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

November 1, 2012

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597

RE: **EM-VER-132-121009** - Cellco Partnership d/b/a Verizon Wireless notice of intent to modify an existing telecommunications facility located at 300 Governors Highway, South Windsor, 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:

- Prior to antenna installation, the modifications identified in the Structural Analysis Report prepared by GPD Group dated June 29, 2012, and stamped by David Granger shall be implemented;

- Following completion of the antenna installation, a signed letter from a Professional Engineer duly licensed in the State of Connecticut shall be submitted to the Council to certify that the recommended modifications have been completed and the tower and foundation do not exceed 100 percent of the post-construction structural rating;

- 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 October 4, 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 Thomas Delnicki, Mayor, Town of South Windsor
Michele R. Lipe, AICP, Town Planner, Town of South Windsor
Julie D. Kohler, Esq., T-Mobile

ROBINSON & COL

EM-VER-132-121009

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Also admitted in Massachusetts

October 4, 2012

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

Re: **Notice of Exempt Modification – Antenna Swap**
300 Governors Highway, South Windsor, Connecticut

Dear Ms. Roberts:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 108-foot level on an existing 169-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 2009. Cellco now intends to replace all of its existing antennas with six (6) model LPA-80063-6CF cellular antennas; three (3) model BXA-171063-12BF PCS antennas; and three (3) model BXA-70063-6CF LTE antennas, all at the same 108-foot level. 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 Matthew B. Galligan, Town Manager of the Town of South Windsor. A copy of this letter is also being sent to Electron Technologies Corporation, 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 108-foot level on the existing 169-foot tower.

2. The proposed modifications do 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 General Power Density table for Cellco's modified facility is included behind Tab 2.

Also attached is a Structural Analysis Report and modification drawings confirming that the tower and foundation, with certain modifications, can support Cellco's proposed antenna 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:
Matthew B. Galligan, South Windsor Town Manager
Electron Technologies Corporation
Sandy M. Carter

Amphenol ANTENNA SOLUTIONS

LPA-80063-6CF-EDIN-X

V-Pol | Log Periodic | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

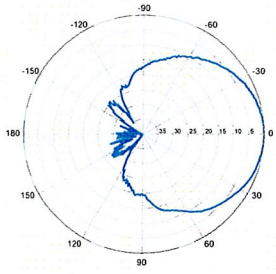
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	
Frequency bands	806-960 MHz
Polarization	Vertical
Horizontal beamwidth	63°
Vertical beamwidth	10°
Gain	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 4, 5, 6, 8, 10
Impedance	50Ω
VSWR	≤1.4:1
Null fill	5% (-26.02 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	1805 x 385 x 332 mm	71.1 x 15.2 x 13.1 in
Depth of antenna with z-bracket	372 mm	14.6 in
Weight without mounting brackets	12.3 kg	27 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.70 m² Side: 0.59 m²	Front: 7.5 ft² Side: 6.3 ft²
Wind load @ 161 km/hr (100 mph)	Front: 885 N Side: 757 N	Front: 199 lbf Side: 170 lbf

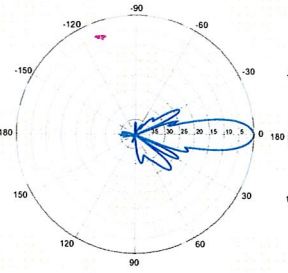
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit (0-20°)	21700000	50-102 mm 2.0-4.0 in	11 kg 25 lbs
Lock-Down Brace	If the lock-down brace is used, the maximum diameter of the mounting pipe is 88.9 mm or 3.5 in.		

LPA-80063-6CF-EDIN-X



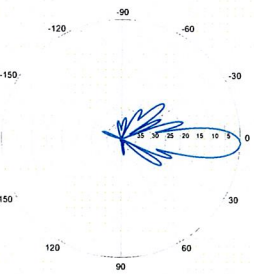
Horizontal

LPA-80063-6CF-EDIN-0



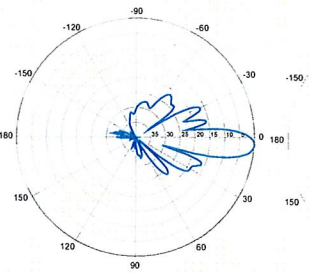
0° | Vertical

LPA-80063-6CF-EDIN-2



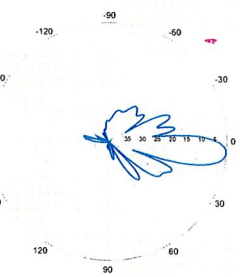
2° | Vertical

LPA-80063-6CF-EDIN-4



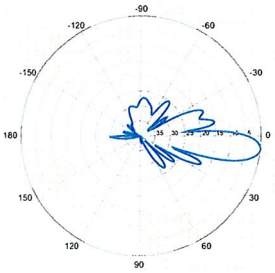
4° | Vertical

LPA-80063-6CF-EDIN-5



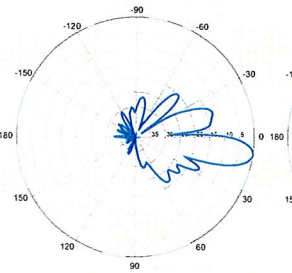
5° | Vertical

LPA-80063-6CF-EDIN-6



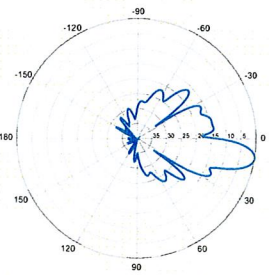
6° | Vertical

LPA-80063-6CF-EDIN-8



8° | Vertical

LPA-80063-6CF-EDIN-10



10° | Vertical

BXA-171063-12BF-EDIN-X

Replace "X" with desired electrical downtilt.

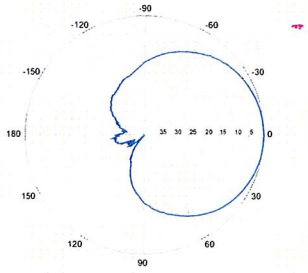
X-Pol | FET Panel | 63° | 19.0 dBi

Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	4.5°	4.5°	4.5°
Gain	16.1 dBd / 18.2 dBi	16.5 dBd / 18.6 dBi	16.9 dBd / 19.0 dBi
Electrical downtilt (X)	0, 2, 5		
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 m² Side: 0.19 m²	Front: 3.1 ft² Side: 2.1 ft²
Wind load @ 161 km/hr (100 mph)	Front: 460 N Side: 304 N	Front: 103 lbf Side: 68 lbf

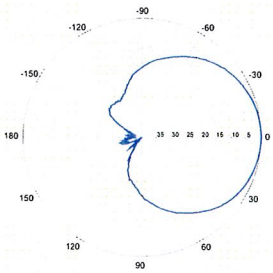
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-12BF-EDIN-X-FP		

BXA-171063-12BF-EDIN-X



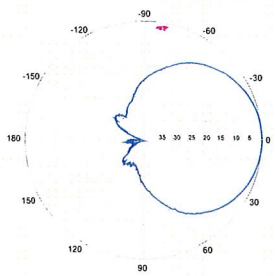
Horizontal | 1710-1880 MHz

BXA-171063-12BF-EDIN-X



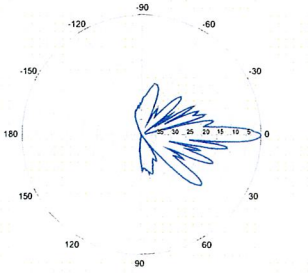
Horizontal | 1850-1990 MHz

BXA-171063-12BF-EDIN-X



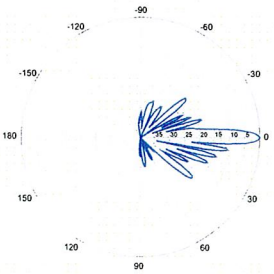
Horizontal | 1920-2170 MHz

BXA-171063-12BF-EDIN-0



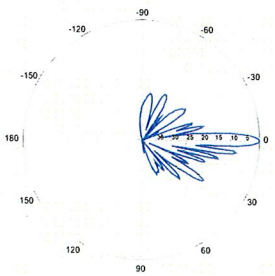
0° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-0



0° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-0

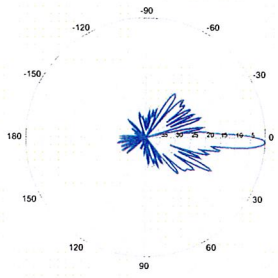


0° | Vertical | 1920-2170 MHz

BXA-171063-12BF-EDIN-X

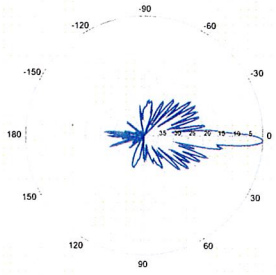
X-Pol | FET Panel | 63° | 19.0 dBi

BXA-171063-12BF-EDIN-2



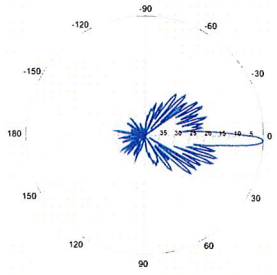
2° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-2



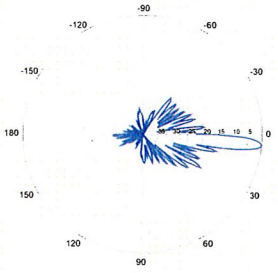
2° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-2



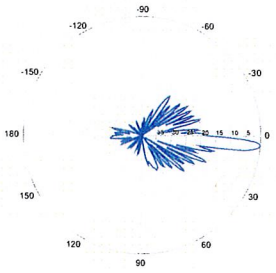
2° | Vertical | 1920-2170 MHz

BXA-171063-12BF-EDIN-5



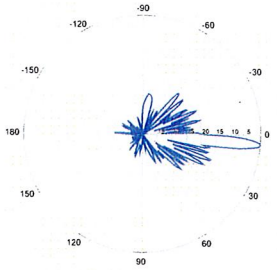
5° | Vertical | 1710-1880 MHz

BXA-171063-12BF-EDIN-5



5° | Vertical | 1850-1990 MHz

BXA-171063-12BF-EDIN-5



5° | Vertical | 1920-2170 MHz

Amphenol ANTENNA SOLUTIONS

BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

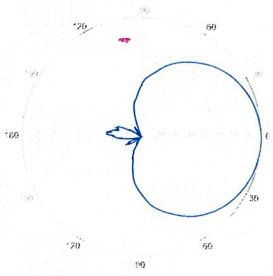
Antenna is also available with NE connector(s). Replace "EDIN" with "NE" in the model number when ordering.

Electrical Characteristics	696-900 MHz	
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 m² Side: 0.24 m²	Front: 5.5 ft² Side: 2.6 ft²
Wind load @ 161 km/hr (100 mph)	Front: 759 N Side: 391 N	Front: 169 lbf Side: 89 lbf

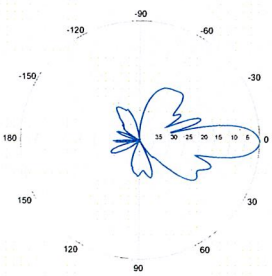
Mounting Options	Part Number	Fits Pipe Diameter	Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm 1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-70063-6CF-EDIN-X-FP		

BXA-70063-6CF-EDIN-X



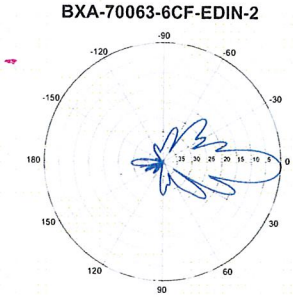
Horizontal | 750 MHz

BXA-70063-6CF-EDIN-0

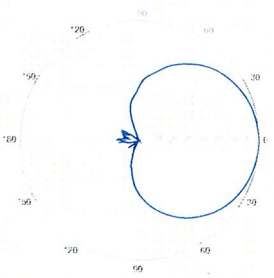


0° | Vertical | 750 MHz

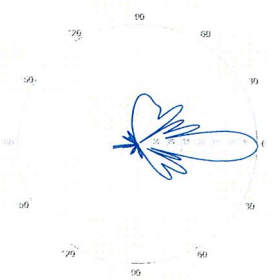
BXA-70063-6CF-EDIN-2



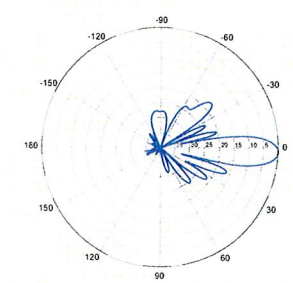
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz

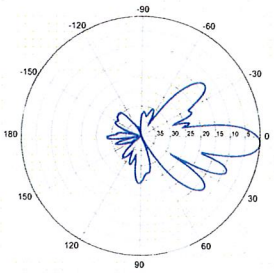


2° | Vertical | 850 MHz

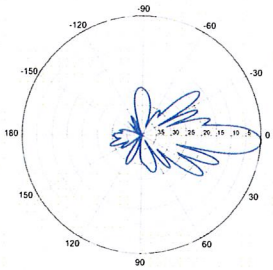
BXA-70063-6CF-EDIN-X

X-Pol | FET Panel | 63° | 14.5 dBd

BXA-70063-6CF-EDIN-3

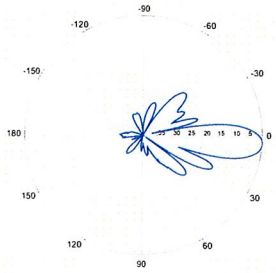


3° | Vertical | 750 MHz

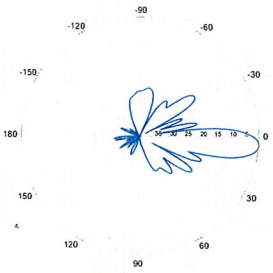


3° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-4

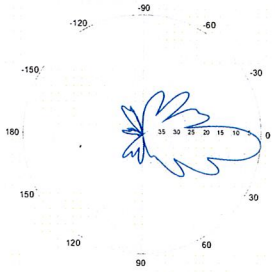


4° | Vertical | 750 MHz

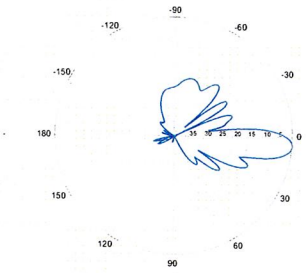


4° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-5

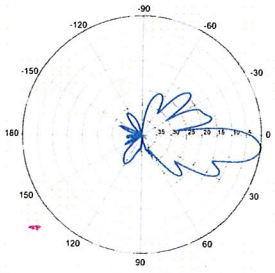


5° | Vertical | 750 MHz

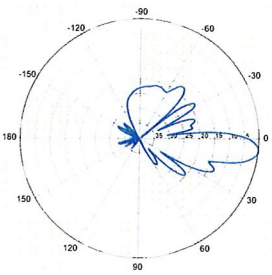


5° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-6



6° | Vertical | 750 MHz



6° | Vertical | 850 MHz

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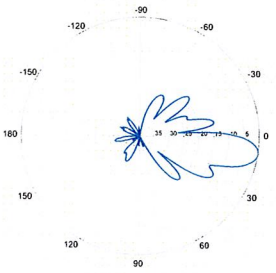
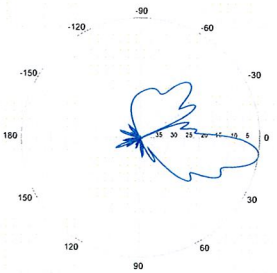
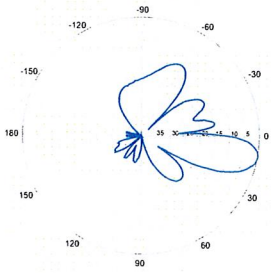


