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Also admitted in Massachusetts

April 22, 2014

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

Re: **Notice of Exempt Modification – Facility Modification**
1116 Johnson Road (a/k/a 1027 Racebrook Road), Woodbridge, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) wireless telecommunications antennas at the 127-foot level of the existing 150-foot tower at 1116 Johnson Road (a/k/a 1027 Racebrook Road) in Woodbridge, Connecticut (the "Property"). The tower is owned by Crown Castle. The Council approved Cellco's use of this tower in 2001. Cellco now intends to modify its facility by replacing six (6) of its existing antennas with two (2) model BXA-80063-4CF, 850 MHz antennas; one (1) model BXA-70080-4CF, 850 MHz antenna; and three (3) model MGD3-800TX, 2100 MHz antennas, all at the same 117-foot level on the tower. Cellco also intends to install three (3) remote radio heads ("RRHs") behind its 2100 MHz antennas and one (1) HYBRIFLEX™ antenna cable inside the monopole. Included in Attachment 1 are specifications for Cellco's replacement antennas, RRHs and HYBRIFLEX™ cable.

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 Ellen Scalettar, Woodbridge's First Selectman. A copy of this letter is also being sent to The Tradition Golf Club at Oak Lane, LLC, the owner of the Property.

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. The replacement antennas and RRHs will be located at the 127-foot level on the 150-foot tower.

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

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

4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative General Power Density table for Cellco's modified facility is included in Attachment 2.

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

6. The tower and its foundation, with certain modifications, can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 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:
Ellen Scalettar, Woodbridge First Selectman
The Tradition Golf Club at Oak Lane, LLC
Sandy M. Carter

ATTACHMENT 1

BXA-80063-4CF-EDIN-X

X-Pol | FET Panel | 63° | 13.0 dBd

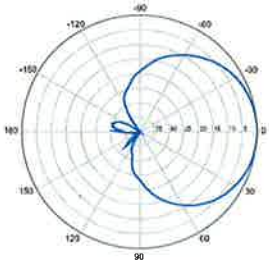
Replace "X" with desired electrical downtilt.

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

Electrical Characteristics				
Frequency bands	806-900 MHz*			
*Optional frequency band for iDEN	806-941 MHz (specify when ordering)			
Polarization	±45°			
Horizontal beamwidth	63°			
Vertical beamwidth	15°			
Gain	13.0 dBd (15.1 dBi)			
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 9, 10, 12, 14			
Impedance	50Ω			
VSWR	≤1.4:1			
Upper sidelobe suppression (0°)	-22.1 dB			
Front-to-back ratio (+/-30°)	-34.9 dB			
Null fill	5% (-26.02 dB)			
Isolation between ports	< -30 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	1205 x 285 x 133 mm		47.4 x 11.2 x 5.2 in	
Depth with z-brackets	173 mm		6.8 in	
Weight without mounting brackets	4.5 kg		9.9 lbs	
Survival wind speed	> 201 km/hr		> 125 mph	
Wind area	Front: 0.34 m²	Side: 0.16 m²	Front: 3.7 ft²	Side: 1.7 ft²
Wind load @ 161 km/hr (100 mph)	Front: 498 N	Side: 260 N	Front: 111 lbf	Side: 55 lbf

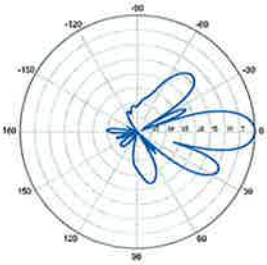
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit	36210006	40-115 mm 1.57-4.5 in	4.1 kg 9 lbs
Concealment Configurations	For concealment configurations, order BXA-80063-4CF-EDIN-X-FP		

BXA-80063-4CF-EDIN-X



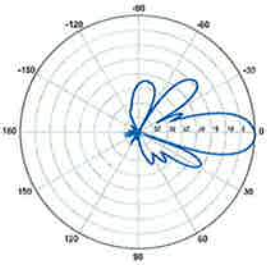
Horizontal

BXA-80063-4CF-EDIN-0



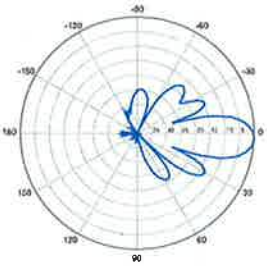
0° | Vertical

BXA-80063-4CF-EDIN-2



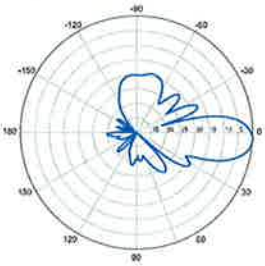
2° | Vertical

BXA-80063-4CF-EDIN-3



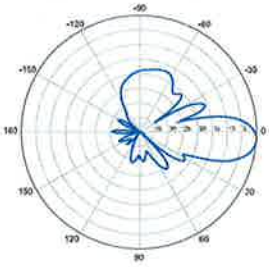
3° | Vertical

BXA-80063-4CF-EDIN-4



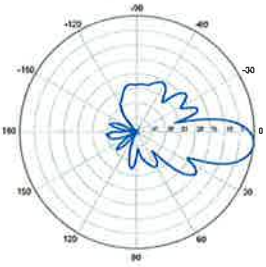
4° | Vertical

BXA-80063-4CF-EDIN-5



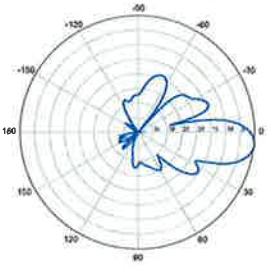
5° | Vertical

BXA-80063-4CF-EDIN-6



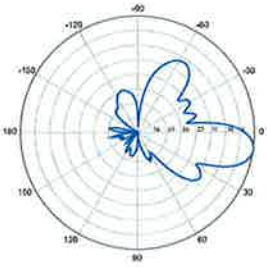
6° | Vertical

BXA-80063-4CF-EDIN-8



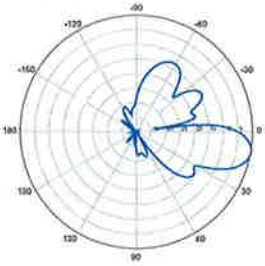
8° | Vertical

BXA-80063-4CF-EDIN-9



9° | Vertical

BXA-80063-4CF-EDIN-10

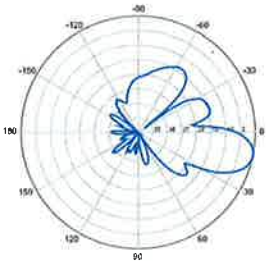


10° | Vertical

BXA-80063-4CF-EDIN-X

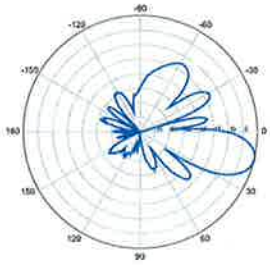
X-Pol | FET Panel | 63° | 13.0 dBd

BXA-80063-4CF-EDIN-12



12° | Vertical

BXA-80063-4CF-EDIN-14



14° | Vertical

Amphenol ANTENNA SOLUTIONS

BXA-70080-4CF-EDIN-X

X-Pol | FET Panel | 80° | 12.0 dBd

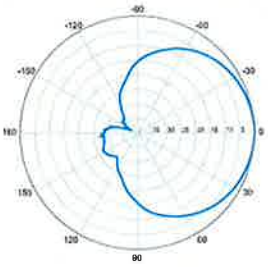
Replace "X" with desired electrical downtilt.

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

Electrical Characteristics	696-900 MHz	
Frequency bands	696-806 MHz	806-900 MHz
Polarization	±45°	
Horizontal beamwidth	82°	80°
Vertical beamwidth	17°	15°
Gain	11.5 dBd (13.6 dBi)	12.0 dBd (14.1 dBi)
Electrical downtilt (X)	0, 2, 4, 6, 8, 10, 12, 14	
Impedance	**50Ω**	
VSWR	**≤1.35:1**	
Upper sidelobe suppression (0°)	-11.8 dB	-13.1 dB
Front-to-back ratio (+/-30°)	-30.3 dB	-36.7 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	1206 x 204 x 151 mm	47.5 x 8.0 x 5.9 in
Depth with z-brackets	196 mm	7.7 in
Weight without mounting brackets	5.4 kg	12 lbs
Survival wind speed	> 201 km/hr	> 125 mph
Wind area	Front: 0.25 m^2 Side: 0.18 m^2	Front: 2.6 ft^2 Side: 1.9 ft^2
Wind load @ 161 km/hr (100 mph)	Front: 351 N Side: 280 N	Front: 79 lbf Side: 61 lbf

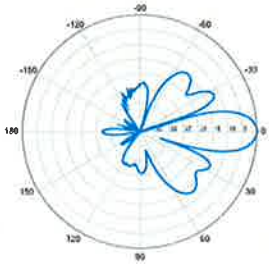
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting & Downtilt Bracket Kit	36210006	40-115 mm 1.57-4.5 in	4.1 kg 9 lbs
Concealment Configurations	For concealment configurations, order BXA-70080-4CF-EDIN-X-FP		

BXA-70080-4CF-EDIN-X



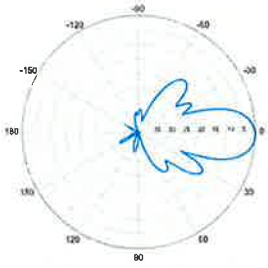
Horizontal | 750 MHz

BXA-70080-4CF-EDIN-0

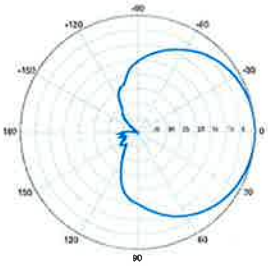


0° | Vertical | 750 MHz

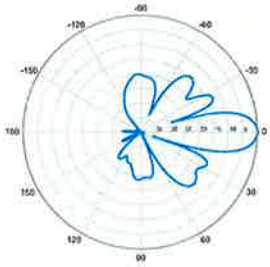
BXA-70080-4CF-EDIN-2



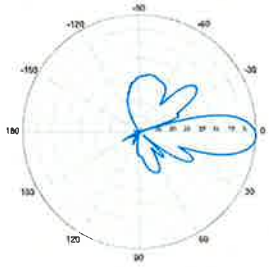
2° | Vertical | 750 MHz



Horizontal | 850 MHz



0° | Vertical | 850 MHz



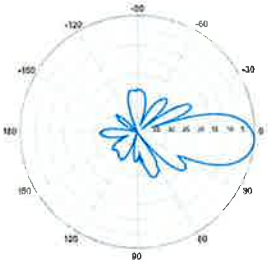
2° | Vertical | 850 MHz

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

BXA-70080-4CF-EDIN-X

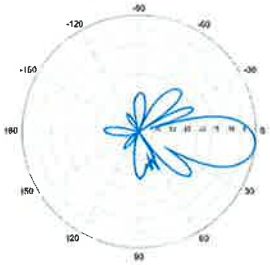
X-Pol | FET Panel | 80° | 12.0 dBd

BXA-70080-4CF-EDIN-4



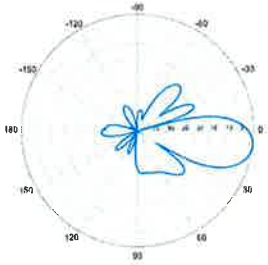
4° | Vertical | 750 MHz

BXA-70080-4CF-EDIN-6

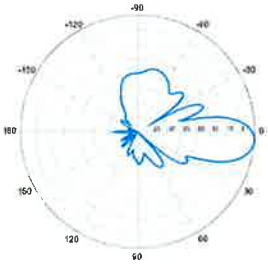


6° | Vertical | 750 MHz

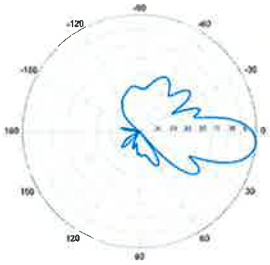
BXA-70080-4CF-EDIN-8



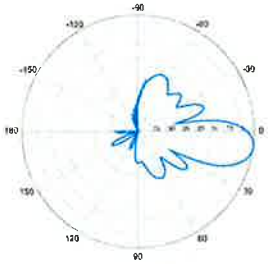
8° | Vertical | 750 MHz



4° | Vertical | 850 MHz

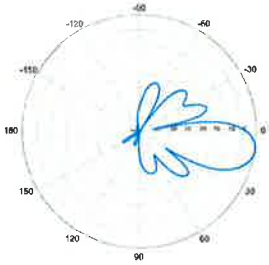


6° | Vertical | 850 MHz



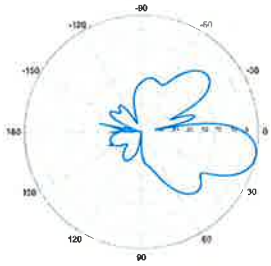
8° | Vertical | 850 MHz

BXA-70080-4CF-EDIN-10



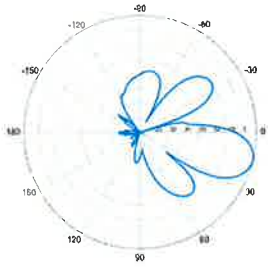
10° | Vertical | 750 MHz

BXA-70080-4CF-EDIN-12

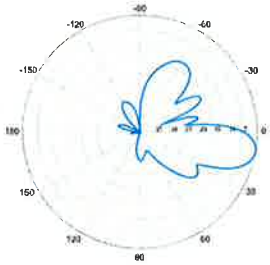


12° | Vertical | 750 MHz

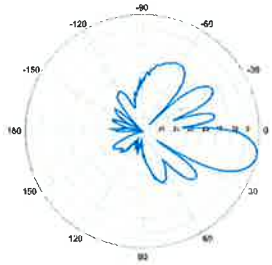
BXA-70080-4CF-EDIN-14



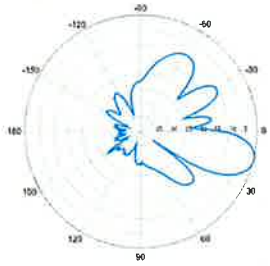
14° | Vertical | 750 MHz



10° | Vertical | 850 MHz



12° | Vertical | 850 MHz



14° | Vertical | 850 MHz

SINGLE-BAND PANEL ANTENNA

BROADBAND 1700-2170 MHZ

MGD3-800TX

1710-1880	1850-1990	1920-2170
H66° V7.2°	H64° V6.6°	H63° V6.3°
Fixed Tilt 0°2,°4,°6,°	Fixed Tilt 0°2,°4,°6,°	Fixed Tilt 0°2,°4,°6,°

ELECTRICAL SPECIFICATIONS

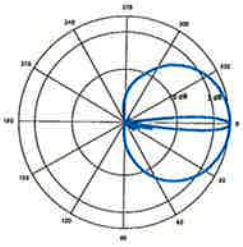
BROADBAND 1710-2170 MHz

Antenna Model	MGD3-800TX		
Polarization	± 45°		
Frequency	1710 - 1880	1850 - 1990	1920 - 2170
Horizontal Beamwidth	66°	64°	63°
Vertical Beamwidth	7.2°	6.6°	6.3°
Gain (dBi)	17.9	18	18.5
Vertical Electrical Tilt	FIXED 0°, 2°, 4°, 6°	FIXED 0°, 2°, 4°, 6°	FIXED 0°, 2°, 4°, 6°
Upper Sidelobe Suppression for the 1st lobe above main beam (dB)	20	20	20
Front-to-Back Ratio /Cpol @ ± 20° (dB)	> 30	> 30	> 30
VSWR	< 1.4 : 1	< 1.4 : 1	< 1.4 : 1
Cross Polar Ratio @ ± 60° (dB)	> 10	> 10	> 10
Isolation Between Ports (dB)	> 30	> 30	> 30
Maximum Power Per Input (W)	250		
Intermodulation (dBc)	< - 150		
Impedance (Ω)	50		

MECHANICAL SPECIFICATIONS

Connectors	2 X 7/16 Female
Connector Position	Bottom
Survival Wind Speed mph (km/h)	124 (200)
Front Windload lbs (N) @ 160 km/h	83 (370)
Lateral Windload lbs (N) @ 160 km/h	38 (170)
Radome Color	Grey, paintable
Temperature Range F (°C)	-67° to 140° (-55° to +60°)
Humidity	100%
Antenna Weight lbs (kg)	15.43 (7)
Antenna Dimension in (mm) H X W X D	53 X 6.29 X 3.54 (1340 X 160 X 90)

H&V Pattern



RYMSA Telecom Group (Headquarters)

RYMSA TELECOM GROUP

www.rymsawireless.com

RYMSA México

RYMSA Wireless U.S.A.

Alcatel-Lucent RRH2x40-07-U

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-07-U is a high-power, small form-factor Remote Radio Head (RRH) operating in the North American Digital Dividend / 700MHz frequency band (3GPP Band 13). The Alcatel-Lucent RRH2x40-07-U is designed with an eco-efficient approach, providing operators with the means to achieve high quality and capacity coverage with minimum site requirements.

A distributed eNodeB expands deployment options by using two components, a Base Band Unit (BBU) containing the digital assets and a separate RRH containing the radio-frequency (RF) elements. This modular design optimizes available space and allows the main components of an eNodeB to be installed separately, within the same site or several kilometres apart.

The Alcatel-Lucent RRH2x40-07-U is linked to the BBU by an optical-fiber connection carrying downlink and uplink digital radio signals along with operations, administration and maintenance (OA&M) information. The Alcatel-Lucent RRH2x40-07-U has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to two-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 10 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-07-U is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-07-U installation, providing more flexible site selection and improved network quality along with greatly reduced installation time and costs.

Fast, low-cost installation and deployment

The Alcatel-Lucent RRH2x40-07-U is a zero-footprint solution and operates noise-free, simplifying negotiations with site property owners and minimizing environmental impacts. Installation can easily be done by a single person because the Alcatel-Lucent RRH2x40-07-U is compact and weights less than 23 kg (50 lb), eliminating the need for a crane to hoist the BTS cabinet to the rooftop. A site can be in operation in less than one day — a fraction of the time required for a traditional BTS.

