

From: Ryan Lynch [mailto:ryan.lynch@smartlinkllc.com]
Sent: Thursday, April 12, 2018 4:53 PM
To: Galligan, Coleen
Cc: CSC-DL Siting Council
Subject: RE: Incomplete - EM-ATT-066-180322 - Weingart Rd

Hi Coleen,

Please see the attached structural analysis from American Tower. This revised structural passes at 100%.

Please let me know if this will suffice to complete the exempt modification filing listed above.

Thank you,



Ryan Lynch | Real Estate Specialist
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AMERICAN TOWER®
CORPORATION

Structural Analysis Report

Structure : 181.9 ft Monopole
ATC Site Name : Harwinton, CT
ATC Site Number : 302502
Engineering Number : OAA712918_C3_04
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 11, 2018
Max Usage : 100%
Result : Pass

Prepared By:
Parvin NikpoorParizi
Structural Engineer I

Reviewed By:

COA: PEC.0001553



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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, 1994
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:	$S_s = 0.18$, $S_1 = 0.06$
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					
185.0	185.0	6	Powerwave LGP21401	Platform w/ Handrails	(12) 1 1/4" Coax (2) 0.39" Fiber Trunk	AT&T Mobility
		6	Ericsson RRUS 11 (Band 12)			
		3	Powerwave 7770.00			
		3	KMW AM-X-CD-16-65-00T-RET			
175.0	175.0	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-OZ			
		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					
185.0	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					
185.0	185.0	3	Kaelus DBC0061F1V51-2	Platform w/ Handrails	(6) 1 5/8" Coax (4) 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			

¹Mount 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	78%	Pass
Base Plate	37%	Pass
Flanges	52%	Pass
Reinforcement	100%	Pass

Foundations

Reaction Component	Analysis Reactions	% of Usage
Moment (Kips-Ft)	3,860.2	92%
Axial (Kips)	66.0	34%
Shear (Kips)	30.8	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) (°)
185.0	Kaelus DBC0061F1V51-2	AT&T Mobility	3.233	2.106
	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



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

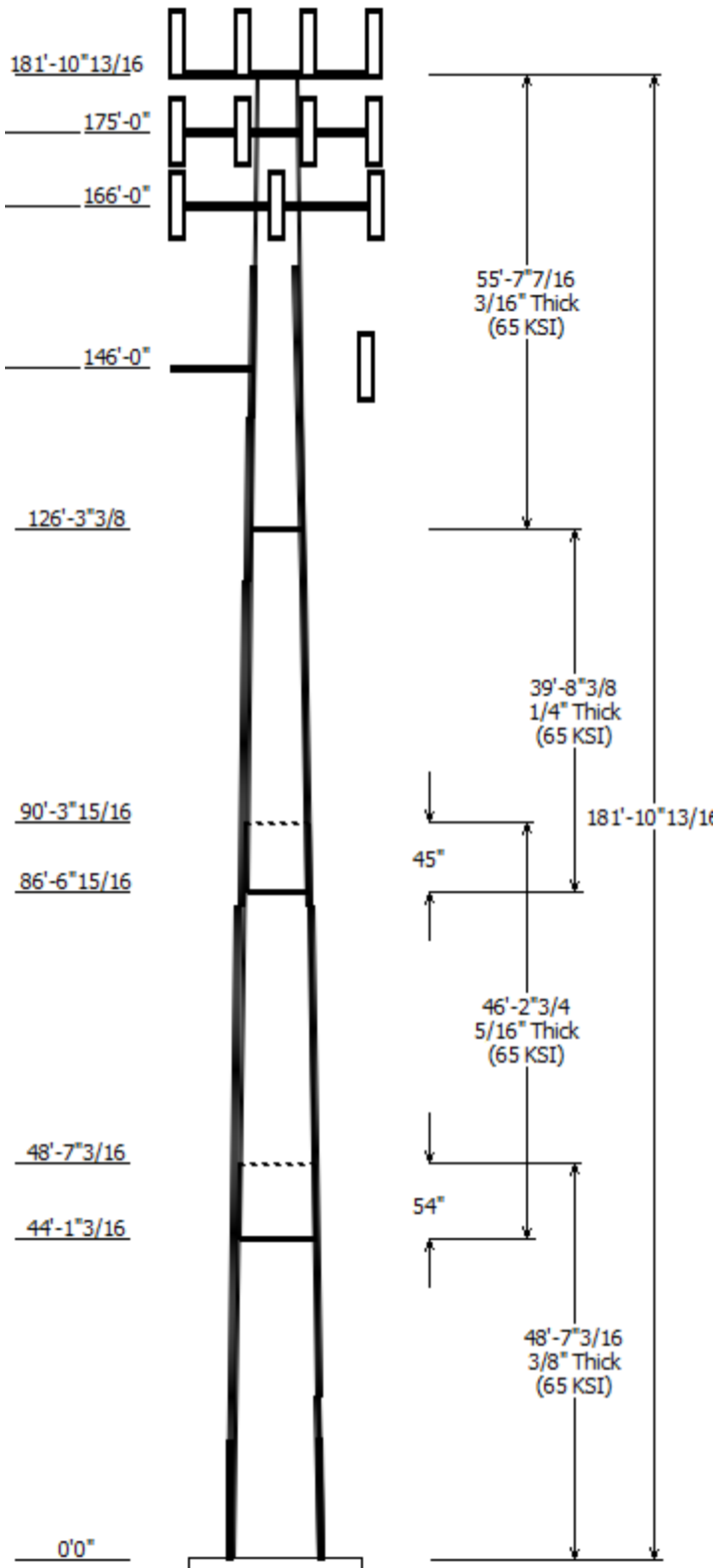
It is the responsibility of the client to ensure that the information provided to A.T. Engineering Service, PLLC and used in the performance of our engineering services is correct and complete.

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.

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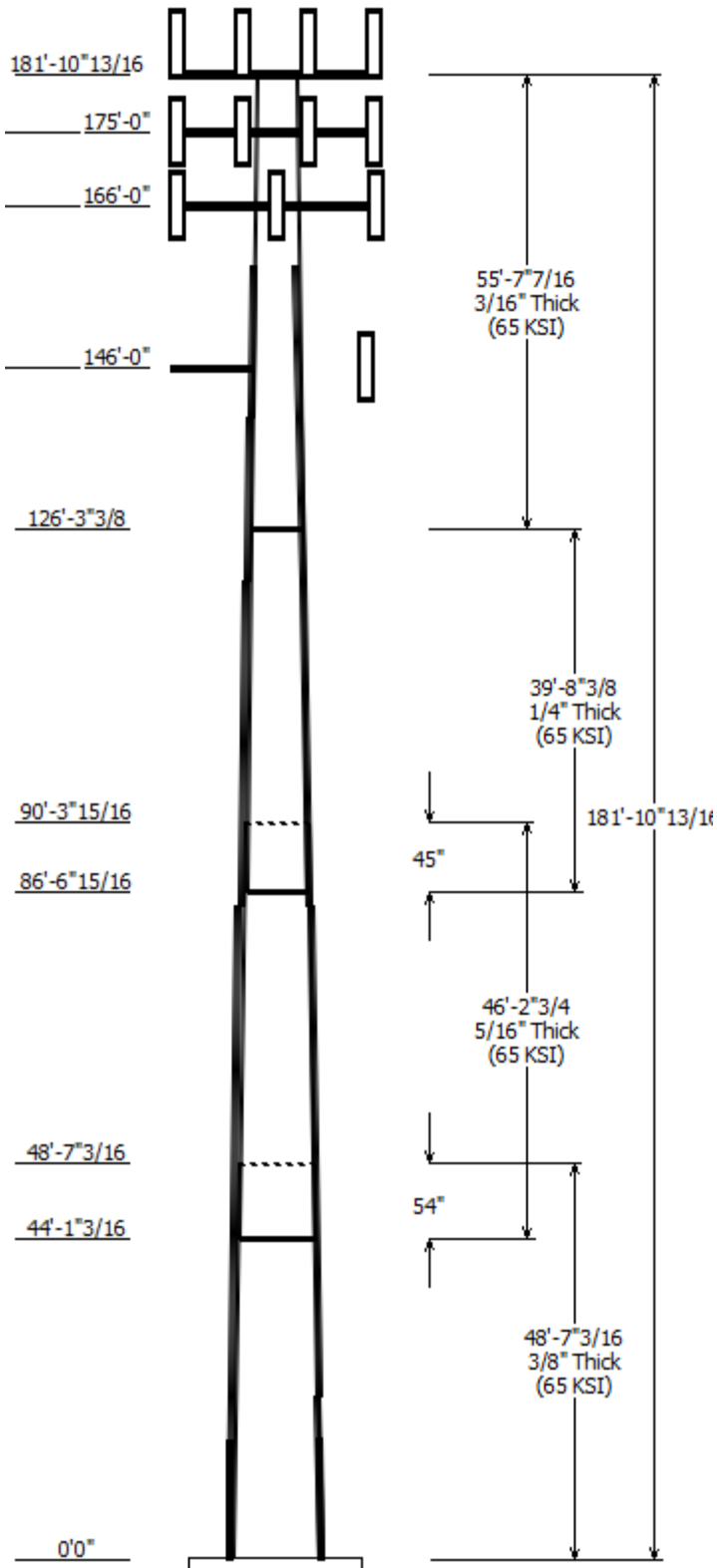


Job Information	
Pole : 302502	Code: ANSI/TIA-222-G
Location : Harwinton, CT	
Description : 182 ft Monopole	
Client : AT&T MOBILITY	Struct Class : II
Shape : 12 Sides	Exposure : B
Height : 181.90 (ft)	Topo : 1
Base Elev (ft): 0.00	
Taper: 0.162864(in/ft)	

Sections Properties							
Shaft Section	Length (ft)	Diameter (in)		Thick (in)	Joint Type	Overlap Length (in)	Steel Grade
		Across Flats Top	Across Flats Bottom				
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
175.000	175.000	1	Flat Low Profile Platform
175.000	175.000	6	Antel LPA-80063/6CF
175.000	175.000	6	Commscope SBNHH-1D65B
175.000	175.000	2	RFS DB-T1-6Z-8AB-0Z
175.000	175.000	3	Alcatel-Lucent B66A RRH4x45-
175.000	175.000	3	Alcatel-Lucent B13 RRH4x30-4R
175.000	175.000	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)		Description	Exposed To Wind
From	To		
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	175.0	1 5/8" Coax	No
5.000	175.0	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	0.39" Fiber Trunk	No



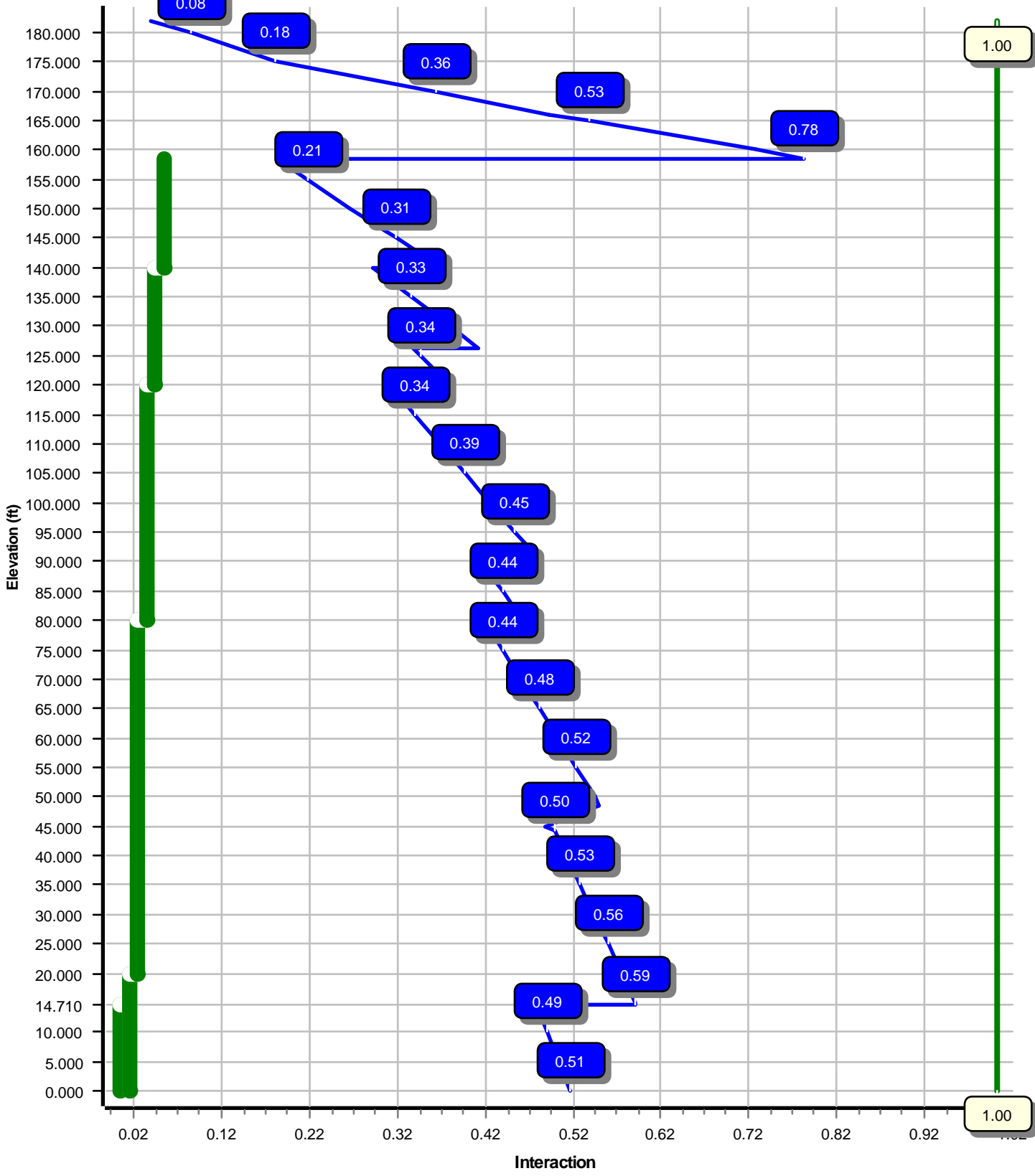
5.000	181.9	0.78" 8 AWG 6	No
5.000	181.9	1 1/4" Coax	No
5.000	181.9	1 5/8" Coax	No
5.000	181.9	3" Conduit	No
0.000	19.500	#20 Dywidag	Yes
0.000	80.000	4.25" Solid Rod	Yes

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	3860.18	30.82	65.98
0.9D + 1.6W	3787.61	30.59	49.47
1.2D + 1.0Di + 1.0Wi	707.10	5.01	106.71
(1.2 + 0.2Sds) * DL + E ELFM	251.79	1.66	65.88
(1.2 + 0.2Sds) * DL + E EMAM	354.30	2.49	65.88
(0.9 - 0.2Sds) * DL + E ELFM	246.00	1.65	45.80
(0.9 - 0.2Sds) * DL + E EMAM	345.56	2.49	45.80
1.0D + 1.0W	1023.72	8.28	55.02

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 77.89% at 158.5 ft



Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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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 Manufacturer :	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):	3.20		
T _L (sec):	6	p:	1
S _s :	0.182	S ₁ :	0.065
F _a :	1.600	F _v :	2.400
S _{ds} :	0.194	S _{d1} :	0.104
		C _s :	0.030
		C _s Max:	0.030
		C _s Min:	0.030

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 + 0.2S _{ds}) * DL + E ELFM	Seismic Equivalent Lateral Forces Method
(1.2 + 0.2S _{ds}) * DL + E EMAM	Seismic Equivalent Modal Analysis Method
(0.9 - 0.2S _{ds}) * DL + E ELFM	Seismic (Reduced DL) Equivalent Lateral Forces Method
(0.9 - 0.2S _{ds}) * 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

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

Shaft Section Properties

Sect Info	Length (ft)	Thick (in)	Fy (ksi)	Joint Type	Joint Len (in)	Weight (lb)	Bottom						Top						
							Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	D/t Ratio	Dia (in)	Elev (ft)	Area (in ²)	Ix (in ⁴)	W/t Ratio	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	0.33
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	0.33
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
175.00	Alcatel-Lucent B13 RRH4x30-4R	3	0.000	0.000	57.80	2.140	0.50
175.00	Alcatel-Lucent B66A RRH4x45-4R	3	0.000	0.000	56.80	2.390	0.50
175.00	Antel LPA-80063/6CF	6	0.000	0.000	27.00	9.590	0.76
175.00	Commscope SBNHH-1D65B	6	0.000	0.000	40.60	8.200	0.69
175.00	Flat Low Profile Platform	1	0.000	0.000	1500.00	26.100	1.00
175.00	RFS DB-T1-6Z-8AB-OZ	2	0.000	0.000	44.00	4.800	0.67
175.00	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	1.00
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)	Projected Flat	Width (in)	Exposed To Wind	Carrier
5.00	181.90	1	0.39" Fiber Trunk	0.39	0.06	N	0.00	N	AT&T Mobility
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	4	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	6	1 5/8" Coax	1.98	0.82	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	175.00	11	1 5/8" Coax	1.98	0.82	N	0.00	N	Verizon
5.00	175.00	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

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

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 —			Connectors	Continuation?
					Description	Spacing (in)	Len (in)			
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)	Ix (in ⁴)	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			
180.0		0.1875	14.809	8.828	240.9	18.48	78.98	81.9	31.4	0.0	154.4			
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

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		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	1,444.5	559.6	2,465.3	0.0	0.0
14.71	Reinf. Top	274.5	943.2					60.2	1,360.8	334.7	2,303.9	0.0	0.0
15.00		284.8	57.5					3.7	66.3	288.5	123.8	0.0	0.0
20.00	Reinf. Top Reinf	532.7	980.6					63.9	1,143.9	596.6	2,124.5	0.0	0.0
25.00		521.7	960.5					63.9	1,143.9	585.7	2,104.4	0.0	0.0
30.00		516.9	940.4					63.9	1,143.9	580.8	2,084.4	0.0	0.0
35.00		522.5	920.3					64.7	1,143.9	587.2	2,064.3	0.0	0.0
40.00		482.7	900.3					66.0	1,143.9	548.7	2,044.2	0.0	0.0
44.10	Bot - Section 2	268.1	723.2					55.0	938.0	323.1	1,661.3	0.0	0.0
45.00		246.6	290.3					12.2	205.9	258.8	496.2	0.0	0.0
48.60	Top - Section 1	274.5	1,149.2					49.1	823.6	323.5	1,972.9	0.0	0.0
50.00		353.1	203.0					19.2	320.3	372.3	523.3	0.0	0.0
55.00		552.8	714.2					69.3	1,143.9	622.0	1,858.1	0.0	0.0
60.00		553.4	697.4					70.2	1,143.9	623.6	1,841.4	0.0	0.0
65.00		552.6	680.7					71.0	1,143.9	623.6	1,824.6	0.0	0.0
70.00		550.5	664.0					71.8	1,143.9	622.3	1,807.9	0.0	0.0
75.00		547.3	647.2					72.5	1,143.9	619.8	1,791.2	0.0	0.0
80.00	Reinf. Top Reinf	543.0	630.5					73.2	1,143.9	616.3	1,774.5	0.0	0.0
85.00		355.2	613.8					73.9	1,044.8	429.1	1,658.5	0.0	0.0
86.58	Bot - Section 3	270.6	190.5					23.5	330.1	294.1	520.6	0.0	0.0
90.00		203.6	738.2					51.0	714.6	254.6	1,452.8	0.0	0.0
90.33	Top - Section 2	268.9	70.5					4.9	69.0	273.8	139.4	0.0	0.0
95.00		516.3	441.8					70.2	975.8	586.5	1,417.6	0.0	0.0
100.00		526.7	460.1					75.7	1,044.8	602.3	1,504.9	0.0	0.0
105.00		518.4	446.7					76.2	1,044.8	594.6	1,491.5	0.0	0.0
110.00		509.5	433.4					76.7	1,044.8	586.3	1,478.1	0.0	0.0
115.00		500.0	420.0					77.2	1,044.8	577.3	1,464.7	0.0	0.0
120.00	Reinf. Top Reinf	489.9	406.6					77.7	1,044.8	567.6	1,451.3	0.0	0.0
125.00		303.5	393.2					78.2	864.4	381.7	1,257.6	0.0	0.0
126.28	Top - Section 3	236.9	98.5					20.1	221.3	257.0	319.8	0.0	0.0
130.00		406.9	211.6					58.5	643.1	465.4	854.7	0.0	0.0
135.00		456.3	275.6					79.1	864.4	535.4	1,140.0	0.0	0.0
140.00	Reinf. Top Reinf	444.1	265.6					79.5	864.4	523.6	1,130.0	0.0	0.0
145.00		262.0	255.5					79.9	708.0	341.9	963.5	0.0	0.0
146.00	Appurtenance(s)	212.5	49.9	523.2	0.0	0.0	837.2	16.0	141.6	751.7	1,028.7	0.0	0.0
150.00		375.4	195.6					64.3	542.8	439.6	738.4	0.0	0.0
155.00		345.9	235.4					80.7	678.5	426.6	913.9	0.0	0.0
158.50	Reinf. Top	199.0	158.8					56.7	474.9	255.7	633.8	0.0	0.0
160.00		218.9	66.6					24.3	73.7	243.3	140.2	0.0	0.0
165.00		191.2	215.4					0.0	245.6	191.2	460.9	0.0	0.0
166.00	Appurtenance(s)	153.9	41.9	2,597.3	0.0	0.0	2,603.5	0.0	49.1	2,751.2	2,694.5	0.0	0.0
170.00		270.3	163.5					0.0	165.1	270.3	328.6	0.0	0.0
175.00	Appurtenance(s)	289.0	195.3	4,263.1	0.0	0.0	2,827.2	0.0	206.4	4,552.2	3,228.9	0.0	0.0
180.00		193.3	185.3					0.0	136.7	193.3	321.9	0.0	0.0
181.90		52.0	67.8					0.0	51.9	52.0	119.7	0.0	0.0

