

280 Trumbull Street
Hartford, CT 06103-3597
Main (860) 275-8200
Fax (860) 275-8299
kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

July 3, 2013

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JUL - 5 2013

CONNECTICUT
SITING COUNCIL

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

Re: **EM-VER-052-121004- Rattlesnake Mountain, Farmington, Connecticut**
EM-VER-084-121004- 1052 Boston Post Road, Milford, Connecticut
EM-VER-084-120928- 423 Oronoque Road, Milford, Connecticut
EM-VER- 085-120913- 88 Main Street, Monroe, Connecticut
EM-VER- 130-120828- 111 Upper Fish Rock Road, Southbury,
Connecticut
EM-VER-139-120907- 898 East South Street, Suffield, Connecticut
EM-VER-167-121024- 50 Woodfield Road, Woodbridge, Connecticut


Completion of Construction Activity

Dear Ms. Bachman:

The purpose of this letter is to notify the Siting Council that construction activity associated with the above-referenced Cellco Partnership d/b/a Verizon Wireless telecommunications facilities has been completed.

If you have any questions or need any additional information regarding this facility please do not hesitate to contact me.

Sincerely,


Kenneth C. Baldwin

Copy to:
Sandy M. Carter



Law Offices

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KENNETH C. BALDWIN

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MAY - 6 2013

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CONNECTICUT
SITING COUNCIL

Also admitted in Massachusetts

May 3, 2013

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

Re: **EM-VER-068-120531 – Bulls Bridge Road, Kent, Connecticut**
EM-VER-084-120928 – 423 Oronoque Road, Milford, Connecticut
EM-VER-031-120514 – 36 Mohawk Trail, Cornwall, Connecticut
EM-VER-085-120924 – 88 Main Street, Monroe, Connecticut
EM-VER-091-121206 – 302 Ball Pond Road, New Fairfield, Connecticut
EM-VER-096-120217 – 4 Elkington Farm Road, New Milford, Connecticut

Completion of Construction Activity

Dear Ms. Bachman:

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STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051
Phone: (860) 827-2935 Fax: (860) 827-2950
E-Mail: siting.council@ct.gov
www.ct.gov/csc

October 9, 2012

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103

RE: **EM-VER-085-120913** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 88 Main Street, Monroe, Connecticut.

Dear Attorney Baldwin:

The Connecticut Siting Council (Council) hereby acknowledges your notice to modify this existing telecommunications facility, pursuant to Section 16-50j-73 of the Regulations of Connecticut State Agencies with the following conditions:

- Any deviation from the proposed modification as specified in this notice and supporting materials with Council shall render this acknowledgement invalid;
- Any material changes to this modification as proposed shall require the filing of a new notice with the Council;
- Not less than 45 days after completion of construction, the Council shall be notified in writing that construction has been completed;
- The validity of this action shall expire one year from the date of this letter; and
- The applicant may file a request for an extension of time beyond the one year deadline provided that such request is submitted to the Council not less than 60 days prior to the expiration;

The proposed modifications including the placement of all necessary equipment and shelters within the tower compound are to be implemented as specified here and in your notice dated September 12, 2012. The modifications are in compliance with the exception criteria in Section 16-50j-72 (b) of the Regulations of Connecticut State Agencies as changes to an existing facility site that would not increase tower height, extend the boundaries of the tower site, increase noise levels at the tower site boundary by six decibels, and increase the total radio frequencies electromagnetic radiation power density measured at the tower site boundary to or above the standard adopted by the State Department of Environmental Protection pursuant to General Statutes § 22a-162. This facility has also been carefully modeled to ensure that radio frequency emissions are conservatively below State and federal standards applicable to the frequencies now used on this tower.

This decision is under the exclusive jurisdiction of the Council. Please be advised that the validity of this action shall expire one year from the date of this letter. Any additional change to this facility will require explicit notice to this agency pursuant to Regulations of Connecticut State Agencies Section 16-50j-73. Such notice shall include all relevant information regarding the proposed change with cumulative worst-case modeling of radio frequency exposure at the closest point of uncontrolled access to the tower base, consistent with Federal Communications Commission, Office of Engineering and Technology, Bulletin 65. Thank you for your attention and cooperation.

Very truly yours,

Linda Roberts
Executive Director

LR/CDM/jbw

c: The Honorable Stephen Vavrek, First Selectman, Town of Monroe
David Killeen, Planning Administrator, Town of Monroe
Julie D. Kohler, Esq., T-Mobile





STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

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www.ct.gov/csc

September 18, 2012

The Honorable Stephen Vavrek
First Selectman
Town of Monroe
Town Hall
7 Fan Hill Road
Monroe, CT 06468-1800

RE: **EM-VER-085-120913** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 88 Main Street, Monroe, Connecticut.

Dear First Selectman Vavrek:

The Connecticut Siting Council (Council) received this request to modify an existing telecommunications facility, pursuant to Regulations of Connecticut State Agencies Section 16-50j-72.

If you have any questions or comments regarding this proposal, please call me or inform the Council by October 2, 2012.

Thank you for your cooperation and consideration.

Very truly yours,

Linda Roberts
Executive Director

LR/jbw

Enclosure: Notice of Intent

c: David Killeen, Planning Administrator, Town of Monroe

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 Hartford, CT 06103-3597
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 kbaldwin@rc.com
 Direct (860) 275-8345

Also admitted in Massachusetts

September 12, 2012

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 CONNECTICUT
 SITING COUNCIL

Linda Roberts
 Executive Director
 Connecticut Siting Council
 10 Franklin Square
 New Britain, CT 06051

Re: **Notice of Exempt Modification – Antenna Swap
 88 Main Street, Monroe, Connecticut**

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the 165-foot level on an existing 195-foot tower at the above-referenced address. The tower is owned by T-Mobile. Cellco’s use of the tower was approved by the Council in 2003. Cellco now intends to replace all of its antennas with six (6) model LPA-80080-6CF cellular antennas; three (3) model BXA-171085-12BF PCS antennas and three (3) model BXA-70063-6CF LTE antennas, all at the same 165-foot level. Cellco also intends to install six (6) additional coax cables inside the monopole tower. Attached behind Tab 1 are the specifications for the replacement antennas.

Please accept this letter as notification pursuant to R.C.S.A. § 16-50j-73, for construction that constitutes an exempt modification pursuant to R.C.S.A. § 16-50j-72(b)(2). In accordance with R.C.S.A. § 16-50j-73, a copy of this letter is being sent to Steve Vavrek, First Selectman of the Town of Monroe. A copy of this letter is also being sent to Stepney VFD, the owner of the property on which the tower is located.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco’s replacement antennas will be located at the 165-foot level on the existing 195-foot tower.



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ROBINSON & COLE_{LLP}

Linda Roberts
September 12, 2012
Page 2

2. The proposed modifications will not involve any change to ground-mounted equipment and, therefore, will not require the extension of the site boundaries.


3. The proposed modifications will not increase noise levels at the facility by six decibels or more.

4. The operation of the replacement antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) adopted safety standard. A cumulative power density table for Cellco's modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report confirming that the tower and foundation can support Cellco's proposed modifications. (See Tab 3).

