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Also admitted in Massachusetts

January 24, 2014

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

Re: **Notice of Exempt Modification – Antenna Swap
70 Platt Road (a/k/a Oliver Terrace), Shelton, Connecticut**

Dear Ms. Bachman:

Cellco Partnership d/b/a Verizon Wireless (“Cellco”) currently maintains twelve (12) wireless telecommunications antennas at the top of the existing 140-foot tower at 70 Platt Road in Shelton (the “Property”). The tower is owned by AT&T. Cellco’s shared use of this tower was approved in 2005. Cellco now intends to replace seven (7) of its existing antennas with three (3) model BXA-80063-6BF 850 MHz antennas; one (1) model BXA-70040-6CF 700 MHz antenna; and three (3) model BXA-171063-8BF 2100 MHz antennas, at the same 140-foot level. Cellco also intends to install three (3) remote radio heads (“RRHs”) behind its 2100 MHz antennas and one (1) HYBRIFLEX™ antenna cable. Included in Attachment 1 are specifications for Cellco’s replacement antennas, RRHs and HYBRIFLEX™ cable.



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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 Mark A. Lauretti, Mayor for the City of Shelton. A copy of this letter is also being sent to Brennan Realty, LLC, the owners 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).

ROBINSON & COLE^{LLP}

Melanie A. Bachman

January 24, 2014

Page 2

1. The proposed modifications will not result in an increase in the height of the existing tower. The replaced antennas and RRHs will be located on Cellco's existing platform at the 140-foot level on the 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.

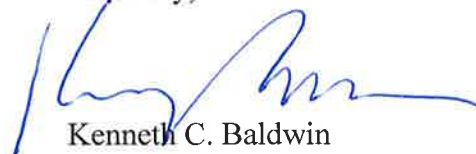
4. The operation of the modified facility will not increase radio frequency (RF) emissions at the facility to a level at or above the Federal Communications Commission (FCC) safety standard. A cumulative power density table for Cellco's modified facility is included behind Attachment 2.

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 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:

Mark A. Lauretti, Shelton Mayor

Brennan Realty, LLC

Sandy M. Carter



ATTACHMENT 1

BXA-80063-6BF-EDIN-X

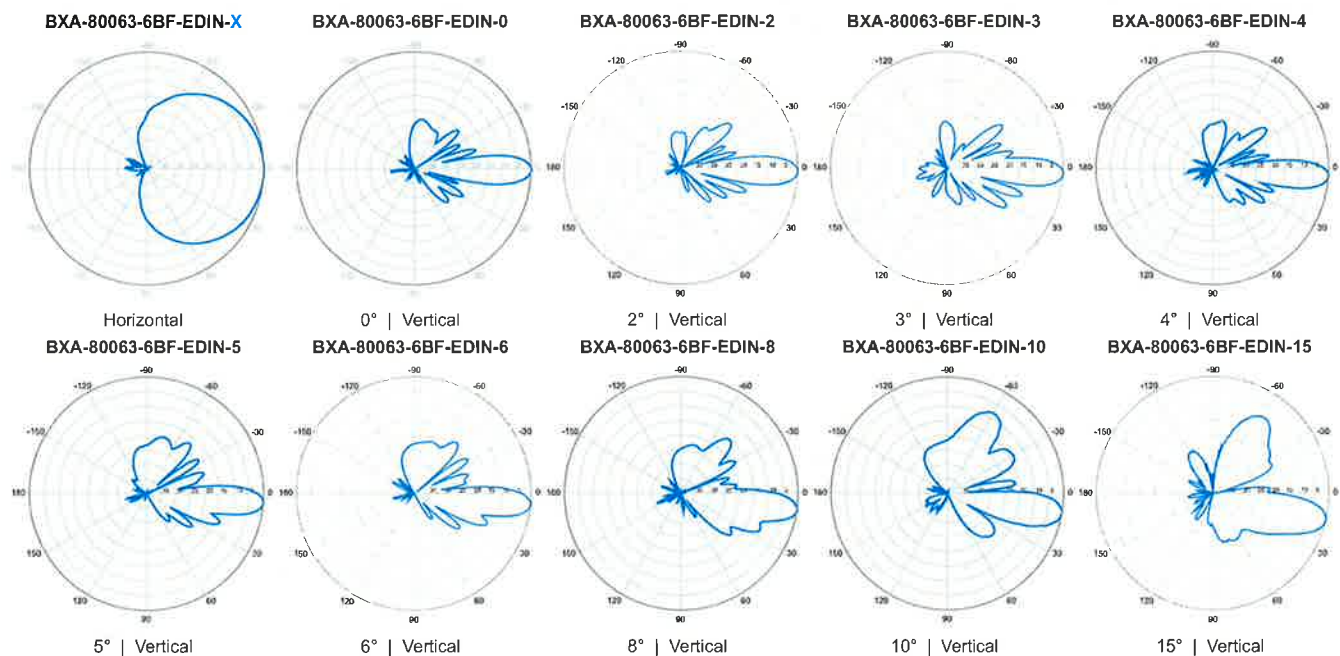
X-Pol | FET Panel | 63° | 14.5 dBd

Replace "X" with desired electrical downtilt.

Antenna is also available with N connector(s). Replace "EDIN" with "N" 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	11°
Gain	14.5 dBd (16.6 dBi)
Electrical downtilt (X)	0, 2, 3, 4, 5, 6, 8, 10, 15
Impedance	50Ω
VSWR	≤1.4:1
Upper sidelobe suppression (0°)	-18.2 dB
Front-to-back ratio (+/-30°)	-36.3 dB
Null fill	5% (-26.02 dB)
Isolation between ports	< -25 dB
Input power with EDIN connectors	500 W
Input power with N connectors	300 W
Lightning protection	Direct Ground
Connector(s)	2 Ports / EDIN or N / Female / Bottom
Mechanical Characteristics	
Dimensions Length x Width x Depth	1742 x 285 x 135 mm 68.6 x 11.2 x 5.3 in
Depth with z-brackets	175 mm 6.9 in
Weight without mounting brackets	8.7 kg 19.2 lbs
Survival wind speed	> 201 km/hr > 125 mph
Wind area	Front: 0.50 m ² Side: 0.24 m ² Front: 5.3 ft ² Side: 2.5 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 733 N Side: 386 N Front: 164 lbf Side: 88 lbf
Mounting Options	
3-Point Mounting & Downtilt Bracket Kit	Part Number: 36210008 Fits Pipe Diameter: 40-115 mm 1.57-4.5 in Weight: 6.9 kg 15.2 lbs
Concealment Configurations	For concealment configurations, order BXA-80063-6BF-EDIN-X-FP



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.

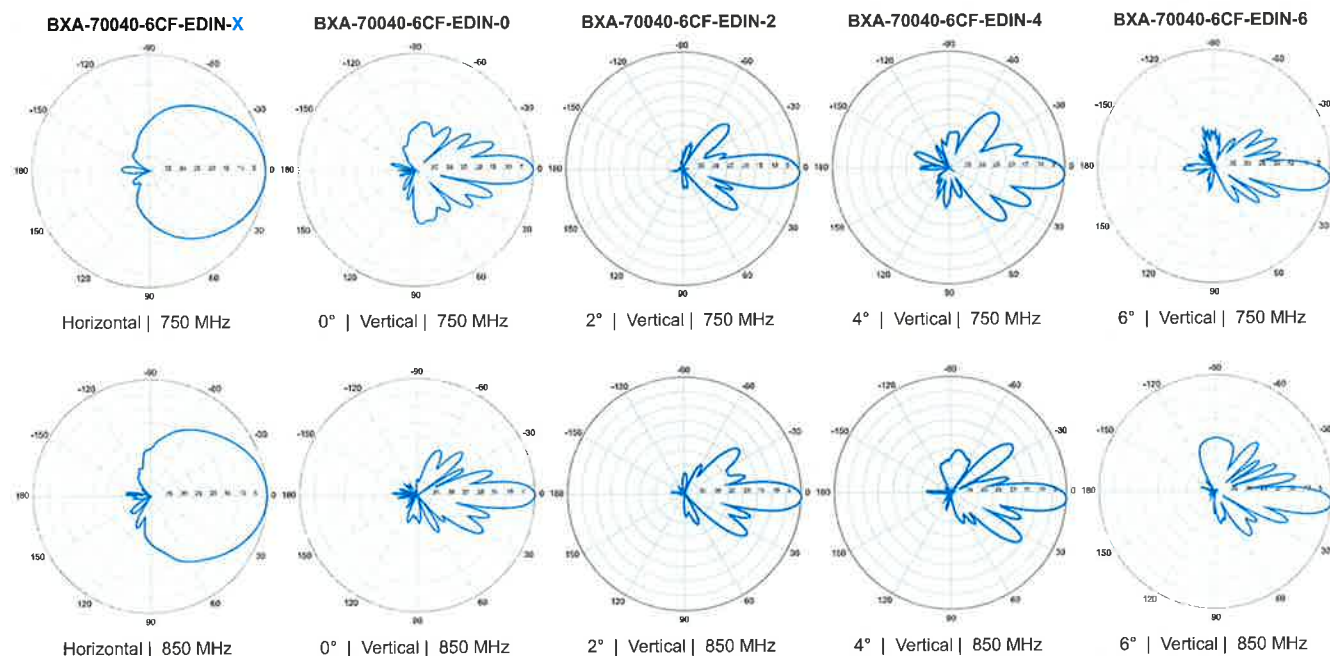
BXA-70040-6CF-EDIN-X

X-Pol | FET Panel | 40° | 16.0 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	42°		40°	
Vertical beamwidth	12°		10°	
Gain	15.5 dBd (17.6 dBi)		16.0 dBd (18.1 dBi)	
Electrical downtilt (X)	0, 2, 4, 6, 8, 10			
Impedance	50Ω			
VSWR	≤1.35:1			
Upper sidelobe suppression (0°)	-12.1 dB		-13.4 dB	
Front-to-back ratio (+/-30°)	-35.8 dB		-38.0 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	1806 x 606 x 200 mm		71.1 x 23.9 x 7.9 in	
Depth with z-brackets	240 mm		9.4 in	
Weight without mounting brackets	17 kg		38 lbs	
Survival wind speed	> 201 km/hr		> 125 mph	
Wind area	Front: 1.09 m ²	Side: 0.36 m ²	Front: 11.8 ft ²	Side: 3.9 ft ²
Wind load @ 161 km/hr (100 mph)	Front: 1564 N	Side: 547 N	Front: 350 lbf	Side: 123 lbf
Mounting Options	Part Number	Fits Pipe Diameter		Weight
3-Point Mounting & Downtilt Bracket Kit	36210008	40-115 mm	1.57-4.5 in	6.9 kg 15.2 lbs
Concealment Configurations	This model cannot be used in a standard FP concealment configuration			

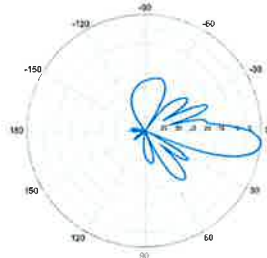


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BXA-70040-6CF-EDIN-X

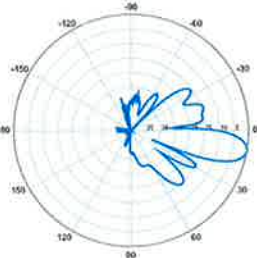
X-Pol | FET Panel | 40° | 16.0 dBd

BXA-70040-6CF-EDIN-8



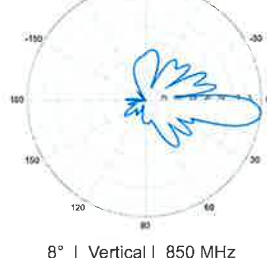
8° | Vertical | 750 MHz

BXA-70040-6CF-EDIN-10



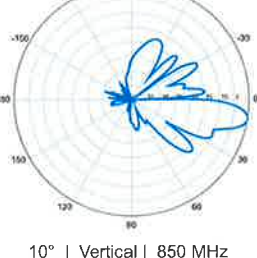
10° | Vertical | 750 MHz

BXA-70040-6CF-EDIN-8



8° | Vertical | 850 MHz

BXA-70040-6CF-EDIN-10



10° | Vertical | 850 MHz

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BXA-171063-8BF-EDIN-X

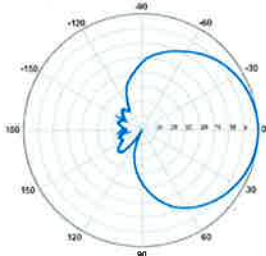
Replace "X" with desired electrical downtilt.

X-Pol | FET Panel | 63° | 17.4 dBi

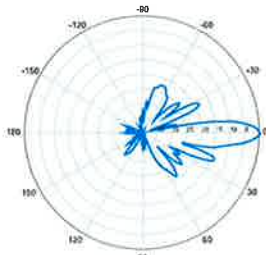
Electrical Characteristics	1710-2170 MHz		
Frequency bands	1710-1880 MHz	1850-1990 MHz	1920-2170 MHz
Polarization	±45°	±45°	±45°
Horizontal beamwidth	68°	65°	60°
Vertical beamwidth	7°	7°	7°
Gain	14.5 dBd / 16.6 dBi	14.9 dBd / 17.0 dBi	15.3 dBd / 17.4 dBi
Electrical downtilt (X)	0, 2, 4, 6, 8		
Impedance	50Ω		
VSWR	≤1.5:1		
First upper sidelobe	< -17 dB		
Front-to-back ratio	> 30 dB		
In-band isolation	< -25 dB		
IM3 (20W carrier)	< -150 dBc		
Input power	300 W		
Lightning protection	Direct Ground		
Connector(s)	2 Ports / EDIN / Female / Bottom		
Operating temperature	-40° to +60° C / -40° to +140° F		
Mechanical Characteristics			
Dimensions Length x Width x Depth	1225 x 154 x 105 mm		48.2 x 6.1 x 4.1 in
Depth with t-brackets	133 mm		5.2 in
Weight without mounting brackets	4.2 kg		9.2 lbs
Survival wind speed	296 km/hr		184 mph
Wind area	Front: 0.19 m ² Side: 0.14 m ²	Front: 2.0 ft ² Side: 1.5 ft ²	
Wind load @ 161 km/hr (100 mph)	Front: 281 N Side: 223 N	Front: 63 lbf Side: 50 lbf	
Mounting Options	Part Number	Fits Pipe Diameter	Weight
2-Point Mounting Bracket Kit	26799997	50-102 mm 2.0-4.0 in	2.3 kg 5 lbs
2-Point Mounting & Downtilt Bracket Kit	26799999	50-102 mm 2.0-4.0 in	3.6 kg 8 lbs
Concealment Configurations	For concealment configurations, order BXA-171063-8BF-EDIN-X-FP		



BXA-171063-8BF-EDIN-X

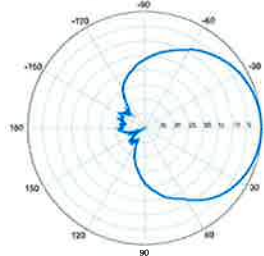


Horizontal | 1710-1880 MHz
BXA-171063-8BF-EDIN-0

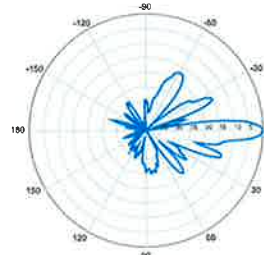


0° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-X

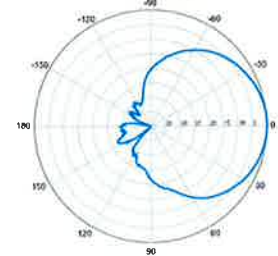


Horizontal | 1850-1990 MHz
BXA-171063-8BF-EDIN-0

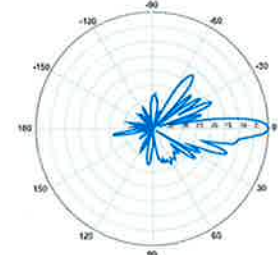


0° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-X



Horizontal | 1920-2170 MHz
BXA-171063-8BF-EDIN-0



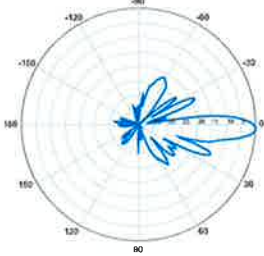
0° | Vertical | 1920-2170 MHz

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BXA-171063-8BF-EDIN-X

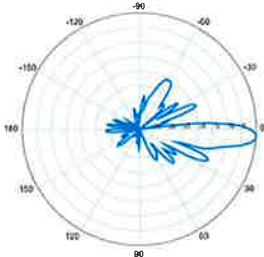
X-Pol | FET Panel | 63° | 17.4 dBi

BXA-171063-8BF-EDIN-2



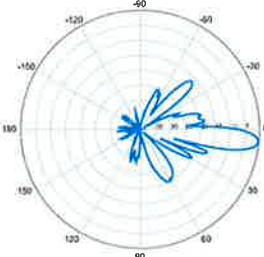
2° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-4



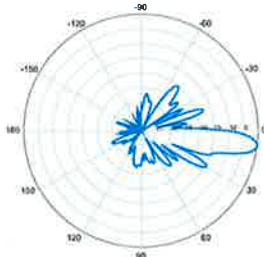
4° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-6



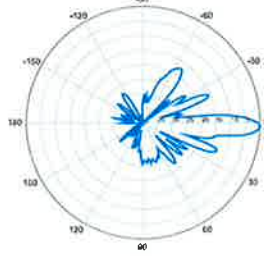
6° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-8



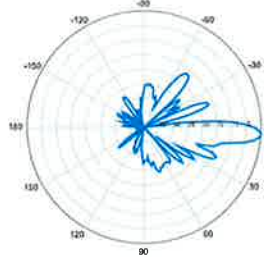
8° | Vertical | 1710-1880 MHz

BXA-171063-8BF-EDIN-2



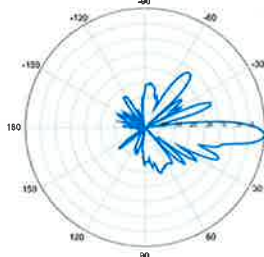
2° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-4



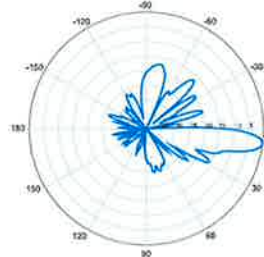
4° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-6



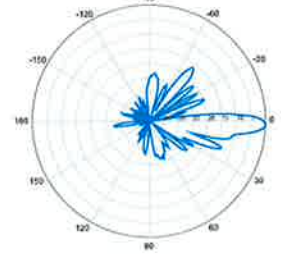
6° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-8



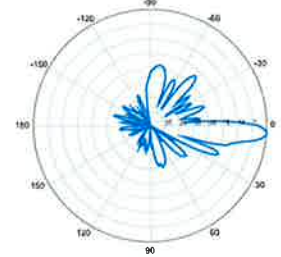
8° | Vertical | 1850-1990 MHz

BXA-171063-8BF-EDIN-2



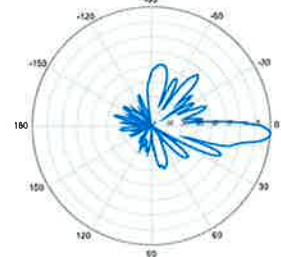
2° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-4



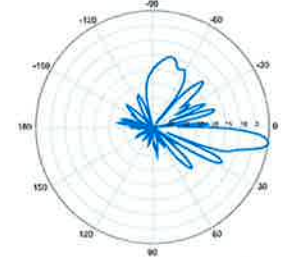
4° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-6



6° | Vertical | 1920-2170 MHz

BXA-171063-8BF-EDIN-8



8° | Vertical | 1920-2170 MHz

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Alcatel-Lucent RRH2x40-AWS

REMOTE RADIO HEAD

The Alcatel-Lucent RRH2x40-AWS is a high-power, small form-factor Remote Radio Head (RRH) operating in the AWS frequency band (1700/2100MHz - 3GPP Band 4). The Alcatel-Lucent RRH2x40-AWS 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-AWS 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-AWS has two transmit RF paths, 40 W RF output power per transmit path, and is designed to manage up to four-way receive diversity. The device is ideally suited to support macro coverage, with multiple-input multiple-output (MIMO) 2x2 operation in up to 20 MHz of bandwidth.