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:47:45 PM

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

Totals: 27,394.3 61,931.0 0.00 0.00

Site Number: 302502

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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	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total	Rotation	Ratio
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	(deg)	
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)		
0.00	-65.98	-30.82	0.00	-3,860.18	0.00	3,860.18	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.514
5.00	-63.67	-30.40	0.00	-3,706.09	0.00	3,706.09	3,397.00	1,698.50	5,857.04	2,892.57	0.10	-0.18	0.501
10.00	-61.12	-30.02	0.00	-3,554.08	0.00	3,554.08	3,359.11	1,679.56	5,677.90	2,804.10	0.37	-0.35	0.487
14.71	-58.78	-29.75	0.00	-3,412.71	0.00	3,412.71	3,322.40	1,661.20	5,509.81	2,721.09	0.81	-0.52	0.474
14.71	-58.78	-29.75	0.00	-3,412.71	0.00	3,412.71	3,322.40	1,661.20	5,509.81	2,721.09	0.81	-0.52	0.588
15.00	-58.59	-29.58	0.00	-3,404.08	0.00	3,404.08	3,320.10	1,660.05	5,499.48	2,715.99	0.84	-0.53	0.587
20.00	-56.37	-29.18	0.00	-3,256.18	0.00	3,256.18	3,279.97	1,639.98	5,321.88	2,628.28	1.51	-0.75	0.572
20.00	-56.37	-29.18	0.00	-3,256.18	0.00	3,256.18	3,279.97	1,639.98	5,321.88	2,628.28	1.51	-0.75	0.572
25.00	-54.16	-28.77	0.00	-3,110.30	0.00	3,110.30	3,238.71	1,619.36	5,145.22	2,541.03	2.41	-0.96	0.557
30.00	-51.98	-28.35	0.00	-2,966.47	0.00	2,966.47	3,196.33	1,598.17	4,969.60	2,454.30	3.54	-1.18	0.541
35.00	-49.82	-27.90	0.00	-2,824.75	0.00	2,824.75	3,152.83	1,576.41	4,795.15	2,368.14	4.89	-1.40	0.526
40.00	-47.70	-27.47	0.00	-2,685.24	0.00	2,685.24	3,108.20	1,554.10	4,621.97	2,282.62	6.48	-1.62	0.510
44.10	-46.00	-27.18	0.00	-2,572.63	0.00	2,572.63	3,070.77	1,535.38	4,481.00	2,213.00	7.95	-1.80	0.496
45.00	-45.46	-26.98	0.00	-2,548.17	0.00	2,548.17	3,062.45	1,531.23	4,450.19	2,197.78	8.30	-1.84	0.485
48.60	-43.45	-26.68	0.00	-2,451.03	0.00	2,451.03	2,379.97	1,189.99	3,474.54	1,715.94	9.75	-2.00	0.547
50.00	-42.88	-26.39	0.00	-2,413.68	0.00	2,413.68	2,371.43	1,185.72	3,439.58	1,698.68	10.34	-2.06	0.542
55.00	-40.94	-25.86	0.00	-2,281.71	0.00	2,281.71	2,340.22	1,170.11	3,315.01	1,637.16	12.62	-2.28	0.521
60.00	-39.03	-25.31	0.00	-2,152.41	0.00	2,152.41	2,307.88	1,153.94	3,191.02	1,575.92	15.13	-2.51	0.500
65.00	-37.14	-24.75	0.00	-2,025.84	0.00	2,025.84	2,274.42	1,137.21	3,067.70	1,515.02	17.87	-2.73	0.479
70.00	-35.27	-24.17	0.00	-1,902.10	0.00	1,902.10	2,239.83	1,119.92	2,945.16	1,454.51	20.85	-2.95	0.458
75.00	-33.43	-23.58	0.00	-1,781.24	0.00	1,781.24	2,204.12	1,102.06	2,823.54	1,394.44	24.05	-3.16	0.438
80.00	-31.61	-22.98	0.00	-1,663.32	0.00	1,663.32	2,167.29	1,083.65	2,702.93	1,334.88	27.47	-3.38	0.417
80.00	-31.61	-22.98	0.00	-1,663.32	0.00	1,663.32	2,167.29	1,083.65	2,702.93	1,334.88	27.47	-3.38	0.459
85.00	-29.92	-22.53	0.00	-1,548.40	0.00	1,548.40	2,129.34	1,064.67	2,583.46	1,275.87	31.12	-3.59	0.437
86.58	-29.38	-22.26	0.00	-1,512.80	0.00	1,512.80	2,117.11	1,058.55	2,545.96	1,257.35	32.32	-3.66	0.430
90.00	-27.91	-21.96	0.00	-1,436.66	0.00	1,436.66	2,090.26	1,045.13	2,465.23	1,217.49	35.00	-3.82	0.407
90.33	-27.75	-21.73	0.00	-1,429.42	0.00	1,429.42	1,547.78	773.89	1,862.15	919.64	35.26	-3.83	0.479
95.00	-26.30	-21.15	0.00	-1,327.95	0.00	1,327.95	1,525.71	762.86	1,787.32	882.69	39.11	-4.04	0.452
100.00	-24.76	-20.53	0.00	-1,222.23	0.00	1,222.23	1,500.99	750.50	1,707.51	843.28	43.47	-4.27	0.423
105.00	-23.24	-19.91	0.00	-1,119.57	0.00	1,119.57	1,475.16	737.58	1,628.14	804.08	48.05	-4.49	0.395
110.00	-21.74	-19.29	0.00	-1,019.99	0.00	1,019.99	1,448.19	724.10	1,549.32	765.15	52.87	-4.70	0.366
115.00	-20.27	-18.67	0.00	-923.54	0.00	923.54	1,420.11	710.05	1,471.16	726.55	57.90	-4.91	0.338
120.00	-18.81	-18.04	0.00	-830.21	0.00	830.21	1,390.90	695.45	1,393.78	688.34	63.15	-5.11	0.310
120.00	-18.81	-18.04	0.00	-830.21	0.00	830.21	1,390.90	695.45	1,393.78	688.34	63.15	-5.11	0.376
125.00	-17.55	-17.58	0.00	-740.02	0.00	740.02	1,360.57	680.28	1,317.29	650.56	68.60	-5.30	0.343
126.28	-17.22	-17.33	0.00	-717.52	0.00	717.52	1,352.62	676.31	1,297.87	640.97	70.03	-5.36	0.335
126.28	-17.22	-17.33	0.00	-717.52	0.00	717.52	900.61	450.31	868.79	429.06	70.03	-5.36	0.409
130.00	-16.36	-16.84	0.00	-653.05	0.00	653.05	888.95	444.47	835.13	412.44	74.27	-5.53	0.376
135.00	-15.22	-16.25	0.00	-568.85	0.00	568.85	872.29	436.14	789.93	390.12	80.17	-5.75	0.333
140.00	-14.09	-15.67	0.00	-487.58	0.00	487.58	854.50	427.25	744.88	367.87	86.30	-5.96	0.291
140.00	-14.09	-15.67	0.00	-487.58	0.00	487.58	854.50	427.25	744.88	367.87	86.30	-5.96	0.367
145.00	-13.14	-15.25	0.00	-409.25	0.00	409.25	835.60	417.80	700.09	345.75	92.63	-6.14	0.315
146.00	-12.17	-14.42	0.00	-394.00	0.00	394.00	831.68	415.84	691.17	341.34	93.92	-6.19	0.304
150.00	-11.44	-13.93	0.00	-336.34	0.00	336.34	815.57	407.78	655.68	323.81	99.17	-6.36	0.264
155.00	-10.55	-13.43	0.00	-266.67	0.00	266.67	794.42	397.21	611.76	302.12	105.92	-6.55	0.215
158.50	-9.93	-13.12	0.00	-219.65	0.00	219.65	778.94	389.47	581.37	287.12	110.75	-6.66	0.180
158.50	-9.93	-13.12	0.00	-219.65	0.00	219.65	778.94	389.47	581.37	287.12	110.75	-6.66	0.779
160.00	-9.75	-12.92	0.00	-199.97	0.00	199.97	772.14	386.07	568.44	280.73	112.85	-6.70	0.726
165.00	-9.25	-12.72	0.00	-135.39	0.00	135.39	748.74	374.37	525.85	259.70	120.16	-7.25	0.535
166.00	-6.89	-9.67	0.00	-122.67	0.00	122.67	743.93	371.96	517.43	255.54	121.68	-7.34	0.490
170.00	-6.55	-9.40	0.00	-83.98	0.00	83.98	723.19	361.60	483.41	238.74	127.96	-7.66	0.362

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:47:45 PM

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

175.00	-3.95	-4.46	0.00	-37.00	0.00	37.00	686.95	343.48	435.91	215.28	136.11	-7.92	0.178
180.00	-3.66	-4.23	0.00	-14.69	0.00	14.69	650.71	325.36	390.87	193.04	144.45	-8.05	0.082
181.90	0.00	-3.67	0.00	-6.66	0.00	6.66	636.94	318.47	374.40	184.90	147.65	-8.07	0.036

Site Number: 302502

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:47:45 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W

93 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		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	1,083.4	492.1	1,848.9	0.0	0.0
14.71	Reinf. Top	274.5	707.4					60.2	1,020.6	334.7	1,727.9	0.0	0.0
15.00		284.8	43.1					3.7	49.8	288.5	92.9	0.0	0.0
20.00	Reinf. Top Reinf	532.7	735.4					63.9	858.0	596.6	1,593.4	0.0	0.0
25.00		521.7	720.4					63.9	858.0	585.7	1,578.3	0.0	0.0
30.00		516.9	705.3					63.9	858.0	580.8	1,563.3	0.0	0.0
35.00		522.5	690.3					64.7	858.0	587.2	1,548.2	0.0	0.0
40.00		482.7	675.2					66.0	858.0	548.7	1,533.2	0.0	0.0
44.10	Bot - Section 2	268.1	542.4					55.0	703.5	323.1	1,246.0	0.0	0.0
45.00		246.6	217.7					12.2	154.4	258.8	372.1	0.0	0.0
48.60	Top - Section 1	274.5	861.9					49.1	617.7	323.5	1,479.7	0.0	0.0
50.00		353.1	152.2					19.2	240.2	372.3	392.5	0.0	0.0
55.00		552.8	535.6					69.3	858.0	622.0	1,393.6	0.0	0.0
60.00		553.4	523.1					70.2	858.0	623.6	1,381.0	0.0	0.0
65.00		552.6	510.5					71.0	858.0	623.6	1,368.5	0.0	0.0
70.00		550.5	498.0					71.8	858.0	622.3	1,355.9	0.0	0.0
75.00		547.3	485.4					72.5	858.0	619.8	1,343.4	0.0	0.0
80.00	Reinf. Top Reinf	543.0	472.9					73.2	858.0	616.3	1,330.8	0.0	0.0
85.00		355.2	460.3					73.9	783.6	429.1	1,243.9	0.0	0.0
86.58	Bot - Section 3	270.6	142.9					23.5	247.6	294.1	390.5	0.0	0.0
90.00		203.6	553.6					51.0	536.0	254.6	1,089.6	0.0	0.0
90.33	Top - Section 2	268.9	52.9					4.9	51.7	273.8	104.6	0.0	0.0
95.00		516.3	331.4					70.2	731.9	586.5	1,063.2	0.0	0.0
100.00		526.7	345.1					75.7	783.6	602.3	1,128.7	0.0	0.0
105.00		518.4	335.1					76.2	783.6	594.6	1,118.6	0.0	0.0
110.00		509.5	325.0					76.7	783.6	586.3	1,108.6	0.0	0.0
115.00		500.0	315.0					77.2	783.6	577.3	1,098.5	0.0	0.0
120.00	Reinf. Top Reinf	489.9	304.9					77.7	783.6	567.6	1,088.5	0.0	0.0
125.00		303.5	294.9					78.2	648.3	381.7	943.2	0.0	0.0
126.28	Top - Section 3	236.9	73.9					20.1	166.0	257.0	239.8	0.0	0.0
130.00		406.9	158.7					58.5	482.3	465.4	641.0	0.0	0.0
135.00		456.3	206.7					79.1	648.3	535.4	855.0	0.0	0.0
140.00	Reinf. Top Reinf	444.1	199.2					79.5	648.3	523.6	847.5	0.0	0.0
145.00		262.0	191.6					79.9	531.0	341.9	722.6	0.0	0.0
146.00	Appurtenance(s)	212.5	37.4	523.2	0.0	0.0	627.9	16.0	106.2	751.7	771.6	0.0	0.0
150.00		375.4	146.7					64.3	407.1	439.6	553.8	0.0	0.0
155.00		345.9	176.6					80.7	508.8	426.6	685.4	0.0	0.0
158.50	Reinf. Top	199.0	119.1					56.7	356.2	255.7	475.3	0.0	0.0
160.00		218.9	49.9					24.3	55.3	243.3	105.2	0.0	0.0
165.00		191.2	161.5					0.0	184.2	191.2	345.7	0.0	0.0
166.00	Appurtenance(s)	153.9	31.4	2,597.3	0.0	0.0	1,952.6	0.0	36.8	2,751.2	2,020.9	0.0	0.0
170.00		270.3	122.6					0.0	123.8	270.3	246.4	0.0	0.0
175.00	Appurtenance(s)	289.0	146.5	4,263.1	0.0	0.0	2,120.4	0.0	154.8	4,552.2	2,421.7	0.0	0.0
180.00		193.3	138.9					0.0	102.5	193.3	241.4	0.0	0.0
181.90		52.0	50.8					0.0	39.0	52.0	89.8	0.0	0.0

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:47:51 PM

Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W

93 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor : 1.10

Wind Importance Factor : 1.00

Dead Load Factor : 0.90

Wind Load Factor : 1.60

Totals: 27,126.8 46,448.2 0.00 0.00

Site Number: 302502

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Site Name: Harwinton, CT

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Customer: AT&T MOBILITY

Load Case: 0.9D + 1.6W

93 mph with No Ice (Reduced DL)

27 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	-49.47	-30.59	0.00	-3,787.61	0.00	3,787.61	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.502
5.00	-47.72	-30.26	0.00	-3,634.67	0.00	3,634.67	3,397.00	1,698.50	5,857.04	2,892.57	0.09	-0.17	0.489
10.00	-45.79	-29.89	0.00	-3,483.39	0.00	3,483.39	3,359.11	1,679.56	5,677.90	2,804.10	0.37	-0.34	0.475
14.71	-44.02	-29.61	0.00	-3,342.60	0.00	3,342.60	3,322.40	1,661.20	5,509.81	2,721.09	0.79	-0.51	0.463
14.71	-44.02	-29.61	0.00	-3,342.60	0.00	3,342.60	3,322.40	1,661.20	5,509.81	2,721.09	0.79	-0.51	0.574
15.00	-43.87	-29.41	0.00	-3,334.02	0.00	3,334.02	3,320.10	1,660.05	5,499.48	2,715.99	0.82	-0.52	0.573
20.00	-42.18	-28.95	0.00	-3,186.99	0.00	3,186.99	3,279.97	1,639.98	5,321.88	2,628.28	1.48	-0.73	0.558
20.00	-42.18	-28.95	0.00	-3,186.99	0.00	3,186.99	3,279.97	1,639.98	5,321.88	2,628.28	1.48	-0.73	0.558
25.00	-40.50	-28.49	0.00	-3,042.24	0.00	3,042.24	3,238.71	1,619.36	5,145.22	2,541.03	2.36	-0.95	0.543
30.00	-38.84	-28.03	0.00	-2,899.78	0.00	2,899.78	3,196.33	1,598.17	4,969.60	2,454.30	3.47	-1.16	0.527
35.00	-37.21	-27.55	0.00	-2,759.64	0.00	2,759.64	3,152.83	1,576.41	4,795.15	2,368.14	4.79	-1.37	0.512
40.00	-35.60	-27.08	0.00	-2,621.91	0.00	2,621.91	3,108.20	1,554.10	4,621.97	2,282.62	6.35	-1.59	0.496
44.10	-34.31	-26.78	0.00	-2,510.89	0.00	2,510.89	3,070.77	1,535.38	4,481.00	2,213.00	7.79	-1.76	0.483
45.00	-33.90	-26.57	0.00	-2,486.78	0.00	2,486.78	3,062.45	1,531.23	4,450.19	2,197.78	8.13	-1.80	0.472
48.60	-32.39	-26.26	0.00	-2,391.13	0.00	2,391.13	2,379.97	1,189.99	3,474.54	1,715.94	9.54	-1.95	0.532
50.00	-31.94	-25.95	0.00	-2,354.37	0.00	2,354.37	2,371.43	1,185.72	3,439.58	1,698.68	10.13	-2.01	0.526
55.00	-30.48	-25.39	0.00	-2,224.62	0.00	2,224.62	2,340.22	1,170.11	3,315.01	1,637.16	12.35	-2.23	0.506
60.00	-29.03	-24.82	0.00	-2,097.65	0.00	2,097.65	2,307.88	1,153.94	3,191.02	1,575.92	14.81	-2.45	0.486
65.00	-27.60	-24.24	0.00	-1,973.53	0.00	1,973.53	2,274.42	1,137.21	3,067.70	1,515.02	17.49	-2.66	0.465
70.00	-26.19	-23.65	0.00	-1,852.32	0.00	1,852.32	2,239.83	1,119.92	2,945.16	1,454.51	20.39	-2.88	0.445
75.00	-24.80	-23.05	0.00	-1,734.06	0.00	1,734.06	2,204.12	1,102.06	2,823.54	1,394.44	23.52	-3.09	0.425
80.00	-23.42	-22.45	0.00	-1,618.79	0.00	1,618.79	2,167.29	1,083.65	2,702.93	1,334.88	26.87	-3.30	0.404
80.00	-23.42	-22.45	0.00	-1,618.79	0.00	1,618.79	2,167.29	1,083.65	2,702.93	1,334.88	26.87	-3.30	0.445
85.00	-22.15	-22.00	0.00	-1,506.54	0.00	1,506.54	2,129.34	1,064.67	2,583.46	1,275.87	30.43	-3.50	0.424
86.58	-21.74	-21.73	0.00	-1,471.78	0.00	1,471.78	2,117.11	1,058.55	2,545.96	1,257.35	31.60	-3.57	0.417
90.00	-20.63	-21.43	0.00	-1,397.47	0.00	1,397.47	2,090.26	1,045.13	2,465.23	1,217.49	34.22	-3.73	0.394
90.33	-20.51	-21.19	0.00	-1,390.40	0.00	1,390.40	1,547.78	773.89	1,862.15	919.64	34.47	-3.74	0.464
95.00	-19.41	-20.61	0.00	-1,291.44	0.00	1,291.44	1,525.71	762.86	1,787.32	882.69	38.23	-3.94	0.438
100.00	-18.25	-20.00	0.00	-1,188.40	0.00	1,188.40	1,500.99	750.50	1,707.51	843.28	42.48	-4.16	0.410
105.00	-17.11	-19.38	0.00	-1,088.42	0.00	1,088.42	1,475.16	737.58	1,628.14	804.08	46.96	-4.38	0.382
110.00	-15.98	-18.77	0.00	-991.50	0.00	991.50	1,448.19	724.10	1,549.32	765.15	51.65	-4.59	0.355
115.00	-14.87	-18.16	0.00	-897.66	0.00	897.66	1,420.11	710.05	1,471.16	726.55	56.56	-4.79	0.328
120.00	-13.78	-17.54	0.00	-806.88	0.00	806.88	1,390.90	695.45	1,393.78	688.34	61.68	-4.99	0.300
120.00	-13.78	-17.54	0.00	-806.88	0.00	806.88	1,390.90	695.45	1,393.78	688.34	61.68	-4.99	0.364
125.00	-12.84	-17.11	0.00	-719.16	0.00	719.16	1,360.57	680.28	1,317.29	650.56	67.00	-5.17	0.333
126.28	-12.59	-16.85	0.00	-697.26	0.00	697.26	1,352.62	676.31	1,297.87	640.97	68.39	-5.23	0.324
126.28	-12.59	-16.85	0.00	-697.26	0.00	697.26	900.61	450.31	868.79	429.06	68.39	-5.23	0.395
130.00	-11.94	-16.37	0.00	-634.57	0.00	634.57	888.95	444.47	835.13	412.44	72.53	-5.39	0.364
135.00	-11.08	-15.80	0.00	-552.72	0.00	552.72	872.29	436.14	789.93	390.12	78.28	-5.60	0.322
140.00	-10.24	-15.22	0.00	-473.75	0.00	473.75	854.50	427.25	744.88	367.87	84.25	-5.80	0.281
140.00	-10.24	-15.22	0.00	-473.75	0.00	473.75	854.50	427.25	744.88	367.87	84.25	-5.80	0.355
145.00	-9.53	-14.83	0.00	-397.62	0.00	397.62	835.60	417.80	700.09	345.75	90.42	-5.99	0.305
146.00	-8.81	-14.02	0.00	-382.79	0.00	382.79	831.68	415.84	691.17	341.34	91.68	-6.03	0.294
150.00	-8.27	-13.55	0.00	-326.73	0.00	326.73	815.57	407.78	655.68	323.81	96.80	-6.20	0.256
155.00	-7.60	-13.07	0.00	-259.00	0.00	259.00	794.42	397.21	611.76	302.12	103.38	-6.38	0.208
158.50	-7.14	-12.77	0.00	-213.27	0.00	213.27	778.94	389.47	581.37	287.12	108.09	-6.49	0.174
158.50	-7.14	-12.77	0.00	-213.27	0.00	213.27	778.94	389.47	581.37	287.12	108.09	-6.49	0.753
160.00	-7.00	-12.55	0.00	-194.12	0.00	194.12	772.14	386.07	568.44	280.73	110.13	-6.53	0.702
165.00	-6.61	-12.35	0.00	-131.36	0.00	131.36	748.74	374.37	525.85	259.70	117.25	-7.06	0.516
166.00	-4.91	-9.39	0.00	-119.01	0.00	119.01	743.93	371.96	517.43	255.54	118.73	-7.15	0.473
170.00	-4.66	-9.12	0.00	-81.44	0.00	81.44	723.19	361.60	483.41	238.74	124.85	-7.46	0.348