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

Sincerely,



Kenneth C. Baldwin

Enclosures

Copy to:

Steve Vavrek, Monroe First Selectman
Stepney VFD
Sandy M. Carter

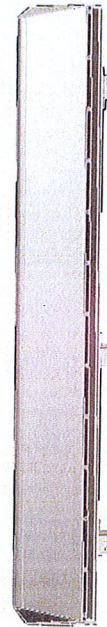


LPA-80080-6CF-EDIN-X

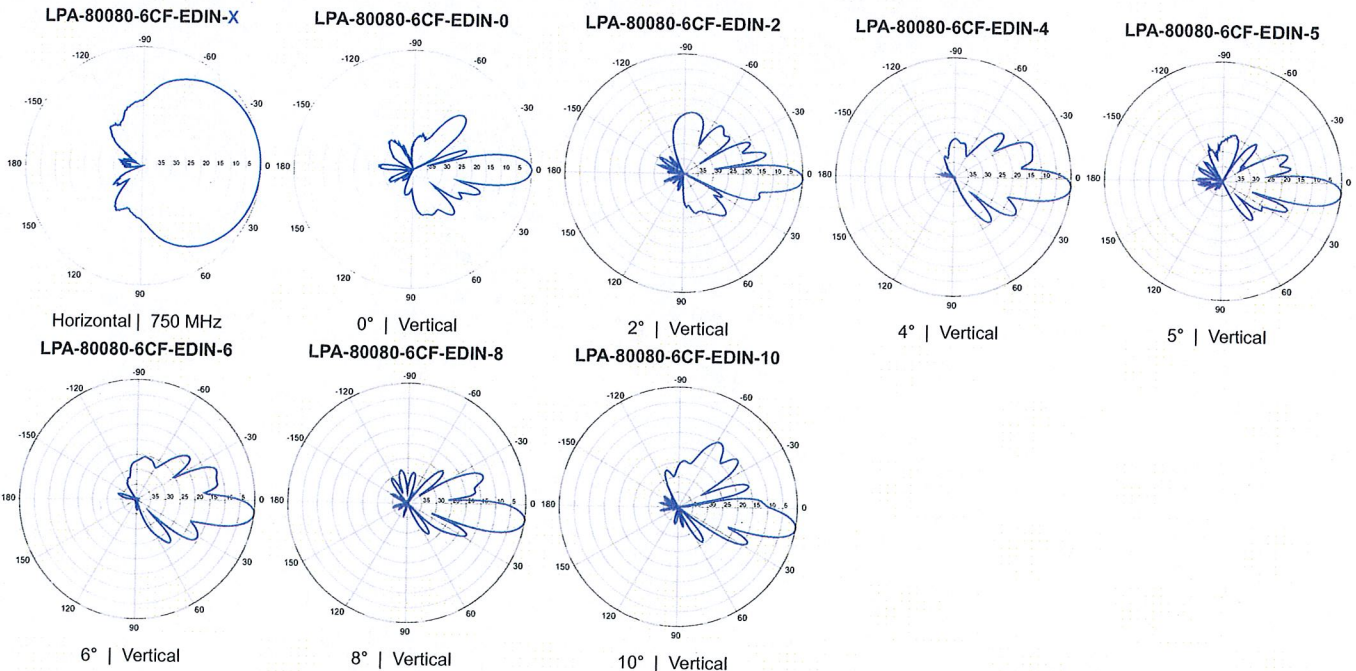
V-Pol | Log Periodic | 80° | 14.0 dBd

Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.



Electrical Characteristics	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	80°
Vertical beamwidth	10°
Gain	14.0 dBd (16.1 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-22.6 dB
Null fill	10% (-20.0 dB)
Input power	500 W
Lightning protection	Direct Ground
Connector(s)	1 Port / EDIN or NE / Female / Center (Back)
Mechanical Characteristics	
Dimensions Length x Width x Depth	1800 x 140 x 335 mm 70.9 x 5.5 x 13.2 in
Depth of antenna with z-bracket	375 mm 14.8 in
Weight without mounting brackets	9.5 kg 21.0 lbs
Survival wind speed	> 201 km/hr > 125 mph
Wind area	Front: 0.25 m ² Side: 0.61 m ² Front: 2.7 ft ² Side: 6.6 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 415 N Side: 878 N Front: 93 lbf Side: 198 lbf
Mounting Options	
	Part Number Fits Pipe Diameter Weight
3-Point Mounting & Downtilt Bracket Kit (0-20°)	21700000 50-102 mm 2.0-4.0 in 11 kg 25 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.



Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

BXA-171085-12BF-EDIN-X

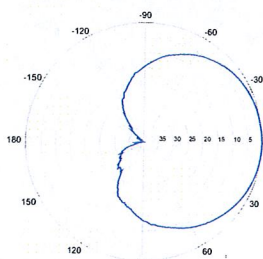
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 85° | 18.0 dBi

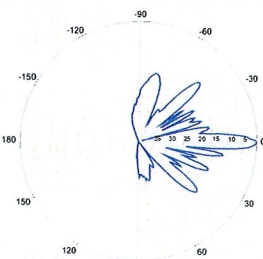
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	88°	85°	80°
Vertical beamwidth	4.5°	4.5°	4.5°
Gain	15.1 dBd / 17.2 dBi	15.5 dBd / 17.6 dBi	15.9 dBd / 18.0 dBi
Electrical downtilt (X)	0, 2, 4		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back ratio	> 30 dB		
In-band isolation	> 28 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1820 x 154 x 105 mm	71.7 x 6.1 x 4.1 in	
Depth with z-brackets	133 mm	5.2 in	
Weight without mounting brackets	6.8 kg	15 lbs	
Survival wind speed	> 201 km/hr		> 125 mph
Wind area	Front: 0.28 m ² Side: 0.19 m ²	Front: 3.1 ft ² Side: 2.1 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf	
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171085-12BF-EDIN-X-FP		



BXA-171085-12BF-EDIN-X

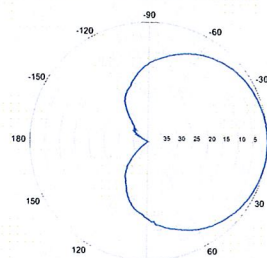


Horizontal | 1710-1880 MHz
BXA-171085-12BF-EDIN-0

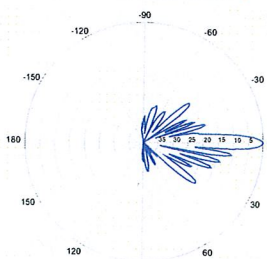


0° | Vertical | 1710-1880 MHz

BXA-171085-12BF-EDIN-X

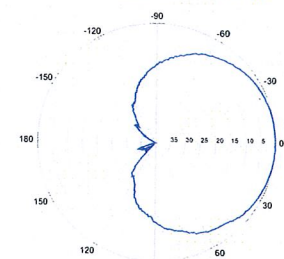


Horizontal | 1850-1990 MHz
BXA-171085-12BF-EDIN-0

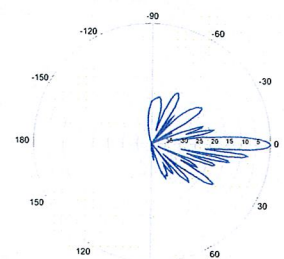


0° | Vertical | 1850-1990 MHz

BXA-171085-12BF-EDIN-X



Horizontal | 1920-2170 MHz
BXA-171085-12BF-EDIN-0



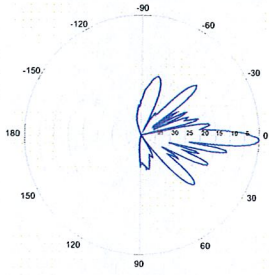
0° | Vertical | 1920-2170 MHz

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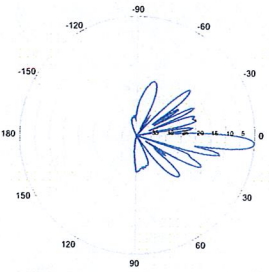
BXA-171085-12BF-EDIN-X

X-Pol | FET Panel | 85° | 18.0 dBi

BXA-171085-12BF-EDIN-2

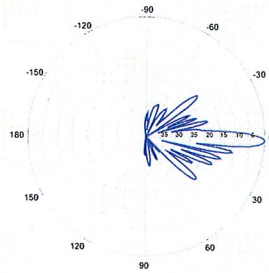


2° | Vertical | 1710-1880 MHz
BXA-171085-12BF-EDIN-4

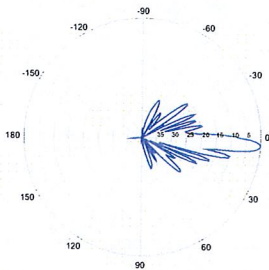


4° | Vertical | 1710-1880 MHz

BXA-171085-12BF-EDIN-2

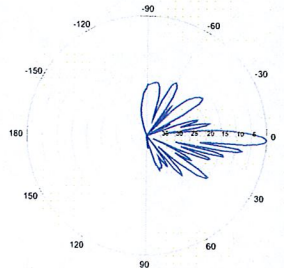


2° | Vertical | 1850-1990 MHz
BXA-171085-12BF-EDIN-4

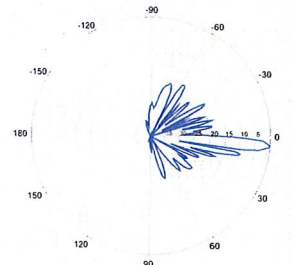


4° | Vertical | 1850-1990 MHz

BXA-171085-12BF-EDIN-2



2° | Vertical | 1920-2170 MHz
BXA-171085-12BF-EDIN-4



4° | Vertical | 1920-2170 MHz

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BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

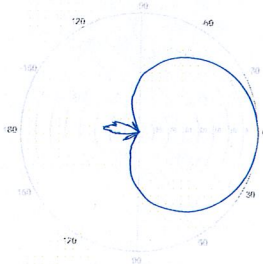
Replace "X" with desired electrical downtilt.

Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.



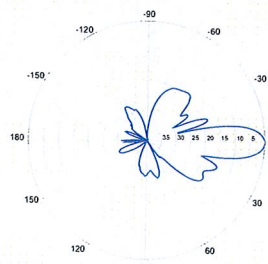
Electrical Characteristics	696-900 MHz	
	696-806 MHz	806-900 MHz
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	65°	63°
Vertical beamwidth	13°	11°
Gain	14.0 dBd (16.1 dBi)	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10	
Impedance	50Ω	
VSWR	≤1.35:1	
Upper sidelobe suppression (0°)	-18.3 dB	-18.2 dB
Front-to-back ratio (+/-30°)	-33.4 dB	-36.3 dB
Null fill	5% (-26.02 dB)	
Isolation between ports	< -25 dB	
Input power with EDIN connectors	500 W	
Input power with NE connectors	300 W	
Lightning protection	Direct Ground	
Connector(s)	2 Ports / EDIN or NE / Female / Center (Back)	
Mechanical Characteristics		
Dimensions Length x Width x Depth	1804 x 285 x 132 mm	71.0 x 11.2 x 5.2 in
Depth with z-brackets	172 mm	6.8 in
Weight without mounting brackets	7.9 kg	17 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.51 m ² Side: 0.24 m ²	Front: 5.5 ft ² Side: 2.6 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf
Mounting Options		
	Part Number	Fits Pipe Diameter
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP	

BXA-70063-6CF-EDIN-X



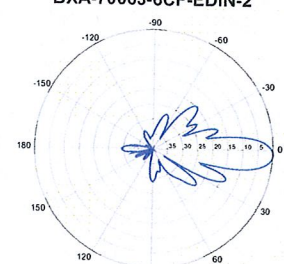
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

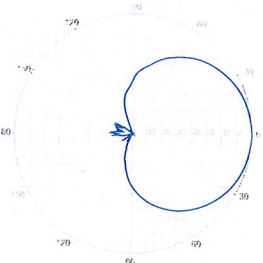


0° | Vertical | 750 MHz

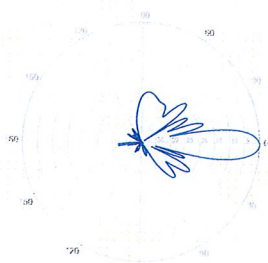
BXA-70063-6CF-EDIN-2



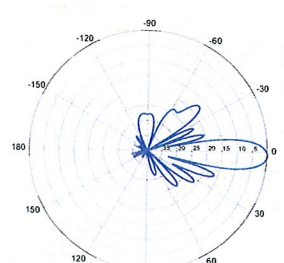
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



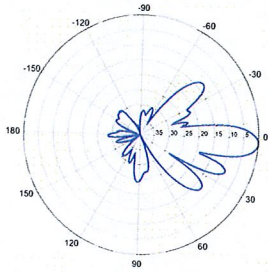
2° | Vertical | 850 MHz

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BXA-70063-6CF-EDIN-X

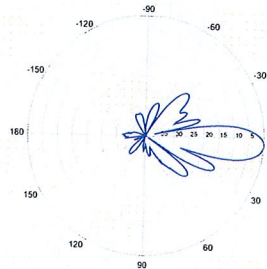
X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3



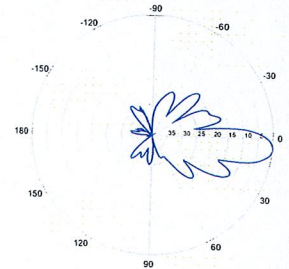
3° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-4

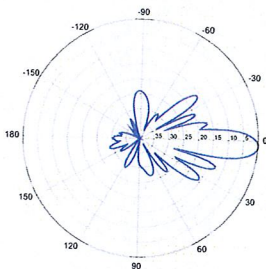


4° | Vertical | 750 MHz

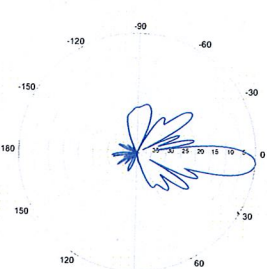
BXA-70063-6CF-EDIN-5



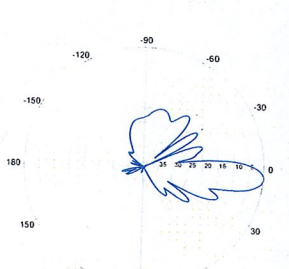
5° | Vertical | 750 MHz



3° | Vertical | 850 MHz

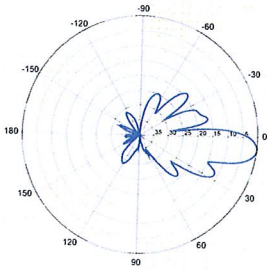


4° | Vertical | 850 MHz



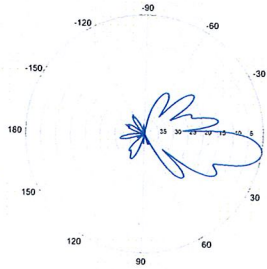
5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



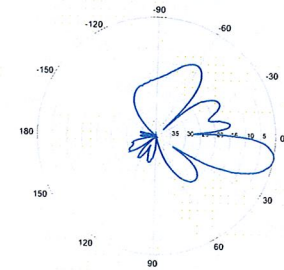
6° | Vertical | 750 MHz

BXA-70063-6CF-EDIN-8

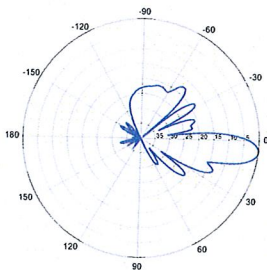


8° | Vertical | 750 MHz

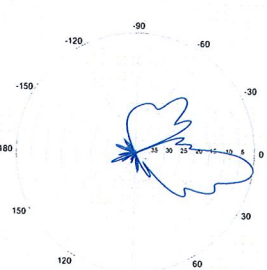
BXA-70063-6CF-EDIN-10



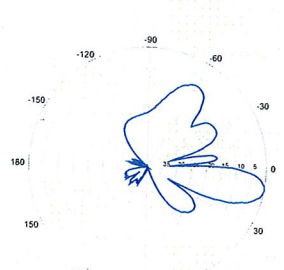
10° | Vertical | 750 MHz



6° | Vertical | 850 MHz



8° | Vertical | 850 MHz



10° | Vertical | 850 MHz

Quoted performance parameters are provided to offer typical or range values only and may vary as a result of normal manufacturing and operational conditions. Extreme operational conditions and/or stress on structural supports is beyond our control. Such conditions may result in damage to this product. Improvements to product may be made without notice.

