Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

HAND DELIVERED

April 16, 2015

Attorney Melanie Bachman
Acting Executive Director
Connecticut Siting Council
10 Franklin Square
New Britain, Connecticut 06051

Re: New Cingular Wireless PCS, LLC notice of intent to modify an existing telecommunications facility located at 240 Kensington Road, Berlin

Dear Ms. Bachman:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and/or Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") plans to modify the equipment configurations at many of its existing cell sites. Please accept this letter and attachments as notification, pursuant to R.C.S.A. Section 16-50j-73, of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2). In compliance with R.C.S.A. Section 16-50j-73, copies of this letter are being sent to the chief elected official of the municipality in which the affected cell site is located, the property owner of record, and the tower owner or operator.

UMTS technology offers services to mobile computer and phone users anywhere in the world. Based on the Global System for Mobile ("GSM") communication standard, UMTS is the planned worldwide standard for mobile users. UMTS, fully implemented, gives computer and phone users high-speed access to the Internet as they travel. They have the same capabilities even when they roam, through both terrestrial wireless and satellite transmissions.

LTE is a high-performance air interface for cellular mobile communications. It is designed to increase the capacity and speed of mobile telephone networks.

Attached is a summary of the planned modifications, including power density calculations reflecting the change in AT&T's operations at the site. Also included is documentation of the structural sufficiency of the tower to accommodate the revised antenna configuration.

The changes to the facility do not constitute modifications as defined in Connecticut General

Statutes ("C.G.S.") Section 16-50i(d) because the general physical and environmental characteristics of the site will not be significantly changed or altered. Rather, the planned changes to the facility fall squarely within those activities explicitly provided for in R.C.S.A. Section 16-50j-72(b)(2).

1. The height of the overall structure will not increase.

2. The proposed changes will not extend the site boundaries.

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

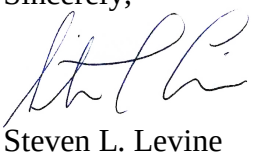
4. The changes will not add radio frequency sending or receiving capability which increases the total radio frequency electromagnetic radiation power density measured at the site boundary to or above the standards adopted by the Federal Communications Commission pursuant to Section 704 of the Telecommunications Act of 1996, as amended, and the State Department of Energy and Environmental Protection, pursuant to Section 22a-162 of the Connecticut General Statutes.

5. The proposed changes will not impair the structural integrity of the facility, as determined in a certification provided by a professional engineer licensed in Connecticut.

For the foregoing reasons, AT&T respectfully submits that the proposed changes at the referenced site constitute exempt modifications under R.C.S.A. Section 16-50j-72(b)(2).

Please feel free to call me at (860) 830-0380 with questions concerning this matter. Thank you for your consideration.

Sincerely,



Steven L. Levine
Real Estate Consultant

cc: TownCEO - Denise M. McNair, Town Manager, Town of Berlin
Property owner of Record - Denise M. McNair, Town Manager, Town of Berlin
Tower Owner – Crown Castle (by email)

Attachments

NEW CINGULAR WIRELESS PCS, LLC
Equipment Modification

240 Kensington Road, Berlin, CT
Cell Site 1019
Exempt Modifications: 12/99; 8/02; 5/08; and 11/12 (Expired)

Tower Owner/Manager: Town of Berlin / Crown Castle

Land Owner of Record: Town of Berlin

Lease Area: The Kensington Road facility was approved by local zoning in or before 1999, and AT&T (then SNET) received Council approval to collocate there in 1999. The attached compound drawing from SNET's 1999 notice depicts the facility as measuring approximately 50 ft x 50 ft. By comparison with the existing 50 ft x 50 ft compound shown in the construction drawings submitted herewith, it is clear that the compound has not increased in size since 1999. Since all proposed equipment modifications will be made either on the existing tower structure or at-grade within the existing AT&T shelter, the proposed modifications will not extend either the lease area or the overall facility boundaries.

Equipment configuration: Monopole

Current and/or approved:
Six CSS DUO1417 antennas @ 149 ft c.l.
Three Powerwave 7770 antennas @ 149 ft c.l.
Six TMA's
Twelve runs 1 1/4 inch coax
Equipment Shelter

Proposed modifications:
Remove all CSS antennas and the existing TMA's.
Relocate Powerwave 7770 antennas to 151 ft c.l.
Install four Andrew SBNH-1D6565C antennas @ 151 ft c.l.
Install two KMW AM-X-CD-16-65-0T-RET antennas @ 151 ft c.l.
Install six CCI DTMABP7819VG12A TMA's @ 151 ft.
Install six Ericsson RRUS-11 remote radio heads @ 148 ft.
Install one Raycap DC6-48-60-18-8F surge arrestors @ 148 ft.
Install one fiber cable and two DC control cables.

Power Density:

Calculations for AT&T's current operations at the site indicate a radio frequency electromagnetic radiation power density, measured at the tower base, of approximately 86 % of the standard adopted by the FCC. As depicted in the second table below, the total radio frequency electromagnetic radiation power density for AT&T's planned operations would be approximately 84.1 % of the standard.

Existing

Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							76.71
AT&T GSM **	149	880 - 894	8	296	0.0384	0.5867	6.54
AT&T GSM **	149	1900 Band	2	427	0.0138	1.0000	1.38
AT&T UMTS **	149	880 - 894	1	500	0.0081	0.5867	1.38
Total							**86.0%**

***** Per CSC records ** Per EM-CING-007-080307 (11/12 approval has expired)

Proposed

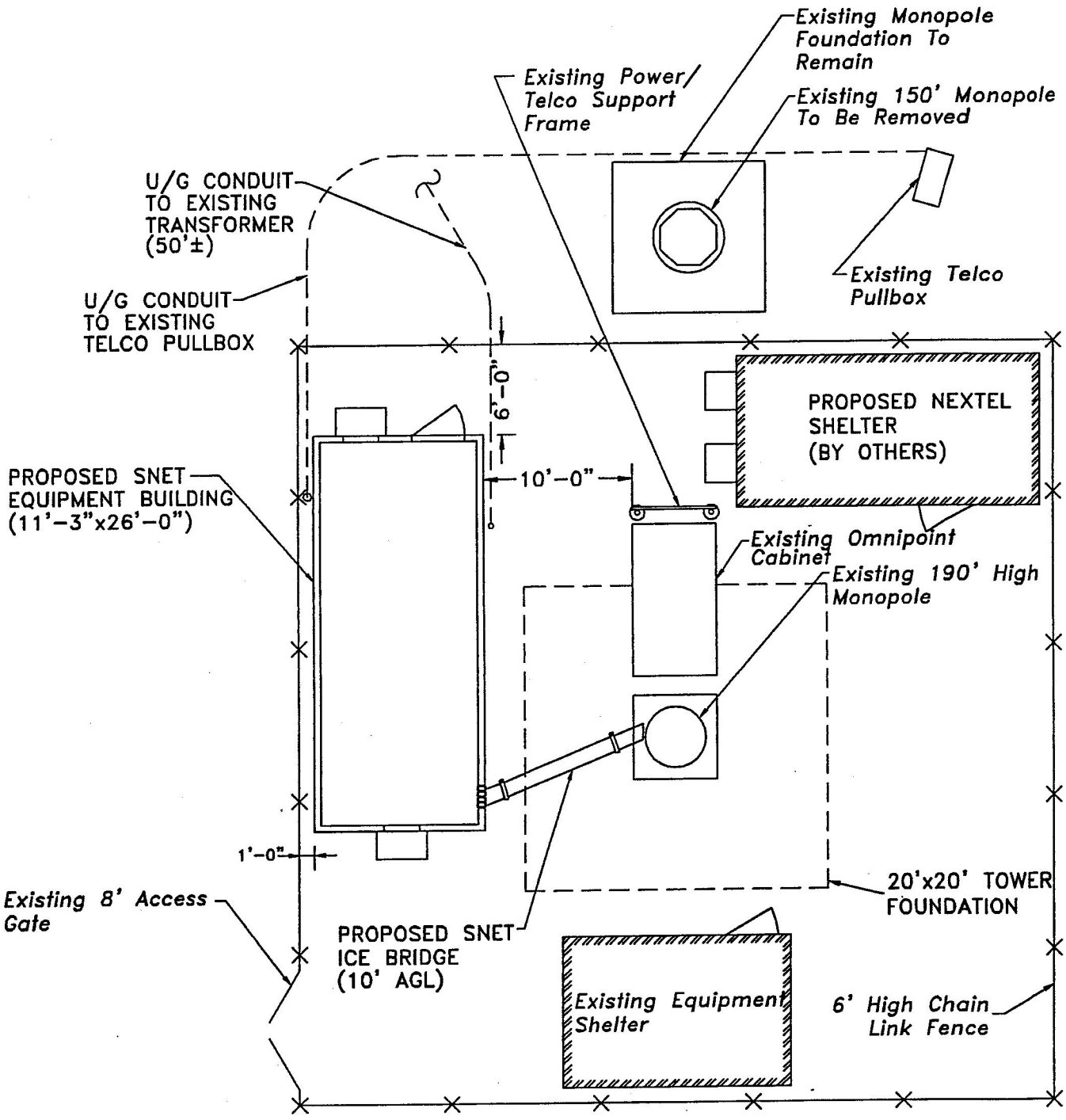
Company	Centerline Ht (feet)	Frequency (MHz)	Number of Channels	Power Per Channel (Watts)	Power Density (mW/cm^2)	Standard Limits (mW/cm^2)	Percent of Limit
Other Users *							76.71
AT&T LTE	151	700 Band	1	500	0.0079	0.4667	1.69
AT&T LTE	151	1900 Band	1	500	0.0079	1.0000	0.79
AT&T LTE	151	2300 Band	1	500	0.0079	1.0000	0.79
AT&T UMTS	151	880 - 894	2	500	0.0158	0.5867	2.69
AT&T UMTS	151	1900 Band	1	500	0.0079	1.0000	0.79
AT&T GSM	151	1900 Band	1	427	0.0067	1.0000	0.67
Total							**84.1%**

***** Per CSC records

Structural information:

The attached structural analysis demonstrates that the tower and foundation have adequate structural capacity to accommodate the proposed equipment modifications upon completion of structural modifications. (B+T Group, 1/30/15)

RAD. CENTER: 148.6± FT. (AGL)



SNET MOBILITY
PRELIMINARY
DESIGN EXHIBIT

NORTH

SITE NAME: BERLIN TOWN HALL

ADDRESS: 240 KENSINGTON RD.
BERLIN, CT 06037

DRAWN: MDJ | CHECKED: GMP | SCALE: 1"=10'

SNET #:00000
MGI #: 14777
TASK #: 0000
DATE: 8/9/99

Maguire Group Inc.
Architects · Engineers · Planners
One Court Street
New Britain, Connecticut 06051

PROJECT INFORMATION

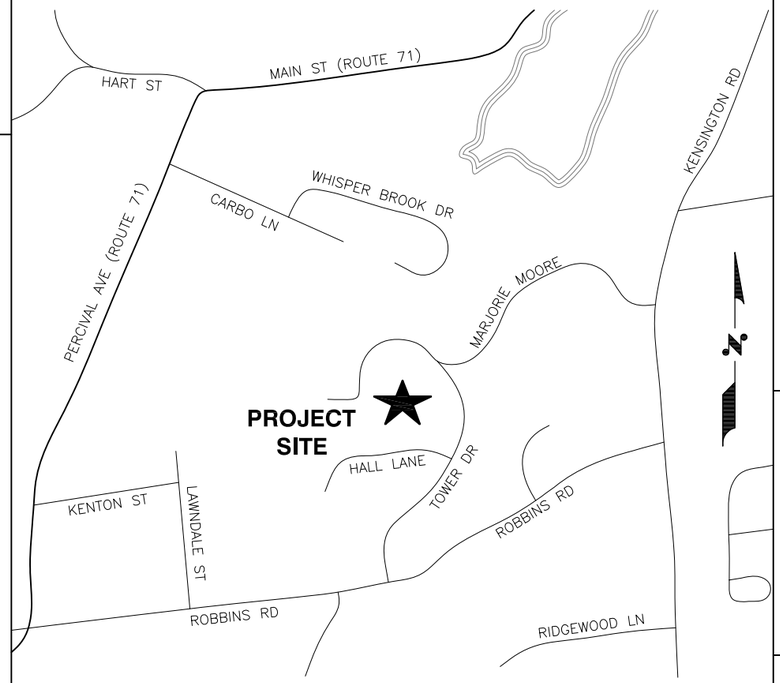
SCOPE OF WORK:	UNMANNED TELECOMMUNICATIONS FACILITY MODIFICATIONS
SITE ADDRESS:	240 KENSINGTON ROAD BERLIN, CT 06037
LATITUDE:	41.6262° N 41° 37' 34.3" N
LONGITUDE:	72.7756° W 72° 46' 32.1" W
JURISDICTION:	NATIONAL, STATE & LOCAL CODES OR ORDINANCES
CURRENT USE:	TELECOMMUNICATIONS FACILITY
PROPOSED USE:	TELECOMMUNICATIONS FACILITY

SITE NUMBER: CT1019
SITE NAME: BERLIN POLICE DEPT

DRAWING INDEX

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 0.4 MI. MERGE ONTO I-91 S VIA THE RAMP ON THE LEFT TOWARD NEW HAVEN. 1.7 MI. MERGE ONTO CT-9 N VIA EXIT 22N TOWARD NEW BRITAIN. 3.1 MI. TAKE EXIT 22 TOWARD US-5 S/CT-15 S/NEW HAVEN. 0.2 MI. TURN RIGHT ONTO FRONTAGE RD. 0.1 MI. TAKE THE 1ST RIGHT ONTO CT-372/WORTHINGTON RDG. 0.08 MI. TURN RIGHT ONTO MILL ST/CT-372. CONTINUE TO FOLLOW CT-372. 1.4 MI. TURN LEFT ONTO MAIN ST. 0.1 MI. TAKE THE 1ST LEFT ONTO KENSINGTON RD. 0.5 MI. 240 KENSINGTON RD IS ON THE RIGHT.



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 REPRESENTATIVE IN WRITING OF DISCREPANCIES BEFORE PROCEEDING WITH THE WORK OR BE RESPONSIBLE FOR SAME.

72 HOURS
BEFORE YOU DIG
CALL TOLL FREE 800-922-4455

UNDERGROUND SERVICE ALERT

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT1019
SITE NAME: BERLIN POLICE DEPT.
CROWN SITE #: 826217
240 KENSINGTON ROAD
BERLIN, CT 06037
HARTFORD COUNTY

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

NO.	DATE	REVISIONS	BY	CHK	APP'D
4	04/13/15	CONSTRUCTION REVISED	SG	DC	DPH
3	03/25/15	CONSTRUCTION REVISED	MR	DC	DPH
2	11/08/13	CONSTRUCTION REVISED	SC	DC	DPH
1	04/18/12	ISSUED FOR CONSTRUCTION	DB	DC	DPH
0	03/08/12	ISSUED FOR REVIEW	RP	DC	DPH

SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RP

STATE OF CONNECTICUT — ROBERT D. PRESTLEY — 16,258 — LICENSED PROFESSIONAL ENGINEER

AT&T

TITLE SHEET
(LTE)

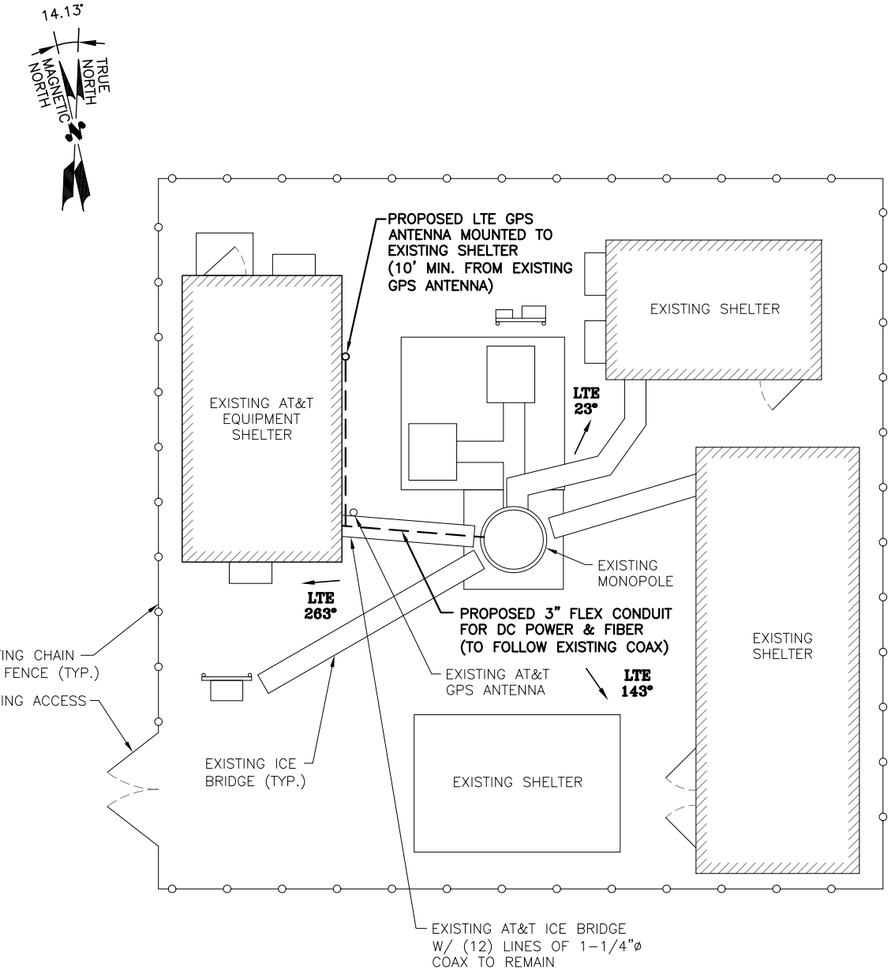
JOB NUMBER	DRAWING NUMBER	REV
1019.01	T-1	4

NOTE:

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

NOTE:

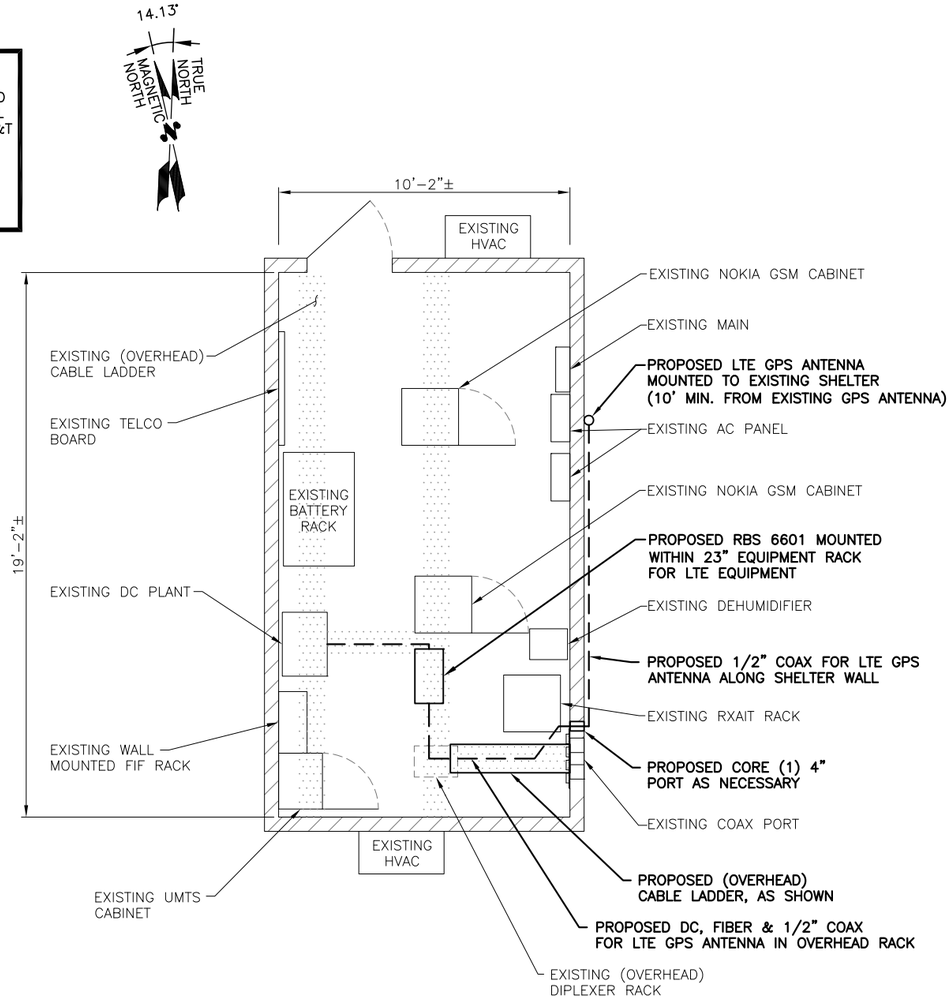
ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS AND MODIFICATION DESIGN BY B&T GROUP, DATED OCTOBER 3, 2013. REFER TO STRUCTURAL MODIFICATION REPORT (REV2) PROVIDED BY B&T GROUP DATED JANUARY 30, 2015 PROVIDED BY CROWN CASTLE AND FINAL AT&T DATA SHEET.



COMPOUND PLAN

SCALE: 3/16"=1'-0"

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



EQUIPMENT PLAN

SCALE: 3/8"=1'-0"

0 1'-4" 2'-8" 5'-4" 8'-0"

Hudson Design Group LLC
1600 OSGOOD STREET
BUILDING 20 NORTH, SUITE 3090
N. ANDOVER, MA 01845
TEL: (978) 557-5553
FAX: (978) 336-5586

SAI
27 NORTHWESTERN DR.
SALEM, NH 03079

SITE NUMBER: CT1019
SITE NAME: BERLIN POLICE DEPT.
CROWN SITE #: 826217
240 KENSINGTON ROAD
BERLIN, CT 06037
HARTFORD COUNTY

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

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0	03/08/12	ISSUED FOR REVIEW	RP	DC	DPH

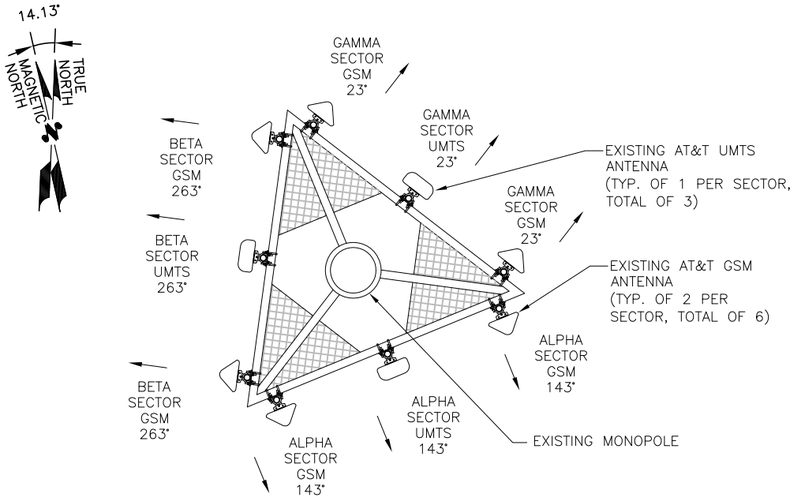
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RP

STATE OF CONNECTICUT
DEREK J. CREASER
No. 25854
LICENSED PROFESSIONAL ENGINEER

AT&T

COMPOUND & EQUIPMENT PLAN (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1019.01	A-1	4



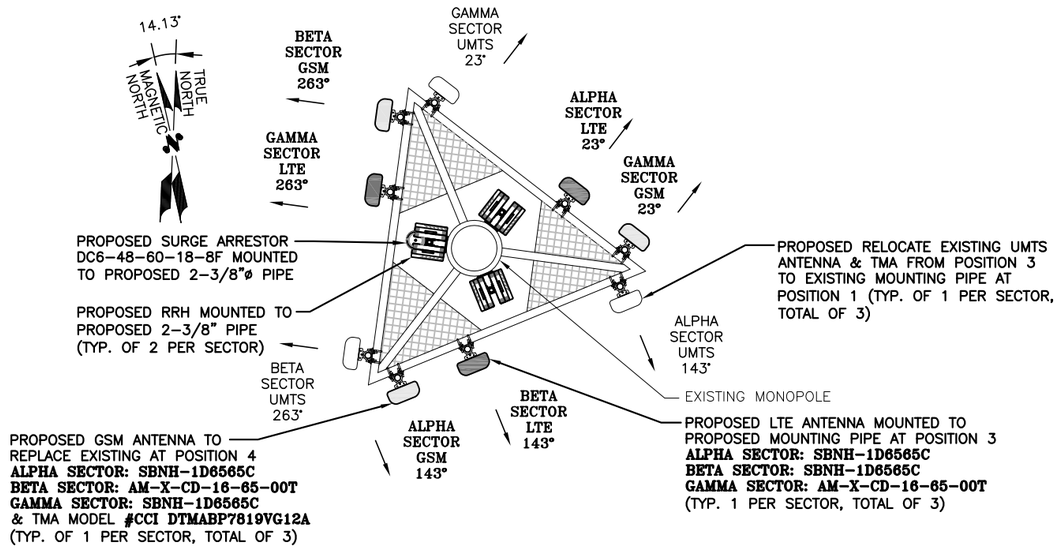
EXISTING UMTS/GSM ANTENNA PLAN

SCALE: N.T.S.

NOTE:

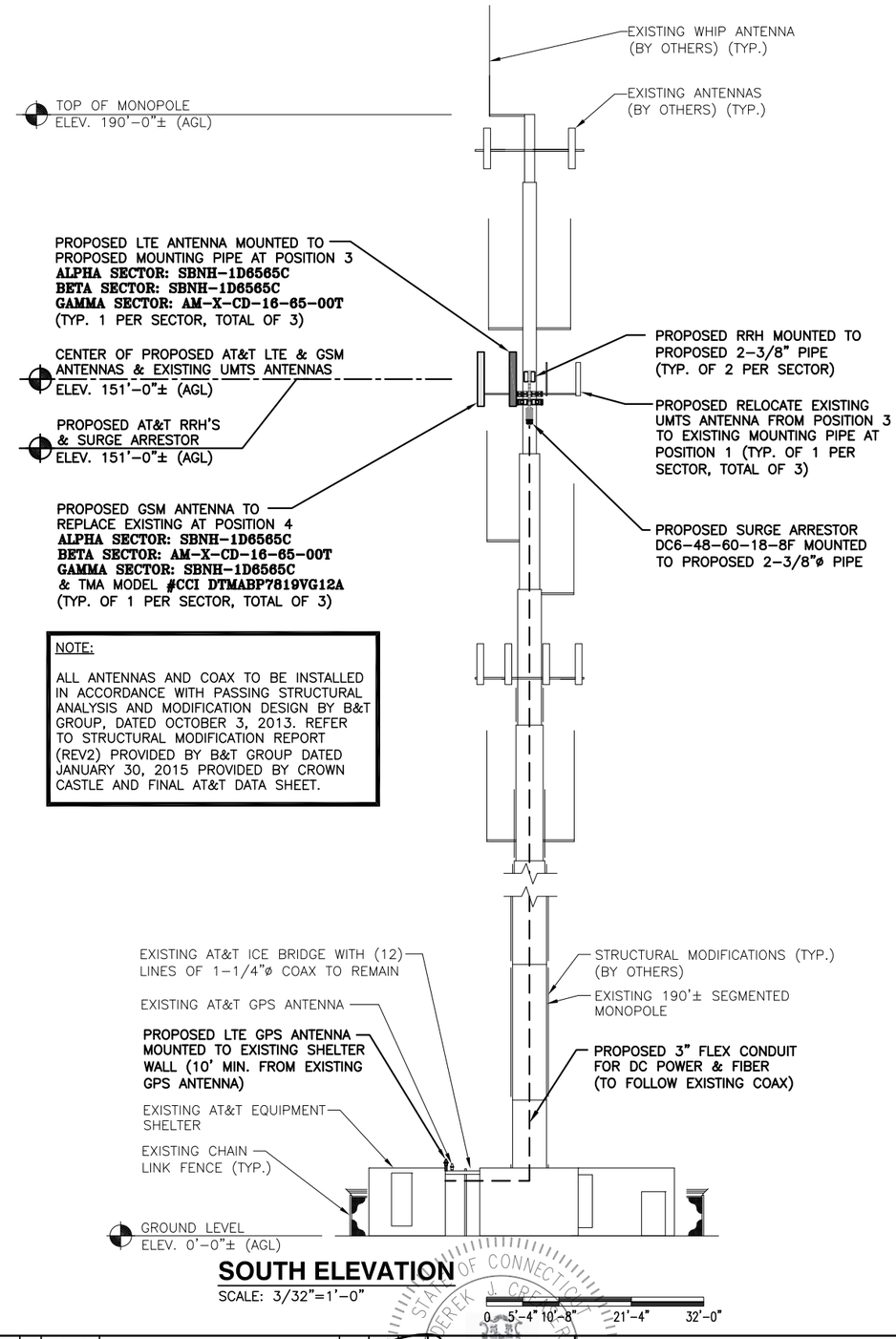
REFER TO THE FINAL RF DATA SHEET FOR FINAL ANTENNA SETTINGS.

INSTALLATION NOTES:
1. CONTRACTOR TO ENSURE THAT RRH MOUNTING DOES NOT INTERFERE WITH CLIMBING LADDER/PEGS, CABLE CLIMB, OR COAX PORTS. MONOPOLE: COLLAR-MOUNT RRH CLUSTER SHALL PROVIDE AN OPENING BETWEEN ADJACENT RRH AT LEAST 30" WIDE CENTERED ON THE EXISTING SAFETY-CLIMB AND 30" DEEP FROM THE FACE OF THE POLE.
SELF-SUPPORT: RRH LEG-MOUNT OR FACE-MOUNT SHALL PROVIDE AN UNOBSTRUCTED VERTICAL CLIMBING PASSAGE AT LEAST 30" WIDE AND 30" DEEP CENTERED ON THE LEG WITH THE CLIMBING LADDER/PEGS.



PROPOSED LTE ANTENNA PLAN

SCALE: N.T.S.



NOTE:

ALL ANTENNAS AND COAX TO BE INSTALLED IN ACCORDANCE WITH PASSING STRUCTURAL ANALYSIS AND MODIFICATION DESIGN BY B&T GROUP, DATED OCTOBER 3, 2013. REFER TO STRUCTURAL MODIFICATION REPORT (REV2) PROVIDED BY B&T GROUP DATED JANUARY 30, 2015 PROVIDED BY CROWN CASTLE AND FINAL AT&T DATA SHEET.

SOUTH ELEVATION

SCALE: 3/32"=1'-0"

0 5'-4" 10'-8" 21'-4" 32'-0"

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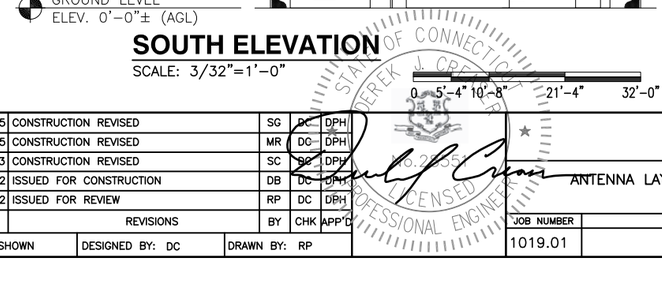
SCALE: AS SHOWN | DESIGNED BY: DC | DRAWN BY: RP



AT&T

ANTENNA LAYOUT AND ELEVATION (LTE)

JOB NUMBER	DRAWING NUMBER	REV
1019.01	A-2	4

January 30, 2015

Mr. Mitchell Abbott
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6612

B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
ModDwgs@btgrp.com

Subject: **Structural Modification Report**

Carrier Designation:

***T-Mobile* Co-Locate**
Carrier Site Number: CT11004B
Carrier Site Name: N/A

Crown Castle Designation:

Crown Castle BU Number: 826217
Crown Castle Site Name: Newington_1
Crown Castle JDE Job Number: 268610
Crown Castle Work Order Number: 996578
Crown Castle Application Number: 261440 Rev. 2

Engineering Firm Designation:

B+T Group Project Number: 87581.010.01

Site Data:

240 Kensington Road, Berlin, CT, Hartford County
Latitude *41° 37' 34.3"*, Longitude *-72° 46' 32.33"*
190 Foot - Monopole

Dear Mr. Abbott,

B+T Group is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 748355, in accordance with application 261440, revision 2.

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:

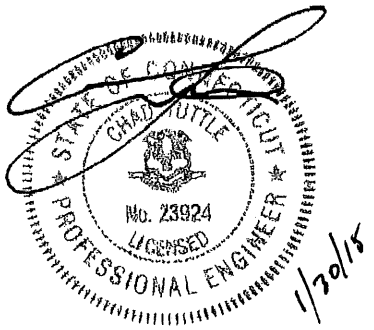
LC4.7: TSA specified load case with proposed modifications **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

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

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

Respectfully submitted by:
B+T Engineering, Inc.



Ali Habibi.
Project Engineer

Chad E. Tuttle, P.E.
President

tnxTower Report - version 6.1.4.1

1) INTRODUCTION

This is a 190 ft. Monopole designed by Pirod in February of 1999. The monopole was originally designed for a wind speed of 80 mph per TIA/EIA-222-F. This monopole was reinforced in 2008 by Natcomm and those modifications were found to be ineffective and were not considered in this analysis. This monopole has been modified by B+T Group in 2014 and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this monopole in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
184.0	184.0	3	Commscope	ATBT-BOTTOM-24V	--	--	--
		3	Commscope	LNX-6515DS-VTM			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
192.0	196.0	1	Kathrein	OGB4-900D	1 1	7/8 1/2	1
		1	Mti Wireless Edge	MT-485002			
	192.0	2	--	Side Arm Mount [SO 701-1]			
191.0	196.0	1	Andrew	DB589-A	1 1	5/16 1/2	1
	190.0	1	Motorola	WB2623			
184.0	181.0	**3**	**Powerwave Tech**	**LGP21401**	**--**	**--**	**3**
		3	**EMS Wireless**	**RR90-17-02DP**			
		3	EMS Wireless	RR90-17-02DP	18	1 5/8	1
		6	Ericsson	KRY 112 144/1			
		3	RFS Celwave	APXV18-206516L-A			
		1	--	Platform Mount [LP 405-1]			
160.0	160.0	6	Commscope	HBXX-6517DS-VTM	7	1 5/8	2
		2	Commscope	LNX-8514DS-VTM			
		3	Antel	BXA-70063-6CF-2			
		1	Commscope	LNX-6514DS-VTM			
		3	Alcatel Lucent	RRH2X60-AWS			
		3	Alcatel Lucent	RRH2X60-PCS			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
		1	--	Platform Mount [LP 303-1]	12	1 5/8	1
158.0	158.0	1	Decibel	DB205-A	2	7/8	1
		1	Sinclair	SRL-224NM-4			
		2	--	Side Arm Mount [SO 702-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
151.0	151.0	2	Andrew	SBNH-1D6565C	2 1	3/8 7/16	2
		6	Communication Components Inc.	DTMABP7819VG12A			
		1	KMW	AM-X-CD-16-65-00T-RET			
		6	Powerwave	CM1007-DBPXBC-003			
		6	Powerwave	LGP21901			
		2	Andrew	SBNH-1D6565C	12	1 1/4	1
		1	KMW	AM-X-CD-16-65-00T-RET			
		3	Powerwave	7770.00			
		1	--	Platform Mount [LP 403-1]			
148.0	148.0	6	Ericsson	RRU-11	--	--	2
		1	Raycap	DC6-48-60-18-8F			
		1	--	Pipe Mount [PM 601-1]			
		2	--	Pipe Mount [PM 601-3]			
132.0	132.0	1	Sinclair	SRL-235-2	1	7/8	1
		1	--	Side Arm Mount [SO 702-1]			
124.0	124.0	1	Decibel	DB205-A	1 1	1/2 1 5/8	1
		1	Decibel	PCS 1900 TMA RX			
		1	--	Side Arm Mount [SO 701-1]			
116.0	120.0	1	Andrew	VHLP2.5-10W	9 3 3	1 1/4 5/16 1/2	1
		1	Dragonwave	HORIZON DUO			
	118.0	3	Argus	LLPX310R			
		9	Decibel	DB844G90A-XY			
		3	Samsung	WIMAX DAP HEAD			
	116.0	1	--	Platform Mount [LP 405-1]			
100.0	100.0	3	Kathrein	742 213	6	1 5/8	1
		1	--	Pipe Mount [PM 601-3]			
90.0	99.0	2	Decibel	DB205-A	1 2 1	5/16 1/2 7/8	1
	90.0	1	Andrew	KP2F-34			
		1	Mti Wireless Edge	MT-485002			
		2	--	Side Arm Mount [SO 702-1]			
87.0	87.0	2	GPS	GPS_A	2	1/2	1
		2	--	Side Arm Mount [SO 701-1]			
70.0	70.0	1	Sinclair	SRL-235-2	1	7/8	1
		1	--	Side Arm Mount [SO 702-1]			
58.0	58.0	1	Decibel	DB583	1	1/2	1
		1	--	Side Arm Mount [SO 702-1]			
43.0	43.0	1	Decibel	DB909XVTE-M	1	1/2	1
		1	--	Side Arm Mount [SO 702-1]			
33.0	33.0	1	Decibel	DB909XVTE-M	1	1/2	1
		1	--	Side Arm Mount [SO 702-1]			

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

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
190	190	1	Decibel	DB809	1	1-5/8
177.667	177.667	12	EMS Wireless	RR90-17-00DP	12	1-5/8
155	155	2	Decibel	DB205	2	1-5/8
140	140	2	Decibel	DB205	2	1-5/8
127.667	127.667	12	EMS Wireless	RR90-17-00DP	12	1-5/8
117.667	117.667	12	EMS Wireless	RR90-17-00DP	12	1-5/8
25	25	1	Decibel	DB516	2	1-5/8
		1	Decibel	DB809M		
20	20	1	Decibel	DB205	1	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	T-Mobile Co-Locate, Rev # 2	261440	CCI Sites
Tower Manufacturer Drawings	Pirod, File No. A-115400	3438498	CCI Sites
Tower Modification Drawings	B+T Group, Project No. 87581.005.01	Date: 10/17/14	CCI Sites
Foundation Drawings	Pirod, File No. A-115400	3463552	CCI Sites
Geotech Report	FPA, Job No. 98A209ERI	3438510	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 09/10/14	CCI Sites

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary) - LC4.7

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	190 - 180	Pole	P18x3/8	1	-3.090	-	6.9	Pass[1]
L2	180 - 140	Pole	P24x3/8	2	-13.011	-	93.3	Pass[1]
L3	140 - 120	Pole	P36x3/8	3	-17.101	-	91.5	Pass[1]
L4	120 - 109	Pole	P42x3/8	4	-21.863	-	92.3	Pass[1]
L5	109 - 104	Pole	P42x3/8 [0.449926]	5	-23.182	-	85.6	Pass[1]
L6	104 - 100	Pole	P42x3/8 [0.525959]	6	-24.358	-	80.9	Pass[1]
L7	100 - 89	Pole	P48x3/8 [0.43965]	7	-28.055	-	93.0	Pass[1]
L8	89 - 80	Pole	P48x3/8 [0.53914]	8	-31.244	-	88.8	Pass[1]
L9	80 - 69	Pole	P54x3/8 [0.490666]	9	-35.194	-	92.4	Pass[1]
L10	69 - 60	Pole	P54x3/8 [0.578486]	10	-38.754	-	89.1	Pass[1]
L11	60 - 49	Pole	P60x3/8 [0.516129]	11	-43.148	-	93.8	Pass[1]
L12	49 - 40	Pole	P60x3/8 [0.594533]	12	-47.190	-	90.7	Pass[1]
L13	40 - 29	Pole	P60x1/2 [0.604293]	13	-52.264	-	93.5	Pass[1]
L14	29 - 20	Pole	P60x1/2 [0.683417]	14	-56.784	-	90.7	Pass[1]
L15	20 - 9	Pole	P60x5/8 [0.703867]	15	-62.516	-	91.1	Pass[1]
L16	9 - 0	Pole	P60x5/8 [0.756633]	16	-67.491	-	92.2	Pass[1]
							Summary	
						Pole (L11)	93.8	Pass[1]
						RATING =	**93.8**	**Pass[1]**

Table 6 - Tower Component Stresses vs. Capacity - LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	180	5.1	Pass
1,2	Flange Plate	180	4.2	Pass
1	Flange Bolts	140	75.7	Pass
1,2	Flange Plate	140	64.0	Pass
1	Bridge Stiffeners	120	80.7	Pass
1	Flange Bolts	120	46.6	Pass
1	Flange Plate	120	32.7	Pass
1	Bridge Stiffeners	100	74.3	Pass
1	Flange Bolts	100	43.0	Pass
1	Flange Plate	100	55.2	Pass
1	Bridge Stiffeners	80	85.4	Pass
1	Flange Bolts	80	54.6	Pass
1	Flange Plate	80	69.5	Pass
1	Bridge Stiffeners	60	51.2	Pass
1	Flange Bolts	60	32.4	Pass
1	Flange Plate	60	51.2	Pass
1	Bridge Stiffeners	40	67.8	Pass
1	Flange Bolts	40	30.6	Pass
1	Flange Plate	40	54.4	Pass
1	Bridge Stiffeners	20	92.6	Pass
1	Flange Bolts	20	43.6	Pass
1	Flange Plate	20	76.1	Pass
1	Anchor Rods	Base	36.7	Pass
1	Base Plate	Base	96.7	Pass
1	Base Foundation	Base	98.1	Pass

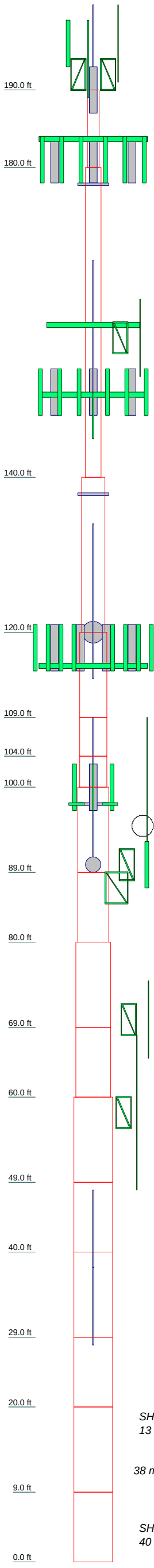
Structure Rating (max from all components) =	98.1%

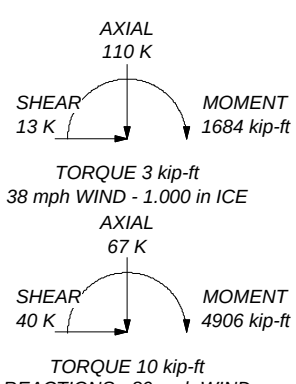
Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Base plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.
3) The percent capacities shown above (excluding foundations) include the 1/3 increase in allowable stresses as allowed by TIA/EIA-222-F.

4.1) Recommendations

1) All modifications proposed in this report shall be installed in accordance with the attached drawings (Appendix D) for the determined available structural capacity to be effective.