Site Number: 302502

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Engineering Number: OAA712918_C3_04

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93 mph with No Ice (Reduced DL)

27 Iterations

Gust Response Factor : 1.10

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Dead Load Factor : 0.90

Wind Load Factor : 1.60

175.00	-2.85	-4.29	0.00	-35.86	0.00	35.86	686.95	343.48	435.91	215.28	132.79	-7.71	0.171
180.00	-2.63	-4.07	0.00	-14.39	0.00	14.39	650.71	325.36	390.87	193.04	140.91	-7.84	0.079
181.90	0.00	-3.67	0.00	-6.66	0.00	6.66	636.94	318.47	374.40	184.90	144.03	-7.86	0.036

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:47:51 PM

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

Applied Segment Forces Summary

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		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	1,754.8	67.5	3,256.6	0.0	0.0
14.71	Reinf. Top	34.5	1,412.0					17.1	1,668.8	51.6	3,080.8	0.0	0.0
15.00		35.9	86.9					1.1	85.7	37.0	172.6	0.0	0.0
20.00	Reinf. Top Reinf	67.3	1,486.2					18.4	1,474.9	85.7	2,961.1	0.0	0.0
25.00		66.2	1,469.4					18.5	1,406.0	84.7	2,875.4	0.0	0.0
30.00		65.8	1,449.8					18.6	1,411.6	84.4	2,861.3	0.0	0.0
35.00		66.8	1,428.1					19.2	1,416.4	85.9	2,844.5	0.0	0.0
40.00		61.9	1,405.0					20.1	1,420.5	81.9	2,825.6	0.0	0.0
44.10	Bot - Section 2	34.4	1,134.9					17.1	1,167.6	51.5	2,302.5	0.0	0.0
45.00		31.7	382.4					3.8	256.6	35.5	639.0	0.0	0.0
48.60	Top - Section 1	35.3	1,513.7					15.5	1,027.5	50.8	2,541.3	0.0	0.0
50.00		45.6	344.6					6.1	400.0	51.7	744.7	0.0	0.0
55.00		71.5	1,212.4					22.3	1,430.7	93.8	2,643.1	0.0	0.0
60.00		71.8	1,189.3					23.0	1,433.5	94.8	2,622.8	0.0	0.0
65.00		71.9	1,165.7					23.6	1,436.1	95.6	2,601.8	0.0	0.0
70.00		71.9	1,141.6					24.2	1,438.5	96.1	2,580.2	0.0	0.0
75.00		71.8	1,117.1					24.7	1,440.8	96.5	2,557.9	0.0	0.0
80.00	Reinf. Top Reinf	71.5	1,092.2					25.3	1,443.0	96.8	2,535.2	0.0	0.0
85.00		46.9	1,067.0					24.8	1,336.9	71.7	2,403.9	0.0	0.0
86.58	Bot - Section 3	35.8	333.1					7.9	422.8	43.7	756.0	0.0	0.0
90.00		26.9	1,047.3					17.3	915.9	44.3	1,963.2	0.0	0.0
90.33	Top - Section 2	35.7	100.3					1.7	88.4	37.4	188.8	0.0	0.0
95.00		68.7	855.3					24.0	1,252.1	92.7	2,107.4	0.0	0.0
100.00		70.4	893.4					26.2	1,342.3	96.6	2,235.7	0.0	0.0
105.00		69.6	870.5					26.6	1,343.9	96.2	2,214.5	0.0	0.0
110.00		68.8	847.4					27.0	1,345.5	95.8	2,193.0	0.0	0.0
115.00		67.8	824.2					27.4	1,347.0	95.2	2,171.2	0.0	0.0
120.00	Reinf. Top Reinf	66.8	800.7					27.8	1,348.5	94.6	2,149.2	0.0	0.0
125.00		41.6	777.1					25.9	1,151.5	67.5	1,928.6	0.0	0.0
126.28	Top - Section 3	32.6	196.3					6.7	295.0	39.3	491.3	0.0	0.0
130.00		56.2	489.5					19.6	857.8	75.8	1,347.4	0.0	0.0
135.00		63.4	638.5					26.6	1,154.1	90.0	1,792.6	0.0	0.0
140.00	Reinf. Top Reinf	62.2	617.7					26.9	1,155.3	89.1	1,773.1	0.0	0.0
145.00		36.8	596.8					24.9	982.5	61.7	1,579.4	0.0	0.0
146.00	Appurtenance(s)	30.1	117.8	106.5	0.0	0.0	1,979.2	5.0	196.6	141.6	2,293.7	0.0	0.0
150.00		53.4	460.0					20.2	643.2	73.5	1,103.2	0.0	0.0
155.00		49.5	554.7					25.4	804.5	75.0	1,359.2	0.0	0.0
158.50	Reinf. Top	28.7	377.0					18.0	563.4	46.6	940.4	0.0	0.0
160.00		36.4	159.1					7.7	111.7	44.2	270.8	0.0	0.0
165.00		33.4	512.1					0.0	245.6	33.4	757.7	0.0	0.0
166.00	Appurtenance(s)	27.1	100.8	470.7	0.0	0.0	5,869.3	0.0	49.1	497.9	6,019.3	0.0	0.0
170.00		48.0	391.8					0.0	165.1	48.0	556.9	0.0	0.0
175.00	Appurtenance(s)	51.9	469.1	705.6	0.0	0.0	8,972.8	0.0	206.4	757.4	9,648.3	0.0	0.0
180.00		35.0	447.5					0.0	136.7	35.0	584.2	0.0	0.0
181.90		9.5	165.8					0.0	51.9	9.5	217.8	0.0	0.0

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:47:57 PM

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

Totals: 4,401.10 96,521.7 0.00 0.00

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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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	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total	Rotation	Ratio
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	(deg)	
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)		
0.00	-106.71	-5.01	0.00	-707.10	0.00	707.10	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.107
5.00	-103.87	-4.99	0.00	-682.07	0.00	682.07	3,397.00	1,698.50	5,857.04	2,892.57	0.02	-0.03	0.105
10.00	-100.61	-4.98	0.00	-657.09	0.00	657.09	3,359.11	1,679.56	5,677.90	2,804.10	0.07	-0.06	0.102
14.71	-97.53	-4.95	0.00	-633.64	0.00	633.64	3,322.40	1,661.20	5,509.81	2,721.09	0.15	-0.10	0.100
14.71	-97.53	-4.95	0.00	-633.64	0.00	633.64	3,322.40	1,661.20	5,509.81	2,721.09	0.15	-0.10	0.123
15.00	-97.36	-4.95	0.00	-632.20	0.00	632.20	3,320.10	1,660.05	5,499.48	2,715.99	0.15	-0.10	0.123
20.00	-94.39	-4.93	0.00	-607.45	0.00	607.45	3,279.97	1,639.98	5,321.88	2,628.28	0.28	-0.14	0.120
20.00	-94.39	-4.93	0.00	-607.45	0.00	607.45	3,279.97	1,639.98	5,321.88	2,628.28	0.28	-0.14	0.120
25.00	-91.51	-4.90	0.00	-582.82	0.00	582.82	3,238.71	1,619.36	5,145.22	2,541.03	0.44	-0.18	0.117
30.00	-88.65	-4.87	0.00	-558.33	0.00	558.33	3,196.33	1,598.17	4,969.60	2,454.30	0.65	-0.22	0.115
35.00	-85.80	-4.83	0.00	-533.99	0.00	533.99	3,152.83	1,576.41	4,795.15	2,368.14	0.91	-0.26	0.112
40.00	-82.97	-4.79	0.00	-509.83	0.00	509.83	3,108.20	1,554.10	4,621.97	2,282.62	1.20	-0.30	0.109
44.10	-80.67	-4.76	0.00	-490.19	0.00	490.19	3,070.77	1,535.38	4,481.00	2,213.00	1.48	-0.34	0.106
45.00	-80.03	-4.74	0.00	-485.91	0.00	485.91	3,062.45	1,531.23	4,450.19	2,197.78	1.54	-0.34	0.104
48.60	-77.49	-4.70	0.00	-468.83	0.00	468.83	2,379.97	1,189.99	3,474.54	1,715.94	1.81	-0.37	0.118
50.00	-76.74	-4.68	0.00	-462.25	0.00	462.25	2,371.43	1,185.72	3,439.58	1,698.68	1.92	-0.39	0.117
55.00	-74.10	-4.63	0.00	-438.82	0.00	438.82	2,340.22	1,170.11	3,315.01	1,637.16	2.35	-0.43	0.113
60.00	-71.47	-4.57	0.00	-415.69	0.00	415.69	2,307.88	1,153.94	3,191.02	1,575.92	2.83	-0.47	0.109
65.00	-68.87	-4.50	0.00	-392.86	0.00	392.86	2,274.42	1,137.21	3,067.70	1,515.02	3.34	-0.51	0.105
70.00	-66.28	-4.43	0.00	-370.37	0.00	370.37	2,239.83	1,119.92	2,945.16	1,454.51	3.90	-0.56	0.101
75.00	-63.72	-4.35	0.00	-348.23	0.00	348.23	2,204.12	1,102.06	2,823.54	1,394.44	4.51	-0.60	0.096
80.00	-61.19	-4.27	0.00	-326.47	0.00	326.47	2,167.29	1,083.65	2,702.93	1,334.88	5.16	-0.64	0.092
80.00	-61.19	-4.27	0.00	-326.47	0.00	326.47	2,167.29	1,083.65	2,702.93	1,334.88	5.16	-0.64	0.101
85.00	-58.78	-4.20	0.00	-305.11	0.00	305.11	2,129.34	1,064.67	2,583.46	1,275.87	5.86	-0.68	0.097
86.58	-58.02	-4.17	0.00	-298.47	0.00	298.47	2,117.11	1,058.55	2,545.96	1,257.35	6.08	-0.70	0.096
90.00	-56.06	-4.12	0.00	-284.20	0.00	284.20	2,090.26	1,045.13	2,465.23	1,217.49	6.60	-0.73	0.091
90.33	-55.87	-4.10	0.00	-282.84	0.00	282.84	1,547.78	773.89	1,862.15	919.64	6.65	-0.73	0.107
95.00	-53.76	-4.02	0.00	-263.69	0.00	263.69	1,525.71	762.86	1,787.32	882.69	7.38	-0.77	0.102
100.00	-51.52	-3.93	0.00	-243.58	0.00	243.58	1,500.99	750.50	1,707.51	843.28	8.22	-0.82	0.096
105.00	-49.31	-3.84	0.00	-223.91	0.00	223.91	1,475.16	737.58	1,628.14	804.08	9.10	-0.86	0.090
110.00	-47.11	-3.75	0.00	-204.69	0.00	204.69	1,448.19	724.10	1,549.32	765.15	10.02	-0.91	0.084
115.00	-44.94	-3.65	0.00	-185.95	0.00	185.95	1,420.11	710.05	1,471.16	726.55	10.99	-0.95	0.078
120.00	-42.79	-3.55	0.00	-167.70	0.00	167.70	1,390.90	695.45	1,393.78	688.34	12.01	-0.99	0.072
120.00	-42.79	-3.55	0.00	-167.70	0.00	167.70	1,390.90	695.45	1,393.78	688.34	12.01	-0.99	0.087
125.00	-40.86	-3.47	0.00	-149.95	0.00	149.95	1,360.57	680.28	1,317.29	650.56	13.06	-1.03	0.080
126.28	-40.37	-3.43	0.00	-145.52	0.00	145.52	1,352.62	676.31	1,297.87	640.97	13.34	-1.04	0.079
126.28	-40.37	-3.43	0.00	-145.52	0.00	145.52	900.61	450.31	868.79	429.06	13.34	-1.04	0.096
130.00	-39.02	-3.36	0.00	-132.75	0.00	132.75	888.95	444.47	835.13	412.44	14.16	-1.07	0.089
135.00	-37.23	-3.26	0.00	-115.95	0.00	115.95	872.29	436.14	789.93	390.12	15.31	-1.12	0.080
140.00	-35.46	-3.16	0.00	-99.63	0.00	99.63	854.50	427.25	744.88	367.87	16.50	-1.16	0.071
140.00	-35.46	-3.16	0.00	-99.63	0.00	99.63	854.50	427.25	744.88	367.87	16.50	-1.16	0.089
145.00	-33.88	-3.08	0.00	-83.80	0.00	83.80	835.60	417.80	700.09	345.75	17.74	-1.20	0.078
146.00	-31.59	-2.91	0.00	-80.72	0.00	80.72	831.68	415.84	691.17	341.34	17.99	-1.21	0.075
150.00	-30.48	-2.83	0.00	-69.09	0.00	69.09	815.57	407.78	655.68	323.81	19.02	-1.24	0.066
155.00	-29.13	-2.74	0.00	-54.94	0.00	54.94	794.42	397.21	611.76	302.12	20.34	-1.28	0.056
158.50	-28.19	-2.68	0.00	-45.35	0.00	45.35	778.94	389.47	581.37	287.12	21.29	-1.30	0.048
158.50	-28.19	-2.68	0.00	-45.35	0.00	45.35	778.94	389.47	581.37	287.12	21.29	-1.30	0.194
160.00	-27.91	-2.66	0.00	-41.33	0.00	41.33	772.14	386.07	568.44	280.73	21.70	-1.31	0.183
165.00	-27.15	-2.64	0.00	-28.03	0.00	28.03	748.74	374.37	525.85	259.70	23.13	-1.42	0.144
166.00	-21.15	-2.01	0.00	-25.39	0.00	25.39	743.93	371.96	517.43	255.54	23.43	-1.44	0.128
170.00	-20.59	-1.97	0.00	-17.36	0.00	17.36	723.19	361.60	483.41	238.74	24.67	-1.51	0.101

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:47:58 PM

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	-10.96	-0.96	0.00	-7.52	0.00	7.52	686.95	343.48	435.91	215.28	26.29	-1.56	0.051
180.00	-10.38	-0.91	0.00	-2.74	0.00	2.74	650.71	325.36	390.87	193.04	27.94	-1.59	0.030
181.90	0.00	-0.62	0.00	-1.01	0.00	1.01	636.94	318.47	374.40	184.90	28.57	-1.59	0.005

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

Seg Elev (ft)	Description	Shaft Forces		Discrete Forces			Linear Forces		Sum of Forces				
		Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Torsion MY (lb-ft)	Moment MZ (lb-ft)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Wind FX (lb)	Dead Load (lb)	Torsion MY (lb-ft)	Moment MZ (lb)
0.00		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	1,203.8	128.1	2,054.4	0.0	0.0
14.71	Reinf. Top	71.5	786.0					24.3	1,134.0	95.8	1,919.9	0.0	0.0
15.00		74.2	47.9					1.5	55.3	75.7	103.2	0.0	0.0
20.00	Reinf. Top Reinf	138.7	817.1					25.8	953.3	164.5	1,770.4	0.0	0.0
25.00		135.8	800.4					25.8	953.3	161.6	1,753.7	0.0	0.0
30.00		134.6	783.7					25.8	953.3	160.4	1,737.0	0.0	0.0
35.00		136.0	767.0					26.1	953.3	162.1	1,720.2	0.0	0.0
40.00		125.7	750.2					26.6	953.3	152.3	1,703.5	0.0	0.0
44.10	Bot - Section 2	69.8	602.7					22.2	781.7	92.0	1,384.4	0.0	0.0
45.00		64.2	241.9					4.9	171.6	69.1	413.5	0.0	0.0
48.60	Top - Section 1	71.5	957.7					19.8	686.4	91.3	1,644.1	0.0	0.0
50.00		91.9	169.1					7.8	266.9	99.7	436.1	0.0	0.0
55.00		143.9	595.1					27.9	953.3	171.9	1,548.4	0.0	0.0
60.00		144.1	581.2					28.3	953.3	172.4	1,534.5	0.0	0.0
65.00		143.9	567.3					28.6	953.3	172.5	1,520.5	0.0	0.0
70.00		143.3	553.3					29.0	953.3	172.3	1,506.6	0.0	0.0
75.00		142.5	539.4					29.3	953.3	171.8	1,492.7	0.0	0.0
80.00	Reinf. Top Reinf	141.4	525.4					29.5	953.3	170.9	1,478.7	0.0	0.0
85.00		92.5	511.5					29.8	870.6	122.3	1,382.1	0.0	0.0
86.58	Bot - Section 3	70.5	158.7					9.5	275.1	79.9	433.9	0.0	0.0
90.00		53.0	615.1					20.6	595.5	73.6	1,210.6	0.0	0.0
90.33	Top - Section 2	70.0	58.7					2.0	57.5	72.0	116.2	0.0	0.0
95.00		134.4	368.2					28.3	813.2	162.7	1,181.4	0.0	0.0
100.00		137.1	383.4					30.5	870.6	167.7	1,254.1	0.0	0.0
105.00		135.0	372.3					30.7	870.6	165.7	1,242.9	0.0	0.0
110.00		132.7	361.1					31.0	870.6	163.6	1,231.8	0.0	0.0
115.00		130.2	350.0					31.2	870.6	161.3	1,220.6	0.0	0.0
120.00	Reinf. Top Reinf	127.6	338.8					31.4	870.6	158.9	1,209.5	0.0	0.0
125.00		79.0	327.7					31.5	720.3	110.6	1,048.0	0.0	0.0
126.28	Top - Section 3	61.7	82.1					8.1	184.4	69.8	266.5	0.0	0.0
130.00		105.9	176.3					23.6	535.9	129.5	712.2	0.0	0.0
135.00		118.8	229.7					31.9	720.3	150.7	950.0	0.0	0.0
140.00	Reinf. Top Reinf	115.6	221.3					32.1	720.3	147.7	941.6	0.0	0.0
145.00		68.2	212.9					31.6	590.0	99.8	802.9	0.0	0.0
146.00	Appurtenance(s)	55.3	41.6	136.2	0.0	0.0	697.7	6.4	118.0	197.9	857.3	0.0	0.0
150.00		97.7	163.0					25.5	452.3	123.3	615.3	0.0	0.0
155.00		90.1	196.2					32.2	565.4	122.3	761.6	0.0	0.0
158.50	Reinf. Top	51.8	132.4					22.7	395.8	74.5	528.1	0.0	0.0
160.00		57.0	55.5					9.8	61.4	66.8	116.9	0.0	0.0
165.00		49.8	179.5					0.0	204.6	49.8	384.1	0.0	0.0
166.00	Appurtenance(s)	40.1	34.9	676.3	0.0	0.0	2,169.6	0.0	40.9	716.3	2,245.4	0.0	0.0
170.00		70.4	136.2					0.0	137.6	70.4	273.8	0.0	0.0
175.00	Appurtenance(s)	75.3	162.7	1,110.0	0.0	0.0	2,356.0	0.0	172.0	1,185.2	2,690.7	0.0	0.0
180.00		50.3	154.4					0.0	113.9	50.3	268.3	0.0	0.0
181.90		13.5	56.5					0.0	43.3	13.5	99.8	0.0	0.0