8° | Vertical | 750 MHz



8° | Vertical | 850 MHz

BXA-70063-6CF-EDIN-10



10° | Vertical | 750 MHz

10° | Vertical | 850 MHz

	General	Power	Density					
Site Name: South Windsor 2								
Tower Height: Verizon @ 108Ft.								
CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
*T-Mobile GSM	8	16	172	0.0016	1930	1.0000	0.16%	
*T-Mobile UMTS	2	674	172	0.0164	2100	1.0000	1.64%	
*Pocket	3	631	142	0.0338	2130	1.0000	3.38%	
*Clearwire	2	153	132	0.0063	2496	1.0000	0.63%	
*Clearwire	1	211	132	0.0044	11 GHz	1.0000	0.44%	
*Sprint/Nextel iDEN	12	100	152	0.0187	851	0.5673	3.29%	
*Sprint/Nextel CDMA	11	301	152	0.0515	1962.5	1.0000	5.15%	
*AT&T UMTS	2	565	162	0.0155	880	0.5867	2.64%	
*AT&T UMTS	2	875	162	0.0240	1900	1.0000	2.40%	
*AT&T GSM	1	647	162	0.0089	880	0.5867	1.51%	
*AT&T GSM	4	934	162	0.0512	1900	1.0000	5.12%	
*AT&T LTE	1	1615	162	0.0221	734	0.4893	4.52%	
Verizon PCS	**11**	**261**	**108**	**0.0885**	**1970**	**1.0000**	**8.85%**	
Verizon Cellular	**9**	**264**	**108**	**0.0732**	**869**	**0.5793**	**12.64%**	
Verizon AWS	**1**	**633**	**108**	**0.0195**	**2145**	**1.0000**	**1.95%**	
Verizon 700	**1**	**861**	**108**	**0.0265**	**698**	**0.4653**	**5.70%**	
								29.15%
* Source: Siting Council								

GPD GROUP

STRUCTURAL ANALYSIS REPORT

T-Mobile TOWERS

SITE NUMBER: CT11279D
SITE NAME: SOUTH WINDSOR/RT 5

SITE ADDRESS: 300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

NEW ANTENNA INSTALLATION
ON AN EXISTING
169' MONOPOLE

BY:

verizon wireless

June 29, 2012

GPD Project #: 2012712.97

MONOPOLE

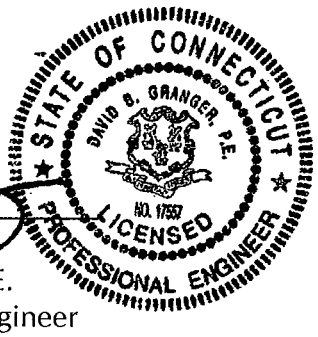
STRUCTURAL ANALYSIS REPORT

CT11279D SOUTH WINDSOR/RT 5
300 Governors Highway
South Windsor, CT 06074
GPD Project #: 2012712.97

New Antenna Installation
Existing 169 ft Monopole

For:
T-Mobile Towers
Bellevue, Washington

Prepared By:



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

June 29, 2012

Glaus, Pyle, Schomer, Burns and DeHaven, Inc. dba GPD Group ENGINEERS • ARCHITECTS • PLANNERS
520 South Main Street • Suite 2531 • Akron • Ohio • 44311-1010 • Tel: 330-572-2100 • Fax: 330-572-2101

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APPENDICES

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 will meet the requirements of TIA/EIA-222-F and 2005 Connecticut State Building Code for an 80 mph fastest-mile wind speed with 1/2" of radial ice (w/ 25% wind load reduction) for the proposed antenna configuration once the GPD designed modifications (Project #: 2012712.97, dated 6/29/12) are installed.

The foundation reactions, with the proposed loading configuration, 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.

Section Results

Monopole	% Capacity	Result
137.4' – 169'	70.2%	Pass
91.9' – 137.4'	98.8%	Pass
47.5' – 91.9'	58.8%	Pass
4' – 47.5'	68.8%	Pass
Modification Plates	83.9%	Pass
Base Plate	76.5%	Pass
Anchor Rods	93.9%	Pass
Foundation	**% Capacity**	**Result**
Compression	71.9%	Pass
Uplift	59.1%	Pass
Frame and Connections	96.1%	Pass
Tower Rating:	**98.8%**	

TOWER DESCRIPTION

The existing 169' monopole is located in South Windsor, Connecticut. It was originally designed for Northern Technologies by Engineered Endeavors Incorporated of Mentor, Ohio. The original design load for the tower was an 80 mph wind speed in accordance with TIA/EIA 222-F and 2005 Connecticut State Building Code.

The existing monopole has four major sections connected with slip joints. It has 18 sides and is evenly tapered from 45.5" (flat-flat) at the base to 16.25" (flat-flat) at the top. The structure is galvanized and has no tower lighting.

DOCUMENTS PROVIDED

Description	Remarks	Source
Tower Drawings	EEI Job #: 6255 Revision 2, dated 6/6/2000	T-Mobile
Foundation Drawings	EEI Job #: 6255 Revision 2, dated 6/6/2000	T-Mobile
Geotechnical Report	French & Parrello Job #: 99A076AR1, dated 10/20/1999	T-Mobile
Site Inspection Report	SiteMaster, dated 3/31/2010	T-Mobile
Previous Structural Analysis	GPD Job#:2012851.30, dated 5/24/2012	GPD
Previous Structural Analysis	GPD Project #: 2012854.36, Dated 6/8/12	GPD
Modification Drawings	Centek Project #: 10003.CO4 Rev 1, dated 6/11/2010	T-Mobile
Field Notes	Centek, dated 1/4/07	Centek

TOWER MATERIALS

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

Monopole	ASTM A572 (65 KSI Yield Strength)
Base Plate	ASTM A572 (60 KSI Yield Strength)
Anchor Rods	ASTM A193-B7
Foundation Frame	ASTM A36 (36 KSI Yield Strength)
Frame Connection Bolts	ASTM A325

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

Elevation	Carrier	Antennas
169'	T-Mobile	(9) Ericsson AIR21 Antennas, (3) Ericsson AIR33 Antennas, (3) Andrew ETW190VS12UB TMAs, (1) Large HCS Fiber/DC box & (1) 2' MW Dish on a 12' LP Platform w/ (12) 1-5/8" internal coax, (12) 1-5/8" external coax & (2) 1-5/8" external hybrids
162'	AT&T	(6) CSS DUO1417-8686 Antennas, (1) Andrew SBNH-1D6565C Antenna, (3) Powerwave 7770 Antennas, (1) Powerwave P65-17-XLH-RR Antenna, (1) KMW AM-X-CD-16-65-00T-RET Antenna, (3) CCI DTMABP7819VG12A TMAs, (6) Ericsson RRUS-11 & (1) Raycap DC6-48-60-18-8F surge arrestor on a 14' LP Platform w/ (12) 1-5/8" internal coax & (1) 3" internal flex conduit containing (2) 3/8" DC power cables & (1) 7/16" fiber cable
148'	Sprint	(3) Andrew 932LG65VTE-B Antennas, flush mounted, w/ (6) 1-5/8" internal coax
138'	Pocket	(3) Kathrein 742 213 Antennas, flush mounted, w/ (6) 1-5/8" external coax
128'	Clearwire	(3) Argus LLPX310R Antennas, (3) Dragonwave A-ANT18G-2-C MW Antennas, (3) Horizon ODUs & (3) Samsung Wimax DapHead on (3) standoff mounts w/ (3) 1/2", (3) 1/4", (3) 5/8" & (1) 5/16" external coax
108'	Verizon	(3) Antel BXA 70080/6CF Antennas, (3) Antel BXA 80080/6CF Antennas, & (6) Antel LPA -185080/12CF Antennas on a 13' LP Platform w/ (18) 1-5/8 external coax & (1) 3/8" external RET cable
66'	Pocket	(1) GPS Antenna on a GPS mount w/ (1) 1/2" external coax

Proposed Configuration

Elevation	Carrier	Antennas
169′	T-Mobile	(9) Ericsson AIR21 Antennas, (3) Ericsson AIR33 Antennas, (3) Andrew ETW190VS12UB TMAs, (1) Large HCS Fiber/DC box & (1) 2' MW Dish on a 12′ LP Platform w/ (12) 1-5/8" internal coax, (12) 1-5/8" external coax & (2) 1-5/8" external hybrids
162′	AT&T	(6) CSS DUO1417-8686 Antennas, (1) Andrew SBNH-1D6565C Antenna, (3) Powerwave 7770 Antennas, (1) Powerwave P65-17-XLH-RR Antenna, (1) KMW AM-X-CD-16-65-00T-RET Antenna, (3) CCI DTMABP7819VG12A TMAs, (6) Ericsson RRUS-11 & (1) Raycap DC6-48-60-18-8F surge arrestor on a 14′ LP Platform w/ (12) 1-5/8" internal coax & (1) 3" internal flex conduit containing (2) 3/8" DC power cables & (1) 7/16" fiber cable
148′	Sprint	(3) Andrew 932LG65VTE-B Antennas, flush mounted, w/ (6) 1-5/8" internal coax
138′	Pocket	(3) Kathrein 742 213 Antennas, flush mounted, w/ (6) 1-5/8" external coax
128′	Clearwire	(3) Argus LLPX310R Antennas, (3) Dragonwave A-ANT18G-2-C MW Antennas, (3) Horizon ODUs & (3) Samsung Wimax DapHead on (3) standoff mounts w/ (3) 1/2", (3) 1/4", (3) 5/8" & (1) 5/16" external coax
108′	**Verizon**	**(3) Antel BXA 70063/6CF Antennas, (6) Antel LPA 80063/6CF Antennas, (3) Antel BXA 171063/12BF Antennas, (6) RFS FD9R6004/2C-3L Diplexers on a 13′ LP Platform w/ (18) 1-5/8 external coax**
66′	Pocket	(1) GPS Antenna on a GPS mount w/ (1) 1/2" external coax

Notes: - **BOLD** type indicates the proposed carrier's final configuration.
- All external lines to 169′ shall be banded flush to the pole together in (2) rows of (7).
- All coax to 128′ is assumed to be banded flush to the pole in a single row.
- The (18) 1-5/8" coax to 108′ are assumed to be banded flush to the pole in (2) rows of (9).
- All TMAs are assumed to be mounted directly behind the antennas.
- See Appendix 3 for feedline plan.

The purpose of this independent structural analysis review is to determine if the design for the existing tower, with the proposed configuration, is in conformance to the latest TIA/EIA-222-F and 2005 Connecticut State Building Code standard requirements.

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 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 and 2005 Connecticut State Building Code requirements. Selected output from the analysis is included in Appendix 1.

The current requirements of TIA/EIA-222-F and 2005 Connecticut State Building Code are for an 80 mph fastest-mile wind speed 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 Hartford County, Connecticut be analyzed with an 80 mph fastest-mile wind speed.

ANALYSIS BASIC WIND SPEED:	80 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. Antennas are assumed to be installed on standard 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 structure will meet the requirements of TIA/EIA-222-F and 2005 Connecticut State Building Code for an 80 mph fastest-mile wind speed with 1/2" of radial ice (w/ 25% wind load reduction) for the proposed antenna configuration once the GPD designed modifications (Project #: 2012712.97, dated 6/29/12) are installed.

The foundation reactions, with the proposed loading configuration, 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 will be structurally satisfactory for the proposed loading configuration once the aforementioned modifications have been properly installed.

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. Member Stress Calculations

3. Tower Elevation Drawing and Feedline Plan

4. Anchor Rod and Base Plate Analysis

5. Foundation Analysis

6. Modification Design Drawings

TNXTOWER ANALYSIS PRINTOUT

tnxTower	Job	Page
	CT11279D South Windsor/RT 5	1 of 6
GPD Group 520 South Main St.; Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	**Project** 2012712.97	**Date** 10:54:15 06/21/12
	Client T-Mobile Towers	**Designed by** tbowman

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 Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 0.5000 in.
Ice density of 56 pcf.
A wind speed of 69 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*	*Total Number*		C_AA_A	*Weight*
				ft			*ft²/ft*	*plf*
5/8" Step Bolts	C	No	CaAa (Out Of Face)	169.00 - 8.00	1	No Ice	0.00	1.00
						1/2" Ice	0.00	1.56
Safety Line 3/8	C	No	CaAa (Out Of Face)	169.00 - 8.00	1	No Ice	0.00	0.22
						1/2" Ice	0.00	0.75
LDF7-50A (1-5/8 FOAM) (T-Mobile)	A	No	Inside Pole	169.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (T-Mobile)	A	No	CaAa (Out Of Face)	169.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
1-5/8" Hybrid (T-Mobile)	A	No	CaAa (Out Of Face)	169.00 - 8.00	2	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM) (AT&T)	B	No	Inside Pole	162.00 - 8.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
3" Flex Conduit (AT&T)	B	No	Inside Pole	162.00 - 8.00	1	No Ice	0.00	0.48
						1/2" Ice	0.00	0.48
3/8" Power Cable (AT&T)	B	No	Inside Pole	162.00 - 8.00	2	No Ice	0.00	0.30
						1/2" Ice	0.00	0.30
7/16" Fiber Cable (AT&T)	B	No	Inside Pole	162.00 - 8.00	1	No Ice	0.00	0.08
						1/2" Ice	0.00	0.08
LDF7-50A (1-5/8 FOAM) (Sprint)	C	No	Inside Pole	148.00 - 8.00	6	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
LDF7-50A (1-5/8 FOAM) (Pocket)	A	No	CaAa (Out Of Face)	138.00 - 108.00	1	No Ice	0.20	0.82
						1/2" Ice	0.30	2.33
LDF7-50A (1-5/8 FOAM) (Pocket)	A	No	CaAa (Out Of Face)	108.00 - 8.00	1	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33
LDF7-50A (1-5/8 FOAM) (Pocket)	A	No	CaAa (Out Of Face)	138.00 - 8.00	5	No Ice	0.00	0.82
						1/2" Ice	0.00	2.33