Site Name: Monroe		General	Power	Density						
Tower Height: Verizon @ 165Ft.										
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total		
*AT&T UMTS	1	500	175	0.0059	1900	1.0000	0.59%			
*AT&T UMTS	1	500	175	0.0059	880	0.5867	1.00%			
*AT&T LTE	1	500	175	0.0059	734	0.4893	1.20%			
*AT&T GSM	1	427	175	0.0050	1900	1.0000	0.50%			
*AT&T GSM	3	296	175	0.0104	880	0.5867	1.78%			
*T-Mobile GSM	8	126	195	0.0095	1945	1.0000	0.95%			
*T-Mobile UMTS	2	589	195	0.0111	2100	1.0000	1.11%			
Verizon PCS	15	230	165	0.0456	1970	1.0000	4.56%			
Verizon Cellular	9	244	165	0.0290	869	0.5793	5.01%			
Verizon AWS	1	558	165	0.0074	2145	1.0000	0.74%			
Verizon 700	1	804	165	0.0106	698	0.4653	2.28%			
									19.71%	
* Source: Siting Council										



STRUCTURAL ANALYSIS REPORT

REVIEWED

By Aaron T. Chandler at 11:28 am, Aug 08, 2012



SITE NUMBER: CT11215A
SITE NAME: MONROE - 1/RT 25
SITE ADDRESS: 88 MAIN STREET
MONROE, CT 06468

NEW ANTENNA INSTALLATION BY:



**ON AN EXISTING
195' MONOPOLE**

July 23, 2012

GPD Project #: 2012716.13

MONOPOLE

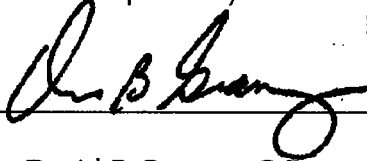
STRUCTURAL ANALYSIS REPORT

CT11215A MONROE – 1/RT 25
88 Main Street
Monroe, CT 06468
GPD Project #: 2012716.13

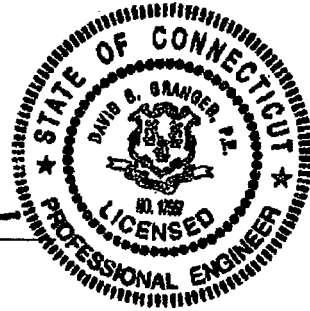
New Antenna Installation
Existing 195 ft Monopole

For:
T-Mobile Towers
Bellevue, Washington

Prepared By:



David B Granger, P.E.
Registered Professional Engineer
Connecticut #: 17557



July 23, 2012

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APPENDICES

1. TNXTOWER ANALYSIS PRINTOUT
2. TOWER ELEVATION DRAWING AND FEEDLINE PLAN
3. ANCHOR ROD AND BASE PLATE ANALYSIS
4. FOUNDATION ANALYSIS

EXECUTIVE SUMMARY

The purpose of this analysis is to verify whether the design for the existing tower is structurally capable of carrying the new antenna and coax loads as specified by Verizon to T-Mobile Towers. This report was commissioned by Ms. MeganJo MacLeod of T-Mobile Towers.

The design for the existing structure meets the requirements of TIA/EIA-222-F and the 2005 Connecticut State Building Code for a fastest-mile wind speed of 85 mph with 1/2" radial ice (w/ 25% wind load reduction) for the proposed loading configuration.

The foundation reactions, with the proposed loading, were found to be less than the capacity of the existing foundation design. Therefore the existing foundation is adequate for the proposed loading, assuming it was properly constructed according to original design.

Section Results

<u>Monopole</u>	<u>% Capacity</u>	<u>Result</u>
157.5' – 195'	37.7%	Pass
116.8' – 157.5'	69.6%	Pass
77' – 116.8'	77.2%	Pass
38' – 77'	89.4%	Pass
0' – 38'	84.2%	Pass
Base Plate	74.5%	Pass
Anchor Rods	80.9%	Pass
<u>Foundation</u>	<u>% Capacity</u>	<u>Result</u>
Structure	80.6%	Pass
Soil Interaction	60.4%	Pass
Tower Rating:	89.4%	

TOWER DESCRIPTION

The existing 195' monopole is located in Monroe, Connecticut. It was originally designed for Voicestream Wireless by Paul J Ford & Company of Columbus, Ohio. The original design load for the tower was for an 85 mph basic wind speed with 1/2" radial ice (w/ 25% wind load reduction) in accordance with TIA/EIA-222-F-1996. The tower was originally designed to hold the following:

Original Configuration

Elevation	Antennas
Elev. 195'	(1) 5/8" Lightning Rod
Elev. 195'	(12) EMS RR90-17-00DP PCS Antennas, on (3) 14' T-Arm Mounts, w/ internal coax
Elev. 185'	(12) EMS RR90-17-00DP PCS Antennas, on (1) 14' LP Platform, w/ internal coax
Elev. 175'	(12) EMS RR90-17-00DP PCS Antennas, on (1) 14' LP Platform, w/ internal coax
Elev. 165'	(12) EMS RR90-17-00DP PCS Antennas, on (1) 14' LP Platform, w/ internal coax
Elev. 155'	(12) EMS RR90-17-00DP PCS Antennas, on (1) 14' LP Platform, w/ internal coax
Elev. 140'	(2) 10' Whip Antennas, on (2) 6' Side Arm Mounts, w/ internal coax
Elev. 120'	(2) 10' Whip Antennas, on (2) 6' Side Arm Mounts, w/ internal coax

The monopole has five major sections connected by slip joints. It has 18 sides and is evenly tapered from 61.60" (flat-flat) at the base to 26.00" (flat-flat) at the top. The structure is galvanized and has no tower lighting.

DOCUMENTS PROVIDED

Description	Remarks	Source
Tower Drawings	PJF Design #: 29201-0505, dated 5/11/01	T-Mobile
Foundation Drawings	PJF Design #: 29201-0505, dated 5/11/01	T-Mobile
Geotechnical Report	Jaworski Geotech, Inc. Project #: 01129G, dated 2/15/01	T-Mobile
Site Inspection Report	SiteMaster, dated 12/8/07	T-Mobile
Previous Structural Analysis	GPD #: 2011704.81, dated 10/19/11	T-Mobile

TOWER MATERIALS

Data on steel strength was available from the information provided. The following table details the steel strength used in the analysis.

Monopole	ASTM A607 (65 KSI Yield Strength)
Base Plate	ASTM A572 (55 KSI Yield Strength)
Anchor Rods	ASTM A615 (75 KSI Yield Strength)

TOWER LOADING

The following data shows the major loading that the tower supports. The proposed antenna information was provided by T-Mobile Towers.

Existing & Reserved Configuration

<u>Elevation</u>	<u>Carrier</u>	<u>Antennas</u>
195'	T-Mobile	(12) Andrew TMBXX-6516-R2M Antennas, (6) Andrew ETW190VS12UB TMAs, & (1) 4' HP MW Dish on (3) 14' T-Arm Mounts, w/ (25) 1-5/8" internal coax
175'	AT&T	(3) Powerwave 7770 Antennas, (3) Powerwave P65-16-XLH-RR Antennas, (6) Powerwave LGP-21401 TMAs, (6) Ericsson RRUS-11 RRHs, & (1) Raycap DC6-48-60-18-8F on a 13' Low Profile Platform, w/ (12) 1-5/8" internal coax, (1) internal LTE fiber cable, & (2) internal LTE DC cables
165'	Verizon	(6) Celwave APL 868013-42TO Antennas & (6) Decibel DB948F85FE-M Antennas on a 15' Low Profile Platform, w/ (12) 1-5/8" internal coax

Proposed Configuration

<u>Elevation</u>	<u>Carrier</u>	<u>Antennas</u>
195'	T-Mobile	(12) Andrew TMBXX-6516-R2M Antennas, (6) Andrew ETW190VS12UB TMAs, & (1) 4' HP MW Dish on (3) 14' T-Arm Mounts, w/ (25) 1-5/8" internal coax
175'	AT&T	(3) Powerwave 7770 Antennas, (3) Powerwave P65-16-XLH-RR Antennas, (6) Powerwave LGP-21401 TMAs, (6) Ericsson RRUS-11 RRHs, & (1) Raycap DC6-48-60-18-8F on a 13' Low Profile Platform, w/ (12) 1-5/8" internal coax, (1) internal LTE fiber cable, & (2) internal LTE DC cables
165'	Verizon	(3) Antel BXA-70063/6CF Antennas, (6) Antel LPA 80080/6CF Antennas & (3) Antel BXA-171085/12BF Antennas on a 15' Low Profile Platform, w/ (18) 1-5/8" internal coax

Notes: - BOLD type indicates proposed carriers final configuration.

- See Appendix 2 for the feedline plan.

ANALYSIS

The purpose of this structural analysis review is to determine if the design for the existing tower is in conformance to the latest TIA/EIA-222-F and the 2005 Connecticut State Building Code standard requirements. TnxTower (Version v6.0.4.0), a commercially available software program, was used to create a three-dimensional model of the tower and calculate member stresses for various dead, live, wind, and ice load cases. All loads were computed in accordance with the ANSI/TIA/EIA-222-F standard and all local building code requirements. Selected output from the analysis is included in Appendix 1.

The current requirements of TIA/EIA-222-F are for a fastest-mile wind speed of 85 mph with 1/2" of radial ice. A 25% reduction in wind load is allowed when wind and ice are applied simultaneously. TIA/EIA-222-F requires towers within Fairfield County, Connecticut be analyzed with an 85 mph fastest-mile wind speed.

