STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE:	:	
	:	
A PETITION OF CELLCO PARTNERSHIP	:	SUB-PETITION NO. 1133
D/B/A VERIZON WIRELESS FOR A	:	158 EDISON ROAD
DECLARATORY RULING FOR	:	TRUMBULL, CONNECTICUT
APPROVAL OF AN ELIGIBLE FACILITY	:	
REQUEST FOR MODIFICATIONS TO AN	:	
EXISTING TELECOMMUNICATIONS	:	
TOWER AT 158 EDISON ROAD,	:	
TRUMBULL, CONNECTICUT	:	NOVEMBER 29, 2017

SUB-PETITION FOR DECLARATORY RULING:
ELIGIBLE FACILITIES REQUEST FOR MODIFICATIONS
THAT WILL NOT SUBSTANTIALLY CHANGE THE
PHYSICAL DIMENSIONS OF AN EXISTING TOWER

I. Introduction

Pursuant to Section 6409(a) of the Middle Class Tax Relief and Job Creation Act of 2012, codified at 47 U.S.C. § 1455(a) ("Section 6409(a)") and the October 21, 2014 Report and Order (FCC-14-153) issued by the Federal Communications Commission ("FCC") (the "FCC Order"), Cellco Partnership d/b/a Verizon Wireless ("Cellco") hereby petitions the Connecticut Siting Council (the "Council") for a declaratory ruling ("Sub-Petition") that the proposed modifications to an existing Blue Sky Towers LLC ("Blue Sky") tower at 158 Edison Road in Trumbull, Connecticut constitutes an Eligible Facilities Request ("EFR") under the FCC Order. Cellco has designated this cell site as its "Trumbull South 3 Facility".

II. Factual Background

Blue Sky maintains a 143-foot monopole tower on a 2.3-acre parcel at 158 Edison Road in Trumbull, Connecticut (the "Property"). The tower, approved by the Council in Docket No. 421, is located adjacent to the Trumbull Police Department. *See* Attachment 1 – Site Vicinity

Map and Site Schematic (Aerial Photograph). The tower is shared by the Town of Trumbull, with antennas at the 90-foot and 140-foot levels and T-Mobile, with antennas at the 120-foot level. Equipment associated with the municipal and T-Mobile antennas is located on the ground near the base of the tower within a fenced facility compound.

III. Cellco's Proposed Trumbull South 3 Facility

Cellco intends to install a total of nine (9) antennas and nine (9) remote radio heads ("RRHs") on an antenna platform at a height of 109 feet above ground level ("AGL") on the Blue Sky tower. Cellco will also install a steel platform with a roof canopy to support three (3) equipment cabinets and a 15 kW natural gas-fueled back-up generator. Power and telephone service to Cellco's equipment will extend from the existing utility backboard at the facility compound. Project Plans for the proposed Trumbull South 3 Facility are included in Attachment 2. Specifications for Cellco's antennas, RRHs and back-up generator are included in Attachment 3. A Structural Analysis Report confirming that the tower can accommodate Cellco's proposed modifications is included in Attachment 4.

IV. Discussion

A. The Proposed Modification Will Not Cause a Substantial Change to the Physical Dimensions of the Existing Tower or Base Station

Section 6409(a) provides, in relevant part, that "a State or local government may not deny, and shall approve, any eligible facilities request for a modification of an existing wireless tower or base station that does not substantially change the physical dimensions of such tower or base station." Pursuant to the FCC Order, the proposed modification does not substantially change the physical dimensions of the tower or base station if the following criteria are satisfied.

1. *The proposed modified facility will not increase the height of the tower by more than ten (10) percent or by the height of one additional antenna array with separation from*

the nearest existing antenna not to exceed twenty (20) feet, whichever is greater. Cellco proposes to install its antennas and RRHs at 109 feet AGL on the existing 143-foot tower.

2. *The proposed facility will not protrude from the edge of the structure more than six (6) feet.* The proposed antennas and RRHs will not protrude more than six (6) feet from the edge of the structure (antenna platform).

3. *The proposed facility does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets.* Cellco intends to install three (3) equipment cabinets on its equipment platform.

4. *The proposed facility does not entail any excavation or deployment outside the current site of the base station.* All of Cellco's site improvements will remain within the limits of the existing facility compound.

5. *The proposed facility does not defeat the existing concealment elements of the base station.* None of the existing antennas on the Blue Sky tower are concealed in any fashion. Likewise, Cellco's antennas and related equipment will not be concealed.

6. *The proposed facility complies with conditions associated with the prior approval of construction or modification of the base station.* The Blue Sky tower was approved by the Council in Docket 421. Cellco's proposed shared use of this tower is consistent with the conditions of that approval.

B. FCC Compliance

Operation of Cellco's Trumbull South 3 Facility will not increase the radio frequency ("RF") emissions at the Blue Sky tower site to a level at or above the FCC Safety standard. A cumulative General Power Density table, including Cellco's proposed facility modifications is included in Attachment 5.

C. Notice to the Town, Property Owner and Abutting Landowners

On November 29, 2017, a copy of this Sub-Petition was sent to Trumbull's First Selectman, Timothy Herbst; Roberto Librandi, Trumbull's Land Use Planner; and Blue Sky, the owner of the tower. The Town is the owner of the Property. Copies of the letters sent to Mr. Herbst, Mr. Librandi, and Blue Sky are included in Attachment 6. A copy of this Sub-Petition was also sent to each owner of land that abuts the Property. A sample abutter's cover letter and the list of those abutting landowners who were sent notice of this filing and a copy of the Sub-Petition is included in Attachment 7.

V. Conclusion

Based on the information provided above, Cellco respectfully submits that the proposed modification of the existing base station at the Property constitutes an "eligible facilities request" under Section 6409(a) and the FCC Order.

Respectfully submitted,

CELLCO PARTNERSHIP d/b/a VERIZON WIRELESS

By _____

Kenneth C. Baldwin, Esq.
Robinson & Cole LLP
280 Trumbull Street
Hartford, CT 06103-3597
(860) 275-8200
Its Attorneys

ATTACHMENT 1

Legend

- Proposed Verizon Wireless Facility
- Surrounding Verizon Wireless Facilities
- Municipal Boundary
- Waterbody

Site Vicinity Map

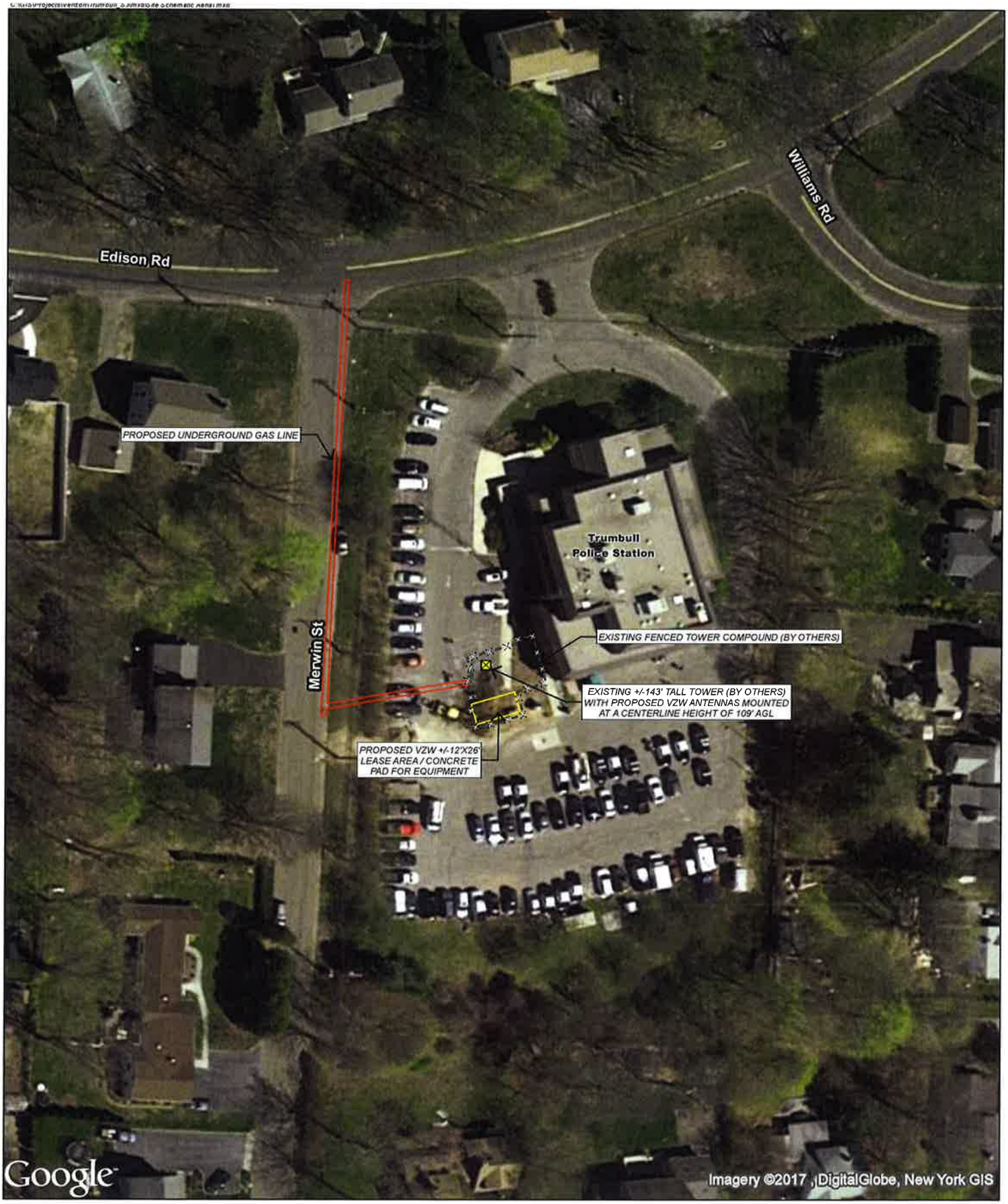
Proposed Wireless
Telecommunications Facility
Trumbull S3 CT
158 Edison Road
Trumbull, Connecticut

verizon

ALL-POINTS TECHNOLOGY CORPORATION

Base Map Source: 2016 Aerial Photograph (CTECO)
Map Scale: 1 inch = 3,000 feet
Map Date: June 2017

3,000 1,500 0 3,000 Feet



Legend

- Existing +/-143' Tall Tower (by others)
- Existing Fenced Tower Compound (by others)
- Proposed Underground Gas Line
- Proposed VzW +/-12'x26' Equipment Lease Area

<u>Map Notes:</u>
Base Map Source: 2016 Google Earth
Map Scale: 1 inch = 75 feet
Map Date: June 2017

75 37.5 0 75 Feet

Site Schematic

Proposed Wireless
Telecommunications Facility
Trumbull S3 CT
158 Edison Road
Trumbull, Connecticut

verizon

ALL-POINTS TECHNOLOGY CORPORATION

ATTACHMENT 2

Cellco Partnership D/B/A

verizon

WIRELESS COMMUNICATIONS FACILITY
TRUMBULL S3
158 EDISON ROAD
TRUMBULL, CT 06611

C.S.C.

PREPARED FOR:
CELLCO PARTNERSHIP D/B/A
verizon

SITE DIRECTIONS

FROM: 99 EAST RIVER DRIVE
EAST HARTFORD, CONNECTICUT

TO: 158 EDISON ROAD
TRUMBULL, CONNECTICUT

1. HEAD SOUTH ON EAST RIVER DRIVE TOWARD PITKIN STREET.	0.09 MILES
2. STAY STRAIGHT TO GO ON EAST RIVER EXT.	0.3 MILES
3. MERGE ONTO US-5 S/CT-15 SOUTH TOWARD I-95 S/NEW HAVEN	1.1 MILES
4. MERGE ONTO I-95 S VIA EXIT 89 TOWARD NEW HAVEN/ NY CITY	17.1 MILES
5. TURN LEFT ONTO WEST STREET/CT-83. CONTINUE TO FOLLOW CT-83	34.1 MILES
6. TAKE THE CT-111/MAIN STREET EXIT VIA EXIT 48	0.1 MILES
7. KEEP RIGHT TO TAKE RAMP TOWARD TRUMBULL/POLICE DEPARTMENT/LONG HILL/MONROE	0.005 MILES
8. TURN RIGHT ONTO MAIN STREET/CT-111	0.2 MILES
9. TAKE THE FIRST RIGHT ONTO EDISON ROAD	0.08 MILES
10. 158 EDISON ROAD IS ON THE RIGHT	

GENERAL NOTES

1. PROPOSED ANTENNA LOCATIONS AND HEIGHTS PROVIDE BY CELLCO PARTNERSHIP.

PROJECT SCOPE

1. THE PROPOSED SCOPE OF WORK GENERALLY INCLUDES THE INSTALLATION OF (3) SECTORS OF (3) PANEL ANTENNAS PER SECTOR AND ASSOCIATED APPURTENANCES MOUNTED TO PROPOSED MOUNTING PLATFORM WITH A CENTERLINE OF 109'± AGL 143'± MONOPOLE.

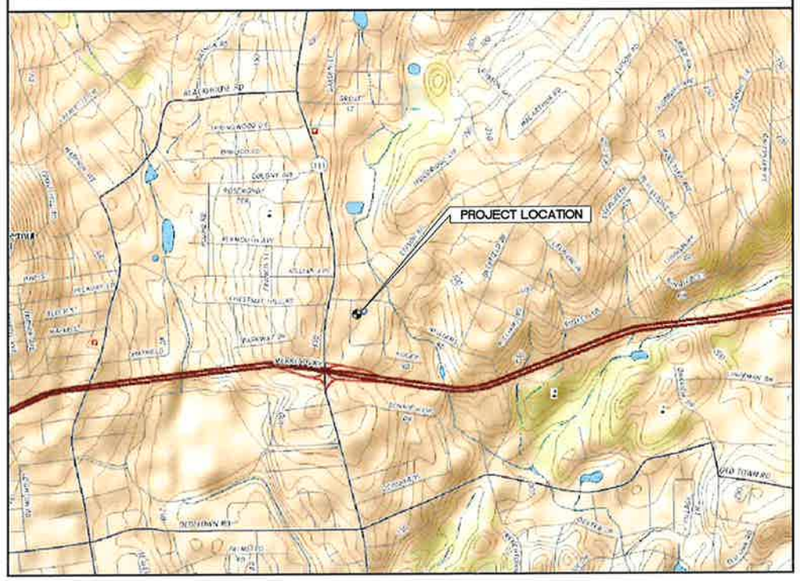
2. POWER AND TELCO UTILITIES SHALL BE ROUTED UNDERGROUND FROM EXISTING UTILITY DEMARCS LOCATED ON OR ADJACENT TO THE SUBJECT PROPERTY. UTILITIES WILL BE ROUTED UNDERGROUND FROM EXISTING UTILITY BACKBOARD TO THE PROPOSED NOMINAL 12'x26' WIRELESS EQUIPMENT PLATFORM LOCATED WITHIN FENCED COMPOUND AREA.

3. THERE WILL NOT BE ANY LIGHTING UNLESS REQUIRED BY THE FCC OR THE FAA.

4. THE PROPOSED WIRELESS FACILITY INSTALLATION WILL BE DESIGNED ACCORDANCE WITH THE 2003 INTERNATIONAL BUILDING CODE AS MODIFIED BY THE 2009 CONNECTICUT SUPPLEMENT.

VICINITY MAP

SCALE 1" = 1000'



PROJECT SUMMARY

SITE NAME:	TRUMBULL S3
SITE ADDRESS:	158 EDISON ROAD TRUMBULL, CT 06611
LESSEE/TENANT:	CELLCO PARTNERSHIP D//B/A VERIZON WIRELESS 99 EAST RIVER DRIVE EAST HARTFORD, CT 06108
VERIZON SITE ACQUISITION CONTACT:	DOUG TALMADGE VERIZON WIRELESS (860) 549-6116
LEGAL/REGULATORY COUNSEL:	KENNETH C. BALDWIN, ESQ. ROBINSON & COLE (860) 257-8345
SITE COORDINATES:	LATITUDE: 41°-14'-03.55" N (NAD 83) LONGITUDE: 73°-13'-07.79" W (NAD 83) GROUND ELEVATION: 320.5' (NAVD 88) (SITE COORDINATES AND GROUND ELEVATION FROM FAA 1A SURVEY CERTIFICATION PERFORMED BY LAND SURVEYING SERVICES, LLC.)

SHEET INDEX

SHEET NO.	DESCRIPTION	REV NO.
T-1	TITLE SHEET	2
C-1	ABUTTERS MAP	2
C-2	SITE PLAN	2
C-3	TOWER ELEVATION AND ANTENNA CONFIGURATION	2

SUBMITTALS

REV	DATE	ISSUED FOR
1	5/31/17	FOR CLIENT REVIEW
2	11/15/17	FOR CLIENT REVIEW
3	11/17/17	FOR CLIENT REVIEW

STAMP

TILSON
245 Commercial Street Suite 203
Portland, ME 04101
P: (207) 591-6427 F: (207) 772-3427

TRUMBULL S3
158 EDISON ROAD
TRUMBULL, CT 06611
FAIRFIELD COUNTY

SHEET TITLE

TITLE SHEET

DRAFTED BY:		REV
CBM	T-1	3

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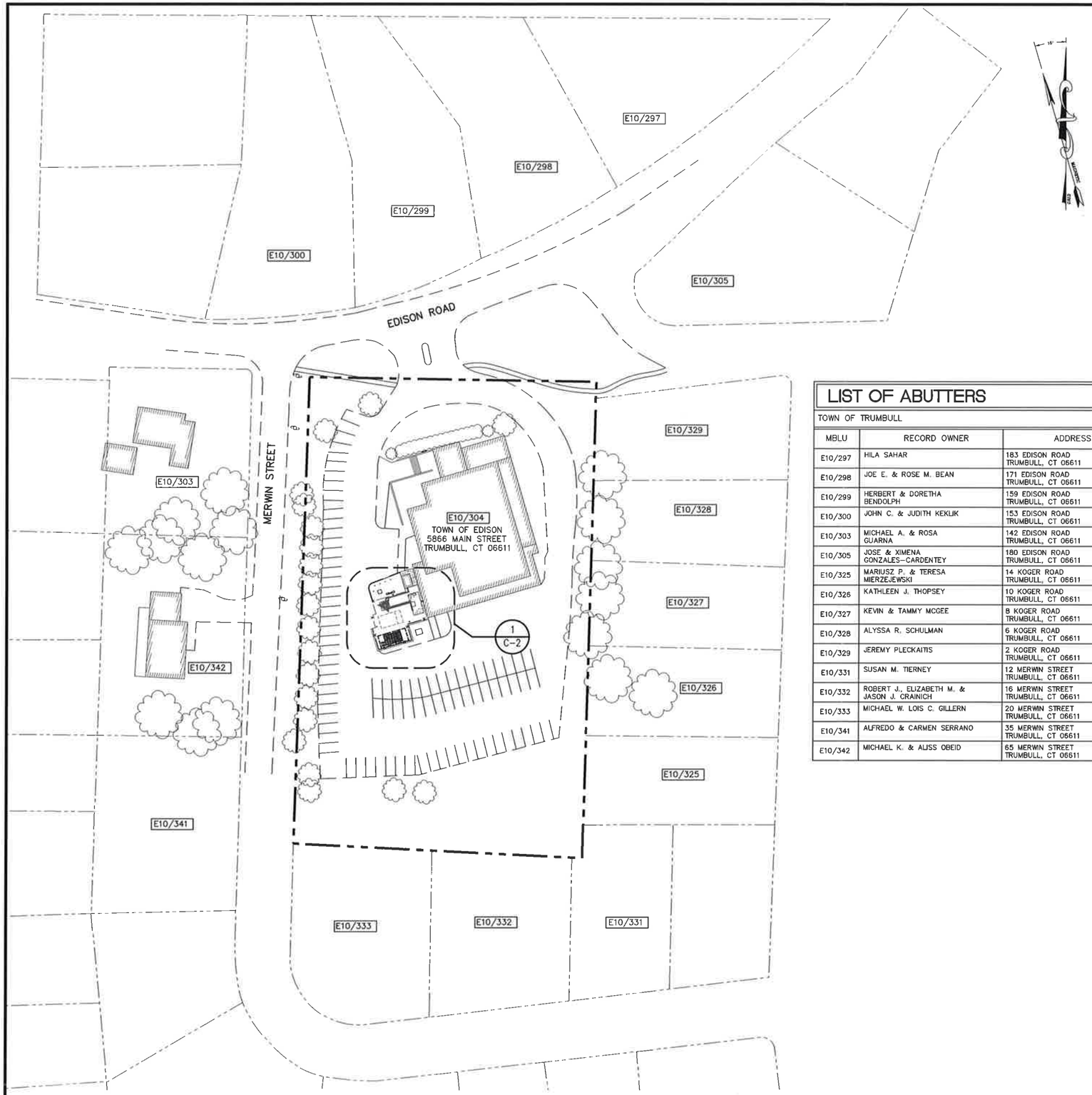

