CONNECTICUT SITING COUNCIL

SUB-PETITION OF NEW CINGULAR WIRELESS PCS, LLC ("AT&T") TO THE CONNECTICUT SITING COUNCIL FOR MODIFICATION AND EXTENSION OF AN EXISTING WIRELESS TELECOMMUNICATIONS FACILITY AT 1684 CHAMBERLAIN HIGHWAY BERLIN, CONNECTICUT	)	SUB-PETITION NO. _____
	)	SEPTEMBER 11, 2018

SUB-PETITION FOR DECLARATORY RULING TO APPROVE ELIGIBLE FACILITIES REQUEST FOR MODIFICATION AND EXTENSION OF AN EXISTING WIRELESS TELECOMMUNICATIONS FACILITY WITHOUT SUBSTANTIAL PHYSICAL CHANGE TO EXISTING BASE STATION 1684 CHAMBERLAIN HIGHWAY, BERLIN, CONNECTICUT

I. Introduction

New Cingular Wireless PCS, LLC ("AT&T"), is applying for administrative approval of a needed modification with an extension of an existing facility pursuant to Section 6409(a) of the Spectrum Act and published FCC guidance in the form of the October 14, 2014 Report and Order referenced as FCC-14-153. AT&T hereby petitions the Connecticut Siting Council ("Council") to modify the existing wireless telecommunication facility at 1684 Chamberlain Highway, Berlin, Connecticut (the "Site"). More specifically AT&T is proposing to extend the existing tower by ten (10) feet to attach three (3) new antennas and associated equipment. These three (3) new antennas will replace nine (9) existing AT&T antennas, for a total of three (3) AT&T antennas at the Site. None of this work represents a substantial change to the existing base station.

II. Existing Facility and Site Background

The Site consists of a one hundred twenty-three (123) foot monopole owned by Crown Castle and associated equipment for the existing wireless carriers. A chain link fence surrounds the Site. The property is used for agricultural purposes and is surrounded by primarily rural and agricultural lands to the north and west and residential properties to the south and east.

On December 11, 2001 (No. TS-VER-007-011203), the Council ordered the shared use of this facility which is currently occupied by AT&T and three other wireless carriers. On July 11, 2002 (No. EM-AT&T-007-020626), the Council issued an acknowledgement of exempt modification for AT&T to co-locate on the existing monopole.

AT&T currently maintains an existing facility consisting of nine (9) panel antennas mounted at 65 feet AGL on the monopole and associated equipment located on a concrete pad in the fenced equipment compound at the base of the tower. The Council has previously issued acknowledgments of exempt modifications to AT&T's existing facility with the most recent being on March 21, 2011 (No. EM-CING-007-110228).

III. Proposed Modification

AT&T plans to extend the tower by ten (10) feet using a new pipe mast. AT&T will add three (3) new OPA-65R-LCUU-H6 model antennas that will be flush-mounted to the extended tower. The existing nine (9) antennas will be removed. Additionally, AT&T will relocate the three (3) existing RRUs onto this new extension. The existing compound will not change. Site drawings for the proposed modification are included in Attachment 1. A Structural Modification Report confirming that the tower can accommodate AT&T's proposed modification is included in Attachment 2.

IV. The Modification Does Not Represent a Substantial Change to the Physical Dimensions of the Existing Base Station and is an Eligible Facilities Request

Section 6409 requires that within 60 days of submission, a state or local agency must approve an "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". Section 6409 and the FCC Order provide that a modification does not "substantially change" the physical dimensions of a tower or base station if it meets the following criteria:

A. Modification does not increase the height by more than 20 feet. The proposed extension requires only a ten (10) foot extension and is within the 6409 Criteria.

B. Modification does not protrude from the edge of the tower more than twenty feet, or more than the width of the tower structure at the level of the appurtenance, whichever is greater; for those towers in the rights-of-way and for all base stations, it must not protrude from the edge of the structure more than six feet. The modification is for an extension of the monopole tower, requires no additional protrusion and will continue to have the same overall silhouette as the existing facility.

C. Proposal does not involve installation of more than the standard number of new equipment cabinets for the technology involved, but not to exceed four cabinets. No new cabinets are proposed. No additional equipment will be installed in the existing shelter.

D. Proposal does not require excavation or deployment outside the current site of the tower or base station. No excavation is proposed or required for this modification.

E. The collocation does not defeat the existing concealment elements of the tower or base station. The existing tower does not incorporate concealment elements.

F. The proposal complies with conditions associated with the prior approval of the tower or base station and any non-compliance is due to an increase in height, increase in width, addition of cabinets, or new excavation that does not exceed the corresponding "substantial change" thresholds. The tower will be raised above the height previously approved by the Council but within the parameters allowed under Section 6409.

In light of the foregoing, AT&T's proposal constitutes an "eligible facilities request" under Section 6409 as it is a "collocation of new transmission equipment" at an existing facility/base station and does not constitute a substantial change to the physical dimensions of the existing facility.

V. Compliance with FCC MPE Limits

The facility will be within 26.34% of the Federal and State emission standards for the general public. A copy of the RF Power Density assessment completed by SAI Communications, Inc. and dated August 16, 2018 is included in Attachment 3. As such, the total radio frequency

power density will be well within standards adopted by the Connecticut Department of Environmental Protection as set forth in Section 22a-162 of the Connecticut General Statutes and the Maximum Permissible Exposure ("MPE") limits established by the Federal Communications Commission for the public.

VI. Notice

Pursuant to Petition 1133, a notice letter and a copy of this Sub-Petition was provided to the Town of Berlin and the abutting property owners. Copies of this correspondence may be found in Attachments 4 and 5.

VII. Conclusion

It is respectfully submitted that AT&T's proposal satisfies the criteria of Section 6409, while also enhancing wireless communication services to the community and enabling users to access a state-of-the-art, digital system for voice communications, messaging, and data transmission and reception.

Respectfully Submitted,

Lucia Chiocchio

Lucia Chiocchio

On behalf of AT&T

cc: Town of Berlin
Abutting Property Owners
AT&T
SAI Communications, Inc.
Christopher B. Fisher, Esq.

1

PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY UPGRADE (RF MOD 2018 UPGRADE):
SITE ADDRESS:	1684 CHAMBERLAIN HIGHWAY BERLIN, CT 06037
LATITUDE:	41.5897139° N 41° 35' 22.97" N
LONGITUDE:	72.8055550° W 72° 48' 19.99" W
TYPE OF SITE:	MONOPOLE / OUTDOOR EQUIPMENT
TOWER HEIGHT:	133'±
RAD CENTER:	133'±
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

at&t

SITE NUMBER: CT1031

SITE NAME: BERLIN CHAMBERLAIN HIGHWAY

PACE ID: MRCTB026546

FA CODE: 10041794

PROJECT: RF MOD 2018 UPGRADE

FOR ZONING

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	A
C-1	SITE PLAN	A
A-1	COMPOUND & EQUIPMENT PLAN	A
A-2	ANTENNA LAYOUTS & ELEVATION	A
A-3	DETAILS	A

CROWN SITE NAME: BERLIN-CHAMBERLAIN HIGHWAY
CROWN SITE #: 876382

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI. TURN LEFT ONTO CAPITOL BLVD. 0.3 MI. TURN LEFT ONTO WEST ST. 0.3 MI. MERGE ONTO I-91 S TO CT-372 E IN BERLIN. TAKE EXIT 21 FROM CT-9 N. MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE USE THE RIGHT 2 LANES TO TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY CONTINUE ONTO I-84. USE THE LEFT 2 LANES TO TAKE EXIT 57 FOR CT-15 S TOWARD I-91 S/CHARTER OAK BRIDGE/N.Y.CITY. CONTINUE ONTO CT-15 S. CONTINUE ONTO CT-15 S/US-5 S TAKE EXIT 86 TO MERGE ONTO I-91 S TOWARD NEW HAVEN/NEW YORK CITY. TAKE EXIT 22N TO MERGE ONTO CT-9 N TOWARD NEW BRITAIN. TAKE EXIT 21 FOR CT-372 TOWARD US-5 N/CT-15 N/E BERLIN. DRIVE TO ORCHARD RD. TURN LEFT ONTO CT-372 E (SIGNS FOR EAST BERLIN) TURN RIGHT ONTO MIDDLETOWN RD. TURN LEFT ONTO US-5 S. TURN RIGHT ONTO ORCHARD RD 1684 CHAMBERLAIN HWY, BERLIN, CT 06037

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1031
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1684 CHAMBERLAIN HIGHWAY
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HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

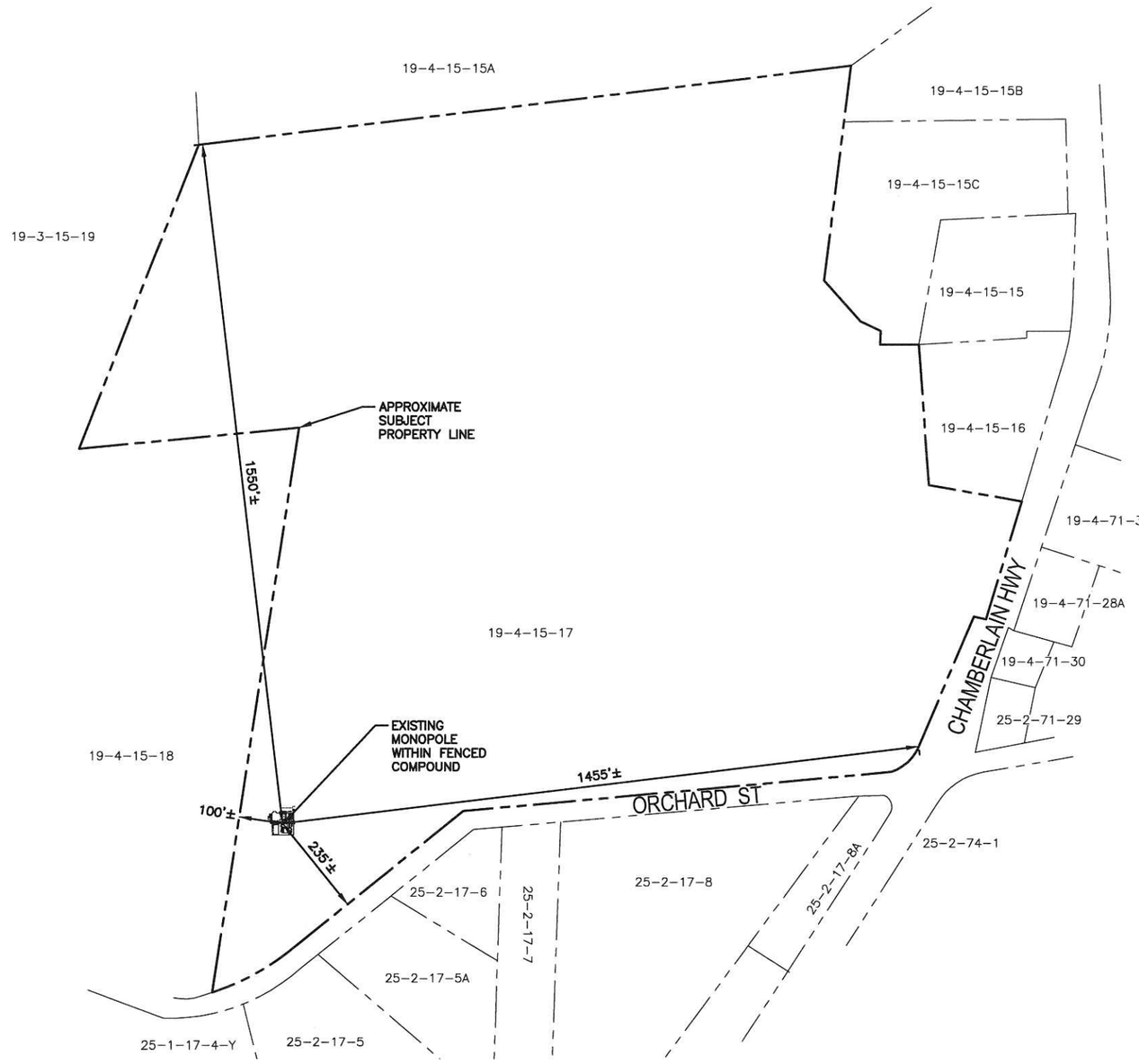
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	07/13/18	ISSUED FOR REVIEW	SB	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

TITLE SHEET
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	T-1	A



TOWN OF BERLIN, CONNECTICUT

Parcel ID	Site Address	Owner Name	Mailing Address	Mailing City	Mailing State	Mailing Zip
19-4-15-15	1606 CHAMBERLAIN HWY	BORKOWSKI CHRISTINE M	1606 CHAMBERLAIN HW	KENSINGTON	CT	06037- 0000
25-2-17-5	318 ORCHARD RD	PUNKUNUS RICHARD & ROSALIE M (1/2) &	318 ORCHARD RD	KENSINGTON	CT	06037- 0000
25-2-17-8	0 ORCHARD RD	MERIDEN CITY OF	117 PARKER AVE	MERIDEN	CT	06450- 0000
25-2-74-1	1753 CHAMBERLAIN HWY	LASTRINA LUCIANO	1753 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
19-4-71-31A	1667 CHAMBERLAIN HWY	RECKERT SHARON LEE & WOYNAR ROBERT W	1667 CHAMBERLAIN HWY	KENSINGTON	CT	06037- 0000
19-3-15-19	0 ORCHARD RD	DEVIVO EDWARD & DEVIVO FAMILY LLC	438 EDGEWOOD RD	BERLIN	CT	06037- 0000
19-4-15-15C	1584 CHAMBERLAIN HWY	MICHAELS DAVID R & ALLISON J	1584 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
19-4-15-15B	1558 CHAMBERLAIN HWY	DIDOMENICO GIANFRANCO & STEFANIA	1558 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
25-2-17-5A	340 ORCHARD RD	DUFAULT VICTOR C & ROSE MARIE	340 ORCHARD RD	KENSINGTON	CT	06037- 0000
19-4-15-16	1636 CHAMBERLAIN HWY	AVITABLE RALPH A & SHARON M (LU)	1636 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
25-2-17-7	384 ORCHARD RD	HAINES ROBERT W & JOAN	56 GARFIELD ST	NEWINGTON	CT	06111- 0000
25-2-71-29	495 ORCHARD RD	GARCIA ROBERTO SR & PRISCILLA	495 ORCHARD RD	KENSINGTON	CT	06037- 0000
19-4-15-17	1684 CHAMBERLAIN HWY	LAVIANA RONALD L & ARLENE G	1684 CHAMBERLAIN HWY	KENSINGTON	CT	06037- 0000
19-4-15-18	0 ORCHARD RD	MERIDEN CITY OF WATER	117 PARKER AVENUE	MERIDEN	CT	06450- 0000
25-2-17-8A	1786 CHAMBERLAIN HWY	MICHALAK ROBERT E	63 BARBERRY LANE	MERIDEN	CT	06450- 0000
25-2-17-6	376 ORCHARD RD	MORTON ALAN S & FELICIA L	376 ORCHARD RD	KENSINGTON	CT	06037- 0000
19-4-71-30	1705 CHAMBERLAIN HWY	MARQUARDT ROBERT S	1705 CHAMBERLAIN HWY	KENSINGTON	CT	06037- 0000
19-4-71-28A-5630	1697 CHAMBERLAIN HWY	LUCIA T SCHEER AMND & RESTATED REV TRST	1697 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
19-4-15-15A	0 CHAMBERLAIN HWY	ANTHONY Z MICACCI 2018 AMENDED &	1510 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
25-1-17-4-Y	0 ORCHARD RD	YANKEE GAS SERVICES COMPANY	PO BOX 270	HARTFORD	CT	06141-0270- 0000

SITE PLAN (1 / C-1)
22x34 SCALE: 1"=150'
11x17 SCALE: 1"=300'

0 75' 150' 300' 450'

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

SITE NUMBER: CT1031
SITE NAME: BERLIN
CHAMBERLAIN HIGHWAY
CROWN SITE#: 876382
1684 CHAMBERLAIN HIGHWAY
BERLIN, CT 06037
HARTFORD COUNTY

NO.	DATE	REVISIONS	BY	CHK	APP'D
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

SITE PLAN
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	c-1	A

NOTE:

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NOTE:

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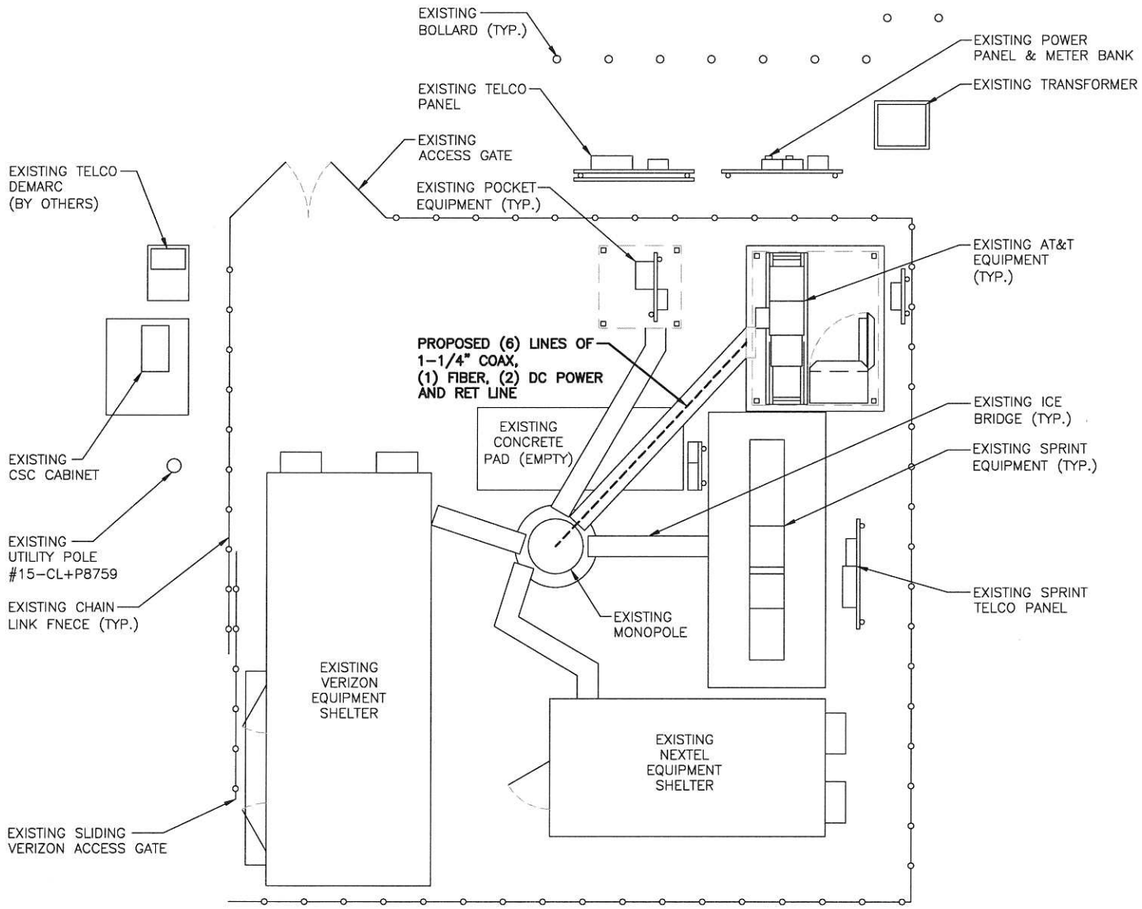

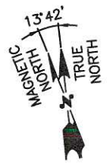

COMPOUND PLAN (1 / A-1)
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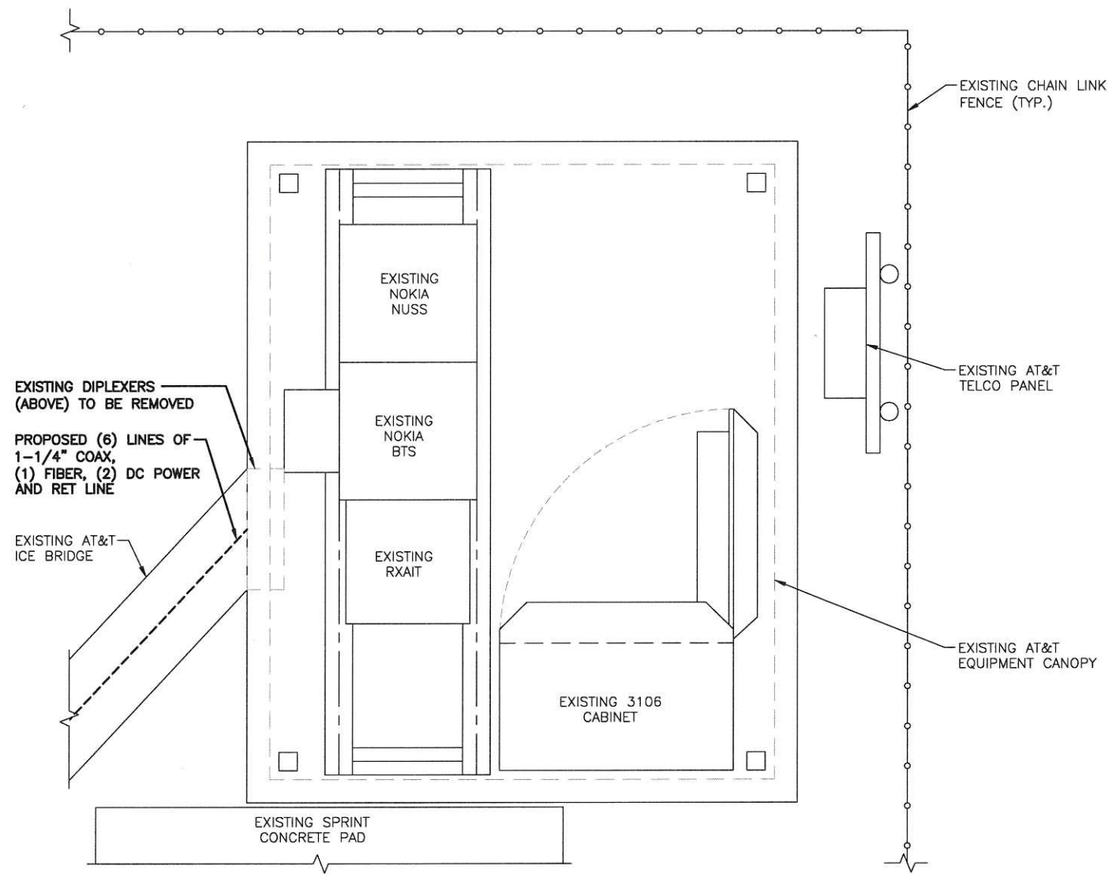
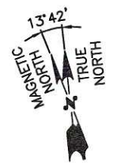
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"





EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1031
SITE NAME: BERLIN
CHAMBERLAIN HIGHWAY
CROWN SITE#: 876382
1684 CHAMBERLAIN HIGHWAY
BERLIN, CT 06037
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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A	07/13/18	ISSUED FOR REVIEW	SB	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

COMPOUND & EQUIPMENT PLAN
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	A-1	A

NOTE:

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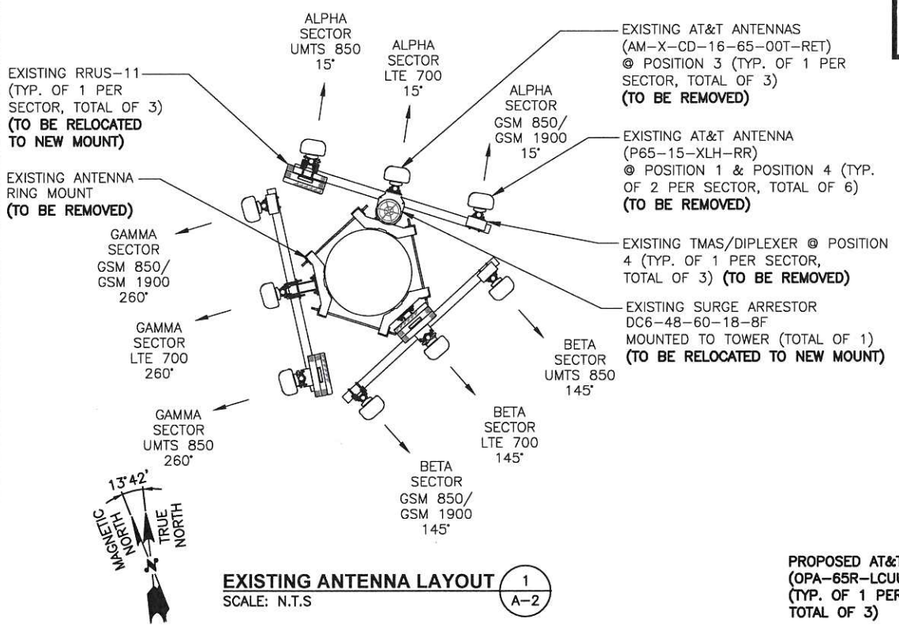
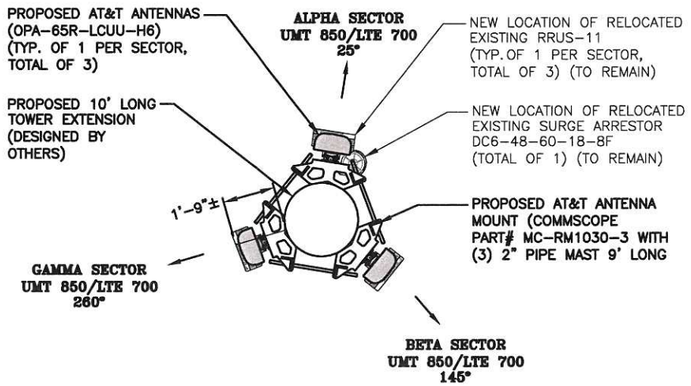
NOTE:

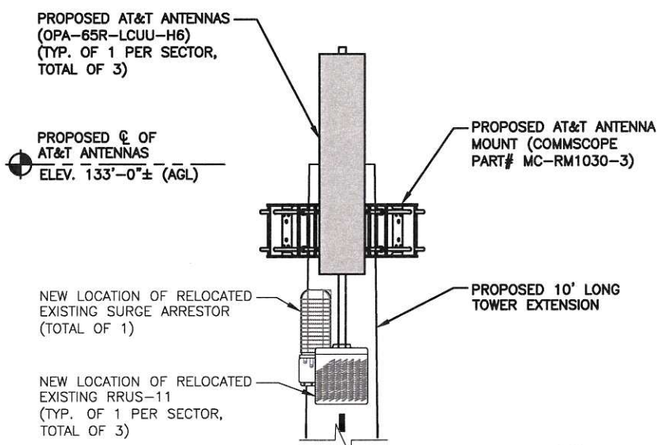
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



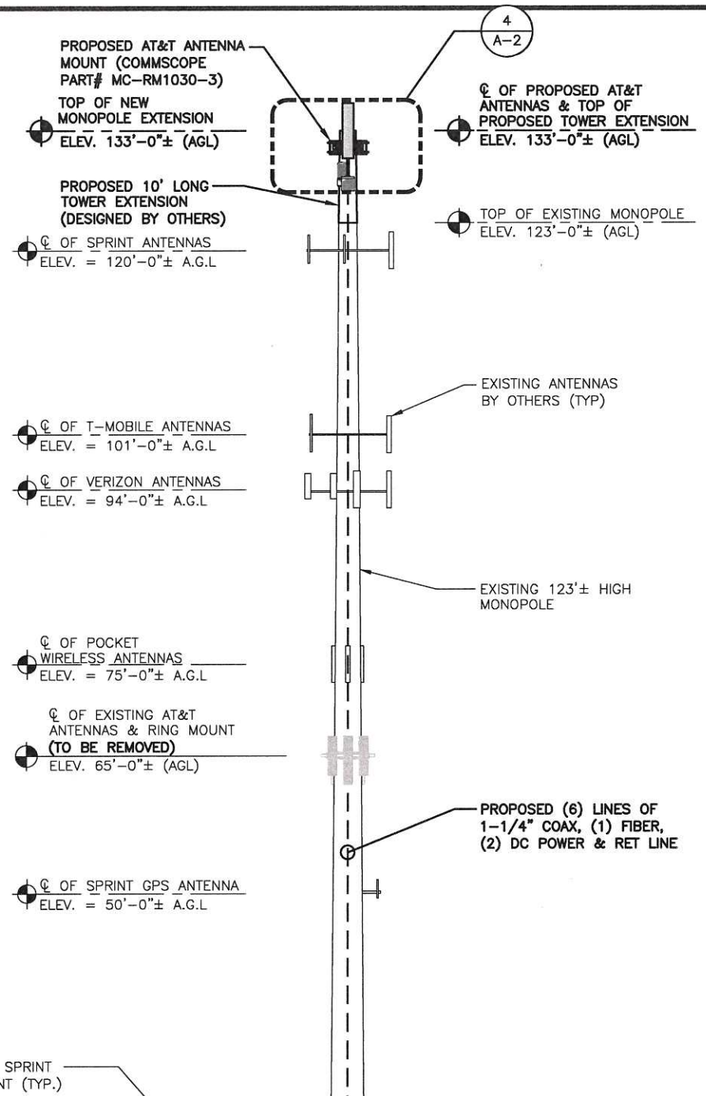
EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S

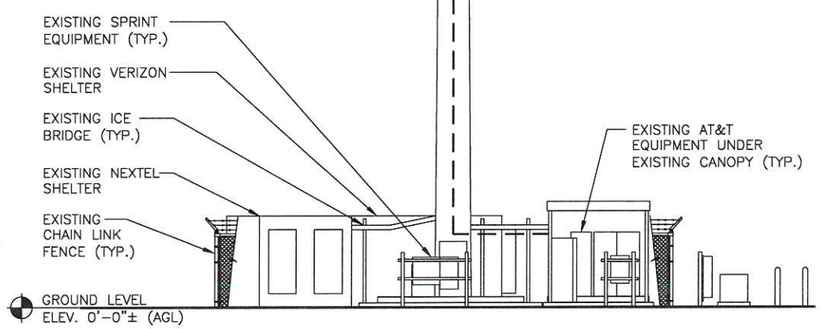


PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S



ENLARGED ANTENNA ELEVATION (4 / A-2)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"





EAST ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"

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1684 CHAMBERLAIN HIGHWAY
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HARTFORD COUNTY

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ANTENNA LAYOUTS & ELEVATION
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	A-2	A

NOTE:

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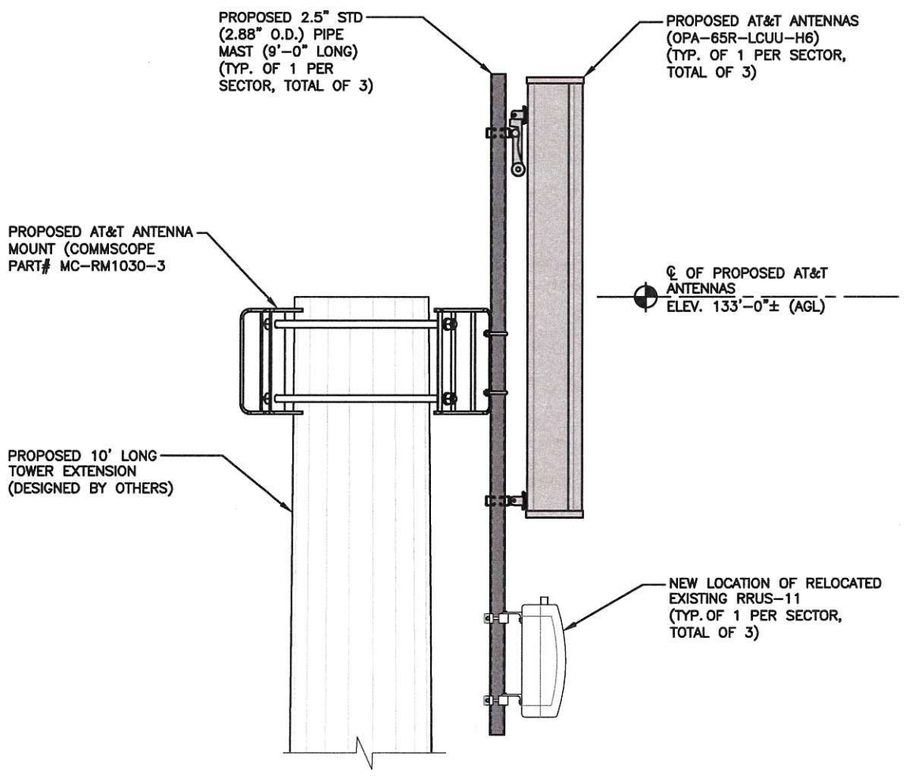
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUT H	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP, DC POWER & FIBER
A1	PROPOSED	LTE	OPA-65R-LCUU-H6	72X14.8X7.4	133'-0"	25°	--	(E) RRUS-11 (700)	-	(2) 1-1/4"	(E)(1) RAYCAP DC6-48-60-18-8F (2) DC POWER (1) FIBER CABLE
B4	PROPOSED	LTE	OPA-65R-LCUU-H6	72X14.8X7.4	133'-0"	145°	--	(E) RRUS-11 (700)	-	(2) 1-1/4"	
C4	PROPOSED	LTE	OPA-65R-LCUU-H6	72X14.8X7.4	133'-0"	260°	--	(E) RRUS-11 (700)	-	(2) 1-1/4"	

FINAL ANTENNA CONFIGURATION TABLE (2 / A-3)
SCALE: N.T.S



PROPOSED ANTENNA & RRU MOUNTING DETAIL (1 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

HUDSON Design Group LLC
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NORTH ANDOVER, MA 01845
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SAI
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AT&T

DETAILS
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	A-3	A

2

PAUL J. FORD & COMPANY

Date: **September 04, 2018**

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1031
	Carrier Site Name:	BERLIN CHAMBERLAIN HWY
Crown Castle Designation:	**Crown Castle BU Number:**	876382
	Crown Castle Site Name:	BERLIN / LAVIANA ORCHARD
	Crown Castle JDE Job Number:	481239
	Crown Castle Work Order Number:	1572415
	Crown Castle Order Number:	423171 Rev. 6
Engineering Firm Designation:	Paul J. Ford and Company Project Number:	37518-0522.004.7700
Site Data:	1684 Chamberlain Highway, BERLIN, Hartford County, CT Latitude *41° 35' 23.07"*, Longitude *-72° 48' 19.2"* 123 Foot - Monopole Tower w/Proposed Extension	

Dear Timothy Howell,

Paul J. Ford and Company is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower.

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

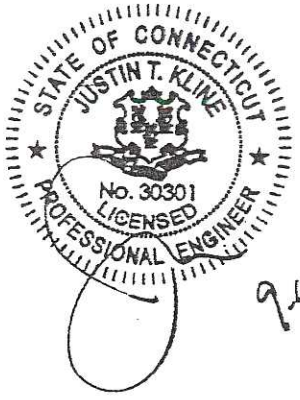
LC4.7: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

Respectfully submitted by:

Gowtham

Gowtham Penumatsa
Structural Designer BKK



9.4.18

3

Sanket Joshi
SAI Communications
12 Industrial Way
Salem, NH 03079
Sanket.Joshi@sai-comm.com

August 16, 2018

Connecticut Siting Council

Subject: AT&T Wireless, CT1031 – Berlin, CT

Dear Connecticut Siting Council:

At the request of AT&T Wireless, SAI Comunications has performed an assessment of the RF Power Density at the proposed site located at 1684 Chamberlain Highway, Berlin, CT.
Calculations were done in compliance with FCC OET Bulletin 65. This report provides an FCC compliance assessment based on a "worst-case" analysis that all transmitters are simultaneously operating at full power and pointing directly at the ground.

FCC OET Bulletin 65 formula:

$$S = \frac{2.56 * 1.64 * ERP}{4 * \pi * R^2}$$

Transmission Mode	Antenna Centerline AGL (ft)	Frequency (MHz)	Number of Channels	Effective Radiated Power per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	% MPE (Uncontrolled/ General Public)
AT&T UMTS	133	850	1	1,054	0.0214	0.5667	3.78%
AT&T LTE	133	700	1	1,216	0.0247	0.4667	5.30%
Other carriers per CSC records							17.26%
Total							**26.34%**

Conclusion: AT&T's proposed antenna installation along with other carriers is calculated to be within 26.34% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).

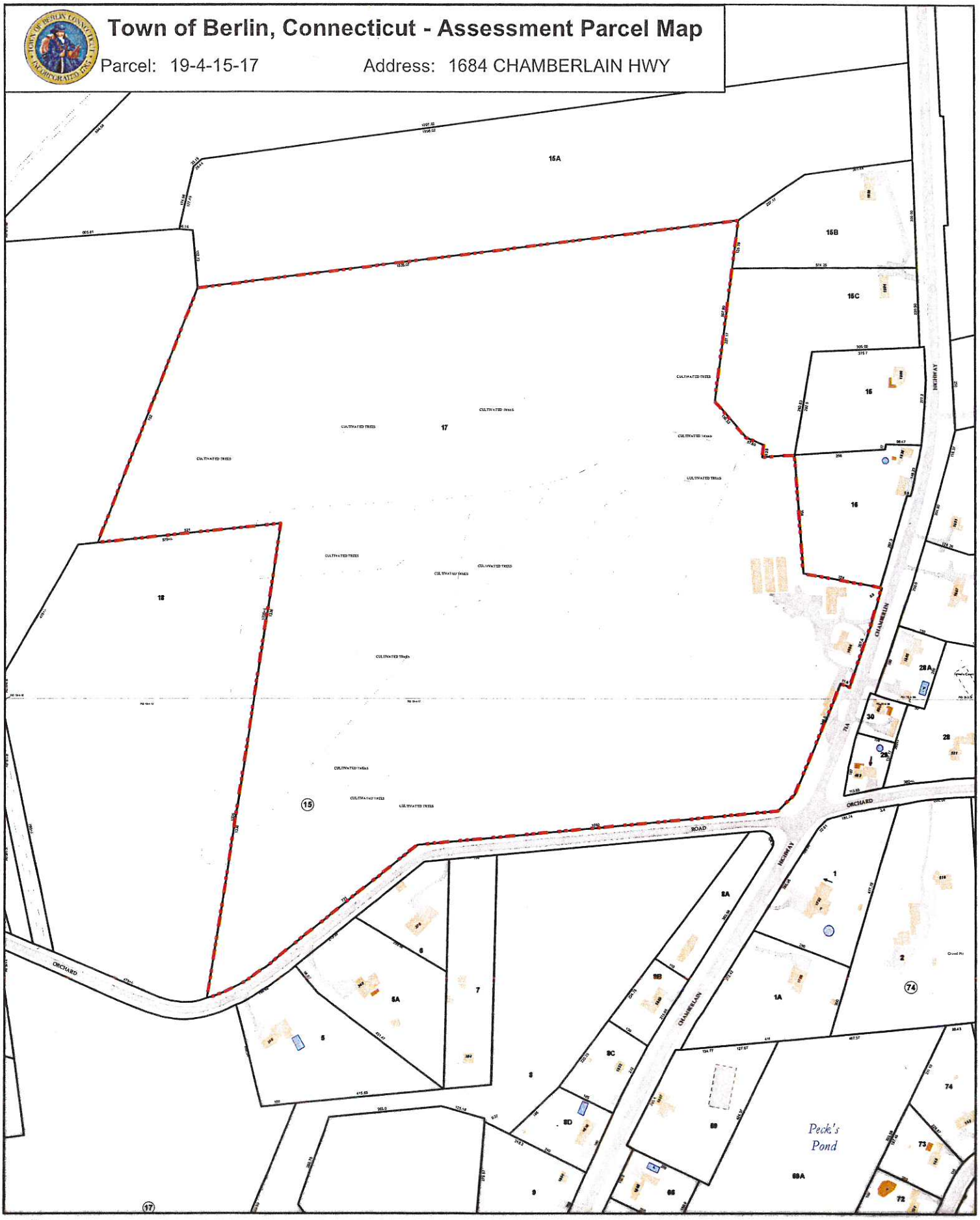
Sincerely,

Sanket Y Joshi
SAI Communications

4

Town of Berlin, Connecticut - Assessment Parcel Map

Parcel: 19-4-15-17 Address: 1684 CHAMBERLAIN HWY



N W E S

NEGEO
New England Geosystems
www.negeosystems.com

Approximate Scale: 1 inch = 333 feet

0 160 320 480 640 Feet

Map Produced: December 2017

Jack Healy, Town Manager
Town of Berlin
240 Kensington Rd
Berlin, CT 06037-0000

Laviana Ronald L
& Arlene G
1684 Chamberlain Hwy
Kensington, CT 06037-0000

Borkowski Christine M
1606 Chamberlain Hwy
Kensington, CT 06037-0000

Punkunus Richard
& Rosalie M
318 Orchard Rd
Kensington, CT 06037-0000

Meriden City of
City Clerk
117 Parker Ave
Meriden, CT 06450-0000

Reckert Sharon Lee &
Woynar Robert W
1667 Chamberlain Hwy
Kensington, CT 06037-0000

Devivo Edward
& Devivo Family LLC
438 Edgewood Rd
Berlin, CT 06037-0000

Michaels David R
& Allison J
1584 Chamberlain Hwy
Berlin, CT 06037-0000

Didomenico Gianfranco
& Stefania
1558 Chamberlain Hwy
Berlin, CT 06037-0000

Dufault Victor C
&Rose Marie
340 Orchard Rd
Kensington, CT 06037-0000

Avitable Raph A
&Sharon M (LU)
1636 Chamberlain Hwy
Berlin, CT 06037-0000

Haines Robert W & Joan
56 Garfield St
Newington, CT 06111-0000

Garcia Roberto Sr & Priscilla
495 Orchard Rd
Kensington, CT 06037-0000

Meriden City of Water
117 Parker Avenue
Meriden, CT 06450-0000

Michalak Robert E
63 Barberry Lane
Meriden, CT 06450-0000

Morton Alan S
& Felicia L
376 Orchard Rd
Kensington, CT 06037-0000

Marquardt Robert S
1705 Chamberlain Hwy
Kensington, CT 06037-0000

Lucia T Scheer
1697 Chamberlain Hwy
Berlin, CT 06037-0000

Anthony Z Micacci
1510 Chamberlain Hwy
Berlin, CT 06037-0000

Yankee Gas Services Company
PO Box 270
Hartford, CT 06141-0270

DL Management Co LLC
1615 Chamberlain Hwy
Kensington, CT 06037-0000

Carlone Dominic M Jr
& Lisa A
1615 Chamberlain Hwy
Kensington, CT 06037-0000

Lastrina Luciano
1753 Chamberlain Hwy
Kensington, CT 06037-0000

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3.	Borkowski Christine M 1606 Chamberlain Hwy Kensington, CT 06037-0000			Handling Charge										
4.	Punkunus Richard & Rosalie M 318 Orchard Rd Kensington, CT 06037-0000			Handling Charge										
5.				Handling Charge										
6.				Handling Charge										
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1.		Meriden City of City Clerk 117 Parker Ave Meriden, CT 06450-0000			Registered and over $50,000 Handling Charge				Adult Signature Required	Adult Signature Restricted Delivery	Restricted Delivery	Return Receipt	Signature Confirmation	Signature Confirmation Restricted Delivery	Sheet and Seq
2.															
3.		Reckert Sharon Lee & Woynar Robert W 1667 Chamberlain Hwy Kensington, CT 06037-0000													
4.		Devivo Edward & Devivo Family LLC 438 Edgewood Rd Berlin, CT 06037-0000													
5.															
6.		Michaels David R & Allison J 1584 Chamberlain Hwy Berlin, CT 06037-0000													
7.					Handling Charge										
8.															