ANALYSIS FASTEST-MILE WIND SPEED:	85 MPH
--	---------------

The tower and foundations are assumed, for the purpose of this analysis, to have been properly fabricated, constructed, maintained, and to be in good condition with no structural defects. This is not a condition assessment of the tower and has been provided without the benefit of recent detailed tower photos, a detailed tower mapping, or a GPD Group site visit. This analysis assumes all antennas and coax have been installed in a neat and orderly fashion. Proposed antennas are assumed to be installed on standard sized mounts. The existing/proposed mounts are assumed to have been verified by the carrier to support the existing/proposed loading for the required various load cases.

CONCLUSIONS AND RECOMMENDATIONS

Based on the computer structural analysis results, the design for the existing 195' monopole meets the requirements of TIA/EIA-222-F and the 2005 Connecticut State Building Code for a fastest-mile wind speed of 85 mph with 1/2" radial ice (w/ 25% wind load reduction) for the proposed loading configuration.

The foundation reactions, with the proposed loading, were found to be less than the capacity of the existing foundation design. Therefore, the existing foundation is adequate, assuming it was properly constructed according to original design.

Summary of Findings

Monopole	Satisfactory
Base Plate	Satisfactory
Anchor Rods	Satisfactory
Foundation	Satisfactory

Therefore, based on our analysis results, the design for the existing structure is structurally satisfactory for the proposed loading configuration.

DISCLAIMER OF WARRANTIES

GPD GROUP has not performed a site visit to the tower to verify the member sizes or antenna/coax loading. If the existing conditions are not as represented on the tower elevation contained in this report, we should be contacted immediately to evaluate the significance of the discrepancy. This is not a condition assessment of the tower or foundation. This report does not replace a full tower inspection. The tower and foundations are assumed to have been properly fabricated, erected, maintained, in good condition, twist free, and plumb.

The engineering services rendered by GPD GROUP in connection with this Structural Analysis are limited to a computer analysis of the tower structure and theoretical capacity of its main structural members. All tower components have been assumed to only resist dead loads when no other loads are applied. No allowance was made for any damaged, bent, missing, loose, or rusted members (above and below ground). No allowance was made for loose bolts or cracked welds.

GPD GROUP does not analyze the fabrication of the structure (including welding). It is not possible to have all the very detailed information needed to perform a thorough analysis of every structural sub-component and connection of an existing tower. GPD GROUP provides a limited scope of service in that we cannot verify the adequacy of every weld, plate connection detail, etc. The purpose of this report is to assess the feasibility of adding appurtenances usually accompanied by transmission lines to the structure.

It is the owner's responsibility to determine the amount of ice accumulation, if any, that should be considered in the structural analysis.

The attached sketches are a schematic representation of the analyzed tower. If any material is fabricated from these sketches, the contractor shall be responsible for field verifying the existing conditions, proper fit, and clearance in the field. Any mentions of structural modifications are reasonable estimates and should not be used as a precise construction document. Precise modification drawings are obtainable from GPD GROUP, but are beyond the scope of this report.

Miscellaneous items such as antenna mounts etc., have not been designed or detailed as a part of our work. We recommend that material of adequate size and strength be purchased from a reputable tower manufacturer.

GPD GROUP makes no warranties, expressed and/or implied, in connection with this report and disclaims any liability arising from material, fabrication, and erection of this tower. GPD GROUP will not be responsible whatsoever for, or on account of, consequential or incidental damages sustained by any person, firm, or organization as a result of any data or conclusions contained in this report. The maximum liability of GPD GROUP pursuant to this report will be limited to the total fee received for preparation of this report.

APPENDICES

1. **TnxTower Analysis Printout**
2. **Tower Elevation Drawing and Feedline Plan**
3. **Anchor Rod and Base Plate Analysis**
4. **Foundation Analysis**

TNXTOWER ANALYSIS PRINTOUT

tnxTower GPD Group 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (220) 572-2101	Job	CT11215A MONROE - 1/RT 25	Page	1 of 6
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	Client	T-Mobile Towers	Designed by	ewells

Tower Input Data

There is a pole section.

This tower is designed using the TIA/EIA-222-F standard.

The following design criteria apply:

Tower is located in Fairfield County, Connecticut.

Basic wind speed of 85 mph.

Nominal ice thickness of 0.5000 in.

Ice density of 56 pcf.

A wind speed of 74 mph is used in combination with ice.

Temperature drop of 50 °F.

Deflections calculated using a wind speed of 50 mph.

A non-linear (P-delta) analysis was used.

Pressures are calculated at each section.

Stress ratio used in pole design is 1.333.

Local bending stresses due to climbing loads, feedline supports, and appurtenance mounts are not considered.

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _A A _A		Weight
						ft ² /ft	plf	
LDF7-50A (1-5/8 FOAM)	B	No	Inside Pole	195.00 - 8.00	25	No Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM)	C	No	Inside Pole	175.00 - 8.00	12	1/2" Ice	0.00	0.82
3/8" Fiber Cable	C	No	Inside Pole	175.00 - 8.00	1	No Ice	0.00	0.82
7/8" DC Power Cable	C	No	Inside Pole	175.00 - 8.00	2	1/2" Ice	0.00	0.10
LDF7-50A (1-5/8 FOAM)	A	No	Inside Pole	165.00 - 8.00	18	No Ice	0.00	0.60
Climbing Pegs	C	No	CaAa (Out Of Face)	195.00 - 8.00	1	1/2" Ice	0.00	0.60
Safety Line 3/8	C	No	CaAa (Out Of Face)	195.00 - 8.00	1	No Ice	0.01	0.31
						1/2" Ice	0.12	0.71
						No Ice	0.04	0.22
						1/2" Ice	0.14	0.75

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement ft	C _A A _A		Weight	
			Horz ft	Lateral ft			Front ft ²	Side ft ²		
5/8"x4' Lightning Rod	C	None			0.0000	195.00	No Ice	0.01	0.01	30.00
14' T-Arm	A	From Leg	1.93		-15.0000	195.00	1/2" Ice	0.05	0.05	30.30
			-0.52				No Ice	5.80	3.33	336.00
			0.00				1/2" Ice	9.71	5.58	412.00
14' T-Arm	B	From Face	1.00		60.0000	195.00	No Ice	5.80	3.33	336.00
			1.73				1/2" Ice	9.71	5.58	412.00

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	Client T-Mobile Towers	Designed by ewells

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral Vert						
			ft	ft	°	ft	ft ²	ft ²	lb	
14' T-Arm	C	From Face	0.00	1.93	-15.0000	195.00	No Ice	5.80	3.33	336.00
				-0.52			1/2" Ice	9.71	5.58	412.00
(4) TMBXX-6516-R2M w/ (2"x84") Mount Pipe	A	From Leg	0.00	3.86	-15.0000	195.00	No Ice	7.32	5.48	60.15
				-1.04			1/2" Ice	8.00	6.58	115.58
(4) TMBXX-6516-R2M w/ (2"x84") Mount Pipe	B	From Face	0.00	2.00	60.0000	195.00	No Ice	7.32	5.48	60.15
				3.46			1/2" Ice	8.00	6.58	115.58
(4) TMBXX-6516-R2M w/ (2"x84") Mount Pipe	C	From Face	0.00	3.86	-15.0000	195.00	No Ice	7.32	5.48	60.15
				-1.04			1/2" Ice	8.00	6.58	115.58
(2) ETW190VS12UB	A	From Leg	0.00	3.86	-15.0000	195.00	No Ice	0.66	0.35	11.00
				-1.04			1/2" Ice	0.78	0.44	15.83
(2) ETW190VS12UB	B	From Face	0.00	2.00	60.0000	195.00	No Ice	0.66	0.35	11.00
				3.46			1/2" Ice	0.78	0.44	15.83
(2) ETW190VS12UB	C	From Face	0.00	3.86	-15.0000	195.00	No Ice	0.66	0.35	11.00
				-1.04			1/2" Ice	0.78	0.44	15.83
4.5" Dia x 4' Dish Mount	B	From Face	0.00	0.50	0.0000	195.00	No Ice	1.32	1.32	43.20
				0.00			1/2" Ice	1.58	1.58	56.19
PiROD 13' Low Profile Platform	C	None	0.00		0.0000	175.00	No Ice	15.70	15.70	1300.00
							1/2" Ice	20.10	20.10	1765.00
7770.00 w/ 2"x96" Mount Pipe	A	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	6.69	4.83	64.20
				0.00			1/2" Ice	7.48	6.00	114.71
7770.00 w/ 2"x96" Mount Pipe	B	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	6.69	4.83	64.20
				0.00			1/2" Ice	7.48	6.00	114.71
7770.00 w/ 2"x96" Mount Pipe	C	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	6.69	4.83	64.20
				0.00			1/2" Ice	7.48	6.00	114.71
P65-16-XLH-RR w/ 2-1/2" x 84" mount pipe	A	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	8.69	6.71	104.53
				0.00			1/2" Ice	9.32	7.74	171.37
P65-16-XLH-RR w/ 2-1/2" x 84" mount pipe	B	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	8.69	6.71	104.53
				0.00			1/2" Ice	9.32	7.74	171.37
P65-16-XLH-RR w/ 2-1/2" x 84" mount pipe	C	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	8.69	6.71	104.53
				0.00			1/2" Ice	9.32	7.74	171.37
(2) LGP21401	A	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	1.29	0.23	14.10
				0.00			1/2" Ice	1.45	0.31	21.26
(2) LGP21401	B	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	1.29	0.23	14.10
				0.00			1/2" Ice	1.45	0.31	21.26
(2) LGP21401	C	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	1.29	0.23	14.10
				0.00			1/2" Ice	1.45	0.31	21.26
(2) RRUS-11	A	From Centroid-Face	0.00	4.00	0.0000	175.00	No Ice	4.42	1.19	55.00
				0.00			1/2" Ice	4.71	1.35	80.77

