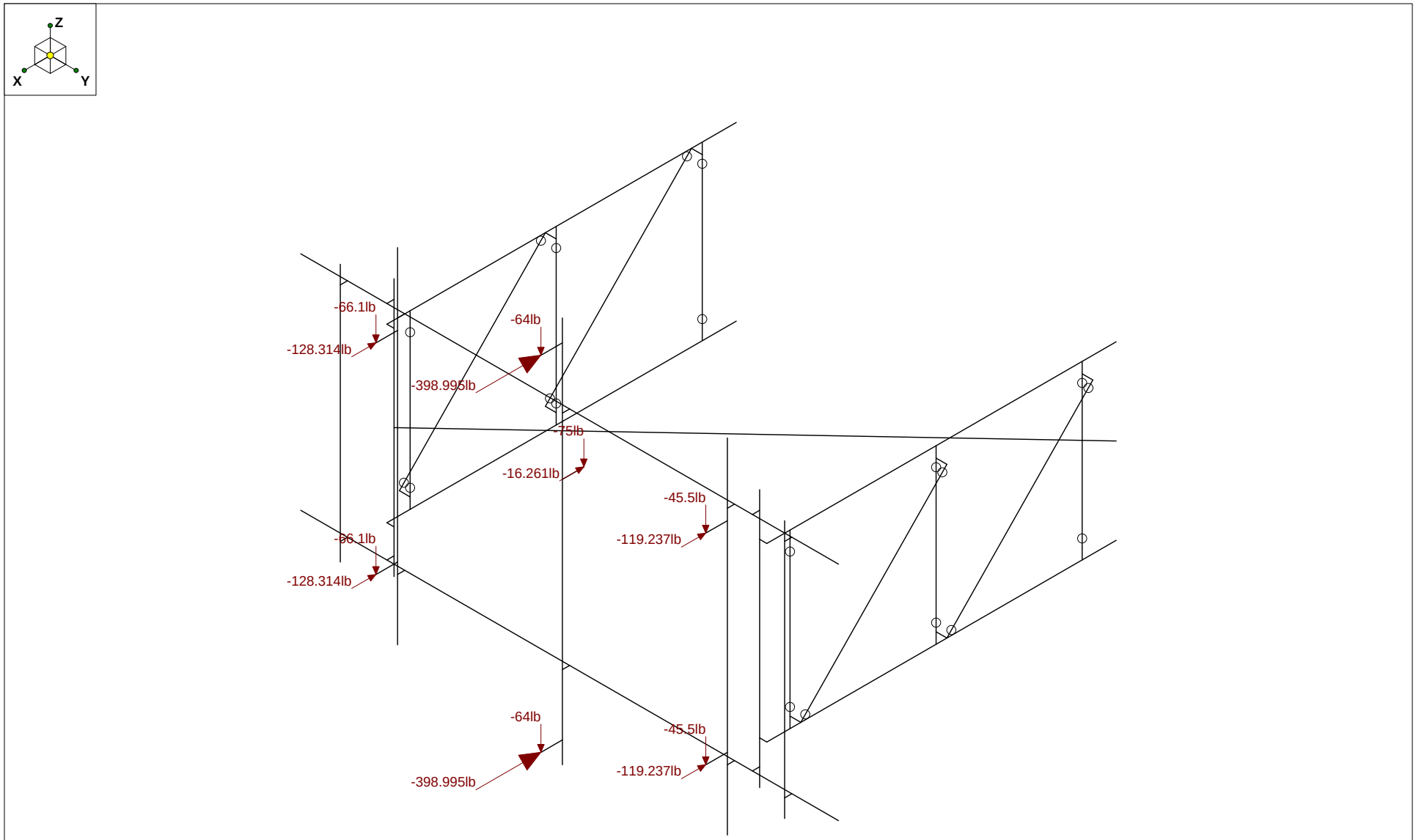
CLS	41124-12605190-Waterford CT	SK - 2
ZSB		Feb 4, 2019 at 12:38 PM
41124-12605190-01-MA	Joint Labels	41124-12605190-01-MA.r3d



CLS		SK - 3
ZSB	41124-12605190-Waterford CT	Feb 4, 2019 at 12:38 PM
41124-12605190-01-MA	Member Labels	41124-12605190-01-MA.r3d

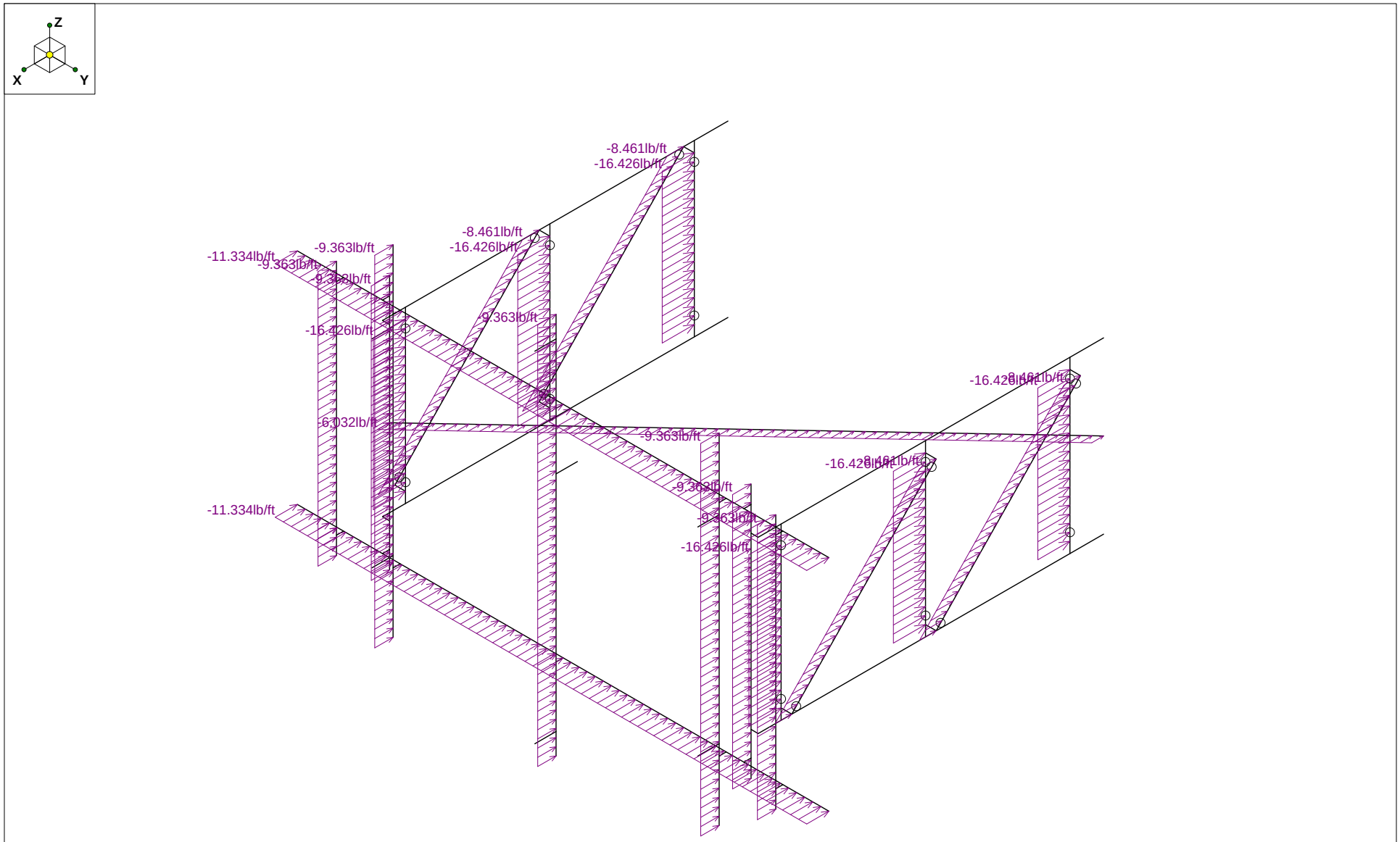


CLS	41124-12605190-Waterford CT	SK - 4
ZSB		Feb 4, 2019 at 12:39 PM
41124-12605190-01-MA	Section Sets	41124-12605190-01-MA.r3d



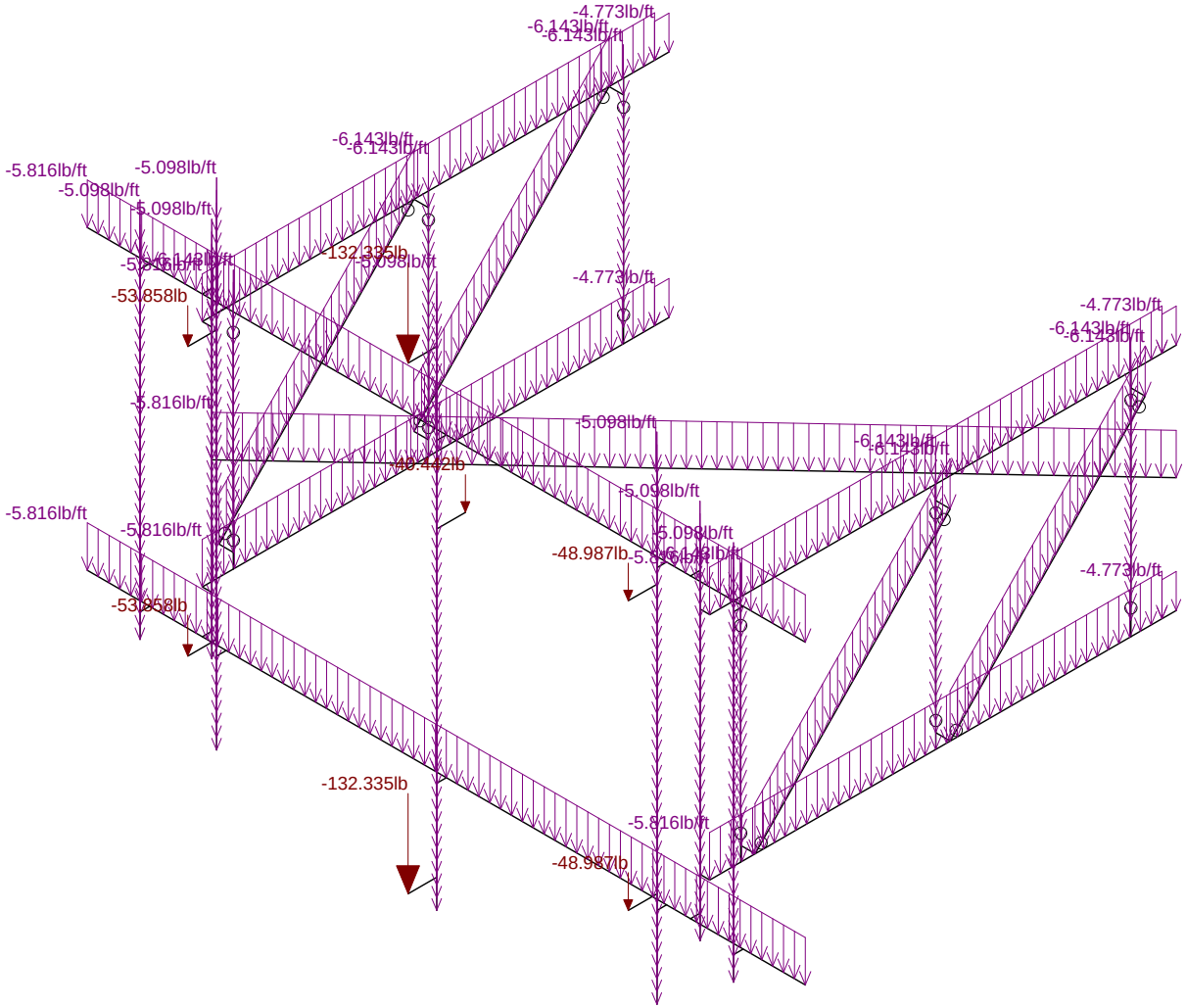
Loads: LC 1, DISPLAY (1.0D + 1.0W_0°)

