4/26/2018

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

Regarding: Notice of Exempt Modification – Antenna Swap
Property Address: 159 Weingart Road, Harwinton, CT
AT&T Site: CTL01057 / FA: 10035016

Dear Ms. Bachman:

On behalf of AT&T, please accept this application as notification pursuant to R.C.S.A. §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. §16- 50j-72(b) (2).

AT&T currently maintains a wireless telecommunications facility on an existing monopole at the above-referenced address. SBC Tower Holdings LLC c/o American Tower, Inc., owns said facility. The site consists of nine (9) wireless telecommunication antennas at an antenna centerline height of 185-feet on an existing 189-foot monopole tower. AT&T now intends to remove (3) Powerwave 7770 panel antennas on position 3 all sectors, while retaining three (3) Powerwave 7770 panel antennas on position 1, all sectors, (2) AM-X-CD-16-65-00T-RET and (1) 800-10764 panel antennas, position 2. AT&T intends to install (3) QS66512-2 panel antennas, position 3 all sectors, for a total of (9) panel antennas, at the 185-foot level. AT&T also intends to install three (3) RRU-32 on the existing antenna masts.

Please accept this letter pursuant to Regulation of Connecticut State Agencies §16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-5I0j-72(b) (2). In accordance with R.C.S.A., a copy of this letter is being sent to Michael R. Criss, First Selectman of the Town of Harwinton; Polly Redmond, Land Use Coordinator for the town of Harwinton; and American Tower, Inc., Property and Tower Owner.

The planned modifications to AT&T's facility fall squarely within those activities explicitly provided for in R.C.S.A. §16-50j-72(b) (2).

1. The proposed modifications will not result in an increase in the height of the existing tower. AT&T's replacement antennas will be installed at the 185-foot level of the 189-foot monopole.
2. The proposed modifications will not involve any changes to ground-mounted equipment and, therefore, will not require and extension of the site boundary.
3. The proposed modifications will not increase the noise levels at the facility by six decibels or more, or to levels that exceed state and local criteria.
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A

cumulative worst-case RF emissions calculation for AT&T's modified facility is provided in the RF Emissions Compliance Report, included.

5. The proposed modifications will not cause a change or alteration in the physical or environmental characteristics of the site.
6. The tower and its foundation can support AT&T's proposed modifications. (See Structural Analysis Report included)

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

Sincerely,

Ryan Lynch
Real Estate Specialist | Smartlink, LLC
85 Rangeway Road, Building 3, Suite 102
North Billerica, MA 01862

Enclosures

CC w/ enclosures:

Michael R. Criss, First Selectman of the Town of Harwinton,
Polly Redmond, Land Use Coordinator for the Town of Harwinton,
American Tower, Inc., Property and Tower Owner

Ryan Lynch

From: TrackingUpdates@fedex.com
Sent: Monday, April 30, 2018 1:25 PM
To: Ryan Lynch
Subject: FedEx Shipment 772085821729 Delivered

Your package has been delivered

Tracking # 772085821729

Ship date:
Thu, 4/26/2018

Ryan Lynch
Smartlink LLC
North Billerica, MA 01862
US

Delivery date:
Mon, 4/30/2018 1:22 pm

ATTN: Polly Redmond, Land Use
Town of Harwinton
100 Bentley Drive
HARWINTON, CT 06791
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	772085821729
Status:	Delivered: 04/30/2018 1:22 PM Signed for By: C.SLASON
Signed for by:	C.SLASON
Delivery location:	HARWINTON, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx 2Day
Packaging type:	FedEx Envelope
Number of pieces:	1
Weight:	1.00 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	4/30/2018 by 4:30 pm

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Ryan Lynch

From: TrackingUpdates@fedex.com
Sent: Monday, April 30, 2018 1:25 PM
To: Ryan Lynch
Subject: FedEx Shipment 772085865750 Delivered

Follow Up Flag: Follow up
Flag Status: Completed

Your package has been delivered

Tracking # 772085865750

Ship date:
Thu, 4/26/2018

Ryan Lynch
Smartlink LLC
North Billerica, MA 01862
US

Delivered

Delivery date:
Mon, 4/30/2018 1:22 pm

ATTN: Mayor Michael Criss
Town of Harwinton
100 Bentley Drive
HARWINTON, CT 06791
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	772085865750
Status:	Delivered: 04/30/2018 1:22 PM Signed for By: C.SLASON
Signed for by:	C.SLASON
Delivery location:	HARWINTON, CT
Delivered to:	Receptionist/Front Desk
Service type:	FedEx 2Day
Packaging type:	FedEx Envelope
Number of pieces:	1
Weight:	1.00 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	4/30/2018 by 4:30 pm

Please do not respond to this message. This email was sent from an unattended mailbox. This report was generated at approximately 12:25 PM CDT on 04/30/2018.

All weights are estimated.

To track the latest status of your shipment, click on the tracking number above.

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

Ryan Lynch

From: TrackingUpdates@fedex.com
Sent: Friday, April 27, 2018 9:22 AM
To: Ryan Lynch
Subject: FedEx Shipment 772085795831 Delivered

Your package has been delivered

Tracking # 772085795831

Ship date:
Thu, 4/26/2018

Ryan Lynch
Smartlink LLC
North Billerica, MA 01862
US

Delivered

Delivery date:
Fri, 4/27/2018 9:14 am

ATTN: Zoning
American Tower Corporation
10 Presidential Way
WOBURN, MA 01801
US

Shipment Facts

Our records indicate that the following package has been delivered.

Tracking number:	772085795831
Status:	Delivered: 04/27/2018 09:14 AM Signed for By: D.AMICIE
Signed for by:	D.AMICIE
Delivery location:	WOBURN, MA
Delivered to:	Receptionist/Front Desk
Service type:	FedEx 2Day
Packaging type:	FedEx Envelope
Number of pieces:	1
Weight:	0.50 lb.
Special handling/Services:	Deliver Weekday
Standard transit:	4/30/2018 by 4:30 pm

Standard transit is the date and time the package is scheduled to be delivered by, based on the selected service, destination and ship date. Limitations and exceptions may apply. Please see the FedEx Service Guide for terms and conditions of service, including the FedEx Money-Back Guarantee, or contact your FedEx Customer Support representative.

Thank you for your business.

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Owner and Parcel Information			
Owner Name	SBC TOWER HOLDINGS LLC C/O AMERICAN TOWER	**Today's Date**	December 12, 2017
Mailing Address	PO BOX 723597	**Parcel ID**	593 (Account #: 3057)
	ATLANTA, GA 31139		
Location Address	159 WEINGART RD	**Census Tract**	298300000000
Map / Block / Lot	B8 / 05 / 0022	**Acreage**	5.35
Use Class / Description	3-1 IND LAND		
Assessing Neighborhood	0001A	**Utilities**	

Current Appraised Value Information							
Building Value	**XF Value**	**OB Value**	**Land Value**	**Special Land Value**	**Total Appraised Value**	**Net Appraised Value**	**Current Assessment**
$ 24,600	$ 0	$ 19,500	$ 129,170		$ 173,270	$ 173,270	$ 121,290

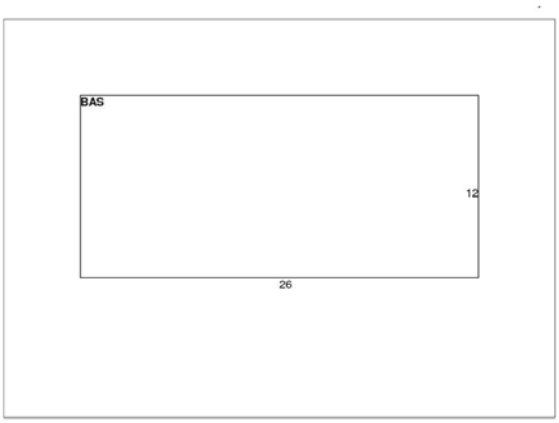
Assessment History				
Year	**Building**	**OB/Misc**	**Land**	**Total Assessment**
Current	$ 17,220	$ 13,650	$ 90,420	$ 121,290
2016	$ 17,220	$ 13,650	$ 90,420	$ 121,290
2015	$ 17,220	$ 13,650	$ 90,420	$ 121,290

Land Information				
Use	**Class**	**Zoning**	**Area**	**Value**
IND LAND	I	TR1.5	1.5 AC	$ 105,300
EX ACRES	R		3.85 AC	$ 23,870

Commercial Building Information									
Style	**Year Built**	**Eff Year Built**	**Gross Area**	**Stories**	**Grade**	**Exterior Wall**	**Interior Wall**	**Wall Height**	**# Units**
Warehouse	1995	1995	312	1	Average +20	Concr/Cinder	Drywall/Sheet	9	1
Roof Cover	**Roof Structure**	**Floor Type**	**Heat Type**	**Heat Fuel**	**AC Type**	**Sprinkler**	**Construction**	**Plumbing**	**Comm Walls**
Concrete Tile	Flat	Average	Solar Assisted	None	NONE	%	MASONRY	NONE	0%

Building Sub Areas				
Code	**Description**	**Living Area**	**Gross Area**	**Effective Area**
BAS	First Floor	312	312	
	Totals	**312**	**312**	**312**

Building Sketch Enlarge



Building Photo
NA

Out Buildings / Extra Features				
Description	**Sub Description**	**Area**	**Year Built**	**Value**
PAVING		3,900 S.F.	1995	$ 19,500

Sale Information						
Sale Date	**Sale Price**	**Deed Book/Page**	**Sale Qualification**	**Reason**	**Vacant or Improved**	**Owner**
08/19/2013		0240/1013	Unqualified		Improved	SBC TOWER HOLDINGS LLC C/O AMERICAN TOWER

06/26/2013	$ 394,000	0240/0205	Qualified		Vacant	AMERICAN TOWER ASSET SUB II LLC
06/05/2002		0171/0811	Qualified			CLEMENTE JAMIE L + LAURA DOROTHY M

Permit Information

Permit ID	Issue Date	Type	Description	Amount	Inspection Date	% Complete	Date Complete	Comments
1718CA	08/14/2017		CO ISSUED			0		
1737B	04/06/2017		REINFORCEMENT BARS	$ 11,000		100		
1720B	02/17/2017		3 ANTENNAS	$ 15,000		100		
9520	04/01/2015		ADDING 3 REMOTE RADI	$ 4,750		0		
9447	11/13/2014		MODIFICATIONS	$ 13,000		0		
9035	09/20/2013		GENERATOR	$ 10,000		0		
8867	04/30/2013	EL	Electric	$ 12,500		0		
8815	03/21/2013			$ 20,000		0		CABINETS & CONCRETE SLAB
8709	11/21/2012		ANTENNAS	$ 10,000		0		
7995	01/25/2011		CELLUAR SITE	$ 12,000		0		
7986	12/22/2010	EL	Electric	$ 15,000		0		

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Structural Analysis Report

Structure	:	**181.9 ft Monopole**
ATC Site Name	:	**Harwinton, CT**
ATC Site Number	:	**302502**
Engineering Number	:	**OAA712918_C3_05**
Proposed Carrier	:	**AT&T Mobility**
Carrier Site Name	:	**Harwinton Weingart Road**
Carrier Site Number	:	**CTL01057 / 10035016**
Site Location	:	**159 Weingart Road** **Harwinton, CT 06791-1109** **41.787800,-73.092500**
County	:	**Litchfield**
Date	:	**April 18, 2018**
Max Usage	:	**99%**
Result	:	**Pass**

Prepared By:
Parvin NikpoorParizi
Structural Engineer I

Reviewed By:

COA: PEC.0001553

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Table of Contents

Introduction

The purpose of this report is to summarize results of a structural analysis performed on the 181.9 ft monopole to reflect the change in loading by AT&T Mobility.

Supporting Documents

Tower Drawings	Mapping by Smith Cullum Inc. Site #CT-0038, dated February 13, 2002
Foundation Drawing	Girard & Co. Engineers Job #3C237, dated April 24, 1990
Geotechnical Report	Johnson Soils Engineering Co. Report #14974-H dated January 28, 2002
Modifications	Hutter Trunkina Engineering Project #03320B, dated August 4, 2003 ATC Project #42504234, dated February 27, 2009 ATC Job #OAA684307_C6_06, dated November 16, 2016

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:	93 mph (3-Second Gust, V_{ASD}) / 120 mph (3-Second Gust, V_{ULT})
Basic Wind Speed w/ Ice:	40 mph (3-Second Gust) w/ 1" 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 = 0.18, 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					
181.9	185.0	6	Powerwave LGP21401	Platform w/ Handrails	(12) 1 1/4" Coax (1) 0.39" Fiber Trunk (2) 0.78" 8 AWG 6	AT&T Mobility
		6	Ericsson RRUS 11 (Band 12)			
		3	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
176.0	176.0	6	RFS FD9R6004/2C-3L (3.1 lbs)	Low Profile Platform	(11) 1 5/8" Coax (2) 1 5/8" Hybriflex	Verizon
		3	Alcatel-Lucent B13 RRH4x30-4R			
		3	Alcatel-Lucent B66A RRH4x45-4R w/o Solar Shield			
		2	RFS DB-T1-6Z-8AB-0Z			
		6	Commscope SBNHH-1D65B (72.9")			
		6	Antel LPA-80063/6CF			
166.0	166.0	3	Ericsson AIR 21, 1.3 M, B2A B4P	Low Profile Platform	(6) 1 5/8" Coax (1) 1 5/8" Fiber	Metro PCS
		3	Ericsson AIR 21, 1.3M, B4A B2P			
		3	Andrew LNX-6515DS-A1M			
146.0	146.0	3	KMW TTA (HB-X-WM-17-65-00T)	Side Arms	(6) 1 5/8" Coax	Clearwire
		3	KMW HB-X-WM-17-65-00T			

Equipment to be Removed

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
181.9.0	185.0	3	Powerwave 7770.00	-	-	AT&T Mobility
		1	Andrew ABT-DFDM-ADB			

Proposed Equipment

Elevation[1] (ft)		Qty	Antenna	Mount Type	Lines	Carrier
Mount	RAD					
181.9	185.0	3	Kaelus DBC0061F1V51-2	Platform w/ Handrails	(2) 0.78" 8 AWG 6 (4) 0.39" Fiber Trunk (1) 3" conduit	AT&T Mobility
		1	Raycap DC6-48-60-0-8F			
		1	Raycap DC6-48-60-18-8F ("Squid")			
		3	Ericsson RRUS 32 (50.8 lbs)			
		3	Ericsson RRUS 12			
		3	Quintel QS66512-2			

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

Install proposed coax inside the pole shaft.

Structure Usages

Structural Component	Controlling Usage	Pass/Fail
Anchor Bolts	78%	Pass
Shaft	79%	Pass
Base Plate	37%	Pass
Flanges	52%	Pass
Reinforcement	99%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,841.6	92%
Axial (Kips)	64.9	34%
Shear (Kips)	30.7	15%

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

Deflection and Sway*

Antenna Elevation (ft)	Antenna	Carrier	Deflection (ft)	Sway (Rotation) (°)
181.9	Kaelus DBC0061F1V51-2	AT&T Mobility	3.224	2.116
	Raycap DC6-48-60-0-8F			
	Raycap DC6-48-60-18-8F ("Squid")			
	Ericsson RRUS 32 (50.8 lbs)			
	Ericsson RRUS 12			
	Quintel QS66512-2			

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

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Standard Conditions

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

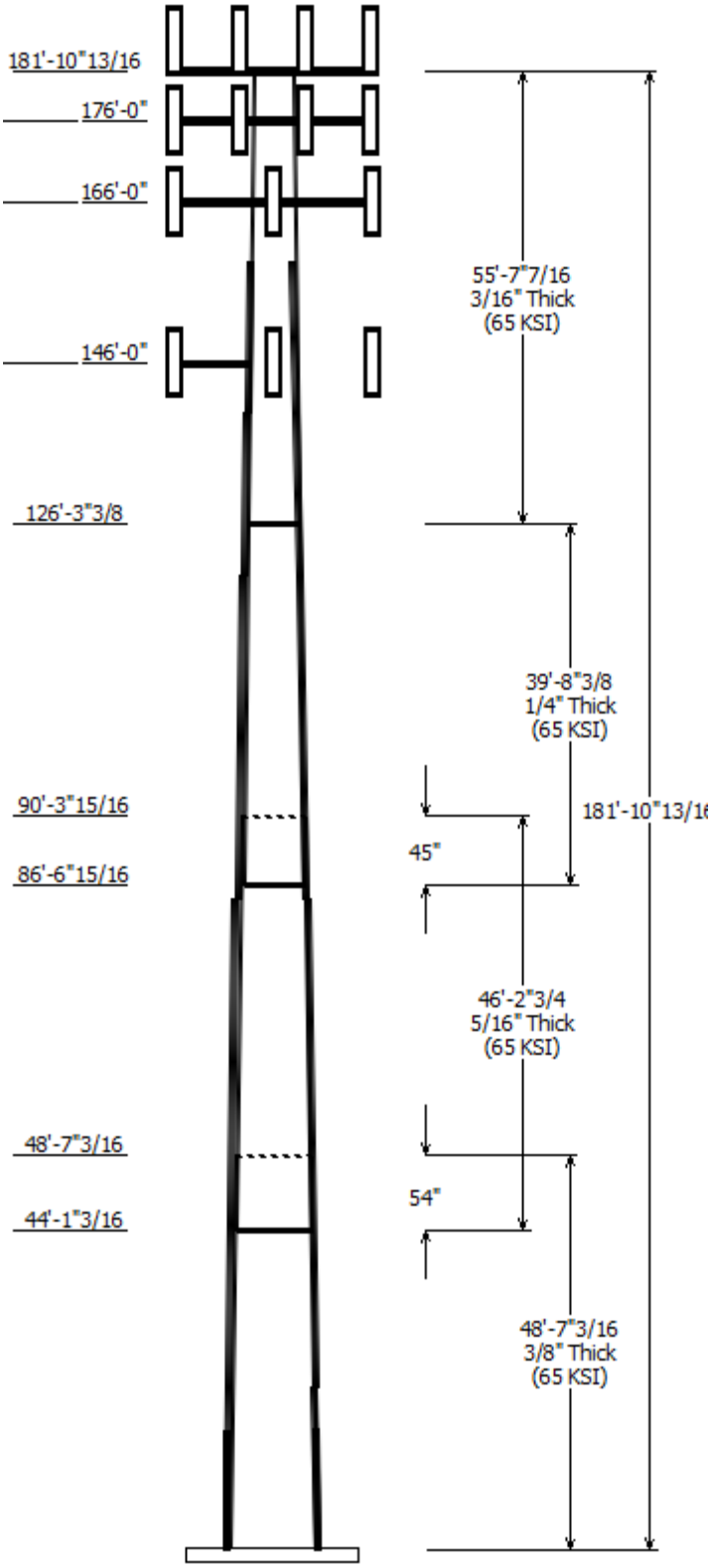
- Information supplied by the client regarding antenna, mounts and feed line loading
- Information from drawings, design and analysis documents, and field notes in the possession of A.T. Engineering Service, PLLC

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

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

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

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



Job Information

Pole :	302502	Code:	ANSI/TIA-222-G
Location :	Harwinton, CT		
Description :	182 ft Monopole		
Client :	AT&T MOBILITY	Struct Class :	II
Shape :	12 Sides	Exposure :	B
Height :	181.90 (ft)	Topo :	1
Base Elev (ft):	0.00		
Taper:	0.162864 (in/ft)		

Sections Properties

Shaft Section	Length (ft)	Diameter (in) Accross Flats Top	Bottom	Thick (in)	Joint Type	Overlap Length (in)	Shape	Steel Grade (ksi)
1	48.600	35.08	43.00	0.375		0.000	12 Sides	65
2	46.230	28.91	36.44	0.313	Slip Joint	54.000	12 Sides	65
3	39.700	23.55	30.02	0.250	Slip Joint	45.000	12 Sides	65
4	55.620	14.50	23.55	0.188	Butt Joint	0.000	12 Sides	65

Discrete Appurtenance

Attach Elev (ft)	Force Elev (ft)	Qty	Description
181.900	185.000	3	Quintel QS66512-2
181.900	185.000	3	Ericsson RRUS 12
181.900	185.000	3	Ericsson RRUS 32 (50.8 lbs)
181.900	185.000	1	Raycap DC6-48-60-18-8F
181.900	185.000	1	Raycap DC6-48-60-0-8F
181.900	185.000	3	Kaelus DBC0061F1V51-2
181.900	181.900	1	Flat Platform w/ Handrails
181.900	185.000	6	Ericsson RRUS 11 (Band 12)
181.900	185.000	3	KMW AM-X-CD-16-65-00T-RET
181.900	185.000	6	Powerwave Allgon LGP21401
181.900	185.000	3	Powerwave Allgon 7770.00
176.000	176.000	1	Flat Low Profile Platform
176.000	176.000	6	Antel LPA-80063/6CF
176.000	176.000	6	Commscope SBNHH-1D65B
176.000	176.000	2	RFS DB-T1-6Z-8AB-0Z
176.000	176.000	3	Alcatel-Lucent B66A RRH4x45-
176.000	176.000	3	Alcatel-Lucent B13 RRH4x30-4R
176.000	176.000	6	RFS FD9R6004/2C-3L (3.1 lbs)
166.000	166.000	1	Round Low Profile Platform
166.000	166.000	3	Andrew LNX-6515DS-A1M
166.000	166.000	3	Ericsson AIR 21, 1.3M, B4A B2P
166.000	166.000	3	Ericsson AIR 21, 1.3 M, B2A B4
146.000	146.000	1	Side Arms
146.000	146.000	3	KMW HB-X-WM-17-65-00T
146.000	146.000	3	KMW TTA (HB-X-WM-17-65-00T)

Linear Appurtenance

Elev (ft) From	To	Description	Exposed To Wind
140.0	160.0	3" Solid Rod	Yes
120.0	140.0	3.5" Solid Rod	Yes
80.000	120.0	4.0" Solid Rod	Yes
5.000	146.0	1 5/8" Coax	Yes
5.000	166.0	1 5/8" Coax	No
5.000	166.0	1 5/8" Fiber	No
5.000	176.0	1 5/8" Coax	No
5.000	176.0	1 5/8" Hybriflex	No
5.000	181.9	0.39" Fiber Trunk	No
5.000	181.9	0.39" Fiber Trunk	No
5.000	181.9	0.78" 8 AWG 6	No

5.000	181.9	0.78" 8 AWG 6	No
5.000	181.9	1 1/4" Coax	No
5.000	181.9	3" Conduit	No
0.000	19.500	#20Dywidag	Yes
0.000	80.000	4.25" Solid Rod	Yes

Load Cases

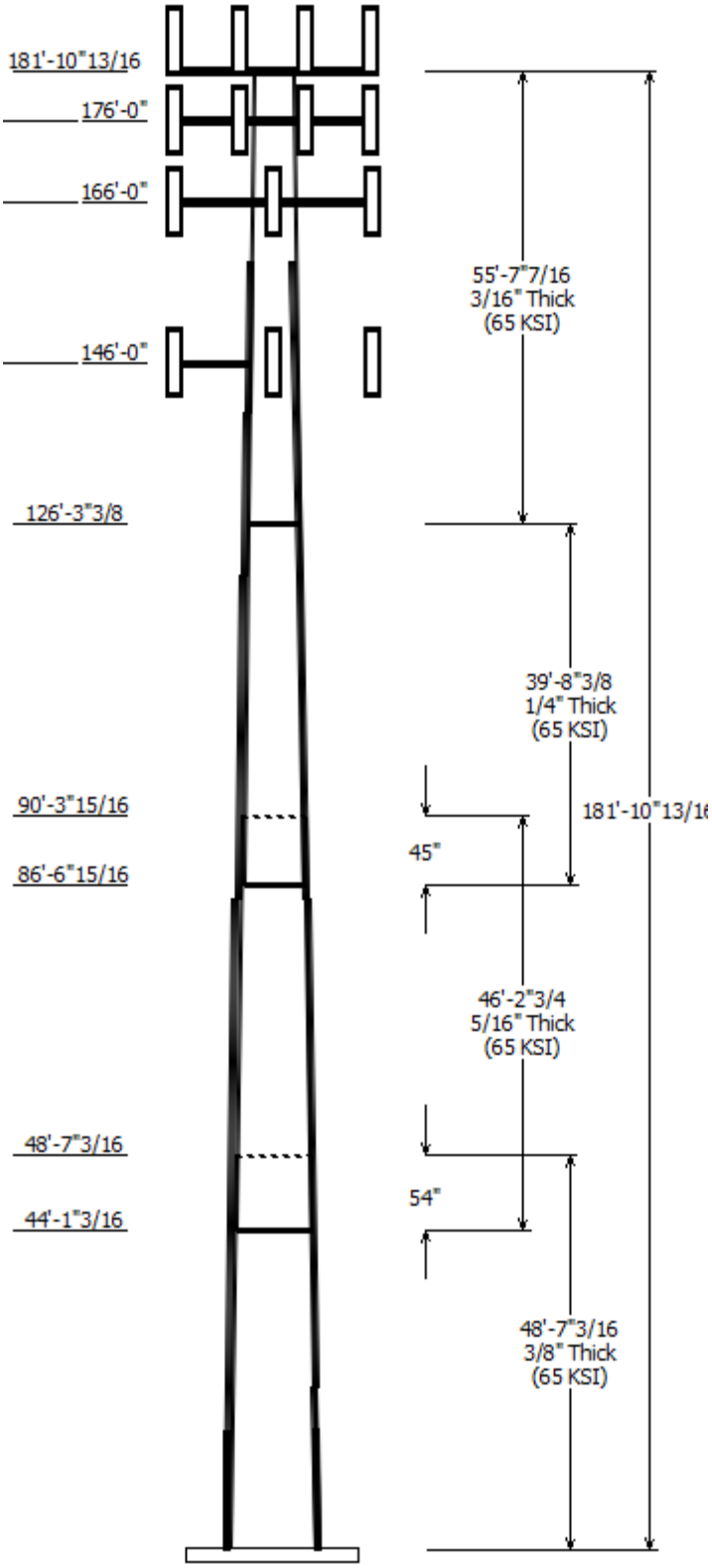
1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Lateral
(0.9 - 0.2Sds) * DL + E	Seismic (Reduced DL) Equivalent Modal
1.0D + 1.0W	Serviceability 60 mph

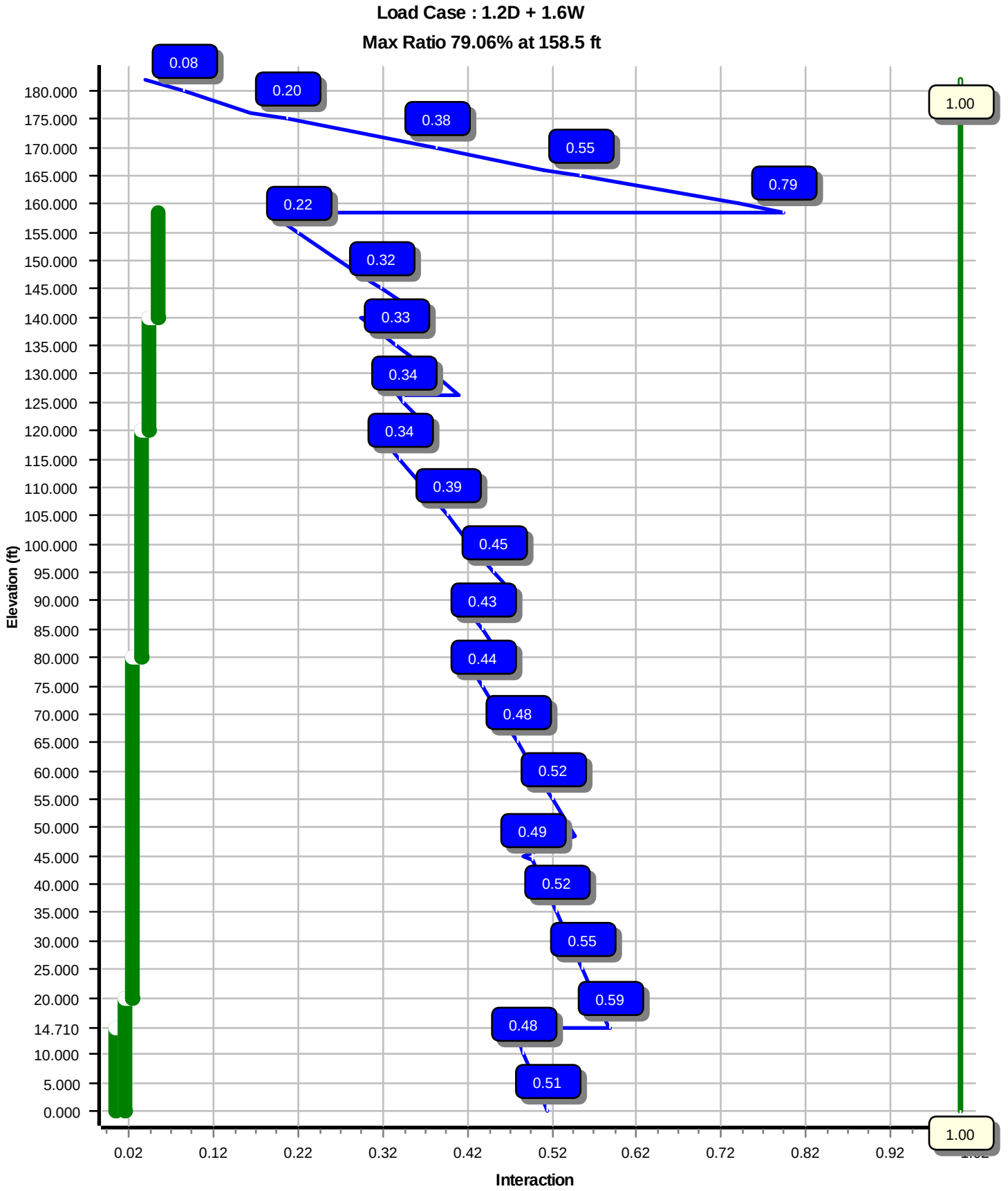
Reactions

Load Case	Moment (kip-ft)	Shear (kip)	Axial (kip)
1.2D + 1.6W	3841.56	30.71	64.93
0.9D + 1.6W	3770.53	30.48	48.69
1.2D + 1.0Di + 1.0Wi	701.71	4.98	105.43
(1.2 + 0.2Sds) * DL + E ELFM	248.11	1.63	64.80
(1.2 + 0.2Sds) * DL + E EMAM	355.34	2.49	64.80
(0.9 - 0.2Sds) * DL + E ELFM	242.49	1.63	45.05
(0.9 - 0.2Sds) * DL + E EMAM	346.54	2.48	45.05
1.0D + 1.0W	1019.01	8.25	54.15

Dish Deflections

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




Load Case : 1.2D + 1.6W
Max Ratio 79.06% at 158.5 ft
0.08
0.20
0.38
0.55
0.79
0.22
0.32
0.33
0.34
0.34
0.39
0.45
0.43
0.44
0.48
0.52
0.49
0.52
0.55
0.59
0.48
0.51
1.00
1.00
Elevation (ft)
180.000
175.000
170.000
165.000
160.000
155.000
150.000
145.000
140.000
135.000
130.000
125.000
120.000
115.000
110.000
105.000
100.000
95.000
90.000
85.000
80.000
75.000
70.000
65.000
60.000
55.000
50.000
45.000
40.000
35.000
30.000
25.000
20.000
14.710
10.000
5.000
0.000
0.02
0.12
0.22
0.32
0.42
0.52
0.62
0.72
0.82
0.92
Interaction

Site Number:	302502	Code: ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number:OAA712918_C3_05	4/18/2018 10:18:38 AM
Customer:	AT&T MOBILITY		

Analysis Parameters

Location :	LITCHFIELD County, CT	Height (ft) :	181.9
Code :	ANSI/TIA-222-G	Base Diameter (in) :	43.00
Shape :	12 Sides	Top Diameter (in) :	14.50
Pole Type :	Taper	Taper (in/ft) :	0.163
Pole Manfacturer :	Mapped	Rotation (deg) :	0.00

Ice & Wind Parameters

Structure Class:	II	Design Wind Speed Without Ice:	93 mph
Exposure Category:	B	Design Wind Speed With Ice:	40 mph
Topographic Category:	1	Operational Wind Speed:	60 mph
Crest Height:	0 ft	Design Ice Thickness:	1.00 in

Seismic Parameters

Analysis Method:	Equivalent Modal Analysis & Equivalent Lateral Force Methods				
Site Class:	D - Stiff Soil				
Period Based on Rayleigh Method (sec):	3.19				
T_L (sec):	6	p:	1	C_s:	0.030
S_s:	0.182	S_1:	0.065	C_s Max:	0.030
F_a:	1.600	F_v:	2.400	C_s Min:	0.030
S_{ds}:	0.194	S_{d1}:	0.104		

Load Cases

1.2D + 1.6W	93 mph with No Ice
0.9D + 1.6W	93 mph with No Ice (Reduced DL)
1.2D + 1.0Di + 1.0Wi	40 mph with 1.00 in Radial Ice
(1.2 + 0.2Sds) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2Sds) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2Sds) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2Sds) * DL + E EMAM	Seismic (Reduced DL) Equivalent Modal Analysis Method
1.0D + 1.0W	Serviceability 60 mph

Site Number: 302502 Code: ANSI/TIA-222-G

Site Name: Harwinton, CT Engineering Number:OAA712918_C3_05 4/18/2018 10:18:38 AM

Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Slip Joint Len (in)	Weight (lb)	Bottom Dia (in)	Bottom Elev (ft)	Bottom Area (in²)	Bottom Ix (in⁴)	Bottom W/t Ratio	Bottom D/t Ratio	Top Dia (in)	Top Elev (ft)	Top Area (in²)	Top Ix (in⁴)	Top W/t Ratio	Top D/t Ratio	Taper (in/ft)
1-12	48.600	0.3750	65		0.00	7,722	43.00	0.00	51.47	11936.2	28.05	114.67	35.08	48.60	41.91	6445.1	22.39	93.56	0.162864
2-12	46.230	0.3125	65	Slip	54.00	5,123	36.44	44.10	36.36	6057.6	28.57	116.62	28.91	90.33	28.78	3004.9	22.11	92.52	0.162864
3-12	39.700	0.2500	65	Slip	45.00	2,886	30.02	86.58	23.97	2712.1	29.50	120.10	23.55	126.28	18.76	1301.1	22.57	94.23	0.162864
4-12	55.620	0.1875	65	Butt	0.00	2,153	23.55	126.28	14.11	983.7	30.99	125.65	14.50	181.90	8.64	225.9	18.04	77.33	0.162864
				Shaft Weight		17,884													

Discrete Appurtenance Properties

Attach Elev (ft)	Description	Qty	Distance From Face (ft)	Vert Ecc (ft)	Weight (lb)	No Ice EPAa (sf)	Orientation Factor
181.90	Ericsson RRUS 11 (Band 12)	6	0.000	3.100	50.00	2.570	0.50
181.90	Ericsson RRUS 12	3	0.000	3.100	50.00	3.150	0.50
181.90	Ericsson RRUS 32 (50.8 lbs)	3	0.000	3.100	50.80	2.690	0.50
181.90	Flat Platform w/ Handrails	1	0.000	0.000	2000.00	34.000	1.00
181.90	Kaelus DBC0061F1V51-2	3	0.000	3.100	25.50	0.510	0.50
181.90	KMW AM-X-CD-16-65-00T-RET	3	0.000	3.100	48.50	8.020	0.67
181.90	Powerwave Allgon 7770.00	3	0.000	3.100	35.00	5.510	0.65
181.90	Powerwave Allgon LGP21401	6	0.000	3.100	14.10	1.100	0.50
181.90	Quintel QS66512-2	3	0.000	3.100	111.00	8.130	0.74
181.90	Raycap DC6-48-60-0-8F	1	0.000	3.100	32.80	1.190	0.67
181.90	Raycap DC6-48-60-18-8F ("Squid	1	0.000	3.100	31.80	1.280	0.67
176.00	Alcatel-Lucent B13 RRH4x30-4R	3	0.000	0.000	57.80	2.140	0.50
176.00	Alcatel-Lucent B66A RRH4x45-4R	3	0.000	0.000	56.80	2.390	0.50
176.00	Antel LPA-80063/6CF	6	0.000	0.000	27.00	9.590	0.76
176.00	Commscope SBNHH-1D65B	6	0.000	0.000	40.60	8.200	0.69
176.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	0.90
176.00	RFS DB-T1-6Z-8AB-0Z	2	0.000	0.000	44.00	4.800	0.67
176.00	RFS FD9R6004/2C-3L (3.1 lbs)	6	0.000	0.000	3.10	0.360	0.33
166.00	Andrew LNX-6515DS-A1M	3	0.000	0.000	49.80	11.450	0.70
166.00	Ericsson AIR 21, 1.3 M, B2A B4	3	0.000	0.000	83.00	6.050	0.71
166.00	Ericsson AIR 21, 1.3M, B4A B2P	3	0.000	0.000	90.40	6.090	0.70
166.00	Round Low Profile Platform	1	0.000	0.000	1500.00	21.700	0.95
146.00	KMW HB-X-WM-17-65-00T	3	0.000	0.000	30.00	3.360	0.79
146.00	KMW TTA (HB-X-WM-17-65-00T)	3	0.000	0.000	15.90	0.650	0.50
146.00	Side Arms	1	0.000	0.000	560.00	8.500	0.67
Totals	Num Loadings:25	77			8634.90		

Linear Appurtenance Properties

Elev From (ft)	Elev To (ft)	Qty	Description	Coax Diameter (in)	Coax Weight (lb/ft)	Flat	Projected Width (in)	Exposed To Wind	Carrier
5.00	181.90	4	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
5.00	181.90	1	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
5.00	181.90	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
5.00	181.90	2	0.78" 8 AWG 6	0.78	0.59	N	0.00	N	AT&T Mobility
5.00	181.90	12	1 1/4" Coax	1.55	0.63	N	0.00	N	AT&T Mobility
5.00	181.90	1	3" Conduit	3.50	7.58	N	0.00	N	AT&T Mobility
5.00	176.00	11	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
5.00	176.00	2	1 5/8" Hybriflex Cable	1.98	1.30	N	0.00	N	Verizon
5.00	166.00	6	1 5/8" Coax	1.98	0.82	N	0.00	N	Metro PCS
5.00	166.00	1	1 5/8" Fiber	1.63	1.61	N	0.00	N	Metro PCS

140.00	160.00	3	3" Solid Rod	3.00	0.00	N	6.00	Y	--
5.00	146.00	6	1 5/8" Coax	1.98	0.82	N	0.00	Y	Clearwire
120.00	140.00	3	3.5" Solid Rod	3.50	0.00	N	7.00	Y	--
80.00	120.00	3	4.0" Solid Rod	4.00	0.00	N	8.00	Y	--
0.00	80.00	3	4.25" Solid Rod	4.25	0.00	N	8.50	Y	--
0.00	19.50	3	#20Dywidag	2.50	0.00	N	0.00	Y	--

Additional Steel

Elev From (ft)	Elev To (ft)	Qty	Description	Fy (ksi)	Offset (in)	Intermediate Connections Description	Spacing (in)	Len (in)	Connectors	Continuation?
0.00	14.71	3	SOL #20 All Thread	80	5.15	6" T Bracket	30.0	3.31	5/8" Hollo Bolt	No
0.00	20.00	3	SOL 4 1/4" SOLID	50	1.00	AJAX M20 Class	16.5	3.50	5/8" A36 U-Bolt	No
20.00	80.00	3	SOL 4 1/4" SOLID	50	1.00	AJAX M20 Class	33.0	3.50	5/8" Hollo Bolt	No
80.00	120.0	3	SOL 4" SOLID	50	0.88	AJAX M20 Class	66.0	3.50	5/8" Hollo Bolt	No
120.0	140.0	3	SOL 3 1/2" SOLID	50	1.13	AJAX M20 Class	66.0	3.50	5/8" Hollo Bolt	No
140.0	158.5	3	SOL 3" SOLID	50	1.38	AJAX M20 Class	66.0	3.50	5/8" Hollo Bolt	No

Segment Properties (Max Len : 5. ft)

Seg Top Elev (ft)	Description	Thick (in)	Flat Dia (in)	Area (in^2)	Ix (in^4)	W/t Ratio	D/t Ratio	F'y (ksi)	S (in^3)	Z (in^3)	Weight (lb)	Additional Reinforcing Area (in^2)	Additional Reinforcing Ix (in^4)	Additional Reinforcing Weight (lb)
0.00		0.3750	43.000	51.470	11,936.2	28.05	114.67	74.1	536.3	0.0	0.0	57.28	18,69	0.0
5.00		0.3750	42.186	50.486	11,265.1	27.46	112.50	74.8	515.9	0.0	867.3	57.28	18,10	974.5
10.00		0.3750	41.371	49.503	10,619.6	26.88	110.32	75.4	495.9	0.0	850.6	57.28	17,52	974.5
14.71	Reinf. Top	0.3750	40.604	48.577	10,034.6	26.33	108.28	76.0	477.4	0.0	786.0	57.28	16,98	918.0
15.00		0.3750	40.557	48.520	9,999.3	26.30	108.15	76.0	476.3	0.0	47.9	42.55	11,70	42.0
20.00	Reinf. Top Reinf	0.3750	39.743	47.537	9,403.6	25.72	105.98	76.7	457.1	0.0	817.1	42.55	11,30	724.0
25.00		0.3750	38.928	46.553	8,832.0	25.14	103.81	77.3	438.3	0.0	800.4	42.55	10,90	724.0
30.00		0.3750	38.114	45.570	8,284.1	24.55	101.64	77.9	419.9	0.0	783.7	42.55	10,51	724.0
35.00		0.3750	37.300	44.587	7,759.4	23.97	99.47	78.6	401.9	0.0	767.0	42.55	10,13	724.0
40.00		0.3750	36.485	43.603	7,257.2	23.39	97.29	79.2	384.3	0.0	750.2	42.55	9,763	724.0
44.10	Bot - Section 2	0.3750	35.818	42.797	6,862.0	22.91	95.51	79.7	370.1	0.0	602.7	42.55	9,462	593.7
45.00		0.3750	35.671	42.620	6,777.3	22.81	95.12	79.8	367.0	0.0	241.9	42.55	9,677	130.3
48.60	Top - Section 1	0.3125	35.710	35.619	5,696.4	27.94	114.27	74.2	308.2	0.0	957.7	42.55	9,414	521.3
50.00		0.3125	35.482	35.389	5,587.1	27.74	113.54	74.5	304.2	0.0	169.1	42.55	9,312	202.7
55.00		0.3125	34.667	34.570	5,207.9	27.05	110.94	75.2	290.2	0.0	595.1	42.55	8,954	724.0
60.00		0.3125	33.853	33.750	4,846.3	26.35	108.33	76.0	276.6	0.0	581.2	42.55	8,603	724.0
65.00		0.3125	33.039	32.931	4,501.8	25.65	105.72	76.7	263.2	0.0	567.3	42.55	8,259	724.0
70.00		0.3125	32.225	32.111	4,174.0	24.95	103.12	77.5	250.2	0.0	553.3	42.55	7,922	724.0
75.00		0.3125	31.410	31.292	3,862.6	24.25	100.51	78.3	237.6	0.0	539.4	42.55	7,593	724.0
80.00	Reinf. Top Reinf	0.3125	30.596	30.473	3,567.0	23.55	97.91	79.0	225.2	0.0	525.4	42.55	7,270	724.0
85.00		0.3125	29.782	29.653	3,286.9	22.86	95.30	79.8	213.2	0.0	511.5	37.69	5,986	641.4
86.58	Bot - Section 3	0.3125	29.524	29.394	3,201.6	22.64	94.48	80.0	209.5	0.0	158.7	37.69	5,901	202.7
90.00		0.3125	28.967	28.834	3,021.9	22.16	92.70	80.5	201.5	0.0	615.1	37.69	5,882	438.7
90.33	Top - Section 2	0.2500	29.413	23.477	2,548.6	28.85	117.65	73.3	167.4	0.0	58.7	37.69	5,864	42.3
95.00		0.2500	28.653	22.864	2,354.3	28.03	114.61	74.1	158.7	0.0	368.2	37.69	5,614	599.1
100.0		0.2500	27.839	22.209	2,157.6	27.16	111.35	75.1	149.7	0.0	383.4	37.69	5,354	641.4
105.0		0.2500	27.024	21.553	1,972.1	26.29	108.10	76.0	141.0	0.0	372.3	37.69	5,099	641.4
110.0		0.2500	26.210	20.898	1,797.6	25.41	104.84	77.0	132.5	0.0	361.1	37.69	4,851	641.4
115.0		0.2500	25.396	20.242	1,633.7	24.54	101.58	78.0	124.3	0.0	350.0	37.69	4,608	641.4
120.0	Reinf. Top Reinf	0.2500	24.581	19.587	1,480.1	23.67	98.33	78.9	116.3	0.0	338.8	37.69	4,372	641.4
125.0		0.2500	23.767	18.931	1,336.4	22.79	95.07	79.9	108.6	0.0	327.7	28.86	3,165	491.1
126.2	Top - Section 3	0.2500	23.559	18.763	1,301.1	22.57	94.23	80.1	106.7	0.0	82.1	28.86	3,121	125.7
126.2	Bot - Section 4	0.1875	23.559	14.110	983.7	30.99	125.65	70.9	80.7	0.0		28.86	3,121	
130.0		0.1875	22.953	13.744	909.2	30.12	122.41	71.9	76.5	0.0	176.3	28.86	2,994	365.4
135.0		0.1875	22.138	13.253	815.1	28.96	118.07	73.1	71.1	0.0	229.7	28.86	2,828	491.1
140.0	Reinf. Top Reinf	0.1875	21.324	12.761	727.7	27.79	113.73	74.4	65.9	0.0	221.3	28.86	2,666	491.1
145.0		0.1875	20.510	12.270	646.8	26.63	109.39	75.7	60.9	0.0	212.9	21.20	1,839	360.8
146.0		0.1875	20.347	12.171	631.4	26.40	108.52	75.9	59.9	0.0	41.6	21.20	1,817	72.1
150.0		0.1875	19.695	11.778	572.1	25.47	105.04	76.9	56.1	0.0	163.0	21.20	1,728	288.6
155.0		0.1875	18.881	11.286	503.4	24.30	100.70	78.2	51.5	0.0	196.2	21.20	1,620	360.8
158.5	Reinf. Top	0.1875	18.311	10.942	458.7	23.49	97.66	79.1	48.4	0.0	132.4	21.20	1,546	252.5
160.0		0.1875	18.067	10.795	440.4	23.14	96.36	79.5	47.1	0.0	55.5			
165.0		0.1875	17.252	10.303	383.0	21.98	92.01	80.7	42.9	0.0	179.5			
166.0		0.1875	17.090	10.205	372.1	21.74	91.14	81.0	42.1	0.0	34.9			
170.0		0.1875	16.438	9.811	330.7	20.81	87.67	81.9	38.9	0.0	136.2			
175.0		0.1875	15.624	9.320	283.4	19.65	83.33	81.9	35.0	0.0	162.7			
176.0		0.1875	15.461	9.221	274.6	19.42	82.46	81.9	34.3	0.0	31.5			
180.0		0.1875	14.809	8.828	240.9	18.48	78.98	81.9	31.4	0.0	122.8			
181.9		0.1875	14.500	8.641	225.9	18.04	77.33	81.9	30.1	0.0	56.5			
											17,884.1			20,752.

