Robinson+Cole

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

January 6, 2017

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

Re: **Notice of Exempt Modification – Facility Modification**
474-480 Main Street, Monroe, Connecticut

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless ("Cellco") currently maintains twelve (12) antennas at the 160-foot level of the existing 191.5-foot tower at 474-480 Main Street in Monroe, Connecticut (the "Property"). The tower is owned by Crown Castle ("Crown"). The Council approved Cellco's use of this tower in 2007. Cellco now intends to modify its facility by adding three (3) model 742 213V01, 2100 MHz antennas, for a total of fifteen (15) antennas. Cellco also intends to install three (3) remote radio heads ("RRHs") behind its new 2100 MHz antennas and one (1) HYBRIFLEX™ fiber optic antenna cable attached to the outside the monopole. The new antennas and RRHs will be attached to Cellco's existing antenna platform at the 160-foot level. 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 Steve Vavrek, First Selectman of the Town of Monroe. A copy of this letter is also being sent to Seven Forty Two Nursery LLC, the owner of the Property and Crown, the tower owner.

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

1. The proposed modifications will not result in an increase in the height of the existing tower. Cellco's new antennas and RRHs will be located at the 160-foot level on the 191.5 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 existing and new antennas will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative worst-case 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 can support Cellco's proposed modifications. (*See* Structural Analysis Report included in Attachment 3).

A copy of the Town Assessor's Parcel Map and property owner information is included in Attachment 4

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

Sincerely,

Kenneth C. Baldwin

Enclosures
Copy to:
Steve Vavrek, Monroe First Selectman
Seven Forty Two Nursery LLC
Crown Castle
Tim Parks

ATTACHMENT 1

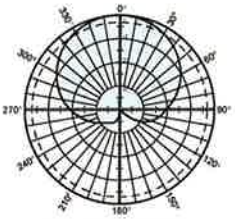
KATHREIN
SCALA DIVISION

742 213V01

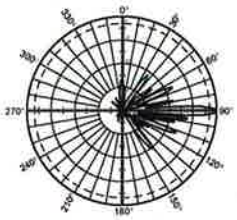
65° Panel Antenna

Kathrein's X-polarized adjustable electrical downtilt antennas offer the wireless carrier the ability to tailor polarization diversity sites for optimum performance. Using variable downtilt, only a few models need be procured to accommodate the needs of widely varying conditions. Remotely controlled downtilt is available as a retrofitable option.

- 0-6° downtilt range.
- UV resistant pulltruded fiberglass radome.
- DC Grounded metallic parts for impulse suppression.
- No moving electrical connections.
- Wideband vector dipole technology.
- Optional remote downtilt Control.
- Will accomodate future 3G / UMTS applications.



Horizontal pattern
±45°- polarization



Vertical pattern
±45°- polarization
0°–6° electrical downtilt

General specifications:

Frequency range	1710–2200 MHz
VSWR	< 1.5:1
Impedance	50 ohms
Intermodulation (2x20w)	IM3: <-150 dBc
Polarization	+45° and -45°
Front-to-back ratio (180°±30°)	>30 dB (co-polar) >25 dB (total power)
Maximum input power	300 watts per input (at 50°C)
Electrical downtilt continuously adjustable	0–6 degrees
Connector	2 x 7-16 DIN female
Isolation	>30 dB
Cross polar ratio Main direction 0° Sector ±60°	 25 dB (typical) >10 dB
Tracking, average	0.5 dB
Squint	±2.0°
Weight	19.8 lb (9 kg) 24.3 lb (11 kg) clamps included
Dimensions	76.9 x 6.1 x 2.8 inches (1954 x 155 x 70 mm)
Wind load Front/Side/Rear Mounting category	at 93 mph (150kph) 115 lbf / 32 lbf / 115 lbf (510 N) / (140 N) / (510 N) M (Medium)
Wind survival rating*	120 mph (200 kph)
Shipping dimensions	88 x 6.8 x 3.6 inches (2235 x 172 x 92 mm)
Shipping weight	28.7 lb (13 kg)
Mounting	Fixed mounts for 2 to 4.6 inch (50 to 115 mm) OD masts are included and tilt options are available.
See reverse for order information.	

Specifications:	**1710–1880 MHz**	**1850–1990 MHz**	**1920–2200 MHz**
Gain	19 dBi	19.2 dBi	19.5 dBi
+45° and -45° polarization horizontal beamwidth	67° (half-power)	65° (half-power)	63° (half-power)
+45° and -45° polarization vertical beamwidth	4.7° (half-power)	4.5° (half-power)	4.3° (half-power)
Sidelobe suppression for first sidelobe above main beam	0° 2° 4° 6° T 18 18 16 15 dB	0° 2° 4° 6° T 18 18 17 16 dB	0° 2° 4° 6° T 18 18 18 18 dB

RoHS Lead-Free

11271-B
936.3740/b

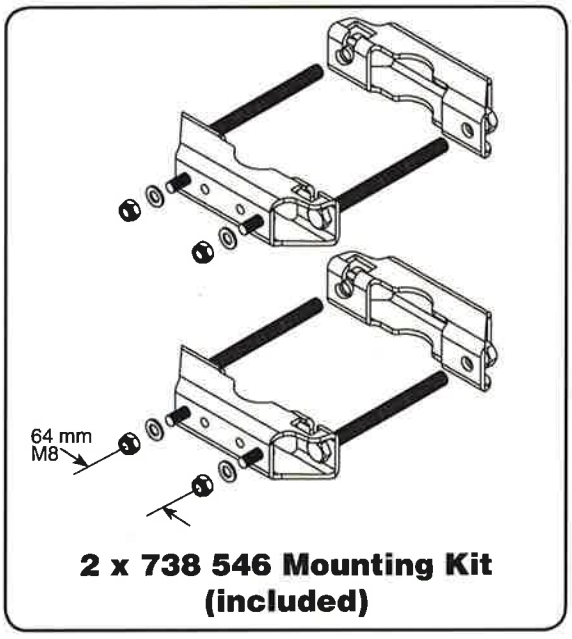
*Mechanical design is based on environmental conditions as stipulated in TIA-222-G-2 (December 2009) and/or ETS 300 019-1-4 which include the static mechanical load imposed on an antenna by wind at maximum velocity. See the Engineering Section of the catalog for further details.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

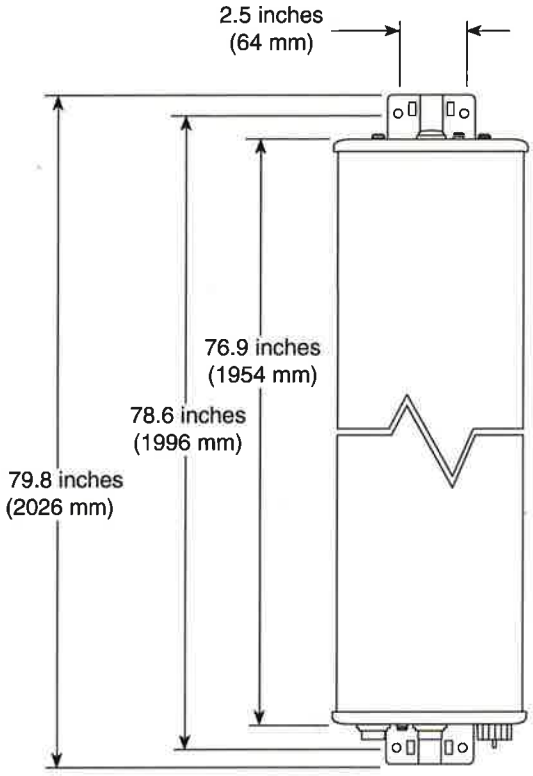
KATHREIN
SCALA DIVISION

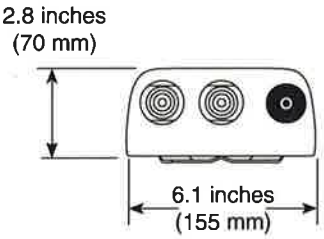
742 213V01

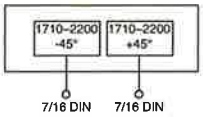
65° Panel Antenna



2 x 738 546 Mounting Kit (included)







Mounting Options:

Model	Description
2 x 738 546 (included)	Mounting Kit for 2 to 4.6 inch (50 to 115 mm) OD mast. 4.4 lb (2 kg)
850 10013	Tilt Mount Kit 0–11 degrees downtilt angle. 7.4 lb (3.7 kg)
742 263	Three-panel Sector Mounting Kit (120 deg. ea.) for 3.5 inch (89 mm) OD mast.

Order Information:

Model	Description
742 213V01	Antenna with 7-16 DIN connectors 0°–6° adjustable electrical downtilt

All specifications are subject to change without notice. The latest specifications are available at www.kathrein-scala.com.

Kathrein Inc., Scala Division Post Office Box 4580 Medford, OR 97501 (USA) Phone: (541) 779-6500 Fax: (541) 779-3991
Email: communications@kathrein.com Internet: www.kathrein-scala.com

ALCATEL-LUCENT B66A RRH4X45

The Alcatel-Lucent B66a Remote Radio Head 4x45 is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering. Its operational range covers beyond that of B4 (AWS) and B10 (AWS+).

Supporting 2Tx/4Tx MIMO and 2-way/4-way Rx diversity, the Alcatel-Lucent B66a RRH4x45 allows operators to have a compact radio solution to deploy LTE in the 2100 band (3GPP band 4, 10, and 66), providing them with the means to achieve high capacity, high quality, high reliability, large instantaneous bandwidth, and high coverage with minimum site requirements.

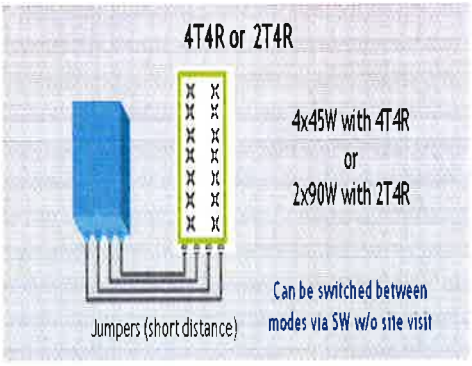
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

The Alcatel-Lucent B66a RRH4x45 is a compact (near zero-footprint) solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

Its compactness and slim design makes the Alcatel-Lucent B66a RRH4x45 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 2110 - 2180 MHz band/DL, 1710-1780MHz/UL (3GPP band 4, 10, and 66a)
- LTE 2Tx or 4Tx MIMO (SW selectable)
- Configuration: 2T2R/2T4R/4T4R
- Output power: Up to 2x90W or 4x45W (SW configurable)
- 70MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports



BENEFITS

- Compact to reduce additional footprint when adding LTE in AWS 1-3 band
- Selection of MIMO configuration (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through 4Tx MIMO
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall

Features & Performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R selectable by SW)
Frequency band	AWS 1-3, B4/B66a DL: 2110-2180 MHz / UL: 1710-1780 MHz
Instantaneous bandwidth - #carriers	70 MHz – 4 LTE MIMO carriers (in 70 MHz occupied bandwidth)
LTE carrier bandwidth	5, 10, 15, 20 MHz
RF output power	2x90W or 4x45W (selectable by SW)
Noise figure – RX Diversity scheme	2 dB typical (<2.5 dB max) – 2 or 4 way Rx diversity
Receiver Sensivity (FRC A1-3)	-104.5 dBm maximum
Sizes (HxWxD) in mm (in.)	655x299x182 (25.8x11.8x7.2) (with solar shield) 640x290x160 (25.2x11.4x6.3) (without solar shield)
Volume in Liters	35.5 (with solar shield) 29.7 (without solar shield)
Weight in kg (lb) (w/o mounting HW)	25.8kg (56.8lb) (with solar shield)
DC voltage range	Nominal: -48V, -40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption
DC power consumption	750W typical @100% RF load (in 2Tx or 4Tx mode); Add 58W for 2A*29V for AISG
Environmental conditions	-40°C (-40°F) /+55°C (+131°F) UL50E Type 4 Enclosure
Wind load (@150km/h or 93mph)	250N (56lb) Frontal/150N (34lb) Lateral
Antenna ports	4 ports 4.3-10 female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate 7, 9.8 Gbps) SFP: SMDF (HW supports also SMSF and MMDF)
AISG interfaces	1 AISG 2.0 output (RS485) Integrated Smart Bias-Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-487 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27 / FCC Part 15 / GR-3178-CORE

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 CELLFLEX² 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-95-658 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)

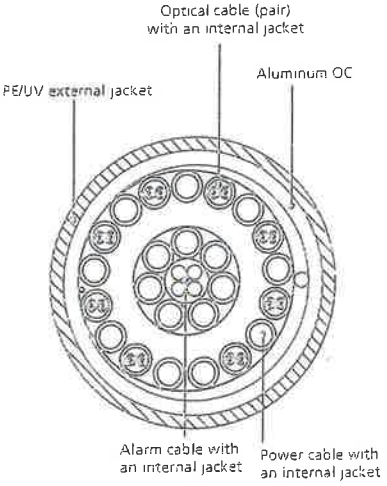


Figure 2: Construction Detail

* This data is provisional and subject to change

ATTACHMENT 2

	General	Power	Density					
Site Name: Monroe W								
Tower Height: 191.5'								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*T-Mobile	8	250	195	1935	0.0202	1.0000	0.20%	
*AT&T	1	296	140	880	0.0059	0.5867	0.10%	
*AT&T	6	427	140	1900	0.0513	1.0000	0.51%	
*AT&T	1	500	140	880	0.0100	0.5867	0.17%	
*AT&T	1	500	140	1900	0.0100	1.0000	0.10%	
*AT&T	1	500	140	740	0.0100	0.4933	0.20%	
*Sprint	2	693	152	1900	0.0234	1.0000	0.23%	
*Sprint	1	390	152	850	0.0066	0.5667	0.12%	
*Sprint	2	693	152	2500	0.0234	1.0000	0.23%	
Verizon	**2**	**2389**	**160**	**0.0671**	**1970**	**1.0000**	**6.71%**	
Verizon	**9**	**377**	**160**	**0.0477**	**869**	**0.5793**	**8.23%**	
Verizon	**2**	**3127**	**160**	**0.0878**	**2145**	**1.0000**	**8.78%**	
Verizon	**2**	**1005**	**160**	**0.0282**	**698**	**0.4973**	**5.68%**	
								31.3%
* Source: Siting Council								

ATTACHMENT 3

Date: **November 23, 2016**

Sean Dempsey
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Velocitel, Inc., d.b.a. FDH Velocitel
6521 Meridien Drive
Raleigh, NC 27616
919.755.1012

Subject: **Structural Analysis Report**

Carrier Designation:	***Verizon Wireless* Co-Locate**	
	Carrier Site Name:	Monroe West CT
	Carrier Site Number:	178702
Crown Castle Designation:	**Crown Castle BU Number:**	876355
	Crown Castle Site Name:	UPPER STEPNEY - TLC
	Crown Castle JDE Job Number:	400131
	Crown Castle Work Order Number:	1328607
	Crown Castle Application Number:	364139 Rev. 0
Engineering Firm Designation:	**FDH Velocitel Project Number:**	16PWSB1400
Site Data:	**474-480 Main St., MONROE, Fairfield County, CT** **Latitude *41° 19' 31.99"*, Longitude *-73° 15' 57.05"*** **191.5 Foot - Monopole Tower**	

Dear Sean Dempsey,

FDH Velocitel 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 973028, in accordance with application 364139, revision 0.