LIST OF ABUTTERS

TOWN OF TRUMBULL

MBLU	RECORD OWNER	ADDRESS
E10/297	HILA SAHAR	183 EDISON ROAD TRUMBULL, CT 06611
E10/298	JOE E. & ROSE M. BEAN	171 EDISON ROAD TRUMBULL, CT 06611
E10/299	HERBERT & DORETHA BENDOLPH	159 EDISON ROAD TRUMBULL, CT 06611
E10/300	JOHN C. & JUDITH KEKLIK	153 EDISON ROAD TRUMBULL, CT 06611
E10/303	MICHAEL A. & ROSA GUARNA	142 EDISON ROAD TRUMBULL, CT 06611
E10/305	JOSE & XIMENA GONZALES–CARDENTEY	180 EDISON ROAD TRUMBULL, CT 06611
E10/325	MARIUSZ P. & TERESA MIERZEJEWSKI	14 KOGER ROAD TRUMBULL, CT 06611
E10/326	KATHLEEN J. THOPSEY	10 KOGER ROAD TRUMBULL, CT 06611
E10/327	KEVIN & TAMMY MCGEE	8 KOGER ROAD TRUMBULL, CT 06611
E10/328	ALYSSA R. SCHULMAN	6 KOGER ROAD TRUMBULL, CT 06611
E10/329	JEREMY PLECKAITIS	2 KOGER ROAD TRUMBULL, CT 06611
E10/331	SUSAN M. TIERNEY	12 MERWIN STREET TRUMBULL, CT 06611
E10/332	ROBERT J., ELIZABETH M. & JASON J. CRAINICH	16 MERWIN STREET TRUMBULL, CT 06611
E10/333	MICHAEL W. LOIS C. GILLERN	20 MERWIN STREET TRUMBULL, CT 06611
E10/341	ALFREDO & CARMEN SERRANO	35 MERWIN STREET TRUMBULL, CT 06611
E10/342	MICHAEL K. & ALISS OBEID	65 MERWIN STREET TRUMBULL, CT 06611

1 C-1 PLOT PLAN
SCALE: 1" = 50'

MUNICIPALITY NOTIFICATION LIMIT MAP

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CELLCO PARTNERSHIP D/B/A
verizon

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TRUMBULL S3
158 EDISON ROAD
TRUMBULL, CT 06611
FAIRFIELD COUNTY

SHEET TITLE
ABUTTERS MAP

DRAFTED BY: CBM | C-1 | REV 3

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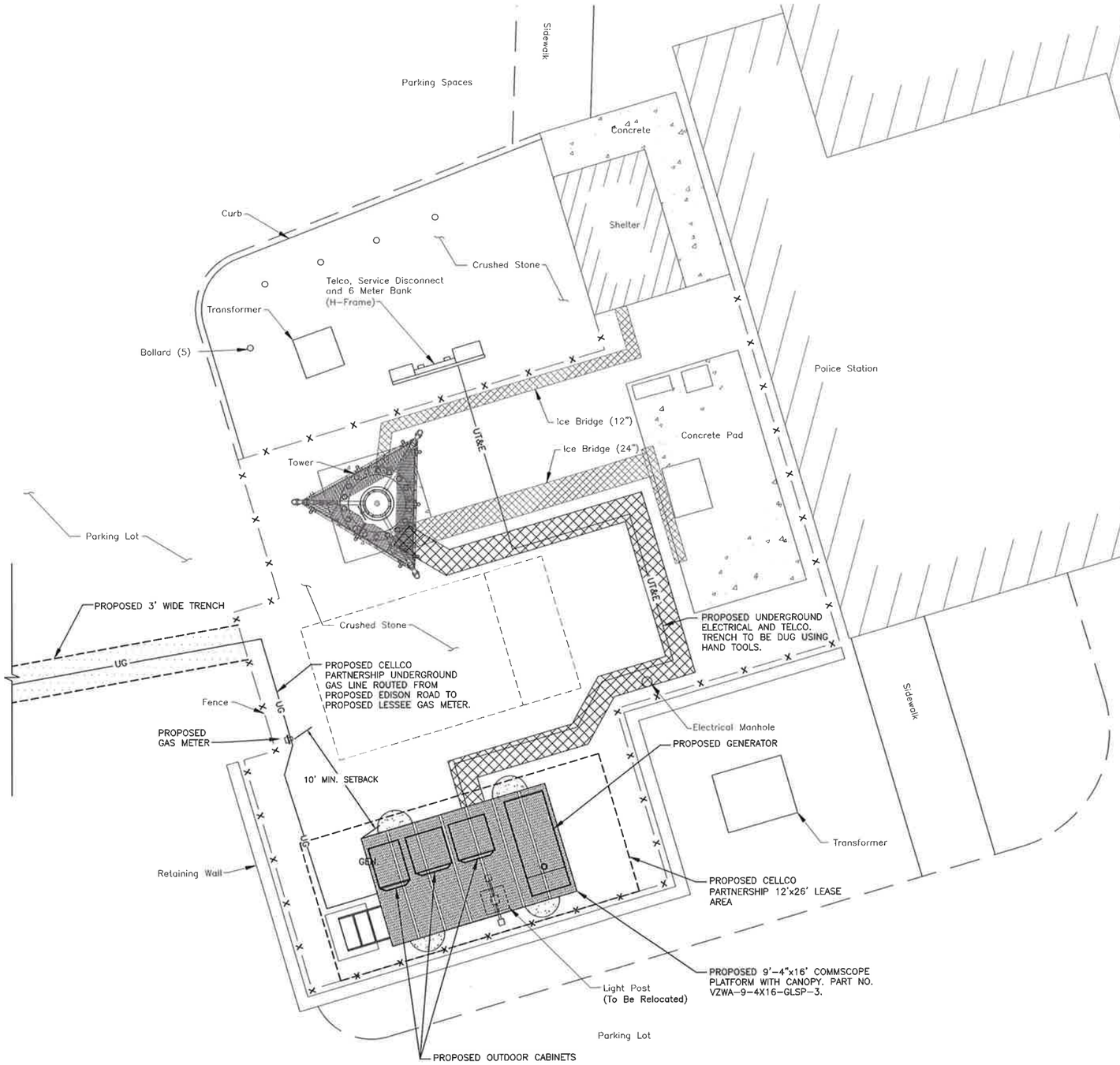

1 / C-2 SITE PLAN
SCALE: 1" = 5

C.S.C.

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verizon

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REV	DATE	ISSUED FOR
3	2/27/17	FOR CLIENT REVIEW
1	5/31/17	FOR CLIENT REVIEW
2	11/15/17	FOR CLIENT REVIEW

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TRUMBULL S3
158 EDISON ROAD
TRUMBULL, CT 06611
FAIRFIELD COUNTY

SHEET TITLE
SITE PLAN

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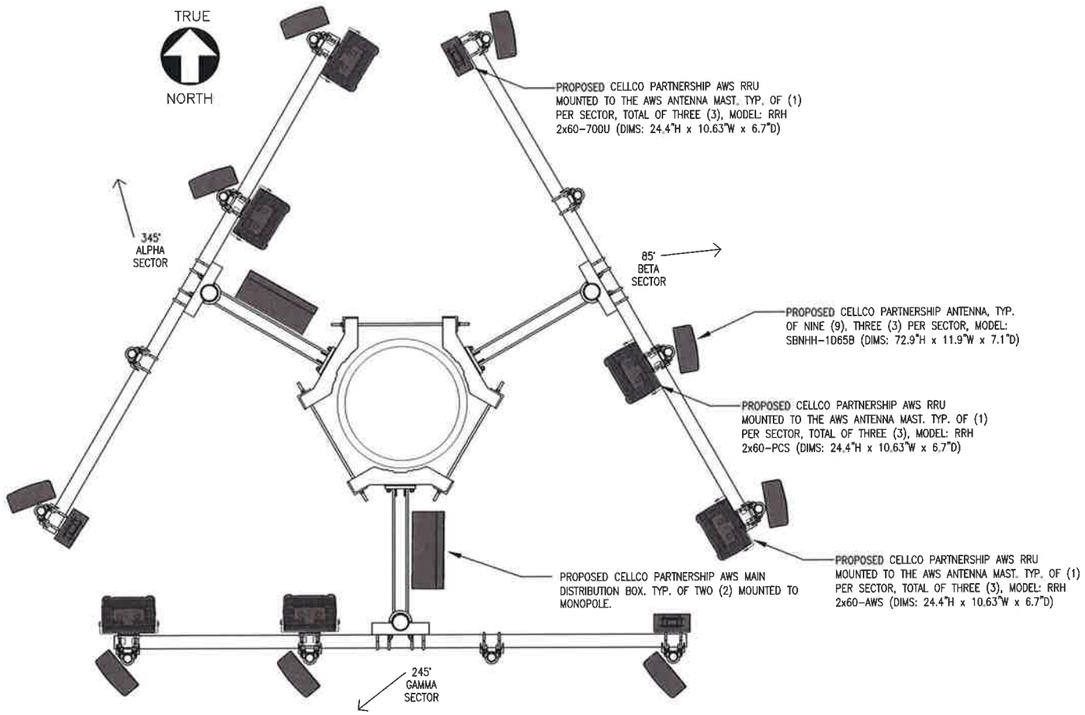
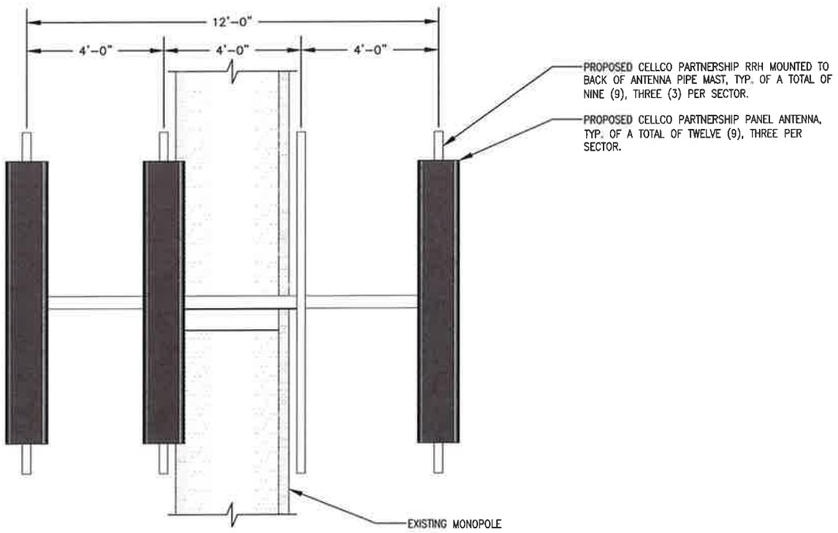
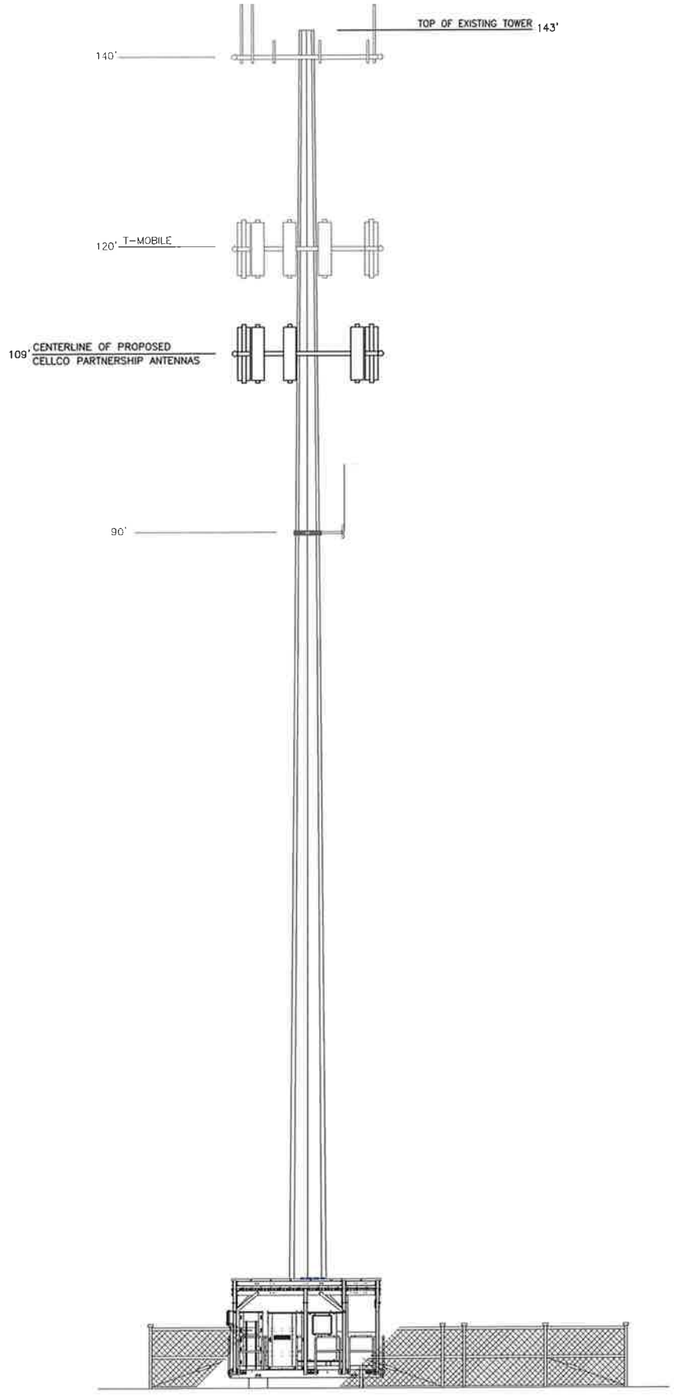


1 C-3 ANTENNA MOUNTING CONFIGURATION
SCALE: N.T.S.



2 C-3 ANTENNA ELEVATION
SCALE: N.T.S.



3 C-3 TOWER ELEVATION
SCALE: 1" = 20'

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CELLCO PARTNERSHIP D/B/A
verizon

SUBMITTALS

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TRUMBULL S3
158 EDISON ROAD
TRUMBULL, CT 06611
FAIRFIELD COUNTY

SHEET TITLE
TOWER ELEVATION AND ANTENNA ELEVATION

DRAFTED BY: CBM
C-3
REV 3

ATTACHMENT 3

Product Specifications

COMMSCOPE®

SBNHH-1D65B

6-port sector antenna, 2x 698–896 and 4x 1695–2360 MHz, 65° HPBW, 2x RET. Both high bands share the same electrical tilt.

- Interleaved dipole technology providing for attractive, low wind load mechanical package

Electrical Specifications

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain, dBi	14.9	14.7	17.7	18.2	18.6	18.6
Beamwidth, Horizontal, degrees	68	66	69	66	63	58
Beamwidth, Vertical, degrees	12.1	10.7	5.6	5.2	5.0	4.5
Beam Tilt, degrees	0–14	0–14	0–7	0–7	0–7	0–7
USLS (First Lobe), dB	14	13	15	15	15	13
Front-to-Back Ratio at 180°, dB	27	29	28	28	28	27
Isolation, dB	25	25	25	25	25	25
Isolation, Intersystem, dB	30	30	30	30	30	30
VSWR | Return Loss, dB	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0	1.5 | 14.0
PIM, 3rd Order, 2 x 20 W, dBc	-153	-153	-153	-153	-153	-153
Input Power per Port, maximum, watts	350	350	350	350	350	300
Polarization	±45°	±45°	±45°	±45°	±45°	±45°
Impedance	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm	50 ohm

Electrical Specifications, BASTA*

Frequency Band, MHz	698–806	806–896	1695–1880	1850–1990	1920–2200	2300–2360
Gain by all Beam Tilts, average, dBi	14.5	14.3	17.4	17.9	18.2	18.3
Gain by all Beam Tilts Tolerance, dB	±0.5	±0.8	±0.4	±0.3	±0.5	±0.3
Gain by Beam Tilt, average, dBi	0 ° | 14.6	0 ° | 14.5	0 ° | 17.4	0 ° | 17.8	0 ° | 18.1	0 ° | 18.2
	7 ° | 14.6	7 ° | 14.4	3 ° | 17.5	3 ° | 17.9	3 ° | 18.3	3 ° | 18.4
	14 ° | 14.2	14 ° | 13.6	7 ° | 17.4	7 ° | 17.9	7 ° | 18.2	7 ° | 18.4
Beamwidth, Horizontal Tolerance, degrees	±2.2	±3.4	±2	±4.6	±5.7	±4.3
Beamwidth, Vertical Tolerance, degrees	±0.8	±1	±0.3	±0.2	±0.3	±0.2
USLS, beampeak to 20° above beampeak, dB	16	14	16	16	16	15
Front-to-Back Total Power at 180° ± 30°, dB	25	26	27	26	26	26
CPR at Boresight, dB	22	23	21	20	20	22
CPR at Sector, dB	13	11	16	12	11	4

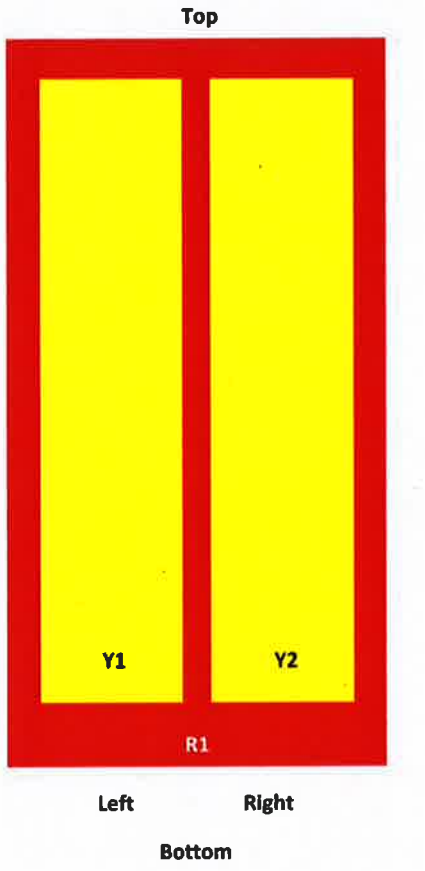
* CommScope® supports NGMN recommendations on Base Station Antenna Standards (BASTA). To learn more about the benefits of BASTA, download the whitepaper Time to Raise the Bar on BSAs.