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1.	Didomenico Gianfranco & Stefania 1558 Chamberlain Hwy Berlin, CT 06037-0000			$0.00 Handling Charge				Restricted Delivery	Restricted Delivery	Return Receipt	Return Receipt	Signature Confirmation	Signature Confirmation Restricted Delivery	Shipping
2.				$0.00 Handling Charge										
3.	Dufault Victor C &Rose Marie 340 Orchard Rd Kensington, CT 06037-0000			$0.00 Handling Charge										
4.	Avitable Raph A &Sharon M (LU) 1636 Chamberlain Hwy Berlin, CT 06037-0000			$0.00 Handling Charge										
5.				$0.00 Handling Charge										
6.	Haines Robert W & Joan 56 Garfield St Newington, CT 06111-0000			$0.00 Handling Charge										
7.				$0.00 Handling Charge										
8.				$0.00 Handling Charge										

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1.	Garcia Roberto Sr & Priscilla 495 Orchard Rd Kensington, CT 06037-0000			0.00										
2.				0.00									Restricted Delivery	
3.	Meriden City of Water 117 Parker Avenue Meriden, CT 06450-0000			0.00				Adult Signature Required	Adult Signature Restricted Delivery	Collect on Delivery	Return Receipt for Merchandise	Signature Confirmation		
4.	Michalak Robert E 63 Barberry Lane Meriden, CT 06450-0000			0.00										Priority Mail
5.				0.00										
6.	Morton Alan S & Felicia L 376 Orchard Rd Kensington, CT 06037-0000			0.00				Adult Signature Required	Adult Signature Restricted Delivery				Signature Confirmation Restricted Delivery	
7.				0.00										
8.				0.00										

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2.															
3.		Lucia T Scheer 1697 Chamberlain Hwy Berlin, CT 06037-0000													
4.															
5.		Anthony Z Micacci 1510 Chamberlain Hwy Berlin, CT 06037-0000													
6.		Yankee Gas Services Company PO Box 270 Hartford, CT 06141-0270													
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2.				Registered Mail Envelope									Standard Restricted Delivery	
3.	Carlone Dominic M Jr & Lisa A 1615 Chamberlain Hwy Kensington, CT 06037-0000			Registered Mail Envelope				Restricted Delivery	Adult Signature Restricted Delivery	Return Receipt				
4.				Registered Mail Envelope				Restricted Delivery	Adult Signature Restricted Delivery	Return Receipt		Signature Confirmation		Signature Confirmation
5.	Lastrina Luciano 1753 Chamberlain Hwy Kensington, CT 06037-0000			Registered Mail Envelope				Restricted Delivery	Adult Signature Restricted Delivery	Return Receipt		Signature Confirmation		Signature Confirmation
6.				Registered Mail Envelope				Restricted Delivery	Adult Signature Restricted Delivery					
7.				Registered Mail Envelope										
8.				Registered Mail Envelope										

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445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
Jack Healy, Town Manager
Town of Berlin
240 Kensington Road
Berlin, CT 06037

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Mr. Healy:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") under Petition 1133 to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

AT&T is submitting this Sub-Petition as an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act of 2012 (codified at 47 USC Sec. 1455(a)) and as further clarified by the Federal Communications Commission in its October 21, 2014 Order (FCC-14-153).

This notice and the enclosed copy of the Sub-Petition are provided to you in keeping with the Council's ruling in Petition 1133. Any comments regarding this proposal should be provided to the Council within thirty (30) days of the date of this submission.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Lucia Chiocchio

Lucia Chiocchio

CUDDY
+FEDER
LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
RONALD L & ARLENE G LAVIANA
1684 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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This notice and the enclosed copy of the Sub-Petition* are provided to you as an abutting property owner in keeping with the Council's ruling in Petition 113. Any comments regarding this proposal should be provided to the Council within thirty (30) days of the date of this submission.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

* Attachment 2 provides the summary sheet of the Structural Modification Report. A full copy of this report is on file with the Council and available for review upon request.

CUDDY
+FEDER
LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
CHRISTINE M BORKOWSKI
1606 CHAMBERLAIN HW
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

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T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
RICHARD & ROSALIE M PUNKUNUS
318 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

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T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
CITY OF MERIDEN
City Clerk
117 PARKER AVE
MERIDEN, CT06450- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

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Lucia Chiocchio
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September 11, 2018

FIRST CLASS MAIL
SHARON LEE RECKERT & ROBERT W WOYNAR
1667 CHAMBERLAIN HWY
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

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CUDDY
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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
EDWARD DEVIVO & DEVIVO FAMILY LLC
438 EDGEWOOD RD
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
DAVID R & ALLISON J MICHAELS
1584 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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September 11, 2018

FIRST CLASS MAIL
GIANFRANCO & STEFANIA DIDOMENICO
1558 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
VICTOR C & ROSE MARIE DUFAULT
340 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
RALPH A & SHARON M AVITABLE
1636 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
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September 11, 2018

FIRST CLASS MAIL
ROBERT W & JOAN HAINES
56 GARFIELD ST
NEWINGTON, CT06111- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ROBERTO SR & PRISCILLA GARCIA
495 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
MERIDEN CITY OF WATER
117 PARKER AVENUE
MERIDEN, CT06450- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ROBERT E MICHALAK
63 BARBERRY LANE
MERIDEN, CT06450- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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September 11, 2018

FIRST CLASS MAIL
ALAN S & FELICIA L MORTON
376 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
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1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ROBERT S MARQUARDT
1705 CHAMBERLAIN HWY
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
LUCIA T SCHEER
1697 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ANTHONY Z MICACCI
1510 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
YANKEE GAS SERVICES COMPANY
PO BOX 270
HARTFORD, CT06141-0270

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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September 11, 2018

FIRST CLASS MAIL
DL MANAGEMENT CO LLC
1615 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
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1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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AT&T is submitting this Sub-Petition as an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act of 2012 (codified at 47 USC Sec. 1455(a)) and as further clarified by the Federal Communications Commission in its October 21, 2014 Order (FCC-14-153).

This notice and the enclosed copy of the Sub-Petition* are provided to you as an abutting property owner in keeping with the Council's ruling in Petition 113. Any comments regarding this proposal should be provided to the Council within thirty (30) days of the date of this submission.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

* Attachment 2 provides the summary sheet of the Structural Modification Report. A full copy of this report is on file with the Council and available for review upon request.

CUDDY +FEDER LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
DOMINIC M JR & LISA A CARLONE
1615 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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LLP

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
LUCIANO LASTRINA
1753 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
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PROJECT INFORMATION

SCOPE OF WORK:	TELECOMMUNICATIONS FACILITY UPGRADE (RF MOD 2018 UPGRADE):
SITE ADDRESS:	1684 CHAMBERLAIN HIGHWAY BERLIN, CT 06037
LATITUDE:	41.5897139° N 41° 35' 22.97" N
LONGITUDE:	72.8055550° W 72° 48' 19.99" W
TYPE OF SITE:	MONOPOLE / OUTDOOR EQUIPMENT
TOWER HEIGHT:	133'±
RAD CENTER:	133'±
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT1031

SITE NAME: BERLIN CHAMBERLAIN HIGHWAY

PACE ID: MRCTB026546

FA CODE: 10041794

PROJECT: RF MOD 2018 UPGRADE

FOR ZONING

DRAWING INDEX

SHEET NO.	DESCRIPTION	REV.
T-1	TITLE SHEET	A
C-1	SITE PLAN	A
A-1	COMPOUND & EQUIPMENT PLAN	A
A-2	ANTENNA LAYOUTS & ELEVATION	A
A-3	DETAILS	A

CROWN SITE NAME: BERLIN-CHAMBERLAIN HIGHWAY
CROWN SITE #: 876382

VICINITY MAP

DIRECTIONS TO SITE:

START OUT GOING NORTHEAST ON ENTERPRISE DR TOWARD CAPITOL BLVD. 0.4 MI. TURN LEFT ONTO CAPITOL BLVD. 0.3 MI. TURN LEFT ONTO WEST ST. 0.3 MI. MERGE ONTO I-91 S TO CT-372 E IN BERLIN. TAKE EXIT 21 FROM CT-9 N. MERGE ONTO I-90 W/MASSACHUSETTS TURNPIKE
USE THE RIGHT 2 LANES TO TAKE EXIT 9 FOR I-84 TOWARD US-20/HARTFORD/NEW YORK CITY CONTINUE ONTO I-84. USE THE LEFT 2 LANES TO TAKE EXIT 57 FOR CT-15 S TOWARD I-91 S/CHARTER OAK BRIDGE/N.Y.CITY. CONTINUE ONTO CT-15 S. CONTINUE ONTO CT-15 S/US-5 S TAKE EXIT 86 TO MERGE ONTO I-91 S TOWARD NEW HAVEN/NEW YORK CITY. TAKE EXIT 22N TO MERGE ONTO CT-9 N TOWARD NEW BRITAIN. TAKE EXIT 21 FOR CT-372 TOWARD US-5 N/CT-15 N/E BERLIN. DRIVE TO ORCHARD RD. TURN LEFT ONTO CT-372 E (SIGNS FOR EAST BERLIN) TURN RIGHT ONTO MIDDLETOWN RD. TURN LEFT ONTO US-5 S. TURN RIGHT ONTO ORCHARD RD
1684 CHAMBERLAIN HWY, BERLIN, CT 06037

GENERAL NOTES

1. THIS DOCUMENT IS THE CREATION, DESIGN, PROPERTY AND COPYRIGHTED WORK OF AT&T. ANY DUPLICATION OR USE WITHOUT EXPRESS WRITTEN CONSENT IS STRICTLY PROHIBITED. DUPLICATION AND USE BY GOVERNMENT AGENCIES FOR THE PURPOSES OF CONDUCTING THEIR LAWFULLY AUTHORIZED REGULATORY AND ADMINISTRATIVE FUNCTIONS IS SPECIFICALLY ALLOWED.
2. THE FACILITY IS AN UNMANNED PRIVATE AND SECURED EQUIPMENT INSTALLATION. IT IS ONLY ACCESSED BY TRAINED TECHNICIANS FOR PERIODIC ROUTINE MAINTENANCE AND THEREFORE DOES NOT REQUIRE ANY WATER OR SANITARY SEWER SERVICE. THE FACILITY IS NOT GOVERNED BY REGULATIONS REQUIRING PUBLIC ACCESS PER ADA REQUIREMENTS.
3. CONTRACTOR SHALL VERIFY ALL PLANS AND EXISTING DIMENSIONS AND CONDITIONS ON THE JOB SITE AND SHALL IMMEDIATELY NOTIFY THE AT&T MOBILITY REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.
4. CONSTRUCTION DRAWINGS ARE VALID FOR SIX MONTHS AFTER ENGINEER OF RECORD'S STAMPED AND SIGNED SUBMITTAL DATE LISTED HEREIN.

72 HOURS

CALL
BEFORE YOU DIG
CALL TOLL FREE 1-800-922-4455
OR CALL 811

UNDERGROUND SERVICE ALERT

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1031
SITE NAME: BERLIN CHAMBERLAIN HIGHWAY
CROWN SITE#: 876382
1684 CHAMBERLAIN HIGHWAY
BERLIN, CT 06037
HARTFORD COUNTY

500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

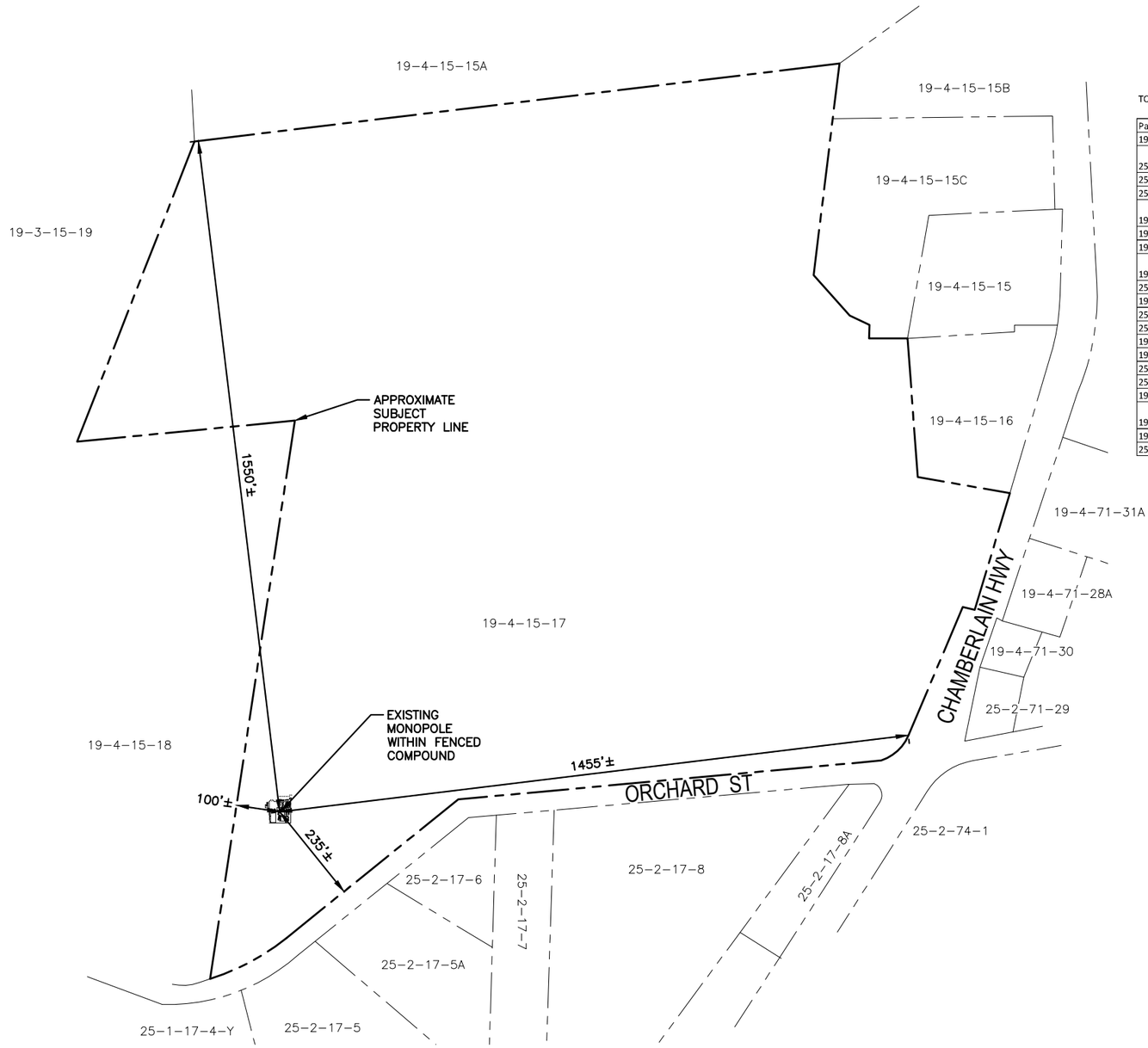
NO.	DATE	REVISIONS	BY	CHK	APP'D
A	07/13/18	ISSUED FOR REVIEW	SB	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

TITLE SHEET
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	T-1	A



TOWN OF BERLIN, CONNECTICUT

Parcel ID	Site Address	Owner Name	Mailing Address	Mailing City	Mailing State	Mailing Zip
19-4-15-15	1606 CHAMBERLAIN HWY	BORKOWSKI CHRISTINE M	1606 CHAMBERLAIN HW	KENSINGTON	CT	06037- 0000
25-2-17-5	318 ORCHARD RD	PUNKUNUS RICHARD & ROSALIE M (1/2) &	318 ORCHARD RD	KENSINGTON	CT	06037- 0000
25-2-17-8	0 ORCHARD RD	MERIDEN CITY OF	117 PARKER AVE	MERIDEN	CT	06450- 0000
25-2-74-1	1753 CHAMBERLAIN HWY	LASTRINA LUCIANO	1753 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
19-4-71-31A	1667 CHAMBERLAIN HWY	RECKERT SHARON LEE & WOYNAR ROBERT W	1667 CHAMBERLAIN HWY	KENSINGTON	CT	06037- 0000
19-3-15-19	0 ORCHARD RD	DEVIVO EDWARD & DEVIVO FAMILY LLC	438 EDGEWOOD RD	BERLIN	CT	06037- 0000
19-4-15-15C	1584 CHAMBERLAIN HWY	MICHAELS DAVID R & ALLISON J	1584 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
19-4-15-15B	1558 CHAMBERLAIN HWY	DIDOMENICO GIANFRANCO & STEFANIA	1558 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
25-2-17-5A	340 ORCHARD RD	DUFAULT VICTOR C & ROSE MARIE	340 ORCHARD RD	KENSINGTON	CT	06037- 0000
19-4-15-16	1636 CHAMBERLAIN HWY	AVITABLE RALPH A & SHARON M (LU)	1636 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
25-2-17-7	384 ORCHARD RD	HAINES ROBERT W & JOAN	56 GARFIELD ST	NEWINGTON	CT	06111- 0000
25-2-71-29	495 ORCHARD RD	GARCIA ROBERTO SR & PRISCILLA	495 ORCHARD RD	KENSINGTON	CT	06037- 0000
19-4-15-17	1684 CHAMBERLAIN HWY	LAVIANA RONALD L & ARLENE G	1684 CHAMBERLAIN HWY	KENSINGTON	CT	06037- 0000
19-4-15-18	0 ORCHARD RD	MERIDEN CITY OF WATER	117 PARKER AVENUE	MERIDEN	CT	06450- 0000
25-2-17-8A	1786 CHAMBERLAIN HWY	MICHALAK ROBERT E	63 BARBERRY LANE	MERIDEN	CT	06450- 0000
25-2-17-6	376 ORCHARD RD	MORTON ALAN S & FELICIA L	376 ORCHARD RD	KENSINGTON	CT	06037- 0000
19-4-71-30	1705 CHAMBERLAIN HWY	MARQUARDT ROBERT S	1705 CHAMBERLAIN HWY	KENSINGTON	CT	06037- 0000
19-4-71-28A-5630	1697 CHAMBERLAIN HWY	LUCIA T SCHEER AMND & RESTATED REV TRST	1697 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
19-4-15-15A	0 CHAMBERLAIN HWY	ANTHONY Z MICACCI 2018 AMENDED &	1510 CHAMBERLAIN HWY	BERLIN	CT	06037- 0000
25-1-17-4-Y	0 ORCHARD RD	YANKEE GAS SERVICES COMPANY	PO BOX 270	HARTFORD	CT	06141-0270- 0000

SITE PLAN 1 / C-1
22x34 SCALE: 1"=150'
11x17 SCALE: 1"=300'

0 75' 150' 300' 450'

HUDSON Design Group LLC
45 BEECHWOOD DRIVE
NORTH ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1031
SITE NAME: BERLIN CHAMBERLAIN HIGHWAY
CROWN SITE#: 876382
1684 CHAMBERLAIN HIGHWAY
BERLIN, CT 06037
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	07/13/18	ISSUED FOR REVIEW	SB	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

SITE PLAN
RF MOD 2018 UPGRADE

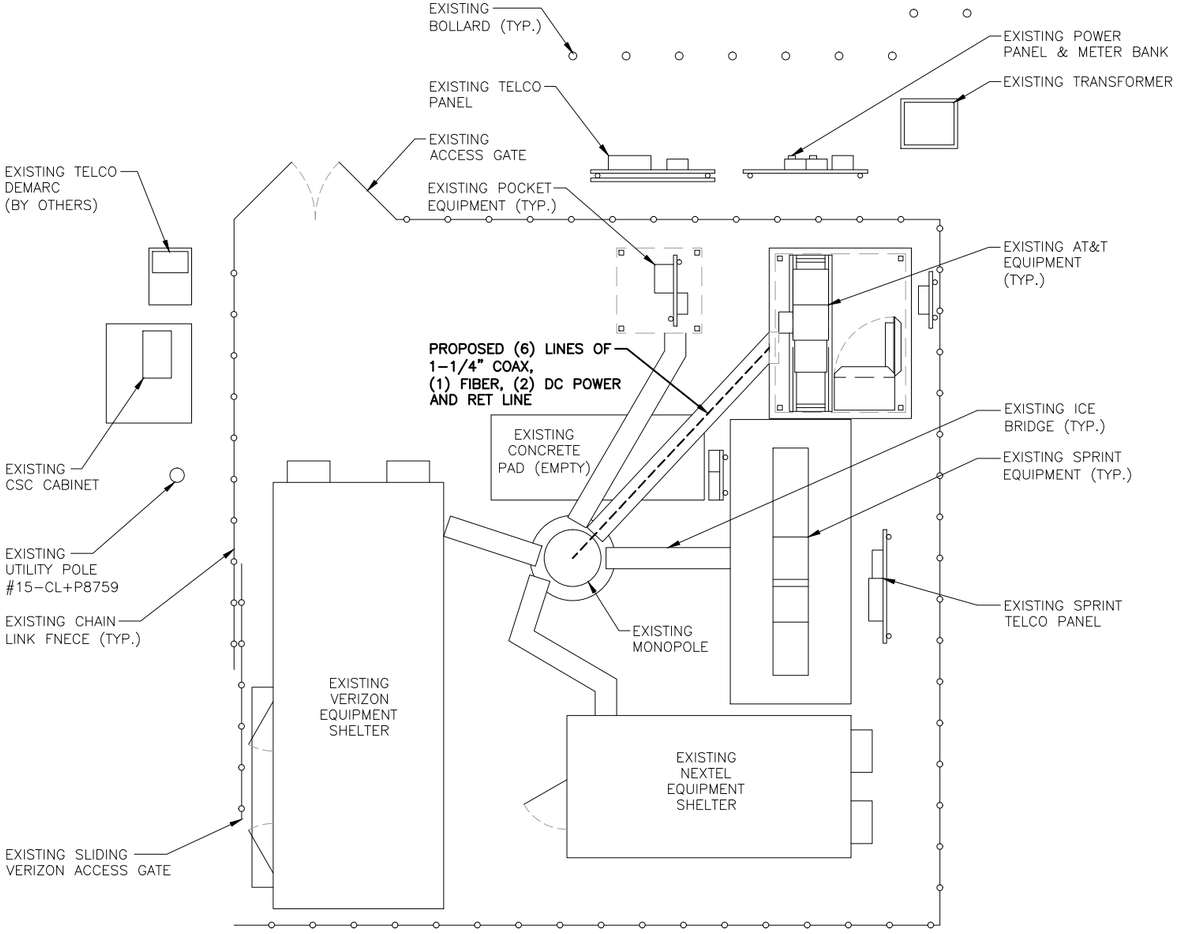
SITE NUMBER	DRAWING NUMBER	REV
CT1031	c-1	A

NOTE:

ALL LINES AND ANTENNAS TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS PROVIDED BY CROWN CASTLE AND AT&T ANTENNA DESIGN SHEET/RECOMMENDATION.

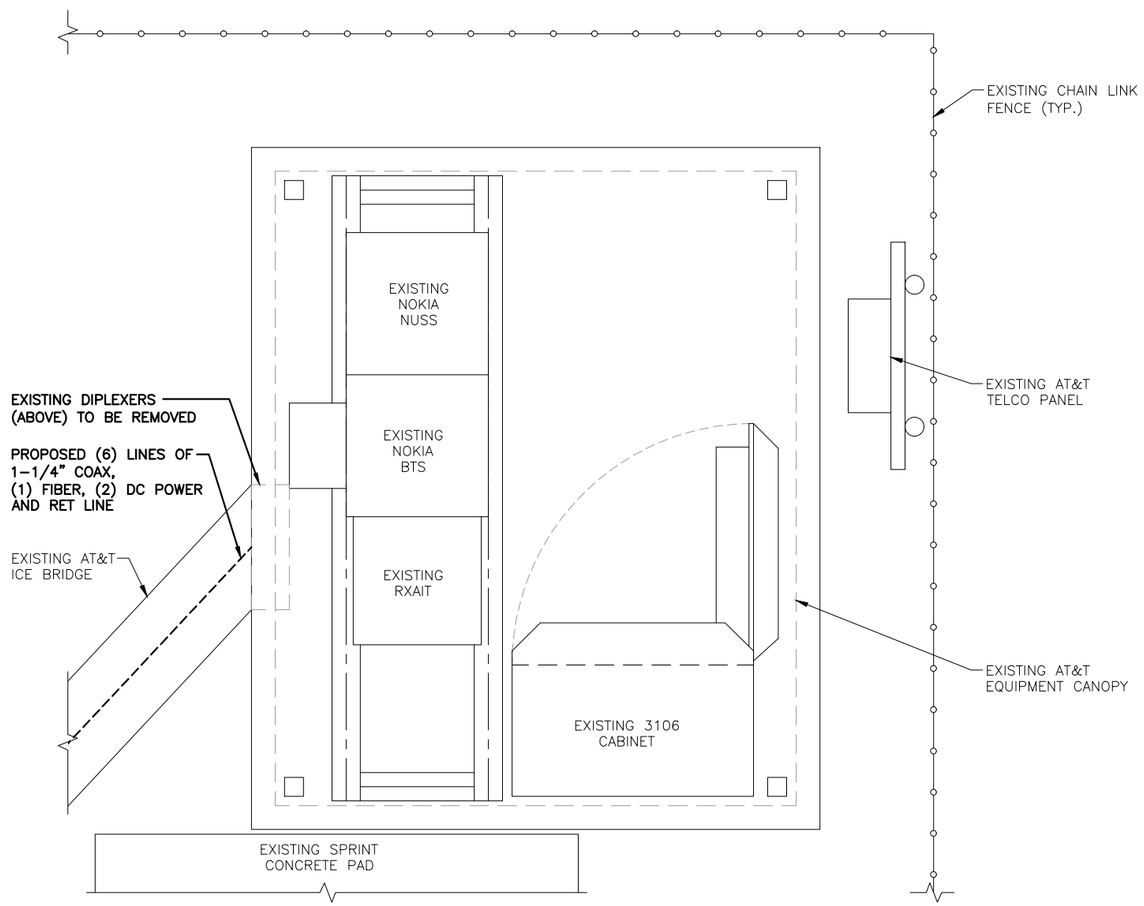
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.



COMPOUND PLAN (1 / A-1)
22x34 SCALE: 3/16"=1'-0"
11x17 SCALE: 3/32"=1'-0"

0 2'-8" 5'-4" 10'-8" 16'-0"



EQUIPMENT PLAN (2 / A-1)
22x34 SCALE: 3/4"=1'-0"
11x17 SCALE: 3/8"=1'-0"

0 0'-8" 1'-4" 2'-8" 4'-0"

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TEL: (978) 557-5553
FAX: (978) 336-5586

12 INDUSTRIAL WAY
SALEM, NH 03079

SITE NUMBER: CT1031
SITE NAME: BERLIN
CHAMBERLAIN HIGHWAY
CROWN SITE#: 876382
1684 CHAMBERLAIN HIGHWAY
BERLIN, CT 06037
HARTFORD COUNTY

at&t
500 ENTERPRISE DRIVE, SUITE 3A
ROCKY HILL, CT 06067

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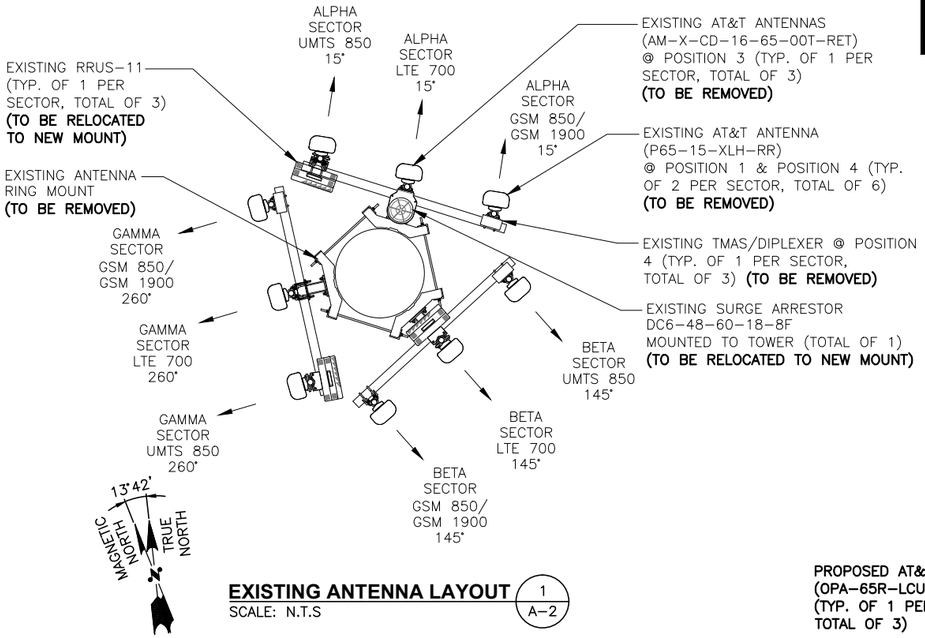
A	07/13/18	ISSUED FOR REVIEW	SB	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

COMPOUND & EQUIPMENT PLAN
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	A-1	A



EXISTING ANTENNA LAYOUT (1 / A-2)
SCALE: N.T.S

NOTE:
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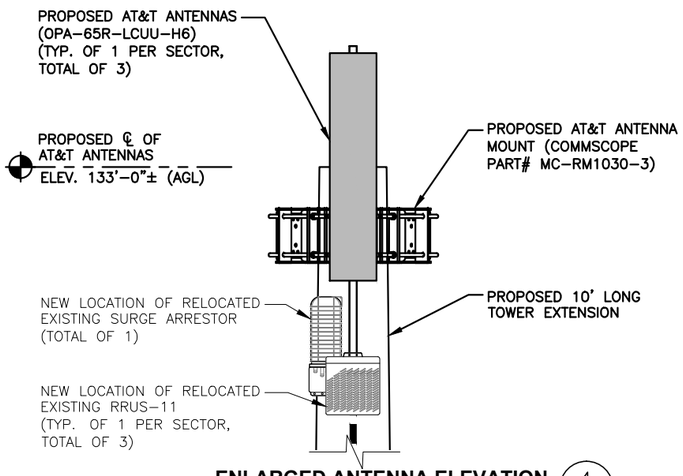
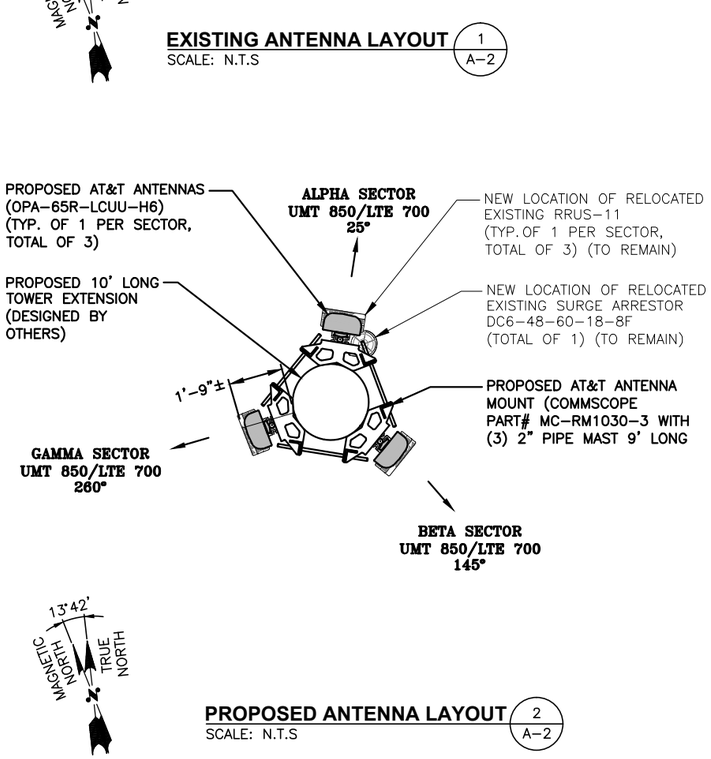
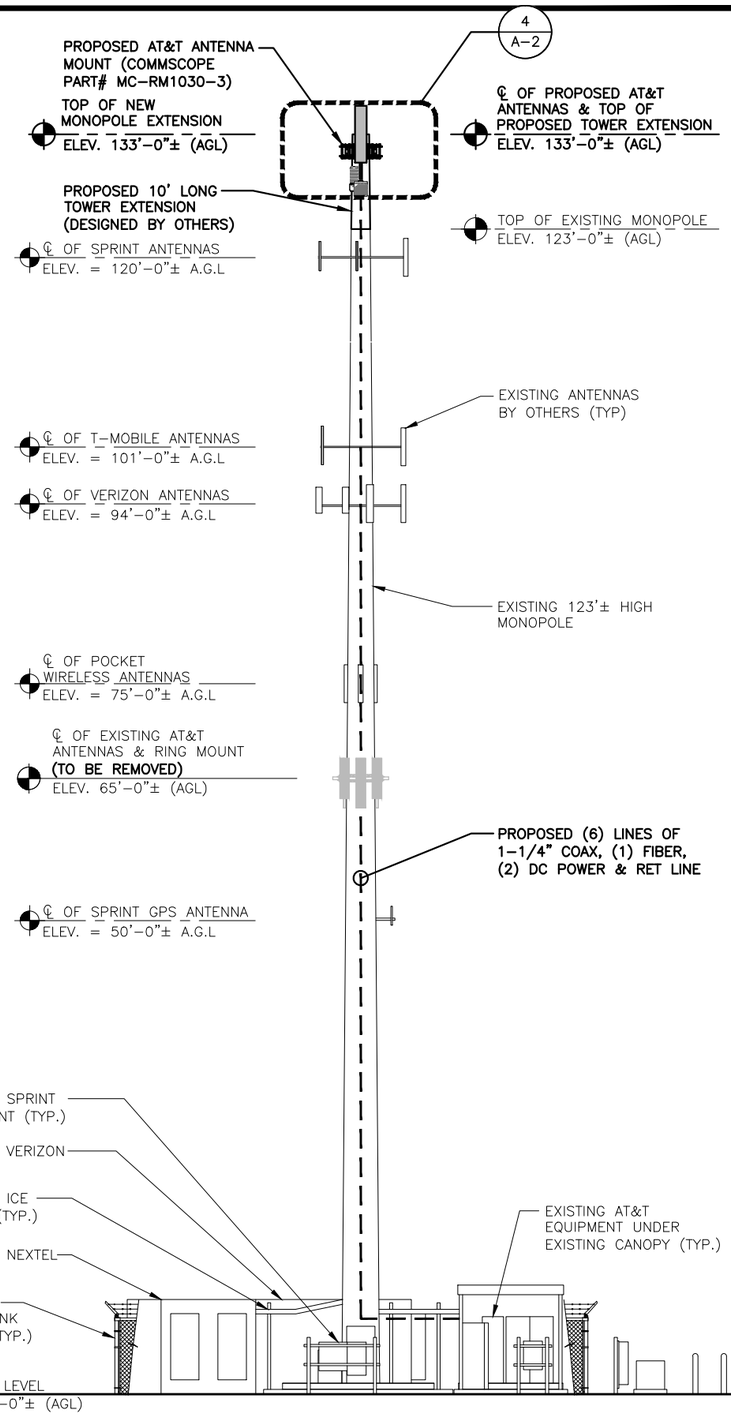
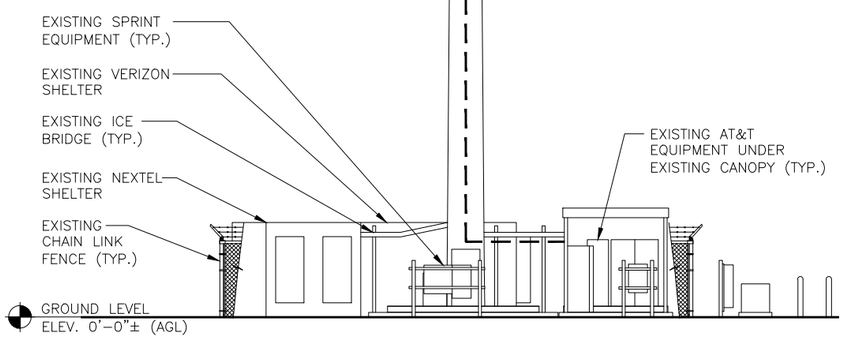


ENLARGED ANTENNA ELEVATION (4 / A-2)
22x34 SCALE: 1/2"=1'-0"
11x17 SCALE: 1/4"=1'-0"
0 1'-0" 2'-0" 4'-0" 6'-0"



PROPOSED ANTENNA LAYOUT (2 / A-2)
SCALE: N.T.S





EAST ELEVATION (3 / A-2)
22x34 SCALE: 1/8"=1'-0"
11x17 SCALE: 1/16"=1'-0"
0 4'-0" 8'-0" 16'-0" 24'-0"

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1684 CHAMBERLAIN HIGHWAY
BERLIN, CT 06037
HARTFORD COUNTY

at&t
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ROCKY HILL, CT 06067

NO.	DATE	REVISIONS	BY	CHK	APP'D
A	07/13/18	ISSUED FOR REVIEW	SB	AT	DJC

SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

ANTENNA LAYOUTS & ELEVATION
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	A-2	A

NOTE:

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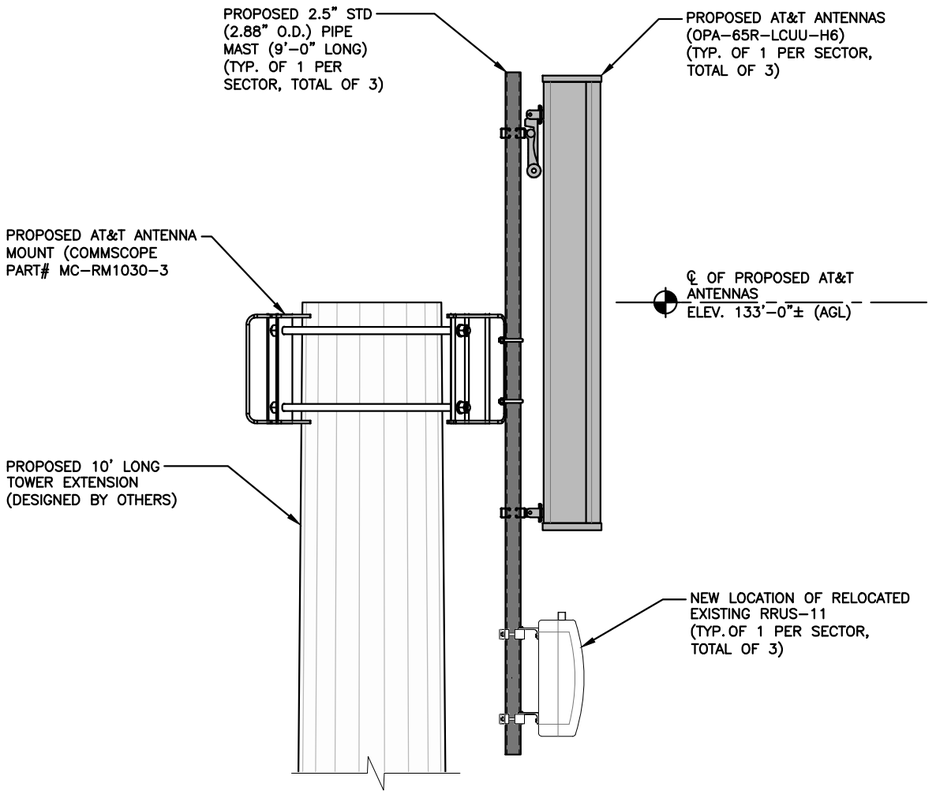
NOTE:

REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

ANTENNA SCHEDULE

SECTOR	EXISTING/ PROPOSED	BAND	ANTENNA	SIZE (INCHES) (L x W x D)	ANTENNA ℄ HEIGHT	AZIMUTH	TMA/ DIPLEXER	RRU	SIZE (INCHES) (L x W x D)	FEEDER	RAYCAP, DC POWER & FIBER
A1	PROPOSED	LTE	OPA-65R-LCUU-H6	72X14.8X7.4	133'-0"	25°	--	(E) RRUS-11 (700)	-	(2) 1-1/4"	(E)(1) RAYCAP DC6-48-60-18-8F (2) DC POWER (1) FIBER CABLE
B4	PROPOSED	LTE	OPA-65R-LCUU-H6	72X14.8X7.4	133'-0"	145°	--	(E) RRUS-11 (700)	-	(2) 1-1/4"	
C4	PROPOSED	LTE	OPA-65R-LCUU-H6	72X14.8X7.4	133'-0"	260°	--	(E) RRUS-11 (700)	-	(2) 1-1/4"	

FINAL ANTENNA CONFIGURATION TABLE (2 / A-3)
SCALE: N.T.S



PROPOSED ANTENNA & RRU MOUNTING DETAIL (1 / A-3)
22x34 SCALE: 1"=1'-0"
11x17 SCALE: 1/2"=1'-0"

0 0'-6" 1'-0" 2'-0" 3'-0"

HUDSON Design Group LLC
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NORTH ANDOVER, MA 01845
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SCALE: AS SHOWN | DESIGNED BY: AT | DRAWN BY: SB

AT&T

DETAILS
RF MOD 2018 UPGRADE

SITE NUMBER	DRAWING NUMBER	REV
CT1031	A-3	A

PAUL J. FORD & COMPANY

Date: **September 04, 2018**

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1031
	Carrier Site Name:	BERLIN CHAMBERLAIN HWY
Crown Castle Designation:	**Crown Castle BU Number:**	876382
	Crown Castle Site Name:	BERLIN / LAVIANA ORCHARD
	Crown Castle JDE Job Number:	481239
	Crown Castle Work Order Number:	1572415
	Crown Castle Order Number:	423171 Rev. 6
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-0522.004.7700
Site Data:	1684 Chamberlain Highway, BERLIN, Hartford County, CT Latitude *41° 35' 23.07"*, Longitude *-72° 48' 19.2"* 123 Foot - Monopole Tower w/Proposed Extension	

Dear Timothy Howell,

Paul J. Ford and Company is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower.

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

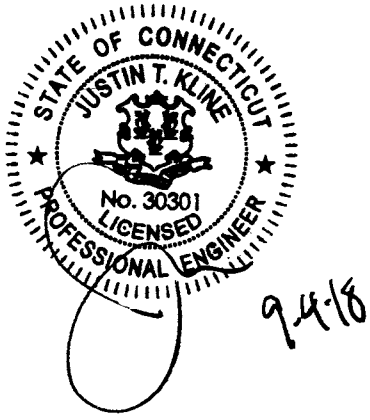
LC4.7: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

Respectfully submitted by:

Gowtham

Gowtham Penumatsa
Structural Designer BKK



9.4.18

PAUL J. FORD & COMPANY

Date: **September 04, 2018**

Timothy Howell
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
(614) 221-6679

Subject:	**Structural Modification Report**	
Carrier Designation:	***AT&T Mobility* Co-Locate**	
	Carrier Site Number:	CT1031
	Carrier Site Name:	BERLIN CHAMBERLAIN HWY
Crown Castle Designation:	**Crown Castle BU Number:**	876382
	Crown Castle Site Name:	BERLIN / LAVIANA ORCHARD
	Crown Castle JDE Job Number:	481239
	Crown Castle Work Order Number:	1572415
	Crown Castle Order Number:	423171 Rev. 6
Engineering Firm Designation:	**Paul J. Ford and Company Project Number:**	37518-0522.004.7700
Site Data:	**1684 Chamberlain Highway, BERLIN, Hartford County, CT**	
	Latitude *41° 35' 23.07"*, Longitude *-72° 48' 19.2"*	
	123 Foot - Monopole Tower w/Proposed Extension	

Dear Timothy Howell,

Paul J. Ford and Company is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower.

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

LC4.7: Modified Structure w/ Proposed Equipment Configuration **Sufficient Capacity**

This analysis has been performed in accordance with the 2016 Connecticut State Building Code based upon an ultimate 3-second gust wind speed of 125 mph converted to a nominal 3-second gust wind speed of 97 mph per Section 1609.3 and Appendix N as required for use in the ANSI/TIA-222-G-2005 Standard, "Structural Standard for Antenna Supporting Structures and Antennas", with ANSI/TIA-222-G-1-2007 and ANSI/TIA-222-G-2-2009 Addenda per Exception #5 of Section 1609.1.1. Risk Category II, Exposure Category C and Topographic Category 1 were used in this analysis.

Respectfully submitted by:

Gowtham Penumatsa
Structural Designer BKK

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1) INTRODUCTION

This tower is a 133 ft Monopole tower designed by SUMMIT in July of 2000. The tower was originally designed for a wind speed of 85 mph per TIA/EIA-222-F.