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF4-50A (1/2 FOAM) (Pocket)	A	No	CaAa (Out Of Face)	68.00 - 8.00	1	No Ice 1/2" Ice	0.00 0.00	0.15 0.84
LDF7-50A (1-5/8 FOAM) (Verizon)	B	No	CaAa (Out Of Face)	108.00 - 8.00	2	No Ice 1/2" Ice	0.20 0.30	0.82 2.33
LDF7-50A (1-5/8 FOAM) (Verizon)	B	No	CaAa (Out Of Face)	108.00 - 8.00	16	No Ice 1/2" Ice	0.00 0.00	0.82 2.33
LDF4-50A (1/2 FOAM) (Clearwire)	C	No	CaAa (Out Of Face)	128.00 - 8.00	3	No Ice 1/2" Ice	0.00 0.00	0.15 0.84
ATCB-B01(1/4") (Clearwire)	C	No	CaAa (Out Of Face)	128.00 - 8.00	3	No Ice 1/2" Ice	0.00 0.00	0.11 0.58
LDF4.5-50 (5/8 FOAM) (Clearwire)	C	No	CaAa (Out Of Face)	128.00 - 8.00	3	No Ice 1/2" Ice	0.00 0.00	0.15 0.99
ATCB-B01-001(5/16") (Clearwire)	C	No	CaAa (Out Of Face)	128.00 - 8.00	1	No Ice 1/2" Ice	0.00 0.00	0.07 0.57

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft Vert ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
Sabre 12' LP Platform	C	None		0.0000	169.00	No Ice 1/2" Ice	28.47 33.59	28.47 33.59	1122.00 1513.66
(3) AIR21 Antenna	A	From Centroid-Face	4.00 0.00 0.00	-40.0000	169.00	No Ice 1/2" Ice	6.53 6.98	4.31 4.72	91.00 132.68
(3) AIR21 Antenna	B	From Centroid-Face	4.00 0.00 0.00	0.0000	169.00	No Ice 1/2" Ice	6.53 6.98	4.31 4.72	91.00 132.68
(3) AIR21 Antenna	C	From Centroid-Face	4.00 0.00 0.00	-30.0000	169.00	No Ice 1/2" Ice	6.53 6.98	4.31 4.72	91.00 132.68
AIR33 Antenna	A	From Centroid-Face	4.00 0.00 0.00	-40.0000	169.00	No Ice 1/2" Ice	6.42 6.86	4.28 4.69	83.00 124.22
AIR33 Antenna	B	From Centroid-Face	4.00 0.00 0.00	0.0000	169.00	No Ice 1/2" Ice	6.42 6.86	4.28 4.69	83.00 124.22
AIR33 Antenna	C	From Centroid-Face	4.00 0.00 0.00	-30.0000	169.00	No Ice 1/2" Ice	6.42 6.86	4.28 4.69	83.00 124.22
ETW190VS12UB	A	From Centroid-Face	4.00 0.00 0.00	-40.0000	169.00	No Ice 1/2" Ice	0.00 0.00	0.35 0.44	11.00 15.83
ETW190VS12UB	B	From Centroid-Face	4.00 0.00 0.00	0.0000	169.00	No Ice 1/2" Ice	0.00 0.00	0.35 0.44	11.00 15.83
ETW190VS12UB	C	From Centroid-Face	4.00 0.00 0.00	-30.0000	169.00	No Ice 1/2" Ice	0.00 0.00	0.35 0.44	11.00 15.83
HCS Fiber/DC Box (Large)	C	From Centroid-Face	4.00 0.00 0.00	0.0000	169.00	No Ice 1/2" Ice	3.22 3.47	1.16 1.34	19.00 38.06

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
EEI LP Platform	C	None		0.0000	162.00	No Ice	15.00	15.00	2100.00
						1/2" Ice	18.00	18.00	3250.00
(2) DUO1417-8686	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	6.53 6.94	4.20 4.57	20.30 62.49
(2) DUO1417-8686	B	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	6.53 6.94	4.20 4.57	20.30 62.49
(2) DUO1417-8686	C	From Centroid-Leg	4.00 0.00 0.00	20.0000	162.00	No Ice 1/2" Ice	6.53 6.94	4.20 4.57	20.30 62.49
7770.00	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	39.00 71.63
7770.00	B	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	39.00 71.63
7770.00	C	From Centroid-Leg	4.00 0.00 0.00	20.0000	162.00	No Ice 1/2" Ice	5.88 6.31	2.93 3.27	39.00 71.63
SBNH-1D6565C	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	11.45 12.06	7.70 8.29	60.80 126.67
P65-17-XLH-RR	B	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	11.47 12.08	6.80 7.38	70.00 132.06
AM-X-CD-16-65-00T-RET	C	From Centroid-Leg	4.00 0.00 0.00	20.0000	162.00	No Ice 1/2" Ice	6.62 7.05	4.13 4.54	33.00 74.48
DTMABP7819VG12A	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	0.00 0.00	0.44 0.56	19.00 26.12
DTMABP7819VG12A	B	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	0.00 0.00	0.44 0.56	19.00 26.12
DTMABP7819VG12A	C	From Centroid-Leg	4.00 0.00 0.00	20.0000	162.00	No Ice 1/2" Ice	0.00 0.00	0.44 0.56	19.00 26.12
(2) RRUS-11	A	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	4.42 4.71	1.19 1.35	55.00 80.77
(2) RRUS-11	B	From Centroid-Leg	4.00 0.00 0.00	30.0000	162.00	No Ice 1/2" Ice	4.42 4.71	1.19 1.35	55.00 80.77
(2) RRUS-11	C	From Centroid-Leg	4.00 0.00 0.00	20.0000	162.00	No Ice 1/2" Ice	4.42 4.71	1.19 1.35	55.00 80.77
DC6-48-60-18-8F Surge Suppression Unit	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	162.00	No Ice 1/2" Ice	1.47 1.67	1.47 1.67	32.80 50.52
Valmont Light Duty Tri-Bracket (1)	C	None		0.0000	148.00	No Ice 1/2" Ice	1.76 2.08	1.76 2.08	54.00 70.00
932LG65VTE-B w/Mount Pipe	A	From Leg	0.50 0.00 0.00	30.0000	148.00	No Ice 1/2" Ice	4.12 4.51	4.33 4.91	34.70 72.88
932LG65VTE-B w/Mount Pipe	B	From Leg	0.50 0.00	30.0000	148.00	No Ice 1/2" Ice	4.12 4.51	4.33 4.91	34.70 72.88

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
			0.00						
932LG65VTE-B w/Mount Pipe	C	From Leg	0.50 0.00 0.00	20.0000	148.00	No Ice 1/2" Ice	4.12 4.51	4.33 4.91	34.70 72.88
Valmont Light Duty Tri-Bracket (1)	C	None		0.0000	138.00	No Ice 1/2" Ice	1.76 2.08	1.76 2.08	54.00 70.00
742 213 w/ Mount Pipe	A	From Leg	0.50 0.00 0.00	30.0000	138.00	No Ice 1/2" Ice	5.37 5.95	4.62 6.00	48.92 90.56
742 213 w/ Mount Pipe	B	From Leg	0.50 0.00 0.00	30.0000	138.00	No Ice 1/2" Ice	5.37 5.95	4.62 6.00	48.92 90.56
742 213 w/ Mount Pipe	C	From Leg	0.50 0.00 0.00	20.0000	138.00	No Ice 1/2" Ice	5.37 5.95	4.62 6.00	48.92 90.56
2' Sidearm - Flat (GPD)	A	From Face	1.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice	0.80 1.05	1.60 2.00	31.31 39.47
2' Sidearm - Flat (GPD)	B	From Face	1.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice	0.80 1.05	1.60 2.00	31.31 39.47
2' Sidearm - Flat (GPD)	C	From Face	1.00 0.00 0.00	0.0000	128.00	No Ice 1/2" Ice	0.80 1.05	1.60 2.00	31.31 39.47
LLPX310R	A	From Face	2.00 1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
LLPX310R	B	From Face	2.00 1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
LLPX310R	C	From Face	2.00 1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	4.84 5.19	1.96 2.22	28.66 54.63
WIMAX DAP HEAD	A	From Face	2.00 1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	1.80 1.99	0.78 0.92	33.00 44.58
WIMAX DAP HEAD	B	From Face	2.00 1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	1.80 1.99	0.78 0.92	33.00 44.58
WIMAX DAP HEAD	C	From Face	2.00 1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	1.80 1.99	0.78 0.92	33.00 44.58
Horizon ODU	B	From Face	2.00 -1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	0.87 1.00	0.43 0.53	11.50 18.08
Horizon ODU	B	From Face	2.00 -1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	0.87 1.00	0.43 0.53	11.50 18.08
Horizon ODU	C	From Face	2.00 -1.00 0.00	0.0000	128.00	No Ice 1/2" Ice	0.87 1.00	0.43 0.53	11.50 18.08
Pirod 13' LP Platform (Mono)	C	None		0.0000	108.00	No Ice 1/2" Ice	15.70 20.10	15.70 20.10	1300.00 1765.00
BXA-70063/6CF	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	7.74 8.28	3.76 4.20	17.00 57.65
BXA-70063/6CF	B	From	4.00	0.0000	108.00	No Ice	7.74	3.76	17.00

tnxTower	Job	Page
	CT11279D South Windsor/RT 5	5 of 6
GPD Group 520 South Main St.; Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	**Project** 2012712.97	**Date** 10:54:15 06/21/12
	Client T-Mobile Towers	**Designed by** tbowman

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight lb
		Centroid-Leg	0.00 0.00			1/2" Ice	8.28	4.20	57.65
BXA-70063/6CF	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	7.74 8.28	3.76 4.20	17.00 57.65
(2) LPA-80063/6CF	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	10.31 10.87	9.01 9.55	27.00 100.95
(2) LPA-80063/6CF	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	10.31 10.87	9.01 9.55	27.00 100.95
(2) LPA-80063/6CF	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	10.31 10.87	9.01 9.55	27.00 100.95
BXA-171063/12BF	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	15.00 42.20
BXA-171063/12BF	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	15.00 42.20
BXA-171063/12BF	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	4.73 5.18	3.57 4.01	15.00 42.20
(2) FD9R6004/2C-3L	A	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	3.10 5.40
(2) FD9R6004/2C-3L	B	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	3.10 5.40
(2) FD9R6004/2C-3L	C	From Centroid-Leg	4.00 0.00 0.00	0.0000	108.00	No Ice 1/2" Ice	0.37 0.45	0.08 0.14	3.10 5.40
2' Sidearm - Flat (GPD)	C	From Leg	1.00 0.00 0.00	0.0000	66.00	No Ice 1/2" Ice	0.80 1.05	1.60 2.00	31.31 39.47
GPS	C	From Leg	2.00 0.00 0.00	0.0000	66.00	No Ice 1/2" Ice	0.17 0.24	0.17 0.24	0.87 3.85

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight lb
2' MW	C	Paraboloid w/Radome	From Centroid -Face	4.00 0.00 0.00	0.0000		169.00	2.00	No Ice 1/2" Ice	3.14 3.41	40.00 67.13
A-ANT-18G-2-C	A	Paraboloid w/Shroud (HP)	From Face	2.00 -1.00 0.00	0.0000		128.00	2.17	No Ice 1/2" Ice	3.72 4.01	30.00 60.00
A-ANT-18G-2-C	B	Paraboloid w/Shroud (HP)	From Face	2.00 -1.00	0.0000		128.00	2.17	No Ice 1/2" Ice	3.72 4.01	30.00 60.00

tnxTower	Job	Page
	CT11279D South Windsor/RT 5	6 of 6
GPD Group 520 South Main St.; Suite 2531 Akron, OH 44311 Phone: (330) 572-2100 FAX: (330) 572-2101	**Project** 2012712.97	**Date** 10:54:15 06/21/12
	Client T-Mobile Towers	**Designed by** tbowman

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	3 dB Beam Width	Elevation	Outside Diameter		Aperture Area	Weight
				ft	°	°	ft	ft		ft²	lb
A-ANT-18G-2-C	C	Paraboloid w/Shroud (HP)	From Face	0.00 2.00 -1.00 0.00	0.0000		128.00	2.17	No Ice 1/2" Ice	3.72 4.01	30.00 60.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
169.00	2' MW	29	49.051	3.0429	0.0097	10769
162.00	EEI LP Platform	29	44.636	2.9576	0.0082	7692
148.00	Valmont Light Duty Tri-Bracket (1)	29	36.112	2.7348	0.0055	2562
138.00	Valmont Light Duty Tri-Bracket (1)	29	30.551	2.4861	0.0039	1916
128.00	A-ANT-18G-2-C	29	25.605	2.1596	0.0027	1942
108.00	Pirod 13' LP Platform (Mono)	29	17.561	1.5754	0.0014	2097
66.00	2' Sidearm - Flat (GPD)	29	6.253	0.9743	0.0006	3253

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P lb	$SF*P_{allow}$ lb	% Capacity	Pass Fail
L1	169 - 137.44	Pole	TP22.2976x16.25x0.25	1	-6364.32	883521.69	70.2	Pass
L2	137.44 - 108	Pole	TP27.3409x21.1678x0.3125	2	-12698.60	1393704.76	98.8	Pass
L3	108 - 91.93	Pole	TP30.3712x27.3409x0.885	3	-16586.30	4187539.35	43.6*	Pass
L4	91.93 - 47.45	Pole	TP38.1248x27.7907x0.81	4	-32925.90	4838229.94	58.8*	Pass
L5	47.4505 - 4	Pole	TP45.5x35.3893x0.728	5	-39773.00	4523015.44	68.8*	Pass
						Summary		
						Pole (L2)	98.8	Pass
						RATING =	**98.8**	**Pass**

*Refer to Appendix 2 for calculations supporting the % capacity used.