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:

LC7: Existing + Reserved + Proposed Equipment **Sufficient Capacity**
Note: See Table I and Table II for the proposed and existing/reserved loading, respectively.

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the TIA-222-G Standard per Exception #5 of Section 1609.1.1. Exposure Category B with a maximum topographic factor 1, Risk Category II were used in this analysis.

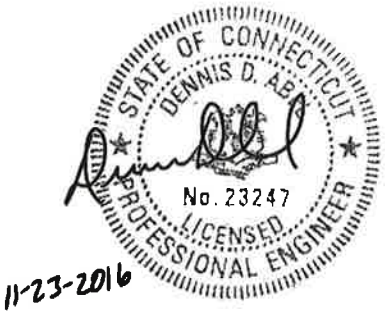
We at *FDH Velocitel* appreciate the opportunity of providing our continuing professional services to you and Crown Castle. If you have any questions or need further assistance on this or any other projects please give us a call.

Respectfully submitted by:

Phylicia D. Hicks
Project Engineer I

Reviewed by:

Dennis D. Abel, PE
Director – Structural Engineering
CT PE License No. 23247



11-23-2016

TABLE OF CONTENTS

1) INTRODUCTION

This tower is a 191.5 ft Monopole tower designed by ENGINEERED ENDEAVORS, INC. in October of 2000. 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 TIA/EIA-222-G Structural Standard for Antenna Supporting Structures and Antennas using a 3-second gust wind speed of 97 mph with no ice, 50 mph with 0.75 inch ice thickness and 60 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
160.0	160.0	3	kathrein	742 213 w/ Mount Pipe	1	1-5/8	-
		3	alcatel lucent	AWS4 (B66) 4x45 RRH			
		1	rfs celwave	DB-B1-6C-8AB-0Z			

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
192.0	194.0	12	ems wireless	RV65-18-02DPL2 w/ Mount Pipe	24	1-5/8	1
		6	ericsson	KRY 112 144/1			
	192.0	1	crown mounts	T-Arm Mount [TA 602-3]			
160.0	160.0	4	antel	LPA-80063/6CF w/ Mount Pipe	12	1-5/8	1
		2	antel	BXA-70063-6CF-2 w/ Mount Pipe			
		2	antel	BXA-171063-12BF w/ Mount Pipe			
		2	antel	LPA-80080/4CF w/ Mount Pipe			
		1	antel	BXA-70063/4CF w/ Mount Pipe			
		1	antel	BXA-171063-8BF-2 w/ Mount Pipe			
		6	rfs celwave	FD9R6004/2C-3L			
		1	crown mounts	Platform Mount [LP 303-1]			
154.0	154.0	3	alcatel lucent	TME-PCS 1900MHz 4x45W-65MHz	-	-	1
		3	alcatel lucent	TME-800MHZ RRH			
		1	crown mounts	Side Arm Mount [SO 102-3]			
150.0	152.0	3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe	1	1-1/4	2
		3	alcatel lucent	TD-RRH8x20-25			
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe	3	1-1/4	1
		3	alcatel lucent	800 EXTERNAL NOTCH FILTER			
		9	rfs celwave	ACU-A20-N			
	150.0	1	crown mounts	Platform Mount [LP 601-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
140.0	140.0	3	powerwave technologies	7770.00 w/ Mount Pipe	6 2 1	1-1/4 5/8 3/8	1
		3	powerwave technologies	P65-16-XLH-RR w/ Mount Pipe			
		6	powerwave technologies	LGP21401			
		3	ericsson	RRUS-11			
		1	raycap	DC6-48-60-18-8F			
		1	crown mounts	Platform Mount [LP 403-1]			
50.0	52.0	1	kathrein	OG-860/1920/GPS-A	1	1/2	1
	50.0	1	crown mounts	Side Arm Mount [SO 701-1]			

Notes:
1) Existing Equipment
2) Reserved Equipment

Table 3 - Design 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)
191.5	191.5	12	Dapa	48000	-	-
181.5	181.5	12	Dapa	48000	-	-
171.5	171.5	12	Dapa	48000	-	-
161.5	161.5	12	Dapa	48000	-	-
150.0	150.0	12	Dapa	48000	-	-
140.0	140.0	12	Dapa	48000	-	-
50.0	50.0	1	Generic	GPS Antenna	-	-

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Clarence Welti Associates, Inc.	1531885	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	Engineering Endeavors, Inc.	1631625	CCISITES
4-TOWER MANUFACTURER DRAWINGS	Engineering Endeavors, Inc.	1631582	CCISITES

3.1) Analysis Method

tnxTower (version 7.0.5.1), 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.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary)

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	191.5 - 172.46	Pole	TP20.46x15.5x0.188	1	-2.308	852.683	14.3	Pass
L2	172.46 - 127.753	Pole	TP31.6x19.282x0.313	2	-15.483	2220.140	35.1	Pass
L3	127.753 - 83.0833	Pole	TP42.19x29.815x0.438	3	-27.002	4156.060	38.5	Pass
L4	83.0833 - 40.4567	Pole	TP52.59x39.847x0.5	4	-42.840	5916.280	37.4	Pass
L5	40.4567 - 0	Pole	TP62x49.727x0.5	5	-65.070	6834.140	41.2	Pass
							Summary	
						Pole (L5)	41.2	Pass
						RATING =	41.2	Pass

Table 6 - Tower Component Stresses vs. Capacity – LC7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	39.6	Pass
1	Base Plate	0	49.6	Pass
1	Base Foundation	0	53.0	Pass
1	Base Foundation Soil Interaction	0	41.0	Pass

Structure Rating (max from all components) =	53.0%

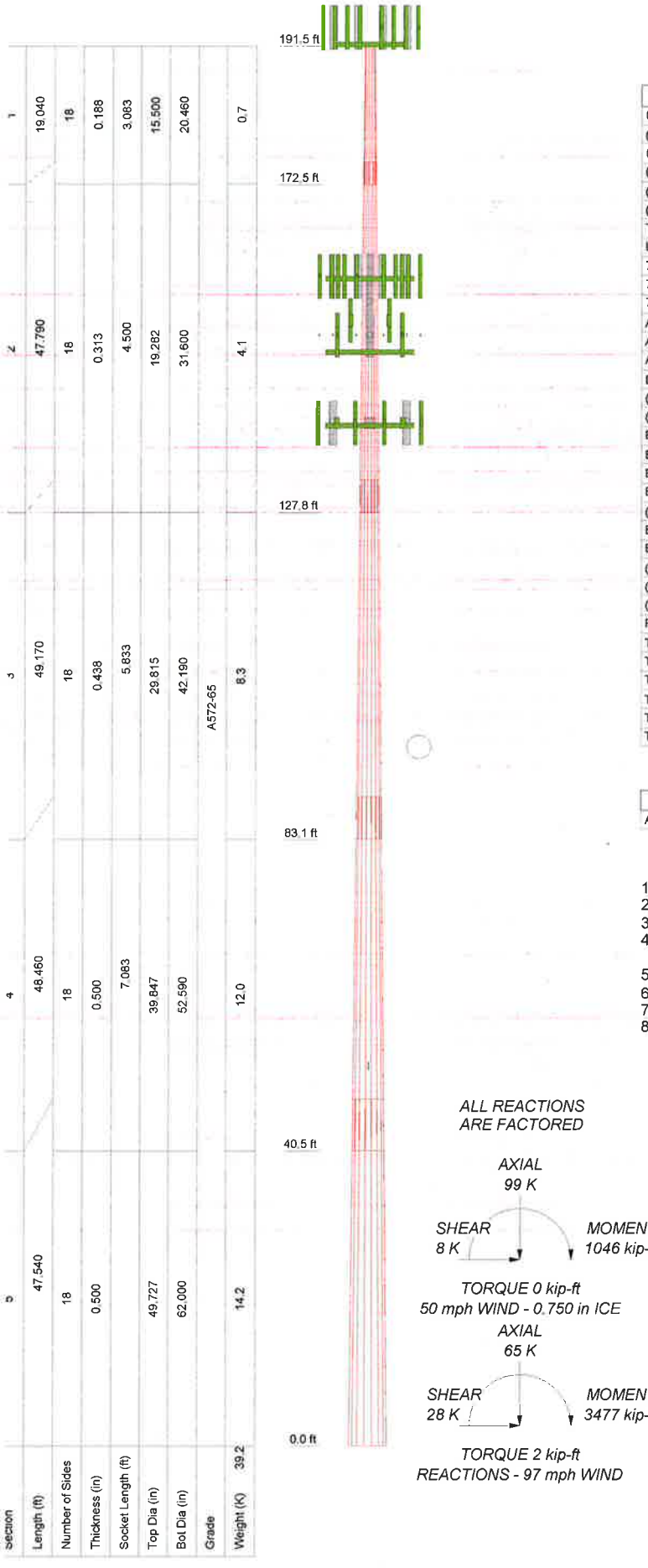
Notes:
1) See additional documentation in "Appendix C – Additional Calculations" for calculations supporting the % capacity consumed.

4.1) Recommendations

The tower and its base foundation have sufficient capacity to carry the existing, reserved and proposed loading. No modifications are required at this time.

APPENDIX A

TNXTOWER OUTPUT



Section	1	2	3	4	5
Length (ft)	19.040	47.790	49.170	48.460	47.540
Number of Sides	18	18	18	18	18
Thickness (in)	0.188	0.313	0.438	0.500	0.500
Socket Length (ft)	3.083	4.500	5.833	7.083	
Top Dia (in)	15.500	19.282	29.815	39.847	49.727
Bot Dia (in)	20.460	31.600	42.190	52.590	62.000
Grade			A572-65		
Weight (K)	0.7	4.1	8.3	12.0	14.2

39.2

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
(4) RV65-18-02DPL2 w/ Mount Pipe	192	Side Arm Mount [SO 102-3]	154
(4) RV65-18-02DPL2 w/ Mount Pipe	192	APXVTM14-C-120 w/ Mount Pipe	150
(4) RV65-18-02DPL2 w/ Mount Pipe	192	APXVTM14-C-120 w/ Mount Pipe	150
(2) KRY 112 144/1	192	APXVTM14-C-120 w/ Mount Pipe	150
(2) KRY 112 144/1	192	TD-RRH8x20-25	150
(2) KRY 112 144/1	192	TD-RRH8x20-25	150
T-Arm Mount [TA 602-3]	192	TD-RRH8x20-25	150
Lightning Rod	191.5	APXVSPP18-C-A20 w/ Mount Pipe	150
742 213 w/ Mount Pipe	160	APXVSPP18-C-A20 w/ Mount Pipe	150
742 213 w/ Mount Pipe	160	APXVSPP18-C-A20 w/ Mount Pipe	150
742 213 w/ Mount Pipe	160	800 EXTERNAL NOTCH FILTER	150
AWS4 (B66) 4x45 RRH	160	800 EXTERNAL NOTCH FILTER	150
AWS4 (B66) 4x45 RRH	160	800 EXTERNAL NOTCH FILTER	150
AWS4 (B66) 4x45 RRH	160	(3) ACU-A20-N	150
DB-B1-6C-12AB-0Z	160	(3) ACU-A20-N	150
(2) LPA-80063/6CF w/ Mount Pipe	160	(3) ACU-A20-N	150
(2) LPA-80063/6CF w/ Mount Pipe	160	Platform Mount [LP 601-1]	150
BXA-70063-6CF-2 w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
BXA-70063-6CF-2 w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
BXA-171063-12BF w/ Mount Pipe	160	7770.00 w/ Mount Pipe	140
BXA-171063-12BF w/ Mount Pipe	160	P65-16-XLH-RR w/ Mount Pipe	140
(2) LPA-80080/4CF w/ Mount Pipe	160	P65-16-XLH-RR w/ Mount Pipe	140
BXA-70063/4CF w/ Mount Pipe	160	P65-16-XLH-RR w/ Mount Pipe	140
BXA-171063-8BF-2 w/ Mount Pipe	160	(2) LGP21401	140
(2) FD9R6004/2C-3L	160	(2) LGP21401	140
(2) FD9R6004/2C-3L	160	(2) LGP21401	140
(2) FD9R6004/2C-3L	160	RRUS-11	140
Platform Mount [LP 303-1]	160	RRUS-11	140
TME-PCS 1900MHz 4x45W-65MHz	154	RRUS-11	140
TME-PCS 1900MHz 4x45W-65MHz	154	DC6-48-60-18-8F	140
TME-PCS 1900MHz 4x45W-65MHz	154	Platform Mount [LP 403-1]	140
TME-800MHZ RRH	154	OG-860/1920/GPS-A	50
TME-800MHZ RRH	154	Side Arm Mount [SO 701-1]	50
TME-800MHZ RRH	154		

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure B to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.000 ft
8. TOWER RATING: 41.2%

ALL REACTIONS ARE FACTORED

AXIAL 99 K

SHEAR 8 K *MOMENT 1046 kip-ft*

TORQUE 0 kip-ft
50 mph WIND - 0.750 in ICE

AXIAL 65 K

SHEAR 28 K *MOMENT 3477 kip-ft*

TORQUE 2 kip-ft
REACTIONS - 97 mph WIND

FDH VELOCITEL
Tower Analysis
FDH Velocitel
6521 Meridien Drive, Suite 107
Raleigh, North Carolina 27616
Phone: 9197551012
FAX: 9197551031

Job: *UPPER STEPNEY - TLC, 876355*			
Project: *16PWSB1400*			
Client: Crown Castle	Drawn by: PHicks	App'd:	
Code: TIA-222-G	Date: 11/23/16	Scale: N	
Path:		Dwg No.	