Excellent RF performance

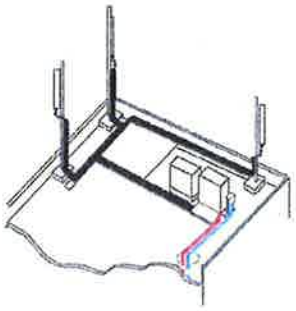
Because of its small size and weight, the Alcatel-Lucent RRH2x40-07-U can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-07-U where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation costs are reduced or eliminated, and there is no need for a Tower Mounted Amplifier (TMA) because losses introduced by the RF feeder are greatly reduced. The Alcatel-Lucent RRH2x40-07-U provides more RF power while at the same time consuming less electricity.

Features

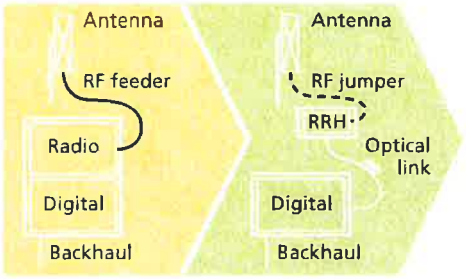
- Zero-footprint deployment
- Easy installation, with a lightweight unit can be carried and set up by one person
- Optimized RF power, with flexible site selection and elimination of a TMA
- Convection-cooled (fanless), noise-free, and heaterless unit
- Best-in-class power efficiency, with significantly reduced energy consumption

Benefits

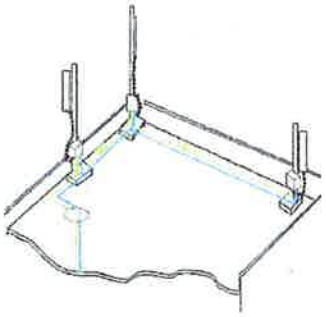
- Leverages existing real estate with lower site costs
- Reduces installation costs, with fewer installation materials and simplified logistics
- Decreases power costs and minimizes environmental impacts, with the potential for eco-sustainable power options
- Improves RF performance and adds flexibility to network planning



Macro



RRH for space-constrained cell sites



Distributed

Technical specifications

Physical dimensions

- Height: 390 mm (15.4 in.)
- Width: 380 mm (15 in.)
- Depth: 210 mm (8.2 in.)
- Weight (without mounting kit): less than 23 kg (50 lb)

Power

- Power supply: -48V

Operating environment

- Outdoor temperature range:
  - ¬ With solar load: -40°C to +50°C (-40°F to +122°F)
  - ¬ Without solar load: -40°C to +55°C (-40°F to +131°F)
- Passive convection cooling (no fans)
- Enclosure protection
  - ¬ IP65 (International Protection rating)

RF characteristics

- Frequency band: 700 MHz; 3GPP Band 13
- Bandwidth: up to 10 MHz
- RF output power at antenna port:
  - ¬ 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way
- Noise figure: below 2.5 dB typical
- ALD features
  - ¬ TMA
  - ¬ Remote electrical tilt (RET) support (AISG v2.0)

Optical characteristics

Type/number of fibers

- Up to 3.12 Gb/s line bit rate
- Single-mode variant
  - ¬ One SM fiber (9/125 µm) per RRH2x, carrying UL and DL using CWDM (at 1550/1310 nm)
- Multi-mode variant
  - ¬ Two MM fibers (50/125 µm) per RRH2x: one carrying UL, the other carrying DL (at 850 nm)

Optical fiber length

- Up to 500 m (0.31 mi), using MM fiber
- Up to 20 km (12.43 mi), using SM fiber

Alarms and ports

- Six external alarms
- Two optical ports to support daisy-chaining

Alcatel·Lucent

Product Data Sheet HB158-1-08U8-S8J18

HYBRIFLEX™ RRH Hybrid Feeder Cabling Solution, 1-5/8", Single-Mode Fiber

Product Description

RFS' HYBRIFLEX Remote Radio Head (RRH) hybrid feeder cabling solution combines optical fiber and DC power for RRHs in a single lightweight aluminum corrugated cable, making it the world's most innovative solution for RRH deployments.

It was developed to reduce installation complexity and costs at Cellular sites. HYBRIFLEX allows mobile operators deploying an RRH architecture to standardize the RRH installation process and eliminate the need for and cost of cable grounding. HYBRIFLEX combines optical fiber (multi-mode or single-mode) and power in a single corrugated cable. It eliminates the need for junction boxes and can connect multiple RRHs with a single feeder. Standard RFS CELLFLEX® accessories can be used with HYBRIFLEX cable. Both pre-connectorized and on-site options are available.

Figure 1: HYBRIFLEX Series

Features/Benefits

- Aluminum corrugated armor with outstanding bending characteristics – minimizes installation time and enables mechanical protection and shielding
- Same accessories as 1 5/8" coaxial cable
- Outer conductor grounding – Eliminates typical grounding requirements and saves on installation costs
- Lightweight solution and compact design – Decreases tower loading
- Robust cabling – Eliminates need for expensive cable trays and ducts
- Installation of tight bundled fiber optic cable pairs directly to the RRH – Reduces CAPEX and wind load by eliminating need for interconnection
- Optical fiber and power cables housed in single corrugated cable – Saves CAPEX by standardizing RRH cable installation and reducing installation requirements
- Outdoor polyethylene jacket – Ensures long-lasting cable protection

Technical Specifications

Outer Conductor Armor	Corrugated Aluminum	[mm (in)]	46.5 (1.83)
Jacket	Polyethylene, PE	[mm (in)]	50.3 (1.98)
UV-Protection	Individual and External Jacket		Yes
Weight, Approximate		[kg/m (lb/ft)]	1.9 (1.30)
Minimum Bending Radius, Single Bending		[mm (in)]	200 (8)
Minimum Bending Radius, Repeated Bending		[mm (in)]	500 (20)
Recommended/Maximum Clamp Spacing		[m (ft)]	1.0 / 1.2 (3.25 / 4.0)
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	068 (0.205)
DC-Resistance Power Cable, 8.4mm²(8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Version			Single-mode OM3
Quantity, Fiber Count			16 (8 pairs)
Core/Clad		[µm]	50/125
Primary Coating (Acrylate)		[µm]	245
Buffer Diameter, Nominal		[µm]	900
Secondary Protection, Jacket, Nominal		[mm (in)]	2.0 (0.08)
Minimum Bending Radius		[mm (in)]	104 (4.1)
Insertion Loss @ wavelength 850nm		dB/km	3.0
Insertion Loss @ wavelength 1310nm		dB/km	1.0
Standards (Meets or exceeds)			UL94-V0, UL1666 RoHS Compliant
Size (Power)		[mm² (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm² (AWG)]	0.8 (18)
Quantity, Wire Count (Alarm)			4 (2 pairs)
Type			UV protected
Strands			19
Primary Jacket Diameter, Nominal		[mm (in)]	6.8 (0.27)
Standards (Meets or exceeds)			NFPA 130, ICEA S-99-689 UL Type XHHW-2, UL 44 UL-LS Limited Smoke, UL VW-1 IEEE-383 (1974), IEEE1202/FT4 RoHS Compliant
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to149)

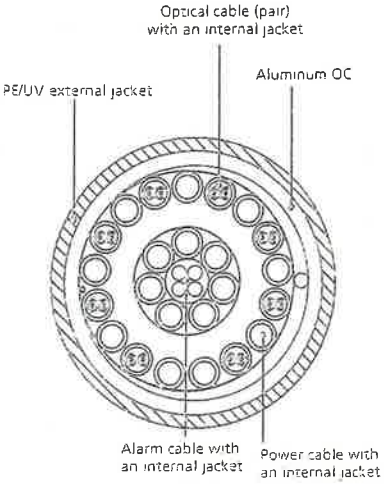


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Woddbridge S								
Tower Height: 150Ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Nextel	9	100	117	0.0236	851	0.5673	4.17%	
*Sprint CDMA/LTE	2	693	153.4	0.0212	1900	1.0000	2.12%	
*Sprint CDMA/LTE	1	390	153.4	0.0060	850	0.5667	1.05%	
*Pocket (now MetroPCS)	3	631	138	0.0357	2130	1.0000	3.57%	
*AT&T UMTS	1	500	102	0.0173	880	0.5867	2.95%	
*AT&T UMTS	1	500	102	0.0173	1900	1.0000	1.73%	
*AT&T GSM	6	296	102	0.0614	880	0.5867	10.46%	
*AT&T GSM	6	427	102	0.0885	1930	1.0000	8.85%	
*AT&T LTE	1	500	102	0.0173	740	0.4933	3.50%	
Verizon	**7**	**326**	**127**	**0.0509**	**1970**	**1.0000**	**5.09%**	
Verizon	**9**	**283**	**127**	**0.0568**	**869**	**0.5793**	**9.80%**	
Verizon	**1**	**1626**	**127**	**0.0362**	**2145**	**1.0000**	**3.62%**	
Verizon	**1**	**695**	**127**	**0.0155**	**698**	**0.4653**	**3.33%**	
								60.25%
* Source: Siting Council								

ATTACHMENT 3

PAUL J. FORD AND COMPANY
STRUCTURAL ENGINEERS
250 East Broad Street • Suite 600 • Columbus, Ohio 43215-3708

Date: **October 08, 2013**

Veronica Harris
Crown Castle USA Inc.
1200 McArthur Blvd
Mahwah, NJ 07430
201.236.9094

Paul J. Ford and Company
250 E. Broad Street, Suite 600
Columbus, OH 43215
614.221.6679
jmeinerding@pjfweb.com

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Number:	N/A
	Carrier Site Name:	WOODBRIDGE SOUTH
Crown Castle Designation:	**Crown Castle BU Number:**	876315
	Crown Castle Site Name:	OAK LANE CC, INC. TOWER (SSUSA)
	Crown Castle JDE Job Number:	243743
	Crown Castle Work Order Number:	658675
	Crown Castle Application Number:	195979 Rev. 3
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37513-2197 R1
Site Data:	**1114 Johnson Rd, Woodbridge, New Haven County, CT** **Latitude *41° 19' 0.6"*, Longitude *-73° 0' 41.7"*** **150 Foot - Monopole Tower**	

Dear Veronica Harris,

Paul J. Ford and Company is pleased to submit this **"Structural Analysis Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 583852, in accordance with application 195979, revision 3.

The purpose of the analysis is to determine acceptability of the tower stress level. Based on our analysis we have determined the tower stress level for the structure and foundation, under the following load case, to be:

LC4.7: Modified Structure w/ Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

All modifications and equipment proposed in this report shall be installed in accordance with the referenced drawings for the determined available structural capacity to be effective.

We at *Paul J. Ford and Company* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Joey Meinerding, E.I.
Structural Designer

tnxTower Report - version 6.1.3.1

OCT 0 8 2013

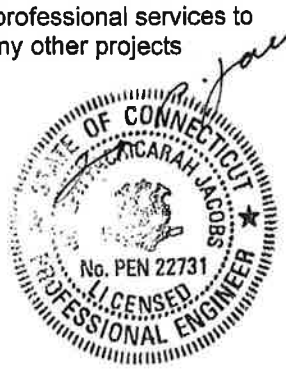


TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 150 ft. Monopole tower designed by SUMMIT in February of 1998. The tower was originally designed for a wind speed of 90 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

The structural analysis was performed for this tower in accordance with the requirements of the 2005 Connecticut Building Code and the TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 85 mph with no ice, 37.6 mph with 0.75 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
126.0	126.0	1	rfs celwave	TMA-DB-T1-6Z-8AB-0Z	--	--	--
		1	tower mounts	Side Arm Mount [SO 102-1]			
124.0	126.0	3	alcatel lucent	RRH2X40-AWS	1	1-5/8	--
		1	antel	BXA-70080/4CF w/ Mount Pipe			
		2	antel	BXA-80063/4CF w/ Mount Pipe			
		3	powerwave technologies	P65.16.XL.2 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		3	rymsa wireless	MG D3-800TV w/ Mount Pipe			
		3	rymsa wireless	MG D3-800Tx w/ Mount Pipe			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
150.0	156.0	1	rfs celwave	201-7	1	1-1/4	1
	153.0	6	decibel	DB980H90E-M w/ Mount Pipe	6	1-5/8	3
		3	alcatel lucent	1900MHz RRH (65MHz)	3	1-1/4	2
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		3	alcatel lucent	800MHZ RRH			
		9	rfs celwave	ACU-A20-N			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe			
	150.0	1	tower mounts	Handrail Kit [NA 507-1]			
		1	tower mounts	Platform Mount [LP 403-1]	--	--	1

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
138.0	138.0	3	rfs celwave	APXV18-206517S-C w/ Mount Pipe	6	1-5/8	1
		1	tower mounts	Pipe Mount [PM 602-3]			
124.0	126.0	6	decibel	DB844H90E-SX w/ Mount Pipe	--	--	3
		6	decibel	DB948F85E-M w/ Mount Pipe			
		1	gps	GPS_A	12	1-5/8	1
	124.0	1	tower mounts	Platform Mount [LP 403-1]	1	1/2	
117.0	118.0	12	decibel	DB844H90E-XY w/ Mount Pipe	12	1-1/4	1
	117.0	1	tower mounts	Platform Mount [LP 403-1]			
102.0	107.0	1	gps	GPS_A	1 2 1 12	3/8 5/8 1/2 1-5/8	1
	102.0	3	ericsson	RRUS-11			
		3	powerwave technologies	7770.00 w/ Mount Pipe			
		6	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		6	powerwave technologies	TT19-08BP111-001			
		1	raycap	DC6-48-60-18-8F			
		1	tower mounts	Platform Mount [LP 403-1]			
86.0	87.0	2	radiall larsen	GPS0015	2	1/2	1
	86.0	2	tower mounts	Side Arm Mount [SO 701-1]			
82.0	82.0	1	tower mounts	Side Arm Mount [SO 701-1]	1	1/2	1
	81.0	1	lucent	KS24019-L112A			

Notes:
1) Existing Equipment
2) Reserved Equipment
3) Equipment To Be Removed

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	CHA, 5835.07.15, 12/17/1996	2134233	CCISITES
4-POST-MODIFICATION INSPECTION	B&T, 79751, 04/03/2009	2414121	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PJF, 29297-080, 02/23/1998	2112237	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PJF/Summit, 2249, 02/23/1998	2134236	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 29201-0398, 10/25/2001	2414123	CCISITES
4-TOWER PROPOSED REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37512-1566 BP, 08/24/2012	3313096	CCISITES

3.1) Analysis Method

tnxTower (version 6.1.3.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) The existing reinforcing referenced above will be removed in accordance to the referenced proposed modification drawings.
5) Monopole will be reinforced in conformance to the referenced proposed modification drawings.

This analysis may be affected if any assumptions are not valid or have been made in error. Paul J. Ford and Company should be notified to determine the effect on the structural integrity of the tower.

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	150 - 102.5	Pole	TP30.314x22x0.25	1	-9.13	1136.03	62.4	Pass
L2	102.5 - 69	Pole	TP35.6777x29.1576x0.3125	2	-17.81	1850.02	97.5	Pass
L3	69 - 66.75	Pole	TP36.0716x35.6777x0.3963	3	-18.31	2301.21	81.4	Pass
L4	66.75 - 53	Pole	TP37.8532x36.0716x0.375	4	-21.29	2352.66	96.7	Pass
L5	53 - 32.25	Pole	TP41.485x37.8532x0.4493	5	-25.28	2940.46	91.2	Pass
L6	32.25 - 0	Pole	TP46.38x39.6674x0.5022	6	-37.69	3764.93	96.5	Pass
							Summary	
						Pole (L2)	97.5	Pass
						RATING =	97.5	Pass

Table 5 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	94.2	Pass
1	Base Plate	0	81.2	Pass
1	Base Foundation Structural Steel	0	83.3	Pass
1	Base Foundation Soil Interaction	0	26.3	Pass

Structure Rating (max from all components) =	97.5%

Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

Install referenced proposed modification drawings.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

There is a pole section.
This tower is designed using the TIA/EIA-222-F standard.
The following design criteria apply:

1) Tower is located in New Haven County, Connecticut.
2) Basic wind speed of 85 mph.
3) Nominal ice thickness of 0.7500 in.
4) Ice density of 56 pcf.
5) A wind speed of 38 mph is used in combination with ice.
6) Temperature drop of 50 °F.
7) Deflections calculated using a wind speed of 50 mph.
8) A non-linear (P-delta) analysis was used.
9) Pressures are calculated at each section.
10) Stress ratio used in pole design is 1.333.
11) Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

Consider Moments - Legs	Distribute Leg Loads As Uniform	Treat Feedline Bundles As Cylinder
Consider Moments - Horizontals	Assume Legs Pinned	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Calculate Redundant Bracing Forces
Use Moment Magnification	√ Use Clear Spans For Wind Area	Ignore Redundant Members in FEA
√ Use Code Stress Ratios	Use Clear Spans For KL/r	SR Leg Bolts Resist Compression
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	All Leg Panels Have Same Allowable
Escalate Ice	√ Bypass Mast Stability Checks	Offset Girt At Foundation
Always Use Max Kz	√ Use Azimuth Dish Coefficients	√ Consider Feedline Torque
Use Special Wind Profile	√ Project Wind Area of Appurt.	Include Angle Block Shear Check
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Poles
Leg Bolts Are At Top Of Section	SR Members Have Cut Ends	√ Include Shear-Torsion Interaction
Secondary Horizontal Braces Leg	Sort Capacity Reports By Component	Always Use Sub-Critical Flow
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Use Top Mounted Sockets
Add IBC .6D+W Combination	Use TIA-222-G Tension Splice Capacity Exemption	