Section	Size	Length (ft)	Grade	Weight (K)
1	P18x3/8	10.000	A53-B-42	0.7
2	P24x3/8	40.000		3.8
3	P36x3/8	20.000		2.9
4	P42x3/8	11.000		1.8
5	P42x3/8 [0.449926]	5.000	38.016952ksi	1.0
6	P42x3/8 [0.423926]	4.000	38.016952ksi	0.9
7	P48x3/8 [0.439697]	11.000	40.362076ksi	2.4
8	P48x3/8 [0.53914]	9.000	38.076921ksi	2.4
9	P54x3/8 [0.490666]	11.000	39.389682ksi	3.0
10	P54x3/8 [0.578486]	9.000	37.614698ksi	2.9
11	P60x3/8 [0.516129]	11.000	39.092679ksi	3.5
12	P60x3/8 [0.594533]	9.000	37.644985ksi	3.3
13	P60x1/2 [0.604293]	11.000	39.940562ksi	4.2
14	P60x1/2 [0.683417]	9.000	38.508049ksi	3.8
15	P60x5/8 [0.703867]	11.000	40.5123ksi	4.9
16	P60x5/8 [0.756633]	9.000	39.574431ksi	4.3
				45.9





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
OGB4-900D (E)	192	(2) DTMABP7819VG12A (R)	151
MT-485002 w/ Mount Pipe (E)	192	Platform Mount [LP 403-1] (E)	151
Side Arm Mount [SO 701-1] (E)	192	(2) SBNH-1D6565C w/ Mount Pipe (E)	151
Side Arm Mount [SO 701-1] (E)	192	(2) RRU-11 (R)	148
DB589-A (E)	191	(2) RRU-11 (R)	148
WB2623 w/ Mount Pipe (E)	191	DC6-48-60-18-8F (R)	148
6' x 2" Mount Pipe (E)	191	(2) Pipe Mount [PM 601-3] (R)	148
Lightning Rod 5/8" x 4' on 4' Pole (E)	190	Pipe Mount [PM 601-1] (R)	148
RR90-17-02DP w/ Mount Pipe (E)	184	(2) RRU-11 (R)	148
RR90-17-02DP w/ Mount Pipe (E)	184	4' ICE SHIELDS (E)	138
RR90-17-02DP w/ Mount Pipe (E)	184	Side Arm Mount [SO 702-1] (E)	132
APXV18-206516L-A w/ Mount Pipe (E)	184	SRL-235-2 (E)	132
APXV18-206516L-A w/ Mount Pipe (E)	184	4' x 2" Pipe Mount (E)	132
APXV18-206516L-A w/ Mount Pipe (E)	184	Side Arm Mount [SO 701-1] (E)	124
(2) KRY 112 144/1 (E)	184	6' x 2" Mount Pipe (E)	124
(2) KRY 112 144/1 (E)	184	DB205-A (E)	124
(2) KRY 112 144/1 (E)	184	PCS 1900 TMA RX (E)	124
LNX-6515DS-VTM w/ Mount Pipe (p)	184	LLPX310R w/ Mount Pipe (E)	116
LNX-6515DS-VTM w/ Mount Pipe (p)	184	(3) DB844G90A-XY w/ Mount Pipe (E)	116
LNX-6515DS-VTM w/ Mount Pipe (p)	184	(3) DB844G90A-XY w/ Mount Pipe (E)	116
ATBT-BOTTOM-24V (p)	184	(3) DB844G90A-XY w/ Mount Pipe (E)	116
ATBT-BOTTOM-24V (p)	184	HORIZON DUO (E)	116
ATBT-BOTTOM-24V (p)	184	WIMAX DAP HEAD (E)	116
Platform Mount [LP 405-1] (E)	184	WIMAX DAP HEAD (E)	116
4' ICE SHIELDS (E)	178	WIMAX DAP HEAD (E)	116
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	160	Platform Mount [LP 405-1] (E)	116
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	160	LLPX310R w/ Mount Pipe (E)	116
LNX-8514DS-VTM w/ Mount Pipe (R)	160	LLPX310R w/ Mount Pipe (E)	116
LNX-8514DS-VTM w/ Mount Pipe (R)	160	VHLP2.5-10W (E)	116
LNX-6514DS-VTM w/ Mount Pipe (R)	160	Pipe Mount [PM 601-3] (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
RRH2X60-PCS (R)	160	4' ICE SHIELDS (E)	98
RRH2X60-PCS (R)	160	4' ICE SHIELDS (E)	98
RRH2X60-PCS (R)	160	4' ICE SHIELDS (E)	98
RRH2X60-AWS (R)	160	DB205-A (E)	90
RRH2X60-AWS (R)	160	DB205-A (E)	90
RRH2X60-AWS (R)	160	Side Arm Mount [SO 702-1] (E)	90
DB-T1-6Z-8AB-0Z (R)	160	Side Arm Mount [SO 702-1] (E)	90
Platform Mount [LP 303-1] (E)	160	6' x 2" Mount Pipe (E)	90
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	160	MT-485002 w/ Mount Pipe (E)	90
SRL-224NM-4 (E)	158	KP2F-34 (E)	90
Side Arm Mount [SO 702-1] (E)	158	GPS_A (E)	87
Side Arm Mount [SO 702-1] (E)	158	GPS_A (E)	87
4' x 2" Pipe Mount (E)	158	Side Arm Mount [SO 701-1] (E)	87
4' x 2" Pipe Mount (E)	158	Side Arm Mount [SO 701-1] (E)	87
DB205-A (E)	158	SRL-235-2 (E-B Leg per Photo)	70
(3) 7770.00 w/ Mount Pipe (E)	151	6' x 2" Mount Pipe (E-B Leg per Photo)	70
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	151	Side Arm Mount [SO 702-1] (E-B Leg per Photo)	70
AM-X-CD-16-65-00T-RET w/ Mount Pipe (R)	151	DB583 (E)	58
(2) SBNH-1D6565C w/ Mount Pipe (R)	151	4' x 2" Pipe Mount (E)	58
(2) CM1007-DBPXBC-003 (R)	151	Side Arm Mount [SO 702-1] (E)	58
(2) CM1007-DBPXBC-003 (R)	151	DB909XVTE-M (E-A Leg per Photo)	43
(2) CM1007-DBPXBC-003 (R)	151	4' x 2" Pipe Mount (E-A Leg per Photo)	43
(2) LGP21901 (R)	151	Side Arm Mount [SO 702-1] (E-A Leg per Photo)	43
(2) LGP21901 (R)	151	4' x 2" Pipe Mount (E-A Leg per Photo)	33
(2) LGP21901 (R)	151	Side Arm Mount [SO 702-1] (E-A Leg per Photo)	33
(4) DTMABP7819VG12A (R)	151	DB909XVTE-M (E-A Leg per Photo)	33

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING 93.8%

ABC Engineering
1234 W. Jones St.
Smallville, PA 12345
Phone: (555) 555-1234
FAX: (555) 555-1235
Consulting Engineers

Job: 87581.010.01 - Newington_1, CT (BU# 826217			
Project:			
Client: Crown Castle	Drawn by: ahabibi	App'd:	
Code: TIA/EIA-222-F	Date: 01/30/15	Scale: NTS	
Path:		Dwg No. E-1	

TOWER MODIFICATION DRAWINGS
PREPARED FOR: CROWN CASTLE

SITE NAME: NEWINGTON_1
BU NUMBER: 826217

SITE ADDRESS:
240 KENSINGTON ROAD,
BERLIN, CT 06037
HARTFORD COUNTY, USA

PROJECT CONTACTS:

1. CROWN TOWER STRUCTURAL ANALYST

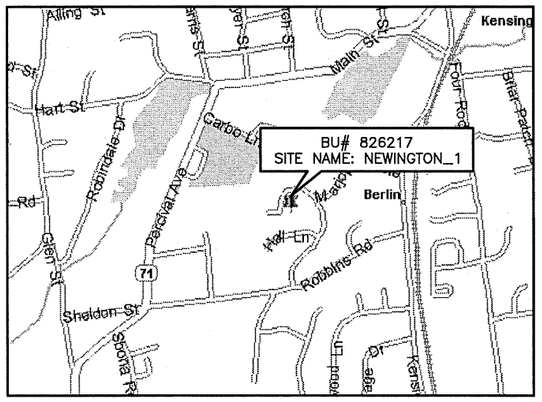
MITCHELL ABBOTT
(704) 405-6612
MITCHELL.ABBOTT@CROWNCASTLE.COM
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

2. CROWN PROJECT MANAGER

JERRY BRUNO
(781) 970-0069
JERRY.BRUNO@CROWNCASTLE.COM

3. CROWN CONSTRUCTION MANAGER

N/A



MAP

DIRECTIONS

FROM RT 9 TO EXIT 22. TURN RIGHT ON TO MILL ST. RT 372 FOLLOW 3/4 MI AT SET OF LIGHTS TURN LEFT ONTO KENSINGO RD. 1/4 MI ON RIGHT WILL BE TOWN BUILDINGS COMPLEX AND ACCESS RD. FOLLOW TO TOP OF HILL. TOWER IS BEHIND TOWN HALL AND POLICE STATION.

4. B+T GROUP PROJECT ENGINEER

ALI HABIBI
(918) 587-4630
AHABIBI@BTGRP.COM
1717 S BOULDER AVENUE, SUITE 300
TULSA, OK 74119

5. B+T GROUP ENGINEER (EOR)

CHAD E TUTTLE, P.E.
(918) 587-4630
CTUTTLE@BTGRP.COM
1717 S BOULDER AVENUE, SUITE 300
TULSA, OK 74119

TOWER INFORMATION

TOWER MANUFACTURER / DWG #:	PIROD INC. / 204566-B
TOWER HEIGHT / TYPE:	190' MONOPOLE
TOWER LOCATION:	LAT. 41° 37' 34.3"
DATUM: (NAD 1983)	LONG. -72° 46' 32.33"
	ELEV. 140 FT AMSL
STRUCTURAL DESIGN DRAWING REPORT:	B+T GROUP / WO. # 996578
STRUCTURAL ANALYSIS REPORT:	B+T GROUP / WO. # 926907
STRUCTURAL ANALYSIS DATE:	09/16/14
APPLICATION ID / REVISION #:	2614401 / 2
CCISITES DOCUMENT ID:	5299086

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF TIA/EIA-222-F STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES USING FASTEST MILE WIND SPEED OF 80 MPH WITH NO ICE, 37.6 MPH WITH 1 INCH ICE THICKNESS AND 50 MPH UNDER SERVICE LOADS.

DRAWINGS INCLUDED

SHEET NUMBER	DESCRIPTION
S1	TITLE SHEET
S2	MODIFICATION INSPECTION NOTES AND CHECKLIST
S3	GENERAL NOTES, AJAX BOLT NOTES AND DETAIL
S4	TOWER ELEV., SCHEDULE AND TX LINE DIST. DIAGRAM
S5	TOWER SECTION (0'–19.5')
S6	TOWER SECTIONS (20'–30.5' AND 40'–50.5')
S7	TOWER SECTIONS (60'–70.5' AND 80'–99.5')
S8	FLAT PLATE BRIDGE STIFFENER DETAIL, SCHEDULE AND TOWER SECTION (100'–110.5')
D1	PART DETAIL

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

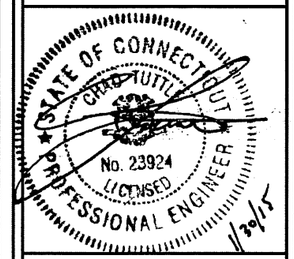
CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.



NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE

TITLE SHEET

SHEET NUMBER:	REVISION:
S1	0

MI CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
		PRE-CONSTRUCTION
X	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVAL	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS AS NECESSARY FOR NON-STANDARD PARTS. 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	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	A VISUAL OBSERVATION BY A CWI OF A PORTION OF WELDING ON THE PROPOSED STRUCTURAL MEMBERS IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL AS SPECIFIED IN THE MODIFICATION DRAWINGS AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING (PER ENG-STD-10069) ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	NDE REPORT OF MONOPOLE BASE PLATE	A NDE (PER ENG-SOW-10033) 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	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		CONSTRUCTION (PERFORMED BY CONTRACTOR)
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS.
N/A	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONCRETE COMP. STRENGTH AND SLUMP TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	POST INSTALLED ANCHOR ROD VERIFICATION	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.
X	BASE PLATE GROUT VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS INSTALLED IN ACCORDANCE WITH CROWN ENG-PRC-10012 FOR INCLUSION IN THE MI REPORT.
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS. CWI SHALL FOLLOW ALL THE PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS ENG-SOW-10066, ENG-STD-10069 AND SRV-STD-10159. A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT. FULL PENETRATION WELDS IN THE VICINITY OF BASE OF THE TOWER ARE REQUIRED TO BE 100% NDE INSPECTED BY UT IN ACCORDANCE WITH AWS D1.1. PARTIAL PENETRATION AND FILLET WELDS IN THE VICINITY OF BASE OF THE TOWER ARE REQUIRED TO BE 50% NDE INSPECTED BY MP IN ACCORDANCE WITH AWS D1.1.
N/A	EARTHWORK: LIFT AND DENSITY	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED IN ACCORDANCE WITH ENG-BUL-10149.
N/A	GUY WIRE TENSION REPORT	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT TO THE MI INSPECTOR INDICATING THE TEMPERATURE AND TENSION IN EVERY GUY CABLE AS PART OF PLUMB AND TENSION PROCEDURE FOR INCLUSION IN THE MI REPORT.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD.
		POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
N/A	POST INSTALLED ANCHOR ROD PULL-OUT TESTING	POST-INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH ENG-PRC-10119 AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
ADDITIONAL TESTING AND INSPECTIONS:		
NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MI REPORT AND N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT		

MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

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

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS.

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

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR

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

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

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN.

GENERAL CONTRACTOR

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

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

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND ENG-SOW-10007.

RECOMMENDATIONS

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

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, 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.
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY 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.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS

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

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

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

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 AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

B+T GRP
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www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CHAD JUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE

MODIFICATION INSPECTION NOTES AND CHECKLIST

SHEET NUMBER:	REVISION:
S2	0

NOTES:

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

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

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

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

5. AS AN ALTERNATIVE TO USING DTI WASHERS, AJAX BOLTS MAY BE PRETENSIONED PER AISC TURN-OF-NUT METHOD.

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

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

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

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

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

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

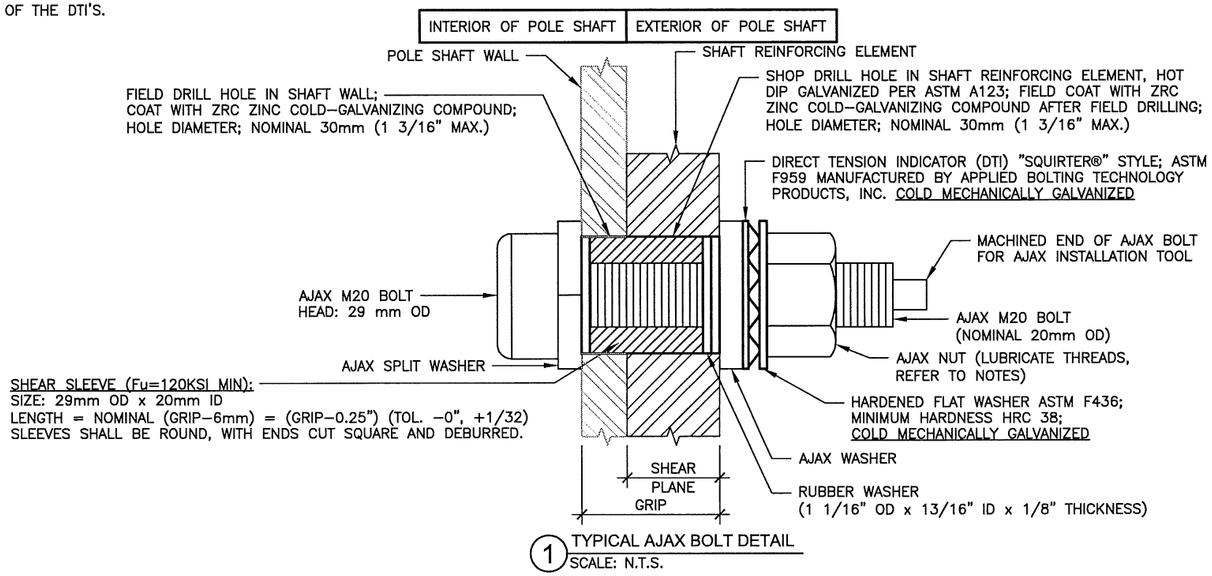
HARDENED WASHERS REQUIRED: USE A HARDENED WASHER FOR A 3/4" NOMINAL BOLT BETWEEN THE TOP OF THE DIRECT TENSION INDICATOR (DTI) WASHER AND THE NUT OF THE AJAX M20 BOLT. HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A MINIMUM HARDNESS OF HRC 38 OR HIGHER. THE HARDENED WASHERS SHALL BE MECHANICALLY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

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

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

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

INSPECTION REQUIRED: ALL AJAX BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 32, 2009, BY A QUALIFIED BOLT INSPECTOR. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION AND THE CONTRACTOR'S TENSIONING PROCEDURE. IN ADDITION, ALL AJAX BOLTS AND DTI'S SHALL BE VISUALLY INSPECTED ACCORDING TO THE DTI MANUFACTURER'S INSTRUCTIONS. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE PHOTO DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THE CONDITION OF THE DTI'S.



1 TYPICAL AJAX BOLT DETAIL
SCALE: N.T.S.

GENERAL NOTES

1.1 ALL WORK SHALL COMPLY WITH THE TIA/EIA-222-F STANDARD AS WELL AS ANY OTHER GOVERNING BUILDING CODES.
1.2 FIELD WORK WILL BE DONE AROUND EXISTING COAXIAL CABLE AND EQUIPMENT. ALL WORK SHALL BE DONE IN A MANNER SUCH THAT NO DAMAGE OCCURS TO THE EXISTING EQUIPMENT OR THE STRUCTURE.
1.3 A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND (OR APPROVED EQUIVALENT) SHALL BE APPLIED TO ANY FIELD CUTS OR FIELD DRILLED HOLES.
1.4 THE USE OF A GAS TORCH OR WELDER WILL NOT BE PERMITTED ON THE TOWER WITHOUT THE CONSENT OF THE OWNER.
1.5 IN LIEU OF TEMPORARY BRACING CONTRACTOR MAY HAVE A STABILITY ANALYSIS PERFORMED BY AN ENGINEER LICENSED IN THE STATE THE TOWER IS LOCATED. THE ANALYSIS SHALL USE A MINIMUM WIND SPEED OF 45 mph (3-SEC) PER TIA-1019.

FABRICATION

2.1 ALL WORK SHALL BE DONE IN ACCORDANCE WITH A.I.S.C. "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2.2 STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:

	YIELD	ASTM SPECS
A. STEEL SHAPES AND PLATES, U.N.O.	65ksi	A572
B. STEEL PIPE	50ksi	---

2.3 ALL NEW MATERIAL INCLUDING STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND A153.
2.4 WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE (LATEST REVISION). ELECTRODES SHALL BE E80 SERIES.
2.5 CONTRACTOR SHALL PROVIDE SHOP FABRICATION DRAWINGS TO B+T GROUP 5 DAYS PRIOR TO FABRICATION.

KEY NOTES

(#) TOWER MODIFICATION I.D.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

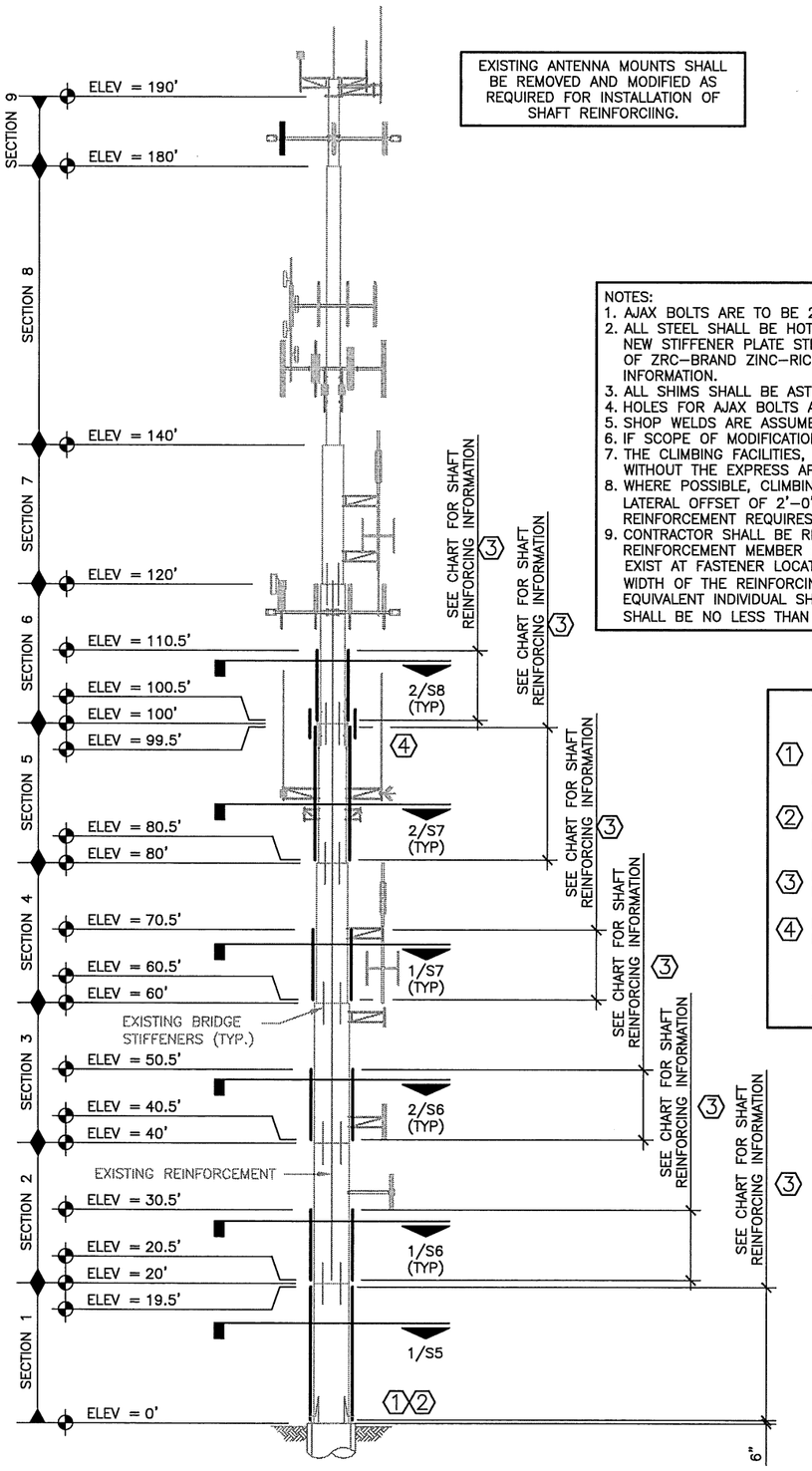
NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
GENERAL NOTES,
AJAX BOLT NOTES
AND DETAIL

SHEET NUMBER:	REVISION:
S3	0



1 TOWER ELEVATION
SCALE: N.T.S.

EXISTING ANTENNA MOUNTS SHALL BE REMOVED AND MODIFIED AS REQUIRED FOR INSTALLATION OF SHAFT REINFORCIING.

CCI: FLAT PLATE-BILL OF MATERIALS (65KSI)

BOTTOM ELEVATION	TOP ELEVATION	FLAT PLATE DESIGNATION	FLAT PLATE LENGTH	FLAT PLATE QUANTITY	AJAX BOLTS PER PLATE	TOTAL AJAX BOLT QTY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	TOTAL STEEL WEIGHT	
0.5'	19.5'	FP1**	19'-0"	3	21	63	6	6	20"	873	LBS.
20.5'	30.5'	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459	LBS.
40.5'	50.5'	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459	LBS.
60.5'	70.5'	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459	LBS.
80.5'	99.5'	FP2**	19'-0"	3	20	60	4	4	16"	582	LBS.
100.5'	110.5'	CCI-SFP-04007510	10'-0"	3	13	39	4	4	16"	306	LBS.
						306				3138	LBS.

** UNIQUE PART. SEE PART DETAIL SHEET D2

NOTES:
1. AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.
2. ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATOR 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. 1-800-831-3275 FOR PRODUCT INFORMATION.
3. ALL SHIMS SHALL BE ASTM A36.
4. HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.
5. SHOP WELDS ARE ASSUMED E80XX OR GREATER, PER STANDARD SPLICE DETAIL.
6. IF SCOPE OF MODIFICATION REQUIRES REMOVAL OF TOWER ID TAG, IT MUST BE REPLACED.
7. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE ENGINEER OF RECORD OR TOWER OWNER.
8. WHERE POSSIBLE, CLIMBING HARDWARE SHOULD REMAIN IN-LINE ALONG THE POLE. IF AN OBSTRUCTION CAUSES A LATERAL OFFSET OF 2'-0" OR MORE, CLIMBING ANCHORS SHALL BE PROVIDED AT EACH CHANGE IN ALIGNMENT. IF NEW REINFORCEMENT REQUIRES STEP BOLT BRACKETS, INSTALL PRIOR TO GALVANIZATION OF STEEL.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER FITTING OF REINFORCEMENT ON MONOPOLES. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER 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.

TOWER MODIFICATIONS:

1. CONTRACTOR SHALL BUDGET A SITE VISIT TO CHECK CRITICAL DIMENSIONS AND VERIFY UNKNOWN CONDITIONS PRIOR TO STEEL FABRICATION.
2. THE NEW AND EXISTING TRANSMISSION LINES MUST BE DISTRIBUTED AS SHOWN IN THE TX LINE DIST. DIAGRAM RE: DETAIL 2/S4.
3. INSTALL NEW REINFORCING ELEMENTS RE: SHEET S5 THRU S8.
4. INSTALL NEW BRIDGE STIFFENERS RE: SHEET S8.

* CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR ALL REMOVE AND REPLACE PROCEDURES.
** MODIFICATIONS SHALL BE COMPLETED PRIOR TO ADDING THE PROPOSED APPURTENANCES.

NEW CCI FLAT PLATE (65KSI) REINFORCING ELEMENTS

START ELEVATION	END ELEVATION	QTY	FLAT #	FLAT PLATE *
0.5'	19.5'	3	---	FP1**
20.5'	30.5'	3	---	CCI-SFP-04510010
40.5'	50.5'	3	---	CCI-SFP-04510010
60.5'	70.5'	3	---	CCI-SFP-04510010
80.5'	99.5'	3	---	FP2**
100.5'	110.5'	3	---	CCI-SFP-04007510

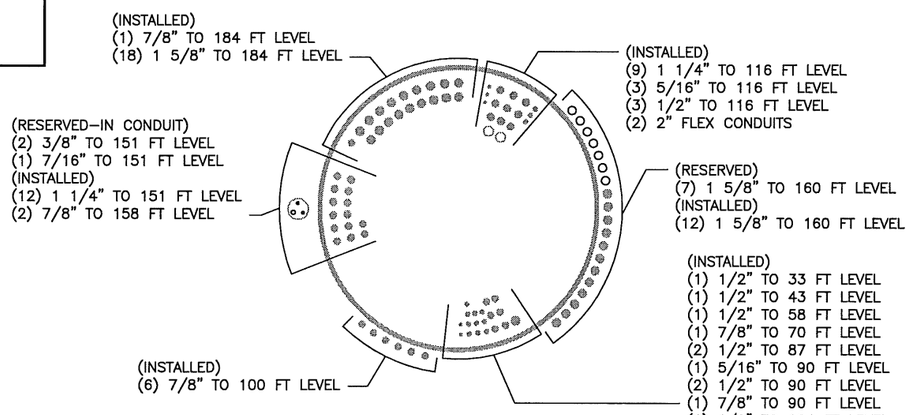
* SEE CMRP 65 KSI PARTS CATALOG EDITION 2 REV. 1 FOR PART DETAILS
** UNIQUE PART. SEE PART DETAIL SHEET D2

ALL BOLTS SHALL BE AJAX M20 BOLTS WITH HIGH STRENGTH SHEAR SLEEVES (ASTM A519 WITH MIN. Fu=120 KSI). CONTACT SUPPLIER FOR MATERIAL (PLATE AND BOLTS) AND INSTALLATION PROCEDURES.

EXISTING MEMBER SCHEDULE

SECTION	DIAMETER
1	60"øx5/8" PIPE
2	60"øx1/2" PIPE
3	60"øx3/8" PIPE
4	54"øx3/8" PIPE
5	48"øx3/8" PIPE
6	42"øx3/8" PIPE
7	36"øx3/8" PIPE
8	24"øx3/8" PIPE
9	18"øx3/8" PIPE

EXISTING TOWER HAS BEEN PREVIOUSLY MODIFIED. REFERENCE DRAWINGS BY B+T GROUP DATED 10/17/14



2 TX LINE DISTRIBUTION DIAGRAM
SCALE: N.T.S.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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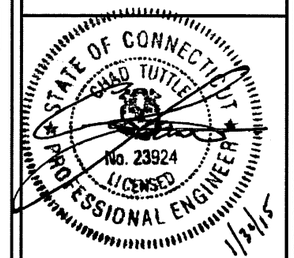


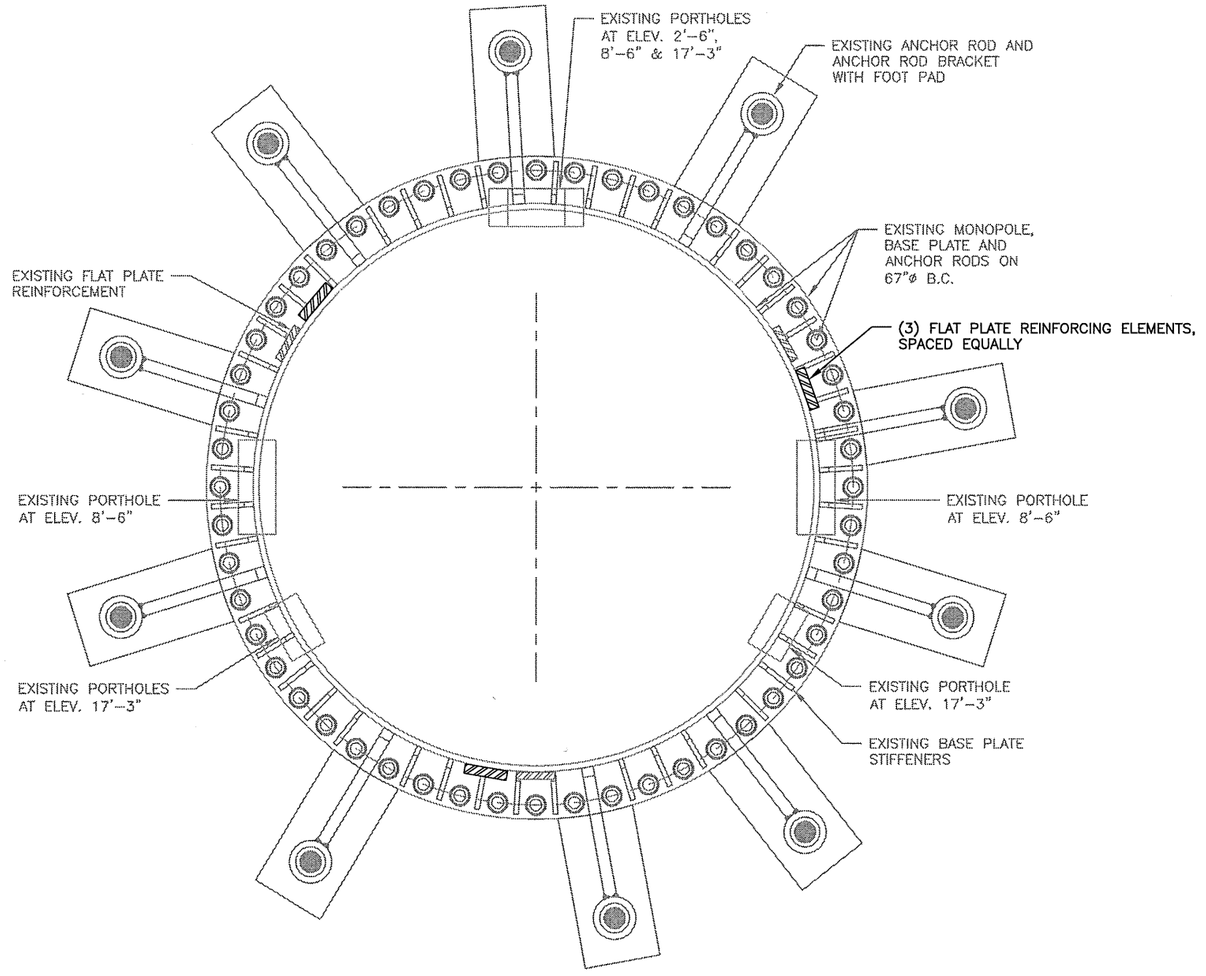
NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
TOWER ELEV., SCHEDULE AND TX LINE DIST. DIAGRAM

SHEET NUMBER: S4
REVISION: 0



1 TOWER SECTION (0'-19.5')
SCALE: N.T.S.

NOTE:
CONTRACTOR CAN CHOOSE ANY SYMMETRICAL LOCATIONS TO SUIT FIELD CONDITIONS. NOTIFY B+T GROUP IMMEDIATELY FOR ANY DISCREPANCIES.

B+T GRP
1717 S. BOULDER AVE.
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TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

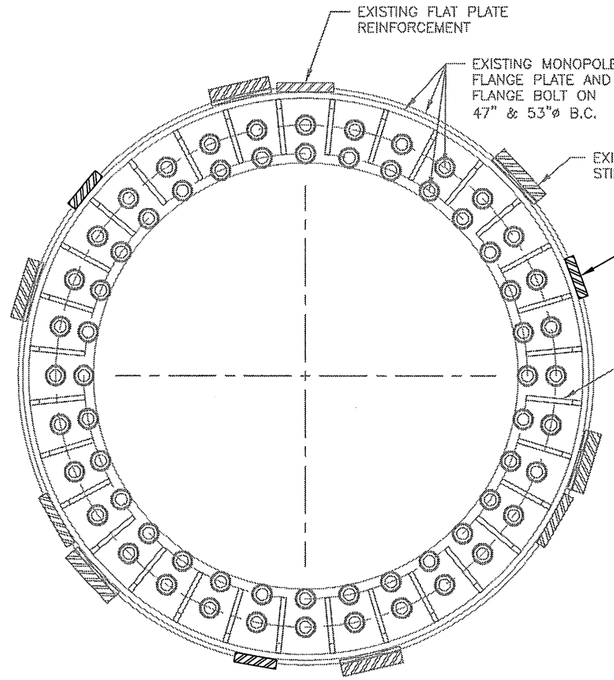
NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
TOWER SECTION
(0'-19.5')

SHEET NUMBER:	REVISION:
S5	0



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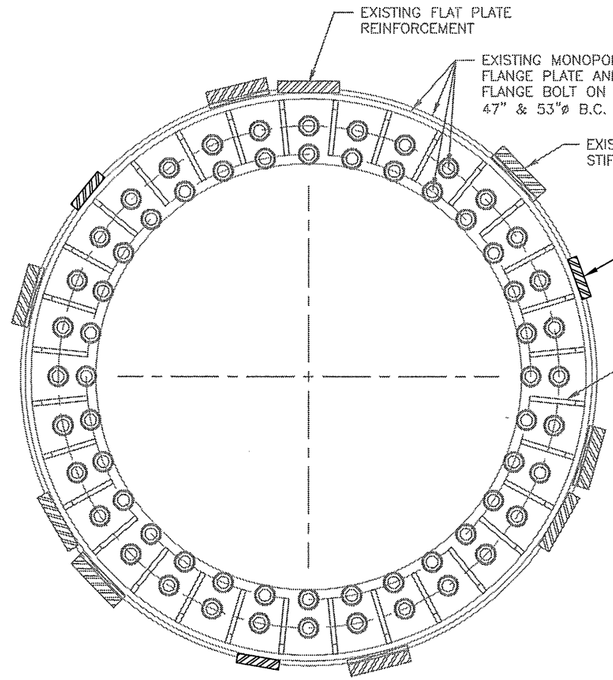
SCALE: N.T.S.



2 TOWER SECTION (40'-50.5')
SCALE: N.T.S.

NOTE:
CONTRACTOR CAN CHOOSE ANY SYMMETRICAL LOCATIONS TO SUIT FIELD CONDITIONS. NOTIFY B+T GROUP IMMEDIATELY FOR ANY DISCREPANCIES.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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CROWN CASTLE

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PROJECT NO:	87581.010.01
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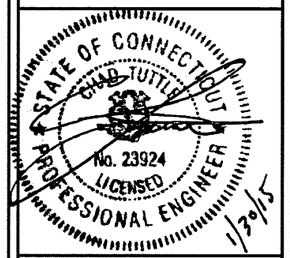


NEWINGTON_1
826217

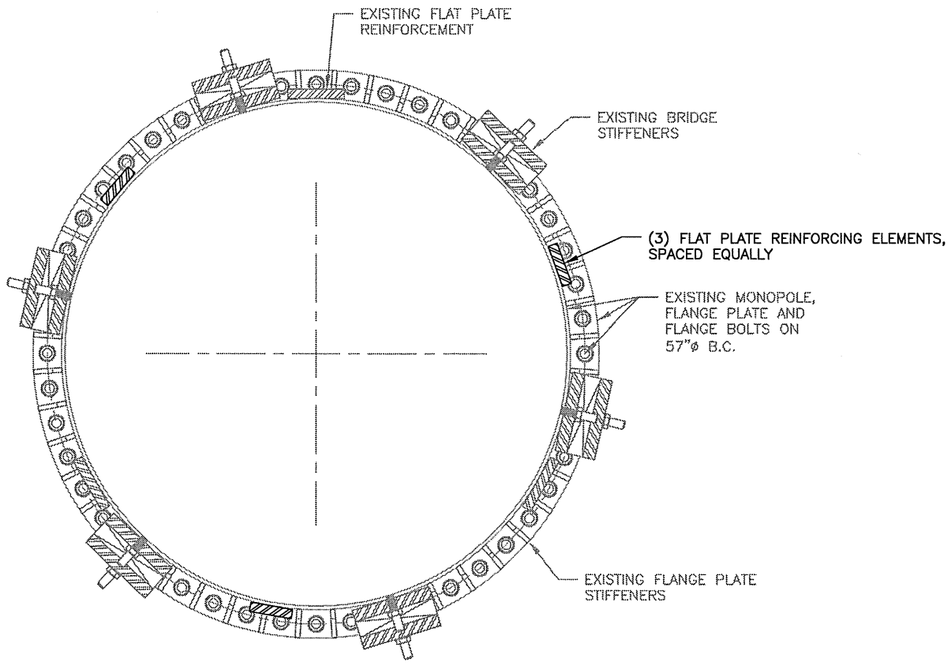
240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE

TOWER SECTIONS
(20'-30.5' AND 40'-50.5')

SHEET NUMBER:	REVISION:
S6	0



1 TOWER SECTION (60'-70.5')
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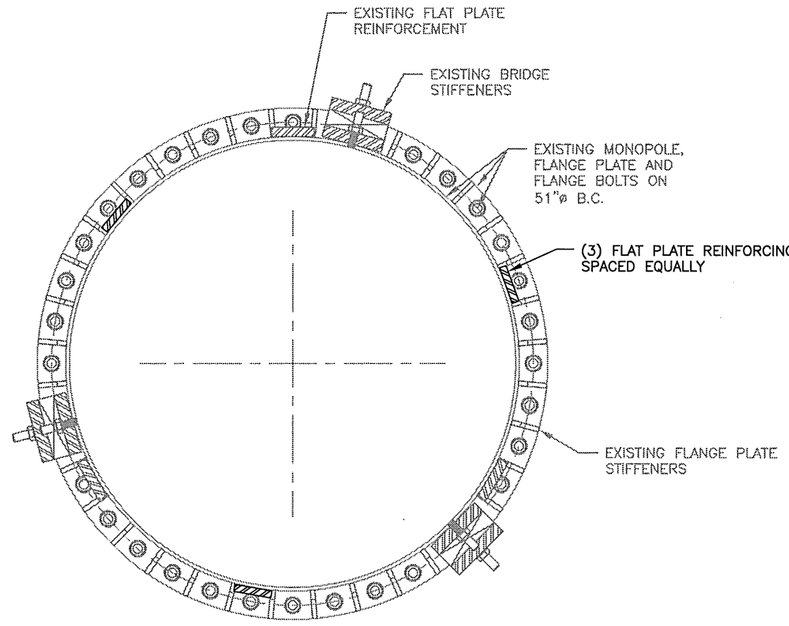

2 TOWER SECTION (80'-99.5')
SCALE: N.T.S.

NOTE:
CONTRACTOR CAN CHOOSE ANY SYMMETRICAL LOCATIONS TO SUIT FIELD CONDITIONS. NOTIFY B+T GROUP IMMEDIATELY FOR ANY DISCREPANCIES.

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SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CRAIG TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

NEWINGTON_1
826217

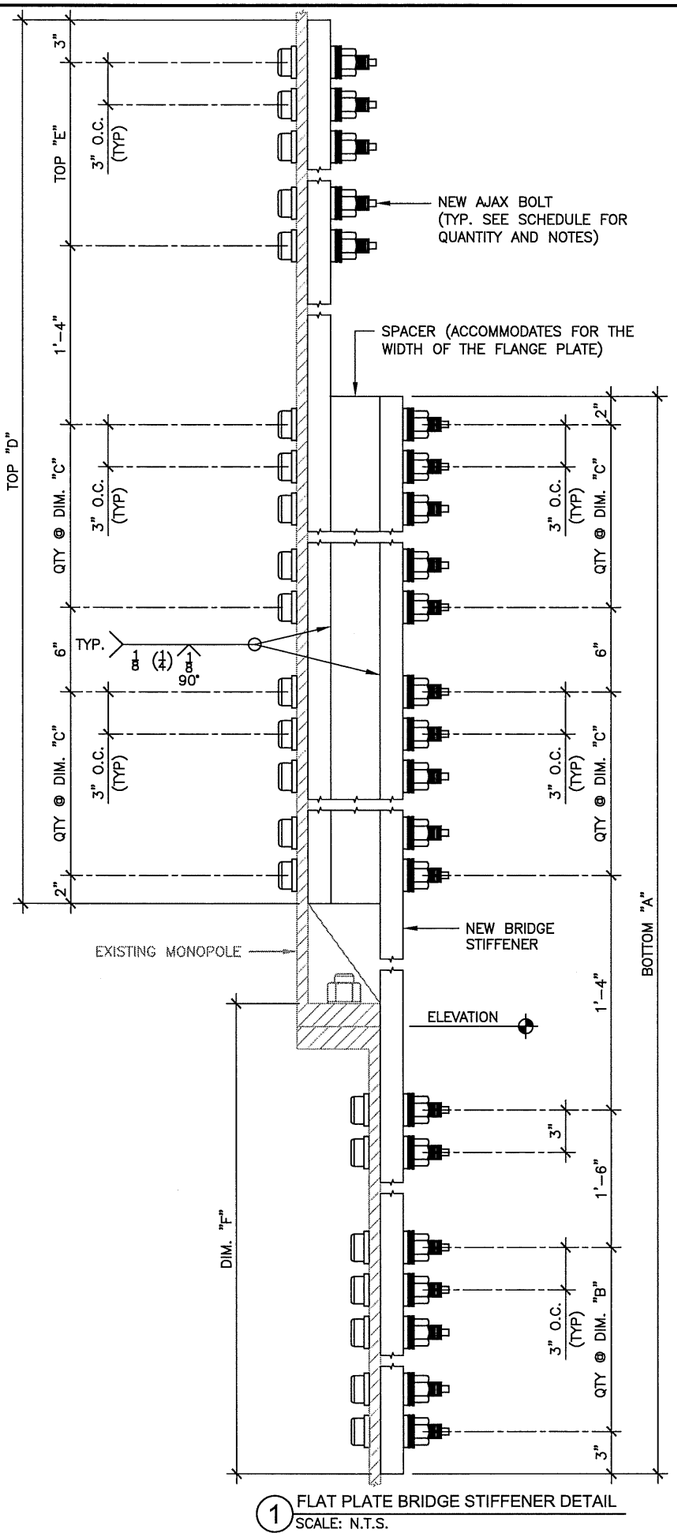
240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
TOWER SECTIONS
(60'-70.5' AND 80'-99.5')

SHEET NUMBER: S7

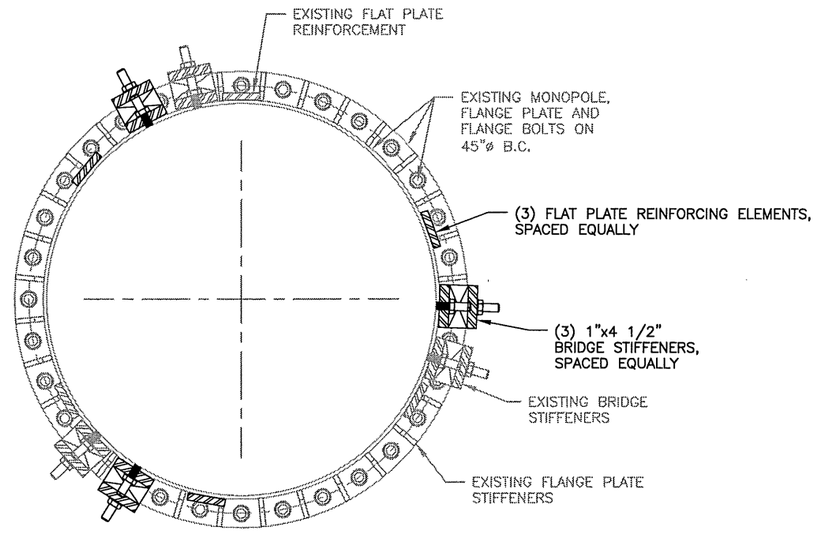
REVISION: 0



1 FLAT PLATE BRIDGE STIFFENER DETAIL
SCALE: N.T.S.

FLAT PLATE BRIDGE STIFFENER-SCHEDULE (65KSI)										
ELEVATION	NO. OF BRIDGE STIFFENERS	FLAT PLATE SIZE	BOTTOM "A"	QTY @ DIM. "B"	QTY @ DIM. "C"	TOP "D"	QTY @ DIM. "E"	DIM. "F"	AJAX BOLT QTY PER STIFFENER	TOTAL AJAX BOLT QTY
100'	3	1"x4 1/2"	7'-0"	6 HOLES @ 1'-3"	5 HOLES @ 1'-0"	5'-6"	6 HOLES @ 1'-3"	3'-9"	24	72

NOTE:
CONTRACTOR CAN CHOOSE ANY SYMMETRICAL LOCATIONS TO SUIT FIELD CONDITIONS NOTIFY B+T GROUP IMMEDIATELY FOR ANY DISCREPANCIES.



2 TOWER SECTION (100'-110.5')
SCALE: N.T.S.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
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CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
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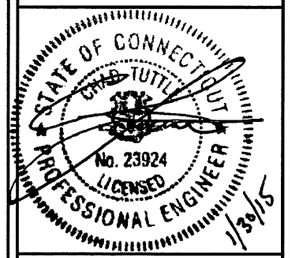
B+T ENGINEERING, INC.