Load Case: 1.2D + 1.6W — 93 mph with No Ice — 28 Iterations

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

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		304.1	0.0					0.0	0.0	304.1	0.0	0.0	0.0
5.00		604.9	1,040.8					0.0	1,169.5	604.9	2,210.3	0.0	0.0
10.00		559.6	1,020.7					0.0	1,414.7	559.6	2,435.4	0.0	0.0
14.71	Reinf. Top	274.5	943.2					60.2	1,332.6	334.7	2,275.8	0.0	0.0
15.00		284.8	57.5					3.7	64.6	288.5	122.1	0.0	0.0
20.00	Reinf. Top Reinf	532.7	980.6					63.9	1,114.1	596.6	2,094.6	0.0	0.0
25.00		521.7	960.5					63.9	1,114.1	585.7	2,074.6	0.0	0.0
30.00		516.9	940.4					63.9	1,114.1	580.8	2,054.5	0.0	0.0
35.00		522.5	920.3					64.7	1,114.1	587.2	2,034.4	0.0	0.0
40.00		482.7	900.3					66.0	1,114.1	548.7	2,014.3	0.0	0.0
44.10	Bot - Section 2	268.1	723.2					55.0	913.5	323.1	1,636.8	0.0	0.0
45.00		246.6	290.3					12.2	200.5	258.8	490.8	0.0	0.0
48.60	Top - Section 1	274.5	1,149.2					49.1	802.1	323.5	1,951.4	0.0	0.0
50.00		353.1	203.0					19.2	311.9	372.3	514.9	0.0	0.0
55.00		552.8	714.2					69.3	1,114.1	622.0	1,828.2	0.0	0.0
60.00		553.4	697.4					70.2	1,114.1	623.6	1,811.5	0.0	0.0
65.00		552.6	680.7					71.0	1,114.1	623.6	1,794.8	0.0	0.0
70.00		550.5	664.0					71.8	1,114.1	622.3	1,778.0	0.0	0.0
75.00		547.3	647.2					72.5	1,114.1	619.8	1,761.3	0.0	0.0
80.00	Reinf. Top Reinf	543.0	630.5					73.2	1,114.1	616.3	1,744.6	0.0	0.0
85.00		355.2	613.8					73.9	1,014.9	429.1	1,628.7	0.0	0.0
86.58	Bot - Section 3	270.6	190.5					23.5	320.7	294.1	511.2	0.0	0.0
90.00		203.6	738.2					51.0	694.2	254.6	1,432.3	0.0	0.0
90.33	Top - Section 2	268.9	70.5					4.9	67.0	273.8	137.5	0.0	0.0
95.00		516.3	441.8					70.2	947.9	586.5	1,389.7	0.0	0.0
100.00		526.7	460.1					75.7	1,014.9	602.3	1,475.0	0.0	0.0
105.00		518.4	446.7					76.2	1,014.9	594.6	1,461.6	0.0	0.0
110.00		509.5	433.4					76.7	1,014.9	586.3	1,448.2	0.0	0.0
115.00		500.0	420.0					77.2	1,014.9	577.3	1,434.8	0.0	0.0
120.00	Reinf. Top Reinf	489.9	406.6					77.7	1,014.9	567.6	1,421.5	0.0	0.0
125.00		303.5	393.2					78.2	834.5	381.7	1,227.7	0.0	0.0
126.28	Top - Section 3	236.9	98.5					20.1	213.6	257.0	312.1	0.0	0.0
130.00		406.9	211.6					58.5	620.9	465.4	832.4	0.0	0.0
135.00		456.3	275.6					79.1	834.5	535.4	1,110.1	0.0	0.0
140.00	Reinf. Top Reinf	444.1	265.6					79.5	834.5	523.6	1,100.1	0.0	0.0
145.00		262.0	255.5					79.9	678.1	341.9	933.6	0.0	0.0
146.00	Appurtenance(s)	212.5	49.9	523.2	0.0	0.0	837.2	16.0	135.6	751.7	1,022.8	0.0	0.0
150.00		375.4	195.6					64.3	518.9	439.6	714.5	0.0	0.0
155.00		345.9	235.4					80.7	648.6	426.6	884.0	0.0	0.0
158.50	Reinf. Top	199.0	158.8					56.7	454.0	255.7	612.8	0.0	0.0
160.00		218.9	66.6					24.3	64.7	243.3	131.3	0.0	0.0
165.00		191.2	215.4					0.0	215.7	191.2	431.1	0.0	0.0
166.00	Appurtenance(s)	153.9	41.9	2,551.5	0.0	0.0	2,603.5	0.0	43.1	2,705.4	2,688.5	0.0	0.0
170.00		270.3	163.5					0.0	141.2	270.3	304.7	0.0	0.0
175.00		176.5	195.3					0.0	176.5	176.5	371.8	0.0	0.0
176.00	Appurtenance(s)	141.3	37.9	4,158.0	0.0	0.0	2,827.2	0.0	35.3	4,299.3	2,900.4	0.0	0.0
180.00		164.6	147.4					0.0	85.4	164.6	232.8	0.0	0.0
181.90		52.0	67.8					0.0	40.6	52.0	108.3	0.0	0.0

Site Number:	302502	Code:	ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number:	OAA712918_C3_05	4/18/2018 10:18:45 AM
Customer:	AT&T MOBILITY			

Load Case: 1.2D + 1.6W — 93 mph with No Ice — 28 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 1.20
Wind Load Factor : 1.60

Wind Importance Factor : 1.00

Totals:	27,243.3	60,887.7	0.00	0.00

Site Number: 302502 Code: ANSI/TIA-222-G

Site Name: Harwinton, CT Engineering Number: OAA712918_C3_05 4/18/2018 10:18:45 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.6W 93 mph with No Ice 28 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.20

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-64.93	-30.71	0.00	-3,841.56	0.00	3,841.56	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.511
5.00	-62.63	-30.29	0.00	-3,688.02	0.00	3,688.02	3,397.00	1,698.50	5,857.04	2,892.57	0.09	-0.17	0.498
10.00	-60.11	-29.90	0.00	-3,536.56	0.00	3,536.56	3,359.11	1,679.56	5,677.90	2,804.10	0.37	-0.35	0.485
14.71	-57.79	-29.64	0.00	-3,395.74	0.00	3,395.74	3,322.40	1,661.20	5,509.81	2,721.09	0.80	-0.51	0.472
14.71	-57.79	-29.64	0.00	-3,395.74	0.00	3,395.74	3,322.40	1,661.20	5,509.81	2,721.09	0.80	-0.51	0.585
15.00	-57.61	-29.46	0.00	-3,387.14	0.00	3,387.14	3,320.10	1,660.05	5,499.48	2,715.99	0.83	-0.53	0.584
20.00	-55.42	-29.05	0.00	-3,239.84	0.00	3,239.84	3,279.97	1,639.98	5,321.88	2,628.28	1.50	-0.74	0.569
20.00	-55.42	-29.05	0.00	-3,239.84	0.00	3,239.84	3,279.97	1,639.98	5,321.88	2,628.28	1.50	-0.74	0.569
25.00	-53.24	-28.64	0.00	-3,094.59	0.00	3,094.59	3,238.71	1,619.36	5,145.22	2,541.03	2.40	-0.96	0.554
30.00	-51.09	-28.21	0.00	-2,951.40	0.00	2,951.40	3,196.33	1,598.17	4,969.60	2,454.30	3.52	-1.18	0.538
35.00	-48.97	-27.77	0.00	-2,810.34	0.00	2,810.34	3,152.83	1,576.41	4,795.15	2,368.14	4.87	-1.40	0.523
40.00	-46.87	-27.33	0.00	-2,671.51	0.00	2,671.51	3,108.20	1,554.10	4,621.97	2,282.62	6.45	-1.61	0.507
44.10	-45.19	-27.04	0.00	-2,559.47	0.00	2,559.47	3,070.77	1,535.38	4,481.00	2,213.00	7.91	-1.79	0.494
45.00	-44.67	-26.84	0.00	-2,535.13	0.00	2,535.13	3,062.45	1,531.23	4,450.19	2,197.78	8.26	-1.83	0.483
48.60	-42.68	-26.54	0.00	-2,438.50	0.00	2,438.50	2,379.97	1,189.99	3,474.54	1,715.94	9.70	-1.99	0.544
50.00	-42.11	-26.25	0.00	-2,401.35	0.00	2,401.35	2,371.43	1,185.72	3,439.58	1,698.68	10.29	-2.05	0.539
55.00	-40.21	-25.72	0.00	-2,270.10	0.00	2,270.10	2,340.22	1,170.11	3,315.01	1,637.16	12.56	-2.27	0.518
60.00	-38.33	-25.17	0.00	-2,141.52	0.00	2,141.52	2,307.88	1,153.94	3,191.02	1,575.92	15.05	-2.49	0.497
65.00	-36.47	-24.60	0.00	-2,015.69	0.00	2,015.69	2,274.42	1,137.21	3,067.70	1,515.02	17.78	-2.71	0.477
70.00	-34.63	-24.02	0.00	-1,892.69	0.00	1,892.69	2,239.83	1,119.92	2,945.16	1,454.51	20.74	-2.93	0.456
75.00	-32.82	-23.43	0.00	-1,772.58	0.00	1,772.58	2,204.12	1,102.06	2,823.54	1,394.44	23.93	-3.15	0.435
80.00	-31.03	-22.83	0.00	-1,655.42	0.00	1,655.42	2,167.29	1,083.65	2,702.93	1,334.88	27.33	-3.36	0.415
80.00	-31.03	-22.83	0.00	-1,655.42	0.00	1,655.42	2,167.29	1,083.65	2,702.93	1,334.88	27.33	-3.36	0.457
85.00	-29.37	-22.38	0.00	-1,541.25	0.00	1,541.25	2,129.34	1,064.67	2,583.46	1,275.87	30.96	-3.57	0.435
86.58	-28.84	-22.11	0.00	-1,505.90	0.00	1,505.90	2,117.11	1,058.55	2,545.96	1,257.35	32.16	-3.64	0.428
90.00	-27.39	-21.81	0.00	-1,430.28	0.00	1,430.28	2,090.26	1,045.13	2,465.23	1,217.49	34.82	-3.80	0.405
90.33	-27.23	-21.58	0.00	-1,423.08	0.00	1,423.08	1,547.78	773.89	1,862.15	919.64	35.09	-3.81	0.476
95.00	-25.81	-20.99	0.00	-1,322.32	0.00	1,322.32	1,525.71	762.86	1,787.32	882.69	38.92	-4.02	0.450
100.00	-24.30	-20.38	0.00	-1,217.36	0.00	1,217.36	1,500.99	750.50	1,707.51	843.28	43.25	-4.25	0.421
105.00	-22.81	-19.76	0.00	-1,115.45	0.00	1,115.45	1,475.16	737.58	1,628.14	804.08	47.81	-4.47	0.393
110.00	-21.35	-19.14	0.00	-1,016.63	0.00	1,016.63	1,448.19	724.10	1,549.32	765.15	52.61	-4.68	0.365
115.00	-19.90	-18.52	0.00	-920.92	0.00	920.92	1,420.11	710.05	1,471.16	726.55	57.62	-4.89	0.337
120.00	-18.47	-17.89	0.00	-828.33	0.00	828.33	1,390.90	695.45	1,393.78	688.34	62.84	-5.09	0.310
120.00	-18.47	-17.89	0.00	-828.33	0.00	828.33	1,390.90	695.45	1,393.78	688.34	62.84	-5.09	0.375
125.00	-17.24	-17.44	0.00	-738.87	0.00	738.87	1,360.57	680.28	1,317.29	650.56	68.27	-5.28	0.343
126.28	-16.92	-17.19	0.00	-716.55	0.00	716.55	1,352.62	676.31	1,297.87	640.97	69.69	-5.34	0.334
126.28	-16.92	-17.19	0.00	-716.55	0.00	716.55	900.61	450.31	868.79	429.06	69.69	-5.34	0.408
130.00	-16.08	-16.70	0.00	-652.62	0.00	652.62	888.95	444.47	835.13	412.44	73.91	-5.50	0.376
135.00	-14.97	-16.11	0.00	-569.12	0.00	569.12	872.29	436.14	789.93	390.12	79.79	-5.72	0.333
140.00	-13.88	-15.53	0.00	-488.55	0.00	488.55	854.50	427.25	744.88	367.87	85.89	-5.93	0.291
140.00	-13.88	-15.53	0.00	-488.55	0.00	488.55	854.50	427.25	744.88	367.87	85.89	-5.93	0.368
145.00	-12.95	-15.12	0.00	-410.90	0.00	410.90	835.60	417.80	700.09	345.75	92.19	-6.12	0.316
146.00	-11.99	-14.28	0.00	-395.79	0.00	395.79	831.68	415.84	691.17	341.34	93.48	-6.17	0.305
150.00	-11.28	-13.80	0.00	-338.65	0.00	338.65	815.57	407.78	655.68	323.81	98.71	-6.34	0.266
155.00	-10.42	-13.31	0.00	-269.63	0.00	269.63	794.42	397.21	611.76	302.12	105.44	-6.52	0.217
158.50	-9.82	-13.00	0.00	-223.05	0.00	223.05	778.94	389.47	581.37	287.12	110.26	-6.64	0.183
158.50	-9.82	-13.00	0.00	-223.05	0.00	223.05	778.94	389.47	581.37	287.12	110.26	-6.64	0.791
160.00	-9.65	-12.79	0.00	-203.55	0.00	203.55	772.14	386.07	568.44	280.73	112.35	-6.69	0.739
165.00	-9.17	-12.60	0.00	-139.58	0.00	139.58	748.74	374.37	525.85	259.70	119.64	-7.24	0.551
166.00	-6.81	-9.60	0.00	-126.98	0.00	126.98	743.93	371.96	517.43	255.54	121.17	-7.34	0.507
170.00	-6.50	-9.33	0.00	-88.57	0.00	88.57	723.19	361.60	483.41	238.74	127.45	-7.67	0.381

Site Number:	302502	Code: ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number: OAA712918_C3_05	4/18/2018 10:18:45 AM
Customer:	AT&T MOBILITY		

Load Case: 1.2D + 1.6W — 93 mph with No Ice — 28 Iterations

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

175.00	-6.13	-9.12	0.00	-41.91	0.00	41.91	686.95	343.48	435.91	215.28	135.62	-7.95	0.204
176.00	-3.85	-4.47	0.00	-32.79	0.00	32.79	679.70	339.85	426.71	210.73	137.28	-7.99	0.161
180.00	-3.64	-4.27	0.00	-14.92	0.00	14.92	650.71	325.36	390.87	193.04	144.00	-8.09	0.083
181.90	0.00	-3.72	0.00	-6.80	0.00	6.80	636.94	318.47	374.40	184.90	147.21	-8.11	0.037

Site Number: 302502 Code: ANSI/TIA-222-G

Site Name: Harwinton, CT Engineering Number: OAA712918_C3_05 4/18/2018 10:18:45 AM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W 93 mph with No Ice (Reduced DL) 28 Iterations

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

Wind Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		237.9	0.0					0.0	0.0	237.9	0.0	0.0	0.0
5.00		471.2	780.6					0.0	877.1	471.2	1,657.7	0.0	0.0
10.00		492.1	765.5					0.0	1,061.0	492.1	1,826.5	0.0	0.0
14.71	Reinf. Top	274.5	707.4					60.2	999.5	334.7	1,706.8	0.0	0.0
15.00		284.8	43.1					3.7	48.5	288.5	91.6	0.0	0.0
20.00	Reinf. Top Reinf	532.7	735.4					63.9	835.5	596.6	1,571.0	0.0	0.0
25.00		521.7	720.4					63.9	835.5	585.7	1,555.9	0.0	0.0
30.00		516.9	705.3					63.9	835.5	580.8	1,540.9	0.0	0.0
35.00		522.5	690.3					64.7	835.5	587.2	1,525.8	0.0	0.0
40.00		482.7	675.2					66.0	835.5	548.7	1,510.7	0.0	0.0
44.10	Bot - Section 2	268.1	542.4					55.0	685.1	323.1	1,227.6	0.0	0.0
45.00		246.6	217.7					12.2	150.4	258.8	368.1	0.0	0.0
48.60	Top - Section 1	274.5	861.9					49.1	601.6	323.5	1,463.5	0.0	0.0
50.00		353.1	152.2					19.2	234.0	372.3	386.2	0.0	0.0
55.00		552.8	535.6					69.3	835.5	622.0	1,371.2	0.0	0.0
60.00		553.4	523.1					70.2	835.5	623.6	1,358.6	0.0	0.0
65.00		552.6	510.5					71.0	835.5	623.6	1,346.1	0.0	0.0
70.00		550.5	498.0					71.8	835.5	622.3	1,333.5	0.0	0.0
75.00		547.3	485.4					72.5	835.5	619.8	1,321.0	0.0	0.0
80.00	Reinf. Top Reinf	543.0	472.9					73.2	835.5	616.3	1,308.4	0.0	0.0
85.00		355.2	460.3					73.9	761.2	429.1	1,221.5	0.0	0.0
86.58	Bot - Section 3	270.6	142.9					23.5	240.5	294.1	383.4	0.0	0.0
90.00		203.6	553.6					51.0	520.6	254.6	1,074.3	0.0	0.0
90.33	Top - Section 2	268.9	52.9					4.9	50.2	273.8	103.1	0.0	0.0
95.00		516.3	331.4					70.2	710.9	586.5	1,042.3	0.0	0.0
100.00		526.7	345.1					75.7	761.2	602.3	1,106.3	0.0	0.0
105.00		518.4	335.1					76.2	761.2	594.6	1,096.2	0.0	0.0
110.00		509.5	325.0					76.7	761.2	586.3	1,086.2	0.0	0.0
115.00		500.0	315.0					77.2	761.2	577.3	1,076.1	0.0	0.0
120.00	Reinf. Top Reinf	489.9	304.9					77.7	761.2	567.6	1,066.1	0.0	0.0
125.00		303.5	294.9					78.2	625.9	381.7	920.8	0.0	0.0
126.28	Top - Section 3	236.9	73.9					20.1	160.2	257.0	234.1	0.0	0.0
130.00		406.9	158.7					58.5	465.7	465.4	624.3	0.0	0.0
135.00		456.3	206.7					79.1	625.9	535.4	832.6	0.0	0.0
140.00	Reinf. Top Reinf	444.1	199.2					79.5	625.9	523.6	825.1	0.0	0.0
145.00		262.0	191.6					79.9	508.6	341.9	700.2	0.0	0.0
146.00	Appurtenance(s)	212.5	37.4	523.2	0.0	0.0	627.9	16.0	101.7	751.7	767.1	0.0	0.0
150.00		375.4	146.7					64.3	389.1	439.6	535.8	0.0	0.0
155.00		345.9	176.6					80.7	486.4	426.6	663.0	0.0	0.0
158.50	Reinf. Top	199.0	119.1					56.7	340.5	255.7	459.6	0.0	0.0
160.00		218.9	49.9					24.3	48.5	243.3	98.5	0.0	0.0
165.00		191.2	161.5					0.0	161.8	191.2	323.3	0.0	0.0
166.00	Appurtenance(s)	153.9	31.4	2,551.5	0.0	0.0	1,952.6	0.0	32.4	2,705.4	2,016.4	0.0	0.0
170.00		270.3	122.6					0.0	105.9	270.3	228.5	0.0	0.0
175.00		176.5	146.5					0.0	132.4	176.5	278.9	0.0	0.0
176.00	Appurtenance(s)	141.3	28.4	4,158.0	0.0	0.0	2,120.4	0.0	26.5	4,299.3	2,175.3	0.0	0.0
180.00		164.6	110.6					0.0	64.1	164.6	174.6	0.0	0.0
181.90		52.0	50.8					0.0	30.4	52.0	81.3	0.0	0.0

Site Number:	302502	Code:	ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number:	OAA712918_C3_05	4/18/2018 10:18:52 AM
Customer:	AT&T MOBILITY			

Load Case: 0.9D + 1.6W — 93 mph with No Ice (Reduced DL) — 28 Iterations

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

Wind Importance Factor : 1.00

Totals:	26,975.7	45,665.8	0.00	0.00

Site Number: 302502 Code: ANSI/TIA-222-G

Site Name: Harwinton, CT Engineering Number: OAA712918_C3_05 4/18/2018 10:18:52 AM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W 93 mph with No Ice (Reduced DL) 28 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-48.69	-30.48	0.00	-3,770.53	0.00	3,770.53	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.500
5.00	-46.94	-30.15	0.00	-3,618.13	0.00	3,618.13	3,397.00	1,698.50	5,857.04	2,892.57	0.09	-0.17	0.487
10.00	-45.03	-29.78	0.00	-3,467.40	0.00	3,467.40	3,359.11	1,679.56	5,677.90	2,804.10	0.37	-0.34	0.473
14.71	-43.28	-29.50	0.00	-3,327.15	0.00	3,327.15	3,322.40	1,661.20	5,509.81	2,721.09	0.79	-0.50	0.460
14.71	-43.28	-29.50	0.00	-3,327.15	0.00	3,327.15	3,322.40	1,661.20	5,509.81	2,721.09	0.79	-0.50	0.571
15.00	-43.14	-29.29	0.00	-3,318.59	0.00	3,318.59	3,320.10	1,660.05	5,499.48	2,715.99	0.82	-0.52	0.570
20.00	-41.47	-28.83	0.00	-3,172.14	0.00	3,172.14	3,279.97	1,639.98	5,321.88	2,628.28	1.47	-0.73	0.555
20.00	-41.47	-28.83	0.00	-3,172.14	0.00	3,172.14	3,279.97	1,639.98	5,321.88	2,628.28	1.47	-0.73	0.555
25.00	-39.81	-28.37	0.00	-3,027.99	0.00	3,027.99	3,238.71	1,619.36	5,145.22	2,541.03	2.35	-0.94	0.540
30.00	-38.18	-27.90	0.00	-2,886.13	0.00	2,886.13	3,196.33	1,598.17	4,969.60	2,454.30	3.45	-1.15	0.525
35.00	-36.57	-27.42	0.00	-2,746.61	0.00	2,746.61	3,152.83	1,576.41	4,795.15	2,368.14	4.77	-1.37	0.509
40.00	-34.98	-26.95	0.00	-2,609.52	0.00	2,609.52	3,108.20	1,554.10	4,621.97	2,282.62	6.32	-1.58	0.493
44.10	-33.71	-26.65	0.00	-2,499.02	0.00	2,499.02	3,070.77	1,535.38	4,481.00	2,213.00	7.75	-1.75	0.480
45.00	-33.31	-26.44	0.00	-2,475.03	0.00	2,475.03	3,062.45	1,531.23	4,450.19	2,197.78	8.09	-1.79	0.470
48.60	-31.81	-26.13	0.00	-2,379.85	0.00	2,379.85	2,379.97	1,189.99	3,474.54	1,715.94	9.50	-1.95	0.529
50.00	-31.37	-25.82	0.00	-2,343.27	0.00	2,343.27	2,371.43	1,185.72	3,439.58	1,698.68	10.08	-2.00	0.524
55.00	-29.93	-25.26	0.00	-2,214.18	0.00	2,214.18	2,340.22	1,170.11	3,315.01	1,637.16	12.30	-2.22	0.504
60.00	-28.50	-24.69	0.00	-2,087.88	0.00	2,087.88	2,307.88	1,153.94	3,191.02	1,575.92	14.74	-2.44	0.483
65.00	-27.10	-24.11	0.00	-1,964.44	0.00	1,964.44	2,274.42	1,137.21	3,067.70	1,515.02	17.41	-2.65	0.463
70.00	-25.71	-23.52	0.00	-1,843.91	0.00	1,843.91	2,239.83	1,119.92	2,945.16	1,454.51	20.30	-2.86	0.443
75.00	-24.34	-22.92	0.00	-1,726.33	0.00	1,726.33	2,204.12	1,102.06	2,823.54	1,394.44	23.41	-3.07	0.423
80.00	-22.99	-22.31	0.00	-1,611.75	0.00	1,611.75	2,167.29	1,083.65	2,702.93	1,334.88	26.74	-3.28	0.402
80.00	-22.99	-22.31	0.00	-1,611.75	0.00	1,611.75	2,167.29	1,083.65	2,702.93	1,334.88	26.74	-3.28	0.443
85.00	-21.74	-21.86	0.00	-1,500.19	0.00	1,500.19	2,129.34	1,064.67	2,583.46	1,275.87	30.29	-3.49	0.422
86.58	-21.33	-21.59	0.00	-1,465.65	0.00	1,465.65	2,117.11	1,058.55	2,545.96	1,257.35	31.45	-3.56	0.415
90.00	-20.25	-21.30	0.00	-1,391.82	0.00	1,391.82	2,090.26	1,045.13	2,465.23	1,217.49	34.06	-3.71	0.393
90.33	-20.12	-21.05	0.00	-1,384.79	0.00	1,384.79	1,547.78	773.89	1,862.15	919.64	34.31	-3.73	0.462
95.00	-19.05	-20.47	0.00	-1,286.47	0.00	1,286.47	1,525.71	762.86	1,787.32	882.69	38.06	-3.93	0.436
100.00	-17.91	-19.86	0.00	-1,184.12	0.00	1,184.12	1,500.99	750.50	1,707.51	843.28	42.28	-4.15	0.408
105.00	-16.79	-19.25	0.00	-1,084.83	0.00	1,084.83	1,475.16	737.58	1,628.14	804.08	46.74	-4.36	0.381
110.00	-15.69	-18.63	0.00	-988.60	0.00	988.60	1,448.19	724.10	1,549.32	765.15	51.42	-4.57	0.354
115.00	-14.60	-18.02	0.00	-895.43	0.00	895.43	1,420.11	710.05	1,471.16	726.55	56.31	-4.77	0.327
120.00	-13.53	-17.41	0.00	-805.33	0.00	805.33	1,390.90	695.45	1,393.78	688.34	61.40	-4.96	0.300
120.00	-13.53	-17.41	0.00	-805.33	0.00	805.33	1,390.90	695.45	1,393.78	688.34	61.40	-4.96	0.364
125.00	-12.61	-16.97	0.00	-718.28	0.00	718.28	1,360.57	680.28	1,317.29	650.56	66.70	-5.15	0.332
126.28	-12.37	-16.72	0.00	-696.55	0.00	696.55	1,352.62	676.31	1,297.87	640.97	68.08	-5.21	0.324
126.28	-12.37	-16.72	0.00	-696.55	0.00	696.55	900.61	450.31	868.79	429.06	68.08	-5.21	0.395
130.00	-11.73	-16.24	0.00	-634.35	0.00	634.35	888.95	444.47	835.13	412.44	72.20	-5.37	0.364
135.00	-10.90	-15.67	0.00	-553.16	0.00	553.16	872.29	436.14	789.93	390.12	77.93	-5.58	0.322
140.00	-10.08	-15.10	0.00	-474.82	0.00	474.82	854.50	427.25	744.88	367.87	83.88	-5.78	0.282
140.00	-10.08	-15.10	0.00	-474.82	0.00	474.82	854.50	427.25	744.88	367.87	83.88	-5.78	0.356
145.00	-9.39	-14.70	0.00	-399.34	0.00	399.34	835.60	417.80	700.09	345.75	90.03	-5.97	0.306
146.00	-8.68	-13.89	0.00	-384.63	0.00	384.63	831.68	415.84	691.17	341.34	91.28	-6.01	0.295
150.00	-8.15	-13.42	0.00	-329.06	0.00	329.06	815.57	407.78	655.68	323.81	96.38	-6.18	0.257
155.00	-7.51	-12.95	0.00	-261.95	0.00	261.95	794.42	397.21	611.76	302.12	102.94	-6.36	0.210
158.50	-7.06	-12.65	0.00	-216.63	0.00	216.63	778.94	389.47	581.37	287.12	107.64	-6.47	0.177
158.50	-7.06	-12.65	0.00	-216.63	0.00	216.63	778.94	389.47	581.37	287.12	107.64	-6.47	0.765
160.00	-6.92	-12.43	0.00	-197.66	0.00	197.66	772.14	386.07	568.44	280.73	109.68	-6.52	0.714
165.00	-6.56	-12.24	0.00	-135.49	0.00	135.49	748.74	374.37	525.85	259.70	116.79	-7.05	0.532
166.00	-4.86	-9.33	0.00	-123.24	0.00	123.24	743.93	371.96	517.43	255.54	118.27	-7.15	0.489
170.00	-4.62	-9.05	0.00	-85.94	0.00	85.94	723.19	361.60	483.41	238.74	124.39	-7.47	0.367

Site Number:	302502	Code: ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number: OAA712918_C3_05	4/18/2018 10:18:52 AM
Customer:	AT&T MOBILITY		

Load Case: 0.9D + 1.6W — 93 mph with No Ice (Reduced DL) — 28 Iterations

Gust Response Factor : 1.10
Dead Load Factor : 0.90
Wind Load Factor : 1.60
Wind Importance Factor : 1.00

175.00	-4.35	-8.85	0.00	-40.68	0.00	40.68	686.95	343.48	435.91	215.28	132.35	-7.74	0.196
176.00	-2.77	-4.30	0.00	-31.83	0.00	31.83	679.70	339.85	426.71	210.73	133.98	-7.78	0.155
180.00	-2.61	-4.12	0.00	-14.62	0.00	14.62	650.71	325.36	390.87	193.04	140.52	-7.87	0.080
181.90	0.00	-3.72	0.00	-6.80	0.00	6.80	636.94	318.47	374.40	184.90	143.65	-7.90	0.037

Site Number:	302502	Code: ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number: OAA712918_C3_05	4/18/2018 10:18:52 AM
Customer:	AT&T MOBILITY		

Load Case: 1.2D + 1.0Di + 1.0Wi — 40 mph with 1.00 in Radial Ice — 27 Iterations

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

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		35.3	0.0					0.0	0.0	35.3	0.0	0.0	0.0
5.00		70.3	1,478.3					0.0	1,350.7	70.3	2,829.0	0.0	0.0
10.00		67.5	1,501.8					0.0	1,724.9	67.5	3,226.7	0.0	0.0
14.71	Reinf. Top	34.5	1,412.0					17.1	1,640.6	51.6	3,052.6	0.0	0.0
15.00		35.9	86.9					1.1	84.0	37.0	170.8	0.0	0.0
20.00	Reinf. Top Reinf	67.3	1,486.2					18.4	1,445.0	85.7	2,931.2	0.0	0.0
25.00		66.2	1,469.4					18.5	1,376.1	84.7	2,845.5	0.0	0.0
30.00		65.8	1,449.8					18.6	1,381.7	84.4	2,831.5	0.0	0.0
35.00		66.8	1,428.1					19.2	1,386.5	85.9	2,814.6	0.0	0.0
40.00		61.9	1,405.0					20.1	1,390.7	81.9	2,795.7	0.0	0.0
44.10	Bot - Section 2	34.4	1,134.9					17.1	1,143.1	51.5	2,278.0	0.0	0.0
45.00		31.7	382.4					3.8	251.2	35.5	633.6	0.0	0.0
48.60	Top - Section 1	35.3	1,513.7					15.5	1,006.0	50.8	2,519.8	0.0	0.0
50.00		45.6	344.6					6.1	391.7	51.7	736.3	0.0	0.0
55.00		71.5	1,212.4					22.3	1,400.8	93.8	2,613.2	0.0	0.0
60.00		71.8	1,189.3					23.0	1,403.6	94.8	2,592.9	0.0	0.0
65.00		71.9	1,165.7					23.6	1,406.2	95.6	2,571.9	0.0	0.0
70.00		71.9	1,141.6					24.2	1,408.7	96.1	2,550.3	0.0	0.0
75.00		71.8	1,117.1					24.7	1,410.9	96.5	2,528.0	0.0	0.0
80.00	Reinf. Top Reinf	71.5	1,092.2					25.3	1,413.1	96.8	2,505.3	0.0	0.0
85.00		46.9	1,067.0					24.8	1,307.0	71.7	2,374.0	0.0	0.0
86.58	Bot - Section 3	35.8	333.1					7.9	413.4	43.7	746.5	0.0	0.0
90.00		26.9	1,047.3					17.3	895.5	44.3	1,942.8	0.0	0.0
90.33	Top - Section 2	35.7	100.3					1.7	86.5	37.4	186.8	0.0	0.0
95.00		68.7	855.3					24.0	1,224.2	92.7	2,079.5	0.0	0.0
100.00		70.4	893.4					26.2	1,312.4	96.6	2,205.8	0.0	0.0
105.00		69.6	870.5					26.6	1,314.0	96.2	2,184.6	0.0	0.0
110.00		68.8	847.4					27.0	1,315.6	95.8	2,163.1	0.0	0.0
115.00		67.8	824.2					27.4	1,317.1	95.2	2,141.3	0.0	0.0
120.00	Reinf. Top Reinf	66.8	800.7					27.8	1,318.6	94.6	2,119.3	0.0	0.0
125.00		41.6	777.1					25.9	1,121.7	67.5	1,898.7	0.0	0.0
126.28	Top - Section 3	32.6	196.3					6.7	287.4	39.3	483.6	0.0	0.0
130.00		56.2	489.5					19.6	835.6	75.8	1,325.2	0.0	0.0
135.00		63.4	638.5					26.6	1,124.2	90.0	1,762.7	0.0	0.0
140.00	Reinf. Top Reinf	62.2	617.7					26.9	1,125.4	89.1	1,743.2	0.0	0.0
145.00		36.8	596.8					24.9	952.6	61.7	1,549.5	0.0	0.0
146.00	Appurtenance(s)	30.1	117.8	104.7	0.0	0.0	1,886.2	5.0	190.7	139.8	2,194.7	0.0	0.0
150.00		53.4	460.0					20.2	619.3	73.5	1,079.3	0.0	0.0
155.00		49.5	554.7					25.4	774.6	75.0	1,329.3	0.0	0.0
158.50	Reinf. Top	28.7	377.0					18.0	542.5	46.6	919.5	0.0	0.0
160.00		36.4	159.1					7.7	102.7	44.2	261.8	0.0	0.0
165.00		33.4	512.1					0.0	215.7	33.4	727.8	0.0	0.0
166.00	Appurtenance(s)	27.1	100.8	459.1	0.0	0.0	5,869.3	0.0	43.1	486.2	6,013.3	0.0	0.0
170.00		48.0	391.8					0.0	141.2	48.0	533.0	0.0	0.0
175.00		31.5	469.1					0.0	176.5	31.5	645.6	0.0	0.0
176.00	Appurtenance(s)	25.5	92.2	681.3	0.0	0.0	8,986.1	0.0	35.3	706.8	9,113.6	0.0	0.0
180.00		29.8	357.3					0.0	85.4	29.8	442.7	0.0	0.0
181.90		9.5	165.8					0.0	40.6	9.5	206.4	0.0	0.0

Site Number:	302502	Code:	ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number:	OAA712918_C3_05	4/18/2018 10:18:58 AM
Customer:	AT&T MOBILITY			

Load Case: 1.2D + 1.0Di + 1.0Wi — 40 mph with 1.00 in Radial Ice — 27 Iterations

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

Ice Dead Load Factor : 1.00

Wind Importance Factor : 1.00
Ice Importance Factor : 1.00

Totals:	4,363.30	95,400.7	0.00	0.00

Site Number: 302502 Code: ANSI/TIA-222-G

Site Name: Harwinton, CT Engineering Number: OAA712918_C3_05 4/18/2018 10:18:58 AM

Customer: AT&T MOBILITY

Load Case: 1.2D + 1.0Di + 1.0Wi 40 mph with 1.00 in Radial Ice 27 Iterations

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

Dead Load Factor : 1.20 Ice Importance Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-105.43	-4.98	0.00	-701.71	0.00	701.71	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.106
5.00	-102.60	-4.97	0.00	-676.81	0.00	676.81	3,397.00	1,698.50	5,857.04	2,892.57	0.02	-0.03	0.104
10.00	-99.37	-4.95	0.00	-651.98	0.00	651.98	3,359.11	1,679.56	5,677.90	2,804.10	0.07	-0.06	0.101
14.71	-96.32	-4.92	0.00	-628.66	0.00	628.66	3,322.40	1,661.20	5,509.81	2,721.09	0.15	-0.09	0.099
14.71	-96.32	-4.92	0.00	-628.66	0.00	628.66	3,322.40	1,661.20	5,509.81	2,721.09	0.15	-0.09	0.122
15.00	-96.14	-4.92	0.00	-627.24	0.00	627.24	3,320.10	1,660.05	5,499.48	2,715.99	0.15	-0.10	0.122
20.00	-93.21	-4.89	0.00	-602.63	0.00	602.63	3,279.97	1,639.98	5,321.88	2,628.28	0.28	-0.14	0.119
20.00	-93.21	-4.89	0.00	-602.63	0.00	602.63	3,279.97	1,639.98	5,321.88	2,628.28	0.28	-0.14	0.119
25.00	-90.36	-4.87	0.00	-578.16	0.00	578.16	3,238.71	1,619.36	5,145.22	2,541.03	0.44	-0.18	0.116
30.00	-87.53	-4.83	0.00	-553.83	0.00	553.83	3,196.33	1,598.17	4,969.60	2,454.30	0.65	-0.22	0.114
35.00	-84.71	-4.80	0.00	-529.66	0.00	529.66	3,152.83	1,576.41	4,795.15	2,368.14	0.90	-0.26	0.111
40.00	-81.91	-4.76	0.00	-505.68	0.00	505.68	3,108.20	1,554.10	4,621.97	2,282.62	1.19	-0.30	0.108
44.10	-79.63	-4.72	0.00	-486.18	0.00	486.18	3,070.77	1,535.38	4,481.00	2,213.00	1.47	-0.33	0.105
45.00	-79.00	-4.71	0.00	-481.93	0.00	481.93	3,062.45	1,531.23	4,450.19	2,197.78	1.53	-0.34	0.103
48.60	-76.47	-4.67	0.00	-464.99	0.00	464.99	2,379.97	1,189.99	3,474.54	1,715.94	1.80	-0.37	0.117
50.00	-75.74	-4.65	0.00	-458.45	0.00	458.45	2,371.43	1,185.72	3,439.58	1,698.68	1.91	-0.38	0.116
55.00	-73.12	-4.59	0.00	-435.22	0.00	435.22	2,340.22	1,170.11	3,315.01	1,637.16	2.33	-0.43	0.112
60.00	-70.53	-4.53	0.00	-412.27	0.00	412.27	2,307.88	1,153.94	3,191.02	1,575.92	2.80	-0.47	0.108
65.00	-67.95	-4.46	0.00	-389.64	0.00	389.64	2,274.42	1,137.21	3,067.70	1,515.02	3.32	-0.51	0.104
70.00	-65.40	-4.39	0.00	-367.35	0.00	367.35	2,239.83	1,119.92	2,945.16	1,454.51	3.87	-0.55	0.100
75.00	-62.87	-4.31	0.00	-345.41	0.00	345.41	2,204.12	1,102.06	2,823.54	1,394.44	4.48	-0.59	0.096
80.00	-60.36	-4.23	0.00	-323.86	0.00	323.86	2,167.29	1,083.65	2,702.93	1,334.88	5.12	-0.64	0.091
80.00	-60.36	-4.23	0.00	-323.86	0.00	323.86	2,167.29	1,083.65	2,702.93	1,334.88	5.12	-0.64	0.101
85.00	-57.99	-4.16	0.00	-302.70	0.00	302.70	2,129.34	1,064.67	2,583.46	1,275.87	5.81	-0.68	0.096
86.58	-57.24	-4.13	0.00	-296.13	0.00	296.13	2,117.11	1,058.55	2,545.96	1,257.35	6.04	-0.69	0.095
90.00	-55.30	-4.08	0.00	-282.01	0.00	282.01	2,090.26	1,045.13	2,465.23	1,217.49	6.54	-0.72	0.090
90.33	-55.11	-4.06	0.00	-280.66	0.00	280.66	1,547.78	773.89	1,862.15	919.64	6.59	-0.73	0.106
95.00	-53.03	-3.98	0.00	-261.70	0.00	261.70	1,525.71	762.86	1,787.32	882.69	7.32	-0.77	0.101
100.00	-50.82	-3.89	0.00	-241.80	0.00	241.80	1,500.99	750.50	1,707.51	843.28	8.15	-0.81	0.095
105.00	-48.63	-3.80	0.00	-222.35	0.00	222.35	1,475.16	737.58	1,628.14	804.08	9.02	-0.86	0.089
110.00	-46.47	-3.71	0.00	-203.34	0.00	203.34	1,448.19	724.10	1,549.32	765.15	9.94	-0.90	0.083
115.00	-44.33	-3.61	0.00	-184.81	0.00	184.81	1,420.11	710.05	1,471.16	726.55	10.91	-0.94	0.077
120.00	-42.21	-3.51	0.00	-166.77	0.00	166.77	1,390.90	695.45	1,393.78	688.34	11.91	-0.98	0.072
120.00	-42.21	-3.51	0.00	-166.77	0.00	166.77	1,390.90	695.45	1,393.78	688.34	11.91	-0.98	0.087
125.00	-40.31	-3.42	0.00	-149.24	0.00	149.24	1,360.57	680.28	1,317.29	650.56	12.96	-1.02	0.080
126.28	-39.82	-3.39	0.00	-144.85	0.00	144.85	1,352.62	676.31	1,297.87	640.97	13.24	-1.03	0.078
126.28	-39.82	-3.39	0.00	-144.85	0.00	144.85	900.61	450.31	868.79	429.06	13.24	-1.03	0.095
130.00	-38.50	-3.32	0.00	-132.24	0.00	132.24	888.95	444.47	835.13	412.44	14.05	-1.06	0.089
135.00	-36.74	-3.22	0.00	-115.65	0.00	115.65	872.29	436.14	789.93	390.12	15.19	-1.11	0.080
140.00	-34.99	-3.12	0.00	-99.53	0.00	99.53	854.50	427.25	744.88	367.87	16.37	-1.15	0.071
140.00	-34.99	-3.12	0.00	-99.53	0.00	99.53	854.50	427.25	744.88	367.87	16.37	-1.15	0.089
145.00	-33.44	-3.04	0.00	-83.91	0.00	83.91	835.60	417.80	700.09	345.75	17.60	-1.19	0.078
146.00	-31.25	-2.87	0.00	-80.87	0.00	80.87	831.68	415.84	691.17	341.34	17.85	-1.20	0.075
150.00	-30.17	-2.79	0.00	-69.38	0.00	69.38	815.57	407.78	655.68	323.81	18.87	-1.23	0.067
155.00	-28.84	-2.71	0.00	-55.41	0.00	55.41	794.42	397.21	611.76	302.12	20.18	-1.27	0.056
158.50	-27.92	-2.65	0.00	-45.94	0.00	45.94	778.94	389.47	581.37	287.12	21.12	-1.30	0.049
158.50	-27.92	-2.65	0.00	-45.94	0.00	45.94	778.94	389.47	581.37	287.12	21.12	-1.30	0.196
160.00	-27.66	-2.63	0.00	-41.97	0.00	41.97	772.14	386.07	568.44	280.73	21.53	-1.30	0.185
165.00	-26.93	-2.61	0.00	-28.83	0.00	28.83	748.74	374.37	525.85	259.70	22.96	-1.42	0.147
166.00	-20.93	-1.99	0.00	-26.22	0.00	26.22	743.93	371.96	517.43	255.54	23.26	-1.44	0.131
170.00	-20.40	-1.95	0.00	-18.27	0.00	18.27	723.19	361.60	483.41	238.74	24.50	-1.51	0.105