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	150.00-102.50	47.50	3.75	12	22.0000	30.3140	0.2500	1.0000	A607-60 (60 ksi)
L2	102.50-69.00	37.25	0.00	12	29.1576	35.6777	0.3125	1.2500	A607-65 (65 ksi)
L3	69.00-66.75	2.25	0.00	12	35.6777	36.0716	0.3963	1.5852	Reinf 63.20 ksi (63 ksi)
L4	66.75-53.00	13.75	0.00	12	36.0716	37.8532	0.3750	1.5000	A607-65 (65 ksi)
L5	53.00-32.25	20.75	5.25	12	37.8532	41.4850	0.4493	1.7974	Reinf 63.34 ksi (63 ksi)
L6	32.25-0.00	37.50		12	39.6674	46.3800	0.5022	2.0088	Reinf 63.45 ksi (63 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	22.7761	17.5087	1057.2060	7.7865	11.3960	92.7699	2142.1860	8.6173	5.2260	20.904
	31.3834	24.2015	2792.0431	10.7629	15.7027	177.8071	5657.4363	11.9113	7.4542	29.817
L2	30.8657	29.0254	3082.5449	10.3266	15.1037	204.0927	6246.0718	14.2854	6.9767	22.326
	36.9363	35.5863	5680.9592	12.6608	18.4811	307.3934	11511.163 6	17.5145	8.7241	27.917
L3	36.9363	45.0233	7153.4474	12.6308	18.4811	387.0689	14494.823 9	22.1591	8.4995	21.447
	37.3440	45.5258	7395.6831	12.7717	18.6851	395.8070	14985.659 0	22.4064	8.6051	21.713
L4	37.3440	43.1036	7010.5575	12.7794	18.6851	375.1956	14205.290 1	21.2143	8.6622	23.099
	39.1885	45.2549	8113.5256	13.4172	19.6080	413.7873	16440.202 5	22.2731	9.1397	24.372
L5	39.1885	54.1187	9664.2136	13.3906	19.6080	492.8719	19582.316 8	26.6356	8.9404	19.897
	42.9484	59.3735	12761.483 7	14.6908	21.4892	593.8549	25858.225 9	29.2218	9.9137	22.063
L6	42.0397	63.3347	12400.208 9	14.0211	20.5477	603.4831	25126.185 1	31.1714	9.2849	18.488
	48.0161	74.1897	19931.255 0	16.4242	24.0248	829.6103	40386.126 3	36.5139	11.0839	22.07

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 150.00-102.50				1	1	1		
L2 102.50-69.00				1	1	1		
L3 69.00-66.75				1	1	1		
L4 66.75-53.00				1	1	1		
L5 53.00-32.25				1	1	1		
L6 32.25-0.00				1	1	1		

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
LDF6-50A(1-1/4")	C	No	Inside Pole	150.00 - 0.00	1	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	150.00 - 0.00	2	No Ice	0.00	1.20
						1/2" Ice	0.00	2.45
						1" Ice	0.00	4.30
HB114-1-0813U4-M5J(1 1/4")	C	No	CaAa (Out Of Face)	150.00 - 0.00	1	No Ice	0.15	1.20
						1/2" Ice	0.25	2.45
						1" Ice	0.35	4.30
**********								
CR 50 1873(1-5/8")	C	No	Inside Pole	138.00 - 0.00	6	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
**********								
561(1-5/8")	C	No	Inside Pole	124.00 - 0.00	12	No Ice	0.00	1.35
						1/2" Ice	0.00	1.35
						1" Ice	0.00	1.35
LDF4-50A(1/2")	C	No	Inside Pole	124.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
HB158-1-08U8-S8J18(1-5/8)	C	No	Inside Pole	124.00 - 0.00	1	No Ice	0.00	1.30
						1/2" Ice	0.00	1.30

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
						1" Ice	0.00	1.30
**********								
LDF6-50A(1-1/4")	C	No	Inside Pole	117.00 - 0.00	12	No Ice	0.00	0.66
						1/2" Ice	0.00	0.66
						1" Ice	0.00	0.66
**********								
LDF4-50A(1/2")	C	No	Inside Pole	102.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
LDF7-50A(1-5/8")	C	No	Inside Pole	102.00 - 0.00	12	No Ice	0.00	0.82
						1/2" Ice	0.00	0.82
						1" Ice	0.00	0.82
FB-L98B-002-50000(3/8)	C	No	Inside Pole	102.00 - 0.00	1	No Ice	0.00	0.06
						1/2" Ice	0.00	0.06
						1" Ice	0.00	0.06
WR-VG82ST-BRDA(5/8")	C	No	Inside Pole	102.00 - 0.00	2	No Ice	0.00	0.31
						1/2" Ice	0.00	0.31
						1" Ice	0.00	0.31
**********								
LDF4-50A(1/2")	C	No	Inside Pole	86.00 - 0.00	2	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
**********								
LDF4-50A(1/2")	C	No	Inside Pole	82.00 - 0.00	1	No Ice	0.00	0.15
						1/2" Ice	0.00	0.15
						1" Ice	0.00	0.15
**********								
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	54.25 - 0.00	1	No Ice	0.13	0.00
						1/2" Ice	0.24	0.00
						1" Ice	0.35	0.00
3/4" Flat Reinforcement	C	No	CaAa (Out Of Face)	70.25 - 64.75	1	No Ice	0.13	0.00
						1/2" Ice	0.24	0.00
						1" Ice	0.35	0.00

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-102.50	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	7.315	0.87
L2	102.50-69.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.315	1.53
L3	69.00-66.75	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.628	0.10
L4	66.75-53.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.524	0.63
L5	53.00-32.25	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.789	0.95
L6	32.25-0.00	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	8.998	1.48

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	150.00-102.50	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	14.440	1.18
L2	102.50-69.00	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	10.549	1.74
L3	69.00-66.75	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.340	0.12
L4	66.75-53.00	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	5.128	0.72
L5	53.00-32.25	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.360	1.09
L6	32.25-0.00	A	0.750	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	19.210	1.69

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	150.00-102.50	-0.1868	0.1079	-0.3300	0.1905
L2	102.50-69.00	-0.1953	0.1127	-0.3533	0.2040
L3	69.00-66.75	-0.3315	0.1914	-0.6235	0.3600
L4	66.75-53.00	-0.2249	0.1298	-0.4167	0.2406
L5	53.00-32.25	-0.3342	0.1930	-0.6353	0.3668
L6	32.25-0.00	-0.3365	0.1943	-0.6455	0.3727

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
201-7	A	From Leg	4.00 0.00 6.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	1.09 1.94 2.80	1.09 1.94 2.80	0.00 0.01 0.03
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.50 9.15 9.77	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.50 9.15 9.77	6.95 8.13 9.02	0.08 0.15 0.23
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	8.50 9.15 9.77	6.95 8.13 9.02	0.08 0.15 0.23
800MHZ RRH	A	From Leg	4.00 0.00 3.00	0.0000	150.00	No Ice 1/2" Ice 1" Ice	2.49 2.71 2.93	2.07 2.27 2.48	0.05 0.07 0.10
800MHZ RRH	B	From Leg	4.00	0.0000	150.00	No Ice	2.49	2.07	0.05

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.00			1/2" Ice	2.71	2.27	0.07
			3.00			1" Ice	2.93	2.48	0.10
800MHZ RRH	C	From Leg	4.00	0.0000	150.00	No Ice	2.49	2.07	0.05
			0.00			1/2" Ice	2.71	2.27	0.07
			3.00			1" Ice	2.93	2.48	0.10
1900MHz RRH (65MHz)	A	From Leg	4.00	0.0000	150.00	No Ice	2.70	2.77	0.06
			0.00			1/2" Ice	2.94	3.01	0.08
			3.00			1" Ice	3.18	3.26	0.11
1900MHz RRH (65MHz)	B	From Leg	4.00	0.0000	150.00	No Ice	2.70	2.77	0.06
			0.00			1/2" Ice	2.94	3.01	0.08
			3.00			1" Ice	3.18	3.26	0.11
1900MHz RRH (65MHz)	C	From Leg	4.00	0.0000	150.00	No Ice	2.70	2.77	0.06
			0.00			1/2" Ice	2.94	3.01	0.08
			3.00			1" Ice	3.18	3.26	0.11
(3) ACU-A20-N	A	From Leg	4.00	0.0000	150.00	No Ice	0.08	0.14	0.00
			0.00			1/2" Ice	0.12	0.19	0.00
			3.00			1" Ice	0.17	0.25	0.00
(3) ACU-A20-N	B	From Leg	4.00	0.0000	150.00	No Ice	0.08	0.14	0.00
			0.00			1/2" Ice	0.12	0.19	0.00
			3.00			1" Ice	0.17	0.25	0.00
(3) ACU-A20-N	C	From Leg	4.00	0.0000	150.00	No Ice	0.08	0.14	0.00
			0.00			1/2" Ice	0.12	0.19	0.00
			3.00			1" Ice	0.17	0.25	0.00
800 EXTERNAL NOTCH FILTER	A	From Leg	4.00	0.0000	150.00	No Ice	0.77	0.37	0.01
			0.00			1/2" Ice	0.89	0.46	0.02
			3.00			1" Ice	1.02	0.56	0.02
800 EXTERNAL NOTCH FILTER	B	From Leg	4.00	0.0000	150.00	No Ice	0.77	0.37	0.01
			0.00			1/2" Ice	0.89	0.46	0.02
			3.00			1" Ice	1.02	0.56	0.02
800 EXTERNAL NOTCH FILTER	C	From Leg	4.00	0.0000	150.00	No Ice	0.77	0.37	0.01
			0.00			1/2" Ice	0.89	0.46	0.02
			3.00			1" Ice	1.02	0.56	0.02
Handrail Kit [NA 507-1]	C	None		0.0000	150.00	No Ice	4.80	4.80	0.25
						1/2" Ice	6.70	6.70	0.29
						1" Ice	8.60	8.60	0.34
Platform Mount [LP 403-1]	C	None		0.0000	150.00	No Ice	18.85	18.85	1.50
						1/2" Ice	24.30	24.30	1.80
						1" Ice	29.75	29.75	2.09
**********									
APXV18-206517S-C w/ Mount Pipe	A	From Leg	1.00	0.0000	138.00	No Ice	5.40	4.70	0.05
			0.00			1/2" Ice	5.96	5.86	0.10
			0.00			1" Ice	6.48	6.73	0.15
APXV18-206517S-C w/ Mount Pipe	B	From Leg	1.00	0.0000	138.00	No Ice	5.40	4.70	0.05
			0.00			1/2" Ice	5.96	5.86	0.10
			0.00			1" Ice	6.48	6.73	0.15
APXV18-206517S-C w/ Mount Pipe	C	From Leg	1.00	0.0000	138.00	No Ice	5.40	4.70	0.05
			0.00			1/2" Ice	5.96	5.86	0.10
			0.00			1" Ice	6.48	6.73	0.15
Pipe Mount [PM 602-3]	C	None		0.0000	138.00	No Ice	7.68	7.68	0.28

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1/2" Ice	9.50 11.32	9.50 11.32	0.35 0.43
						1" Ice			
**********									
TMA-DB-T1-6Z-8AB-0Z	A	From Leg	2.00 0.00 0.00	0.0000	126.00	No Ice 1/2" Ice 1" Ice	5.60 5.92 6.24	2.33 2.56 2.79	0.04 0.08 0.12
Side Arm Mount [SO 102-1]	A	None		0.0000	126.00	No Ice 1/2" Ice 1" Ice	1.50 1.74 1.98	1.50 1.75 2.00	0.03 0.04 0.04
**********									
GPS_A	C	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	0.30 0.37 0.46	0.30 0.37 0.46	0.00 0.00 0.01
MG D3-800Tx w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.57 3.98 4.39	3.42 4.12 4.78	0.03 0.07 0.11
MG D3-800Tx w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.57 3.98 4.39	3.42 4.12 4.78	0.03 0.07 0.11
MG D3-800Tx w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.57 3.98 4.39	3.42 4.12 4.78	0.03 0.07 0.11
MG D3-800TV w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.57 3.98 4.39	3.42 4.12 4.78	0.04 0.07 0.11
MG D3-800TV w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.57 3.98 4.39	3.42 4.12 4.78	0.04 0.07 0.11
MG D3-800TV w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	3.57 3.98 4.39	3.42 4.12 4.78	0.04 0.07 0.11
P65.16.XL.2 w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.64 9.29 9.91	5.78 6.95 7.83	0.06 0.12 0.19
P65.16.XL.2 w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.64 9.29 9.91	5.78 6.95 7.83	0.06 0.12 0.19
P65.16.XL.2 w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	8.64 9.29 9.91	5.78 6.95 7.83	0.06 0.12 0.19
BXA-70080/4CF w/ Mount Pipe	A	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	5.44 5.89 6.35	4.00 4.61 5.25	0.03 0.08 0.13
BXA-80063/4CF w/ Mount Pipe	B	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	5.40 5.84 6.30	3.42 4.02 4.64	0.03 0.07 0.12
BXA-80063/4CF w/ Mount Pipe	C	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	5.40 5.84 6.30	3.42 4.02 4.64	0.03 0.07 0.12

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
RRH2X40-AWS	A	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	2.60 2.84 3.08	2.02 2.24 2.47	0.04 0.06 0.08
RRH2X40-AWS	B	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	2.60 2.84 3.08	2.02 2.24 2.47	0.04 0.06 0.08
RRH2X40-AWS	C	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	2.60 2.84 3.08	2.02 2.24 2.47	0.04 0.06 0.08
(2) FD9R6004/2C-3L	A	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.54	0.08 0.14 0.20	0.00 0.01 0.01
(2) FD9R6004/2C-3L	B	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.54	0.08 0.14 0.20	0.00 0.01 0.01
(2) FD9R6004/2C-3L	C	From Leg	4.00 0.00 2.00	0.0000	124.00	No Ice 1/2" Ice 1" Ice	0.37 0.45 0.54	0.08 0.14 0.20	0.00 0.01 0.01
Platform Mount [LP 403-1]	C	None		0.0000	124.00	No Ice 1/2" Ice 1" Ice	18.85 24.30 29.75	18.85 24.30 29.75	1.50 1.80 2.09
**********									
(4) DB844H90E-XY w/ Mount Pipe	A	From Leg	4.00 0.00 1.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice	3.30 3.69 4.12	4.92 5.60 6.28	0.03 0.07 0.12
(4) DB844H90E-XY w/ Mount Pipe	B	From Leg	4.00 0.00 1.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice	3.30 3.69 4.12	4.92 5.60 6.28	0.03 0.07 0.12
(4) DB844H90E-XY w/ Mount Pipe	C	From Leg	4.00 0.00 1.00	0.0000	117.00	No Ice 1/2" Ice 1" Ice	3.30 3.69 4.12	4.92 5.60 6.28	0.03 0.07 0.12
Platform Mount [LP 403-1]	C	None		0.0000	117.00	No Ice 1/2" Ice 1" Ice	18.85 24.30 29.75	18.85 24.30 29.75	1.50 1.80 2.09
**********									
7770.00 w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
7770.00 w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	6.12 6.63 7.13	4.25 5.01 5.71	0.06 0.10 0.16
(2) P65-16-XLH-RR w/ Mount Pipe	A	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	8.64 9.29 9.91	6.36 7.54 8.43	0.08 0.14 0.22
(2) P65-16-XLH-RR w/ Mount Pipe	B	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice	8.64 9.29 9.91	6.36 7.54 8.43	0.08 0.14 0.22

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
(2) P65-16-XLH-RR w/ Mount Pipe	C	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	8.64 9.29 9.91	6.36 7.54 8.43	0.08 0.14 0.22
GPS_A	B	From Leg	4.00 0.00 5.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	0.30 0.37 0.46	0.30 0.37 0.46	0.00 0.00 0.01
(2) TT19-08BP111-001	A	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	0.64 0.75 0.87	0.52 0.62 0.73	0.02 0.02 0.03
(2) TT19-08BP111-001	B	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	0.64 0.75 0.87	0.52 0.62 0.73	0.02 0.02 0.03
(2) TT19-08BP111-001	C	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	0.64 0.75 0.87	0.52 0.62 0.73	0.02 0.02 0.03
RRUS-11	A	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.74	1.37 1.55 1.74	0.05 0.07 0.09
RRUS-11	B	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.74	1.37 1.55 1.74	0.05 0.07 0.09
RRUS-11	C	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	3.25 3.49 3.74	1.37 1.55 1.74	0.05 0.07 0.09
DC6-48-60-18-8F	C	From Leg	4.00 0.00 0.00	0.0000	102.00	No Ice 1/2" Ice 1" Ice	2.57 2.80 3.04	2.57 2.80 3.04	0.02 0.04 0.07
Platform Mount [LP 403-1]	C	None		0.0000	102.00	No Ice 1/2" Ice 1" Ice	18.85 24.30 29.75	18.85 24.30 29.75	1.50 1.80 2.09
**********									
GPS0015	A	From Leg	3.00 0.00 1.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.21 0.27 0.34	0.21 0.27 0.34	0.00 0.00 0.01
GPS0015	C	From Leg	3.00 0.00 1.00	0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.21 0.27 0.34	0.21 0.27 0.34	0.00 0.00 0.01
Side Arm Mount [SO 701-1]	A	None		0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
Side Arm Mount [SO 701-1]	C	None		0.0000	86.00	No Ice 1/2" Ice 1" Ice	0.85 1.14 1.43	1.67 2.34 3.01	0.07 0.08 0.09
**********									
KS24019-L112A	A	From Leg	3.00 0.00 -1.00	0.0000	82.00	No Ice 1/2" Ice 1" Ice	0.16 0.22 0.30	0.16 0.22 0.30	0.01 0.01 0.01
Side Arm Mount [SO 701-1]	A	None		0.0000	82.00	No Ice 1/2"	0.85 1.14	1.67 2.34	0.07 0.08

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 K
						Ice 1" Ice	1.43	3.01	0.09

Tower Pressures - No Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 150.00-102.50	125.31	1.464	27	103.538	A	0.000	103.538	103.538	100.00	0.000	0.000
					B	0.000	103.538		100.00	0.000	0.000
					C	0.000	103.538		100.00	0.000	7.315
L2 102.50-69.00	85.48	1.313	24	91.416	A	0.000	91.416	91.416	100.00	0.000	0.000
					B	0.000	91.416		100.00	0.000	0.000
					C	0.000	91.416		100.00	0.000	5.315
L3 69.00-66.75	67.87	1.229	23	6.726	A	0.000	6.726	6.726	100.00	0.000	0.000
					B	0.000	6.726		100.00	0.000	0.000
					C	0.000	6.726		100.00	0.000	0.628
L4 66.75-53.00	59.82	1.185	22	42.353	A	0.000	42.353	42.353	100.00	0.000	0.000
					B	0.000	42.353		100.00	0.000	0.000
					C	0.000	42.353		100.00	0.000	2.524
L5 53.00-32.25	42.47	1.075	20	68.594	A	0.000	68.594	68.594	100.00	0.000	0.000
					B	0.000	68.594		100.00	0.000	0.000
					C	0.000	68.594		100.00	0.000	5.789
L6 32.25-0.00	15.77	1	18	116.889	A	0.000	116.889	116.889	100.00	0.000	0.000
					B	0.000	116.889		100.00	0.000	0.000
					C	0.000	116.889		100.00	0.000	8.998