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	Client	T-Mobile Towers	Designed by	ewells

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						
			ft	ft	°	ft	ft ²	ft ²	lb	
(2) RRUS-11	B	From	4.00		0.0000	175.00	No Ice	4.42	1.19	55.00
		Centroid-Face	0.00				1/2" Ice	4.71	1.35	80.77
(2) RRUS-11	C	From	4.00		0.0000	175.00	No Ice	4.42	1.19	55.00
		Centroid-Face	0.00				1/2" Ice	4.71	1.35	80.77
DC6-48-60-18-8F	C	None			0.0000	175.00	No Ice	2.22	2.22	20.00
							1/2" Ice	2.44	2.44	39.25
PiROD 15' Low Profile Platform	C	None			0.0000	165.00	No Ice	17.30	17.30	1500.00
							1/2" Ice	22.10	22.10	2030.00
BXA-70063/6CF w/ Mount Pipe	A	From	4.00		0.0000	165.00	No Ice	8.00	5.42	42.55
		Centroid-Face	0.00				1/2" Ice	8.65	6.59	98.87
BXA-70063/6CF w/ Mount Pipe	B	From	4.00		0.0000	165.00	No Ice	8.00	5.42	42.55
		Centroid-Face	0.00				1/2" Ice	8.65	6.59	98.87
BXA-70063/6CF w/ Mount Pipe	C	From	4.00		0.0000	165.00	No Ice	8.00	5.42	42.55
		Centroid-Face	0.00				1/2" Ice	8.65	6.59	98.87
(2) LPA-80080/6CF w/ Mount Pipe	A	From	4.00		0.0000	165.00	No Ice	4.35	10.51	42.90
		Centroid-Left	0.00				1/2" Ice	4.79	11.56	104.60
(2) LPA-80080/6CF w/ Mount Pipe	B	From	4.00		0.0000	165.00	No Ice	4.35	10.51	42.90
		Centroid-Left	0.00				1/2" Ice	4.79	11.56	104.60
(2) LPA-80080/6CF w/ Mount Pipe	C	From	4.00		0.0000	165.00	No Ice	4.35	10.51	42.90
		Centroid-Left	0.00				1/2" Ice	4.79	11.56	104.60
BXA-171085-12BF w/ Mount Pipe	A	From	4.00		0.0000	165.00	No Ice	4.74	5.30	49.74
		Centroid-Left	0.00				1/2" Ice	5.19	6.10	93.74
BXA-171085-12BF w/ Mount Pipe	B	From	4.00		0.0000	165.00	No Ice	4.74	5.30	49.74
		Centroid-Left	0.00				1/2" Ice	5.19	6.10	93.74
BXA-171085-12BF w/ Mount Pipe	C	From	4.00		0.0000	165.00	No Ice	4.74	5.30	49.74
		Centroid-Left	0.00				1/2" Ice	5.19	6.10	93.74

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets:		Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter	Aperture Area	Weight	
				Horz	Lateral							
			ft	ft	°	°	ft	ft	ft ²	lb		
4' HP	B	Paraboloid w/Shroud (HP)	From	0.50		0.0000		195.00	4.00	No Ice	12.57	50.00
			Face	0.00						1/2" Ice	13.10	130.00
				0.00								

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	Client T-Mobile Towers	Designed by ewells

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.5	47.601	32	2.1122	0.0236
L2	161.75 - 116.75	33.290	32	1.9504	0.0115
L3	122 - 77	18.758	32	1.4850	0.0055
L4	83 - 38	8.510	32	0.9914	0.0028
L5	45 - 0	2.459	32	0.4954	0.0011

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	4' HP	32	47.601	2.1122	0.0236	42116
175.00	PiROD 13' Low Profile Platform	32	38.859	2.0357	0.0157	10528
165.00	PiROD 15' Low Profile Platform	32	34.630	1.9753	0.0124	7023

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	195 - 157.5	136.747	7	6.0636	0.0688
L2	161.75 - 116.75	95.734	7	5.6094	0.0334
L3	122 - 77	54.001	7	4.2755	0.0160
L4	83 - 38	24.517	7	2.8563	0.0080
L5	45 - 0	7.087	7	1.4280	0.0032

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
195.00	4' HP	7	136.747	6.0636	0.0688	15151
175.00	PiROD 13' Low Profile Platform	7	111.699	5.8510	0.0457	3785
165.00	PiROD 15' Low Profile Platform	7	99.578	5.6803	0.0361	2522

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L _n ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio P/P _a
L1	195 - 157.5 (1)	TP33.351x26x0.25	37.50	0.00	0.0	39.000	25.6046	-8003.07	998578.00	0.008
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	45.00	0.00	0.0	39.000	39.1765	-15061.80	1527880.00	0.010
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	45.00	0.00	0.0	39.000	55.2929	-24674.40	2156420.00	0.011
L4	77 - 38 (4)	TP54.901x46.0798x0.375	45.00	0.00	0.0	39.000	63.2663	-35759.50	2467390.00	0.014
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	45.00	0.00	0.0	39.000	84.9318	-51828.40	3312340.00	0.016

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Section No.	Elevation ft	Size	L ft	L _u ft	Kl/r	F _a ksi	A in ²	Actual P lb	Allow. P _a lb	Ratio $\frac{P}{P_a}$
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Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M _x lb-ft	Actual f _{bx} ksi	Allow. F _{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M _y lb-ft	Actual f _{by} ksi	Allow. F _{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	326568.33	19.220	39.000	0.493	0.00	0.000	39.000	0.000
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	1138350.00	35.778	39.000	0.917	0.00	0.000	39.000	0.000
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	2095625.00	39.684	39.000	1.018	0.00	0.000	39.000	0.000
L4	77 - 38 (4)	TP54.901x46.0798x0.375	3175616.67	45.886	39.000	1.177	0.00	0.000	39.000	0.000
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	4614800.00	43.172	39.000	1.107	0.00	0.000	39.000	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V lb	Actual f _v ksi	Allow. F _v ksi	Ratio $\frac{f_v}{F_v}$	Actual T lb-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	195 - 157.5 (1)	TP33.351x26x0.25	18381.60	0.718	26.000	0.055	5557.29	0.160	26.000	0.006
L2	157.5 - 116.75 (2)	TP40.839x32.0179x0.3125	22465.70	0.573	26.000	0.044	5518.67	0.085	26.000	0.003
L3	116.75 - 77 (3)	TP48.006x39.1849x0.375	26556.00	0.480	26.000	0.037	5477.81	0.051	26.000	0.002
L4	77 - 38 (4)	TP54.901x46.0798x0.375	30130.40	0.476	26.000	0.037	5441.47	0.038	26.000	0.001
L5	38 - 0 (5)	TP61.6x52.7788x0.4375	33729.70	0.397	26.000	0.031	5413.38	0.025	26.000	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	195 - 157.5 (1)	0.008	0.493	0.000	0.055	0.006	0.502	1.333	H1-3+VT ✓
L2	157.5 - 116.75 (2)	0.010	0.917	0.000	0.044	0.003	0.928	1.333	H1-3+VT ✓
L3	116.75 - 77 (3)	0.011	1.018	0.000	0.037	0.002	1.029	1.333	H1-3+VT ✓
L4	77 - 38 (4)	0.014	1.177	0.000	0.037	0.001	1.191	1.333	H1-3+VT ✓
L5	38 - 0 (5)	0.016	1.107	0.000	0.031	0.001	1.123	1.333	H1-3+VT ✓