CLS		SK - 5
ZSB	41124-12605190-Waterford CT	Feb 4, 2019 at 12:39 PM
41124-12605190-01-MA	Joint Loads - Dead and Normal Wind	41124-12605190-01-MA.r3d



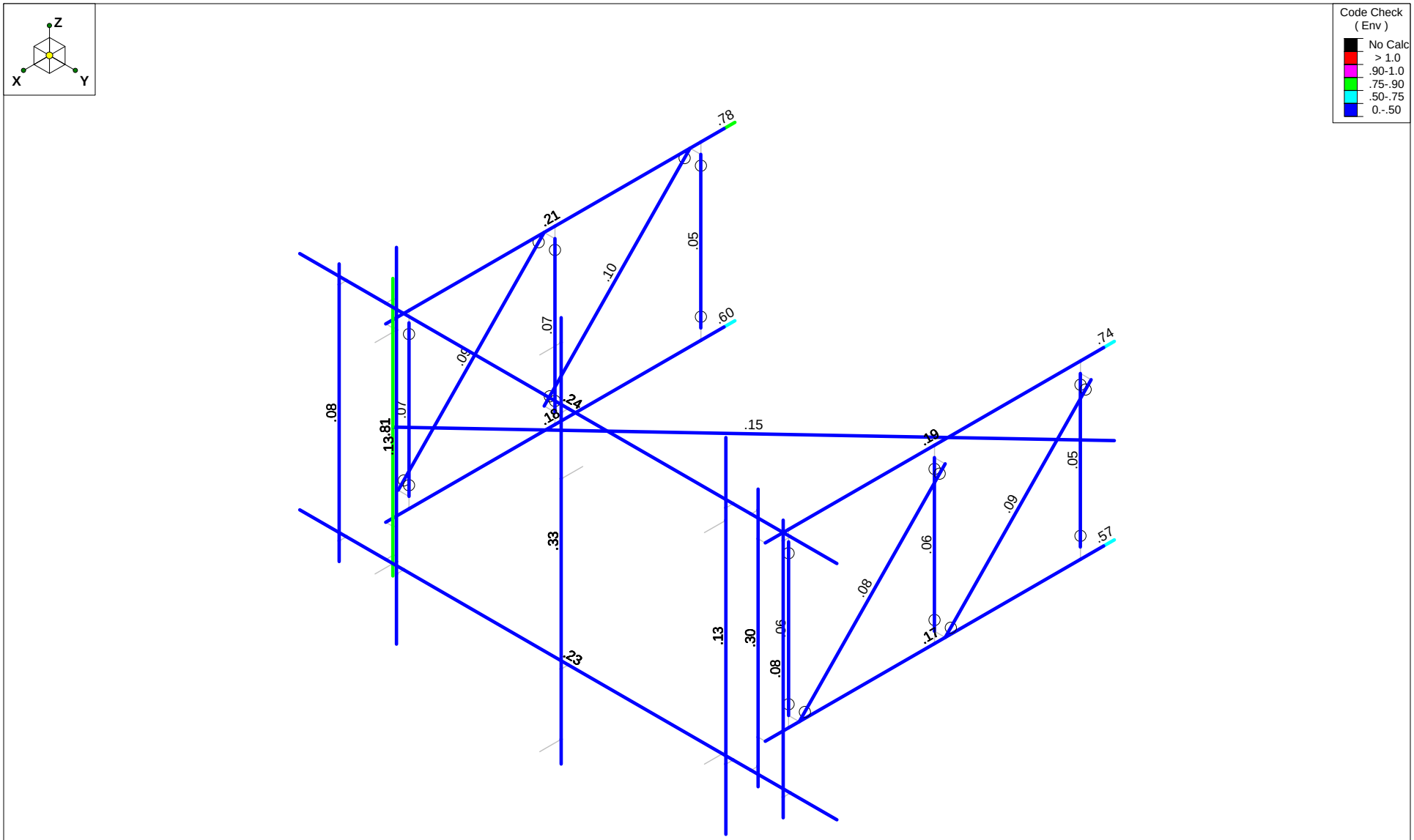
Loads: BLC 4, Structure Wind 0°

CLS		SK - 6
ZSB	41124-12605190-Waterford CT	Feb 4, 2019 at 12:40 PM
41124-12605190-01-MA	Distributed Load - Normal Wind	41124-12605190-01-MA.r3d



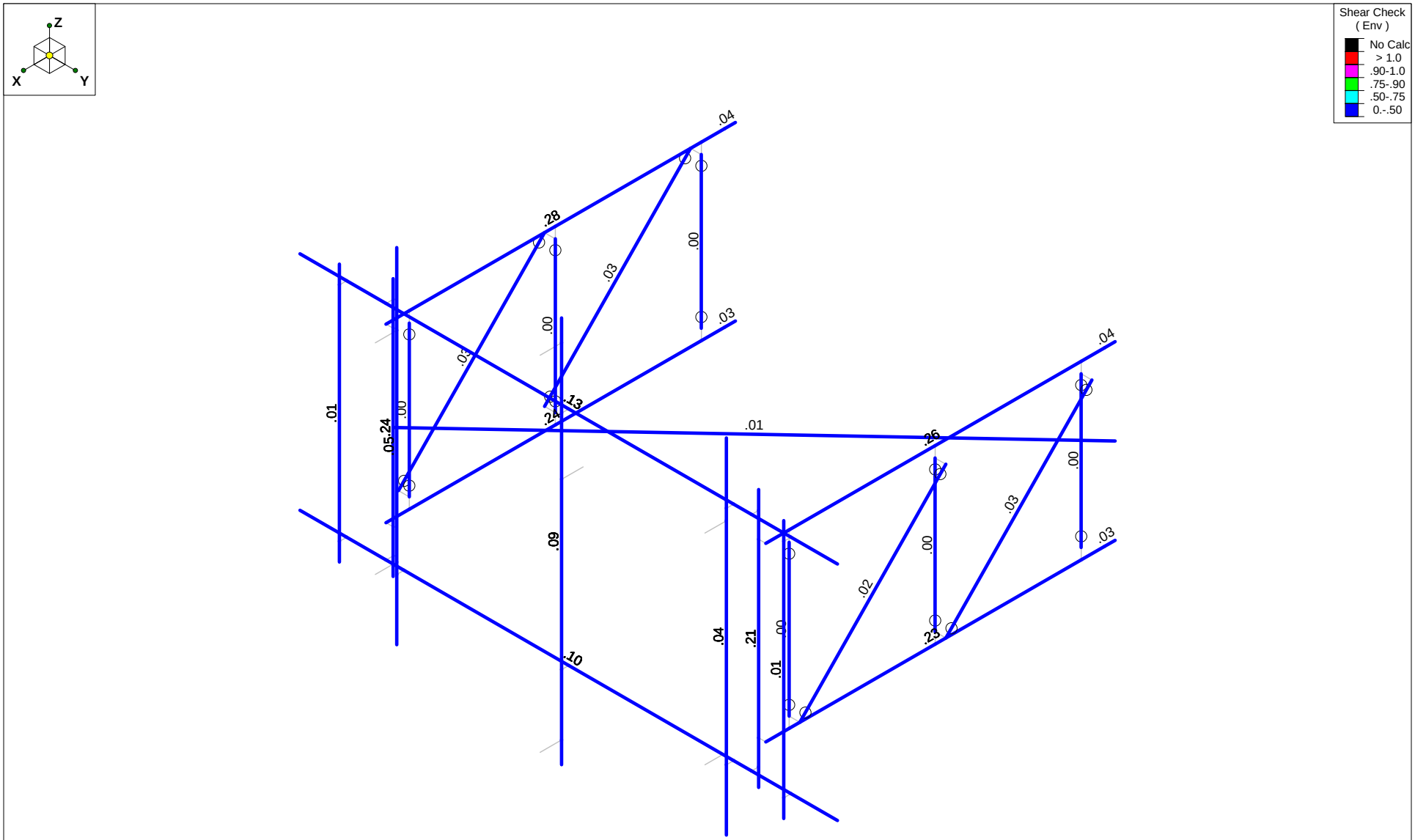
Loads: BLC 2, Ice Dead

CLS		SK - 7
ZSB	41124-12605190-Waterford CT	Feb 4, 2019 at 12:40 PM
41124-12605190-01-MA	Ice Dead Loads	41124-12605190-01-MA.r3d



Member Code Checks Displayed (Enveloped)
Envelope Only Solution

CLS	41124-12605190-Waterford CT	SK - 8
ZSB		Feb 4, 2019 at 12:42 PM
41124-12605190-01-MA	Envelope Member Unity Check Results - Bending	41124-12605190-01-MA.r3d



Member Shear Checks Displayed (Enveloped)
Envelope Only Solution

CLS		SK - 9
ZSB	41124-12605190-Waterford CT	Feb 4, 2019 at 12:42 PM
41124-12605190-01-MA	Envelope Member Check Results - Shear	41124-12605190-01-MA.r3d