The Alcatel-Lucent RRH2x40-AWS is designed to make available all the benefits of a distributed eNodeB, with excellent RF characteristics, with low

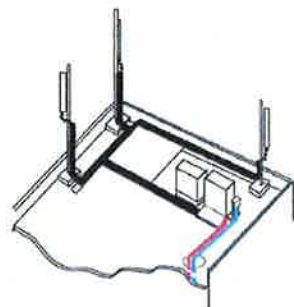
capital expenditures (CAPEX) and low operating expenditures (OPEX). The limited space available in some sites may prevent the installation of traditional single-cabinet BTS equipment or require costly cranes to be employed, leaving coverage holes. However, many of these sites can host an Alcatel-Lucent RRH2x40-AWS 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-AWS 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-AWS is compact and weighs less than 20 kg (44 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

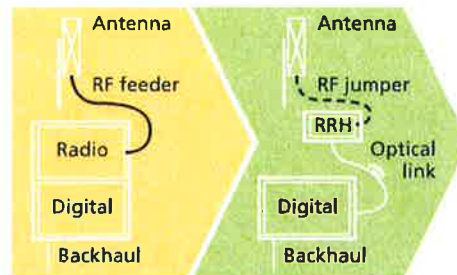
Because of its small size and weight, the Alcatel-Lucent RRH2x40-AWS can be installed close to the antenna. Operators can therefore locate the Alcatel-Lucent RRH2x40-AWS where RF engineering is deemed ideal, minimizing trade-offs between available sites and RF optimum sites. The RF feeder cost and installation 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-AWS provides more RF power while at the same time consuming less electricity.



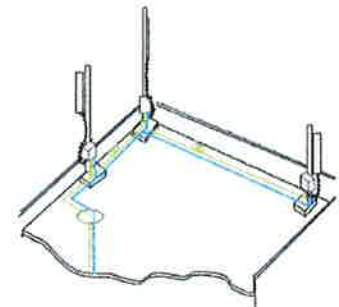
Macro

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
- Best-in-class power efficiency, with significantly reduced energy consumption



RRH for space-constrained cell sites



Distributed

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

Technical specifications

Physical dimensions

- Height: 620 mm (24.4 in.)
- Width: 270 mm (10.63 in.)
- Depth: 170 mm (6.7 in.)
- Weight (without mounting kit): less than 20 kg (44 lb)

Power

- Power supply: -48VDC

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: 1700/2100 MHz (AWS); 3GPP Band 4
- Bandwidth: up to 20 MHz
- RF output power at antenna port: 40 W nominal RF power for each Tx port
- Rx diversity: 2-way or 4-way with optional Rx Diversity module
- Noise figure: below 2.0 dB typical
- Antenna Line Device features
 - TMA and Remote electrical tilt (RET) support via AISG v2.0

Optical characteristics

Type/number of fibers

- Single-mode variant
 - One Single Mode Single Fiber per RRH2x, carrying UL and DL using CWDM
 - Single mode dual fiber (SM/DF)
- Multi-mode variant
 - Two Multi-mode fibers per RRH2x: one carrying UL, the other carrying DL

Optical fiber length

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

Digital Ports and Alarms

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

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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-connected and on-site options are available.

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



Figure 1: HYBRIFLEX Series

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
Mechanical Properties			
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)
Electrical Properties			
DC-Resistance Outer Conductor Armor		[Ω/km (Ω/1000ft)]	0.68 (0.205)
DC-Resistance Power Cable: 8 4mm ² (8AWG)		[Ω/km (Ω/1000ft)]	2.1 (0.307)
Optical Properties			
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
DC Power & Wire Properties			
Size (Power)		[mm (AWG)]	8.4 (8)
Quantity, Wire Count (Power)			16 (8 pairs)
Size (Alarm)		[mm (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
Operating Range			
Installation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)
Operation Temperature		[°C (°F)]	-40 to +65 (-40 to 149)

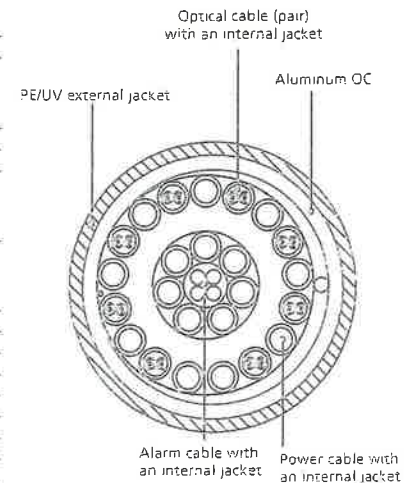


Figure 2: Construction Detail

All information contained in the present datasheet is subject to confirmation at time of ordering.

* This data is provisional and subject to change

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HB158-1-08U8-S8J18

Rev: P1

Print Date: 27.6.2012

ATTACHMENT 2

	General	Power	Density						
	CARRIER	# OF CHAN.	WATTS ERP	HEIGHT	CALC. POWER DENS	FREQ.	MAX. PERMISS. EXP.	FRACTION MPE	Total
	RF calculated by taking field measurements of all existing antennas and adding LTE calculation								
*AT&T		3	443.61	110	0.0395	2140	1.0000	3.95%	
*MetroPCS		8	162	120	0.0324	1945	1.0000	3.24%	
*T-Mobile		2	500	96.5	0.0386	31	0.2000	19.31%	
*J. Brennan Constrcn		9	100	84.5	0.0453	851	0.5673	7.99%	
*Nextel		2	153	75	0.0196	2496	1.0000	1.96%	
*Clearwire		1	211	75	0.0135	18 GHz	1.0000	1.35%	
*Sprint CDMA/LTE		4	693	74.7	0.1786	1900	1.0000	17.86%	
*Sprint CDMA/LTE		1	390	74.7	0.0251	850	0.5667	4.43%	
Verizon		15	289	140	0.0795	1970	1.0000	7.95%	
Verizon		9	392	140	0.0647	869	0.5793	11.17%	
Verizon		1	1750	140	0.0321	2145	1.0000	3.21%	
Verizon		1	1024	140	0.0188	698	0.4653	4.04%	86.46%
* Source: Siting Council									

ATTACHMENT 3



AT&T Towers

2300 Northlake Center Dr Ste 405
Tucker, GA 30084

December 18, 2013

B+T GRP

1717 S. Boulder, Suite 300
Tulsa, OK 74119

B+T No.: 84720.007.01

**STRUCTURAL ANALYSIS
140' Monopole Tower**

AT&T DESIGNATION:	Site ID: 24519 Site FA: 10071231 Site Name: Shelton NE AT&T Project: Verizon Modification 8-7-13
ANALYSIS CRITERIA:	Codes: TIA/EIA-222-F (85 mph fastest mile) IBC 2003 2005 Connecticut Building Code
SITE DATA:	Oliver Terrace, Shelton, CT, Fairfield County Latitude 41.293792°, Longitude -73.107299° Market MA/RI/VT/NH/ME/CT

Ms. Charlotte Malone,

B+T Group is pleased to submit this Structural Analysis Report to determine the structural integrity of the aforementioned tower. The purpose of the analysis is to determine the suitability of the tower with the existing and proposed loading configuration detailed in the analysis report.

Analysis Results

Tower Stress Level with Proposed Equipment:	98.9%	Pass
Foundation Ratio with Proposed Equipment:	70.7%	Pass

We at B+T Group appreciate the opportunity of providing our continuing professional services to you and AT&T Towers. If you have any questions or need further assistance on this or any other project please give us a call.

Respectfully Submitted by: B+T Engineering, Inc.
 Analysis Prepared by: Zach Smith
 Analysis Reviewed by: Chad E. Tuttle, P.E.



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Not for use or disclosure outside the AT&T companies
except under written agreement

ANALYSIS RESULTS:

Table 1 - Section Capacity (Summary)

Elevation (ft)	% Capacity	Pass / Fail
140 - 101.58	98.9	Pass
101.58 - 70	84.4	Pass
70 - 59.103	86.8	Pass
59.103 - 59	68.2	Pass
59 - 48.58	95.6	Pass
48.58 - 30.58	46.5	Pass
30.58 - 30.52	88.6	Pass
30.52 - 0	94.4	Pass

Table 2 - Tower Component Stresses vs. Capacity

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	Base	84.6	Pass
1	Base Plate	Base	50.0	Pass
1	Flange	101.58	73.0	Pass
1	Base Foundation	Base	70.7	Pass

Structure Rating (max from all components) =	98.9%
---	--------------

Notes:

- 1) See additional documentation in "Appendix B - Calculations" for calculation supporting the % capacity consumed.

Recommendations:

N/A

ANALYSIS PROCEDURE:

Table 3 - Documents Provided

Document	Description	Date	Source
Tower Data	FWT Job No. J030219001	1/24/2003	Siterra
Foundation Information	Dewberry-Goodkind Job No. 24445	7/11/2003	Siterra
Geotech Report	Dr. Clarence Welti	3/20/2013	Siterra
Loading	B&T Project No. 84720.004.01; 2_Sprint Vision Modification 5-15-2012	3/20/2013	On File
	Site Lease Application; Verizon Modification 8-7-13	11/4/2013	Siterra
	NOC2; Verizon Modification 8-7-13	8/14/2013	Siterra
Previous Structural Analysis	B&T Project No. 84720.004.01; 2_Sprint Vision Modification 5-15-2012	3/20/2013	On File
	B&T Project No. 84720.002a; 1_Verizon Modification 7-26-2012	11/27/2012	On File
	Centek Engineering Project No. 11021.CO45	4/13/2011	Siterra
Modification Drawings	B&T Project No. 84720.002.01; 1_Verizon Modification 7-26-2012	12/28/2012	On File
	GPD Project No. 2010266.16	9/17/2010	Siterra

ANALYSIS METHOD:

tnxTower, 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 B.

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 specifications.
3. The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Appendix A of this report.
4. Mount areas and weights are assumed based on photographs provided.
5. Refer to the base level drawing for transmission line distribution.
6. All loading for Verizon was taken from the Site Lease Application.
7. All other existing/reserved loading was taken from the previous analysis unless otherwise noted.
8. Generic future loading was used in this analysis.
9. The proposed RRH units will be installed directly behind the proposed panel antennas.

If any of these assumptions have been made in error, B+T Group should be notified to determine the effect on the structural integrity of the tower.

APPENDIX A
TOWER ANALYSIS LOADING

TOWER ANALYSIS LOADING:

Existing / Reserved Loading

Antenna Owner		Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Mount Type	Quantity	Size (in)
Unknown		138	144.5	1	Unknown	9H Omni			1	7/8"
Verizon		138	140	2	Antel	BXA-70063-6CF	1	LP Platform	12	1-5/8"
Verizon		138	140	1*	Antel	BXA-70063-6CF				
Verizon		138	140	6*	Andrew	DBB46F5ZAXY				
Verizon		138	140	3	Antel	BXA-171063-8BF				
Verizon		138	140	6	RFS	FDR6004ZC-3L				
T-Mobile		120	120	6	RFS	APX16PV-18PVL-E	3	T-Arm	18	1-5/8"
T-Mobile		120	120	6	CCI	DTMA-1819-DD-12				
MetroPCS		110	110	3	Kathrein	800-10604	3	T-Arm	12	1-5/8"
MetroPCS		110	110	3	Kathrein	742-351				
MetroPCS		110	110	6	Kathrein	860-10025 RET				
AT&T		95	95	3	Powerwave	7770	1	Platform w/ rails	6	7/8"
AT&T		95	95	3	Powerwave	P65-16-XL-HRR				
AT&T		95	95	6	Powerwave	LG21401				
AT&T		99	99	6	Eriasson	RRUS-11	1	Uni-Trt Bracket	2	DC
AT&T		99	99	1	Raycap	DC6-48-60-18-8F			1	Fiber
Clearwire		73	75	3	Argus	LLPX310R	1	LP Platform	6	5/16"
Clearwire		73	75	3	Samsung	FDD R6 RRH				
Clearwire		73	75	2	Dragonwave	Horizon DUO			2	1/2"
Clearwire		73	75	2	Dragonwave	A-Ant-23G-2-G				
Sprint/Nextel		73	75	6	RFS	APXVSP18-C-A20			12	1 1/4"
Sprint/Nextel		72.667	73	3	Andrew	800MHz 2x50W	1	Ring Mount	3	1-1/4"
Sprint/Nextel		72.667	73	3	Panasonic	1900MHz 2x48W	6	Pipe Mount		
Sprint/Nextel		72.667	73	3	Andrew	800MHz 2x50W(Notch Filter)				
Sprint/Nextel		50	50	1	Maxrad	GPS-TMG-HR-26NCM				

*Equipment to be Removed

Proposed Loading

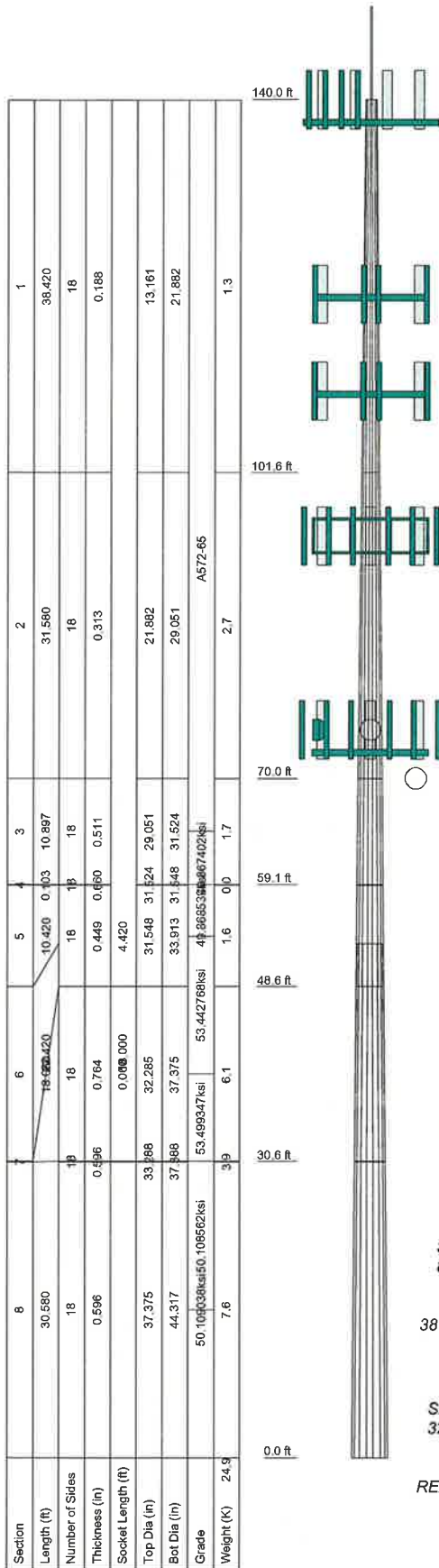
Antenna Owner		Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Mount Type	Quantity	Size (in)
Verizon		138	140	3	Antel	BXA-80063-6BF				
Verizon		138	140	3	Antel	BXA-171063-8BF				
Verizon		138	140	1	Antel	BXA-70046-6CF				
Verizon		138	140	3	ALU	ALU RH 2x40-AWS				
Verizon		138	140	1	RFS	DB-T1-6Z-8AB-0Z			1	1 5/8"

Note: See Base Level Drawing For Transmission Line Distribution

Future Loading

Antenna Owner		Mount Height (ft)	Antenna CL (ft)	Quantity	Manufacturer	Model	Quantity	Mount Type	Quantity	Size (in)
AT&T		95	95	3	Powerwave	P65-16-XL-HRR			6	1 5/8"

APPENDIX B
CALCULATIONS



DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
9' Omni (E)	138	(2) 860 10025 (MetroPCS-E)	110
BXA-80063-8BF w/Mount Pipe (Verizon-P)	138	(2) 860 10025 (MetroPCS-E)	110
BXA-80063-8BF w/Mount Pipe (Verizon-P)	138	T-Arm Mount [TA 702-3] (MetroPCS-E)	110
BXA-80063-8BF w/Mount Pipe (Verizon-P)	138	(2) RRUS-11 (ATI-E)	99
BXA-80063-8BF w/Mount Pipe (Verizon-P)	138	(2) RRUS-11 (ATI-E)	99
BXA-80063-8BF w/Mount Pipe (Verizon-P)	138	(2) RRUS-11 (ATI-E)	99
BXA 171063/8BF w/Mount Pipe (Verizon-P)	138	DC6-48-60-18-8F (ATI-E)	99
BXA 171063/8BF w/Mount Pipe (Verizon-P)	138	Valmont Uni-Tri Bracket (ATI-E)	99
BXA 171063/8BF w/Mount Pipe (Verizon-P)	138	7770.00 w/ Mount Pipe (ATI-E)	95
BXA 171063/8BF w/Mount Pipe (Verizon-P)	138	7770.00 w/ Mount Pipe (ATI-E)	95
BXA 171063/8BF w/Mount Pipe (Verizon-P)	138	7770.00 w/ Mount Pipe (ATI-E)	95
BXA-70040/8CF w/ Mount Pipe (Verizon-P)	138	P65-16-XLH-RR w/Mount Pipe (ATI-E)	95
ALU RH_2x40-AWS (Verizon-P-Shielded)	138	P65-16-XLH-RR w/Mount Pipe (ATI-E)	95
ALU RH_2x40-AWS (Verizon-P-Shielded)	138	P65-16-XLH-RR w/Mount Pipe (ATI-E)	95
ALU RH_2x40-AWS (Verizon-P-Shielded)	138	(2) LGP21401 (ATI-E)	95
DB-T1-6Z-8AB-0Z (Verizon-P)	138	(2) LGP21401 (ATI-E)	95
BXA-70063/6CF w/ Mount Pipe (Verizon-E)	138	P65-16-XLH-RR w/Mount Pipe (ATI-Future)	95
BXA-70063/6CF w/ Mount Pipe (Verizon-E)	138	P65-16-XLH-RR w/Mount Pipe (ATI-Future)	95
BXA 171063/8BF w/Mount Pipe (Verizon-E)	138	P65-16-XLH-RR w/Mount Pipe (ATI-Future)	95
BXA 171063/8BF w/Mount Pipe (Verizon-E)	138	6' x 2" Mount Pipe (ATI-E)	95
BXA 171063/8BF w/Mount Pipe (Verizon-E)	138	6' x 2" Mount Pipe (ATI-E)	95
(2) FD9R6004/2C-3L (Verizon-E)	138	Platform Mount [LP 602-1] (ATI-E)	95
(2) FD9R6004/2C-3L (Verizon-E)	138	LLPX310R w/ Mount Pipe (Clearwire-E)	73
(2) FD9R6004/2C-3L (Verizon-E)	138	LLPX310R w/ Mount Pipe (Clearwire-E)	73
Platform Mount [LP 712-1] (Verizon-E)	138	LLPX310R w/ Mount Pipe (Clearwire-E)	73
(2) APX16PV-16PVL-E w/ Mount Pipe (T-Mobile-E)	120	LLPX310R w/ Mount Pipe (Clearwire-E)	73
(2) APX16PV-16PVL-E w/ Mount Pipe (T-Mobile-E)	120	FDD_R6_RRH (Clearwire-E)	73
(2) APX16PV-16PVL-E w/ Mount Pipe (T-Mobile-E)	120	FDD_R6_RRH (Clearwire-E)	73
(2) DTMA-1819-DD-12 (T-Mobile-E)	120	FDD_R6_RRH (Clearwire-E)	73
(2) DTMA-1819-DD-12 (T-Mobile-E)	120	HORIZON DUO (Clearwire-E)	73
(2) DTMA-1819-DD-12 (T-Mobile-E)	120	HORIZON DUO (Clearwire-E)	73
(2) DTMA-1819-DD-12 (T-Mobile-E)	120	(2) APXVSP18-C-A20 w/ Mount Pipe (Sprint/Nextel-E)	73
(2) DTMA-1819-DD-12 (T-Mobile-E)	120	(2) APXVSP18-C-A20 w/ Mount Pipe (Sprint/Nextel-E)	73
6' x 2" Mount Pipe (T-Mobile-E)	120	(2) APXVSP18-C-A20 w/ Mount Pipe (Sprint/Nextel-E)	73
6' x 2" Mount Pipe (T-Mobile-E)	120	800MHz 2x50w (Sprint/Nextel-E)	73
6' x 2" Mount Pipe (T-Mobile-E)	120	800MHz 2x50w (Sprint/Nextel-E)	73
T-Arm Mount [TA 602-3] (T-Mobile-E)	120	800MHz 2x50w (Sprint/Nextel-E)	73
800 10504 w/ Mount Pipe (MetroPCS-E)	110	1900MHz 2x40w (Sprint/Nextel-E)	73
800 10504 w/ Mount Pipe (MetroPCS-E)	110	1900MHz 2x40w (Sprint/Nextel-E)	73
800 10504 w/ Mount Pipe (MetroPCS-E)	110	1900MHz 2x40w (Sprint/Nextel-E)	73
800 10504 w/ Mount Pipe (MetroPCS-E)	110	800MHz 2x50w (Notch Filter) (Sprint/Nextel-E)	73
800 10504 w/ Mount Pipe (MetroPCS-E)	110	800MHz 2x50w (Notch Filter) (Sprint/Nextel-E)	73
742 351 w/ Mount Pipe (MetroPCS-E)	110	800MHz 2x50w (Notch Filter) (Sprint/Nextel-E)	73
742 351 w/ Mount Pipe (MetroPCS-E)	110	Platform Mount [LP 712-1] (E)	73
742 351 w/ Mount Pipe (MetroPCS-E)	110	A-ANT-23G-2-C (Nextel-E)	73
(2) 860 10025 (MetroPCS-E)	110	A-ANT-23G-2-C (Nextel-E)	73
		GPS-TMG-HR-26NCM (Sprint/Nextel-E)	50