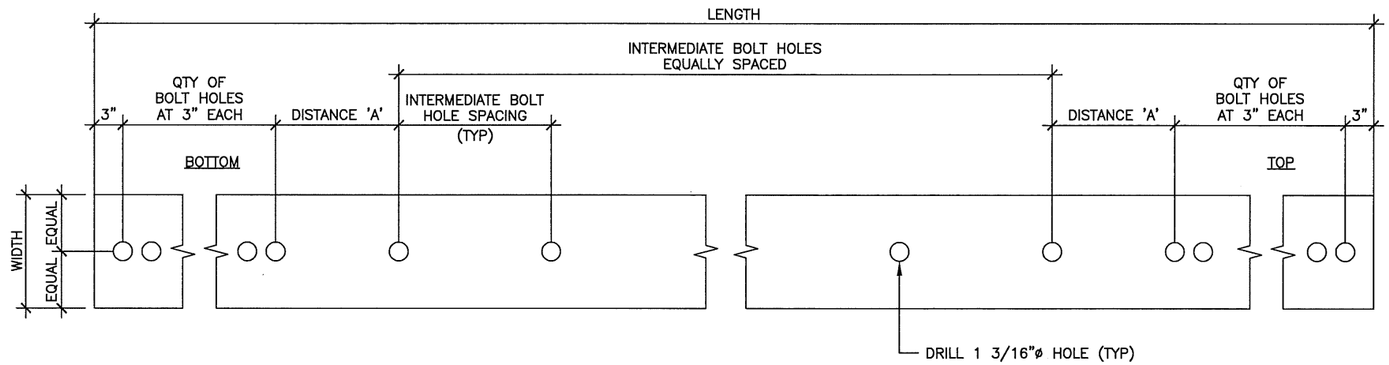
NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
FLAT PLATE BRIDGE STIFFENER DETAIL, SCHEDULE AND TOWER SECTION (100'-110.5')

SHEET NUMBER:	REVISION:
S8	0



1 PART DETAIL
SCALE: N.T.S.

PART NUMBER	BLACK WEIGHT (LBS)	WIDTH	THICKNESS	LENGTH	DISTANCE 'A'	TOTAL QTY OF 1 3/16"ø BOLT HOLES	QTY OF BOLT HOLES (BOTTOM END)	QTY OF BOLT HOLES (TOP END)	INTERMEDIATE BOLT HOLE SPACING
FP1	291	4 1/2"	1"	19'–0"	1'–4"	21	6	6	1'–8"
FP2	194	4"	3/4"	19'–0"	1'–2"	20	4	4	1'–4"

B+T GRP
1717 S. BOULDER AVE.
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TULSA, OK 74119
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www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE

PART DETAIL

SHEET NUMBER: D1

REVISION: 0

Centek Engineering, Inc.
3-2 North Branford Road
Branford, Connecticut 06405
Phone: (203) 488-0580
Fax: (203) 488-8587

Steven L. Levine
Real Estate Consultant

April 16, 2015

Denise M. McNair, Town Manager
Town of Berlin
Town Hall 240 Kensington Road
Berlin, Connecticut 06037

Notice of Exempt Modification: Existing Telecommunications Facility at 240 Kensington Road, Berlin, CT

Dear Ms. McNair:

In order to accommodate technological changes, implement Uniform Mobile Telecommunications System ("UMTS") and Long Term Evolution ("LTE") capabilities, and enhance system performance in the State of Connecticut, New Cingular Wireless PCS, LLC ("AT&T") will be changing its equipment configuration at certain cell sites.

As required by Regulations of Connecticut State Agencies ("R.C.S.A.") Section 16-50j-73, the Connecticut Siting Council has been notified of the changes and will review AT&T's proposal. Please accept this letter as notification under Section 16-50j-73 of construction which constitutes an exempt modification pursuant to R.C.S.A. Section 16-50j-72(b)(2).

The enclosed Notice fully sets forth the AT&T proposal. However, if you have any questions or require any further information on the plans for the site or the Siting Council's procedures, please contact the undersigned at 860-830-0380 or Ms. Melanie Bachman, Acting Executive Director, Connecticut Siting Council at (860) 827-2935

Sincerely,

Steven L. Levine
Real Estate Consultant

Enclosure

January 30, 2015

Mr. Mitchell Abbott
Crown Castle
3530 Toringdon Way Suite 300
Charlotte, NC 28277
(704) 405-6612

B+T GRP

B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
(918) 587-4630
ModDwgs@btgrp.com

Subject: **Structural Modification Report**

Carrier Designation:

***T-Mobile* Co-Locate**
Carrier Site Number: CT11004B
Carrier Site Name: N/A

Crown Castle Designation:

Crown Castle BU Number: 826217
Crown Castle Site Name: Newington_1
Crown Castle JDE Job Number: 268610
Crown Castle Work Order Number: 996578
Crown Castle Application Number: 261440 Rev. 2

Engineering Firm Designation:

B+T Group Project Number: 87581.010.01

Site Data:

240 Kensington Road, Berlin, CT, Hartford County
Latitude *41° 37' 34.3"*, Longitude *-72° 46' 32.33"*
190 Foot - Monopole

Dear Mr. Abbott,

B+T Group is pleased to submit this **"Structural Modification Report"** to determine the structural integrity of the above mentioned tower. This analysis has been performed in accordance with the Crown Castle Structural 'Statement of Work' and the terms of Crown Castle Purchase Order Number 748355, in accordance with application 261440, revision 2.

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:

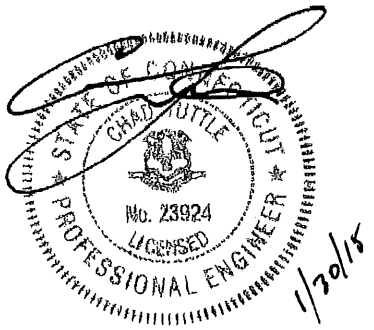
LC4.7: TSA specified load case with proposed modifications **Sufficient Capacity**
Note: See Table 1 and Table 2 for the proposed and existing/reserved loading, respectively.

The analysis has been performed in accordance with the TIA/EIA-222-F standard and 2005 CT State Building Code based upon a wind speed of 80 mph fastest mile.

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

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

Respectfully submitted by:
B+T Engineering, Inc.



Ali Habibi.
Project Engineer

Chad E. Tuttle, P.E.
President

tnxTower Report - version 6.1.4.1

TABLE OF CONTENTS

1) INTRODUCTION

This is a 190 ft. Monopole designed by Pirod in February of 1999. The monopole was originally designed for a wind speed of 80 mph per TIA/EIA-222-F. This monopole was reinforced in 2008 by Natcomm and those modifications were found to be ineffective and were not considered in this analysis. This monopole has been modified by B+T Group in 2014 and those modifications were incorporated in this analysis.

2) ANALYSIS CRITERIA

The structural analysis was performed for this monopole in accordance with the requirements of TIA/EIA-222-F Structural Standards for Steel Antenna Towers and Antenna Supporting Structures using a fastest mile wind speed of 80 mph with no ice, 37.6 mph with 1 inch ice thickness and 50 mph under service loads.

Table 1 - Proposed Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
184.0	184.0	3	Commscope	ATBT-BOTTOM-24V	--	--	--
		3	Commscope	LNX-6515DS-VTM			

Table 2 - Existing and Reserved Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
192.0	196.0	1	Kathrein	OGB4-900D	1 1	7/8 1/2	1
		1	Mti Wireless Edge	MT-485002			
	192.0	2	--	Side Arm Mount [SO 701-1]			
191.0	196.0	1	Andrew	DB589-A	1 1	5/16 1/2	1
	190.0	1	Motorola	WB2623			
184.0	181.0	**3**	**Powerwave Tech**	**LGP21401**	**--**	**--**	**3**
		3	**EMS Wireless**	**RR90-17-02DP**			
		3	EMS Wireless	RR90-17-02DP	18	1 5/8	1
		6	Ericsson	KRY 112 144/1			
		3	RFS Celwave	APXV18-206516L-A			
		1	--	Platform Mount [LP 405-1]			
160.0	160.0	6	Commscope	HBXX-6517DS-VTM	7	1 5/8	2
		2	Commscope	LNX-8514DS-VTM			
		3	Antel	BXA-70063-6CF-2			
		1	Commscope	LNX-6514DS-VTM			
		3	Alcatel Lucent	RRH2X60-AWS			
		3	Alcatel Lucent	RRH2X60-PCS			
		1	RFS Celwave	DB-T1-6Z-8AB-0Z			
		1	--	Platform Mount [LP 303-1]	12	1 5/8	1
158.0	158.0	1	Decibel	DB205-A	2	7/8	1
		1	Sinclair	SRL-224NM-4			
		2	--	Side Arm Mount [SO 702-1]			

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)	Note
151.0	151.0	2	Andrew	SBNH-1D6565C	2 1	3/8 7/16	2
		6	Communication Components Inc.	DTMABP7819VG12A			
		1	KMW	AM-X-CD-16-65-00T-RET			
		6	Powerwave	CM1007-DBPXBC-003			
		6	Powerwave	LGP21901			
		2	Andrew	SBNH-1D6565C	12	1 1/4	1
		1	KMW	AM-X-CD-16-65-00T-RET			
		3	Powerwave	7770.00			
		1	--	Platform Mount [LP 403-1]			
148.0	148.0	6	Ericsson	RRU-11	--	--	2
		1	Raycap	DC6-48-60-18-8F			
		1	--	Pipe Mount [PM 601-1]			
		2	--	Pipe Mount [PM 601-3]			
132.0	132.0	1	Sinclair	SRL-235-2	1	7/8	1
		1	--	Side Arm Mount [SO 702-1]			
124.0	124.0	1	Decibel	DB205-A	1 1	1/2 1 5/8	1
		1	Decibel	PCS 1900 TMA RX			
		1	--	Side Arm Mount [SO 701-1]			
116.0	120.0	1	Andrew	VHLP2.5-10W	9 3 3	1 1/4 5/16 1/2	1
		1	Dragonwave	HORIZON DUO			
	118.0	3	Argus	LLPX310R			
		9	Decibel	DB844G90A-XY			
		3	Samsung	WIMAX DAP HEAD			
	116.0	1	--	Platform Mount [LP 405-1]			
100.0	100.0	3	Kathrein	742 213	6	1 5/8	1
		1	--	Pipe Mount [PM 601-3]			
90.0	99.0	2	Decibel	DB205-A	1 2 1	5/16 1/2 7/8	1
	90.0	1	Andrew	KP2F-34			
		1	Mti Wireless Edge	MT-485002			
		2	--	Side Arm Mount [SO 702-1]			
87.0	87.0	2	GPS	GPS_A	2	1/2	1
		2	--	Side Arm Mount [SO 701-1]			
70.0	70.0	1	Sinclair	SRL-235-2	1	7/8	1
		1	--	Side Arm Mount [SO 702-1]			
58.0	58.0	1	Decibel	DB583	1	1/2	1
		1	--	Side Arm Mount [SO 702-1]			
43.0	43.0	1	Decibel	DB909XVTE-M	1	1/2	1
		1	--	Side Arm Mount [SO 702-1]			
33.0	33.0	1	Decibel	DB909XVTE-M	1	1/2	1
		1	--	Side Arm Mount [SO 702-1]			

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

Table 3 - Design Antenna and Cable Information

Mounting Level (ft)	Center Line Elevation (ft)	Number of Antennas	Antenna Manufacturer	Antenna Model	Number of Feed Lines	Feed Line Size (in)
190	190	1	Decibel	DB809	1	1-5/8
177.667	177.667	12	EMS Wireless	RR90-17-00DP	12	1-5/8
155	155	2	Decibel	DB205	2	1-5/8
140	140	2	Decibel	DB205	2	1-5/8
127.667	127.667	12	EMS Wireless	RR90-17-00DP	12	1-5/8
117.667	117.667	12	EMS Wireless	RR90-17-00DP	12	1-5/8
25	25	1	Decibel	DB516	2	1-5/8
		1	Decibel	DB809M		
20	20	1	Decibel	DB205	1	1-5/8

3) ANALYSIS PROCEDURE

Table 4 - Documents Provided

Document	Remarks	Reference	Source
Online Application	T-Mobile Co-Locate, Rev # 2	261440	CCI Sites
Tower Manufacturer Drawings	Pirod, File No. A-115400	3438498	CCI Sites
Tower Modification Drawings	B+T Group, Project No. 87581.005.01	Date: 10/17/14	CCI Sites
Foundation Drawings	Pirod, File No. A-115400	3463552	CCI Sites
Geotech Report	FPA, Job No. 98A209ERI	3438510	CCI Sites
Antenna Configuration	Crown CAD Package	Date: 09/10/14	CCI Sites

3.1) Analysis Method

tnxTower (version 6.1.4.1), a commercially available analysis software package, was used to create a three-dimensional model of the tower and calculate member stresses for various loading cases. Selected output from the analysis is included in Appendix A.

3.2) Assumptions

1) Tower and structures were built in accordance with the manufacturer's specifications.
2) The tower and structures have been maintained in accordance with the manufacturer's specification.
3) The configuration of antennas, transmission cables, mounts and other appurtenances are as specified in Tables 1 and 2 and the referenced drawings.
4) When applicable, transmission cables are considered as structural components for calculating wind loads as allowed by TIA/EIA-222-F.
5) Mount areas and weights are assumed based on photographs provided.

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

4) ANALYSIS RESULTS

Table 5 - Section Capacity (Summary) - LC4.7

Section No.	Elevation (ft)	Component Type	Size	Critical Element	P (K)	SF*P_allow (K)	% Capacity	Pass / Fail
L1	190 - 180	Pole	P18x3/8	1	-3.090	-	6.9	Pass[1]
L2	180 - 140	Pole	P24x3/8	2	-13.011	-	93.3	Pass[1]
L3	140 - 120	Pole	P36x3/8	3	-17.101	-	91.5	Pass[1]
L4	120 - 109	Pole	P42x3/8	4	-21.863	-	92.3	Pass[1]
L5	109 - 104	Pole	P42x3/8 [0.449926]	5	-23.182	-	85.6	Pass[1]
L6	104 - 100	Pole	P42x3/8 [0.525959]	6	-24.358	-	80.9	Pass[1]
L7	100 - 89	Pole	P48x3/8 [0.43965]	7	-28.055	-	93.0	Pass[1]
L8	89 - 80	Pole	P48x3/8 [0.53914]	8	-31.244	-	88.8	Pass[1]
L9	80 - 69	Pole	P54x3/8 [0.490666]	9	-35.194	-	92.4	Pass[1]
L10	69 - 60	Pole	P54x3/8 [0.578486]	10	-38.754	-	89.1	Pass[1]
L11	60 - 49	Pole	P60x3/8 [0.516129]	11	-43.148	-	93.8	Pass[1]
L12	49 - 40	Pole	P60x3/8 [0.594533]	12	-47.190	-	90.7	Pass[1]
L13	40 - 29	Pole	P60x1/2 [0.604293]	13	-52.264	-	93.5	Pass[1]
L14	29 - 20	Pole	P60x1/2 [0.683417]	14	-56.784	-	90.7	Pass[1]
L15	20 - 9	Pole	P60x5/8 [0.703867]	15	-62.516	-	91.1	Pass[1]
L16	9 - 0	Pole	P60x5/8 [0.756633]	16	-67.491	-	92.2	Pass[1]
							Summary	
						Pole (L11)	93.8	Pass[1]
						RATING =	**93.8**	**Pass[1]**

Table 6 - Tower Component Stresses vs. Capacity - LC4.7

Notes	Component	Elevation (ft)	% Capacity	Pass / Fail
1	Flange Bolts	180	5.1	Pass
1,2	Flange Plate	180	4.2	Pass
1	Flange Bolts	140	75.7	Pass
1,2	Flange Plate	140	64.0	Pass
1	Bridge Stiffeners	120	80.7	Pass
1	Flange Bolts	120	46.6	Pass
1	Flange Plate	120	32.7	Pass
1	Bridge Stiffeners	100	74.3	Pass
1	Flange Bolts	100	43.0	Pass
1	Flange Plate	100	55.2	Pass
1	Bridge Stiffeners	80	85.4	Pass
1	Flange Bolts	80	54.6	Pass
1	Flange Plate	80	69.5	Pass
1	Bridge Stiffeners	60	51.2	Pass
1	Flange Bolts	60	32.4	Pass
1	Flange Plate	60	51.2	Pass
1	Bridge Stiffeners	40	67.8	Pass
1	Flange Bolts	40	30.6	Pass
1	Flange Plate	40	54.4	Pass
1	Bridge Stiffeners	20	92.6	Pass
1	Flange Bolts	20	43.6	Pass
1	Flange Plate	20	76.1	Pass
1	Anchor Rods	Base	36.7	Pass
1	Base Plate	Base	96.7	Pass
1	Base Foundation	Base	98.1	Pass

Structure Rating (max from all components) =	98.1%

Notes:
1) See additional documentation in "Appendix C - Additional Calculations" for calculations supporting the % capacity listed.
2) Base plate design methodology of the manufacturer has been reviewed and found to be an acceptable means of designing to resist the full capacity of the bolts and shaft.
3) The percent capacities shown above (excluding foundations) include the 1/3 increase in allowable stresses as allowed by TIA/EIA-222-F.

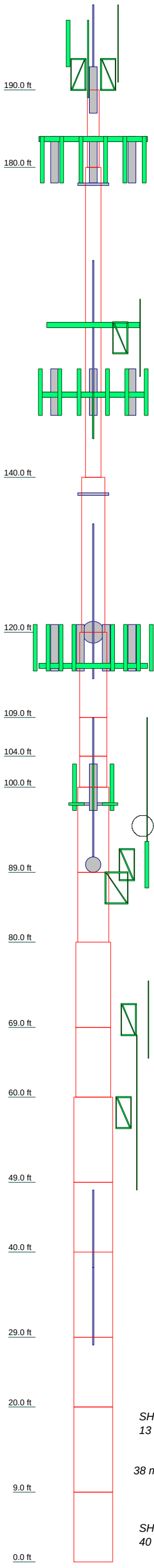
4.1) Recommendations

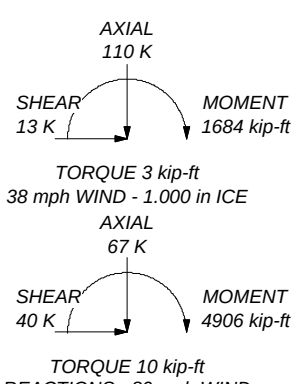
1) All modifications proposed in this report shall be installed in accordance with the attached drawings (Appendix D) for the determined available structural capacity to be effective.

APPENDIX A

tnxTOWER OUTPUT

Section	Size	Length (ft)	Grade	Weight (K)
1	P18x3/8	10.000	A53-B-42	0.7
2	P24x3/8	40.000		3.8
3	P36x3/8	20.000		2.9
4	P42x3/8	11.000		1.8
5	P42x3/8 [0.449926]	5.000	38.016952ksi	1.0
6	P42x3/8 [0.423926]	4.000	38.016952ksi	0.9
7	P48x3/8 [0.439697]	11.000	40.362076ksi	2.4
8	P48x3/8 [0.53914]	9.000	38.076921ksi	2.4
9	P54x3/8 [0.490666]	11.000	39.389682ksi	3.0
10	P54x3/8 [0.578486]	9.000	37.614698ksi	2.9
11	P60x3/8 [0.516129]	11.000	39.092679ksi	3.5
12	P60x3/8 [0.594533]	9.000	37.644985ksi	3.3
13	P60x1/2 [0.604293]	11.000	39.940562ksi	4.2
14	P60x1/2 [0.683417]	9.000	38.508049ksi	3.8
15	P60x5/8 [0.703867]	11.000	40.5123ksi	4.9
16	P60x5/8 [0.756633]	9.000	39.574431ksi	4.3
				45.9





DESIGNED APPURTENANCE LOADING

TYPE	ELEVATION	TYPE	ELEVATION
OGB4-900D (E)	192	(2) DTMABP7819VG12A (R)	151
MT-485002 w/ Mount Pipe (E)	192	Platform Mount [LP 403-1] (E)	151
Side Arm Mount [SO 701-1] (E)	192	(2) SBNH-1D6565C w/ Mount Pipe (E)	151
Side Arm Mount [SO 701-1] (E)	192	(2) RRU-11 (R)	148
DB589-A (E)	191	(2) RRU-11 (R)	148
WB2623 w/ Mount Pipe (E)	191	DC6-48-60-18-8F (R)	148
6' x 2" Mount Pipe (E)	191	(2) Pipe Mount [PM 601-3] (R)	148
Lightning Rod 5/8" x 4' on 4' Pole (E)	190	Pipe Mount [PM 601-1] (R)	148
RR90-17-02DP w/ Mount Pipe (E)	184	(2) RRU-11 (R)	148
RR90-17-02DP w/ Mount Pipe (E)	184	4' ICE SHIELDS (E)	138
RR90-17-02DP w/ Mount Pipe (E)	184	Side Arm Mount [SO 702-1] (E)	132
APXV18-206516L-A w/ Mount Pipe (E)	184	SRL-235-2 (E)	132
APXV18-206516L-A w/ Mount Pipe (E)	184	4' x 2" Pipe Mount (E)	132
APXV18-206516L-A w/ Mount Pipe (E)	184	Side Arm Mount [SO 701-1] (E)	124
(2) KRY 112 144/1 (E)	184	6' x 2" Mount Pipe (E)	124
(2) KRY 112 144/1 (E)	184	DB205-A (E)	124
(2) KRY 112 144/1 (E)	184	PCS 1900 TMA RX (E)	124
LNX-6515DS-VTM w/ Mount Pipe (p)	184	LLPX310R w/ Mount Pipe (E)	116
LNX-6515DS-VTM w/ Mount Pipe (p)	184	(3) DB844G90A-XY w/ Mount Pipe (E)	116
LNX-6515DS-VTM w/ Mount Pipe (p)	184	(3) DB844G90A-XY w/ Mount Pipe (E)	116
ATBT-BOTTOM-24V (p)	184	(3) DB844G90A-XY w/ Mount Pipe (E)	116
ATBT-BOTTOM-24V (p)	184	HORIZON DUO (E)	116
ATBT-BOTTOM-24V (p)	184	WIMAX DAP HEAD (E)	116
Platform Mount [LP 405-1] (E)	184	WIMAX DAP HEAD (E)	116
4' ICE SHIELDS (E)	178	WIMAX DAP HEAD (E)	116
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	160	Platform Mount [LP 405-1] (E)	116
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	160	LLPX310R w/ Mount Pipe (E)	116
LNX-8514DS-VTM w/ Mount Pipe (R)	160	LLPX310R w/ Mount Pipe (E)	116
LNX-8514DS-VTM w/ Mount Pipe (R)	160	VHLP2.5-10W (E)	116
LNX-6514DS-VTM w/ Mount Pipe (R)	160	Pipe Mount [PM 601-3] (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
BXA-70063-6CF-2 w/ Mount Pipe (R)	160	742 213 (E)	100
RRH2X60-PCS (R)	160	4' ICE SHIELDS (E)	98
RRH2X60-PCS (R)	160	4' ICE SHIELDS (E)	98
RRH2X60-PCS (R)	160	4' ICE SHIELDS (E)	98
RRH2X60-AWS (R)	160	DB205-A (E)	90
RRH2X60-AWS (R)	160	DB205-A (E)	90
RRH2X60-AWS (R)	160	Side Arm Mount [SO 702-1] (E)	90
DB-T1-6Z-8AB-0Z (R)	160	Side Arm Mount [SO 702-1] (E)	90
Platform Mount [LP 303-1] (E)	160	6' x 2" Mount Pipe (E)	90
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	160	MT-485002 w/ Mount Pipe (E)	90
SRL-224NM-4 (E)	158	KP2F-34 (E)	90
Side Arm Mount [SO 702-1] (E)	158	GPS_A (E)	87
Side Arm Mount [SO 702-1] (E)	158	GPS_A (E)	87
4' x 2" Pipe Mount (E)	158	Side Arm Mount [SO 701-1] (E)	87
4' x 2" Pipe Mount (E)	158	Side Arm Mount [SO 701-1] (E)	87
DB205-A (E)	158	SRL-235-2 (E-B Leg per Photo)	70
(3) 7770.00 w/ Mount Pipe (E)	151	6' x 2" Mount Pipe (E-B Leg per Photo)	70
AM-X-CD-16-65-00T-RET w/ Mount Pipe (E)	151	Side Arm Mount [SO 702-1] (E-B Leg per Photo)	70
AM-X-CD-16-65-00T-RET w/ Mount Pipe (R)	151	DB583 (E)	58
(2) SBNH-1D6565C w/ Mount Pipe (R)	151	4' x 2" Pipe Mount (E)	58
(2) CM1007-DBPXBC-003 (R)	151	Side Arm Mount [SO 702-1] (E)	58
(2) CM1007-DBPXBC-003 (R)	151	DB909XVTE-M (E-A Leg per Photo)	43
(2) CM1007-DBPXBC-003 (R)	151	4' x 2" Pipe Mount (E-A Leg per Photo)	43
(2) LGP21901 (R)	151	Side Arm Mount [SO 702-1] (E-A Leg per Photo)	43
(2) LGP21901 (R)	151	4' x 2" Pipe Mount (E-A Leg per Photo)	33
(2) LGP21901 (R)	151	Side Arm Mount [SO 702-1] (E-A Leg per Photo)	33
(4) DTMABP7819VG12A (R)	151	DB909XVTE-M (E-A Leg per Photo)	33

TOWER DESIGN NOTES

1. Tower is located in Hartford County, Connecticut.
2. Tower designed for a 80 mph basic wind in accordance with the TIA/EIA-222-F Standard.
3. Tower is also designed for a 38 mph basic wind with 1.00 in ice. Ice is considered to increase in thickness with height.
4. Deflections are based upon a 50 mph wind.
5. TOWER RATING 93.8%

ABC Engineering
1234 W. Jones St.
Smallville, PA 12345
Phone: (555) 555-1234
FAX: (555) 555-1235
Consulting Engineers

Job: 87581.010.01 - Newington_1, CT (BU# 826217			
Project:			
Client: Crown Castle	Drawn by: ahabibi	App'd:	
Code: TIA/EIA-222-F	Date: 01/30/15	Scale: NTS	
Path:		Dwg No. E-1	

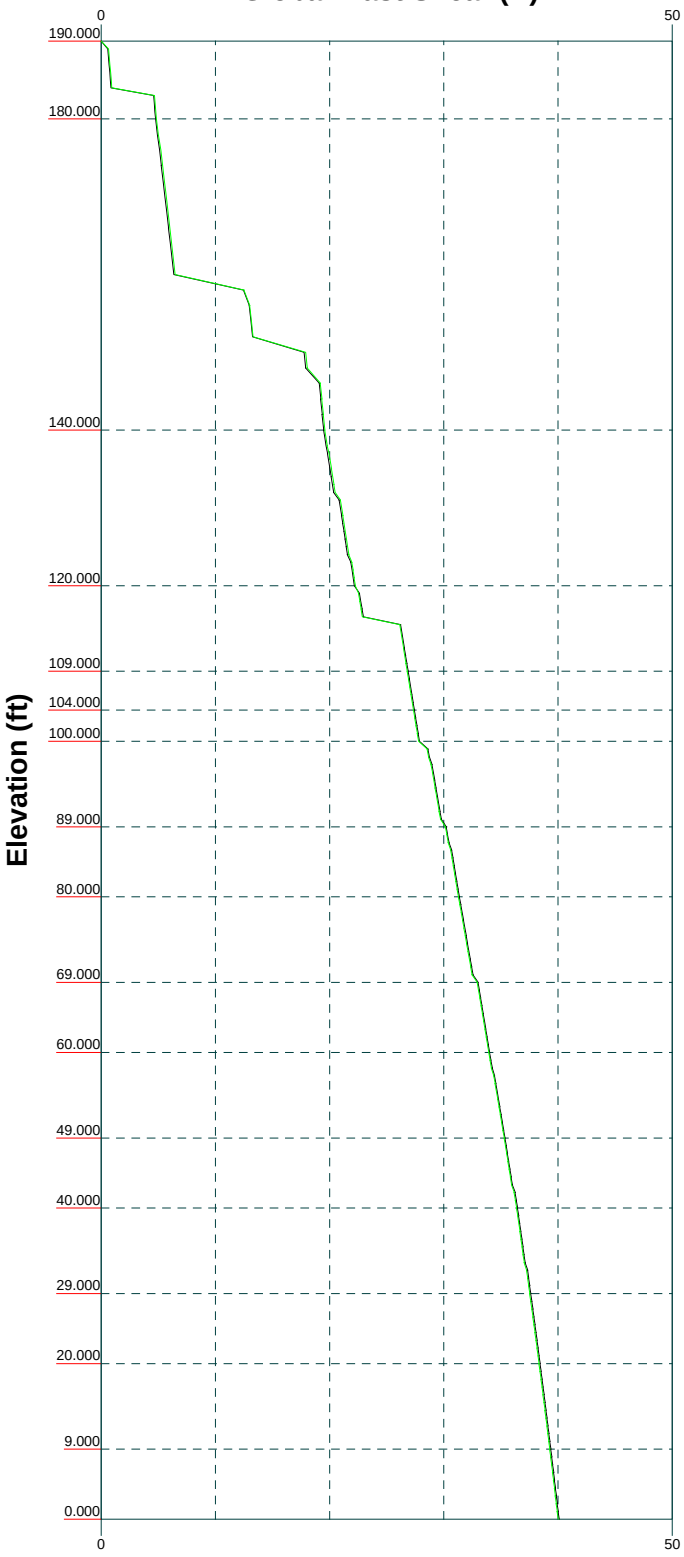
TIA/EIA-222-F - 80 mph/38 mph 1.000 in Ice

Vx Vz

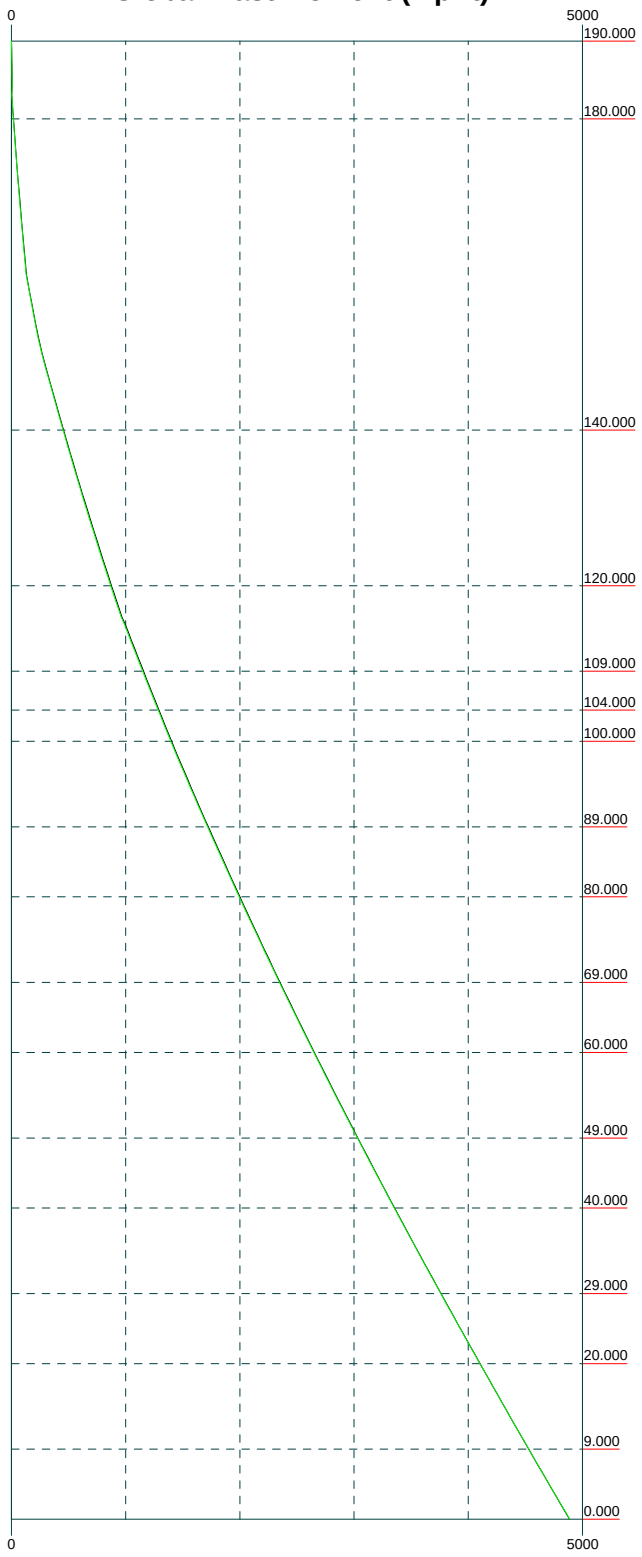
Maximum Values

Mx Mz

Global Mast Shear (K)



Global Mast Moment (kip-ft)

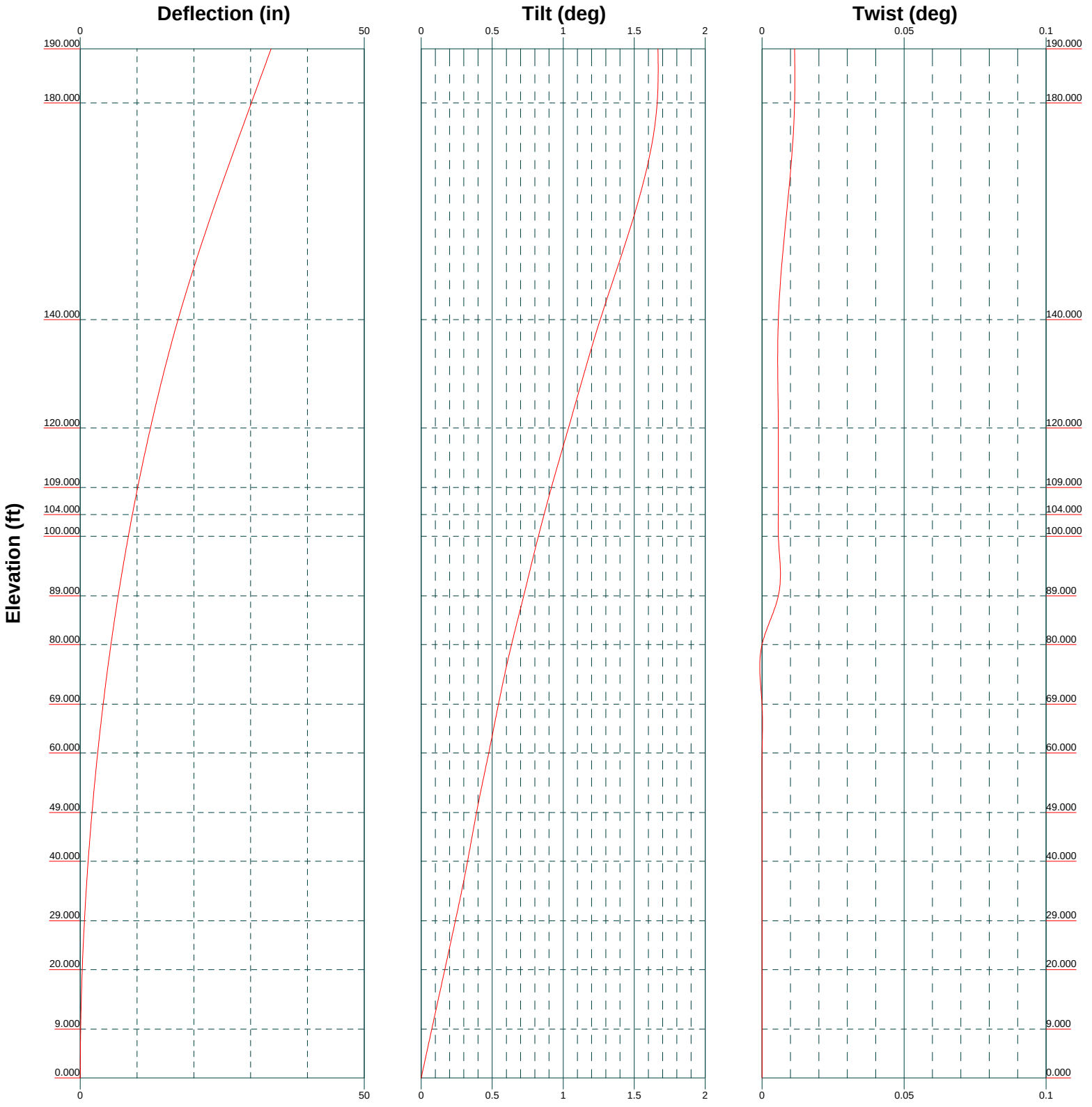


B+T Group
1717 S. Boulder, Suite 300
Tulsa, OK 74119
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: 87581.009.01 - Newington_1, CT (BU# 826217			
Project:			
Client: Crown Castle	Drawn by: APatil	App'd:	
Code: TIA/EIA-222-F	Date: 10/26/14	Scale: NTS	
Path:		Dwg No. E-4	

TIA/EIA-222-F - Service - 50 mph

Maximum Values



B+T GRP

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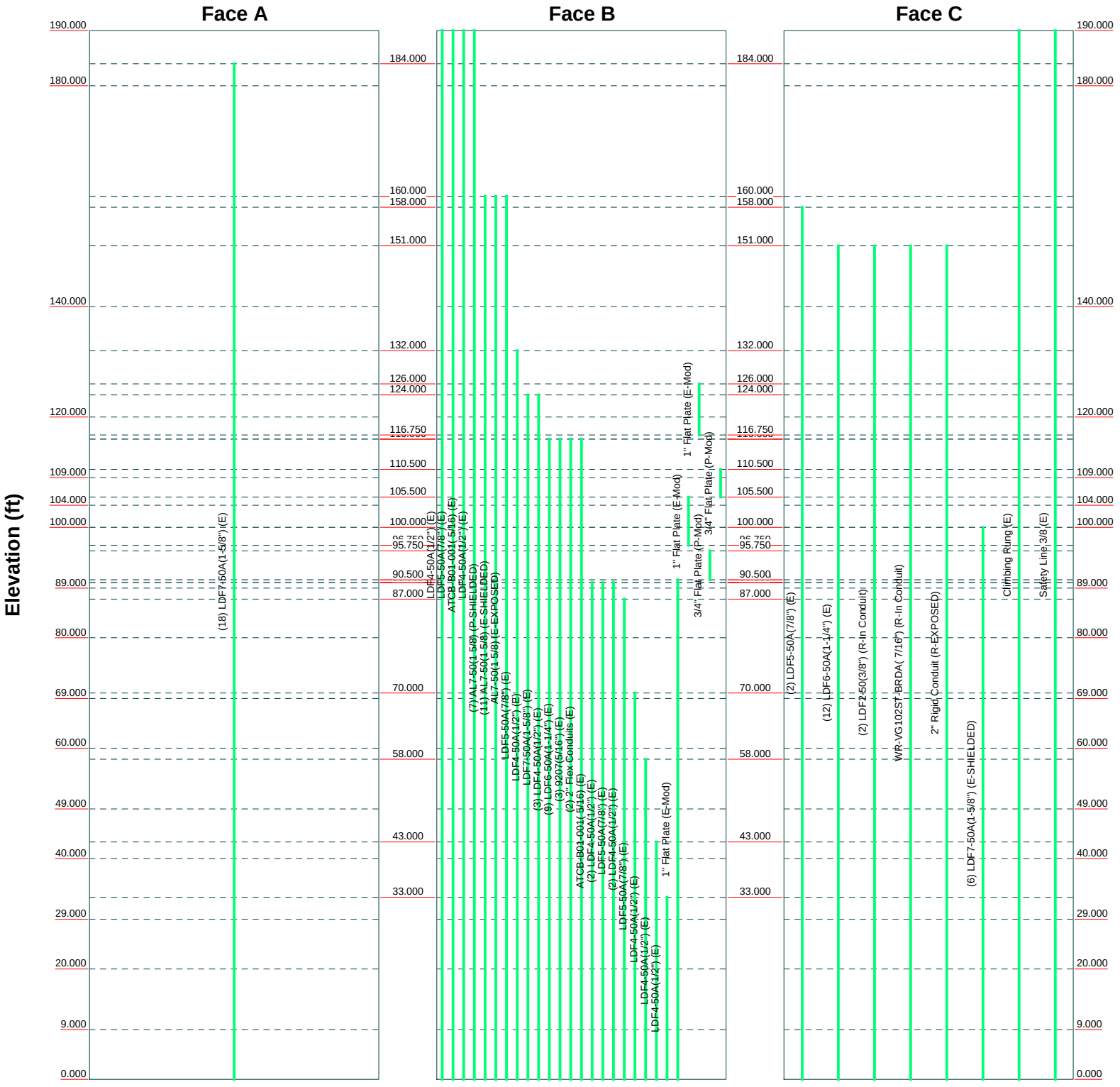
Phone: (918) 587-4630
FAX: (918) 295-0265

Job: ***87581.009.01 - Newington_1, CT (BU# 826217***		
Project:		
Client: Crown Castle	Drawn by: APatil	App'd:
Code: TIA/EIA-222-F	Date: 10/26/14	Scale: NTS
Path:		Dwg No. E-5

Feed Line Distribution Chart
0' - 190'

Round | Flat | App In Face | App Out Face | Truss Leg



B+T GRP

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FAX: (918) 295-0265

Job:	***87581.009.01 - Newington_1, CT (BU# 826217***		
Project:			
Client: Crown Castle		Drawn by: APatil	App'd:
Code: TIA/EIA-222-F		Date: 10/26/14	Scale: NTS
Path:			Dwg No. E-7

Tower Input Data

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

Tower is located in Hartford County, Connecticut.
Basic wind speed of 80 mph.
Nominal ice thickness of 1.000 in.
Ice thickness is considered to increase with height.
Ice density of 56.000 pcf.
A wind speed of 38 mph is used in combination with ice.
Temperature drop of 50.000 °F.
Deflections calculated using a wind speed of 50 mph.
TOWER RATING 93.8%.
A non-linear (P-delta) analysis was used.
Pressures are calculated at each section.
Stress ratio used in pole design is 1.333.
Local bending stresses due to climbing loads, feed line supports, and appurtenance mounts are not considered.