Array Layout

Product Specifications

SBNHH-1D65B

SBNHH 65



Array	Freq (MHz)	Conns	RET (MRET)	AISG RET UID
R1	698-896	1-2	1	ANxxxxxxxxxxxxxxxx.1
Y1	1695-2360	3-4	2	ANxxxxxxxxxxxxxxxx.2
Y2	1695-2360	5-6		

View from the front of the antenna

(Sizes of colored boxes are not true depictions of array sizes)

General Specifications

Operating Frequency Band	1695 – 2360 MHz | 698 – 896 MHz
Antenna Type	Sector
Band	Multiband
Performance Note	Outdoor usage

Mechanical Specifications

RF Connector Quantity, total	6
RF Connector Quantity, low band	2
RF Connector Quantity, high band	4
RF Connector Interface	7-16 DIN Female

Product Specifications

SBNHH-1D65B

Color	Light gray
Grounding Type	RF connector inner conductor and body grounded to reflector and mounting bracket
Radiator Material	Aluminum | Low loss circuit board
Radome Material	Fiberglass, UV resistant
Reflector Material	Aluminum
RF Connector Location	Bottom
Wind Loading, frontal	618.0 N @ 150 km/h 138.9 lbf @ 150 km/h
Wind Loading, lateral	197.0 N @ 150 km/h 44.3 lbf @ 150 km/h
Wind Loading, rear	728.0 N @ 150 km/h 163.7 lbf @ 150 km/h
Wind Speed, maximum	241 km/h | 150 mph

Dimensions

Length	1851.0 mm | 72.9 in
Width	301.0 mm | 11.9 in
Depth	180.0 mm | 7.1 in
Net Weight, without mounting kit	18.4 kg | 40.6 lb

Remote Electrical Tilt (RET) Information

Input Voltage	10–30 Vdc
Internal RET	High band (1) | Low band (1)
Power Consumption, idle state, maximum	2.0 W
Power Consumption, normal conditions, maximum	13.0 W
Protocol	3GPP/AISG 2.0 (Multi-RET)
RET Interface	8-pin DIN Female | 8-pin DIN Male
RET Interface, quantity	1 female | 1 male

Packed Dimensions

Length	2025.0 mm | 79.7 in
Width	390.0 mm | 15.4 in
Depth	296.0 mm | 11.7 in
Shipping Weight	31.0 kg | 68.3 lb

Regulatory Compliance/Certifications

Agency	Classification
RoHS 2011/65/EU	Compliant by Exemption
China RoHS SJ/T 11364-2006	Above Maximum Concentration Value (MCV)
ISO 9001:2008	Designed, manufactured and/or distributed under this quality management system

Included Products

BSAMNT-1 — Wide Profile Antenna Downtilt Mounting Kit for 2.4 - 4.5 in (60 - 115 mm) OD round members. Kit contains one scissor top bracket set and one bottom bracket set.

* Footnotes

Performance Note	Severe environmental conditions may degrade optimum performance

ALCATEL-LUCENT B13 RRH4X30-4R

Alcatel-Lucent B13 Remote Radio Head 4x30-4R is the newest addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B13 RRH4x30-4R allows operators to have a compact radio solution to deploy LTE in the 700U band (700 MHz, 3GPP band 13), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B13 RRH4x30-4R product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity and up to 10MHz instantaneous bandwidth.

The Alcatel-Lucent B13 RRH4x30-4R is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

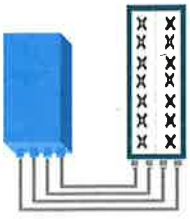
Its compactness and slim design makes the Alcatel-Lucent B13 RRH4x30-4R easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 700 MHz band (700U, 3GPP band 13)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- 10MHz LTE carrier with 4Rx Diversity
- Convection-cooled (fan-less)
- Supports AISG 2.0 ALD devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in 700U band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Improves downlink spectral efficiency through MIMO4
- Increases LTE coverage thanks to 4Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options: Pole or Wall



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

Alcatel·Lucent

TECHNICAL SPECIFICATIONS

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	U700 (C) (3GPP bands 13): DL: 746 - 756 MHz / UL: 777 - 787 MHz
Instantaneous bandwidth - #carriers	10MHz – 1 LTE carrier (in 10MHz occupied bandwidth)
LTE carrier bandwidth	10 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure – RX Diversity scheme	2 dB typ. (<2.5 dB max) – 2 or 4 way Rx diversity
Sizes (HxWxD) in mm (in.) **Volume in L** **Weight in kg (lb) (w/o mounting HW)**	550 x 305 x 230 (21.6" x 12.0" x 9") (with solar shield) 38 (with solar shield) 26 (57.2) (with solar shield)
DC voltage range **DC power consumption**	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 550W typical @100% RF load (in 2Tx or 4TX mode)
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5
CPRI ports	2 CPRI ports (HW ready for Rate7, 9.8 Gbps) SFP single mode dual fiber
AISG interfaces	1 AISG2.0 output (RS485) Integrated Smart Bias Tees (x2)
Misc. Interfaces	4 external alarms (1 connector) – 4 RF Tx & 4 RF Rx monitor ports - 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT B25 RRH4X30

Alcatel-Lucent Band 25 Remote Radio Head 4x30W is the new addition of Remote Radio Head to the extended product line of Alcatel-Lucent's distributed Base Station solutions, aimed at facilitating smooth RF site acquisition and related civil engineering.

Supporting 2Tx/4Tx MIMO and 4-way Rx diversity, Alcatel-Lucent B25 RRH4x30 allows operators to have a compact radio solution to deploy LTE in the PCS band (1.9 GHz, 3GPP band 25), providing them with the means to achieve high capacity, high quality and high coverage with minimum site requirements.

The Alcatel-Lucent B25 RRH4x30 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x60 W or 4x30 W RF output power. It supports also 4-way Rx diversity, LTE carriers from 3 MHz up to 20 MHz and up to 65 MHz instantaneous bandwidth.

The Alcatel-Lucent B25 RRH4x30 is a near zero-footprint solution and operates noise free, simplifying negotiations with site property owners and minimizing environmental impacts.

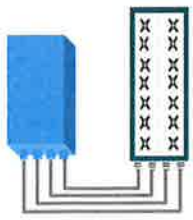
Its compactness and slim design makes the Alcatel-Lucent B25 RRH4x30 easy to install close to the antenna: operators can therefore locate this Remote Radio Head where RF design conditions are deemed ideal, minimizing trade-offs between available sites and RF optimum sites, together with reducing the RF feeder needs and installation costs.

FEATURES

- Supporting LTE in 1.9 GHz band (PCS, 3GPP band 2 & 25)
- LTE 2Tx or 4Tx MIMO (SW switchable)
- Output power: Up to 2x60W or 4x30W
- Ready for 3, 5, 10, 15 or 20MHz LTE carrier operation with 4Rx Diversity
- Ready to support up to 4 carriers anywhere in 65MHz instantaneous bandwidth
- Convection-cooled (fan-less)
- Supports AISG 2.0 devices (RET, TMA) through RS485 or RF ports

BENEFITS

- Compact to reduce additional footprint when adding LTE in PCS band
- MIMO scheme operation selection (2Tx or 4Tx) by software only
- Full flexibility for multiple carriers operation over entire PCS spectrum
- Improves downlink spectral efficiency and cell edge throughput through MIMO4
- Increases LTE coverage thanks to 4-way Rx diversity capability and best in class Rx sensitivity
- Flexible mounting options (Pole or Wall)



4x30W with 4T4R
or
2x60W with 2T4R

Can be switched between modes via SW w/o site visit

Alcatel·Lucent

Features & performance	
Number of TX/RX paths	4 duplexed (either 4T4R or 2T4R by SW)
Frequency band	3GPP bands 2 & 25 (PCS-G) DL: 1930 - 1995 MHz UL: 1850 - 1915 MHz
Instantaneous bandwidth - #carriers	65MHz – Up to 4 LTE carriers (in 40MHz occupied bandwidth)
LTE carrier bandwidth	3, 5, 10, 15 or 20 MHz
RF output power	2x60W or 4x30W (by SW)
Noise figure (3GPP band 2) **RX Diversity scheme**	2.0 dB typ. (<2.5 dB max) 2 or 4 way Rx diversity
Sizes (HxWxD)(w/ solar shield) in mm (in.) **Volume (w/ solar shield) in L** **Weight (w/ solar shield) in kg (lb)**	538 x 304 x 182 (21.2" x 12.0" x 7.2") 30 24 (53)
DC voltage range **DC power consumption**	-40.5 to -57V at full performance, -38 to -57V with relaxation on power consumption 580W typical @100% RF load
Environmental conditions **Wind load (@150km/h or 93mph)**	-40°C (-40°F) /+55°C (+131°F) IP65 Frontal:<200N / Lateral :<150N
Antenna ports	4 ports 7/16 DIN female (50 ohms) VSWR < 1.5 (> 14dB)
CPRI ports	2 CPRI ports (HW ready for Rate7 / 9.8 Gbps)
AISG interfaces	1 AISG2.0 output (RS485), +24V/2A DC power Integrated Smart Bias Tees (x2)
Misc. Interfaces	1 external alarms connector (4 alarms) 4 RF Tx & 4 RF Rx monitor ports 1 DC connector (2 pins)
Installation conditions	Pole and wall mounting
Regulatory compliance	3GPP 36.141 / 3GPP 36.113 / GR-1089-CORE / GR-3108-CORE / UL 60950-1 / FCC Part 27

ALCATEL-LUCENT B66A RRH4X45

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

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

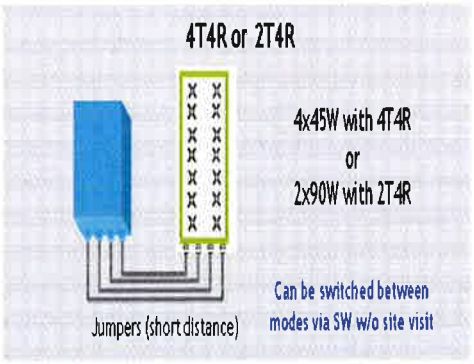
The Alcatel-Lucent B66a RRH4x45 product has four transmit RF paths, offering the possibility to **select, via software only, 2Tx or 4Tx MIMO configurations** with either 2x90W or 4x45W RF output power. It also supports 4-way Rx diversity at the 70 MHz instantaneous bandwidth.

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

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

FEATURES

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



BENEFITS

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

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

Alcatel·Lucent

8220-603 series

Reliability through Simplicity

POLAR POWER INC.

Back-up DC Generator Set

Founded in 1979 Polar Power specialized in solar photovoltaic systems, solar air conditioning and refrigeration. We developed and provided photovoltaic charging controls for telecommunications in the 1980s along with DC generators for the military. In 1994 we were first to provide DC generators with remote control and monitoring to the telecommunications industry.

Polar's success is based on engineering generators to meet the very specific needs of each application. Telecom site optimization is best met with the DC generator technology as the loads and batteries are DC. It makes no sense to install an AC generator and convert the output to DC. The AC generators are designed for a wide range of applications and they are not specifically produced for telecom applications so there are issues with reliability, space, and fuel efficiency.

Polar can save you considerable time and cost in permitting, installing, purchasing, and maintaining a backup generator. We reduce CAPEX and OPEX costs while improving backup reliability.

Intertek 4003706

Conforms to UL STD 2200

Certified to CSA STD C22.2 No. 100

Meets EPA Emission Regulations
CA/MA Emissions Compliant

Available Models:

- **8220-603-NG-12** Natural Gas 12 kW -48 VDC
- **8340-603-NG-15** Natural Gas 15 kW -48 VDC
- **8220-603-LP-12** LPG 12 kW -48 VDC
- **8340-603-LP-15** LPG 15 kW -48 VDC

Made In USA

2 year standard warranty, extended 5-10 year warranty available

The concepts and features behind Polar's backup generator for telecommunications include:

SMALL FOOTPRINT. Polar's DC generator is considerably smaller in size than an AC generator. You can now backup sites that could not accommodate an AC generator. Smaller also means less cost for space leasing.

LOW ACOUSTIC NOISE. <59 dBA @ 7 meters, and low vibration so as not to disturb the local residents or building landlords. Quieter than other generators with lower noise ratings.

LIGHTWEIGHT. Up to 1/3 the weight of a comparable AC generator. Facilitates roof top installations.

RODENT RESISTANT. Small animals can quickly destroy a generator set by gnawing on wires, fuel lines, radiator hoses, etc. Cooling air inlets and outlets have perforated aluminum screens to keep small rodents and large insects out. Stainless steel wire braid is placed over fuel and radiator lines for increased reliability and safety.

CORROSION RESISTANT. All-aluminum enclosure with stainless hardware for low maintenance, and long service life.

SUPERCAPACITOR STARTER. Failure to start is the number one problem plaguing generator reliability. Polar's unique design has replaced the starting battery with a Super Capacitor. Capacitors are more reliable and last longer than batteries (10-15 year life).

LONG LIFE. Controls and wire harnesses are designed to exceed a 20 year life. Higher grade, longer life electrical wire (UL 3173), weather tight connectors, gold plated connector pins on signal circuits. Controls and wire harness are easily replaceable.

ADVANCED MONITORING. Remote diagnostics, control, and monitoring. Ethernet and RS232 standard, with optional SNMP.

SIMPLICITY. Transfer switch, rectifier, and starting battery are not required.

POLAR POWER INC.
application and engineering data

COMPARING THE COST OF AC vs DC

	AC	DC
Transfer switch required	Yes	No
Permitting costs	$$	$
Shipping to site and installation cost	$$	$
Site preparation/reinforcing structures	$$$	$
Ethernet/RS232 remote control and monitoring	Extra	Standard

PERMITTING IS FACILITATED

- Small engine horsepower
- DC generator is fully isolated from the utility grid
- No transfer switch
- Low acoustic noise
- Incorporates all requirements made by local Fire Marshals

8220 ALTERNATOR FEATURES

- No mechanical adjustments
- Very lightweight
- High quality electrical output
- Voltage and current regulation
- Up to 94% efficiency
- Class 220° C insulation
- Anodized type III process for aluminum parts
- Nickel plating for steel parts
- Stator is varnished

8220 ALTERNATOR SPECIFICATIONS

Type	Permanent Magnets, NdFeB
Weight (lb/kg)	46.5/21
Regulation Type	Variable engine speed
Stator	3 phase/32 poles
Overcurrent Protection (A)	12 kW - 250 15 kW - 350
Disconnect Means	Pull fuse block, sized for each generator kW
Voltage Range (VDC)	44 to 62
Alternator Exhaust Flow (cfm/cmm)	130 to 180 / 3.68 to 5.1
MTBF (hr)	100,000+

ENCLOSURE

Model	88-25-0603
Type	Weather Protective
Materials	Marine Grade Aluminum
Door Hardware	Three Point with Padlock Hasp, and Removable Side Panels
Mounting	Secure Mounting Tabs

STARTER SUPERCAPACITOR SPECIFICATIONS

Model	20-16-0001
Storage Rating (Farads)	500
Voltage (VDC)	13-14.4
Weight (lb/kg)	12.1/5.5
Operating Temperature (°C/°F)	-40 to 65 / -40 to 149
Service Life (year)	10 to 15

CHARGER SPECIFICATIONS

Model	00-10-0015
Input Voltage (VDC)	28.8 to 60
Output Voltage (VDC)	14 to 14.4
Recharge time from 0 VDC (min)	10
Recharge time from 8 VDC (min)	2
Weight (lb/kg)	2.2/1

SOUND EMISSIONS

Contact us for current sound data.

WEIGHTS AND DIMENSIONS

	Natural Gas	LPG
Dry Weight (lb/kg)	765/347	770/350
Dimensions (LxWxH) (in/cm)	32 x 50 x 72 / 81.3 x 127 x 183	

ENGINE SPECIFICATIONS: 12 - 15 KW NATURAL GAS and LPG

Engine Model	Natural Gas - Kubota DG972 LPG - Kubota WG972
Cylinders	3 In-line
Displacement (L)	0.962
Bore (in./mm)	2.93/74.5
Stroke (in./mm)	2.9/73.6
Intake Air System	Naturally Aspirated
Engine HP	18
Emissions Compliance	EPA and CARB Certified
Variable RPM	2300 to 3150

ENVIRONMENTAL

Operating Temperature (°C/°F)	-40 to 72 or -40 to 162
Operating Humidity %	100
Cold Start Aids	Glow Plugs

PROPANE ENGINE FUEL CONSUMPTION

	Output (kW)	gal/hr	L/hr
Kubota 972	4	0.97	3.67
	5	1.1	4.16
	6	1.26	4.77
	7	1.475	5.58
	8	1.69	6.4
	9	1.945	7.36
	10	2.2	8.33
	12	2.52	9.54
	15	3.55	13.44

ENGINE LUBRICATION SYSTEM

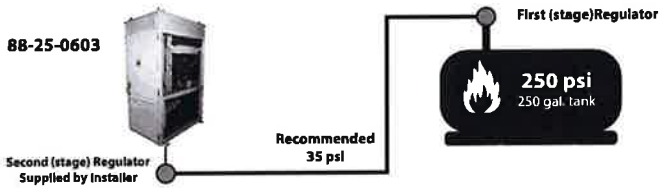
Oil Filter Type	Full flow spin-on canister
Oil Capacity	3.7 L - DG972/WG972
Oil Pressure Switch	Yes
Oil Pressure Transducer	Optional

ENGINE COOLING SYSTEM

Type	Pressurized Aluminum Radiator
Water Pump	Belt-driven, Pre-lubed, self-sealing
Fan Type	Electric Fans
Airflow CFM or M³/hr	1300 or 2200
Fan Mode	Pusher
Temperature Switch	Yes

FUEL SYSTEM

Type	Natural Gas or Propane
Fuel Tank/Line	Supplied By Customer
Max Fuel Flow Rate (BTU/hr)	12 kW - 241,000 15 kW - 340,000



Pressure Chart

Minimum	Recommended	Maximum
0.14 psi	0.39 psi	0.5 psi
4 in H2O	11 in H2O	13.9 in H2O
10 mbar	27.4 mbar	34.5 mbar

POWER ADJUSTMENT FOR AMBIENT CONDITIONS

Temperature Deration	1% derate for every 5.6 °C (10 °F) above 25 °C (77 °F)
Altitude Deration	3% derate for every 300 m (1000 ft) above 91 m (300 ft)

POLAR POWER INC.
operating data

ENGINE COOLING

	Natural Gas	LPG
System coolant capacity (gal/L)	2.2/8.3	
Maximum operation air temperature on radiator (°C/°F)	54/129	
Maximum ambient temperature (°C/°F)	49/120	

COMBUSTION REQUIREMENTS

	Natural Gas	LPG
Flow at rated power (cfm/cmm)	47/1.34	

EXHAUST

	Natural Gas	LPG
Exhaust flow at rated output (cfm/cmm)	90/2.55	
Exhaust temperature at rated output (°C/°F)	480/900	

CONTROLLER FEATURES

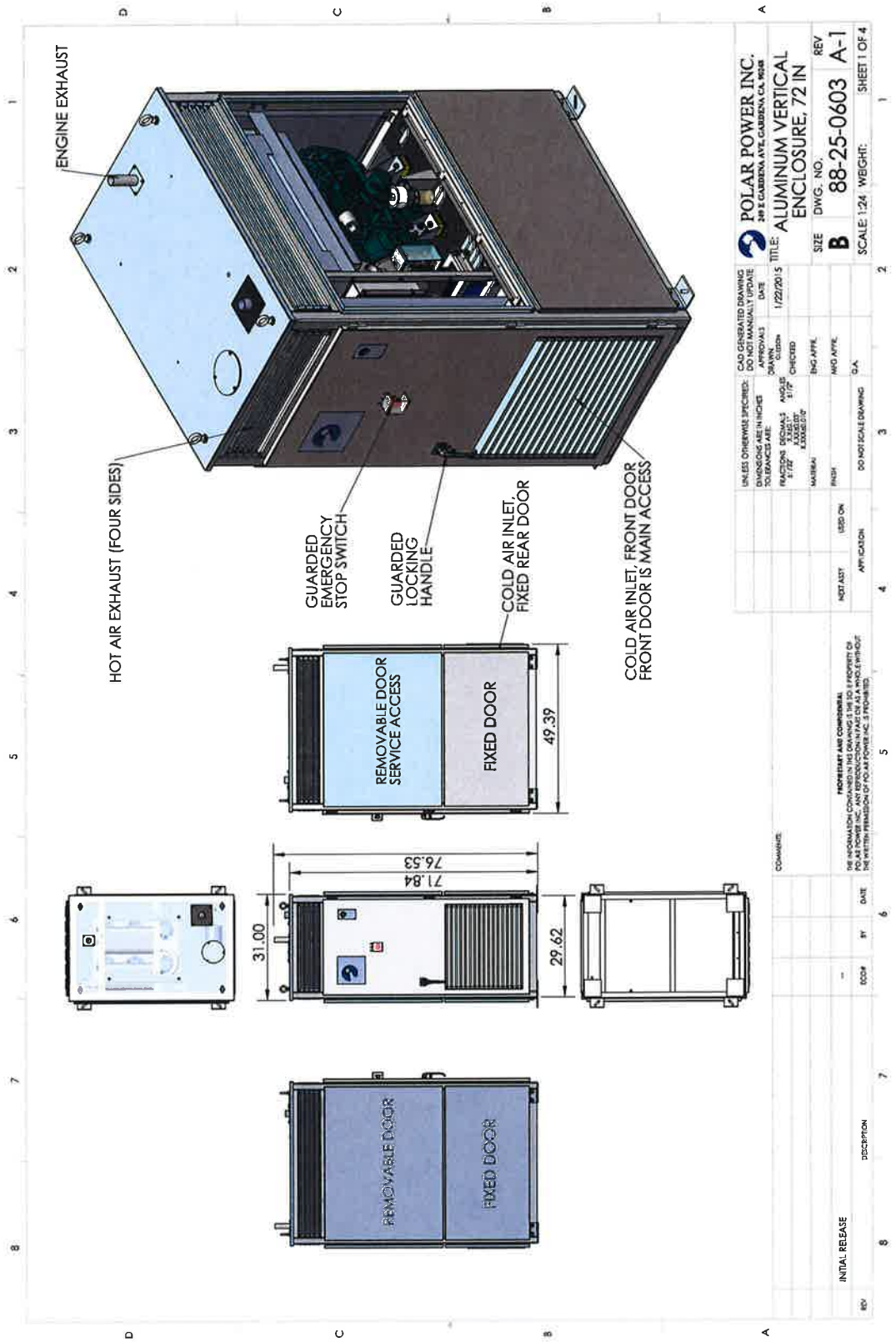
Controller Type.....Supra Model 250
4-Line Plain Text LCD Display.....Simple user interface for ease of operation
Engine Run Hours Indication.....Standard
Programmable Start Delay.....Standard
Run/Alarm/Maintenance Logs.....Standard
Engine Start Sequence.....Cyclic cranking: 5 sec on, 45 sec rest (3 attempts maximum)
Starter Supercapacitor Charger.....Standard
Automatic Voltage Regulation with Over and Under Voltage Protection.....Standard
Automatic Low Oil Pressure/High Oil Temperature Shutdown.....Standard
Overcrank/Overspeed.....Standard
Automatic High Engine Temperature Shutdown.....Standard
Field Upgradeable Firmware.....Standard
Glow Plug Delay.....Automatic With Temperature
Engine Start Delay.....Adjustable, Set at 60 sec
Return to Utility Delay.....Adjustable, Set at 60 sec
Engine Cooldown.....Adjustable, Set at 60 sec
Exerciser.....Programmable, weekly/bi-weekly