GPD GROUP

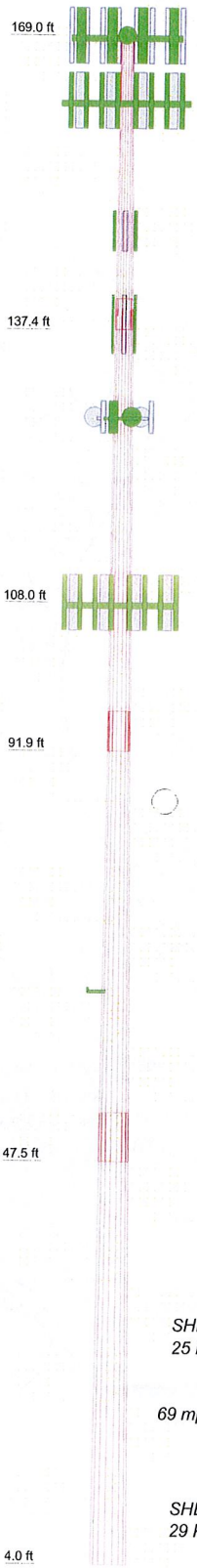
Reinforced Monopole Analysis
CT11279D SOUTH WINDSOR/RT 5
2012712.97

Code =	TIA/EIA-222-F
AISF=	1.333
Max Stress Ratio=	1
# of Sides =	18

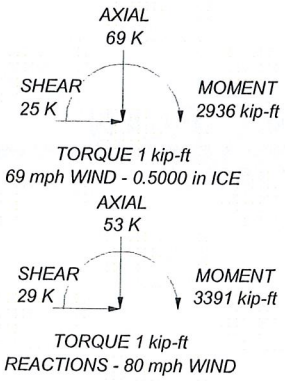
Geometry									Reactions				Output	Capacities		
Shape	Quantity	Section	Elevation (ft)	Pole Flat-Flat (In)	Wall t (in)	Fy (ksi)	K	Conn.Spacing (in)	Moment (k-ft)	Axial (k)	Shear (k)	Torsion (k-ft)	Equivalent t (in)	Pole	Reinforcment	Pass/Fail
Plate 6x1.25	6	L3	91.9	30.3712	0.3125	65	0.8	18	1102.04	19.08	22.52	1.01	0.885	43.6%	54.1%	Pass
Plate 6x1.25	6	L4	47.5	38.1248	0.375	65	0.8	12	2189.17	36.43	26.45	1.01	0.810	58.8%	72.1%	Pass
Plate 6x1.25	6	L5	4	45.5	0.375	65	0.8	12	3324.75	52.43	28.88	1.01	0.728	68.8%	83.9%	Pass

GPD Modified Monopole Analysis - V1.00

TOWER ELEVATION DRAWING AND FEEDLINE PLAN



Section	1	2	3	4	5
Length (ft)	31.56	32.73	16.07	48.78	48.72
Number of Sides	18	18	18	18	18
Thickness (in)	0.2500	0.3125	0.8850	0.8100	0.7280
Socket Length (ft)	3.29		4.30	5.27	
Top Dia (in)	16.2500	21.1678	27.3409	27.7907	35.3893
Bot Dia (in)	22.2976	27.3409	30.3712	38.1248	45.5000
Grade	A572-65				
Weight (K)	1.6	2.6	4.3	13.7	15.2



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Sabre 12' LP Platform	169	742 213 w/ Mount Pipe	138
(3) AIR21 Antenna	169	742 213 w/ Mount Pipe	138
(3) AIR21 Antenna	169	742 213 w/ Mount Pipe	138
(3) AIR21 Antenna	169	Valmont Light Duty Tri-Bracket (1)	138
AIR33 Antenna	169	2' Sidearm - Flat (GPD)	128
AIR33 Antenna	169	2' Sidearm - Flat (GPD)	128
AIR33 Antenna	169	LLPX310R	128
ETW190VS12UB	169	LLPX310R	128
ETW190VS12UB	169	LLPX310R	128
ETW190VS12UB	169	WIMAX DAP HEAD	128
HCS Fiber/DC Box (Large)	169	WIMAX DAP HEAD	128
2' MW	169	WIMAX DAP HEAD	128
(2) DUO1417-8686	162	Horizon ODU	128
(2) DUO1417-8686	162	Horizon ODU	128
(2) DUO1417-8686	162	Horizon ODU	128
7770.00	162	2' Sidearm - Flat (GPD)	128
7770.00	162	A-ANT-18G-2-C	128
7770.00	162	A-ANT-18G-2-C	128
SBNH-1D6565C	162	A-ANT-18G-2-C	128
P65-17-XLH-RR	162	(2) LPA-80063/6CF	108
AM-X-CD-16-65-00T-RET	162	(2) LPA-80063/6CF	108
DTMABP7819VG12A	162	(2) LPA-80063/6CF	108
DTMABP7819VG12A	162	BXA-171063/12BF	108
DTMABP7819VG12A	162	BXA-171063/12BF	108
(2) RRUS-11	162	BXA-171063/12BF	108
(2) RRUS-11	162	(2) FD9R6004/2C-3L	108
(2) RRUS-11	162	(2) FD9R6004/2C-3L	108
DC6-48-60-18-8F Surge Suppression Unit	162	(2) FD9R6004/2C-3L	108
		Pirod 13' LP Platform (Mono)	108
EEI LP Platform	162	BXA-70063/6CF	108
932LG65VTE-B w/Mount Pipe	148	BXA-70063/6CF	108
932LG65VTE-B w/Mount Pipe	148	BXA-70063/6CF	108
932LG65VTE-B w/Mount Pipe	148	2' Sidearm - Flat (GPD)	66
Valmont Light Duty Tri-Bracket (1)	148	GPS	66

MATERIAL STRENGTH

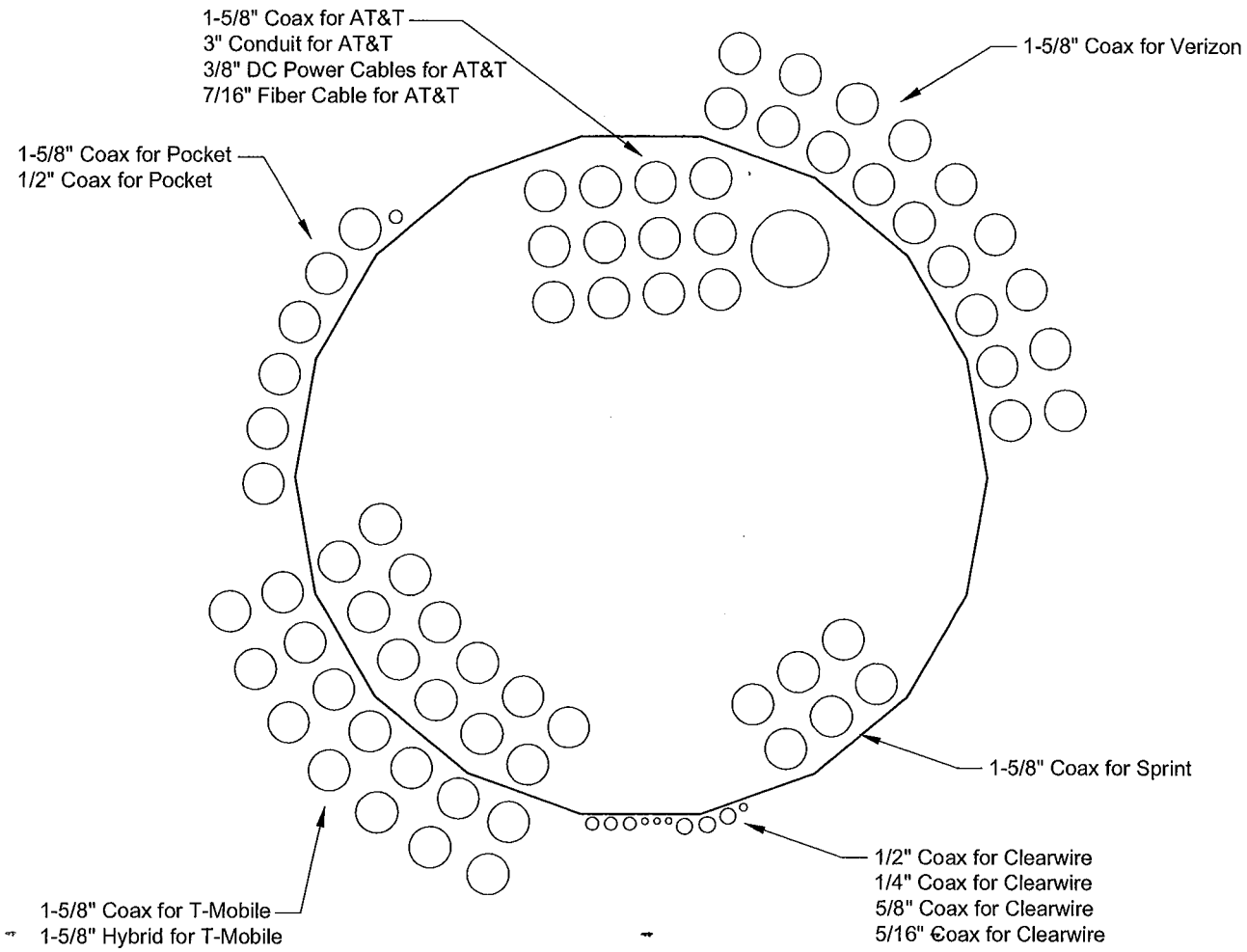
GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 69 mph basic wind with 0.50 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 98.8%

GPD GROUP
Consulting Engineers
GPD Group
520 South Main St.; Suite 2531
Akron, OH 44311
Phone: (330) 572-2100
FAX: (330) 572-2101

Job: *CT11279D South Windsor/RT 5*			
Project: *2012712.97*			
Client: T-Mobile Towers	Drawn by: tbowman	App'd:	
Code: TIA/EIA-222-F	Date: 06/29/12	Scale: NTS	
Path: O:\2012\2012712\97\tnx\CT11279D.eri		Dwg No. E-1	



FEEDLINE PLAN

NOT TO SCALE

GPD GROUP
Gteus, Pyle, Schomer, Burns & Deneven, Inc.
520 South Main Street, Suite 2531
Akron, Ohio 44311
330-572-2100 Fax 330-572-2101

CT11279D SOUTH WINDSOR/RT 5

JOB NO.
2012712.97
DATE
6/29/2012
DRAWN BY
TB

ANCHOR ROD AND BASE PLATE ANALYSIS

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job 2012.12.97
Sheet No. 1 of 2
Calculated by TB Date 6/26/12
Checked by _____ Date _____

Anchor rod and base plate analysis

fdn reactions: M = 3390.58 k-ft
P = 53.36k
V = 28.84 k

anchor rods - (12) 2-¼" A354-BD or a 54" rod circle
rods oriented in (6) groups of (2) rods

Force in anchor rods

$$P_C = \frac{M_y A}{I} + \frac{P}{n} = \frac{3390.58k\text{-}ft\left(\frac{12in}{ft}\right)\pi\frac{(2.25in)^2}{4}\left(\frac{54in}{2}\right)}{17406.46in^4} + \frac{53.36k}{12} = 255.38\,k$$

$$P_T = \frac{M_y A}{I} - \frac{P}{n} = 246.49\,k$$

$$R_{rod\ allowable} = 0.33(150ksi)\left(\frac{\pi(2.25in)^2}{4}\right)(1/3) = 262.42k$$

$$Ratio = \frac{246.49k}{262.42k} = 93.9\%$$

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job 2012 7/2.97
Sheet No. 2 of 2
Calculated by TB Date 6/26/12
Checked by _____ Date _____

Base plate with stiffeners

plate section length = 6in plate section width = 6 in

Stiffener $b/c = \frac{(b-t)}{(w_s + t_{pl}/2)} = \frac{(6in - 2.5in)}{(6in + 2.5in/2)} = 0.483$

Plate pressure $q = \frac{P_c/(b-t)}{(w_s + t_{pl}/2)} = \frac{255.38k/(6-2.5in)}{(6in + 2.5in/2)} = 10.064\ ksi$

$L_c/b = 1/0.483 = 2.071 \rightarrow \beta = 0.792$

stress $f_b = \frac{\beta q b^2}{t^2} = \frac{0.792(10.064ksi)(6in)^2}{(2.5in)^2} = 45.91\ ksi$

Allowable stress $F_b = 0.75(60ksi)(4/3) = 60ksi$

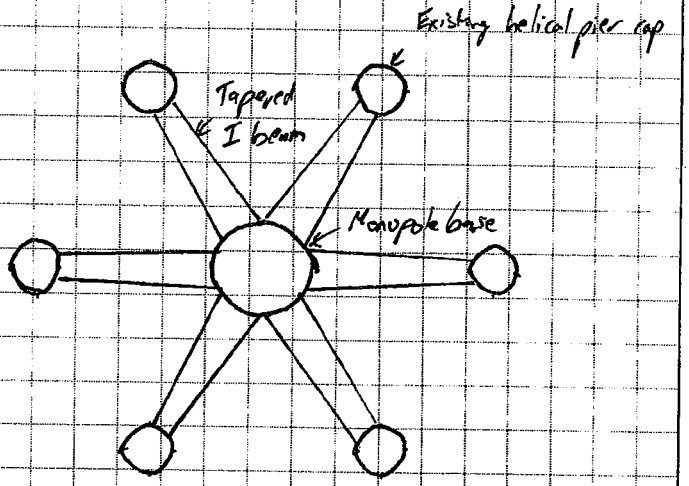
Rating $= \frac{45.91ksi}{60ksi} = 76.5\%$

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job 2012.712.97
Sheet No. 1 of 2
Calculated by TB Date 6/29/12
Checked by JS Date 6/29/12

Foundation Analysis

Reactions: M= 3391 k-ft
P= 53 k



Anchor group

$I = \frac{6(300\,in)^2}{8} = 67500\,in^2$

Helical capacity = 138 k (ultimate)
(2) helical piers per cap

Force in anchors

Compression $P_u = \frac{M_y}{I} + \frac{P}{n} = \frac{3391\,k\text{-}ft\,(12\,\frac{in}{ft})\,150\,in}{67500\,in^2} + \frac{53k}{6} = 99.26\,k$

Uplift $P_u = \frac{M_y}{I} - \frac{P}{n} = \frac{3391\,k\text{-}ft\,(12\,\frac{in}{ft})\,150\,in}{67500\,in^2} - \frac{53k}{6} = 81.59\,k$

Rating

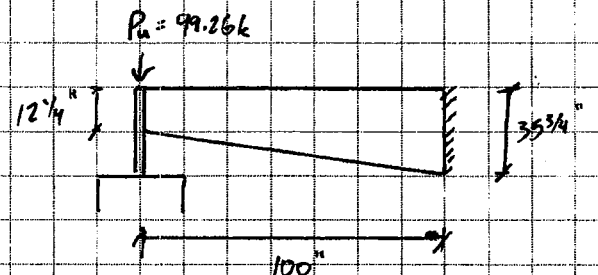
Compression = $\frac{99.26k}{0.5(138k)(2\,piers)} = 71.9\,\%$

Uplift = $\frac{81.59k}{0.5(138k)(2\,piers)} = 59.1\,\%$

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.