Site Number:	302502	Code:	ANSI/TIA-222-G		
Site Name:	Harwinton, CT	Engineering Number:	OAA712918_C3_05	4/18/2018 10:18:59 AM	
Customer:	AT&T MOBILITY				

Load Case: 1.2D + 1.0Di + 1.0Wi — 40 mph with 1.00 in Radial Ice — 27 Iterations

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

Dead Load Factor : 1.20 | Ice Importance Factor : 1.00

Wind Load Factor : 1.00

175.00	-19.75	-1.91	0.00	-8.53	0.00	8.53	686.95	343.48	435.91	215.28	26.11	-1.57	0.068
176.00	-10.66	-0.96	0.00	-6.62	0.00	6.62	679.70	339.85	426.71	210.73	26.44	-1.57	0.047
180.00	-10.22	-0.92	0.00	-2.79	0.00	2.79	650.71	325.36	390.87	193.04	27.77	-1.59	0.030
181.90	0.00	-0.63	0.00	-1.05	0.00	1.05	636.94	318.47	374.40	184.90	28.40	-1.60	0.006

Site Number: 302502 Code: ANSI/TIA-222-G

Site Name: Harwinton, CT Engineering Number: OAA712918_C3_05 4/18/2018 10:18:59 AM

Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W Serviceability 60 mph 26 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Applied Segment Forces Summary

		Shaft Forces		Discrete Forces				Linear Forces		Sum of Forces			
Seg Elev (ft)	Description	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		61.9	0.0					0.0	0.0	61.9	0.0	0.0	0.0
5.00		122.7	867.3					0.0	974.5	122.7	1,841.9	0.0	0.0
10.00		128.1	850.6					0.0	1,178.9	128.1	2,029.5	0.0	0.0
14.71	Reinf. Top	71.5	786.0					24.3	1,110.5	95.8	1,896.5	0.0	0.0
15.00		74.2	47.9					1.5	53.8	75.7	101.8	0.0	0.0
20.00	Reinf. Top Reinf	138.7	817.1					25.8	928.4	164.5	1,745.5	0.0	0.0
25.00		135.8	800.4					25.8	928.4	161.6	1,728.8	0.0	0.0
30.00		134.6	783.7					25.8	928.4	160.4	1,712.1	0.0	0.0
35.00		136.0	767.0					26.1	928.4	162.1	1,695.3	0.0	0.0
40.00		125.7	750.2					26.6	928.4	152.3	1,678.6	0.0	0.0
44.10	Bot - Section 2	69.8	602.7					22.2	761.3	92.0	1,364.0	0.0	0.0
45.00		64.2	241.9					4.9	167.1	69.1	409.0	0.0	0.0
48.60	Top - Section 1	71.5	957.7					19.8	668.4	91.3	1,626.1	0.0	0.0
50.00		91.9	169.1					7.8	259.9	99.7	429.1	0.0	0.0
55.00		143.9	595.1					27.9	928.4	171.9	1,523.5	0.0	0.0
60.00		144.1	581.2					28.3	928.4	172.4	1,509.6	0.0	0.0
65.00		143.9	567.3					28.6	928.4	172.5	1,495.6	0.0	0.0
70.00		143.3	553.3					29.0	928.4	172.3	1,481.7	0.0	0.0
75.00		142.5	539.4					29.3	928.4	171.8	1,467.8	0.0	0.0
80.00	Reinf. Top Reinf	141.4	525.4					29.5	928.4	170.9	1,453.8	0.0	0.0
85.00		92.5	511.5					29.8	845.7	122.3	1,357.2	0.0	0.0
86.58	Bot - Section 3	70.5	158.7					9.5	267.3	79.9	426.0	0.0	0.0
90.00		53.0	615.1					20.6	578.5	73.6	1,193.6	0.0	0.0
90.33	Top - Section 2	70.0	58.7					2.0	55.8	72.0	114.6	0.0	0.0
95.00		134.4	368.2					28.3	789.9	162.7	1,158.1	0.0	0.0
100.00		137.1	383.4					30.5	845.7	167.7	1,229.2	0.0	0.0
105.00		135.0	372.3					30.7	845.7	165.7	1,218.0	0.0	0.0
110.00		132.7	361.1					31.0	845.7	163.6	1,206.9	0.0	0.0
115.00		130.2	350.0					31.2	845.7	161.3	1,195.7	0.0	0.0
120.00	Reinf. Top Reinf	127.6	338.8					31.4	845.7	158.9	1,184.6	0.0	0.0
125.00		79.0	327.7					31.5	695.4	110.6	1,023.1	0.0	0.0
126.28	Top - Section 3	61.7	82.1					8.1	178.0	69.8	260.1	0.0	0.0
130.00		105.9	176.3					23.6	517.4	129.5	693.7	0.0	0.0
135.00		118.8	229.7					31.9	695.4	150.7	925.1	0.0	0.0
140.00	Reinf. Top Reinf	115.6	221.3					32.1	695.4	147.7	916.7	0.0	0.0
145.00		68.2	212.9					31.6	565.1	99.8	778.0	0.0	0.0
146.00	Appurtenance(s)	55.3	41.6	136.2	0.0	0.0	697.7	6.4	113.0	197.9	852.3	0.0	0.0
150.00		97.7	163.0					25.5	432.4	123.3	595.4	0.0	0.0
155.00		90.1	196.2					32.2	540.5	122.3	736.7	0.0	0.0
158.50	Reinf. Top	51.8	132.4					22.7	378.3	74.5	510.7	0.0	0.0
160.00		57.0	55.5					9.8	53.9	66.8	109.4	0.0	0.0
165.00		49.8	179.5					0.0	179.7	49.8	359.2	0.0	0.0
166.00	Appurtenance(s)	40.1	34.9	664.3	0.0	0.0	2,169.6	0.0	35.9	704.4	2,240.4	0.0	0.0
170.00		70.4	136.2					0.0	117.7	70.4	253.9	0.0	0.0
175.00		45.9	162.7					0.0	147.1	45.9	309.8	0.0	0.0
176.00	Appurtenance(s)	36.8	31.5	1,082.6	0.0	0.0	2,356.0	0.0	29.4	1,119.4	2,417.0	0.0	0.0
180.00		42.8	122.8					0.0	71.2	42.8	194.0	0.0	0.0
181.90		13.5	56.5					0.0	33.8	13.5	90.3	0.0	0.0

Site Number:	302502	Code:	ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number:	OAA712918_C3_05	4/18/2018 10:19:05 AM
Customer:	AT&T MOBILITY			

Load Case: 1.0D + 1.0W — Serviceability 60 mph — 26 Iterations

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

Wind Importance Factor : 1.00

Totals:	7,335.88	50,739.8	0.00	0.00

Site Number: 302502 Code: ANSI/TIA-222-G

Site Name: Harwinton, CT Engineering Number: OAA712918_C3_05 4/18/2018 10:19:05 AM

Customer: AT&T MOBILITY

Load Case: 1.0D + 1.0W Serviceability 60 mph 26 Iterations

Gust Response Factor : 1.10 Wind Importance Factor : 1.00

Dead Load Factor : 1.00

Wind Load Factor : 1.00

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-54.15	-8.25	0.00	-1,019.01	0.00	1,019.01	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.141
5.00	-52.30	-8.17	0.00	-977.76	0.00	977.76	3,397.00	1,698.50	5,857.04	2,892.57	0.03	-0.05	0.137
10.00	-50.26	-8.08	0.00	-936.92	0.00	936.92	3,359.11	1,679.56	5,677.90	2,804.10	0.10	-0.09	0.133
14.71	-48.36	-8.00	0.00	-898.87	0.00	898.87	3,322.40	1,661.20	5,509.81	2,721.09	0.21	-0.14	0.129
14.71	-48.36	-8.00	0.00	-898.87	0.00	898.87	3,322.40	1,661.20	5,509.81	2,721.09	0.21	-0.14	0.160
15.00	-48.26	-7.95	0.00	-896.55	0.00	896.55	3,320.10	1,660.05	5,499.48	2,715.99	0.22	-0.14	0.160
20.00	-46.51	-7.82	0.00	-856.81	0.00	856.81	3,279.97	1,639.98	5,321.88	2,628.28	0.40	-0.20	0.156
20.00	-46.51	-7.82	0.00	-856.81	0.00	856.81	3,279.97	1,639.98	5,321.88	2,628.28	0.40	-0.20	0.156
25.00	-44.77	-7.70	0.00	-817.69	0.00	817.69	3,238.71	1,619.36	5,145.22	2,541.03	0.63	-0.25	0.151
30.00	-43.05	-7.58	0.00	-779.19	0.00	779.19	3,196.33	1,598.17	4,969.60	2,454.30	0.93	-0.31	0.147
35.00	-41.35	-7.44	0.00	-741.31	0.00	741.31	3,152.83	1,576.41	4,795.15	2,368.14	1.29	-0.37	0.142
40.00	-39.67	-7.32	0.00	-704.09	0.00	704.09	3,108.20	1,554.10	4,621.97	2,282.62	1.71	-0.43	0.138
44.10	-38.30	-7.23	0.00	-674.09	0.00	674.09	3,070.77	1,535.38	4,481.00	2,213.00	2.09	-0.47	0.134
45.00	-37.89	-7.18	0.00	-667.58	0.00	667.58	3,062.45	1,531.23	4,450.19	2,197.78	2.18	-0.48	0.131
48.60	-36.26	-7.09	0.00	-641.74	0.00	641.74	2,379.97	1,189.99	3,474.54	1,715.94	2.57	-0.53	0.148
50.00	-35.83	-7.01	0.00	-631.81	0.00	631.81	2,371.43	1,185.72	3,439.58	1,698.68	2.72	-0.54	0.146
55.00	-34.30	-6.86	0.00	-596.76	0.00	596.76	2,340.22	1,170.11	3,315.01	1,637.16	3.32	-0.60	0.141
60.00	-32.78	-6.70	0.00	-562.47	0.00	562.47	2,307.88	1,153.94	3,191.02	1,575.92	3.98	-0.66	0.135
65.00	-31.28	-6.54	0.00	-528.96	0.00	528.96	2,274.42	1,137.21	3,067.70	1,515.02	4.70	-0.72	0.129
70.00	-29.80	-6.38	0.00	-496.25	0.00	496.25	2,239.83	1,119.92	2,945.16	1,454.51	5.48	-0.77	0.123
75.00	-28.33	-6.22	0.00	-464.34	0.00	464.34	2,204.12	1,102.06	2,823.54	1,394.44	6.32	-0.83	0.118
80.00	-26.87	-6.05	0.00	-433.26	0.00	433.26	2,167.29	1,083.65	2,702.93	1,334.88	7.22	-0.89	0.112
80.00	-26.87	-6.05	0.00	-433.26	0.00	433.26	2,167.29	1,083.65	2,702.93	1,334.88	7.22	-0.89	0.123
85.00	-25.51	-5.92	0.00	-403.01	0.00	403.01	2,129.34	1,064.67	2,583.46	1,275.87	8.18	-0.94	0.117
86.58	-25.08	-5.85	0.00	-393.65	0.00	393.65	2,117.11	1,058.55	2,545.96	1,257.35	8.49	-0.96	0.115
90.00	-23.89	-5.76	0.00	-373.65	0.00	373.65	2,090.26	1,045.13	2,465.23	1,217.49	9.19	-1.00	0.109
90.33	-23.77	-5.70	0.00	-371.75	0.00	371.75	1,547.78	773.89	1,862.15	919.64	9.26	-1.00	0.128
95.00	-22.61	-5.54	0.00	-345.12	0.00	345.12	1,525.71	762.86	1,787.32	882.69	10.27	-1.06	0.121
100.00	-21.38	-5.37	0.00	-317.42	0.00	317.42	1,500.99	750.50	1,707.51	843.28	11.41	-1.12	0.113
105.00	-20.16	-5.20	0.00	-290.56	0.00	290.56	1,475.16	737.58	1,628.14	804.08	12.61	-1.17	0.106
110.00	-18.95	-5.03	0.00	-264.55	0.00	264.55	1,448.19	724.10	1,549.32	765.15	13.88	-1.23	0.098
115.00	-17.76	-4.86	0.00	-239.40	0.00	239.40	1,420.11	710.05	1,471.16	726.55	15.19	-1.28	0.091
120.00	-16.57	-4.69	0.00	-215.10	0.00	215.10	1,390.90	695.45	1,393.78	688.34	16.57	-1.34	0.083
120.00	-16.57	-4.69	0.00	-215.10	0.00	215.10	1,390.90	695.45	1,393.78	688.34	16.57	-1.34	0.101
125.00	-15.55	-4.56	0.00	-191.66	0.00	191.66	1,360.57	680.28	1,317.29	650.56	17.99	-1.39	0.092
126.28	-15.29	-4.49	0.00	-185.82	0.00	185.82	1,352.62	676.31	1,297.87	640.97	18.37	-1.40	0.090
126.28	-15.29	-4.49	0.00	-185.82	0.00	185.82	900.61	450.31	868.79	429.06	18.37	-1.40	0.109
130.00	-14.59	-4.36	0.00	-169.10	0.00	169.10	888.95	444.47	835.13	412.44	19.48	-1.44	0.101
135.00	-13.67	-4.20	0.00	-147.30	0.00	147.30	872.29	436.14	789.93	390.12	21.02	-1.50	0.089
140.00	-12.75	-4.04	0.00	-126.31	0.00	126.31	854.50	427.25	744.88	367.87	22.62	-1.55	0.078
140.00	-12.75	-4.04	0.00	-126.31	0.00	126.31	854.50	427.25	744.88	367.87	22.62	-1.55	0.099
145.00	-11.98	-3.92	0.00	-106.11	0.00	106.11	835.60	417.80	700.09	345.75	24.28	-1.60	0.085
146.00	-11.13	-3.71	0.00	-102.19	0.00	102.19	831.68	415.84	691.17	341.34	24.61	-1.62	0.082
150.00	-10.53	-3.58	0.00	-87.36	0.00	87.36	815.57	407.78	655.68	323.81	25.99	-1.66	0.072
155.00	-9.80	-3.44	0.00	-69.49	0.00	69.49	794.42	397.21	611.76	302.12	27.75	-1.71	0.059
158.50	-9.29	-3.35	0.00	-57.45	0.00	57.45	778.94	389.47	581.37	287.12	29.01	-1.74	0.050
158.50	-9.29	-3.35	0.00	-57.45	0.00	57.45	778.94	389.47	581.37	287.12	29.01	-1.74	0.212
160.00	-9.18	-3.29	0.00	-52.42	0.00	52.42	772.14	386.07	568.44	280.73	29.56	-1.75	0.199
165.00	-8.81	-3.25	0.00	-35.95	0.00	35.95	748.74	374.37	525.85	259.70	31.47	-1.89	0.150
166.00	-6.60	-2.47	0.00	-32.70	0.00	32.70	743.93	371.96	517.43	255.54	31.87	-1.92	0.137
170.00	-6.34	-2.40	0.00	-22.81	0.00	22.81	723.19	361.60	483.41	238.74	33.52	-2.00	0.104

Site Number:	302502	Code: ANSI/TIA-222-G	
Site Name:	Harwinton, CT	Engineering Number: OAA712918_C3_05	4/18/2018 10:19:05 AM
Customer:	AT&T MOBILITY		

Load Case: 1.0D + 1.0W — Serviceability 60 mph — 26 Iterations

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

175.00	-6.03	-2.35	0.00	-10.79	0.00	10.79	686.95	343.48	435.91	215.28	35.66	-2.07	0.059
176.00	-3.66	-1.15	0.00	-8.44	0.00	8.44	679.70	339.85	426.71	210.73	36.09	-2.08	0.045
180.00	-3.46	-1.10	0.00	-3.85	0.00	3.85	650.71	325.36	390.87	193.04	37.85	-2.11	0.025
181.90	0.00	-0.97	0.00	-1.77	0.00	1.77	636.94	318.47	374.40	184.90	38.69	-2.12	0.010

Equivalent Lateral Forces Method Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18	
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06	
Long-Period Transition Period (T_L):	6	
Importance Factor (I_E):	1.00	
Site Coefficient F_a:	1.60	
Site Coeffiecient F_v:	2.40	
Response Modification Coefficient (R):	1.50	
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19	
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10	
Seismic Response Coefficient (C_s):	0.03	
Upper Limit C_s	0.03	
Lower Limit C_s	0.03	
Period based on Rayleigh Method (sec):	3.19	
Redundancy Factor (p):	1.00	
Seismic Force Distribution Exponent (k):	2.00	
Total Unfactored Dead Load:	54.15	k
Seismic Base Shear (E):	1.62	k

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
47	180.95	90	2,956	0.005	8	112
46	178.00	194	6,148	0.011	17	240
45	175.50	61	1,878	0.003	5	76
44	172.50	310	9,220	0.016	26	384
43	168.00	254	7,166	0.012	20	315
42	165.50	71	1,940	0.003	5	88
41	162.50	359	9,485	0.016	26	445
40	159.25	109	2,774	0.005	8	136
39	156.75	511	12,548	0.021	35	633
38	152.50	737	17,133	0.029	48	913
37	148.00	595	13,041	0.022	36	738
36	145.50	155	3,273	0.006	9	192
35	142.50	778	15,799	0.027	44	964
34	137.50	917	17,332	0.030	48	1,136
33	132.50	925	16,241	0.028	45	1,146
32	128.14	694	11,390	0.020	32	859
31	125.64	260	4,106	0.007	11	322
30	122.50	1,023	15,353	0.026	43	1,267
29	117.50	1,185	16,354	0.028	45	1,467
28	112.50	1,196	15,133	0.026	42	1,481
27	107.50	1,207	13,947	0.024	39	1,495
26	102.50	1,218	12,797	0.022	36	1,509
25	97.50	1,229	11,685	0.020	32	1,523

24	92.67	1,158	9,945	0.017	28	1,435
23	90.17	115	931	0.002	3	142
22	88.29	1,194	9,304	0.016	26	1,479
21	85.79	426	3,135	0.005	9	528
20	82.50	1,357	9,238	0.016	26	1,681
19	77.50	1,454	8,732	0.015	24	1,801
18	72.50	1,468	7,715	0.013	21	1,818
17	67.50	1,482	6,751	0.012	19	1,836
16	62.50	1,496	5,842	0.010	16	1,853
15	57.50	1,510	4,991	0.009	14	1,870
14	52.50	1,524	4,199	0.007	12	1,887
13	49.30	429	1,043	0.002	3	532
12	46.80	1,626	3,562	0.006	10	2,014
11	44.55	409	812	0.001	2	507
10	42.05	1,364	2,412	0.004	7	1,690
9	37.50	1,679	2,361	0.004	7	2,080
8	32.50	1,695	1,791	0.003	5	2,100
7	27.50	1,712	1,295	0.002	4	2,121
6	22.50	1,729	875	0.001	2	2,142
5	17.50	1,746	535	0.001	1	2,162
4	14.85	102	22	0.000	0	126
3	12.35	1,896	289	0.000	1	2,349
2	7.50	2,029	114	0.000	0	2,514
1	2.50	1,842	12	0.000	0	2,282
Kaelus DBC0061F1V51-	181.90	76	2,531	0.004	7	95
Powerwave Allgon LGP	181.90	85	2,799	0.005	8	105
Raycap DC6-48-60-0-8	181.90	33	1,085	0.002	3	41
Raycap DC6-48-60-18-	181.90	32	1,052	0.002	3	39
Ericsson RRUS 11 (Ba	181.90	300	9,926	0.017	28	372
Ericsson RRUS 32 (50	181.90	152	5,043	0.009	14	189
Ericsson RRUS 12	181.90	150	4,963	0.008	14	186
Powerwave Allgon 777	181.90	105	3,474	0.006	10	130
KMW AM-X-CD-16-65-00	181.90	146	4,814	0.008	13	180
Quintel QS66512-2	181.90	333	11,018	0.019	31	413
Flat Platform w/ Han	181.90	2,000	66,175	0.113	184	2,478
RFS FD9R6004/2C-3L (	176.00	19	576	0.001	2	23
Alcatel-Lucent B13 R	176.00	173	5,371	0.009	15	215
Alcatel-Lucent B66A	176.00	170	5,278	0.009	15	211
RFS DB-T1-6Z-8AB-0Z	176.00	88	2,726	0.005	8	109
Commscope SBNHH-1D65	176.00	244	7,546	0.013	21	302
Antel LPA-80063/6CF	176.00	162	5,018	0.009	14	201
Flat Low Profile Pla	176.00	1,500	46,464	0.080	129	1,858
Ericsson AIR 21, 1.3	166.00	249	6,861	0.012	19	308
Ericsson AIR 21, 1.3	166.00	271	7,473	0.013	21	336
Andrew LNX-6515DS-A1	166.00	149	4,117	0.007	11	185
Round Low Profile Pl	166.00	1,500	41,334	0.071	115	1,858
KMW TTA (HB-X-WM-17-	146.00	48	1,017	0.002	3	59
KMW HB-X-WM-17-65-00	146.00	90	1,918	0.003	5	111
Side Arms	146.00	560	11,937	0.020	33	694
		54,151	584,123	1.000	1,625	67,084

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

Segment	Height Above Base (ft)	Weight (lb)	W_z (lb-ft)	C_{vx}	Horizontal Force (lb)	Vertical Force (lb)
47	180.95	90	2,956	0.005	8	78
46	178.00	194	6,148	0.011	17	167
45	175.50	61	1,878	0.003	5	52
44	172.50	310	9,220	0.016	26	267
43	168.00	254	7,166	0.012	20	219

42	165.50	71	1,940	0.003	5	61
41	162.50	359	9,485	0.016	26	309
40	159.25	109	2,774	0.005	8	94
39	156.75	511	12,548	0.021	35	440
38	152.50	737	17,133	0.029	48	634
37	148.00	595	13,041	0.022	36	513
36	145.50	155	3,273	0.006	9	133
35	142.50	778	15,799	0.027	44	670
34	137.50	917	17,332	0.030	48	789
33	132.50	925	16,241	0.028	45	797
32	128.14	694	11,390	0.020	32	597
31	125.64	260	4,106	0.007	11	224
30	122.50	1,023	15,353	0.026	43	881
29	117.50	1,185	16,354	0.028	45	1,020
28	112.50	1,196	15,133	0.026	42	1,030
27	107.50	1,207	13,947	0.024	39	1,039
26	102.50	1,218	12,797	0.022	36	1,049
25	97.50	1,229	11,685	0.020	32	1,059
24	92.67	1,158	9,945	0.017	28	997
23	90.17	115	931	0.002	3	99
22	88.29	1,194	9,304	0.016	26	1,028
21	85.79	426	3,135	0.005	9	367
20	82.50	1,357	9,238	0.016	26	1,169
19	77.50	1,454	8,732	0.015	24	1,252
18	72.50	1,468	7,715	0.013	21	1,264
17	67.50	1,482	6,751	0.012	19	1,276
16	62.50	1,496	5,842	0.010	16	1,288
15	57.50	1,510	4,991	0.009	14	1,300
14	52.50	1,524	4,199	0.007	12	1,312
13	49.30	429	1,043	0.002	3	370
12	46.80	1,626	3,562	0.006	10	1,400
11	44.55	409	812	0.001	2	352
10	42.05	1,364	2,412	0.004	7	1,175
9	37.50	1,679	2,361	0.004	7	1,446
8	32.50	1,695	1,791	0.003	5	1,460
7	27.50	1,712	1,295	0.002	4	1,474
6	22.50	1,729	875	0.001	2	1,489
5	17.50	1,746	535	0.001	1	1,503
4	14.85	102	22	0.000	0	88
3	12.35	1,896	289	0.000	1	1,633
2	7.50	2,029	114	0.000	0	1,748
1	2.50	1,842	12	0.000	0	1,586
Kaelus DBC0061F1V51-	181.90	76	2,531	0.004	7	66
Powerwave Allgon LGP	181.90	85	2,799	0.005	8	73
Raycap DC6-48-60-0-8	181.90	33	1,085	0.002	3	28
Raycap DC6-48-60-18-	181.90	32	1,052	0.002	3	27
Ericsson RRUS 11 (Ba	181.90	300	9,926	0.017	28	258
Ericsson RRUS 32 (50	181.90	152	5,043	0.009	14	131
Ericsson RRUS 12	181.90	150	4,963	0.008	14	129
Powerwave Allgon 777	181.90	105	3,474	0.006	10	90
KMW AM-X-CD-16-65-00	181.90	146	4,814	0.008	13	125
Quintel QS66512-2	181.90	333	11,018	0.019	31	287
Flat Platform w/ Han	181.90	2,000	66,175	0.113	184	1,722
RFS FD9R6004/2C-3L (	176.00	19	576	0.001	2	16
Alcatel-Lucent B13 R	176.00	173	5,371	0.009	15	149
Alcatel-Lucent B66A	176.00	170	5,278	0.009	15	147
RFS DB-T1-6Z-8AB-0Z	176.00	88	2,726	0.005	8	76
Commscope SBNHH-1D65	176.00	244	7,546	0.013	21	210
Antel LPA-80063/6CF	176.00	162	5,018	0.009	14	140
Flat Low Profile Pla	176.00	1,500	46,464	0.080	129	1,292
Ericsson AIR 21, 1.3	166.00	249	6,861	0.012	19	214
Ericsson AIR 21, 1.3	166.00	271	7,473	0.013	21	234
Andrew LNX-6515DS-A1	166.00	149	4,117	0.007	11	129
Round Low Profile Pl	166.00	1,500	41,334	0.071	115	1,292

KMW TTA (HB-X-WM-17-	146.00	48	1,017	0.002	3	41
KMW HB-X-WM-17-65-00	146.00	90	1,918	0.003	5	78
Side Arms	146.00	560	11,937	0.020	33	482
		54,151	584,123	1.000	1,625	46,634

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-64.80	-1.63	0.00	-248.11	0.00	248.11	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.041
5.00	-62.29	-1.64	0.00	-239.96	0.00	239.96	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.01	0.040
10.00	-59.94	-1.65	0.00	-231.75	0.00	231.75	3,359.11	1,679.56	5,677.90	2,804.10	0.02	-0.02	0.039
14.71	-59.81	-1.66	0.00	-223.97	0.00	223.97	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.039
14.71	-59.81	-1.66	0.00	-223.97	0.00	223.97	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.048
15.00	-57.65	-1.66	0.00	-223.49	0.00	223.49	3,320.10	1,660.05	5,499.48	2,715.99	0.05	-0.03	0.047
20.00	-55.51	-1.67	0.00	-215.18	0.00	215.18	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.046
20.00	-55.51	-1.67	0.00	-215.18	0.00	215.18	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.046
25.00	-53.39	-1.68	0.00	-206.81	0.00	206.81	3,238.71	1,619.36	5,145.22	2,541.03	0.16	-0.06	0.045
30.00	-51.29	-1.69	0.00	-198.41	0.00	198.41	3,196.33	1,598.17	4,969.60	2,454.30	0.23	-0.08	0.044
35.00	-49.21	-1.69	0.00	-189.98	0.00	189.98	3,152.83	1,576.41	4,795.15	2,368.14	0.32	-0.09	0.043
40.00	-47.51	-1.69	0.00	-181.53	0.00	181.53	3,108.20	1,554.10	4,621.97	2,282.62	0.42	-0.11	0.042
44.10	-47.01	-1.69	0.00	-174.60	0.00	174.60	3,070.77	1,535.38	4,481.00	2,213.00	0.52	-0.12	0.041
45.00	-44.99	-1.68	0.00	-173.08	0.00	173.08	3,062.45	1,531.23	4,450.19	2,197.78	0.54	-0.12	0.040
48.60	-44.46	-1.69	0.00	-167.01	0.00	167.01	2,379.97	1,189.99	3,474.54	1,715.94	0.64	-0.13	0.045
50.00	-42.57	-1.68	0.00	-164.65	0.00	164.65	2,371.43	1,185.72	3,439.58	1,698.68	0.68	-0.14	0.044
55.00	-40.70	-1.67	0.00	-156.27	0.00	156.27	2,340.22	1,170.11	3,315.01	1,637.16	0.83	-0.15	0.043
60.00	-38.85	-1.66	0.00	-147.92	0.00	147.92	2,307.88	1,153.94	3,191.02	1,575.92	1.00	-0.17	0.041
65.00	-37.01	-1.64	0.00	-139.63	0.00	139.63	2,274.42	1,137.21	3,067.70	1,515.02	1.18	-0.18	0.040
70.00	-35.20	-1.63	0.00	-131.41	0.00	131.41	2,239.83	1,119.92	2,945.16	1,454.51	1.38	-0.20	0.038
75.00	-33.39	-1.60	0.00	-123.28	0.00	123.28	2,204.12	1,102.06	2,823.54	1,394.44	1.60	-0.21	0.036
80.00	-31.71	-1.58	0.00	-115.26	0.00	115.26	2,167.29	1,083.65	2,702.93	1,334.88	1.83	-0.23	0.035
80.00	-31.71	-1.58	0.00	-115.26	0.00	115.26	2,167.29	1,083.65	2,702.93	1,334.88	1.83	-0.23	0.038
85.00	-31.18	-1.57	0.00	-107.36	0.00	107.36	2,129.34	1,064.67	2,583.46	1,275.87	2.08	-0.24	0.036
86.58	-29.71	-1.55	0.00	-104.87	0.00	104.87	2,117.11	1,058.55	2,545.96	1,257.35	2.16	-0.25	0.035
90.00	-29.56	-1.55	0.00	-99.58	0.00	99.58	2,090.26	1,045.13	2,465.23	1,217.49	2.34	-0.26	0.034
90.33	-28.13	-1.52	0.00	-99.07	0.00	99.07	1,547.78	773.89	1,862.15	919.64	2.36	-0.26	0.040
95.00	-26.61	-1.48	0.00	-92.00	0.00	92.00	1,525.71	762.86	1,787.32	882.69	2.62	-0.27	0.037
100.00	-25.10	-1.45	0.00	-84.58	0.00	84.58	1,500.99	750.50	1,707.51	843.28	2.91	-0.29	0.035
105.00	-23.60	-1.41	0.00	-77.35	0.00	77.35	1,475.16	737.58	1,628.14	804.08	3.22	-0.30	0.033
110.00	-22.12	-1.36	0.00	-70.31	0.00	70.31	1,448.19	724.10	1,549.32	765.15	3.55	-0.32	0.030
115.00	-20.65	-1.31	0.00	-63.50	0.00	63.50	1,420.11	710.05	1,471.16	726.55	3.89	-0.33	0.028
120.00	-19.39	-1.27	0.00	-56.94	0.00	56.94	1,390.90	695.45	1,393.78	688.34	4.25	-0.35	0.026
120.00	-19.39	-1.27	0.00	-56.94	0.00	56.94	1,390.90	695.45	1,393.78	688.34	4.25	-0.35	0.031
125.00	-19.06	-1.26	0.00	-50.60	0.00	50.60	1,360.57	680.28	1,317.29	650.56	4.62	-0.36	0.029
126.28	-18.20	-1.22	0.00	-48.99	0.00	48.99	1,352.62	676.31	1,297.87	640.97	4.72	-0.36	0.028
126.28	-18.20	-1.22	0.00	-48.99	0.00	48.99	900.61	450.31	868.79	429.06	4.72	-0.36	0.034
130.00	-17.06	-1.17	0.00	-44.44	0.00	44.44	888.95	444.47	835.13	412.44	5.01	-0.38	0.031
135.00	-15.92	-1.12	0.00	-38.57	0.00	38.57	872.29	436.14	789.93	390.12	5.41	-0.39	0.028
140.00	-14.96	-1.07	0.00	-32.96	0.00	32.96	854.50	427.25	744.88	367.87	5.83	-0.40	0.025
140.00	-14.96	-1.07	0.00	-32.96	0.00	32.96	854.50	427.25	744.88	367.87	5.83	-0.40	0.031
145.00	-14.77	-1.07	0.00	-27.59	0.00	27.59	835.60	417.80	700.09	345.75	6.26	-0.42	0.027
146.00	-13.17	-0.98	0.00	-26.52	0.00	26.52	831.68	415.84	691.17	341.34	6.35	-0.42	0.026
150.00	-12.25	-0.93	0.00	-22.60	0.00	22.60	815.57	407.78	655.68	323.81	6.70	-0.43	0.023
155.00	-11.62	-0.89	0.00	-17.97	0.00	17.97	794.42	397.21	611.76	302.12	7.16	-0.44	0.019
158.50	-11.49	-0.88	0.00	-14.86	0.00	14.86	778.94	389.47	581.37	287.12	7.49	-0.45	0.017
158.50	-11.49	-0.88	0.00	-14.86	0.00	14.86	778.94	389.47	581.37	287.12	7.49	-0.45	0.066
160.00	-11.04	-0.86	0.00	-13.53	0.00	13.53	772.14	386.07	568.44	280.73	7.64	-0.46	0.063
165.00	-10.95	-0.85	0.00	-9.25	0.00	9.25	748.74	374.37	525.85	259.70	8.13	-0.49	0.050
166.00	-7.95	-0.64	0.00	-8.40	0.00	8.40	743.93	371.96	517.43	255.54	8.24	-0.50	0.044
170.00	-7.57	-0.62	0.00	-5.83	0.00	5.83	723.19	361.60	483.41	238.74	8.66	-0.52	0.035
175.00	-7.49	-0.61	0.00	-2.74	0.00	2.74	686.95	343.48	435.91	215.28	9.22	-0.54	0.024
176.00	-4.33	-0.36	0.00	-2.13	0.00	2.13	679.70	339.85	426.71	210.73	9.33	-0.54	0.016
180.00	-4.22	-0.35	0.00	-0.67	0.00	0.67	650.71	325.36	390.87	193.04	9.79	-0.55	0.010
181.90	0.00	-0.31	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	10.01	-0.55	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-45.05	-1.63	0.00	-242.49	0.00	242.49	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.038
5.00	-43.30	-1.64	0.00	-234.35	0.00	234.35	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.01	0.037
10.00	-41.67	-1.64	0.00	-226.17	0.00	226.17	3,359.11	1,679.56	5,677.90	2,804.10	0.02	-0.02	0.036
14.71	-41.58	-1.65	0.00	-218.43	0.00	218.43	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.036
14.71	-41.58	-1.65	0.00	-218.43	0.00	218.43	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.044
15.00	-40.07	-1.65	0.00	-217.95	0.00	217.95	3,320.10	1,660.05	5,499.48	2,715.99	0.05	-0.03	0.043
20.00	-38.59	-1.66	0.00	-209.70	0.00	209.70	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.042
20.00	-38.59	-1.66	0.00	-209.70	0.00	209.70	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.042
25.00	-37.11	-1.66	0.00	-201.43	0.00	201.43	3,238.71	1,619.36	5,145.22	2,541.03	0.15	-0.06	0.041
30.00	-35.65	-1.66	0.00	-193.13	0.00	193.13	3,196.33	1,598.17	4,969.60	2,454.30	0.22	-0.08	0.040
35.00	-34.20	-1.66	0.00	-184.82	0.00	184.82	3,152.83	1,576.41	4,795.15	2,368.14	0.31	-0.09	0.039
40.00	-33.03	-1.66	0.00	-176.51	0.00	176.51	3,108.20	1,554.10	4,621.97	2,282.62	0.41	-0.10	0.038
44.10	-32.68	-1.66	0.00	-169.71	0.00	169.71	3,070.77	1,535.38	4,481.00	2,213.00	0.51	-0.12	0.038
45.00	-31.28	-1.65	0.00	-168.21	0.00	168.21	3,062.45	1,531.23	4,450.19	2,197.78	0.53	-0.12	0.037
48.60	-30.91	-1.65	0.00	-162.26	0.00	162.26	2,379.97	1,189.99	3,474.54	1,715.94	0.63	-0.13	0.042
50.00	-29.59	-1.64	0.00	-159.95	0.00	159.95	2,371.43	1,185.72	3,439.58	1,698.68	0.66	-0.13	0.041
55.00	-28.29	-1.63	0.00	-151.73	0.00	151.73	2,340.22	1,170.11	3,315.01	1,637.16	0.81	-0.15	0.040
60.00	-27.01	-1.62	0.00	-143.57	0.00	143.57	2,307.88	1,153.94	3,191.02	1,575.92	0.97	-0.16	0.038
65.00	-25.73	-1.60	0.00	-135.47	0.00	135.47	2,274.42	1,137.21	3,067.70	1,515.02	1.15	-0.18	0.036
70.00	-24.46	-1.59	0.00	-127.45	0.00	127.45	2,239.83	1,119.92	2,945.16	1,454.51	1.35	-0.19	0.035
75.00	-23.21	-1.56	0.00	-119.52	0.00	119.52	2,204.12	1,102.06	2,823.54	1,394.44	1.56	-0.21	0.033
80.00	-22.04	-1.54	0.00	-111.71	0.00	111.71	2,167.29	1,083.65	2,702.93	1,334.88	1.78	-0.22	0.032
80.00	-22.04	-1.54	0.00	-111.71	0.00	111.71	2,167.29	1,083.65	2,702.93	1,334.88	1.78	-0.22	0.035
85.00	-21.68	-1.53	0.00	-104.02	0.00	104.02	2,129.34	1,064.67	2,583.46	1,275.87	2.02	-0.24	0.033
86.58	-20.65	-1.50	0.00	-101.60	0.00	101.60	2,117.11	1,058.55	2,545.96	1,257.35	2.10	-0.24	0.033
90.00	-20.55	-1.50	0.00	-96.46	0.00	96.46	2,090.26	1,045.13	2,465.23	1,217.49	2.28	-0.25	0.031
90.33	-19.55	-1.47	0.00	-95.96	0.00	95.96	1,547.78	773.89	1,862.15	919.64	2.29	-0.25	0.036
95.00	-18.49	-1.44	0.00	-89.08	0.00	89.08	1,525.71	762.86	1,787.32	882.69	2.55	-0.27	0.034
100.00	-17.44	-1.40	0.00	-81.88	0.00	81.88	1,500.99	750.50	1,707.51	843.28	2.83	-0.28	0.032
105.00	-16.41	-1.36	0.00	-74.86	0.00	74.86	1,475.16	737.58	1,628.14	804.08	3.14	-0.30	0.030
110.00	-15.38	-1.32	0.00	-68.03	0.00	68.03	1,448.19	724.10	1,549.32	765.15	3.45	-0.31	0.028
115.00	-14.36	-1.27	0.00	-61.42	0.00	61.42	1,420.11	710.05	1,471.16	726.55	3.79	-0.32	0.026
120.00	-13.47	-1.23	0.00	-55.06	0.00	55.06	1,390.90	695.45	1,393.78	688.34	4.13	-0.34	0.024
120.00	-13.47	-1.23	0.00	-55.06	0.00	55.06	1,390.90	695.45	1,393.78	688.34	4.13	-0.34	0.028
125.00	-13.25	-1.22	0.00	-48.91	0.00	48.91	1,360.57	680.28	1,317.29	650.56	4.49	-0.35	0.026
126.28	-12.65	-1.18	0.00	-47.35	0.00	47.35	1,352.62	676.31	1,297.87	640.97	4.59	-0.35	0.025
126.28	-12.65	-1.18	0.00	-47.35	0.00	47.35	900.61	450.31	868.79	429.06	4.59	-0.35	0.031
130.00	-11.86	-1.14	0.00	-42.95	0.00	42.95	888.95	444.47	835.13	412.44	4.87	-0.36	0.029
135.00	-11.07	-1.09	0.00	-37.27	0.00	37.27	872.29	436.14	789.93	390.12	5.26	-0.38	0.025
140.00	-10.40	-1.04	0.00	-31.83	0.00	31.83	854.50	427.25	744.88	367.87	5.66	-0.39	0.022
140.00	-10.40	-1.04	0.00	-31.83	0.00	31.83	854.50	427.25	744.88	367.87	5.66	-0.39	0.028
145.00	-10.26	-1.03	0.00	-26.63	0.00	26.63	835.60	417.80	700.09	345.75	6.08	-0.41	0.025
146.00	-9.15	-0.95	0.00	-25.60	0.00	25.60	831.68	415.84	691.17	341.34	6.17	-0.41	0.023
150.00	-8.52	-0.90	0.00	-21.82	0.00	21.82	815.57	407.78	655.68	323.81	6.52	-0.42	0.020
155.00	-8.08	-0.86	0.00	-17.33	0.00	17.33	794.42	397.21	611.76	302.12	6.96	-0.43	0.017
158.50	-7.98	-0.85	0.00	-14.32	0.00	14.32	778.94	389.47	581.37	287.12	7.28	-0.44	0.015
158.50	-7.98	-0.85	0.00	-14.32	0.00	14.32	778.94	389.47	581.37	287.12	7.28	-0.44	0.060
160.00	-7.67	-0.83	0.00	-13.05	0.00	13.05	772.14	386.07	568.44	280.73	7.42	-0.44	0.056
165.00	-7.61	-0.82	0.00	-8.91	0.00	8.91	748.74	374.37	525.85	259.70	7.90	-0.48	0.044
166.00	-5.53	-0.62	0.00	-8.09	0.00	8.09	743.93	371.96	517.43	255.54	8.00	-0.48	0.039
170.00	-5.26	-0.59	0.00	-5.61	0.00	5.61	723.19	361.60	483.41	238.74	8.42	-0.50	0.031
175.00	-5.21	-0.59	0.00	-2.64	0.00	2.64	686.95	343.48	435.91	215.28	8.96	-0.52	0.020
176.00	-3.01	-0.35	0.00	-2.05	0.00	2.05	679.70	339.85	426.71	210.73	9.06	-0.52	0.014
180.00	-2.93	-0.34	0.00	-0.65	0.00	0.65	650.71	325.36	390.87	193.04	9.51	-0.53	0.008
181.90	0.00	-0.31	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	9.72	-0.53	0.000

Equivalent Modal Forces Analysis

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

Spectral Response Acceleration for Short Period (S_s):	0.18
Spectral Response Acceleration at 1.0 Second Period (S_1):	0.06
Importance Factor (I_E):	1.00
Site Coefficient F_a:	1.60
Site Coefficient F_v	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
Desing Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	3.19
Redundancy Factor (p):	1.00