Basic Load Cases

	BLC Description	Category	X Gravity	Y Gravity	Z Gravity	Joint	Point	Distributed	Area(M...	Surface...
1	Dead	DL			-1	7				
2	Ice Dead	RL				7		28		
4	Structure Wind 0Á	None						20		
5	Structure Wind 30Á	None						56		
6	Structure Wind 45Á	None						56		
7	Structure Wind 60Á	None						56		
8	Structure Wind 90Á	None						26		
9	Structure Wind 12...	None						56		
10	Structure Wind 13...	None						56		
11	Structure Wind 15...	None						56		
12	Structure Wind w/...	None						20		
13	Structure Wind w/...	None						56		
14	Structure Wind w/...	None						56		
15	Structure Wind w/...	None						56		
16	Structure Wind w/...	None						26		
17	Structure Wind w/...	None						56		
18	Structure Wind w/...	None						56		
19	Structure Wind w/...	None						56		
20	Antenna Wind 0Á	None				7				
21	Antenna Wind 30Á	None				14				
22	Antenna Wind 45Á	None				14				
23	Antenna Wind 60Á	None				14				
24	Antenna Wind 90Á	None				7				
25	Antenna Wind 120Á	None				14				
26	Antenna Wind 135Á	None				14				
27	Antenna Wind 150Á	None				14				
28	Antenna Wind w/ I...	None				7				
29	Antenna Wind w/ I...	None				14				
30	Antenna Wind w/ I...	None				14				
31	Antenna Wind w/ I...	None				14				
32	Antenna Wind w/ I...	None				7				
33	Antenna Wind w/ I...	None				14				
34	Antenna Wind w/ I...	None				14				
35	Antenna Wind w/ I...	None				14				
39	Maintenance Live ...	OL1				1				
40	Maintenance Live ...	OL2				1				
41	Maintenance Live ...	OL3				1				
42	Maintenance Live ...	OL4				1				
43	Maintenance Live ...	OL5				1				

Load Combinations

	Description	Solve	P...	S...	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
1	DISPLAY ...	Yes	Y		DL	1	20	1																
2	1.4D	Yes	Y		DL	1.4																		
3	1.2D + 1....	Yes	Y		DL	1.2	4	1	20	1														
4	1.2D + 1....	Yes	Y		DL	1.2	5	1	21	1														
5	1.2D + 1....	Yes	Y		DL	1.2	6	1	22	1														
6	1.2D + 1....	Yes	Y		DL	1.2	7	1	23	1														
7	1.2D + 1....	Yes	Y		DL	1.2	8	1	24	1														

Load Combinations (Continued)

	Description	Solve	P...	S...	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
8	1.2D + 1....	Yes	Y		DL	1.2	9	1	25	1																
9	1.2D + 1....	Yes	Y		DL	1.2	10	1	26	1																
10	1.2D + 1....	Yes	Y		DL	1.2	11	1	27	1																
11	1.2D + 1....	Yes	Y		DL	1.2	4	-1	20	-1																
12	1.2D + 1....	Yes	Y		DL	1.2	5	-1	21	-1																
13	1.2D + 1....	Yes	Y		DL	1.2	6	-1	22	-1																
14	1.2D + 1....	Yes	Y		DL	1.2	7	-1	23	-1																
15	1.2D + 1....	Yes	Y		DL	1.2	8	-1	24	-1																
16	1.2D + 1....	Yes	Y		DL	1.2	9	-1	25	-1																
17	1.2D + 1....	Yes	Y		DL	1.2	10	-1	26	-1																
18	1.2D + 1....	Yes	Y		DL	1.2	11	-1	27	-1																
19	1.2D + 1....	Yes	Y		DL	1.2	12	1	28	1	RL	1														
20	1.2D + 1....	Yes	Y		DL	1.2	13	1	29	1	RL	1														
21	1.2D + 1....	Yes	Y		DL	1.2	14	1	30	1	RL	1														
22	1.2D + 1....	Yes	Y		DL	1.2	15	1	31	1	RL	1														
23	1.2D + 1....	Yes	Y		DL	1.2	16	1	32	1	RL	1														
24	1.2D + 1....	Yes	Y		DL	1.2	17	1	33	1	RL	1														
25	1.2D + 1....	Yes	Y		DL	1.2	18	1	34	1	RL	1														
26	1.2D + 1....	Yes	Y		DL	1.2	19	1	35	1	RL	1														
27	1.2D + 1....	Yes	Y		DL	1.2	12	-1	28	-1	RL	1														
28	1.2D + 1....	Yes	Y		DL	1.2	13	-1	29	-1	RL	1														
29	1.2D + 1....	Yes	Y		DL	1.2	14	-1	30	-1	RL	1														
30	1.2D + 1....	Yes	Y		DL	1.2	15	-1	31	-1	RL	1														
31	1.2D + 1....	Yes	Y		DL	1.2	16	-1	32	-1	RL	1														
32	1.2D + 1....	Yes	Y		DL	1.2	17	-1	33	-1	RL	1														
33	1.2D + 1....	Yes	Y		DL	1.2	18	-1	34	-1	RL	1														
34	1.2D + 1....	Yes	Y		DL	1.2	19	-1	35	-1	RL	1														
35	1.2D + 1....	Yes	Y		DL	1.2	4	.06	20	.06	OL1	1.5														
36	1.2D + 1....	Yes	Y		DL	1.2	5	.06	21	.06	OL1	1.5														
37	1.2D + 1....	Yes	Y		DL	1.2	6	.06	22	.06	OL1	1.5														
38	1.2D + 1....	Yes	Y		DL	1.2	7	.06	23	.06	OL1	1.5														
39	1.2D + 1....	Yes	Y		DL	1.2	8	.06	24	.06	OL1	1.5														
40	1.2D + 1....	Yes	Y		DL	1.2	9	.06	25	.06	OL1	1.5														
41	1.2D + 1....	Yes	Y		DL	1.2	10	.06	26	.06	OL1	1.5														
42	1.2D + 1....	Yes	Y		DL	1.2	11	.06	27	.06	OL1	1.5														
43	1.2D + 1....	Yes	Y		DL	1.2	4	-.06	20	-.06	OL1	1.5														
44	1.2D + 1....	Yes	Y		DL	1.2	5	-.06	21	-.06	OL1	1.5														
45	1.2D + 1....	Yes	Y		DL	1.2	6	-.06	22	-.06	OL1	1.5														
46	1.2D + 1....	Yes	Y		DL	1.2	7	-.06	23	-.06	OL1	1.5														
47	1.2D + 1....	Yes	Y		DL	1.2	8	-.06	24	-.06	OL1	1.5														
48	1.2D + 1....	Yes	Y		DL	1.2	9	-.06	25	-.06	OL1	1.5														
49	1.2D + 1....	Yes	Y		DL	1.2	10	-.06	26	-.06	OL1	1.5														
50	1.2D + 1....	Yes	Y		DL	1.2	11	-.06	27	-.06	OL1	1.5														
51	1.2D + 1....	Yes	Y		DL	1.2	4	.06	20	.06	OL2	1.5														
52	1.2D + 1....	Yes	Y		DL	1.2	5	.06	21	.06	OL2	1.5														
53	1.2D + 1....	Yes	Y		DL	1.2	6	.06	22	.06	OL2	1.5														
54	1.2D + 1....	Yes	Y		DL	1.2	7	.06	23	.06	OL2	1.5														
55	1.2D + 1....	Yes	Y		DL	1.2	8	.06	24	.06	OL2	1.5														
56	1.2D + 1....	Yes	Y		DL	1.2	9	.06	25	.06	OL2	1.5														
57	1.2D + 1....	Yes	Y		DL	1.2	10	.06	26	.06	OL2	1.5														
58	1.2D + 1....	Yes	Y		DL	1.2	11	.06	27	.06	OL2	1.5														
59	1.2D + 1....	Yes	Y		DL	1.2	4	-.06	20	-.06	OL2	1.5														

Load Combinations (Continued)

	Description	Solve	P...	S...	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
60	1.2D + 1....	Yes	Y		DL	1.2	5	-.06	21	-.06	OL2	1.5														
61	1.2D + 1....	Yes	Y		DL	1.2	6	-.06	22	-.06	OL2	1.5														
62	1.2D + 1....	Yes	Y		DL	1.2	7	-.06	23	-.06	OL2	1.5														
63	1.2D + 1....	Yes	Y		DL	1.2	8	-.06	24	-.06	OL2	1.5														
64	1.2D + 1....	Yes	Y		DL	1.2	9	-.06	25	-.06	OL2	1.5														
65	1.2D + 1....	Yes	Y		DL	1.2	10	-.06	26	-.06	OL2	1.5														
66	1.2D + 1....	Yes	Y		DL	1.2	11	-.06	27	-.06	OL2	1.5														
67	1.2D + 1....	Yes	Y		DL	1.2	4	.06	20	.06	OL3	1.5														
68	1.2D + 1....	Yes	Y		DL	1.2	5	.06	21	.06	OL3	1.5														
69	1.2D + 1....	Yes	Y		DL	1.2	6	.06	22	.06	OL3	1.5														
70	1.2D + 1....	Yes	Y		DL	1.2	7	.06	23	.06	OL3	1.5														
71	1.2D + 1....	Yes	Y		DL	1.2	8	.06	24	.06	OL3	1.5														
72	1.2D + 1....	Yes	Y		DL	1.2	9	.06	25	.06	OL3	1.5														
73	1.2D + 1....	Yes	Y		DL	1.2	10	.06	26	.06	OL3	1.5														
74	1.2D + 1....	Yes	Y		DL	1.2	11	.06	27	.06	OL3	1.5														
75	1.2D + 1....	Yes	Y		DL	1.2	4	-.06	20	-.06	OL3	1.5														
76	1.2D + 1....	Yes	Y		DL	1.2	5	-.06	21	-.06	OL3	1.5														
77	1.2D + 1....	Yes	Y		DL	1.2	6	-.06	22	-.06	OL3	1.5														
78	1.2D + 1....	Yes	Y		DL	1.2	7	-.06	23	-.06	OL3	1.5														
79	1.2D + 1....	Yes	Y		DL	1.2	8	-.06	24	-.06	OL3	1.5														
80	1.2D + 1....	Yes	Y		DL	1.2	9	-.06	25	-.06	OL3	1.5														
81	1.2D + 1....	Yes	Y		DL	1.2	10	-.06	26	-.06	OL3	1.5														
82	1.2D + 1....	Yes	Y		DL	1.2	11	-.06	27	-.06	OL3	1.5														
83	1.2D + 1....	Yes	Y		DL	1.2	4	.06	20	.06	OL4	1.5														
84	1.2D + 1....	Yes	Y		DL	1.2	5	.06	21	.06	OL4	1.5														
85	1.2D + 1....	Yes	Y		DL	1.2	6	.06	22	.06	OL4	1.5														
86	1.2D + 1....	Yes	Y		DL	1.2	7	.06	23	.06	OL4	1.5														
87	1.2D + 1....	Yes	Y		DL	1.2	8	.06	24	.06	OL4	1.5														
88	1.2D + 1....	Yes	Y		DL	1.2	9	.06	25	.06	OL4	1.5														
89	1.2D + 1....	Yes	Y		DL	1.2	10	.06	26	.06	OL4	1.5														
90	1.2D + 1....	Yes	Y		DL	1.2	11	.06	27	.06	OL4	1.5														
91	1.2D + 1....	Yes	Y		DL	1.2	4	-.06	20	-.06	OL4	1.5														
92	1.2D + 1....	Yes	Y		DL	1.2	5	-.06	21	-.06	OL4	1.5														
93	1.2D + 1....	Yes	Y		DL	1.2	6	-.06	22	-.06	OL4	1.5														
94	1.2D + 1....	Yes	Y		DL	1.2	7	-.06	23	-.06	OL4	1.5														
95	1.2D + 1....	Yes	Y		DL	1.2	8	-.06	24	-.06	OL4	1.5														
96	1.2D + 1....	Yes	Y		DL	1.2	9	-.06	25	-.06	OL4	1.5														
97	1.2D + 1....	Yes	Y		DL	1.2	10	-.06	26	-.06	OL4	1.5														
98	1.2D + 1....	Yes	Y		DL	1.2	11	-.06	27	-.06	OL4	1.5														
99	1.2D + 1....	Yes	Y		DL	1.2	4	.06	20	.06	OL5	1.5														
100	1.2D + 1....	Yes	Y		DL	1.2	5	.06	21	.06	OL5	1.5														
101	1.2D + 1....	Yes	Y		DL	1.2	6	.06	22	.06	OL5	1.5														
102	1.2D + 1....	Yes	Y		DL	1.2	7	.06	23	.06	OL5	1.5														
103	1.2D + 1....	Yes	Y		DL	1.2	8	.06	24	.06	OL5	1.5														
104	1.2D + 1....	Yes	Y		DL	1.2	9	.06	25	.06	OL5	1.5														
105	1.2D + 1....	Yes	Y		DL	1.2	10	.06	26	.06	OL5	1.5														
106	1.2D + 1....	Yes	Y		DL	1.2	11	.06	27	.06	OL5	1.5														
107	1.2D + 1....	Yes	Y		DL	1.2	4	-.06	20	-.06	OL5	1.5														
108	1.2D + 1....	Yes	Y		DL	1.2	5	-.06	21	-.06	OL5	1.5														
109	1.2D + 1....	Yes	Y		DL	1.2	6	-.06	22	-.06	OL5	1.5														
110	1.2D + 1....	Yes	Y		DL	1.2	7	-.06	23	-.06	OL5	1.5														
111	1.2D + 1....	Yes	Y		DL	1.2	8	-.06	24	-.06	OL5	1.5														