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:48:04 PM

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

Totals: 7,375.20 51,609.1 0.00 0.00

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:48:04 PM

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	-55.02	-8.28	0.00	-1,023.72	0.00	1,023.72	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.141
5.00	-53.17	-8.20	0.00	-982.33	0.00	982.33	3,397.00	1,698.50	5,857.04	2,892.57	0.03	-0.05	0.138
10.00	-51.11	-8.11	0.00	-941.33	0.00	941.33	3,359.11	1,679.56	5,677.90	2,804.10	0.10	-0.09	0.134
14.71	-49.19	-8.03	0.00	-903.14	0.00	903.14	3,322.40	1,661.20	5,509.81	2,721.09	0.21	-0.14	0.130
14.71	-49.19	-8.03	0.00	-903.14	0.00	903.14	3,322.40	1,661.20	5,509.81	2,721.09	0.21	-0.14	0.161
15.00	-49.08	-7.98	0.00	-900.82	0.00	900.82	3,320.10	1,660.05	5,499.48	2,715.99	0.22	-0.14	0.161
20.00	-47.30	-7.86	0.00	-860.92	0.00	860.92	3,279.97	1,639.98	5,321.88	2,628.28	0.40	-0.20	0.156
20.00	-47.30	-7.86	0.00	-860.92	0.00	860.92	3,279.97	1,639.98	5,321.88	2,628.28	0.40	-0.20	0.156
25.00	-45.54	-7.73	0.00	-821.64	0.00	821.64	3,238.71	1,619.36	5,145.22	2,541.03	0.64	-0.26	0.152
30.00	-43.80	-7.61	0.00	-782.97	0.00	782.97	3,196.33	1,598.17	4,969.60	2,454.30	0.94	-0.31	0.148
35.00	-42.07	-7.48	0.00	-744.93	0.00	744.93	3,152.83	1,576.41	4,795.15	2,368.14	1.30	-0.37	0.143
40.00	-40.36	-7.35	0.00	-707.53	0.00	707.53	3,108.20	1,554.10	4,621.97	2,282.62	1.72	-0.43	0.139
44.10	-38.97	-7.27	0.00	-677.39	0.00	677.39	3,070.77	1,535.38	4,481.00	2,213.00	2.10	-0.48	0.135
45.00	-38.56	-7.21	0.00	-670.85	0.00	670.85	3,062.45	1,531.23	4,450.19	2,197.78	2.20	-0.49	0.132
48.60	-36.91	-7.13	0.00	-644.88	0.00	644.88	2,379.97	1,189.99	3,474.54	1,715.94	2.58	-0.53	0.149
50.00	-36.47	-7.05	0.00	-634.90	0.00	634.90	2,371.43	1,185.72	3,439.58	1,698.68	2.74	-0.54	0.147
55.00	-34.92	-6.89	0.00	-599.67	0.00	599.67	2,340.22	1,170.11	3,315.01	1,637.16	3.34	-0.60	0.141
60.00	-33.38	-6.74	0.00	-565.20	0.00	565.20	2,307.88	1,153.94	3,191.02	1,575.92	4.00	-0.66	0.136
65.00	-31.85	-6.58	0.00	-531.50	0.00	531.50	2,274.42	1,137.21	3,067.70	1,515.02	4.72	-0.72	0.130
70.00	-30.34	-6.42	0.00	-498.60	0.00	498.60	2,239.83	1,119.92	2,945.16	1,454.51	5.51	-0.78	0.124
75.00	-28.84	-6.25	0.00	-466.50	0.00	466.50	2,204.12	1,102.06	2,823.54	1,394.44	6.35	-0.83	0.118
80.00	-27.36	-6.09	0.00	-435.23	0.00	435.23	2,167.29	1,083.65	2,702.93	1,334.88	7.26	-0.89	0.113
80.00	-27.36	-6.09	0.00	-435.23	0.00	435.23	2,167.29	1,083.65	2,702.93	1,334.88	7.26	-0.89	0.124
85.00	-25.98	-5.96	0.00	-404.79	0.00	404.79	2,129.34	1,064.67	2,583.46	1,275.87	8.22	-0.94	0.118
86.58	-25.54	-5.89	0.00	-395.38	0.00	395.38	2,117.11	1,058.55	2,545.96	1,257.35	8.53	-0.96	0.116
90.00	-24.33	-5.80	0.00	-375.24	0.00	375.24	2,090.26	1,045.13	2,465.23	1,217.49	9.24	-1.01	0.110
90.33	-24.21	-5.74	0.00	-373.33	0.00	373.33	1,547.78	773.89	1,862.15	919.64	9.31	-1.01	0.129
95.00	-23.03	-5.58	0.00	-346.52	0.00	346.52	1,525.71	762.86	1,787.32	882.69	10.32	-1.06	0.122
100.00	-21.77	-5.41	0.00	-318.63	0.00	318.63	1,500.99	750.50	1,707.51	843.28	11.47	-1.12	0.114
105.00	-20.53	-5.24	0.00	-291.58	0.00	291.58	1,475.16	737.58	1,628.14	804.08	12.67	-1.18	0.106
110.00	-19.30	-5.07	0.00	-265.38	0.00	265.38	1,448.19	724.10	1,549.32	765.15	13.94	-1.24	0.099
115.00	-18.08	-4.90	0.00	-240.04	0.00	240.04	1,420.11	710.05	1,471.16	726.55	15.27	-1.29	0.091
120.00	-16.87	-4.73	0.00	-215.56	0.00	215.56	1,390.90	695.45	1,393.78	688.34	16.65	-1.34	0.083
120.00	-16.87	-4.73	0.00	-215.56	0.00	215.56	1,390.90	695.45	1,393.78	688.34	16.65	-1.34	0.101
125.00	-15.82	-4.60	0.00	-191.93	0.00	191.93	1,360.57	680.28	1,317.29	650.56	18.08	-1.39	0.092
126.28	-15.55	-4.53	0.00	-186.05	0.00	186.05	1,352.62	676.31	1,297.87	640.97	18.45	-1.41	0.090
126.28	-15.55	-4.53	0.00	-186.05	0.00	186.05	900.61	450.31	868.79	429.06	18.45	-1.41	0.110
130.00	-14.84	-4.40	0.00	-169.19	0.00	169.19	888.95	444.47	835.13	412.44	19.57	-1.45	0.101
135.00	-13.89	-4.23	0.00	-147.21	0.00	147.21	872.29	436.14	789.93	390.12	21.12	-1.51	0.090
140.00	-12.95	-4.07	0.00	-126.04	0.00	126.04	854.50	427.25	744.88	367.87	22.72	-1.56	0.078
140.00	-12.95	-4.07	0.00	-126.04	0.00	126.04	854.50	427.25	744.88	367.87	22.72	-1.56	0.099
145.00	-12.15	-3.96	0.00	-105.68	0.00	105.68	835.60	417.80	700.09	345.75	24.39	-1.61	0.085
146.00	-11.29	-3.74	0.00	-101.72	0.00	101.72	831.68	415.84	691.17	341.34	24.72	-1.62	0.082
150.00	-10.68	-3.61	0.00	-86.76	0.00	86.76	815.57	407.78	655.68	323.81	26.10	-1.66	0.071
155.00	-9.92	-3.47	0.00	-68.71	0.00	68.71	794.42	397.21	611.76	302.12	27.87	-1.71	0.058
158.50	-9.39	-3.38	0.00	-56.57	0.00	56.57	778.94	389.47	581.37	287.12	29.14	-1.74	0.049
158.50	-9.39	-3.38	0.00	-56.57	0.00	56.57	778.94	389.47	581.37	287.12	29.14	-1.74	0.209
160.00	-9.27	-3.33	0.00	-51.49	0.00	51.49	772.14	386.07	568.44	280.73	29.69	-1.75	0.196
165.00	-8.89	-3.28	0.00	-34.86	0.00	34.86	748.74	374.37	525.85	259.70	31.60	-1.89	0.146
166.00	-6.66	-2.49	0.00	-31.59	0.00	31.59	743.93	371.96	517.43	255.54	32.00	-1.92	0.133
170.00	-6.39	-2.42	0.00	-21.62	0.00	21.62	723.19	361.60	483.41	238.74	33.65	-2.00	0.099

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:48:04 PM

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

175.00	-3.74	-1.14	0.00	-9.51	0.00	9.51	686.95	343.48	435.91	215.28	35.78	-2.07	0.050
180.00	-3.47	-1.08	0.00	-3.80	0.00	3.80	650.71	325.36	390.87	193.04	37.96	-2.10	0.025
181.90	0.00	-0.96	0.00	-1.73	0.00	1.73	636.94	318.47	374.40	184.90	38.80	-2.11	0.009

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

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_{d1}):	0.06
Long-Period Transition Period (T_L):	6
Importance Factor (I_E):	1.00
Site Coefficient F_a :	1.60
Site Coefficient F_v :	2.40
Response Modification Coefficient (R):	1.50
Design Spectral Response Acceleration at Short Period (S_{ds}):	0.19
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):	3.20
Redundancy Factor (p):	1.00
Seismic Force Distribution Exponent (k):	2.00
Total Unfactored Dead Load:	55.02 k
Seismic Base Shear (E):	1.65 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)
46	180.95	100	3,266	0.006	9	124
45	177.50	268	8,452	0.014	24	332
44	172.50	335	9,960	0.017	28	415
43	168.00	274	7,728	0.013	22	339
42	165.50	76	2,077	0.004	6	94
41	162.50	384	10,143	0.017	28	476
40	159.25	117	2,964	0.005	8	145
39	156.75	528	12,977	0.022	36	654
38	152.50	762	17,712	0.030	49	943
37	148.00	615	13,477	0.023	38	762
36	145.50	160	3,378	0.006	9	198
35	142.50	803	16,304	0.027	45	995
34	137.50	942	17,803	0.030	50	1,167
33	132.50	950	16,678	0.028	46	1,177
32	128.14	712	11,695	0.020	33	882
31	125.64	266	4,207	0.007	12	330
30	122.50	1,048	15,727	0.027	44	1,298
29	117.50	1,209	16,698	0.028	46	1,498
28	112.50	1,221	15,448	0.026	43	1,512
27	107.50	1,232	14,235	0.024	40	1,526
26	102.50	1,243	13,058	0.022	36	1,540
25	97.50	1,254	11,921	0.020	33	1,554
24	92.67	1,181	10,144	0.017	28	1,464

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

23	90.17	116	945	0.002	3	144
22	88.29	1,211	9,437	0.016	26	1,500
21	85.79	434	3,193	0.005	9	537
20	82.50	1,382	9,407	0.016	26	1,712
19	77.50	1,479	8,882	0.015	25	1,832
18	72.50	1,493	7,846	0.013	22	1,849
17	67.50	1,507	6,864	0.012	19	1,866
16	62.50	1,521	5,940	0.010	17	1,884
15	57.50	1,534	5,073	0.009	14	1,901
14	52.50	1,548	4,268	0.007	12	1,918
13	49.30	436	1,060	0.002	3	540
12	46.80	1,644	3,601	0.006	10	2,037
11	44.55	413	821	0.001	2	512
10	42.05	1,384	2,448	0.004	7	1,715
9	37.50	1,704	2,396	0.004	7	2,110
8	32.50	1,720	1,817	0.003	5	2,131
7	27.50	1,737	1,314	0.002	4	2,152
6	22.50	1,754	888	0.001	2	2,173
5	17.50	1,770	542	0.001	2	2,193
4	14.85	103	23	0.000	0	128
3	12.35	1,920	293	0.000	1	2,378
2	7.50	2,054	116	0.000	0	2,545
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	0.112	184	2,478
RFS FD9R6004/2C-3L (	175.00	19	570	0.001	2	23
Alcatel-Lucent B13 R	175.00	173	5,310	0.009	15	215
Alcatel-Lucent B66A	175.00	170	5,219	0.009	15	211
RFS DB-T1-6Z-8AB-0Z	175.00	88	2,695	0.005	8	109
Commscope SBNHH-1D65	175.00	244	7,460	0.013	21	302
Antel LPA-80063/6CF	175.00	162	4,961	0.008	14	201
Flat Low Profile Pla	175.00	1,500	45,938	0.077	128	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 PI	166.00	1,500	41,334	0.070	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
		55,021	592,927	1.000	1,651	68,161

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)
46	180.95	100	3,266	0.006	9	86
45	177.50	268	8,452	0.014	24	231
44	172.50	335	9,960	0.017	28	288
43	168.00	274	7,728	0.013	22	236
42	165.50	76	2,077	0.004	6	65
41	162.50	384	10,143	0.017	28	331

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

40	159.25	117	2,964	0.005	8	101
39	156.75	528	12,977	0.022	36	455
38	152.50	762	17,712	0.030	49	656
37	148.00	615	13,477	0.023	38	530
36	145.50	160	3,378	0.006	9	137
35	142.50	803	16,304	0.027	45	691
34	137.50	942	17,803	0.030	50	811
33	132.50	950	16,678	0.028	46	818
32	128.14	712	11,695	0.020	33	613
31	125.64	266	4,207	0.007	12	229
30	122.50	1,048	15,727	0.027	44	903
29	117.50	1,209	16,698	0.028	46	1,042
28	112.50	1,221	15,448	0.026	43	1,051
27	107.50	1,232	14,235	0.024	40	1,061
26	102.50	1,243	13,058	0.022	36	1,070
25	97.50	1,254	11,921	0.020	33	1,080
24	92.67	1,181	10,144	0.017	28	1,017
23	90.17	116	945	0.002	3	100
22	88.29	1,211	9,437	0.016	26	1,043
21	85.79	434	3,193	0.005	9	374
20	82.50	1,382	9,407	0.016	26	1,190
19	77.50	1,479	8,882	0.015	25	1,273
18	72.50	1,493	7,846	0.013	22	1,285
17	67.50	1,507	6,864	0.012	19	1,297
16	62.50	1,521	5,940	0.010	17	1,309
15	57.50	1,534	5,073	0.009	14	1,321
14	52.50	1,548	4,268	0.007	12	1,333
13	49.30	436	1,060	0.002	3	376
12	46.80	1,644	3,601	0.006	10	1,416
11	44.55	413	821	0.001	2	356
10	42.05	1,384	2,448	0.004	7	1,192
9	37.50	1,704	2,396	0.004	7	1,467
8	32.50	1,720	1,817	0.003	5	1,481
7	27.50	1,737	1,314	0.002	4	1,496
6	22.50	1,754	888	0.001	2	1,510
5	17.50	1,770	542	0.001	2	1,525
4	14.85	103	23	0.000	0	89
3	12.35	1,920	293	0.000	1	1,653
2	7.50	2,054	116	0.000	0	1,769
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	0.112	184	1,722
RFS FD9R6004/2C-3L (	175.00	19	570	0.001	2	16
Alcatel-Lucent B13 R	175.00	173	5,310	0.009	15	149
Alcatel-Lucent B66A	175.00	170	5,219	0.009	15	147
RFS DB-T1-6Z-8AB-0Z	175.00	88	2,695	0.005	8	76
Commscope SBNHH-1D65	175.00	244	7,460	0.013	21	210
Antel LPA-80063/6CF	175.00	162	4,961	0.008	14	140
Flat Low Profile Pla	175.00	1,500	45,938	0.077	128	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 PI	166.00	1,500	41,334	0.070	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