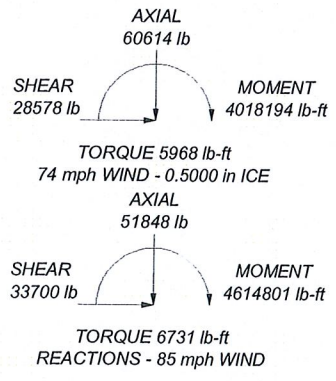
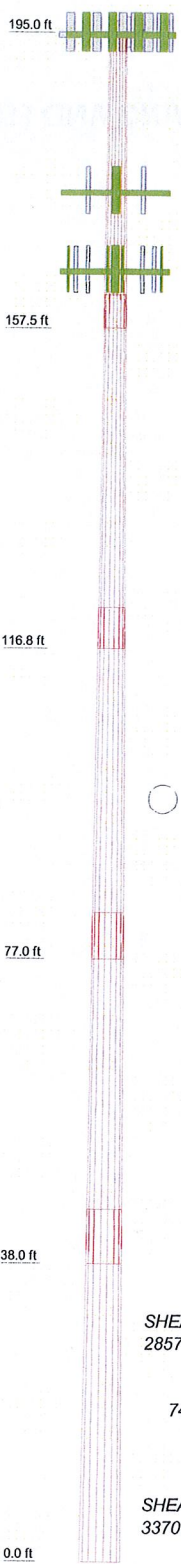
tnxTower GPD Group 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (220) 572-2101	Job CT11215A MONROE - 1/RT 25	Page 6 of 6
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Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	SF*P _{allow} lb	% Capacity	Pass Fail
L1	195 - 157.5	Pole	TP33.351x26x0.25	1	-8003.07	1331104.42	37.7	Pass
L2	157.5 - 116.75	Pole	TP40.839x32.0179x0.3125	2	-15061.80	2036663.96	69.6	Pass
L3	116.75 - 77	Pole	TP48.006x39.1849x0.375	3	-24674.40	2874507.74	77.2	Pass
L4	77 - 38	Pole	TP54.901x46.0798x0.375	4	-35759.50	3289030.73	89.4	Pass
L5	38 - 0	Pole	TP61.6x52.7788x0.4375	5	-51828.40	4415349.04	84.2	Pass
Summary								
Pole (L4)							89.4	Pass
RATING =							89.4	Pass

TOWER ELEVATION DRAWING AND FEEDLINE PLAN

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (lb)
1	37.50	18	0.2500	4.25	26.0000	33.3510		2979.5
2	45.00	18	0.3125	5.25	32.0179	40.8390		5485.3
3	45.00	18	0.3750	6.00	39.1849	48.0060	A607-65	7877.3
4	45.00	18	0.3750	7.00	46.0798	54.9010		9133.9
5	45.00	18	0.4375	52.7788	61.6000			12067.4
								37543.4



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
5/8"x4' Lightning Rod	195	P65-16-XLH-RR w/ 2-1/2" x 84" mount pipe	175
14' T-Arm	195	(2) LGP21401	175
14' T-Arm	195	(2) LGP21401	175
14' T-Arm	195	(2) LGP21401	175
(4) TMBXX-6516-R2M w/ (2"x84") Mount Pipe	195	(2) RRUS-11	175
(4) TMBXX-6516-R2M w/ (2"x84") Mount Pipe	195	(2) RRUS-11	175
(4) TMBXX-6516-R2M w/ (2"x84") Mount Pipe	195	(2) RRUS-11	175
(2) ETW190VS12UB	195	DC6-48-60-18-8F	175
(2) ETW190VS12UB	195	PIROD 13' Low Profile Platform	175
(2) ETW190VS12UB	195	BXA-70063/6CF w/ Mount Pipe	165
4.5" Dia x 4' Dish Mount	195	BXA-70063/6CF w/ Mount Pipe	165
4' HP	195	BXA-70063/6CF w/ Mount Pipe	165
7770.00 w/ 2"x96" Mount Pipe	175	(2) LPA-80080/6CF w/ Mount Pipe	165
7770.00 w/ 2"x96" Mount Pipe	175	(2) LPA-80080/6CF w/ Mount Pipe	165
7770.00 w/ 2"x96" Mount Pipe	175	BXA-171085-12BF w/ Mount Pipe	165
P65-16-XLH-RR w/ 2-1/2" x 84" mount pipe	175	BXA-171085-12BF w/ Mount Pipe	165
P65-16-XLH-RR w/ 2-1/2" x 84" mount pipe	175	BXA-171085-12BF w/ Mount Pipe	165
		PIROD 15' Low Profile Platform	165

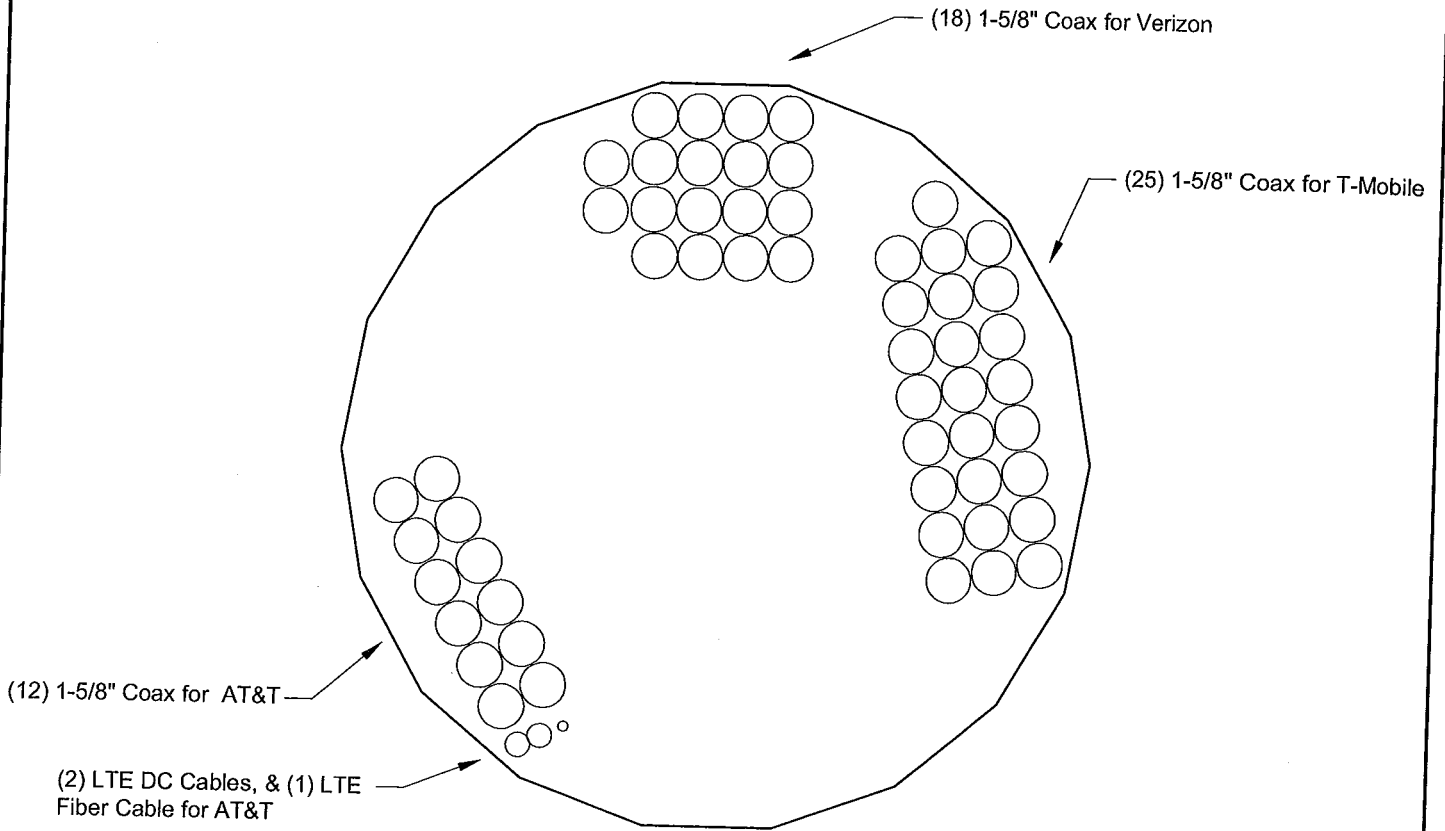
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