Tower Pressure - With Ice

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft^2	Face	A_F ft^2	A_R ft^2	A_{leg} ft^2	Leg %	C_AA_A In Face ft^2	C_AA_A Out Face ft^2
L1 150.00-102.50	125.31	1.464	5	0.7500	109.476	A	0.000	109.476	109.476	100.00	0.000	0.000
						B	0.000	109.476		100.00	0.000	0.000
						C	0.000	109.476		100.00	0.000	14.440
L2 102.50-69.00	85.48	1.313	5	0.7500	95.603	A	0.000	95.603	95.603	100.00	0.000	0.000
						B	0.000	95.603		100.00	0.000	0.000
						C	0.000	95.603		100.00	0.000	10.549
L3 69.00-66.75	67.87	1.229	4	0.7500	7.008	A	0.000	7.008	7.008	100.00	0.000	0.000
						B	0.000	7.008		100.00	0.000	0.000
						C	0.000	7.008		100.00	0.000	1.340
L4 66.75-53.00	59.82	1.185	4	0.7500	44.071	A	0.000	44.071	44.071	100.00	0.000	0.000
						B	0.000	44.071		100.00	0.000	0.000
						C	0.000	44.071		100.00	0.000	5.128
L5 53.00-32.25	42.47	1.075	4	0.7500	71.188	A	0.000	71.188	71.188	100.00	0.000	0.000
						B	0.000	71.188		100.00	0.000	0.000
						C	0.000	71.188		100.00	0.000	12.360
L6 32.25-0.00	15.77	1	4	0.7500	120.920	A	0.000	120.920	120.920	100.00	0.000	0.000
						B	0.000	120.920		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	120.920		100.00	0.000	19.210

Tower Pressure - Service

G_H = 1.690

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 150.00-102.50	125.31	1.464	9	103.538	A	0.000	103.538	103.538	100.00	0.000	0.000
					B	0.000	103.538		100.00	0.000	0.000
					C	0.000	103.538		100.00	0.000	7.315
L2 102.50-69.00	85.48	1.313	8	91.416	A	0.000	91.416	91.416	100.00	0.000	0.000
					B	0.000	91.416		100.00	0.000	0.000
					C	0.000	91.416		100.00	0.000	5.315
L3 69.00-66.75	67.87	1.229	8	6.726	A	0.000	6.726	6.726	100.00	0.000	0.000
					B	0.000	6.726		100.00	0.000	0.000
					C	0.000	6.726		100.00	0.000	0.628
L4 66.75-53.00	59.82	1.185	8	42.353	A	0.000	42.353	42.353	100.00	0.000	0.000
					B	0.000	42.353		100.00	0.000	0.000
					C	0.000	42.353		100.00	0.000	2.524
L5 53.00-32.25	42.47	1.075	7	68.594	A	0.000	68.594	68.594	100.00	0.000	0.000
					B	0.000	68.594		100.00	0.000	0.000
					C	0.000	68.594		100.00	0.000	5.789
L6 32.25-0.00	15.77	1	6	116.889	A	0.000	116.889	116.889	100.00	0.000	0.000
					B	0.000	116.889		100.00	0.000	0.000
					C	0.000	116.889		100.00	0.000	8.998

Load Combinations

Comb. No.	Description
1	Dead Only
2	Dead+Wind 0 deg - No Ice
3	Dead+Wind 30 deg - No Ice
4	Dead+Wind 60 deg - No Ice
5	Dead+Wind 90 deg - No Ice
6	Dead+Wind 120 deg - No Ice
7	Dead+Wind 150 deg - No Ice
8	Dead+Wind 180 deg - No Ice
9	Dead+Wind 210 deg - No Ice
10	Dead+Wind 240 deg - No Ice
11	Dead+Wind 270 deg - No Ice
12	Dead+Wind 300 deg - No Ice
13	Dead+Wind 330 deg - No Ice
14	Dead+Ice+Temp
15	Dead+Wind 0 deg+Ice+Temp
16	Dead+Wind 30 deg+Ice+Temp
17	Dead+Wind 60 deg+Ice+Temp
18	Dead+Wind 90 deg+Ice+Temp
19	Dead+Wind 120 deg+Ice+Temp
20	Dead+Wind 150 deg+Ice+Temp
21	Dead+Wind 180 deg+Ice+Temp
22	Dead+Wind 210 deg+Ice+Temp
23	Dead+Wind 240 deg+Ice+Temp
24	Dead+Wind 270 deg+Ice+Temp
25	Dead+Wind 300 deg+Ice+Temp
26	Dead+Wind 330 deg+Ice+Temp
27	Dead+Wind 0 deg - Service
28	Dead+Wind 30 deg - Service

Comb. No.	Description
29	Dead+Wind 60 deg - Service
30	Dead+Wind 90 deg - Service
31	Dead+Wind 120 deg - Service
32	Dead+Wind 150 deg - Service
33	Dead+Wind 180 deg - Service
34	Dead+Wind 210 deg - Service
35	Dead+Wind 240 deg - Service
36	Dead+Wind 270 deg - Service
37	Dead+Wind 300 deg - Service
38	Dead+Wind 330 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	150 - 102.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-16.23	0.46	0.19
			Max. Mx	11	-9.15	416.12	0.01
			Max. My	2	-9.13	0.17	418.61
			Max. Vy	11	-17.01	416.12	0.01
			Max. Vx	8	17.13	0.17	-418.50
			Max. Torque	5			0.66
L2	102.5 - 69	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-27.78	1.13	-0.17
			Max. Mx	11	-17.82	1277.10	-0.08
			Max. My	8	-17.81	0.41	-1284.22
			Max. Vy	11	-25.95	1277.10	-0.08
			Max. Vx	8	26.08	0.41	-1284.22
			Max. Torque	9			-0.75
L3	69 - 66.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-28.32	1.16	-0.19
			Max. Mx	11	-18.32	1335.78	-0.08
			Max. My	8	-18.31	0.43	-1343.18
			Max. Vy	11	-26.22	1335.78	-0.08
			Max. Vx	8	26.35	0.43	-1343.18
			Max. Torque	9			-0.75
L4	66.75 - 53	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-31.60	1.34	-0.30
			Max. Mx	11	-21.30	1707.08	-0.12
			Max. My	8	-21.29	0.50	-1716.25
			Max. Vy	11	-27.80	1707.08	-0.12
			Max. Vx	8	27.93	0.50	-1716.25
			Max. Torque	9			-0.77
L5	53 - 32.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-35.95	1.57	-0.43
			Max. Mx	11	-25.29	2151.01	-0.16
			Max. My	8	-25.28	0.58	-2162.15
			Max. Vy	11	-29.50	2151.01	-0.16
			Max. Vx	8	29.63	0.58	-2162.15
			Max. Torque	9			-0.80
L6	32.25 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	14	-49.29	2.15	-0.77
			Max. Mx	11	-37.69	3333.46	-0.29
			Max. My	8	-37.69	0.79	-3349.31
			Max. Vy	11	-33.47	3333.46	-0.29
			Max. Vx	8	33.60	0.79	-3349.31
			Max. Torque	2			0.90

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	14	49.29	-0.00	0.00
	Max. H_x	11	37.71	33.44	0.00
	Max. H_z	2	37.71	0.00	33.57
	Max. M_x	2	3348.74	0.00	33.57
	Max. M_z	5	3331.87	-33.44	0.00
	Max. Torsion	2	0.90	0.00	33.57
	Min. Vert	8	37.71	0.00	-33.57
	Min. H_x	5	37.71	-33.44	0.00
	Min. H_z	8	37.71	0.00	-33.57
	Min. M_x	8	-3349.31	0.00	-33.57
	Min. M_z	11	-3333.46	33.44	0.00
	Min. Torsion	8	-0.90	0.00	-33.57

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	37.71	-0.00	0.00	0.27	0.77	0.00
Dead+Wind 0 deg - No Ice	37.71	-0.00	-33.57	-3348.74	0.79	-0.90
Dead+Wind 30 deg - No Ice	37.71	16.72	-29.07	-2900.30	-1665.65	-0.87
Dead+Wind 60 deg - No Ice	37.71	28.97	-16.79	-1674.39	-2885.60	-0.61
Dead+Wind 90 deg - No Ice	37.71	33.44	-0.00	0.29	-3331.87	-0.19
Dead+Wind 120 deg - No Ice	37.71	28.97	16.79	1674.95	-2885.59	0.29
Dead+Wind 150 deg - No Ice	37.71	16.72	29.07	2900.87	-1665.65	0.68
Dead+Wind 180 deg - No Ice	37.71	-0.00	33.57	3349.31	0.79	0.90
Dead+Wind 210 deg - No Ice	37.71	-16.72	29.07	2900.87	1667.24	0.87
Dead+Wind 240 deg - No Ice	37.71	-28.97	16.79	1674.96	2887.19	0.61
Dead+Wind 270 deg - No Ice	37.71	-33.44	-0.00	0.29	3333.46	0.19
Dead+Wind 300 deg - No Ice	37.71	-28.97	-16.79	-1674.39	2887.19	-0.29
Dead+Wind 330 deg - No Ice	37.71	-16.72	-29.07	-2900.31	1667.24	-0.68
Dead+Ice+Temp	49.29	0.00	-0.00	0.77	2.15	0.00
Dead+Wind 0 deg+Ice+Temp	49.29	0.00	-7.75	-801.61	2.30	-0.27
Dead+Wind 30 deg+Ice+Temp	49.29	3.86	-6.71	-694.11	-397.20	-0.26
Dead+Wind 60 deg+Ice+Temp	49.29	6.69	-3.88	-400.41	-689.66	-0.18
Dead+Wind 90 deg+Ice+Temp	49.29	7.73	-0.00	0.80	-796.70	-0.06
Dead+Wind 120 deg+Ice+Temp	49.29	6.69	3.88	402.01	-689.66	0.09
Dead+Wind 150 deg+Ice+Temp	49.29	3.86	6.71	695.71	-397.20	0.21
Dead+Wind 180 deg+Ice+Temp	49.29	0.00	7.75	803.21	2.30	0.27
Dead+Wind 210 deg+Ice+Temp	49.29	-3.86	6.71	695.71	401.80	0.26
Dead+Wind 240 deg+Ice+Temp	49.29	-6.69	3.88	402.01	694.25	0.18
Dead+Wind 270 deg+Ice+Temp	49.29	-7.73	-0.00	0.80	801.30	0.06
Dead+Wind 300 deg+Ice+Temp	49.29	-6.69	-3.88	-400.41	694.25	-0.09
Dead+Wind 330 deg+Ice+Temp	49.29	-3.86	-6.71	-694.11	401.80	-0.21
Dead+Wind 0 deg - Service	37.71	0.00	-11.61	-1160.22	0.80	-0.31
Dead+Wind 30 deg - Service	37.71	5.79	-10.06	-1004.93	-576.71	-0.30
Dead+Wind 60 deg - Service	37.71	10.02	-5.81	-580.08	-999.48	-0.21
Dead+Wind 90 deg - Service	37.71	11.57	-0.00	0.28	-1154.01	-0.07
Dead+Wind 120 deg - Service	37.71	10.02	5.81	580.64	-999.48	0.10
Dead+Wind 150 deg - Service	37.71	5.79	10.06	1005.49	-576.71	0.24
Dead+Wind 180 deg -	37.71	0.00	11.61	1160.79	0.80	0.31

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Service						
Dead+Wind 210 deg - Service	37.71	-5.79	10.06	1005.49	578.31	0.30
Dead+Wind 240 deg - Service	37.71	-10.02	5.81	580.64	1001.08	0.21
Dead+Wind 270 deg - Service	37.71	-11.57	-0.00	0.28	1155.62	0.07
Dead+Wind 300 deg - Service	37.71	-10.02	-5.81	-580.08	1001.08	-0.10
Dead+Wind 330 deg - Service	37.71	-5.79	-10.06	-1004.93	578.31	-0.24

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX K	PY K	PZ K	PX K	PY K	PZ K	% Error
1	0.00	-37.71	0.00	0.00	37.71	-0.00	0.000%
2	0.00	-37.71	-33.57	0.00	37.71	33.57	0.005%
3	16.72	-37.71	-29.07	-16.72	37.71	29.07	0.000%
4	28.97	-37.71	-16.79	-28.97	37.71	16.79	0.000%
5	33.45	-37.71	0.00	-33.44	37.71	0.00	0.005%
6	28.97	-37.71	16.79	-28.97	37.71	-16.79	0.000%
7	16.72	-37.71	29.07	-16.72	37.71	-29.07	0.000%
8	0.00	-37.71	33.57	0.00	37.71	-33.57	0.005%
9	-16.72	-37.71	29.07	16.72	37.71	-29.07	0.000%
10	-28.97	-37.71	16.79	28.97	37.71	-16.79	0.000%
11	-33.45	-37.71	0.00	33.44	37.71	0.00	0.005%
12	-28.97	-37.71	-16.79	28.97	37.71	16.79	0.000%
13	-16.72	-37.71	-29.07	16.72	37.71	29.07	0.000%
14	0.00	-49.29	0.00	-0.00	49.29	0.00	0.000%
15	0.00	-49.29	-7.75	-0.00	49.29	7.75	0.000%
16	3.86	-49.29	-6.71	-3.86	49.29	6.71	0.000%
17	6.69	-49.29	-3.88	-6.69	49.29	3.88	0.000%
18	7.73	-49.29	0.00	-7.73	49.29	0.00	0.000%
19	6.69	-49.29	3.88	-6.69	49.29	-3.88	0.000%
20	3.86	-49.29	6.71	-3.86	49.29	-6.71	0.000%
21	0.00	-49.29	7.75	-0.00	49.29	-7.75	0.000%
22	-3.86	-49.29	6.71	3.86	49.29	-6.71	0.000%
23	-6.69	-49.29	3.88	6.69	49.29	-3.88	0.000%
24	-7.73	-49.29	0.00	7.73	49.29	0.00	0.000%
25	-6.69	-49.29	-3.88	6.69	49.29	3.88	0.000%
26	-3.86	-49.29	-6.71	3.86	49.29	6.71	0.000%
27	0.00	-37.71	-11.62	-0.00	37.71	11.61	0.005%
28	5.79	-37.71	-10.06	-5.79	37.71	10.06	0.001%
29	10.02	-37.71	-5.81	-10.02	37.71	5.81	0.001%
30	11.57	-37.71	0.00	-11.57	37.71	0.00	0.005%
31	10.02	-37.71	5.81	-10.02	37.71	-5.81	0.001%
32	5.79	-37.71	10.06	-5.79	37.71	-10.06	0.001%
33	0.00	-37.71	11.62	-0.00	37.71	-11.61	0.005%
34	-5.79	-37.71	10.06	5.79	37.71	-10.06	0.001%
35	-10.02	-37.71	5.81	10.02	37.71	-5.81	0.001%
36	-11.57	-37.71	0.00	11.57	37.71	0.00	0.005%
37	-10.02	-37.71	-5.81	10.02	37.71	5.81	0.001%
38	-5.79	-37.71	-10.06	5.79	37.71	10.06	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	14	0.00005166	0.00008706

3	Yes	18	0.00000001	0.00008287
4	Yes	18	0.00000001	0.00008440
5	Yes	14	0.00005170	0.00006711
6	Yes	18	0.00000001	0.00008384
7	Yes	18	0.00000001	0.00008322
8	Yes	14	0.00005166	0.00008707
9	Yes	18	0.00000001	0.00008484
10	Yes	18	0.00000001	0.00008308
11	Yes	14	0.00005170	0.00006714
12	Yes	18	0.00000001	0.00008362
13	Yes	18	0.00000001	0.00008447
14	Yes	6	0.00000001	0.00000350
15	Yes	16	0.00000001	0.00007473
16	Yes	16	0.00000001	0.00008603
17	Yes	16	0.00000001	0.00008610
18	Yes	16	0.00000001	0.00007416
19	Yes	16	0.00000001	0.00008610
20	Yes	16	0.00000001	0.00008619
21	Yes	16	0.00000001	0.00007483
22	Yes	16	0.00000001	0.00008695
23	Yes	16	0.00000001	0.00008658
24	Yes	16	0.00000001	0.00007469
25	Yes	16	0.00000001	0.00008655
26	Yes	16	0.00000001	0.00008677
27	Yes	13	0.00013416	0.00007999
28	Yes	15	0.00000001	0.00007252
29	Yes	15	0.00000001	0.00007680
30	Yes	13	0.00013416	0.00007675
31	Yes	15	0.00000001	0.00007521
32	Yes	15	0.00000001	0.00007346
33	Yes	13	0.00013415	0.00008002
34	Yes	15	0.00000001	0.00007801
35	Yes	15	0.00000001	0.00007318
36	Yes	13	0.00013416	0.00007688
37	Yes	15	0.00000001	0.00007464
38	Yes	15	0.00000001	0.00007694

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 102.5	39.368	33	2.1763	0.0023
L2	106.25 - 69	20.413	33	1.8514	0.0013
L3	69 - 66.75	8.278	33	1.1819	0.0006
L4	66.75 - 53	7.730	33	1.1418	0.0006
L5	53 - 32.25	4.831	33	0.8675	0.0004
L6	37.5 - 0	2.460	33	0.5923	0.0002