Job 202712.17
Sheet No. 2 of 2
Calculated by JB Date 6/29/12
Checked by JS Date 6/29/12

Tapered Beam Analysis



Beam t_f = 0.625 in
t_w = 0.375 in
b_f = 12 in
I_x = 5910.3 in^4 (LAD)
F_y = 36 ksi

$$f_b = \frac{Mc}{I} = \frac{99.26k(100in)(\frac{1}{2})(35.75in)}{5910.3in^4} = 30.02 ksi$$

$$F_b = 0.66 F_y = 0.66(36ksi)(4/3) = 31.68 ksi$$

$$Rating = \frac{30.02ksi}{31.68ksi} = 94.8\%$$

End connection

$$Bolt\ tension = \frac{M_y}{y^2} = \frac{992.6k\text{-}in(20.5in)}{8(13.5")^2 + 8(20.5")^2} = 38.5k$$

$$Bolt\ Allowable = \frac{\pi(1")^2}{4}(44ksi)(4/3) = 46.1k$$

$$Rating = \frac{38.5k}{46.1k} = 83.5\%$$

$$Plate\ bending = \frac{4(38.5k)(2in)}{8.9in^3} = 34.6 ksi$$ ← includes stiffeners

$$Allowable = 0.75(36ksi)(4/3) = 36 ksi$$

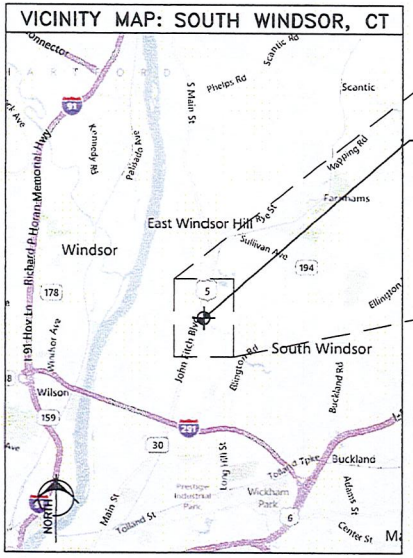
$$Rating = 34.6ksi / 36.0ksi = 96.1\%$$

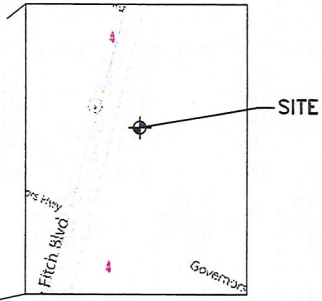
SOUTH WINDSOR/RT 5

CT11279D

169 FT MONOPOLE

VICINITY MAP: SOUTH WINDSOR, CT





AERIAL VIEW

PROJECT SUMMARY	
TOWER OWNER:	T–MOBILE TOWERS
TOWER TYPE:	MONOPOLE TOWER
GOVERNING CODE:	TIA/EIA–222–F & 2005 CSBC
LATITUDE:	41° 50' 0.4668" N
LONGITUDE:	72° 36' 10.9872" W
OWNER CONTACT:	MEGAN JO MACLEAD 12920 SE 38TH ST. BELLEVUE, WA 98006 (425) 383–5335
ENGINEER CONTACT:	MR. CHRIS SCHEKS 400 NORTH 34TH ST., SUITE 216 SEATTLE, WA 98103 (206) 467–2621

PROJECT OVERVIEW:
THE LISTED DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER BY REPLACING THE EXISTING BASE PLATE ANCHOR BOLTS AND INSTALLING STIFFENER PLATES TO THE EXISTING BASE PLATE.

DRAWING INDEX
T–01 TITLE SHEET
N–01 PROJECT NOTES
S–01 TOWER ELEVATION & MODIFICATION SCHEDULE
S–02 MODIFICATION SECTIONS & DETAILS
MI–01 MODIFICATION INSPECTION CHECKLIST

CO–LOCATOR:

verizon wireless

STATE OF CONNECTICUT
DAVID S. GRABGER, P.E.
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330.572.2100
330.572.21

T-Mobile TOWERS

REV	DATE	DESCRIPTION

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

TITLE SHEET

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	DESIGNER
DMH	TAB

JOB NO.
2012712.97

T-01

GENERAL NOTES

1. THE FOLLOWING DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER. THE MODIFICATIONS ARE BASED ON GPD GROUP STRUCTURAL REPORT (PROJECT #: 2012854.36, DATED JUNE 8, 2012). ALL MODIFICATIONS MUST BE INSTALLED TO BRING THE TOWER INTO CONFORMANCE WITH TIA/EIA-222-F & 2005 CSBC.

2. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222-F, 2005 CSBC, AWS, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.

3. ALL ORIGINAL TOWER INFORMATION WAS OBTAINED IN THE FORM OF TOWER DRAWINGS BY EEI (JOB #: 6255 REV.2, DATED JUNE 6, 2000), AND MODIFICATION DRAWINGS BY CENTEK (PROJECT #: 10003.C04 REV 1, DATED JUNE 11, 2010). CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED TOWER DOCUMENTS.

4. THIS DESIGN ASSUMES THE TOWER AND FOUNDATIONS HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION ASSESSMENT BY GPD GROUP. CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW. SEE CONTRACTOR NOTES.

5. MANUFACTURER TOLERANCES, FIELD ADJUSTMENTS, INCORRECT STACKING, AND TEMPERATURE CAN CAUSE DIMENSION DISCREPANCIES. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS. ALL FIELD MEASUREMENTS MUST BE REPORTED TO ENGINEER.

6. ALL NEW STEEL SHALL BE HOT DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. A354-BD RODS SHALL BE COATED WITH DACROMET F1136 GRADE 3 COATING. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

7. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING BRUSH APPLIED PAINT (ZRC OR EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).

8. CAULKING SHALL BE PROVIDED AROUND PERIMETER OF ANY AND ALL MODIFICATION MEMBERS TO ENSURE COMPLETE SEAL BETWEEN EXISTING STRUCTURE AND REINFORCING MEMBERS. SEALANT IS TO BE EXTERIOR GRADE, PAINTABLE SILICONE CAULKING AS MANUFACTURED BY DOW AND ACCEPTABLE TO GPD.

9. LOADINGS:

WIND LOADS:
FASTEST MILE WIND SPEED (TIA/EIA-222-F & 2005 CSBC) 80 MPH
(HARTFORD COUNTY, CT)

ICE LOADS:
1/2" RADIAL BASE ICE
FASTEST MILE WIND SPEED (CONCURRENT W/ ICE) 69 MPH

10. STRUCTURAL STEEL:

SPECIFICATIONS
LATEST EDITION OF AISC

MATERIAL

STIFFENERS	ASTM A572 (GR 50)
ANCHOR BOLTS	ASTM A354-BD
HOT DIPPED GALVANIZING	ASTM A123
WELDS	E70XX
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

11. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.

12. ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.

13. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

14. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.

15. INSTALLATION OF THE PROPOSED LOADING IS BY OTHERS, AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

CONTRACTOR NOTES

1. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND GPD GROUP THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGEMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND GPD GROUP ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND GPD GROUP.

2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, GPD GROUP SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.

3. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.

4. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.

5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.

6. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. SEE GENERAL NOTES #4 AND #5 THIS SHEET.

7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE TOWER MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

8. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

9. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

10. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH). CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL TOWER SHORING, TEMPORARY GLOBAL TOWER SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

WELD NOTES

1. CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING A CERTIFIED WELD INSPECTOR (CWI) THROUGHOUT THE ENTIRETY OF THE PROJECT. A PASSING CWI REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.

2. WELDING CERTIFICATES MUST BE PROVIDED TO CWI AND GPD GROUP PRIOR TO WELDING CONTRACTOR BEGINNING WORK ON SITE. CERTIFICATE WILL BE ASKED FOR AS PART OF INSPECTION PROCESS. ALL WELDING SHOULD BE PERFORMED BY AN AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES AND IN ACCORDANCE WITH ANSI/AWS D1.1 AND ANSI Z 49.1 OR LATEST EDITIONS.

3. OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.

4. INSTALL 3000° (NFPA 701) FIRE BLANKET AROUND ALL COAX.

5. MORE SPLATTER AND SPARKS SHALL BE ANTICIPATED GIVEN THE PREVIOUSLY GALV. SURFACE.

6. COAX IS FLAMMABLE AND CAN CATCH FIRE IF PROPER PRECAUTIONS ARE NOT MADE TO SHIELD COAX FROM ALL WELDING PROCEDURES. ALL COAX SHALL BE SHIELDED AT AND BELOW EACH WELDING PROCEDURE AND ELEVATION. IN ADDITION, COAX SHALL BE PUSHED AWAY FROM TOWER FACE WHERE WELDING IS BEING PERFORMED.

7. CONTRACTOR SHALL EXERCISE CAUTION WHEN WELDING ON A GALVANIZED SURFACE. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC IT DOES NOT PROVIDE A STRUCTURAL WELD.

8. FUMES CREATED FROM WELDING ON A PREVIOUSLY GALV. SURFACE CAN BE HAZARDOUS.

9. PRIOR TO WELDING, ALL SURFACES SHALL BE PROPERLY GROUND TO REMOVE GALVANIZING.

10. ALL FIELD WELDS SHALL BE TOUCHED UP WITH A GALVANIZING PAINT REPAIR (ZRC OR APPROVED EQUIVALENT).

11. WATER SHALL BE ON SITE, OF ADEQUATE AMOUNT, AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. A MINIMUM OF 500 GAL. OF WATER SHALL BE PROVIDED. WATER SHALL BE CAPABLE OF REACHING HEIGHT WHERE WELDING IS BEING PERFORMED. IN ADDITION, A MINIMUM OF SIX (6) 10 LB. CLASS ABC MULTIPURPOSE FIRE EXTINGUISHERS FULLY CHARGED AND CAPABLE OF DISCHARGE WITHIN 30 SECONDS OF DETECTING A FIRE SHALL BE PROVIDED. FIRE EXTINGUISHERS SHALL BE STRATEGICALLY LOCATED AROUND COMPOUND AND IN THE AIR (I.E. ON THE MAN LIFT WHERE WELDING IS BEING PERFORMED).

12. CLEAN OUT ALL DEBRIS THROUGHOUT MONOPOLE AND MONOPOLE BASE PRIOR TO WELDING.

ANCHOR ROD NOTES

1. CONTRACTOR SHALL INSTALL RODS AND BRACKETS AT LOCATIONS INDICATED ON DRAWINGS.

2. CONTRACTOR SHALL VERIFY THAT TOWER IS PLUMB PRIOR TO THE INSTALLATION OF ANY TOWER MODIFICATIONS.

3. CONTRACTOR SHALL PROVIDE TOP AND BOTTOM HEAVY HEX NUTS FOR PROPOSED ANCHOR RODS. TOP AND BOTTOM CONNECTIONS SHALL BE DOUBLE NUTTED.

STATE OF CONNECTICUT
DAVID S. GRANGER, P.E.
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PROFESSIONAL ENGINEER

GPD GROUP
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AKRON, OH 44311
330.572.2100 330.572.2101

T-Mobile TOWERS

REV.	DATE	DESCRIPTION

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

PROJECT NOTES

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	DESIGNER
DMH	TAD

JOB NO. 2012712.97

N-01

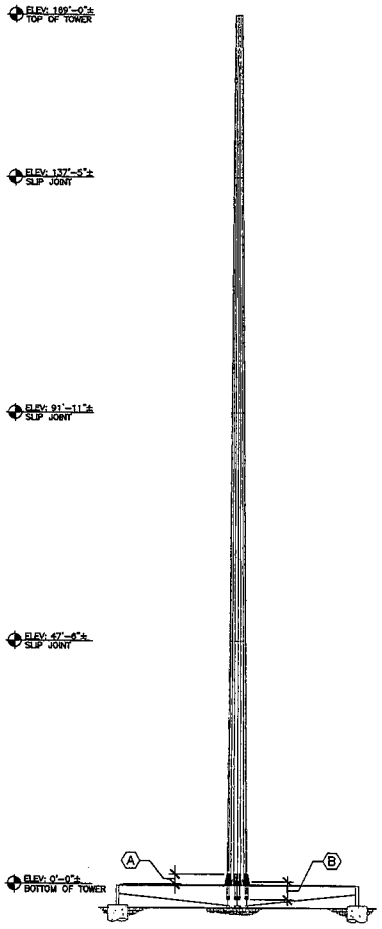
Akron • Atlanta • Cleveland • Columbus • Indianapolis • Louisville • Malden • Phoenix • Seattle • Youngstown

ANTENNA SCHEDULE

ELEVATION	STATUS	ANTENNA	MOUNT	COAX
169'-0"	EXISTING	(9) AIR21	(1) 12' PLATFORM	(24) 1-5/8"
	EXISTING	(3) AIR33		(2) 1-5/8" HYB.
	EXISTING	(3) ETW190VS12UB TMA's		
	EXISTING	(1) HCS FIBER/DC BOX		
	EXISTING	(1) MW DISH		
162'-0"	EXISTING	(6) DU01417-8686	(1) 14' LP PLATFORM	(12) 1-5/8"
	EXISTING	(3) 7770		(2) 3/8" DC CABLES
	EXISTING	(1) SBNH-1D6565C		
	EXISTING	(1) P65-17-XLH-RR		(1) 7/16" FIBER CABLE
	EXISTING	(1) AM-X-CD-16-65-00T-RET		
	EXISTING	(3) DTMABP7819VG12A TMA's		
	EXISTING	(6) RRUS-11		
	EXISTING	(1) DC6-48-60-18-8F		
148'-0"	EXISTING	(3) 9321G65VTE-B	(1) FLUSH MOUNT	(6) 1-5/8"
138'-0"	EXISTING	(3) 742 213	(1) FLUSH MOUNT	(6) 1-5/8"
128'-0"	EXISTING	(3) LLPX310R	(3) STANDOFFS	(3) 1/2"
	EXISTING	(3) A-ANT18G-2-C MW		(3) 1/4"
	EXISTING	(3) ODU's		(3) 5/8"
	EXISTING	(3) WiMAX DAPHEAD		(1) 5/16"
108'-0"	PROPOSED	(3) BXA70063/6CF	(1) 13' LP PLATFORM	(18) 1-5/8"
	PROPOSED	(6) LPA80063/6CF		
	PROPOSED	(3) BXA171063/12BF		
	PROPOSED	(6) FD9R6004/2D-3L		
66'-0"	EXISTING	(1) GPS	(1) GPS MOUNT	(1) 1/2"

MODIFICATION SCHEDULE

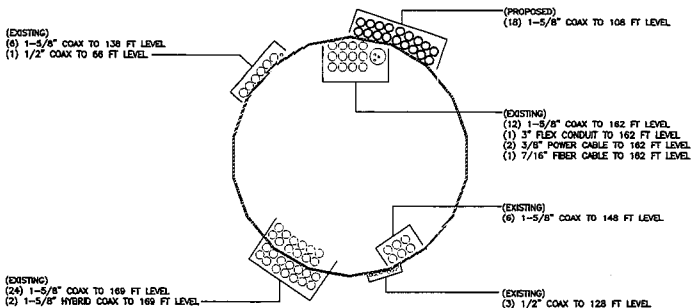
SYMBOL	ELEVATION	MEMBER TYPE	EXISTING MEMBER	NEW MEMBER	NOTES
(A)	0'-0"± TO 2'-0"±	STIFFENERS	-	6"x24"x1"	INSTALL (18) NEW BASE PLATE STIFFENERS. SEE DETAILS ON SHEET S-02 FOR MORE DETAILS.
(B)	0'-0"± TO -3'-0"±	ANCHOR RODS	2-1/4" DIA.	2-1/4" DIA.	REPLACE EXISTING ANCHOR BOLTS WITH NEW ANCHOR BOLTS. LENGTH AS REQUIRED. SEE DETAIL 1 AND SECTION A ON SHEET S-02 FOR MORE DETAILS.



AXIAL: 69 K
SHEAR: 25 K
MOMENT: 2936 k-ft
TORQUE: 98 kip-ft
REACTIONS- 85 mph WIND- 0.5000 IN. ICE

AXIAL: 53 K
SHEAR: 29 K
MOMENT: 3391 kip-ft
TORQUE: 1.2 kip-ft
REACTIONS- 80 mph

TOWER ELEVATION
1"=1'-0"



COAX LAYOUT
N.T.S.