WARNING ALARMS

Low Diesel Fuel Level.....Standard
Diesel Fuel Tank Rapture Basin.....Standard
Low/High Supercapacitor Voltage.....Standard
High Water Temperature.....Standard
Low Oil Pressure.....Standard

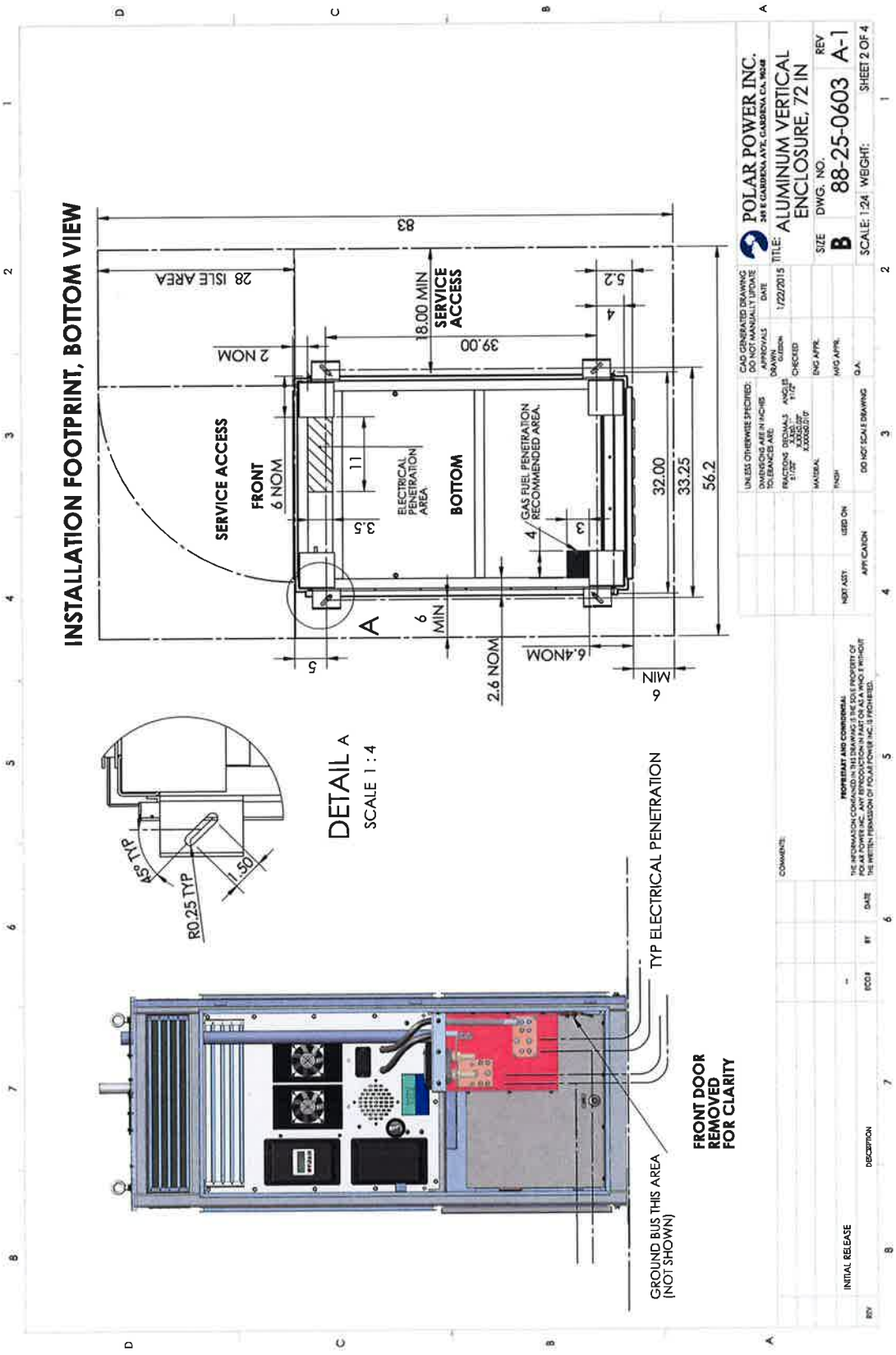
CONTACT CLOSURE FOR REMOTE INDICATION (PN 84-12-0640)

Shutdown Alarm.....Optional
Warning Alarm.....Optional
Engine Run.....Optional
Low Diesel Fuel Level.....Optional
Diesel Fuel Leak.....Optional
E-Stop Depressed.....Optional
Fuel Level Over 90%.....Optional


ENGINE EXHAUST
HOT AIR EXHAUST (FOUR SIDES)
GUARDED EMERGENCY STOP SWITCH
GUARDED LOCKING HANDLE
COLD AIR INLET, FIXED REAR DOOR
COLD AIR INLET, FRONT DOOR FRONT DOOR IS MAIN ACCESS
REMOVABLE DOOR SERVICE ACCESS
FIXED DOOR
49.39
76.53
71.84
31.00
29.62
REMOVABLE DOOR
FIXED DOOR
POLAR POWER INC.
ALUMINUM VERTICAL ENCLOSURE, 72 IN
DWG. NO. 88-25-0603
SIZE B
REV A-1
SCALE: 1:24
WEIGHT:
SHEET 1 OF 4
INITIAL RELEASE

POLAR POWER INC.

installation layout



ATTACHMENT 4

TILSON

October 23rd, 2017

Subject: STRUCTURAL ANALYSIS REPORT
Verizon Wireless Site Reference – TRUMBULL_S3_CT
142 ft. Monopole
158 Edison Road
Trumbull, CT 06611

To Whom It May Concern:

Tilson has completed a structural analysis report of the above referenced property.

The existing monopole is an 18 sided Valmont design (Valmont order # 291087) with a 13 ft. extension with a bolted flange connection at 129' to achieve an overall height of 142 ft. There are no known reinforcements or modifications added to the monopole itself or the foundation.

The foundation is a circular pier and square pad footing designed by Valmont (S.O.# 291087) and is based on the loading per the Valmont design, and geotechnical report provided by Terracon Consultants, Inc. (Project No. J2135196)

The existing monopole and its foundation was analyzed per the latest revision of the TIA-222-G code and local state building codes, and was found to be adequate to support the proposed, existing and reserved loading outlined in this structural analysis report.

Sincerely,

Eric T. Anderson, P.E.

Disclaimer – if any of the general notes or assumptions made listed on page 4 are not true, this structural analysis report to be considered null and void.

245 Commercial Street, Suite 203, Portland, ME 04101
www.tilsontech.com - info@tilsontech.com
@tilsontech - (207) 591-6427

TILSON

TABLE OF CONTENTS:

TILSON

EQUIPMENT LOADING SUMMARY:

ELEVATION (ABOVE BASE PLATE)*:	EQUIPMENT:	Feedlines:	Mount:	LOADING SCENARIO:
142 ft.	(8) Omni whip antennas, (2) dipole antennas, (1) 2 ft. dia. microwave dish	(11) 7/8" dia.	T-Arm	Reserved
119 ft.	(6) ericsson AIR21 panel antennas, (3) Andrew LNX-6515DS panel antennas, (3) ericsson RRUS-11 remote radio heads	(6) 1-5/8" dia.	T-Arm	Reserved
108 ft.	(9) Commscope SBNHH-1D65B panel antennas, (3) RRH 2x60-PCS, (3) RRH 2x60-AWS and (3) RRH 2x60-700 remote radio heads, (2) distribution boxes	(2) 1-5/8" dia.	T-Arm	Proposed
89 ft.	(12) Andrew LNX-6515DS panel antennas	(12) 1-5/8" dia.	T-Arm	Reserved
60 ft.	(1) 6 ft. omni antenna	(1) 1-5/8" dia.	Side mount stand off	Existing

**Note – base plate is 1 ft. above grade*

GENERAL NOTES:

1. All equipment and loading scenarios outlined on page 3 is taken from previous structural analysis report completed by Centek Engineering (project no. 15072.00) dated November 8th, 2016 based on the recommendation by Blue Sky Towers, LLC.
2. All reserved loading outlined on page 3 is assumed to be greater than any existing loading on the tower and have a greater overall impact on the structural capacity of the tower and its foundation
3. Tower analysis was done using the latest version of tnxTower.
4. No known reinforcements have been done to the tower or its foundation.
5. All support documents listed on page 7 are assumed to accurately depict existing conditions at this site
6. It is assumed that there is no rust, deterioration, pitting or any other defects to the monopole, base plate, flange plate or anchor rods.
7. This analysis does NOT check the adequacy of the existing antenna and equipment mounts.
8. It is assumed that there is no evidence of cracking in the foundation, and that the base of the foundation is above the ground water elevation.
9. It is assumed that the tower and its foundation have been properly installed and maintained

TILSON

LOADING DETAILS:

County: Fairfield County

Exposure category: C

Ice Thickness: 0.75 in.

Wind Speed: 100 mph basic wind speed with no ice

50 mph basic wind speed with ice

Deflections based on 60 mph wind speed

Tower structure Class: III

Topographic Category: 1, crest height =0'

STRUCTURAL DETAILS:

The tower is an 18-sided tapered monopole. There is a 13 ft. extension bolted at 130 ft. to bring the entire height to 143 ft. above grade. The flange plate extension at 130 ft. consists of (14) 1-1/2" dia. bolts and 2 in. thick flange plates.

The base of the tower is secured to the foundation via (20) 2-1/4 in. dia. anchor bolts evenly spaced around a circular base plate that is 3-1/4 in. thick.

The foundation is a pier and pad footing, with a circular pier this is 8 ft. in diameter and the pad is 26.5 ft. square, 3 ft. thick and 7 ft. below grade. The pier reinforcing steel consists of (48) #11 bars with #5 ties, and the pad consists of (34) #9 bars each way.

CAPACITY RESULTS:

Below capacity ratios show the actual loading divided by the allowable loading per TIA-222-G. Note – See Appendix B-E for more info about capacities.

Monopole Capacity:

Section No:	Elevation:	Stress Capacity Ratio:	Pass/Fail:
L4	38.0833 ft. to 0 ft.	51.0%	Pass

Base Plate and Anchor Rods Capacity:

Component:	Elevation:	Stress Capacity Ratio:	Pass/Fail:
Base Plate	0 ft.	44.5%	Pass
Anchor Rods	0 ft.	46.4%	Pass

Foundation Capacity:

Limiting Capacity:	Elevation:	Stress Capacity Ratio:	Pass/Fail:
Max. soil bearing pressure	7 ft. below grade	53.7%	Pass

Flange Plate Capacity:

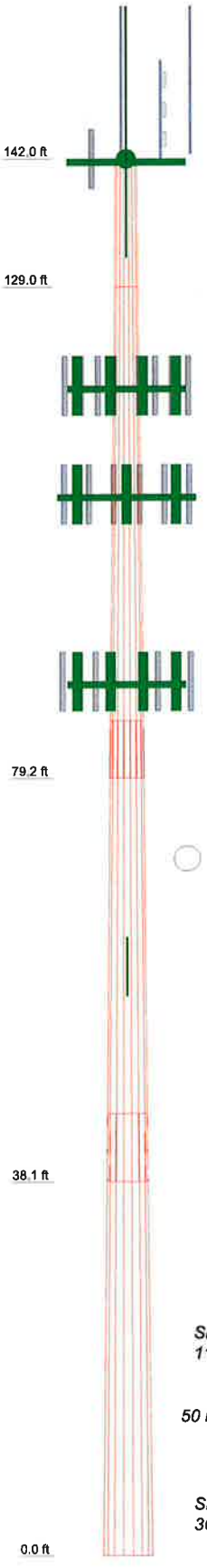
Component:	Elevation:	Stress Capacity Ratio:	Pass/Fail:
Flange Bolts	129 ft.	7.7%	Pass
Base Plate	129 ft.	48.7%	Pass

SUPPORT DOCUMENTS:

The following documents were used for this analysis.

Document Type:	Company and Project Number:	Date:
Geotechnical Report	Terracon Consultants, Inc., Project No. J2135196	10/17/2013
Tower Design (Calculations)	Valmont, order # 291087	6/29/2016
Foundation Drawing	Valmont, order # 291087	8/21/2016
Structural Analysis Report	Centek Engineering, Inc., Project No. 15072.00	11/8/2016

APPENDIX A:



Section	1	2	3	4		
Length (ft)	13'	49'9-31/32"	46'11-1/32"	45'		
Number of Sides	18	18	18	18		
Thickness (in)	0.2500	0.3125	0.3750	0.4375		
Socket Length (ft)		5'9-31/32"	6'11-1/32"			
Top Dia (in)	25.7330	28.9500	39.2143	48.3633		
Bot Dia (in)	28.9500	41.2830	50.8250	59.5000		
Grade			A572-65			
Weight (K)	1.0	5.9	8.5	11.4		26.7

ALL REACTIONS ARE FACTORED

AXIAL 103 K

SHEAR 11 K — *MOMENT 1100 kip-ft*

TORQUE 3 kip-ft

50 mph WIND - 0.7500 in ICE

AXIAL 54 K

SHEAR 36 K — *MOMENT 3379 kip-ft*

TORQUE 9 kip-ft

REACTIONS - 100 mph WIND

DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
Lightning Rod 5/8x4'	144	LNX-6515DS-VTM	119
(2) DB809KE-XT	142	(3) SBNHH-1D65B	108
Valmont T-Arm (3)	142	(3) SBNHH-1D65B	108
Lightning Rod 2"x15' (1142-2AN)	142	(3) RMU (Remote Units)	108
Lightning Rod 2"x15' (1142-2AN)	142	(3) RMU (Remote Units)	108
(2) Lightning Rod 2"x15' (1142-2AN)	142	(3) RMU (Remote Units)	108
872F-70TM	142	distribution box	108
ANT790TF2	142	distribution box	108
DS1F06F36U-D	142	(5) 8'x2 1/2" Pipe Mount	108
HP2-18	142	(5) 8'x2 1/2" Pipe Mount	108
13'-3" Platform (work platform)	140	(5) 8'x2 1/2" Pipe Mount	108
LNX-6515DS-VTM	119	Rohn 14' Platform	108
LNX-6515DS-VTM	119	(3) SBNHH-1D65B	108
(2) Air21	119	(4) LNX-6515DS-VTM	89
(2) Air21	119	(4) LNX-6515DS-VTM	89
(2) Air21	119	(4) 8'x2 1/2" Pipe Mount	89
(4) 8'x2 1/2" Pipe Mount	119	(4) 8'x2 1/2" Pipe Mount	89
(4) 8'x2 1/2" Pipe Mount	119	(4) 8'x2 1/2" Pipe Mount	89
(4) 8'x2 1/2" Pipe Mount	119	Valmont T-Arm (3)	89
RMU (Remote Units)	119	(4) LNX-6515DS-VTM	89
RMU (Remote Units)	119	Pirod 6' Side Mount Standoff (1)	60
RMU (Remote Units)	119	(2) 4'x4" Pipe Mount	60
Valmont T-Arm (3)	119	CO-35A	60

MATERIAL STRENGTH

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

TOWER DESIGN NOTES

1. Tower is located in Fairfield County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 100 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 0.75 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class III.
7. Topographic Category 1 with Crest Height of 0'
8. TOWER RATING: 58.9%

TILSON
245 COMMERCIAL ST. SUITE 203
PORTLAND, ME 04101
Phone: (207) 591-6427
FAX:

Job: ***Trumbull S3 CT***
Project: ***New Equipment Co-Locate***
Client: Cellco Partnership D/B/A Verizon Wireless
Drawn by: ETA App'd:
Code: TIA-222-G
Date: 10/23/17 Scale: N
Path: Z:\Shared\Design\VZW\CT\Trumbull S3\SA\LC1\Trumbull S3 CT Pole LC1.eri
Dwg No.