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
47	180.95	90	1.870	1.878	1.103	0.352	21	112
46	178.00	194	1.810	1.583	0.994	0.314	41	240
45	175.50	61	1.759	1.360	0.909	0.283	11	76
44	172.50	310	1.700	1.121	0.814	0.247	51	384
43	168.00	254	1.612	0.817	0.687	0.198	34	315
42	165.50	71	1.565	0.673	0.623	0.173	8	88
41	162.50	359	1.508	0.522	0.553	0.144	34	445
40	159.25	109	1.449	0.382	0.484	0.115	8	136
39	156.75	511	1.403	0.290	0.435	0.094	32	633
38	152.50	737	1.328	0.162	0.362	0.062	30	913
37	148.00	595	1.251	0.058	0.295	0.032	13	738
36	145.50	155	1.209	0.014	0.262	0.017	2	192
35	142.50	778	1.160	-0.030	0.226	0.001	1	964
34	137.50	917	1.080	-0.081	0.175	-0.022	-13	1,136
33	132.50	925	1.003	-0.109	0.133	-0.039	-24	1,146
32	128.14	694	0.938	-0.120	0.103	-0.050	-23	859
31	125.64	260	0.902	-0.122	0.088	-0.055	-10	322
30	122.50	1,023	0.857	-0.120	0.072	-0.059	-40	1,267
29	117.50	1,185	0.789	-0.110	0.051	-0.060	-48	1,467
28	112.50	1,196	0.723	-0.094	0.035	-0.057	-45	1,481
27	107.50	1,207	0.660	-0.074	0.023	-0.048	-38	1,495
26	102.50	1,218	0.600	-0.053	0.015	-0.034	-27	1,509
25	97.50	1,229	0.543	-0.032	0.009	-0.017	-14	1,523
24	92.67	1,158	0.490	-0.013	0.007	0.001	1	1,435
23	90.17	115	0.464	-0.003	0.006	0.010	1	142
22	88.29	1,194	0.445	0.003	0.006	0.017	13	1,479
21	85.79	426	0.420	0.012	0.006	0.025	7	528
20	82.50	1,357	0.389	0.022	0.007	0.034	31	1,681
19	77.50	1,454	0.343	0.035	0.009	0.045	43	1,801
18	72.50	1,468	0.300	0.045	0.012	0.052	51	1,818
17	67.50	1,482	0.260	0.053	0.016	0.056	55	1,836
16	62.50	1,496	0.223	0.060	0.020	0.058	58	1,853
15	57.50	1,510	0.189	0.064	0.025	0.059	59	1,870
14	52.50	1,524	0.157	0.067	0.029	0.058	59	1,887

13	49.30	429	0.139	0.069	0.032	0.058	16	532
12	46.80	1,626	0.125	0.070	0.034	0.057	62	2,014
11	44.55	409	0.113	0.070	0.035	0.057	15	507
10	42.05	1,364	0.101	0.071	0.037	0.056	51	1,690
9	37.50	1,679	0.080	0.072	0.040	0.055	62	2,080
8	32.50	1,695	0.060	0.072	0.041	0.054	61	2,100
7	27.50	1,712	0.043	0.071	0.042	0.053	60	2,121
6	22.50	1,729	0.029	0.068	0.040	0.051	59	2,142
5	17.50	1,746	0.017	0.062	0.037	0.048	56	2,162
4	14.85	102	0.013	0.058	0.034	0.046	3	126
3	12.35	1,896	0.009	0.053	0.030	0.043	54	2,349
2	7.50	2,029	0.003	0.038	0.021	0.033	45	2,514
1	2.50	1,842	0.000	0.015	0.008	0.016	19	2,282
Kaelus DBC0061F1V51-	181.90	76	1.890	1.980	1.140	0.365	19	95
Powerwave Allgon LGP	181.90	85	1.890	1.980	1.140	0.365	21	105
Raycap DC6-48-60-0-8	181.90	33	1.890	1.980	1.140	0.365	8	41
Raycap DC6-48-60-18-	181.90	32	1.890	1.980	1.140	0.365	8	39
Ericsson RRUS 11 (Ba	181.90	300	1.890	1.980	1.140	0.365	73	372
Ericsson RRUS 32 (50	181.90	152	1.890	1.980	1.140	0.365	37	189
Ericsson RRUS 12	181.90	150	1.890	1.980	1.140	0.365	37	186
Powerwave Allgon 777	181.90	105	1.890	1.980	1.140	0.365	26	130
KMW AM-X-CD-16-65-00	181.90	146	1.890	1.980	1.140	0.365	35	180
Quintel QS66512-2	181.90	333	1.890	1.980	1.140	0.365	81	413
Flat Platform w/ Han	181.90	2,000	1.890	1.980	1.140	0.365	487	2,478
RFS FD9R6004/2C-3L (	176.00	19	1.769	1.403	0.925	0.289	4	23
Alcatel-Lucent B13 R	176.00	173	1.769	1.403	0.925	0.289	33	215
Alcatel-Lucent B66A	176.00	170	1.769	1.403	0.925	0.289	33	211
RFS DB-T1-6Z-8AB-0Z	176.00	88	1.769	1.403	0.925	0.289	17	109
Commscope SBNHH-	176.00	244	1.769	1.403	0.925	0.289	47	302
Antel LPA-80063/6CF	176.00	162	1.769	1.403	0.925	0.289	31	201
Flat Low Profile Pla	176.00	1,500	1.769	1.403	0.925	0.289	289	1,858
Ericsson AIR 21, 1.3	166.00	249	1.574	0.700	0.635	0.177	29	308
Ericsson AIR 21, 1.3	166.00	271	1.574	0.700	0.635	0.177	32	336
Andrew LNX-6515DS-A1	166.00	149	1.574	0.700	0.635	0.177	18	185
Round Low Profile Pl	166.00	1,500	1.574	0.700	0.635	0.177	177	1,858
KMW TTA (HB-X-WM-17-	146.00	48	1.218	0.022	0.268	0.020	1	59
KMW HB-X-WM-17-65-00	146.00	90	1.218	0.022	0.268	0.020	1	111
Side Arms	146.00	560	1.218	0.022	0.268	0.020	8	694
		54,151	75.260	43.518	31.386	9.441	2,495	67,084

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

Segment	Height Above Base (ft)	Weight (lb)	a	b	c	Saz	Horizontal Force (lb)	Vertical Force (lb)
47	180.95	90	1.870	1.878	1.103	0.352	21	78
46	178.00	194	1.810	1.583	0.994	0.314	41	167
45	175.50	61	1.759	1.360	0.909	0.283	11	52
44	172.50	310	1.700	1.121	0.814	0.247	51	267
43	168.00	254	1.612	0.817	0.687	0.198	34	219
42	165.50	71	1.565	0.673	0.623	0.173	8	61
41	162.50	359	1.508	0.522	0.553	0.144	34	309
40	159.25	109	1.449	0.382	0.484	0.115	8	94
39	156.75	511	1.403	0.290	0.435	0.094	32	440
38	152.50	737	1.328	0.162	0.362	0.062	30	634
37	148.00	595	1.251	0.058	0.295	0.032	13	513
36	145.50	155	1.209	0.014	0.262	0.017	2	133
35	142.50	778	1.160	-0.030	0.226	0.001	1	670
34	137.50	917	1.080	-0.081	0.175	-0.022	-13	789
33	132.50	925	1.003	-0.109	0.133	-0.039	-24	797

32	128.14	694	0.938	-0.120	0.103	-0.050	-23	597
31	125.64	260	0.902	-0.122	0.088	-0.055	-10	224
30	122.50	1,023	0.857	-0.120	0.072	-0.059	-40	881
29	117.50	1,185	0.789	-0.110	0.051	-0.060	-48	1,020
28	112.50	1,196	0.723	-0.094	0.035	-0.057	-45	1,030
27	107.50	1,207	0.660	-0.074	0.023	-0.048	-38	1,039
26	102.50	1,218	0.600	-0.053	0.015	-0.034	-27	1,049
25	97.50	1,229	0.543	-0.032	0.009	-0.017	-14	1,059
24	92.67	1,158	0.490	-0.013	0.007	0.001	1	997
23	90.17	115	0.464	-0.003	0.006	0.010	1	99
22	88.29	1,194	0.445	0.003	0.006	0.017	13	1,028
21	85.79	426	0.420	0.012	0.006	0.025	7	367
20	82.50	1,357	0.389	0.022	0.007	0.034	31	1,169
19	77.50	1,454	0.343	0.035	0.009	0.045	43	1,252
18	72.50	1,468	0.300	0.045	0.012	0.052	51	1,264
17	67.50	1,482	0.260	0.053	0.016	0.056	55	1,276
16	62.50	1,496	0.223	0.060	0.020	0.058	58	1,288
15	57.50	1,510	0.189	0.064	0.025	0.059	59	1,300
14	52.50	1,524	0.157	0.067	0.029	0.058	59	1,312
13	49.30	429	0.139	0.069	0.032	0.058	16	370
12	46.80	1,626	0.125	0.070	0.034	0.057	62	1,400
11	44.55	409	0.113	0.070	0.035	0.057	15	352
10	42.05	1,364	0.101	0.071	0.037	0.056	51	1,175
9	37.50	1,679	0.080	0.072	0.040	0.055	62	1,446
8	32.50	1,695	0.060	0.072	0.041	0.054	61	1,460
7	27.50	1,712	0.043	0.071	0.042	0.053	60	1,474
6	22.50	1,729	0.029	0.068	0.040	0.051	59	1,489
5	17.50	1,746	0.017	0.062	0.037	0.048	56	1,503
4	14.85	102	0.013	0.058	0.034	0.046	3	88
3	12.35	1,896	0.009	0.053	0.030	0.043	54	1,633
2	7.50	2,029	0.003	0.038	0.021	0.033	45	1,748
1	2.50	1,842	0.000	0.015	0.008	0.016	19	1,586
Kaelus DBC0061F1V51-	181.90	76	1.890	1.980	1.140	0.365	19	66
Powerwave Allgon LGP	181.90	85	1.890	1.980	1.140	0.365	21	73
Raycap DC6-48-60-0-8	181.90	33	1.890	1.980	1.140	0.365	8	28
Raycap DC6-48-60-18-	181.90	32	1.890	1.980	1.140	0.365	8	27
Ericsson RRUS 11 (Ba	181.90	300	1.890	1.980	1.140	0.365	73	258
Ericsson RRUS 32 (50	181.90	152	1.890	1.980	1.140	0.365	37	131
Ericsson RRUS 12	181.90	150	1.890	1.980	1.140	0.365	37	129
Powerwave Allgon 777	181.90	105	1.890	1.980	1.140	0.365	26	90
KMW AM-X-CD-16-65-00	181.90	146	1.890	1.980	1.140	0.365	35	125
Quintel QS66512-2	181.90	333	1.890	1.980	1.140	0.365	81	287
Flat Platform w/ Han	181.90	2,000	1.890	1.980	1.140	0.365	487	1,722
RFS FD9R6004/2C-3L (	176.00	19	1.769	1.403	0.925	0.289	4	16
Alcatel-Lucent B13 R	176.00	173	1.769	1.403	0.925	0.289	33	149
Alcatel-Lucent B66A	176.00	170	1.769	1.403	0.925	0.289	33	147
RFS DB-T1-6Z-8AB-0Z	176.00	88	1.769	1.403	0.925	0.289	17	76
Commscope SBNHH-	176.00	244	1.769	1.403	0.925	0.289	47	210
Antel LPA-80063/6CF	176.00	162	1.769	1.403	0.925	0.289	31	140
Flat Low Profile Pla	176.00	1,500	1.769	1.403	0.925	0.289	289	1,292
Ericsson AIR 21, 1.3	166.00	249	1.574	0.700	0.635	0.177	29	214
Ericsson AIR 21, 1.3	166.00	271	1.574	0.700	0.635	0.177	32	234
Andrew LNX-6515DS-A1	166.00	149	1.574	0.700	0.635	0.177	18	129
Round Low Profile Pl	166.00	1,500	1.574	0.700	0.635	0.177	177	1,292
KMW TTA (HB-X-WM-17-	146.00	48	1.218	0.022	0.268	0.020	1	41
KMW HB-X-WM-17-65-00	146.00	90	1.218	0.022	0.268	0.020	1	78
Side Arms	146.00	560	1.218	0.022	0.268	0.020	8	482
		54,151	75.260	43.518	31.386	9.441	2,495	46,634

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-64.80	-2.49	0.00	-355.34	0.00	355.34	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.055
5.00	-62.29	-2.46	0.00	-342.92	0.00	342.92	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.02	0.054
10.00	-59.94	-2.42	0.00	-330.63	0.00	330.63	3,359.11	1,679.56	5,677.90	2,804.10	0.03	-0.03	0.053
14.71	-59.81	-2.42	0.00	-319.24	0.00	319.24	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.052
14.71	-59.81	-2.42	0.00	-319.24	0.00	319.24	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.064
15.00	-57.65	-2.38	0.00	-318.53	0.00	318.53	3,320.10	1,660.05	5,499.48	2,715.99	0.08	-0.05	0.063
20.00	-55.51	-2.34	0.00	-306.65	0.00	306.65	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.062
20.00	-55.51	-2.34	0.00	-306.65	0.00	306.65	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.062
25.00	-53.38	-2.29	0.00	-294.96	0.00	294.96	3,238.71	1,619.36	5,145.22	2,541.03	0.22	-0.09	0.061
30.00	-51.28	-2.25	0.00	-283.50	0.00	283.50	3,196.33	1,598.17	4,969.60	2,454.30	0.33	-0.11	0.059
35.00	-49.20	-2.20	0.00	-272.26	0.00	272.26	3,152.83	1,576.41	4,795.15	2,368.14	0.46	-0.13	0.058
40.00	-47.51	-2.16	0.00	-261.27	0.00	261.27	3,108.20	1,554.10	4,621.97	2,282.62	0.61	-0.15	0.057
44.10	-47.01	-2.15	0.00	-252.41	0.00	252.41	3,070.77	1,535.38	4,481.00	2,213.00	0.75	-0.17	0.056
45.00	-44.99	-2.09	0.00	-250.48	0.00	250.48	3,062.45	1,531.23	4,450.19	2,197.78	0.78	-0.17	0.054
48.60	-44.46	-2.08	0.00	-242.95	0.00	242.95	2,379.97	1,189.99	3,474.54	1,715.94	0.92	-0.19	0.062
50.00	-42.57	-2.03	0.00	-240.03	0.00	240.03	2,371.43	1,185.72	3,439.58	1,698.68	0.97	-0.20	0.061
55.00	-40.70	-1.98	0.00	-229.90	0.00	229.90	2,340.22	1,170.11	3,315.01	1,637.16	1.19	-0.22	0.059
60.00	-38.85	-1.93	0.00	-220.01	0.00	220.01	2,307.88	1,153.94	3,191.02	1,575.92	1.43	-0.24	0.058
65.00	-37.01	-1.88	0.00	-210.37	0.00	210.37	2,274.42	1,137.21	3,067.70	1,515.02	1.70	-0.26	0.056
70.00	-35.19	-1.83	0.00	-200.98	0.00	200.98	2,239.83	1,119.92	2,945.16	1,454.51	1.98	-0.29	0.054
75.00	-33.39	-1.79	0.00	-191.82	0.00	191.82	2,204.12	1,102.06	2,823.54	1,394.44	2.30	-0.31	0.053
80.00	-31.71	-1.77	0.00	-182.85	0.00	182.85	2,167.29	1,083.65	2,702.93	1,334.88	2.63	-0.33	0.051
80.00	-31.71	-1.77	0.00	-182.85	0.00	182.85	2,167.29	1,083.65	2,702.93	1,334.88	2.63	-0.33	0.056
85.00	-31.18	-1.77	0.00	-174.01	0.00	174.01	2,129.34	1,064.67	2,583.46	1,275.87	3.00	-0.36	0.055
86.58	-29.70	-1.75	0.00	-171.22	0.00	171.22	2,117.11	1,058.55	2,545.96	1,257.35	3.12	-0.37	0.054
90.00	-29.56	-1.75	0.00	-165.24	0.00	165.24	2,090.26	1,045.13	2,465.23	1,217.49	3.38	-0.38	0.052
90.33	-28.12	-1.75	0.00	-164.66	0.00	164.66	1,547.78	773.89	1,862.15	919.64	3.41	-0.38	0.061
95.00	-26.60	-1.76	0.00	-156.49	0.00	156.49	1,525.71	762.86	1,787.32	882.69	3.80	-0.41	0.059
100.00	-25.09	-1.79	0.00	-147.67	0.00	147.67	1,500.99	750.50	1,707.51	843.28	4.24	-0.44	0.057
105.00	-23.59	-1.83	0.00	-138.71	0.00	138.71	1,475.16	737.58	1,628.14	804.08	4.71	-0.46	0.054
110.00	-22.11	-1.87	0.00	-129.56	0.00	129.56	1,448.19	724.10	1,549.32	765.15	5.21	-0.49	0.051
115.00	-20.64	-1.92	0.00	-120.19	0.00	120.19	1,420.11	710.05	1,471.16	726.55	5.74	-0.52	0.048
120.00	-19.37	-1.95	0.00	-110.61	0.00	110.61	1,390.90	695.45	1,393.78	688.34	6.30	-0.54	0.045
120.00	-19.37	-1.95	0.00	-110.61	0.00	110.61	1,390.90	695.45	1,393.78	688.34	6.30	-0.54	0.055
125.00	-19.05	-1.97	0.00	-100.83	0.00	100.83	1,360.57	680.28	1,317.29	650.56	6.88	-0.57	0.052
126.28	-18.19	-1.99	0.00	-98.31	0.00	98.31	1,352.62	676.31	1,297.87	640.97	7.03	-0.58	0.050
126.28	-18.19	-1.99	0.00	-98.31	0.00	98.31	900.61	450.31	868.79	429.06	7.03	-0.58	0.062
130.00	-17.04	-2.01	0.00	-90.93	0.00	90.93	888.95	444.47	835.13	412.44	7.49	-0.60	0.058
135.00	-15.91	-2.02	0.00	-80.89	0.00	80.89	872.29	436.14	789.93	390.12	8.14	-0.63	0.052
140.00	-14.94	-2.01	0.00	-70.81	0.00	70.81	854.50	427.25	744.88	367.87	8.81	-0.66	0.047
140.00	-14.94	-2.01	0.00	-70.81	0.00	70.81	854.50	427.25	744.88	367.87	8.81	-0.66	0.059
145.00	-14.75	-2.01	0.00	-60.75	0.00	60.75	835.60	417.80	700.09	345.75	9.52	-0.69	0.052
146.00	-13.15	-1.97	0.00	-58.74	0.00	58.74	831.68	415.84	691.17	341.34	9.66	-0.69	0.050
150.00	-12.24	-1.94	0.00	-50.84	0.00	50.84	815.57	407.78	655.68	323.81	10.26	-0.72	0.044
155.00	-11.60	-1.90	0.00	-41.15	0.00	41.15	794.42	397.21	611.76	302.12	11.03	-0.75	0.037
158.50	-11.47	-1.90	0.00	-34.48	0.00	34.48	778.94	389.47	581.37	287.12	11.58	-0.77	0.033
158.50	-11.47	-1.90	0.00	-34.48	0.00	34.48	778.94	389.47	581.37	287.12	11.58	-0.77	0.135
160.00	-11.02	-1.86	0.00	-31.64	0.00	31.64	772.14	386.07	568.44	280.73	11.83	-0.77	0.127
165.00	-10.93	-1.86	0.00	-22.32	0.00	22.32	748.74	374.37	525.85	259.70	12.69	-0.86	0.101
166.00	-7.93	-1.53	0.00	-20.45	0.00	20.45	743.93	371.96	517.43	255.54	12.87	-0.88	0.091
170.00	-7.55	-1.48	0.00	-14.32	0.00	14.32	723.19	361.60	483.41	238.74	13.63	-0.93	0.070
175.00	-7.47	-1.47	0.00	-6.90	0.00	6.90	686.95	343.48	435.91	215.28	14.63	-0.98	0.043
176.00	-4.32	-0.93	0.00	-5.42	0.00	5.42	679.70	339.85	426.71	210.73	14.83	-0.98	0.032
180.00	-4.21	-0.90	0.00	-1.72	0.00	1.72	650.71	325.36	390.87	193.04	15.66	-1.00	0.015
181.90	0.00	-0.83	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	16.06	-1.00	0.000

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

Calculated Forces

Seg Elev (ft)	Pu FY (-) (kips)	Vu FX (-) (kips)	Tu MY (ft-kips)	Mu MZ (ft-kips)	Mu MX (ft-kips)	Resultant Moment (ft-kips)	phi Pn (kips)	phi Vn (kips)	phi Tn (ft-kips)	phi Mn (ft-kips)	Total Deflect (in)	Rotation (deg)	Ratio
0.00	-45.05	-2.48	0.00	-346.54	0.00	346.54	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.052
5.00	-43.30	-2.45	0.00	-334.14	0.00	334.14	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.02	0.050
10.00	-41.66	-2.40	0.00	-321.90	0.00	321.90	3,359.11	1,679.56	5,677.90	2,804.10	0.03	-0.03	0.049
14.71	-41.58	-2.41	0.00	-310.57	0.00	310.57	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.048
14.71	-41.58	-2.41	0.00	-310.57	0.00	310.57	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.059
15.00	-40.07	-2.36	0.00	-309.88	0.00	309.88	3,320.10	1,660.05	5,499.48	2,715.99	0.08	-0.05	0.059
20.00	-38.58	-2.31	0.00	-298.09	0.00	298.09	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.058
20.00	-38.58	-2.31	0.00	-298.09	0.00	298.09	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.058
25.00	-37.11	-2.26	0.00	-286.53	0.00	286.53	3,238.71	1,619.36	5,145.22	2,541.03	0.22	-0.09	0.056
30.00	-35.65	-2.21	0.00	-275.23	0.00	275.23	3,196.33	1,598.17	4,969.60	2,454.30	0.32	-0.11	0.055
35.00	-34.20	-2.16	0.00	-264.17	0.00	264.17	3,152.83	1,576.41	4,795.15	2,368.14	0.44	-0.13	0.054
40.00	-33.03	-2.12	0.00	-253.38	0.00	253.38	3,108.20	1,554.10	4,621.97	2,282.62	0.59	-0.15	0.053
44.10	-32.67	-2.11	0.00	-244.70	0.00	244.70	3,070.77	1,535.38	4,481.00	2,213.00	0.73	-0.17	0.052
45.00	-31.27	-2.04	0.00	-242.81	0.00	242.81	3,062.45	1,531.23	4,450.19	2,197.78	0.76	-0.17	0.051
48.60	-30.90	-2.03	0.00	-235.45	0.00	235.45	2,379.97	1,189.99	3,474.54	1,715.94	0.89	-0.18	0.058
50.00	-29.59	-1.98	0.00	-232.60	0.00	232.60	2,371.43	1,185.72	3,439.58	1,698.68	0.95	-0.19	0.057
55.00	-28.29	-1.92	0.00	-222.72	0.00	222.72	2,340.22	1,170.11	3,315.01	1,637.16	1.16	-0.21	0.055
60.00	-27.00	-1.87	0.00	-213.11	0.00	213.11	2,307.88	1,153.94	3,191.02	1,575.92	1.39	-0.23	0.054
65.00	-25.73	-1.82	0.00	-203.75	0.00	203.75	2,274.42	1,137.21	3,067.70	1,515.02	1.65	-0.26	0.052
70.00	-24.46	-1.77	0.00	-194.66	0.00	194.66	2,239.83	1,119.92	2,945.16	1,454.51	1.93	-0.28	0.051
75.00	-23.21	-1.73	0.00	-185.79	0.00	185.79	2,204.12	1,102.06	2,823.54	1,394.44	2.23	-0.30	0.049
80.00	-22.04	-1.70	0.00	-177.13	0.00	177.13	2,167.29	1,083.65	2,702.93	1,334.88	2.56	-0.32	0.048
80.00	-22.04	-1.70	0.00	-177.13	0.00	177.13	2,167.29	1,083.65	2,702.93	1,334.88	2.56	-0.32	0.053
85.00	-21.67	-1.70	0.00	-168.61	0.00	168.61	2,129.34	1,064.67	2,583.46	1,275.87	2.91	-0.35	0.051
86.58	-20.64	-1.69	0.00	-165.92	0.00	165.92	2,117.11	1,058.55	2,545.96	1,257.35	3.03	-0.35	0.051
90.00	-20.55	-1.69	0.00	-160.16	0.00	160.16	2,090.26	1,045.13	2,465.23	1,217.49	3.29	-0.37	0.049
90.33	-19.55	-1.68	0.00	-159.60	0.00	159.60	1,547.78	773.89	1,862.15	919.64	3.31	-0.37	0.057
95.00	-18.49	-1.70	0.00	-151.73	0.00	151.73	1,525.71	762.86	1,787.32	882.69	3.69	-0.40	0.055
100.00	-17.44	-1.73	0.00	-143.24	0.00	143.24	1,500.99	750.50	1,707.51	843.28	4.12	-0.42	0.053
105.00	-16.40	-1.77	0.00	-134.60	0.00	134.60	1,475.16	737.58	1,628.14	804.08	4.58	-0.45	0.051
110.00	-15.37	-1.81	0.00	-125.77	0.00	125.77	1,448.19	724.10	1,549.32	765.15	5.06	-0.48	0.048
115.00	-14.35	-1.85	0.00	-116.73	0.00	116.73	1,420.11	710.05	1,471.16	726.55	5.57	-0.50	0.046
120.00	-13.46	-1.89	0.00	-107.45	0.00	107.45	1,390.90	695.45	1,393.78	688.34	6.11	-0.53	0.043
120.00	-13.46	-1.89	0.00	-107.45	0.00	107.45	1,390.90	695.45	1,393.78	688.34	6.11	-0.53	0.052
125.00	-13.24	-1.90	0.00	-97.99	0.00	97.99	1,360.57	680.28	1,317.29	650.56	6.68	-0.55	0.049
126.28	-12.64	-1.92	0.00	-95.55	0.00	95.55	1,352.62	676.31	1,297.87	640.97	6.83	-0.56	0.048
126.28	-12.64	-1.92	0.00	-95.55	0.00	95.55	900.61	450.31	868.79	429.06	6.83	-0.56	0.058
130.00	-11.84	-1.95	0.00	-88.39	0.00	88.39	888.95	444.47	835.13	412.44	7.27	-0.58	0.054
135.00	-11.05	-1.96	0.00	-78.66	0.00	78.66	872.29	436.14	789.93	390.12	7.90	-0.61	0.049
140.00	-10.38	-1.95	0.00	-68.87	0.00	68.87	854.50	427.25	744.88	367.87	8.55	-0.64	0.044
140.00	-10.38	-1.95	0.00	-68.87	0.00	68.87	854.50	427.25	744.88	367.87	8.55	-0.64	0.055
145.00	-10.25	-1.95	0.00	-59.10	0.00	59.10	835.60	417.80	700.09	345.75	9.24	-0.67	0.049
146.00	-9.13	-1.92	0.00	-57.15	0.00	57.15	831.68	415.84	691.17	341.34	9.38	-0.67	0.047
150.00	-8.50	-1.89	0.00	-49.46	0.00	49.46	815.57	407.78	655.68	323.81	9.96	-0.70	0.042
155.00	-8.06	-1.85	0.00	-40.03	0.00	40.03	794.42	397.21	611.76	302.12	10.70	-0.73	0.035
158.50	-7.96	-1.85	0.00	-33.54	0.00	33.54	778.94	389.47	581.37	287.12	11.24	-0.74	0.030
158.50	-7.96	-1.85	0.00	-33.54	0.00	33.54	778.94	389.47	581.37	287.12	11.24	-0.74	0.127
160.00	-7.65	-1.81	0.00	-30.77	0.00	30.77	772.14	386.07	568.44	280.73	11.48	-0.75	0.120
165.00	-7.59	-1.81	0.00	-21.71	0.00	21.71	748.74	374.37	525.85	259.70	12.31	-0.84	0.094
166.00	-5.51	-1.49	0.00	-19.90	0.00	19.90	743.93	371.96	517.43	255.54	12.49	-0.85	0.085
170.00	-5.24	-1.44	0.00	-13.93	0.00	13.93	723.19	361.60	483.41	238.74	13.23	-0.90	0.066
175.00	-5.19	-1.43	0.00	-6.71	0.00	6.71	686.95	343.48	435.91	215.28	14.20	-0.95	0.039
176.00	-3.00	-0.90	0.00	-5.28	0.00	5.28	679.70	339.85	426.71	210.73	14.40	-0.95	0.029
180.00	-2.92	-0.88	0.00	-1.67	0.00	1.67	650.71	325.36	390.87	193.04	15.20	-0.97	0.013
181.90	0.00	-0.83	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	15.59	-0.97	0.000

Analysis Summary

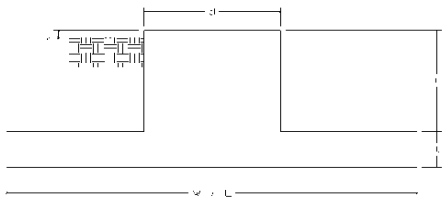
Load Case	Reactions Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Max Usage Elev (ft)	Interaction Ratio
1.2D + 1.6W	30.71	0.00	64.93	0.00	0.00	3841.56	158.50	0.79
0.9D + 1.6W	30.48	0.00	48.69	0.00	0.00	3770.53	158.50	0.76
1.2D + 1.0Di + 1.0Wi	4.98	0.00	105.43	0.00	0.00	701.71	158.50	0.20
(1.2 + 0.2Sds) * DL + E ELFM	1.63	0.00	64.80	0.00	0.00	248.11	158.50	0.07
(1.2 + 0.2Sds) * DL + E EMAM	2.49	0.00	64.80	0.00	0.00	355.34	158.50	0.13
(0.9 - 0.2Sds) * DL + E ELFM	1.63	0.00	45.05	0.00	0.00	242.49	158.50	0.06
(0.9 - 0.2Sds) * DL + E EMAM	2.48	0.00	45.05	0.00	0.00	346.54	158.50	0.13
1.0D + 1.0W	8.25	0.00	54.15	0.00	0.00	1019.01	158.50	0.21

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors VQ/I (lb/in)	Shear Applied (kips)	Shear phiVn (kips)	Upper Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Lower Termination Connectors MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Max Member Pu (kip)	phiPn (kip)	Ratio
0.00	14.7	(3) SOL-#20 All Thre	143.8	4.3	16.8	197.7	25.3	8	12	0.0	25.3	0	0	209.1	330.5	0.633
0.00	20.0	(3) SOL-4 1/4" SOLID	457.7	7.6	38.3	612.6	12.0	52	0	0.0	12.0	0	0	631.3	635.6	0.993
20.0	80.0	(3) SOL-4 1/4" SOLID	550.6	18.2	38.3	479.1	25.3	19	0	612.6	25.3	25	0	621.3	627.2	0.991
80.0	120.	(3) SOL-4" SOLID	582.6	38.4	38.3	323.6	25.3	13	0	461.5	25.3	19	0	467.2	522.2	0.895
120.	140.	(3) SOL-3 1/2" SOLID	595.9	39.3	38.3	224.9	25.3	9	0	300.8	25.3	12	0	304.5	390.2	0.780
140.	158.	(3) SOL-3" SOLID	564.3	37.2	38.3	113.5	25.3	5	0	209.1	25.3	9	0	212.0	276.1	0.768

Site Name:	Harwinton, CT
Site Number:	302502
Engineering Number:	OAA712918
Engineer:	Parvin.NikpoorParizi
Date:	04/18/18
Tower Type:	MP

Program Last Updated: *5/13/2014*



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

Design / Analysis / Mapping:	Analysis				
Compression/Leg:	64.9	k	Concrete Strength (f'_c):	3000	psi
Uplift/Leg:	0.0	k	Pad Tension Steel Depth:	32.00	in
Total Shear:	30.7	k	ϕ_{Shear}:	0.75	
Moment:	3841.6	k-ft	$\phi_{Flexure\ /\ Tension}$:	0.90	
Tower + Appurtenance Weight:	64.9	k	$\phi_{Compression:}$	0.65	
Depth to Base of Foundation (l + t - h):	8.00	ft	β:	0.85	
Diameter of Pier (d):	6.00	ft	Bottom Pad Rebar Size #:	10	
Height of Pier above Ground (h):	0.50		# of Bottom Pad Rebar:	40	
Width of Pad (W):	20.00	ft	Pad Bottom Steel Area:	50.80	in^2
Length of Pad (L):	20.00	ft	Pad Steel F_y:	60000	psi
Thickness of Pad (t):	3.00	ft	Top Pad Rebar Size #:	5	
Tower Leg Center to Center:	0.00	ft	# of Top Pad Rebar:	40	
Number of Tower Legs:	1.0	(1 if MP or GT)	Pad Top Steel Area:	12.40	in^2
Tower Center from Mat Center:	0.00	ft	Pier Rebar Size #:	11	
Depth Below Ground Surface to Water Table:	99.00	ft	Pier Steel Area (Single Bar):	1.56	in^2
Unit Weight of Concrete:	150.0	pcf	# of Pier Rebar:	52	
Unit Weight of Soil Above Water Table:	105.0	pcf	Pier Steel F_y:	60000	psi
Unit Weight of Water:	62.4	pcf	Pier Cage Diameter:	64.0	in
Unit Weight of Soil Below Water Table:	50.0	pcf	Rebar Strain Limit:	0.008	
Friction Angle of Uplift:	15.0	Degrees	Steel Elastic Modulus:	29000	ksi
Ultimate Coefficient of Shear Friction:	0.50		Tie Rebar Size #:	4	
Ultimate Compressive Bearing Pressure:	24000.0	psf	Tie Steel Area (Single Bar):	0.20	in^2
Ultimate Passive Pressure on Pad Face:	1000.0	psf	Tie Spacing:	12	in
$\phi_{Soil\ and\ Concrete\ Weight}$:	0.9		Tie Steel F_y:	60000	psi
ϕ_{Soil}:	0.75				

Overturning Moment Usage

Design OTM:	4102.6	k-ft
OTM Resistance:	4481.7	k-ft
Design OTM / OTM Resistance:	0.92	Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	6150	psf
Factored Nominal Bearing Pressure:	18000	psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.34	Result: OK
Load Direction Controling Design Bearing Pressure:	Diagonal to Pad Edge	

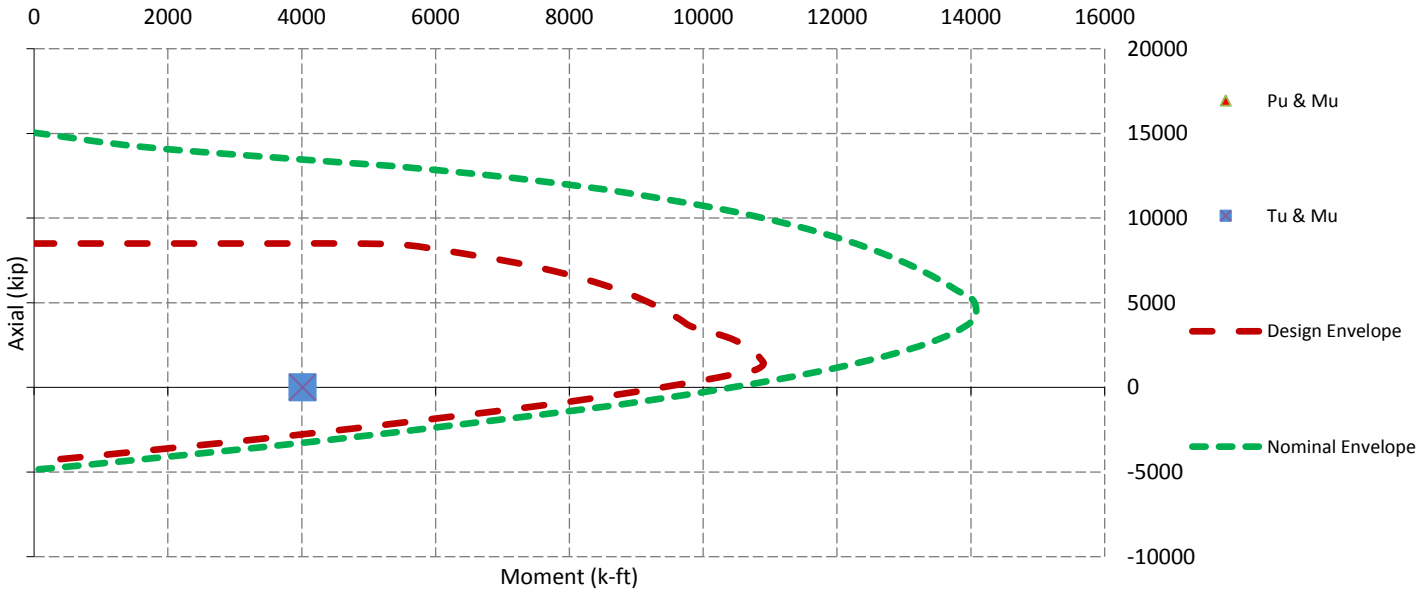
Sliding Factor of Safety

Total Factored Sliding Resistance:	210.2	k
Sliding Design / Sliding Resistance:	0.15	Result: OK

One Way Shear, Flexual Capacity, and Punching Shear

Factored One Way Shear (V_u):	263.8	k
One Way Shear Capacity (ϕV_c):	534.8	k - ACI11.3.1.1
V_u / ϕV_c:	0.49	Result: OK
Load Direction Controling Shear Capacity:	Diagonal to Pad Edge	
Lower Steel Pad Factored Moment (M_u):	1709.0	k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	7403.8	k-ft - ACI10.3
M_u / ϕM_n:	0.23	Result: OK
Load Direction Controling Flexural Capacity:	Diagonal to Pad Edge	
Upper Steel Pad Factored Moment (M_u):	764.4	k-ft
Upper Steel Pad Moment Capacity (ϕM_n):	1756.8	k-ft
M_u / ϕM_n:	0.44	Result: OK
Lower Pad Flexural Reinforcement Ratio:	0.0066	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Upper Pad Flexural Reinforcement Ratio:	0.0016	OK - Minimum Reinforcement Ratio Met - ACI10.5.1
Lower Pad Reinforcement Spacing:	6	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Upper Pad Reinforcement Spacing:	6	in - Pad Reinforcing Spacing OK - ACI7.12.2.2 & 10.5.4
Factored Punching Shear (V_u):	0.0	k
Nominal Punching Shear Capacity ($\phi_c V_n$):	1718.0	k - ACI11.12.2.1
V_u / ϕV_c:	0.00	Result: OK
Factored Moment in Pier (M_u):	4010.5	k-ft
Pier Moment Capacity (ϕM_n):	11423.2	k-ft
M_u / ϕM_n:	0.35	Result: OK
Factored Shear in Pier (V_u):	30.7	k
Pier Shear Capacity (ϕV_n):	337.2	k
V_u / ϕV_c:	0.09	Result: OK
Pier Shear Reinforcement Ratio:	0.0005	No Ties Necessary for Shear - ACI11.5.6.1
Factored Tension in Pier (T_u):	0.0	k
Pier Tension Capacity (ϕT_n):	4380.5	k
T_u / ϕT_n:	0.00	Result: OK
Factored Compression in Pier (P_u):	64.9	k
Pier Compression Capacity (ϕP_n):	5291.2	k - ACI10.3.6.2
P_u / ϕP_n:	0.01	Result: OK
Pier Compression Reinforcement Ratio:	0.020	OK - Reinforcement Ratio Met - ACI10.9.1 & 10.8.4
$M_u/\phi_B M_n + T_u/\phi_T T_n$:	0.35	Result: OK

Nominal and Design Moment Capacity and Factored Design Loads



Base Plate & Anchor Rod Analysis

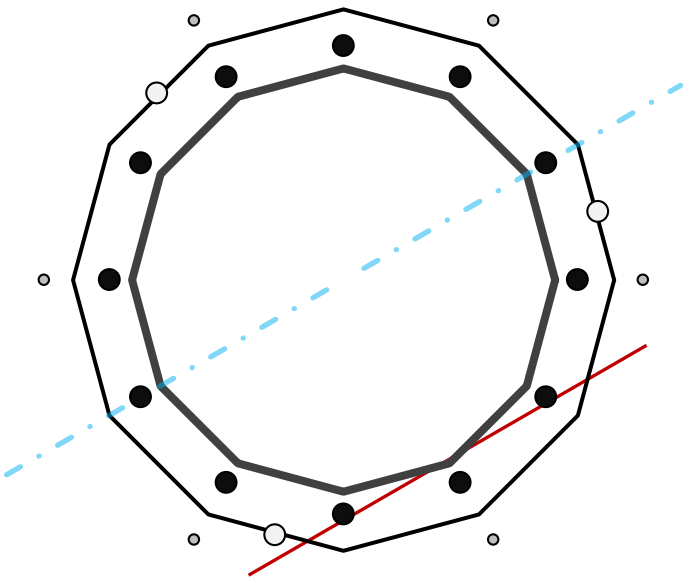
Pole Dimensions		
Number of Sides	12	-
Diameter	43.00	in
Thickness	0.375	in
Orientation Offset		°

Base Reactions		
Moment, Mu	3841.6	k-ft
Axial, Pu	64.9	k
Shear, Vu	30.7	k
Neutral Axis	210	°

Report Capacities		
Component	Capacity	Result
Base Plate	37%	Pass
Anchor Rods	78%	Pass
Dwyidag	57%	Pass

Base Plate		
Number of Sides	12	-
Diameter, ø	55	in
Thickness	2 1/2	in
Grade	A572-50	-
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Clip	N/A	in
Orientation Offset	0	°
Anchor Rod Detail	c	η=0.55
Clear Distance	N/A	in
Applied Moment, Mu	548.2	k
Bending Stress, ϕMn	1478.1	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	12	-
Diameter, ø	2 1/4	in
Bolt Circle	49.25	in
Grade	A615-75	
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Spacing	12.9	in
Orientation Offset	0	°
Applied Force, Pu	175.4	k
Anchor Rods, ϕPn	259.8	k



Dywidag Reinforcement		
Quantity	3	-
Bar Size	#20	in
Diameter, ø	2.5	in
Bracket Type	Angle	-
Circle	55.50	in
Orientation Offset	15	°
Applied Force, Pu	223.8	k
Dywidag Bar, ϕPn	392.7	k

Additional Dywidag Reinforcement		
Quantity	6	-
Diameter, ø	1.212	in
Bolt Circle	63	in
Grade	Other	
Yield Strength, Fy	105	ksi
Tensile Strength, Fu	125	ksi
Bypass Base?	Yes (Dywidag)	
Orientation Offset	0	°
Applied Force, Pu	84.0	k
Additional Rod, ϕPn	115.4	k

Calculations for Monopole Base Plate & Anchor Rod Analysis

Reaction Distribution

Reaction	Shear Vu	Moment Mu	Factor
-	k	k-ft	-
Base Forces	30.7	2124.9	0.55
Anchor Rod Forces	30.7	2124.9	0.55
Additional Bolt (Grp1) Forces	0.0	647.2	0.17
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1069.5	0.28
Stiffener Forces	0.0	0.0	0.00

Geometric Properties

Section	Gross Area	Net Area	Individual Inertia	Threads per Inch	Moment of Inertia
-	in^2	in^2	in^4	#	in^4
Pole	49.6447	4.1371	0.1948		11277.22
Bolt	3.9761	3.2477	0.8393	4.5	11826.28
Bolt1	1.1537	1.1537	0.1059	-	3434.93
Bolt2	0.0000	0.0000	0.0000	0	0.00
Dywidag	4.9087	4.9087	1.9175		5675.81
Stiffener	0.0000	0.0000	0.0000		0.00

Base Plate		
Shape	12	-
Width, W	55	in
Thickness, t	2.5	in
Yield Strength, Fy	50	ksi
Tensile Strength, Fu	65	ksi
Base Plate Chord	34.293	in
Detail Type	c	-
Detail Factor	0.55	-
Clear Distance	N/A	-

External Base Plate		
Chord Length AA	34.782	in
Additional AA	5.000	in
Section Modulus, Z	62.159	in^3
Applied Moment, Mu	548.2	k-ft
Bending Capacity, ϕMn	2797.2	k-ft
Capacity, Mu/ϕMn	0.196	OK
Chord Length AB	33.265	in
Additional AB	5.000	in
Section Modulus, Z	59.789	in^3
Applied Moment, Mu	415.2	k-ft
Bending Capacity, ϕMn	2690.5	k-ft
Capacity, Mu/ϕMn	0.154	OK
Bend Line Length	21.021	in
Additional Bend Line	0.000	in
Section Modulus, Z	32.846	in^3
Applied Moment, Mu	548.2	k-ft
Bending Capacity, ϕMn	1478.1	k-ft
Capacity, Mu/ϕMn	0.371	OK

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

Anchor Rods		
Anchor Rod Quantity, N	12	-
Rod Diameter, d	2.25	in
Bolt Circle, BC	49.25	in
Yield Strength, Fy	75	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	175.4	k
Applied Shear, Vu	0.6	k
Compressive Capacity, ϕPn	259.8	k
Tensile Capacity, ϕRnt	0.675	OK
Interaction Capacity	0.679	OK

Additional Bolt Group 1		
Bolt Quantity, N	6	-
Bolt Diameter, d	1.212	in
Bolt Circle, BC	63	in
Yield Strength, Fy	105	ksi
Tensile Strength, Fu	125	ksi
Applied Axial, Pu	84.0	k
Applied Shear, Vu	0.0	k
Compressive Capacity, ϕPn	115.4	k
Compressive Capacity, ϕPn	0.728	OK
Interaction Capacity	0.777	OK

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

Dywidag Reinforcement		
Dywidag Quantity, N	3	-
Dywidag Diameter, d	2.5	in
Bolt Circle, BC	55.5	in
Yield Strength, Fy	80	ksi
Tensile Strength, Fu	100	ksi
Applied Axial, Pu	223.8	k
Compressive Capacity, ϕPn	392.7	k
Capacity, Pu/ϕPn	0.570	OK

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

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

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

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

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

Base/Flange Plate	Plate Type	***Flange***	***@ 126.3 ft***
	Pole Diameter	23.55	in
	Pole Thickness	0.1875	in
	Plate Diameter	30	in
	Plate Thickness	1.25	in
	Plate Fy	36	ksi
	Weld Length	0.1875	in
	ϕ_s Resistance	58.52	k-in
	Applied	27.76	k-in
Stiffeners	#		

Bolts	#	***16***	
	Bolt Circle	27	in
	(R)adial / (S)quare	R	
●	Diameter	1	in
	Hole Diameter	1.125	in
	Type	A325	
	Fy	92	ksi
	Fu	120	ksi
	ϕ_s Resistance	54.52	k
	Applied	28.47	k
Reinforcement ●	#	***3***	
	DYW. Circle	29.35	in
	Offset Angle	45	°
	Type	Other	
	Diameter	2.5	in
	Fu	100	ksi
	ϕ_s Resistance	392.70	k
	Applied	236.45	k
Extra Bolts O	#	***0***	

Code Rev. ***G***

Date	4/18/2018
Engineer	Parvin.NikpoorParizi
Site #	302502
Carrier	AT&T MOBILITY

Moment	716.6 k-ft
Axial	16.9 k

Required Flange Thickness:
0.86 in OK

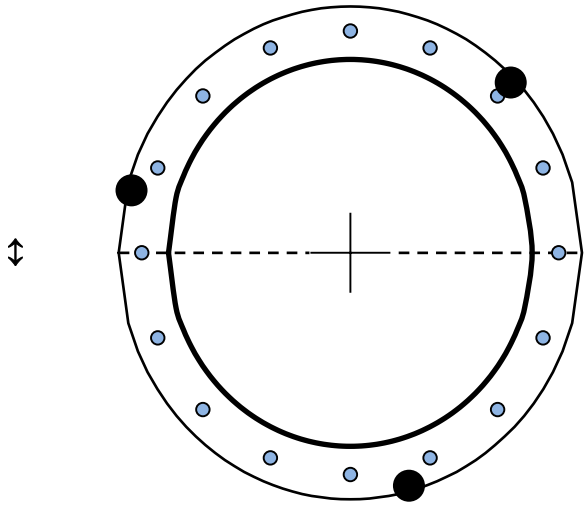


Plate Stress Ratio:
0.47 (Pass)

Bolt Stress Ratio:
0.52 (Pass)

Reinforcement Stress Ratio:
0.60 (Pass)

SpectraSite

100 Regency Forest Drive, Suite 400
Cary, NC 27511
919.465.6633
www.SpectraSite.com

Steel Data Monopole Report

Site Name:

HARWINTON

Site #:

CT-0038

Company Profile and Signature

- Print your company name and the names of all crew members present on site.
- The team leader signature indicates that the tower mapping is complete and accurate to SpectraSite standards.