2) ANALYSIS CRITERIA

Building Code:	2016 Connecticut State Building Code
TIA-222 Revision:	TIA-222-G
Risk Category:	II
Wind Speed:	96.8 mph
Exposure Category:	C
Topographic Factor:	1
Ice Thickness:	1 in
Wind Speed with Ice:	50 mph
Service Wind Speed:	60 mph

Table 1 - Proposed Equipment Configuration

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
133.0	133.0	3	cci antennas	OPA-65R-LCUU-H6 w/ Mount Pipe	1 2 6	3/8 3/4 1-1/4
		3	ericsson	RRUS 11		
		1	raycap	DC6-48-60-18-8F		
		1	tower mounts	Side Arm Mount [SO 901-3]		

Table 2 - Other Considered Equipment

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
120.0	121.0	3	alcatel lucent	TD-RRH8x20-25	4	1-1/4
		3	rfs celwave	APXVSPP18-C-A20 w/ Mount Pipe		
		3	rfs celwave	APXVTM14-C-120 w/ Mount Pipe		
	120.0	1	tower mounts	Platform Mount [LP 1201-1]		
118.0	118.0	3	alcatel lucent	800MHz 2X50W RRH W/FILTER	-	-
		3	alcatel lucent	PCS 1900MHz 4x45W-65MHz		
		1	tower mounts	Pipe Mount [PM 601-3]		
		1	tower mounts	Side Arm Mount [SO 102-3]		
100.0	101.0	3	andrew	ETT19V2S12UB	12	1-5/8
		3	commscope	TMAT1921B78-21A		
		3	ericsson	KRY 112 144/1		
		3	rfs celwave	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe		
		3	rfs celwave	FDAP5002-1A20		
	100.0	1	tower mounts	T-Arm Mount [TA 602-3]		
93.0	94.0	3	alcatel lucent	RRH2X40-AWS	13	1-5/8
		3	andrew	LNX-6514DS-A1M w/ Mount Pipe		
		3	antel	BXA-171063-12CF-EDIN-X w/ Mount Pipe		
		2	antel	BXA-171063-8BF-2 w/ Mount Pipe		
		1	antel	BXA-171085-8BF-EDIN-0 w/ Mount Pipe		
		3	antel	BXA-70063-4CF-EDIN-X w/ Mount Pipe		
		1	rfs celwave	DB-T1-6Z-8AB-0Z		
		6	rfs celwave	FD9R6004/2C-3L		
	93.0	1	tower mounts	Platform Mount [LP 1201-1]		
75.0	75.0	3	rfs celwave	APXV18-206517S-C	6	1-5/8
		1	tower mounts	Pipe Mount [PM 601-3]		
50.0	51.0	1	lucent	KS24019-L112A	1	1/2
	50.0	1	tower mounts	Side Arm Mount [SO 702-1]		

3) ANALYSIS PROCEDURE

Table 3 - Documents Provided

Document	Remarks	Reference	Source
4-GEOTECHNICAL REPORTS	Dr. Clarence Welti, 05/05/2000	1629353	CCISITES
4-TOWER FOUNDATION DRAWINGS/DESIGN/SPECS	PJF, 29200-0802, 06/06/2000	1629413	CCISITES
4-TOWER MANUFACTURER DRAWINGS	PJF, 29200-0802, 06/06/2000	1629384	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	Vertical Solutions, 080828.04, 12/11/2008	2611098	CCISITES
4-POST-MODIFICATION INSPECTION	SGS, 145202, 9/8/2014	5287888	CCISITES
4-TOWER REINFORCEMENT DESIGN/DRAWINGS/DATA	PJF, 37508-0979, 10/29/2008	2339268	CCISITES

3.1) Analysis Method

tnxTower (version 8.0.4.0), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

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

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

4) ANALYSIS RESULTS

Table 4 - Section Capacity (Summary)

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133 - 128	Pole	TP14x14x0.349	Pole	7.1%	Pass
128 - 123.5	Pole	TP14x14x0.349	Pole	13.8%	Pass
123.5 - 123	Pole	TP22x14x0.349	Pole	6.0%	Pass
123 - 118	Pole	TP22.75x22x0.1875	Pole	13.0%	Pass
118 - 113	Pole	TP23.5x22.75x0.1875	Pole	22.2%	Pass
113 - 108	Pole	TP24.251x23.5x0.1875	Pole	31.0%	Pass
108 - 103	Pole	TP25.001x24.251x0.1875	Pole	39.3%	Pass
103 - 98	Pole	TP25.751x25.001x0.1875	Pole	48.4%	Pass
98 - 93	Pole	TP26.501x25.751x0.1875	Pole	57.7%	Pass
93 - 88	Pole	TP27.251x26.501x0.1875	Pole	71.4%	Pass
88 - 85.75	Pole	TP28.114x27.251x0.1875	Pole	76.9%	Pass
85.75 - 80.75	Pole	TP27.964x27.214x0.25	Pole	58.0%	Pass
80.75 - 75.75	Pole	TP28.714x27.964x0.25	Pole	65.0%	Pass
75.75 - 70.75	Pole	TP29.465x28.714x0.25	Pole	72.0%	Pass
70.75 - 65.75	Pole	TP30.215x29.465x0.25	Pole	78.6%	Pass
65.75 - 60.75	Pole	TP30.965x30.215x0.25	Pole	84.8%	Pass
60.75 - 57	Pole	TP31.528x30.965x0.25	Pole	89.2%	Pass
57 - 56.75	Pole + Reinf.	TP31.565x31.528x0.4625	Reinf. 2 Tension Rupture	78.9%	Pass
56.75 - 51.75	Pole + Reinf.	TP32.315x31.565x0.4563	Reinf. 2 Tension Rupture	84.2%	Pass
51.75 - 48.08	Pole + Reinf.	TP32.866x32.315x0.45	Reinf. 2 Tension Rupture	87.9%	Pass
48.08 - 47.83	Pole + Reinf.	TP32.904x32.866x0.5625	Reinf. 2 Tension Rupture	74.1%	Pass
47.83 - 45	Pole + Reinf.	TP33.966x32.904x0.5625	Reinf. 2 Tension Rupture	76.6%	Pass
45 - 40	Pole + Reinf.	TP33.578x32.828x0.5938	Reinf. 2 Tension Rupture	78.2%	Pass
40 - 35	Pole + Reinf.	TP34.329x33.578x0.5813	Reinf. 2 Tension Rupture	82.3%	Pass
35 - 30	Pole + Reinf.	TP35.079x34.329x0.5688	Reinf. 2 Tension Rupture	86.3%	Pass
30 - 26.25	Pole + Reinf.	TP35.642x35.079x0.5688	Reinf. 2 Tension Rupture	89.3%	Pass
26.25 - 26	Pole + Reinf.	TP35.679x35.642x0.6188	Reinf. 1 Connection	79.6%	Pass
26 - 22.75	Pole + Reinf.	TP36.167x35.679x0.6063	Reinf. 1 Compression	81.9%	Pass
22.75 - 22.5	Pole + Reinf.	TP36.204x36.167x0.6563	Reinf. 1 Compression	78.2%	Pass
22.5 - 17.5	Pole + Reinf.	TP36.954x36.204x0.6438	Reinf. 1 Compression	81.5%	Pass
17.5 - 12.5	Pole + Reinf.	TP37.705x36.954x0.6313	Reinf. 1 Compression	84.8%	Pass
12.5 - 7.5	Pole + Reinf.	TP38.455x37.705x0.6188	Reinf. 1 Compression	87.9%	Pass
7.5 - 3.25	Pole + Reinf.	TP39.092x38.455x0.6188	Reinf. 1 Compression	90.5%	Pass
3.25 - 3	Pole + Reinf.	TP39.13x39.092x0.6313	Reinf. 1 Compression	87.9%	Pass
3 - 0	Pole + Reinf.	TP39.58x39.13x0.6188	Reinf. 1 Connection	89.7%	Pass
				Summary	
			Pole	89.2%	Pass
			Reinforcement	90.5%	Pass
			Overall	90.5%	Pass

Table 5 - Tower Component Stresses vs. Capacity - LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Anchor Rods	0	98.5	Pass
1	Base Plate	0	58.8	Pass
1	Base Foundation Structural Steel	0	76.0	Pass
1	Base Foundation Soil Interaction	0	53.5	Pass
1	Extension Connection	123	53.0	Pass

Structure Rating (max from all components) =	98.5%

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

4.1) Recommendations

The monopole and its foundation have sufficient capacity to carry the proposed loading configuration once the proposed modification’s per attached drawings are installed.

APPENDIX A

TNXTOWER OUTPUT

Tower Input Data

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

1) Tower is located in Hartford County, Connecticut.
2) ASCE 7-10 Wind Data is used (wind speeds converted to nominal values).
3) Basic wind speed of 97 mph.
4) Structure Class II.
5) Exposure Category C.
6) Topographic Category 1.
7) Crest Height 0.0000 ft.
8) Nominal ice thickness of 1.0000 in.
9) Ice thickness is considered to increase with height.
10) Ice density of 56.00 pcf.
11) A wind speed of 50 mph is used in combination with ice.
12) Deflections calculated using a wind speed of 60 mph.
13) A non-linear (P-delta) analysis was used.
14) Pressures are calculated at each section.
15) Stress ratio used in pole design is 1.
16) 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		Ignore KL/ry For 60 Deg. Angle Legs		Pole Without Linear Attachments
					Pole With Shroud Or No Appurtenances
					Outside and Inside Corner Radii Are Known

Tapered Pole Section Geometry

Section	*Elevation*	*Section Length*	*Splice Length*	*Number of Sides*	*Top Diameter*	*Bottom Diameter*	*Wall Thickness*	*Bend Radius*	*Pole Grade*
	ft	*ft*	*ft*		*in*	*in*	*in*	*in*	
L1	133.0000-128.0000	5.0000	0.00	Round	14.0000	14.0000	0.3490		A53-B-35 (35 ksi)
L2	128.0000-123.5000	4.5000	0.00	Round	14.0000	14.0000	0.3490		A53-B-35 (35 ksi)
L3	123.5000-123.0000	0.5000	0.00	Round	14.0000	22.0000	0.3490		A53-B-35 (35 ksi)
L4	123.0000-	5.0000	0.00	18	22.0000	22.7502	0.1875	0.7500	A607-60

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
	118.0000								(60 ksi)
L5	118.0000-113.0000	5.0000	0.00	18	22.7502	23.5004	0.1875	0.7500	A607-60 (60 ksi)
L6	113.0000-108.0000	5.0000	0.00	18	23.5004	24.2506	0.1875	0.7500	A607-60 (60 ksi)
L7	108.0000-103.0000	5.0000	0.00	18	24.2506	25.0007	0.1875	0.7500	A607-60 (60 ksi)
L8	103.0000-98.0000	5.0000	0.00	18	25.0007	25.7509	0.1875	0.7500	A607-60 (60 ksi)
L9	98.0000-93.0000	5.0000	0.00	18	25.7509	26.5011	0.1875	0.7500	A607-60 (60 ksi)
L10	93.0000-88.0000	5.0000	0.00	18	26.5011	27.2513	0.1875	0.7500	A607-60 (60 ksi)
L11	88.0000-82.2500	5.7500	3.50	18	27.2513	28.1140	0.1875	0.7500	A607-60 (60 ksi)
L12	82.2500-80.7500	5.0000	0.00	18	27.2139	27.9641	0.2500	1.0000	A607-65 (65 ksi)
L13	80.7500-75.7500	5.0000	0.00	18	27.9641	28.7143	0.2500	1.0000	A607-65 (65 ksi)
L14	75.7500-70.7500	5.0000	0.00	18	28.7143	29.4646	0.2500	1.0000	A607-65 (65 ksi)
L15	70.7500-65.7500	5.0000	0.00	18	29.4646	30.2148	0.2500	1.0000	A607-65 (65 ksi)
L16	65.7500-60.7500	5.0000	0.00	18	30.2148	30.9651	0.2500	1.0000	A607-65 (65 ksi)
L17	60.7500-57.0000	3.7500	0.00	18	30.9651	31.5277	0.2500	1.0000	A607-65 (65 ksi)
L18	57.0000-56.7500	0.2500	0.00	18	31.5277	31.5652	0.4625	1.8500	A607-65 (65 ksi)
L19	56.7500-51.7500	5.0000	0.00	18	31.5652	32.3155	0.4562	1.8250	A607-65 (65 ksi)
L20	51.7500-48.0800	3.6700	0.00	18	32.3155	32.8662	0.4500	1.8000	A607-65 (65 ksi)
L21	48.0800-47.8300	0.2500	0.00	18	32.8662	32.9037	0.5625	2.2500	A607-65 (65 ksi)
L22	47.8300-40.7500	7.0800	4.25	18	32.9037	33.9660	0.5625	2.2500	A607-65 (65 ksi)
L23	40.7500-40.0000	5.0000	0.00	18	32.8283	33.5785	0.5938	2.3752	A607-65 (65 ksi)
L24	40.0000-35.0000	5.0000	0.00	18	33.5785	34.3287	0.5813	2.3252	A607-65 (65 ksi)
L25	35.0000-30.0000	5.0000	0.00	18	34.3287	35.0789	0.5688	2.2752	A607-65 (65 ksi)
L26	30.0000-26.2500	3.7500	0.00	18	35.0789	35.6415	0.5688	2.2752	A607-65 (65 ksi)
L27	26.2500-26.0000	0.2500	0.00	18	35.6415	35.6790	0.6188	2.4752	A607-65 (65 ksi)
L28	26.0000-22.7500	3.2500	0.00	18	35.6790	36.1666	0.6063	2.4252	A607-65 (65 ksi)
L29	22.7500-22.5000	0.2500	0.00	18	36.1666	36.2041	0.6563	2.6252	A607-65 (65 ksi)
L30	22.5000-17.5000	5.0000	0.00	18	36.2041	36.9543	0.6438	2.5752	A607-65 (65 ksi)
L31	17.5000-12.5000	5.0000	0.00	18	36.9543	37.7045	0.6313	2.5252	A607-65 (65 ksi)
L32	12.5000-7.5000	5.0000	0.00	18	37.7045	38.4547	0.6188	2.4752	A607-65 (65 ksi)
L33	7.5000-3.2500	4.2500	0.00	18	38.4547	39.0924	0.6188	2.4752	A607-65 (65 ksi)
L34	3.2500-3.0000	0.2500	0.00	18	39.0924	39.1299	0.6313	2.5252	A607-65 (65 ksi)
L35	3.0000-0.0000	3.0000		18	39.1299	39.5800	0.6188	2.4752	A607-65 (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	14.0000	14.9672	348.8691	4.8279	7.0000	49.8384	697.7382	7.4791	0.0000	0
	14.0000	14.9672	348.8691	4.8279	7.0000	49.8384	697.7382	7.4791	0.0000	0
L2	14.0000	14.9672	348.8691	4.8279	7.0000	49.8384	697.7382	7.4791	0.0000	0
	14.0000	14.9672	348.8691	4.8279	7.0000	49.8384	697.7382	7.4791	0.0000	0
L3	14.0000	14.9672	348.8691	4.8279	7.0000	49.8384	697.7382	7.4791	0.0000	0
	22.0000	23.7385	1391.3360	7.6558	11.0000	126.4851	2782.6720	11.8622	0.0000	0
L4	22.3105	12.9812	780.3007	7.7434	11.1760	69.8193	1561.6281	6.4918	3.5420	18.891
	23.0722	13.4276	863.6105	8.0098	11.5571	74.7256	1728.3574	6.7151	3.6740	19.595
L5	23.0722	13.4276	863.6105	8.0098	11.5571	74.7256	1728.3574	6.7151	3.6740	19.595
	23.8340	13.8741	952.6487	8.2761	11.9382	79.7984	1906.5509	6.9384	3.8061	20.299
L6	23.8340	13.8741	952.6487	8.2761	11.9382	79.7984	1906.5509	6.9384	3.8061	20.299
	24.5957	14.3205	1047.6055	8.5424	12.3193	85.0379	2096.5895	7.1616	3.9381	21.003
L7	24.5957	14.3205	1047.6055	8.5424	12.3193	85.0379	2096.5895	7.1616	3.9381	21.003
	25.3575	14.7670	1148.6716	8.8087	12.7004	90.4439	2298.8546	7.3849	4.0701	21.707
L8	25.3575	14.7670	1148.6716	8.8087	12.7004	90.4439	2298.8546	7.3849	4.0701	21.707
	26.1192	15.2134	1256.0373	9.0750	13.0815	96.0165	2513.7272	7.6082	4.2022	22.412
L9	26.1192	15.2134	1256.0373	9.0750	13.0815	96.0165	2513.7272	7.6082	4.2022	22.412
	26.8810	15.6599	1369.8931	9.3413	13.4626	101.7558	2741.5886	7.8314	4.3342	23.116
L10	26.8810	15.6599	1369.8931	9.3413	13.4626	101.7558	2741.5886	7.8314	4.3342	23.116
	27.6428	16.1063	1490.4294	9.6076	13.8437	107.6616	2982.8200	8.0547	4.4662	23.82
L11	27.6428	16.1063	1490.4294	9.6076	13.8437	107.6616	2982.8200	8.0547	4.4662	23.82
	28.5188	16.6198	1637.5523	9.9139	14.2819	114.6592	3277.2593	8.3115	4.6181	24.63
L12	28.1284	21.3958	1965.3102	9.5722	13.8246	142.1599	3933.2064	10.6999	4.3496	17.399
	28.3569	21.9911	2133.9640	9.8385	14.2058	150.2181	4270.7359	10.9977	4.4817	17.927
L13	28.3569	21.9911	2133.9640	9.8385	14.2058	150.2181	4270.7359	10.9977	4.4817	17.927
	29.1187	22.5865	2312.0005	10.1048	14.5869	158.4986	4627.0433	11.2954	4.6137	18.455
L14	29.1187	22.5865	2312.0005	10.1048	14.5869	158.4986	4627.0433	11.2954	4.6137	18.455
	29.8806	23.1818	2499.6739	10.3712	14.9680	167.0011	5002.6370	11.5931	4.7458	18.983
L15	29.8806	23.1818	2499.6739	10.3712	14.9680	167.0011	5002.6370	11.5931	4.7458	18.983
	30.6424	23.7771	2697.2381	10.6375	15.3491	175.7258	5398.0253	11.8908	4.8778	19.511
L16	30.6424	23.7771	2697.2381	10.6375	15.3491	175.7258	5398.0253	11.8908	4.8778	19.511
	31.4042	24.3724	2904.9471	10.9038	15.7302	184.6727	5813.7166	12.1885	5.0098	20.039
L17	31.4042	24.3724	2904.9471	10.9038	15.7302	184.6727	5813.7166	12.1885	5.0098	20.039
	31.9755	24.8189	3067.5391	11.1036	16.0161	191.5286	6139.1146	12.4118	5.1089	20.436
L18	31.9427	45.6030	5560.0652	11.0282	16.0161	347.1550	11127.4464	22.8058	4.7349	10.238
	31.9808	45.6580	5580.2311	11.0415	16.0351	348.0001	11167.8049	22.8334	4.7415	10.252
L19	31.9818	45.0501	5508.1418	11.0437	16.0351	343.5044	11023.5314	22.5293	4.7525	10.416
	32.7436	46.1365	5916.3391	11.3100	16.4163	360.3950	11840.4631	23.0727	4.8845	10.706
L20	32.7446	45.5135	5838.7283	11.3122	16.4163	355.6673	11685.1393	22.7611	4.8955	10.879
	33.3037	46.3000	6146.6901	11.5077	16.6960	368.1533	12301.4681	23.1544	4.9924	11.094
L21	33.2864	57.6741	7603.6448	11.4678	16.6960	455.4170	15217.2946	28.8425	4.7944	8.523
	33.3245	57.7411	7630.1642	11.4811	16.7151	456.4844	15270.3683	28.8760	4.8010	8.535
L22	33.3245	57.7411	7630.1642	11.4811	16.7151	456.4844	15270.3683	28.8760	4.8010	8.535
	34.4032	59.6378	8407.0344	11.8582	17.2547	487.2308	16825.1309	29.8246	4.9880	8.868
L23	33.8906	60.7530	7975.3057	11.4432	16.6768	478.2283	15961.1055	30.3823	4.7327	7.97
	34.0049	62.1669	8545.1896	11.7096	17.0579	500.9529	17101.6233	31.0894	4.8647	8.193
L24	34.0068	60.8813	8374.8201	11.7140	17.0579	490.9651	16760.6600	30.4465	4.8867	8.407
	34.7686	62.2655	8959.1078	11.9803	17.4390	513.7407	17930.0043	31.1387	5.0188	8.634
L25	34.7705	60.9491	8776.2003	11.9848	17.4390	503.2523	17563.9485	30.4803	5.0408	8.862
	35.5323	62.3035	9374.3535	12.2511	17.8201	526.0561	18761.0421	31.1577	5.1728	9.094
L26	35.5323	62.3035	9374.3535	12.2511	17.8201	526.0561	18761.0421	31.1577	5.1728	9.094
	36.1036	63.3193	9840.3795	12.4508	18.1059	543.4906	19693.707	31.6656	5.2718	9.268

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
L27	36.0959	68.7871	10659.6713	12.4331	18.1059	588.7407	21333.3700	34.4001	5.1838	8.377
	36.1340	68.8608	10693.9582	12.4464	18.1249	590.0134	21401.9878	34.4369	5.1904	8.388
L28	36.1359	67.4938	10489.1472	12.4508	18.1249	578.7135	20992.0963	33.7533	5.2124	8.597
	36.6310	68.4322	10932.7560	12.6239	18.3727	595.0559	21879.8976	34.2226	5.2982	8.739
L29	36.6233	73.9715	11784.5029	12.6062	18.3727	641.4154	23584.5122	36.9928	5.2102	7.939
	36.6614	74.0496	11821.8862	12.6195	18.3917	642.7835	23659.3279	37.0318	5.2168	7.949
L30	36.6633	72.6648	11608.9624	12.6239	18.3917	631.2063	23233.2003	36.3393	5.2388	8.137
	37.4251	74.1977	12359.2869	12.8902	18.7728	658.3613	24734.8364	37.1059	5.3709	8.342
L31	37.4270	72.7822	12131.8400	12.8947	18.7728	646.2455	24279.6434	36.3980	5.3929	8.542
	38.1888	74.2853	12899.1576	13.1610	19.1539	673.4481	25815.2883	37.1497	5.5249	8.752
L32	38.1907	72.8390	12656.5426	13.1654	19.1539	660.7815	25329.7390	36.4264	5.5469	8.964
	38.9525	74.3124	13440.2533	13.4318	19.5350	688.0090	26898.1916	37.1633	5.6789	9.177
L33	38.9525	74.3124	13440.2533	13.4318	19.5350	688.0090	26898.1916	37.1633	5.6789	9.177
	39.6000	75.5648	14131.3086	13.6581	19.8589	711.5847	28281.2115	37.7896	5.7912	9.359
L34	39.5981	77.0662	14402.7191	13.6537	19.8589	725.2516	28824.3897	38.5404	5.7692	9.139
	39.6361	77.1414	14444.8993	13.6670	19.8780	726.6783	28908.8056	38.5780	5.7758	9.149
L35	39.6381	75.6385	14172.6804	13.6714	19.8780	712.9839	28364.0097	37.8264	5.7978	9.369
	40.0951	76.5226	14675.4576	13.8312	20.1066	729.8812	29370.2255	38.2686	5.8770	9.497

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 133.0000-128.0000				1	1	1			
L2 128.0000-123.5000				1	1	1			
L3 123.5000-123.0000				1	1	1			
L4 123.0000-118.0000				1	1	1			
L5 118.0000-113.0000				1	1	1			
L6 113.0000-108.0000				1	1	1			
L7 108.0000-103.0000				1	1	1			
L8 103.0000-98.0000				1	1	1			
L9 98.0000-93.0000				1	1	1			
L10 93.0000-88.0000				1	1	1			
L11 88.0000-82.2500				1	1	1			
L12 82.2500-80.7500				1	1	1			
L13 80.7500-75.7500				1	1	1			

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
L14 75.7500-70.7500				1	1	1			
L15 70.7500-65.7500				1	1	1			
L16 65.7500-60.7500				1	1	1			
L17 60.7500-57.0000				1	1	1			
L18 57.0000-56.7500				1	1	0.944643			
L19 56.7500-51.7500				1	1	0.947749			
L20 51.7500-48.0800				1	1	0.953841			
L21 48.0800-47.8300				1	1	1.07711			
L22 47.8300-40.7500				1	1	1.06891			
L23 40.7500-40.0000				1	1	1.06185			
L24 40.0000-35.0000				1	1	1.07092			
L25 35.0000-30.0000				1	1	1.08102			
L26 30.0000-26.2500				1	1	1.07161			
L27 26.2500-26.0000				1	1	1.05394			
L28 26.0000-22.7500				1	1	1.0669			
L29 22.7500-22.5000				1	1	1.07251			
L30 22.5000-17.5000				1	1	1.0794			
L31 17.5000-12.5000				1	1	1.08714			
L32 12.5000-7.5000				1	1	1.09576			
L33 7.5000-3.2500				1	1	1.08513			
L34 3.2500-3.0000				1	1	1.03908			
L35 3.0000-0.0000				1	1	1.05274			

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	59.7500 - 0.0000	1	No Ice	0.2083	0.00
							1/2" Ice	0.3194	0.00
							1" Ice	0.4306	0.00
1 1/4" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	25.5000 - 0.0000	1	No Ice	0.2083	0.00
							1/2" Ice	0.3194	0.00
							1" Ice	0.4306	0.00
1" Flat Reinforcement	C	No	No	CaAa (Out Of Face)	50.5800 - 25.5000	1	No Ice	0.1667	0.00
							1/2" Ice	0.2778	0.00
							1" Ice	0.3889	0.00
********** **********									
LDF6-50A(1-1/4)	C	No	No	CaAa (Out	133.0000 -	1	No Ice	0.1550	0.60

Description	Face or Leg	Allow Shield	Exclude From Torque Calculation	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight plf
				Of Face)	0.0000		1/2" Ice	0.2550	1.85
							1" Ice	0.3550	3.72
LDF6-50A(1-1/4)	C	No	No	CaAa (Out Of Face)	133.0000 - 0.0000	5	No Ice	0.0000	0.60
							1/2" Ice	0.0000	1.85
							1" Ice	0.0000	3.72
WR-VG86ST-BRD(3/4)	C	No	No	CaAa (Out Of Face)	133.0000 - 0.0000	2	No Ice	0.0000	0.58
							1/2" Ice	0.0000	1.38
							1" Ice	0.0000	2.78
FB-L98B-034-XXX(3/8)	C	No	No	CaAa (Out Of Face)	133.0000 - 0.0000	1	No Ice	0.0000	0.06
							1/2" Ice	0.0000	0.60
							1" Ice	0.0000	1.76
***									
HB114-1-08U4-M5J(1-1/4)	C	No	No	Inside Pole	120.0000 - 0.0000	3	No Ice	0.0000	1.08
							1/2" Ice	0.0000	1.08
							1" Ice	0.0000	1.08
HB114-21U3M12-XXXF(1-1/4)	C	No	No	CaAa (Out Of Face)	100.0000 - 0.0000	1	No Ice	0.0000	1.22
							1/2" Ice	0.0000	2.47
							1" Ice	0.0000	4.32
HB114-21U3M12-XXXF(1-1/4)	C	No	No	CaAa (Out Of Face)	120.0000 - 100.0000	1	No Ice	0.1540	1.22
							1/2" Ice	0.2540	2.47
							1" Ice	0.3540	4.32
***									
AL7-50(1-5/8)	C	No	No	CaAa (Out Of Face)	100.0000 - 0.0000	1	No Ice	0.1960	0.52
							1/2" Ice	0.2960	2.02
							1" Ice	0.3960	4.14
AL7-50(1-5/8)	C	No	No	CaAa (Out Of Face)	100.0000 - 0.0000	5	No Ice	0.0000	0.52
							1/2" Ice	0.0000	2.02
							1" Ice	0.0000	4.14
AL7-50(1-5/8)	C	No	No	Inside Pole	100.0000 - 0.0000	6	No Ice	0.0000	0.52
							1/2" Ice	0.0000	0.52
							1" Ice	0.0000	0.52
***									
LDF7-50A(1-5/8)	C	No	No	Inside Pole	93.0000 - 0.0000	12	No Ice	0.0000	0.82
							1/2" Ice	0.0000	0.82
							1" Ice	0.0000	0.82
HB158-1-08U8-S8J18(1-5/8)	C	No	No	Inside Pole	93.0000 - 0.0000	1	No Ice	0.0000	1.30
							1/2" Ice	0.0000	1.30
							1" Ice	0.0000	1.30
***									
AVA7-50(1-5/8)	C	No	No	CaAa (Out Of Face)	75.0000 - 0.0000	2	No Ice	0.0000	0.70
							1/2" Ice	0.0000	2.23
							1" Ice	0.0000	4.38
AVA7-50(1-5/8)	C	No	No	Inside Pole	75.0000 - 0.0000	4	No Ice	0.0000	0.70
							1/2" Ice	0.0000	0.70
							1" Ice	0.0000	0.70
***									
***									
LDF4-50A(1/2)	C	No	No	CaAa (Out Of Face)	50.0000 - 0.0000	1	No Ice	0.0000	0.15
							1/2" Ice	0.0000	0.84
							1" Ice	0.0000	2.14

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	133.0000-128.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.775	0.02
L2	128.0000-123.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.698	0.02

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
L3	123.5000-123.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.077	0.00
L4	123.0000-118.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.083	0.03
L5	118.0000-113.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.545	0.05
L6	113.0000-108.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.545	0.05
L7	108.0000-103.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.545	0.05
L8	103.0000-98.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.629	0.06
L9	98.0000-93.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.755	0.08
L10	93.0000-88.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.755	0.13
L11	88.0000-82.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.018	0.15
L12	82.2500-80.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.526	0.04
L13	80.7500-75.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.755	0.13
L14	75.7500-70.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.755	0.15
L15	70.7500-65.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.755	0.15
L16	65.7500-60.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.755	0.15
L17	60.7500-57.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	1.889	0.12
L18	57.0000-56.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.140	0.01
L19	56.7500-51.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.797	0.15
L20	51.7500-48.0800	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.469	0.11
L21	48.0800-47.8300	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.181	0.01
L22	47.8300-40.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	5.140	0.22
L23	40.7500-40.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.544	0.02
L24	40.0000-35.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.630	0.16
L25	35.0000-30.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.630	0.16

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
L26	30.0000-26.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.723	0.12
L27	26.2500-26.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.181	0.01
L28	26.0000-22.7500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.474	0.10
L29	22.7500-22.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.192	0.01
L30	22.5000-17.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.838	0.16
L31	17.5000-12.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.838	0.16
L32	12.5000-7.5000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.838	0.16
L33	7.5000-3.2500	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	3.263	0.13
L34	3.2500-3.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	0.192	0.01
L35	3.0000-0.0000	A	0.000	0.000	0.000	0.000	0.00
		B	0.000	0.000	0.000	0.000	0.00
		C	0.000	0.000	0.000	2.303	0.09

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	133.0000-128.0000	A	2.295	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	3.070	0.50
L2	128.0000-123.5000	A	2.286	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	2.755	0.45
L3	123.5000-123.0000	A	2.282	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.306	0.05
L4	123.0000-118.0000	A	2.277	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	4.270	0.52
L5	118.0000-113.0000	A	2.267	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.079	0.57
L6	113.0000-108.0000	A	2.257	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.059	0.56
L7	108.0000-103.0000	A	2.246	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.038	0.56
L8	103.0000-98.0000	A	2.236	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.100	0.71
L9	98.0000-93.0000	A	2.224	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.203	0.93
L10	93.0000-88.0000	A	2.212	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.180	0.98

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
L11	88.0000-82.2500	A	2.199	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.075	1.12
L12	82.2500-80.7500	A	2.189	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.846	0.29
L13	80.7500-75.7500	A	2.180	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.116	0.96
L14	75.7500-70.7500	A	2.166	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.087	1.06
L15	70.7500-65.7500	A	2.151	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.056	1.07
L16	65.7500-60.7500	A	2.134	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.024	1.06
L17	60.7500-57.0000	A	2.119	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.363	0.78
L18	57.0000-56.7500	A	2.112	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.468	0.05
L19	56.7500-51.7500	A	2.102	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.336	1.03
L20	51.7500-48.0800	A	2.084	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.387	0.76
L21	48.0800-47.8300	A	2.076	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.620	0.05
L22	47.8300-40.7500	A	2.060	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	17.454	1.46
L23	40.7500-40.0000	A	2.041	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	1.849	0.15
L24	40.0000-35.0000	A	2.026	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.183	1.00
L25	35.0000-30.0000	A	1.997	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	12.061	0.97
L26	30.0000-26.2500	A	1.968	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	8.955	0.72
L27	26.2500-26.0000	A	1.954	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.594	0.05
L28	26.0000-22.7500	A	1.940	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	7.799	0.61
L29	22.7500-22.5000	A	1.926	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.598	0.05
L30	22.5000-17.5000	A	1.902	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.870	0.92
L31	17.5000-12.5000	A	1.848	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.642	0.90
L32	12.5000-7.5000	A	1.775	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	11.332	0.86
L33	7.5000-3.2500	A	1.668	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	9.248	0.68

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
L34	3.2500-3.0000	A	1.580	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	0.525	0.04
L35	3.0000-0.0000	A	1.468	0.000	0.000	0.000	0.000	0.00
		B		0.000	0.000	0.000	0.000	0.00
		C		0.000	0.000	0.000	6.022	0.42

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	133.0000-128.0000	-1.0708	0.6182	-1.5051	0.8690
L2	128.0000-123.5000	-1.0708	0.6182	-1.5030	0.8677
L3	123.5000-123.0000	-1.1451	0.6611	-1.6616	0.9593
L4	123.0000-118.0000	-1.4557	0.8405	-2.3189	1.3388
L5	118.0000-113.0000	-1.8197	1.0506	-3.0326	1.7509
L6	113.0000-108.0000	-1.8473	1.0666	-3.0670	1.7707
L7	108.0000-103.0000	-1.8741	1.0820	-3.0994	1.7895
L8	103.0000-98.0000	-1.9559	1.1292	-3.1614	1.8252
L9	98.0000-93.0000	-2.0615	1.1902	-3.2374	1.8691
L10	93.0000-88.0000	-2.0894	1.2063	-3.2655	1.8854
L11	88.0000-82.2500	-2.1184	1.2231	-3.2936	1.9016
L12	82.2500-80.7500	-2.1248	1.2267	-3.3018	1.9063
L13	80.7500-75.7500	-2.1418	1.2366	-3.3111	1.9117
L14	75.7500-70.7500	-2.1674	1.2513	-3.3332	1.9244
L15	70.7500-65.7500	-2.1922	1.2657	-3.3531	1.9359
L16	65.7500-60.7500	-2.2164	1.2796	-3.3710	1.9462
L17	60.7500-57.0000	-2.7025	1.5603	-4.3432	2.5076
L18	57.0000-56.7500	-2.8508	1.6459	-4.6597	2.6903
L19	56.7500-51.7500	-2.8701	1.6571	-4.6750	2.6991
L20	51.7500-48.0800	-2.3898	1.3797	-5.3739	3.1026
L21	48.0800-47.8300	-2.5485	1.4714	-5.6712	3.2742
L22	47.8300-40.7500	-2.5559	1.4756	-5.6982	3.2899
L23	40.7500-40.0000	-2.5574	1.4765	-5.7055	3.2941
L24	40.0000-35.0000	-2.5629	1.4797	-5.7039	3.2932
L25	35.0000-30.0000	-2.5724	1.4852	-5.7295	3.3079
L26	30.0000-26.2500	-2.5805	1.4898	-5.7460	3.3175
L27	26.2500-26.0000	-2.5845	1.4922	-5.7520	3.3209
L28	26.0000-22.7500	-2.6916	1.5540	-5.8088	3.3537
L29	22.7500-22.5000	-2.7140	1.5669	-5.8216	3.3611
L30	22.5000-17.5000	-2.7189	1.5698	-5.8218	3.3612
L31	17.5000-12.5000	-2.7281	1.5751	-5.8092	3.3539
L32	12.5000-7.5000	-3.6398	2.1015	-5.7683	3.3303
L33	7.5000-3.2500	-3.6779	2.1234	-5.6756	3.2768
L34	3.2500-3.0000	-3.6963	2.1341	-5.5798	3.2215
L35	3.0000-0.0000	-3.7094	2.1416	-5.4403	3.1410

Note: For pole sections, center of pressure calculations do not consider feed line shielding.

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
5/8" X 5' Lightning Rod	C	None		0.00	135.5000	No Ice	0.3125	0.3125	0.01
						1/2" Ice	0.8260	0.8260	0.01
						1" Ice	1.3216	1.3216	0.02
*******									
OPA-65R-LCUU-H6 w/ Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	133.0000	No Ice	9.8953	7.1792	0.10
						1/2" Ice	10.4700	8.3621	0.18
						1" Ice	11.0098	9.2588	0.26
OPA-65R-LCUU-H6 w/ Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	133.0000	No Ice	9.8953	7.1792	0.10
						1/2" Ice	10.4700	8.3621	0.18
						1" Ice	11.0098	9.2588	0.26
OPA-65R-LCUU-H6 w/ Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	133.0000	No Ice	9.8953	7.1792	0.10
						1/2" Ice	10.4700	8.3621	0.18
						1" Ice	11.0098	9.2588	0.26
RRUS 11	A	From Leg	4.0000 0.00 0.00	0.00	133.0000	No Ice	2.7908	1.1923	0.05
						1/2" Ice	2.9984	1.3395	0.07
						1" Ice	3.2134	1.4957	0.10
RRUS 11	B	From Leg	4.0000 0.00 0.00	0.00	133.0000	No Ice	2.7908	1.1923	0.05
						1/2" Ice	2.9984	1.3395	0.07
						1" Ice	3.2134	1.4957	0.10
RRUS 11	C	From Leg	4.0000 0.00 0.00	0.00	133.0000	No Ice	2.7908	1.1923	0.05
						1/2" Ice	2.9984	1.3395	0.07
						1" Ice	3.2134	1.4957	0.10
DC6-48-60-18-8F	A	From Leg	4.0000 0.00 0.00	0.00	133.0000	No Ice	0.9167	0.9167	0.02
						1/2" Ice	1.4583	1.4583	0.04
						1" Ice	1.6431	1.6431	0.06
Side Arm Mount [SO 901-3]	C	None		0.00	133.0000	No Ice	1.6600	1.6600	0.32
						1/2" Ice	2.1700	2.1700	0.33
						1" Ice	2.6800	2.6800	0.34
2.375" OD x 5' Mount Pipe	A	From Face	4.0000 0.00 0.00	0.00	133.0000	No Ice	1.1875	1.1875	0.02
						1/2" Ice	1.4956	1.4956	0.03
						1" Ice	1.8071	1.8071	0.04
2.375" OD x 5' Mount Pipe	B	From Face	4.0000 0.00 0.00	0.00	133.0000	No Ice	1.1875	1.1875	0.02
						1/2" Ice	1.4956	1.4956	0.03
						1" Ice	1.8071	1.8071	0.04
2.375" OD x 5' Mount Pipe	C	From Face	4.0000 0.00 0.00	0.00	133.0000	No Ice	1.1875	1.1875	0.02
						1/2" Ice	1.4956	1.4956	0.03
						1" Ice	1.8071	1.8071	0.04
****									
APXVSPP18-C-A20 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	120.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						1" Ice	9.3462	9.0212	0.23
APXVSPP18-C-A20 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	120.0000	No Ice	8.2619	6.9458	0.08
						1/2" Ice	8.8215	8.1266	0.15
						Ice	9.3462	9.0212	0.23

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						1" Ice			
APXVSPP18-C-A20 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	8.2619 8.8215 9.3462	6.9458 8.1266 9.0212	0.08 0.15 0.23
APXVTM14-C-120 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
APXVTM14-C-120 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	6.5799 7.0306 7.4733	4.9591 5.7544 6.4723	0.08 0.13 0.19
(3) TD-RRH8x20-25	A	From Leg	4.0000 0.00 1.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	4.0455 4.2975 4.5570	1.5345 1.7142 1.9008	0.07 0.10 0.13
Platform Mount [LP 1201-1]	C	None		0.00	120.0000	No Ice 1/2" Ice 1" Ice	23.1000 26.8000 30.5000	23.1000 26.8000 30.5000	2.10 2.50 2.90
(2) 2.375" OD x 5' Mount Pipe	A	From Face	4.0000 0.00 0.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	1.1875 1.4956 1.8071	1.1875 1.4956 1.8071	0.02 0.03 0.04
(2) 2.375" OD x 5' Mount Pipe	B	From Face	4.0000 0.00 0.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	1.1875 1.4956 1.8071	1.1875 1.4956 1.8071	0.02 0.03 0.04
(2) 2.375" OD x 5' Mount Pipe	C	From Face	4.0000 0.00 0.00	0.00	120.0000	No Ice 1/2" Ice 1" Ice	1.1875 1.4956 1.8071	1.1875 1.4956 1.8071	0.02 0.03 0.04
****									
800MHz 2X50W RRH W/FILTER	A	From Face	2.0000 0.00 0.00	0.00	118.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	B	From Face	2.0000 0.00 0.00	0.00	118.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
800MHz 2X50W RRH W/FILTER	C	From Face	2.0000 0.00 0.00	0.00	118.0000	No Ice 1/2" Ice 1" Ice	2.0583 2.2398 2.4287	1.9317 2.1087 2.2931	0.06 0.09 0.11
PCS 1900MHz 4x45W-65MHz	A	From Face	2.0000 0.00 0.00	0.00	118.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	B	From Face	2.0000 0.00 0.00	0.00	118.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
PCS 1900MHz 4x45W-65MHz	C	From Face	2.0000 0.00 0.00	0.00	118.0000	No Ice 1/2" Ice 1" Ice	2.3218 2.5266 2.7388	2.2381 2.4407 2.6507	0.06 0.08 0.11
Side Arm Mount [SO 102-3]	C	None		0.00	118.0000	No Ice 1/2" Ice	3.0000 3.4800 3.9600	3.0000 3.4800 3.9600	0.08 0.11 0.14

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							1" Ice			
Pipe Mount [PM 601-3]	C	None			0.00	118.0000	No Ice	4.3900	4.3900	0.20
							1/2" Ice	5.4800	5.4800	0.24
							1" Ice	6.5700	6.5700	0.28
*********										
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	A	From Leg	4.0000		0.00	100.0000	No Ice	6.8239	3.4938	0.06
			0.00				1/2" Ice	7.2751	4.2631	0.11
			1.00				1" Ice	7.7192	4.9598	0.16
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	B	From Leg	4.0000		0.00	100.0000	No Ice	6.8239	3.4938	0.06
			0.00				1/2" Ice	7.2751	4.2631	0.11
			1.00				1" Ice	7.7192	4.9598	0.16
APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	C	From Leg	4.0000		0.00	100.0000	No Ice	6.8239	3.4938	0.06
			0.00				1/2" Ice	7.2751	4.2631	0.11
			1.00				1" Ice	7.7192	4.9598	0.16
ETT19V2S12UB	A	From Leg	4.0000		0.00	100.0000	No Ice	0.5718	0.2761	0.01
			0.00				1/2" Ice	0.6683	0.3495	0.02
			1.00				1" Ice	0.7722	0.4323	0.03
ETT19V2S12UB	B	From Leg	4.0000		0.00	100.0000	No Ice	0.5718	0.2761	0.01
			0.00				1/2" Ice	0.6683	0.3495	0.02
			1.00				1" Ice	0.7722	0.4323	0.03
ETT19V2S12UB	C	From Leg	4.0000		0.00	100.0000	No Ice	0.5718	0.2761	0.01
			0.00				1/2" Ice	0.6683	0.3495	0.02
			1.00				1" Ice	0.7722	0.4323	0.03
KRY 112 144/1	A	From Leg	4.0000		0.00	100.0000	No Ice	0.3500	0.1750	0.01
			0.00				1/2" Ice	0.4259	0.2343	0.01
			1.00				1" Ice	0.5093	0.3009	0.02
KRY 112 144/1	B	From Leg	4.0000		0.00	100.0000	No Ice	0.3500	0.1750	0.01
			0.00				1/2" Ice	0.4259	0.2343	0.01
			1.00				1" Ice	0.5093	0.3009	0.02
KRY 112 144/1	C	From Leg	4.0000		0.00	100.0000	No Ice	0.3500	0.1750	0.01
			0.00				1/2" Ice	0.4259	0.2343	0.01
			1.00				1" Ice	0.5093	0.3009	0.02
FDAP5002-1A20	A	From Leg	4.0000		0.00	100.0000	No Ice	0.4600	0.1829	0.01
			0.00				1/2" Ice	0.5467	0.2419	0.01
			1.00				1" Ice	0.6409	0.3082	0.02
FDAP5002-1A20	B	From Leg	4.0000		0.00	100.0000	No Ice	0.4600	0.1829	0.01
			0.00				1/2" Ice	0.5467	0.2419	0.01
			1.00				1" Ice	0.6409	0.3082	0.02
FDAP5002-1A20	C	From Leg	4.0000		0.00	100.0000	No Ice	0.4600	0.1829	0.01
			0.00				1/2" Ice	0.5467	0.2419	0.01
			1.00				1" Ice	0.6409	0.3082	0.02
TMAT1921B78-21A	A	From Leg	4.0000		0.00	100.0000	No Ice	0.6525	0.3000	0.02
			0.00				1/2" Ice	0.7545	0.3759	0.02
			1.00				1" Ice	0.8640	0.4593	0.03
TMAT1921B78-21A	B	From Leg	4.0000		0.00	100.0000	No Ice	0.6525	0.3000	0.02
			0.00				1/2" Ice	0.7545	0.3759	0.02
			1.00				1" Ice	0.8640	0.4593	0.03
TMAT1921B78-21A	C	From Leg	4.0000		0.00	100.0000	No Ice	0.6525	0.3000	0.02
			0.00				1/2" Ice	0.7545	0.3759	0.02
			1.00				1" Ice	0.8640	0.4593	0.03