TILSON

APPENDIX B:

Tower Input Data

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

- Tower is located in Fairfield County, Connecticut.
- Basic wind speed of 100 mph.
- Structure Class III.
- Exposure Category C.
- Topographic Category 1.
- Crest Height 0'.
- Nominal ice thickness of 0.7500 in.
- Ice thickness is considered to increase with height.
- Ice density of 56 pcf.
- A wind speed of 50 mph is used in combination with ice.
- Temperature drop of 50 °F.
- Deflections calculated using a wind speed of 60 mph.
- A non-linear (P-delta) analysis was used.
- Pressures are calculated at each section.
- Stress ratio used in pole design is 1.
- Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Tapered Pole Section Geometry

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L1	142'-129'	13'	0'	18	25.7330	28.9500	0.2500	1.0000	A572-65 (65 ksi)
L2	129'-79'2-1/32"	49'9-31/32"	5'9-31/32"	18	28.9500	41.2830	0.3125	1.2500	A572-65

Section	Elevation ft	Section Length ft	Splice Length ft	Number of Sides	Top Diameter in	Bottom Diameter in	Wall Thickness in	Bend Radius in	Pole Grade
L3	79'2-1/32"-38'31/32"	46'11-1/32"	6'11-1/32"	18	39.2143	50.8250	0.3750	1.5000	(65 ksi) A572-65 (65 ksi)
L4	38'31/32"-0'	45'		18	48.3633	59.5000	0.4375	1.7500	A572-65 (65 ksi)

Tapered Pole Properties

Section	Tip Dia. in	Area in^2	I in^4	r in	C in	I/C in^3	J in^4	It/Q in^2	w in	w/t
L1	26.1300	20.2208	1658.9605	9.0465	13.0724	126.9059	3320.1039	10.1123	4.0890	16.356
	29.3966	22.7735	2369.9003	10.1885	14.7066	161.1454	4742.9189	11.3889	4.6552	18.621
L2	29.3966	28.4048	2943.0640	10.1663	14.7066	200.1186	5890.0005	14.2051	4.5452	14.545
	41.9199	40.6376	8618.0337	14.5445	20.9718	410.9351	17247.4072	20.3227	6.7158	21.491
L3	41.2852	46.2285	8810.3080	13.7880	19.9209	442.2649	17632.2088	23.1187	6.2417	16.645
	51.6091	60.0481	19308.9720	17.9097	25.8191	747.8561	38643.3512	30.0298	8.2852	22.094
L4	50.8475	66.5510	19312.1509	17.0137	24.5686	786.0515	38649.7132	33.2818	7.7419	17.696
	60.4179	82.0157	36145.8055	20.9672	30.2260	1195.8514	72339.1726	41.0156	9.7020	22.176

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	Double Angle Stitch Bolt Spacing Redundants in
L1 142'-129'				1	1	1			
L2 129'-79'2-1/32"				1	1	1			
L3 79'2-1/32"-38'31/32"				1	1	1			
L4 38'31/32"-0'				1	1	1			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
CR 50 1873 (1-5/8 FOAM)	A	No	Inside Pole	142' - 6'	12	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
CR 50 1873 (1-5/8 FOAM)	B	No	Inside Pole	129' - 6'	6	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
CR 50 1873 (1-5/8 FOAM)	B	No	Inside Pole	119' - 6'	12	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
CR 50 1873 (1-5/8 FOAM)	C	No	Inside Pole	109' - 6'	9	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83
CR 50 1873 (1-5/8 FOAM)	C	No	Inside Pole	89' - 6'	12	No Ice	0.00	0.83
						1/2" Ice	0.00	0.83
						1" Ice	0.00	0.83

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
Safety Line 5/8	C	No	CaAa (Out Of Face)	142' - 0'	1	No Ice	0.09	0.40
						1/2" Ice	0.19	1.24
						1" Ice	0.29	2.70

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	142'-129'	A	0.000	0.000	0.000	0.000	0.13
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.144	0.01
L2	129'-79'2-1/32"	A	0.000	0.000	0.000	0.000	0.50
		B	0.000	0.000	0.000	0.000	0.64
		C	0.000	0.000	0.000	4.385	0.34
L3	79'2-1/32"-38'31/32"	A	0.000	0.000	0.000	0.000	0.41
		B	0.000	0.000	0.000	0.000	0.61
		C	0.000	0.000	0.000	3.615	0.73
L4	38'31/32"-0'	A	0.000	0.000	0.000	0.000	0.32
		B	0.000	0.000	0.000	0.000	0.48
		C	0.000	0.000	0.000	3.351	0.57

Feed Line/Linear Appurtenances Section Areas - With Ice

Tower Section	Tower Elevation ft	Face or Leg	Ice Thickness in	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	142'-129'	A	2.159	0.000	0.000	0.000	0.000	0.13
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.758	0.11
L2	129'-79'2-1/32"	A	2.101	0.000	0.000	0.000	0.000	0.50
		B		0.000	0.000	0.000	0.000	0.64
		C		0.000	0.000	0.000	25.325	0.73
L3	79'2-1/32"-38'31/32"	A	1.985	0.000	0.000	0.000	0.000	0.41
		B		0.000	0.000	0.000	0.000	0.61
		C		0.000	0.000	0.000	20.878	1.06
L4	38'31/32"-0'	A	1.775	0.000	0.000	0.000	0.000	0.32
		B		0.000	0.000	0.000	0.000	0.48
		C		0.000	0.000	0.000	18.468	0.84

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	142'-129'	-0.6545	0.3779	-1.6509	0.9532
L2	129'-79'2-1/32"	-0.6626	0.3826	-1.7194	0.9927
L3	79'2-1/32"-38'31/32"	-0.6694	0.3865	-1.8061	1.0427
L4	38'31/32"-0'	-0.6731	0.3886	-1.7850	1.0305

Shielding Factor Ka

Tower Section	Feed Line Record No.	Description	Feed Line Segment Elev.	K_a No Ice	K_a Ice

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8x4'	C	From Face	1.00 0' 0'	0.0000	144'	No Ice 1/2" Ice 1" Ice	0.25 0.66 0.97	0.25 0.66 0.97	0.03 0.03 0.04
(2) DB809KE-XT	C	From Face	3.00 0' 0'	0.0000	142'	No Ice 1/2" Ice 1" Ice	3.05 4.30 5.57	3.05 4.30 5.57	0.03 0.05 0.08
Valmont T-Arm (3)	C	None		0.0000	142'	No Ice 1/2" Ice 1" Ice	21.00 29.00 37.00	21.00 29.00 37.00	1.01 1.24 1.46
13'-3" Platform (work platform)	C	None		0.0000	140'	No Ice 1/2" Ice 1" Ice	13.92 17.41 20.90	13.92 17.41 20.90	3.20 4.90 6.60
Lightning Rod 2"x15' (1142-2AN)	A	From Face	3.00 6' 8'	0.0000	142'	No Ice 1/2" Ice 1" Ice	3.00 4.53 6.07	3.00 4.53 6.07	0.08 0.10 0.14
Lightning Rod 2"x15' (1142-2AN)	B	From Face	3.00 6' 8'	0.0000	142'	No Ice 1/2" Ice 1" Ice	3.00 4.53 6.07	3.00 4.53 6.07	0.08 0.10 0.14
(2) Lightning Rod 2"x15' (1142-2AN)	C	From Face	3.00 0' 8'	0.0000	142'	No Ice 1/2" Ice 1" Ice	3.00 4.53 6.07	3.00 4.53 6.07	0.08 0.10 0.14
872F-70TM	B	From Face	3.00 0' 5'	0.0000	142'	No Ice 1/2" Ice 1" Ice	3.50 4.50 5.50	3.50 4.50 5.50	0.02 0.03 0.04
ANT790TF2	A	From Face	3.00 0' 0'	0.0000	142'	No Ice 1/2" Ice 1" Ice	0.73 1.00 1.27	0.73 1.00 1.27	0.01 0.01 0.01
DS1F06F36U-D	C	From Face	3.00 0' 0'	0.0000	142'	No Ice 1/2" Ice 1" Ice	6.58 8.80 11.04	6.58 8.80 11.04	0.06 0.11 0.17
**** *****									
LNX-6515DS-VTM	A	From Face	3.00 0' 0'	0.0000	119'	No Ice 1/2" Ice 1" Ice	11.47 12.09 12.72	7.72 8.31 8.91	0.04 0.11 0.18
LNX-6515DS-VTM	B	From Face	3.00 0' 0'	0.0000	119'	No Ice 1/2" Ice 1" Ice	11.47 12.09 12.72	7.72 8.31 8.91	0.04 0.11 0.18
LNX-6515DS-VTM	C	From Face	3.00 0' 0'	0.0000	119'	No Ice 1/2" Ice 1" Ice	11.47 12.09 12.72	7.72 8.31 8.91	0.04 0.11 0.18
(2) Air21	A	From Face	3.00 0'	0.0000	119'	No Ice 1/2" Ice	5.00 5.50	6.70 7.31	0.10 0.17

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1" Ice	6.03	7.92	0.25
(2) Air21	B	From Face	3.00	0.0000	119'	No Ice	5.00	6.70	0.10
			0'			1/2" Ice	5.50	7.31	0.17
			0'			1" Ice	6.03	7.92	0.25
(2) Air21	C	From Face	3.00	0.0000	119'	No Ice	5.00	6.70	0.10
			0'			1/2" Ice	5.50	7.31	0.17
			0'			1" Ice	6.03	7.92	0.25
(4) 8'x2 1/2" Pipe Mount	A	From Face	3.00	0.0000	119'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
(4) 8'x2 1/2" Pipe Mount	B	From Face	3.00	0.0000	119'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
(4) 8'x2 1/2" Pipe Mount	C	From Face	3.00	0.0000	119'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
RMU (Remote Units)	A	From Face	3.00	0.0000	119'	No Ice	5.45	5.45	0.08
			0'			1/2" Ice	5.98	5.98	0.12
			0'			1" Ice	6.51	6.51	0.16
RMU (Remote Units)	B	From Face	3.00	0.0000	119'	No Ice	5.45	5.45	0.08
			0'			1/2" Ice	5.98	5.98	0.12
			0'			1" Ice	6.51	6.51	0.16
RMU (Remote Units)	C	From Face	3.00	0.0000	119'	No Ice	5.45	5.45	0.08
			0'			1/2" Ice	5.98	5.98	0.12
			0'			1" Ice	6.51	6.51	0.16
Valmont T-Arm (3)	C	None		0.0000	119'	No Ice	21.00	21.00	1.01
						1/2" Ice	29.00	29.00	1.24
						1" Ice	37.00	37.00	1.46
*****									
(3) SBNHH-1D65B	A	From Face	3.00	0.0000	108'	No Ice	8.20	5.42	0.04
			0'			1/2" Ice	8.66	5.88	0.09
			0'			1" Ice	9.13	6.35	0.15
(3) SBNHH-1D65B	B	From Face	3.00	0.0000	108'	No Ice	8.20	5.42	0.04
			0'			1/2" Ice	8.66	5.88	0.09
			0'			1" Ice	9.13	6.35	0.15
(3) SBNHH-1D65B	C	From Face	3.00	0.0000	108'	No Ice	8.20	5.42	0.04
			0'			1/2" Ice	8.66	5.88	0.09
			0'			1" Ice	9.13	6.35	0.15
(3) RMU (Remote Units)	A	From Face	3.00	0.0000	108'	No Ice	5.45	5.45	0.08
			0'			1/2" Ice	5.98	5.98	0.12
			0'			1" Ice	6.51	6.51	0.16
(3) RMU (Remote Units)	B	From Face	3.00	0.0000	108'	No Ice	5.45	5.45	0.08
			0'			1/2" Ice	5.98	5.98	0.12
			0'			1" Ice	6.51	6.51	0.16
(3) RMU (Remote Units)	C	From Face	3.00	0.0000	108'	No Ice	5.45	5.45	0.08
			0'			1/2" Ice	5.98	5.98	0.12
			0'			1" Ice	6.51	6.51	0.16
distribution box	C	From Face	1.00	0.0000	108'	No Ice	2.00	5.45	0.08
			0'			1/2" Ice	2.25	5.98	0.12
			0'			1" Ice	2.50	6.51	0.16
distribution box	A	From Face	1.00	0.0000	108'	No Ice	2.00	5.45	0.08
			0'			1/2" Ice	2.25	5.98	0.12
			0'			1" Ice	2.50	6.51	0.16
(5) 8'x2 1/2" Pipe Mount	A	From Face	3.00	0.0000	108'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
(5) 8'x2 1/2" Pipe Mount	B	From Face	3.00	0.0000	108'	No Ice	2.30	2.30	0.04

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
(5) 8'x2 1/2" Pipe Mount	C	From Face	3.00	0.0000	108'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
Rohn 14' Platform	C	None		0.0000	108'	No Ice	41.00	41.00	2.50
						1/2" Ice	56.00	56.00	3.00
						1" Ice	71.00	71.00	3.50
*****									
(4) LNX-6515DS-VTM	A	From Face	3.00	0.0000	89'	No Ice	11.47	7.72	0.04
			0'			1/2" Ice	12.09	8.31	0.11
			0'			1" Ice	12.72	8.91	0.18
(4) LNX-6515DS-VTM	B	From Face	3.00	0.0000	89'	No Ice	11.47	7.72	0.04
			0'			1/2" Ice	12.09	8.31	0.11
			0'			1" Ice	12.72	8.91	0.18
(4) LNX-6515DS-VTM	C	From Face	3.00	0.0000	89'	No Ice	11.47	7.72	0.04
			0'			1/2" Ice	12.09	8.31	0.11
			0'			1" Ice	12.72	8.91	0.18
(4) 8'x2 1/2" Pipe Mount	A	From Face	3.00	0.0000	89'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
(4) 8'x2 1/2" Pipe Mount	B	From Face	3.00	0.0000	89'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
(4) 8'x2 1/2" Pipe Mount	C	From Face	3.00	0.0000	89'	No Ice	2.30	2.30	0.04
			0'			1/2" Ice	3.13	3.13	0.06
			0'			1" Ice	3.62	3.62	0.08
Valmont T-Arm (3)	C	None		0.0000	89'	No Ice	21.00	21.00	1.01
						1/2" Ice	29.00	29.00	1.24
						1" Ice	37.00	37.00	1.46
****									
CO-35A	C	From Face	6.00	0.0000	60'	No Ice	2.07	2.07	0.01
			0'			1/2" Ice	3.13	3.13	0.02
			0'			1" Ice	4.20	4.20	0.04
Pirod 6' Side Mount Standoff (1)	C	From Face	3.00	0.0000	60'	No Ice	4.97	4.97	0.07
			0'			1/2" Ice	6.12	6.12	0.13
			0'			1" Ice	7.27	7.27	0.19
(2) 4'x4" Pipe Mount	C	From Face	6.00	0.0000	60'	No Ice	1.12	1.12	0.04
			0'			1/2" Ice	1.58	1.58	0.06
			0'			1" Ice	1.84	1.84	0.07

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral ft / Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft^2	Weight K
HP2-18	C	Paraboloid w/Shroud (HP)	From Face	2.00	0.0000		142'	2.00	No Ice	3.14	0.03
				0'					1/2" Ice	3.41	0.04
				0'					1" Ice	3.67	0.06

Tower Pressures - No Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 142'-129'	135'4-7/16'	1.349	38	30.077	A	0.000	30.077	30.077	100.00	0.000	0.000
					B	0.000	30.077		100.00	0.000	0.000
					C	0.000	30.077		100.00	0.000	1.144
L2 129'-79'2-1/32"	102'11-9/32"	1.273	36	148.081	A	0.000	148.081	148.081	100.00	0.000	0.000
					B	0.000	148.081		100.00	0.000	0.000
					C	0.000	148.081		100.00	0.000	4.385
L3 79'2-1/32"-38'3 1/32"	58'3"	1.13	31	159.017	A	0.000	159.017	159.017	100.00	0.000	0.000
					B	0.000	159.017		100.00	0.000	0.000
					C	0.000	159.017		100.00	0.000	3.615
L4 38'31/32"-0'	19'1-9/16"	0.893	25	176.557	A	0.000	176.557	176.557	100.00	0.000	0.000
					B	0.000	176.557		100.00	0.000	0.000
					C	0.000	176.557		100.00	0.000	3.351

Tower Pressure - With Ice

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 142'-129'	135'4-7/16"	1.349	8	2.1593	34.755	A	0.000	34.755	34.755	100.00	0.000	0.000
						B	0.000	34.755		100.00	0.000	0.000
						C	0.000	34.755		100.00	0.000	6.758
L2 129'-79'2-1/32"	102'11-9/32"	1.273	8	2.1009	165.530	A	0.000	165.530	165.530	100.00	0.000	0.000
						B	0.000	165.530		100.00	0.000	0.000
						C	0.000	165.530		100.00	0.000	25.325
L3 79'2-1/32"-38'31 /32"	58'3"	1.13	7	1.9846	173.402	A	0.000	173.402	173.402	100.00	0.000	0.000
						B	0.000	173.402		100.00	0.000	0.000
						C	0.000	173.402		100.00	0.000	20.878
L4 38'31/32"-0'	19'1-9/16"	0.893	6	1.7755	189.153	A	0.000	189.153	189.153	100.00	0.000	0.000
						B	0.000	189.153		100.00	0.000	0.000
						C	0.000	189.153		100.00	0.000	18.468

Tower Pressure - Service

$G_H = 1.100$

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
L1 142'-129'	135'4-7/16'	1.349	11	30.077	A	0.000	30.077	30.077	100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
					B	0.000	30.077		100.00	0.000	0.000
					C	0.000	30.077		100.00	0.000	1.144
L2	102'11-9/32"	1.273	10	148.081	A	0.000	148.081	148.081	100.00	0.000	0.000
129'-79'2-1/32"					B	0.000	148.081		100.00	0.000	0.000
					C	0.000	148.081		100.00	0.000	4.385
L3	58'3"	1.13	9	159.017	A	0.000	159.017	159.017	100.00	0.000	0.000
79'2-1/32"-38'3 1/32"					B	0.000	159.017		100.00	0.000	0.000
					C	0.000	159.017		100.00	0.000	3.615
L4 38'31/32"-0'	19'1-9/16"	0.893	7	176.557	A	0.000	176.557	176.557	100.00	0.000	0.000
					B	0.000	176.557		100.00	0.000	0.000
					C	0.000	176.557		100.00	0.000	3.351

Tower Forces - No Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.13	0.95	A	1	0.65	38	1	1	30.077	0.86	66.06	C
			B	1	0.65		1	1	30.077			
			C	1	0.65		1	1	30.077			
L2	1.48	5.85	A	1	0.65	36	1	1	148.081	3.94	78.97	C
129'-79'2-1/32"			B	1	0.65		1	1	148.081			
			C	1	0.65		1	1	148.081			
L3	1.76	8.48	A	1	0.65	31	1	1	159.017	3.70	90.12	C
79'2-1/32"-38' 31/32"			B	1	0.65		1	1	159.017			
			C	1	0.65		1	1	159.017			
L4	1.37	11.37	A	1	0.65	25	1	1	176.557	3.30	86.63	C
38'31/32"-0'			B	1	0.65		1	1	176.557			
			C	1	0.65		1	1	176.557			
Sum Weight:	4.75	26.66						OTM	800.11 kip-ft	11.80		

Tower Forces - No Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.13	0.95	A	1	0.65	38	1	1	30.077	0.86	66.06	C
			B	1	0.65		1	1	30.077			
			C	1	0.65		1	1	30.077			
L2	1.48	5.85	A	1	0.65	36	1	1	148.081	3.94	78.97	C
129'-79'2-1/32"			B	1	0.65		1	1	148.081			
			C	1	0.65		1	1	148.081			
L3	1.76	8.48	A	1	0.65	31	1	1	159.017	3.70	90.12	C
79'2-1/32"-38' 31/32"			B	1	0.65		1	1	159.017			
			C	1	0.65		1	1	159.017			
L4	1.37	11.37	A	1	0.65	25	1	1	176.557	3.30	86.63	C
38'31/32"-0'			B	1	0.65		1	1	176.557			
			C	1	0.65		1	1	176.557			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
Sum Weight:	4.75	26.66						OTM	800.11 kip-ft	11.80		

Tower Forces - No Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.13	0.95	A	1	0.65	38	1	1	30.077	0.86	66.06	C
			B	1	0.65		1	1	30.077			
			C	1	0.65		1	1	30.077			
L2 129'-79'2-1/32"	1.48	5.85	A	1	0.65	36	1	1	148.081	3.94	78.97	C
			B	1	0.65		1	1	148.081			
			C	1	0.65		1	1	148.081			
L3 79'2-1/32"-38' 31/32"	1.76	8.48	A	1	0.65	31	1	1	159.017	3.70	90.12	C
			B	1	0.65		1	1	159.017			
			C	1	0.65		1	1	159.017			
L4 38'31/32"-0'	1.37	11.37	A	1	0.65	25	1	1	176.557	3.30	86.63	C
			B	1	0.65		1	1	176.557			
			C	1	0.65		1	1	176.557			
Sum Weight:	4.75	26.66						OTM	800.11 kip-ft	11.80		

Tower Forces - With Ice - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.24	1.97	A	1	1.2	8	1	1	34.755	0.44	33.63	C
			B	1	1.2		1	1	34.755			
			C	1	1.2		1	1	34.755			
L2 129'-79'2-1/32"	1.87	10.66	A	1	1.2	8	1	1	165.530	1.90	38.20	C
			B	1	1.2		1	1	165.530			
			C	1	1.2		1	1	165.530			
L3 79'2-1/32"-38' 31/32"	2.08	13.29	A	1	1.2	7	1	1	173.402	1.72	41.93	C
			B	1	1.2		1	1	173.402			
			C	1	1.2		1	1	173.402			
L4 38'31/32"-0'	1.64	16.10	A	1	1.2	6	1	1	189.153	1.49	39.14	C
			B	1	1.2		1	1	189.153			
			C	1	1.2		1	1	189.153			
Sum Weight:	5.84	42.02						OTM	384.01 kip-ft	5.55		

Tower Forces - With Ice - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.24	1.97	A	1	1.2	8	1	1	34.755	0.44	33.63	C
			B	1	1.2		1	1	34.755			
			C	1	1.2		1	1	34.755			
L2	1.87	10.66	A	1	1.2	8	1	1	165.530	1.90	38.20	C
129'-79'2-1/32			B	1	1.2		1	1	165.530			
"			C	1	1.2		1	1	165.530			
L3	2.08	13.29	A	1	1.2	7	1	1	173.402	1.72	41.93	C
79'2-1/32"-38'			B	1	1.2		1	1	173.402			
31/32"			C	1	1.2		1	1	173.402			
L4	1.64	16.10	A	1	1.2	6	1	1	189.153	1.49	39.14	C
38'31/32"-0'			B	1	1.2		1	1	189.153			
			C	1	1.2		1	1	189.153			
Sum Weight:	5.84	42.02						OTM	384.01 kip-ft	5.55		