STATE OF CONNECTICUT
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T-Mobile TOWERS

REV.	DATE	DESCRIPTION

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

TOWER ELEVATION & MODIFICATION SCHEDULE

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	DESIGNER
DMH	XXX

JOB NO. 2012712.97

S-01

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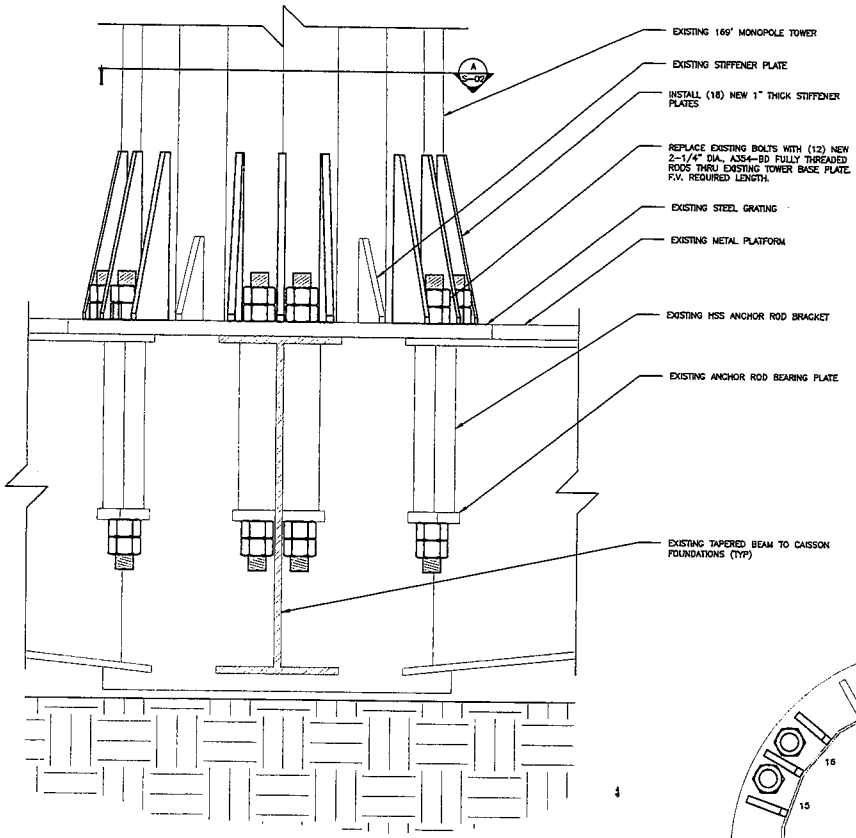
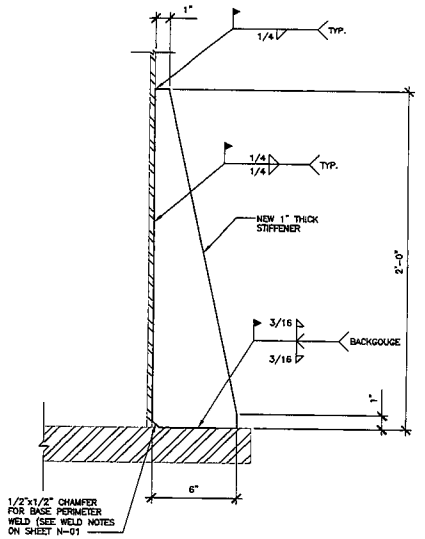
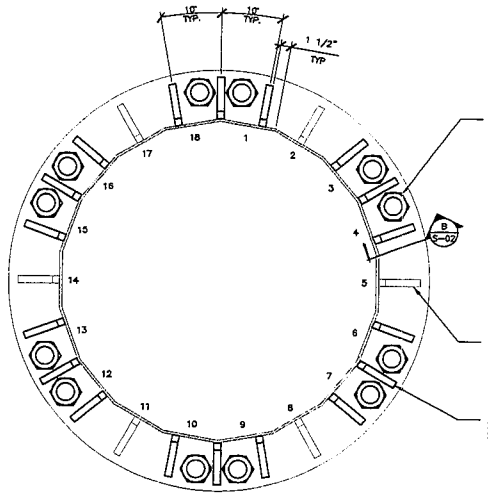


DETAIL 1
1 1/2"=1'-0" S-02



SECTION B
3"=1'-0" S-02



SECTION A
1 1/2"=1'-0" S-02

STATE OF CONNECTICUT
DAVID S. GRANGER, P.E.
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T-Mobile TOWERS

REV.	DATE	DESCRIPTION

Akron • Atlanta • Cleveland • Columbus • Indianapolis • Louisville • Marion • Phoenix • Seattle • Youngstown

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

MODIFICATION SECTIONS & DETAILS

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	DESIGNER
DMH	TAG

JOB NO.
2012712.97

S-02

MODIFICATION INSPECTION CHECKLIST

BEFORE CONSTRUCTION		DURING CONSTRUCTION		AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM	CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM	CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
X	MODIFICATION INSPECTION CHECKLIST DRAWING	X	CONSTRUCTION INSPECTIONS	X	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWING(S)
X	ENGINEER OF RECORD APPROVED SHOP DRAWINGS	–	FOUNDATION INSPECTIONS	–	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	FABRICATION INSPECTION	–	CONCRETE COMP. STRENGTH AND SLUMP TESTS	X	PHOTOGRAPHS
–	FABRICATOR CERTIFIED WELD INSPECTION	–	POST INSTALLED ANCHOR ROD VERIFICATION	ADDITIONAL TESTING AND INSPECTIONS:	
X	MATERIAL TEST REPORT	–	BASE PLATE GROUT VERIFICATION		
–	FABRICATOR NDE INSPECTION	X	CONTRACTOR'S CERTIFIED WELD INSPECTION		
–	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)	–	EARTHWORK: LIFT AND DENSITY		
X	PACKING SLIPS	X	ON SITE COLD GALVANIZING VERIFICATION		
ADDITIONAL TESTING AND INSPECTIONS:		–	GUY WIRE TENSION REPORT		
		X	GC AS-BUILT DOCUMENTS		
		ADDITIONAL TESTING AND INSPECTIONS:			

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MODIFICATION INSPECTION REPORT
– DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MODIFICATION INSPECTION REPORT

MODIFICATION INSPECTION NOTES:

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD.

2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MODIFICATION INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD AT ALL TIMES.

3. TO ENSURE THAT THE REQUIREMENTS OF THE MODIFICATION INSPECTION ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO OR PAYMENT IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. CONTACT LISTED ON THE TITLE SHEET SHALL BE CONTACTED IF SPECIFIC INSPECTOR CONTACT INFORMATION IS NOT KNOWN.

MODIFICATION INSPECTOR

1. THE MODIFICATION INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSPECTION TO:

–REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST
–WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
–DISCUSS ANY SITE SPECIFIC INSPECTIONS OR CONCERNS

2. THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MODIFICATION INSPECTION REPORT.

GENERAL CONTRACTOR

1. THE GC IS REQUIRED TO CONTACT THE MODIFICATION INSPECTOR AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO:

–REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST
–WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MODIFICATION INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
–BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

2. THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.

RECOMMENDATIONS

1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MODIFICATION INSPECTION REPORT:

–IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MODIFICATION INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION TO BE CONDUCTED.
–THE GC AND MODIFICATION INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
–WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
–IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MODIFICATION INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
–WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MODIFICATION INSPECTION. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MODIFICATION INSPECTION CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MODIFICATION INSPECTION

1. IF THE GC AND MODIFICATION INSPECTOR AGREE TO A DATE ON WHICH THE MODIFICATION INSPECTION WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, THE TOWER OWNER SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MODIFICATION INSPECTION ("FAILED MODIFICATION INSPECTION"), THE GC SHALL WORK WITH MODIFICATION INSPECTOR TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

–CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MODIFICATION INSPECTION.
–OR, WITH TOWER OWNER'S APPROVAL, THE GC MAY WORK WITH THE ENGINEER OF RECORD TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

VERIFICATION INSPECTIONS

1. TOWER OWNER RESERVES THE RIGHT TO CONDUCT A VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MODIFICATION INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

2. VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT FIRM AFTER A MODIFICATION PROJECT IS COMPLETED, AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MODIFICATION INSPECTION" OR "PASS AS NOTED MODIFICATION INSPECTION" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS ARE TO BE TAKEN AND INCLUDED IN THE MODIFICATION INSPECTION REPORT:

–PRE-CONSTRUCTION GENERAL SITE CONDITION
–PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND
INSPECTION
RAW MATERIALS
PHOTOS OF ALL CRITICAL DETAILS
FOUNDATION MODIFICATIONS
WELD PREPARATION
BOLT INSTALLATION AND TORQUE
FINAL INSTALLED CONDITION
SURFACE COATING REPAIR
–POST CONSTRUCTION PHOTOGRAPHS
FINAL INFIELD CONDITION
–ANY OTHER PHOTOS DEEMED RELEVANT TO SHOW COMPLETE DETAILS OF MODIFICATIONS

2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

GPD GROUP.
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T-Mobile TOWERS

Youngstown • Seattle • Phoenix • Marion • Louisville • Indianapolis • Columbus • Cleveland • Atlanta • Akron

REV	DATE	DESCRIPTION

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

MODIFICATION INSPECTION CHECKLIST

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	DESIGNER
DMH	TAB

JOB NO. 2012712.97

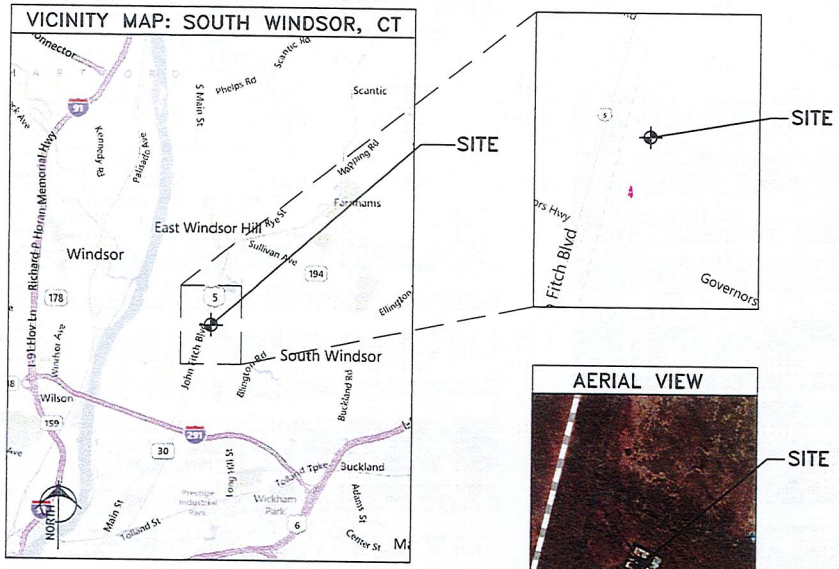
MI-01

SOUTH WINDSOR/RT 5

CT11279D

169 FT MONOPOLE

VICINITY MAP: SOUTH WINDSOR, CT



AERIAL VIEW

PROJECT SUMMARY	
TOWER OWNER:	T-MOBILE TOWERS
TOWER TYPE:	MONOPOLE TOWER
GOVERNING CODE:	TIA/EIA-222-F & 2005 CSBC
LATITUDE:	41° 50' 0.4668" N
LONGITUDE:	72° 36' 10.9872" W
OWNER CONTACT:	MEGAN JO MACLEAD 12920 SE 38TH ST. BELLEVUE, WA 98006 (425) 383-5335
ENGINEER CONTACT:	MR. CHRIS SCHEKS 400 NORTH 34TH ST., SUITE 216 SEATTLE, WA 98103 (206) 467-2621

PROJECT OVERVIEW:
THE LISTED DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER BY REPLACING THE EXISTING BASE PLATE ANCHOR BOLTS AND INSTALLING STIFFENER PLATES TO THE EXISTING BASE PLATE.

DRAWING INDEX

CO-LOCATOR:

verizon wireless

STATE OF CONNECTICUT ★ DAVID B. GRANGER P.E. ★ NO. 17257 ★ LICENSED PROFESSIONAL ENGINEER

GPD GROUP
Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
570 SOUTH MAIN STREET, SUITE 2[illegible]
AKRON, OH 443[illegible]
330.572.2100 330.572.21[illegible]

T-Mobile TOWERS

REV	DATE	DESCRIPTION

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

TITLE SHEET

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	DESIGNER
DMH	TAB

JOB NO. 2012712.97

T-01

GENERAL NOTES

1. THE FOLLOWING DRAWINGS REPRESENT MODIFICATIONS TO THE EXISTING TOWER. THE MODIFICATIONS ARE BASED ON GPD GROUP STRUCTURAL REPORT (PROJECT #: 2012854.36, DATED JUNE 8, 2012). ALL MODIFICATIONS MUST BE INSTALLED TO BRING THE TOWER INTO CONFORMANCE WITH TIA/EIA-222-F & 2005 CSBC.

2. THESE MODIFICATIONS HAVE BEEN DESIGNED IN ACCORDANCE WITH THE GOVERNING PROVISIONS OF TIA/EIA-222-F, 2005 CSBC, AWS, AND AISC. MATERIALS AND SERVICES PROVIDED BY THE CONTRACTOR SHALL CONFORM TO THE ABOVE MENTIONED CODES AND THE CONTRACT SPECIFICATIONS.

3. ALL ORIGINAL TOWER INFORMATION WAS OBTAINED IN THE FORM OF TOWER DRAWINGS BY EEI (JOB #: 6255 REV.2, DATED JUNE 6, 2000), AND MODIFICATION DRAWINGS BY CENTEK (PROJECT #: 10003.C04 REV 1, DATED JUNE 11, 2010). CONTRACTOR SHALL OBTAIN AND BECOME FAMILIAR WITH THE REFERENCED TOWER DOCUMENTS.

4. THIS DESIGN ASSUMES THE TOWER AND FOUNDATIONS HAVE BEEN WELL MAINTAINED, IN GOOD CONDITION, AND ARE WITHOUT DEFECT. BENT MEMBERS, CORRODED MEMBERS, LOOSE BOLTS, CRACKED WELDS AND OTHER MEMBER DEFECTS HAVE NOT BEEN CONSIDERED. THE TOWER IS ASSUMED TO BE PLUMB AND THE SITE IS ASSUMED TO BE LEVEL. THIS DESIGN IS BEING PROVIDED WITHOUT THE BENEFIT OF A CONDITION ASSESSMENT BY GPD GROUP. CONTRACTOR SHALL COMMISSION A COMPLETE CONDITION ASSESSMENT PRIOR TO ORDERING ANY REINFORCING MATERIALS. CONTRACTOR SHALL SUPPLY CONDITION ASSESSMENT TO ENGINEER FOR REVIEW. SEE CONTRACTOR NOTES.

5. MANUFACTURER TOLERANCES, FIELD ADJUSTMENTS, INCORRECT STACKING, AND TEMPERATURE CAN CAUSE DIMENSION DISCREPANCIES. CONTRACTOR SHALL FIELD VERIFY ALL DIMENSIONS PRIOR TO ORDERING MATERIALS. ALL FIELD MEASUREMENTS MUST BE REPORTED TO ENGINEER.