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		*C_AA_A Front* *ft^2*	*C_AA_A Side* *ft^2*	*Weight* *K*
						1" Ice			
T-Arm Mount [TA 602-3]	C	None		0.00	100.0000	No Ice	11.5900	11.5900	0.77
						1/2" Ice	15.4400	15.4400	0.99
						1" Ice	19.2900	19.2900	1.21
2.375" OD x 6' Mount Pipe	A	From Leg	4.0000 0.00 0.00	0.00	100.0000	No Ice	1.4250	1.4250	0.03
						1/2" Ice	1.9250	1.9250	0.04
						1" Ice	2.2939	2.2939	0.05
2.375" OD x 6' Mount Pipe	B	From Leg	4.0000 0.00 0.00	0.00	100.0000	No Ice	1.4250	1.4250	0.03
						1/2" Ice	1.9250	1.9250	0.04
						1" Ice	2.2939	2.2939	0.05
2.375" OD x 6' Mount Pipe	C	From Leg	4.0000 0.00 0.00	0.00	100.0000	No Ice	1.4250	1.4250	0.03
						1/2" Ice	1.9250	1.9250	0.04
						1" Ice	2.2939	2.2939	0.05
*****									
BXA-70063-4CF-EDIN-X w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	4.9453	3.6927	0.03
						1/2" Ice	5.3243	4.2947	0.07
						1" Ice	5.7120	4.9133	0.12
BXA-70063-4CF-EDIN-X w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	4.9453	3.6927	0.03
						1/2" Ice	5.3243	4.2947	0.07
						1" Ice	5.7120	4.9133	0.12
BXA-70063-4CF-EDIN-X w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	4.9453	3.6927	0.03
						1/2" Ice	5.3243	4.2947	0.07
						1" Ice	5.7120	4.9133	0.12
LNX-6514DS-A1M w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	8.4106	7.0817	0.06
						1/2" Ice	8.9745	8.2729	0.13
						1" Ice	9.5048	9.1847	0.21
LNX-6514DS-A1M w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	8.4106	7.0817	0.06
						1/2" Ice	8.9745	8.2729	0.13
						1" Ice	9.5048	9.1847	0.21
LNX-6514DS-A1M w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	8.4106	7.0817	0.06
						1/2" Ice	8.9745	8.2729	0.13
						1" Ice	9.5048	9.1847	0.21
BXA-171063-8BF-2 w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	3.1789	3.3530	0.03
						1/2" Ice	3.5550	3.9709	0.06
						1" Ice	3.9298	4.5951	0.10
BXA-171063-8BF-2 w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	3.1789	3.3530	0.03
						1/2" Ice	3.5550	3.9709	0.06
						1" Ice	3.9298	4.5951	0.10
BXA-171063-12CF-EDIN-X w/ Mount Pipe	A	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	5.0290	5.2887	0.04
						1/2" Ice	5.5830	6.4594	0.09
						1" Ice	6.1033	7.3479	0.14
BXA-171063-12CF-EDIN-X w/ Mount Pipe	B	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	5.0290	5.2887	0.04
						1/2" Ice	5.5830	6.4594	0.09
						1" Ice	6.1033	7.3479	0.14
BXA-171063-12CF-EDIN-X w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	5.0290	5.2887	0.04
						1/2" Ice	5.5830	6.4594	0.09
						1" Ice	6.1033	7.3479	0.14
BXA-171085-8BF-EDIN-0 w/ Mount Pipe	C	From Leg	4.0000 0.00 1.00	0.00	93.0000	No Ice	3.1789	3.3530	0.03
						1/2" Ice	3.5550	3.9709	0.06
						1" Ice	3.9298	4.5951	0.10

Description	*Face or Leg*	*Offset Type*	*Offsets: Horz Lateral Vert* *ft* *ft* *ft*	*Azimuth Adjustment* *°*	*Placement* *ft*		C_AA_A *Front* *ft²*	C_AA_A *Side* *ft²*	*Weight* *K*
						1" Ice			
RRH2X40-AWS	A	From Leg	4.0000	0.00	93.0000	No Ice	2.1614	1.4199	0.04
			0.00			1/2" Ice	2.3597	1.5903	0.06
			1.00			1" Ice	2.5655	1.7676	0.08
RRH2X40-AWS	B	From Leg	4.0000	0.00	93.0000	No Ice	2.1614	1.4199	0.04
			0.00			1/2" Ice	2.3597	1.5903	0.06
			1.00			1" Ice	2.5655	1.7676	0.08
RRH2X40-AWS	C	From Leg	4.0000	0.00	93.0000	No Ice	2.1614	1.4199	0.04
			0.00			1/2" Ice	2.3597	1.5903	0.06
			1.00			1" Ice	2.5655	1.7676	0.08
(2) FD9R6004/2C-3L	A	From Leg	4.0000	0.00	93.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2" Ice	0.3862	0.1189	0.01
			1.00			1" Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	B	From Leg	4.0000	0.00	93.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2" Ice	0.3862	0.1189	0.01
			1.00			1" Ice	0.4656	0.1685	0.01
(2) FD9R6004/2C-3L	C	From Leg	4.0000	0.00	93.0000	No Ice	0.3142	0.0762	0.00
			0.00			1/2" Ice	0.3862	0.1189	0.01
			1.00			1" Ice	0.4656	0.1685	0.01
DB-T1-6Z-8AB-0Z	A	From Leg	4.0000	0.00	93.0000	No Ice	4.8000	2.0000	0.04
			0.00			1/2" Ice	5.0704	2.1926	0.08
			1.00			1" Ice	5.3481	2.3926	0.12
Platform Mount [LP 1201-1]	C	None		0.00	93.0000	No Ice	23.1000	23.1000	2.10
						1/2" Ice	26.8000	26.8000	2.50
						1" Ice	30.5000	30.5000	2.90
****									
APXV18-206517S-C	A	From Face	1.0000	0.00	75.0000	No Ice	5.1667	3.0375	0.03
			0.00			1/2" Ice	5.6182	3.4693	0.05
			0.00			1" Ice	6.0772	3.9086	0.09
APXV18-206517S-C	B	From Face	1.0000	0.00	75.0000	No Ice	5.1667	3.0375	0.03
			0.00			1/2" Ice	5.6182	3.4693	0.05
			0.00			1" Ice	6.0772	3.9086	0.09
APXV18-206517S-C	C	From Face	1.0000	0.00	75.0000	No Ice	5.1667	3.0375	0.03
			0.00			1/2" Ice	5.6182	3.4693	0.05
			0.00			1" Ice	6.0772	3.9086	0.09
Pipe Mount [PM 601-3]	C	None		0.00	75.0000	No Ice	4.3900	4.3900	0.20
						1/2" Ice	5.4800	5.4800	0.24
						1" Ice	6.5700	6.5700	0.28
****									
****									
KS24019-L112A	A	From Face	2.0000	0.00	50.0000	No Ice	0.1407	0.1407	0.01
			0.00			1/2" Ice	0.1979	0.1979	0.01
			1.00			1" Ice	0.2621	0.2621	0.01
Side Arm Mount [SO 702-1]	A	None		0.00	50.0000	No Ice	1.0000	1.4300	0.03
						1/2" Ice	1.0000	2.0500	0.04
						1" Ice	1.0000	2.6700	0.05
****									

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 133.0000-128.0000	130.5000	1.339	30.630	5.833	A	0.000	5.833	5.833	100.00	0.000	0.000
					B	0.000	5.833		100.00	0.000	0.000
					C	0.000	5.833		100.00	0.000	0.775
L2 128.0000-123.5000	125.7500	1.328	30.392	5.250	A	0.000	5.250	5.250	100.00	0.000	0.000
					B	0.000	5.250		100.00	0.000	0.000
					C	0.000	5.250		100.00	0.000	0.698
L3 123.5000-123.0000	123.2315	1.323	30.263	0.750	A	0.000	0.750	0.750	100.00	0.000	0.000
					B	0.000	0.750		100.00	0.000	0.000
					C	0.000	0.750		100.00	0.000	0.077
L4 123.0000-118.0000	120.4860	1.316	30.120	9.455	A	0.000	9.455	9.455	100.00	0.000	0.000
					B	0.000	9.455		100.00	0.000	0.000
					C	0.000	9.455		100.00	0.000	1.083
L5 118.0000-113.0000	115.4865	1.305	29.852	9.772	A	0.000	9.772	9.772	100.00	0.000	0.000
					B	0.000	9.772		100.00	0.000	0.000
					C	0.000	9.772		100.00	0.000	1.545
L6 113.0000-108.0000	110.4869	1.292	29.575	10.090	A	0.000	10.090	10.090	100.00	0.000	0.000
					B	0.000	10.090		100.00	0.000	0.000
					C	0.000	10.090		100.00	0.000	1.545
L7 108.0000-103.0000	105.4873	1.28	29.288	10.407	A	0.000	10.407	10.407	100.00	0.000	0.000
					B	0.000	10.407		100.00	0.000	0.000
					C	0.000	10.407		100.00	0.000	1.545
L8 103.0000-98.0000	100.4877	1.267	28.990	10.724	A	0.000	10.724	10.724	100.00	0.000	0.000
					B	0.000	10.724		100.00	0.000	0.000
					C	0.000	10.724		100.00	0.000	1.629
L9 98.0000-93.0000	95.4880	1.253	28.681	11.042	A	0.000	11.042	11.042	100.00	0.000	0.000
					B	0.000	11.042		100.00	0.000	0.000
					C	0.000	11.042		100.00	0.000	1.755
L10 93.0000-88.0000	90.4884	1.239	28.358	11.359	A	0.000	11.359	11.359	100.00	0.000	0.000
					B	0.000	11.359		100.00	0.000	0.000
					C	0.000	11.359		100.00	0.000	1.755
L11 88.0000-82.2500	85.1101	1.223	27.994	13.455	A	0.000	13.455	13.455	100.00	0.000	0.000
					B	0.000	13.455		100.00	0.000	0.000
					C	0.000	13.455		100.00	0.000	2.018
L12 82.2500-80.7500	81.4990	1.212	27.740	3.530	A	0.000	3.530	3.530	100.00	0.000	0.000
					B	0.000	3.530		100.00	0.000	0.000
					C	0.000	3.530		100.00	0.000	0.526
L13 80.7500-75.7500	78.2390	1.202	27.503	11.974	A	0.000	11.974	11.974	100.00	0.000	0.000
					B	0.000	11.974		100.00	0.000	0.000
					C	0.000	11.974		100.00	0.000	1.755
L14 75.7500-70.7500	73.2393	1.185	27.123	12.292	A	0.000	12.292	12.292	100.00	0.000	0.000
					B	0.000	12.292		100.00	0.000	0.000
					C	0.000	12.292		100.00	0.000	1.755
L15 70.7500-65.7500	68.2395	1.168	26.722	12.609	A	0.000	12.609	12.609	100.00	0.000	0.000
					B	0.000	12.609		100.00	0.000	0.000
					C	0.000	12.609		100.00	0.000	1.755
L16 65.7500-60.7500	63.2398	1.149	26.297	12.926	A	0.000	12.926	12.926	100.00	0.000	0.000
					B	0.000	12.926		100.00	0.000	0.000
					C	0.000	12.926		100.00	0.000	1.755
L17 60.7500-57.0000	58.8694	1.132	25.904	9.903	A	0.000	9.903	9.903	100.00	0.000	0.000
					B	0.000	9.903		100.00	0.000	0.000
					C	0.000	9.903		100.00	0.000	1.889
L18 57.0000-56.7500	56.8750	1.124	25.717	0.666	A	0.000	0.666	0.666	100.00	0.000	0.000
					B	0.000	0.666		100.00	0.000	0.000
					C	0.000	0.666		100.00	0.000	0.140
L19 56.7500-51.7500	54.2402	1.113	25.461	13.484	A	0.000	13.484	13.484	100.00	0.000	0.000
					B	0.000	13.484		100.00	0.000	0.000
					C	0.000	13.484		100.00	0.000	2.797
L20 51.7500-48.0800	49.9098	1.093	25.019	10.100	A	0.000	10.100	10.100	100.00	0.000	0.000
					B	0.000	10.100		100.00	0.000	0.000
					C	0.000	10.100		100.00	0.000	2.469
L21 48.0800-	47.9550	1.084	24.80	0.694	A	0.000	0.694	0.694	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
47.8300			9		B	0.000	0.694		100.00	0.000	0.000
					C	0.000	0.694		100.00	0.000	0.181
L22 47.8300-40.7500	44.2713	1.066	24.395	19.980	A	0.000	19.980	19.980	100.00	0.000	0.000
					B	0.000	19.980		100.00	0.000	0.000
					C	0.000	19.980		100.00	0.000	5.140
L23 40.7500-40.0000	40.3748	1.046	23.927	2.122	A	0.000	2.122	2.122	100.00	0.000	0.000
					B	0.000	2.122		100.00	0.000	0.000
					C	0.000	2.122		100.00	0.000	0.544
L24 40.0000-35.0000	37.4908	1.029	23.556	14.328	A	0.000	14.328	14.328	100.00	0.000	0.000
					B	0.000	14.328		100.00	0.000	0.000
					C	0.000	14.328		100.00	0.000	3.630
L25 35.0000-30.0000	32.4910	0.999	22.857	14.646	A	0.000	14.646	14.646	100.00	0.000	0.000
					B	0.000	14.646		100.00	0.000	0.000
					C	0.000	14.646		100.00	0.000	3.630
L26 30.0000-26.2500	28.1200	0.969	22.172	11.193	A	0.000	11.193	11.193	100.00	0.000	0.000
					B	0.000	11.193		100.00	0.000	0.000
					C	0.000	11.193		100.00	0.000	2.723
L27 26.2500-26.0000	26.1250	0.954	21.832	0.752	A	0.000	0.752	0.752	100.00	0.000	0.000
					B	0.000	0.752		100.00	0.000	0.000
					C	0.000	0.752		100.00	0.000	0.181
L28 26.0000-22.7500	24.3713	0.94	21.515	9.854	A	0.000	9.854	9.854	100.00	0.000	0.000
					B	0.000	9.854		100.00	0.000	0.000
					C	0.000	9.854		100.00	0.000	2.474
L29 22.7500-22.5000	22.6250	0.926	21.180	0.763	A	0.000	0.763	0.763	100.00	0.000	0.000
					B	0.000	0.763		100.00	0.000	0.000
					C	0.000	0.763		100.00	0.000	0.192
L30 22.5000-17.5000	19.9915	0.902	20.636	15.435	A	0.000	15.435	15.435	100.00	0.000	0.000
					B	0.000	15.435		100.00	0.000	0.000
					C	0.000	15.435		100.00	0.000	3.838
L31 17.5000-12.5000	14.9916	0.85	19.450	15.753	A	0.000	15.753	15.753	100.00	0.000	0.000
					B	0.000	15.753		100.00	0.000	0.000
					C	0.000	15.753		100.00	0.000	3.838
L32 12.5000-7.5000	9.9918	0.85	19.450	16.072	A	0.000	16.072	16.072	100.00	0.000	0.000
					B	0.000	16.072		100.00	0.000	0.000
					C	0.000	16.072		100.00	0.000	3.838
L33 7.5000-3.2500	5.3692	0.85	19.450	13.910	A	0.000	13.910	13.910	100.00	0.000	0.000
					B	0.000	13.910		100.00	0.000	0.000
					C	0.000	13.910		100.00	0.000	3.263
L34 3.2500-3.0000	3.1250	0.85	19.450	0.825	A	0.000	0.825	0.825	100.00	0.000	0.000
					B	0.000	0.825		100.00	0.000	0.000
					C	0.000	0.825		100.00	0.000	0.192
L35 3.0000-0.0000	1.4971	0.85	19.450	9.967	A	0.000	9.967	9.967	100.00	0.000	0.000
					B	0.000	9.967		100.00	0.000	0.000
					C	0.000	9.967		100.00	0.000	2.303

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 133.0000-128.0000	130.5000	1.339	8.139	2.2948	7.746	A	0.000	7.746	7.746	100.00	0.000	0.000
						B	0.000	7.746		100.00	0.000	0.000
						C	0.000	7.746		100.00	0.000	3.070
L2 128.0000-123.5000	125.7500	1.328	8.075	2.2863	6.965	A	0.000	6.965	6.965	100.00	0.000	0.000
						B	0.000	6.965		100.00	0.000	0.000
						C	0.000	6.965		100.00	0.000	2.755
L3 123.5000-123.0000	123.2315	1.323	8.041	2.2817	0.940	A	0.000	0.940	0.940	100.00	0.000	0.000
						B	0.000	0.940		100.00	0.000	0.000
						C	0.000	0.940		100.00	0.000	0.306
L4 123.0000-118.0000	120.4860	1.316	8.003	2.2765	11.352	A	0.000	11.352	11.352	100.00	0.000	0.000
						B	0.000	11.352		100.00	0.000	0.000
						C	0.000	11.352		100.00	0.000	4.270

Section Elevation	z	K_Z	q_z	t_Z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	in	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
L5 118.0000-113.0000	115.4865	1.305	7.932	2.2669	11.661	A	0.000	11.661	11.661	100.00	0.000	0.000
						B	0.000	11.661		100.00	0.000	0.000
						C	0.000	11.661		100.00	0.000	6.079
L6 113.0000-108.0000	110.4869	1.292	7.858	2.2569	11.970	A	0.000	11.970	11.970	100.00	0.000	0.000
						B	0.000	11.970		100.00	0.000	0.000
						C	0.000	11.970		100.00	0.000	6.059
L7 108.0000-103.0000	105.4873	1.28	7.782	2.2465	12.279	A	0.000	12.279	12.279	100.00	0.000	0.000
						B	0.000	12.279		100.00	0.000	0.000
						C	0.000	12.279		100.00	0.000	6.038
L8 103.0000-98.0000	100.4877	1.267	7.703	2.2356	12.587	A	0.000	12.587	12.587	100.00	0.000	0.000
						B	0.000	12.587		100.00	0.000	0.000
						C	0.000	12.587		100.00	0.000	6.100
L9 98.0000-93.0000	95.4880	1.253	7.621	2.2242	12.895	A	0.000	12.895	12.895	100.00	0.000	0.000
						B	0.000	12.895		100.00	0.000	0.000
						C	0.000	12.895		100.00	0.000	6.203
L10 93.0000-88.0000	90.4884	1.239	7.535	2.2123	13.203	A	0.000	13.203	13.203	100.00	0.000	0.000
						B	0.000	13.203		100.00	0.000	0.000
						C	0.000	13.203		100.00	0.000	6.180
L11 88.0000-82.2500	85.1101	1.223	7.438	2.1988	15.563	A	0.000	15.563	15.563	100.00	0.000	0.000
						B	0.000	15.563		100.00	0.000	0.000
						C	0.000	15.563		100.00	0.000	7.075
L12 82.2500-80.7500	81.4990	1.212	7.371	2.1892	4.080	A	0.000	4.080	4.080	100.00	0.000	0.000
						B	0.000	4.080		100.00	0.000	0.000
						C	0.000	4.080		100.00	0.000	1.846
L13 80.7500-75.7500	78.2390	1.202	7.308	2.1803	13.791	A	0.000	13.791	13.791	100.00	0.000	0.000
						B	0.000	13.791		100.00	0.000	0.000
						C	0.000	13.791		100.00	0.000	6.116
L14 75.7500-70.7500	73.2393	1.185	7.207	2.1660	14.096	A	0.000	14.096	14.096	100.00	0.000	0.000
						B	0.000	14.096		100.00	0.000	0.000
						C	0.000	14.096		100.00	0.000	6.087
L15 70.7500-65.7500	68.2395	1.168	7.100	2.1507	14.401	A	0.000	14.401	14.401	100.00	0.000	0.000
						B	0.000	14.401		100.00	0.000	0.000
						C	0.000	14.401		100.00	0.000	6.056
L16 65.7500-60.7500	63.2398	1.149	6.987	2.1344	14.705	A	0.000	14.705	14.705	100.00	0.000	0.000
						B	0.000	14.705		100.00	0.000	0.000
						C	0.000	14.705		100.00	0.000	6.024
L17 60.7500-57.0000	58.8694	1.132	6.883	2.1192	11.228	A	0.000	11.228	11.228	100.00	0.000	0.000
						B	0.000	11.228		100.00	0.000	0.000
						C	0.000	11.228		100.00	0.000	6.363
L18 57.0000-56.7500	56.8750	1.124	6.833	2.1119	0.754	A	0.000	0.754	0.754	100.00	0.000	0.000
						B	0.000	0.754		100.00	0.000	0.000
						C	0.000	0.754		100.00	0.000	0.468
L19 56.7500-51.7500	54.2402	1.113	6.765	2.1019	15.236	A	0.000	15.236	15.236	100.00	0.000	0.000
						B	0.000	15.236		100.00	0.000	0.000
						C	0.000	15.236		100.00	0.000	9.336
L20 51.7500-48.0800	49.9098	1.093	6.648	2.0845	11.375	A	0.000	11.375	11.375	100.00	0.000	0.000
						B	0.000	11.375		100.00	0.000	0.000
						C	0.000	11.375		100.00	0.000	8.387
L21 48.0800-47.8300	47.9550	1.084	6.592	2.0762	0.780	A	0.000	0.780	0.780	100.00	0.000	0.000
						B	0.000	0.780		100.00	0.000	0.000
						C	0.000	0.780		100.00	0.000	0.620
L22 47.8300-40.7500	44.2713	1.066	6.482	2.0596	22.410	A	0.000	22.410	22.410	100.00	0.000	0.000
						B	0.000	22.410		100.00	0.000	0.000
						C	0.000	22.410		100.00	0.000	17.454
L23 40.7500-40.0000	40.3748	1.046	6.357	2.0407	2.379	A	0.000	2.379	2.379	100.00	0.000	0.000
						B	0.000	2.379		100.00	0.000	0.000
						C	0.000	2.379		100.00	0.000	1.849
L24 40.0000-35.0000	37.4908	1.029	6.259	2.0257	16.016	A	0.000	16.016	16.016	100.00	0.000	0.000
						B	0.000	16.016		100.00	0.000	0.000
						C	0.000	16.016		100.00	0.000	12.183
L25 35.0000-30.0000	32.4910	0.999	6.073	1.9969	16.310	A	0.000	16.310	16.310	100.00	0.000	0.000
						B	0.000	16.310		100.00	0.000	0.000
						C	0.000	16.310		100.00	0.000	12.061
L26 30.0000-26.2500	28.1200	0.969	5.891	1.9682	12.423	A	0.000	12.423	12.423	100.00	0.000	0.000
						B	0.000	12.423		100.00	0.000	0.000
						C	0.000	12.423		100.00	0.000	8.955
L27 26.2500-26.0000	26.1250	0.954	5.801	1.9538	0.834	A	0.000	0.834	0.834	100.00	0.000	0.000
						B	0.000	0.834		100.00	0.000	0.000

Section Elevation ft	z ft	K_Z	q_z psf	t_Z in	A_G ft²	Face	A_F ft²	A_R ft²	A_{leg} ft²	Leg %	C_AA_A In Face ft²	C_AA_A Out Face ft²
						C	0.000	0.834		100.00	0.000	0.594
L28 26.0000-22.7500	24.3713	0.94	5.716	1.9403	10.905	A	0.000	10.905	10.905	100.00	0.000	0.000
						B	0.000	10.905		100.00	0.000	0.000
						C	0.000	10.905		100.00	0.000	7.799
L29 22.7500-22.5000	22.6250	0.926	5.628	1.9259	0.844	A	0.000	0.844	0.844	100.00	0.000	0.000
						B	0.000	0.844		100.00	0.000	0.000
						C	0.000	0.844		100.00	0.000	0.598
L30 22.5000-17.5000	19.9915	0.902	5.483	1.9022	17.020	A	0.000	17.020	17.020	100.00	0.000	0.000
						B	0.000	17.020		100.00	0.000	0.000
						C	0.000	17.020		100.00	0.000	11.870
L31 17.5000-12.5000	14.9916	0.85	5.168	1.8483	17.294	A	0.000	17.294	17.294	100.00	0.000	0.000
						B	0.000	17.294		100.00	0.000	0.000
						C	0.000	17.294		100.00	0.000	11.642
L32 12.5000-7.5000	9.9918	0.85	5.168	1.7748	17.550	A	0.000	17.550	17.550	100.00	0.000	0.000
						B	0.000	17.550		100.00	0.000	0.000
						C	0.000	17.550		100.00	0.000	11.332
L33 7.5000-3.2500	5.3692	0.85	5.168	1.6679	15.092	A	0.000	15.092	15.092	100.00	0.000	0.000
						B	0.000	15.092		100.00	0.000	0.000
						C	0.000	15.092		100.00	0.000	9.248
L34 3.2500-3.0000	3.1250	0.85	5.168	1.5800	0.891	A	0.000	0.891	0.891	100.00	0.000	0.000
						B	0.000	0.891		100.00	0.000	0.000
						C	0.000	0.891		100.00	0.000	0.525
L35 3.0000-0.0000	1.4971	0.85	5.168	1.4679	10.701	A	0.000	10.701	10.701	100.00	0.000	0.000
						B	0.000	10.701		100.00	0.000	0.000
						C	0.000	10.701		100.00	0.000	6.022

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 133.0000-128.0000	130.5000	1.339	10.486	5.833	A	0.000	5.833	5.833	100.00	0.000	0.000
					B	0.000	5.833		100.00	0.000	0.000
					C	0.000	5.833		100.00	0.000	0.775
L2 128.0000-123.5000	125.7500	1.328	10.404	5.250	A	0.000	5.250	5.250	100.00	0.000	0.000
					B	0.000	5.250		100.00	0.000	0.000
					C	0.000	5.250		100.00	0.000	0.698
L3 123.5000-123.0000	123.2315	1.323	10.360	0.750	A	0.000	0.750	0.750	100.00	0.000	0.000
					B	0.000	0.750		100.00	0.000	0.000
					C	0.000	0.750		100.00	0.000	0.077
L4 123.0000-118.0000	120.4860	1.316	10.311	9.455	A	0.000	9.455	9.455	100.00	0.000	0.000
					B	0.000	9.455		100.00	0.000	0.000
					C	0.000	9.455		100.00	0.000	1.083
L5 118.0000-113.0000	115.4865	1.305	10.219	9.772	A	0.000	9.772	9.772	100.00	0.000	0.000
					B	0.000	9.772		100.00	0.000	0.000
					C	0.000	9.772		100.00	0.000	1.545
L6 113.0000-108.0000	110.4869	1.292	10.125	10.090	A	0.000	10.090	10.090	100.00	0.000	0.000
					B	0.000	10.090		100.00	0.000	0.000
					C	0.000	10.090		100.00	0.000	1.545
L7 108.0000-103.0000	105.4873	1.28	10.026	10.407	A	0.000	10.407	10.407	100.00	0.000	0.000
					B	0.000	10.407		100.00	0.000	0.000
					C	0.000	10.407		100.00	0.000	1.545
L8 103.0000-98.0000	100.4877	1.267	9.925	10.724	A	0.000	10.724	10.724	100.00	0.000	0.000
					B	0.000	10.724		100.00	0.000	0.000
					C	0.000	10.724		100.00	0.000	1.629
L9 98.0000-93.0000	95.4880	1.253	9.818	11.042	A	0.000	11.042	11.042	100.00	0.000	0.000
					B	0.000	11.042		100.00	0.000	0.000
					C	0.000	11.042		100.00	0.000	1.755
L10 93.0000-88.0000	90.4884	1.239	9.708	11.359	A	0.000	11.359	11.359	100.00	0.000	0.000
					B	0.000	11.359		100.00	0.000	0.000

Section Elevation	z	K_Z	q_z	A_G	Face	A_F	A_R	A_{leg}	Leg %	C_AA_A In Face	C_AA_A Out Face
ft	ft		psf	ft^2		ft^2	ft^2	ft^2		ft^2	ft^2
					C	0.000	11.359		100.00	0.000	1.755
L11 88.0000-82.2500	85.1101	1.223	9.583	13.455	A	0.000	13.455	13.455	100.00	0.000	0.000
					B	0.000	13.455		100.00	0.000	0.000
					C	0.000	13.455		100.00	0.000	2.018
L12 82.2500-80.7500	81.4990	1.212	9.496	3.530	A	0.000	3.530	3.530	100.00	0.000	0.000
					B	0.000	3.530		100.00	0.000	0.000
					C	0.000	3.530		100.00	0.000	0.526
L13 80.7500-75.7500	78.2390	1.202	9.415	11.974	A	0.000	11.974	11.974	100.00	0.000	0.000
					B	0.000	11.974		100.00	0.000	0.000
					C	0.000	11.974		100.00	0.000	1.755
L14 75.7500-70.7500	73.2393	1.185	9.285	12.292	A	0.000	12.292	12.292	100.00	0.000	0.000
					B	0.000	12.292		100.00	0.000	0.000
					C	0.000	12.292		100.00	0.000	1.755
L15 70.7500-65.7500	68.2395	1.168	9.148	12.609	A	0.000	12.609	12.609	100.00	0.000	0.000
					B	0.000	12.609		100.00	0.000	0.000
					C	0.000	12.609		100.00	0.000	1.755
L16 65.7500-60.7500	63.2398	1.149	9.003	12.926	A	0.000	12.926	12.926	100.00	0.000	0.000
					B	0.000	12.926		100.00	0.000	0.000
					C	0.000	12.926		100.00	0.000	1.755
L17 60.7500-57.0000	58.8694	1.132	8.868	9.903	A	0.000	9.903	9.903	100.00	0.000	0.000
					B	0.000	9.903		100.00	0.000	0.000
					C	0.000	9.903		100.00	0.000	1.889
L18 57.0000-56.7500	56.8750	1.124	8.804	0.666	A	0.000	0.666	0.666	100.00	0.000	0.000
					B	0.000	0.666		100.00	0.000	0.000
					C	0.000	0.666		100.00	0.000	0.140
L19 56.7500-51.7500	54.2402	1.113	8.716	13.484	A	0.000	13.484	13.484	100.00	0.000	0.000
					B	0.000	13.484		100.00	0.000	0.000
					C	0.000	13.484		100.00	0.000	2.797
L20 51.7500-48.0800	49.9098	1.093	8.565	10.100	A	0.000	10.100	10.100	100.00	0.000	0.000
					B	0.000	10.100		100.00	0.000	0.000
					C	0.000	10.100		100.00	0.000	2.469
L21 48.0800-47.8300	47.9550	1.084	8.493	0.694	A	0.000	0.694	0.694	100.00	0.000	0.000
					B	0.000	0.694		100.00	0.000	0.000
					C	0.000	0.694		100.00	0.000	0.181
L22 47.8300-40.7500	44.2713	1.066	8.351	19.980	A	0.000	19.980	19.980	100.00	0.000	0.000
					B	0.000	19.980		100.00	0.000	0.000
					C	0.000	19.980		100.00	0.000	5.140
L23 40.7500-40.0000	40.3748	1.046	8.191	2.122	A	0.000	2.122	2.122	100.00	0.000	0.000
					B	0.000	2.122		100.00	0.000	0.000
					C	0.000	2.122		100.00	0.000	0.544
L24 40.0000-35.0000	37.4908	1.029	8.064	14.328	A	0.000	14.328	14.328	100.00	0.000	0.000
					B	0.000	14.328		100.00	0.000	0.000
					C	0.000	14.328		100.00	0.000	3.630
L25 35.0000-30.0000	32.4910	0.999	7.825	14.646	A	0.000	14.646	14.646	100.00	0.000	0.000
					B	0.000	14.646		100.00	0.000	0.000
					C	0.000	14.646		100.00	0.000	3.630
L26 30.0000-26.2500	28.1200	0.969	7.590	11.193	A	0.000	11.193	11.193	100.00	0.000	0.000
					B	0.000	11.193		100.00	0.000	0.000
					C	0.000	11.193		100.00	0.000	2.723
L27 26.2500-26.0000	26.1250	0.954	7.474	0.752	A	0.000	0.752	0.752	100.00	0.000	0.000
					B	0.000	0.752		100.00	0.000	0.000
					C	0.000	0.752		100.00	0.000	0.181
L28 26.0000-22.7500	24.3713	0.94	7.365	9.854	A	0.000	9.854	9.854	100.00	0.000	0.000
					B	0.000	9.854		100.00	0.000	0.000
					C	0.000	9.854		100.00	0.000	2.474
L29 22.7500-22.5000	22.6250	0.926	7.251	0.763	A	0.000	0.763	0.763	100.00	0.000	0.000
					B	0.000	0.763		100.00	0.000	0.000
					C	0.000	0.763		100.00	0.000	0.192
L30 22.5000-17.5000	19.9915	0.902	7.064	15.435	A	0.000	15.435	15.435	100.00	0.000	0.000
					B	0.000	15.435		100.00	0.000	0.000
					C	0.000	15.435		100.00	0.000	3.838
L31 17.5000-12.5000	14.9916	0.85	6.659	15.753	A	0.000	15.753	15.753	100.00	0.000	0.000
					B	0.000	15.753		100.00	0.000	0.000
					C	0.000	15.753		100.00	0.000	3.838
L32 12.5000-7.5000	9.9918	0.85	6.659	16.072	A	0.000	16.072	16.072	100.00	0.000	0.000
					B	0.000	16.072		100.00	0.000	0.000
					C	0.000	16.072		100.00	0.000	3.838
L33 7.5000-	5.3692	0.85	6.659	13.910	A	0.000	13.910	13.910	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
3.2500					B	0.000	13.910		100.00	0.000	0.000
					C	0.000	13.910		100.00	0.000	3.263
L34 3.2500-3.0000	3.1250	0.85	6.659	0.825	A	0.000	0.825	0.825	100.00	0.000	0.000
					B	0.000	0.825		100.00	0.000	0.000
					C	0.000	0.825		100.00	0.000	0.192
L35 3.0000-0.0000	1.4971	0.85	6.659	9.967	A	0.000	9.967	9.967	100.00	0.000	0.000
					B	0.000	9.967		100.00	0.000	0.000
					C	0.000	9.967		100.00	0.000	2.303

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 30 deg - No Ice
5	0.9 Dead+1.6 Wind 30 deg - No Ice
6	1.2 Dead+1.6 Wind 60 deg - No Ice
7	0.9 Dead+1.6 Wind 60 deg - No Ice
8	1.2 Dead+1.6 Wind 90 deg - No Ice
9	0.9 Dead+1.6 Wind 90 deg - No Ice
10	1.2 Dead+1.6 Wind 120 deg - No Ice
11	0.9 Dead+1.6 Wind 120 deg - No Ice
12	1.2 Dead+1.6 Wind 150 deg - No Ice
13	0.9 Dead+1.6 Wind 150 deg - No Ice
14	1.2 Dead+1.6 Wind 180 deg - No Ice
15	0.9 Dead+1.6 Wind 180 deg - No Ice
16	1.2 Dead+1.6 Wind 210 deg - No Ice
17	0.9 Dead+1.6 Wind 210 deg - No Ice
18	1.2 Dead+1.6 Wind 240 deg - No Ice
19	0.9 Dead+1.6 Wind 240 deg - No Ice
20	1.2 Dead+1.6 Wind 270 deg - No Ice
21	0.9 Dead+1.6 Wind 270 deg - No Ice
22	1.2 Dead+1.6 Wind 300 deg - No Ice
23	0.9 Dead+1.6 Wind 300 deg - No Ice
24	1.2 Dead+1.6 Wind 330 deg - No Ice
25	0.9 Dead+1.6 Wind 330 deg - No Ice
26	1.2 Dead+1.0 Ice
27	1.2 Dead+1.0 Wind 0 deg+1.0 Ice
28	1.2 Dead+1.0 Wind 30 deg+1.0 Ice
29	1.2 Dead+1.0 Wind 60 deg+1.0 Ice
30	1.2 Dead+1.0 Wind 90 deg+1.0 Ice
31	1.2 Dead+1.0 Wind 120 deg+1.0 Ice
32	1.2 Dead+1.0 Wind 150 deg+1.0 Ice
33	1.2 Dead+1.0 Wind 180 deg+1.0 Ice
34	1.2 Dead+1.0 Wind 210 deg+1.0 Ice
35	1.2 Dead+1.0 Wind 240 deg+1.0 Ice
36	1.2 Dead+1.0 Wind 270 deg+1.0 Ice
37	1.2 Dead+1.0 Wind 300 deg+1.0 Ice
38	1.2 Dead+1.0 Wind 330 deg+1.0 Ice
39	Dead+Wind 0 deg - Service
40	Dead+Wind 30 deg - Service
41	Dead+Wind 60 deg - Service
42	Dead+Wind 90 deg - Service
43	Dead+Wind 120 deg - Service
44	Dead+Wind 150 deg - Service
45	Dead+Wind 180 deg - Service
46	Dead+Wind 210 deg - Service
47	Dead+Wind 240 deg - Service
48	Dead+Wind 270 deg - Service
49	Dead+Wind 300 deg - Service
50	Dead+Wind 330 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	133 - 128	Pole	Max Tension	36	0.00	-0.00	-0.00
			Max. Compression	26	-4.20	0.28	0.45
			Max. Mx	20	-1.10	11.53	0.08
			Max. My	2	-1.09	0.01	11.63
			Max. Vy	20	-2.43	11.53	0.08
			Max. Vx	2	-2.43	0.01	11.63
			Max. Torque	20			-0.24
L2	128 - 123.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.13	0.54	0.33
			Max. Mx	20	-1.38	23.01	0.08
			Max. My	2	-1.37	0.03	23.11
			Max. Vy	20	-2.67	23.01	0.08
			Max. Vx	2	-2.68	0.03	23.11
			Max. Torque	20			-0.23
L3	123.5 - 123	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-5.25	0.58	0.31
			Max. Mx	20	-1.42	24.36	0.08
			Max. My	2	-1.41	0.03	24.46
			Max. Vy	20	-2.70	24.36	0.08
			Max. Vx	2	-2.71	0.03	24.46
			Max. Torque	20			-0.22
L4	123 - 118	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-14.75	1.07	3.67
			Max. Mx	20	-4.79	48.53	1.22
			Max. My	2	-4.73	0.06	50.83
			Max. Vy	20	-6.97	48.53	1.22
			Max. Vx	2	-7.30	0.06	50.83
			Max. Torque	20			-1.28
L5	118 - 113	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-17.86	1.66	3.43
			Max. Mx	20	-5.75	89.59	1.22
			Max. My	2	-5.69	0.09	93.52
			Max. Vy	20	-8.44	89.59	1.22
			Max. Vx	2	-8.78	0.09	93.52
			Max. Torque	20			-1.28
L6	113 - 108	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-19.09	2.27	3.17
			Max. Mx	20	-6.07	133.00	1.22
			Max. My	2	-6.01	0.12	138.56
			Max. Vy	20	-8.91	133.00	1.22
			Max. Vx	2	-9.25	0.12	138.56
			Max. Torque	20			-1.24
L7	108 - 103	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-20.32	2.89	2.90
			Max. Mx	20	-6.40	178.74	1.22
			Max. My	2	-6.34	0.16	185.93
			Max. Vy	20	-9.38	178.74	1.22
			Max. Vx	2	-9.71	0.16	185.93
			Max. Torque	20			-1.20
L8	103 - 98	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-25.62	3.68	2.55
			Max. Mx	20	-8.03	231.14	1.22
			Max. My	2	-7.97	0.20	239.96
			Max. Vy	20	-11.60	231.14	1.22
			Max. Vx	2	-11.94	0.20	239.96
			Max. Torque	6			1.16
L9	98 - 93	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-27.27	4.70	2.05
			Max. Mx	20	-8.45	290.38	1.21
			Max. My	2	-8.39	0.25	300.81
			Max. Vy	20	-12.08	290.38	1.21
			Max. Vx	2	-12.42	0.25	300.81
			Max. Torque	6			1.16
L10	93 - 88	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.05	5.79	2.81
			Max. Mx	20	-11.93	376.07	1.41

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-11.85	0.32	389.07
			Max. Vy	20	-16.80	376.07	1.41
			Max. Vx	2	-17.26	0.32	389.07
			Max. Torque	6			1.53
L11	88 - 82.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-38.83	6.29	2.57
			Max. Mx	20	-12.18	414.11	1.40
			Max. My	2	-12.10	0.34	428.10
			Max. Vy	20	-17.00	414.11	1.40
			Max. Vx	2	-17.46	0.34	428.10
			Max. Torque	6			1.53
L12	82.25 - 80.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-41.20	7.39	2.04
			Max. Mx	20	-13.04	500.44	1.39
			Max. My	2	-12.97	0.40	516.63
			Max. Vy	20	-17.51	500.44	1.39
			Max. Vx	2	-17.97	0.40	516.63
			Max. Torque	6			1.53
L13	80.75 - 75.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-43.05	8.50	1.50
			Max. Mx	20	-13.73	589.13	1.37
			Max. My	2	-13.66	0.47	607.52
			Max. Vy	20	-17.96	589.13	1.37
			Max. Vx	2	-18.42	0.47	607.52
			Max. Torque	6			1.53
L14	75.75 - 70.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-46.02	9.71	0.89
			Max. Mx	20	-14.76	683.03	1.34
			Max. My	2	-14.69	0.54	703.60
			Max. Vy	20	-19.10	683.03	1.34
			Max. Vx	2	-19.56	0.54	703.60
			Max. Torque	6			1.53
L15	70.75 - 65.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-48.03	10.95	0.25
			Max. Mx	20	-15.52	779.61	1.31
			Max. My	2	-15.47	0.61	802.34
			Max. Vy	20	-19.52	779.61	1.31
			Max. Vx	2	-19.98	0.61	802.34
			Max. Torque	6			1.53
L16	65.75 - 60.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-50.04	12.18	-0.40
			Max. Mx	20	-16.32	878.24	1.28
			Max. My	2	-16.27	0.69	903.13
			Max. Vy	20	-19.93	878.24	1.28
			Max. Vx	2	-20.38	0.69	903.13
			Max. Torque	6			1.53
L17	60.75 - 57	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.55	13.10	-0.88
			Max. Mx	20	-16.92	953.65	1.26
			Max. My	2	-16.88	0.74	980.15
			Max. Vy	20	-20.29	953.65	1.26
			Max. Vx	2	-20.74	0.74	980.15
			Max. Torque	6			1.53
L18	57 - 56.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-51.67	13.16	-0.92
			Max. Mx	20	-17.00	958.73	1.25
			Max. My	2	-16.95	0.75	985.33
			Max. Vy	20	-20.31	958.73	1.25
			Max. Vx	2	-20.76	0.75	985.33
			Max. Torque	4			1.53
L19	56.75 - 51.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-54.05	14.38	-1.57
			Max. Mx	20	-18.12	1061.75	1.22

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. My	2	-18.08	0.82	1090.48
			Max. Vy	20	-20.88	1061.75	1.22
			Max. Vx	2	-21.33	0.82	1090.48
			Max. Torque	4			1.61
L20	51.75 - 48.08	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-55.91	15.35	-2.03
			Max. Mx	20	-18.99	1139.69	1.20
			Max. My	2	-18.96	0.89	1169.98
			Max. Vy	20	-21.57	1139.69	1.20
			Max. Vx	2	-22.01	0.89	1169.98
			Max. Torque	4			1.71
L21	48.08 - 47.83	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-56.05	15.41	-2.06
			Max. Mx	20	-19.08	1145.09	1.20
			Max. My	2	-19.04	0.90	1175.48
			Max. Vy	20	-21.60	1145.09	1.20
			Max. Vx	2	-22.05	0.90	1175.48
			Max. Torque	4			1.71
L22	47.83 - 40.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-57.62	16.12	-2.45
			Max. Mx	20	-19.92	1206.94	1.18
			Max. My	2	-19.89	0.94	1238.53
			Max. Vy	20	-22.09	1206.94	1.18
			Max. Vx	2	-22.54	0.94	1238.53
			Max. Torque	4			1.77
L23	40.75 - 40	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-61.94	17.37	-3.13
			Max. Mx	20	-22.56	1319.76	1.14
			Max. My	2	-22.53	1.02	1353.48
			Max. Vy	20	-23.01	1319.76	1.14
			Max. Vx	2	-23.46	1.02	1353.48
			Max. Torque	4			1.88
L24	40 - 35	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-64.77	18.60	-3.80
			Max. Mx	20	-24.15	1436.90	1.10
			Max. My	2	-24.12	1.10	1472.73
			Max. Vy	20	-23.83	1436.90	1.10
			Max. Vx	2	-24.28	1.10	1472.73
			Max. Torque	4			1.99
L25	35 - 30	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-67.59	19.81	-4.47
			Max. Mx	20	-25.78	1558.05	1.06
			Max. My	2	-25.75	1.18	1596.00
			Max. Vy	20	-24.62	1558.05	1.06
			Max. Vx	2	-25.07	1.18	1596.00
			Max. Torque	4			2.09
L26	30 - 26.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.70	20.71	-4.97
			Max. Mx	20	-27.01	1651.48	1.02
			Max. My	2	-26.98	1.24	1691.00
			Max. Vy	20	-25.20	1651.48	1.02
			Max. Vx	2	-25.64	1.24	1691.00
			Max. Torque	15			-2.21
L27	26.25 - 26	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-69.85	20.77	-5.00
			Max. Mx	20	-27.10	1657.79	1.02
			Max. My	2	-27.08	1.25	1697.41
			Max. Vy	20	-25.23	1657.79	1.02
			Max. Vx	2	-25.67	1.25	1697.41
			Max. Torque	15			-2.21
L28	26 - 22.75	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.74	21.54	-5.43
			Max. Mx	20	-28.23	1740.61	0.99
			Max. My	2	-28.21	1.30	1781.59
			Max. Vy	20	-25.73	1740.61	0.99
			Max. Vx	2	-26.17	1.30	1781.59