Tower Forces - With Ice - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.24	1.97	A	1	1.2	8	1	1	34.755	0.44	33.63	C
			B	1	1.2		1	1	34.755			
			C	1	1.2		1	1	34.755			
L2	1.87	10.66	A	1	1.2	8	1	1	165.530	1.90	38.20	C
129'-79'2-1/32			B	1	1.2		1	1	165.530			
"			C	1	1.2		1	1	165.530			
L3	2.08	13.29	A	1	1.2	7	1	1	173.402	1.72	41.93	C
79'2-1/32"-38'			B	1	1.2		1	1	173.402			
31/32"			C	1	1.2		1	1	173.402			
L4	1.64	16.10	A	1	1.2	6	1	1	189.153	1.49	39.14	C
38'31/32"-0'			B	1	1.2		1	1	189.153			
			C	1	1.2		1	1	189.153			
Sum Weight:	5.84	42.02						OTM	384.01 kip-ft	5.55		

Tower Forces - Service - Wind Normal To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.13	0.95	A	1	0.65	11	1	1	30.077	0.24	18.50	C
			B	1	0.65		1	1	30.077			
			C	1	0.65		1	1	30.077			
L2	1.48	5.85	A	1	0.65	10	1	1	148.081	1.10	22.12	C

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
129'-79'2-1/32			B	1	0.65		1	1	148.081			
"			C	1	0.65		1	1	148.081			
L3	1.76	8.48	A	1	0.65	9	1	1	159.017	1.04	25.24	C
79'2-1/32"-38'			B	1	0.65		1	1	159.017			
31/32"			C	1	0.65		1	1	159.017			
L4	1.37	11.37	A	1	0.65	7	1	1	176.557	0.92	24.27	C
38'31/32"-0'			B	1	0.65		1	1	176.557			
			C	1	0.65		1	1	176.557			
Sum Weight:	4.75	26.66						OTM	224.10 kip-ft	3.30		

Tower Forces - Service - Wind 60 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.13	0.95	A	1	0.65	11	1	1	30.077	0.24	18.50	C
			B	1	0.65		1	1	30.077			
			C	1	0.65		1	1	30.077			
L2	1.48	5.85	A	1	0.65	10	1	1	148.081	1.10	22.12	C
129'-79'2-1/32			B	1	0.65		1	1	148.081			
"			C	1	0.65		1	1	148.081			
L3	1.76	8.48	A	1	0.65	9	1	1	159.017	1.04	25.24	C
79'2-1/32"-38'			B	1	0.65		1	1	159.017			
31/32"			C	1	0.65		1	1	159.017			
L4	1.37	11.37	A	1	0.65	7	1	1	176.557	0.92	24.27	C
38'31/32"-0'			B	1	0.65		1	1	176.557			
			C	1	0.65		1	1	176.557			
Sum Weight:	4.75	26.66						OTM	224.10 kip-ft	3.30		

Tower Forces - Service - Wind 90 To Face

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
L1 142'-129'	0.13	0.95	A	1	0.65	11	1	1	30.077	0.24	18.50	C
			B	1	0.65		1	1	30.077			
			C	1	0.65		1	1	30.077			
L2	1.48	5.85	A	1	0.65	10	1	1	148.081	1.10	22.12	C
129'-79'2-1/32			B	1	0.65		1	1	148.081			
"			C	1	0.65		1	1	148.081			
L3	1.76	8.48	A	1	0.65	9	1	1	159.017	1.04	25.24	C
79'2-1/32"-38'			B	1	0.65		1	1	159.017			
31/32"			C	1	0.65		1	1	159.017			
L4	1.37	11.37	A	1	0.65	7	1	1	176.557	0.92	24.27	C
38'31/32"-0'			B	1	0.65		1	1	176.557			

Section Elevation ft	Add Weight K	Self Weight K	Face	e	C_F	q_z psf	D_F	D_R	A_E ft²	F K	w plf	Ctrl. Face
Sum Weight:	4.75	26.66	C	1	0.65		1	1 OTM	176.557 224.10 kip-ft	3.30		

Force Totals

Load Case	Vertical Forces K	Sum of Forces X K	Sum of Forces Z K	Sum of Overturning Moments, M_x kip-ft	Sum of Overturning Moments, M_z kip-ft	Sum of Torques kip-ft
Leg Weight	26.66					
Bracing Weight	0.00					
Total Member Self-Weight	26.66			2.07	-0.28	
Total Weight	45.06			2.07	-0.28	
Wind 0 deg - No Ice		0.06	-22.70	-2054.23	-6.67	0.07
Wind 90 deg - No Ice		22.68	-0.04	-2.27	-2052.05	5.30
Wind 180 deg - No Ice		-0.06	22.66	2053.77	6.10	-0.07
Member Ice	15.36					
Total Weight Ice	92.14			9.91	0.61	
Wind 0 deg - Ice		0.00	-11.02	-1009.45	0.61	-0.23
Wind 90 deg - Ice		11.00	0.00	10.49	-1015.39	3.05
Wind 180 deg - Ice		0.00	11.02	1027.97	0.61	0.23
Total Weight	45.06			2.07	-0.28	
Wind 0 deg - Service		0.02	-6.36	-573.93	-2.16	0.20
Wind 90 deg - Service		6.35	-0.01	0.81	-575.05	1.38
Wind 180 deg - Service		-0.02	6.35	576.69	1.42	-0.20

Load Combinations

Comb. No.	Description
1	Dead Only
2	1.2 Dead+1.6 Wind 0 deg - No Ice
3	0.9 Dead+1.6 Wind 0 deg - No Ice
4	1.2 Dead+1.6 Wind 90 deg - No Ice
5	0.9 Dead+1.6 Wind 90 deg - No Ice
6	1.2 Dead+1.6 Wind 180 deg - No Ice
7	0.9 Dead+1.6 Wind 180 deg - No Ice
8	1.2 Dead+1.0 Ice+1.0 Temp
9	1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp
10	1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp
11	1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp
12	Dead+Wind 0 deg - Service
13	Dead+Wind 90 deg - Service
14	Dead+Wind 180 deg - Service

Maximum Member Forces

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
L1	142 - 129	Pole	Max Tension	8	0.00	0.00	0.00
			Max. Compression	8	-17.97	-1.69	-4.74
			Max. Mx	4	-6.68	-76.77	-1.21
			Max. My	6	-6.67	-0.54	-78.31
			Max. Vy	4	6.17	-76.77	-1.21
			Max. Vx	2	-6.30	-0.57	76.80
			Max. Torque	4			-4.28
L2	129 - 79.1667	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-61.00	-0.68	-5.77
			Max. Mx	4	-24.20	-755.01	-0.30
			Max. My	2	-24.19	-2.68	758.57
			Max. Vy	4	24.70	-755.01	-0.30
			Max. Vx	2	-24.73	-2.68	758.57
			Max. Torque	4			-4.88
L3	79.1667 - 38.0833	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-78.66	-0.15	-10.78
			Max. Mx	4	-36.14	-1861.19	1.33
			Max. My	2	-36.13	-6.58	1864.56
			Max. Vy	4	30.71	-1861.19	1.33
			Max. Vx	2	-30.73	-6.58	1864.56
			Max. Torque	4			-8.33
L4	38.0833 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	8	-102.69	0.51	-11.11
			Max. Mx	4	-54.06	-3374.28	4.54
			Max. My	2	-54.06	-10.86	3378.77
			Max. Vy	4	36.31	-3374.28	4.54
			Max. Vx	2	-36.34	-10.86	3378.77
			Max. Torque	4			-8.53

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	8	102.69	0.00	0.00
	Max. H_x	7	40.55	0.09	-36.26
	Max. H_z	3	40.55	-0.09	36.31
	Max. M_x	2	3378.77	-0.09	36.31
	Max. M_z	4	3374.28	-36.29	0.07
	Max. Torsion	14	0.21	0.02	-6.35
	Min. Vert	3	40.55	-0.09	36.31
	Min. H_x	5	40.55	-36.29	0.07
	Min. H_z	7	40.55	0.09	-36.26
	Min. M_x	6	-3376.35	0.09	-36.26
	Min. M_z	7	-10.16	0.09	-36.26
	Min. Torsion	4	-8.53	-36.29	0.07

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

Load Combination	Vertical	$Shear_x$	$Shear_z$	Overturning Moment, M_x	Overturning Moment, M_z	Torque
	K	K	K	kip-ft	kip-ft	kip-ft
Dead Only	45.06	-0.00	-0.00	2.07	-0.28	-0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	54.07	0.09	-36.31	-3378.77	-10.86	0.13
0.9 Dead+1.6 Wind 0 deg - No Ice	40.55	0.09	-36.31	-3355.67	-10.69	0.13
1.2 Dead+1.6 Wind 90 deg - No Ice	54.07	36.29	-0.07	-4.55	-3374.28	8.53
0.9 Dead+1.6 Wind 90 deg - No Ice	40.55	36.29	-0.07	-5.16	-3350.46	8.51
1.2 Dead+1.6 Wind 180 deg - No Ice	54.07	-0.09	36.26	3376.35	10.14	-0.14
0.9 Dead+1.6 Wind 180 deg - No Ice	40.55	-0.09	36.26	3351.98	10.16	-0.13
1.2 Dead+1.0 Ice+1.0 Temp	102.69	-0.00	-0.00	11.11	0.51	-0.00
1.2 Dead+1.0 Wind 0 deg+1.0 Ice+1.0 Temp	102.69	-0.00	-11.02	-1077.97	0.51	-0.20
1.2 Dead+1.0 Wind 90 deg+1.0 Ice+1.0 Temp	102.69	11.00	0.00	12.09	-1085.30	3.15
1.2 Dead+1.0 Wind 180 deg+1.0 Ice+1.0 Temp	102.69	-0.00	11.01	1099.51	0.51	0.20
Dead+Wind 0 deg - Service	45.06	0.02	-6.36	-587.18	-2.13	0.21
Dead+Wind 90 deg - Service	45.06	6.35	-0.01	0.91	-588.31	1.39
Dead+Wind 180 deg - Service	45.06	-0.02	6.35	590.16	1.53	-0.21

Solution Summary

	Sum of Applied Forces			Sum of Reactions			
Load Comb.	PX	PY	PZ	PX	PY	PZ	% Error
	K	K	K	K	K	K	
1	0.00	-45.06	0.00	0.00	45.06	0.00	0.000%
2	0.09	-54.07	-36.31	-0.09	54.07	36.31	0.002%
3	0.09	-40.55	-36.31	-0.09	40.55	36.31	0.002%
4	36.29	-54.07	-0.07	-36.29	54.07	0.07	0.001%
5	36.29	-40.55	-0.07	-36.29	40.55	0.07	0.000%
6	-0.09	-54.07	36.26	0.09	54.07	-36.26	0.002%
7	-0.09	-40.55	36.26	0.09	40.55	-36.26	0.002%
8	0.00	-102.69	0.00	0.00	102.69	0.00	0.001%
9	0.00	-102.69	-11.02	0.00	102.69	11.02	0.000%
10	11.00	-102.69	0.00	-11.00	102.69	-0.00	0.000%
11	0.00	-102.69	11.02	0.00	102.69	-11.01	0.000%
12	0.02	-45.06	-6.36	-0.02	45.06	6.36	0.001%
13	6.35	-45.06	-0.01	-6.35	45.06	0.01	0.001%
14	-0.02	-45.06	6.35	0.02	45.06	-6.35	0.001%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	6	0.00000001	0.00000001
2	Yes	12	0.00000001	0.00010901
3	Yes	12	0.00000001	0.00009107
4	Yes	13	0.00000001	0.00014013
5	Yes	13	0.00000001	0.00011393

6	Yes	12	0.00000001	0.00009817
7	Yes	12	0.00000001	0.00008233
8	Yes	8	0.00000001	0.00002189
9	Yes	13	0.00000001	0.00008058
10	Yes	13	0.00000001	0.00008887
11	Yes	13	0.00000001	0.00008336
12	Yes	11	0.00000001	0.00003275
13	Yes	11	0.00000001	0.00004757
14	Yes	11	0.00000001	0.00003300

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	142 - 129	9.267	14	0.5362	0.0063
L2	129 - 79.1667	7.822	14	0.5222	0.0045
L3	85 - 38.0833	3.514	14	0.3854	0.0019
L4	45 - 0	0.995	14	0.1989	0.0008

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
144'	Lightning Rod 5/8x4'	14	9.267	0.5362	0.0063	85241
142'	HP2-18	14	9.267	0.5362	0.0063	85241
140'	13'-3" Platform	14	9.043	0.5344	0.0060	85241
119'	LNX-6515DS-VTM	14	6.747	0.5029	0.0035	25138
108'	(3) SBNHH-1D65B	14	5.619	0.4725	0.0028	20006
89'	(4) LNX-6515DS-VTM	14	3.851	0.4023	0.0020	14790
60'	CO-35A	14	1.740	0.2702	0.0012	10941

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	142 - 129	52.961	2	3.0533	0.0369
L2	129 - 79.1667	44.732	2	2.9805	0.0267
L3	85 - 38.0833	20.109	2	2.2060	0.0114
L4	45 - 0	5.694	2	1.1386	0.0048

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
144'	Lightning Rod 5/8x4'	2	52.961	3.0533	0.0369	15668
142'	HP2-18	2	52.961	3.0533	0.0369	15668
140'	13'-3" Platform	2	51.686	3.0444	0.0352	15668
119'	LNX-6515DS-VTM	2	38.597	2.8749	0.0209	4529
108'	(3) SBNHH-1D65B	2	32.155	2.7038	0.0166	3557
89'	(4) LNX-6515DS-VTM	2	22.040	2.3030	0.0121	2591
60'	CO-35A	2	9.957	1.5463	0.0071	1914

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
L1	142 - 141	TP28.95x25.733x0.25	13'	0'	0.0	20.4171	-1.74	1506.01	0.001
	141 - 140					20.6135	-1.84	1516.69	0.001
	140 - 139					20.8098	-5.71	1527.30	0.004
	139 - 138					21.0062	-5.80	1537.84	0.004
	138 - 137					21.2026	-5.90	1548.31	0.004
	137 - 136					21.3989	-5.99	1558.70	0.004
	136 - 135					21.5953	-6.09	1569.02	0.004
	135 - 134					21.7916	-6.18	1579.27	0.004
	134 - 133					21.9880	-6.28	1589.45	0.004
	133 - 132					22.1844	-6.38	1599.55	0.004
	132 - 131					22.3807	-6.48	1609.58	0.004
	131 - 130					22.5771	-6.57	1619.54	0.004
	130 - 129					22.7735	-6.67	1629.42	0.004
L2	129 - 126.684	TP41.283x28.95x0.3125	49'9-31/32"	0'	0.0	28.9733	-7.02	2152.57	0.003
	126.684 - 124.368					29.5418	-7.36	2194.80	0.003
	124.368 - 122.053					30.1102	-7.72	2237.04	0.003
	122.053 - 119.737					30.6787	-8.08	2279.27	0.004
	119.737 - 117.421					31.2472	-11.16	2317.15	0.005
	117.421 - 115.105					31.8156	-11.54	2348.44	0.005
	115.105 - 112.789					32.3841	-11.92	2379.33	0.005
	112.789 - 110.474					32.9526	-12.30	2409.84	0.005
	110.474 - 108.158					33.5210	-12.69	2439.96	0.005
	108.158 - 105.842					34.0895	-18.04	2469.69	0.007
	105.842 - 103.526					34.6580	-18.45	2499.03	0.007
	103.526 - 101.211					35.2264	-18.87	2527.99	0.007
	101.211 - 98.8947					35.7949	-19.29	2556.55	0.008

Section No.	Elevation	Size	L	L_u	Kl/r	A	P_u	ϕP_n	Ratio $\frac{P_u}{\phi P_n}$
	ft		ft	ft		in^2	K	K	
	98.8947 - 96.5789					36.3633	-19.71	2584.73	0.008
	96.5789 - 94.2632					36.9318	-20.15	2612.52	0.008
	94.2632 - 91.9474					37.5003	-20.59	2639.92	0.008
	91.9474 - 89.6316					38.0687	-21.03	2666.93	0.008
	89.6316 - 87.3158					38.6372	-23.73	2693.55	0.009
	87.3158 - 85					39.2057	-24.19	2719.78	0.009
	85 - 79.1667					40.6376	-12.19	2784.14	0.004
L3	85 - 79.1667	TP50.825x39.2143x0.375	46'11-1/32"	0'	0.0	47.9468	-14.28	3496.47	0.004
	79.1667 - 77.2685					48.5059	-26.96	3525.92	0.008
	77.2685 - 75.3704					49.0650	-27.45	3555.11	0.008
	75.3704 - 73.4722					49.6241	-27.95	3584.04	0.008
	73.4722 - 71.5741					50.1832	-28.44	3612.71	0.008
	71.5741 - 69.6759					50.7423	-28.95	3641.12	0.008
	69.6759 - 67.7778					51.3014	-29.46	3669.27	0.008
	67.7778 - 65.8796					51.8605	-29.97	3697.16	0.008
	65.8796 - 63.9815					52.4197	-30.49	3724.78	0.008
	63.9815 - 62.0833					52.9788	-31.02	3752.15	0.008
	62.0833 - 60.1852					53.5379	-31.54	3779.25	0.008
	60.1852 - 58.287					54.0970	-32.25	3806.10	0.008
	58.287 - 56.3889					54.6561	-32.79	3832.68	0.009
	56.3889 - 54.4907					55.2152	-33.34	3859.00	0.009
	54.4907 - 52.5926					55.7743	-33.89	3885.06	0.009
	52.5926 - 50.6944					56.3334	-34.44	3910.86	0.009
	50.6944 - 48.7963					56.8925	-35.00	3936.40	0.009
	48.7963 - 46.8981					57.4517	-35.56	3961.68	0.009
	46.8981 - 45					58.0108	-36.13	3986.69	0.009
	45 - 38.0833					60.0481	-18.76	4075.64	0.005
L4	45 - 38.0833	TP59.5x48.3633x0.4375	45'	0'	0.0	68.9279	-21.33	4948.99	0.004
	38.0833 - 36.0789					69.6168	-40.78	4983.74	0.008
	36.0789 - 34.0746					70.3056	-41.47	5018.20	0.008
	34.0746 - 32.0702					70.9944	-42.16	5052.37	0.008
	32.0702 - 30.0658					71.6833	-42.86	5086.25	0.008
	30.0658 -					72.3721	-43.56	5119.84	0.009

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K	ϕP_n K	Ratio $\frac{P_u}{\phi P_n}$
	28.0614								
	28.0614 - 26.057					73.0609	-44.27	5153.13	0.009
	26.057 - 24.0526					73.7497	-44.99	5186.14	0.009
	24.0526 - 22.0482					74.4386	-45.71	5218.86	0.009
	22.0482 - 20.0439					75.1274	-46.44	5251.28	0.009
	20.0439 - 18.0395					75.8162	-47.17	5283.41	0.009
	18.0395 - 16.0351					76.5051	-47.91	5315.25	0.009
	16.0351 - 14.0307					77.1939	-48.66	5346.80	0.009
	14.0307 - 12.0263					77.8827	-49.41	5378.06	0.009
	12.0263 - 10.0219					78.5715	-50.17	5409.03	0.009
	10.0219 - 8.01754					79.2604	-50.94	5439.71	0.009
	8.01754 - 6.01316					79.9492	-51.71	5470.10	0.009
	6.01316 - 4.00877					80.6380	-52.48	5500.19	0.010
	4.00877 - 2.00439					81.3268	-53.27	5530.00	0.010
	2.00439 - 0					82.0157	-54.06	5559.51	0.010