Company (Print):	Smith Cullum Inc.
Team Leader (Print):	Brad Panneton
Team Member (Print):	Henderson Hinton
Team Member (Print):	
Team Leader Signature:	**Brad Panneton**
Date at Site:	2/12/2002
Date Completed:	2/13/2002

SpectraSite

EEL DATA
MONOPOLE
Site Name Harwinton
Site # CT-0038
Date 2/12/2002
Page 2 of 6

CHECKLIST

- Initial each item when completed and identify the correct page number(s).
- Use notes to give reason why page(s) were not completed.

Page Title	Initial	Page # (s)	Notes
Checklist	BP	2	
Executive Summary	BP	3	
Zoning Department Summary	N/A		
Compound Plan Sketch	N/A		
Monopole Elevation	N/A		
Monopole Base	BP	4	
Monopole Sections	N/A		
Monopole Structural Data	N/A		
Hand-Hole Rims	N/A		
Transmission Cables I	N/A		
Transmission Cables II	N/A		
Antenna and Mount Sketch	N/A		
Photo Log:	BP	5	
Overall Site	N/A		
Problem Vegetation	N/A		
Monopole Base	BP	5	
Each Monopole Side	N/A		
Ice Bridges	N/A		
Antennas from Ground	N/A		
Antennas from Monopole	N/A		
Typical Flanges	N/A		
Typical Gusset	N/A		
Problem Areas	N/A		
Access Drive	N/A		
Miscellaneous	BP	6	

EXECUTIVE SUMMARY

- Use notes to identify problem areas that were identified or corrected.
- Use notes to list and explain exceptions to standard procedures.

Exceptions to Standard Inspection Procedures (Note any areas that were unable to be completed. For example, unable to climb. Note the area not completed, reason, date, and team member giving exception.):

Only base drawings for previous CT-0038 Smith Cullum Inc. Report

Briefly summarize monopole site and surrounding area:

SpectraSite

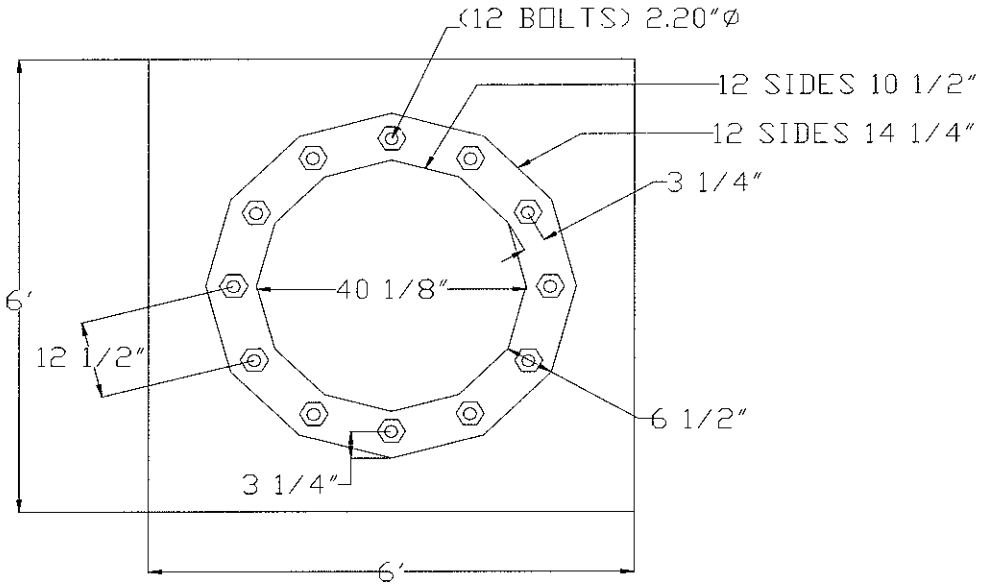
STEEL DATA
MONOPOLE
Site Name _HARWINTON_____
Site #___CT-0038_____
Date___02-12-02_____

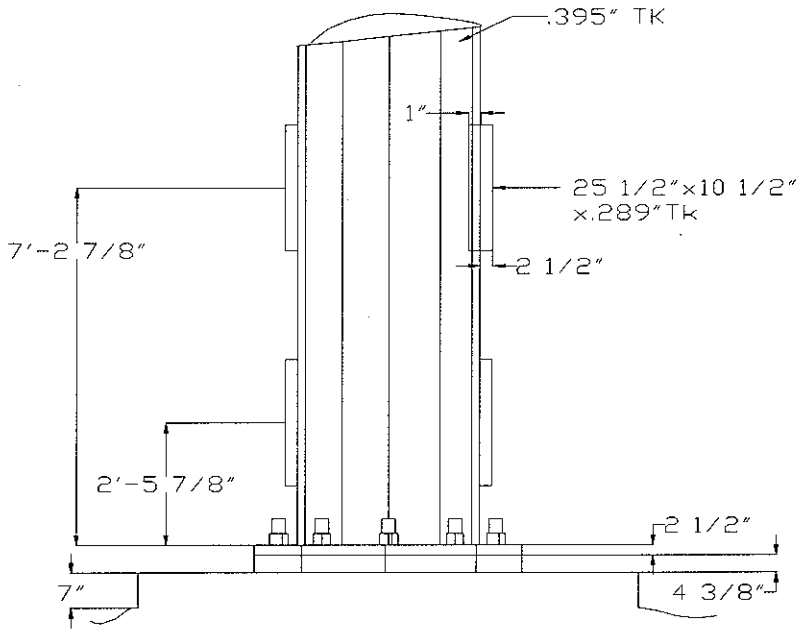
MONOPOLE BASE

- Draw an elevation view of the monopole base.
- Show all connections, dimensions, etc.

Ultrasound Calibration Test

Test Block Size	.500"
Test Measurement	.485"
Ultrasound Model #	Cygnus 1
Ultrasound Serial #	2274





SpectraSite

ST L DATA
MONOPOLE

Site Name _Harwinton_____
Site #____CT-0038_____
Date_____02-12-02_____
Page_5_of_6_

PHOTO LOG # __1 of 1___

Disk #	Photo #	Description of Photograph
1	1	Site Sign
1	2	Monopole Base
1	3	Monopole Base
1	4	Base of Monopole

100 Regency Forest Drive, Suite 400, Cary, NC 27511 O) 919.465.6633 F) 919.468.8522
website: http://www.SpectraSite.com

SpectraSite

ST L DATA
MONOPOLE
Site Name Harwinton
Site # CT-0038
Date 02-12-02

MISCELLANEOUS NOTES

The corrected base drawings for previous Smith Cullum Inc. report.

100 Regency Forest Drive, Suite 400, Cary, NC 27511 O) 919.465.6633 F) 919.468.8522
website: http://www.SpectraSite.com

Due Diligence Steel Data

Acquisition #: CT-0038 **Date at Site:** 05/13/2001

SMITH CULLUM INC
1610 E. WILLIAMS ST.
APEX, NC 27502
919.387.7444

REJECTED

Name Date

Name Date

⇒ THICKNESSES DO NOT MATCH

Steel Data Tower Report

Acquisition #: CT-0038
Site Name: HARWINGTON
State / Prov : CT

Company (Print :)	SMITH CULLUM, INC.
Team Member (Print:)	LUCAS CLAYBORN
Team Member (Print:)	
Team Member (Print:)	
Team Leader:	PAUL J. UNTI
Date at Site:	5/13/01
Date Completed:	5/13/01

* Report must be completed and signed before submittal.Signature indicates that, to the best of your knowledge, all information in the following report is accurate and complete.

Steel Data - Tower Report

Acquisition #: CT-0038 Date at Site: 05/13/2001

Team Member : P.UNTI/L.CLAYBORN

Executive Summary

Exceptions to Standard Inspection Procedures:

Note any areas that were unable to be completed. For example, Unable to Access Building, Unable to Climb Tower, Could not get Twist & Plumb, Etc.

**NO CLIMBING PEGS.....

Briefly summarize tower site and surrounding area:

TOWER SITE CONSISTS OF ONE(1) MONOPOLE TOWER, ONE(1) EQUIPMENT SHELTER AND ELEVEN(11) ANTENNAS ON TOWER...

TOWER SITE IS SURROUNDED BY A WOODS ON ALL FOUR SIDES AND IS LOCATED IN A RURAL AREA...

THE TOWER SITE HAS ROOM FOR FUTURE GROWTH INSIDE COMPOUND AND ON THE TOWER AS WELL...

THE GATE COMBO IS: **8522**

Steel Data - Tower Report

Acquisition #: CT-0038 Date: 05/13/2001

Team Member: P.UNTI/L.CLAYBORN

Checklist

Item	Description	Page	Initial when complete	Notes
1	**Checklist**	2	PJU	
2	**Compound**	3	LC	
3	**Guy Wires**	4	NA	
	Guy Wires (Continued)	*4a*	NA	
4	**Climbing Ladder & Wave Guide**	5	PJU	
5	**Tower Section Data**	6	PJU	
	Tower Section Data(Cont.)	*6a*	NA	
6	**Drawing of Elevation View & Base**	7 & 8	PJU	
	Drawing of a Tower Section and Base (Cont)	7a & 8a	NA	
7	**Coaxes/Appurtenances**	9	PJU	
	Coaxes (Continued)	*9a*	NA	
8	**Antennas**	10	PJU	
	Antennas (Continued)	*10a*	PJU	
9	**Photographs Log Sheet**	11	LC	
	Overall Site		LC	
	Guy Anchors		LC	
	Problem Vegetation		NA	
	Tower Base		LC	
	Each Tower Face		LC	
	Coaxes & Wave Guide		LC	
	Ice Bridge(s)		LC	
	Antenna from Ground		LC	
	Antenna from Tower		LC	
	Problem Areas		NA	
	Access Drive		LC	
10	**Twist and Out-of-Plumb** (Triangular or Square)	12 & 13	NA	

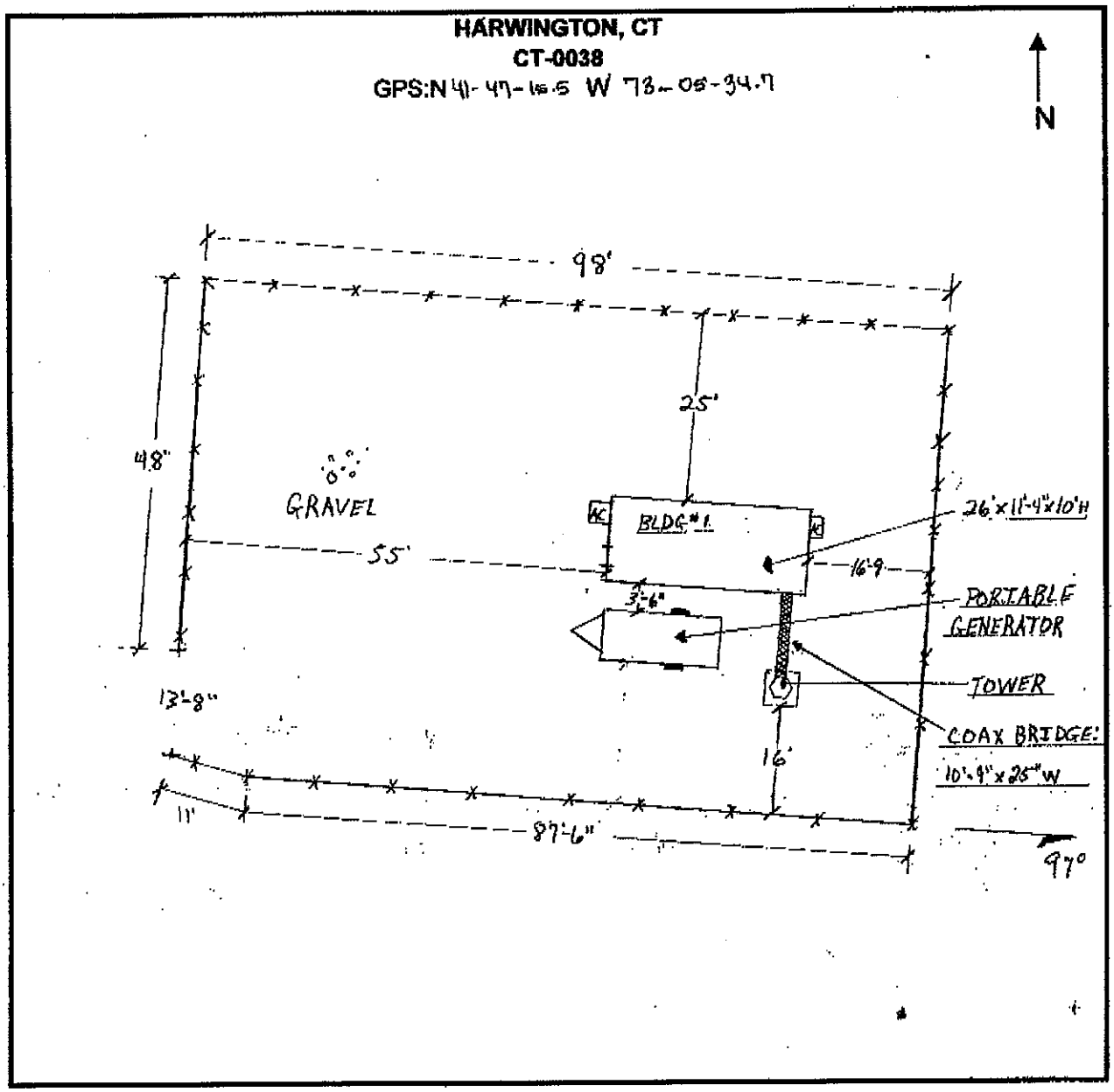
Steel Data Tower Report

Acquisition #: CT-0038 Date at Site: 5/13/01

Team Member : L.CLAYBORN

Compound

Draw a Plan View of the Compound with Dimensions and Tower Azimuth
Include Leg A relative to North. Include all items as indicated in Scope of Work.



Acquisition #: CT-0038
Team Member: P.UNTI/L.CLAYBORN

Steel Data Report

Date: 05/13/2001

Guy Wires

Draw an elevation view of a typical anchor point with hardware dimensions and number of guys.	Draw a plan view and elevation of a typical torque arm and show distance from tower face to the guy attachment(s).
NA	NA

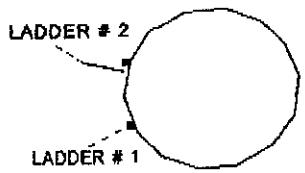
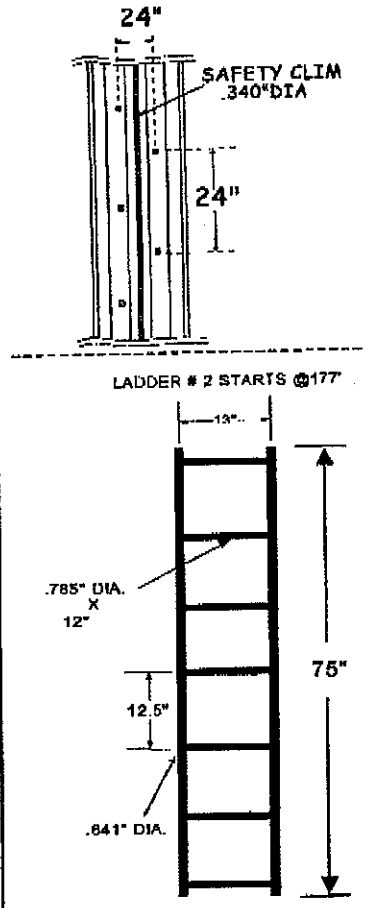
Repeat on separate sheet (page 4a - provided) if necessary.

Guy number	Guy diameter	Pre-form color	Guy elevation	Guy radius from tower (per leg if different)	Notes:
NA					
NA					
NA					
NA					
NA					
NA					
NA					

Steel Data Tower Report

Acquisition #: CT-0038
Team Member: P.UNTI/L.CLAYBORN
Date: 05/13/2001

Climbing Ladder and Wave Guide:

Draw a plan section of the tower with the ladder(s) and wave guide(s) locations shown.	Draw a typical elevation view of the ladder(s).	Draw a typical elevation view of the wave guide(s).
LADDER # 1 PEG MOUNTS ARE @ 85 DEGREES 	LADDER # 1 PEG MOUNTS STARTS @ 11' AND ENDS @ 180' **NO CLIMBING PEGS 	NA

Description	Number	Width	Step	Rail size & type	Rung size & type(PEG)	Safety wire size & type	Notes
Ladder	1	24"	12"	MONOPOLE	***NO PEGS	.340"DIA:7 STRAND	SAFETY CLIMB STARTS @
Ladder	2	13"	12.5"	.641"DIA.	.785"DIA.	NA	11' AND ENDS @ 180'
Ladder	NA	NA	NA	NA	NA	NA	
Wave Guide	NA	NA	NA	NA	NA	NA	
Wave Guide	NA	NA	NA	NA	NA	NA	
Wave Guide	NA	NA	NA	NA	NA	NA	

Steel Data Tower Report

Date: 05/13/2001

Acquisition #: CT-0038

Team Member: P.UNTI/L.CLAYBORN

Tower Sections

* Test measurement of Calibrated Gauge is Required before the inspection of any tower

(Follow the Scope of Work Guidelines)

Repeat on separate sheet (page 6a-provided) if necessary

Section Elevation (Bottom-Top)	Section Number	Face Width	Leg Size/ Type	Leg * Wall Thick	Leg Bolts	Flange Size	Horiz. Size	Diag. Size	H/D Bolts	Guy Wire Tie Points	Bay Length
0 - 44.10'	BASE 1	43"DIA.	MONOPOLE	.410"TK	(12) 2.5 X 2.205" DIA.	55"DIA. X 2.5"TK	NA	NA	NA	NA	NA
44.10' - 86.58'	2	TAPERS EVENLY	MONOPOLE	.375"TK	NA	SLIP FLANGE	NA	NA	NA	NA	NA
86.58' - 126.28'	3	TAPERS EVENLY	MONOPOLE	.310"TK	(16) 4.25" X .971"DIA.	TOP: 30" DIA. X 1"TK	NA	NA	NA	NA	NA
126.28' - 181.90'	4	TOP: 14.5" DIA.	MONOPOLE	.250"TK	(12) 3.5" X .985"DIA.	TOP: 28"DIA. X1.049"TK	NA	NA	NA	NA	NA
181.90' - 185.40'	5	21" DIA.	MONOPOLE	.270"TK	(12) 3.5" X .985"DIA.	BOTTOM 27.5"DIA X .540"TK	NA	NA	NA	NA	NA
TOWER HEIGHT IS 185.40', HOWEVER ANTENNA # 1-11 EXTENDS ABOVE TOWER 1.5'						TOP: 22"DIA. X .517"TK					

Measurement of Calibration Tool (1/4", 1/2"),Etc	1/2"

Enter Test Measurement	0.5

Enter Equipment Serial #	2966

Steel Data Tower Report

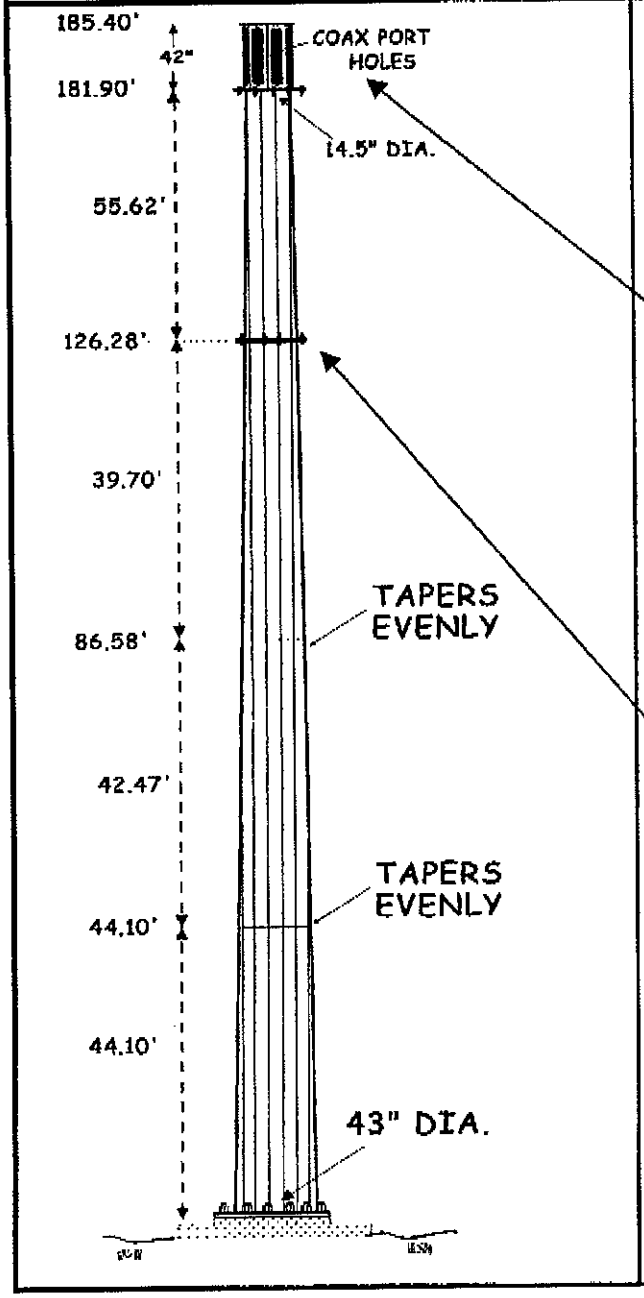
Acquisition #: CT-0038 Date: 05/13/2001

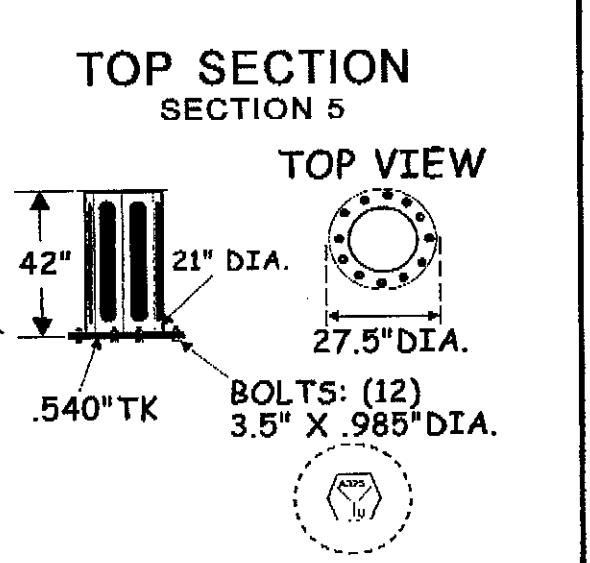
Team Member: P.UNTI/L.CLAYBORN

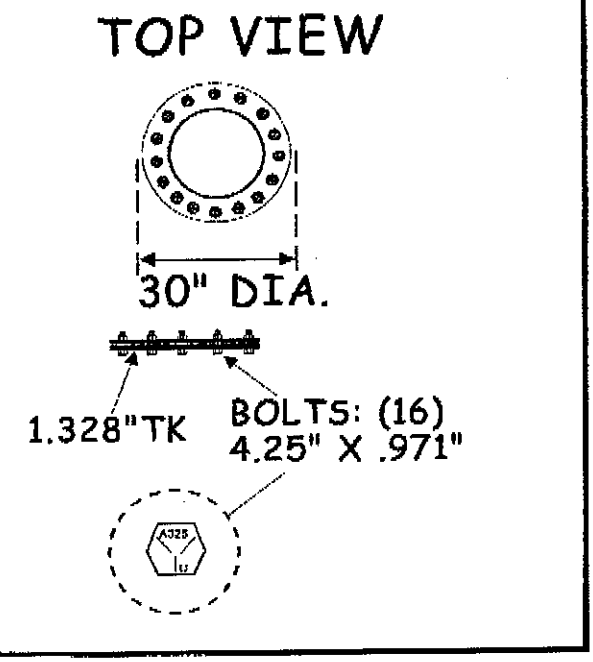
Drawing of Typical Tower Sections

Repeat on separate sheet (page 7a to 7z - provided) if necessary.

Draw an elevation view of the tower section(s) and indicate all dimensions	Draw an elevation view of the tower section(s) and indicate all dimensions







Steel Data Tower Report

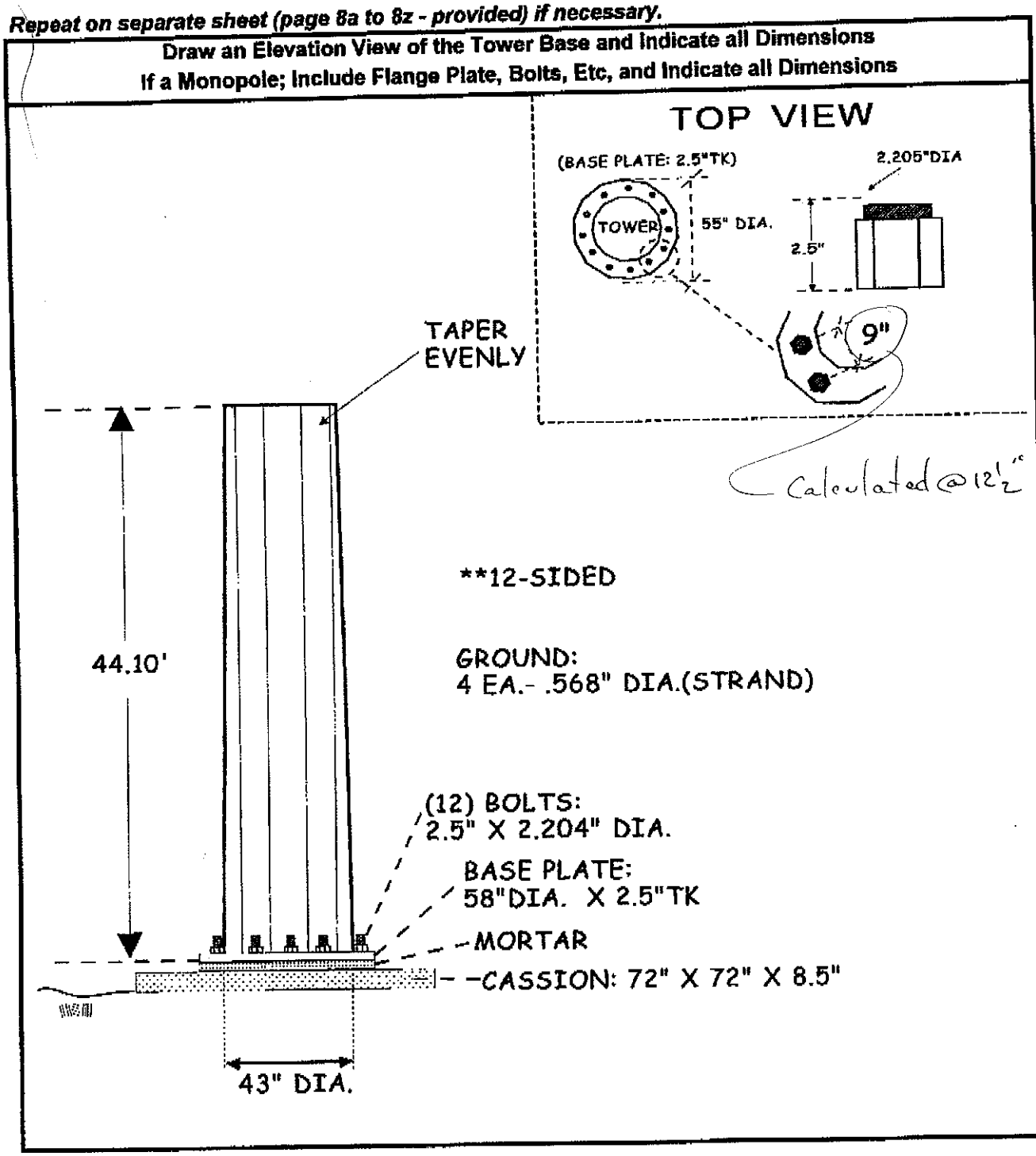
Acquisition #: CT-0038 Date: 05/13/2001

Team Member: P.UNTI/L.CLAYBORN

Drawing of Typical Tower Base

Repeat on separate sheet (page 8a to 8z - provided) if necessary.

Draw an Elevation View of the Tower Base and Indicate all Dimensions
If a Monopole; Include Flange Plate, Bolts, Etc, and Indicate all Dimensions



Steel Data Tower Report

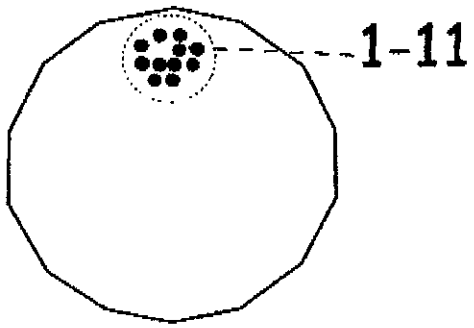
Acquisition #: CT-0038 Date: 05/13/2001

Team Member: P.UNTI/L.CLAYBORN

Coaxes/Appurtenances

Draw a plan section of the tower with all coaxes shown.
Number all coaxes beginning with the coax closest to the 0 degree, North (Leg "A") and proceed clockwise.

LADDER # 1 IS @ 275 DEGREES
*****NO LIGHTS ON TOWER**



Repeat on separate sheet (page 9a - provided) if necessary.

Brass Tag Number (e.g., 001)	Size and Type of Coax (Trade Size)	Elevation at Bottom of Antenna	Antenna Mounted on: Leg /FaceName (e.g., Leg A, Face AB, Leg B, Face BC, Leg C, Face CA)	Antenna Azimuth	Antenna Make and Model
1	7/8" COAX	182.50'	A-FACE OF PLATFORM	35 °	ALLGON: 7120.16.05.00
2	7/8" COAX	182.50'	A-FACE OF PLATFORM	35 °	ALLGON: 7120.16.05.00
3	7/8" COAX	182.50'	A-FACE OF PLATFORM	35 °	ALLGON: 7120.16.05.00
4	7/8" COAX	182.50'	A-FACE OF PLATFORM	35 °	ALLGON: 7120.16.05.00
5	7/8" COAX	182.50'	B-FACE OF PLATFORM	155°	ALLGON: 7120.16.05.00
6	7/8" COAX	182.50'	B-FACE OF PLATFORM	155°	ALLGON: 7120.16.05.00
7	7/8" COAX	182.50'	B-FACE OF PLATFORM	155°	ALLGON: 7120.16.05.00
8	7/8" COAX	182.50'	C-FACE OF PLATFORM	275°	ALLGON: 7120.16.05.00
9	7/8" COAX	182.50'	C-FACE OF PLATFORM	275°	ALLGON: 7120.16.05.00
10	7/8" COAX	182.50'	C-FACE OF PLATFORM	275°	ALLGON: 7120.16.05.00
11	7/8" COAX	182.50'	C-FACE OF PLATFORM	275°	ALLGON: 7120.16.05.00
				°	
				°	
				°	
				°	
				°	
				°	
				°	
				°	
				°	
				°	

Acquisition #: CT-0038

Team Member: P.UNTI/L.CLAYBORN

Date: 5/13/2001

Antenna / Devices

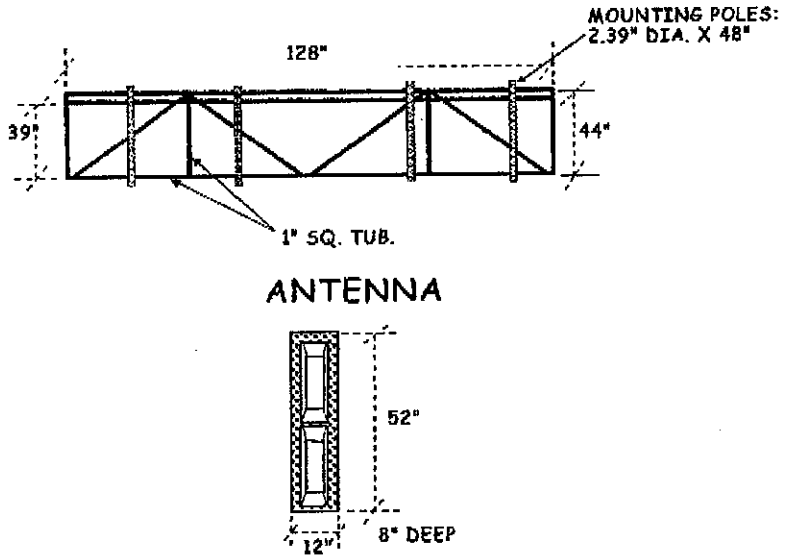
USE THIS PAGE ONLY IF ANTENNA IS NOT IDENTIFIED BY MODEL #
OR IF A DEVICE IS ATTACHED TO TOWER - SUCH AS PREAMPLIFIER, CROSSBAND COUPLER, ETC.

Repeat on a separate sheet (page 8a to 8z - provided) if necessary.

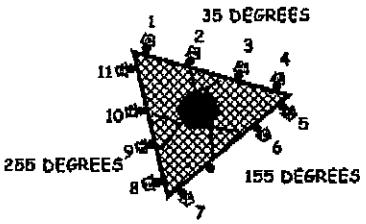
Antenna Mount Type: _____

Draw an elevation and a plan view of the antenna with the associated mounting. Show dimensions of antenna and mount(s):

Brass Tag Number (e.g., 001)	Size and Type of Coax (Trade Size)	Elevation at Bottom of Antenna	Antenna Mounted on: Leg /FaceName (e.g., Leg A, Face AB, Leg B, Face BC, Leg C, Face CA)	Antenna Azimuth	Antenna Make and Model
1-11	7/8" COAX	182.50'	SEE DIAGRAM	SEE DIAGRAM	ALLGON: 7120.16.06.00



ELEVATION VIEW



PLAN VIEW

Steel Data Tower Report

Acquisition #: CT-0038 Date: 5/13/01

Team Member: P.UNTI/L.CLAYBORN

Photographic Log Sheet

Photo # and Disc #	Description of Photograph *(Indicate Disk/Roll Number)* ***Repeat on separate sheet (page11a to 11z - provided) if necessary.***
DISK #1 OF 2	
1	VIEW OF FLANGE#1
2	VIEW OF THIRD FLANGE WITH BOLT PATTERN
3-6	N.E.S.W. VIEW OF COMPOUND
7-10	N.E.S.W. VIEW OF SURROUNDING AREA
11	ENTRY PORT OF PLATFORM
12	COAX PORT ON TOWER
13-19	VIEW OF ANTENNAS 1-11
20	TOP OF SAFETY CLIMB
21	VIEW OF PLATFORM
22	VIEW OF LADDER#2
DISC#2 OF 2	
1	VIEW OF ACCESS DRIVE
2	VIEW OF SIGNS AT COMPOUND
3-12	VIEW OF COMPOUND AND PROFILE OF TOWER
13-15	VIEW OF TOWER BASE
16	COAX BRIDGE FROM BUILDING#1 TO TOWER
17	BOTTOM OF SAFETY CLIMB
18-19	VIEW OF PLATFORM FROM GROUND\
20	VIEW OF FLANGE#2
21	VIEW OF FLANGE#3
22	VIEW OF PLATFORM AND ANTENNAS
23-24	VIEW OF POWER METER ON BUILDING#1

Acquisition #: CT-0038

Team Member: UNTIAL CLAYBORN

Steel Data Report Date: 5/13/01

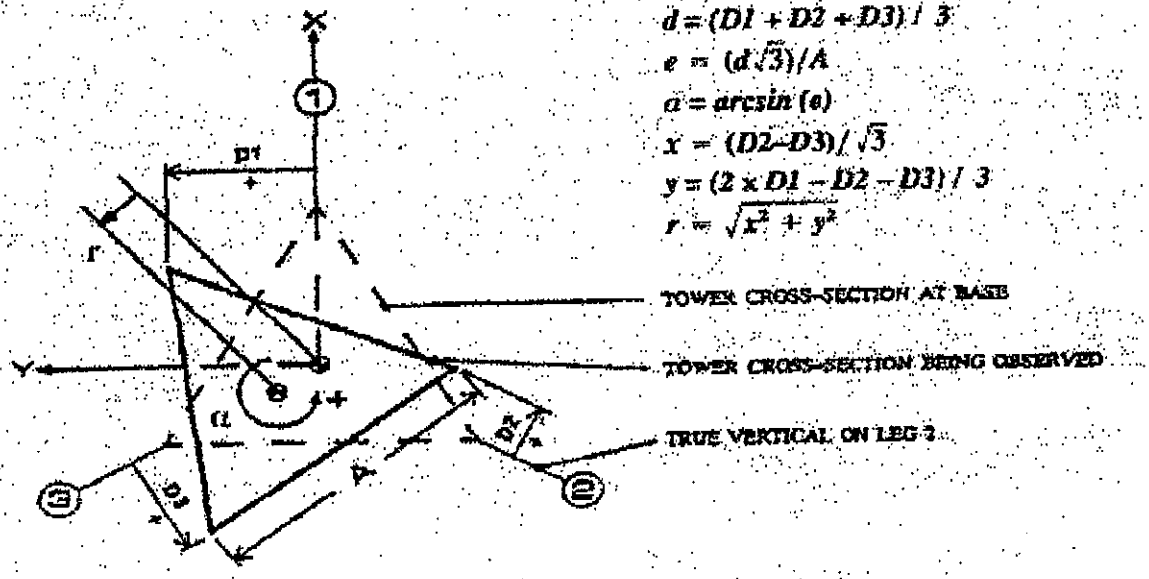
Twist and Out-of-Plumb Determination for Triangular Towers

Time	Temp	Wind
NA	NA	NA

Instructions:

Three transit setups are required, one on each leg azimuth, sighting the corresponding tower leg at the base of the tower to set the true vertical.