Tower Input Data

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

Tower is located in Fairfield County, Connecticut.
Basic wind speed of 97 mph.
Structure Class II.
Exposure Category B.
Topographic Category 1.
Crest Height 0.000 ft.
Nominal ice thickness of 0.750 in.
Ice thickness is considered to increase with height.
Ice density of 56 pcf.
A wind speed of 50 mph is used in combination with ice.
Temperature drop of 50 °F.
Deflections calculated using a wind speed of 60 mph.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.
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	Use ASCE 10 X-Brace Ly Rules
Consider Moments - Horizontals	Assume Legs Pinned	Calculate Redundant Bracing Forces
Consider Moments - Diagonals	√ Assume Rigid Index Plate	Ignore Redundant Members in FEA
Use Moment Magnification	√ Use Clear Spans For Wind Area	SR Leg Bolts Resist Compression
√ Use Code Stress Ratios	Use Clear Spans For KL/r	All Leg Panels Have Same Allowable
√ Use Code Safety Factors - Guys	Retension Guys To Initial Tension	Offset Girt At Foundation
Escalate Ice	√ Bypass Mast Stability Checks	√ Consider Feed Line Torque
Always Use Max Kz	√ Use Azimuth Dish Coefficients	Include Angle Block Shear Check
Use Special Wind Profile	√ Project Wind Area of Appurt.	Use TIA-222-G Bracing Resist. Exemption
Include Bolts In Member Capacity	Autocalc Torque Arm Areas	Use TIA-222-G Tension Splice Exemption
Leg Bolts Are At Top Of Section	Add IBC .6D+W Combination	Poles
Secondary Horizontal Braces Leg	√ Sort Capacity Reports By Component	√ Include Shear-Torsion Interaction
Use Diamond Inner Bracing (4 Sided)	Triangulate Diamond Inner Bracing	Always Use Sub-Critical Flow
SR Members Have Cut Ends	Treat Feed Line Bundles As Cylinder	Use Top Mounted Sockets
SR Members Are Concentric		

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	191.500-172.460	19.040	3.083	18	15.500	20.460	0.188	0.750	A572-65 (65 ksi)
L2	172.460-127.753	47.790	4.500	18	19.282	31.600	0.313	1.250	A572-65 (65 ksi)

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*
L3	127.753-83.083	49.170	5.833	18	29.815	42.190	0.438	1.750	A572-65 (65 ksi)
L4	83.083-40.457	48.460	7.083	18	39.847	52.590	0.500	2.000	A572-65 (65 ksi)
L5	40.457-0.000	47.540		18	49.727	62.000	0.500	2.000	A572-65 (65 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	15.739	9.113	269.950	5.436	7.874	34.284	540.256	4.557	2.398	12.789
	20.776	12.065	626.423	7.197	10.394	60.270	1253.670	6.033	3.271	17.445
L2	20.386	18.815	855.356	6.734	9.795	87.324	1711.837	9.409	2.844	9.099
	32.087	31.033	3838.018	11.107	16.053	239.087	7681.086	15.520	5.012	16.037
L3	31.425	40.794	4448.064	10.429	15.146	293.678	8901.981	20.401	4.477	10.234
	42.841	57.979	12769.382	14.822	21.433	595.795	25555.567	28.995	6.655	15.212
L4	42.019	62.444	12213.654	13.968	20.242	603.375	24443.379	31.228	6.133	12.266
	53.401	82.667	28338.539	18.492	26.716	1060.744	56714.366	41.341	8.376	16.752
L5	52.351	78.124	23918.499	17.476	25.261	946.836	47868.471	39.069	7.872	15.744
	62.956	97.600	46637.979	21.833	31.496	1480.759	93337.326	48.810	10.032	20.064

伀ŋ儀ŋ市ŋ 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*	*Double Angle Stitch Bolt Spacing Redundants* *in*
L1 191.500-172.460				1	1	1			
L2 172.460-127.753				1	1	1			
L3 127.753-83.083				1	1	1			
L4 83.083-40.457				1	1	1			
L5 40.457-0.000				1	1	1			

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	*Sector*	*Component Type*	*Placement* *ft*	*Total Number*	*Number Per Row*	*Start/End Position*	*Width or Diameter* *in*	*Perimeter* *in*	*Weight* *klf*
Safety Line 3/8	C	Surface Ar (CaAa)	191.500 - 0.000	1	1	-0.020 0.200	0.375		0.000
Climbing Ladder	A	Surface Af (CaAa)	152.000 - 144.000	1	1	-0.030 -0.030	2.500	10.000	0.008
HB158-1-08U8-S8J18(1-5/8")	B	Surface Ar (CaAa)	160.000 - 0.000	1	1	0.450 0.500	1.980		0.001

Description	Sector	Component Type	Placement ft	Total Number	Number Per Row	Start/End Position	Width or Diameter in	Perimeter in	Weight klf
*									

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 klf
*								
LDF7-50A(1-5/8")	A	No	Inside Pole	191.500 - 0.000	24	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
*								
AVA7-50(1-5/8")	C	No	Inside Pole	160.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
*								
HB114-1-0813U4-M5J(1 1/4")	A	No	Inside Pole	150.000 - 0.000	4	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
*								
LDF6-50A(1-1/4")	B	No	Inside Pole	140.000 - 0.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
FB-L98B-002-75000(3/8")	B	No	Inside Pole	140.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
WR-VG82ST-BRDA(5/8")	B	No	Inside Pole	140.000 - 0.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
2" Rigid Conduit	B	No	Inside Pole	140.000 - 0.000	1	No Ice	0.000	0.003
						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.003
*								
LDF4-50A(1/2")	A	No	Inside Pole	50.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
*								

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	191.500-172.460	A	0.000	0.000	0.000	0.000	0.375
		B	0.000	0.000	0.000	0.000	0.000
		C	0.000	0.000	0.714	0.000	0.004
L2	172.460-127.753	A	0.000	0.000	3.333	0.000	1.050
		B	0.000	0.000	6.385	0.000	0.133
		C	0.000	0.000	1.677	0.000	0.281
L3	127.753-83.083	A	0.000	0.000	0.000	0.000	1.094
		B	0.000	0.000	8.845	0.000	0.390
		C	0.000	0.000	1.675	0.000	0.385
L4	83.083-40.457	A	0.000	0.000	0.000	0.000	1.045
		B	0.000	0.000	8.440	0.000	0.372
		C	0.000	0.000	1.599	0.000	0.367

Tower Section	Tower Elevation ft	Face	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L5	40.457-0.000	A	0.000	0.000	0.000	0.000	0.996
		B	0.000	0.000	8.010	0.000	0.353
		C	0.000	0.000	1.517	0.000	0.349

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft²	A_F ft²	C_AA_A In Face ft²	C_AA_A Out Face ft²	Weight K
L1	191.500-172.460	A	1.779	0.000	0.000	0.000	0.000	0.375
		B		0.000	0.000	0.000	0.000	0.000
		C		0.000	0.000	7.488	0.000	0.093
L2	172.460-127.753	A	1.744	0.000	0.000	5.481	0.000	1.142
		B		0.000	0.000	17.857	0.000	0.396
		C		0.000	0.000	17.582	0.000	0.490
L3	127.753-83.083	A	1.683	0.000	0.000	0.000	0.000	1.094
		B		0.000	0.000	24.423	0.000	0.744
		C		0.000	0.000	17.253	0.000	0.587
L4	83.083-40.457	A	1.596	0.000	0.000	0.000	0.000	1.045
		B		0.000	0.000	22.792	0.000	0.693
		C		0.000	0.000	15.950	0.000	0.548
L5	40.457-0.000	A	1.424	0.000	0.000	0.000	0.000	0.996
		B		0.000	0.000	20.926	0.000	0.635
		C		0.000	0.000	14.433	0.000	0.504

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	191.500-172.460	-0.010	0.054	-0.076	0.401
L2	172.460-127.753	-0.165	-0.019	-0.097	0.373
L3	127.753-83.083	0.246	0.181	0.466	0.683
L4	83.083-40.457	0.247	0.182	0.484	0.709
L5	40.457-0.000	0.247	0.183	0.489	0.711

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L1	1	Safety Line 3/8	172.46 - 191.50	1.0000	1.0000
L1	2	Climbing Ladder	172.46 - 152.00	1.0000	1.0000
L1	7	HB158-1-08U8-S8J18(1-5/8")	172.46 - 160.00	1.0000	1.0000
L2	1	Safety Line 3/8	127.75 - 172.46	1.0000	1.0000

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice
L2	7	HB158-1-08U8-S8J18(1-5/8")	127.75 - 160.00	1.0000	1.0000
L3	1	Safety Line 3/8	83.08 - 127.75	1.0000	1.0000
L3	7	HB158-1-08U8-S8J18(1-5/8")	83.08 - 127.75	1.0000	1.0000
L4	1	Safety Line 3/8	40.46 - 83.08	1.0000	1.0000
L4	7	HB158-1-08U8-S8J18(1-5/8")	40.46 - 83.08	1.0000	1.0000

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod	C	From Leg	0.000 0.000 2.000	0.000	191.500	No Ice 1/2" Ice 1" Ice	0.250 0.664 0.973	0.250 0.664 0.973	0.031 0.034 0.039
***									
(4) RV65-18-02DPL2 w/ Mount Pipe	A	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice	3.537 3.954 4.368	3.294 4.020 4.696	0.031 0.064 0.103
(4) RV65-18-02DPL2 w/ Mount Pipe	B	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice	3.537 3.954 4.368	3.294 4.020 4.696	0.031 0.064 0.103
(4) RV65-18-02DPL2 w/ Mount Pipe	C	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice	3.537 3.954 4.368	3.294 4.020 4.696	0.031 0.064 0.103
(2) KRY 112 144/1	A	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice	0.352 0.428 0.512	0.162 0.219 0.285	0.011 0.014 0.018
(2) KRY 112 144/1	B	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice	0.352 0.428 0.512	0.162 0.219 0.285	0.011 0.014 0.018
(2) KRY 112 144/1	C	From Leg	4.000 0.000 2.000	0.000	192.000	No Ice 1/2" Ice 1" Ice	0.352 0.428 0.512	0.162 0.219 0.285	0.011 0.014 0.018
T-Arm Mount [TA 602-3]	C	None		0.000	192.000	No Ice 1/2" Ice 1" Ice	11.590 15.440 19.290	11.590 15.440 19.290	0.774 0.990 1.206
***									
742 213 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice	5.373 5.950 6.501	4.620 6.000 6.982	0.049 0.094 0.146
742 213 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice	5.373 5.950 6.501	4.620 6.000 6.982	0.049 0.094 0.146
742 213 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice	5.373 5.950 6.501	4.620 6.000 6.982	0.049 0.094 0.146
AWS4 (B66) 4x45 RRH	A	From Leg	4.000 0.000	0.000	160.000	No Ice 1/2" Ice	2.660 2.878	1.586 1.769	0.064 0.084