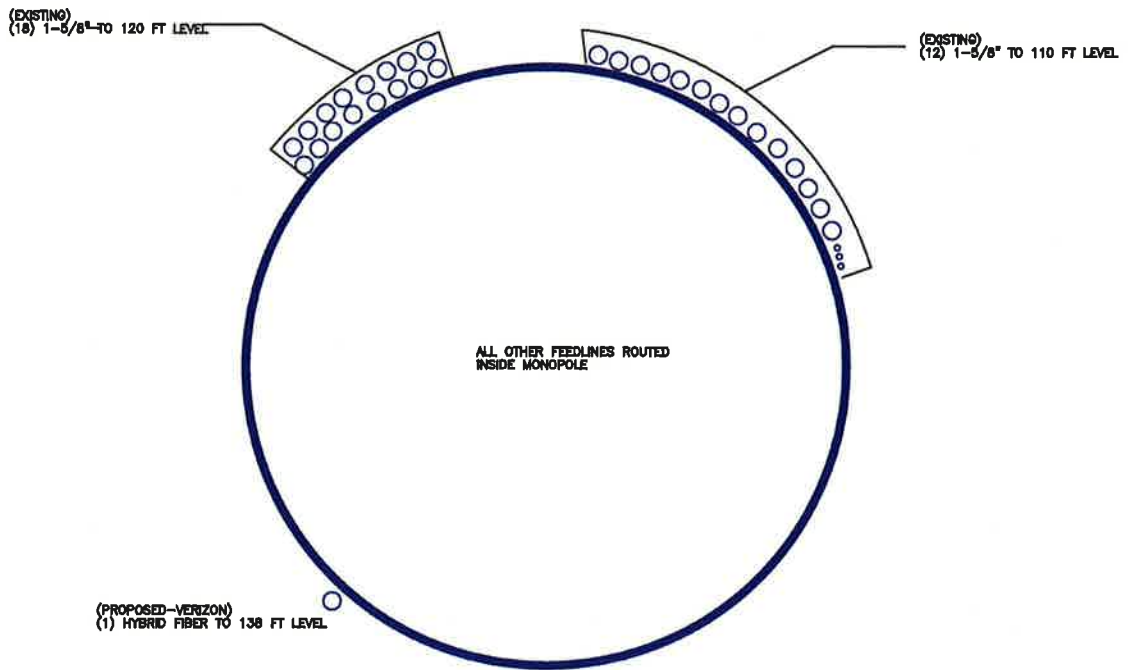
MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A572-65	65 ksi	80 ksi	53.499347ksi	53 ksi	68 ksi
49.867402ksi	50 ksi	65 ksi	50.108562ksi	50 ksi	65 ksi
49.868539ksi	50 ksi	65 ksi	50.109038ksi	50 ksi	65 ksi
53.442768ksi	53 ksi	68 ksi			

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for a 85 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.

	B+T Group		Job: 84720.006.01- Shelton NE, CT (USID# 24519)	
	1717 S. Boulder Ave.		Project: Verizon Modification 8-7-13	
	Tulsa, OK 74119		Client: AT&T Towers	Drawn by: zsmith
	Phone: (918) 587-4630		Code: TIA/EIA-222-F	Date: 12/18/13
	FAX: (918) 295-0265		Path:	Scale: NTS
			Dwg No. E-1	

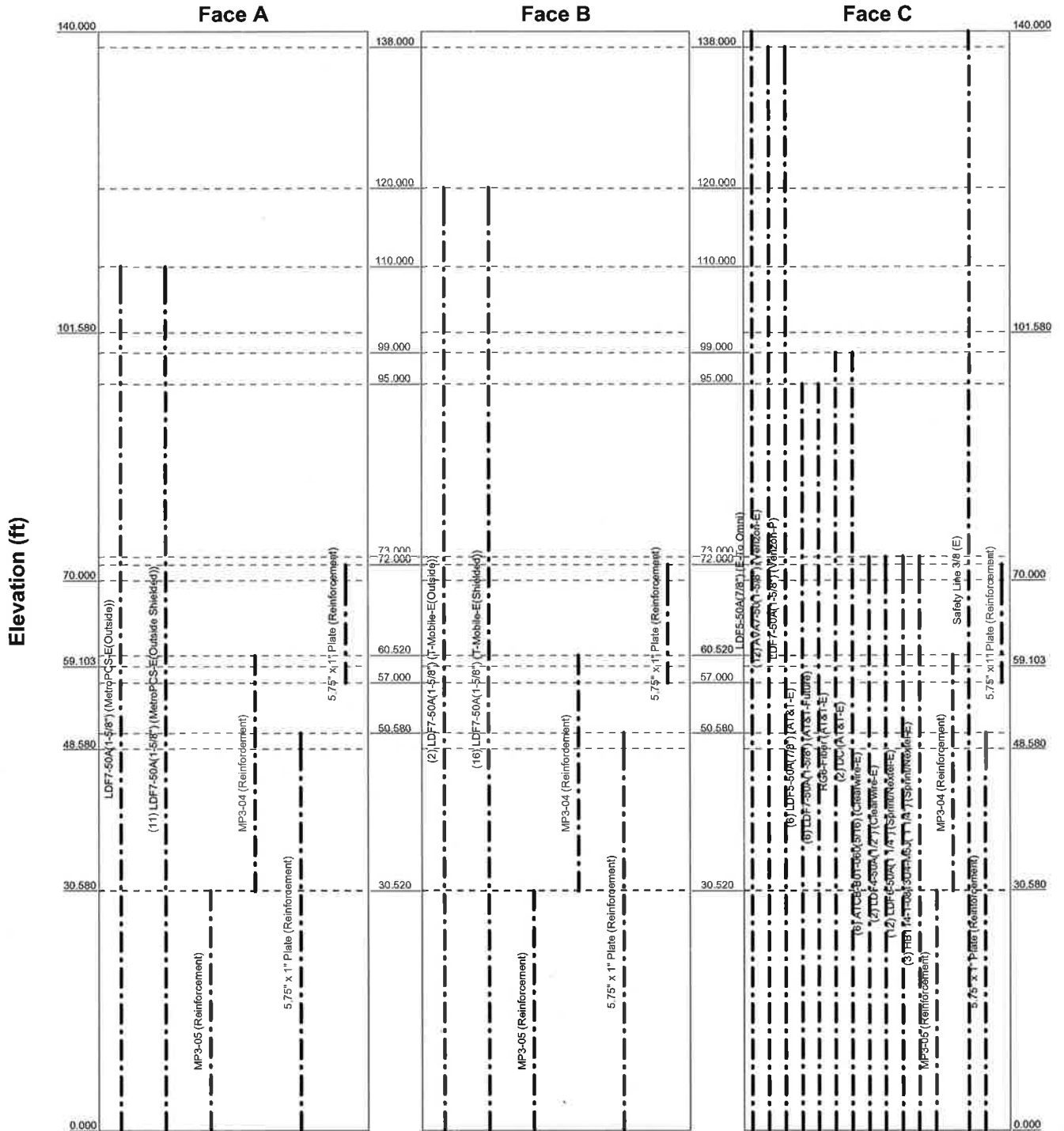


PROJECT NUMBER: 84720.007

Feed Line Distribution Chart

0' - 140'

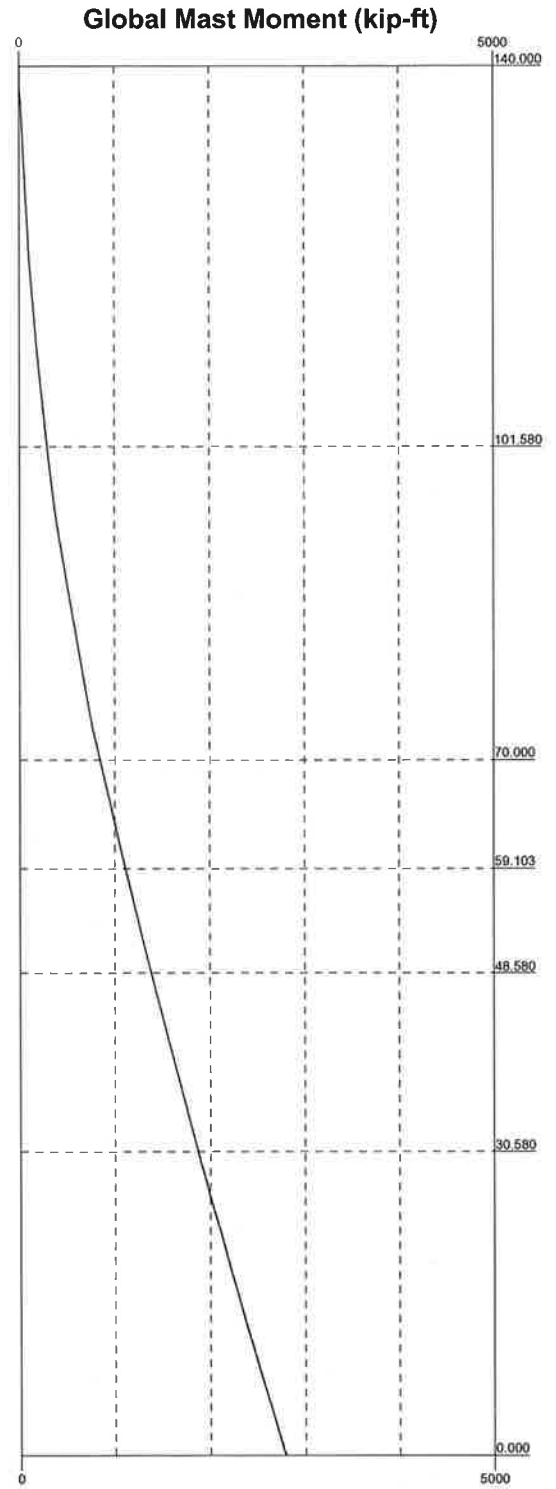
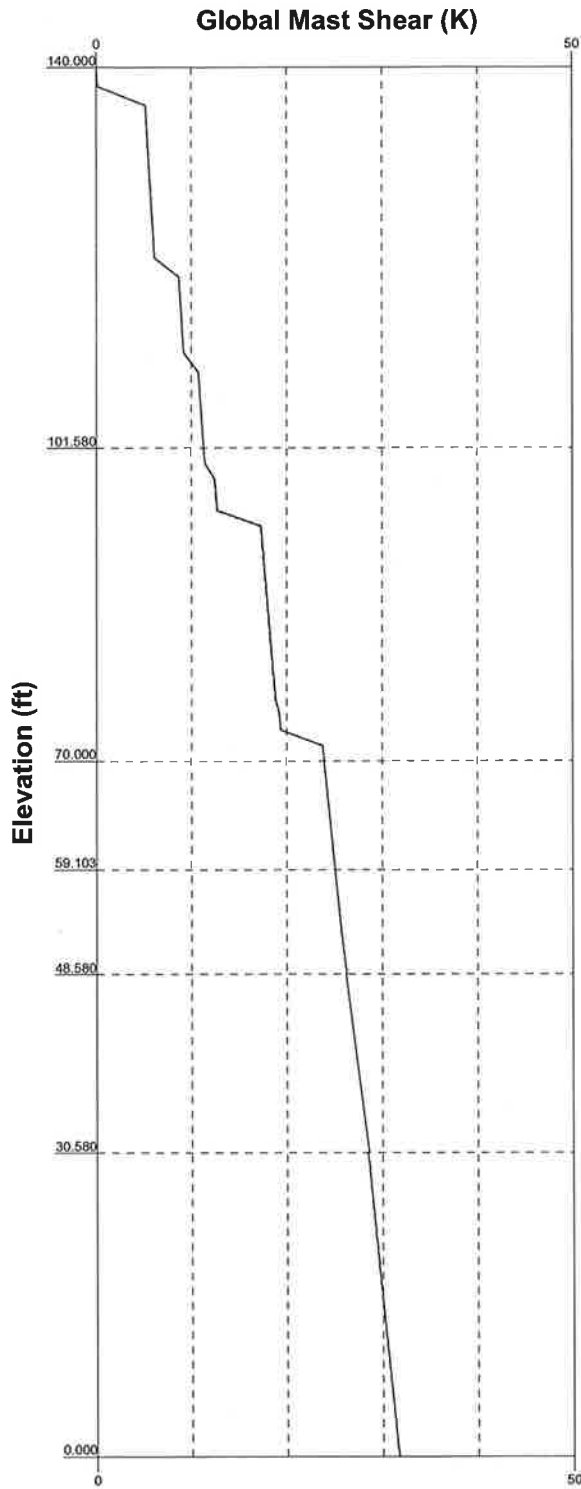
Round Flat App In Face App Out Face Truss Leg



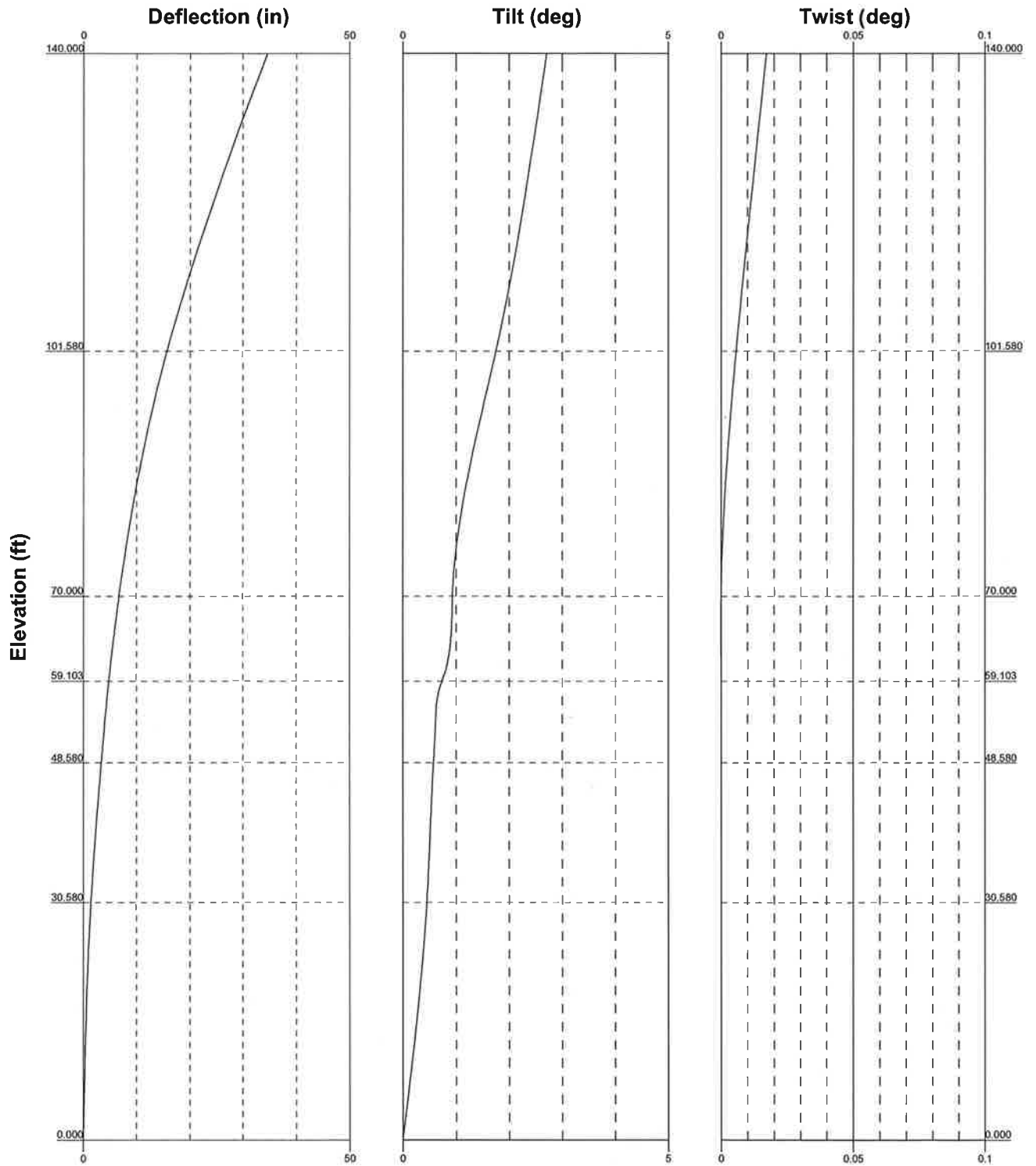
 B+T Group 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job: 84720.006.01- Shelton NE, CT (USID# 24519)	
	Project: Verizon Modification 8-7-13	
	Client: AT&T Towers	Drawn by: zsmith
	Code: TIA/EIA-222-F	Date: 12/18/13
	Path:	App'd: _____ Scale: NTS Dwg No. E-7


—— Vx Vz

—— Mx Mz



 B+T Group 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job: 84720.006.01- Shelton NE, CT (USID# 24519)		
	Project: Verizon Modification 8-7-13		
	Client: AT&T Towers	Drawn by: zsmith	App'd:
	Code: TIA/EIA-222-F	Date: 12/18/13	Scale: NTS
	Path:		Dwg No. E-4



 <p>B+T Group 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265</p>	Job: 84720.006.01- Shelton NE, CT (USID# 24519)		
	Project: Verizon Modification 8-7-13		
	Client: AT&T Towers	Drawn by: zsmith	App'd:
	Code: TIA/EIA-222-F	Date: 12/18/13	Scale: NTS
	Path:		Dwg No. E-5

tnxTower B+T Group 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 84720.006.01- Shelton NE, CT (USID# 24519)	Page 1 of 31
	Project Verizon Modification 8-7-13	Date 16:50:45 12/18/13
	Client AT&T Towers	Designed by zsmith

Tower Input Data

There is a pole section.