Section No.	Elevation ft	Component Type	Condition	Gov. Load Comb.	Axial K	Major Axis Moment kip-ft	Minor Axis Moment kip-ft
			Max. Torque	15			-2.34
L29	22.75 - 22.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-71.89	21.60	-5.47
			Max. Mx	20	-28.34	1747.05	0.99
			Max. My	2	-28.32	1.30	1788.13
			Max. Vy	20	-25.75	1747.05	0.99
			Max. Vx	2	-26.20	1.30	1788.13
			Max. Torque	15			-2.35
L30	22.5 - 17.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-74.92	22.77	-6.12
			Max. Mx	20	-30.22	1877.72	0.94
			Max. My	2	-30.20	1.39	1920.88
			Max. Vy	20	-26.49	1877.72	0.94
			Max. Vx	2	-26.94	1.39	1920.88
			Max. Torque	15			-2.53
L31	17.5 - 12.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-77.92	23.90	-6.76
			Max. Mx	20	-32.13	2011.91	0.89
			Max. My	2	-32.12	1.47	2057.14
			Max. Vy	20	-27.17	2011.91	0.89
			Max. Vx	2	-27.61	1.47	2057.14
			Max. Torque	15			-2.71
L32	12.5 - 7.5	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-80.90	24.97	-7.38
			Max. Mx	20	-34.06	2149.00	0.84
			Max. My	2	-34.06	1.56	2196.28
			Max. Vy	20	-27.65	2149.00	0.84
			Max. Vx	2	-28.09	1.56	2196.28
			Max. Torque	15			-2.89
L33	7.5 - 3.25	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.37	25.82	-7.86
			Max. Mx	20	-35.73	2267.40	0.80
			Max. My	2	-35.72	1.63	2316.41
			Max. Vy	20	-28.05	2267.40	0.80
			Max. Vx	2	-28.49	1.63	2316.41
			Max. Torque	15			-3.04
L34	3.25 - 3	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-83.51	25.87	-7.89
			Max. Mx	20	-35.83	2274.42	0.80
			Max. My	2	-35.83	1.64	2323.53
			Max. Vy	20	-28.07	2274.42	0.80
			Max. Vx	2	-28.50	1.64	2323.53
			Max. Torque	15			-3.05
L35	3 - 0	Pole	Max Tension	1	0.00	0.00	0.00
			Max. Compression	26	-85.15	26.38	-8.19
			Max. Mx	20	-36.98	2359.07	0.77
			Max. My	2	-36.98	1.69	2409.40
			Max. Vy	20	-28.35	2359.07	0.77
			Max. Vx	2	-28.79	1.69	2409.40
			Max. Torque	15			-3.16

Maximum Reactions

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
Pole	Max. Vert	36	85.15	8.50	-0.00
	Max. H_x	20	36.99	28.34	0.00
	Max. H_z	2	36.99	0.00	28.77
	Max. M_x	2	2409.40	0.00	28.77
	Max. M_z	8	2355.67	-28.34	0.00
	Max. Torsion	3	3.16	0.00	28.77
	Min. Vert	23	27.75	24.54	14.39
	Min. H_x	8	36.99	-28.34	0.00
	Min. H_z	14	36.99	0.00	-28.77

Location	Condition	Gov. Load Comb.	Vertical K	Horizontal, X K	Horizontal, Z K
	Min. M_x	14	-2407.86	0.00	-28.77
	Min. M_z	20	-2359.07	28.34	0.00
	Min. Torsion	15	-3.16	0.00	-28.77

Tower Mast Reaction Summary

Load Combination	Vertical K	$Shear_x$ K	$Shear_z$ K	Overturning Moment, M_x kip-ft	Overturning Moment, M_z kip-ft	Torque kip-ft
Dead Only	30.83	0.00	0.00	-0.60	1.38	0.00
1.2 Dead+1.6 Wind 0 deg - No Ice	36.99	-0.00	-28.77	-2409.40	1.69	-3.16
0.9 Dead+1.6 Wind 0 deg - No Ice	27.75	-0.00	-28.77	-2385.68	1.26	-3.16
1.2 Dead+1.6 Wind 30 deg - No Ice	36.99	14.17	-24.92	-2086.74	-1176.92	-2.72
0.9 Dead+1.6 Wind 30 deg - No Ice	27.75	14.17	-24.92	-2066.17	-1165.90	-2.70
1.2 Dead+1.6 Wind 60 deg - No Ice	36.99	24.54	-14.39	-1205.15	-2039.81	-1.54
0.9 Dead+1.6 Wind 60 deg - No Ice	27.75	24.54	-14.39	-1193.19	-2020.39	-1.50
1.2 Dead+1.6 Wind 90 deg - No Ice	36.99	28.34	0.00	-0.77	-2355.67	0.06
0.9 Dead+1.6 Wind 90 deg - No Ice	27.75	28.34	0.00	-0.55	-2333.18	0.10
1.2 Dead+1.6 Wind 120 deg - No Ice	36.99	24.54	14.39	1203.62	-2039.81	1.65
0.9 Dead+1.6 Wind 120 deg - No Ice	27.75	24.54	14.39	1192.08	-2020.39	1.68
1.2 Dead+1.6 Wind 150 deg - No Ice	36.99	14.17	24.92	2085.21	-1176.92	2.78
0.9 Dead+1.6 Wind 150 deg - No Ice	27.75	14.17	24.92	2065.06	-1165.90	2.80
1.2 Dead+1.6 Wind 180 deg - No Ice	36.99	-0.00	28.77	2407.86	1.69	3.16
0.9 Dead+1.6 Wind 180 deg - No Ice	27.75	-0.00	28.77	2384.57	1.26	3.16
1.2 Dead+1.6 Wind 210 deg - No Ice	36.99	-14.17	24.92	2085.21	1180.31	2.70
0.9 Dead+1.6 Wind 210 deg - No Ice	27.75	-14.17	24.92	2065.07	1168.41	2.67
1.2 Dead+1.6 Wind 240 deg - No Ice	36.99	-24.54	14.39	1203.62	2043.20	1.52
0.9 Dead+1.6 Wind 240 deg - No Ice	27.75	-24.54	14.39	1192.08	2022.91	1.48
1.2 Dead+1.6 Wind 270 deg - No Ice	36.99	-28.34	0.00	-0.77	2359.07	-0.06
0.9 Dead+1.6 Wind 270 deg - No Ice	27.75	-28.34	0.00	-0.55	2335.71	-0.10
1.2 Dead+1.6 Wind 300 deg - No Ice	36.99	-24.54	-14.39	-1205.16	2043.20	-1.62
0.9 Dead+1.6 Wind 300 deg - No Ice	27.75	-24.54	-14.39	-1193.19	2022.91	-1.66
1.2 Dead+1.6 Wind 330 deg - No Ice	36.99	-14.17	-24.92	-2086.75	1180.31	-2.76
0.9 Dead+1.6 Wind 330 deg - No Ice	27.75	-14.17	-24.92	-2066.18	1168.41	-2.78
1.2 Dead+1.0 Ice	85.15	-0.00	0.00	8.19	26.38	0.01
1.2 Dead+1.0 Wind 0 deg+1.0 Ice	85.15	-0.00	-8.58	-784.56	26.42	-1.74
1.2 Dead+1.0 Wind 30 deg+1.0 Ice	85.15	4.25	-7.43	-678.35	-364.68	-1.33
1.2 Dead+1.0 Wind 60 deg+1.0 Ice	85.15	7.36	-4.29	-388.18	-650.98	-0.55

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
1.2 Dead+1.0 Wind 90 deg+1.0 Ice	85.15	8.50	0.00	8.20	-755.73	0.38
1.2 Dead+1.0 Wind 120 deg+1.0 Ice	85.15	7.36	4.29	404.58	-650.98	1.20
1.2 Dead+1.0 Wind 150 deg+1.0 Ice	85.15	4.25	7.43	694.75	-364.67	1.71
1.2 Dead+1.0 Wind 180 deg+1.0 Ice	85.15	-0.00	8.58	800.96	26.42	1.76
1.2 Dead+1.0 Wind 210 deg+1.0 Ice	85.15	-4.25	7.43	694.75	417.51	1.34
1.2 Dead+1.0 Wind 240 deg+1.0 Ice	85.15	-7.36	4.29	404.58	703.81	0.56
1.2 Dead+1.0 Wind 270 deg+1.0 Ice	85.15	-8.50	0.00	8.20	808.56	-0.36
1.2 Dead+1.0 Wind 300 deg+1.0 Ice	85.15	-7.36	-4.29	-388.18	703.81	-1.19
1.2 Dead+1.0 Wind 330 deg+1.0 Ice	85.15	-4.25	-7.43	-678.35	417.51	-1.69
Dead+Wind 0 deg - Service	30.83	0.00	-6.16	-513.36	1.41	-0.68
Dead+Wind 30 deg - Service	30.83	3.03	-5.33	-444.67	-249.48	-0.58
Dead+Wind 60 deg - Service	30.83	5.25	-3.08	-257.00	-433.15	-0.33
Dead+Wind 90 deg - Service	30.83	6.06	-0.00	-0.63	-500.38	0.02
Dead+Wind 120 deg - Service	30.83	5.25	3.08	255.73	-433.15	0.35
Dead+Wind 150 deg - Service	30.83	3.03	5.33	443.41	-249.48	0.60
Dead+Wind 180 deg - Service	30.83	0.00	6.16	512.10	1.41	0.68
Dead+Wind 210 deg - Service	30.83	-3.03	5.33	443.41	252.31	0.58
Dead+Wind 240 deg - Service	30.83	-5.25	3.08	255.74	435.98	0.33
Dead+Wind 270 deg - Service	30.83	-6.06	-0.00	-0.63	503.20	-0.02
Dead+Wind 300 deg - Service	30.83	-5.25	-3.08	-257.00	435.98	-0.35
Dead+Wind 330 deg - Service	30.83	-3.03	-5.33	-444.67	252.31	-0.60

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	-30.83	0.00	0.00	30.83	0.00	0.000%
2	0.00	-36.99	-28.77	0.00	36.99	28.77	0.000%
3	0.00	-27.75	-28.77	0.00	27.75	28.77	0.000%
4	14.17	-36.99	-24.92	-14.17	36.99	24.92	0.000%
5	14.17	-27.75	-24.92	-14.17	27.75	24.92	0.000%
6	24.54	-36.99	-14.39	-24.54	36.99	14.39	0.000%
7	24.54	-27.75	-14.39	-24.54	27.75	14.39	0.000%
8	28.34	-36.99	0.00	-28.34	36.99	0.00	0.000%
9	28.34	-27.75	0.00	-28.34	27.75	0.00	0.000%
10	24.54	-36.99	14.39	-24.54	36.99	-14.39	0.000%
11	24.54	-27.75	14.39	-24.54	27.75	-14.39	0.000%
12	14.17	-36.99	24.92	-14.17	36.99	-24.92	0.000%
13	14.17	-27.75	24.92	-14.17	27.75	-24.92	0.000%
14	0.00	-36.99	28.77	0.00	36.99	-28.77	0.000%
15	0.00	-27.75	28.77	0.00	27.75	-28.77	0.000%
16	-14.17	-36.99	24.92	14.17	36.99	-24.92	0.000%
17	-14.17	-27.75	24.92	14.17	27.75	-24.92	0.000%
18	-24.54	-36.99	14.39	24.54	36.99	-14.39	0.000%
19	-24.54	-27.75	14.39	24.54	27.75	-14.39	0.000%
20	-28.34	-36.99	0.00	28.34	36.99	0.00	0.000%
21	-28.34	-27.75	0.00	28.34	27.75	0.00	0.000%
22	-24.54	-36.99	-14.39	24.54	36.99	14.39	0.000%

Load Comb.	Sum of Applied Forces PX K	PY K	PZ K	Sum of Reactions PX K	PY K	PZ K	% Error
23	-24.54	-27.75	-14.39	24.54	27.75	14.39	0.000%
24	-14.17	-36.99	-24.92	14.17	36.99	24.92	0.000%
25	-14.17	-27.75	-24.92	14.17	27.75	24.92	0.000%
26	0.00	-85.15	0.00	0.00	85.15	-0.00	0.000%
27	0.00	-85.15	-8.58	0.00	85.15	8.58	0.000%
28	4.25	-85.15	-7.43	-4.25	85.15	7.43	0.000%
29	7.36	-85.15	-4.29	-7.36	85.15	4.29	0.000%
30	8.50	-85.15	0.00	-8.50	85.15	-0.00	0.000%
31	7.36	-85.15	4.29	-7.36	85.15	-4.29	0.000%
32	4.25	-85.15	7.43	-4.25	85.15	-7.43	0.000%
33	0.00	-85.15	8.58	0.00	85.15	-8.58	0.000%
34	-4.25	-85.15	7.43	4.25	85.15	-7.43	0.000%
35	-7.36	-85.15	4.29	7.36	85.15	-4.29	0.000%
36	-8.50	-85.15	0.00	8.50	85.15	-0.00	0.000%
37	-7.36	-85.15	-4.29	7.36	85.15	4.29	0.000%
38	-4.25	-85.15	-7.43	4.25	85.15	7.43	0.000%
39	0.00	-30.83	-6.16	0.00	30.83	6.16	0.000%
40	3.03	-30.83	-5.33	-3.03	30.83	5.33	0.000%
41	5.25	-30.83	-3.08	-5.25	30.83	3.08	0.000%
42	6.06	-30.83	0.00	-6.06	30.83	0.00	0.000%
43	5.25	-30.83	3.08	-5.25	30.83	-3.08	0.000%
44	3.03	-30.83	5.33	-3.03	30.83	-5.33	0.000%
45	0.00	-30.83	6.16	0.00	30.83	-6.16	0.000%
46	-3.03	-30.83	5.33	3.03	30.83	-5.33	0.000%
47	-5.25	-30.83	3.08	5.25	30.83	-3.08	0.000%
48	-6.06	-30.83	0.00	6.06	30.83	0.00	0.000%
49	-5.25	-30.83	-3.08	5.25	30.83	3.08	0.000%
50	-3.03	-30.83	-5.33	3.03	30.83	5.33	0.000%

Non-Linear Convergence Results

Load Combination	Converged?	Number of Cycles	Displacement Tolerance	Force Tolerance
1	Yes	4	0.00000001	0.00000001
2	Yes	5	0.00000001	0.00042699
3	Yes	5	0.00000001	0.00019113
4	Yes	6	0.00000001	0.00025662
5	Yes	6	0.00000001	0.00007711
6	Yes	6	0.00000001	0.00028198
7	Yes	6	0.00000001	0.00008607
8	Yes	5	0.00000001	0.00034141
9	Yes	5	0.00000001	0.00014599
10	Yes	6	0.00000001	0.00026545
11	Yes	6	0.00000001	0.00008067
12	Yes	6	0.00000001	0.00026342
13	Yes	6	0.00000001	0.00007957
14	Yes	5	0.00000001	0.00042593
15	Yes	5	0.00000001	0.00019080
16	Yes	6	0.00000001	0.00028416
17	Yes	6	0.00000001	0.00008674
18	Yes	6	0.00000001	0.00025620
19	Yes	6	0.00000001	0.00007732
20	Yes	5	0.00000001	0.00034176
21	Yes	5	0.00000001	0.00014607
22	Yes	6	0.00000001	0.00027144
23	Yes	6	0.00000001	0.00008225
24	Yes	6	0.00000001	0.00027622
25	Yes	6	0.00000001	0.00008388
26	Yes	4	0.00000001	0.00021815
27	Yes	6	0.00000001	0.00023748
28	Yes	6	0.00000001	0.00046376
29	Yes	6	0.00000001	0.00055737
30	Yes	5	0.00008365	0.00091246
31	Yes	6	0.00000001	0.00053415
32	Yes	6	0.00000001	0.00047504

33	Yes	6	0.00000001	0.00023940
34	Yes	6	0.00000001	0.00066958
35	Yes	6	0.00000001	0.00055157
36	Yes	5	0.00008353	0.00098909
37	Yes	6	0.00000001	0.00057818
38	Yes	6	0.00000001	0.00065352
39	Yes	4	0.00000001	0.00060108
40	Yes	5	0.00000001	0.00007115
41	Yes	5	0.00000001	0.00008996
42	Yes	4	0.00000001	0.00050543
43	Yes	5	0.00000001	0.00007533
44	Yes	5	0.00000001	0.00007415
45	Yes	4	0.00000001	0.00059430
46	Yes	5	0.00000001	0.00009168
47	Yes	5	0.00000001	0.00007035
48	Yes	4	0.00000001	0.00050869
49	Yes	5	0.00000001	0.00008125
50	Yes	5	0.00000001	0.00008515

Maximum Tower Deflections - Service Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133 - 128	20.62	39	1.38	0.01
L2	128 - 123.5	19.18	39	1.37	0.00
L3	123.5 - 123	17.89	39	1.36	0.00
L4	123 - 118	17.75	39	1.36	0.00
L5	118 - 113	16.33	39	1.35	0.00
L6	113 - 108	14.93	39	1.32	0.00
L7	108 - 103	13.57	39	1.28	0.00
L8	103 - 98	12.25	39	1.24	0.00
L9	98 - 93	10.98	39	1.19	0.00
L10	93 - 88	9.77	39	1.12	0.00
L11	88 - 82.25	8.63	39	1.05	0.00
L12	85.75 - 80.75	8.14	39	1.01	0.00
L13	80.75 - 75.75	7.11	39	0.96	0.00
L14	75.75 - 70.75	6.14	39	0.89	0.00
L15	70.75 - 65.75	5.25	39	0.80	0.00
L16	65.75 - 60.75	4.46	39	0.72	0.00
L17	60.75 - 57	3.76	39	0.62	0.00
L18	57 - 56.75	3.30	39	0.55	0.00
L19	56.75 - 51.75	3.27	39	0.55	0.00
L20	51.75 - 48.08	2.72	39	0.49	0.00
L21	48.08 - 47.83	2.36	39	0.45	0.00
L22	47.83 - 40.75	2.34	39	0.45	0.00
L23	45 - 40	2.08	39	0.42	0.00
L24	40 - 35	1.65	39	0.39	0.00
L25	35 - 30	1.26	39	0.35	0.00
L26	30 - 26.25	0.92	39	0.29	0.00
L27	26.25 - 26	0.71	39	0.26	0.00
L28	26 - 22.75	0.69	39	0.25	0.00
L29	22.75 - 22.5	0.53	39	0.22	0.00
L30	22.5 - 17.5	0.52	39	0.22	0.00
L31	17.5 - 12.5	0.32	39	0.17	0.00
L32	12.5 - 7.5	0.16	39	0.12	0.00
L33	7.5 - 3.25	0.06	39	0.07	0.00
L34	3.25 - 3	0.01	39	0.03	0.00
L35	3 - 0	0.01	39	0.03	0.00

Critical Deflections and Radius of Curvature - Service Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
135.5000	5/8" X 5' Lightning Rod	39	20.62	1.38	0.01	27623
133.0000	OPA-65R-LCUU-H6 w/ Mount Pipe	39	20.62	1.38	0.01	27623
120.0000	APXVSPP18-C-A20 w/ Mount Pipe	39	16.90	1.35	0.00	19018
118.0000	800MHz 2X50W RRH W/FILTER	39	16.33	1.35	0.00	14993
100.0000	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	39	11.48	1.21	0.00	5201
93.0000	BXA-70063-4CF-EDIN-X w/ Mount Pipe	39	9.77	1.12	0.00	4204
75.0000	APXV18-206517S-C	39	6.00	0.87	0.00	3537
50.0000	KS24019-L112A	39	2.54	0.47	0.00	5224

Maximum Tower Deflections - Design Wind

Section No.	Elevation ft	Horz. Deflection in	Gov. Load Comb.	Tilt °	Twist °
L1	133 - 128	96.47	2	6.44	0.02
L2	128 - 123.5	89.75	2	6.41	0.02
L3	123.5 - 123	83.74	2	6.35	0.02
L4	123 - 118	83.08	2	6.35	0.02
L5	118 - 113	76.47	2	6.29	0.02
L6	113 - 108	69.95	2	6.18	0.02
L7	108 - 103	63.58	2	6.01	0.02
L8	103 - 98	57.40	2	5.80	0.02
L9	98 - 93	51.46	2	5.55	0.01
L10	93 - 88	45.80	2	5.26	0.01
L11	88 - 82.25	40.48	2	4.92	0.01
L12	85.75 - 80.75	38.20	2	4.74	0.01
L13	80.75 - 75.75	33.34	2	4.52	0.01
L14	75.75 - 70.75	28.80	2	4.16	0.01
L15	70.75 - 65.75	24.65	2	3.77	0.01
L16	65.75 - 60.75	20.92	2	3.36	0.01
L17	60.75 - 57	17.64	2	2.92	0.01
L18	57 - 56.75	15.47	2	2.59	0.00
L19	56.75 - 51.75	15.34	2	2.57	0.00
L20	51.75 - 48.08	12.78	2	2.32	0.00
L21	48.08 - 47.83	11.07	2	2.12	0.00
L22	47.83 - 40.75	10.96	2	2.11	0.00
L23	45 - 40	9.75	2	1.98	0.00
L24	40 - 35	7.73	2	1.85	0.00
L25	35 - 30	5.91	2	1.62	0.00
L26	30 - 26.25	4.34	2	1.38	0.00
L27	26.25 - 26	3.32	2	1.20	0.00
L28	26 - 22.75	3.26	2	1.19	0.00
L29	22.75 - 22.5	2.50	2	1.04	0.00
L30	22.5 - 17.5	2.45	2	1.03	0.00
L31	17.5 - 12.5	1.49	2	0.81	0.00
L32	12.5 - 7.5	0.76	2	0.58	0.00
L33	7.5 - 3.25	0.27	2	0.35	0.00
L34	3.25 - 3	0.05	2	0.15	0.00
L35	3 - 0	0.04	2	0.14	0.00

Critical Deflections and Radius of Curvature - Design Wind

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
135.5000	5/8" X 5' Lightning Rod	2	96.47	6.44	0.02	6180
133.0000	OPA-65R-LCUU-H6 w/ Mount	2	96.47	6.44	0.02	6180

Elevation ft	Appurtenance	Gov. Load Comb.	Deflection in	Tilt °	Twist °	Radius of Curvature ft
	Pipe					
120.0000	APXVSPP18-C-A20 w/ Mount Pipe	2	79.10	6.32	0.02	4355
118.0000	800MHz 2X50W RRH W/FILTER	2	76.47	6.29	0.02	3463
100.0000	APX16DWV-16DWV-S-E-A20 w/ Mount Pipe	2	53.80	5.66	0.01	1144
93.0000	BXA-70063-4CF-EDIN-X w/ Mount Pipe	2	45.80	5.26	0.01	918
75.0000	APXV18-206517S-C	2	28.15	4.10	0.01	763
50.0000	KS24019-L112A	2	11.95	2.22	0.00	1116

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L1	133 - 128 (1)	TP14x14x0.349	5.0000	0.0000	0.0	14.9672	-1.09
L2	128 - 123.5 (2)	TP14x14x0.349	4.5000	0.0000	0.0	14.9672	-1.37
L3	123.5 - 123 (3)	TP22x14x0.349	0.5000	0.0000	0.0	14.9672	-1.37
L4	123 - 118 (4)	TP22.7502x22x0.1875	5.0000	0.0000	0.0	13.4276	-4.73
L5	118 - 113 (5)	TP23.5004x22.7502x0.1875	5.0000	0.0000	0.0	13.8741	-5.69
L6	113 - 108 (6)	TP24.2506x23.5004x0.1875	5.0000	0.0000	0.0	14.3205	-6.01
L7	108 - 103 (7)	TP25.0007x24.2506x0.1875	5.0000	0.0000	0.0	14.7670	-6.34
L8	103 - 98 (8)	TP25.7509x25.0007x0.1875	5.0000	0.0000	0.0	15.2134	-7.97
L9	98 - 93 (9)	TP26.5011x25.7509x0.1875	5.0000	0.0000	0.0	15.6599	-8.39
L10	93 - 88 (10)	TP27.2513x26.5011x0.1875	5.0000	0.0000	0.0	16.1063	-11.85
L11	88 - 82.25 (11)	TP28.114x27.2513x0.1875	5.7500	0.0000	0.0	16.3072	-12.10
L12	82.25 - 80.75 (12)	TP27.9641x27.2139x0.25	5.0000	0.0000	0.0	21.9911	-12.97
L13	80.75 - 75.75 (13)	TP28.7143x27.9641x0.25	5.0000	0.0000	0.0	22.5865	-13.66
L14	75.75 - 70.75 (14)	TP29.4646x28.7143x0.25	5.0000	0.0000	0.0	23.1818	-14.69
L15	70.75 - 65.75 (15)	TP30.2148x29.4646x0.25	5.0000	0.0000	0.0	23.7771	-15.47
L16	65.75 - 60.75 (16)	TP30.9651x30.2148x0.25	5.0000	0.0000	0.0	24.3724	-16.27
L17	60.75 - 57 (17)	TP31.5277x30.9651x0.25	3.7500	0.0000	0.0	24.8189	-16.88
L18	57 - 56.75 (18)	TP31.5652x31.5277x0.4625	0.2500	0.0000	0.0	45.6581	-16.95
L19	56.75 - 51.75 (19)	TP32.3155x31.5652x0.4563	5.0000	0.0000	0.0	46.1365	-18.08
L20	51.75 - 48.08 (20)	TP32.8662x32.3155x0.45	3.6700	0.0000	0.0	46.3000	-18.96
L21	48.08 - 47.83 (21)	TP32.9037x32.8662x0.5625	0.2500	0.0000	0.0	57.7411	-19.04
L22	47.83 - 40.75 (22)	TP33.966x32.9037x0.5625	7.0800	0.0000	0.0	58.4992	-19.89

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	A in^2	P_u K
L23	40.75 - 40 (23)	TP33.5785x32.8283x0.5938	5.0000	0.0000	0.0	62.1669	-22.53
L24	40 - 35 (24)	TP34.3287x33.5785x0.5813	5.0000	0.0000	0.0	62.2655	-24.12
L25	35 - 30 (25)	TP35.0789x34.3287x0.5688	5.0000	0.0000	0.0	62.3035	-25.75
L26	30 - 26.25 (26)	TP35.6415x35.0789x0.5688	3.7500	0.0000	0.0	63.3193	-26.98
L27	26.25 - 26 (27)	TP35.679x35.6415x0.6188	0.2500	0.0000	0.0	68.8608	-27.08
L28	26 - 22.75 (28)	TP36.1666x35.679x0.6063	3.2500	0.0000	0.0	68.4322	-28.21
L29	22.75 - 22.5 (29)	TP36.2041x36.1666x0.6563	0.2500	0.0000	0.0	74.0496	-28.32
L30	22.5 - 17.5 (30)	TP36.9543x36.2041x0.6438	5.0000	0.0000	0.0	74.1977	-30.20
L31	17.5 - 12.5 (31)	TP37.7045x36.9543x0.6313	5.0000	0.0000	0.0	74.2853	-32.12
L32	12.5 - 7.5 (32)	TP38.4547x37.7045x0.6188	5.0000	0.0000	0.0	74.3124	-34.06
L33	7.5 - 3.25 (33)	TP39.0924x38.4547x0.6188	4.2500	0.0000	0.0	75.5648	-35.72
L34	3.25 - 3 (34)	TP39.1299x39.0924x0.6313	0.2500	0.0000	0.0	77.1414	-35.83
L35	3 - 0 (35)	TP39.58x39.1299x0.6188	3.0000	0.0000	0.0	76.5226	-36.98

Pole Bending Design Data

Section No.	Elevation ft	Size	M_{ux} kip-ft
L1	133 - 128 (1)	TP14x14x0.349	11.63
L2	128 - 123.5 (2)	TP14x14x0.349	23.11
L3	123.5 - 123 (3)	TP22x14x0.349	23.11
L4	123 - 118 (4)	TP22.7502x22x0.1875	50.83
L5	118 - 113 (5)	TP23.5004x22.7502x0.1875	93.52
L6	113 - 108 (6)	TP24.2506x23.5004x0.1875	138.56
L7	108 - 103 (7)	TP25.0007x24.2506x0.1875	185.93
L8	103 - 98 (8)	TP25.7509x25.0007x0.1875	239.96
L9	98 - 93 (9)	TP26.5011x25.7509x0.1875	300.81
L10	93 - 88 (10)	TP27.2513x26.5011x0.1875	389.07
L11	88 - 82.25 (11)	TP28.114x27.2513x0.1875	428.10
L12	82.25 - 80.75 (12)	TP27.9641x27.2139x0.25	516.63
L13	80.75 - 75.75 (13)	TP28.7143x27.9641x0.25	607.52
L14	75.75 - 70.75 (14)	TP29.4646x28.7143x0.25	703.60
L15	70.75 - 65.75 (15)	TP30.2148x29.4646x0.25	802.34
L16	65.75 - 60.75 (16)	TP30.9651x30.2148x0.25	903.13
L17	60.75 - 57 (17)	TP31.5277x30.9651x0.25	980.15
L18	57 - 56.75	TP31.5652x31.5277x0.46	985.33

Section No.	Elevation ft	Size	M_{ux} kip-ft
	(18)	25	
L19	56.75 - 51.75 (19)	TP32.3155x31.5652x0.45 63	1090.48
L20	51.75 - 48.08 (20)	TP32.8662x32.3155x0.45	1169.98
L21	48.08 - 47.83 (21)	TP32.9037x32.8662x0.56 25	1175.48
L22	47.83 - 40.75 (22)	TP33.966x32.9037x0.562 5	1238.53
L23	40.75 - 40 (23)	TP33.5785x32.8283x0.59 38	1353.47
L24	40 - 35 (24)	TP34.3287x33.5785x0.58 13	1472.73
L25	35 - 30 (25)	TP35.0789x34.3287x0.56 88	1596.00
L26	30 - 26.25 (26)	TP35.6415x35.0789x0.56 88	1691.00
L27	26.25 - 26 (27)	TP35.679x35.6415x0.618 8	1697.41
L28	26 - 22.75 (28)	TP36.1666x35.679x0.606 3	1781.59
L29	22.75 - 22.5 (29)	TP36.2041x36.1666x0.65 63	1788.13
L30	22.5 - 17.5 (30)	TP36.9543x36.2041x0.64 38	1920.88
L31	17.5 - 12.5 (31)	TP37.7045x36.9543x0.63 13	2057.14
L32	12.5 - 7.5 (32)	TP38.4547x37.7045x0.61 88	2196.28
L33	7.5 - 3.25 (33)	TP39.0924x38.4547x0.61 88	2316.41
L34	3.25 - 3 (34)	TP39.1299x39.0924x0.63 13	2323.53
L35	3 - 0 (35)	TP39.58x39.1299x0.6188	2409.40

Pole Shear Design Data

Section No.	Elevation ft	Size	Actual V_u K
L1	133 - 128 (1)	TP14x14x0.349	2.43
L2	128 - 123.5 (2)	TP14x14x0.349	2.68
L3	123.5 - 123 (3)	TP22x14x0.349	2.71
L4	123 - 118 (4)	TP22.7502x22x0.1875	7.30
L5	118 - 113 (5)	TP23.5004x22.7502x0.18 75	8.78
L6	113 - 108 (6)	TP24.2506x23.5004x0.18 75	9.25
L7	108 - 103 (7)	TP25.0007x24.2506x0.18 75	9.71
L8	103 - 98 (8)	TP25.7509x25.0007x0.18 75	11.94
L9	98 - 93 (9)	TP26.5011x25.7509x0.18 75	12.42
L10	93 - 88 (10)	TP27.2513x26.5011x0.18 75	17.26
L11	88 - 82.25 (11)	TP28.114x27.2513x0.187 5	17.46
L12	82.25 - 80.75 (12)	TP27.9641x27.2139x0.25	17.97
L13	80.75 - 75.75 (13)	TP28.7143x27.9641x0.25	18.42
L14	75.75 - 70.75	TP29.4646x28.7143x0.25	19.56

Section No.	Elevation ft	Size	Actual V_u K
	(14)		
L15	70.75 - 65.75	TP30.2148x29.4646x0.25	19.98
	(15)		
L16	65.75 - 60.75	TP30.9651x30.2148x0.25	20.38
	(16)		
L17	60.75 - 57	TP31.5277x30.9651x0.25	20.74
	(17)		
L18	57 - 56.75	TP31.5652x31.5277x0.46	20.76
	(18)	25	
L19	56.75 - 51.75	TP32.3155x31.5652x0.45	21.33
	(19)	63	
L20	51.75 - 48.08	TP32.8662x32.3155x0.45	22.01
	(20)		
L21	48.08 - 47.83	TP32.9037x32.8662x0.56	22.05
	(21)	25	
L22	47.83 - 40.75	TP33.966x32.9037x0.562	22.54
	(22)	5	
L23	40.75 - 40	TP33.5785x32.8283x0.59	23.46
	(23)	38	
L24	40 - 35 (24)	TP34.3287x33.5785x0.58	24.28
		13	
L25	35 - 30 (25)	TP35.0789x34.3287x0.56	25.07
		88	
L26	30 - 26.25	TP35.6415x35.0789x0.56	25.64
	(26)	88	
L27	26.25 - 26	TP35.679x35.6415x0.618	25.67
	(27)	8	
L28	26 - 22.75	TP36.1666x35.679x0.606	26.17
	(28)	3	
L29	22.75 - 22.5	TP36.2041x36.1666x0.65	26.20
	(29)	63	
L30	22.5 - 17.5	TP36.9543x36.2041x0.64	26.93
	(30)	38	
L31	17.5 - 12.5	TP37.7045x36.9543x0.63	27.61
	(31)	13	
L32	12.5 - 7.5 (32)	TP38.4547x37.7045x0.61	28.09
		88	
L33	7.5 - 3.25 (33)	TP39.0924x38.4547x0.61	28.49
		88	
L34	3.25 - 3 (34)	TP39.1299x39.0924x0.63	28.50
		13	
L35	3 - 0 (35)	TP39.58x39.1299x0.6188	28.79

CCIpole

per TIA-222- G

Site BU: 876382

Work Order:

Pole Geometry

	Pole Height Above Base (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Bend Radius (in)	Pole Material
1	133	9.5	0	0	14	14	0.349		A53-B-35
2	123.5	0.5	0	0	14.00	22	0.349		A53-B-35
3	123	40.75	3.5	18	22.00	28.114	0.1875	Auto	A607-60
4	85.75	45	4.25	18	27.21	33.966	0.25	Auto	A607-65
5	45	45	0	18	32.83	39.58	0.2813	Auto	A607-65

Reinforcement Configuration

	Bottom Effective Elevation (ft)	Top Effective Elevation (ft)	Type	Model	Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	0	26.25	plate	.125 x 1.25; (1) (1.187	3			o						o						o			
2	26.25	57	plate	.875 x 1.25; (1) (1.187	3			o						o						o			
3	3.25	22.75	plate	CCI-SFP-065125	3								o						o				o
4	22.75	48.08	plate	CCI-AFP-060100	3								o						o				o
5	0	3.25	plate	FP 1.25 x 5.75_1	2														o				o
6	0	3.25	plate	FP 1.25 x 6.5_1	1							c											
7																							
8																							
9																							
10																							

Reinforcement Details

	B (in)	H (in)	Gross Area (in^2)	Pole Face to Centroid (in)	Bottom Termination Length (in)	Top Termination Length (in)	L_u (in)	Net Area (in^2)	Bolt Hole Size (in)	Reinforcement Material
1	6.125	1.25	7.65625	0.625	n/a	n/a	15.000	6.094	1.1875	A572-65
2	4.875	1.25	6.09375	0.625	27.000	21.000	18.000	4.531	1.1875	A572-65
3	6.5	1.25	8.125	0.625	33.000	33.000	19.000	6.563	1.1875	A572-65
4	6	1	6	0.5	30.000	30.000	16.000	4.750	1.1875	A572-65
5	1.25	5.75	7.1875	2.875	n/a	n/a	0.000	7.188	0.0000	A572-65
6	1.25	6.5	8.125	3.25	n/a	n/a	0.000	8.125	0.0000	A572-65

TNX Geometry Input

Increment (ft): 5

	Section Height (ft)	Section Length (ft)	Lap Splice Length (ft)	Number of Sides	Top Diameter (in)	Bottom Diameter (in)	Wall Thickness (in)	Tapered Pole Grade	Weight Multiplier
1	133 - 128	5		0	14.000	14.000	0.349	A53-B-35	1.000
2	128 - 123.5	4.5	0	0	14.000	14.000	0.349	A53-B-35	1.000
3	123.5 - 123	0.5	0	0	14.000	22.000	0.349	A53-B-35	1.000
4	123 - 118	5		18	22.000	22.750	0.1875	A607-60	1.000
5	118 - 113	5		18	22.750	23.500	0.1875	A607-60	1.000
6	113 - 108	5		18	23.500	24.251	0.1875	A607-60	1.000
7	108 - 103	5		18	24.251	25.001	0.1875	A607-60	1.000
8	103 - 98	5		18	25.001	25.751	0.1875	A607-60	1.000
9	98 - 93	5		18	25.751	26.501	0.1875	A607-60	1.000
10	93 - 88	5		18	26.501	27.251	0.1875	A607-60	1.000
11	88 - 85.75	5.75	3.5	18	27.251	28.114	0.1875	A607-60	1.000
12	85.75 - 80.75	5		18	27.214	27.964	0.25	A607-65	1.000
13	80.75 - 75.75	5		18	27.964	28.714	0.25	A607-65	1.000
14	75.75 - 70.75	5		18	28.714	29.465	0.25	A607-65	1.000
15	70.75 - 65.75	5		18	29.465	30.215	0.25	A607-65	1.000
16	65.75 - 60.75	5		18	30.215	30.965	0.25	A607-65	1.000
17	60.75 - 57	3.75		18	30.965	31.528	0.25	A607-65	1.000
18	57 - 56.75	0.25		18	31.528	31.565	0.4625	A607-65	0.945
19	56.75 - 51.75	5		18	31.565	32.315	0.45625	A607-65	0.948
20	51.75 - 48.08	3.67		18	32.315	32.866	0.45	A607-65	0.954
21	48.08 - 47.83	0.25		18	32.866	32.904	0.5625	A607-65	1.077
22	47.83 - 45	7.08	4.25	18	32.904	33.966	0.5625	A607-65	1.069
23	45 - 40	5		18	32.828	33.578	0.5938	A607-65	1.062
24	40 - 35	5		18	33.578	34.329	0.5813	A607-65	1.071
25	35 - 30	5		18	34.329	35.079	0.5688	A607-65	1.081
26	30 - 26.25	3.75		18	35.079	35.642	0.5688	A607-65	1.072
27	26.25 - 26	0.25		18	35.642	35.679	0.6188	A607-65	1.054
28	26 - 22.75	3.25		18	35.679	36.167	0.6063	A607-65	1.067
29	22.75 - 22.5	0.25		18	36.167	36.204	0.6563	A607-65	1.073
30	22.5 - 17.5	5		18	36.204	36.954	0.6438	A607-65	1.079
31	17.5 - 12.5	5		18	36.954	37.705	0.6313	A607-65	1.087
32	12.5 - 7.5	5		18	37.705	38.455	0.6188	A607-65	1.096
33	7.5 - 3.25	4.25		18	38.455	39.092	0.6188	A607-65	1.085
34	3.25 - 3	0.25		18	39.092	39.130	0.6313	A607-65	1.039
35	3 - 0	3		18	39.130	39.580	0.6188	A607-65	1.053

TNX Section Forces

Increment (ft):	5	TNX Output		
	Section Height (ft)	P_u (K)	M_{ux} (kip-ft)	V_u (K)
1	133 - 128	1.09	11.63	2.43
2	128 - 123.5	1.37	23.11	2.68
3	123.5 - 123	1.41	24.46	2.71
4	123 - 118	4.73	50.83	7.30
5	118 - 113	5.69	93.52	8.78
6	113 - 108	6.01	138.56	9.25
7	108 - 103	6.34	185.93	9.71
8	103 - 98	7.97	239.96	11.94
9	98 - 93	8.39	300.81	12.42
10	93 - 88	11.85	389.07	17.26
11	88 - 85.75	12.10	428.10	17.46
12	85.75 - 80.75	12.97	516.63	17.97
13	80.75 - 75.75	13.66	607.52	18.42
14	75.75 - 70.75	14.69	703.60	19.56
15	70.75 - 65.75	15.47	802.34	19.98
16	65.75 - 60.75	16.27	903.13	20.38
17	60.75 - 57	16.88	980.15	20.74
18	57 - 56.75	16.95	985.33	20.76
19	56.75 - 51.75	18.08	1090.48	21.33
20	51.75 - 48.08	18.96	1169.98	22.01
21	48.08 - 47.83	19.04	1175.48	22.05
22	47.83 - 45	19.89	1238.53	22.54
23	45 - 40	22.53	1353.48	23.46
24	40 - 35	24.12	1472.73	24.28
25	35 - 30	25.75	1596.00	25.07
26	30 - 26.25	26.98	1691.00	25.64
27	26.25 - 26	27.08	1697.41	25.67
28	26 - 22.75	28.21	1781.59	26.17
29	22.75 - 22.5	28.32	1788.13	26.20
30	22.5 - 17.5	30.20	1920.88	26.94
31	17.5 - 12.5	32.12	2057.14	27.61
32	12.5 - 7.5	34.06	2196.28	28.09
33	7.5 - 3.25	35.72	2316.41	28.49
34	3.25 - 3	35.83	2323.53	28.50
35	3 - 0	36.98	2409.40	28.79

Analysis Results

Elevation (ft)	Component Type	Size	Critical Element	% Capacity	Pass / Fail
133 - 128	Pole	TP14x14x0.349	Pole	7.1%	Pass
128 - 123.5	Pole	TP14x14x0.349	Pole	13.8%	Pass
123.5 - 123	Pole	TP22x14x0.349	Pole	6.0%	Pass
123 - 118	Pole	TP22.75x22x0.1875	Pole	13.0%	Pass
118 - 113	Pole	TP23.5x22.75x0.1875	Pole	22.2%	Pass
113 - 108	Pole	TP24.251x23.5x0.1875	Pole	31.0%	Pass
108 - 103	Pole	TP25.001x24.251x0.1875	Pole	39.3%	Pass
103 - 98	Pole	TP25.751x25.001x0.1875	Pole	48.4%	Pass
98 - 93	Pole	TP26.501x25.751x0.1875	Pole	57.7%	Pass
93 - 88	Pole	TP27.251x26.501x0.1875	Pole	71.4%	Pass
88 - 85.75	Pole	TP28.114x27.251x0.1875	Pole	76.9%	Pass
85.75 - 80.75	Pole	TP27.964x27.214x0.25	Pole	58.0%	Pass
80.75 - 75.75	Pole	TP28.714x27.964x0.25	Pole	65.0%	Pass
75.75 - 70.75	Pole	TP29.465x28.714x0.25	Pole	72.0%	Pass
70.75 - 65.75	Pole	TP30.215x29.465x0.25	Pole	78.6%	Pass
65.75 - 60.75	Pole	TP30.965x30.215x0.25	Pole	84.8%	Pass
60.75 - 57	Pole	TP31.528x30.965x0.25	Pole	89.2%	Pass
57 - 56.75	Pole + Reinf.	TP31.565x31.528x0.4625	Reinf. 2 Tension Rupture	78.9%	Pass
56.75 - 51.75	Pole + Reinf.	TP32.315x31.565x0.4563	Reinf. 2 Tension Rupture	84.2%	Pass
51.75 - 48.08	Pole + Reinf.	TP32.866x32.315x0.45	Reinf. 2 Tension Rupture	87.9%	Pass
48.08 - 47.83	Pole + Reinf.	TP32.904x32.866x0.5625	Reinf. 2 Tension Rupture	74.1%	Pass
47.83 - 45	Pole + Reinf.	TP33.966x32.904x0.5625	Reinf. 2 Tension Rupture	76.6%	Pass
45 - 40	Pole + Reinf.	TP33.578x32.828x0.5938	Reinf. 2 Tension Rupture	78.2%	Pass
40 - 35	Pole + Reinf.	TP34.329x33.578x0.5813	Reinf. 2 Tension Rupture	82.3%	Pass
35 - 30	Pole + Reinf.	TP35.079x34.329x0.5688	Reinf. 2 Tension Rupture	86.3%	Pass
30 - 26.25	Pole + Reinf.	TP35.642x35.079x0.5688	Reinf. 2 Tension Rupture	89.3%	Pass
26.25 - 26	Pole + Reinf.	TP35.679x35.642x0.6188	Reinf. 1 Connection	79.6%	Pass
26 - 22.75	Pole + Reinf.	TP36.167x35.679x0.6063	Reinf. 1 Compression	81.9%	Pass
22.75 - 22.5	Pole + Reinf.	TP36.204x36.167x0.6563	Reinf. 1 Compression	78.2%	Pass
22.5 - 17.5	Pole + Reinf.	TP36.954x36.204x0.6438	Reinf. 1 Compression	81.5%	Pass
17.5 - 12.5	Pole + Reinf.	TP37.705x36.954x0.6313	Reinf. 1 Compression	84.8%	Pass
12.5 - 7.5	Pole + Reinf.	TP38.455x37.705x0.6188	Reinf. 1 Compression	87.9%	Pass
7.5 - 3.25	Pole + Reinf.	TP39.092x38.455x0.6188	Reinf. 1 Compression	90.5%	Pass
3.25 - 3	Pole + Reinf.	TP39.13x39.092x0.6313	Reinf. 1 Compression	87.9%	Pass
3 - 0	Pole + Reinf.	TP39.58x39.13x0.6188	Reinf. 1 Connection	89.7%	Pass
				Summary	
			Pole	89.2%	Pass
			Reinforcement	90.5%	Pass
			Overall	90.5%	Pass

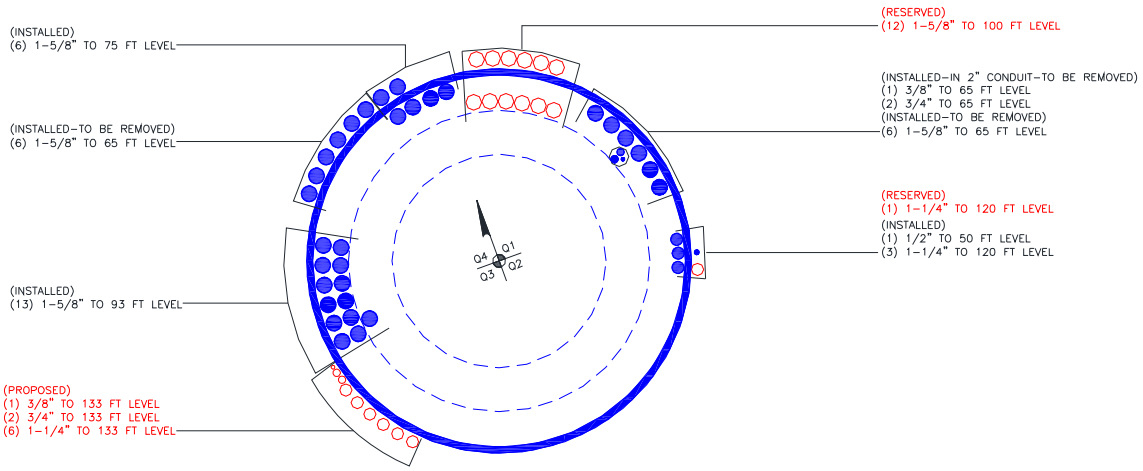
Additional Calculations

Section Elevation (ft)	Moment of Inertia (in^4)			Area (in^2)			% Capacity						
	Pole	Reinf.	Total	Pole	Reinf.	Total	Pole	R1	R2	R3	R4	R5	R6
133 - 128	349	n/a	349	14.97	n/a	14.97	7.1%						
128 - 123.5	349	n/a	349	14.97	n/a	14.97	13.8%						
123.5 - 123	1391	n/a	1391	23.74	n/a	23.74	6.0%						
123 - 118	863	n/a	863	13.43	n/a	13.43	13.0%						
118 - 113	952	n/a	952	13.87	n/a	13.87	22.2%						
113 - 108	1047	n/a	1047	14.32	n/a	14.32	31.0%						
108 - 103	1148	n/a	1148	14.77	n/a	14.77	39.4%						
103 - 98	1256	n/a	1256	15.21	n/a	15.21	48.4%						
98 - 93	1369	n/a	1369	15.66	n/a	15.66	57.7%						
93 - 88	1490	n/a	1490	16.11	n/a	16.11	71.4%						
88 - 85.75	1546	n/a	1546	16.31	n/a	16.31	76.9%						
85.75 - 80.75	2133	n/a	2133	21.99	n/a	21.99	58.0%						
80.75 - 75.75	2311	n/a	2311	22.59	n/a	22.59	65.0%						
75.75 - 70.75	2499	n/a	2499	23.18	n/a	23.18	72.0%						
70.75 - 65.75	2696	n/a	2696	23.78	n/a	23.78	78.6%						
65.75 - 60.75	2904	n/a	2904	24.37	n/a	24.37	84.8%						
60.75 - 57	3066	n/a	3066	24.82	n/a	24.82	89.2%						
57 - 56.75	3077	2480	5558	24.85	18.28	43.13	48.9%		78.9%				
56.75 - 51.75	3304	2594	5898	25.44	18.28	43.72	52.7%		84.2%				
51.75 - 48.08	3477	2679	6156	25.88	18.28	44.16	55.4%		87.9%				
48.08 - 47.83	3505	4147	7652	25.91	36.28	62.19	47.4%		74.1%		58.5%		
47.83 - 45	3644	4249	7893	26.25	36.28	62.53	49.3%		76.6%		60.6%		
45 - 40	4180	4312	8492	29.73	36.28	66.01	48.5%		78.2%		62.3%		
40 - 35	4468	4498	8967	30.40	36.28	66.68	51.4%		82.3%		65.7%		
35 - 30	4770	4688	9458	31.07	36.28	67.35	54.3%		86.3%		69.0%		
30 - 26.25	5005	4834	9838	31.57	36.28	67.85	56.5%		89.3%		71.4%		
26.25 - 26	5018	5666	10684	31.60	40.97	72.57	52.2%	79.6%			66.6%		
26 - 22.75	5228	5815	11043	32.04	40.97	73.01	54.0%	81.9%			68.6%		
22.75 - 22.5	5255	6474	11729	32.07	47.34	79.42	51.6%	78.2%		62.5%			
22.5 - 17.5	5590	6732	12323	32.74	47.34	80.09	54.2%	81.5%		65.2%			
17.5 - 12.5	5940	6996	12936	33.41	47.34	80.76	56.8%	84.8%		67.9%			
12.5 - 7.5	6304	7265	13568	34.08	47.34	81.43	59.4%	87.9%		70.6%			
7.5 - 3.25	6624	7497	14122	34.65	47.34	81.99	61.5%	90.5%		72.7%			
3.25 - 3	6621	7733	14354	34.68	45.47	80.15	58.9%	87.9%				65.1%	65.3%
3 - 0	6854	7899	14753	35.09	45.47	80.56	60.4%	89.7%				66.4%	66.6%

Note: Section capacity checked in 5 degree increments.