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	201-7	33	39.368	2.1763	0.0023	36503
138.00	APXV18-206517S-C w/ Mount Pipe	33	33.936	2.1232	0.0019	15209
126.00	TMA-DB-T1-6Z-8AB-0Z	33	28.617	2.0525	0.0017	7604
124.00	GPS_A	33	27.750	2.0378	0.0016	7018
117.00	(4) DB844H90E-XY w/ Mount Pipe	33	24.772	1.9774	0.0015	5529
102.00	7770.00 w/ Mount Pipe	33	18.777	1.7885	0.0012	3877
86.00	GPS0015	33	13.152	1.5038	0.0009	3068
82.00	KS24019-L112A	33	11.894	1.4267	0.0008	2915

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	150 - 102.5	113.330	8	6.2697	0.0065
L2	106.25 - 69	58.807	8	5.3347	0.0037
L3	69 - 66.75	23.866	8	3.4075	0.0017
L4	66.75 - 53	22.288	8	3.2919	0.0016
L5	53 - 32.25	13.931	8	2.5015	0.0011
L6	37.5 - 0	7.095	8	1.7084	0.0007

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
150.00	201-7	8	113.330	6.2697	0.0065	12947
138.00	APXV18-206517S-C w/ Mount Pipe	8	97.708	6.1169	0.0055	5393
126.00	TMA-DB-T1-6Z-8AB-0Z	8	82.411	5.9135	0.0048	2694
124.00	GPS_A	8	79.916	5.8711	0.0047	2486
117.00	(4) DB844H90E-XY w/ Mount Pipe	8	71.348	5.6973	0.0043	1957
102.00	7770.00 w/ Mount Pipe	8	54.099	5.1537	0.0035	1368
86.00	GPS0015	8	37.904	4.3341	0.0025	1077
82.00	KS24019-L112A	8	34.282	4.1121	0.0023	1022

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	150 - 102.5 (1)	TP30.314x22x0.25	47.50	0.00	0.0	36.000	23.6731	-9.13	852.23	0.011
L2	102.5 - 69 (2)	TP35.6777x29.1576x0.3125	37.25	0.00	0.0	39.000	35.5863	-17.81	1387.86	0.013
L3	69 - 66.75 (3)	TP36.0716x35.6777x0.3963	2.25	0.00	0.0	37.920	45.5258	-18.31	1726.34	0.011
L4	66.75 - 53 (4)	TP37.8532x36.0716x0.375	13.75	0.00	0.0	39.000	45.2549	-21.29	1764.94	0.012
L5	53 - 32.25 (5)	TP41.485x37.8532x0.4493	20.75	0.00	0.0	38.004	58.0439	-25.28	2205.90	0.011
L6	32.25 - 0 (6)	TP46.38x39.6674x0.5022	37.50	0.00	0.0	38.070	74.1897	-37.69	2824.40	0.013

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	150 - 102.5 (1)	TP30.314x22x0.25	418.61	29.532	36.000	0.820	0.00	0.000	36.000	0.000
L2	102.5 - 69 (2)	TP35.6777x29.1576x0.31	1284.2	50.133	39.000	1.285	0.00	0.000	39.000	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L3	69 - 66.75 (3)	TP36.0716x35.6777x0.3925	2 1343.1 8	40.722	37.920	1.074	0.00	0.000	37.920	0.000
L4	66.75 - 53 (4)	TP37.8532x36.0716x0.375	1716.2 5	49.772	39.000	1.276	0.00	0.000	39.000	0.000
L5	53 - 32.25 (5)	TP41.485x37.8532x0.4493	2162.1 5	45.726	38.004	1.203	0.00	0.000	38.004	0.000
L6	32.25 - 0 (6)	TP46.38x39.6674x0.5022	3349.3 1	48.446	38.070	1.273	0.00	0.000	38.070	0.000

Pole Shear Design Data

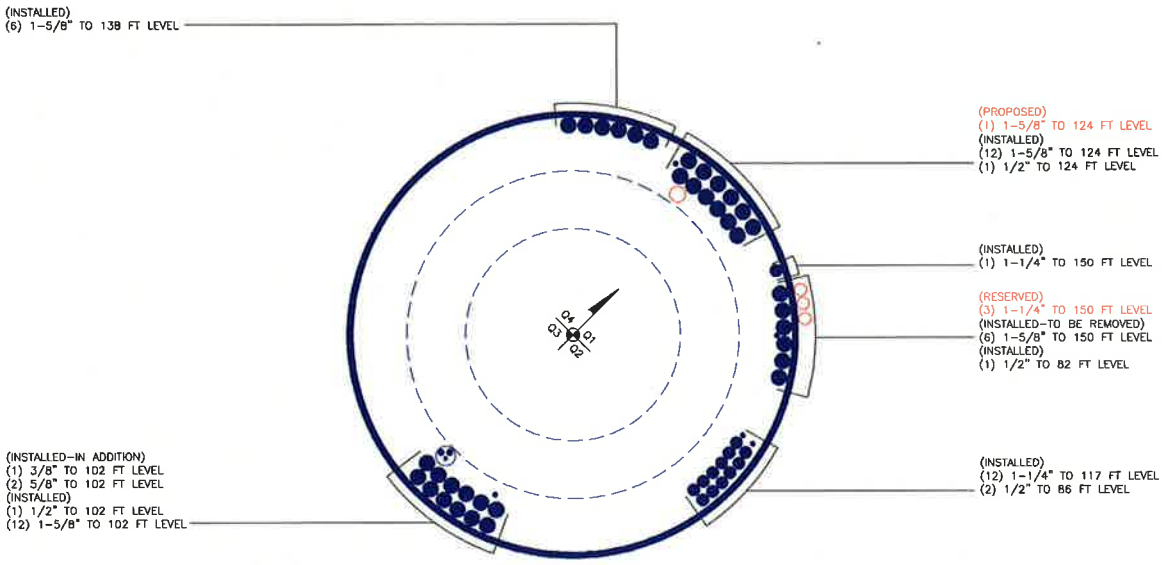
Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	150 - 102.5 (1)	TP30.314x22x0.25	17.13	0.724	24.000	0.061	0.13	0.004	24.000	0.000
L2	102.5 - 69 (2)	TP35.6777x29.1576x0.3125	26.08	0.733	26.000	0.057	0.68	0.012	26.000	0.000
L3	69 - 66.75 (3)	TP36.0716x35.6777x0.3963	26.35	0.579	25.280	0.047	0.68	0.010	25.280	0.000
L4	66.75 - 53 (4)	TP37.8532x36.0716x0.375	27.93	0.617	26.000	0.048	0.71	0.010	26.000	0.000
L5	53 - 32.25 (5)	TP41.485x37.8532x0.4493	29.63	0.511	25.336	0.041	0.77	0.008	25.336	0.000
L6	32.25 - 0 (6)	TP46.38x39.6674x0.5022	33.60	0.453	25.380	0.036	0.90	0.006	25.380	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	150 - 102.5 (1)	0.011	0.820	0.000	0.061	0.000	0.832 ✔	1.333	H1-3+VT ✔
L2	102.5 - 69 (2)	0.013	1.285	0.000	0.057	0.000	1.299 ✔	1.333	H1-3+VT ✔
L3	69 - 66.75 (3)	0.011	1.074	0.000	0.047	0.000	1.085 ✔	1.333	H1-3+VT ✔
L4	66.75 - 53 (4)	0.012	1.276	0.000	0.048	0.000	1.289 ✔	1.333	H1-3+VT ✔
L5	53 - 32.25 (5)	0.011	1.203	0.000	0.041	0.000	1.215 ✔	1.333	H1-3+VT ✔
L6	32.25 - 0 (6)	0.013	1.273	0.000	0.036	0.000	1.286 ✔	1.333	H1-3+VT ✔

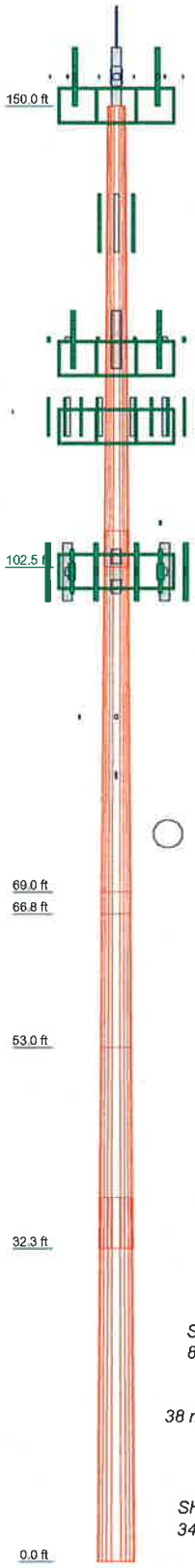
Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	150 - 102.5	Pole	TP30.314x22x0.25	1	-9.13	1136.03	62.4	Pass
L2	102.5 - 69	Pole	TP35.6777x29.1576x0.3125	2	-17.81	1850.02	97.5	Pass
L3	69 - 66.75	Pole	TP36.0716x35.6777x0.3963	3	-18.31	2301.21	81.4	Pass
L4	66.75 - 53	Pole	TP37.8532x36.0716x0.375	4	-21.29	2352.66	96.7	Pass
L5	53 - 32.25	Pole	TP41.485x37.8532x0.4493	5	-25.28	2940.46	91.2	Pass
L6	32.25 - 0	Pole	TP46.38x39.6674x0.5022	6	-37.69	3764.93	96.5	Pass
							Summary	
						Pole (L2)	97.5	Pass
						RATING =	**97.5**	**Pass**


(INSTALLED)
(6) 1-5/8" TO 138 FT LEVEL
(PROPOSED)
(1) 1-5/8" TO 124 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 124 FT LEVEL
(1) 1/2" TO 124 FT LEVEL
(INSTALLED)
(1) 1-1/4" TO 150 FT LEVEL
(RESERVED)
(3) 1-1/4" TO 150 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-5/8" TO 150 FT LEVEL
(INSTALLED)
(1) 1/2" TO 82 FT LEVEL
(INSTALLED-IN ADDITION)
(1) 3/8" TO 102 FT LEVEL
(2) 5/8" TO 102 FT LEVEL
(INSTALLED)
(1) 1/2" TO 102 FT LEVEL
(12) 1-5/8" TO 102 FT LEVEL
(INSTALLED)
(12) 1-1/4" TO 117 FT LEVEL
(2) 1/2" TO 86 FT LEVEL
A4
A1
A3
A2

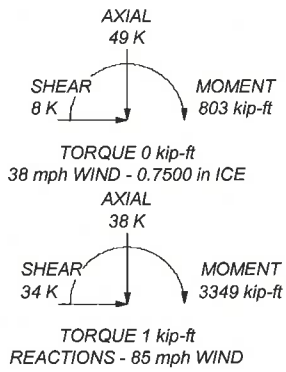
APPENDIX C

ADDITIONAL CALCULATIONS



Section	1	2	3	4	5	6
Length (ft)	47.50	37.25	2.25	13.75	20.75	37.50
Number of Sides	12	12	12	12	12	12
Thickness (in)	0.2500	0.3125	0.3963	0.3750	0.4493	0.5022
Socket Length (ft)	3.75	5.25				
Top Dia (in)	22.0000	29.1576	35.6777	36.0716	37.8532	39.6674
Bot Dia (in)	30.3140	35.6777	36.0716	37.8532	41.4850	46.3800
Grade	A607-60	A607-65	Reinf 63.20 ksi	A607-65	A607-65	Reinf 63.34 ksi / Reinf 63.45 ksi
Weight (K)	3.4	4.1	0.3	2.1	4.0	8.8

Total Weight (K) 22.7



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
201-7	150	BXA-80063/4CF w/ Mount Pipe	124
APXVSPP18-C-A20 w/ Mount Pipe	150	BXA-80063/4CF w/ Mount Pipe	124
APXVSPP18-C-A20 w/ Mount Pipe	150	RRH2X40-AWS	124
APXVSPP18-C-A20 w/ Mount Pipe	150	RRH2X40-AWS	124
800MHZ RRH	150	RRH2X40-AWS	124
800MHZ RRH	150	(2) FD9R6004/2C-3L	124
800MHZ RRH	150	(2) FD9R6004/2C-3L	124
1900MHz RRH (65MHz)	150	(2) FD9R6004/2C-3L	124
1900MHz RRH (65MHz)	150	Platform Mount [LP 403-1]	124
1900MHz RRH (65MHz)	150	(4) DB844H90E-XY w/ Mount Pipe	117
(3) ACU-A20-N	150	(4) DB844H90E-XY w/ Mount Pipe	117
(3) ACU-A20-N	150	(4) DB844H90E-XY w/ Mount Pipe	117
(3) ACU-A20-N	150	Platform Mount [LP 403-1]	117
800 EXTERNAL NOTCH FILTER	150	7770.00 w/ Mount Pipe	102
800 EXTERNAL NOTCH FILTER	150	7770.00 w/ Mount Pipe	102
800 EXTERNAL NOTCH FILTER	150	7770.00 w/ Mount Pipe	102
Handrail Kit [NA 507-1]	150	(2) P65-16-XLH-RR w/ Mount Pipe	102
Platform Mount [LP 403-1]	150	(2) P65-16-XLH-RR w/ Mount Pipe	102
APXV18-206517S-C w/ Mount Pipe	138	(2) P65-16-XLH-RR w/ Mount Pipe	102
APXV18-206517S-C w/ Mount Pipe	138	GPS_A	102
APXV18-206517S-C w/ Mount Pipe	138	(2) TT19-08BP111-001	102
Pipe Mount [PM 602-3]	138	(2) TT19-08BP111-001	102
TMA-DB-T1-6Z-8AB-0Z	126	(2) TT19-08BP111-001	102
Side Arm Mount [SO 102-1]	126	RRUS-11	102
GPS_A	124	RRUS-11	102
MG D3-800Tx w/ Mount Pipe	124	RRUS-11	102
MG D3-800Tx w/ Mount Pipe	124	DC6-48-60-18-8F	102
MG D3-800Tx w/ Mount Pipe	124	Platform Mount [LP 403-1]	102
MG D3-800TV w/ Mount Pipe	124	GPS0015	86
MG D3-800TV w/ Mount Pipe	124	GPS0015	86
MG D3-800TV w/ Mount Pipe	124	Side Arm Mount [SO 701-1]	86
P65.16.XL 2 w/ Mount Pipe	124	Side Arm Mount [SO 701-1]	86
P65.16.XL 2 w/ Mount Pipe	124	KS24019-L112A	82
P65.16.XL 2 w/ Mount Pipe	124	Side Arm Mount [SO 701-1]	82
BXA-70080/4CF w/ Mount Pipe	124		

MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A607-60	60 ksi	75 ksi	Reinf 63.34 ksi	63 ksi	80 ksi
A607-65	65 ksi	80 ksi	Reinf 63.45 ksi	63 ksi	80 ksi
Reinf 63.20 ksi	63 ksi	79 ksi			

TOWER DESIGN NOTES

1. Tower is located in New Haven County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING: 97.5%

Paul J. Ford and Company
250 E. Broad Street Suite 600
Columbus, OH 43215
Phone: 614.221.6679
FAX: 614.448.4105

Job: Ex 150 ft Monopole / Oak Lane CC, Inc. Tower		
Project: PJF 37513-2197 / BU 876315		
Client: CCI	Drawn by: Joey Meinerding	App'd:
Code: TIA/EIA-222-F	Date: 10/08/13	Scale: NTS
Path:		Dwg No. E-1

Square, Stiffened / Unstiffened Base Plate, Any Rod Material - Rev. F /G

Assumptions: 1) Rod groups at corners. Total # rods divisible by 4. Maximum total # of rods = 48 (12 per Corner).
2) Rod Spacing = Straight Center-to-Center distance between any (2) adjacent rods (same corner)
3) Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876315*
Site Name: *Oak Lane CC, Inc. Tower*
App #:

Anchor Rod Data		
Qty:	16	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	54	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	54	in
Thick:	3	in
Grade:	60	ksi
Clip Distance:	4	in

Stiffener Data (Welding at both sides)		
Configuration:	Unstiffened	
Weld Type:		**
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

Pole Data		
Diam:	46.38	in
Thick:	0.4375	in
Grade:	65	ksi
# of Sides:	12	"0" IF Round

Stress Increase Factor		
ASD ASIF:	1.333	

Base Reactions		
TIA Revision:	F	
Unfactored Moment, M:	3349	ft-kips
Unfactored Axial, P:	38	kips
Unfactored Shear, V:	34	kips

Anchor Rod Results

TIA F --> Maximum Rod Tension	183.7 Kips
Allowable Tension:	195.0 Kips
Anchor Rod Stress Ratio:	94.2% **Pass**

Base Plate Results Flexural Check

Base Plate Stress:	48.7 ksi
Allowable PL Bending Stress:	60.0 ksi
Base Plate Stress Ratio:	81.2% **Pass**

PL Ref. Data
Yield Line (in): 29.99
Max PL Length: 29.99

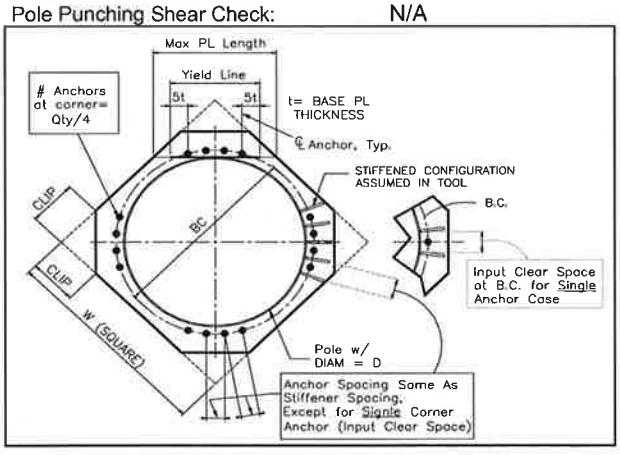
N/A - Unstiffened

Stiffener Results

Horizontal Weld :	N/A
Vertical Weld:	N/A
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	N/A
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	N/A
Plate Comp. (AISC Bracket):	N/A