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft	ϕM_{nx} kip-ft	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy} kip-ft	ϕM_{ny} kip-ft	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
L1	142 - 141	TP28.95x25.733x0.25	12.56	795.37	0.016	0.00	795.37	0.000
	141 - 140		16.40	808.79	0.020	0.00	808.79	0.000
	140 - 139		21.48	822.28	0.026	0.00	822.28	0.000
	139 - 138		26.66	835.84	0.032	0.00	835.84	0.000
	138 - 137		31.96	849.47	0.038	0.00	849.47	0.000
	137 - 136		37.36	863.17	0.043	0.00	863.17	0.000
	136 - 135		42.87	876.92	0.049	0.00	876.92	0.000
	135 - 134		48.50	890.75	0.054	0.00	890.75	0.000
	134 - 133		54.23	904.64	0.060	0.00	904.64	0.000
	133 - 132		60.08	918.59	0.065	0.00	918.59	0.000
	132 - 131		66.04	932.61	0.071	0.00	932.61	0.000
	131 - 130		72.12	946.68	0.076	0.00	946.68	0.000
	130 - 129		78.31	960.82	0.082	0.00	960.82	0.000
L2	129 - 126.684	TP41.283x28.95x0.3125	93.09	1289.34	0.072	0.00	1289.34	0.000
	126.684 - 124.368		108.50	1340.71	0.081	0.00	1340.71	0.000
	124.368 - 122.053		124.55	1393.08	0.089	0.00	1393.08	0.000
	122.053 - 119.737		141.25	1446.45	0.098	0.00	1446.45	0.000
	119.737 - 117.421		165.45	1498.01	0.110	0.00	1498.01	0.000

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
	117.421 - 115.105		193.50	1546.13	0.125	0.00	1546.13	0.000
	115.105 - 112.789		222.22	1594.72	0.139	0.00	1594.72	0.000
	112.789 - 110.474		251.62	1643.79	0.153	0.00	1643.79	0.000
	110.474 - 108.158		281.69	1693.32	0.166	0.00	1693.32	0.000
	108.158 - 105.842		324.30	1743.28	0.186	0.00	1743.28	0.000
	105.842 - 103.526		368.33	1793.68	0.205	0.00	1793.68	0.000
	103.526 - 101.211		413.06	1844.48	0.224	0.00	1844.48	0.000
	101.211 - 98.8947		458.48	1895.68	0.242	0.00	1895.68	0.000
	98.8947 - 96.5789		504.59	1947.28	0.259	0.00	1947.28	0.000
	96.5789 - 94.2632		551.46	1999.24	0.276	0.00	1999.24	0.000
	94.2632 - 91.9474		599.12	2051.57	0.292	0.00	2051.57	0.000
	91.9474 - 89.6316		647.49	2104.23	0.308	0.00	2104.23	0.000
	89.6316 - 87.3158		701.71	2157.22	0.325	0.00	2157.22	0.000
	87.3158 - 85		758.58	2210.54	0.343	0.00	2210.54	0.000
	85 - 79.1667		423.33	2346.15	0.180	0.00	2346.15	0.000
L3	85 - 79.1667	TP50.825x39.2143x0.375	481.96	2892.14	0.167	0.00	2892.14	0.000
	79.1667 - 77.2685		954.11	2950.82	0.323	0.00	2950.82	0.000
	77.2685 - 75.3704		1003.40	3009.86	0.333	0.00	3009.86	0.000
	75.3704 - 73.4722		1053.18	3069.24	0.343	0.00	3069.24	0.000
	73.4722 - 71.5741		1103.43	3128.97	0.353	0.00	3128.97	0.000
	71.5741 - 69.6759		1154.18	3189.02	0.362	0.00	3189.02	0.000
	69.6759 - 67.7778		1205.40	3249.38	0.371	0.00	3249.38	0.000
	67.7778 - 65.8796		1257.11	3310.07	0.380	0.00	3310.07	0.000
	65.8796 - 63.9815		1309.29	3371.07	0.388	0.00	3371.07	0.000
	63.9815 - 62.0833		1361.97	3432.36	0.397	0.00	3432.36	0.000
	62.0833 - 60.1852		1415.13	3493.94	0.405	0.00	3493.94	0.000
	60.1852 - 58.287		1469.00	3555.81	0.413	0.00	3555.81	0.000
	58.287 - 56.3889		1524.03	3617.96	0.421	0.00	3617.96	0.000
	56.3889 - 54.4907		1579.55	3680.37	0.429	0.00	3680.37	0.000
	54.4907 - 52.5926		1635.55	3743.04	0.437	0.00	3743.04	0.000
	52.5926 - 50.6944		1692.04	3805.97	0.445	0.00	3805.97	0.000
	50.6944 -		1749.02	3869.14	0.452	0.00	3869.14	0.000

Section No.	Elevation	Size	M_{ux}	ϕM_{nx}	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	M_{uy}	ϕM_{ny}	Ratio $\frac{M_{uy}}{\phi M_{ny}}$
	ft		kip-ft	kip-ft		kip-ft	kip-ft	
	48.7963							
	48.7963 - 46.8981		1806.52	3932.55	0.459	0.00	3932.55	0.000
	46.8981 - 45		1864.57	3996.20	0.467	0.00	3996.20	0.000
	45 - 38.0833		986.27	4229.93	0.233	0.00	4229.93	0.000
L4	45 - 38.0833	TP59.5x48.3633x0.4375	1094.38	5046.71	0.217	0.00	5046.71	0.000
	38.0833 - 36.0789		2144.57	5133.38	0.418	0.00	5133.38	0.000
	36.0789 - 34.0746		2209.00	5220.46	0.423	0.00	5220.46	0.000
	34.0746 - 32.0702		2273.93	5307.94	0.428	0.00	5307.94	0.000
	32.0702 - 30.0658		2339.37	5395.82	0.434	0.00	5395.82	0.000
	30.0658 - 28.0614		2405.30	5484.08	0.439	0.00	5484.08	0.000
	28.0614 - 26.057		2471.72	5572.73	0.444	0.00	5572.73	0.000
	26.057 - 24.0526		2538.65	5661.73	0.448	0.00	5661.73	0.000
	24.0526 - 22.0482		2606.06	5751.10	0.453	0.00	5751.10	0.000
	22.0482 - 20.0439		2673.94	5840.81	0.458	0.00	5840.81	0.000
	20.0439 - 18.0395		2742.32	5930.87	0.462	0.00	5930.87	0.000
	18.0395 - 16.0351		2811.17	6021.25	0.467	0.00	6021.25	0.000
	16.0351 - 14.0307		2880.49	6111.95	0.471	0.00	6111.95	0.000
	14.0307 - 12.0263		2950.29	6202.97	0.476	0.00	6202.97	0.000
	12.0263 - 10.0219		3020.56	6294.30	0.480	0.00	6294.30	0.000
	10.0219 - 8.01754		3091.28	6385.92	0.484	0.00	6385.92	0.000
	8.01754 - 6.01316		3162.47	6477.82	0.488	0.00	6477.82	0.000
	6.01316 - 4.00877		3234.13	6570.00	0.492	0.00	6570.00	0.000
	4.00877 - 2.00439		3306.23	6662.45	0.496	0.00	6662.45	0.000
	2.00439 - 0		3378.79	6755.17	0.500	0.00	6755.17	0.000

Pole Shear Design Data

Section No.	Elevation	Size	Actual V_u	ϕV_n	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u	ϕT_n	Ratio $\frac{T_u}{\phi T_n}$
	ft		K	K		kip-ft	kip-ft	
L1	142 - 141	TP28.95x25.733x0.25	3.79	753.01	0.005	1.91	1592.68	0.001
	141 - 140		3.89	758.35	0.005	1.91	1619.56	0.001
	140 - 139		5.13	763.65	0.007	1.90	1646.58	0.001
	139 - 138		5.24	768.92	0.007	1.90	1673.72	0.001
	138 - 137		5.35	774.15	0.007	1.89	1701.02	0.001
	137 - 136		5.46	779.35	0.007	1.89	1728.43	0.001
	136 - 135		5.57	784.51	0.007	1.88	1755.99	0.001

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	135 - 134		5.68	789.63	0.007	1.88	1783.68	0.001
	134 - 133		5.79	794.72	0.007	1.87	1811.49	0.001
	133 - 132		5.91	799.77	0.007	1.86	1839.43	0.001
	132 - 131		6.02	804.79	0.007	1.86	1867.50	0.001
	131 - 130		6.13	809.77	0.008	1.85	1895.68	0.001
	130 - 129		6.25	809.77	0.008	1.85	1923.99	0.001
L2	129 - 126.684	TP41.283x28.95x0.3125	6.52	1055.17	0.006	1.84	2581.84	0.001
	126.684 - 124.368		6.79	1076.29	0.006	1.83	2684.70	0.001
	124.368 - 122.053		7.07	1097.40	0.006	1.81	2789.56	0.001
	122.053 - 119.737		7.35	1118.52	0.007	1.80	2896.43	0.001
	119.737 - 117.421		11.97	1139.64	0.011	1.78	2999.68	0.001
	117.421 - 115.105		12.26	1174.22	0.010	1.77	3096.03	0.001
	115.105 - 112.789		12.55	1189.67	0.011	1.75	3193.35	0.001
	112.789 - 110.474		12.84	1204.92	0.011	1.74	3291.61	0.001
	110.474 - 108.158		13.14	1219.98	0.011	1.72	3390.78	0.001
	108.158 - 105.842		18.87	1234.84	0.015	1.71	3490.82	0.000
	105.842 - 103.526		19.17	1249.52	0.015	0.96	3591.73	0.000
	103.526 - 101.211		19.47	1263.99	0.015	0.95	3693.47	0.000
	101.211 - 98.8947		19.77	1278.28	0.015	0.93	3796.01	0.000
	98.8947 - 96.5789		20.08	1292.36	0.016	0.91	3899.32	0.000
	96.5789 - 94.2632		20.43	1306.26	0.016	0.89	4003.38	0.000
	94.2632 - 91.9474		20.74	1319.96	0.016	0.88	4108.15	0.000
	91.9474 - 89.6316		21.05	1333.46	0.016	0.86	4213.61	0.000
	89.6316 - 87.3158		24.41	1346.77	0.018	0.84	4319.73	0.000
	87.3158 - 85		24.73	1359.89	0.018	0.82	4426.49	0.000
	85 - 79.1667		12.19	1392.07	0.009	0.39	4698.03	0.000
L3	85 - 79.1667	TP50.825x39.2143x0.375	13.42	1748.23	0.008	0.42	5791.35	0.000
	79.1667 - 77.2685		25.86	1762.96	0.015	0.76	5908.87	0.000
	77.2685 - 75.3704		26.11	1777.56	0.015	0.75	6027.08	0.000
	75.3704 - 73.4722		26.36	1792.02	0.015	0.73	6145.99	0.000
	73.4722 - 71.5741		26.62	1806.36	0.015	0.72	6265.58	0.000
	71.5741 - 69.6759		26.87	1820.56	0.015	0.70	6385.82	0.000
	69.6759 - 67.7778		27.13	1834.64	0.015	0.69	6506.72	0.000
	67.7778 - 65.8796		27.38	1848.58	0.015	0.67	6628.24	0.000
	65.8796 - 63.9815		27.64	1862.39	0.015	0.66	6750.37	0.000

Section No.	Elevation ft	Size	Actual V_u K	ϕV_n K	Ratio $\frac{V_u}{\phi V_n}$	Actual T_u kip-ft	ϕT_n kip-ft	Ratio $\frac{T_u}{\phi T_n}$
	63.9815 - 62.0833		27.89	1876.07	0.015	0.64	6873.11	0.000
	62.0833 - 60.1852		28.15	1889.63	0.015	0.63	6996.43	0.000
	60.1852 - 58.287		28.88	1903.05	0.015	0.61	7120.32	0.000
	58.287 - 56.3889		29.14	1916.34	0.015	0.60	7244.76	0.000
	56.3889 - 54.4907		29.39	1929.50	0.015	0.58	7369.73	0.000
	54.4907 - 52.5926		29.65	1942.53	0.015	0.57	7495.24	0.000
	52.5926 - 50.6944		29.91	1955.43	0.015	0.55	7621.25	0.000
	50.6944 - 48.7963		30.16	1968.20	0.015	0.54	7747.75	0.000
	48.7963 - 46.8981		30.47	1980.84	0.015	0.52	7874.72	0.000
	46.8981 - 45		30.73	1993.35	0.015	0.50	8002.17	0.000
	45 - 38.0833		15.35	2037.82	0.008	0.25	8470.25	0.000
L4	45 - 38.0833	TP59.5x48.3633x0.4375	16.45	2474.49	0.007	0.24	10105.75	0.000
	38.0833 - 36.0789		32.04	2491.87	0.013	0.43	10279.33	0.000
	36.0789 - 34.0746		32.29	2509.10	0.013	0.41	10453.67	0.000
	34.0746 - 32.0702		32.54	2526.19	0.013	0.40	10628.83	0.000
	32.0702 - 30.0658		32.79	2543.12	0.013	0.38	10804.83	0.000
	30.0658 - 28.0614		33.04	2559.92	0.013	0.37	10981.58	0.000
	28.0614 - 26.057		33.29	2576.57	0.013	0.35	11159.08	0.000
	26.057 - 24.0526		33.53	2593.07	0.013	0.34	11337.33	0.000
	24.0526 - 22.0482		33.77	2609.43	0.013	0.32	11516.25	0.000
	22.0482 - 20.0439		34.01	2625.64	0.013	0.30	11695.92	0.000
	20.0439 - 18.0395		34.25	2641.71	0.013	0.29	11876.25	0.000
	18.0395 - 16.0351		34.49	2657.63	0.013	0.27	12057.25	0.000
	16.0351 - 14.0307		34.73	2673.40	0.013	0.26	12238.83	0.000
	14.0307 - 12.0263		34.96	2689.03	0.013	0.24	12421.08	0.000
	12.0263 - 10.0219		35.20	2704.52	0.013	0.23	12604.00	0.000
	10.0219 - 8.01754		35.43	2719.86	0.013	0.21	12787.42	0.000
	8.01754 - 6.01316		35.66	2735.05	0.013	0.20	12971.50	0.000
	6.01316 - 4.00877		35.89	2750.10	0.013	0.18	13156.08	0.000
	4.00877 - 2.00439		36.11	2765.00	0.013	0.16	13341.17	0.000
	2.00439 - 0		36.34	2779.76	0.013	0.15	13526.83	0.000

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P_u}{\phi P_n}$	Ratio $\frac{M_{ux}}{\phi M_{nx}}$	Ratio $\frac{M_{uy}}{\phi M_{ny}}$	Ratio $\frac{V_u}{\phi V_n}$	Ratio $\frac{T_u}{\phi T_n}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	142 - 141	0.001	0.016	0.000	0.005	0.001	0.017 ✔	1.000	4.8.2 ✔
	141 - 140	0.001	0.020	0.000	0.005	0.001	0.022 ✔	1.000	4.8.2 ✔
	140 - 139	0.004	0.026	0.000	0.007	0.001	0.030 ✔	1.000	4.8.2 ✔
	139 - 138	0.004	0.032	0.000	0.007	0.001	0.036 ✔	1.000	4.8.2 ✔
	138 - 137	0.004	0.038	0.000	0.007	0.001	0.041 ✔	1.000	4.8.2 ✔
	137 - 136	0.004	0.043	0.000	0.007	0.001	0.047 ✔	1.000	4.8.2 ✔
	136 - 135	0.004	0.049	0.000	0.007	0.001	0.053 ✔	1.000	4.8.2 ✔
	135 - 134	0.004	0.054	0.000	0.007	0.001	0.058 ✔	1.000	4.8.2 ✔
	134 - 133	0.004	0.060	0.000	0.007	0.001	0.064 ✔	1.000	4.8.2 ✔
	133 - 132	0.004	0.065	0.000	0.007	0.001	0.069 ✔	1.000	4.8.2 ✔
	132 - 131	0.004	0.071	0.000	0.007	0.001	0.075 ✔	1.000	4.8.2 ✔
	131 - 130	0.004	0.076	0.000	0.008	0.001	0.080 ✔	1.000	4.8.2 ✔
	130 - 129	0.004	0.082	0.000	0.008	0.001	0.086 ✔	1.000	4.8.2 ✔
L2	129 - 126.684	0.003	0.072	0.000	0.006	0.001	0.076 ✔	1.000	4.8.2 ✔
	126.684 - 124.368	0.003	0.081	0.000	0.006	0.001	0.084 ✔	1.000	4.8.2 ✔
	124.368 - 122.053	0.003	0.089	0.000	0.006	0.001	0.093 ✔	1.000	4.8.2 ✔
	122.053 - 119.737	0.004	0.098	0.000	0.007	0.001	0.101 ✔	1.000	4.8.2 ✔
	119.737 - 117.421	0.005	0.110	0.000	0.011	0.001	0.115 ✔	1.000	4.8.2 ✔
	117.421 - 115.105	0.005	0.125	0.000	0.010	0.001	0.130 ✔	1.000	4.8.2 ✔
	115.105 - 112.789	0.005	0.139	0.000	0.011	0.001	0.144 ✔	1.000	4.8.2 ✔
	112.789 - 110.474	0.005	0.153	0.000	0.011	0.001	0.158 ✔	1.000	4.8.2 ✔
	110.474 - 108.158	0.005	0.166	0.000	0.011	0.001	0.172 ✔	1.000	4.8.2 ✔
	108.158 - 105.842	0.007	0.186	0.000	0.015	0.000	0.194 ✔	1.000	4.8.2 ✔
	105.842 - 103.526	0.007	0.205	0.000	0.015	0.000	0.213	1.000	4.8.2 ✔

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	103.526 - 101.211	0.007	0.224	0.000	0.015	0.000	0.232	1.000	4.8.2
	101.211 - 98.8947	0.008	0.242	0.000	0.015	0.000	0.250	1.000	4.8.2
	98.8947 - 96.5789	0.008	0.259	0.000	0.016	0.000	0.267	1.000	4.8.2
	96.5789 - 94.2632	0.008	0.276	0.000	0.016	0.000	0.284	1.000	4.8.2
	94.2632 - 91.9474	0.008	0.292	0.000	0.016	0.000	0.300	1.000	4.8.2
	91.9474 - 89.6316	0.008	0.308	0.000	0.016	0.000	0.316	1.000	4.8.2
	89.6316 - 87.3158	0.009	0.325	0.000	0.018	0.000	0.334	1.000	4.8.2
	87.3158 - 85	0.009	0.343	0.000	0.018	0.000	0.352	1.000	4.8.2
	85 - 79.1667	0.004	0.180	0.000	0.009	0.000	0.185	1.000	4.8.2
L3	85 - 79.1667	0.004	0.167	0.000	0.008	0.000	0.171	1.000	4.8.2
	79.1667 - 77.2685	0.008	0.323	0.000	0.015	0.000	0.331	1.000	4.8.2
	77.2685 - 75.3704	0.008	0.333	0.000	0.015	0.000	0.341	1.000	4.8.2
	75.3704 - 73.4722	0.008	0.343	0.000	0.015	0.000	0.351	1.000	4.8.2
	73.4722 - 71.5741	0.008	0.353	0.000	0.015	0.000	0.361	1.000	4.8.2
	71.5741 - 69.6759	0.008	0.362	0.000	0.015	0.000	0.370	1.000	4.8.2
	69.6759 - 67.7778	0.008	0.371	0.000	0.015	0.000	0.379	1.000	4.8.2
	67.7778 - 65.8796	0.008	0.380	0.000	0.015	0.000	0.388	1.000	4.8.2
	65.8796 - 63.9815	0.008	0.388	0.000	0.015	0.000	0.397	1.000	4.8.2
	63.9815 - 62.0833	0.008	0.397	0.000	0.015	0.000	0.405	1.000	4.8.2
	62.0833 - 60.1852	0.008	0.405	0.000	0.015	0.000	0.414	1.000	4.8.2
	60.1852 - 58.287	0.008	0.413	0.000	0.015	0.000	0.422	1.000	4.8.2
	58.287 - 56.3889	0.009	0.421	0.000	0.015	0.000	0.430	1.000	4.8.2
	56.3889 - 54.4907	0.009	0.429	0.000	0.015	0.000	0.438	1.000	4.8.2
	54.4907 - 52.5926	0.009	0.437	0.000	0.015	0.000	0.446	1.000	4.8.2
	52.5926 - 50.6944	0.009	0.445	0.000	0.015	0.000	0.454	1.000	4.8.2
	50.6944 -	0.009	0.452	0.000	0.015	0.000	0.461	1.000	4.8.2