Options

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

Pole Section Geometry

Section	*Elevation* *ft*	*Section Length* *ft*	*Pole Size*	*Pole Grade*	*Socket Length* *ft*
L1	190.000-180.000	10.000	P18x3/8	A53-B-42 (42 ksi)	
L2	180.000-140.000	40.000	P24x3/8	A53-B-42 (42 ksi)	
L3	140.000-120.000	20.000	P36x3/8	A53-B-42 (42 ksi)	
L4	120.000-109.000	11.000	P42x3/8	A53-B-42 (42 ksi)	

Section	Elevation ft	Section Length ft	Pole Size	Pole Grade	Socket Length ft
L5	109.000-104.000	5.000	P42x3/8 [0.449926]	39.923929ksi (40 ksi)	
L6	104.000-100.000	4.000	P42x3/8 [0.525959]	38.016952ksi (38 ksi)	
L7	100.000-89.000	11.000	P48x3/8 [0.43965]	40.362076ksi (40 ksi)	
L8	89.000-80.000	9.000	P48x3/8 [0.53914]	38.076921ksi (38 ksi)	
L9	80.000-69.000	11.000	P54x3/8 [0.490666]	39.389682ksi (39 ksi)	
L10	69.000-60.000	9.000	P54x3/8 [0.578486]	37.614698ksi (38 ksi)	
L11	60.000-49.000	11.000	P60x3/8 [0.516129]	39.092679ksi (39 ksi)	
L12	49.000-40.000	9.000	P60x3/8 [0.594533]	37.644985ksi (38 ksi)	
L13	40.000-29.000	11.000	P60x1/2 [0.604293]	39.940562ksi (40 ksi)	
L14	29.000-20.000	9.000	P60x1/2 [0.683417]	38.508049ksi (39 ksi)	
L15	20.000-9.000	11.000	P60x5/8 [0.703867]	40.5123ksi (41 ksi)	
L16	9.000-0.000	9.000	P60x5/8 [0.756633]	39.574431ksi (40 ksi)	

Tower Elevation ft	Gusset Area (per face) ft^2	Gusset Thickness in	Gusset Grade	Adjust. Factor A_f	Adjust. Factor A_r	Weight Mult.	Double Angle Stitch Bolt Spacing Diagonals in	Double Angle Stitch Bolt Spacing Horizontals in
L1 190.000-180.000				1	1	1		
L2 180.000-140.000				1	1	1		
L3 140.000-120.000				1	1	1		
L4 120.000-109.000				1	1	1		
L5 109.000-104.000				1	1	0.988718		
L6 104.000-100.000				1	1	0.978734		
L7 100.000-89.000				1	1	0.991619		
L8 89.000-80.000				1	1	0.978348		
L9 80.000-69.000				1	1	0.984646		
L10 69.000-60.000				1	1	0.97566		
L11				1	1	0.981503		

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
60.000-49.000								
L12				1	1	0.974922		
49.000-40.000								
L13				1	1	0.988999		
40.000-29.000								
L14				1	1	0.98172		
29.000-20.000								
L15				1	1	0.992596		
20.000-9.000								
L16				1	1	0.988139		
9.000-0.000								

Feed Line/Linear Appurtenances - Entered As Round Or Flat

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number	Number Per Row	Clear Spacing in	Width or Diameter in	Perimeter in	Weight klf
##										

Feed Line/Linear Appurtenances - Entered As Area

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
LDF4-50A(1/2")	B	No	Inside Pole	190.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF5-50A(7/8")	B	No	Inside Pole	190.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
ATCB-B01-001(5/16)	B	No	Inside Pole	190.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF4-50A(1/2")	B	No	Inside Pole	190.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF7-50A(1-5/8")	A	No	Inside Pole	184.000 - 0.000	18	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
##								
AL7-50(1 5/8)	B	No	CaAa (Out Of	160.000 - 0.000	7	No Ice	0.000	0.001

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
(R-SHIELDED)			Face)			1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.010
						4" Ice	0.000	0.030
AL7-50(1 5/8)	B	No	CaAa (Out Of	160.000 - 0.000	11	No Ice	0.000	0.001
(E-SHIELDED)			Face)			1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.010
						4" Ice	0.000	0.030
AL7-50(1 5/8)	B	No	CaAa (Out Of	160.000 - 0.000	1	No Ice	0.196	0.001
(E-EXPOSED)			Face)			1/2" Ice	0.296	0.002
						1" Ice	0.396	0.004
						2" Ice	0.596	0.010
						4" Ice	0.996	0.030
##								
LDF5-50A(7/8")	C	No	Inside Pole	158.000 - 0.000	2	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF6-50A(1-1/4")	C	No	Inside Pole	151.000 - 0.000	12	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
LDF2-50(3/8")	C	No	Inside Pole	151.000 - 0.000	2	No Ice	0.000	0.000
(R-In Conduit)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
WR-VG102ST-BRDA(	C	No	Inside Pole	151.000 - 0.000	1	No Ice	0.000	0.000
7/16")						1/2" Ice	0.000	0.000
(R-In Conduit)						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
2" Rigid Conduit	C	No	CaAa (Out Of	151.000 - 0.000	1	No Ice	0.200	0.003
(R-EXPOSED)			Face)			1/2" Ice	0.300	0.004
						1" Ice	0.400	0.006
						2" Ice	0.600	0.013
						4" Ice	1.000	0.032
##								
LDF5-50A(7/8")	B	No	Inside Pole	132.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF4-50A(1/2")	B	No	Inside Pole	124.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF7-50A(1-5/8")	B	No	Inside Pole	124.000 - 0.000	1	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
##								
LDF4-50A(1/2")	B	No	Inside Pole	116.000 - 0.000	3	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF6-50A(1-1/4")	B	No	Inside Pole	116.000 - 0.000	9	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
9207(5/16")	B	No	Inside Pole	116.000 - 0.000	3	No Ice	0.000	0.001
(E)						1/2" Ice	0.000	0.001
						1" Ice	0.000	0.001
						2" Ice	0.000	0.001
						4" Ice	0.000	0.001
2" Flex Conduits	B	No	Inside Pole	116.000 - 0.000	2	No Ice	0.000	0.003
(E)						1/2" Ice	0.000	0.003
						1" Ice	0.000	0.003
						2" Ice	0.000	0.003
						4" Ice	0.000	0.003
##								
LDF7-50A(1-5/8")	C	No	CaAa (Out Of Face)	100.000 - 0.000	6	No Ice	0.000	0.001
(E-SHIELDED)						1/2" Ice	0.000	0.002
						1" Ice	0.000	0.004
						2" Ice	0.000	0.011
						4" Ice	0.000	0.030
##								
ATCB-B01-001(5/16)	B	No	Inside Pole	90.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF4-50A(1/2")	B	No	Inside Pole	90.000 - 0.000	2	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
LDF5-50A(7/8")	B	No	Inside Pole	90.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF4-50A(1/2")	B	No	Inside Pole	87.000 - 0.000	2	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF5-50A(7/8")	B	No	Inside Pole	70.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF4-50A(1/2")	B	No	Inside Pole	58.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF4-50A(1/2")	B	No	Inside Pole	43.000 - 0.000	1	No Ice	0.000	0.000
(E)						1/2" Ice	0.000	0.000

Description	Face or Leg	Allow Shield	Component Type	Placement ft	Total Number		C_AA_A ft^2/ft	Weight klf
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
LDF4-50A(1/2") (E)	B	No	Inside Pole	33.000 - 0.000	1	No Ice	0.000	0.000
						1/2" Ice	0.000	0.000
						1" Ice	0.000	0.000
						2" Ice	0.000	0.000
						4" Ice	0.000	0.000
##								
Climbing Rung (E)	C	No	CaAa (Out Of Face)	190.000 - 0.000	1	No Ice	0.234	0.005
						1/2" Ice	0.547	0.008
						1" Ice	0.859	0.013
						2" Ice	1.484	0.029
						4" Ice	2.734	0.087
Safety Line 3/8 (E)	C	No	CaAa (Out Of Face)	190.000 - 0.000	1	No Ice	0.037	0.000
						1/2" Ice	0.137	0.001
						1" Ice	0.238	0.001
						2" Ice	0.437	0.002
						4" Ice	0.838	0.004
##								
1" Flat Plate (E-Mod)	B	No	CaAa (Out Of Face)	90.500 - 0.000	1	No Ice	0.167	0.000
						1/2" Ice	0.250	0.000
						1" Ice	0.333	0.000
						2" Ice	0.500	0.000
						4" Ice	0.833	0.000
1" Flat Plate (E-Mod)	B	No	CaAa (Out Of Face)	105.500 - 96.750	1	No Ice	0.167	0.000
						1/2" Ice	0.250	0.000
						1" Ice	0.333	0.000
						2" Ice	0.500	0.000
						4" Ice	0.833	0.000
1" Flat Plate (E-Mod)	B	No	CaAa (Out Of Face)	126.000 - 116.750	1	No Ice	0.167	0.000
						1/2" Ice	0.250	0.000
						1" Ice	0.333	0.000
						2" Ice	0.500	0.000
						4" Ice	0.833	0.000
##								
3/4" Flat Plate (P-Mod)	B	No	CaAa (Out Of Face)	95.750 - 90.500	1	No Ice	0.125	0.000
						1/2" Ice	0.208	0.000
						1" Ice	0.292	0.000
						2" Ice	0.458	0.000
						4" Ice	0.792	0.000
3/4" Flat Plate (P-Mod)	B	No	CaAa (Out Of Face)	110.500 - 105.500	1	No Ice	0.125	0.000
						1/2" Ice	0.208	0.000
						1" Ice	0.292	0.000
						2" Ice	0.458	0.000
						4" Ice	0.792	0.000
##								

Feed Line/Linear Appurtenances Section Areas

Tower Section	Tower Elevation ft	Face	A_R ft^2	A_F ft^2	C_AA_A In Face ft^2	C_AA_A Out Face ft^2	Weight K
L1	190.000-180.000	A	0.000	0.000	0.000	0.000	0.059
		B	0.000	0.000	0.000	0.000	0.007
		C	0.000	0.000	0.000	2.719	0.055
L2	180.000-140.000	A	0.000	0.000	0.000	0.000	0.590

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
		B	0.000	0.000	0.000	3.920	0.226
		C	0.000	0.000	0.000	13.076	0.353
L3	140.000-120.000	A	0.000	0.000	0.000	0.000	0.295
		B	0.000	0.000	0.000	4.920	0.220
		C	0.000	0.000	0.000	9.438	0.344
L4	120.000-109.000	A	0.000	0.000	0.000	0.000	0.162
		B	0.000	0.000	0.000	2.885	0.227
		C	0.000	0.000	0.000	5.191	0.189
L5	109.000-104.000	A	0.000	0.000	0.000	0.000	0.074
		B	0.000	0.000	0.000	1.667	0.128
		C	0.000	0.000	0.000	2.359	0.086
L6	104.000-100.000	A	0.000	0.000	0.000	0.000	0.059
		B	0.000	0.000	0.000	1.451	0.103
		C	0.000	0.000	0.000	1.888	0.069
L7	100.000-89.000	A	0.000	0.000	0.000	0.000	0.162
		B	0.000	0.000	0.000	3.604	0.283
		C	0.000	0.000	0.000	5.191	0.244
L8	89.000-80.000	A	0.000	0.000	0.000	0.000	0.133
		B	0.000	0.000	0.000	3.264	0.240
		C	0.000	0.000	0.000	4.247	0.199
L9	80.000-69.000	A	0.000	0.000	0.000	0.000	0.162
		B	0.000	0.000	0.000	3.989	0.294
		C	0.000	0.000	0.000	5.191	0.244
L10	69.000-60.000	A	0.000	0.000	0.000	0.000	0.133
		B	0.000	0.000	0.000	3.264	0.243
		C	0.000	0.000	0.000	4.247	0.199
L11	60.000-49.000	A	0.000	0.000	0.000	0.000	0.162
		B	0.000	0.000	0.000	3.989	0.298
		C	0.000	0.000	0.000	5.191	0.244
L12	49.000-40.000	A	0.000	0.000	0.000	0.000	0.133
		B	0.000	0.000	0.000	3.264	0.245
		C	0.000	0.000	0.000	4.247	0.199
L13	40.000-29.000	A	0.000	0.000	0.000	0.000	0.162
		B	0.000	0.000	0.000	3.989	0.301
		C	0.000	0.000	0.000	5.191	0.244
L14	29.000-20.000	A	0.000	0.000	0.000	0.000	0.133
		B	0.000	0.000	0.000	3.264	0.247
		C	0.000	0.000	0.000	4.247	0.199
L15	20.000-9.000	A	0.000	0.000	0.000	0.000	0.162
		B	0.000	0.000	0.000	3.989	0.302
		C	0.000	0.000	0.000	5.191	0.244
L16	9.000-0.000	A	0.000	0.000	0.000	0.000	0.133
		B	0.000	0.000	0.000	3.264	0.247
		C	0.000	0.000	0.000	4.247	0.199

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	190.000-180.000	A	1.230	0.000	0.000	0.000	0.000	0.059
		B		0.000	0.000	0.000	0.000	0.007
		C		0.000	0.000	0.000	12.865	0.179
L2	180.000-140.000	A	1.209	0.000	0.000	0.000	0.000	0.590
		B		0.000	0.000	0.000	8.755	2.081
		C		0.000	0.000	0.000	55.624	0.892
L3	140.000-120.000	A	1.179	0.000	0.000	0.000	0.000	0.295
		B		0.000	0.000	0.000	10.814	2.005

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
		C		0.000	0.000	0.000	33.604	0.672
L4	120.000-109.000	A	1.161	0.000	0.000	0.000	0.000	0.162
		B		0.000	0.000	0.000	6.359	1.187
		C		0.000	0.000	0.000	18.281	0.365
L5	109.000-104.000	A	1.151	0.000	0.000	0.000	0.000	0.074
		B		0.000	0.000	0.000	3.778	0.559
		C		0.000	0.000	0.000	8.258	0.165
L6	104.000-100.000	A	1.145	0.000	0.000	0.000	0.000	0.059
		B		0.000	0.000	0.000	3.130	0.444
		C		0.000	0.000	0.000	6.582	0.131
L7	100.000-89.000	A	1.135	0.000	0.000	0.000	0.000	0.162
		B		0.000	0.000	0.000	7.991	1.209
		C		0.000	0.000	0.000	17.983	0.707
L8	89.000-80.000	A	1.119	0.000	0.000	0.000	0.000	0.133
		B		0.000	0.000	0.000	6.958	0.982
		C		0.000	0.000	0.000	14.574	0.570
L9	80.000-69.000	A	1.103	0.000	0.000	0.000	0.000	0.162
		B		0.000	0.000	0.000	8.437	1.180
		C		0.000	0.000	0.000	17.623	0.686
L10	69.000-60.000	A	1.084	0.000	0.000	0.000	0.000	0.133
		B		0.000	0.000	0.000	6.840	0.948
		C		0.000	0.000	0.000	14.245	0.551
L11	60.000-49.000	A	1.062	0.000	0.000	0.000	0.000	0.162
		B		0.000	0.000	0.000	8.273	1.133
		C		0.000	0.000	0.000	17.166	0.659
L12	49.000-40.000	A	1.037	0.000	0.000	0.000	0.000	0.133
		B		0.000	0.000	0.000	6.685	0.901
		C		0.000	0.000	0.000	13.809	0.525
L13	40.000-29.000	A	1.005	0.000	0.000	0.000	0.000	0.162
		B		0.000	0.000	0.000	8.044	1.064
		C		0.000	0.000	0.000	16.526	0.622
L14	29.000-20.000	A	1.000	0.000	0.000	0.000	0.000	0.133
		B		0.000	0.000	0.000	6.564	0.865
		C		0.000	0.000	0.000	13.472	0.506
L15	20.000-9.000	A	1.000	0.000	0.000	0.000	0.000	0.162
		B		0.000	0.000	0.000	8.023	1.058
		C		0.000	0.000	0.000	16.466	0.618
L16	9.000-0.000	A	1.000	0.000	0.000	0.000	0.000	0.133
		B		0.000	0.000	0.000	6.564	0.865
		C		0.000	0.000	0.000	13.472	0.506

Feed Line Center of Pressure

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L1	190.000-180.000	-0.299	0.173	-0.838	0.484
L2	180.000-140.000	-0.245	0.263	-0.799	0.633
L3	140.000-120.000	-0.237	0.434	-0.820	0.922
L4	120.000-109.000	-0.225	0.455	-0.831	0.991
L5	109.000-104.000	-0.146	0.491	-0.668	1.036
L6	104.000-100.000	-0.115	0.505	-0.641	1.042
L7	100.000-89.000	-0.156	0.500	-0.721	1.081
L8	89.000-80.000	-0.117	0.518	-0.668	1.091
L9	80.000-69.000	-0.120	0.528	-0.692	1.134
L10	69.000-60.000	-0.120	0.528	-0.685	1.126
L11	60.000-49.000	-0.122	0.536	-0.701	1.158

Section	Elevation ft	CP_X in	CP_Z in	CP_X Ice in	CP_Z Ice in
L12	49.000-40.000	-0.122	0.536	-0.690	1.146
L13	40.000-29.000	-0.122	0.536	-0.677	1.132
L14	29.000-20.000	-0.122	0.536	-0.674	1.129
L15	20.000-9.000	-0.122	0.536	-0.674	1.129
L16	9.000-0.000	-0.122	0.536	-0.674	1.129

Discrete Tower Loads

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
Lightning Rod 5/8" x 4' on 4' Pole (E)	C	From Leg	0.000 0.000 4.000	0.000	190.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.465 2.131 2.702 3.805 6.417	1.465 2.131 2.702 3.805 6.417	0.066 0.087 0.112 0.175 0.373
## OGB4-900D (E)	B	From Leg	3.000 0.000 4.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.785 1.028 1.281 1.814 3.111	0.785 1.028 1.281 1.814 3.111	0.010 0.016 0.025 0.053 0.148
MT-485002 w/ Mount Pipe (E)	C	From Leg	3.000 0.000 4.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.572 1.797 2.044 2.587 3.843	0.473 0.681 0.932 1.512 2.909	0.011 0.022 0.037 0.075 0.209
Side Arm Mount [SO 701-1] (E)	B	From Leg	1.500 0.000 0.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.850 1.140 1.430 2.010 3.170	1.670 2.340 3.010 4.350 7.030	0.065 0.079 0.093 0.121 0.177
Side Arm Mount [SO 701-1] (E)	C	From Leg	1.500 0.000 0.000	0.000	192.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.850 1.140 1.430 2.010 3.170	1.670 2.340 3.010 4.350 7.030	0.065 0.079 0.093 0.121 0.177
## DB589-A (E)	A	From Leg	1.000 0.000 5.000	0.000	191.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.763 4.170 5.593 8.490 12.440	2.763 4.170 5.593 8.490 12.440	0.012 0.033 0.063 0.150 0.437
WB2623 w/ Mount Pipe (E)	A	From Leg	1.000 0.000 -1.000	0.000	191.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	2.221 2.477 2.751 3.354 4.725	0.919 1.183 1.475 2.151 3.740	0.020 0.038 0.058 0.111 0.281
6' x 2" Mount Pipe (E)	A	From Leg	0.500 0.000 0.000	0.000	191.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.425 1.925 2.294 3.060	1.425 1.925 2.294 3.060	0.022 0.033 0.048 0.090

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	4.702	4.702	0.231
##									
RR90-17-02DP w/ Mount Pipe (E)	A	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.593 5.088 5.578 6.588 8.731	3.319 4.089 4.784 6.225 9.308	0.034 0.072 0.115 0.224 0.557
RR90-17-02DP w/ Mount Pipe (E)	B	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.593 5.088 5.578 6.588 8.731	3.319 4.089 4.784 6.225 9.308	0.034 0.072 0.115 0.224 0.557
RR90-17-02DP w/ Mount Pipe (E)	C	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	4.593 5.088 5.578 6.588 8.731	3.319 4.089 4.784 6.225 9.308	0.034 0.072 0.115 0.224 0.557
APXV18-206516L-A w/ Mount Pipe (E)	A	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.808 4.221 4.666 5.622 7.659	3.289 3.995 4.661 6.044 9.023	0.038 0.073 0.113 0.213 0.526
APXV18-206516L-A w/ Mount Pipe (E)	B	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.808 4.221 4.666 5.622 7.659	3.289 3.995 4.661 6.044 9.023	0.038 0.073 0.113 0.213 0.526
APXV18-206516L-A w/ Mount Pipe (E)	C	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.808 4.221 4.666 5.622 7.659	3.289 3.995 4.661 6.044 9.023	0.038 0.073 0.113 0.213 0.526
(2) KRY 112 144/1 (E)	A	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.408 0.497 0.594 0.815 1.359	0.204 0.273 0.351 0.533 0.999	0.011 0.014 0.019 0.032 0.082
(2) KRY 112 144/1 (E)	B	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.408 0.497 0.594 0.815 1.359	0.204 0.273 0.351 0.533 0.999	0.011 0.014 0.019 0.032 0.082
(2) KRY 112 144/1 (E)	C	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.408 0.497 0.594 0.815 1.359	0.204 0.273 0.351 0.533 0.999	0.011 0.014 0.019 0.032 0.082
LNX-6515DS-VTM w/ Mount Pipe (p)	A	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151
LNX-6515DS-VTM w/ Mount Pipe (p)	B	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151

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
LNX-6515DS-VTM w/ Mount Pipe (p)	C	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.083 0.173 0.273 0.506 1.151
ATBT-BOTTOM-24V (p)	A	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.121 0.172 0.232 0.377 0.771	0.075 0.119 0.172 0.303 0.668	0.003 0.004 0.006 0.013 0.045
ATBT-BOTTOM-24V (p)	B	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.121 0.172 0.232 0.377 0.771	0.075 0.119 0.172 0.303 0.668	0.003 0.004 0.006 0.013 0.045
ATBT-BOTTOM-24V (p)	C	From Leg	4.000 0.000 -3.000	0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.121 0.172 0.232 0.377 0.771	0.075 0.119 0.172 0.303 0.668	0.003 0.004 0.006 0.013 0.045
Platform Mount [LP 405-1] (E)	C	None		0.000	184.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	20.800 28.100 35.400 50.000 79.200	20.800 28.100 35.400 50.000 79.200	1.800 2.066 2.332 2.864 3.928
##									
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.976 9.647 10.291 11.595 14.321	6.963 8.182 9.144 11.022 15.027	0.069 0.139 0.217 0.401 0.916
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	B	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.976 9.647 10.291 11.595 14.321	6.963 8.182 9.144 11.022 15.027	0.069 0.139 0.217 0.401 0.916
(2) HBXX-6517DS-VTM w/ Mount Pipe (R)	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.976 9.647 10.291 11.595 14.321	6.963 8.182 9.144 11.022 15.027	0.069 0.139 0.217 0.401 0.916
LNX-8514DS-VTM w/ Mount Pipe (R)	A	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.084 0.174 0.273 0.507 1.152
LNX-8514DS-VTM w/ Mount Pipe (R)	C	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	11.683 12.404 13.135 14.601 17.875	9.842 11.366 12.914 15.267 20.139	0.084 0.174 0.273 0.507 1.152
LNX-6514DS-VTM w/ Mount Pipe (R)	B	From Leg	4.000 0.000 0.000	0.000	160.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	8.648 9.305 9.930 11.204 13.872	7.082 8.273 9.185 11.023 15.063	0.065 0.134 0.211 0.393 0.902
BXA-70063-6CF-2 w/ Mount	A	From Leg	4.000	0.000	160.000	No Ice	7.969	5.801	0.042

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
Pipe			0.000			1/2" Ice	8.609	6.953	0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
BXA-70063-6CF-2 w/ Mount	B	From Leg	4.000	0.000	160.000	No Ice	7.969	5.801	0.042
Pipe			0.000			1/2" Ice	8.609	6.953	0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
BXA-70063-6CF-2 w/ Mount	C	From Leg	4.000	0.000	160.000	No Ice	7.969	5.801	0.042
Pipe			0.000			1/2" Ice	8.609	6.953	0.103
(R)			0.000			1" Ice	9.216	7.819	0.171
						2" Ice	10.459	9.601	0.335
						4" Ice	13.066	13.366	0.804
RRH2X60-PCS	A	From Leg	4.000	0.000	160.000	No Ice	2.567	2.011	0.055
(R)			0.000			1/2" Ice	2.791	2.218	0.075
			0.000			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-PCS	B	From Leg	4.000	0.000	160.000	No Ice	2.567	2.011	0.055
(R)			0.000			1/2" Ice	2.791	2.218	0.075
			0.000			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-PCS	C	From Leg	4.000	0.000	160.000	No Ice	2.567	2.011	0.055
(R)			0.000			1/2" Ice	2.791	2.218	0.075
			0.000			1" Ice	3.025	2.435	0.099
						2" Ice	3.517	2.894	0.155
						4" Ice	4.606	3.915	0.313
RRH2X60-AWS	A	From Leg	4.000	0.000	160.000	No Ice	3.957	2.158	0.060
(R)			0.000			1/2" Ice	4.272	2.441	0.084
			0.000			1" Ice	4.596	2.733	0.112
						2" Ice	5.271	3.342	0.180
						4" Ice	6.722	4.665	0.369
RRH2X60-AWS	B	From Leg	4.000	0.000	160.000	No Ice	3.957	2.158	0.060
(R)			0.000			1/2" Ice	4.272	2.441	0.084
			0.000			1" Ice	4.596	2.733	0.112
						2" Ice	5.271	3.342	0.180
						4" Ice	6.722	4.665	0.369
RRH2X60-AWS	C	From Leg	4.000	0.000	160.000	No Ice	3.957	2.158	0.060
(R)			0.000			1/2" Ice	4.272	2.441	0.084
			0.000			1" Ice	4.596	2.733	0.112
						2" Ice	5.271	3.342	0.180
						4" Ice	6.722	4.665	0.369
DB-T1-6Z-8AB-0Z	C	From Leg	4.000	0.000	160.000	No Ice	5.600	2.333	0.044
(R)			0.000			1/2" Ice	5.915	2.558	0.080
			0.000			1" Ice	6.240	2.791	0.120
						2" Ice	6.914	3.284	0.213
						4" Ice	8.365	4.373	0.455
Platform Mount [LP 303-1]	C	None		0.000	160.000	No Ice	14.660	14.660	1.250
(E)						1/2" Ice	18.870	18.870	1.481
						1" Ice	23.080	23.080	1.713
						2" Ice	31.500	31.500	2.175
						4" Ice	48.340	48.340	3.101
##									
DB205-A	A	From Leg	6.000	0.000	158.000	No Ice	1.200	1.200	0.038
(E)			0.000			1/2" Ice	2.160	2.160	0.049

Description	Face or Leg	Offset Type	Offsets: Horz Lateral Vert ft ft ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
			0.000			1" Ice	3.120	3.120	0.061
						2" Ice	5.040	5.040	0.084
						4" Ice	8.880	8.880	0.129
SRL-224NM-4	B	From Leg	6.000	0.000	158.000	No Ice	2.600	2.600	0.035
(E)			0.000			1/2" Ice	4.680	4.680	0.045
			0.000			1" Ice	6.760	6.760	0.056
						2" Ice	10.920	10.920	0.077
						4" Ice	19.240	19.240	0.119
Side Arm Mount [SO 702-1]	A	From Leg	3.000	0.000	158.000	No Ice	1.000	1.430	0.027
(E)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
Side Arm Mount [SO 702-1]	B	From Leg	3.000	0.000	158.000	No Ice	1.000	1.430	0.027
(E)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
4' x 2" Pipe Mount	A	From Leg	6.000	0.000	158.000	No Ice	0.866	0.866	0.015
(E)			0.000			1/2" Ice	1.111	1.111	0.022
			0.000			1" Ice	1.365	1.365	0.032
						2" Ice	1.901	1.901	0.062
						4" Ice	3.228	3.228	0.161
4' x 2" Pipe Mount	B	From Leg	6.000	0.000	158.000	No Ice	0.866	0.866	0.015
(E)			0.000			1/2" Ice	1.111	1.111	0.022
			0.000			1" Ice	1.365	1.365	0.032
						2" Ice	1.901	1.901	0.062
						4" Ice	3.228	3.228	0.161
##									
(2) SBNH-1D6565C w/ Mount Pipe	A	From Leg	4.000	0.000	151.000	No Ice	11.644	9.842	0.094
			0.000			1/2" Ice	12.365	11.366	0.183
(E)			0.000			1" Ice	13.095	12.914	0.283
						2" Ice	14.553	15.267	0.516
						4" Ice	17.825	20.139	1.160
(3) 7770.00 w/ Mount Pipe	C	From Leg	4.000	0.000	151.000	No Ice	6.119	4.254	0.055
(E)			0.000			1/2" Ice	6.626	5.014	0.103
			0.000			1" Ice	7.128	5.711	0.157
						2" Ice	8.164	7.155	0.287
						4" Ice	10.360	10.412	0.665
AM-X-CD-16-65-00T-RET w/ Mount Pipe	A	From Leg	4.000	0.000	151.000	No Ice	8.498	6.304	0.074
			0.000			1/2" Ice	9.149	7.479	0.139
(E)			0.000			1" Ice	9.767	8.368	0.212
						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
AM-X-CD-16-65-00T-RET w/ Mount Pipe	B	From Leg	4.000	0.000	151.000	No Ice	8.498	6.304	0.074
			0.000			1/2" Ice	9.149	7.479	0.139
(R)			0.000			1" Ice	9.767	8.368	0.212
						2" Ice	11.031	10.179	0.385
						4" Ice	13.679	14.024	0.874
(2) SBNH-1D6565C w/ Mount Pipe	B	From Leg	4.000	0.000	151.000	No Ice	11.644	9.842	0.094
			0.000			1/2" Ice	12.365	11.366	0.183
(R)			0.000			1" Ice	13.095	12.914	0.283
						2" Ice	14.553	15.267	0.516
						4" Ice	17.825	20.139	1.160
(2) CM1007-DBPXBC-003	A	From Leg	4.000	0.000	151.000	No Ice	0.429	0.156	0.007
(R)			0.000			1/2" Ice	0.523	0.214	0.010
			0.000			1" Ice	0.626	0.280	0.015

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	0.858	0.438	0.029
						4" Ice	1.425	0.858	0.082
(2) CM1007-DBPXBC-003 (R)	B	From Leg	4.000 0.000 0.000	0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.429 0.523 0.626 0.858 1.425	0.156 0.214 0.280 0.438 0.858	0.007 0.010 0.015 0.029 0.082
(2) CM1007-DBPXBC-003 (R)	C	From Leg	4.000 0.000 0.000	0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.429 0.523 0.626 0.858 1.425	0.156 0.214 0.280 0.438 0.858	0.007 0.010 0.015 0.029 0.082
(2) LGP21901 (R)	A	From Leg	4.000 0.000 0.000	0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.270 0.343 0.425 0.616 1.101	0.184 0.248 0.322 0.494 0.943	0.006 0.008 0.011 0.022 0.066
(2) LGP21901 (R)	B	From Leg	4.000 0.000 0.000	0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.270 0.343 0.425 0.616 1.101	0.184 0.248 0.322 0.494 0.943	0.006 0.008 0.011 0.022 0.066
(2) LGP21901 (R)	C	From Leg	4.000 0.000 0.000	0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	0.270 0.343 0.425 0.616 1.101	0.184 0.248 0.322 0.494 0.943	0.006 0.008 0.011 0.022 0.066
(4) DTMABP7819VG12A (R)	A	From Leg	4.000 0.000 0.000	0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
(2) DTMABP7819VG12A (R)	B	From Leg	4.000 0.000 0.000	0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.139 1.284 1.437 1.769 2.538	0.391 0.488 0.595 0.833 1.414	0.019 0.026 0.036 0.060 0.140
Platform Mount [LP 403-1] (E)	C	None		0.000	151.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	18.850 24.300 29.750 40.650 62.450	18.850 24.300 29.750 40.650 62.450	1.500 1.797 2.093 2.686 3.872
##									
(2) RRU-11 (R)	A	From Leg	1.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.912 2.102 2.301 2.725 3.676	1.472 1.645 1.827 2.218 3.102	0.044 0.060 0.078 0.123 0.254
(2) RRU-11 (R)	B	From Leg	1.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	1.912 2.102 2.301 2.725 3.676	1.472 1.645 1.827 2.218 3.102	0.044 0.060 0.078 0.123 0.254
(2) RRU-11 (R)	C	From Leg	1.000 0.000 0.000	0.000	148.000	No Ice 1/2" Ice 1" Ice 2" Ice	1.912 2.102 2.301 2.725	1.472 1.645 1.827 2.218	0.044 0.060 0.078 0.123

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft	Offsets: Vert ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
							4" Ice	3.676	3.102	0.254
DC6-48-60-18-8F	C	From Leg	1.000		0.000	148.000	No Ice	2.567	2.567	0.019
(R)			0.000				1/2" Ice	2.798	2.798	0.041
			0.000				1" Ice	3.038	3.038	0.067
							2" Ice	3.543	3.543	0.129
							4" Ice	4.658	4.658	0.299
(2) Pipe Mount [PM 601-3]	C	None			0.000	148.000	No Ice	4.390	4.390	0.195
(R)							1/2" Ice	5.480	5.480	0.237
							1" Ice	6.570	6.570	0.280
							2" Ice	8.750	8.750	0.365
							4" Ice	13.110	13.110	0.534
Pipe Mount [PM 601-1]	C	From Leg	0.500		0.000	148.000	No Ice	3.000	0.900	0.065
(R)			0.000				1/2" Ice	3.740	1.120	0.079
			0.000				1" Ice	4.480	1.340	0.093
							2" Ice	5.960	1.780	0.122
							4" Ice	8.920	2.660	0.178
##										
SRL-235-2	A	From Leg	6.000		0.000	132.000	No Ice	7.000	7.000	0.076
(E)			0.000				1/2" Ice	9.037	9.037	0.125
			0.000				1" Ice	11.092	11.092	0.187
							2" Ice	15.250	15.250	0.351
							4" Ice	22.255	22.255	0.836
4' x 2" Pipe Mount	A	From Leg	6.000		0.000	132.000	No Ice	0.866	0.866	0.015
(E)			0.000				1/2" Ice	1.111	1.111	0.022
			0.000				1" Ice	1.365	1.365	0.032
							2" Ice	1.901	1.901	0.062
							4" Ice	3.228	3.228	0.161
Side Arm Mount [SO 702-1]	A	From Leg	3.000		0.000	132.000	No Ice	1.000	1.430	0.027
(E)			0.000				1/2" Ice	1.000	2.050	0.038
			0.000				1" Ice	1.000	2.670	0.049
							2" Ice	1.000	3.910	0.071
							4" Ice	1.000	6.390	0.115
##										
DB205-A	A	From Leg	3.000		0.000	124.000	No Ice	1.200	1.200	0.038
(E)			0.000				1/2" Ice	2.160	2.160	0.049
			0.000				1" Ice	3.120	3.120	0.061
							2" Ice	5.040	5.040	0.084
							4" Ice	8.880	8.880	0.129
PCS 1900 TMA RX	A	From Leg	3.000		0.000	124.000	No Ice	0.628	0.617	0.018
(E)			0.000				1/2" Ice	0.744	0.732	0.023
			0.000				1" Ice	0.869	0.856	0.031
							2" Ice	1.145	1.131	0.052
							4" Ice	1.799	1.783	0.122
Side Arm Mount [SO 701-1]	A	From Leg	1.500		0.000	124.000	No Ice	0.850	1.670	0.065
(E)			0.000				1/2" Ice	1.140	2.340	0.079
			0.000				1" Ice	1.430	3.010	0.093
							2" Ice	2.010	4.350	0.121
							4" Ice	3.170	7.030	0.177
6' x 2" Mount Pipe	A	From Leg	3.000		0.000	124.000	No Ice	1.425	1.425	0.022
(E)			0.000				1/2" Ice	1.925	1.925	0.033
			0.000				1" Ice	2.294	2.294	0.048
							2" Ice	3.060	3.060	0.090
							4" Ice	4.702	4.702	0.231
##										
LLPX310R w/ Mount Pipe	A	From Leg	4.000		0.000	116.000	No Ice	5.904	3.857	0.058
(E)			0.000				1/2" Ice	6.722	4.954	0.105
			2.000				1" Ice	7.462	5.903	0.158

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	8.772	7.531	0.287
						4" Ice	11.557	11.049	0.670
LLPX310R w/ Mount Pipe	B	From Leg	4.000	0.000	116.000	No Ice	5.904	3.857	0.058
(E)			0.000			1/2" Ice	6.722	4.954	0.105
			2.000			1" Ice	7.462	5.903	0.158
						2" Ice	8.772	7.531	0.287
						4" Ice	11.557	11.049	0.670
LLPX310R w/ Mount Pipe	C	From Leg	4.000	0.000	116.000	No Ice	5.904	3.857	0.058
(E)			0.000			1/2" Ice	6.722	4.954	0.105
			2.000			1" Ice	7.462	5.903	0.158
						2" Ice	8.772	7.531	0.287
						4" Ice	11.557	11.049	0.670
(3) DB844G90A-XY w/	A	From Leg	4.000	0.000	116.000	No Ice	3.299	4.921	0.032
Mount Pipe			0.000			1/2" Ice	3.690	5.596	0.072
(E)			2.000			1" Ice	4.119	6.284	0.117
						2" Ice	5.007	7.712	0.228
						4" Ice	6.920	10.833	0.557
(3) DB844G90A-XY w/	B	From Leg	4.000	0.000	116.000	No Ice	3.299	4.921	0.032
Mount Pipe			0.000			1/2" Ice	3.690	5.596	0.072
(E)			2.000			1" Ice	4.119	6.284	0.117
						2" Ice	5.007	7.712	0.228
						4" Ice	6.920	10.833	0.557
(3) DB844G90A-XY w/	C	From Leg	4.000	0.000	116.000	No Ice	3.299	4.921	0.032
Mount Pipe			0.000			1/2" Ice	3.690	5.596	0.072
(E)			2.000			1" Ice	4.119	6.284	0.117
						2" Ice	5.007	7.712	0.228
						4" Ice	6.920	10.833	0.557
HORIZON DUO	A	From Leg	4.000	0.000	116.000	No Ice	0.547	0.343	0.007
(E)			0.000			1/2" Ice	0.648	0.426	0.012
			4.000			1" Ice	0.759	0.518	0.018
						2" Ice	1.005	0.728	0.036
						4" Ice	1.601	1.252	0.097
WIMAX DAP HEAD	A	From Leg	4.000	0.000	116.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			2.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
WIMAX DAP HEAD	B	From Leg	4.000	0.000	116.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			2.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
WIMAX DAP HEAD	C	From Leg	4.000	0.000	116.000	No Ice	1.804	0.778	0.033
(E)			0.000			1/2" Ice	1.988	0.918	0.045
			2.000			1" Ice	2.180	1.067	0.058
						2" Ice	2.589	1.391	0.094
						4" Ice	3.512	2.143	0.201
Platform Mount [LP 405-1]	C	None		0.000	116.000	No Ice	20.800	20.800	1.800
(E)						1/2" Ice	28.100	28.100	2.066
						1" Ice	35.400	35.400	2.332
						2" Ice	50.000	50.000	2.864
						4" Ice	79.200	79.200	3.928
##									
742 213	A	From Leg	1.000	0.000	100.000	No Ice	5.135	2.869	0.022
(E)			0.000			1/2" Ice	5.609	3.483	0.047
			0.000			1" Ice	6.090	3.946	0.078
						2" Ice	7.074	4.893	0.158

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	9.130	6.876	0.394
742 213	B	From Leg	1.000	0.000	100.000	No Ice	5.135	2.869	0.022
(E)			0.000			1/2" Ice	5.609	3.483	0.047
			0.000			1" Ice	6.090	3.946	0.078
						2" Ice	7.074	4.893	0.158
						4" Ice	9.130	6.876	0.394
742 213	C	From Leg	1.000	0.000	100.000	No Ice	5.135	2.869	0.022
(E)			0.000			1/2" Ice	5.609	3.483	0.047
			0.000			1" Ice	6.090	3.946	0.078
						2" Ice	7.074	4.893	0.158
						4" Ice	9.130	6.876	0.394
Pipe Mount [PM 601-3]	C	None		0.000	100.000	No Ice	4.390	4.390	0.195
(E)						1/2" Ice	5.480	5.480	0.237
						1" Ice	6.570	6.570	0.280
						2" Ice	8.750	8.750	0.365
						4" Ice	13.110	13.110	0.534
##									
DB205-A	A	From Leg	6.000	0.000	90.000	No Ice	1.200	1.200	0.038
(E)			0.000			1/2" Ice	2.160	2.160	0.049
			9.000			1" Ice	3.120	3.120	0.061
						2" Ice	5.040	5.040	0.084
						4" Ice	8.880	8.880	0.129
DB205-A	B	From Leg	6.000	0.000	90.000	No Ice	1.200	1.200	0.038
(E)			0.000			1/2" Ice	2.160	2.160	0.049
			9.000			1" Ice	3.120	3.120	0.061
						2" Ice	5.040	5.040	0.084
						4" Ice	8.880	8.880	0.129
MT-485002 w/ Mount Pipe	B	From Leg	6.000	0.000	90.000	No Ice	1.572	0.473	0.011
(E)			0.000			1/2" Ice	1.797	0.681	0.022
			0.000			1" Ice	2.044	0.932	0.037
						2" Ice	2.587	1.512	0.075
						4" Ice	3.843	2.909	0.209
Side Arm Mount [SO 702-1]	A	From Leg	3.000	0.000	90.000	No Ice	1.000	1.430	0.027
(E)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
Side Arm Mount [SO 702-1]	B	From Leg	3.000	0.000	90.000	No Ice	1.000	1.430	0.027
(E)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
6' x 2" Mount Pipe	A	From Leg	6.000	0.000	90.000	No Ice	1.425	1.425	0.022
(E)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
##									
GPS_A	A	From Leg	3.000	0.000	87.000	No Ice	0.297	0.297	0.001
(E)			0.000			1/2" Ice	0.374	0.374	0.005
			0.000			1" Ice	0.459	0.459	0.010
						2" Ice	0.655	0.655	0.025
						4" Ice	1.151	1.151	0.079
GPS_A	B	From Leg	3.000	0.000	87.000	No Ice	0.297	0.297	0.001
(E)			0.000			1/2" Ice	0.374	0.374	0.005
			0.000			1" Ice	0.459	0.459	0.010
						2" Ice	0.655	0.655	0.025

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						4" Ice	1.151	1.151	0.079
Side Arm Mount [SO 701-1]	A	From Leg	1.500	0.000	87.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
Side Arm Mount [SO 701-1]	B	From Leg	1.500	0.000	87.000	No Ice	0.850	1.670	0.065
(E)			0.000			1/2" Ice	1.140	2.340	0.079
			0.000			1" Ice	1.430	3.010	0.093
						2" Ice	2.010	4.350	0.121
						4" Ice	3.170	7.030	0.177
##									
SRL-235-2	B	From Leg	6.000	0.000	70.000	No Ice	7.000	7.000	0.076
(E-B Leg per Photo)			0.000			1/2" Ice	9.037	9.037	0.125
			0.000			1" Ice	11.092	11.092	0.187
						2" Ice	15.250	15.250	0.351
						4" Ice	22.255	22.255	0.836
6' x 2" Mount Pipe	B	From Leg	6.000	0.000	70.000	No Ice	1.425	1.425	0.022
(E-B Leg per Photo)			0.000			1/2" Ice	1.925	1.925	0.033
			0.000			1" Ice	2.294	2.294	0.048
						2" Ice	3.060	3.060	0.090
						4" Ice	4.702	4.702	0.231
Side Arm Mount [SO 702-1]	B	From Leg	3.000	0.000	70.000	No Ice	1.000	1.430	0.027
(E-B Leg per Photo)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
##									
DB583	B	From Leg	4.000	0.000	58.000	No Ice	0.537	0.537	0.006
(E)			0.000			1/2" Ice	0.711	0.711	0.012
			0.000			1" Ice	0.894	0.894	0.019
						2" Ice	1.336	1.336	0.041
						4" Ice	2.392	2.392	0.116
4' x 2" Pipe Mount	B	From Leg	4.000	0.000	58.000	No Ice	0.866	0.866	0.015
(E)			0.000			1/2" Ice	1.111	1.111	0.022
			0.000			1" Ice	1.365	1.365	0.032
						2" Ice	1.901	1.901	0.062
						4" Ice	3.228	3.228	0.161
Side Arm Mount [SO 702-1]	B	From Leg	2.000	0.000	58.000	No Ice	1.000	1.430	0.027
(E)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
##									
DB909XVTE-M	A	From Leg	4.000	0.000	43.000	No Ice	2.301	2.301	0.024
(E-A Leg per Photo)			0.000			1/2" Ice	2.622	2.622	0.047
			0.000			1" Ice	2.952	2.952	0.073
						2" Ice	3.733	3.733	0.139
						4" Ice	5.478	5.478	0.323
4' x 2" Pipe Mount	A	From Leg	4.000	0.000	43.000	No Ice	0.866	0.866	0.015
(E-A Leg per Photo)			0.000			1/2" Ice	1.111	1.111	0.022
			0.000			1" Ice	1.365	1.365	0.032
						2" Ice	1.901	1.901	0.062
						4" Ice	3.228	3.228	0.161
Side Arm Mount [SO 702-1]	A	From Leg	2.000	0.000	43.000	No Ice	1.000	1.430	0.027
(E-A Leg per Photo)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049

Description	Face or Leg	Offset Type	Offsets: Horz Lateral ft / Vert ft / ft	Azimuth Adjustment °	Placement ft		C_AA_A Front ft^2	C_AA_A Side ft^2	Weight K
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
##									
DB909XVTE-M	A	From Leg	4.000	0.000	33.000	No Ice	2.301	2.301	0.024
(E-A Leg per Photo)			0.000			1/2" Ice	2.622	2.622	0.047
			0.000			1" Ice	2.952	2.952	0.073
						2" Ice	3.733	3.733	0.139
						4" Ice	5.478	5.478	0.323
4' x 2" Pipe Mount	A	From Leg	4.000	0.000	33.000	No Ice	0.866	0.866	0.015
(E-A Leg per Photo)			0.000			1/2" Ice	1.111	1.111	0.022
			0.000			1" Ice	1.365	1.365	0.032
						2" Ice	1.901	1.901	0.062
						4" Ice	3.228	3.228	0.161
Side Arm Mount [SO 702-1]	A	From Leg	2.000	0.000	33.000	No Ice	1.000	1.430	0.027
(E-A Leg per Photo)			0.000			1/2" Ice	1.000	2.050	0.038
			0.000			1" Ice	1.000	2.670	0.049
						2" Ice	1.000	3.910	0.071
						4" Ice	1.000	6.390	0.115
##									
4' ICE SHIELDS	A	From Leg	0.500	0.000	178.000	No Ice	1.400	0.467	0.030
(E)			0.000			1/2" Ice	1.884	0.640	0.095
			0.000			1" Ice	2.377	0.821	0.167
						2" Ice	3.388	1.210	0.332
						4" Ice	5.514	2.091	0.748
4' ICE SHIELDS	A	From Leg	0.500	0.000	138.000	No Ice	1.400	0.467	0.030
(E)			0.000			1/2" Ice	1.884	0.640	0.095
			0.000			1" Ice	2.377	0.821	0.167
						2" Ice	3.388	1.210	0.332
						4" Ice	5.514	2.091	0.748
4' ICE SHIELDS	A	From Leg	0.500	0.000	98.000	No Ice	1.400	0.467	0.030
(E)			0.000			1/2" Ice	1.884	0.640	0.095
			0.000			1" Ice	2.377	0.821	0.167
						2" Ice	3.388	1.210	0.332
						4" Ice	5.514	2.091	0.748
4' ICE SHIELDS	B	From Leg	0.500	0.000	98.000	No Ice	1.400	0.467	0.030
(E)			0.000			1/2" Ice	1.884	0.640	0.095
			0.000			1" Ice	2.377	0.821	0.167
						2" Ice	3.388	1.210	0.332
						4" Ice	5.514	2.091	0.748
4' ICE SHIELDS	C	From Leg	0.500	0.000	98.000	No Ice	1.400	0.467	0.030
(E)			0.000			1/2" Ice	1.884	0.640	0.095
			0.000			1" Ice	2.377	0.821	0.167
						2" Ice	3.388	1.210	0.332
						4" Ice	5.514	2.091	0.748
##									

Dishes

Description	Face or Leg	Dish Type	Offset Type	Offsets: Horz Lateral Vert ft	Azimuth Adjustment °	3 dB Beam Width °	Elevation ft	Outside Diameter ft		Aperture Area ft²	Weight K
VHLP2.5-10W (E)	A	Paraboloid w/Shroud (HP)	From Leg	4.000 0.000 4.000	90.000		116.000	2.917	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	6.680 7.070 7.460 8.230 9.780	0.050 0.090 0.120 0.200 0.340
##											
KP2F-34 (E)	A	Grid	From Leg	6.000 0.000 0.000	0.000		90.000	2.000	No Ice 1/2" Ice 1" Ice 2" Ice 4" Ice	3.140 3.410 3.680 4.276 5.600	0.005 0.023 0.040 0.075 0.100
##											

Compression Checks

Pole Design Data

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in²	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
L1	190 - 189	P18x3/8	10.000	0.000	0.0	25.200	20.764	-0.307	523.252	0.001
	189 - 188					25.200	20.764	-0.385	523.252	0.001
	188 - 187					25.200	20.764	-0.464	523.252	0.001
	187 - 186					25.200	20.764	-0.543	523.252	0.001
	186 - 185					25.200	20.764	-0.621	523.252	0.001
	185 - 184					25.200	20.764	-0.700	523.252	0.001
	184 - 183					25.200	20.764	-2.853	523.252	0.005
	183 - 182					25.200	20.764	-2.932	523.252	0.006
	182 - 181					25.200	20.764	-3.010	523.252	0.006
	181 - 180					25.200	20.764	-3.090	523.252	0.006
L2	180 - 178	P24x3/8	40.000	0.000	0.0	25.200	27.833	-3.327	701.380	0.005
	178 - 176					25.200	27.833	-3.590	701.380	0.005
	176 - 174					25.200	27.833	-3.828	701.380	0.005
	174 - 172					25.200	27.833	-4.066	701.380	0.006
	172 - 170					25.200	27.833	-4.305	701.380	0.006
	170 - 168					25.200	27.833	-4.544	701.380	0.006
	168 - 166					25.200	27.833	-4.783	701.380	0.007
	166 - 164					25.200	27.833	-5.023	701.380	0.007
	164 - 162					25.200	27.833	-5.264	701.380	0.008
	162 - 160					25.200	27.833	-5.505	701.380	0.008
	160 - 158					25.200	27.833	-7.748	701.380	0.011
	158 - 156					25.200	27.833	-8.129	701.380	0.012
	156 - 154					25.200	27.833	-8.379	701.380	0.012
	154 - 152					25.200	27.833	-8.631	701.380	0.012
	152 - 150					25.200	27.833	-10.978	701.380	0.016
	150 - 148					25.200	27.833	-11.241	701.380	0.016
	148 - 146					25.200	27.833	-12.180	701.380	0.017
	146 - 144					25.200	27.833	-12.453	701.380	0.018
	144 - 142					25.200	27.833	-12.730	701.380	0.018
	142 - 140					25.200	27.833	-13.011	701.380	0.019
L3	140 - 139	P36x3/8	20.000	0.000	0.0	23.696	41.970	-13.217	994.507	0.013
	139 - 138					23.696	41.970	-13.404	994.507	0.013
	138 - 137					23.696	41.970	-13.618	994.507	0.014