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
			0.000			1" Ice	3.104	1.959	0.108
AWS4 (B66) 4x45 RRH	B	From Leg	4.000	0.000	160.000	No Ice	2.660	1.586	0.064
			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
AWS4 (B66) 4x45 RRH	C	From Leg	4.000	0.000	160.000	No Ice	2.660	1.586	0.064
			0.000			1/2" Ice	2.878	1.769	0.084
			0.000			1" Ice	3.104	1.959	0.108
DB-B1-6C-12AB-0Z	C	From Leg	4.000	0.000	160.000	No Ice	4.800	2.000	0.044
			0.000			1/2" Ice	5.070	2.193	0.080
			0.000			1" Ice	5.348	2.393	0.120
(2) LPA-80063/6CF w/ Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	9.831	10.215	0.052
			0.000			1/2" Ice	10.400	11.384	0.145
			0.000			1" Ice	10.933	12.269	0.246
(2) LPA-80063/6CF w/ Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	9.831	10.215	0.052
			0.000			1/2" Ice	10.400	11.384	0.145
			0.000			1" Ice	10.933	12.269	0.246
BXA-70063-6CF-2 w/ Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	7.806	5.801	0.042
			0.000			1/2" Ice	8.357	6.953	0.103
			0.000			1" Ice	8.872	7.819	0.171
BXA-70063-6CF-2 w/ Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	7.806	5.801	0.042
			0.000			1/2" Ice	8.357	6.953	0.103
			0.000			1" Ice	8.872	7.819	0.171
BXA-171063-12BF w/ Mount Pipe	A	From Leg	4.000	0.000	160.000	No Ice	4.971	5.228	0.040
			0.000			1/2" Ice	5.521	6.389	0.086
			0.000			1" Ice	6.036	7.261	0.139
BXA-171063-12BF w/ Mount Pipe	B	From Leg	4.000	0.000	160.000	No Ice	4.971	5.228	0.040
			0.000			1/2" Ice	5.521	6.389	0.086
			0.000			1" Ice	6.036	7.261	0.139
(2) LPA-80080/4CF w/ Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	2.619	5.399	0.012
			0.000			1/2" Ice	2.922	5.726	0.045
			0.000			1" Ice	3.232	6.061	0.083
BXA-70063/4CF w/ Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	4.842	3.470	0.027
			0.000			1/2" Ice	5.194	4.046	0.068
			0.000			1" Ice	5.554	4.638	0.115
BXA-171063-8BF-2 w/ Mount Pipe	C	From Leg	4.000	0.000	160.000	No Ice	3.179	3.353	0.029
			0.000			1/2" Ice	3.555	3.971	0.061
			0.000			1" Ice	3.930	4.595	0.099
(2) FD9R6004/2C-3L	A	From Leg	4.000	0.000	160.000	No Ice	0.314	0.076	0.003
			0.000			1/2" Ice	0.386	0.119	0.005
			0.000			1" Ice	0.466	0.169	0.009
(2) FD9R6004/2C-3L	B	From Leg	4.000	0.000	160.000	No Ice	0.314	0.076	0.003
			0.000			1/2" Ice	0.386	0.119	0.005
			0.000			1" Ice	0.466	0.169	0.009
(2) FD9R6004/2C-3L	C	From Leg	4.000	0.000	160.000	No Ice	0.314	0.076	0.003
			0.000			1/2" Ice	0.386	0.119	0.005
			0.000			1" Ice	0.466	0.169	0.009
Platform Mount [LP 303-1]	C	None		0.000	160.000	No Ice	14.660	14.660	1.250
						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
***									
TME-PCS 1900MHz 4x45W-65MHz	A	From Leg	2.000	0.000	154.000	No Ice	2.322	2.238	0.060
			0.000			1/2" Ice	2.527	2.441	0.083
			0.000			1" Ice	2.739	2.651	0.110
TME-PCS 1900MHz 4x45W-65MHz	B	From Leg	2.000	0.000	154.000	No Ice	2.322	2.238	0.060
			0.000			1/2" Ice	2.527	2.441	0.083
			0.000			1" Ice	2.739	2.651	0.110
TME-PCS 1900MHz	C	From Leg	2.000	0.000	154.000	No Ice	2.322	2.238	0.060

Description	Face or Leg	Offset Type	Offsets: Horz Lateral / Vert	Azimuth Adjustment	Placement		C_AA_A Front	C_AA_A Side	Weight
			ft / ft / ft	°	ft		ft^2	ft^2	K
4x45W-65MHz			0.000			1/2" Ice	2.527	2.441	0.083
			0.000			1" Ice	2.739	2.651	0.110
TME-800MHZ RRH	A	From Leg	2.000	0.000	154.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			0.000			1" Ice	2.512	2.127	0.098
TME-800MHZ RRH	B	From Leg	2.000	0.000	154.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			0.000			1" Ice	2.512	2.127	0.098
TME-800MHZ RRH	C	From Leg	2.000	0.000	154.000	No Ice	2.134	1.773	0.053
			0.000			1/2" Ice	2.320	1.946	0.074
			0.000			1" Ice	2.512	2.127	0.098
Side Arm Mount [SO 102-3]	C	None		0.000	154.000	No Ice	3.000	3.000	0.081
						1/2" Ice	3.480	3.480	0.111
						1" Ice	3.960	3.960	0.141
*									
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.000	0.000	150.000	No Ice	6.580	4.959	0.077
			0.000			1/2" Ice	7.031	5.754	0.132
			2.000			1" Ice	7.473	6.472	0.193
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.000	0.000	150.000	No Ice	6.580	4.959	0.077
			0.000			1/2" Ice	7.031	5.754	0.132
			2.000			1" Ice	7.473	6.472	0.193
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.000	0.000	150.000	No Ice	6.580	4.959	0.077
			0.000			1/2" Ice	7.031	5.754	0.132
			2.000			1" Ice	7.473	6.472	0.193
TD-RRH8x20-25	A	From Leg	4.000	0.000	150.000	No Ice	3.704	1.294	0.066
			0.000			1/2" Ice	3.946	1.465	0.090
			2.000			1" Ice	4.196	1.642	0.117
TD-RRH8x20-25	B	From Leg	4.000	0.000	150.000	No Ice	3.704	1.294	0.066
			0.000			1/2" Ice	3.946	1.465	0.090
			2.000			1" Ice	4.196	1.642	0.117
TD-RRH8x20-25	C	From Leg	4.000	0.000	150.000	No Ice	3.704	1.294	0.066
			0.000			1/2" Ice	3.946	1.465	0.090
			2.000			1" Ice	4.196	1.642	0.117
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.000	0.000	150.000	No Ice	8.262	7.471	0.088
			0.000			1/2" Ice	8.822	8.656	0.158
			2.000			1" Ice	9.346	9.556	0.237
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.000	0.000	150.000	No Ice	8.262	7.471	0.088
			0.000			1/2" Ice	8.822	8.656	0.158
			2.000			1" Ice	9.346	9.556	0.237
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.000	0.000	150.000	No Ice	8.262	7.471	0.088
			0.000			1/2" Ice	8.822	8.656	0.158
			2.000			1" Ice	9.346	9.556	0.237
800 EXTERNAL NOTCH FILTER	A	From Leg	4.000	0.000	150.000	No Ice	0.660	0.321	0.011
			0.000			1/2" Ice	0.763	0.398	0.017
			2.000			1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	B	From Leg	4.000	0.000	150.000	No Ice	0.660	0.321	0.011
			0.000			1/2" Ice	0.763	0.398	0.017
			2.000			1" Ice	0.873	0.483	0.024
800 EXTERNAL NOTCH FILTER	C	From Leg	4.000	0.000	150.000	No Ice	0.660	0.321	0.011
			0.000			1/2" Ice	0.763	0.398	0.017
			2.000			1" Ice	0.873	0.483	0.024
(3) ACU-A20-N	A	From Leg	4.000	0.000	150.000	No Ice	0.067	0.117	0.001
			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004
(3) ACU-A20-N	B	From Leg	4.000	0.000	150.000	No Ice	0.067	0.117	0.001
			0.000			1/2" Ice	0.104	0.162	0.002
			2.000			1" Ice	0.148	0.215	0.004

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
(3) ACU-A20-N	C	From Leg	4.000 0.000 2.000	0.000	150.000	No Ice 1/2" Ice 1" Ice	0.067 0.104 0.148	0.117 0.162 0.215	0.001 0.002 0.004
Platform Mount [LP 601-1]	C	None		0.000	150.000	No Ice 1/2" Ice 1" Ice	28.470 33.590 38.710	28.470 33.590 38.710	1.122 1.514 1.905
***									
7770.00 w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
7770.00 w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	5.746 6.179 6.607	4.254 5.014 5.711	0.055 0.103 0.157
P65-16-XLH-RR w/ Mount Pipe	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	8.371 8.931 9.457	6.362 7.538 8.427	0.079 0.144 0.218
P65-16-XLH-RR w/ Mount Pipe	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	8.371 8.931 9.457	6.362 7.538 8.427	0.079 0.144 0.218
P65-16-XLH-RR w/ Mount Pipe	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	8.371 8.931 9.457	6.362 7.538 8.427	0.079 0.144 0.218
(2) LGP21401	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.347 0.442 0.544	0.014 0.021 0.030
(2) LGP21401	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.347 0.442 0.544	0.014 0.021 0.030
(2) LGP21401	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	1.104 1.239 1.381	0.347 0.442 0.544	0.014 0.021 0.030
RRUS-11	A	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	2.522 2.719 2.923	1.068 1.211 1.361	0.055 0.074 0.097
RRUS-11	B	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	2.522 2.719 2.923	1.068 1.211 1.361	0.055 0.074 0.097
RRUS-11	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	2.522 2.719 2.923	1.068 1.211 1.361	0.055 0.074 0.097
DC6-48-60-18-8F	C	From Leg	4.000 0.000 0.000	0.000	140.000	No Ice 1/2" Ice 1" Ice	2.200 2.398 2.604	3.700 3.940 4.187	0.019 0.050 0.085
Platform Mount [LP 403-1]	C	None		0.000	140.000	No Ice 1/2" Ice 1" Ice	18.850 24.300 29.750	18.850 24.300 29.750	1.500 1.797 2.093
***									
OG-860/1920/GPS-A	A	From Leg	2.000 0.000 2.000	0.000	50.000	No Ice 1/2" Ice 1" Ice	0.308 0.395 0.490	0.367 0.457 0.555	0.002 0.005 0.010
Side Arm Mount [SO 701-1]	A	From Leg	1.500 0.000 0.000	0.000	50.000	No Ice 1/2" Ice 1" Ice	0.850 1.140 1.430	1.670 2.340 3.010	0.065 0.079 0.093
***									

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	191.5 - 190.436	TP20.46x15.5x0.188	19.040	0.000	0.0	9.278	-1.365	689.292	0.002
	190.436 - 189.372					9.443	-1.427	701.545	0.002
	189.372 - 188.309					9.608	-1.491	713.798	0.002
	188.309 - 187.245					9.773	-1.555	726.050	0.002
	187.245 - 186.181					9.937	-1.619	738.303	0.002
	186.181 - 185.117					10.102	-1.685	750.556	0.002
	185.117 - 184.054					10.267	-1.751	762.809	0.002
	184.054 - 182.99					10.432	-1.818	775.061	0.002
	182.99 - 181.926					10.597	-1.886	787.314	0.002
	181.926 - 180.862					10.762	-1.954	799.567	0.002
	180.862 - 179.798					10.927	-2.024	811.820	0.002
	179.798 - 178.735					11.092	-2.093	824.072	0.003
	178.735 - 177.671					11.257	-2.164	834.609	0.003
	177.671 - 176.607					11.422	-2.235	843.692	0.003
	176.607 - 175.543					11.587	-2.308	852.683	0.003
	175.543 - 172.46					12.065	-1.070	878.233	0.001
L2	175.543 - 172.46	TP31.6x19.282x0.313	47.790	0.000	0.0	19.603	-1.689	1456.440	0.001
	172.46 - 170.226					20.174	-3.020	1498.870	0.002
	170.226 - 167.993					20.746	-3.287	1541.290	0.002
	167.993 - 165.759					21.317	-3.559	1583.720	0.002
	165.759 - 163.525					21.888	-3.836	1626.150	0.002
	163.525 - 161.291					22.459	-4.118	1668.580	0.002
	161.291 - 159.058					23.030	-6.591	1711.010	0.004
	159.058 - 156.824					23.601	-6.882	1753.430	0.004

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	156.824 - 154.59					24.172	-7.182	1795.860	0.004
	154.59 - 152.357					24.743	-7.950	1838.290	0.004
	152.357 - 150.123					25.314	-8.266	1880.720	0.004
	150.123 - 147.889					25.885	-10.593	1923.150	0.006
	147.889 - 145.656					26.456	-10.924	1965.570	0.006
	145.656 - 143.422					27.027	-11.262	2008.000	0.006
	143.422 - 141.188					27.598	-11.605	2050.430	0.006
	141.188 - 138.954					28.170	-14.384	2092.860	0.007
	138.954 - 136.721					28.741	-14.744	2135.290	0.007
	136.721 - 134.487					29.312	-15.110	2177.720	0.007
	134.487 - 132.253					29.883	-15.483	2220.140	0.007
	132.253 - 127.753					31.033	-7.227	2305.280	0.003
L3	132.253 - 127.753	TP42.19x29.815x0.438	49.170	0.000	0.0	42.367	-9.759	3147.670	0.003
	127.753 - 125.596					43.121	-17.484	3203.690	0.005
	125.596 - 123.438					43.875	-17.987	3259.710	0.006
	123.438 - 121.281					44.629	-18.498	3315.730	0.006
	121.281 - 119.123					45.383	-19.015	3371.750	0.006
	119.123 - 116.965					46.137	-19.540	3427.770	0.006
	116.965 - 114.808					46.891	-20.072	3483.800	0.006
	114.808 - 112.65					47.645	-20.611	3539.820	0.006
	112.65 - 110.493					48.400	-21.157	3595.840	0.006
	110.493 - 108.335					49.153	-21.710	3651.860	0.006
	108.335 - 106.177					49.908	-22.270	3707.880	0.006
	106.177 - 104.02					50.662	-22.837	3763.900	0.006
	104.02 - 101.862					51.416	-23.411	3819.930	0.006
	101.862 - 99.7046					52.170	-23.992	3875.950	0.006
	99.7046 - 97.547					52.924	-24.580	3931.970	0.006
	97.547 - 95.3894					53.678	-25.175	3987.990	0.006
	95.3894 - 93.2319					54.432	-25.777	4044.010	0.006
	93.2319 - 91.0743					55.186	-26.386	4100.030	0.006