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

The following design criteria apply:

- Tower is located in Fairfield County, Connecticut.
- Basic wind speed of 85 mph.
- Nominal ice thickness of 0.750 in.
- Ice thickness is considered to increase with height.
- Ice density of 56.000 pcf.
- A wind speed of 38 mph is used in combination with ice.
- Temperature drop of 50.000 °F.
- Deflections calculated using a wind speed of 50 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.333.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

- | | | |
|--|---|---|
| <ul style="list-style-type: none"> Consider Moments - Legs Consider Moments - Horizontals Consider Moments - Diagonals Use Moment Magnification √ Use Code Stress Ratios √ Use Code Safety Factors - Guys √ Escalate Ice Always Use Max Kz Use Special Wind Profile Include Bolts In Member Capacity Leg Bolts Are At Top Of Section Secondary Horizontal Braces Leg Use Diamond Inner Bracing (4 Sided) Add IBC .6D+W Combination | <ul style="list-style-type: none"> Distribute Leg Loads As Uniform Assume Legs Pinned √ Assume Rigid Index Plate √ Use Clear Spans For Wind Area Use Clear Spans For KL/r Retension Guys To Initial Tension √ Bypass Mast Stability Checks √ Use Azimuth Dish Coefficients √ Project Wind Area of Appurt. Autocalc Torque Arm Areas SR Members Have Cut Ends Sort Capacity Reports By Component Triangulate Diamond Inner Bracing Use TIA-222-G Tension Splice Capacity Exemption | <ul style="list-style-type: none"> Treat Feedline Bundles As Cylinder Use ASCE 10 X-Brace Ly Rules Calculate Redundant Bracing Forces Ignore Redundant Members in FEA SR Leg Bolts Resist Compression All Leg Panels Have Same Allowable Offset Girt At Foundation √ Consider Feedline Torque Include Angle Block Shear Check <li style="padding-left: 20px;">Poles √ Include Shear-Torsion Interaction Always Use Sub-Critical Flow Use Top Mounted Sockets |
|--|---|---|

Tapered Pole Section Geometry

Section	Elevation	Section Length	Splice Length	Number of Sides	Top Diameter	Bottom Diameter	Wall Thickness	Bend Radius	Pole Grade
	ft	ft	ft		in	in	in	in	
L1	140.000-101.580	38.420	0.000	18	13.161	21.882	0.188	0.750	A572-65 (65 ksi)
L2	101.580-70.000	31.580	0.000	18	21.882	29.051	0.313	1.250	A572-65 (65 ksi)
L3	70.000-59.103	10.897	0.000	18	29.051	31.524	0.511	2.043	49.867402ksi (50 ksi)
L4	59.103-59.000	0.103	0.000	18	31.524	31.548	0.660	2.642	49.868539ksi (50 ksi)
L5	59.000-48.580	10.420	4.420	18	31.548	33.913	0.449	1.796	53.442768ksi

tnxTower B+T Group 1717 S. Boulder Ave. Tulsa, OK 74119 Phone: (918) 587-4630 FAX: (918) 295-0265	Job 84720.006.01- Shelton NE, CT (USID# 24519)	Page 2 of 31
	Project Verizon Modification 8-7-13	Date 16:50:45 12/18/13
	Client AT&T Towers	Designed by zsmith

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 (53 ksi)
L6	48.580-30.580	22.420	18.000	18	32.285	37.375	0.764	3.055	53.499347ksi
L7	30.580-30.520	18.060	0.060	18	33.288	37.388	0.596	2.386	50.108562ksi
L8	30.520-0.000	30.580		18	37.375	44.317	0.596	2.385	50.109038ksi

Tapered Pole Properties

Section	Tip Dia. in	Area in ²	I in ⁴	r in	C in	I/C in ³	J in ⁴	I/Q in ²	w in	w/t
L1	13.364	7.721	164.179	4.606	6.686	24.556	328.574	3.861	1.986	10.594
	22.220	12.911	767.705	7.702	11.116	69.063	1536.421	6.457	3.521	18.78
L2	22.220	21.394	1257.519	7.657	11.116	113.126	2516.693	10.699	3.301	10.564
	29.499	28.505	2974.208	10.202	14.758	201.535	5952.329	14.255	4.563	14.601
L3	29.499	46.276	4762.035	10.132	14.758	322.681	9530.337	23.142	4.214	8.249
	32.011	50.287	6110.669	11.010	16.014	381.575	12229.378	25.148	4.649	9.101
L4	32.011	64.703	7786.832	10.957	16.014	486.241	15583.910	32.358	4.386	6.64
	32.034	64.752	7804.542	10.965	16.026	486.986	15619.354	32.382	4.390	6.646
L5	32.034	44.318	5415.054	11.040	16.026	337.887	10837.233	22.163	4.762	10.607
	34.436	47.689	6747.009	11.880	17.228	391.635	13502.895	23.849	5.178	11.534
L6	33.802	76.410	9591.536	11.190	16.401	584.828	19195.692	38.213	4.338	5.68
	37.951	88.749	15028.655	12.997	18.986	791.553	30077.086	44.383	5.234	6.853
L7	37.951	61.887	8356.278	11.606	16.910	494.151	16723.552	30.949	4.809	8.063
	37.965	69.649	11911.123	13.061	18.993	627.126	23837.919	34.831	5.531	9.273
L8	37.965	69.609	11895.602	13.056	18.986	626.537	23806.857	34.811	5.528	9.271
	45.001	82.749	19983.612	15.521	22.513	887.646	39993.519	41.382	6.750	11.32

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 140.000-101.580				1	1	1		
L2 101.580-70.000				1	1	1		
L3 70.000-59.103				1	1	0.959292		
L4 59.103-59.000				1	1	0.936932		
L5 59.000-48.580				1	1	0.967358		
L6 48.580-30.580				1	1	0.975736		
L7 30.580-30.520				1	1	0.954496		
L8 30.520-0.000				1	1	0.954528		

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Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}		Weight klf
						ft ² /ft		
LDF5-50A(7/8") (E-To Omni)	C	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
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
AVA7-50(1-5/8") (Verizon-E)	C	No	Inside Pole	138.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF7-50A(1-5/8") (Verizon-P)	C	No	CaAa (Out Of Face)	138.000 - 0.000	1	No Ice	0.198	0.001
						1/2" Ice	0.298	0.002
						1" Ice	0.398	0.004
						2" Ice	0.598	0.011
						4" Ice	0.998	0.030
///	B	No	CaAa (Out Of Face)	120.000 - 0.000	2	No Ice	0.198	0.001
						1/2" Ice	0.298	0.002
						1" Ice	0.398	0.004
						2" Ice	0.598	0.011
						4" Ice	0.998	0.030
LDF7-50A(1-5/8") (T-Mobile-E(Shielded))	B	No	CaAa (Out Of Face)	120.000 - 0.000	16	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.011
						4" Ice	0.000	0.030
///	A	No	CaAa (Out Of Face)	110.000 - 0.000	1	No Ice	0.198	0.001
						1/2" Ice	0.298	0.002
						1" Ice	0.398	0.004
						2" Ice	0.598	0.011
						4" Ice	0.998	0.030
LDF7-50A(1-5/8") (MetroPCS-E(Outside Shielded))	A	No	CaAa (Out Of Face)	110.000 - 0.000	11	No Ice	0.000	0.001
						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.011
						4" Ice	0.000	0.030
LDF5-50A(7/8") (AT&T-E)	C	No	Inside Pole	95.000 - 0.000	6	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF7-50A(1-5/8") (AT&T-Future)	C	No	Inside Pole	95.000 - 0.000	6	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
RG6-Fiber (AT&T-E)	C	No	Inside Pole	99.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
DC (AT&T-E)	C	No	Inside Pole	99.000 - 0.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C _A A _A ft ² /ft	Weight klf
///								
ATCB-B01-060(5/16) (Clearwire-E)	C	No	Inside Pole	73.000 - 0.000	6	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF4-50A(1/2") (Clearwire-E)	C	No	Inside Pole	73.000 - 0.000	2	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF6-50A(1 1/4") (Sprint/Nextel-E)	C	No	Inside Pole	73.000 - 0.000	12	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
HB114-1-0813U4-M5J(1 1/4") (Sprint/Nextel-E)	C	No	Inside Pole	73.000 - 0.000	3	No Ice	0.000	0.001
						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
///								
MP3-05 (Reinforcement)	C	No	CaAa (Out Of Face)	30.520 - 0.000	1	No Ice	0.348	0.019
						1/2" Ice	0.432	0.021
						1" Ice	0.515	0.023
						2" Ice	0.682	0.029
						4" Ice	1.015	0.044
MP3-05 (Reinforcement)	B	No	CaAa (Out Of Face)	30.520 - 0.000	1	No Ice	0.348	0.019
						1/2" Ice	0.432	0.021
						1" Ice	0.515	0.023
						2" Ice	0.682	0.029
						4" Ice	1.015	0.044
MP3-05 (Reinforcement)	A	No	CaAa (Out Of Face)	30.520 - 0.000	1	No Ice	0.000	0.019
						1/2" Ice	0.000	0.021
						1" Ice	0.000	0.023
						2" Ice	0.000	0.029
						4" Ice	0.000	0.044
MP3-04 (Reinforcement)	C	No	CaAa (Out Of Face)	60.520 - 30.520	1	No Ice	0.268	0.014
						1/2" Ice	0.352	0.016
						1" Ice	0.435	0.018
						2" Ice	0.602	0.022
						4" Ice	0.935	0.036
MP3-04 (Reinforcement)	B	No	CaAa (Out Of Face)	60.520 - 30.520	1	No Ice	0.268	0.014
						1/2" Ice	0.352	0.016
						1" Ice	0.435	0.018
						2" Ice	0.602	0.022
						4" Ice	0.935	0.036
MP3-04 (Reinforcement)	A	No	CaAa (Out Of Face)	60.520 - 30.520	1	No Ice	0.000	0.014
						1/2" Ice	0.000	0.016
						1" Ice	0.000	0.018
						2" Ice	0.000	0.022
						4" Ice	0.000	0.036
///								
Safety Line 3/8 (E)	C	No	CaAa (Out Of Face)	140.000 - 0.000	1	No Ice	0.037	0.000
						1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004

5.75" x 1" Plate (Reinforcement)	A	No	CaAa (Out Of Face)	50.580 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000

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Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	C _{AA}	Weight klf
						ft ² /ft	
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
5.75" x 1" Plate (Reinforcement)	B	No	CaAa (Out Of Face)	50.580 - 0.000	1	No Ice	0.167
						1/2" Ice	0.250
						1" Ice	0.333
						2" Ice	0.500
						4" Ice	0.833
5.75" x 1" Plate (Reinforcement)	C	No	CaAa (Out Of Face)	50.580 - 0.000	1	No Ice	0.167
						1/2" Ice	0.250
						1" Ice	0.333
						2" Ice	0.500
						4" Ice	0.833
5.75" x 1" Plate (Reinforcement)	A	No	CaAa (Out Of Face)	72.000 - 57.000	1	No Ice	0.000
						1/2" Ice	0.000
						1" Ice	0.000
						2" Ice	0.000
						4" Ice	0.000
5.75" x 1" Plate (Reinforcement)	B	No	CaAa (Out Of Face)	72.000 - 57.000	1	No Ice	0.167
						1/2" Ice	0.250
						1" Ice	0.333
						2" Ice	0.500
						4" Ice	0.833
5.75" x 1" Plate (Reinforcement)	C	No	CaAa (Out Of Face)	72.000 - 57.000	1	No Ice	0.167
						1/2" Ice	0.250
						1" Ice	0.333
						2" Ice	0.500
						4" Ice	0.833

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A _R ft ²	A _F ft ²	C _{AA} In Face ft ²	C _{AA} Out Face ft ²	Weight K
L1	140.000-101.580	A	0.000	0.000	0.000	1.667	0.083
		B	0.000	0.000	0.000	7.294	0.272
		C	0.000	0.000	0.000	8.652	0.357
L2	101.580-70.000	A	0.000	0.000	0.000	6.253	0.311
		B	0.000	0.000	0.000	12.839	0.494
		C	0.000	0.000	0.000	7.770	0.559
L3	70.000-59.103	A	0.000	0.000	0.000	2.158	0.127
		B	0.000	0.000	0.000	6.512	0.334
		C	0.000	0.000	0.000	4.763	0.494
L4	59.103-59.000	A	0.000	0.000	0.000	0.020	0.002
		B	0.000	0.000	0.000	0.086	0.004
		C	0.000	0.000	0.000	0.069	0.006
L5	59.000-48.580	A	0.000	0.000	0.000	2.063	0.249
		B	0.000	0.000	0.000	7.589	0.357
		C	0.000	0.000	0.000	5.917	0.510
L6	48.580-30.580	A	0.000	0.000	0.000	3.564	0.431
		B	0.000	0.000	0.000	14.958	0.773
		C	0.000	0.000	0.000	12.069	1.037
L7	30.580-30.520	A	0.000	0.000	0.000	0.012	0.001
		B	0.000	0.000	0.000	0.050	0.003
		C	0.000	0.000	0.000	0.040	0.003
L8	30.520-0.000	A	0.000	0.000	0.000	6.043	0.887
		B	0.000	0.000	0.000	27.804	1.467
		C	0.000	0.000	0.000	22.905	1.914

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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 _A A _A In Face ft ²	C _A A _A Out Face ft ²	Weight K
L1	140,000-101,580	A	0.875	0.000	0.000	0.000	3.141	0.397
		B		0.000	0.000	0.000	13.742	1.303
		C		0.000	0.000	0.000	21.751	0.506
L2	101,580-70,000	A	0.840	0.000	0.000	0.000	11.561	1.433
		B		0.000	0.000	0.000	23.736	2.183
		C		0.000	0.000	0.000	18.668	0.686
L3	70,000-59,103	A	0.813	0.000	0.000	0.000	3.929	0.503
		B		0.000	0.000	0.000	11.722	0.923
		C		0.000	0.000	0.000	9.973	0.565
L4	59,103-59,000	A	0.804	0.000	0.000	0.000	0.037	0.006
		B		0.000	0.000	0.000	0.146	0.010
		C		0.000	0.000	0.000	0.130	0.007
L5	59,000-48,580	A	0.795	0.000	0.000	0.000	3.720	0.624
		B		0.000	0.000	0.000	12.814	0.914
		C		0.000	0.000	0.000	11.142	0.585
L6	48,580-30,580	A	0.766	0.000	0.000	0.000	6.427	1.078
		B		0.000	0.000	0.000	25.454	1.762
		C		0.000	0.000	0.000	22.565	1.193
L7	30,580-30,520	A	0.750	0.000	0.000	0.000	0.021	0.003
		B		0.000	0.000	0.000	0.084	0.006
		C		0.000	0.000	0.000	0.074	0.004
L8	30,520-0.000	A	0.750	0.000	0.000	0.000	10.621	1.923
		B		0.000	0.000	0.000	44.590	3.044
		C		0.000	0.000	0.000	39.691	2.177

Feed Line Center of Pressure

Section	Elevation ft	CP _X in	CP _Z in	CP _X Ice in	CP _Z Ice in
L1	140,000-101,580	-0.013	0.193	-0.121	0.327
L2	101,580-70,000	0.149	0.139	0.111	0.247
L3	70,000-59,103	0.140	0.323	0.105	0.481
L4	59,103-59,000	0.127	0.504	0.094	0.667
L5	59,000-48,580	0.135	0.436	0.103	0.588
L6	48,580-30,580	0.132	0.526	0.101	0.707
L7	30,580-30,520	0.135	0.536	0.104	0.722
L8	30,520-0.000	0.135	0.614	0.107	0.794

Discrete Tower Loads

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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz	Lateral						Vert
9' Omni (E)	A	From Leg	4.000		0.000	138.000	No Ice	2.250	2.250	0.030
			0.000				1/2" Ice	3.180	3.180	0.050
			6.500				1" Ice	4.110	4.110	0.070
							2" Ice	5.970	5.970	0.110
							4" Ice	9.690	9.690	0.190
///										
BXA-80063-6BF w/Mount Pipe (Verizon-P)	A	From Leg	4.000		0.000	138.000	No Ice	7.707	5.630	0.039
			0.000				1/2" Ice	8.328	6.719	0.099
			2.000				1" Ice	8.919	7.561	0.165
							2" Ice	10.132	9.294	0.325
							4" Ice	12.677	12.968	0.781
BXA-80063-6BF w/Mount Pipe (Verizon-P)	B	From Leg	4.000		0.000	138.000	No Ice	7.707	5.630	0.039
			0.000				1/2" Ice	8.328	6.719	0.099
			2.000				1" Ice	8.919	7.561	0.165
							2" Ice	10.132	9.294	0.325
							4" Ice	12.677	12.968	0.781
BXA-80063-6BF w/Mount Pipe (Verizon-P)	C	From Leg	4.000		0.000	138.000	No Ice	7.707	5.630	0.039
			0.000				1/2" Ice	8.328	6.719	0.099
			2.000				1" Ice	8.919	7.561	0.165
							2" Ice	10.132	9.294	0.325
							4" Ice	12.677	12.968	0.781
BXA 171063/8BF w/Mount Pipe (Verizon-P)	A	From Leg	4.000		0.000	138.000	No Ice	3.367	3.541	0.023
			0.000				1/2" Ice	3.843	4.343	0.057
			2.000				1" Ice	4.302	5.022	0.097
							2" Ice	5.310	6.429	0.197
							4" Ice	7.466	9.587	0.509
BXA 171063/8BF w/Mount Pipe (Verizon-P)	B	From Leg	4.000		0.000	138.000	No Ice	3.367	3.541	0.023
			0.000				1/2" Ice	3.843	4.343	0.057
			2.000				1" Ice	4.302	5.022	0.097
							2" Ice	5.310	6.429	0.197
							4" Ice	7.466	9.587	0.509
BXA 171063/8BF w/Mount Pipe (Verizon-P)	C	From Leg	4.000		0.000	138.000	No Ice	3.367	3.541	0.023
			0.000				1/2" Ice	3.843	4.343	0.057
			2.000				1" Ice	4.302	5.022	0.097
							2" Ice	5.310	6.429	0.197
							4" Ice	7.466	9.587	0.509
BXA-70040/6CF w/ Mount Pipe (Verizon-P)	B	From Leg	4.000		0.000	138.000	No Ice	16.551	7.366	0.063
			0.000				1/2" Ice	17.273	8.535	0.163
			2.000				1" Ice	17.960	9.417	0.272
							2" Ice	19.366	11.234	0.520
							4" Ice	22.296	15.344	1.168
ALU RH_2x40-AWS (Verizon-P-Shielded)	A	From Leg	4.000		0.000	138.000	No Ice	0.000	1.589	0.044
			0.000				1/2" Ice	0.000	1.795	0.061
			2.000				1" Ice	0.000	2.010	0.082
							2" Ice	0.000	2.465	0.132
							4" Ice	0.000	3.479	0.275
ALU RH_2x40-AWS (Verizon-P-Shielded)	B	From Leg	4.000		0.000	138.000	No Ice	0.000	1.589	0.044
			0.000				1/2" Ice	0.000	1.795	0.061
			2.000				1" Ice	0.000	2.010	0.082
							2" Ice	0.000	2.465	0.132
							4" Ice	0.000	3.479	0.275
ALU RH_2x40-AWS (Verizon-P-Shielded)	C	From Leg	4.000		0.000	138.000	No Ice	0.000	1.589	0.044
			0.000				1/2" Ice	0.000	1.795	0.061
			2.000				1" Ice	0.000	2.010	0.082
							2" Ice	0.000	2.465	0.132
							4" Ice	0.000	3.479	0.275
DB-T1-6Z-8AB-0Z	A	From Leg	4.000		0.000	138.000	No Ice	5.600	2.333	0.044

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	Client	AT&T Towers		Designed by	zsmith

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight	
			Horz Lateral	Vert						°
(Verizon-P)			0.000							
			2.000			1/2" Ice	5.915	2.558	0.080	
						1" Ice	6.240	2.791	0.120	
						2" Ice	6.914	3.284	0.213	
						4" Ice	8.365	4.373	0.455	
BXA-70063/6CF w/ Mount Pipe (Verizon-E)	A	From Leg	4.000		30.000	138.000	No Ice	7.979	5.407	0.042
			0.000				1/2" Ice	8.621	6.558	0.101
			2.000				1" Ice	9.228	7.422	0.168
							2" Ice	10.473	9.198	0.328
							4" Ice	13.082	12.952	0.788
BXA-70063/6CF w/ Mount Pipe (Verizon-E)	C	From Leg	4.000		-20.000	138.000	No Ice	7.979	5.407	0.042
			0.000				1/2" Ice	8.621	6.558	0.101
			2.000				1" Ice	9.228	7.422	0.168
							2" Ice	10.473	9.198	0.328
							4" Ice	13.082	12.952	0.788
BXA 171063/8BF w/Mount Pipe (Verizon-E)	A	From Leg	4.000		30.000	138.000	No Ice	3.367	3.541	0.023
			0.000				1/2" Ice	3.843	4.343	0.057
			2.000				1" Ice	4.302	5.022	0.097
							2" Ice	5.310	6.429	0.197
							4" Ice	7.466	9.587	0.509
BXA 171063/8BF w/Mount Pipe (Verizon-E)	B	From Leg	4.000		0.000	138.000	No Ice	3.367	3.541	0.023
			0.000				1/2" Ice	3.843	4.343	0.057
			2.000				1" Ice	4.302	5.022	0.097
							2" Ice	5.310	6.429	0.197
							4" Ice	7.466	9.587	0.509
BXA 171063/8BF w/Mount Pipe (Verizon-E)	C	From Leg	4.000		-20.000	138.000	No Ice	3.367	3.541	0.023
			0.000				1/2" Ice	3.843	4.343	0.057
			2.000				1" Ice	4.302	5.022	0.097
							2" Ice	5.310	6.429	0.197
							4" Ice	7.466	9.587	0.509
(2) FD9R6004/2C-3L (Verizon-E)	A	From Leg	4.000		0.000	138.000	No Ice	0.367	0.085	0.003
			0.000				1/2" Ice	0.451	0.136	0.005
			2.000				1" Ice	0.543	0.196	0.009
							2" Ice	0.755	0.343	0.020
							4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L (Verizon-E)	B	From Leg	4.000		0.000	138.000	No Ice	0.367	0.085	0.003
			0.000				1/2" Ice	0.451	0.136	0.005
			2.000				1" Ice	0.543	0.196	0.009
							2" Ice	0.755	0.343	0.020
							4" Ice	1.281	0.740	0.063
(2) FD9R6004/2C-3L (Verizon-E)	C	From Leg	4.000		0.000	138.000	No Ice	0.367	0.085	0.003
			0.000				1/2" Ice	0.451	0.136	0.005
			2.000				1" Ice	0.543	0.196	0.009
							2" Ice	0.755	0.343	0.020
							4" Ice	1.281	0.740	0.063
Platform Mount [LP 712-1] (Verizon-E)	C	None			0.000	138.000	No Ice	24.530	24.530	1.335
							1/2" Ice	29.940	29.940	1.646
							1" Ice	35.350	35.350	1.956
							2" Ice	46.170	46.170	2.577
							4" Ice	67.810	67.810	3.820