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	137 - 136					23.696	41.970	-13.806	994.507	0.014
	136 - 135					23.696	41.970	-13.994	994.507	0.014
	135 - 134					23.696	41.970	-14.182	994.507	0.014
	134 - 133					23.696	41.970	-14.371	994.507	0.014
	133 - 132					23.696	41.970	-14.560	994.507	0.015
	132 - 131					23.696	41.970	-14.848	994.507	0.015
	131 - 130					23.696	41.970	-15.039	994.507	0.015
	130 - 129					23.696	41.970	-15.229	994.507	0.015
	129 - 128					23.696	41.970	-15.420	994.507	0.016
	128 - 127					23.696	41.970	-15.612	994.507	0.016
	127 - 126					23.696	41.970	-15.804	994.507	0.016
	126 - 125					23.696	41.970	-15.996	994.507	0.016
	125 - 124					23.696	41.970	-16.189	994.507	0.016
	124 - 123					23.696	41.970	-16.517	994.507	0.017
	123 - 122					23.696	41.970	-16.711	994.507	0.017
	122 - 121					23.696	41.970	-16.906	994.507	0.017
	121 - 120					23.696	41.970	-17.101	994.507	0.017
L4	120 - 119	P42x3/8	11.000	0.000	0.0	22.711	49.038	-17.368	1113.690	0.016
	119 - 118					22.711	49.038	-17.592	1113.690	0.016
	118 - 117					22.711	49.038	-17.816	1113.690	0.016
	117 - 116					22.711	49.038	-18.040	1113.690	0.016
	116 - 115					22.711	49.038	-20.496	1113.690	0.018
	115 - 114					22.711	49.038	-20.723	1113.690	0.019
	114 - 113					22.711	49.038	-20.950	1113.690	0.019
	113 - 112					22.711	49.038	-21.177	1113.690	0.019
	112 - 111					22.711	49.038	-21.405	1113.690	0.019
	111 - 110					22.711	49.038	-21.634	1113.690	0.019
	110 - 109					22.711	49.038	-21.863	1113.690	0.020
L5	109 - 108	P42x3/8 [0.449926]	5.000	0.000	0.0	23.061	58.730	-22.127	1354.400	0.016
	108 - 107					23.061	58.730	-22.390	1354.400	0.017
	107 - 106					23.061	58.730	-22.653	1354.400	0.017
	106 - 105					23.061	58.730	-22.917	1354.400	0.017
	105 - 104					23.061	58.730	-23.182	1354.400	0.017
L6	104 - 103	P42x3/8 [0.525959]	4.000	0.000	0.0	22.810	68.530	-23.476	1563.170	0.015
	103 - 102					22.810	68.530	-23.770	1563.170	0.015
	102 - 101					22.810	68.530	-24.064	1563.170	0.015
	101 - 100					22.810	68.530	-24.358	1563.170	0.016
L7	100 - 99	P48x3/8 [0.43965]	11.000	0.000	0.0	22.208	65.690	-24.888	1458.870	0.017
	99 - 98					22.208	65.690	-25.179	1458.870	0.017
	98 - 97					22.208	65.690	-25.556	1458.870	0.018
	97 - 96					22.208	65.690	-25.848	1458.870	0.018
	96 - 95					22.208	65.690	-26.140	1458.870	0.018
	95 - 94					22.208	65.690	-26.432	1458.870	0.018
	94 - 93					22.208	65.690	-26.724	1458.870	0.018
	93 - 92					22.208	65.690	-27.017	1458.870	0.019
	92 - 91					22.208	65.690	-27.310	1458.870	0.019
	91 - 90					22.208	65.690	-27.604	1458.870	0.019
	90 - 89					22.208	65.690	-28.055	1458.870	0.019
L8	89 - 88	P48x3/8 [0.53914]	9.000	0.000	0.0	22.666	80.387	-28.395	1822.090	0.016
	88 - 87					22.666	80.387	-28.734	1822.090	0.016
	87 - 86					22.666	80.387	-29.202	1822.090	0.016
	86 - 85					22.666	80.387	-29.541	1822.090	0.016
	85 - 84					22.666	80.387	-29.881	1822.090	0.016
	84 - 83					22.666	80.387	-30.222	1822.090	0.017
	83 - 82					22.666	80.387	-30.562	1822.090	0.017
	82 - 81					22.666	80.387	-30.903	1822.090	0.017
	81 - 80					22.666	80.387	-31.244	1822.090	0.017
L9	80 - 79	P54x3/8 [0.490666]	11.000	0.000	0.0	21.771	82.483	-31.593	1795.750	0.018
	79 - 78					21.771	82.483	-31.940	1795.750	0.018
	78 - 77					21.771	82.483	-32.288	1795.750	0.018

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	77 - 76					21.771	82.483	-32.635	1795.750	0.018
	76 - 75					21.771	82.483	-32.983	1795.750	0.018
	75 - 74					21.771	82.483	-33.332	1795.750	0.019
	74 - 73					21.771	82.483	-33.680	1795.750	0.019
	73 - 72					21.771	82.483	-34.029	1795.750	0.019
	72 - 71					21.771	82.483	-34.378	1795.750	0.019
	71 - 70					21.771	82.483	-34.727	1795.750	0.019
	70 - 69					21.771	82.483	-35.194	1795.750	0.020
L10	69 - 68	P54x3/8 [0.578486]	9.000	0.000	0.0	22.138	97.087	-35.589	2149.270	0.017
	68 - 67					22.138	97.087	-35.984	2149.270	0.017
	67 - 66					22.138	97.087	-36.379	2149.270	0.017
	66 - 65					22.138	97.087	-36.774	2149.270	0.017
	65 - 64					22.138	97.087	-37.169	2149.270	0.017
	64 - 63					22.138	97.087	-37.565	2149.270	0.017
	63 - 62					22.138	97.087	-37.961	2149.270	0.018
	62 - 61					22.138	97.087	-38.357	2149.270	0.018
	61 - 60					22.138	97.087	-38.754	2149.270	0.018
L11	60 - 59	P60x3/8 [0.516129]	11.000	0.000	0.0	21.332	96.451	-39.149	2057.470	0.019
	59 - 58					21.332	96.451	-39.543	2057.470	0.019
	58 - 57					21.332	96.451	-39.984	2057.470	0.019
	57 - 56					21.332	96.451	-40.379	2057.470	0.020
	56 - 55					21.332	96.451	-40.774	2057.470	0.020
	55 - 54					21.332	96.451	-41.169	2057.470	0.020
	54 - 53					21.332	96.451	-41.564	2057.470	0.020
	53 - 52					21.332	96.451	-41.960	2057.470	0.020
	52 - 51					21.332	96.451	-42.356	2057.470	0.021
	51 - 50					21.332	96.451	-42.752	2057.470	0.021
	50 - 49					21.332	96.451	-43.148	2057.470	0.021
L12	49 - 48	P60x3/8 [0.594533]	9.000	0.000	0.0	21.618	110.956	-43.590	2398.620	0.018
	48 - 47					21.618	110.956	-44.031	2398.620	0.018
	47 - 46					21.618	110.956	-44.473	2398.620	0.019
	46 - 45					21.618	110.956	-44.914	2398.620	0.019
	45 - 44					21.618	110.956	-45.356	2398.620	0.019
	44 - 43					21.618	110.956	-45.798	2398.620	0.019
	43 - 42					21.618	110.956	-46.305	2398.620	0.019
	42 - 41					21.618	110.956	-46.747	2398.620	0.019
	41 - 40					21.618	110.956	-47.190	2398.620	0.020
L13	40 - 39	P60x1/2 [0.604293]	11.000	0.000	0.0	22.644	112.759	-47.645	2553.280	0.019
	39 - 38					22.644	112.759	-48.099	2553.280	0.019
	38 - 37					22.644	112.759	-48.554	2553.280	0.019
	37 - 36					22.644	112.759	-49.009	2553.280	0.019
	36 - 35					22.644	112.759	-49.463	2553.280	0.019
	35 - 34					22.644	112.759	-49.919	2553.280	0.020
	34 - 33					22.644	112.759	-50.374	2553.280	0.020
	33 - 32					22.644	112.759	-50.895	2553.280	0.020
	32 - 31					22.644	112.759	-51.351	2553.280	0.020
	31 - 30					22.644	112.759	-51.807	2553.280	0.020
	30 - 29					22.644	112.759	-52.264	2553.280	0.020
L14	29 - 28	P60x1/2 [0.683417]	9.000	0.000	0.0	22.944	127.354	-52.766	2921.950	0.018
	28 - 27					22.944	127.354	-53.268	2921.950	0.018
	27 - 26					22.944	127.354	-53.769	2921.950	0.018
	26 - 25					22.944	127.354	-54.271	2921.950	0.019
	25 - 24					22.944	127.354	-54.773	2921.950	0.019
	24 - 23					22.944	127.354	-55.276	2921.950	0.019
	23 - 22					22.944	127.354	-55.778	2921.950	0.019
	22 - 21					22.944	127.354	-56.281	2921.950	0.019
	21 - 20					22.944	127.354	-56.784	2921.950	0.019
L15	20 - 19	P60x5/8 [0.703867]	11.000	0.000	0.0	23.971	131.119	-57.304	3143.050	0.018
	19 - 18					23.971	131.119	-57.824	3143.050	0.018
	18 - 17					23.971	131.119	-58.345	3143.050	0.019

Section No.	Elevation ft	Size	L ft	L_u ft	Kl/r	F_a ksi	A in^2	Actual P K	Allow. P_a K	Ratio $\frac{P}{P_a}$
	17 - 16					23.971	131.119	-58.865	3143.050	0.019
	16 - 15					23.971	131.119	-59.386	3143.050	0.019
	15 - 14					23.971	131.119	-59.907	3143.050	0.019
	14 - 13					23.971	131.119	-60.429	3143.050	0.019
	13 - 12					23.971	131.119	-60.950	3143.050	0.019
	12 - 11					23.971	131.119	-61.472	3143.050	0.020
	11 - 10					23.971	131.119	-61.994	3143.050	0.020
	10 - 9					23.971	131.119	-62.516	3143.050	0.020
L16	9 - 8	P60x5/8 [0.756633]	9.000	0.000	0.0	23.745	140.823	-63.069	3343.800	0.019
	8 - 7					23.745	140.823	-63.621	3343.800	0.019
	7 - 6					23.745	140.823	-64.173	3343.800	0.019
	6 - 5					23.745	140.823	-64.726	3343.800	0.019
	5 - 4					23.745	140.823	-65.278	3343.800	0.020
	4 - 3					23.745	140.823	-65.831	3343.800	0.020
	3 - 2					23.745	140.823	-66.384	3343.800	0.020
	2 - 1					23.745	140.823	-66.938	3343.800	0.020
	1 - 0					23.745	140.823	-67.491	3343.800	0.020

Pole Bending Design Data

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
L1	190 - 189	P18x3/8	2.675	0.358	27.720	0.013	0.000	0.000	27.720	0.000
	189 - 188		3.352	0.449	27.720	0.016	0.000	0.000	27.720	0.000
	188 - 187		4.086	0.547	27.720	0.020	0.000	0.000	27.720	0.000
	187 - 186		4.880	0.653	27.720	0.024	0.000	0.000	27.720	0.000
	186 - 185		5.732	0.767	27.720	0.028	0.000	0.000	27.720	0.000
	185 - 184		6.642	0.889	27.720	0.032	0.000	0.000	27.720	0.000
	184 - 183		3.588	0.480	27.720	0.017	0.000	0.000	27.720	0.000
	183 - 182		8.284	1.109	27.720	0.040	0.000	0.000	27.720	0.000
	182 - 181		13.037	1.746	27.720	0.063	0.000	0.000	27.720	0.000
	181 - 180		17.849	2.390	27.720	0.086	0.000	0.000	27.720	0.000
L2	180 - 178	P24x3/8	27.695	2.053	27.720	0.074	0.000	0.000	27.720	0.000
	178 - 176		37.931	2.812	27.720	0.101	0.000	0.000	27.720	0.000
	176 - 174		48.526	3.598	27.720	0.130	0.000	0.000	27.720	0.000
	174 - 172		59.438	4.407	27.720	0.159	0.000	0.000	27.720	0.000
	172 - 170		70.667	5.239	27.720	0.189	0.000	0.000	27.720	0.000
	170 - 168		82.211	6.095	27.720	0.220	0.000	0.000	27.720	0.000
	168 - 166		94.067	6.974	27.720	0.252	0.000	0.000	27.720	0.000
	166 - 164		106.236	7.876	27.720	0.284	0.000	0.000	27.720	0.000
	164 - 162		118.714	8.801	27.720	0.318	0.000	0.000	27.720	0.000
	162 - 160		131.500	9.749	27.720	0.352	0.000	0.000	27.720	0.000
	160 - 158		156.693	11.617	27.720	0.419	0.000	0.000	27.720	0.000
	158 - 156		182.302	13.516	27.720	0.488	0.000	0.000	27.720	0.000
	156 - 154		208.619	15.467	27.720	0.558	0.000	0.000	27.720	0.000
	154 - 152		235.229	17.440	27.720	0.629	0.000	0.000	27.720	0.000
	152 - 150		267.174	19.808	27.720	0.715	0.000	0.000	27.720	0.000
	150 - 148		303.163	22.476	27.720	0.811	0.000	0.000	27.720	0.000
	148 - 146		341.430	25.313	27.720	0.913	0.000	0.000	27.720	0.000
	146 - 144		380.077	28.179	27.720	1.017	0.000	0.000	27.720	0.000
	144 - 142		418.978	31.063	27.720	1.121	0.000	0.000	27.720	0.000
	142 - 140		458.124	33.965	27.720	1.225	0.000	0.000	27.720	0.000
L3	140 - 139	P36x3/8	477.807	15.499	23.696	0.654	0.000	0.000	23.696	0.000
	139 - 138		497.596	16.141	23.696	0.681	0.000	0.000	23.696	0.000
	138 - 137		517.595	16.790	23.696	0.709	0.000	0.000	23.696	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	137 - 136		537.648	17.440	23.696	0.736	0.000	0.000	23.696	0.000
	136 - 135		557.808	18.094	23.696	0.764	0.000	0.000	23.696	0.000
	135 - 134		578.073	18.751	23.696	0.791	0.000	0.000	23.696	0.000
	134 - 133		598.444	19.412	23.696	0.819	0.000	0.000	23.696	0.000
	133 - 132		618.921	20.076	23.696	0.847	0.000	0.000	23.696	0.000
	132 - 131		640.574	20.779	23.696	0.877	0.000	0.000	23.696	0.000
	131 - 130		661.634	21.462	23.696	0.906	0.000	0.000	23.696	0.000
	130 - 129		682.799	22.148	23.696	0.935	0.000	0.000	23.696	0.000
	129 - 128		704.068	22.838	23.696	0.964	0.000	0.000	23.696	0.000
	128 - 127		725.439	23.532	23.696	0.993	0.000	0.000	23.696	0.000
	127 - 126		746.913	24.228	23.696	1.022	0.000	0.000	23.696	0.000
	126 - 125		768.490	24.928	23.696	1.052	0.000	0.000	23.696	0.000
	125 - 124		790.168	25.631	23.696	1.082	0.000	0.000	23.696	0.000
	124 - 123		812.601	26.359	23.696	1.112	0.000	0.000	23.696	0.000
	123 - 122		834.658	27.075	23.696	1.143	0.000	0.000	23.696	0.000
	122 - 121		856.825	27.793	23.696	1.173	0.000	0.000	23.696	0.000
	121 - 120		879.083	28.515	23.696	1.203	0.000	0.000	23.696	0.000
L4	120 - 119	P42x3/8	901.883	21.398	22.711	0.942	0.000	0.000	22.711	0.000
	119 - 118		924.567	21.936	22.711	0.966	0.000	0.000	22.711	0.000
	118 - 117		947.350	22.476	22.711	0.990	0.000	0.000	22.711	0.000
	117 - 116		970.258	23.020	22.711	1.014	0.000	0.000	22.711	0.000
	116 - 115		1000.967	23.748	22.711	1.046	0.000	0.000	22.711	0.000
	115 - 114		1027.250	24.372	22.711	1.073	0.000	0.000	22.711	0.000
	114 - 113		1053.642	24.998	22.711	1.101	0.000	0.000	22.711	0.000
	113 - 112		1080.142	25.627	22.711	1.128	0.000	0.000	22.711	0.000
	112 - 111		1106.758	26.258	22.711	1.156	0.000	0.000	22.711	0.000
	111 - 110		1133.475	26.892	22.711	1.184	0.000	0.000	22.711	0.000
	110 - 109		1160.308	27.529	22.711	1.212	0.000	0.000	22.711	0.000
L5	109 - 108	P42x3/8 [0.449926]	1187.242	23.603	23.061	1.023	0.000	0.000	23.061	0.000
	108 - 107		1214.292	24.141	23.061	1.047	0.000	0.000	23.061	0.000
	107 - 106		1241.450	24.681	23.061	1.070	0.000	0.000	23.061	0.000
	106 - 105		1268.725	25.223	23.061	1.094	0.000	0.000	23.061	0.000
	105 - 104		1296.100	25.767	23.061	1.117	0.000	0.000	23.061	0.000
L6	104 - 103	P42x3/8 [0.525959]	1323.592	22.633	25.091	0.902	0.000	0.000	25.091	0.000
	103 - 102		1351.192	23.105	25.091	0.921	0.000	0.000	25.091	0.000
	102 - 101		1378.900	23.579	25.091	0.940	0.000	0.000	25.091	0.000
	101 - 100		1406.725	24.055	25.091	0.959	0.000	0.000	25.091	0.000
L7	100 - 99	P48x3/8 [0.43965]	1435.283	22.253	22.208	1.002	0.000	0.000	22.208	0.000
	99 - 98		1463.958	22.698	22.208	1.022	0.000	0.000	22.208	0.000
	98 - 97		1492.867	23.146	22.208	1.042	0.000	0.000	22.208	0.000
	97 - 96		1521.89	23.596	22.208	1.062	0.000	0.000	22.208	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	96 - 95		1551.022	24.048	22.208	1.083	0.000	0.000	22.208	0.000
	95 - 94		1580.283	24.501	22.208	1.103	0.000	0.000	22.208	0.000
	94 - 93		1609.658	24.957	22.208	1.124	0.000	0.000	22.208	0.000
	93 - 92		1639.150	25.414	22.208	1.144	0.000	0.000	22.208	0.000
	92 - 91		1668.758	25.873	22.208	1.165	0.000	0.000	22.208	0.000
	91 - 90		1698.475	26.334	22.208	1.186	0.000	0.000	22.208	0.000
	90 - 89		1730.017	26.823	22.208	1.208	0.000	0.000	22.208	0.000
L8	89 - 88	P48x3/8 [0.53914]	1760.292	22.395	22.666	0.988	0.000	0.000	22.666	0.000
	88 - 87		1790.675	22.782	22.666	1.005	0.000	0.000	22.666	0.000
	87 - 86		1821.500	23.174	22.666	1.022	0.000	0.000	22.666	0.000
	86 - 85		1852.242	23.565	22.666	1.040	0.000	0.000	22.666	0.000
	85 - 84		1883.100	23.958	22.666	1.057	0.000	0.000	22.666	0.000
	84 - 83		1914.067	24.351	22.666	1.074	0.000	0.000	22.666	0.000
	83 - 82		1945.142	24.747	22.666	1.092	0.000	0.000	22.666	0.000
	82 - 81		1976.333	25.144	22.666	1.109	0.000	0.000	22.666	0.000
	81 - 80		2007.642	25.542	22.666	1.127	0.000	0.000	22.666	0.000
L9	80 - 79	P54x3/8 [0.490666]	2039.058	22.377	21.771	1.028	0.000	0.000	21.771	0.000
	79 - 78		2070.600	22.723	21.771	1.044	0.000	0.000	21.771	0.000
	78 - 77		2102.258	23.071	21.771	1.060	0.000	0.000	21.771	0.000
	77 - 76		2134.033	23.419	21.771	1.076	0.000	0.000	21.771	0.000
	76 - 75		2165.933	23.769	21.771	1.092	0.000	0.000	21.771	0.000
	75 - 74		2197.950	24.121	21.771	1.108	0.000	0.000	21.771	0.000
	74 - 73		2230.083	24.473	21.771	1.124	0.000	0.000	21.771	0.000
	73 - 72		2262.333	24.827	21.771	1.140	0.000	0.000	21.771	0.000
	72 - 71		2294.708	25.183	21.771	1.157	0.000	0.000	21.771	0.000
	71 - 70		2327.192	25.539	21.771	1.173	0.000	0.000	21.771	0.000
	70 - 69		2360.142	25.901	21.771	1.190	0.000	0.000	21.771	0.000
L10	69 - 68	P54x3/8 [0.578486]	2393.200	22.386	22.138	1.011	0.000	0.000	22.138	0.000
	68 - 67		2426.375	22.696	22.138	1.025	0.000	0.000	22.138	0.000
	67 - 66		2459.66	23.008	22.138	1.039	0.000	0.000	22.138	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	66 - 65		2493.067	23.320	22.138	1.053	0.000	0.000	22.138	0.000
	65 - 64		2526.583	23.633	22.138	1.068	0.000	0.000	22.138	0.000
	64 - 63		2560.208	23.948	22.138	1.082	0.000	0.000	22.138	0.000
	63 - 62		2593.950	24.264	22.138	1.096	0.000	0.000	22.138	0.000
	62 - 61		2627.800	24.580	22.138	1.110	0.000	0.000	22.138	0.000
	61 - 60		2661.758	24.898	22.138	1.125	0.000	0.000	22.138	0.000
L11	60 - 59	P60x3/8 [0.516129]	2695.833	22.748	21.332	1.066	0.000	0.000	21.332	0.000
	59 - 58		2730.017	23.037	21.332	1.080	0.000	0.000	21.332	0.000
	58 - 57		2764.417	23.327	21.332	1.094	0.000	0.000	21.332	0.000
	57 - 56		2798.933	23.618	21.332	1.107	0.000	0.000	21.332	0.000
	56 - 55		2833.558	23.910	21.332	1.121	0.000	0.000	21.332	0.000
	55 - 54		2868.308	24.204	21.332	1.135	0.000	0.000	21.332	0.000
	54 - 53		2903.167	24.498	21.332	1.148	0.000	0.000	21.332	0.000
	53 - 52		2938.142	24.793	21.332	1.162	0.000	0.000	21.332	0.000
	52 - 51		2973.225	25.089	21.332	1.176	0.000	0.000	21.332	0.000
	51 - 50		3008.425	25.386	21.332	1.190	0.000	0.000	21.332	0.000
	50 - 49		3043.742	25.684	21.332	1.204	0.000	0.000	21.332	0.000
L12	49 - 48	P60x3/8 [0.594533]	3079.158	22.645	21.618	1.048	0.000	0.000	21.618	0.000
	48 - 47		3114.692	22.907	21.618	1.060	0.000	0.000	21.618	0.000
	47 - 46		3150.333	23.169	21.618	1.072	0.000	0.000	21.618	0.000
	46 - 45		3186.075	23.432	21.618	1.084	0.000	0.000	21.618	0.000
	45 - 44		3221.925	23.695	21.618	1.096	0.000	0.000	21.618	0.000
	44 - 43		3257.883	23.960	21.618	1.108	0.000	0.000	21.618	0.000
	43 - 42		3294.408	24.228	21.618	1.121	0.000	0.000	21.618	0.000
	42 - 41		3330.700	24.495	21.618	1.133	0.000	0.000	21.618	0.000
	41 - 40		3367.108	24.763	21.618	1.145	0.000	0.000	21.618	0.000
L13	40 - 39	P60x1/2 [0.604293]	3403.608	24.639	22.644	1.088	0.000	0.000	22.644	0.000
	39 - 38		3440.208	24.904	22.644	1.100	0.000	0.000	22.644	0.000
	38 - 37		3476.908	25.170	22.644	1.112	0.000	0.000	22.644	0.000
	37 - 36		3513.69	25.436	22.644	1.123	0.000	0.000	22.644	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	36 - 35		3550.512	25.703	22.644	1.135	0.000	0.000	22.644	0.000
	35 - 34		3587.627	25.971	22.644	1.147	0.000	0.000	22.644	0.000
	34 - 33		3624.815	26.240	22.644	1.159	0.000	0.000	22.644	0.000
	33 - 32		3662.042	26.510	22.644	1.171	0.000	0.000	22.644	0.000
	32 - 31		3699.550	26.781	22.644	1.183	0.000	0.000	22.644	0.000
	31 - 30		3737.150	27.054	22.644	1.195	0.000	0.000	22.644	0.000
	30 - 29		3774.842	27.326	22.644	1.207	0.000	0.000	22.644	0.000
L14	29 - 28	P60x1/2 [0.683417]	3812.625	24.502	22.944	1.068	0.000	0.000	22.944	0.000
	28 - 27		3850.500	24.745	22.944	1.079	0.000	0.000	22.944	0.000
	27 - 26		3888.458	24.989	22.944	1.089	0.000	0.000	22.944	0.000
	26 - 25		3926.517	25.234	22.944	1.100	0.000	0.000	22.944	0.000
	25 - 24		3964.667	25.479	22.944	1.110	0.000	0.000	22.944	0.000
	24 - 23		4002.900	25.724	22.944	1.121	0.000	0.000	22.944	0.000
	23 - 22		4041.233	25.971	22.944	1.132	0.000	0.000	22.944	0.000
	22 - 21		4079.642	26.218	22.944	1.143	0.000	0.000	22.944	0.000
	21 - 20		4118.150	26.465	22.944	1.153	0.000	0.000	22.944	0.000
L15	20 - 19	P60x5/8 [0.703867]	4156.742	25.964	23.971	1.083	0.000	0.000	23.971	0.000
	19 - 18		4195.425	26.205	23.971	1.093	0.000	0.000	23.971	0.000
	18 - 17		4234.192	26.447	23.971	1.103	0.000	0.000	23.971	0.000
	17 - 16		4273.042	26.690	23.971	1.113	0.000	0.000	23.971	0.000
	16 - 15		4311.983	26.933	23.971	1.124	0.000	0.000	23.971	0.000
	15 - 14		4351.008	27.177	23.971	1.134	0.000	0.000	23.971	0.000
	14 - 13		4390.117	27.421	23.971	1.144	0.000	0.000	23.971	0.000
	13 - 12		4429.317	27.666	23.971	1.154	0.000	0.000	23.971	0.000
	12 - 11		4468.592	27.912	23.971	1.164	0.000	0.000	23.971	0.000
	11 - 10		4507.958	28.157	23.971	1.175	0.000	0.000	23.971	0.000
	10 - 9		4547.400	28.404	23.971	1.185	0.000	0.000	23.971	0.000
L16	9 - 8	P60x5/8 [0.756633]	4586.925	26.723	26.119	1.023	0.000	0.000	26.119	0.000
	8 - 7		4626.542	26.954	26.119	1.032	0.000	0.000	26.119	0.000
	7 - 6		4666.23	27.185	26.119	1.041	0.000	0.000	26.119	0.000

Section No.	Elevation ft	Size	Actual M_x kip-ft	Actual f_{bx} ksi	Allow. F_{bx} ksi	Ratio $\frac{f_{bx}}{F_{bx}}$	Actual M_y kip-ft	Actual f_{by} ksi	Allow. F_{by} ksi	Ratio $\frac{f_{by}}{F_{by}}$
	6 - 5		3 4706.008	27.417	26.119	1.050	0.000	0.000	26.119	0.000
	5 - 4		4745.867	27.649	26.119	1.059	0.000	0.000	26.119	0.000
	4 - 3		4785.800	27.882	26.119	1.067	0.000	0.000	26.119	0.000
	3 - 2		4825.817	28.115	26.119	1.076	0.000	0.000	26.119	0.000
	2 - 1		4865.917	28.349	26.119	1.085	0.000	0.000	26.119	0.000
	1 - 0		4906.092	28.583	26.119	1.094	0.000	0.000	26.119	0.000

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Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
L1	190 - 189	P18x3/8	0.645	0.062	16.800	0.004	0.039	0.003	16.800	0.000
	189 - 188		0.703	0.068	16.800	0.004	0.040	0.003	16.800	0.000
	188 - 187		0.761	0.073	16.800	0.004	0.041	0.003	16.800	0.000
	187 - 186		0.820	0.079	16.800	0.005	0.042	0.003	16.800	0.000
	186 - 185		0.878	0.085	16.800	0.005	0.042	0.003	16.800	0.000
	185 - 184		0.937	0.090	16.800	0.005	0.043	0.003	16.800	0.000
	184 - 183		4.663	0.449	16.800	0.027	0.044	0.003	16.800	0.000
	183 - 182		4.721	0.455	16.800	0.027	0.045	0.003	16.800	0.000
	182 - 181		4.780	0.460	16.800	0.027	0.046	0.003	16.800	0.000
	181 - 180		4.838	0.466	16.800	0.028	0.047	0.003	16.800	0.000
L2	180 - 178	P24x3/8	4.998	0.359	16.800	0.021	0.048	0.002	16.800	0.000
	178 - 176		5.213	0.375	16.800	0.022	0.066	0.002	16.800	0.000
	176 - 174		5.372	0.386	16.800	0.023	0.067	0.002	16.800	0.000
	174 - 172		5.531	0.397	16.800	0.024	0.068	0.003	16.800	0.000
	172 - 170		5.689	0.409	16.800	0.024	0.069	0.003	16.800	0.000
	170 - 168		5.846	0.420	16.800	0.025	0.070	0.003	16.800	0.000
	168 - 166		6.002	0.431	16.800	0.026	0.071	0.003	16.800	0.000
	166 - 164		6.158	0.442	16.800	0.026	0.072	0.003	16.800	0.000
	164 - 162		6.312	0.454	16.800	0.027	0.073	0.003	16.800	0.000
	162 - 160		6.466	0.465	16.800	0.028	0.074	0.003	16.800	0.000
	160 - 158		12.575	0.904	16.800	0.054	0.940	0.035	16.800	0.002
	158 - 156		13.084	0.940	16.800	0.056	0.067	0.002	16.800	0.000
	156 - 154		13.232	0.951	16.800	0.057	0.067	0.003	16.800	0.000
	154 - 152		13.377	0.961	16.800	0.057	0.068	0.003	16.800	0.000
	152 - 150		17.938	1.289	16.800	0.077	1.349	0.050	16.800	0.003
	150 - 148		18.076	1.299	16.800	0.077	1.349	0.050	16.800	0.003
	148 - 146		19.274	1.385	16.800	0.082	1.206	0.045	16.800	0.003
	146 - 144		19.405	1.394	16.800	0.083	1.205	0.045	16.800	0.003
	144 - 142		19.531	1.403	16.800	0.084	1.204	0.045	16.800	0.003
	142 - 140		19.654	1.412	16.800	0.084	1.203	0.045	16.800	0.003
L3	140 - 139	P36x3/8	19.750	0.941	16.800	0.056	1.202	0.019	11.901	0.002
	139 - 138		19.857	0.946	16.800	0.056	1.202	0.019	11.901	0.002
	138 - 137		20.015	0.954	16.800	0.057	1.181	0.019	11.901	0.002
	137 - 136		20.121	0.959	16.800	0.057	1.181	0.019	11.901	0.002
	136 - 135		20.228	0.964	16.800	0.057	1.181	0.019	11.901	0.002
	135 - 134		20.334	0.969	16.800	0.058	1.181	0.019	11.901	0.002
	134 - 133		20.439	0.974	16.800	0.058	1.181	0.019	11.901	0.002

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	133 - 132		20.544	0.979	16.800	0.058	1.181	0.019	11.901	0.002
	132 - 131		21.024	1.002	16.800	0.060	0.184	0.003	11.901	0.000
	131 - 130		21.128	1.007	16.800	0.060	0.184	0.003	11.901	0.000
	130 - 129		21.232	1.012	16.800	0.060	0.184	0.003	11.901	0.000
	129 - 128		21.336	1.017	16.800	0.061	0.184	0.003	11.901	0.000
	128 - 127		21.439	1.022	16.800	0.061	0.184	0.003	11.901	0.000
	127 - 126		21.541	1.027	16.800	0.061	0.184	0.003	11.901	0.000
	126 - 125		21.644	1.031	16.800	0.061	0.183	0.003	11.901	0.000
	125 - 124		21.745	1.036	16.800	0.062	0.183	0.003	11.901	0.000
	124 - 123		22.027	1.050	16.800	0.062	0.592	0.010	11.901	0.001
	123 - 122		22.128	1.054	16.800	0.063	0.592	0.010	11.901	0.001
	122 - 121		22.228	1.059	16.800	0.063	0.592	0.010	11.901	0.001
	121 - 120		22.328	1.064	16.800	0.063	0.592	0.010	11.901	0.001
L4	120 - 119	P42x3/8	22.638	0.923	16.800	0.055	1.561	0.019	9.619	0.002
	119 - 118		22.751	0.928	16.800	0.055	1.561	0.019	9.619	0.002
	118 - 117		22.864	0.932	16.800	0.056	1.561	0.019	9.619	0.002
	117 - 116		22.976	0.937	16.800	0.056	1.561	0.019	9.619	0.002
	116 - 115		26.246	1.070	16.800	0.064	1.602	0.019	9.619	0.002
	115 - 114		26.357	1.075	16.800	0.064	1.602	0.019	9.619	0.002
	114 - 113		26.467	1.079	16.800	0.064	1.601	0.019	9.619	0.002
	113 - 112		26.576	1.084	16.800	0.065	1.601	0.019	9.619	0.002
	112 - 111		26.685	1.088	16.800	0.065	1.601	0.019	9.619	0.002
	111 - 110		26.794	1.093	16.800	0.065	1.600	0.019	9.619	0.002
	110 - 109		26.902	1.097	16.800	0.065	1.600	0.019	9.619	0.002
L5	109 - 108	P42x3/8 [0.449926]	27.012	0.920	15.970	0.058	1.600	0.016	12.412	0.001
	108 - 107		27.124	0.924	15.970	0.058	1.598	0.016	12.412	0.001
	107 - 106		27.234	0.927	15.970	0.058	1.597	0.016	12.412	0.001
	106 - 105		27.344	0.931	15.970	0.058	1.596	0.016	12.412	0.001
	105 - 104		27.453	0.935	15.970	0.059	1.595	0.016	12.412	0.001
L6	104 - 103	P42x3/8 [0.525959]	27.564	0.804	15.207	0.053	1.594	0.014	15.207	0.001
	103 - 102		27.675	0.808	15.207	0.053	1.593	0.014	15.207	0.001
	102 - 101		27.786	0.811	15.207	0.053	1.591	0.014	15.207	0.001
	101 - 100		27.896	0.814	15.207	0.054	1.590	0.014	15.207	0.001
L7	100 - 99	P48x3/8 [0.43965]	28.647	0.872	16.145	0.054	1.588	0.012	9.813	0.001
	99 - 98		28.765	0.876	16.145	0.054	1.587	0.012	9.813	0.001
	98 - 97		28.993	0.883	16.145	0.055	1.586	0.012	9.813	0.001
	97 - 96		29.111	0.886	16.145	0.055	1.585	0.012	9.813	0.001
	96 - 95		29.228	0.890	16.145	0.055	1.584	0.012	9.813	0.001
	95 - 94		29.345	0.893	16.145	0.055	1.583	0.012	9.813	0.001
	94 - 93		29.462	0.897	16.145	0.056	1.581	0.012	9.813	0.001
	93 - 92		29.578	0.901	16.145	0.056	1.580	0.012	9.813	0.001
	92 - 91		29.694	0.904	16.145	0.056	1.579	0.012	9.813	0.001
	91 - 90		29.809	0.908	16.145	0.056	1.578	0.012	9.813	0.001
	90 - 89		30.243	0.921	16.145	0.057	1.524	0.012	9.813	0.001
L8	89 - 88	P48x3/8 [0.53914]	30.357	0.755	15.231	0.050	1.523	0.010	13.325	0.001
	88 - 87		30.472	0.758	15.231	0.050	1.522	0.010	13.325	0.001
	87 - 86		30.712	0.764	15.231	0.050	1.383	0.009	13.325	0.001
	86 - 85		30.827	0.767	15.231	0.050	1.381	0.009	13.325	0.001
	85 - 84		30.940	0.770	15.231	0.051	1.380	0.009	13.325	0.001
	84 - 83		31.054	0.773	15.231	0.051	1.378	0.009	13.325	0.001
	83 - 82		31.166	0.775	15.231	0.051	1.377	0.009	13.325	0.001
	82 - 81		31.278	0.778	15.231	0.051	1.375	0.009	13.325	0.001
	81 - 80		31.390	0.781	15.231	0.051	1.374	0.009	13.325	0.001
L9	80 - 79	P54x3/8 [0.490666]	31.510	0.764	15.756	0.048	1.372	0.008	10.275	0.001
	79 - 78		31.630	0.767	15.756	0.049	1.370	0.008	10.275	0.001
	78 - 77		31.750	0.770	15.756	0.049	1.369	0.008	10.275	0.001
	77 - 76		31.870	0.773	15.756	0.049	1.367	0.008	10.275	0.001
	76 - 75		31.989	0.776	15.756	0.049	1.366	0.007	10.275	0.001
	75 - 74		32.108	0.779	15.756	0.049	1.364	0.007	10.275	0.001
	74 - 73		32.227	0.781	15.756	0.050	1.362	0.007	10.275	0.001

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	73 - 72		32.344	0.784	15.756	0.050	1.361	0.007	10.275	0.001
	72 - 71		32.462	0.787	15.756	0.050	1.359	0.007	10.275	0.001
	71 - 70		32.579	0.790	15.756	0.050	1.357	0.007	10.275	0.001
	70 - 69		33.037	0.801	15.756	0.051	1.312	0.007	10.275	0.001
L10	69 - 68	P54x3/8 [0.578486]	33.151	0.683	15.046	0.045	1.314	0.006	12.624	0.000
	68 - 67		33.264	0.685	15.046	0.046	1.315	0.006	12.624	0.000
	67 - 66		33.378	0.688	15.046	0.046	1.317	0.006	12.624	0.000
	66 - 65		33.491	0.690	15.046	0.046	1.318	0.006	12.624	0.000
	65 - 64		33.604	0.692	15.046	0.046	1.320	0.006	12.624	0.000
	64 - 63		33.716	0.695	15.046	0.046	1.321	0.006	12.624	0.000
	63 - 62		33.828	0.697	15.046	0.046	1.323	0.006	12.624	0.000
	62 - 61		33.939	0.699	15.046	0.046	1.324	0.006	12.624	0.000
	61 - 60		34.050	0.701	15.046	0.047	1.326	0.006	12.624	0.000
L11	60 - 59	P60x3/8 [0.516129]	34.165	0.708	15.637	0.045	1.328	0.006	10.115	0.001
	59 - 58		34.282	0.711	15.637	0.045	1.329	0.006	10.115	0.001
	58 - 57		34.491	0.715	15.637	0.046	1.842	0.008	10.115	0.001
	57 - 56		34.607	0.718	15.637	0.046	1.844	0.008	10.115	0.001
	56 - 55		34.722	0.720	15.637	0.046	1.845	0.008	10.115	0.001
	55 - 54		34.837	0.722	15.637	0.046	1.847	0.008	10.115	0.001
	54 - 53		34.952	0.725	15.637	0.046	1.849	0.008	10.115	0.001
	53 - 52		35.066	0.727	15.637	0.046	1.850	0.008	10.115	0.001
	52 - 51		35.180	0.729	15.637	0.047	1.852	0.008	10.115	0.001
	51 - 50		35.293	0.732	15.637	0.047	1.853	0.008	10.115	0.001
	50 - 49		35.406	0.734	15.637	0.047	1.855	0.008	10.115	0.001
L12	49 - 48	P60x3/8 [0.594533]	35.513	0.640	15.058	0.043	1.857	0.007	12.070	0.001
	48 - 47		35.621	0.642	15.058	0.043	1.858	0.007	12.070	0.001
	47 - 46		35.728	0.644	15.058	0.043	1.860	0.007	12.070	0.001
	46 - 45		35.835	0.646	15.058	0.043	1.861	0.007	12.070	0.001
	45 - 44		35.942	0.648	15.058	0.043	1.863	0.007	12.070	0.001
	44 - 43		36.048	0.650	15.058	0.043	1.864	0.007	12.070	0.001
	43 - 42		36.282	0.654	15.058	0.043	1.459	0.005	12.070	0.000
	42 - 41		36.387	0.656	15.058	0.044	1.461	0.005	12.070	0.000
	41 - 40		36.492	0.658	15.058	0.044	1.462	0.005	12.070	0.000
L13	40 - 39	P60x1/2 [0.604293]	36.588	0.649	15.976	0.041	1.464	0.005	12.318	0.000
	39 - 38		36.685	0.651	15.976	0.041	1.465	0.005	12.318	0.000
	38 - 37		36.780	0.652	15.976	0.041	1.467	0.005	12.318	0.000
	37 - 36		36.876	0.654	15.976	0.041	1.468	0.005	12.318	0.000
	36 - 35		37.043	0.657	15.976	0.041	3.475	0.013	12.318	0.001
	35 - 34		37.137	0.659	15.976	0.041	3.471	0.013	12.318	0.001
	34 - 33		37.231	0.660	15.976	0.041	3.467	0.013	12.318	0.001
	33 - 32		37.449	0.664	15.976	0.042	4.116	0.015	12.318	0.001
	32 - 31		37.542	0.666	15.976	0.042	4.112	0.015	12.318	0.001
	31 - 30		37.634	0.668	15.976	0.042	4.108	0.015	12.318	0.001
	30 - 29		37.725	0.669	15.976	0.042	4.105	0.015	12.318	0.001
L14	29 - 28	P60x1/2 [0.683417]	37.817	0.594	15.403	0.039	4.101	0.013	14.367	0.001
	28 - 27		37.909	0.595	15.403	0.039	4.098	0.013	14.367	0.001
	27 - 26		38.000	0.597	15.403	0.039	4.094	0.013	14.367	0.001
	26 - 25		38.091	0.598	15.403	0.039	4.090	0.013	14.367	0.001
	25 - 24		38.181	0.600	15.403	0.039	4.087	0.013	14.367	0.001
	24 - 23		38.271	0.601	15.403	0.039	4.083	0.013	14.367	0.001
	23 - 22		38.361	0.602	15.403	0.039	4.080	0.013	14.367	0.001
	22 - 21		38.449	0.604	15.403	0.039	4.076	0.013	14.367	0.001
	21 - 20		38.537	0.605	15.403	0.039	4.073	0.013	14.367	0.001
L15	20 - 19	P60x5/8 [0.703867]	38.626	0.589	16.205	0.036	4.069	0.013	14.906	0.001
	19 - 18		38.713	0.591	16.205	0.036	4.066	0.013	14.906	0.001
	18 - 17		38.801	0.592	16.205	0.037	4.062	0.013	14.906	0.001
	17 - 16		38.887	0.593	16.205	0.037	4.058	0.013	14.906	0.001
	16 - 15		38.973	0.594	16.205	0.037	4.055	0.013	14.906	0.001
	15 - 14		39.059	0.596	16.205	0.037	4.051	0.013	14.906	0.001
	14 - 13		39.144	0.597	16.205	0.037	4.048	0.013	14.906	0.001

Section No.	Elevation ft	Size	Actual V K	Actual f_v ksi	Allow. F_v ksi	Ratio $\frac{f_v}{F_v}$	Actual T kip-ft	Actual f_{vt} ksi	Allow. F_{vt} ksi	Ratio $\frac{f_{vt}}{F_{vt}}$
	13 - 12		39.228	0.598	16.205	0.037	4.044	0.013	14.906	0.001
	12 - 11		39.312	0.600	16.205	0.037	4.041	0.013	14.906	0.001
	11 - 10		39.395	0.601	16.205	0.037	4.037	0.013	14.906	0.001
	10 - 9		39.478	0.602	16.205	0.037	4.034	0.013	14.906	0.001
L16	9 - 8	P60x5/8 [0.756633]	39.560	0.562	15.830	0.035	4.030	0.012	15.830	0.001
	8 - 7		39.644	0.563	15.830	0.036	4.027	0.012	15.830	0.001
	7 - 6		39.726	0.564	15.830	0.036	4.023	0.012	15.830	0.001
	6 - 5		39.808	0.565	15.830	0.036	4.020	0.012	15.830	0.001
	5 - 4		39.889	0.567	15.830	0.036	4.016	0.012	15.830	0.001
	4 - 3		39.970	0.568	15.830	0.036	4.012	0.012	15.830	0.001
	3 - 2		40.050	0.569	15.830	0.036	4.009	0.012	15.830	0.001
	2 - 1		40.129	0.570	15.830	0.036	4.005	0.012	15.830	0.001
	1 - 0		40.208	0.571	15.830	0.036	4.002	0.012	15.830	0.001