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	91.0743 - 88.9167					55.940	-27.002	4156.060	0.006
	88.9167 - 83.0833					57.979	-14.322	4307.520	0.003
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	48.460	0.000	0.0	64.878	-15.854	4820.100	0.003
	83.0833 - 81.1087					65.702	-30.823	4881.330	0.006
	81.1087 - 79.1341					66.526	-31.471	4942.550	0.006
	79.1341 - 77.1594					67.350	-32.126	5003.770	0.006
	77.1594 - 75.1848					68.174	-32.788	5064.990	0.006
	75.1848 - 73.2102					68.998	-33.456	5126.220	0.007
	73.2102 - 71.2356					69.822	-34.132	5187.440	0.007
	71.2356 - 69.2609					70.646	-34.813	5248.660	0.007
	69.2609 - 67.2863					71.470	-35.502	5309.890	0.007
	67.2863 - 65.3117					72.294	-36.198	5371.110	0.007
	65.3117 - 63.337					73.118	-36.900	5432.330	0.007
	63.337 - 61.3624					73.942	-37.609	5493.550	0.007
	61.3624 - 59.3878					74.767	-38.325	5554.780	0.007
	59.3878 - 57.4131					75.591	-39.047	5616.000	0.007
	57.4131 - 55.4385					76.415	-39.776	5677.220	0.007
	55.4385 - 53.4639					77.239	-40.512	5738.450	0.007
	53.4639 - 51.4893					78.063	-41.255	5799.670	0.007
	51.4893 - 49.5146					78.887	-42.084	5860.890	0.007
	49.5146 - 47.54					79.711	-42.840	5916.280	0.007
	47.54 - 40.4567					82.667	-24.257	6078.310	0.004
L5	47.54 - 40.4567	TP62x49.727x0.5	47.540	0.000	0.0	81.026	-23.606	5988.870	0.004
	40.4567 - 38.3274					81.898	-48.707	6036.570	0.008
	38.3274 - 36.1981					82.771	-49.552	6083.920	0.008
	36.1981 - 34.0688					83.643	-50.403	6130.910	0.008
	34.0688 - 31.9395					84.515	-51.263	6177.540	0.008
	31.9395 - 29.8102					85.388	-52.130	6223.820	0.008
	29.8102 - 27.6809					86.260	-53.005	6269.730	0.008
	27.6809 - 25.5516					87.132	-53.887	6315.290	0.009

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
	25.5516 - 23.4223					88.005	-54.777	6360.500	0.009
	23.4223 - 21.293					88.877	-55.674	6405.340	0.009
	21.293 - 19.1637					89.749	-56.580	6449.830	0.009
	19.1637 - 17.0344					90.622	-57.492	6493.960	0.009
	17.0344 - 14.9051					91.494	-58.413	6537.730	0.009
	14.9051 - 12.7758					92.366	-59.341	6581.150	0.009
	12.7758 - 10.6465					93.239	-60.277	6624.210	0.009
	10.6465 - 8.51719					94.111	-61.220	6666.910	0.009
	8.51719 - 6.38789					94.983	-62.171	6709.260	0.009
	6.38789 - 4.2586					95.856	-63.130	6751.240	0.009
	4.2586 - 2.1293					96.728	-64.096	6792.870	0.009
	2.1293 - 0					97.601	-65.070	6834.140	0.010

Pole Bending Design Data

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
L1	191.5 - 190.436	TP20.46x15.5x0.188	6.912	220.059	0.031	0.000	220.059	0.000
	190.436 - 189.372		9.458	227.999	0.041	0.000	227.999	0.000
	189.372 - 188.309		12.057	236.080	0.051	0.000	236.080	0.000
	188.309 - 187.245		14.710	244.303	0.060	0.000	244.303	0.000
	187.245 - 186.181		17.416	252.665	0.069	0.000	252.665	0.000
	186.181 - 185.117		20.178	261.168	0.077	0.000	261.168	0.000
	185.117 - 184.054		22.995	269.812	0.085	0.000	269.812	0.000
	184.054 - 182.99		25.869	278.597	0.093	0.000	278.597	0.000
	182.99 - 181.926		28.800	287.522	0.100	0.000	287.522	0.000
	181.926 - 180.862		31.790	296.588	0.107	0.000	296.588	0.000
	180.862 - 179.798		34.838	305.796	0.114	0.000	305.796	0.000
	179.798 - 178.735		37.946	315.143	0.120	0.000	315.143	0.000
	178.735 - 177.671		41.115	323.966	0.127	0.000	323.966	0.000
	177.671 -		44.345	332.337	0.133	0.000	332.337	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	176.607							
	176.607 - 175.543		47.637	340.775	0.140	0.000	340.775	0.000
	175.543 - 172.46		22.663	365.604	0.062	0.000	365.604	0.000
L2	175.543 - 172.46	TP31.6x19.282x0.313	34.906	587.283	0.059	0.000	587.283	0.000
	172.46 - 170.226		65.143	622.272	0.105	0.000	622.272	0.000
	170.226 - 167.993		73.023	658.273	0.111	0.000	658.273	0.000
	167.993 - 165.759		81.213	695.288	0.117	0.000	695.288	0.000
	165.759 - 163.525		89.718	733.314	0.122	0.000	733.314	0.000
	163.525 - 161.291		98.544	772.354	0.128	0.000	772.354	0.000
	161.291 - 159.058		112.260	812.406	0.138	0.000	812.406	0.000
	159.058 - 156.824		132.208	853.467	0.155	0.000	853.467	0.000
	156.824 - 154.59		152.523	895.550	0.170	0.000	895.550	0.000
	154.59 - 152.357		174.255	938.633	0.186	0.000	938.633	0.000
	152.357 - 150.123		196.698	982.742	0.200	0.000	982.742	0.000
	150.123 - 147.889		229.963	1027.850	0.224	0.000	1027.850	0.000
	147.889 - 145.656		260.333	1073.983	0.242	0.000	1073.983	0.000
	145.656 - 143.422		291.053	1121.117	0.260	0.000	1121.117	0.000
	143.422 - 141.188		322.123	1169.275	0.275	0.000	1169.275	0.000
	141.188 - 138.954		356.435	1218.433	0.293	0.000	1218.433	0.000
	138.954 - 136.721		394.379	1268.617	0.311	0.000	1268.617	0.000
	136.721 - 134.487		432.677	1319.808	0.328	0.000	1319.808	0.000
	134.487 - 132.253		471.330	1372.008	0.344	0.000	1372.008	0.000
	132.253 - 127.753		239.597	1480.033	0.162	0.000	1480.033	0.000
L3	132.253 - 127.753	TP42.19x29.815x0.438	310.863	1962.192	0.158	0.000	1962.192	0.000
	127.753 - 125.596		588.995	2033.167	0.290	0.000	2033.167	0.000
	125.596 - 123.438		627.884	2105.392	0.298	0.000	2105.392	0.000
	123.438 - 121.281		667.130	2178.883	0.306	0.000	2178.883	0.000
	121.281 - 119.123		706.733	2253.642	0.314	0.000	2253.642	0.000
	119.123 - 116.965		746.696	2329.650	0.321	0.000	2329.650	0.000
	116.965 - 114.808		787.020	2406.925	0.327	0.000	2406.925	0.000
	114.808 -		827.707	2485.458	0.333	0.000	2485.458	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	112.65							
	112.65 - 110.493		868.758	2565.258	0.339	0.000	2565.258	0.000
	110.493 - 108.335		910.175	2646.317	0.344	0.000	2646.317	0.000
	108.335 - 106.177		951.958	2728.633	0.349	0.000	2728.633	0.000
	106.177 - 104.02		994.117	2812.208	0.354	0.000	2812.208	0.000
	104.02 - 101.862		1036.642	2897.050	0.358	0.000	2897.050	0.000
	101.862 - 99.7046		1079.542	2983.150	0.362	0.000	2983.150	0.000
	99.7046 - 97.547		1122.817	3070.517	0.366	0.000	3070.517	0.000
	97.547 - 95.3894		1166.467	3159.133	0.369	0.000	3159.133	0.000
	95.3894 - 93.2319		1210.492	3249.025	0.373	0.000	3249.025	0.000
	93.2319 - 91.0743		1254.908	3340.167	0.376	0.000	3340.167	0.000
	91.0743 - 88.9167		1299.692	3432.575	0.379	0.000	3432.575	0.000
	88.9167 - 83.0833		687.893	3688.717	0.186	0.000	3688.717	0.000
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	735.120	4034.492	0.182	0.000	4034.492	0.000
	83.0833 - 81.1087		1465.492	4138.258	0.354	0.000	4138.258	0.000
	81.1087 - 79.1341		1508.275	4243.342	0.355	0.000	4243.342	0.000
	79.1341 - 77.1594		1551.383	4349.750	0.357	0.000	4349.750	0.000
	77.1594 - 75.1848		1594.800	4457.467	0.358	0.000	4457.467	0.000
	75.1848 - 73.2102		1638.525	4566.508	0.359	0.000	4566.508	0.000
	73.2102 - 71.2356		1682.575	4676.858	0.360	0.000	4676.858	0.000
	71.2356 - 69.2609		1726.925	4788.533	0.361	0.000	4788.533	0.000
	69.2609 - 67.2863		1771.592	4901.525	0.361	0.000	4901.525	0.000
	67.2863 - 65.3117		1816.575	5015.833	0.362	0.000	5015.833	0.000
	65.3117 - 63.337		1861.867	5131.458	0.363	0.000	5131.458	0.000
	63.337 - 61.3624		1907.475	5248.400	0.363	0.000	5248.400	0.000
	61.3624 - 59.3878		1953.392	5366.667	0.364	0.000	5366.667	0.000
	59.3878 - 57.4131		1999.617	5486.242	0.364	0.000	5486.242	0.000
	57.4131 - 55.4385		2046.158	5607.141	0.365	0.000	5607.141	0.000
	55.4385 - 53.4639		2093.017	5729.358	0.365	0.000	5729.358	0.000
	53.4639 - 51.4893		2140.175	5852.883	0.366	0.000	5852.883	0.000
	51.4893 -		2187.942	5977.733	0.366	0.000	5977.733	0.000

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	49.5146							
	49.5146 - 47.54		2235.817	6097.891	0.367	0.000	6097.891	0.000
	47.54 - 40.4567		1241.717	6499.517	0.191	0.000	6499.517	0.000
L5	47.54 - 40.4567	TP62x49.727x0.5	1168.767	6275.541	0.186	0.000	6275.541	0.000
	40.4567 - 38.3274		2463.850	6394.291	0.385	0.000	6394.291	0.000
	38.3274 - 36.1981		2517.508	6513.750	0.386	0.000	6513.750	0.000
	36.1981 - 34.0688		2571.467	6633.891	0.388	0.000	6633.891	0.000
	34.0688 - 31.9395		2625.725	6754.725	0.389	0.000	6754.725	0.000
	31.9395 - 29.8102		2680.283	6876.217	0.390	0.000	6876.217	0.000
	29.8102 - 27.6809		2735.150	6998.367	0.391	0.000	6998.367	0.000
	27.6809 - 25.5516		2790.317	7121.167	0.392	0.000	7121.167	0.000
	25.5516 - 23.4223		2845.792	7244.591	0.393	0.000	7244.591	0.000
	23.4223 - 21.293		2901.567	7368.633	0.394	0.000	7368.633	0.000
	21.293 - 19.1637		2957.658	7493.283	0.395	0.000	7493.283	0.000
	19.1637 - 17.0344		3014.067	7618.525	0.396	0.000	7618.525	0.000
	17.0344 - 14.9051		3070.783	7744.358	0.397	0.000	7744.358	0.000
	14.9051 - 12.7758		3127.817	7870.750	0.397	0.000	7870.750	0.000
	12.7758 - 10.6465		3185.167	7997.708	0.398	0.000	7997.708	0.000
	10.6465 - 8.51719		3242.833	8125.208	0.399	0.000	8125.208	0.000
	8.51719 - 6.38789		3300.817	8253.241	0.400	0.000	8253.241	0.000
	6.38789 - 4.2586		3359.125	8381.833	0.401	0.000	8381.833	0.000
	4.2586 - 2.1293		3417.758	8510.833	0.402	0.000	8510.833	0.000
	2.1293 - 0		3476.717	8640.417	0.402	0.000	8640.417	0.000