(2) APX16PV-16PVL-E w/ Mount Pipe (T-Mobile-E)	A	From Leg	3.000		0.000	120.000	No Ice	7.075	3.428	0.062
			0.000				1/2" Ice	7.639	4.251	0.109
			0.000				1" Ice	8.177	4.951	0.162
							2" Ice	9.286	6.400	0.292
							4" Ice	11.638	9.513	0.671
(2) APX16PV-16PVL-E w/ Mount Pipe	B	From Leg	3.000		0.000	120.000	No Ice	7.075	3.428	0.062
			0.000				1/2" Ice	7.639	4.251	0.109

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	Project Verizon Modification 8-7-13	Date 16:50:45 12/18/13
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Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A ₁ Front	C _A A ₁ Side	Weight
			Horz	Vert					
(T-Mobile-E)			0.000						
						1" Ice	8.177	4.951	0.162
						2" Ice	9.286	6.400	0.292
						4" Ice	11.638	9.513	0.671
(2) APX16PV-16PVL-E w/ Mount Pipe (T-Mobile-E)	C	From Leg	3.000	0.000	120.000	No Ice	7.075	3.428	0.062
			0.000			1/2" Ice	7.639	4.251	0.109
			0.000			1" Ice	8.177	4.951	0.162
						2" Ice	9.286	6.400	0.292
						4" Ice	11.638	9.513	0.671
(2) DTMA-1819-DD-12 (T-Mobile-E)	A	From Leg	3.000	0.000	120.000	No Ice	0.706	0.411	0.014
			0.000			1/2" Ice	0.831	0.521	0.019
			0.000			1" Ice	0.966	0.641	0.026
						2" Ice	1.260	0.905	0.045
						4" Ice	1.952	1.538	0.111
(2) DTMA-1819-DD-12 (T-Mobile-E)	B	From Leg	3.000	0.000	120.000	No Ice	0.706	0.411	0.014
			0.000			1/2" Ice	0.831	0.521	0.019
			0.000			1" Ice	0.966	0.641	0.026
						2" Ice	1.260	0.905	0.045
						4" Ice	1.952	1.538	0.111
(2) DTMA-1819-DD-12 (T-Mobile-E)	C	From Leg	3.000	0.000	120.000	No Ice	0.706	0.411	0.014
			0.000			1/2" Ice	0.831	0.521	0.019
			0.000			1" Ice	0.966	0.641	0.026
						2" Ice	1.260	0.905	0.045
						4" Ice	1.952	1.538	0.111
6' x 2" Mount Pipe (T-Mobile-E)	A	From Leg	3.000	0.000	120.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (T-Mobile-E)	B	From Leg	3.000	0.000	120.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (T-Mobile-E)	C	From Leg	3.000	0.000	120.000	No Ice	1.425	1.425	0.022
			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
T-Arm Mount [TA 602-3] (T-Mobile-E)	C	None		0.000	120.000	No Ice	11.590	11.590	0.774
						1/2" Ice	15.440	15.440	0.990
						1" Ice	19.290	19.290	1.206
						2" Ice	26.990	26.990	1.639
						4" Ice	42.390	42.390	2.503
///									
800 10504 w/ Mount Pipe (MetroPCS-E)	A	From Leg	3.000	0.000	110.000	No Ice	3.589	3.178	0.038
			0.000			1/2" Ice	4.007	3.905	0.070
			0.000			1" Ice	4.422	4.581	0.109
						2" Ice	5.339	5.982	0.207
						4" Ice	7.385	8.983	0.514
800 10504 w/ Mount Pipe (MetroPCS-E)	B	From Leg	3.000	0.000	110.000	No Ice	3.589	3.178	0.038
			0.000			1/2" Ice	4.007	3.905	0.070
			0.000			1" Ice	4.422	4.581	0.109
						2" Ice	5.339	5.982	0.207
						4" Ice	7.385	8.983	0.514
800 10504 w/ Mount Pipe (MetroPCS-E)	C	From Leg	3.000	0.000	110.000	No Ice	3.589	3.178	0.038
			0.000			1/2" Ice	4.007	3.905	0.070
			0.000			1" Ice	4.422	4.581	0.109

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	Client	AT&T Towers		Designed by	zsmith

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A ₁ Front	C _A A ₂ Side	Weight
			Horz	Vert					
Valmont Uni-Tri Bracket (AT&T-E)	C	None			0.000	99.000	4" Ice	6.797	0.383
							No Ice	1.750	0.290
							1/2" Ice	1.940	0.306
							1" Ice	2.130	0.322
							2" Ice	2.510	0.354
						4" Ice	3.270	0.418	
///									
7770.00 w/ Mount Pipe (AT&T-E)	A	From Leg	4.000	0.000	0.000	95.000	No Ice	4.353	0.057
							1/2" Ice	6.769	0.105
							1" Ice	7.296	0.160
							2" Ice	8.385	0.293
							4" Ice	10.691	0.680
7770.00 w/ Mount Pipe (AT&T-E)	B	From Leg	4.000	0.000	0.000	95.000	No Ice	4.353	0.057
							1/2" Ice	6.769	0.105
							1" Ice	7.296	0.160
							2" Ice	8.385	0.293
							4" Ice	10.691	0.680
7770.00 w/ Mount Pipe (AT&T-E)	C	From Leg	4.000	0.000	0.000	95.000	No Ice	4.353	0.057
							1/2" Ice	6.769	0.105
							1" Ice	7.296	0.160
							2" Ice	8.385	0.293
							4" Ice	10.691	0.680
P65-16-XLH-RR w/Mount Pipe (AT&T-E)	A	From Leg	4.000	0.000	0.000	95.000	No Ice	6.362	0.079
							1/2" Ice	9.290	0.144
							1" Ice	9.910	0.218
							2" Ice	11.176	0.393
							4" Ice	13.829	0.886
P65-16-XLH-RR w/Mount Pipe (AT&T-E)	B	From Leg	4.000	0.000	0.000	95.000	No Ice	6.362	0.079
							1/2" Ice	9.290	0.144
							1" Ice	9.910	0.218
							2" Ice	11.176	0.393
							4" Ice	13.829	0.886
P65-16-XLH-RR w/Mount Pipe (AT&T-E)	C	From Leg	4.000	0.000	0.000	95.000	No Ice	6.362	0.079
							1/2" Ice	9.290	0.144
							1" Ice	9.910	0.218
							2" Ice	11.176	0.393
							4" Ice	13.829	0.886
(2) LGP21401 (AT&T-E)	A	From Leg	4.000	0.000	0.000	95.000	No Ice	0.233	0.014
							1/2" Ice	1.445	0.021
							1" Ice	1.611	0.030
							2" Ice	1.969	0.055
							4" Ice	2.788	0.135
(2) LGP21401 (AT&T-E)	B	From Leg	4.000	0.000	0.000	95.000	No Ice	0.233	0.014
							1/2" Ice	1.445	0.021
							1" Ice	1.611	0.030
							2" Ice	1.969	0.055
							4" Ice	2.788	0.135
(2) LGP21401 (AT&T-E)	C	From Leg	4.000	0.000	0.000	95.000	No Ice	0.233	0.014
							1/2" Ice	1.445	0.021
							1" Ice	1.611	0.030
							2" Ice	1.969	0.055
							4" Ice	2.788	0.135
P65-16-XLH-RR w/Mount Pipe (AT&T-Future)	A	From Leg	4.000	0.000	0.000	95.000	No Ice	6.362	0.079
							1/2" Ice	9.290	0.144
							1" Ice	9.910	0.218
							2" Ice	11.176	0.393
							4" Ice	13.829	0.886

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	Project	Verizon Modification 8-7-13		Date	16:50:45 12/18/13
	Client	AT&T Towers		Designed by	zsmith

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _A A _s Front	C _A A _s Side	Weight	
			Horz	Lateral						Veri
P65-16-XLH-RR w/Mount Pipe (AT&T-Future)	B	From Leg	4.000	0.000	0.000	95.000	No Ice	8.637	6.362	0.079
			0.000	0.000			1/2" Ice	9.290	7.538	0.144
			0.000	0.000			1" Ice	9.910	8.427	0.218
							2" Ice	11.176	10.239	0.393
							4" Ice	13.829	14.099	0.886
P65-16-XLH-RR w/Mount Pipe (AT&T-Future)	C	From Leg	4.000	0.000	0.000	95.000	No Ice	8.637	6.362	0.079
			0.000	0.000			1/2" Ice	9.290	7.538	0.144
			0.000	0.000			1" Ice	9.910	8.427	0.218
							2" Ice	11.176	10.239	0.393
							4" Ice	13.829	14.099	0.886
6' x 2" Mount Pipe (AT&T-E)	A	From Leg	4.000	0.000	0.000	95.000	No Ice	1.425	1.425	0.022
			0.000	0.000			1/2" Ice	1.925	1.925	0.033
			0.000	0.000			1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
							4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (AT&T-E)	B	From Leg	4.000	0.000	0.000	95.000	No Ice	1.425	1.425	0.022
			0.000	0.000			1/2" Ice	1.925	1.925	0.033
			0.000	0.000			1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
							4" Ice	4.702	4.702	0.231
6' x 2" Mount Pipe (AT&T-E)	C	From Leg	4.000	0.000	0.000	95.000	No Ice	1.425	1.425	0.022
			0.000	0.000			1/2" Ice	1.925	1.925	0.033
			0.000	0.000			1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
							4" Ice	4.702	4.702	0.231
Platform Mount [LP 602-1] (AT&T-E)	C	None			0.000	95.000	No Ice	32.030	32.030	1.343
							1/2" Ice	38.710	38.710	1.800
							1" Ice	45.390	45.390	2.257
							2" Ice	58.750	58.750	3.170
							4" Ice	85.470	85.470	4.998
///										
LLPX310R w/ Mount Pipe (Clearwire-E)	A	From Leg	4.000	0.000	0.000	73.000	No Ice	5.065	2.985	0.045
			0.000	0.000			1/2" Ice	5.480	3.528	0.083
			2.000	0.000			1" Ice	5.905	4.087	0.126
							2" Ice	6.788	5.314	0.232
							4" Ice	8.705	8.133	0.544
LLPX310R w/ Mount Pipe (Clearwire-E)	B	From Leg	4.000	0.000	0.000	73.000	No Ice	5.065	2.985	0.045
			0.000	0.000			1/2" Ice	5.480	3.528	0.083
			2.000	0.000			1" Ice	5.905	4.087	0.126
							2" Ice	6.788	5.314	0.232
							4" Ice	8.705	8.133	0.544
LLPX310R w/ Mount Pipe (Clearwire-E)	C	From Leg	4.000	0.000	0.000	73.000	No Ice	5.065	2.985	0.045
			0.000	0.000			1/2" Ice	5.480	3.528	0.083
			2.000	0.000			1" Ice	5.905	4.087	0.126
							2" Ice	6.788	5.314	0.232
							4" Ice	8.705	8.133	0.544
FDD_R6_RRH (Clearwire-E)	A	From Leg	4.000	0.000	0.000	73.000	No Ice	1.789	0.778	0.033
			0.000	0.000			1/2" Ice	1.971	0.918	0.045
			2.000	0.000			1" Ice	2.163	1.067	0.058
							2" Ice	2.571	1.391	0.094
							4" Ice	3.491	2.143	0.200
FDD_R6_RRH (Clearwire-E)	B	From Leg	4.000	0.000	0.000	73.000	No Ice	1.789	0.778	0.033
			0.000	0.000			1/2" Ice	1.971	0.918	0.045
			2.000	0.000			1" Ice	2.163	1.067	0.058
							2" Ice	2.571	1.391	0.094
							4" Ice	3.491	2.143	0.200
FDD_R6_RRH	C	From Leg	4.000	0.000	0.000	73.000	No Ice	1.789	0.778	0.033

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	Project	Verizon Modification 8-7-13	Date	16:50:45 12/18/13
	Client	AT&T Towers	Designed by	zsmith

Description	Face or Leg	Offset Type	Offsets:		Azimuth Adjustment	Placement	C _{AA} Front	C _{AA} Side	Weight
			Horz	Vert					
(Clearwire-E)			0.000						
			2.000			1/2" Ice	1.971	0.918	0.045
						1" Ice	2.163	1.067	0.058
						2" Ice	2.571	1.391	0.094
						4" Ice	3.491	2.143	0.200
HORIZON DUO (Clearwire-E)	A	From Leg	4.000	0.000	73.000	No Ice	0.547	0.343	0.007
			0.000			1/2" Ice	0.648	0.426	0.012
			2.000			1" Ice	0.759	0.518	0.018
						2" Ice	1.005	0.728	0.036
						4" Ice	1.601	1.252	0.097
HORIZON DUO (Clearwire-E)	C	From Leg	4.000	0.000	73.000	No Ice	0.547	0.343	0.007
			0.000			1/2" Ice	0.648	0.426	0.012
			2.000			1" Ice	0.759	0.518	0.018
						2" Ice	1.005	0.728	0.036
						4" Ice	1.601	1.252	0.097
///									
(2) APXVSP18-C-A20 w/ Mount Pipe (Sprint/Nextel-E)	A	From Leg	4.000	0.000	73.000	No Ice	8.498	6.946	0.083
			0.000			1/2" Ice	9.149	8.127	0.151
			2.000			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
(2) APXVSP18-C-A20 w/ Mount Pipe (Sprint/Nextel-E)	B	From Leg	4.000	0.000	73.000	No Ice	8.498	6.946	0.083
			0.000			1/2" Ice	9.149	8.127	0.151
			2.000			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
(2) APXVSP18-C-A20 w/ Mount Pipe (Sprint/Nextel-E)	C	From Leg	4.000	0.000	73.000	No Ice	8.498	6.946	0.083
			0.000			1/2" Ice	9.149	8.127	0.151
			2.000			1" Ice	9.767	9.021	0.227
						2" Ice	11.031	10.844	0.406
						4" Ice	13.679	14.851	0.909
800MHz 2x50w (Sprint/Nextel-E)	A	From Leg	4.000	0.000	73.000	No Ice	2.490	2.068	0.053
			0.000			1/2" Ice	2.706	2.271	0.074
			0.000			1" Ice	2.931	2.481	0.098
						2" Ice	3.407	2.928	0.157
						4" Ice	4.462	3.927	0.318
800MHz 2x50w (Sprint/Nextel-E)	B	From Leg	4.000	0.000	73.000	No Ice	2.490	2.068	0.053
			0.000			1/2" Ice	2.706	2.271	0.074
			0.000			1" Ice	2.931	2.481	0.098
						2" Ice	3.407	2.928	0.157
						4" Ice	4.462	3.927	0.318
800MHz 2x50w (Sprint/Nextel-E)	C	From Leg	4.000	0.000	73.000	No Ice	2.490	2.068	0.053
			0.000			1/2" Ice	2.706	2.271	0.074
			0.000			1" Ice	2.931	2.481	0.098
						2" Ice	3.407	2.928	0.157
						4" Ice	4.462	3.927	0.318
1900MHz 2x40w (Sprint/Nextel-E)	A	From Leg	4.000	0.000	73.000	No Ice	2.490	3.064	0.090
			0.000			1/2" Ice	2.706	3.300	0.117
			0.000			1" Ice	2.931	3.545	0.147
						2" Ice	3.407	4.059	0.218
						4" Ice	4.462	5.192	0.410
1900MHz 2x40w (Sprint/Nextel-E)	B	From Leg	4.000	0.000	73.000	No Ice	2.490	3.064	0.090
			0.000			1/2" Ice	2.706	3.300	0.117
			0.000			1" Ice	2.931	3.545	0.147
						2" Ice	3.407	4.059	0.218
						4" Ice	4.462	5.192	0.410
1900MHz 2x40w (Sprint/Nextel-E)	C	From Leg	4.000	0.000	73.000	No Ice	2.490	3.064	0.090
			0.000			1/2" Ice	2.706	3.300	0.117

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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
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	140 - 101.58	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-11.718	-1.316	0.370
			Max. Mx	5	-4.933	-290.944	-2.938
			Max. My	2	-4.933	2.883	291.604
			Max. Vy	5	11.293	-290.944	-2.938
			Max. Vx	2	-11.310	2.883	291.604
			Max. Torque	11			
L2	101.58 - 70	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-28.888	-3.105	0.911
			Max. Mx	5	-14.163	-846.965	-5.033
			Max. My	2	-14.168	4.662	845.821

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Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Force K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L3	70 - 59.103	Pole	Max. Vy	5	23.908	-846.965	-5.033
			Max. Vx	8	23.884	-6.049	-845.249
			Max. Torque	11			-1.714
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.936	-3.880	0.808
			Max. Mx	5	-17.037	-1113.670	-5.224
			Max. My	8	-17.040	-6.435	-1111.697
			Max. Vy	5	25.044	-1113.670	-5.224
			Max. Vx	8	25.020	-6.435	-1111.697
			Max. Torque	11			-1.712
L4	59.103 - 59	Pole	Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-32.984	-3.887	0.807
			Max. Mx	5	-17.084	-1116.251	-5.226
			Max. My	8	-17.087	-6.439	-1114.276
			Max. Vy	5	25.050	-1116.251	-5.226
			Max. Vx	8	25.026	-6.439	-1114.276
			Max. Torque	11			-1.679
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-35.299	-4.331	0.826
			Max. Mx	5	-18.741	-1268.538	-5.268
L5	59 - 48.58	Pole	Max. My	8	-18.743	-6.656	-1266.351
			Max. Vy	5	25.693	-1268.538	-5.268
			Max. Vx	8	25.669	-6.656	-1266.351
			Max. Torque	11			-1.679
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-30.261	-3.353	0.345
			Max. Mx	5	-18.543	-1048.445	-3.156
			Max. My	8	-18.544	-4.179	-1046.905
			Max. Vy	5	16.455	-1048.445	-3.156
			Max. Vx	8	16.441	-4.179	-1046.905
L6	48.58 - 30.58	Pole	Max. Torque	11			-0.999
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-26.257	-3.007	0.309
			Max. Mx	5	-16.165	-939.194	-2.831
			Max. My	8	-16.166	-3.747	-937.813
			Max. Vy	5	14.252	-939.194	-2.831
			Max. Vx	2	-14.245	1.691	936.994
			Max. Torque	11			-0.765
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-68.375	-8.566	0.184
L7	30.58 - 30.52	Pole	Max. Mx	5	-44.762	-2796.503	-6.348
			Max. My	8	-44.762	-8.692	-2793.039
			Max. Vy	5	31.686	-2796.503	-6.348
			Max. Vx	8	31.663	-8.692	-2793.039
			Max. Torque	11			-1.530
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-68.375	-8.566	0.184
			Max. Mx	5	-44.762	-2796.503	-6.348
			Max. My	8	-44.762	-8.692	-2793.039
			Max. Vy	5	31.686	-2796.503	-6.348
L8	30.52 - 0	Pole	Max. Vx	8	31.663	-8.692	-2793.039
			Max. Torque	11			-1.530
			Max Tension	1	0.000	0.000	0.000
			Max. Compression	14	-68.375	-8.566	0.184
			Max. Mx	5	-44.762	-2796.503	-6.348
			Max. My	8	-44.762	-8.692	-2793.039
			Max. Vy	5	31.686	-2796.503	-6.348
			Max. Vx	8	31.663	-8.692	-2793.039
			Max. Torque	11			-1.530
			Max Tension	1	0.000	0.000	0.000

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	18	68.375	-8.353	-0.004
	Max. H _x	11	44.780	31.625	0.044
	Max. H _z	2	44.780	-0.017	31.610
	Max. M _x	2	2789.273	-0.017	31.610
	Max. M _z	5	2796.503	-31.661	-0.001
	Max. Torsion	5	1.303	-31.661	-0.001

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Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. Vert	1	44,780	0.000	0,000
	Min. H _x	5	44,780	-31.661	-0.001
	Min. H _z	8	44,780	-0.018	-31.638
	Min. M _x	8	-2793.039	-0.018	-31.638
	Min. M _z	11	-2789.955	31.625	0.044
	Min. Torsion	11	-1.330	31.625	0.044