The deflection at any point on the tower should be measured from this true vertical, using the sign convention below



$$d = (D1 + D2 + D3) / 3$$

$$e = (d\sqrt{3})/A$$

$$a = \arcsin(e)$$

$$x = (D2 - D3)/\sqrt{3}$$

$$y = (2 \times D1 - D2 - D3) / 3$$

$$r = \sqrt{x^2 + y^2}$$

Observed Mast Data					Calculated Twist			Calculated Out-of-Plumb		
Mast Elev. (Feet)	A (inches)	D1 (inches)	D2 (inches)	D3 (inches)	D (Inches)	E	A (Degree)	x (inches)	y (inches)	r (inches)

Steel Data Report

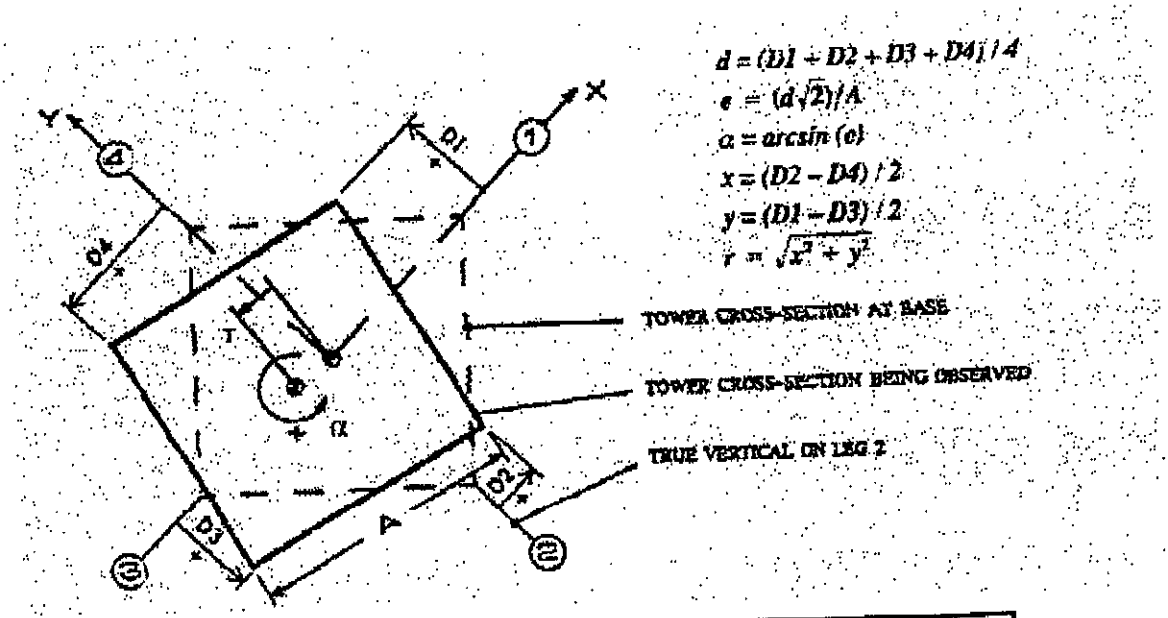
Date: 5/13/01

Acquisition #: CT-0038

Team Member: UNTIL CLAYBORN

Twist and Out-of-Plumb Determination for Square Towers

Time	Temp	Wind
NA	NA	NA



$$d = (D1 + D2 + D3 + D4) / 4$$

$$e = (d\sqrt{2}) / A$$

$$\alpha = \arcsin(e)$$

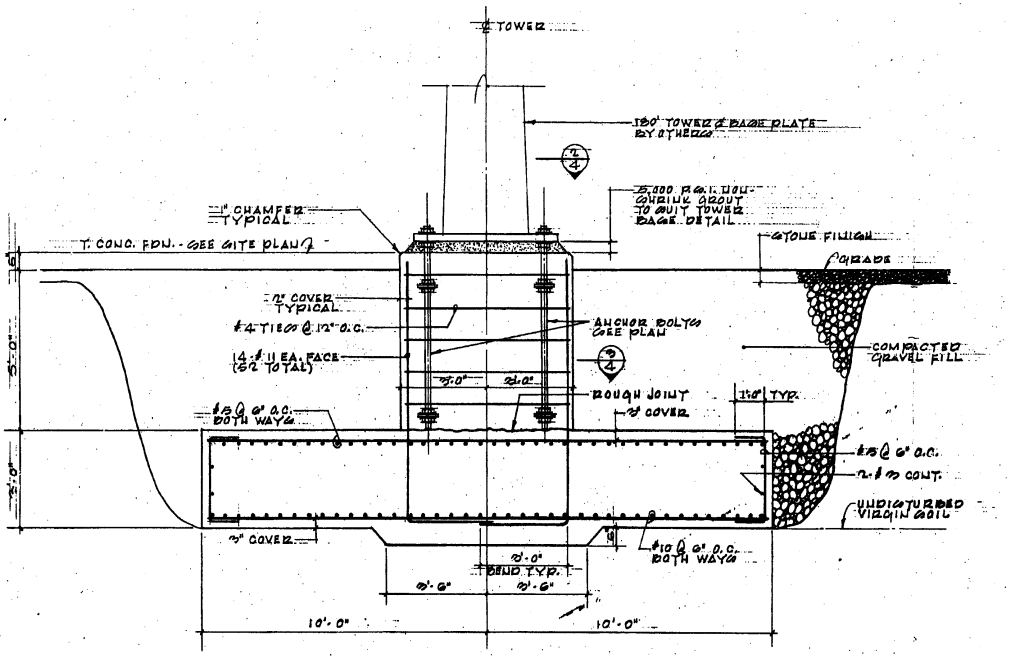
$$x = (D2 - D4) / 2$$

$$y = (D1 - D3) / 2$$

$$r = \sqrt{x^2 + y^2}$$

Observed Mast Data						Calculated Twist			Calculated Out-of-Plumb		
Mast Elev. (Feet)	A (inches)	D1 (inches)	D2 (inches)	D3 (inches)	D4 (inches)	d (inches)	e	α (degrees)	x (inches)	y (inches)	r (inches)

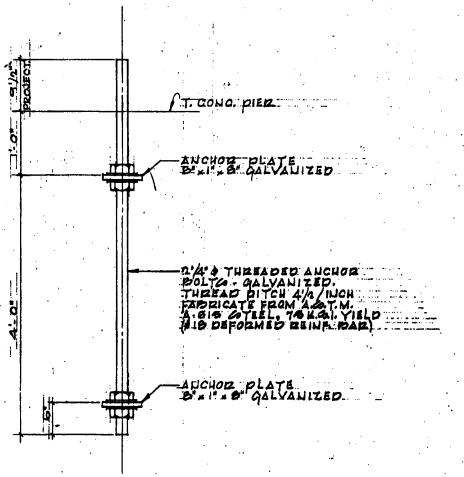
CT-0038



SECTION AT TOWER FOOTING (1/4)

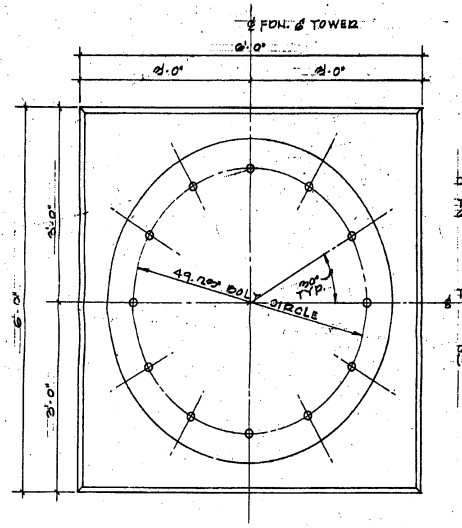
SCALE - 1/2" = 1'-0"

NOTE:
FURNISH 2 LOCK NUTS W/ WASHERS PER ANCHOR BOLT FOR TOWER BASE LEVELING & BOLTING. NUTS & WASHERS TO BE GALVANIZED.



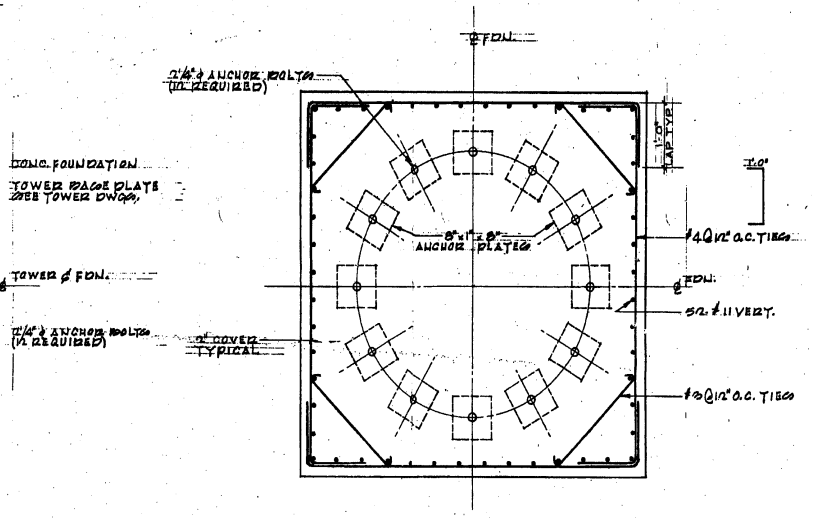
TYPICAL ANCHOR BOLT DETAIL

SCALE - 1" = 1'-0"
(12 BOLTS REQUIRED)



PLAN AT TOWER BASE PLATE (2/4)

SCALE - 1" = 1'-0"



PLAN AT FOUNDATION STEM (3/4)

SCALE - 1" = 1'-0"

NOTE: TOWER BASE TEMPLATE TO BE FURNISHED BY OTHERS (TOWER SUPPLIER) THIS CONTRACTOR TO FURNISH & SET THE ANCHOR BOLTS.

COORDINATE SETTING AND ORIENTATION OF ANCHOR BOLTS WITH TOWER DWGS AND OWNER REQUIREMENTS.

GIRARD & CO. ENGINEERS
40 Wethersfield Avenue
HARTFORD, CONNECTICUT 06114

SHEET 4 OF 8

SNET
Office of the District Manager - Building Construction & Design

LOCATION: HARWINTON, CONN.
DESCRIPTION: CELLULAR RADIO CELL SITE
TOWER FOUNDATION

DRAWN BY	DATE	FILE	JOB NUMBER
R.J.D.	2-24-99		3C237
CHECKED BY M.G.	NOTED		

JOHNSON SOILS ENGINEERING COMPANY

EXPLORATION - TESTING - DESIGN

752 GRAND AVENUE • RIDGEFIELD, N.J. 07657 • (201) 943-1793 • FAX (201) 943-0951

January 28, 2002

P.D.H. Engineers
PO Box 33037
Raleigh, NC 27636

Attn: Chris Murphy
re: Proposed Monopole
159 Weingart Road
Harwington, CT
Our #14974-H

Dear Sir,

In order to determine the various soil types, depth ad strength values, a soils investigation was undertaken. The program consisted of one (1) test boring drilled with a truck mounted hollow stem auger rig on January 26, 2002.

The boring was located inside the fence to the existing tower to the left of the gate.

Standard Penetration Tests were taken from 0-2 ft. and 5-6 ft. The Standard Penetration Test consists of a 140 lb. hammer falling 30 inches to advance a 2 inch dimaeter sampler in 6 inch increments. All samples were reclassified in the lab.

The boring showed 10 inches of crushed stone over a brown fine/coarse Sand, trace of silt (SW) to 1'2".

A gray-brown gravel and fine/coarse Sand (SW-GW) was found from 1'2" to 4 ft. Allowable bearing is 6000 P.S.F. and lateral bearing of 500 PSF/ft.

JOHNSON SOILS ENGINEERING COMPANY

Below 4 ft. to 6 ft. a gray gravel and fine/coarse Sand with boulders and silt was found to practical refusal at 6 ft. Allowable bearing is 6000 P.S.F. and lateral bearing of 500 PSF/ft.

A gray gneiss rock was drilled from 6-11 ft. with recovery of 4'6" and R.Q.D. of 3'6".

Allowable bearing on the rock varies from 12,000 to 50,000 P.S.F. depending upon the amount of fractures.

Water level was not found at the time of drilling.

The proposed pole can be supported by a conventional mat foundation on the Sand and gravel using 6000 P.S.F. or on the bedrock using 12,000 P.S.F. Bedrock is not expected to be level within the site.

Coefficient of friction against sliding for the Sand and gravel is 0.5.

A smooth bedrock should be doweled for sliding.

Minimum depth for frost protection is 4 ft.

The soils are type "C" per OSHA 29 CFR Part 1926 and require bracing or slopes of 1.5:1 for excavation over 4 ft.

A caisson type design does not appear practical due to the shallow depth of rock.

Very truly yours,

John C. Mahle Jr., P.E.

encl log of boring

JOHNSON SOILS ENGINEERING

Project Proposed Monopole, Harvington, CT. Boring Log # 1
Date 1/26/02 Sheet 1 of 1
Job 14974-H

Depth, Feet	Sample #	Depth	Sample/ Spoon Blows/6"	DESCRIPTION	
	1	0-2'	27-31 70-82	Crushed stone	0 - 10"
				Brown fine/coarse Sand, trace of silt (SW)	10" - 1'2"
5	2	5-7'	64-100	Gray-brown gravel & Sand (SW-GW)	1'2" - 4'
				Gray gravel & fine/coarse Sand with boulders &silt	4 - 6'
10	R-1	6-11'	Rec 4'6" RQD 3'6"	(size NX) Gray gneiss rock	
15					
20					
25					
30					
35					
40					

Remarks:

Depth of Water Dry Date
Driller R.V. Drilling

Casing Hammer Wgt. ; Drop
Spoon Hammer Wgt. 140# ; Drop 30"
Casing Size ; Spoon Size 2"

PROJECT:	LTE 3C / 4C
SITE NUMBER:	CTL01057
FA NUMBER:	10035016
PTN NUMBER:	2051A0CZT7/2051A0D0Q6
PACE NUMBER:	MRCTB025179/MRCTB025306
ATC#:	302502
SITE NAME:	HARWINTON
SITE ADDRESS:	159 WEINGART ROAD HARWINTON, CT 06791

PROJECT INFORMATION

SITE NAME:	HARWINTON
SITE NUMBER:	CTL01057
SITE ADDRESS:	159 WEINGART ROAD HARWINTON, CT 06791
FA NUMBER:	10035016
PTN NUMBER:	2051A0CZT7/2051A0D0Q6
PACE NUMBER:	MRCTB025179/MRCTB025306
USID NUMBER:	71290
ATC NUMBER:	302502
APPLICANT:	AT&T WIRELESS 550 COCHITUATE ROAD SUITE 550 13 AND 14 FRAMINGHAM, MA 01701
TOWER OWNER:	AMERICAN TOWER CORPORATION 111 SHILOH ST PITTSBURGH, PA 15211
JURISDICTION:	LITCHFIELD COUNTY
COUNTY:	LITCHFIELD
SITE COORDINATES FROM	(RFDS)
LATITUDE:	41.7877419°
LONGITUDE:	-73.0925269°
GROUND ELEV.:	1055'
PROPOSED USE:	TELECOMMUNICATIONS FACILITY
AT&T RF MANAGER:	DEEPAK RATHORE
PHONE:	(860) 965-3068
EMAIL:	dr701e@att.com

PROJECT CONSULTANTS

PROJECT MANAGER:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	EDWARD WEISSMAN (917) 528-1857
EMAIL:	Edward.Weissman@smartlinkllc.com
SITE AQUISITION:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	SHARON KEEFE (978) 930-3918
EMAIL:	Sharon.Keefe@smartlinkllc.com
ENGINEER/ARCHITECT:	FULLERTON ENGINEERING
ADDRESS:	1100 E. WOODFIELD ROAD, SUITE 500 SCHAUMBURG, IL 60173
CONTACT:	MILEN DIMITROV (847) 908-8439
EMAIL:	MDimitrov@FullertonEngineering.com
CONSTRUCTION:	SMARTLINK
ADDRESS:	85 RANGEWAY ROAD, SUITE 102 NORTH BILLERICA, MA 01862
CONTACT:	MARK DONNELLY (617) 515-2080
EMAIL:	mark.donnelly@smartlinkllc.com

SCOPE OF WORK

LTE WILL BE 3C/4C AT THE SITE WITH BRONZE CONFIGURATION.
PROPOSED 3C/4C PROJECT SCOPE HEREIN BASED ON RFDS ID # 1811301, VERSION 1.00 LAST UPDATED 09/13/17.

- (3) NEW ANTENNAS TO REPLACE (3) EXISTING ANTENNAS
- (3) NEW RRUS-32 UNITS
- (2) NEW RRUS-B14 4478 UNITS (BETA & GAMMA WILL SHARE THE B14 RADIO)
- (1) NEW RAYCAP UNIT W/ (1) FIBER CABLE AND (2) DC POWER CABLES
- (6) NEW 25A BREAKERS
- UPGRADE DUS TO 5216 AND ADD XMU
- REPLACE DIPLEXERS W/ NEW LOW BAND COMBINERS

- CONTRACTOR SHALL FURNISH ALL MATERIAL WITH THE EXCEPTION OF AT&T SUPPLIED MATERIAL.
- ALL MATERIAL SHALL BE INSTALLED BY THE CONTRACTOR, UNLESS STATED OTHERWISE.

SITE LOCATION MAP

DIRECTIONS

SCAN QR CODE FOR LINK
TO SITE LOCATION MAP

APPLICABLE BUILDING CODES AND STANDARDS

ALL WORK AND MATERIALS SHALL BE PERFORMED AND INSTALLED IN ACCORDANCE WITH THE CURRENT EDITIONS OF THE FOLLOWING CODES AS ADOPTED BY THE LOCAL GOVERNING AUTHORITIES.

BUILDING CODE:	2012 INTERNATIONAL BUILDING CODE 2016 CONNECTICUT STATE BUILDING CODE SUPPLEMENT
ELECTRICAL CODE:	2014 NATIONAL ELECTRIC CODE

- FACILITY IS UNMANNED AND NOT FOR HUMAN HABITATION.
- ADA ACCESS REQUIREMENTS ARE NOT REQUIRED.
- THIS FACILITY DOES NOT REQUIRE POTABLE WATER AND WILL NOT PRODUCE ANY SEWAGE

DRAWING INDEX

NOTE: DRAWING SCALES ARE FOR 11"x17" SHEETS UNLESS OTHERWISE NOTED

550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701

smartlink
1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076

FULLERTON
ENGINEERING · DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
COA# PEC.0001444
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
0	09/25/17	90% REVIEW	NM
1	11/30/17	FOR PERMIT	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

SITE NAME
HARWINTON

SITE NUMBER:
CTL01057

SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME
TITLE SHEET

SHEET NUMBER
T1

GENERAL CONSTRUCTION

1. FOR THE PURPOSE OF CONSTRUCTION DRAWINGS, THE FOLLOWING DEFINITIONS SHALL APPLY:
   CONTRACTOR/CM – SMARTLINK
   OWNER – AT&T WIRELESS

2. ALL SITE WORK SHALL BE COMPLETED AS INDICATED ON THE DRAWINGS AND AT&T PROJECT SPECIFICATIONS.

3. GENERAL CONTRACTOR SHALL VISIT THE SITE AND SHALL FAMILIARIZE HIMSELF WITH ALL CONDITIONS AFFECTING THE PROPOSED WORK AND SHALL MAKE PROVISIONS. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR FAMILIARIZING HIMSELF WITH ALL CONTRACT DOCUMENTS, FIELD CONDITIONS, DIMENSIONS, AND CONFIRMING THAT THE WORK MAY BE ACCOMPLISHED AS SHOWN PRIOR TO PROCEEDING WITH CONSTRUCTION. ANY DISCREPANCIES SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER PRIOR TO THE COMMENCEMENT OF WORK.

4. ALL MATERIALS FURNISHED AND INSTALLED SHALL BE IN STRICT ACCORDANCE WITH ALL APPLICABLE CODES, REGULATIONS, AND ORDINANCES. GENERAL CONTRACTOR SHALL ISSUE ALL APPROPRIATE NOTICES AND COMPLY WITH ALL LAWS, ORDINANCES, RULES, REGULATIONS, AND LAWFUL ORDERS OF ANY PUBLIC AUTHORITY REGARDING THE PERFORMANCE OF WORK.

5. ALL WORK CARRIED OUT SHALL COMPLY WITH ALL APPLICABLE MUNICIPAL AND UTILITY COMPANY SPECIFICATIONS AND LOCAL JURISDICTIONAL CODES, ORDINANCES, AND APPLICABLE REGULATIONS.

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

7. PLANS ARE NOT TO BE SCALED. THESE PLANS ARE INTENDED TO BE A DIAGRAMMATIC OUTLINE ONLY UNLESS OTHERWISE NOTED. DIMENSIONS SHOWN ARE TO FINISH SURFACES UNLESS OTHERWISE NOTED. SPACING BETWEEN EQUIPMENT IS THE MINIMUM REQUIRED CLEARANCE. THEREFORE, IT IS CRITICAL TO FIELD VERIFY DIMENSIONS, SHOULD THERE BE ANY QUESTIONS REGARDING THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING A CLARIFICATION FROM THE ENGINEER PRIOR TO PROCEEDING WITH THE WORK. DETAILS ARE INTENDED TO SHOW DESIGN INTENT. MODIFICATIONS MAY BE REQUIRED TO SUIT JOB DIMENSIONS OR CONDITIONS AND SUCH MODIFICATIONS SHALL BE INCLUDED AS PART OF WORK AND PREPARED BY THE ENGINEER PRIOR TO PROCEEDING WITH WORK.

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

9. IF THE SPECIFIED EQUIPMENT CANNOT BE INSTALLED AS SHOWN ON THESE DRAWINGS, THE CONTRACTOR SHALL PROPOSE AN ALTERNATIVE INSTALLATION SPACE FOR APPROVAL BY THE ENGINEER PRIOR TO PROCEEDING.

10. GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY OF WORK AREA, ADJACENT AREAS AND BUILDING OCCUPANTS THAT ARE LIKELY TO BE AFFECTED BY THE WORK UNDER THIS CONTRACT. WORK SHALL CONFIRM TO ALL OSHA REQUIREMENTS AND THE LOCAL JURISDICTION.

11. GENERAL CONTRACTOR SHALL COORDINATE WORK AND SCHEDULE WORK ACTIVITIES WITH OTHER DISCIPLINES.

12. ERECTION SHALL BE DONE IN A WORKMANLIKE MANNER BY COMPETENT EXPERIENCED WORKMAN IN ACCORDANCE WITH APPLICABLE CODES AND THE BEST ACCEPTED PRACTICE. ALL MEMBERS SHALL BE LAID PLUMB AND TRUE AS INDICATED ON THE DRAWINGS.

13. SEAL PENETRATIONS THROUGH FIRE RATED AREAS WITH UL LISTED MATERIALS APPROVED BY LOCAL JURISDICTION. CONTRACTOR SHALL KEEP AREA CLEAN, HAZARD FREE, AND DISPOSE OF ALL DEBRIS.

14. WORK PREVIOUSLY COMPLETED IS REPRESENTED BY LIGHT SHADED LINES AND NOTES. THE SCOPE OF WORK FOR THIS PROJECT IS REPRESENTED BY DARK SHADED LINES AND NOTES. CONTRACTOR SHALL NOTIFY THE GENERAL CONTRACTOR OF ANY EXISTING CONDITIONS THAT DEVIATE FROM THE DRAWINGS PRIOR TO BEGINNING CONSTRUCTION.

15. CONTRACTOR SHALL PROVIDE WRITTEN NOTICE TO THE CONSTRUCTION MANAGER 48 HOURS PRIOR TO COMMENCEMENT OF WORK.

16. THE CONTRACTOR SHALL PROTECT EXISTING IMPROVEMENTS, PAVEMENTS, CURBS, LANDSCAPING AND STRUCTURES. ANY DAMAGED PART SHALL BE REPAIRED AT CONTRACTOR'S EXPENSE TO THE SATISFACTION OF THE OWNER.

17. THE CONTRACTOR SHALL CONTACT UTILITY LOCATING SERVICES PRIOR TO THE START OF CONSTRUCTION.

18. GENERAL CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS FOR ALL TRADES AND CONTRACTORS TO THE SITE AND/OR BUILDING.

19. THE GENERAL CONTRACTOR SHALL BE RESPONSIBLE FOR SECURITY OF THE SITE FOR THE DURATION OF CONSTRUCTION UNTIL JOB COMPLETION.

20. THE GENERAL CONTRACTOR SHALL MAINTAIN IN GOOD CONDITION ONE COMPLETE SET OF PLANS WITH ALL REVISIONS, ADDENDA, AND CHANGE ORDERS ON THE PREMISES AT ALL TIMES.

21. THE GENERAL CONTRACTOR SHALL PROVIDE PORTABLE FIRE EXTINGUISHERS WITH A RATING OF NOT LESS THAN 2–A OT 2–A:10–B:C AND SHALL BE WITHIN 25 FEET OF TRAVEL DISTANCE TO ALL PORTIONS OF WHERE THE WORK IS BEING COMPLETED DURING CONSTRUCTION.

22. ALL EXISTING ACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES SHALL BE PROTECTED AT ALL TIMES, AND WHERE REQUIRED FOR THE PROPER EXECUTION OF THE WORK, SHALL BE RELOCATED AS DIRECTED BY THE ENGINEER. EXTREME CAUTION SHOULD BE USED BY THE CONTRACTOR WHEN EXCAVATING OR DRILLING PIERS AROUND OR NEAR UTILITIES. CONTRACTOR SHALL PROVIDE SAFETY TRAINING FOR THE WORKING CREW. THIS SHALL INCLUDE BUT NOT BE LIMITED TO A) FALL PROTECTION, B) CONFINED SPACE, C) ELECTRICAL SAFETY, AND D) TRENCHING & EXCAVATION.

23. ALL EXISTING INACTIVE SEWER, WATER, GAS, ELECTRIC, AND OTHER UTILITIES, WHICH INTERFERE WITH THE EXECUTION OF THE WORK, SHALL BE REMOVED, CAPPED, PLUGGED OR OTHERWISE DISCONNECTED AT POINTS WHICH WILL NOT INTERFERE WITH THE EXECUTION OF THE WORK, AS DIRECTED BY THE RESPONSIBLE ENGINEER, AND SUBJECT TO THE APPROVAL OF THE OWNER AND/OR LOCAL UTILITIES.

24. THE AREAS OF THE OWNER'S PROPERTY DISTURBED BY THE WORK AND NOT COVERED BY THE TOWER, EQUIPMENT OR DRIVEWAY, SHALL BE GRADED TO A UNIFORM SLOPE, AND STABILIZED TO PREVENT EROSION.

25. CONTRACTOR SHALL MINIMIZE DISTURBANCE TO THE EXISTING SITE DURING CONSTRUCTION. EROSION CONTROL MEASURES, IF REQUIRED DURING CONSTRUCTION, SHALL BE IN CONFORMANCE WITH THE FEDERAL AND LOCAL JURISDICTION FOR EROSION AND SEDIMENT CONTROL.

26. NO FILL OR EMBANKMENT MATERIAL SHALL BE PLACED ON FROZEN GROUNDING. FROZEN MATERIALS, SNOW OR ICE SHALL NOT BE PLACED IN ANY FILL OR EMBANKMENT.

27. THE SUBGRADE SHALL BE BROUGHT TO A SMOOTH UNIFORM GRADE AND COMPACTED TO 95 PERCENT STANDARD PROCTOR DENSITY UNDER PAVEMENT AND STRUCTURES AND 80 PERCENT STANDARD PROCTOR DENSITY IN OPEN SPACE. ALL TRENCHES IN PUBLIC RIGHT OF WAY SHALL BE BACKFILLED WITH FLOWABLE FILL OR OTHER MATERIAL PRE–APPROVED BY THE LOCAL JURISDICTION.

28. ALL NECESSARY RUBBISH, STUMPS, DEBRIS, STICKS, STONES, AND OTHER REFUSE SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LAWFUL MANNER.

29. ALL BROCHURES, OPERATING AND MAINTENANCE MANUALS, CATALOGS, SHOP DRAWINGS, AND OTHER DOCUMENTS SHALL BE TURNED OVER TO THE GENERAL CONTRACTOR AT COMPLETION OF CONSTRUCTION AND PRIOR TO PAYMENT.

30. CONTRACTOR SHALL SUBMIT A COMPLETE SET OF AS–BUILT REDLINES TO THE GENERAL CONTRACTOR UPON COMPLETION OF PROJECT AND PRIOR TO FINAL PAYMENT.

31. CONTRACTOR SHALL LEAVE PREMISES IN A CLEAN CONDITION.

32. THE PROPOSED FACILITY WILL BE UNMANNED AND DOES NOT REQUIRE POTABLE WATER OR SEWER SERVICE, AND IS NOT FOR HUMAN HABITAT (NO HANDICAP ACCESS REQUIRED).

33. OCCUPANCY IS LIMITED TO PERIODIC MAINTENANCE AND INSPECTION, APPROXIMATELY 2 TIMES PER MONTH, BY AT&T TECHNICIANS.

34. NO OUTDOOR STORAGE OR SOLID WASTE CONTAINERS ARE PROPOSED.

35. ALL MATERIAL SHALL BE FURNISHED AND WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE LATEST REVISION AT&T MOBILITY GROUNDING STANDARD "TECHNICAL SPECIFICATION FOR CONSTRUCTION OF GSM/GPRS WIRELESS SITES" AND "TECHNICAL SPECIFICATION FOR FACILITY GROUNDING". IN CASE OF A CONFLICT BETWEEN THE CONSTRUCTION SPECIFICATION AND THE DRAWINGS, THE DRAWINGS SHALL GOVERN.

36. CONTRACTORS SHALL BE RESPONSIBLE FOR OBTAINING ALL PERMITS AND INSPECTIONS REQUIRED FOR CONSTRUCTION. IF CONTRACTOR CANNOT OBTAIN A PERMIT, THEY MUST NOTIFY THE GENERAL CONTRACTOR IMMEDIATELY.

37. CONTRACTOR SHALL REMOVE ALL TRASH AND DEBRIS FROM THE SITE ON A DAILY BASIS.

38. INFORMATION SHOWN ON THESE DRAWINGS WAS OBTAINED FROM SITE VISITS AND/OR DRAWINGS PROVIDED BY THE SITE OWNER. CONTRACTORS SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES PRIOR TO ORDERING MATERIAL OR PROCEEDING WITH CONSTRUCTION.

39. NO WHITE STROBE LIGHTS ARE PERMITTED. LIGHTING IF REQUIRED, WILL MEET FAA STANDARDS AND REQUIREMENTS.

ANTENNA MOUNTING

40. DESIGN AND CONSTRUCTION OF ANTENNA SUPPORTS SHALL CONFORM TO CURRENT ANSI/TIA–222 OR APPLICABLE LOCAL CODES.

41. ALL STEEL MATERIALS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 "ZINC (HOT–DIP GALVANIZED) COATINGS ON IRON AND STEEL PRODUCTS", UNLESS NOTED OTHERWISE.

42. ALL BOLTS, ANCHORS AND MISCELLANEOUS HARDWARE SHALL BE GALVANIZED IN ACCORDANCE WITH ASTM A153 "ZINC–COATING (HOT–DIP) ON IRON AND STEEL HARDWARE", UNLESS NOTED OTHERWISE.

43. DAMAGED GALVANIZED SURFACES SHALL BE REPAIRED BY COLD GALVANIZING IN ACCORDANCE WITH ASTM A780.

44. ALL ANTENNA MOUNTS SHALL BE INSTALLED WITH LOCK NUTS, DOUBLE NUTS AND SHALL BE TORQUED TO MANUFACTURER'S RECOMMENDATIONS.

45. CONTRACTOR SHALL INSTALL ANTENNA PER MANUFACTURER'S RECOMMENDATION FOR INSTALLATION AND GROUNDING.

46. ALL UNUSED PORTS ON ANY ANTENNAS SHALL BE TERMINATED WITH A 50–OHM LOAD TO ENSURE ANTENNAS PERFORM AS DESIGNED.

47. PRIOR TO SETTING ANTENNA AZIMUTHS AND DOWNTILTS, ANTENNA CONTRACTOR SHALL CHECK THE ANTENNA MOUNT FOR TIGHTNESS AND ENSURE THAT THEY ARE PLUMB. ANTENNA AZIMUTHS SHALL BE SET FROM TRUE NORTH AND BE ORIENTED WITHIN +/– 5% AS DEFINED BY THE RFDS. ANTENNA DOWNTILTS SHALL BE WITHIN +/– 0.5% AS DEFINED BY THE RFDS. REFER TO ND–00246.

48. JUMPERS FROM THE TMA'S MUST TERMINATE TO OPPOSITE POLARIZATION'S IN EACH SECTOR.

49. CONTRACTOR SHALL RECORD THE SERIAL #, SECTOR, AND POSITION OF EACH ACTUATOR INSTALLED AT THE ANTENNAS AND PROVIDE THE INFORMATION TO AT&T.

50. TMA'S SHALL BE MOUNTED ON PIPE DIRECTLY BEHIND ANTENNAS AS CLOSE TO ANTENNA AS FEASIBLE IN A VERTICAL POSITION.

TORQUE REQUIREMENTS

51. ALL RF CONNECTIONS SHALL BE TIGHTENED BY A TORQUE WRENCH.

52. ALL RF CONNECTIONS, GROUNDING HARDWARE AND ANTENNA HARDWARE SHALL HAVE A TORQUE MARK INSTALLED IN A CONTINUOUS STRAIGHT LINE FROM BOTH SIDES OF THE CONNECTION.
   A. RF CONNECTION BOTH SIDES OF THE CONNECTOR.
   B. GROUNDING AND ANTENNA HARDWARE ON THE NUT SIDE STARTING FROM THE THREADS TO THE SOLID SURFACE. EXAMPLE OF SOLID SURFACE: GROUND BAR, ANTENNA BRACKET METAL.

FIBER & POWER CABLE MOUNTING

53. THE FIBER OPTIC TRUNK CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY. WHEN INSTALLING FIBER OPTIC TRUNK CABLES INTO A CABLE TRAY SYSTEM, THEY SHALL BE INSTALLED INTO AN INTER DUCT AND A PARTITION BARRIER SHALL BE INSTALLED BETWEEN THE 600 VOLT CABLES AND THE INTER DUCT IN ORDER TO SEGREGATE CABLE TYPES. OPTIC FIBER TRUNK CABLES SHALL HAVE APPROVED CABLE RESTRAINTS EVERY (60) SIXTY FEET AND SECURELY FASTENED TO THE CABLE TRAY SYSTEM. NFPA 70 (NEC) ARTICLE 770 RULES SHALL APPLY.

54. THE TYPE TC–ER CABLES SHALL BE INSTALLED INTO CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY AND SHALL BE SECURED AT INTERVALS NOT EXCEEDING (6) SIX FEET. AN EXCEPTION; WHERE TYPE TC–ER CABLES ARE NOT SUBJECT TO PHYSICAL DAMAGE, CABLES SHALL BE PERMITTED TO MAKE A TRANSITION BETWEEN CONDUITS, CHANNEL CABLE TRAYS, OR CABLE TRAY WHICH ARE SERVING UTILIZATION EQUIPMENT OR DEVICES, A DISTANCE (6) SIX FEET SHALL NOT BE EXCEEDED WITHOUT CONTINUOUS SUPPORTING. NFPA 70 (NEC) ARTICLES 336 AND 392 RULES SHALL APPLY.

55. WHEN INSTALLING OPTIC FIBER TRUNK CABLES OR TYPE TC–ER CABLES INTO CONDUITS, NFPA 70 (NEC) ARTICLE 300 RULES SHALL APPLY.

COAXIAL CABLE NOTES

62. TYPES AND SIZES OF THE ANTENNA CABLE ARE BASED ON ESTIMATED LENGTHS. PRIOR TO

    ORDERING CABLE, CONTRACTOR SHALL VERIFY ACTUAL LENGTH BASED ON CONSTRUCTION LAYOUT AND NOTIFY THE PROJECT MANAGER IF ACTUAL LENGTHS EXCEED ESTIMATED LENGTHS.

63. CONTRACTOR SHALL VERIFY THE DOWN–TILT OF EACH ANTENNA WITH A DIGITAL LEVEL.

64. CONTRACTOR SHALL CONFIRM COAX COLOR CODING PRIOR TO CONSTRUCTION.

65. ALL JUMPERS TO THE ANTENNAS FROM THE MAIN TRANSMISSION LINE SHALL BE 1/2" DIA. LDF AND SHALL NOT EXCEED 6'–0".

66. ALL COAXIAL CABLE SHALL BE SECURED TO THE DESIGNED SUPPORT STRUCTURE, IN AN APPROVED MANNER, AT DISTANCES NOT TO EXCEED 4'–0" OC.

67. CONTRACTOR SHALL FOLLOW ALL MANUFACTURER'S RECOMMENDATIONS REGARDING BOTH THE INSTALLATION AND GROUNDING OF ALL COAXIAL CABLES, CONNECTORS, ANTENNAS, AND ALL OTHER EQUIPMENT.

68. CONTRACTOR SHALL GROUND ALL EQUIPMENT. INCLUDING ANTENNAS, RET MOTORS, TMA'S, COAX CABLES, AND RET CONTROL CABLES AS A COMPLETE SYSTEM. GROUNDING SHALL BE EXECUTED BY QUALIFIED WIREMEN IN COMPLIANCE WITH MANUFACTURER'S SPECIFICATION AND RECOMMENDATION.

69. CONTRACTOR SHALL PROVIDE STRAIN–RELIEF AND CABLE SUPPORTS FOR ALL CABLE ASSEMBLIES, COAX CABLES, AND RET CONTROL CABLES. CABLE STRAIN–RELIEFS AND CABLE SUPPORTS SHALL BE APPROVED FOR THE PURPOSE. INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS AND RECOMMENDATIONS.

70. CONTRACTOR TO VERIFY THAT EXISTING COAX HANGERS ARE STACKABLE SNAP IN HANGERS. IF EXISTING HANGERS ARE NOT STACKABLE SNAP IN HANGERS THE CONTRACTOR SHALL REPLACE EXISTING HANGERS WITH NEW SNAP IN HANGERS IF APPLICABLE.

GENERAL CABLE AND EQUIPMENT NOTES

71. CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY ANTENNA, TMAS, DIPLEXERS, AND COAX CONFIGURATION, MAKE AND MODELS PRIOR TO INSTALLATION.

72. ALL CONNECTIONS FOR HANGERS, SUPPORTS, BRACING, ETC. SHALL BE INSTALLED PER TOWER MANUFACTURER'S RECOMMENDATIONS.

73. CONTRACTOR SHALL REFERENCE THE TOWER STRUCTURAL ANALYSIS/DESIGN DRAWINGS FOR DIRECTIONS ON CABLE DISTRIBUTION/ROUTING.

74. ALL OUTDOOR RF CONNECTORS/CONNECTIONS SHALL BE WEATHERPROOFED, EXCEPT THE RET CONNECTORS, USING BUTYL TAPE AFTER INSTALLATION AND FINAL CONNECTIONS ARE MADE. BUTYL TAPE SHALL HAVE A MINIMUM OF ONE–HALF TAPE WIDTH OVERLAP ON EACH TURN AND EACH LAYER SHALL BE WRAPPED THREE TIMES. WEATHERPROOFING SHALL BE SMOOTH WITHOUT BUCKLING. BUTYL BLEEDING IS NOT ALLOWED.

75. IF REQUIRED TO PAINT ANTENNAS AND/OR COAX:
   A. TEMPERATURE SHALL BE ABOVE 50° F.
   B. PAINT COLOR MUST BE APPROVED BY BUILDING OWNER/LANDLORD.
   C. FOR REGULATED TOWERS, FAA/FCC APPROVED PAINT IS REQUIRED.
   D. DO NOT PAINT OVER COLOR CODING OR ON EQUIPMENT MODEL NUMBERS

76. ALL CABLES SHALL BE GROUNDED WITH COAXIAL CABLE GROUND KITS. FOLLOW THE MANUFACTURER'S RECOMMENDATIONS.
   A. GROUNDING AT THE ANTENNA LEVEL.
   B. GROUNDING AT MID LEVEL, TOWERS WHICH ARE OVER 200'–0", ADDITIONAL CABLE GROUNDING REQUIRED.
   C. GROUNDING AT BASE OF TOWER PRIOR TO TURNING HORIZONTAL.
   D. GROUNDING OUTSIDE THE EQUIPMENT SHELTER AT ENTRY PORT.
   E. GROUNDING INSIDE THE EQUIPMENT SHELTER AT THE ENTRY PORT.

77. ALL PROPOSED GROUND BAR DOWNLEADS ARE TO BE TERMINATED TO THE EXISTING ADJACENT GROUND BAR DOWNLEADS A MINIMUM DISTANCE OF 4'–0" BELOW GROUND BAR. TERMINATIONS MAY BE EXOTHERMIC OR COMPRESSION.

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0	09/25/17	90% REVIEW	NM
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I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NAME
HARWINTON

SITE NUMBER:
CTL01057

SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP1

NOTICE

Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC General Population Exposure Limits.

Follow all posted signs and site guidelines for working in a RF environment.

at&t

Ref: 47CFR 1.1307(b)

CAUTION

Beyond This Point you are entering a controlled area where RF emissions *may exceed* the FCC Occupational Exposure Limits.

Obey all posted signs and site guidelines for working in a RF environment.

at&t

Ref: 47CFR 1.1307(b)

ALERTING SIGNS

WARNING!

DANGER DO NOT TOUCH TOWER!

SERIOUS "RF" BURN HAZARD!

MAINTAIN AN ADEQUATE CLEARANCE BETWEEN TOWER SUPPORTS AND GUY WIRES

FAILURE TO OBEY ALL POSTED SIGNS AND SITE GUIDELINES FOR WORKING IN A RADIO FREQUENCY ENVIRONMENT COULD RESULT IN SERIOUS INJURY. CONTACT CURRENT MAY EXCEED LIMITS PRESCRIBED IN ANSI/EEE C95.1-1992 FOR CONTROLLED ENVIRONMENTS.

at&t

ALERTING SIGN

PROPERTY OF AT&T

at&t

AUTHORIZED PERSONNEL ONLY

IN CASE OF EMERGENCY, OR PRIOR TO PERFORMING MAINTENANCE ON THIS SITE, CALL 800-638-2822 AND REFERENCE CELL SITE NUMBER_____

INFO SIGN #4

INFORMATION

AT&T operates telecommunications antennas at this location. Remain at least 3 feet away from any antenna and obey all posted signs.

Contact the owner(s) of the antenna(s) before working closer than 3 feet from the antenna.

Contact AT&T at _____ prior to performing any maintenance or repairs near AT&T antennas. This is Site#_____

Contact the management office if this door/hatch/gate is found unlocked.

INFORMACION

En esta propiedad se ubican antenas de telecomunicationes operadas por AT&T. Favor mantener una distancia de no menos de 3 pies y obedecer todos los avisos.

Comuníquese con el propietario o los propicatarios de las antenas antes de trabajar o caminar a una distancia de menos de 3 pies de la antena.

Comuníquese con AT&T _____antes de realizar cualquier mantenimiento o reparaciones cerca de la antenas de AT&T.

Esta es la estacion base numero_____

Favor comunicarse con la oficina de la administracion del edificio si esta puerta o compuerta se encuentra sin candado.

at&t

INFO SIGN #1

INFORMATION

ACTIVE ANTENNAS ARE MOUNTED

- ☐ ON THE OUTSIDE OF THIS BUILDING
- ☐ BEHIND THIS PANEL
- ☐ ON THIS STRUCTURE

STAY BACK A MINIMUM OF 3 FEET FROM THESE ANTENNAS

Contact AT&T at _____ and follow their instructions prior to performing any maintenance or repairs closer than 3 feet from the antennas.

This is AT&T site# _____

at&t

INFO SIGN #2

STAY BACK 3 FEET FROM ANTENNA

at&t

INFO SIGN #3

ALERTING SIGN
(FOR CELL SITE BATTERIES)

ALERTING SIGN
(FOR DIESEL FUEL)

ALERTING SIGN
(FOR PROPANE)

GENERAL SIGNAGE GUIDELINES

STRUCTURE TYPE	INFO SIGN #1	INFO SIGN #2	INFO SIGN #3	INFO SIGN #4	STRIPING	NOTICE SIGN	CAUTION SIGN
TOWERS							
MONOPOLE/MONOPINE/MONOPALM	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	CLIMBING SIDE OF THE TOWER	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			AT THE HEIGHT OF THE FIRST CLIMBING STEP, MIN 9 FT ABOVE GROUND
SEC TOWERS/TOWERS WITH HIGH VOLTAGE	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	CLIMBING SIDE OF THE TOWER	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			
LIGHT POLES/FLAG POLES	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS			
UTILITY WOOD POLES (JPA)	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS		IF GP MAX VALUE OF MPE AT ANTENNA LEVEL IS: 0-99%, NOTICE SIGN; OVER 99%: CAUTION SIGN AT NO LESS THAN 3FT BELOW ANTENNA AND 9FT ABOVE GROUND	
MICROCELLS MOUNTED ON NON-JPA POLES	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS	ON THE POLE, NO LESS THAN 3FT BELOW THE ANTENNA AND LESS THAN 9FT ABOVE GROUND	ON BACKSIDE OF ANTENNAS	ENTRANCE GATES, SHELTER DOORS OR ON THE OUTDOOR CABINETS		NOTICE OR CAUTION SIGN AT NO LESS THAN 9FT ABOVE GROUND: ONLY IF THE EXPOSURE EXCEEDS 90% OF THE GENERAL PUBLIC EXPOSURE AT EXPOSURE AT 6FT ABOVE GROUND OR AT OUTSIDE OF SURFACE OF ADJACENT BUILDING	
TOWERS							
AT ALL ACCESS POINTS TO THE ROOF	X			X			
ON ANTENNAS	X		X	X			
CONCEALED ANTENNAS	X	X		X			
ANTENNAS MOUNTED FACING OUTSIDE THE BUILDING	X	X		X			
ANTENNAS ON SUPPORT STRUCTURE	X	X		X			
ROOFVIEW GRAPH							
RADIATION AREA IS WITHIN 3FT FROM ANTENNA	X	ADJACENT TO EACH ANTENNA		X		EITHER NOTICE OR CAUTION SIGN (BASED ON ROOFVIEW RESULTS) AT ANTENNA /BARRIER	
RADIATION AREA IS BEYOND 3FT FROM ANTENNA	X	ADJACENT TO EACH ANTENNA		X	DIAGONAL, YELLOW STRIPING AS TO ROOFVIEW GRAPH		
CHURCH STEEPLES	ACCESS TO STEEPLE	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO STEEPLE			CAUTION SIGN AT THE ANTENNAS
WATER STATIONS	ACCESS TO LADDER	ADJACENT TO ANTENNAS IF ANTENNAS ARE CONCEALED	ON BACKSIDE OF ANTENNAS	ACCESS TO LADDER			CAUTION SIGN BESIDE INFO SIGN #1, MIN. 9FT ABOVE GROUND

NOTES FOR ROOFTOP SITES:

1. EITHER NOTICE OR CAUTION SIGNS NEED TO BE POSTED AT EACH SECTOR AS CLOSE AS POSSIBLE TO: THE OUTER EDGE OF THE STRIPED OFF AREA OR THE OUTER ANTENNAS OF THE SECTOR
2. IF ROOFVIEWS SHOWS: ONLY BLUE = NOTICE SIGN, BLUE AND YELLOW = CAUTION SIGN, ONLY YELLOW = CAUTION SIGN TO BE INSTALLED
3. SHOULD THE REQUIRED STRIPING AREAS INTERFERE WITH ANY STRUCTURE OR EQUIPMENT (A/C, VENTS, ROOF HATCH, DOORS, OTHER ANTENNAS, DISHES, ETC.). PLEASE NOTIFY AT&T TO MODIFY THE STRIPING AREA, PRIOR TO STARTING THE WORK.