Load Combinations (Continued)

	Description	Solve	P...	S...	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact..	BLC	Fact...
112	1.2D + 1....	Yes	Y		DL	1.2	9	-.06	25	-.06	OL5	1.5														
113	1.2D + 1....	Yes	Y		DL	1.2	10	-.06	26	-.06	OL5	1.5														
114	1.2D + 1....	Yes	Y		DL	1.2	11	-.06	27	-.06	OL5	1.5														

Hot Rolled Steel Properties

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

Hot Rolled Steel Section Sets

	Label	Shape	Type	Design List	Material	Design R...	A [in2]	Iyy [in4]	Izz [in4]	J [in4]
1	Face Horizontal	PIPE 2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
2	Offset Horizontal	PIPE 2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
3	Stiff Arm	PIPE 2.5	Beam	None	A53 Gr.B	Typical	1.61	1.45	1.45	2.89
4	Mount Pipe	PIPE 2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25
5	Standoff PL	PL3.5x.375	Beam	None	A36 Gr.36	Typical	1.125	.013	.844	.049
6	Bracing Angle	L2.5x2.5x3	Beam	None	A36 Gr.36	Typical	.901	.535	.535	.011
7	Standoff Vertical	PIPE_2.0	Beam	None	A53 Gr.B	Typical	1.02	.627	.627	1.25

Hot Rolled Steel Design Parameters

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
1	M7	Face Horizo...	150	104.3	63	Lbyy						Lateral
2	M44	Face Horizo...	150	104.3	63	Lbyy						Lateral
3	M27	Offset Horiz...	94.5			Lbyy						Lateral
4	M28	Standoff PL	3			Lbyy						Lateral
5	M31	Offset Horiz...	94.5			Lbyy						Lateral
6	M32	Standoff PL	3			Lbyy						Lateral
7	M36A	Bracing Angle	42			Lbyy						Lateral
8	M37A	Bracing Angle	42			Lbyy						Lateral
9	M42	Bracing Angle	58.52			Lbyy						Lateral
10	M43A	Bracing Angle	58.52			Lbyy						Lateral
11	M45A	Bracing Angle	42			Lbyy						Lateral
12	M48	Standoff Ve...	72			Lbyy						Lateral
13	M48A	Standoff Ve...	72			Lbyy						Lateral
14	M51	Stiff Arm	142.556			Lbyy						Lateral
15	M54	Mount Pipe	72			Lbyy						Lateral
16	M57	Mount Pipe	72			Lbyy						Lateral
17	M60	Mount Pipe	96			Lbyy						Lateral
18	M63	Mount Pipe	96			Lbyy						Lateral
19	M66	Mount Pipe	108			Lbyy						Lateral
20	M55A	Offset Horiz...	94.5			Lbyy						Lateral

Hot Rolled Steel Design Parameters (Continued)

	Label	Shape	Length[in]	Lbyy[in]	Lbzz[in]	Lcomp top[in]	Lcomp bot[in]	L-torqu...	Kyy	Kzz	Cb	Function
21	M56A	Standoff PL	3			Lbyy						Lateral
22	M59A	Offset Horiz...	94.5			Lbyy						Lateral
23	M60A	Standoff PL	3			Lbyy						Lateral
24	M64A	Bracing Angle	42			Lbyy						Lateral
25	M65A	Bracing Angle	42			Lbyy						Lateral
26	M70A	Bracing Angle	58.52			Lbyy						Lateral
27	M71A	Bracing Angle	58.52			Lbyy						Lateral
28	M73A	Bracing Angle	42			Lbyy						Lateral

Envelope Joint Reactions

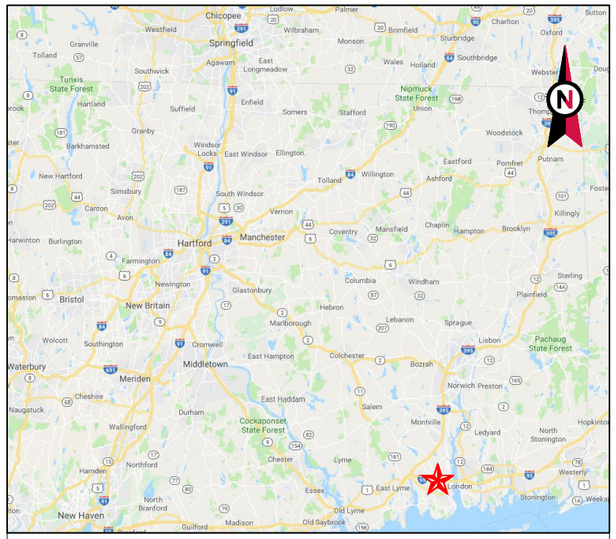
	Joint		X [lb]	LC	Y [lb]	LC	Z [lb]	LC	MX [lb-ft]	LC	MY [lb-ft]	LC	MZ [lb-ft]	LC
1	N38	max	-470.941	3	119.562	15	825.898	46	0	114	0	114	0	114
2		min	-2749.169	43	-182.963	7	292.978	1	0	1	0	1	0	1
3	N45	max	2758.846	35	137.508	15	566.463	49	0	114	0	114	0	114
4		min	463.257	11	-79.99	7	212.862	1	0	1	0	1	0	1
5	N66	max	1661.054	7	1797.778	15	66.017	31	0	114	0	114	0	114
6		min	-1653.208	15	-1804.572	7	27.992	1	0	1	0	1	0	1
7	N94A	max	-56.104	17	188.996	15	873.618	103	0	114	0	114	0	114
8		min	-2939.557	105	-112.124	7	327.809	1	0	1	0	1	0	1
9	N101A	max	2937.301	113	77.475	15	596.302	112	0	114	0	114	0	114
10		min	85.723	9	-141.634	7	237.236	1	0	1	0	1	0	1
11	Totals:	max	2633.02	3	2321.32	15	2730.525	22						
12		min	-2633.007	11	-2321.283	7	1098.877	1						

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

	Member	Shape	Code C...	Loc[in]	LC	Shear Ch...	Loc[i...	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
1	M48A	PIPE_2.0	.815	35.621	15	.238	60.6...		3	20866.733	32130	1871.625	1871.625	1.83	H1-1b
2	M56A	PL3.5x....	.782	0	105	.038	3	z	102	35005.731	36450	284.766	2278.125	1.6...	H1-1b
3	M28	PL3.5x....	.741	0	39	.036	3	z	49	35005.731	36450	284.766	2278.125	1.6...	H1-1b
4	M60A	PL3.5x....	.604	0	113	.029	3	z	113	35005.731	36450	284.766	2278.125	1.6...	H1-1b
5	M32	PL3.5x....	.572	0	48	.027	3	z	50	35005.731	36450	284.766	2278.125	1.6...	H1-1b
6	M66	PIPE_2.0	.330	22.737	11	.093	22.7...		5	12143.947	32130	1871.625	1871.625	1.5...	H1-1b
7	M48	PIPE_2.0	.297	60.632	44	.214	60.6...		3	20866.733	32130	1871.625	1871.625	2.3...	H1-1b
8	M44	PIPE_2.5	.239	75.789	11	.127	14.2...		14	27330.401	50715	3596.25	3596.25	1	H1-1b
9	M7	PIPE_2.5	.234	23.684	15	.096	23.6...		14	27330.401	50715	3596.25	3596.25	4.1...	H1-1b
10	M55A	PIPE_2.5	.206	88.532	105	.279	5.968		103	30530.241	50715	3596.25	3596.25	2.5...	H1-1b
11	M27	PIPE_2.5	.195	88.532	43	.263	5.968		50	30530.241	50715	3596.25	3596.25	2.5...	H1-1b
12	M59A	PIPE_2.5	.184	87.537	113	.242	5.968		107	30530.241	50715	3596.25	3596.25	1.7...	H1-1b
13	M31	PIPE_2.5	.174	87.537	35	.229	5.968		44	30530.241	50715	3596.25	3596.25	1.7...	H1-1b
14	M51	PIPE_2.5	.152	142.5...	7	.006	0		33	16119.007	50715	3596.25	3596.25	1.2...	H1-1b*
15	M63	PIPE_2.0	.134	78.821	70	.045	17.1...		14	14916.096	32130	1871.625	1871.625	1.7...	H1-1b
16	M60	PIPE_2.0	.129	78.821	79	.046	78.8...		15	14916.096	32130	1871.625	1871.625	1.7...	H1-1b
17	M70A	L2.5x2.5...	.097	28.952	21	.033	58.52	y	112	13385.508	29192.4	872.574	1673.963	1.14	H2-1
18	M42	L2.5x2.5...	.093	28.952	7	.030	0	y	35	13385.508	29192.4	872.574	1673.963	1.14	H2-1
19	M71A	L2.5x2.5...	.089	28.952	7	.027	58.52	z	15	13385.508	29192.4	872.574	1673.963	1.14	H2-1
20	M43A	L2.5x2.5...	.083	28.952	7	.020	58.52	y	35	13385.508	29192.4	872.574	1673.963	1.14	H2-1
21	M57	PIPE_2.0	.083	5.305	77	.010	5.305		29	20866.733	32130	1871.625	1871.625	2.0...	H1-1b
22	M54	PIPE_2.0	.082	5.305	77	.010	66.6...		32	20866.733	32130	1871.625	1871.625	2.0...	H1-1b
23	M73A	L2.5x2.5...	.069	21.221	4	.004	0	z	15	19383.148	29192.4	872.574	1803.86	1.14	H2-1