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	44.780	0.000	0.000	0.815	-1.839	-0.000
Dead+Wind 0 deg - No Ice	44.780	0.017	-31.610	-2789.273	2.250	-0.220
Dead+Wind 30 deg - No Ice	44.780	15.796	-27.367	-2412.127	-1391.846	-0.748
Dead+Wind 60 deg - No Ice	44.780	27.378	-15.804	-1389.404	-2416.274	-1.168
Dead+Wind 90 deg - No Ice	44.780	31.661	0.001	6.348	-2796.503	-1.303
Dead+Wind 120 deg - No Ice	44.780	27.431	15.854	1404.338	-2425.649	-0.866
Dead+Wind 150 deg - No Ice	44.780	15.831	27.449	2425.423	-1403.948	-0.202
Dead+Wind 180 deg - No Ice	44.780	0.018	31.638	2793.039	-8.692	0.289
Dead+Wind 210 deg - No Ice	44.780	-15.777	27.378	2414.632	1386.590	0.736
Dead+Wind 240 deg - No Ice	44.780	-27.337	15.820	1392.316	2409.327	1.086
Dead+Wind 270 deg - No Ice	44.780	-31.625	-0.044	-7.996	2789.955	1.330
Dead+Wind 300 deg - No Ice	44.780	-27.416	-15.846	-1402.058	2420.807	0.878
Dead+Wind 330 deg - No Ice	44.780	-15.851	-27.396	-2419.712	1401.661	0.187
Dead+Ice+Temp	68.375	0.000	-0.000	-0.184	-8.566	-0.000
Dead+Wind 0 deg+Ice+Temp	68.375	-0.000	-8.341	-752.644	-7.111	-0.017
Dead+Wind 30 deg+Ice+Temp	68.375	4.165	-7.220	-650.732	-383.246	-0.132
Dead+Wind 60 deg+Ice+Temp	68.375	7.223	-4.167	-374.740	-659.662	-0.233
Dead+Wind 90 deg+Ice+Temp	68.375	8.353	0.004	1.732	-762.294	-0.278
Dead+Wind 120 deg+Ice+Temp	68.375	7.239	4.185	378.550	-662.485	-0.197
Dead+Wind 150 deg+Ice+Temp	68.375	4.180	7.243	653.694	-387.170	-0.063
Dead+Wind 180 deg+Ice+Temp	68.375	0.008	8.348	752.749	-10.935	0.036
Dead+Wind 210 deg+Ice+Temp	68.375	-4.161	7.223	650.547	365.474	0.131
Dead+Wind 240 deg+Ice+Temp	68.375	-7.213	4.171	374.646	641.502	0.213
Dead+Wind 270 deg+Ice+Temp	68.375	-8.345	-0.014	-2.872	744.224	0.281
Dead+Wind 300 deg+Ice+Temp	68.375	-7.235	-4.183	-378.789	644.806	0.197
Dead+Wind 330 deg+Ice+Temp	68.375	-4.185	-7.231	-653.144	370.076	0.060
Dead+Wind 0 deg - Service	44.780	0.006	-10.938	-965.759	-0.448	-0.074
Dead+Wind 30 deg - Service	44.780	5.466	-9.470	-835.092	-483.401	-0.262
Dead+Wind 60 deg - Service	44.780	9.473	-5.468	-480.792	-838.293	-0.412
Dead+Wind 90 deg - Service	44.780	10.955	0.000	2.736	-970.031	-0.461
Dead+Wind 120 deg - Service	44.780	9.492	5.486	487.050	-841.570	-0.308
Dead+Wind 150 deg - Service	44.780	5.478	9.498	840.790	-487.618	-0.072
Dead+Wind 180 deg - Service	44.780	0.006	10.947	968.130	-4.250	0.103
Dead+Wind 210 deg - Service	44.780	-5.459	9.473	837.023	479.115	0.260
Dead+Wind 240 deg - Service	44.780	-9.459	5.474	482.861	833.420	0.382
Dead+Wind 270 deg - Service	44.780	-10.943	-0.015	-2.245	965.293	0.466
Dead+Wind 300 deg - Service	44.780	-9.487	-5.483	-485.196	837.421	0.309
Dead+Wind 330 deg - Service	44.780	-5.485	-9.479	-837.745	484.355	0.069

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Solution Summary

Load Comb.	Sum of Applied Forces			Sum of Reactions			% Error
	PX K	PY K	PZ K	PX K	PY K	PZ K	
1	0.000	-44.780	0.000	0.000	44.780	0.000	0.000%
2	0.017	-44.780	-31.610	-0.017	44.780	31.610	0.000%
3	15.796	-44.780	-27.367	-15.796	44.780	27.367	0.000%
4	27.378	-44.780	-15.804	-27.378	44.780	15.804	0.000%
5	31.661	-44.780	0.001	-31.661	44.780	-0.001	0.000%
6	27.431	-44.780	15.854	-27.431	44.780	-15.854	0.000%
7	15.831	-44.780	27.449	-15.831	44.780	-27.449	0.000%
8	0.018	-44.780	31.638	-0.018	44.780	-31.638	0.000%
9	-15.777	-44.780	27.378	15.777	44.780	-27.378	0.000%
10	-27.337	-44.780	15.820	27.337	44.780	-15.820	0.000%
11	-31.625	-44.780	-0.044	31.625	44.780	0.044	0.000%
12	-27.416	-44.780	-15.846	27.416	44.780	15.846	0.000%
13	-15.851	-44.780	-27.396	15.851	44.780	27.396	0.000%
14	0.000	-68.375	0.000	-0.000	68.375	0.000	0.000%
15	-0.000	-68.375	-8.341	0.000	68.375	8.341	0.000%
16	4.165	-68.375	-7.220	-4.165	68.375	7.220	0.000%
17	7.223	-68.375	-4.167	-7.223	68.375	4.167	0.000%
18	8.353	-68.375	0.004	-8.353	68.375	-0.004	0.000%
19	7.239	-68.375	4.185	-7.239	68.375	-4.185	0.000%
20	4.180	-68.375	7.243	-4.180	68.375	-7.243	0.000%
21	0.008	-68.375	8.348	-0.008	68.375	-8.348	0.000%
22	-4.161	-68.375	7.223	4.161	68.375	-7.223	0.000%
23	-7.213	-68.375	4.171	7.213	68.375	-4.171	0.000%
24	-8.345	-68.375	-0.014	8.345	68.375	0.014	0.000%
25	-7.235	-68.375	-4.183	7.235	68.375	4.183	0.000%
26	-4.185	-68.375	-7.231	4.185	68.375	7.231	0.000%
27	0.006	-44.780	-10.938	-0.006	44.780	10.938	0.000%
28	5.466	-44.780	-9.470	-5.466	44.780	9.470	0.000%
29	9.473	-44.780	-5.468	-9.473	44.780	5.468	0.000%
30	10.955	-44.780	0.000	-10.955	44.780	-0.000	0.000%
31	9.492	-44.780	5.486	-9.492	44.780	-5.486	0.000%
32	5.478	-44.780	9.498	-5.478	44.780	-9.498	0.000%
33	0.006	-44.780	10.947	-0.006	44.780	-10.947	0.000%
34	-5.459	-44.780	9.473	5.459	44.780	-9.473	0.000%
35	-9.459	-44.780	5.474	9.459	44.780	-5.474	0.000%
36	-10.943	-44.780	-0.015	10.943	44.780	0.015	0.000%
37	-9.487	-44.780	-5.483	9.487	44.780	5.483	0.000%
38	-5.485	-44.780	-9.479	5.485	44.780	9.479	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000529
2	Yes	5	0.00000001	0.00027279
3	Yes	6	0.00000001	0.00022577
4	Yes	6	0.00000001	0.00024406
5	Yes	5	0.00000001	0.00061296
6	Yes	6	0.00000001	0.00022608
7	Yes	6	0.00000001	0.00023564
8	Yes	5	0.00000001	0.00025256
9	Yes	6	0.00000001	0.00023909
10	Yes	6	0.00000001	0.00022297

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11	Yes	5	0.00000001	0.00072125
12	Yes	6	0.00000001	0.00024155
13	Yes	6	0.00000001	0.00023101
14	Yes	5	0.00000001	0.00020803
15	Yes	7	0.00000001	0.00011523
16	Yes	7	0.00000001	0.00011993
17	Yes	7	0.00000001	0.00012033
18	Yes	7	0.00000001	0.00011649
19	Yes	7	0.00000001	0.00012127
20	Yes	7	0.00000001	0.00012071
21	Yes	7	0.00000001	0.00011454
22	Yes	7	0.00000001	0.00011733
23	Yes	7	0.00000001	0.00011696
24	Yes	7	0.00000001	0.00011334
25	Yes	7	0.00000001	0.00011885
26	Yes	7	0.00000001	0.00011937
27	Yes	5	0.00000001	0.00014727
28	Yes	5	0.00000001	0.00065157
29	Yes	5	0.00000001	0.00073290
30	Yes	5	0.00000001	0.00019174
31	Yes	5	0.00000001	0.00066333
32	Yes	5	0.00000001	0.00070287
33	Yes	5	0.00000001	0.00014740
34	Yes	5	0.00000001	0.00070516
35	Yes	5	0.00000001	0.00063703
36	Yes	5	0.00000001	0.00019665
37	Yes	5	0.00000001	0.00072742
38	Yes	5	0.00000001	0.00067901

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	140 - 101.58	34.518	31	2.710	0.017
L2	101.58 - 70	15.663	31	1.756	0.004
L3	70 - 59.103	6.681	31	0.932	0.001
L4	59.103 - 59	4.777	31	0.736	0.001
L5	59 - 48.58	4.761	31	0.735	0.001
L6	53 - 30.58	3.915	31	0.612	0.001
L7	48.58 - 30.52	3.364	31	0.577	0.001
L8	30.58 - 0	1.415	31	0.450	0.000

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
138.000	9' Omni	31	33.436	2.663	0.016	11741
120.000	(2) APX16PV-16PVL-E w/ Mount Pipe	31	23.969	2.229	0.009	2934
110.000	800 10504 w/ Mount Pipe	31	19.206	1.978	0.006	1955
99.000	(2) RRUS-11	31	14.682	1.685	0.004	1590
95.000	7770.00 w/ Mount Pipe	31	13.260	1.575	0.003	1682
75.000	A-ANT-23G-2-C	31	7.723	1.045	0.001	2435
73.000	LLPX310R w/ Mount Pipe	31	7.292	0.998	0.001	2549

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Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
50.000	GPS-TMG-HR-26NCM	31	3.537	0.584	0.001	7800

Maximum Tower Deflections - Design Wind

Section No.	Elevation	Horz. Deflection	Gov. Load Comb.	Tilt	Twist
	ft	in		°	°
L1	140 - 101.58	99.109	6	7.793	0.047
L2	101.58 - 70	45.077	6	5.054	0.011
L3	70 - 59.103	19.249	6	2.685	0.003
L4	59.103 - 59	13.765	6	2.122	0.002
L5	59 - 48.58	13.719	6	2.118	0.002
L6	53 - 30.58	11.281	6	1.764	0.002
L7	48.58 - 30.52	9.694	6	1.663	0.001
L8	30.58 - 0	4.078	6	1.298	0.001

Critical Deflections and Radius of Curvature - Design Wind

Elevation	Appurtenance	Gov. Load Comb.	Deflection	Tilt	Twist	Radius of Curvature
ft			in	°	°	ft
138.000	9' Omni	6	96.011	7.656	0.049	4216
120.000	(2) APX16PV-16PVL-E w/ Mount Pipe	6	68.893	6.413	0.028	1050
110.000	800 10504 w/ Mount Pipe	6	55.241	5.692	0.018	697
99.000	(2) RRUS-11	6	42.261	4.851	0.011	564
95.000	7770.00 w/ Mount Pipe	6	38.178	4.534	0.009	595
75.000	A-ANT-23G-2-C	6	22.249	3.009	0.004	851
73.000	LLPX310R w/ Mount Pipe	6	21.009	2.875	0.004	889
50.000	GPS-TMG-HR-26NCM	6	10.193	1.682	0.002	2714

Compression Checks

Pole Design Data

Section No.	Elevation	Size	L	L _n	Kl/r	F _a	A	Actual P	Allow. P _a	Ratio P/P _a			
	ft		ft	ft		ksi	in ²	K	K				
L1	140 - 138.079	TP21.882x13.161x0.188	38.420	0.000	0.0	39.000	7.980	-0.073	311.234	0.000			
	138.079 - 136.158							-1.438	321.355	0.004			
	136.158 - 134.237								39.000	8.499	-1.518	331.475	0.005
	134.237 - 132.316								39.000	8.759	-1.602	341.596	0.005
	132.316 -								39.000	9.018	-1.689	351.717	0.005

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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 P P _a
	130.395									
	130.395 - 128.474					39,000	9.278	-1,779	361,837	0.005
	128.474 - 126.553					39,000	9.537	-1.872	371,958	0.005
	126.553 - 124.632					39,000	9.797	-1,969	382,079	0.005
	124.632 - 122.711					39,000	10.056	-2,068	392,199	0.005
	122.711 - 120.79					39,000	10.316	-2,169	402,320	0.005
	120.79 - 118.869					39,000	10.575	-3,289	412,441	0.008
	118.869 - 116.948					39,000	10.835	-3,403	422,561	0.008
	116.948 - 115.027					39,000	11,094	-3,521	432,682	0.008
	115.027 - 113.106					39,000	11,354	-3,642	442,803	0.008
	113.106 - 111.185					39,000	11,613	-3,767	452,923	0.008
	111.185 - 109.264					39,000	11,873	-4,359	463,044	0.009
	109.264 - 107.343					39,000	12,132	-4,494	473,165	0.009
	107.343 - 105.422					39,000	12,392	-4,633	483,285	0.010
	105.422 - 103.501					39,000	12,651	-4,776	493,406	0.010
	103.501 - 101.58					39,000	12,911	-4,922	503,527	0.010
L2	101.58 - 100.001	TP29.051x21.882x0.313	31.580	0.000	0.0	39,000	21,750	-5,125	848,241	0.006
	100.001 - 98.422					39,000	22,105	-5,867	862,106	0.007
	98.422 - 96.843					39,000	22,461	-6,067	875,972	0.007
	96.843 - 95.264					39,000	22,816	-6,269	889,837	0.007
	95.264 - 93.685					39,000	23,172	-8,263	903,702	0.009
	93.685 - 92.106					39,000	23,527	-8,479	917,568	0.009
	92.106 - 90.527					39,000	23,883	-8,694	931,433	0.009
	90.527 - 88.948					39,000	24,238	-8,916	945,298	0.009
	88.948 - 87.369					39,000	24,594	-9,142	959,163	0.010
	87.369 - 85.79					39,000	24,949	-9,370	973,029	0.010
	85.79 - 84.211					39,000	25,305	-9,601	986,894	0.010
	84.211 - 82.632					39,000	25,660	-9,835	1000,760	0.010
	82.632 - 81.053					39,000	26,016	-10,071	1014,620	0.010
	81.053 - 79.474					39,000	26,372	-10,311	1028,490	0.010
	79.474 - 77.895					39,000	26,727	-10,553	1042,360	0.010
	77.895 - 76.316					39,000	27,083	-10,797	1056,220	0.010
	76.316 - 74.737					39,000	27,438	-11,056	1070,090	0.010
	74.737 - 73.158					39,000	27,794	-11,306	1083,950	0.010
	73.158 - 71.579					39,000	28,149	-13,892	1097,820	0.013
	71.579 - 70					39,000	28,505	-14,158	1111,680	0.013
L3	70 - 68.9103	TP31.524x29,051x0.511	10.897	0,000	0,0	29,920	46,677	-14,452	1396,590	0.010
	68.9103 - 67.8206					29,920	47,078	-14,732	1408,590	0.010
	67.8206 - 66.7309					29,920	47,479	-15,014	1420,590	0.011
	66.7309 - 65.6412					29,920	47,880	-15,297	1432,590	0.011

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Section No.	Elevation ft	Size	L ft	L _n ft	Kl/r	F _a ksi	A in ²	Actual P K	Allow. P _a K	Ratio P P _a
	65.6412 - 64.5515					29.920	48.281	-15.583	1444.590	0.011
	64.5515 - 63.4618					29.920	48.682	-15.869	1456.590	0.011
	63.4618 - 62.3721					29.920	49.083	-16.158	1468.590	0.011
	62.3721 - 61.2824					29.920	49.484	-16.448	1480.590	0.011
	61.2824 - 60.1927					29.920	49.886	-16.740	1492.600	0.011
	60.1927 - 59.103					29.920	50.286	-17.034	1504.600	0.011
L4	59.103 - 59 (4)	TP31.548x31.524x0.66	0.103	0.000	0.0	29.921	64.752	-17.081	1937.460	0.009
L5	59 - 58	TP33.913x31.548x0.449	10.420	0.000	0.0	32.066	44.642	-17.344	1431.460	0.012
	58 - 57					32.066	44.965	-17.620	1441.840	0.012
	57 - 56					32.066	45.289	-17.898	1452.210	0.012
	56 - 55					32.066	45.612	-18.177	1462.580	0.012
	55 - 54					32.066	45.936	-18.457	1472.960	0.013
	54 - 53					32.066	46.259	-18.738	1483.330	0.013
	53 - 48.58					32.066	47.689	-8.078	1529.180	0.005
L6	53 - 48.58	TP37.375x32.285x0.764	22.420	0.000	0.0	32.100	78.843	-12.975	2530.830	0.005
	48.58 - 30.58					32.100	88.749	-18.541	2848.810	0.007
L7	48.58 - 30.58	TP37.388x33.288x0.596	18.060	0.000	0.0	30.065	69.623	-16.164	2093.230	0.008
	30.58 - 30.52					30.065	69.649	-16.164	2094.000	0.008
L8	30.58 - 30.52	TP44.317x37.375x0.596	30.580	0.000	0.0	30.065	69.635	-16.157	2093.600	0.008
	30.52 - 28.9137					30.065	70.325	-32.924	2114.360	0.016
	28.9137 - 27.3074					30.065	71.015	-33.549	2135.110	0.016
	27.3074 - 25.7011					30.065	71.706	-34.179	2155.860	0.016
	25.7011 - 24.0947					30.065	72.396	-34.812	2176.610	0.016
	24.0947 - 22.4884					30.065	73.086	-35.448	2197.360	0.016
	22.4884 - 20.8821					30.065	73.776	-36.089	2218.110	0.016
	20.8821 - 19.2758					30.065	74.466	-36.733	2238.860	0.016
	19.2758 - 17.6695					30.065	75.157	-37.381	2259.620	0.017
	17.6695 - 16.0632					30.065	75.847	-38.033	2280.370	0.017
	16.0632 - 14.4568					30.065	76.537	-38.689	2301.120	0.017
	14.4568 - 12.8505					30.065	77.227	-39.349	2321.870	0.017
	12.8505 - 11.2442					30.065	77.918	-40.012	2342.620	0.017
	11.2442 - 9.63789					30.065	78.608	-40.679	2363.370	0.017
	9.63789 - 8.03158					30.065	79.298	-41.350	2384.120	0.017
	8.03158 - 6.42526					30.065	79.988	-42.025	2404.880	0.017
	6.42526 - 4.81895					30.065	80.678	-42.703	2425.630	0.018
	4.81895 - 3.21263					30.065	81.368	-43.386	2446.380	0.018
	3.21263 - 1.60632					30.065	82.059	-44.072	2467.130	0.018

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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 $\frac{P}{P_a}$
	1,60632 - 0					30.065	82.749	-44.762	2487.880	0.018