SIGNAGE GUIDELINES CHART

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TEL: 847-908-8400
COA# PEC.0001444
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1	11/30/17	FOR PERMIT	EB

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STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

SITE NAME
HARWINTON

SITE NUMBER:
CTL01057

SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME
NOTES AND SPECIFICATIONS

SHEET NUMBER
SP2

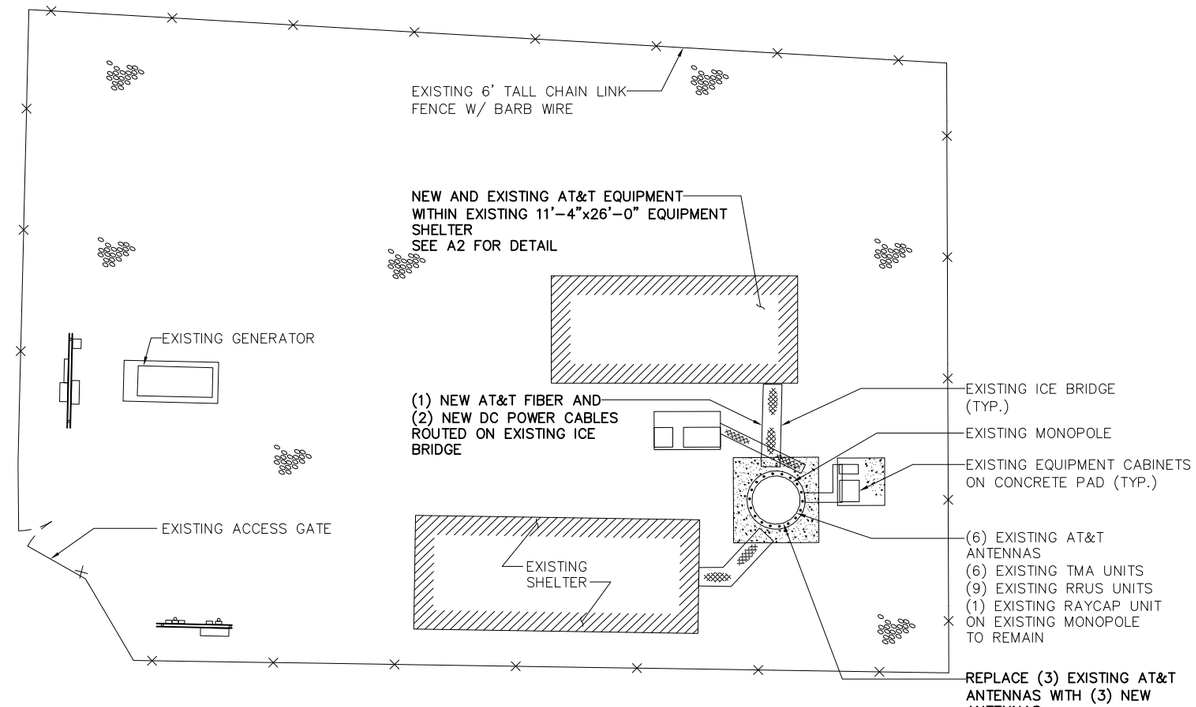
FEC# 2017.0278. 0003

ABBREVIATIONS

AFF	ABOVE FINISHED FLOOR
AGL	ABOVE GRADE LEVEL
AMSL	ABOVE MEAN SEA LEVEL
APPROX	APPROXIMATE
ATS	AUTOMATIC TRANSFER SWITCH
AWG	AMERICAN WIRE GAUGE
BLDG	BUILDING
BTS	BASE TRANSMISSION STATION
℄	CENTERLINE
CLR	CLEAR
COL	COLUMN
CONC	CONCRETE
CND	CONDUIT
DWG	DRAWING
FT	FOOT(FEET)
EGB	EQUIPMENT GROUND BAR
ELEC	ELECTRICAL
EMT	ELECTRICAL METALLIC TUBING
ELEV	ELEVATION
EQUIP	EQUIPMENT
(E)	EXISTING
EXT	EXTERIOR
FND	FOUNDATION
F	FIBER
FIF	FACILITY INTERFACE FRAME
GA	GAUGE
GALV	GALVANIZED
GPS	GLOBAL POSITIONING SYSTEM
GND	GROUND
GSM	GLOBAL SYSTEM FOR MOBILE COMMUNICATION
LTE	LONG TERM EVOLUTION
MAX	MAXIMUM
MCPA	MULTI-CARRIER POWER AMPLIFIER
MFR	MANUFACTURER
MGB	MASTER GROUND BAR
MIN	MINIMUM
MTS	MANUAL TRANSFER SWITCH
N.T.S.	NOT TO SCALE
O.C.	ON CENTER
OE/OT	OVERHEAD ELECTRIC/TELCO
PPC	POWER PROTECTION CABINET
PL	PROPERY LINE
RBS	RADIO BASED STATION
RET	REMOTE ELECTRIC TILT
RRU	REMOTE RADIO UNIT
RGS	RIGID GALVANIZED STEEL
IN	INCH(ES)
INT	INTERIOR
LB(S), #	POUND(S)
SF	SQUARE FOOT
STL	STEEL
TMA	TOWER MOUNTED AMPLIFIER
TYP	TYPICAL
UE/UT	UNDERGROUND ELECTRIC/TELCO
UNO	UNLESS NOTED OTHERWISE
UMTS	UNIVERSAL MOBILE TELE-COMMUNICATION SYSTEM
VIF	VERIFY IN FIELD
W/	WITH
XFMR	TRANSFORMER

SYMBOLS

- REVISION
- WORK POINT
- UTILITY POLE
- COMPRESSED STONE
- BRICK
- CONCRETE
- EARTH
- GRAVEL
- MASONRY
- STEEL
- CENTERLINE
- PROPERTY LINE
- LEASE LINE
- EASEMENT LINE
- CHAIN LINK FENCE
- WOOD FENCE
- UE — BELOW GRADE ELECTRIC
- UT — BELOW GRADE TELEPHONE
- OE/OT — OVERHEAD ELECTRIC/TELEPHONE
- SECTION REFERENCE (A / S-1)



COMPOUND PLAN — SCALE: 1/16" = 1'-0" — 1

SITE PHOTO 1 — SCALE: N.T.S. — 2

SITE PHOTO 2 — SCALE: N.T.S. — 3

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SITE NAME
HARWINTON

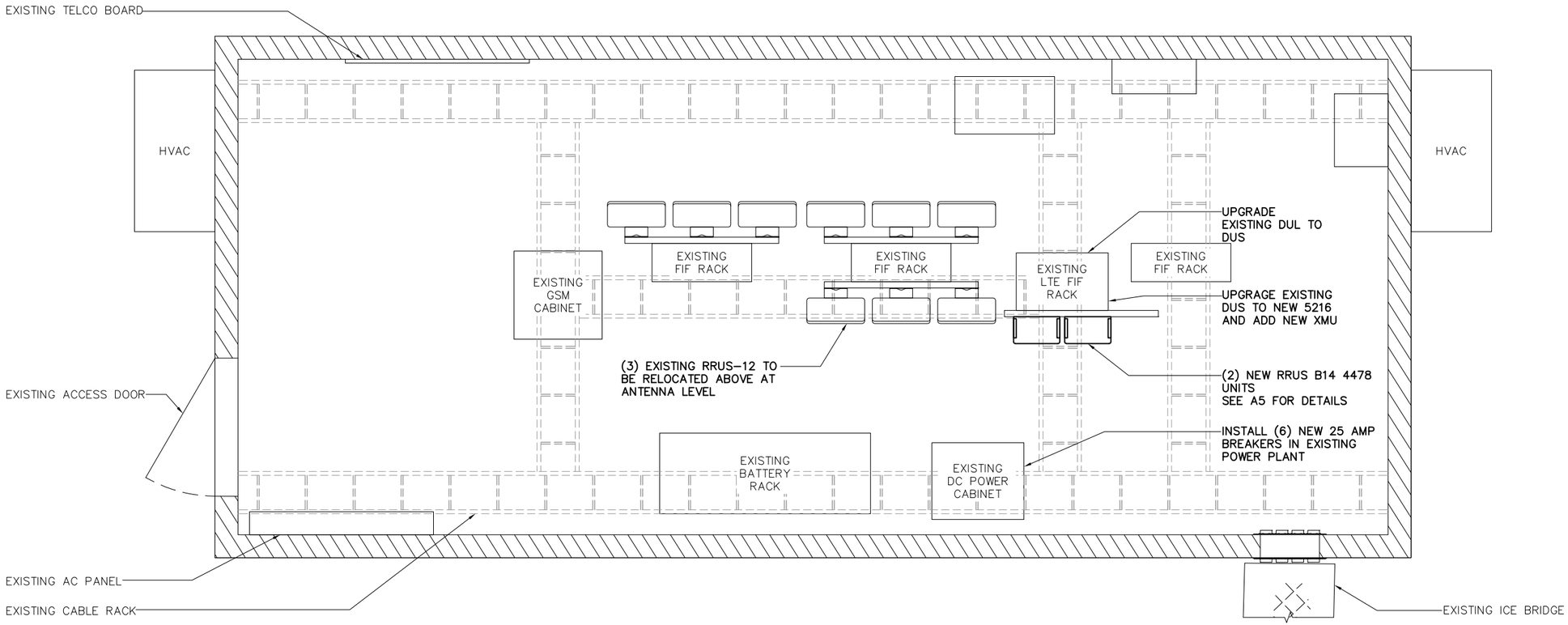
SITE NUMBER:
CTL01057

SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME
COMPOUND PLAN

SHEET NUMBER
A1

FEC# 2017.0278. 0003



EQUIPMENT PLAN

SCALE: 3/8" = 1'-0" | 1

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SITE NAME

HARWINTON

SITE NUMBER:

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SITE ADDRESS

159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME

EQUIPMENT PLAN

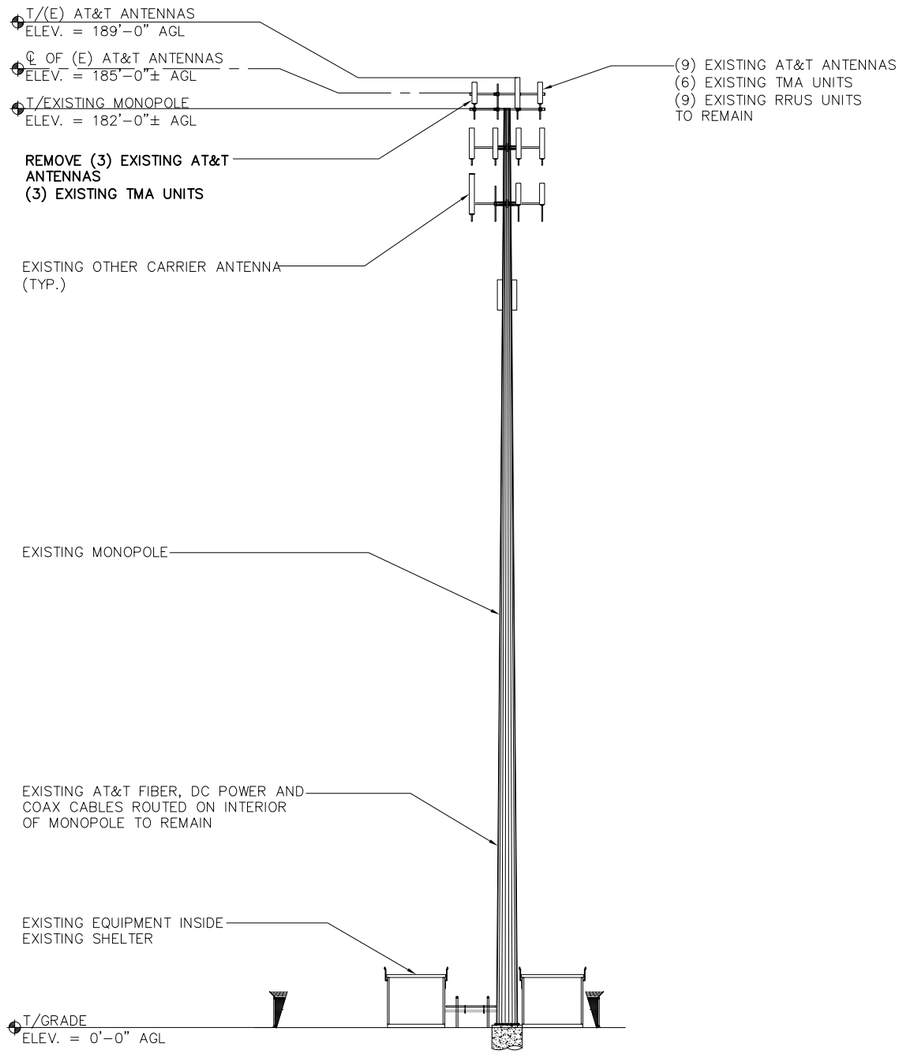
SHEET NUMBER

A2

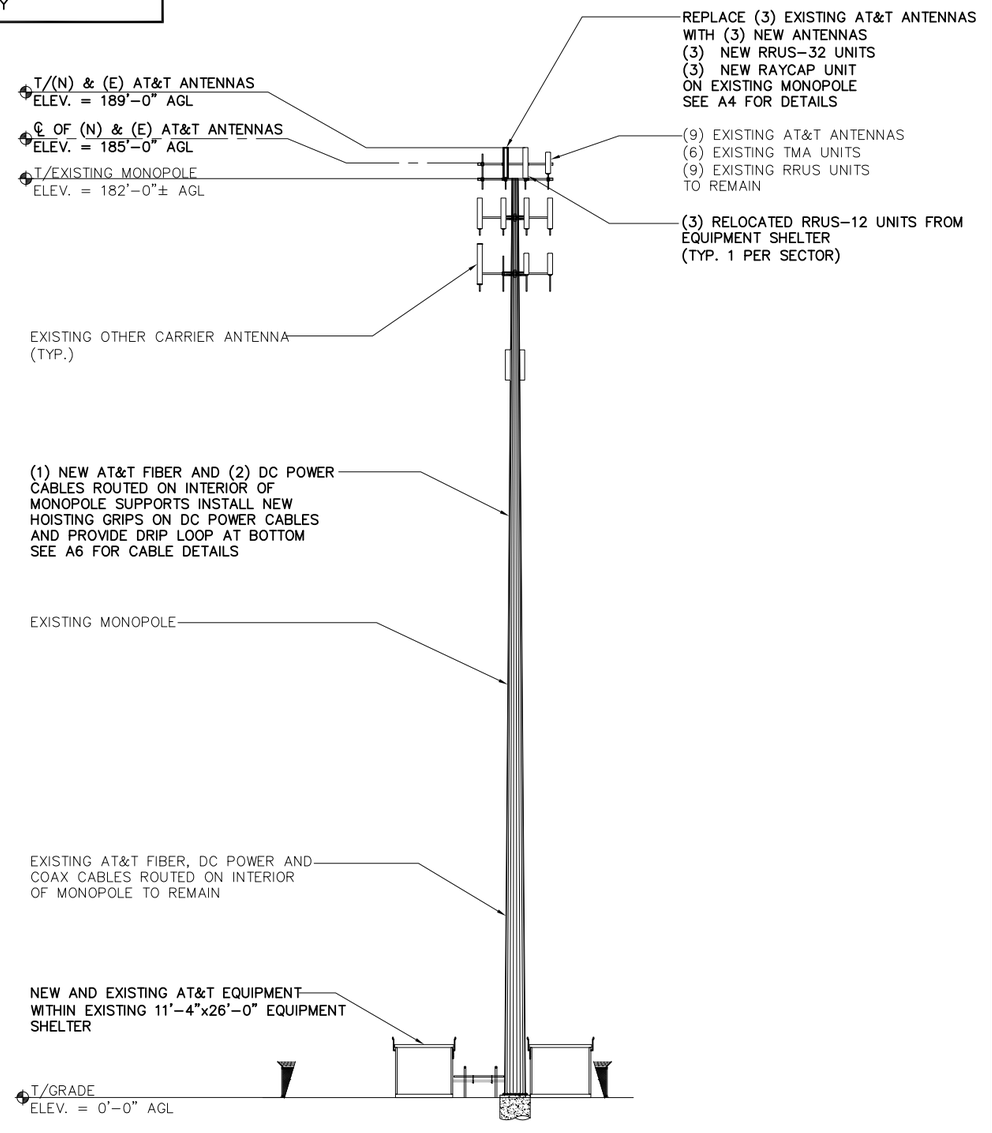
FEC# 2017.0278. 0003

NOTES:

1. CALCULATIONS FOR THE STRUCTURE WERE PREPARED BY OTHERS AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
2. CALCULATIONS FOR THE ANTENNA MOUNTS WERE PREPARED BY FULLERTON AND THOSE CALCULATIONS CERTIFY THE CAPACITY OF THE STRUCTURE TO SUPPORT THE NEW EQUIPMENT
3. CABLES NOT SHOWN FOR CLARITY



EXISTING ELEVATION SCALE: N.T.S. 1



NEW ELEVATION SCALE: N.T.S. 2

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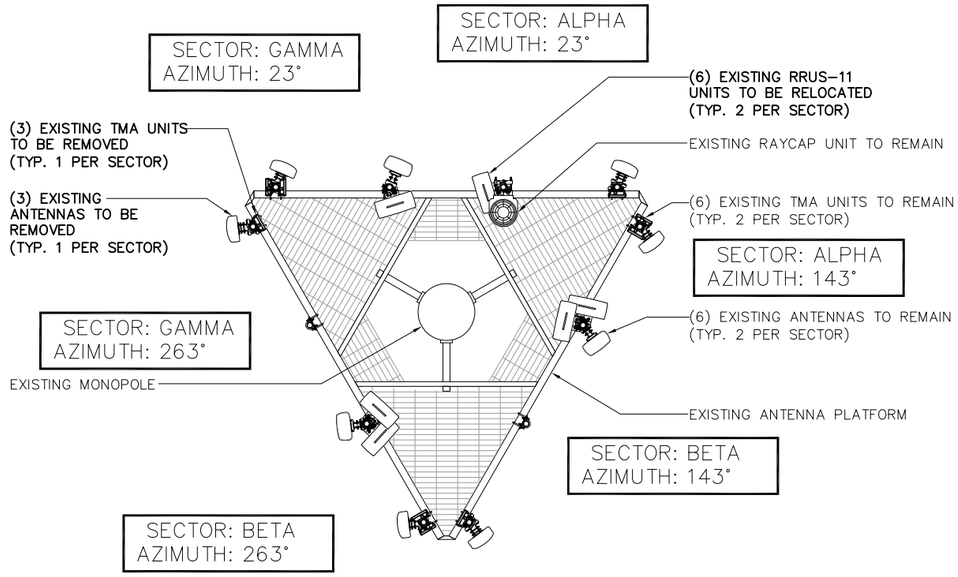
159 WEINGART ROAD
HARWINTON, CT 06791

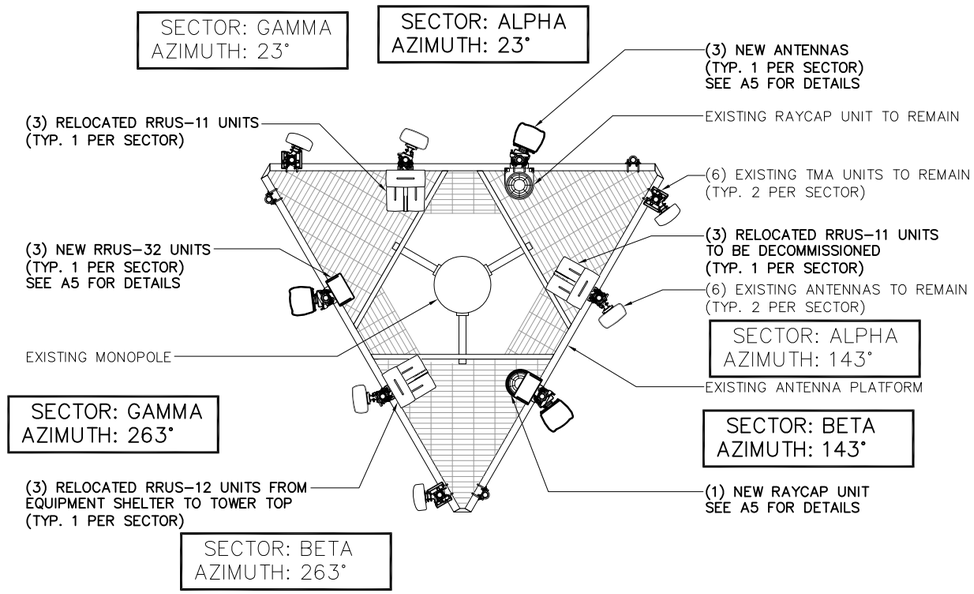
SHEET NAME
ELEVATIONS

SHEET NUMBER
A3



EXISTING ANTENNA PLAN

SCALE: 3/16" = 1'-0" | 1



FINAL ANTENNA PLAN

SCALE: 3/16" = 1'-0" | 2

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25358
LICENSED PROFESSIONAL ENGINEER

SITE NAME
HARWINTON

SITE NUMBER:
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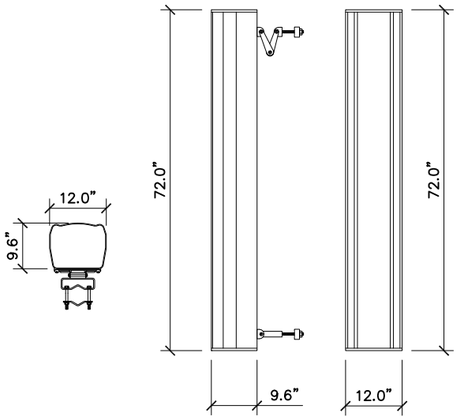
SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME
ANTENNA PLANS

SHEET NUMBER
A4

FEC# 2017.0278. 0003



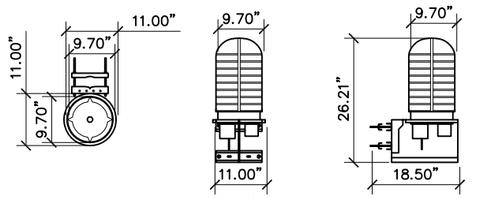
PLAN VIEW SIDE VIEW FRONT VIEW

QUINTEL – QS66512-2

MULTISERVE MULITBAND 12 PORT ANTENNA
WITH QTILT AND INTERNAL RET

FREQUENCY RANGE	2x698–806 MHz 2x824–894 MHz 4x1850–1990 MHz 4x1695–1780 +2110–2400 MHz
ANTENNA	111 Lbs
BRACKET	15 Lbs
TOTAL WEIGHT	126 Lbs

ANTENNA SPEC SCALE: N.T.S. 1



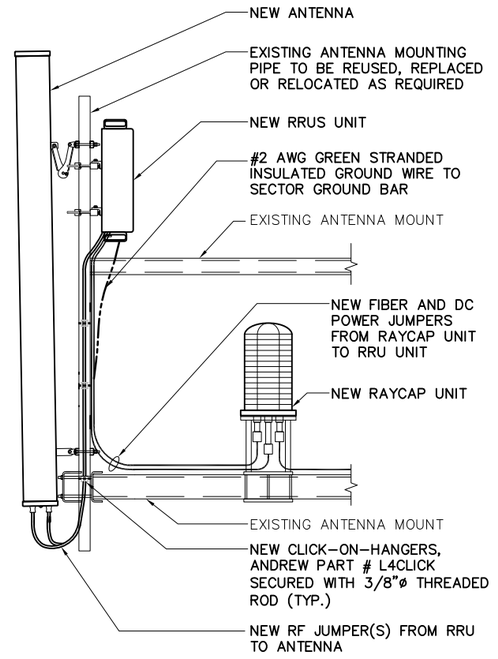
PLAN VIEW FRONT VIEW SIDE VIEW

RAYCAP – DC6-48-60-18-8F

TOWER DC OVER VOLTAGE PROTECTION POWER CONNECTION SOLUTION

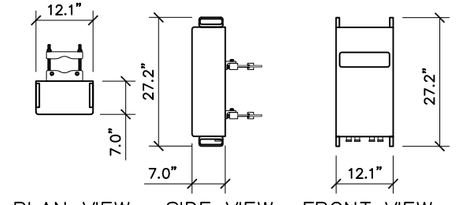
UNIT WEIGHT 32.8 Lbs

RAYCAP SPEC SCALE: N.T.S. 2



ANTENNA SCHEMATIC SCALE: N.T.S. 3

NOT USED SCALE: N.T.S. 4

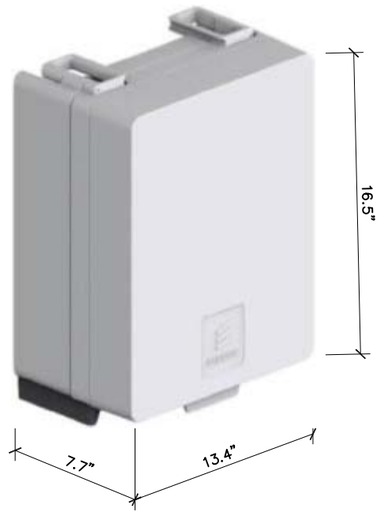


PLAN VIEW SIDE VIEW FRONT VIEW

ERICSSON – RRUS 32

UNIT WEIGHT 60 Lbs

RRU SPEC SCALE: N.T.S. 5



ERICSSON – RRUS 4478 B14

FREQUENCY RANGE	TX RX	758–768 MHz 788–798 MHz
TOTAL WEIGHT		59.9 Lbs

RRU SPEC SCALE: N.T.S. 6

NOT USED SCALE: N.T.S. 7

NOT USED SCALE: N.T.S. 8

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SITE NAME
HARWINTON

SITE NUMBER:
CTL01057

SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME
EQUIPMENT DETAILS

SHEET NUMBER
A5

FEC# 2017.0278. 0003

FINAL ANTENNA CONFIGURATION AND CABLE SCHEDULE
SUPPLIED BY AT&T WIRELESS, FROM RF CONFIG. DATED (09/13/17)

SECTOR	ANTENNA NUMBER	ANTENNA STATUS & TYPE	ANTENNA MODEL NUMBER	ANTENNA VENDOR	TMA/RRU UNIT (BY ANTENNAS)	TMA/RRU UNIT (BY EQUIPMENT)	AZIMUTH	ANTENNA CL FROM GROUND	CABLE FEEDER TYPE	CABLE FEEDER LENGTH	RAYCAP UNIT
ALPHA	A-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	–	143°	185'-0"	1-5/8"ø LDF7-50A	210'-0"	(1) (E) DC6-48-60-18-8F UNIT **(1) (N) DC6-48-60-18-8F UNIT**
									1-5/8"ø LDF7-50A	210'-0"	
	A-2	(E) LTE1C/2C ANTENNA	AM-X-CD-16-65-00T-RET	KMW	(1) EXISTING RRUS-11 UNIT **(1) EXISTING RRUS-11 UNIT TO BE DECOMMISSIONED AND (1) RELOCATED RRUS-12 UNIT**	–	23°	185'-0"	(1) EXISTING FIBER CABLE	210'-0"	
									(2) EXISTING DC POWER CABLES	210'-0"	
	A-3	**(N) LTE3C/4C ANTENNA**	**QS66512-2**	**QUNITEL**	**(1) NEW RRUS-32 UNIT (2) NEW DBC0061F1V51-2 LOW BAND COMBINERS**	**(1) NEW RRUS-B14 4478 UNIT**	**23°**	**185'-0"**	(2) 1-5/8"ø LDF7-50A	210'-0"	
									(1) NEW FIBER & (2) DC POWER CABLES	**210'-0"**	
	A-4	–	–	–	–	–	–	–	–	–	
BETA	B-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	–	263°	185'-0"	1-5/8"ø LDF7-50A	210'-0"	
									1-5/8"ø LDF7-50A	210'-0"	
	B-2	(E) LTE1C/2C ANTENNA	80010764	KATHREIN	(1) EXISTING RRUS-11 UNIT **(1) EXISTING RRUS-11 UNIT TO BE DECOMMISSIONED AND (1) RELOCATED RRUS-12 UNIT**	–	143°	185'-0"	SEE ANTENNA A-2 FOR CABLE TYPE AND LENGTH		
	B-3	**(N) LTE3C/4C ANTENNA**	**QS66512-2**	**QUNITEL**	**(1) NEW RRUS-32 UNIT (2) NEW DBC0061F1V51-2 LOW BAND COMBINERS**	**(1) NEW RRUS-B14 4478 UNIT**	**143°**	**185'-0"**	(2) 1-5/8"ø LDF7-50A	210'-0"	
									SEE ANTENNA A-3 FOR CABLE TYPE AND LENGTH		
	B-4	–	–	–	–	–	–	–	–	–	
GAMMA	C-1	(E) UMTS ANTENNA	7770	POWERWAVE	(2) EXISTING TMA UNITS	–	23°	185'-0"	1-5/8"ø LDF7-50A	210'-0"	
									1-5/8"ø LDF7-50A	210'-0"	
	C-2	(E) LTE1C/2C ANTENNA	AM-X-CD-16-65-00T-RET	KMW	(1) EXISTING RRUS-11 UNIT **(1) EXISTING RRUS-11 UNIT TO BE DECOMMISSIONED AND (1) RELOCATED RRUS-12 UNIT**	–	263°	185'-0"	SEE ANTENNA A-2 FOR CABLE TYPE AND LENGTH		
	C-3	**(N) LTE3C/4C ANTENNA**	**QS66512-2**	**QUNITEL**	**(1) NEW RRUS-32 UNIT (2) NEW DBC0061F1V51-2 LOW BAND COMBINERS**	SHARED W/ B-3	**263°**	**185'-0"**	(2) 1-5/8"ø LDF7-50A	210'-0"	
									SEE ANTENNA A-3 FOR CABLE TYPE AND LENGTH		
	C-4	–	–	–	–	–	–	–	–	–	

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HARWINTON, CT 06791

SHEET NAME
ANTENNA & CABLE CONFIGURATION

SHEET NUMBER
A6

1. CONTRACTOR IS TO REFER TO AT&T'S MOST CURRENT RADIO FREQUENCY DATA SHEET (RFDS) PRIOR TO CONSTRUCTION.
2. THE SIZE, HEIGHT, AND DIRECTION OF THE ANTENNAS SHALL BE ADJUSTED TO ACHIEVE THE AZIMUTHS SPECIFIED AND LIMIT SHADOWING AND TO MEET THE SYSTEM REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY THE HEIGHT OF THE ANTENNA WITH THE AT&T WIRELESS PROJECT MANAGER.
4. VERIFY TYPE AND SIZE OF TOWER LEG PRIOR TO ORDERING ANY ANTENNA MOUNT.
5. UNLESS NOTED OTHERWISE THE CONTRACTOR MUST PROVIDE ALL MATERIAL NECESSARY.
6. ANTENNA AZIMUTHS ARE DEGREES OFF OF TRUE NORTH, BEARING CLOCKWISE, IN WHICH ANTENNA FACE IS DIRECTED. ALL ANTENNAS (AND SUPPORTING STRUCTURES AS PRACTICAL) SHALL BE ACCURATELY ORIENTED IN THE SPECIFIED DIRECTION.
7. CONTRACTOR SHALL VERIFY ALL RF INFORMATION PRIOR TO CONSTRUCTION.
8. SWEEP TEST SHALL BE PERFORMED BY GENERAL CONTRACTOR AND SUBMITTED TO AT&T WIRELESS CONSTRUCTION SPECIALIST. TEST SHALL BE PERFORMED PER AT&T WIRELESS STANDARDS.
9. CABLE LENGTHS WERE DETERMINED BASED ON THE DESIGN DRAWING. CONTRACTOR TO VERIFY ACTUAL LENGTH DURING PRE-CONSTRUCTION WALK.
10. CONTRACTOR TO USE ROSENBERGER FIBER LINE HANGER COMPONENTS (OR ENGINEER APPROVED EQUAL).

ANTENNA AND CABLING NOTES

SCALE: N.T.S. | 1

RF, DC, & COAX CABLE MARKING LOCATIONS TABLE	
NO	LOCATIONS
1	EACH TOP-JUMPER SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS.
2	EACH MAIN COAX SHALL BE COLOR CODED WITH (1) SET OF 3" WIDE BANDS NEAR THE TOP-JUMPER CONNECTION AND WITH (1) SET OF 3/4" WIDE COLOR BANDS JUST PRIOR TO ENTERING THE BTS OR TRANSMITTER BUILDING.
3	CABLE ENTRY PORT ON THE INTERIOR OF THE SHELTER.
4	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER.
5	ALL BOTTOM JUMPERS SHALL BE COLOR CODED WITH (1) SET OF 3/4" WIDE BANDS ON EACH END OF THE BOTTOM JUMPER.

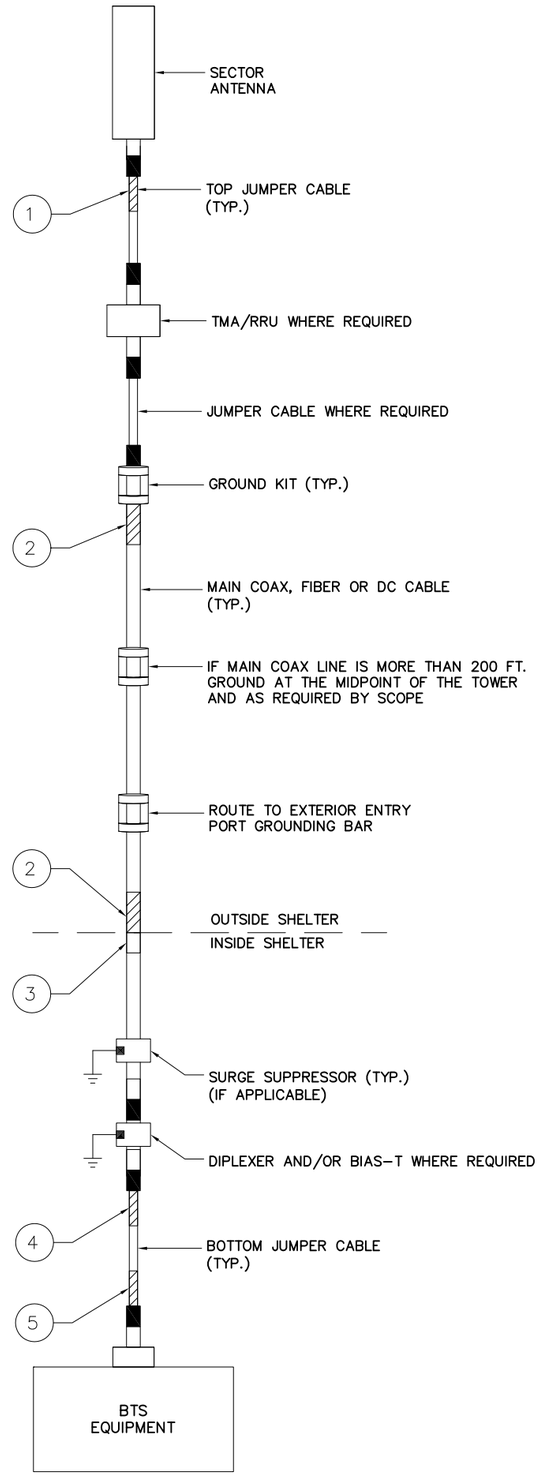
CABLE MARKING DIAGRAM

SCALE: N.T.S. | 2

1. THE ANTENNA SYSTEM COAX SHALL BE LABELED WITH VINYL TAPE.
2. THE STANDARD IS BASED ON EIGHT COLORED TAPES-RED, BLUE, GREEN, YELLOW, ORANGE, BROWN, WHITE, AND VIOLET. THESE TAPES MUST BE 3/4" WIDE & UV RESISTANT SUCH AS SCOTCH 35 VINYL ELECTRICAL COLOR CODING TAPE AND SHOULD BE READILY AVAILABLE TO THE ELECTRICIAN OR CONTRACTOR ON SITE.
3. USING COLOR BANDS ON THE CABLES, MARK ALL RF CABLE BY SECTOR AND CABLE NUMBER AS SHOWN ON "CABLE COLOR CHART".
4. WHEN AN EXISTING COAXIAL LINE THAT IS INTENDED TO BE A SHARED LINE BETWEEN TECHNOLOGIES IS ENCOUNTERED, THE CONTRACTOR SHALL REMOVE THE EXISTING COLOR CODING SCHEME AND REPLACE IT WITH THE COLOR CODING STANDARD. IN THE ABSENCE OF AN EXISTING COLOR CODING AND TAGGING SCHEME, OR WHEN INSTALLING PROPOSED COAXIAL CABLES, THIS GUIDELINE SHALL BE IMPLEMENTED AT THAT SITE REGARDLESS OF TECHNOLOGY.
5. ALL COLOR CODE TAPE SHALL BE 3M-35 AND SHALL BE INSTALLED USING A MINIMUM OF (3) THREE WRAPS OF TAPE AND SHALL BE NEATLY TRIMMED AND SMOOTHED OUT SO AS TO AVOID UNRAVELING.
6. ALL COLOR BANDS INSTALLED AT THE TOP OF THE TOWER SHALL BE A MINIMUM OF 3" WIDE, AND SHALL HAVE A MINIMUM OF 3/4" OF SPACE BETWEEN EACH COLOR.
7. ALL COLOR CODES SHALL BE INSTALLED SO AS TO ALIGN NEATLY WITH ONE ANOTHER FROM SIDE-TO-SIDE.
8. IF EXISTING CABLES AT THE SITE ALREADY HAVE A COLOR CODING SCHEME AND THEY ARE NOT INTENDED TO BE REUSED OR SHARED WITH THE NEW TECHNOLOGY, THE EXISTING COLOR CODING SCHEME SHALL REMAIN UNTOUCHED.

CABLE MARKING NOTES

SCALE: N.T.S. | 3



CABLE COLOR CODING DIAGRAM

SCALE: N.T.S. | 4

at&t
550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701

smartlink
1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076

FULLERTON ENGINEERING · DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
COA# PEC.0001444
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
0	09/25/17	90% REVIEW	NM
1	11/30/17	FOR PERMIT	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

STATE OF CONNECTICUT · HENRY M. BELLAGAMBA · 25358 · LICENSED PROFESSIONAL ENGINEER

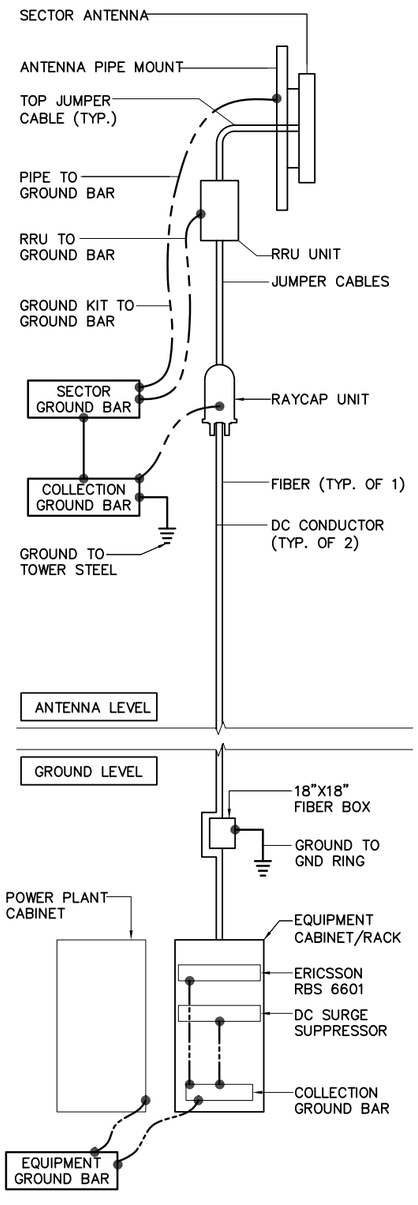
SITE NAME
HARWINTON

SITE NUMBER:
CTL01057

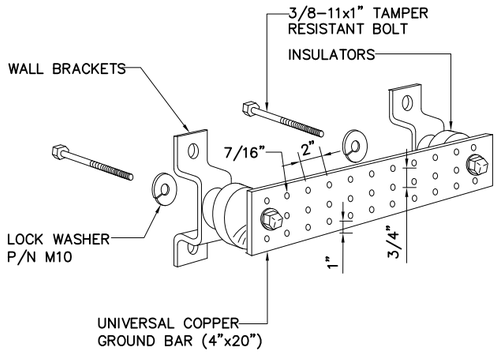
SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

SHEET NAME
CABLE NOTES AND COLOR CODING

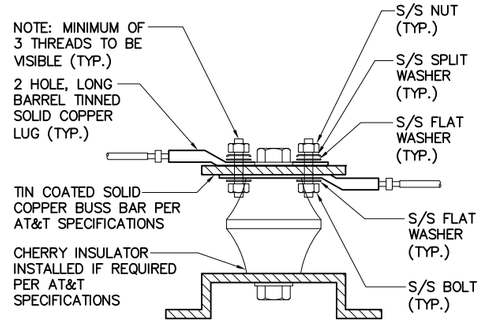
SHEET NUMBER
A7



GROUNDING SCHEMATIC SCALE: N.T.S. 1



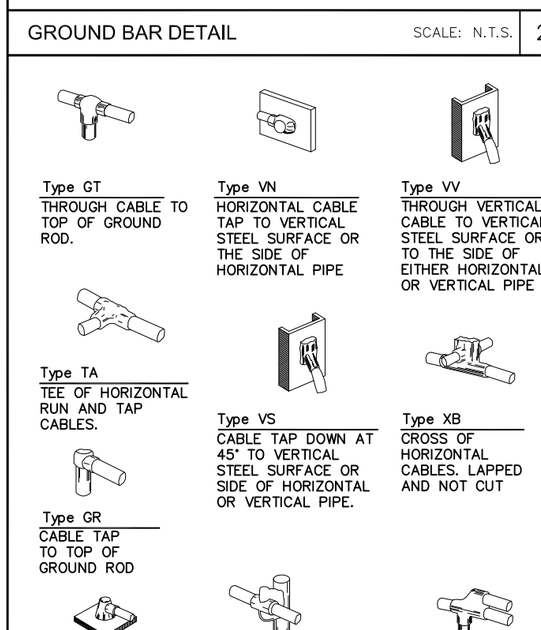
GROUND BAR DETAIL SCALE: N.T.S. 2



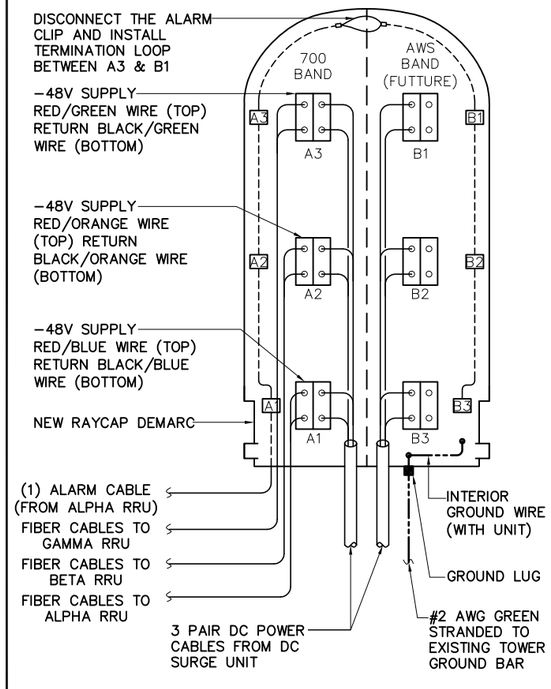
NOTES:

1. ALL HARDWARE 18-8 STAINLESS STEEL INCLUDING SPLIT WASHERS.
2. COAT WIRE END WITH ANTI-OXIDATION COMPOUND PRIOR TO INSERTION INTO LUG BARREL AND CRIMPING.
3. APPLY ANTI-OXIDATION COMPOUND BETWEEN ALL LUGS AND BUSS BARS PRIOR TO MATING AND BOLTING.

LUG DETAIL SCALE: N.T.S. 3



EXOTHERMIC WELD DETAILS SCALE: N.T.S. 4



RAYCAP DC POWER AND ALARM DET. SCALE: N.T.S. 5

NOT USED SCALE: N.T.S. 6

at&t
550 COCHITUATE ROAD
SUITE 550 13 AND 14
FRAMINGHAM, MA 01701

smartlink
1362 MELLON ROAD
SUITE 140
HANOVER, MD 21076

FULLERTON ENGINEERING · DESIGN
1100 E. WOODFIELD ROAD, SUITE 500
SCHAUMBURG, ILLINOIS 60173
TEL: 847-908-8400
COA# PEC.0001444
www.FullertonEngineering.com

REV	DATE	DESCRIPTION	BY
0	09/25/17	90% REVIEW	NM
1	11/30/17	FOR PERMIT	EB

I HEREBY CERTIFY THAT THESE DRAWINGS WERE PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND CONTROL, AND TO THE BEST OF MY KNOWLEDGE AND BELIEF COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE CODES.