APPENDIX B

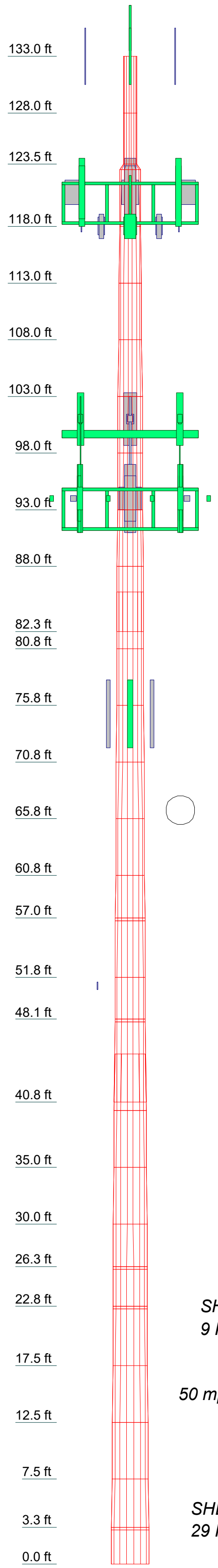
BASE LEVEL DRAWING


(RESERVED)
(12) 1-5/8" TO 100 FT LEVEL
(INSTALLED)
(6) 1-5/8" TO 75 FT LEVEL
(INSTALLED-IN 2" CONDUIT-TO BE REMOVED)
(1) 3/8" TO 65 FT LEVEL
(2) 3/4" TO 65 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-5/8" TO 65 FT LEVEL
(INSTALLED-TO BE REMOVED)
(6) 1-5/8" TO 65 FT LEVEL
(RESERVED)
(1) 1-1/4" TO 120 FT LEVEL
(INSTALLED)
(1) 1/2" TO 50 FT LEVEL
(3) 1-1/4" TO 120 FT LEVEL
Q1
Q2
Q3
Q4
(INSTALLED)
(13) 1-5/8" TO 93 FT LEVEL
(PROPOSED)
(1) 3/8" TO 133 FT LEVEL
(2) 3/4" TO 133 FT LEVEL
(6) 1-1/4" TO 133 FT LEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Section	Length (ft)	Number of Sides	Thickness (in)	Socket Length (ft)	Top Dia (in)	Bot Dia (in)	Grade	Weight (K)
1	5.0000	0	0.3490		14.0000	14.0000	A53-B-35	0.3
2	[illegible]	0	[illegible]		[illegible]	[illegible]		0.2
3	[illegible]	0	[illegible]		[illegible]	[illegible]		0.0
4	[illegible]	18	[illegible]		[illegible]	[illegible]	A607-60	0.2
5	5.0000	18	0.1875		22.7502	23.5004		0.2
6	5.0000	18	0.1875		23.5004	24.2506		0.2
7	5.0000	18	0.1875		24.2506	25.0007		0.2
8	5.0000	18	0.1875		25.0007	25.7509		0.3
9	5.0000	18	0.1875		25.7509	26.5011		0.3
10	5.0000	18	0.1875		26.5011	27.2513		0.3
11	[illegible]	18	0.1875	3.5000	27.2513	28.1140		0.3
12	[illegible]	18	[illegible]		[illegible]	[illegible]	A607-65	0.4
13	5.0000	18	0.2500		[illegible]	[illegible]		0.4
14	5.0000	18	0.2500		28.7143	29.4646		0.4
15	5.0000	18	0.2500		29.4646	30.2148		0.4
16	5.0000	18	0.2500		30.2148	30.9651		0.4
17	[illegible]	18	[illegible]		[illegible]	[illegible]		0.3
18	[illegible]	18	[illegible]		[illegible]	[illegible]		0.0
19	[illegible]	18	[illegible]		[illegible]	[illegible]		0.7
20	[illegible]	18	[illegible]		[illegible]	[illegible]		0.5
21	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
22	[illegible]	18	0.5625	4.2500	[illegible]	[illegible]		1.5
23	[illegible]	18	[illegible]		[illegible]	[illegible]		1.1
24	5.0000	18	[illegible]		[illegible]	[illegible]		1.1
25	5.0000	18	0.5688		34.3287	35.0789		1.1
26	[illegible]	18	[illegible]		[illegible]	[illegible]		0.9
27	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
28	[illegible]	18	[illegible]		[illegible]	[illegible]		0.8
29	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
30	[illegible]	18	[illegible]		[illegible]	[illegible]		1.3
31	5.0000	18	0.6313		36.9543	37.7045		1.4
32	5.0000	18	0.6188		37.7045	38.4547		1.4
33	[illegible]	18	[illegible]		[illegible]	[illegible]		1.2
34	[illegible]	18	[illegible]		[illegible]	[illegible]		0.8
35	[illegible]	18	[illegible]		[illegible]	[illegible]		0.1
								19.0



MATERIAL STRENGTH

GRADE	Fy	Fu	GRADE	Fy	Fu
A53-B-35	35 ksi	60 ksi	A607-65	65 ksi	80 ksi
A607-60	60 ksi	75 ksi			

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for Exposure C to the TIA-222-G Standard.
3. Tower designed for a 97 mph basic wind in accordance with the TIA-222-G Standard.
4. Tower is also designed for a 50 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
5. Deflections are based upon a 60 mph wind.
6. Tower Structure Class II.
7. Topographic Category 1 with Crest Height of 0.0000 ft

ALL REACTIONS ARE FACTORED

AXIAL 85 K
SHEAR 9 K
MOMENT 812 kip-ft
TORQUE 2 kip-ft
50 mph WIND - 1.0000 in ICE

AXIAL 37 K
SHEAR 29 K
MOMENT 2409 kip-ft
TORQUE 3 kip-ft
REACTIONS - 97 mph WIND

Paul J. Ford and Company
250 East Broad st., Suite 600
Columbus, OH 43215
Phone: (614) 221-6679
FAX:

Job:	***123' Monopole w/proposed Extension / Berlin / Laviana Orchard***
Project:	***PJF# 37518-0522 / BU# 876382***
Client:	Crown Castle International
Drawn by:	gpenumatsa
App'd:	
Code:	TIA-222-G
Date:	09/04/18
Scale:	NTS
Path:	
Dwg No.	E-1

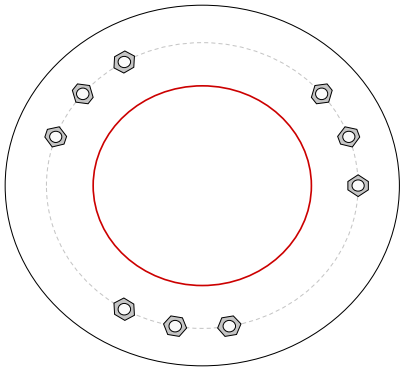
Monopole Flange Plate Connection

Elevation = 123 ft.

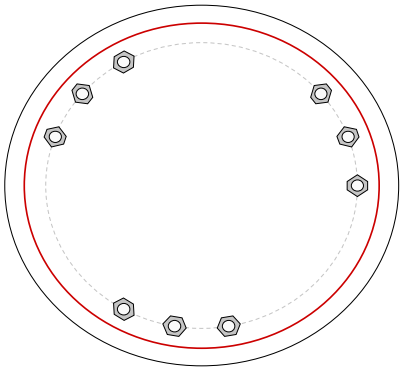
BU #	876382
Site Name	
Order #	
TIA-222 Revision	G

Applied Loads	
Moment (kip-ft)	24.46
Axial Force (kips)	1.41
Shear Force (kips)	2.71

Top Plate - Internal



Bottom Plate - Internal



Connection Properties

Bolt Data

(9) 3/4" ø bolts (A325 N; Fy=92 ksi, Fu=120 ksi) on 19" BC

Top Plate Data

24" ID x 1.5" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Bottom Plate Data

24" ID x 0.75" Plate (A36; Fy=36 ksi, Fu=58 ksi)

Top Stiffener Data

N/A

Bottom Stiffener Data

N/A

Top Pole Data

14" x 0.349" round pole (A53-B-35; Fy=35 ksi, Fu=60 ksi)

Bottom Pole Data

22" x 0.1875" 18-sided pole (A607-60; Fy=60 ksi, Fu=75 ksi)

Analysis Results

Bolt Capacity

Max Load (kips)	6.71	
Allowable (kips)	30.06	
Stress Rating:	**22.3%**	Pass

Top Plate Capacity

Max Stress (ksi):	3.34	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**10.3%**	Pass
Tension Side Stress Rating:	**3.3%**	Pass

Bottom Plate Capacity

Max Stress (ksi):	17.18	(Flexural)
Allowable Stress (ksi):	32.40	
Stress Rating:	**53.0%**	Pass
Tension Side Stress Rating:	**22.7%**	Pass

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 • Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

v4.4 - Effective 7-12-13

Date: 9/4/2018
PJF Project: 37518-0522.004.7700
Client Ref. # BU 876382
Site Name: Berlin/ Laviana Orchard
Description: 123 ft MP w/ Proposed 10 ft Extension
Owner: CCI
Engineer: GP

Asymmetric Anchor Rod Analysis

Moment =	2409	k-ft	TIA Ref.	G	Location =	Base Plate		
Axial =	37.0	kips	ASIF =	N/A	η =	0.50	for BP, Rev. G Sect. 4.9.9	
Shear =	29.0	kips	Max Ratio =	100.0%	Threads =	N/A	for FP, Rev. G	
Anchor Qty =	12							

**** For Post Installed Anchors: Check anchors for embedment, epoxy/grout bond, and capacity based on proof load. ****

Item	Nominal Anchor Dia, in	Spec	Fy, ksi	Fu, ksi	Location, degrees	Anchor Circle, in	Area Override, in^2	Area, in^2	Max Net Compression, kips	Max Net Tension, kips	Load for Capacity Calc, kips	Capacity Override, kips	Capacity, kips	Capacity Ratio
1	2.250	#18J A615 Gr 75	75	100	37.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
2	2.250	#18J A615 Gr 75	75	100	52.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
3	2.250	#18J A615 Gr 75	75	100	127.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
4	2.250	#18J A615 Gr 75	75	100	142.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
5	2.250	#18J A615 Gr 75	75	100	217.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
6	2.250	#18J A615 Gr 75	75	100	232.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
7	2.250	#18J A615 Gr 75	75	100	307.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
8	2.250	#18J A615 Gr 75	75	100	322.5	46.00	0.00	3.98	208.63	202.47	213.47	0.00	260.00	82.1%
9	2.250	#18J A615 Gr 75	75	100	0.0	47.30	0.00	3.98	214.44	208.28	219.28	222.71	222.71	98.5%
10	2.250	#18J A615 Gr 75	75	100	90.0	47.30	0.00	3.98	214.44	208.28	219.28	222.71	222.71	98.5%
11	2.250	#18J A615 Gr 75	75	100	180.0	47.30	0.00	3.98	214.44	208.28	219.28	222.71	222.71	98.5%
12	2.250	#18J A615 Gr 75	75	100	270.0	47.30	0.00	3.98	214.44	208.28	219.28	222.71	222.71	98.5%
					.			47.76						

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

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

Site Data

BU#: *876382*
Site Name: *Berlin / Laviana Orchard*
App #:

Anchor Rod Data		
Eta Factor, η	0.5	TIA G (Fig. 4-4)
Qty:	8	
Diam:	2.25	in
Rod Material:	A615-J	
Yield, Fy:	75	ksi
Strength, Fu:	100	ksi
Bolt Circle:	46	in
Anchor Spacing:	6	in

Plate Data		
W=Side:	44	in
Thick:	2.75	in
Grade:	55	ksi
Clip Distance:		in

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

Pole Data		
Diam:	39.58	in
Thick:	0.28125	in
Grade:	65	ksi
# of Sides:	18	"0" IF Round

Base Reactions		
TIA Revision:	G	
Factored Moment, Mu:	1575.9	ft-kips
Factored Axial, Pu:	24.7	kips
Factored Shear, Vu:	19.3	kips

Reactions adjusted to account for post installed anchor rods

Anchor Rod Results

TIA G --> Max Rod (Cu+ Vu/η):	213.5	Kips
Axial Design Strength, Φ*Fu*Anet:	260.0	Kips
Anchor Rod Stress Ratio:	82.1%	**Pass**

Refer to "Asymmetric Anchor Rod Analysis" spreadsheet for post-installed anchor capacities.

Base Plate Results	Flexural Check	
Base Plate Stress:	29.1	ksi
PL Design Bending Strength, Φ*Fy:	49.5	ksi
Base Plate Stress Ratio:	58.8%	**Pass**

PL Ref. Data
Yield Line (in): 22.65
Max PL Length: 22.65

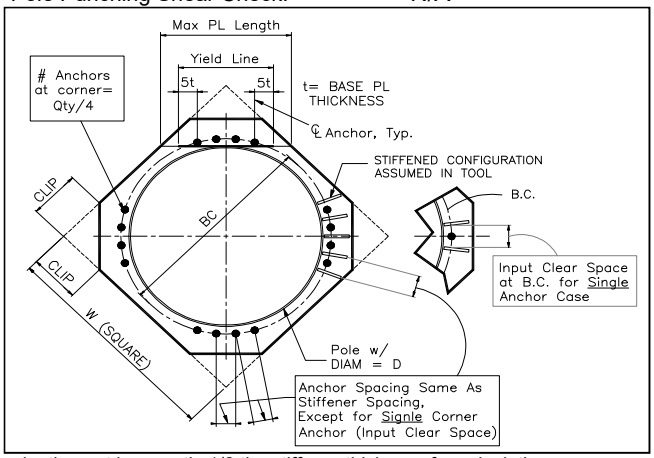
N/A - Unstiffened

Stiffener Results

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

Pole Results

Pole Punching Shear Check: N/A



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

Drilled Pier Foundation

BU # :	876382
Site Name:	Berlin / Laviana Oracha
App. Number:	

TIA-222 Revison:	G
Tower Type:	Monopole

Applied Loads	Comp.	Uplift
Moment (kip-ft)	2409	
Axial Force (kips)	37	
Shear Force (kips)	29	

Material Properties		
Concrete Strength, f'c:	3	ksi
Rebar Strength, Fy:	60	ksi

Pier Design Data		
Depth	20	ft
Ext. Above Grade	0.5	ft
Pier Section 1		
From 0.5' above grade to 20' below grade		
Pier Diameter	6	ft
Rebar Quantity	16	
Rebar Size	11	
Clear Cover to Ties	4	in
Tie Size	5	

Analysis Results		
Soil Lateral Capacity	*Compression*	*Uplift*
$D_{v=0}$ (ft from TOC)	5.54	-
Soil Safety Factor	2.48	-
Max Moment (kip-ft)	2547.95	-
Rating	*53.5%*	-
Soil Vertical Capacity	*Compression*	*Uplift*
Skin Friction (kips)	143.49	-
End Bearing (kips)	848.23	-
Weight of Concrete (kips)	93.75	-
Total Capacity (kips)	991.72	-
Axial (kips)	130.75	-
Rating	*13.2%*	-
Reinforced Concrete Capacity	*Compression*	*Uplift*
Critical Depth (ft from TOC)	5.36	-
Critical Moment (kip-ft)	2547.65	-
Critical Moment Capacity	3350.46	-
Rating	*76.0%*	-

Soil Interaction Rating	**53.5%**
Structural Foundation Rating	**76.0%**

Soil Profile

Groundwater Depth	15	ft	# of Layers: 4

Layer	Top (ft)	Bottom (ft)	Thickness (ft)	γ_{soil} (pcf)	$\gamma_{concrete}$ (pcf)	Cohesion (ksf)	Angle of Friction (degrees)	Calculated Ultimate Skin Friction Comp (ksf)	Calculated Ultimate Skin Friction Uplift (ksf)	Ultimate Skin Friction Comp Override (ksf)	Ultimate Skin Friction Uplift Override (ksf)	Ult. Gross Bearing Capacity (ksf)	SPT Blow Count	Soil Type
1	0	3.33	3.33	135	150	0	0	0.000	0.000	0.00	0.00			Cohesionless
2	3.33	5	1.67	135	150	0	38	0.688	0.688				33	Cohesionless
3	5	15	10	135	150	0	38	0.000	0.000	0.60	0.60			Cohesionless
4	15	20	5	72.58	87.6	0	38	0.000	0.000	0.60	0.60	40		Cohesionless

APPENDIX D

MODIFICATION DRAWINGS

MODIFIED 123'-0" MONOPOLE

BU #876382 BERLIN/LAVIANA ORCHARD

1684 CHAMBERLAIN HIGHWAY
BERLIN, CONNECTICUT 06037
HARTFORD COUNTY
LAT: 41° 35' 23.07"; LONG: -72° 48' 19.2"
ORDER: 423171 REV. 6; WO: 1572415

PROJECT CONTACTS

STRUCTURE OWNER:
CROWN CASTLE
MOD PM: DAN VADNEY AT DAN.VADNEY@CROWNCASTLE.COM
PH: (518) 373-3510
MOD CM: JASON D'AMICO AT JASON.DAMICO@CROWNCASTLE.COM
PH: (860) 209-0104

ENGINEER OF RECORD:
PJFMOD@PAULJFORD.COM

THIS PROJECT INCLUDES THE FOLLOWING ITEMS
REMOVE TOP HAT & LIGHTENING ROD
FIELD WELDED STIFFENERS
INSTALL NEW SHAFT REINFORCING
SHAFT EXTENSION
OBSTRUCTION SIGNAGE
INSTALL NEW SAFETY CLIMB

SHEET INDEX	
SHEET NUMBER	DESCRIPTION
T-1	TITLE SHEET
MI-1	MI CHECKLIST
N-1	GENERAL NOTES
B-1	FORGBolt® DETAILS
B-2	NEXGEN2™ BOLT DETAIL
B-3	AJAX ONESIDE™ BOLT DETAIL
S-1	MONOPOLE PROFILE
S-2	MONOPOLE SECTIONS AND DETAILS
S-3	BASE PLATE DETAILS
S-4	TRANSITION STIFFENER DETAILS
S-5	EXTENSION PROFILE
S-6	EXTENSION DETAILS

WIND DESIGN DATA	
REFERENCE STANDARD	ANSI/TIA-222-G-2-2009
LOCAL CODE	2016 CONNECTICUT STATE BUILDING CODE
ULTIMATE WIND SPEED (3-SECOND GUST)	125 MPH
CONVERTED NOMINAL WIND SPEED (3-SECOND GUST)	97 MPH
ICE THICKNESS	1.0 IN
ICE WIND SPEED	50 MPH
SERVICE WIND SPEED	60 MPH
RISK CATEGORY	II
EXPOSURE CATEGORY	C
Kzt	1.0

TOWER MANUFACTURER: SUMMIT MANUFACTURING, LLC
TOWER MANUFACTURER #: 10083

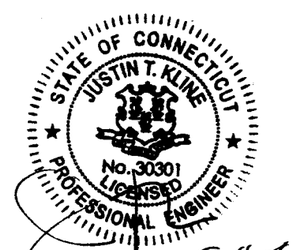
THE ASSOCIATED FAILING SA WO NUMBER FOR THIS PROJECT IS 1542387

QUALIFIED ENGINEERING SERVICES ARE AVAILABLE FROM PAUL J. FORD & COMPANY TO ASSIST CONTRACTORS IN CLASS IV RIGGING PLAN REVIEWS. FOR REQUESTED QUALIFIED ENGINEERING SERVICES, PLEASE CONTACT RIGGING@PAULJFORD.COM.

HOT WORK INCLUDED	
NA	BASE GRINDING ONLY
X	BASE WELDING (AND GRINDING)
NA	AERIAL GRINDING ONLY
X	AERIAL WELDING (AND GRINDING)

SAFETY CLIMB: "LOOK UP"
THE INTEGRITY OF THE WIRE ROPE SAFETY CLIMB SYSTEM SHALL BE CONSIDERED DURING ALL STAGES OF DESIGN, INSTALLATION AND INSPECTION. TOWER REINFORCEMENT INSTALLATIONS SHALL NOT COMPROMISE THE INTEGRITY OR FUNCTIONAL USE OF ANY WIRE ROPE SAFETY CLIMB ON THE STRUCTURE. THIS SHALL INCLUDE, BUT NOT BE LIMITED TO; PINCHING OF THE WIRE ROPE, BENDING OF THE WIRE ROPE FROM ITS SUPPORTS, DIRECT CONTACT OR CLOSE PROXIMITY TO THE WIRE ROPE WHICH MAY CAUSE FRICTIONAL WEAR, OR IMPACT TO THE ANCHORAGE POINTS IN ANY WAY. ANY COMPROMISED SAFETY CLIMB MUST BE REPORTED TO YOUR CROWN POC FOR RESOLUTION, INCLUDING EXISTING CONDITIONS

ATTENTION ALL CONTRACTORS, ANYTIME YOU ACCESS A CROWN SITE FOR ANY REASON YOU ARE TO CALL THE CROWN NOC UPON ARRIVAL AND DEPARTURE, DAILY AT (800) 788-7011.



REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600· Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876382 BERLIN/LAVIANA ORCHARD
BERLIN, CONNECTICUT
MODIFIED 123'-0" MONOPOLE

PROJECT No:	37518-0522.004.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	
DATE:	09-04-2018

TITLE SHEET

T-1

V1.0 37518-0522.004.DWG

MI CHECKLIST

REQUIRED	REPORT ITEM	APPLICABLE CROWN DOC #	BRIEF DESCRIPTION
PRE-CONSTRUCTION			
X	MI CHECKLIST DRAWING	CED-SOW-10007	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVED SHOP DRAWINGS	CED-SOW-10007	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS. THESE ARE TO INCLUDE, BUT ARE NOT LIMITED TO, A VISUAL LAYOUT OF NEW REINFORCEMENT, EXISTING REINFORCEMENT CONFIGURATION, PORTHOLES, MOUNTS, STEP PEGS, SAFETY CLIMBS AND ANY OTHER MISCELLANEOUS ITEMS WHICH MAY AFFECT SUCCESSFUL INSTALLATION OF MODIFICATIONS ON THE TOWER. THESE DRAWINGS SHALL BE SUBMITTED TO THE EOR FOR APPROVAL. APPROVED ASSEMBLY/SHOP DRAWINGS SHALL BE SUBMITTED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATION INSPECTION	CED-SOW-10007	A LETTER FROM THE FABRICATOR, STATING THAT THE WORK WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THE CONTRACT DOCUMENTS, SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR CERTIFIED WELD INSPECTION	CED-SOW-10007 CED-STD-10069	A CWI SHALL INSPECT ALL WELDING PERFORMED ON STRUCTURAL MEMBERS DURING FABRICATION. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORTS (MTR)	CED-SOW-10007	MATERIAL TEST REPORTS SHALL BE PROVIDED FOR MATERIAL USED AS REQUIRED PER SECTION 9.2.5 OF CED-SOW-10007. MTRS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	FABRICATOR NDE INSPECTION REPORT	CED-SOW-10066 CED-STD-10069	CRITICAL SHOP WELDS THAT REQUIRE TESTING ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED NDT INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	NDE OF MONOPOLE BASE PLATE	ENG-SOW-10033	A NDE OF THE POLE TO BASE PLATE CONNECTION IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PACKING SLIPS	CED-SOW-10007	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			
CONSTRUCTION			
NA	FOUNDATION INSPECTIONS	CED-SOW-10144	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A VISUAL OBSERVATION OF THE REBAR SHALL BE PERFORMED BEFORE PLACING THE EPOXY. A SEALED WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	CONCRETE COMP. STRENGTH AND SLUMP TEST	CED-SOW-10144	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED AS PART OF THE FOUNDATION REPORT.
NA	EARTHWORK	CED-SOW-10144	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND RESULTS INCLUDED AS PART OF THE FOUNDATION REPORT.
NA	MICROPILE/ROCK ANCHOR	CED-SOW-10144	MICROPILES/ROCK ANCHORS SHALL BE INSPECTED BY THE FOUNDATION INSPECTION VENDOR AND SHALL BE INCLUDED AS PART OF THE FOUNDATION INSPECTION REPORT, ADDITIONAL TESTING AND/OR INSPECTION REQUIREMENTS ARE NOTED IN THESE CONTRACT DOCUMENTS.
NA	POST-INSTALLED ANCHOR ROD VERIFICATION	CED-SOW-10007	POST INSTALLED ANCHOR ROD VERIFICATION SHALL BE PERFORMED IN ACCORDANCE WITH CROWN REQUIREMENTS AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
NA	BASE PLATE GROUT VERIFICATION	ENG-STD-10323	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS REMOVED AND/OR INSTALLED IN ACCORDANCE WITH CROWN REQUIREMENTS FOR INCLUSION IN THE MI REPORT.
X	FIELD CERTIFIED WELD INSPECTION	CED-SOW-10066 CED-STD-10069	A CROWN APPROVED CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST FIELD WELDS, FOLLOWING ALL PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS APPLICABLE TO WELD INSPECTIONS. A REPORT SHALL BE PROVIDED. NDE OF FIELD WELDS SHALL BE PERFORMED AS REQUIRED BY CROWN STANDARDS AND CONTRACT DOCUMENTS. THE NDE REPORT SHALL BE INCLUDED IN THE CWI REPORT.
X	ON-SITE COLD GALVANIZING VERIFICATION	ENG-STD-10149 ENG-BUL-10149	THE GENERAL CONTRACTOR SHALL PROVIDE WRITTEN AND PHOTOGRAPHIC DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED PER MANUFACTURER SPECIFICATIONS AND APPLICABLE STANDARDS.
NA	TENSION TWIST AND PLUMB	CED-PRC-10182 CED-STD-10261	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT IN ACCORDANCE WITH APPLICABLE STANDARDS DOCUMENTING TENSION TWIST AND PLUMB.
X	GC AS-BUILT DRAWINGS	CED-SOW-10007	THE GENERAL CONTRACTOR SHALL SUBMIT A LEGIBLE COPY OF THE ORIGINAL DESIGN DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD. EOR/RFI FORMS APPROVING ALL CHANGES SHALL BE SUBMITTED WHEN THE EOR IS SPECIFYING ADDITIONAL INSPECTIONS DESCRIPTION AND APPLICABLE STANDARDS SHALL BE APPLIED.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			
POST-CONSTRUCTION			
X	CONSTRUCTION COMPLIANCE LETTER	CED-SOW-10007	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS, INCLUDING LISTING ADDITIONAL PARTIES TO THE MODIFICATION PROCESS.
NA	POST-INSTALLED ANCHOR ROD PULL TESTS	CED-PRC-10119	POST-INSTALLED ANCHOR RODS SHALL BE TESTED BY A CROWN APPROVED PULL TEST INSPECTOR AND A REPORT SHALL BE PROVIDED INDICATING TESTING RESULTS.
X	PHOTOGRAPHS	CED-SOW-10007	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI. PHOTOS SHALL DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
NA	BOLT INSTALLATION VERIFICATION REPORT	CED-SOW-10007	THE MI INSPECTOR SHALL VERIFY THE INSTALLATION AND TIGHTNESS 10% OF ALL NON PRE-TENSIONED BOLTS INSTALLED AS PART OF THE MODIFICATION. THE MI INSPECTOR SHALL LOOSEN THE NUT AND VERIFY THE BOLT HOLE SIZE AND CONDITION. THE MI REPORT SHALL CONTAIN THE COMPLETED BOLT INSTALLATION VERIFICATION REPORT, INCLUDING THE SUPPORTING PHOTOGRAPHS.
X	PUNCHLIST DEVELOPMENT AND CORRECTION DOCUMENTATION	CED-PRC-10283 CED-FRM-10285	FINAL PUNCHLIST INDICATING ALL NONCONFORMANCE(S) IDENTIFIED AND THE FINAL RESOLUTION AND APPROVAL.
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	CED-SOW-10007	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTOR'S REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
ADDITIONAL TESTING AND INSPECTIONS:			
NA			

MODIFICATION INSPECTION NOTES

GENERAL

THE MI IS AN ON-SITE VISUAL AND HANDS-ON INSPECTION OF TOWER MODIFICATIONS INCLUDING A REVIEW OF CONSTRUCTION REPORTS AND ADDITIONAL PERTINENT DOCUMENTATION PROVIDED BY THE GENERAL CONTRACTOR (GC), AS WELL AS ANY INSPECTION DOCUMENTS PROVIDED BY 3RD PARTY INSPECTORS. THE MI IS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS; IN ACCORDANCE WITH APPLICABLE CROWN STANDARDS; AND AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

NO DOCUMENT, CODE OR POLICY CAN ANTICIPATE EVERY SITUATION THAT MAY ARISE. ACCORDINGLY, THIS CHECKLIST IS INTENDED TO SERVE AS A SOURCE OF GUIDING PRINCIPLES IN ESTABLISHING GUIDELINES FOR MODIFICATION INSPECTION.

THE MI IS TO CONFIRM INSTALLATION CONFIGURATION AND WORKMANSHIP ONLY AND IS NOT A REVIEW OF THE MODIFICATION DESIGN ITSELF, AND THE MI INSPECTOR DOES NOT TAKE OWNERSHIP OF THE MODIFICATION DESIGN. OWNERSHIP OF THE STRUCTURAL MODIFICATION DESIGN EFFECTIVENESS AND INTEGRITY RESIDES WITH THE EOR AT ALL TIMES. THE MI INSPECTOR SHALL INSPECT AND NOTE CONFORMANCE/NONCONFORMANCE AND PROVIDE TO THE CROWN POINT OF CONTACT (CROWN POC) FOR EVALUATION.

ALL MI'S SHALL BE CONDUCTED BY A CROWN APPROVED MI INSPECTOR, WORKING FOR A CROWN APPROVED MI VENDOR. SEE CROWN CED-LST-10173, "APPROVED MI VENDORS".

TO ENSURE THAT THE REQUIREMENTS OF THE MI ARE MET, IT IS VITAL THAT THE GENERAL CONTRACTOR (GC) AND THE MI INSPECTOR BEGIN COMMUNICATING AND COORDINATING AS SOON AS A PURCHASE ORDER (PO) IS RECEIVED. IT IS EXPECTED THAT EACH PARTY WILL BE PROACTIVE IN REACHING OUT TO THE OTHER PARTY. IF CONTACT INFORMATION IS NOT KNOWN THE GC AND/OR INSPECTOR SHALL CONTACT THE CROWN POINT OF CONTACT (POC).

REFER TO CROWN CED-SOW-10007, "MODIFICATION INSPECTION SOW", FOR FURTHER DETAILS AND REQUIREMENTS.

SERVICE LEVEL COMMITMENT

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

- THE GC SHALL PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, PREFERABLY 10, TO THE MI INSPECTOR AS TO WHEN THE SITE WILL BE READY FOR THE MI TO BE CONDUCTED.
- THE GC AND MI INSPECTOR COORDINATE CLOSELY THROUGHOUT THE ENTIRE PROJECT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE SIMULTANEOUSLY FOR ANY GUY WIRE TENSIONING OR RE-TENSIONING OPERATIONS.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY MINOR DEFICIENCIES CORRECTED DURING THE INITIAL MI. THEREFORE, THE GC MAY CHOOSE TO COORDINATE THE MI CAREFULLY TO ENSURE ALL CONSTRUCTION FACILITIES ARE AT THEIR DISPOSAL WHEN THE MI INSPECTOR IS ON SITE.

REQUIRED PHOTOS

BETWEEN THE GC AND THE MI INSPECTOR THE FOLLOWING PHOTOGRAPHS, AT A MINIMUM, ARE TO BE TAKEN AND INCLUDED IN THE MI REPORT:

- PRE-CONSTRUCTION GENERAL SITE CONDITION
- PHOTOGRAPHS DURING THE REINFORCEMENT MODIFICATION CONSTRUCTION/ERECTION AND INSPECTION
  - RAW MATERIALS
  - PHOTOS OF ALL CRITICAL DETAILS
  - FOUNDATION MODIFICATIONS
  - WELD PREPARATION
  - BOLT INSTALLATION
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO CROWN DOCUMENT # CED-SOW-10007.

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

9.4.18

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.6679
www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876382 BERLIN/LAVIANA ORCHARD
BERLIN, CONNECTICUT
MODIFIED 123'-0" MONOPOLE

PROJECT No:	37518-0522.004.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	
DATE:	09-04-2018

MI CHECKLIST

MI-1

V1.0 37518-0522.004.DWG

1. GENERAL NOTES
   - 1.1. THE MONOPOLE STRUCTURE IN ITS EXISTING CONDITION DOES NOT HAVE THE STRUCTURAL CAPACITY TO CARRY ALL OF THE PROPOSED AND EXISTING LOADS FROM THE ATTACHED STRUCTURAL MODIFICATION REPORT AT THE REQUIRED MINIMUM WIND SPEEDS. DO NOT INSTALL ANY NEW LOADS UNTIL THE MONOPOLE REINFORCING SYSTEM IS COMPLETELY AND SUCCESSFULLY INSTALLED.
   - 1.2. THESE DRAWINGS WERE PREPARED FROM INFORMATION PROVIDED BY CROWN CASTLE. THE INFORMATION PROVIDED HAS NOT BEEN FIELD VERIFIED BY THE ENGINEER OF RECORD (EOR) FOR ACCURACY AND THEREFORE DISCREPANCIES BETWEEN THESE DRAWINGS AND ACTUAL SITE CONDITIONS SHOULD BE ANTICIPATED. THE CONTRACTOR SHALL COORDINATE WITH THE PROJECT DRAWINGS AND THEIR FIELD VERIFIED CONDITIONS AND DIMENSIONS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL IMMEDIATELY REPORT ANY AND ALL DISCREPANCIES TO THE EOR AND CROWN CASTLE BEFORE PROCEEDING WITH THE WORK. ANY WORK PERFORMED WITHOUT A PREFABRICATION MAPPING IS DONE AT THE RISK OF THE GENERAL CONTRACTOR AND/OR THE FABRICATOR
   - 1.3. IF MATERIALS, QUANTITIES, STRENGTHS OR SIZES INDICATED BY THE DRAWINGS OR SPECIFICATIONS ARE NOT IN AGREEMENT WITH THESE NOTES, THE BETTER QUALITY AND/OR GREATER QUANTITY, STRENGTH OR SIZE INDICATED, SPECIFIED OR NOTED SHALL BE PROVIDED.
   - 1.4. THIS STRUCTURE IS DESIGNED TO BE SELF-SUPPORTING AND STABLE AFTER THE INSTALLATION OF THE REINFORCING REPAIR SYSTEM HAS BEEN SUCCESSFULLY COMPLETED. IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO ENSURE THE SAFETY AND STABILITY OF THE MONOPOLE AND ITS COMPONENT PARTS DURING FIELD MODIFICATIONS. THIS INCLUDES, BUT IS NOT LIMITED TO, THE ADDITION OF WHATEVER TEMPORARY BRACING, GUYS OR TIE DOWNS THAT MAY BE NECESSARY. SUCH MATERIAL SHALL BE REMOVED AND SHALL REMAIN THE PROPERTY OF THE CONTRACTOR AFTER THE COMPLETION OF THE PROJECT.
   - 1.5. ALL CONSTRUCTION MEANS AND METHODS; INCLUDING BUT NOT LIMITED TO, ERECTION PLANS, RIGGING PLANS, CLIMBING PLANS, AND RESCUE PLANS SHALL BE THE RESPONSIBILITY OF THE GENERAL CONTRACTOR RESPONSIBLE FOR THE EXECUTION OF THE WORK CONTAINED HEREIN AND SHALL MEET ANSI/ASSE A10.48 (LATEST EDITION); FEDERAL, STATE, AND LOCAL REGULATIONS; AND ANY APPLICABLE INDUSTRY CONSENSUS STANDARDS RELATED TO THE CONSTRUCTION ACTIVITIES BEING PERFORMED. ALL RIGGING PLANS SHALL ADHERE TO ANSI/ASSE A10.48 (LATEST EDITION) AND CROWN STANDARD CED-STD-10253 INCLUDING THE REQUIRED INVOLVEMENT OF A QUALIFIED ENGINEER FOR CLASS IV CONSTRUCTION TO CERTIFY THE SUPPORTING STRUCTURE(S) IN ACCORDANCE WITH THE ANSI/TIA-322 (LATEST EDITION).
   - 1.6. OBSERVATION VISITS TO THE SITE BY CROWN CASTLE AND/OR THE EOR SHALL NOT INCLUDE INSPECTIONS OF THE PROTECTIVE MEASURES OR THE CONSTRUCTION PROCEDURES. ANY SUPPORT SERVICES PERFORMED BY THE EOR DURING CONSTRUCTION ARE SOLELY FOR THE PURPOSE OF ACHIEVING GENERAL CONFORMANCE WITH THE CONTRACT DOCUMENTS. THEY DO NOT GUARANTEE THE CONTRACTOR'S PERFORMANCE AND SHALL NOT BE CONSTRUED AS SUPERVISION OF CONSTRUCTION.
   - 1.7. ALL MATERIALS AND EQUIPMENT FURNISHED SHALL BE NEW AND OF GOOD QUALITY, FREE FROM FAULTS AND DEFECTS AND IN CONFORMANCE WITH THE CONTRACT DOCUMENTS. ANY AND ALL SUBSTITUTIONS MUST BE PROPERLY APPROVED AND AUTHORIZED IN WRITING BY CROWN CASTLE AND EOR PRIOR TO INSTALLATION. THE CONTRACTOR SHALL FURNISH SATISFACTORY EVIDENCE AS TO THE KIND AND QUALITY OF MATERIALS AND EQUIPMENT BEING SUBSTITUTED.
   - 1.8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING ALL SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH THE WORK. THE CONTRACTOR IS RESPONSIBLE TO ENSURE THAT THIS PROJECT AND RELATED WORK COMPLIES WITH ALL APPLICABLE LOCAL, STATE, AND FEDERAL SAFETY CODES AND REGULATIONS GOVERNING THIS WORK AS WELL AS CROWN CASTLE SAFETY GUIDELINES.
   - 1.9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL EXISTING AND NEW COAXIAL CABLES AND OTHER EQUIPMENT DURING CONSTRUCTION.
   - 1.10. ANY EXISTING ATTACHMENTS AND/OR PROJECTIONS ON THE POLE THAT MAY INTERFERE WITH THE INSTALLATION OF THE REINFORCING SYSTEM WILL HAVE TO BE REMOVED AND RELOCATED, REPLACED, OR RE-INSTALLED AS REQUIRED AFTER THE REINFORCING IS SUCCESSFULLY COMPLETED. THE CONTRACTOR SHALL IDENTIFY AND COORDINATE THESE ITEMS PRIOR TO CONSTRUCTION WITH CROWN CASTLE, TESTING AGENCY, AND EOR.
   - 1.11. ANY AND ALL EXISTING PLATFORMS THAT ARE LOCATED IN AREAS OF THE POLE SHAFT WHERE SHAFT REINFORCING MUST BE APPLIED SHALL BE TEMPORARILY REMOVED OR OTHERWISE SUPPORTED TO PERMIT NEW CONTINUOUS REINFORCEMENT TO BE ATTACHED. AFTER THE CONTRACTOR HAS SUCCESSFULLY INSTALLED THE MONOPOLE REINFORCEMENT SYSTEM, THE CONTRACTOR SHALL RE-INSTALL THE PLATFORMS.
   - 1.12. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE YOUR CROWN POC. ALL ALTERATIONS TO A SAFETY CLIMB'S ORIGINAL MANUFACTURER'S CONFIGURATION MUST BE DESIGNED BY THE ENGINEER OF RECORD. IF THE GENERAL CONTRACTOR FINDS THAT THE CLIMBING FACILITIES ARE IMPEDED, EITHER DURING BIDDING, DURING PRE-FABRICATION MAPPING, OR WHILE ON-SITE, THE GENERAL CONTRACTOR SHALL CONTACT THE CROWN POC TO DETERMINE A METHOD OF RESOLUTION.
   - 1.13. FOR STANDARD CROWN PARTS SEE THE MOST RECENT VERSION OF THE "CCI APPROVED REINFORCEMENT COMPONENTS" CATALOG.
   - 1.14. ALL SOLUTIONS FOR THE REPLACEMENT, RELOCATION OR MODIFICATION OF THE SAFETY CLIMB AND/OR ANY OF THE MONOPOLE CLIMBING FACILITIES SHALL BE COORDINATED WITH TUF-TUG PRODUCTS. CONTACT DETAILS: 3434 ENCRETE LANE, MORAINE, OHIO 45439 PHONE: 937-299-1213 EMAIL: TUFTUG@AOL.COM

2. STRUCTURAL STEEL
   - 2.1. STRUCTURAL STEEL MATERIALS, FABRICATION, DETAILING, AND WORKMANSHIP SHALL CONFORM TO THE LATEST EDITION OF THE FOLLOWING REFERENCE STANDARDS:
     - 2.1.1. BY THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC):
       - 2.1.1.1. "SPECIFICATION FOR STRUCTURAL STEEL BUILDINGS."
       - 2.1.1.2. "SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS," AS APPROVED BY THE RESEARCH COUNCIL ON STRUCTURAL CONNECTIONS.
       - 2.1.1.3. "CODE OF STANDARD PRACTICE FOR STEEL BUILDINGS AND BRIDGES"
     - 2.1.2. BY THE AMERICAN WELDING SOCIETY (AWS):
       - 2.1.2.1. "STRUCTURAL WELDING CODE - STEEL D1.1."
       - 2.1.2.2. "STANDARD SYMBOLS FOR WELDING, BRAZING, AND NONDESTRUCTIVE EXAMINATION"
   - 2.2. ALL STRUCTURAL BOLTS SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING ASTM HIGH STRENGTH BOLTS', DEC. 31, 2009.
   - 2.3. ANY MATERIAL OR WORKMANSHIP WHICH IS OBSERVED TO BE DEFECTIVE OR INCONSISTENT WITH THE CONTRACT DOCUMENTS SHALL BE CORRECTED, MODIFIED, OR REPLACED AT THE CONTRACTOR'S EXPENSE.
   - 2.4. WELDED CONNECTIONS SHALL CONFORM TO THE LATEST REVISED CODE OF THE AMERICAN WELDING SOCIETY, AWS D1.1. ALL WELD ELECTRODES SHALL BE E80XX UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   - 2.5. ALL WELDED CONNECTIONS SHALL BE MADE BY WELDERS CERTIFIED BY AWS. CONTRACTOR SHALL SUBMIT WELDERS' CERTIFICATION AND QUALIFICATION DOCUMENTATION TO CROWN CASTLE'S TESTING AGENCY FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION.
   - 2.6. STRUCTURAL STEEL PLATES SHALL CONFORM TO ASTM A572 GRADE 65(FY = 65 KSI MIN) UNLESS NOTED OTHERWISE ON THE DRAWINGS.
   - 2.7. SURFACES OF EXISTING STEEL SHALL BE PREPARED AS REQUIRED FOR FIELD WELDING PER AWS. SEE SECTION I NOTES REGARDING TOUCH UP OF GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS FIELD WELDING.
   - 2.8. NO WELDING SHALL BE DONE TO THE EXISTING STRUCTURE WITHOUT THE PRIOR APPROVAL AND SUPERVISION OF THE TESTING AGENCY.
   - 2.9. FIELD CUTTING OF STEEL:
     - 2.9.1. IMPORTANT CUTTING AND WELDING SAFETY GUIDELINES: THE CONTRACTOR SHALL FOLLOW ALL CROWN CASTLE CUTTING, WELDING, FIRE PREVENTION AND SAFETY GUIDELINES. PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL OBTAIN A COPY OF THE CURRENT CROWN CASTLE GUIDELINES. PER THE 12-01-2005 CROWN CASTLE DIRECTIVE: "ALL CUTTING AND WELDING ACTIVITIES SHALL BE CONDUCTED IN ACCORDANCE WITH CROWN CASTLE POLICY 'CUTTING AND WELDING SAFETY PLAN' (DOC # ENG-PLN-10015) ON AN ONGOING BASIS THROUGHOUT THE ENTIRE LIFE OF THE PROJECT". ANY DAMAGE TO THE COAX CABLES, AND/OR OTHER EQUIPMENT AND/OR THE STRUCTURE, RESULTING FROM THE CONTRACTOR'S ACTIVITIES SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE. THE INSPECTION/TESTING AGENCY SHALL CLOSELY AND CONTINUOUSLY MONITOR THIS ACTIVITY.
     - 2.9.2. ALL REQUIRED CUTS SHALL BE CUT WITHIN THE DIMENSIONS SHOWN ON THE DRAWINGS. NO CUTS SHALL EXTEND BEYOND THE OUTLINE OF THE DIMENSIONS SHOWN ON THE DRAWINGS. ALL CUT EDGES SHALL BE GROUND SMOOTH AND DE-BURRED. CUT EDGES THAT ARE TO BE FIELD WELDED SHALL BE PREPARED FOR FIELD WELDING PER AWS D1.1 AND AS SHOWN ON THE DRAWINGS. CONTRACTOR TO AVOID 90 DEGREE CORNERS. IT MAY BE NECESSARY TO DRILL STARTER HOLES AS REQUIRED TO MAKE THE CUTS.