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	140 - 138.079	TP21.882x13.161x0.188	0.112	0.051	39,000	0.001	0.000	0.000	39,000	0.000
	138.079 - 136.158		17.691	7.584	39,000	0.194	0.000	0.000	39,000	0.000
	136.158 - 134.237		27.894	11.233	39,000	0.288	0.000	0.000	39,000	0.000
	134.237 - 132.316		38.313	14.523	39,000	0.372	0.000	0.000	39,000	0.000
	132.316 - 130.395		48.954	17.498	39,000	0.449	0.000	0.000	39,000	0.000
	130.395 - 128.474		59.820	20.196	39,000	0.518	0.000	0.000	39,000	0.000
	128.474 - 126.553		70.915	22.649	39,000	0.581	0.000	0.000	39,000	0.000
	126.553 - 124.632		82.244	24.886	39,000	0.638	0.000	0.000	39,000	0.000
	124.632 - 122.711		93.809	26.932	39,000	0.691	0.000	0.000	39,000	0.000
	122.711 - 120.79		105.617	28.808	39,000	0.739	0.000	0.000	39,000	0.000
	120.79 - 118.869		120.417	31.244	39,000	0.801	0.000	0.000	39,000	0.000
	118.869 - 116.948		137.382	33.950	39,000	0.871	0.000	0.000	39,000	0.000
	116.948 - 115.027		154.593	36.429	39,000	0.934	0.000	0.000	39,000	0.000
	115.027 - 113.106		172.056	38.703	39,000	0.992	0.000	0.000	39,000	0.000
	113.106 - 111.185		189.772	40.792	39,000	1.046	0.000	0.000	39,000	0.000
	111.185 - 109.264		208.772	42.927	39,000	1.101	0.000	0.000	39,000	0.000
	109.264 - 107.343		229.679	45.219	39,000	1.159	0.000	0.000	39,000	0.000
	107.343 - 105.422		250.847	47.330	39,000	1.214	0.000	0.000	39,000	0.000
	105.422 - 103.501		272.277	49.279	39,000	1.264	0.000	0.000	39,000	0.000
	L2		103.501 - 101.58	TP29.051x21.882x0.313	293.975	51.080	39,000	1.310	0.000	0.000
101.58 - 100.001		312.023	32.017		39,000	0.821	0.000	0.000	39,000	0.000
100.001 - 98.422		330.795	32.853		39,000	0.842	0.000	0.000	39,000	0.000
98.422 - 96.843		350.574	33.717		39,000	0.865	0.000	0.000	39,000	0.000
96.843 - 95.264		370.570	34.531		39,000	0.885	0.000	0.000	39,000	0.000
95.264 - 93.685		396.644	35.827		39,000	0.919	0.000	0.000	39,000	0.000

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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 $\frac{f_{by}}{F_{by}}$
	93.685 - 92.106		424.111	37.152	39.000	0.953	0.000	0.000	39.000	0.000
	92.106 - 90.527		451.832	38.403	39.000	0.985	0.000	0.000	39.000	0.000
	90.527 - 88.948		479.800	39.585	39.000	1.015	0.000	0.000	39.000	0.000
	88.948 - 87.369		507.983	40.700	39.000	1.044	0.000	0.000	39.000	0.000
	87.369 - 85.79		536.385	41.752	39.000	1.071	0.000	0.000	39.000	0.000
	85.79 - 84.211		565.003	42.746	39.000	1.096	0.000	0.000	39.000	0.000
	84.211 - 82.632		593.841	43.684	39.000	1.120	0.000	0.000	39.000	0.000
	82.632 - 81.053		622.897	44.570	39.000	1.143	0.000	0.000	39.000	0.000
	81.053 - 79.474		652.173	45.408	39.000	1.164	0.000	0.000	39.000	0.000
	79.474 - 77.895		681.671	46.200	39.000	1.185	0.000	0.000	39.000	0.000
	77.895 - 76.316		711.390	46.950	39.000	1.204	0.000	0.000	39.000	0.000
	76.316 - 74.737		741.331	47.659	39.000	1.222	0.000	0.000	39.000	0.000
	74.737 - 73.158		771.864	48.354	39.000	1.240	0.000	0.000	39.000	0.000
	73.158 - 71.579		813.592	49.682	39.000	1.274	0.000	0.000	39.000	0.000
	71.579 - 70		851.267	50.687	39.000	1.300	0.000	0.000	39.000	0.000
L3	70 - 68.9103	TP31.524x29.051x0.511	877.408	32.066	29.920	1.072	0.000	0.000	29.920	0.000
	68.9103 - 67.8206		903.675	32.461	29.920	1.085	0.000	0.000	29.920	0.000
	67.8206 - 66.7309		930.067	32.842	29.920	1.098	0.000	0.000	29.920	0.000
	66.7309 - 65.6412		956.583	33.210	29.920	1.110	0.000	0.000	29.920	0.000
	65.6412 - 64.5515		983.225	33.566	29.920	1.122	0.000	0.000	29.920	0.000
	64.5515 - 63.4618		1009.983	33.909	29.920	1.133	0.000	0.000	29.920	0.000
	63.4618 - 62.3721		1036.875	34.240	29.920	1.144	0.000	0.000	29.920	0.000
	62.3721 - 61.2824		1063.883	34.560	29.920	1.155	0.000	0.000	29.920	0.000
	61.2824 - 60.1927		1091.025	34.870	29.920	1.165	0.000	0.000	29.920	0.000
	60.1927 - 59.103		1118.292	35.169	29.920	1.175	0.000	0.000	29.920	0.000
L4	59.103 - 59 (4)	TP31.548x31.524x0.66	1120.875	27.620	29.921	0.923	0.000	0.000	29.921	0.000
L5	59 - 58	TP33.913x31.548x0.449	1146.017	40.109	32.066	1.251	0.000	0.000	32.066	0.000
	58 - 57		1171.258	40.400	32.066	1.260	0.000	0.000	32.066	0.000
	57 - 56		1196.617	40.683	32.066	1.269	0.000	0.000	32.066	0.000
	56 - 55		1222.067	40.957	32.066	1.277	0.000	0.000	32.066	0.000
	55 - 54		1247.633	41.223	32.066	1.286	0.000	0.000	32.066	0.000
	54 - 53		1273.300	41.481	32.066	1.294	0.000	0.000	32.066	0.000

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Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v / F _v	Actual T kip-ft	Actual f _{vt} ksi	Allow. F _{vt} ksi	Ratio f _{vt} / F _{vt}
	132.316 - 130.395		5.602	0.621	26.000	0.048	0.528	0.092	26.000	0.004
	130.395 - 128.474		5.721	0.617	26.000	0.047	0.527	0.086	26.000	0.003
	128.474 - 126.553		5.841	0.612	26.000	0.047	0.526	0.082	26.000	0.003
	126.553 - 124.632		5.964	0.609	26.000	0.047	0.525	0.077	26.000	0.003
	124.632 - 122.711		6.089	0.605	26.000	0.047	0.523	0.073	26.000	0.003
	122.711 - 120.79		6.216	0.603	26.000	0.046	0.522	0.069	26.000	0.003
	120.79 - 118.869		8.775	0.830	26.000	0.064	0.521	0.066	26.000	0.003
	118.869 - 116.948		8.904	0.822	26.000	0.063	0.520	0.063	26.000	0.002
	116.948 - 115.027		9.033	0.814	26.000	0.063	0.518	0.059	26.000	0.002
	115.027 - 113.106		9.165	0.807	26.000	0.062	0.517	0.057	26.000	0.002
	113.106 - 111.185		9.298	0.801	26.000	0.062	0.515	0.054	26.000	0.002
	111.185 - 109.264		10.827	0.912	26.000	0.070	0.514	0.051	26.000	0.002
	109.264 - 107.343		10.962	0.904	26.000	0.069	0.513	0.049	26.000	0.002
	107.343 - 105.422		11.099	0.896	26.000	0.069	0.511	0.047	26.000	0.002
	105.422 - 103.501		11.237	0.888	26.000	0.068	0.510	0.045	26.000	0.002
	103.501 - 101.58		11.377	0.881	26.000	0.068	0.508	0.043	26.000	0.002
L2	101.58 - 100.001	TP29.051x21.882x0.313	11.509	0.529	26.000	0.041	0.507	0.025	26.000	0.001
	100.001 - 98.422		12.469	0.564	26.000	0.043	0.685	0.033	26.000	0.001
	98.422 - 96.843		12.606	0.561	26.000	0.043	0.686	0.032	26.000	0.001
	96.843 - 95.264		12.744	0.559	26.000	0.043	0.686	0.031	26.000	0.001
	95.264 - 93.685		17.341	0.748	26.000	0.058	0.686	0.030	26.000	0.001
	93.685 - 92.106		17.477	0.743	26.000	0.057	0.687	0.029	26.000	0.001
	92.106 - 90.527		17.643	0.739	26.000	0.057	1.168	0.048	26.000	0.002
	90.527 - 88.948		17.780	0.734	26.000	0.056	1.168	0.047	26.000	0.002
	88.948 - 87.369		17.917	0.729	26.000	0.056	1.167	0.045	26.000	0.002
	87.369 - 85.79		18.055	0.724	26.000	0.056	1.166	0.044	26.000	0.002
	85.79 - 84.211		18.194	0.719	26.000	0.055	1.165	0.043	26.000	0.002
	84.211 - 82.632		18.333	0.714	26.000	0.055	1.164	0.042	26.000	0.002
	82.632 - 81.053		18.472	0.710	26.000	0.055	1.163	0.040	26.000	0.002
	81.053 - 79.474		18.612	0.706	26.000	0.054	1.163	0.039	26.000	0.002
	79.474 - 77.895		18.752	0.702	26.000	0.054	1.162	0.038	26.000	0.001

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Section No.	Elevation ft	Size	Actual V K	Actual f _v ksi	Allow. F _v ksi	Ratio f _v / F _v	Actual T kip-ft	Actual f _v ksi	Allow. F _v ksi	Ratio f _v / F _v
	77.895 - 76.316		18.893	0.698	26.000	0.054	1.161	0.037	26.000	0.001
	76.316 - 74.737		19.268	0.702	26.000	0.054	1.160	0.036	26.000	0.001
	74.737 - 73.158		19.410	0.698	26.000	0.054	1.159	0.035	26.000	0.001
	73.158 - 71.579		23.795	0.845	26.000	0.065	1.159	0.034	26.000	0.001
L3	71.579 - 70	TP31.524x29.051x0.511	23.932	0.840	26.000	0.065	1.158	0.034	26.000	0.001
	70 - 68.9103		24.035	0.515	19.947	0.052	1.157	0.020	19.947	0.001
	68.9103 - 67.8206		24.148	0.513	19.947	0.051	1.155	0.020	19.947	0.001
	67.8206 - 66.7309		24.262	0.511	19.947	0.051	1.153	0.020	19.947	0.001
	66.7309 - 65.6412		24.375	0.509	19.947	0.051	1.151	0.019	19.947	0.001
	65.6412 - 64.5515		24.490	0.507	19.947	0.051	1.149	0.019	19.947	0.001
	64.5515 - 63.4618		24.604	0.505	19.947	0.051	1.147	0.019	19.947	0.001
	63.4618 - 62.3721		24.719	0.504	19.947	0.050	1.144	0.018	19.947	0.001
	62.3721 - 61.2824		24.835	0.502	19.947	0.050	1.142	0.018	19.947	0.001
	61.2824 - 60.1927		24.951	0.500	19.947	0.050	1.140	0.018	19.947	0.001
60.1927 - 59.103	25.067	0.498	19.947	0.050	1.138	0.017	19.947	0.001		
L4	59.103 - 59 (4)	TP31.548x31.524x0.66	25.073	0.387	19.947	0.039	1.136	0.013	19.947	0.001
L5	59 - 58	TP33.913x31.548x0.449	25.186	0.564	21.377	0.053	1.135	0.019	21.377	0.001
	58 - 57		25.291	0.562	21.377	0.053	1.132	0.019	21.377	0.001
	57 - 56		25.397	0.561	21.377	0.052	1.129	0.019	21.377	0.001
	56 - 55		25.503	0.559	21.377	0.052	1.126	0.018	21.377	0.001
	55 - 54		25.610	0.558	21.377	0.052	1.123	0.018	21.377	0.001
	54 - 53		25.716	0.556	21.377	0.052	1.120	0.018	21.377	0.001
	53 - 48.58		10.431	0.219	21.377	0.020	0.444	0.007	21.377	0.000
L6	53 - 48.58	TP37.375x32.285x0.764	15.863	0.201	21.400	0.019	0.673	0.006	21.400	0.000
	48.58 - 30.58		16.465	0.186	21.400	0.017	0.622	0.005	21.400	0.000
L7	48.58 - 30.58	TP37.388x33.288x0.596	12.172	0.175	20.043	0.017	0.466	0.004	20.043	0.000
	30.58 - 30.52		14.260	0.205	20.043	0.020	0.509	0.005	20.043	0.000
L8	30.58 - 30.52	TP44.317x37.375x0.596	14.279	0.205	20.044	0.020	0.509	0.005	20.044	0.000
	30.52 - 28.9137		28.718	0.408	20.044	0.041	1.017	0.009	20.044	0.000
	28.9137 - 27.3074		28.878	0.407	20.044	0.041	1.010	0.009	20.044	0.000
	27.3074 - 25.7011		29.040	0.405	20.044	0.040	1.002	0.009	20.044	0.000
	25.7011 - 24.0947		29.202	0.403	20.044	0.040	0.995	0.009	20.044	0.000
	24.0947 - 22.4884		29.364	0.402	20.044	0.040	0.987	0.008	20.044	0.000
	22.4884 - 20.8821		29.528	0.400	20.044	0.040	0.980	0.008	20.044	0.000
	20.8821 - 19.2758		29.692	0.399	20.044	0.040	0.972	0.008	20.044	0.000
	19.2758 - 17.6695		29.856	0.397	20.044	0.040	0.964	0.008	20.044	0.000
	17.6695 - 16.0632		30.021	0.396	20.044	0.039	0.957	0.007	20.044	0.000
	16.0632 -		30.187	0.394	20.044	0.039	0.949	0.007	20.044	0.000

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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 $\frac{f_{vt}}{F_{vt}}$
	14.4568									
	14.4568 - 12.8505		30.354	0.393	20.044	0.039	0.941	0.007	20.044	0.000
	12.8505 - 11.2442		30.521	0.392	20.044	0.039	0.933	0.007	20.044	0.000
	11.2442 - 9.63789		30.688	0.390	20.044	0.039	0.925	0.007	20.044	0.000
	9.63789 - 8.03158		30.857	0.389	20.044	0.039	0.917	0.007	20.044	0.000
	8.03158 - 6.42526		31.026	0.388	20.044	0.039	0.908	0.006	20.044	0.000
	6.42526 - 4.81895		31.195	0.387	20.044	0.039	0.900	0.006	20.044	0.000
	4.81895 - 3.21263		31.366	0.385	20.044	0.038	0.892	0.006	20.044	0.000
	3.21263 - 1.60632		31.537	0.384	20.044	0.038	0.883	0.006	20.044	0.000
	1.60632 - 0		31.708	0.383	20.044	0.038	0.875	0.006	20.044	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_a	F_{bx}	F_{by}	F_v	F_{vt}			
L1	140 - 138.079	0.000	0.001	0.000	0.001	0.000	0.002	1.333	H1-3+VT ✓
	138.079 - 136.158	0.004	0.194	0.000	0.049	0.004	0.200	1.333	H1-3+VT ✓
	136.158 - 134.237	0.005	0.288	0.000	0.049	0.004	0.293	1.333	H1-3+VT ✓
	134.237 - 132.316	0.005	0.372	0.000	0.048	0.004	0.378	1.333	H1-3+VT ✓
	132.316 - 130.395	0.005	0.449	0.000	0.048	0.004	0.454	1.333	H1-3+VT ✓
	130.395 - 128.474	0.005	0.518	0.000	0.047	0.003	0.523	1.333	H1-3+VT ✓
	128.474 - 126.553	0.005	0.581	0.000	0.047	0.003	0.586	1.333	H1-3+VT ✓
	126.553 - 124.632	0.005	0.638	0.000	0.047	0.003	0.644	1.333	H1-3+VT ✓
	124.632 - 122.711	0.005	0.691	0.000	0.047	0.003	0.697	1.333	H1-3+VT ✓
	122.711 - 120.79	0.005	0.739	0.000	0.046	0.003	0.745	1.333	H1-3+VT ✓
	120.79 - 118.869	0.008	0.801	0.000	0.064	0.003	0.810	1.333	H1-3+VT ✓
	118.869 - 116.948	0.008	0.871	0.000	0.063	0.002	0.880	1.333	H1-3+VT ✓
	116.948 - 115.027	0.008	0.934	0.000	0.063	0.002	0.943	1.333	H1-3+VT ✓
	115.027 - 113.106	0.008	0.992	0.000	0.062	0.002	1.002	1.333	H1-3+VT ✓
	113.106 -	0.008	1.046	0.000	0.062	0.002	1.055	1.333	H1-3+VT ✓

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Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_u	F_{bx}	F_{by}	F_v	F_{vt}			
	111.185						✓		
	111.185 - 109.264	0.009	1.101	0.000	0.070	0.002	1.111	1.333	H1-3+VT ✓
	109.264 - 107.343	0.009	1.159	0.000	0.069	0.002	1.170	1.333	H1-3+VT ✓
	107.343 - 105.422	0.010	1.214	0.000	0.069	0.002	1.224	1.333	H1-3+VT ✓
	105.422 - 103.501	0.010	1.264	0.000	0.068	0.002	1.275	1.333	H1-3+VT ✓
	103.501 - 101.58	0.010	1.310	0.000	0.068	0.002	1.321	1.333	H1-3+VT ✓
L2	101.58 - 100.001	0.006	0.821	0.000	0.041	0.001	0.827	1.333	H1-3+VT ✓
	100.001 - 98.422	0.007	0.842	0.000	0.043	0.001	0.850	1.333	H1-3+VT ✓
	98.422 - 96.843	0.007	0.865	0.000	0.043	0.001	0.872	1.333	H1-3+VT ✓
	96.843 - 95.264	0.007	0.885	0.000	0.043	0.001	0.893	1.333	H1-3+VT ✓
	95.264 - 93.685	0.009	0.919	0.000	0.058	0.001	0.929	1.333	H1-3+VT ✓
	93.685 - 92.106	0.009	0.953	0.000	0.057	0.001	0.963	1.333	H1-3+VT ✓
	92.106 - 90.527	0.009	0.985	0.000	0.057	0.002	0.995	1.333	H1-3+VT ✓
	90.527 - 88.948	0.009	1.015	0.000	0.056	0.002	1.025	1.333	H1-3+VT ✓
	88.948 - 87.369	0.010	1.044	0.000	0.056	0.002	1.054	1.333	H1-3+VT ✓
	87.369 - 85.79	0.010	1.071	0.000	0.056	0.002	1.081	1.333	H1-3+VT ✓
	85.79 - 84.211	0.010	1.096	0.000	0.055	0.002	1.107	1.333	H1-3+VT ✓
	84.211 - 82.632	0.010	1.120	0.000	0.055	0.002	1.131	1.333	H1-3+VT ✓
	82.632 - 81.053	0.010	1.143	0.000	0.055	0.002	1.154	1.333	H1-3+VT ✓
	81.053 - 79.474	0.010	1.164	0.000	0.054	0.002	1.175	1.333	H1-3+VT ✓
	79.474 - 77.895	0.010	1.185	0.000	0.054	0.001	1.196	1.333	H1-3+VT ✓
	77.895 - 76.316	0.010	1.204	0.000	0.054	0.001	1.215	1.333	H1-3+VT ✓
	76.316 - 74.737	0.010	1.222	0.000	0.054	0.001	1.233	1.333	H1-3+VT ✓
	74.737 - 73.158	0.010	1.240	0.000	0.054	0.001	1.251	1.333	H1-3+VT ✓
	73.158 - 71.579	0.013	1.274	0.000	0.065	0.001	1.288	1.333	H1-3+VT ✓
	71.579 - 70	0.013	1.300	0.000	0.065	0.001	1.314	1.333	H1-3+VT ✓
L3	70 - 68.9103	0.010	1.072	0.000	0.052	0.001	1.083	1.333	H1-3+VT ✓