6. ALL NEW STEEL SHALL BE HOT DIPPED GALVANIZED FOR FULL WEATHER PROTECTION. A354-BD RODS SHALL BE COATED WITH DACROMET F1136 GRADE 3 COATING. IN ADDITION ALL NEW STEEL SHALL BE PAINTED TO MATCH EXISTING STEEL. CONTRACTOR SHALL OBTAIN WRITTEN PERMISSION TO PROTECT STEEL BY ANY OTHER MEANS.

7. ALL EXISTING PAINTED/GALVANIZED SURFACES DAMAGED DURING REHAB INCLUDING AREAS UNDER STIFFENER PLATES SHALL BE WIRE BRUSHED CLEAN, REPAIRED BY COLD GALVANIZING BRUSH APPLIED PAINT (ZRC OR EQUAL), AND REPAINTED TO MATCH THE EXISTING FINISH (IF APPLICABLE).

8. CAULKING SHALL BE PROVIDED AROUND PERIMETER OF ANY AND ALL MODIFICATION MEMBERS TO ENSURE COMPLETE SEAL BETWEEN EXISTING STRUCTURE AND REINFORCING MEMBERS. SEALANT IS TO BE EXTERIOR GRADE, PAINTABLE SILICONE CAULKING AS MANUFACTURED BY DOW AND ACCEPTABLE TO GPD.

9. LOADINGS:

WIND LOADS:
FASTEST MILE WIND SPEED (TIA/EIA-222-F & 2005 CSBC) 80 MPH
(HARTFORD COUNTY, CT)

ICE LOADS:
1/2" RADIAL BASE ICE
FASTEST MILE WIND SPEED (CONCURRENT W/ ICE) 69 MPH

10. STRUCTURAL STEEL:

SPECIFICATIONS
LATEST EDITION OF AISC

MATERIAL

STIFFENERS	ASTM A572 (GR 50)
ANCHOR BOLTS	ASTM A354-BD
HOT DIPPED GALVANIZING	ASTM A123
WELDS	E70XX
PAINT	NEW STEEL TO BE PAINTED TO MATCH EXISTING TOWER

11. ALL MATERIAL UTILIZED FOR THIS PROJECT MUST BE NEW AND FREE OF ANY DEFECTS. ANY MATERIAL SUBSTITUTIONS, INCLUDING BUT NOT LIMITED TO ALTERED SIZES AND/OR STRENGTHS, MUST BE APPROVED BY THE OWNER AND ENGINEER IN WRITING.

12. ALL SUBSTITUTES PROPOSED BY THE CONTRACTOR SHALL BE APPROVED IN WRITING BY THE ENGINEER. CONTRACTOR SHALL PROVIDE DOCUMENTATION TO ENGINEER FOR DETERMINING IF SUBSTITUTE IS SUITABLE FOR USE AND MEETS THE ORIGINAL DESIGN CRITERIA. DIFFERENCES FROM THE ORIGINAL DESIGN, INCLUDING MAINTENANCE, REPAIR AND REPLACEMENT, SHALL BE NOTED. ESTIMATES OF COSTS/CREDITS ASSOCIATED WITH THE SUBSTITUTION (INCLUDING RE-DESIGN COSTS AND COSTS TO SUB-CONTRACTORS) SHALL BE PROVIDED TO THE ENGINEER. CONTRACTOR SHALL PROVIDE ADDITIONAL DOCUMENTATION AND/OR SPECIFICATIONS TO THE ENGINEER AS REQUESTED.

13. PROVIDE STRUCTURAL STEEL SHOP DRAWINGS TO ENGINEER FOR APPROVAL PRIOR TO FABRICATION.

14. UNLESS NOTED OTHERWISE, ALL NEW MEMBERS SHALL MAINTAIN THE EXISTING MEMBER WORK LINES AND NOT INTRODUCE ECCENTRICITIES INTO THE STRUCTURE.

15. INSTALLATION OF THE PROPOSED LOADING IS BY OTHERS, AND IS BEYOND THE SCOPE OF THESE DRAWINGS.

CONTRACTOR NOTES

1. ALL CONTRACTORS AND LOWER TIER CONTRACTORS MUST ACKNOWLEDGE IN WRITING TO TOWER OWNER AND GPD GROUP THAT THEY HAVE OBTAINED, UNDERSTAND, AND WILL FOLLOW TOWER OWNER STANDARDS OF PRACTICE, CONSTRUCTION GUIDELINES, ALL SITE AND TOWER SAFETY PROCEDURES, ALL PRODUCT LIMITATIONS AND INSTALLATION PROCEDURES USED ON SITE, AND PROPOSED MODIFICATIONS DESCRIBED. RECEIPT OF ACKNOWLEDGMENT MUST OCCUR PRIOR TO BEGINNING CONSTRUCTION OR CLIMBING. IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO PROVIDE THIS DOCUMENTATION FOR TOWER OWNER AND GPD GROUP ON COMPANY LETTERHEAD AND THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO OBTAIN THIS DOCUMENTATION FROM LOWER TIER SUBCONTRACTORS (ON SUBCONTRACTOR LETTERHEAD) AND DELIVER IT TO TOWER OWNER AND GPD GROUP.

2. IF THE CONTRACTOR DISCOVERS ANY EXISTING CONDITIONS THAT ARE NOT REPRESENTED ON THESE DRAWINGS, OR ANY CONDITIONS THAT WOULD INTERFERE WITH THE INSTALLATION OF THE MODIFICATIONS, GPD GROUP SHALL BE CONTACTED IMMEDIATELY TO EVALUATE THE SIGNIFICANCE OF THE DEVIATION.

3. IT IS ASSUMED THAT ANY STRUCTURAL MODIFICATION WORK SPECIFIED ON THESE PLANS WILL BE ACCOMPLISHED BY KNOWLEDGEABLE WORKMEN WITH TOWER CONSTRUCTION EXPERIENCE. THIS INCLUDES PROVIDING THE NECESSARY CERTIFICATIONS TO THE TOWER OWNER AND ENGINEER.

4. THESE DRAWINGS DO NOT INDICATE THE METHOD OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION METHODS, MEANS, TECHNIQUES, SEQUENCES, AND PROCEDURES.

5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PROGRAMS AND PRECAUTIONS IN CONNECTION WITH THIS WORK.

6. THE CONTRACTOR SHALL VISIT THE SITE PRIOR TO BIDDING; ANY PROBLEMS WITH ACCESS, INTERFERENCE, ETC. SHALL BE RESOLVED PRIOR TO MOBILIZATION. THE CONTRACTOR MUST VISIT THE SITE PRIOR TO ORDERING ANY MATERIAL AND MUST RESOLVE ALL ISSUES WITH THE OWNER PREVENTING A CONTINUOUS INSTALLATION. CONTRACTOR SHALL NOTE ALL ANTENNAS, MOUNTS, COAX, LIGHTING, CLIMBING SUPPORTS, STEP BOLTS, PORT HOLES, AND ANY OTHER TOWER APPURTENANCES IN THE REGION OF THE MODIFICATIONS. SEE GENERAL NOTES #4 AND #5 THIS SHEET.

7. CONTRACTOR IS RESPONSIBLE FOR TEMPORARILY REMOVING ALL COAX, T-BRACKETS, ANTENNA MOUNTS, AND ANY OTHER TOWER APPURTENANCE THAT MAY INTERFERE WITH THE TOWER MODIFICATIONS. ALL TOWER APPURTENANCES MUST BE REPLACED AND/OR RESTORED TO ITS ORIGINAL LOCATION. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

8. SOME ATTACHMENTS MAY REQUIRE CUSTOM MODIFICATIONS TO PROPERLY FIT THE MODIFIED REGION OF THE STRUCTURE. THESE CUSTOMIZATIONS ARE DESIGNED BY OTHERS AND MUST BE APPROVED BY THE ENGINEER PRIOR TO REMOVING SUCH ATTACHMENTS. ANY CARRIER DOWNTIME MUST BE COORDINATED WITH THE TOWER OWNER IN WRITING.

9. CONTRACTOR SHALL ONLY WORK WITHIN THE LIMITS OF THE TOWER OWNER'S PROPERTY OR LEASE AREA AND APPROVED EASEMENTS. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY WORK IS WITHIN THESE BOUNDARIES. CONTRACTOR SHALL EMPLOY A SURVEYOR AS REQUIRED. ANY WORK OUTSIDE THESE BOUNDARIES SHALL BE APPROVED IN WRITING BY THE LAND OWNER PRIOR TO MOBILIZATION. CONSTRUCTION STAKING AND BOUNDARY MARKING IS THE RESPONSIBILITY OF THE CONTRACTOR.

10. WORK SHALL ONLY BE PERFORMED DURING CALM DRY DAYS (WINDS LESS THAN 10-MPH). CONTRACTOR IS RESPONSIBLE FOR ALL TEMPORARY LOCAL TOWER SHORING, TEMPORARY GLOBAL TOWER SHORING, AND ALL SHORING OF SURROUNDING BUILDINGS, PADS, AND OTHER OUTDOOR SITE OBSTRUCTIONS. ALL SHORING, TEMPORARY BRACING, AND TEMPORARY SUPPORTS ARE THE RESPONSIBILITY OF THE CONTRACTOR.

WELD NOTES

1. CONTRACTOR IS RESPONSIBLE FOR COMMISSIONING A CERTIFIED WELD INSPECTOR (CWI) THROUGHOUT THE ENTIRETY OF THE PROJECT. A PASSING CWI REPORT SHALL BE PROVIDED TO THE ENGINEER UPON COMPLETION OF THE PROJECT.

2. WELDING CERTIFICATES MUST BE PROVIDED TO CWI AND GPD GROUP PRIOR TO WELDING CONTRACTOR BEGINNING WORK ON SITE. CERTIFICATE WILL BE ASKED FOR AS PART OF INSPECTION PROCESS. ALL WELDING SHOULD BE PERFORMED BY AN AWS QUALIFIED WELDER WHO HAS EXPERIENCE WITH GALVANIZED SURFACES AND IN ACCORDANCE WITH ANSI/AWS D1.1 AND ANSI Z 49.1 OR LATEST EDITIONS.

3. OXY FUEL GAS WELDING OR BRAZING IS STRICTLY PROHIBITED. SPECIFICALLY, NO TORCH CUTTING IS PERMITTED ON SITE. ALL HOLES SHALL BE CUT WITH A GRINDER.

4. INSTALL 3000° (NFPA 701) FIRE BLANKET AROUND ALL COAX.

5. MORE SPLATTER AND SPARKS SHALL BE ANTICIPATED GIVEN THE PREVIOUSLY GALV. SURFACE.

6. COAX IS FLAMMABLE AND CAN CATCH FIRE IF PROPER PRECAUTIONS ARE NOT MADE TO SHIELD COAX FROM ALL WELDING PROCEDURES. ALL COAX SHALL BE SHIELDED AT AND BELOW EACH WELDING PROCEDURE AND ELEVATION. IN ADDITION, COAX SHALL BE PUSHED AWAY FROM TOWER FACE WHERE WELDING IS BEING PERFORMED.

7. CONTRACTOR SHALL EXERCISE CAUTION WHEN WELDING ON A GALVANIZED SURFACE. IF THE WELD MATERIAL IS CONTAMINATED WITH ZINC IT DOES NOT PROVIDE A STRUCTURAL WELD.

8. FUMES CREATED FROM WELDING ON A PREVIOUSLY GALV. SURFACE CAN BE HAZARDOUS.

9. PRIOR TO WELDING, ALL SURFACES SHALL BE PROPERLY GROUND TO REMOVE GALVANIZING.

10. ALL FIELD WELDS SHALL BE TOUCHED UP WITH A GALVANIZING PAINT REPAIR (ZRC OR APPROVED EQUIVALENT).

11. WATER SHALL BE ON SITE, OF ADEQUATE AMOUNT, AND AVAILABLE AT SHORT NOTICE AT ALL TIMES DURING WELDING ACTIVITY. A MINIMUM OF 500 GAL. OF WATER SHALL BE PROVIDED. WATER SHALL BE CAPABLE OF REACHING HEIGHT WHERE WELDING IS BEING PERFORMED. IN ADDITION, A MINIMUM OF SIX (6) 10 LB. CLASS ABC MULTIPURPOSE FIRE EXTINGUISHERS FULLY CHARGED AND CAPABLE OF DISCHARGE WITHIN 30 SECONDS OF DETECTING A FIRE SHALL BE PROVIDED. FIRE EXTINGUISHERS SHALL BE STRATEGICALLY LOCATED AROUND COMPOUND AND IN THE AIR (I.E. ON THE MAN LIFT WHERE WELDING IS BEING PERFORMED).

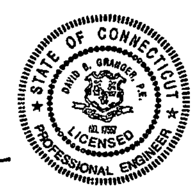
12. CLEAN OUT ALL DEBRIS THROUGHOUT MONOPOLE AND MONOPOLE BASE PRIOR TO WELDING.

ANCHOR ROD NOTES

1. CONTRACTOR SHALL INSTALL RODS AND BRACKETS AT LOCATIONS INDICATED ON DRAWINGS.

2. CONTRACTOR SHALL VERIFY THAT TOWER IS PLUMB PRIOR TO THE INSTALLATION OF ANY TOWER MODIFICATIONS.

3. CONTRACTOR SHALL PROVIDE TOP AND BOTTOM HEAVY HEX NUTS FOR PROPOSED ANCHOR RODS. TOP AND BOTTOM CONNECTIONS SHALL BE DOUBLE NUTTED.