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

Side Arms	146.00	560	11,937	0.020	33	482
		55,021	592,927	1.000	1,651	47,382

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:48:04 PM

Customer: AT&T MOBILITY

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	-65.88	-1.66	0.00	-251.79	0.00	251.79	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.042
5.00	-63.33	-1.67	0.00	-243.51	0.00	243.51	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.01	0.041
10.00	-60.96	-1.68	0.00	-235.17	0.00	235.17	3,359.11	1,679.56	5,677.90	2,804.10	0.02	-0.02	0.040
14.71	-60.83	-1.69	0.00	-227.26	0.00	227.26	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.039
14.71	-60.83	-1.69	0.00	-227.26	0.00	227.26	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.048
15.00	-58.63	-1.69	0.00	-226.77	0.00	226.77	3,320.10	1,660.05	5,499.48	2,715.99	0.05	-0.03	0.048
20.00	-56.46	-1.70	0.00	-218.32	0.00	218.32	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.047
20.00	-56.46	-1.70	0.00	-218.32	0.00	218.32	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.047
25.00	-54.31	-1.71	0.00	-209.81	0.00	209.81	3,238.71	1,619.36	5,145.22	2,541.03	0.16	-0.06	0.046
30.00	-52.18	-1.71	0.00	-201.27	0.00	201.27	3,196.33	1,598.17	4,969.60	2,454.30	0.23	-0.08	0.045
35.00	-50.07	-1.72	0.00	-192.69	0.00	192.69	3,152.83	1,576.41	4,795.15	2,368.14	0.32	-0.09	0.043
40.00	-48.35	-1.72	0.00	-184.10	0.00	184.10	3,108.20	1,554.10	4,621.97	2,282.62	0.43	-0.11	0.042
44.10	-47.84	-1.72	0.00	-177.05	0.00	177.05	3,070.77	1,535.38	4,481.00	2,213.00	0.53	-0.12	0.041
45.00	-45.80	-1.71	0.00	-175.50	0.00	175.50	3,062.45	1,531.23	4,450.19	2,197.78	0.55	-0.12	0.040
48.60	-45.26	-1.72	0.00	-169.33	0.00	169.33	2,379.97	1,189.99	3,474.54	1,715.94	0.65	-0.13	0.046
50.00	-43.34	-1.71	0.00	-166.93	0.00	166.93	2,371.43	1,185.72	3,439.58	1,698.68	0.69	-0.14	0.045
55.00	-41.44	-1.70	0.00	-158.40	0.00	158.40	2,340.22	1,170.11	3,315.01	1,637.16	0.84	-0.15	0.044
60.00	-39.56	-1.69	0.00	-149.91	0.00	149.91	2,307.88	1,153.94	3,191.02	1,575.92	1.01	-0.17	0.042
65.00	-37.69	-1.67	0.00	-141.47	0.00	141.47	2,274.42	1,137.21	3,067.70	1,515.02	1.20	-0.19	0.040
70.00	-35.84	-1.65	0.00	-133.11	0.00	133.11	2,239.83	1,119.92	2,945.16	1,454.51	1.40	-0.20	0.038
75.00	-34.01	-1.63	0.00	-124.83	0.00	124.83	2,204.12	1,102.06	2,823.54	1,394.44	1.62	-0.22	0.037
80.00	-32.30	-1.61	0.00	-116.68	0.00	116.68	2,167.29	1,083.65	2,702.93	1,334.88	1.86	-0.23	0.035
80.00	-32.30	-1.61	0.00	-116.68	0.00	116.68	2,167.29	1,083.65	2,702.93	1,334.88	1.86	-0.23	0.038
85.00	-31.76	-1.60	0.00	-108.64	0.00	108.64	2,129.34	1,064.67	2,583.46	1,275.87	2.11	-0.25	0.037
86.58	-30.26	-1.57	0.00	-106.11	0.00	106.11	2,117.11	1,058.55	2,545.96	1,257.35	2.19	-0.25	0.036
90.00	-30.11	-1.57	0.00	-100.73	0.00	100.73	2,090.26	1,045.13	2,465.23	1,217.49	2.37	-0.26	0.034
90.33	-28.65	-1.54	0.00	-100.21	0.00	100.21	1,547.78	773.89	1,862.15	919.64	2.39	-0.26	0.040
95.00	-27.10	-1.51	0.00	-93.01	0.00	93.01	1,525.71	762.86	1,787.32	882.69	2.65	-0.28	0.038
100.00	-25.56	-1.47	0.00	-85.46	0.00	85.46	1,500.99	750.50	1,707.51	843.28	2.95	-0.29	0.035
105.00	-24.03	-1.43	0.00	-78.10	0.00	78.10	1,475.16	737.58	1,628.14	804.08	3.27	-0.31	0.033
110.00	-22.52	-1.39	0.00	-70.95	0.00	70.95	1,448.19	724.10	1,549.32	765.15	3.60	-0.32	0.031
115.00	-21.02	-1.34	0.00	-64.03	0.00	64.03	1,420.11	710.05	1,471.16	726.55	3.95	-0.34	0.028
120.00	-19.72	-1.29	0.00	-57.35	0.00	57.35	1,390.90	695.45	1,393.78	688.34	4.31	-0.35	0.026
120.00	-19.72	-1.29	0.00	-57.35	0.00	57.35	1,390.90	695.45	1,393.78	688.34	4.31	-0.35	0.031
125.00	-19.39	-1.28	0.00	-50.91	0.00	50.91	1,360.57	680.28	1,317.29	650.56	4.68	-0.37	0.029
126.28	-18.51	-1.24	0.00	-49.27	0.00	49.27	1,352.62	676.31	1,297.87	640.97	4.78	-0.37	0.028
126.28	-18.51	-1.24	0.00	-49.27	0.00	49.27	900.61	450.31	868.79	429.06	4.78	-0.37	0.034
130.00	-17.33	-1.19	0.00	-44.66	0.00	44.66	888.95	444.47	835.13	412.44	5.08	-0.38	0.032
135.00	-16.17	-1.14	0.00	-38.70	0.00	38.70	872.29	436.14	789.93	390.12	5.48	-0.40	0.028
140.00	-15.17	-1.09	0.00	-33.01	0.00	33.01	854.50	427.25	744.88	367.87	5.90	-0.41	0.025
140.00	-15.17	-1.09	0.00	-33.01	0.00	33.01	854.50	427.25	744.88	367.87	5.90	-0.41	0.031
145.00	-14.97	-1.08	0.00	-27.56	0.00	27.56	835.60	417.80	700.09	345.75	6.34	-0.42	0.027
146.00	-13.35	-0.99	0.00	-26.48	0.00	26.48	831.68	415.84	691.17	341.34	6.43	-0.43	0.026
150.00	-12.40	-0.94	0.00	-22.51	0.00	22.51	815.57	407.78	655.68	323.81	6.79	-0.44	0.023
155.00	-11.75	-0.90	0.00	-17.83	0.00	17.83	794.42	397.21	611.76	302.12	7.26	-0.45	0.019
158.50	-11.61	-0.89	0.00	-14.68	0.00	14.68	778.94	389.47	581.37	287.12	7.59	-0.46	0.017
158.50	-11.61	-0.89	0.00	-14.68	0.00	14.68	778.94	389.47	581.37	287.12	7.59	-0.46	0.066
160.00	-11.13	-0.86	0.00	-13.35	0.00	13.35	772.14	386.07	568.44	280.73	7.73	-0.46	0.062
165.00	-11.04	-0.86	0.00	-9.04	0.00	9.04	748.74	374.37	525.85	259.70	8.23	-0.50	0.050
166.00	-8.01	-0.65	0.00	-8.18	0.00	8.18	743.93	371.96	517.43	255.54	8.34	-0.50	0.043
170.00	-7.60	-0.62	0.00	-5.59	0.00	5.59	723.19	361.60	483.41	238.74	8.77	-0.52	0.034
175.00	-4.35	-0.36	0.00	-2.50	0.00	2.50	686.95	343.48	435.91	215.28	9.33	-0.54	0.018
180.00	-4.22	-0.35	0.00	-0.67	0.00	0.67	650.71	325.36	390.87	193.04	9.90	-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	10.12	-0.55	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:48:04 PM

Customer: AT&T MOBILITY

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

Seismic (Reduced DL) Equivalent Lateral Forces Method

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-45.80	-1.65	0.00	-246.00	0.00	246.00	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.038
5.00	-44.03	-1.66	0.00	-237.73	0.00	237.73	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.01	0.038
10.00	-42.37	-1.67	0.00	-229.42	0.00	229.42	3,359.11	1,679.56	5,677.90	2,804.10	0.02	-0.02	0.037
14.71	-42.28	-1.67	0.00	-221.55	0.00	221.55	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.036
14.71	-42.28	-1.67	0.00	-221.55	0.00	221.55	3,322.40	1,661.20	5,509.81	2,721.09	0.05	-0.03	0.044
15.00	-40.76	-1.68	0.00	-221.07	0.00	221.07	3,320.10	1,660.05	5,499.48	2,715.99	0.05	-0.03	0.044
20.00	-39.25	-1.68	0.00	-212.68	0.00	212.68	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.043
20.00	-39.25	-1.68	0.00	-212.68	0.00	212.68	3,279.97	1,639.98	5,321.88	2,628.28	0.10	-0.05	0.043
25.00	-37.75	-1.69	0.00	-204.27	0.00	204.27	3,238.71	1,619.36	5,145.22	2,541.03	0.16	-0.06	0.042
30.00	-36.27	-1.69	0.00	-195.83	0.00	195.83	3,196.33	1,598.17	4,969.60	2,454.30	0.23	-0.08	0.041
35.00	-34.80	-1.69	0.00	-187.39	0.00	187.39	3,152.83	1,576.41	4,795.15	2,368.14	0.32	-0.09	0.040
40.00	-33.61	-1.69	0.00	-178.94	0.00	178.94	3,108.20	1,554.10	4,621.97	2,282.62	0.42	-0.11	0.039
44.10	-33.25	-1.69	0.00	-172.02	0.00	172.02	3,070.77	1,535.38	4,481.00	2,213.00	0.52	-0.12	0.038
45.00	-31.84	-1.68	0.00	-170.50	0.00	170.50	3,062.45	1,531.23	4,450.19	2,197.78	0.54	-0.12	0.037
48.60	-31.46	-1.68	0.00	-164.45	0.00	164.45	2,379.97	1,189.99	3,474.54	1,715.94	0.63	-0.13	0.042
50.00	-30.13	-1.67	0.00	-162.09	0.00	162.09	2,371.43	1,185.72	3,439.58	1,698.68	0.67	-0.14	0.042
55.00	-28.81	-1.66	0.00	-153.74	0.00	153.74	2,340.22	1,170.11	3,315.01	1,637.16	0.82	-0.15	0.040
60.00	-27.50	-1.65	0.00	-145.44	0.00	145.44	2,307.88	1,153.94	3,191.02	1,575.92	0.99	-0.17	0.039
65.00	-26.20	-1.63	0.00	-137.20	0.00	137.20	2,274.42	1,137.21	3,067.70	1,515.02	1.17	-0.18	0.037
70.00	-24.91	-1.61	0.00	-129.04	0.00	129.04	2,239.83	1,119.92	2,945.16	1,454.51	1.37	-0.20	0.035
75.00	-23.64	-1.59	0.00	-120.98	0.00	120.98	2,204.12	1,102.06	2,823.54	1,394.44	1.58	-0.21	0.034
80.00	-22.45	-1.56	0.00	-113.03	0.00	113.03	2,167.29	1,083.65	2,702.93	1,334.88	1.81	-0.22	0.032
80.00	-22.45	-1.56	0.00	-113.03	0.00	113.03	2,167.29	1,083.65	2,702.93	1,334.88	1.81	-0.22	0.035
85.00	-22.08	-1.56	0.00	-105.22	0.00	105.22	2,129.34	1,064.67	2,583.46	1,275.87	2.05	-0.24	0.034
86.58	-21.03	-1.53	0.00	-102.76	0.00	102.76	2,117.11	1,058.55	2,545.96	1,257.35	2.13	-0.24	0.033
90.00	-20.93	-1.53	0.00	-97.52	0.00	97.52	2,090.26	1,045.13	2,465.23	1,217.49	2.31	-0.25	0.032
90.33	-19.91	-1.50	0.00	-97.02	0.00	97.02	1,547.78	773.89	1,862.15	919.64	2.33	-0.26	0.037
95.00	-18.83	-1.47	0.00	-90.02	0.00	90.02	1,525.71	762.86	1,787.32	882.69	2.58	-0.27	0.035
100.00	-17.76	-1.43	0.00	-82.70	0.00	82.70	1,500.99	750.50	1,707.51	843.28	2.87	-0.28	0.033
105.00	-16.70	-1.39	0.00	-75.56	0.00	75.56	1,475.16	737.58	1,628.14	804.08	3.18	-0.30	0.030
110.00	-15.65	-1.34	0.00	-68.62	0.00	68.62	1,448.19	724.10	1,549.32	765.15	3.50	-0.31	0.028
115.00	-14.61	-1.29	0.00	-61.91	0.00	61.91	1,420.11	710.05	1,471.16	726.55	3.84	-0.33	0.026
120.00	-13.71	-1.25	0.00	-55.44	0.00	55.44	1,390.90	695.45	1,393.78	688.34	4.19	-0.34	0.024
120.00	-13.71	-1.25	0.00	-55.44	0.00	55.44	1,390.90	695.45	1,393.78	688.34	4.19	-0.34	0.029
125.00	-13.48	-1.24	0.00	-49.20	0.00	49.20	1,360.57	680.28	1,317.29	650.56	4.55	-0.35	0.026
126.28	-12.86	-1.20	0.00	-47.61	0.00	47.61	1,352.62	676.31	1,297.87	640.97	4.65	-0.36	0.026
126.28	-12.86	-1.20	0.00	-47.61	0.00	47.61	900.61	450.31	868.79	429.06	4.65	-0.36	0.031
130.00	-12.05	-1.15	0.00	-43.14	0.00	43.14	888.95	444.47	835.13	412.44	4.93	-0.37	0.029
135.00	-11.24	-1.10	0.00	-37.37	0.00	37.37	872.29	436.14	789.93	390.12	5.33	-0.38	0.025
140.00	-10.54	-1.05	0.00	-31.87	0.00	31.87	854.50	427.25	744.88	367.87	5.74	-0.40	0.022
140.00	-10.54	-1.05	0.00	-31.87	0.00	31.87	854.50	427.25	744.88	367.87	5.74	-0.40	0.028
145.00	-10.41	-1.04	0.00	-26.60	0.00	26.60	835.60	417.80	700.09	345.75	6.16	-0.41	0.025
146.00	-9.28	-0.96	0.00	-25.56	0.00	25.56	831.68	415.84	691.17	341.34	6.25	-0.41	0.023
150.00	-8.62	-0.91	0.00	-21.72	0.00	21.72	815.57	407.78	655.68	323.81	6.60	-0.42	0.020
155.00	-8.17	-0.87	0.00	-17.19	0.00	17.19	794.42	397.21	611.76	302.12	7.05	-0.44	0.017
158.50	-8.07	-0.86	0.00	-14.15	0.00	14.15	778.94	389.47	581.37	287.12	7.37	-0.44	0.015
158.50	-8.07	-0.86	0.00	-14.15	0.00	14.15	778.94	389.47	581.37	287.12	7.37	-0.44	0.060
160.00	-7.74	-0.83	0.00	-12.86	0.00	12.86	772.14	386.07	568.44	280.73	7.51	-0.45	0.056
165.00	-7.67	-0.83	0.00	-8.70	0.00	8.70	748.74	374.37	525.85	259.70	8.00	-0.48	0.044
166.00	-5.57	-0.62	0.00	-7.88	0.00	7.88	743.93	371.96	517.43	255.54	8.10	-0.49	0.038
170.00	-5.28	-0.60	0.00	-5.38	0.00	5.38	723.19	361.60	483.41	238.74	8.51	-0.51	0.030
175.00	-3.02	-0.35	0.00	-2.40	0.00	2.40	686.95	343.48	435.91	215.28	9.06	-0.52	0.016
180.00	-2.93	-0.34	0.00	-0.65	0.00	0.65	650.71	325.36	390.87	193.04	9.61	-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	9.82	-0.53	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

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
Design Spectral Response Acceleration at 1.0 Second Period (S_{d1}):	0.10
Period Based on Rayleigh Method (sec):	3.20
Redundancy Factor (ρ):	1.00

Load Case (1.2 + 0.2S_{ds}) * 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)
46	180.95	100	1.870	1.878	1.103	0.352	23	124
45	177.50	268	1.800	1.537	0.977	0.307	55	332
44	172.50	335	1.700	1.121	0.814	0.247	55	415
43	168.00	274	1.612	0.817	0.687	0.198	36	339
42	165.50	76	1.565	0.673	0.623	0.172	9	94
41	162.50	384	1.508	0.522	0.553	0.144	37	476
40	159.25	117	1.449	0.382	0.484	0.115	9	145
39	156.75	528	1.403	0.290	0.435	0.094	33	654
38	152.50	762	1.328	0.162	0.362	0.062	31	943
37	148.00	615	1.251	0.058	0.295	0.032	13	762
36	145.50	160	1.209	0.014	0.262	0.017	2	198
35	142.50	803	1.160	-0.030	0.226	0.001	1	995
34	137.50	942	1.080	-0.081	0.175	-0.022	-14	1,167
33	132.50	950	1.003	-0.109	0.133	-0.039	-25	1,177
32	128.14	712	0.938	-0.120	0.103	-0.050	-24	882
31	125.64	266	0.902	-0.122	0.088	-0.055	-10	330
30	122.50	1,048	0.857	-0.120	0.072	-0.059	-41	1,298
29	117.50	1,209	0.789	-0.110	0.051	-0.061	-49	1,498
28	112.50	1,221	0.723	-0.094	0.035	-0.057	-46	1,512
27	107.50	1,232	0.660	-0.074	0.023	-0.048	-39	1,526
26	102.50	1,243	0.600	-0.053	0.015	-0.034	-28	1,540
25	97.50	1,254	0.543	-0.032	0.009	-0.017	-14	1,554
24	92.67	1,181	0.490	-0.013	0.007	0.001	1	1,464
23	90.17	116	0.464	-0.003	0.006	0.010	1	144
22	88.29	1,211	0.445	0.003	0.006	0.017	13	1,500
21	85.79	434	0.420	0.012	0.006	0.025	7	537
20	82.50	1,382	0.389	0.022	0.007	0.034	31	1,712
19	77.50	1,479	0.343	0.035	0.009	0.045	44	1,832
18	72.50	1,493	0.300	0.045	0.012	0.052	52	1,849
17	67.50	1,507	0.260	0.053	0.016	0.056	56	1,866
16	62.50	1,521	0.223	0.060	0.020	0.058	59	1,884
15	57.50	1,534	0.189	0.064	0.025	0.059	60	1,901
14	52.50	1,548	0.157	0.067	0.029	0.058	60	1,918
13	49.30	436	0.139	0.069	0.032	0.058	17	540

Site Number: 302502

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

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Customer: AT&T MOBILITY

12	46.80	1,644	0.125	0.070	0.034	0.057	63	2,037
11	44.55	413	0.113	0.070	0.035	0.057	16	512
10	42.05	1,384	0.101	0.071	0.037	0.056	52	1,715
9	37.50	1,704	0.080	0.072	0.040	0.055	63	2,110
8	32.50	1,720	0.060	0.072	0.041	0.054	62	2,131
7	27.50	1,737	0.043	0.071	0.042	0.053	61	2,152
6	22.50	1,754	0.029	0.068	0.040	0.051	60	2,173
5	17.50	1,770	0.017	0.062	0.037	0.048	57	2,193
4	14.85	103	0.013	0.058	0.034	0.046	3	128
3	12.35	1,920	0.009	0.053	0.030	0.043	55	2,378
2	7.50	2,054	0.003	0.038	0.021	0.034	46	2,545
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 (	175.00	19	1.749	1.318	0.892	0.277	3	23
Alcatel-Lucent B13 R	175.00	173	1.749	1.318	0.892	0.277	32	215
Alcatel-Lucent B66A	175.00	170	1.749	1.318	0.892	0.277	31	211
RFS DB-T1-6Z-8AB-0Z	175.00	88	1.749	1.318	0.892	0.277	16	109
Commscope SBNHH-	175.00	244	1.749	1.318	0.892	0.277	45	302
Antel LPA-80063/6CF	175.00	162	1.749	1.318	0.892	0.277	30	201
Flat Low Profile Pla	175.00	1,500	1.749	1.318	0.892	0.277	277	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 PI	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	7	694
		55,021	73.350	41.517	30.229	9.063	2,501	68,161

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)
46	180.95	100	1.870	1.878	1.103	0.352	23	86
45	177.50	268	1.800	1.537	0.977	0.307	55	231
44	172.50	335	1.700	1.121	0.814	0.247	55	288
43	168.00	274	1.612	0.817	0.687	0.198	36	236
42	165.50	76	1.565	0.673	0.623	0.172	9	65
41	162.50	384	1.508	0.522	0.553	0.144	37	331
40	159.25	117	1.449	0.382	0.484	0.115	9	101
39	156.75	528	1.403	0.290	0.435	0.094	33	455
38	152.50	762	1.328	0.162	0.362	0.062	31	656
37	148.00	615	1.251	0.058	0.295	0.032	13	530
36	145.50	160	1.209	0.014	0.262	0.017	2	137
35	142.50	803	1.160	-0.030	0.226	0.001	1	691
34	137.50	942	1.080	-0.081	0.175	-0.022	-14	811
33	132.50	950	1.003	-0.109	0.133	-0.039	-25	818
32	128.14	712	0.938	-0.120	0.103	-0.050	-24	613
31	125.64	266	0.902	-0.122	0.088	-0.055	-10	229

Site Number: 302502

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30	122.50	1,048	0.857	-0.120	0.072	-0.059	-41	903
29	117.50	1,209	0.789	-0.110	0.051	-0.061	-49	1,042
28	112.50	1,221	0.723	-0.094	0.035	-0.057	-46	1,051
27	107.50	1,232	0.660	-0.074	0.023	-0.048	-39	1,061
26	102.50	1,243	0.600	-0.053	0.015	-0.034	-28	1,070
25	97.50	1,254	0.543	-0.032	0.009	-0.017	-14	1,080
24	92.67	1,181	0.490	-0.013	0.007	0.001	1	1,017
23	90.17	116	0.464	-0.003	0.006	0.010	1	100
22	88.29	1,211	0.445	0.003	0.006	0.017	13	1,043
21	85.79	434	0.420	0.012	0.006	0.025	7	374
20	82.50	1,382	0.389	0.022	0.007	0.034	31	1,190
19	77.50	1,479	0.343	0.035	0.009	0.045	44	1,273
18	72.50	1,493	0.300	0.045	0.012	0.052	52	1,285
17	67.50	1,507	0.260	0.053	0.016	0.056	56	1,297
16	62.50	1,521	0.223	0.060	0.020	0.058	59	1,309
15	57.50	1,534	0.189	0.064	0.025	0.059	60	1,321
14	52.50	1,548	0.157	0.067	0.029	0.058	60	1,333
13	49.30	436	0.139	0.069	0.032	0.058	17	376
12	46.80	1,644	0.125	0.070	0.034	0.057	63	1,416
11	44.55	413	0.113	0.070	0.035	0.057	16	356
10	42.05	1,384	0.101	0.071	0.037	0.056	52	1,192
9	37.50	1,704	0.080	0.072	0.040	0.055	63	1,467
8	32.50	1,720	0.060	0.072	0.041	0.054	62	1,481
7	27.50	1,737	0.043	0.071	0.042	0.053	61	1,496
6	22.50	1,754	0.029	0.068	0.040	0.051	60	1,510
5	17.50	1,770	0.017	0.062	0.037	0.048	57	1,525
4	14.85	103	0.013	0.058	0.034	0.046	3	89
3	12.35	1,920	0.009	0.053	0.030	0.043	55	1,653
2	7.50	2,054	0.003	0.038	0.021	0.034	46	1,769
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 (	175.00	19	1.749	1.318	0.892	0.277	3	16
Alcatel-Lucent B13 R	175.00	173	1.749	1.318	0.892	0.277	32	149
Alcatel-Lucent B66A	175.00	170	1.749	1.318	0.892	0.277	31	147
RFS DB-T1-6Z-8AB-0Z	175.00	88	1.749	1.318	0.892	0.277	16	76
Commscope SBNHH-	175.00	244	1.749	1.318	0.892	0.277	45	210
Antel LPA-80063/6CF	175.00	162	1.749	1.318	0.892	0.277	30	140
Flat Low Profile Pla	175.00	1,500	1.749	1.318	0.892	0.277	277	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 PI	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	7	482
		55,021	73.350	41.517	30.229	9.063	2,501	47,382