Pole Interaction Design Data

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
L1	190 - 189	0.001	0.013	0.000	0.004	0.000	0.014 ✔	1.333	H1-3+VT ✔
	189 - 188	0.001	0.016	0.000	0.004	0.000	0.017 ✔	1.333	H1-3+VT ✔
	188 - 187	0.001	0.020	0.000	0.004	0.000	0.021 ✔	1.333	H1-3+VT ✔
	187 - 186	0.001	0.024	0.000	0.005	0.000	0.025 ✔	1.333	H1-3+VT ✔
	186 - 185	0.001	0.028	0.000	0.005	0.000	0.029 ✔	1.333	H1-3+VT ✔
	185 - 184	0.001	0.032	0.000	0.005	0.000	0.033 ✔	1.333	H1-3+VT ✔
	184 - 183	0.005	0.017	0.000	0.027	0.000	0.024 ✔	1.333	H1-3+VT ✔
	183 - 182	0.006	0.040	0.000	0.027	0.000	0.046 ✔	1.333	H1-3+VT ✔
	182 - 181	0.006	0.063	0.000	0.027	0.000	0.069 ✔	1.333	H1-3+VT ✔
	181 - 180	0.006	0.086	0.000	0.028	0.000	0.093 ✔	1.333	H1-3+VT ✔
L2	180 - 178	0.005	0.074	0.000	0.021	0.000	0.079 ✔	1.333	H1-3+VT ✔
	178 - 176	0.005	0.101	0.000	0.022	0.000	0.107 ✔	1.333	H1-3+VT ✔
	176 - 174	0.005	0.130	0.000	0.023	0.000	0.136 ✔	1.333	H1-3+VT ✔
	174 - 172	0.006	0.159	0.000	0.024	0.000	0.165 ✔	1.333	H1-3+VT ✔
	172 - 170	0.006	0.189	0.000	0.024	0.000	0.196 ✔	1.333	H1-3+VT ✔
	170 - 168	0.006	0.220	0.000	0.025	0.000	0.227	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	168 - 166	0.007	0.252	0.000	0.026	0.000	0.259	1.333	H1-3+VT
	166 - 164	0.007	0.284	0.000	0.026	0.000	0.292	1.333	H1-3+VT
	164 - 162	0.008	0.318	0.000	0.027	0.000	0.326	1.333	H1-3+VT
	162 - 160	0.008	0.352	0.000	0.028	0.000	0.360	1.333	H1-3+VT
	160 - 158	0.011	0.419	0.000	0.054	0.002	0.433	1.333	H1-3+VT
	158 - 156	0.012	0.488	0.000	0.056	0.000	0.502	1.333	H1-3+VT
	156 - 154	0.012	0.558	0.000	0.057	0.000	0.573	1.333	H1-3+VT
	154 - 152	0.012	0.629	0.000	0.057	0.000	0.645	1.333	H1-3+VT
	152 - 150	0.016	0.715	0.000	0.077	0.003	0.737	1.333	H1-3+VT
	150 - 148	0.016	0.811	0.000	0.077	0.003	0.833	1.333	H1-3+VT
	148 - 146	0.017	0.913	0.000	0.082	0.003	0.938	1.333	H1-3+VT
	146 - 144	0.018	1.017	0.000	0.083	0.003	1.042	1.333	H1-3+VT
	144 - 142	0.018	1.121	0.000	0.084	0.003	1.146	1.333	H1-3+VT
	142 - 140	0.019	1.225	0.000	0.084	0.003	1.251	1.333	H1-3+VT
L3	140 - 139	0.013	0.654	0.000	0.056	0.002	0.671	1.333	H1-3+VT
	139 - 138	0.013	0.681	0.000	0.056	0.002	0.698	1.333	H1-3+VT
	138 - 137	0.014	0.709	0.000	0.057	0.002	0.726	1.333	H1-3+VT
	137 - 136	0.014	0.736	0.000	0.057	0.002	0.753	1.333	H1-3+VT
	136 - 135	0.014	0.764	0.000	0.057	0.002	0.781	1.333	H1-3+VT
	135 - 134	0.014	0.791	0.000	0.058	0.002	0.809	1.333	H1-3+VT
	134 - 133	0.014	0.819	0.000	0.058	0.002	0.837	1.333	H1-3+VT
	133 - 132	0.015	0.847	0.000	0.058	0.002	0.865	1.333	H1-3+VT
	132 - 131	0.015	0.877	0.000	0.060	0.000	0.895	1.333	H1-3+VT
	131 - 130	0.015	0.906	0.000	0.060	0.000	0.924	1.333	H1-3+VT
	130 - 129	0.015	0.935	0.000	0.060	0.000	0.954	1.333	H1-3+VT
	129 - 128	0.016	0.964	0.000	0.061	0.000	0.983	1.333	H1-3+VT

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	128 - 127	0.016	0.993	0.000	0.061	0.000	1.012	1.333	H1-3+VT
	127 - 126	0.016	1.022	0.000	0.061	0.000	1.042	1.333	H1-3+VT
	126 - 125	0.016	1.052	0.000	0.061	0.000	1.072	1.333	H1-3+VT
	125 - 124	0.016	1.082	0.000	0.062	0.000	1.102	1.333	H1-3+VT
	124 - 123	0.017	1.112	0.000	0.062	0.001	1.133	1.333	H1-3+VT
	123 - 122	0.017	1.143	0.000	0.063	0.001	1.163	1.333	H1-3+VT
	122 - 121	0.017	1.173	0.000	0.063	0.001	1.194	1.333	H1-3+VT
	121 - 120	0.017	1.203	0.000	0.063	0.001	1.225	1.333	H1-3+VT
L4	120 - 119	0.016	0.942	0.000	0.055	0.002	0.961	1.333	H1-3+VT
	119 - 118	0.016	0.966	0.000	0.055	0.002	0.985	1.333	H1-3+VT
	118 - 117	0.016	0.990	0.000	0.056	0.002	1.009	1.333	H1-3+VT
	117 - 116	0.016	1.014	0.000	0.056	0.002	1.033	1.333	H1-3+VT
	116 - 115	0.018	1.046	0.000	0.064	0.002	1.068	1.333	H1-3+VT
	115 - 114	0.019	1.073	0.000	0.064	0.002	1.096	1.333	H1-3+VT
	114 - 113	0.019	1.101	0.000	0.064	0.002	1.124	1.333	H1-3+VT
	113 - 112	0.019	1.128	0.000	0.065	0.002	1.152	1.333	H1-3+VT
	112 - 111	0.019	1.156	0.000	0.065	0.002	1.180	1.333	H1-3+VT
	111 - 110	0.019	1.184	0.000	0.065	0.002	1.208	1.333	H1-3+VT
	110 - 109	0.020	1.212	0.000	0.065	0.002	1.236	1.333	H1-3+VT
L5	109 - 108	0.016	1.023	0.000	0.058	0.001	1.043	1.333	H1-3+VT
	108 - 107	0.017	1.047	0.000	0.058	0.001	1.067	1.333	H1-3+VT
	107 - 106	0.017	1.070	0.000	0.058	0.001	1.090	1.333	H1-3+VT
	106 - 105	0.017	1.094	0.000	0.058	0.001	1.114	1.333	H1-3+VT
	105 - 104	0.017	1.117	0.000	0.059	0.001	1.138	1.333	H1-3+VT
L6	104 - 103	0.015	0.902	0.000	0.053	0.001	0.920	1.333	H1-3+VT
	103 - 102	0.015	0.921	0.000	0.053	0.001	0.939	1.333	H1-3+VT

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	102 - 101	0.015	0.940	0.000	0.053	0.001	0.958	1.333	H1-3+VT
	101 - 100	0.016	0.959	0.000	0.054	0.001	0.977	1.333	H1-3+VT
L7	100 - 99	0.017	1.002	0.000	0.054	0.001	1.022	1.333	H1-3+VT
	99 - 98	0.017	1.022	0.000	0.054	0.001	1.042	1.333	H1-3+VT
	98 - 97	0.018	1.042	0.000	0.055	0.001	1.063	1.333	H1-3+VT
	97 - 96	0.018	1.062	0.000	0.055	0.001	1.083	1.333	H1-3+VT
	96 - 95	0.018	1.083	0.000	0.055	0.001	1.104	1.333	H1-3+VT
	95 - 94	0.018	1.103	0.000	0.055	0.001	1.125	1.333	H1-3+VT
	94 - 93	0.018	1.124	0.000	0.056	0.001	1.145	1.333	H1-3+VT
	93 - 92	0.019	1.144	0.000	0.056	0.001	1.166	1.333	H1-3+VT
	92 - 91	0.019	1.165	0.000	0.056	0.001	1.187	1.333	H1-3+VT
	91 - 90	0.019	1.186	0.000	0.056	0.001	1.208	1.333	H1-3+VT
	90 - 89	0.019	1.208	0.000	0.057	0.001	1.230	1.333	H1-3+VT
L8	89 - 88	0.016	0.988	0.000	0.050	0.001	1.006	1.333	H1-3+VT
	88 - 87	0.016	1.005	0.000	0.050	0.001	1.023	1.333	H1-3+VT
	87 - 86	0.016	1.022	0.000	0.050	0.001	1.041	1.333	H1-3+VT
	86 - 85	0.016	1.040	0.000	0.050	0.001	1.058	1.333	H1-3+VT
	85 - 84	0.016	1.057	0.000	0.051	0.001	1.076	1.333	H1-3+VT
	84 - 83	0.017	1.074	0.000	0.051	0.001	1.094	1.333	H1-3+VT
	83 - 82	0.017	1.092	0.000	0.051	0.001	1.111	1.333	H1-3+VT
	82 - 81	0.017	1.109	0.000	0.051	0.001	1.129	1.333	H1-3+VT
	81 - 80	0.017	1.127	0.000	0.051	0.001	1.147	1.333	H1-3+VT
L9	80 - 79	0.018	1.028	0.000	0.048	0.001	1.048	1.333	H1-3+VT
	79 - 78	0.018	1.044	0.000	0.049	0.001	1.064	1.333	H1-3+VT
	78 - 77	0.018	1.060	0.000	0.049	0.001	1.080	1.333	H1-3+VT
	77 - 76	0.018	1.076	0.000	0.049	0.001	1.096	1.333	H1-3+VT

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	76 - 75	0.018	1.092	0.000	0.049	0.001	1.113 ✔	1.333	H1-3+VT ✔
	75 - 74	0.019	1.108	0.000	0.049	0.001	1.129 ✔	1.333	H1-3+VT ✔
	74 - 73	0.019	1.124	0.000	0.050	0.001	1.145 ✔	1.333	H1-3+VT ✔
	73 - 72	0.019	1.140	0.000	0.050	0.001	1.162 ✔	1.333	H1-3+VT ✔
	72 - 71	0.019	1.157	0.000	0.050	0.001	1.178 ✔	1.333	H1-3+VT ✔
	71 - 70	0.019	1.173	0.000	0.050	0.001	1.195 ✔	1.333	H1-3+VT ✔
	70 - 69	0.020	1.190	0.000	0.051	0.001	1.212 ✔	1.333	H1-3+VT ✔
L10	69 - 68	0.017	1.011	0.000	0.045	0.000	1.030 ✔	1.333	H1-3+VT ✔
	68 - 67	0.017	1.025	0.000	0.046	0.000	1.044 ✔	1.333	H1-3+VT ✔
	67 - 66	0.017	1.039	0.000	0.046	0.000	1.058 ✔	1.333	H1-3+VT ✔
	66 - 65	0.017	1.053	0.000	0.046	0.000	1.073 ✔	1.333	H1-3+VT ✔
	65 - 64	0.017	1.068	0.000	0.046	0.000	1.087 ✔	1.333	H1-3+VT ✔
	64 - 63	0.017	1.082	0.000	0.046	0.000	1.101 ✔	1.333	H1-3+VT ✔
	63 - 62	0.018	1.096	0.000	0.046	0.000	1.116 ✔	1.333	H1-3+VT ✔
	62 - 61	0.018	1.110	0.000	0.046	0.000	1.130 ✔	1.333	H1-3+VT ✔
	61 - 60	0.018	1.125	0.000	0.047	0.000	1.145 ✔	1.333	H1-3+VT ✔
L11	60 - 59	0.019	1.066	0.000	0.045	0.001	1.088 ✔	1.333	H1-3+VT ✔
	59 - 58	0.019	1.080	0.000	0.045	0.001	1.101 ✔	1.333	H1-3+VT ✔
	58 - 57	0.019	1.094	0.000	0.046	0.001	1.115 ✔	1.333	H1-3+VT ✔
	57 - 56	0.020	1.107	0.000	0.046	0.001	1.129 ✔	1.333	H1-3+VT ✔
	56 - 55	0.020	1.121	0.000	0.046	0.001	1.143 ✔	1.333	H1-3+VT ✔
	55 - 54	0.020	1.135	0.000	0.046	0.001	1.157 ✔	1.333	H1-3+VT ✔
	54 - 53	0.020	1.148	0.000	0.046	0.001	1.171 ✔	1.333	H1-3+VT ✔
	53 - 52	0.020	1.162	0.000	0.046	0.001	1.185 ✔	1.333	H1-3+VT ✔
	52 - 51	0.021	1.176	0.000	0.047	0.001	1.199 ✔	1.333	H1-3+VT ✔
	51 - 50	0.021	1.190	0.000	0.047	0.001	1.213 ✔	1.333	H1-3+VT ✔

Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	50 - 49	0.021	1.204	0.000	0.047	0.001	1.227	1.333	H1-3+VT
L12	49 - 48	0.018	1.048	0.000	0.043	0.001	1.068	1.333	H1-3+VT
	48 - 47	0.018	1.060	0.000	0.043	0.001	1.080	1.333	H1-3+VT
	47 - 46	0.019	1.072	0.000	0.043	0.001	1.092	1.333	H1-3+VT
	46 - 45	0.019	1.084	0.000	0.043	0.001	1.105	1.333	H1-3+VT
	45 - 44	0.019	1.096	0.000	0.043	0.001	1.117	1.333	H1-3+VT
	44 - 43	0.019	1.108	0.000	0.043	0.001	1.129	1.333	H1-3+VT
	43 - 42	0.019	1.121	0.000	0.043	0.000	1.142	1.333	H1-3+VT
	42 - 41	0.019	1.133	0.000	0.044	0.000	1.155	1.333	H1-3+VT
	41 - 40	0.020	1.145	0.000	0.044	0.000	1.167	1.333	H1-3+VT
L13	40 - 39	0.019	1.088	0.000	0.041	0.000	1.108	1.333	H1-3+VT
	39 - 38	0.019	1.100	0.000	0.041	0.000	1.120	1.333	H1-3+VT
	38 - 37	0.019	1.112	0.000	0.041	0.000	1.132	1.333	H1-3+VT
	37 - 36	0.019	1.123	0.000	0.041	0.000	1.144	1.333	H1-3+VT
	36 - 35	0.019	1.135	0.000	0.041	0.001	1.156	1.333	H1-3+VT
	35 - 34	0.020	1.147	0.000	0.041	0.001	1.168	1.333	H1-3+VT
	34 - 33	0.020	1.159	0.000	0.041	0.001	1.180	1.333	H1-3+VT
	33 - 32	0.020	1.171	0.000	0.042	0.001	1.193	1.333	H1-3+VT
	32 - 31	0.020	1.183	0.000	0.042	0.001	1.205	1.333	H1-3+VT
	31 - 30	0.020	1.195	0.000	0.042	0.001	1.217	1.333	H1-3+VT
	30 - 29	0.020	1.207	0.000	0.042	0.001	1.229	1.333	H1-3+VT
L14	29 - 28	0.018	1.068	0.000	0.039	0.001	1.088	1.333	H1-3+VT
	28 - 27	0.018	1.079	0.000	0.039	0.001	1.098	1.333	H1-3+VT
	27 - 26	0.018	1.089	0.000	0.039	0.001	1.109	1.333	H1-3+VT
	26 - 25	0.019	1.100	0.000	0.039	0.001	1.120	1.333	H1-3+VT
	25 - 24	0.019	1.110	0.000	0.039	0.001	1.131	1.333	H1-3+VT

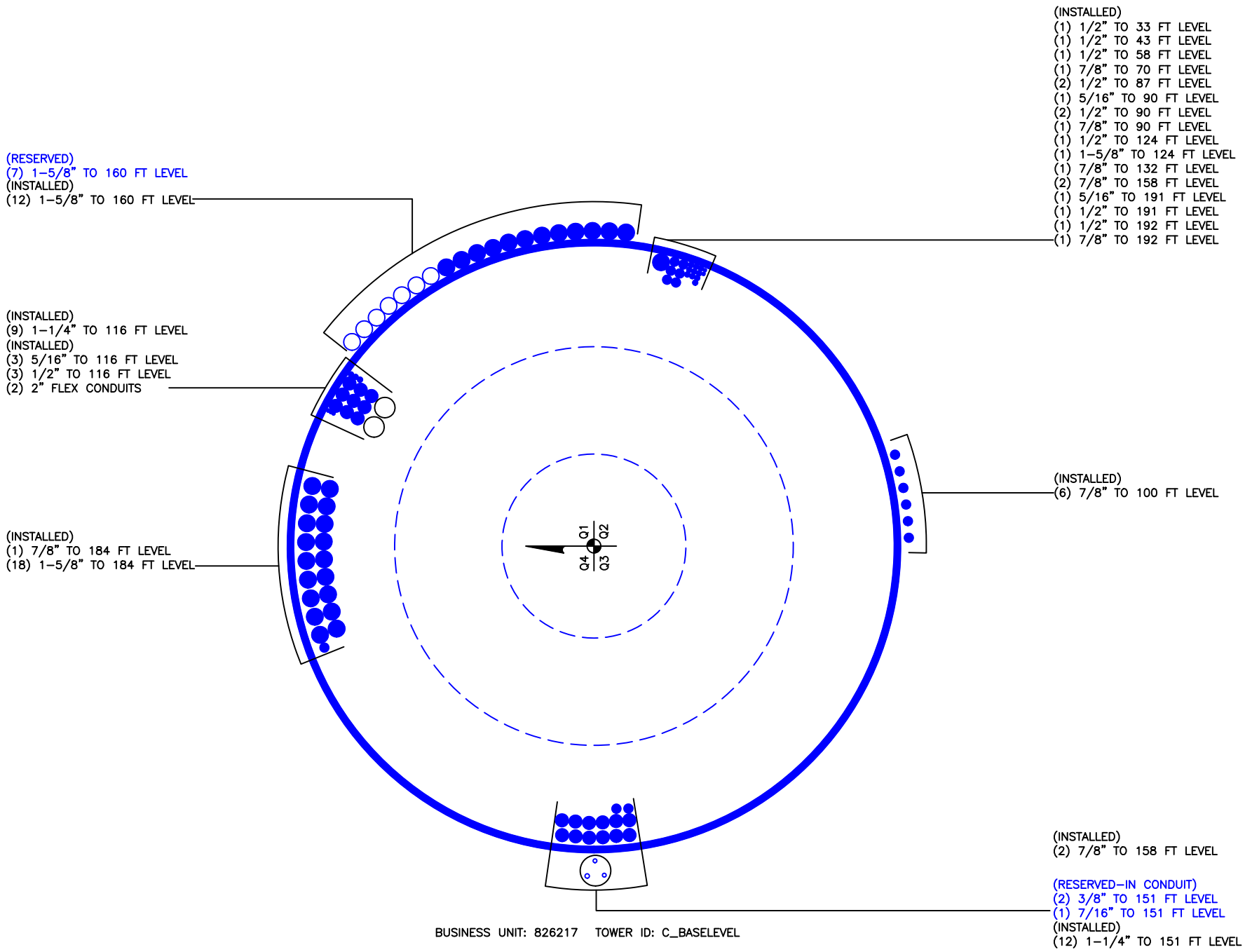
Section No.	Elevation ft	Ratio $\frac{P}{P_a}$	Ratio $\frac{f_{bx}}{F_{bx}}$	Ratio $\frac{f_{by}}{F_{by}}$	Ratio $\frac{f_v}{F_v}$	Ratio $\frac{f_{vt}}{F_{vt}}$	Comb. Stress Ratio	Allow. Stress Ratio	Criteria
	24 - 23	0.019	1.121	0.000	0.039	0.001	1.142	1.333	H1-3+VT
	23 - 22	0.019	1.132	0.000	0.039	0.001	1.153	1.333	H1-3+VT
	22 - 21	0.019	1.143	0.000	0.039	0.001	1.164	1.333	H1-3+VT
	21 - 20	0.019	1.153	0.000	0.039	0.001	1.175	1.333	H1-3+VT
L15	20 - 19	0.018	1.083	0.000	0.036	0.001	1.103	1.333	H1-3+VT
	19 - 18	0.018	1.093	0.000	0.036	0.001	1.113	1.333	H1-3+VT
	18 - 17	0.019	1.103	0.000	0.037	0.001	1.123	1.333	H1-3+VT
	17 - 16	0.019	1.113	0.000	0.037	0.001	1.134	1.333	H1-3+VT
	16 - 15	0.019	1.124	0.000	0.037	0.001	1.144	1.333	H1-3+VT
	15 - 14	0.019	1.134	0.000	0.037	0.001	1.154	1.333	H1-3+VT
	14 - 13	0.019	1.144	0.000	0.037	0.001	1.165	1.333	H1-3+VT
	13 - 12	0.019	1.154	0.000	0.037	0.001	1.175	1.333	H1-3+VT
	12 - 11	0.020	1.164	0.000	0.037	0.001	1.185	1.333	H1-3+VT
	11 - 10	0.020	1.175	0.000	0.037	0.001	1.196	1.333	H1-3+VT
	10 - 9	0.020	1.185	0.000	0.037	0.001	1.206	1.333	H1-3+VT
L16	9 - 8	0.019	1.023	0.000	0.035	0.001	1.043	1.333	H1-3+VT
	8 - 7	0.019	1.032	0.000	0.036	0.001	1.052	1.333	H1-3+VT
	7 - 6	0.019	1.041	0.000	0.036	0.001	1.061	1.333	H1-3+VT
	6 - 5	0.019	1.050	0.000	0.036	0.001	1.070	1.333	H1-3+VT
	5 - 4	0.020	1.059	0.000	0.036	0.001	1.079	1.333	H1-3+VT
	4 - 3	0.020	1.067	0.000	0.036	0.001	1.089	1.333	H1-3+VT
	3 - 2	0.020	1.076	0.000	0.036	0.001	1.098	1.333	H1-3+VT
	2 - 1	0.020	1.085	0.000	0.036	0.001	1.107	1.333	H1-3+VT
	1 - 0	0.020	1.094	0.000	0.036	0.001	1.116	1.333	H1-3+VT

Section Capacity Table

Section No.	Elevation ft	Component Type	Size	Critical Element	P K	$SF*P_{allow}$ K	% Capacity	Pass Fail
L1	190 - 180	Pole	P18x3/8	1	-3.090	697.495	6.9	Pass
L2	180 - 140	Pole	P24x3/8	2	-13.011	934.940	93.3	Pass
L3	140 - 120	Pole	P36x3/8	3	-17.101	1325.678	91.5	Pass
L4	120 - 109	Pole	P42x3/8	4	-21.863	1484.549	92.3	Pass
L5	109 - 104	Pole	P42x3/8 [0.449926]	5	-23.182	1805.415	85.6	Pass
L6	104 - 100	Pole	P42x3/8 [0.525959]	6	-24.358	2083.706	80.9	Pass
L7	100 - 89	Pole	P48x3/8 [0.43965]	7	-28.055	1944.674	93.0	Pass
L8	89 - 80	Pole	P48x3/8 [0.53914]	8	-31.244	2428.846	88.8	Pass
L9	80 - 69	Pole	P54x3/8 [0.490666]	9	-35.194	2393.735	92.4	Pass
L10	69 - 60	Pole	P54x3/8 [0.578486]	10	-38.754	2864.977	89.1	Pass
L11	60 - 49	Pole	P60x3/8 [0.516129]	11	-43.148	2742.607	93.8	Pass
L12	49 - 40	Pole	P60x3/8 [0.594533]	12	-47.190	3197.360	90.7	Pass
L13	40 - 29	Pole	P60x1/2 [0.604293]	13	-52.264	3403.522	93.5	Pass
L14	29 - 20	Pole	P60x1/2 [0.683417]	14	-56.784	3894.959	90.7	Pass
L15	20 - 9	Pole	P60x5/8 [0.703867]	15	-62.516	4189.685	91.1	Pass
L16	9 - 0	Pole	P60x5/8 [0.756633]	16	-67.491	4457.285	92.2	Pass
							Summary	
						Pole (L2)	93.8	Pass
						RATING =	**93.8**	**Pass**

APPENDIX B

BASE LEVEL DRAWING


(INSTALLED)
(1) 1/2" TO 33 FT LEVEL
(1) 1/2" TO 43 FT LEVEL
(1) 1/2" TO 58 FT LEVEL
(1) 7/8" TO 70 FT LEVEL
(2) 1/2" TO 87 FT LEVEL
(1) 5/16" TO 90 FT LEVEL
(2) 1/2" TO 90 FT LEVEL
(1) 7/8" TO 90 FT LEVEL
(1) 1/2" TO 124 FT LEVEL
(1) 1-5/8" TO 124 FT LEVEL
(1) 7/8" TO 132 FT LEVEL
(2) 7/8" TO 158 FT LEVEL
(1) 5/16" TO 191 FT LEVEL
(1) 1/2" TO 191 FT LEVEL
(1) 1/2" TO 192 FT LEVEL
(1) 7/8" TO 192 FT LEVEL
(RESERVED)
(7) 1-5/8" TO 160 FT LEVEL
(INSTALLED)
(12) 1-5/8" TO 160 FT LEVEL
(INSTALLED)
(9) 1-1/4" TO 116 FT LEVEL
(INSTALLED)
(3) 5/16" TO 116 FT LEVEL
(3) 1/2" TO 116 FT LEVEL
(2) 2" FLEX CONDUITS
(INSTALLED)
(6) 7/8" TO 100 FT LEVEL
(INSTALLED)
(1) 7/8" TO 184 FT LEVEL
(18) 1-5/8" TO 184 FT LEVEL
Q1
Q2
Q4
Q3
(INSTALLED)
(2) 7/8" TO 158 FT LEVEL
(RESERVED-IN CONDUIT)
(2) 3/8" TO 151 FT LEVEL
(1) 7/16" TO 151 FT LEVEL
(INSTALLED)
(12) 1-1/4" TO 151 FT LEVEL
BUSINESS UNIT: 826217 TOWER ID: C_BASELEVEL

APPENDIX C

ADDITIONAL CALCULATIONS

Reinforced Pole Stress and Effective Thickness Check

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Section		Loads				Pole																Unreinforced Pole - Rev. F					Reinforced Pole						Rev. F	Reinforcement 1										Reinforcement 2									Composite								
Section	Elevation (ft)	Moment (ft-kip)	Compressi on (kip)	Shear (kip)	Torsion (kip-ft)	Number of Sides	OD (in)	Thickness (in)	Yield Strength (ksi)	Flat Width (in)	Area (in^2)	Moment of Inertia (in^4)	Percent of Composit e Moment of Inertia	Angle Offset to Pole Flat	Distance to Extreme Fiber (in)	Section Modulus (in^3)	Torsion Constant (in^4)	Polygonal Compact Criterion	Allowable Bending Stress (ksi)	Allowable Bending Moment Strength (ft-kip)	Allowable Axial Stress (ksi)	Allowable Shear Stress (ksi)	Bending Stress (ksi)	Axial Stress (ksi)	Shear Stress (ksi)	Torsion Shear Stress (ksi)	Stress Ratio	Moment in Pole when Reinforce d	Bending Stress (ksi)	Axial Stress (ksi)	Shear Stress (ksi)	Torsion Shear Stress (ksi)	Reinforced Pole Stress Ratio	Rev. F	Qty	Model	Position (F-Flat, C-Corner)	Gap Between Pole and Back of Rein. (in)	Tension only or Tension & Comp.	Total Moment of Inertia (in^4)	Axial Force (kip)	Stress Ratio	Qty	Model	Position (F-Flat, C-Corner)	Gap Between Pole and Back of Rein. (in)	Tension only or Tension & Comp.	Total Moment of Inertia (in^4)	Axial Force (kip)	Stress Ratio	Centroid Offset (in)	Area (in^2)	Moment of Inertia (in^4)	Controlling Stress Ratio	Thickness (in)	Weight Multiplier	Derated Yield Stress (ksi)	% Error in Derated Yield Stress
Section	*Elevation*	*Moment*	*Compressio*	*Shear*	*Torsion*	*PoleSides*	*PoleOD*	*PoleT*	*PoleFy*	*PoleW*	*PoleA*	*PoleI*	*PoleIPer*	*PoleCPoint*	*PoleC*	*PoleS*	*PoleJ*	*PoleWTT*	*PoleFb*	*PoleMAll*	*PoleFa*	*PoleFv*	*PoleFbAct*	*PoleFaAct*	*PoleFvAct*	*PoleFvtAct*	***PoleSR***	*PoleMomen*	*RPoleFbAct*	*RPoleFaAct*	*RPoleFvAct*	*RPoleFvtAct*	***RPoleSR***		*Rein1Qty*	***Rein1Model***	*Rein1Pos*	*Rein1Gap*	*Rein1TC*	*Rein1Total*	*Rein1P*	***Rein1SR***	*Rein2Qty*	***Rein2Model***	*Rein2Pos*	*Rein2Gap*	*Rein2TC*	*Rein2Total*	*Rein2P*	***Rein2SR***	*CompYBar*	*CompA*	*CompI*	***CompSR***	*EPoleT*	*EPoleWM*	*EDPoleFy*	*EDPoleSRCheck*
1	190	0.0	0.0	0.0	0.0	Round	18.0000	0.5000	42	0.00	27.5	1053	100%	TRUE	9.00	117	2106	0	37.0	360.3	33.6	22.4	0.0	0.00	0.00	0.00	**0.000**	0.0	0.0	0.00	0.00	0.00	**0.000**																				0.000	27.5	1053	**0.000**	**0.5000**	**1.00**	**42.0**	**147.6%**
2	180	17.8	3.1	4.8	0.0	Round	18.0000	0.3750	42	0.00	20.8	807	100%	TRUE	9.00	90	1613	0	37.0	276.0	33.6	22.4	2.4	0.15	0.00	0.00	**0.069**	17.8	2.4	0.15	0.00	0.00	**0.069**																				0.000	20.8	807	**0.069**	**0.3750**	**1.00**	**42.0**	**4.3%**
3	140	458.1	13.0	19.7	1.2	Round	24.0000	0.3750	42	0.00	27.8	1942	100%	TRUE	12.00	162	3885	0	37.0	498.4	33.6	22.4	34.0	0.47	0.00	0.04	**0.933**	458.1	34.0	0.47	0.00	0.00	**0.933**																				0.000	27.8	1942	**0.933**	**0.3750**	**1.00**	**42.0**	**0.1%**
4	120	879.1	17.1	22.3	0.6	Round	36.0000	0.3750	42	0.00	42.0	6659	100%	TRUE	18.00	370	13318	0	31.6	973.8	33.6	22.4	28.5	0.41	0.00	0.01	**0.915**	879.1	28.5	0.41	0.00	0.00	**0.915**																				0.000	42.0	6659	**0.915**	**0.3750**	**1.00**	**42.0**	**0.2%**
5	109	1160.3	21.9	26.9	1.6	Round	42.0000	0.3750	42	0.00	49.0	10622	100%	TRUE	21.00	506	21243	0	30.3	1276.0	33.6	22.4	27.5	0.45	0.00	0.02	**0.923**	1160.3	27.5	0.45	0.00	0.00	**0.923**																				0.000	49.0	10622	**0.923**	**0.3750**	**1.00**	**42.0**	**0.3%**
6	104	1296.1	23.2	27.5	1.6	Round	42.0000	0.3750	42	0.00	49.0	10622	84%	TRUE	21.00	506	21243	0	30.3	1276.0	33.6	22.4	30.8	0.47	0.00	0.02	**1.030**	1085.4	25.8	0.47	0.00	0.00	**0.865**		**3**	**CCI-0.75x4**	**F**	0	T&C	2062	78.6	**0.723**	0.000	58.0	12684	**0.865**	**0.4499**	**0.99**	**39.9**	**1.4%**
7	100	1406.7	24.4	27.9	1.6	Round	42.0000	0.3750	42	0.00	49.0	10622	72%	TRUE	21.00	506	21243	0	30.3	1276.0	33.6	22.4	33.4	0.50	0.00	0.02	**1.117**	1013.3	24.0	0.50	0.00	0.00	**0.809**	**3**	**CCI-0.75x4**	**F**	0	T&C	2062	73.4	**0.675**	**3**	**CCI-0.75x6**	**F**	0	T&C	2062	72.3	**0.665**	0.000	67.0	14746	**0.809**	**0.5260**	**0.98**	**38.0**	**9.7%**
8	80	1730.0	28.1	30.2	1.5	Round	48.0000	0.3750	42	0.00	56.1	15908	86%	TRUE	24.00	663	31817	0	29.3	1617.8	33.6	22.4	31.3	0.50	0.00	0.01	**1.044**	1480.6	26.8	0.50	0.00	0.00	**0.930**											**3**	**CCI-0.75x6**	**F**	0	T&C	2680	81.7	**0.753**	0.000	65.1	18588	**0.930**	**0.4287**	**0.99**	**40.4**	**0.9%**
9	80	2007.6	31.2	31.4	1.4	Round	48.0000	0.3750	42	0.00	56.1	15908	70%	TRUE	24.00	663	31817	0	29.3	1617.8	33.6	22.4	36.3	0.56	0.00	0.01	**1.258**	1410.0	25.5	0.56	0.00	0.00	**0.888**	**3**	**CCI-1x4.5**	**F**	0	T&C	4064	115.5	**0.673**	**3**	**CCI-0.75x6**	**F**	0	T&C	2680	77.8	**0.715**	0.000	78.6	22652	**0.888**	**0.5391**	**0.98**	**38.1**	**3.3%**
10	69	2360.1	35.2	33.0	1.3	Round	54.0000	0.3750	42	0.00	63.2	22730	77%	TRUE	27.00	841	45420	0	28.5	1999.2	33.6	22.4	33.7	0.56	0.00	0.01	**1.197**	1834.2	25.9	0.56	0.00	0.00	**0.924**	**3**	**CCI-1x6**	**F**	0	T&C	6834	158.2	**0.629**									0.000	81.2	29544	**0.924**	**0.4907**	**0.98**	**39.4**	**1.8%**
11	60	2661.8	38.8	34.0	1.3	Round	54.0000	0.3750	42	0.00	63.2	22730	66%	TRUE	27.00	841	45420	0	28.5	1999.2	33.6	22.4	38.0	0.61	0.00	0.01	**1.350**	1744.0	24.9	0.61	0.00	0.00	**0.891**	**3**	**CCI-1x6**	**F**	0	T&C	6834	149.8	**0.595**	**3**	**CCI-1x4.5**	**F**	0	T&C	5117	114.1	**0.665**	0.000	94.7	34660	**0.891**	**0.5785**	**0.98**	**37.6**	**3.7%**
12	49	3043.7	43.1	35.4	1.9	Round	60.0000	0.3750	42	0.00	70.2	31217	73%	TRUE	30.00	1041	62434	0	27.9	2420.2	33.6	22.4	35.1	0.61	0.00	0.01	**1.276**	2225.6	25.7	0.61	0.00	0.00	**0.938**	**3**	**CCI-1.25x6.5**	**F**	0	T&C	11475	212.9	**0.613**									0.000	94.6	42692	**0.938**	**0.5161**	**0.98**	**39.1**	**2.0%**
13	40	3367.1	47.2	36.5	1.5	Round	60.0000	0.3750	42	0.00	70.2	31217	64%	TRUE	30.00	1041	62434	0	27.9	2420.2	33.6	22.4	38.8	0.67	0.00	0.01	**1.411**	2145.9	24.7	0.67	0.00	0.00	**0.907**	**3**	**CCI-1.25x6.5**	**F**	0	T&C	11475	202.2	**0.582**	**3**	**CCI-1x4.5**	**F**	0	T&C	6291	113.2	**0.660**	0.000	108.5	48983	**0.907**	**0.5945**	**0.97**	**37.6**	**3.6%**
14	29	3774.8	52.3	37.7	4.1	Round	60.0000	0.5000	42	0.00	93.5	41363	83%	TRUE	30.00	1379	82726	0	29.7	3418.0	33.6	22.4	32.9	0.56	0.00	0.02	**1.171**	3137.6	27.3	0.56	0.00	0.00	**0.935**	**3**	**CCI-1x6**	**F**	0	T&C	8400	166.6	**0.662**									0.000	111.5	49763	**0.935**	**0.6043**	**0.99**	**39.9**	**1.5%**
15	20	4118.1	56.8	38.5	4.1	Round	60.0000	0.5000	42	0.00	93.5	41363	74%	TRUE	30.00	1379	82726	0	29.7	3418.0	33.6	22.4	35.8	0.61	0.00	0.02	**1.273**	3038.8	26.4	0.61	0.00	0.00	**0.907**	**3**	**CCI-1x6**	**F**	0	T&C	8400	158.9	**0.632**	**3**	**CCI-1x4.5**	**F**	0	T&C	6291	121.0	**0.705**	0.000	125.0	56054	**0.907**	**0.6834**	**0.98**	**38.5**	**3.0%**
16	9	4547.4	62.5	39.5	4.0	Round	60.0000	0.6250	42	0.00	116.6	51381	89%	TRUE	30.00	1713	102761	0	31.6	4508.2	33.6	22.4	31.9	0.54	0.00	0.01	**1.025**	4051.3	28.4	0.54	0.00	0.00	**0.915**											**3**	**CCI-1x4.5**	**F**	0	T&C	6291	129.9	**0.757**	0.000	130.1	57672	**0.915**	**0.7039**	**0.99**	**40.5**	**1.2%**
17	0	4906.1	67.5	40.2	4.0	Round	60.0000	0.6250	42	0.00	116.6	51381	83%	TRUE	30.00	1713	102761	0	31.6	4508.2	33.6	22.4	34.4	0.58	0.00	0.01	**1.106**	4077.0	28.6	0.58	0.00	0.00	**0.922**	**3**	**CCI-0.75x4**	**F**	0	T&C	4158	86.8	**0.798**	**3**	**CCI-1x4.5**	**F**	0	T&C	6291	128.7	**0.750**	0.000	139.1	61830	**0.922**	**0.7566**	**0.99**	**39.6**	**5.4%**
																											1.411						**0.938**																											**0.798**												**0.757**				**0.938**				

Rein1

Bottom	Top	Qty	Model	Position	T or T&C
0	9	3	CCI-0.75x4	F	T&C
20	40	3	CCI-1x6	F	T&C
40	60	3	CI-1.25x6.5	F	T&C
60	80	3	CCI-1x6	F	T&C
80	89	3	CCI-1x4.5	F	T&C
100	104	3	CCI-0.75x4	F	T&C
				F	T&C
				F	T&C
				F	T&C

Flats (Used for relative orientation only. Actual flat numbers may vary.)

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	1	1															
1	1	1															
1	1	1															
1	1	1															
1	1	1															
1	1	1															

Rein2

Bottom	Top	Qty	Model	Position	T or T&C
0	20	3	CCI-1x4.5	F	T&C
20	29	3	CCI-1x4.5	F	T&C
40	49	3	CCI-1x4.5	F	T&C
60	69	3	CCI-1x4.5	F	T&C
80	100	3	CCI-0.75x4	F	T&C
100	109	3	CCI-0.75x4	F	T&C
				F	T&C
				F	T&C
				F	T&C

1	2	3
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1
1	1	1

Rein3

Bottom	Top	Qty	Model	Position	T or T&C
0				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C
				F	T&C

Reinforcement Capacity

AeroSolutions LLC
Optimizing Your Tower Infrastructure
5500 Flatirons Parkway, Suite 100
Boulder, CO 80301
720-304-6882

Dimensions and Properties														Compression				Axial				
																		ASD-9			LRFD	
Model	Weight (lb/ft)	Area (in^2)	Moment of Inertia (in^4)	Moment of Inertia (in^4)	Centroid from Mating Edge (in)	Centroid from Bolt Hole Center (in)	Web Thickness (in)	Width (in)	Flange Width (in)	Flange Thickness (in)	Hole Diameter (in)	Yield Stress (ksi)	Ultimate Stress (ksi)	Slender. Ratio Coefficient	Unbraced Length (in)	Slender. Ratio Coefficient	Unbraced Length (in)	Allowable Axial (kip)	Allowable Axial w/ increase (kip)	Governing Axial	Design Axial Strength (kip)	Governing Axial
CCI-0.75x4	10.2	3.00	0.14	4.00	0.375	0	0.75	4	0	0	1.21875	65	80	0.80	16	1.00	16	81.6	108.8	Rupture	122.3	Rupture
CCI-1x4.5	15.3	4.50	0.38	7.59	0.5	0	1	4.5	0	0	1.21875	65	80	0.80	20	1.00	20	128.8	171.7	Rupture	193.1	Rupture
CCI-1x6	20.4	6.00	0.50	18.00	0.5	0	1	6	0	0	1.21875	65	80	0.80	16	1.00	16	188.8	251.7	Rupture	283.1	Rupture
CCI-1.25x6.5	27.6	8.13	1.06	28.61	0.625	0	1.25	6.5	0	0	1.21875	65	80	0.80	19	1.00	19	260.4	347.2	Compress.	391.4	Rupture

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

Site Data

BU#: *826217*
Site Name: *Newington ,CT*
App #: *261440 Rev# 2*

Pole Manufacturer:	Pirod

Reactions		
Moment:	17.849	ft-kips
Axial:	3.09	kips
Shear:	4.838	kips
Elevation:	180	feet

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

Bolt Data			
Qty:	16		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	21		

Plate Data		
Diam:	24	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.53	in

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

Pole Data		
Diam:	18	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	2.36	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.474	in	
Min PL "treq" for actual **T w/ Pry**:	0.256	in	
Min PL "t1" for actual **T w/o Pry**:	0.333	in	
T allowable with Prying:	41.75	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	2.36	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	5.1%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
No Prying			10.82
Tension Side Stress Ratio, (treq/t)^2:	4.2%	**Pass**	

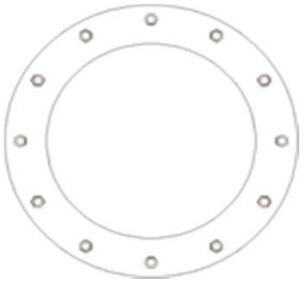
n/a

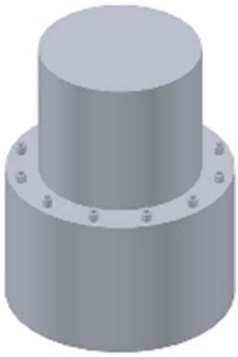
Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A





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

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

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

Site Data

BU#: *826217*
Site Name: *Newington ,CT*
App #: *261440 Rev# 2*

Pole Manufacturer:	Pirod

Reactions		
Moment:	458.124	ft-kips
Axial:	13.011	kips
Shear:	19.654	kips
Elevation:	140	feet

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

Bolt Data			
Qty:	24		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	27		

Plate Data		
Diam:	36.375	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	-17.00	in

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

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Non-Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	33.39	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.503	in	
Min PL "treq" for actual **T w/ Pry**:	1.000	in	
Min PL "t1" for actual **T w/o Pry**:	1.280	in	
T allowable with Prying:	39.05	kips	0≤α'≤1 case
Prying Force, Q:	1.49	kips	
Total Bolt Tension=T+Q:	34.88	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	75.7%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Non-Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
Prying Occurs, PL Check:			#NUM!
Tension Side Stress Ratio, (treq/t)^2:	64.0%	**Pass**	

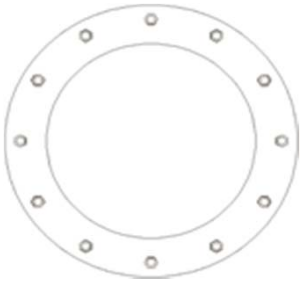
n/a

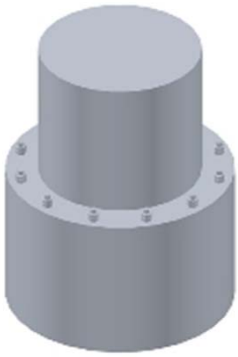
Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A





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

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

PROJECT	**87581.010.01 - Newington_1, CT - BU# 826217**		
SUBJECT	**Existing Bolt-on Bridge Stiffeners @ 120'**		
DATE	**01/28/15**	PAGE 1	OF 1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

SSC

Global Section Properties:

Step Width	3.00 in		
Pole Thickness	0.38 in		
Pole Grade	42.00 ksi	Bolt Circle	39
BS Material Grade	65.00 ksi	Number of Bolts	28
BS Ultimate Stress	80.00 ksi	Bolt Size	1
BS Width	4.50 in		
BS Thickness	1.00 in		
BS Height	110.00 in		
I	7314.58 in^4	Global MOI, Taken from AutoCAD	
Moment	879.08 k-ft	Moment at Flange Under Consideration	
Ybar	21.50 in	Dist. CL Pole to CL BS	
S	340.21 in^3	Global Section Modulus; I/Ybar	
fb	31.01 ksi	M/S	
Area	4.50 in^2	BS Cross Sectional Area Below Flange	
P	139.53 k	Load to BS	

Check Bridge Stiffener Span:

Lu	16.00 in	
Iy	0.38 in^4	
A	4.50 in^2	
ry	0.2887 in	
Cc	93.84414701	
kl/r	55.42562584	
Fa	28.81 ksi	
Fa w/ 1/3 Increase	38.42 ksi	**80.71%**

Plate Tension Analysis:

Hole Size	1.25 in	
Ag	4.50 in^2	
An	3.25 in^2	
U	1	
Ae	3.25 in^2	
Ta (Yielding)	234.00 k	
Ta (Rupture)	173.33 k	
Ft (Equiv)	38.52 ksi	**80.50%**

Moment to Existing Bolt Group:

S_{BG} =	375.11 in^3	# Bolts Actinç	7
ft =	28.12 ksi		
Ab =	.785 in^2		
T =	154.61 k		
Arm =	39.00 in		
M_{EQ} =	502.5 k-ft	**<-------Insert into Crown Spreadsheet**	

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

Site Data

BU#: *826217*
Site Name: *Newington ,CT*
App #: *261440 Rev# 2*

Pole Manufacturer:	Pirod

Reactions		
Moment:	502.5	ft-kips
Axial:	17.101	kips
Shear:	22.328	kips
Elevation:	120	feet