Pole Results

Pole Punching Shear Check: N/A



** Note: for complete joint penetration groove welds the groove depth must be exactly 1/2 the stiffener thickness for calculation purposes

foundation loads

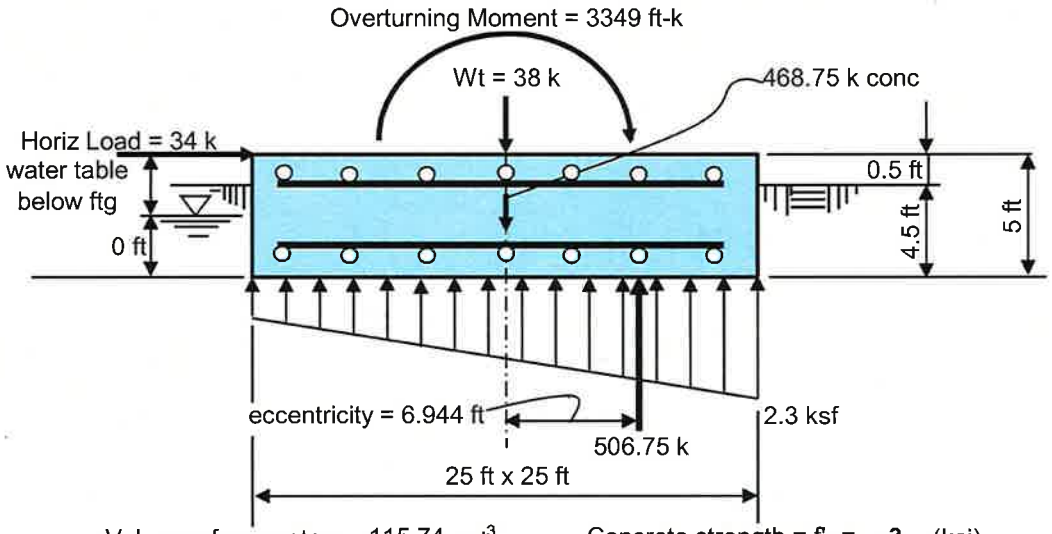
Tower or Pole Weight =	**38**	kips
Total Horizontal Force =	**34**	kips
Overturning Moment =	**3349**	ft-kips

soil properties

Safety factor against overturning =	**1.5**	
Soil density =	**100**	pcf
Allowable soil bearing =	**12**	ksf
Depth to water table =	**99**	ft

mat dimensions

depth to bottom of footing =	**4.5**	ft
Footing thickness =	**5**	ft
Footing Width =	**25**	ft
Footing Length =	**25**	ft
Tower/Pole Center Offset =	**0**	ft



Volume of concrete = 115.74 yd^3 Concrete strength = f'_c = **3** (ksi)

Rebar = (136) #9 bars by 24.5 ft long

reinforcing steel = **(34) #9 @ 8.91 in o.c. ea way top and bottom**

Summary of analysis results

Overturning Moment: (Stress Ratio = 0.833) **< CONTROLLING CRITERIA**

Calculated Overturning Moment = 3519 ft-kips

Resisting Moment = 6334.4 ft-kips

Factor of Safety against overturning = 1.800 **> 1.5 okay**

Rebar strength = F_y = **60** (ksi)

minimum cover over rebar = **3** inches

Soil Bearing (Stress Ratio = 0.192)

Net Soil Bearing Resistance = 12 ksf

Calculated Soil Bearing Pressure = 2.3 **ksf < 12 ksf okay**

Bending Moment (Stress Ratio = 0.263)

Ultimate Bending Moment Resistance = 8259 ft-kips

Calculated Ultimate Bending Moment = 2169 **ft-kips < 8259 ft-kips okay**

Bending Shear (Stress Ratio = 0.215)

Ultimate Bending Shear Resistance = 1363 kips

Calculated Ultimate Bending Shear = 293 **kips < 1363 kips okay**

CROWN CASTLE PROJECT: BU #876315; OAK LANE CC, INC. TOWER (SSUSA); WOODBRIDGE, CT
MONOPOLE RETROFIT PROJECT MASTER NOTES DOCUMENT (REV. 2, 1/23/2009)

UPON THE SUCCESSFUL AND COMPLETE INSTALLATION OF THE REINFORCING SYSTEM SPECIFIED IN THESE PLANS, THE REINFORCED POLE MEETS THE WIND DESIGN RECOMMENDATIONS OF THE TIA/EIA 222-F-1996 STANDARD FOR WIND SPEEDS OF 85 MPH AND 30 MPH + 3/4" RADIAL ICE

A. GENERAL NOTES

1. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS PRIOR TO FABRICATION AND CONSTRUCTION. THESE DRAWINGS WERE PREPARED FROM INFORMATION AND DOCUMENTS PROVIDED TO PAUL J. FORD & COMPANY BY CROWN CASTLE. THIS INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY PAUL J. FORD & COMPANY FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. ANY DISCREPANCIES AND/OR CHANGES BETWEEN THE INFORMATION CONTAINED IN THESE DRAWINGS AND THE ACTUAL VERIFIED SITE CONDITIONS SHALL BE IMMEDIATELY BROUGHT TO THE ATTENTION OF CROWN CASTLE AND PAUL J. FORD & COMPANY SO THAT ANY CHANGES AND/OR ADJUSTMENTS, IF NECESSARY, CAN BE MADE TO THE DESIGN AND DRAWINGS.
2. THE EXISTING UNREINFORCED MONOPOLE STRUCTURE DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE ANTENNA AND PLATFORM LOADS SHOWN ON THESE DRAWINGS AT THE REQUIRED MINIMUM TIA/EIA-222-F BASIC WIND SPEEDS. DO NOT INSTALL ANY ADDITIONAL OR NEW ANTENNA AND PLATFORM LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN PROPERLY AND ADEQUATELY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO INSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT. IMPORTANT CUTTING, WELDING AND SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CROWN CASTLE GUIDELINES FROM CROWN CASTLE. PER THE 12-01-2005 CROWN CASTLE DIRECTIVE, "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE HOTWORK CONTROL AND WELDING PERMIT (DOC # LVG-PLN-0010) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT."
5. THE STRUCTURAL CONTRACT DOCUMENTS DO NOT INDICATE THE METHOD OR MEANS OF CONSTRUCTION. THE CONTRACTOR SHALL SUPERVISE AND DIRECT THE WORK AND SHALL BE SOLELY RESPONSIBLE FOR ALL CONSTRUCTION MEANS, METHODS, TECHNIQUES, SEQUENCES, AND PROCEDURES. OBSERVATION VISITS TO THE SITE BY THE OWNER AND/OR THE ENGINEER SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES.
6. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY THE INSPECTION/TESTING AGENCY. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
7. ALL MATERIALS AND EQUIPMENT FURNISHED WILL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY THE OWNER AND ENGINEER PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO INSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CROWN CASTLE SAFETY GUIDELINES.
9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED, AND/OR RELOCATED, AND/OR REPLACED AND RE-INSTALLED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH THE OWNER, TESTING AGENCY, AND ENGINEER.
11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS. IN NO CASE SHALL ANY NEW AND/OR ADDITIONAL PLATFORMS AND/OR ANTENNAS AND/OR COAX CABLES AND/OR OTHER EQUIPMENT BE INSTALLED ON THE MONOPOLE UNTIL THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF ALL OF THE REQUIRED STRUCTURAL REINFORCING SYSTEM COMPONENTS.

B. "LOW HEAT" WELDING PROCEDURES:

1. ALL AND ALL FIELD WELDING REQUIRED ON THIS PROJECT SHALL BE PERFORMED BY AWS CERTIFIED WELDERS USING "LOW HEAT" WELDING TECHNIQUES.
2. FOR THE PURPOSES OF THIS PROJECT, "LOW HEAT" WELDING IS DEFINED AS A CAREFUL AND CONTROLLED WELDING PROCESS, PERFORMED BY EXPERIENCED AWS CERTIFIED WELDERS, SUCH THAT THE CORRECT AMOUNT OF WELD METAL IS DEPOSITED AND IS PROPERLY FUSED IN SUCH A WAY THAT EXCESSIVE AMOUNTS OF HEAT BUILDUP AT THE WELDED JOINT, DUE TO EXCESSIVE MOLTEN WELD METAL POOLING, IS AVOIDED.
3. THE "LOW HEAT" WELDING PROCESS SHALL BE SET UP SO THAT ANY FIELD WELDING ACTIVITY ON THE POLE STRUCTURE DOES NOT SCORCH OR OTHERWISE DAMAGE THE EXISTING GALVANIZED SURFACE ON THE INSIDE OF THE POLE SHAFT IN AND AROUND THE REGION OF THE WELD.
4. THE "LOW HEAT" WELDING PROCESS, USED IN CONJUNCTION WITH THE CROWN CASTLE COAX PROTECTION AND FIRE SAFETY GUIDELINES, SHALL BE SET UP SO THAT ANY FIELD WELDING ACTIVITY ON THE POLE STRUCTURE DOES NOT SCORCH AND/OR OTHERWISE DAMAGE THE EXISTING COAX CABLES THAT RUN ON THE INSIDE AND/OR OUTSIDE OF THE POLE SHAFT IN AND AROUND THE REGION OF THE WELD.
5. "LOW HEAT" WELD DEMONSTRATION REQUIRED: PRIOR TO BEGINNING THE FIELD WELDING FOR THE REINFORCEMENT WORK, THE CONTRACTOR'S AWS CERTIFIED WELDER SHALL DEMONSTRATE THE "LOW HEAT" WELDING PROCESS THAT WILL BE USED ON THIS PROJECT SO THAT CROWN CASTLE REPRESENTATIVES CAN OBSERVE AND VERIFY THAT THE PROPOSED PROCESS DOES NOT DAMAGE THE EXISTING GALVANIZED SURFACE ON THE BACK SIDE OF THE SAMPLE PLATE THAT IS BEING WELDED. THE CONTRACTOR SHALL USE TEMPERATURE MONITORING DEVICES SUCH AS THERMOCOUPLE, HEAT CRAYON, AND/OR INFRARED SENSOR TO MEASURE AND DEMONSTRATE THE TEMPERATURE OF THE STEEL ON THE BACK SURFACE IN THE REGION OF THE WELD. THE "LOW HEAT" WELD DEMONSTRATION SHALL BE CARRIED OUT ON-SITE AND USING A GALVANIZED STEEL PLATE SAMPLE WITH A THICKNESS EQUAL TO THE MINIMUM SHAFT THICKNESS THAT WILL BE REINFORCED. ONLY AFTER THE "LOW HEAT" TECHNIQUES HAVE BEEN SUCCESSFULLY DEMONSTRATED AND ARE APPROVED BY CROWN CASTLE REPRESENTATIVES, CAN THE CONTRACTOR PROCEED WITH THE FIELD WELDING ON THE STRUCTURE.
6. CAUTION: THE CONTRACTOR SHALL CAREFULLY FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE SAFETY, AND ALL OTHER SAFETY GUIDELINES WHICH ALSO INCLUDE "LOW HEAT" WELDING TECHNIQUES. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR MAINTAINING THE SAFETY AND STABILITY OF THE STRUCTURE DURING CONSTRUCTION. THE CONTRACTOR SHALL BE HELD FULLY LIABLE FOR ANY DAMAGE (INCLUDING HEAT AND FIRE DAMAGE CAUSED BY FIELD WELDING) TO THE STRUCTURE AND ANY OF ITS COMPONENTS WHICH OCCURS DURING CONSTRUCTION.

C. SPECIAL INSPECTION AND TESTING:

1. ALL WORK SHALL BE SUBJECT TO REVIEW AND OBSERVATION BY THE OWNER'S REPRESENTATIVE AND THE OWNER'S AUTHORIZED INDEPENDENT INSPECTION AND TESTING AGENCY. REFER TO CROWN CASTLE DOCUMENT ENG-SOW-10006 FOR SPECIFICATION.
2. ANY SUPPORT SERVICES PERFORMED BY THE ENGINEER DURING CONSTRUCTION SHALL BE DISTINGUISHED FROM CONTINUOUS AND DETAILED INSPECTION SERVICES WHICH ARE FURNISHED BY OTHERS. THESE SUPPORT SERVICES PERFORMED BY THE ENGINEER ARE PERFORMED SOLELY FOR THE PURPOSE OF ASSISTING IN QUALITY CONTROL AND IN ACHIEVING CONFORMANCE WITH CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
3. OBSERVED DISCREPANCIES BETWEEN THE WORK AND THE CONTRACT DOCUMENTS SHALL BE CORRECTED BY THE CONTRACTOR AT NO ADDITIONAL COST.
4. AN INDEPENDENT QUALIFIED INSPECTION/TESTING AGENCY SHALL BE SELECTED, RETAINED AND PAID FOR BY THE OWNER FOR THE SOLE PURPOSE OF INSPECTING, TESTING, DOCUMENTING, AND APPROVING ALL WELDING AND FIELD WORK PERFORMED BY THE CONTRACTOR.
   (A.) ACCESS TO ANY PLACE WHERE WORK IS BEING DONE SHALL BE PERMITTED AT ALL TIMES
   (B.) THE INSPECTION AGENCY SHALL SO SCHEDULE THIS WORK AS TO CAUSE A MINIMUM OF INTERRUPTION TO, AND COORDINATE WITH, THE WORK IN PROGRESS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE THE WORK SCHEDULE WITH THE TESTING AGENCY. THE CONTRACTOR SHALL ALLOW FOR ADEQUATE TIME AND ACCESS FOR THE TESTING AGENCY TO PERFORM THEIR DUTIES.
5. THE INSPECTION AND TESTING AGENCY SHALL BE RESPONSIBLE TO PERFORM THE FOLLOWING SERVICES FOR THE OWNER. THE TESTING AGENCY SHALL INSPECT THE FOLLOWING ITEMS IN ACCORDANCE WITH THE CONSTRUCTION DRAWINGS. THE TESTING AGENCY SHALL INSPECT ITEMS ON THIS LIST AND OTHER ITEMS AS NECESSARY TO FULFILL THEIR RESPONSIBILITY. THE TESTING AGENCY SHALL UTILIZE EXPERIENCED, TRAINED INSPECTORS INCLUDING AWS CERTIFIED WELDING INSPECTORS (CWI). INSPECTORS SHALL HAVE THE TRAINING, CREDENTIALS, AND EXPERIENCE APPROPRIATE FOR AND COMMENSURATE WITH THE SCOPE AND TYPE OF INSPECTION WORK TO BE PERFORMED.

A. GENERAL:
   (1.) PERFORM CONTINUOUS ON-SITE OBSERVATION, INSPECTION, VERIFICATION, AND TESTING DURING THE TIME THE CONTRACTOR IS WORKING ON SITE. AGENCY SHALL NOTIFY OWNER IMMEDIATELY WHEN FIELD PROBLEMS OR DISCREPANCIES OCCUR.

B. FOUNDATIONS, CONCRETE, AND SOIL PREPARATION: (NOT REQUIRED)

C. CONCRETE TESTING PER ACI: (NOT REQUIRED)

D. STRUCTURAL STEEL:
   (1.) CHECK THE STEEL ON THE JOB WITH THE PLANS.
   (2.) CHECK MILL CERTIFICATIONS.
   (3.) CHECK GRADE OF STEEL MEMBERS, AND BOLTS FOR CONFORMANCE WITH DRAWINGS.
   (4.) INSPECT STEEL MEMBERS FOR DISTORTION, EXCESSIVE RUST, FLAWS AND BURNED HOLES.
   (5.) CALL FOR LABORATORY TEST REPORTS WHEN IN DOUBT.
   (6.) CHECK STEEL MEMBERS FOR SIZES, SWEEP AND DIMENSIONAL TOLERANCES.
   (7.) CHECK FOR SURFACE FINISH SPECIFIED, GALVANIZED.
   (8.) CHECK BOLT TIGHTENING ACCORDING TO AISC "TURN OF THE NUT" METHOD.

E. WELDING:
   (1.) VERIFY FIELD WELDING PROCEDURES, WELDERS, AND WELDING OPERATORS, NOT DEEMED PREQUALIFIED, IN ACCORDANCE WITH AWS D1.1.
   (2.) INSPECT FIELD WELDED CONNECTIONS IN ACCORDANCE WITH THE REQUIREMENTS SPECIFIED AND IN ACCORDANCE WITH AWS D1.1.
   (3.) APPROVE FIELD WELDING SEQUENCE.
      (A.) A PROGRAM OF THE APPROVED SEQUENCES SHALL BE SUBMITTED TO THE OWNER BEFORE WELDING BEGINS. NO CHANGE IN APPROVED SEQUENCES MAY BE MADE WITHOUT PERMISSION FROM THE OWNER.
   (4.) INSPECT WELDED CONNECTIONS AS FOLLOWS AND IN ACCORDANCE WITH AWS D1.1:
      (A.) INSPECT WELDING EQUIPMENT FOR CAPACITY, MAINTENANCE AND WORKING CONDITIONS
      (B.) VERIFY SPECIFIED ELECTRODES AND HANDLING AND STORAGE OF ELECTRODES FOR CONFORMANCE TO SPECIFICATIONS.
      (C.) INSPECT PREHEATING AND INTERPASS TEMPERATURES FOR CONFORMANCE WITH AWS D1.1.
      (D.) VISUALLY INSPECT ALL WELDS AND VERIFY THAT QUALITY OF WELDS MEETS THE REQUIREMENTS OF AWS D1.1.
      (E.) SPOT TEST AT LEAST ONE FILLET WELD OF EACH MEMBER USING MAGNETIC PARTICLE OR DYE PENETRANT.
      (F.) INSPECT FOR SIZE, SPACING, TYPE AND LOCATION AS PER APPROVED PLANS.
      (G.) VERIFY THAT THE BASE METAL CONFORMS TO THE DRAWINGS.
      (H.) REVIEW THE REPORTS BY TESTING LABS.
      (I.) CHECK TO SEE THAT WELDS ARE CLEAN AND FREE FROM SLAG.
      (J.) INSPECT PEEN PROTECTION OF WELDS AS PER SPECIFICATIONS.
      (K.) CHECK THAT DEFECTIVE WELDS ARE CLEARLY MARKED AND HAVE BEEN ADEQUATELY REPAIRED.