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
L1	191.5 - 190.436	TP20.46x15.5x0.188	2.370	344.646	0.007	0.000	440.656	0.000
	190.436 - 189.372		2.419	350.772	0.007	0.000	456.557	0.000
	189.372 - 188.309		2.469	356.899	0.007	0.000	472.738	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	188.309 - 187.245		2.520	363.025	0.007	0.000	489.202	0.000
	187.245 - 186.181		2.571	369.152	0.007	0.000	505.947	0.000
	186.181 - 185.117		2.623	375.278	0.007	0.000	522.975	0.000
	185.117 - 184.054		2.676	381.404	0.007	0.000	540.284	0.000
	184.054 - 182.99		2.730	387.531	0.007	0.000	557.875	0.000
	182.99 - 181.926		2.784	393.657	0.007	0.000	575.747	0.000
	181.926 - 180.862		2.839	399.783	0.007	0.000	593.903	0.000
	180.862 - 179.798		2.895	405.910	0.007	0.000	612.339	0.000
	179.798 - 178.735		2.952	412.036	0.007	0.006	631.058	0.000
	178.735 - 177.671		3.009	417.304	0.007	0.006	648.723	0.000
	177.671 - 176.607		3.067	421.846	0.007	0.006	665.486	0.000
	176.607 - 175.543		3.126	426.342	0.007	0.006	682.383	0.000
	175.543 - 172.46		1.356	439.116	0.003	0.002	732.102	0.000
L2	175.543 - 172.46	TP31.6x19.282x0.313	1.964	728.219	0.003	0.004	1176.000	0.000
	172.46 - 170.226		3.456	749.433	0.005	0.009	1246.067	0.000
	170.226 - 167.993		3.593	770.647	0.005	0.009	1318.158	0.000
	167.993 - 165.759		3.733	791.861	0.005	0.009	1392.275	0.000
	165.759 - 163.525		3.875	813.075	0.005	0.009	1468.425	0.000
	163.525 - 161.291		4.020	834.289	0.005	0.010	1546.600	0.000
	161.291 - 159.058		8.820	855.503	0.010	1.058	1626.800	0.001
	159.058 - 156.824		9.016	876.717	0.010	1.832	1709.025	0.001
	156.824 - 154.59		9.191	897.931	0.010	2.114	1793.283	0.001
	154.59 - 152.357		9.971	919.145	0.011	2.114	1879.567	0.001
	152.357 - 150.123		10.125	940.359	0.011	2.114	1967.883	0.001
	150.123 - 147.889		13.522	961.573	0.014	2.114	2058.225	0.001
	147.889 - 145.656		13.677	982.787	0.014	2.113	2150.592	0.001
	145.656 - 143.422		13.834	1004.000	0.014	2.113	2244.983	0.001
	143.422 - 141.188		13.993	1025.220	0.014	2.113	2341.408	0.001
	141.188 - 138.954		16.914	1046.430	0.016	2.113	2439.858	0.001
	138.954 - 136.721		17.073	1067.640	0.016	1.445	2540.333	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	136.721 - 134.487		17.232	1088.860	0.016	1.445	2642.833	0.001
	134.487 - 132.253		17.393	1110.070	0.016	1.445	2747.367	0.001
	132.253 - 127.753		7.837	1152.640	0.007	0.629	2963.683	0.000
L3	132.253 - 127.753	TP42.19x29.815x0.438	9.956	1573.830	0.006	0.816	3929.183	0.000
	127.753 - 125.596		17.956	1601.840	0.011	1.445	4071.300	0.000
	125.596 - 123.438		18.121	1629.850	0.011	1.445	4215.942	0.000
	123.438 - 121.281		18.287	1657.870	0.011	1.444	4363.100	0.000
	121.281 - 119.123		18.454	1685.880	0.011	1.444	4512.792	0.000
	119.123 - 116.965		18.621	1713.890	0.011	1.444	4665.000	0.000
	116.965 - 114.808		18.789	1741.900	0.011	1.444	4819.742	0.000
	114.808 - 112.65		18.958	1769.910	0.011	1.444	4977.000	0.000
	112.65 - 110.493		19.128	1797.920	0.011	1.444	5136.792	0.000
	110.493 - 108.335		19.298	1825.930	0.011	1.444	5299.100	0.000
	108.335 - 106.177		19.470	1853.940	0.011	1.443	5463.942	0.000
	106.177 - 104.02		19.642	1881.950	0.010	1.443	5631.300	0.000
	104.02 - 101.862		19.814	1909.960	0.010	1.443	5801.191	0.000
	101.862 - 99.7046		19.988	1937.970	0.010	1.443	5973.600	0.000
	99.7046 - 97.547		20.162	1965.980	0.010	1.443	6148.541	0.000
	97.547 - 95.3894		20.337	1994.000	0.010	1.443	6326.000	0.000
	95.3894 - 93.2319		20.513	2022.010	0.010	1.443	6505.991	0.000
	93.2319 - 91.0743		20.690	2050.020	0.010	1.442	6688.500	0.000
	91.0743 - 88.9167		20.867	2078.030	0.010	1.442	6873.533	0.000
	88.9167 - 83.0833		10.509	2153.760	0.005	0.697	7386.450	0.000
L4	88.9167 - 83.0833	TP52.59x39.847x0.5	10.950	2410.050	0.005	0.745	8078.850	0.000
	83.0833 - 81.1087		21.610	2440.660	0.009	1.442	8286.641	0.000
	81.1087 - 79.1341		21.769	2471.270	0.009	1.442	8497.083	0.000
	79.1341 - 77.1594		21.928	2501.890	0.009	1.442	8710.167	0.000
	77.1594 - 75.1848		22.086	2532.500	0.009	1.442	8925.833	0.000
	75.1848 - 73.2102		22.245	2563.110	0.009	1.442	9144.167	0.000
	73.2102 - 71.2356		22.404	2593.720	0.009	1.442	9365.167	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	71.2356 - 69.2609		22.562	2624.330	0.009	1.442	9588.750	0.000
	69.2609 - 67.2863		22.721	2654.940	0.009	1.441	9815.000	0.000
	67.2863 - 65.3117		22.879	2685.550	0.009	1.441	10043.917	0.000
	65.3117 - 63.337		23.037	2716.170	0.008	1.441	10275.500	0.000
	63.337 - 61.3624		23.195	2746.780	0.008	1.441	10509.667	0.000
	61.3624 - 59.3878		23.354	2777.390	0.008	1.441	10746.417	0.000
	59.3878 - 57.4131		23.512	2808.000	0.008	1.441	10985.917	0.000
	57.4131 - 55.4385		23.670	2838.610	0.008	1.441	11228.000	0.000
	55.4385 - 53.4639		23.828	2869.220	0.008	1.441	11472.749	0.000
	53.4639 - 51.4893		23.985	2899.830	0.008	1.441	11720.083	0.000
	51.4893 - 49.5146		24.188	2930.450	0.008	1.558	11970.083	0.000
	49.5146 - 47.54		24.345	2958.140	0.008	1.558	12210.667	0.000
	47.54 - 40.4567		13.055	3039.160	0.004	0.802	13014.916	0.000
L5	47.54 - 40.4567	TP62x49.727x0.5	11.978	2994.430	0.004	0.755	12566.416	0.000
	40.4567 - 38.3274		25.158	3018.290	0.008	1.558	12804.249	0.000
	38.3274 - 36.1981		25.297	3041.960	0.008	1.558	13043.416	0.000
	36.1981 - 34.0688		25.438	3065.450	0.008	1.558	13284.000	0.000
	34.0688 - 31.9395		25.579	3088.770	0.008	1.558	13526.000	0.000
	31.9395 - 29.8102		25.722	3111.910	0.008	1.558	13769.249	0.000
	29.8102 - 27.6809		25.865	3134.870	0.008	1.558	14013.833	0.000
	27.6809 - 25.5516		26.008	3157.650	0.008	1.558	14259.749	0.000
	25.5516 - 23.4223		26.153	3180.250	0.008	1.557	14506.916	0.000
	23.4223 - 21.293		26.298	3202.670	0.008	1.557	14755.249	0.000
	21.293 - 19.1637		26.444	3224.910	0.008	1.557	15004.916	0.000
	19.1637 - 17.0344		26.591	3246.980	0.008	1.557	15255.667	0.000
	17.0344 - 14.9051		26.739	3268.870	0.008	1.557	15507.667	0.000
	14.9051 - 12.7758		26.887	3290.580	0.008	1.557	15760.749	0.000
	12.7758 - 10.6465		27.037	3312.100	0.008	1.557	16015.000	0.000
	10.6465 - 8.51719		27.186	3333.460	0.008	1.557	16270.333	0.000
	8.51719 - 6.38789		27.337	3354.630	0.008	1.557	16526.667	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	6.38789 - 4.2586		27.489	3375.620	0.008	1.557	16784.083	0.000
	4.2586 - 2.1293		27.641	3396.440	0.008	1.557	17042.583	0.000
	2.1293 - 0		27.794	3417.070	0.008	1.557	17302.000	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	191.5 - 190.436	0.002	0.031	0.000	0.007	0.000	0.033	1.000	4.8.2
	190.436 - 189.372	0.002	0.041	0.000	0.007	0.000	0.044	1.000	4.8.2
	189.372 - 188.309	0.002	0.051	0.000	0.007	0.000	0.053	1.000	4.8.2
	188.309 - 187.245	0.002	0.060	0.000	0.007	0.000	0.062	1.000	4.8.2
	187.245 - 186.181	0.002	0.069	0.000	0.007	0.000	0.071	1.000	4.8.2
	186.181 - 185.117	0.002	0.077	0.000	0.007	0.000	0.080	1.000	4.8.2
	185.117 - 184.054	0.002	0.085	0.000	0.007	0.000	0.088	1.000	4.8.2
	184.054 - 182.99	0.002	0.093	0.000	0.007	0.000	0.095	1.000	4.8.2
	182.99 - 181.926	0.002	0.100	0.000	0.007	0.000	0.103	1.000	4.8.2
	181.926 - 180.862	0.002	0.107	0.000	0.007	0.000	0.110	1.000	4.8.2
	180.862 - 179.798	0.002	0.114	0.000	0.007	0.000	0.116	1.000	4.8.2
	179.798 - 178.735	0.003	0.120	0.000	0.007	0.000	0.123	1.000	4.8.2
	178.735 - 177.671	0.003	0.127	0.000	0.007	0.000	0.130	1.000	4.8.2
	177.671 - 176.607	0.003	0.133	0.000	0.007	0.000	0.136	1.000	4.8.2
	176.607 - 175.543	0.003	0.140	0.000	0.007	0.000	0.143	1.000	4.8.2
	175.543 - 172.46	0.001	0.062	0.000	0.003	0.000	0.063	1.000	4.8.2
L2	175.543 - 172.46	0.001	0.059	0.000	0.003	0.000	0.061	1.000	4.8.2
	172.46 - 170.226	0.002	0.105	0.000	0.005	0.000	0.107	1.000	4.8.2
	170.226 - 167.993	0.002	0.111	0.000	0.005	0.000	0.113	1.000	4.8.2
	167.993 - 165.759	0.002	0.117	0.000	0.005	0.000	0.119	1.000	4.8.2
	165.759 - 163.525	0.002	0.122	0.000	0.005	0.000	0.125	1.000	4.8.2
	163.525 - 161.291	0.002	0.128	0.000	0.005	0.000	0.130	1.000	4.8.2

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	161.291 - 159.058	0.004	0.138	0.000	0.010	0.001	0.142	1.000	4.8.2
	159.058 - 156.824	0.004	0.155	0.000	0.010	0.001	0.159	1.000	4.8.2
	156.824 - 154.59	0.004	0.170	0.000	0.010	0.001	0.174	1.000	4.8.2
	154.59 - 152.357	0.004	0.186	0.000	0.011	0.001	0.190	1.000	4.8.2
	152.357 - 150.123	0.004	0.200	0.000	0.011	0.001	0.205	1.000	4.8.2
	150.123 - 147.889	0.006	0.224	0.000	0.014	0.001	0.229	1.000	4.8.2
	147.889 - 145.656	0.006	0.242	0.000	0.014	0.001	0.248	1.000	4.8.2
	145.656 - 143.422	0.006	0.260	0.000	0.014	0.001	0.265	1.000	4.8.2
	143.422 - 141.188	0.006	0.275	0.000	0.014	0.001	0.281	1.000	4.8.2
	141.188 - 138.954	0.007	0.293	0.000	0.016	0.001	0.300	1.000	4.8.2
	138.954 - 136.721	0.007	0.311	0.000	0.016	0.001	0.318	1.000	4.8.2
	136.721 - 134.487	0.007	0.328	0.000	0.016	0.001	0.335	1.000	4.8.2
	134.487 - 132.253	0.007	0.344	0.000	0.016	0.001	0.351	1.000	4.8.2
	132.253 - 127.753	0.003	0.162	0.000	0.007	0.000	0.165	1.000	4.8.2
L3	132.253 - 127.753	0.003	0.158	0.000	0.006	0.000	0.162	1.000	4.8.2
	127.753 - 125.596	0.005	0.290	0.000	0.011	0.000	0.295	1.000	4.8.2
	125.596 - 123.438	0.006	0.298	0.000	0.011	0.000	0.304	1.000	4.8.2
	123.438 - 121.281	0.006	0.306	0.000	0.011	0.000	0.312	1.000	4.8.2
	121.281 - 119.123	0.006	0.314	0.000	0.011	0.000	0.319	1.000	4.8.2
	119.123 - 116.965	0.006	0.321	0.000	0.011	0.000	0.326	1.000	4.8.2
	116.965 - 114.808	0.006	0.327	0.000	0.011	0.000	0.333	1.000	4.8.2
	114.808 - 112.65	0.006	0.333	0.000	0.011	0.000	0.339	1.000	4.8.2
	112.65 - 110.493	0.006	0.339	0.000	0.011	0.000	0.345	1.000	4.8.2
	110.493 - 108.335	0.006	0.344	0.000	0.011	0.000	0.350	1.000	4.8.2
	108.335 - 106.177	0.006	0.349	0.000	0.011	0.000	0.355	1.000	4.8.2
	106.177 - 104.02	0.006	0.354	0.000	0.010	0.000	0.360	1.000	4.8.2
	104.02 - 101.862	0.006	0.358	0.000	0.010	0.000	0.364	1.000	4.8.2
	101.862 - 99.7046	0.006	0.362	0.000	0.010	0.000	0.368	1.000	4.8.2
	99.7046 - 97.547	0.006	0.366	0.000	0.010	0.000	0.372	1.000	4.8.2
	97.547 - 95.3894	0.006	0.369	0.000	0.010	0.000	0.376	1.000	4.8.2