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

Bolt Data			
Qty:	28		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	39		

Plate Data		
Diam:	42	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.04	in

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

Pole Data		
Diam:	36	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	21.48	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.379	in	
Min PL "treq" for actual **T w/ Pry**:	0.714	in	
Min PL "t1" for actual **T w/o Pry**:	0.941	in	
T allowable with Prying:	43.33	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	21.48	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	46.6%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	Rohn/Pirod,	OK	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	Rohn/Pirod,	OK	Comp. Y.L. Length:
No Prying			15.00
Tension Side Stress Ratio, (treq/t)^2:	32.7%	**Pass**	

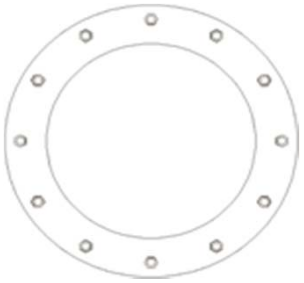
n/a

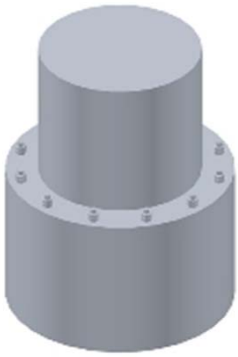
Stiffener Results N/A for Rohn / Pirod

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

Pole Results

Pole Punching Shear Check: N/A





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

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

PROJECT	**87581.010.01 - Newington_1, CT - BU# 826217**		
SUBJECT	**Existing and New Bolt-on Bridge Stiffeners @ 100'**		
DATE	**01/28/15**	PAGE 1	OF 1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

SSC

Global Section Properties:

Step Width	3.00 in		
Pole Thickness	0.38 in		
Pole Grade	42.00 ksi	Bolt Circle	45
BS Material Grade	65.00 ksi	Number of Bolts	32
BS Ultimate Stress	80.00 ksi	Bolt Size	1
BS Width	4.50 in		
BS Thickness	1.00 in		
BS Height	110.00 in		
I	14490.58 in^4	Global MOI, Taken from AutoCAD	
Moment	1406.73 k-ft	Moment at Flange Under Consideration	
Ybar	24.50 in	Dist. CL Pole to CL BS	
S	591.45 in^3	Global Section Modulus; I/Ybar	
fb	28.54 ksi	M/S	
Area	4.50 in^2	BS Cross Sectional Area Below Flange	
P	128.43 k	Load to BS	

Check Bridge Stiffener Span:

Lu	16.00 in	
Iy	0.38 in^4	
A	4.50 in^2	
ry	0.2887 in	
Cc	93.84414701	
kl/r	55.42562584	
Fa	28.81 ksi	
Fa w/ 1/3 Increase	38.42 ksi	**74.29%**

Plate Tension Analysis:

Hole Size	1.25 in	
Ag	4.50 in^2	
An	3.25 in^2	
U	1	
Ae	3.25 in^2	
Ta (Yielding)	234.00 k	
Ta (Rupture)	173.33 k	
Ft (Equiv)	38.52 ksi	**74.10%**

Moment to Existing Bolt Group:

S_{BG} =	644.03 in^3	# Bolts Actinç	8
ft =	26.21 ksi		
Ab =	.785 in^2		
T =	164.69 k		
Arm =	45.00 in		
M_{EQ} =	617.6 k-ft	**<-------Insert into Crown Spreadsheet**	

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

Site Data

BU#: *826217*
Site Name: *Newington ,CT*
App #: *261440 Rev# 2*

Pole Manufacturer:	Other

Reactions		
Moment:	617.6	ft-kips
Axial:	24.358	kips
Shear:	27.896	kips
Elevation:	100	feet

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

Bolt Data			
Qty:	32		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	45		

Plate Data		
Diam:	48	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.12	in

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

Pole Data		
Diam:	42	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	19.83	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.365	in	
Min PL "treq" for actual **T w/ Pry**:	0.678	in	
Min PL "t1" for actual **T w/o Pry**:	0.895	in	
T allowable with Prying:	43.59	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	19.83	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	43.0%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	19.2	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	53.4%	**Pass**	Comp. Y.L. Length:
No Prying			16.16
Tension Side Stress Ratio, (treq/t)^2:	29.4%	**Pass**	

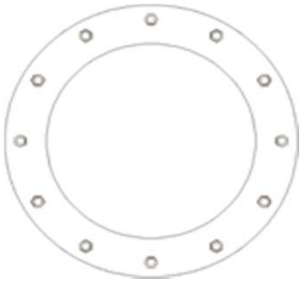
n/a

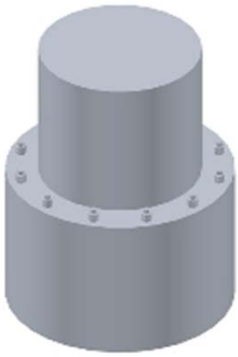
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data	
BU#:	*826217*
Site Name:	*Newington ,CT*
App #:	*261440 Rev# 2*

Manufacturer:	Other

Reactions		
Moment:	617.6	ft-kips
Axial:	24.358	kips
Shear:	27.896	kips
Exterior Flange Run, T+Q:	19.83	kips

Elevation: 100 feet

Bolt Data			
Qty:	32		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle:	45	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	19.8	Kips, Ext. Flange T+Q
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	43.0%	**Pass**

Plate Data		
Plate Outer Diam:	47.25	in
Plate Inner Diam:	42	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.64	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	21.3	Kips, Ext. C= Interior C
Plate Stress:	19.9	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	55.2%	**Pass**

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

n/a

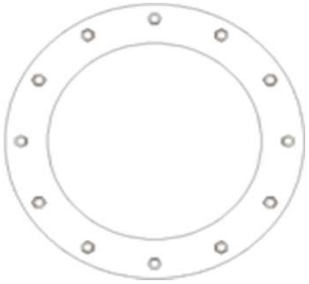
Stiffener Results

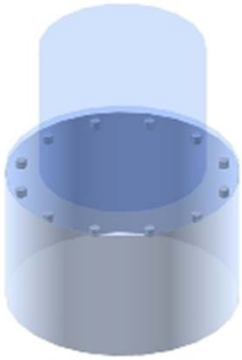
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Pole OuterDiam:	48	in
Thick:	0.375	in
Pole Inner Diam:	47.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





Stress Increase Factor		
ASIF:	1.333	

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

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

PROJECT	**87581.010.01 - Newington_1, CT - BU# 826217**		
SUBJECT	**Existing Bolt-on Bridge Stiffeners @ 80'**		
DATE	**01/28/15**	PAGE 1	OF 1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

SSC

Global Section Properties:

Step Width	3.00 in		
Pole Thickness	0.38 in		
Pole Grade	42.00 ksi	Bolt Circle	51
BS Material Grade	65.00 ksi	Number of Bolts	36
BS Ultimate Stress	80.00 ksi	Bolt Size	1
BS Width	6.50 in		
BS Thickness	1.25 in		
BS Height	128.00 in		
I	18539.73 in^4	Global MOI, Taken from AutoCAD	
Moment	2007.64 k-ft	Moment at Flange Under Consideration	
Ybar	27.63 in	Dist. CL Pole to CL BS	
S	671.12 in^3	Global Section Modulus; I/Ybar	
fb	35.90 ksi	M/S	
Area	8.13 in^2	BS Cross Sectional Area Below Flange	
P	291.67 k	Load to BS	

Check Bridge Stiffener Span:

Lu	16.00 in	
Iy	1.06 in^4	
A	8.13 in^2	
ry	0.3608 in	
Cc	93.84414701	
kl/r	44.34050067	
Fa	31.54 ksi	
Fa w/ 1/3 Increase	42.06 ksi	**85.35%**

Plate Tension Analysis:

Hole Size	1.25 in	
Ag	8.13 in^2	
An	6.56 in^2	
U	1	
Ae	6.56 in^2	
Ta (Yielding)	422.50 k	
Ta (Rupture)	350.00 k	
Ft (Equiv)	43.08 ksi	**83.33%**

Moment to Existing Bolt Group:

S_{BG} =	727.05 in^3	# Bolts Actinç	9
ft =	33.14 ksi		
Ab =	.785 in^2		
T =	234.23 k		
Arm =	51.00 in		
M_{EQ} =	995.5 k-ft	**<-------Insert into Crown Spreadsheet**	

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

Site Data

BU#: *826217*
Site Name: *Newington ,CT*
App #: *261440 Rev# 2*

Pole Manufacturer:	Other

Reactions		
Moment:	995.5	ft-kips
Axial:	31.244	kips
Shear:	31.39	kips
Elevation:	80	feet

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

Bolt Data			
Qty:	36		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	51		

Plate Data		
Diam:	54	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	4.19	in

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

Pole Data		
Diam:	48	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	25.16	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.354	in	
Min PL "treq" for actual **T w/ Pry**:	0.757	in	
Min PL "t1" for actual **T w/o Pry**:	1.001	in	
T allowable with Prying:	43.80	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	25.16	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	54.6%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	24.1	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	66.9%	**Pass**	Comp. Y.L. Length:
No Prying			17.23
Tension Side Stress Ratio, (treq/t)^2:	36.7%	**Pass**	

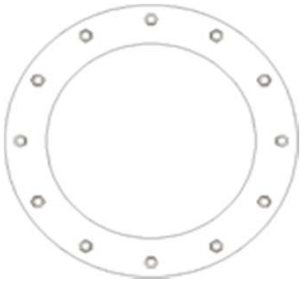
n/a

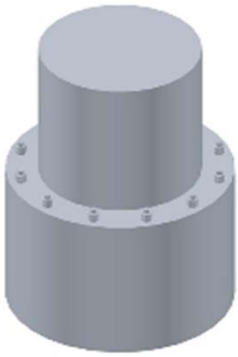
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data	
BU#:	*826217*
Site Name:	*Newington ,CT*
App #:	*261440 Rev# 2*

Manufacturer:	Other

Reactions		
Moment:	995.5	ft-kips
Axial:	31.244	kips
Shear:	31.39	kips
Exterior Flange Run, T+Q:	25.16	kips

Elevation: 80 feet

Bolt Data			
Qty:	36		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle:	51	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	25.2	Kips, Ext. Flange T+Q
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	54.6%	**Pass**

Plate Data		
Plate Outer Diam:	53.25	in
Plate Inner Diam:	48	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	4.65	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	26.9	Kips, Ext. C= Interior C
Plate Stress:	25.0	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	69.5%	**Pass**

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

n/a

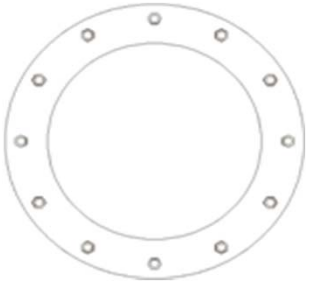
Stiffener Results

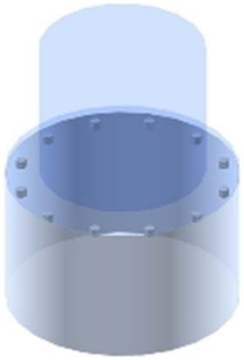
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

Pole Results

Pole Punching Shear Check: n/a

Pole Data		
Pole OuterDiam:	54	in
Thick:	0.375	in
Pole Inner Diam:	53.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





Stress Increase Factor		
ASIF:	1.333	

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

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

PROJECT	**87581.010.01 - Newington_1, CT - BU# 826217**		
SUBJECT	**Existing Bolt-on Bridge Stiffeners @ 60'**		
DATE	**01/28/15**	PAGE 1	OF 1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

SSC

Global Section Properties:

Step Width	3.00 in		
Pole Thickness	0.38 in		
Pole Grade	42.00 ksi	Bolt Circle	57
BS Material Grade	65.00 ksi	Number of Bolts	48
BS Ultimate Stress	80.00 ksi	Bolt Size	1
BS Width	8.50 in		
BS Thickness	1.25 in		
BS Height	128.00 in		
I	45404.24 in^4	Global MOI, Taken from AutoCAD	
Moment	2661.76 k-ft	Moment at Flange Under Consideration	
Ybar	30.63 in	Dist. CL Pole to CL BS	
S	1482.59 in^3	Global Section Modulus; I/Ybar	
fb	21.54 ksi	M/S	
Area	10.63 in^2	BS Cross Sectional Area Below Flange	
P	228.91 k	Load to BS	

Check Bridge Stiffener Span:

Lu	16.00 in	
Iy	1.38 in^4	
A	10.63 in^2	
ry	0.3608 in	
Cc	93.84414701	
kl/r	44.34050067	
Fa	31.54 ksi	
Fa w/ 1/3 Increase	42.06 ksi	**51.23%**

Plate Tension Analysis:

Hole Size	1.25 in	
Ag	10.63 in^2	
An	9.06 in^2	
U	1	
Ae	9.06 in^2	
Ta (Yielding)	552.50 k	
Ta (Rupture)	483.33 k	
Ft (Equiv)	45.49 ksi	**47.36%**

Moment to Existing Bolt Group:

S_{BG} =	1593.13 in^3	# Bolts Actinç	12
ft =	20.05 ksi		
Ab =	.785 in^2		
T =	188.96 k		
Arm =	57.00 in		
M_{EQ} =	897.6 k-ft	**<-------Insert into Crown Spreadsheet**	

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

Site Data

BU#: *826217*
Site Name: *Newington ,CT*
App #: *261440 Rev# 2*

Pole Manufacturer:	Other

Reactions		
Moment:	897.6	ft-kips
Axial:	38.754	kips
Shear:	34.05	kips
Elevation:	60	feet

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

Bolt Data			
Qty:	48		
Diameter (in.):	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle (in.):	57		

Plate Data		
Diam:	60	in
Thick, t:	1.25	in
Grade (Fy):	36	ksi
Strength, Fu:	58	ksi
Single-Rod B-eff:	3.53	in

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

Pole Data		
Diam:	54	in
Thick:	0.375	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

Flange Bolt Results

			Rigid
Bolt Tension Capacity, **B**:	46.07	kips	Service, ASD
Max Bolt directly applied T:	14.94	Kips	Fty*ASIF
Min. PL "tc" for **B** cap. **w/o** Pry:	1.474	in	
Min PL "treq" for actual **T w/ Pry**:	0.644	in	
Min PL "t1" for actual **T w/o Pry**:	0.839	in	
T allowable with Prying:	41.75	kips	0≤α'≤1 case
Prying Force, Q:	0.00	kips	
Total Bolt Tension=T+Q:	14.94	kips	
Prying Bolt Stress Ratio=(T+Q)/(B):	32.4%	**Pass**	

Exterior Flange Plate Results Flexural Check

			Rigid
Compression Side Plate Stress:	17.5	ksi	Service ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Compression Plate Stress Ratio:	48.5%	**Pass**	Comp. Y.L. Length:
No Prying			18.25
Tension Side Stress Ratio, (treq/t)^2:	26.5%	**Pass**	

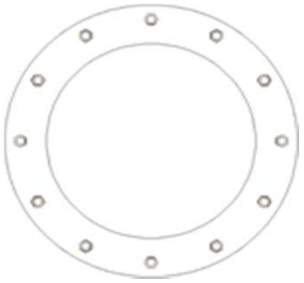
n/a

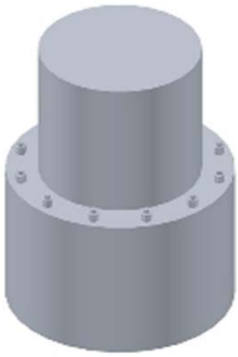
Stiffener Results

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

Pole Results

Pole Punching Shear Check: n/a





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#:	*826217*
Site Name:	*Newington ,CT*
App #:	*261440 Rev# 2*

Manufacturer:	Other

Reactions

Moment:	897.6	ft-kips
Axial:	38.754	kips
Shear:	34.05	kips
Exterior Flange Run, T+Q:	14.94	kips

Elevation: 60 feet

Bolt Data

Qty:	48		
Diam:	1	Bolt Fu:	120
Bolt Material:	A325	Bolt Fy:	92
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle:	57	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	14.9	Kips, Ext. Flange T+Q
Allowable Tension:	46.1	Kips
Bolt Stress Ratio:	32.4%	**Pass**

Plate Data

Plate Outer Diam:	59.25	in
Plate Inner Diam:	54	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	3.88	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	16.6	Kips, Ext. C= Interior C
Plate Stress:	18.4	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	51.2%	**Pass**

Stiffener Data (Welding at Both Sides)

Config:	0	*
Weld Type:		
Groove Depth:		in **
Groove Angle:		degrees
Fillet H. Weld:		<-- Disregard
Fillet V. Weld:		in
Width:		in
Height:		in
Thick:		in
Notch:		in
Grade:		ksi
Weld str.:		ksi

n/a

Stiffener Results

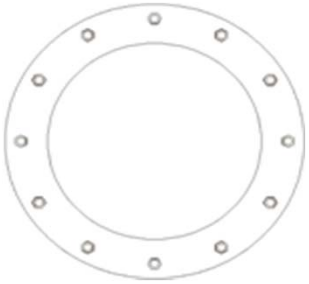
Horizontal Weld :	n/a
Vertical Weld:	n/a
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	n/a
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	n/a
Plate Comp. (AISC Bracket):	n/a

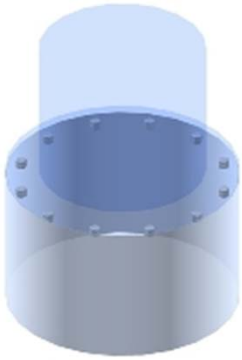
Pole Results

Pole Punching Shear Check: n/a

Pole Data

Pole OuterDiam:	60	in
Thick:	0.375	in
Pole Inner Diam:	59.25	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





Stress Increase Factor

ASIF:	1.333	

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

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

PROJECT	**87581.010.01 - Newington_1, CT - BU# 826217**		
SUBJECT	**Existing Bolt-on Bridge Stiffeners @ 40'**		
DATE	**01/28/15**	PAGE 1	OF 1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

SSC

Global Section Properties:

Step Width	0.00 in		
Pole Thickness	0.50 in		
Pole Grade	42.00 ksi	Bolt Circle	50
BS Material Grade	65.00 ksi	Number of Bolts	64
BS Ultimate Stress	80.00 ksi	Bolt Size	1.25
BS Width	8.50 in		
BS Thickness	1.25 in		
BS Height	128.00 in		
I	55715.20 in^4	Global MOI, Taken from AutoCAD	
Moment	3367.11 k-ft	Moment at Flange Under Consideration	
Ybar	31.13 in	Dist. CL Pole to CL BS	
S	1790.05 in^3	Global Section Modulus; I/Ybar	
fb	22.57 ksi	M/S	
Area	10.63 in^2	BS Cross Sectional Area Below Flange	
P	239.83 k	Load to BS	

Check Bridge Stiffener Span:

Lu	25.00 in	
Iy	1.38 in^4	
A	10.63 in^2	
ry	0.3608 in	
Cc	93.84414701	
kl/r	69.2820323	
Fa	24.98 ksi	
Fa w/ 1/3 Increase	33.30 ksi	**67.78%**

Plate Tension Analysis:

Hole Size	1.25 in	
Ag	10.63 in^2	
An	9.06 in^2	
U	1	
Ae	9.06 in^2	
Ta (Yielding)	552.50 k	
Ta (Rupture)	483.33 k	
Ft (Equiv)	45.49 ksi	**49.62%**

Moment to Existing Bolt Group:

S_{BG} =	2228.61 in^3	# Bolts Actinç	16
ft =	18.13 ksi		
Ab =	1.227 in^2		
T =	355.99 k		
Arm =	50.00 in		
M_{EQ} =	1483.3 k-ft	**<-------Insert into Crown Spreadsheet**	

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#:	*826217*
Site Name:	*Newington ,CT*
App #:	*261440 Rev# 2*

Manufacturer:	Other

Reactions

Moment:	652.97	ft-kips
Axial:	47.19	kips
Shear:	36.492	kips
Exterior Flange Run, T+Q:	0	kips

Elevation: 40-47BC feet

Bolt Data

Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:		<-- Disregard	Bolt Fty: 44.00
N/A:		<-- Disregard	
Circle:	47	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	19.4	Kips, Ext. T=Interior T
Allowable Tension:	72.0	Kips
Bolt Stress Ratio:	26.9%	**Pass**

Plate Data

Plate Outer Diam:	59	in
Plate Inner Diam:	45	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.79	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	22.3	Kips, Ext. C= Interior C
Plate Stress:	17.5	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	48.7%	**Pass**

Stiffener Data (Welding at Both Sides)

Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	6	in
Thick:	0.5	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Stiffener Results

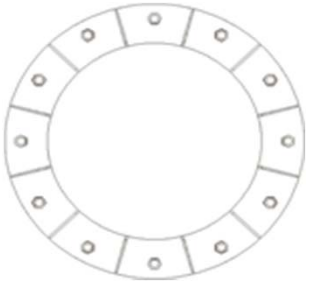
Horizontal Weld :	18.4%	**Pass**
Vertical Weld:	9.9%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	6.3%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	15.4%	**Pass**
Plate Comp. (AISC Bracket):	21.0%	**Pass**

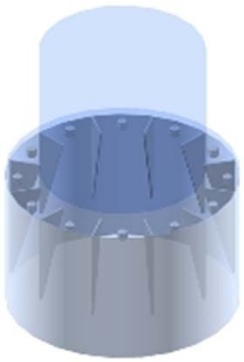
Pole Results

Pole Punching Shear Check:	3.4%	**Pass**

Pole Data

Pole OuterDiam:	60	in
Thick:	0.5	in
Pole Inner Diam:	59	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi





Stress Increase Factor

ASIF:	1.333	

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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#:	*826217*
Site Name:	*Newington ,CT*
App #:	*261440 Rev# 2*

Manufacturer:	Other

Reactions

Moment:	830.33	ft-kips
Axial:	47.19	kips
Shear:	36.492	kips
Exterior Flange Run, T+Q:	0	kips

Elevation: 40-53BC feet

Bolt Data

Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:		<-- Disregard	Bolt Fty: 44.00
N/A:		<-- Disregard	
Circle:	53	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	22.0	Kips, Ext. T=Interior T
Allowable Tension:	72.0	Kips
Bolt Stress Ratio:	30.6%	**Pass**

Plate Data

Plate Outer Diam:	59	in
Plate Inner Diam:	45	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.79	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	25.0	Kips, Ext. C= Interior C
Plate Stress:	19.6	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	54.4%	**Pass**

Stiffener Data (Welding at Both Sides)

Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	6	in
Thick:	0.5	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Stiffener Results

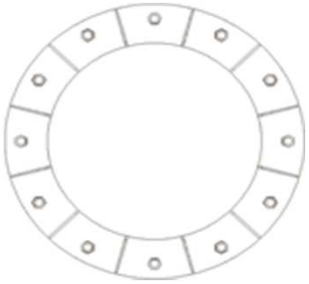
Horizontal Weld :	23.0%	**Pass**
Vertical Weld:	12.3%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	8.1%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	19.5%	**Pass**
Plate Comp. (AISC Bracket):	26.2%	**Pass**

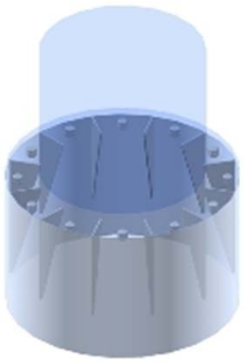
Pole Data

Pole OuterDiam:	60	in
Thick:	0.5	in
Pole Inner Diam:	59	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Pole Results

Pole Punching Shear Check:	4.3%	**Pass**





Stress Increase Factor

ASIF:	1.333	

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

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

PROJECT	**87581.010.01 - Newington_1, CT - BU# 826217**		
SUBJECT	**Existing Bolt-on Bridge Stiffeners @ 20'**		
DATE	**01/28/15**	PAGE 1	OF 1

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

SSC

Global Section Properties:

Step Width	0.00 in		
Pole Thickness	0.63 in		
Pole Grade	42.00 ksi	Bolt Circle	50
BS Material Grade	65.00 ksi	Number of Bolts	64
BS Ultimate Stress	80.00 ksi	Bolt Size	1.25
BS Width	6.50 in		
BS Thickness	1.25 in		
BS Height	128.00 in		
I	48342.38 in^4	Global MOI, Taken from AutoCAD	
Moment	4118.15 k-ft	Moment at Flange Under Consideration	
Ybar	31.13 in	Dist. CL Pole to CL BS	
S	1553.17 in^3	Global Section Modulus; I/Ybar	
fb	31.82 ksi	M/S	
Area	8.13 in^2	BS Cross Sectional Area Below Flange	
P	258.52 k	Load to BS	

Check Bridge Stiffener Span:

Lu	24.00 in	
Iy	1.06 in^4	
A	8.13 in^2	
ry	0.3608 in	
Cc	93.84414701	
kl/r	66.51075101	
Fa	25.78 ksi	
Fa w/ 1/3 Increase	34.38 ksi	**92.56%**

Plate Tension Analysis:

Hole Size	1.25 in	
Ag	8.13 in^2	
An	6.56 in^2	
U	1	
Ae	6.56 in^2	
Ta (Yielding)	422.50 k	
Ta (Rupture)	350.00 k	
Ft (Equiv)	43.08 ksi	**73.86%**

Moment to Existing Bolt Group:

S_{BG} =	1933.70 in^3	# Bolts Actinç	16
ft =	25.56 ksi		
Ab =	1.227 in^2		
T =	501.79 k		
Arm =	50.00 in		
M_{EQ} =	2090.8 k-ft	**<-------Insert into Crown Spreadsheet**	

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#: *826217*
Site Name: *Newington ,CT*
App #: *261440 Rev# 2*

Manufacturer:	Other

Reactions		
Moment:	920.4	ft-kips
Axial:	56.784	kips
Shear:	38.537	kips
Exterior Flange Run, T+Q:	0	kips

Elevation: 20-47BC feet

Bolt Data			
Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle:	47	in	

Plate Data		
Plate Outer Diam:	58.75	in
Plate Inner Diam:	45	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.77	in

Stiffener Data (Welding at Both Sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	6	in
Thick:	0.5	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Pole OuterDiam:	60	in
Thick:	0.625	in
Pole Inner Diam:	58.75	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Stress Increase Factor		
ASIF:	1.333	

Interior Flange Bolt Results

Maximum Bolt Tension:	27.6	Kips, Ext. T=Interior T
Allowable Tension:	72.0	Kips
Bolt Stress Ratio:	38.3%	**Pass**

Interior Flange Plate Results Flexural Check

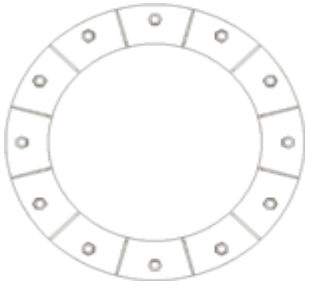
Controlling Bolt Axial Force:	31.1	Kips, Ext. C= Interior C
Plate Stress:	24.5	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	67.9%	**Pass**

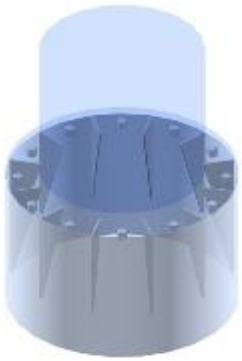
Stiffener Results

Horizontal Weld :	21.8%	**Pass**
Vertical Weld:	11.6%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	7.6%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	18.4%	**Pass**
Plate Comp. (AISC Bracket):	24.8%	**Pass**

Pole Results

Pole Punching Shear Check:	3.2%	**Pass**





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

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

Stiffened or Unstiffened, Interior Flange Plate - Any Bolt Material TIA Rev F

Site Data

BU#:	*826217*
Site Name:	*Newington ,CT*
App #:	*261440 Rev# 2*

Manufacturer:	Other

Reactions

Moment:	1170.4	ft-kips
Axial:	56.784	kips
Shear:	38.537	kips
Exterior Flange Run, T+Q:	0	kips

Elevation: 20-53BC feet

Bolt Data

Qty:	32		
Diam:	1.25	Bolt Fu:	105
Bolt Material:	A325	Bolt Fy:	81
N/A:		<-- Disregard	Bolt Fty:
N/A:		<-- Disregard	44.00
Circle:	53	in	

Interior Flange Bolt Results

Maximum Bolt Tension:	31.4	Kips, Ext. T=Interior T
Allowable Tension:	72.0	Kips
Bolt Stress Ratio:	43.6%	**Pass**

Plate Data

Plate Outer Diam:	58.75	in
Plate Inner Diam:	45	in (Hole @ Ctr)
Thick:	1.25	in
Grade:	36	ksi
Effective Width:	5.77	in

Interior Flange Plate Results Flexural Check

Controlling Bolt Axial Force:	34.9	Kips, Ext. C= Interior C
Plate Stress:	27.4	ksi
Allowable Plate Stress:	36.0	ksi
Plate Stress Ratio:	76.1%	**Pass**

Stiffener Data (Welding at Both Sides)

Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	6	in
Thick:	0.5	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Stiffener Results

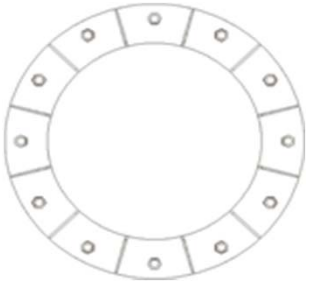
Horizontal Weld :	27.3%	**Pass**
Vertical Weld:	14.6%	**Pass**
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	10.0%	**Pass**
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	23.4%	**Pass**
Plate Comp. (AISC Bracket):	31.1%	**Pass**

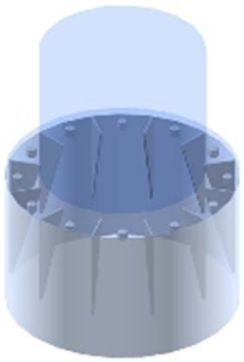
Pole Data

Pole OuterDiam:	60	in
Thick:	0.625	in
Pole Inner Diam:	58.75	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi

Pole Results

Pole Punching Shear Check:	4.0%	**Pass**





Stress Increase Factor

ASIF:	1.333	

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

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

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

Site Information	
ID:	826217
Name:	Newington_1
App. #:	221161; Revision # 5

AeroSolutions LLC
Optimizing Your Tower Infrastructure

Base Reactions		
Moment:	4906	ft-kip
Axial:	67	kip
Shear:	40	kip
Base Plate Type:	Circular	

Design Information	
TIA Code:	F
ASIF:	1.333
Failure:	95%
eta Factor:	0.50

Original Anchor Rod Data

Quantity:	52	
Diameter:	1.25	in
Material:	A687	
Bolt Circle:	67.0	in
Bolt Spacing:		in
Bolt Group Area:	63.81	in^2
Bolt Group MOIx:	35807	in^4

Reactions Seen by Original AR Group

Moment:	2249.3	kip-ft
Axial:	67.5	kip
Shear:	40.2	kip

Original AR Capacity Check

Tension Load:	29.7	kip
Allowable load:	81.0	kip
AR Capacity:	36.7%	Pass

First Added Anchor Rod Data

Quantity:	10	
Diameter:	2.25	in
Material:	A193 B7	
Bolt Circle:	92.3	in
Bolt Group Area:	39.76	in^2
Bolt Group MOIx:	42296	in^4

Reactions Seen by First Added AR Group

Moment:	2656.8	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

First Added AR Capacity Check

Tension Load:	138.2	kip
Allowable load:	218.6	kip
AR Capacity:	63.2%	Pass

Second Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Third Added Anchor Rod Data

Quantity:		
Diameter:		in
Material:		
Bolt Circle:		in
Bolt Group Area:	0.00	in^2
Bolt Group MOIx:	0	in^4

Reactions Seen by Second Added AR Group

Moment:	0.0	kip-ft
Axial:	0.0	kip
Shear:	0.0	kip

Second Added AR Capacity Check

Tension Load:	0.0	kip
Allowable load:	0.0	kip
AR Capacity:	0.0%	

Rev.4.1

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

TIA Rev F

Site Data

BU#:	*826217*
Site Name:	*Newington_1*
App #:	*261440; Revision # 2*
Pole Manufacturer:	*Other*

Reactions		
Moment:	2249.3	ft-kips
Axial:	67.4913	kips
Shear:	40.20778	kips

Anchor Rod Data		
Qty:	52	
Diam:	1.25	in
Rod Material:	Other	
Strength (Fu):	150	ksi
Yield (Fy):	105	ksi
Bolt Circle:	67	in

Plate Data		
Diam:	70	in
Thick:	1	in
Grade:	36	ksi
Single-Rod B-eff:	3.62	in

Stiffener Data (Welding at both sides)		
Config:	1	*
Weld Type:	Fillet	
Groove Depth:		<-- Disregard
Groove Angle:		<-- Disregard
Fillet H. Weld:	0.3125	in
Fillet V. Weld:	0.3125	in
Width:	3	in
Height:	6	in
Thick:	0.5	in
Notch:	0.5	in
Grade:	36	ksi
Weld str.:	70	ksi

Pole Data		
Diam:	60	in
Thick:	0.625	in
Grade:	42	ksi
# of Sides:	0	"0" IF Round
Fu	63	ksi
Reinf. Fillet Weld	0	"0" if None

Stress Increase Factor		
ASIF:	1.333	

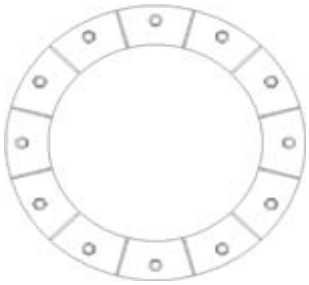
If No stiffeners, Criteria:	AISC ASD	<-Only Applcable to Unstiffened Cases

Anchor Rod Results			Stiffened
Maximum Rod Tension:	29.7	Kips	Service, ASD
Allowable Tension:	81.0	Kips	Fty*ASIF
Anchor Rod Stress Ratio:	36.7%	Pass	

Base Plate Results	Flexural Check		Stiffened
Base Plate Stress:	34.8	ksi	Service, ASD
Allowable Plate Stress:	36.0	ksi	0.75*Fy*ASIF
Base Plate Stress Ratio:	96.7%	Pass	Y.L. Length: N/A, Roark

Stiffener Results		
Horizontal Weld :	46.5%	Pass
Vertical Weld:	24.9%	Pass
Plate Flex+Shear, fb/Fb+(fv/Fv)^2:	19.6%	Pass
Plate Tension+Shear, ft/Ft+(fv/Fv)^2:	42.4%	Pass
Plate Comp. (AISC Bracket):	53.0%	Pass

Pole Results		
Pole Punching Shear Check:	6.9%	Pass



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

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

PROJECT	**826217 - Newington_1**				**JEB**
SUBJECT	**261440 Rev # 2**				
DATE	**01/28/15**	PAGE	**1**	OF	**9**

B+T GRP
1717 S. Boulder, Suite 300
Tulsa, OK 74159
(918) 587-4630

87581_009_01_MP_FDN_Monopole Pier and Pad Unified.xls

B&T Proj. No.: 87581.009.01

Monopole Pad & Pier Foundation Analysis

Rev. Type: F

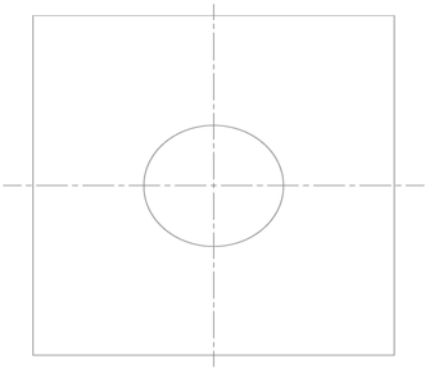
Design Loads:

	Input unfactored loads	
Shear:	40.0	kips
Moment:	3,706.0	ft-kips
Tower Height:	190.0	ft
Tower Weight:	67.0	kips

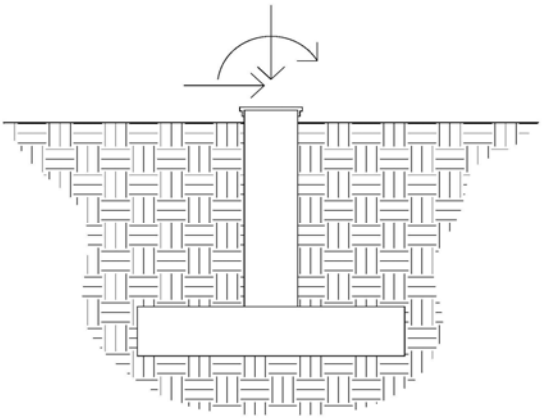
Pad & Pier Dimensions / Properties:

Pole Diameter at Base:	60.00	in
Bearing Depth:	9.0	ft
Pad Width:	20.5	ft
Neglected Depth:	3.3	ft
Thickness:	2.5	ft
Pier Diameter:	7.0	ft
Pier Height Above Grade:	0.5	ft
BP Dist. Above Pier:	3.0	in
Clear Cover:	3.0	in
Pier Rebar Size:	9	
Pier Rebar Quanity:	34	
Pad Rebar Size:	11	
Pad Rebar Quanity:	30	
Pier Tie Size:	4	
Tie Quanity:	11	
Rebar Yield Strength:	60000	psi
Concrete Strength:	3000	psi
Concrete Unit Weight:	0.15	kcf
Seismic Zone:	1	

Plan View



Elevation Overview



Soil Data:

	Allowable Values	
Soil Unit Weight:	0.130	kcf
Ult. Bearing Capacity:	16.000	ksf
Angle of Friction:	36.000	deg
Cohesion:	0.000	ksf
Passive Pressure:	0.000	ksf
Base Friction:	0.350	

Summary of Results

Req'd Pier Diam.	OK
Overturning	84.4%
Shear Capacity	29.4%
Bearing	64.6%
Pad Shear - 1-way	98.1%
Pad Shear - 2-way	10.6%
Pad Moment Capacity	51.5%
Pier Moment Capacity	93.4%

** Notes:

The moment was reduced to account for the rock anchor modificaiton.

APPENDIX D

TOWER MODIFICATION DRAWINGS

TOWER MODIFICATION DRAWINGS
PREPARED FOR: CROWN CASTLE

SITE NAME: NEWINGTON_1
BU NUMBER: 826217

SITE ADDRESS:
240 KENSINGTON ROAD,
BERLIN, CT 06037
HARTFORD COUNTY, USA

PROJECT CONTACTS:

1. CROWN TOWER STRUCTURAL ANALYST

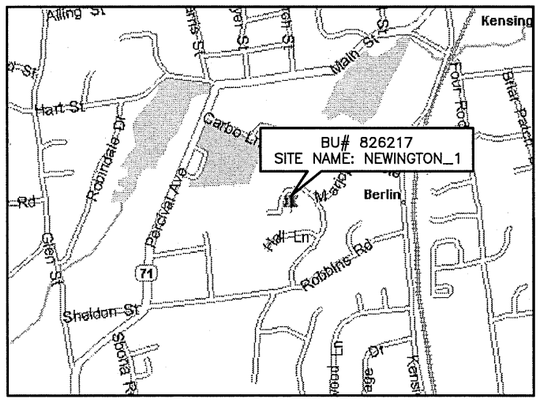
MITCHELL ABBOTT
(704) 405-6612
MITCHELL.ABBOTT@CROWNCASTLE.COM
3530 TORINGDON WAY, SUITE 300
CHARLOTTE, NC 28277

2. CROWN PROJECT MANAGER

JERRY BRUNO
(781) 970-0069
JERRY.BRUNO@CROWNCASTLE.COM

3. CROWN CONSTRUCTION MANAGER

N/A



MAP

DIRECTIONS

FROM RT 9 TO EXIT 22. TURN RIGHT ON TO MILL ST. RT 372 FOLLOW 3/4 MI AT SET OF LIGHTS TURN LEFT ONTO KENSINGO RD. 1/4 MI ON RIGHT WILL BE TOWN BUILDINGS COMPLEX AND ACCESS RD. FOLLOW TO TOP OF HILL. TOWER IS BEHIND TOWN HALL AND POLICE STATION.

4. B+T GROUP PROJECT ENGINEER

ALI HABIBI
(918) 587-4630
AHABIBI@BTGRP.COM
1717 S BOULDER AVENUE, SUITE 300
TULSA, OK 74119

5. B+T GROUP ENGINEER (EOR)

CHAD E TUTTLE, P.E.
(918) 587-4630
CTUTTLE@BTGRP.COM
1717 S BOULDER AVENUE, SUITE 300
TULSA, OK 74119

TOWER INFORMATION

TOWER MANUFACTURER / DWG #:	PIROD INC. / 204566-B
TOWER HEIGHT / TYPE:	190' MONOPOLE
TOWER LOCATION:	LAT. 41° 37' 34.3"
DATUM: (NAD 1983)	LONG. -72° 46' 32.33"
	ELEV. 140 FT AMSL
STRUCTURAL DESIGN DRAWING REPORT:	B+T GROUP / WO. # 996578
STRUCTURAL ANALYSIS REPORT:	B+T GROUP / WO. # 926907
STRUCTURAL ANALYSIS DATE:	09/16/14
APPLICATION ID / REVISION #:	2614401 / 2
CCISITES DOCUMENT ID:	5299086

CODE COMPLIANCE

THIS REINFORCEMENT DESIGN IS BASED ON THE REQUIREMENTS OF TIA/EIA-222-F STRUCTURAL STANDARDS FOR STEEL ANTENNA TOWERS AND ANTENNA SUPPORTING STRUCTURES USING FASTEST MILE WIND SPEED OF 80 MPH WITH NO ICE, 37.6 MPH WITH 1 INCH ICE THICKNESS AND 50 MPH UNDER SERVICE LOADS.

DRAWINGS INCLUDED

SHEET NUMBER	DESCRIPTION
S1	TITLE SHEET
S2	MODIFICATION INSPECTION NOTES AND CHECKLIST
S3	GENERAL NOTES, AJAX BOLT NOTES AND DETAIL
S4	TOWER ELEV., SCHEDULE AND TX LINE DIST. DIAGRAM
S5	TOWER SECTION (0'–19.5')
S6	TOWER SECTIONS (20'–30.5' AND 40'–50.5')
S7	TOWER SECTIONS (60'–70.5' AND 80'–99.5')
S8	FLAT PLATE BRIDGE STIFFENER DETAIL, SCHEDULE AND TOWER SECTION (100'–110.5')
D1	PART DETAIL

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

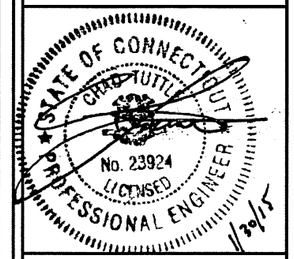
CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.



NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE

TITLE SHEET

SHEET NUMBER:	REVISION:
S1	0

MI CHECKLIST

REQUIRED	REPORT ITEM	BRIEF DESCRIPTION
		PRE-CONSTRUCTION
X	MI CHECKLIST DRAWING	THIS CHECKLIST SHALL BE INCLUDED IN THE MI REPORT.
X	EOR APPROVAL	ONCE THE PRE-MODIFICATION MAPPING IS COMPLETE AND PRIOR TO FABRICATION, THE CONTRACTOR SHALL PROVIDE DETAILED ASSEMBLY DRAWINGS AND/OR SHOP DRAWINGS AS NECESSARY FOR NON-STANDARD PARTS. 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	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	A VISUAL OBSERVATION BY A CWI OF A PORTION OF WELDING ON THE PROPOSED STRUCTURAL MEMBERS IS REQUIRED AND A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	MATERIAL TEST REPORT (MTR)	MILL CERTIFICATION SHALL BE PROVIDED FOR ALL STEEL AS SPECIFIED IN THE MODIFICATION DRAWINGS AND THIS DOCUMENTATION SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	FABRICATOR NDE INSPECTION	CRITICAL SHOP WELDS THAT REQUIRE TESTING (PER ENG-STD-10069) ARE NOTED ON THESE CONTRACT DRAWINGS. A CERTIFIED WELD INSPECTOR SHALL PERFORM NON-DESTRUCTIVE EXAMINATION AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	NDE REPORT OF MONOPOLE BASE PLATE	A NDE (PER ENG-SOW-10033) 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	THE MATERIAL SHIPPING LIST SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
		CONSTRUCTION (PERFORMED BY CONTRACTOR)
X	CONSTRUCTION INSPECTIONS	A LETTER FROM THE GENERAL CONTRACTOR STATING THAT THE WORKMANSHIP WAS PERFORMED IN ACCORDANCE WITH INDUSTRY STANDARDS AND THESE CONTRACT DRAWINGS.
N/A	FOUNDATION INSPECTIONS	A VISUAL OBSERVATION OF THE EXCAVATION AND REBAR SHALL BE PERFORMED BEFORE PLACING THE CONCRETE. A WRITTEN REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	CONCRETE COMP. STRENGTH AND SLUMP TESTS	THE CONCRETE MIX DESIGN, SLUMP TEST, AND COMPRESSIVE STRENGTH TESTS SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
N/A	POST INSTALLED ANCHOR ROD VERIFICATION	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.
X	BASE PLATE GROUT VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR THAT CERTIFIES THAT THE GROUT WAS INSTALLED IN ACCORDANCE WITH CROWN ENG-PRC-10012 FOR INCLUSION IN THE MI REPORT.
N/A	CONTRACTOR'S CERTIFIED WELD INSPECTION	A CERTIFIED WELD INSPECTOR SHALL INSPECT AND TEST AS NECESSARY ALL FIELD WELDS. CWI SHALL FOLLOW ALL THE PROCEDURES SPECIFIED IN CROWN STANDARD DOCUMENTS ENG-SOW-10066, ENG-STD-10069 AND SRV-STD-10159. A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT. FULL PENETRATION WELDS IN THE VICINITY OF BASE OF THE TOWER ARE REQUIRED TO BE 100% NDE INSPECTED BY UT IN ACCORDANCE WITH AWS D1.1. PARTIAL PENETRATION AND FILLET WELDS IN THE VICINITY OF BASE OF THE TOWER ARE REQUIRED TO BE 50% NDE INSPECTED BY MP IN ACCORDANCE WITH AWS D1.1.
N/A	EARTHWORK: LIFT AND DENSITY	FOUNDATION SUB-GRADES SHALL BE INSPECTED AND APPROVED BY A GEOTECHNICAL ENGINEER AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	ON SITE COLD GALVANIZING VERIFICATION	THE GENERAL CONTRACTOR SHALL PROVIDE DOCUMENTATION TO THE MI INSPECTOR VERIFYING THAT ANY ON-SITE COLD GALVANIZING WAS APPLIED IN ACCORDANCE WITH ENG-BUL-10149.
N/A	GUY WIRE TENSION REPORT	THE GENERAL CONTRACTOR SHALL PROVIDE A REPORT TO THE MI INSPECTOR INDICATING THE TEMPERATURE AND TENSION IN EVERY GUY CABLE AS PART OF PLUMB AND TENSION PROCEDURE FOR INCLUSION IN THE MI REPORT.
X	GC AS-BUILT DOCUMENTS	THE GENERAL CONTRACTOR SHALL SUBMIT A COPY OF THE CONTRACT DRAWINGS EITHER STATING "INSTALLED AS DESIGNED" OR NOTING ANY CHANGES THAT WERE REQUIRED AND APPROVED BY THE ENGINEER OF RECORD.
		POST-CONSTRUCTION
X	MI INSPECTOR REDLINE OR RECORD DRAWING(S)	THE MI INSPECTOR SHALL OBSERVE AND REPORT ANY DISCREPANCIES BETWEEN THE CONTRACTORS REDLINE DRAWING AND THE ACTUAL COMPLETED INSTALLATION.
N/A	POST INSTALLED ANCHOR ROD PULL-OUT TESTING	POST-INSTALLED ANCHOR RODS SHALL BE TESTED IN ACCORDANCE WITH ENG-PRC-10119 AND A REPORT SHALL BE PROVIDED TO THE MI INSPECTOR FOR INCLUSION IN THE MI REPORT.
X	PHOTOGRAPHS	PHOTOGRAPHS SHALL BE SUBMITTED TO THE MI WHICH DOCUMENT ALL PHASES OF THE CONSTRUCTION. THE PHOTOS SHALL BE ORGANIZED IN A MANNER THAT EASILY IDENTIFIES THE EXACT LOCATION OF THE PHOTO.
ADDITIONAL TESTING AND INSPECTIONS:		
NOTE: X DENOTES A DOCUMENT NEEDED FOR THE MI REPORT AND N/A DENOTES A DOCUMENT THAT IS NOT REQUIRED FOR THE MI REPORT		

MODIFICATION INSPECTION NOTES:

GENERAL

THE MODIFICATION INSPECTION (MI) IS A VISUAL INSPECTION OF TOWER MODIFICATIONS AND A REVIEW OF CONSTRUCTION INSPECTIONS AND OTHER REPORTS TO ENSURE THE INSTALLATION WAS CONSTRUCTED IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, NAMELY THE MODIFICATION DRAWINGS, AS DESIGNED BY THE ENGINEER OF RECORD (EOR).