3. TOUCH UP OF GALVANIZING
   - 3.1. THE CONTRACTOR SHALL TOUCH UP ANY AND ALL AREAS OF GALVANIZING ON THE EXISTING STRUCTURE OR NEW COMPONENTS THAT ARE DAMAGED OR ABRADED DURING CONSTRUCTION. GALVANIZED SURFACES DAMAGED DURING TRANSPORTATION OR ERECTION AND ASSEMBLY AS WELL AS ANY AND ALL ABRASIONS, CUTS, FIELD DRILLING, AND ALL FIELD WELDING SHALL BE TOUCHED UP WITH TWO (2) COATS OF ZRC COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
   - 3.2. CONTRACTOR SHALL CLEAN AND PREPARE ALL FIELD WELDS ON GALVANIZED AND PRIME PAINTED SURFACES FOR TOUCH-UP COATING IN ACCORDANCE WITH AWS D1.1. CROWN CASTLE'S TESTING AGENCY SHALL VERIFY THE PREPARED SURFACE PRIOR TO APPLICATION OF THE TOUCH-UP COATING.
   - 3.3. CROWN CASTLE'S TESTING AGENCY SHALL TEST AND VERIFY THE COATING THICKNESS AFTER THE CONTRACTOR HAS APPLIED THE ZRC COLD GALVANIZING COMPOUND AND IT HAS SUFFICIENTLY DRIED. AREAS FOUND TO BE ADEQUATELY COATED, SHALL BE RE-COATED BY THE CONTRACTOR AND RE-TESTED BY THE TESTING AGENCY.

4. HOT-DIP GALVANIZING
   - 4.1. HOT-DIP GALVANIZE ALL STRUCTURAL STEEL MEMBERS AND ALL STEEL ACCESSORIES, BOLTS, WASHERS, ETC. PER ASTM A123 OR PER ASTM A153, AS APPROPRIATE.
   - 4.2. PROPERLY PREPARE STEEL ITEMS FOR GALVANIZING. DRILL OR PUNCH WEEP AND/OR DRAINAGE HOLES WITH EOR APPROVAL OF LOCATIONS.
   - 4.3. ALL GALVANIZING SHALL BE DONE AFTER FABRICATION IS COMPLETED AND PRIOR TO FIELD INSTALLATION.

5. PERPETUAL INSPECTION AND MAINTENANCE BY THE OWNER
   - 5.1. AFTER THE CONTRACTOR HAS SUCCESSFULLY COMPLETED THE INSTALLATION OF THE MONOPOLE REINFORCING SYSTEM AND THE WORK HAS BEEN ACCEPTED BY CROWN CASTLE, CROWN CASTLE WILL BE RESPONSIBLE FOR THE LONG TERM AND PERPETUAL INSPECTION AND MAINTENANCE OF THE POLE AND REINFORCING SYSTEM.
   - 5.2. ANY FIELD WELDED CONNECTIONS ARE SUBJECT TO CORROSION DAMAGE AND DETERIORATION IF THEY ARE NOT PROPERLY MAINTAINED AND COVERED WITH CORROSION PREVENTIVE COATING SUCH AS THE ZRC GALVANIZING COMPOUND SPECIFIED PREVIOUSLY. THE STRUCTURAL LOAD CARRYING CAPACITY OF THE REINFORCED POLE SYSTEM IS DEPENDENT UPON THE INSTALLED SIZE AND QUALITY, MAINTAINED SOUND CONDITION AND STRENGTH OF THESE FIELD WELDED CONNECTIONS. ANY CORROSION OF, DAMAGE TO, FATIGUE, FRACTURE, AND/OR DETERIORATION OF THESE WELDS AND/OR THE EXISTING GALVANIZED STEEL POLE STRUCTURE AND THE WELDED COMPONENTS WILL RESULT IN THE LOSS OF STRUCTURAL LOAD CARRYING CAPACITY AND MAY LEAD TO FAILURE OF THE STRUCTURAL SYSTEM. THEREFORE, IT IS IMPERATIVE THAT CROWN CASTLE REGULARLY INSPECTS, MAINTAINS, AND REPAIRS AS NECESSARY, ALL OF THESE WELDS, CONNECTIONS, AND COMPONENTS FOR THE LIFE OF THE STRUCTURE.
   - 5.3. CROWN CASTLE SHALL REFER TO ANSI/TIA-222-G-2-2009, SECTION 14 AND ANNEX J FOR RECOMMENDATIONS FOR MAINTENANCE AND INSPECTION. THE FREQUENCY OF THE INSPECTION AND MAINTENANCE INTERVALS IS TO BE DETERMINED BY CROWN CASTLE BASED UPON ACTUAL SITE AND ENVIRONMENTAL CONDITIONS. THE EOR RECOMMENDS THAT A COMPLETE AND THOROUGH INSPECTION OF THE ENTIRE REINFORCED MONOPOLE STRUCTURAL SYSTEM BE PERFORMED YEARLY AND/OR AS FREQUENTLY AS CONDITIONS WARRANT. ACCORDING TO ANSI/TIA-222-G-2-2009 SECTION 14.2: "IT IS RECOMMENDED THAT THE STRUCTURE BE INSPECTED AFTER SEVERE WIND AND/OR ICE STORMS OR OTHER EXTREME LOADING CONDITIONS".

6. FIELD NDE MINIMUM REQUIREMENTS
   - 6.1. ALL NDE SHALL BE IN ACCORDANCE WITH AWS D1.1.
   - 6.2. FOR NEW BASE STIFFENERS (INCLUSIVE OF TRANSITION STIFFENERS) AND ANCHOR ROD BRACKETS, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT.
   - 6.3. FOR NEW FLAT PLATE REINFORCEMENT AT THE BASE OF THE TOWER, COMPLETE JOINT PENETRATION WELDS SHALL BE 100% INSPECTED BY UT. ALL PARTIAL JOINT PENETRATION AND FILLET WELDS SHALL BE 100% INSPECTED BY MT, BUT MAY BE LIMITED TO A HEIGHT OF 10'-0".
   - 6.4. FOR NDE OF THE EXISTING BASE PLATE CIRCUMFERENTIAL WELD, GC SHALL REFERENCE THE MI CHECKLIST FOR APPLICABILITY. PLEASE SEE ENG-SOW-10033: 'TOWER BASE PLATE NDE, AND ENG-BUL-10051: 'NDE REQUIREMENTS FOR MONOPOLE BASE PLATE TO PREVENT CONNECTION FAILURE'. NOTIFY THE EOR AND CROWN ENGINEERING IMMEDIATELY IF ANY CRACKS ARE SUSPECTED OR HAVE BEEN IDENTIFIED. THE NDE SHALL INCLUDE ALL EXISTING MODIFICATIONS THAT HAVE BEEN WELDED TO THE BASE PLATE.
   - 6.5. ALL TESTING LIMITATIONS SHALL BE DETAILED IN THE NDE REPORT.

7. FOUNDATION WORK - (NOT REQUIRED)

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

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

10. BASE PLATE GROUT REMOVAL - (NOT REQUIRED)

11. BASE PLATE GROUT - (NOT REQUIRED)

PJF PAUL J. FORD & COMPANY
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CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876382 BERLIN/LAVIANA ORCHARD
BERLIN, CONNECTICUT
MODIFIED 123'-0" MONOPOLE

PROJECT No:	37518-0522.004.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	
DATE:	09-04-2018

GENERAL NOTES

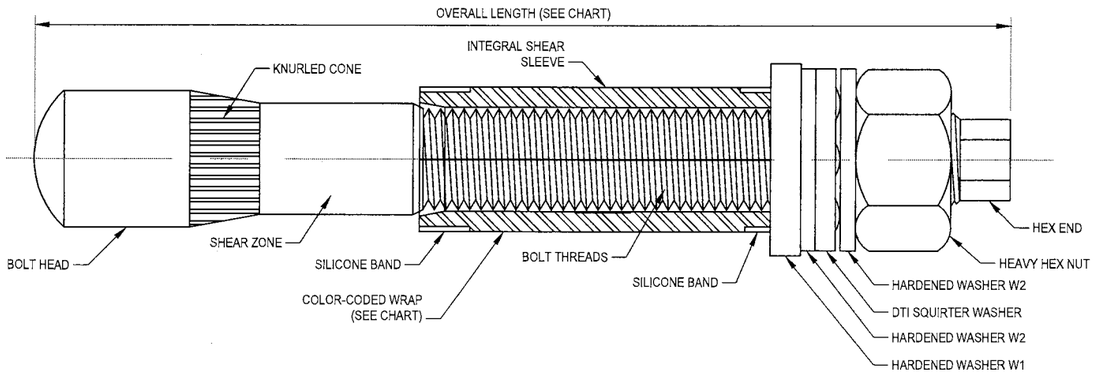
N-1

STATE OF CONNECTICUT · JUSTIN T. KLINE · No. 30301 · LICENSED PROFESSIONAL ENGINEER

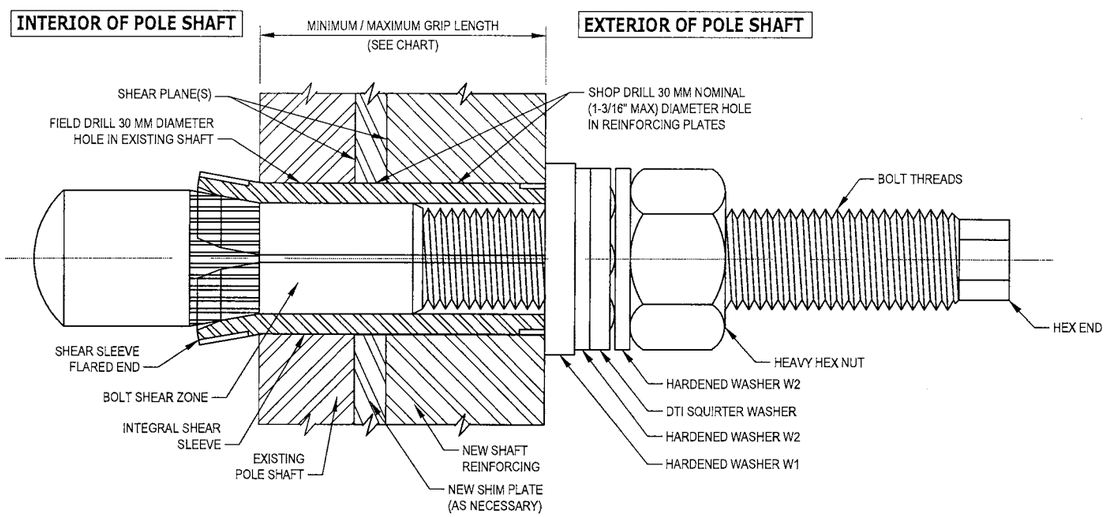
9.4.18

REV	DATE	DESCRIPTION

V1.0 37518-0522.004.DWG



PRE-INSTALLED FORGBolt® ASSEMBLY DETAIL 1 / B-1



INSTALLED FORGBolt® ASSEMBLY DETAIL 2 / B-1

FORGBolt®		AISC Group A Material: ASTM A325 and PC8.8 (Tensile Stress, Fu = 120 ksi minimum)					
GROUP A		FORGBolt® Size (mm)	Overall Length (inches)	Estimated Weight Each (lbs)	Grip Range (inch)	Comment	Color Code
FORGBolt® A325 - PC8.8	1	135	5.31	1.3	3/8" to 1"	--	RED
	2	160	6.30	1.6	3/4" to 1-1/2"	--	GREEN
	3	195	7.68	1.9	1-1/4" to 2-1/4"	--	BLUE
	4	260	10.24	2.6	2" to 3-1/2"	Splice Bolt	YELLOW
	5	365	14.37	3.6	3-1/2" to 5-1/2"	Flange Jump Bolt	ORANGE
	6	440	17.32	4.3	5-1/2" to 8-1/2"	Flange Jump Bolt	BLACK
DTI Note		Each Group A (A325/PC8.8) FORGBolt® assembly shall have a 'Squirter' DTI that is compatible with a M20-PC8.8 bolt.					

FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION

INSTALLATION NOTES:
1. FIELD DRILL HOLES TO 30 MM DIAMETER.
2. SELECT CORRECT BOLT SIZE FOR INSTALLATION GRIP (REFER TO PLANS).
3. INSERT BOLT ASSEMBLY THROUGH HOLES IN SHAFT REINFORCING PLATES AND SEAT THE HARDENED WASHER W1 FLUSH AGAINST OUTSIDE OF PLATE.
4. HAND TIGHTEN NUT TO FINGER TIGHT.
5. TIGHTEN NUT TO PRETENSIONED CONDITION AND UNTIL DTI SHOWS PROPER INDICATION.
6. PROPERLY DOCUMENT AND INSPECT BOLT TIGHTENING PER PLAN REQUIREMENTS.

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

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

AISC GROUP A MATERIAL: ASTM A325 AND PC8.8
(Fu = 120 KSI MIN TENSILE STRESS)

CONTAINS PROPRIETARY INFORMATION
U.S. PATENT NUMBER 9,562,558 B2

DISTRIBUTOR CONTACT:
PRECISION TOWER PRODUCTS
PHONE: 888-926-4857
EMAIL: info@precisiontowerproducts.com
WEB: www.precisiontowerproducts.com

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FORGBolt® DETAILS

B-1

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FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION

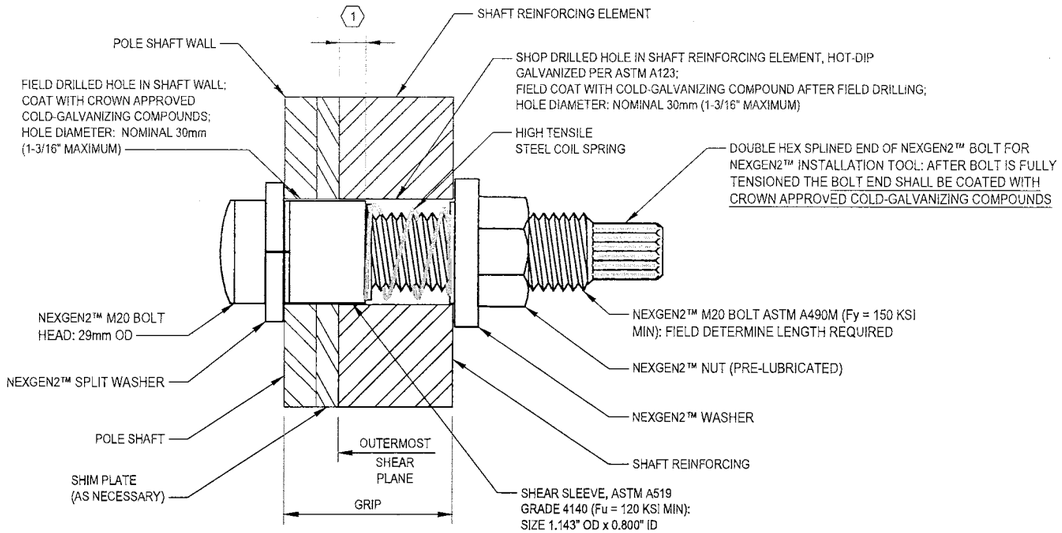
BOLT HOLE NOTES:

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

BOLT TIGHTENING AND INSPECTION NOTES:

1. ALL NEXGEN2™ BOLT ASSEMBLIES SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF SECTION 8.2.3 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. PER SECTION 8.2.3: ALL FASTENER ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS IN AISC SECTION 8.1 WITHOUT SEVERING THE SPLINED END AND WITH WASHERS POSITIONED AS REQUIRED IN AISC SECTION 6.2. PER REQUIREMENTS IN SECTION 8.1: PRIOR TO BOLT PRETENSIONING, THE JOINT SHALL FIRST BE COMPACTED TO THE SNUG-TIGHT CONDITION. SNUG TIGHT IS THE CONDITION THAT EXISTS WHEN ALL OF THE PLIES IN THE CONNECTION HAVE BEEN PULLED INTO FIRM CONTACT BY THE BOLTS AND THE BOLTS HAVE BEEN TIGHTENED SUFFICIENTLY TO PREVENT THE REMOVAL OF THE NUTS WITHOUT THE USE OF A WRENCH. ONCE THE SNUG TIGHT CONDITION IS ACHIEVED, THEN THE BOLT ASSEMBLY CAN BE TIGHTENED TO THE PRETENSIONED CONDITION.
2. ALL NEXGEN2™ BOLT ASSEMBLIES SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF SECTION 9.2.3 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. NOTE THAT COMPLETE INSPECTION OF ALL NEXGEN2™ BOLT ASSEMBLIES IS REQUIRED IN ADDITION TO ROUTINE OBSERVATION.
3. ALL NEXGEN2™ BOLTS SHALL BE INSPECTED BY A QUALIFIED BOLT INSPECTOR PER NOTES 1 AND 2, ABOVE. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE NEXGEN2™ BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THAT THE DOUBLE HEX SPLINED END OF THE BOLTS HAVE BEEN TWISTED OFF AND COATED WITH CROWN APPROVED COLD-GALVANIZING COMPOUND..

(1) NOTE: SHEAR SLEEVE LENGTH: THE SHEAR SLEEVE SHALL PROJECT A MINIMUM OF 3/8" BEYOND THE OUTERMOST SHEAR PLANE. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS SHOWING NEXGEN2™ BOLT LENGTHS AND SHEAR SLEEVE LENGTHS TO THE EOR FOR REVIEW AND APPROVAL.



TYPICAL NEXGEN2™ BOLT DETAIL (1) B-2

PART NUMBER	BOLT LENGTH	SLEEVE LENGTH	MIN GRIP RANGE	MAX GRIP RANGE
2NG2032	M20x75	1/2"	5/8"	1 3/8"
2NG2036	M20x95	11/16"	15/16"	1 7/16"
2NG2048	M20x95	1 3/16"	1 7/16"	1 7/8"
2NG2057	M20x95	1 5/8"	1 7/8"	2 1/4"
2NG2068	M20x135	2"	2 1/4"	2 11/16"
2NG2096	M20x135	2 7/16"	2 11/16"	3 3/4"
2NG2127	M20x175	3"	3 3/4"	5"
2NG2212	M20x250	4"	5"	8 5/16"

NOTE: NEXGEN2™ BOLT ASSEMBLY SHALL BE MAGNI 565 COATED PER ASTM F2833 AND MANUFACTURER SPECIFICATIONS.

NOTE: INSTALL NEXGEN2™ BOLT ASSEMBLY PER MANUFACTURER'S INSTRUCTIONS.

DISTRIBUTOR CONTACT DETAILS:
ALLFASTENERS
959 LAKE ROAD
MEDINA, OHIO, USA 44256
PHONE: 440-232-6060
FAX 440-232-6062
WEBSITES: WWW.ALLFASTENERS.COM
WWW.AFTOWER.COM

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NEXGEN2™ BOLT DETAIL

B-2

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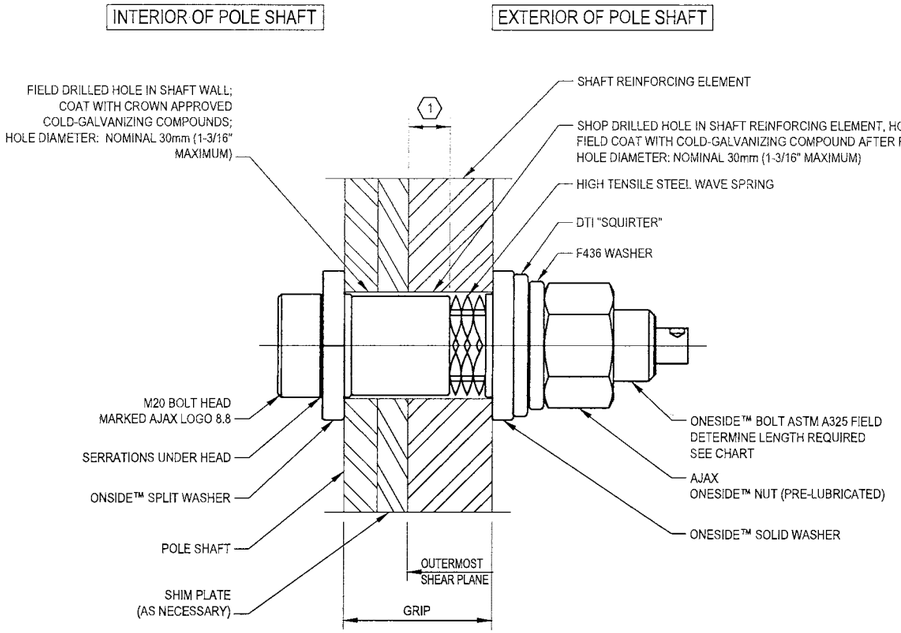
(1) NOTE: SHEAR SLEEVE LENGTH: THE SHEAR SLEEVE SHALL PROJECT A MINIMUM OF 3/8" BEYOND THE OUTERMOST SHEAR PLANE. THE CONTRACTOR SHALL SUBMIT FABRICATION DRAWINGS SHOWING AJAX ONESIDE™ BOLT LENGTHS AND SHEAR SLEEVE LENGTHS TO THE EOR FOR REVIEW AND APPROVAL.



TYPICAL AJAX ONESIDE™ BOLT DETAIL 1 / B-3

FOLLOW ALL MANUFACTURER / DISTRIBUTOR RECOMMENDATIONS FOR INSTALLATION, TIGHTENING, AND INSPECTION

BOLT HOLE NOTES:

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

BOLT TIGHTENING AND INSPECTION NOTES:

1. ALL AJAX ONESIDE™ BOLT ASSEMBLIES SHALL BE INSTALLED AND TIGHTENED TO THE PRETENSIONED CONDITION ACCORDING TO THE REQUIREMENTS OF SECTION 8.2.4 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. PER SECTION 8.2.4: ALL FASTENER ASSEMBLIES SHALL BE INSTALLED IN ACCORDANCE WITH THE REQUIREMENTS IN AISC SECTION 8.1 WITH WASHERS POSITIONED AS REQUIRED IN AISC SECTION 6.2. PER REQUIREMENTS IN SECTION 8.1: PRIOR TO BOLT PRETENSIONING, THE JOINT SHALL FIRST BE COMPACTED TO THE SNUG-TIGHT CONDITION. SNUG TIGHT IS THE CONDITION THAT EXISTS WHEN ALL OF THE PLIES IN THE CONNECTION HAVE BEEN PULLED INTO FIRM CONTACT BY THE BOLTS AND THE BOLTS HAVE BEEN TIGHTENED SUFFICIENTLY TO PREVENT THE REMOVAL OF THE NUTS WITHOUT THE USE OF A WRENCH. ONCE THE SNUG TIGHT CONDITION IS ACHIEVED, THEN THE BOLT ASSEMBLY CAN BE TIGHTENED TO THE PRETENSIONED CONDITION.
2. ALL AJAX ONESIDE™ BOLT ASSEMBLIES SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF SECTION 9.2.4 OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 31, 2009. NOTE THAT COMPLETE INSPECTION OF ALL AJAX ONESIDE™ BOLT ASSEMBLIES IS REQUIRED IN ADDITION TO ROUTINE OBSERVATION.
3. ALL AJAX ONESIDE™ BOLTS SHALL BE INSPECTED BY A QUALIFIED BOLT INSPECTOR PER NOTES 1 AND 2, ABOVE. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT: THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX ONESIDE™ BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION; AND THE CONTRACTOR'S TENSIONING PROCEDURE. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THAT THE DIRECT TENSION INDICATOR WASHERS SHOW THAT THE PROPER BOLT TENSION HAS BEEN REACHED.
4. A MINIMUM OF 4 OUT OF 5 SQUIRTER® DTI PROTRUSIONS SHALL BE ENGAGED IN ANY AJAX ONESIDE™/DTI BOLT ASSEMBLY IN THE REINFORCING MEMBERS. A FEELER GAGE MAY BE USED TO VERIFY PROTRUSION COMPRESSION.
5. INSPECTIONS SHALL BE IN ACCORDANCE WITH THE MANUFACTURERS REQUIREMENTS AND CROWN DOCUMENT ENG-SOW-10007: *MODIFICATION INSPECTION SOW*.

BOLT ASSEMBLY AND INSTALLATION:

1. BOLT MUST BE PURCHASED PRE-ASSEMBLED.
2. FOLLOW BOLT AND DTI MANUFACTURERS INSTRUCTIONS FOR INSTALLATION.

AJAX ONESIDE™ BOLT DETAIL

CODE	SIZE	COLOR	SLEEVE LENGTH	GRIP	GRIP IMP
OSBA20.65-6	M20 x 65	ORANGE	6.0 (0.236")	12.5 / 20.0	0.500" / 0.787"
OSBA20.95-14	M20 x 95	BLACK	14.0 (0.551")	20.0 / 32.0	0.787" / 1.259"
OSBA20.95-22	M20 x 95	GREEN	22.0 (0.866")	30.0 / 50.0	1.181" / 1.968"
OSBA20.95-30	M20 x 95	YELLOW	30.0 (1.181")	40.5 / 50.0	1.595" / 1.968"
OSBA20.135-39	M20 x 135	BLUE	39.0 (1.535")	49.0 / 77.0	1.929" / 3.031"
OSBA20.135-48	M20 x 135	BROWN	48.0 (1.889")	60.5 / 77.0	2.375" / 3.031"
OSBA20.135-57	M20 x 135	PURPLE	57.0 (2.244")	67.0 / 90.0	2.637" / 3.543"
OSBA20.165-76	M20 x 165	RED	76.0 (3.000")	87.0 / 120.0	3.425" / 4.724"
OSBA20.250	M20 x 250	SILVER	MTO	121.0 / 211.0	4.724" / 8.310"

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JOHN KILLAM - JOHN@IRASVENS.COM
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MANUFACTURER
AJAX FASTENERS
SALES + TECH: ONESIDE@AJAXFAST.COM.AU

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AJAX ONESIDE™ BOLT DETAIL

B-3

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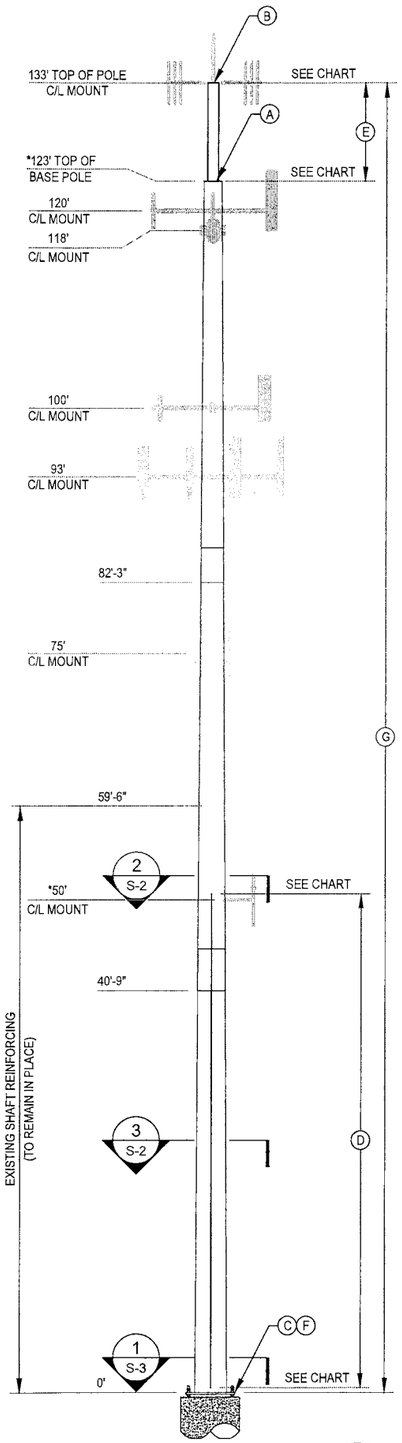

POLE ELEVATION 1 / S-1

TOWER MODIFICATION SCHEDULE

	ELEVATION	TOWER MODIFICATION DESCRIPTION	REFERENCE SHEETS
(A)	123'	REMOVE TOP HAT	S-1
(B)	133'-0"	REMOVE EXISTING LIGHTENING ROD FROM TOP OF POLE AND RELOCATE TO TOP OF NEW EXTENSION.	S-1
(C)	0'	INSTALL NEW TRANSITION STIFFENERS W/BEARING PLATES AT BASE PLATE	S-3 & S-4
(D)	0'-6" TO 50'-7"	INSTALL NEW SHAFT REINFORCING	S-1 & S-2
(E)	123' TO 133'	INSTALL NEW POLE EXTENSION	S-5 & S-6
(F)	-	** CONTRACTOR TO POST SIGNAGE INDICATING OBSTRUCTED CLIMBING FACILITIES	S-1
(G)	10' TO 133'	INSTALL NEW SAFETY CLIMB THAT EXTENDS HEIGHT OF TOWER. COORDINATE WITH TUF-TUG. SEE NOTE 1.14 ON N-1	N-1

** CONTRACTOR NOTE: REFER TO THE OBSTRUCTION CLIMBING FACILITIES SIGNAGE SHEET OF CROWN DOCUMENT CAT-CED-10300 FOR INFORMATION REGARDING OBSTRUCTION SIGNAGE.

* EXISTING MOUNTS MAY NEED TO BE ADJUSTED, MOVED AND/OR TEMPORARILY SUPPORTED DURING THE INSTALLATION OF SHAFT REINFORCING

MANUFACTURER POLE SPECIFICATIONS

TAPER	0.150044 IN/FT
BASE PLATE STEEL	ASTM A572 GRADE 55 (55 KSI)
ANCHOR RODS	2 1/4"ø ASTM 615 GRADE 75
FLANGE PLATE STEEL	A36
FLANGE BOLTS	3/4"ø A325

SHAFT SECTION DATA

SHAFT SECTION	SECTION LENGTH (FT)	PLATE THICKNESS (IN)	LAP SPLICE (FT)	DIAMETER ACROSS FLATS (IN) @ TOP	DIAMETER ACROSS FLATS (IN) @ BOTTOM	POLE GRADE (ksi)	POLE SHAPE
1	40.75	0.1875	3.50	22.000	28.114	60	18-SIDED
2	45.00	0.2500	4.25	27.214	33.966	65	18-SIDED
3	45.00	0.2813		32.828	39.580	65	18-SIDED

NOTE: DIMENSIONS SHOWN DO NOT INCLUDE GALVANIZING TOLERANCES

PRIOR TO FABRICATION AND INSTALLATION CONTRACTOR SHALL VERIFY ALL LENGTHS AND QUANTITIES GIVEN. LENGTH AND QUANTITIES PROVIDED ARE FOR QUOTING PURPOSES ONLY AND SHALL NOT BE USED FOR FABRICATION.

NOTE: SHAFT REINFORCING MAY NEED TO BE INSTALLED OFF-CENTER OF FLAT FOR FIT UP. OFFSETS THAT RESULT IN THE FASTENER BEING LOCATED LESS THAN 1 1/2" FROM THE APEX OF THE FLAT MUST BE APPROVED BY THE ENGINEER OF RECORD.

NEW CCI FLAT PLATE (65 KSI) REINFORCING SCHEDULE

BOTTOM ELEVATION	TOP ELEVATION	ELEMENT	FLAT # / DEGREE SEPARATION	ELEMENT LENGTH	ELEMENT QUANTITY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	APPROXIMATE BOLTS PER ELEMENT	STEEL WEIGHT PER PLATE	APPROXIMATE TOTAL BOLT QUANTITY	ESTIMATED TOTAL STEEL WEIGHT	NOTES
0' - 6"	25' - 6"	CCI-SFP-06512525	F8	25' - 0"	1	11	11	19"	34	691 LBS.	34	691 LBS.	SHAFT REINFORCING
0' - 6"	25' - 6"	WCFP-06512525 #1	F14 & F18	25' - 0"	2	0	11	19"	23	691 LBS.	46	1382 LBS.	SHAFT REINFORCING
25' - 7"	50' - 7"	CCI-AFP-06010025	F8, F14 & F18	25' - 0"	3	10	10	16"	34	510 LBS.	102	1530 LBS.	SHAFT REINFORCING
											182	3603 LBS.	

NOTES:

1.) ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123. ALTERNATIVELY, ALL NEW STIFFENER PLATE STEEL REINFORCING MAY BE COLD GALVANIZED AS FOLLOWS: APPLY A MINIMUM OF TWO COATS OF ZRC-BRAND ZINC-RICH COLD GALVANIZING COMPOUND. FILM THICKNESS PER COAT SHALL BE: WET 3.0 MILS; DRY 1.5 MILS. APPLY PER ZRC (MANUFACTURER) RECOMMENDED PROCEDURES. CONTACT ZRC AT 1-800-831-3275 FOR PRODUCT INFORMATION.
2.) ALL REINFORCING SHALL BE ASTM A572 GR. 65.
3.) WELDS SHALL BE E80XX OR GREATER. TERMINATION WELDS SHALL BE 3/8" FILLET WELDS.
4.) HOLES FOR BOLTS ARE 30mm UNLESS NOTED OTHERWISE.
5.) ALL SHIMS SHALL BE ASTM A-36.
6.) ALL HOLES ARE TO BE DRILLED, DO NOT BURN OR PUNCH.
7.) FOR PLATES STARTING AT 6", THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT 6" ± 1". FOR SINGLE PLATES OR MULTIPLE PLATES SPLICED TOGETHER, THE BOTTOM OF THE FLAT PLATE SHALL BEGIN AT THE PROPOSED ELEVATION ± 3". FOR MULTIPLE PLATES SPLICED TOGETHER, THE TOP OF THE FLAT PLATE IS TO BE PLACED SUCH THAT THERE IS NO MORE THAN 3" DIFFERENCE BETWEEN THE ACTUAL OVERALL LENGTH OF THE SPAN AND THE PROPOSED OVERALL LENGTH OF THE SPAN, FROM THE BOTTOM OF THE PLATE

* FOR JUMP PLATES, TERMINATION BOLTS LISTED ARE INCLUDED IN TERMINATION BOLTS FOR SHAFT REINFORCING

SPLICE PLATE INSTALLATION CHART

BOTTOM ELEVATION	TOP ELEVATION	CCI PART # / DIMENSIONS	QUANTITY	QUANTITY OF BOLT HOLES PER PLATE	TOTAL BOLT HOLE QUANTITY	ADDITIONAL BOLTS*	TOTAL STEEL WEIGHT
22' - 6"	28' - 4"	CCI-SP-060100-10-11	3	21	63	-	357 LBS.
					63		357 LBS.

* NUMBER OF ADDITIONAL BOLTS WHEN SPLICING INTO EXISTING FLAT PLATES

NEW SHIM CHART

1/16" SHIM QUANTITY	1/4" SHIM QUANTITY	SHIM WIDTH	SHIM LENGTH	HOLE DIAMETER
18	0	6"	6"	1-1/4"
0	0	6-1/2"	6-1/2"	1-1/4"

SHIMS ARE FOR BIDDING PURPOSES ONLY. FINAL SHIM REQUIREMENTS TO BE DETERMINED BY CONTRACTOR DURING FABRICATION.

ASTM A36 SHIMS FOR MONOPOLE REINFORCEMENT MEMBERS SHALL BE REQUIRED WHERE GAPS BETWEEN THE POLE SHAFT AND REINFORCING MEMBER EXIST AT FASTENER LOCATIONS. FOR INTERMEDIATE CONNECTIONS, THE MINIMUM SHIM LENGTH AND WIDTH SHALL BE THE WIDTH OF THE REINFORCING MEMBER. FOR TERMINATION CONNECTIONS, A CONTINUOUS SHIM PLATE (PREFERRED) OR EQUIVALENT INDIVIDUAL SHIM PLATES THE WIDTH OF THE REINFORCING MEMBER MAY BE USED. SHIM THICKNESSES SHALL BE NO LESS THAN 1/16". STACKING OF SHIMS IS PERMITTED. FINGER SHIMS AND HORSESHOE SHIMS ARE PERMITTED. STACKED SHIMS SHALL BE NO GREATER THAN 1/4" WITHOUT ENGINEER OF RECORD APPROVAL. SHIMS THICKER THAN 1/4" SHALL BE SHOP WELDED TO THE NEW SHAFT REINFORCING WITH 5/16" FILLET WELDS.