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Customer: AT&T MOBILITY

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	-65.88	-2.49	0.00	-354.30	0.00	354.30	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.055
5.00	-63.33	-2.46	0.00	-341.85	0.00	341.85	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.02	0.054
10.00	-60.95	-2.42	0.00	-329.54	0.00	329.54	3,359.11	1,679.56	5,677.90	2,804.10	0.03	-0.03	0.053
14.71	-60.83	-2.43	0.00	-318.12	0.00	318.12	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.052
14.71	-60.83	-2.43	0.00	-318.12	0.00	318.12	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.064
15.00	-58.63	-2.38	0.00	-317.42	0.00	317.42	3,320.10	1,660.05	5,499.48	2,715.99	0.08	-0.05	0.063
20.00	-56.46	-2.34	0.00	-305.51	0.00	305.51	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.062
20.00	-56.46	-2.34	0.00	-305.51	0.00	305.51	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.062
25.00	-54.31	-2.29	0.00	-293.82	0.00	293.82	3,238.71	1,619.36	5,145.22	2,541.03	0.22	-0.09	0.061
30.00	-52.17	-2.25	0.00	-282.34	0.00	282.34	3,196.33	1,598.17	4,969.60	2,454.30	0.33	-0.11	0.059
35.00	-50.06	-2.20	0.00	-271.10	0.00	271.10	3,152.83	1,576.41	4,795.15	2,368.14	0.46	-0.13	0.058
40.00	-48.35	-2.16	0.00	-260.11	0.00	260.11	3,108.20	1,554.10	4,621.97	2,282.62	0.60	-0.15	0.056
44.10	-47.84	-2.15	0.00	-251.25	0.00	251.25	3,070.77	1,535.38	4,481.00	2,213.00	0.74	-0.17	0.056
45.00	-45.80	-2.09	0.00	-249.31	0.00	249.31	3,062.45	1,531.23	4,450.19	2,197.78	0.78	-0.17	0.054
48.60	-45.26	-2.08	0.00	-241.79	0.00	241.79	2,379.97	1,189.99	3,474.54	1,715.94	0.91	-0.19	0.062
50.00	-43.34	-2.02	0.00	-238.88	0.00	238.88	2,371.43	1,185.72	3,439.58	1,698.68	0.97	-0.20	0.061
55.00	-41.44	-1.97	0.00	-228.75	0.00	228.75	2,340.22	1,170.11	3,315.01	1,637.16	1.19	-0.22	0.059
60.00	-39.55	-1.92	0.00	-218.88	0.00	218.88	2,307.88	1,153.94	3,191.02	1,575.92	1.43	-0.24	0.058
65.00	-37.69	-1.87	0.00	-209.27	0.00	209.27	2,274.42	1,137.21	3,067.70	1,515.02	1.69	-0.26	0.056
70.00	-35.84	-1.83	0.00	-199.91	0.00	199.91	2,239.83	1,119.92	2,945.16	1,454.51	1.98	-0.29	0.054
75.00	-34.01	-1.79	0.00	-190.77	0.00	190.77	2,204.12	1,102.06	2,823.54	1,394.44	2.29	-0.31	0.053
80.00	-32.29	-1.76	0.00	-181.84	0.00	181.84	2,167.29	1,083.65	2,702.93	1,334.88	2.62	-0.33	0.051
80.00	-32.29	-1.76	0.00	-181.84	0.00	181.84	2,167.29	1,083.65	2,702.93	1,334.88	2.62	-0.33	0.056
85.00	-31.75	-1.76	0.00	-173.04	0.00	173.04	2,129.34	1,064.67	2,583.46	1,275.87	2.98	-0.36	0.055
86.58	-30.25	-1.74	0.00	-170.26	0.00	170.26	2,117.11	1,058.55	2,545.96	1,257.35	3.10	-0.36	0.054
90.00	-30.11	-1.75	0.00	-164.30	0.00	164.30	2,090.26	1,045.13	2,465.23	1,217.49	3.37	-0.38	0.052
90.33	-28.65	-1.74	0.00	-163.73	0.00	163.73	1,547.78	773.89	1,862.15	919.64	3.40	-0.38	0.061
95.00	-27.09	-1.76	0.00	-155.59	0.00	155.59	1,525.71	762.86	1,787.32	882.69	3.78	-0.41	0.059
100.00	-25.55	-1.79	0.00	-146.81	0.00	146.81	1,500.99	750.50	1,707.51	843.28	4.22	-0.43	0.056
105.00	-24.02	-1.82	0.00	-137.88	0.00	137.88	1,475.16	737.58	1,628.14	804.08	4.69	-0.46	0.054
110.00	-22.51	-1.87	0.00	-128.76	0.00	128.76	1,448.19	724.10	1,549.32	765.15	5.19	-0.49	0.051
115.00	-21.01	-1.91	0.00	-119.41	0.00	119.41	1,420.11	710.05	1,471.16	726.55	5.71	-0.51	0.048
120.00	-19.71	-1.95	0.00	-109.84	0.00	109.84	1,390.90	695.45	1,393.78	688.34	6.27	-0.54	0.045
120.00	-19.71	-1.95	0.00	-109.84	0.00	109.84	1,390.90	695.45	1,393.78	688.34	6.27	-0.54	0.055
125.00	-19.38	-1.96	0.00	-100.08	0.00	100.08	1,360.57	680.28	1,317.29	650.56	6.85	-0.57	0.051
126.28	-18.50	-1.99	0.00	-97.56	0.00	97.56	1,352.62	676.31	1,297.87	640.97	7.00	-0.57	0.050
126.28	-18.50	-1.99	0.00	-97.56	0.00	97.56	900.61	450.31	868.79	429.06	7.00	-0.57	0.061
130.00	-17.32	-2.01	0.00	-90.18	0.00	90.18	888.95	444.47	835.13	412.44	7.46	-0.60	0.057
135.00	-16.15	-2.02	0.00	-80.15	0.00	80.15	872.29	436.14	789.93	390.12	8.10	-0.63	0.052
140.00	-15.16	-2.01	0.00	-70.07	0.00	70.07	854.50	427.25	744.88	367.87	8.77	-0.66	0.046
140.00	-15.16	-2.01	0.00	-70.07	0.00	70.07	854.50	427.25	744.88	367.87	8.77	-0.66	0.058
145.00	-14.96	-2.01	0.00	-60.01	0.00	60.01	835.60	417.80	700.09	345.75	9.47	-0.68	0.052
146.00	-13.33	-1.97	0.00	-58.00	0.00	58.00	831.68	415.84	691.17	341.34	9.62	-0.69	0.050
150.00	-12.39	-1.94	0.00	-50.10	0.00	50.10	815.57	407.78	655.68	323.81	10.21	-0.72	0.044
155.00	-11.73	-1.90	0.00	-40.42	0.00	40.42	794.42	397.21	611.76	302.12	10.97	-0.74	0.037
158.50	-11.59	-1.89	0.00	-33.77	0.00	33.77	778.94	389.47	581.37	287.12	11.53	-0.76	0.032
158.50	-11.59	-1.89	0.00	-33.77	0.00	33.77	778.94	389.47	581.37	287.12	11.53	-0.76	0.133
160.00	-11.11	-1.86	0.00	-30.93	0.00	30.93	772.14	386.07	568.44	280.73	11.77	-0.77	0.125
165.00	-11.02	-1.86	0.00	-21.65	0.00	21.65	748.74	374.37	525.85	259.70	12.62	-0.85	0.098
166.00	-7.99	-1.52	0.00	-19.79	0.00	19.79	743.93	371.96	517.43	255.54	12.80	-0.87	0.088
170.00	-7.58	-1.47	0.00	-13.70	0.00	13.70	723.19	361.60	483.41	238.74	13.55	-0.92	0.068
175.00	-4.33	-0.93	0.00	-6.35	0.00	6.35	686.95	343.48	435.91	215.28	14.54	-0.96	0.036
180.00	-4.21	-0.90	0.00	-1.72	0.00	1.72	650.71	325.36	390.87	193.04	15.56	-0.98	0.015
181.90	0.00	-0.83	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	15.95	-0.98	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:48:04 PM

Customer: AT&T MOBILITY

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

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4/11/2018 4:48:04 PM

Customer: AT&T MOBILITY

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

Calculated Forces

Seg	Pu	Vu	Tu	Mu	Mu	Resultant	phi	phi	phi	phi	Total		
Elev	FY (-)	FX (-)	MY	MZ	MX	Moment	Pn	Vn	Tn	Mn	Deflect	Rotation	Ratio
(ft)	(kips)	(kips)	(ft-kips)	(ft-kips)	(ft-kips)	(ft-kips)	(kips)	(kips)	(ft-kips)	(ft-kips)	(in)	(deg)	
0.00	-45.80	-2.49	0.00	-345.56	0.00	345.56	3,433.77	1,716.88	6,036.76	2,981.33	0.00	0.00	0.051
5.00	-44.03	-2.45	0.00	-333.12	0.00	333.12	3,397.00	1,698.50	5,857.04	2,892.57	0.01	-0.02	0.050
10.00	-42.37	-2.41	0.00	-320.86	0.00	320.86	3,359.11	1,679.56	5,677.90	2,804.10	0.03	-0.03	0.049
14.71	-42.28	-2.41	0.00	-309.51	0.00	309.51	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.048
14.71	-42.28	-2.41	0.00	-309.51	0.00	309.51	3,322.40	1,661.20	5,509.81	2,721.09	0.07	-0.05	0.059
15.00	-40.76	-2.36	0.00	-308.81	0.00	308.81	3,320.10	1,660.05	5,499.48	2,715.99	0.08	-0.05	0.059
20.00	-39.25	-2.31	0.00	-297.00	0.00	297.00	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.058
20.00	-39.25	-2.31	0.00	-297.00	0.00	297.00	3,279.97	1,639.98	5,321.88	2,628.28	0.14	-0.07	0.058
25.00	-37.75	-2.26	0.00	-285.43	0.00	285.43	3,238.71	1,619.36	5,145.22	2,541.03	0.22	-0.09	0.056
30.00	-36.27	-2.21	0.00	-274.11	0.00	274.11	3,196.33	1,598.17	4,969.60	2,454.30	0.32	-0.11	0.055
35.00	-34.80	-2.16	0.00	-263.05	0.00	263.05	3,152.83	1,576.41	4,795.15	2,368.14	0.44	-0.13	0.054
40.00	-33.61	-2.12	0.00	-252.25	0.00	252.25	3,108.20	1,554.10	4,621.97	2,282.62	0.59	-0.15	0.053
44.10	-33.25	-2.11	0.00	-243.58	0.00	243.58	3,070.77	1,535.38	4,481.00	2,213.00	0.72	-0.17	0.052
45.00	-31.84	-2.04	0.00	-241.68	0.00	241.68	3,062.45	1,531.23	4,450.19	2,197.78	0.75	-0.17	0.050
48.60	-31.46	-2.03	0.00	-234.33	0.00	234.33	2,379.97	1,189.99	3,474.54	1,715.94	0.89	-0.18	0.058
50.00	-30.13	-1.97	0.00	-231.48	0.00	231.48	2,371.43	1,185.72	3,439.58	1,698.68	0.94	-0.19	0.057
55.00	-28.80	-1.92	0.00	-221.61	0.00	221.61	2,340.22	1,170.11	3,315.01	1,637.16	1.15	-0.21	0.055
60.00	-27.49	-1.87	0.00	-212.01	0.00	212.01	2,307.88	1,153.94	3,191.02	1,575.92	1.39	-0.23	0.054
65.00	-26.20	-1.81	0.00	-202.68	0.00	202.68	2,274.42	1,137.21	3,067.70	1,515.02	1.64	-0.26	0.052
70.00	-24.91	-1.77	0.00	-193.61	0.00	193.61	2,239.83	1,119.92	2,945.16	1,454.51	1.92	-0.28	0.051
75.00	-23.64	-1.73	0.00	-184.78	0.00	184.78	2,204.12	1,102.06	2,823.54	1,394.44	2.22	-0.30	0.049
80.00	-22.45	-1.70	0.00	-176.15	0.00	176.15	2,167.29	1,083.65	2,702.93	1,334.88	2.55	-0.32	0.048
80.00	-22.45	-1.70	0.00	-176.15	0.00	176.15	2,167.29	1,083.65	2,702.93	1,334.88	2.55	-0.32	0.053
85.00	-22.07	-1.69	0.00	-167.67	0.00	167.67	2,129.34	1,064.67	2,583.46	1,275.87	2.90	-0.34	0.051
86.58	-21.03	-1.68	0.00	-164.99	0.00	164.99	2,117.11	1,058.55	2,545.96	1,257.35	3.01	-0.35	0.051
90.00	-20.93	-1.68	0.00	-159.25	0.00	159.25	2,090.26	1,045.13	2,465.23	1,217.49	3.27	-0.37	0.049
90.33	-19.91	-1.68	0.00	-158.70	0.00	158.70	1,547.78	773.89	1,862.15	919.64	3.30	-0.37	0.057
95.00	-18.83	-1.69	0.00	-150.86	0.00	150.86	1,525.71	762.86	1,787.32	882.69	3.67	-0.39	0.055
100.00	-17.76	-1.72	0.00	-142.40	0.00	142.40	1,500.99	750.50	1,707.51	843.28	4.10	-0.42	0.053
105.00	-16.70	-1.76	0.00	-133.80	0.00	133.80	1,475.16	737.58	1,628.14	804.08	4.56	-0.45	0.051
110.00	-15.64	-1.80	0.00	-125.00	0.00	125.00	1,448.19	724.10	1,549.32	765.15	5.04	-0.47	0.048
115.00	-14.60	-1.85	0.00	-115.98	0.00	115.98	1,420.11	710.05	1,471.16	726.55	5.55	-0.50	0.045
120.00	-13.70	-1.89	0.00	-106.72	0.00	106.72	1,390.90	695.45	1,393.78	688.34	6.08	-0.52	0.043
120.00	-13.70	-1.89	0.00	-106.72	0.00	106.72	1,390.90	695.45	1,393.78	688.34	6.08	-0.52	0.052
125.00	-13.47	-1.90	0.00	-97.26	0.00	97.26	1,360.57	680.28	1,317.29	650.56	6.65	-0.55	0.048
126.28	-12.85	-1.92	0.00	-94.83	0.00	94.83	1,352.62	676.31	1,297.87	640.97	6.79	-0.56	0.047
126.28	-12.85	-1.92	0.00	-94.83	0.00	94.83	900.61	450.31	868.79	429.06	6.79	-0.56	0.058
130.00	-12.03	-1.95	0.00	-87.67	0.00	87.67	888.95	444.47	835.13	412.44	7.24	-0.58	0.054
135.00	-11.22	-1.96	0.00	-77.94	0.00	77.94	872.29	436.14	789.93	390.12	7.86	-0.61	0.049
140.00	-10.53	-1.95	0.00	-68.16	0.00	68.16	854.50	427.25	744.88	367.87	8.51	-0.64	0.044
140.00	-10.53	-1.95	0.00	-68.16	0.00	68.16	854.50	427.25	744.88	367.87	8.51	-0.64	0.055
145.00	-10.39	-1.95	0.00	-58.39	0.00	58.39	835.60	417.80	700.09	345.75	9.20	-0.66	0.049
146.00	-9.26	-1.92	0.00	-56.44	0.00	56.44	831.68	415.84	691.17	341.34	9.34	-0.67	0.047
150.00	-8.61	-1.89	0.00	-48.76	0.00	48.76	815.57	407.78	655.68	323.81	9.91	-0.69	0.041
155.00	-8.15	-1.85	0.00	-39.33	0.00	39.33	794.42	397.21	611.76	302.12	10.65	-0.72	0.034
158.50	-8.05	-1.84	0.00	-32.86	0.00	32.86	778.94	389.47	581.37	287.12	11.19	-0.74	0.030
158.50	-8.05	-1.84	0.00	-32.86	0.00	32.86	778.94	389.47	581.37	287.12	11.19	-0.74	0.125
160.00	-7.72	-1.81	0.00	-30.09	0.00	30.09	772.14	386.07	568.44	280.73	11.42	-0.75	0.117
165.00	-7.65	-1.80	0.00	-21.06	0.00	21.06	748.74	374.37	525.85	259.70	12.25	-0.83	0.091
166.00	-5.55	-1.48	0.00	-19.26	0.00	19.26	743.93	371.96	517.43	255.54	12.42	-0.84	0.083
170.00	-5.26	-1.43	0.00	-13.33	0.00	13.33	723.19	361.60	483.41	238.74	13.15	-0.89	0.063
175.00	-3.01	-0.90	0.00	-6.19	0.00	6.19	686.95	343.48	435.91	215.28	14.11	-0.94	0.033
180.00	-2.92	-0.88	0.00	-1.67	0.00	1.67	650.71	325.36	390.87	193.04	15.11	-0.95	0.013
181.90	0.00	-0.83	0.00	0.00	0.00	0.00	636.94	318.47	374.40	184.90	15.49	-0.96	0.000

Site Number: 302502

Code: ANSI/TIA-222-G

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Site Name: Harwinton, CT

Engineering Number: OAA712918_C3_04

4/11/2018 4:48:04 PM

Customer: AT&T MOBILITY

Analysis Summary

Load Case	Reactions						Max Usage	
	Shear FX (kips)	Shear FZ (kips)	Axial FY (kips)	Moment MX (ft-kips)	Moment MY (ft-kips)	Moment MZ (ft-kips)	Elev (ft)	Interaction Ratio
1.2D + 1.6W	30.82	0.00	65.98	0.00	0.00	3860.18	158.50	0.78
0.9D + 1.6W	30.59	0.00	49.47	0.00	0.00	3787.61	158.50	0.75
1.2D + 1.0Di + 1.0Wi	5.01	0.00	106.71	0.00	0.00	707.10	158.50	0.19
(1.2 + 0.2Sds) * DL + E ELFM	1.66	0.00	65.88	0.00	0.00	251.79	158.50	0.07
(1.2 + 0.2Sds) * DL + E EMAM	2.49	0.00	65.88	0.00	0.00	354.30	158.50	0.13
(0.9 - 0.2Sds) * DL + E ELFM	1.65	0.00	45.80	0.00	0.00	246.00	158.50	0.06
(0.9 - 0.2Sds) * DL + E EMAM	2.49	0.00	45.80	0.00	0.00	345.56	158.50	0.12
1.0D + 1.0W	8.28	0.00	55.02	0.00	0.00	1023.72	158.50	0.21