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

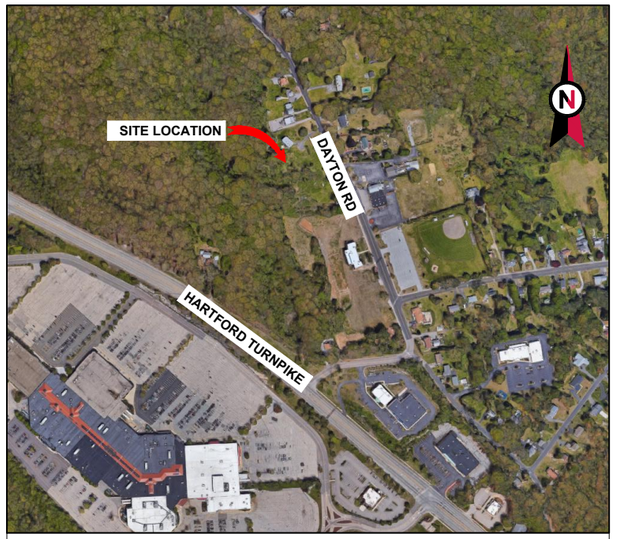
	Member	Shape	Code C...	Loc[in]	LC	Shear Ch...	Loc[i...	Dir	LC	phi*Pnc [lb]	phi*Pnt [lb]	phi*Mn y-...	phi*Mn z-...	Cb	Eqn
24	M64A	L2.5x2.5...	.067	21.221	6	.004	0	z	15	19383.148	29192.4	872.574	1803.86	1.14	H2-1
25	M45A	L2.5x2.5...	.063	21.221	3	.004	0	y	11	19383.148	29192.4	872.574	1803.86	1.14	H2-1
26	M36A	L2.5x2.5...	.063	22.989	36	.004	0	z	7	19383.148	29192.4	872.574	1803.86	1.14	H2-1
27	M65A	L2.5x2.5...	.050	21.221	14	.004	0	y	11	19383.148	29192.4	872.574	1803.86	1.14	H2-1
28	M37A	L2.5x2.5...	.047	21.221	14	.004	0	z	15	19383.148	29192.4	872.574	1803.86	1.14	H2-1



VICINITY MAP

AMERICAN TOWER®

ATC SITE NAME: WATERFORD CT
ATC SITE NUMBER: 411183
T-MOBILE SITE ID: CT11041D
SITE ADDRESS: 53 DAYTON RD.
WATERFORD, CT 06385



LOCATION MAP

T-MOBILE ANTENNA AMENDMENT
67D92DB HYBRID CONFIGURATION

COMPLIANCE CODE

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

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

UTILITY COMPANIES

POWER COMPANY: NORTHEAST
PHONE: (860) 665-6792

TELEPHONE COMPANY: UNKNOWN
PHONE: N/A

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

PROJECT SUMMARY

SITE ADDRESS:

53 DAYTON RD.
WATERFORD, CT 06385
COUNTY: NEW LONDON

GEOGRAPHIC COORDINATES:

LATITUDE: 41.377778

LONGITUDE: -72.141389

GROUND ELEVATION: 186' AMSL

PROJECT TEAM

TOWER OWNER:

AMERICAN TOWER
10 PRESIDENTIAL WAY
WOBURN, MA 01801

ENGINEER:

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

PROPERTY OWNER:

COHANZIE VOLUNTEER FIRE
SERVICE BENEFIT ASSOC
53 DAYTON RD
WATERFORD, CT 06385

PROJECT DESCRIPTION

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

REMOVE (3) PANELS, (3) RRUs, AND (1) 1-5/8" HYBRID CABLE

INSTALL (3) NEW PANELS, (3) RRUs, AND (2) 1-1/4" HYBRID CABLES

EXISTING (6) PANELS, (1) 1-5/8" HYBRID CABLES AND (12) 1-5/8" COAX CABLES TO REMAIN

PROJECT NOTES

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

PROJECT LOCATION DIRECTIONS

FROM HARTFORD, CT:

GET ON I-84 E FROM MAIN ST AND MORGAN ST S. AFTER 0.6 MILES FOLLOW CT-2 E AND CT-11 S TO CT-82 E IN SALEM. TAKE EXIT 4 FROM CT-11 S. AFTER 31.9 MILES TAKE CT-85 S TO DAYTON PL IN WATERFORD. YOU WILL ARRIVE AT YOUR DESTINATION AFTER 11.2 MILES.

SHEET INDEX

SHEET NO:	DESCRIPTION:	REV:	DATE:	BY:
G-001	TITLE SHEET	3	11/20/18	TC
G-002	GENERAL NOTES	0	08/29/18	TC
C-101	DETAILED SITE PLAN & TOWER ELEVATION	2	10/26/18	TC
C-501	ANTENNA INFORMATION & SCHEDULE	3	11/20/18	TC
E-501	GROUNDING DETAILS	0	08/29/18	TC
R-601	SUPPLEMENTAL			

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/29/18
1	ANTENNA MODEL	TC	10/12/18
2	RAD HEIGHT	TC	10/26/18
3	HYBRID CABLES	TC	11/20/18

ATC SITE NUMBER:
411183

ATC SITE NAME:
WATERFORD CT

SITE ADDRESS:
53 DAYTON RD.
WATERFORD, CT 06385

SEAL:

Authorized by "EOR"
~~Nov 20 2018 4:20 PM~~

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T-Mobile

DRAWN BY:	TC
APPROVED BY:	KRF
DATE DRAWN:	08/29/18
ATC JOB NO:	12607172

TITLE SHEET

SHEET NUMBER:	REVISION:
G-001	3

GENERAL CONSTRUCTION NOTES:

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

STRUCTURAL STEEL NOTES:

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

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/29/18

ATC SITE NUMBER:
411183

ATC SITE NAME:
WATERFORD CT

SITE ADDRESS:
53 DAYTON RD.
WATERFORD, CT 06385

SEAL:

Authorized by "EOR"
~~Nov 20 2018 4:20 PM~~ cosign

T-Mobile

DRAWN BY:	TC
APPROVED BY:	KRF
DATE DRAWN:	08/29/18
ATC JOB NO:	12607172

GENERAL NOTES

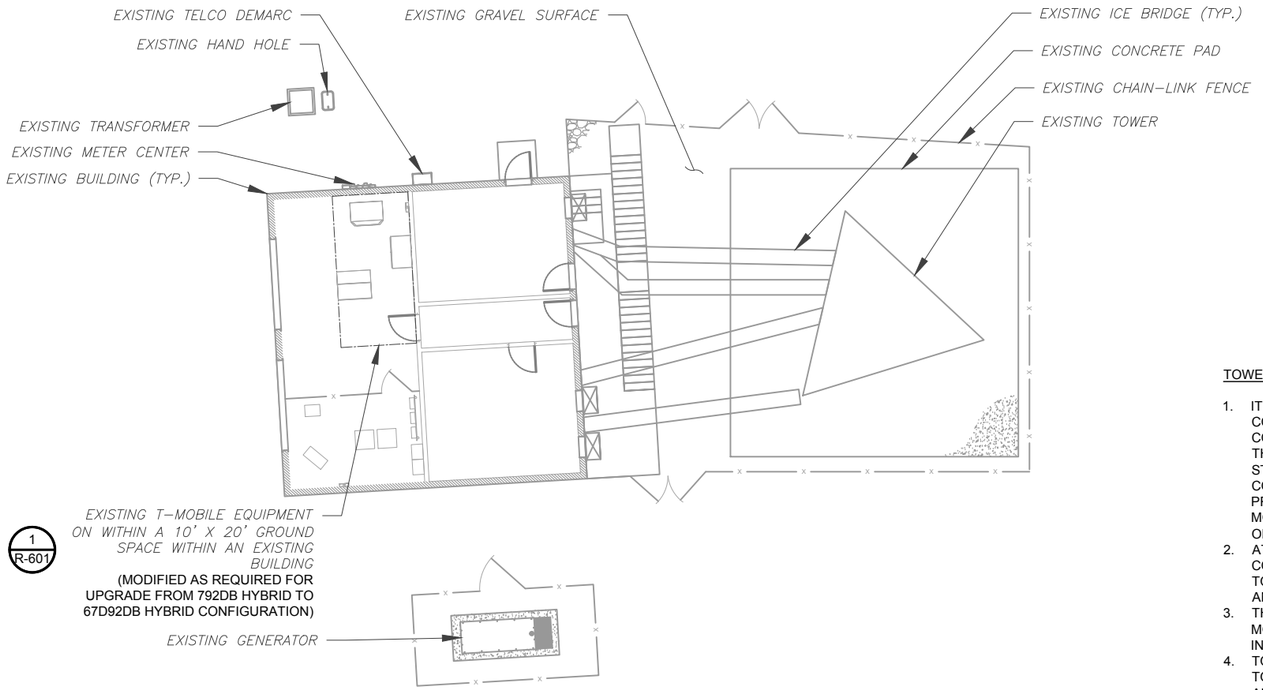
SHEET NUMBER:	REVISION:
G-002	0

SITE PLAN NOTES:

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

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

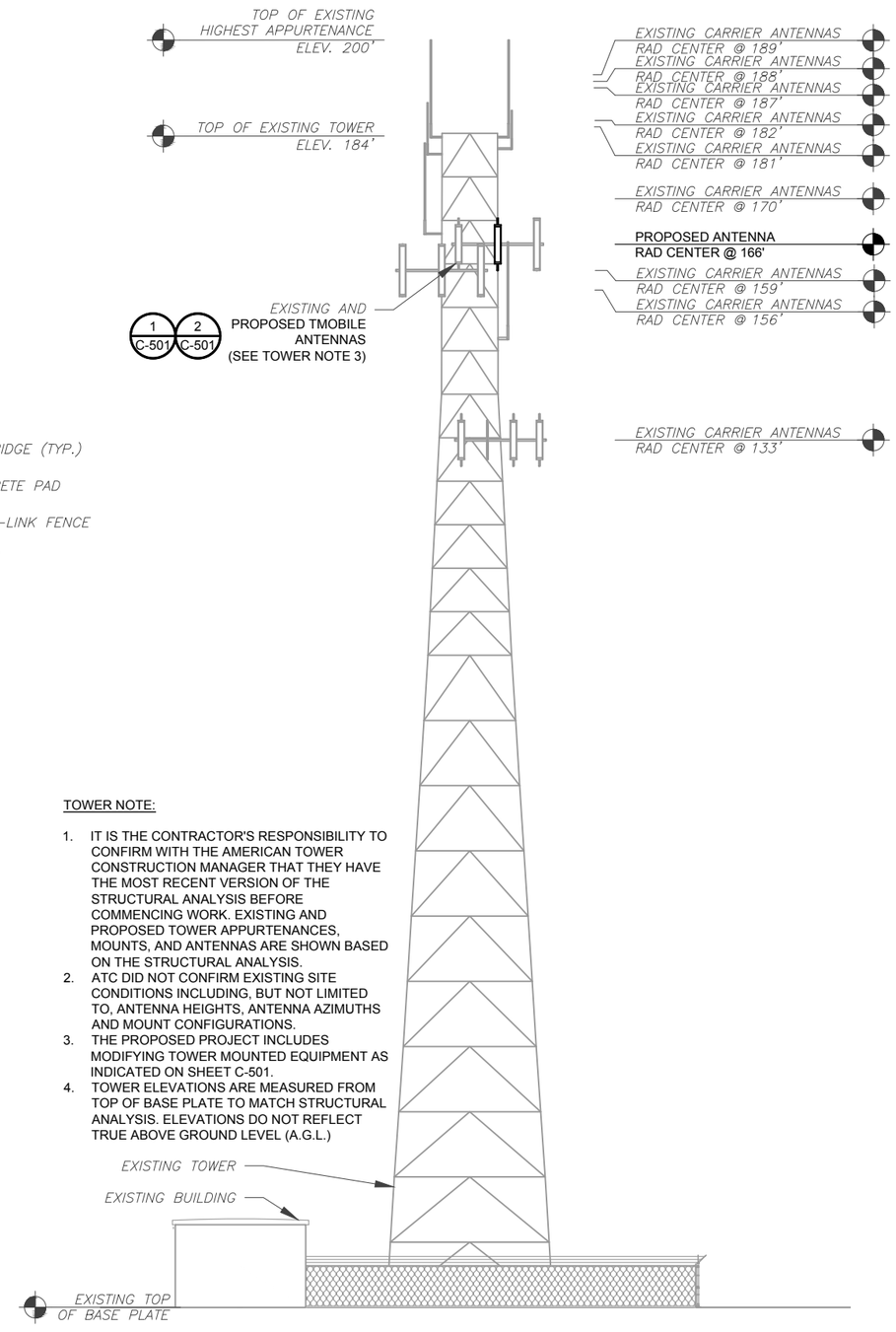
3. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO COORDINATE WITH THE T-MOBILE REPRESENTATIVE AND LOCAL UTILITY COMPANY FOR THE INSTALLATION OF CONDUITS, CONDUCTORS, BREAKERS, DISCONNECTS, OR ANY OTHER EQUIPMENT REQUIRED FOR ELECTRICAL SERVICE. ALL ELECTRICAL WORK SHALL BE PERFORMED IN ACCORDANCE WITH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



1 DETAILED SITE PLAN

0 10' 20'

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



TOWER NOTE:

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONFIRM WITH THE AMERICAN TOWER CONSTRUCTION MANAGER THAT THEY HAVE THE MOST RECENT VERSION OF THE STRUCTURAL ANALYSIS BEFORE COMMENCING WORK. EXISTING AND PROPOSED TOWER APPURTENANCES, MOUNTS, AND ANTENNAS ARE SHOWN BASED ON THE STRUCTURAL ANALYSIS.
2. ATC DID NOT CONFIRM EXISTING SITE CONDITIONS INCLUDING, BUT NOT LIMITED TO, ANTENNA HEIGHTS, ANTENNA AZIMUTHS AND MOUNT CONFIGURATIONS.
3. THE PROPOSED PROJECT INCLUDES MODIFYING TOWER MOUNTED EQUIPMENT AS INDICATED ON SHEET C-501.
4. TOWER ELEVATIONS ARE MEASURED FROM TOP OF BASE PLATE TO MATCH STRUCTURAL ANALYSIS. ELEVATIONS DO NOT REFLECT TRUE ABOVE GROUND LEVEL (A.G.L.)

2 TOWER ELEVATION

SCALE: NOT TO SCALE

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/29/18
1	ANTENNA MODEL	TC	10/12/18
2	RAD HEIGHT	TC	10/26/18

ATC SITE NUMBER:
411183

ATC SITE NAME:
WATERFORD CT

SITE ADDRESS:
53 DAYTON RD.
WATERFORD, CT 06385

SEAL:

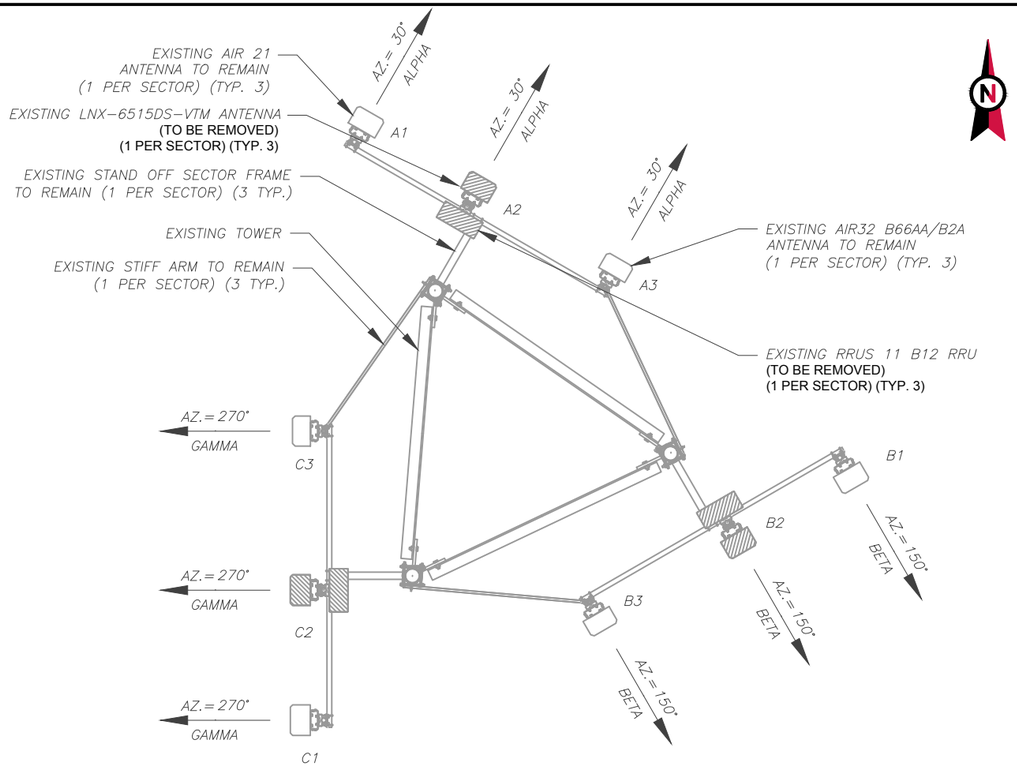
Authorized by "EOR"
~~Nov 20 2018 4:20 PM~~ cosign

T-Mobile

DRAWN BY:	TC
APPROVED BY:	KRF
DATE DRAWN:	08/29/18
ATC JOB NO:	12607172

DETAILED SITE PLAN & TOWER ELEVATION

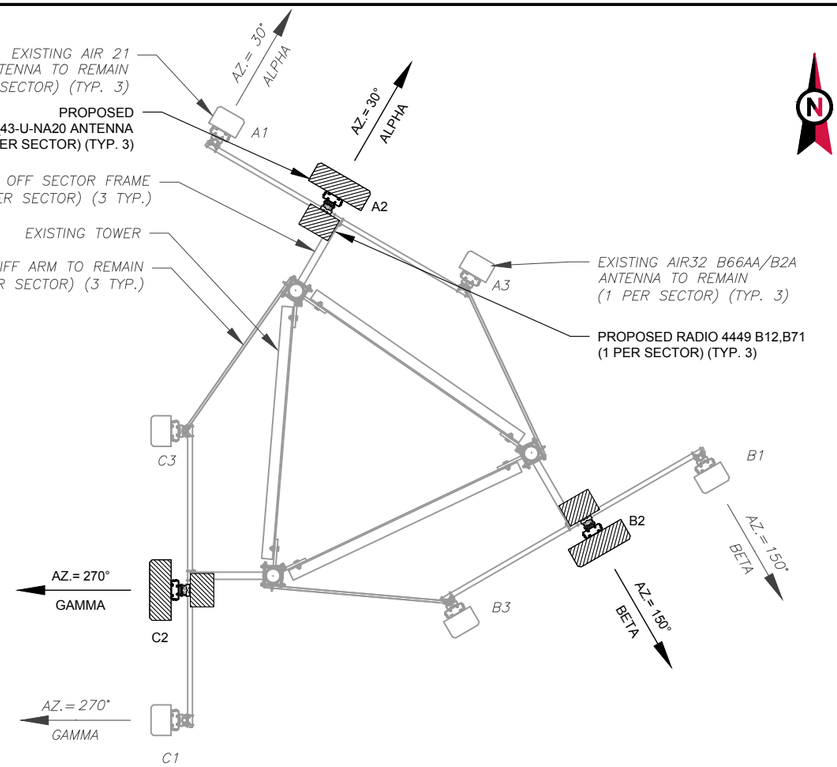
SHEET NUMBER:	REVISION:
C-101	2



1 EXISTING ANTENNA PLAN

NOTES:

1. ATC HAS NOT YET VERIFIED ANY EXISTING ANTENNA CONFIGURATION OR MOUNT CONFIGURATION. CONTRACTOR TO VERIFY MOUNT CONFIGURATION HAS SUFFICIENT SPACE FOR PROPOSED LESSEE EQUIPMENT (I.E. CLEARANCES, MOUNT PIPE OR SUFFICIENT LENGTH, ETC.) ATC DID NOT ANALYZE ANTENNA MOUNT TO DETERMINE ADEQUATE STRUCTURAL CAPACITY FOR ANY LESSEE LOADING.