Section No.	Elevation ft	Ratio $P_u/\phi P_n$	Ratio $M_{ux}/\phi M_{nx}$	Ratio $M_{uy}/\phi M_{ny}$	Ratio $V_u/\phi V_n$	Ratio $T_u/\phi T_n$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	48.7963						✔		
	48.7963 - 46.8981	0.009	0.459	0.000	0.015	0.000	0.469 ✔	1.000	4.8.2 ✔
	46.8981 - 45	0.009	0.467	0.000	0.015	0.000	0.476 ✔	1.000	4.8.2 ✔
	45 - 38.0833	0.005	0.233	0.000	0.008	0.000	0.238 ✔	1.000	4.8.2 ✔
L4	45 - 38.0833	0.004	0.217	0.000	0.007	0.000	0.221 ✔	1.000	4.8.2 ✔
	38.0833 - 36.0789	0.008	0.418	0.000	0.013	0.000	0.426 ✔	1.000	4.8.2 ✔
	36.0789 - 34.0746	0.008	0.423	0.000	0.013	0.000	0.432 ✔	1.000	4.8.2 ✔
	34.0746 - 32.0702	0.008	0.428	0.000	0.013	0.000	0.437 ✔	1.000	4.8.2 ✔
	32.0702 - 30.0658	0.008	0.434	0.000	0.013	0.000	0.442 ✔	1.000	4.8.2 ✔
	30.0658 - 28.0614	0.009	0.439	0.000	0.013	0.000	0.447 ✔	1.000	4.8.2 ✔
	28.0614 - 26.057	0.009	0.444	0.000	0.013	0.000	0.452 ✔	1.000	4.8.2 ✔
	26.057 - 24.0526	0.009	0.448	0.000	0.013	0.000	0.457 ✔	1.000	4.8.2 ✔
	24.0526 - 22.0482	0.009	0.453	0.000	0.013	0.000	0.462 ✔	1.000	4.8.2 ✔
	22.0482 - 20.0439	0.009	0.458	0.000	0.013	0.000	0.467 ✔	1.000	4.8.2 ✔
	20.0439 - 18.0395	0.009	0.462	0.000	0.013	0.000	0.471 ✔	1.000	4.8.2 ✔
	18.0395 - 16.0351	0.009	0.467	0.000	0.013	0.000	0.476 ✔	1.000	4.8.2 ✔
	16.0351 - 14.0307	0.009	0.471	0.000	0.013	0.000	0.481 ✔	1.000	4.8.2 ✔
	14.0307 - 12.0263	0.009	0.476	0.000	0.013	0.000	0.485 ✔	1.000	4.8.2 ✔
	12.0263 - 10.0219	0.009	0.480	0.000	0.013	0.000	0.489 ✔	1.000	4.8.2 ✔
	10.0219 - 8.01754	0.009	0.484	0.000	0.013	0.000	0.494 ✔	1.000	4.8.2 ✔
	8.01754 - 6.01316	0.009	0.488	0.000	0.013	0.000	0.498 ✔	1.000	4.8.2 ✔
	6.01316 - 4.00877	0.010	0.492	0.000	0.013	0.000	0.502 ✔	1.000	4.8.2 ✔
	4.00877 - 2.00439	0.010	0.496	0.000	0.013	0.000	0.506 ✔	1.000	4.8.2 ✔
	2.00439 - 0	0.010	0.500	0.000	0.013	0.000	0.510 ✔	1.000	4.8.2 ✔

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	ϕP_{allow} K	% Capacity	Pass Fail
L1	142 - 129	Pole	TP28.95x25.733x0.25	1	-6.67	1629.42	8.6	Pass
L2	129 - 79.1667	Pole	TP41.283x28.95x0.3125	2	-24.19	2719.78	35.2	Pass
L3	79.1667 - 38.0833	Pole	TP50.825x39.2143x0.375	3	-36.13	3986.69	47.6	Pass
L4	38.0833 - 0	Pole	TP59.5x48.3633x0.4375	4	-54.06	5559.51	51.0	Pass
							Summary	
						Pole (L4)	51.0	Pass
						RATING =	**51.0**	**Pass**

APPENDIX C:

TILSON

PIER AND PAD FOUNDATION - MONOPOLE

CODE - TIA-222-G

JOB: TRUMBULL S3 CT
REV: 0
DATE: 10/23/2017

INPUT:

TOWER BASE REACTIONS:

OVERTURNING MOMENT =	3379	(ft-kips)
SHEAR FORCE =	36	(kips)
AXIAL FORCE =	54	(kips)

Pier Shape = Circular

Foundation dimensions:

Pad depth =	7	ft.
Pad width (square) =	26.5	ft.
Pad thickness =	3	ft.
Pier diameter =	8	ft.
concrete strength, f'c =	3000	psi
Pier projection above grade =	0.5	ft.

Rebar Info, pad:

Pad rebar size =	9		
total number rebar, one direction =	34		
rebar spacing =	9.45	in.	OK
clear cover =	3	in.	OK
rebar strength, fy =	60	kips/in.^{2}	
d=	31.88	in.	
Area Steel =	33.98	in.^{2}	Min. Reinf. OK
b_D=	401.73	in. (circum)	

Rebar Info, pier:

Pier rebar size =	11		
total number of rebar =	48		
Tie size =	5		
clear cover =	6	in.	OK
tie spacing =	9	in.	OK
rebar spacing =	5.41	in.	OK
Hooks?	yes		
d=	88.69	in.	
Area Steel =	74.95	in.^{2}	OK

Soil Info:

Ground water depth=	999	ft.
Ultimate soil bearing capacity=	12	kips/ft.^{2}
soil unit weight (fill)=	0.1	kips/ft.^{3}
cohesion (clay)=	0	kips/ft.^{2}
Internal friction angle (sand)=	30	deg.

CAPACITY RESULTS:

SOIL:

Allowable bearing capcity, q_{all} =	4.00	kips/ft.^{2}
Max applied pressure, q_{max}=	2.15	kips/ft.^{2}
q_{max}/q_{all} Ratio =	53.7%	OK
Overturning uplift resistance=	8426.0	ft-kips
Max. overturning moment=	3631	ft-kips
Overturning Capacity Ratio =	43.1%	OK

PAD:

One way shear capacity, ϕV_c=	832.8	kips
Max. applied shaear load, V_u=	322.3	kips
$V_u/\phi V_c$ Ratio=	38.7%	OK
Punching shear stress capacity, ϕv_c=	0.16	kips/in.^{2}
Max. applied punching shear stress, v_u=	0.03	kips/in.^{2}
$v_u/\phi v_c$ Ratio=	18.7%	OK

Flexure Reinforcement:

Req'd. area steel rebar, $A_{req'd}$=	27.76	in.^{2}
Provided area steel rebar, A_{st}=	33.98	in.^{2}
$A_{req'd}/A_{st}$ Ratio=	< 1.0	OK
Req'd. development length, $l_{req'd.}$ =	61.618788	in.
Available development length, $l_{avail.}$ =	108	in.
$l_{req'd.}/l_{avail.}$ Ratio =	< 1.0	OK

PIER:

Allowable pier on pad bearing capacity, ϕP_n=	11997.4	kips
Max. axial force, P_u=	87.93	kips
$P_u/\phi P_n$ Ratio =	0.7%	OK
Req.'d development length, $l_{req'd.}$ =	61.62	in.
Available development length, $l_{avail.}$ =	30.75	in.
$l_{req'd.}/l_{avail.}$ Ratio =	OK (HOOKED ENDS)	
Req'd. compressive development length, l_{dc} =	30.12	in.
Available development length, $l_{avail.}$ =	30.75	in.
$l_{dc}/l_{avail.}$ Ratio =	< 1.0	OK
Moment capacity of pier, ϕM_n =	12374	ft.-kips <=== Separate analysis software used
Maximum applied moment, M_u =	3631	ft.-kips
$M_u/\phi M_n$ Ratio =	29.3%	OK
Allowable pier axial capacity, $\phi P_{n,max}$=	11836.9	kips
Max. axial force, P_u=	54	kips
$P_u/\phi P_{n,max}$ Ratio =	0.5%	OK

TILSON

APPENDIX D:

TILSON

CIRCULAR BASE PLATE - MONOPOLE

CODE - TIA-222-G

JOB: TRUMBULL S3 CT
REV: 0
DATE: 10/23/2017

INPUT:

base plate info:

plate diameter =	72.92	in.
thickness =	3.25	in.
height above fdn. =	3	in.
yield strength, F_y =	50	ksi
ultimate strength, F_u =	65	ksi
pole diameter =	59.5	in.
pole plate thickness =	0.4375	in.

foundation dimensions:

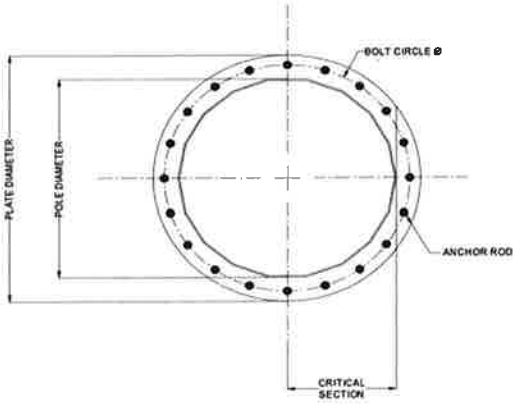
pier diameter =	96	in.
concrete strength =	3000	psi

Anchor rod info:

anchor rod diameter =	2.25	in.
total number anchor rods =	20	
yield strength, F_y =	75	ksi
ultimate strength, F_u =	100	ksi
bolt circle diameter =	66.92	in.
embedment depth =	60	
threads per inch, n =	4.5	

TOWER BASE REACTIONS:

OVERTURNING MOMENT =	3379	(ft-kips)
SHEAR FORCE =	36	(kips)
AXIAL FORCE =	54	(kips)



CAPACITY RESULTS:

ANCHOR RODS: (note: values shown are per (1) rod)

tension capacity, ϕR_n =	243.6	kip
max tension, R_u =	112.9	kip
$R_u/\phi R_n$ Ratio =	46.4%	OK
shear capacity, ϕR_{nv} =	134.2	kip
max shear load, R_{uv} =	1.8	kip
$R_u/\phi R_{nv}$ Ratio =	1.3%	OK

NOTE: SINCE Ru/ϕRnv =1.3% AND IS LESS THAN 20%, EFFECTS OF COMBINED SHEAR AND TENSION STRESS NOT NEEDED TO BE CHECKED (AISC SEC. J3.7)

BASE PLATE:

required plate thickness, $t_{p,req'd.}$ =	1.45	in.
provided plate thickness, t_p =	3.25	in.
$t_{p,req'd.}/t_p$ Ratio =	44.5%	OK

APPENDIX E:

TILSON

CIRCULAR FLANGE PLATE - MONOPOLE

CODE - TIA-222-G

JOB: TRUMBULL 53 CT
REV: 0
DATE: 10/23/2017

INPUT:

flange plate info:

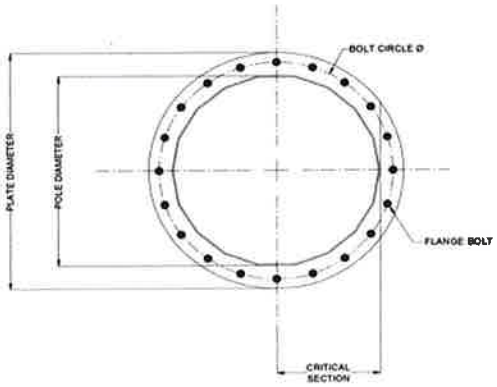
plate diameter =	37.52	in.
thickness =	2	in.
height above ground =	129	ft.
yield strength, F_y =	50	ksi
ultimate strength, F_u =	65	ksi
pole diameter =	28.95	in.
pole plate thickness =	0.25	in.

bolt info:

bolt diameter =	1.5	in.
total number bolt =	14	
yield strength, F_y =	-	ksi
ultimate strength, F_u =	105	ksi
bolt circle diameter =	33.77	in.
threads included in shear plate?	yes	

TOWER REACTIONS:

OVERTURNING MOMENT =	78.33	(ft-kips)
SHEAR FORCE =	6.25	(kips)
AXIAL FORCE =	6.67	(kips)



CAPACITY RESULTS:

FLANGE BOLTS: (note: values shown are per (1) rod)

tension capacity, ϕR_n =	119.3	kip
max tension, R_u =	9.2	kip
$R_u/\phi R_n$ Ratio =	7.7%	OK
shear capacity, ϕR_{nv} =	71.6	kip
max shear load, R_{uv} =	0.446428571	kip
$R_u/\phi R_{nv}$ Ratio =	0.6%	OK

NOTE: SINCE BOTH CAPACITY RATIOS ARE LESS THAN 20%, EFFECTS OF COMBINED SHEAR AND TENSION STRESS NOT NEEDED TO BE CHECKED (AISC SEC. J3.7)

BASE PLATE:

required plate thickness, $t_{p,req'd}$ =	0.97	in.
provided plate thickness, t_p =	2	in.
$t_{p,req'd}/t_p$ Ratio =	48.7%	OK

ATTACHMENT 5

	General	Power	Density					
Site Name: Trumbull S 3								
Tower Height: 143ft								
CARRIER	**# OF CHAN.**	**WATTS ERP**	**HEIGHT**	**CALC. POWER DENS**	**FREQ.**	**MAX. PERMISS. EXP.**	**FRACTION MPE**	**Total**
*Trumbull PD	11	35	154	850	0.0063	0.5667	0.11%	
*Trumbull PD	1	280	153	857	0.0047	0.5713	0.08%	
*Trumbull PD	1	70	152	155.8	0.0012	0.2000	0.06%	
*Trumbull PD	1	50	152	154.1	0.0008	0.2000	0.04%	
*Trumbull PD	1	25	148	154.1	0.0004	0.2000	0.02%	
*Trumbull PD	1	50	148	45	0.0009	0.2000	0.04%	
*Trumbull PD	3	110	148	33	0.0059	0.2000	0.29%	
*Trumbull PD	1	100	148	39	0.0018	0.2000	0.09%	
*T-Mobile	1	502	120	1930	0.0139	1.0000	0.14%	
*T-Mobile	1	631	120	2100	0.0175	1.0000	0.17%	
Verizon	**1**	**1234**	**109**	**0.0373**	**1970**	**1.0000**	**3.73%**	
Verizon	**9**	**352**	**109**	**0.0959**	**869**	**0.5793**	**16.55%**	
Verizon	**1**	**1850**	**109**	**0.0560**	**2145**	**1.0000**	**5.60%**	
Verizon	**1**	**921**	**109**	**0.0279**	**746**	**0.4973**	**5.60%**	
								32.55%
* Source: Siting Council								

ATTACHMENT 6

Robinson + Cole

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

November 29, 2017

Via Certificate of Mailing

Timothy Herbst, First Selectman
Town of Trumbull
5866 Main Street
Trumbull, CT 06611

Re: **Proposed Shared Use of an Existing Telecommunications Facility at 158 Edison Road, Trumbull, Connecticut**

Dear Mr. Herbst:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to share the existing telecommunications facility at the Trumbull Police Department site, 158 Edison Road in Trumbull (the "Property"). Cellco intends to install nine (9) antennas and nine (9) remote radio heads on an antenna platform at a height of 109 feet above ground level. Equipment associated with Cellco's antennas and a natural gas-fueled back-up generator will be located on a steel platform near the base of the tower and within the existing facility compound.

As presented in the Sub-Petition, the proposed facility modifications at the Property constitute an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation act of 2012 (47 U.S.C. § 1455(a)) and the October 21, 2014 Order of the Federal Communications Commission (FCC-14-533). A copy of the full Sub-Petition is attached for your review. Landowners whose property abuts the Property were also sent notice of this filing along with a copy of the Sub-Petition.

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson+Cole

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Main (860) 275-8200
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kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

November 29, 2017

Via Certificate of Mailing

Roberto Librandi, Land Use Planner
Town of Trumbull
5866 Main Street
Trumbull, CT 06611

Re: **Proposed Shared Use of an Existing Telecommunications Facility at 158 Edison Road, Trumbull, Connecticut**

Dear Mr. Librandi:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to share the existing telecommunications facility at the Trumbull Police Department site, 158 Edison Road in Trumbull (the "Property"). Cellco intends to install nine (9) antennas and nine (9) remote radio heads on an antenna platform at a height of 109 feet above ground level. Equipment associated with Cellco's antennas and a natural gas-fueled back-up generator will be located on a steel platform near the base of the tower and within the existing facility compound.

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Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

Robinson + Cole

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kbaldwin@rc.com
Direct (860) 275-8345

Also admitted in Massachusetts

November 29, 2017

Via Certificate of Mailing

Sean Gormley, Project Manager
Blue Sky Tower Partners, LLC
352 Park Street, Suite 106
North Reading, MA 01864

Re: **Proposed Shared Use of an Existing Telecommunications Facility at 158 Edison Road, Trumbull, Connecticut**

Dear Mr. Gormley:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to share the existing telecommunications facility at the Trumbull Police Department site, 158 Edison Road in Trumbull (the "Property"). Cellco intends to install nine (9) antennas and nine (9) remote radio heads on an antenna platform at a height of 109 feet above ground level. Equipment associated with Cellco's antennas and a natural gas-fueled back-up generator will be located on a steel platform near the base of the tower and within the existing facility compound.

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Robinson + Cole

Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

Please contact me if you have any questions regarding this proposal.

Sincerely,

Kenneth C. Baldwin

Attachment

ATTACHMENT 7

KENNETH C. BALDWIN

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

Also admitted in Massachusetts

November 29, 2017

Via Certificate of Mailing

«Name_and_Address»

Re: **Proposed Shared Use of an Existing Telecommunications Facility at 158 Edison Road, Trumbull, Connecticut**

Dear «Salutation»:

This firm represents Cellco Partnership d/b/a Verizon Wireless ("Cellco"). Today, Cellco filed a Sub-Petition for Declaratory Ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") seeking approval to share the existing telecommunications facility at the Trumbull Police Department site, 158 Edison Road in Trumbull (the "Property"). Cellco intends to install nine (9) antennas and nine (9) remote radio heads on an antenna platform at a height of 109 feet above ground level. Equipment associated with Cellco's antennas and a natural gas-fueled back-up generator will be located on a steel platform near the base of the tower and within the existing facility compound.

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Pursuant to its decision in Petition No. 1133, comments or concerns regarding this proposal should be submitted to the Council within thirty (30) days of the date of the attached Sub-Petition.

This notice is being sent to you because you are listed as an owner of land that abuts the Property. If you have any questions regarding the Sub-Petition, the Council's process for reviewing the Sub-Petition or the details of the filing itself, please feel free to contact me at the number listed above. You may also contact the Council directly at 860-827-2935.

Sincerely,

Kenneth C. Baldwin

Attachment

CELLCO PARTNERSHIP D/B/A VERIZON WIRELESS

ABUTTERS LIST

158 EDISON ROAD
TRUMBULL, CONNECTICUT

	Property Address	Owner and Mailing Address
1.	142 Edison Road	Michael A. and Rosa Guarna 142 Edison Road Trumbull, CT 06611-2116
2.	65 Merwin Street	Michael K. and Aliss Obeid 65 Merwin Street Trumbull, CT 06611
3.	35 Merwin Street	Alfred and Carmen Serrano 35 Merwin Street Trumbull, CT 06611
4.	20 Merwin Street	Michael W. and Lois Gillern 20 Merwin Street Trumbull, CT 06611
5.	16 Merwin Street	Robert J. and Elizabeth M. Crainich & Jason J. Crainich 16 Merwin Street Trumbull, CT 06611
6.	12 Merwin Street	Susan M. Tierney 12 Merwin Street Trumbull, CT 06611
7.	14 Koger Road	Mariusz P. and Teresa Mierzejewski 14 Koger Road Trumbull, CT 06611
8.	10 Koger Road	Kathleen J. Thopsey 10 Koger Road Trumbull, CT 06611
9.	8 Koger Road	Kevin and Tammy McGee 8 Koger Road Trumbull, CT 06611

	Property Address	**Owner and Mailing Address**
10.	6 Koger Road	Alyssa Schulman 6 Koger Road Trumbull, CT 06611
11.	2 Koger Road	Jeremy Pleckaitis 2 Koger Road Trumbull, CT 06611
12.	180 Edison Road	Ximena and Jose Gonzales-Cardentey 180 Edison Road Trumbull, CT 06611
13.	183 Edison Road	Hila Sahar 183 Edison Road Trumbull, CT 06611
14.	171 Edison Road	Joe E. and Rose M. Bean 171 Edison Road Trumbull, CT 06611
15.	159 Edison Road	Herbert and Doretha Bendolph 159 Edison Road Trumbull, CT 06611
16.	153 Edison Road	John C. and Judith Keklik 153 Edison Road Trumbull, CT 06611