Additional Steel Summary

Elev From (ft)	Elev To (ft)	Member	Intermediate Connectors			Upper Termination Connectors				Lower Termination Connectors				Max Member		
			VQ/I (lb/in)	Applied (kips)	phiVn (kips)	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	MQ/I (kips)	phiVn (kips)	Num Reqd	Num Actual	Pu (kip)	phiPn (kip)	Ratio
0.00	14.7	(3) SOL-#20 All Thre	144.4	4.3	16.8	198.7	25.3	8	12	0.0	25.3	0	0	210.2	330.5	0.636
0.00	20.0	(3) SOL-4 1/4" SOLID	459.7	7.6	38.3	615.7	12.0	52	0	0.0	12.0	0	0	634.6	635.6	0.998
20.0	80.0	(3) SOL-4 1/4" SOLID	554.3	18.3	38.3	481.3	25.3	20	0	615.7	25.3	25	0	624.5	627.2	0.996
80.0	120.	(3) SOL-4" SOLID	587.3	38.8	38.3	324.4	25.3	13	0	463.7	25.3	19	0	469.5	522.2	0.899
120.	140.	(3) SOL-3 1/2" SOLID	601.1	39.7	38.3	224.5	25.3	9	0	301.5	25.3	12	0	305.2	390.2	0.782
140.	158.	(3) SOL-3" SOLID	569.2	37.6	38.3	111.8	25.3	5	0	208.7	25.3	9	0	211.6	276.1	0.766



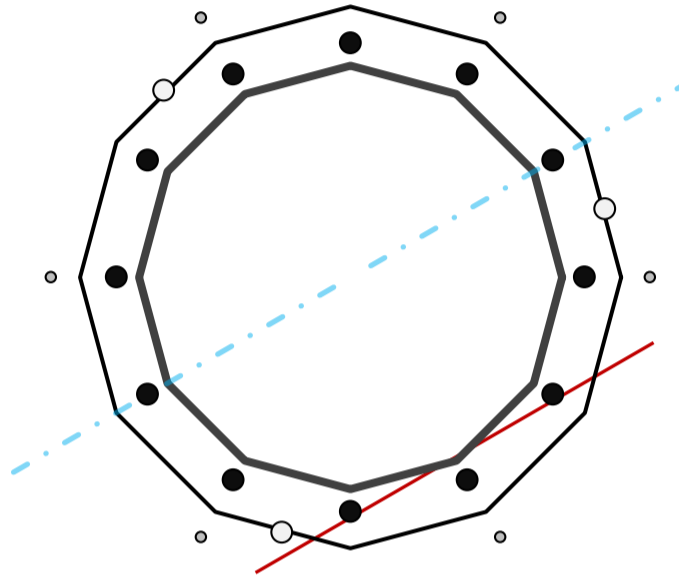
Base Plate & Anchor Rod Analysis

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

Base Reactions			
Moment, Mu	3860.2	k-ft	
Axial, Pu	66.0	k	
Shear, Vu	30.8	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, ϕ	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	$\eta=0.55$
Clear Distance	N/A	in
Applied Moment, Mu	551.0	k
Bending Stress, ϕMn	1478.1	k



Dwyidag Reinforcement		
Quantity	3	-
Bar Size	#20	in
Diameter, ϕ	2.5	in
Bracket Type	Angle	-
Circle	55.50	in
Orientation Offset	15	°
Applied Force, Pu	225.0	k
Dwyidag Bar, ϕPn	392.7	k

Original Anchor Rods		
Arrangement	Radial	-
Quantity	12	-
Diameter, ϕ	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	176.3	k
Anchor Rods, ϕPn	259.8	k

Additional Dwyidag Reinforcement		
Quantity	6	-
Diameter, ϕ	1.212	in
Bolt Circle	63	in
Grade	Other	
Yield Strength, Fy	105	ksi
Tensile Strength, Fu	125	ksi
Bypass Base?	Yes (Dwyidag)	
Orientation Offset	0	°
Applied Force, Pu	84.4	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	30.8	2135.2	0.55
Anchor Rod Forces	30.8	2135.2	0.55
Additional Bolt (Grp1) Forces	0.0	650.4	0.17
Additional Bolt (Grp2) Forces	0.0	0.0	0.00
Dywidag Forces	0.0	1074.6	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	-

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	176.3	k
Applied Shear, Vu	0.6	k
Compressive Capacity, φPn	259.8	k
Tensile Capacity, φRnt	0.679	OK
Interaction Capacity	0.683	OK

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

External Base Plate		
Chord Length AA	34.782	in
Additional AA	5.000	in
Section Modulus, Z	62.159	in ³
Applied Moment, Mu	551.0	k-ft
Bending Capacity, φMn	2797.2	k-ft
Capacity, Mu/φMn	0.197	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	84.4	k
Applied Shear, Vu	0.0	k
Compressive Capacity, φPn	115.4	k
Compressive Capacity, φPn	0.732	OK
Interaction Capacity	0.781	OK

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 /φ _p P _n + V _u /φ _v V _n		

Chord Length AB	33.265	in
Additional AB	5.000	in
Section Modulus, Z	59.789	in ³
Applied Moment, Mu	417.2	k-ft
Bending Capacity, φMn	2690.5	k-ft
Capacity, Mu/φMn	0.155	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		

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 /φ _p P _n + V _u /φ _v V _n		

Bend Line Length	21.021	in
Additional Bend Line	0.000	in
Section Modulus, Z	32.846	in ³
Applied Moment, Mu	551.0	k-ft
Bending Capacity, φMn	1478.1	k-ft
Capacity, Mu/φMn	0.373	OK

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	225.0	k
Compressive Capacity, φPn	392.7	k
Capacity, Pu/φPn	0.573	OK

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		

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		

Plate Compression		
Radius of Gyration	#DIV/0!	in ³
kl/r	#DIV/0!	-
4.71 √(E/Fy)	0.00	-
Buckling Stress(F _e)	0.0	-
Crit. Buckling Stress(F _{cr})	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	27.78 k-in
	Stiffeners	#

Code Rev. **G**

Date 4/11/2018
 Engineer Parvin.NikpoorParizi
 Site # 302502
 Carrier AT&T MOBILITY

Moment **717.5 k-ft**
 Axial **17.2 k**

Required Flange Thickness:
0.86 in OK

Bolts	#	16
	Bolt Circle (R)adial / (S)quare	27 in R
	Diameter	1 in
	Hole Diameter	1.125 in
	Type	A325
	Fy	92 ksi
	Fu	120 ksi
	ϕ_s Resistance	54.52 k
	Applied	28.49 k
	Reinforcement	#	3
DYW. Circle		29.35 in
Offset Angle		45 °
Type		Other
Diameter		2.5 in
Fu		100 ksi
Extra Bolts O	#	0

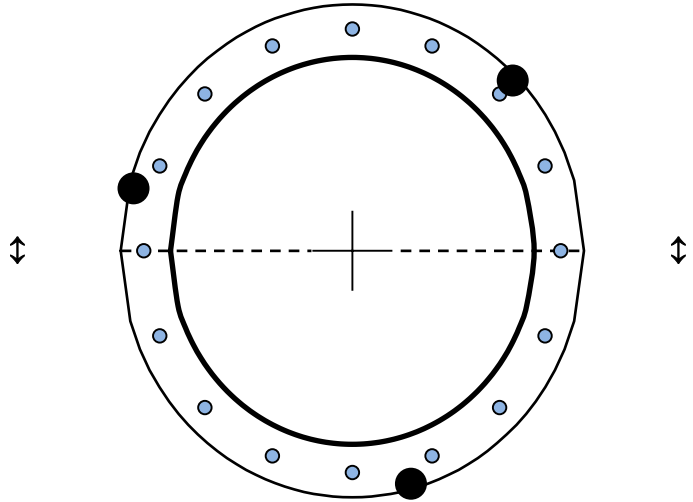


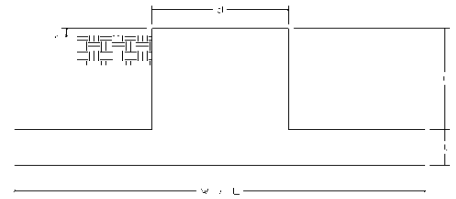
Plate Stress Ratio:
0.47 (Pass)

Bolt Stress Ratio:
0.52 (Pass)

Reinforcement Stress Ratio:
0.60 (Pass)

Site Name: Harwinton, CT
 Site Number: 302502
 Engineering Number: OAA712918
 Engineer: Parvin.NikpoorParizi
 Date: 04/11/18
 Tower Type: MP

Program Last Updated: 5/13/2014



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

Design / Analysis / Mapping:

	Analysis		
Compression/Leg:	66.0 k	Concrete Strength (f'_c):	3000 psi
Uplift/Leg:	0.0 k	Pad Tension Steel Depth:	32.00 in
Total Shear:	30.8 k	ϕ_{Shear} :	0.75
Moment:	3860.2 k-ft	$\phi_{\text{Flexure / Tension}}$:	0.90
Tower + Appurtenance Weight:	66.6 k	$\phi_{\text{Compression}}$:	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
$\phi_{\text{Soil and Concrete Weight}}$:	0.9	Tie Steel F_y :	60000 psi
ϕ_{Soil} :	0.75		

Overturning Moment Usage

Design OTM:	4122.2 k-ft
OTM Resistance:	4494.4 k-ft
Design OTM / OTM Resistance:	0.92 Result: OK

Soil Bearing Pressure Usage

Net Bearing Pressure:	6174 psf
Factored Nominal Bearing Pressure:	18000 psf
Net Bearing Pressure/Factored Nominal Bearing Pressure:	0.34 Result: OK
Load Direction Controlling Design Bearing Pressure:	Diagonal to Pad Edge

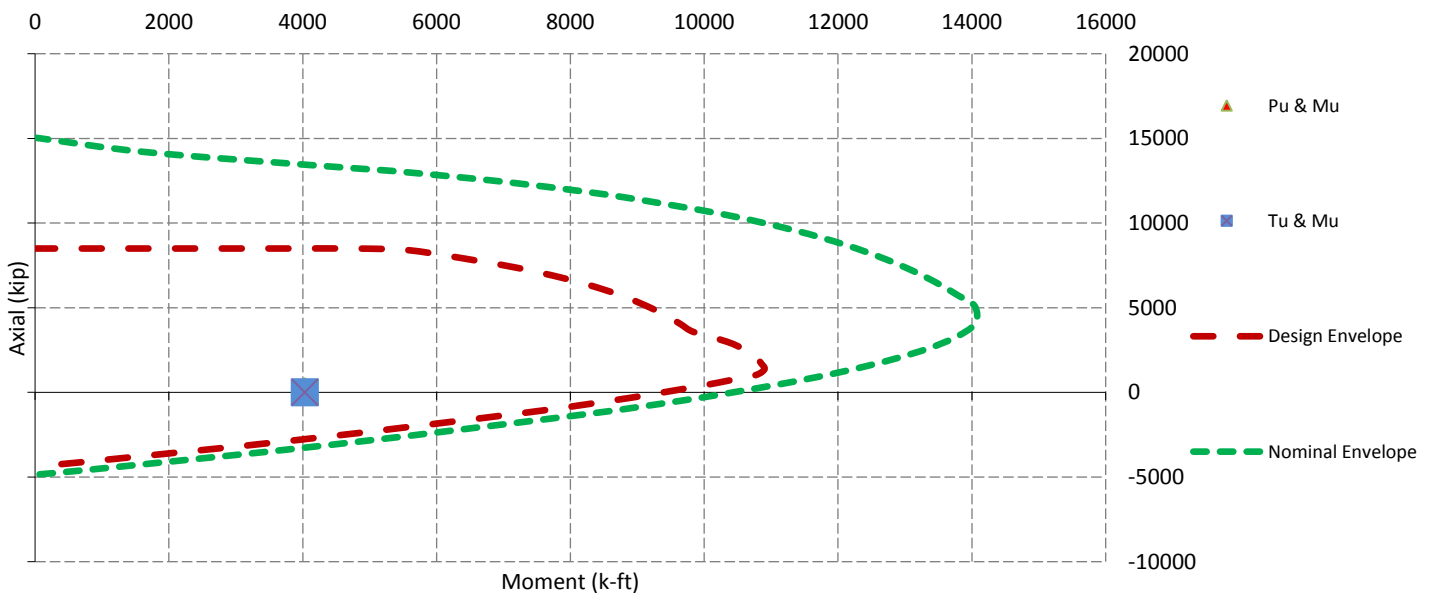
Sliding Factor of Safety

Total Factored Sliding Resistance:	210.7 k
Sliding Design / Sliding Resistance:	0.15 Result: OK

One Way Shear, Flexural Capacity, and Punching Shear

Factored One Way Shear (V_u):	264.9 k
One Way Shear Capacity (ϕV_c):	534.8 k - ACI11.3.1.1
$V_u / \phi V_c$:	0.50 Result: OK
Load Direction Controlling Shear Capacity:	Diagonal to Pad Edge
Lower Steel Pad Factored Moment (M_u):	1716.3 k-ft
Lower Steel Pad Moment Capacity (ϕM_n):	7403.8 k-ft - ACI10.3
$M_u / \phi M_n$:	0.23 Result: OK
Load Direction Controlling 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
$M_u / \phi M_n$:	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
$V_u / \phi V_c$:	0.00 Result: OK
Factored Moment in Pier (M_u):	4029.7 k-ft
Pier Moment Capacity (ϕM_n):	11423.2 k-ft
$M_u / \phi M_n$:	0.35 Result: OK
Factored Shear in Pier (V_u):	30.8 k
Pier Shear Capacity (ϕV_n):	337.2 k
$V_u / \phi V_c$:	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
$T_u / \phi T_n$:	0.00 Result: OK
Factored Compression in Pier (P_u):	66.0 k
Pier Compression Capacity (ϕP_n):	5291.2 k - ACI10.3.6.2
$P_u / \phi P_n$:	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





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



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	





**ST L DATA
MONOPOLE**

Site Name HARWINTON

Site # CT-0038

Date 02-12-02

Page 3 of 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:

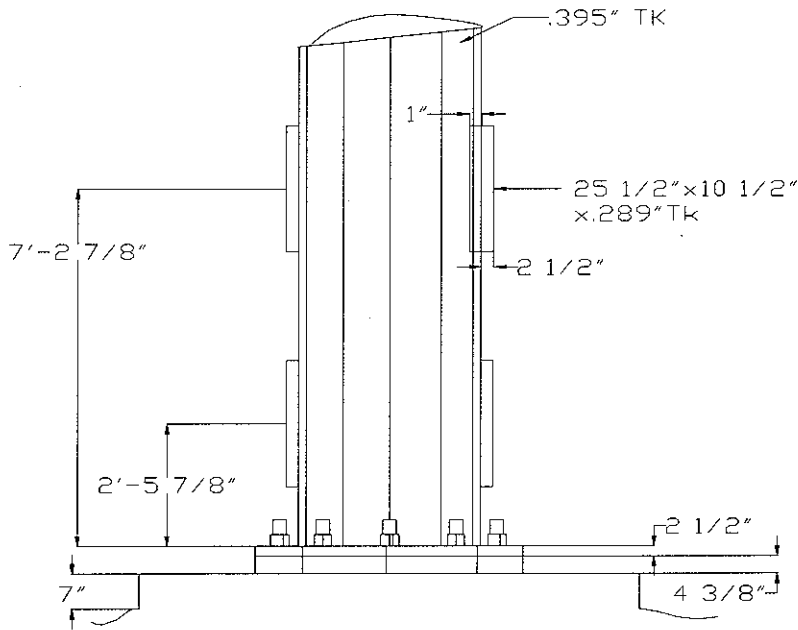
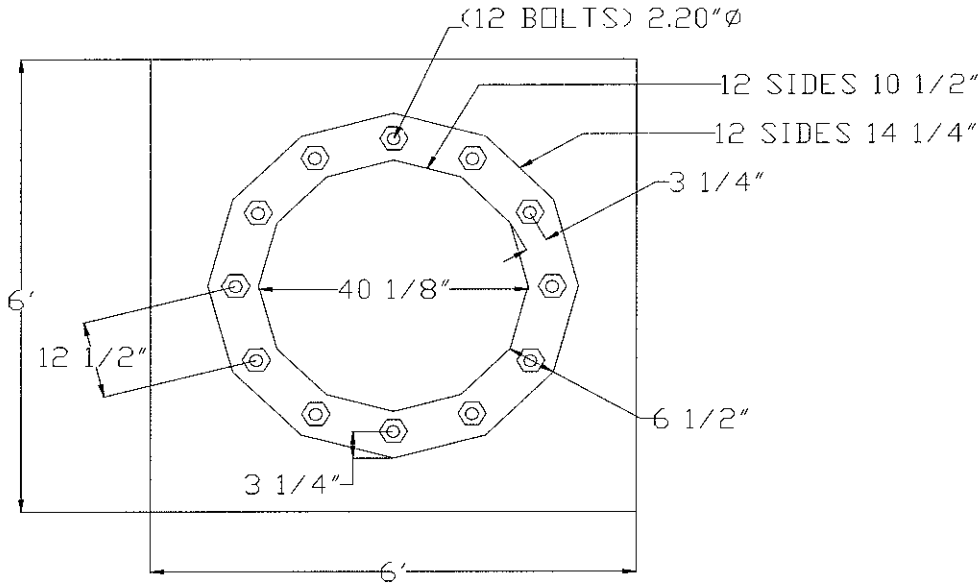


MONOPOLE BASE

- 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



Due Diligence Steel Data

Acquisition #: CT-0038

Date at Site: 05/13/2001



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 :)	<u>SMITH CULLUM, INC.</u>
Team Member (Print:)	<u>LUCAS CLAYBORN</u>
Team Member (Print:)	<u></u>
Team Member (Print:)	<u></u>
Team Leader:	<u>PAUL J. UNTI</u> <i>Paul J. Unti</i>
Date at Site:	<u>5/13/01</u>
Date Completed:	<u>5/13/01</u>

* 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 #: GT-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
 Team Member: P.UNTI/L.CLAYBORN

Date: 05/13/2001

Checklist

Item	Description	Page	Initial when complete	Notes
1	Checklist	2	PJU	
2	Compound	3	LC	
3	Guy Wires	4	NA	
	<i>Guy Wires (Continued)</i>	4a	NA	
4	Climbing Ladder & Wave Guide	5	PJU	
5	Tower Section Data	6	PJU	
	<i>Tower Section Data(Cont.)</i>	6a	NA	
6	Drawing of Elevation View & Base	7 & 8	PJU	
	<i>Drawing of a Tower Section and Base (Cont)</i>	7a & 8a	NA	
7	Coaxes/Appurtenances	9	PJU	
	<i>Coaxes (Continued)</i>	9a	NA	
8	Antennas	10	PJU	
	<i>Antennas (Continued)</i>	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

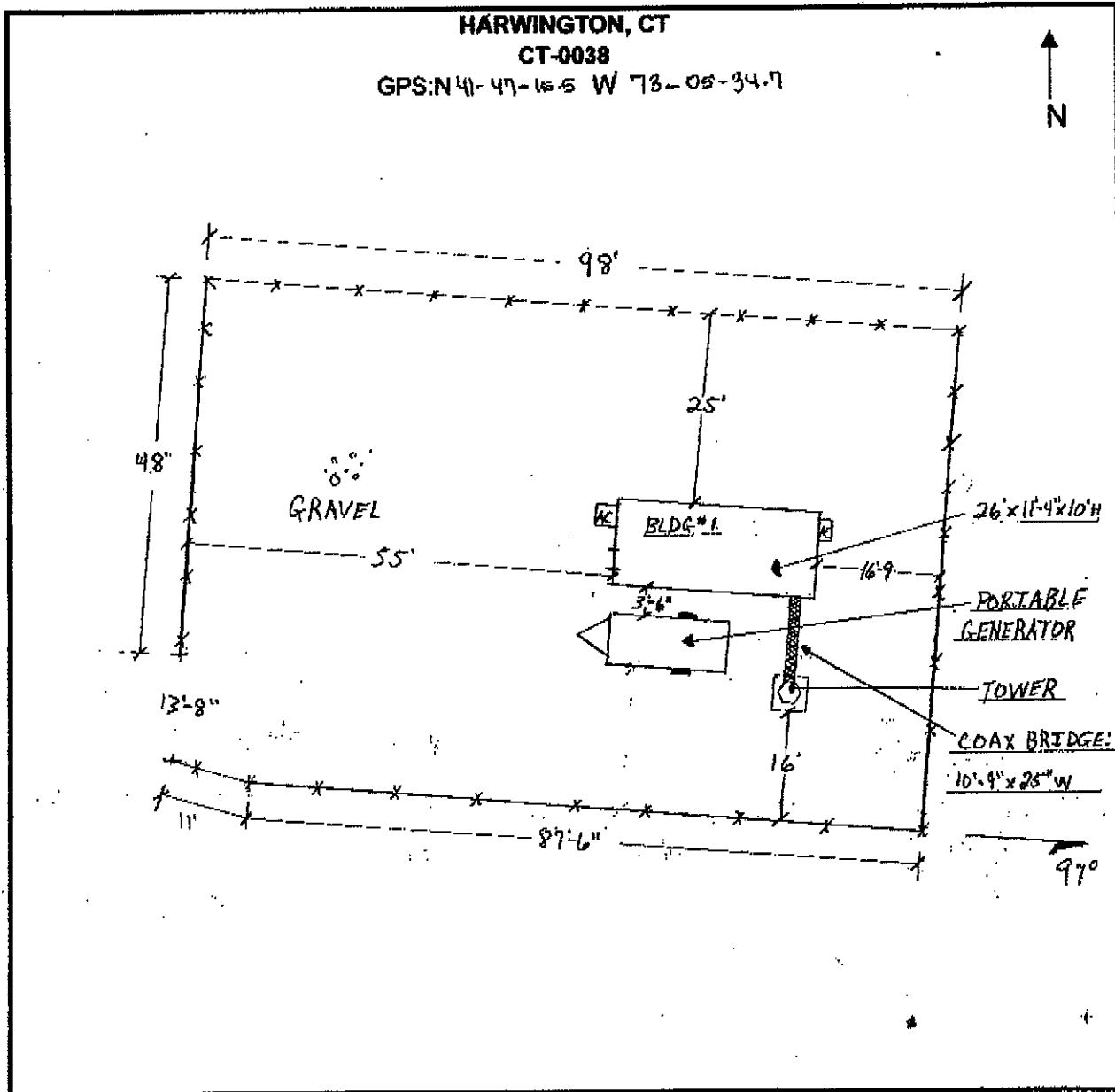
Acquisition #: CT-0038

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.