F. SPECIAL INSPECTION OF EXISTING SHAFT-TO-FLANGE WELD CONNECTIONS:
   (1.) PRIOR TO CONSTRUCTION, TESTING AGENCY SHALL INSPECT CONDITION OF EXISTING SHAFT-TO-BASE PLATE WELD CONNECTION. ALSO INSPECT EXISTING STIFFENERS IF PRESENT. THE INSPECTOR SHALL USE THE FOLLOWING INSPECTION METHODS, OR COMBINATION OF METHODS, AS REQUIRED TO IDENTIFY ANY CRACKS: VISUAL, MAGNETIC PARTICLE, AND/OR ULTRASONIC. IN ADDITION, OTHER TEST METHODS MAY ALSO BE USED AT THE RECOMMENDATION OF THE TESTING AGENCY AND UPON THE APPROVAL OF THE OWNER AND THE ENGINEER. THE TESTING AGENCY SHALL PROVIDE CAREFUL AND THOROUGH DOCUMENTATION OF THIS INSPECTION TO THE OWNER AND THE ENGINEER. TESTING AGENCY SHALL COORDINATE THESE INSPECTION ACTIVITIES WITH THE OWNER'S REQUIRED PROCESSES AND PROCEDURES. IMPORTANT: THE TESTING AGENCY SHALL IMMEDIATELY REPORT ANY INDICATIONS OF CRACKS, FRACTURES, DISTRESS, AND/OR CORROSION TO THE OWNER AND ENGINEER.
   (2.) AFTER CONSTRUCTION, TESTING AGENCY SHALL INSPECT ANY AND ALL FIELD REPAIRS IMPLEMENTED AS REQUIRED BY THE OWNER FROM THE RESULTS OF THE INSPECTION IN THE PREVIOUS NOTE 5.F.(1.) ABOVE.
   (3.) REFER TO CROWN CASTLE DOCUMENTS ENG-SOW-10003 AND ENG-SOW-10051 FOR SPECIFICATIONS.

G. REPORTS:
   (1.) COMPILE AND PERIODICALLY SUBMIT DAILY INSPECTION REPORTS TO THE OWNER.

6. THE INSPECTION PLAN OUTLINED HEREIN IS INTENDED AS A DESCRIPTION OF GENERAL AND SPECIFIC ITEMS OF CONCERN. IT IS NOT INTENDED TO BE ALL-INCLUSIVE. IT DOES NOT LIMIT THE TESTING AND INSPECTION AGENCY TO THE ITEMS LISTED. ADDITIONAL TESTING, INSPECTION, AND CHECKING MAY BE REQUIRED AND SHOULD BE ANTICIPATED. THE TESTING AGENCY SHALL USE THEIR PROFESSIONAL JUDGMENT AND KNOWLEDGE OF THE JOB SITE CONDITIONS AND THE CONTRACTOR'S PERFORMANCE TO DECIDE WHAT OTHER ITEMS REQUIRE ADDITIONAL ATTENTION. THE TESTING AGENCY'S JUDGMENT MUST PREVAIL ON ITEMS NOT SPECIFICALLY COVERED. ANY DISCREPANCIES AND PROBLEMS SHALL BE BROUGHT IMMEDIATELY TO THE OWNER'S ATTENTION. RESOLUTIONS ARE NOT TO BE MADE WITHOUT THE OWNER'S REVIEW AND SPECIFIC WRITTEN CONSENT. THE OWNER RESERVES THE RIGHT TO DETERMINE WHAT IS AN ACCEPTABLE RESOLUTION OF DISCREPANCIES AND PROBLEMS.
7. AFTER EACH INSPECTION, THE TESTING AGENCY WILL PREPARE A WRITTEN ACCEPTANCE OR REJECTION WHICH WILL BE GIVEN TO THE CONTRACTOR AND FILED AS DAILY REPORTS TO THE OWNER. THIS WRITTEN ACTION WILL GIVE THE CONTRACTOR A LIST OF ITEMS TO BE CORRECTED, PRIOR TO CONTINUING CONSTRUCTION, AND/OR LOADING OF STRUCTURAL ITEMS.
8. RESPONSIBILITY: THE TESTING AGENCY DOES NOT RELIEVE THE CONTRACTOR'S CONTRACTUAL OR STATUTORY OBLIGATIONS. THE CONTRACTOR HAS THE SOLE RESPONSIBILITY FOR ANY DEVIATIONS FROM THE OFFICIAL CONTRACT DOCUMENTS. THE TESTING AGENCY WILL NOT REPLACE THE CONTRACTOR'S QUALITY CONTROL PERSONNEL.

AUG 2, 8 2012

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WOODBRIDGE, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37512-1565	ISSUE DATE OF PERMIT: 8-24-2012
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D. **STRUCTURAL STEEL**

1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:

A. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
   (A.) "SPECIFICATION FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
   (B.) "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM A325 OR A490 BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS OF THE ENGINEERING FOUNDATION.
   (C.) "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES" (PARAGRAPH 4.2.1 SPECIFICALLY EXCLUDED)

B. BY THE AMERICAN WELDING SOCIETY (AWS):
   (A.) "STRUCTURAL WELDING CODE - STEEL D1.1."
   (B.) "SYMBOLS FOR WELDING AND NON DESTRUCTIVE TESTING"

2. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
3. TIGHTEN ALL STRUCTURAL BOLTS, INCLUDING THE AJAX M36 BOLTS WITH SHEAR SLEEVES, ACCORDING TO THE REQUIREMENTS OF THE AISC "TURN OF THE NUT" METHOD. TIGHTEN BOLTS 1/3 TURN PAST THE SNUG TIGHT CONDITION AS DEFINED BY AISC.
4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO THE OWNER'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65 (FY = 65 KSI MIN.) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH-UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
8. UNLESS OTHERWISE NOTED, ALL STEEL MEMBERS SHALL BE HOT-DIP GALVANIZED, AFTER FABRICATION, IN ACCORDANCE WITH ASTM A123. SEE SECTION J FOR FURTHER NOTES AND FOR EXCEPTIONS (IF ANY).
9. ALL WELDS SHALL BE VISUALLY INSPECTED BY THE OWNER'S APPROVED TESTING AGENCY. OTHER TESTS MAY ALSO BE PERFORMED ON THE WELDS BY THE TESTING AGENCY IN ORDER FOR THEM TO PERFORM THEIR DUTIES FOR THIS PROJECT. THE CONTRACTOR SHALL COOPERATE WITH THE TESTING AGENCY IN THEIR TESTING EFFORTS.
10. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
11. FIELD CUTTING OF STEEL:
   (A.) PRIOR TO ANY FIELD CUTTING, THE CONTRACTOR SHALL MARK THE CUT OUTLINES ON THE STEEL AND THE INSPECTION/TESTING AGENCY SHALL VERIFY PROPOSED LAYOUT, LOCATION, AND DIMENSIONS.
   (B.) ANY REQUIRED CUTS IN THE STEEL SHALL BE CAREFULLY CUT BY MECHANICAL METHODS SUCH AS DRILLING, SAW CUTTING, AND GRINDING. THE CONTRACTOR IS RESPONSIBLE TO PREVENT ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, DURING THE CUTTING WORK. ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
   (C.) ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.

E. BASE PLATE GROUT

1. NEW GROUT FOR THE POLE BASE SHALL BE NON-SHRINK, NON-METALLIC, GROUT (EUCO NS GROUT BY EUCLID, OR APPROVED EQUAL) WITH A 7500 PSI MINIMUM COMPRESSIVE STRENGTH, PVC DRAINAGE PIPES SHALL BE PROVIDED FROM INSIDE THE POLE SHAFT OUT THROUGH THE GROUT SPACE UNDER THE BASE PLATE IN ORDER TO ALLOW MOISTURE TO ADEQUATELY DRAIN FROM THE INTERIOR OF THE POLE SHAFT. CONTRACTOR SHALL SUBMIT PROPOSED GROUT SPECIFICATION INFORMATION TO THE OWNER FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION. CONTRACTOR SHALL FOLLOW GROUT MANUFACTURER'S SPECIFICATIONS FOR COLD WEATHER GROUTING PROCEDURES (IF NECESSARY) AND THE TESTING AGENCY SHALL PREPARE GROUT SAMPLE SPECIMENS FOR COMPRESSIVE STRENGTH TESTING AND VERIFICATION.
2. GROUT SHALL BE INSTALLED TIGHT UNDER BASE PLATE WITH NO VOIDS REMAINING BETWEEN TOP OF EXISTING CONCRETE AND UNDERSIDE OF EXISTING BASE PLATE (EXCEPT FOR DRAIN PIPES). GROUT COMPLETELY SOLID (EXCEPT FOR DRAIN PIPES) UNDER ENTIRE SURFACE OF BASE PLATE FROM OUTSIDE EDGE TO INSIDE EDGE.

F. FOUNDATION WORK - (NOT REQUIRED)

G. CAST-IN-PLACE CONCRETE - (NOT REQUIRED)

H. EPOXY GROUTED REINFORCING ANCHOR RODS - (NOT REQUIRED)

I. **TOUCH UP OF GALVANIZING**

1. THE CONTRACTOR SHALL TOUCH UP ANY AND/OR ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-631-3275 FOR PRODUCT INFORMATION.
2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. THE OWNER'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
3. THE OWNER'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE INADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

J. HOT DIP GALVANIZING

1. HOT DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES: BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING.
3. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES AS REQUIRED.
4. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

K. **PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER**

1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY THE OWNER, THE OWNER WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
2. THE MONOPOLE REINFORCING SYSTEM INDICATED IN THESE DOCUMENTS USES REINFORCING COMPONENTS THAT INVOLVE FIELD WELDING STEEL MEMBERS TO THE EXISTING GALVANIZED STEEL POLE STRUCTURE. THESE FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE CONNECTED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT THE OWNER REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.
3. THE OWNER SHALL REFER TO TIA/EIA-222-F-1996, SECTION 14 AND ANNEX E FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY THE OWNER BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. PAUL J. FORD & COMPANY RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT. ACCORDING TO TIA/EIA-222-F-1996 SECTION 14.3, NOTE 1: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS."

STATE OF CONNECTICUT — DEPARTMENT OF CONSUMER PROTECTION — No. PEN.22731 — LICENSED PROFESSIONAL ENGINEER

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AJAX BOLT NOTE SHEET - REV. 1.2, 01-23-2012

NOTES: 1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS", DEC. 31, 2009.

2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS", DEC. 31, 2009.

3. ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAIL BELOW FOR THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

4. ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTI'S) AND HARDENED WASHERS. DTI'S SHALL BE THE SQUIRTER® STYLE, MADE TO ASTM F959 LATEST REVISION; AND HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A HARDNESS OF RC 38 OR HIGHER.

NOTES FOR AJAX M20 'ONE-SIDE' BOLTS WITH DIRECT TENSION INDICATORS (DTI'S):

DTI'S REQUIRED: DTI'S SHALL BE "SELF-INDICATING" SQUIRTER® STYLE DTI'S MADE WITH SILICONE EMBEDDED IN THEM, INSPECTED BY MEANS OF THE VISUAL EJECTION OF SILICONE AS THE DTI PROTRUSIONS COMPRESS. SQUIRTER® DTI'S SHALL BE CALIBRATED PER MANUFACTURER'S INSTRUCTIONS PRIOR TO USE.

THE DIRECT TENSION INDICATOR (DTI) WASHERS SHALL BE THE "SQUIRTER® STYLE" AS MANUFACTURED BY:

APPLIED BOLTING TECHNOLOGY PRODUCTS, INC.
1413 ROCKINGHAM ROAD BELLOWS FALLS, VERMONT, USA 05101
PHONE 1-800-552-1999
WEBSITE: WWW.APPLIEDBOLTING.COM

DISTRIBUTORS OF SQUIRTER® DTI'S:
HTTP://WWW.APPLIEDBOLTING.COM/APPLIED-BOLTING-DISTRIBUTORS.HTML

DTI: USE DIRECT TENSION INDICATOR (DTI) WASHERS COMPATIBLE WITH 3/4" NOMINAL A325 BOLTS FOR THE AJAX M20 BOLTS. DTI'S SHALL NOT BE HOT-DIP GALVANIZED. DTI'S SHALL BE MECHANICALLY GALVANIZED (MG) BY THE COLD MECHANICAL PROCESS ONLY AS PROVIDED BY THE DTI MANUFACTURER.

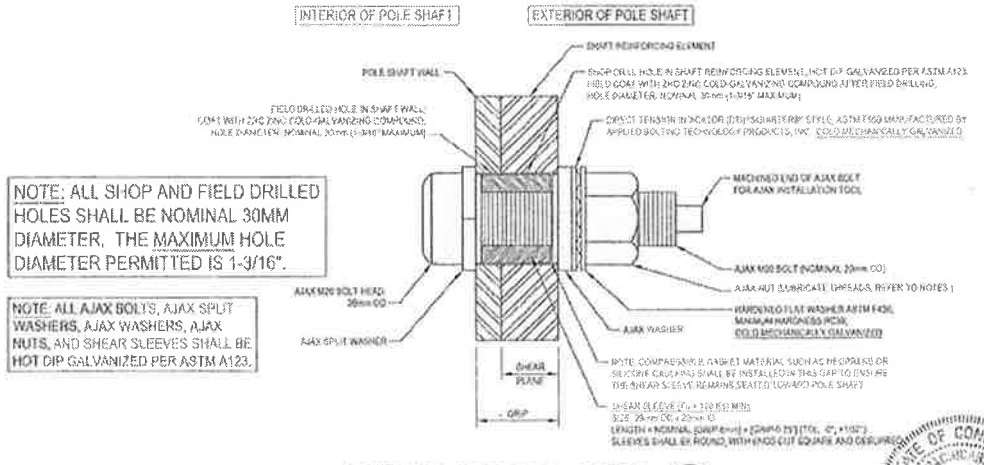
HARDENED WASHERS REQUIRED: USE A HARDENED WASHER FOR A 3/4" NOMINAL BOLT BETWEEN THE TOP OF THE DIRECT TENSION INDICATOR (DTI) WASHER AND THE NUT OF THE AJAX M20 BOLTS. HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A MINIMUM HARDNESS OF RC 38 OR HIGHER. THE HARDENED WASHERS SHALL BE MECHANICALLY GALVANIZED BY THE COLD MECHANICAL PROCESS. ALTERNATIVELY, CORRECTLY MADE HOT DIP GALVANIZED HARDENED FLAT WASHERS HAVING A MINIMUM HARDNESS OF RC 38 CAN BE USED; CONTRACTOR SHALL PROVIDE DOCUMENTATION OF WASHER SPECIFICATION AND HARDNESS.

NUT LUBRICATION REQUIRED: PROPERLY LUBRICATE THE THREADS OF THE NUT OF THE AJAX BOLT SO THAT IT CAN BE PROPERLY TIGHTENED WITHOUT GALLING AND/OR LOCKING UP ON THE BOLT THREADS. CONTRACTOR SHALL FOLLOW DTI MANUFACTURER INSTRUCTIONS FOR PROPER LUBRICATION AND TIGHTENING.

NOTE: COMPLETELY COMPRESSED DTI'S SHOWING NO VISIBLE REMAINING GAP ARE ACCEPTABLE. DTI WASHERS SHALL BE PLACED DIRECTLY AGAINST THE OUTER AJAX WASHER WITH THE DTI BUMPS FACING AWAY FROM THE AJAX WASHER. PLACE A HARDENED WASHER BETWEEN THE DTI AND THE AJAX NUT. THE DTI BUMPS SHALL BEAR AGAINST THE UNDERSIDE OF A HARDENED FLAT WASHER, NEVER DIRECTLY AGAINST THE NUT.

CONTRACTOR SHALL FOLLOW DTI MANUFACTURER'S INSTRUCTIONS FOR INSTALLATION, LUBRICATION, TIGHTENING AND INSPECTION.

INSPECTION REQUIRED: ALL AJAX BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS", DEC. 31, 2009, BY A QUALIFIED BOLT INSPECTOR. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. IN ADDITION, ALL AJAX BOLTS AND DTI'S SHALL BE VISUALLY INSPECTED ACCORDING TO THE DTI MANUFACTURER'S INSTRUCTIONS. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE PHOTO DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THE CONDITION OF THE DTI'S.



NOTE: ALL SHOP AND FIELD DRILLED HOLES SHALL BE NOMINAL 30MM DIAMETER, THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16".

NOTE: ALL AJAX BOLTS, AJAX SPLIT WASHERS, AJAX WASHERS, AJAX NUTS, AND SHEAR SLEEVES SHALL BE HOT DIP GALVANIZED PER ASTM A123.

TYPICAL AJAX BOLT DETAIL 1 / S-3

STATE OF CONNECTICUT — THOMAS J. DOLAN — No. PEN 22731 — LICENSED PROFESSIONAL ENGINEER — AUG 28 2012

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BU #876315; OAK LANE CC, INC. TOWER (SSUSA
WOODBRIDGE, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No.	37512-1986
DRAWN BY	B.M.S.
CHECKED BY	T.J.D
APPROVED BY	
DATE	8-24-2012

ISSUE DATE OF PERMIT: 8-24-2012

S-3

NOTE: NO DETAILED INFORMATION REGARDING INTERFERENCES WAS PROVIDED. THEREFORE, CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. REPORT ANY AND ALL DISCREPANCIES TO PAUL J. FORD AND COMPANY AND CROWN CASTLE FIELD PERSONNEL IMMEDIATELY.

THIS POLE REINFORCEMENT DRAWING IS FOR THE POLE DESIGN AND ANTENNA LOADING DOCUMENTED IN THE PJF CO-LOCATION ANALYSIS FOR THIS SITE (PJF#37512-1566), DATED 8-24-2012.