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	95.3894 - 93.2319	0.006	0.373	0.000	0.010	0.000	0.379	1.000	4.8.2
	93.2319 - 91.0743	0.006	0.376	0.000	0.010	0.000	0.382	1.000	4.8.2
	91.0743 - 88.9167	0.006	0.379	0.000	0.010	0.000	0.385	1.000	4.8.2
	88.9167 - 83.0833	0.003	0.186	0.000	0.005	0.000	0.190	1.000	4.8.2
L4	88.9167 - 83.0833	0.003	0.182	0.000	0.005	0.000	0.186	1.000	4.8.2
	83.0833 - 81.1087	0.006	0.354	0.000	0.009	0.000	0.361	1.000	4.8.2
	81.1087 - 79.1341	0.006	0.355	0.000	0.009	0.000	0.362	1.000	4.8.2
	79.1341 - 77.1594	0.006	0.357	0.000	0.009	0.000	0.363	1.000	4.8.2
	77.1594 - 75.1848	0.006	0.358	0.000	0.009	0.000	0.364	1.000	4.8.2
	75.1848 - 73.2102	0.007	0.359	0.000	0.009	0.000	0.365	1.000	4.8.2
	73.2102 - 71.2356	0.007	0.360	0.000	0.009	0.000	0.366	1.000	4.8.2
	71.2356 - 69.2609	0.007	0.361	0.000	0.009	0.000	0.367	1.000	4.8.2
	69.2609 - 67.2863	0.007	0.361	0.000	0.009	0.000	0.368	1.000	4.8.2
	67.2863 - 65.3117	0.007	0.362	0.000	0.009	0.000	0.369	1.000	4.8.2
	65.3117 - 63.337	0.007	0.363	0.000	0.008	0.000	0.370	1.000	4.8.2
	63.337 - 61.3624	0.007	0.363	0.000	0.008	0.000	0.370	1.000	4.8.2
	61.3624 - 59.3878	0.007	0.364	0.000	0.008	0.000	0.371	1.000	4.8.2
	59.3878 - 57.4131	0.007	0.364	0.000	0.008	0.000	0.372	1.000	4.8.2
	57.4131 - 55.4385	0.007	0.365	0.000	0.008	0.000	0.372	1.000	4.8.2
	55.4385 - 53.4639	0.007	0.365	0.000	0.008	0.000	0.372	1.000	4.8.2
	53.4639 - 51.4893	0.007	0.366	0.000	0.008	0.000	0.373	1.000	4.8.2
	51.4893 - 49.5146	0.007	0.366	0.000	0.008	0.000	0.373	1.000	4.8.2
	49.5146 - 47.54	0.007	0.367	0.000	0.008	0.000	0.374	1.000	4.8.2
	47.54 - 40.4567	0.004	0.191	0.000	0.004	0.000	0.195	1.000	4.8.2
L5	47.54 - 40.4567	0.004	0.186	0.000	0.004	0.000	0.190	1.000	4.8.2
	40.4567 - 38.3274	0.008	0.385	0.000	0.008	0.000	0.393	1.000	4.8.2
	38.3274 - 36.1981	0.008	0.386	0.000	0.008	0.000	0.395	1.000	4.8.2
	36.1981 - 34.0688	0.008	0.388	0.000	0.008	0.000	0.396	1.000	4.8.2
	34.0688 - 31.9395	0.008	0.389	0.000	0.008	0.000	0.397	1.000	4.8.2
	31.9395 - 29.8102	0.008	0.390	0.000	0.008	0.000	0.398	1.000	4.8.2

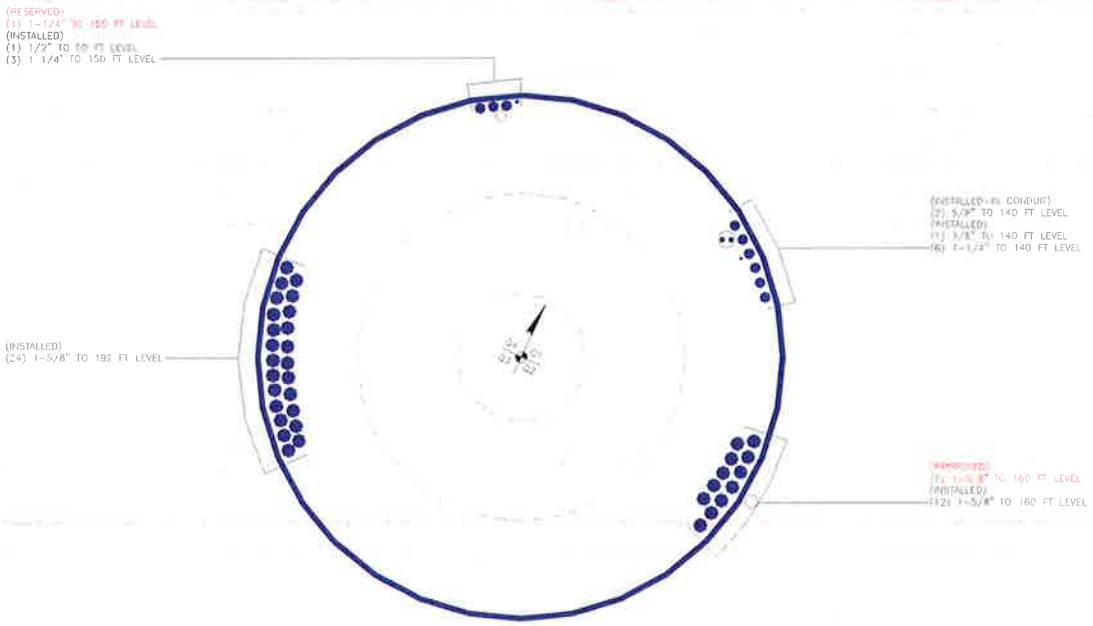
Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	29.8102 - 27.6809	0.008	0.391	0.000	0.008	0.000	0.399	1.000	4.8.2
	27.6809 - 25.5516	0.009	0.392	0.000	0.008	0.000	0.400	1.000	4.8.2
	25.5516 - 23.4223	0.009	0.393	0.000	0.008	0.000	0.401	1.000	4.8.2
	23.4223 - 21.293	0.009	0.394	0.000	0.008	0.000	0.403	1.000	4.8.2
	21.293 - 19.1637	0.009	0.395	0.000	0.008	0.000	0.404	1.000	4.8.2
	19.1637 - 17.0344	0.009	0.396	0.000	0.008	0.000	0.405	1.000	4.8.2
	17.0344 - 14.9051	0.009	0.397	0.000	0.008	0.000	0.406	1.000	4.8.2
	14.9051 - 12.7758	0.009	0.397	0.000	0.008	0.000	0.406	1.000	4.8.2
	12.7758 - 10.6465	0.009	0.398	0.000	0.008	0.000	0.407	1.000	4.8.2
	10.6465 - 8.51719	0.009	0.399	0.000	0.008	0.000	0.408	1.000	4.8.2
	8.51719 - 6.38789	0.009	0.400	0.000	0.008	0.000	0.409	1.000	4.8.2
	6.38789 - 4.2586	0.009	0.401	0.000	0.008	0.000	0.410	1.000	4.8.2
	4.2586 - 2.1293	0.009	0.402	0.000	0.008	0.000	0.411	1.000	4.8.2
	2.1293 - 0	0.010	0.402	0.000	0.008	0.000	0.412	1.000	4.8.2

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	191.5 - 172.46	Pole	TP20.46x15.5x0.188	1	-2.308	852.683	14.3	Pass
L2	172.46 - 127.753	Pole	TP31.6x19.282x0.313	2	-15.483	2220.140	35.1	Pass
L3	127.753 - 83.0833	Pole	TP42.19x29.815x0.438	3	-27.002	4156.060	38.5	Pass
L4	83.0833 - 40.4567	Pole	TP52.59x39.847x0.5	4	-42.840	5916.280	37.4	Pass
L5	40.4567 - 0	Pole	TP62x49.727x0.5	5	-65.070	6834.140	41.2	Pass
							Summary	
						Pole (L5)	41.2	Pass
						RATING =	**41.2**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(PRESERVED)
(INSTALLED)
(1) 1/2" TO 60 FT LEVEL
(3) 1 1/4" TO 150 FT LEVEL
(INSTALLED)
(24) 1-5/8" TO 192 FT LEVEL
(INSTALLED)
(2) 5/8" TO 140 FT LEVEL
(INSTALLED)
(6) 1-1/4" TO 140 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 160 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Stiffened or Unstiffened, Ungrouted, Circular Base Plate - Any Rod Material

TIA Rev G Assumption: Clear space between bottom of leveling nut and top of concrete **not** exceeding (1)*(Rod Diameter)

Site Data

BU#: *876355*
Site Name: *UPPER STEPNEY - TLC*
App #: *0*

Pole Manufacturer:	*Other*

Reactions		
Mu:	3477	ft-kips
Axial, Pu:	65	kips
Shear, Vu:	28	kips
Eta Factor, η	0.5	TIA G (Fig. 4-4)

If No stiffeners, Criteria:	AISC LRFD	<-Only Applcable to Unstiffened Cases

Anchor Rod Data		
Qty:	24	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	71	in

Anchor Rod Results

		Rigid
Max Rod (Cu+ Vu/ŕ):	103.0 Kips	AISC LRFD
Allowable Axial, Φ*Fu*Anet:	260.0 Kips	φ*Tn
Anchor Rod Stress Ratio:	39.6% Pass	

Plate Data		
Diam:	77	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	8.20	in

Base Plate Results

	Flexural Check	Rigid
Base Plate Stress:	26.8 ksi	AISC LRFD
Allowable Plate Stress:	54.0 ksi	φ*Fy
Base Plate Stress Ratio:	49.6% Pass	Y.L. Length:
		34.60

Stiffener Data (Welding at both sides)		
Config:	0	*
Weld Type:		
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:		in
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

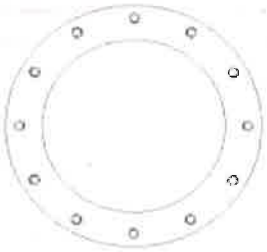
Stiffener Results

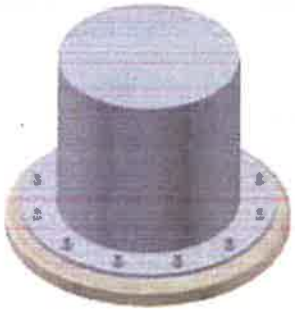
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Diam:	62	in
Thick:	0.5	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None





* 0 = none, 1 = every bolt, 2 = every 2 bolts, 3 = 2 per bolt

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

FDH VELOCITEL
ENGINEERING INNOVATION

Version: 2.2
Version Date: 12/12/2016

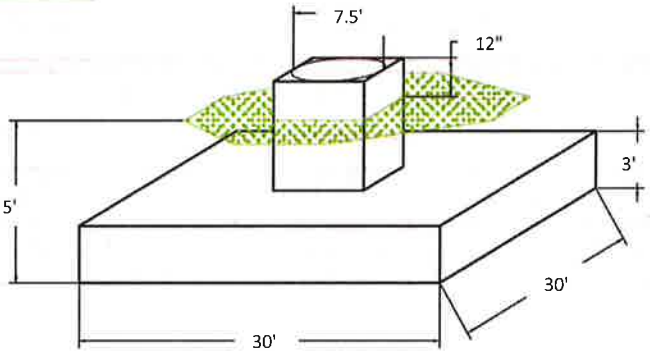
FDH Velocitel -- 6521 Meridien Drive, Raleigh, NC 27616 -- Ph. 919.755.1012 -- Fax 919.755.1031

MONOPOLE PAD AND PIER STEEL CHECKS

Project & Site Details			
Project No.	16PWSB1400	Rev.	0
Project Name	UPPER STEPNEY - TLC		
Site ID	876355		
Date	Wednesday, November 23, 2016		
Code	ANSI/TIA-222-G		
Overstress Capacity	105%		

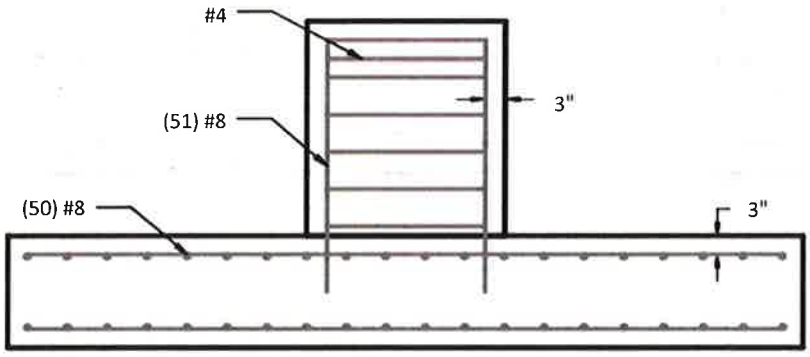
tnx Reactions		
Moment, M	3,477	kip-ft
Shear, V	28	k
Axial, P	65	k

Foundation Details		
Pier Above Grade, E	1.0	ft
Pad Depth Below Grade, D	5.0	ft
Pad Width, W	30.0	ft
Pad Thickness, T	3.0	ft
Pier Shape	Square	-
Pier Diameter, D_p	7.5	ft
Density of Soil, γ_s	0.170	kcf
Density of Concrete, γ_c	0.150	kcf



Pad Steel Details		
Horiz. Bar Size	#8	-
Pad Bar Diameter, d_b	1	in
Number of pad bars, n	50	-
Strength of Concrete, f_c'	4,000	psi
Clear Cover, cc	3.0	in
Yield Strength of Steel, F_y	60	ksi

Pier Steel Details		
Vertical Bar Size	#8	-
Pier Bar Diameter, d_v	1	in
Number of pier bars, n_v	51	-
Tie Size	#4	-
Tie Bar Diameter, d_t	0.5	in
Clear Cover, cc	3.0	in



Pad Steel Checks		
Pad Shear	15.5%	PASS
Two-Way Shear	15.0%	PASS
Pad Flexure	23.7%	PASS
Steel Yielding	OK	

Pier Steel Checks		
Pier Compression	0.4%	PASS
Applied Moment, Mu	3561.00	k-ft

Moment Capacity of Drilled Concrete Shaft (Caisson) for TIA Rev F or G

Note: Shaft assumed to have ties, not spiral, transverse reinforcing

Site Data

BU#: *876355*
Site Name: *UPPER STEPNEY - TLC*
App #:

Loads Already Factored		
For M (WL)	1.3	<----Disregard
For P (DL)	1.3	<----Disregard

Pier Properties

Concrete:

Pier Diameter =	7.5	ft
Concrete Area =	8100.0	in^2

Reinforcement:

Clear Cover to **Tie**=	3	in
Horiz. **Tie** Bar Size=	4	
Vert. Cage Diameter =	6.83	ft
Vert. Cage Diameter =	82.00	in
Vertical Bar Size =	8	
Bar Diameter =	1.00	in
Bar Area =	0.79	in^2
Number of Bars =	51	
As Total=	40.29	in^2
A s/ Aconc, Rho:	0.0050	0.50%