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

ALL MI'S SHALL BE CONDUCTED BY A CROWN ENGINEERING VENDOR (AEV) OR ENGINEERING SERVICE VENDOR (AESV) THAT IS APPROVED TO PERFORM ELEVATED WORK FOR CROWN. SEE ENG-BUL-10173 LIST OF APPROVED MI VENDORS.

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

REFER TO ENG-SOW-10007 : MODIFICATION INSPECTION SOW FOR FURTHER DETAILS AND REQUIREMENTS.

MI INSPECTOR

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

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

THE MI INSPECTOR IS RESPONSIBLE FOR COLLECTING ALL GENERAL CONTRACTOR (GC) INSPECTION AND TEST REPORTS, REVIEWING THE DOCUMENTS FOR ADHERENCE TO THE CONTRACT DOCUMENTS, CONDUCTING THE IN-FIELD INSPECTIONS, AND SUBMITTING THE MI REPORT TO CROWN.

GENERAL CONTRACTOR

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

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

THE GC SHALL PERFORM AND RECORD THE TEST AND INSPECTION RESULTS IN ACCORDANCE WITH THE REQUIREMENTS OF THE MI CHECKLIST AND ENG-SOW-10007.

RECOMMENDATIONS

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

- IT IS SUGGESTED THAT THE GC PROVIDE A MINIMUM OF 5 BUSINESS DAYS NOTICE, 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.
- IT MAY BE BENEFICIAL TO INSTALL ALL TOWER MODIFICATIONS PRIOR TO CONDUCTING THE FOUNDATION INSPECTIONS TO ALLOW FOUNDATION AND MI INSPECTION(S) TO COMMENCE WITH ONE SITE VISIT.
- WHEN POSSIBLE, IT IS PREFERRED TO HAVE THE GC AND MI INSPECTOR ON-SITE DURING THE MI TO HAVE ANY 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.

CANCELLATION OR DELAYS IN SCHEDULED MI

IF THE GC AND MI INSPECTOR AGREE TO A DATE ON WHICH THE MI WILL BE CONDUCTED, AND EITHER PARTY CANCELS OR DELAYS, CROWN SHALL NOT BE RESPONSIBLE FOR ANY COSTS, FEES, LOSS OF DEPOSITS AND/OR OTHER PENALTIES RELATED TO THE CANCELLATION OR DELAY INCURRED BY EITHER PARTY FOR ANY TIME (E.G. TRAVEL AND LODGING, COSTS OF KEEPING EQUIPMENT ON-SITE, ETC.). IF CROWN CONTRACTS DIRECTLY FOR A THIRD PARTY MI, EXCEPTIONS MAY BE MADE IN THE EVENT THAT THE DELAY/CANCELLATION IS CAUSED BY WEATHER OR OTHER CONDITIONS THAT MAY COMPROMISE THE SAFETY OF THE PARTIES INVOLVED.

CORRECTION OF FAILING MI'S

IF THE MODIFICATION INSTALLATION WOULD FAIL THE MI ("FAILED MI"), THE GC SHALL WORK WITH CROWN TO COORDINATE A REMEDIATION PLAN IN ONE OF TWO WAYS:

- CORRECT FAILING ISSUES TO COMPLY WITH THE SPECIFICATIONS CONTAINED IN THE ORIGINAL CONTRACT DOCUMENTS AND COORDINATE A SUPPLEMENT MI.
- OR, WITH CROWN'S APPROVAL, THE GC MAY WORK WITH THE EOR TO RE-ANALYZE THE MODIFICATION/REINFORCEMENT USING THE AS-BUILT CONDITION

MI VERIFICATION INSPECTIONS

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

ALL VERIFICATION INSPECTIONS SHALL BE HELD TO THE SAME SPECIFICATIONS AND REQUIREMENTS IN THE CONTRACT DOCUMENTS AND IN ACCORDANCE WITH ENG-SOW-10007.

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

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 AND TORQUE
  - FINAL INSTALLED CONDITION
  - SURFACE COATING REPAIR
- POST CONSTRUCTION PHOTOGRAPHS
  - FINAL INFIELD CONDITION

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

THIS IS NOT A COMPLETE LIST OF REQUIRED PHOTOS, PLEASE REFER TO ENG-SOW-10007.

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CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CHAD JUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE

MODIFICATION INSPECTION NOTES AND CHECKLIST

SHEET NUMBER:	REVISION:
S2	0

NOTES:

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

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

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

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

5. AS AN ALTERNATIVE TO USING DTI WASHERS, AJAX BOLTS MAY BE PRETENSIONED PER AISC TURN-OF-NUT METHOD.

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

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

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

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

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

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

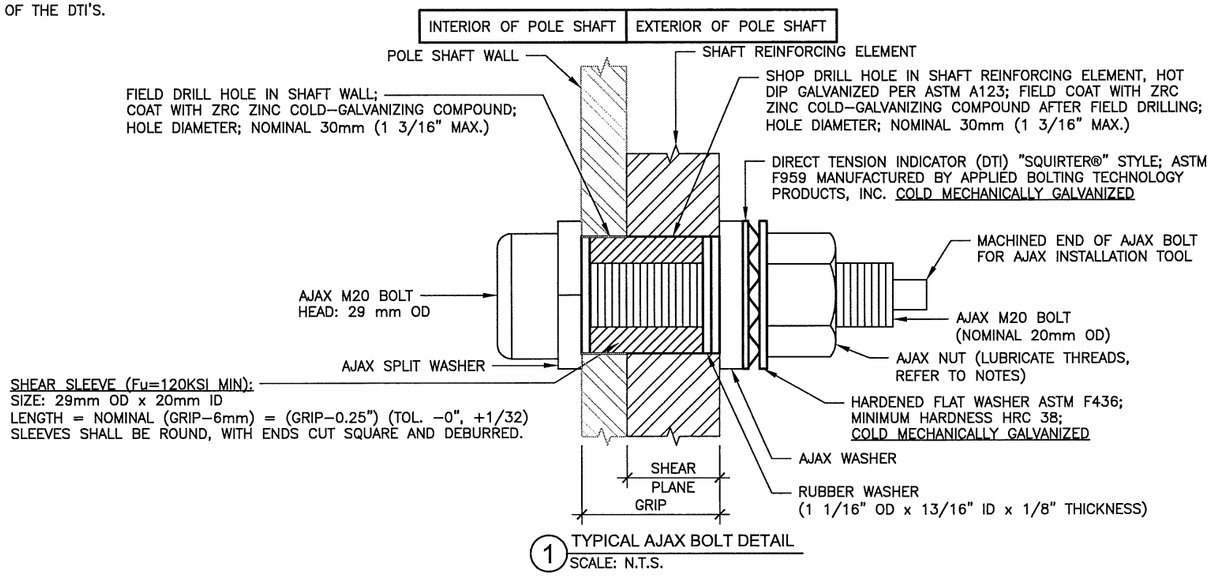
HARDENED WASHERS REQUIRED: USE A HARDENED WASHER FOR A 3/4" NOMINAL BOLT BETWEEN THE TOP OF THE DIRECT TENSION INDICATOR (DTI) WASHER AND THE NUT OF THE AJAX M20 BOLT. HARDENED WASHERS SHALL CONFORM TO ASTM F436 AND HAVE A MINIMUM HARDNESS OF HRC 38 OR HIGHER. THE HARDENED WASHERS SHALL BE MECHANICALLY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

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

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

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

INSPECTION REQUIRED: ALL AJAX BOLTS SHALL BE INSPECTED ACCORDING TO THE REQUIREMENTS OF THE AISC 'SPECIFICATION FOR STRUCTURAL JOINTS USING HIGH-STRENGTH BOLTS', DEC. 32, 2009, BY A QUALIFIED BOLT INSPECTOR. DURING INSTALLATION, THE BOLT INSPECTOR SHALL VERIFY AND DOCUMENT THE SHOP-DRILLED AND FIELD-DRILLED HOLE SIZES; THE INSTALLATION OF THE AJAX BOLT ASSEMBLY, INCLUDING THE SHEAR SLEEVE PLACEMENT AND NUT LUBRICATION AND THE CONTRACTOR'S TENSIONING PROCEDURE. IN ADDITION, ALL AJAX BOLTS AND DTI'S SHALL BE VISUALLY INSPECTED ACCORDING TO THE DTI MANUFACTURER'S INSTRUCTIONS. THE BOLT INSPECTOR SHALL PROVIDE COMPLETE PHOTO DOCUMENTATION OF ALL BOLTS AFTER TIGHTENING CLEARLY SHOWING THE CONDITION OF THE DTI'S.



1 TYPICAL AJAX BOLT DETAIL
SCALE: N.T.S.

GENERAL NOTES

1.1 ALL WORK SHALL COMPLY WITH THE TIA/EIA-222-F STANDARD AS WELL AS ANY OTHER GOVERNING BUILDING CODES.
1.2 FIELD WORK WILL BE DONE AROUND EXISTING COAXIAL CABLE AND EQUIPMENT. ALL WORK SHALL BE DONE IN A MANNER SUCH THAT NO DAMAGE OCCURS TO THE EXISTING EQUIPMENT OR THE STRUCTURE.
1.3 A MINIMUM OF TWO COATS OF ZINGA COLD GALVANIZING COMPOUND (OR APPROVED EQUIVALENT) SHALL BE APPLIED TO ANY FIELD CUTS OR FIELD DRILLED HOLES.
1.4 THE USE OF A GAS TORCH OR WELDER WILL NOT BE PERMITTED ON THE TOWER WITHOUT THE CONSENT OF THE OWNER.
1.5 IN LIEU OF TEMPORARY BRACING CONTRACTOR MAY HAVE A STABILITY ANALYSIS PERFORMED BY AN ENGINEER LICENSED IN THE STATE THE TOWER IS LOCATED. THE ANALYSIS SHALL USE A MINIMUM WIND SPEED OF 45 mph (3-SEC) PER TIA-1019.

FABRICATION

2.1 ALL WORK SHALL BE DONE IN ACCORDANCE WITH A.I.S.C. "SPECIFICATIONS FOR THE DESIGN, FABRICATION AND ERECTION OF STRUCTURAL STEEL FOR BUILDINGS."
2.2 STRUCTURAL STEEL SHALL MEET THE FOLLOWING SPECIFICATIONS:

	YIELD	ASTM SPECS
A. STEEL SHAPES AND PLATES, U.N.O.	65ksi	A572
B. STEEL PIPE	50ksi	---

2.3 ALL NEW MATERIAL INCLUDING STRUCTURAL STEEL AND FASTENERS SHALL BE HOT DIPPED GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A123 AND A153.
2.4 WELDING SHALL MEET ANSI/AWS D1.1 STRUCTURAL WELDING CODE (LATEST REVISION). ELECTRODES SHALL BE E80 SERIES.
2.5 CONTRACTOR SHALL PROVIDE SHOP FABRICATION DRAWINGS TO B+T GROUP 5 DAYS PRIOR TO FABRICATION.

KEY NOTES

(#) TOWER MODIFICATION I.D.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
TULSA, OK 74119
PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

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STATE OF CONNECTICUT
CHAD TUTTLE
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NEWINGTON_1
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240 KENSINGTON ROAD,
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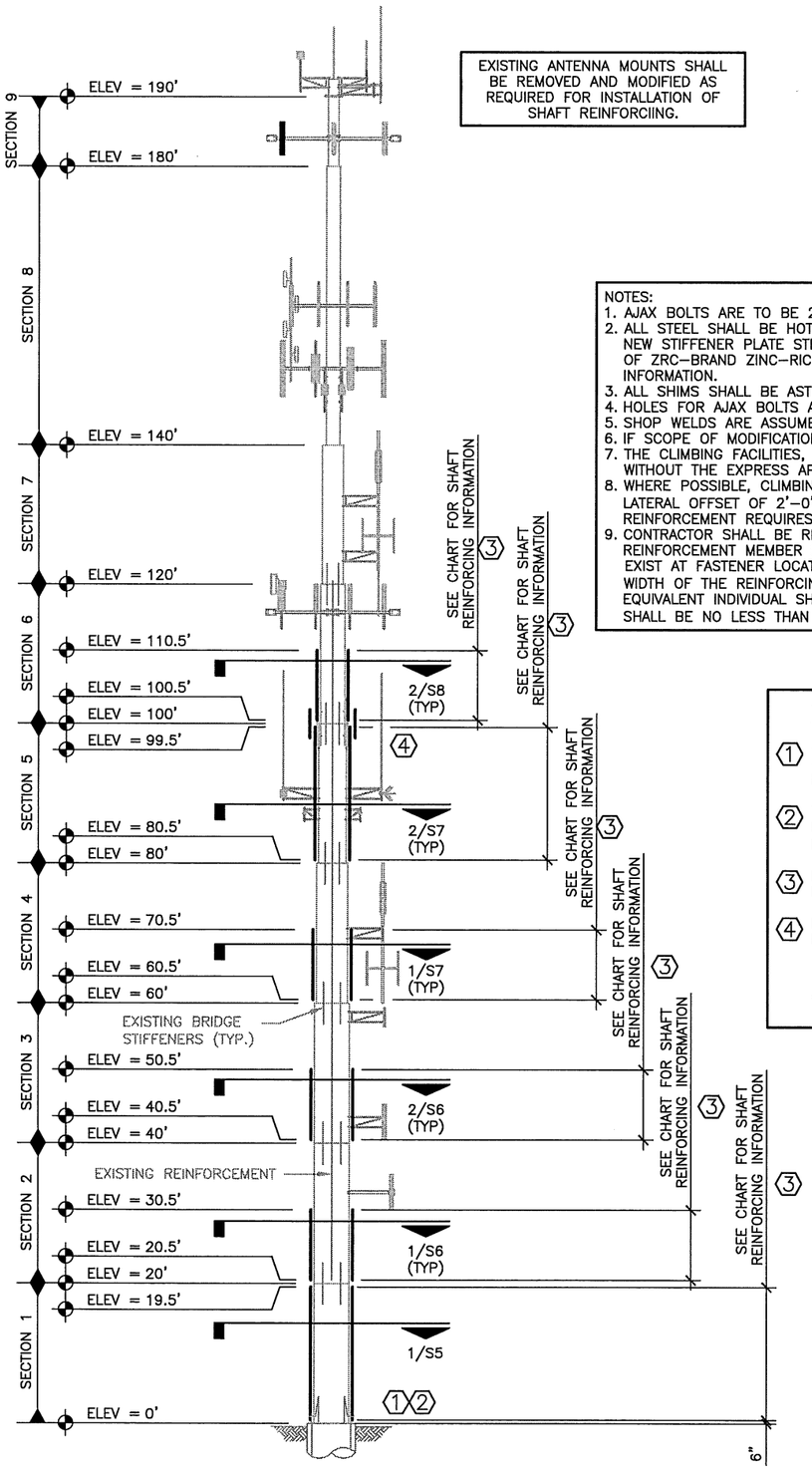
EXISTING 190' MONOPOLE

SHEET TITLE
GENERAL NOTES,
AJAX BOLT NOTES
AND DETAIL

SHEET NUMBER:	REVISION:
S3	0



1 TOWER ELEVATION
SCALE: N.T.S.

EXISTING ANTENNA MOUNTS SHALL BE REMOVED AND MODIFIED AS REQUIRED FOR INSTALLATION OF SHAFT REINFORCIING.

CCI: FLAT PLATE-BILL OF MATERIALS (65KSI)

BOTTOM ELEVATION	TOP ELEVATION	FLAT PLATE DESIGNATION	FLAT PLATE LENGTH	FLAT PLATE QUANTITY	AJAX BOLTS PER PLATE	TOTAL AJAX BOLT QTY	TERMINATION BOLTS (BOTTOM)	TERMINATION BOLTS (TOP)	MAXIMUM INTERMEDIATE BOLT SPACING	TOTAL STEEL WEIGHT	
0.5'	19.5'	FP1**	19'-0"	3	21	63	6	6	20"	873	LBS.
20.5'	30.5'	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459	LBS.
40.5'	50.5'	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459	LBS.
60.5'	70.5'	CCI-SFP-04510010	10'-0"	3	16	48	6	6	20"	459	LBS.
80.5'	99.5'	FP2**	19'-0"	3	20	60	4	4	16"	582	LBS.
100.5'	110.5'	CCI-SFP-04007510	10'-0"	3	13	39	4	4	16"	306	LBS.
						306				3138	LBS.

** UNIQUE PART. SEE PART DETAIL SHEET D2

NOTES:
1. AJAX BOLTS ARE TO BE 20mm DIAMETER WITH CORRESPONDING 29mm DIAMETER SLEEVE WITH MATCHING STEEL GRADE.
2. ALL STEEL SHALL BE HOT-DIP GALVANIZED AFTER FABRICATOR 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. 1-800-831-3275 FOR PRODUCT INFORMATION.
3. ALL SHIMS SHALL BE ASTM A36.
4. HOLES FOR AJAX BOLTS AND SHEAR SLEEVES ARE 30mm UNLESS NOTED OTHERWISE.
5. SHOP WELDS ARE ASSUMED E80XX OR GREATER, PER STANDARD SPLICE DETAIL.
6. IF SCOPE OF MODIFICATION REQUIRES REMOVAL OF TOWER ID TAG, IT MUST BE REPLACED.
7. THE CLIMBING FACILITIES, SAFETY CLIMB AND ALL PARTS THEREOF SHALL NOT BE IMPEDED, MODIFIED OR ALTERED WITHOUT THE EXPRESS APPROVAL OF THE ENGINEER OF RECORD OR TOWER OWNER.
8. WHERE POSSIBLE, CLIMBING HARDWARE SHOULD REMAIN IN-LINE ALONG THE POLE. IF AN OBSTRUCTION CAUSES A LATERAL OFFSET OF 2'-0" OR MORE, CLIMBING ANCHORS SHALL BE PROVIDED AT EACH CHANGE IN ALIGNMENT. IF NEW REINFORCEMENT REQUIRES STEP BOLT BRACKETS, INSTALL PRIOR TO GALVANIZATION OF STEEL.
9. CONTRACTOR SHALL BE RESPONSIBLE FOR PROPER FITTING OF REINFORCEMENT ON MONOPOLES. SHIMS FOR MONOPOLE REINFORCEMENT MEMBER 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.

TOWER MODIFICATIONS:

1. CONTRACTOR SHALL BUDGET A SITE VISIT TO CHECK CRITICAL DIMENSIONS AND VERIFY UNKNOWN CONDITIONS PRIOR TO STEEL FABRICATION.
2. THE NEW AND EXISTING TRANSMISSION LINES MUST BE DISTRIBUTED AS SHOWN IN THE TX LINE DIST. DIAGRAM RE: DETAIL 2/S4.
3. INSTALL NEW REINFORCING ELEMENTS RE: SHEET S5 THRU S8.
4. INSTALL NEW BRIDGE STIFFENERS RE: SHEET S8.

* CONTRACTOR SHALL PROVIDE TEMPORARY BRACING FOR ALL REMOVE AND REPLACE PROCEDURES.
** MODIFICATIONS SHALL BE COMPLETED PRIOR TO ADDING THE PROPOSED APPURTENANCES.

NEW CCI FLAT PLATE (65KSI) REINFORCING ELEMENTS

START ELEVATION	END ELEVATION	QTY	FLAT #	FLAT PLATE *
0.5'	19.5'	3	---	FP1**
20.5'	30.5'	3	---	CCI-SFP-04510010
40.5'	50.5'	3	---	CCI-SFP-04510010
60.5'	70.5'	3	---	CCI-SFP-04510010
80.5'	99.5'	3	---	FP2**
100.5'	110.5'	3	---	CCI-SFP-04007510

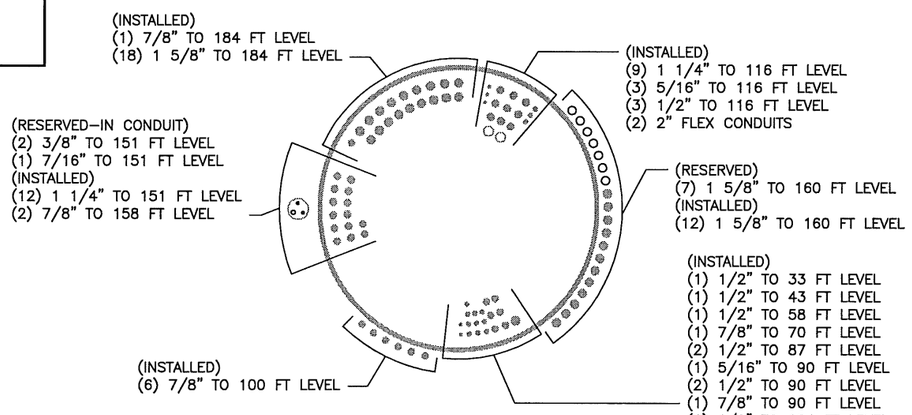
* SEE CMRP 65 KSI PARTS CATALOG EDITION 2 REV. 1 FOR PART DETAILS
** UNIQUE PART. SEE PART DETAIL SHEET D2

ALL BOLTS SHALL BE AJAX M20 BOLTS WITH HIGH STRENGTH SHEAR SLEEVES (ASTM A519 WITH MIN. Fu=120 KSI). CONTACT SUPPLIER FOR MATERIAL (PLATE AND BOLTS) AND INSTALLATION PROCEDURES.

EXISTING MEMBER SCHEDULE

SECTION	DIAMETER
1	60"øx5/8" PIPE
2	60"øx1/2" PIPE
3	60"øx3/8" PIPE
4	54"øx3/8" PIPE
5	48"øx3/8" PIPE
6	42"øx3/8" PIPE
7	36"øx3/8" PIPE
8	24"øx3/8" PIPE
9	18"øx3/8" PIPE

EXISTING TOWER HAS BEEN PREVIOUSLY MODIFIED. REFERENCE DRAWINGS BY B+T GROUP DATED 10/17/14



2 TX LINE DISTRIBUTION DIAGRAM
SCALE: N.T.S.

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1717 S. BOULDER AVE.
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TULSA, OK 74119
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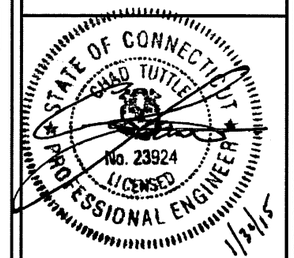
CHECKED BY:	SSC

B+T ENGINEERING, INC.



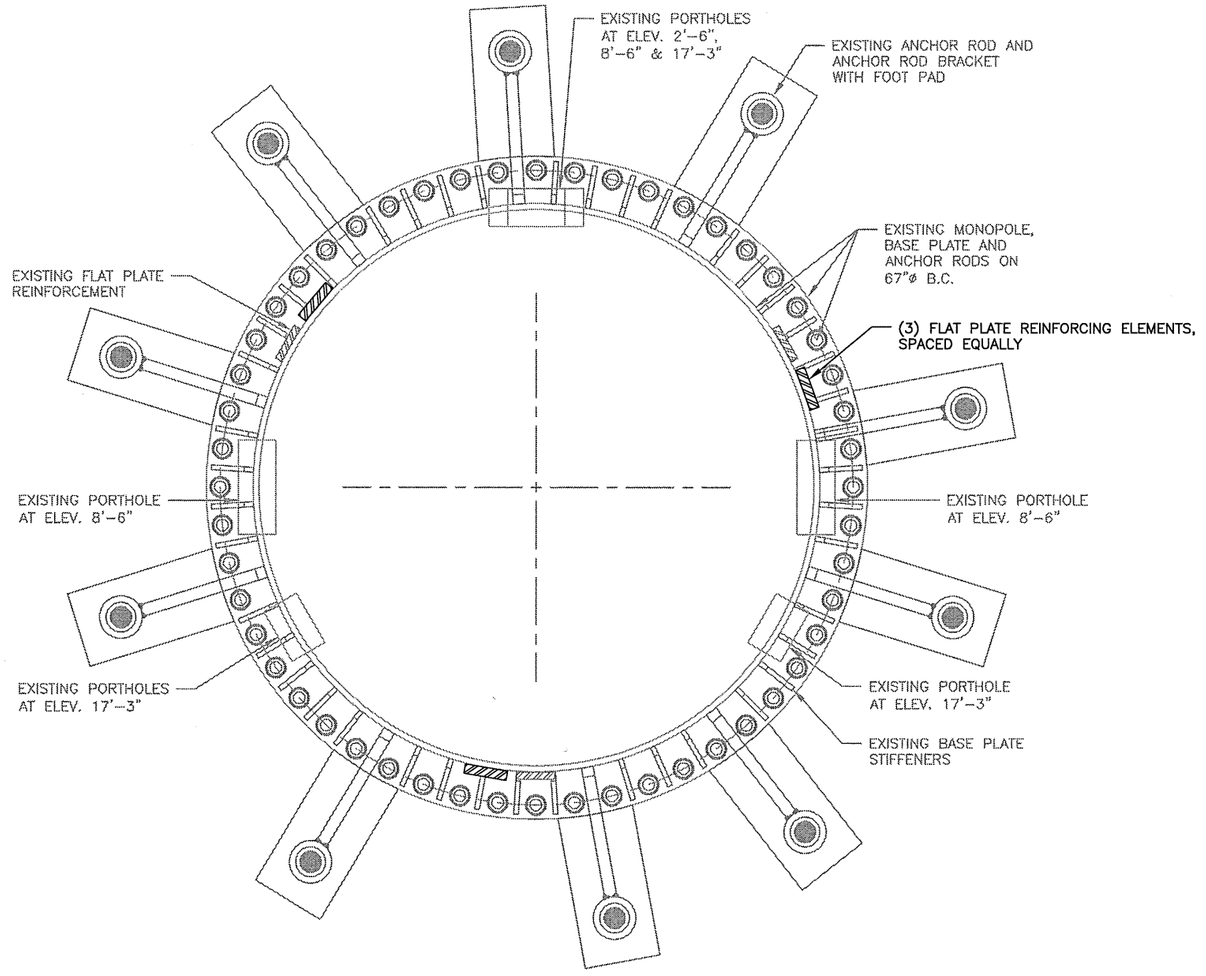
NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
TOWER ELEV., SCHEDULE AND TX LINE DIST. DIAGRAM

SHEET NUMBER: S4
REVISION: 0



1 TOWER SECTION (0'-19.5')
SCALE: N.T.S.

NOTE:
CONTRACTOR CAN CHOOSE ANY SYMMETRICAL LOCATIONS TO SUIT FIELD CONDITIONS. NOTIFY B+T GROUP IMMEDIATELY FOR ANY DISCREPANCIES.

B+T GRP
1717 S. BOULDER AVE.
SUITE 300
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PH: (918) 587-4630
www.btgrp.com

CROWN CASTLE

ISSUED FOR:

REV	DATE	DESCRIPTION
0	01/30/15	ISSUED FOR CONSTRUCTION

PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
CHECKED BY:	SSC

B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CHAD TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

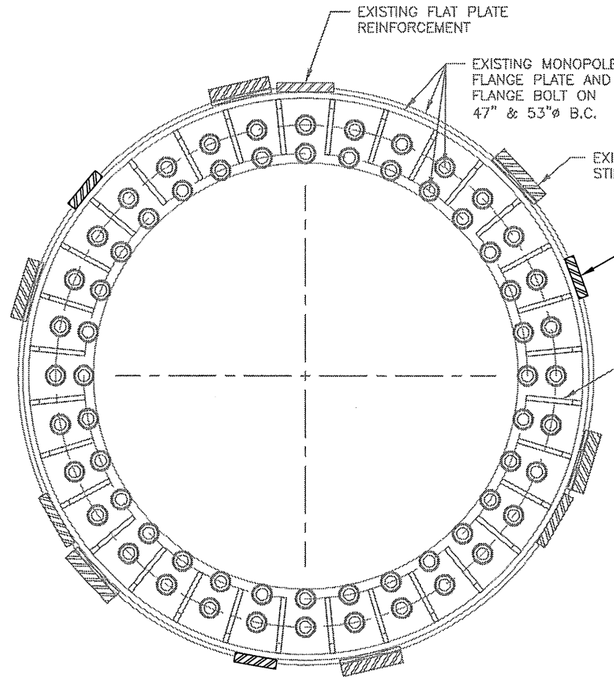
NEWINGTON_1
826217

240 KENSINGTON ROAD,
BERLIN, CT

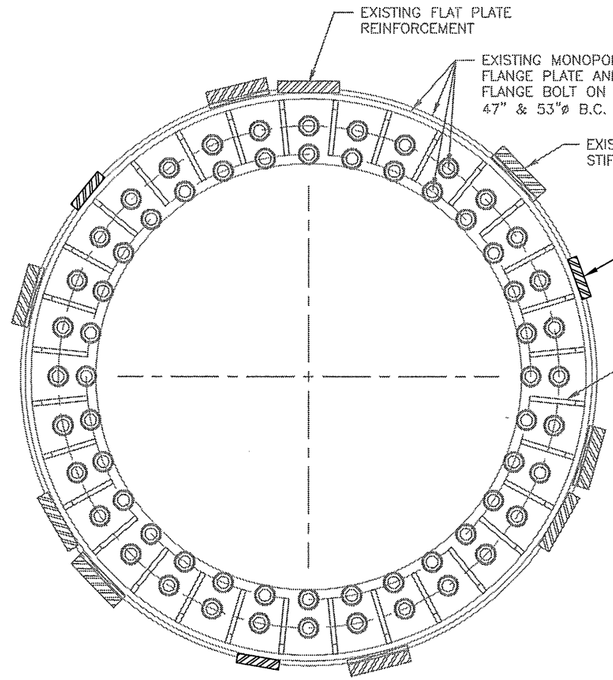
EXISTING 190' MONOPOLE

SHEET TITLE
TOWER SECTION
(0'-19.5')

SHEET NUMBER:	REVISION:
S5	0



1 TOWER SECTION (20'-30.5')
SCALE: N.T.S.



2 TOWER SECTION (40'-50.5')
SCALE: N.T.S.

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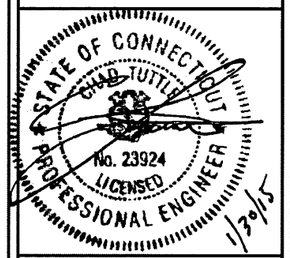

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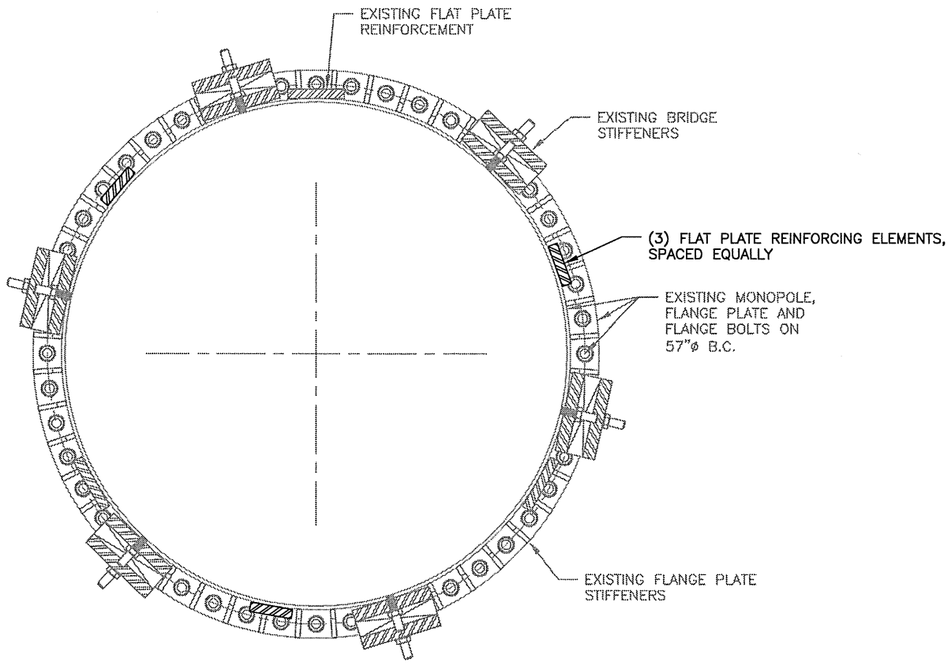
240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

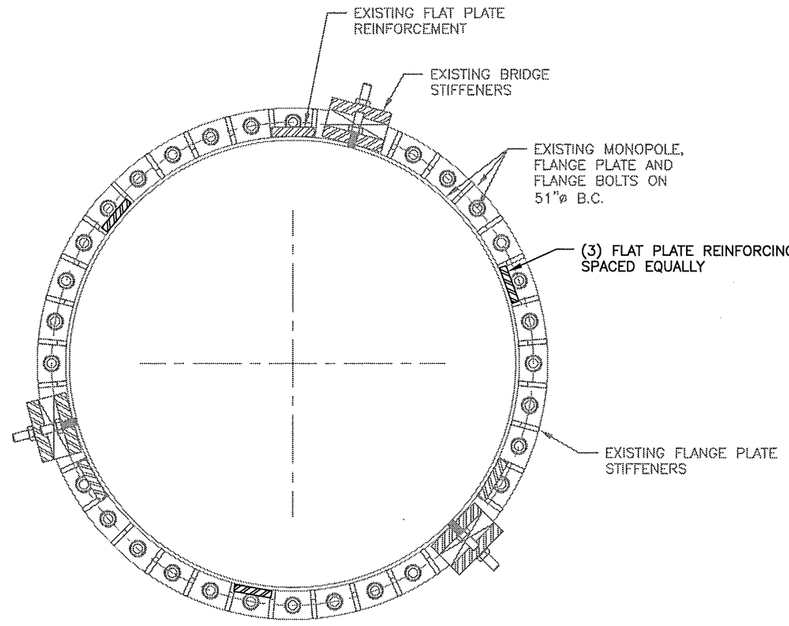
SHEET TITLE

TOWER SECTIONS
(20'-30.5' AND 40'-50.5')

SHEET NUMBER:	REVISION:
S6	0



1 TOWER SECTION (60'-70.5')
SCALE: N.T.S.



2 TOWER SECTION (80'-99.5')
SCALE: N.T.S.

NOTE:
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CROWN CASTLE

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PROJECT NO:	87581.010.01
PROJECT ENG:	ALI HABIBI
DRAWN BY:	UUJ / GLS
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B+T ENGINEERING, INC.

STATE OF CONNECTICUT
CRAIG TUTTLE
No. 23924
LICENSED
PROFESSIONAL ENGINEER
1/30/15

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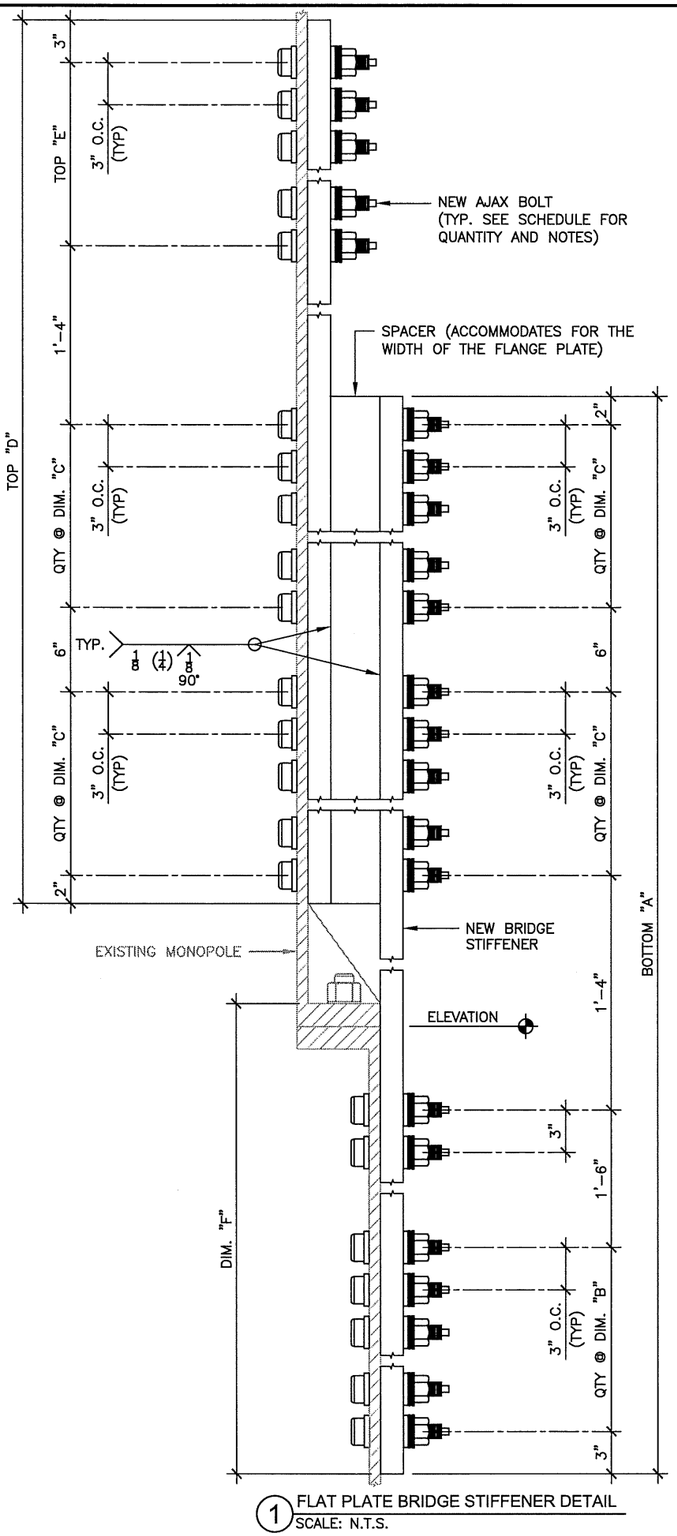
240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
TOWER SECTIONS
(60'-70.5' AND 80'-99.5')

SHEET NUMBER: S7

REVISION: 0



1 FLAT PLATE BRIDGE STIFFENER DETAIL
SCALE: N.T.S.

FLAT PLATE BRIDGE STIFFENER-SCHEDULE (65KSI)										
ELEVATION	NO. OF BRIDGE STIFFENERS	FLAT PLATE SIZE	BOTTOM "A"	QTY @ DIM. "B"	QTY @ DIM. "C"	TOP "D"	QTY @ DIM. "E"	DIM. "F"	AJAX BOLT QTY PER STIFFENER	TOTAL AJAX BOLT QTY
100'	3	1"x4 1/2"	7'-0"	6 HOLES @ 1'-3"	5 HOLES @ 1'-0"	5'-6"	6 HOLES @ 1'-3"	3'-9"	24	72

NOTE:
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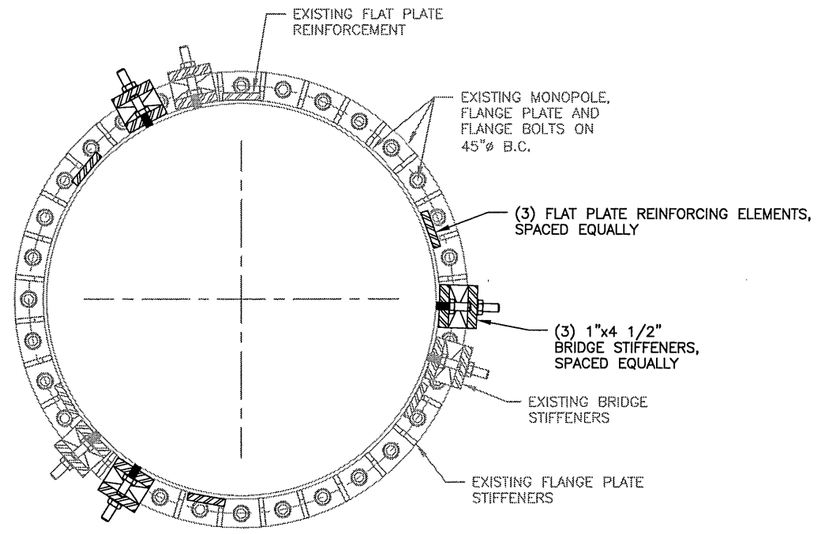

2 TOWER SECTION (100'-110.5')
SCALE: N.T.S.

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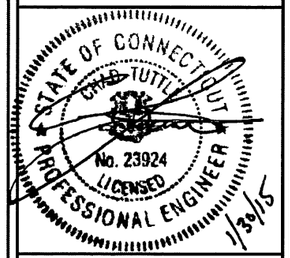

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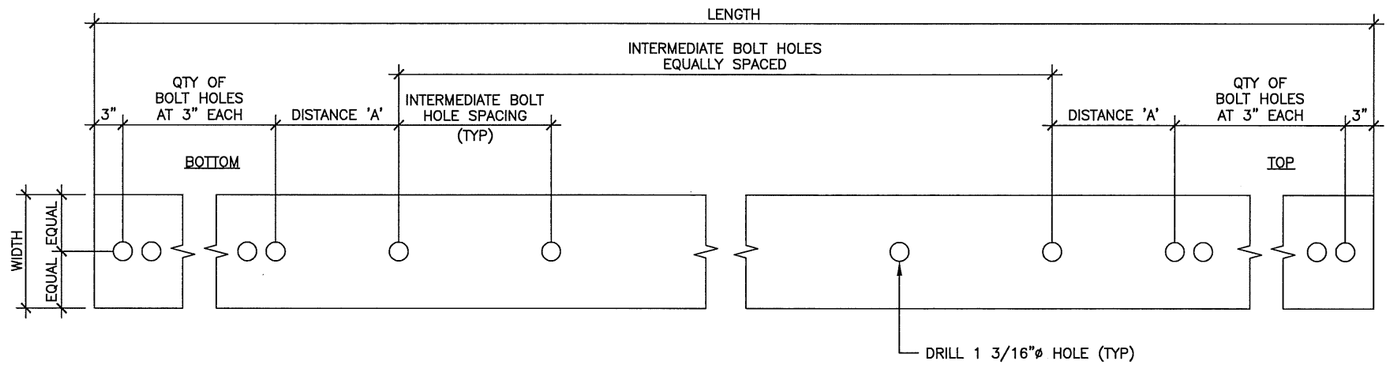
240 KENSINGTON ROAD,
BERLIN, CT

EXISTING 190' MONOPOLE

SHEET TITLE
FLAT PLATE BRIDGE STIFFENER DETAIL, SCHEDULE AND TOWER SECTION (100'-110.5')

SHEET NUMBER:	REVISION:
S8	0



1 PART DETAIL
SCALE: N.T.S.

PART NUMBER	BLACK WEIGHT (LBS)	WIDTH	THICKNESS	LENGTH	DISTANCE 'A'	TOTAL QTY OF 1 3/16"ø BOLT HOLES	QTY OF BOLT HOLES (BOTTOM END)	QTY OF BOLT HOLES (TOP END)	INTERMEDIATE BOLT HOLE SPACING
FP1	291	4 1/2"	1"	19'–0"	1'–4"	21	6	6	1'–8"
FP2	194	4"	3/4"	19'–0"	1'–2"	20	4	4	1'–4"

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EXISTING 190' MONOPOLE

SHEET TITLE

PART DETAIL

SHEET NUMBER: D1

REVISION: 0