2 FINAL ANTENNA PLAN

NOTES:

1. ALL PROPOSED EQUIPMENT INCLUDING ANTENNAS, COAX, ETC. SHALL BE MOUNTED IN ACCORDANCE WITH THE TOWER STRUCTURAL ANALYSIS ON FILE WITH THE ATC CM.
2. SPACING OF PROPOSED EQUIPMENT SHALL BE CONFIRMED FOR TOWER CONFLICTS AND PROPOSED MOUNTS SHALL NOT IMPEDE TOWER CLIMBING PEGS.

EXISTING ANTENNA/ COAX SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT	ANTENNA COAX DESCRIPTION
ALPHA	A1	AIR 21	164'-0"	30°	0°	3°	–	(4) 1-5/8"
ALPHA	A2	LNX-6515DS-VTM	164'-0"	30°	0°	2°	RRUS11 B12	–
ALPHA	A3	AIR32 B66AA/B2A	164'-0"	30°	0°	2°	–	–
BETA	B1	AIR 21	164'-0"	150°	0°	3°	–	(4) 1-5/8"
BETA	B2	LNX-6515DS-VTM	164'-0"	150°	0°	2°	RRUS11 B12	–
BETA	B3	AIR32 B66AA/B2A	164'-0"	150°	0°	2°	–	–
GAMMA	C1	AIR 21	164'-0"	270°	0°	3°	–	(4) 1-5/8"
GAMMA	C2	LNX-6515DS-VTM	164'-0"	270°	0°	2°	RRUS11 B12	–
GAMMA	C3	AIR32 B66AA/B2A	164'-0"	270°	0°	2°	–	–

1. (2) EXISTING 1-5/8" HYBRID CABLE TO REMAIN
2. (1) EXISTING 1-5/8" HYBRID CABLE (TO BE REMOVED)

3 ANTENNA SCHEDULE

FINAL ANTENNA/ COAX SCHEDULE

SECTOR	ANT.	MANUFACTURER (MODEL #)	RAD CENTER	AZIMUTH (TN)	MECH. D-TILT	ELEC. D-TILT	ADDITIONAL TOWER MOUNTED EQUIPMENT	ANTENNA COAX DESCRIPTION
ALPHA	A1	AIR 21	166'-0"	30°	0°	3°	-	(4) 1-5/8"
ALPHA	A2	APXVAARR24_43-U-NA20	166'-0"	30°	0°	2°	RADIO 4449 B12,B71	-
ALPHA	A3	AIR32 B66AA/B2A	166'-0"	30°	0°	2°	-	-
BETA	B1	AIR 21	166'-0"	150°	0°	3°	-	(4) 1-5/8"
BETA	B2	APXVAARR24_43-U-NA20	166'-0"	150°	0°	2°	RADIO 4449 B12,B71	-
BETA	B3	AIR32 B66AA/B2A	166'-0"	30°	0°	2°	-	-
GAMMA	C1	AIR 21	166'-0"	270°	0°	3°	-	(4) 1-5/8"
GAMMA	C2	APXVAARR24_43-U-NA20	166'-0"	270°	0°	2°	RADIO 4449 B12,B71	-
GAMMA	C3	AIR32 B66AA/B2A	166'-0"	30°	0°	2°	-	-

1. BASED ON APPROVED ATC APPLICATION 12605190, DATED 08-15-2018. CONFIRM WITH T-MOBILE REP FOR APPLICABLE UPDATES/REVISIONS AND MOST RECENT RFDS.
2. (2) PROPOSED 1-1/4" HYBRID CABLE (250±)
3. (1) EXISTING 1-5/8" HYBRID CABLE TO REMAIN

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/29/18
1	ANTENNA MODEL	TC	10/12/18
2	RAD HEIGHT	TC	10/26/18
3	HYBRID CABLES	TC	11/20/18

ATC SITE NUMBER:
411183

ATC SITE NAME:
WATERFORD CT

SITE ADDRESS:
53 DAYTON RD.
WATERFORD, CT 06385

SEAL:

Authorized by "EOR"
~~Nov 20 2018 4:20 PM~~ cosign

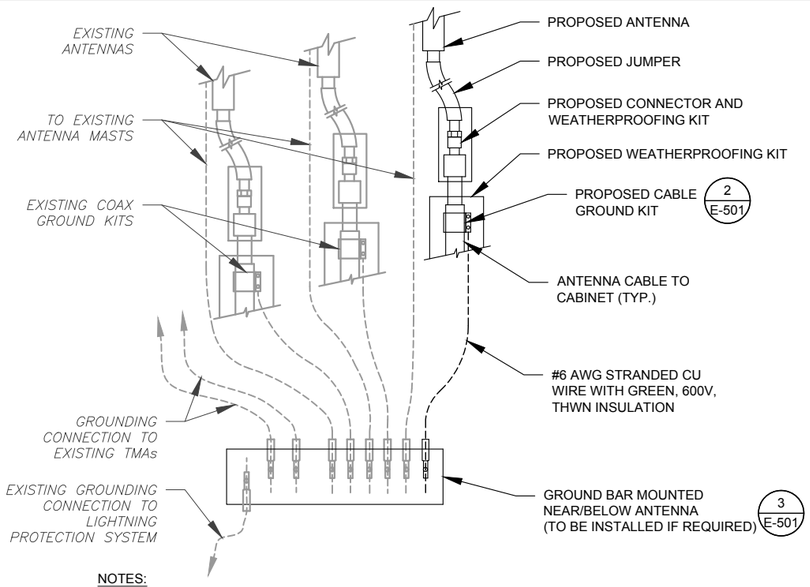
T-Mobile

DRAWN BY:	TC
APPROVED BY:	KRF
DATE DRAWN:	08/29/18
ATC JOB NO:	12607172

ANTENNA INFORMATION & SCHEDULE

SHEET NUMBER: C-501

REVISION: 3

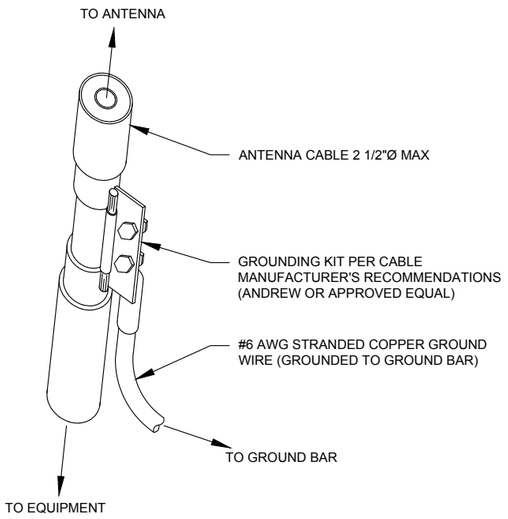


NOTES:

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

1 TYPICAL ANTENNA GROUNDING DIAGRAM

SCALE: NOT TO SCALE

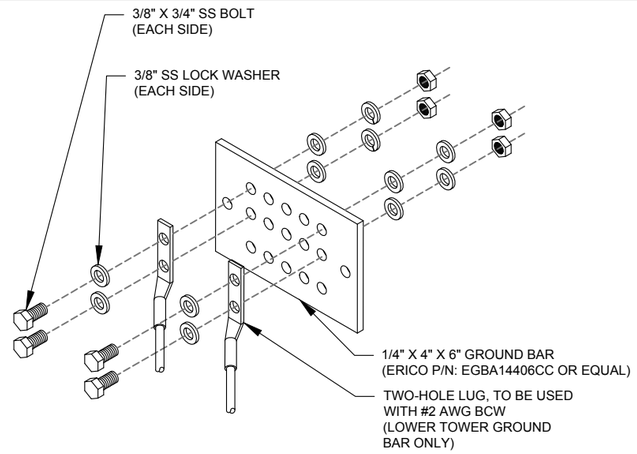


GROUND KIT NOTES:

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

2 CABLE GROUND KIT CONNECTION DETAIL

SCALE: NOT TO SCALE



GROUND BAR NOTES:

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

3 TOWER GROUND BAR DETAIL

SCALE: NOT TO SCALE

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

REV.	DESCRIPTION	BY	DATE
0	FOR CONSTRUCTION	TC	08/29/18

ATC SITE NUMBER:
411183

ATC SITE NAME:
WATERFORD CT

SITE ADDRESS:
53 DAYTON RD.
WATERFORD, CT 06385

SEAL:

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Nov 20 2018 4:20 PM

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DRAWN BY:	TC
APPROVED BY:	KRF
DATE DRAWN:	08/29/18
ATC JOB NO:	12607172

GROUNDING DETAILS

SHEET NUMBER:	REVISION:
E-501	0

Existing RAN Equipment		
Template: 792DB Hybrid		
Enclosure	1	2
Enclosure Type	RBS 6102	Ancillary Equipment
Baseband	BB 5216 (L2100, L1900, L700); DUW30 (U1900); DUW30 (U2100 (DECOMMISSIONED)); DUG20 (G1900)	
Hybrid Cable System		Ericsson 9x18 HCS 70m; Ericsson 6x12 HCS 6AWG 80m
Multiplexer	XMU	
Radio	RUS01 B4 (x6) (U2100 (DECOMMISSIONED))	

Proposed RAN Equipment		
Template: 87D92DB Hybrid		
Enclosure	1	2
Enclosure Type	RBS 6102	Ancillary Equipment
Baseband	BB 5216 (L2100, L1900, L700, L600); DUW30 (U1900); DUW30 (U2100 (DECOMMISSIONED)); DUG20 (G1900)	
Hybrid Cable System		Ericsson 9x18 HCS 70m; Ericsson 6x12 HCS 6AWG 80m (x2)
Multiplexer	XMU	
Radio	RUS01 B4 (x6) (U2100 (DECOMMISSIONED))	
RAN Scope of Work:		