SITE NAME
HARWINTON

SITE NUMBER:
CTL01057

SITE ADDRESS
159 WEINGART ROAD
HARWINTON, CT 06791

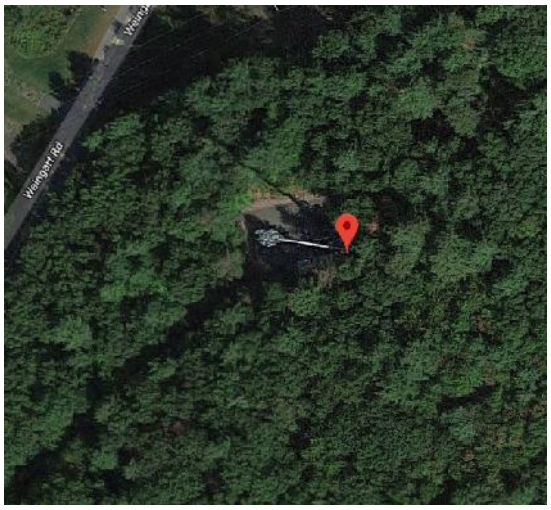
SHEET NAME
GROUNDING DETAILS

SHEET NUMBER
A8

FEC# 2017.0278. 0003

SITESAFE
RF COMPLIANCE EXPERTS

200 North Glebe Road, Suite 1000, Arlington, VA 22203-3728
703.276.1100 ● 703.276.1169 fax
info@sitesafe.com ● www.sitesafe.com



SmartLink, LLC on behalf of AT&T Mobility, LLC
Site FA – 10035016
Site ID – CT1057 (MRCTB025179)
USID – 71290
Site Name – Harwinton
Site Compliance Report

159 Weingart Road
Harwinton, CT 06791

Latitude: N41-47-15.87
Longitude: W73-5-33.10
Structure Type: Monopole

Report generated date: December 11, 2017
Report by: Leo Romero
Customer Contact: Ryan Lynch

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

Table of Contents

1 General Site Summary

1.1 Report Summary

AT&T Mobility, LLC	Summary
Access to Antennas Locked?	Yes
RF Sign(s) @ access point(s)	No
RF Sign(s) @ antennas	No
Barrier(s) @ sectors	No
Max cumulative simulated RFE level on the Ground Level	<1% General Public Limit at AT&T Mobility, LLC Alpha, Beta and Gamma Sectors
FCC & AT&T Compliant?	Will Be Compliant

The following documents were provided by the client and were utilized to create this report:

RFDS: NEW-ENGLAND_CONNECTICUT_CT1057_2018-LTE-Next-Carrier_LTE_rx855w_2051A0CZT7_10035016_71290_06-13-2017_Final-Approved_v1.00

CD's: 10035016_AE201_171130_CTL01057_REV1

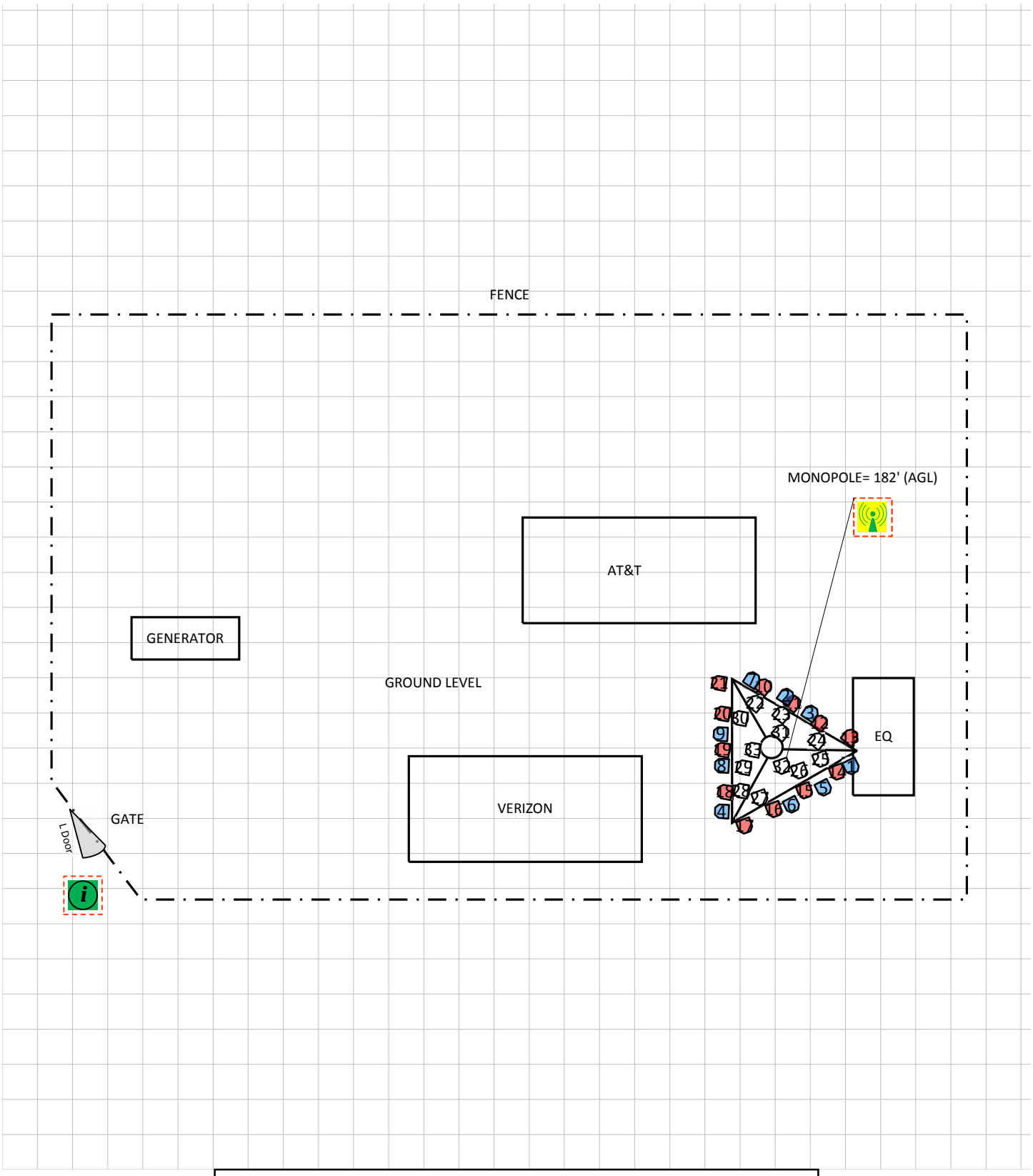
RF Powers Used: RFDS ERP Values

2 Scale Maps of Site

The following diagrams are included:

- Site Scale Map
- RF Exposure Diagram
- AT&T Mobility, LLC Contribution
- Elevation View

Site Scale Map For: Harwinton



Carrier Identification

AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

Sign Legend

Caution 1 | Caution 2 | Notice 2 | Notice 1 | Warning | Info 1 | Info 2

Barrier

Proposed Barriers/ Signs

(Feet)

0 7.3 14.6

www.sitesafe.com
Site Name:Harwinton
12/11/2017 5:10:28 PM

3 Antenna Inventory

The following antenna inventory on this and the following page, were obtained by the customer and were utilized to create the site model diagrams:

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	2G GSM Radio(s)	3G UMTS Radio(s)	4G Radio(s)	Total ERP (Watts)	X	Y	Z (AGL)
1	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	143	82	4.6	11.51	0	1	0	281.8	99.8'	83.6'	182.7'
2	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	23	65	6	13.36	0	0	1	1475.7	92.9'	91.1'	182'
2	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	1900	23	67	6	15.26	0	0	1	1475.7	92.9'	91.1'	182'
3	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	23	69	6	11.46	0	0	1	2951.4	95.5'	89.3'	182'
3	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	23	64	6	14.56	0	0	1	1285.3	95.5'	89.3'	182'
4	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	263	82	4.6	11.51	0	1	0	281.8	86'	78.8'	182.7'
5	AT&T MOBILITY LLC	Kathrein-Scala 800-10764	Panel	737	143	68	4.6	12.14	0	0	1	1475.7	96.9'	81.3'	182.7'
5	AT&T MOBILITY LLC	Kathrein-Scala 800-10764	Panel	1900	143	60	4.6	15.43	0	0	1	1475.7	96.9'	81.3'	182.7'
6	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	143	69	6	11.46	0	0	1	2951.4	93.5'	79.5'	182'
6	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	143	64	6	14.56	0	0	1	1285.3	93.5'	79.5'	182'
7	AT&T MOBILITY LLC	Powerwave 7770	Panel	850	23	82	4.6	11.51	0	1	0	281.8	89.3'	92.8'	182.7'
8	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	737	263	65	6	13.36	0	0	1	1475.7	86'	83.7'	182'
8	AT&T MOBILITY LLC	KMW AM-X-CD-16-65-00T	Panel	1900	263	67	6	15.26	0	0	1	1475.7	86'	83.7'	182'
9	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	737	263	69	6	11.46	0	0	1	2951.4	85.9'	87'	182'
9	AT&T MOBILITY LLC (Proposed)	Quintel QS66512-2	Panel	2300	263	64	6	14.56	0	0	1	1285.3	85.9'	87'	182'
10	VERIZON WIRELESS	Generic Panel	Panel	850	30	65	6.3	13.43	-	-	-	1762.3	90.5'	92.1'	171.9'
11	VERIZON WIRELESS	Generic Panel	Panel	1900	30	65	6.3	16.26	-	-	-	2536	93.6'	90.3'	171.9'
12	VERIZON WIRELESS	Generic Panel	Panel	751	30	65	6.3	12.56	-	-	-	1081.8	96.5'	88.2'	171.9'
13	VERIZON WIRELESS	Generic Panel	Panel	2100	30	65	6.3	15.53	-	-	-	2143.6	99.7'	86.7'	171.9'
14	VERIZON WIRELESS	Generic Panel	Panel	850	150	65	6.3	13.43	-	-	-	1762.3	98.3'	83'	171.9'
15	VERIZON WIRELESS	Generic Panel	Panel	1900	150	65	6.3	16.26	-	-	-	2536	94.8'	81'	171.9'
16	VERIZON WIRELESS	Generic Panel	Panel	751	150	65	6.3	12.56	-	-	-	1081.8	91.6'	79'	171.9'
17	VERIZON WIRELESS	Generic Panel	Panel	2100	150	65	6.3	15.53	-	-	-	2143.6	88.5'	77.2'	171.9'
18	VERIZON WIRELESS	Generic Panel	Panel	850	270	65	6.3	13.43	-	-	-	1762.3	86.3'	80.8'	171.9'
19	VERIZON WIRELESS	Generic Panel	Panel	1900	270	65	6.3	16.26	-	-	-	2536	86.1'	85.3'	171.9'
20	VERIZON WIRELESS	Generic Panel	Panel	751	270	65	6.3	12.56	-	-	-	1081.8	86.1'	89.2'	171.9'
21	VERIZON WIRELESS	Generic Panel	Panel	2100	270	65	6.3	15.53	-	-	-	2143.6	85.7'	92.5'	171.9'

Ant ID	Operator	Antenna Make & Model	Type	TX Freq (MHz)	Az (Deg)	Hor BW (Deg)	Ant Len (ft)	Ant Gain (dBd)	2G GSM Radio(s)	3G UMTS Radio(s)	4G Radio(s)	Total ERP (Watts)	X	Y	Z (AGL)
22	UNKNOWN CARRIER	Generic Panel	Panel	1900	30	65	4.6	15.43	-	-	-	2094.8	89.6'	90.3'	162.7'
23	UNKNOWN CARRIER	Generic Panel	Panel	1900	30	65	4.6	15.43	-	-	-	2094.8	92.4'	89.1'	162.7'
24	UNKNOWN CARRIER	Generic Panel	Panel	700	30	65	6.3	12.56	-	-	-	1081.8	96.2'	86.3'	161.9'
25	UNKNOWN CARRIER	Generic Panel	Panel	1900	150	65	4.6	15.43	-	-	-	2094.8	96.6'	84.3'	162.7'
26	UNKNOWN CARRIER	Generic Panel	Panel	1900	150	65	4.6	15.43	-	-	-	2094.8	94.3'	83.1'	162.7'
27	UNKNOWN CARRIER	Generic Panel	Panel	700	150	65	6.3	12.56	-	-	-	1081.8	90.1'	80.2'	161.9'
28	UNKNOWN CARRIER	Generic Panel	Panel	1900	270	65	4.6	15.43	-	-	-	2094.8	88.1'	81'	162.7'
29	UNKNOWN CARRIER	Generic Panel	Panel	1900	270	65	4.6	15.43	-	-	-	2094.8	88.3'	83.5'	162.7'
30	UNKNOWN CARRIER	Generic Panel	Panel	700	270	65	6.3	12.56	-	-	-	1081.8	88'	88.7'	161.9'
31	UNKNOWN CARRIER	Generic Panel	Panel	1900	30	65	4.6	15.43	-	-	-	2094.8	92.3'	87.2'	152.7'
32	UNKNOWN CARRIER	Generic Panel	Panel	1900	150	65	4.6	15.43	-	-	-	2094.8	92.5'	83.6'	152.7'
33	UNKNOWN CARRIER	Generic Panel	Panel	1900	270	65	4.6	15.43	-	-	-	2094.8	89.3'	85.3'	152.7'

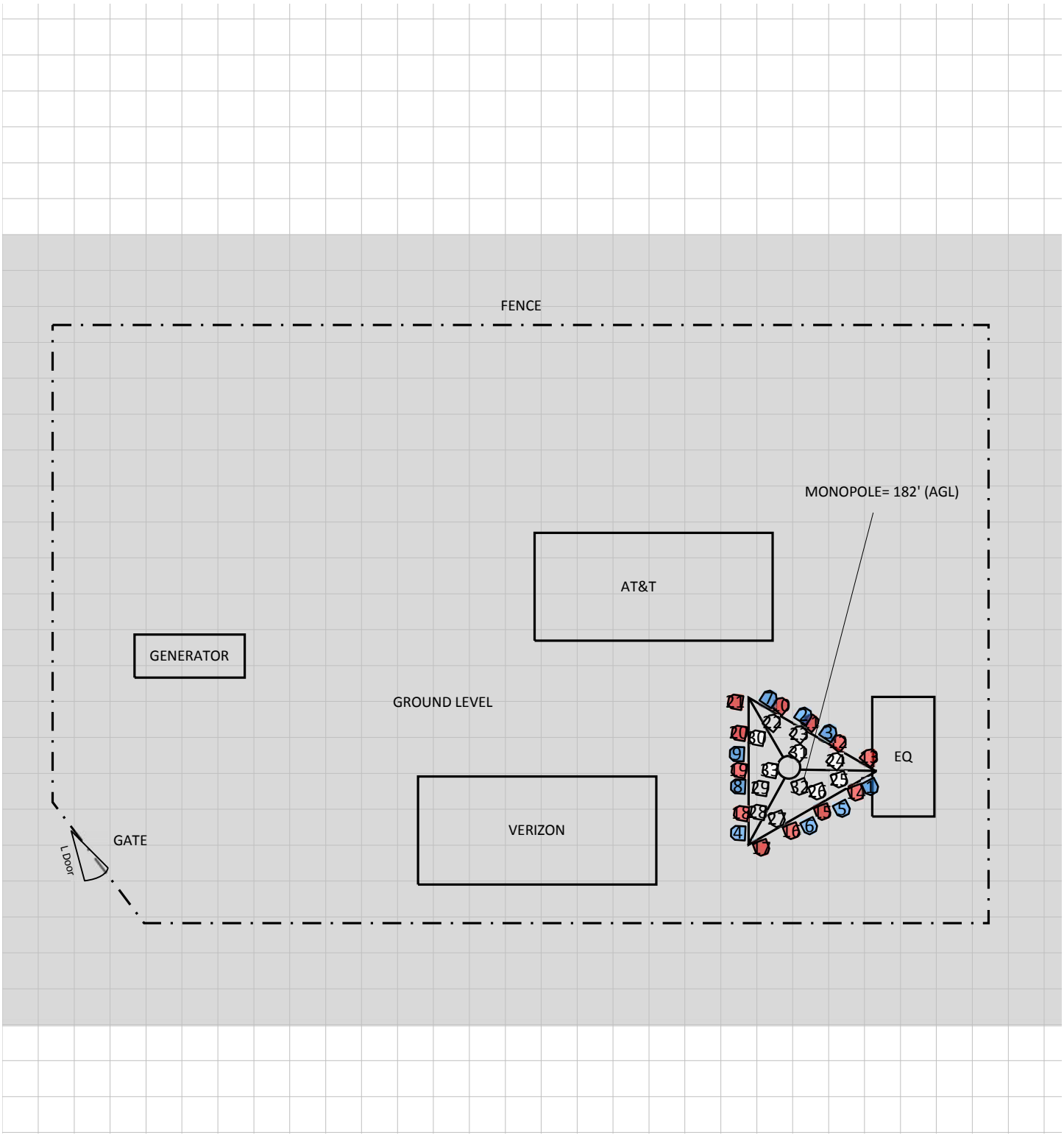
NOTE: X, Y and Z indicate relative position of the bottom of the antenna to the origin location on the site, displayed in the model results diagram. Specifically, the Z reference indicates the bottom of the antenna height **above ground level (AGL).** The distance to the bottom of the antenna is calculated by subtracting half of the length of the antenna from the antenna centerline**.** Effective Radiated Power (ERP) is provided by the operator or based on Sitesafe experience. The values used in the modeling may be greater than are currently deployed. For other operators at this site the use of "Generic" as an antenna model or "Unknown" for a wireless operator means the information with regard to operator, their FCC license and/or antenna information was not available nor could it be secured while on site. Other operator's equipment, antenna models and powers used for modeling are based on obtained information or Sitesafe experience.

4 Emission Predictions

In the RF Exposure Simulations below all heights are reflected with respect to main site level. In most rooftop cases this is the height of the main rooftop and in other cases this can be ground level. Each different height area, rooftop, or platform level is labeled with its height relative to the main site level. Emissions are calculated appropriately based on the relative height and location of that area to all antennas.

The Antenna Inventory heights are referenced to the same level.

RF Exposure Simulation For: Harwinton



% of FCC Public Exposure Limit
Spatial average 0' - 6'

>= 5000 | >= 500 | >= 100 | >= 5 | < 5

Carrier Identification

AT&T MOBILITY LLC | VERIZON WIRELESS | T-MOBILE | SPRINT | UNKNOWN CARRIER

Barrier | Proposed Barriers

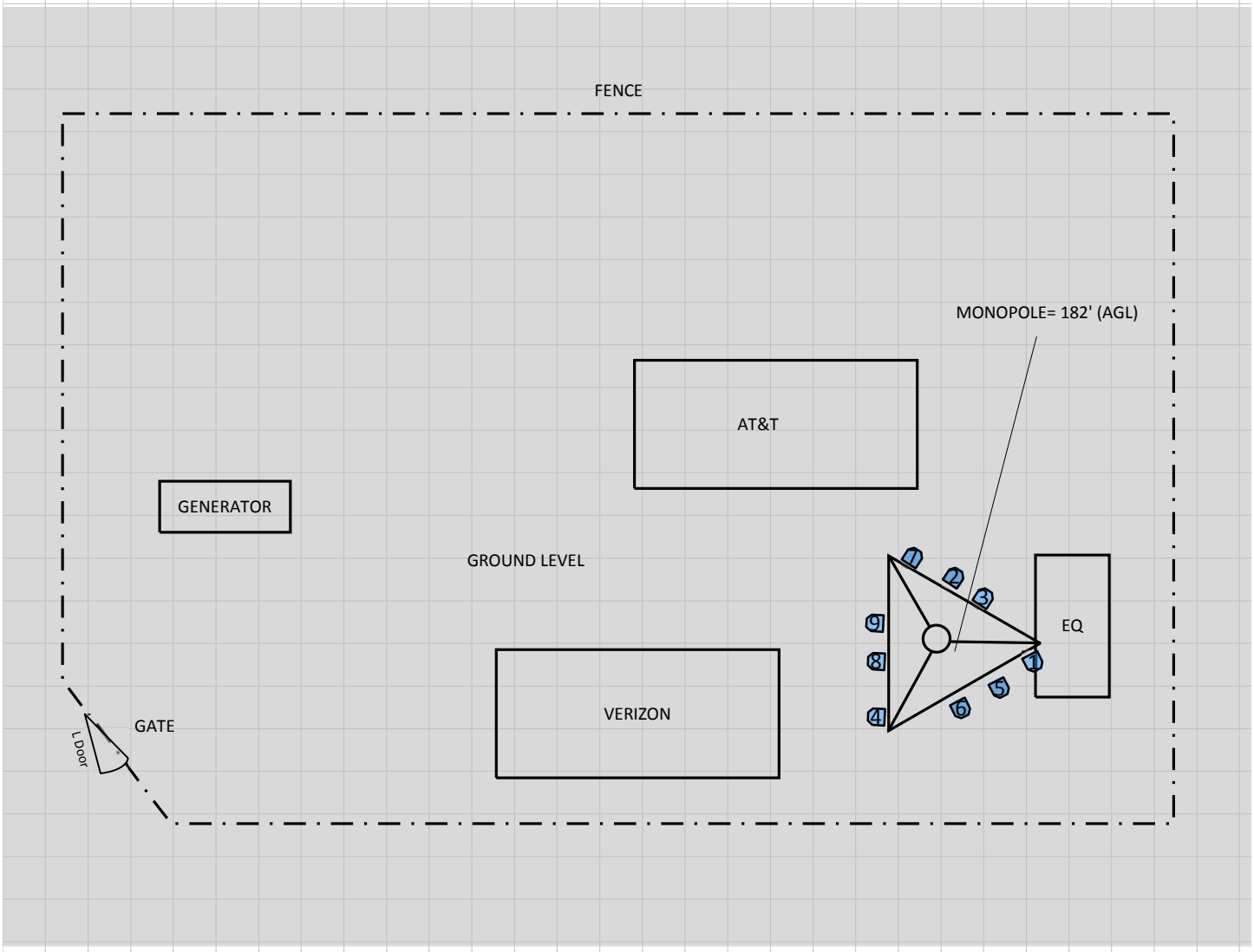
(Feet)

0 7.4 14.7

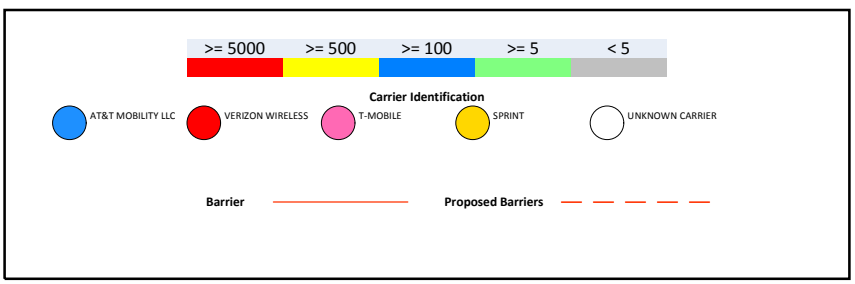
www.sitesafe.com
Site Name:Harwinton
12/11/2017 5:07:37 PM

SitesafeTC Version:1.0.0.0 - 0.0.0.266
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: Harwinton
AT&T Mobility, LLC Contribution



% of FCC Public Exposure Limit
Spatial average 0' - 6'



(Feet)
0 7.3 14.6
www.sitesafe.com
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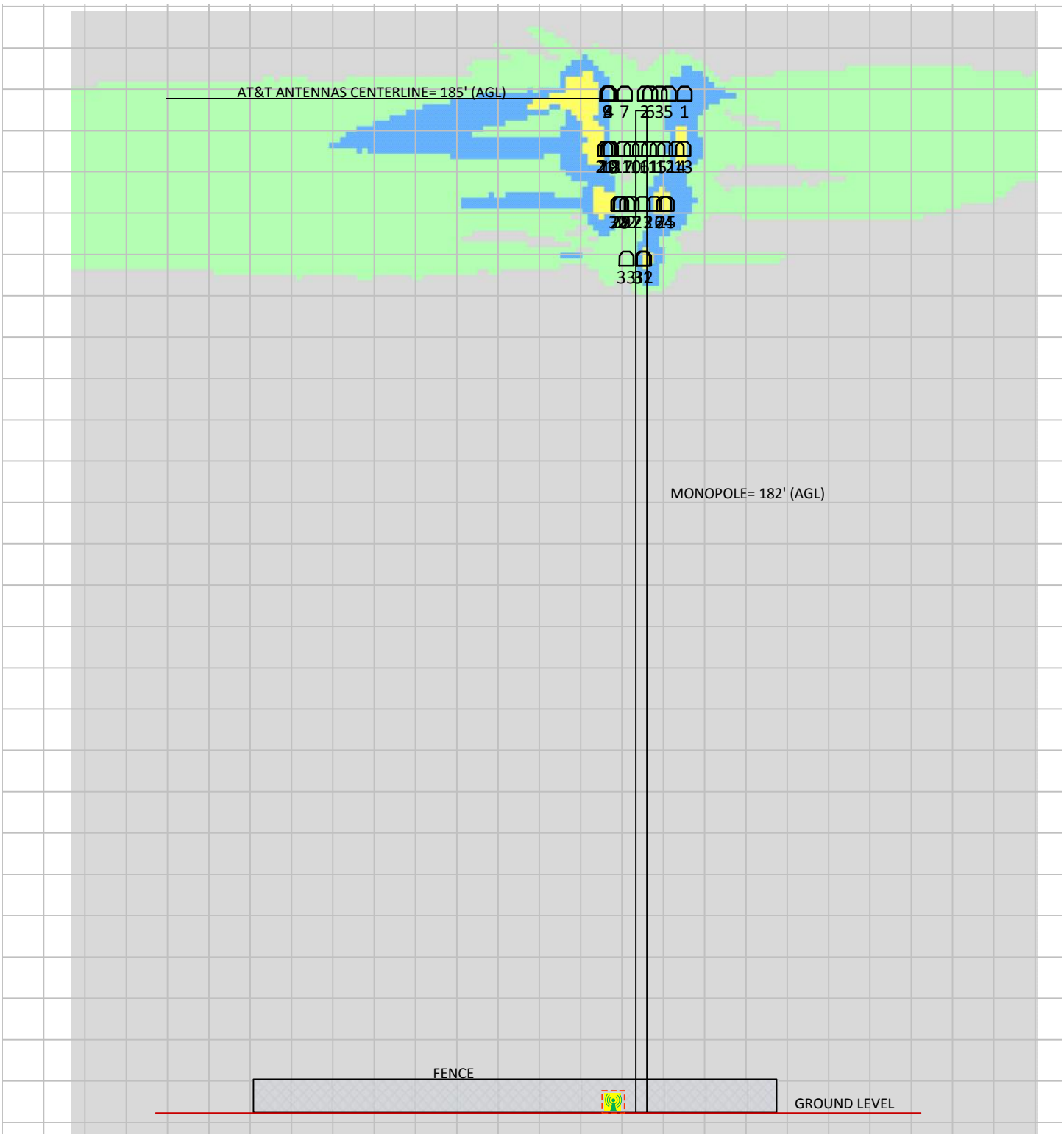
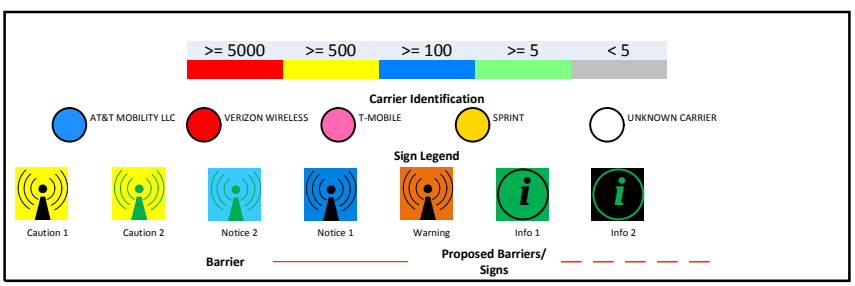
12/11/2017 5:08:22 PM

SitesafeTC Version:1.0.0.0 - 0.0.0.266
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Spatially Averaged

RF Exposure Simulation For: Harwinton
Elevation View



% of FCC Public Exposure Limit



(Feet)

0 13.6 27.3

www.sitesafe.com
Site Name:Harwinton
12/11/2017 5:23:29 PM

SitesafeTC Version:1.0.0.0 - 0.0.0.266
Sitesafe OET-65 Model
Near Field Boundary: 1.5 * Aperture
Reflection Factor: 1
Single Level (0)

5 Site Compliance

5.1 Site Compliance Statement

Upon evaluation of the cumulative RF emission levels from all operators at this site, RF hazard signage and antenna locations, Sitesafe has determined that:

AT&T Mobility, LLC will be compliant when the remediation recommended in Section 5.2 or other appropriate remediation is implemented.

The compliance determination is based on General Public RFE levels derived from theoretical modeling, RF signage placement, proposed antenna inventory and the level of restricted access to the antennas at the site. Any deviation from the AT&T Mobility, LLC's proposed deployment plan could result in the site being rendered non-compliant.

Modeling is used for determining compliance and the percentage of MPE contribution.

5.2 Actions for Site Compliance

Based on FCC regulations, common industry practice, and our understanding of AT&T Mobility, LLC RF Safety Policy requirements, this section provides a statement of recommendations for site compliance. Recommendations have been proposed based on our understanding of existing access restrictions, signage, and an analysis of predicted RFE levels.

AT&T Mobility, LLC will be made compliant if the following changes are implemented:

Base of Monopole

Caution 2 sign required.

Compound Gate

Information 1 sign required.

6 Reviewer Certification

The reviewer whose signature appears below hereby certifies and affirms:

That I am an employee of Sitesafe, Inc., in Arlington, Virginia, at which place the staff and I provide RF compliance services to clients in the wireless communications industry; and

That I am thoroughly familiar with the Rules and Regulations of the Federal Communications Commission (FCC) as well as the regulations of the Occupational Safety and Health Administration (OSHA), both in general and specifically as they apply to the FCC Guidelines for Human Exposure to Radio-frequency Radiation; and

That I have thoroughly reviewed this Site Compliance Report and believe it to be true and accurate to the best of my knowledge as assembled by and attested to by Leo Romero.

December 11, 2017

Appendix A – Statement of Limiting Conditions

Sitesafe has provided computer generated model(s) in this Site Compliance Report to show approximate dimensions of the site, and the model is included to assist the reader of the compliance report to visualize the site area, and to provide supporting documentation for Sitesafe's recommendations.

Sitesafe may note in the Site Compliance Report any adverse physical conditions, such as needed repairs, that Sitesafe became aware of during the normal research involved in creating this report. Sitesafe will not be responsible for any such conditions that do exist or for any engineering or testing that might be required to discover whether such conditions exist. Because Sitesafe is not an expert in the field of mechanical engineering or building maintenance, the Site Compliance Report must not be considered a structural or physical engineering report.

Sitesafe obtained information used in this Site Compliance Report from sources that Sitesafe considers reliable and believes them to be true and correct. Sitesafe does not assume any responsibility for the accuracy of such items that were furnished by other parties. When conflicts in information occur between data collected by Sitesafe provided by a second party and data collected by Sitesafe, the data will be used.

Appendix B – Regulatory Background Information

FCC Rules and Regulations

In 1996, the Federal Communications Commission (FCC) adopted regulations for the evaluating of the effects of RF emissions in 47 CFR § 1.1307 and 1.1310. The guideline from the FCC Office of Engineering and Technology is Bulletin 65 ("OET Bulletin 65"), *Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields*, Edition 97-01, published August 1997. Since 1996 the FCC periodically reviews these rules and regulations as per their congressional mandate.

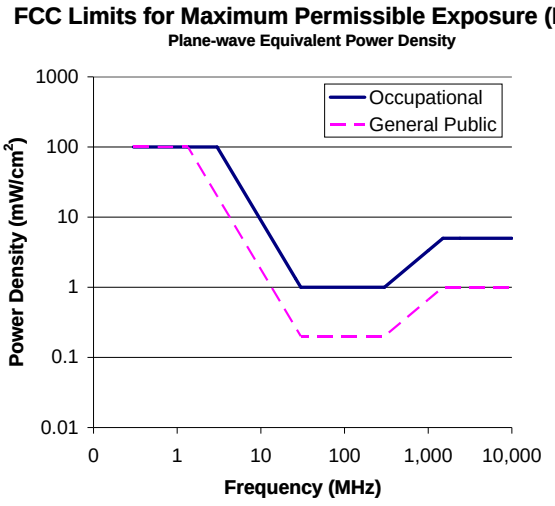
FCC regulations define two separate tiers of exposure limits: Occupational or "Controlled environment" and General Public or "Uncontrolled environment". The General Public limits are generally five times more conservative or restrictive than the Occupational limit. These limits apply to *accessible* areas where workers or the general public may be exposed to Radio Frequency (RF) electromagnetic fields.

Occupational or Controlled limits apply in situations in which persons are exposed as a consequence of their employment and where those persons exposed have been made fully aware of the potential for exposure and can exercise control over their exposure.

An area is considered a Controlled environment when access is limited to these aware personnel. Typical criteria are restricted access (i.e. locked or alarmed doors, barriers, etc.) to the areas where antennas are located coupled with proper RF warning signage. A site with Controlled environments is evaluated with Occupational limits.

All other areas are considered Uncontrolled environments. If a site has no access controls or no RF warning signage it is evaluated with General Public limits.

The theoretical modeling of the RF electromagnetic fields has been performed in accordance with OET Bulletin 65. The Maximum Permissible Exposure (MPE) limits utilized in this analysis are outlined in the following diagram:



Limits for Occupational/Controlled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	($900/f^2$)*	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6

Limits for General Population/Uncontrolled Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm^2)	Averaging Time $\|E\|^2$, $\|H\|^2$ or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

f = frequency in MHz *Plane-wave equivalent power density

OSHA Statement

The General Duty clause of the OSHA Act (Section 5) outlines the occupational safety and health responsibilities of the employer and employee. The General Duty clause in Section 5 states:

(a) Each employer –

(1) shall furnish to each of his employees employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm to his employees;

(2) shall comply with occupational safety and health standards promulgated under this Act.

(b) Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct.

OSHA has defined Radiofrequency and Microwave Radiation safety standards for workers who may enter hazardous RF areas. Regulation Standards 29 CFR § 1910.147 identify a generic Lock Out Tag Out procedure aimed to control the unexpected energization or start up of machines when maintenance or service is being performed.

Appendix C – Safety Plan and Procedures

The following items are general safety recommendations that should be administered on a site by site basis as needed by the carrier.

General Maintenance Work: Any maintenance personnel required to work immediately in front of antennas and / or in areas indicated as above 100% of the Occupational MPE limits should coordinate with the wireless operators to disable transmitters during their work activities.

Training and Qualification Verification: All personnel accessing areas indicated as exceeding the General Population MPE limits should have a basic understanding of EME awareness and RF Safety procedures when working around transmitting antennas. Awareness training increases a workers understanding to potential RF exposure scenarios. Awareness can be achieved in a number of ways (e.g. videos, formal classroom lecture or internet based courses).

Physical Access Control: Access restrictions to transmitting antennas locations is the primary element in a site safety plan. Examples of access restrictions are as follows:

- Locked door or gate
- Alarmed door
- Locked ladder access
- Restrictive Barrier at antenna (e.g. Chain link with posted RF Sign)

RF Signage: Everyone should obey all posted signs at all times. RF signs play an important role in properly warning a worker prior to entering into a potential RF Exposure area.

Assume all antennas are active: Due to the nature of telecommunications transmissions, an antenna transmits intermittently. Always assume an antenna is transmitting. Never stop in front of an antenna. If you have to pass by an antenna, move through as quickly and safely as possible thereby reducing any exposure to a minimum.

Maintain a 3 foot clearance from all antennas: There is a direct correlation between the strength of an EME field and the distance from the transmitting antenna. The further away from an antenna, the lower the corresponding EME field is.

Site RF Emissions Diagram: Section 4 of this report contains an RF Diagram that outlines various theoretical Maximum Permissible Exposure (MPE) areas at the site. The modeling is a worst case scenario assuming a duty cycle of 100% for each transmitting antenna at full power. This analysis is based on one of two access control criteria: General Public criteria means the access to the site is uncontrolled and anyone can gain access. Occupational criteria means the access is restricted and only properly trained individuals can gain access to the antenna locations.

Appendix D – RF Emissions

The RF Emissions Simulation(s) in this report display theoretical spatially averaged percentage of the Maximum Permissible Exposure for all systems at the site unless otherwise noted. These diagrams use modeling as prescribed in OET Bulletin 65 and assumptions detailed in Appendix E.

The key at the bottom of each RF Emissions Simulation indicates percentages displayed referenced to FCC General Public Maximum Permissible Exposure (MPE) limits. Color coding on the diagram is as follows:

- Areas indicated as Gray are predicted to be below 5% of the MPE limits. **Gray represents areas more than 20 times below the most conservative exposure limit**.
- Green represents areas are predicted to be between 5% and 100% of the MPE limits. **Green areas are accessible to anyone**.
- Blue represents areas predicted to exceed the General Public MPE limits but are less than Occupational limits. **Blue areas should be accessible only to RF trained workers**.
- Yellow represents areas predicted to exceed Occupational MPE limits. **Yellow areas should be accessible only to RF trained workers able to assess current exposure levels**.
- Red represents areas predicted to have exposure more than 10 times the Occupational MPE limits. **Red indicates that the RF levels must be reduced prior to access.** An RF Safety Plan is required which outlines how to reduce the RF energy in these areas prior to access.

Appendix E – Assumptions and Definitions

General Model Assumptions

In this site compliance report, it is assumed that all antennas are operating at **full power at all times**. Software modeling was performed for all transmitting antennas located on the site. Sitesafe has further assumed a 100% duty cycle and maximum radiated power.

The modeling is based on recommendations from the FCC's OET-65 bulletin with the following variances per AT&T guidance. Reflection has not been considered in the modeling, i.e. the reflection factor is 1.0. The near / far field boundary has been set to 1.5 times the aperture height of the antenna and modeling beyond that point is the lesser of the near field cylindrical model and the far field model taking into account the gain of the antenna.

The site has been modeled with these assumptions to show the maximum RF energy density. Areas modeled with exposure greater than 100% of the General Public MPE level may not actually occur, but are shown as a prediction that could be realized. Sitesafe believes these areas to be safe for entry by occupationally trained personnel utilizing appropriate personal protective equipment (in most cases, a personal monitor).

Use of Generic Antennas

For the purposes of this report, the use of "Generic" as an antenna model, or "Unknown" for an operator means the information about a carrier, their FCC license and/or antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of equipment, antenna models, and transmit power to model the site. If more specific information can be obtained for the unknown measurement criteria, Sitesafe recommends remodeling of the site utilizing the more complete and accurate data. Information about similar facilities is used when the service is identified and associated with a particular antenna. If no information is available regarding the transmitting service associated with an unidentified antenna, using the antenna manufacturer's published data regarding the antenna's physical characteristics makes more conservative assumptions.

Where the frequency is unknown, Sitesafe uses the closest frequency in the antenna's range that corresponds to the highest Maximum Permissible Exposure (MPE), resulting in a conservative analysis.

Definitions

5% Rule – The rules adopted by the FCC specify that, in general, at multiple transmitter sites actions necessary to bring the area into compliance with the guidelines are the shared responsibility of all licensees whose transmitters produce field strengths or power density levels at the area in question in excess of 5% of the exposure limits. In other words, any wireless operator that contributes 5% or greater of the MPE limit in an area that is identified to be greater than 100% of the MPE limit is responsible taking corrective actions to bring the site into compliance.

Compliance – The determination of whether a site is safe or not with regards to Human Exposure to Radio Frequency Radiation from transmitting antennas.

Decibel (dB) – A unit for measuring power or strength of a signal.

Duty Cycle – The percent of pulse duration to the pulse period of a periodic pulse train. Also, may be a measure of the temporal transmission characteristic of an intermittently transmitting RF source such as a paging antenna by dividing average transmission duration by the average period for transmission. A duty cycle of 100% corresponds to continuous operation.

Effective (or Equivalent) Isotropic Radiated Power (EIRP) – The product of the power supplied to the antenna and the antenna gain in a given direction relative to an isotropic antenna.

Effective Radiated Power (ERP) – In a given direction, the relative gain of a transmitting antenna with respect to the maximum directivity of a half wave dipole multiplied by the net power accepted by the antenna from the connecting transmitter.

Gain (of an antenna) – The ratio of the maximum intensity in a given direction to the maximum radiation in the same direction from an isotropic radiator. Gain is a measure of the relative efficiency of a directional antennas as compared to an omni directional antenna.

General Population/Uncontrolled Environment – Defined by the FCC, as an area where exposure to RF energy may occur to persons who are **unaware** of the potential for exposure and who have no control of their exposure. General Population is also referenced as General Public.

Generic Antenna – For the purposes of this report, the use of "Generic" as an antenna model means the antenna information was not provided and could not be obtained while on site. In the event of unknown information, Sitesafe will use our industry specific knowledge of antenna models to select a worst case scenario antenna to model the site.

Isotropic Antenna – An antenna that is completely non-directional. In other words, an antenna that radiates energy equally in all directions.

Maximum Measurement – This measurement represents the single largest measurement recorded when performing a spatial average measurement.

Maximum Permissible Exposure (MPE) – The maximum levels of RF exposure a person may be exposed to without harmful effect and with acceptable safety factor.

Occupational/Controlled Environment – Defined by the FCC, as an area where Radio Frequency Radiation (RFR) exposure may occur to persons who are **aware** of the

potential for exposure as a condition of employment or specific activity and can exercise control over their exposure.

OET Bulletin 65 – Technical guideline developed by the FCC's Office of Engineering and Technology to determine the impact of Radio Frequency radiation on Humans. The guideline was published in August 1997.

OSHA (Occupational Safety and Health Administration) – Under the Occupational Safety and Health Act of 1970, employers are responsible for providing a safe and healthy workplace for their employees. OSHA's role is to promote the safety and health of America's working men and women by setting and enforcing standards; providing training, outreach and education; establishing partnerships; and encouraging continual process improvement in workplace safety and health. For more information, visit www.osha.gov.

Radio Frequency (RF) – The frequencies of electromagnetic waves which are used for radio communications. Approximately 3 kHz to 300 GHz.

Radio Frequency Exposure (RFE) – The amount of RF power density that a person is or might be exposed to.

Spatial Average Measurement – A technique used to average a minimum of ten (10) measurements taken in a ten (10) second interval from zero (0) to six (6) feet. This measurement is intended to model the average power density an average sized human will be exposed to at a location.

Transmitter Power Output (TPO) – The radio frequency output power of a transmitter's final radio frequency stage as measured at the output terminal while connected to a load.

Appendix F – References

The following references can be followed for further information about RF Health and Safety.

Sitesafe, Inc.
http://www.sitesafe.com
FCC Radio Frequency Safety
http://www.fcc.gov/encyclopedia/radio-frequency-safety
National Council on Radiation Protection and Measurements (NCRP)
http://www.ncrponline.org
Institute of Electrical and Electronics Engineers, Inc., (IEEE)
http://www.ieee.org
American National Standards Institute (ANSI)
http://www.ansi.org
Environmental Protection Agency (EPA)
http://www.epa.gov/radtown/wireless-tech.html
National Institutes of Health (NIH)
http://www.niehs.nih.gov/health/topics/agents/emf/
Occupational Safety and Health Agency (OSHA)
http://www.osha.gov/SLTC/radiofrequencyradiation/
International Commission on Non-Ionizing Radiation Protection (ICNIRP)
http://www.icnirp.org
World Health Organization (WHO)
http://www.who.int/peh-emf/en/
National Cancer Institute
http://www.cancer.gov/cancertopics/factsheet/Risk/cellphones
American Cancer Society (ACS)
http://www.cancer.org/docroot/PED/content/PED_1_3X_Cellular_Phone_Towers.asp?siteareа=PED
European Commission Scientific Committee on Emerging and Newly Identified Health Risks
http://ec.europa.eu/health/ph_risk/committees/04_scenihr/docs/scenihr_o_022.pdf
Fairfax County, Virginia Public School Survey
http://www.fcps.edu/fts/safety-security/RFEESurvey/
UK Health Protection Agency Advisory Group on Non-ionising Radiation
http://www.hpa.org.uk/webw/HPAweb&HPAwebStandard/HPAweb_C/1317133826368
Norwegian Institute of Public Health
http://www.fhi.no/dokumenter/545eea7147.pdf