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T-Mobile TOWERS

REV.	DATE	DESCRIPTION

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

PROJECT NOTES

Youngstown • Seattle • Phoenix • Marion • Louisville • Indianapolis • Columbus • Cleveland • Atlanta • Akron

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	

PROJECT MANAGER	DESIGNER
DMH	TAB

JOB NO.
2012712.97

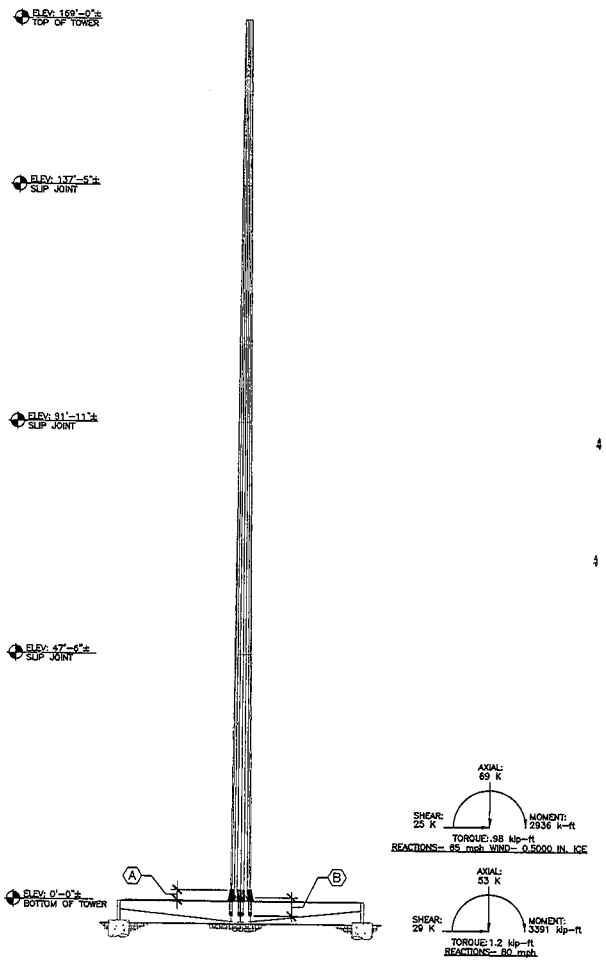
N-01

ANTENNA SCHEDULE

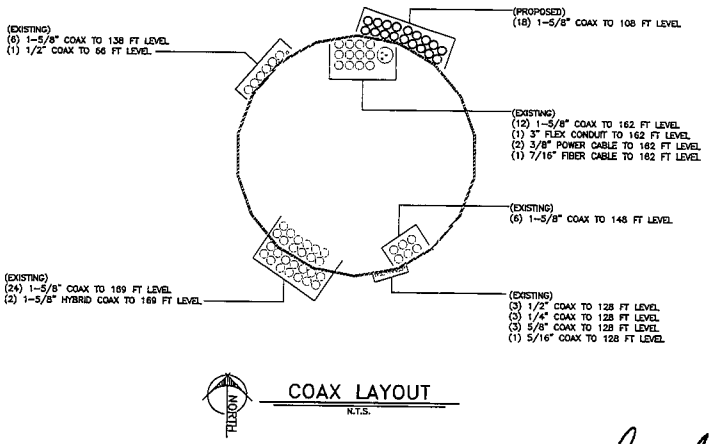
ELEVATION	STATUS	ANTENNA	MOUNT	COAX
169'-0"	EXISTING	(9) AIR21	(1) 12' PLATFORM	(24) 1-5/8"
	EXISTING	(3) AIR33		(2) 1-5/8" HYB.
	EXISTING	(3) ETW190VS12UB TMA's		
	EXISTING	(1) HCS FIBER/DC BOX		
	EXISTING	(1) MW DISH		
162'-0"	EXISTING	(6) DUO1417-B68	(1) 14' LP PLATFORM	(12) 1-5/8"
	EXISTING	(3) 7770		(2) 3/8" DC CABLES
	EXISTING	(1) SBNH-1D6565C		
	EXISTING	(1) PS5-17-XLH-RR		(1) 7/16" FIBER CABLE
	EXISTING	(1) AM-X-CD-16-65-00T-RET		
	EXISTING	(3) DTMABP7819VG12A TMA's		
	EXISTING	(6) RRUS-11		
	EXISTING	(1) DC6-48-60-18-8F		
148'-0"	EXISTING	(3) 939LG6SVTE-B	(1) FLUSH MOUNT	(6) 1-5/8"
138'-0"	EXISTING	(3) 742 213	(1) FLUSH MOUNT	(6) 1-5/8"
128'-0"	EXISTING	(3) LLPX310R	(3) STANDOFFS	(3) 1/2"
	EXISTING	(3) A-ANT18G-2-C MW		(3) 1/4"
	EXISTING	(3) ODU's		(3) 5/8"
	EXISTING	(3) WIMAX DAPHNEAD		(1) 5/16"
108'-0"	PROPOSED	(3) BXA70063/6CF	(1) 13' LP PLATFORM	(18) 1-5/8"
	PROPOSED	(6) LPA80063/6CF		
	PROPOSED	(3) BXA171063/12BF		
	PROPOSED	(6) FD9R6004/2C-3L		
56'-0"	EXISTING	(1) GPS	(1) GPS MOUNT	(1) 1/2"

MODIFICATION SCHEDULE

SYMBOL	ELEVATION	MEMBER TYPE	EXISTING MEMBER	NEW MEMBER	NOTES
(A)	0'-0"± TO 2'-0"±	STIFFENERS	-	6"x24"x1"	INSTALL (18) NEW BASE PLATE STIFFENERS. SEE DETAILS ON SHEET S-02 FOR MORE DETAILS.
(B)	0'-0"± TO -3'-0"±	ANCHOR RODS	2-1/4" DIA.	2-1/4" DIA.	REPLACE EXISTING ANCHOR BOLTS WITH NEW ANCHOR BOLTS. LENGTH AS REQUIRED. SEE DETAIL 1 AND SECTION A ON SHEET S-02 FOR MORE DETAILS.



TOWER ELEVATION
1"=1'-0"



COAX LAYOUT
N.T.S.

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T-Mobile TOWERS

REV	DATE	DESCRIPTION

Akron • Atlanta • Cleveland • Columbus • Indianapolis • Louisville • Marion • Phoenix • Seattle • Youngstown

T-MOBILE TOWERS
300 GOVERNORS HIGHWAY
SOUTH WINDSOR, CT 06074

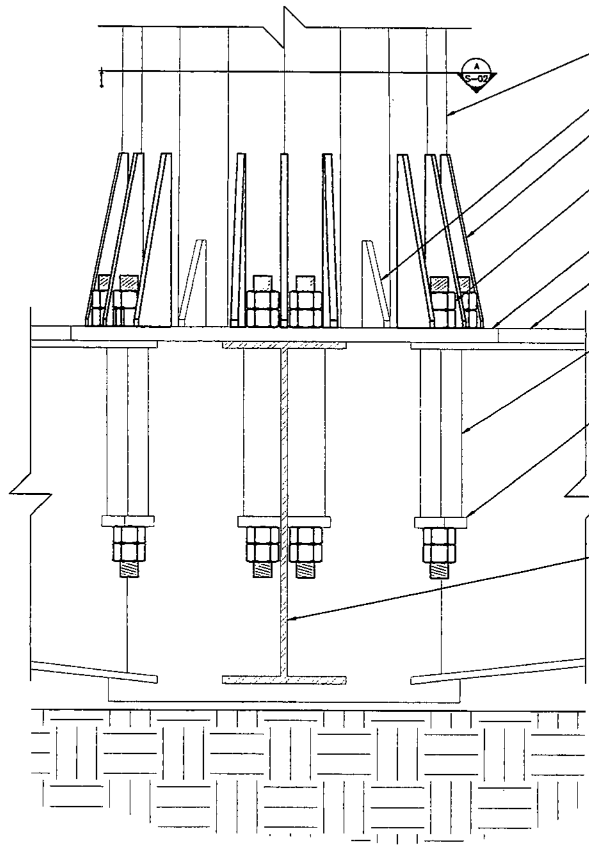
TOWER ELEVATION & MODIFICATION SCHEDULE

ISSUED FOR:	
PERMIT	8/29/12
BID	
CONSTRUCTION	
RECORD	

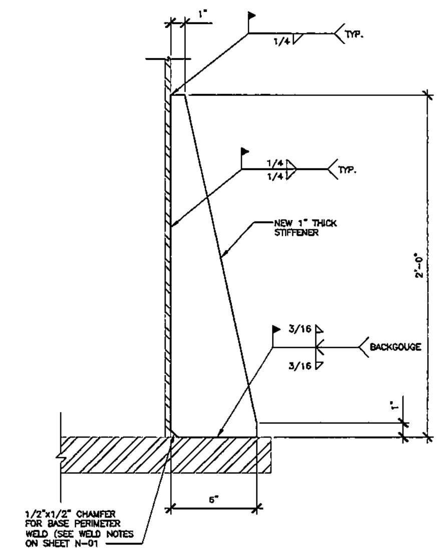
PROJECT MANAGER	DESIGNER
DMH	XXX

JOB NO.
2012712.97

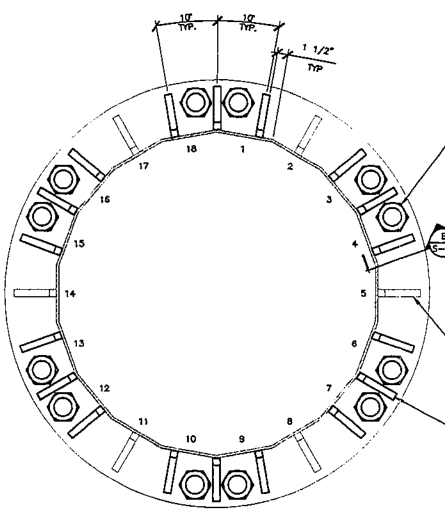
S-01



DETAIL 1 (S-02)
1 1/2"=1'-0"



SECTION B (S-02)
3"=1'-0"



SECTION A (S-02)
1 1/2"=1'-0"

STATE OF CONNECTICUT ★ DAVID B. GRANGER, P.E. NO. 17557 LICENSED PROFESSIONAL ENGINEER

GPD GROUP. Glaus, Pyle, Schomer, Burns & DeHaven, Inc.
520 SOUTH MAIN STREET, SUITE 2531 AKRON, OH 44311
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SOUTH WINDSOR, CT 06074

MODIFICATION SECTIONS & DETAILS

ISSUED FOR:	
PERMIT	6/29/12
BID	
CONSTRUCTION	
RECORD	
PROJECT MANAGER	DESIGNER
DMH	TAB

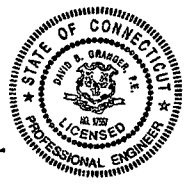
JOB NO. 2012712.97

S-02

MODIFICATION INSPECTION CHECKLIST

BEFORE CONSTRUCTION		DURING CONSTRUCTION		AFTER CONSTRUCTION	
CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM	CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM	CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY ENGINEER OF RECORD)	REPORT ITEM
X	MODIFICATION INSPECTION CHECKLIST DRAWING	X	CONSTRUCTION INSPECTIONS	X	MODIFICATION INSPECTOR REDLINE OR RECORD DRAWING(S)
X	ENGINEER OF RECORD APPROVED SHOP DRAWINGS	–	FOUNDATION INSPECTIONS	–	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	FABRICATION INSPECTION	–	CONCRETE COMP. STRENGTH AND SLUMP TESTS	X	PHOTOGRAPHS
–	FABRICATOR CERTIFIED WELD INSPECTION	–	POST INSTALLED ANCHOR ROD VERIFICATION	ADDITIONAL TESTING AND INSPECTIONS:	
X	MATERIAL TEST REPORT	–	BASE PLATE GROUT VERIFICATION		
–	FABRICATOR NDE INSPECTION	X	CONTRACTOR'S CERTIFIED WELD INSPECTION		
–	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)	–	EARTHWORK: LIFT AND DENSITY		
X	PACKING SLIPS	X	ON SITE COLD GALVANIZING VERIFICATION		
ADDITIONAL TESTING AND INSPECTIONS:		–	GUY WIRE TENSION REPORT		
		X	GC AS-BUILT DOCUMENTS		
		ADDITIONAL TESTING AND INSPECTIONS:			

NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MODIFICATION INSPECTION REPORT
– DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MODIFICATION INSPECTION REPORT



MODIFICATION INSPECTION NOTES:

GENERAL

1. THE MODIFICATION INSPECTION IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD.

2. THE MODIFICATION INSPECTION IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, NOR DOES THE MODIFICATION INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTENT RESIDES WITH THE ENGINEER OF RECORD AT ALL TIMES.

3. TO ENSURE THAT THE REQUIREMENTS OF THE MODIFICATION INSPECTION ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MODIFICATION INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PO OR PAYMENT IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. CONTACT LISTED ON THE TITLE SHEET SHALL BE CONTACTED IF SPECIFIC INSPECTOR CONTACT INFORMATION IS NOT KNOWN.

MODIFICATION INSPECTOR

1. THE MODIFICATION INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSPECTION TO:

   –REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST
   –WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
   –DISCUSS ANY SITE SPECIFIC INSPECTIONS OR CONCERNS

2. THE MODIFICATION INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MODIFICATION INSPECTION REPORT.

GENERAL CONTRACTOR

1. THE GC IS REQUIRED TO CONTACT THE MODIFICATION INSPECTOR AS SOON AS RECEIVING A PO OR PAYMENT FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO:

   –REVIEW THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST
   –WORK WITH THE MI INSPECTOR TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE MODIFICATION INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS
   –BETTER UNDERSTAND ALL INSPECTION AND TESTING REQUIREMENTS

2. THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MODIFICATION INSPECTION CHECKLIST.

RECOMMENDATIONS

1. THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MODIFICATION INSPECTION REPORT:

   –IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MODIFICATION INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MODIFICATION INSPECTION TO BE CONDUCTED.
   –THE GC AND MODIFICATION INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
   –WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
   –IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MODIFICATION INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
   –WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MODIFICATION INSPECTOR ON-SITE DURING THE MODIFICATION INSPECTION TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MODIFICATION INSPECTION. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MODIFICATION INSPECTION CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

CANCELLATION OR DELAYS IN SCHEDULED MODIFICATION INSPECTION

1. IF THE GC AND MODIFICATION INSPECTOR AGREE TO A DATE ON WHICH THE MODIFICATION INSPECTION WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, THE TOWER OWNER SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MODIFICATION INSPECTION

1. IF THE MODIFICATION INSTALLATION WOULD FAIL THE MODIFICATION INSPECTION ("FAILED MODIFICATION INSPECTION"), THE GC SHALL WORK WITH MODIFICATION INSPECTOR TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

   –CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MODIFICATION INSPECTION.
   –OR, WITH TOWER OWNER'S APPROVAL, THE GC MAY WORK WITH THE ENGINEER OF RECORD TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION.

VERIFICATION INSPECTIONS

1. TOWER OWNER RESERVES THE RIGHT TO CONDUCT A VERIFICATION INSPECTION TO VERIFY THE ACCURACY AND COMPLETENESS OF PREVIOUSLY COMPLETED MODIFICATION INSPECTION(S) ON TOWER MODIFICATION PROJECTS.

2. VERIFICATION INSPECTION MAY BE CONDUCTED BY AN INDEPENDENT FIRM AFTER A MODIFICATION PROJECT IS COMPLETED. AS MARKED BY THE DATE OF AN ACCEPTED "PASSING MODIFICATION INSPECTION" OR "PASS AS NOTED MODIFICATION INSPECTION" REPORT FOR THE ORIGINAL PROJECT.

REQUIRED PHOTOS

1. BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS ARE TO BE TAKEN AND INCLUDED IN THE MODIFICATION INSPECTION REPORT:

   –PRE-CONSTRUCTION GENERAL SITE CONDITION
   –PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
      RAW MATERIALS
      PHOTOS OF ALL CRITICAL DETAILS
      FOUNDATION MODIFICATIONS
      WELD PREPARATION
      BOLT INSTALLATION AND TORQUE
      FINAL INSTALLED CONDITION
      SURFACE COATING REPAIR
   –POST CONSTRUCTION PHOTOGRAPHS
      FINAL INFIELD CONDITION
   –ANY OTHER PHOTOS DEEMED RELEVANT TO SHOW COMPLETE DETAILS OF MODIFICATIONS

2. PHOTOS OF ELEVATED MODIFICATIONS TAKEN FROM THE GROUND SHALL BE CONSIDERED INADEQUATE.

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MI-01

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