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Section No.	Elevation ft	Ratio P	Ratio f_{bx}	Ratio f_{by}	Ratio f_v	Ratio f_{vt}	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		P_n	F_{bx}	F_{by}	F_v	F_{vt}			
	68.9103 - 67.8206	0.010	1.085	0.000	0.051	0.001	1.096	1.333	H1-3+VT ✓
	67.8206 - 66.7309	0.011	1.098	0.000	0.051	0.001	1.109	1.333	H1-3+VT ✓
	66.7309 - 65.6412	0.011	1.110	0.000	0.051	0.001	1.121	1.333	H1-3+VT ✓
	65.6412 - 64.5515	0.011	1.122	0.000	0.051	0.001	1.133	1.333	H1-3+VT ✓
	64.5515 - 63.4618	0.011	1.133	0.000	0.051	0.001	1.145	1.333	H1-3+VT ✓
	63.4618 - 62.3721	0.011	1.144	0.000	0.050	0.001	1.156	1.333	H1-3+VT ✓
	62.3721 - 61.2824	0.011	1.155	0.000	0.050	0.001	1.167	1.333	H1-3+VT ✓
	61.2824 - 60.1927	0.011	1.165	0.000	0.050	0.001	1.177	1.333	H1-3+VT ✓
	60.1927 - 59.103	0.011	1.175	0.000	0.050	0.001	1.187	1.333	H1-3+VT ✓
L4	59.103 - 59 (4)	0.009	0.923	0.000	0.039	0.001	0.932	1.333	H1-3+VT ✓
L5	59 - 58	0.012	1.251	0.000	0.053	0.001	1.264	1.333	H1-3+VT ✓
	58 - 57	0.012	1.260	0.000	0.053	0.001	1.273	1.333	H1-3+VT ✓
	57 - 56	0.012	1.269	0.000	0.052	0.001	1.282	1.333	H1-3+VT ✓
	56 - 55	0.012	1.277	0.000	0.052	0.001	1.290	1.333	H1-3+VT ✓
	55 - 54	0.013	1.286	0.000	0.052	0.001	1.299	1.333	H1-3+VT ✓
	54 - 53	0.013	1.294	0.000	0.052	0.001	1.307	1.333	H1-3+VT ✓
	53 - 48.58	0.005	0.518	0.000	0.020	0.000	0.524	1.333	H1-3+VT ✓
L6	53 - 48.58	0.005	0.507	0.000	0.019	0.000	0.513	1.333	H1-3+VT ✓
	48.58 - 30.58	0.007	0.497	0.000	0.017	0.000	0.503	1.333	H1-3+VT ✓
L7	48.58 - 30.58	0.008	0.529	0.000	0.017	0.000	0.537	1.333	H1-3+VT ✓
	30.58 - 30.52	0.008	0.599	0.000	0.020	0.000	0.607	1.333	H1-3+VT ✓
L8	30.58 - 30.52	0.008	0.599	0.000	0.020	0.000	0.607	1.333	H1-3+VT ✓
	30.52 - 28.9137	0.016	1.204	0.000	0.041	0.000	1.220	1.333	H1-3+VT ✓
	28.9137 - 27.3074	0.016	1.209	0.000	0.041	0.000	1.225	1.333	H1-3+VT ✓
	27.3074 - 25.7011	0.016	1.214	0.000	0.040	0.000	1.230	1.333	H1-3+VT ✓
	25.7011 - 24.0947	0.016	1.218	0.000	0.040	0.000	1.234	1.333	H1-3+VT ✓

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Section No.	Elevation <i>ft</i>	Ratio	Ratio	Ratio	Ratio	Ratio	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
		<i>P</i>	<i>f_{bx}</i>	<i>f_{by}</i>	<i>f_v</i>	<i>f_{vt}</i>			
		<i>P_a</i>	<i>F_{bx}</i>	<i>F_{by}</i>	<i>F_v</i>	<i>F_{vt}</i>			
	24.0947 - 22.4884	0.016	1.222	0.000	0.040	0.000	1.239	1.333	H1-3+VT ✓
	22.4884 - 20.8821	0.016	1.226	0.000	0.040	0.000	1.243	1.333	H1-3+VT ✓
	20.8821 - 19.2758	0.016	1.230	0.000	0.040	0.000	1.246	1.333	H1-3+VT ✓
	19.2758 - 17.6695	0.017	1.233	0.000	0.040	0.000	1.250	1.333	H1-3+VT ✓
	17.6695 - 16.0632	0.017	1.236	0.000	0.039	0.000	1.253	1.333	H1-3+VT ✓
	16.0632 - 14.4568	0.017	1.239	0.000	0.039	0.000	1.257	1.333	H1-3+VT ✓
	14.4568 - 12.8505	0.017	1.242	0.000	0.039	0.000	1.260	1.333	H1-3+VT ✓
	12.8505 - 11.2442	0.017	1.245	0.000	0.039	0.000	1.263	1.333	H1-3+VT ✓
	11.2442 - 9.63789	0.017	1.248	0.000	0.039	0.000	1.265	1.333	H1-3+VT ✓
	9.63789 - 8.03158	0.017	1.250	0.000	0.039	0.000	1.268	1.333	H1-3+VT ✓
	8.03158 - 6.42526	0.017	1.252	0.000	0.039	0.000	1.270	1.333	H1-3+VT ✓
	6.42526 - 4.81895	0.018	1.255	0.000	0.039	0.000	1.273	1.333	H1-3+VT ✓
	4.81895 - 3.21263	0.018	1.257	0.000	0.038	0.000	1.275	1.333	H1-3+VT ✓
	3.21263 - 1.60632	0.018	1.258	0.000	0.038	0.000	1.277	1.333	H1-3+VT ✓
	1.60632 - 0	0.018	1.260	0.000	0.038	0.000	1.279	1.333	H1-3+VT ✓

Section Capacity Table

Section No.	Elevation <i>ft</i>	Component Type	Size	Critical Element	<i>P</i> <i>K</i>	<i>SF*P_{allow}</i> <i>K</i>	% Capacity	Pass Fail	
L1	140 - 101.58	Pole	TP21.882x13.161x0.188	1	-4.922	671.201	**	Pass	
L2	101.58 - 70	Pole	TP29.051x21.882x0.313	2	-14.158	1481.869	**	Pass	
L3	70 - 59.103	Pole	TP31.524x29.051x0.511	3	-17.034	2005.632	**	Pass	
L4	59.103 - 59	Pole	TP31.548x31.524x0.66	4	-17.081	2582.634	**	Pass	
L5	59 - 48.58	Pole	TP33.913x31.548x0.449	5	-18.738	1977.279	**	Pass	
L6	48.58 - 30.58	Pole	TP37.375x32.285x0.764	6	-12.975	3373.596	**	Pass	
L7	30.58 - 30.52	Pole	TP37.388x33.288x0.596	7	-16.164	2791.302	**	Pass	
L8	30.52 - 0	Pole	TP44.317x37.375x0.596	8	-44.762	3316.344	**	Pass	
							Summary		
							Pole (L1)	**	Pass
							RATING =	**	Pass

**see additional calculations for pole capacities

Reinforcement 1									
Bottom Elevation	Top Elevation	QTY	Type	Position	Gap	Term/Comp			
0	30.52	3	MP305	F	0	T&C			
30.52	59.103	3	MP304	F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			

Reinforcement 2									
Bottom	Top	QTY	Type	Position	Gap	Term/Comp			
0	30.58	3	AT1-5.75x1	F	0	T&C			
30.58	48.58	3	AT1-5.75x1	F	0	T&C			
59	70	3	AT1-5.75x1	F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			

Reinforcement 3									
Bottom	Top	QTY	Type	Position	Gap	Term/Comp			
0				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			
				F	0	T&C			

Bottom Elevation	Top Elevation	Original Thickness	Original Yield Stress	Original Ultimate Stress	Shaft Capacity
101.5800	140.0000	0.1875	65	80	98.9%
70.0000	101.5800	0.3125	65	80	98.4%
59.1030	70.0000	0.3125	65	80	67.6%
59.0000	59.1030	0.3125	65	80	53.4%
48.5800	59.0000	0.3125	65	80	79.7%
30.5800	53.0000	0.3125	65	80	69.9%
30.5200	48.5800	0.3125	65	80	82.7%
0.0000	30.5800	0.3125	65	80	85.8%
	30.5200				

Bottom Elevation	Top Elevation	QTY	Type	Capacity	Rein. 1 Type	Rein. 1 Capacity	Rein. 2 Type	Rein. 2 Capacity	Rein. 3 Type	Rein. 3 Capacity	Stress Ratio
101.5800	140.0000	3	MP304	60.0%	MP304	95.6%	3	AT1-5.75x1	86.8%	98.9%	
70.0000	101.5800	3	MP304	46.2%	MP304	95.6%	3	AT1-5.75x1	86.2%	98.4%	
59.1030	70.0000	3	MP304	82.7%	MP304	95.6%	3	AT1-5.75x1	88.0%	86.4%	
59.0000	59.1030	3	MP304	85.8%	MP304	95.6%	3	AT1-5.75x1	88.6%	86.2%	
48.5800	59.0000	3	MP304	82.7%	MP304	95.6%	3	AT1-5.75x1	88.6%	86.2%	
30.5800	53.0000	3	MP304	85.8%	MP304	95.6%	3	AT1-5.75x1	88.6%	86.2%	
30.5200	48.5800	3	MP304	85.8%	MP304	95.6%	3	AT1-5.75x1	88.6%	86.2%	
0.0000	30.5800	3	MP304	85.8%	MP304	95.6%	3	AT1-5.75x1	88.6%	86.2%	
	30.5200										

Bottom Elevation	Top Elevation	Section Length	Lap Splice	# of Sides	Top Diameter	Bottom Diameter	Shaft Thickness	Equivalent Shaft Fy	Equivalent Weight Mult.
101.5800	140.0000	38.4200	0.0000	18	13.1610	21.8620	0.1875	65.0	1.00
70.0000	101.5800	31.5800	0.0000	18	21.8820	29.0507	0.3125	65.0	1.00
59.1030	70.0000	10.8970	0.0000	18	29.0507	31.5243	0.5109	49.9	0.96
59.0000	59.1030	10.8970	0.0000	18	31.5243	31.5477	0.6605	49.9	0.94
48.5800	59.0000	10.4200	4.4200	18	31.5477	33.9130	0.4490	53.4	0.97
30.5800	53.0000	22.4200	18.0000	18	32.2847	37.3746	0.7637	53.5	0.98
30.5200	48.5800	18.0000	0.0000	18	33.2881	37.3882	0.5964	50.1	0.95
0.0000	30.5800	38.4200	30.5200	18	37.2746	44.3170	0.5963	50.1	0.95
	30.5200								

Bottom Elevation	Top Elevation	Section Failure	Bottom Elevation	Section Failure
101.5800	140.0000	29	47.5	237.0%
70.0000	101.5800	29	30.5	237.0%
59.1030	70.0000			
59.0000	59.1030			
48.5800	59.0000			
30.5800	53.0000			
30.5200	48.5800			
0.0000	30.5800			
	30.5200			

Reinforcement Capacity

Dimensions and Properties										Compression				Axial			ASD-9		LRFD				
Model	Weight (lb/ft)	Area (in ²)	Moment of Inertia (in ⁴)	Moment of Inertia (in ⁴)	Centroid from Main Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender Ratio Coefficient	Unbraced Length (in)	Slender Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ Increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial	LRFD
MP504	14.1	4.13	0.91	11.86	0.81	0	0.43	4.78	1.61	0.64	1.21875	65	80	1.00	18	1.00	18	137.7	133.1	Rupture	206.0	Rupture	206.0
MP505	19.2	5.05	2.15	20.79	0.79	0	0.5	5.33	2.09	0.91	1.21875	65	80	0.80	18	1.00	18	194.5	259.3	Rupture	291.8	Rupture	291.8
ATT-5.75x1	19.6	5.75	0.48	15.84	0.5	0	1	5.75	0	0	1.25	65	80	0.80	16	1.00	16	177.5	236.7	Rupture	266.3	Rupture	266.3

Stiffened or Unstiffened, Exterior Flange Plate - Any Bolt Material TIA Re

Site Data

USID#: 24519
 Site Name: SHELTON NE
 County #:

Pole Manufacturer: Other

Bolt Data

Qty:	16	Bolt Fu:	120
Diameter (in.):	1	Bolt Fy:	92
Bolt Material:	A325	Bolt Fty:	44.00
N/A:			
N/A:			
Circle (in.):	26		

Plate Data

Diam:	30	in
Thick, t:	1.5	in
Grade (Fy):	50	ksi
Strength, Fu:	65	ksi
Single-Rod B-eff:	4.34	in

Stiffener Data (Welding at Both Sides)

Config:	0	*
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:	21.882	in
Thick:	0.1875	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
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Reactions

Moment:	293.97471	ft-kips
Axial:	4.9529	kips
Shear:	11.363199	kips
Elevation:	101.58	feet

If No stiffeners, Criteria: AISC ASD <--Only Applicable to Unstiff

Flange Bolt Results

Bolt Tension Capacity, B:	46.07 kips
Max Bolt <u>directly</u> applied T:	33.61 Kips
Min. PL "tc" for B cap. <u>w/o Pry:</u>	1.416 in
Min PL "treq" for actual T <u>w/ Pry:</u>	0.914 in
Min PL "t1" for actual T <u>w/o Pry:</u>	1.210 in
T allowable w/o Prying:	46.07 kips
Prying Force, Q:	0.00 kips
Total Bolt Tension=T+Q:	33.61 kips
Non-Prying Bolt Stress Ratio, T/B:	73.0% Pass

Exterior Flange Plate Results	Flexural Check
Compression Side Plate Stress:	26.2 ksi
Allowable Plate Stress:	50.0 ksi
Compression Plate Stress Ratio:	52.5% Pass
No Prying	
Tension Side Stress Ratio, (treq/t)^2:	37.1% Pass

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



* 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

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

TIA Rev F

Site Data

USID#: 24519
 Site Name: SHELTON NE
 County #:

Pole Manufacturer: Other

Anchor Rod Data

Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Strength (Fu):	100	ksi
Yield (Fy):	75	ksi
Bolt Circle:	51	in

Plate Data

Diam:	57	in
Thick:	2.25	in
Grade:	60	ksi
Single-Rod B-eff:	15.62	in

Stiffener Data (Welding at both sides)

Config:	0	*
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:	44.317	in
Thick:	0.3125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round
Fu	80	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor

ASIF:	1.333
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Reactions

Moment:	1401.4226	ft-kips
Axial:	44.7619	kips
Shear:	31.708116	kips

If No stiffeners, Criteria: AISC ASD <-Only Applicable to Unstiffened Cases

Anchor Rod Results

Maximum Rod Tension: 159.3 Kips
 Allowable Tension: 195.0 Kips
 Anchor Rod Stress Ratio: 81.7% Pass

Rigid
Service, ASD
Fty*ASIF

Base Plate Results

Base Plate Stress: 30.0 ksi
 Allowable Plate Stress: 60.0 ksi
 Base Plate Stress Ratio: 50.0% Pass

Flexural Check

Rigid
Service ASD
0.75*Fy*ASIF
Y.L. Length:
22.50

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



* 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

Anchor Rod Information for TIA/EIA-222-F and TIA-222-G-2



Site Information	
ID:	24519
Name:	SHELTON NE
App. #:	

Base Reactions	
Moment:	2803 ft-kip
Axial:	45 kip
Shear:	32 kip
Base Plate Type:	Circular

Design Information	
TIA Code:	F
ASIF:	1.333
Failure:	100%
eta Factor:	0.50

Original Anchor Rod Data	
Quantity:	8
Diameter:	2.25 in
Material:	#181
Bolt Circle:	51.0 in
Bolt Spacing:	31.81 in ²
Bolt Group Area:	10342 in ⁴
Bolt Group MOIx:	
Reactions Seen by Original AR Group	
Moment:	1401.4 kip-ft
Axial:	44.8 kip
Shear:	31.7 kip
Original AR Capacity Check	
Tension Load:	159.3 kip
Allowable load:	194.8 kip
AR Capacity:	81.8% Pass

First Added Anchor Rod Data	
Quantity:	4
Diameter:	2.25 in
Material:	#181
Bolt Circle:	51.0 in
Bolt Group Area:	15.90 in ²
Bolt Group MOIx:	5171 in ⁴
Reactions Seen by First Added AR Group	
Moment:	700.7 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
First Added AR Capacity Check	
Tension Load:	164.9 kip
Allowable load:	194.8 kip
AR Capacity:	84.6% Pass

Second Added Anchor Rod Data	
Quantity:	4
Diameter:	2.25 in
Material:	F1554 GR 105
Bolt Circle:	51.0 in
Bolt Group Area:	15.90 in ²
Bolt Group MOIx:	5171 in ⁴
Reactions Seen by Second Added AR Group	
Moment:	700.7 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
Second Added AR Capacity Check	
Tension Load:	164.9 kip
Allowable load:	218.6 kip
AR Capacity:	75.4% Pass

Third Added Anchor Rod Data	
Quantity:	
Diameter:	in
Material:	
Bolt Circle:	in
Bolt Group Area:	0.00 in ²
Bolt Group MOIx:	0 in ⁴
Reactions Seen by Second Added AR Group	
Moment:	0.0 kip-ft
Axial:	0.0 kip
Shear:	0.0 kip
Second Added AR Capacity Check	
Tension Load:	0.0 kip
Allowable load:	0.0 kip
AR Capacity:	0.0%



Site Number	24519
Site Name	SHELTON NE

Caisson Analysis

Pier Properties		Analysis Properties	
Moment	2803 kip-ft	TIA Code	F
Shear	32 kip	Soil Safety Factor	2.00
Pier Diameter	6.0 ft	Water Table Depth	99.0 ft
Height Above Grade	0.50 ft	Ignored Soil Depth	3.0 ft
Depth Below Grade	14.00 ft	Cohesion Based on	PLS Caisson
Donut Diameter	ft	Max Soil Capacity	100%
Donut Depth	ft		

Soil Properties						
Layer	Top of Soil Layer (ft)	Layer Thickness (ft)	Bottom of Soil Layer (ft)	Soil Unit Weight (pcf)	Cohesion (psf)	Friction Angle (degrees)
<i>Soil.Layer</i>	<i>Soil.Top</i>	<i>Soil.Thick</i>	<i>Soil.Bottom</i>	<i>Soil.Weight</i>	<i>Soil.Cohesion</i>	<i>Soil.Phi</i>
1	0.00	3	3.00	100		
2	3.00	5.5	8.50	130	4000	
3	8.50	20	28.50	130	12000	
4						
5						
6						
7						
8						
9						
10						

Critical Depths Below Grade		Results	
Rotation Axis	10.42 ft	Soil Capacity	65.0% OK
Zero Shear	3.51 ft	Max Pier Moment	2922 kip-ft

Moment At User Defined Depths Below Grade	
	kip-ft
	kip-ft

V1.0

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

USID#: 24519	
Site Name: SHELTON NE	

Enter Load Factors Below:

For M (WL)	1.3	<---- Enter Factor
For P (DL)	1.3	<---- Enter Factor

Pier Properties

Concrete:	
Pier Diameter =	6.0 ft
Concrete Area =	4071.5 in ²
Reinforcement:	
Clear Cover to Tie=	3.00 in
Horiz. Tie Bar Size=	4
Vert. Cage Diameter =	5.30 ft
Vert. Cage Diameter =	63.59 in
Vertical Bar Size =	11
Bar Diameter =	1.41 in
Bar Area =	1.56 in ²
Number of Bars =	26
As Total=	40.56 in ²
A s/ Aconc, Rho:	0.0100 1.00%

ACI 10.5, ACI 21.10.4, and IBC 1810.
Min As for Flexural, Tension Controlled, Shafts:
 $(3) \cdot (\sqrt{f_c}) / F_y = 0.0032$
 $200 / F_y = 0.0033$

Minimum Rho Check:

Actual Req'd Min. Rho:	0.33%	Flexural
Provided Rho:	1.00%	OK

Maximum Shaft Superimposed Forces

TIA Revision:	F	
Max. Service Shaft M:	2921.876	ft-kips (* Note)
Max. Service Shaft P:	44.7619	kips
Max Axial Force Type:	Comp.	

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

Load Factor	Shaft Factored Loads	
1.30	Mu:	3798.438 ft-kips
1.30	Pu:	58.19047 kips

Material Properties

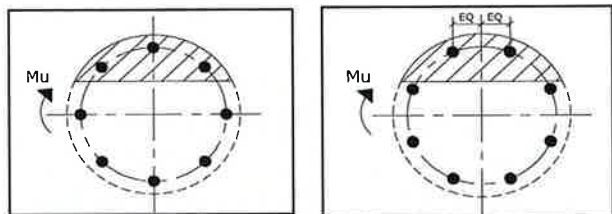
Concrete Comp. strength, f _c =	4000	psi
Reinforcement yield strength, F _y =	60	ksi
Reinforcing Modulus of Elasticity, E =	29000	ksi
Reinforcement yield strain =	0.00207	
Limiting compressive strain =	0.003	
ACI 318 Code		
Select Analysis ACI Code=	2002	
Seismic Properties		
Seismic Design Category =	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: **13.27** in
 Extreme Steel Strain, ϵ_t : **0.0123**
 $\epsilon_t > 0.0050$, Tension Controlled
 Reduction Factor, ϕ : **0.900**

Ref. Shaft Max Axial Capacities, ϕ Max(P _n or T _n):		
Max Pu = ($\phi=0.65$) P _n :		
P _n per ACI 318 (10-2)	8392.18	kips
at Mu=($\phi=0.65$)M _n =	4351.05	ft-kips
Max Tu, ($\phi=0.9$) T _n =	2190.24	kips
at Mu= $\phi=(0.90)$ M _n =	0.00	ft-kips

Output Note: Negative Pu=Tension

For Axial Compression, ϕ P_n = Pu: **58.19** kips
 Drilled Shaft Moment Capacity, ϕ M_n: **5376.14** ft-kips
 Drilled Shaft Superimposed Mu: **3798.44** ft-kips

(Mu/ϕM_n, Drilled Shaft Flexure CSR):	70.7%
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