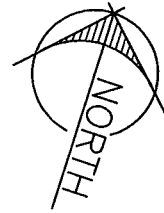
1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 74 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 89.4%

<p>GPD Group 520 South Main St. Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (220) 572-2101</p>	<p>Job: CT11215A MONROE - 1/RT 25</p> <p>Project: 2012716.13</p>		
	<p>Client: T-Mobile Towers</p> <p>Code: TIA/EIA-222-F</p> <p>Path: C:\Users\ewells\Desktop\2012716.13\Tower\CT11215A MONROE - 1RT 25.ed</p>	<p>Drawn by: ewells</p> <p>Date: 07/22/12</p>	<p>App'd: NTS</p> <p>Scale: NTS</p> <p>Dwg No. E-1</p>

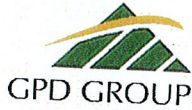


COAX PLACEMENT

NOT TO SCALE



ANCHOR ROD AND BASE PLATE ANALYSIS



Anchor Rod and Base Plate Stresses

CT11215A MONROE - 1/RT 25

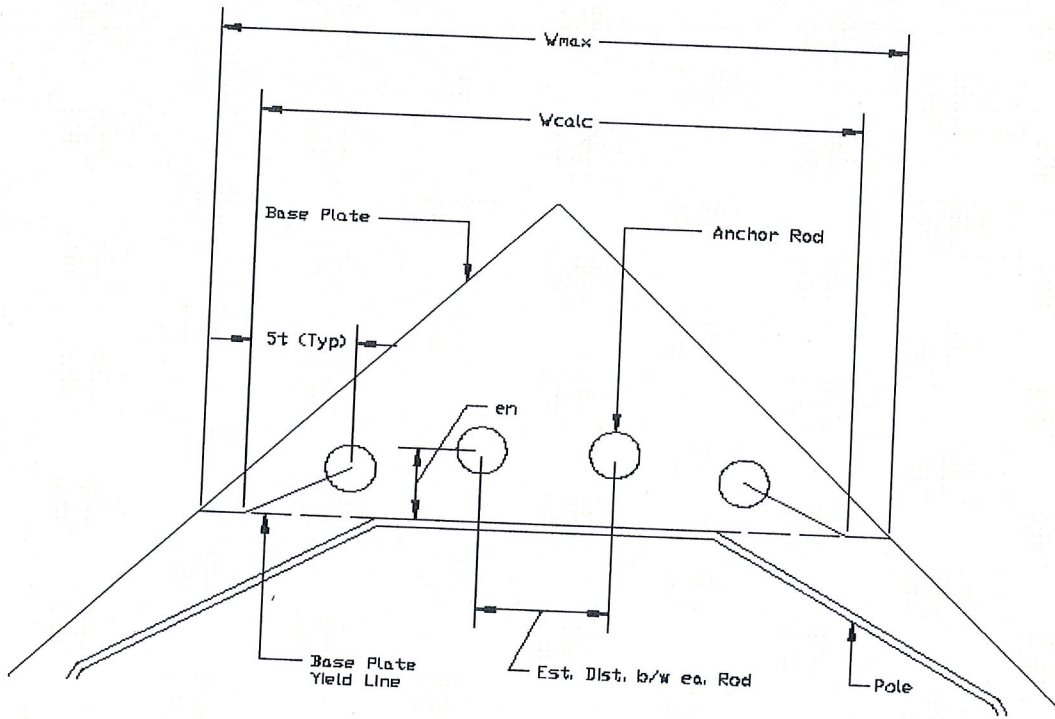
2012716.13

Overturning Moment =	4614.80	k ² ft
Axial Force =	51.85	k
Shear Force =	33.70	k

Acceptable Stress Ratio =	105.0%
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Anchor Rods		
Pole Diameter =	61.6	in
Number of Rods =	20	
Type =	Upset Rod	
Rod Yield Strength (F _y) =	75	ksi
ASIF =	1.333	
Rod Circle =	69	in
Rod Diameter =	2.25	in
Net Tensile Area =	3.25	in ²
Max Tension on Rod =	157.84	kips
Max Compression on Rod =	163.02	kips
Allow. Rod Force =	195.00	kips
Anchor Rod Capacity =	80.9%	OK

Base Plate		
Plate Strength (F _y) =	55	ksi
Plate Thickness =	3	in
Plate Width =	68	in
Est. Dist. b/w ea. Rod =	6	in
W _{calc} =	53.548	in
W _{max} =	34.567	in
w =	34.57	in
S =	51.85	in ³
f _b =	40.96	ksi
F _b =	55	ksi
Base Plate Capacity =	74.5%	OK



FOUNDATION ANALYSIS



Caisson Analysis
CT11215A MONROE - 1/RT 25
2012716.13

General Info	
Code	TIA/EIA-222-F
Concrete Code	ACI 318-05
Seismic Design Category	
Max Stress Ratio	1.05
Reinforcing Known?	Yes
Modified?	No

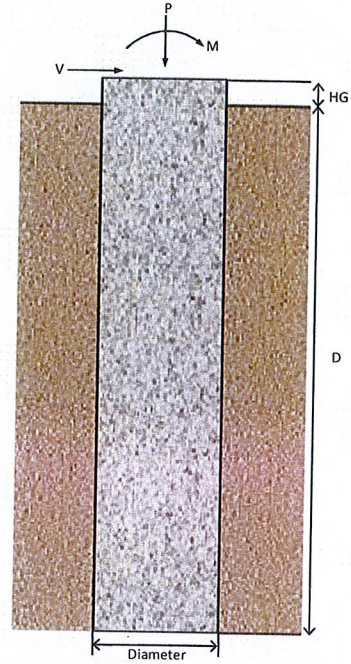
General Soil	
Ground Water	3.00 ft
Soil Depth to Neglect	13.00 ft

Reactions	
Moment, M	4614.80 k-ft
Axial, P	51.85 k
Shear, V	33.70 k

Pier Information		
Pier Diameter	8	ft
Pier Length Below Grade	37	ft
Distance Above Grade	0.5	ft
Vertical Bar Size	# 11	
Vertical Bar Quantity	28	
Tie Size	# 5	ft
fc'	4.5	ksi
fy	60	ksi
Clear Cover =	4	in

Soil Summary (Req. FS=2.0)	
Mu =	4614.80 k-ft
Mr =	15280.80 k-ft
FS =	3.31
Capacity =	60.4% Pass

Reinforcing Summary	
ϕMn =	8209.81 k-ft
Mu =	6620.67 k-ft
Min ρ =	0.00500
Provided ρ =	0.00603 OK
Capacity =	80.6% Pass



Soil Info								
Layer	Soil Type	Thickness	γ , pcf	Cu, psf	ϕ	Kp	Top of Layer	Bot. of Layer
Layer 1	Clay	13	120	0	0	0.00	0.00	13.00
Layer 2	Sand	24	115	0	34	3.54	13.00	37.00
Layer 3	Clay					0.00	37.00	37.00
Layer 4	Clay					0.00	37.00	37.00
Layer 5	Clay					0.00	37.00	37.00
Layer 6	Sand					1.00	37.00	37.00
Layer 7	Sand					1.00	37.00	37.00
Layer 8	Clay					0.00	37.00	37.00
Layer 9	Sand					1.00	37.00	37.00
Layer 10	Clay					0.00	37.00	37.00