ACI 10.5 , ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:

(3)*(Sqrt(f'c)/Fy:	0.0032
200 / Fy:	0.0033

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	0.50%	OK

Ref. Shaft Max Axial Capacities, ϕ Max(Pn or Tn):		
Max Pu = (φ=0.65) Pn.		
Pn per ACI 318 (10-2)	15506.62	kips
at Mu=(ϕ=0.65)Mn=	1033.41	ft-kips
Max Tu, (φ=0.9) Tn =	2175.66	kips
at Mu=ϕ=(0.90)Mn=	0.00	ft-kips

Maximum Shaft Superimposed Forces

TIA Revision:	G	
Max. Factored Shaft Mu:	3561	ft-kips **(* Note)**
Max. Factored Shaft Pu:	65	kips
Max Axial Force Type:	Tension	

(*) Note: Max Shaft Superimposed Moment does not necessarily equal to the shaft top reaction moment

Load Factor	Shaft Factored Loads		
1.00	Mu:	3561	ft-kips
1.00	Pu:	65	kips

Material Properties

Concrete Comp. strength, f'c =	4000	psi
Reinforcement yield strength, Fy =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	

ACI 318 Code

Select Analysis ACI Code= 2008

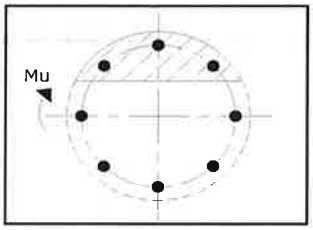
Seismic Properties

Seismic Design Category =	B
Seismic Risk =	**Low**

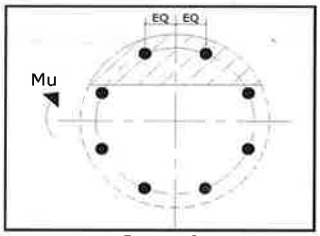
Solve (Run) <-- Press Upon Completing All Input

Results:

Governing Orientation Case: **1**



Case 1



Case 2

Dist. From Edge to Neutral Axis:	**12.42**	in
Extreme Steel Strain, εt:	**0.0178**	
	εt > 0.0050, Tension Controlled	
Reduction Factor,φ:	**0.900**	

Output Note: Negative Pu=Tension

For Axial Compression, φ Pn = Pu:	-65.00	kips
Drilled Shaft Moment Capacity, φMn:	**6722.55**	ft-kips
Drilled Shaft Superimposed Mu:	**3561.00**	ft-kips

(Mu/φMn, Drilled Shaft Flexure CSR:	**53.0%**

(Bearing and Stability Checks) Tool for TIA Rev F or G - Application (MP, SST with unitbase)

Site Data

Site ID: *876355*
Site Name: *UPPER STEPNEY - TLC*
Job No.:

Loads Already Factored		
For P (DL)	1.2	<----Disregard
For P,V, and M (WL)	1.35	<----Disregard

Pad & Pier Data		
Base PL Dist. Above Pier:	12	in
Pier Dist. Above Grade:	12	in
Pad Bearing Depth, D:	5	ft
Pad Thickness, T:	3	ft
Pad Width=Length, L:	30	ft
Pier Cross Section Shape:	Square	<--Pull Down
Enter Pier Side Width:	7.5	ft
Concrete Density:	150.0	pcf
Pier Cross Section Area:	56.25	ft^2
Pier Height:	3.00	ft
Soil (above pad) Height:	2.00	ft

Soil Parameters		
Unit Weight, γ:	110.0	pcf
Ultimate Bearing Capacity, qn:	13.44	ksf
Strength Reduct. factor, ϕ:	0.75	
Angle of Friction, Φ:	30.0	degrees
Undrained Shear Strength, Cu:	0.00	ksf
Allowable Bearing: ϕ*qn:	10.08	ksf
Passive Pres. Coeff., Kp	3.00	

Forces/Moments due to Wind and Lateral Soil		
Minimum of (φ*Ultimate Pad Passive Force, Vu):	28.0	kips
Pad Force Location Above D:	1.29	ft
ϕ(Passive Pressure Moment):	36.00	ft-kips
Factored O.T. M(WL), "1.6W":	3673.0	ft-kips
Factored OT (MW-Msoil), M1	3637.00	ft-kips

Resistance due to Foundation Gravity		
Soil Wedge Projection grade, a:	1.15	ft
Sum of Soil Wedges Wt:	6.97	kips
Soil Wedges ecc, K1:	12.74	ft
Ftg+Soil above Pad wt:	615.9	kips
Unfactored (Total ftg-soil Wt):	622.91	kips
1.2D. **No Soil Wedges**.	804.13	kips
0.9D. **With Soil Wedges**	609.37	kips

Resistance due to Cohesion (Vertical)		
ϕ*(1/2*Cu)(Total Vert. Planes)	0.00	kips
Cohesion Force Eccentricity, K2	0.00	ft

Monopole Base Reaction Forces		
TIA Revision:	G	<--Pull Down
Factored DL Axial, PDu:	65	kips
Factored WL Shear, Vu:	28	kips
Factored WL Moment, Mu:	3477	ft-kips

Load Factor	Shaft Factored Loads		
1.00	1.2D+1.6W, Pu:	65	kips
0.90	0.9D+1.6W, Pu:	48.75	kips
1.00	Vu:	28	kips
	Mu:	3477	ft-kips

1.2D+1.6W Load Combination, Bearing Results:

(**No Soil Wedges**) [Reaction+Conc+Soil]	804.13	P1="1.2D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil), M1	3637.00	ft-kips

Orthogonal Direction:

ecc1 = M1/P1 =	4.52	ft
Orthogonal qu=	1.43	ksf
qu/ϕ*qn Ratio=	**14.21%**	Pass

Diagonal Direction:

ecc2 = (0.707M1)/P1 =	3.20	ft
Diagonal qu=	1.44	ksf
qu/ϕ*qn Ratio=	**14.32%**	Pass

Run <-- Press Upon Completing All Input

Overturning Stability Check

0.9D+1.6W Load Combination, Bearing Results:

(**w/ Soil Wedges**) [Reaction+Conc+Soil]	609.37	P2="0.9D+1.6W" (Kips)
Factored "1.6W" Overturning Moment (MW-Msoil) - 0.9(M of Wedge + M of Cohesion), M2	3557.07	ft-kips

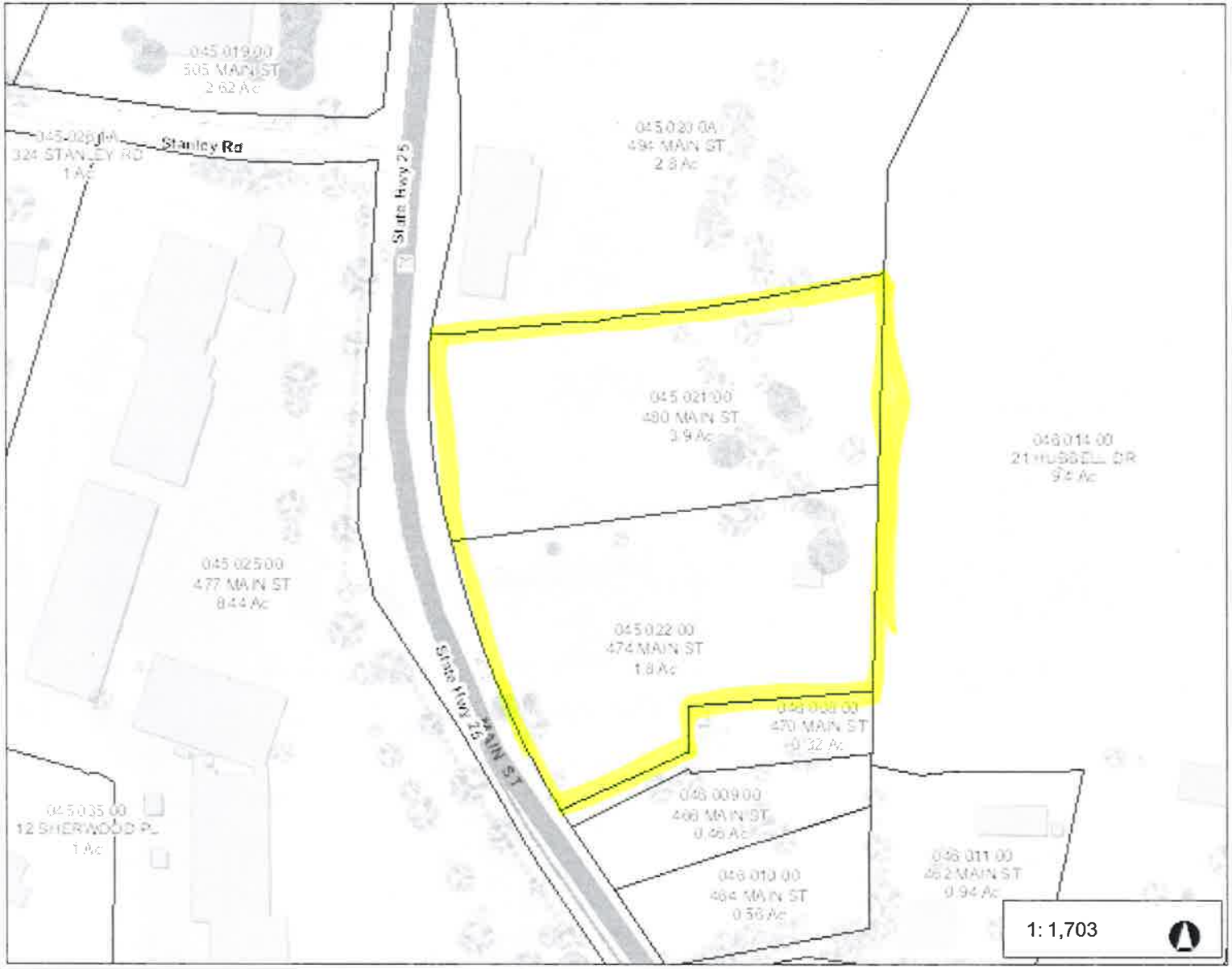
Orthogonal ecc3 = M2/P2 =	5.84	ft
Ortho Non Bearing Length,NBL=	11.67	ft
Orthogonal qu=	1.20	ksf
Diagonal qu=	1.29	ksf

Max Reaction Moment (ft-kips) so that qu=φ*qn = 100% Capacity Rating			
Actual M:	3477.00		
M Orthogonal:	8476.88	**41.02%**	Pass
M Diagonal:	8476.88	**41.02%**	Pass

ATTACHMENT 4

Town of Monroe

Map Title



Legend

- Parcels
- Streetname
- Roadways
  - Local
  - Collector
  - Minor Collector
  - Minor Arterial
  - Major Collector
  - PA Other
  - PA Other Expwy
  - PA Interstate

283.9 0 141.95 283.9 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Created by Greater Bridgeport Regional Council

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

METROCOG

474 MAIN ST

Location	474 MAIN ST	**Map/Lot**	045/ 022/ 00/ /
Acct#	04502200	**Owner**	SEVEN FORTY TWO NURSERY LLC
Assessment	$12,400	**Appraisal**	$27,300
PID	8020	**Building Count**	1
Survey	1676 B		

Current Value

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$13,400	$13,900	$27,300

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$9,400	$3,000	$12,400

Owner of Record

Owner	SEVEN FORTY TWO NURSERY LLC
Co-Owner	KEITH M BUNOVSKY JR MEMBER
Address	742 MAIN ST MONROE, CT 06468

Sale Price	$0
Certificate	1
Book & Page	1800/ 210
Sale Date	05/30/2013

Ownership History

Ownership History				
Owner	**Sale Price**	**Certificate**	**Book & Page**	**Sale Date**
SEVEN FORTY TWO NURSERY LLC	$0	1	1800/ 210	05/30/2013
BIRDSEYS PLAIN LLC	$0	2	1410/ 59	02/21/2006
FOUR 74 MAIN ST HOLDINGS INC	$0	3	943/ 187	04/27/2001
TREE LANDSCAPE CARE(TLC) INC	$0	4	735/ 54	03/14/1997
TREE LANDSCAPE CARE INC	$0	5	699/ 90	04/30/1996

Building Information

Building 1 : Section 1

Year Built:
Living Area: 0

Building Photo

Building Attributes	
Field	**Description**
Style	Vacant Land
Model	
Stories:	
Occupancy	
Exterior Wall 1	
Heat Fuel	
Heat Type:	
AC Type:	
Total Bedrooms:	
Total Bthrms:	
Total Half Baths:	
Total Rooms:	
Fireplaces	
Basement Gar.	
Basement	
In Law Apt	

(http://images.vgsi.com/photos/MonroeCTPhotos//\00\00\01/0

Building Layout

Building Sub-Areas (sq ft)	Legend
No Data for Building Sub-Areas	

Extra Features

Extra Features	Legend
No Data for Extra Features	

Land

Land Use

Use Code	716
Description	Tillable A
Zone	B1
Neighborhood	
Alt Land Approved	No
Category	

Land Line Valuation

Size (Acres)	1.8
Appraised Value	$13,900

Outbuildings

Outbuildings						Legend
Code	**Description**	**Sub Code**	**Sub Description**	**Size**	**Value**	**Bldg #**
RG4	Garage Fin Attic			396 S.F.	$11,900	1
RS1	Frame Utility Shed			154 S.F.	$1,500	1

Valuation History

Appraisal			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$13,400	$13,900	$27,300
2009		$2,200	$14,490

Assessment			
Valuation Year	**Improvements**	**Land**	**Total**
2015	$9,400	$3,000	$12,400
2009		$1,540	$10,143