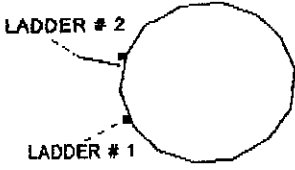
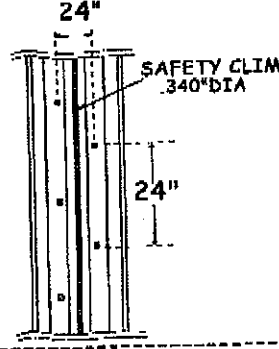
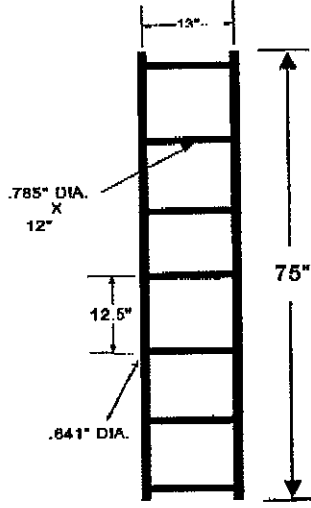
Guy number	Guy diameter	Pre-form color	Guy elevation	Guy radius from tower (per leg if different)	Notes:
NA					
NA					
NA					
NA					
NA					
NA					
NA					

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).
<p>LADDER # 1 PEG MOUNTS ARE @ 85 DEGREES</p> 	<p>LADDER # 1 PEG MOUNTS STARTS @ 11' AND ENDS @ 180' **NO CLIMBING PEGS</p> <p style="text-align: center;">24"</p>  <p style="text-align: center;">LADDER # 2 STARTS @ 177'</p> 	<p style="font-size: 2em;">NA</p>

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. X 1.049"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
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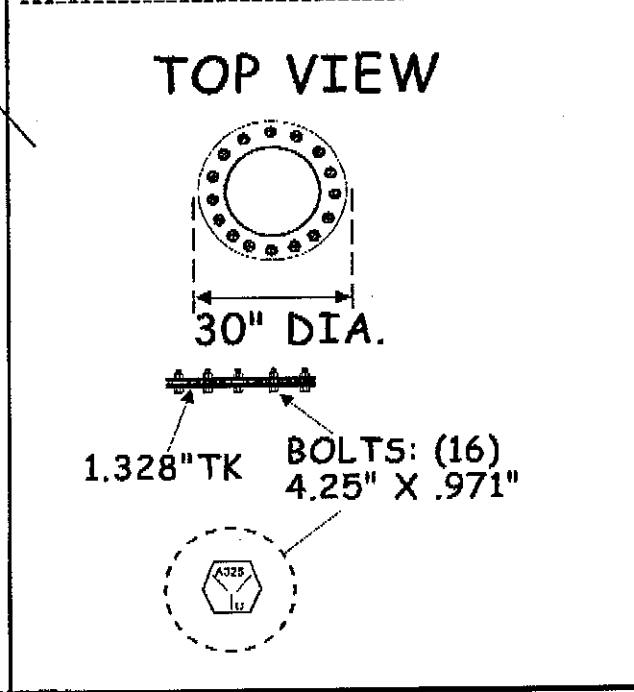
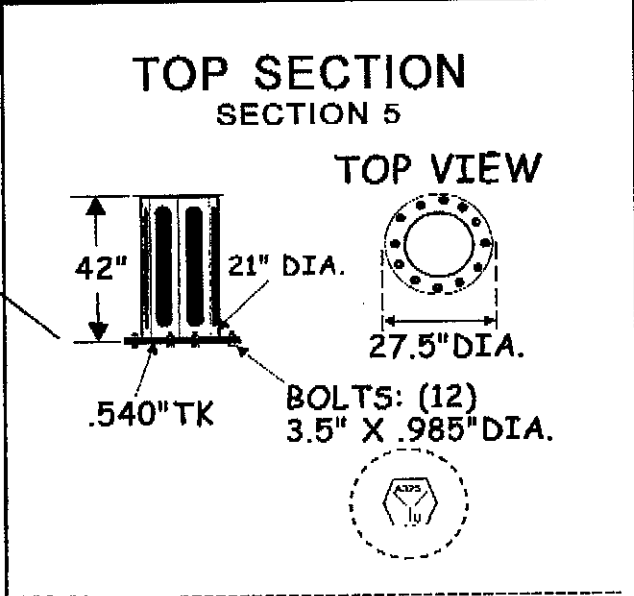
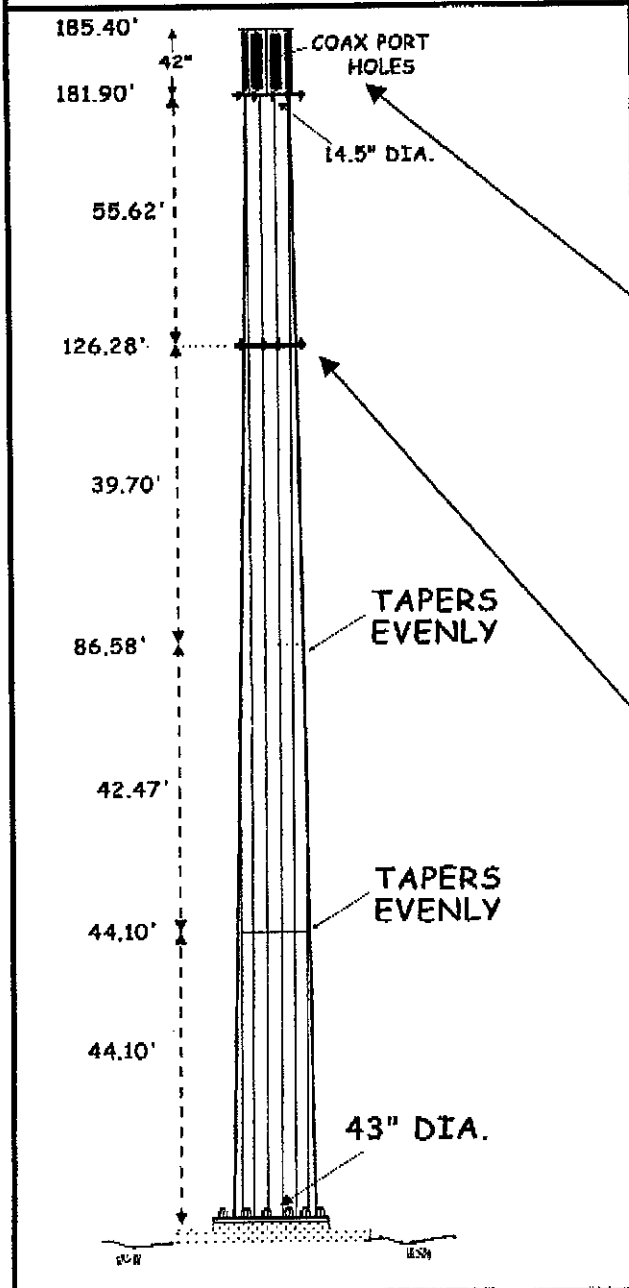
Enter Equipment Serial #	2966
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Drawing of Typical Tower Sections

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

Date: 05/13/2001

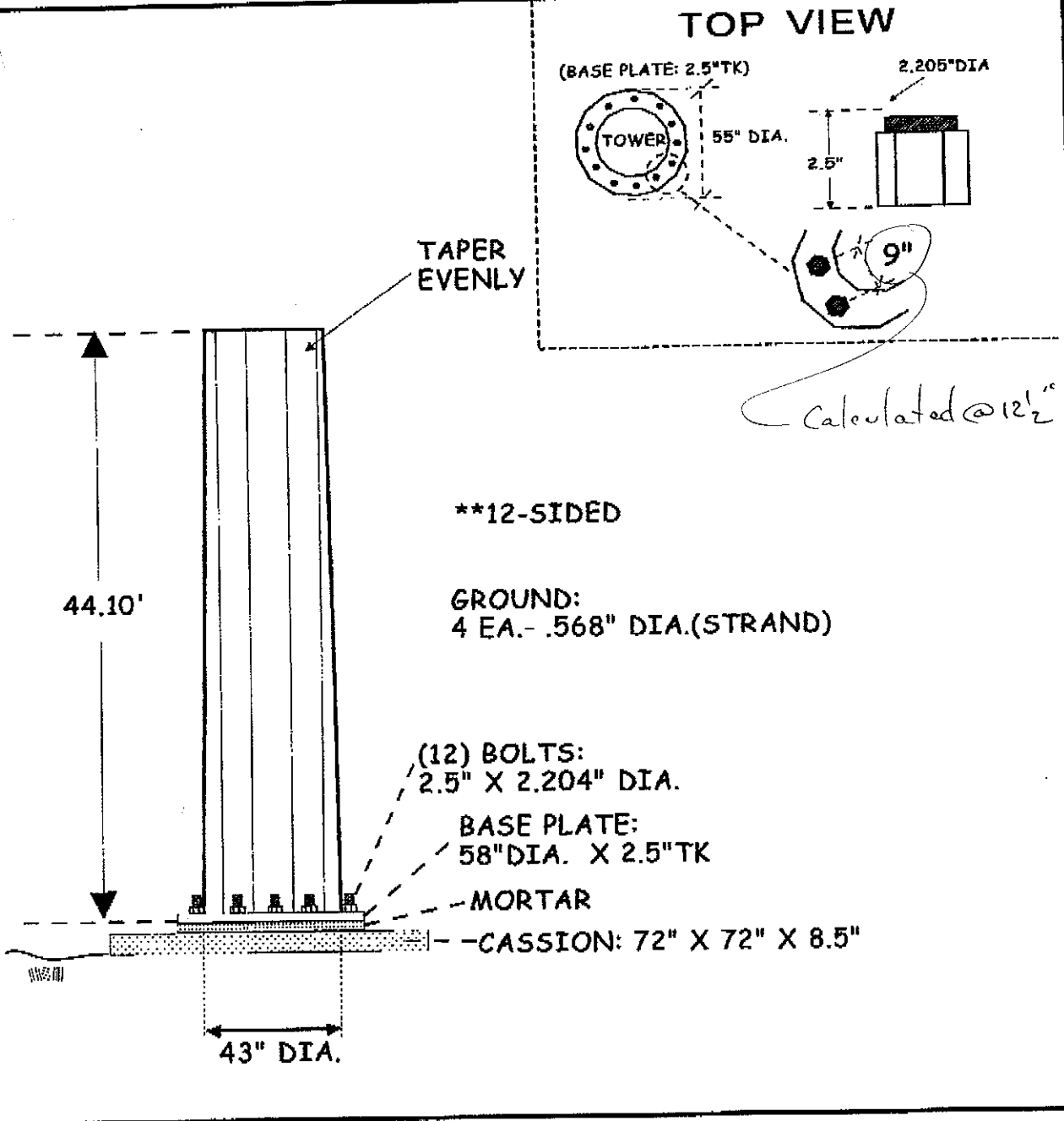
Acquisition #: CT-0038

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

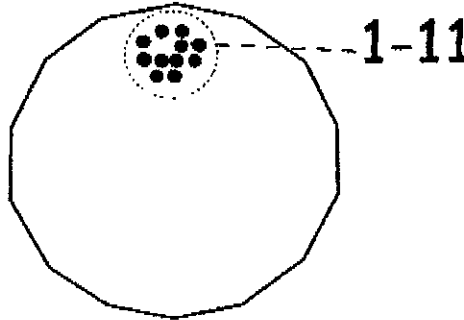
Acquisition #: CT-0038
 Team Member: P.UNTI/L.CLAYBORN

Date: 05/13/2001

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. UNTIL CLAYBORN

Date: 5/13/2001

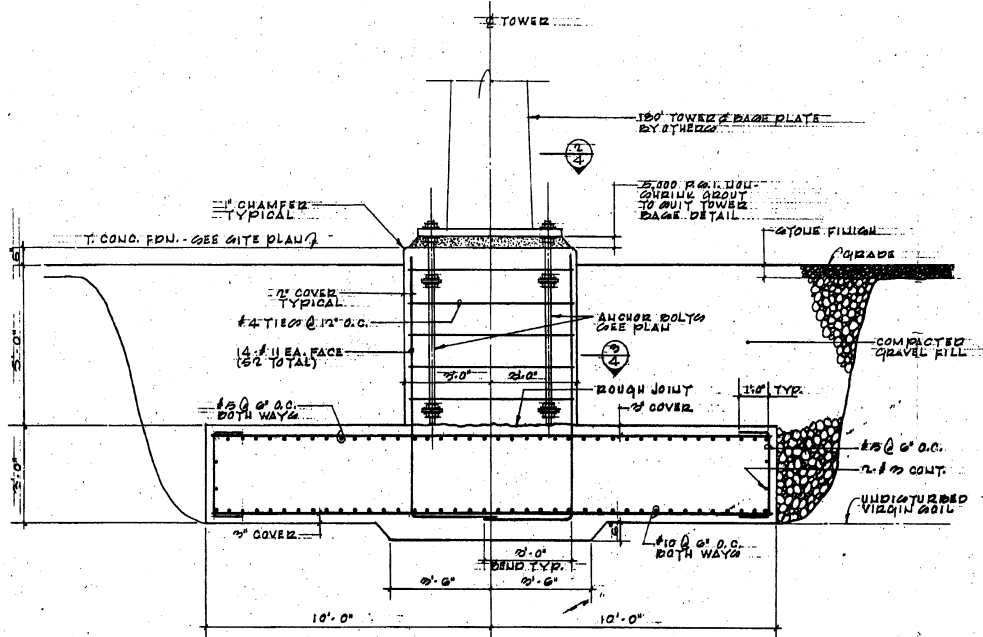
Antenna / Devices

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: _____

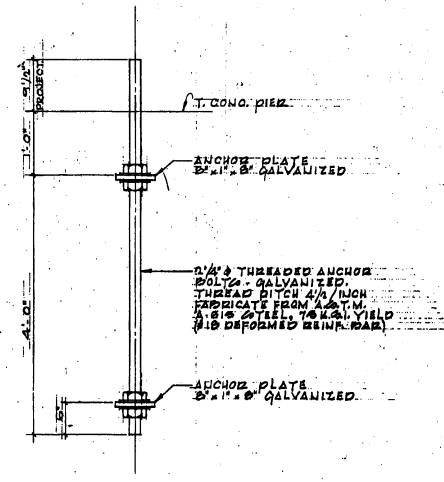
Draw an elevation and a plan view of the antenna with the associated mounting. Show dimensions of antenna and mount(s):					
Brass Tag Number (e.g., 001)	Size and Type of Coax (Trade Size)	Elevation at Bottom of Antenna	Antenna Mounted on: Leg / Face Name (e.g., Leg A, Face AB, Leg B, Face BC, Leg C, Face CA)	Antenna Azimuth	Antenna Make and Model
1-11	7/8" COAX	182.50'	SEE DIAGRAM	SEE DIAGRAM	ALLGON: 7120.16.06.00
<p>128"</p> <p>39"</p> <p>44"</p> <p>MOUNTING POLES: 2.39" DIA. X 48"</p> <p>1" SQ. TUB.</p> <p>ANTENNA</p> <p>52"</p> <p>8" DEEP</p> <p>12"</p>			<p>35 DEGREES</p> <p>255 DEGREES</p> <p>155 DEGREES</p>		
ELEVATION VIEW			PLAN VIEW		



SECTION AT TOWER FOOTING

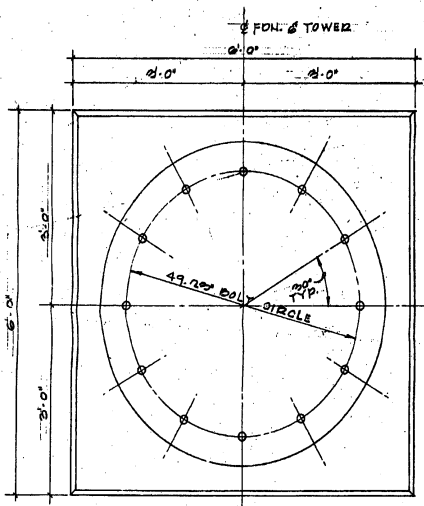
SCALE - 1/2" = 1'-0"

NOTE:
FURNISH 1/2" LOCKE NUTS W/ WASHERS
TIE ALONG BOLT FOR TOWER BASE
LEVEL HQ & BOLTING NUTS & WASHERS
TO BE GALVANIZED.



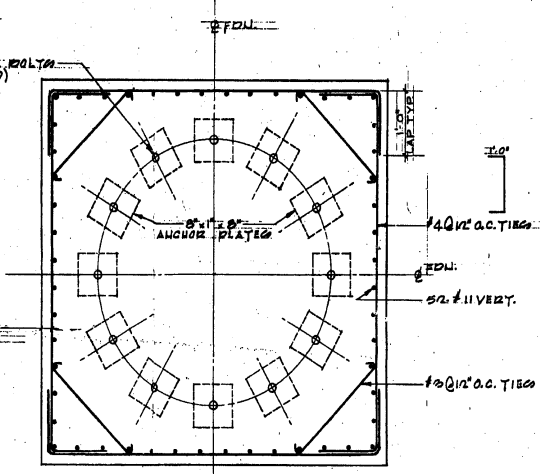
TYPICAL ANCHOR BOLT DETAIL

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



PLAN AT TOWER BASE PLATE

SCALE - 1" = 1'-0"



PLAN AT FOUNDATION STEM

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 Wetherfield Avenue
HARTFORD, CONNECTICUT 06114

SHEET	4 OF 8	
LOGO		
LOCATION	HARWINTON, CONN.	
PROJECT	CELLULAR RADIO CELL SITE	
TITLE	TOWER FOUNDATION	
DATE	2-24-94	30237
DESIGNER	N.A.	NOTED

JOHNSON SOILS ENGINEERING COMPANY

EXPLORATION - TESTING - DESIGN

752 GRAND AVENUE • RIDGEFIELD, N.J. 07857 • (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-R

Dear Sir,

In order to determine the various soil types, depth and 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 diameter 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.

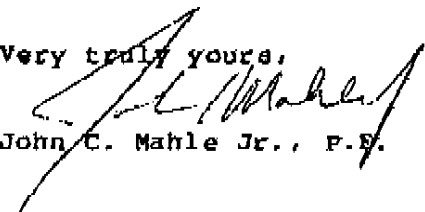
A smooth bedrock should be doveled for sliding.

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.

enc: log of boring

JOHNSON SOILS ENGINEERING

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

Depth, Feet	Sample #	Depth	Sample/ Spoon Blows/6"	DESCRIPTION
0	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 <u>DRY</u> Date _____	Casing Hammer Wgt. _____ ; Drop _____
Driller <u>R.V. Drilling</u>	Spoon Hammer Wgt. <u>140#</u> ; Drop <u>30"</u>
	Casing Size _____ ; Spoon Size <u>2"</u>