POLE SPECIFICATIONS	
POLE SHAPE TYPE:	12-SIDED POLYGON
TAPER:	0.1700 IN/FT
SHAFT STEEL:	ASTM A572 GRADE 65/ ASTM A572 GRADE 65
BASE PL STEEL:	ASTM A572 GRADE 65 (65 KSI)
ANCHOR RODS:	2 1/4"Ø 8 (MEETS MEETS GRADE 75

SHAFT SECTION DATA					
SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (IN)	DIAMETER ACROSS FLATES (IN)	
				@ TOP	@ BOTTOM
1	47.50	0.2500	45.00	22.000	30.314
2	43.25	0.3125	57.00	29.158	36.900
3	34.50	0.3750	63.00	35.448	43.485
4	37.50	0.4375		41.858	49.350

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

CONTRACTOR SHALL PROVIDE ASTM A36 SHIM PLATES BELOW SLIP JOINTS. THE SHIM PLATES SHALL BE PLACED BETWEEN THE NEW SHAFT REINFORCEMENT AND THE EXISTING POLE SHAFT FROM THE SLIP JOINT TO THE NEW SHAFT REINFORCEMENT SPLICE PLATE LOCATION AND A EXTRA LONG "SPLICE SHIM" SHALL BE PLACED BETWEEN THE NEW UPPER AND LOWER SHAFT REINFORCEMENT PLATES AT THE SHAFT REINFORCEMENT SPLICE PLATE LOCATION.

NOTES:

1. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS", DEC 31, 2009

2. ALL STRUCTURAL BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC "SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH STRENGTH BOLTS", DEC 31, 2009

3. * ALL AJAX M20 BOLTS WITH SHEAR SLEEVES SHALL BE PRETENSIONED AND TIGHTENED UNTIL THE DIRECT TENSION INDICATOR (DTI) WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED. SEE NOTES AND DETAIL ON SHEET S-3 FOR THE USE OF DIRECT TENSION INDICATOR (DTI) WASHERS WITH THE AJAX M20 BOLTS.

4. DTIS REQUIRED: * ALL AJAX BOLTS SHALL BE INSTALLED USING DIRECT TENSION INDICATORS (DTIS) AND HARDENED WASHERS. DTIS SHALL BE THE SQUIRTER STYLE MADE TO ASTM F959 LATEST REVISION, AND HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A HARDNESS OF RC 38 OR HIGHER.

5. BOLT LUBRICATION REQUIRED: * PROPERLY LUBRICATE THE THREADS OF THE NUT OF THE AJAX BOLT SO THAT IT CAN BE PROPERLY TIGHTENED WITHOUT GALLING AND/OR LOCKING UP ON THE BOLT THREADS. CONTRACTOR SHALL FOLLOW DTI MANUFACTURER INSTRUCTIONS FOR PROPER LUBRICATION AND TIGHTENING. REFER TO SHEET S-3.

6. AJAX BOLT HOLE SIZE: ALL SHOP- AND YIELD DRILLED HOLES SHALL BE NOMINAL 35MM DIAMETER. THE MAXIMUM HOLE DIAMETER PERMITTED IS 1-3/16". REFER TO SHEET S-3.

* AS OF 5/3/2012 UNTIL FURTHER NOTICE, CROWN CASTLE WILL ACCEPT AJAX BOLTS TIGHTENED USING AISC "TURN-OF-THE-NUT" METHODOLOGY. INSTALLERS SHALL FOLLOW CROWN GUIDELINES FOR AISC "TURN-OF-THE-NUT" METHOD AND AS SO PROVIDE, COMPLETE INSPECTION DOCUMENTATION IN THE FMI.

ANY OF THE CIRCUMFERENTIAL WELD OF THE BASE PLATE TO SHAFT CONNECTION IS REQUIRED, PLEASE SEE ENGINEERING'S "POWER BASE PLATE AND ANCHOR RODS" NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING REINFORCEMENTS THAT HAVE BEEN WELDED TO THE BASE PLATE. FULL PENETRATION WELDING TO THE BASE PLATE REQUIRED AS PART OF THIS ACTIVE REINFORCEMENT DESIGN, SHALL BE INCLUDED IN THE NDE SCOPE OF WORK.

REINFORCING RAD SPLICE DETAILS TO BE COORDINATED BY RESPECTIVE CONTRACTORS.

NEW AEROSOLUTIONS MP3 REINFORCING (OPTION #1)		
ELEVATION	PLATE #	MP3
0'-0" TO 37'-6"	1, 2 & 3	MP3-01
37'-6" TO 69'-6"	2, 3 & 4	MP3-04
69'-6" TO 77'-0"	3, 3 & 4	MP3-03

ALL BOLTS SHALL BE AJAX M20 BOLTS WITH HIGH STRENGTH SHEAR SLEEVES (ASTM A449 WITH MIN. Fy=109 KSI). CONTACT SUPPLIER FOR MATERIAL (PLATE & BOLTS) AND INSTALLATION PROCEDURES.

NEW SABRE REINFORCING (OPTION #2)		
ELEVATION	PLATE #	MP3
0'-0" TO 37'-6"	2, 3 & 4	MS-03
37'-6" TO 69'-6"	1, 2 & 3	MS-01
69'-6" TO 77'-0"	2, 3 & 4	MS-02

ALL BOLTS SHALL BE AJAX M20 BOLTS WITH HIGH STRENGTH SHEAR SLEEVES (ASTM A449 WITH MIN. Fy=109 KSI). CONTACT SUPPLIER FOR MATERIAL (PLATE & BOLTS) AND INSTALLATION PROCEDURES.

NEW CCI FLAT PLATE (100 KSI) REINFORCING (OPTION #3)		
ELEVATION	PLATE #	FLAT PLATE
0'-0" TO 37'-6"	2, 3 & 4	65P-100-0754
37'-6" TO 54'-3"	2, 3 & 4	55P-100-0754
54'-6" TO 77'-0"	2, 3 & 4	50P-100-0754

NOTES FOR CROWN FLAT PLATE OPTION (100 KSI) MATERIAL:
1. DO NOT FIELD WELD DIRECTLY TO THE 100 KSI MATERIAL.
2. THE 100 KSI MATERIAL SHALL CONFORM TO THE FOLLOWING:
A. MATERIAL SHALL BE ASTM A514, GRADE A, GRADE E, or GRADE P, AS AND A MINIMUM TENSILE STRENGTH (Fu) OF 110 KSI AND A MINIMUM YIELD STRENGTH (Fy) OF 100 KSI.
B. MATERIAL SHALL BE HEAT TREATED, QUENCHED AND TEMPERED PER ASTM A514.
C. MATERIAL SHALL HAVE CHARPY V-NOTCH (CVN) IMPACT VALUES OF NOT LESS THAN 15 FT-LB AT -20 DEGREES F, IN ACCORDANCE WITH ASTM A370.
D. MINIMUM INSIDE BEND RADIUS FOR COLD BENDING, PER ASTM A6 TABLE X 4.2, SHALL BE 4.5t MINIMUM.
E. ANY AND ALL WELDING TO THE MATERIAL SHALL BE PERFORMED ACCORDING TO AN APPROVED WELDING PROCEDURE SPECIFICATION (WPS) OUTLINING HOW THE GRADE AND INTENDED USE AND SERVICE. THE WPS SHALL BE DEVELOPED BY A QUALIFIED CWI AND IN ACCORDANCE WITH AWS D1.1. PRIOR TO ANY WORK, FABRICATION OR WELDING, THE WPS SHALL BE SUBMITTED TO CROWN CASTLE AND PAUL J. FORD AND COMPANY FOR REVIEW.

AUG 2 8 2012

POLE ELEVATION 1 S-4

PAUL J. FORD AND COMPANY
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BU #876315; OAK LANE CC, INC. TOWER
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WOODBRIDGE, CT
MONOPOLE REINFORCEMENT AND RETROFIT PROJECT

PROJECT No: 37512-1566	ISSUE DATE OF PERMIT: 8-24-2012
DRAWN BY: B.M.S.	
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APPROVED BY:	S-4
DATE: 8-24-2012	

37612-1568 PERMIT.DWG

SPECIAL INSPECTION OF EXISTING SHAFT TO FLANGE WELD CONNECTIONS:

(1) PRIOR TO CONSTRUCTION, CONTRACTOR'S INSPECTION AGENCY SHALL INSPECT CONDITION OF EXISTING SHAFT TO BASE PLATE WELD CONNECTION. ALSO INSPECT EXISTING STIFFENERS IF PRESENT. THE CONTRACTOR'S INSPECTION AGENCY SHALL USE THE FOLLOWING INSPECTION METHODS, OR COMBINATION OF METHODS, AS REQUIRED TO IDENTIFY ANY CRACKS: VISUAL, MAGNETIC PARTICLE, AND/OR ULTRA-SONIC. IN ADDITION, OTHER TEST METHODS MAY ALSO BE USED AT THE RECOMMENDATION OF THE TESTING AGENCY AND UPON THE APPROVAL OF THE OWNER AND THE ENGINEER. CONTRACTOR SHALL PROVIDE CAREFUL AND THOROUGH DOCUMENTATION OF THIS INSPECTION TO THE OWNER AND THE ENGINEER BEFORE PROCEEDING WITH WORK. CONTRACTOR SHALL COORDINATE THESE INSPECTION ACTIVITIES WITH THE OWNERS REQUIRED PROCESSES AND PROCEDURES. IMPORTANT: THE TESTING AGENCY SHALL IMMEDIATELY REPORT ANY INDICATIONS OF CRACKS, FRACTURES, DISTRESS, AND/OR CORROSION TO THE OWNER AND ENGINEER.

(2) AFTER CONSTRUCTION, TESTING AGENCY SHALL INSPECT ANY AND ALL FIELD WELDS AND FIELD REPAIRS IMPLEMENTED AS REQUIRED BY THE OWNER FROM THE RESULTS OF THE INSPECTION IN THE PREVIOUS NOTE (1) ABOVE.

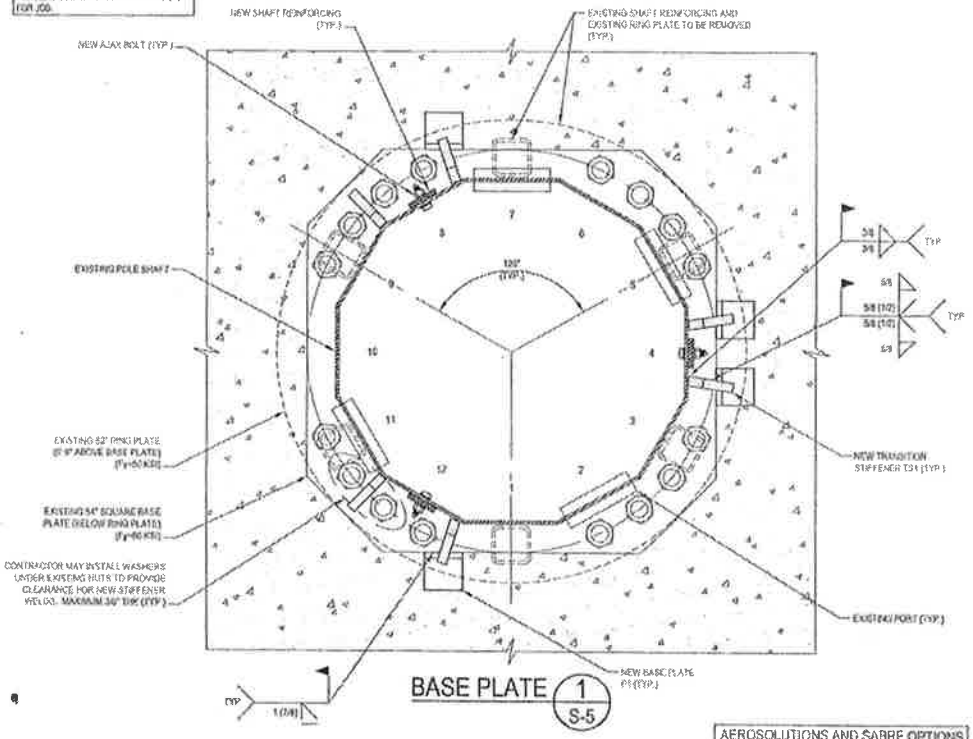
GENERAL NOTES:

1. AJAX BOLTS ARE TO BE 36 mm Ø WITH CORRESPONDING 25 mm Ø SHEAR SLEEVE WITH MATCHING STEEL GRADE. DRILLED HOLE DIAMETERS IN REINFORCING STEEL AND EXISTING SHAFT SHALL BE 1 9/16" MAX.

2. ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL, REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC BRAND LONG RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS, DRY 1.5 MILS. APPLY PER ZRC MANUFACTURERS RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-841-3272 FOR PRODUCT INFORMATION.

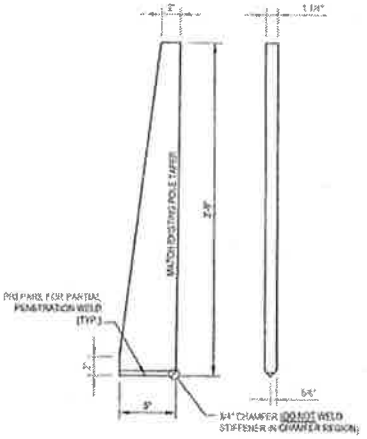
3. ALL WELD ELECTRODES SHALL BE E80XX.

AEROSOLUTIONS REINFORCING NOT SHOWN. LAYOUT DESIGN TO BE FINALIZED FOR AEROSOLUTIONS UPON AWARD OF JOB.



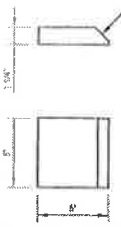
BASE PLATE 1 / S-5

AEROSOLUTIONS AND SABRE OPTIONS REQUIRE (6) TRANSITION STIFFENERS. CROWN OPTION REQUIRES (3) TRANSITION STIFFENERS.



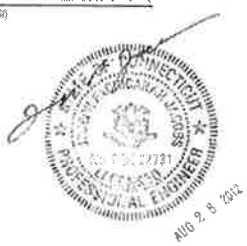
TRANSITION STIFFENER MK~TS1

(6 REQUIRED FOR AEROSOLUTIONS AND SABRE; 3 REQUIRED FOR CROWN) (F_y = 65 KSI)



BEARING PLATE MK~P1

(4 REQUIRED) (F_y = 50 KSI)



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PROJECT No:	37612-1568
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CHECKED BY:	T.J.D.
APPROVED BY:	
DATE:	8-24-2012

ISSUE DATE OF PERMIT: 8-24-2012

S-5

876315-1006 PERMIT.DWG

MODIFICATION INSPECTION NOTES

GENERAL
THE MODIFICATION INSPECTION (MI) 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 (EOR).

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF. NOR DOES THE MI INSPECTOR TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES.

ALL MIS SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (NEW) OR ENGINEERING SERVICE VENDOR (AE/EV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE END-SOW-1000 LIST OF APPROVED MI VENDORS.

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BOTH COMMUNICATE AND COORDINATE AS SOON AS A PO IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN, CONTACT YOUR CROWN POINT OF CONTACT (POC).

REFER TO END-SOW-1000 "MODIFICATION INSPECTION SOW" FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR
THE MI INSPECTOR IS REQUIRED TO CONTACT THE GC AS SOON AS RECEIVING A PO FOR THE MI TO, AT A MINIMUM:

- REVIEW THE REQUIREMENTS OF THE MI CHECKLIST
- WORK WITH THE GC TO DEVELOP A SCHEDULE TO CONDUCT ON-SITE INSPECTIONS, INCLUDING FOUNDATION INSPECTIONS

THE MI 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 MI REPORT TO CROWN.

GENERAL CONTRACTOR
THE GC IS REQUIRED TO CONTACT THE MI INSPECTOR AS SOON AS RECEIVING A PO FOR THE MODIFICATION INSTALLATION OR TURNKEY PROJECT TO, AT A MINIMUM:

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

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND END-SOW-1000.

RECOMMENDATIONS
THE FOLLOWING RECOMMENDATIONS AND SUGGESTIONS ARE OFFERED TO ENHANCE THE EFFICIENCY AND EFFECTIVENESS OF DELIVERING A MI REPORT:

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLE TO, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTION COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI 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 MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTION ON-SITE DURING THE MI TO HAVE ANY DEFICIENCIES CORRECTED DURING THE INITIAL MI. THOUGH ONE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON-SITE.

CANCELLATION OR DELAYS IN SCHEDULE (MI)
IF THE GC AND MI INSPECTOR ASSESS TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER FINANCIALS RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIMELINE, TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, 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 MIS
IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI (FAILED MI), THE GC SHALL WORK WITH CROWN 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 SUPPLEMENTAL MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO REANALYZE THE MODIFICATION IN THE DISCREPANT USING THE AS-BUILT CONDITION.

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

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH END-SOW-1000.

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

PHOTOGRAPHS
IT IS THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI 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 REPAIRS
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL BOLTED CONDITION

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS. PLEASE REFER TO END-SOW-1000.

MI CHECKLIST

CONSTRUCTION/INSTALLATION INSPECTIONS AND TESTING REQUIRED (COMPLETED BY EOR)	REPORT ITEM
	PRE-CONSTRUCTION
X	MI CHECKLIST DRAWINGS
X	EOR APPROVED SHOP DRAWINGS
X	FABRICATION INSPECTION
NA	FABRICATOR CERTIFIED WELD INSPECTION
X	MATERIAL TEST REPORT (MTR)
NA	FABRICATOR NDE INSPECTION
X	NDE REPORT OF MONOPOLE BASE PLATE (AS REQUIRED)
X	PACKING SLIPS
ADDITIONAL TESTING AND INSPECTIONS:	
	CONSTRUCTION
X	CONSTRUCTION INSPECTIONS
NA	FOUNDATION INSPECTIONS
NA	CONCRETE COMP. STRENGTH AND SLUMP TESTS
NA	POST INSTALLED ANCHOR ROD VERIFICATION
X	BASE PLATE GROUT VERIFICATION
X	CONTRACTOR'S CERTIFIED WELD INSPECTION
NA	EARTHWORK LIFT AND DENSITY
X	ON SITE COLD GALVANIZING VERIFICATION
NA	GUY WIRE TENSION REPORT
X	EOC AS-BUILT DOCUMENTS
X	INSPECTION OF BOLT PRETENSION PER ASD BOLT SPEC
X	INSPECTION OF AJAX BOLTS AND SLEEVES PER REQUIREMENTS ON SHEET S-3
ADDITIONAL TESTING AND INSPECTIONS:	
	POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)
NA	POST INSTALLED ANCHOR ROD PULL-OUT TESTING
X	PHOTOGRAPHS
ADDITIONAL TESTING AND INSPECTIONS:	

NOTE: X DENOTES A DOCUMENT REQUIRED FOR THE MI REPORT
NA DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT

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