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MONOPOLE PROFILE

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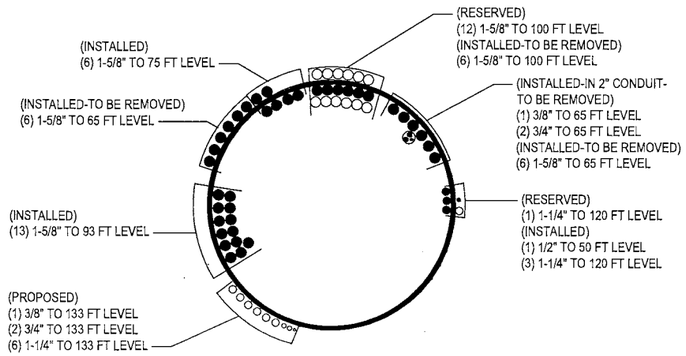
STATE OF CONNECTICUT · JUSTIN T. KLINE · No. 30301 · LICENSED PROFESSIONAL ENGINEER

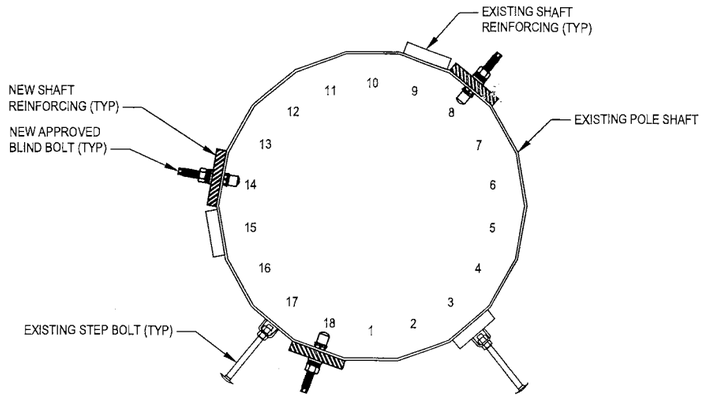
CROWN CASTLE US PATENT NOS 8,046,972; 8,156,712; 7,849,659; 8,424,269 AND PATENT PENDING

REV	DATE	DESCRIPTION

V1.0 37518-0522.004.DWG

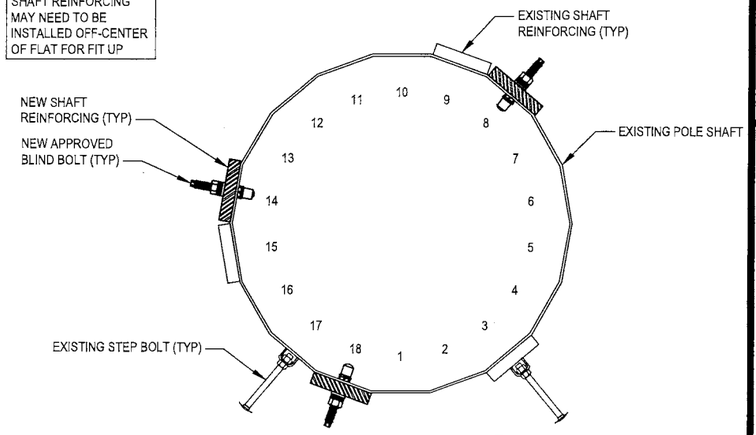


COAX LAYOUT 1 / S-2

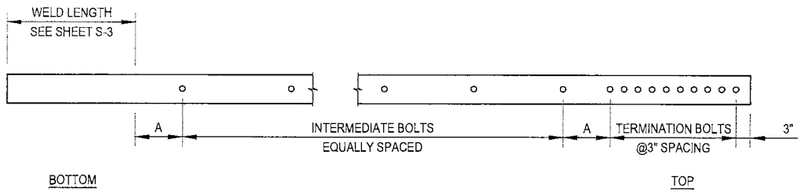


SECTION 2 / S-2
EL 50'

SHAFT REINFORCING MAY NEED TO BE INSTALLED OFF-CENTER OF FLAT FOR FIT UP



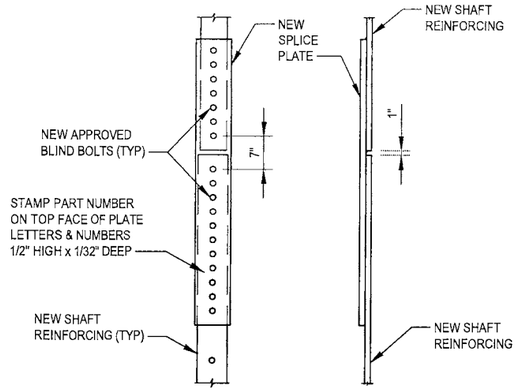
SECTION 3 / S-2
EL 25'-6"



CUSTOM WELDED FLAT PLATE DETAIL

NOTE: "A" DIMENSION MAY VARY,
NOT TO EXCEED MAXIMUM
INTERMEDIATE BOLT SPACING

CUSTOM FLAT PLATE PART NUMBER BREAKDOWN



SPLICE DETAIL

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

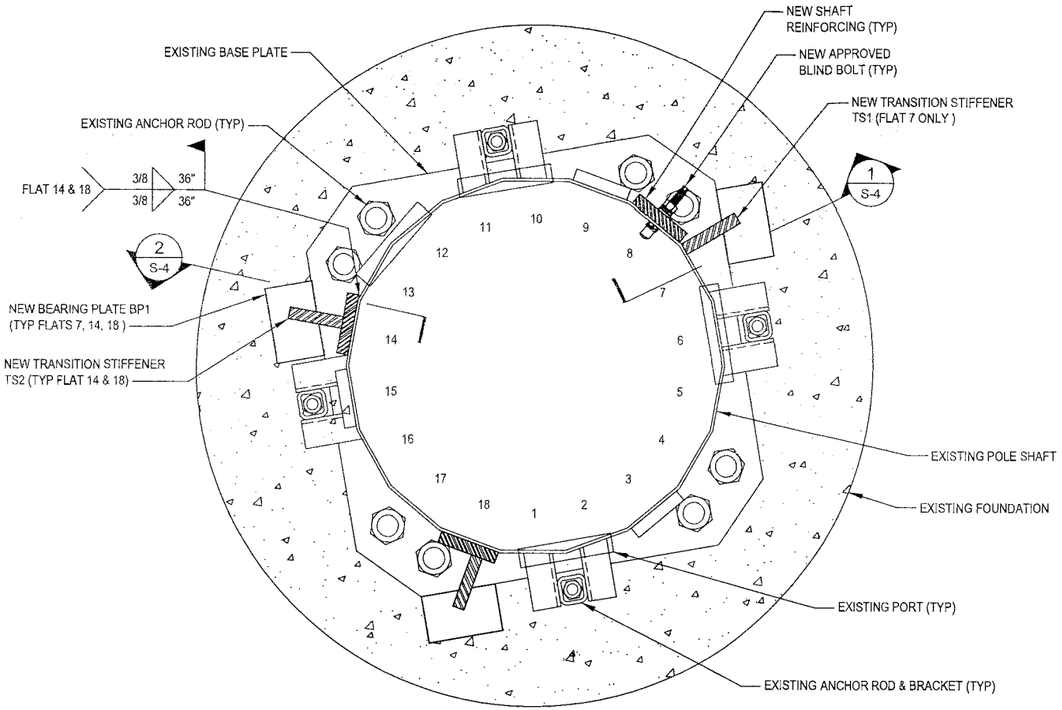
BU #876382 BERLIN/LAVIANA ORCHARD
BERLIN, CONNECTICUT
MODIFIED 123'-0" MONOPOLE

PROJECT No:	37518-0522.004.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	
DATE:	09-04-2018

MONOPOLE SECTIONS & DETAILS

S-2

V1.0 37518-0522.004.DWG



BASE PLATE 1 / S-3

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600- Columbus, OH 43215
Phone 614.221.6679 www.pauljford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876382 BERLIN/LAVIANA ORCHARD

BERLIN, CONNECTICUT
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PROJECT No:	37518-0522.004.7700
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CHECKED BY:	
DATE:	09-04-2018

BASE PLATE DETAILS

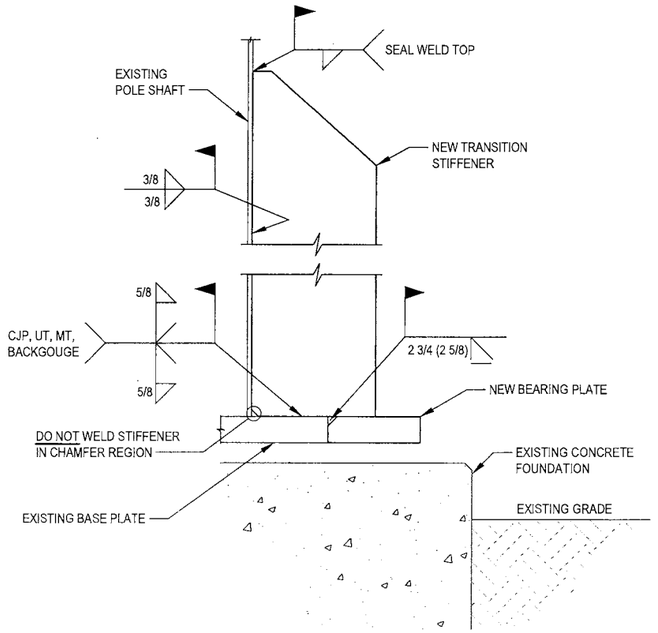
S-3

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED
PROFESSIONAL ENGINEER

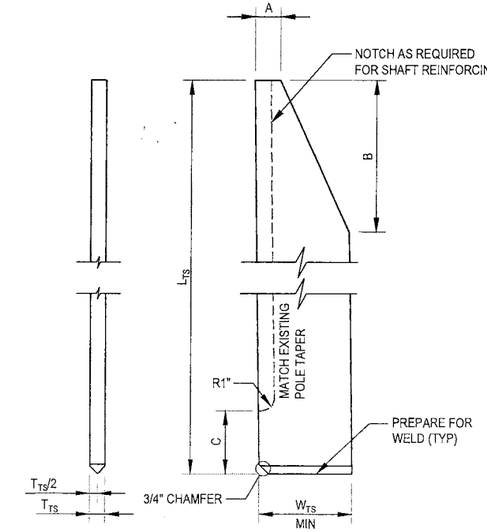
9/4/18

REV	DATE	DESCRIPTION

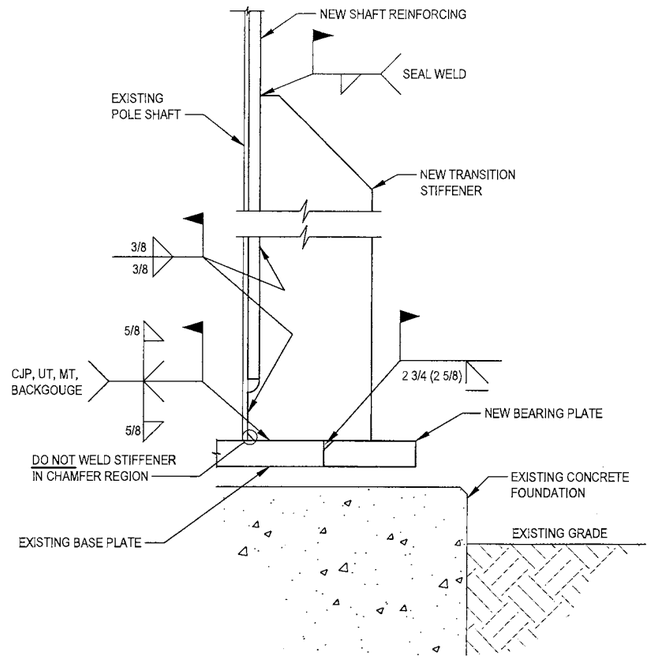
V1.0 37518-0522.004.DWG



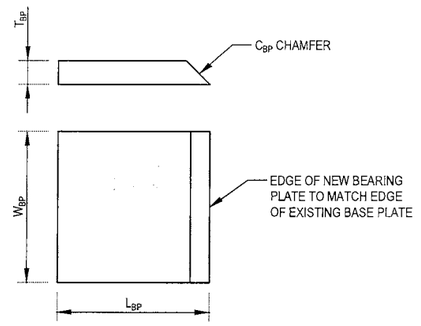
TRANSITION STIFFENER DETAIL 1 / S-4



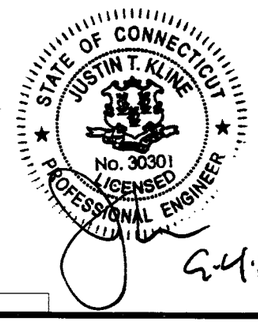
TRANSITION STIFFENER										
PART #	FLAT #	QTY	MAT'L SPEC	T_{TS} (IN)	W_{TS} (IN)	L_{TS} (IN)	A (IN)	B (IN)	NOTCH	
									REQ'D	C (IN)
TS1	7	1	ASTM A572 GR 65KSI	1 1/4	6 1/2	72	2	12	-	-
TS2	14, 18	2	ASTM A572 GR 65KSI	1 1/4	7	36	2	12	YES	5



TRANSITION STIFFENER DETAIL 2 / S-4



BEARING PLATE							
PART #	FLAT #	QTY	MAT'L SPEC	T_{BP} (IN)	W_{BP} (IN)	L_{BP} (IN)	C_{BP} (IN)
BP1	7, 14, 18	3	ASTM A572 GR 50KSI	2 3/4	8	5	2 3/4



REV	DATE	DESCRIPTION

PAUL J. FORD & COMPANY
250 E Broad St, Ste 600· Columbus, OH 43215
Phone 614.221.6679 www.paulford.com

CROWN CASTLE
3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
PH: (724) 416-2000

BU #876382 BERLIN/LAVIANA ORCHARD

BERLIN, CONNECTICUT
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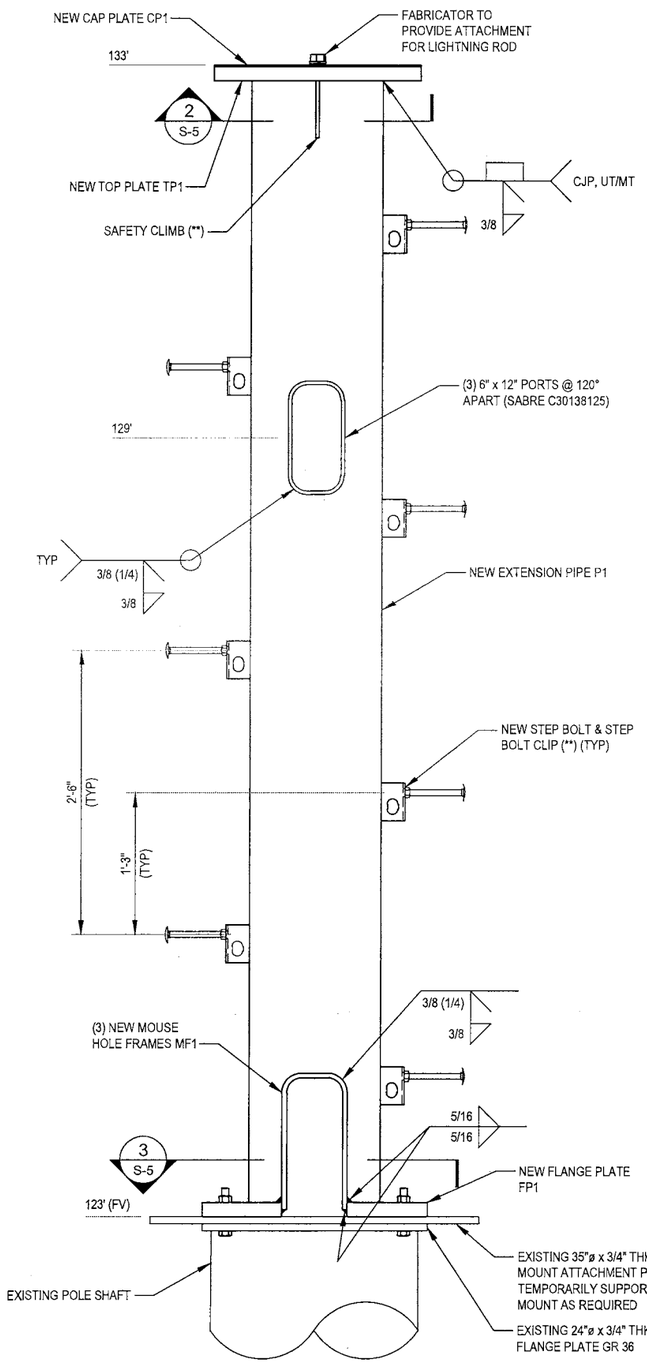
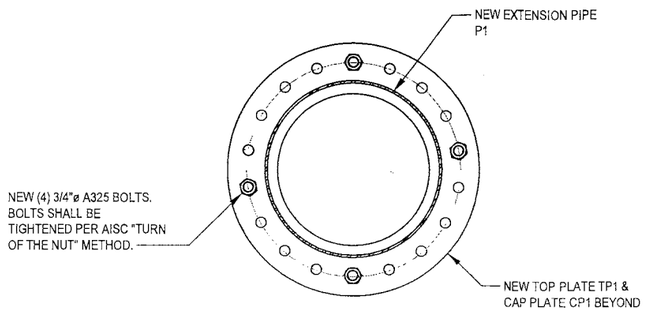
TRANSITION STIFFENER DETAILS

S-4

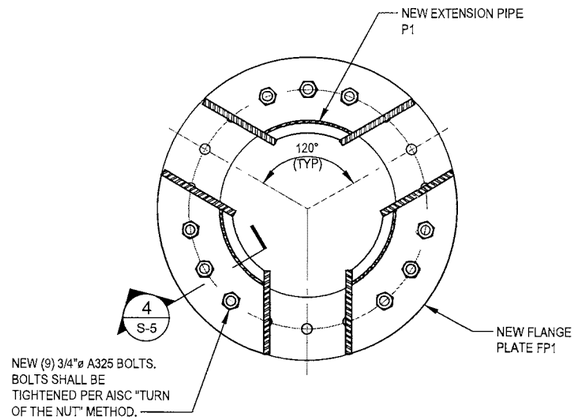
V1.0 37518-0522.004.DWG



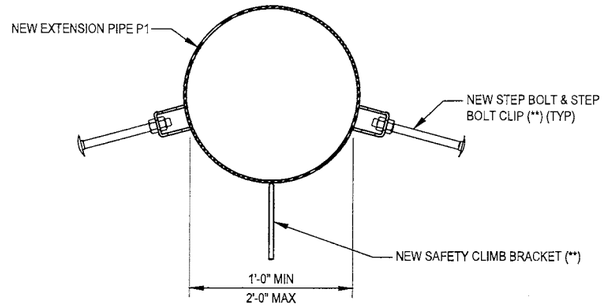
PARTIAL ELEVATION 1 / S-5



SECTION 2 / S-5



SECTION 3 / S-5

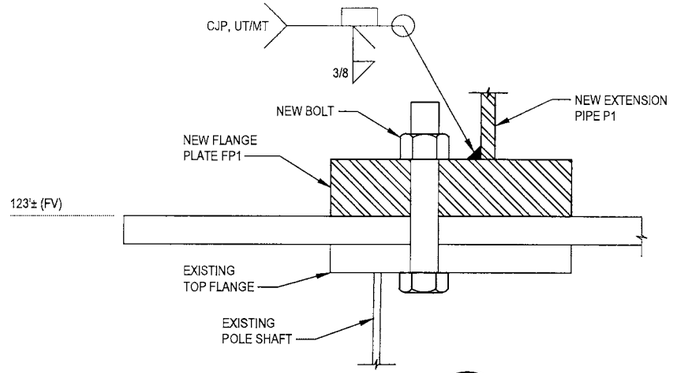


SAFETY CLIMB & STEP BOLT LAYOUT

SAFETY CABLE NOTE:

EXISTING SAFETY CABLE SHALL BE REPLACED WITH A NEW CABLE THAT EXTENDS THE ENTIRE TOWER LENGTH. CONTRACTOR SHALL COORDINATE LOCATIONS OF EXISTING STEP BOLTS AND SAFETY CLIMB WITH NEW EXTENSION PRIOR TO FABRICATION. CONTRACTOR SHALL COORDINATE SOLUTION WITH TUF-TUG PRIOR TO FABRICATION. THE NEW SYSTEM SHALL BE CROWN APPROVED PRIOR TO CONSTRUCTION. (**)

CONTRACTOR TO VERIFY ALL EXISTING DIMENSIONS PRIOR TO FABRICATION OF EXTENSION



DETAIL 4 / S-5

STATE OF CONNECTICUT
JUSTIN T. KLINE
No. 30301
LICENSED PROFESSIONAL ENGINEER

6/4/18

** SEE CROWN DOCUMENT CED-CAT-10300

REV	DATE	DESCRIPTION

PAUL J. FORD & COMPANY
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Phone 614.221.6679 www.paulford.com

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3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
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BU #876382 BERLIN/LAVIANA ORCHARD
BERLIN, CONNECTICUT
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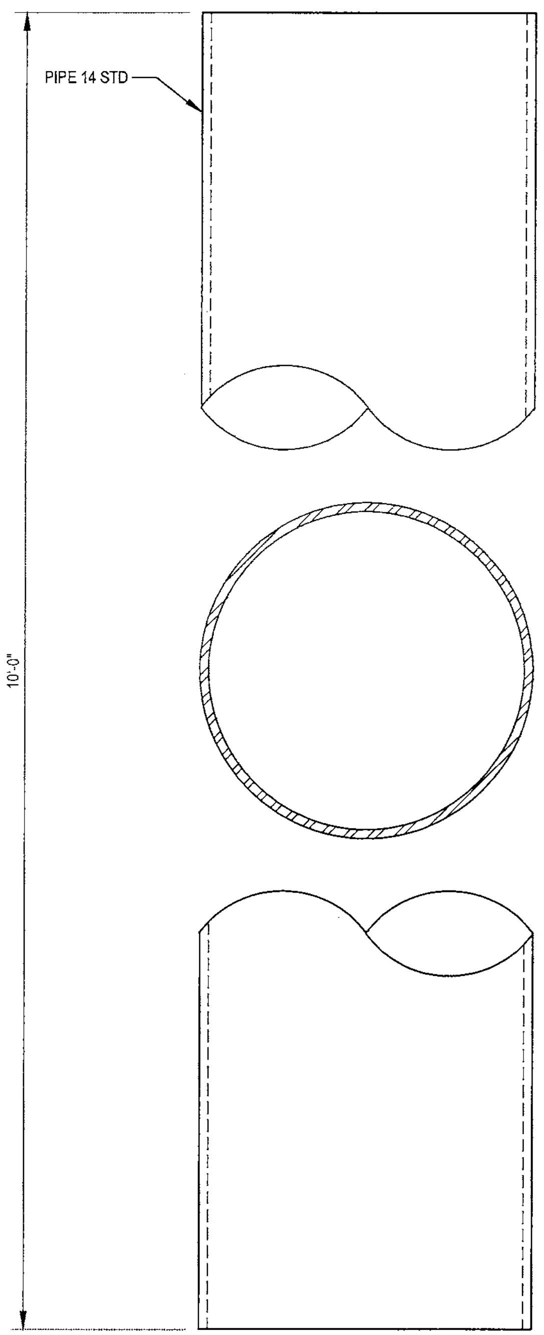
EXTENSION PROFILE

S-5

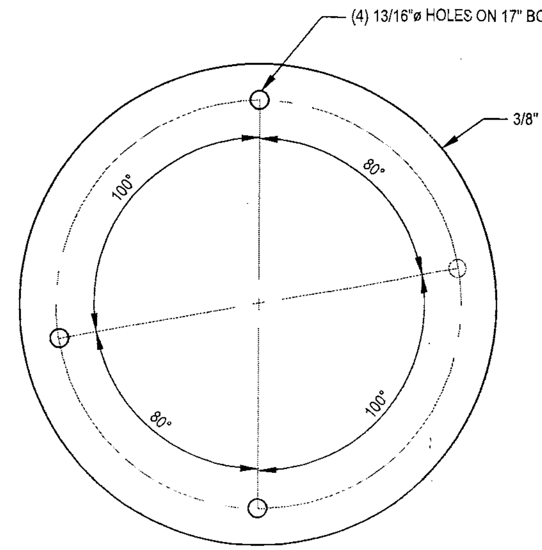
V1.0 37518-0522.004.DWG

MONOPOLE EXTENSION MATERIAL LIST

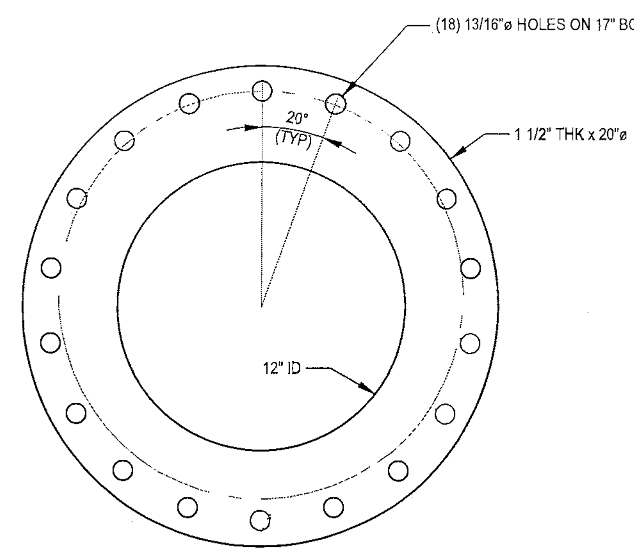
MARK	QTY	MATERIAL	STEEL WEIGHT
CP1	1	CAP PLATE	33
TP1	1	TOP PLATE	134
FP1	1	FLANGE PLATE	192
P1	1	EXTENSION PIPE	545
MF1	3	BENT PLATE	123
	3	6" x 12" SABRE PORT	
	13	3/4"ø A325 BOLTS	
	7	STEP BOLT	
	14	LOCK WASHERS AND NUTS FOR STEP BOLT	
			1027



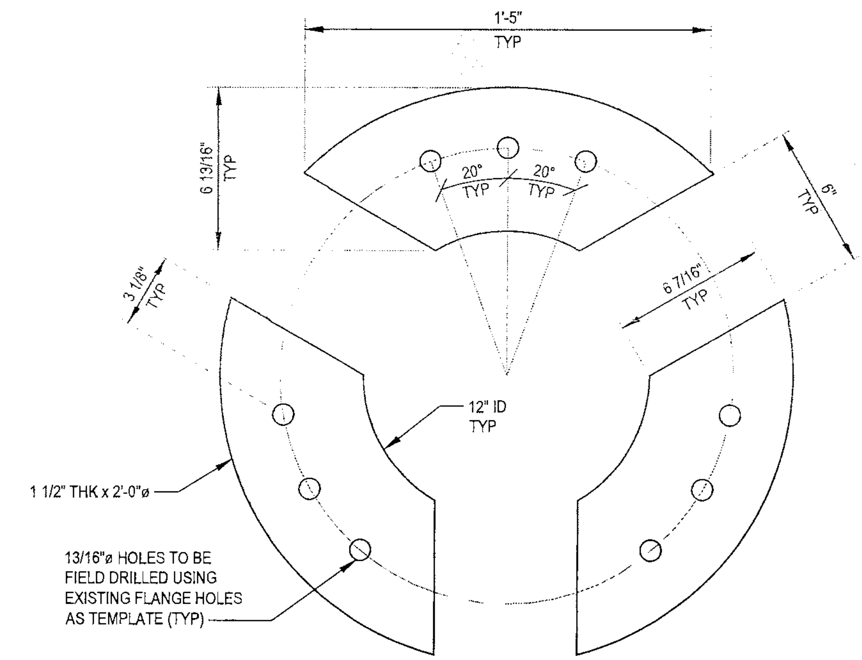
EXTENSION PIPE MK~P1
(Fy = 35 KSI)



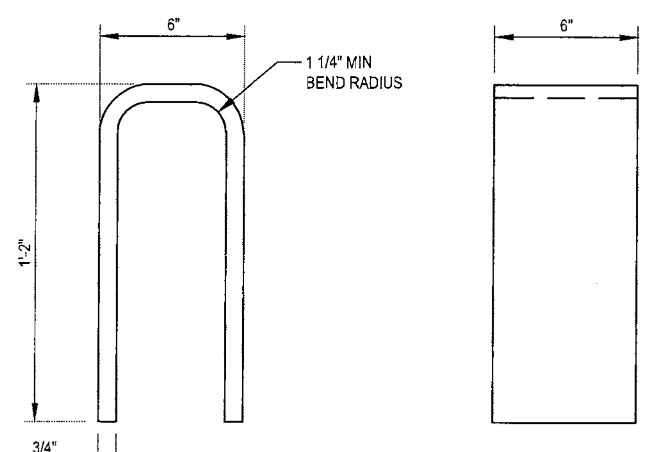
CAP PLATE MK~CP1
(Fy = 36 KSI)



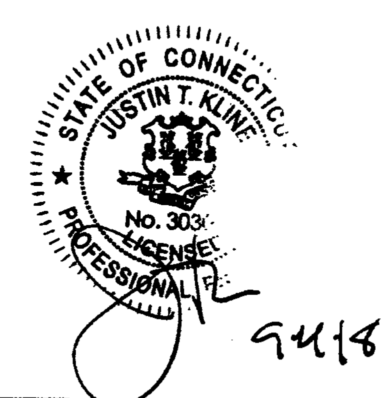
TOP PLATE MK~TP1
(Fy = 36 KSI)



FLANGE PLATE MK~FP1
(1 REQUIRED) (Fy = 36 KSI)



BENT PLATE MK~MF1
(Fy = 36 KSI)



REV	DATE	DESCRIPTION

PJF PAUL J. FORD & COMPANY
250 E Broad St, Ste 600 · Columbus, OH 43215
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3530 TORINGDON WAY SUITE 300 CHARLOTTE, NC 28277
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BU #876382 BERLIN/LAVIANA ORCHARD
BERLIN, CONNECTICUT
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PROJECT No:	37518-0522.004.7700
DRAWN BY:	DC
DESIGNED BY:	GP
CHECKED BY:	
DATE:	09-04-2018

EXTENSION DETAILS

S-6

V1.0 37518-0522.004.DWG

Sanket Joshi
SAI Communications
12 Industrial Way
Salem, NH 03079
Sanket.Joshi@sai-comm.com

August 16, 2018

Connecticut Siting Council

Subject: AT&T Wireless, CT1031 – Berlin, CT

Dear Connecticut Siting Council:

At the request of AT&T Wireless, SAI Comunications has performed an assessment of the RF Power Density at the proposed site located at 1684 Chamberlain Highway, Berlin, CT.
Calculations were done in compliance with FCC OET Bulletin 65. This report provides an FCC compliance assessment based on a "worst-case" analysis that all transmitters are simultaneously operating at full power and pointing directly at the ground.

FCC OET Bulletin 65 formula:

$$S = \frac{2.56 * 1.64 * ERP}{4 * \pi * R^2}$$

Transmission Mode	Antenna Centerline AGL (ft)	Frequency (MHz)	Number of Channels	Effective Radiated Power per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	% MPE (Uncontrolled/ General Public)
AT&T UMTS	133	850	1	1,054	0.0214	0.5667	3.78%
AT&T LTE	133	700	1	1,216	0.0247	0.4667	5.30%
Other carriers per CSC records							17.26%
Total							**26.34%**

Conclusion: AT&T's proposed antenna installation along with other carriers is calculated to be within 26.34% of FCC Standard for General Public/Uncontrolled Maximum Permissible Exposure (MPE).

Sincerely,

Sanket Y Joshi
SAI Communications

CERTIFICATION OF SERVICE

I hereby certify that on the 11th of September, 2018, a copy of the foregoing letter with copy of the noted sub-petition was mailed to each of the abutting properties owners on the accompanying list and to the Town of Berlin.

9/11/18
Date

Kristen Motel
Cuddy & Feder LLP
445 Hamilton Avenue, 14th Floor
White Plains, New York 10601

Attorneys for:
New Cingular Wireless PCS, LLC ("AT&T")

TOWN OF BERLIN:

Jack Healy, Town Manager
Town of Berlin
240 Kensington, CT 06037-0000

ADJACENT PROPERTY OWNERS:

Ronald L. & Arlene G.
1684 Chamberlain HWY
Kensington, CT 06037-0000

Christine M. Borkowski
1606 Chamberlain HWY
Kensington, CT 06037-0000

Richard & Rosalie M. Punkunus
318 Orchard Rd
Kensington, CT 06037-0000

City Clerk
City of Meriden
117 Parker Ave
Meriden, CT 06450-0000

Sharon Lee Reckert & Robert W. Woynar
1667 Chamberlain HWY
Kensington, CT 06037-0000

Edward Devivo & Devivo Family LLC
438 Edgewood Rd
Berlin, CT 06037-0000

David R. & Allison J. Michaels
1584 Chamberlain HWY
Berlin, CT 06037-0000

Gianfranco & Stefania Didomenico
1558 Chamberlain HWY
Berlin, CT 06037-0000

Victor C. & Rose Marie Dufault
340 Orchard Road
Kensington, CT 06037-0000

Ralph A. & Sharon M. Avitable
1636 Chamberlain HWY
Berlin, CT 06037-0000

Robert W. & Joan Haines
56 Garfield St.
Newington, CT 06111-0000

Roberto Sr. & Priscilla Garcia
495 Orchard Rd
Kensington, CT 06037-0000

Meriden City of Water
117 Parker Avenue
Meriden, CT 06045-0000

Robert E. Michalak
63 Barberry Lane
Meriden, CT 06045-0000

Alan S. & Felicia L. Morton
376 Orchard Road
Kensington, CT 06037-0000

Robert S. Marquardt
1705 Chamberlain HWY
Kensington, CT 06037-0000

Lucia T. Scheer
1697 Chamberlain HWY
Berlin, CT 06037

Anthony Z. Micacci
1510 Chamberlain HWY
Berlin, CT 06037-0000

Yankee Gas Services Company
PO Box 270
Hartford, CT 06141-0270-0000

DL Management Co., LLC
1615 Chamberlain HWY
Kensington, CT 06037-0000

Dominic M. Jr. & Lisa A. Carlone
1615 Chamberlain HWY
Kensington, CT 06037-0000

Luciano Lastrina
1753 Chamberlain HWY
Kensington, CT 06037-0000

CUDDY
+FEDER
LLP

445 Hamilton Avenue, 14th Floor
White Plains, New York 10601
T 914 761 1300
F 914 761 5372
cuddyfeder.com

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
[ADDRESSEE]

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

AT&T is submitting this Sub-Petition as an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act of 2012 (codified at 47 USC Sec. 1455(a)) and as further clarified by the Federal Communications Commission in its October 21, 2014 Order (FCC-14-153).

This notice and the enclosed copy of the Sub-Petition[1] are provided to you as an abutting property owner in keeping with the Council's ruling in Petition 113. Any comments regarding this proposal should be provided to the Council within thirty (30) days of the date of this submission.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

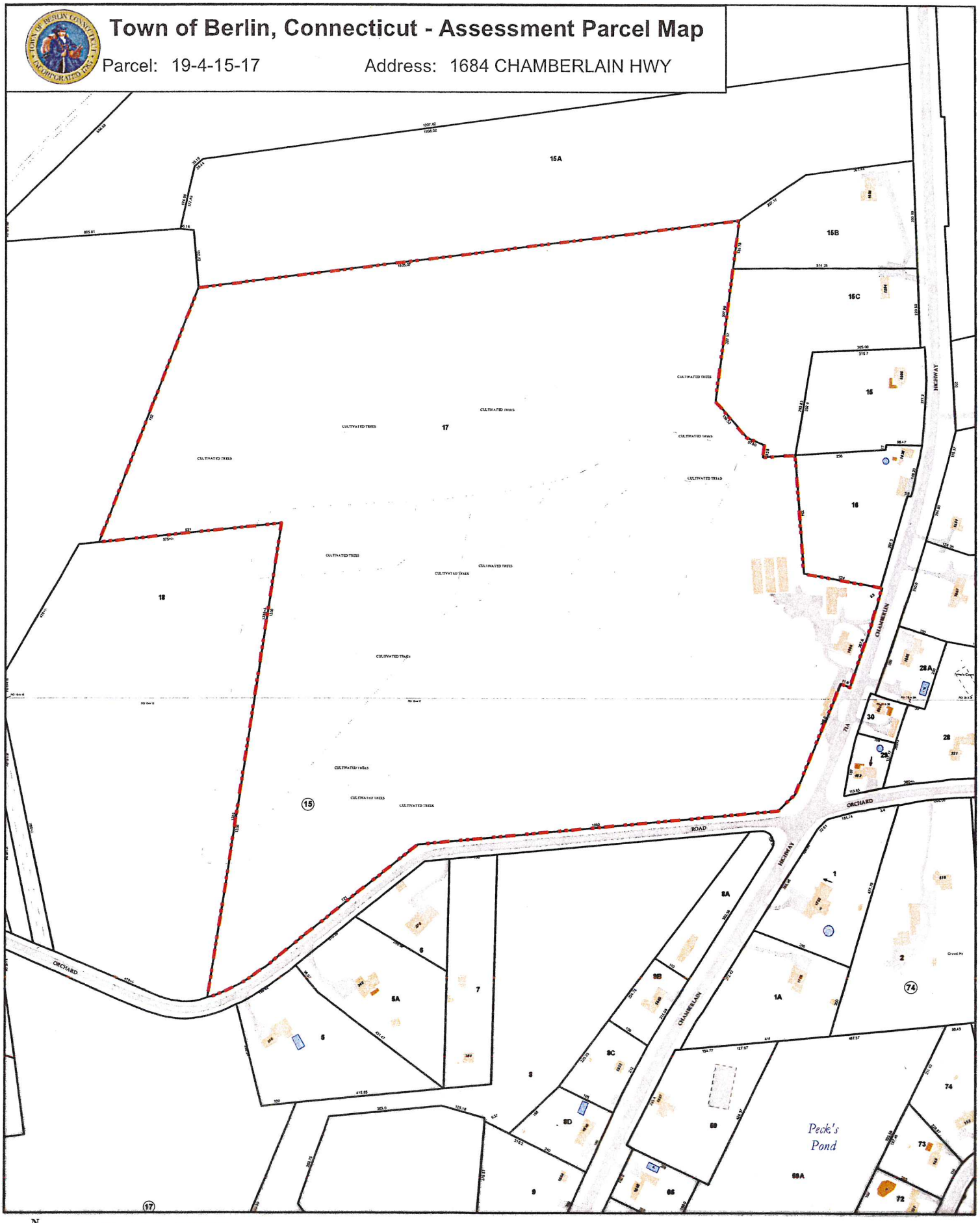
Very truly yours,

Lucia Chiocchio
Enclosure

[1] Attachment 2 provides the summary sheet of the Structural Modification Report. A full copy of this report is on file with the Council and available for review upon request.

Town of Berlin, Connecticut - Assessment Parcel Map

Parcel: 19-4-15-17 Address: 1684 CHAMBERLAIN HWY



N W E S

NEGEO
New England Geosystems
www.negeosystems.com
202 Main Street Extension - C2
Middletown, CT 06457 - (203) 404-7126

Approximate Scale: 1 inch = 333 feet

0 160 320 480 640 Feet

Map Produced: December 2017

Disclaimer: This map is for informational purposes only All information is subject to verification by any user. The Town of Berlin and its mapping contractors assume no legal responsibility for the information contained herein.

Jack Healy, Town Manager
Town of Berlin
240 Kensington Rd
Berlin, CT 06037-0000

Laviana Ronald L
& Arlene G
1684 Chamberlain Hwy
Kensington, CT 06037-0000

Borkowski Christine M
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1558 Chamberlain Hwy
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Dufault Victor C
&Rose Marie
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&Sharon M (LU)
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Carlone Dominic M Jr
& Lisa A
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Kensington, CT 06037-0000

Lastrina Luciano
1753 Chamberlain Hwy
Kensington, CT 06037-0000

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1.		Jack Healy, Town Manager Town of Berlin 240 Kensington Rd Berlin, CT 06037-0000													
2.															
3.		Laviana Ronald L & Arlene G 1684 Chamberlain Hwy Kensington, CT 06037-0000													
4.		Borkowski Christine M 1606 Chamberlain Hwy Kensington, CT 06037-0000													
5.															
6.		Punkunus Richard & Rosalie M 318 Orchard Rd Kensington, CT 06037-0000													
7.															
8.															

Handling Charge - if Registered and over $50,000 in value

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Adult Signature Restricted Delivery

Restricted Delivery

Return Receipt

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Signature Confirmation Restricted Delivery

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1.		Meriden City of City Clerk 117 Parker Ave Meriden, CT 06450-0000			0.00										
2.		Reckert Sharon Lee & Woynar Robert W 1667 Chamberlain Hwy Kensington, CT 06037-0000			0.00									0.00	
3.		Devivo Edward & Devivo Family LLC 438 Edgewood Rd Berlin, CT 06037-0000			0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00
4.		Michaels David R & Allison J 1584 Chamberlain Hwy Berlin, CT 06037-0000			0.00				0.00	0.00	0.00	0.00	0.00	0.00	0.00
5.					0.00										
6.					0.00										
7.					0.00										
8.					0.00										

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1.	Didomenico Gianfranco & Stefania 1558 Chamberlain Hwy Berlin, CT 06037-0000			0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary
2.	Dufault Victor C &Rose Marie 340 Orchard Rd Kensington, CT 06037-0000			0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary
3.	Avitable Raph A &Sharon M (LU) 1636 Chamberlain Hwy Berlin, CT 06037-0000			0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary
4.	Haines Robert W & Joan 56 Garfield St Newington, CT 06111-0000			0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary
5.				0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary
6.				0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary
7.				0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary
8.				0.00				Restricted	Restricted	Restricted	Restricted	Complimentary	Restricted	Complimentary

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45 HAMILTON AVENUE, 14TH FLOOR
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1.	Garcia Roberto Sr & Priscilla 495 Orchard Rd Kensington, CT 06037-0000													
2.														
3.	Meriden City of Water 117 Parker Avenue Meriden, CT 06450-0000													
4.														
5.	Michalak Robert E 63 Barberry Lane Meriden, CT 06450-0000													
6.	Morton Alan S & Felicia L 376 Orchard Rd Kensington, CT 06037-0000													
7.														
8.														

Handling Charge - if Registered and over $50,000 in value
Adult Signature Required
Adult Signature Restricted Delivery
Restricted Delivery
Return Receipt
Signature Confirmation
Signature Confirmation Restricted Delivery
Special Handling

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SEP 11 2018
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UNITED STATES POSTAL SERVICE®

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Name and Address of Sender

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445 HAMILTON AVENUE, 14TH FLOOR
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1.		Marquardt Robert S 1705 Chamberlain Hwy Kensington, CT 06037-0000			$3.50				Adult Signature Required	Adult Signature Restricted Delivery	Restricted Delivery	Return Receipt	Certified Mail Restricted Delivery	Signature Confirmation Restricted Delivery	Special Handling
2.					$3.50										
3.		Lucia T Scheer 1697 Chamberlain Hwy Berlin, CT 06037-0000			$3.50										
4.					$3.50										
5.		Anthony Z Micacci 1510 Chamberlain Hwy Berlin, CT 06037-0000			$3.50										
6.		Yankee Gas Services Company PO Box 270 Hartford, CT 06141-0270			$3.50										
7.					$3.50										
8.					$3.50										

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1.		DL Management Co LLC 1615 Chamberlain Hwy Kensington, CT 06037-0000			0.00										
2.					0.00									Delivery	
3.		Carlone Dominic M Jr & Lisa A 1615 Chamberlain Hwy Kensington, CT 06037-0000			0.00				Adult Signature Required	Adult Signature Restricted Delivery	Restricted Delivery	Return Receipt	Signature Confirmation	Restricted Delivery	Special Handling
4.					0.00										
5.		Lastrina Luciano 1753 Chamberlain Hwy Kensington, CT 06037-0000			0.00										
6.					0.00									Confirmation	
7.					0.00									Signature	
8.															

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
JACK HEALY, TOWN MANAGER
TOWN OF BERLIN
240 KENSINGTON RD
BERLIN, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

AT&T is submitting this Sub-Petition as an eligible facility request pursuant to Section 6409(a) of the Federal Middle Class Tax Relief and Job Creation Act of 2012 (codified at 47 USC Sec. 1455(a)) and as further clarified by the Federal Communications Commission in its October 21, 2014 Order (FCC-14-153).

This notice and the enclosed copy of the Sub-Petition* are provided to you as an abutting property owner in keeping with the Council's ruling in Petition 113. Any comments regarding this proposal should be provided to the Council within thirty (30) days of the date of this submission.

Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

* Attachment 2 provides the summary sheet of the Structural Modification Report. A full copy of this report is on file with the Council and available for review upon request.

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
RONALD L & ARLENE G LAVIANA
1684 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
CHRISTINE M BORKOWSKI
1606 CHAMBERLAIN HW
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
RICHARD & ROSALIE M PUNKUNUS
318 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio
Enclosure

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
CITY OF MERIDEN
City Clerk
117 PARKER AVE
MERIDEN, CT06450- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
SHARON LEE RECKERT & ROBERT W WOYNAR
1667 CHAMBERLAIN HWY
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio

Lucia Chiocchio
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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
EDWARD DEVIVO & DEVIVO FAMILY LLC
438 EDGEWOOD RD
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio

Lucia Chiocchio
Enclosure

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
DAVID R & ALLISON J MICHAELS
1584 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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Lucia Chiocchio

Lucia Chiocchio
Enclosure

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
GIANFRANCO & STEFANIA DIDOMENICO
1558 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
VICTOR C & ROSE MARIE DUFAULT
340 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Should you have any questions please feel free to contact me at the address above or the Council at 860.827.2935.

Very truly yours,

Lucia Chiocchio

Lucia Chiocchio
Enclosure

* Attachment 2 provides the summary sheet of the Structural Modification Report. A full copy of this report is on file with the Council and available for review upon request.

Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
RALPH A & SHARON M AVITABLE
1636 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ROBERT W & JOAN HAINES
56 GARFIELD ST
NEWINGTON, CT06111- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ROBERTO SR & PRISCILLA GARCIA
495 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
MERIDEN CITY OF WATER
117 PARKER AVENUE
MERIDEN, CT06450- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ROBERT E MICHALAK
63 BARBERRY LANE
MERIDEN, CT06450- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ALAN S & FELICIA L MORTON
376 ORCHARD RD
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ROBERT S MARQUARDT
1705 CHAMBERLAIN HWY
KENSINGTON, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
LUCIA T SCHEER
1697 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
ANTHONY Z MICACCI
1510 CHAMBERLAIN HWY
BERLIN, CT06037- 0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
YANKEE GAS SERVICES COMPANY
PO BOX 270
HARTFORD, CT06141-0270

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

Dear Sir or Madam:

We are writing to you on behalf of our client New Cingular Wireless PCS, LLC ("AT&T") with respect to the above referenced matter and the filing today of a sub-petition for declaratory ruling ("Sub-Petition") with the Connecticut Siting Council ("Council") to allow a modification of the existing wireless facility at the above-referenced location. AT&T plans to extend the height of the existing tower by 10 feet to a total height of 133 feet and install three (3) new antennas. AT&T will remove its existing nine (9) antennas. AT&T's antennas will be flush mounted to the new monopole extension, so the appearance will remain the same as today, but taller.

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Lucia Chiocchio
lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
DL MANAGEMENT CO LLC
1615 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
DOMINIC M JR & LISA A CARLONE
1615 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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lchiocchio@cuddyfeder.com

September 11, 2018

FIRST CLASS MAIL
LUCIANO LASTRINA
1753 CHAMBERLAIN HWY
KENSINGTON, CT06037-0000

Re: Connecticut Siting Council Sub-Petition
Extension of Existing Telecommunications Facility
1684 Chamberlain Highway, Berlin, Connecticut

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