1 CABINET CONFIGURATION
SCALE: NOT TO SCALE

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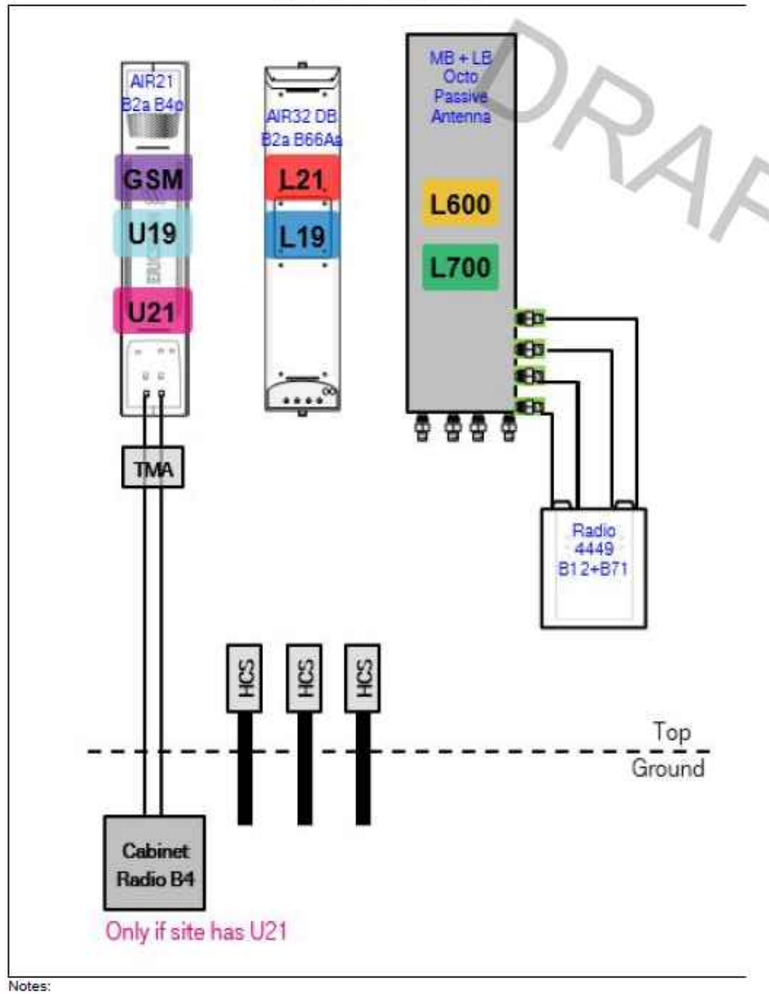

Notes:

2 ANTENNA CONFIGURATION
SCALE: NOT TO SCALE

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

SUPPLEMENTAL

SHEET NUMBER:	REVISION:
R-601	0

UPS Internet Shipping: View/Print Label

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

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

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

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

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RAMSEY ,NJ 07446

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SUFFERN ,NY 10901

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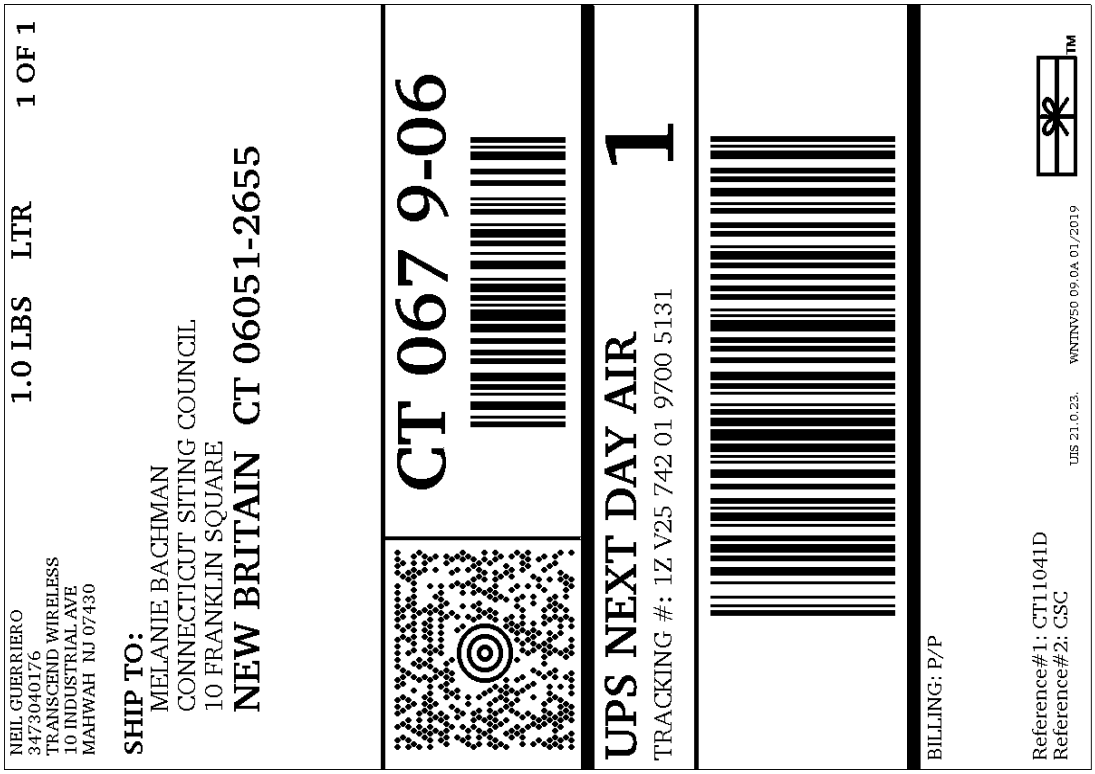

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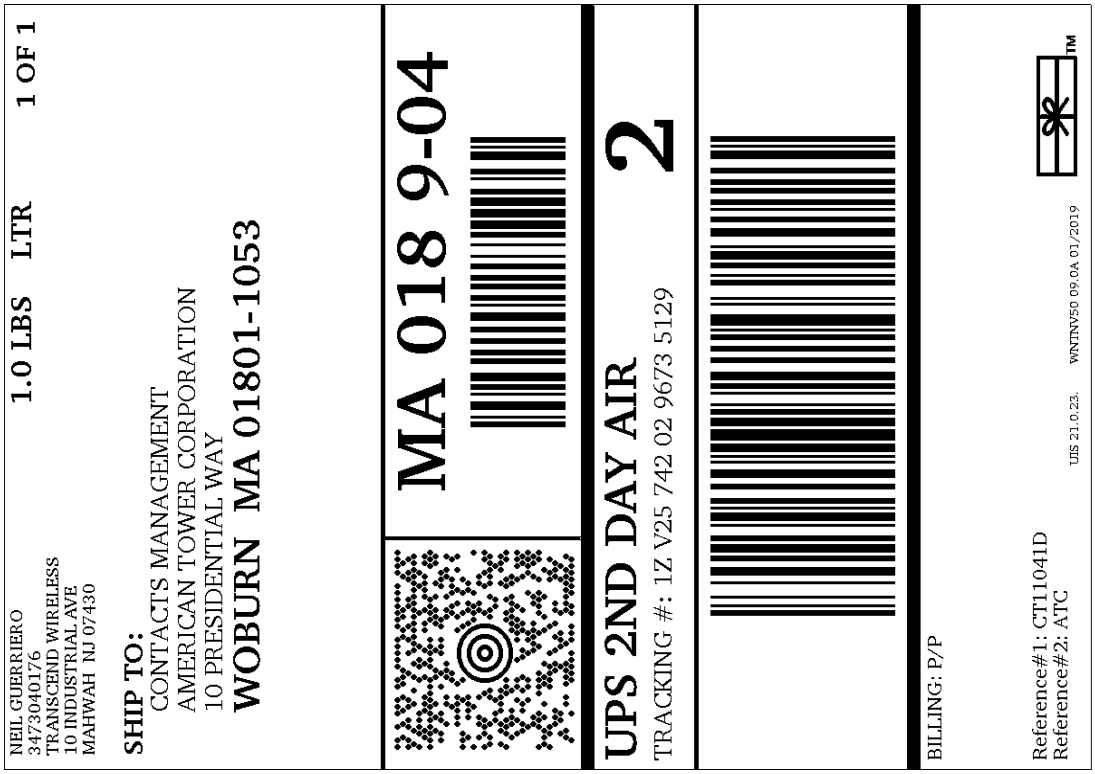

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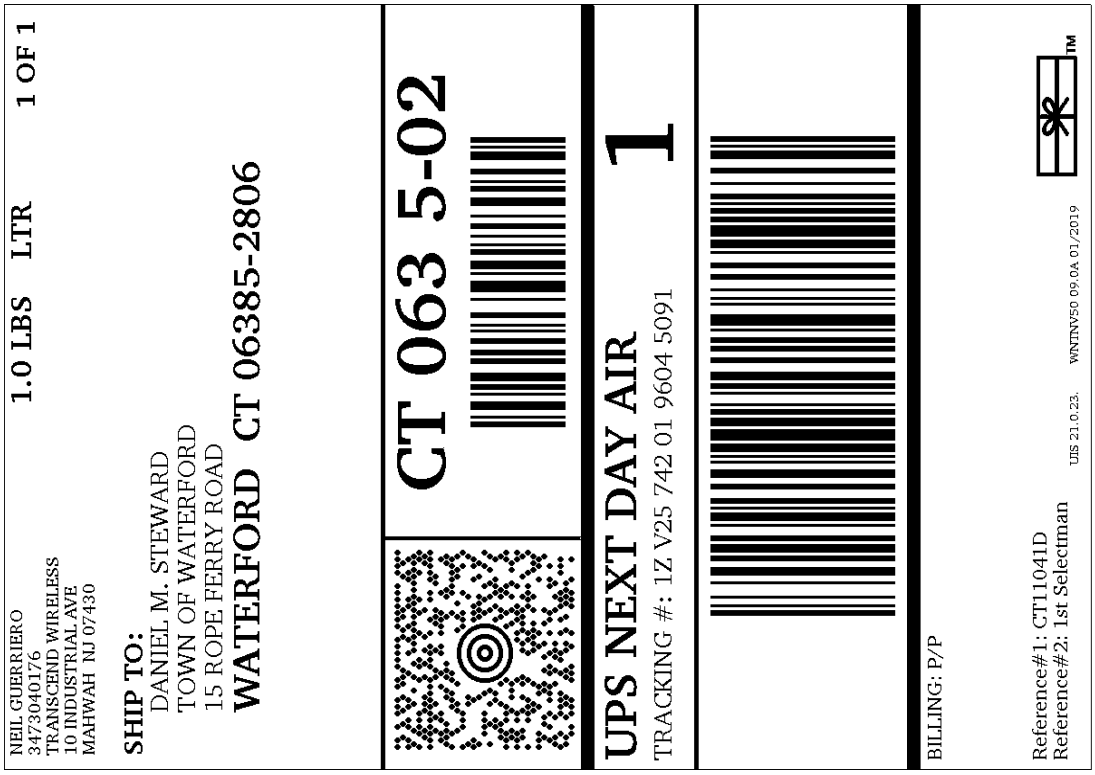

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